

**Report on Site-Specific Response  
Analyses  
Port Access Road  
SCDOT Project ID 0037345  
North Charleston, SC  
S&ME Project No. 1431-15-075**



Prepared for:  
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August 5, 2015





August 5, 2015

SCDOT  
PO Box 191  
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Attention: Mr. Trapp Harris

Reference: **Report of Site-Specific Response Analyses**  
**Port Access Road - SCDOT Project ID 0037345**  
North Charleston, SC  
S&ME Project No. 1431-15-075

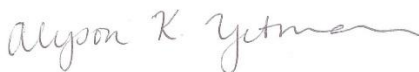
Dear Mr. Harris:

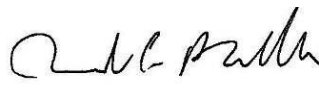
We have completed site-specific response analyses for the proposed Port Access Road in North Charleston, South Carolina. Our methodology, results, and recommendations are summarized herein. Our services were performed in accordance with the SCDOT Scope of Services dated May 26, 2015 issued for Work Order Number SME#3-18-37345 dated June 5, 2015.

We appreciate the opportunity to be of service on this project. Please let us know if you have any questions.

Sincerely,

**S&ME, Inc.**


  
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## 1.0 Project Information and Background

The proposed Port Access Road will connect I-26 to the State Port Authority's new container terminal on the former Charleston Naval Base. It will consist of multiple ramps and overpasses at the I-26 intersection; overpasses at multiple rail lines, Highway 52, and Highway 78; a bridge over Shipyard Creek; and connections to the surface streets north of the terminal site. The structures will likely be supported on drilled shafts or driven piles. Ground improvement beneath embankments and around structures may be required to meet the SCDOT performance limits under static and/or seismic loading.

The SCDOT plans to construct the new roadway using a design-build contract. The SCDOT contracted with S&ME to develop the acceleration design response spectra (ADRS) that will be provided to the design-build teams. The specific tasks and requirements were included in an SCDOT scope of services dated May 26, 2015, which can be summarized as follows:

- Seven synthetic acceleration time histories, generated by the Scenario\_PC software, were provided by the SCDOT for both the functional evaluation earthquake (FEE) and the safety evaluation earthquake (SEE) base "rock" hazards.
- The site conditions across the alignment are to be represented by up to four model profiles or soil columns.
- The analyses are to be performed using equivalent-linear and nonlinear procedures using DMOD2000 or DEEPSOIL with the Andrus et al. 2003 modulus and damping curves.
- The variability in stratigraphy, soil properties, and depth to rock should be considered with appropriate sensitivity analyses.
- The analyses must be peer reviewed. The standard 3-point ADRS shall be used for comparison with the site-specific results, but with consent of the Peer Reviewer, the 70% limit on the maximum reduction between the final design spectra and the 3-point spectrum does not apply.

## 2.0 Methodology Overview

Our equivalent-linear (EL) and nonlinear (NL) analyses were performed with the one-dimensional wave propagation program DEEPSOIL v6.0. The program can perform the EL and NL analyses simultaneously, and the NL analyses can be performed for total stress or with porewater pressure generation conditions. The majority of our analyses were performed with total stress conditions, but some analyses with porewater pressure generation were performed to evaluate the consequences of pore pressure generation. In all the analyses, the large strain soil behavior was limited by the corresponding soil shear strength or friction angle to avoid unrealistically high or low implied strengths from the standard normalized modulus reduction curves (Hashash et. al 2010, Yee et. al 2013). The required input can be summarized as follows:

- Representative acceleration time histories for the design earthquakes. A total of 14 time histories were provided by the SCDOT and are discussed in Section 3.0

- Stratigraphy. Per the scope of services, the project alignment was represented by four model soil columns or profiles. These models (i.e., layer thickness, soil type, groundwater elevation, etc.) were developed based on the available data and are discussed in more detail in Section 4.0.
- Shear wave velocity profiles. The available shear wave data were used to develop representative velocity profiles for each of the four model soil columns. The shear wave velocity ( $V_s$ ) profiles are discussed in more detail in Section 4.0.
- Modulus and damping reduction curves. As required by the scope of services, the dynamic properties of all soils were modeled using the Andrus et al. 2003 curves. Curve generation requires estimates of plasticity index (PI),  $K_0$ , unit weight, and effective stress. Additionally, to apply large strain strength limits, estimates of effective stress friction angle, undrained shear strength, and overconsolidation ratio (OCR) are required. The development of the modulus and damping reduction curves and the shear strength correction are discussed in more detail in Section 5.
- Porewater generation parameters. For NL analyses with porewater pressure generation, the coefficient of consolidation for each layer is required. Additionally, numerous fitting parameters, which are based on  $V_s$ , fines content, PI, and OCR, are necessary to generate the porewater pressure generation models. The porewater generation parameters are discussed in more detail in Section 6.

Sensitivity analyses were used to account for the uncertainty or variability associated with some of the above items. More specifically, the acceleration time histories were input at multiple depths within each profile, the  $V_s$  profiles were varied (faster and slower), and the soil properties used to develop the modulus and damping curves (e.g., PI) were varied. Similarly, for the analyses with pore water pressure generation, we considered variations to the stratigraphy and different fitting parameters for the porewater pressure generation models. Our sensitivity analyses are described in Sections 4 and 6.

The results were used to generate ADRS at the ground surface and at the top of the Cooper Marl, which we have assumed will correspond to the approximate depth-to-motion for the structures that will be designed by the design-build teams.

Dr. Youssef Hashash, P.E., served as a consultant to S&ME during our analyses. Dr. Sanjoy Chakraborty, P.E., with CDM Smith was contracted by S&ME to provide the required peer review. Dr. Chakraborty's comments and concurrence are submitted under separate cover.

### **3.0 Ground Motions**

We were provided a total of 28 synthetic acceleration time histories that were generated by the SCDOT using Scenario\_PC: 7 unscaled FEE motions, 7 scaled FEE motions, 7 unscaled SEE motions, and 7 scaled SEE motions. The FEE and SEE motions correspond to events having a 15% and 3% probability of exceedance in 75 years, respectively. All time histories correspond to an outcrop motion on rock with a shear wave velocity of 700 m/s (2,300 fps). The FEE motions are based on a scenario event with a moment magnitude of 7.36 and an epicentral distance of 24.9 km. The SEE motions are based on a scenario event with a moment magnitude of 7.36 and an epicentral distance of 16 km. The motions were processed using DEEPSOIL, and the resulting output is included in Appendix I. The scaled motions were noted to include a large permanent displacement offset, or drift, and a large amplitude spike at 50 Hz. Additionally, it was noted that the peak ground accelerations of the provided motions were less than the



target values reported in the supporting documentation. These issues are presented in more detail in S&ME Technical Memorandum 1 dated June 19, 2015, which is included in Appendix I. The motions were used as provided, and baseline correction was applied to remove the displacement drift prior to conducting site response analyses.

## **4.0 Model Profiles**

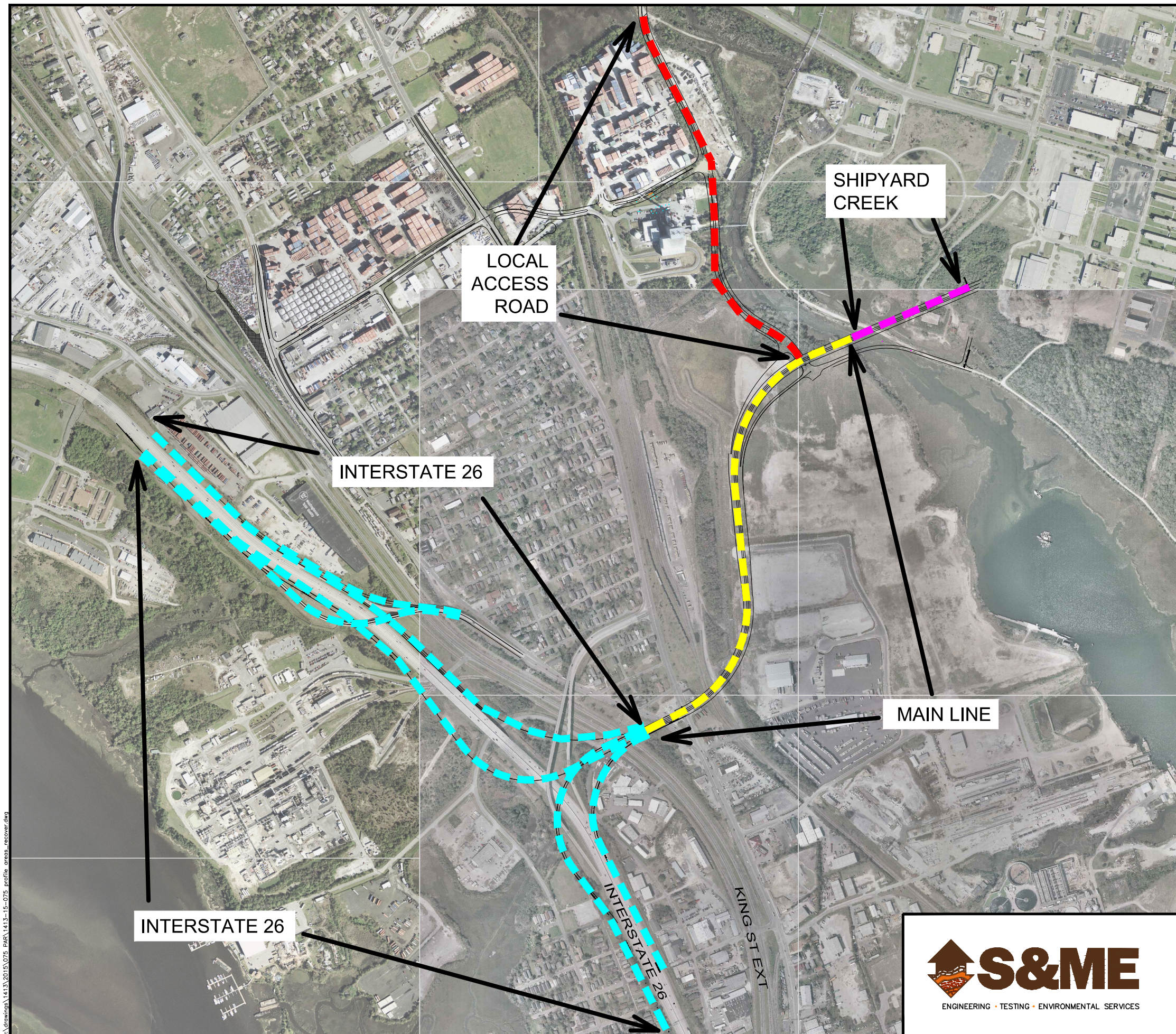
S&ME performed geotechnical site characterization for this project under a previous work order, and the data are summarized in the Geotechnical Base Line Report<sup>1</sup> (GBLR). The site characterization included soil test borings, cone penetration test (CPT) soundings, seismic CPT soundings, dilatometer soundings, MASW seismic testing, downhole P-S suspension logging in an 800-ft deep borehole, and laboratory testing. The data summarized in the GBLR are the basis for the model profiles that we have developed for the site-specific response analyses. Based on our review of the data, we established four representative profiles or model soil columns, which we have identified as: 1) I-26, 2) Main Line, 3) Shipyard Creek, and 4) Local Access Road. Each of the four profiles shares a common “basement” profile representative of the presumed deep subsurface conditions (i.e.,  $\approx 50$  ft to 800 ft). The general area represented by each of these four “shallow” profiles is shown in Figure 4-1, and the four model profiles and the basement profile are illustrated in Figures 4-2 through 4-4.

Each profile figure includes the stratigraphy,  $V_s$  profile, unit weight, CPT tip stress ( $q_t$ ), Relative Density ( $D_R$ ), Effective Stress Friction Angle ( $\phi'$ ), OCR, Undrained Shear Strength ( $S_u$ ), Atterberg Limits, and  $K_0$ . Some of these data are direct measurements (e.g.,  $V_s$ ,  $q_t$ , Atterberg Limits), others are based on correlations (e.g.,  $D_R$ ,  $\phi'$ ,  $S_u$ ), and others are estimates (e.g.,  $K_0$ ). In general, ranges of data are plotted in the profile figures, and the specific values used in our analyses are indicated on the plots.

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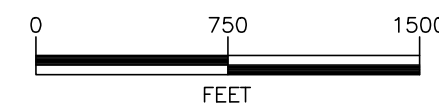
<sup>1</sup> Geotechnical Base Line Report – Port Access Road, July 21, 2015; S&ME, Inc.





#### LEGEND

- INTERSTATE 26
- MAIN LINE
- SHIPYARD CREEK
- LOCAL ACCESS ROAD

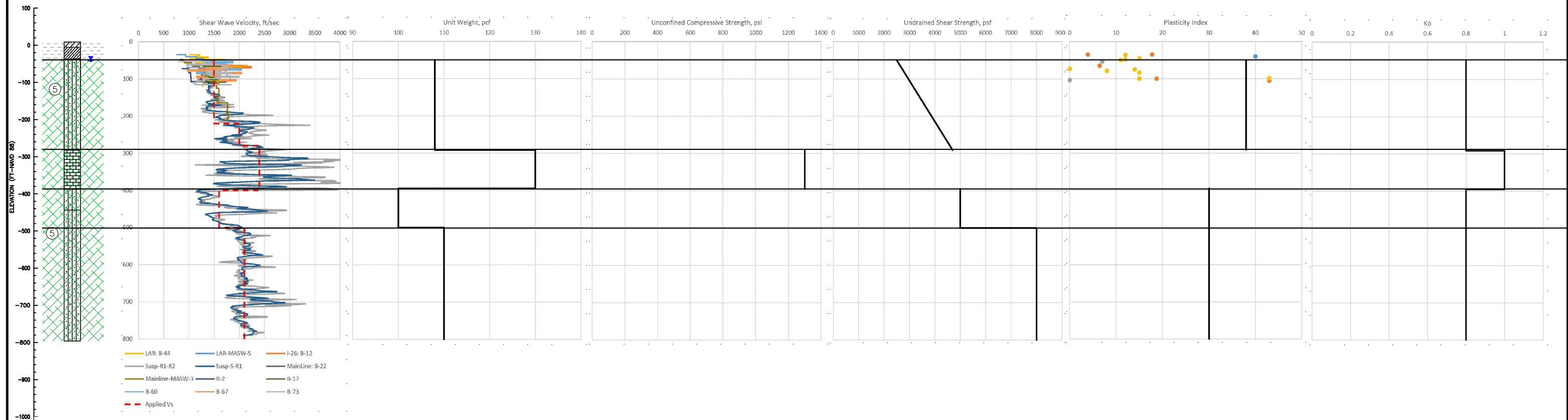


#### REPRESENTATIVE AREAS OF THE FOUR MODEL SAIL PROFILES PORT ACCESS ROAD NORTH CHARLESTON, SOUTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY:
PROJECT NO. 1413-14-075	DATE: 7-24-2015	FIGURE NO. 1



BASEMENT PROFILE



LEGEND

- |   |   |
|---|---|
| (1A) ARTIFICIAL FILL                                | (2B) PLEISTOCENE FOSSILIFEROUS SHELL SAND AND SILT                        |
| (1B) HOLOCENE MARSH DEPOSITS EAST OF SHIPYARD CREEK | (2C) PLEISTOCENE CLAYS AND SILTS  |
| (1C) HOLOCENE MARSH DEPOSITS WEST OF I-26 ALIGNMENT | (3) PLEISTOCENE LOWER SANDS   |
| (2A) RECENT TO PLEISTOCENE "BARRIER" SANDS          | (5) OLIGOCENE/EOCENE COOPER GROUP, SANTEE LIMESTONE AND BLACK MINGO GROUP |

NOTE: OLIGOCENE/EOCENE COOPER GROUP, SANTEE LIMESTONE AND BLACK MINGO GROUP WERE ALL MODELED USING ANDRUS ET AL 2003 TERTIARY M/D CURVES.



BASEMENT PROFILE  
PORT ACCESS ROAD  
CHARLESTON, SOUTH CAROLINA

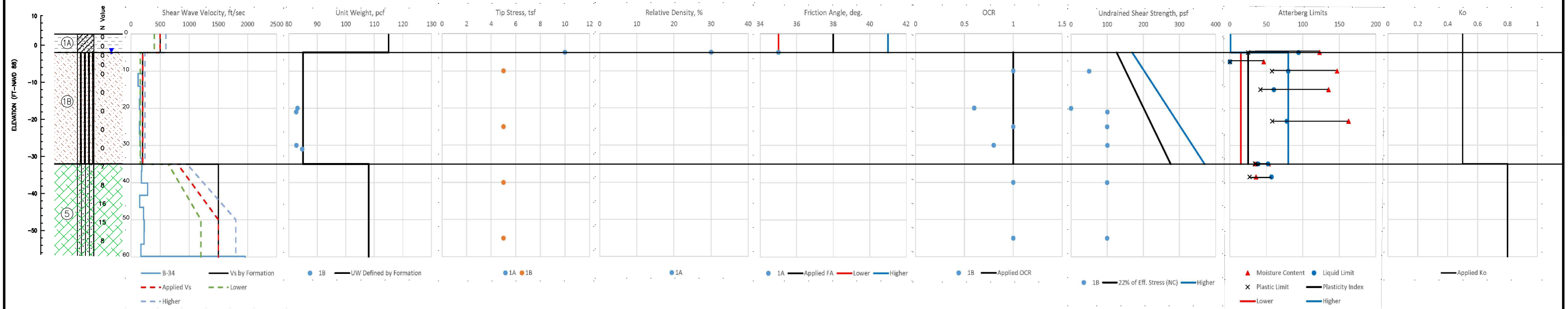
SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY:
PROJECT NO. 1413-15-075	DATE: 7-24-2015	FIGURE NO. 2





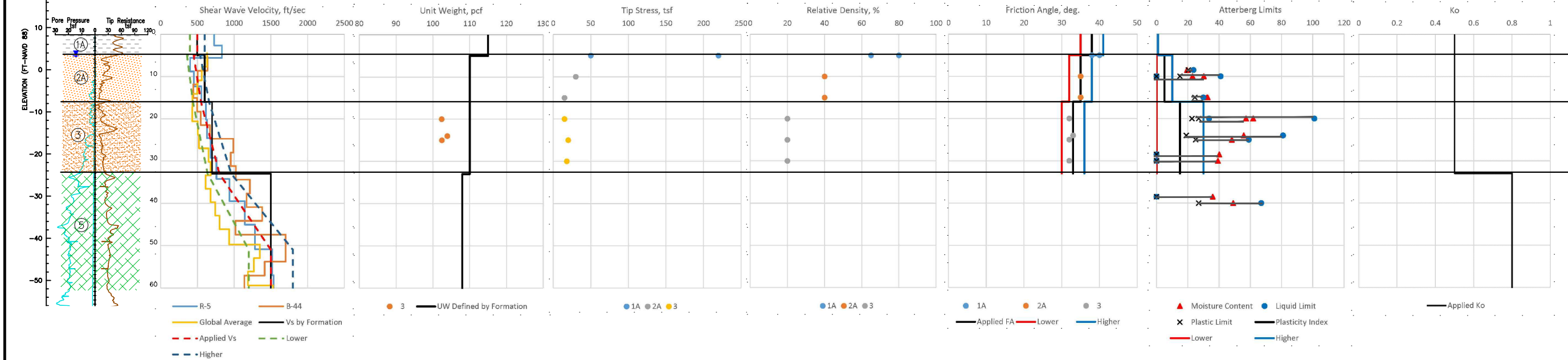
## B-31

## SHIPYARD CREEK







## B-44

LOCAL ACCESS ROAD



### LEGEND

- |   |  |   |  |
|---|--|---|--|
|  | ARTIFICIAL FILL                                |  | PLEISTOCENE FOSSILIFEROUS SHELL SAND AND SILT  |
|  | HOLOCENE MARSH DEPOSITS EAST OF SHIPYARD CREEK |  | PLEISTOCENE CLAYS AND SILTS                    |
|  | HOLOCENE MARSH DEPOSITS WEST OF I-26 ALIGNMENT |  | PLEISTOCENE LOWER SANDS                        |
|  | RECENT TO PLEISTOCENE "BARRIER" SANDS          |  | OLIGOCENE ASHLEY FORMATION (COOPER GROUP) MARL |



## PROFILES

PORT ACCESS ROAD  
CHARLESTON, SOUTH CAROLINA

SCALE: AS SHOWN  
PROJECT NO. 1413-15-075

DRAWN BY:	LAJ
DATE:	7-24-2015

APPROVED BY:	
FIGURE NO.	4

## **4.1 Regional Geology and the Basement Profile**

The project site is located in the Atlantic Coastal Plain physiographic province, or more specifically, the lower Coastal Plain of South Carolina. The lower Coastal Plain consists of a wedge of late Cretaceous and younger sediments that have been deposited on Paleozoic/Mesozoic igneous and metamorphic rock. The crystalline rock gradually dips seawards or towards the southeast, but the overlying sediments dip at a lesser rate; consequently, the Coastal Plain sedimentary units thicken down dip (Heron, 1962). The thickness of the Coastal Plain sediments at the project site is likely on the order of 2,500 ft. The sediments within the Coastal Plain primarily consist of unconsolidated siliciclastic materials and carbonates with varying quantities of terrigenous matter (Horton and Zullo, 1991). With respect to geotechnical characterization, the materials generally classify as intermediate geomaterials (i.e., in between soil and rock), although some soft rock lenses may be encountered.

The site characterization included a deep test hole (B-11) that was sampled to a depth of 500 ft and logged using geophysics (including P-S suspension logging) to a depth of 800 ft. These data serve as the basis of our Basement Profile. The test hole boring log and the measured  $V_s$  profile are included in Appendix II. Geologically, the test hole encountered the following formations (Katuna 2009):

- 0 to 48 ft – Wando Formation (Pleistocene)
- 48 to 170 ft – Ashley Formation of the Cooper Group (Upper Oligocene)
- 170 to 290 ft – Harleyville Formation of the Cooper Group (Upper Eocene)
- 290 to 330 ft – Cross Member of the Santee Limestone (Middle Eocene)
- 330 to 395 ft – Chicora Member of the Williamsburg Formation of the Black Mingo Group (Upper Paleocene)
- 395 to 450 ft – Lower Bridge Member of the Williamsburg Formation of the Black Mingo Group (Upper Paleocene)
- 450 to >500 ft – Rhems Formation of the Black Mingo Group (Upper to Lower Paleocene).

Since samples were not obtained below a depth of 500 ft, the deeper geology is unknown, but based on the geophysical data, the 800 ft deep test hole is believed to have been terminated within the Black Mingo Group. The thickness and/or presence of the underlying units (i.e., Peedee Formation, Black Creek Formation, and the Middendorf Formation) is not known.

The Basement Profile inferred from the deep test hole is shown in Figure 2. As noted above, the ground motions were generated for an assumed soft “rock” outcrop having a shear wave velocity of 2,300 fps. The  $V_s$  profile, as measured with the P-S suspension logging, indicates that a velocity of approximately 2,300 fps was first measured at a depth of about 220 ft. Between depths of about 220 ft and 500 ft, the velocity is rather variable, and the  $V_s$  within relatively thin layers is at times as high as 3,500 fps and as low as 1,200 fps. From approximately 500 ft to the termination depth of 800 ft, the velocity profile is more uniform and is generally around 2,100 fps. We chose an acceleration time history input depth of 200 ft for our base model, but considering the variability in the  $V_s$  data, our sensitivity analyses included models with input depths of 500 ft and 1000 ft. The Andrus et al. 2003 Tertiary (Ashley or Cooper Marl)



parameters were used to construct the modulus and damping reduction curves for all materials in the Basement Profile.

The Basement Profile was appended to the four surface or areal profiles. The layer details of the Basement Profile used in site response analyses are summarized in Table 4.1.

**Table 4-1 – Basement Profile Model**

Geologic Age	Layer No.*	Layer H, ft	Depth, ft	Formation	USCS Soil Type	V <sub>s</sub> , fps	PI	Unit Weight, pcf	K <sub>o</sub>	Friction Angle	S <sub>u</sub> , psf
**	b+	**	**	**	**	**	**	**	**	**	**
Tertiary	1	5	61	Ashley	CH	1500	30	108	0.8		2500
Tertiary	2	5	66	Ashley	CH	1500	30	108	0.8		2610
Tertiary	3	5	71	Ashley	CH	1500	30	108	0.8		2720
Tertiary	4	5	76	Ashley	CH	1500	30	108	0.8		2830
Tertiary	5	5	81	Ashley	CH	1500	30	108	0.8		2940
Tertiary	6	5	86	Ashley	CH	1500	30	108	0.8		3050
Tertiary	7	8	94	Ashley	CH	1500	30	108	0.8		3160
Tertiary	8	8	102	Ashley	CH	1500	30	108	0.8		3270
Tertiary	9	8	110	Ashley	CH	1500	30	108	0.8		3380
Tertiary	10	8	118	Ashley	CH	1500	30	108	0.8		3490
Tertiary	11	8	126	Ashley	CH	1500	30	108	0.8		3600
Tertiary	12	8	134	Ashley	CH	1500	30	108	0.8		3710
Tertiary	13	10	144	Ashley	CH	1500	30	108	0.8		3820
Tertiary	14	10	154	Ashley	CH	1500	30	108	0.8		3930
Tertiary	15	10	164	Ashley	CH	1500	30	108	0.8		4040
Tertiary	16	12	176	Harleyville	CH	1500	30	108	0.8		4150
Tertiary	17	12	188	Harleyville	CH	1500	30	108	0.8		4260
Tertiary	18	12	200	Harleyville	CH	1500	30	108	0.8		4370
Tertiary	19	10	210	Harleyville	CH	1500	30	108	0.8		4455
Tertiary	20	10	220	Harleyville	CH	1500	30	108	0.8		4540
Tertiary	21	12	232	Harleyville	CH	2000	30	108	0.8		4625
Tertiary	22	16	248	Harleyville	CH	2000	30	108	0.8		4710
Tertiary	23	16	264	Harleyville	CH	2000	30	108	0.8		4795
Tertiary	24	16	280	Harleyville	CH	2000	30	108	0.8		4700
Tertiary	25	20	300	Cross	IGM	2400	30	130	1.0	48	14686
Tertiary	26	20	320	Cross	IGM	2400	30	130	1.0	48	16187
Tertiary	27	20	340	Chicora	IGM	2400	30	130	0.8	48	17689
Tertiary	28	20	360	Chicora	IGM	2400	30	130	0.8	48	19190



**Report of Site-Specific Response Analyses**  
**Port Access Road - SCDOT Project ID 0037345**

North Charleston, SC  
S&ME Project No. 1431-15-075

Geologic Age	Layer No.*	Layer H, ft	Depth, ft	Formation	USCS Soil Type	V <sub>s</sub> , fps	PI	Unit Weight, pcf	K <sub>o</sub>	Friction Angle	S <sub>u</sub> , psf
Tertiary	29	20	380	Chicora	IGM	2400	30	130	0.8	48	20692
Tertiary	30	20	400	Rhems	IGM	2400	30	130	0.8	48	22193
Tertiary	31	9	409	Rhems	IGM	1600	30	100	0.8		7000
Tertiary	32	13	422	Rhems	IGM	1600	30	100	0.8		7625
Tertiary	33	13	435	Rhems	IGM	1600	30	100	0.58		8250
Tertiary	34	13	448	Rhems	IGM	1600	30	100	0.8		8875
Tertiary	35	13	461	Rhems	IGM	1600	30	100	0.8		9500
Tertiary	36	13	474	Rhems	IGM	1600	30	100	0.8		10125
Tertiary	37	13	487	Rhems	IGM	1600	30	100	0.8		10750
Tertiary	38	13	500	Rhems	IGM	1600	30	100	0.8		11375
Tertiary	39	7	507	Black Mingo?	IGM	2100	30	105	0.8		12000
Tertiary	40	17	524	Black Mingo?	IGM	2100	30	105	0.8		12172
Tertiary	41	17	541	Black Mingo?	IGM	2100	30	105	0.8		12344
Tertiary	42	17	558	Black Mingo?	IGM	2100	30	105	0.8		12516
Tertiary	43	17	575	Black Mingo?	IGM	2100	30	105	0.8		12688
Tertiary	44	17	592	Black Mingo?	IGM	2100	30	105	0.8		12860
Tertiary	45	17	609	Black Mingo?	IGM	2100	30	105	0.8		13032
Tertiary	46	17	626	Black Mingo?	IGM	2100	30	105	0.8		13204
Tertiary	47	17	643	Black Mingo?	IGM	2100	30	105	0.8		13376
Tertiary	48	17	660	Black Mingo?	IGM	2100	30	105	0.8		13548
Tertiary	49	17	677	Black Mingo?	IGM	2100	30	105	0.8		13720
Tertiary	50	17	694	Black Mingo?	IGM	2100	30	105	0.8		13892
Tertiary	51	17	711	Black Mingo?	IGM	2100	30	105	0.8		14064
Tertiary	52	17	728	Black Mingo?	IGM	2100	30	105	0.8		14236
Tertiary	53	17	745	Black Mingo?	IGM	2100	30	105	0.8		14408
Tertiary	54	17	762	Black Mingo?	IGM	2100	30	105	0.8		14580
Tertiary	55	17	779	Black Mingo?	IGM	2100	30	105	0.8		14752
Tertiary	56	17	796	Black Mingo?	IGM	2100	30	105	0.8		14924
Tertiary	57	17	813	Black Mingo?	IGM	2100	30	105	0.8		15096
Tertiary	58	17	830	Black Mingo?	IGM	2100	30	105	0.8		15268
Tertiary	59	17	847	Black Mingo?	IGM	2100	30	105	0.8		15440
Tertiary	60	17	864	Black Mingo?	IGM	2100	30	105	0.8		15612
Tertiary	61	17	881	Black Mingo?	IGM	2100	30	105	0.8		15784
Tertiary	62	17	898	Black Mingo?	IGM	2100	30	105	0.8		15956
Tertiary	63	17	915	Black Mingo?	IGM	2100	30	105	0.8		16128

Geologic Age	Layer No.*	Layer H, ft	Depth, ft	Formation	USCS Soil Type	V <sub>s</sub> , fps	PI	Unit Weight, pcf	K <sub>o</sub>	Friction Angle	S <sub>u</sub> , psf
Tertiary	64	17	932	Black Mingo?	IGM	2100	30	105	0.8		16300
Tertiary	65	17	949	Black Mingo?	IGM	2100	30	105	0.8		16472
Tertiary	66	17	966	Black Mingo?	IGM	2100	30	105	0.8		16644
Tertiary	67	17	983	Black Mingo?	IGM	2100	30	105	0.8		16816
Tertiary	68	17	1000	Black Mingo?	IGM	2100	30	105	0.8		17000

**Notes:**

\* *b* is the number of the base layer in each of the four surface models.

The tabulated depth corresponds to the I-26 surface model, but it will vary slightly by location.

\*\* See 4 surface models in subsequent section.

Unfilled portion is the base model with input at 200 ft.

Light gray portion is the additional layers for input at 500 ft.

Entire table includes all layers for input at 1000 ft.

Modulus & Damping Curves for All Layers use Andrus et al. 2003 Tertiary (Ashley or Cooper Marl) Parameters.

Groundwater at 5 ft below ground surface.

Sensitivity analyses related to the Basement profile considered changes to the acceleration time history input depths (200 ft, 500 ft, or 1000 ft as indicated by the shading in the table) and consideration of faster (i.e., 1800 fps) and slower (i.e., 1200 fps) shear wave velocities within the Cooper Marl down to a depth of 200 ft. When reducing the V<sub>s</sub> profile, the layer thickness had to be changed in some cases to make sure the layer thickness/V<sub>s</sub> combination had a minimum natural frequency of 30 Hz.

## 4.2 Interstate 26 (I-26) Profile

The subsurface conditions in the area of the ramps and overpasses near the I-26 intersection are summarized on Figures 4-1 through 4-5 in the GBLR. The conditions across the area are relatively consistent and GBLR Figure 4-5, which is included in Appendix II, was selected to represent the general conditions within the I-26 area. The model profile shown in Figure 3 was developed to represent the I-26 subsurface conditions. The model profile consists of 4 strata overlying the Basement Profile described in Section 4.1. Beginning at the surface, the strata consist of:

- Unit 1A Fill (0 to 6 ft) – fine, medium dense, non-plastic silty sand (SP-SM)
- Unit 1C Sandy Marsh Deposits (6 to 18 ft) – fine, very loose to loose, clayey or silty sand (SC or SM)
- Unit 2C Clays and Silts (18 to 43 ft) – soft to firm, normally to moderately consolidated, (CH/MH)
- Unit 3 Sands (43 to 56 ft) – loose to medium dense, slightly silty to silty (SP-SM/SM)

The layer details of the base I-26 Profile are summarized in Table 4.2.



**Table 4-2 – I-26 Profile Model (Base)**

Geologic Age	Layer No.	Layer H, ft	Depth, ft	Unit	USCS Soil Type	V <sub>s</sub> , fps	PI	Unit Weight, pcf	K <sub>o</sub>	Friction Angle	S <sub>w</sub> , psf
Holocene	1	2	2	1A	SP-SM	500	1	115	0.5	38	90
Holocene	2	2	4	1A	SP-SM	500	1	115	0.5	38	270
Holocene	3	1	5	1A	SP-SM	500	1	115	0.5	38	404
Holocene	4	1	6	1A	SP-SM	400	1	115	0.5	38	470
Holocene	5	2	8	1C	SC/SM	417	12	85	0.5		209
Holocene	6	2	10	1C	SC/SM	434	12	85	0.5		227
Holocene	7	2	12	1C	SC/SM	451	12	85	0.5		245
Holocene	8	2	14	1C	SC/SM	468	12	85	0.5		263
Holocene	9	2	16	1C	SC/SM	485	12	85	0.5		281
Holocene	10	2	18	1C	SC/SM	500	12	85	0.5		300
Pleistocene	11	3	21	2C	CH/MH	535	10	95	0.5		338
Pleistocene	12	4	25	2C	CH/MH	570	10	95	0.5		376
Pleistocene	13	4	29	2C	CH/MH	605	10	95	0.5		414
Pleistocene	14	4	33	2C	CH/MH	640	10	95	0.5		452
Pleistocene	15	5	38	2C	CH/MH	675	10	95	0.5		490
Pleistocene	16	5	43	2C	CH/MH	700	10	95	0.5		526
Pleistocene	17	3	46	3	SP-SM/SM	835	15	110	0.5	33	1159
Pleistocene	18	3	49	3	SP-SM/SM	970	15	110	0.5	33	1252
Pleistocene	19	3	52	3	SP-SM/SM	1105	15	110	0.5	33	1345
Pleistocene	20	4	56	3	SP-SM/SM	1250	15	110	0.5	33	1453

**Notes:**

*Modulus & Damping Curves use Andrus et al. 2003 Holocene or Pleistocene Parameters*

*Groundwater at 5 ft below ground surface*

Our sensitivity analyses for I-26 considered the higher and lower V<sub>s</sub> profiles, as illustrated in Figure 3, with a corresponding increase or decrease in the shear strength. When reducing the V<sub>s</sub> profile, the layer thickness had to be changed in some cases to make sure the layer thickness/V<sub>s</sub> combination had a minimum natural frequency of 30 Hz. Additional sensitivity analyses were performed with higher and lower values of PI, which are also shown on Figure 3.

### 4.3 Main Line Profile

The subsurface conditions in the area between the I-26 intersection and the western side of Shipyard Creek, which we have designated “Main Line”, are summarized on Figure 4-6 in the GBLR. The conditions along this portion of the alignment are relatively consistent and Boring B-23 shown on GBLR Figure 4-6, which is included in Appendix II, was selected to represent the general conditions within the Main Line area. More specifically, the model profile shown in Figure 3 was developed to represent the Main Line

subsurface conditions. The model profile consists of 4 strata overlying the Basement Profile described in Section 4.1. Beginning at the surface, the strata consist of:

- Unit 1A Fill (0 to 4 ft) – fine, medium dense, non-plastic silty sand (SP-SM)
- Unit 2A Sands (4 to 22 ft) – fine, very loose to loose, clean to clayey or silty sand (SP, SP-SM, or SM/SC)
- Unit 2C Clays and Silts (22 to 28 ft) – soft to firm, normally to moderately consolidated, (CH/MH)
- Unit 3 Sands (28 to 44 ft) – loose to medium dense, slightly silty to silty (SP-SM/SM)

The layer details of the base Main Line Profile are summarized in Table 4.3.

**Table 4-3 – Main Line Profile Model (base)**

Geologic Age	Layer No.	Layer H, ft	Depth, ft	Unit	USCS Soil Type	V <sub>s</sub> , fps	PI	Unit Weight, pcf	Ko	Friction Angle	S <sub>u</sub> , psf
Holocene	1	2.0	2	1A	SP-SM	500	1	115	0.5	38	90
Holocene	2	2.0	4	1A	SP-SM	500	1	115	0.5	38	270
Pleistocene	3	1.0	5	2A	SP-SM/SC	600	5	110	0.5	38	402
Pleistocene	4	1.0	6	2A	SP-SM/SC	610	5	110	0.5	38	464
Pleistocene	5	2.0	8	2A	SP-SM/SC	615	5	110	0.5	38	520
Pleistocene	6	3.5	11.5	2A	SP-SM/SC	620	5	110	0.5	38	622
Pleistocene	7	3.5	15	2A	SP-SM/SC	630	5	110	0.5	38	752
Pleistocene	8	3.5	18.5	2A	SP-SM/SC	640	5	110	0.5	38	882
Pleistocene	9	3.5	22	2A	SP-SM/SC	650	5	110	0.5	38	1012
Pleistocene	10	3.0	25	2C	CH/MH	500	10	95	0.5		428
Pleistocene	11	3.0	28	2C	CH/MH	700	10	95	0.5		493
Pleistocene	12	2.0	30	3	SP-SM/SM	762.5	15	110	0.5	33	1054
Pleistocene	13	2.0	32	3	SP-SM/SM	825	15	110	0.5	33	1115
Pleistocene	14	2.0	34	3	SP-SM/SM	887.5	15	110	0.5	33	1177
Pleistocene	15	2.0	36	3	SP-SM/SM	950	15	110	0.5	33	1239
Pleistocene	16	2.0	38	3	SP-SM/SM	1012.5	15	110	0.5	33	1301
Pleistocene	17	2.0	40	3	SP-SM/SM	1075	15	110	0.5	33	1363
Pleistocene	18	2.0	42	3	SP-SM/SM	1137.5	15	110	0.5	33	1425
Pleistocene	19	2.0	44	3	SP-SM/SM	1200	15	110	0.5	33	1486

**Notes:**

*Modulus & Damping Curves use Andrus et al. 2003 Holocene or Pleistocene Parameters*

*Groundwater at 5 ft below ground surface*

Our sensitivity analyses for the Main Line profile considered higher and lower V<sub>s</sub> profiles, as illustrated in Figure 3, with a corresponding increase or decrease in the shear strength. When reducing the V<sub>s</sub> profile, the layer thickness had to be changed in some cases to make sure the layer thickness/V<sub>s</sub> combination had



a minimum natural frequency of 30 Hz. Additional sensitivity analyses were performed with higher and lower values of PI, which are also shown on Figure 3.

#### 4.4 Shipyard Creek Profile

The subsurface conditions on the eastern side of Shipyard Creek are summarized on Figure 4-7 in the GBLR. This figure is included in Appendix II. The subsurface conditions consist of an increasing thickness of soft, high plasticity clay heading east from the edge of the creek. We selected Boring B-31 to represent the general conditions within the eastern bank of Shipyard Creek and subsequently developed the model profile shown in Figure 4. The model profile consists of 2 strata overlying the Basement Profile described in Section 4.1. Beginning at the surface, the stratum consist of:

- Unit 1A Fill (0 to 5 ft) – fine, medium dense, non-plastic silty sand (SP-SM)
- Unit 1B Silt (5 to 35 ft) – very soft, normally consolidated, (MH)

The layer details of the base Shipyard Creek Profile are summarized in Table 4.4.

**Table 4-4 – Shipyard Creek Profile Model (base)**

Geologic Age	Layer No.	Layer H, ft	Depth, ft	Unit	USCS Soil Type	V <sub>s</sub> , fps	PI	Unit Weight, pcf	K <sub>o</sub>	Friction Angle	S <sub>u</sub> , psf
Holocene	1	2.5	2.5	1A	SP-SM	500	0	115	0.5	38	112
Holocene	2	2.5	5	1A	SP-SM	500	0	115	0.5	38	337
Holocene	3	1.5	6.5	1B	MH	200	25	85	0.5		127
Holocene	4	1.5	8	1B	MH	200	25	85	0.5		135
Holocene	5	1.5	9.5	1B	MH	200	25	85	0.5		143
Holocene	6	1.5	11	1B	MH	200	25	85	0.5		151
Holocene	7	1.5	12.5	1B	MH	200	25	85	0.5		158
Holocene	8	1.5	14	1B	MH	200	25	85	0.5		166
Holocene	9	1.5	15.5	1B	MH	200	25	85	0.5		174
Holocene	10	1.5	17	1B	MH	200	25	85	0.5		182
Holocene	11	1.5	18.5	1B	MH	200	25	85	0.5		190
Holocene	12	1.5	20	1B	MH	200	25	85	0.5		198
Holocene	13	1.5	21.5	1B	MH	200	25	85	0.5		205
Holocene	14	1.5	23	1B	MH	200	25	85	0.5		213
Holocene	15	1.5	24.5	1B	MH	200	25	85	0.5		221
Holocene	16	1.5	26	1B	MH	200	25	85	0.5		229
Holocene	17	1.5	27.5	1B	MH	200	25	85	0.5		237
Holocene	18	1.5	29	1B	MH	200	25	85	0.5		245
Holocene	19	1.5	30.5	1B	MH	200	25	85	0.5		252
Holocene	20	1.5	32	1B	MH	200	25	85	0.5		260

Geologic Age	Layer No.	Layer H, ft	Depth, ft	Unit	USCS Soil Type	V <sub>s</sub> , fps	PI	Unit Weight, pcf	Ko	Friction Angle	S <sub>u</sub> , psf
Holocene	21	1.5	33.5	1B	MH	200	25	85	0.5		268
Holocene	22	1.5	35	1B	MH	200	25	85	0.5		276

**Notes:**

*Modulus & Damping Curves use Andrus et al. 2003 Holocene Parameters*

*Groundwater at 5 ft below ground surface*

Our sensitivity analyses for the Shipyard profile considered the higher and lower V<sub>s</sub> profiles, as illustrated in Figure 4. Since the soft clay was assumed to be normally consolidated in the base model, the strength was not reduced within Unit 1B when the shear wave velocity was lowered, but it was increased when the shear wave velocity was increased. When reducing the V<sub>s</sub> profile, the layer thickness had to be changed in some cases to make sure the layer thickness/V<sub>s</sub> combination had a minimum natural frequency of 30 Hz. Additional sensitivity analyses were performed with higher and lower values of PI, which are also shown on Figure 4.

#### 4.5 Local Access Road Profile

The subsurface conditions to the north of the Main Line and Shipyard Creek, which we designated “Local Access Road” are summarized on Figure 4-10 in the GBLR. This figure is included in Appendix II. The subsurface conditions are similar to those of the I-26 and Main Line profiles except the Unit 2C clay/silt stratum is not present. We selected Sounding B-44 to represent the general conditions within the Local Access Road area and subsequently developed the model profile shown in Figure 4. The model profile consists of 3 strata overlying the Basement Profile described in Section 4.1. Beginning at the surface, the strata consist of:

- Unit 1A Fill (0 to 5 ft) – fine, medium dense, non-plastic silty sand (SP-SM)
- Unit 2A Sands (5 to 16 ft) – fine, very loose to loose, clean to clayey or silty sand (SP, SP-SM, or SM/SC)
- Unit 3 Sands (16 to 33 ft) – loose to medium dense, slightly silty to silty (SP-SM/SM)

The layer details of the base Local Access Road Profile are summarized in Table 4.5.

**Table 4-5 – Local Access Road Profile Model (base)**

Geologic Age	Layer No.	Layer H, ft	Depth, ft	Unit	USCS Soil Type	V <sub>s</sub> , fps	PI	Unit Weight, pcf	Ko	Friction Angle	S <sub>u</sub> , psf
Holocene	1	2.5	2.5	1A	SP-SM	500	0	115	0.5	38	112
Holocene	2	2.5	5	1A	SP-SM	500	0	115	0.5	38	337
Pleistocene	3	2.75	7.75	2A	SP-SM/SC	450	5	110	0.5	35	448
Pleistocene	4	2.75	10.5	2A	SP-SM/SC	483	5	110	0.5	35	540
Pleistocene	5	2.75	13.25	2A	SP-SM/SC	516	5	110	0.5	35	632
Pleistocene	6	2.75	16	2A	SP-SM/SC	550	5	110	0.5	35	723

Geologic Age	Layer No.	Layer H, ft	Depth, ft	Unit	USCS Soil Type	V <sub>s</sub> , fps	PI	Unit Weight, pcf	K <sub>o</sub>	Friction Angle	S <sub>u</sub> , psf
Pleistocene	7	4.25	20.25	3	SP-SM/SM	612	15	110	0.5	33	779
Pleistocene	8	4.25	24.5	3	SP-SM/SM	674	15	110	0.5	33	911
Pleistocene	9	4.25	28.75	3	SP-SM/SM	736	15	110	0.5	33	1042
Pleistocene	10	4.25	33	3	SP-SM/SM	800	15	110	0.5	33	1173

**Notes:**

*Modulus & Damping Curves use Andrus et al. 2003 Holocene or Pleistocene Parameters*

*Groundwater at 5 ft below ground surface*

Our sensitivity analyses for the Local Access Road profile considered higher and lower V<sub>s</sub> profiles, as illustrated in Figure 4, with a corresponding increase or decrease in the shear strength. When reducing the V<sub>s</sub> profile, the layer thickness had to be changed in some cases to make sure the layer thickness/V<sub>s</sub> combination had a minimum natural frequency of 30 Hz. Additional sensitivity analyses were performed with higher and lower values of PI, which are also shown on Figure 4.

## 5.0 Modulus & Damping Curves

### 5.1 Andrus et al. 2003 Models

The dynamic soil properties were modeled using the normalized modulus and damping reduction curves of Andrus et al. 2003. These curves represent best fits to available laboratory data on South Carolina soils.

The modulus curves are based on three equations:

$$G/G_{max} = \frac{1}{1 + \left(\frac{\gamma}{\gamma_r}\right)^\alpha} \quad (5.1)$$

$$\gamma_r = \gamma_{r1} \left( \frac{\sigma'_m}{P_a} \right)^k \quad (5.2)$$

$$\sigma'_m = \sigma'_v \left( \frac{1 + 2K'_o}{3} \right) \quad (5.3)$$

Where:

$G$  = shear modulus, and  $G_{max}$  = low strain shear modulus.

$\gamma$  = shear strain,  $\gamma_r$  = reference shear strain for hyperbolic fitting, and  $\gamma_{r1}$  = reference shear strain at a mean effective confining pressure of 100 kPa.

$\sigma'_m$  = mean effective confining pressure,  $\sigma'_v$  = vertical effective stress and  $K'_o$  = coefficient of effective earth pressure at rest.

$\alpha$  and  $\kappa$  are curve fitting parameters.

The mean effective stress is calculated based on the applicable vertical effective stress and  $K'_o$ , and tabulated fitting parameters ( $\alpha$ ,  $\kappa$  and  $\gamma_{r1}$ ) are provided for different values of Plasticity Index and

geologic age or origin (Holocene, Pleistocene, Tertiary or Residual). The Tertiary soils are further discretized based on geologic formation.

The damping curves are based on three equations as well:

$$D - D_{min} = 12.2(G/G_{max})^2 - 34.2(G/G_{max}) + 22.0 \quad (5.4)$$

$$D_{min} = D_{min1}(\sigma'_m/P_a)^{-k/2} \quad (5.5)$$

$$D_{min1} = a(PI) + b \quad (5.6)$$

Where:

$D$  = damping,  $D_{min}$  = low strain damping, and  $D_{min1}$  = small strain damping at a mean effective confining pressure of 100 kPa.

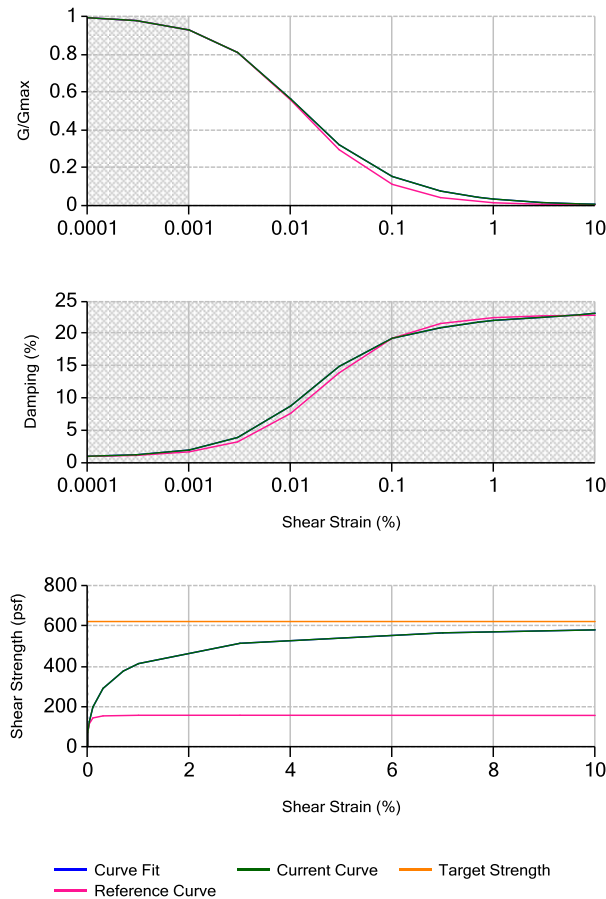
$a$ ,  $b$  and  $k$  (same as in equation 5.2) are curve fitting parameters and  $PI$  is the soil plasticity index.

Values for the curve fitting parameters  $a$ ,  $b$ ,  $k$  and  $D_{min1}$  are based on the geologic age or formation and for some of the parameters,  $PI$ .

The above equations with appropriate parameters were used to construct normalized modulus and damping curves for the midpoint of every layer. The resulting curves were entered into DEEPSOIL as a series of points.

## 5.2 Implied Shear Strength Correction

Since the shear modulus,  $G$ , is equal to the shear stress,  $\tau$ , divided by the shear strain,  $\gamma$ , a normalized modulus curve results in an implied stress-strain curve for a given value of  $G_{max}$ . However, since the normalized curves are based only on small to mid-strain soil data, the resulting stress-strain curve at larger strains is not constrained with respect to the actual shear strength of the soil. Depending on the shape of the normalized curve and the value of  $G_{max}$ , the implied shear stress at large strains may be greater than or less than the actual shear strength. For large ground motions, such as those provided for this project, the large strain behavior is critical to the site response, and the large strain shear strength must be appropriately captured in the soil models. This issue has been raised by a number of researchers including Hashash et. al (2010) and Yee et. al (2013). They both proposed manual correction procedures that are time consuming and not always feasible, especially when the implied and target strengths are quite different. More recently Prof. Hashash's research group has developed a far easier approach to address this problem through the introduction of a new soil model called the GQH (Generalized Quadratic Hyperbolic) model (Groholski et al. 2015). The model allows the user to capture both the small strain response and the desired shear strength. The GQH model was used to fit a curve through the points defined by the Andrus et al. 2003 procedure and the estimated maximum shear strength of each layer. The process is illustrated in Fig 5.1.



**Figure 5-1 – Example of Curve Fitting with the GQH Model.**

Sample normalized modulus, damping, and implied strength curves obtained using the Andrus et al. 2003 procedures are shown in Figure 5-1. The "Reference" curve is the implied shear strength, the "Target" strength is user-defined, and the "Current" and "Curve Fit" lines illustrate what is used after fitting. The target strengths used in our base models are included in Tables 4.1 through 4.5. For the sensitivity analyses, we increased or decreased the target strength corresponding to the increase or decrease in the shear wave velocity, and the resulting ranges are included on Figures 4-3 and 4-4. For fine-grained soils, the target strength was always greater than or equal to the normally consolidated shear strength (i.e.  $0.22\sigma'_v$ ). Strengths in the Basement Profile were not modified in any of the sensitivity analyses since large strains are not generated in the stiff materials.

## 6.0 Analyses with Porewater Pressure Generation

While the total stress nonlinear analyses may provide a better estimate of the site response for large strain conditions (as compared to equivalent-linear analyses), they do not consider the porewater pressure

(PWP) generation and dissipation that may occur. More specifically, liquefaction-induced softening is not considered in total stress analyses. Since liquefaction is likely to occur under the SEE design events, we also performed analyses with PWP, which can model the cyclic PWP response. Liquefiable sands are only missing in the Shipyard Creek profile. Of the remaining three profiles, we selected the Main Line profile as the most critical with respect to liquefaction potential. It contains thicker sand deposits than the I-26 profile and will require more significant embankments and/or structures than the Local Access Road infrastructure.

The Dobry/Matasovic model, as implemented in DEEPSOIL, was used for PWP generation and dissipation. Both sand and clay models were used. The models consider for each cycle the shear strain, a threshold shear strain, the coefficient of consolidation, and several curve fitting parameters. For sands, the curve fitting parameters are related to shear wave velocity and fines content. For clays, the curve fitting parameters are related to PI and OCR.

Our base model with PWP was the same as that used for the NL analyses without PWP. The fines content of the sands was assumed to be 10% and coefficients of consolidation based on correlations and experience were used. We also considered alternative profiles with 1) a fines content of 35% for the sands, 2) lower shear wave velocity in the lower sands, and 3) a stratigraphy with no clay (i.e., the upper and lower sands were thickened to replace the intermediate clay stratum).

## **7.0 Results**

As listed in Table 7.1, our response analyses resulted in a total of 840 individual “runs” or site response analyses. As explained in Section 4, we used four base model profiles (i.e., I-26, Main Line, Shipyard Creek, Local Access Road), and six alternatives were evaluated for each base model (i.e., base plus 6 alternatives for a total of 7 model scenarios for each of the four profiles). Each of the model scenarios was analyzed for each of the 14 acceleration time histories (i.e., 7 FEE motions, 7 SEE motions) using both EL and NL methods. Additionally, as explained in Section 6, the Main Line Profile was also analyzed using the NL method with a PWP generation model. With the PWP model, we considered the Main Line Base model and three alternatives.

**Table 7-1 – Summary of Analyses**

Scenario	FEE		SEE		Total
	Equivalent-Linear	Nonlinear	Equivalent-Linear	Nonlinear	
Base	7	7	7	7	<b>28</b>
Input at 500 ft	7	7	7	7	<b>28</b>
Input at 1000 ft	7	7	7	7	<b>28</b>
Higher Vs	7	7	7	7	<b>28</b>
Lower Vs	7	7	7	7	<b>28</b>
Higher PI	7	7	7	7	<b>28</b>
Lower PI	7	7	7	7	<b>28</b>
Total per Profile (w/o PWP)	49	49	49	49	<b>196</b>
<b>Total for 4 Profiles</b>	<b>196</b>	<b>196</b>	<b>196</b>	<b>196</b>	<b>784</b>
<i>Main Line w PWP</i>					
Base w PWP	-	7	-	7	<b>14</b>
No Clay	-	7	-	7	<b>14</b>
Higher Fines	-	7	-	7	<b>14</b>
Lower Vs	-	7	-	7	<b>14</b>
<b>Total</b>	<b>196</b>	<b>224</b>	<b>196</b>	<b>224</b>	<b>840</b>

DEEPSOIL allows multiple analyses to be performed with a single input file. Specifically, for a given scenario, the NL and EL analyses were performed using all 14 acceleration time histories with a single input file and execution. The resulting output was extensive, and we used a custom built MATLAB program to process it.

The results from each of the four profiles, including the Main Line Profile with PWP generation, are plotted in Appendices III through VII. Each appendix is organized in a consistent manner. Summary plots are provided in the beginning followed by individualized output. The general organization is as follows:

1. Six pages of summaries for the average response of the 7 FEE motions that include:
  - a. For all 7 scenarios: plots of PGA, maximum strain, and maximum cyclic stress ratios versus depth for NL and EL analyses. (2 pages)
  - b. Plots of EL and NL response spectra for all 7 scenarios for the ground surface and the top of marl. (2 pages)
  - c. Plots of EL and NL spectral amplification for all 7 scenarios for the ground surface and the top of marl. (2 pages)
2. Six pages of summaries for the average response of the 7 SEE motions that include:

- a. For all 7 scenarios: plots of PGA, maximum strain, and maximum cyclic stress ratios versus depth for NL and EL analyses. (2 pages)
  - b. Plots of EL and NL response spectra for all 7 scenarios for the ground surface and the top of marl. (2 pages)
  - c. Plots of EL and NL spectral amplification for all 7 scenarios for the ground surface and the top of marl. (2 pages)
3. Seventy-six pages for each scenario (e.g., Base, Input at 500 ft, Higher PI, etc.) with plots for each individual acceleration time history and for each type of analysis (i.e., EL or NL), which include:
  - a. Acceleration, Velocity, Displacement, and Arias Intensity time histories for the ground surface and the top of marl
  - b. Response spectra, Spectral Amplification, Amplitude, and Amplitude Ratio at the ground surface and the top of marl
  - c. PGA, maximum strain, and maximum cyclic stress ratios versus depth for NL and EL analyses.
  - d. Summary plots for all of the above showing all 7 time histories with averages. One set for FEE motions and one set for SEE motions.

## **8.0 Synthesis of Results and Design Spectra**

Our general observations with respect to the output can be summarized as follows:

- The NL analyses generally yield smaller motions at the ground surface than do the EL analyses for both the FEE and SEE acceleration time histories.
- With the SEE time histories, the EL amplification at the ground surface at periods of 1 sec or greater is typically 40% to 100% greater than the NL amplification at the same periods.
- With the FEE time histories, the EL amplification is typically 15% to 40% greater than the NL amplification between periods of about 0.5 secs to 1.5 secs.
- With respect to the top of marl response spectra, the EL and NL analyses produce similar results.
- For all analyses, the maximum strain occurs within soils between depths of about 10 to 40 ft with the peak strain commonly occurring around 20 ft. These depths correspond to the Pleistocene sands and clays that overlie the Cooper Marl.
- The concentrated strain between the ground surface and the top of the Cooper Marl creates a "base isolation" effect that reduces the motions at the ground surface. This is more pronounced for the SEE motions but is apparent in the FEE motions as well.
- The Local Access Road profile is the only one that does not include a clay layer within the overburden deposits, as such the "base isolation" effect is absent under the FEE motions and less pronounced under the SEE motions.
- At very short periods (e.g., PGA), the NL analyses yield smaller spectral accelerations than the EL analyses.



Our sensitivity analyses produced a range of motions, and the surface response spectral values differed by as much as a factor of 2. The two deeper soil columns frequently corresponded to the lowest spectral accelerations, while higher shear wave velocities and the use of higher-PI modulus and damping curves generally produced larger accelerations. The NL analyses with PWP generation produced ground surface response spectra that were very similar to those computed without the PWP model. This is attributable to the presence of the clay layer between the upper and lower sand strata. The clay experiences very large strains or yielding and thereby acts as a base isolator, which dominates the ground surface response with or without PWP generation.

With respect to the sensitivity analyses, we note that our “base” models reflect our best estimate of the actual subsurface conditions and are based on best estimate of soil column properties. While the alternative scenarios that were considered in the sensitivity analyses are all possible, they are not equally probable. Therefore, a simple arithmetic average of the base model result with all of the sensitivity analyses may introduce an unknown bias. In consideration of the potential for bias and with recognition that the base model analyses generally fell within the midrange of the results, we chose to use the NL base model response spectra as the basis for the site-specific ADRS. However, in recognition of the fact that NL analyses can under-predict the short period motions, we used the PGA from the EL analyses.

The site-specific ADRS was constructed in accordance with the procedures specified in the Scope of Services (i.e., Table 12-33). Four site-specific ADRS curves were developed for each of the four profiles: FEE ground surface, Fee top of marl, SEE ground surface, and SEE top of marl. The resulting 16 ADRS curves are presented on Figures 8-1 through 8-16. Each figure includes the following:

- The response spectrum developed using the simple SCDOT “three-point method”. A Site Class D was used to construct the ground surface spectrum, and a Site Class C was used to construct the top of marl spectrum.
- The response spectra from each NL analysis and scenario (i.e., the base model plus the 6 alternatives). The plotted response spectra represents the average of the response of the 7 applicable input time histories.
- The arithmetic average of the 7 NL analysis response spectra.
- A Site-Specific ADRS Curve.
- Tabulated values of the Site-Specific ADRS Curve.
- Tabulated ancillary values as required by the scope of services. It should be noted that for some cases, the tabulated values of  $S_{D1}$  do not match the value of  $S_a$  plotted at 1 sec. This is due to the prescribed SCDOT limits (e.g.,  $S_{D1}$  must not be less than twice the value of  $S_a$  at 2 seconds).

In six cases (i.e., Figures, 8-5, 8-7, 8-9, 8-10, 8-13, and 8-15), the SCDOT site-specific ADRS construction methodology produced a spectrum that seemed too narrow and did not fully capture the results of the site-specific analyses. In these cases, we have included an additional spectrum, which we have identified as a “suggested” ADRS. The suggested ADRS has been constructed by selecting an alternate value of  $T_s$  that makes the resulting spectrum more compatible with the site-specific results. The alternate value of  $T_s$  is selected by simple inspection, and the transition from the value of  $T_s$  back to the curve based on the SCDOT construction methodology is similarly done by inspection. For comparison, the FEE and SEE ADRS curves from each of the four profiles have been plotted together in Figures 8-17 and 8-18. Our “suggested” ADRS curves have been used in Figures 8-17 and 8-18.



We note that the ADRS curves presented herein are applicable for the current free-field conditions. The ADRS curves do not consider the consequences of ground improvement or the potential stiffening effects of deep foundations.

Project ID:	0037345			Latitude:	32.8380
Route:	Port Access Road	County:	10-Charleston	Longitude:	-79.9524
Project:	Port Access Road				

Designer: S&ME, Inc.  
Date: July 2015

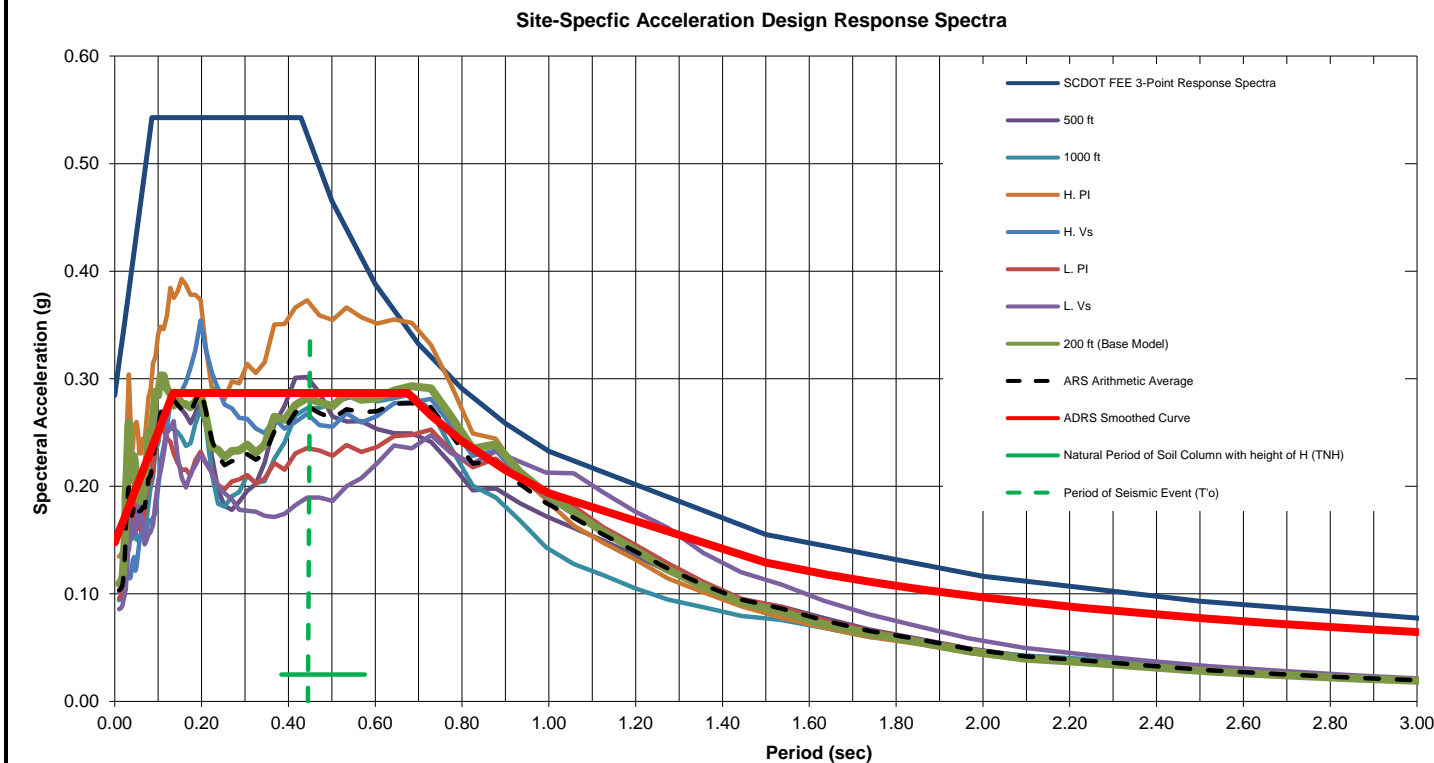
Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T_o$
	g	g	g		km	ft/sec	sec	sec
FEE	0.148	0.287	0.194	7.36	16	10.64	10.90	0.45


OC=	I	Damping:	5%
		Geologic Condition:	Geologically Realistic (Q=100)
		ADRS Location within Soil Column:	Ground Surface

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	968	200	0.826	1.239

Tabulated Values (Smoothed ADRS Curve)

T (sec)	$S_a$ (g)
0.00	0.15
0.01	0.16
0.02	0.17
0.03	0.18
0.04	0.19
0.05	0.20
0.06	0.21
0.07	0.22
0.08	0.23
0.09	0.24
0.10	0.25
0.13	0.29
0.19	0.29
0.29	0.29
0.31	0.29
0.32	0.29
0.60	0.29
0.67	0.29
0.73	0.27
0.80	0.24
0.90	0.22
1.00	0.19
1.50	0.13
1.64	0.12
1.74	0.11
1.85	0.10
2.00	0.10
2.23	0.09
2.52	0.08
2.69	0.07
2.86	0.07
3.00	0.06



Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Interstate 26 Profile</b> <b>FEE Design Event</b> <b>Response Spectra at Ground Surface</b>	<b>Figure</b> <b>8 - 1</b>
Date: July 2015			
Port Access Road SSRA			

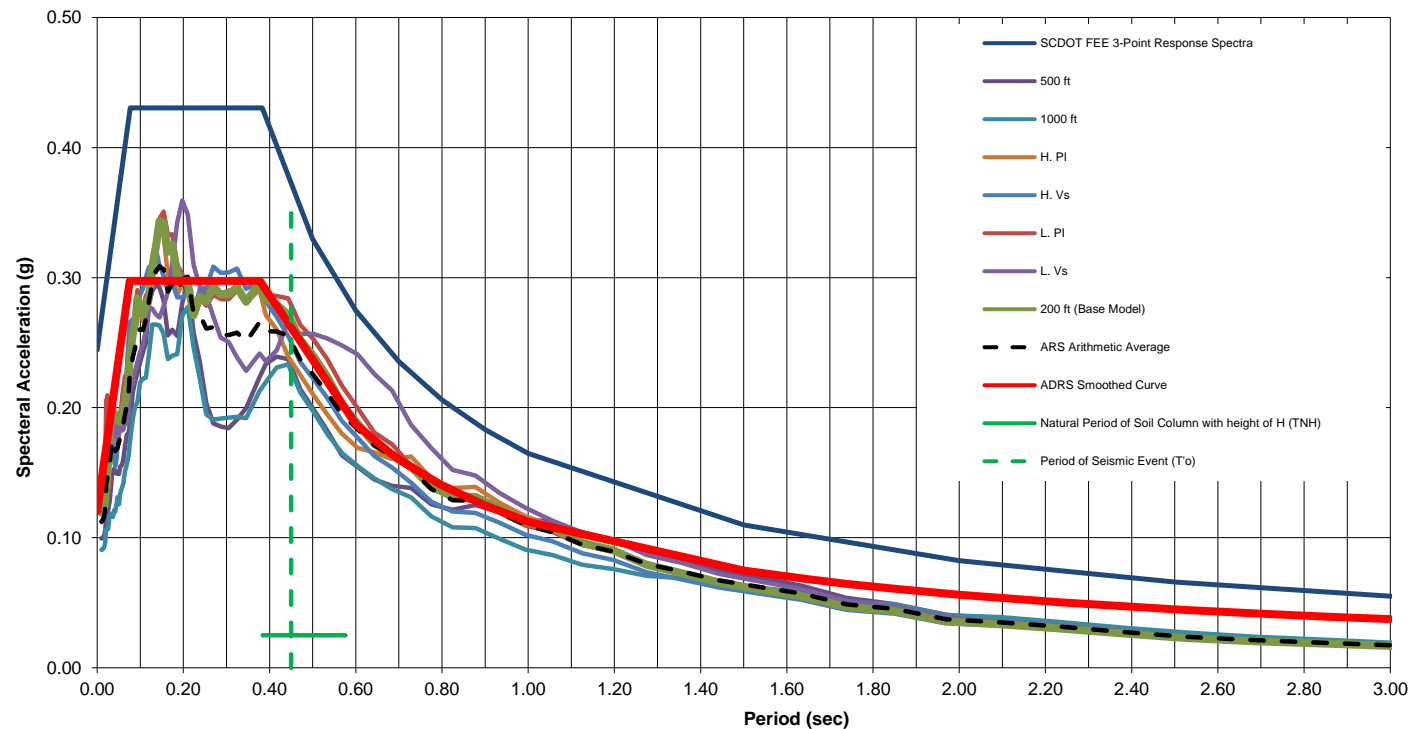
<b>Project ID:</b>	0037345	<b>Latitude:</b>	32.8380
<b>Route:</b>	Port Access Road	<b>County:</b>	10-Charleston
<b>Project:</b>	Port Access Road	<b>Longitude:</b>	-79.9524

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T'_o$
	g	g	g		km	ft/sec	sec	sec
FEE	0.120	0.298	0.112	7.36	16	6.2	10.9	0.45

OC=	I	Damping:	5%
Geologic Condition:		Geologically Realistic (Q=100)	
ADRS Location within Soil Column:		Top of Cooper Marl	

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	1500	144	0.384	0.576



Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.12
0.01	0.14
0.02	0.17
0.03	0.19
0.04	0.21
0.05	0.24
0.06	0.26
0.07	0.28
0.08	0.30
0.09	0.30
0.10	0.30
0.13	0.30
0.14	0.30
0.29	0.30
0.31	0.30
0.38	0.30
0.60	0.19
0.68	0.17
0.71	0.16
0.80	0.14
0.90	0.12
1.00	0.11
1.50	0.07
1.64	0.07
1.74	0.06
1.85	0.06
2.00	0.06
2.23	0.05
2.52	0.04
2.69	0.04
2.86	0.04
3.00	0.04

Project No.: 1413-15-075

Date: July 2015

Port Access Road SSRA



Site-Specific Design Response Spectra  
Interstate 26 Profile  
FEE Design Event  
Response Spectra at Top of Cooper Marl

Figure  
8-2

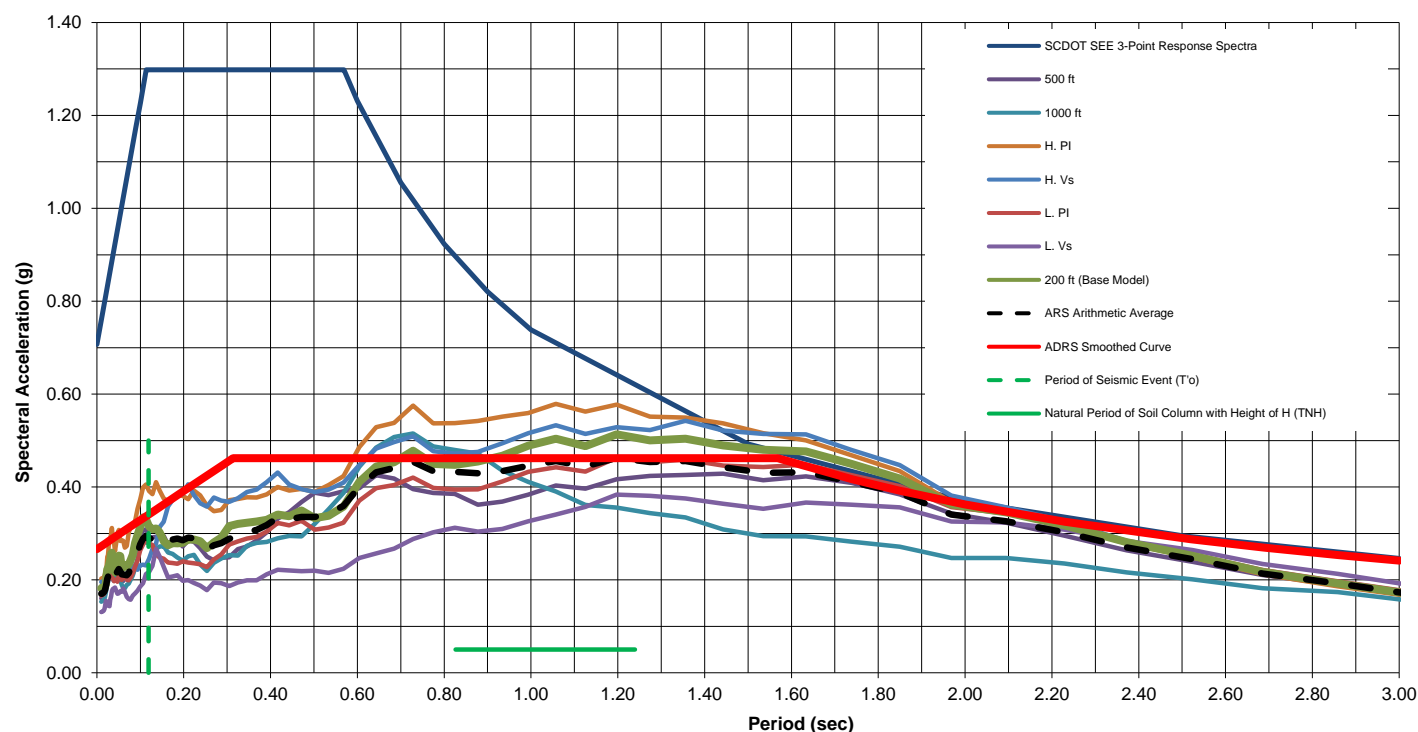
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<b>Route:</b>	Port Access Road	<b>County:</b>	10-Charleston
<b>Project:</b>	Port Access Road	<b>Longitude:</b>	-79.9524

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	S <sub>DS</sub>	S <sub>D1</sub>	M <sub>w</sub>	R	PGV	D <sub>a5-95</sub>	T' <sub>o</sub>
	g	g	g		km	ft/sec	sec	sec
SEE	0.266	0.462	0.724	7.36	16	39.85	10.90	0.12

OC=	I	Damping:	5%
Geologic Condition:		Geologically Realistic (Q=100)	
ADRS Location within Soil Column:		Ground Surface	

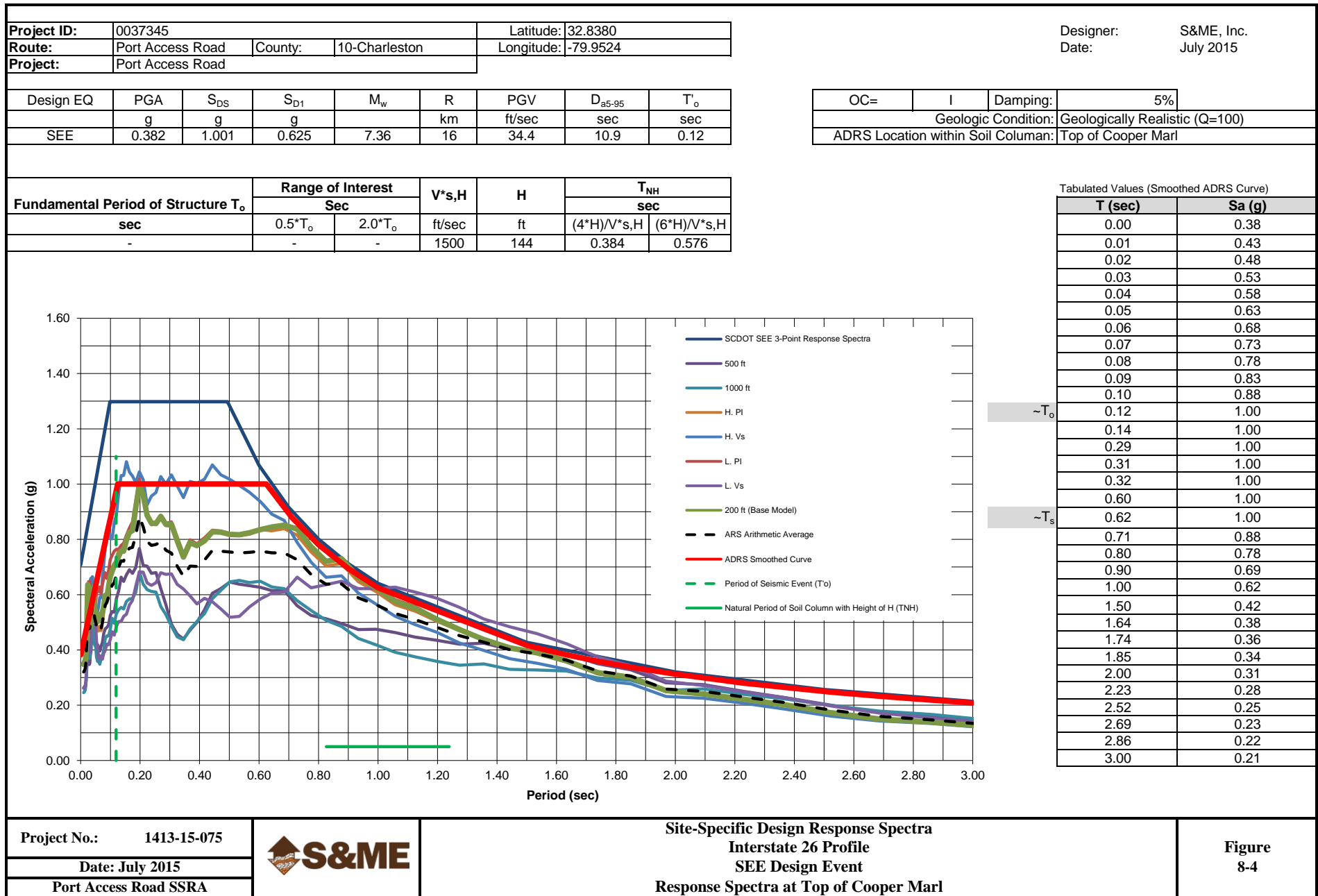
Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	968	200	0.826	1.239



Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.27
0.01	0.27
0.02	0.28
0.03	0.29
0.04	0.29
0.05	0.30
0.06	0.30
0.07	0.31
0.08	0.32
0.09	0.32
0.10	0.33
0.13	0.35
0.19	0.38
0.29	0.45
0.31	0.46
0.32	0.46
0.60	0.46
0.68	0.46
0.73	0.46
0.80	0.46
0.90	0.46
1.00	0.46
1.50	0.46
1.57	0.46
1.74	0.42
1.85	0.39
2.00	0.36
2.23	0.32
2.52	0.29
2.69	0.27
2.86	0.25
3.00	0.24

Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Interstate 26 Profile</b> <b>SEE Design Event</b> <b>Response Spectra at Ground Surface</b>	<b>Figure</b> <b>8 - 3</b>
Date: July 2015			
Port Access Road SSRA			



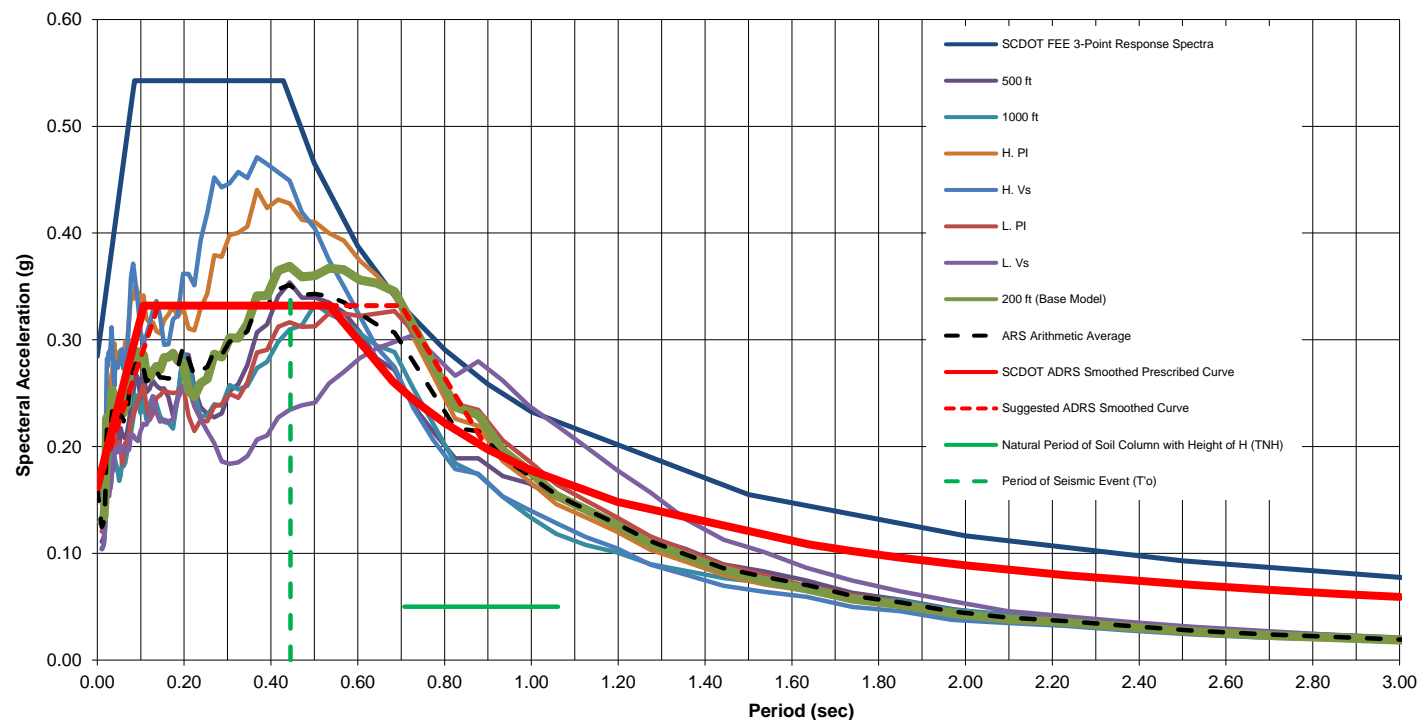
<b>Project ID:</b>	0037345	Latitude:	32.8380
<b>Route:</b>	Port Access Road	County:	10-Charleston
<b>Project:</b>	Port Access Road	Longitude:	-79.9524

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T'_o$
	g	g	g		km	ft/sec	sec	sec
FEE	0.162	0.332	0.178	7.36	16	9.8	10.9	0.45


OC=	I	Damping:	5%
Geologic Condition:		Geologically Realistic (Q=100)	
ADRS Location within Soil Column:		Ground Surface	

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
sec	$0.5 \cdot T_o$	$2.0 \cdot T_o$	ft/sec	ft	$(4 \cdot H)/V^*s,H$	$(6 \cdot H)/V^*s,H$
-	-	-	1131	200	0.707	1.061



Tabulated Values (Smoothed ADRS Curve)

T (sec)	$S_a$ (g)
0.00	0.16
0.01	0.18
0.02	0.19
0.03	0.21
0.04	0.23
0.05	0.24
0.06	0.26
0.07	0.27
0.08	0.29
0.09	0.31
0.10	0.32
0.11	0.33
0.19	0.33
0.25	0.33
0.31	0.33
0.32	0.33
0.53	0.33
0.68	0.26
0.73	0.24
0.80	0.22
0.90	0.20
1.00	0.18
1.20	0.15
1.64	0.11
1.74	0.10
1.85	0.10
2.00	0.09
2.23	0.08
2.52	0.07
2.69	0.07
2.86	0.06
3.00	0.06

Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Main Line Profile</b> <b>FEE Design Event</b> <b>Response Spectra at Ground Surface</b>	<b>Figure</b> <b>8 -5</b>
Date: July 2015			
Port Access Road SSRA			

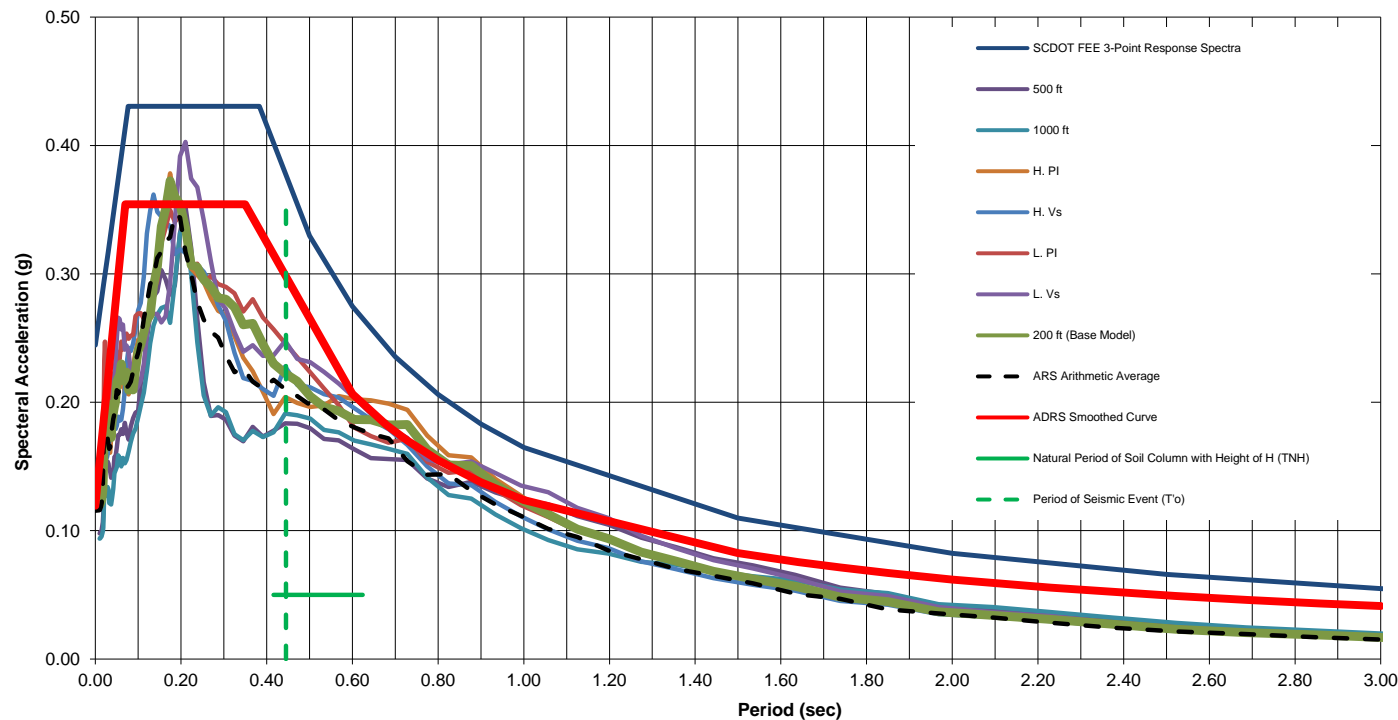
Project ID:	0037345			Latitude:	32.8380
Route:	Port Access Road	County:	10-Charleston	Longitude:	-79.9524
Project:	Port Access Road				

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	S <sub>DS</sub>	S <sub>D1</sub>	M <sub>w</sub>	R	PGV	D <sub>a5-95</sub>	T' <sub>o</sub>
	g	g	g		km	ft/sec	sec	sec
FEE	0.119	0.354	0.124	7.36	16	6.8	10.90	0.45

OC=	I	Damping:	5%
		Geologic Condition:	Geologically Realistic (Q=100)
		ADRS Location within Soil Column:	Top of Cooper Marl

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	1500	156	0.416	0.624



Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.12
0.01	0.15
0.02	0.19
0.03	0.22
0.04	0.25
0.05	0.29
0.06	0.32
~T <sub>o</sub> 0.07	0.35
0.08	0.35
0.09	0.35
0.10	0.35
0.13	0.35
0.14	0.35
0.29	0.35
0.31	0.35
~T <sub>s</sub> 0.35	0.35
0.60	0.21
0.68	0.18
0.73	0.17
0.80	0.15
0.90	0.14
1.00	0.12
1.50	0.08
1.64	0.08
1.74	0.07
1.85	0.07
2.00	0.06
2.23	0.06
2.52	0.05
2.69	0.05
2.86	0.04
3.00	0.04

Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Main Line Profile</b> <b>FEE Design Event</b> <b>Response Spectra at Top of Cooper Marl</b>	<b>Figure</b> <b>8 - 6</b>
Date: July 2015			
Port Access Road SSRA			



Project ID:	0037345			Latitude:	32.8380
Route:	Port Access Road	County:	10-Charleston	Longitude:	-79.9524
Project:	Port Access Road				

Designer: S&ME, Inc.  
Date: July 2015

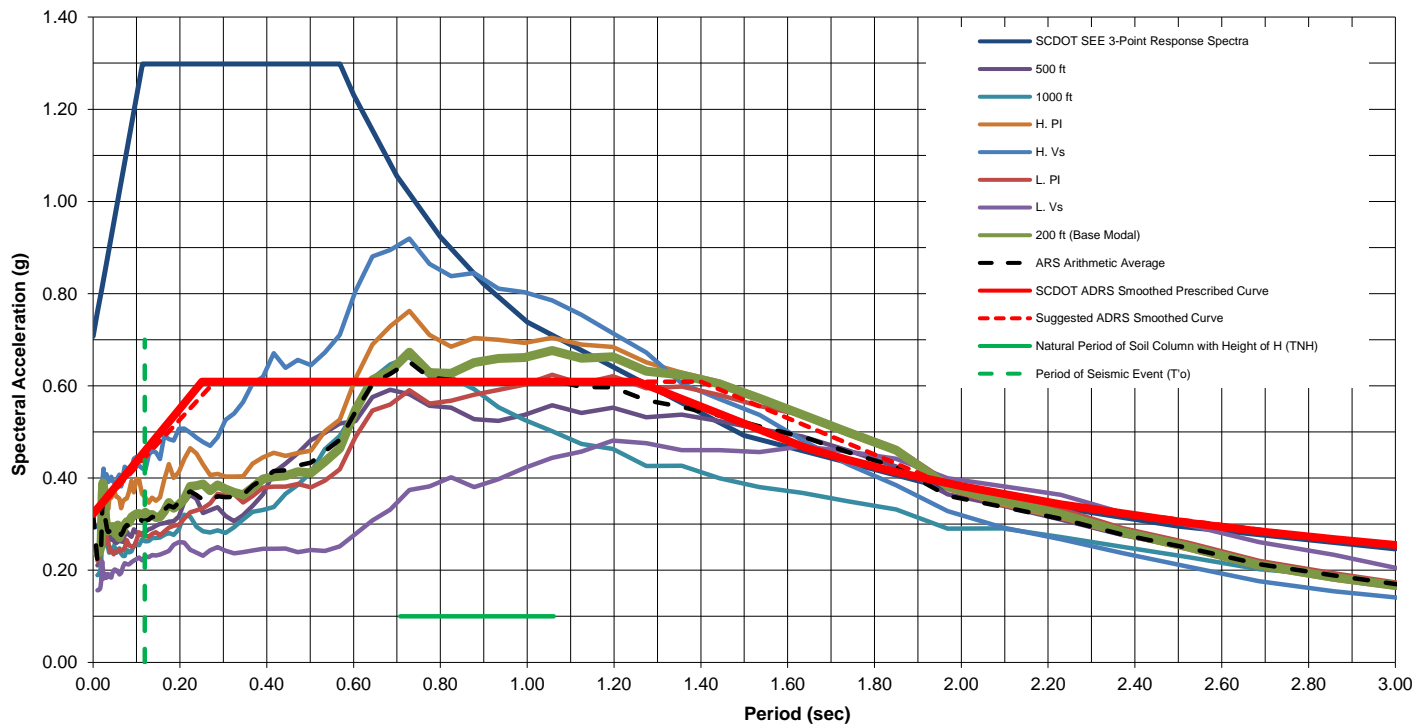
Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T_o$
	g	g	g		km	ft/sec	sec	sec
SEE	0.322	0.609	0.764	7.36	16	42.0	10.9	0.12

OC=	I	Damping:	5%
		Geologic Condition:	Geologically Realistic (Q=100)
		ADRS Location within Soil Column:	Ground Surface

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
sec	$0.5^*T_o$	$2.0^*T_o$	ft/sec	ft	$(4^*H)/V^*s,H$	$(6^*H)/V^*s,H$
-	-	-	1131	200	0.707	1.061

Tabulated Values (Smoothed ADRS Curve)

T (sec)	$S_a$ (g)
0.00	0.32
0.01	0.33
0.02	0.34
0.03	0.36
0.04	0.37
0.05	0.38
0.06	0.39
0.07	0.40
0.08	0.41
0.09	0.42
0.10	0.44
0.13	0.47
0.19	0.54
0.25	0.61
0.31	0.61
0.32	0.61
0.60	0.61
0.68	0.61
0.73	0.61
0.80	0.61
0.90	0.61
1.00	0.61
1.26	0.61
1.64	0.47
1.74	0.44
1.85	0.41
2.00	0.38
2.23	0.34
2.52	0.30
2.69	0.28
2.86	0.27
3.00	0.25



Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Main Line Profile</b> <b>SEE Design Event</b> <b>Response Spectra at Ground Surface</b>	<b>Figure</b> <b>8 - 7</b>
Date: July 2015			
Port Access Road SSRA			

Project ID:	0037345			Latitude:	32.8380
Route:	Port Access Road	County:	10-Charleston	Longitude:	-79.9524
Project:	Port Access Road				

Designer: S&ME, Inc.  
Date: July 2015

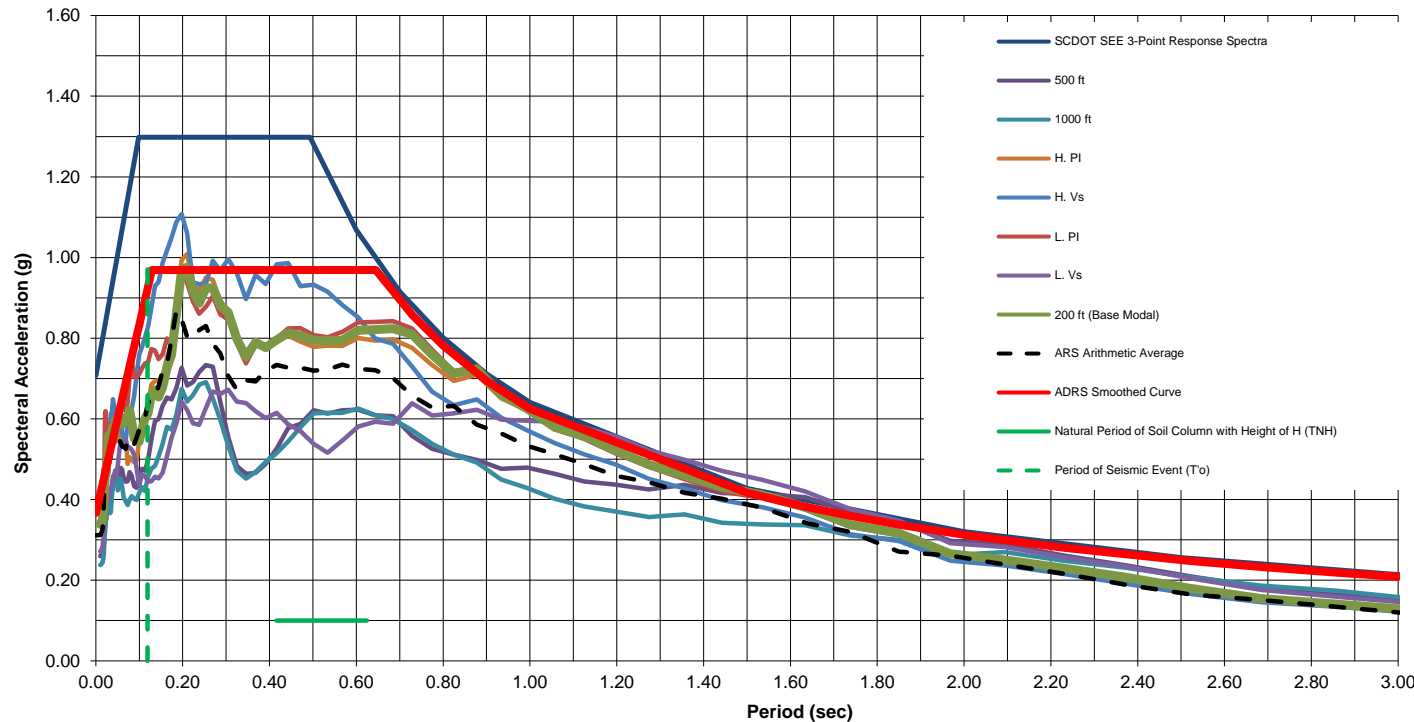
Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T_o$
	g	g	g		km	ft/sec	sec	sec
SEE	0.367	0.969	0.625	7.36	16	34.4	10.9	0.12

OC=	I	Damping:	5%
Geologic Condition:		Geologically Realistic (Q=100)	
ADRS Location within Soil Column:		Top of Cooper Marl	

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	1500	156	0.416	0.624

Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.37
0.01	0.41
0.02	0.46
0.03	0.51
0.04	0.55
0.05	0.60
0.06	0.65
0.07	0.69
0.08	0.74
0.09	0.79
0.10	0.83
0.13	0.97
0.14	0.97
0.29	0.97
0.31	0.97
0.32	0.97
0.60	0.97
0.64	0.97
0.73	0.86
0.80	0.78
0.90	0.69
1.00	0.63
1.50	0.42
1.64	0.38
1.74	0.36
1.85	0.34
2.00	0.31
2.23	0.28
2.52	0.25
2.69	0.23
2.86	0.22
3.00	0.21



Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Main Line Profile</b> <b>SEE Design Event</b> <b>Response Spectra at Top of Cooper Marl</b>	<b>Figure</b> <b>8 - 8</b>
Date: July 2015			
Port Access Road SSRA			

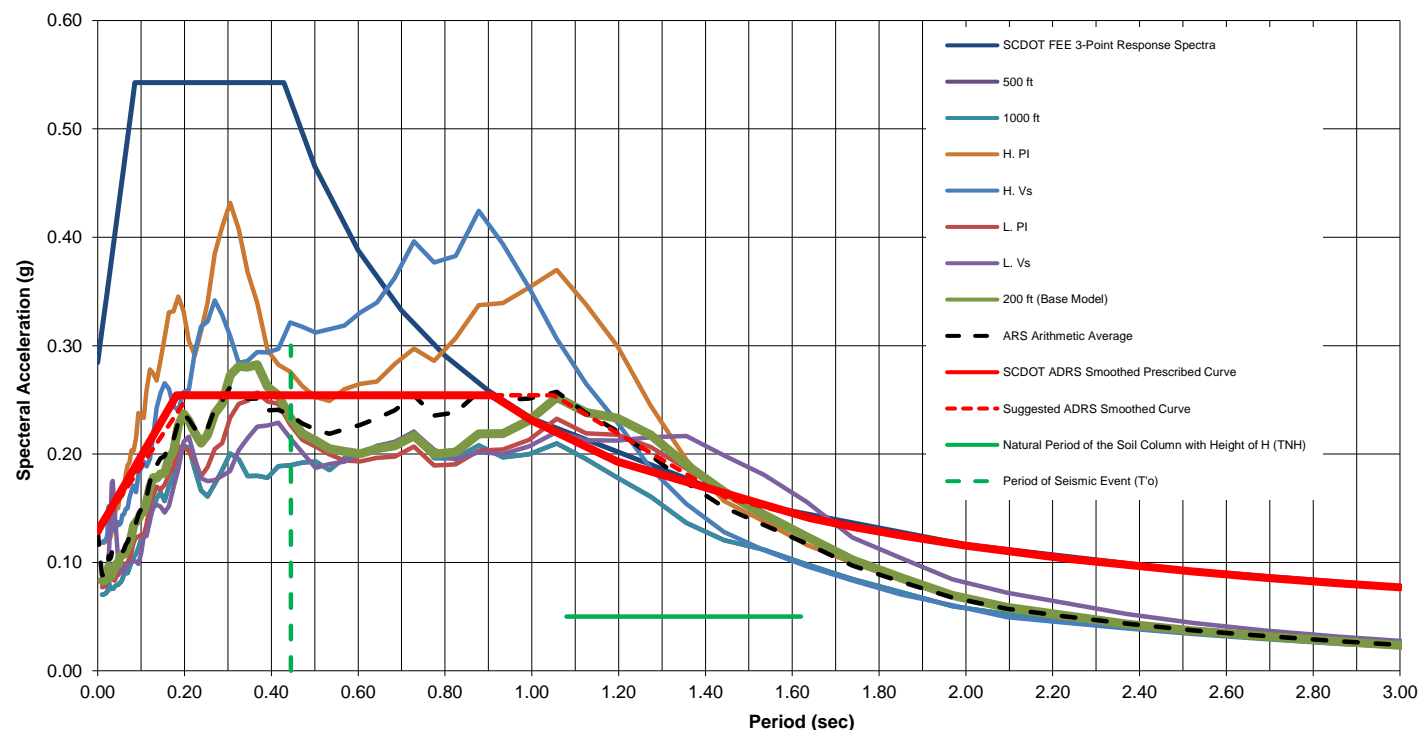
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<b>Project:</b>	Port Access Road	<b>Longitude:</b>	-79.9524

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T_o$
	g	g	g		km	ft/sec	sec	sec
FEE	0.129	0.254	0.231	7.36	16	12.7	10.9	0.45

OC=	I	Damping:	5%
Geologic Condition:		Geologically Realistic (Q=100)	
ADRS Location within Soil Column:		Ground Surface	

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	741	200	1.080	1.620



Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.13
0.01	0.14
0.02	0.14
0.03	0.15
0.04	0.16
0.05	0.16
0.06	0.17
0.07	0.18
0.08	0.18
0.09	0.19
0.10	0.20
0.11	0.20
0.18	0.25
0.25	0.25
0.31	0.25
0.32	0.25
0.53	0.25
0.68	0.25
0.73	0.25
0.80	0.25
0.91	0.25
1.00	0.23
1.20	0.19
1.64	0.14
1.74	0.13
1.85	0.12
2.00	0.12
2.23	0.10
2.52	0.09
2.69	0.09
2.86	0.08
3.00	0.08

Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Shipyard Creek Profile</b> <b>FEE Design Event</b> <b>Response Spectra at Ground Surface</b>	<b>Figure</b> <b>8 - 9</b>
Date: July 2015			
Port Access Road			

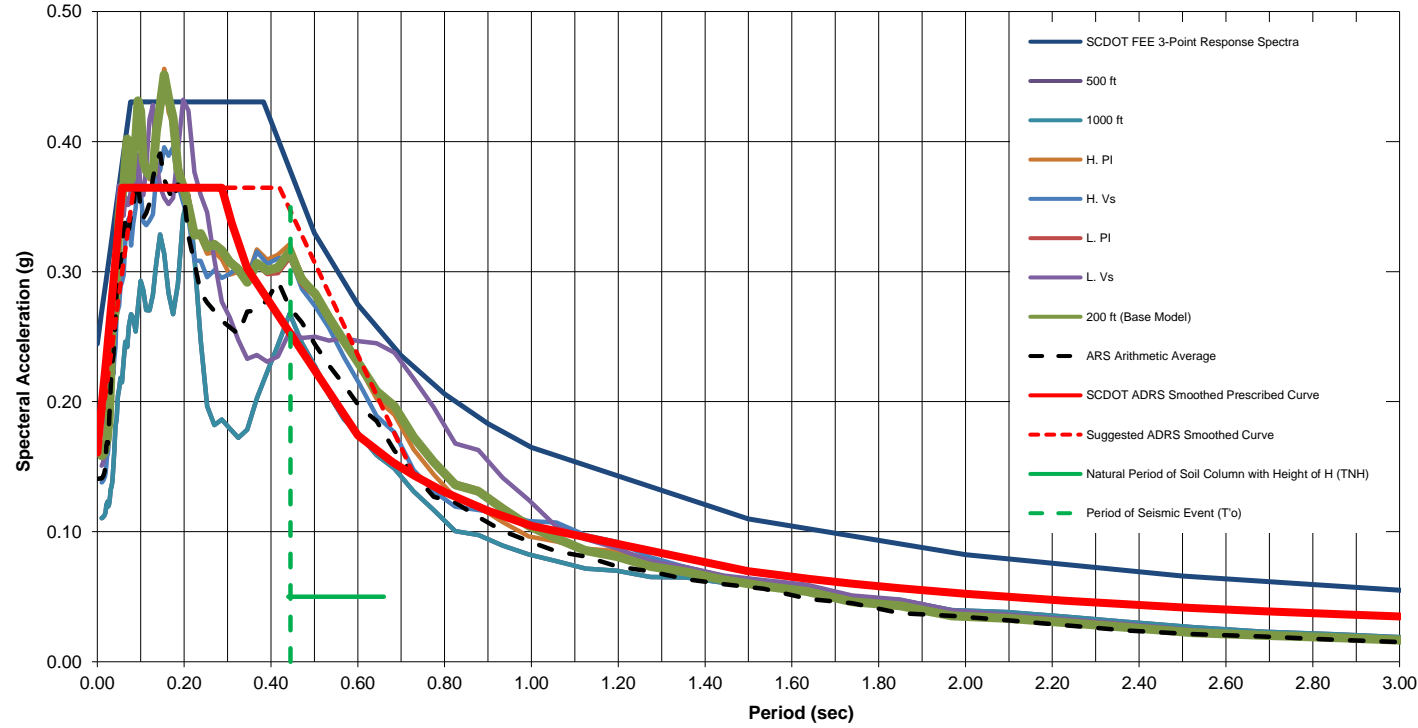
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<b>Route:</b>	Port Access Road	<b>County:</b>	10-Charleston
<b>Project:</b>	Port Access Road	<b>Longitude:</b>	-79.9524

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	S <sub>DS</sub>	S <sub>D1</sub>	M <sub>w</sub>	R	PGV	D <sub>a5-95</sub>	T' <sub>o</sub>
	g	g	g		km	ft/sec	sec	sec
FEE	0.161	0.364	0.104	7.36	16	5.7	10.90	0.45

OC=	I	Damping:	5%
Geologic Condition:		Geologically Realistic (Q=100)	
ADRS Location within Soil Column:		Top of Cooper Marl	

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	1500	165	0.44	0.66



Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.16
0.01	0.20
0.02	0.23
0.03	0.27
0.04	0.30
0.05	0.34
~T <sub>o</sub> 0.06	0.36
0.07	0.36
0.08	0.36
0.09	0.36
0.10	0.36
0.13	0.36
0.14	0.36
~T <sub>s</sub> 0.29	0.36
0.31	0.34
0.35	0.30
0.60	0.17
0.68	0.15
0.73	0.14
0.80	0.13
0.90	0.12
1.00	0.10
1.50	0.07
1.64	0.06
1.74	0.06
1.85	0.06
2.00	0.05
2.23	0.05
2.52	0.04
2.69	0.04
2.86	0.04
3.00	0.03

Project ID:	0037345			Latitude:	32.8380
Route:	Port Access Road	County:	10-Charleston	Longitude:	-79.9524
Project:	Port Access Road				

Designer: S&ME, Inc.  
Date: July 2015

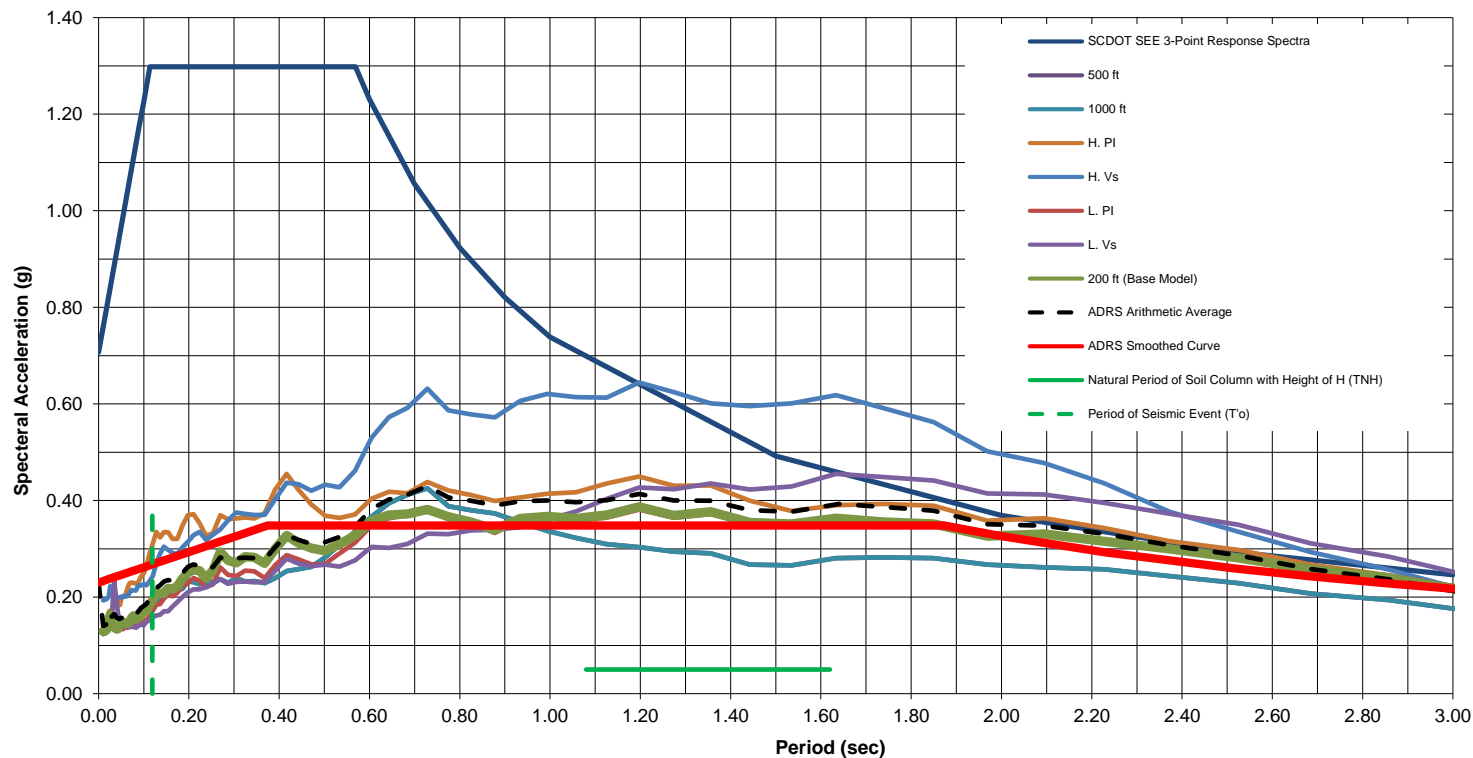
Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T_o$
	g	g	g		km	ft/sec	sec	sec
SEE	0.230	0.348	0.652	7.36	16	35.9	10.9	0.12

OC=	I	Damping:	5%
		Geologic Condition:	Geologically Realistic (Q=100)
		ADRS Location within Soil Column:	Ground Surface

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	741	200	1.080	1.620

Tabulated Values (Smoothed ADRS Curve)

T (sec)	$S_a$ (g)
0.00	0.23
0.01	0.23
0.02	0.24
0.03	0.24
0.04	0.24
0.05	0.25
0.06	0.25
0.07	0.25
0.08	0.26
0.09	0.26
0.10	0.26
0.13	0.27
0.19	0.29
0.25	0.31
0.31	0.33
0.37	0.35
0.60	0.35
0.68	0.35
0.73	0.35
0.80	0.35
0.90	0.35
1.00	0.35
1.20	0.35
1.64	0.35
1.74	0.35
1.87	0.35
2.00	0.33
2.23	0.29
2.52	0.26
2.69	0.24
2.86	0.23
3.00	0.22



Project No.: 1413-15-075

Date: July 2015

Port Access Road SSRA



Site-Specific Design Response Spectra  
Shipyard Creek Profile  
SEE Design Event  
Response Spectra at Ground Surface

Figure  
8 -11

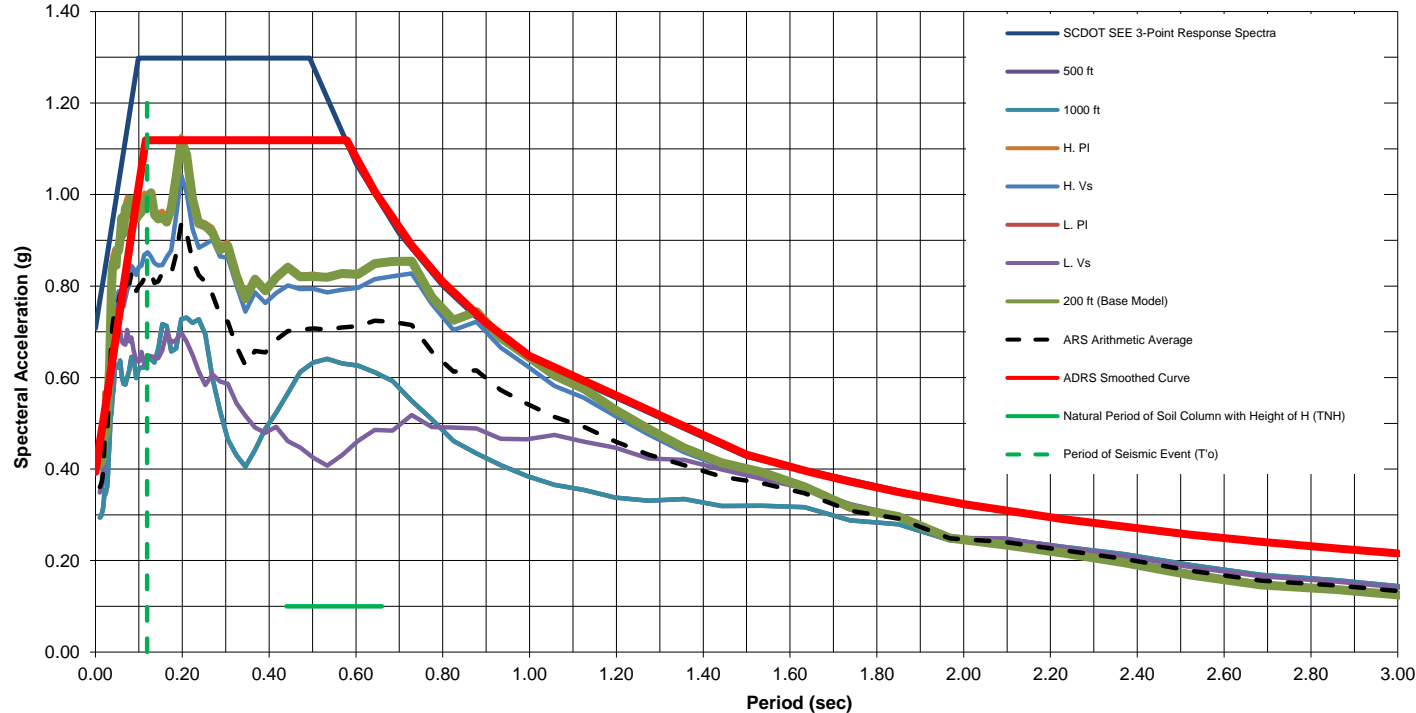
Project ID:	0037345	Latitude:	32.8380
Route:	Port Access Road	County:	10-Charleston
Project:	Port Access Road	Longitude:	-79.9524

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	S <sub>DS</sub>	S <sub>D1</sub>	M <sub>w</sub>	R	PGV	D <sub>a5-95</sub>	T' <sub>o</sub>
	g	g	g		km	ft/sec	sec	sec
SEE	0.394	1.119	0.647	7.36	16	35.6	10.9	0.12

OC=	I	Damping:	5%
Geologic Condition:		Geologically Realistic (Q=100)	
ADRS Location within Soil Column:		Top of Cooper Marl	

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	1500	165	0.44	0.66



Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.39
0.01	0.46
0.02	0.52
0.03	0.58
0.04	0.64
0.05	0.71
0.06	0.77
0.07	0.83
0.08	0.89
0.09	0.96
0.10	1.02
0.12	1.12
0.14	1.12
0.29	1.12
0.31	1.12
0.32	1.12
0.58	1.12
0.64	1.01
0.73	0.89
0.80	0.81
0.90	0.72
1.00	0.65
1.50	0.43
1.64	0.39
1.74	0.37
1.85	0.35
2.00	0.32
2.23	0.29
2.52	0.26
2.69	0.24
2.86	0.23
3.00	0.22

Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Shipyards Creek Profile</b> <b>SEE Design Event</b> <b>Response Spectra at Top of Cooper Marl</b>	<b>Figure</b> <b>8 -12</b>
Date: July 2015			
Port Access Road SSRA			

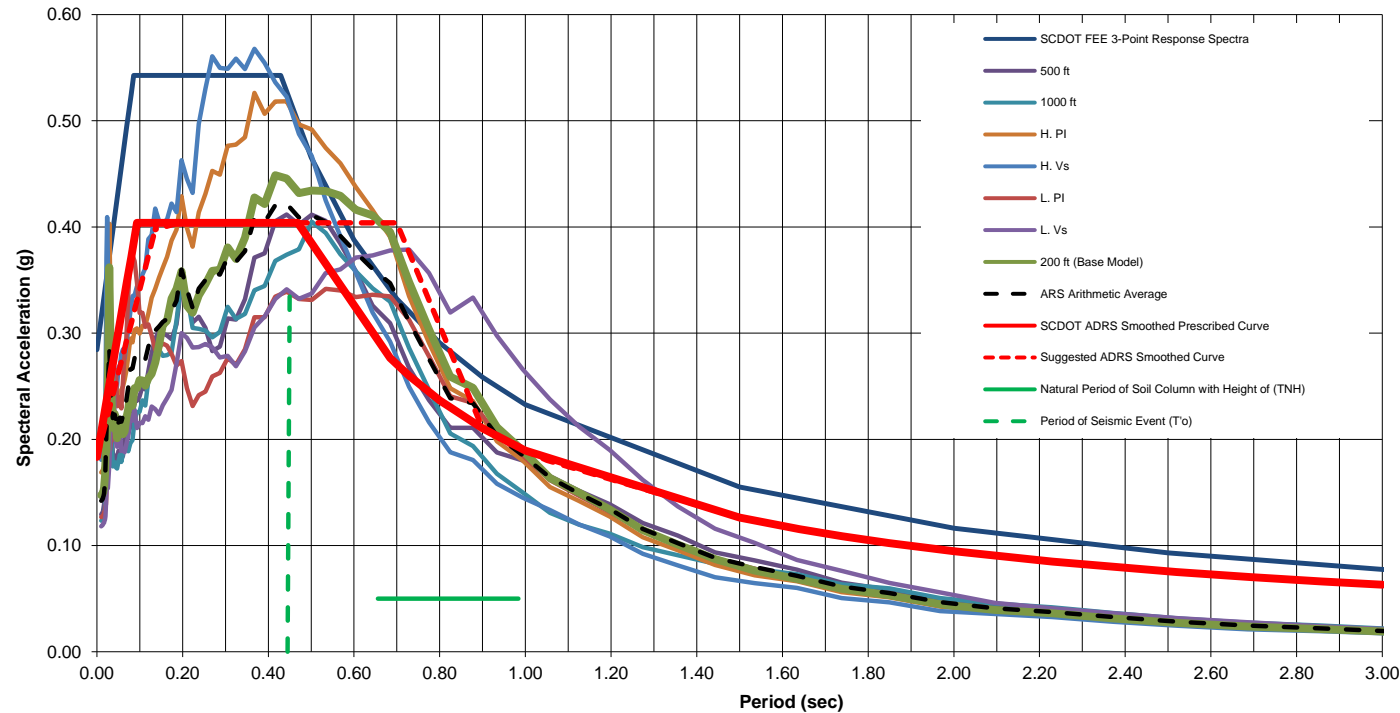
Project ID:	0037345			Latitude:	32.8380
Route:	Port Access Road	County:	10-Charleston	Longitude:	-79.9524
Project:	Port Access Road				

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	S <sub>DS</sub>	S <sub>D1</sub>	M <sub>w</sub>	R	PGV	D <sub>a5-95</sub>	T <sub>o</sub>
	g	g	g		km	ft/sec	sec	sec
FEE	0.183	0.404	0.189	7.36	16	10.41	10.90	0.45

OC=	I	Damping:	5%
		Geologic Condition:	Geologically Realistic (Q=100)
		ADRS Location within Soil Column:	Ground Surface

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	$(4^*H)/V^*s,H$
-	-	-	1220	200	0.656	0.984



Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.18
0.01	0.21
0.02	0.23
0.03	0.25
0.04	0.28
0.05	0.30
0.06	0.32
0.07	0.35
0.08	0.37
0.09	0.40
0.10	0.40
0.14	0.40
0.19	0.40
0.29	0.40
0.31	0.40
0.32	0.40
0.47	0.40
0.68	0.28
0.73	0.26
0.80	0.24
0.90	0.21
1.00	0.19
1.50	0.13
1.64	0.12
1.74	0.11
1.85	0.10
2.00	0.09
2.23	0.08
2.52	0.08
2.69	0.07
2.86	0.07
3.00	0.06

Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Local Access Road Profile</b> <b>FEE Design Event</b> <b>Response Spectra at Ground Surface</b>	<b>Figure</b> <b>8 -13</b>
Date: July 2015			
Port Access Road SSRA			

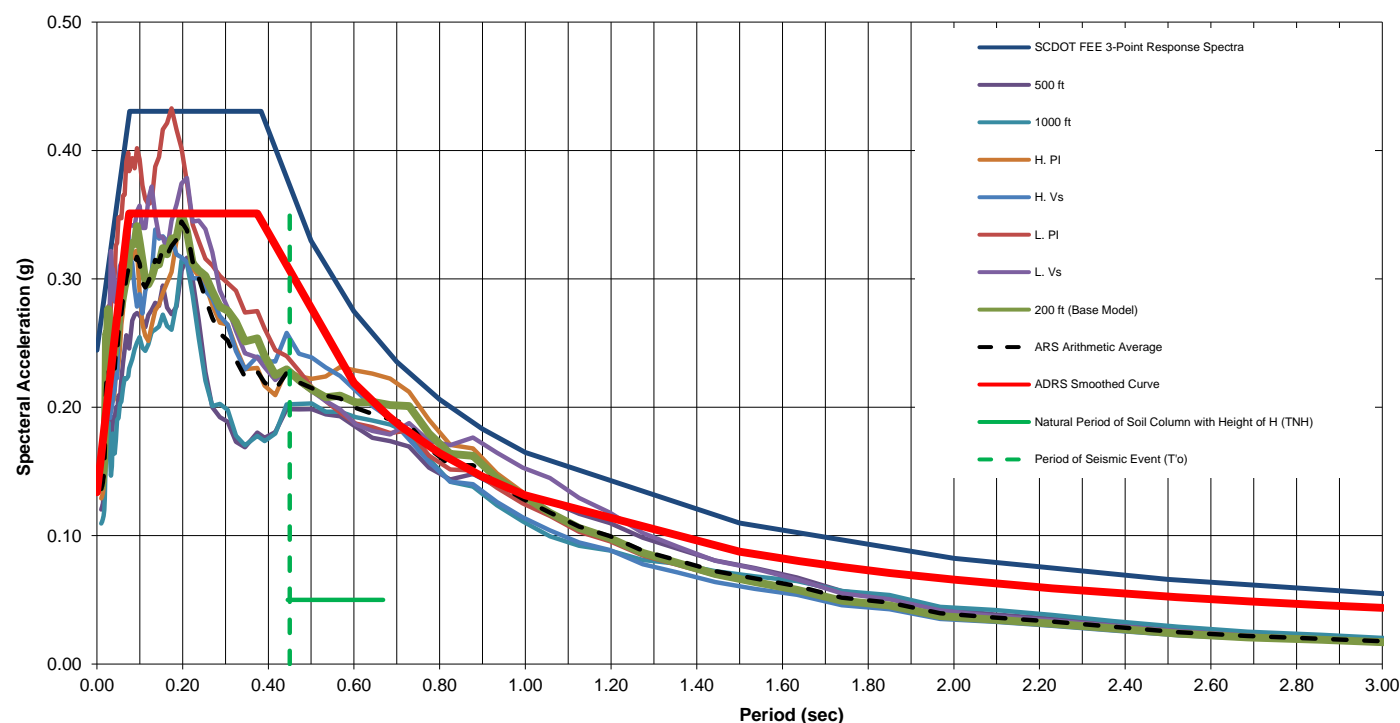
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Route:	Port Access Road	County:	10-Charleston	Longitude:	-79.9524
Project:	Port Access Road				

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T'_o$
	g	g	g		km	ft/sec	sec	sec
FEE	0.244	0.431	0.131	7.36	16	7.2	10.9	0.45

OC=	I	Damping:	5%
Geologic Condition:		Geologically Realistic (Q=100)	
ADRS Location within Soil Column:		Top of Cooper Marl	

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
sec	$0.5 \cdot T_o$	$2.0 \cdot T_o$	ft/sec	ft	$(4 \cdot H)/V^*s,H$	$(6 \cdot H)/V^*s,H$
-	-	-	1500	167	0.445	0.668



Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.13
0.01	0.16
0.02	0.19
0.03	0.22
0.04	0.25
0.05	0.28
0.06	0.31
0.07	0.34
~ $T_o$ 0.08	0.35
0.09	0.35
0.10	0.35
0.13	0.35
0.14	0.35
0.29	0.35
0.31	0.35
~ $T_s$ 0.37	0.35
0.60	0.22
0.68	0.19
0.71	0.19
0.80	0.16
0.90	0.15
1.00	0.13
1.50	0.09
1.64	0.08
1.74	0.08
1.85	0.07
2.00	0.07
2.23	0.06
2.52	0.05
2.69	0.05
2.86	0.05
3.00	0.04

Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Local Access Road Profile</b> <b>FEE Design Event</b> <b>Response Spectra at Top of Cooper Marl</b>	<b>Figure 8-14</b>
Date: July 2015			
Port Access Road SSRA			



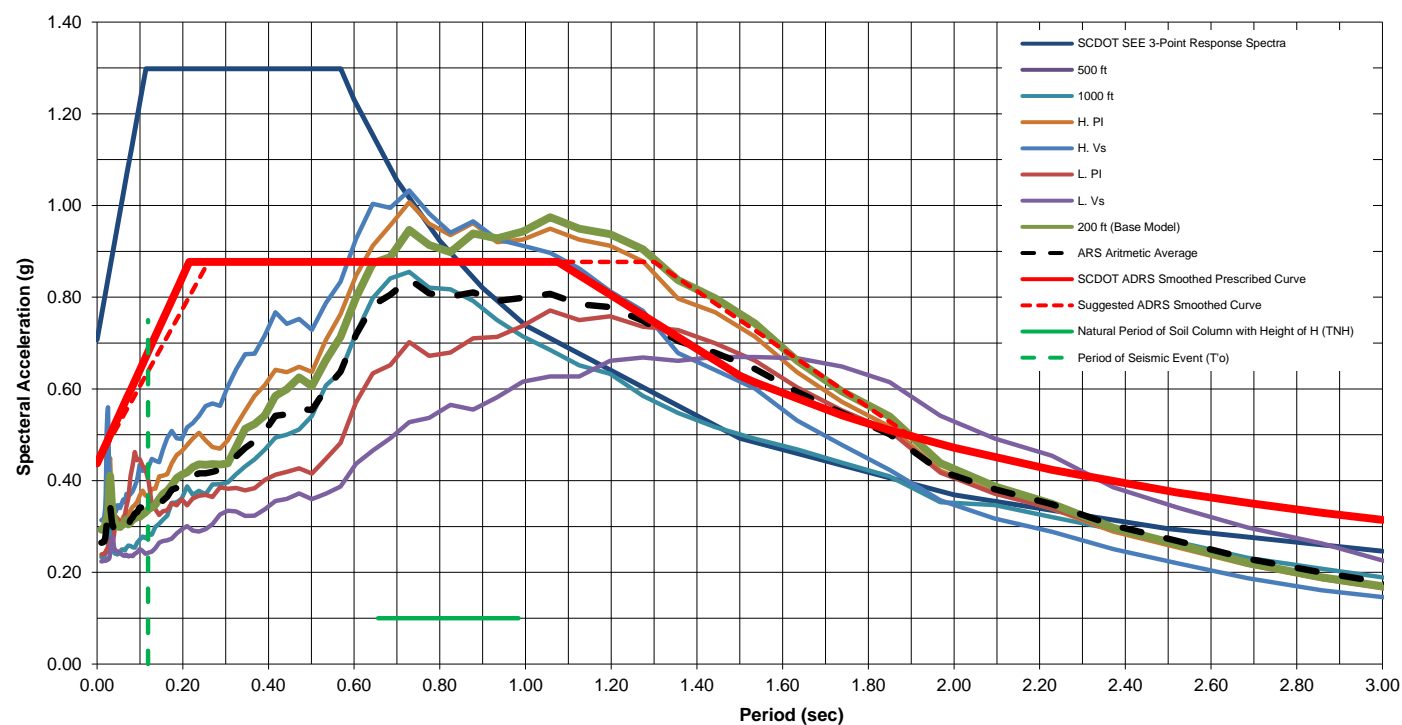
Project ID:	0037345			Latitude:	32.8380
Route:	Port Access Road	County:	10-Charleston	Longitude:	-79.9524
Project:	Port Access Road				

Designer: S&ME, Inc.  
Date: July 2015

Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T_o$
	g	g	g		km	ft/sec	sec	sec
SEE	0.437	0.877	0.943	7.36	16	51.89	10.90	0.12

OC=	I	Damping:	5%
		Geologic Condition:	Geologically Realistic (Q=100)
		ADRS Location within Soil Column:	Ground Surface

Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
sec	$0.5 \cdot T_o$	$2.0 \cdot T_o$	ft/sec	ft	$(4 \cdot H)/V^*s,H$	$(6 \cdot H)/V^*s,H$
-	-	-	1220	200	0.656	0.984



Tabulated Values (Smoothed ADRS Curve)

T (sec)	$S_a$ (g)
0.00	0.44
0.01	0.46
0.02	0.48
0.03	0.50
0.04	0.52
0.05	0.54
0.06	0.56
0.07	0.58
0.08	0.60
0.09	0.62
0.10	0.64
0.13	0.70
0.19	0.83
~ $T_o$ 0.22	0.88
0.31	0.88
0.32	0.88
0.60	0.88
0.68	0.88
0.73	0.88
0.80	0.88
0.90	0.88
~ $T_s$ 1.08	0.88
1.50	0.63
1.54	0.61
1.74	0.54
1.85	0.51
2.00	0.47
2.23	0.42
2.52	0.37
2.69	0.35
2.86	0.33
3.00	0.31

Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Local Access Road Profile</b> <b>SEE Design Event</b> <b>Response Spectra at Ground Surface</b>	<b>Figure</b> <b>8 - 15</b>
Date: July 2015			
Port Access Road SSRA			

Project ID:	0037345			Latitude:	32.8380
Route:	Port Access Road	County:	10-Charleston	Longitude:	-79.9524
Project:	Port Access Road				

Designer: S&ME, Inc.  
Date: July 2015

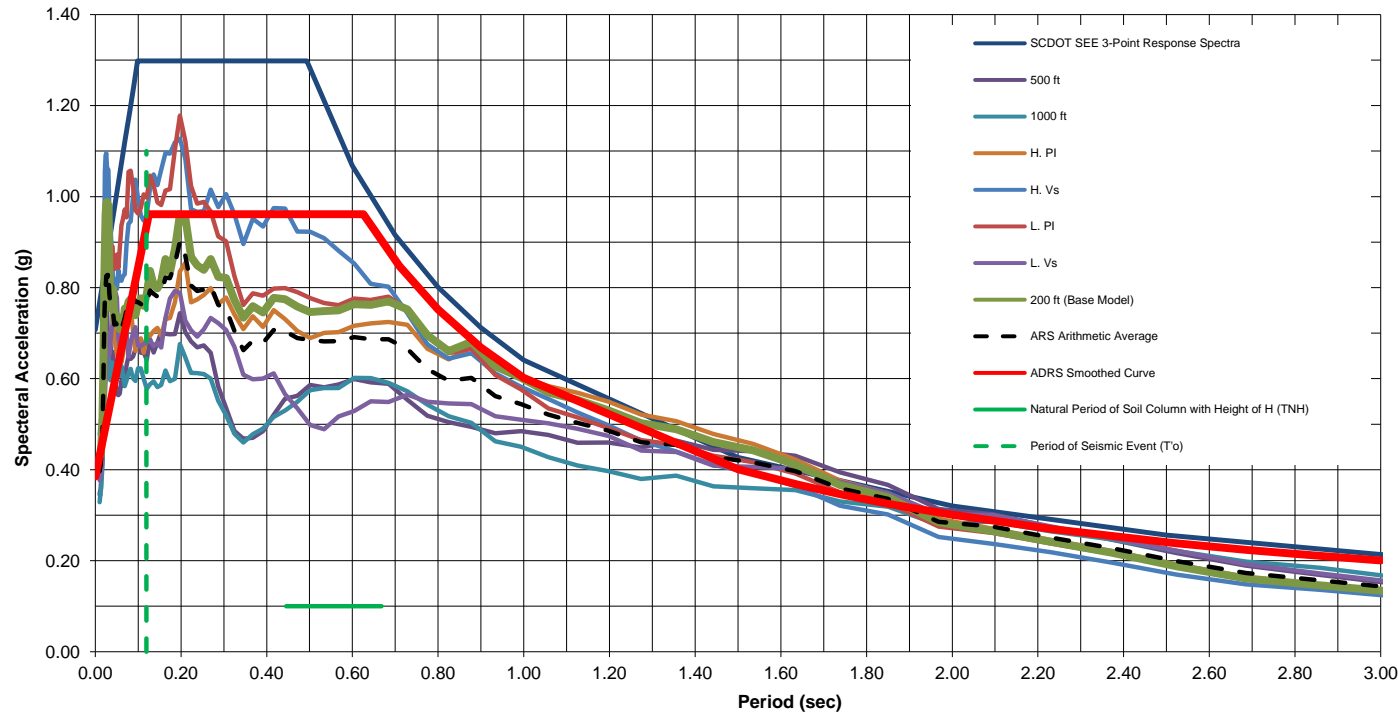
Design EQ	PGA	$S_{DS}$	$S_{D1}$	$M_w$	R	PGV	$D_{a5-95}$	$T_o$
	g	g	g		km	ft/sec	sec	sec
SEE	0.385	0.961	0.602	7.36	16	33.1	10.9	0.12

OC=	I	Damping:	5%
		Geologic Condition:	Geologically Realistic (Q=100)
		ADRS Location within Soil Column:	Top of Cooper Marl

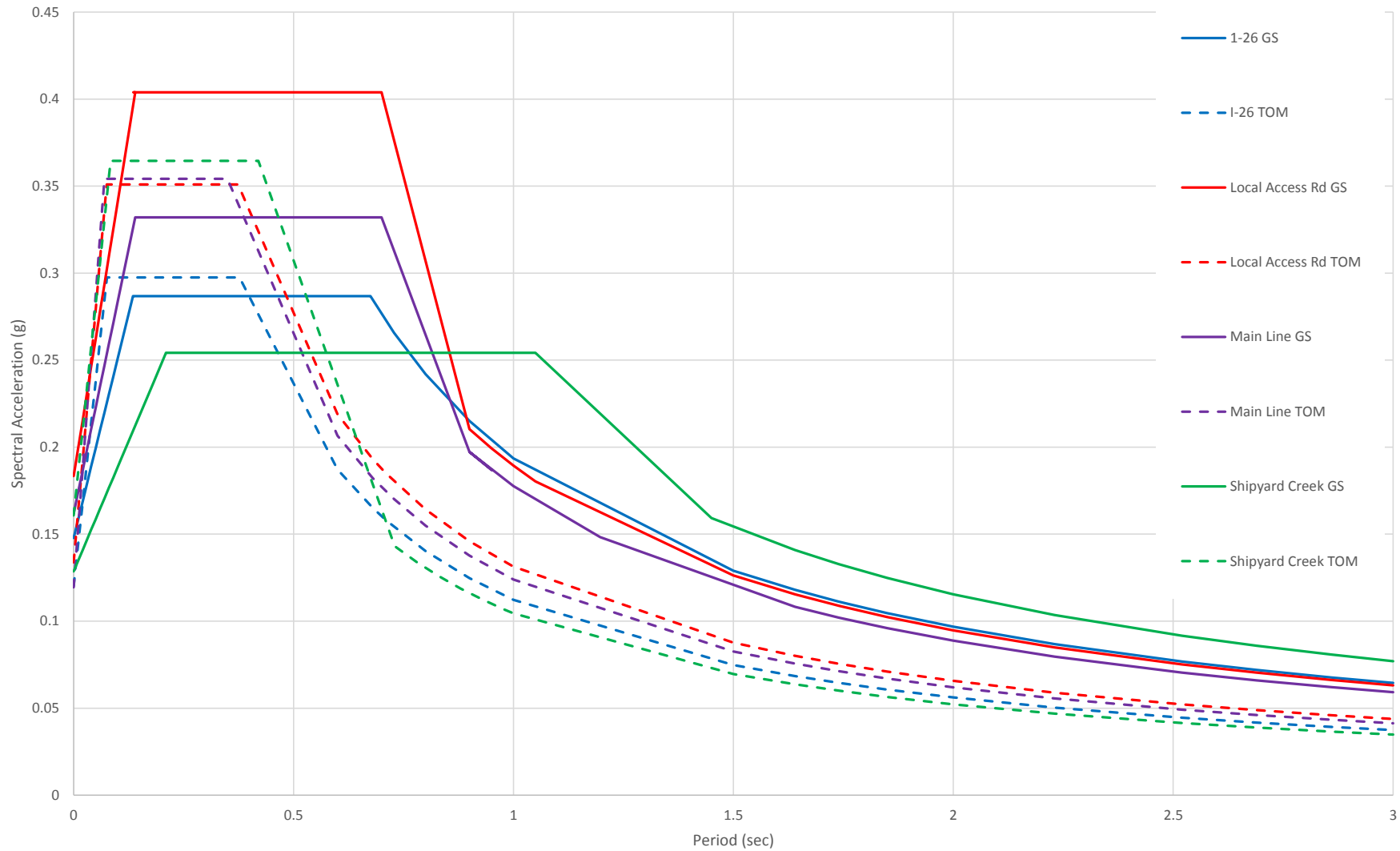
Fundamental Period of Structure $T_o$	Range of Interest		$V^*s,H$	H	$T_{NH}$	
	Sec				sec	
	sec	$0.5^*T_o$			$2.0^*T_o$	ft/sec
-	-	-	1500	167	0.445	0.668

Tabulated Values (Smoothed ADRS Curve)

T (sec)	Sa (g)
0.00	0.38
0.01	0.43
0.02	0.48
0.03	0.52
0.04	0.57
0.05	0.62
0.06	0.66
0.07	0.71
0.08	0.75
0.09	0.80
0.10	0.85
0.13	0.96
0.14	0.96
0.29	0.96
0.31	0.96
0.32	0.96
0.60	0.96
0.63	0.96
0.71	0.85
0.80	0.75
0.90	0.67
1.00	0.60
1.50	0.40
1.64	0.37
1.74	0.35
1.85	0.33
2.00	0.30
2.23	0.27
2.52	0.24
2.69	0.22
2.86	0.21
3.00	0.20



Project No.: 1413-15-075		<b>Site-Specific Design Response Spectra</b> <b>Local Access Road Profile</b> <b>SEE Design Event</b> <b>Response Spectra at Top of Cooper Marl</b>	<b>Figure</b> <b>8 - 16</b>
Date: July 2015			
Port Access Road SSRA			



Project No.: 1413-15-075

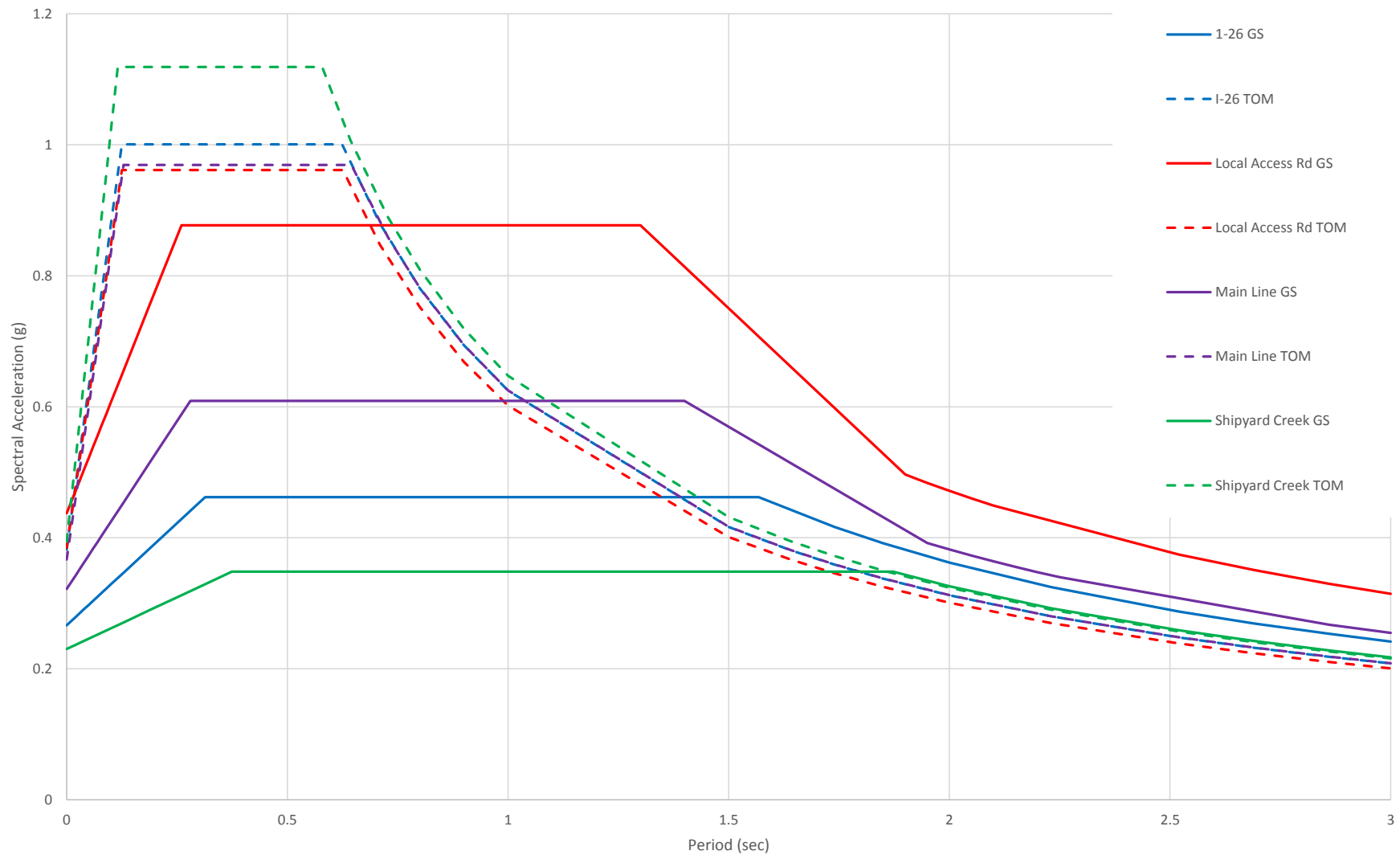
Date: July 2015

Port Access Road



Site-Specific Design Response Spectra  
FEE Design Events  
Response Spectra at Ground Surface and Top of Cooper Marl

Figure  
8 - 17



Project No.: 1413-15-075

Date: July 2015

Port Access Road



Site-Specific Design Response Spectra  
SEE Design Events  
Response Spectra at Ground Surface and Top of Cooper Marl

Figure  
8 - 18

## 9.0 References

- Groholski, D., Hashash, Y.M.A., Kim, Byungmin, Musgrove, M., Harmon, J., and Stewart, J.P., (2015) “Simplified Model for Small-Strain Nonlinearity and Strength in 1-D Seismic Site Response Analysis,” *Journal of Geotechnical and Geoenvironmental Engineering*, Submitted for review.
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- Katuna, Michael (2009), “Stratigraphic Interpretation of Geological Formations Observed in SCDOT Borehole (B-11) North Charleston, SC”, 9 page report submitted to S&ME, Inc., Charleston, SC.
- Yee, E., Stewart, J.P., Tokimatsu, K., 2013. Elastic and large-strain nonlinear seismic site response from analysis of vertical array recordings. *J. Geotech. Geoenviron. Eng.* 139, 1789–1801.

## **Appendices**

## **Appendix I – Ground Motions**

Summary Text File for FEE Motions from Scenario\_pc

FEE Unscaled & Scaled Time Histories and Spectral Values

Summary Text File for SEE Motions from Scenario\_pc

SEE Unscaled & Scaled Time Histories and Spectral Values

S&ME June 19, 2015 Technical Memo 1 – Ground Motion Issues

summary\_fee1.txt

THIS FILE CONTAINS THE RESULTS FROM ONE EXECUTION  
OF PROGRAM scenario\_pc (Martin Chapman, 2006).

THE NAME OF THE DIRECTORY CONTAINING THIS FILE  
AND ALL ASSOCIATED OUTPUT FILES IS: Port\_Access\_FEE1

10% PROBABILITY OF EXCEEDANCE (For 50 year Exposure)  
FOR GEOLOGICALLY REALISTIC SITE CONDITION

#### RESULTS OF INTERPOLATION

Site Location: 32.8380 N 79.9524 W  
Nearest Grid Point: 32.8750 N 80.0000 W Distance From Site: 6.05 km  
Thickness of sediments, meters: 794.8

PSA and PGA as Percentage of g							
0.5Hz	1.0Hz	2.0Hz	3.3Hz	5Hz	6.7Hz	13Hz	PGA
3.37676	9.69578	19.11059	28.72872	35.87590	36.38866	36.05789	20.43691

Interpolated results from USGS Deaggregation 2002								
Freq.	R(mean)	km	mag(mean)	eps0(mean)	R(modal)	km	mag(modal)	eps0(modal)
PGA		31.2	6.62	-.97		20.8	7.30	-2.17
5 Hz		34.7	6.72	-.88		20.8	7.30	-2.05
1 Hz		60.2	6.97	-1.03		20.7	7.30	-2.19

#### TIME SERIES GENERATED BY THIS RUN

The time series defined below is scaled using a  
phase-invariant method to match the entire  
uniform hazard PSA spectrum given above.

Number of points used in time series is: 4096  
Time step used: .01  
Seed used: -1

#### SCENARIO EVENT

Moment magnitude: 7.36  
Epicentral distance (km): 24.9

Motions are based on either a 1 or 2 layer geological structure  
overlying a basement half space.  
The first layer represents a sedimentary layer with  
Vs=700 m/s, density 2.0 gm/cc and Q=100.0 The thickness of  
the first layer is by default that assumed in the hazard  
calculations. This can be changed by the user.  
The second layer represents weathered rock (Vs=2.5 km/sec).  
Sediment layer thickness used for time series simulations: 794.77 m

thickness(meters)	Vs(m/sec)	density(gm/cc)	Q
794.77	700	2.0	100.0



summary_fee1.txt			
250	2500	2.5	600
INF	3500	2.6	680f <sup>0.36</sup>

The unscaled time series is contained in the file "unscaledtime.dat". The units are cm/sec<sup>2</sup> versus seconds.

The PSA spectrum for the unscaled time series is contained in the file "unscaledpsa.dat". The units are cm/sec<sup>2</sup> versus frequency in Hz.

The same spectrum with x axis in terms of period in seconds is in file "unscaledpsa\_t.dat"

The scaled time series is contained in the file "scaledtime.dat." The units are cm/sec<sup>2</sup>.

The PSA spectrum for the scaled time series is contained in the file "scaledpsa.dat". The units are cm/sec<sup>2</sup> versus frequency in Hz.

The same spectrum with x axis in terms of period in seconds is in file "scaledpsa\_t.dat"

#### SUMMARY OF STOCHASTIC MODELING:

##### ACCELERATION RECORD

brune source model

PEAK AMPLITUDES: -.140754E+03 .149225E+03

INTEGRAL OF SQUARED AMPLITUDES: .307912E+05

RMS AMPLITUDE: .274178E+02

T1: .247000E+01 T2: .184400E+02 DURATION: .159700E+02

N: 4096 DT: .010 SEED: -1

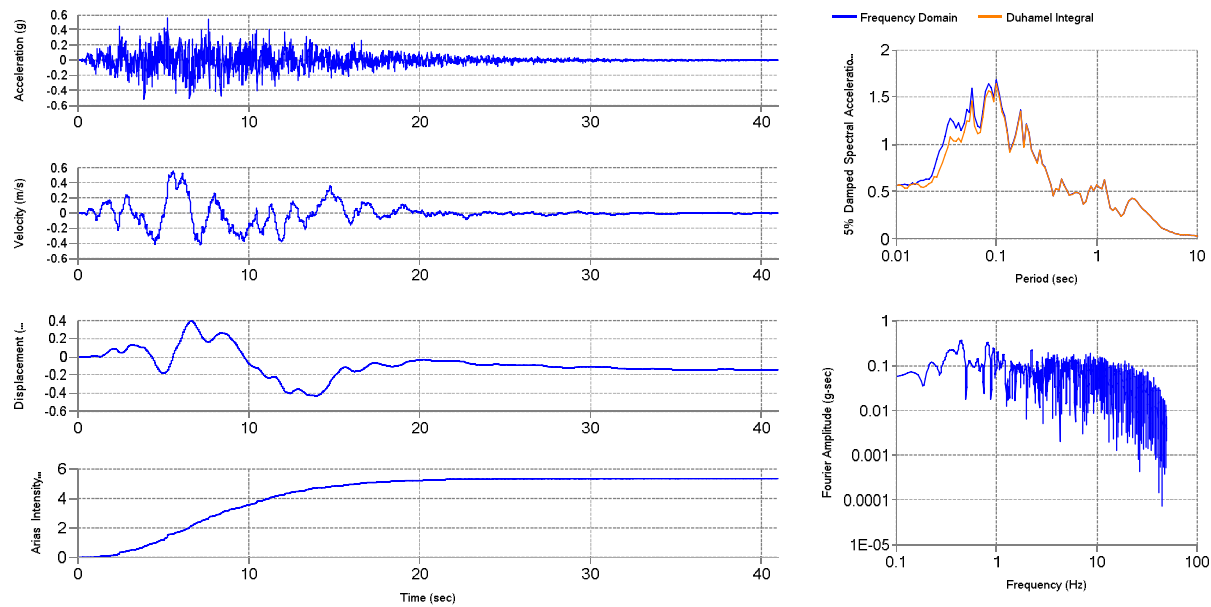
MOMENT: .123027E+28 VELOCITY: .360000E+06 DENSITY: .260000E+01

STRESS DROP: .100000E+03 FMAX (RAD/SEC): .251327E+03

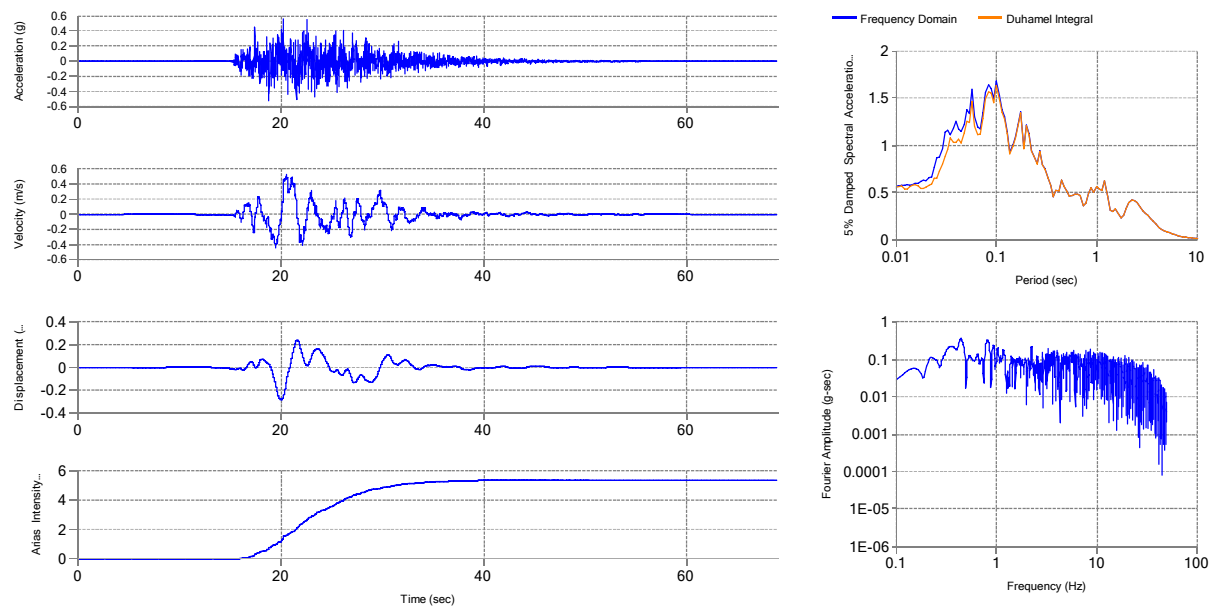
Q: .680000E+03 EXPONENT: .360000E+00

EP. DIS.: .249000E+02 CROSSOVER: .100000E+03 FOCAL DEPTH: .100000E+02

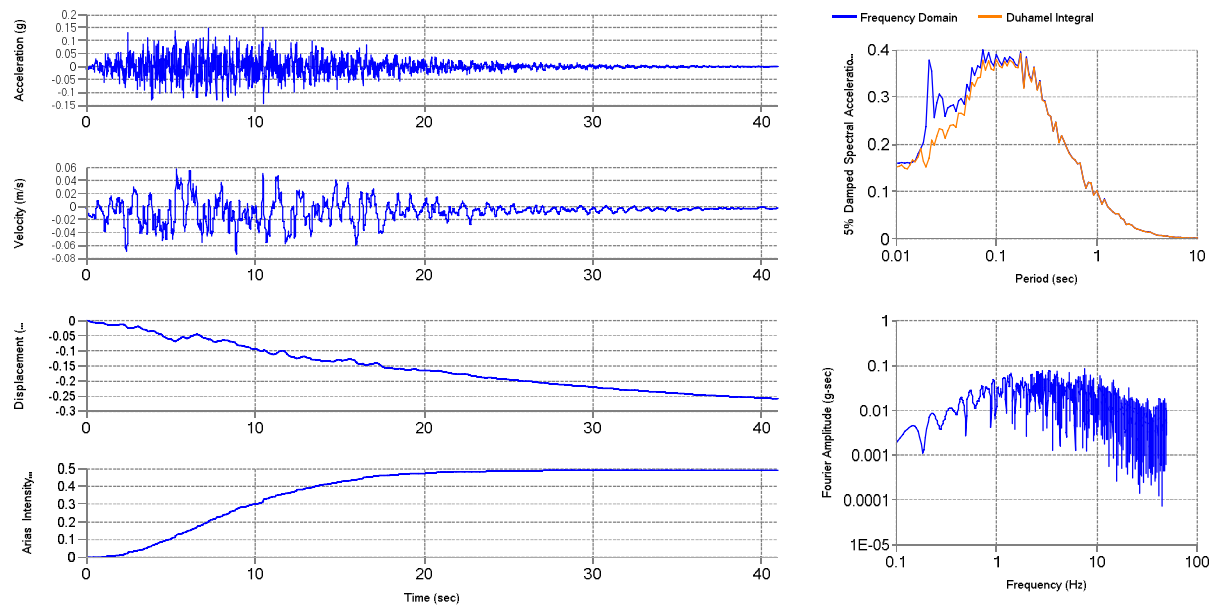
FEE1 Unscaled



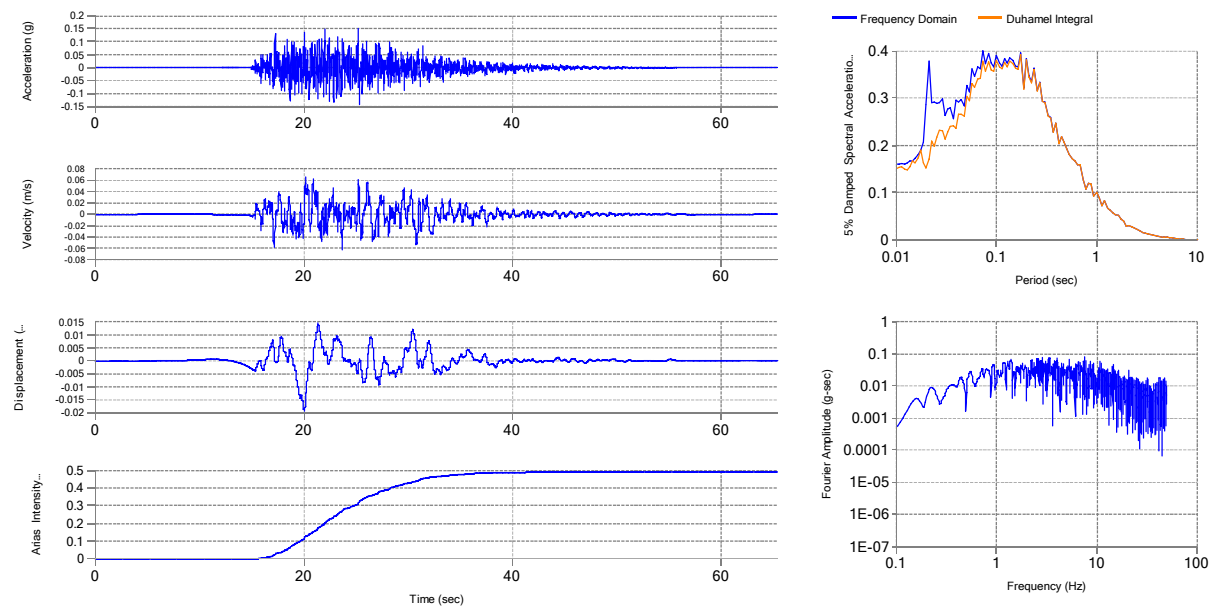
FEE1 Unscaled & Corrected



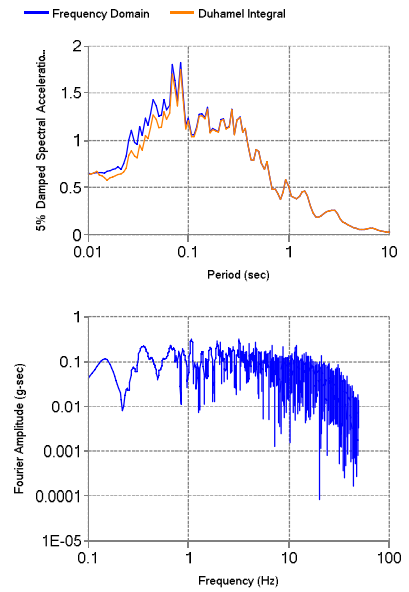
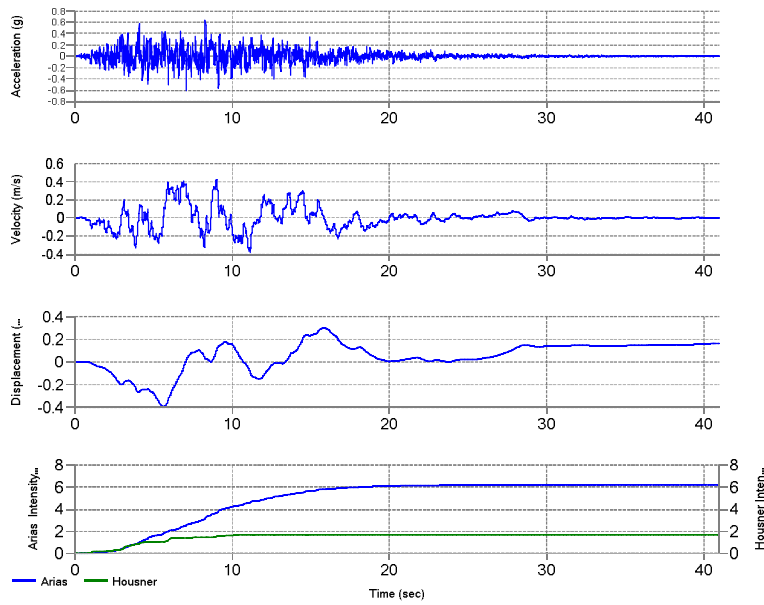
FEE1 Scaled



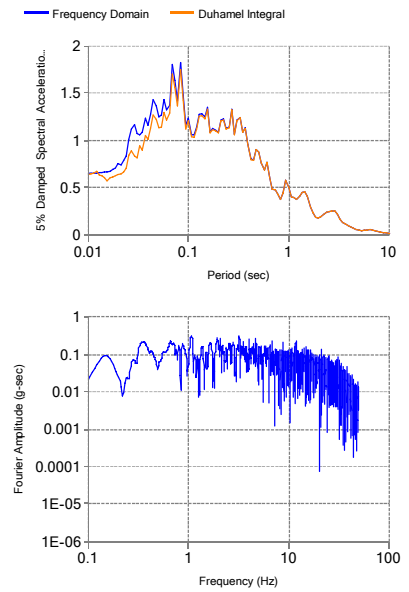
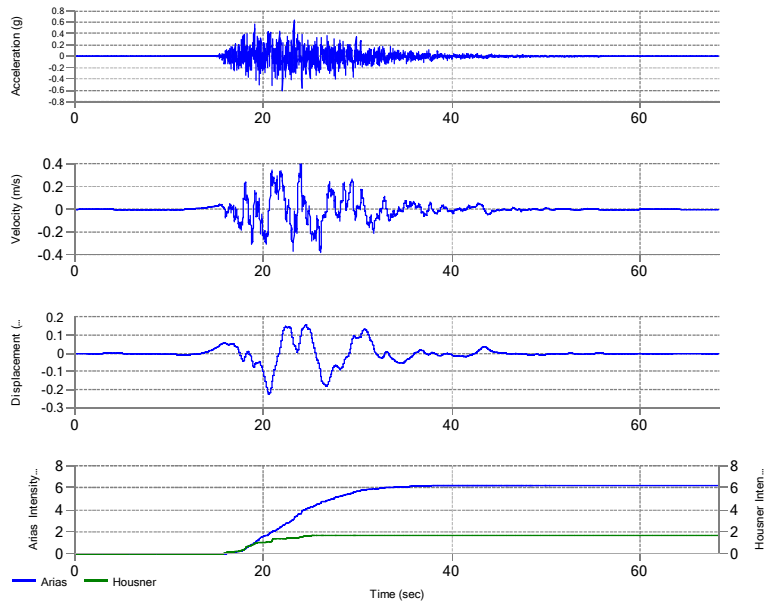
FEE1 Scaled & Corrected



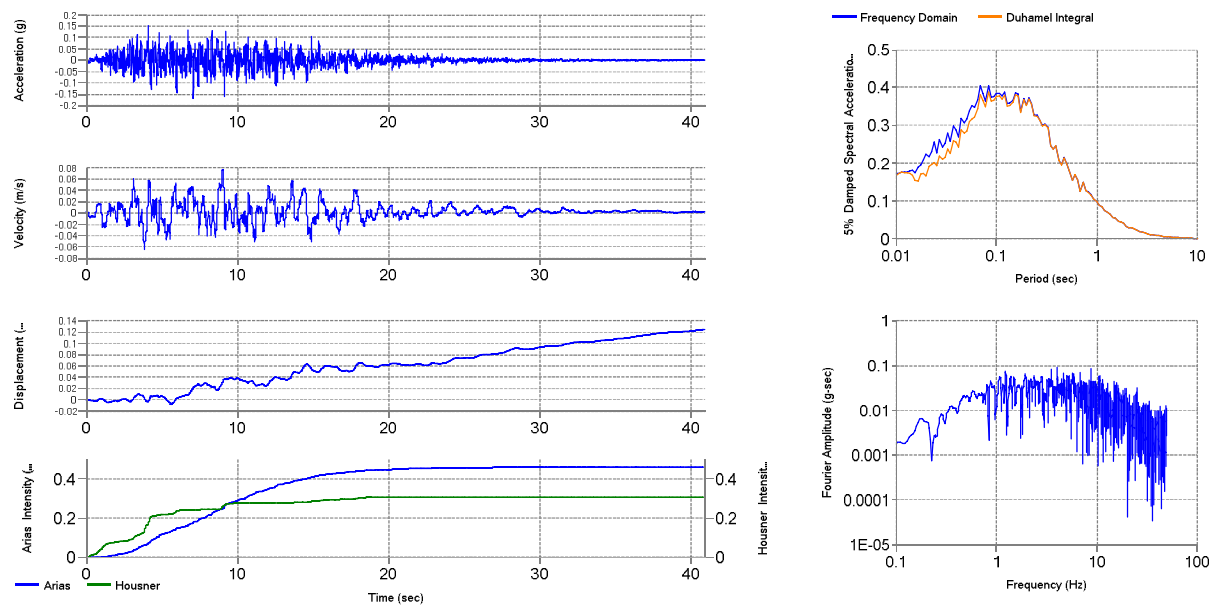
## FEE2 Unscaled



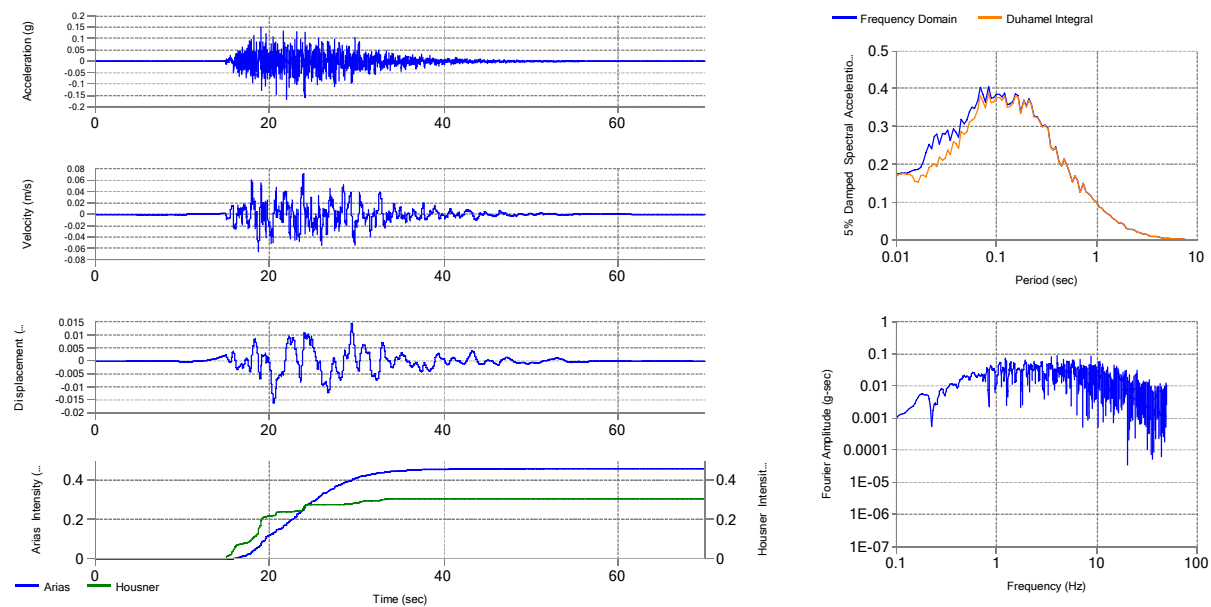
## FEE2 Unscaled & Corrected



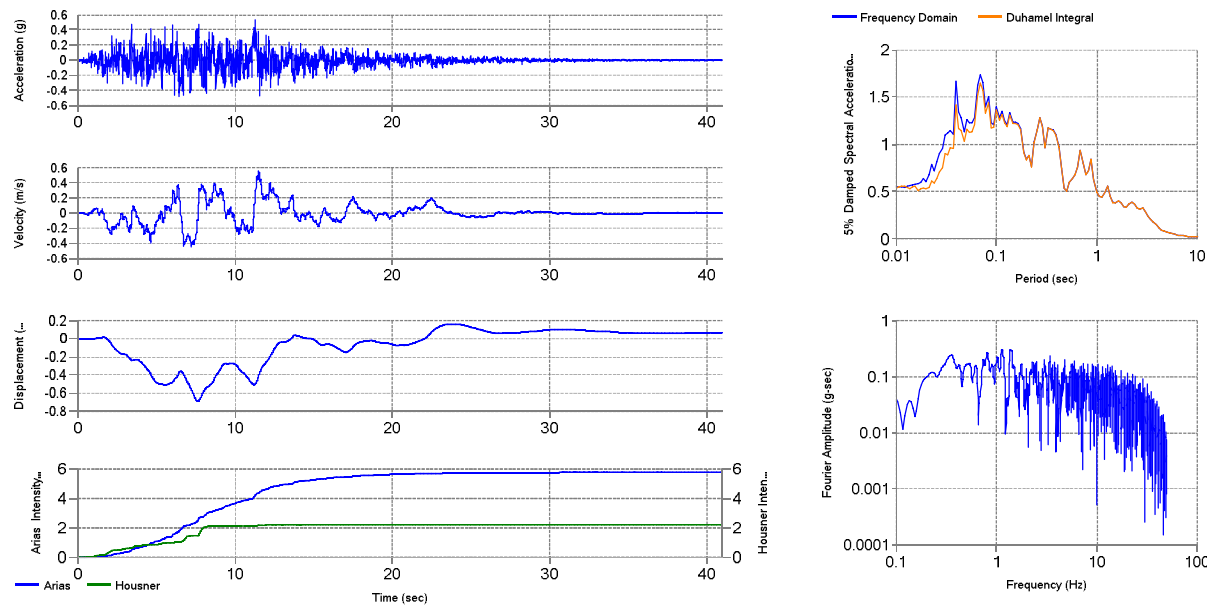
FEE2 Scaled



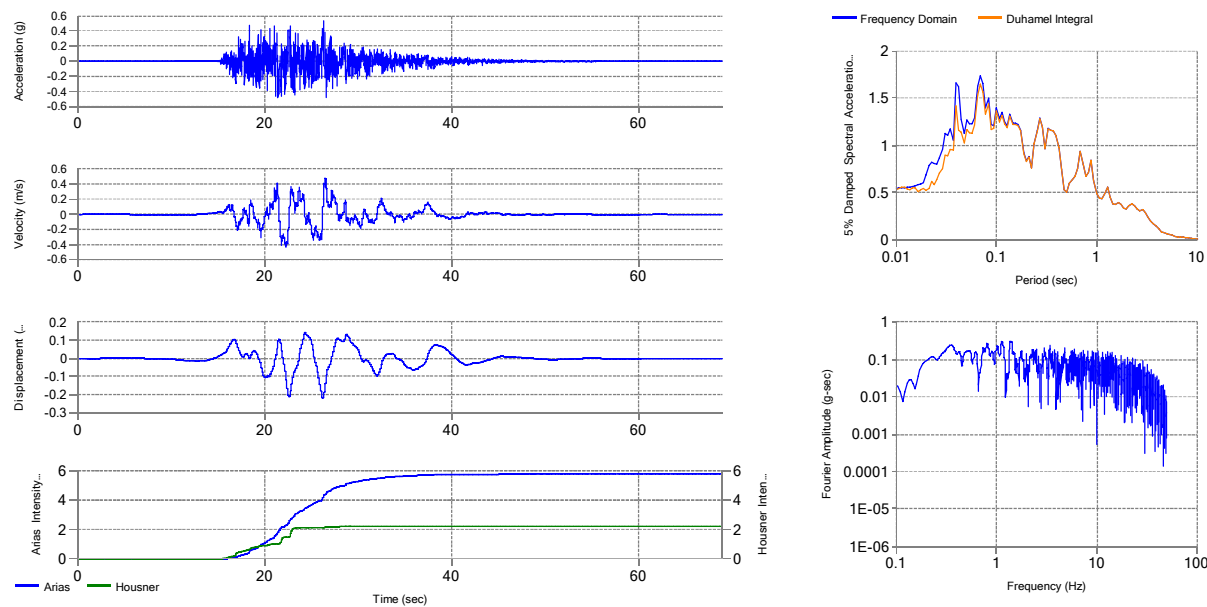
FEE2 Scaled & Corrected



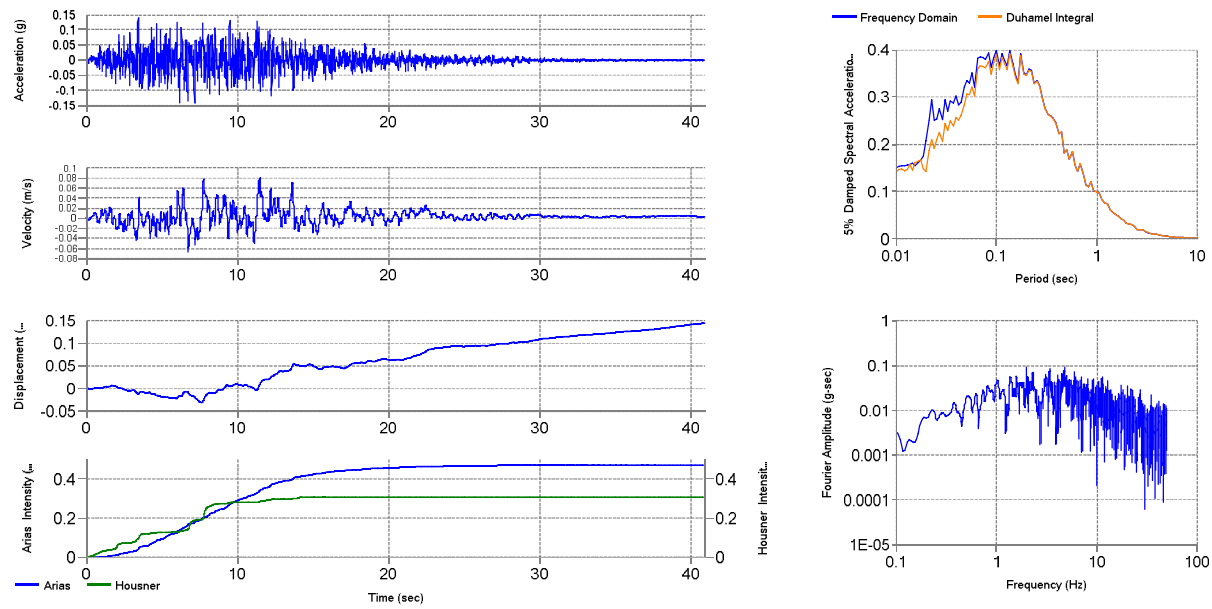
FEE3 Unscaled



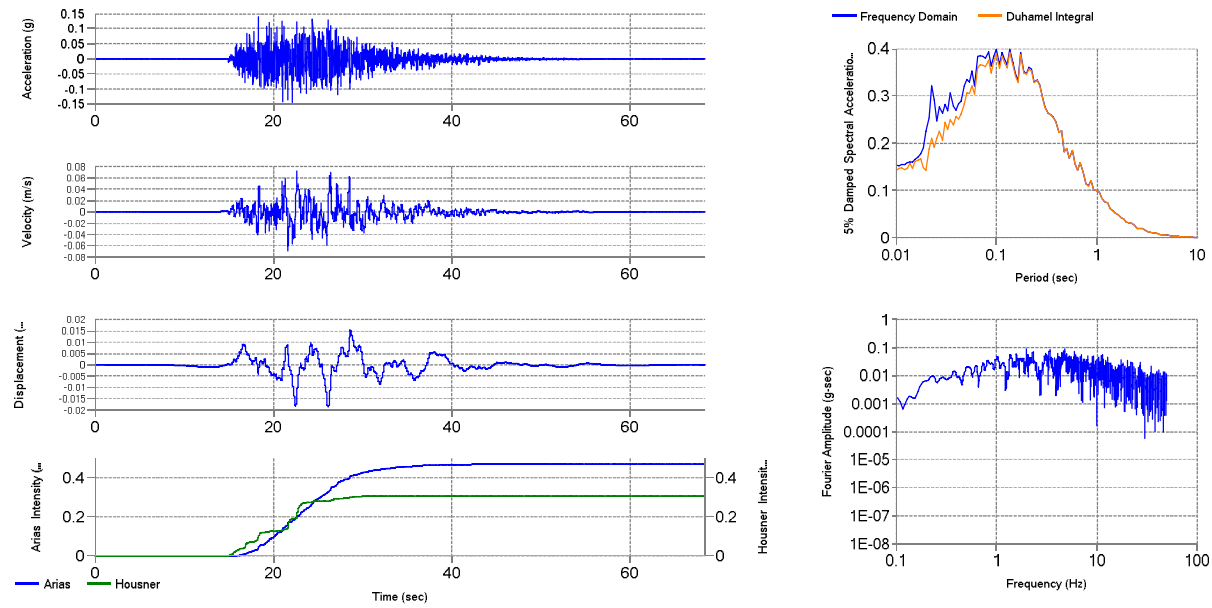
FEE3 Unscaled & Corrected



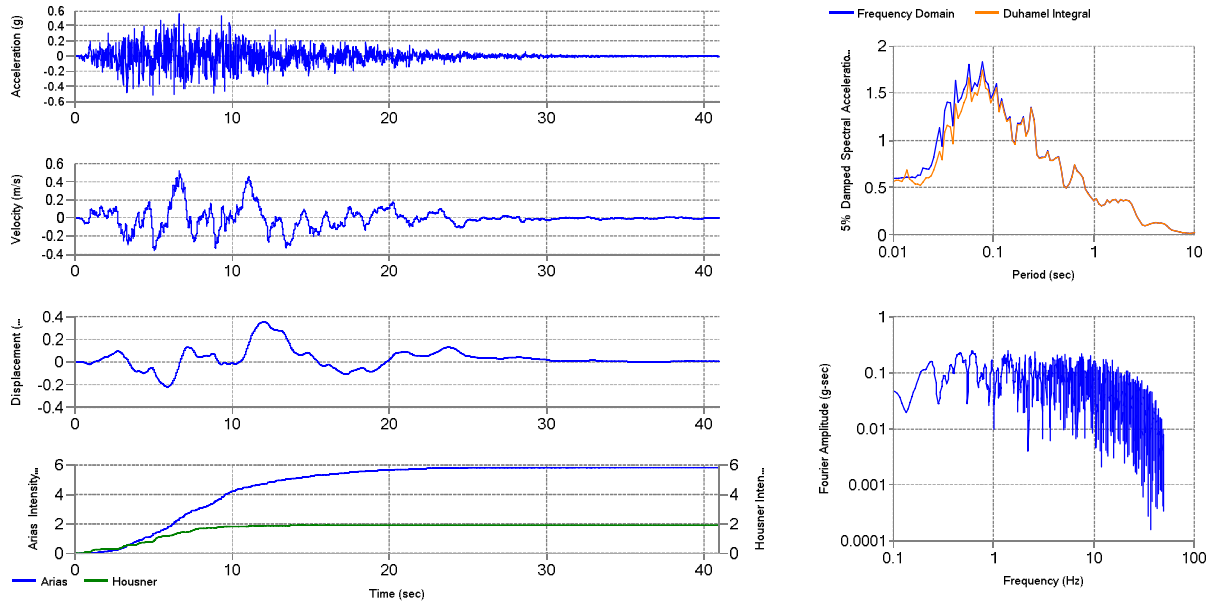
FEE3 Scaled



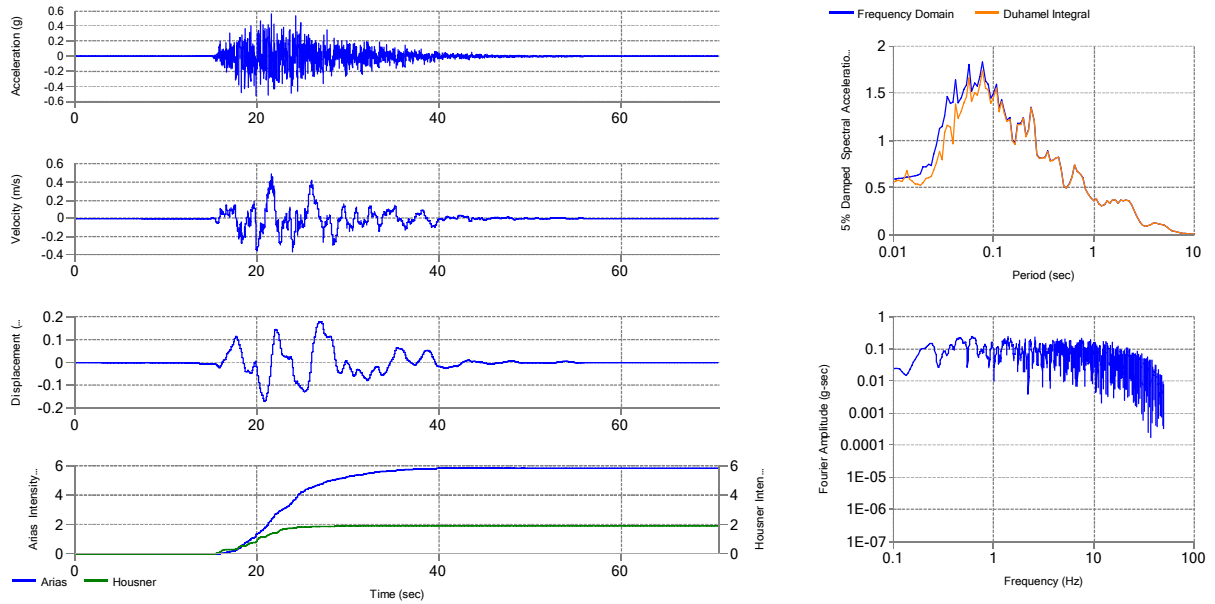
FEE3 Scaled & Corrected



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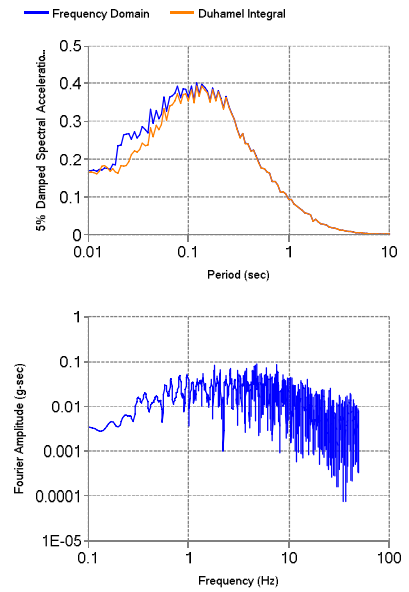
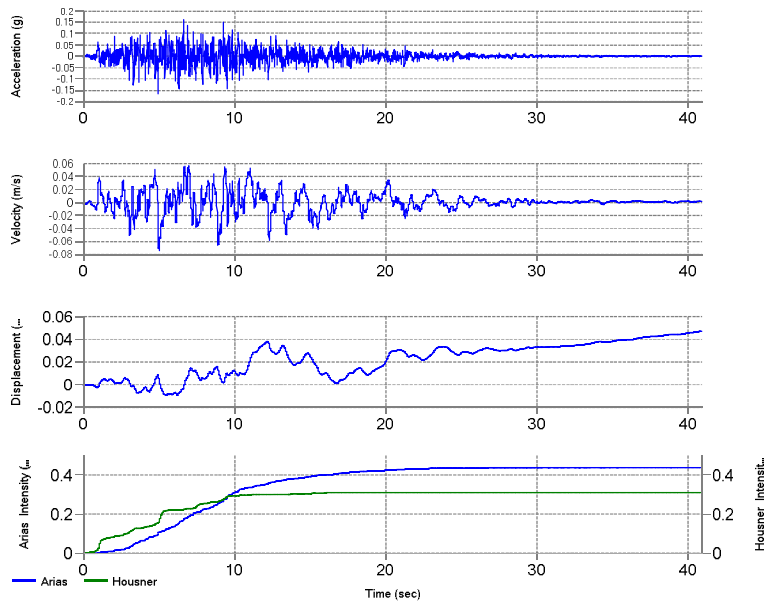


## FEE4 Unscaled & Corrected

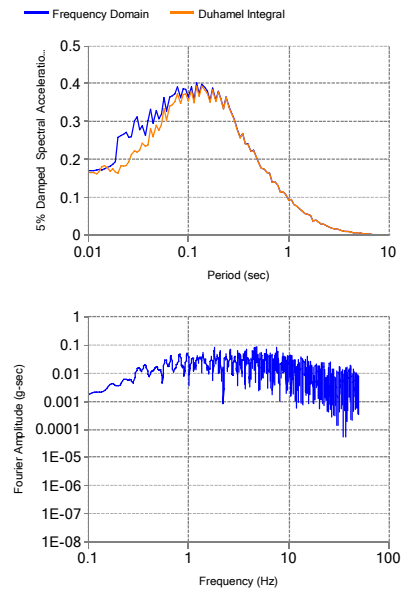
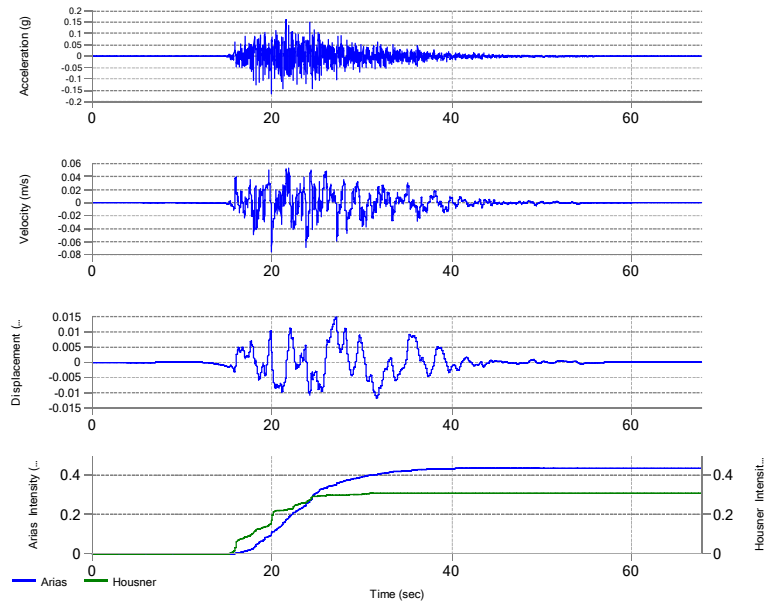




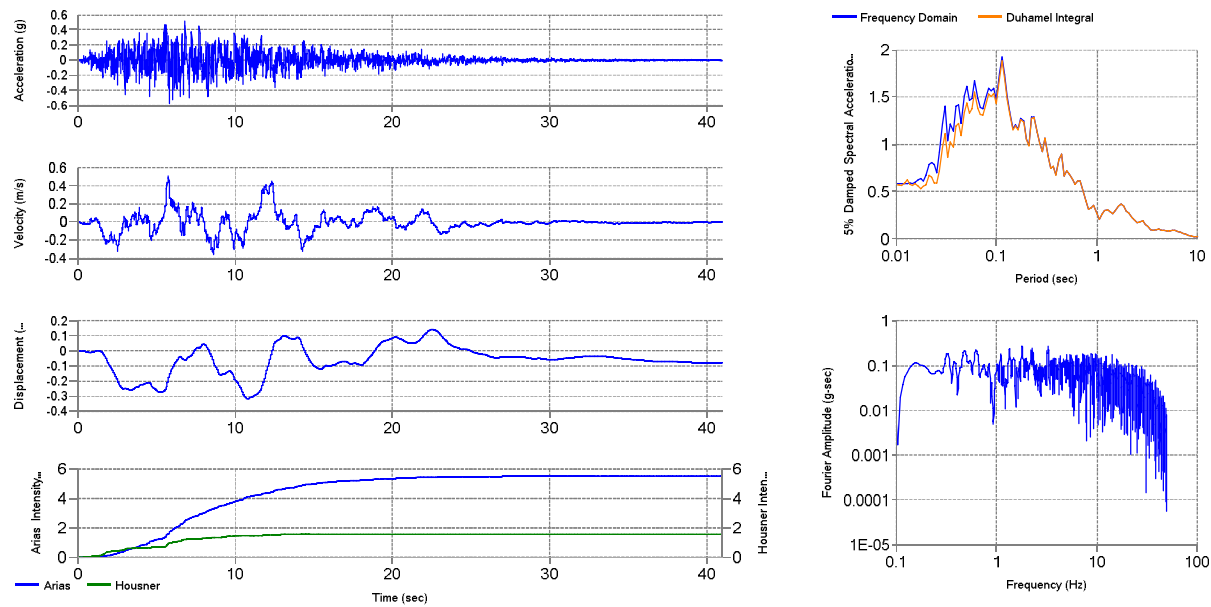
## FEE4 Scaled



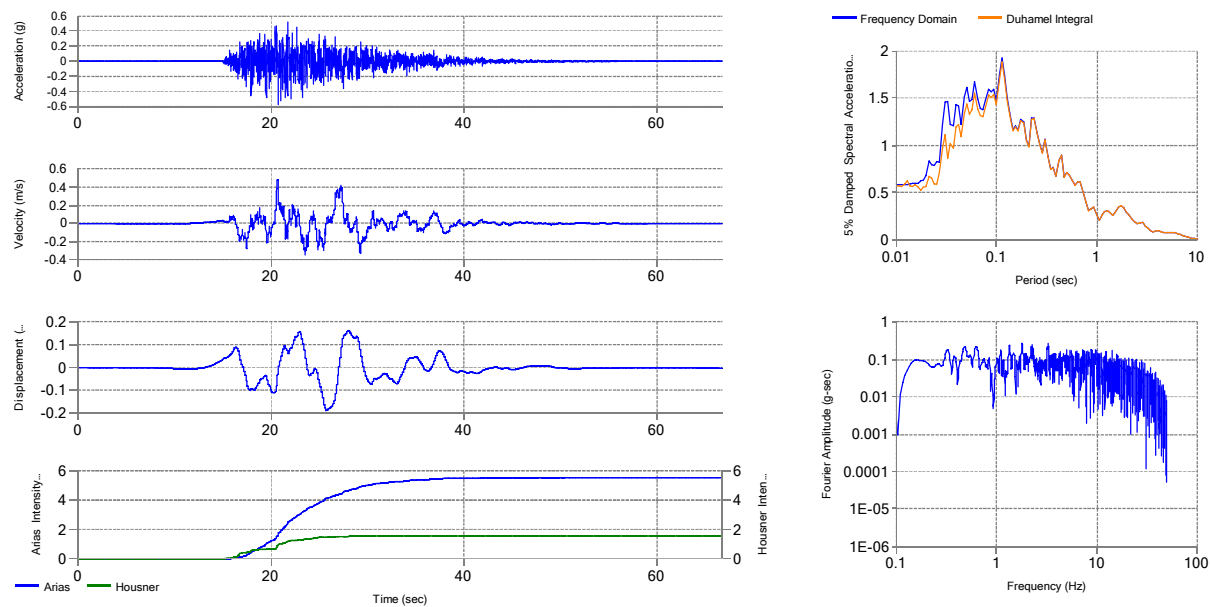
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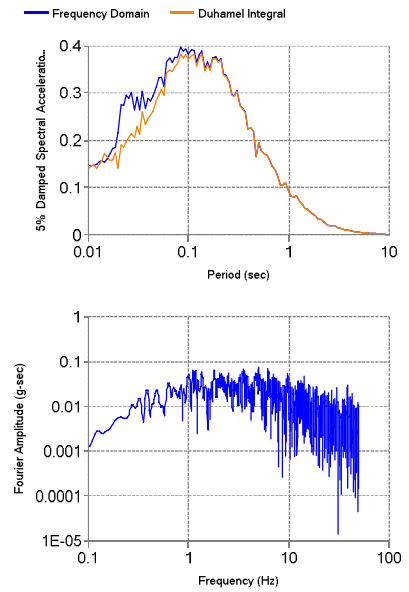
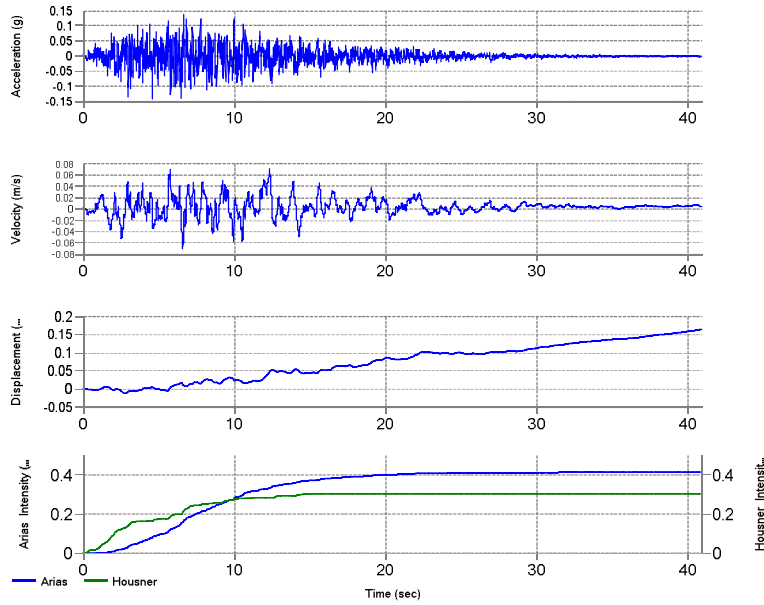
FEE5 Unscaled



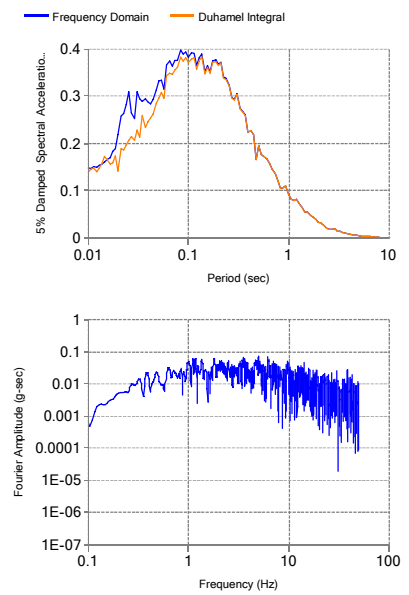
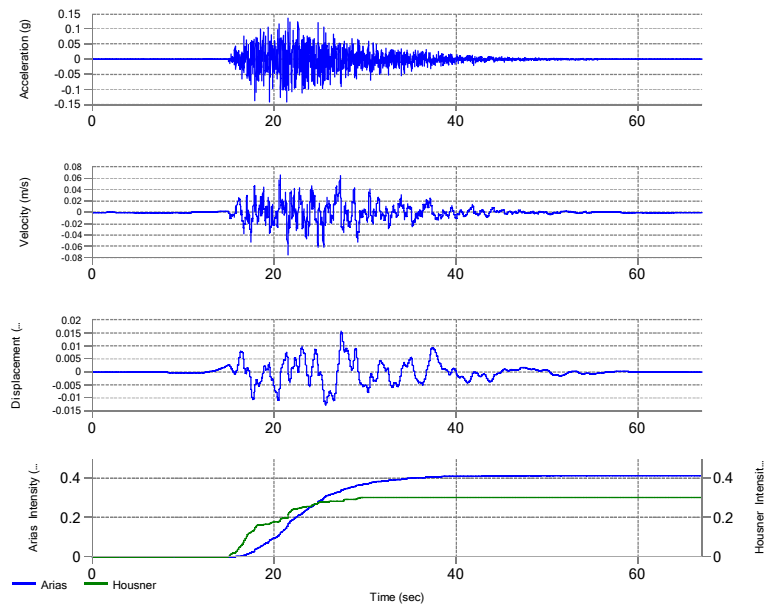
FEE5 Unscaled & Corrected



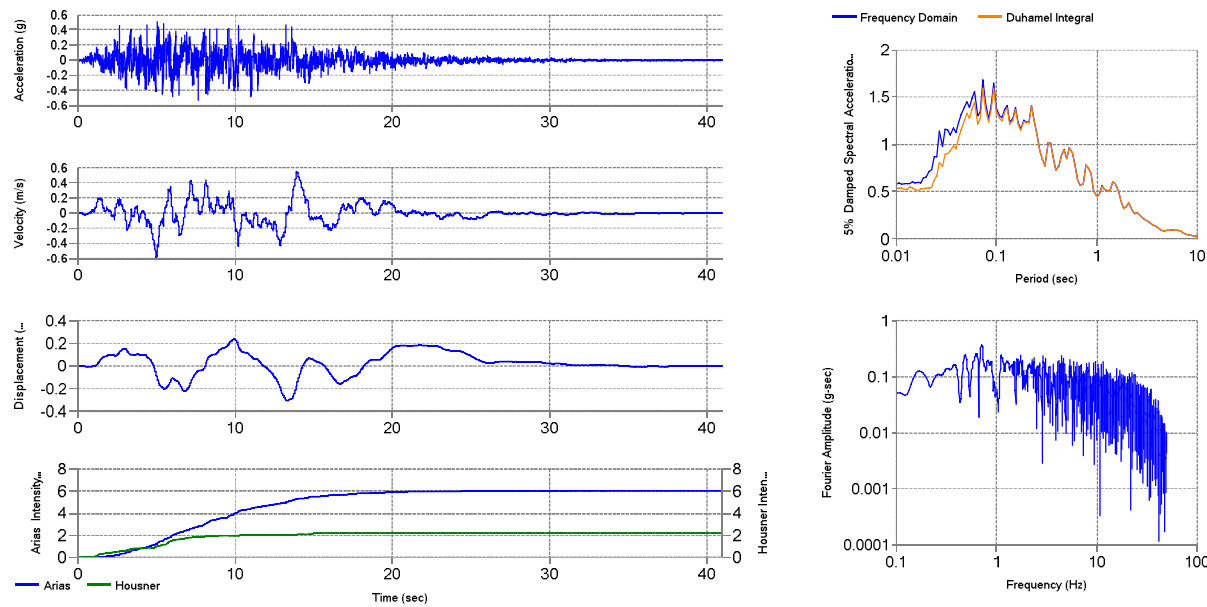
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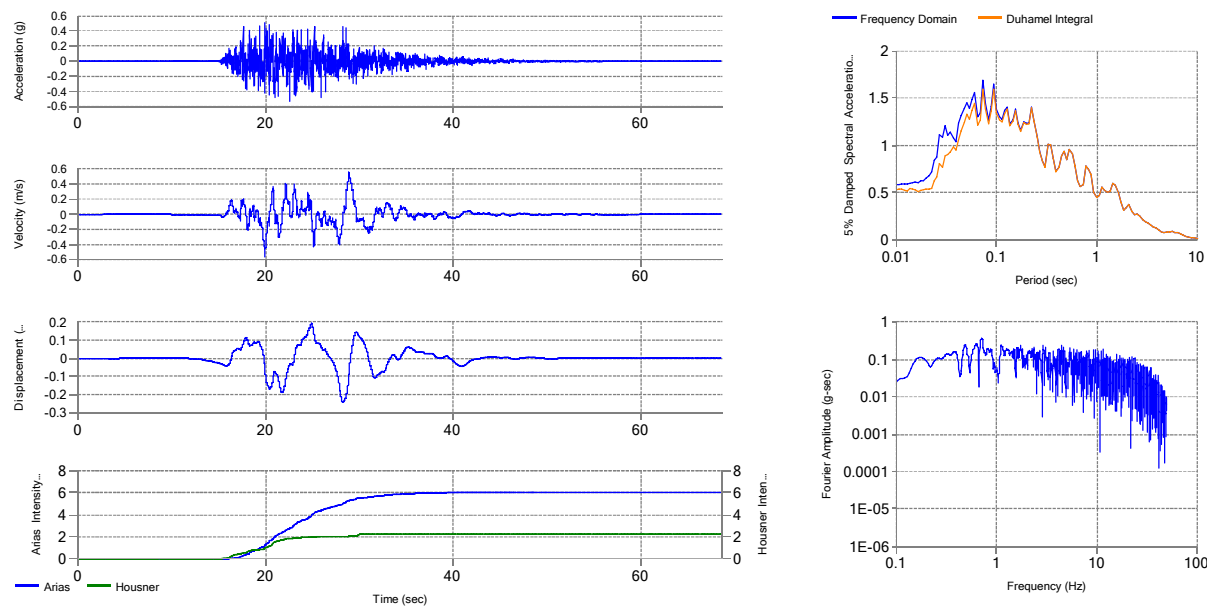
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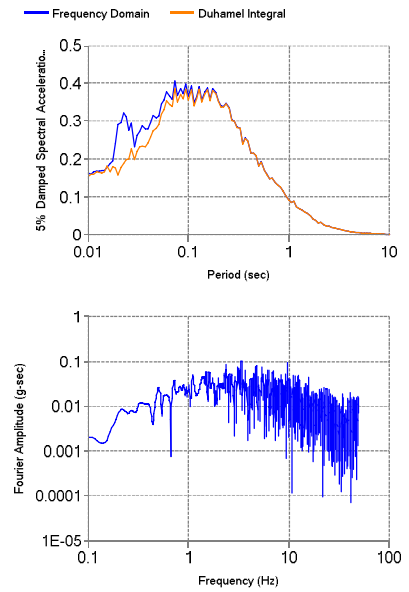
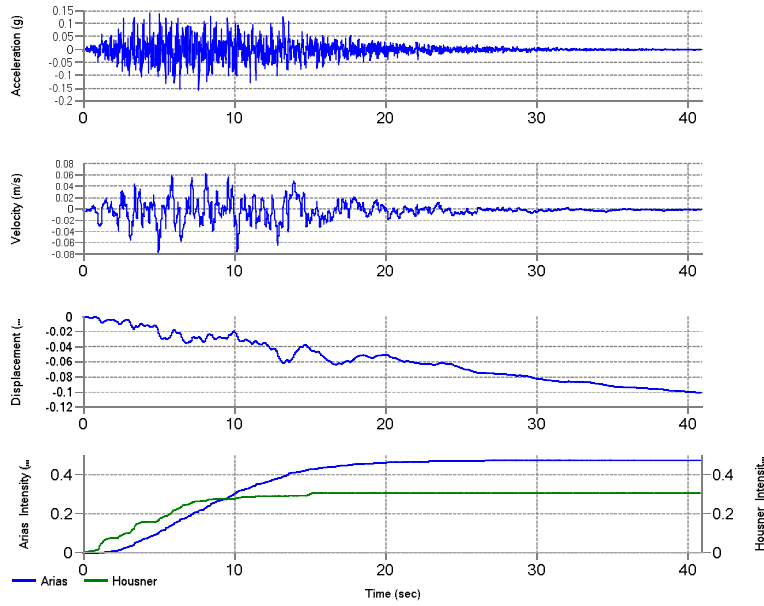
FEE6 Unscaled



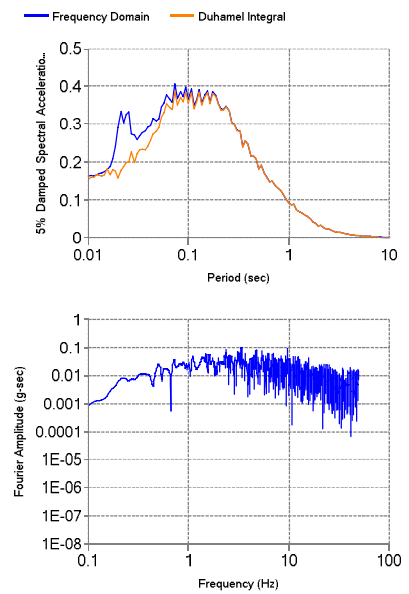
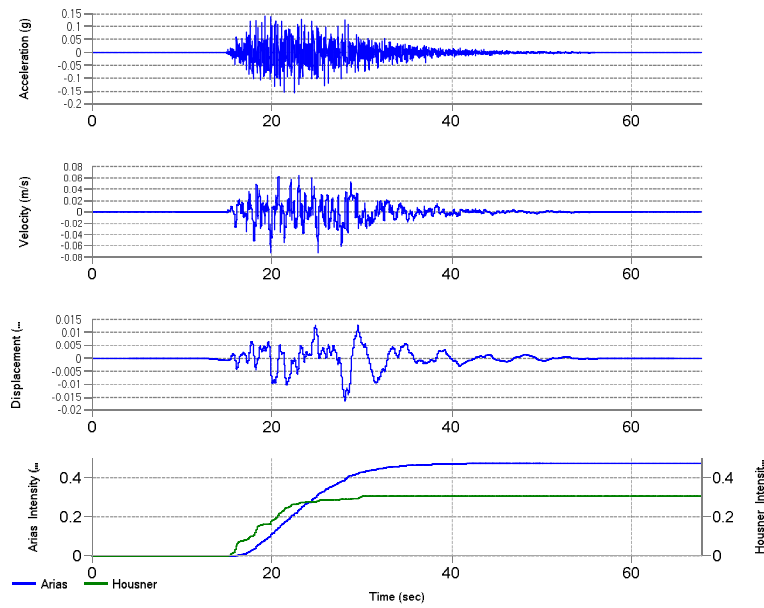
FEE6 Unscaled & Corrected



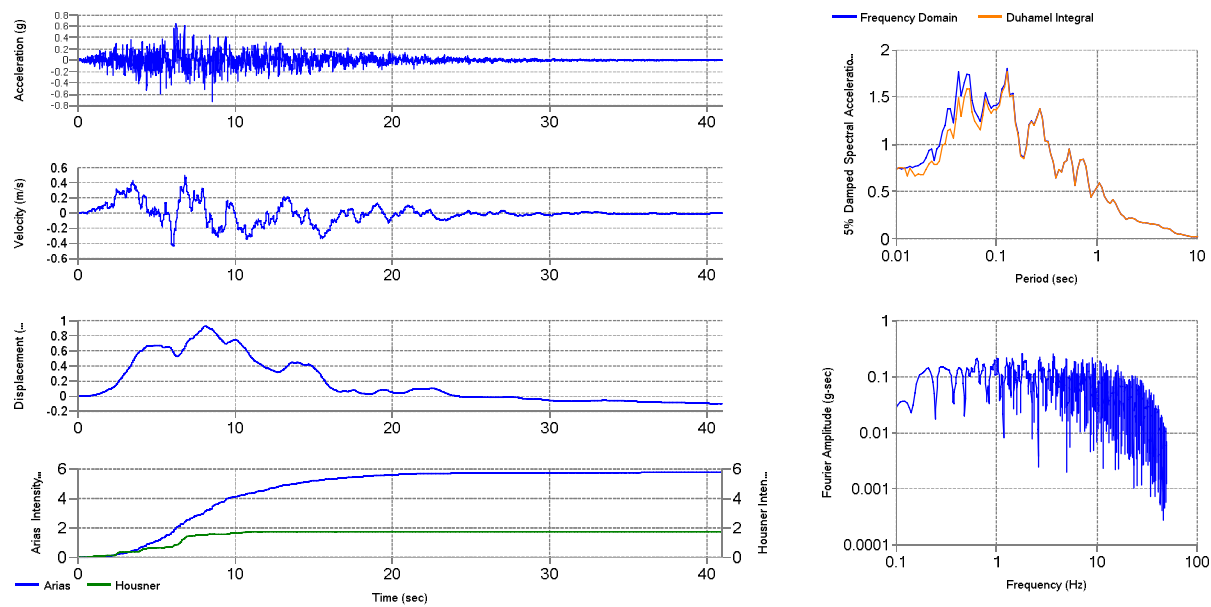
## FEE6 Scaled



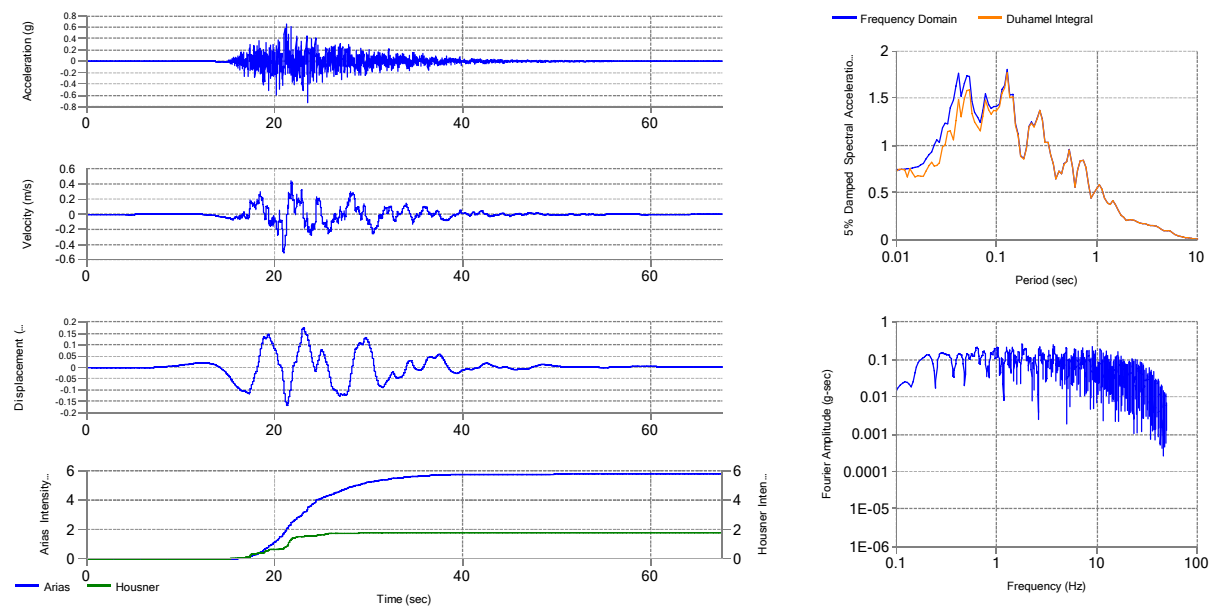
## FEE6 Scaled & Corrected



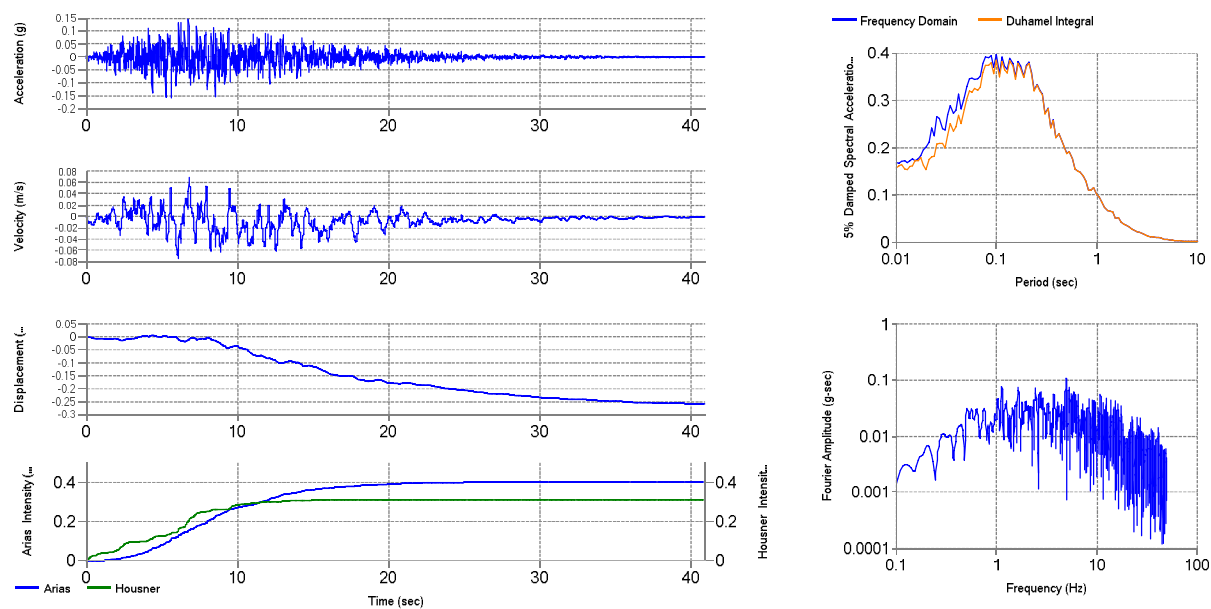
FEE7 Unscaled



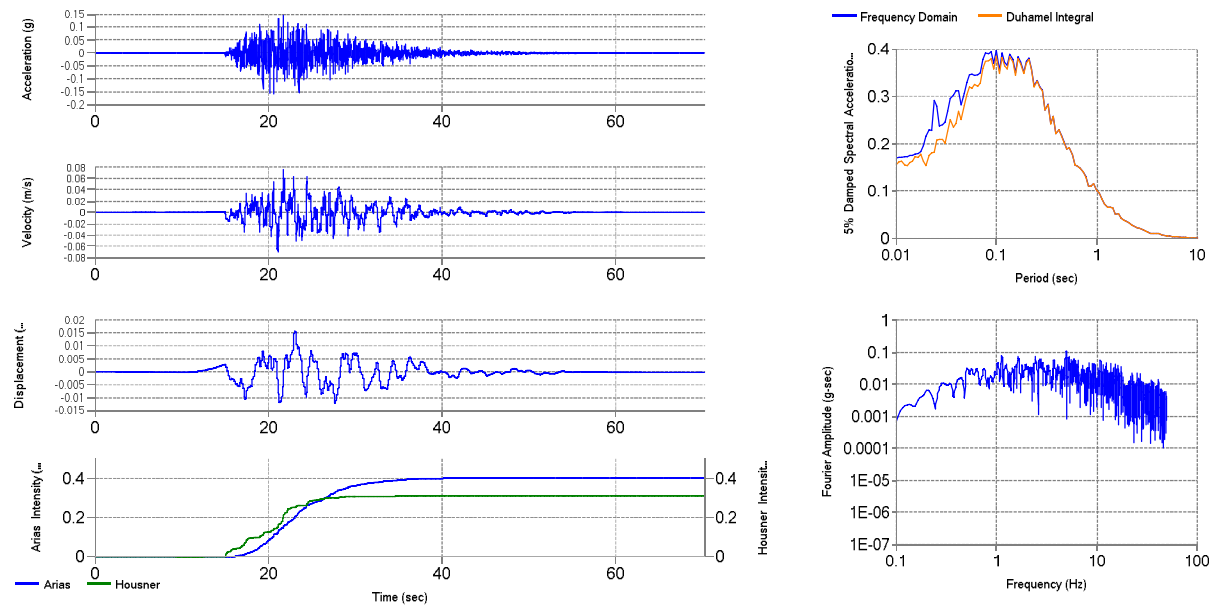
FEE7 Unscaled & Corrected



FEE7 Scaled



FEE7 Scaled & Corrected





summary\_see1.txt

THIS FILE CONTAINS THE RESULTS FROM ONE EXECUTION  
OF PROGRAM scenario\_pc (Martin Chapman, 2006).

THE NAME OF THE DIRECTORY CONTAINING THIS FILE  
AND ALL ASSOCIATED OUTPUT FILES IS: Port\_Access\_SEE1

2% PROBABILITY OF EXCEEDANCE (For 50 year Exposure)  
FOR GEOLOGICALLY REALISTIC SITE CONDITION

#### RESULTS OF INTERPOLATION

Site Location: 32.8380 N 79.9524 W  
Nearest Grid Point: 32.8750 N 80.0000 W Distance From Site: 6.05 Km  
Thickness of sediments, meters: 794.8

PSA and PGA as Percentage of g							
0.5Hz	1.0Hz	2.0Hz	3.3Hz	5Hz	6.7Hz	13Hz	PGA
22.82116	48.86403	83.54157	112.00550	129.82010	130.15640	123.00260	70.72472

Interpolated results from USGS Deaggregation 2002								
Freq.	R(mean)	km	mag(mean)	eps0(mean)	R(modal)	km	mag(modal)	eps0(modal)
PGA	19.1		7.04	.27	18.2		7.30	.02
5 Hz	20.6		7.14	.30	18.7		7.30	.13
1 Hz	23.3		7.23	.25	18.6		7.30	.06

#### TIME SERIES GENERATED BY THIS RUN

The time series defined below is scaled using a  
phase-invariant method to match the entire  
uniform hazard PSA spectrum given above.

Number of points used in time series is: 4096  
Time step used: .01  
Seed used: -1

#### SCENARIO EVENT

Moment magnitude: 7.36  
Epicentral distance (km): 16.0

Motions are based on either a 1 or 2 layer geological structure  
overlying a basement half space.  
The first layer represents a sedimentary layer with  
Vs=700 m/s, density 2.0 gm/cc and Q=100.0 The thickness of  
the first layer is by default that assumed in the hazard  
calculations. This can be changed by the user.  
The second layer represents weathered rock (Vs=2.5 km/sec).  
Sediment layer thickness used for time series simulations: 794.77 m

thickness(meters)	Vs(m/sec)	density(gm/cc)	Q
794.77	700	2.0	100.0

# summary\_see1.txt

250	2500	2.5	600
-----			
INF	3500	2.6	680f^0.36

The unscaled time series is contained in the file "unscaledtime.dat". The units are cm/sec^2 versus seconds.

The PSA spectrum for the unscaled time series is contained in the file "unscaledpsa.dat". The units are cm/sec^2 versus frequency in Hz.

The same spectrum with x axis in terms of period in seconds is in file "unscaledpsa\_t.dat"

The scaled time series is contained in the file "scaledtime.dat." The units are cm/sec^2.

The PSA spectrum for the scaled time series is contained in the file "scaledpsa.dat". The units are cm/sec^2 versus frequency in Hz.

The same spectrum with x axis in terms of period in seconds is in file "scaledpsa\_t.dat"

## SUMMARY OF STOCHASTIC MODELING:

### ACCELERATION RECORD

brune source model

PEAK AMPLITUDES: -.504370E+03 .540669E+03

INTEGRAL OF SQUARED AMPLITUDES: .383810E+06

RMS AMPLITUDE: .968006E+02

T1: .227000E+01 T2: .166200E+02 DURATION: .143500E+02

N: 4096 DT: .010 SEED: -1

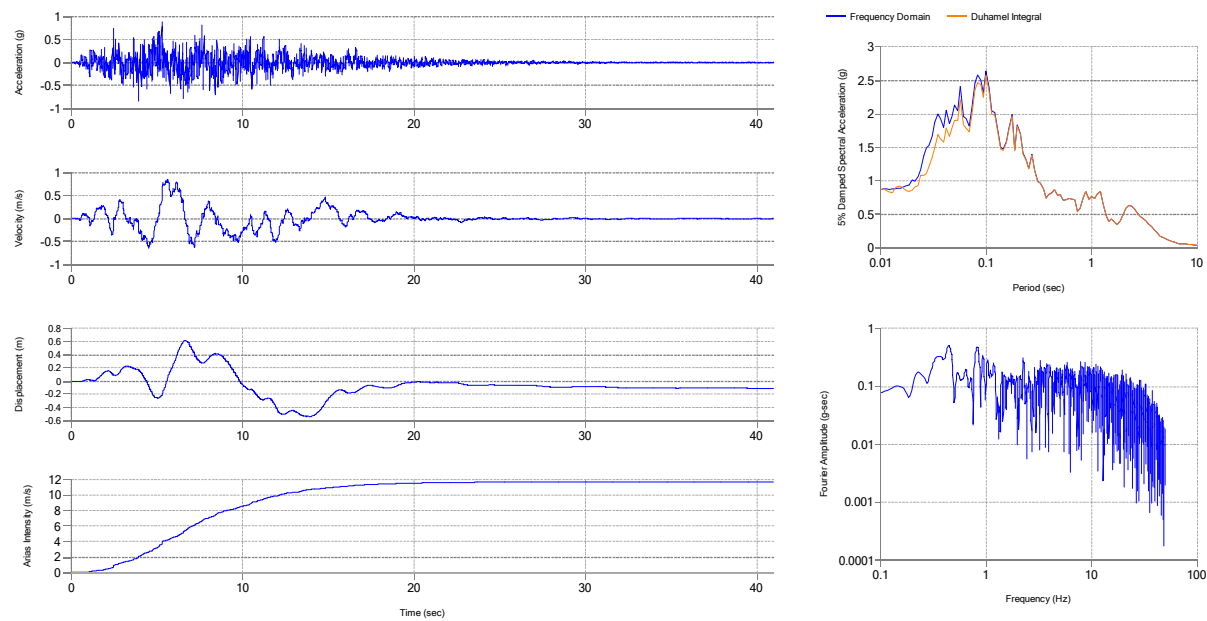
MOMENT: .123027E+28 VELOCITY: .360000E+06 DENSITY: .260000E+01

STRESS DROP: .100000E+03 FMAX (RAD/SEC): .251327E+03

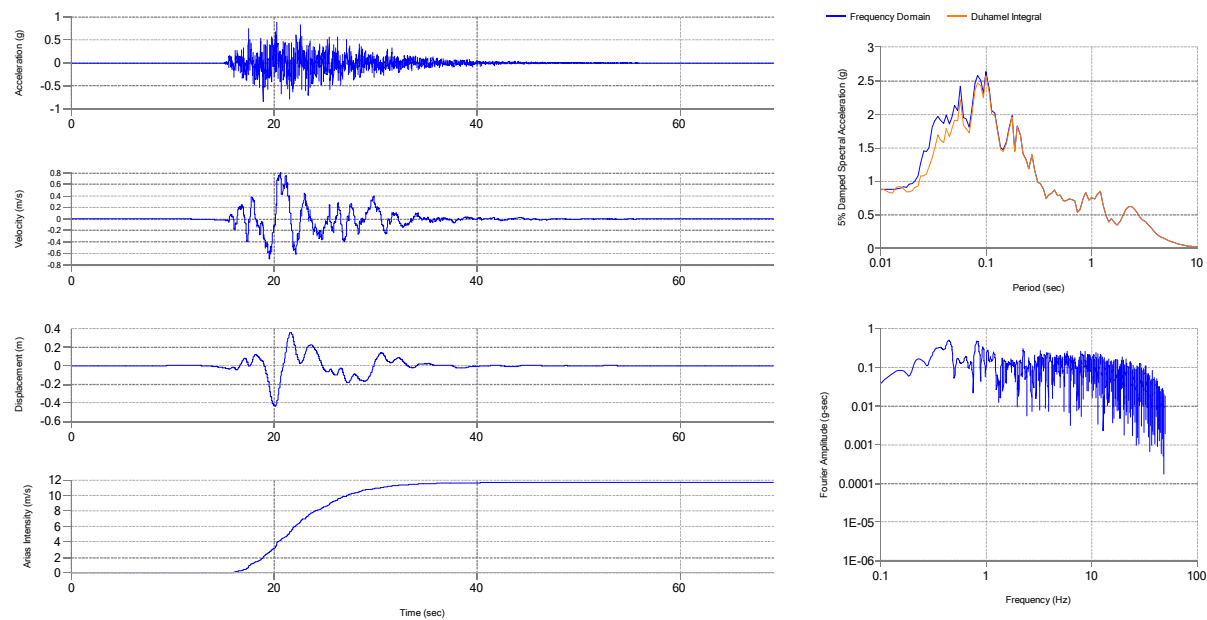
Q: .680000E+03 EXPONENT: .360000E+00

EP. DIS.: .160000E+02 CROSSOVER: .100000E+03 FOCAL DEPTH: .100000E+02

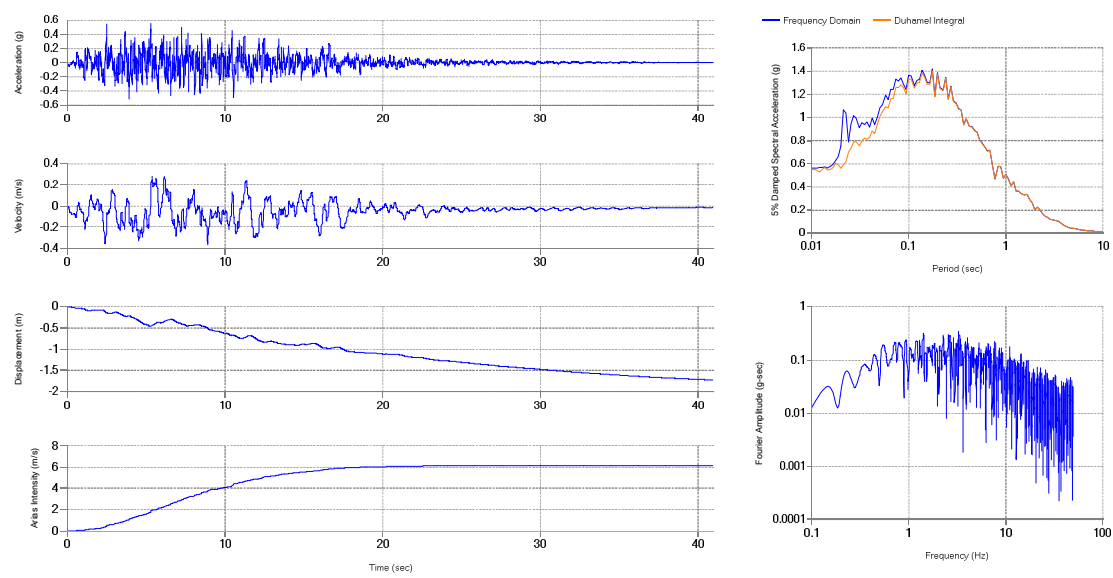
SEE1 Unscaled



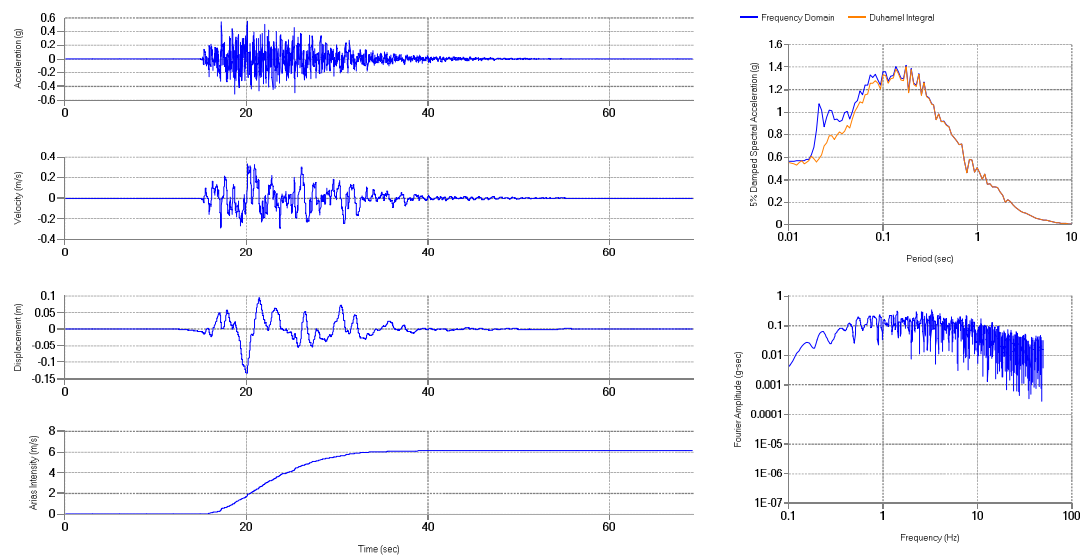
SEE1 Unscaled & Corrected



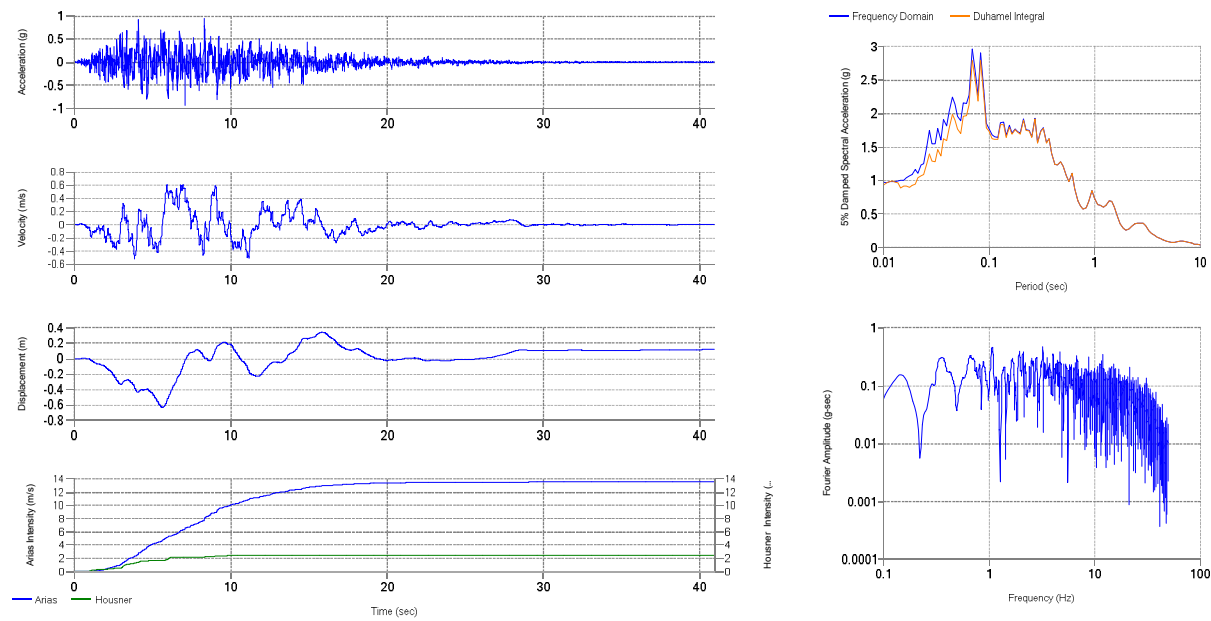
SEE1 Scaled



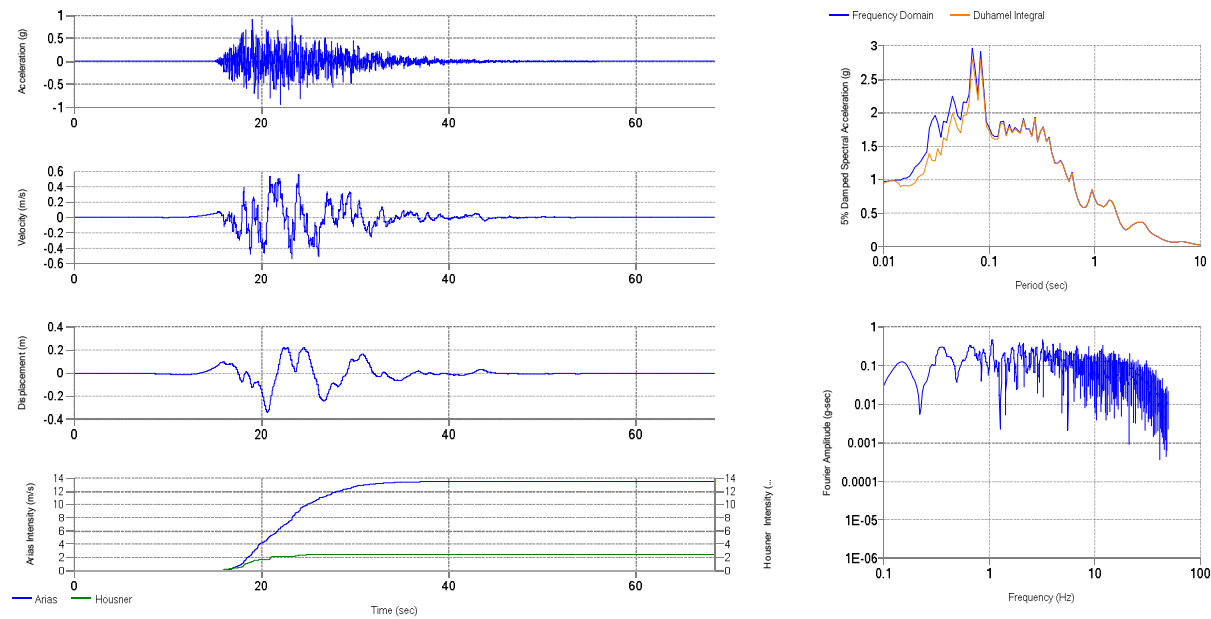
SEE1 Scaled & Corrected



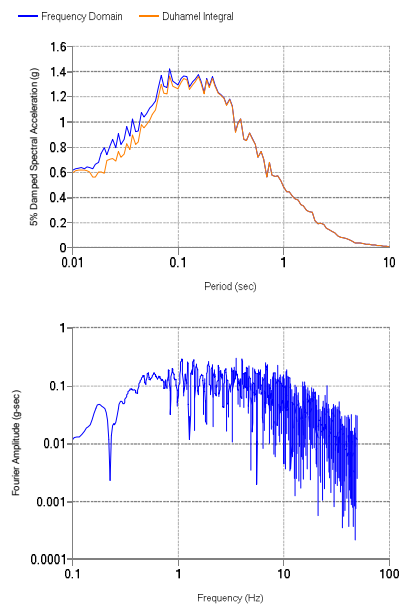
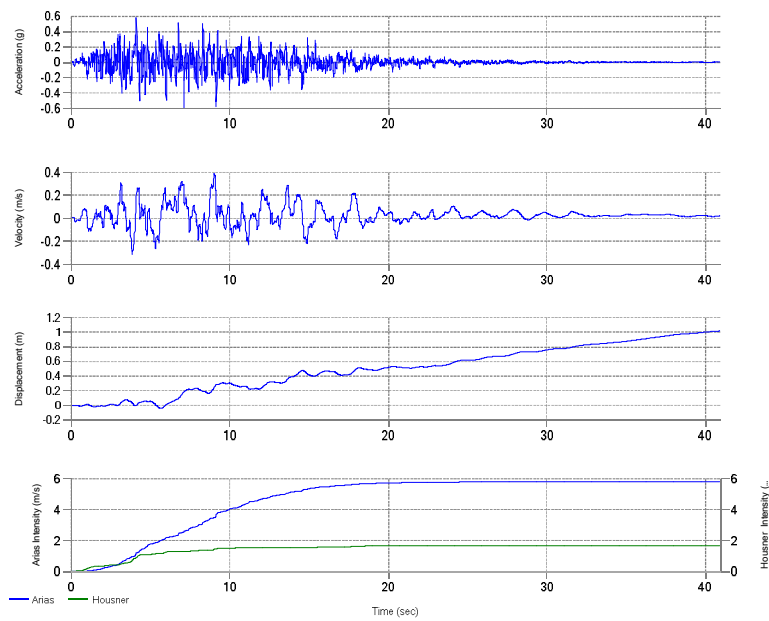
SEE2 Unscaled



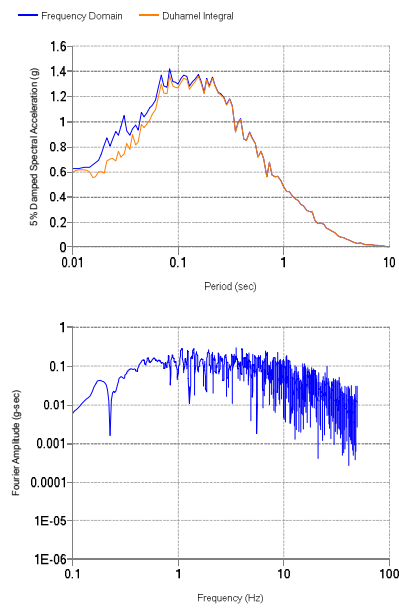
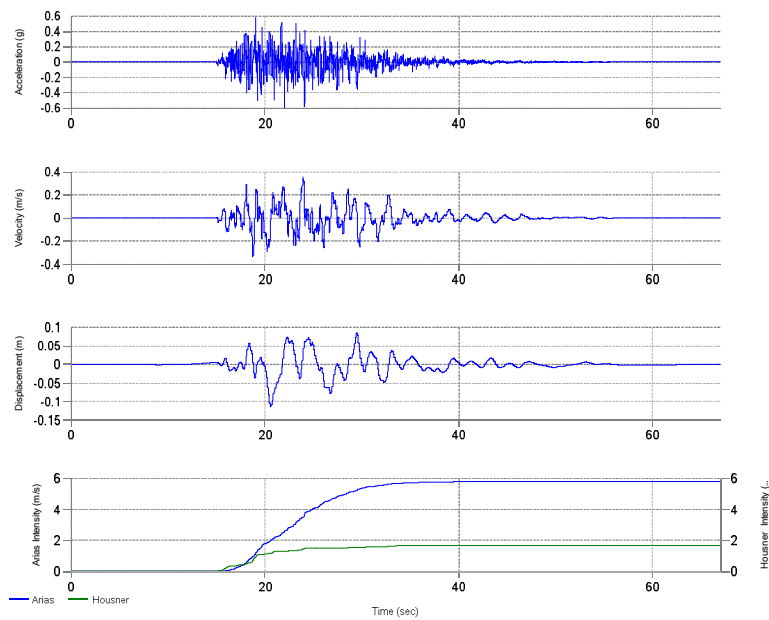
SEE2 Unscaled & Corrected



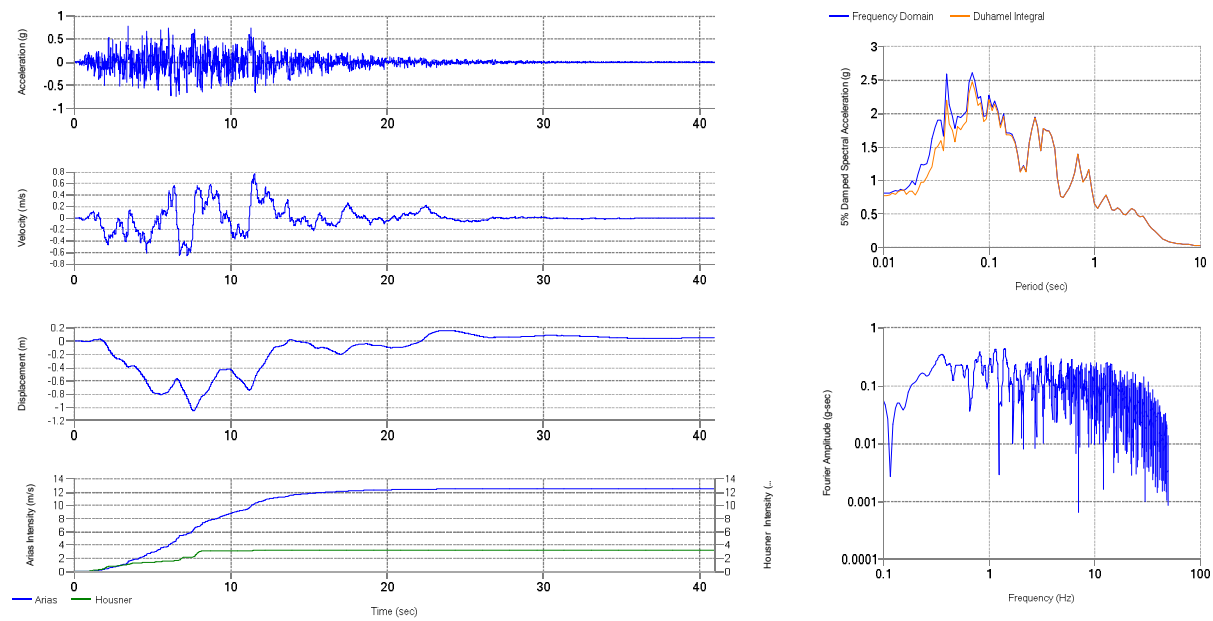
SEE2 Scaled



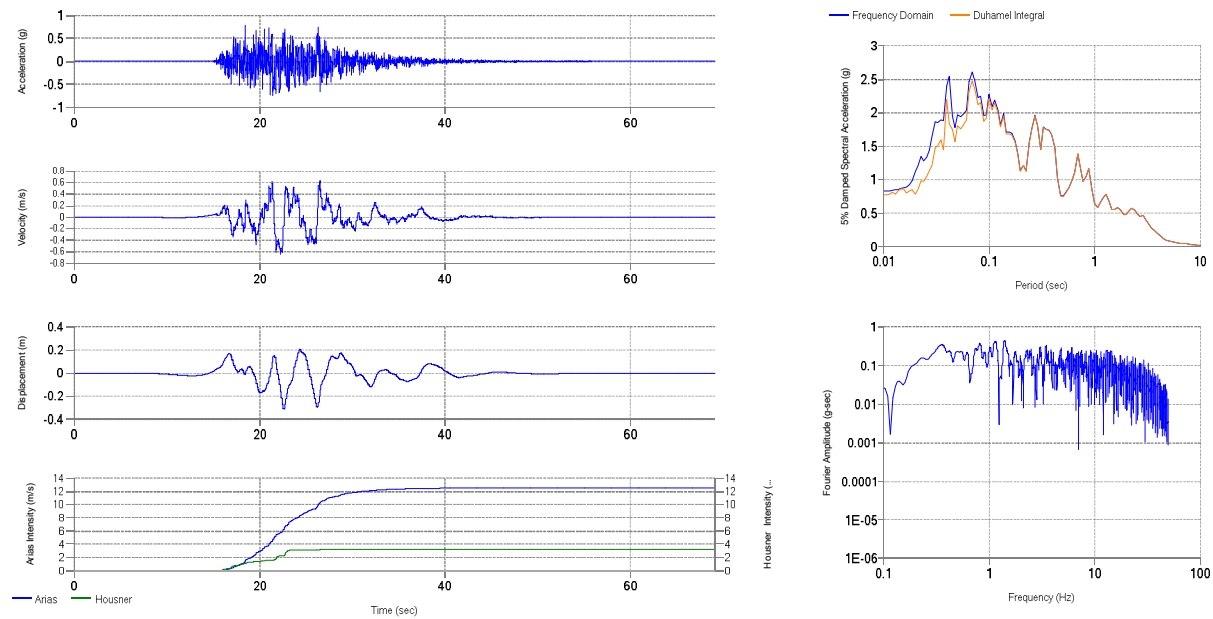
SEE2 Scaled & Corrected



SEE3 Unscaled

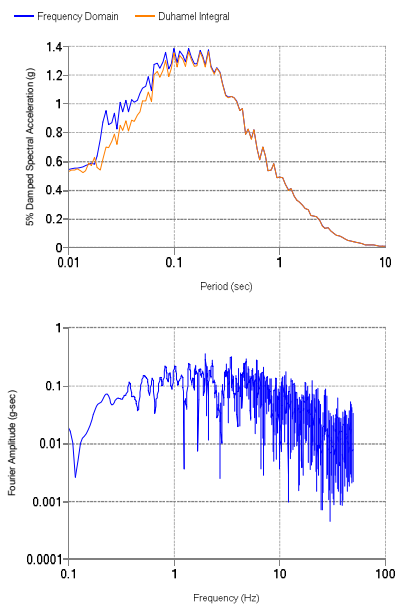
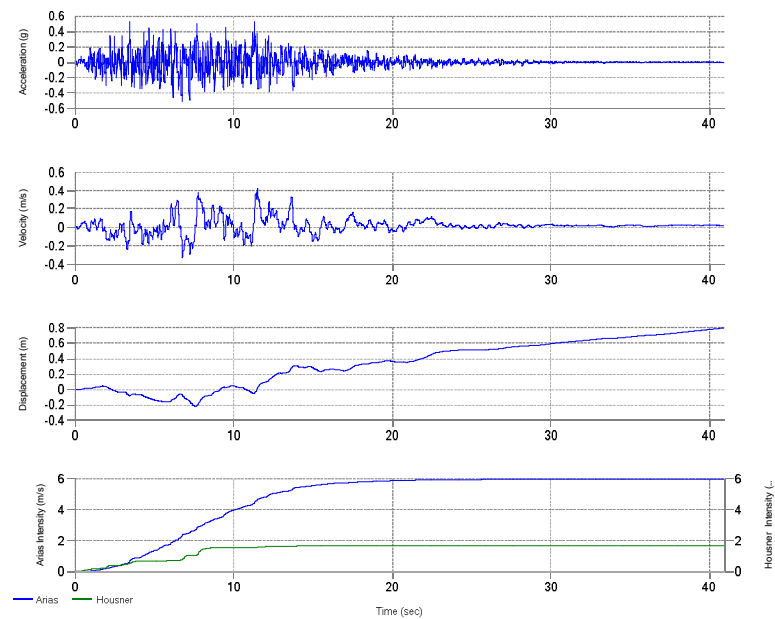


SEE3 Unscaled & Corrected

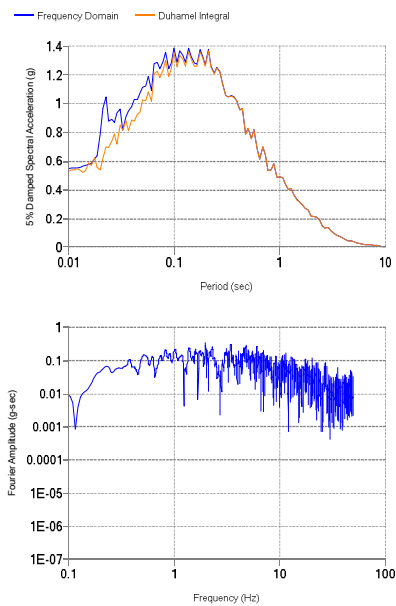
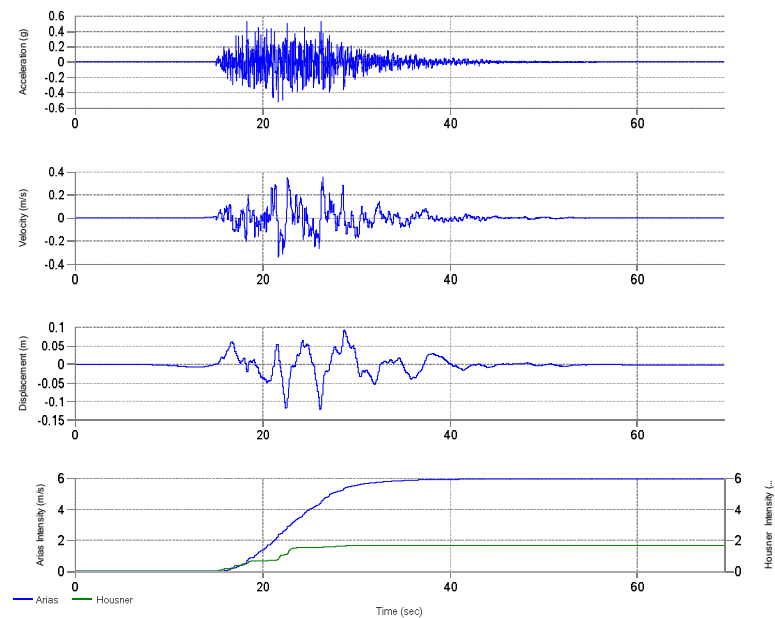




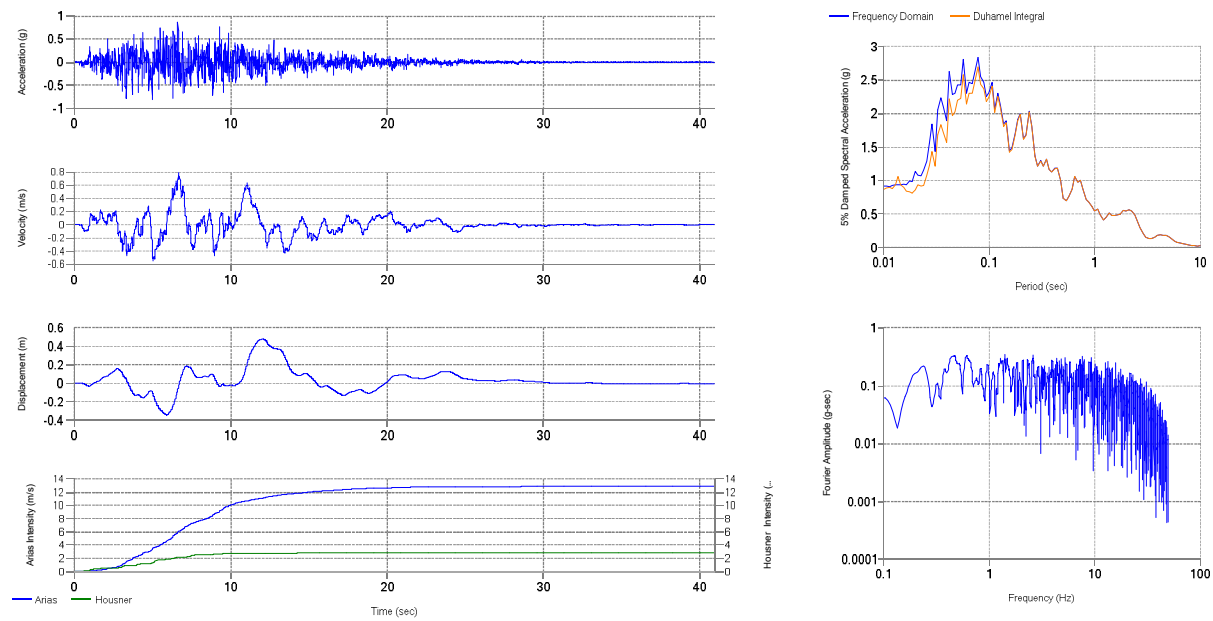
SEE3 Scaled



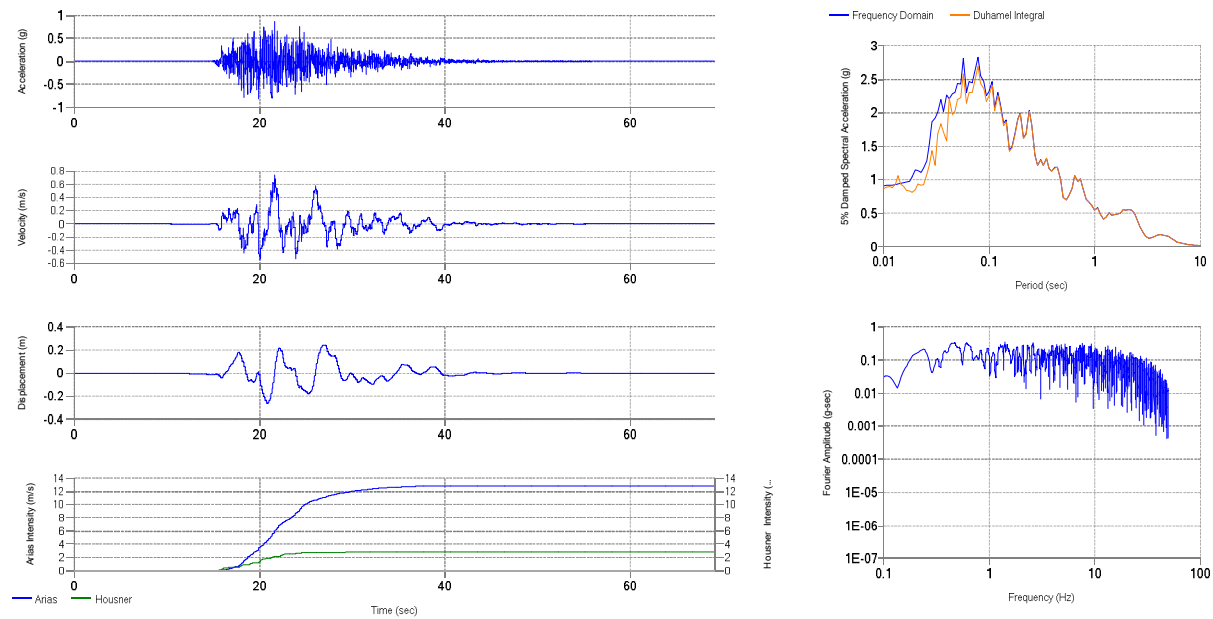
SEE3 Scaled & Corrected



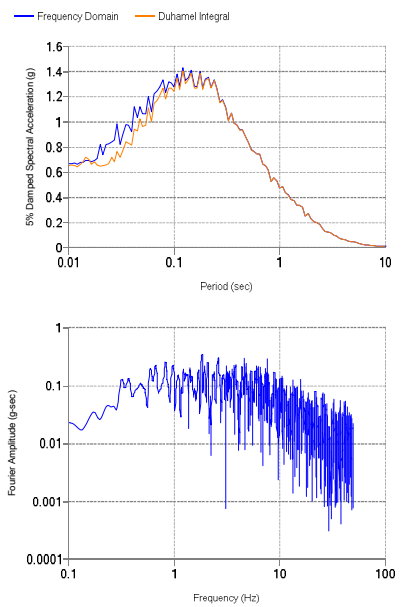
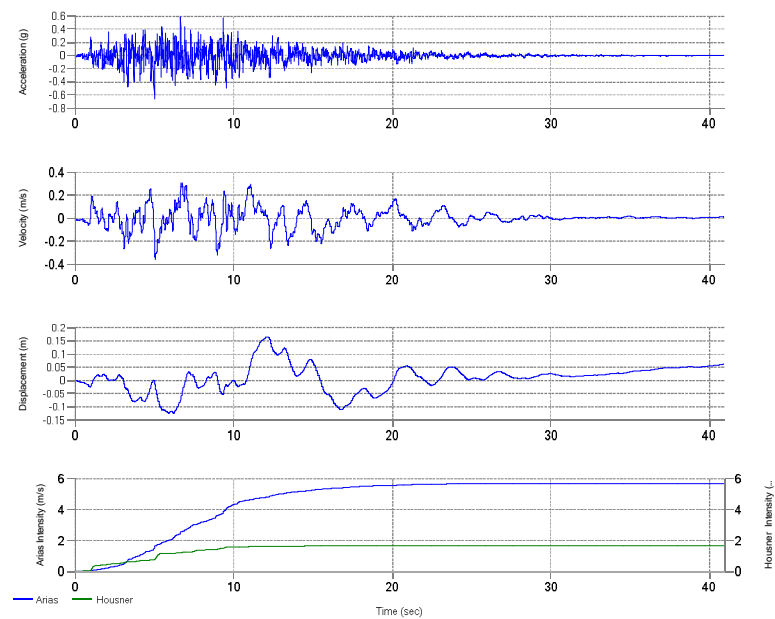
SEE4 Unscaled



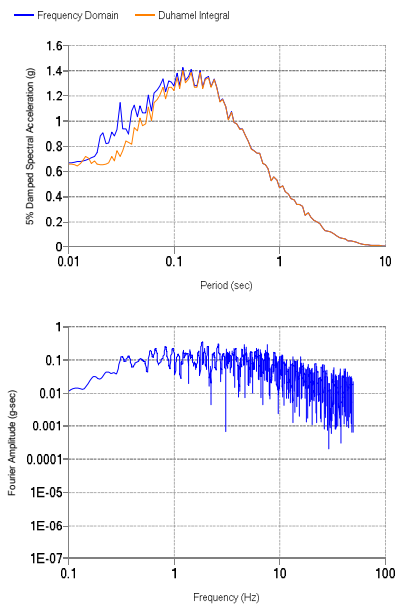
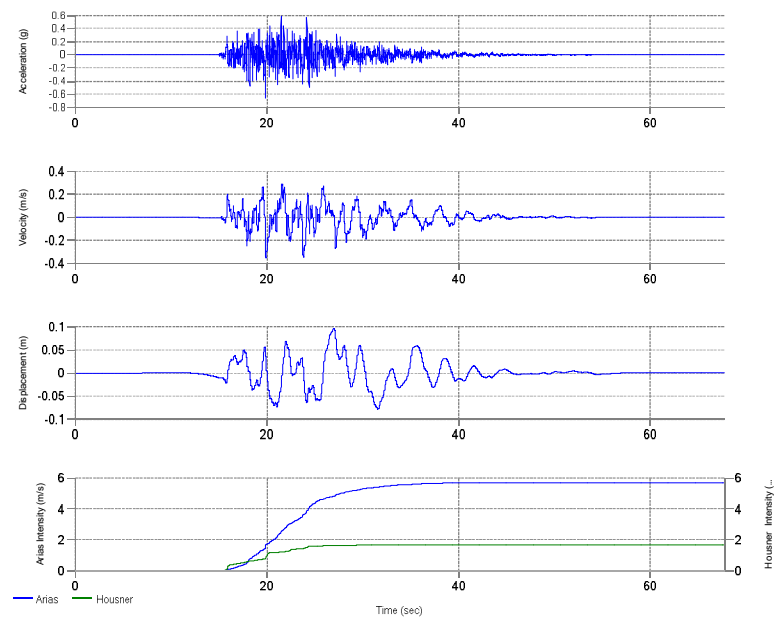
SEE4 Unscaled & Corrected



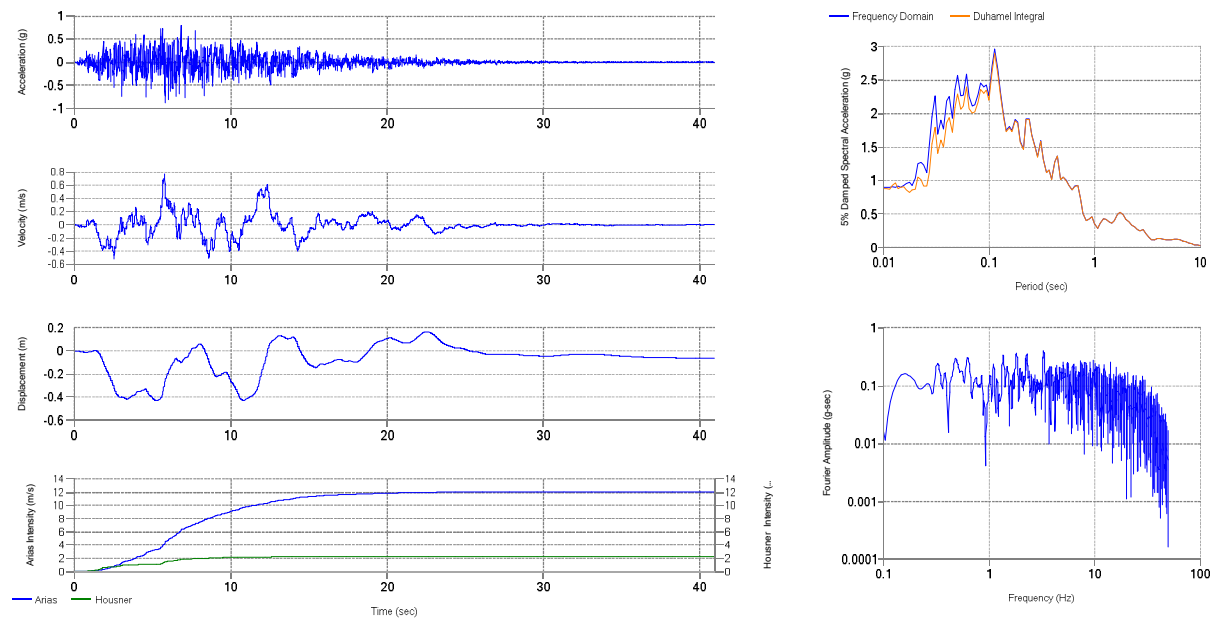
SEE4 Scaled



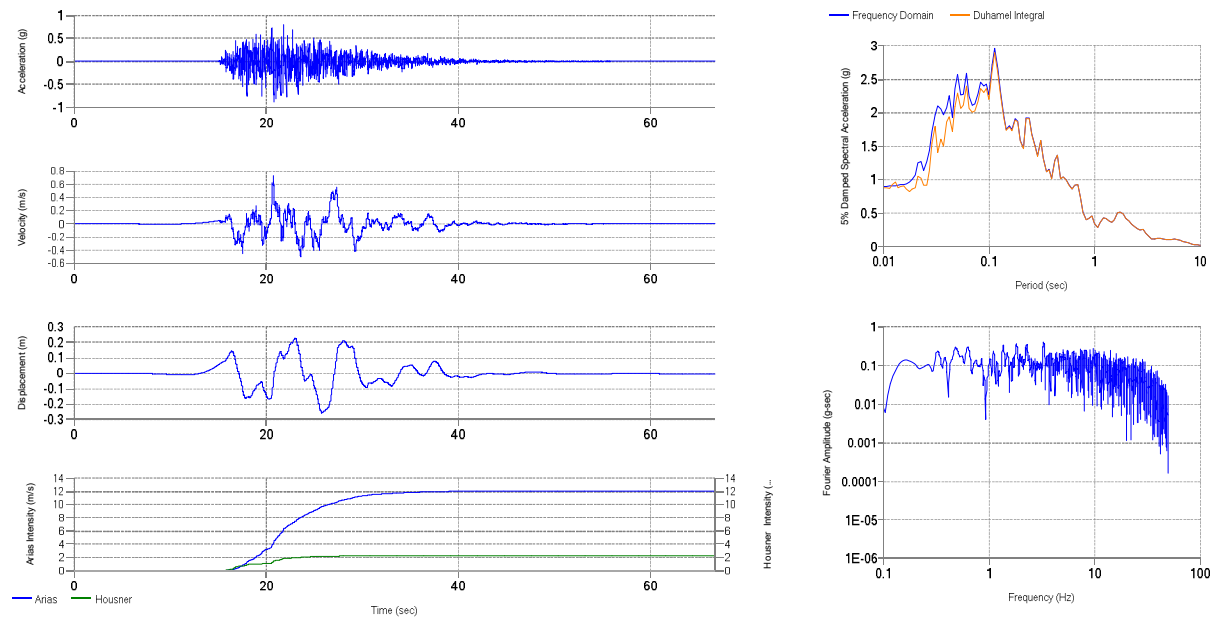
SEE4 Scaled & Corrected



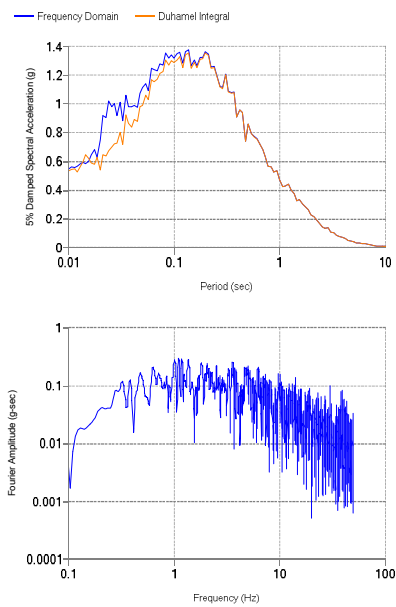
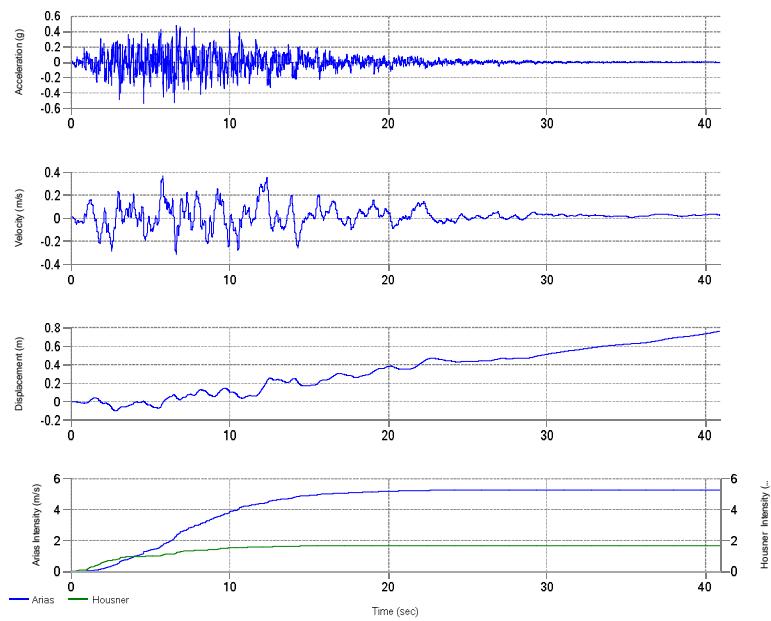
SEE5 Unscaled



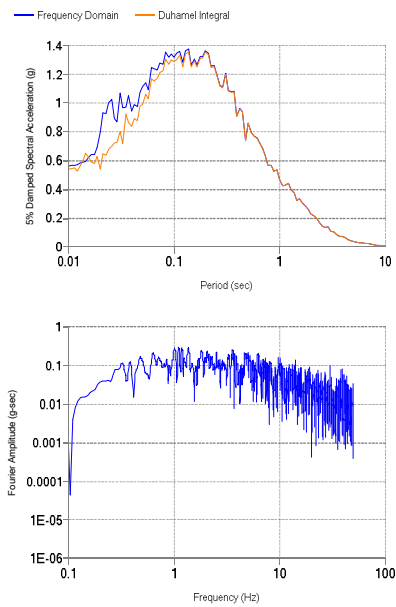
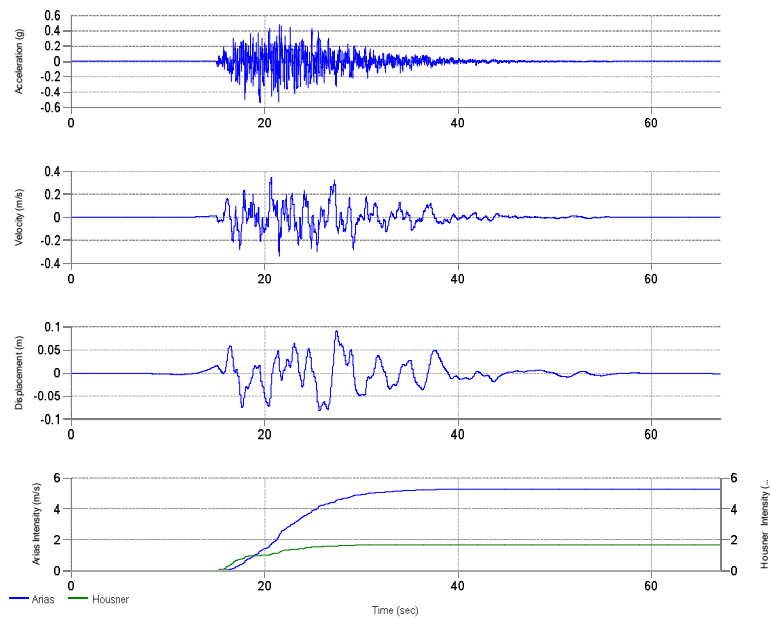
SEE5 Unscaled & Corrected



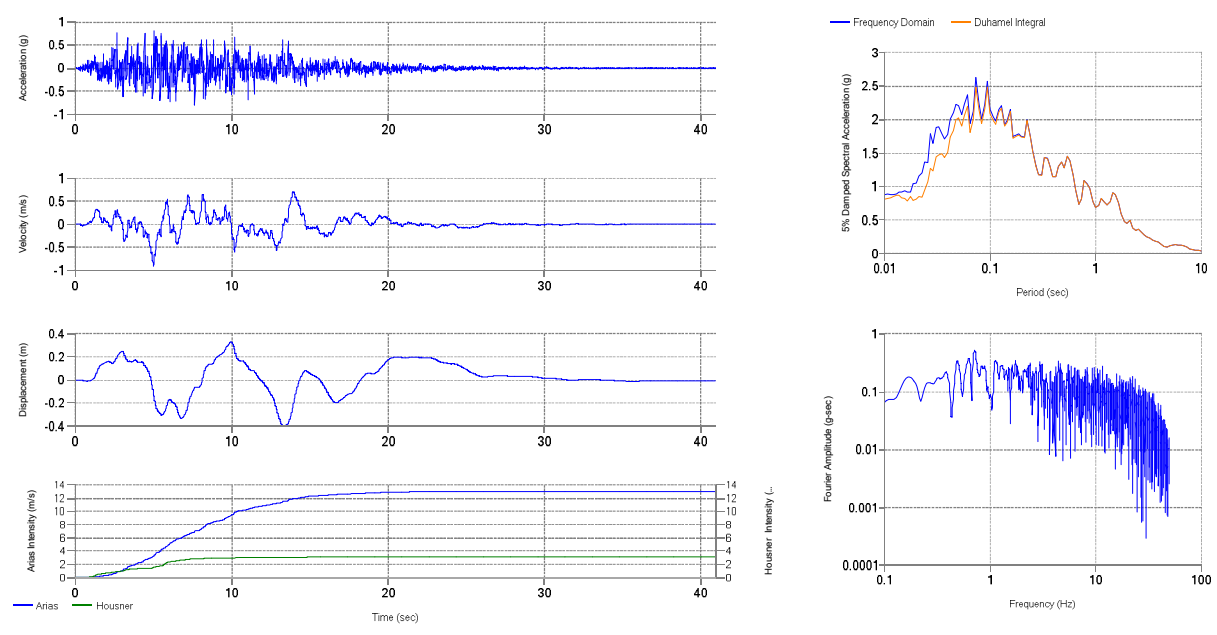
SEE5 Scaled



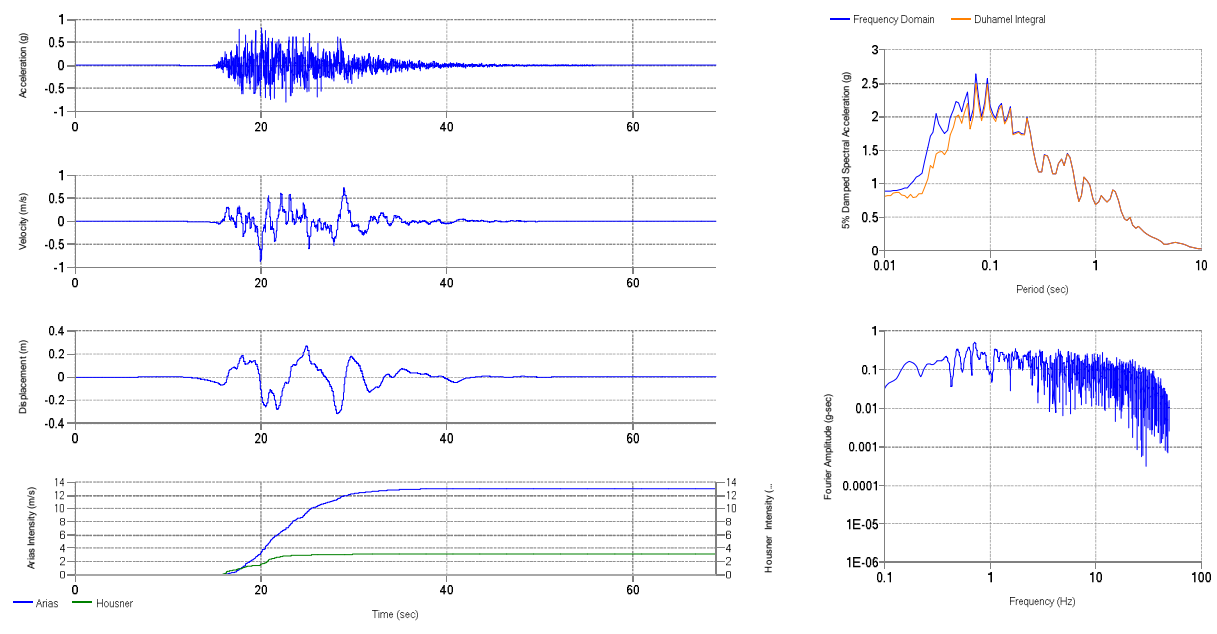
SEE5 Scaled & Corrected



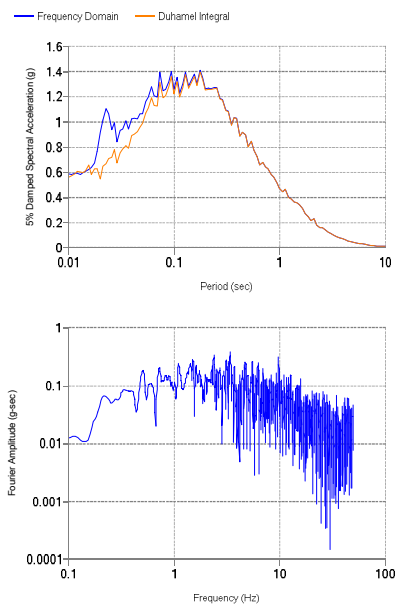
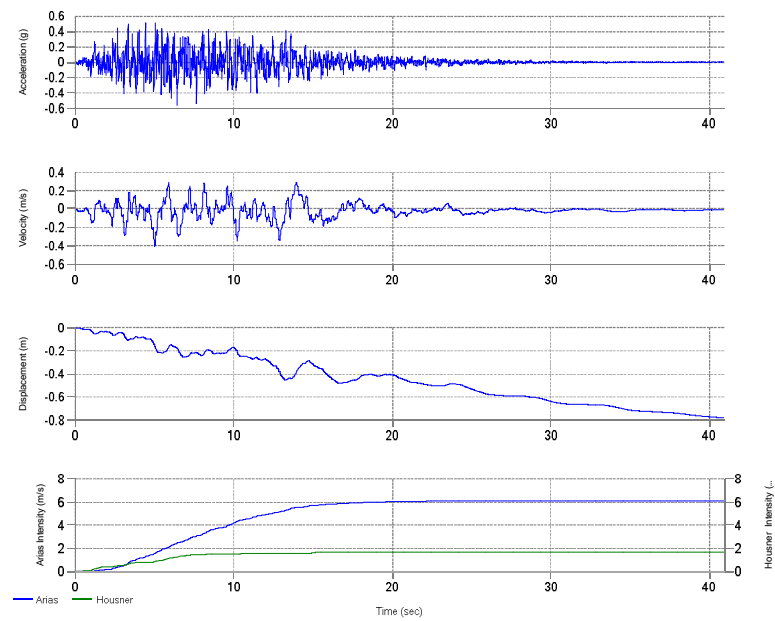
SEE6 Unscaled



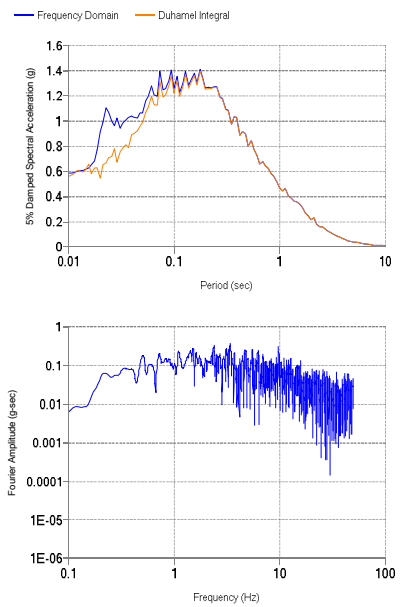
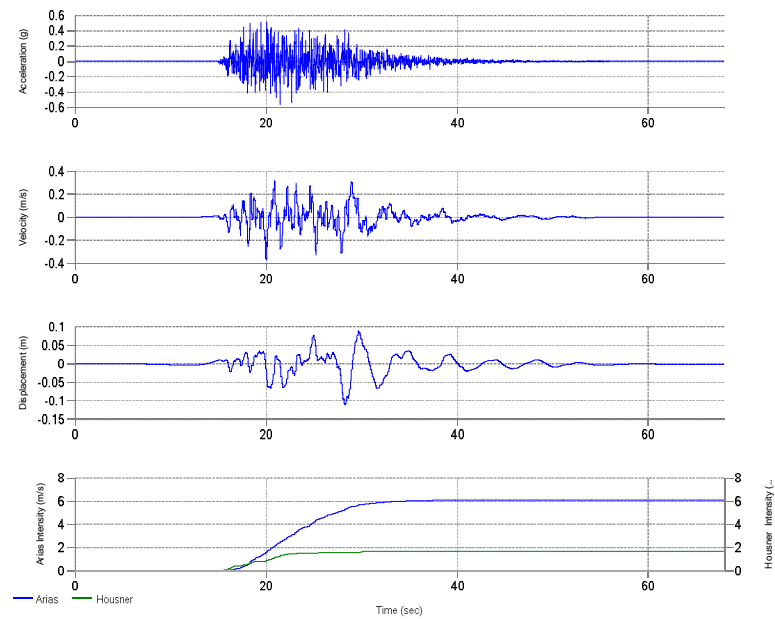
SEE6 Unscaled & Corrected



SEE6 Scaled

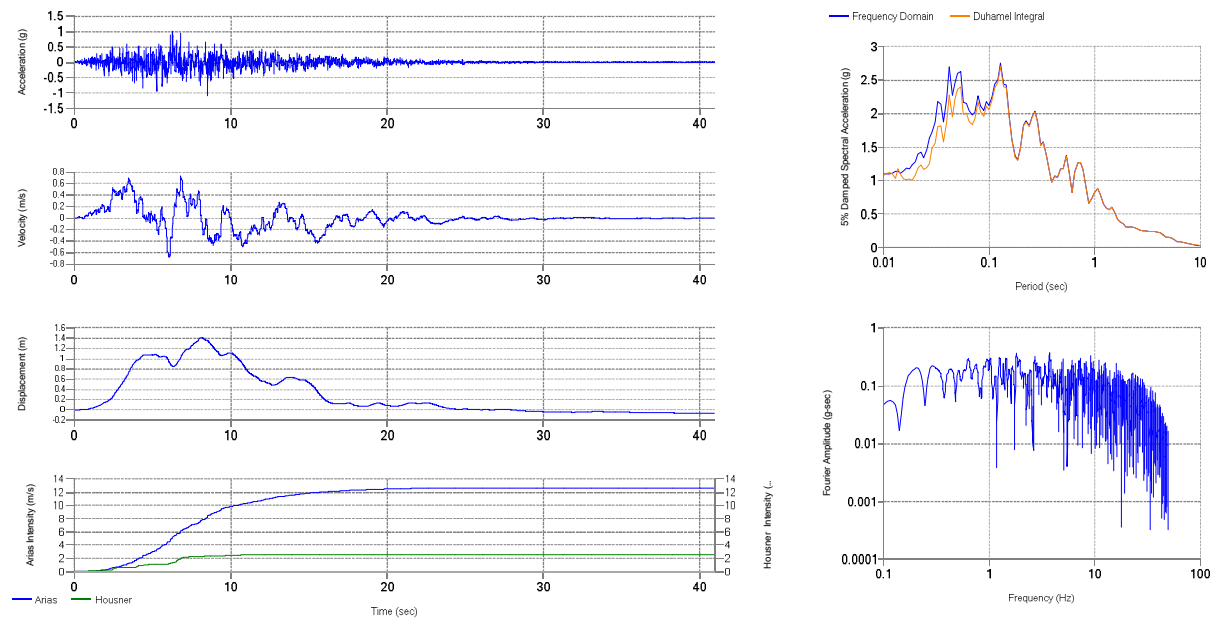


SEE6 Scaled & Corrected

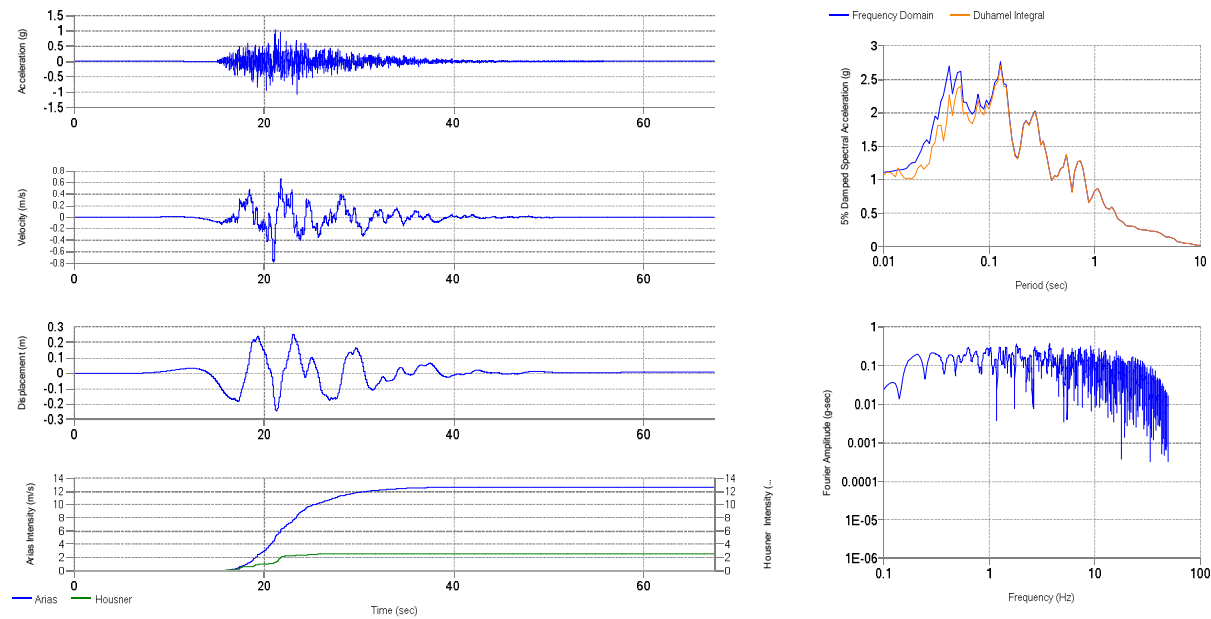




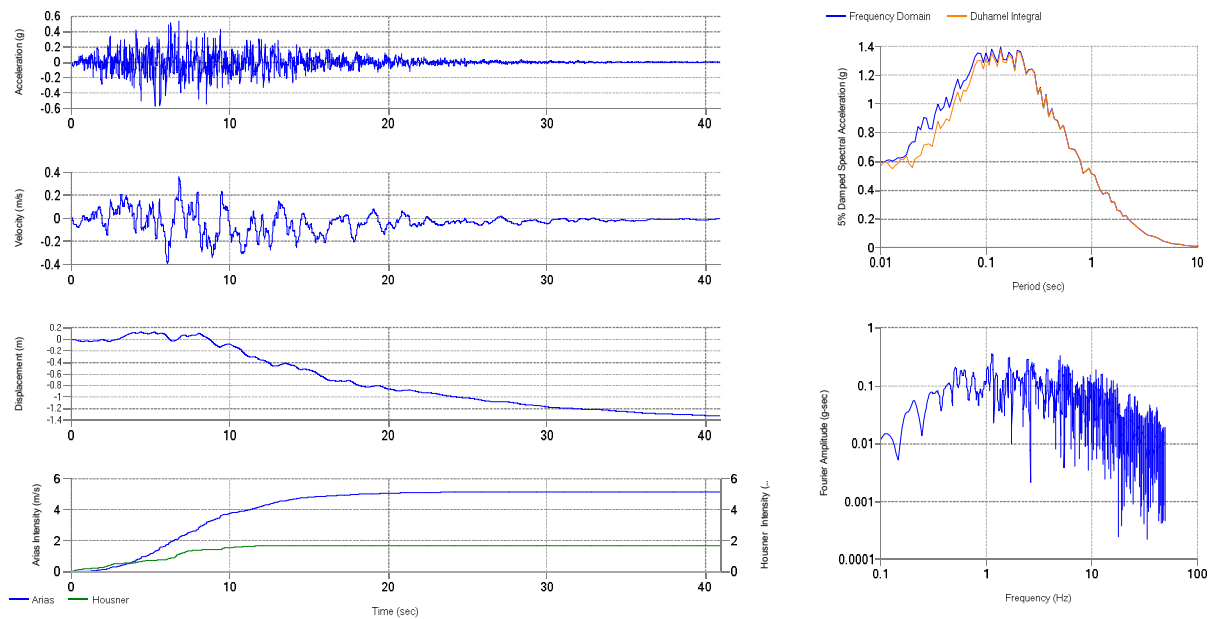
SEE7 Unscaled



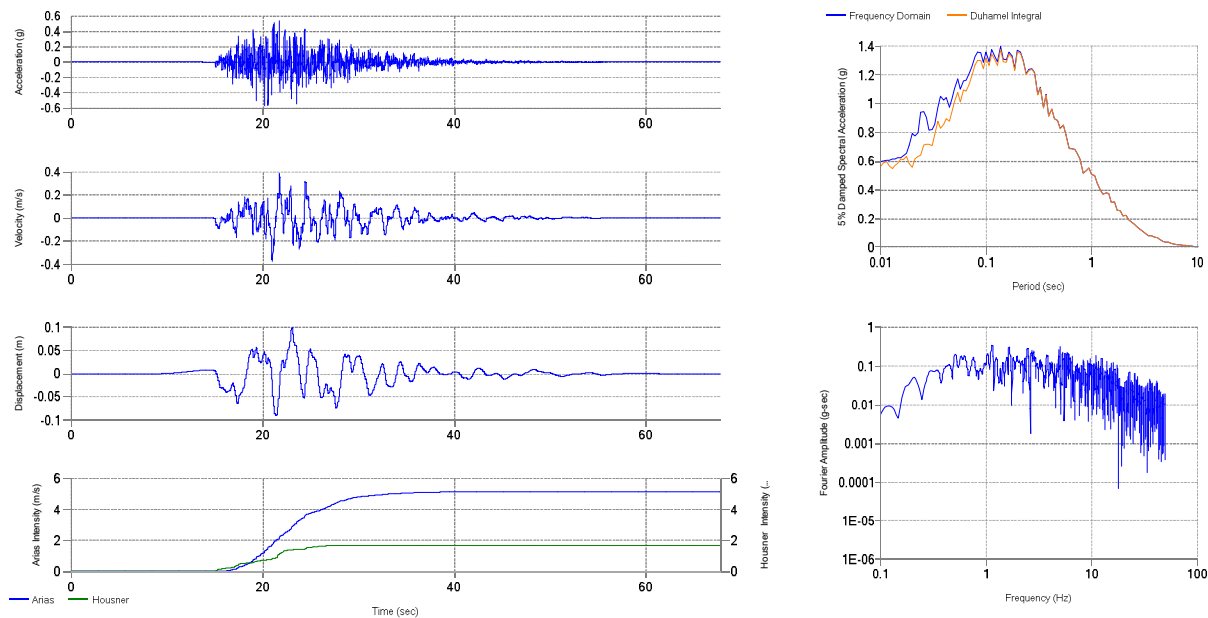
SEE7 Unscaled & Corrected



SEE7 Scaled



SEE7 Scaled & Corrected



**S&ME Project Name / No.:** Port Access Rd SSRA/ 1413-15-075

**SCDOT Project ID:** 0037345

**Contract Reference:** SCDOT Work Order SME#3-18-37345, dated Jun 5, 2015

**To:** Trapp Harris, PE, Chris Gaskins, PE, Nick Harman, PE, Jeff Sizemore, PE – SCDOT

**C:** Dr. Youssef Hashash, PE – Consultant; Dr. Sanjoy Chakraborty, PE – CDM Smith

**From:** Billy Camp, PE, D.GE & Michael Ulmer, PE – S&ME, Inc.

**Date:** June 19, 2015

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## Introduction

S&ME organized a meeting this week that brought together our staff that are assigned to the Port Access Road site-specific response analysis (SSRA) project, our consultant/advisor Dr. Youssef Hashash, and our peer reviewer Dr. Sanjoy Chakraborty. One topic of discussion was the ground motion data that were provided by the SCDOT (i.e., Scenario\_pc output). The provided data include target response spectrum, unscaled and scaled acceleration time histories, and response spectra of the unscaled and scaled time histories. After processing, plotting, and reviewing these ground motion files, three issues were identified that we want to bring to your attention.

## Issues

A total of 28 ground motions were provided: seven unscaled and seven scaled for each of the two design events (i.e., FEE and SEE). All 28 motions have been processed and plotted using DEEPSOIL, and example plots are included as Figures 1 through 4. Figures 1 and 2 present acceleration, velocity, displacement, and energy time histories for the scaled and unscaled motions. The figures also include the Fourier amplitude spectra of the motions and the response spectrum computed in two different ways: the conventional Duhamel Integral (DI) method and a more theoretically correct Frequency Domain (FD) method.

Figures 1 and 2 illustrate two issues that are of concern. First, the displacement time histories include a permanent displacement offset or drift of nearly  $\frac{1}{4}$  m for the FEE1 scaled motion and nearly 2 m for the SEE1 motion. These drift values are very large and are not present in the unscaled motions that were used as the seed motions for the spectral matching. The spectral matching process has apparently introduced unintended and unrealistic characteristics into the ground motions. A few of the provided ground motions do have smaller, more reasonable drift values, but the majority are similar to what is plotted in Figures 1 and 2. We will use the baseline correction feature of DEEPSOIL to remove the drift, but ideally, such correction should not have been needed as this can be handled during the spectral matching process.

The second issue of concern is illustrated in the response spectra and Fourier amplitude spectra plots. When the more theoretically correct FD method is used to compute the response spectrum, it agrees reasonably well with the DI method for the unscaled motions. However, for the scaled motions, the FD method produces a large spike in the very short period range (i.e., near 0.02s) that is not present in the DI method spectrum. Although not as obvious, the Fourier amplitude plots also indicate that there is

more energy near the 50 Hz range for the scaled motions than is present in the unscaled motions. As with our conclusions regarding the drift, both of these observations indicate that the spectral matching process has introduced unintended and unrealistic characteristics into the ground motions. We will use the DEEPSOIL linear interpolation calculation method for the time history interpolation in nonlinear analyses to reduce analytical problems created by the high frequency energy.

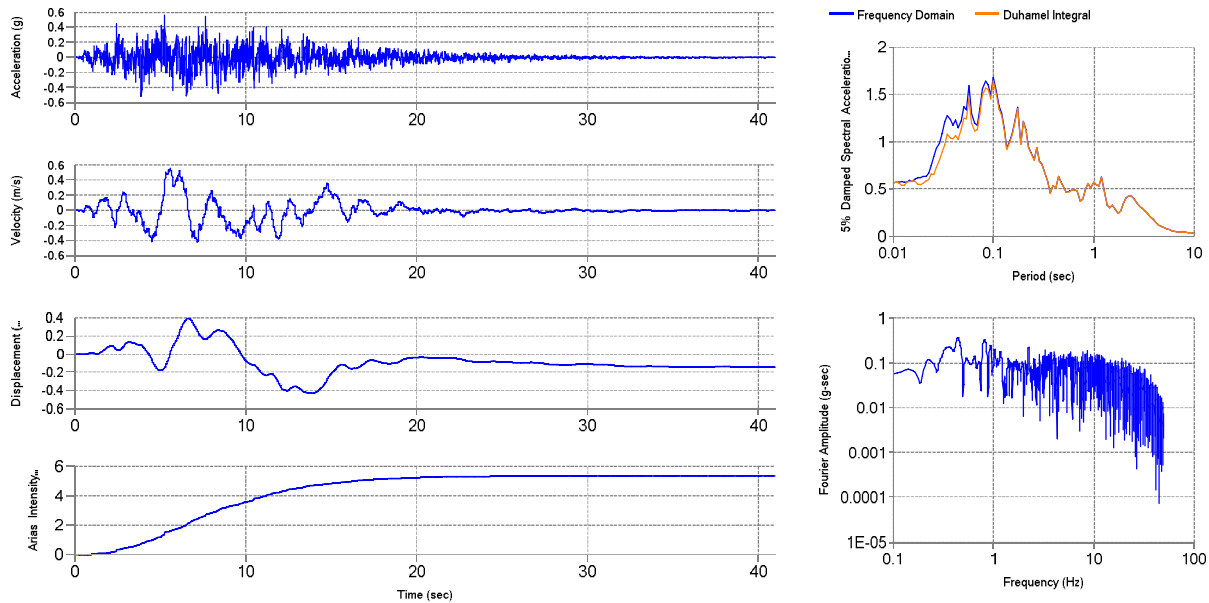
Figures 3 and 4 illustrate the third and potentially most significant issue of concern. These two figures include the response spectrum of each of the scaled, baseline corrected time histories (FEE on Figure 3 and SEE on Figure 4). The figures also include two target spectra. The dashed red line and points are the target PSA values that were included in the Scenario\_pc output files named “summary\_feex.txt” and “summary\_seex.txt” (where “x” is 1 through 7). We plotted PGA at a period of 0.001s to show it on a log scale graph. The black line is the target PSA as presented in the Scenario\_pc output files named “target\_t\_feex” and “target\_t\_seex”. As shown in the figures, the ground motions match the target spectrum very well at periods of 0.025s and greater (Note: All response spectra are computed using conventional DI procedure. When using FD procedure they will show a spike at ~0.02s). However, for both the FEE and SEE data, the PGAs of the provided ground motions are below the target PGA. More specifically, the seven FEE PGAs range from 69% to 83% of the target value of 0.20g and the seven SEE PGAs range from 76% to 93% of the target value of 0.71g. Additionally, the target PSA plotted as the black line includes a flat horizontal portion between 0.02s and 0.025 seconds, where it then immediately transitions into a more conventional looking spectrum shape. The horizontal line and abrupt transition would be very difficult to match and may be the cause of the high frequency energy that is apparent in the scaled ground motions.

### Summary

In summary, most of the motions include significant drift and a response spectrum spike around 0.02s. These issues will be addressed using available tools within DEEPSOIL (i.e., baseline correction and linear interpolation of the acceleration time history in the nonlinear calculation). All of the provided ground motions fall below the PGA target. Revised motions could be incorporated into our analyses if they are provided immediately, but some additional analysis time will be required, potentially jeopardizing the delivery date and budget. Considering the short schedule on this project, the provided motions will be used in our SSRA with this apparent inconsistency with the hazard.

**END**

(1a) FEE1 - Unscaled without Baseline Correction (Motion as provided by SCDOT)



(1b) FEE1 - Unscaled with Baseline Correction using DEEPSOIL

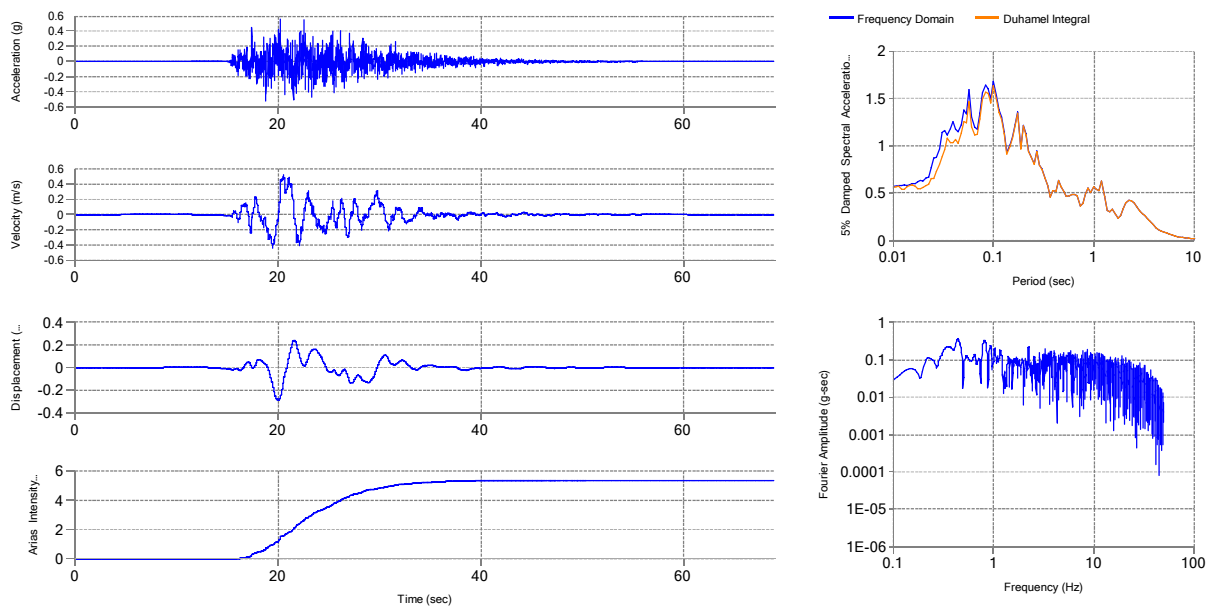
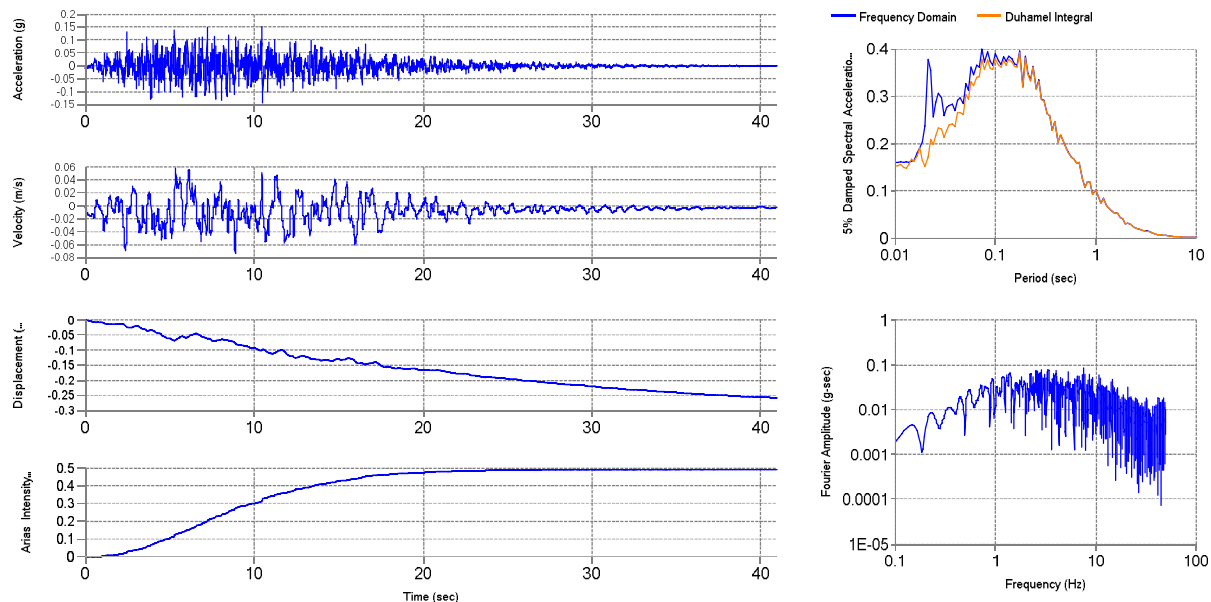


Figure 1 – FEE1 Ground Motion. Plots of acceleration, velocity, displacement, and energy time histories on the left. Response spectrum using Frequency Domain method (in red) and Duhamel Integral at top right and Fourier Amplitude on bottom right. Drift (displacement) without correction is relatively small and the Response Spectra plots are in reasonable agreement (1a).

(1c) FEE1 - Scaled without Baseline Correction (Motion as provided by SCDOT)



(1d) FEE1 - Scaled with Baseline Correction using DEEPSOIL

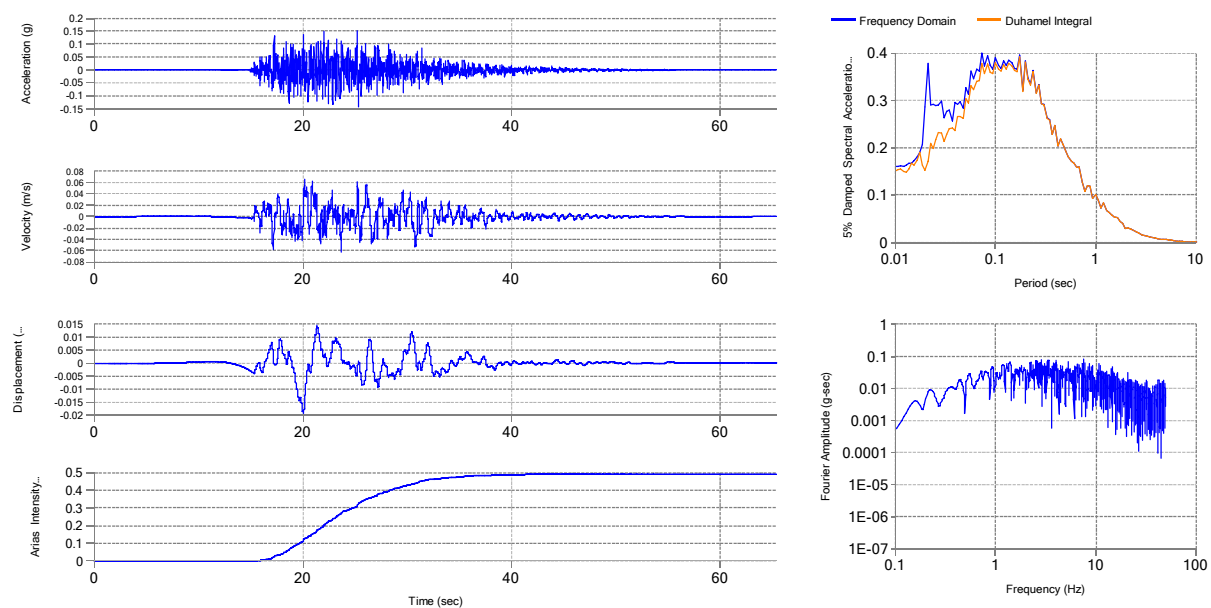
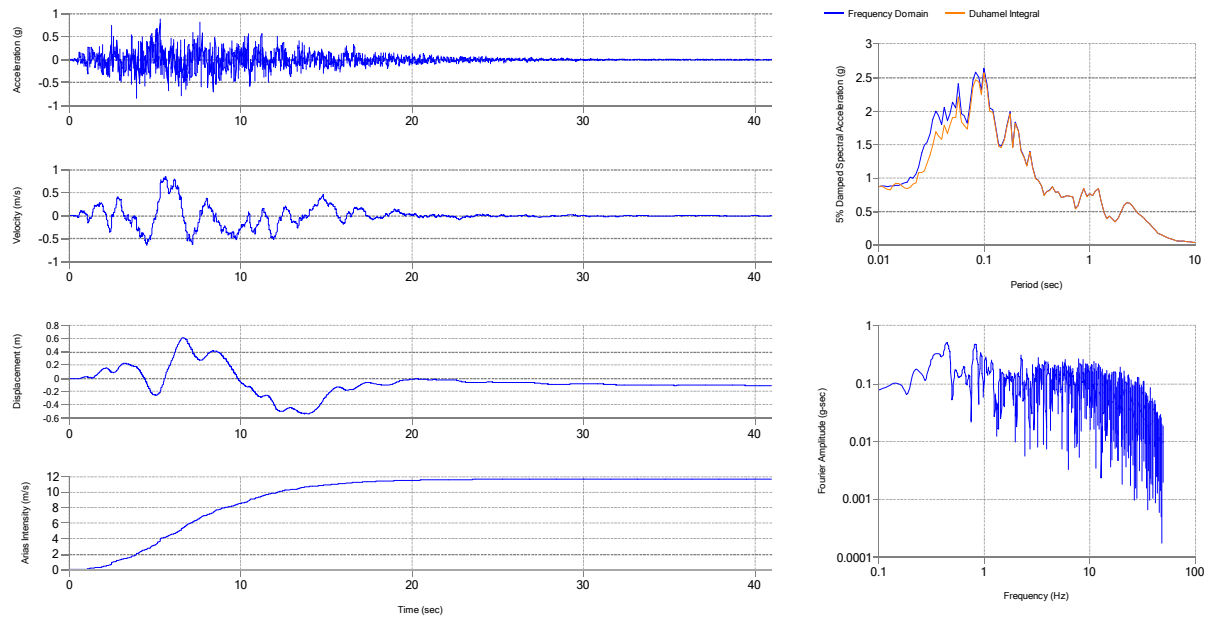


Figure 1 cont. – FEE1 Ground Motion. Plots of acceleration, velocity, displacement, and energy time histories on the left. Response spectrum using Frequency Domain method (in red) and Duhamel Integral at top right and Fourier Amplitude on bottom right. After spectral matching, drift (displacement) without correction is large and the Response Spectrum plot using the Frequency Domain method includes a large spike around 0.02s (1c). Baseline correction fixes drift but does not eliminate the short period spike.

## (2a) SEE1 - Unscaled without Baseline Correction (Motion as provided by SCDOT)



## (2b) SEE1 - Unscaled with Baseline Correction using DEEPSOIL

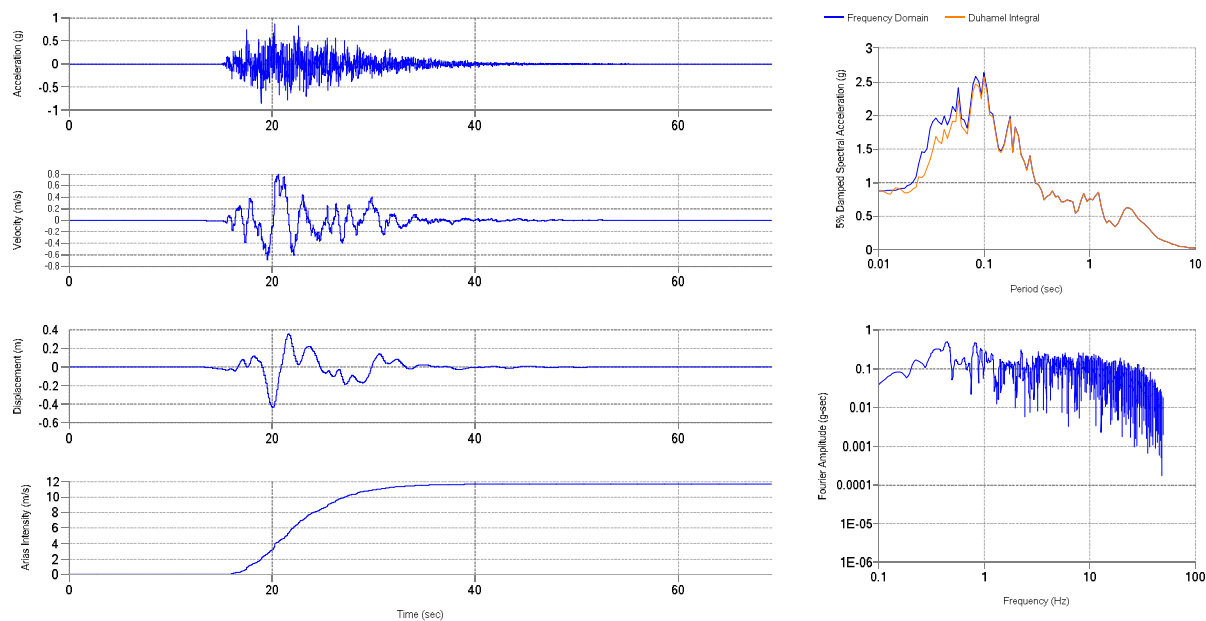
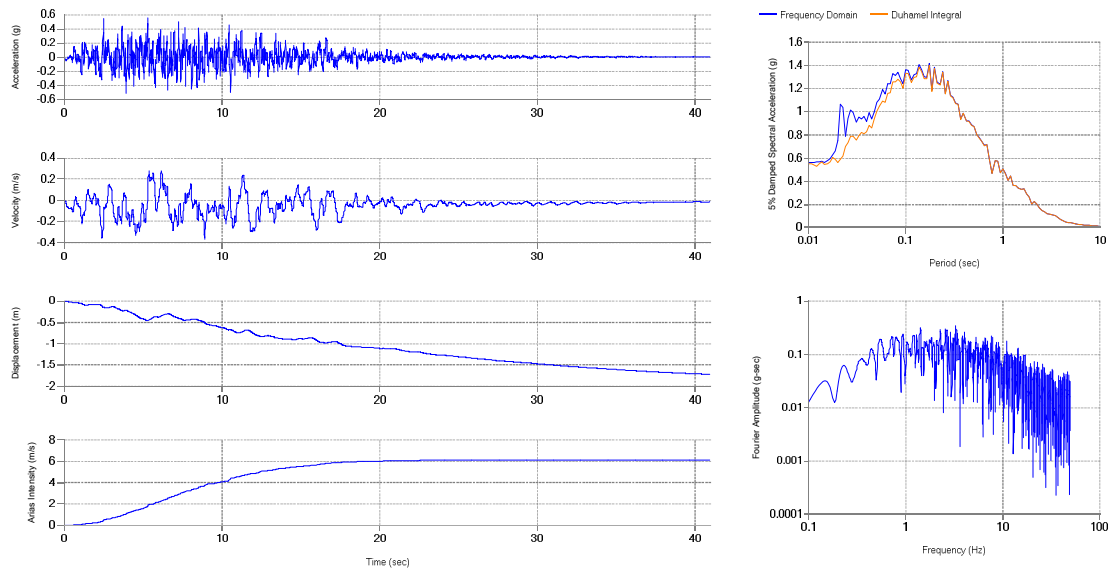


Figure 2 – SEE1 Ground Motion. Plots of acceleration, velocity, displacement, and energy time histories on the left. Response spectrum using Frequency Domain method (in red) and Duhamel Integral at top right and Fourier Amplitude on bottom right. Drift (displacement) without correction is relatively small and the Response Spectrum plots are in reasonable agreement (2a).



## (2c) SEE1 - Scaled without Baseline Correction (Motion as provided by SCDOT)



## (2d) SEE1 - Scaled with Baseline Correction using DEEPSOIL

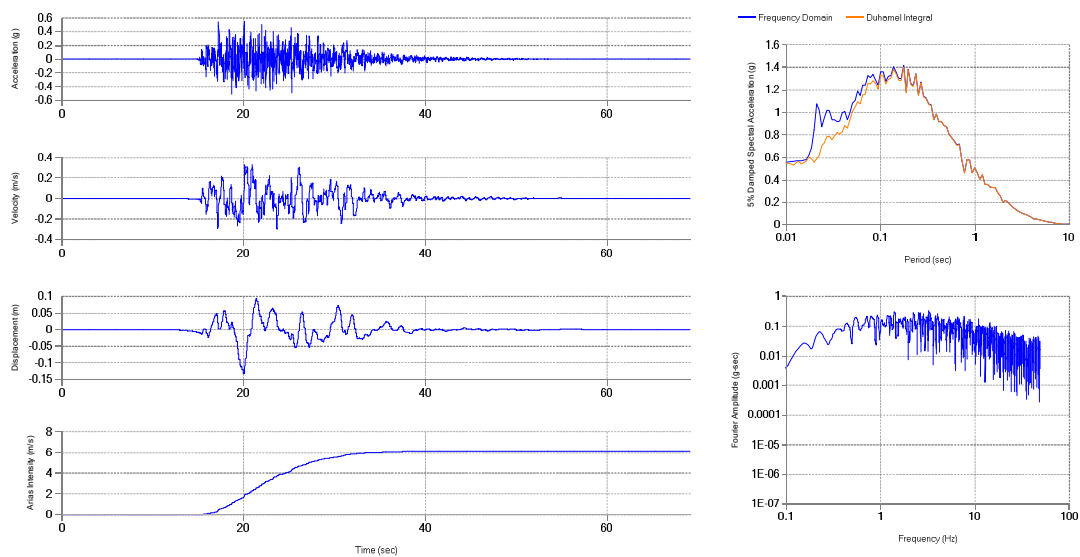


Figure 2 cont. – SEE1 Ground Motion. Plots of acceleration, velocity, displacement, and energy time histories on the left. Response spectrum using Frequency Domain method (in red) and Duhamel Integral at top right and Fourier Amplitude on bottom right. After spectral matching, drift (displacement) without correction is very large and the Response Spectrum plot using the Frequency Domain method includes a large spike around 0.02s (2c). Baseline correction fixes drift but does not eliminate the short period spike.

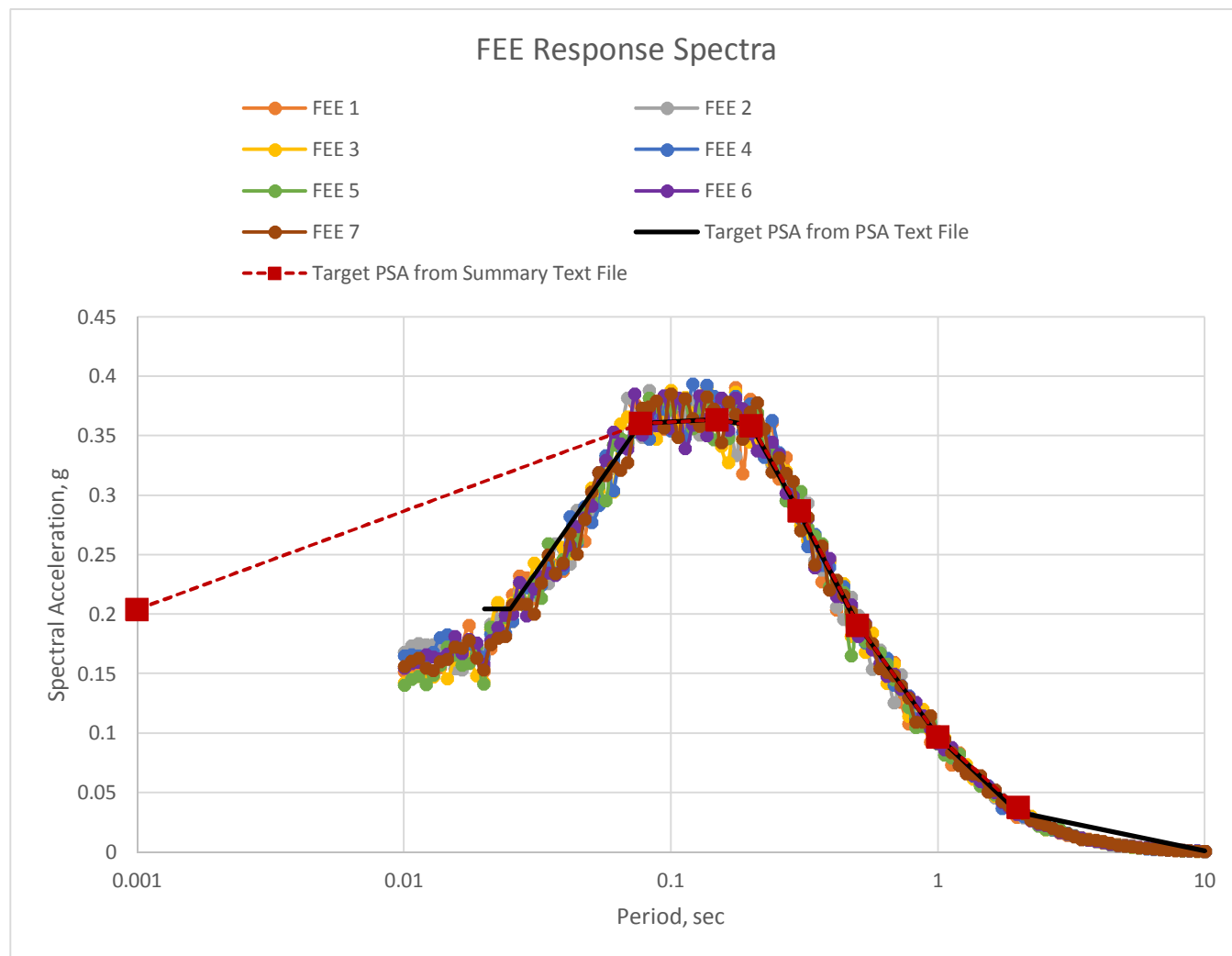


Figure 3 – FEE Response Spectra. Match at periods  $>0.025$ s is generally good but target spectrum is horizontal between 0.02s and 0.025s and the time history PGA values are all less than the target PGA. Note: All response spectra are computed using conventional DI procedure. When using FD procedure they will show a spike at  $\sim 0.02$ s.

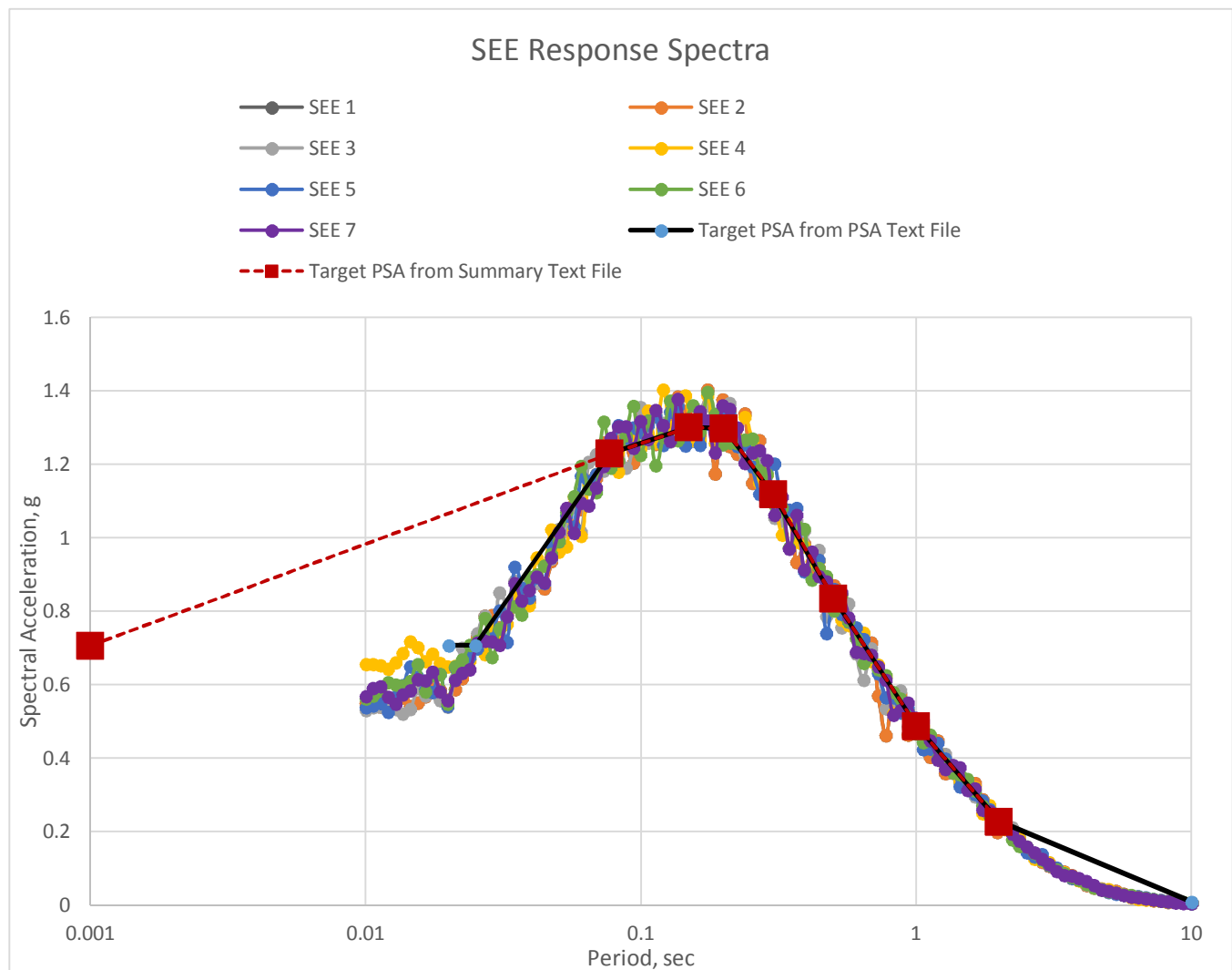
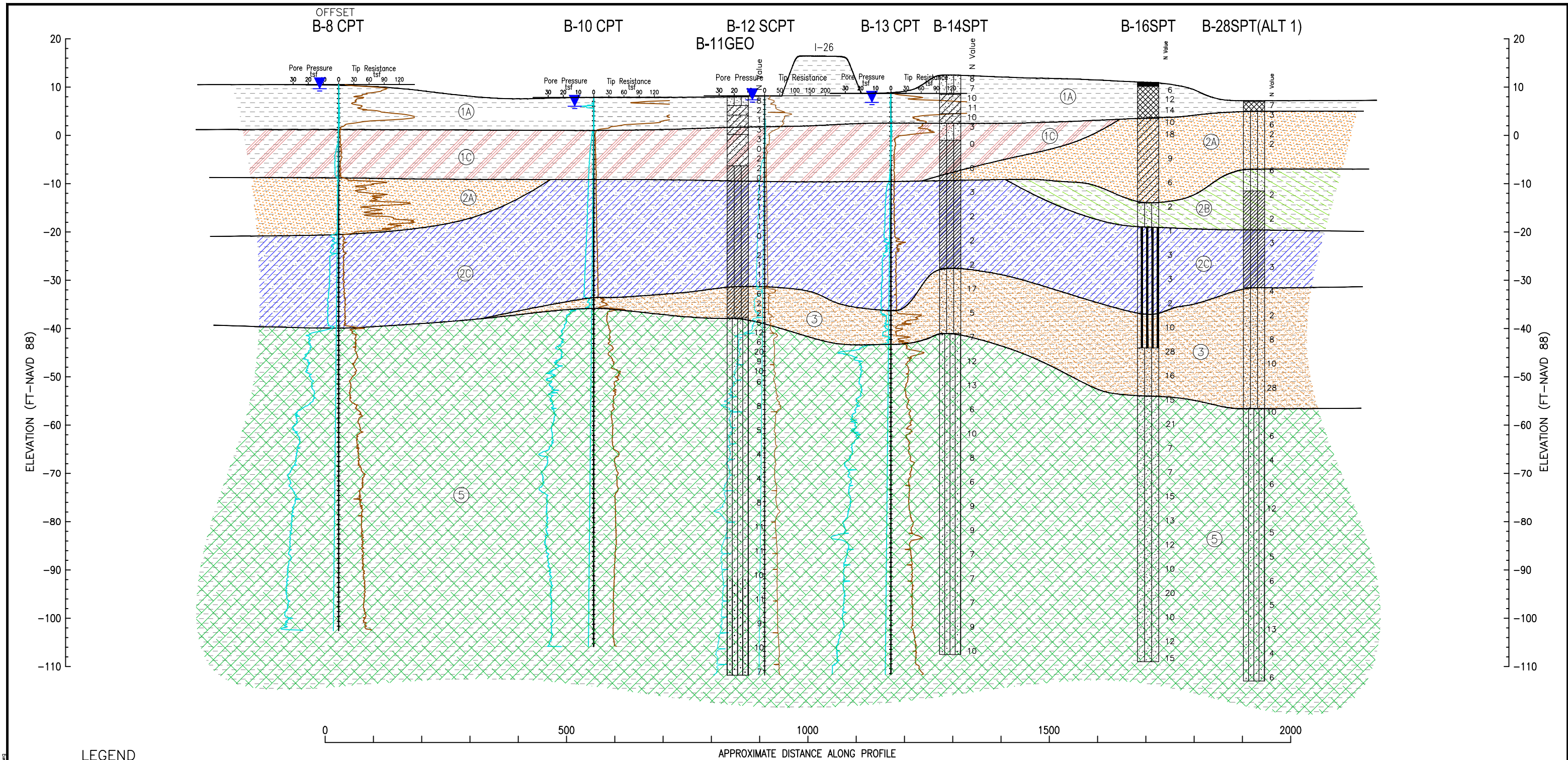


Figure 4 – FEE Response Spectra. Match at periods  $>0.025$ s is generally good but target spectrum is horizontal between 0.02s and 0.025s and the time history PGA values are all less than the target PGA. Note: All response spectra are computed using conventional DI procedure. When using FD procedure they will show a spike at  $\sim 0.02$ s.

## **Appendix II – Subsurface Data for Profile Development**



LEGEND

- |   |  |
|---|--|
| (1A) ARTIFICIAL FILL                                | (2C) PLEISTOCENE CLAYS AND SILTS                   |
| (1B) HOLOCENE MARSH DEPOSITS EAST OF SHIPYARD CREEK | (3) PLEISTOCENE LOWER SANDS                        |
| (1C) HOLOCENE MARSH DEPOSITS WEST OF I-26 ALIGNMENT | (4) UNDIFFERENTIATED MIOCENE OR YOUNGER MARLS      |
| (2A) RECENT TO PLEISTOCENE "BARRIER" SANDS          | (5) OLIGOCENE ASHLEY FORMATION (COOPER GROUP) MARL |
| (2B) PLEISTOCENE FOSSILIFEROUS SHELL SAND AND SILT  |  |

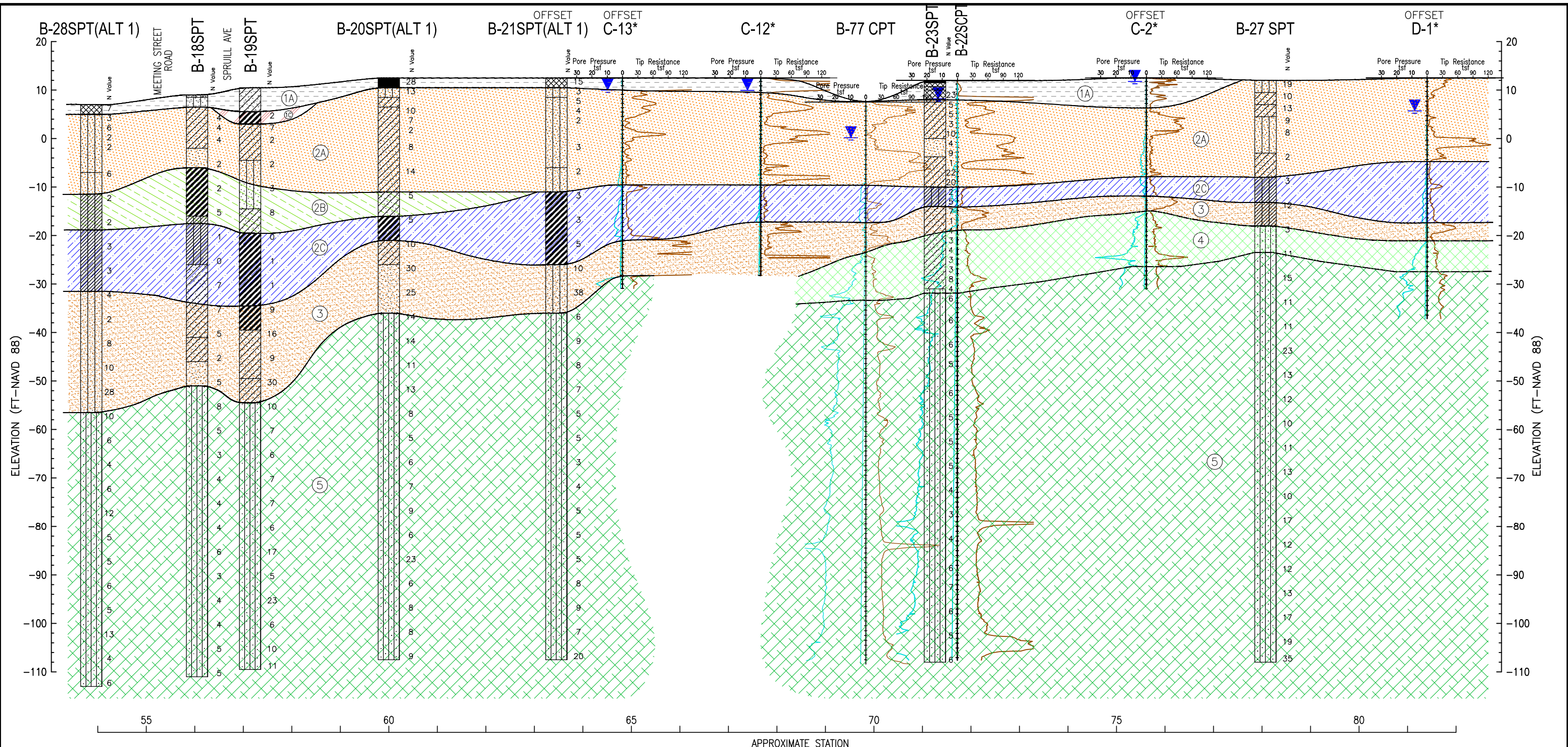
Note: This generalized subsurface profile is for illustrative purposes only and is representative of subsurface conditions encountered at each individual test location. Variations in subsurface conditions will occur between test locations.



**RAMP A GENERALIZED SUBSURFACE PROFILE  
BORINGS B-8 TO B-28 (ALT 1)**  
PORT ACCESS ROAD  
NORTH CHARLESTON, SOUTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY: DWH
JOB NO. 1131-08-554	DATE: 4-07-09	FIGURE NO. 4-5





LEGEND

- |   |  |
|---|--|
| (1A) ARTIFICIAL FILL                                | (2C) PLEISTOCENE CLAYS AND SILTS                   |
| (1B) HOLOCENE MARSH DEPOSITS EAST OF SHIPYARD CREEK | (3) PLEISTOCENE LOWER SANDS                        |
| (1C) HOLOCENE MARSH DEPOSITS WEST OF I-26 ALIGNMENT | (4) UNDIFFERENTIATED MIOCENE OR YOUNGER MARLS      |
| (2A) RECENT TO PLEISTOCENE "BARRIER" SANDS          | (5) OLIGOCENE ASHLEY FORMATION (COOPER GROUP) MARL |
| (2B) PLEISTOCENE FOSSILIFEROUS SHELL SAND AND SILT  |  |

Note: This generalized subsurface profile is for illustrative purposes only and is representative of subsurface conditions encountered at each individual test location. Variations in subsurface conditions will occur between test locations.

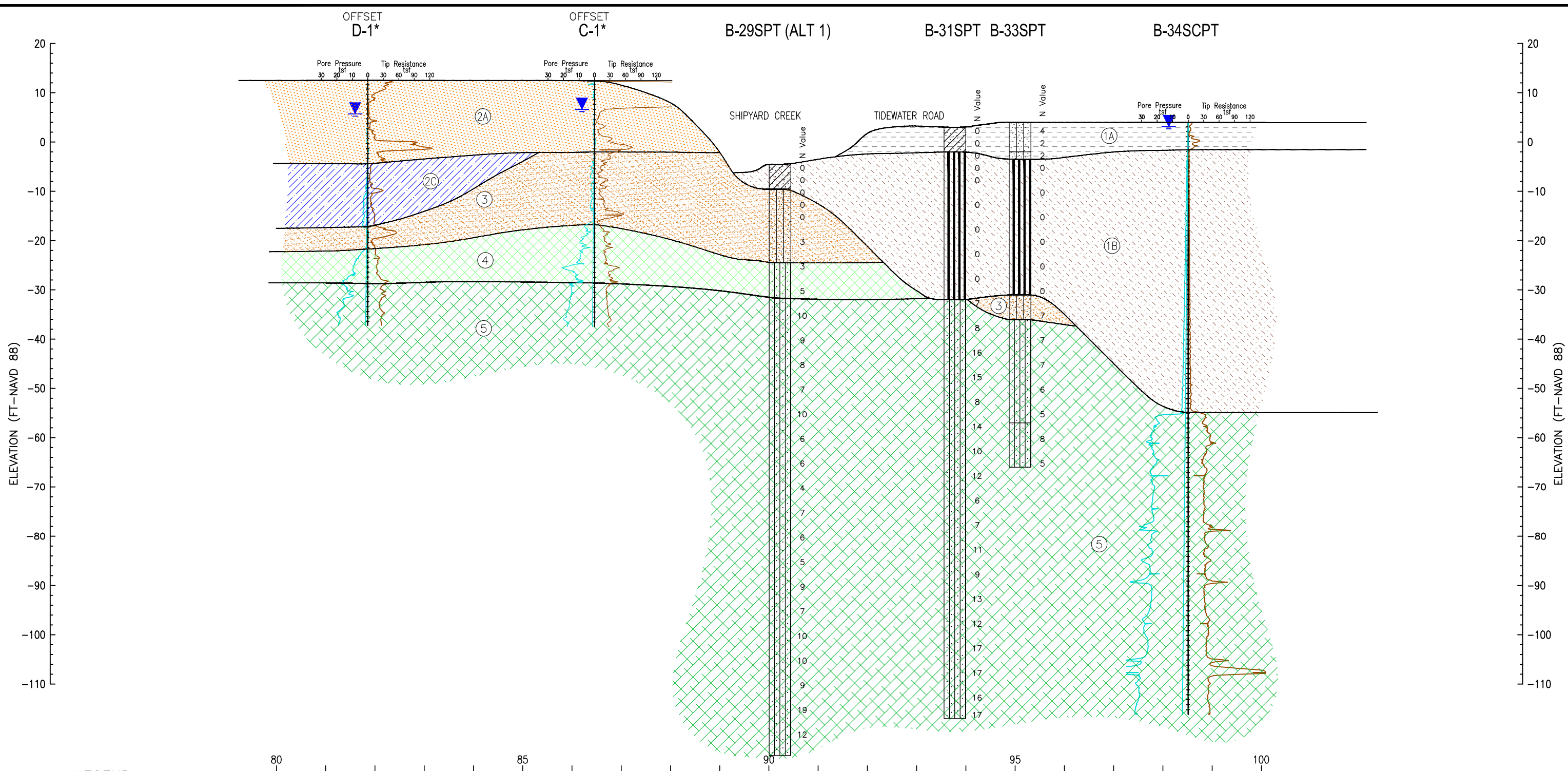
\* ASSUMED ELEVATION 12.5 FEET



MAIN LINE 1D GENERALIZED SUBSURFACE PROFILE BORINGS B-28 (ALT 1) TO D-1 PORT ACCESS ROAD NORTH CHARLESTON, SOUTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY: DWH
JOB NO. 1131-08-554	DATE: 4-07-09	FIGURE NO. 4-6

G:\Drawings\1131\2008\108554\108554.dwg 108554 Ramp profile2015.dwg



LEGEND

- |      |  |      |  |
|------|--|------|--|
| (1A) | ARTIFICIAL FILL                                | (2C) | PLEISTOCENE CLAYS AND SILTS                    |
| (1B) | HOLOCENE MARSH DEPOSITS EAST OF SHIPYARD CREEK | (3)  | PLEISTOCENE LOWER SANDS                        |
| (1C) | HOLOCENE MARSH DEPOSITS WEST OF I-26 ALIGNMENT | (4)  | UNDIFFERENTIATED MIOCENE OR YOUNGER MARLS      |
| (2A) | RECENT TO PLEISTOCENE "BARRIER" SANDS          | (5)  | OLIGOCENE ASHLEY FORMATION (COOPER GROUP) MARL |
| (2B) | PLEISTOCENE FOSSILIFEROUS SHELL SAND AND SILT  |      |  |

Note: This generalized subsurface profile is for illustrative purposes only and is representative of subsurface conditions encountered at each individual test location. Variations in subsurface conditions will occur between test locations.

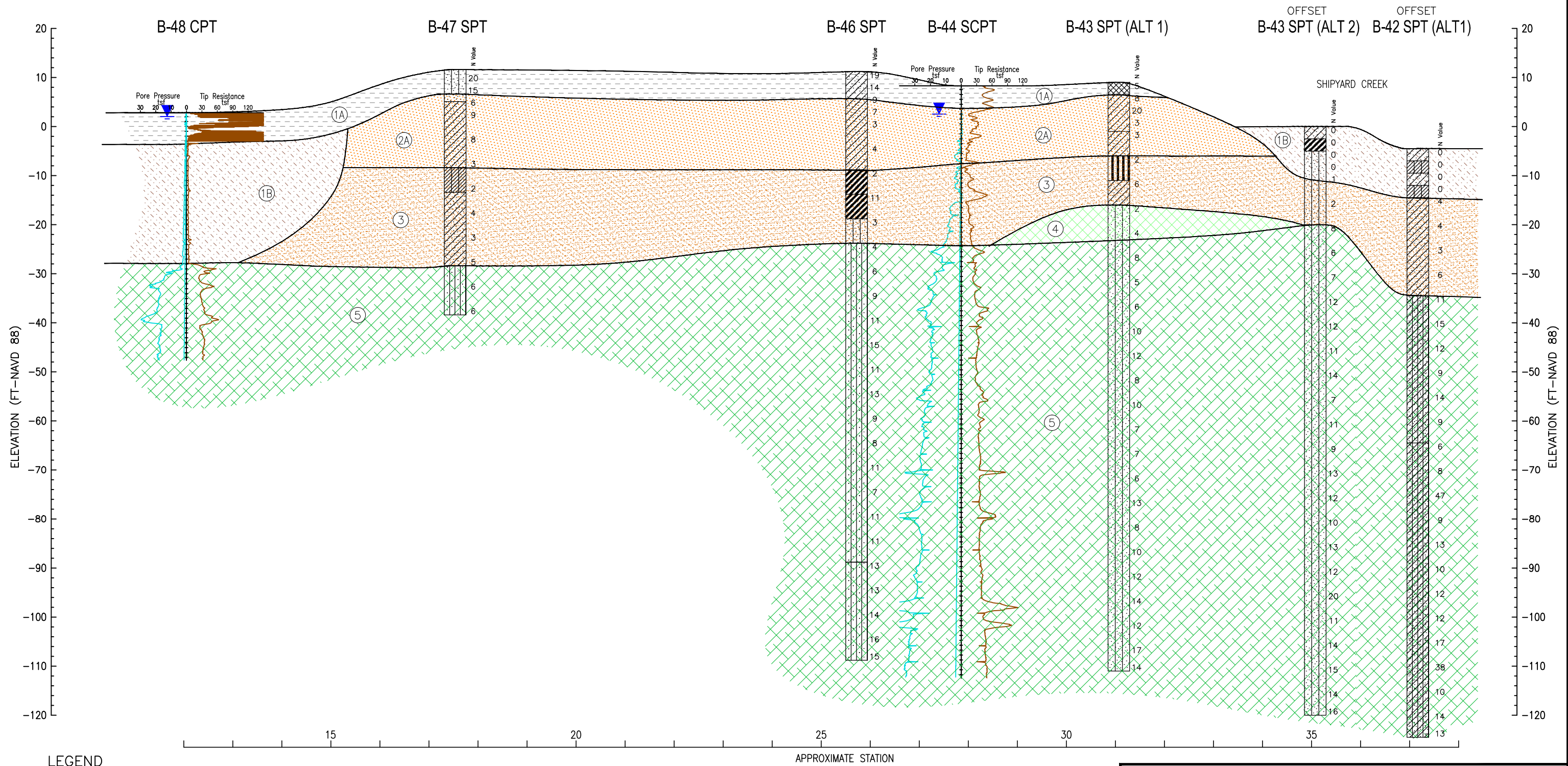
\* ASSUMED ELEVATION 12.5 FEET



**MAIN LINE 1D GENERALIZED SUBSURFACE PROFILE**  
**BORINGS D-1 TO B-34**  
PORT ACCESS ROAD  
NORTH CHARLESTON, SOUTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY: DWH
JOB NO. 1131-08-554	DATE: 4-07-09	FIGURE NO. 4-7





LEGEND

- |   |  |
|---|--|
| (1A) ARTIFICIAL FILL                                | (2C) PLEISTOCENE CLAYS AND SILTS                   |
| (1B) HOLOCENE MARSH DEPOSITS EAST OF SHIPYARD CREEK | (3) PLEISTOCENE LOWER SANDS                        |
| (1C) HOLOCENE MARSH DEPOSITS WEST OF I-26 ALIGNMENT | (4) UNDIFFERENTIATED MIOCENE OR YOUNGER MARLS      |
| (2A) RECENT TO PLEISTOCENE "BARRIER" SANDS          | (5) OLIGOCENE ASHLEY FORMATION (COOPER GROUP) MARL |
| (2B) PLEISTOCENE FOSSILIFEROUS SHELL SAND AND SILT  |  |

Note: This generalized subsurface profile is for illustrative purposes only and is representative of subsurface conditions encountered at each individual test location. Variations in subsurface conditions will occur between test locations.



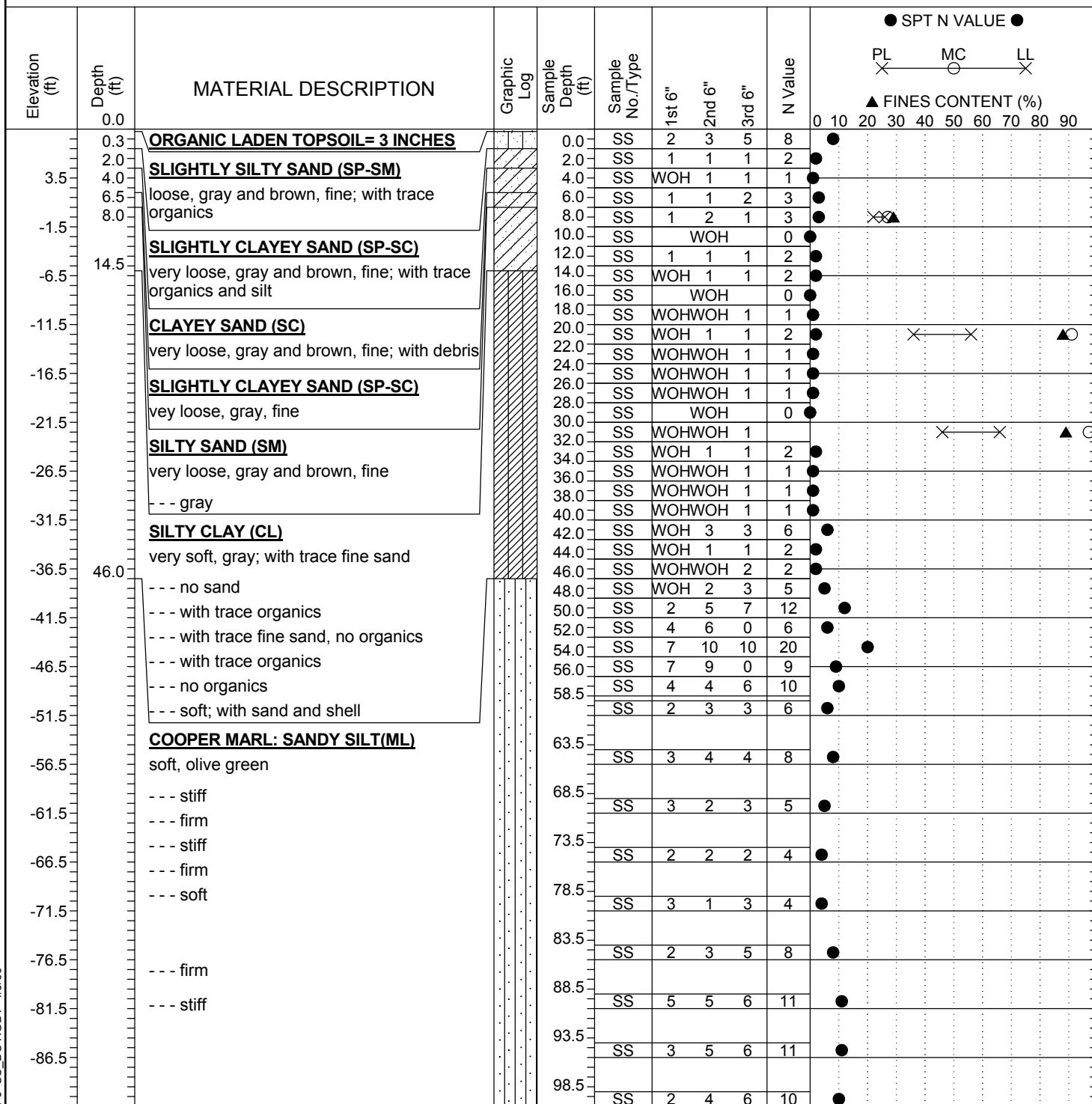
**LOCAL ACCESS ROAD GENERALIZED SUBSURFACE PROFILE**  
**BORINGS B-43 (ALT 2) TO B-48**  
PORT ACCESS ROAD  
NORTH CHARLESTON, SOUTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY: DWH
JOB NO. 1131-08-554	DATE: 4-07-09	FIGURE NO. 4-10



# SCDOT Soil Test Boring Log

File No.:	10.224B	Project No. (PIN):	1131-08-554	County:	CHARLESTON	Eng./Geo.:	P. BAUMSTARK
Site Description:	PORT ACCESS ROAD					Route:	
Boring No.:	B-11 GEO	Boring Location:		Offset:		Alignment:	
Elev.:	8.5 ft	Latitude:	32.8336	Longitude:	79.958476	Date Started:	10/6/08
Total Depth:	800 ft	Soil Depth:	ft	Core Depth:	ft	Date Completed:	12/9/2008
Bore Hole Diameter (in):	4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-750	Drill Method:	MUD ROTARY	Hammer Type:	Automatic	Energy Ratio:	76%
Core Size:		Driller:	MAD	Groundwater:	TOB	N/A	24HR



LEGEND

Continued Next Page

SC\_DOT 08554.GPJ SC\_DOT.GDT 4/3/09

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

# SCDOT Soil Test Boring Log

File No.:	10.224B	Project No. (PIN):	1131-08-554	County:	CHARLESTON	Eng./Geo.:	P. BAUMSTARK
Site Description:	PORT ACCESS ROAD					Route:	
Boring No.:	B-11 GEO	Boring Location:		Offset:		Alignment:	
Elev.:	8.5 ft	Latitude:	32.8336	Longitude:	79.958476	Date Started:	10/6/08
Total Depth:	800 ft	Soil Depth:	ft	Core Depth:	ft	Date Completed:	12/9/2008
Bore Hole Diameter (in):	4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-750	Drill Method:	MUD ROTARY	Hammer Type:	Automatic	Energy Ratio:	76%
Core Size:		Driller:	MAD	Groundwater:	TOB N/A	24HR	N/A

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL X</div> <div>MC ○</div> <div>LL X</div> </div> <div>▲ FINES CONTENT (%)</div> <div>0 10 20 30 40 50 60 70 80 90</div> </div>
-96.5				103.5	SS	3	4	7	11	●
-101.5				108.5	SS	3	3	6	9	●
-106.5				113.5	SS	3	4	6	10	●
-111.5		--- firm		118.5	SS	3	2	5	7	●
-121.5	131.7	3" X 30" FIXED PISTON SAMPLE PUSHED 24" WITH 30" RECOVERY		129.3	ST					
-151.5				159.5	SS	4	5	7	12	●
-161.5	171.6	3" X 36" PITCHER BARREL SAMPLE PUSHED 36" WITH 12" RECOVERY		169.2	PB					
-171.5				179.5	SS	10	3	6	9	●
-181.5				189.5	SS	2	5	7	12	●
-199.5				199.5						

## LEGEND

Continued Next Page

### SAMPLER TYPE

### DRILLING METHOD

SS - Split Spoon  
ST - Shelby Tube  
AWG - Rock Core, 1-1/8"

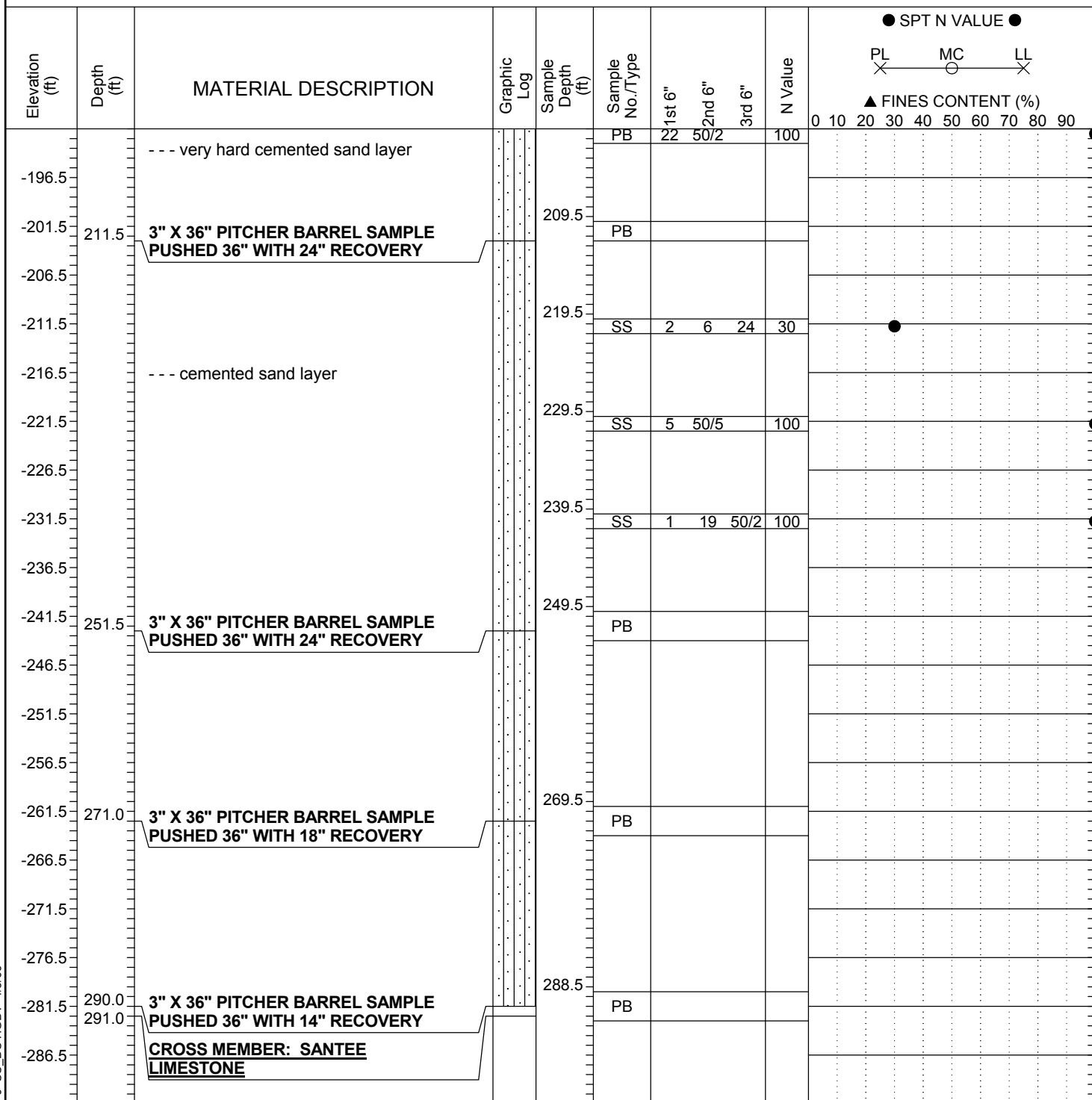
NQ - Rock Core, 1-7/8"  
CU - Cuttings  
CT - Continuous Tube

HSA - Hollow Stem Auger  
CFA - Continuous Flight Augers  
DC - Driving Casing

RW - Rotary Wash  
RC - Rock Core

# SCDOT Soil Test Boring Log

File No.:	10.224B	Project No. (PIN):	1131-08-554	County:	CHARLESTON	Eng./Geo.:	P. BAUMSTARK
Site Description:	PORT ACCESS ROAD					Route:	
Boring No.:	B-11 GEO	Boring Location:		Offset:		Alignment:	
Elev.:	8.5 ft	Latitude:	32.8336	Longitude:	79.958476	Date Started:	10/6/08
Total Depth:	800 ft	Soil Depth:	ft	Core Depth:	ft	Date Completed:	12/9/2008
Bore Hole Diameter (in):	4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-750	Drill Method:	MUD ROTARY	Hammer Type:	Automatic	Energy Ratio:	76%
Core Size:		Driller:	MAD	Groundwater:	TOB N/A	24HR	N/A



## LEGEND

Continued Next Page

SC\_DOT 08554.GPJ SC\_DOT.GDT 4/3/09

SAMPLER TYPE		DRILLING METHOD	
SS	- Split Spoon	HSA	- Hollow Stem Auger
ST	- Shelby Tube	CFA	- Continuous Flight Augers
AWG	- Rock Core, 1-1/8"	DC	- Driving Casing
NQ	- Rock Core, 1-7/8"	RW	- Rotary Wash
CU	- Cuttings	RC	- Rock Core
CT	- Continuous Tube		

# SCDOT Soil Test Boring Log

File No.:	10.224B	Project No. (PIN):	1131-08-554	County:	CHARLESTON	Eng./Geo.:	P. BAUMSTARK
Site Description:	PORT ACCESS ROAD					Route:	
Boring No.:	B-11 GEO	Boring Location:		Offset:		Alignment:	
Elev.:	8.5 ft	Latitude:	32.8336	Longitude:	79.958476	Date Started:	10/6/08
Total Depth:	800 ft	Soil Depth:	ft	Core Depth:	ft	Date Completed:	12/9/2008
Bore Hole Diameter (in):	4	Sampler Configuration		Liner Required:	Y (N)	Liner Used:	Y (N)
Drill Machine:	CME-750	Drill Method:	MUD ROTARY	Hammer Type:	Automatic	Energy Ratio:	76%
Core Size:		Driller:	MAD	Groundwater:	TOB N/A	24HR	N/A

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	● SPT N VALUE ● PL X MC O LL X ▲ FINES CONTENT (%) 0 10 20 30 40 50 60 70 80 90
-296.5				308.5						
-301.5	311.5	3" X 36" PITCHER BARREL SAMPLE PUSHED 36" WITH 21" RECOVERY			PB					
-306.5										
-311.5										
-316.5										
-321.5	330.0	3" X 36" PITCHER BARREL SAMPLE PUSHED 36" WITH 25" RECOVERY		328.5	PB					
-326.5	331.5	WILLIAMSBURG FORMATION-CHICORA MEMBER: BLACK MINGO GROUP								
-331.5										
-336.5										
-341.5	351.5	3" X 36" PITCHER BARREL SAMPLE PUSHED 36" WITH 19" RECOVERY		348.5	PB					
-346.5										
-351.5										
-356.5										
-361.5										
-366.5	377.0	3" X 36" PITCHER BARREL SAMPLE PUSHED 36" WITH 20" RECOVERY		374.5	PB					
-371.5										
-376.5										
-381.5										
-386.5	395.0	WILLIAMSBURG FORMATION- LOWER BRIDGE MEMBER: BLACK MINGO		399.5						

## LEGEND

Continued Next Page

### SAMPLER TYPE

### DRILLING METHOD

SS - Split Spoon  
ST - Shelby Tube  
AWG - Rock Core, 1-1/8"

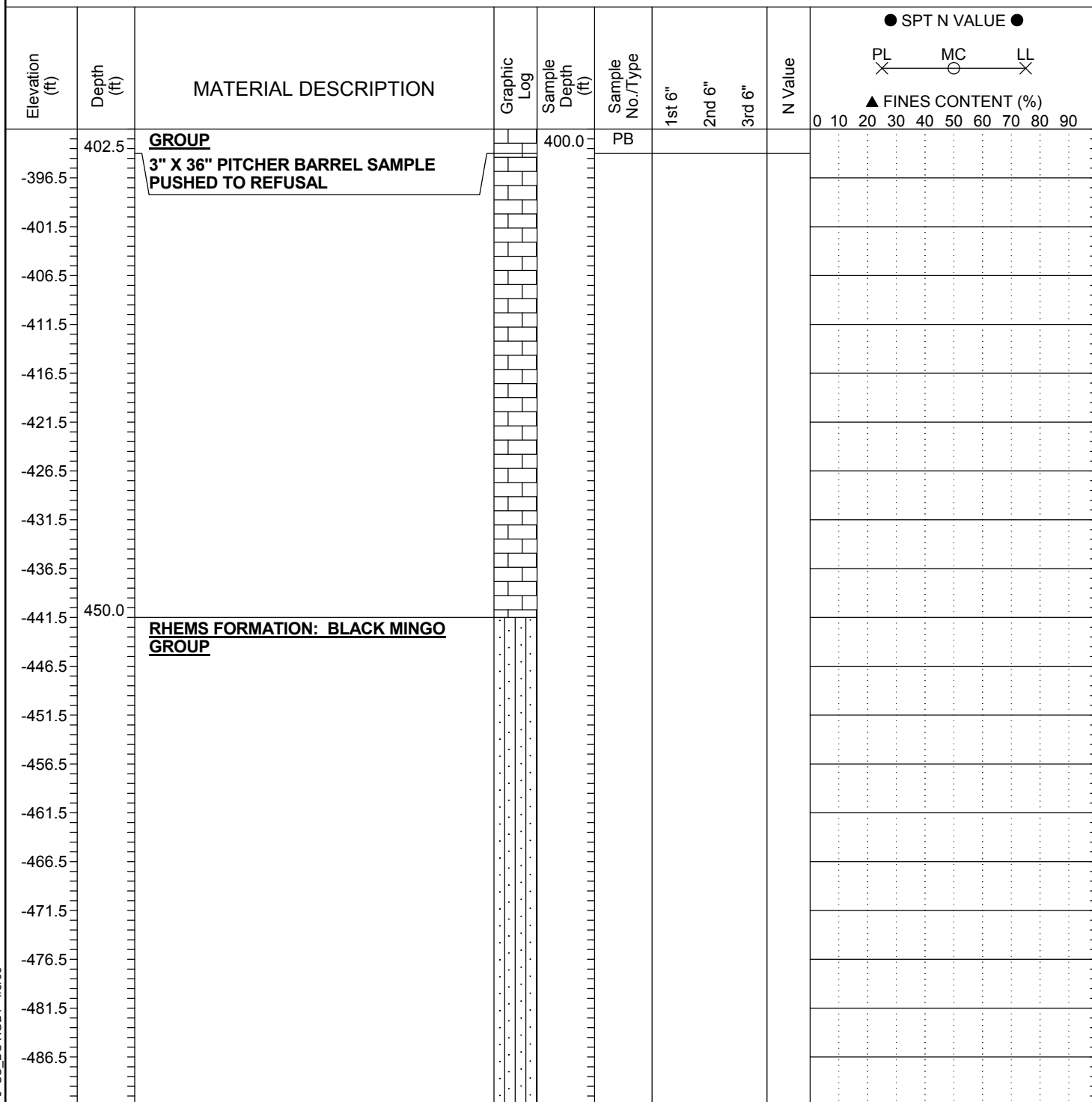
NQ - Rock Core, 1-7/8"  
CU - Cuttings  
CT - Continuous Tube

HSA - Hollow Stem Auger  
CFA - Continuous Flight Augers  
DC - Driving Casing

RW - Rotary Wash  
RC - Rock Core

# SCDOT Soil Test Boring Log

<b>File No.:</b>	10.224B	<b>Project No. (PIN):</b>	1131-08-554	<b>County:</b>	CHARLESTON	<b>Eng./Geo.:</b>	P. BAUMSTARK	
<b>Site Description:</b>		PORT ACCESS ROAD				<b>Route:</b>		
<b>Boring No.:</b>	B-11 GEO	<b>Boring Location:</b>			<b>Offset:</b>		<b>Alignment:</b>	
<b>Elev.:</b>	8.5 ft	<b>Latitude:</b>	32.8336	<b>Longitude:</b>	79.958476	<b>Date Started:</b>	10/6/08	
<b>Total Depth:</b>	800 ft	<b>Soil Depth:</b>	ft	<b>Core Depth:</b>	ft	<b>Date Completed:</b>	12/9/2008	
<b>Bore Hole Diameter (in):</b>	4	<b>Sampler Configuration</b>			<b>Liner Required:</b>	Y (N)	<b>Liner Used:</b>	Y (N)
<b>Drill Machine:</b>	CME-750	<b>Drill Method:</b>	MUD ROTARY	<b>Hammer Type:</b>	Automatic	<b>Energy Ratio:</b>	76%	
<b>Core Size:</b>		<b>Driller:</b>	MAD	<b>Groundwater:</b>	TOB	N/A	<b>24HR</b>	N/A



## LEGEND

Continued Next Page

### SAMPLER TYPE

### DRILLING METHOD

SS - Split Spoon  
 ST - Shelby Tube  
 AWG - Rock Core, 1-1/8"  
 NQ - Rock Core, 1-7/8"  
 CU - Cuttings  
 CT - Continuous Tube

HSA - Hollow Stem Auger  
 CFA - Continuous Flight Augers  
 DC - Driving Casing  
 RW - Rotary Wash  
 RC - Rock Core

# SCDOT Soil Test Boring Log

<b>File No.:</b>	10.224B	<b>Project No. (PIN):</b>	1131-08-554	<b>County:</b>	CHARLESTON	<b>Eng./Geo.:</b>	P. BAUMSTARK	
<b>Site Description:</b>		PORT ACCESS ROAD				<b>Route:</b>		
<b>Boring No.:</b>	B-11 GEO	<b>Boring Location:</b>		<b>Offset:</b>		<b>Alignment:</b>		
<b>Elev.:</b>	8.5 ft	<b>Latitude:</b>	32.8336	<b>Longitude:</b>	79.958476	<b>Date Started:</b>	10/6/08	
<b>Total Depth:</b>	800 ft	<b>Soil Depth:</b>	ft	<b>Core Depth:</b>	ft	<b>Date Completed:</b>	12/9/2008	
<b>Bore Hole Diameter (in):</b>		4	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)	<b>Liner Used:</b>	Y (N)
<b>Drill Machine:</b>	CME-750	<b>Drill Method:</b>	MUD ROTARY	<b>Hammer Type:</b>	Automatic	<b>Energy Ratio:</b>		76%
<b>Core Size:</b>		<b>Driller:</b>	MAD	<b>Groundwater:</b>	TOB	N/A	<b>24HR</b>	N/A

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
-496.5										
-501.5										
-506.5										
-511.5										
-516.5										
-521.5										
-526.5										
-531.5										
-536.5										
-541.5										
-546.5										
-551.5										
-556.5										
-561.5										
-566.5										
-571.5										
-576.5										
-581.5										
-586.5										

## LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

# SCDOT Soil Test Boring Log

<b>File No.:</b>	10.224B	<b>Project No. (PIN):</b>	1131-08-554	<b>County:</b>	CHARLESTON	<b>Eng./Geo.:</b>	P. BAUMSTARK	
<b>Site Description:</b>		PORT ACCESS ROAD				<b>Route:</b>		
<b>Boring No.:</b>	B-11 GEO	<b>Boring Location:</b>		<b>Offset:</b>		<b>Alignment:</b>		
<b>Elev.:</b>	8.5 ft	<b>Latitude:</b>	32.8336	<b>Longitude:</b>	79.958476	<b>Date Started:</b>	10/6/08	
<b>Total Depth:</b>	800 ft	<b>Soil Depth:</b>	ft	<b>Core Depth:</b>	ft	<b>Date Completed:</b>	12/9/2008	
<b>Bore Hole Diameter (in):</b>		4	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)	<b>Liner Used:</b>	Y (N)
<b>Drill Machine:</b>	CME-750	<b>Drill Method:</b>	MUD ROTARY	<b>Hammer Type:</b>	Automatic	<b>Energy Ratio:</b>		76%
<b>Core Size:</b>		<b>Driller:</b>	MAD	<b>Groundwater:</b>	TOB	N/A	<b>24HR</b>	N/A

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
					CT					<div> <div>0 10 20 30 40 50 60 70 80 90</div> </div>
-596.5										
-601.5										
-606.5										
-611.5										
-616.5										
-621.5										
-626.5										
-631.5										
-636.5										
-641.5										
-646.5										
-651.5										
-656.5										
-661.5										
-666.5										
-671.5										
-676.5										
-681.5										
-686.5										

## LEGEND

Continued Next Page

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

# SCDOT Soil Test Boring Log

<b>File No.:</b>	10.224B	<b>Project No. (PIN):</b>	1131-08-554	<b>County:</b>	CHARLESTON	<b>Eng./Geo.:</b>	P. BAUMSTARK	
<b>Site Description:</b>		PORT ACCESS ROAD				<b>Route:</b>		
<b>Boring No.:</b>	B-11 GEO	<b>Boring Location:</b>		<b>Offset:</b>		<b>Alignment:</b>		
<b>Elev.:</b>	8.5 ft	<b>Latitude:</b>	32.8336	<b>Longitude:</b>	79.958476	<b>Date Started:</b>	10/6/08	
<b>Total Depth:</b>	800 ft	<b>Soil Depth:</b>	ft	<b>Core Depth:</b>	ft	<b>Date Completed:</b>	12/9/2008	
<b>Bore Hole Diameter (in):</b>		4	<b>Sampler Configuration</b>		<b>Liner Required:</b>	Y (N)	<b>Liner Used:</b>	Y (N)
<b>Drill Machine:</b>	CME-750	<b>Drill Method:</b>	MUD ROTARY	<b>Hammer Type:</b>	Automatic	<b>Energy Ratio:</b>		76%
<b>Core Size:</b>		<b>Driller:</b>	MAD	<b>Groundwater:</b>	TOB	N/A	<b>24HR</b>	N/A

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div> <div>● SPT N VALUE ●</div> <div> <div>PL</div> <div>MC</div> <div>LL</div> </div> <div>▲ FINES CONTENT (%)</div> </div>
-696.5										0 10 20 30 40 50 60 70 80 90
-701.5										
-706.5										
-711.5										
-716.5										
-721.5										
-726.5										
-731.5										
-736.5										
-741.5										
-746.5										
-751.5										
-756.5										
-761.5										
-766.5										
-771.5										
-776.5										
-781.5										
-786.5										
800.0										

## LEGEND

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SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	



# SCDOT Soil Test Boring Log

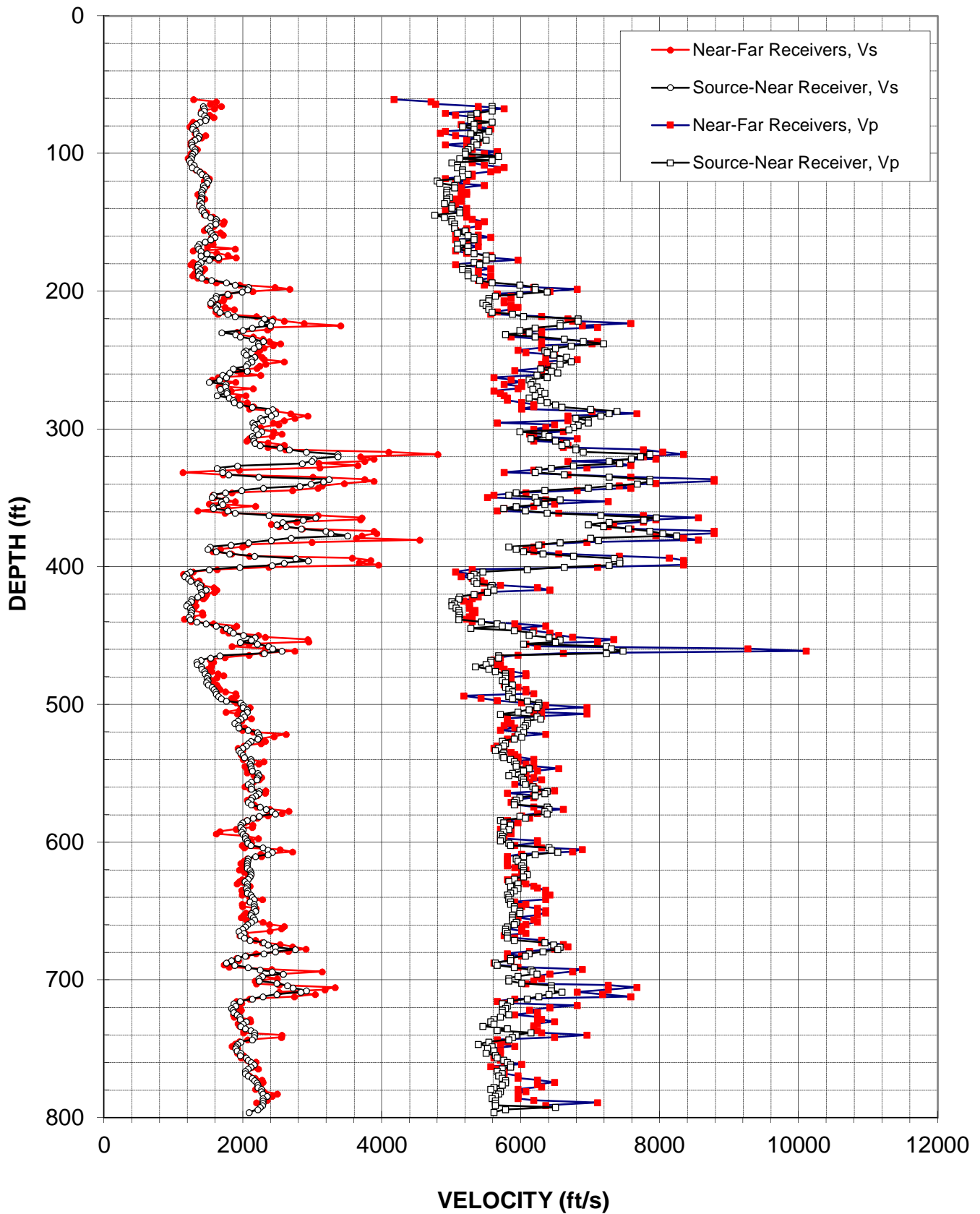
<b>File No.:</b>	10.224B	<b>Project No. (PIN):</b>	1131-08-554	<b>County:</b>	CHARLESTON	<b>Eng./Geo.:</b>	P. BAUMSTARK	
<b>Site Description:</b>		PORT ACCESS ROAD				<b>Route:</b>		
<b>Boring No.:</b>	B-11 GEO	<b>Boring Location:</b>			<b>Offset:</b>		<b>Alignment:</b>	
<b>Elev.:</b>	8.5 ft	<b>Latitude:</b>	32.8336	<b>Longitude:</b>	79.958476	<b>Date Started:</b>	10/6/08	
<b>Total Depth:</b>	800 ft	<b>Soil Depth:</b>	ft	<b>Core Depth:</b>	ft	<b>Date Completed:</b>	12/9/2008	
<b>Bore Hole Diameter (in):</b>	4	<b>Sampler Configuration</b>			<b>Liner Required:</b>	Y (N)	<b>Liner Used:</b>	Y (N)
<b>Drill Machine:</b>	CME-750	<b>Drill Method:</b>	MUD ROTARY	<b>Hammer Type:</b>	Automatic	<b>Energy Ratio:</b>	76%	
<b>Core Size:</b>		<b>Driller:</b>	MAD	<b>Groundwater:</b>	TOB	N/A	<b>24HR</b>	N/A

Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	<div>● SPT N VALUE ●</div> <div>PL — MC — LL</div> <div>▲ FINES CONTENT (%)</div> <div>0 10 20 30 40 50 60 70 80 90</div>
-796.5		BORING TERMINATED AT800 FEET.								
-801.5										
-806.5										
-811.5										
-816.5										
-821.5										
-826.5										
-831.5										
-836.5										
-841.5										
-846.5										
-851.5										
-856.5										
-861.5										
-866.5										
-871.5										
-876.5										
-881.5										
-886.5										

## LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

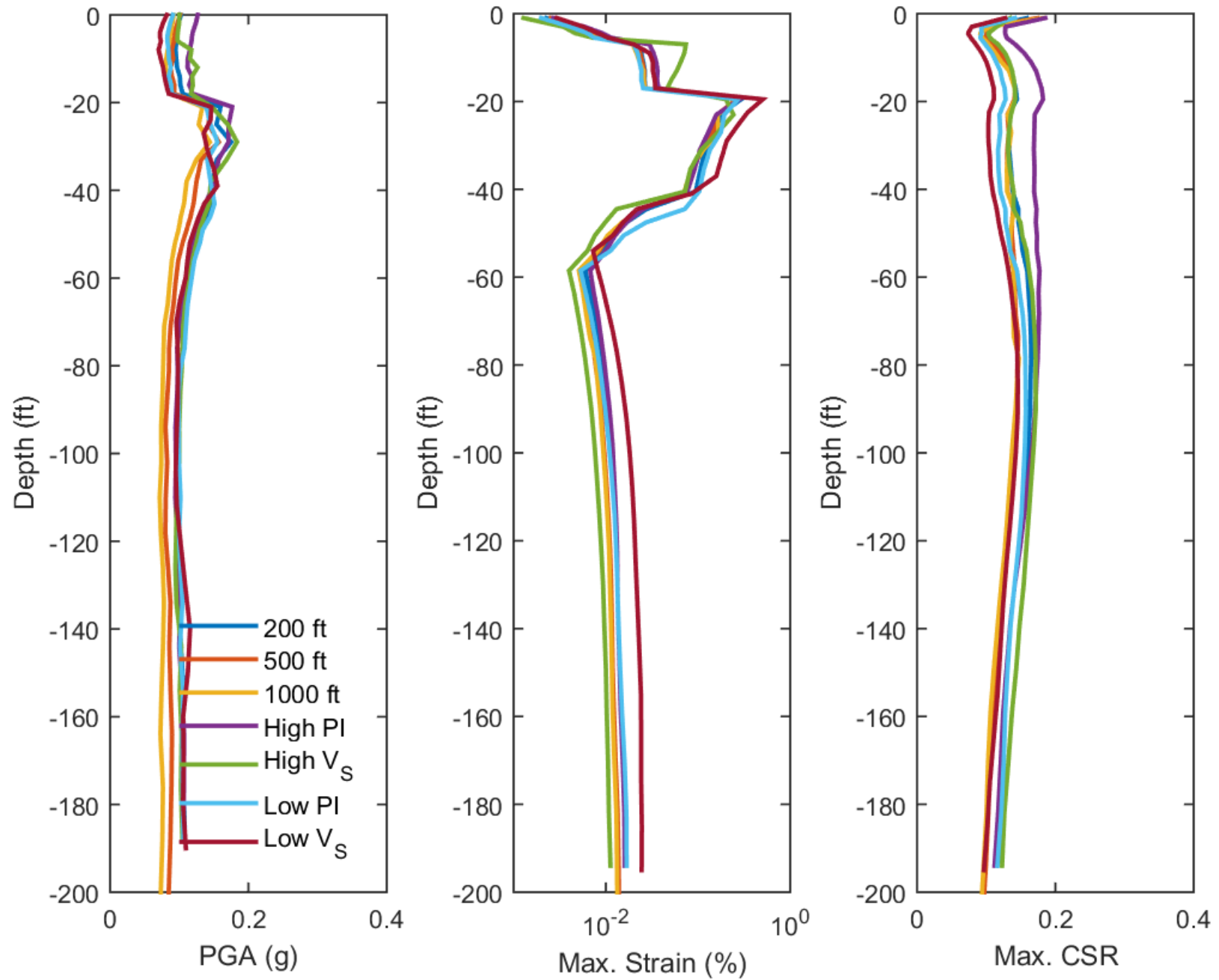
**B-11GEO PORT ACCESS ROAD**  
**Source to Receiver and Receiver to Receiver Analysis**



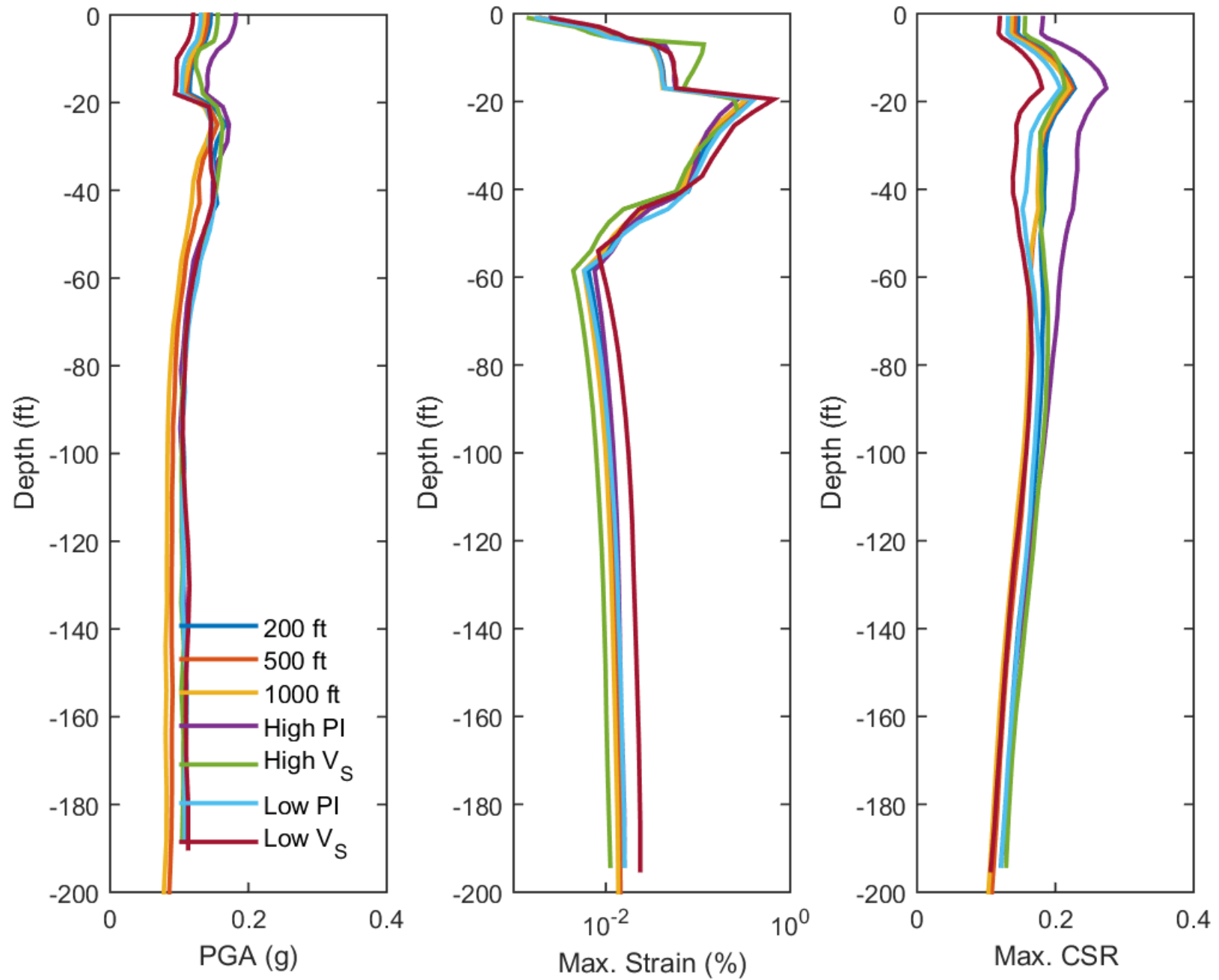
## **Appendix III – I-26 Output**

## **FEE SUMMARY PLOTS**

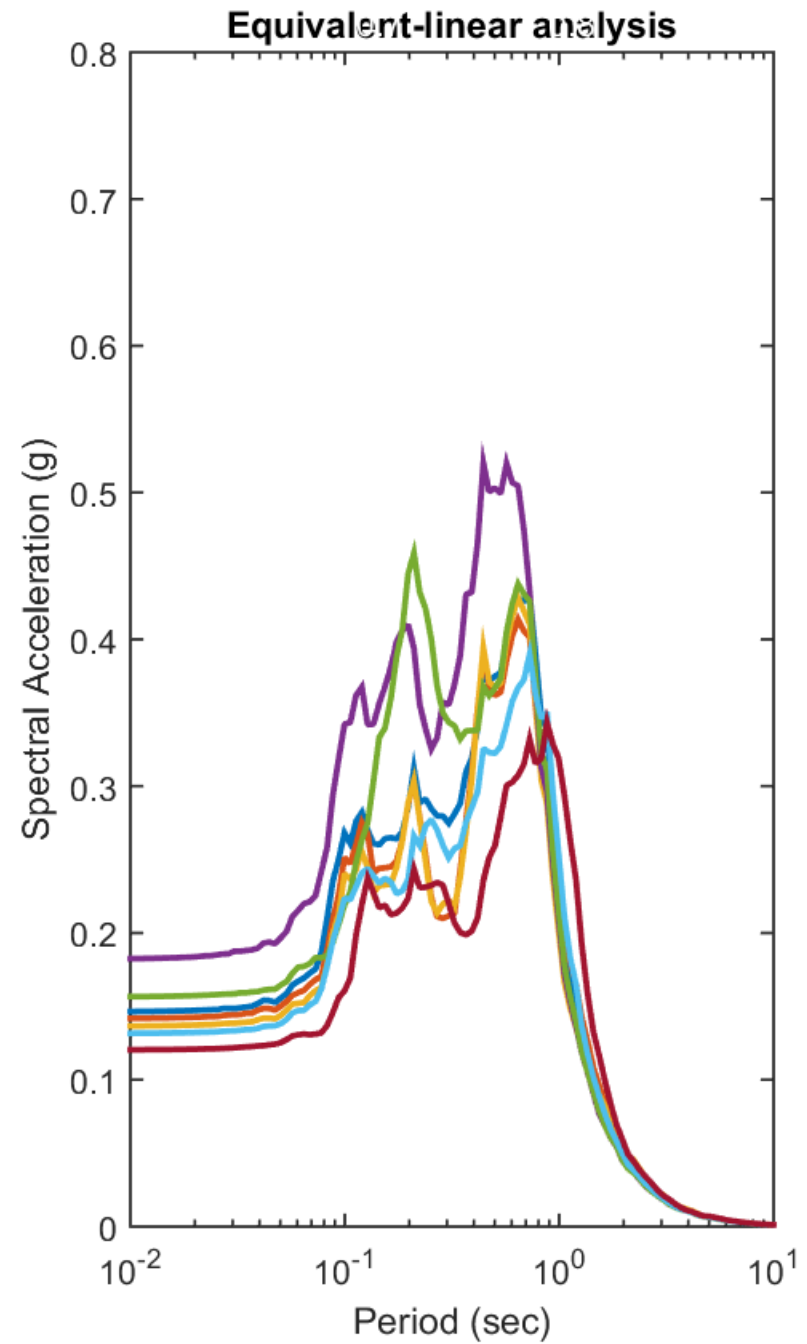
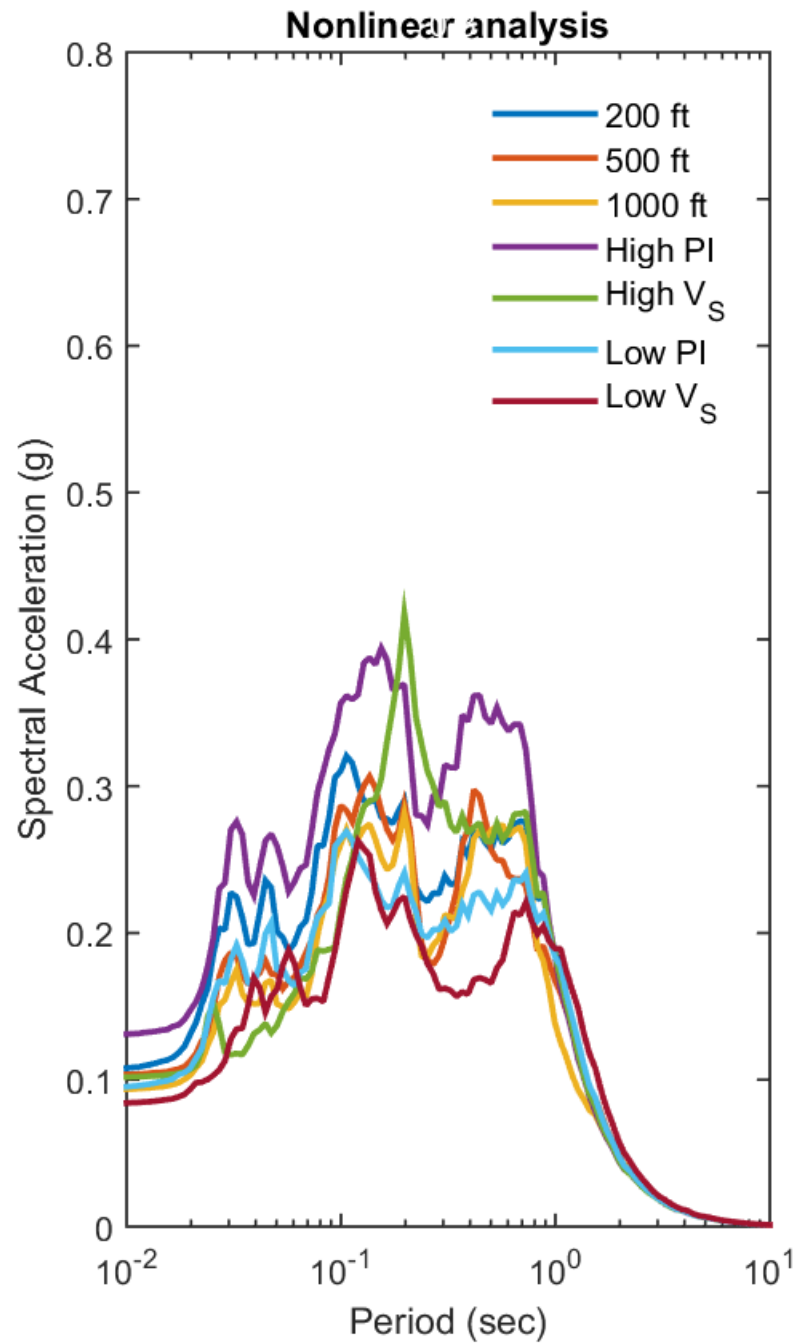
# Nonlinear Analysis for All Scenarios: I-26



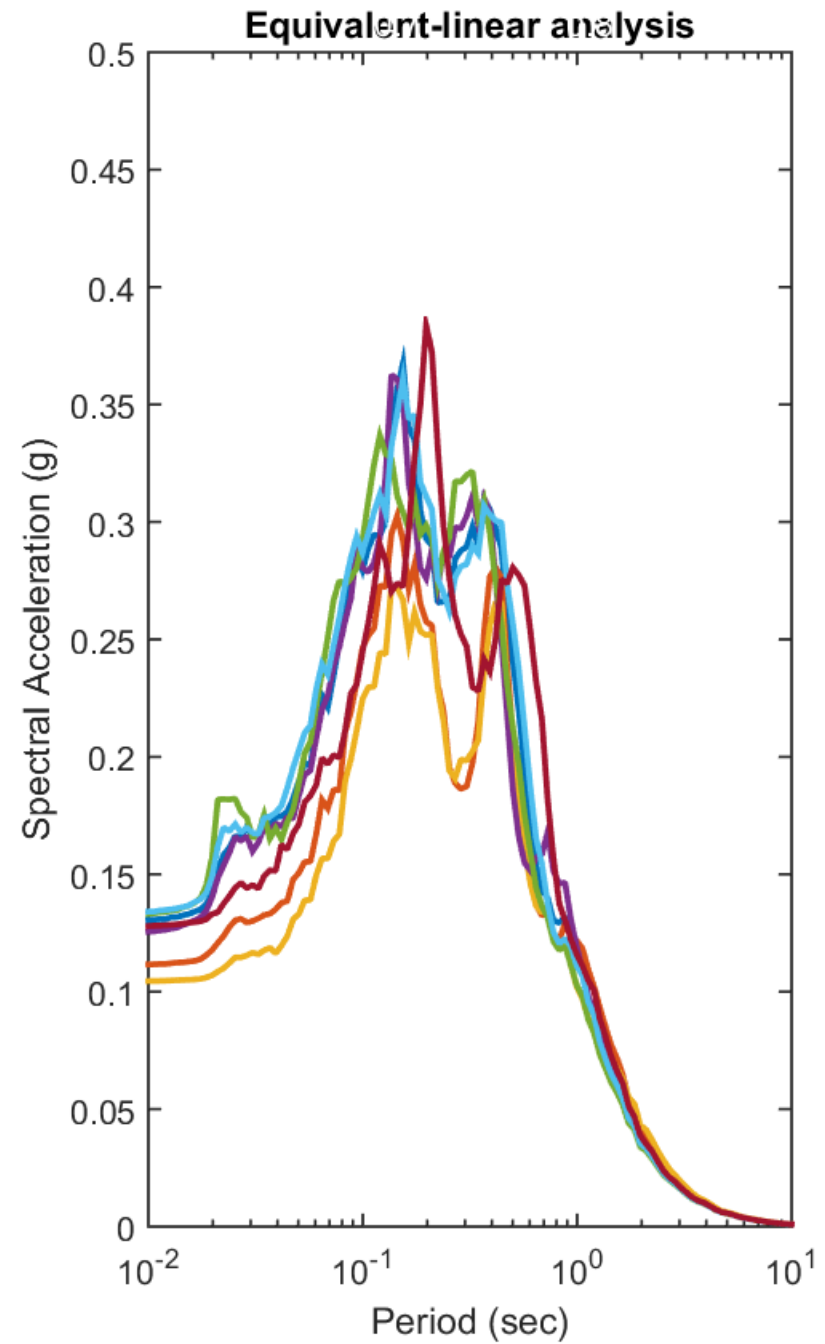
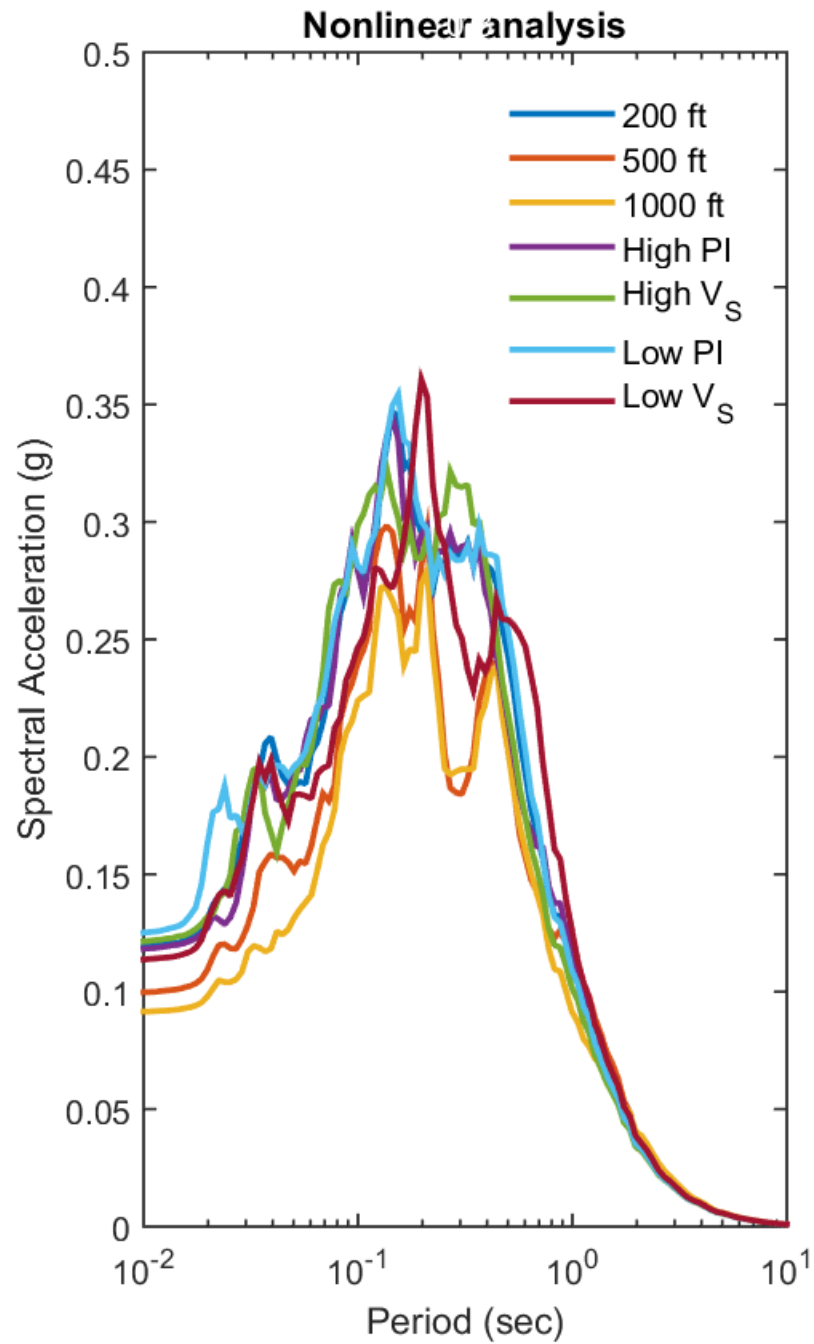
## Equivalent Linear Analysis for All Scenarios: I-26



## Ground Surface RS for All Scenarios: I-26



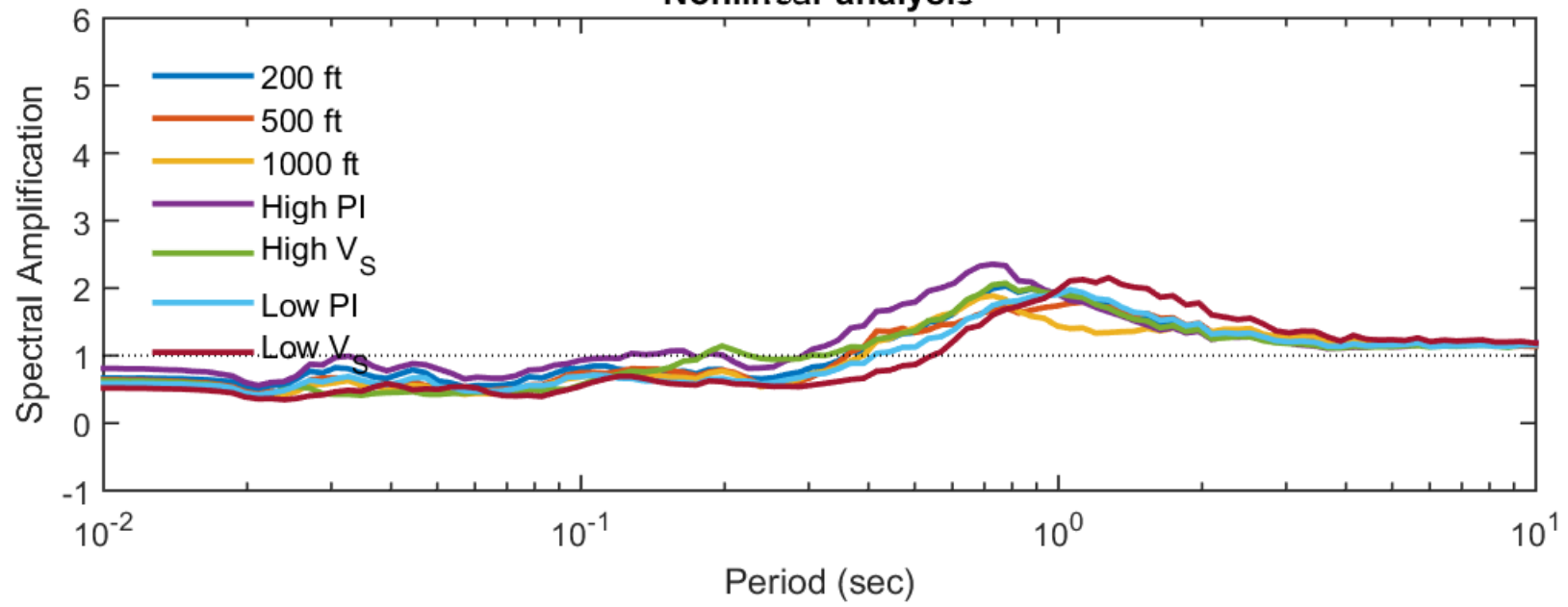
## Top of Marl RS for All Scenarios: I-26



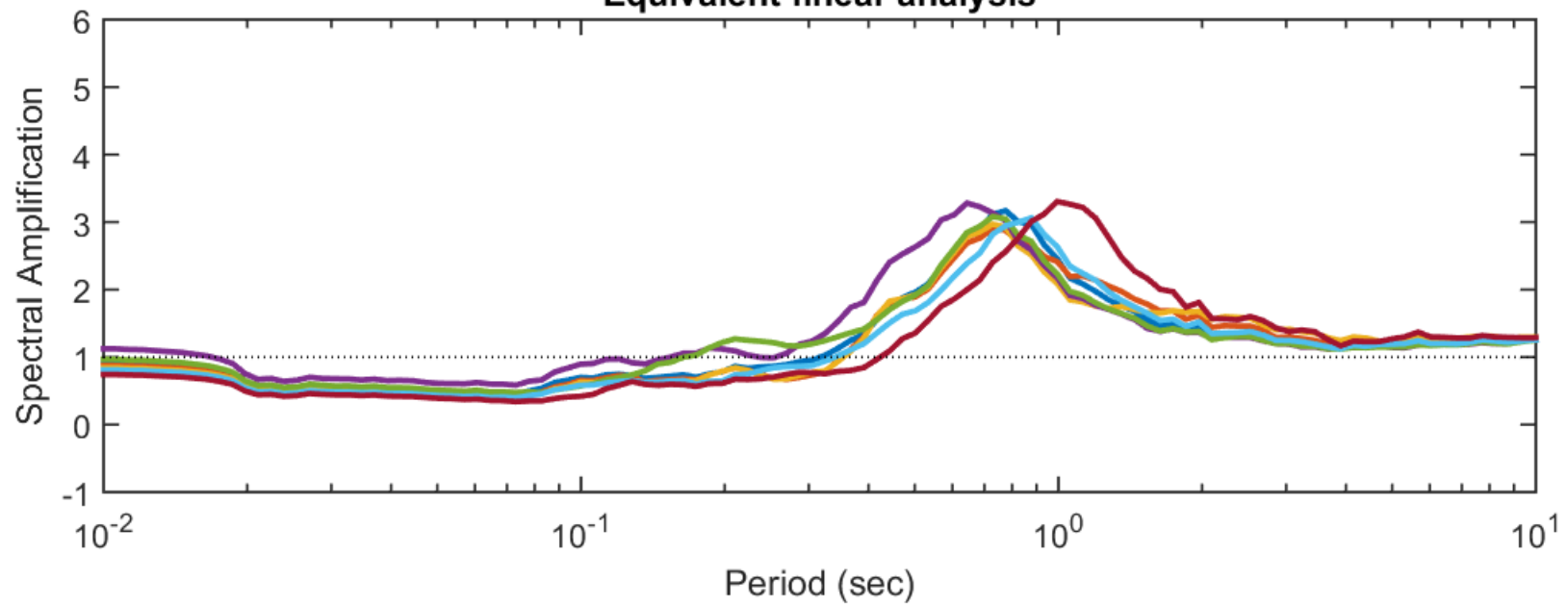


## Ground Surface Amplification for All Scenarios: I-26

### Nonlinear analysis

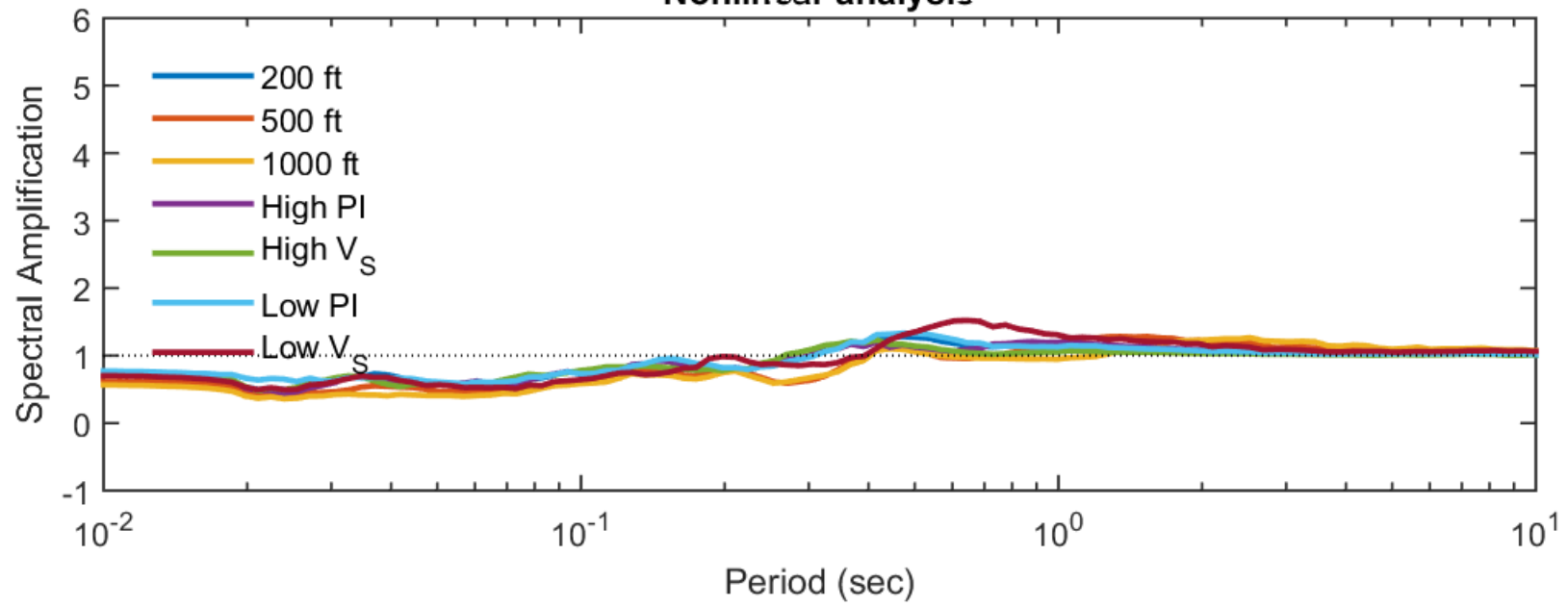


### Equivalent-linear analysis

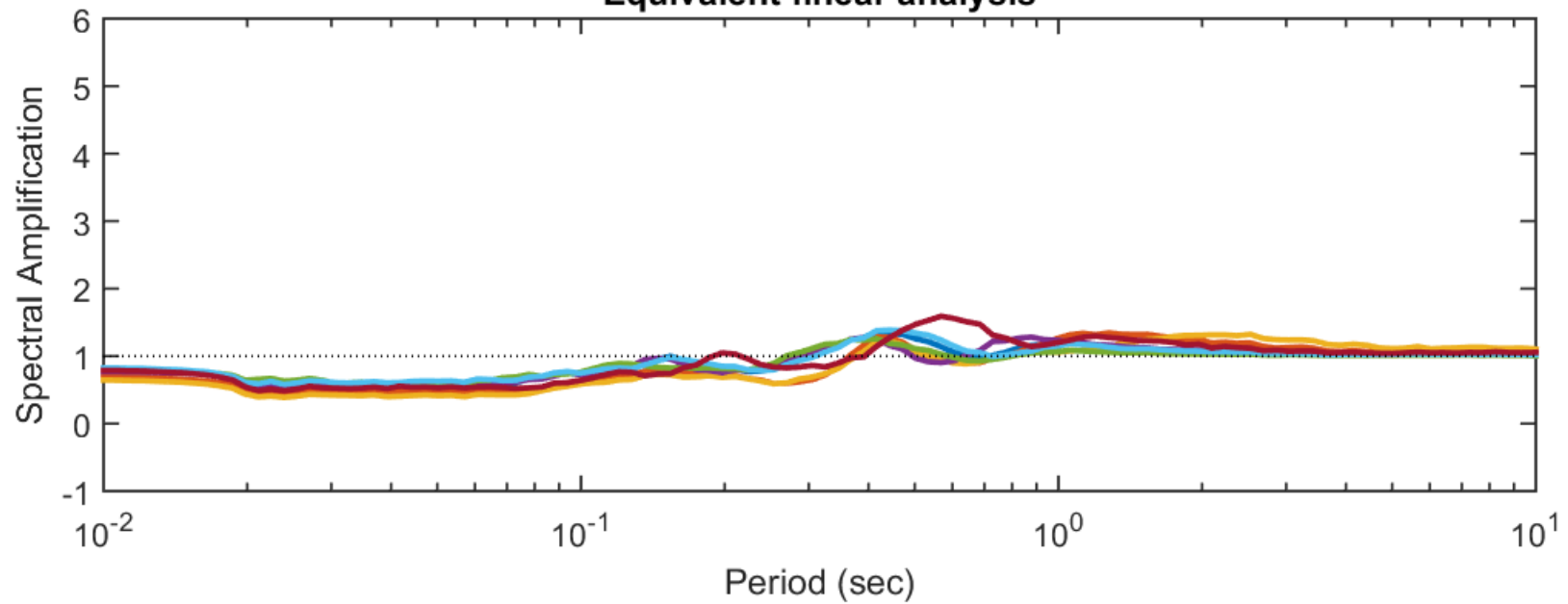


## Top of Marl Amplification for All Scenarios: I-26

### Nonlinear analysis

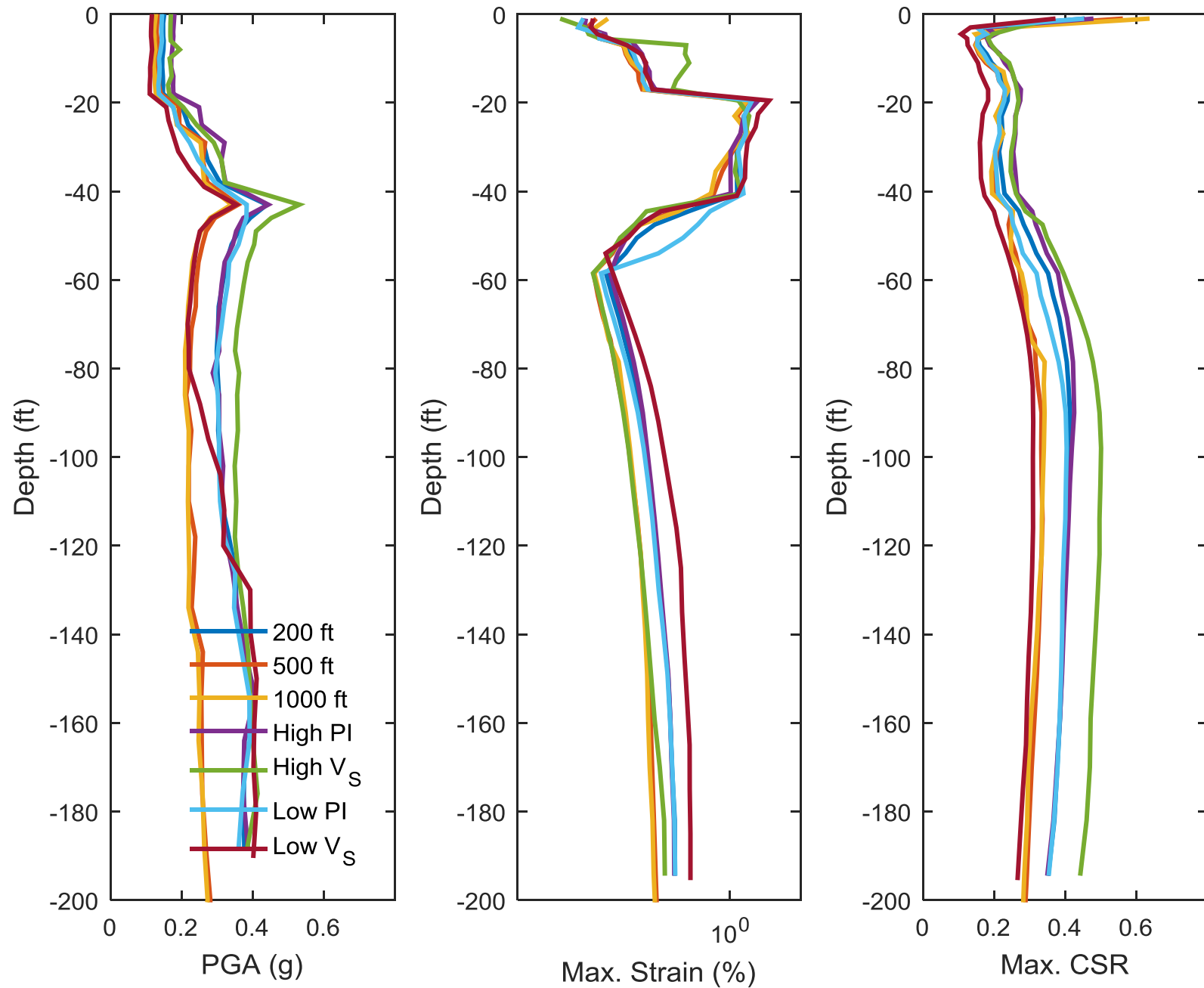


### Equivalent-linear analysis

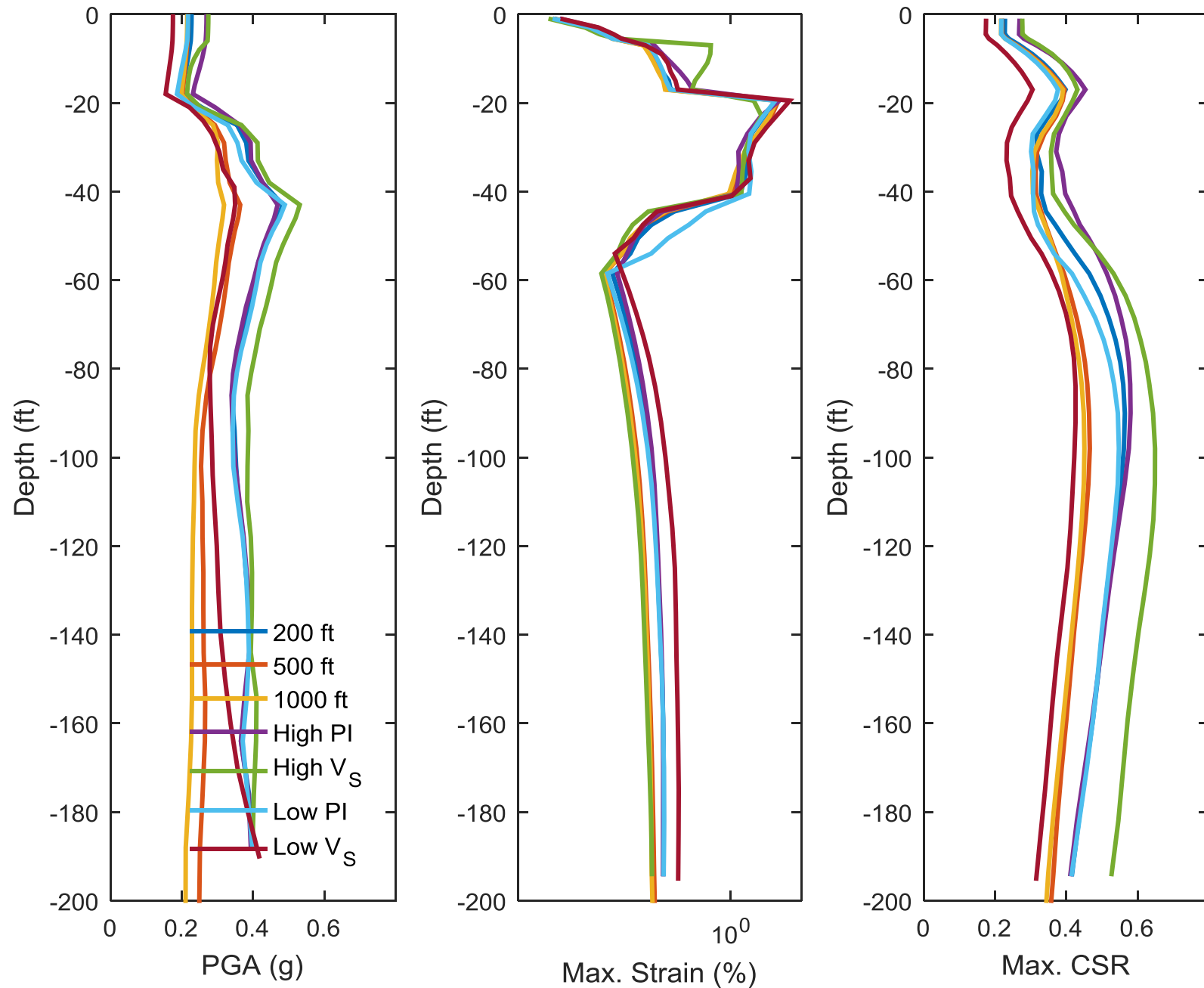


**SEE SUMMARY PLOTS**

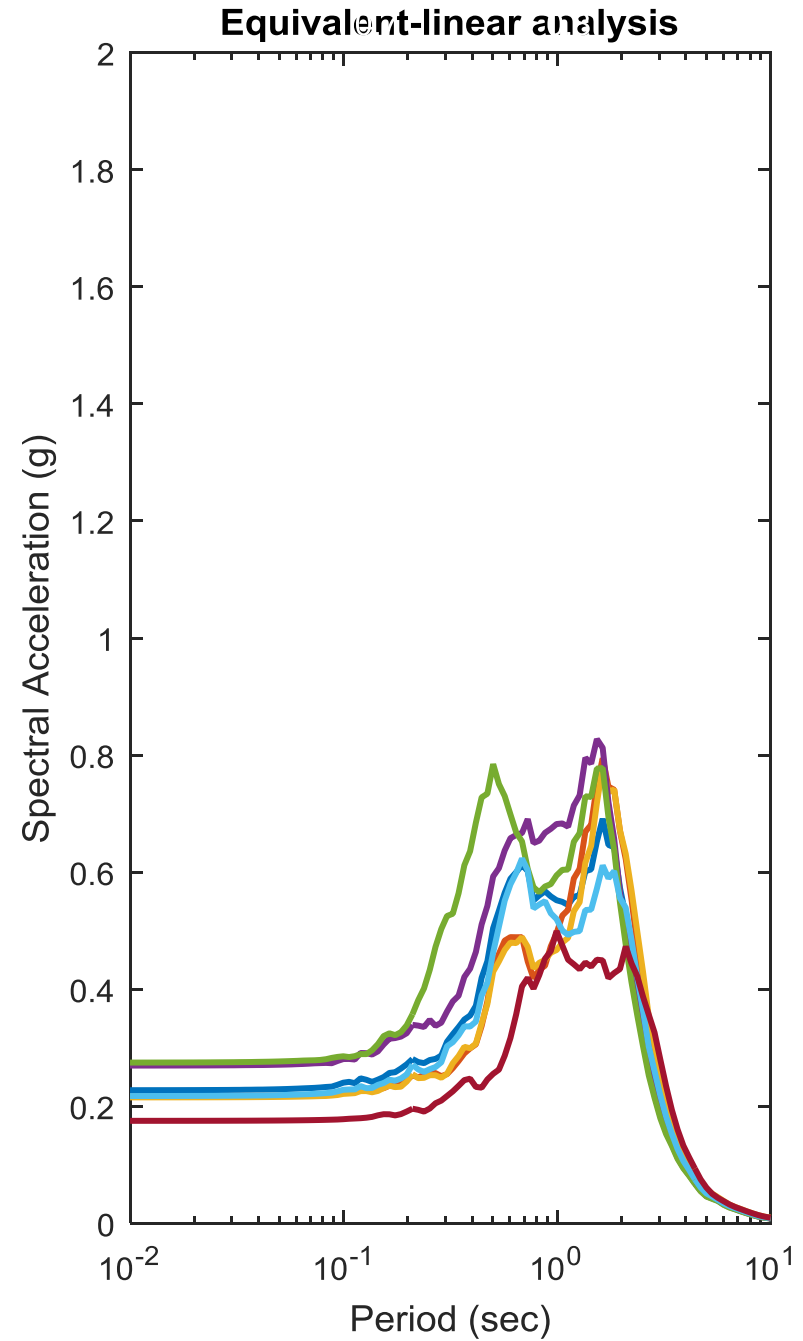
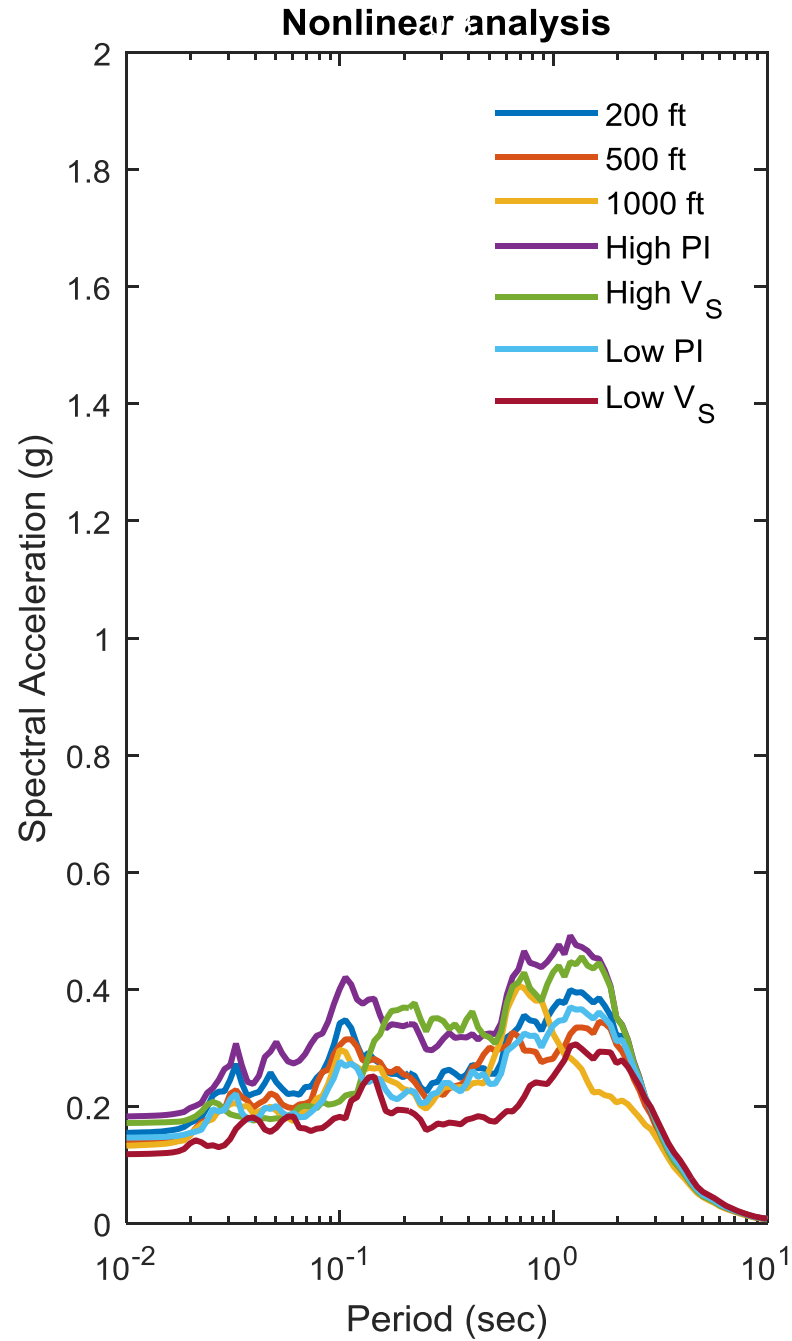
## Nonlinear Analysis for All Scenarios: I-26



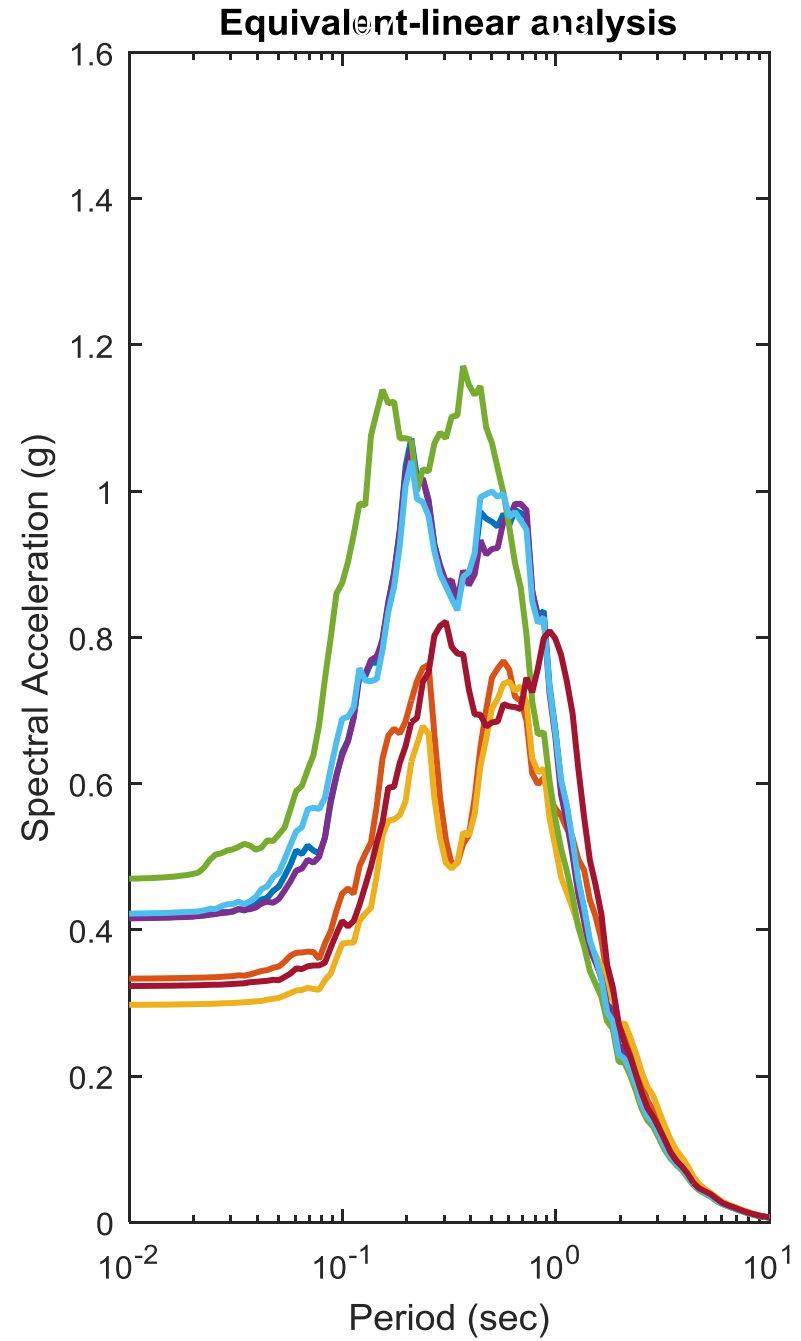
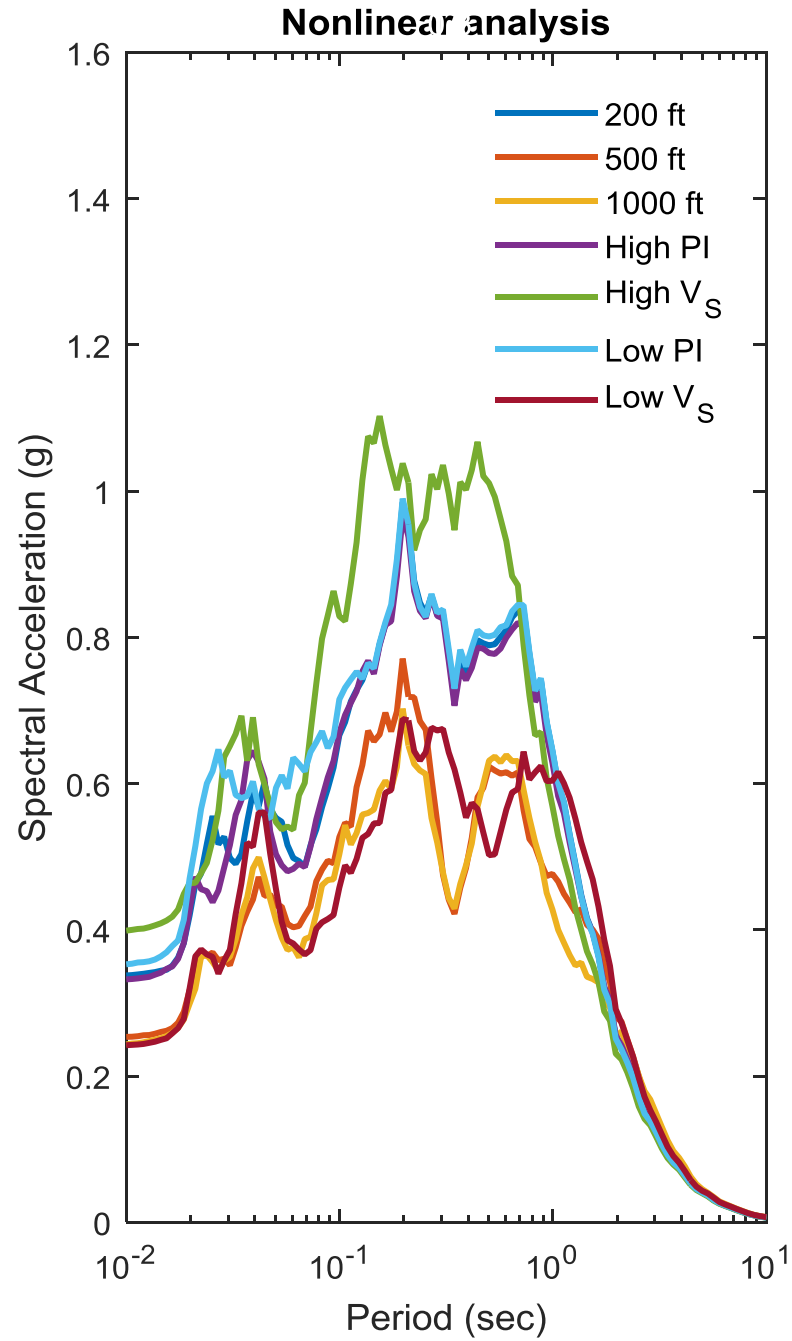
## Equivalent Linear Analysis for All Scenarios: I-26



## Ground Surface RS for All Scenarios: I-26

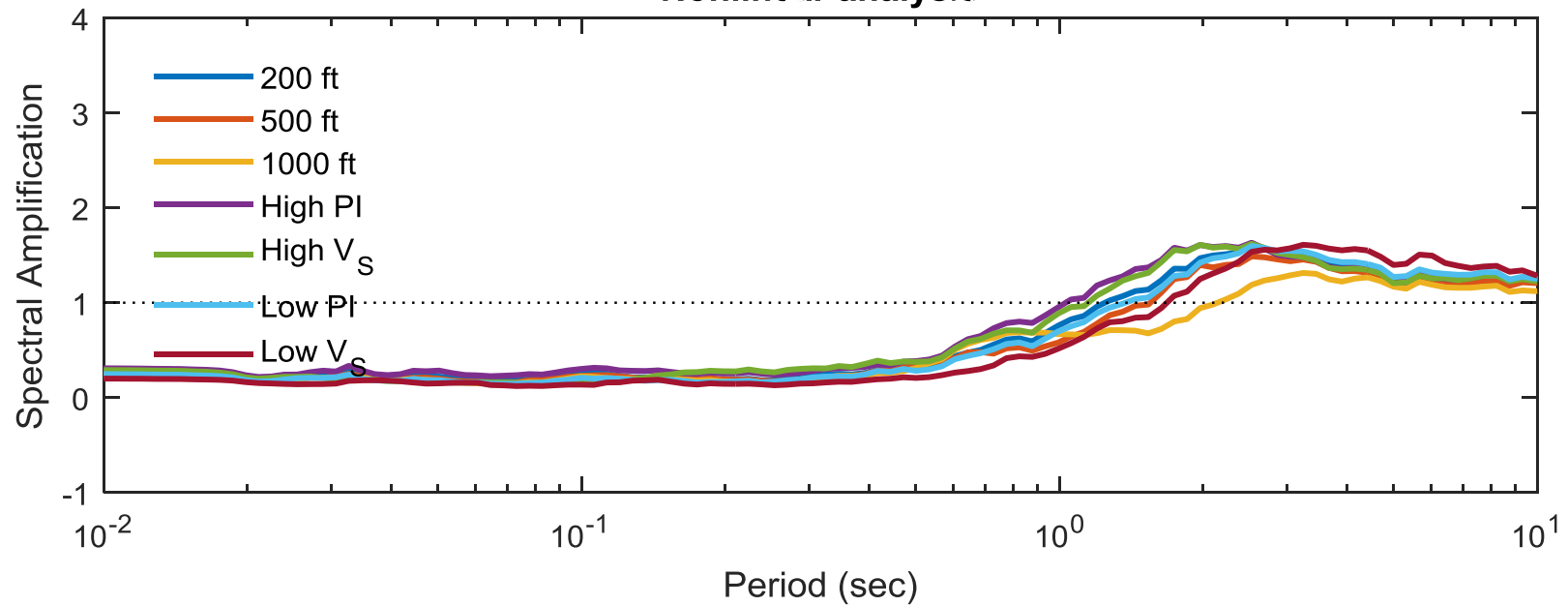


## Top of Marl RS for All Scenarios: I-26

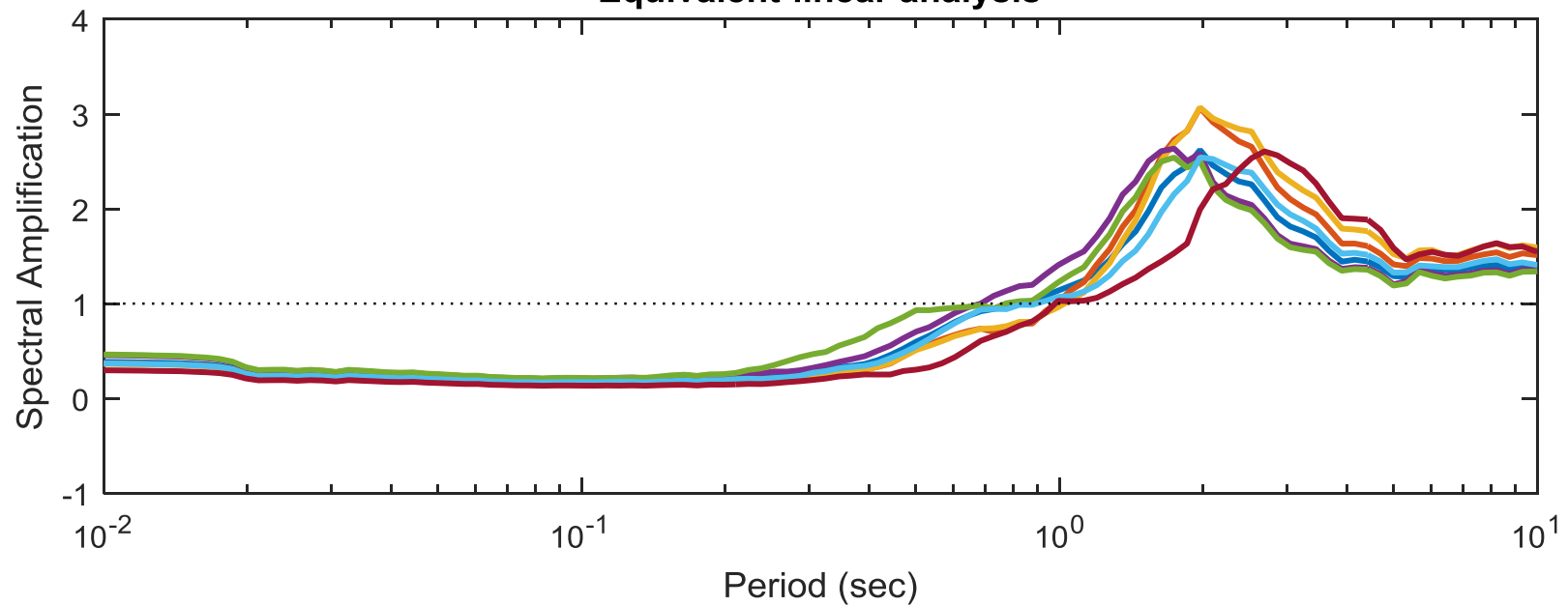


## Ground Surface Amplification for All Scenarios: I-26

### Nonlinear analysis



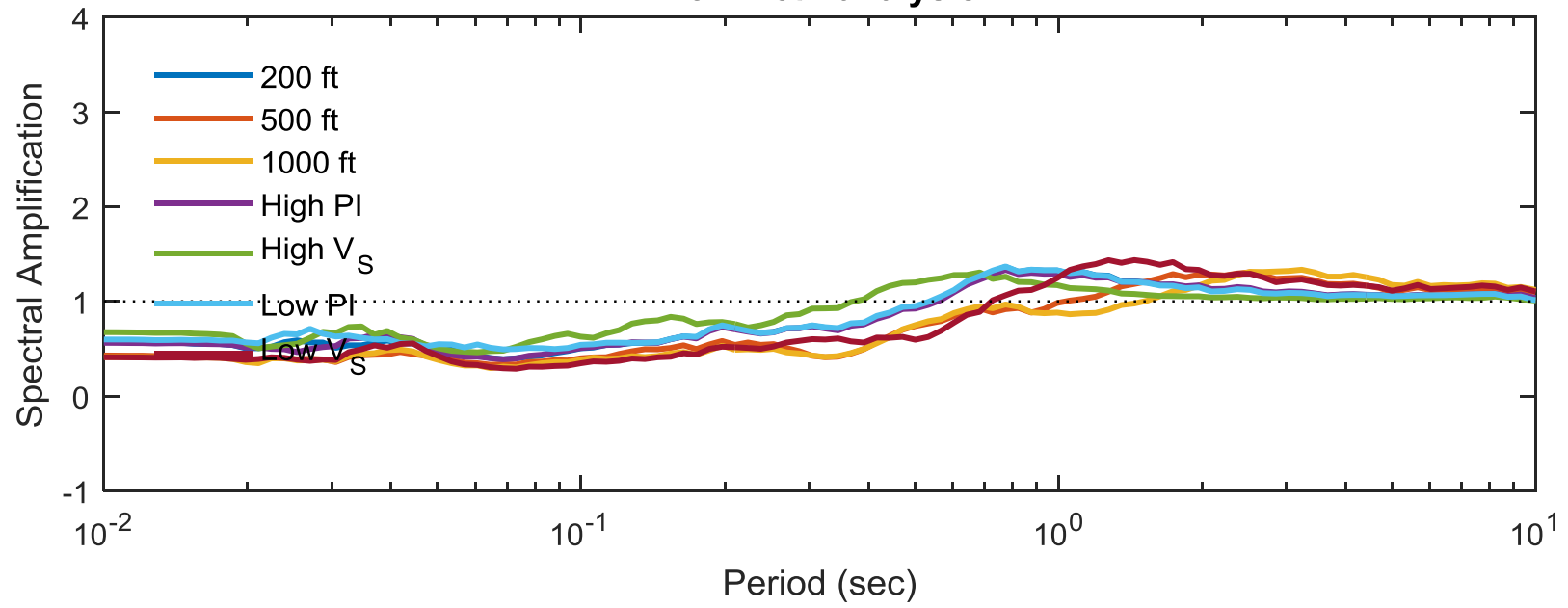
### Equivalent-linear analysis



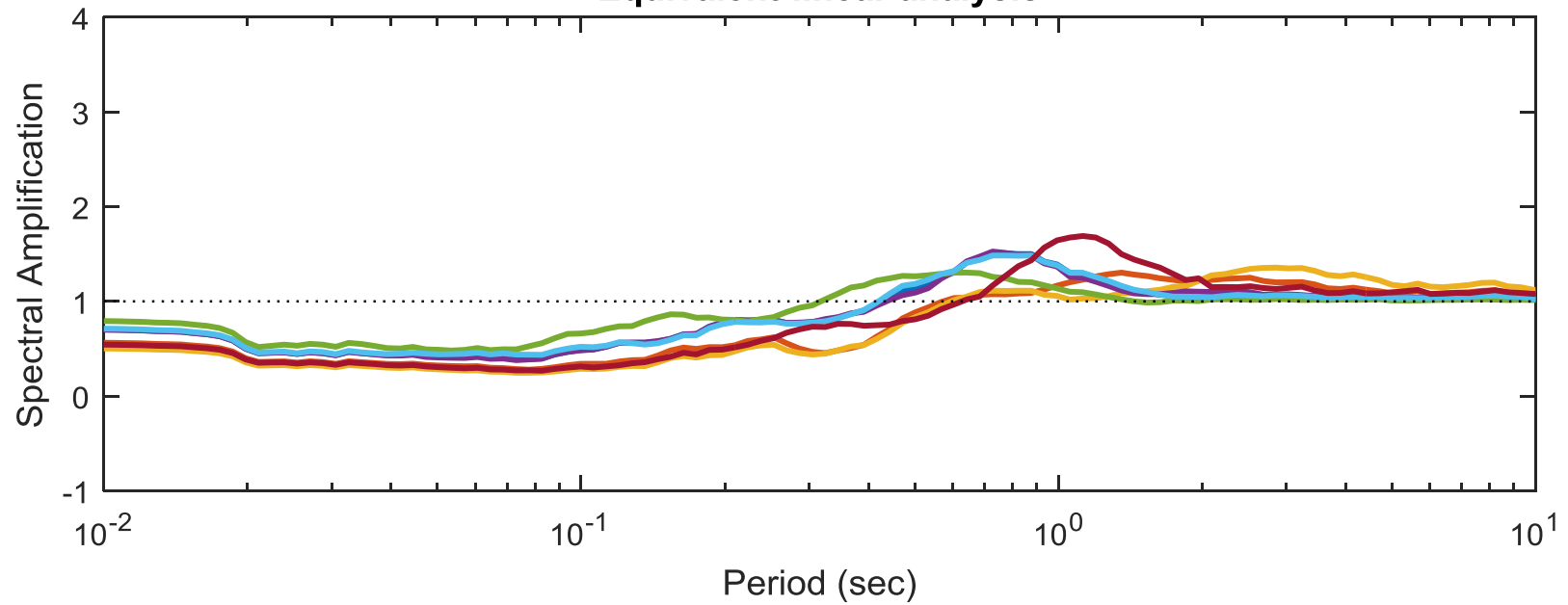


## Top of Marl Amplification for All Scenarios: I-26

### Nonlinear analysis

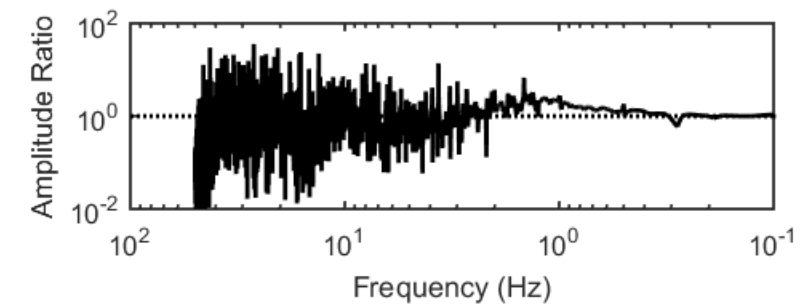
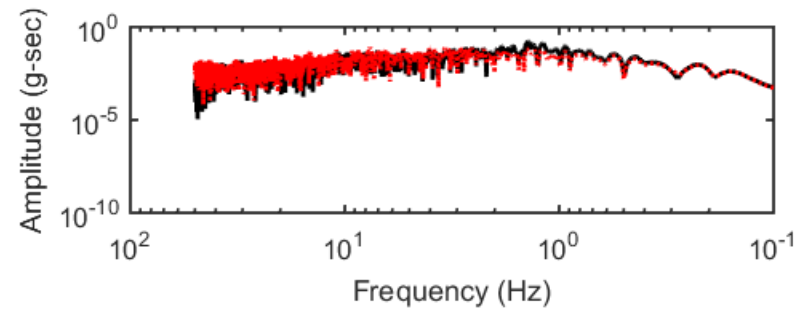
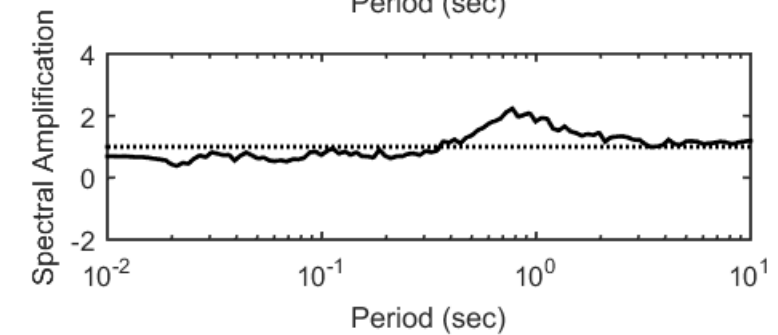
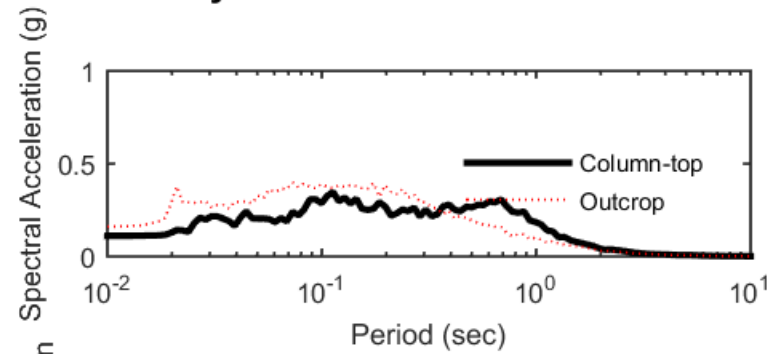
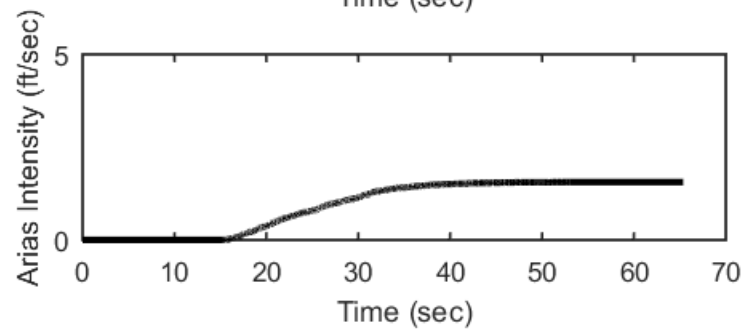
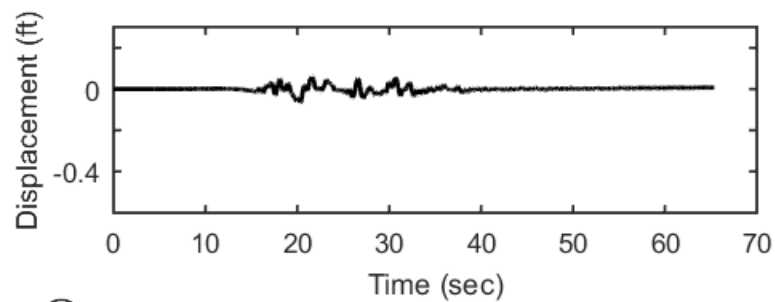
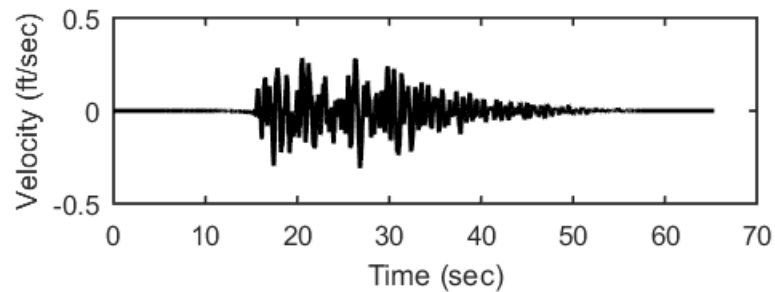
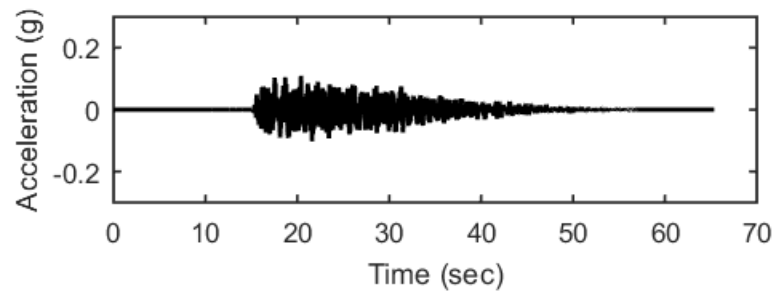


### Equivalent-linear analysis

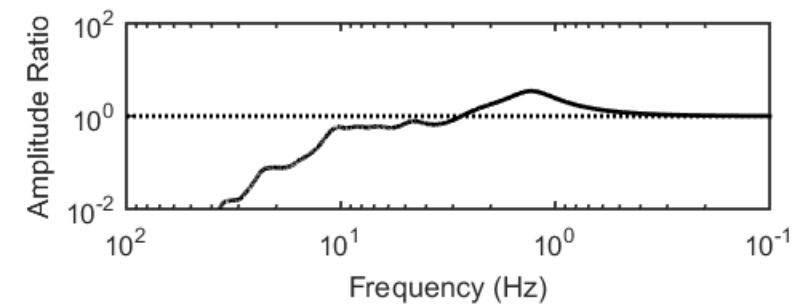
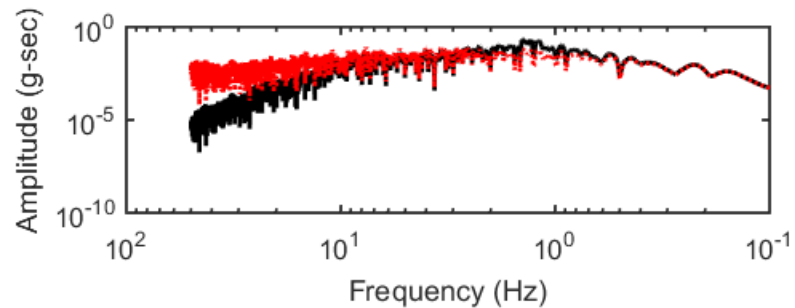
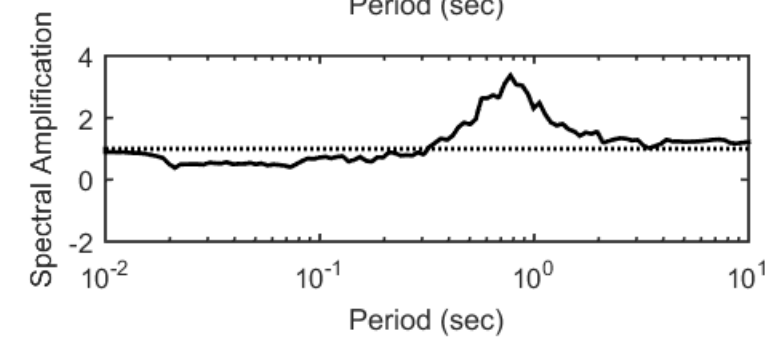
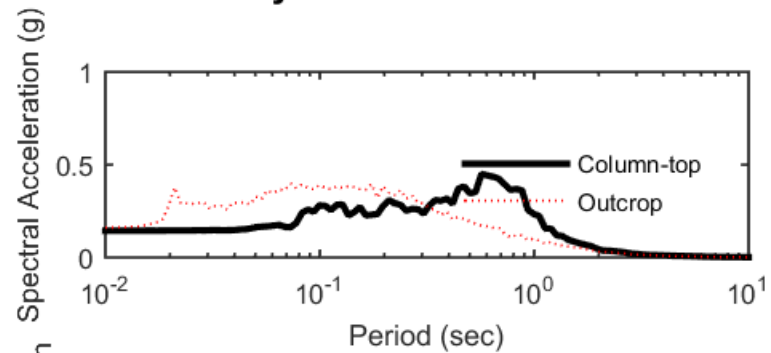
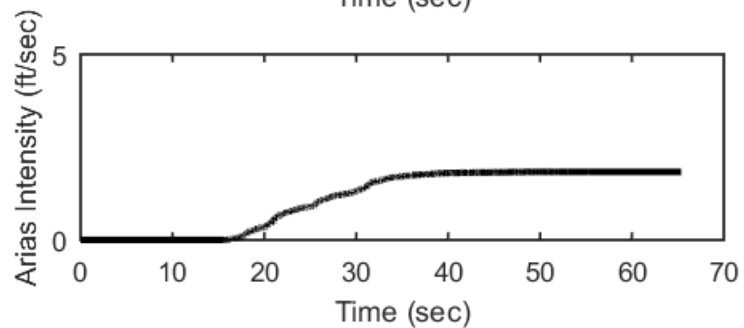
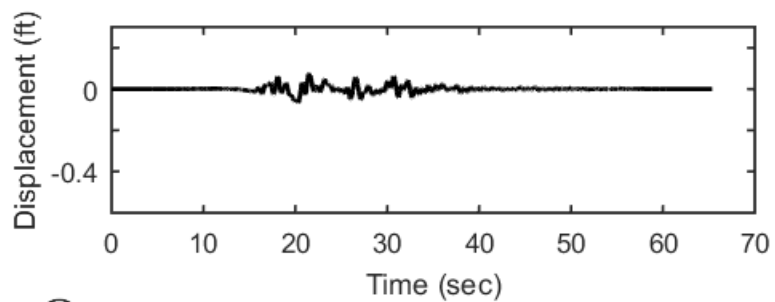
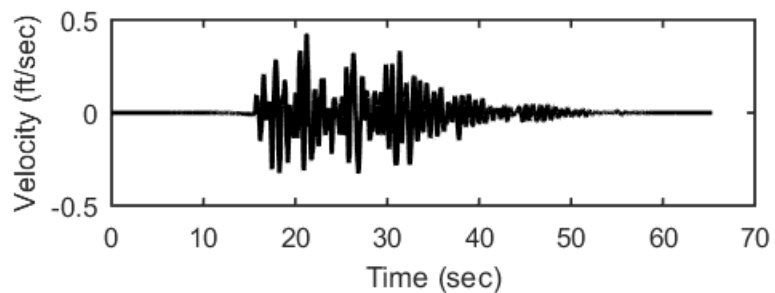
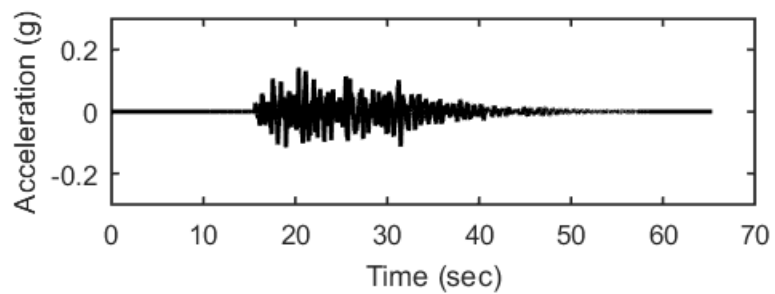


## **200 FT BASE MODEL**

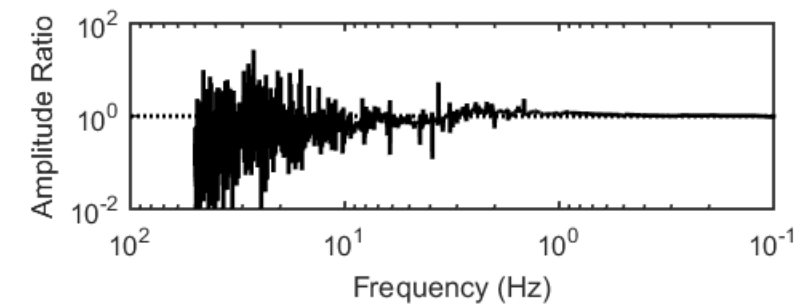
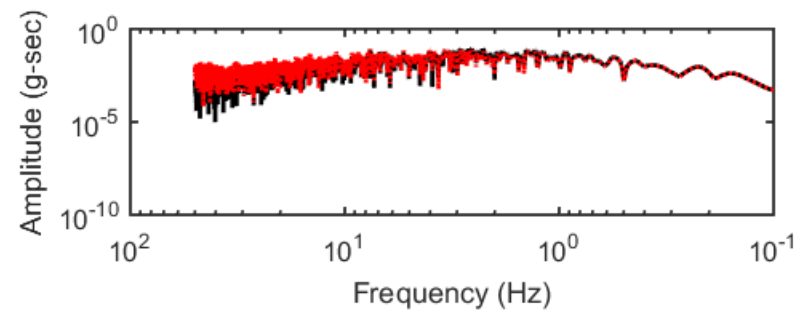
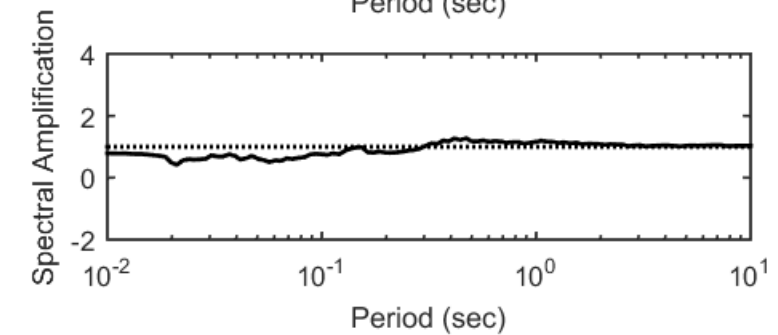
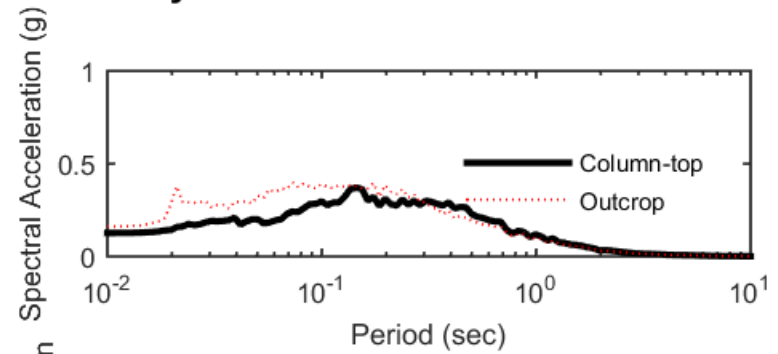
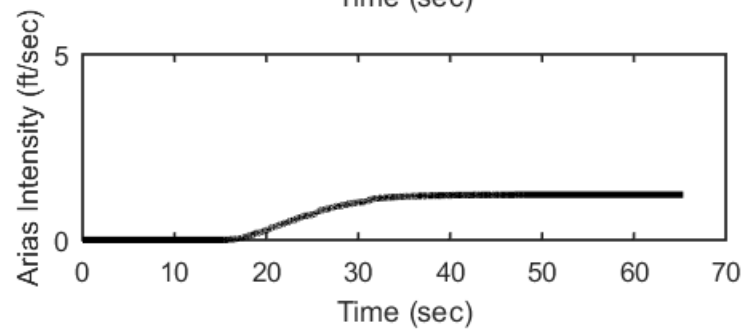
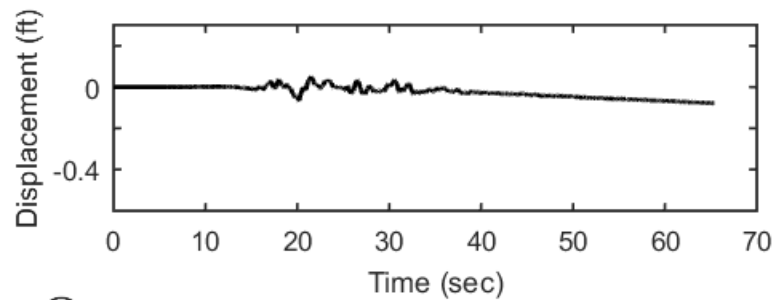
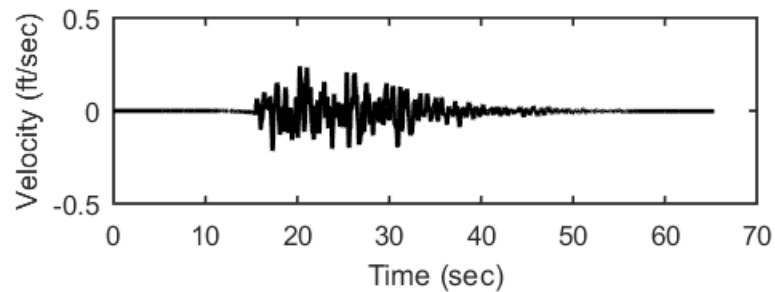
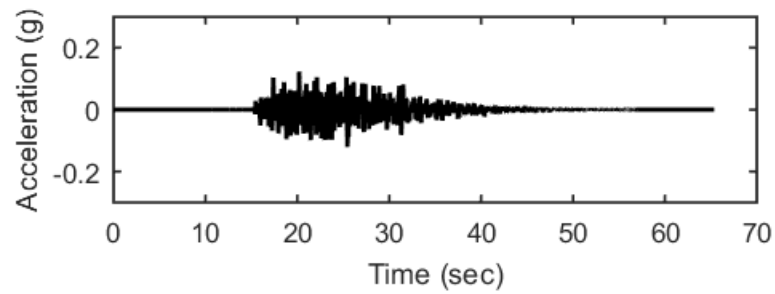
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



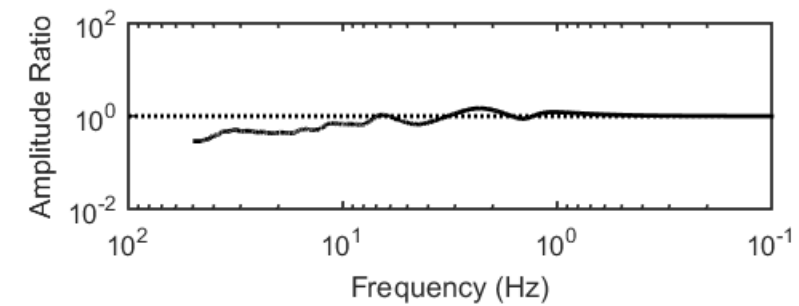
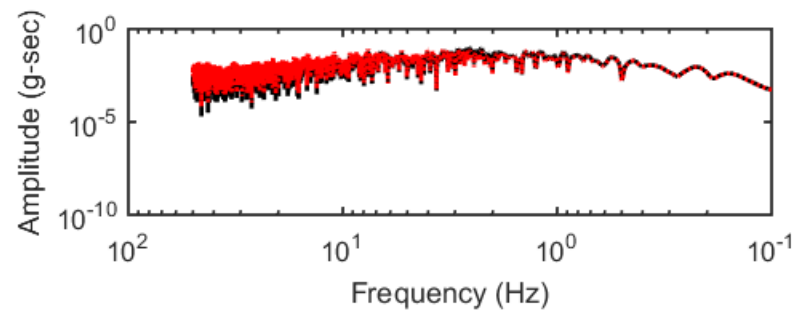
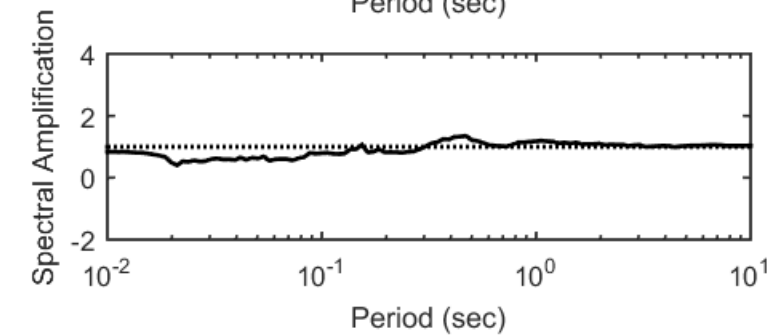
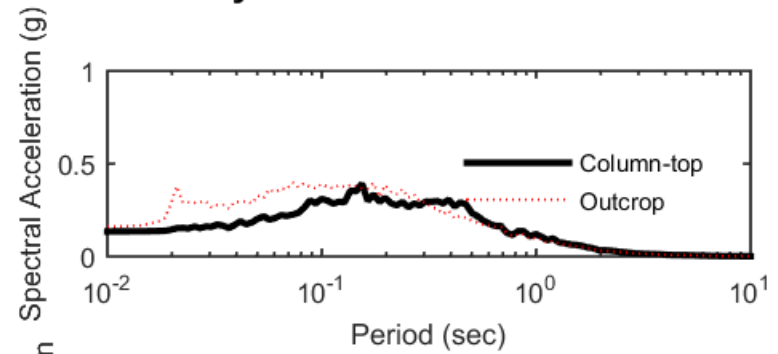
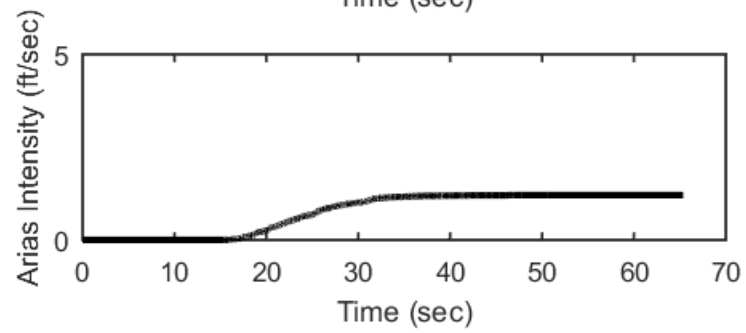
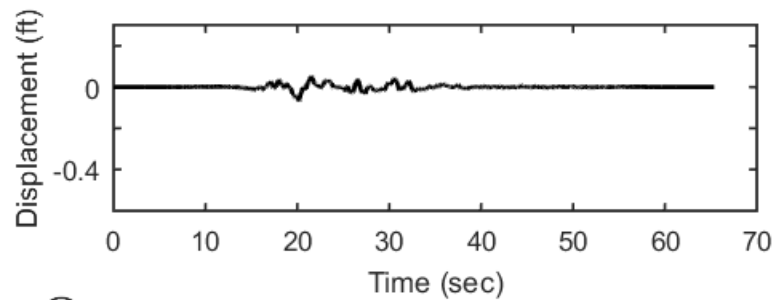
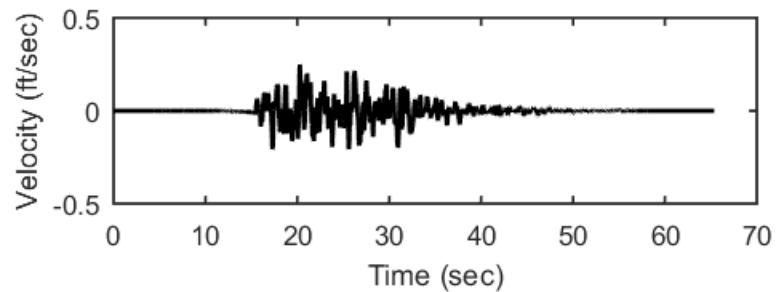
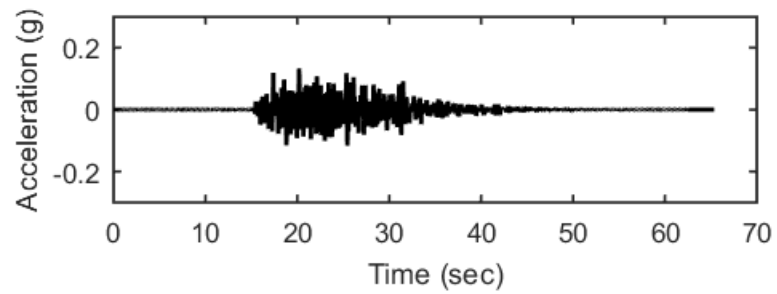
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



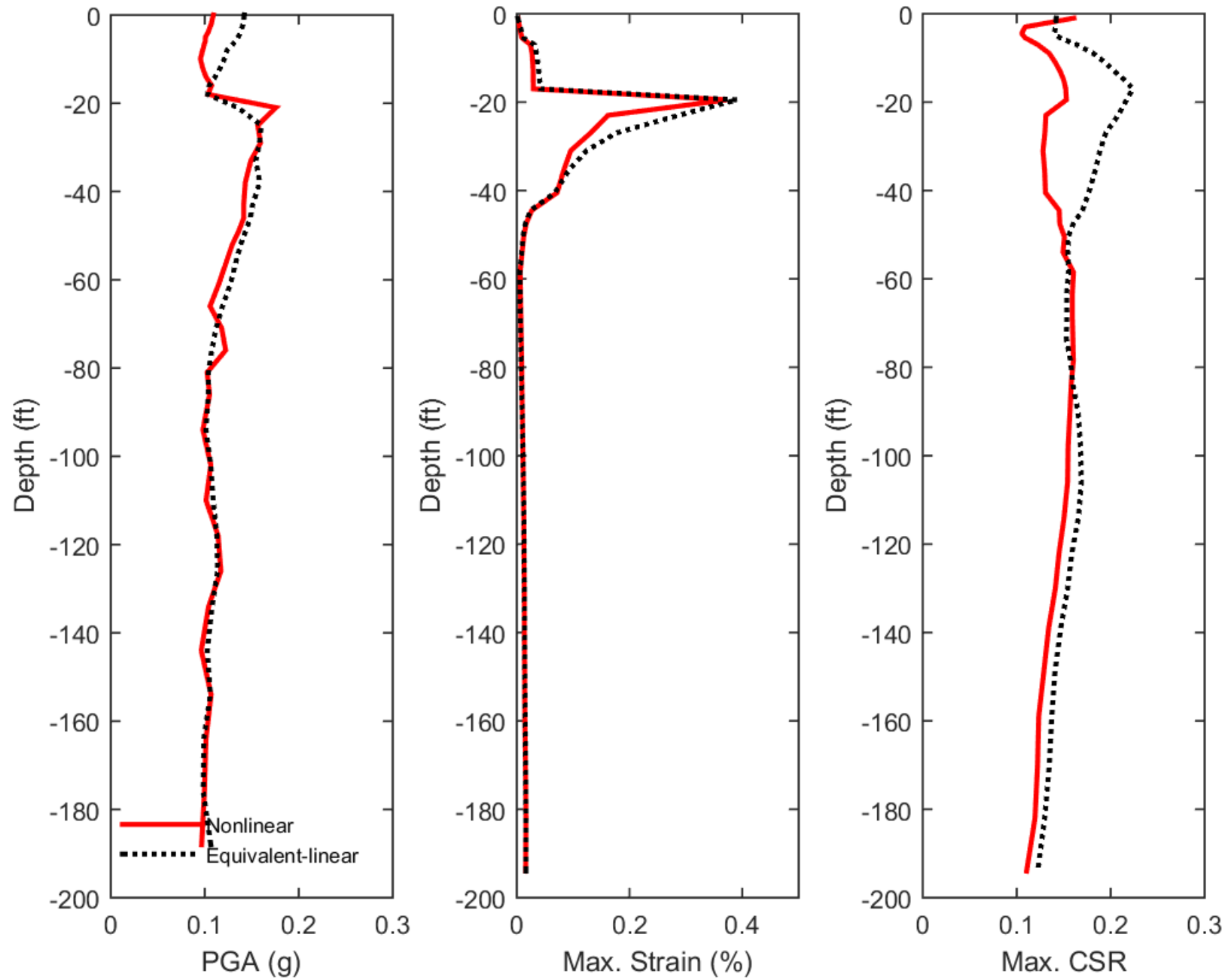
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



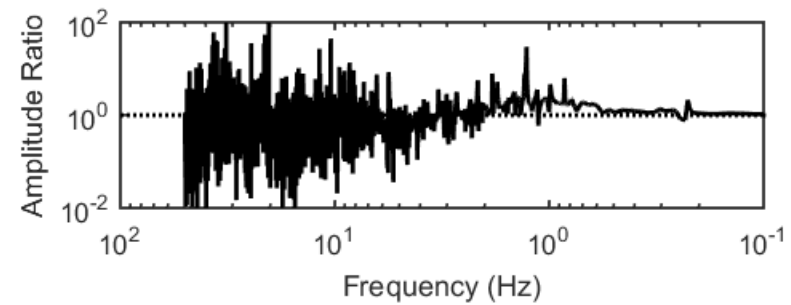
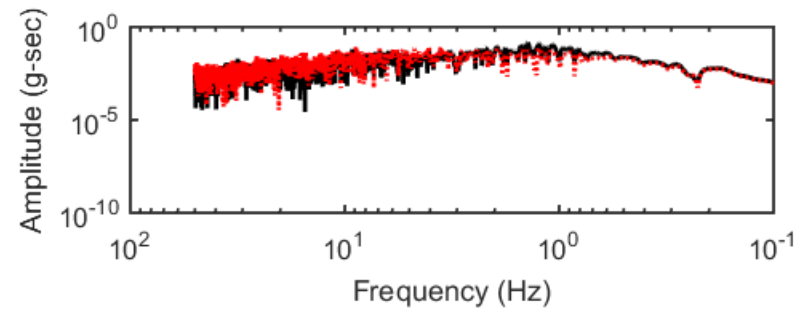
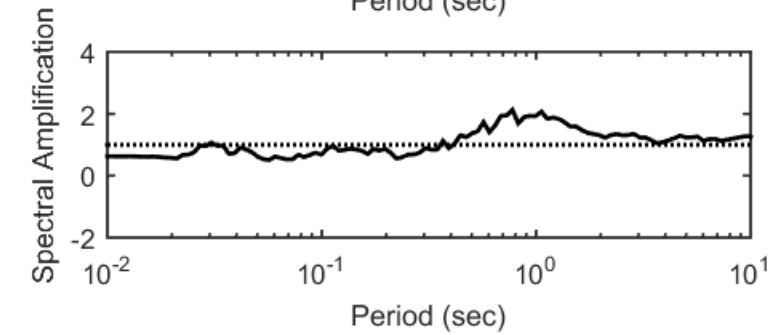
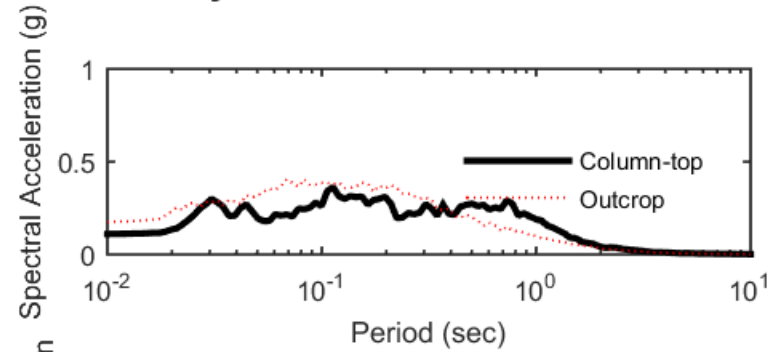
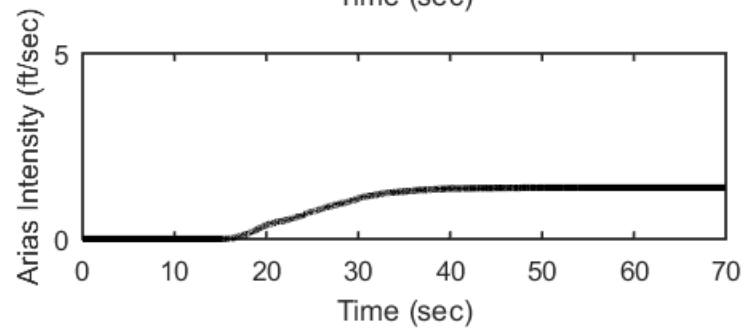
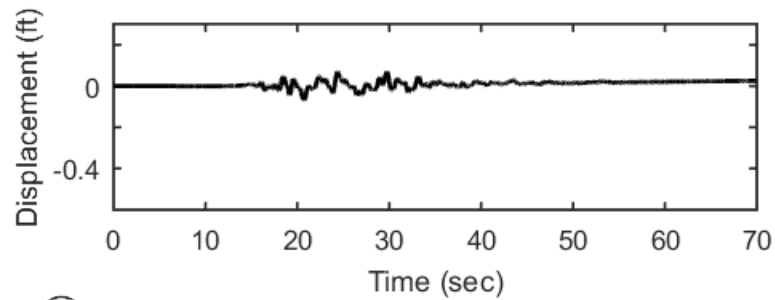
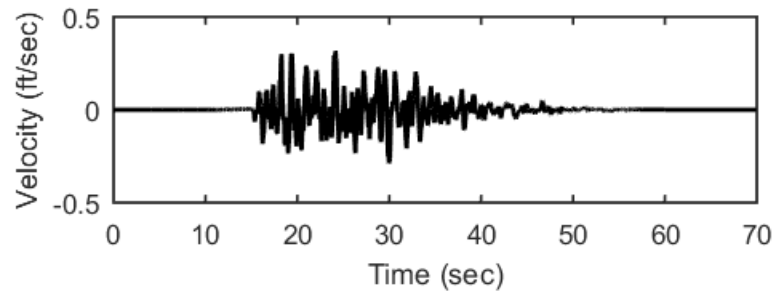
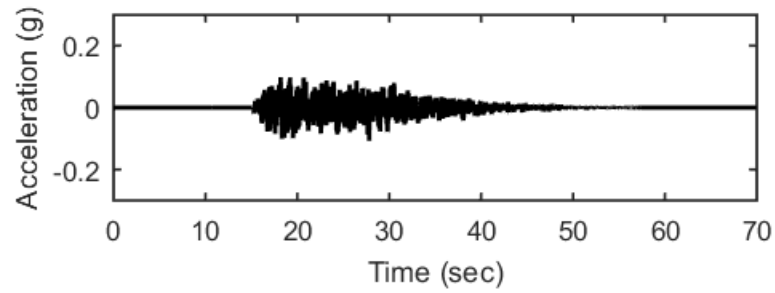
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



### Profile outputs for Motion: FEE1

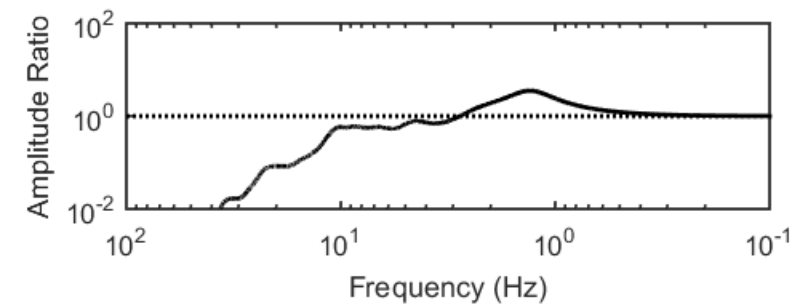
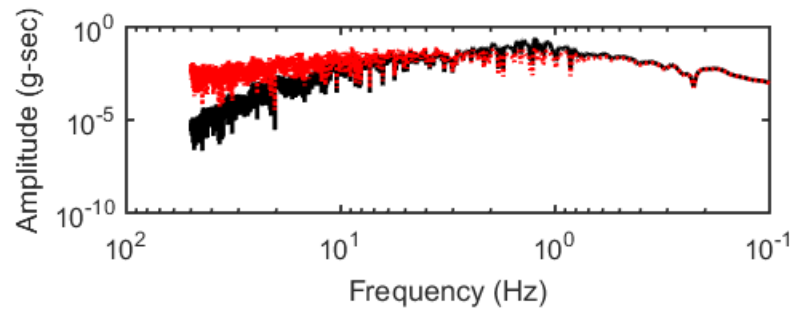
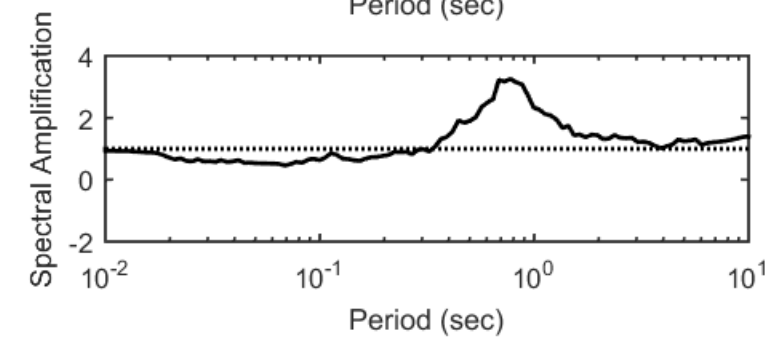
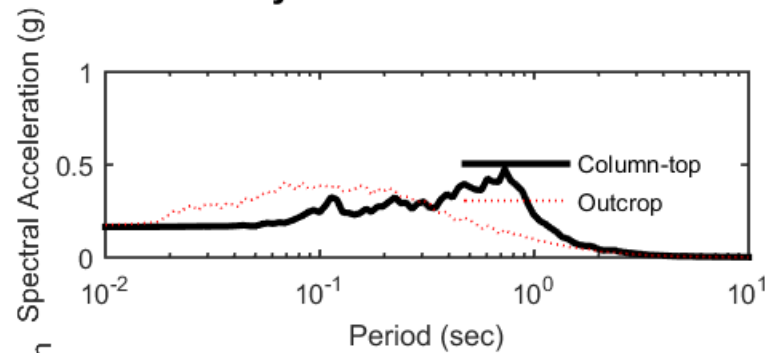
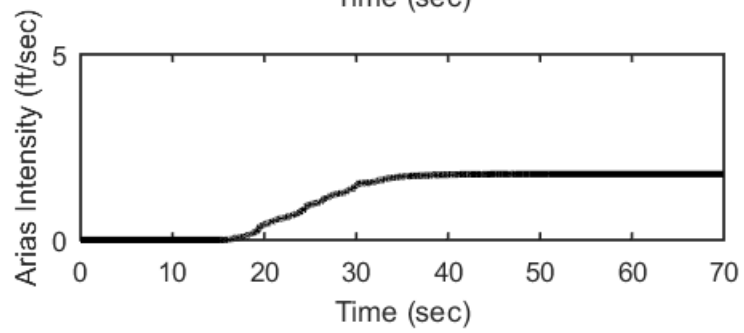
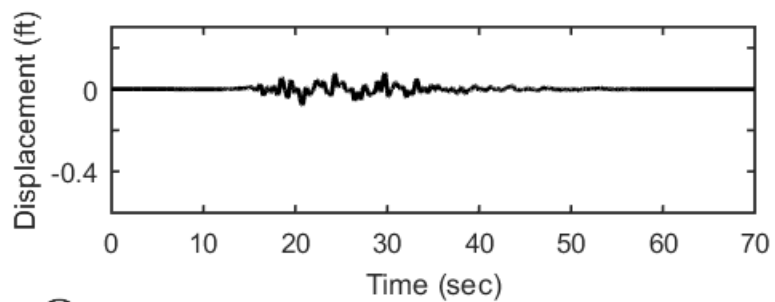
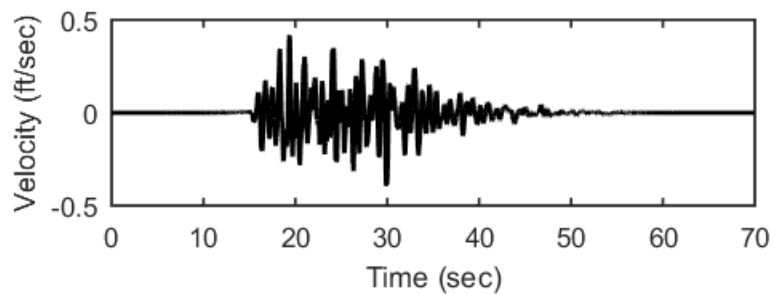
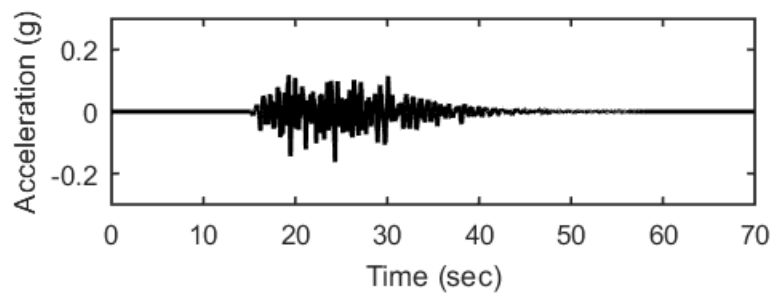


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2

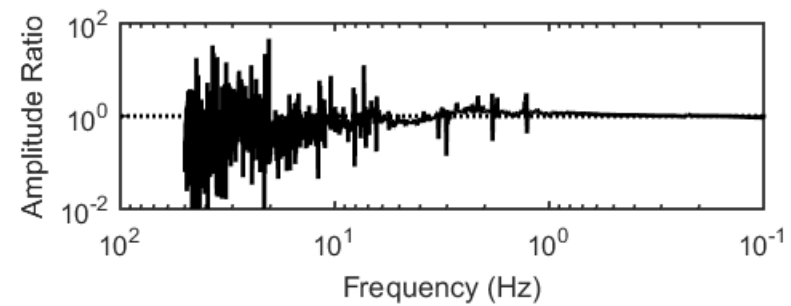
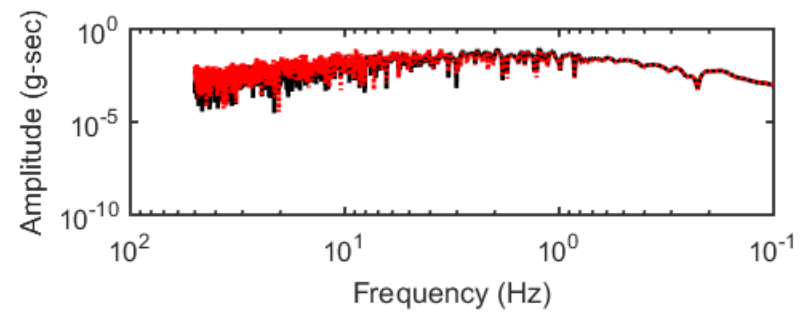
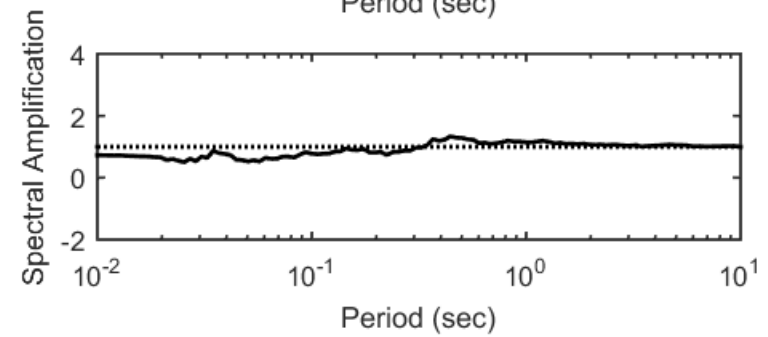
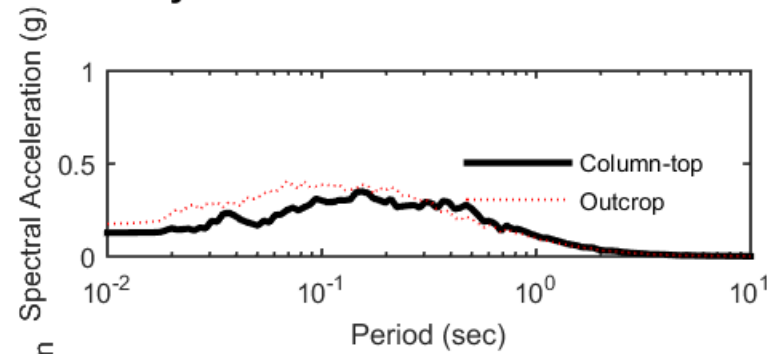
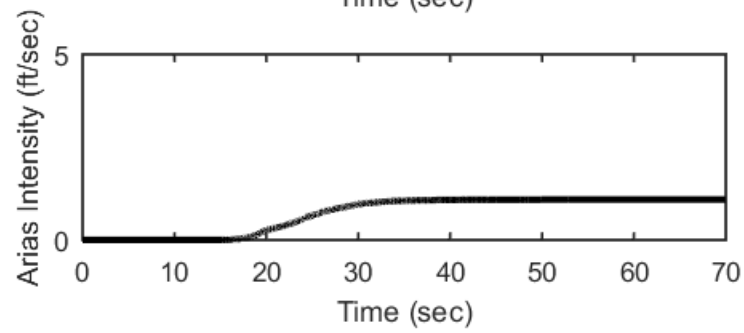
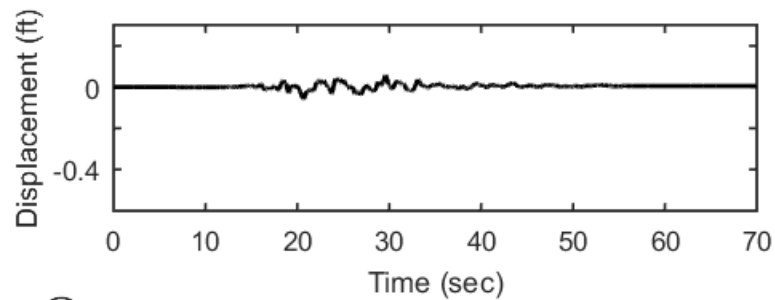
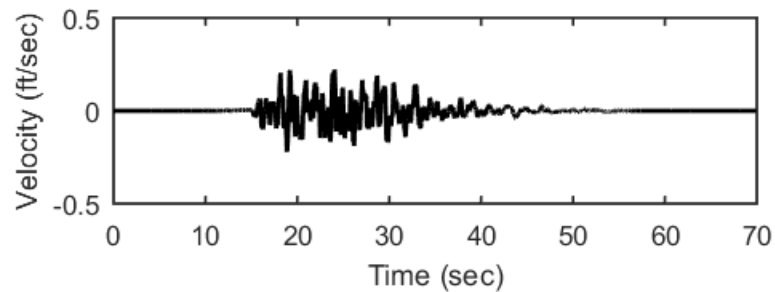
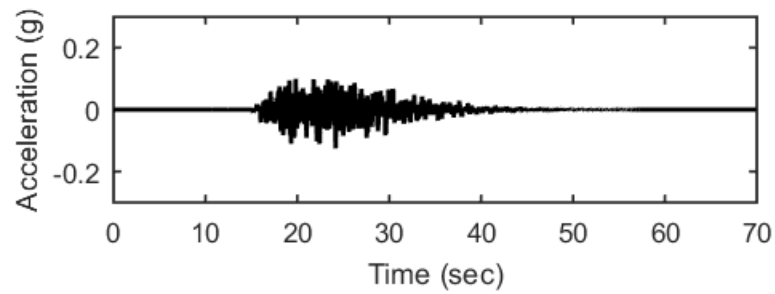




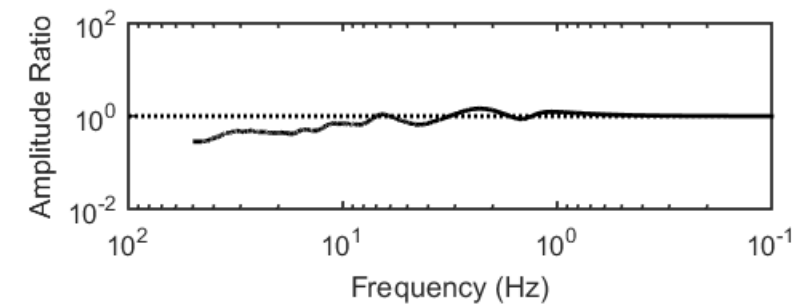
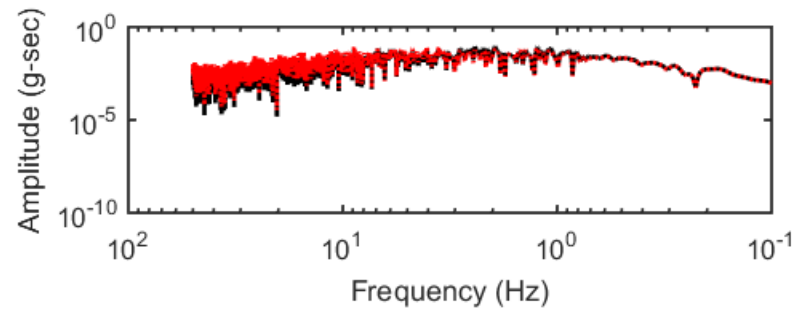
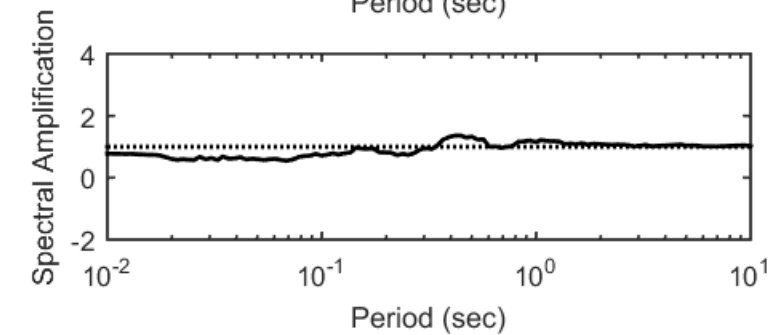
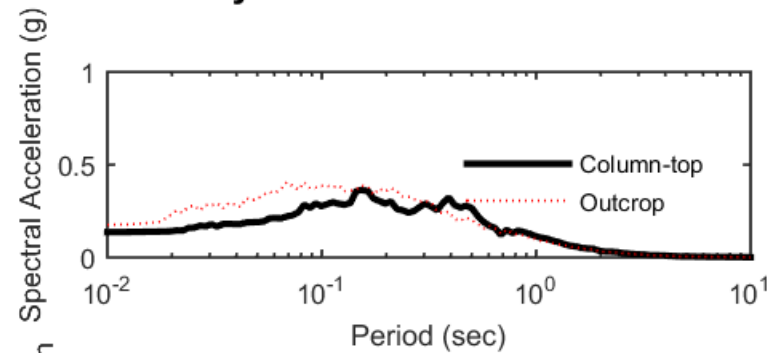
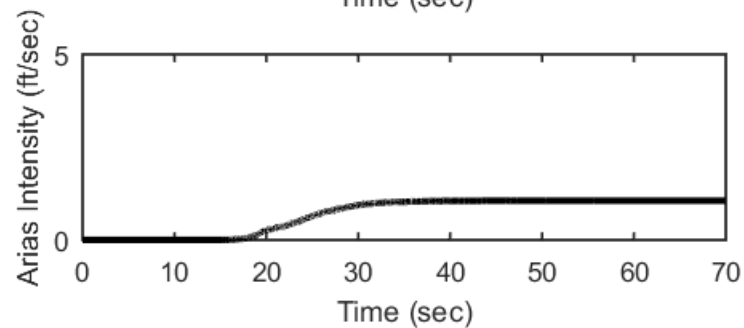
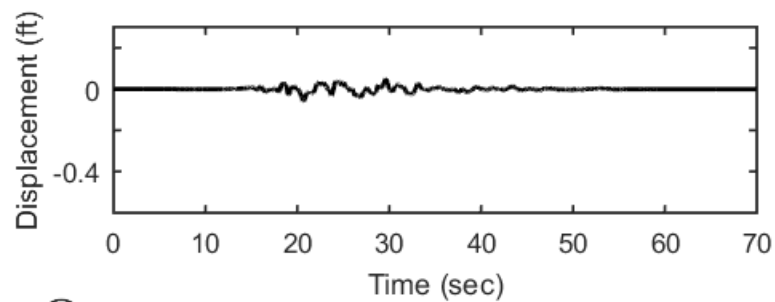
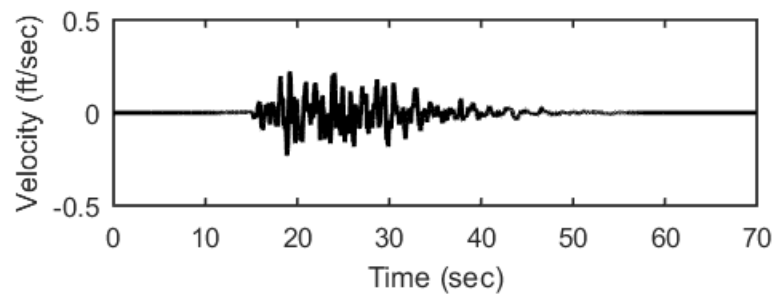
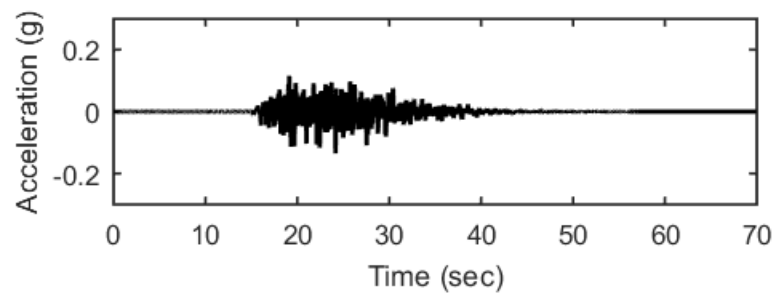
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



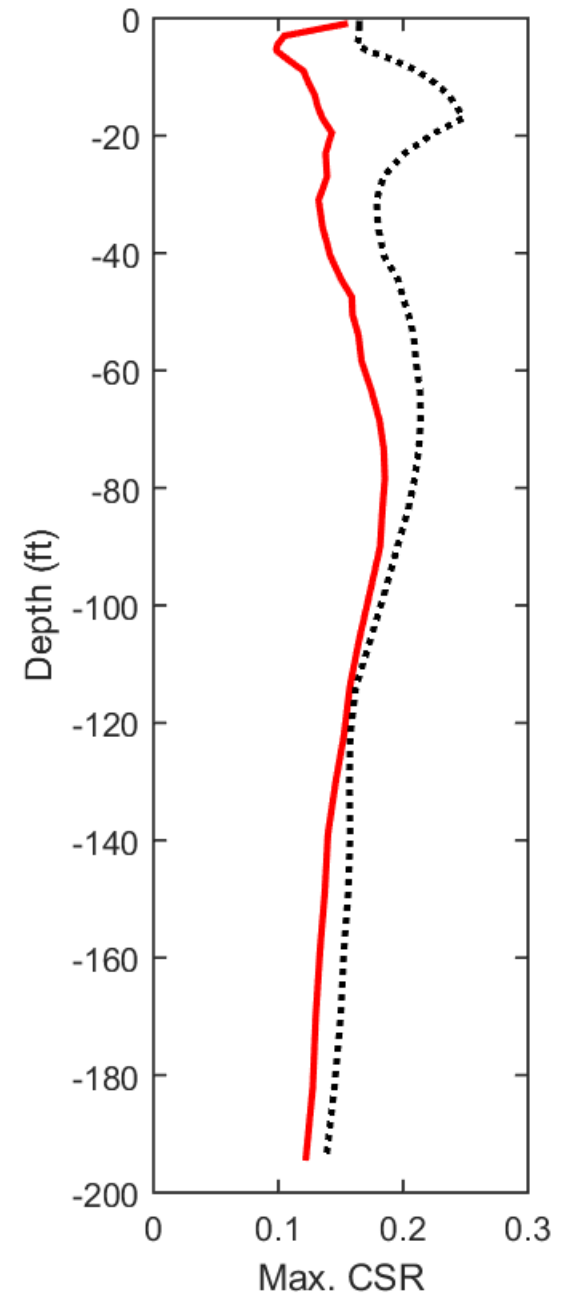
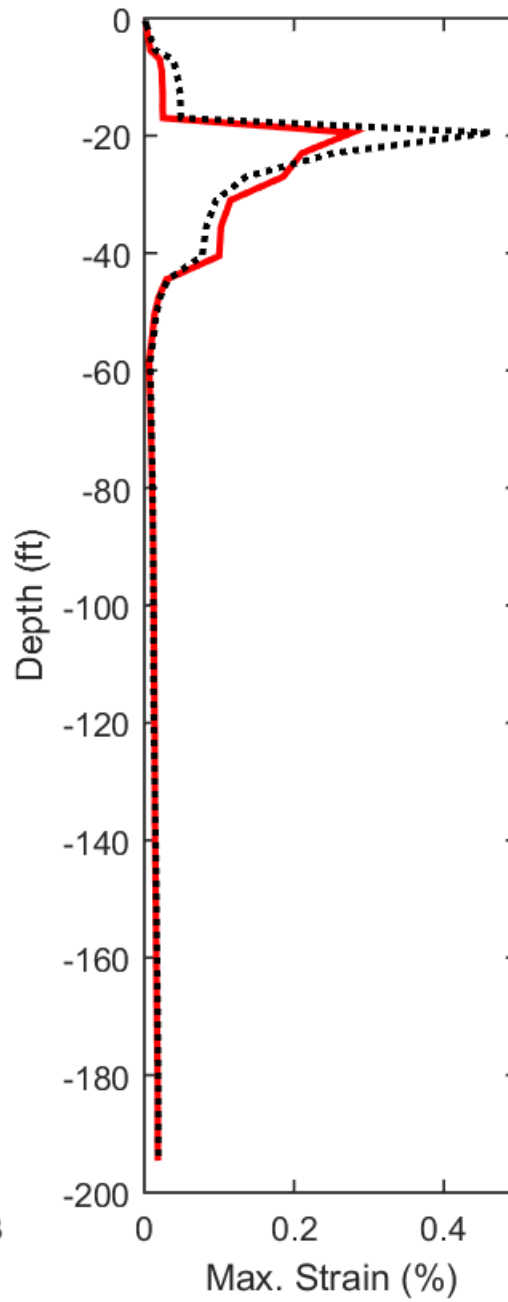
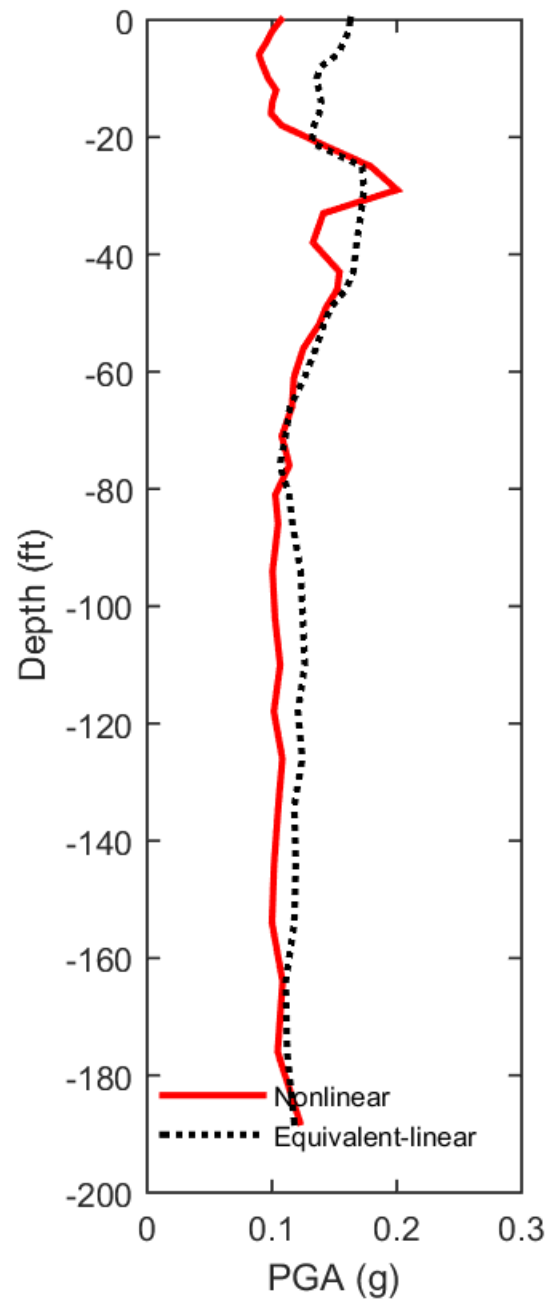
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



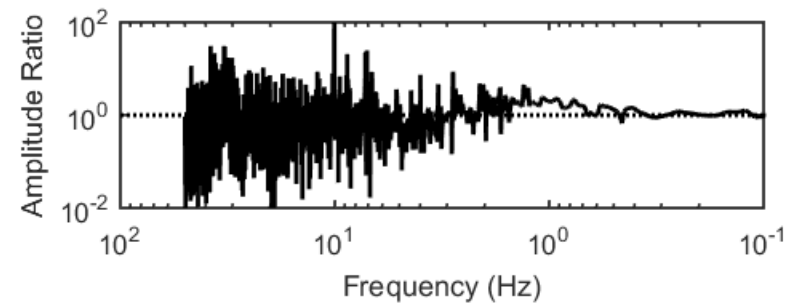
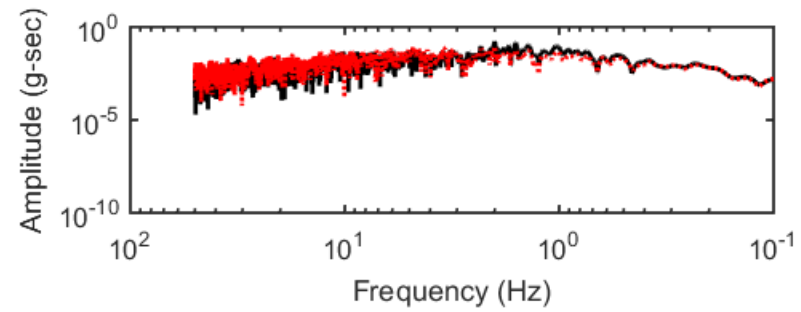
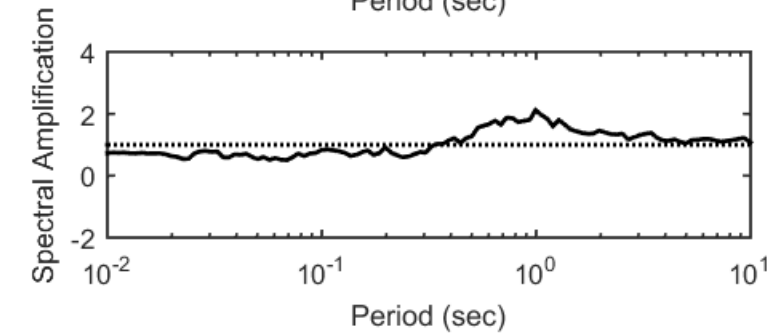
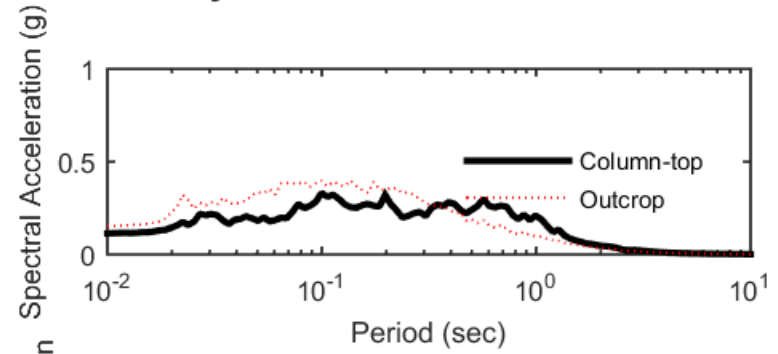
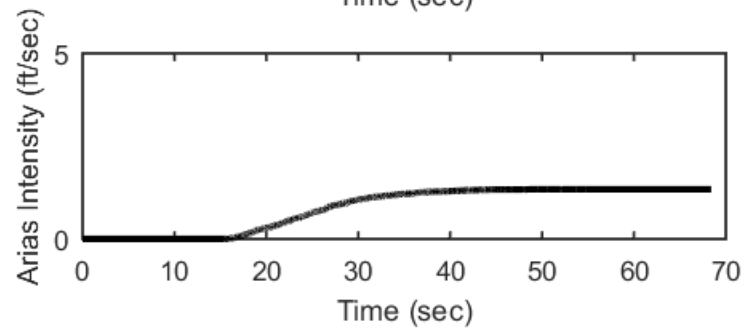
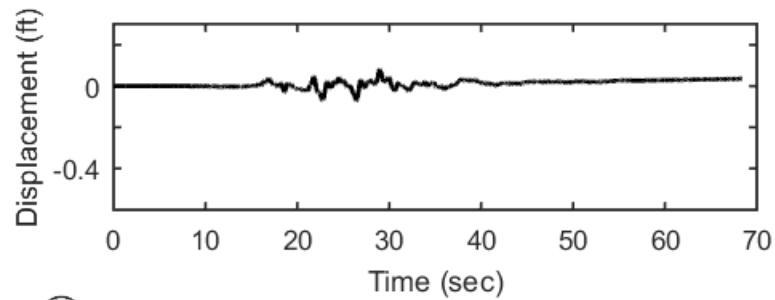
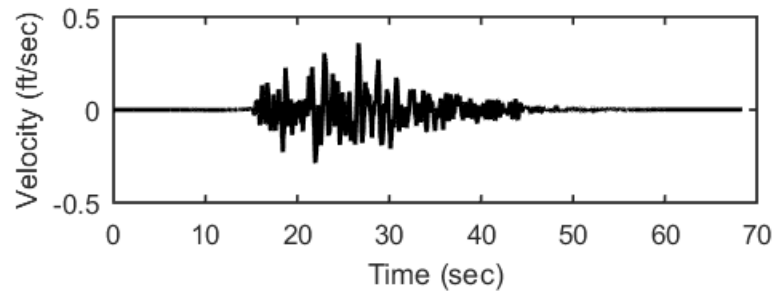
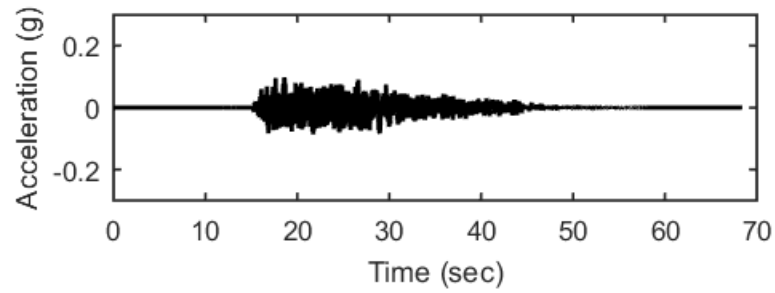
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



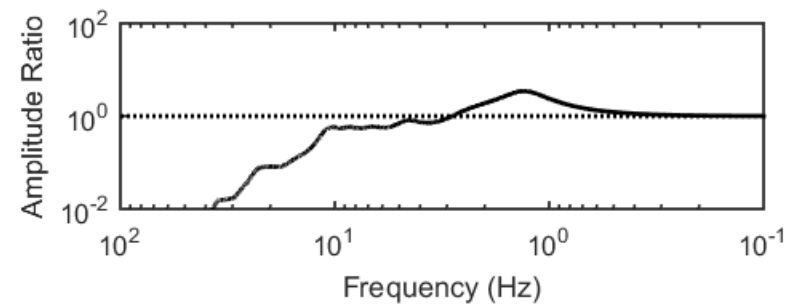
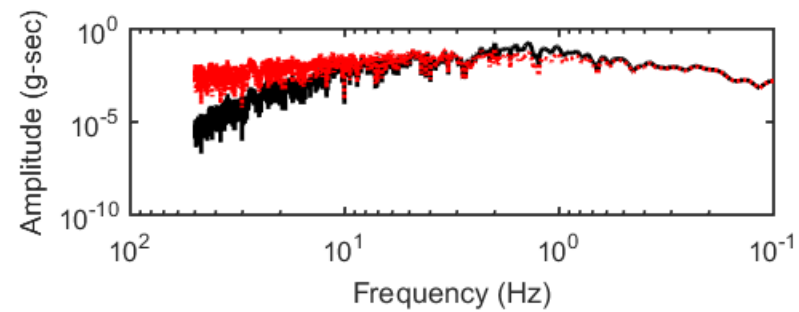
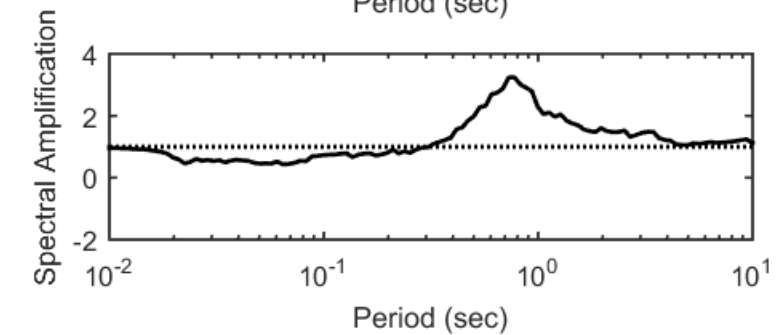
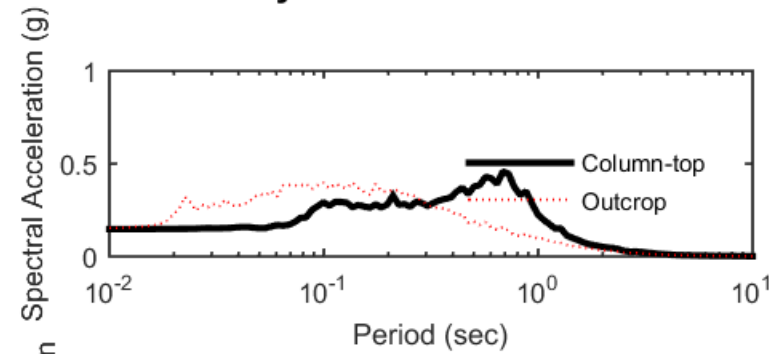
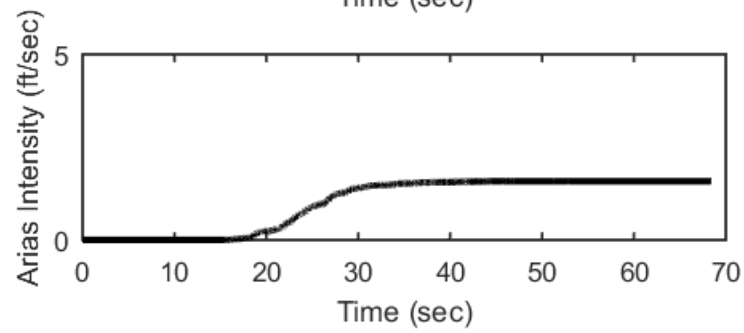
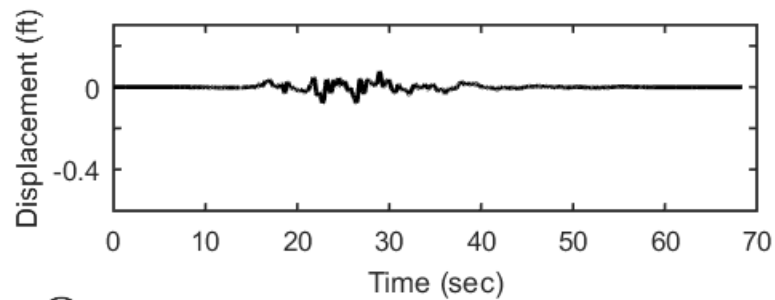
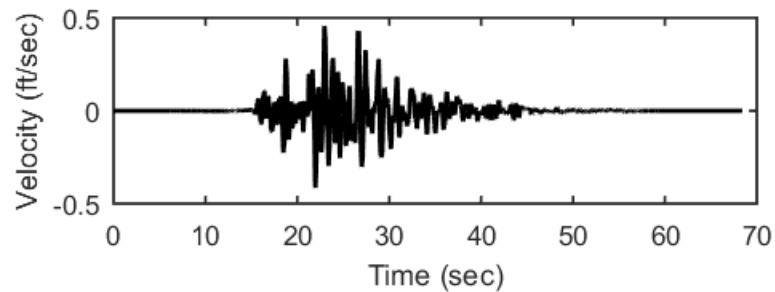
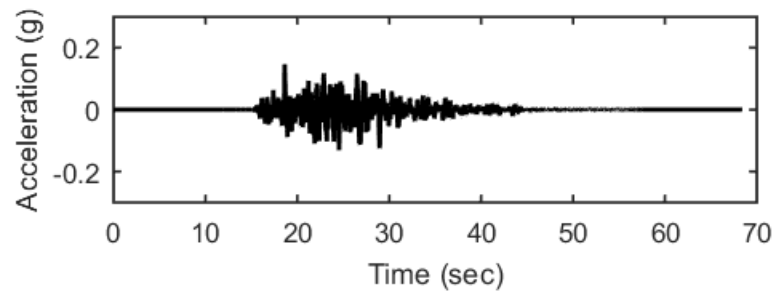
### Profile outputs for Motion: FEE2



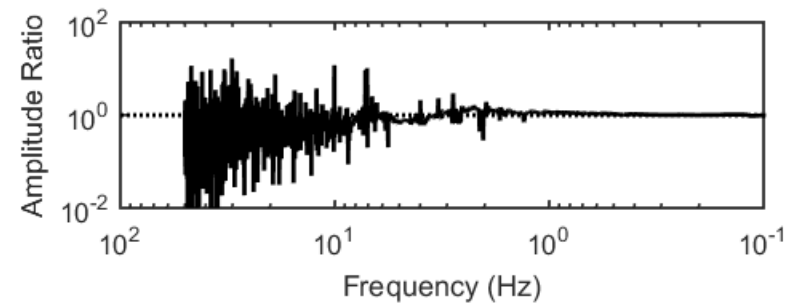
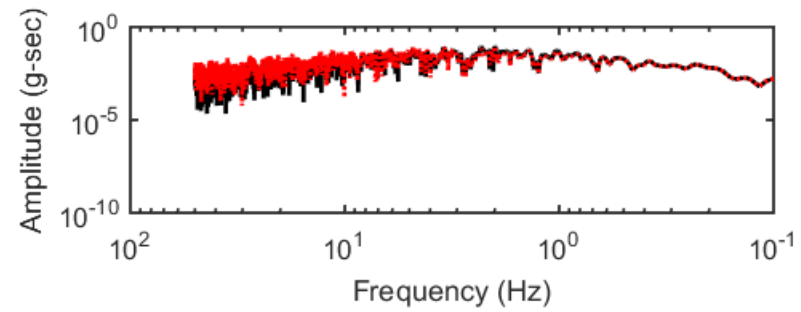
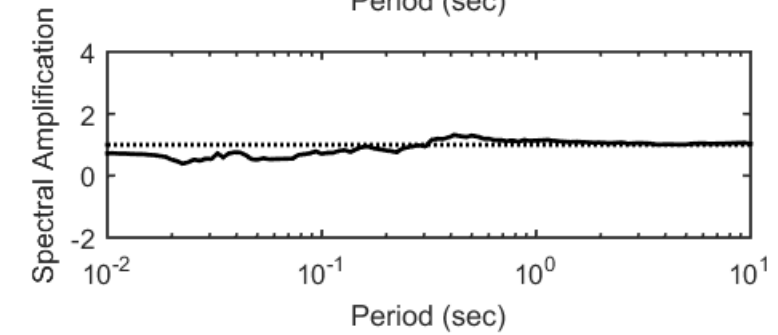
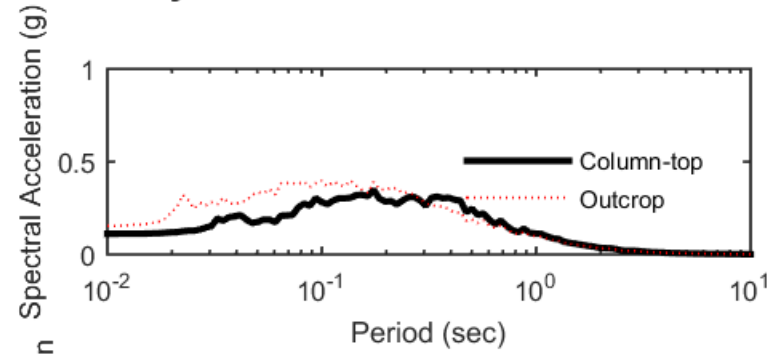
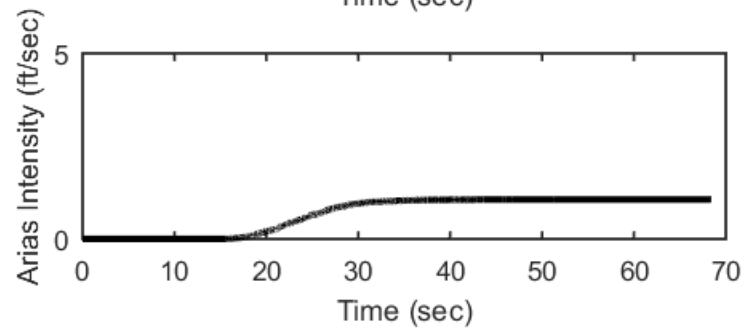
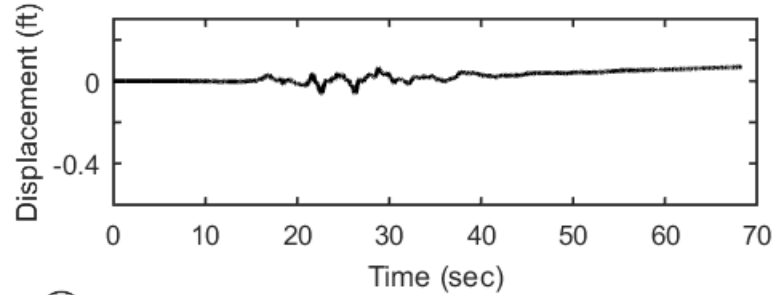
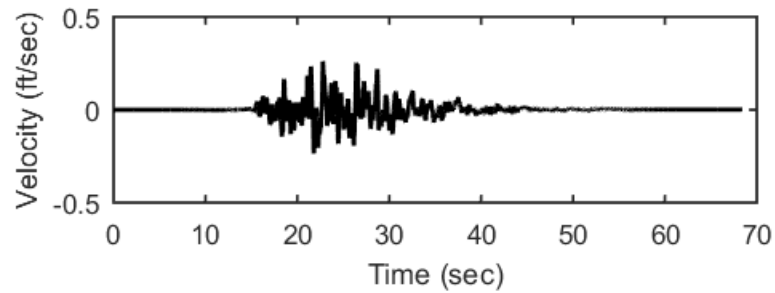
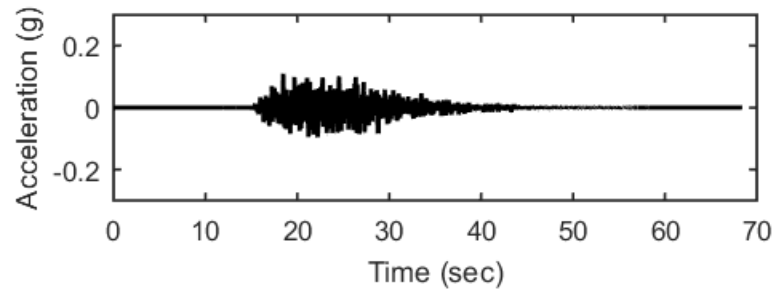
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



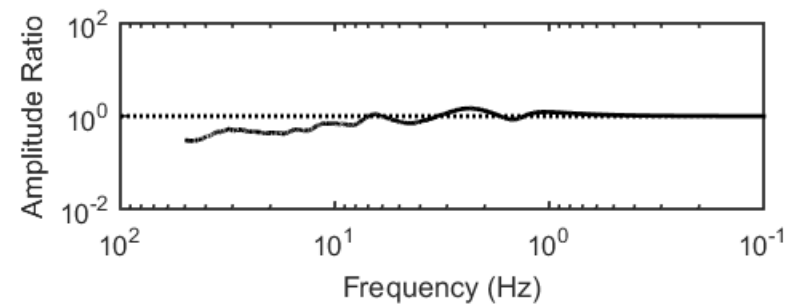
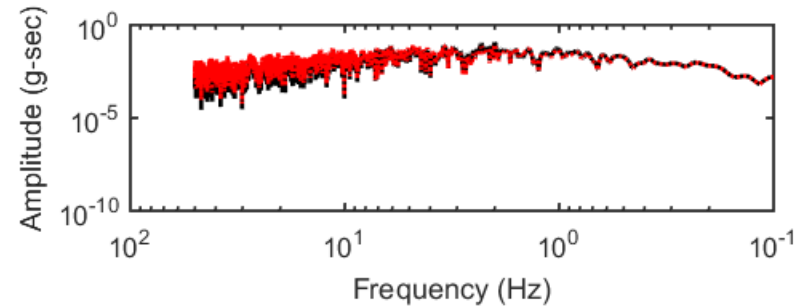
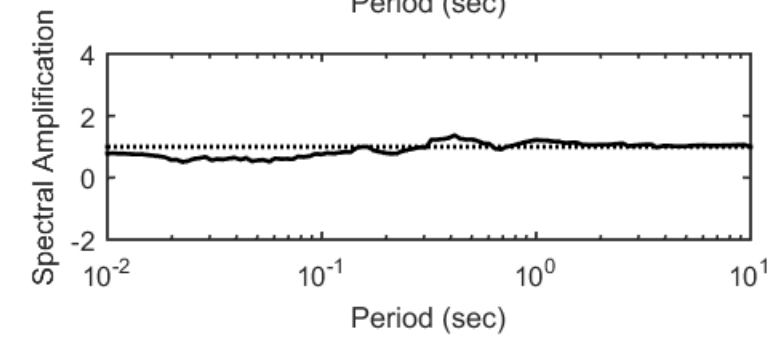
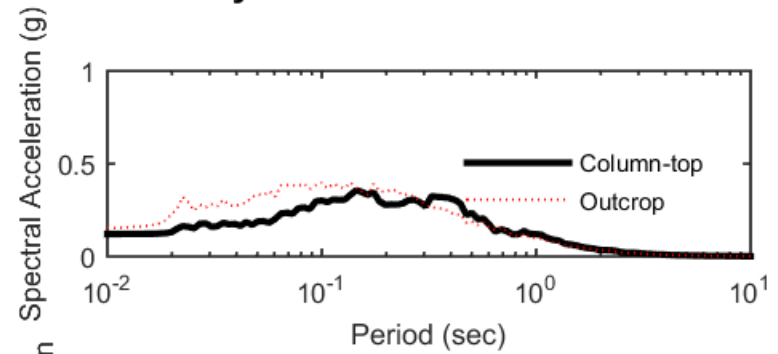
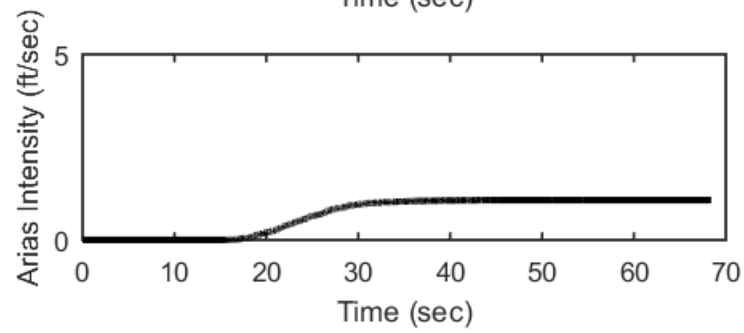
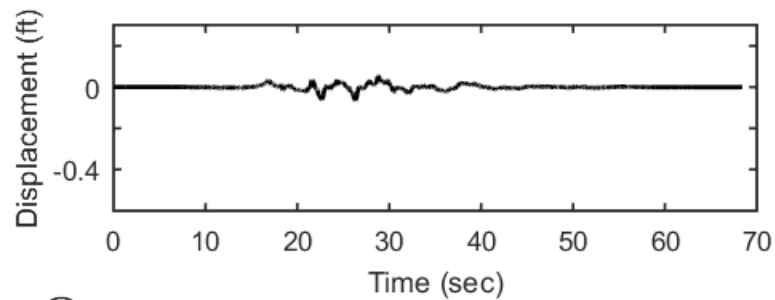
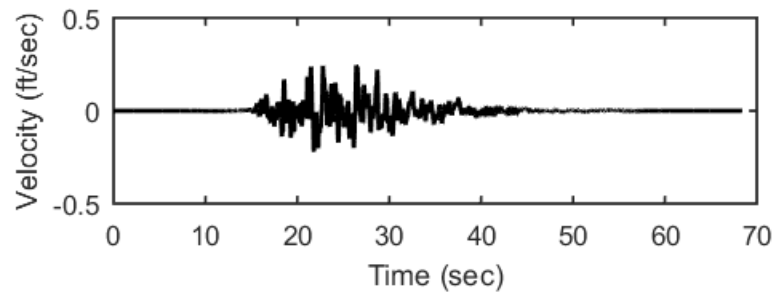
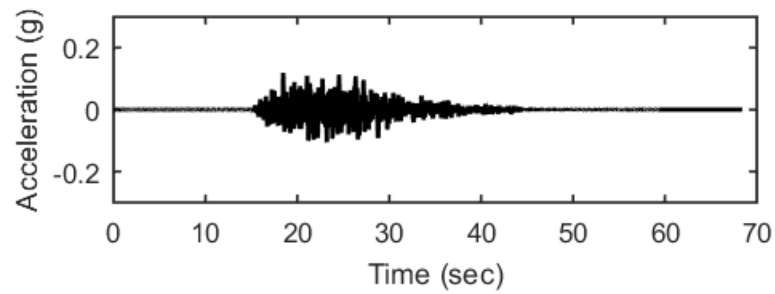
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3

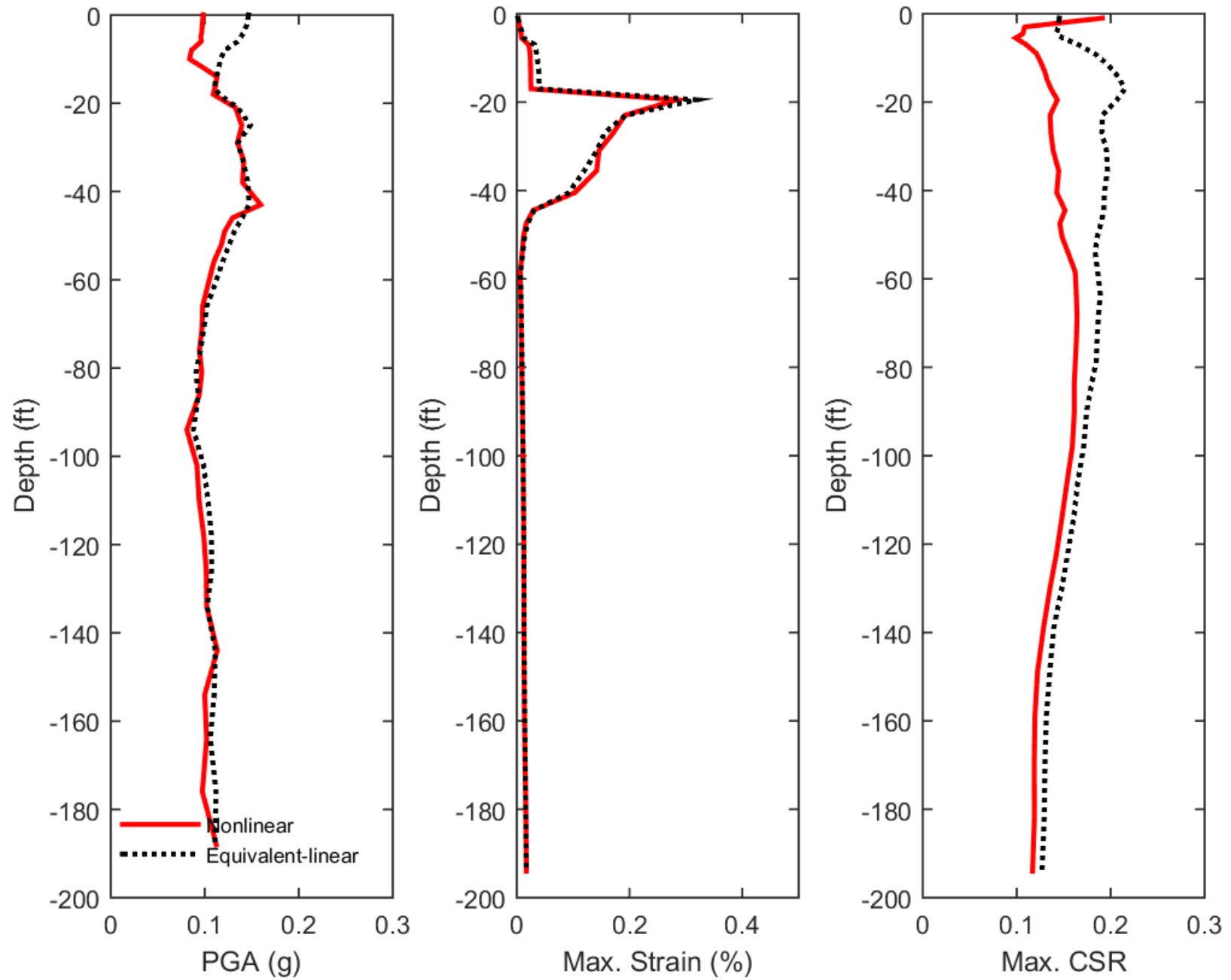


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3

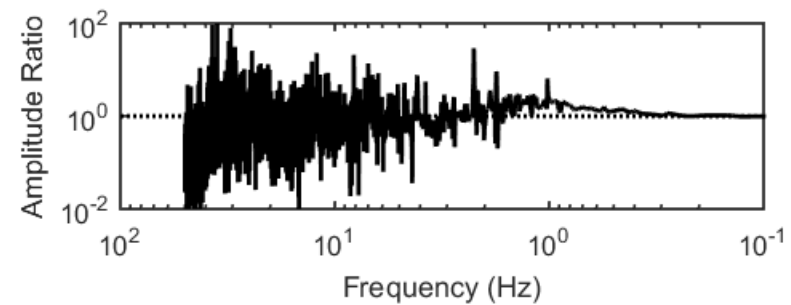
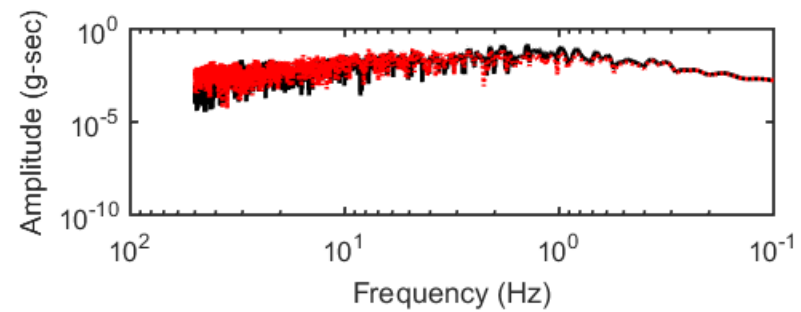
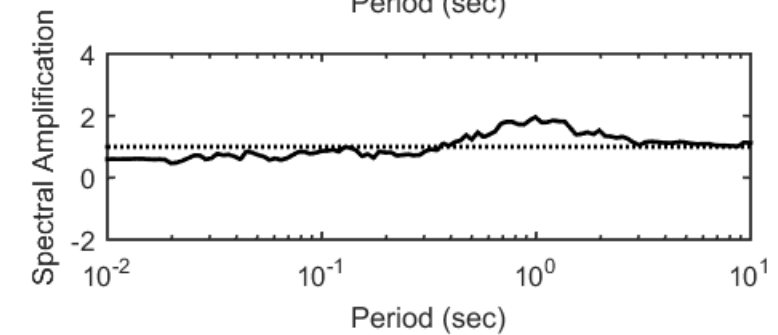
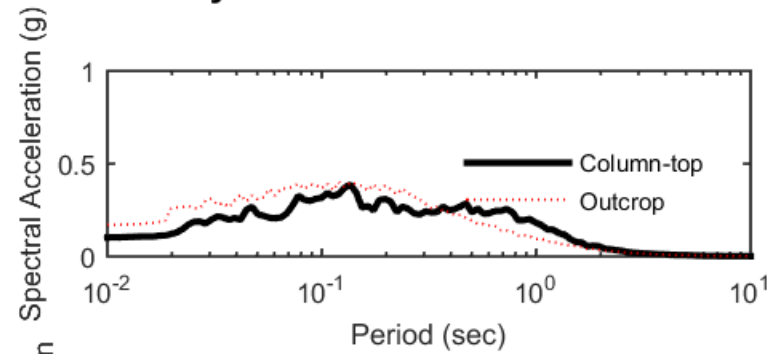
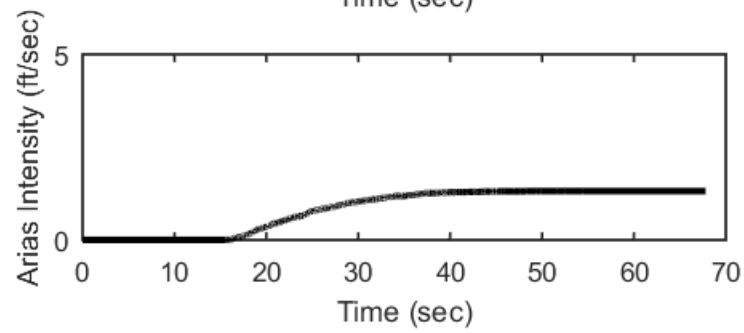
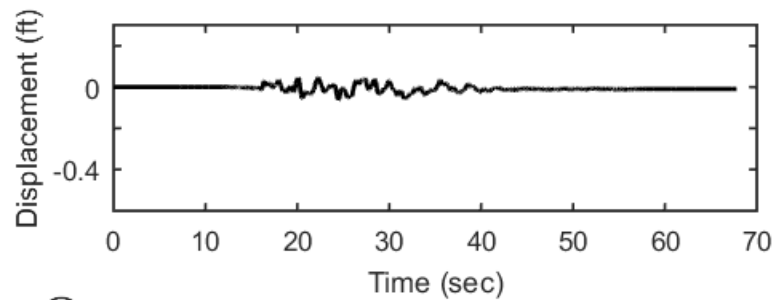
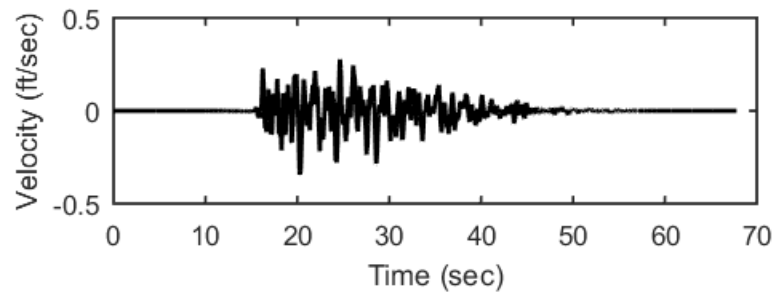
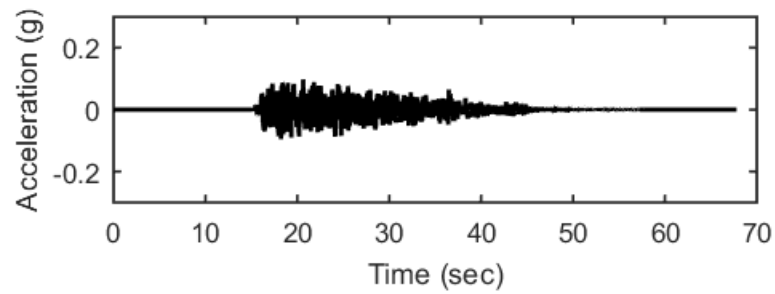




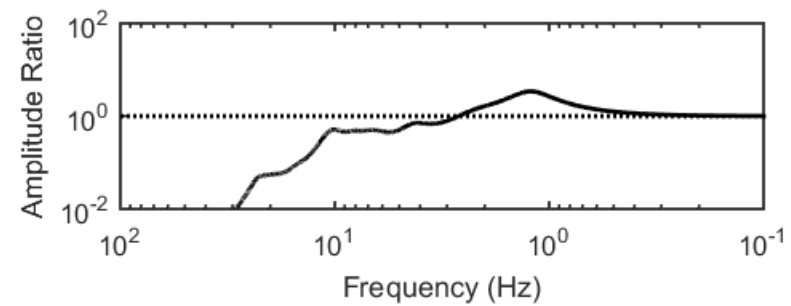
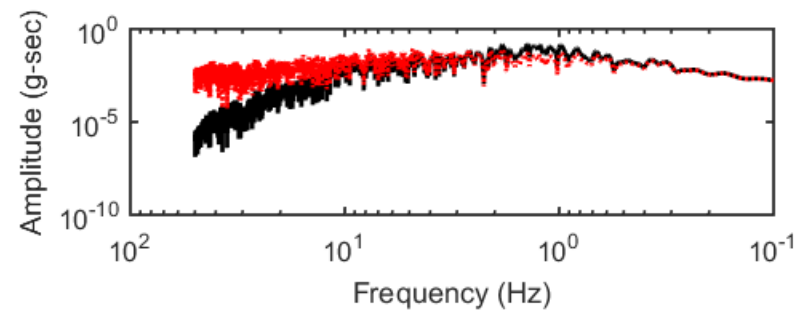
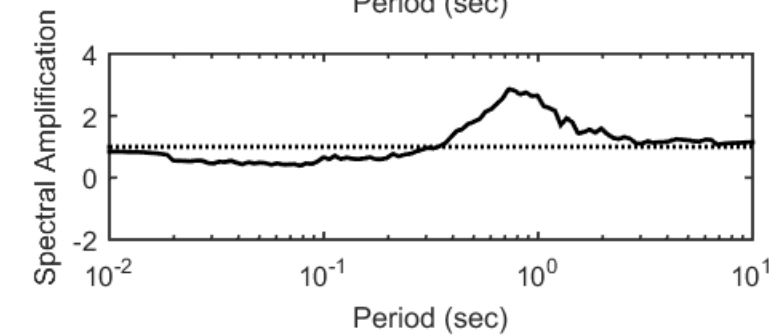
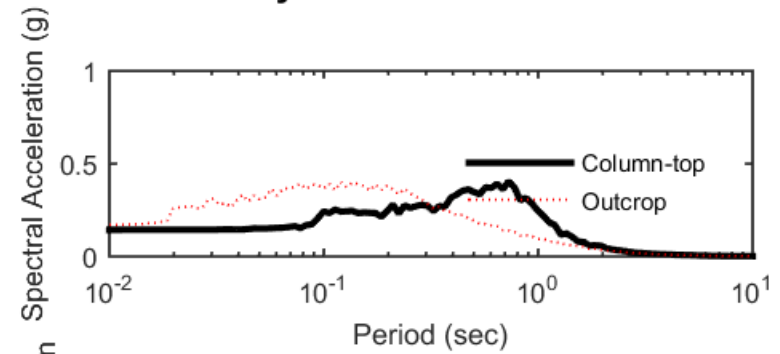
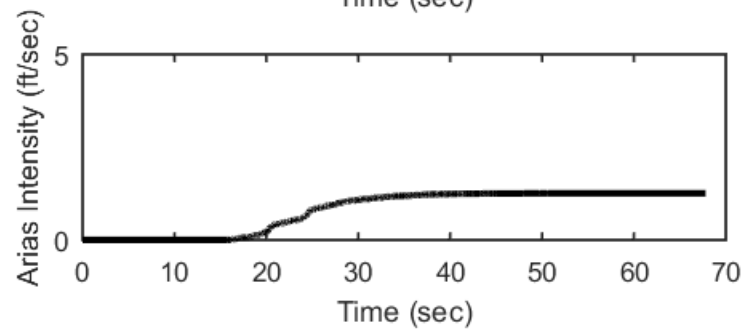
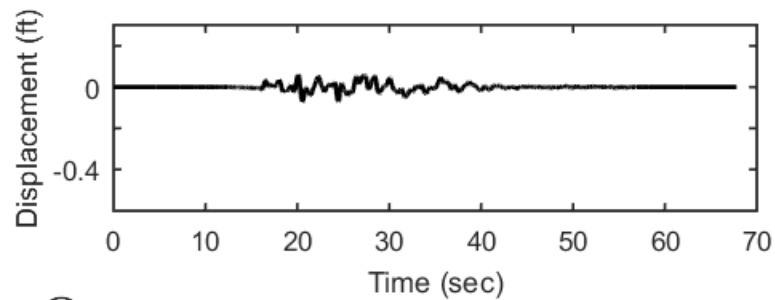
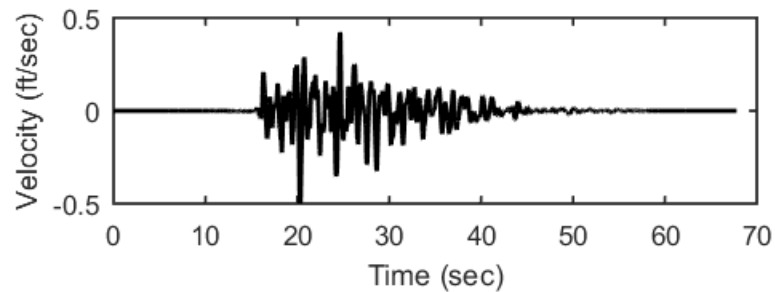
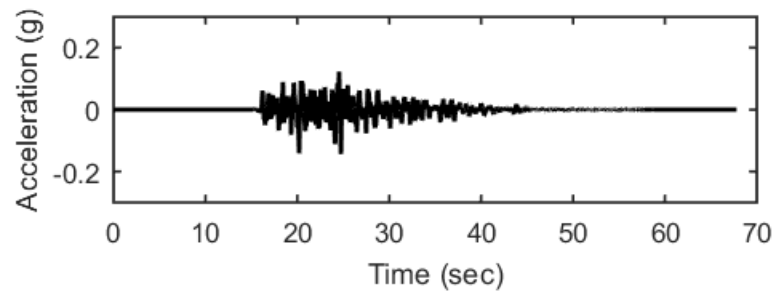
### Profile outputs for Motion: FEE3



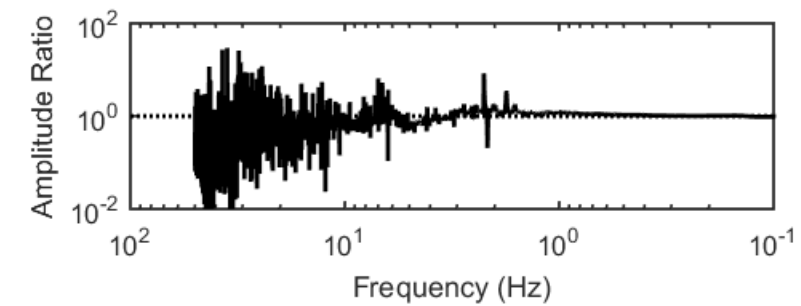
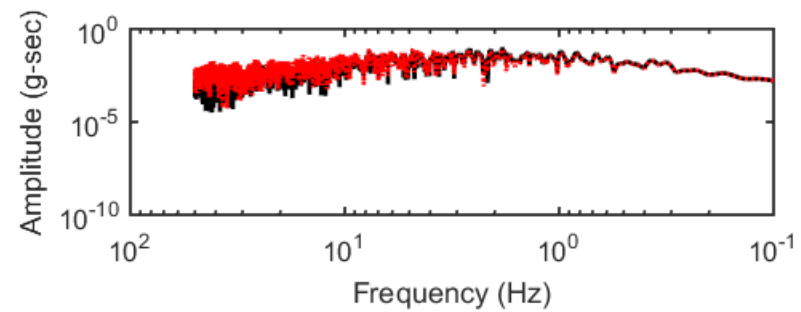
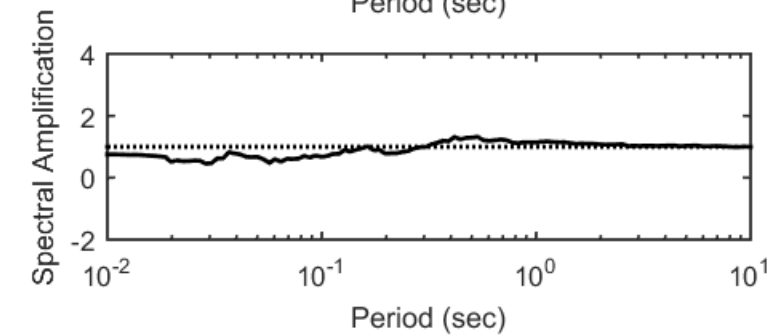
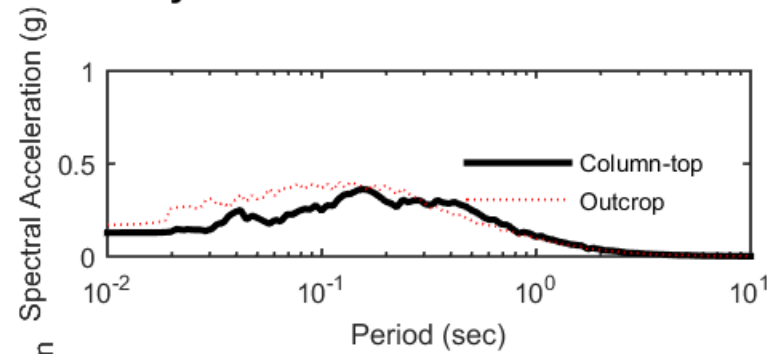
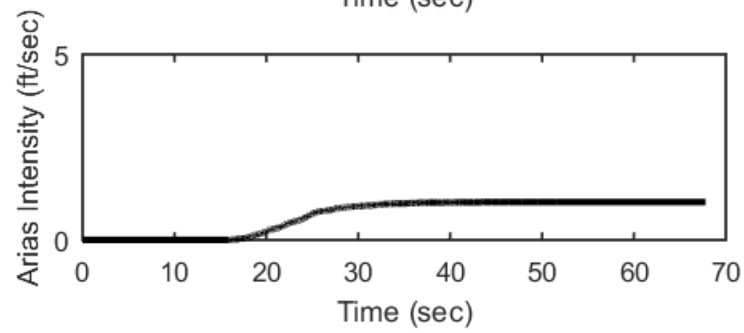
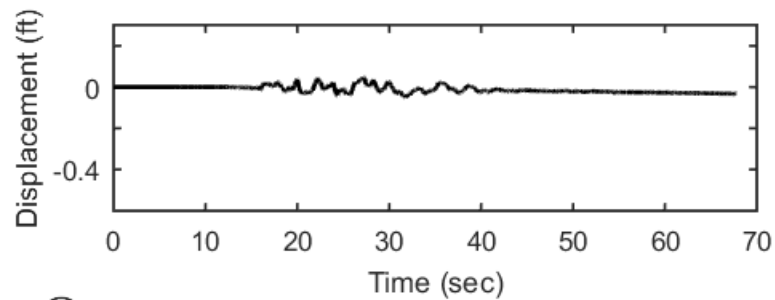
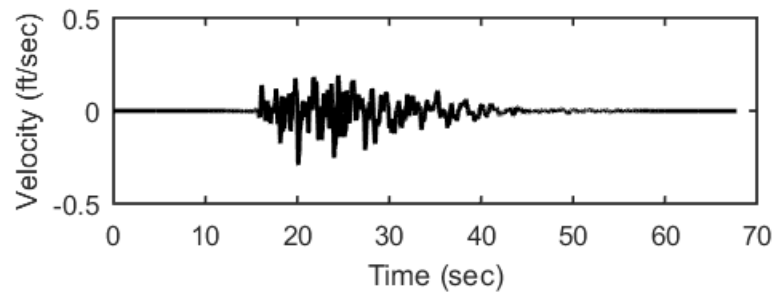
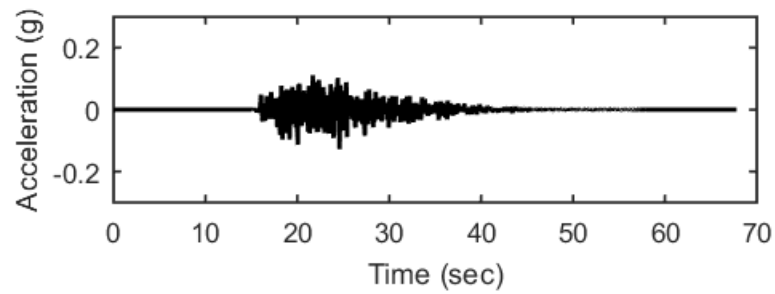
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



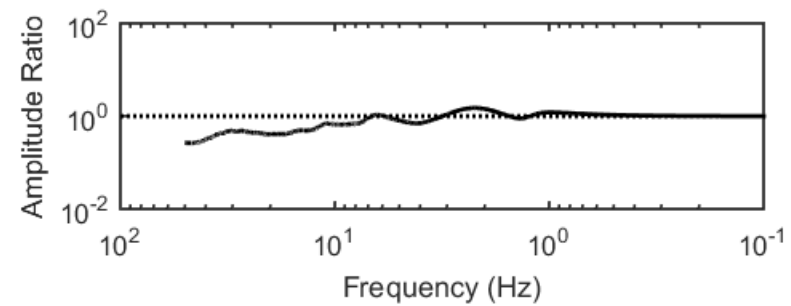
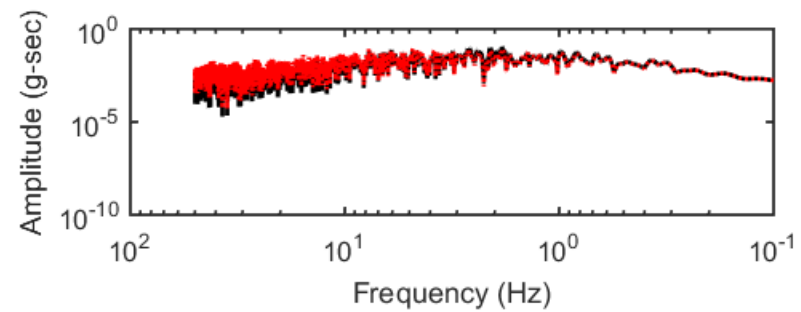
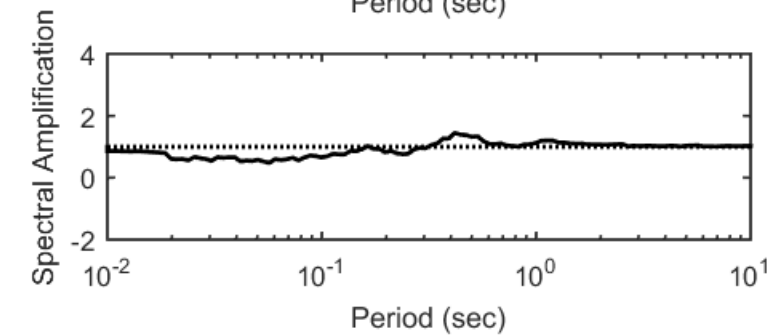
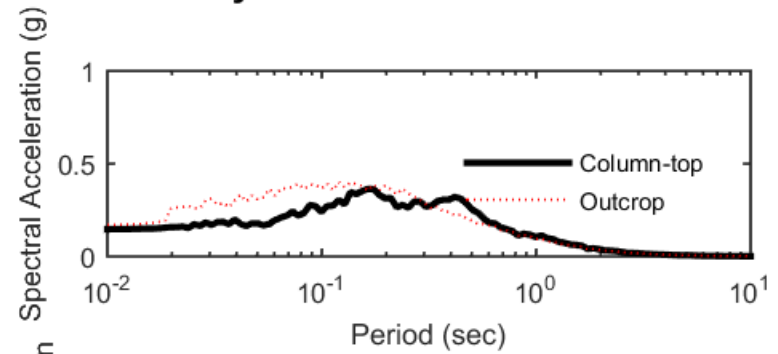
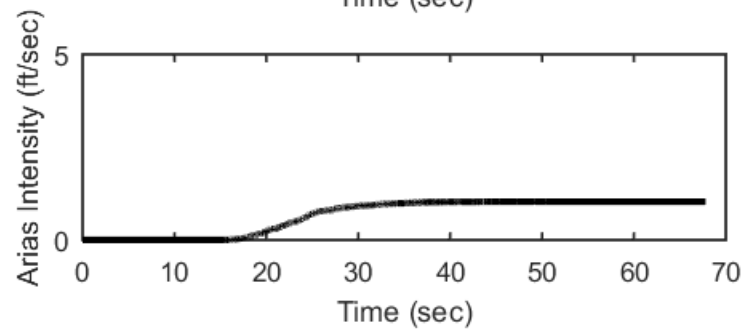
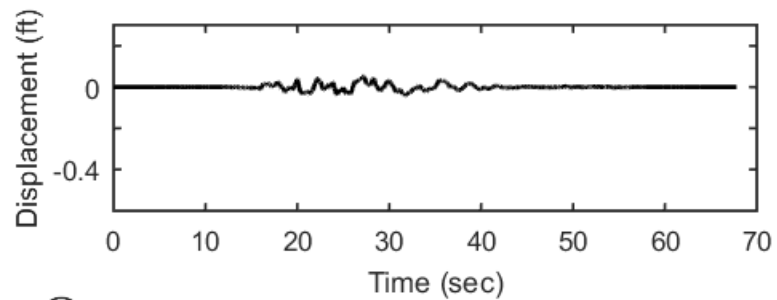
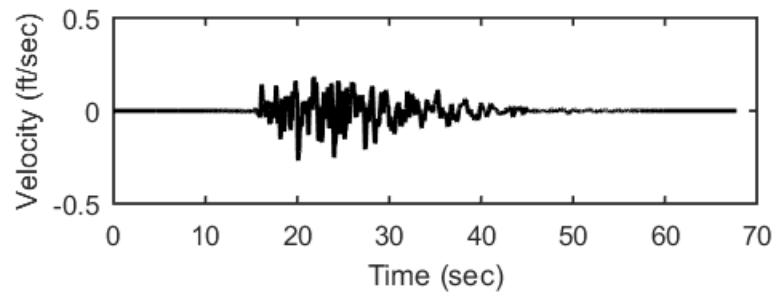
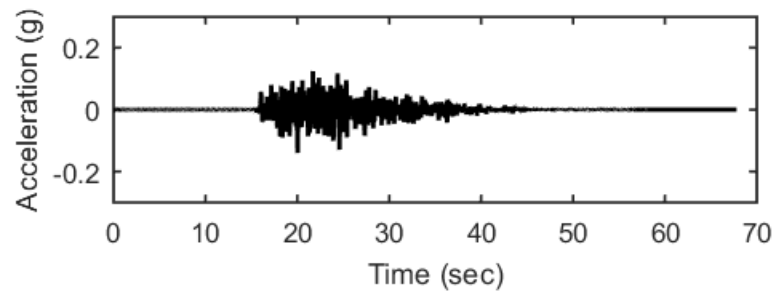
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



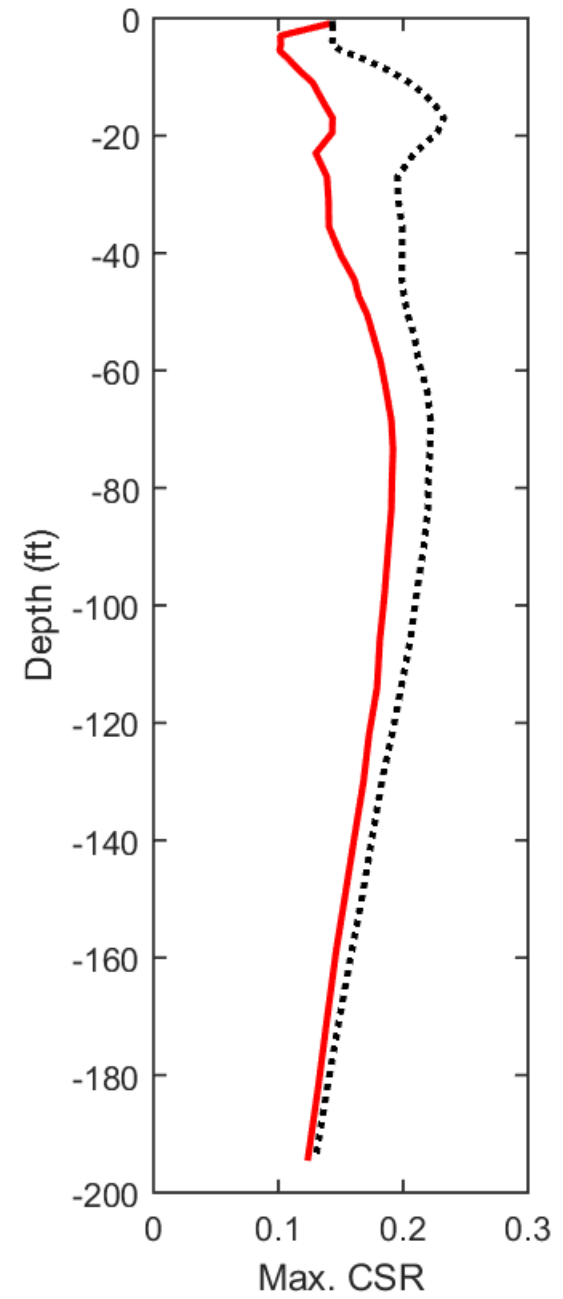
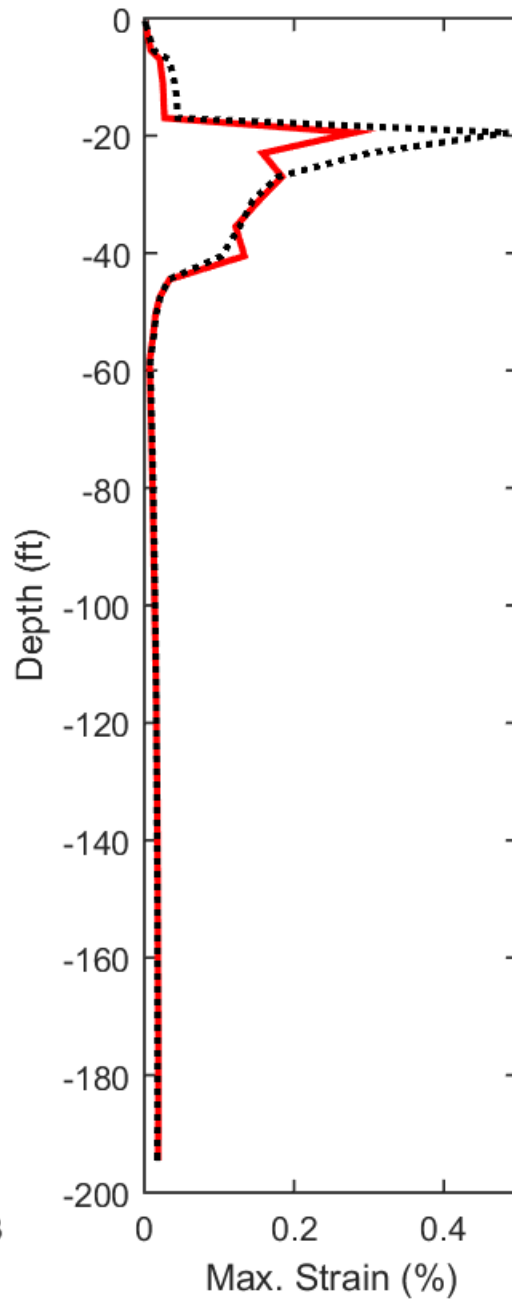
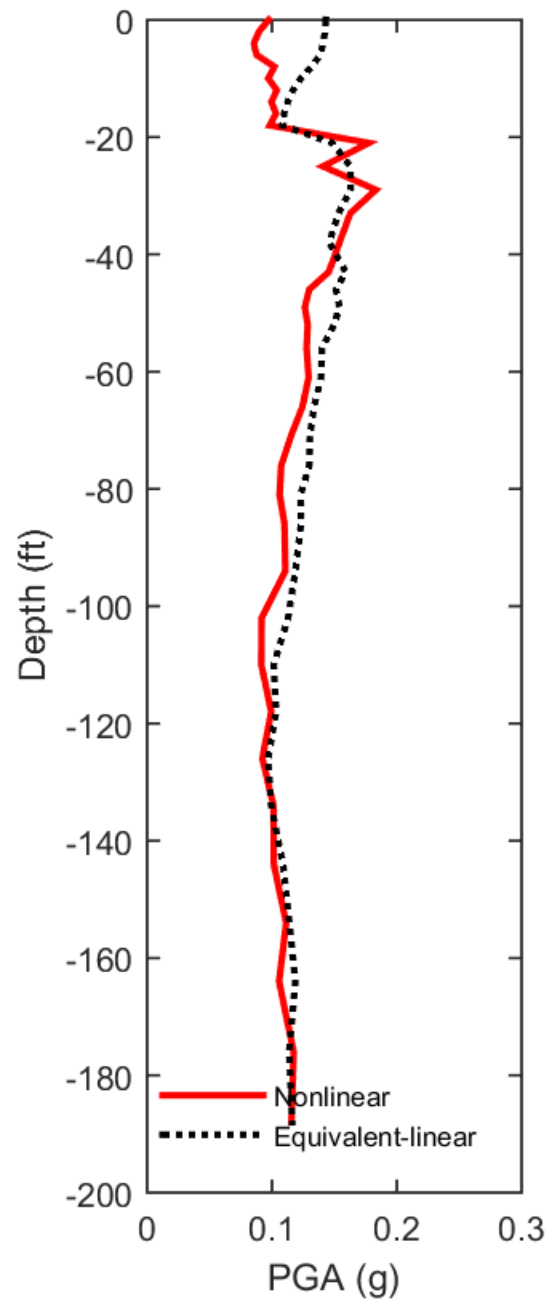
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



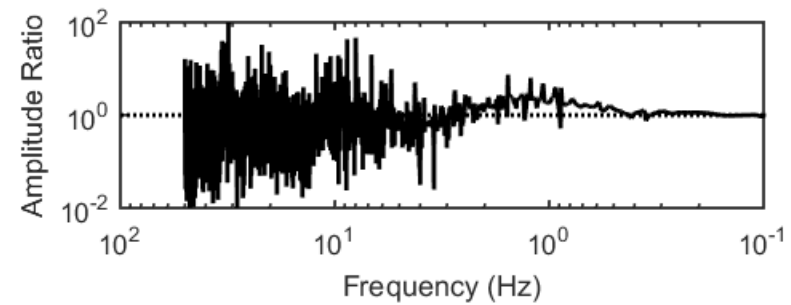
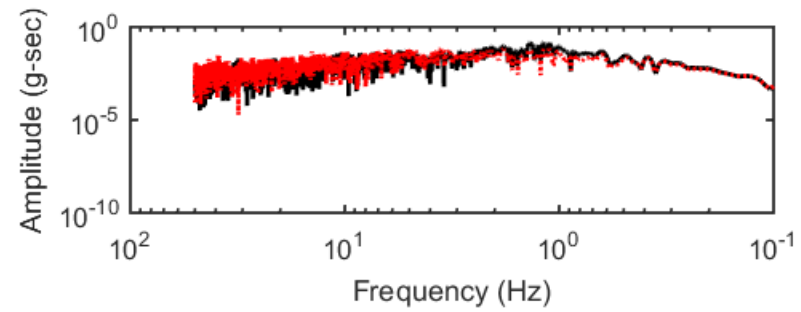
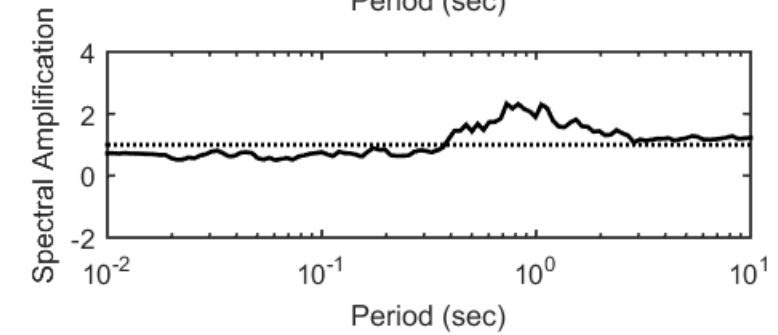
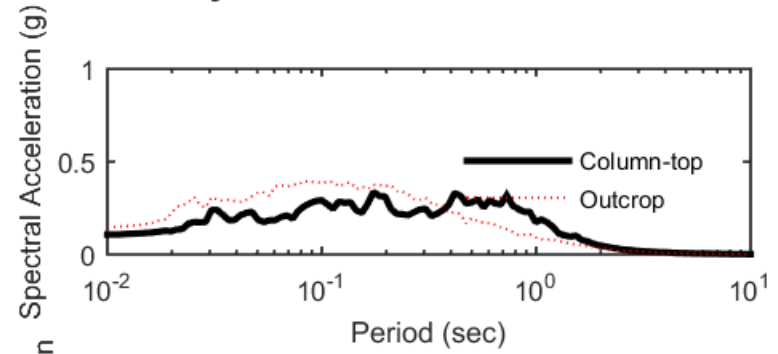
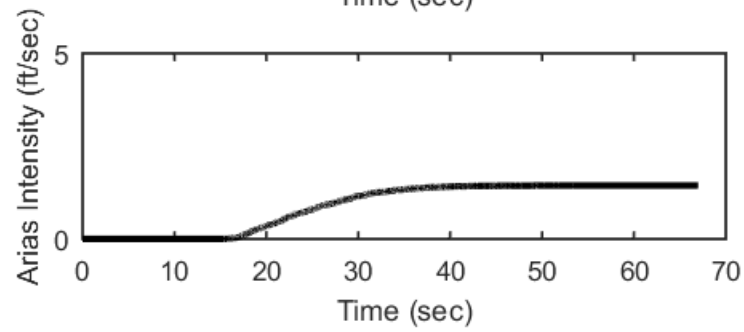
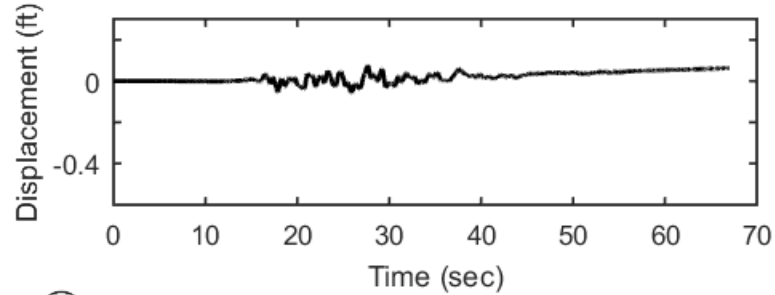
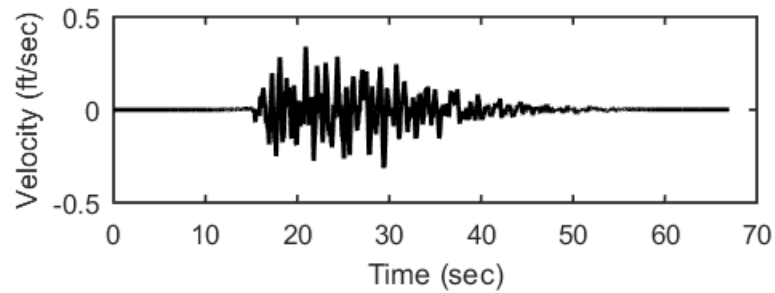
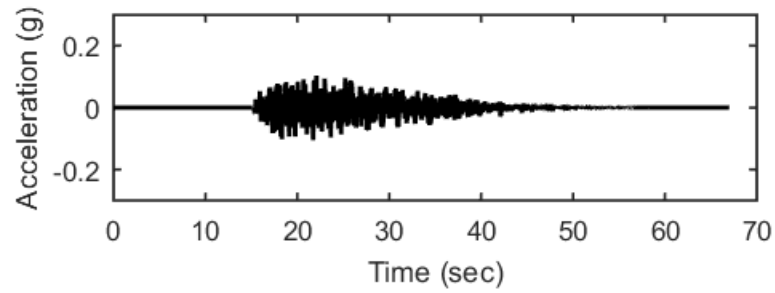
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



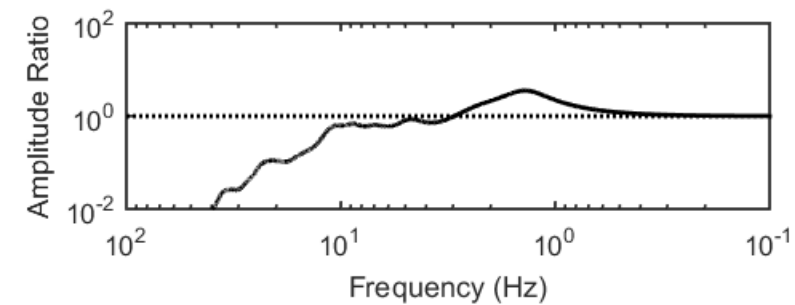
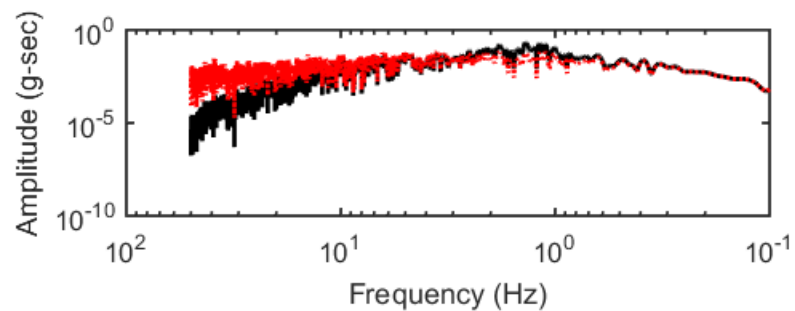
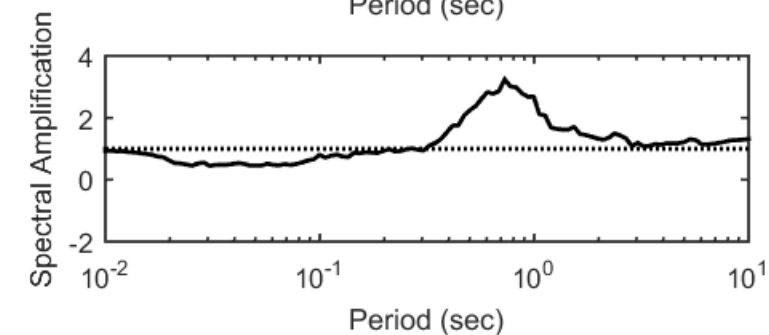
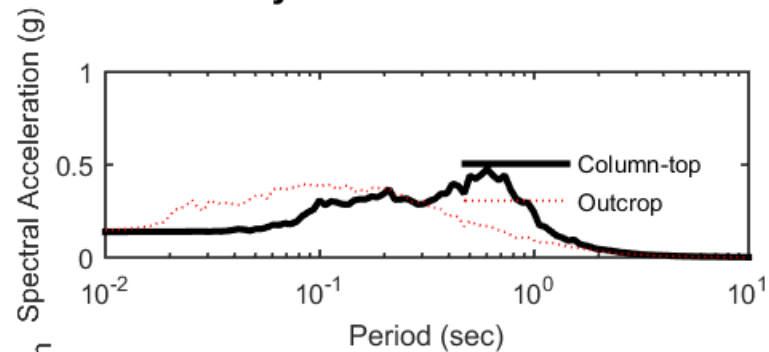
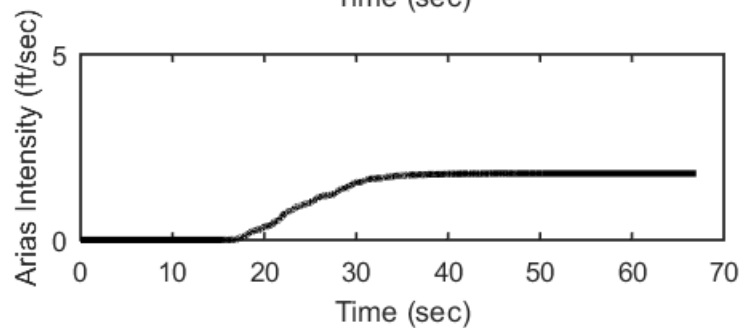
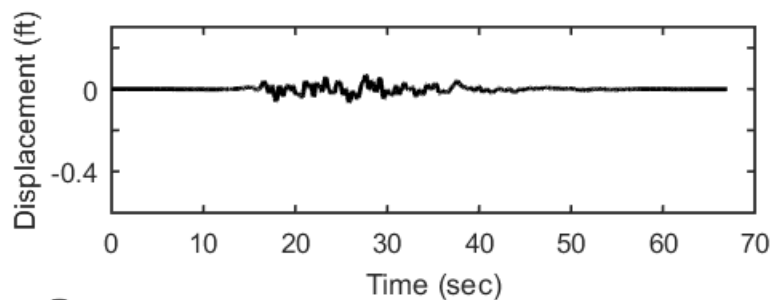
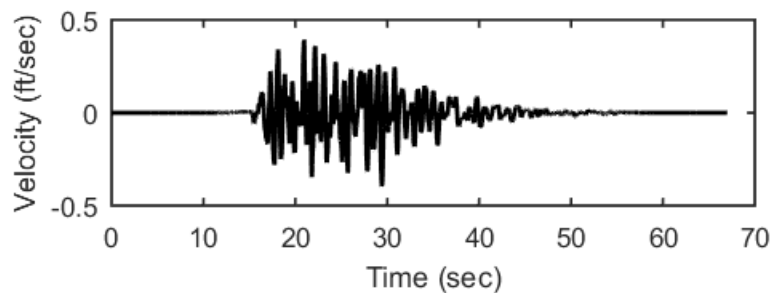
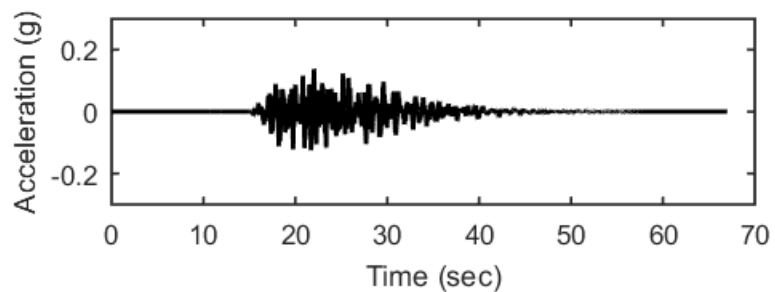
### Profile outputs for Motion: FEE4



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5

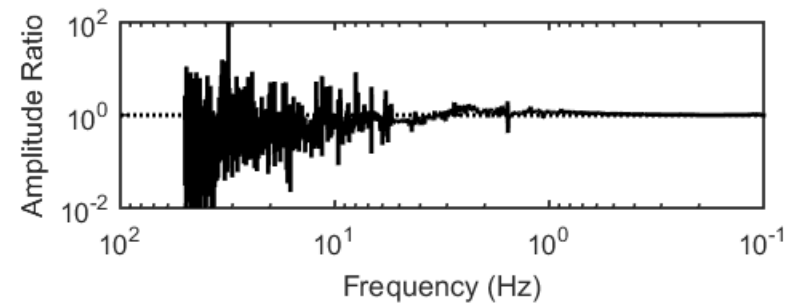
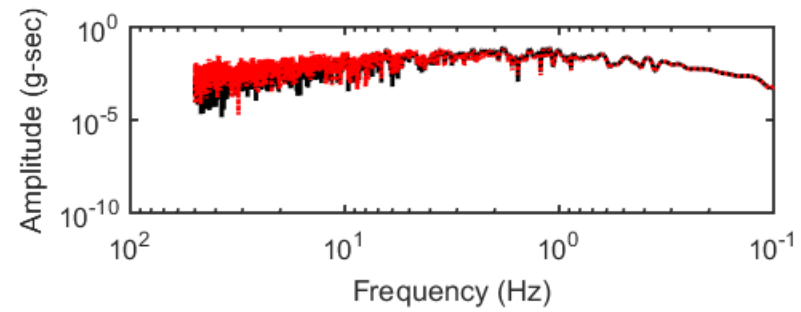
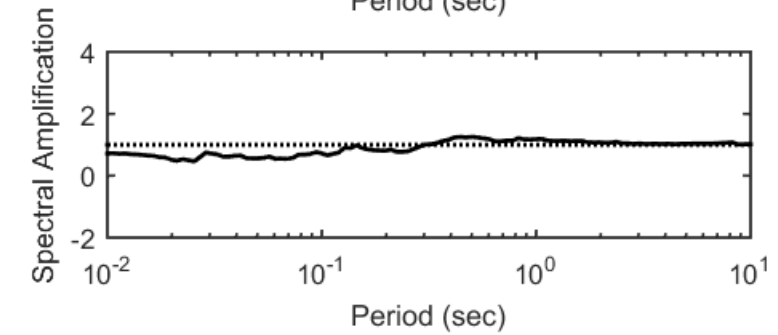
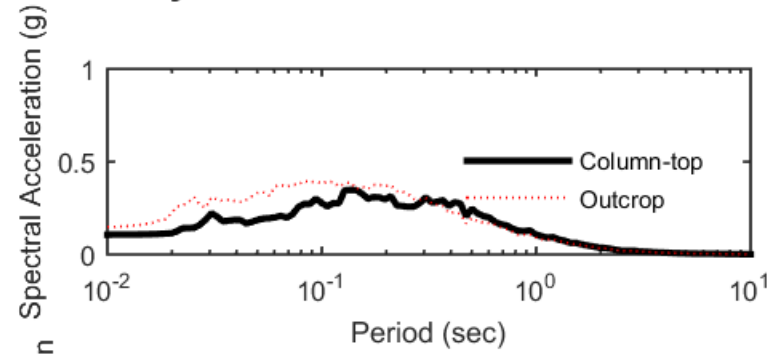
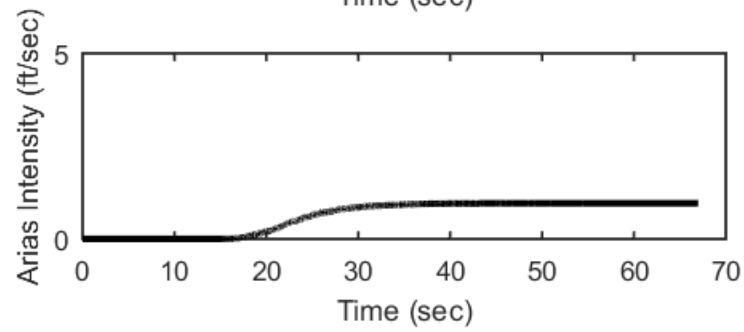
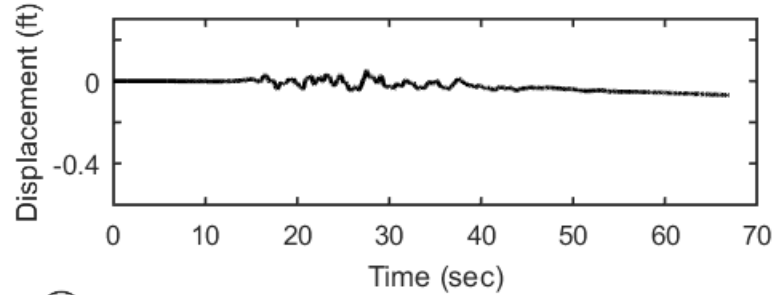
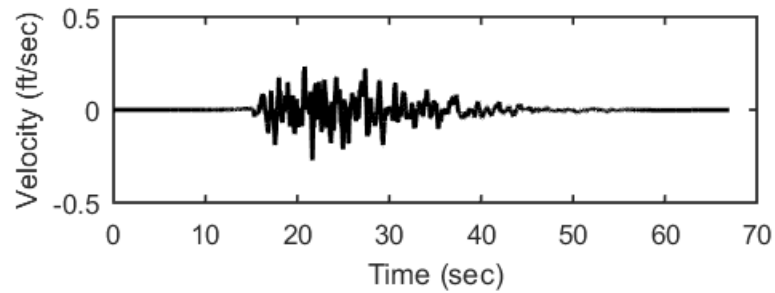
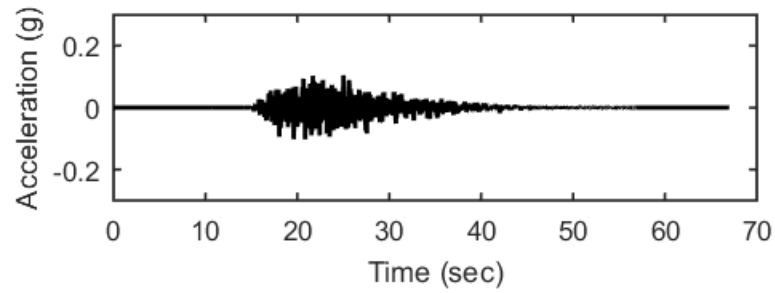


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5

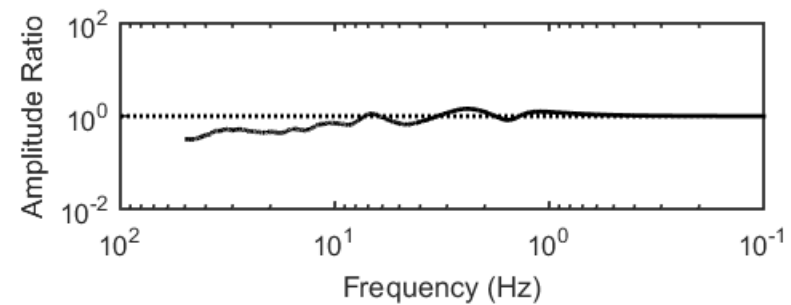
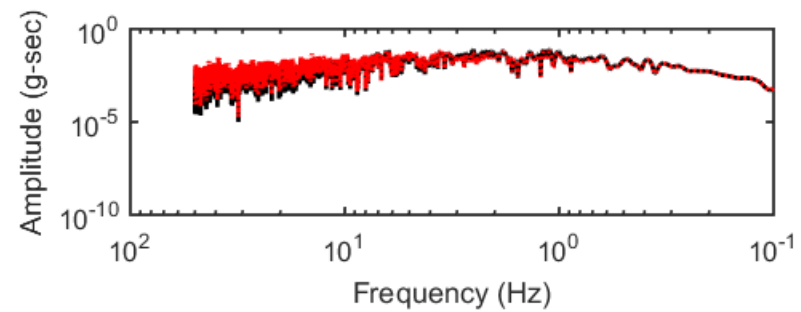
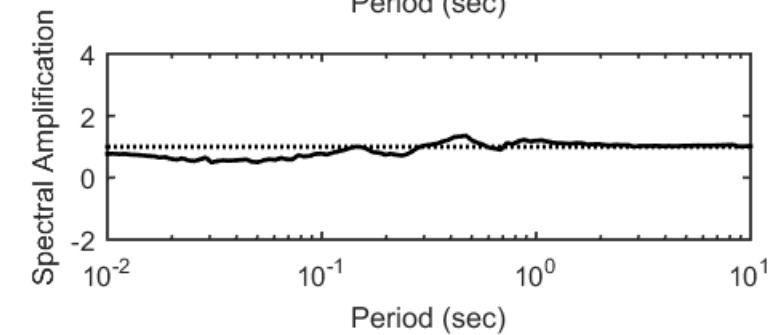
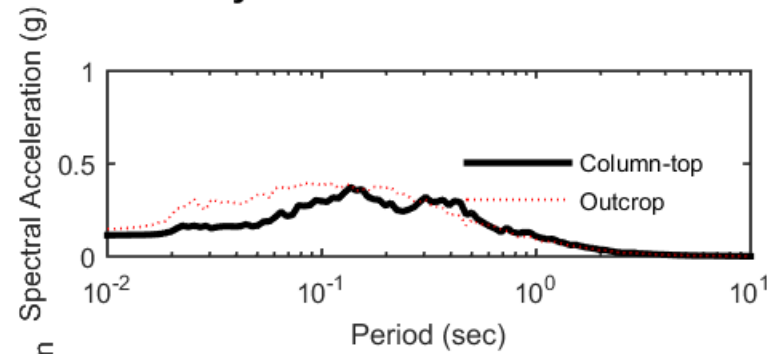
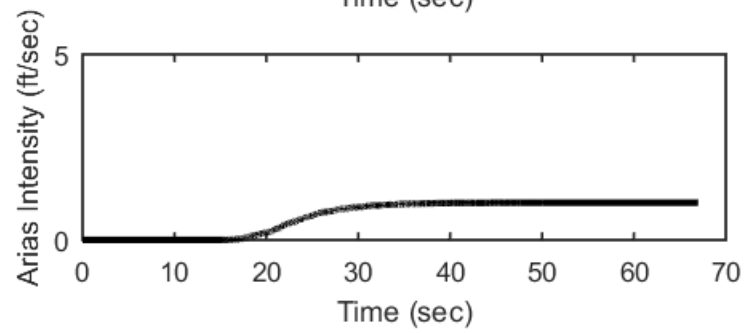
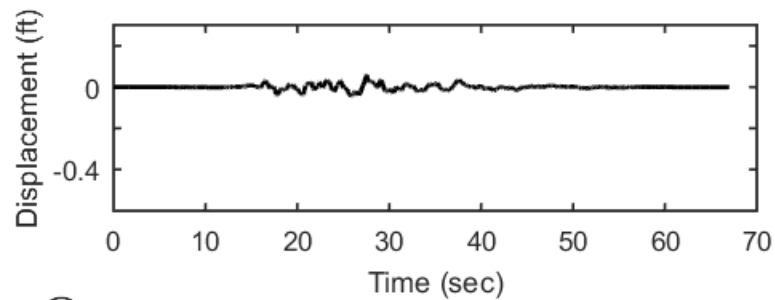
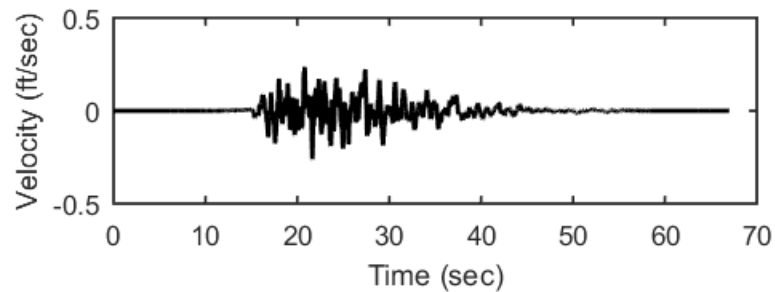
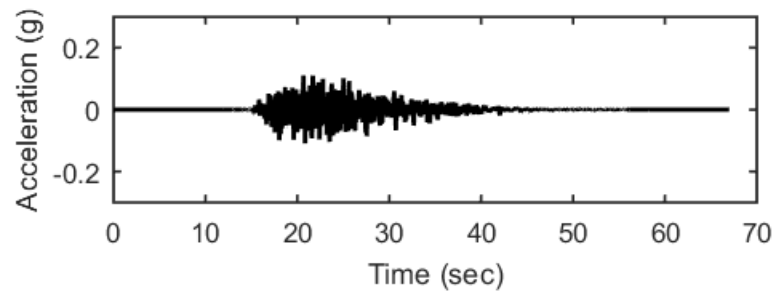




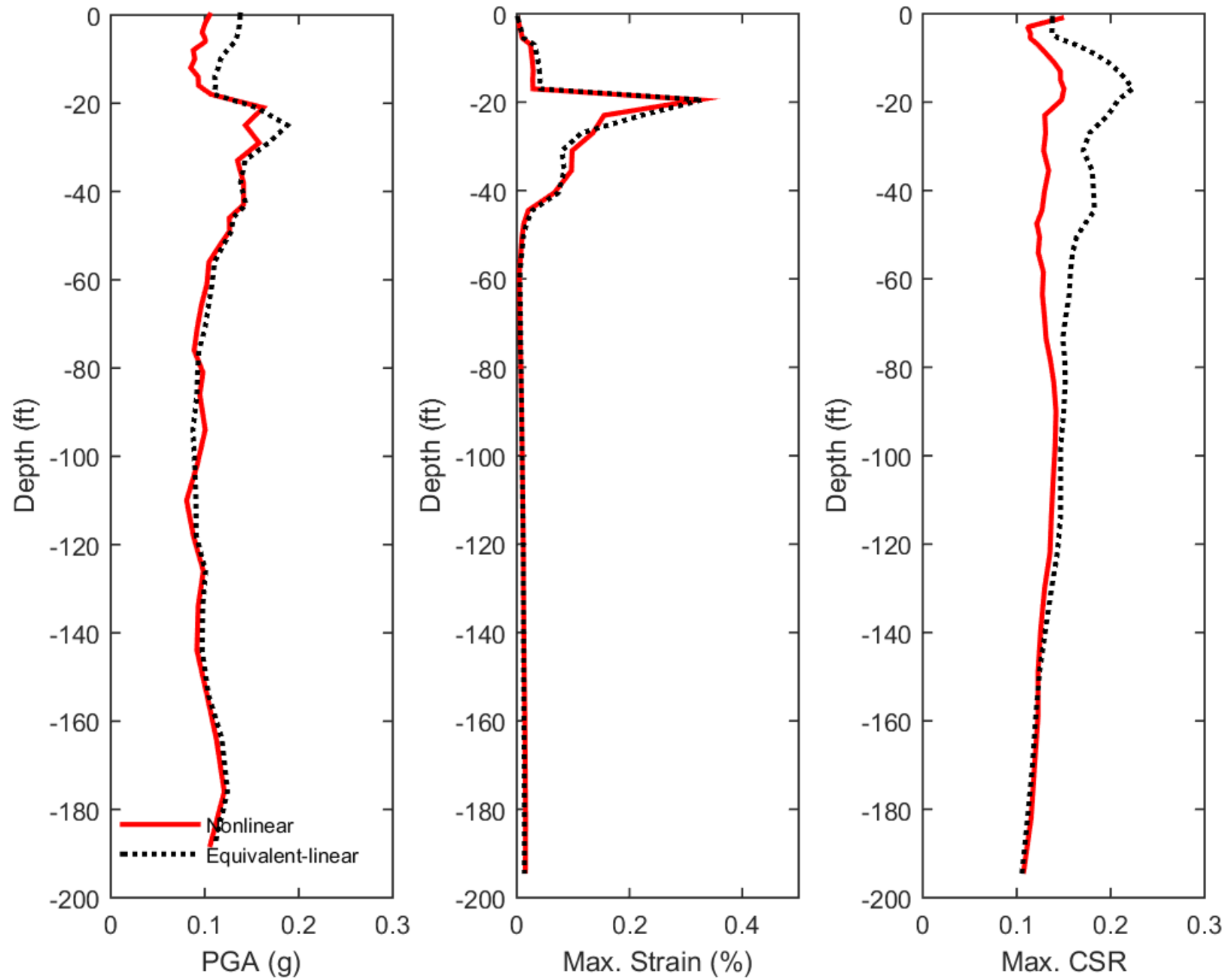
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



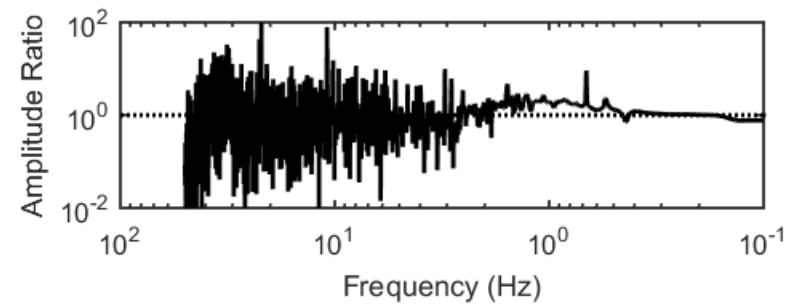
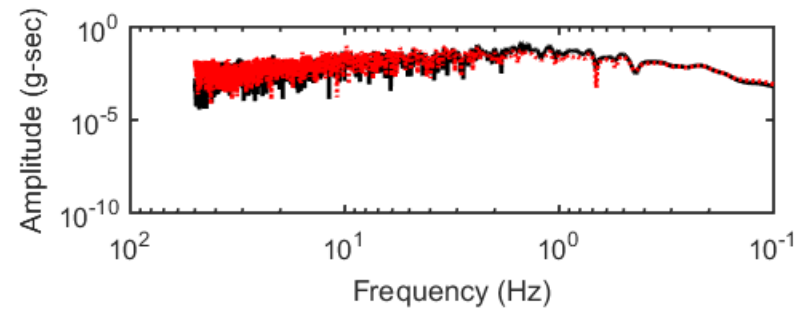
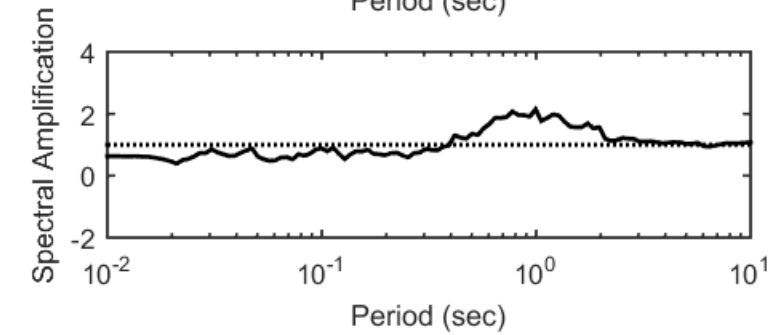
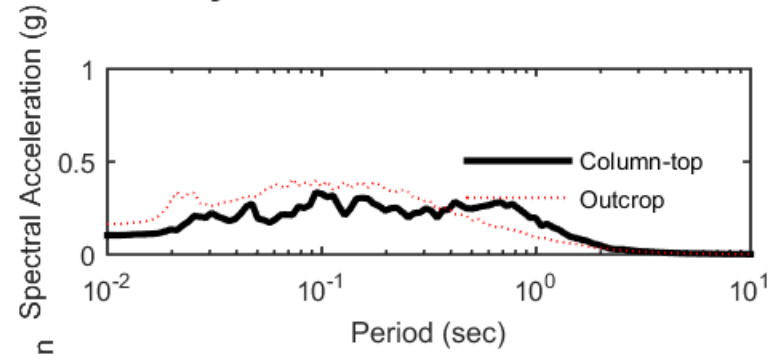
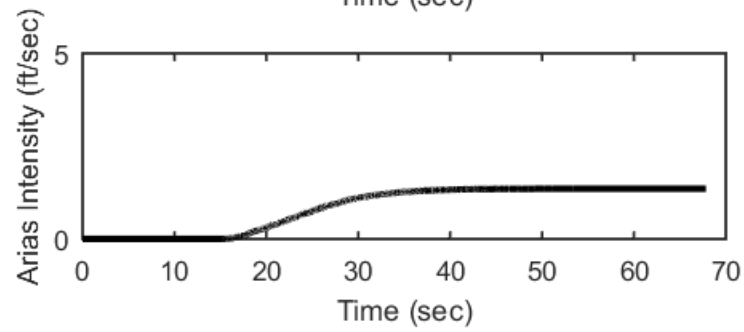
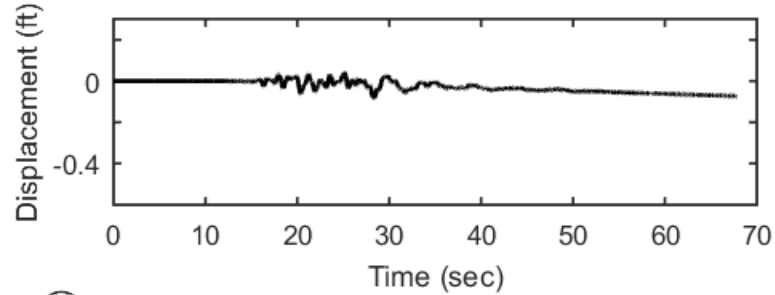
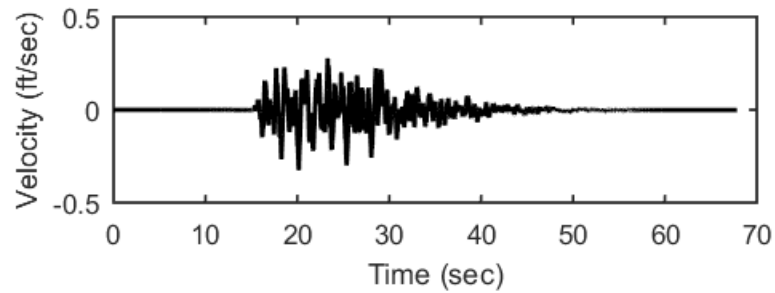
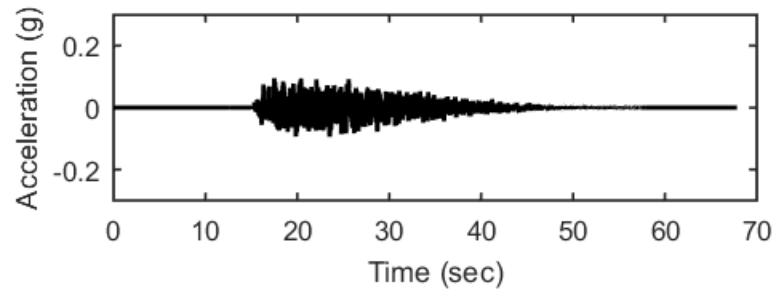
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



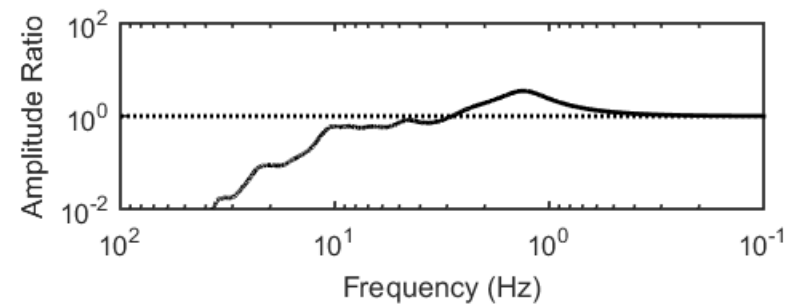
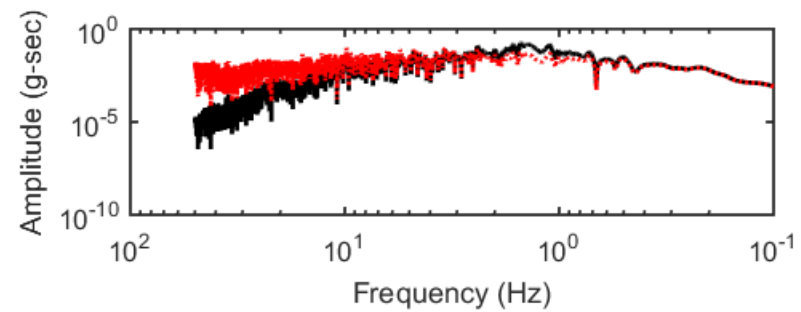
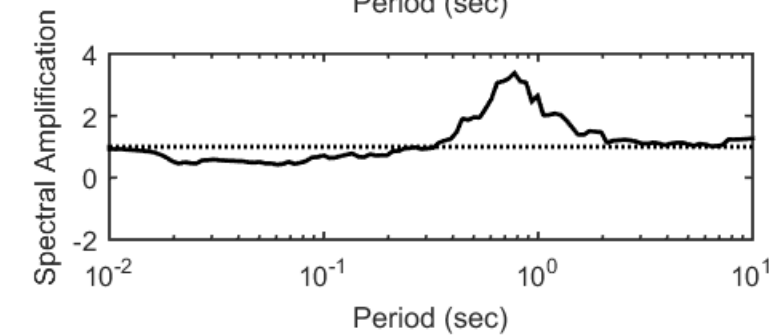
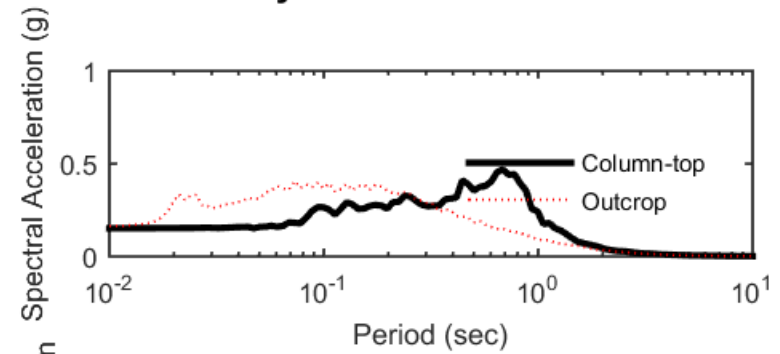
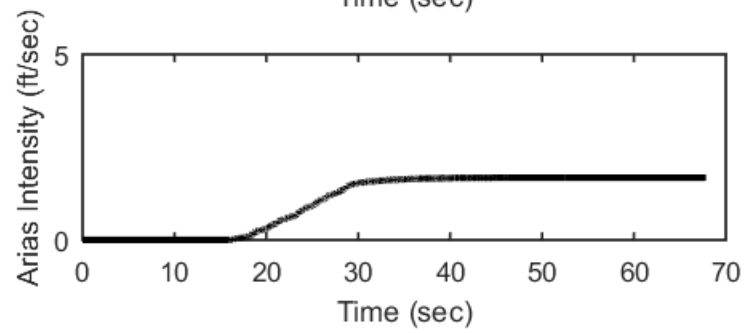
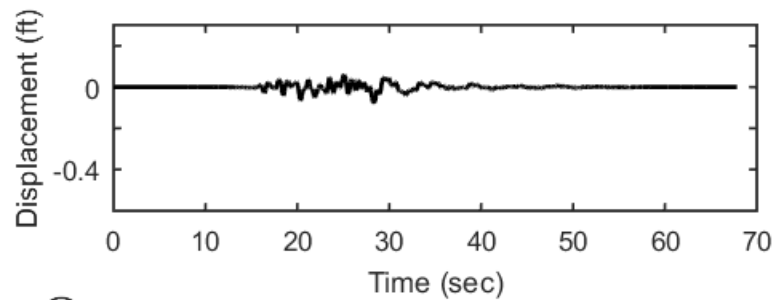
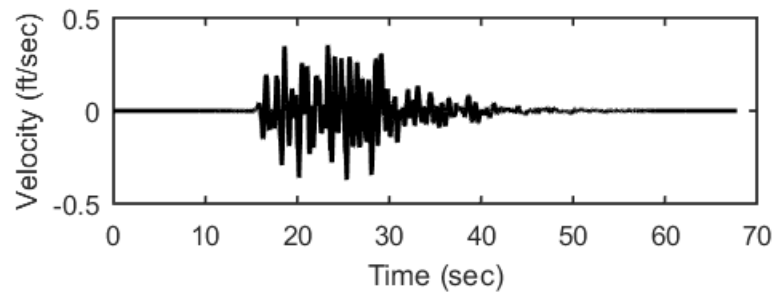
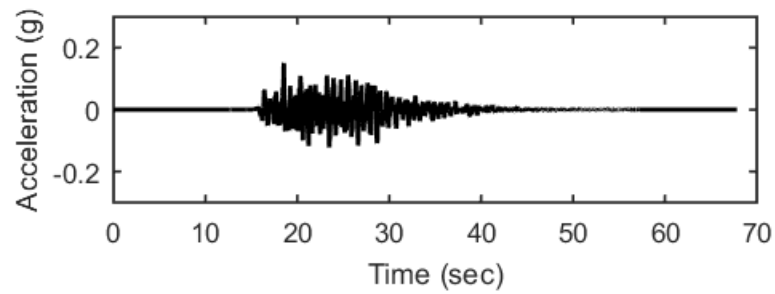
### Profile outputs for Motion: FEE5



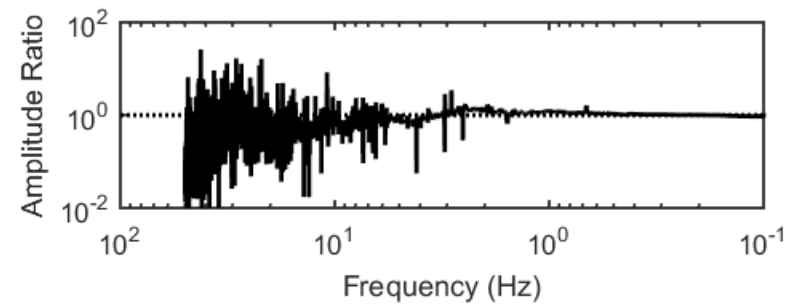
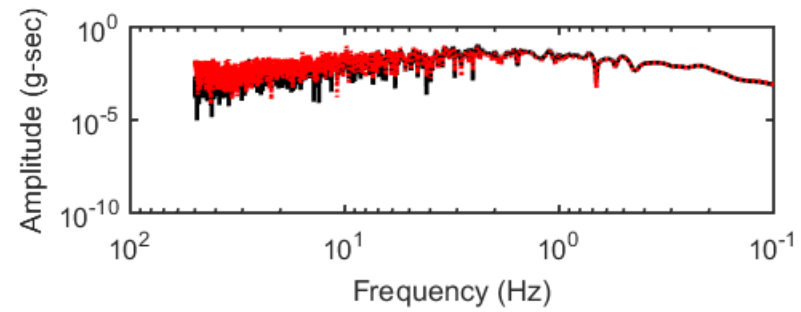
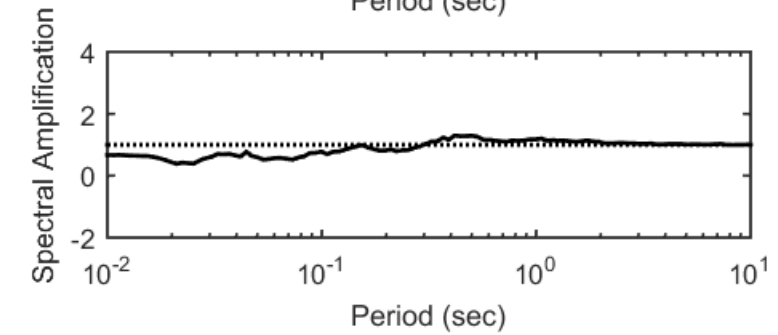
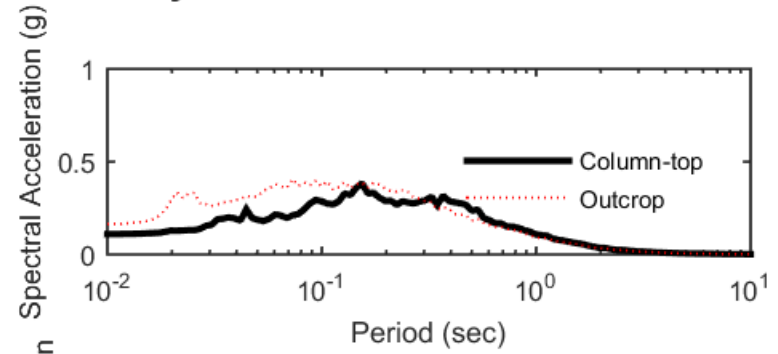
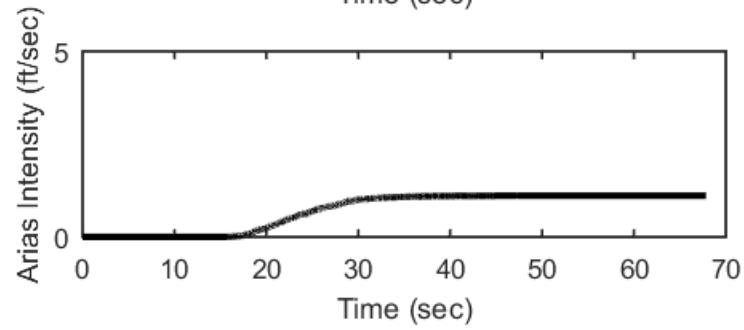
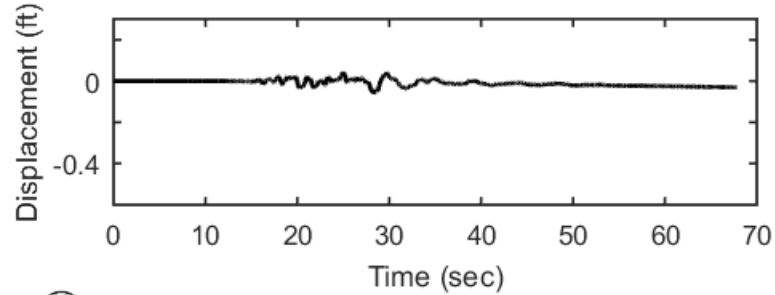
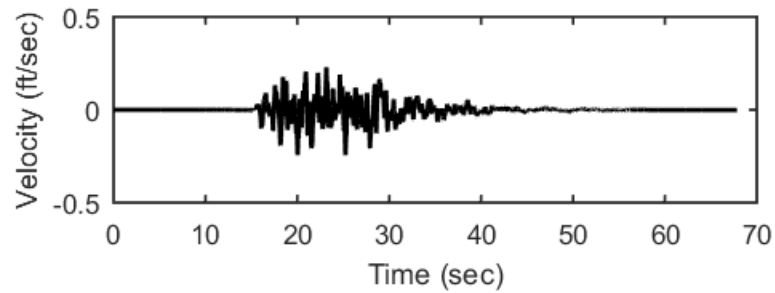
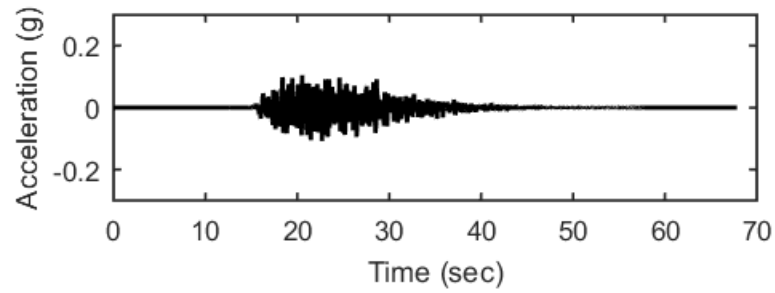
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



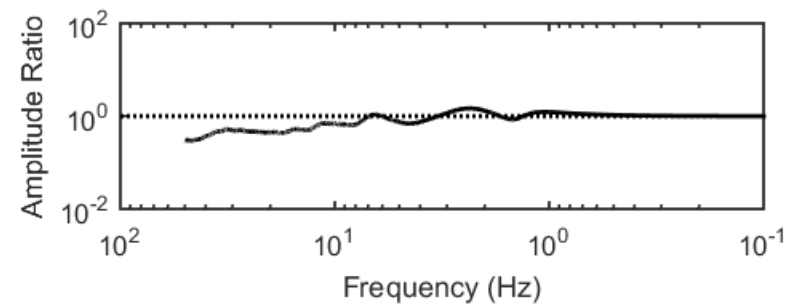
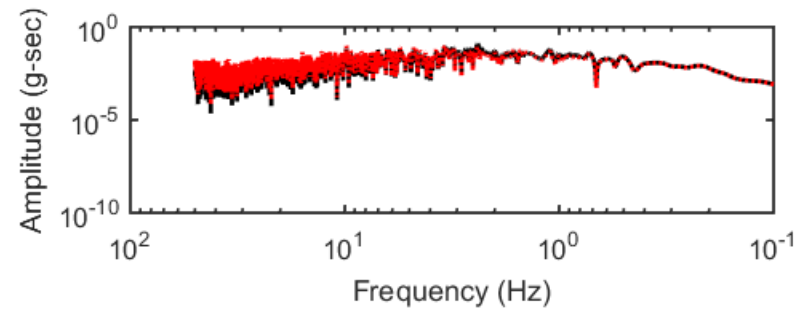
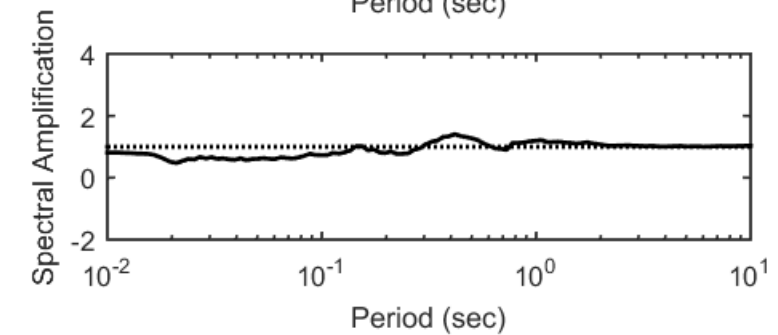
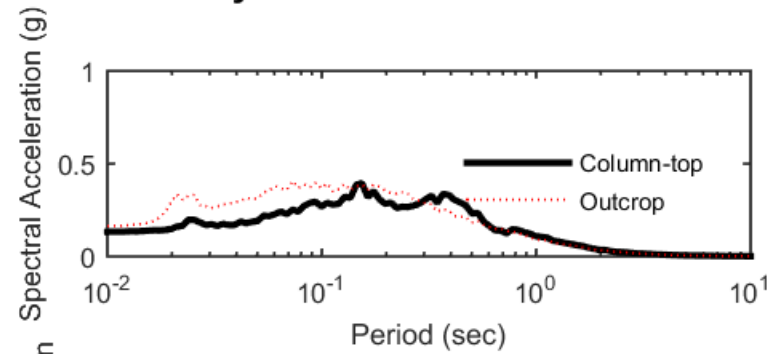
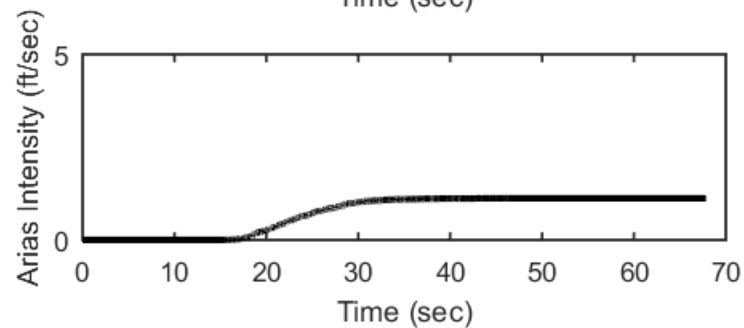
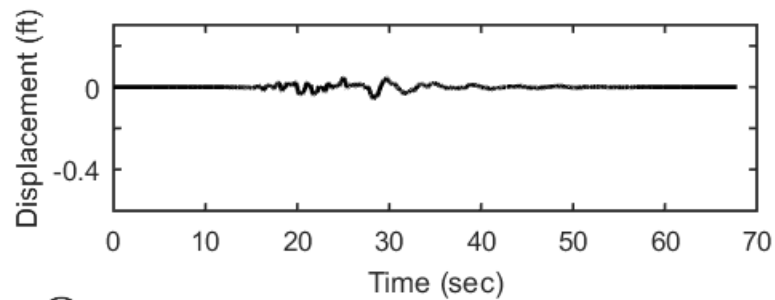
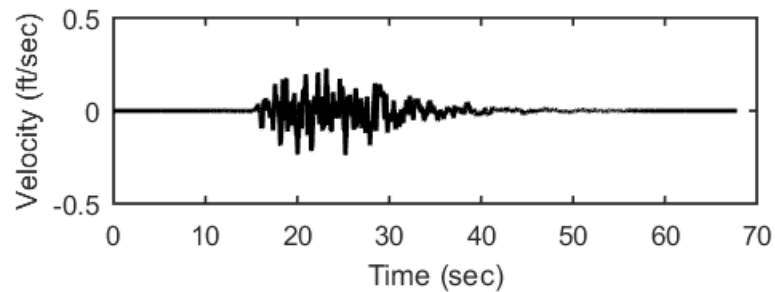
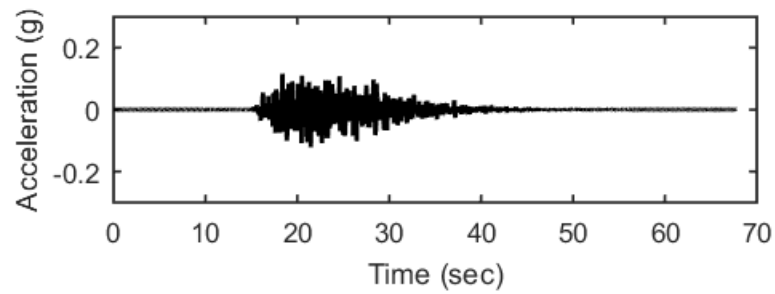
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



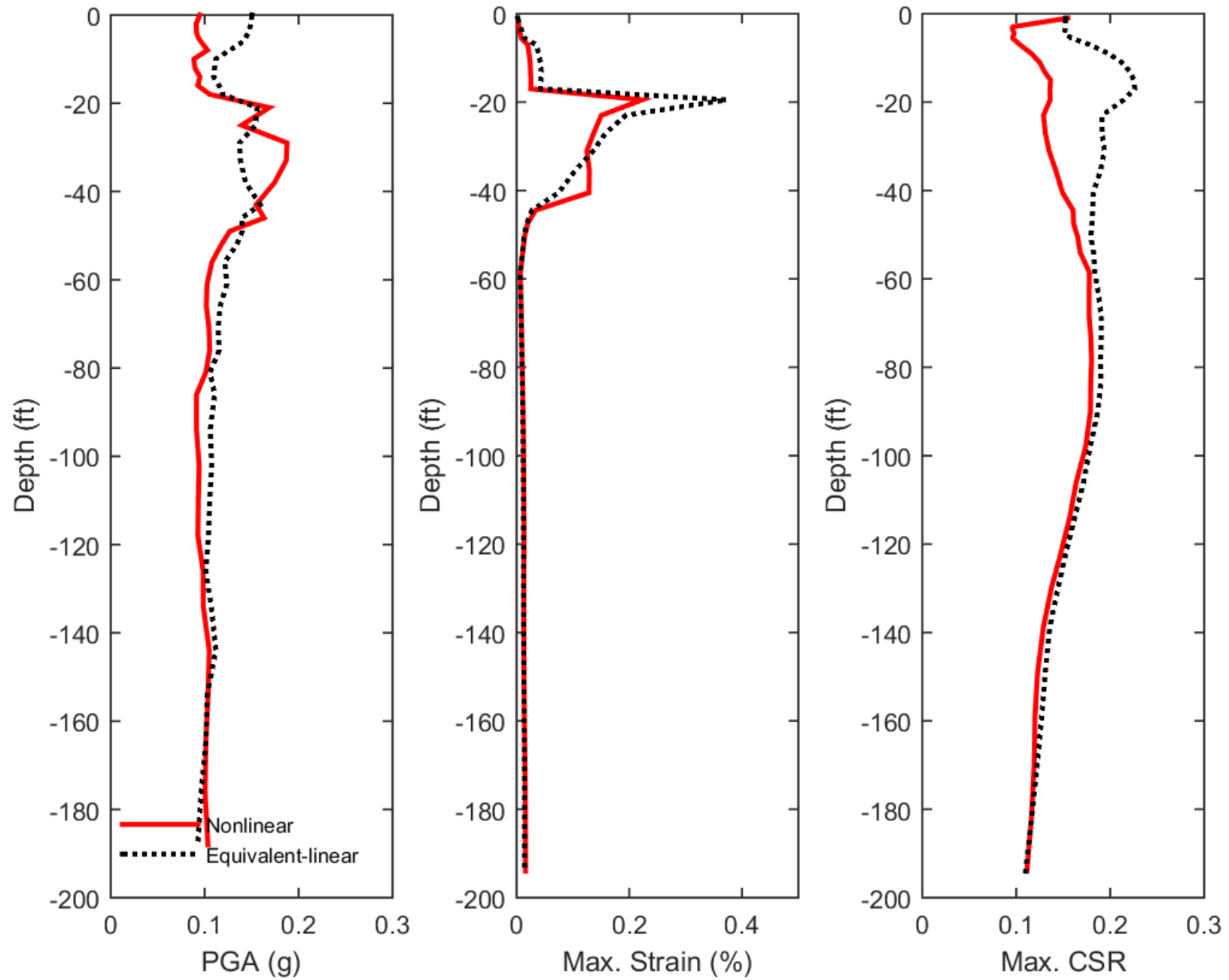
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6

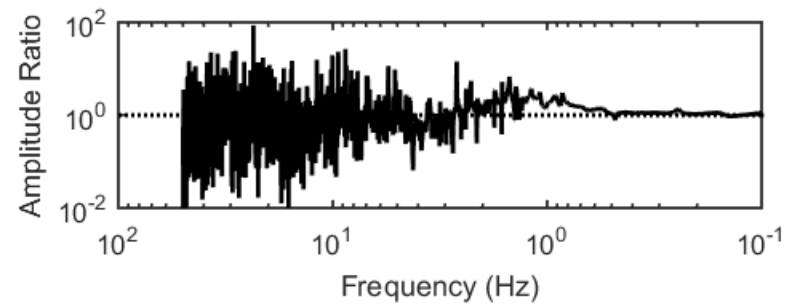
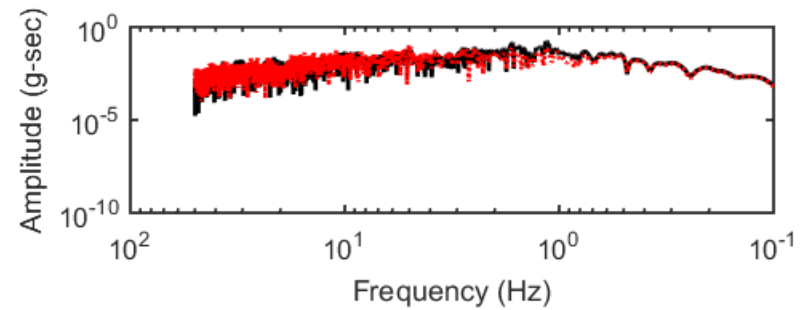
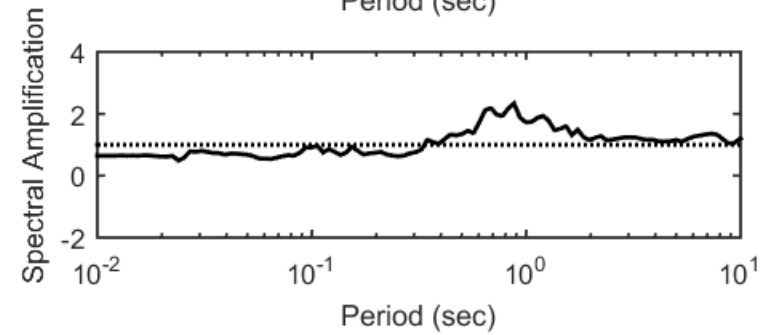
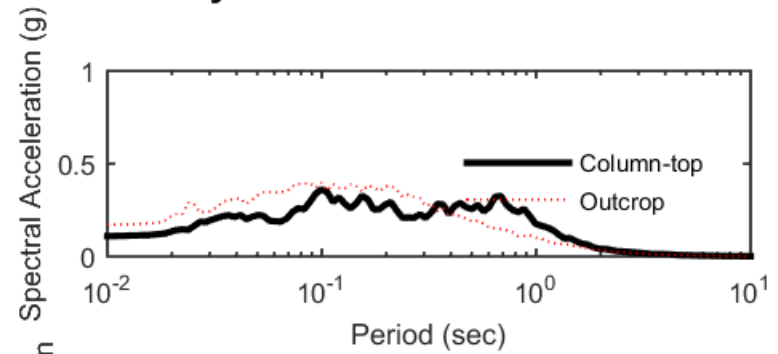
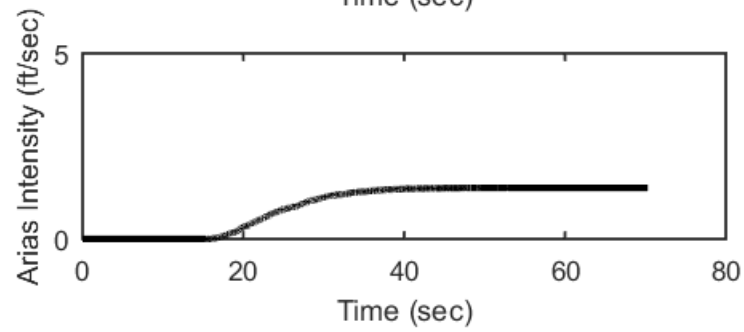
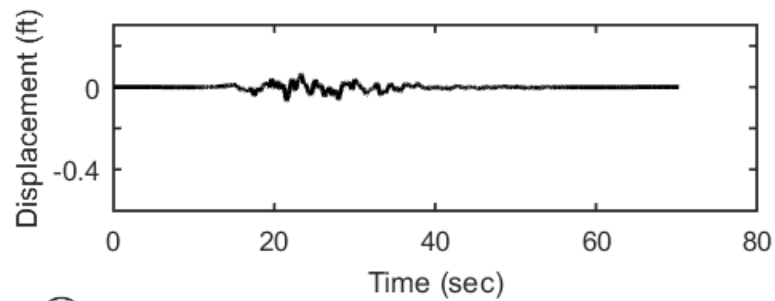
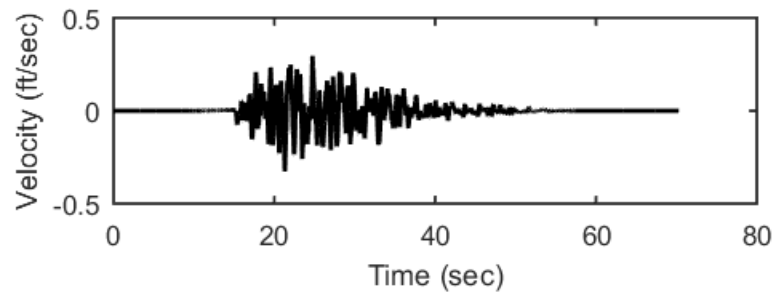
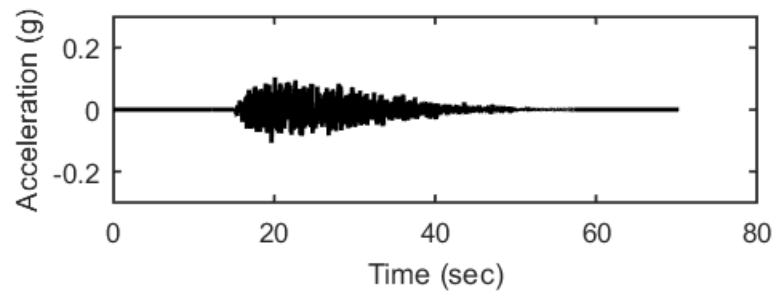


### Profile outputs for Motion: FEE6

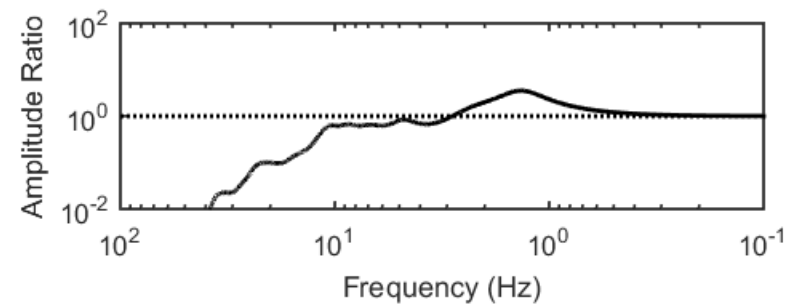
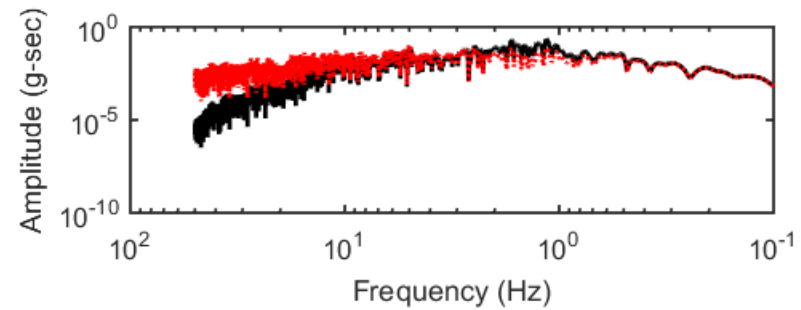
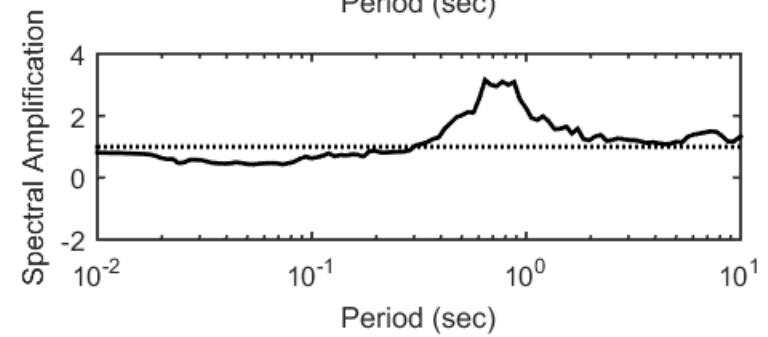
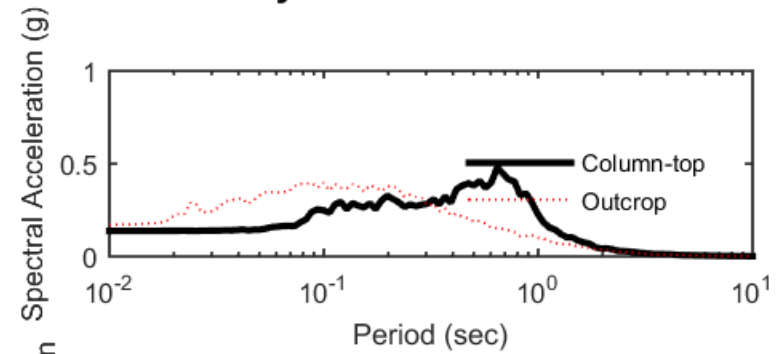
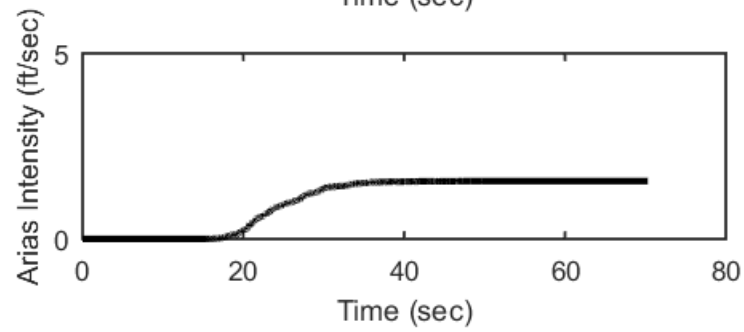
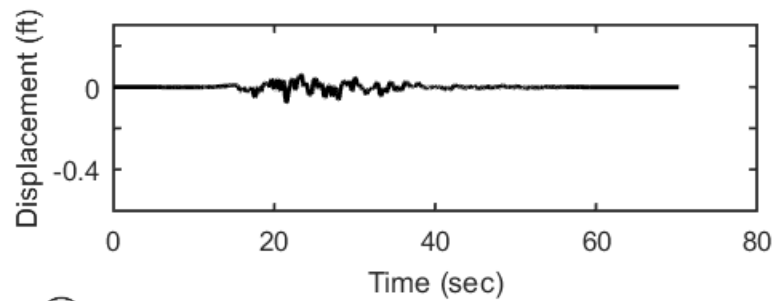
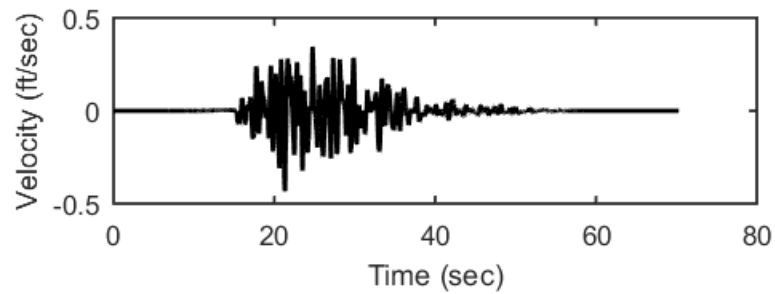
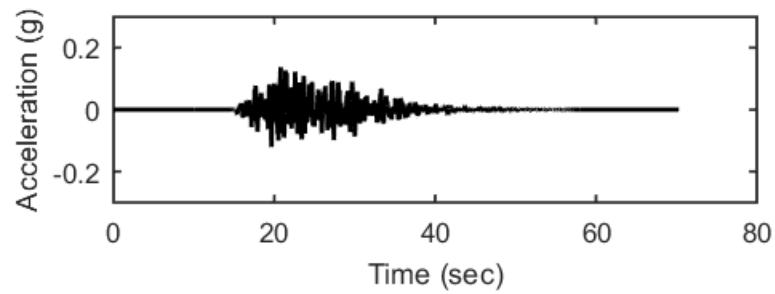




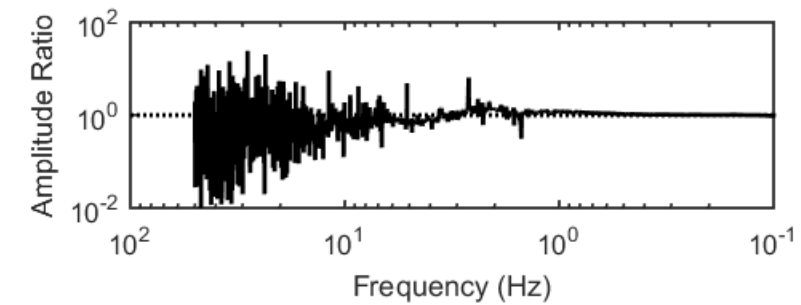
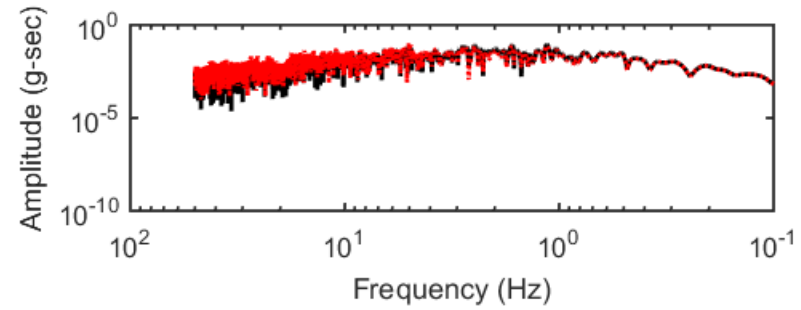
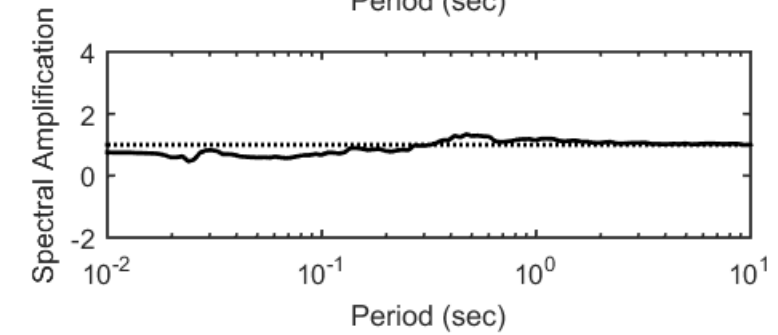
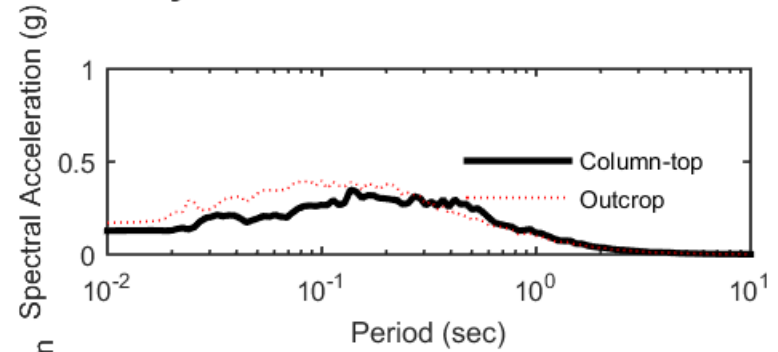
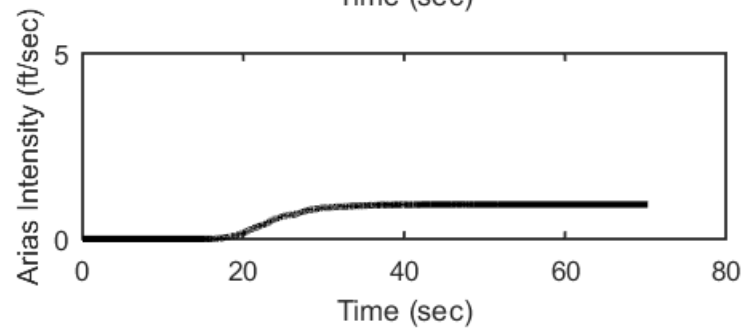
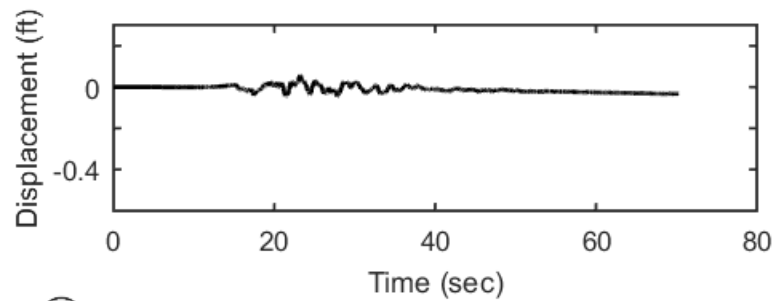
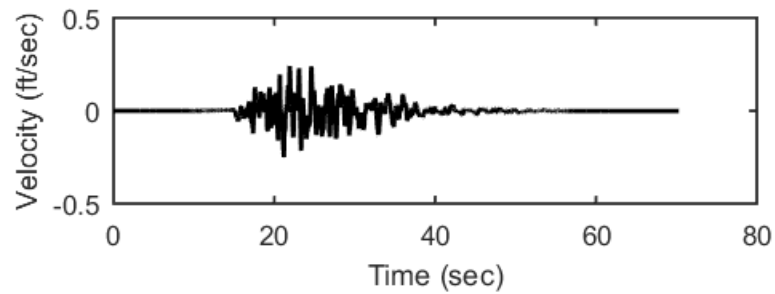
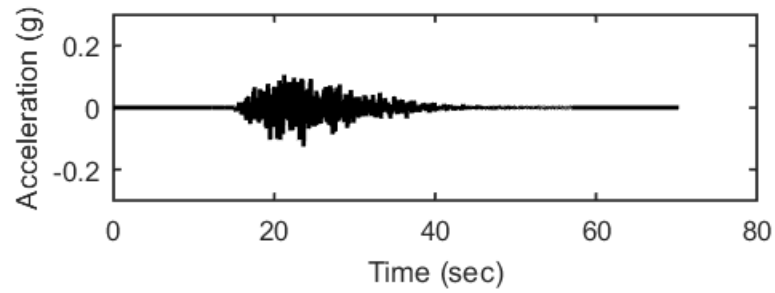
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



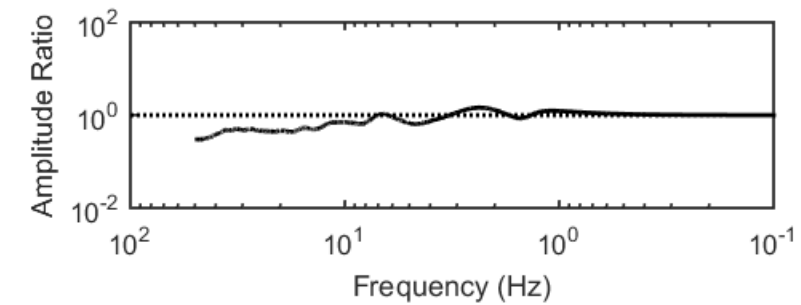
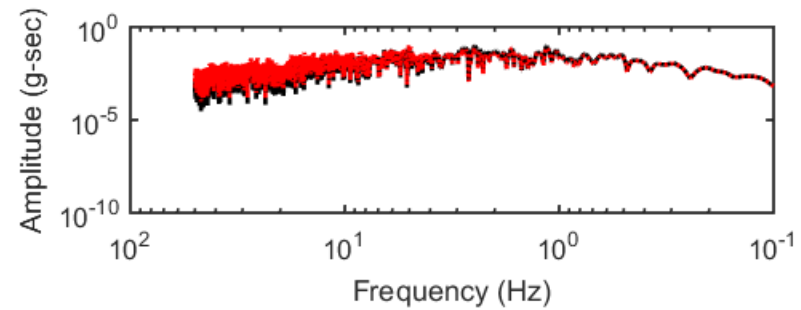
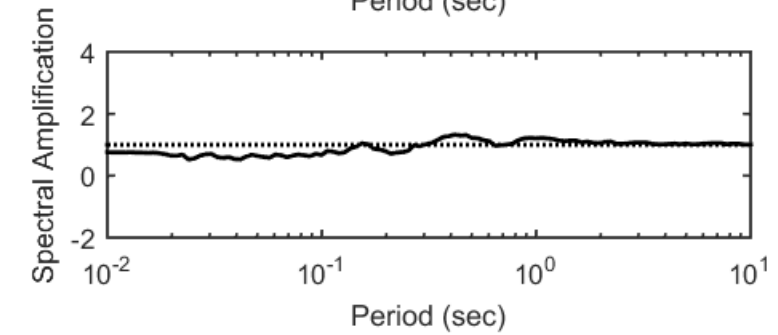
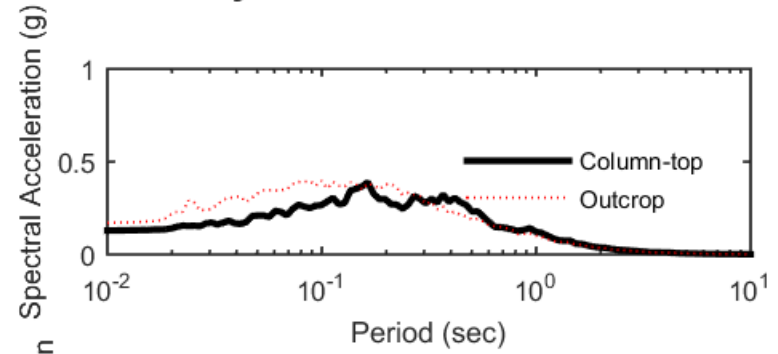
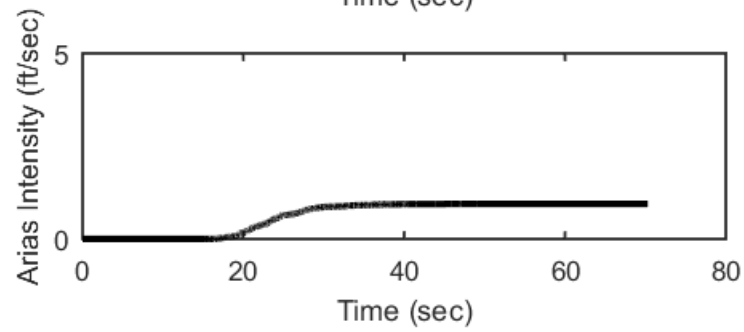
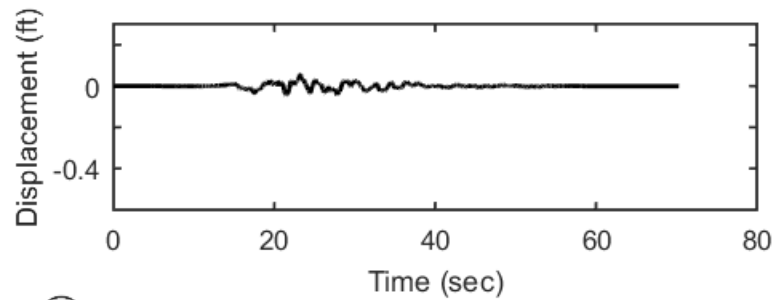
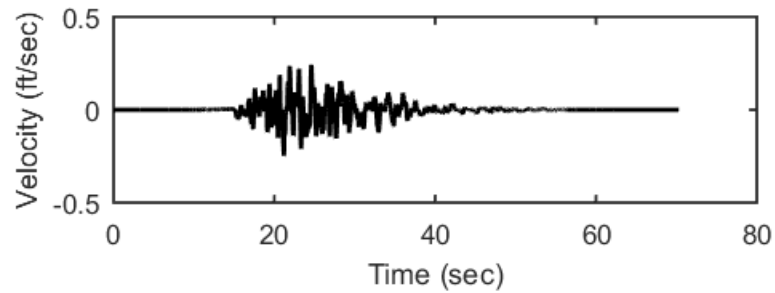
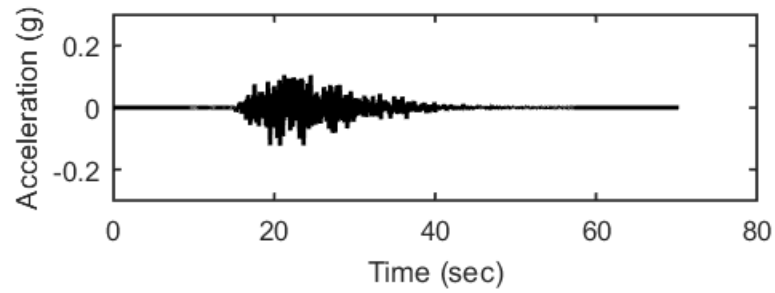
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



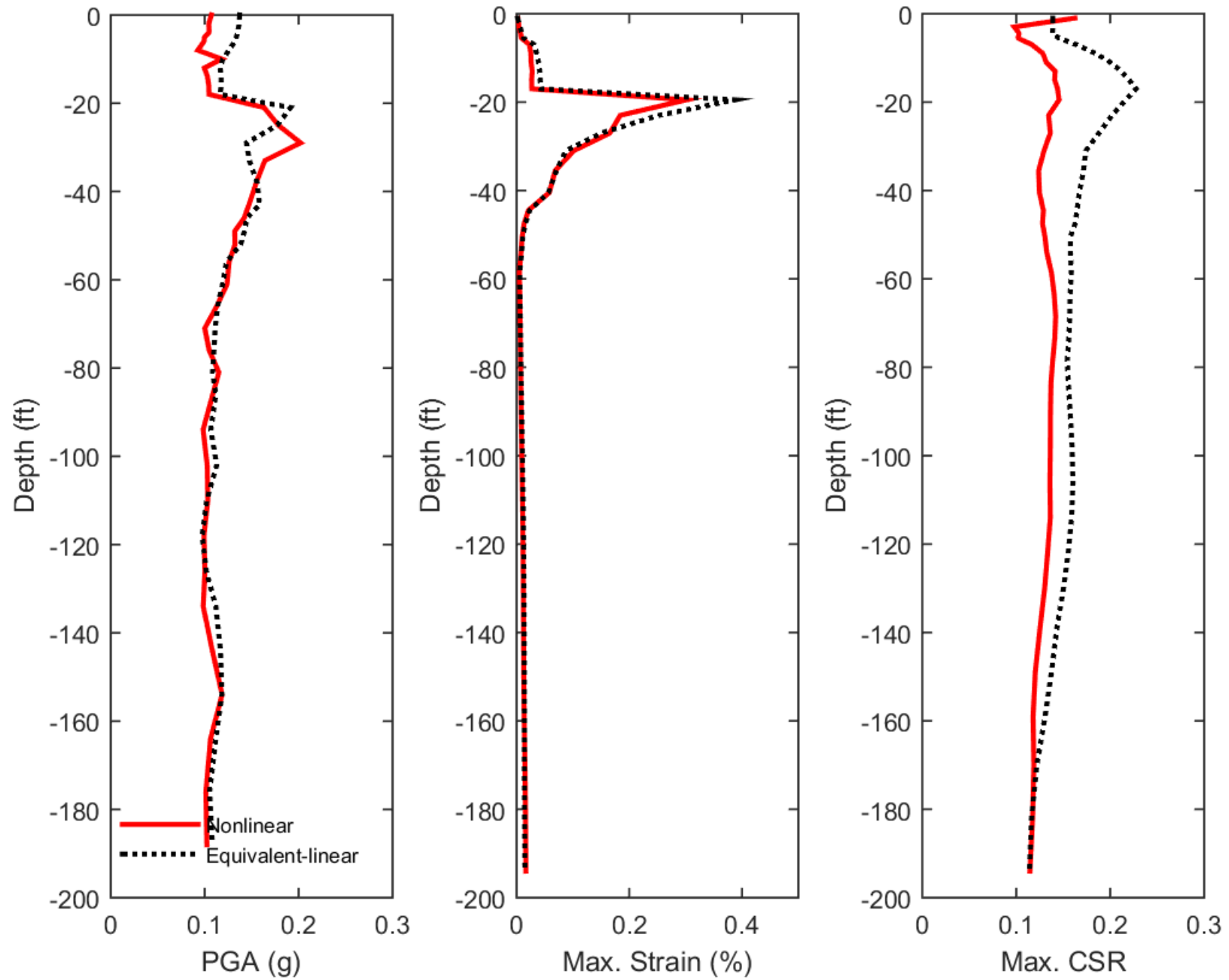
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



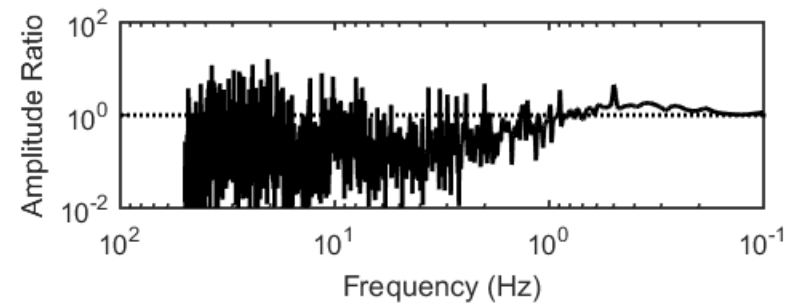
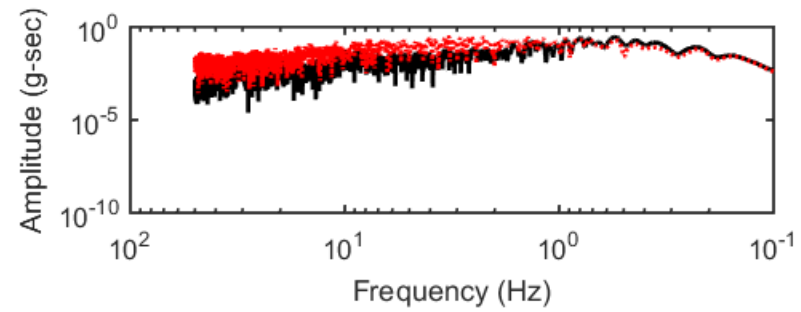
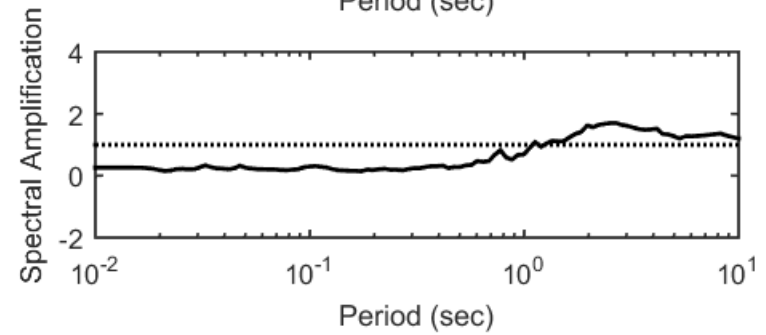
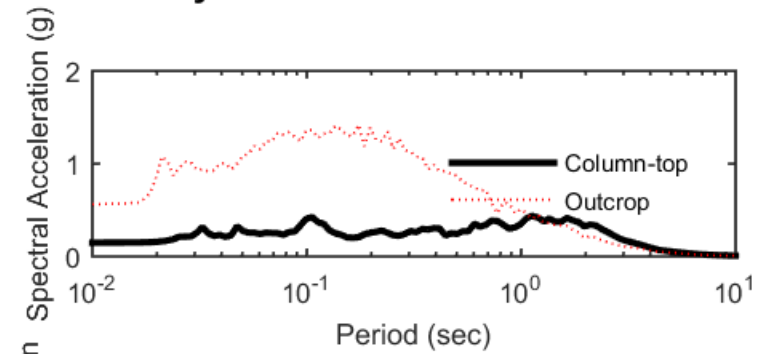
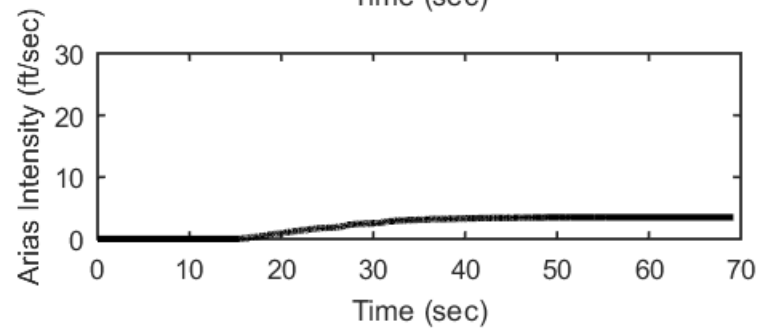
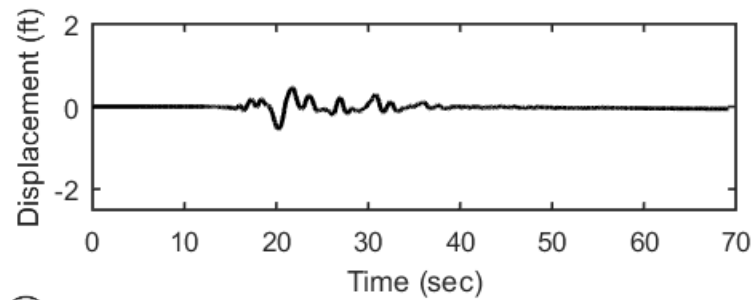
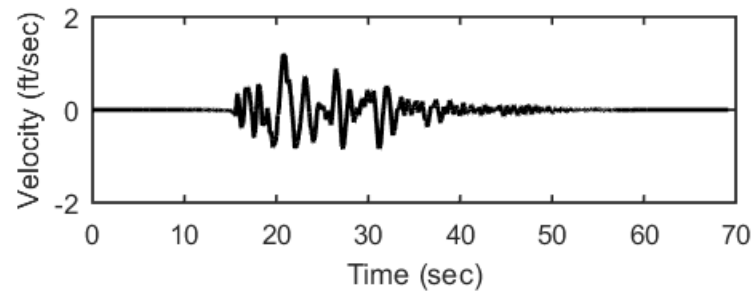
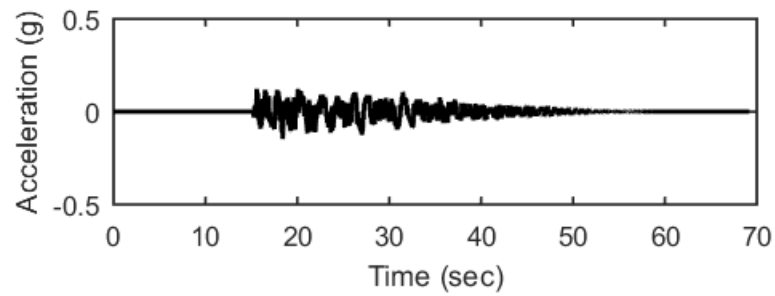
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



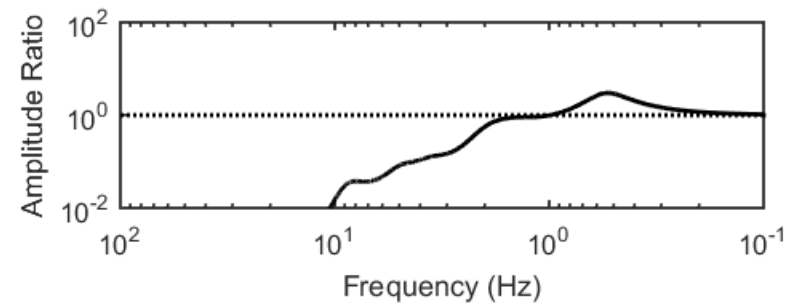
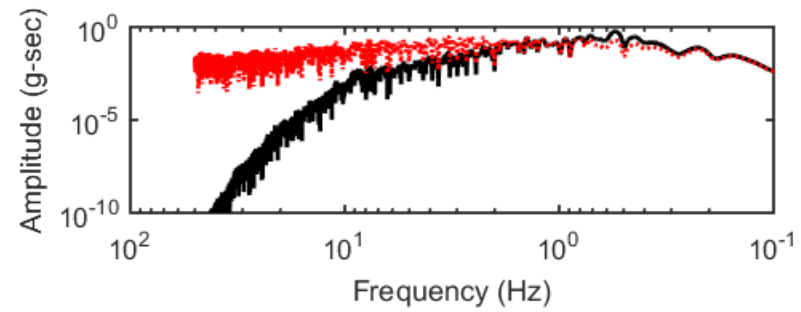
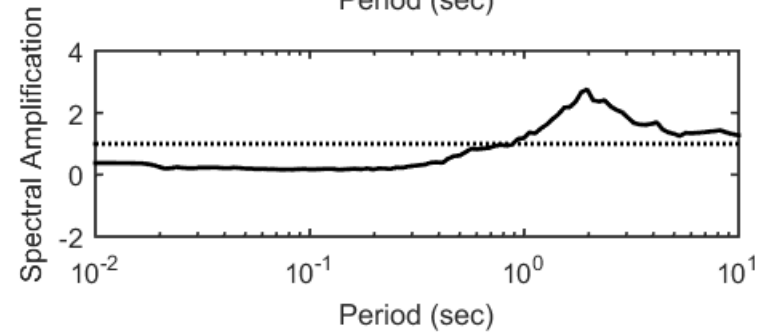
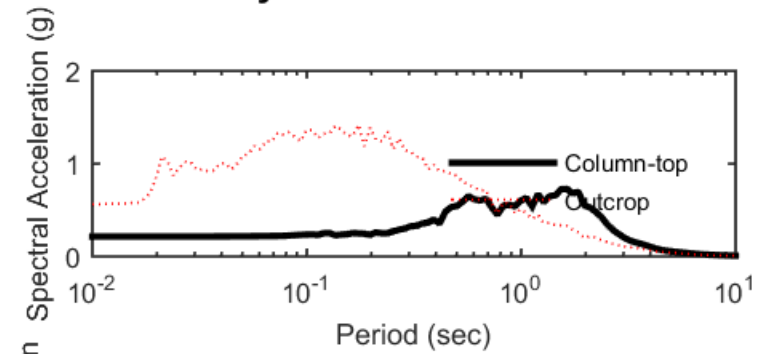
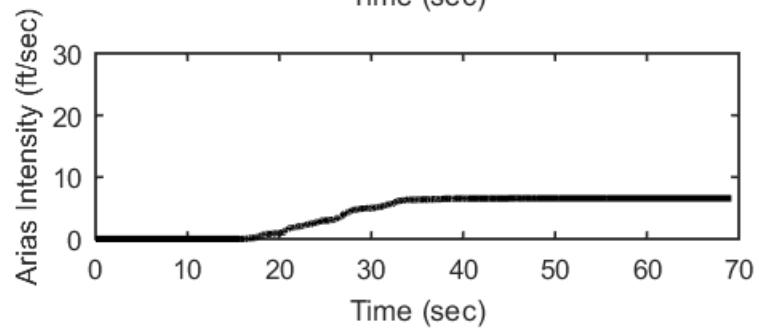
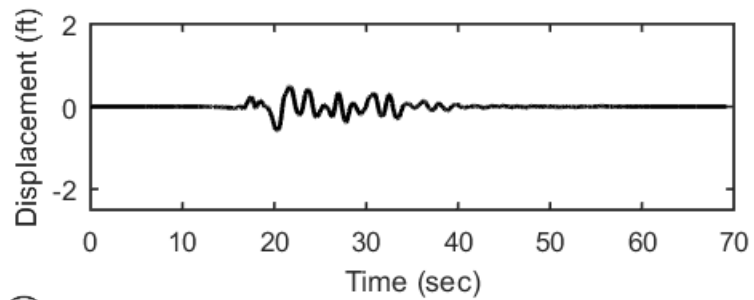
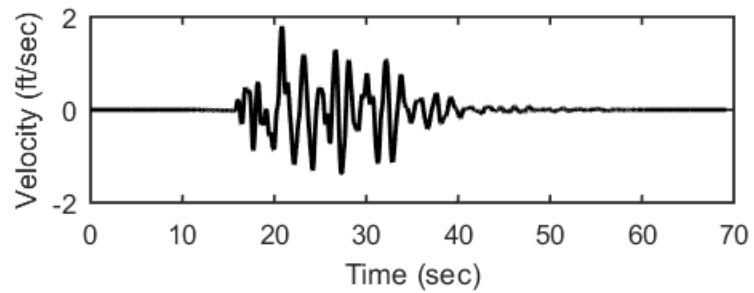
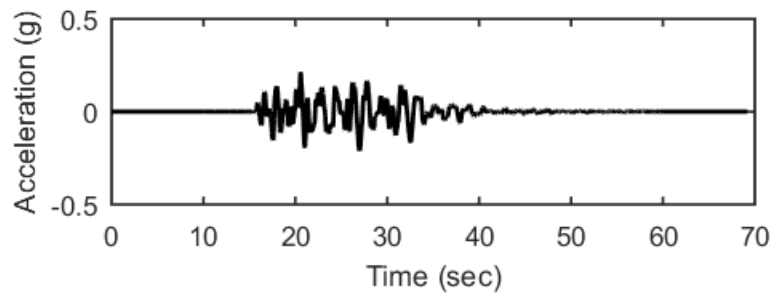
### Profile outputs for Motion: FEE7



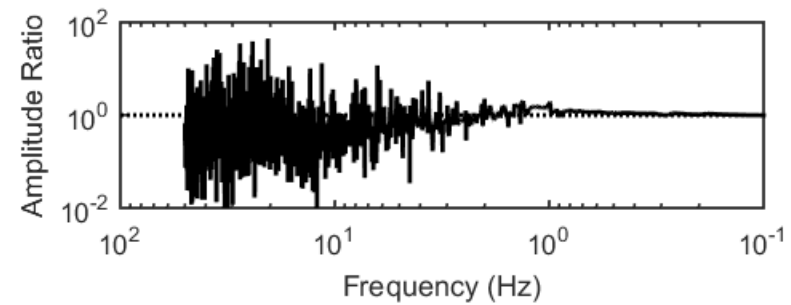
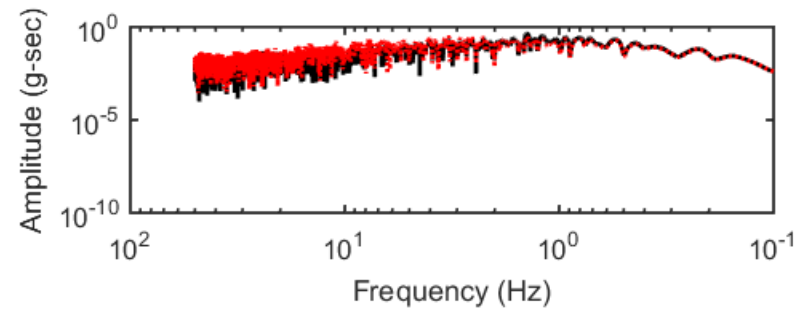
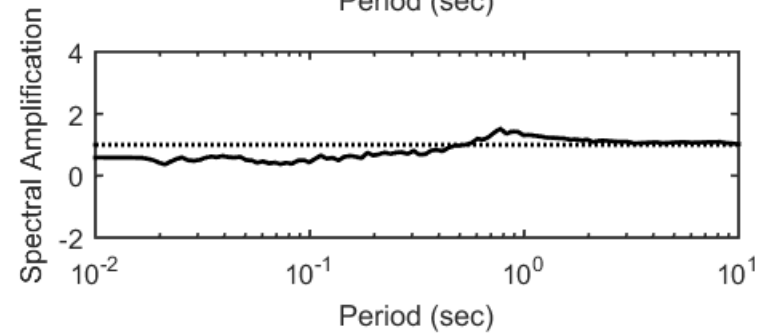
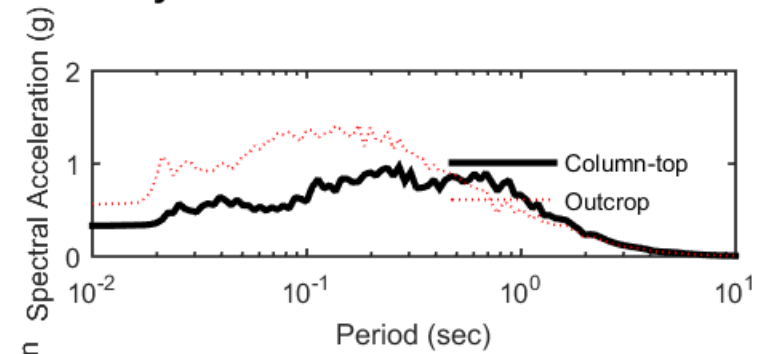
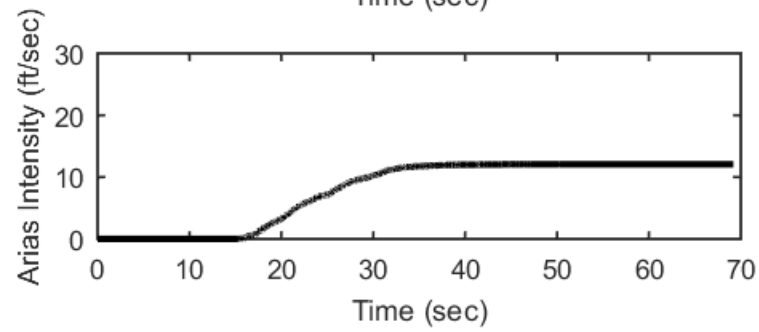
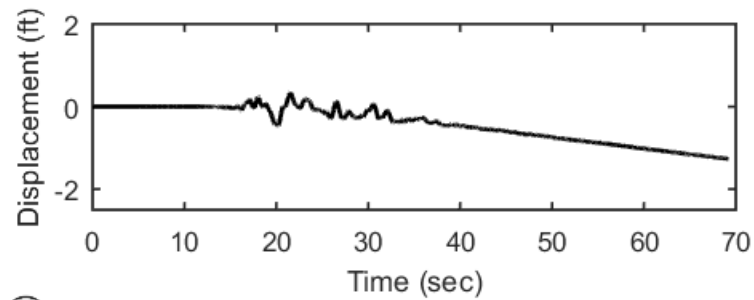
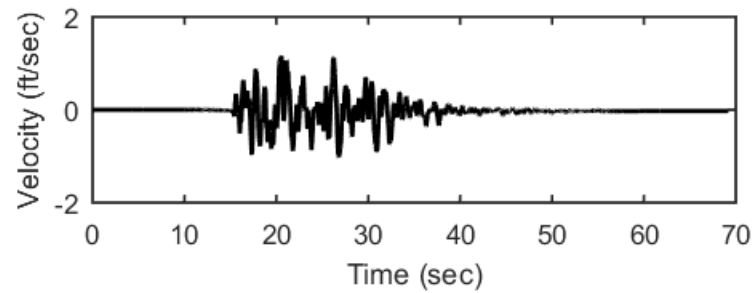
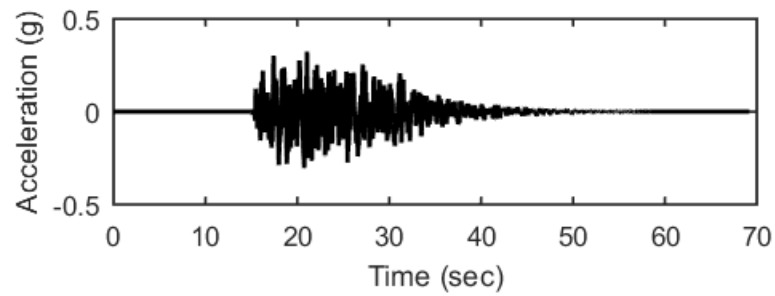
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1

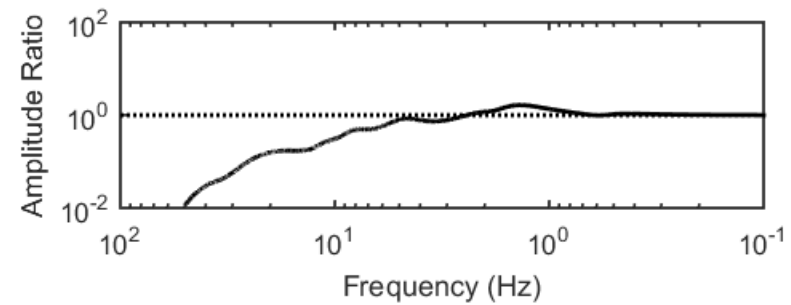
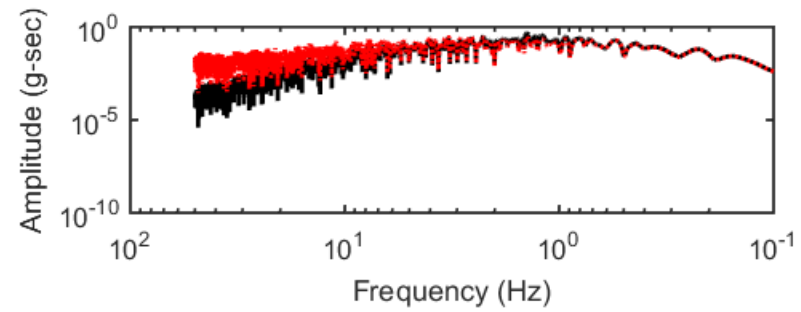
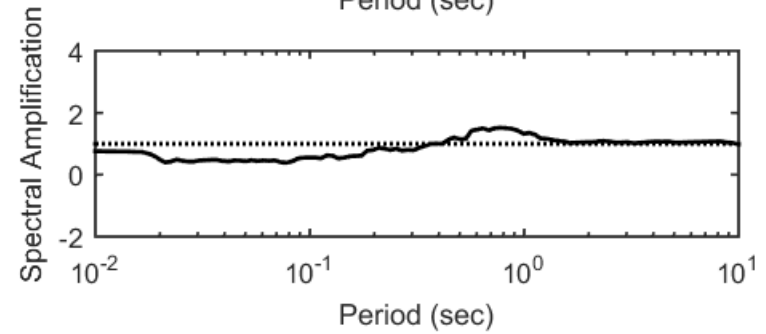
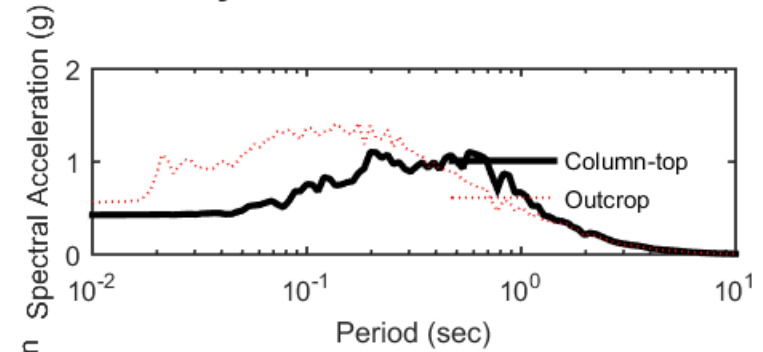
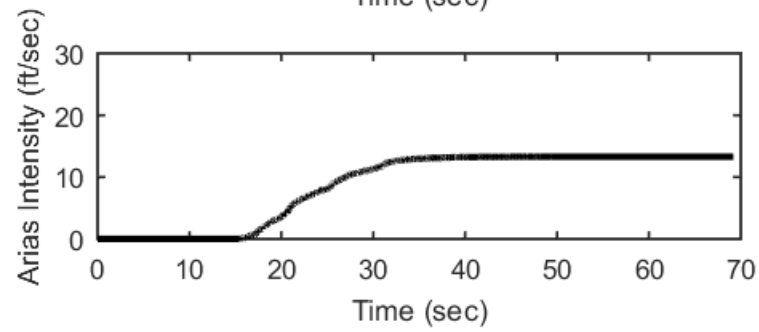
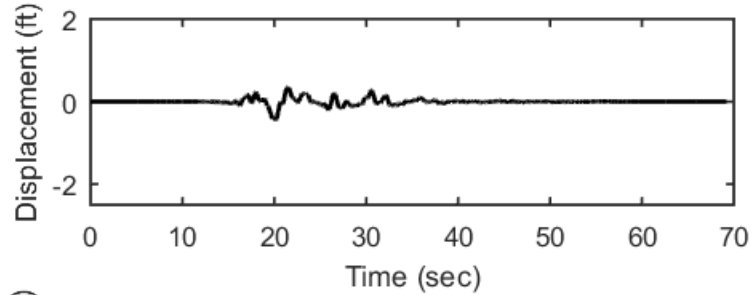
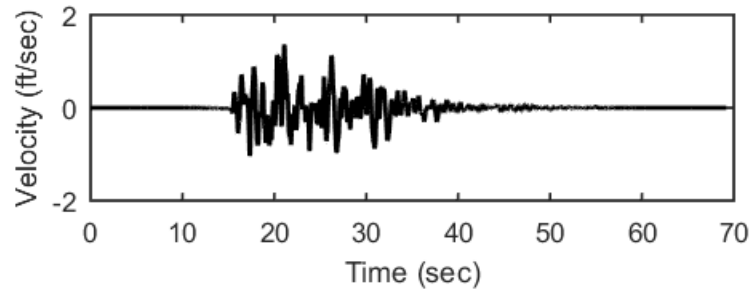
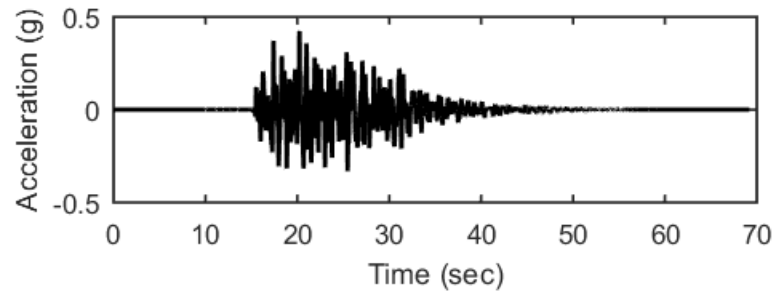


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1

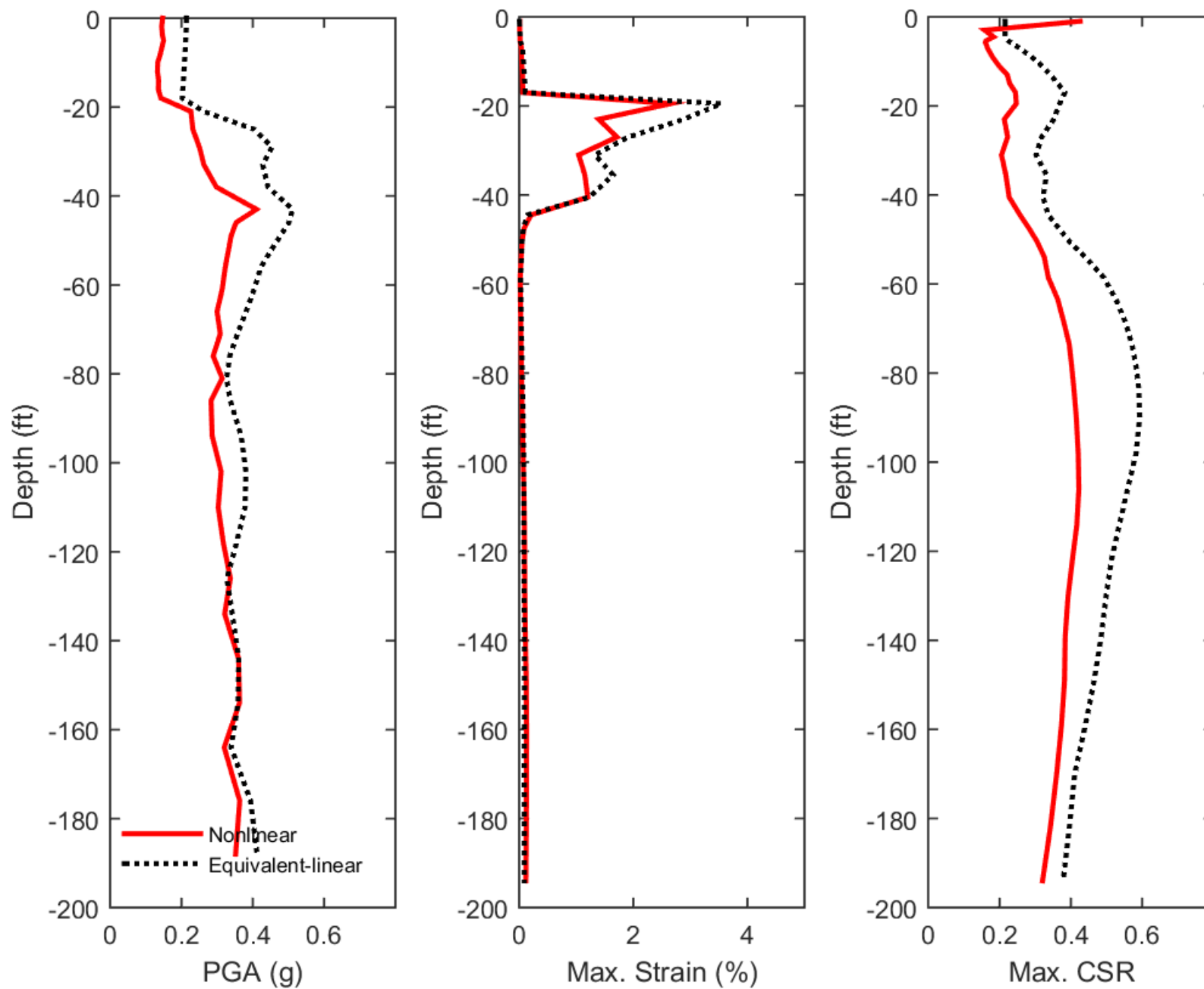




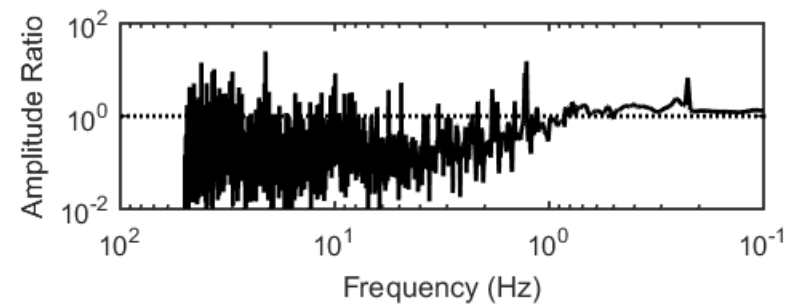
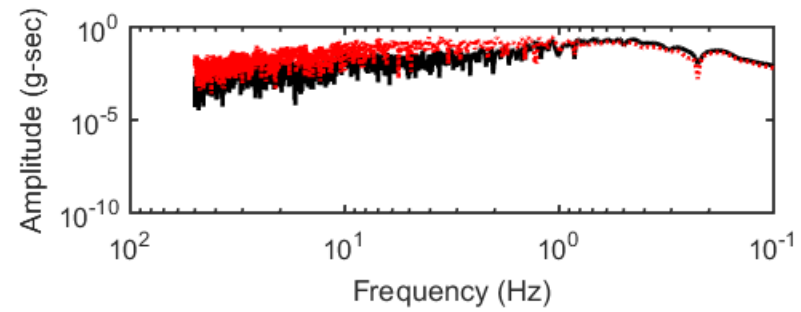
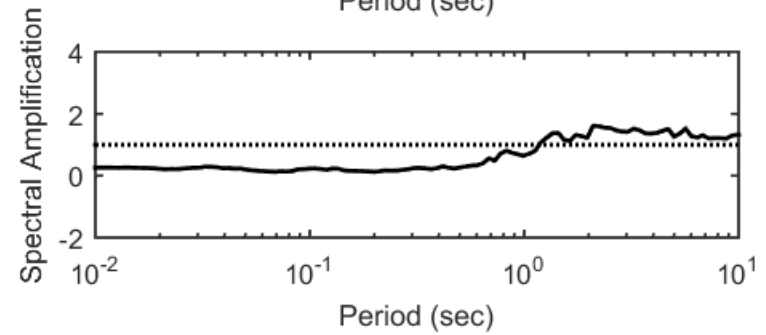
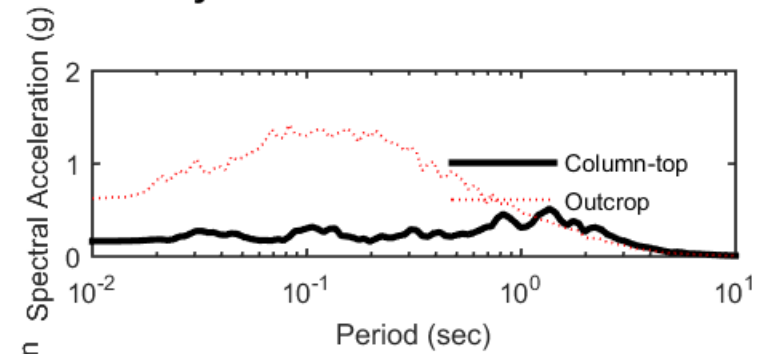
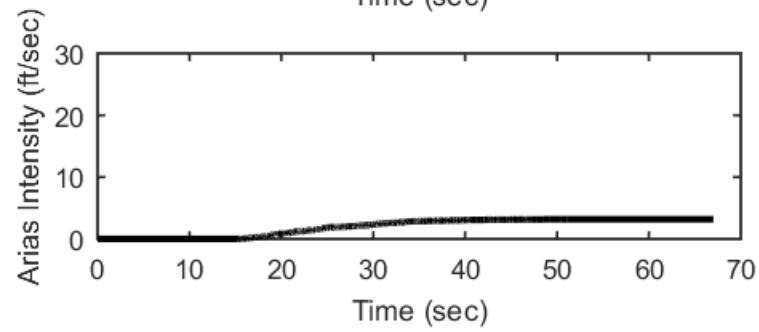
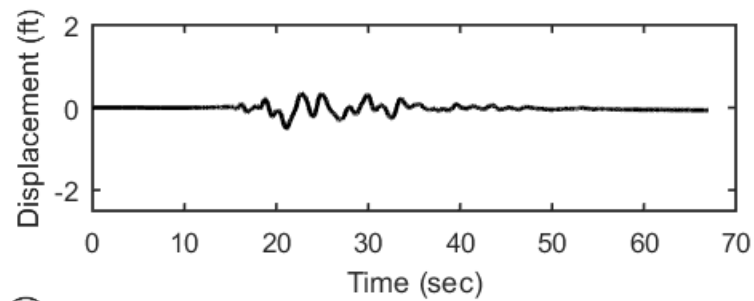
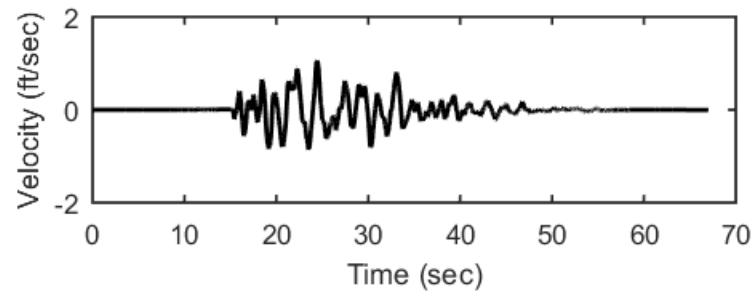
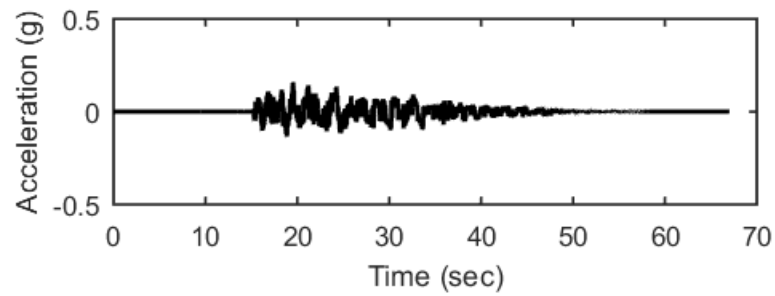
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



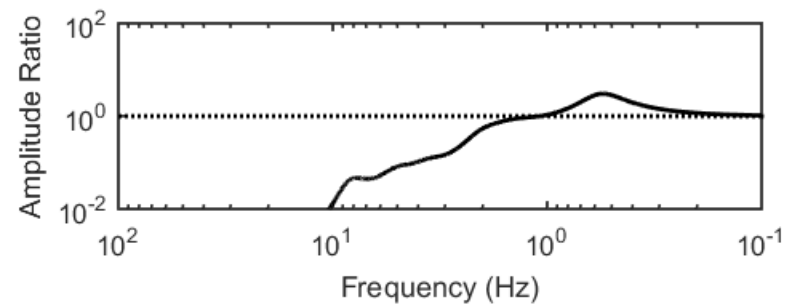
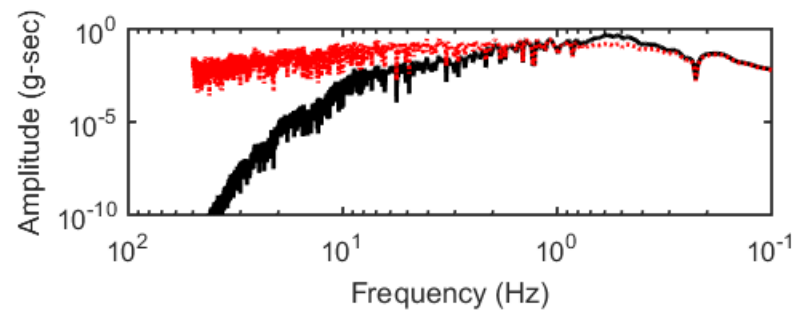
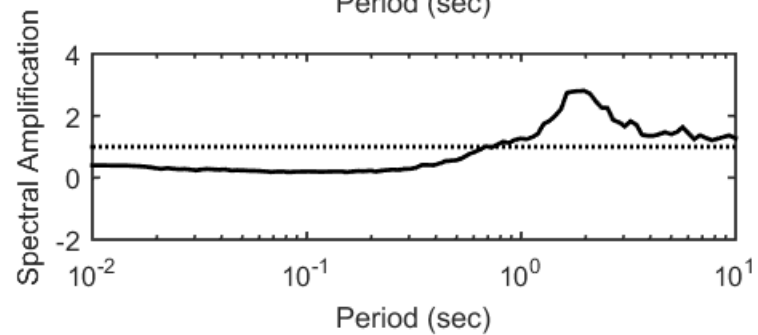
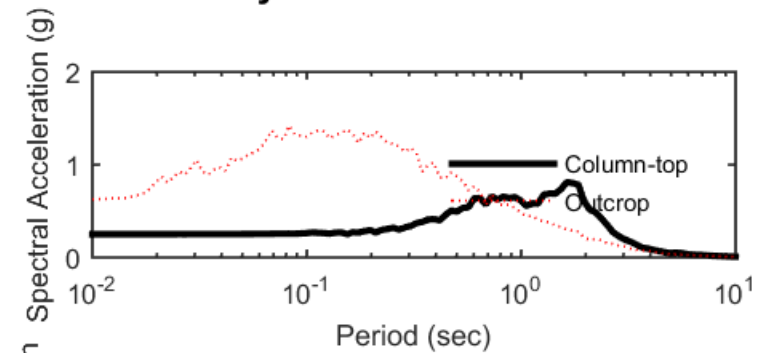
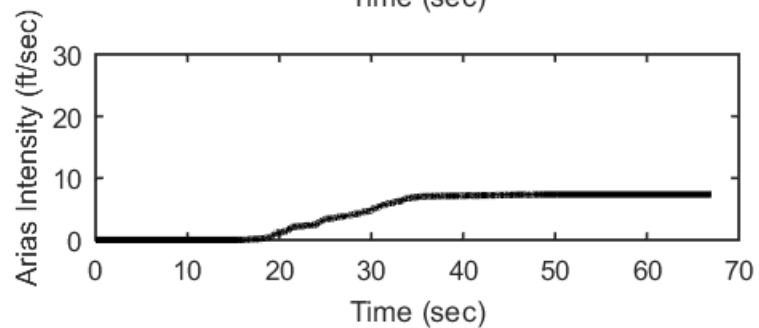
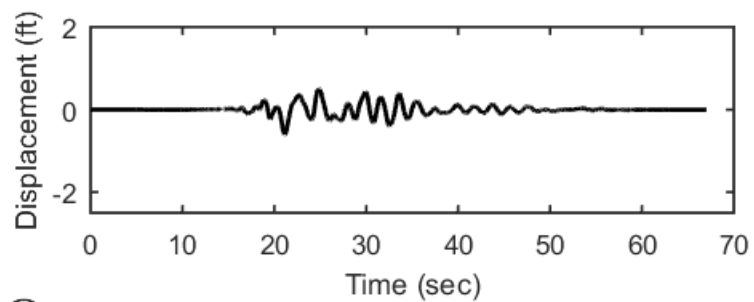
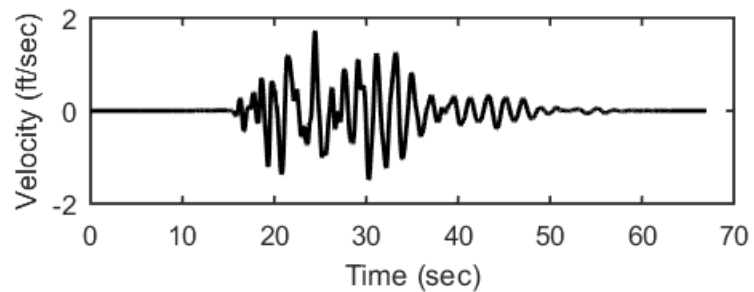
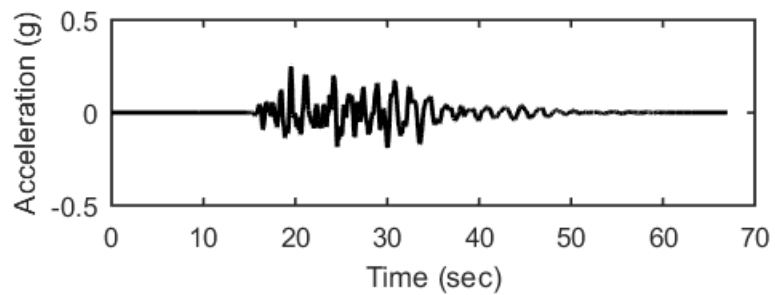
### Profile outputs for Motion: SEE1



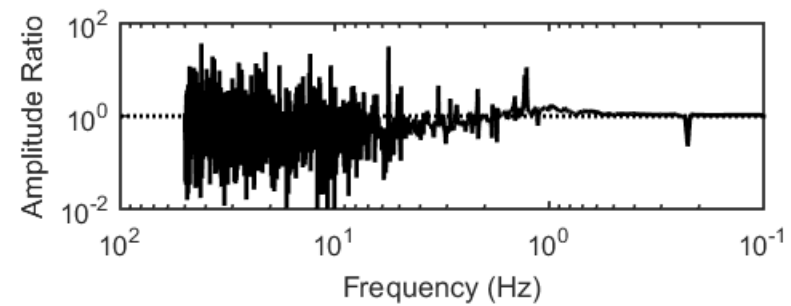
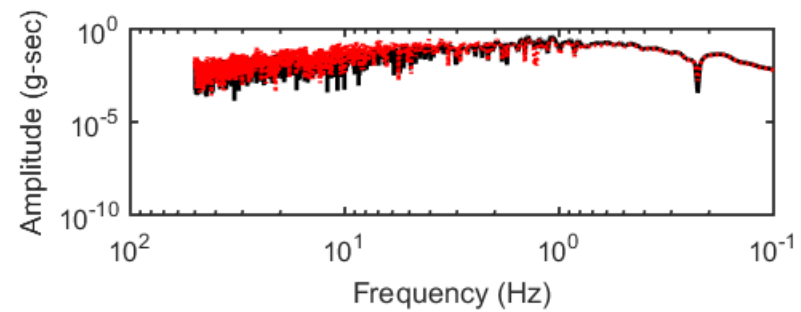
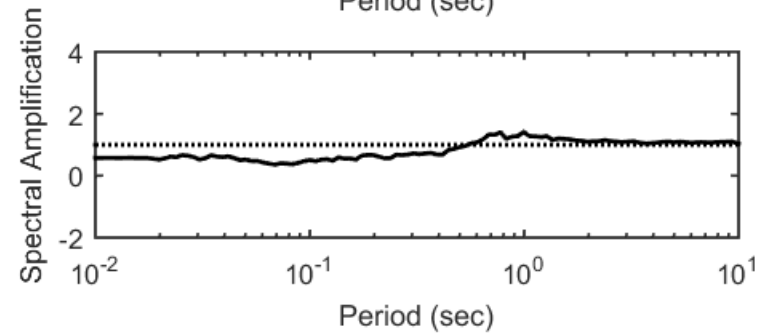
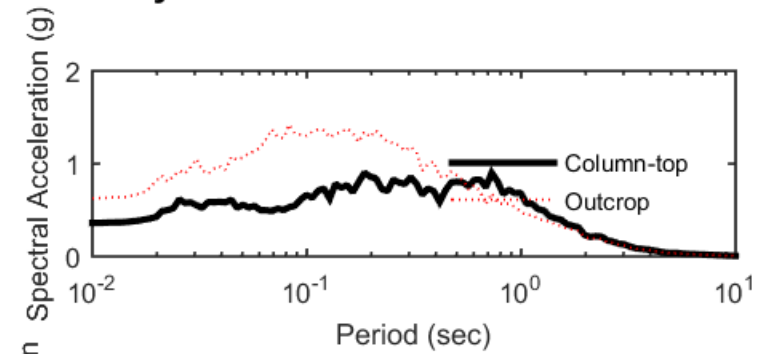
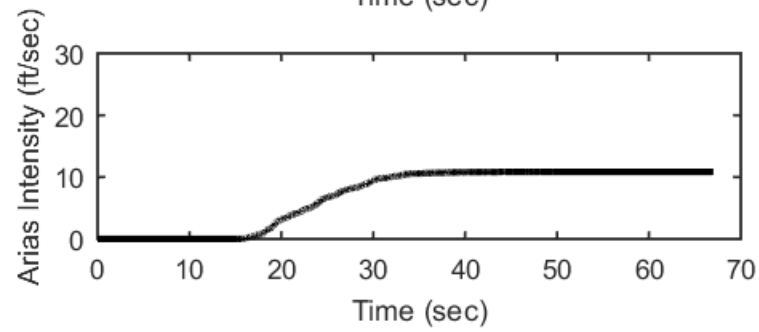
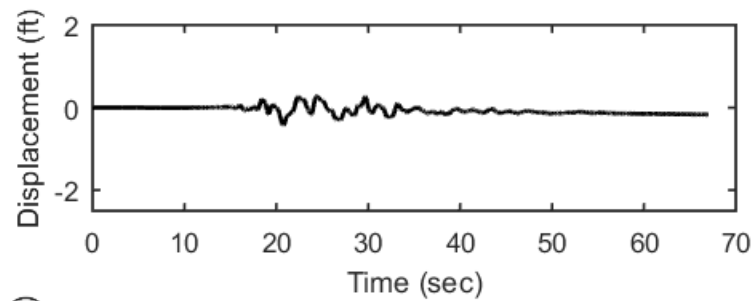
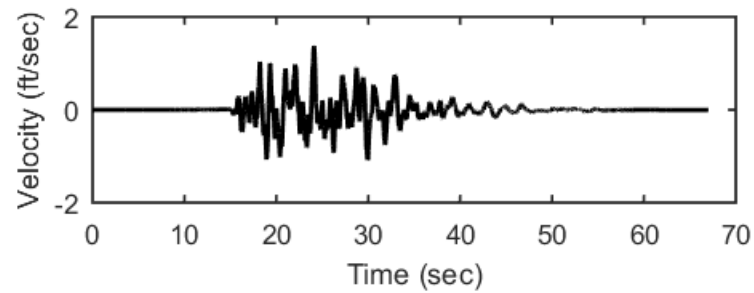
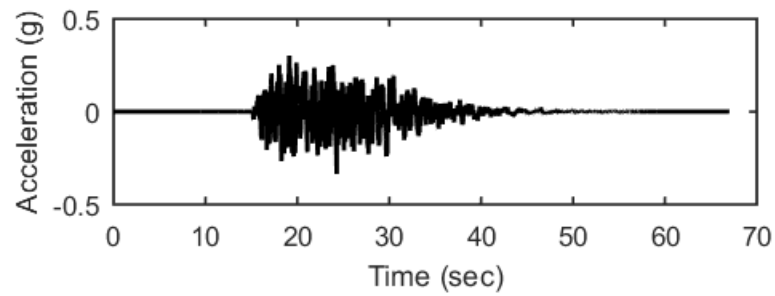
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



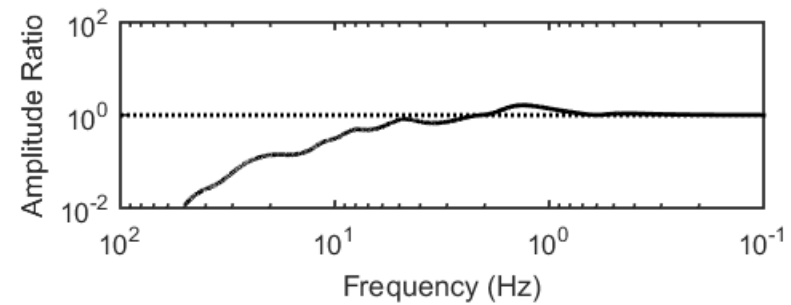
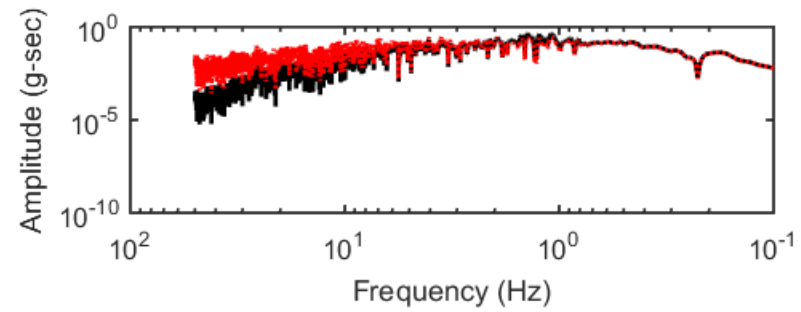
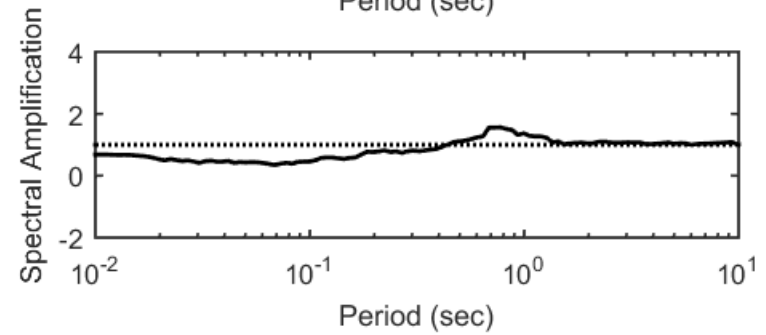
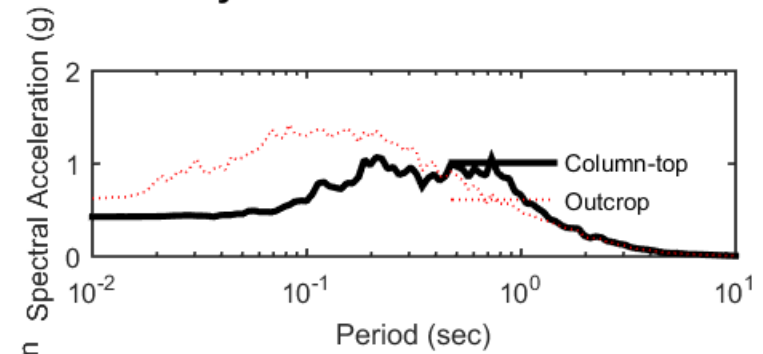
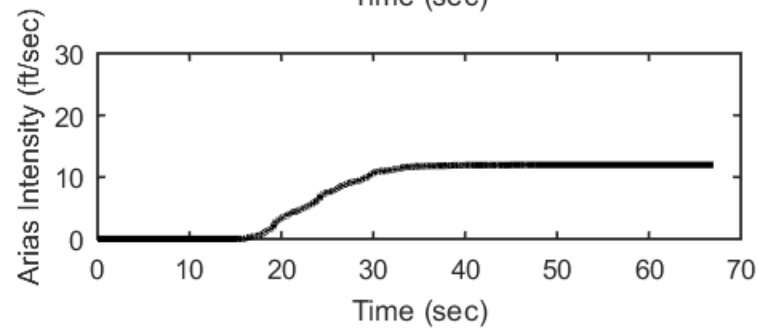
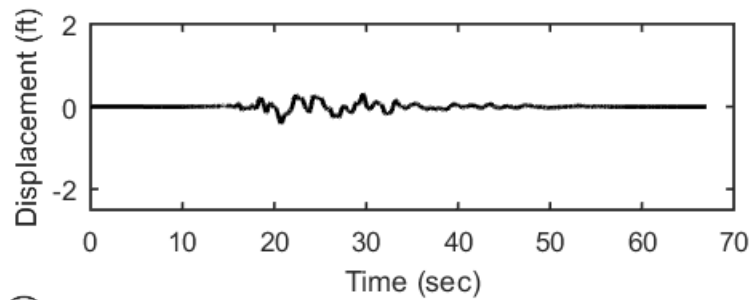
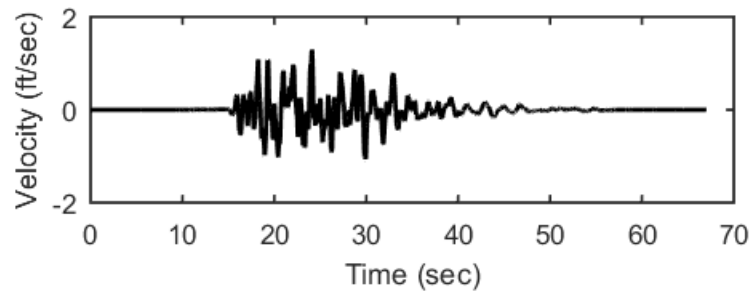
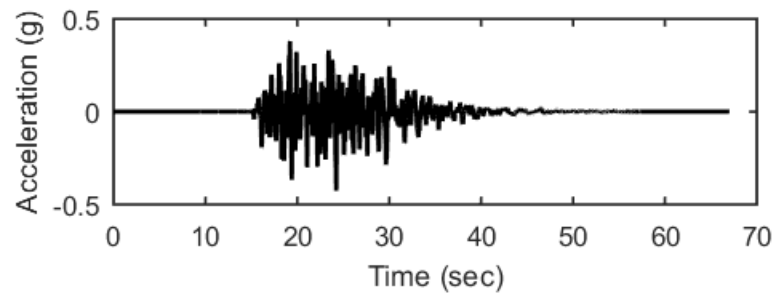
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



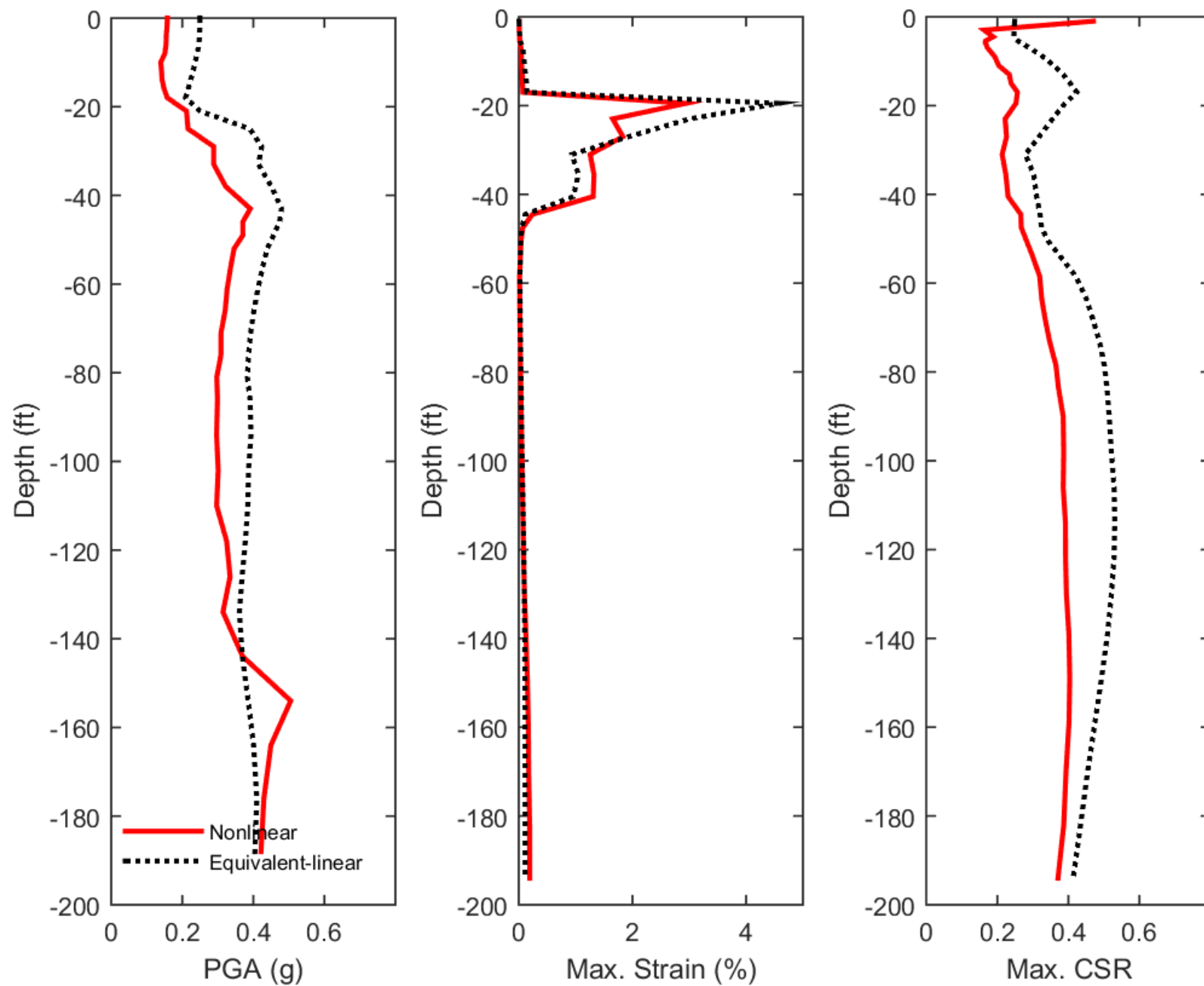
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



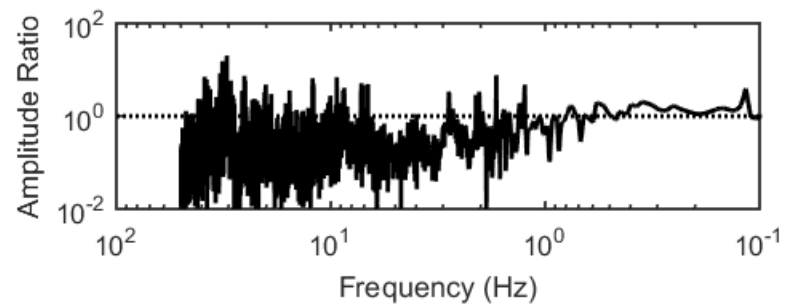
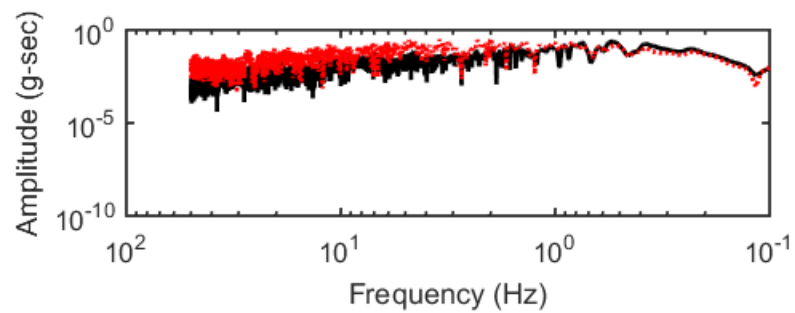
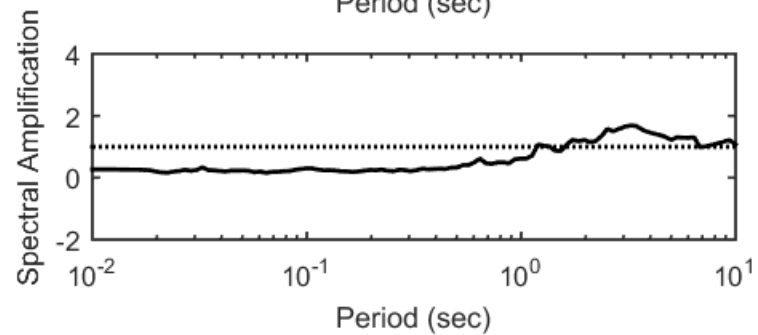
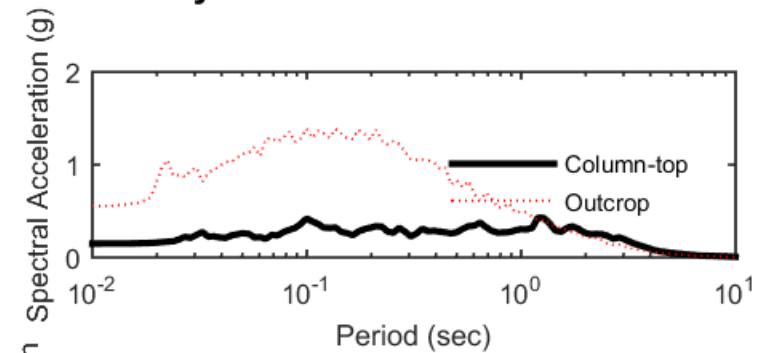
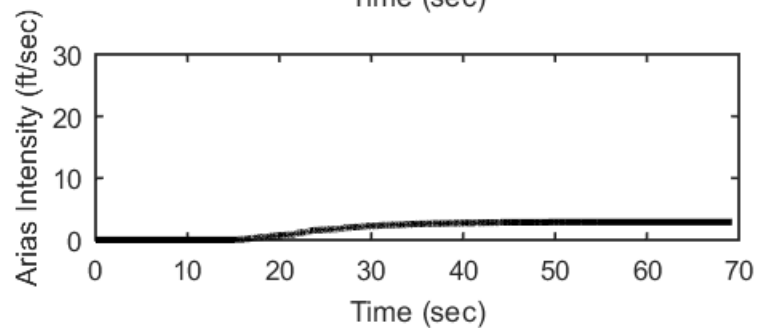
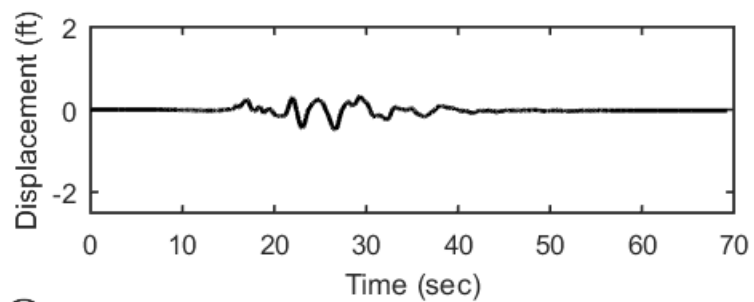
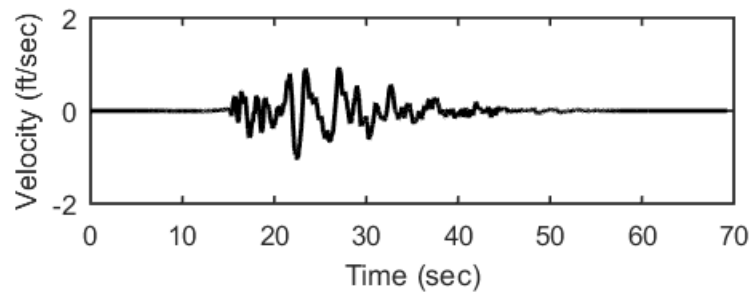
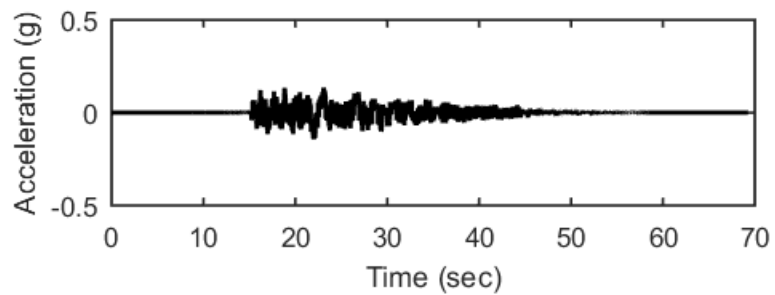
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



### Profile outputs for Motion: SEE2

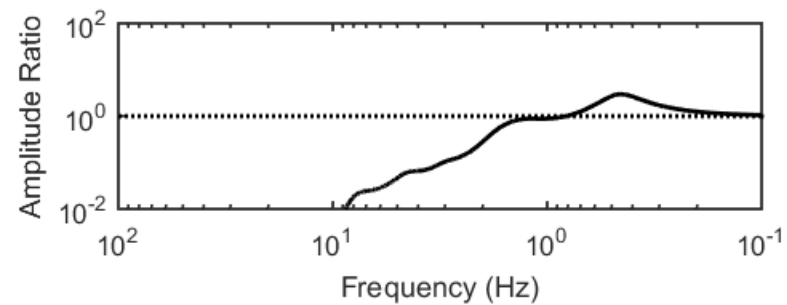
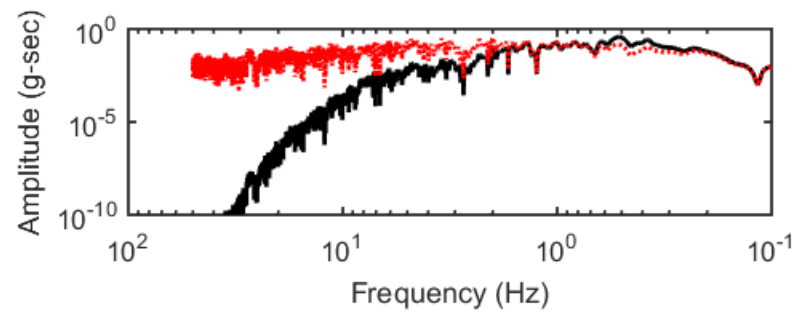
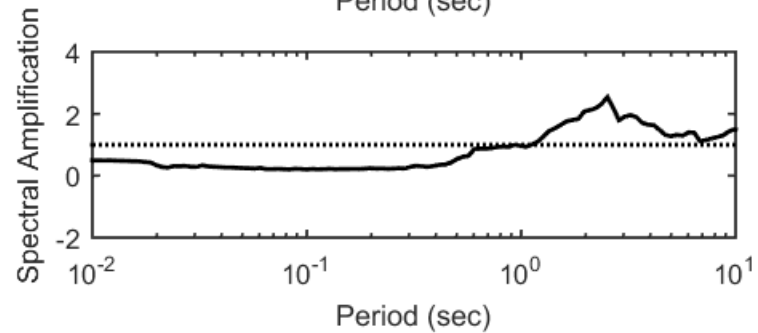
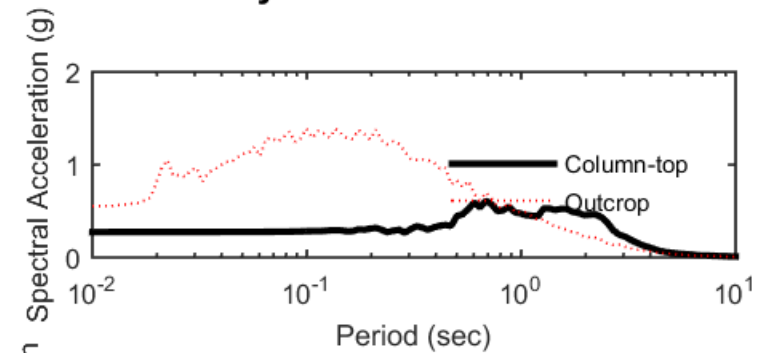
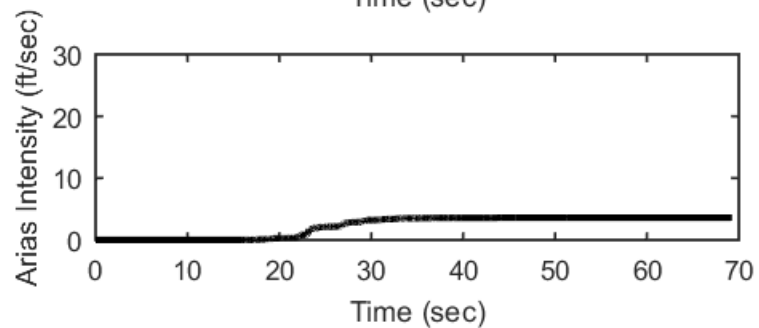
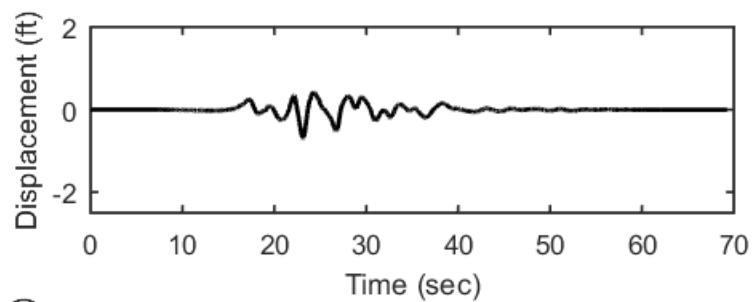
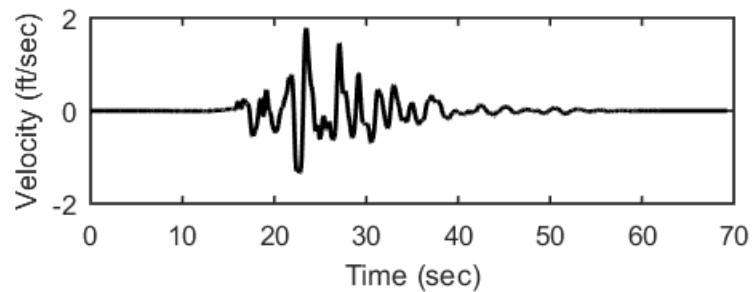
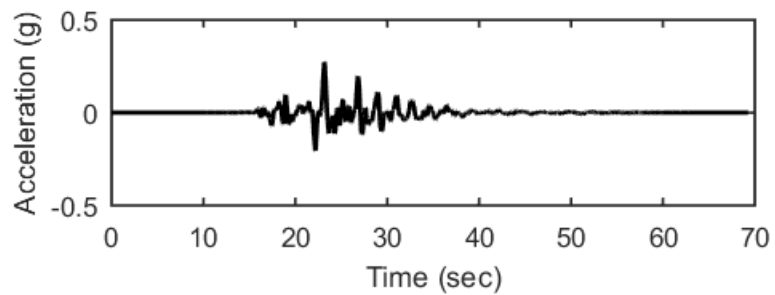


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3

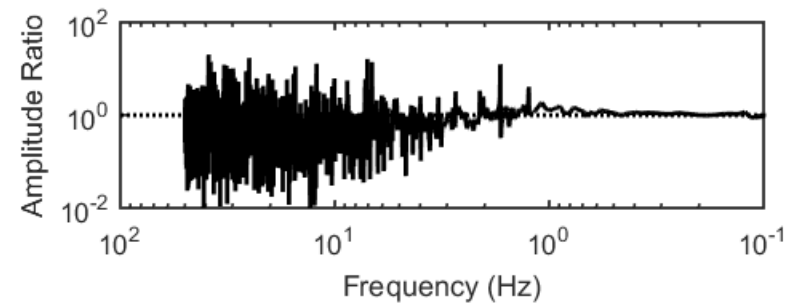
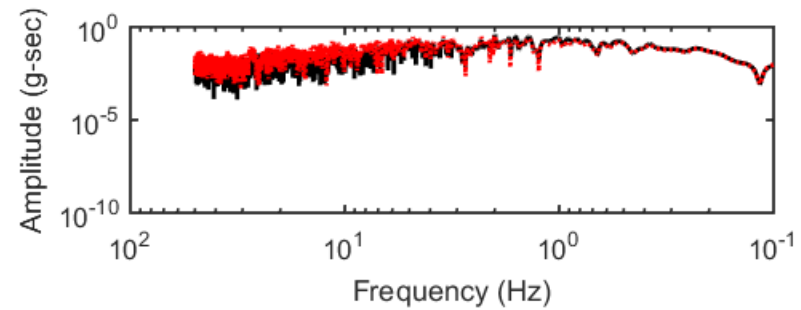
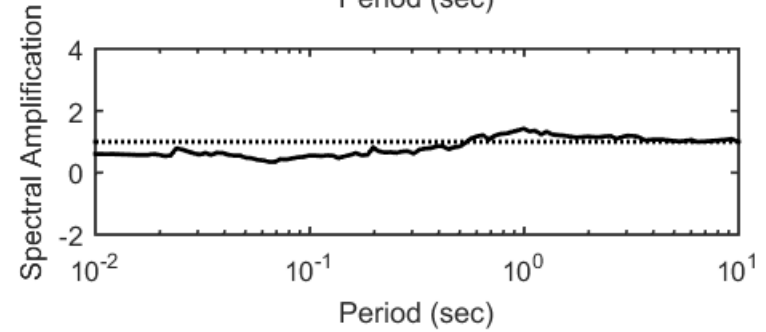
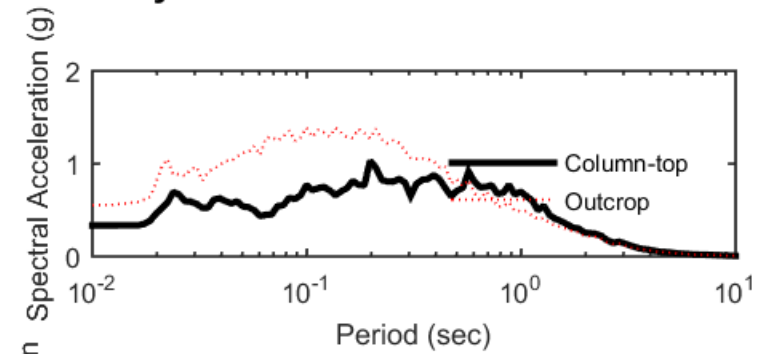
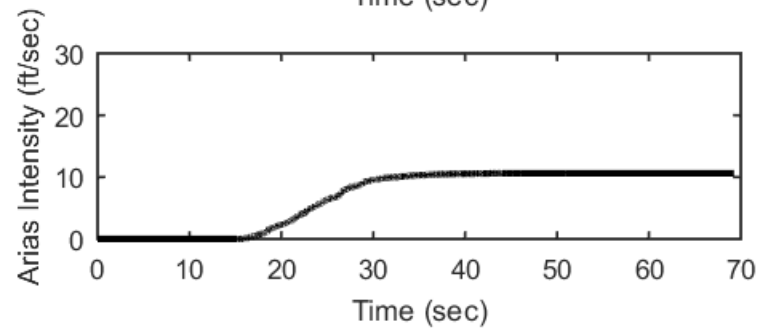
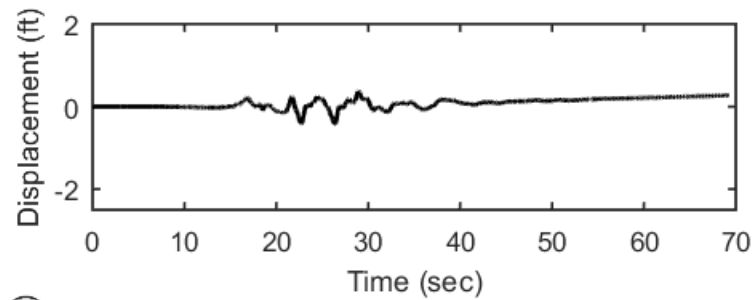
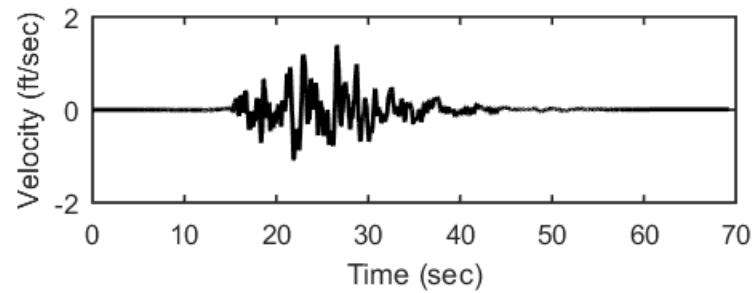
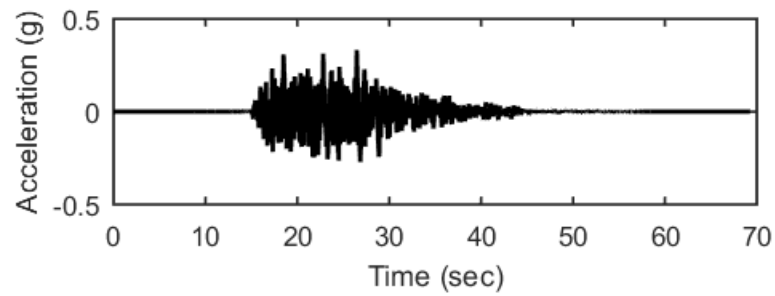




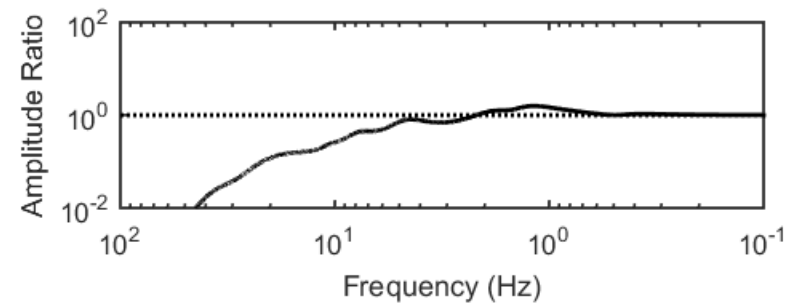
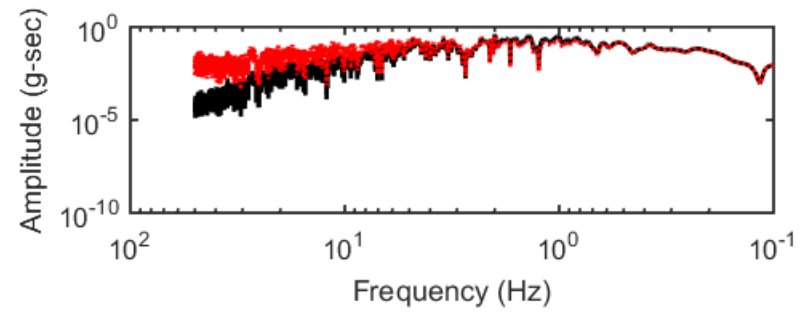
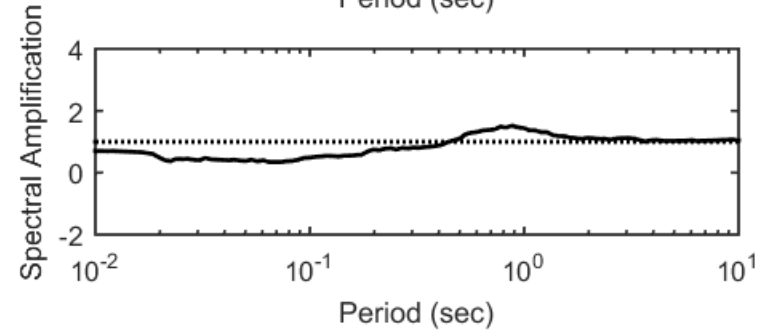
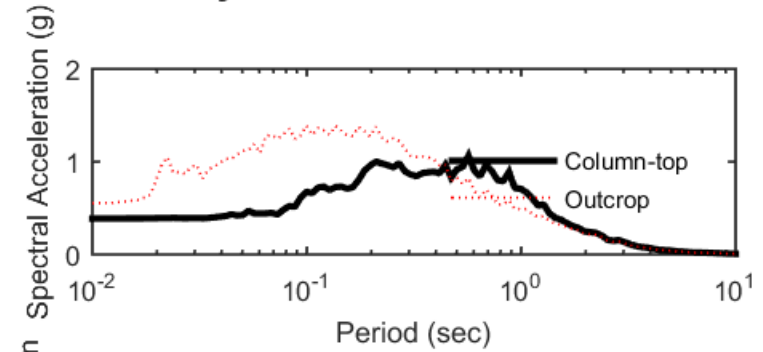
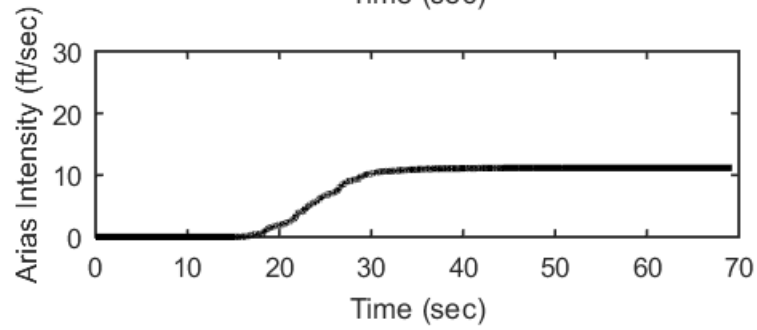
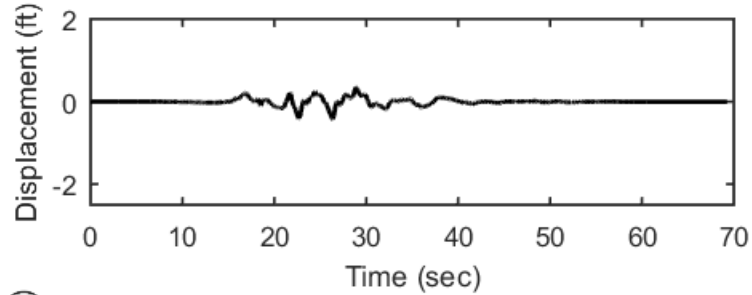
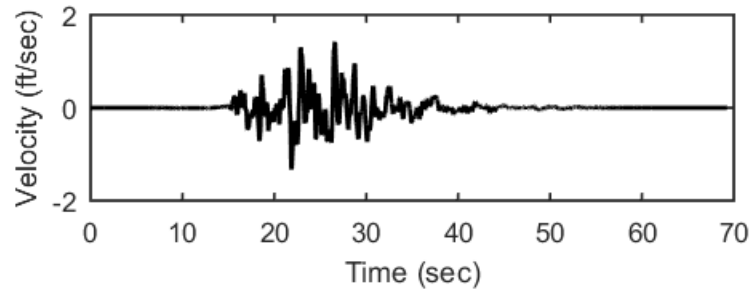
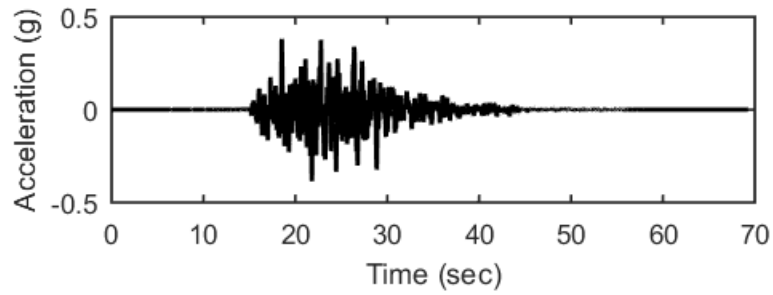
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



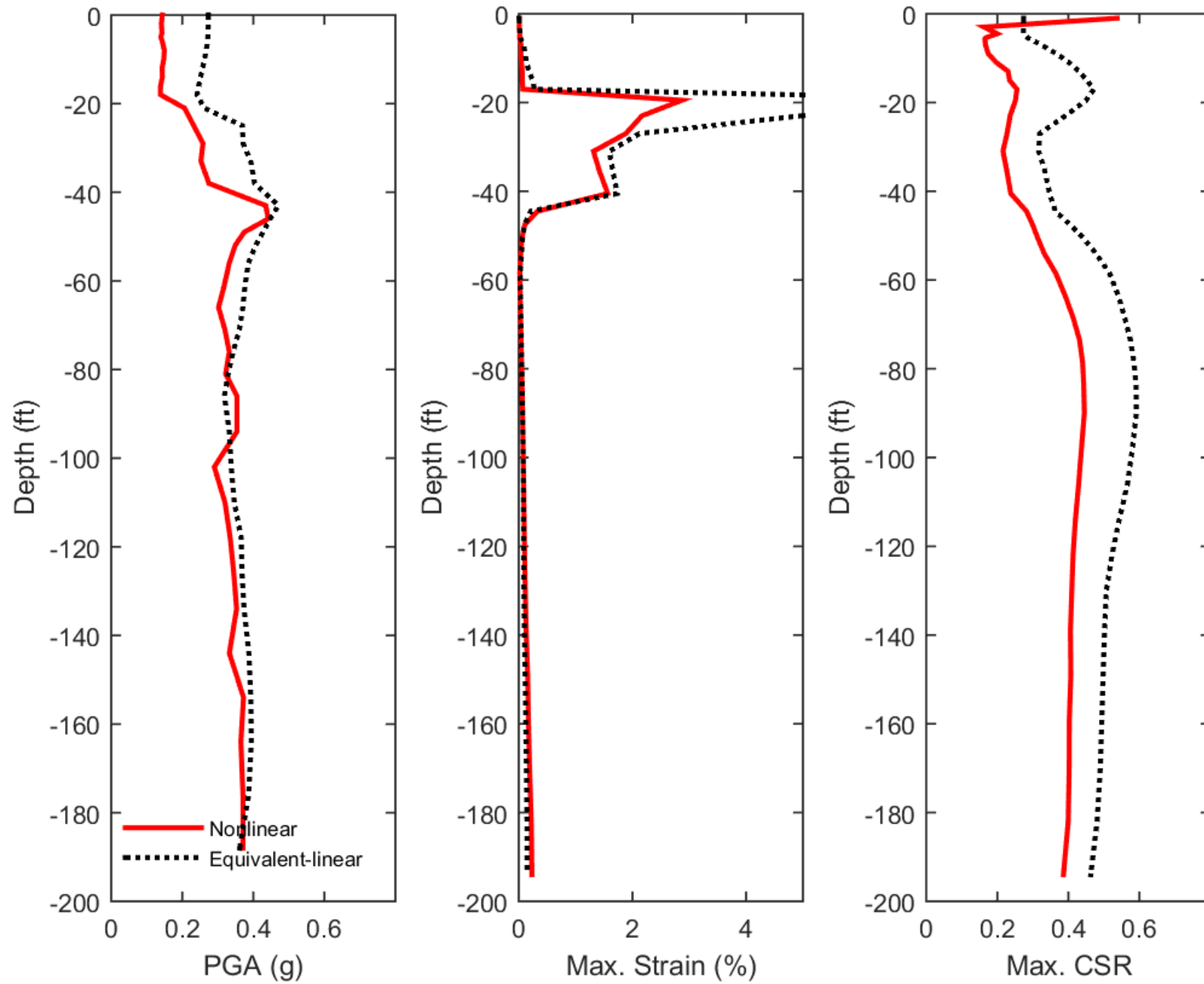
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



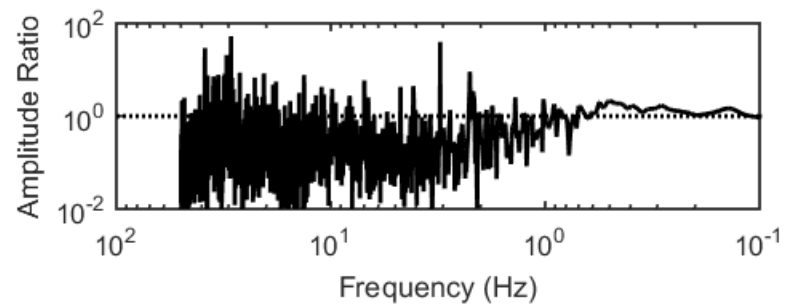
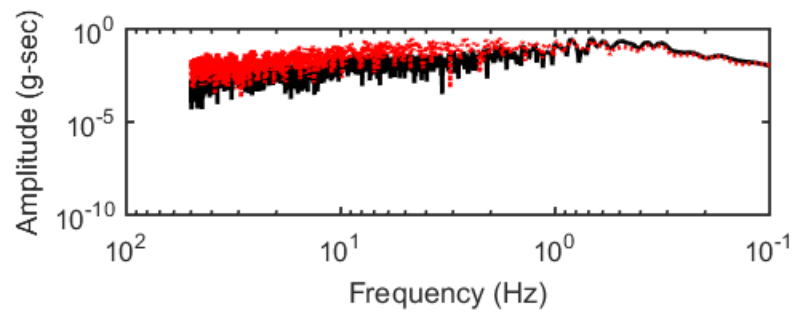
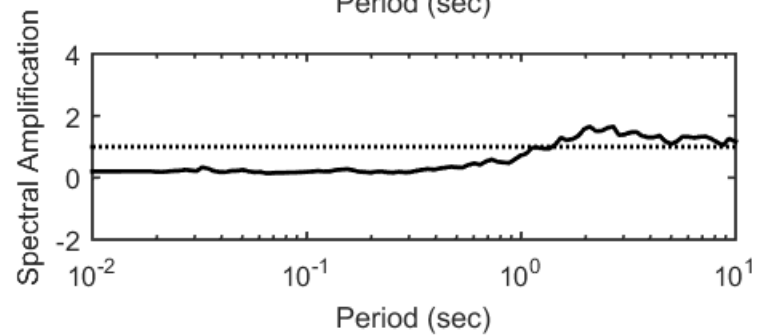
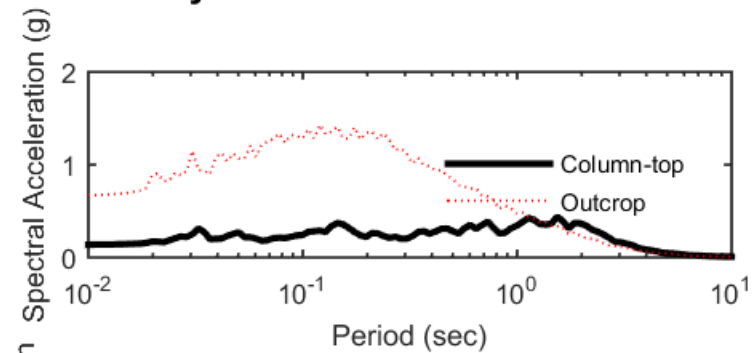
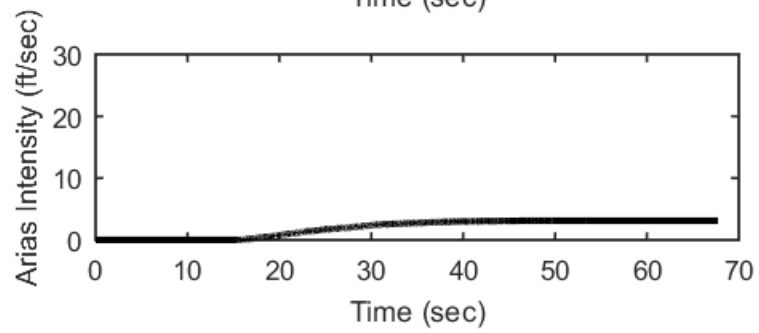
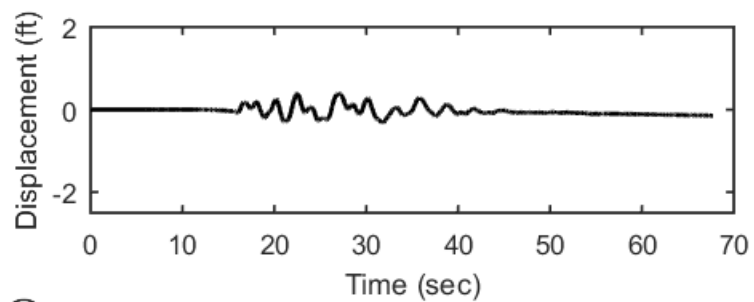
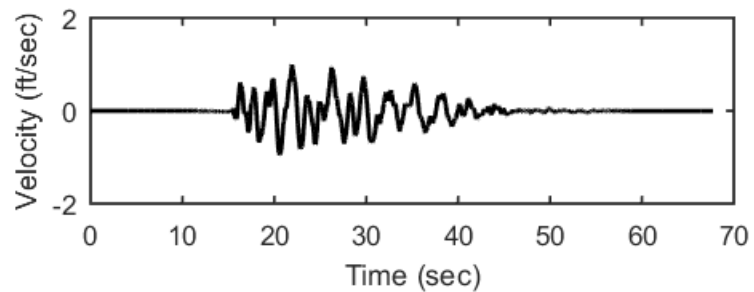
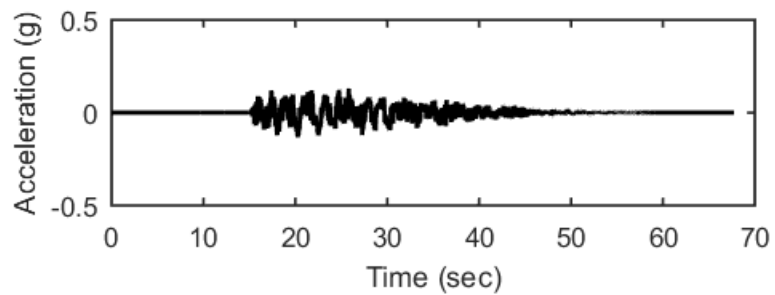
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



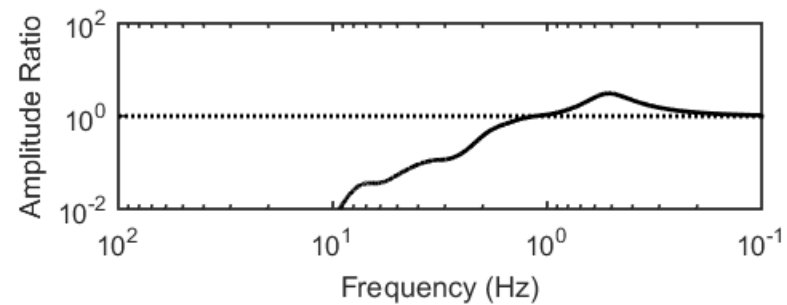
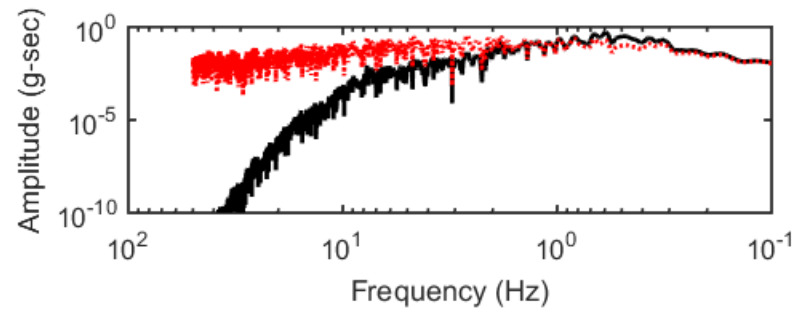
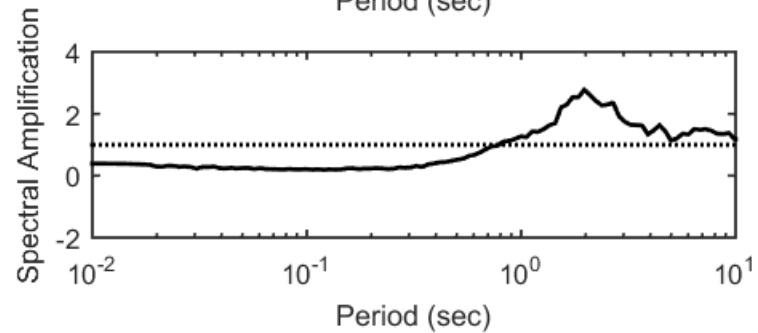
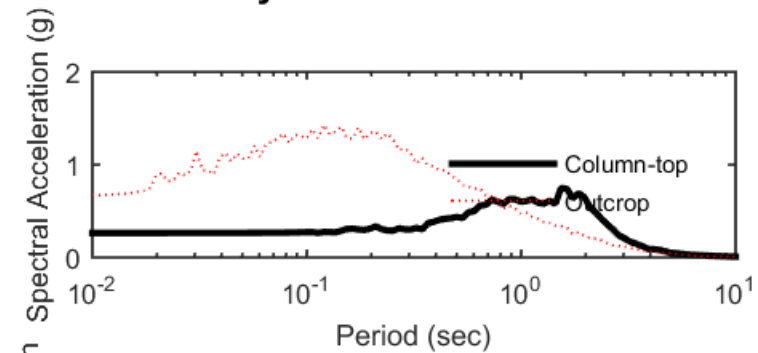
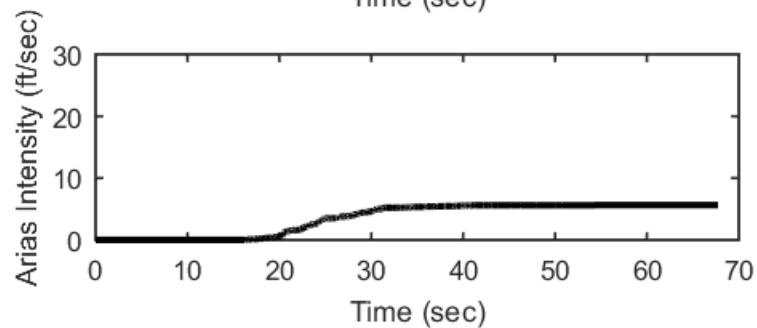
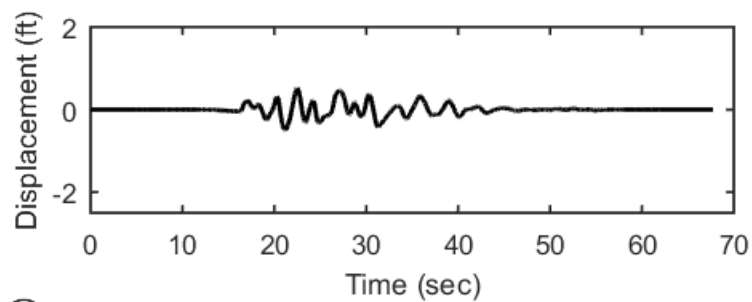
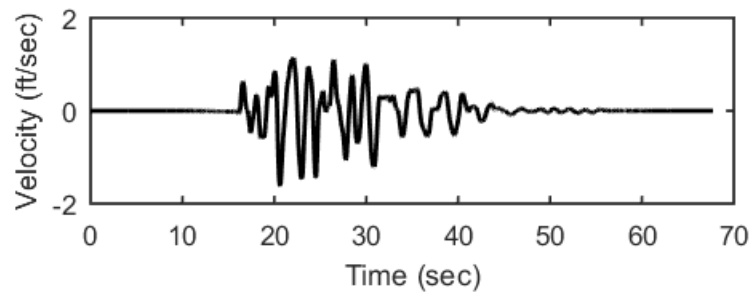
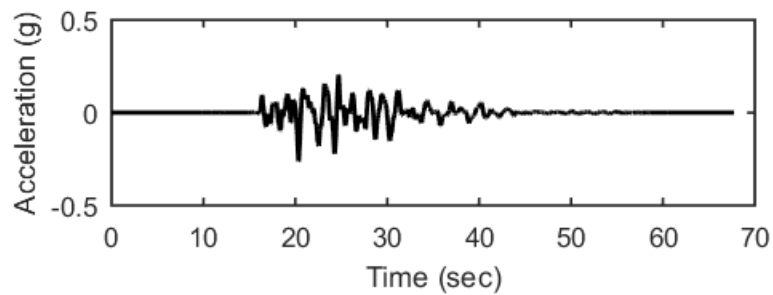
### Profile outputs for Motion: SEE3



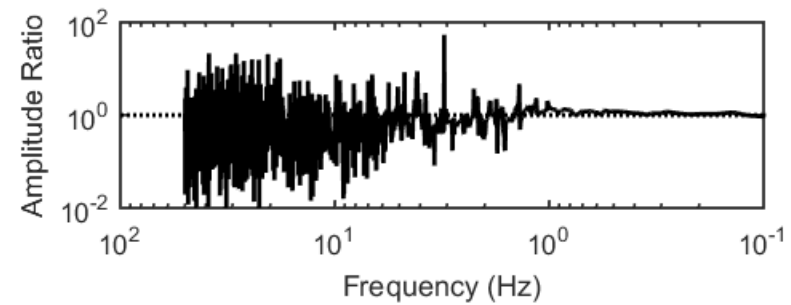
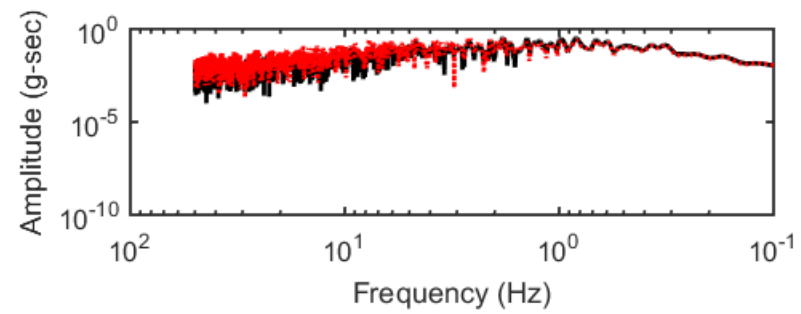
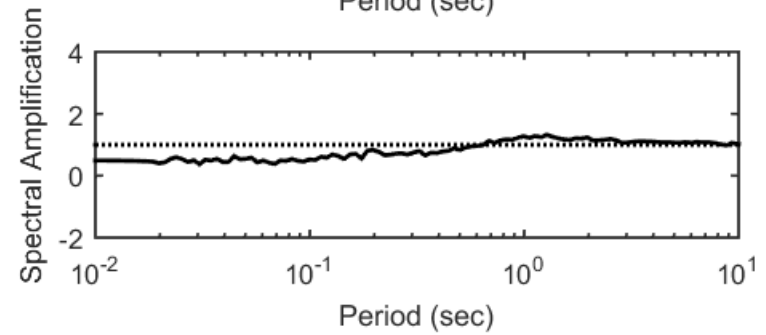
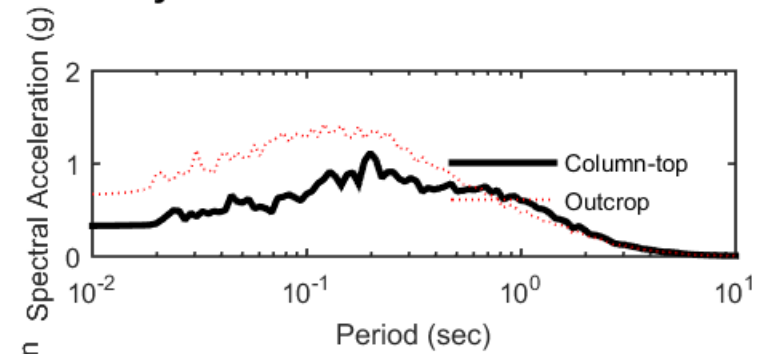
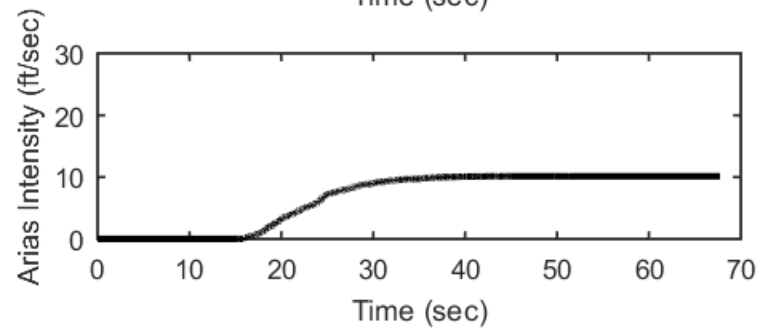
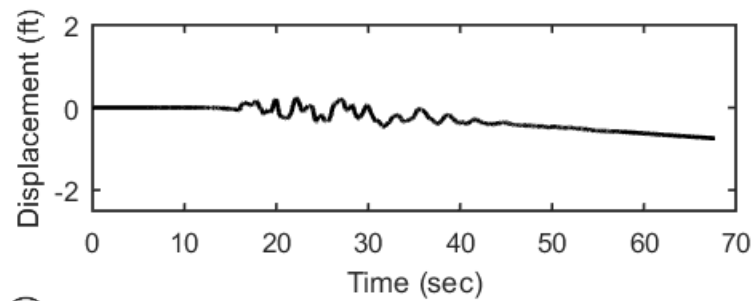
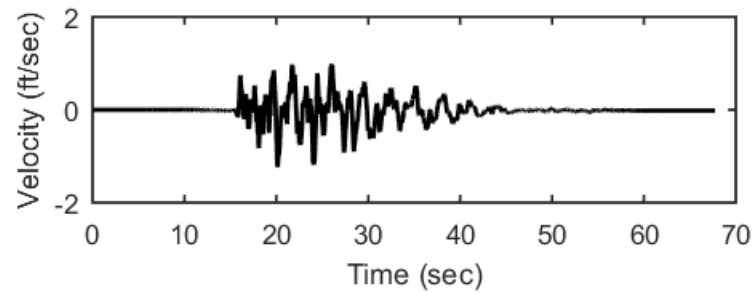
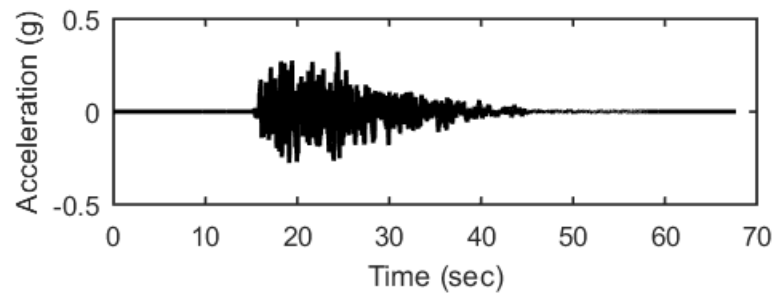
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



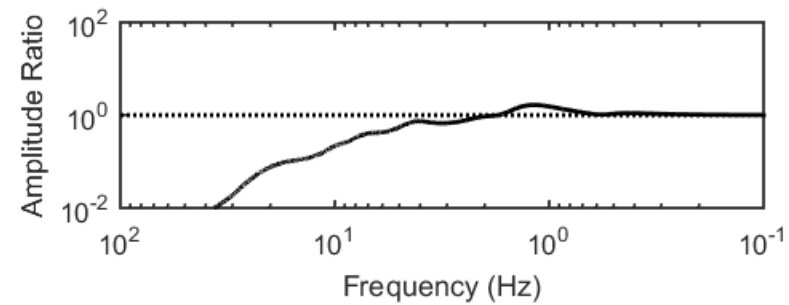
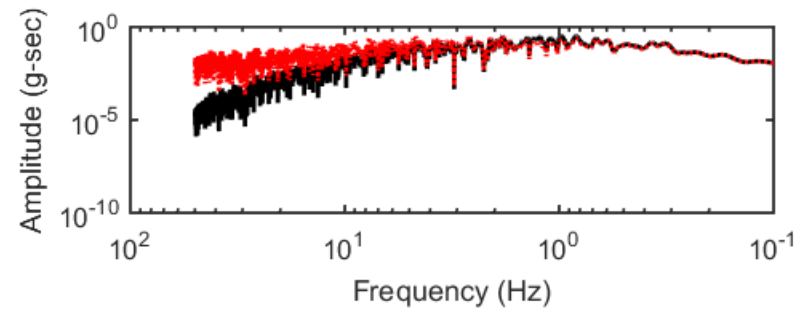
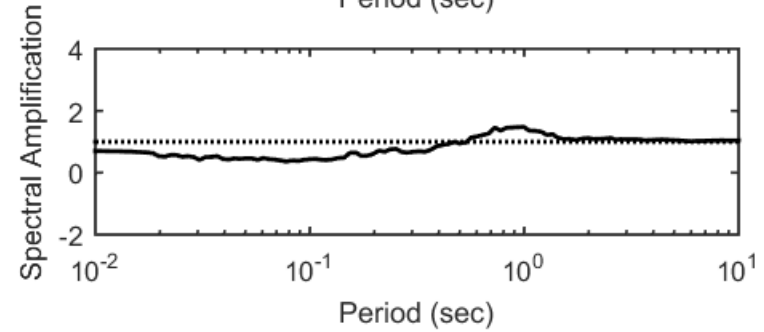
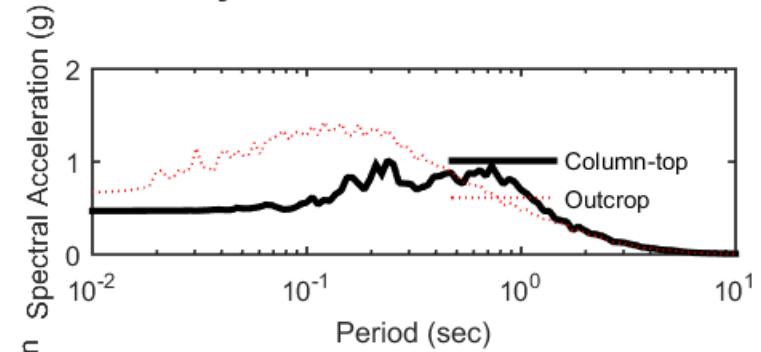
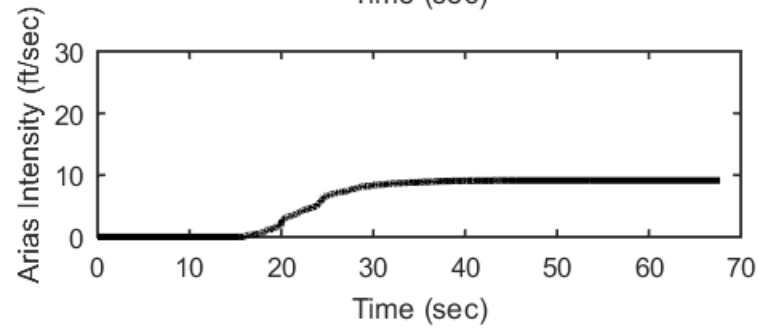
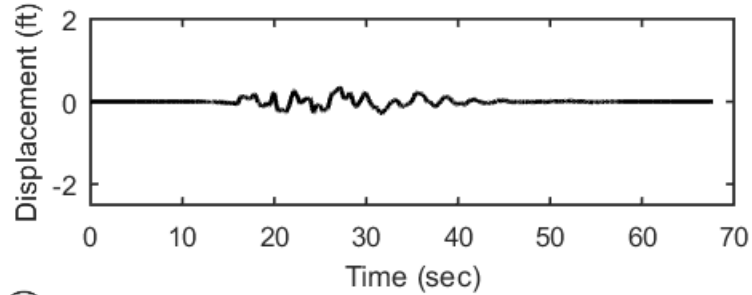
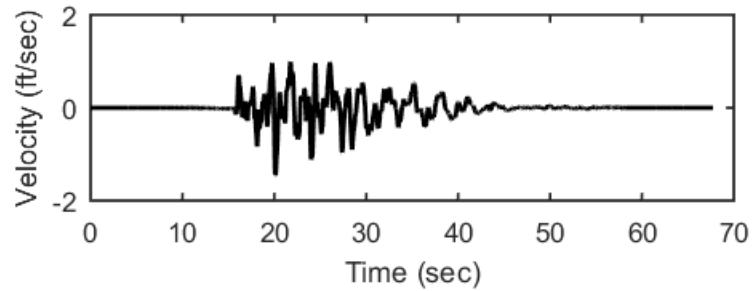
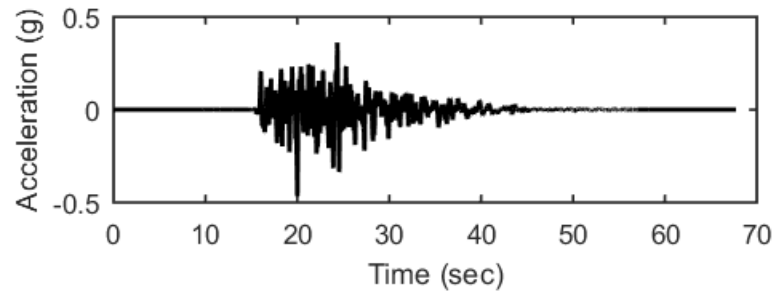
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4

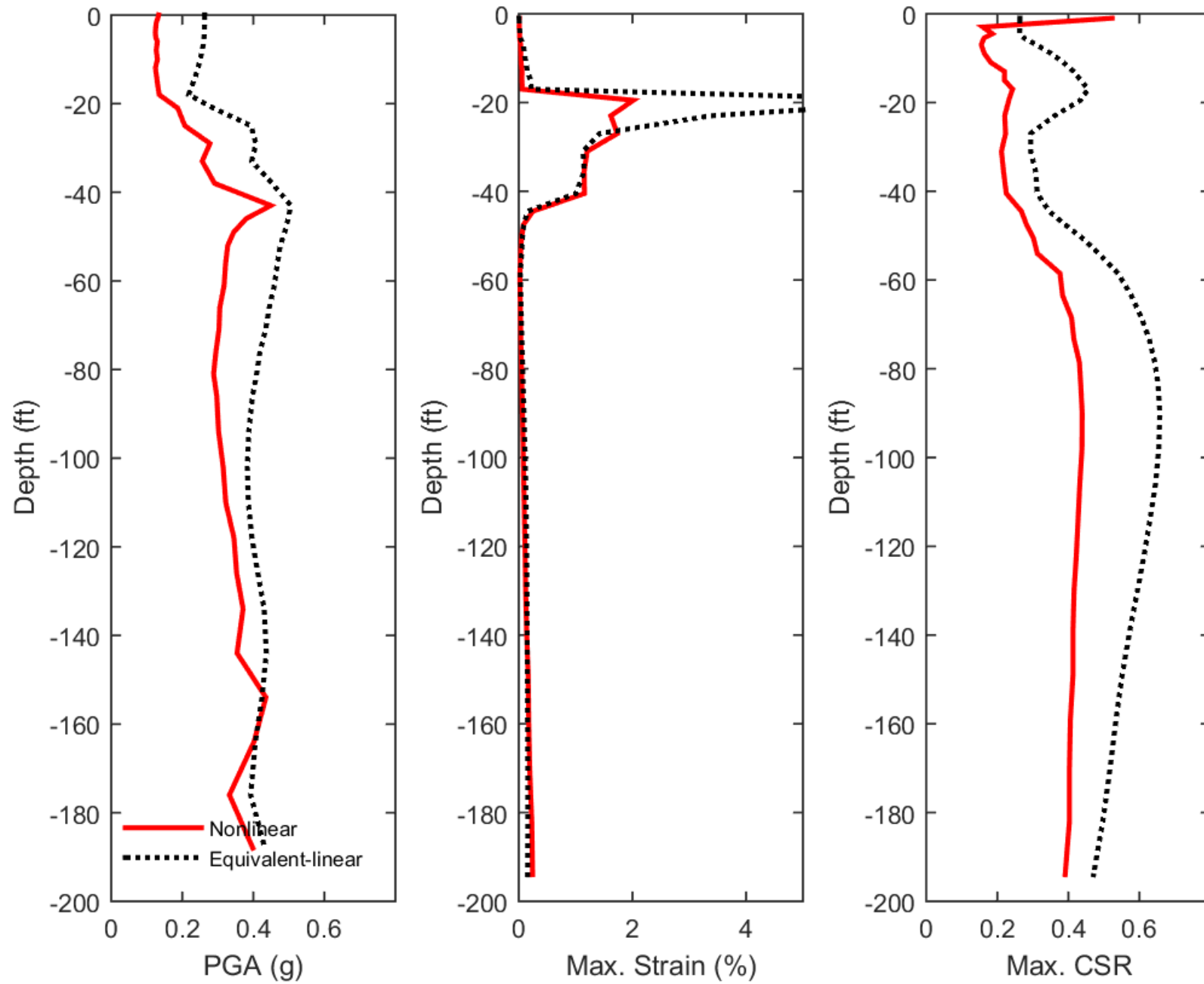


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4

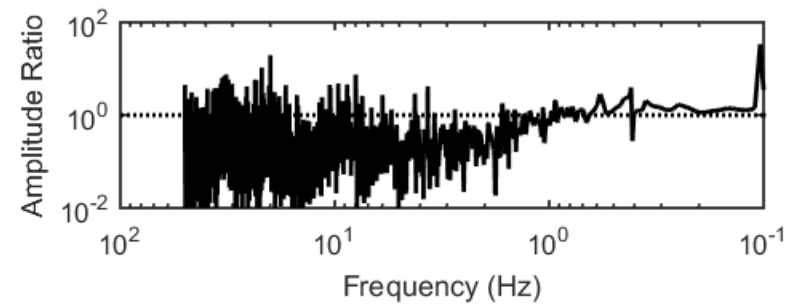
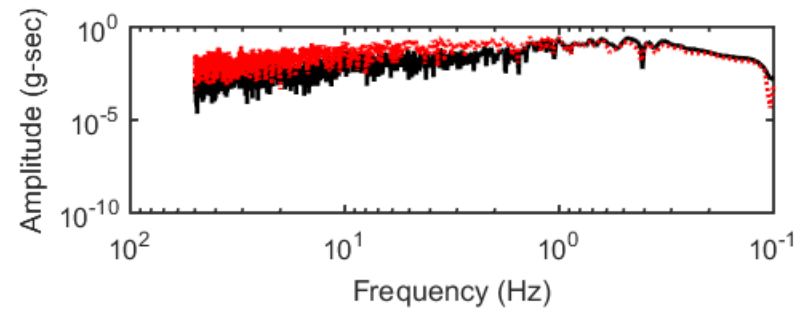
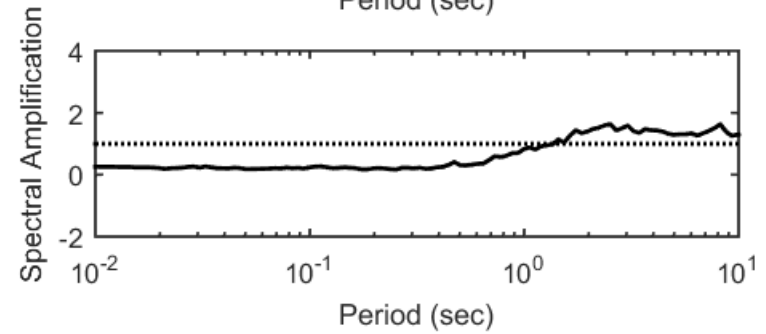
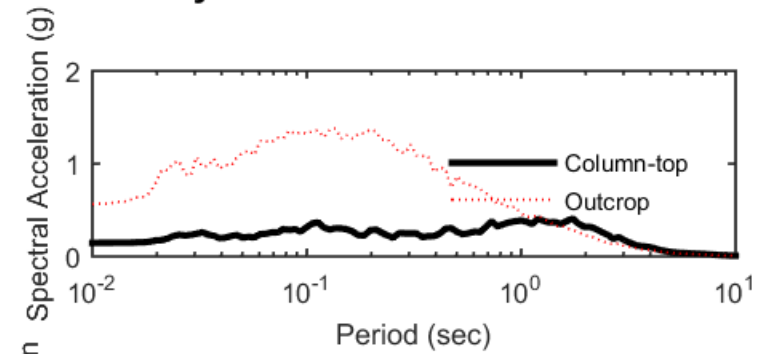
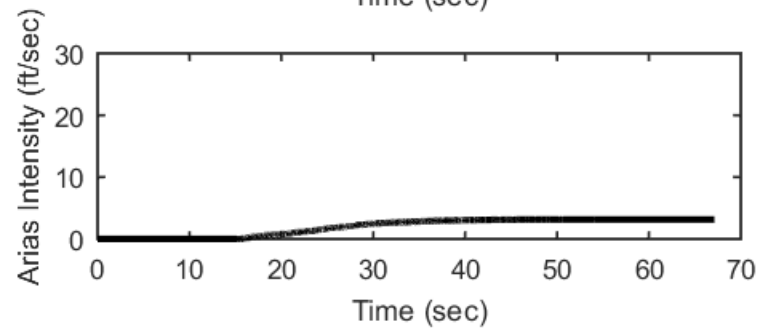
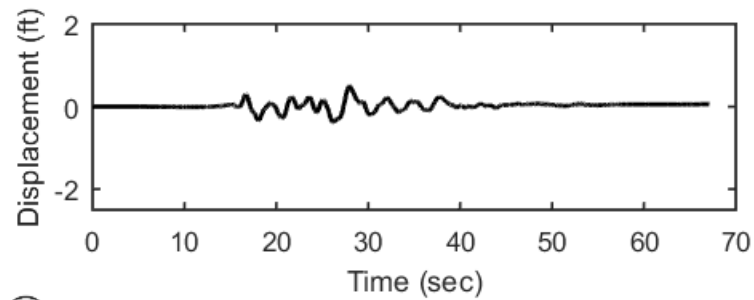
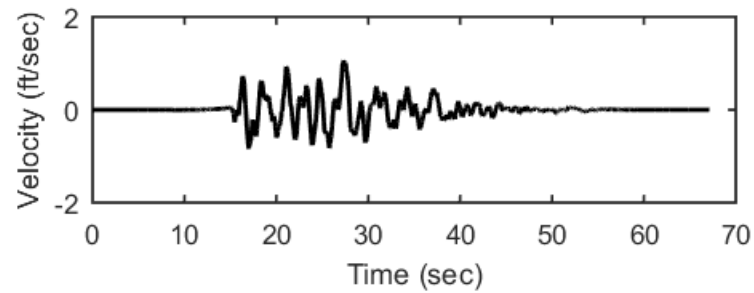
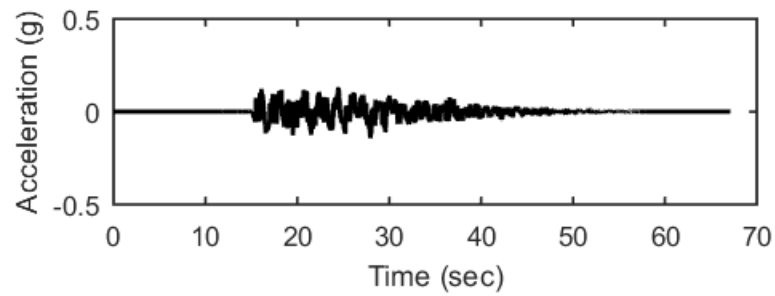




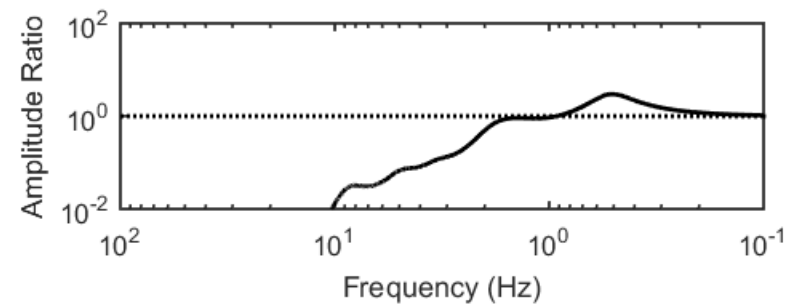
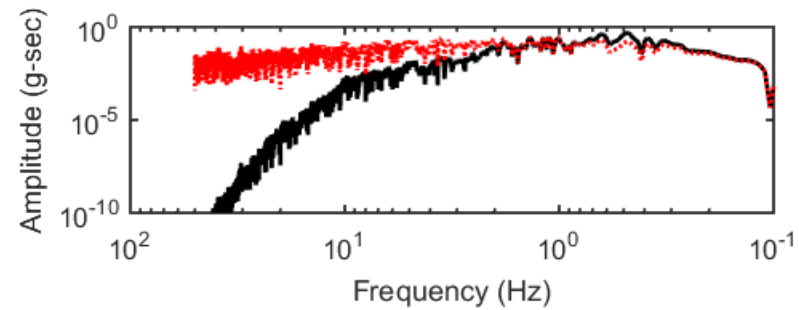
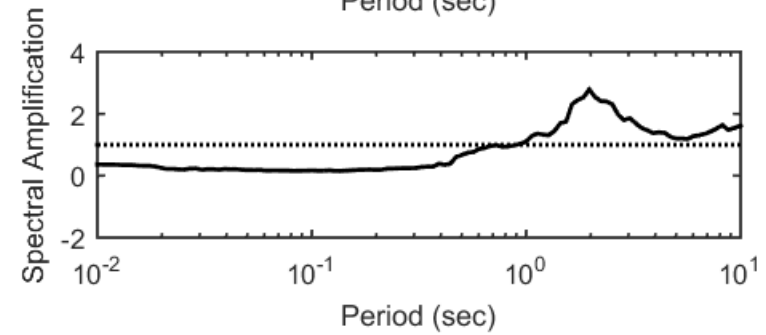
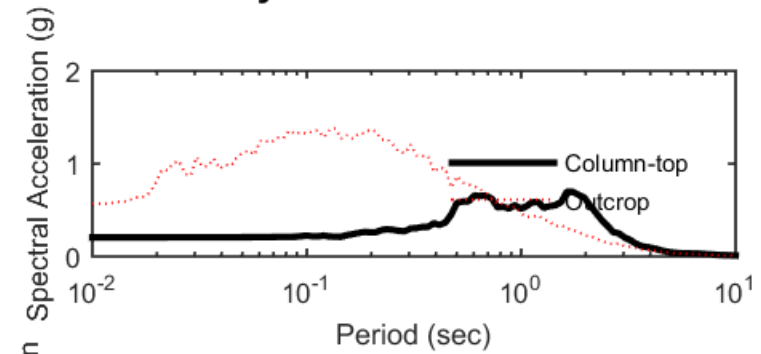
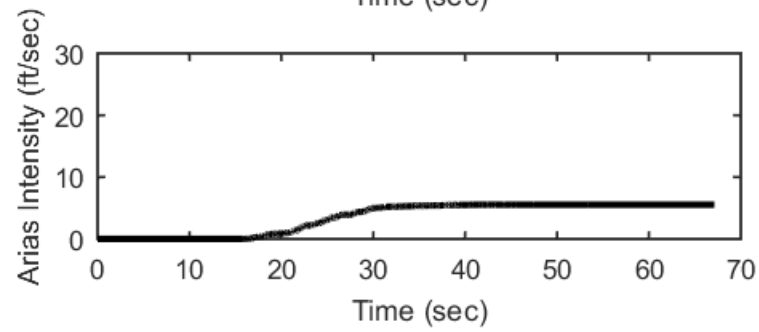
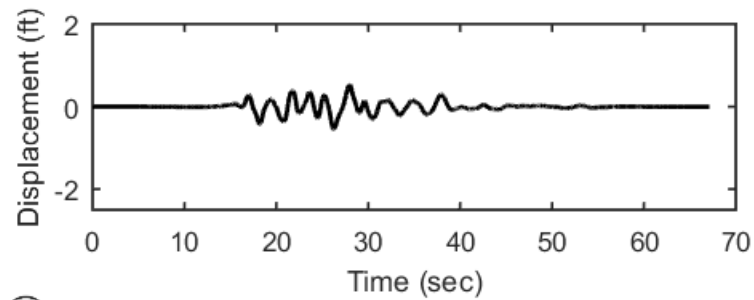
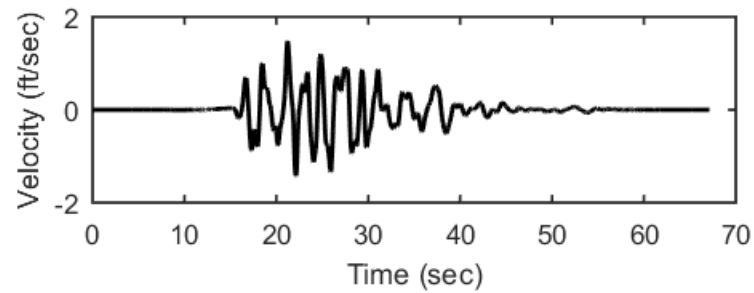
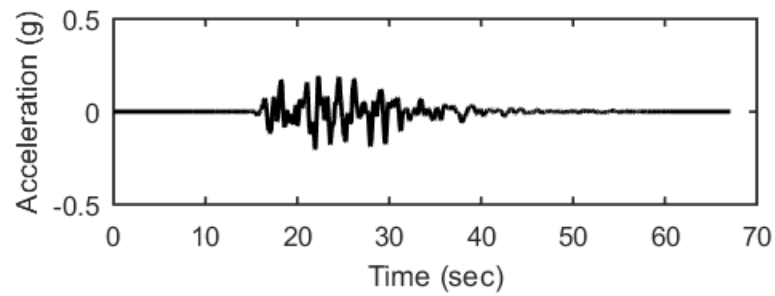
### Profile outputs for Motion: SEE4



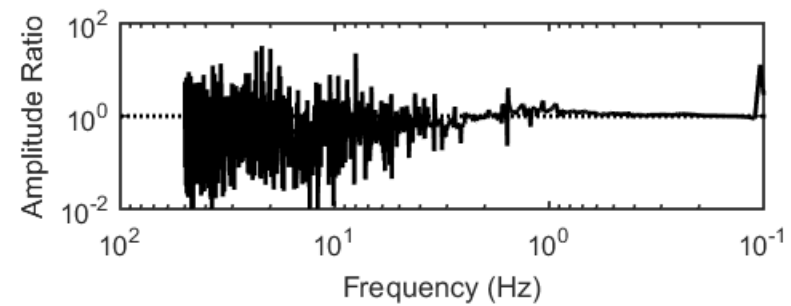
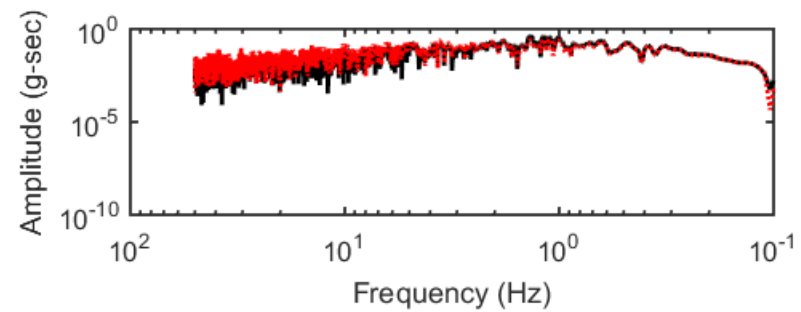
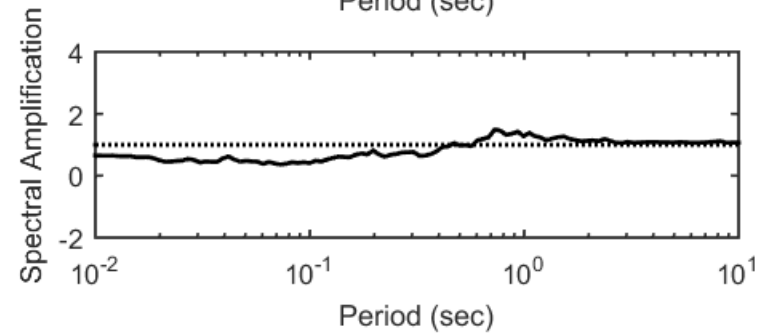
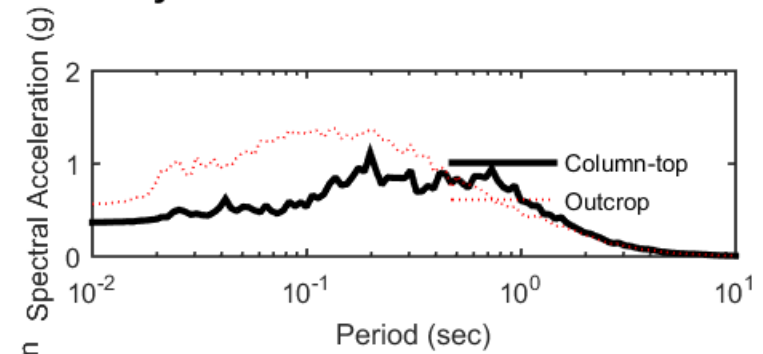
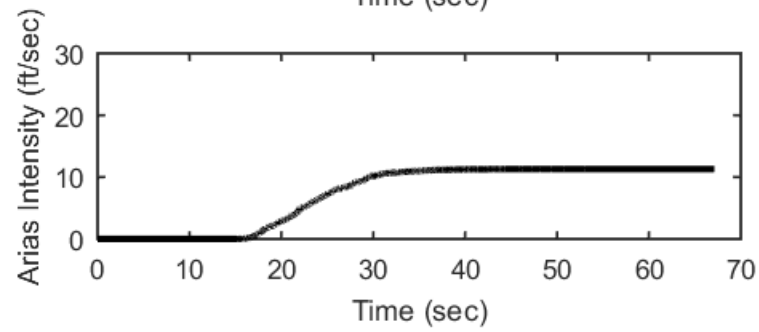
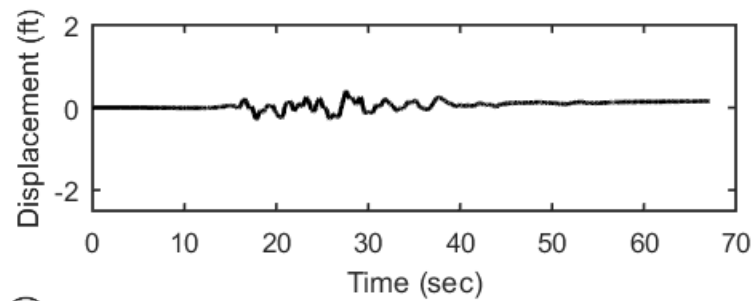
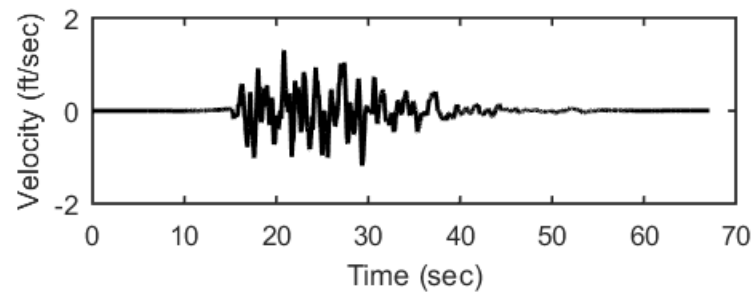
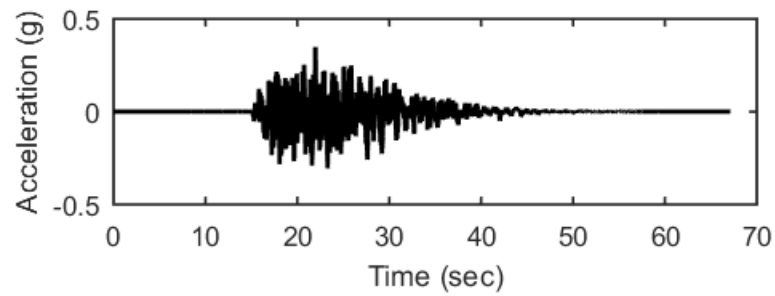
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



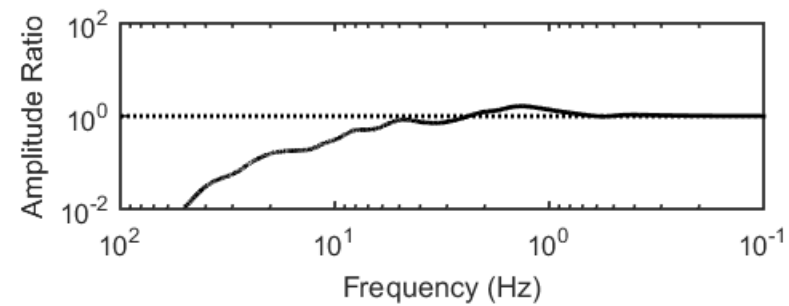
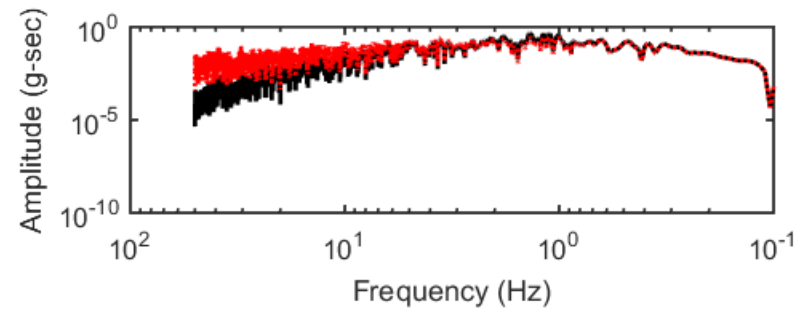
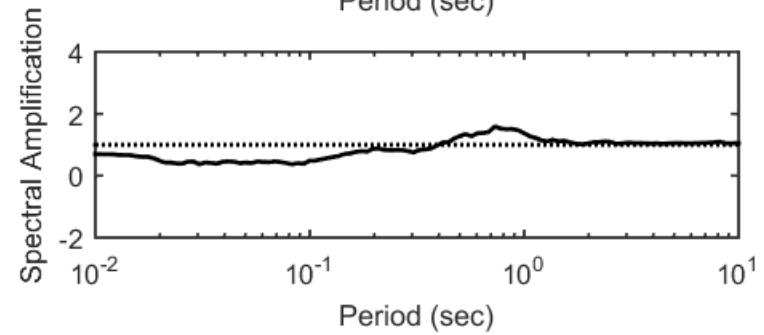
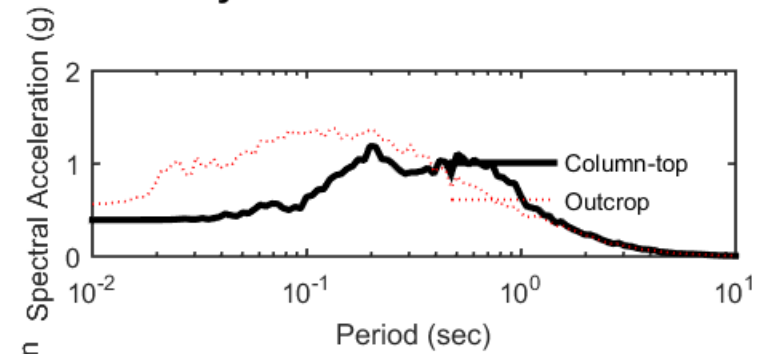
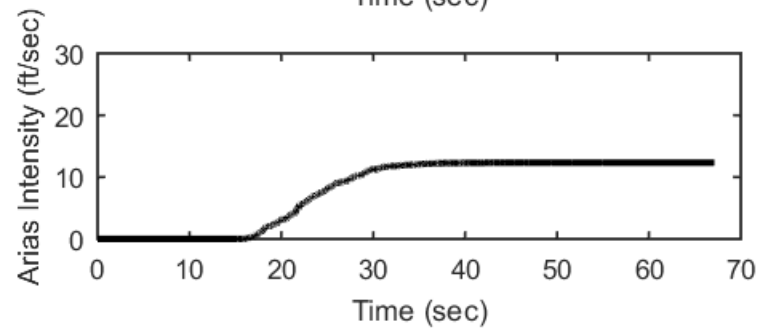
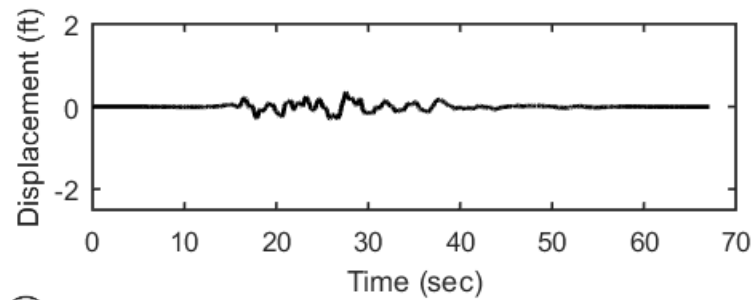
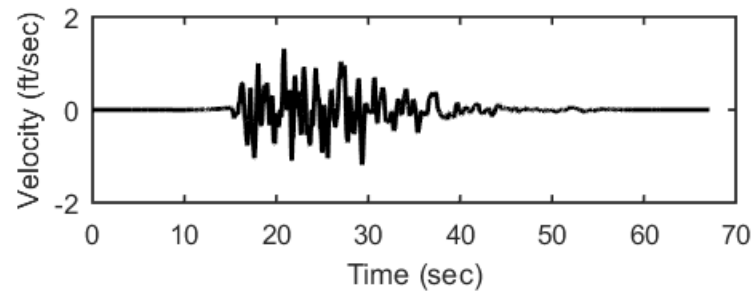
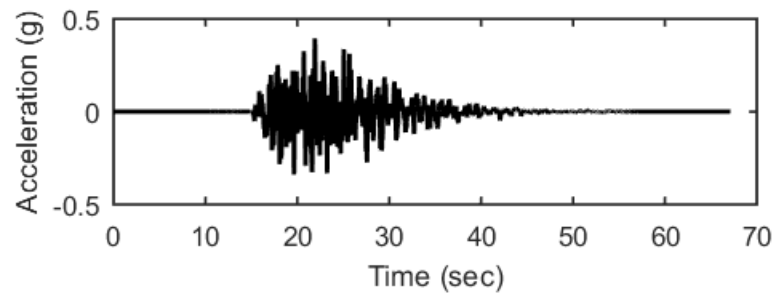
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



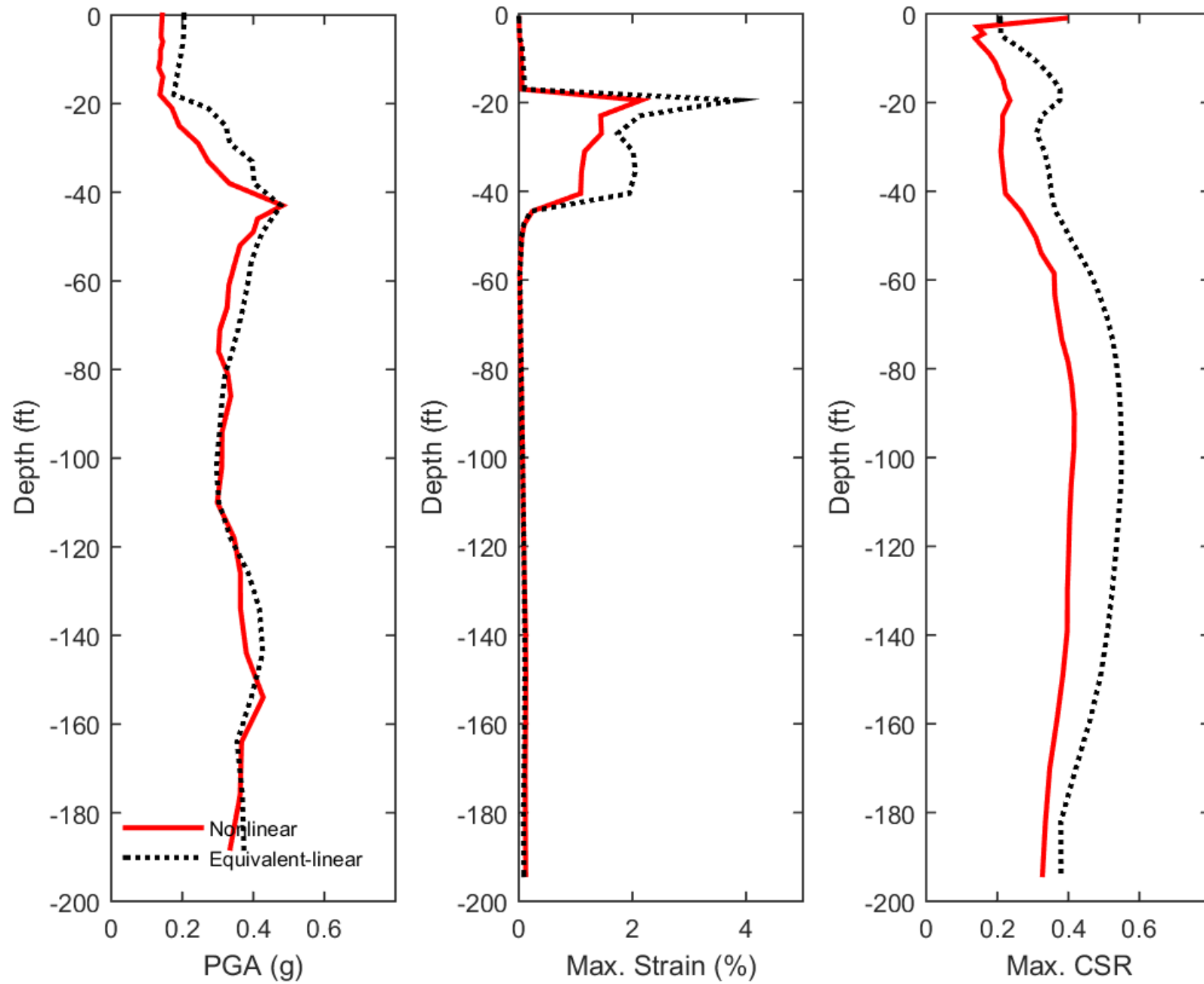
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



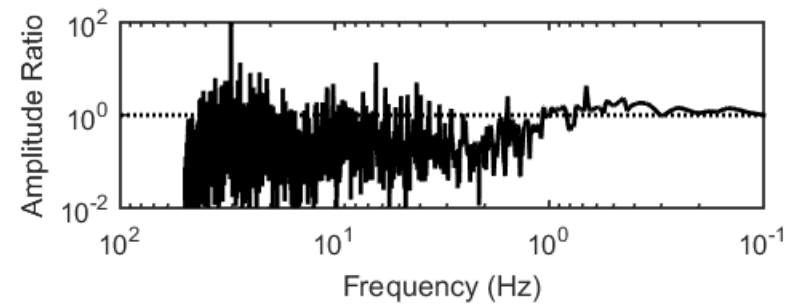
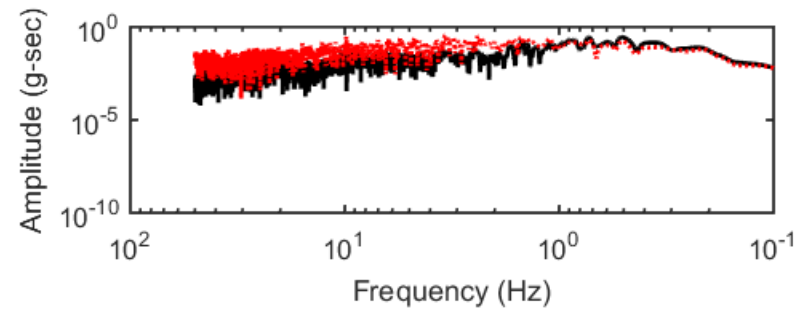
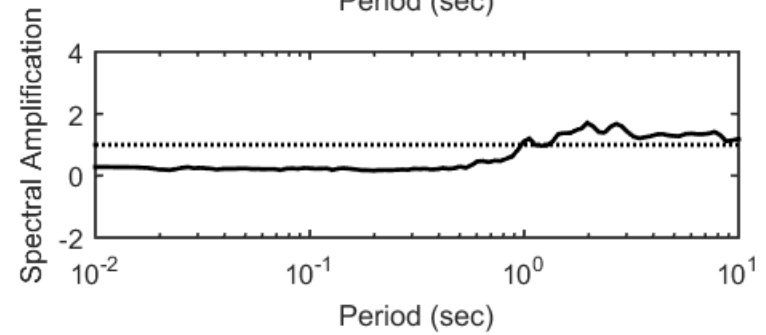
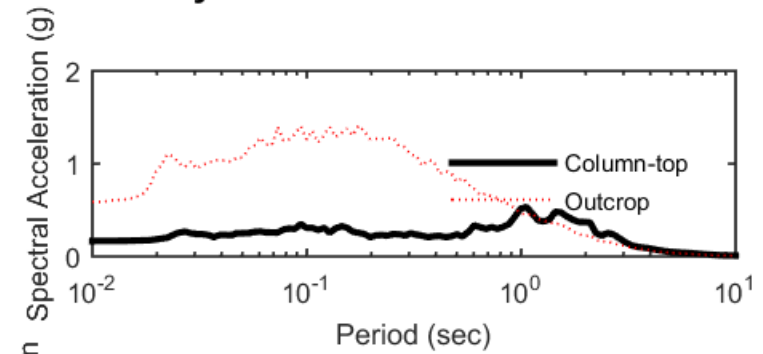
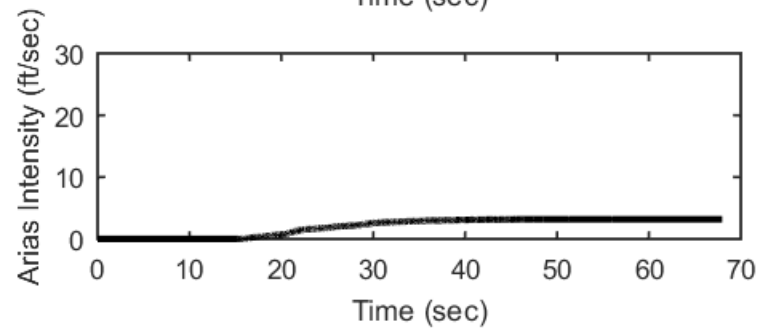
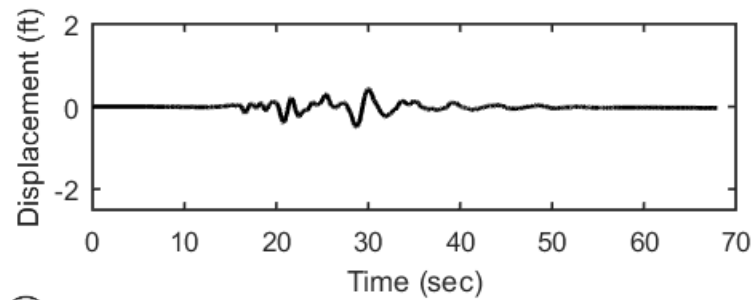
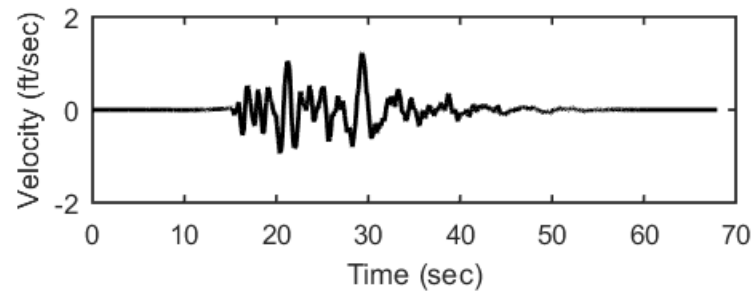
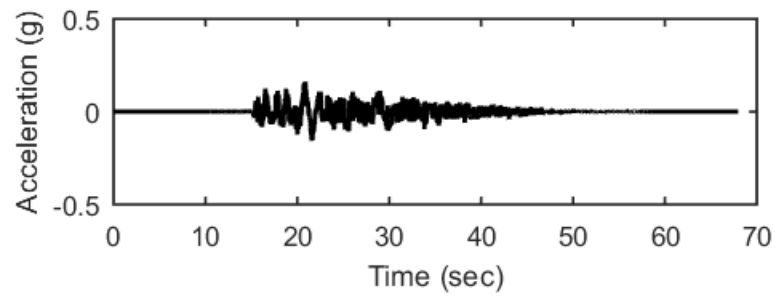
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



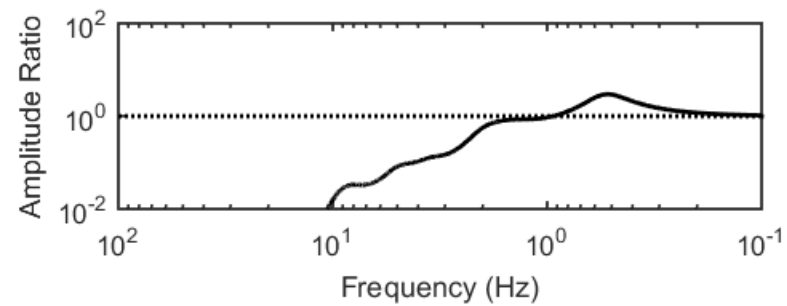
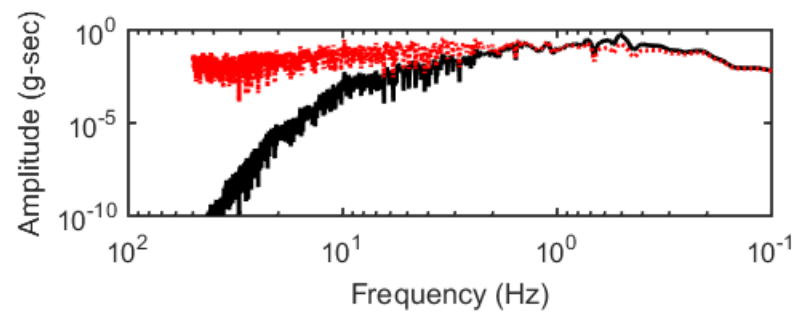
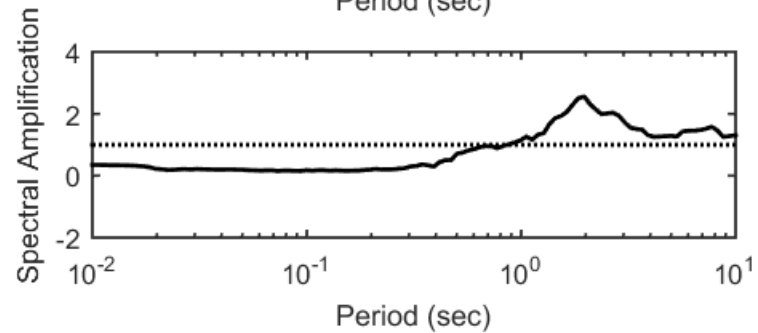
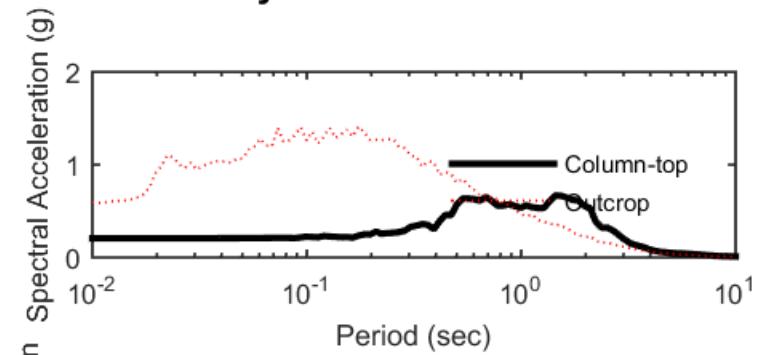
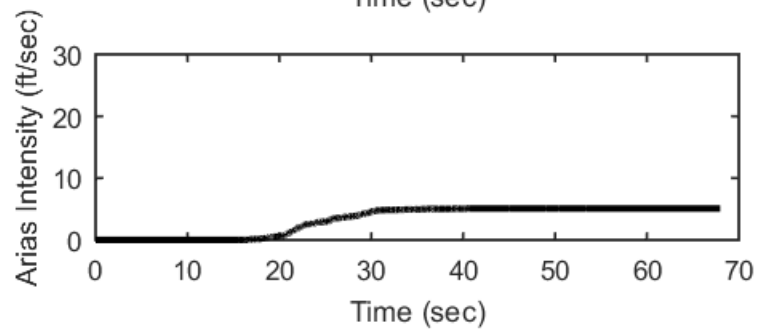
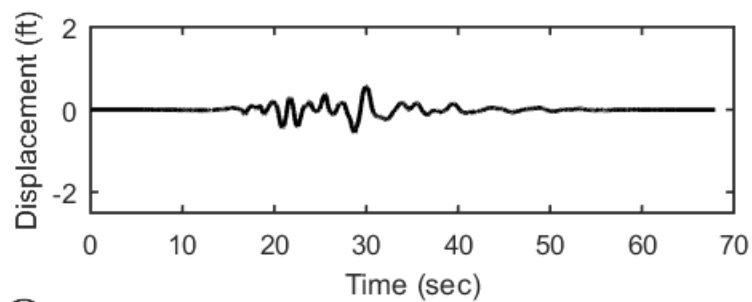
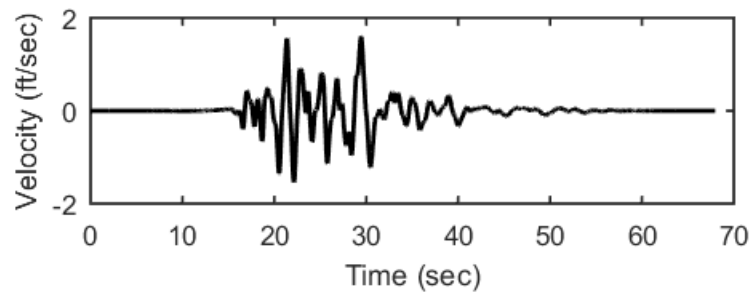
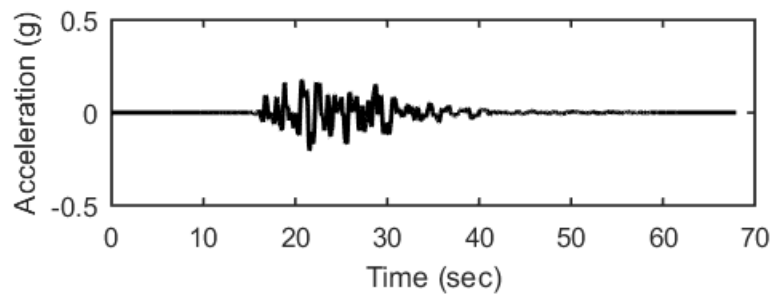
### Profile outputs for Motion: SEE5



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6

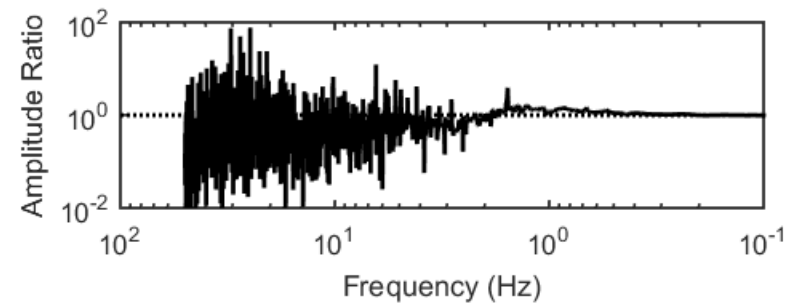
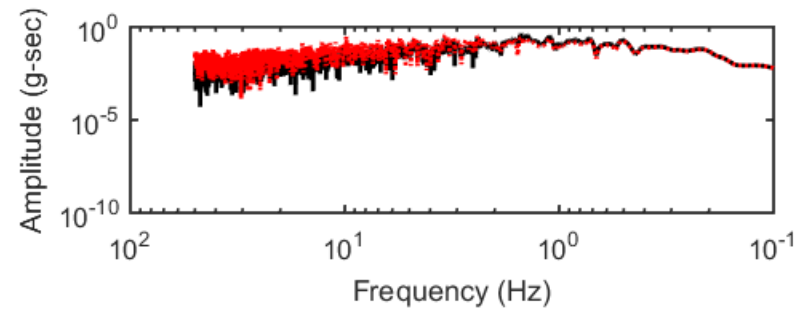
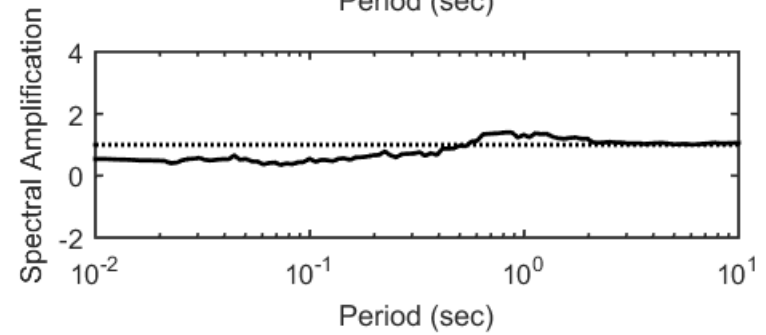
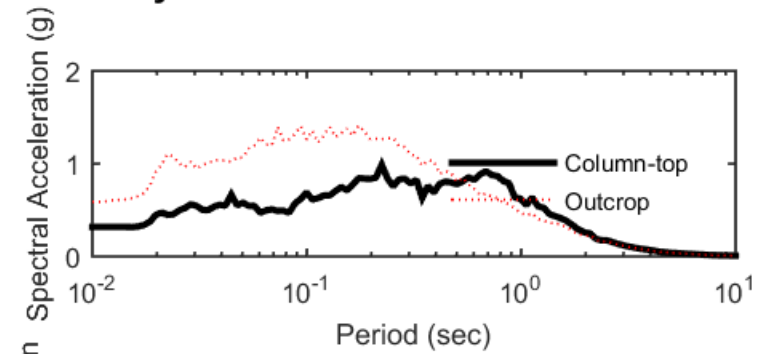
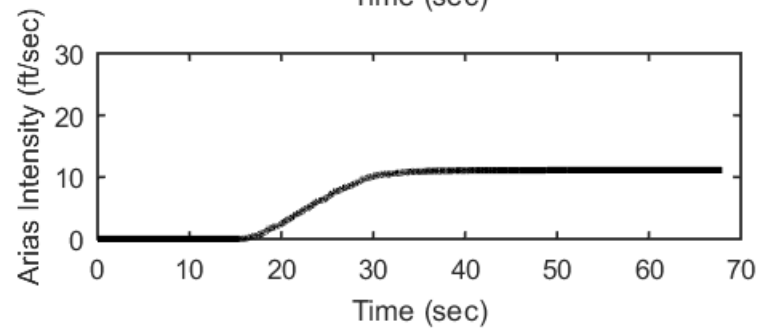
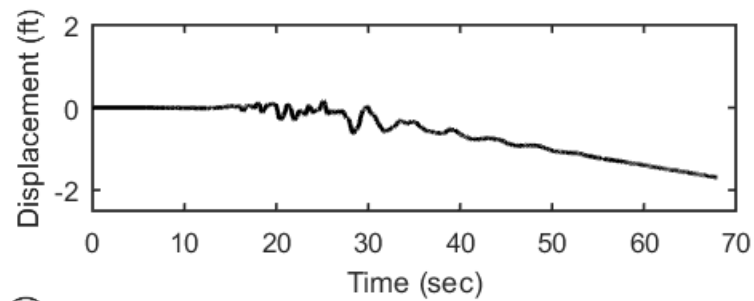
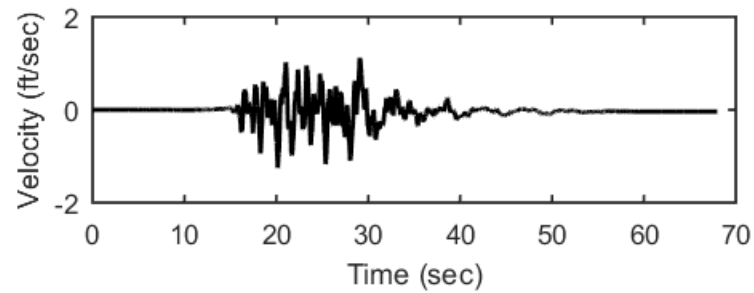
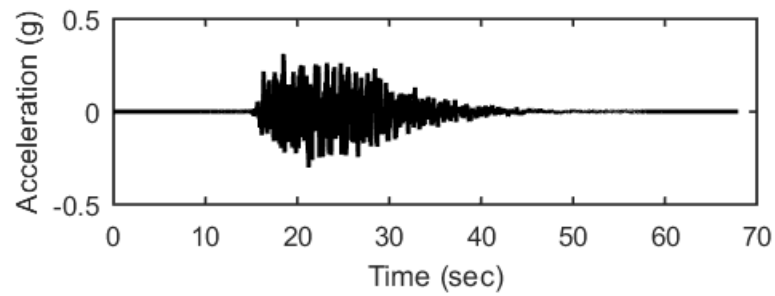


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6

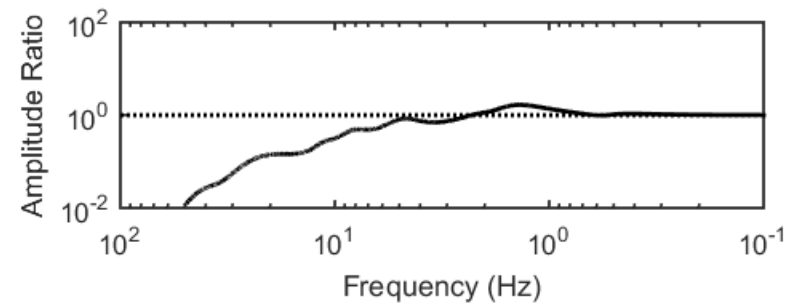
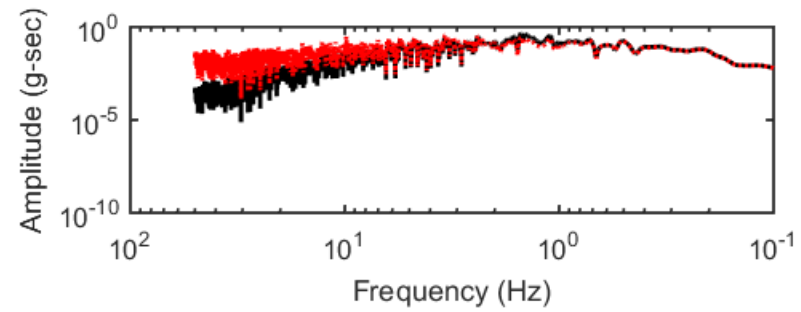
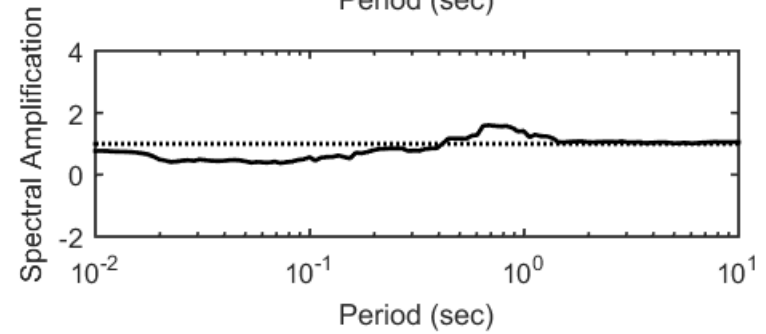
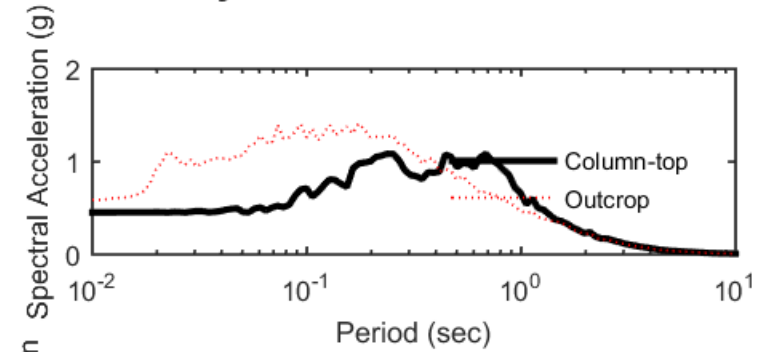
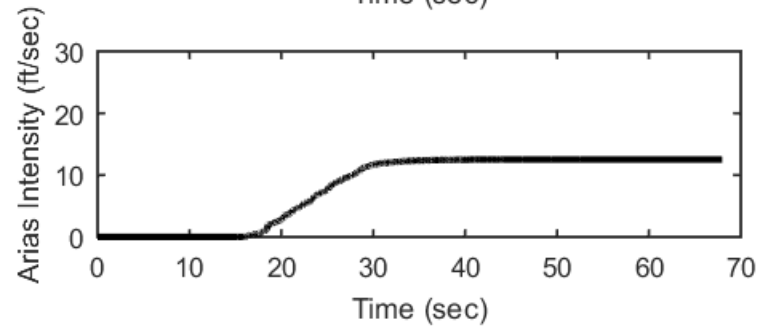
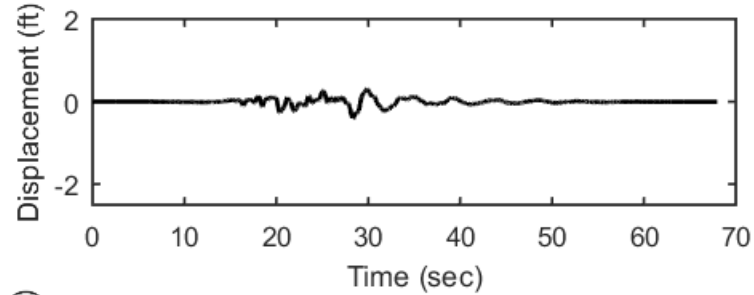
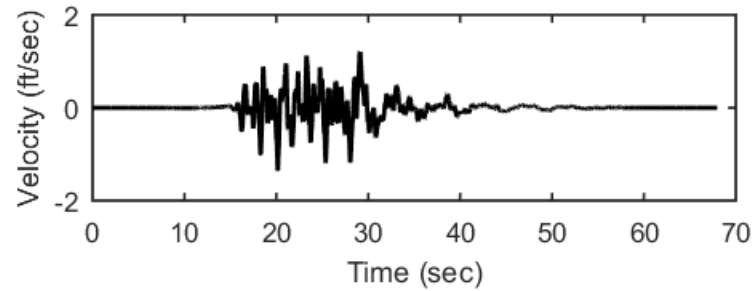
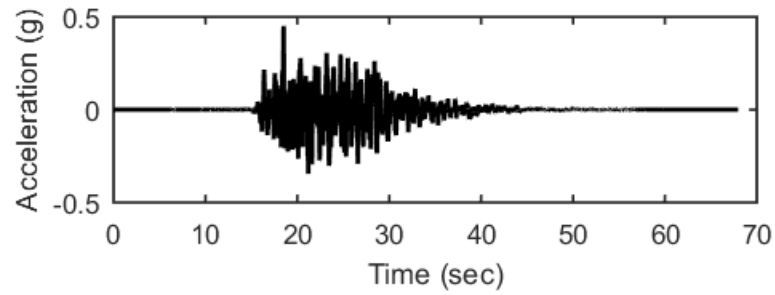




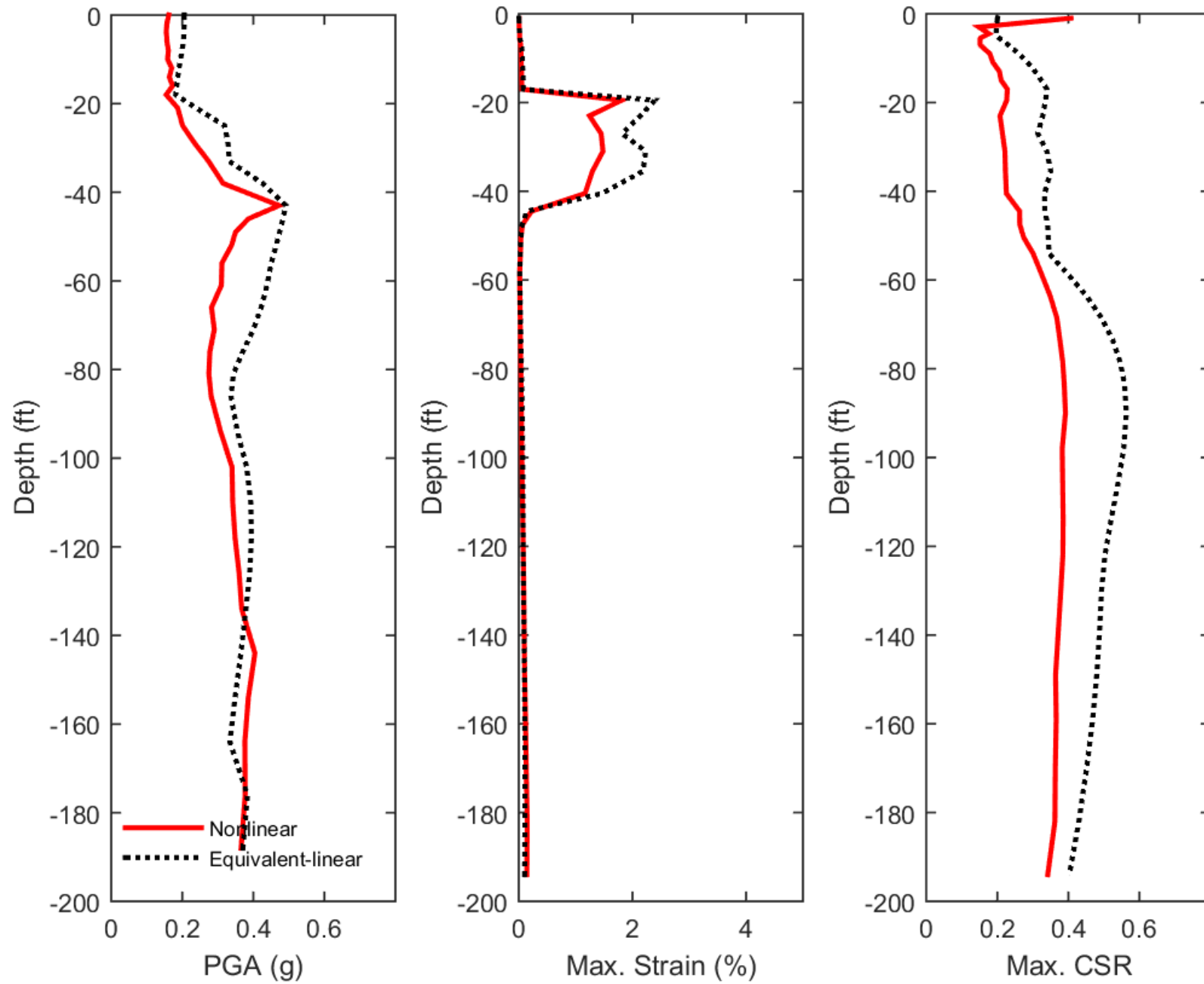
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



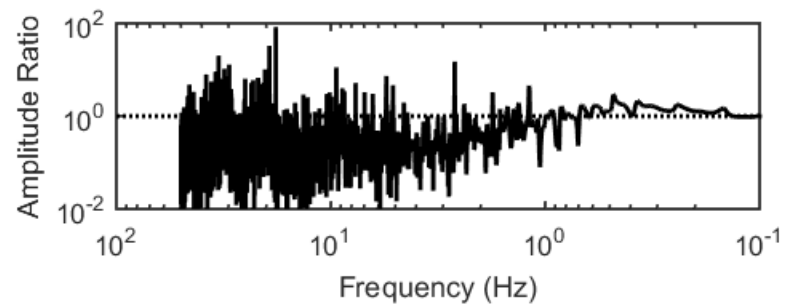
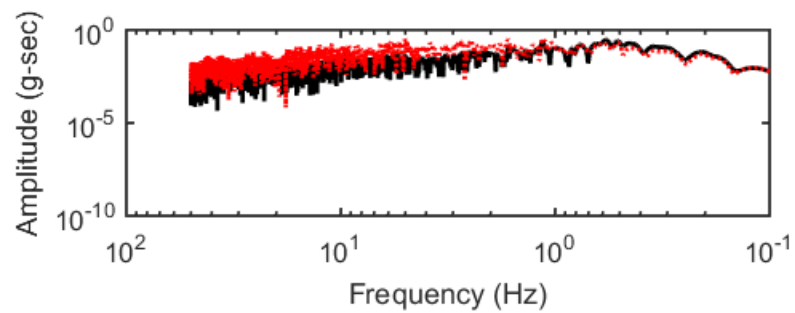
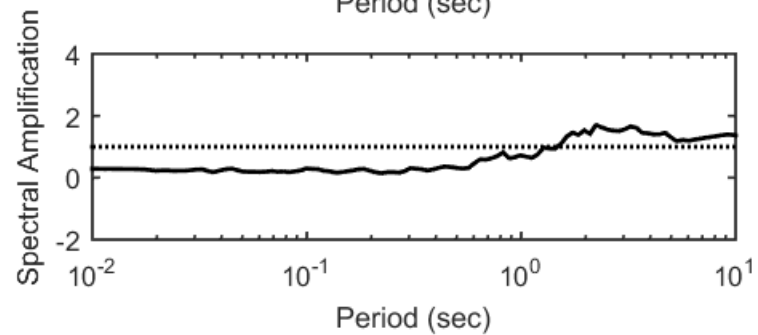
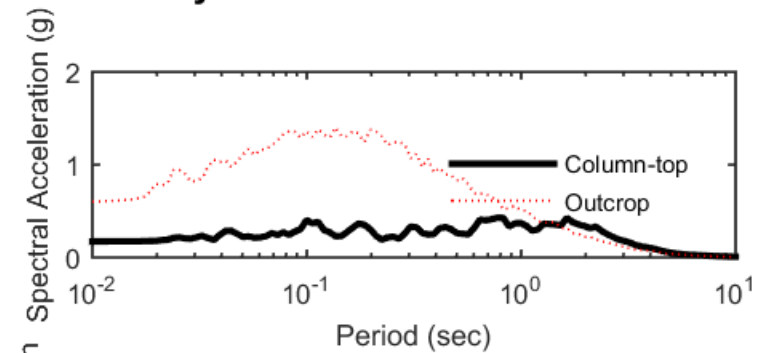
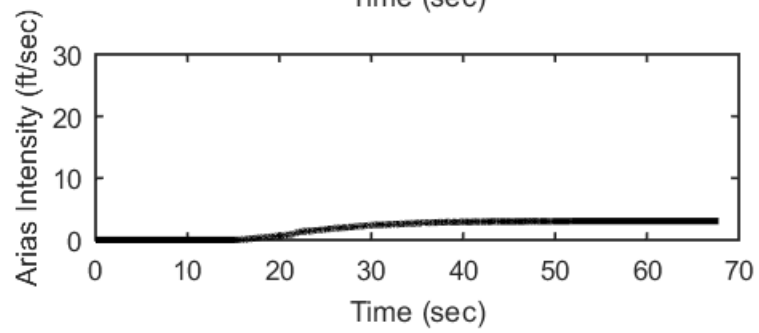
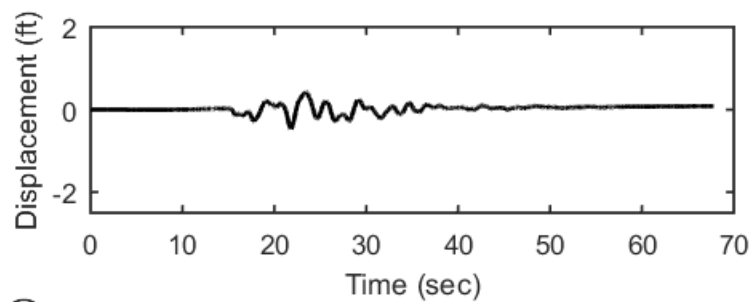
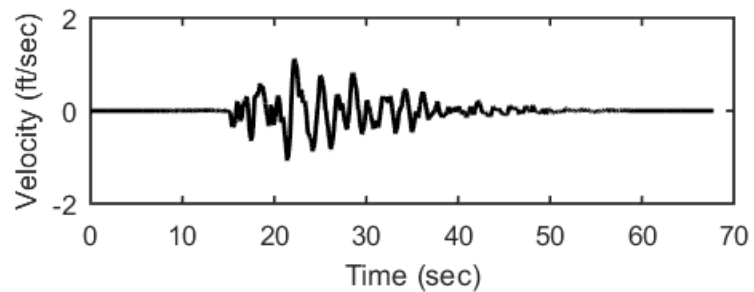
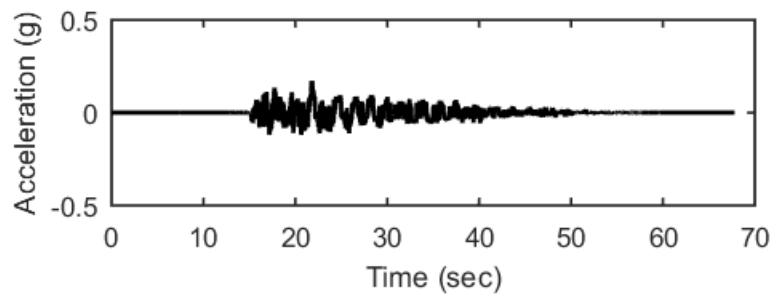
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



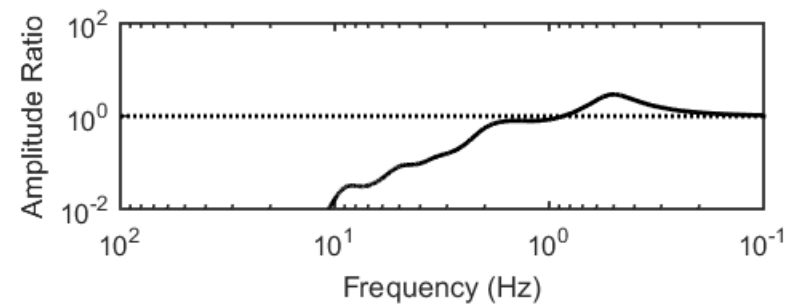
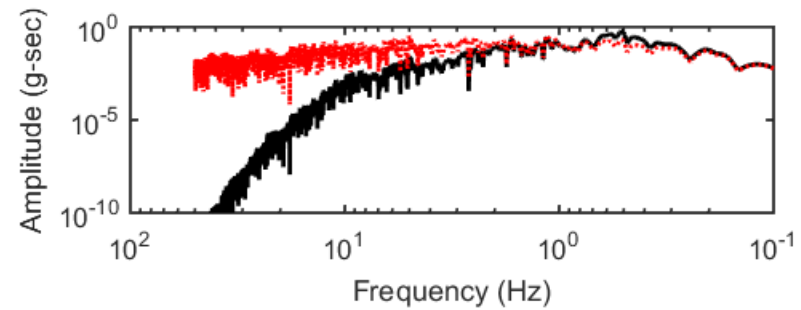
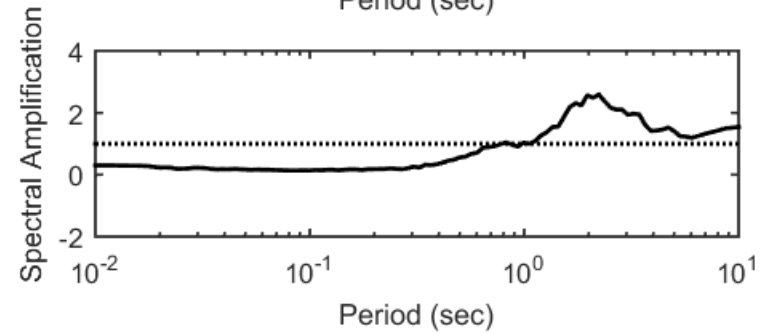
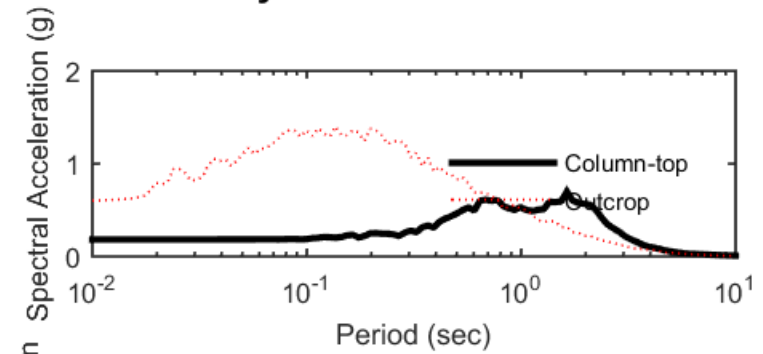
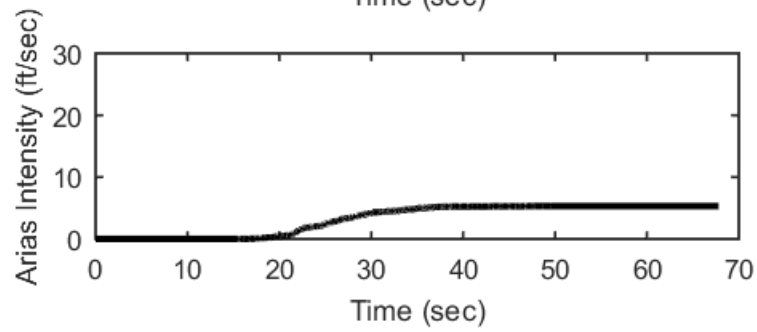
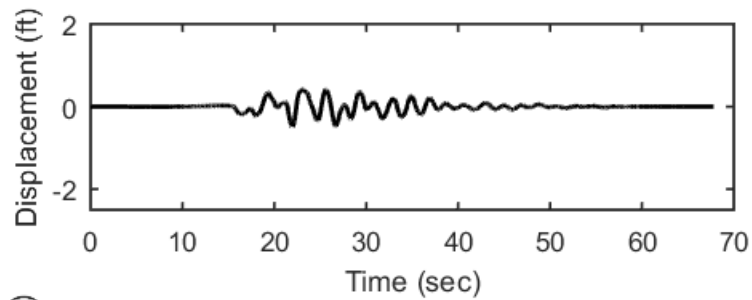
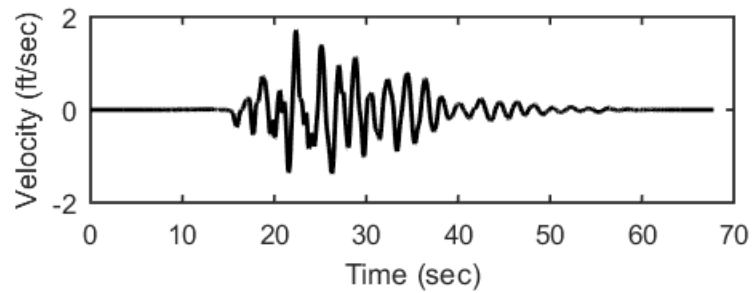
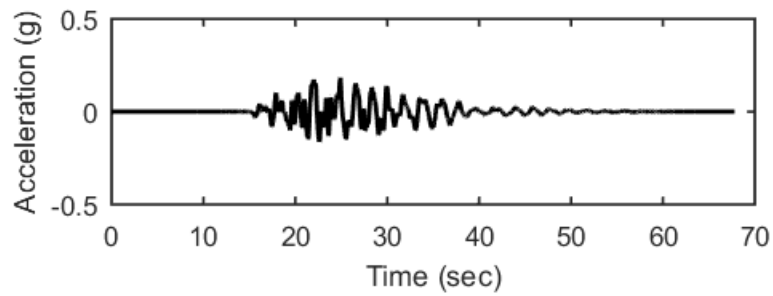
### Profile outputs for Motion: SEE6



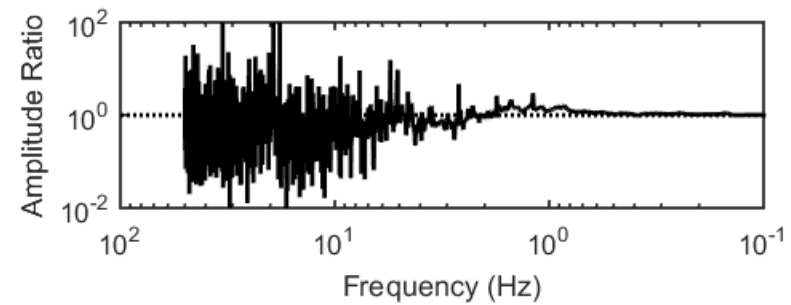
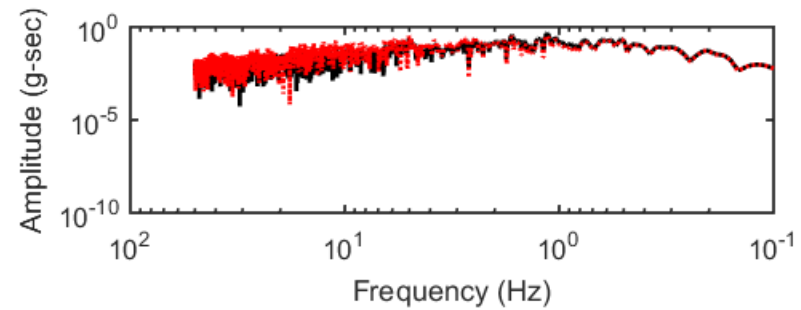
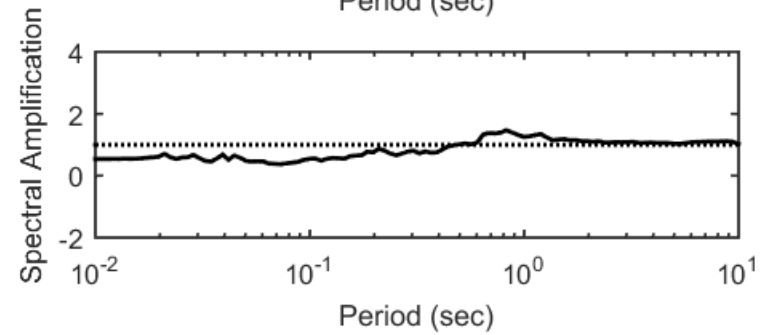
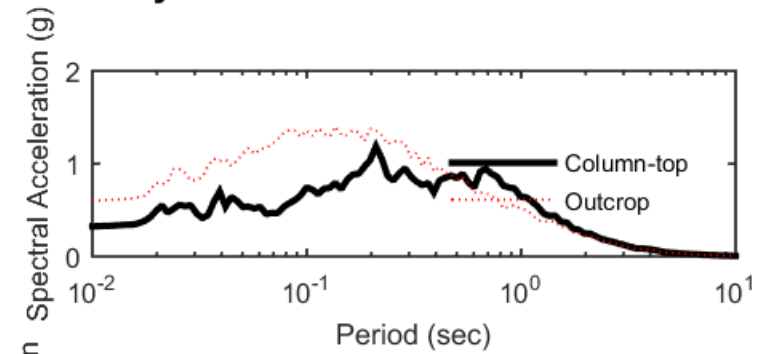
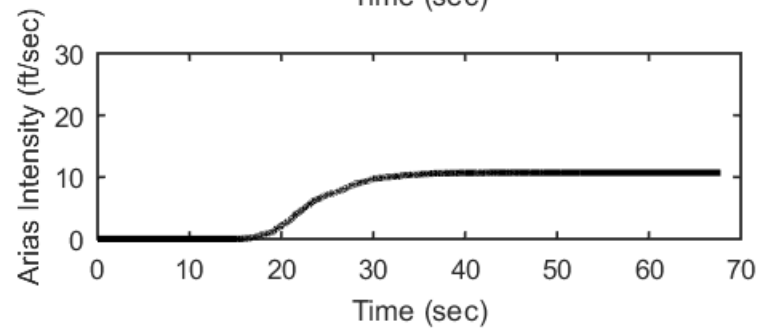
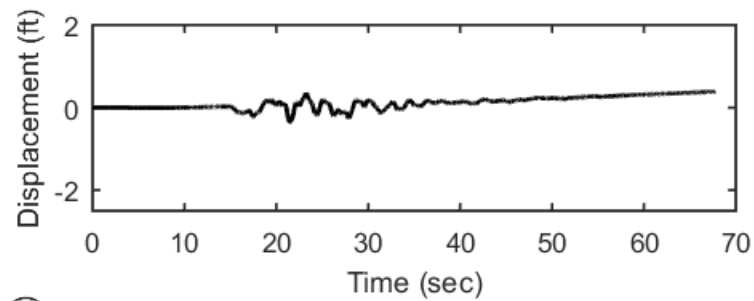
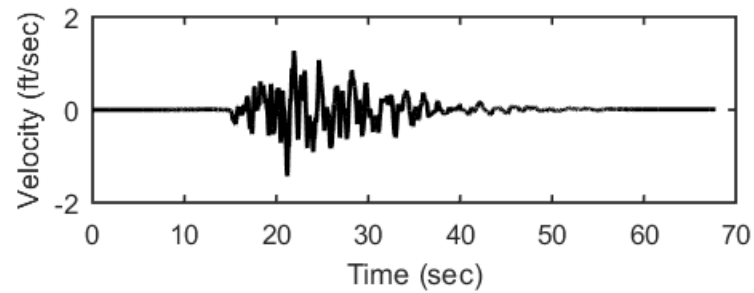
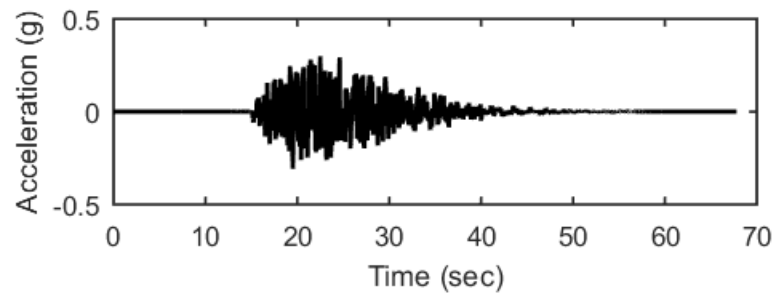
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



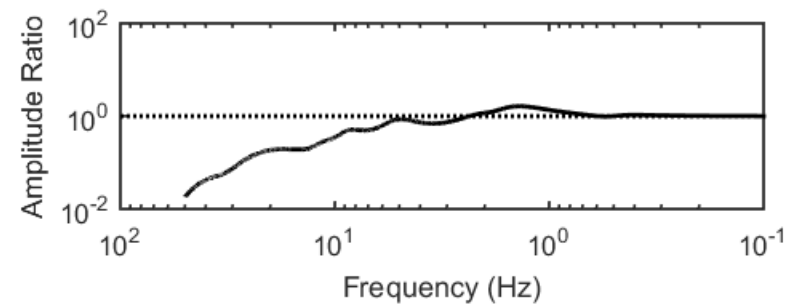
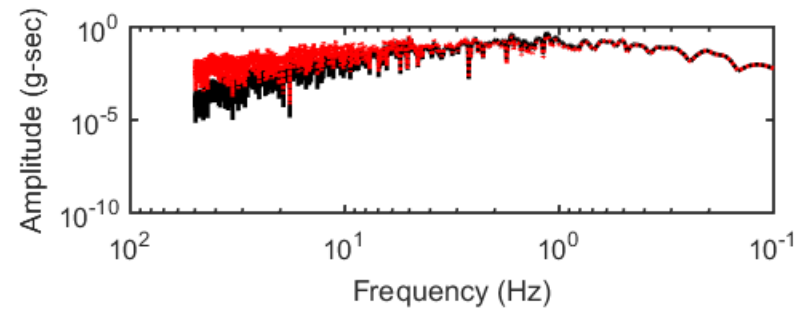
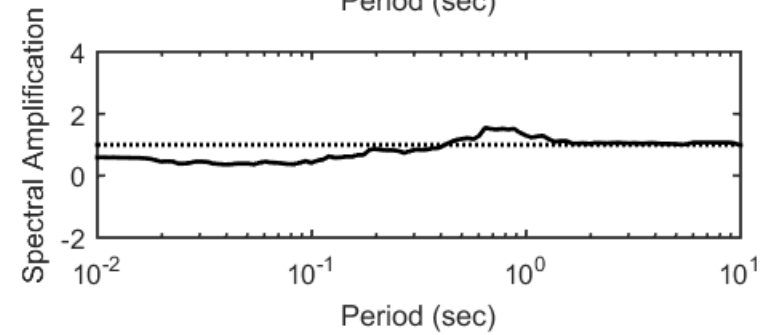
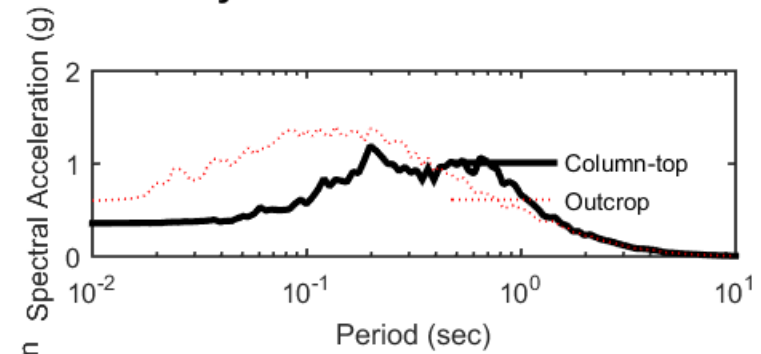
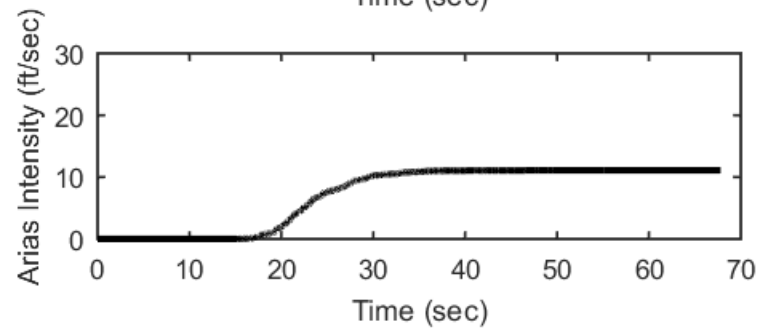
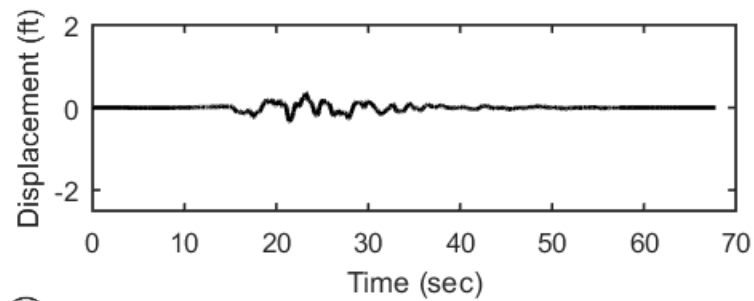
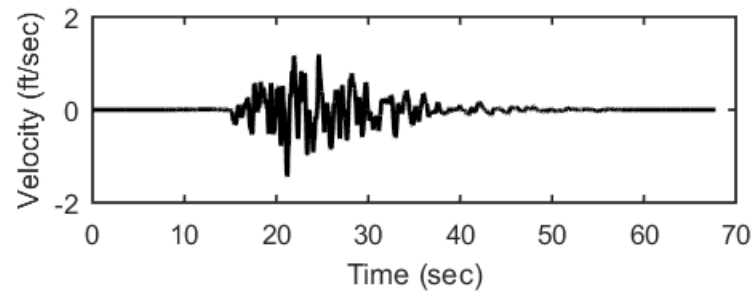
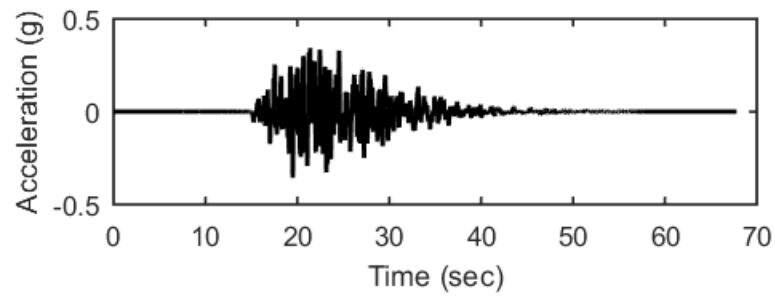
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



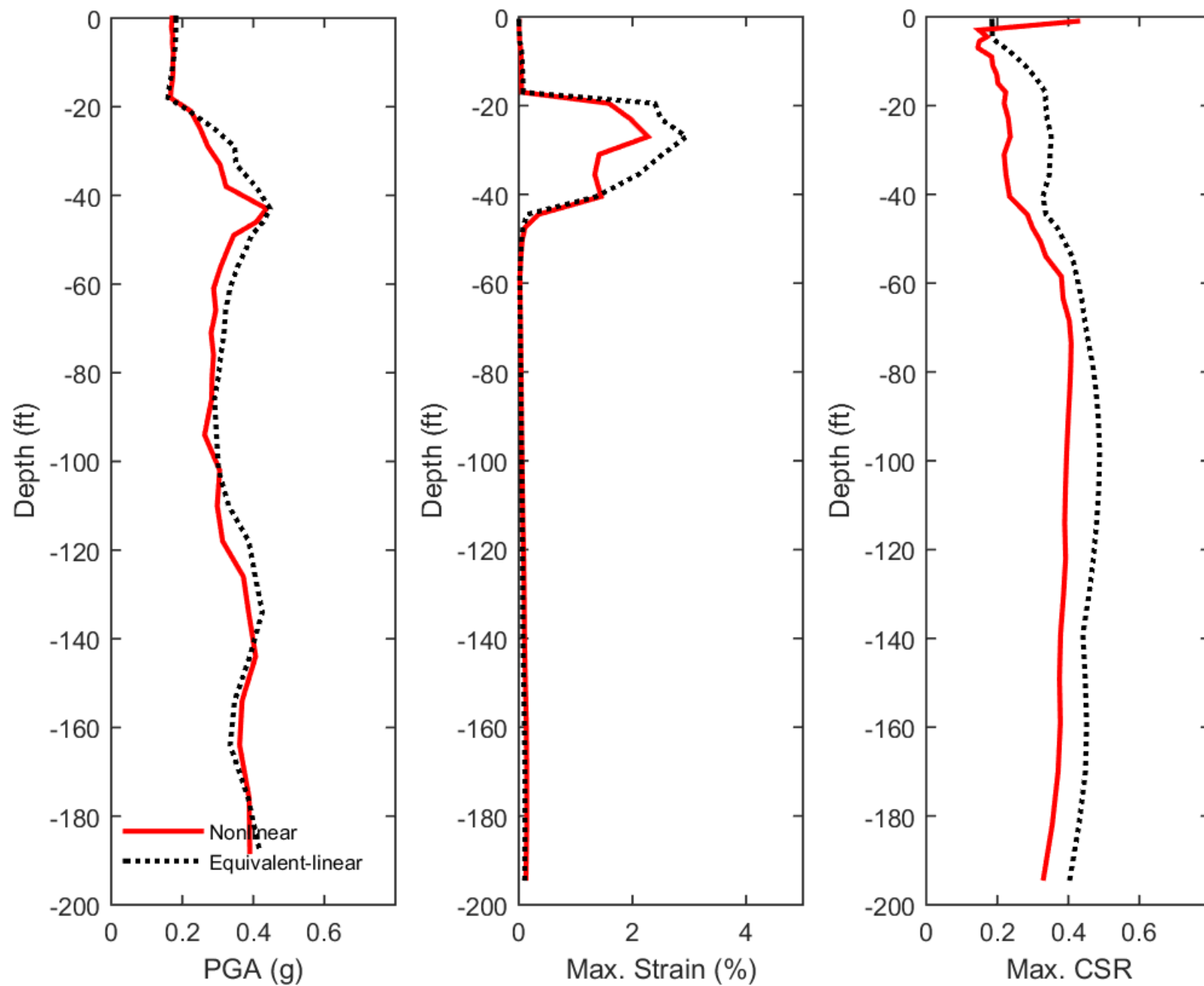
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7

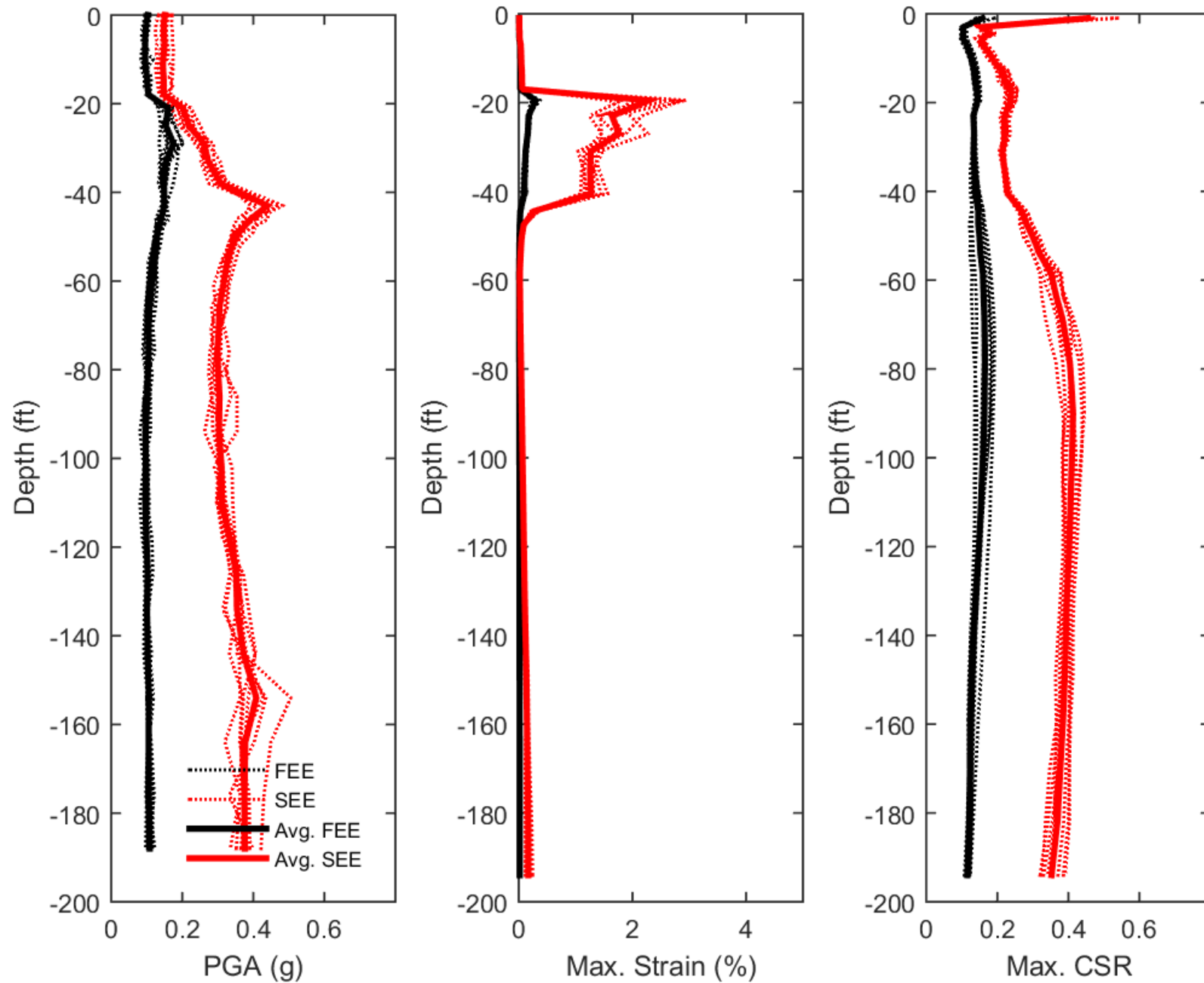


### Profile outputs for Motion: SEE7

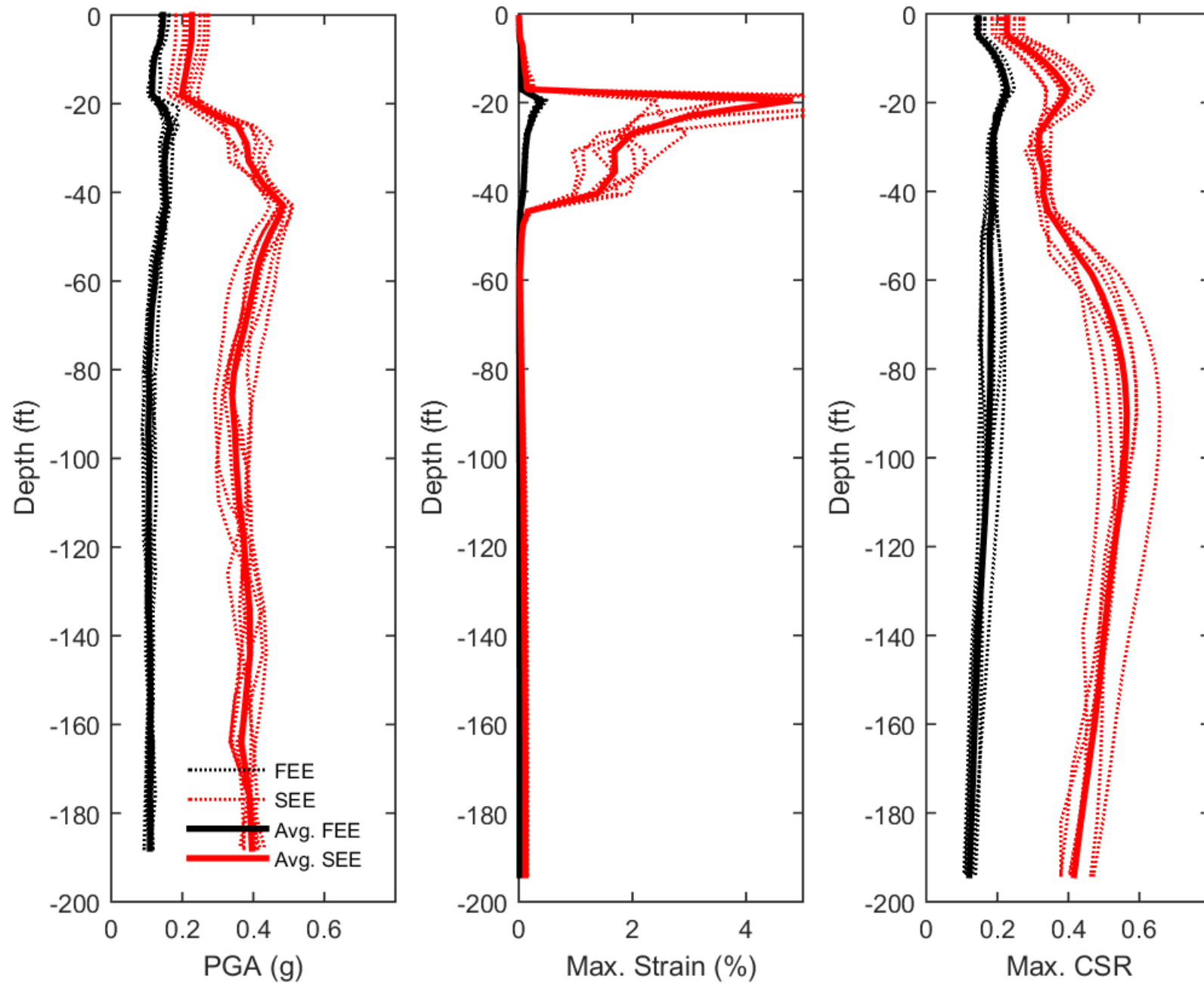




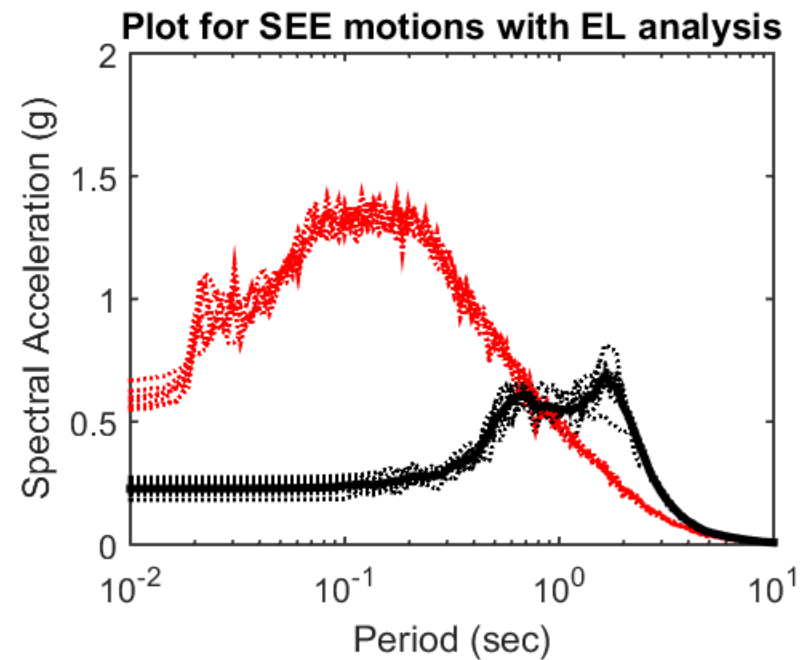
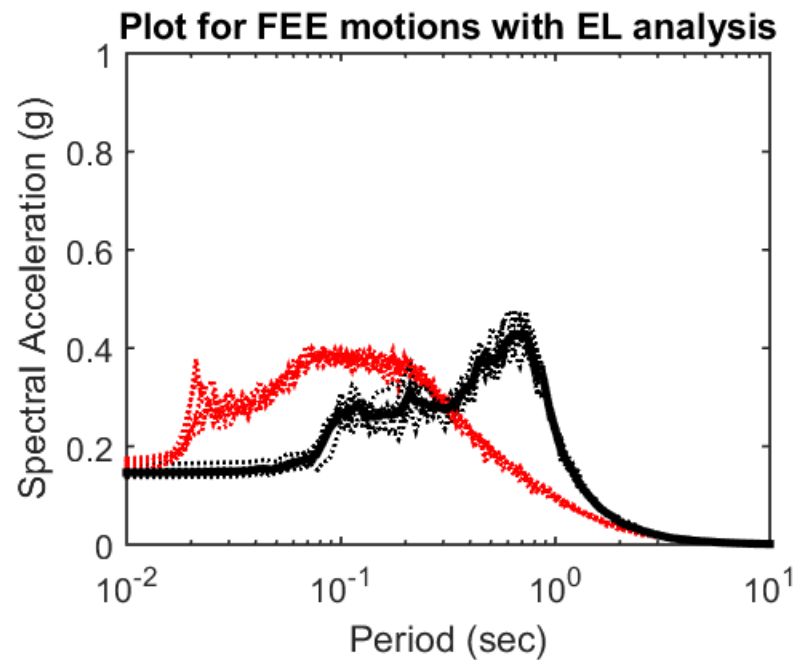
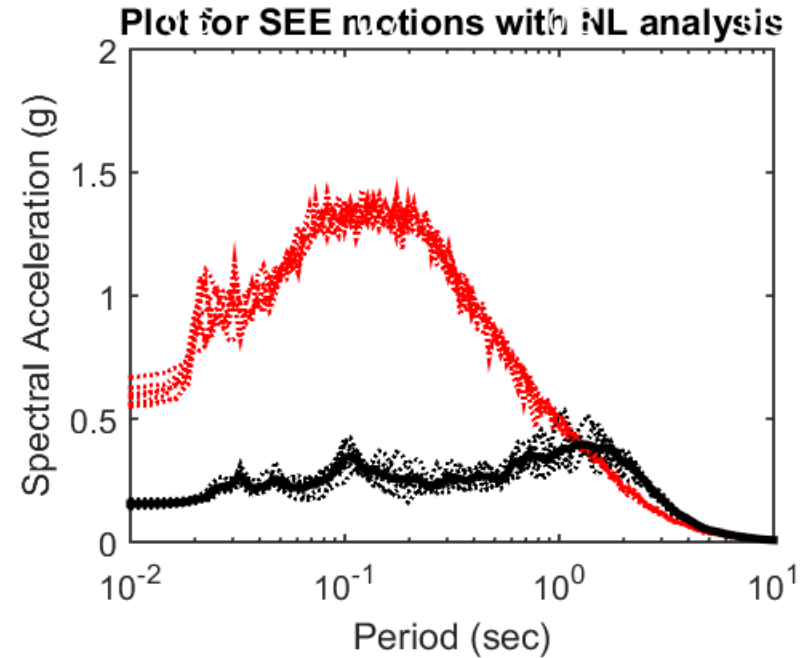
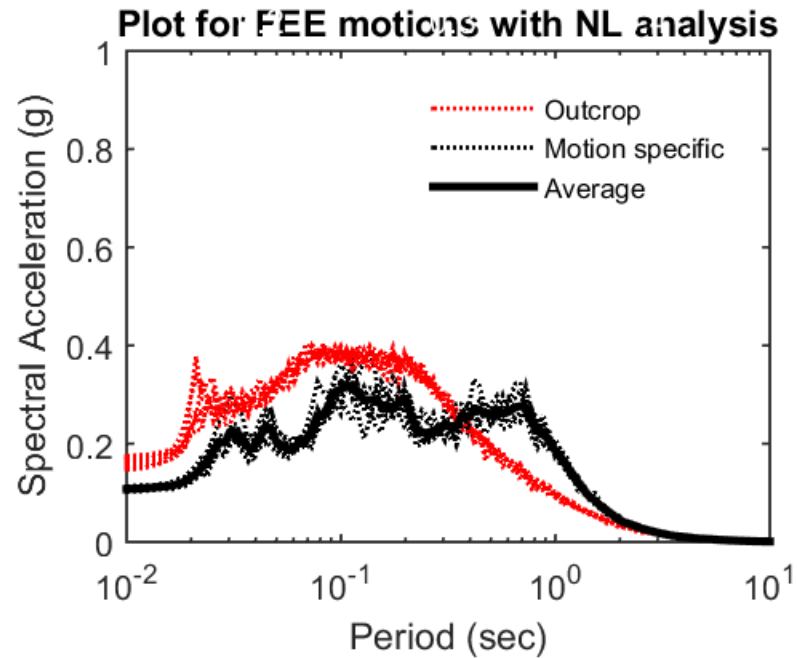
### Summary of the profile outputs for Nonlinear analysis



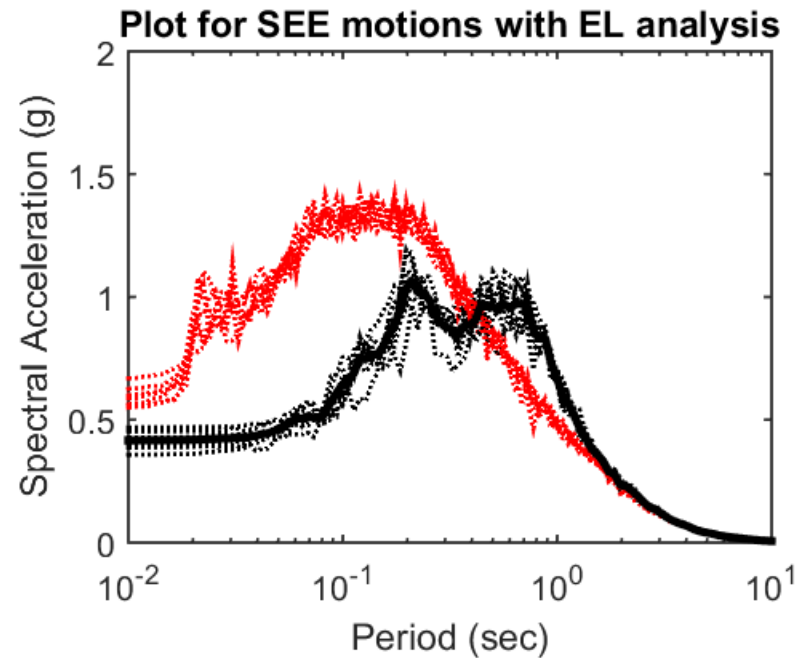
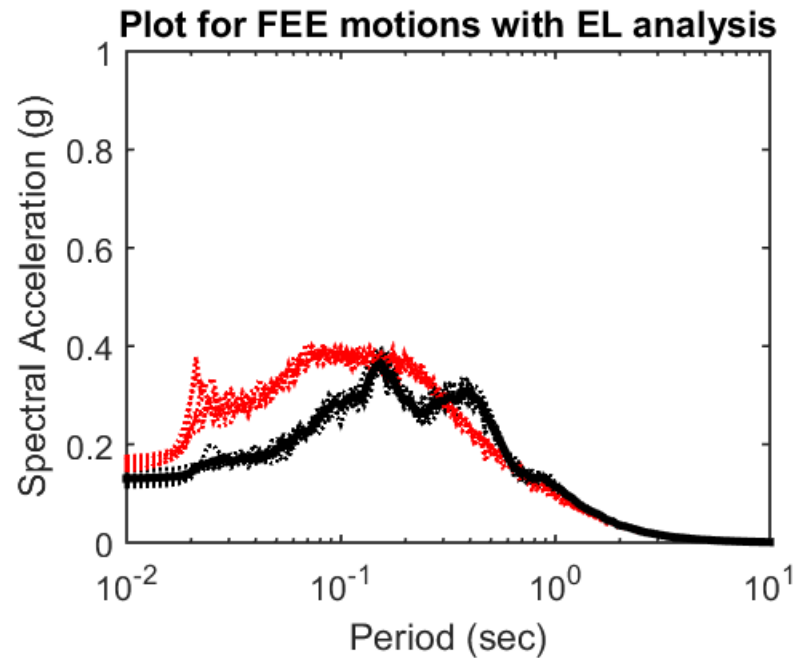
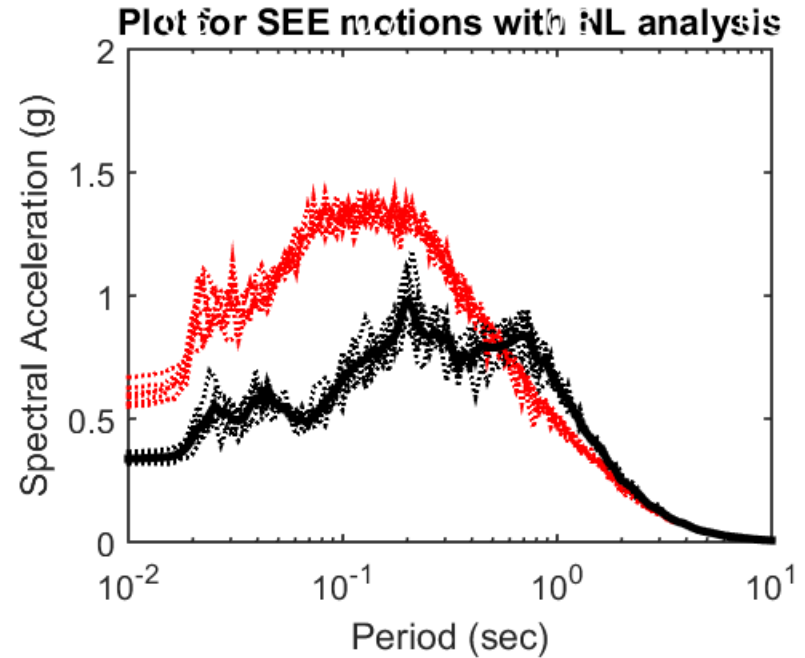
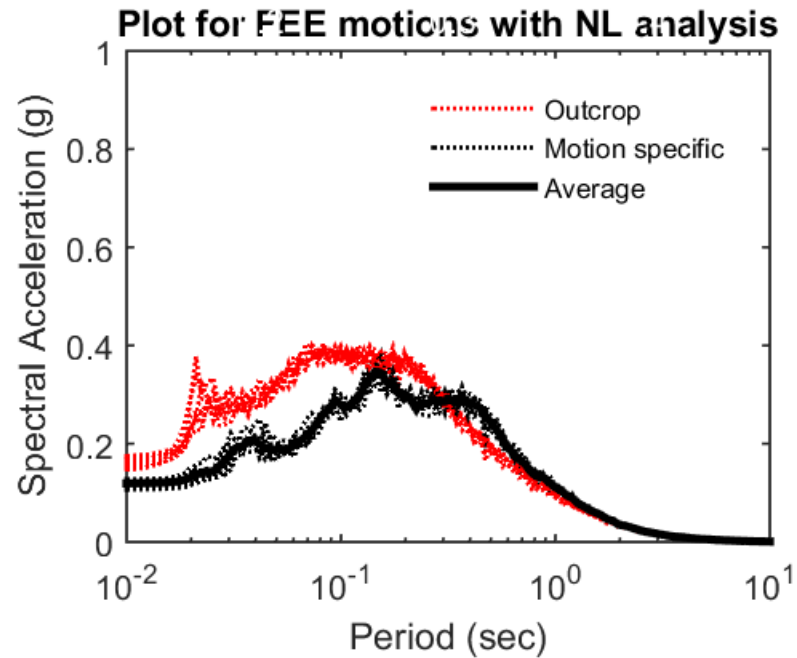
### Summary of the profile outputs for Equivalent-linear analysis



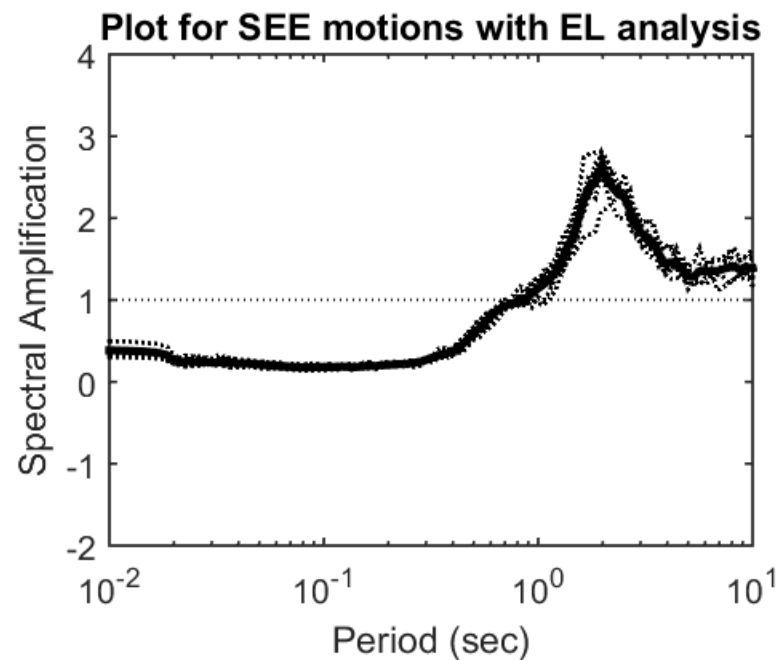
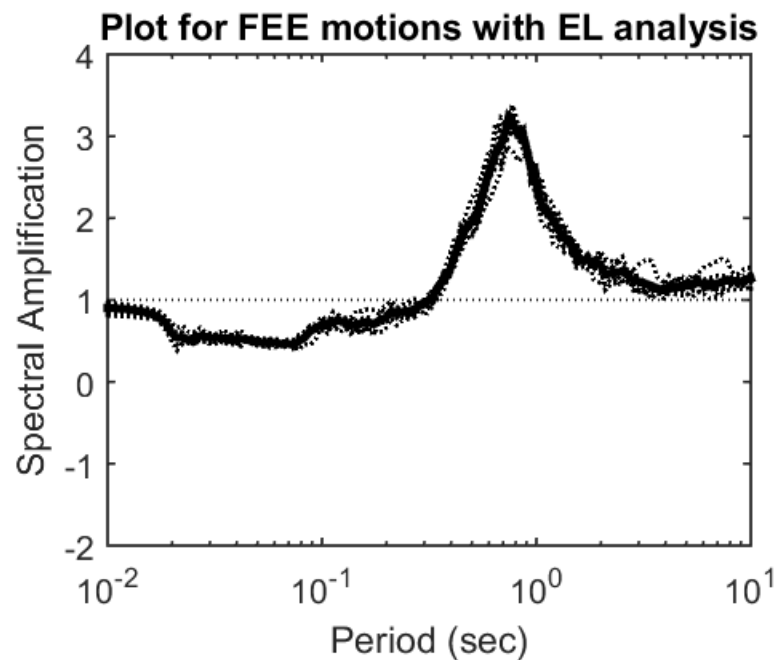
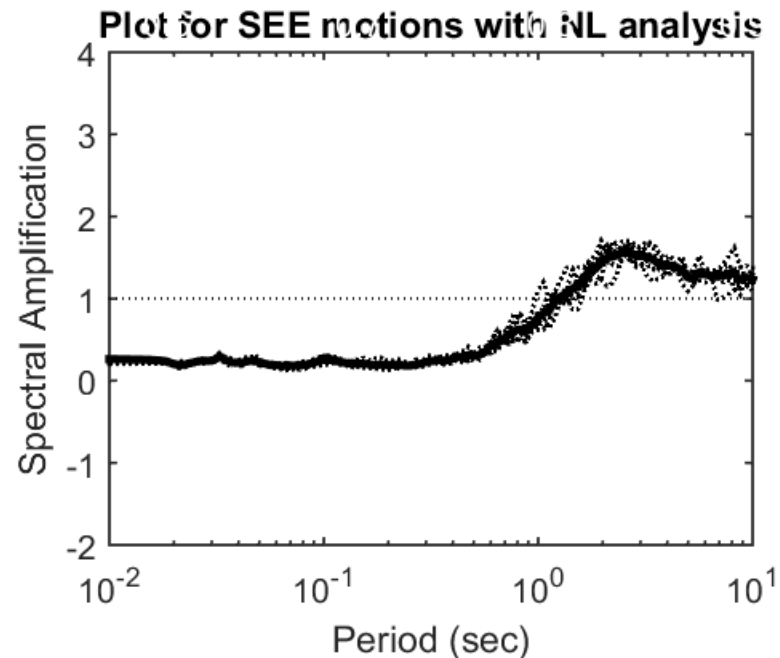
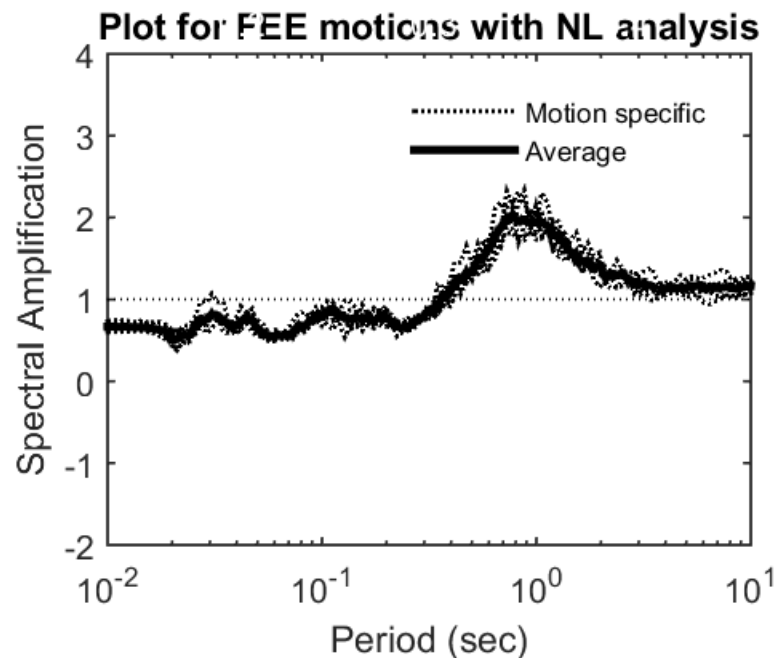
## Summary plots: RSA at ground surface



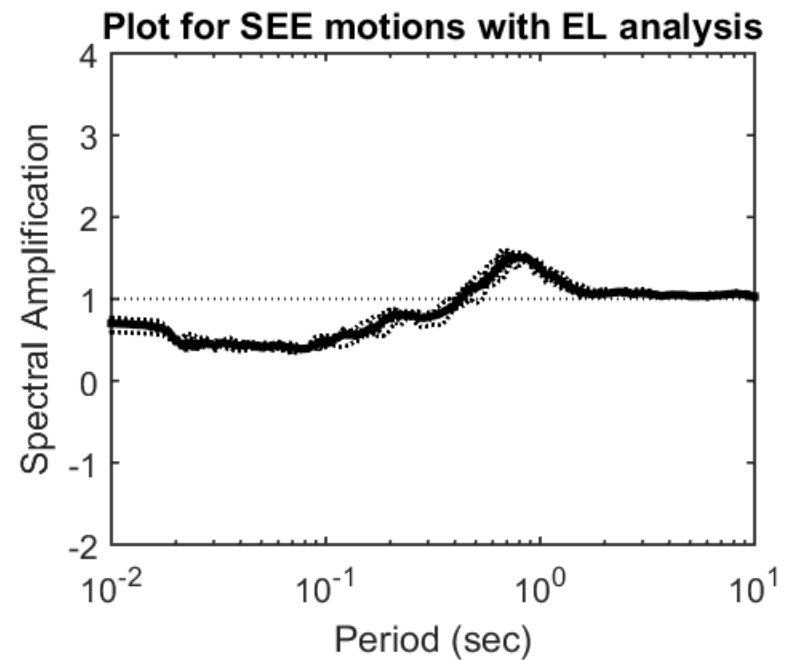
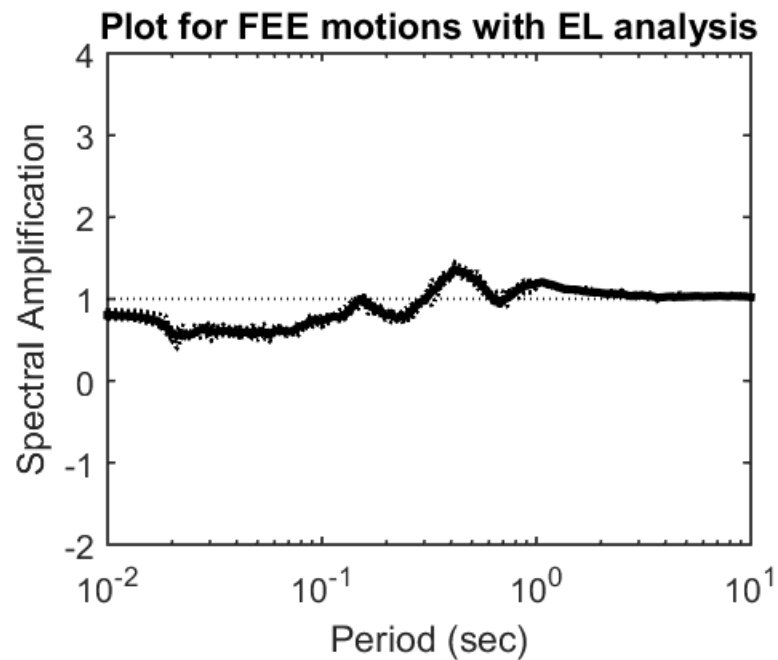
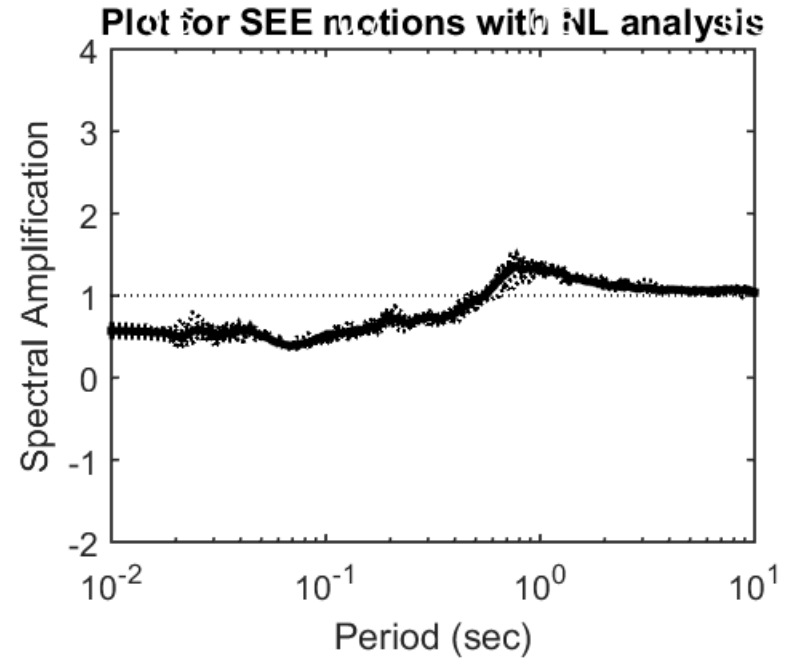
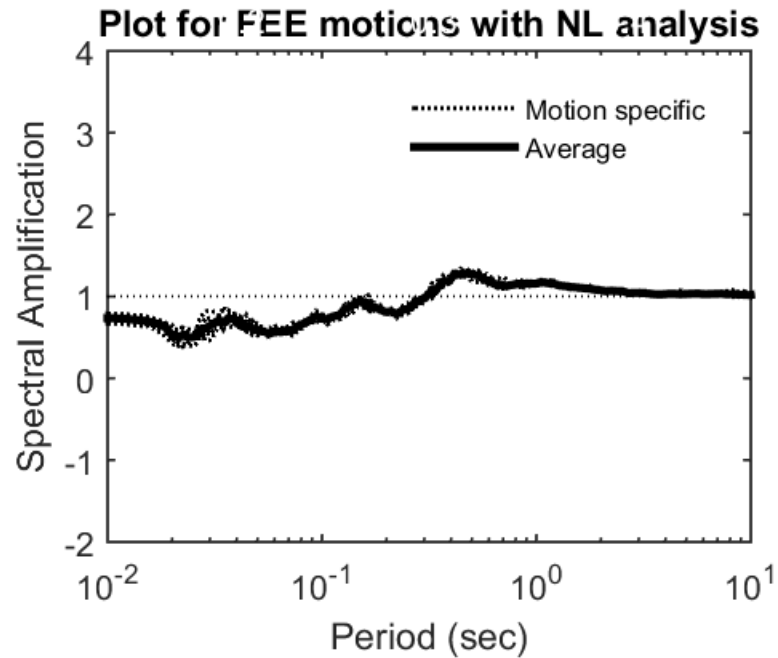
### Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

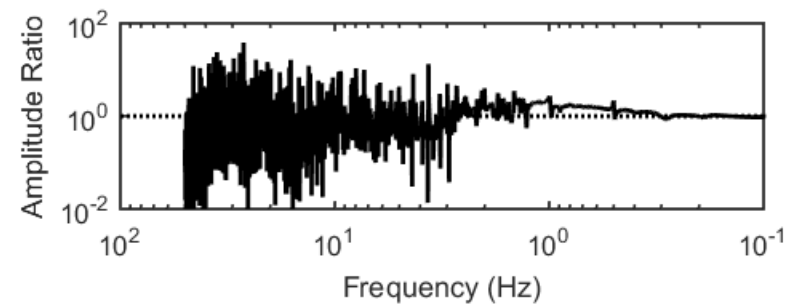
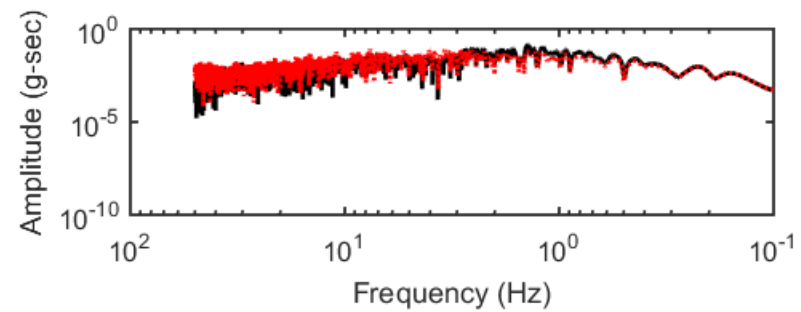
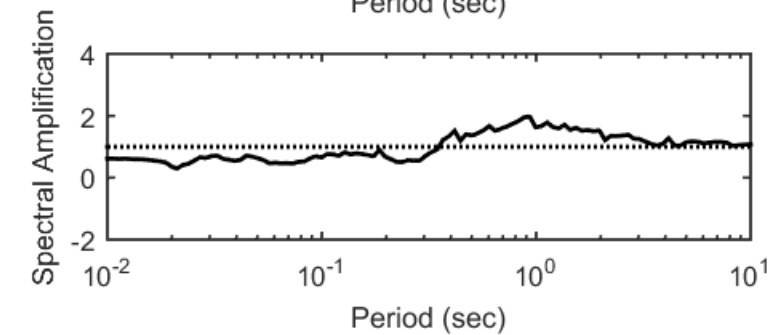
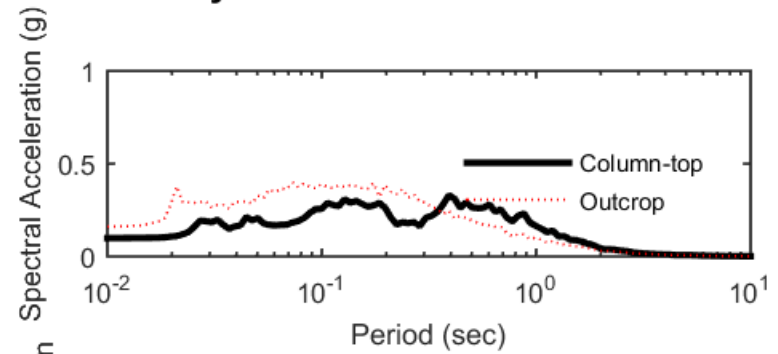
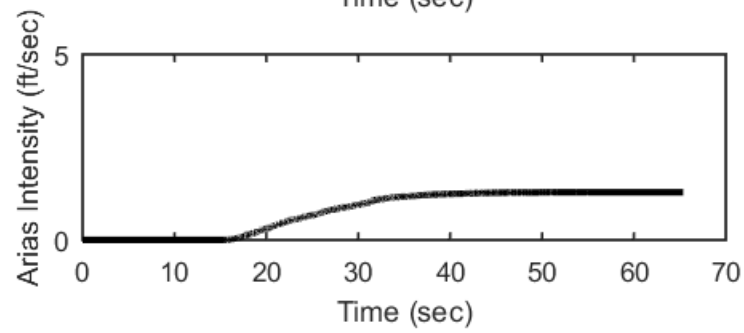
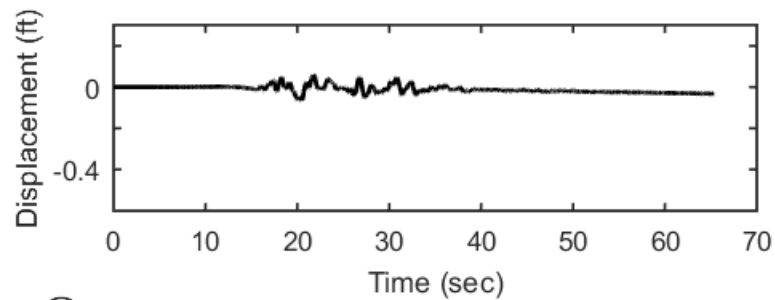
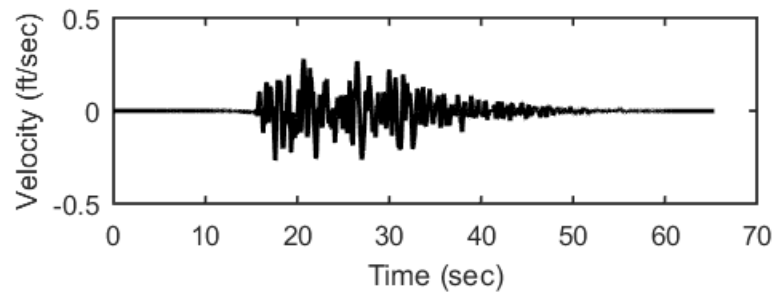
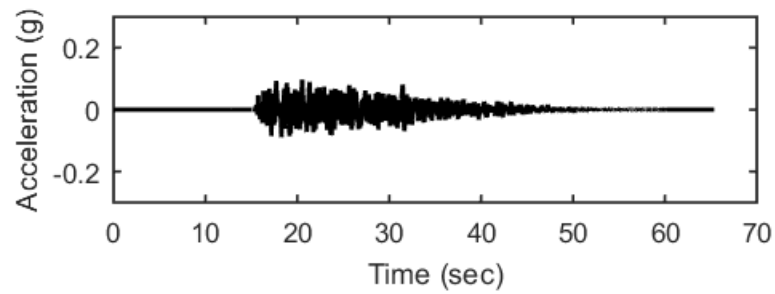


## Summary plots: Spectral amplification at top of Marl



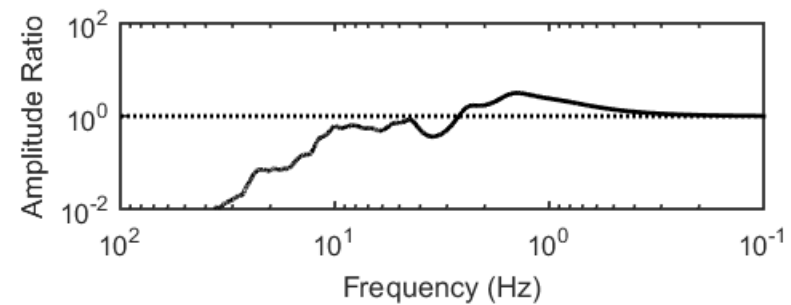
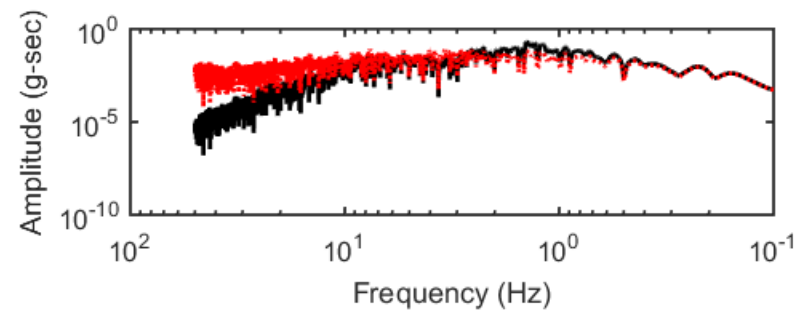
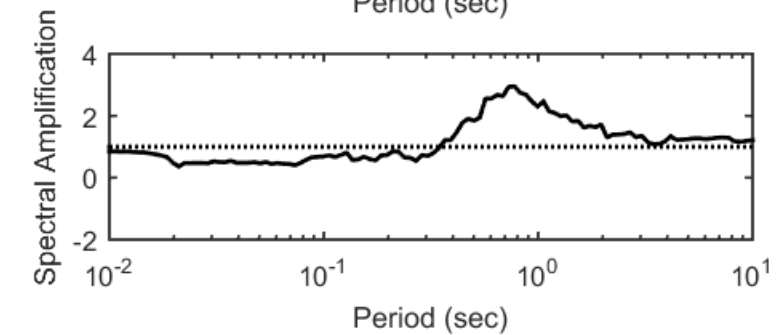
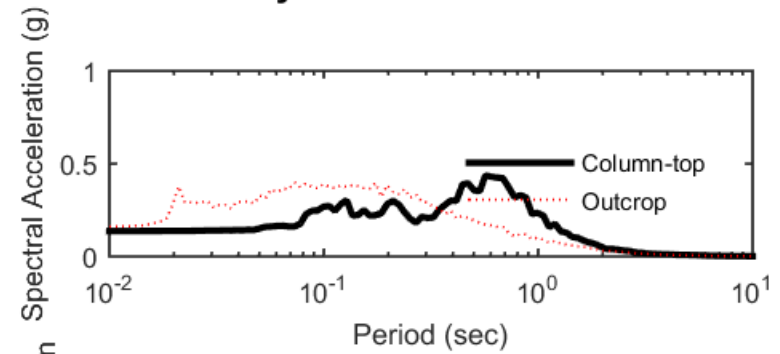
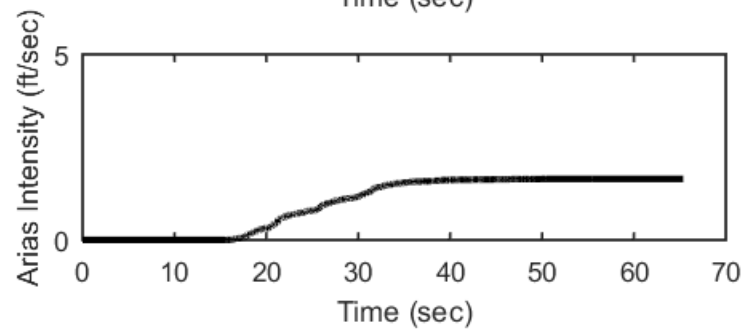
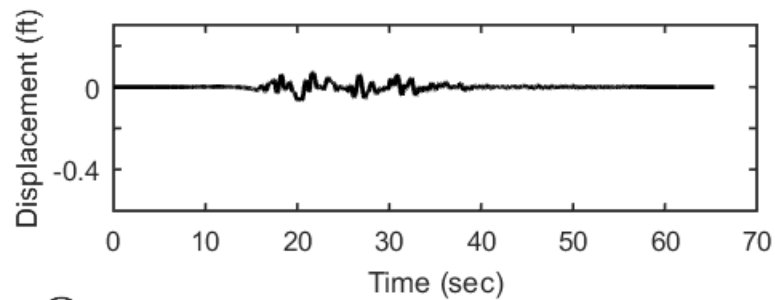
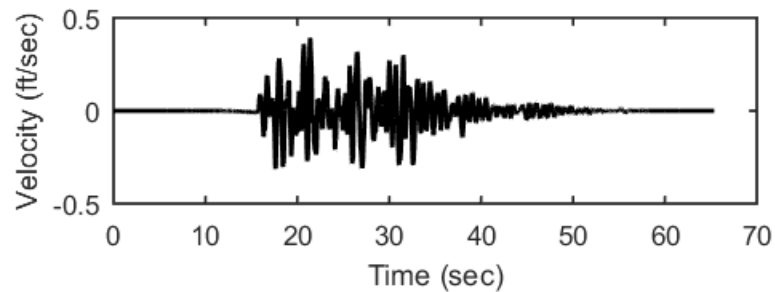
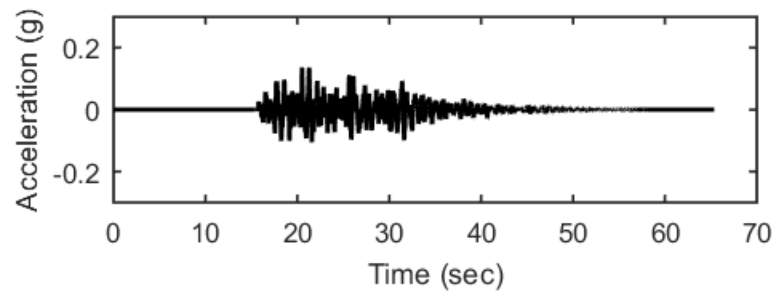
## **500 FT MODEL**

## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1

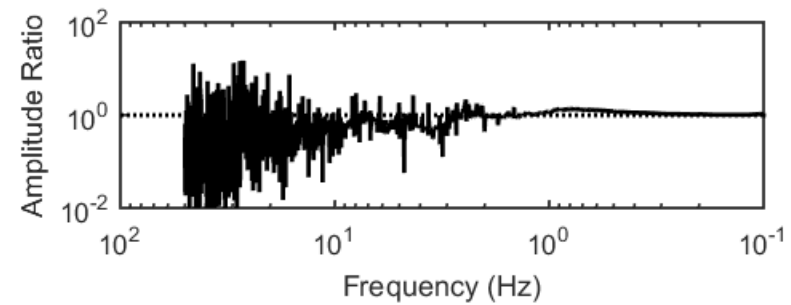
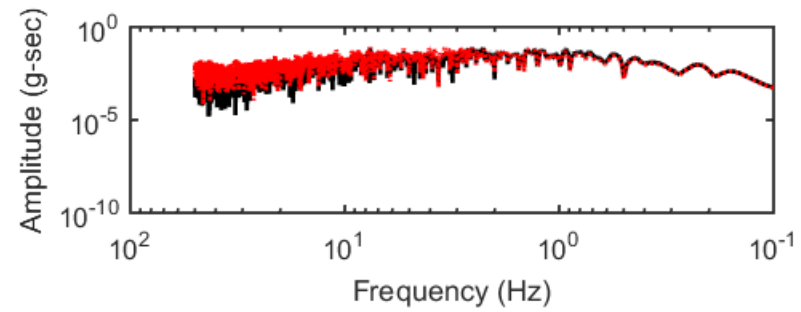
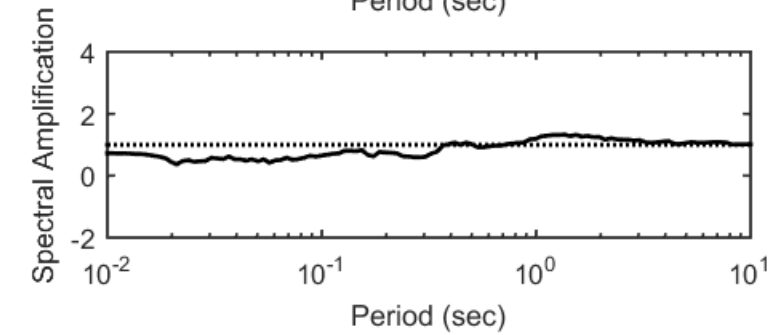
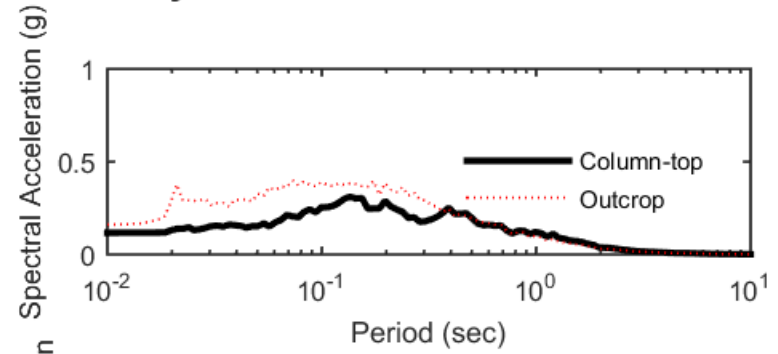
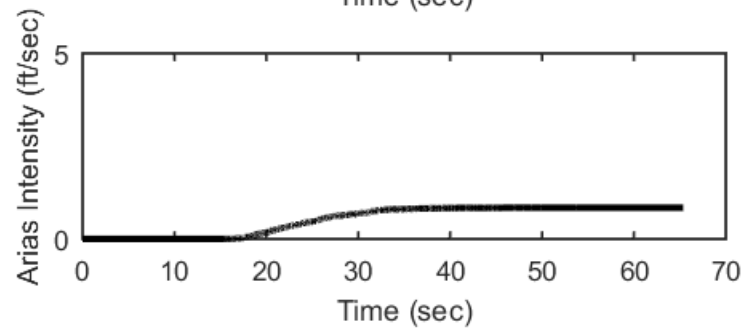
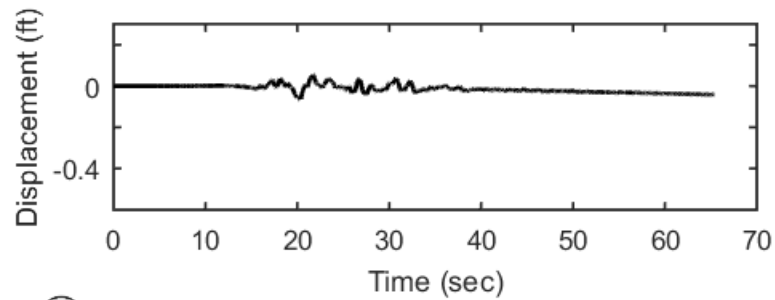
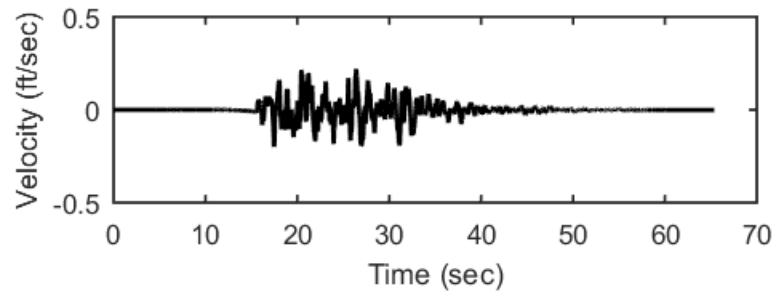
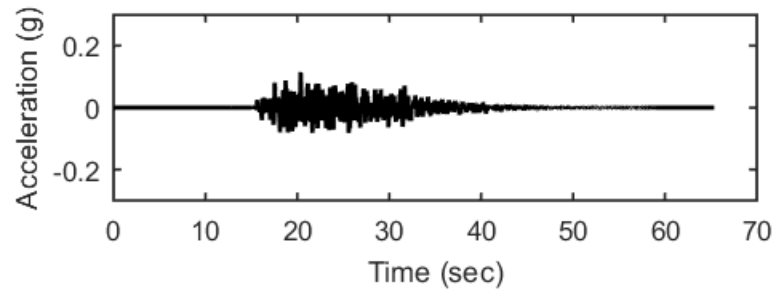




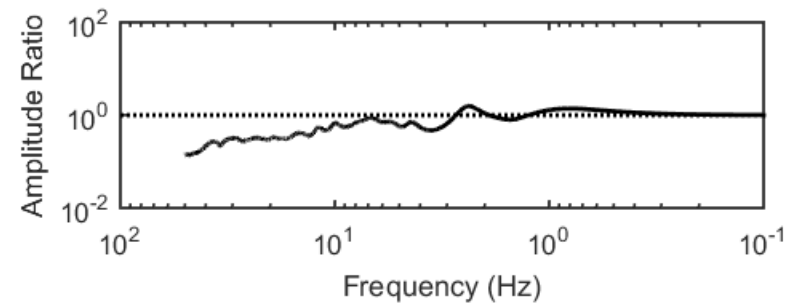
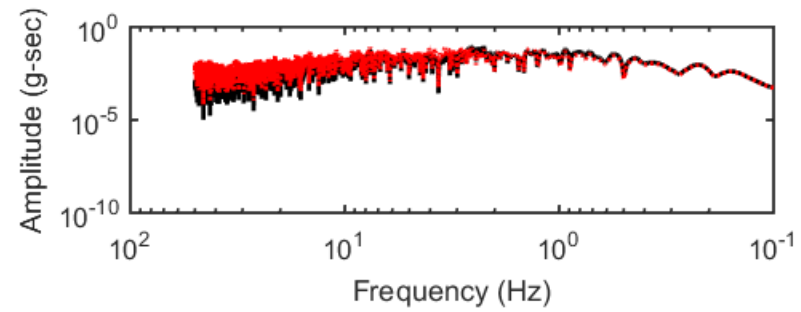
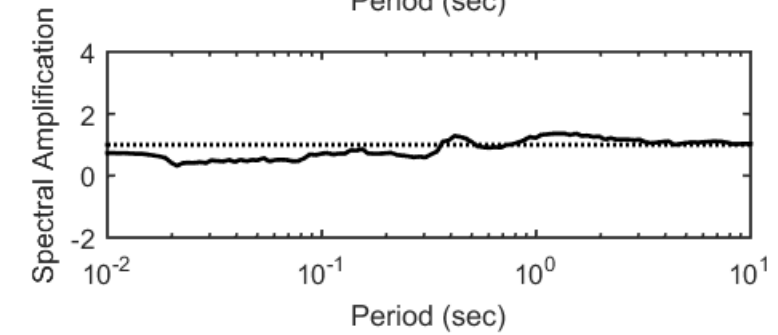
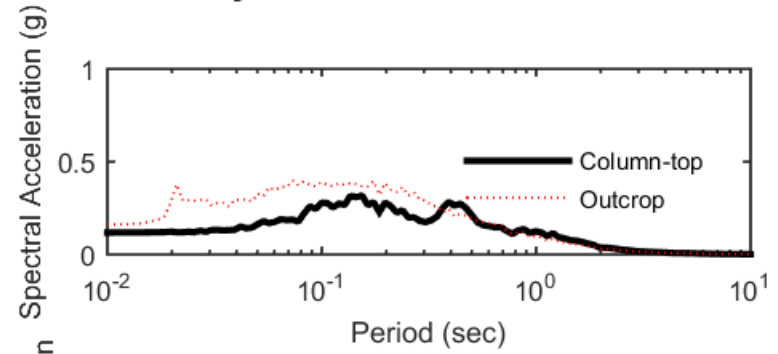
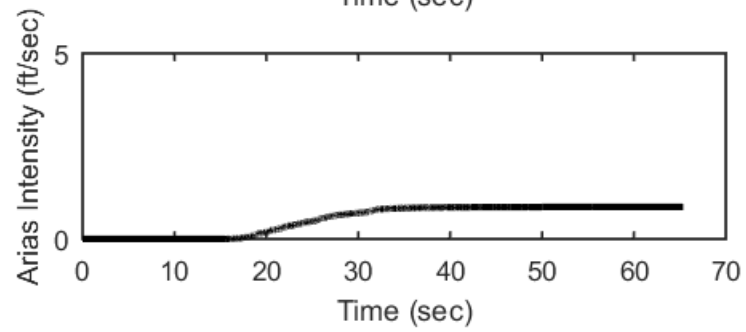
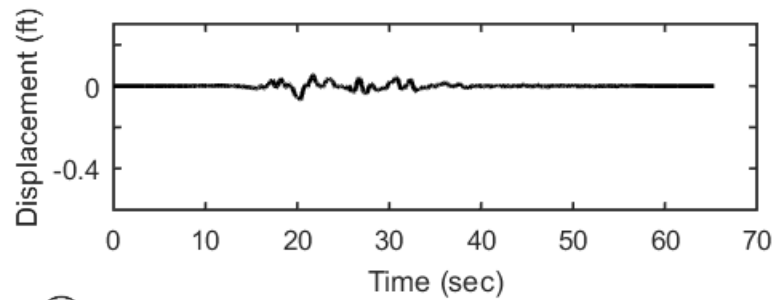
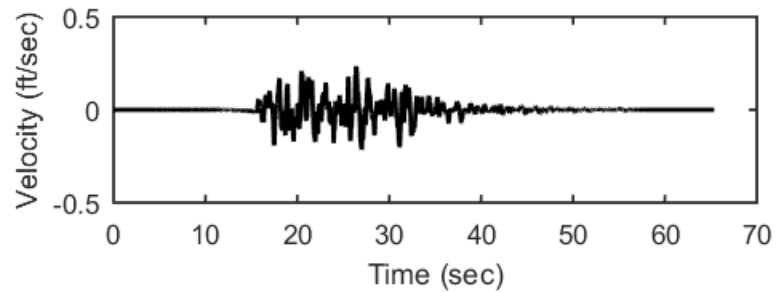
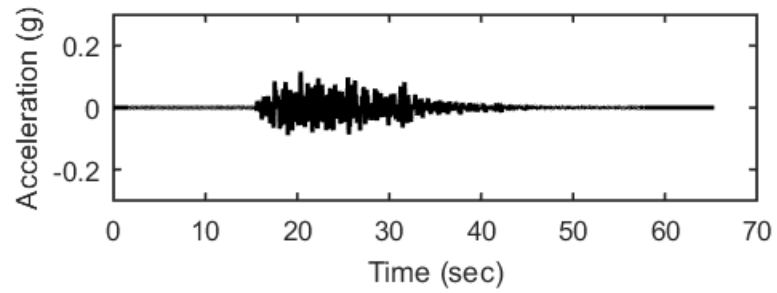
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



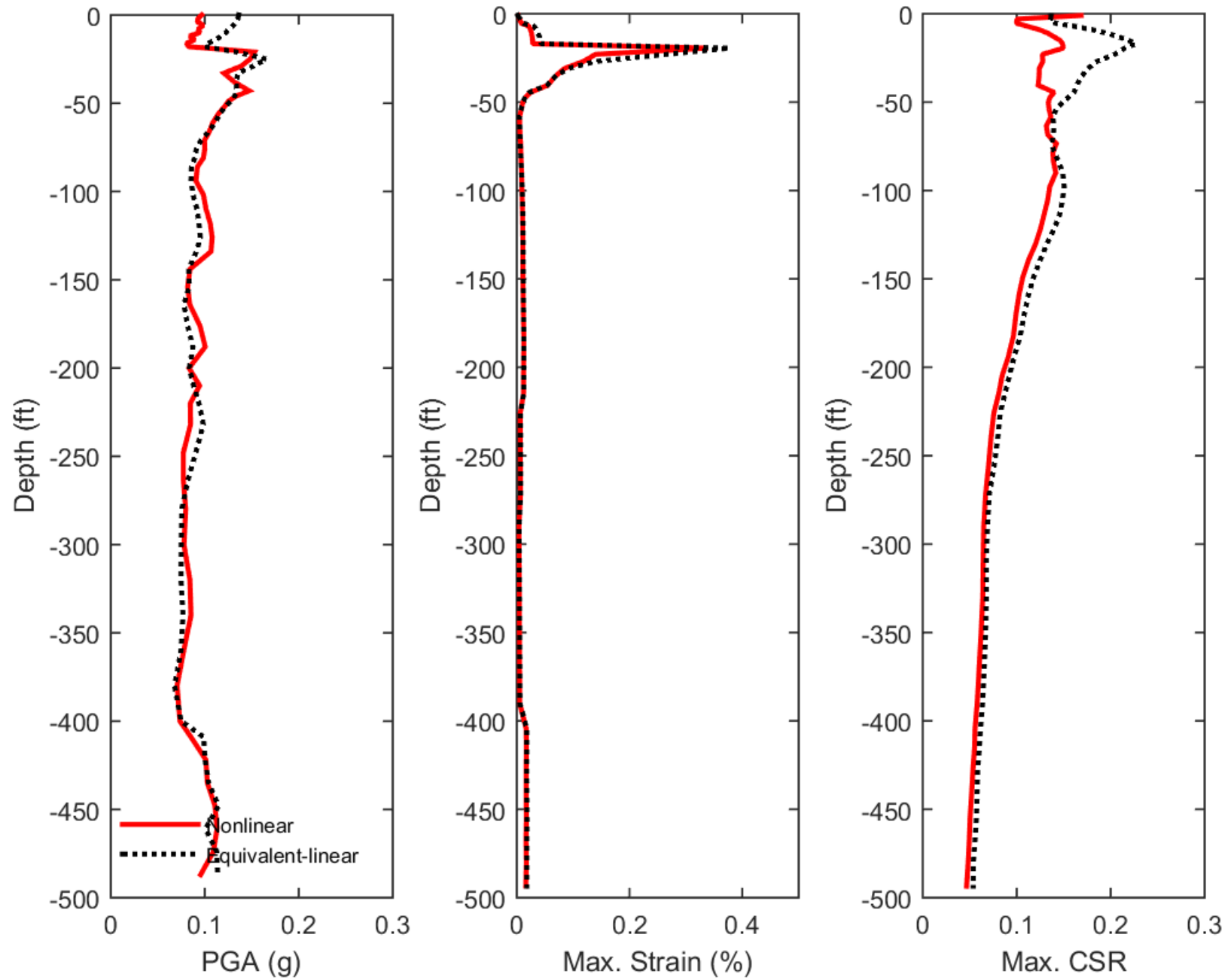
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



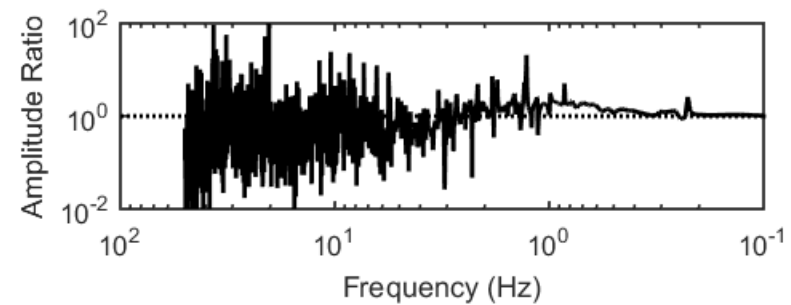
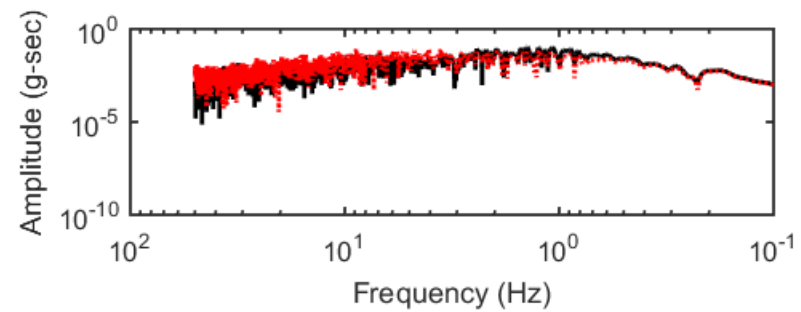
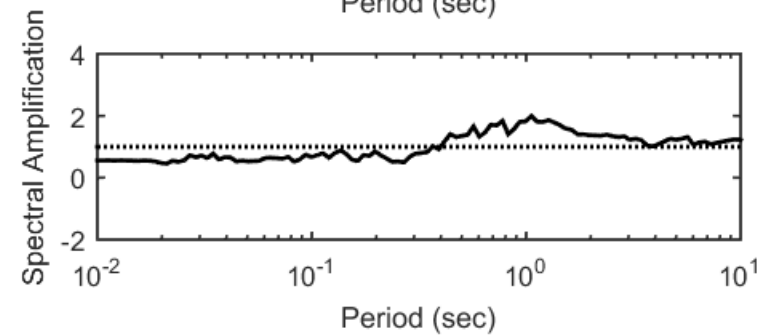
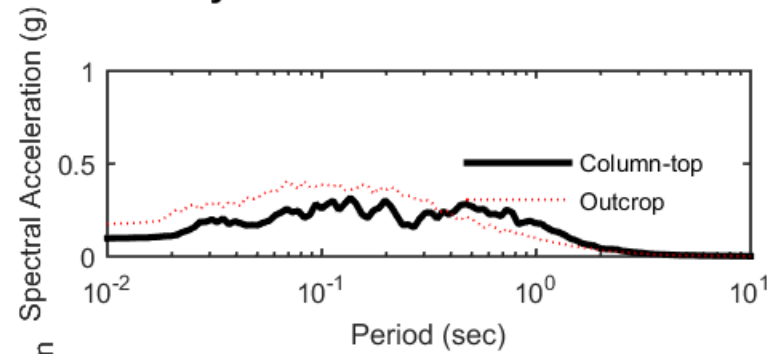
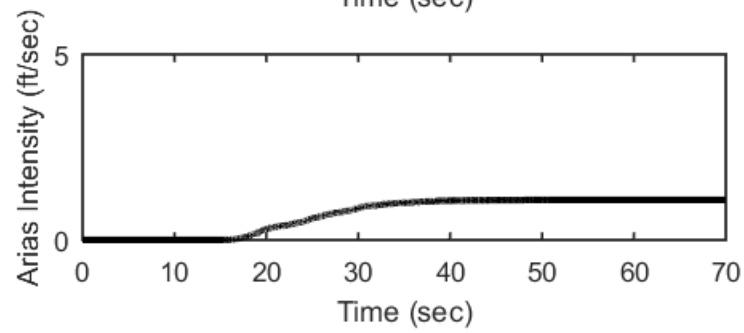
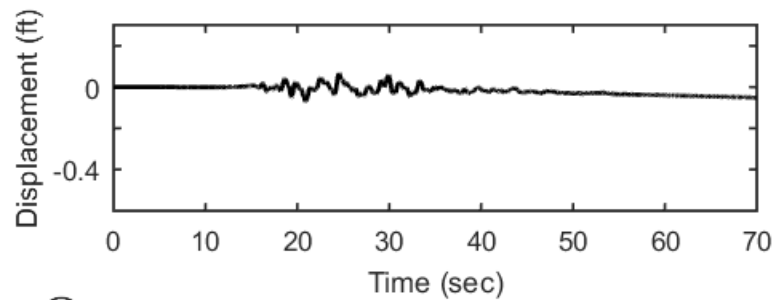
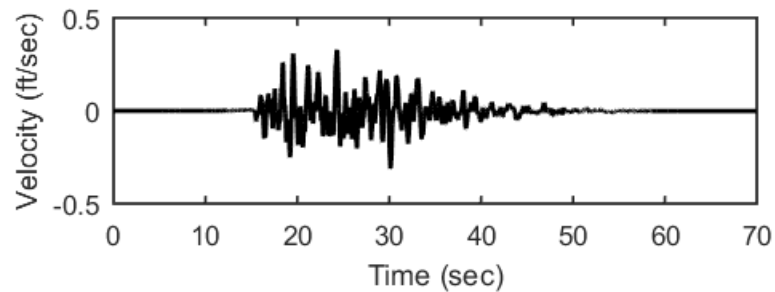
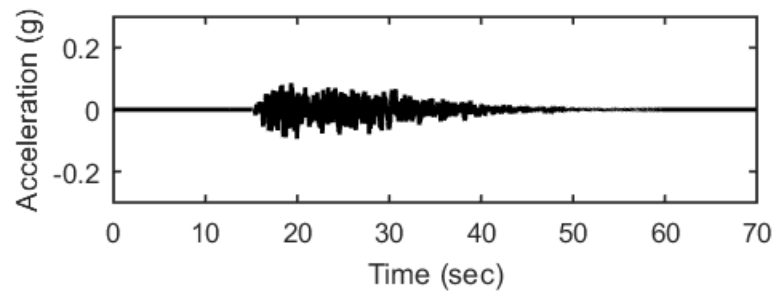
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



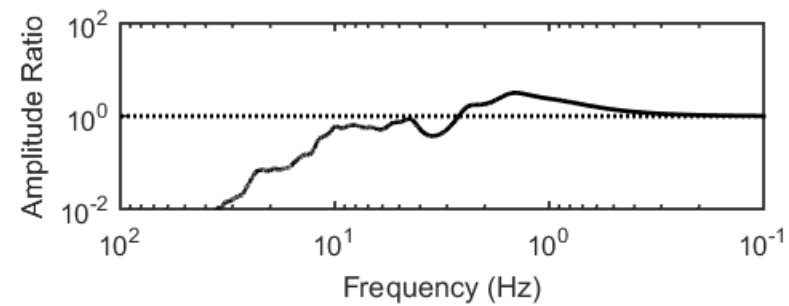
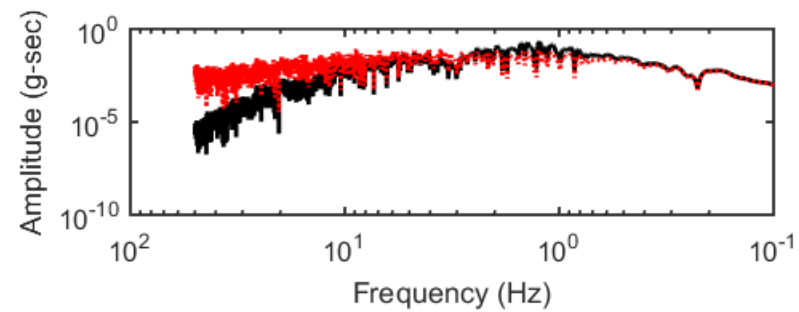
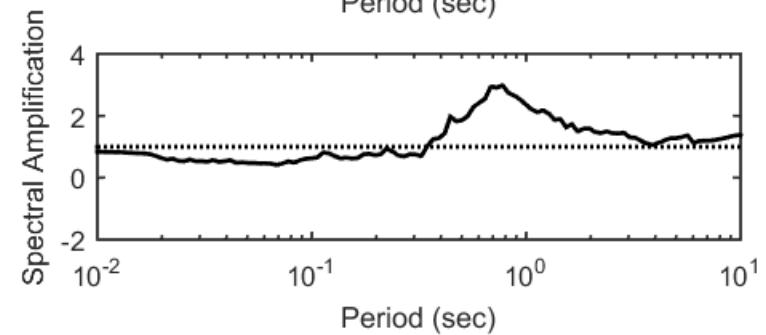
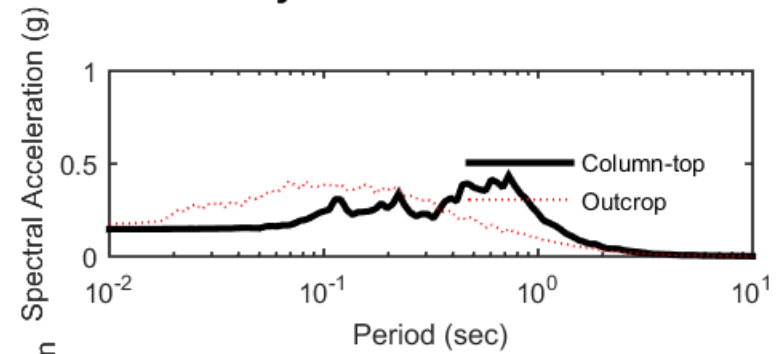
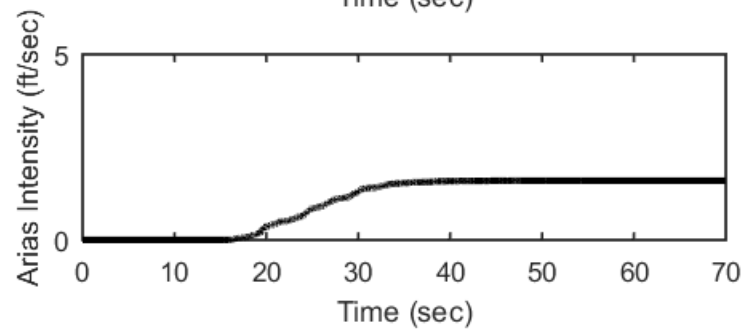
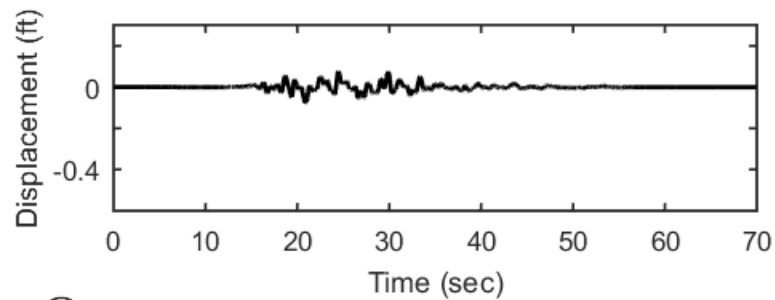
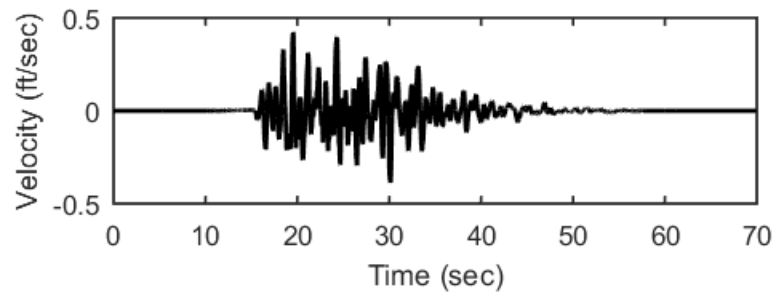
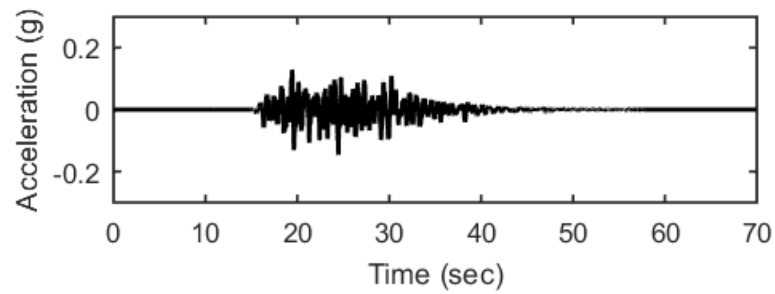
Profile outputs for Motion: FEE1



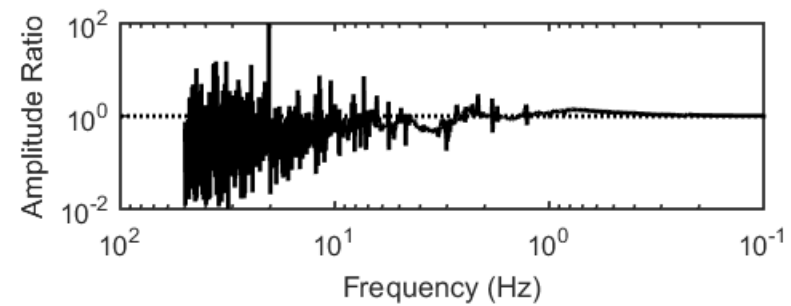
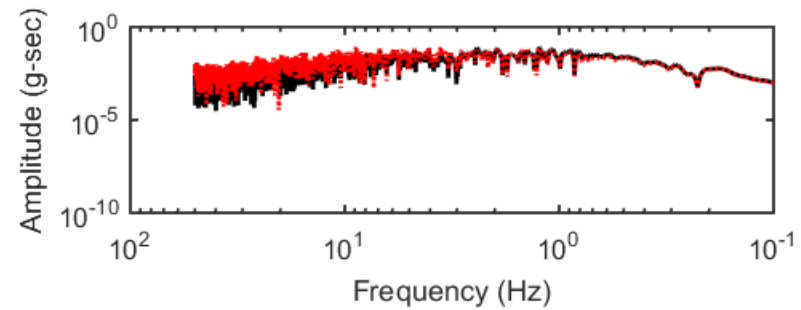
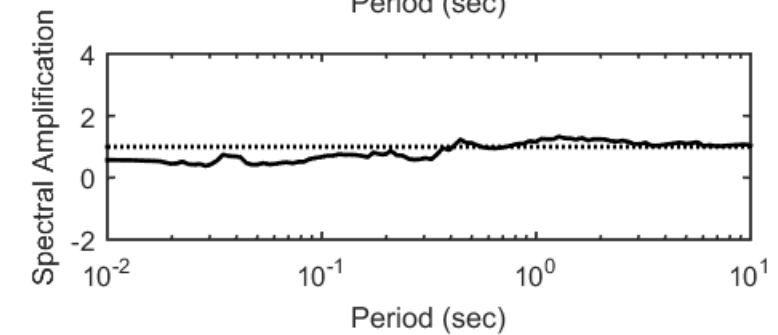
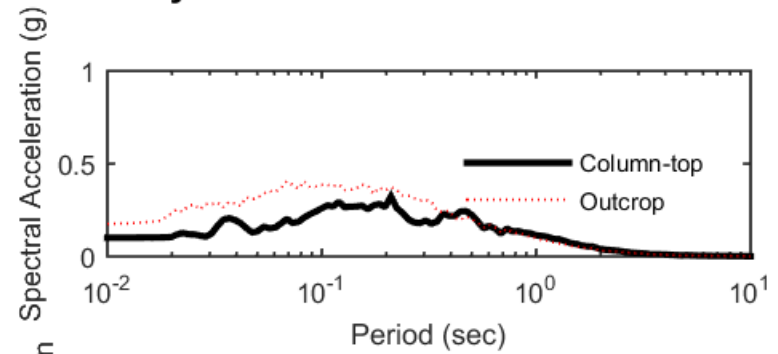
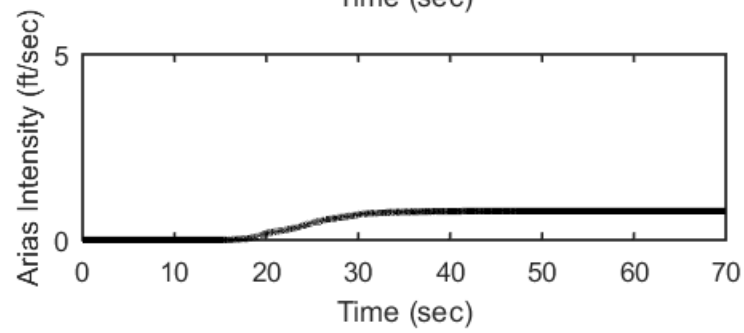
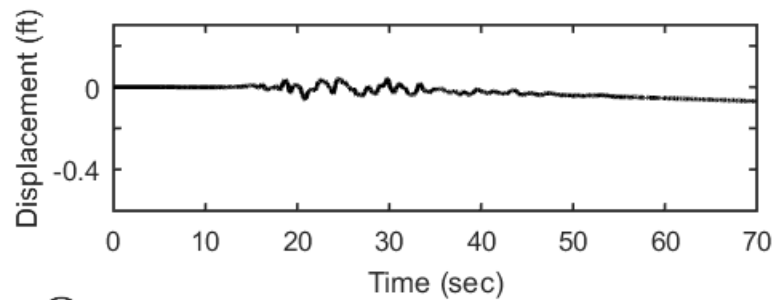
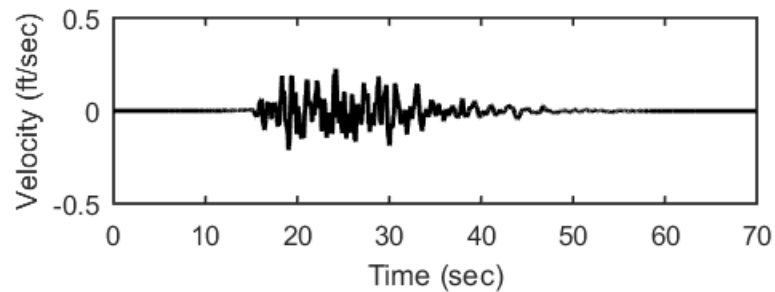
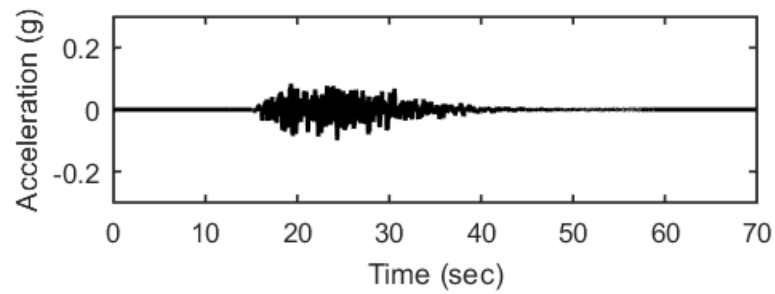
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



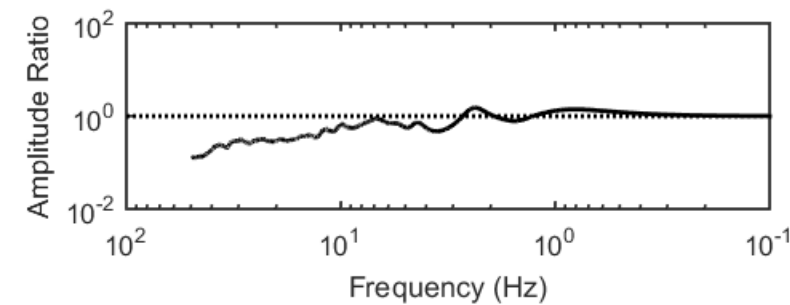
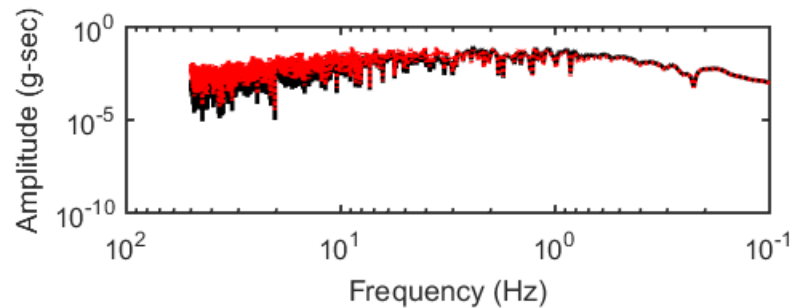
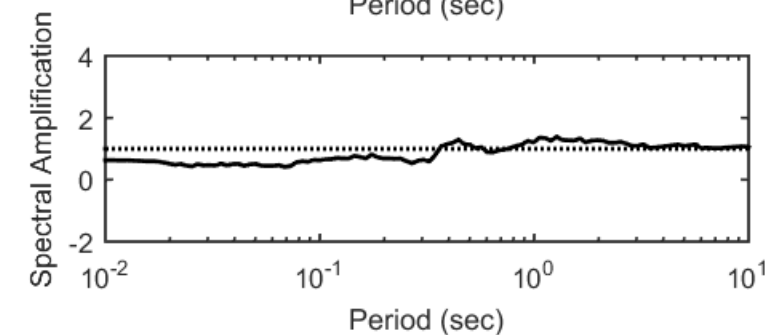
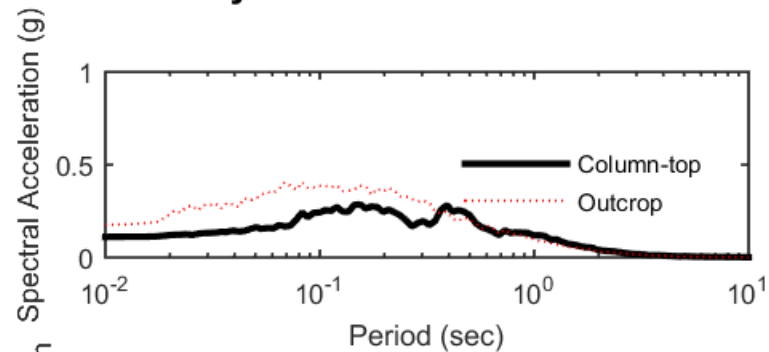
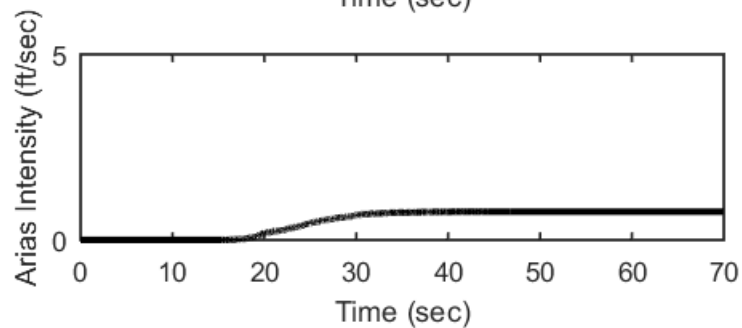
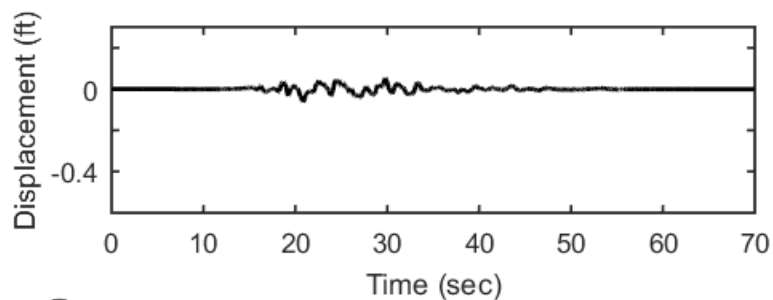
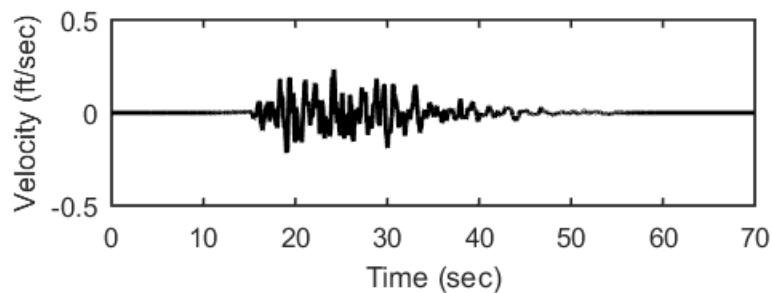
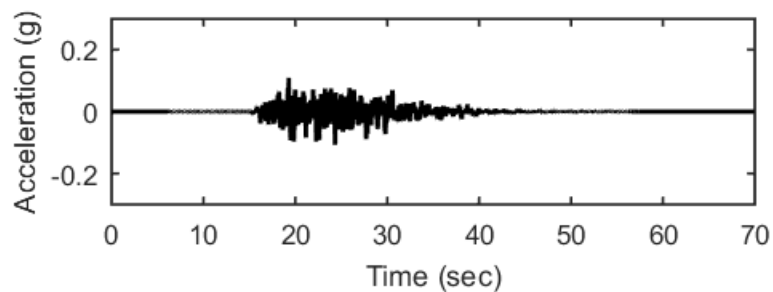
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2

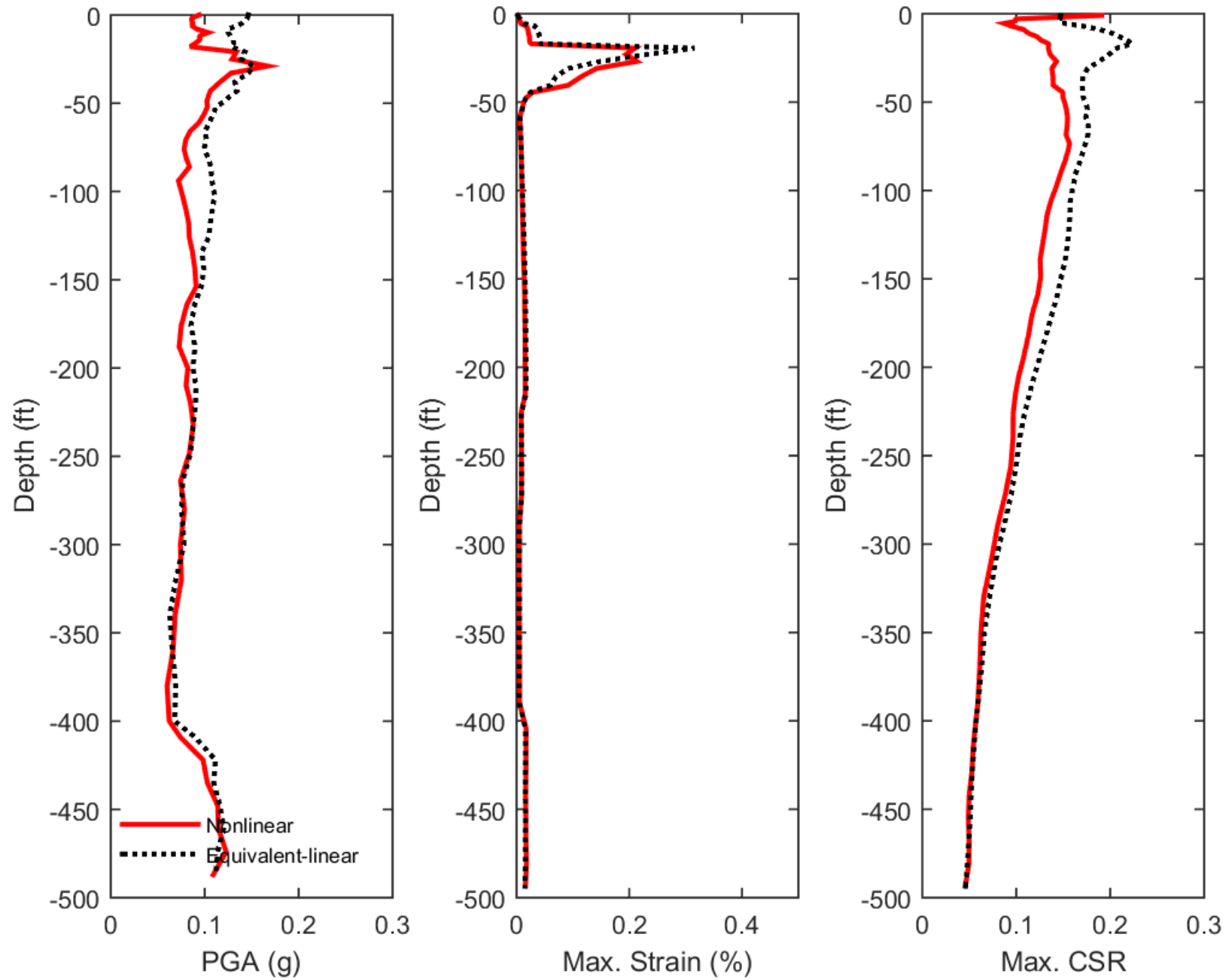


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2

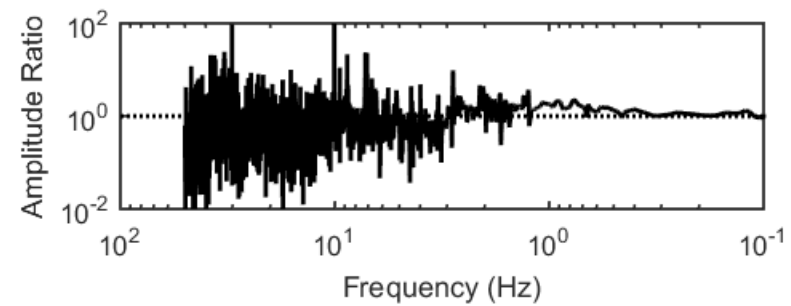
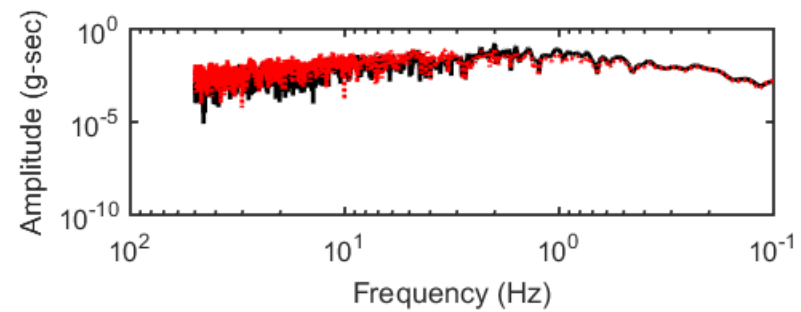
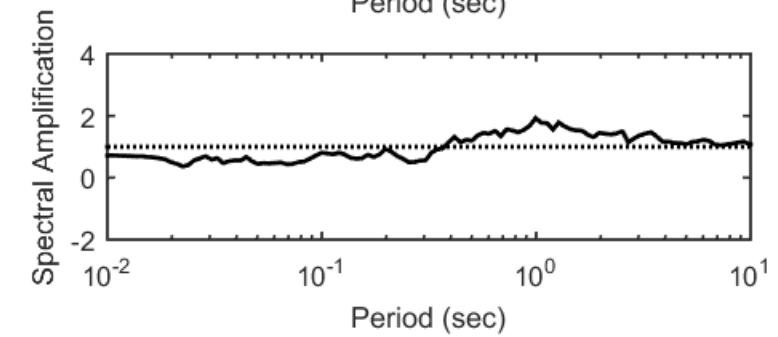
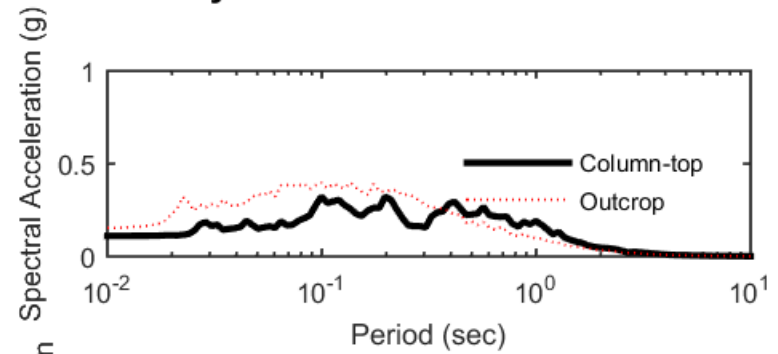
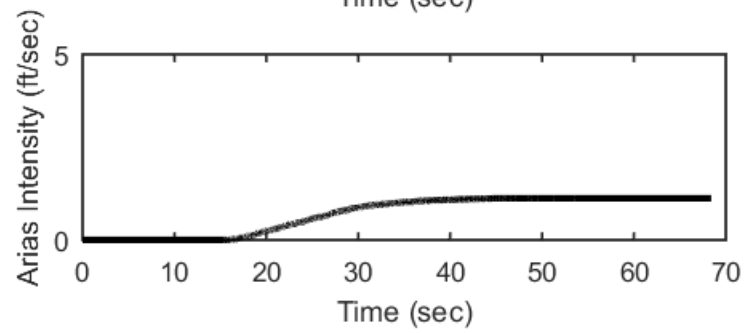
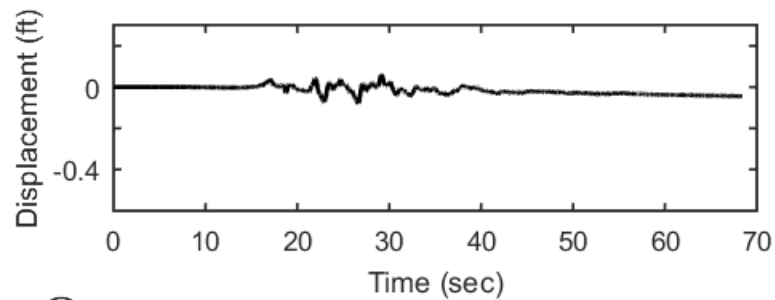
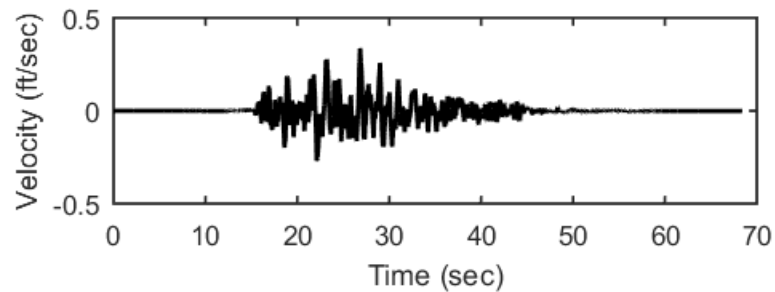
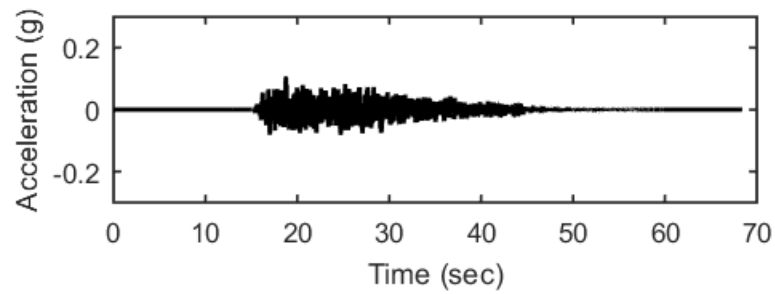




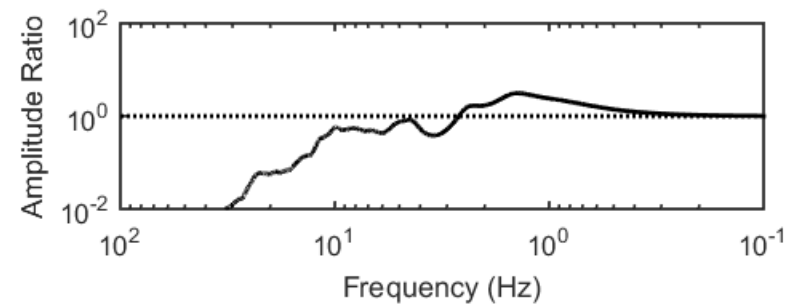
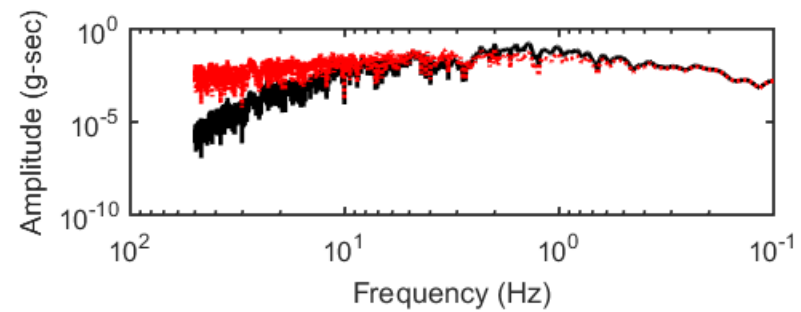
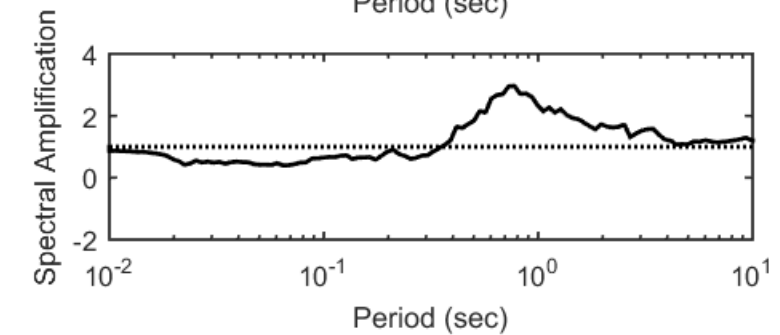
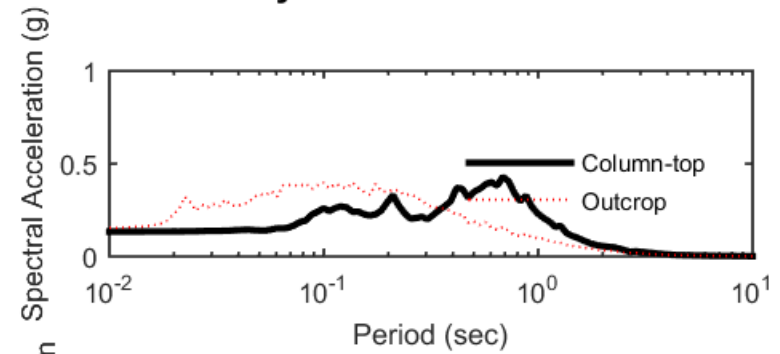
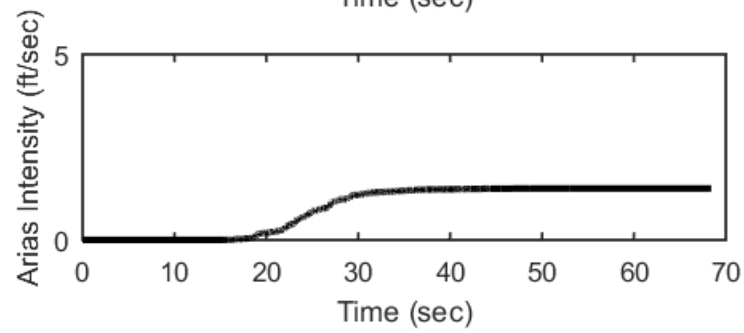
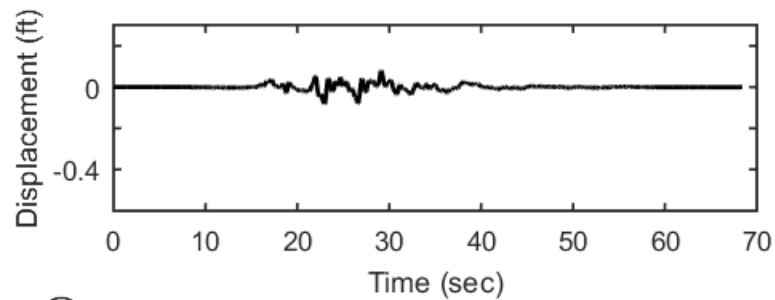
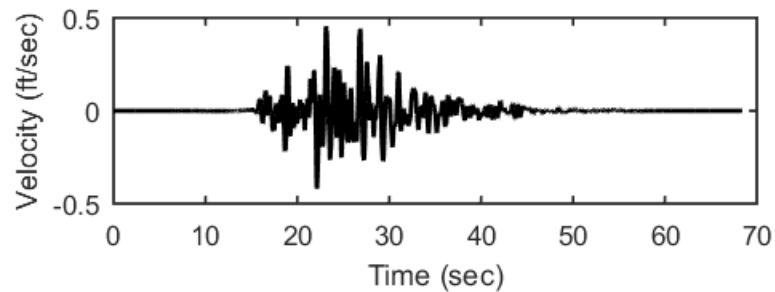
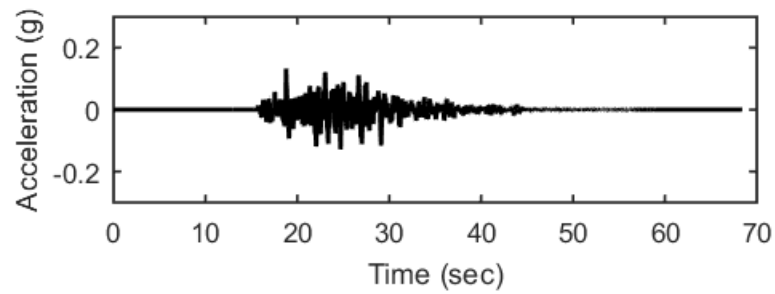
### Profile outputs for Motion: FEE2



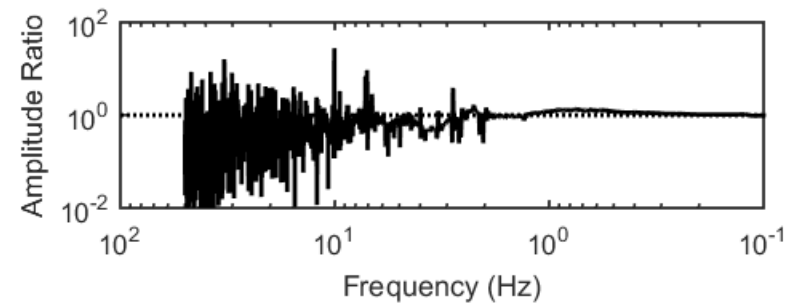
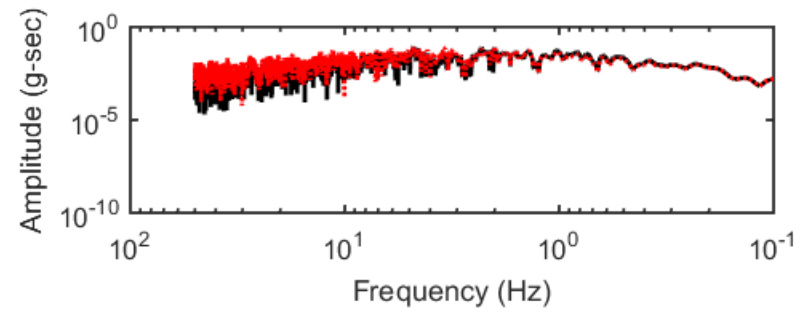
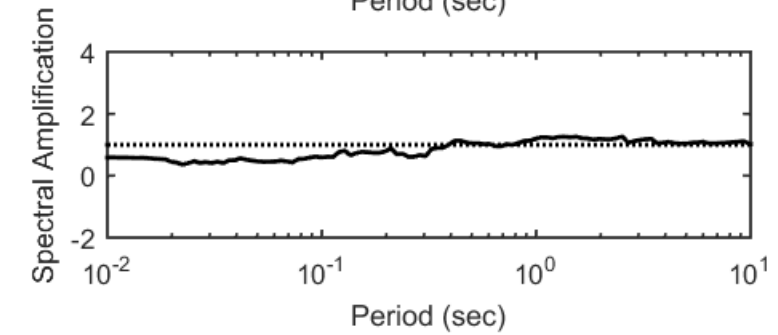
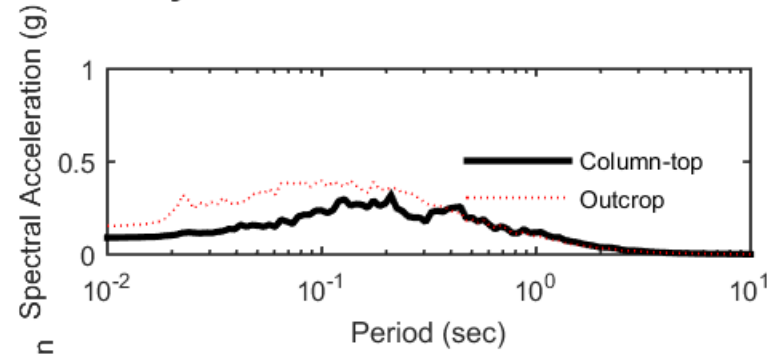
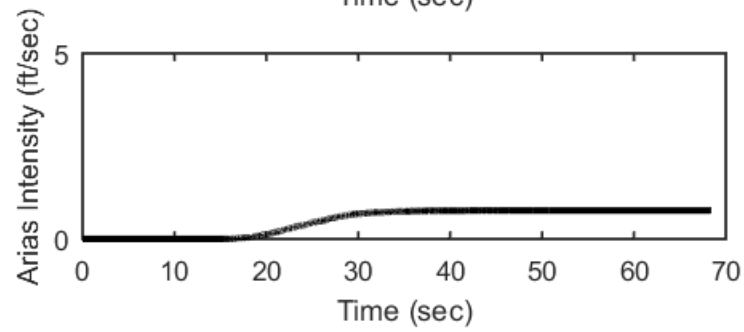
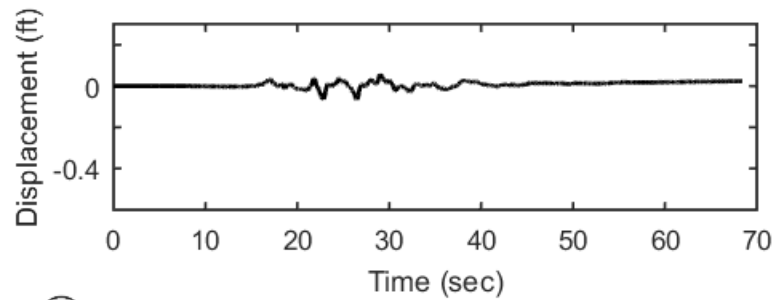
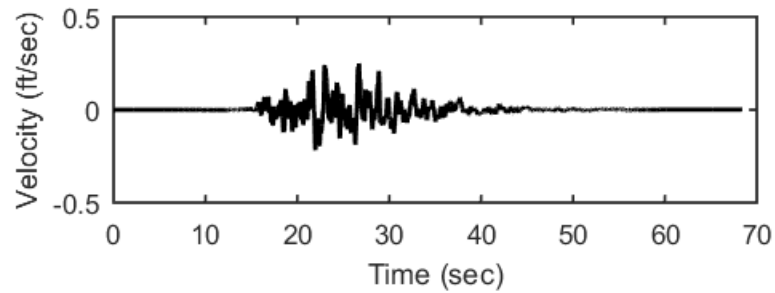
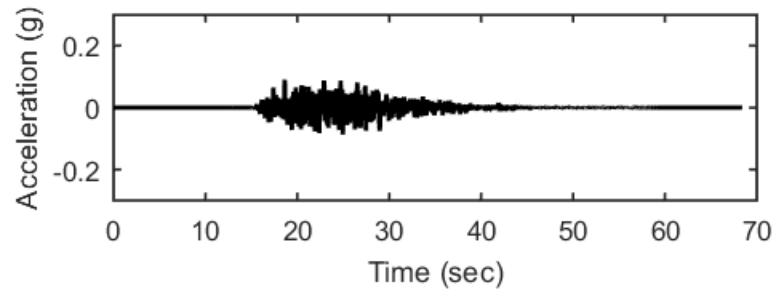
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



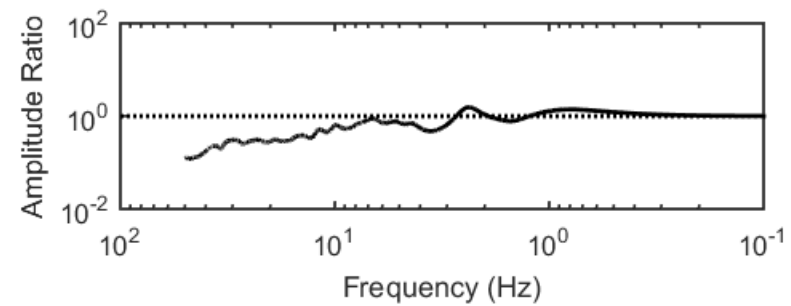
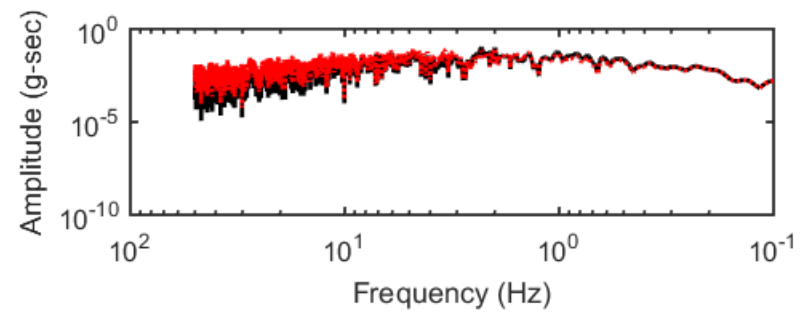
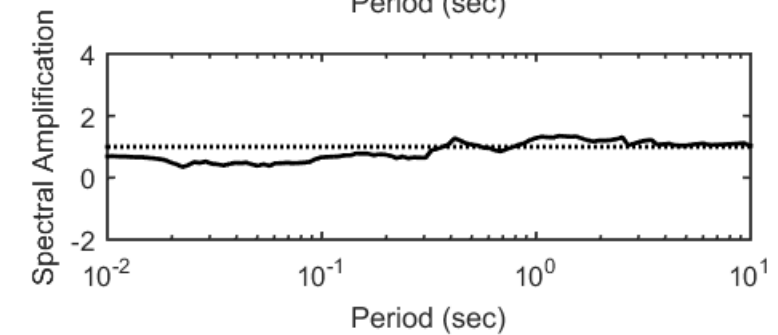
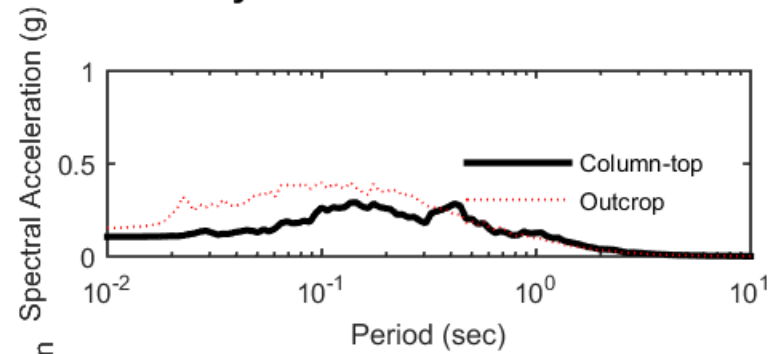
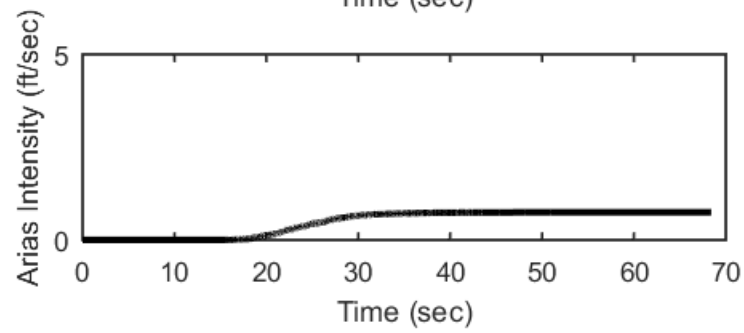
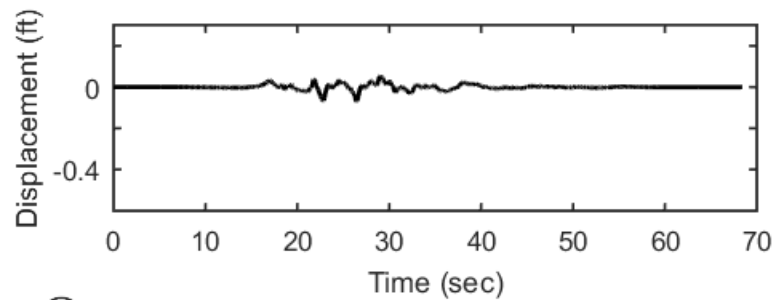
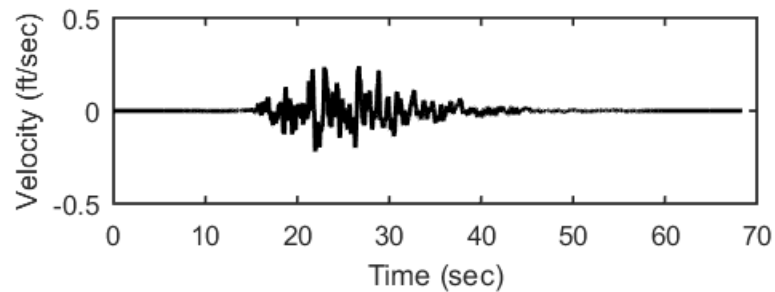
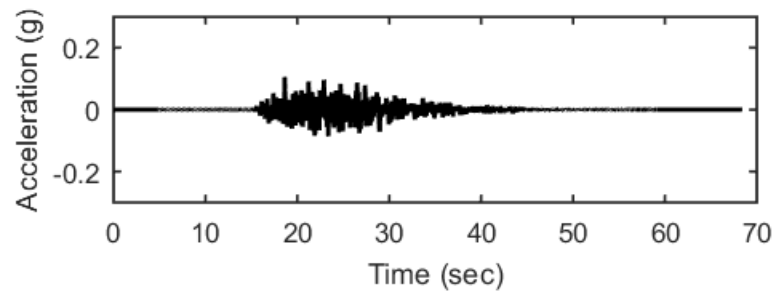
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



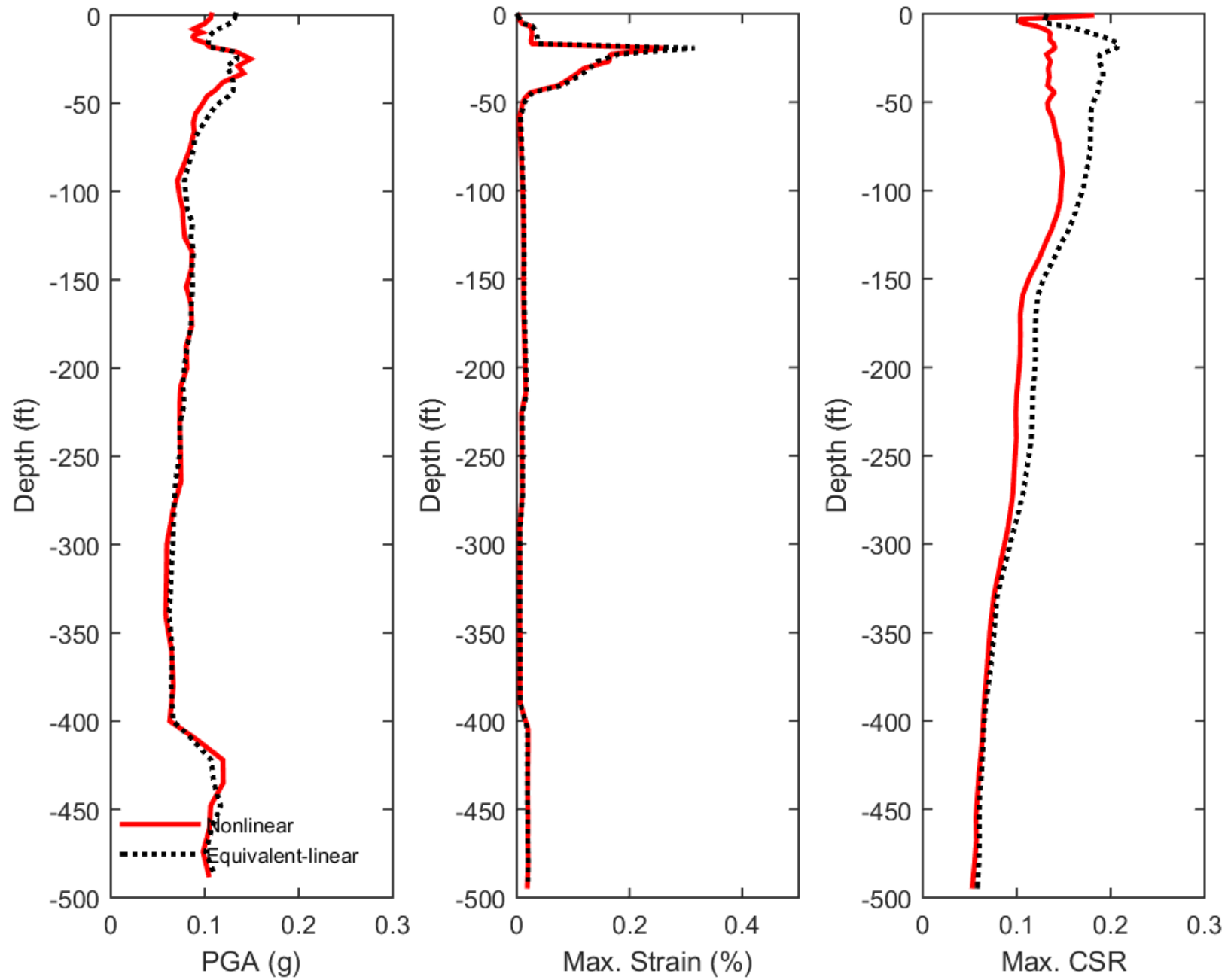
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



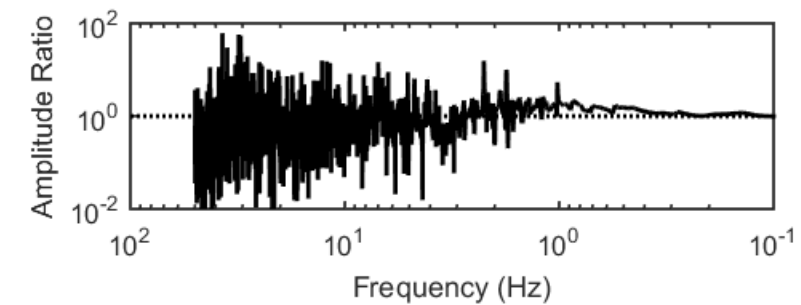
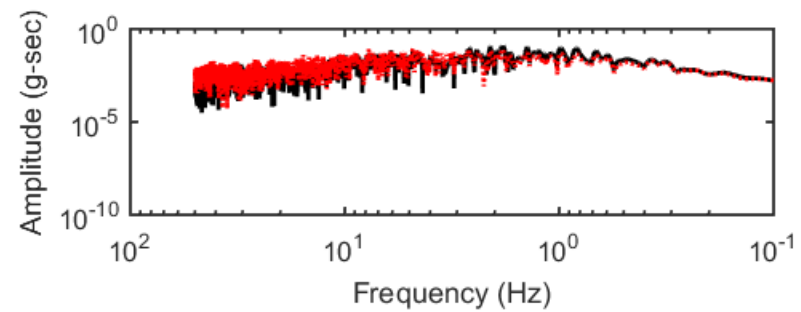
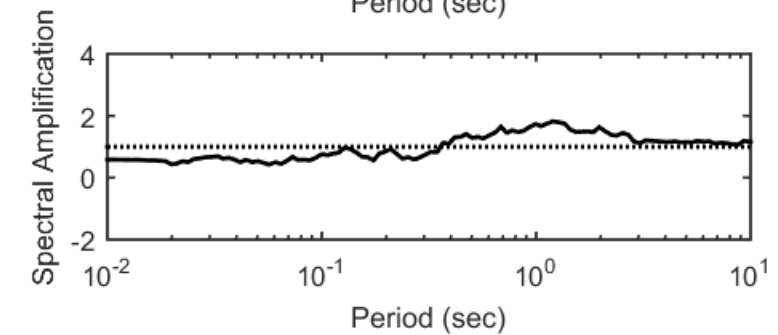
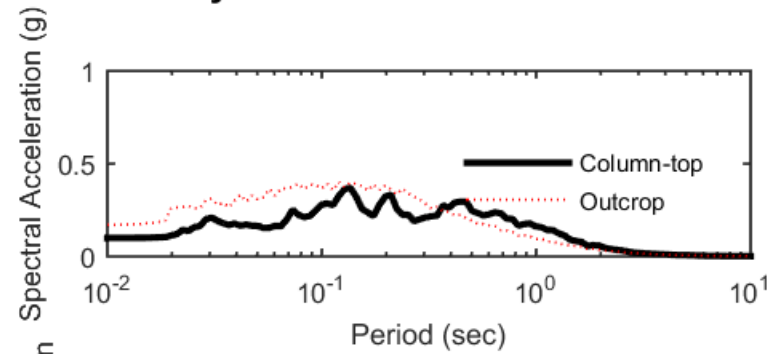
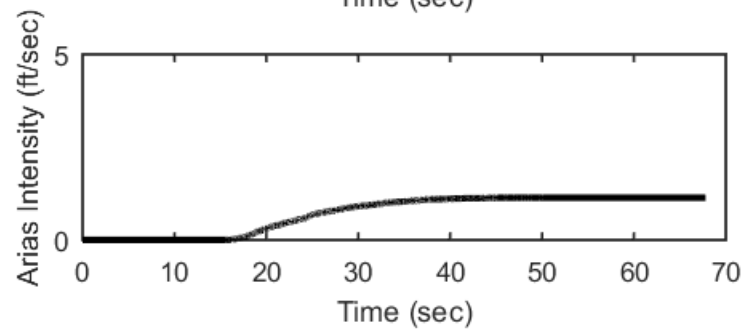
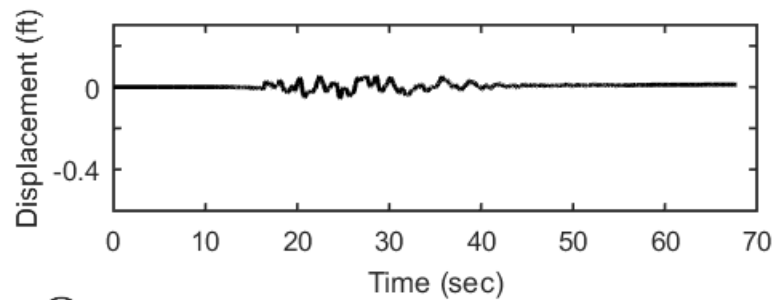
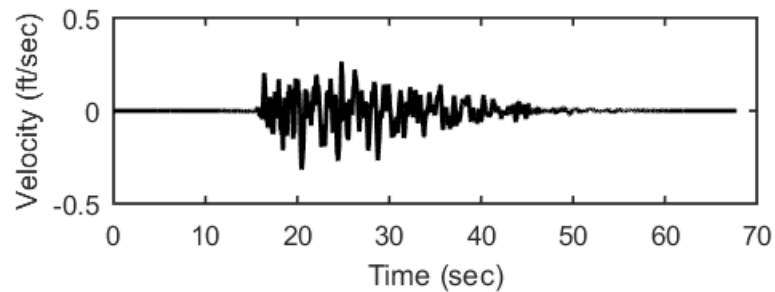
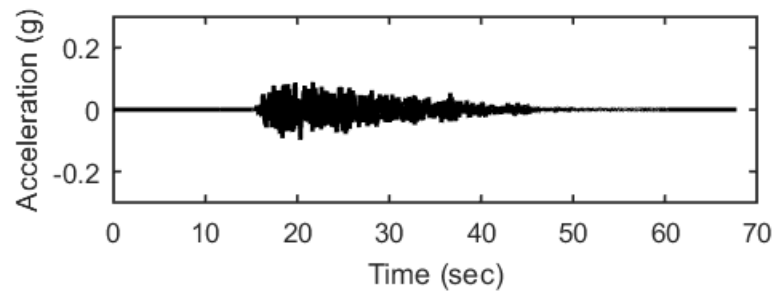
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



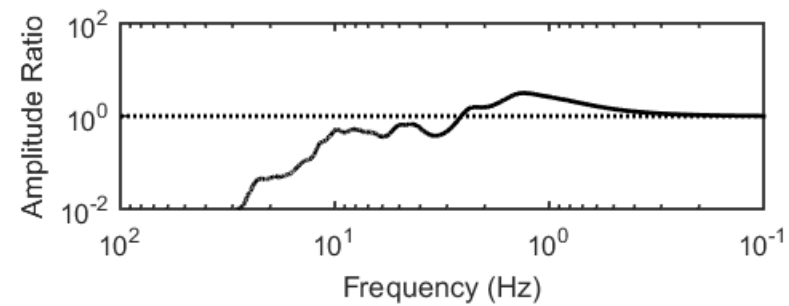
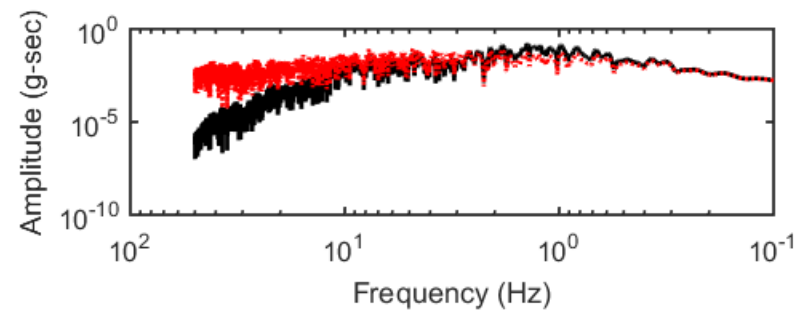
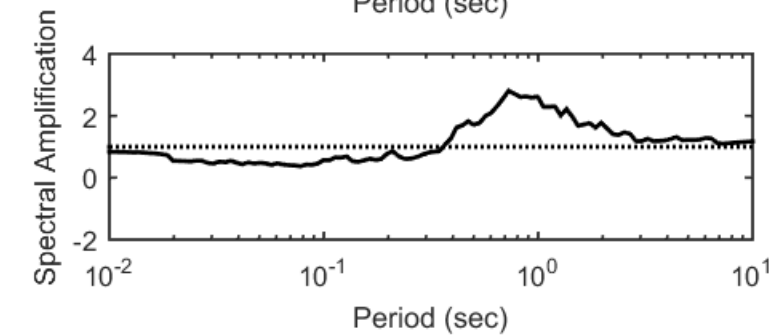
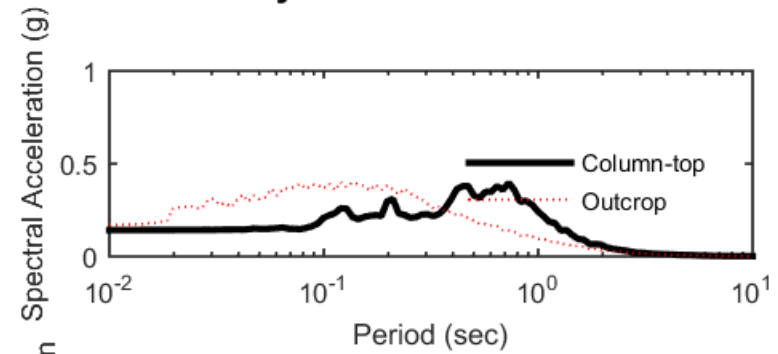
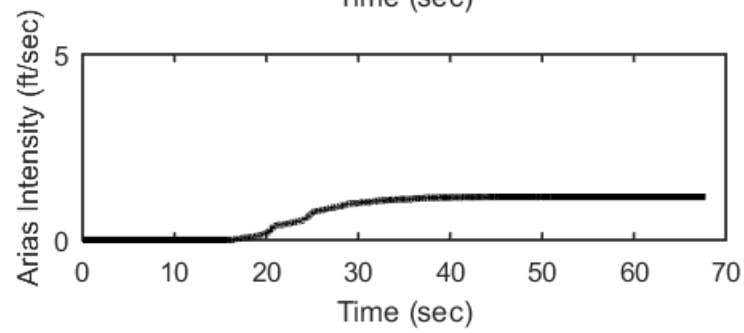
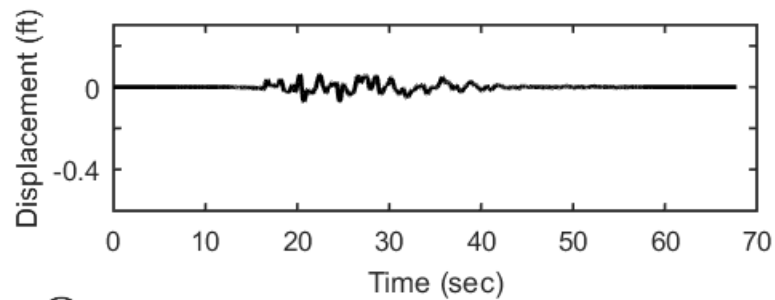
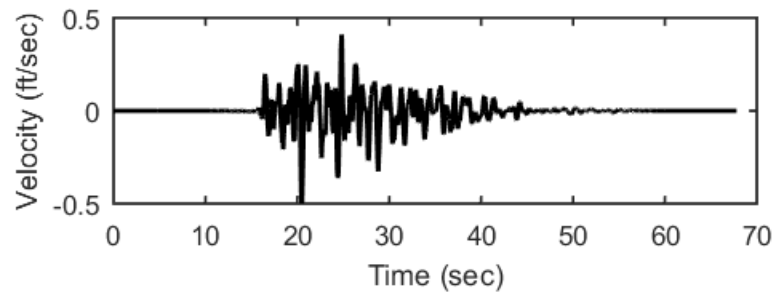
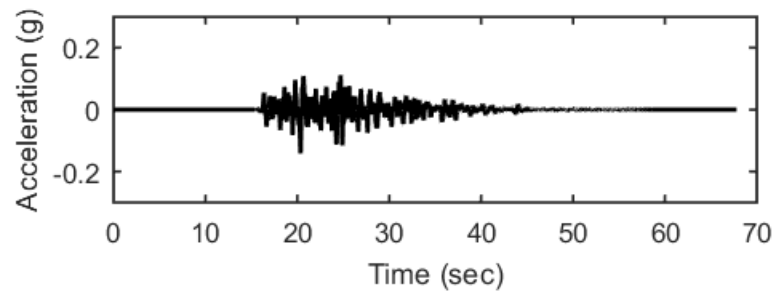
### Profile outputs for Motion: FEE3



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4

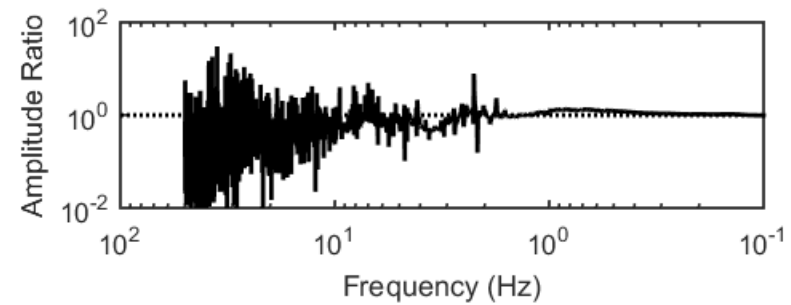
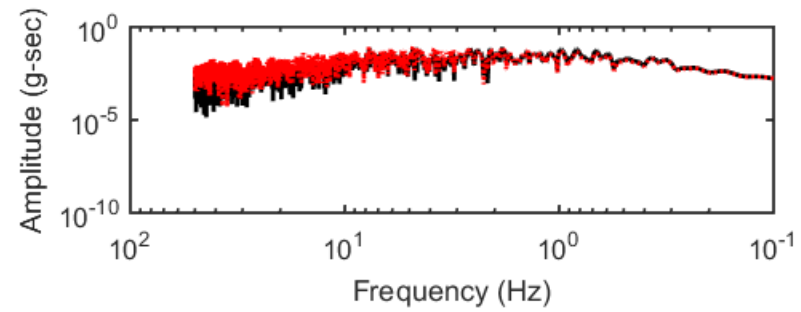
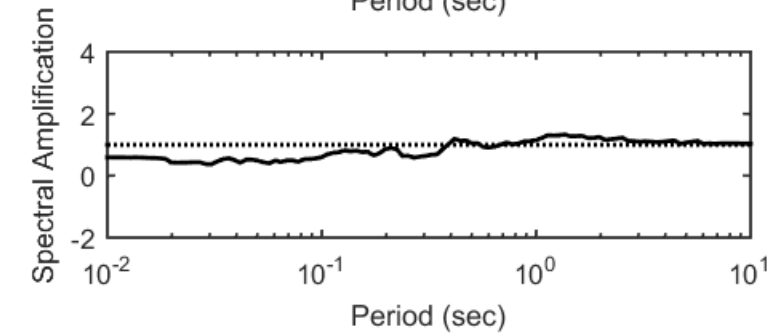
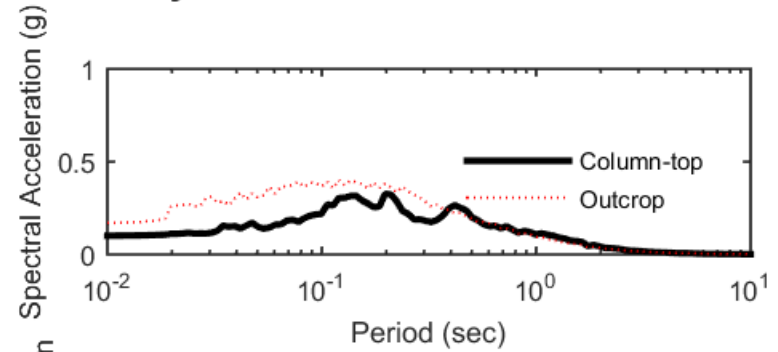
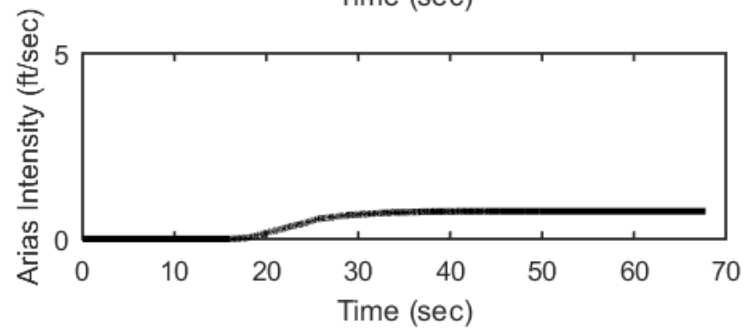
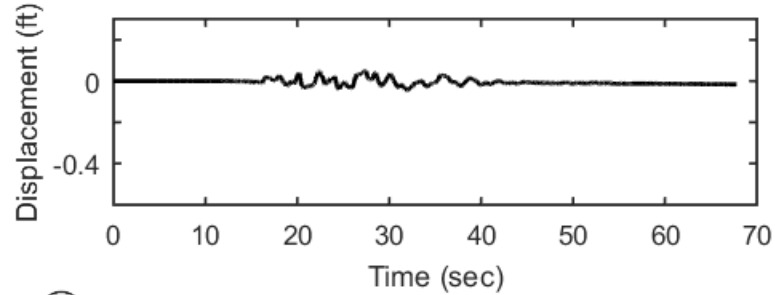
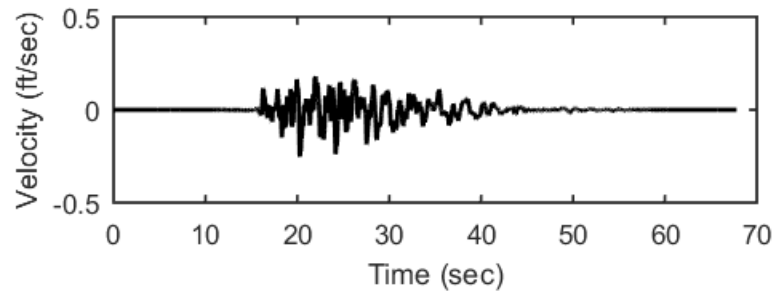
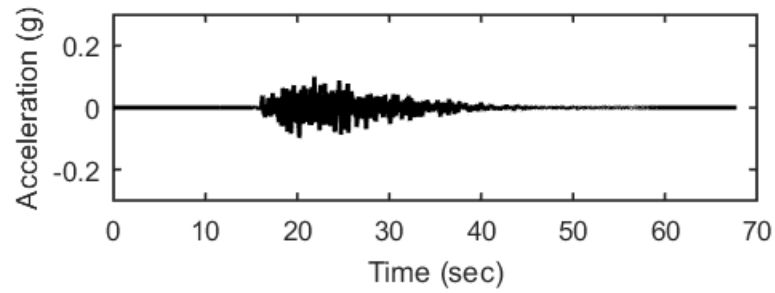


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4

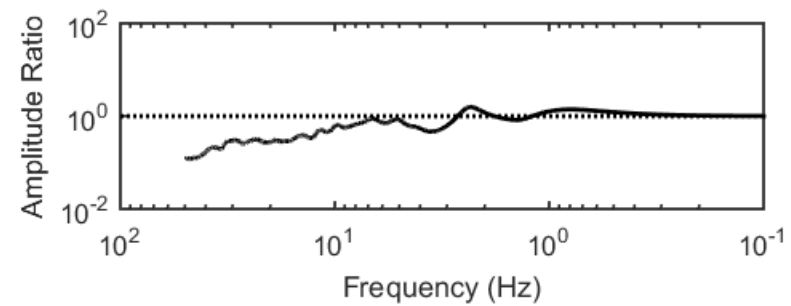
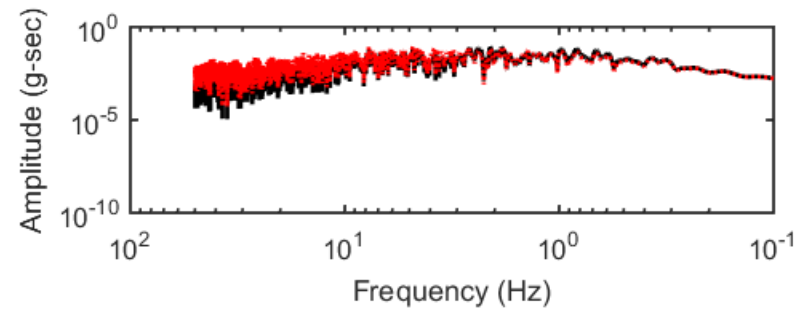
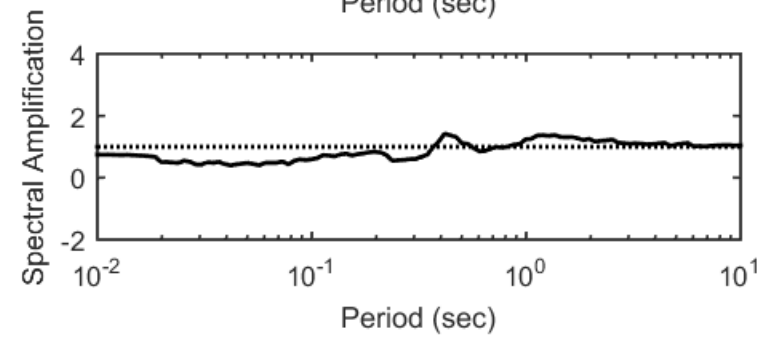
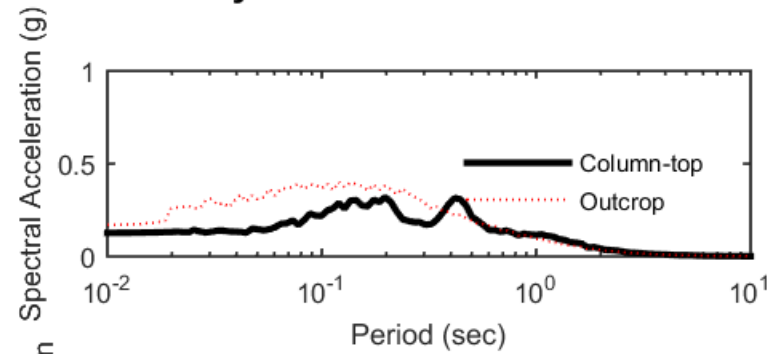
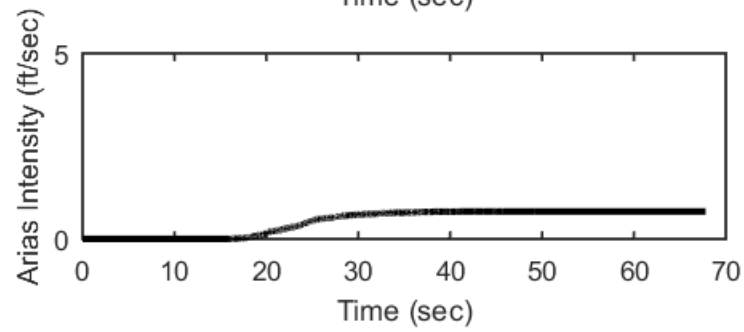
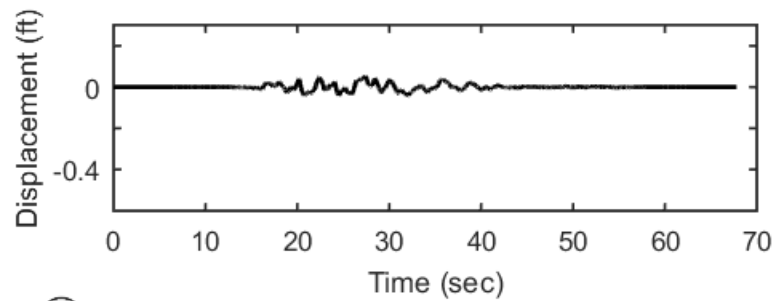
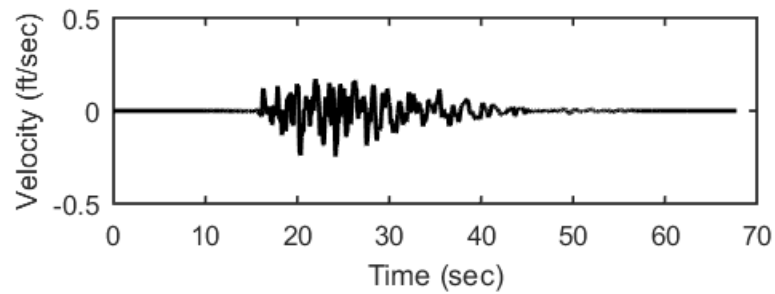
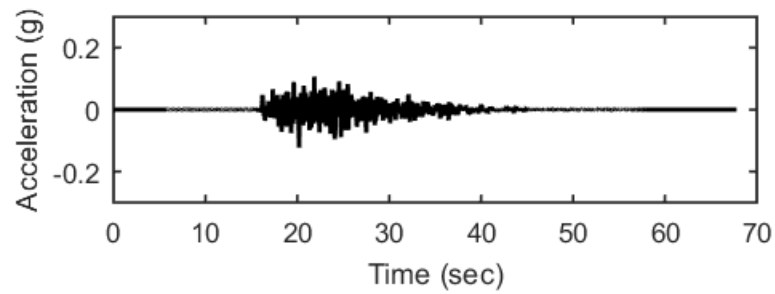




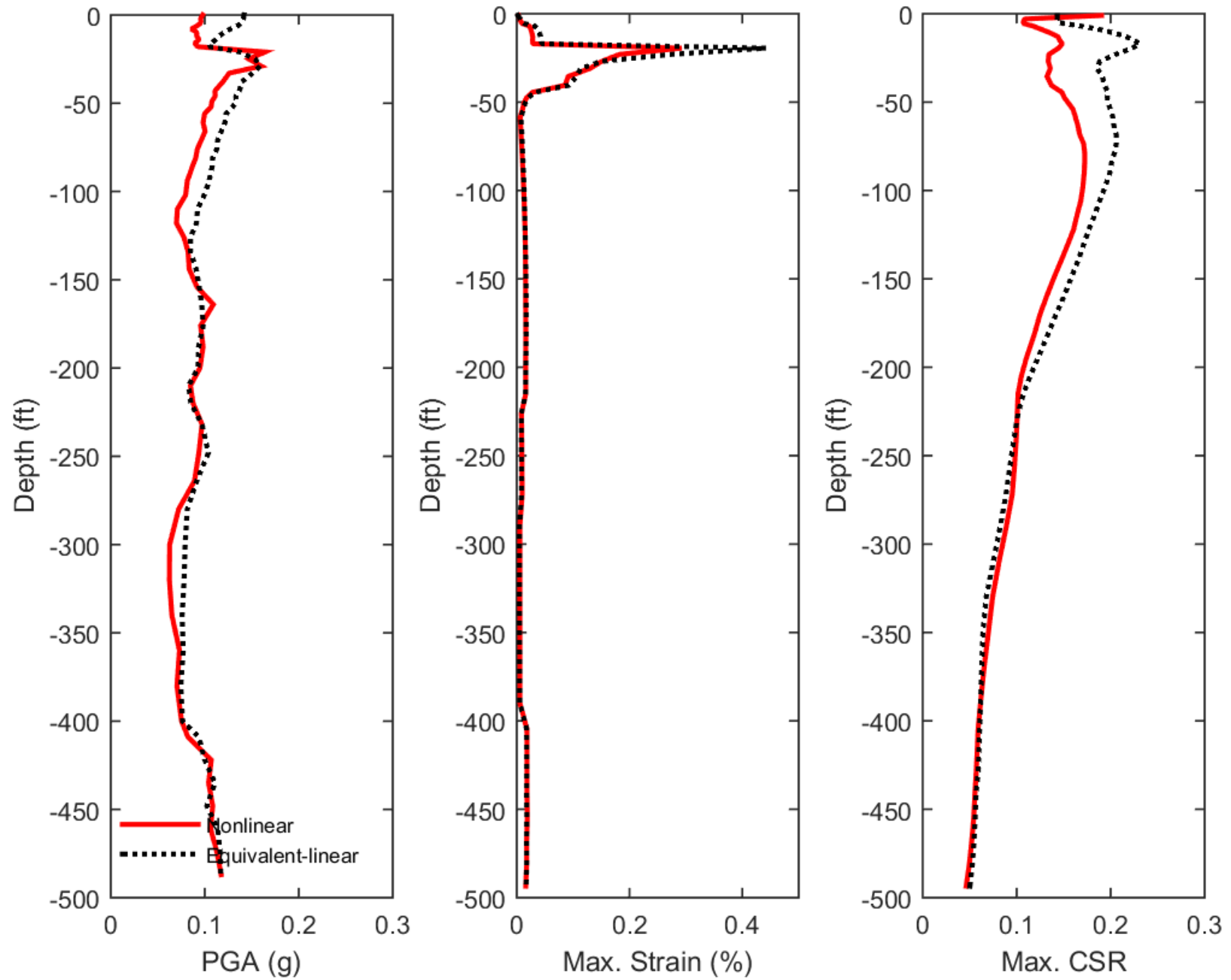
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



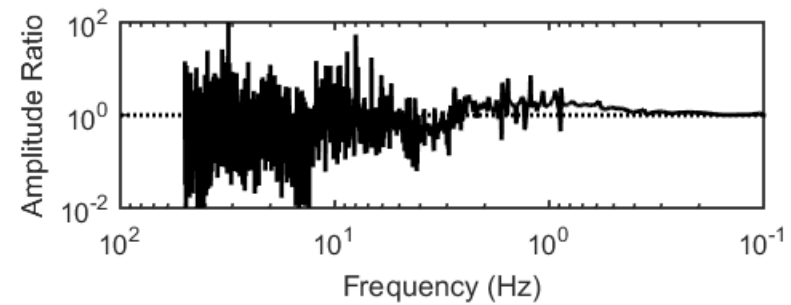
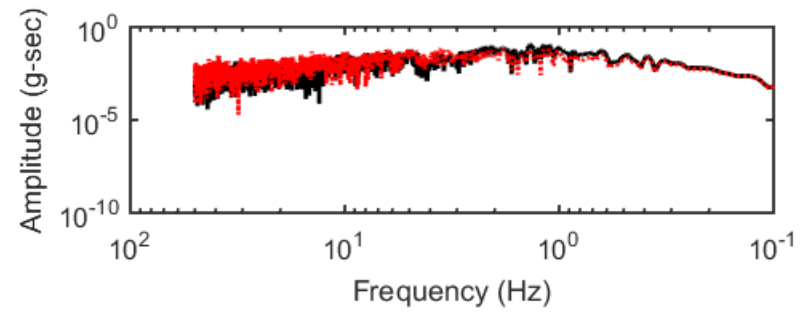
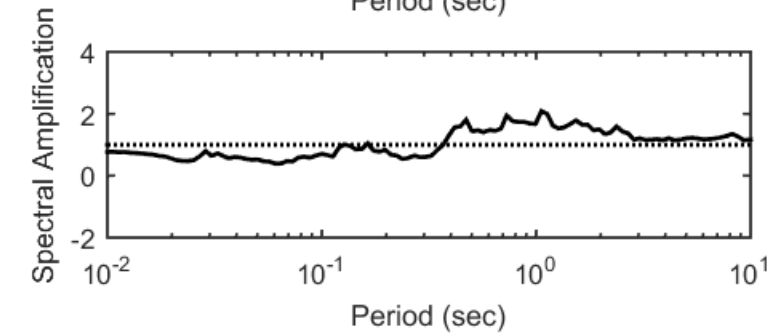
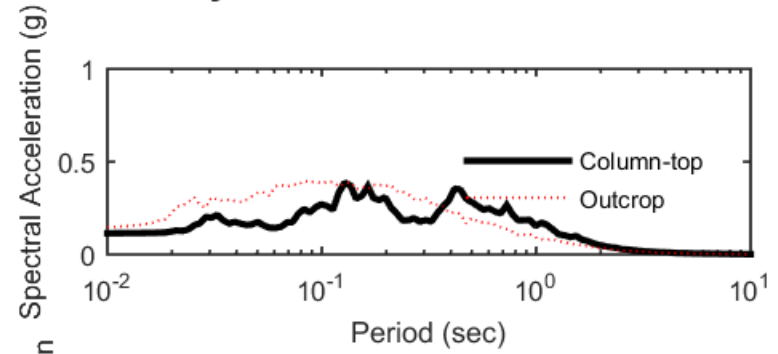
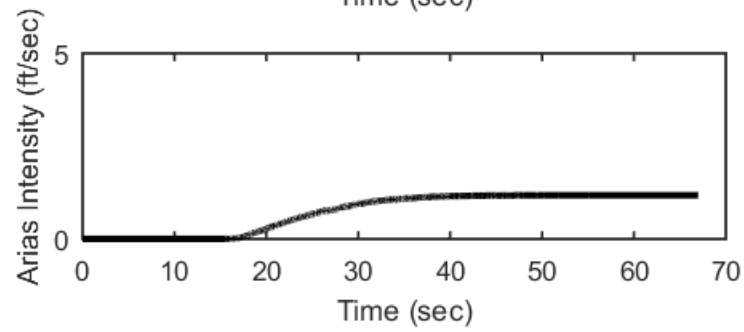
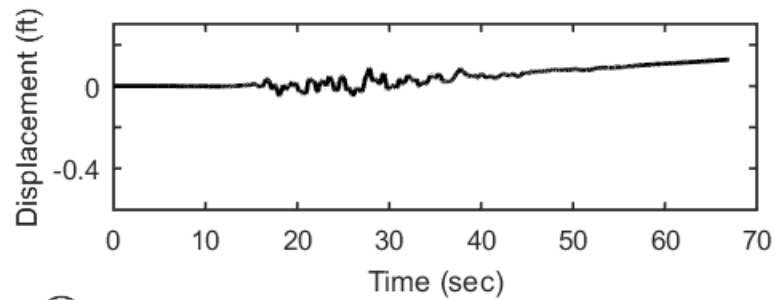
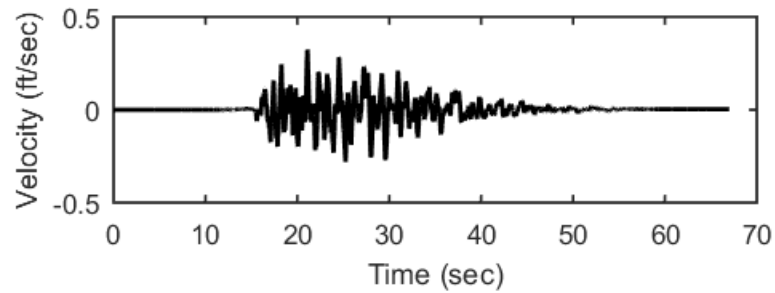
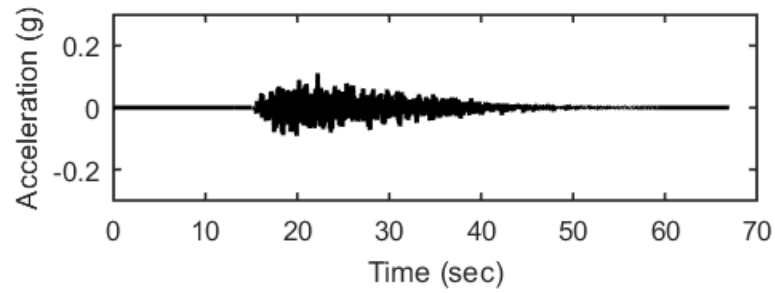
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



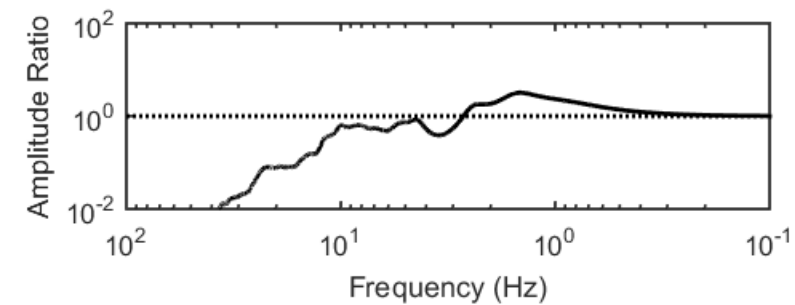
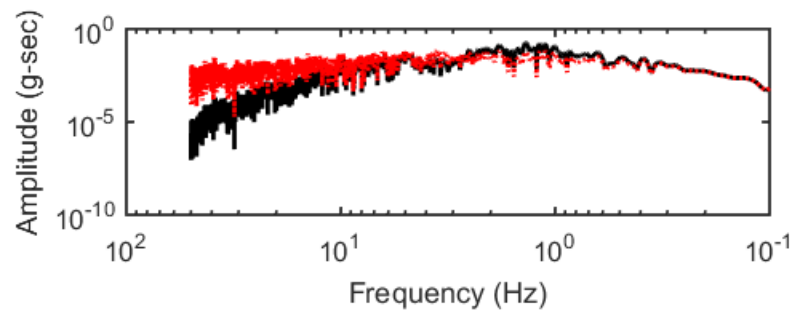
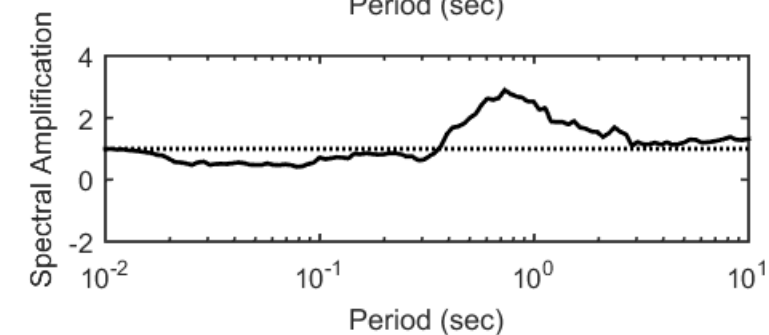
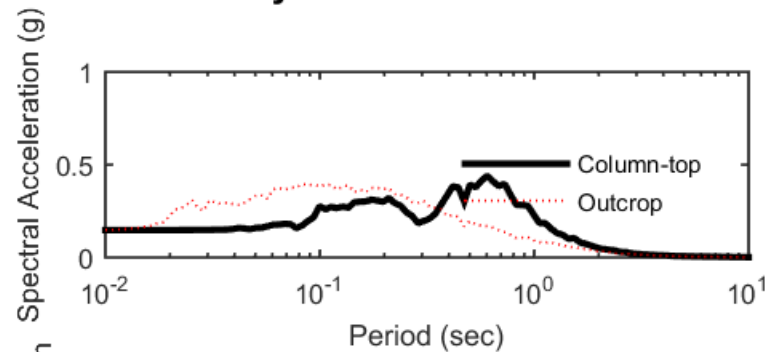
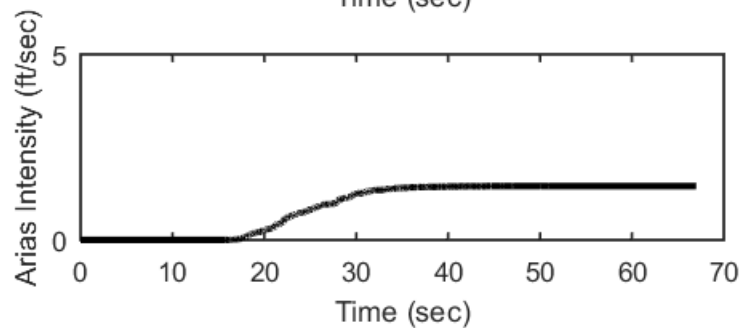
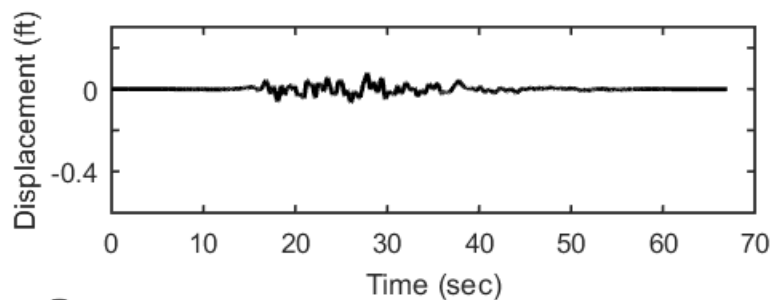
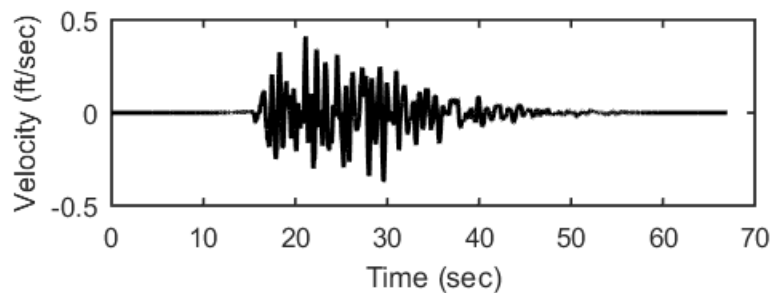
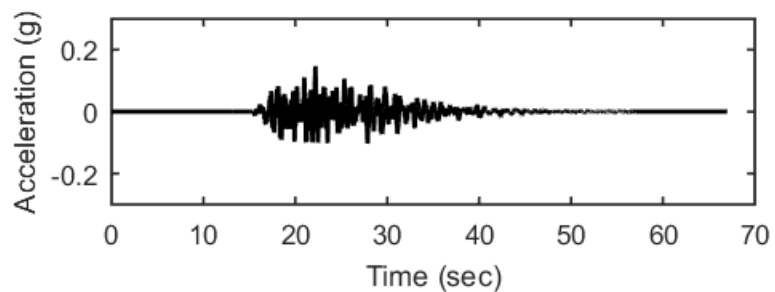
### Profile outputs for Motion: FEE4



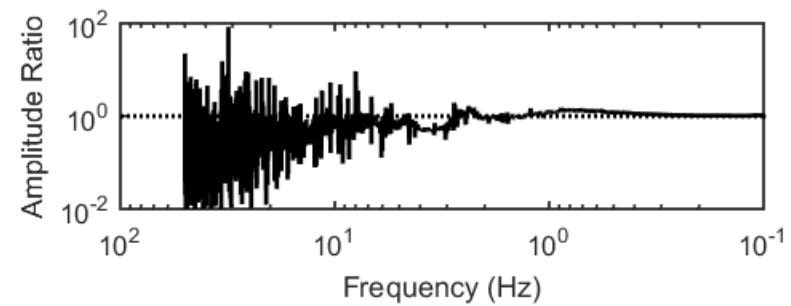
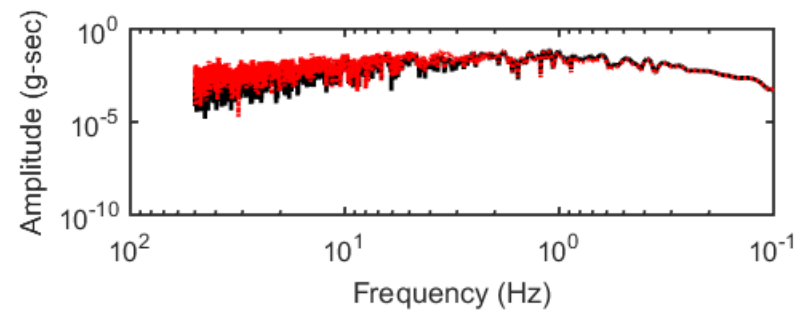
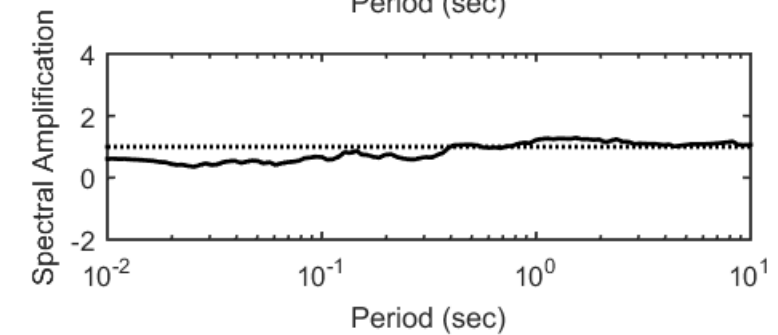
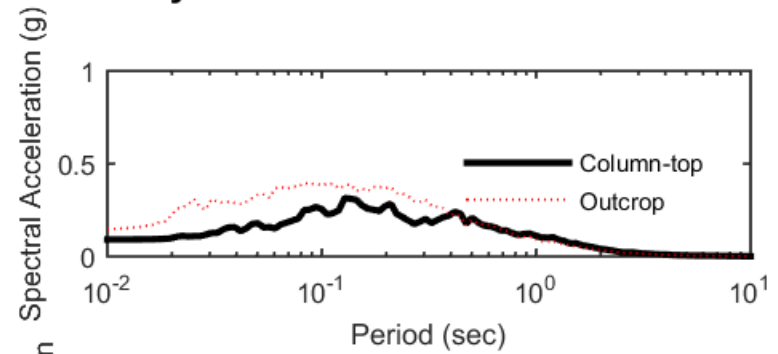
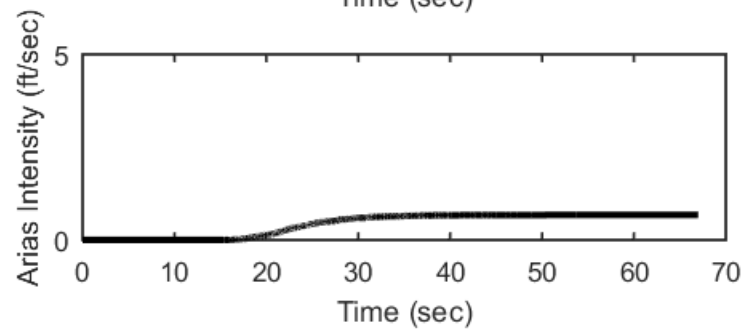
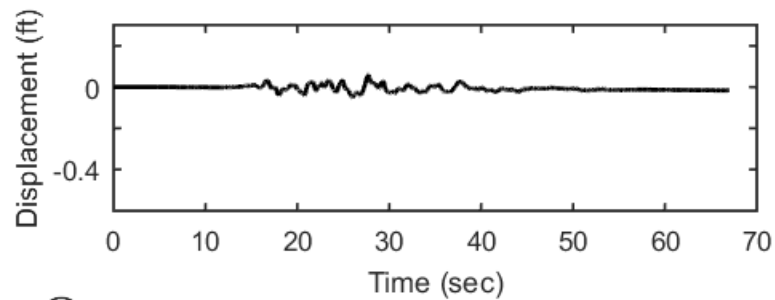
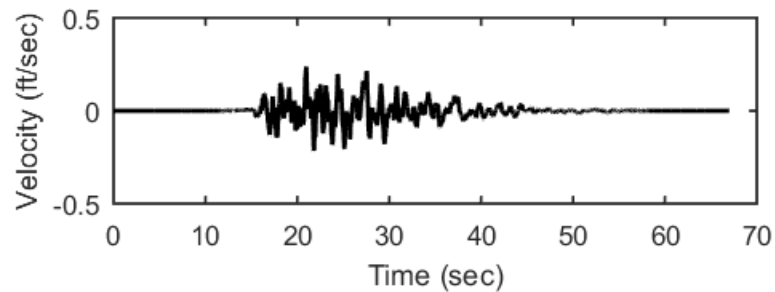
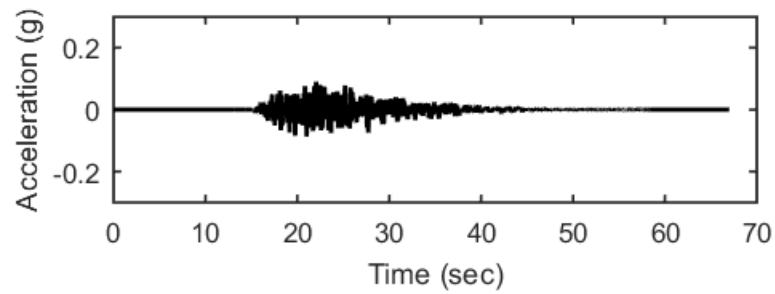
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



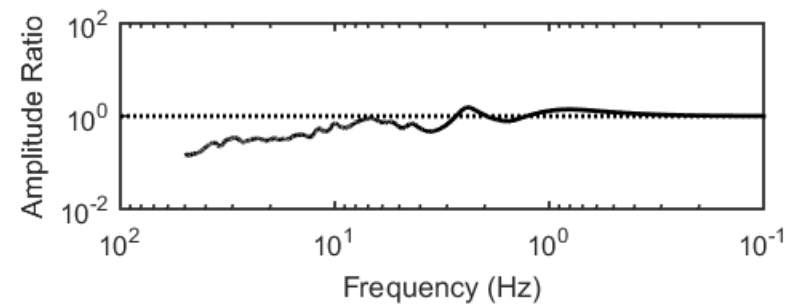
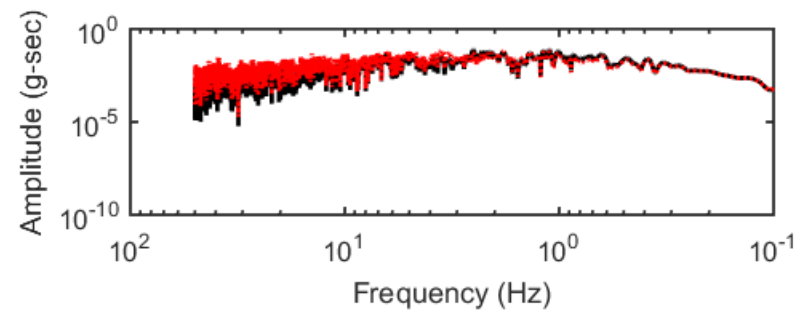
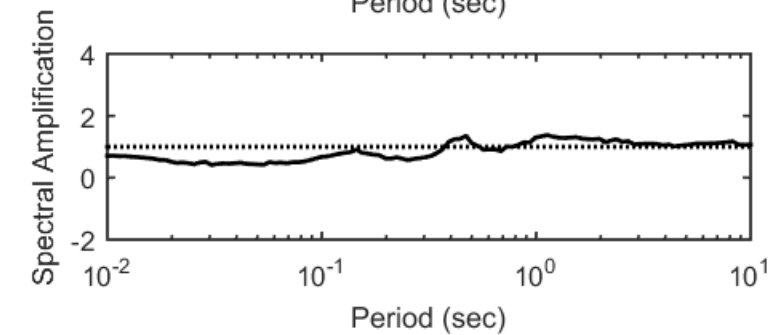
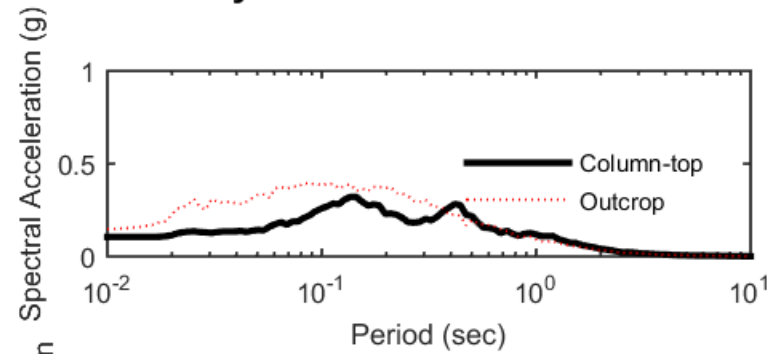
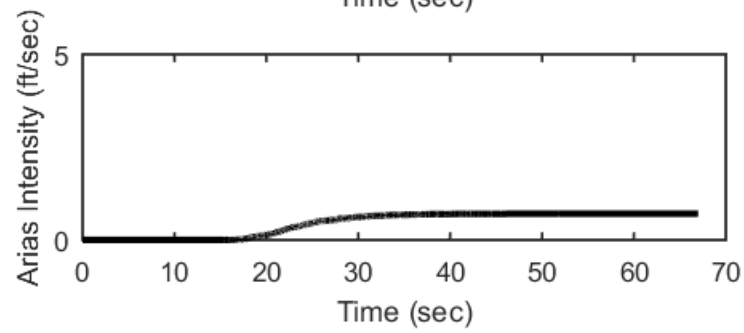
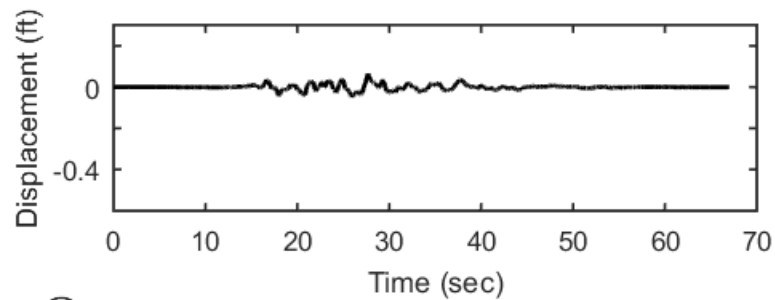
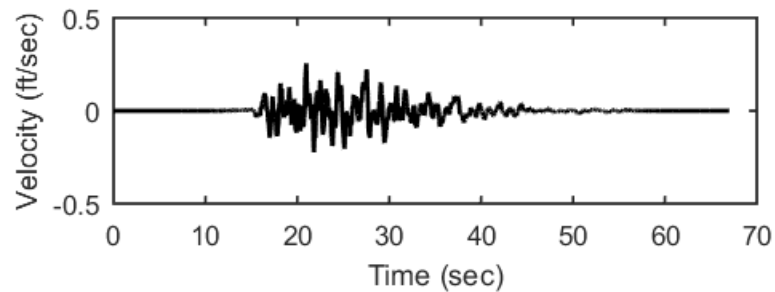
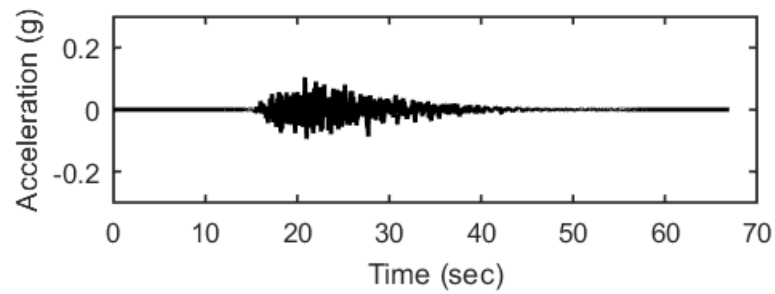
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



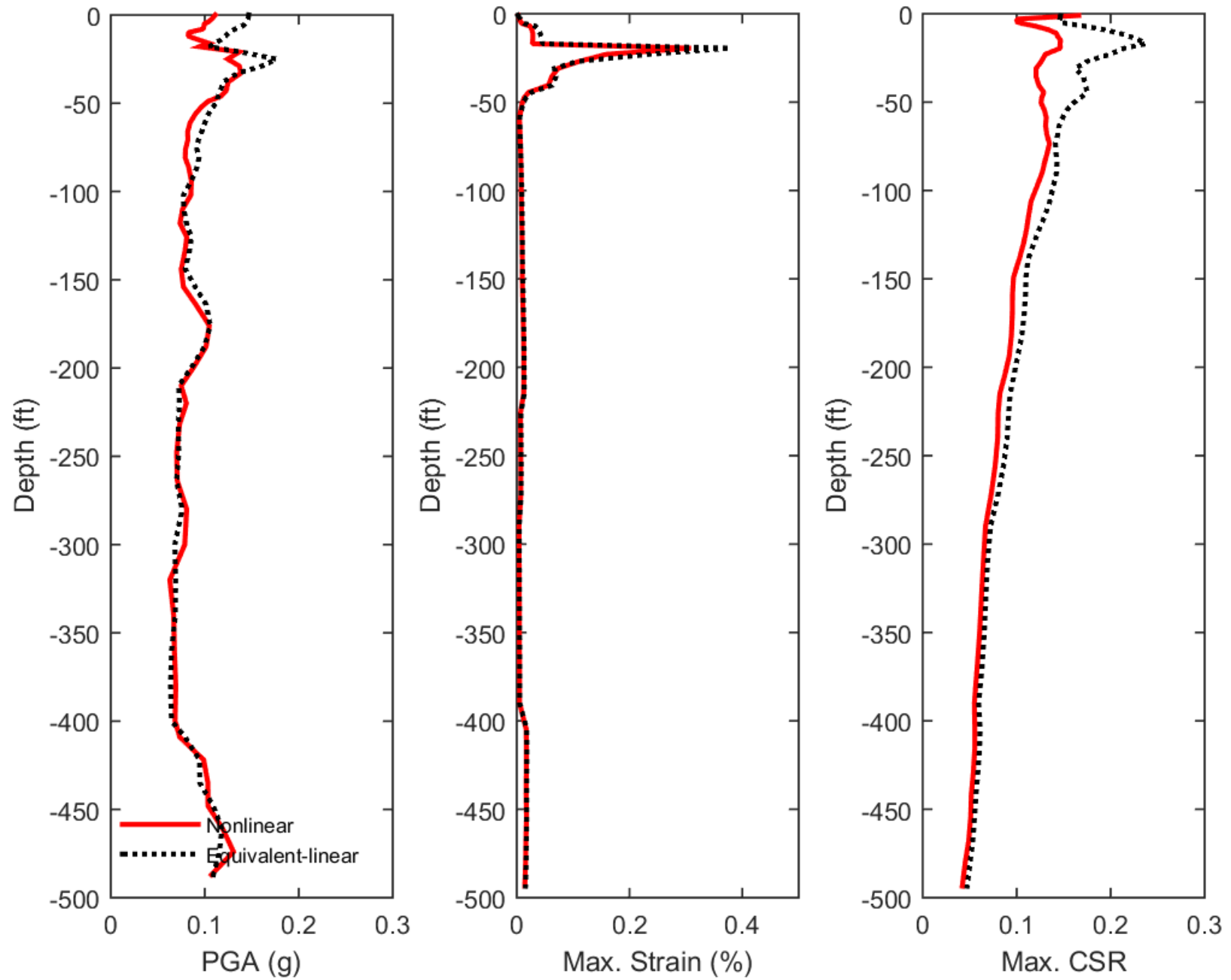
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5

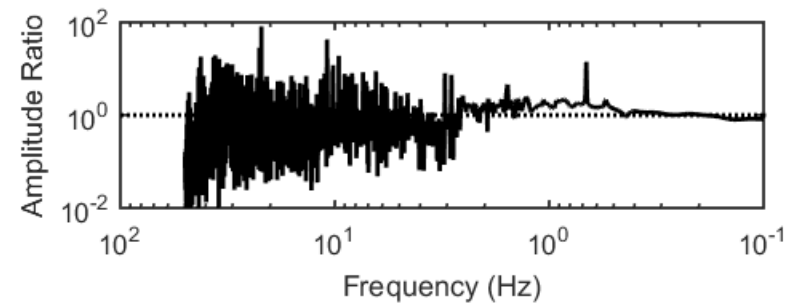
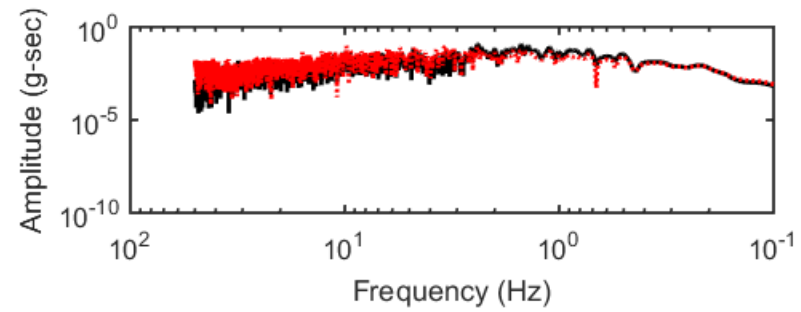
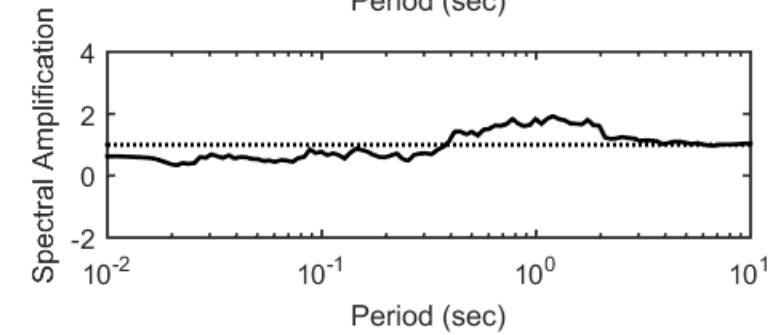
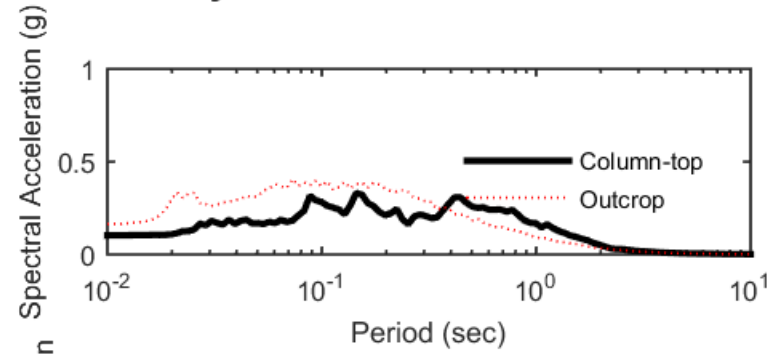
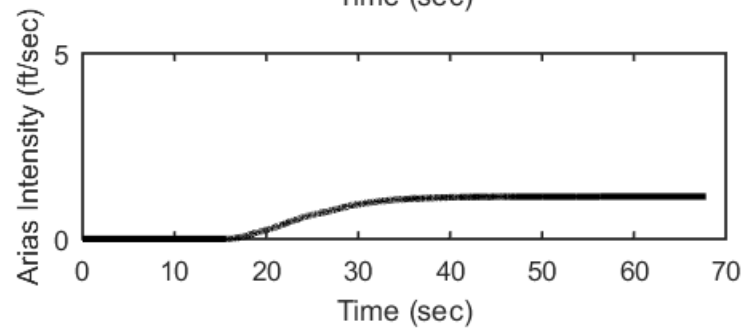
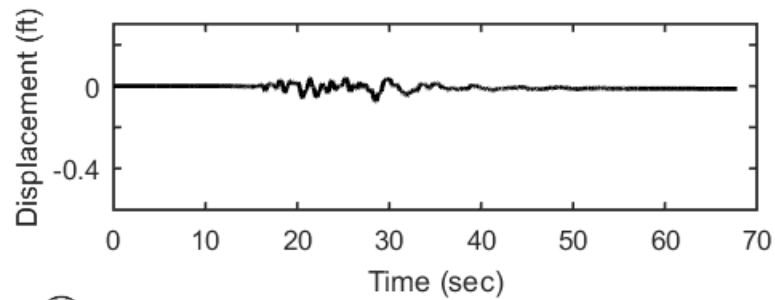
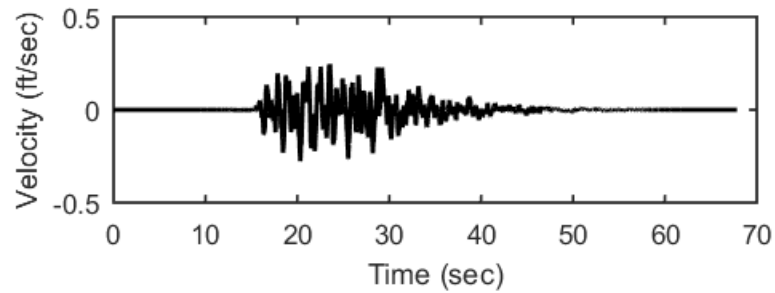
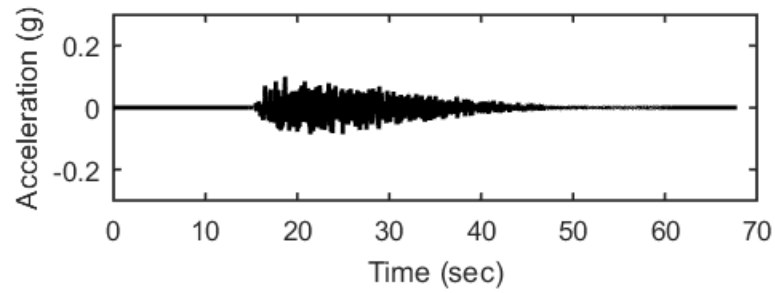


### Profile outputs for Motion: FEE5

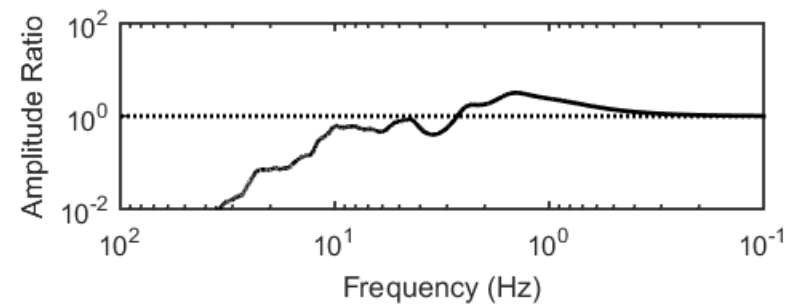
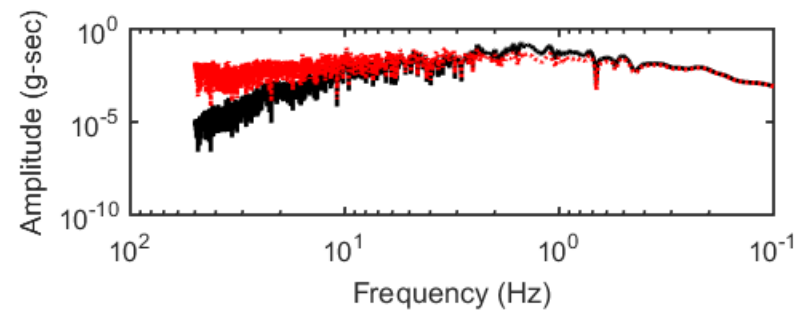
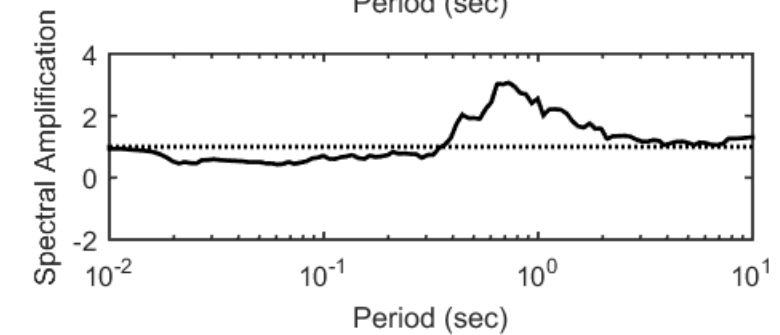
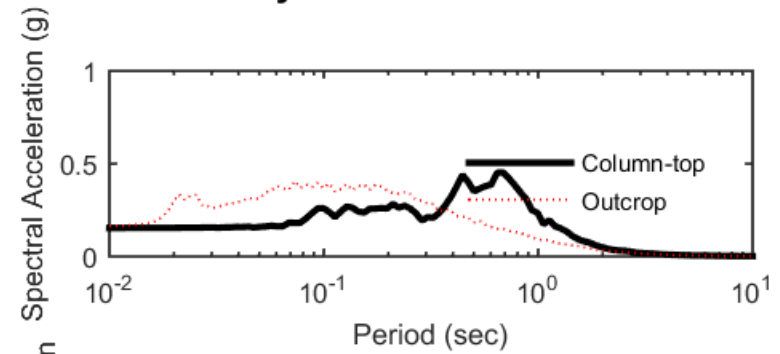
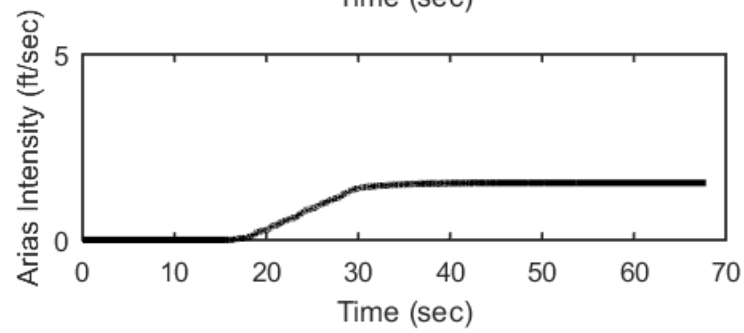
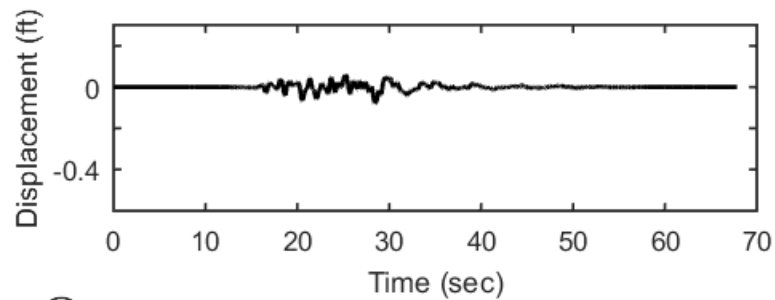
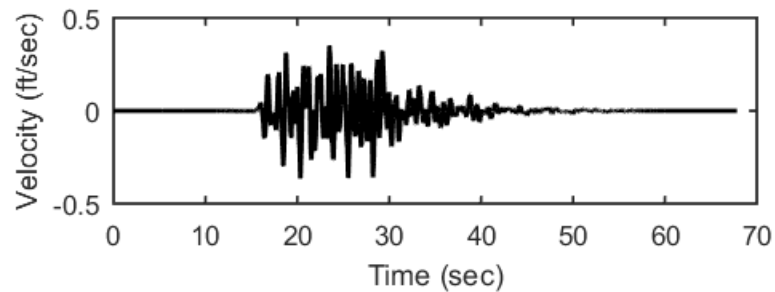
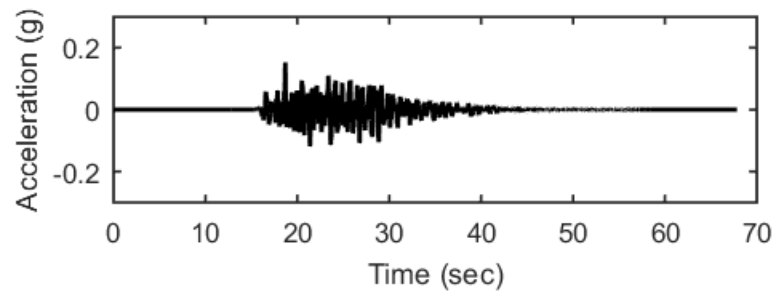




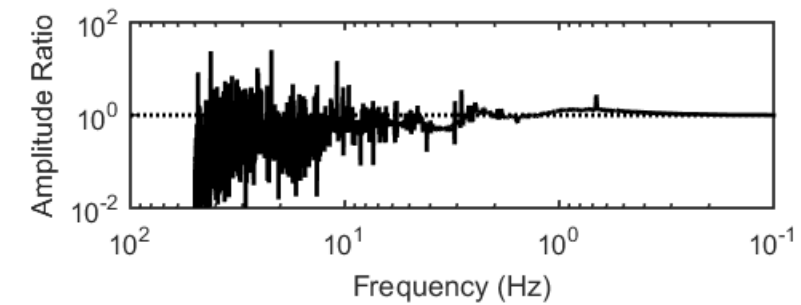
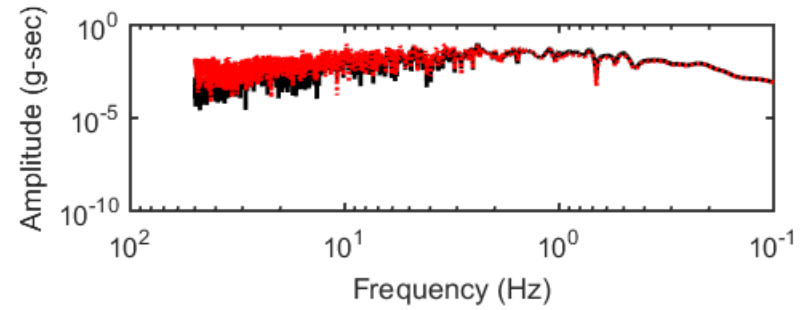
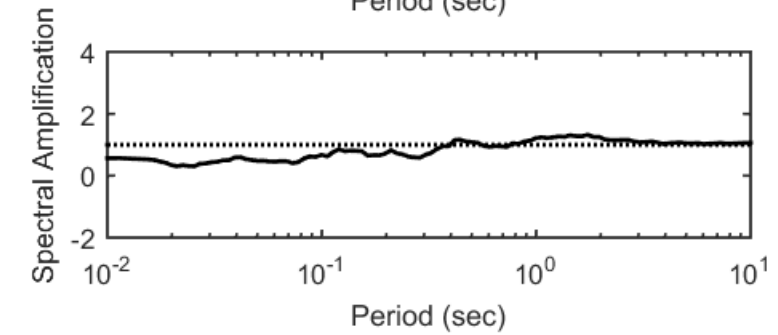
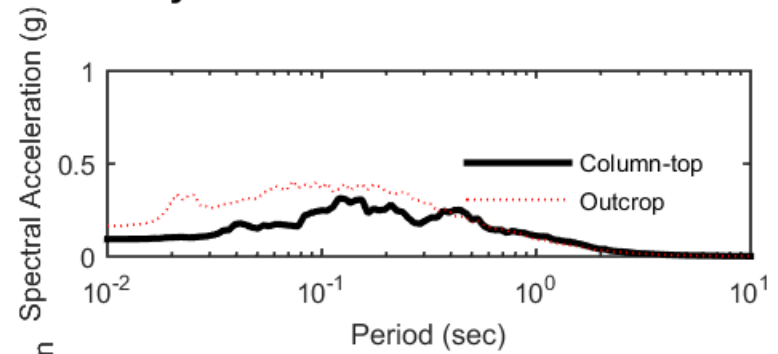
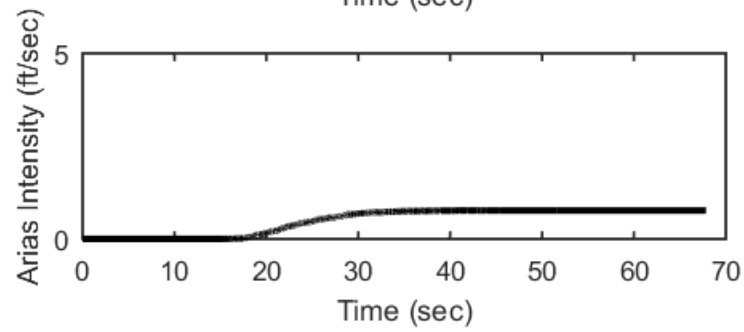
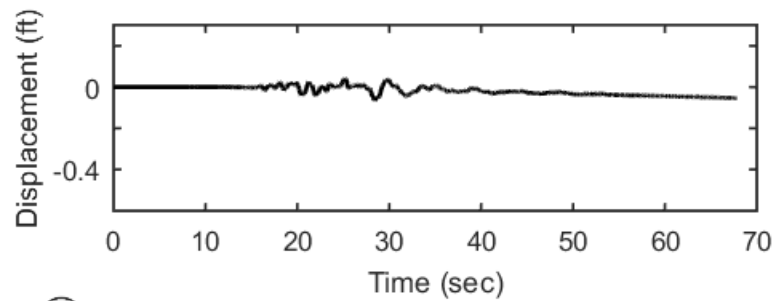
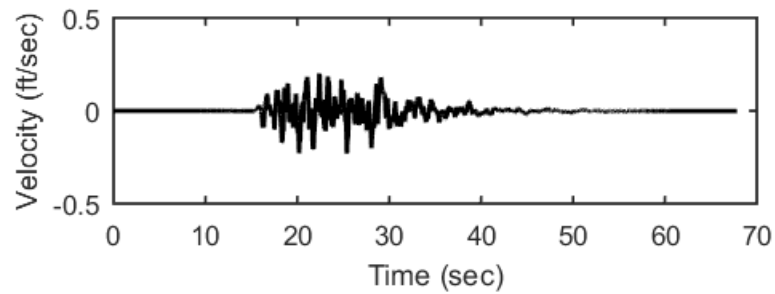
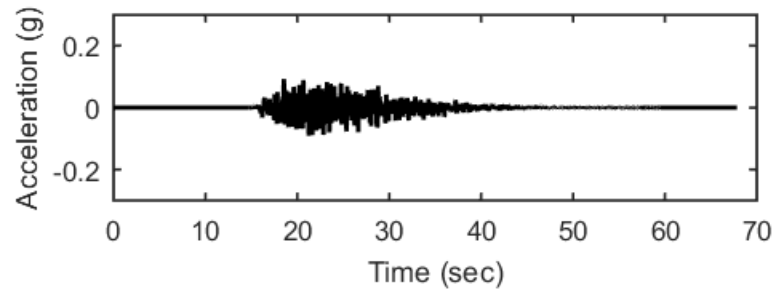
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



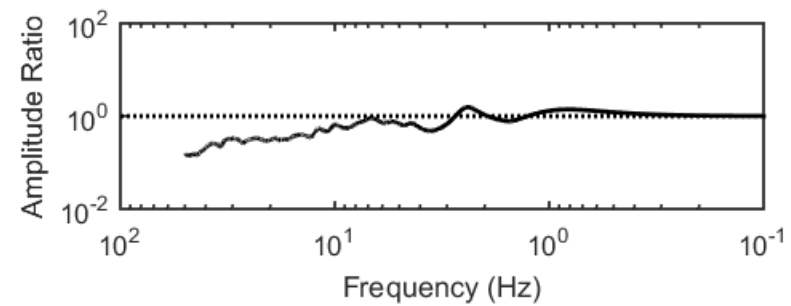
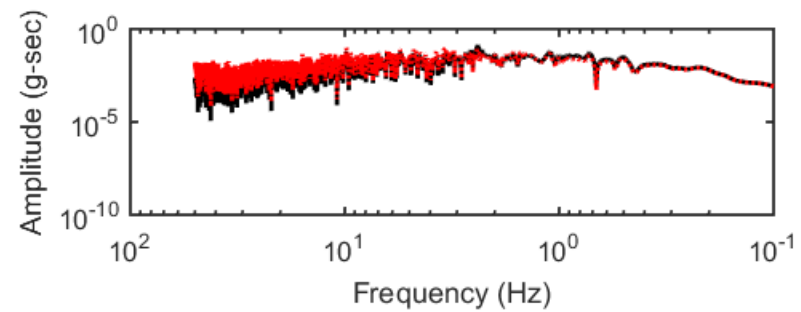
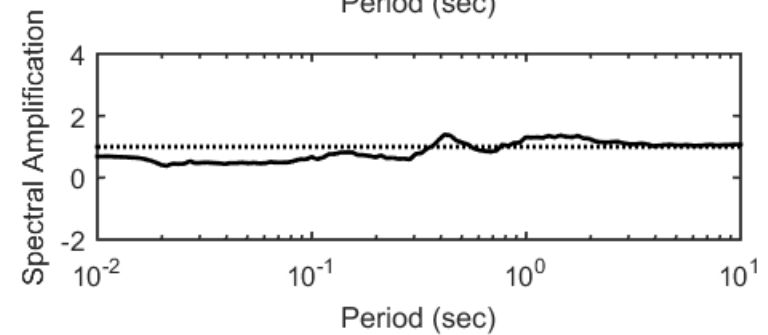
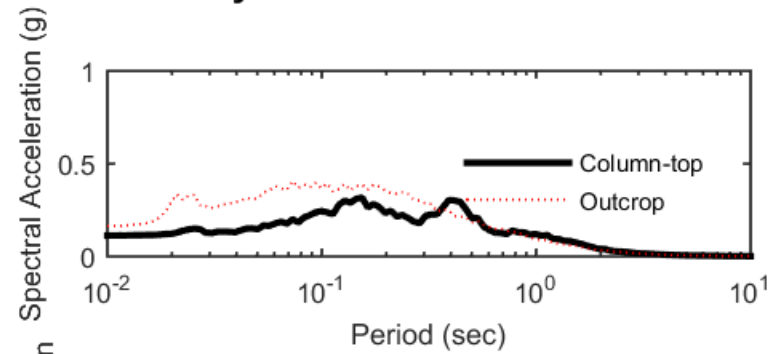
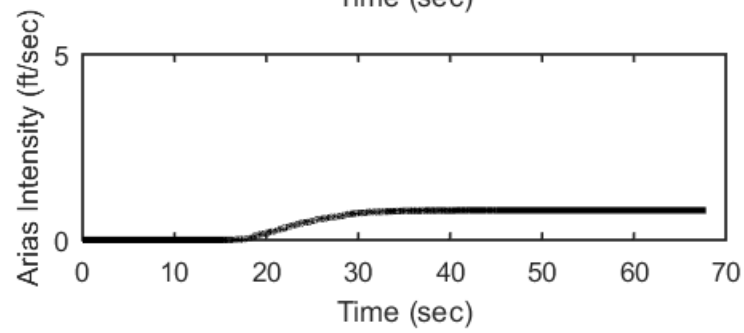
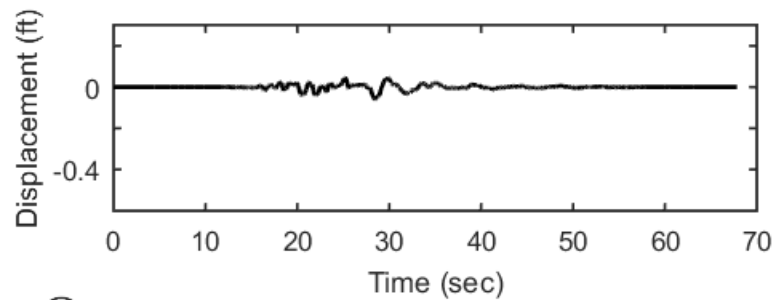
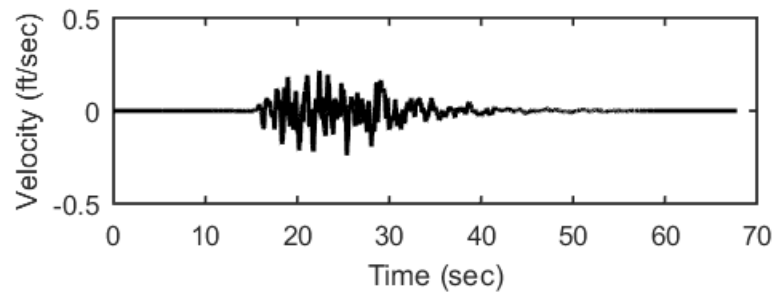
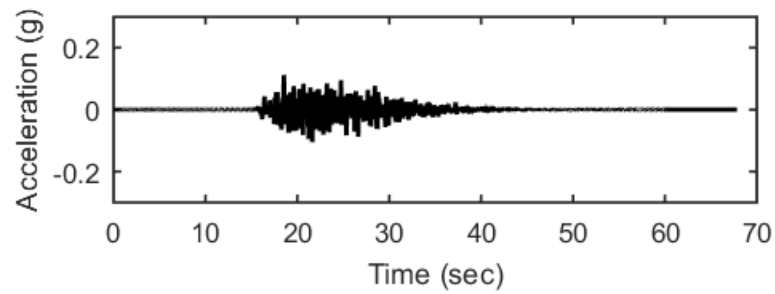
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



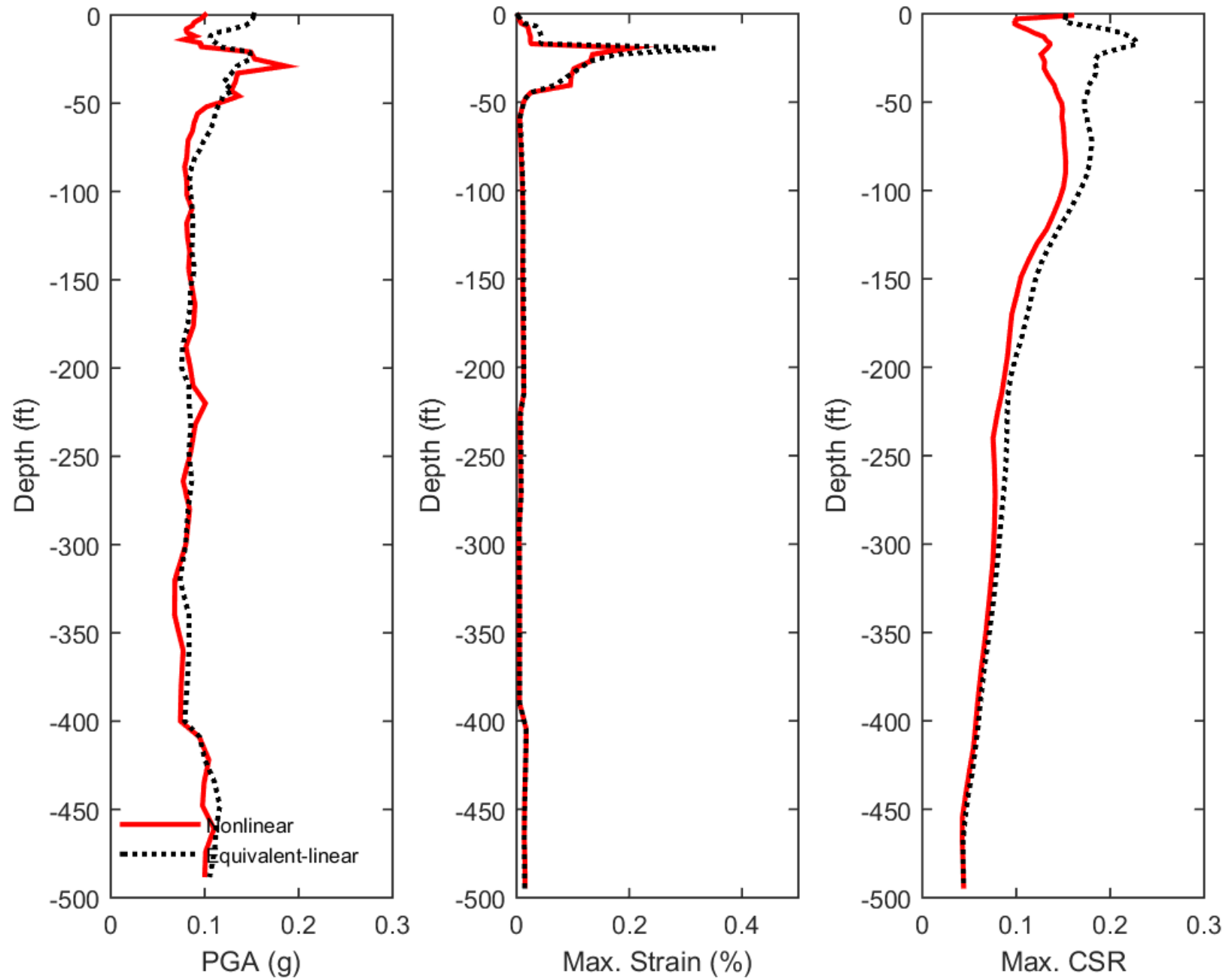
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



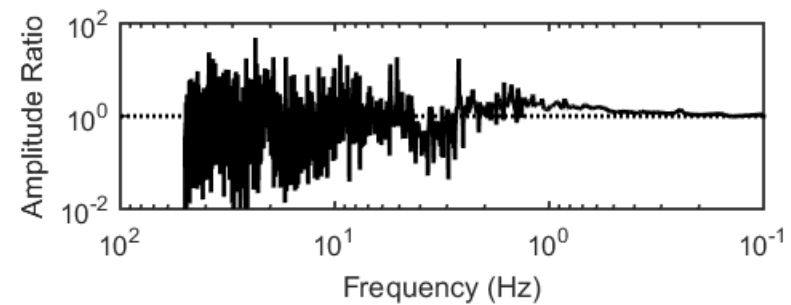
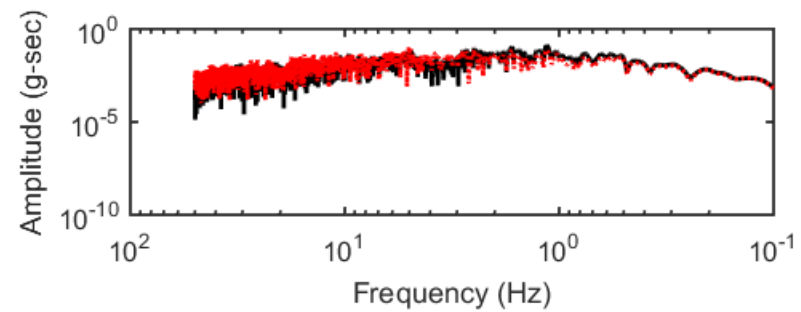
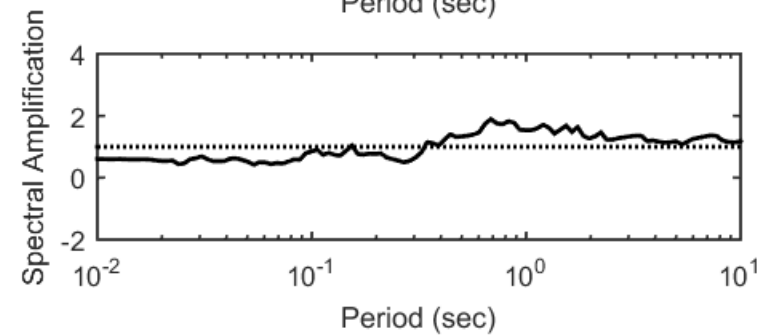
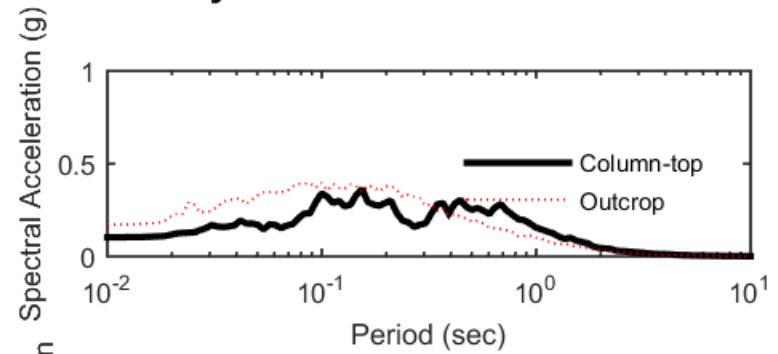
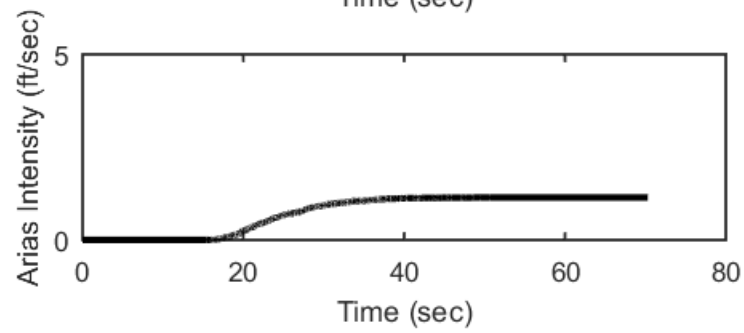
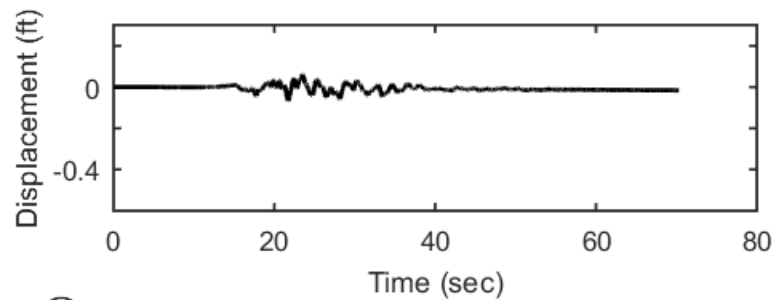
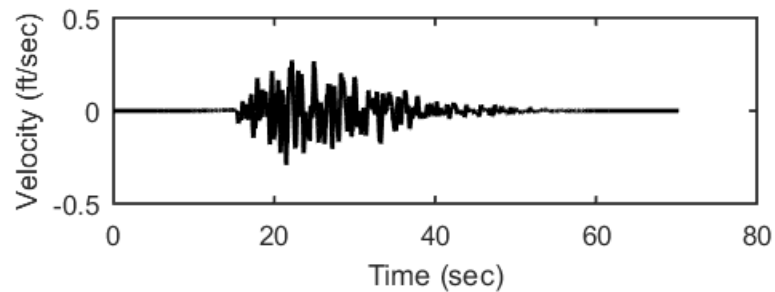
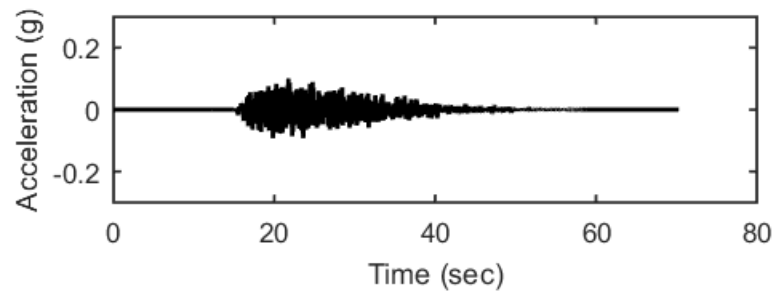
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



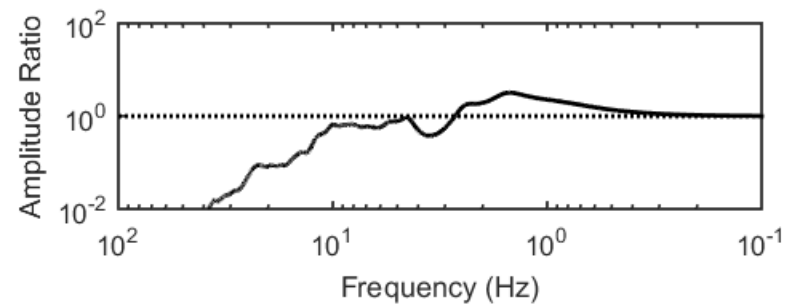
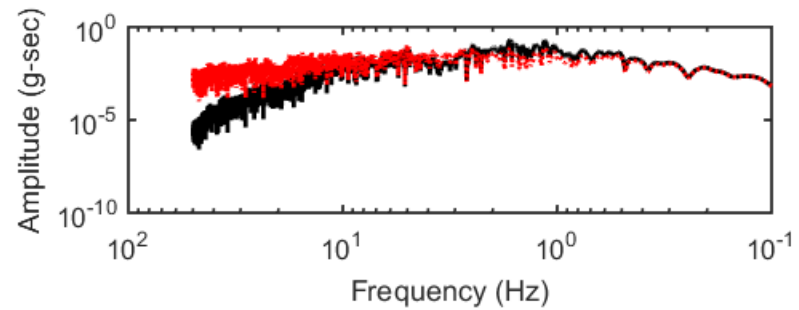
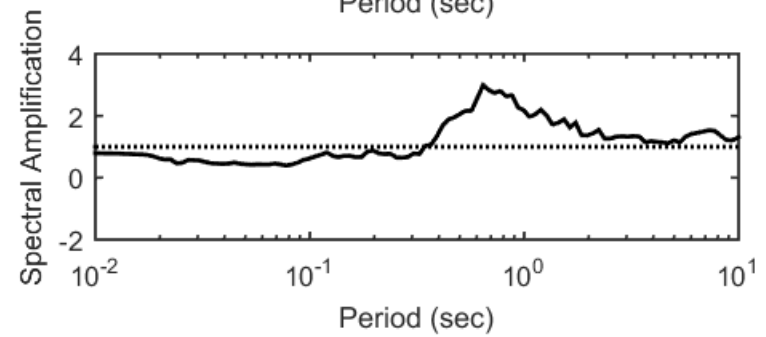
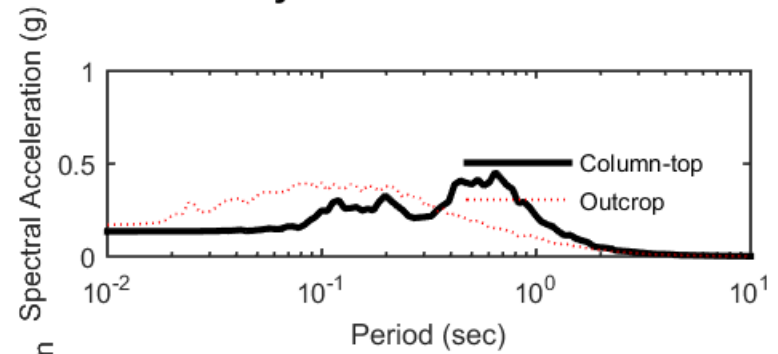
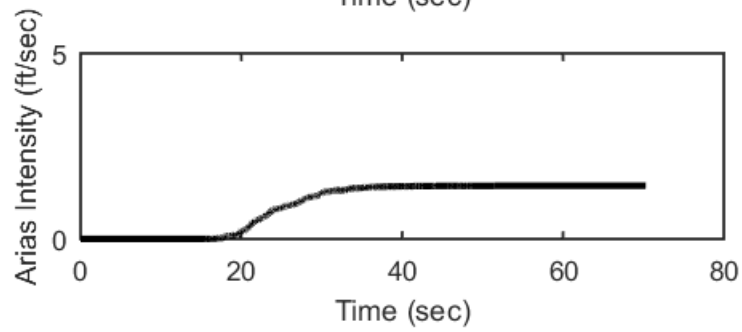
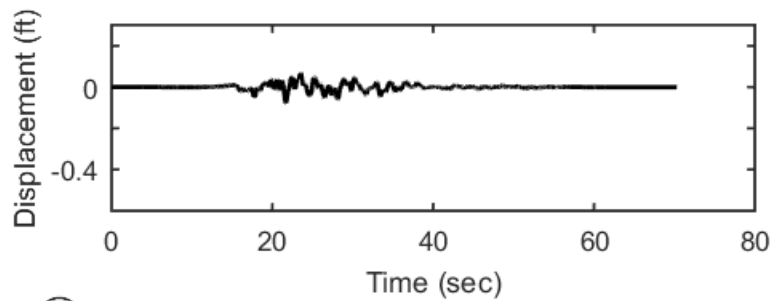
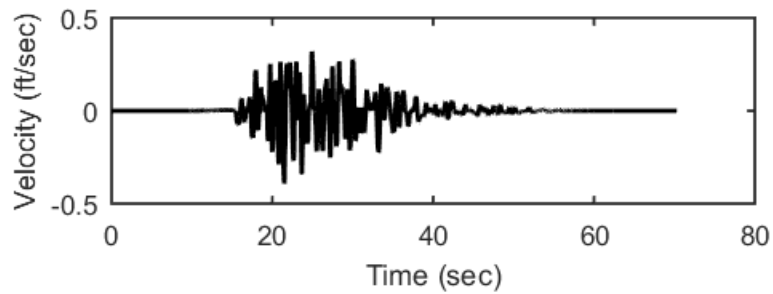
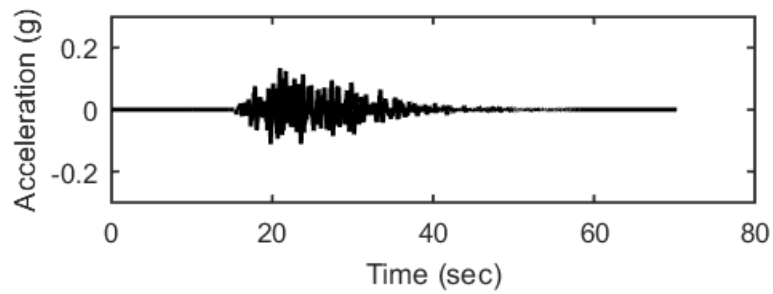
### Profile outputs for Motion: FEE6



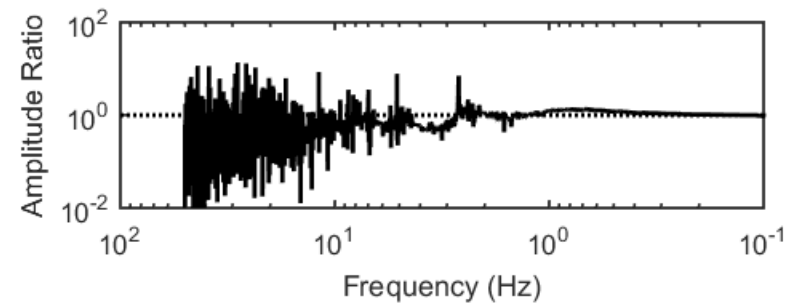
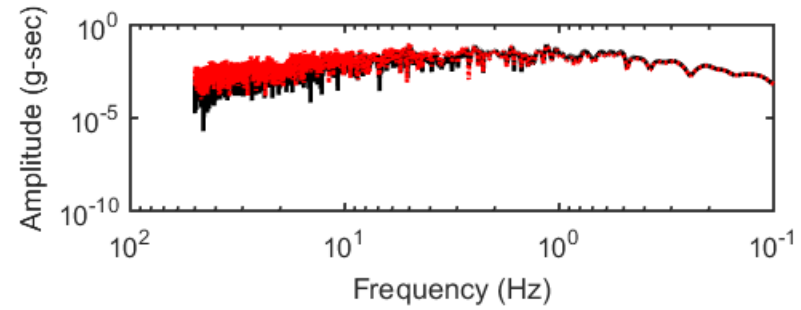
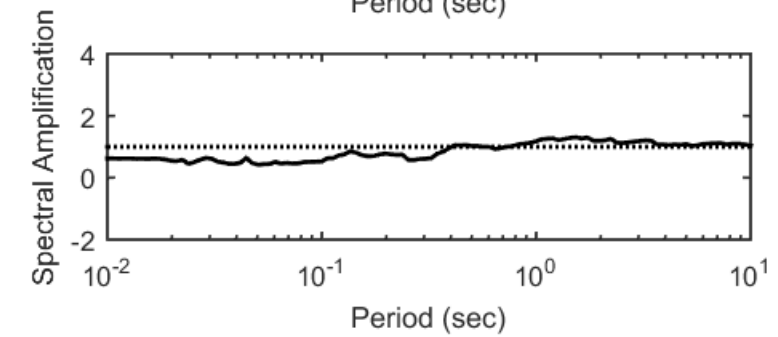
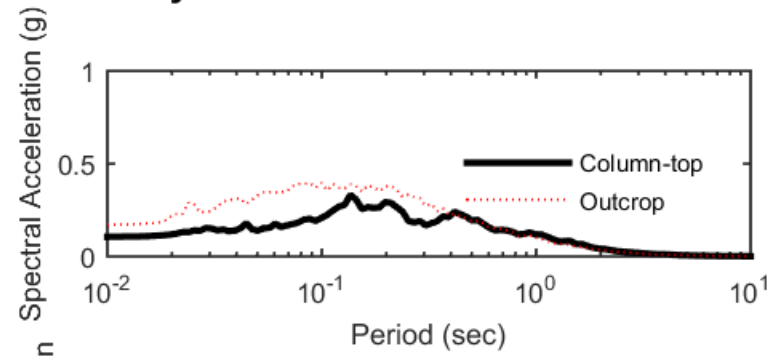
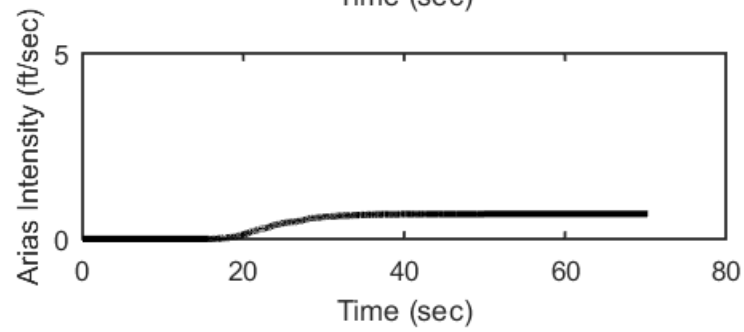
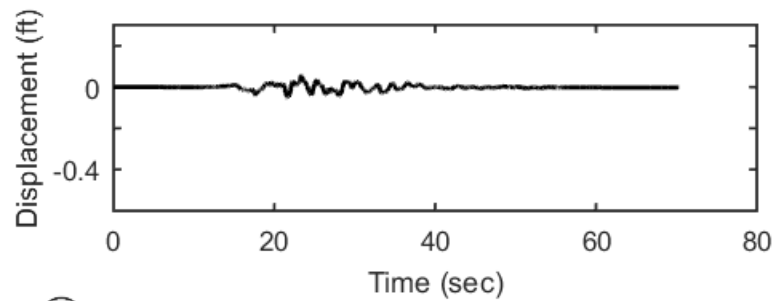
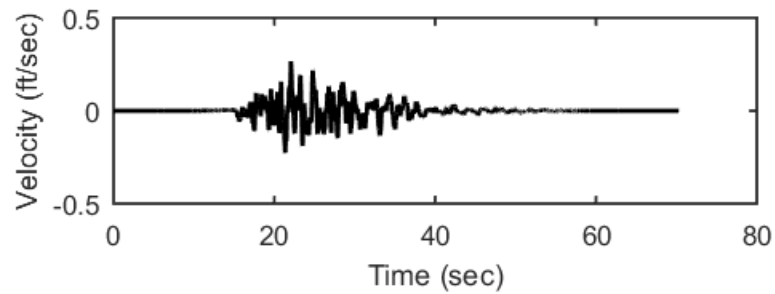
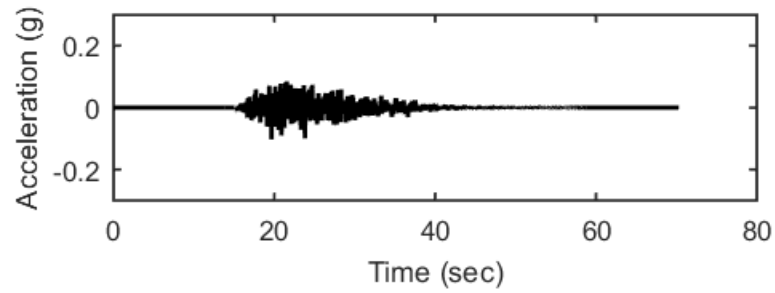
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7

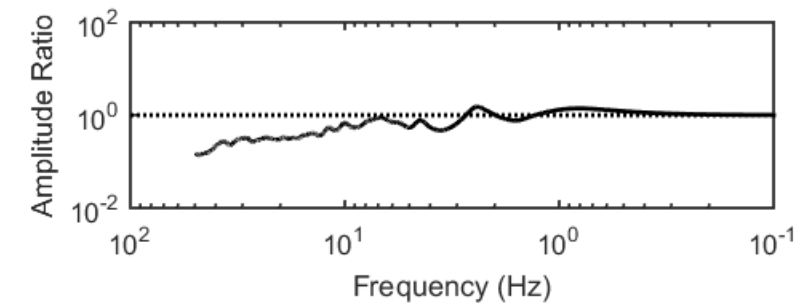
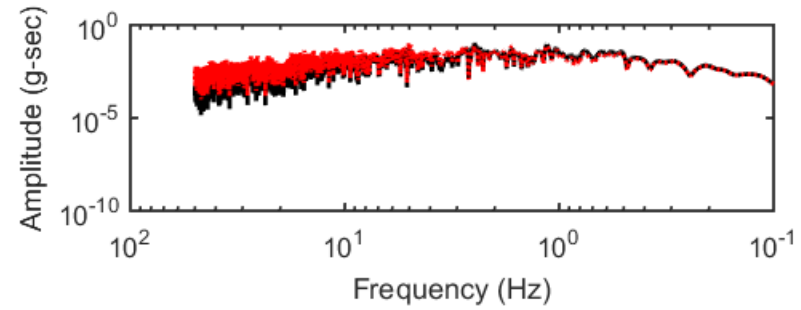
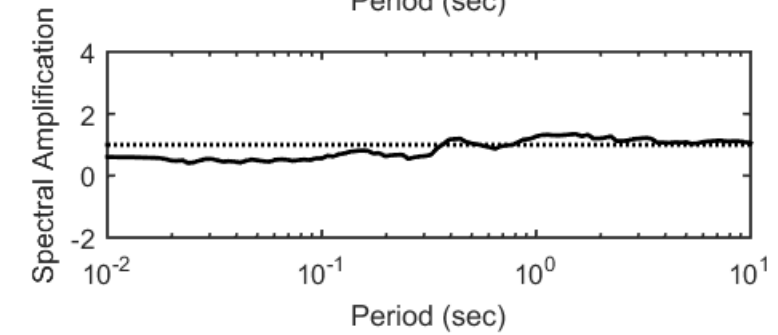
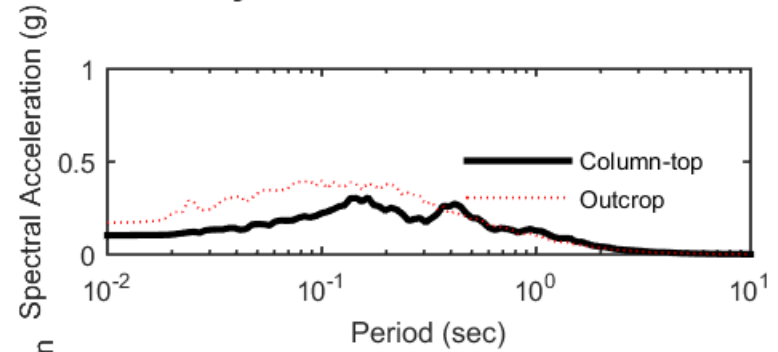
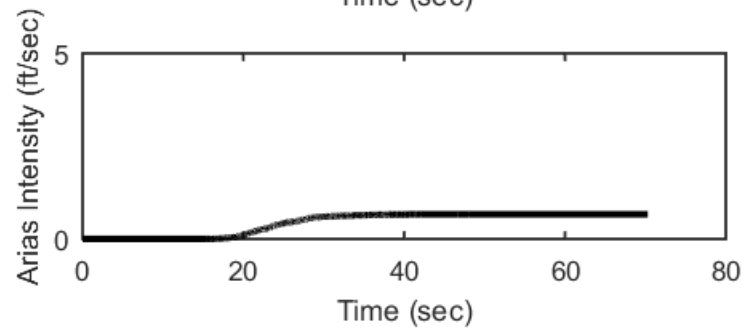
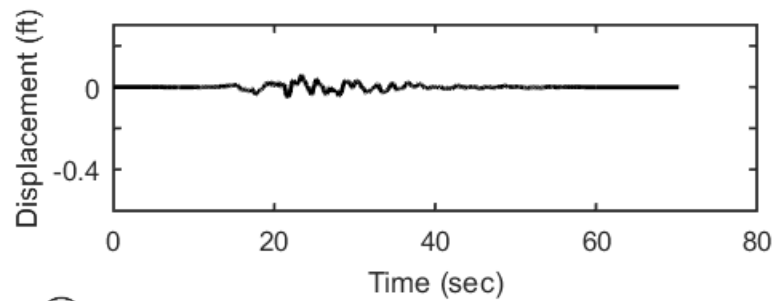
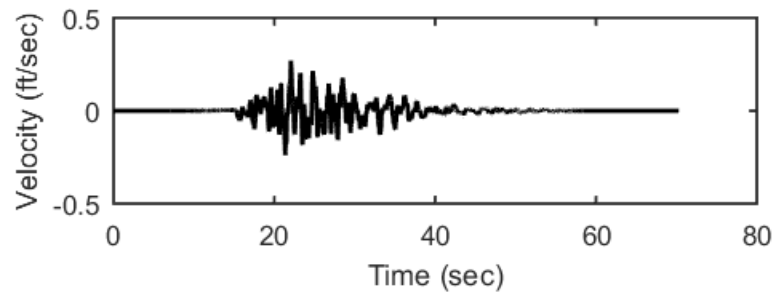
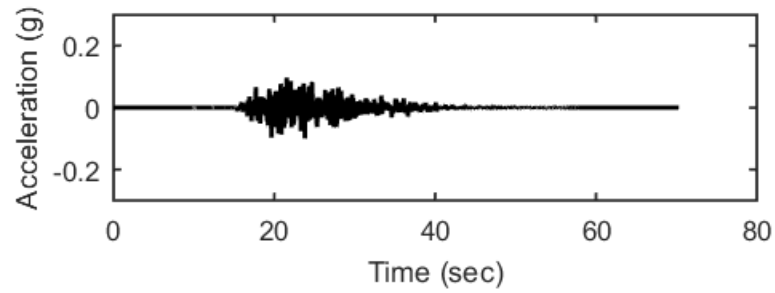


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7

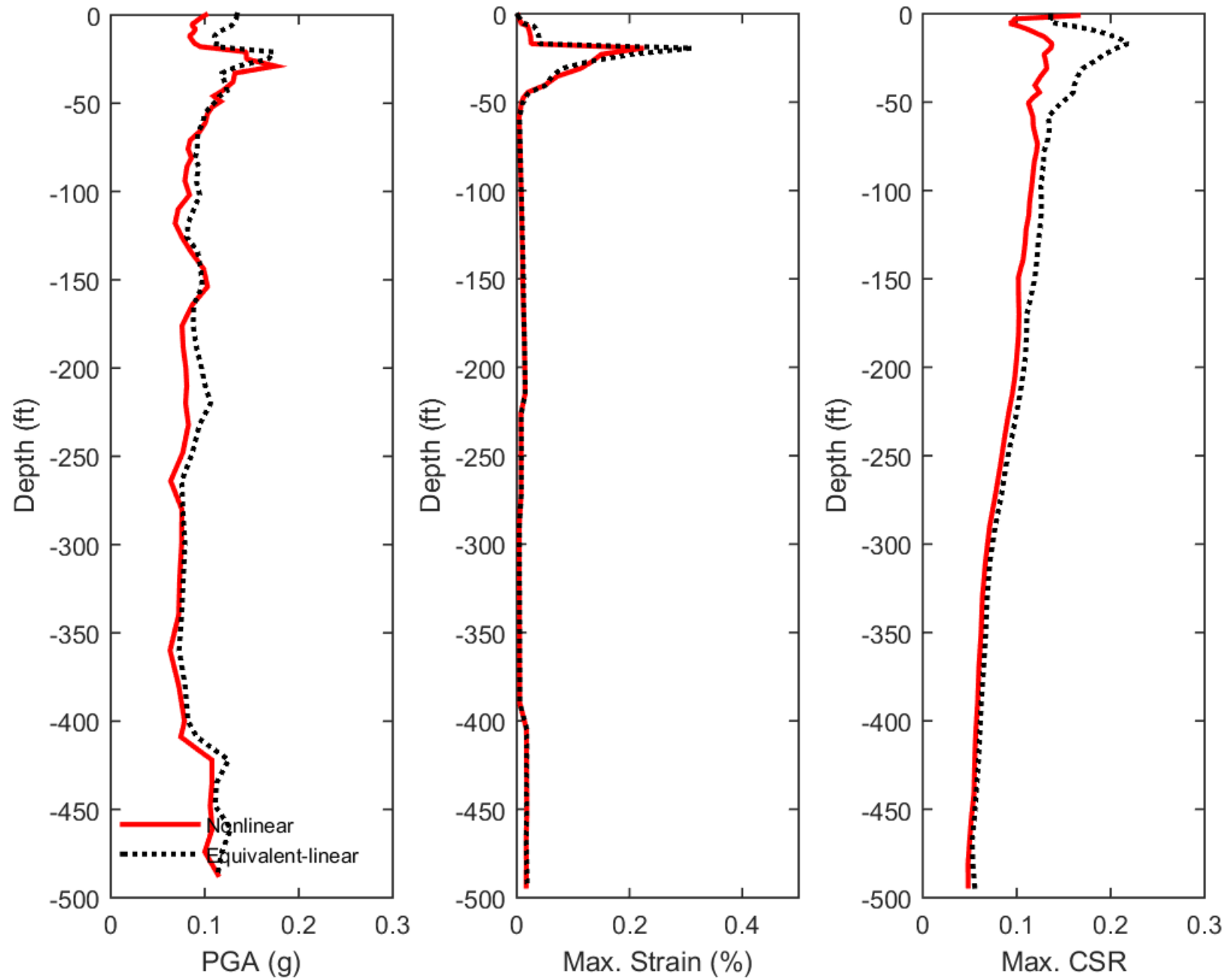




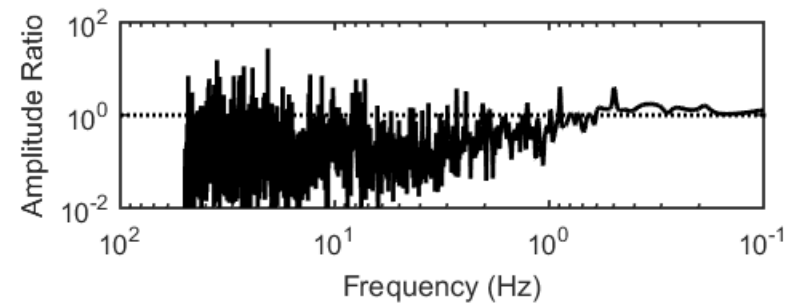
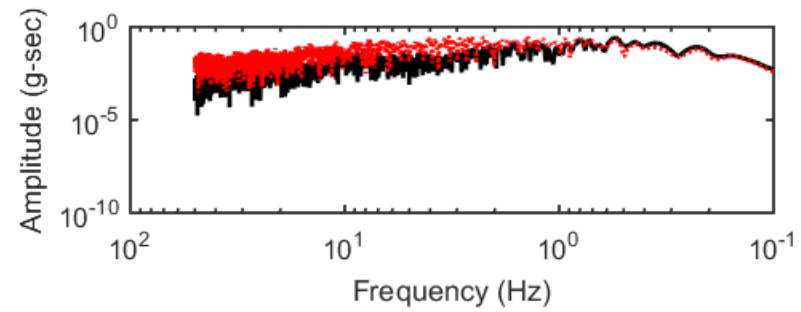
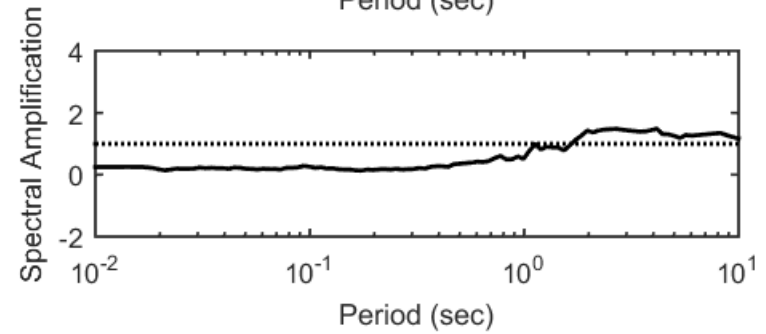
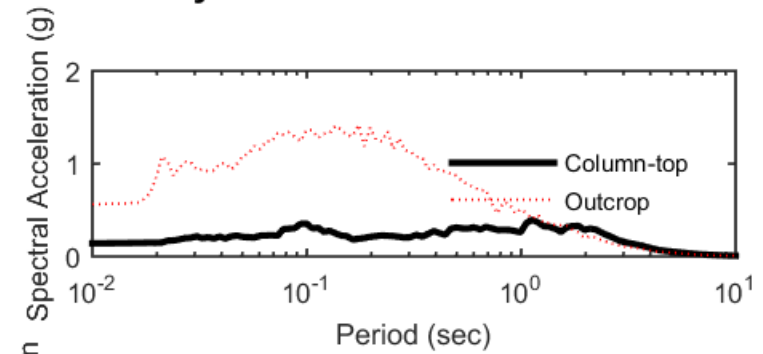
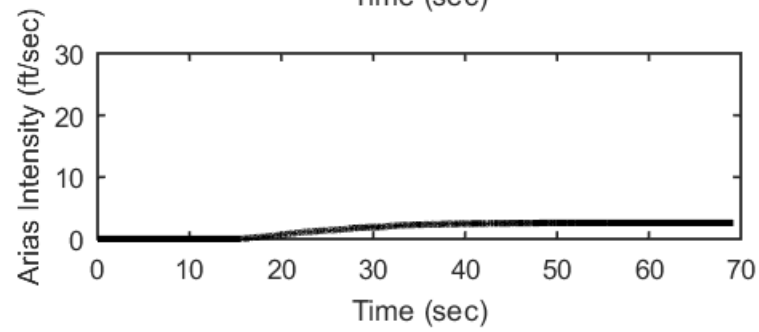
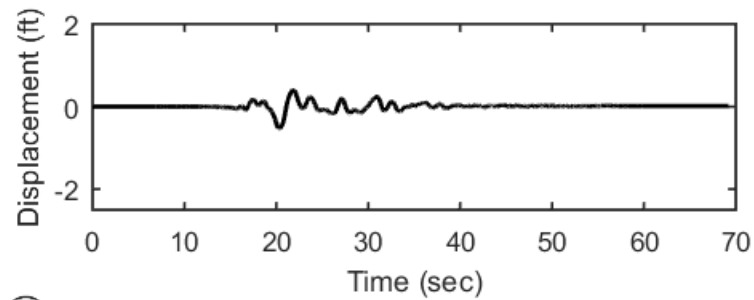
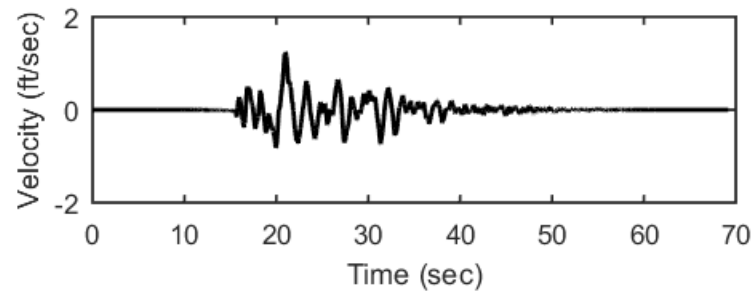
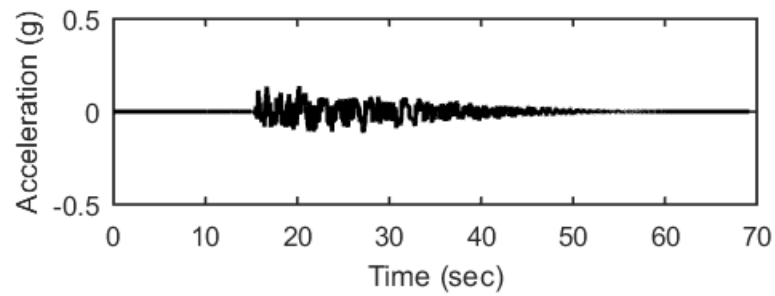
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



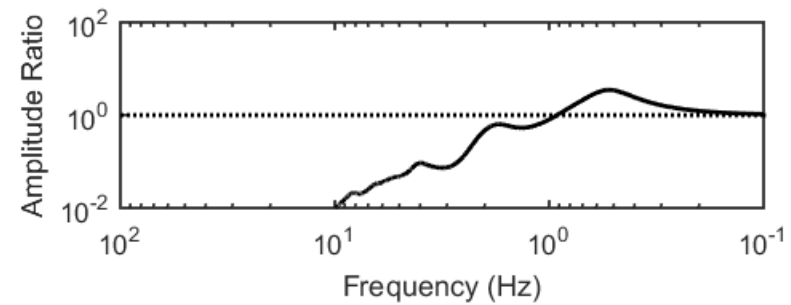
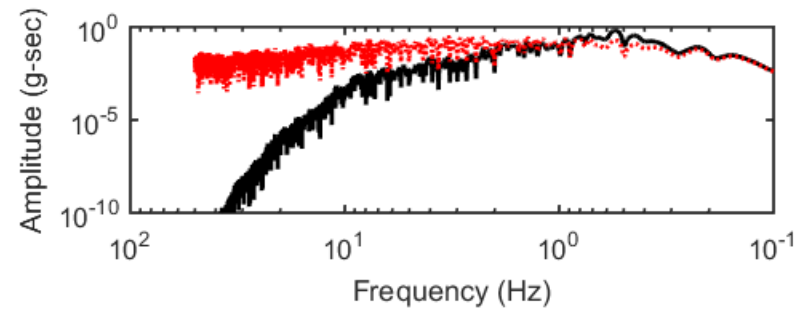
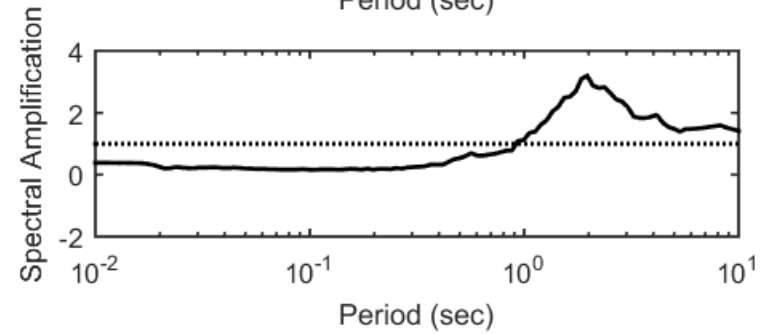
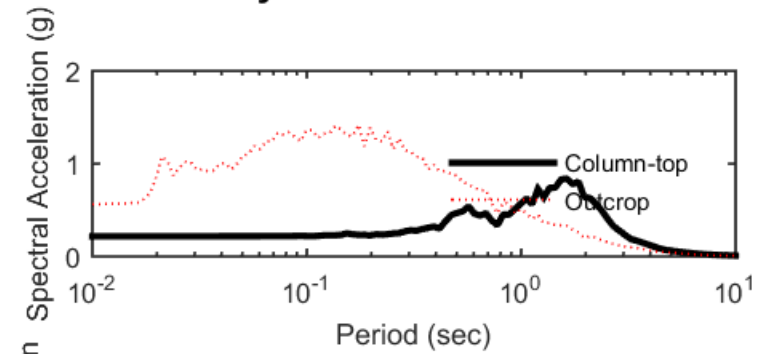
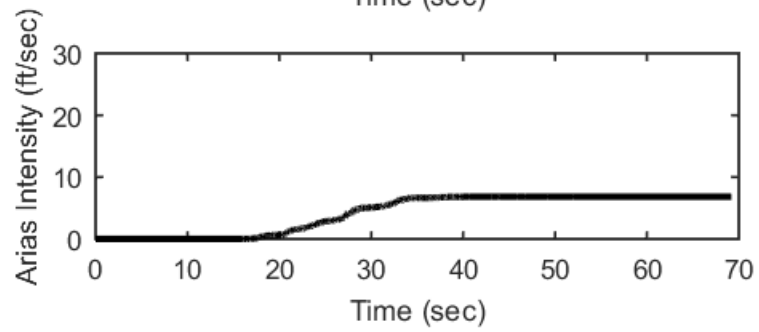
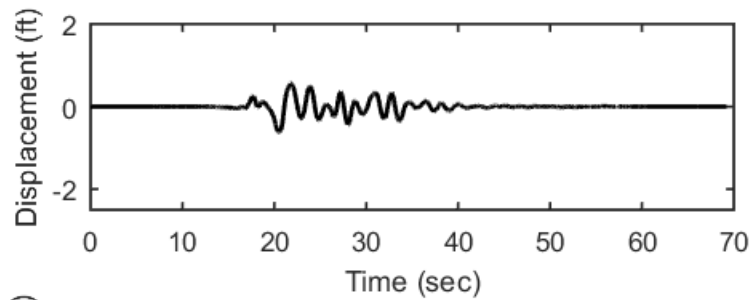
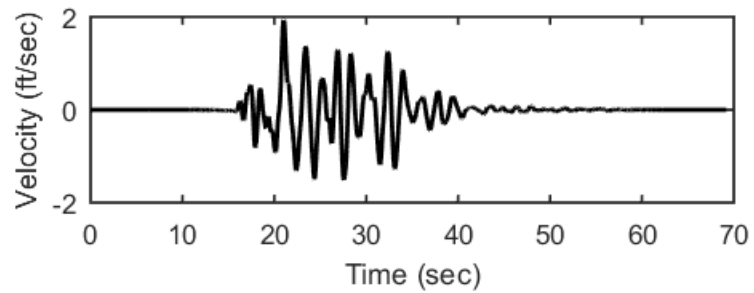
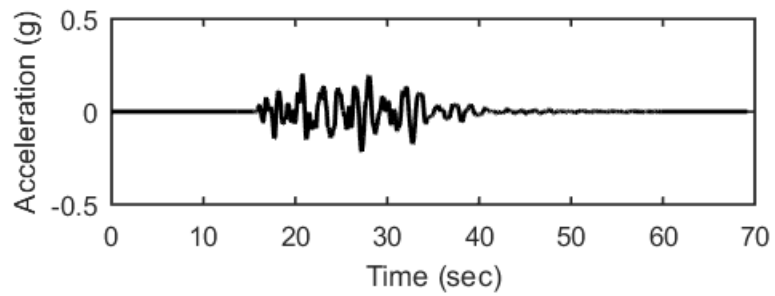
### Profile outputs for Motion: FEE7



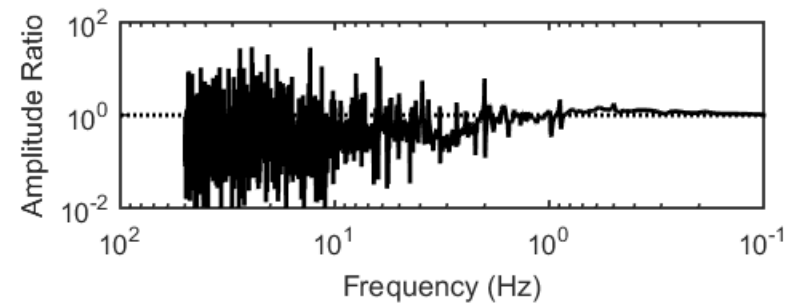
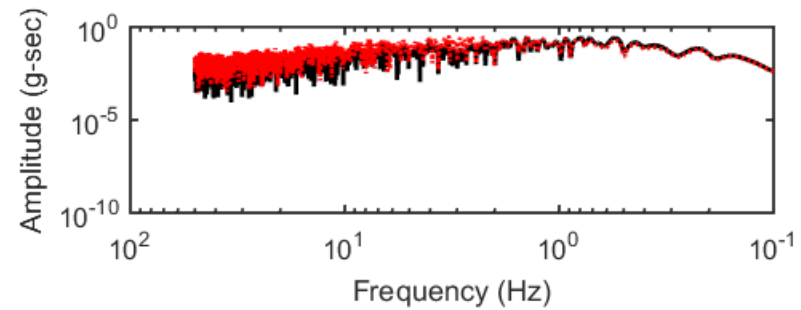
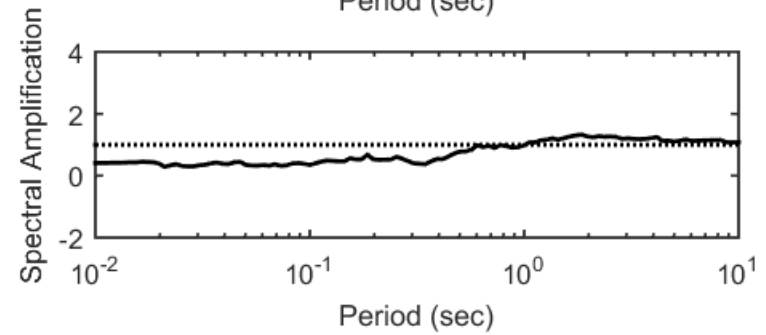
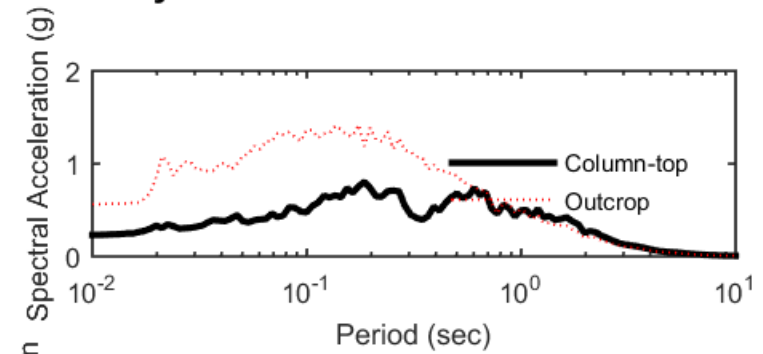
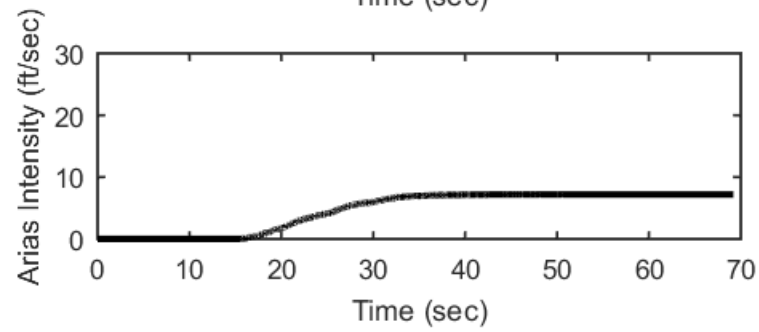
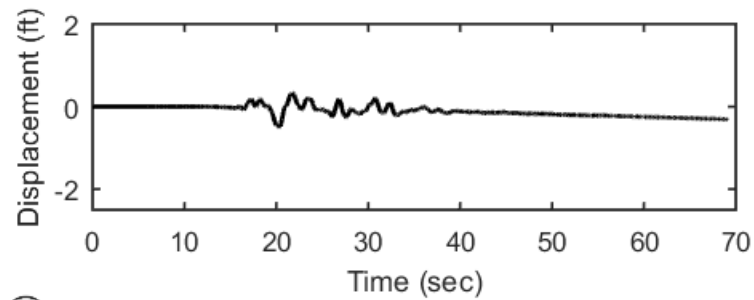
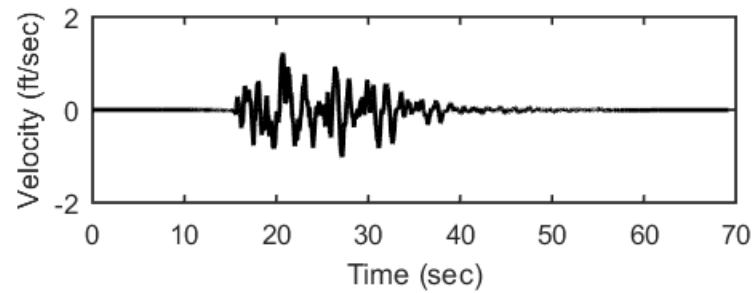
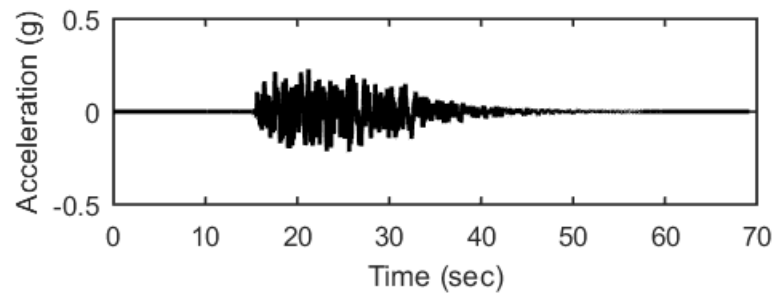
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



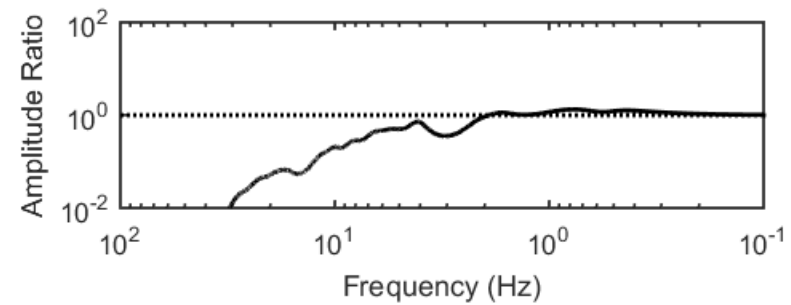
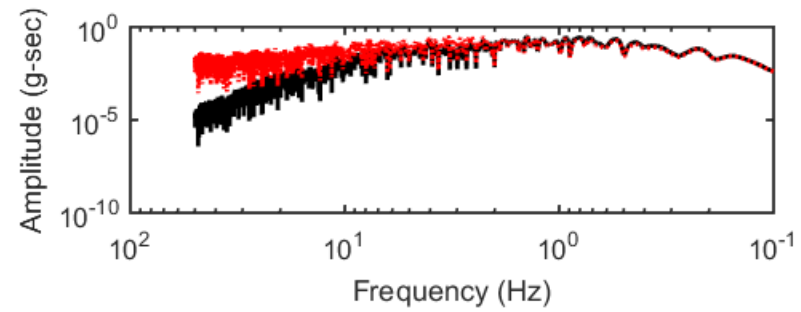
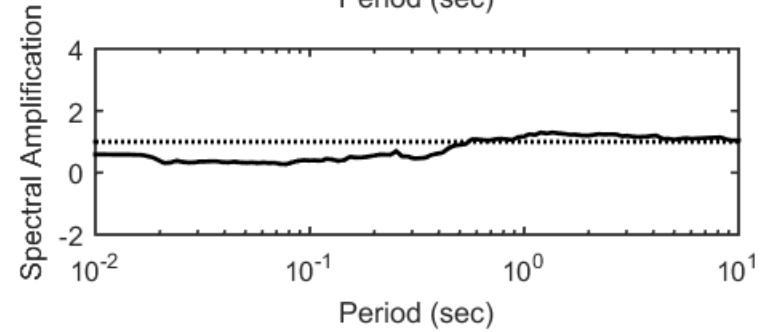
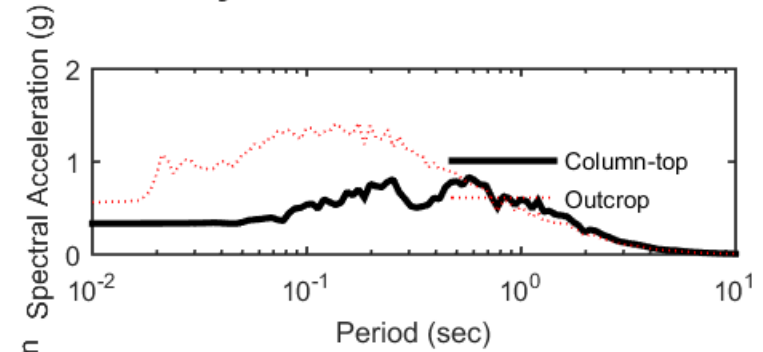
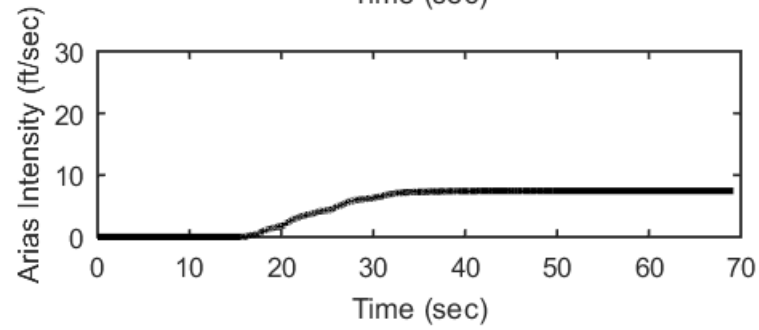
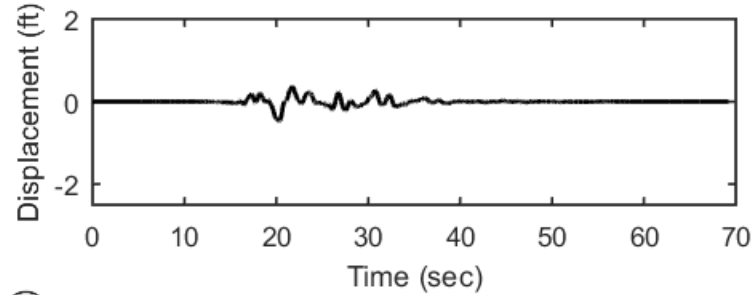
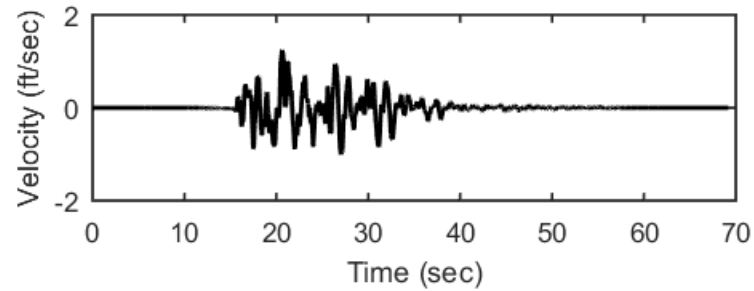
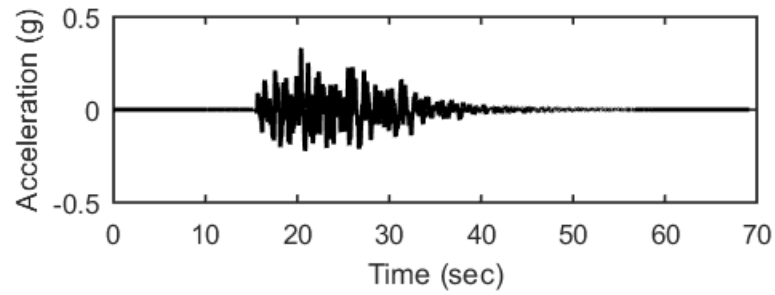
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



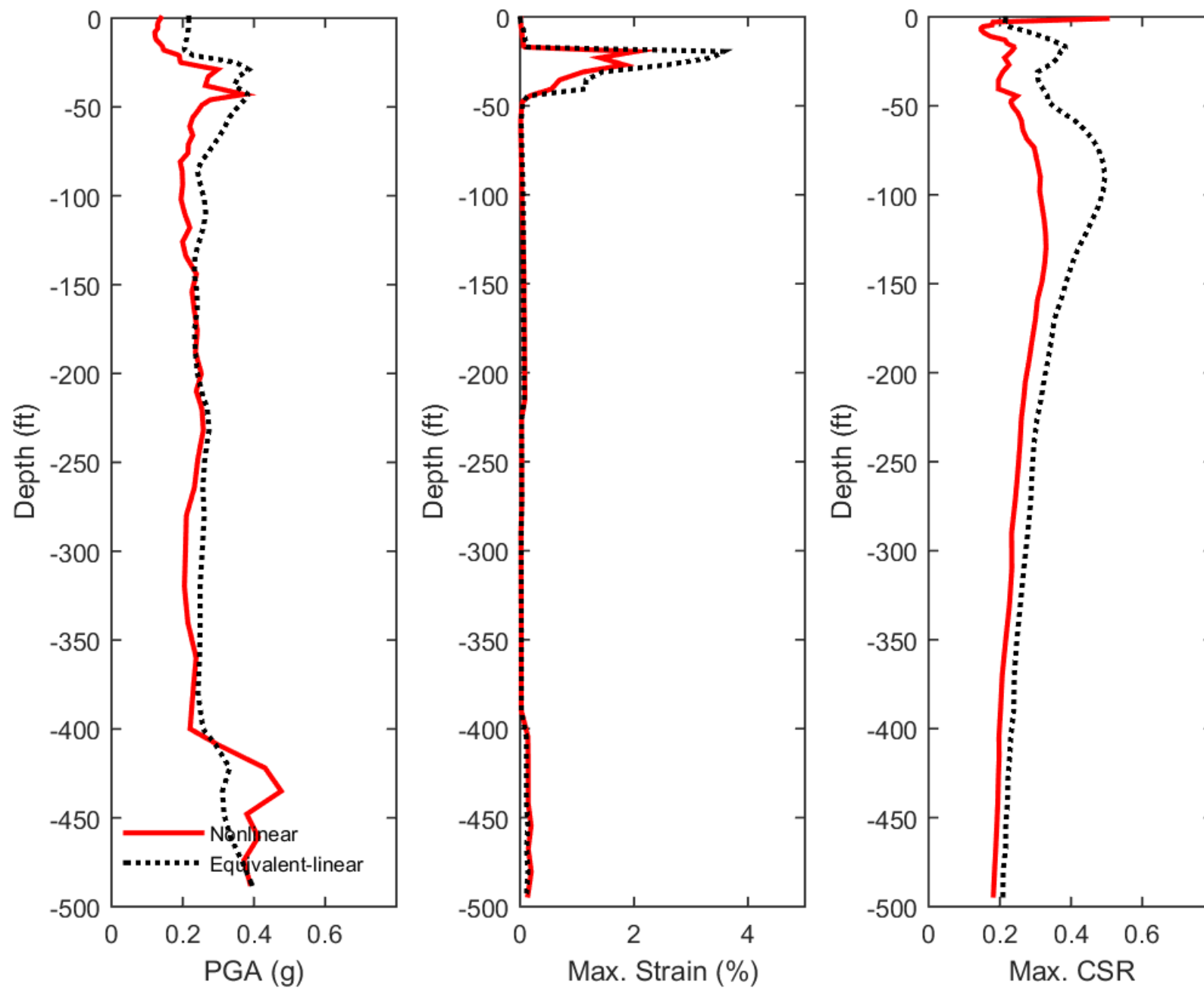
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



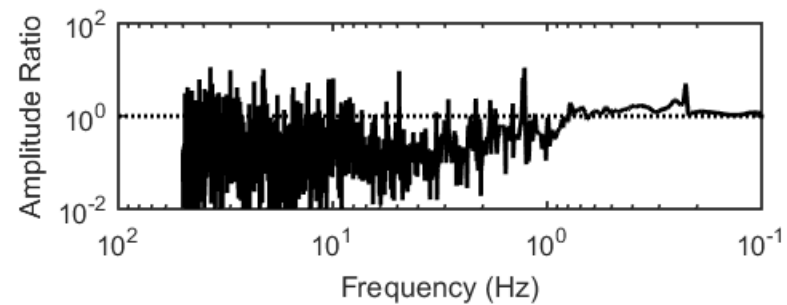
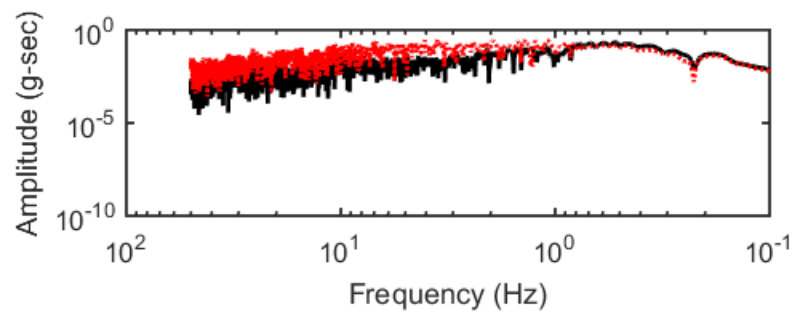
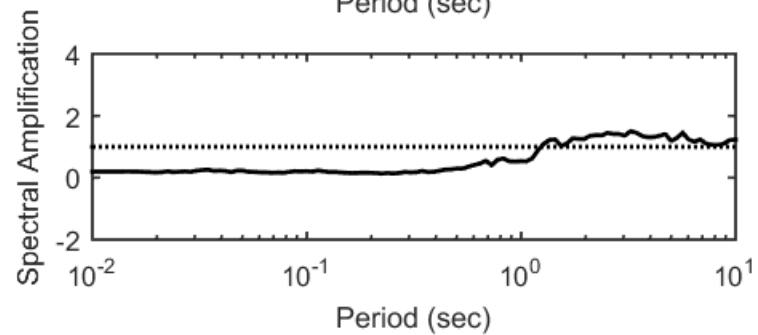
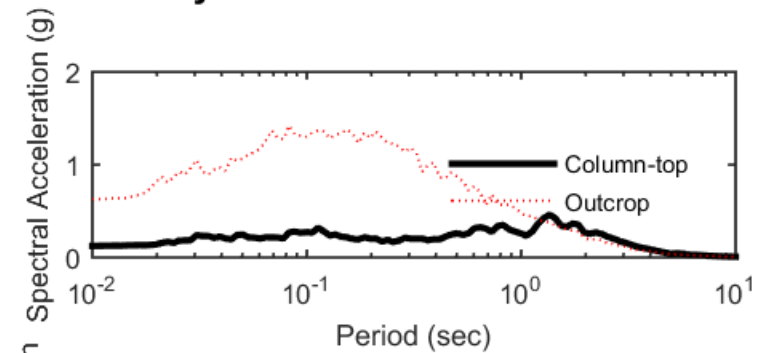
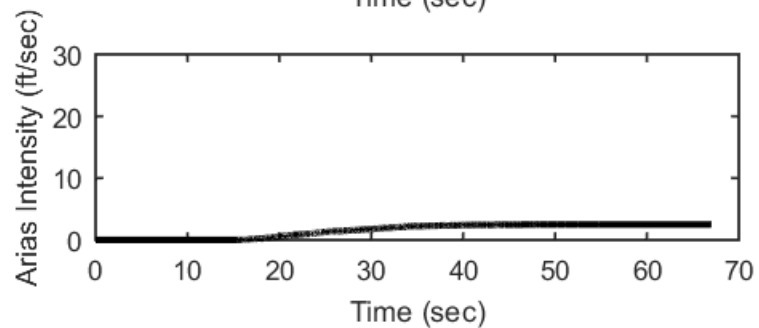
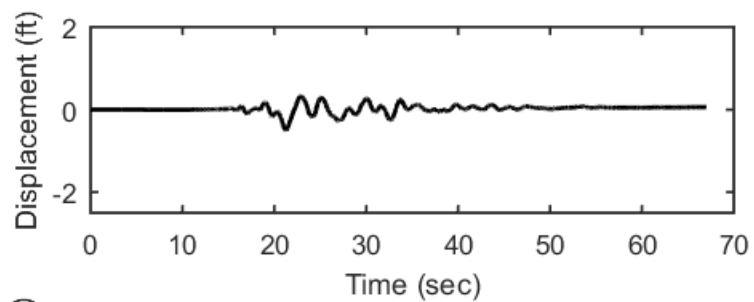
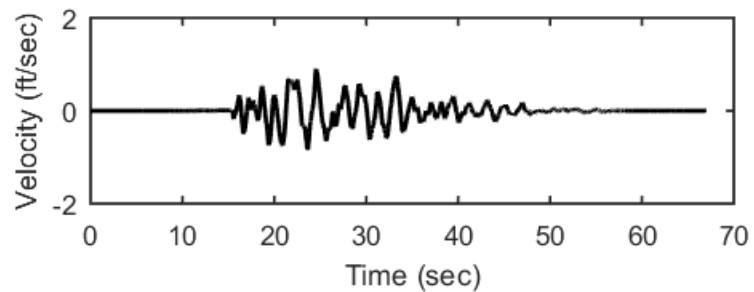
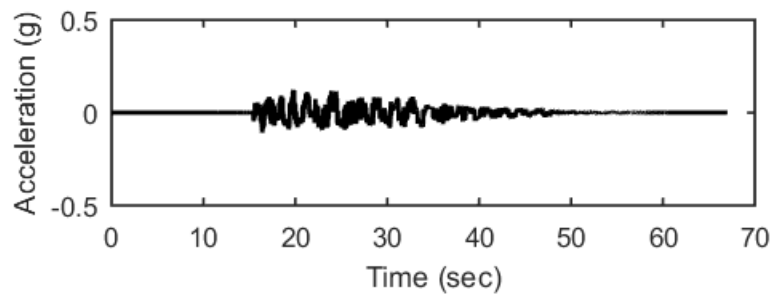
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



### Profile outputs for Motion: SEE1

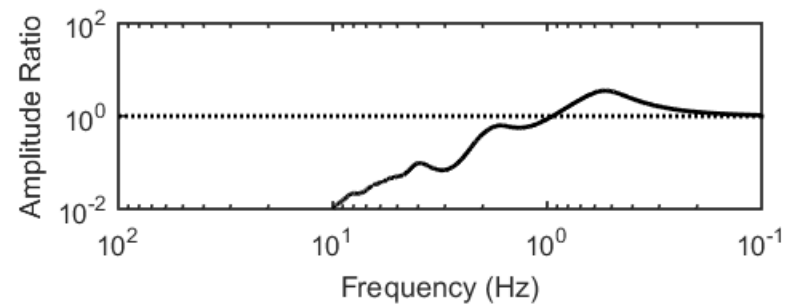
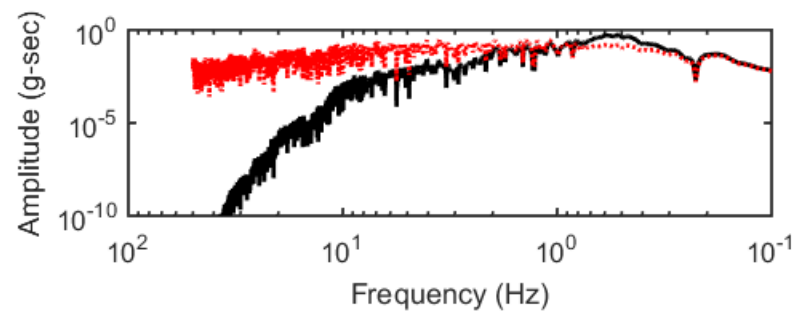
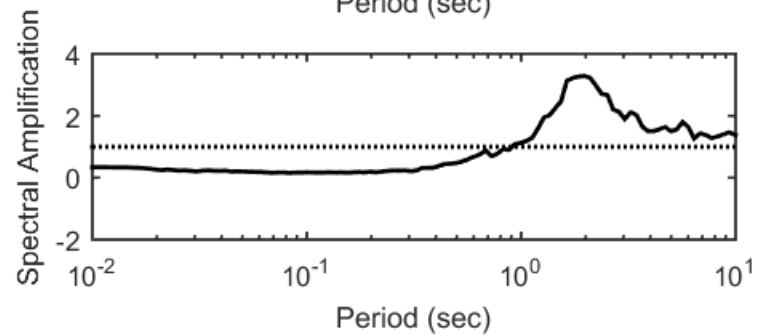
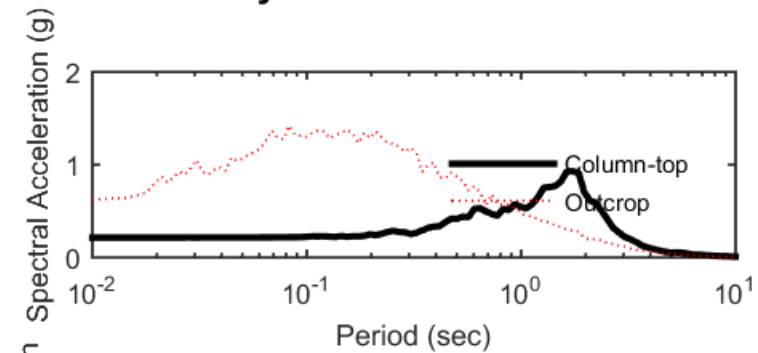
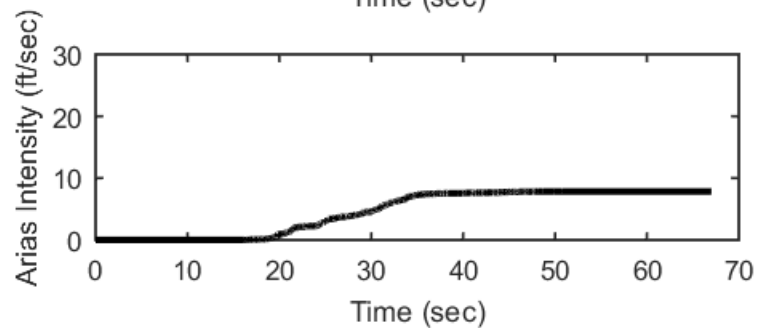
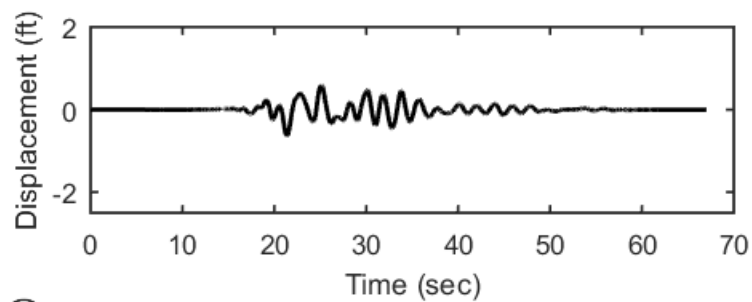
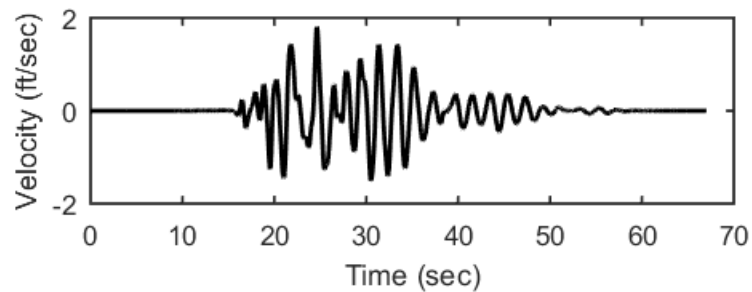
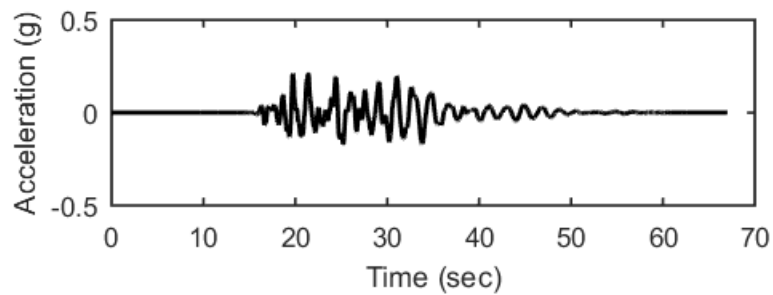


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2

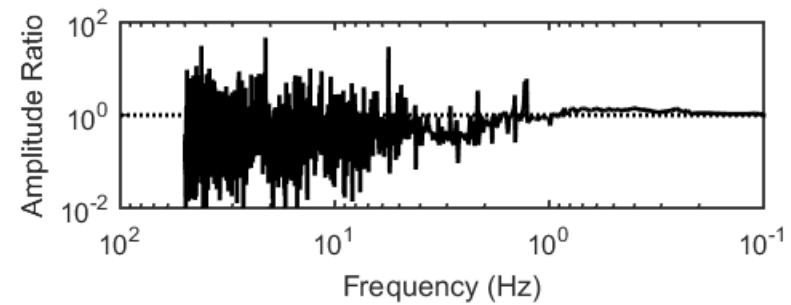
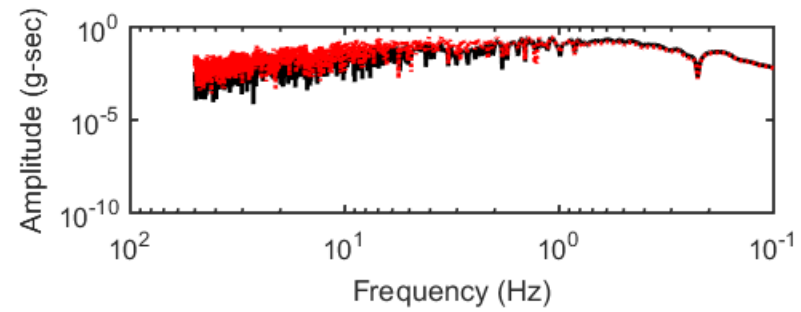
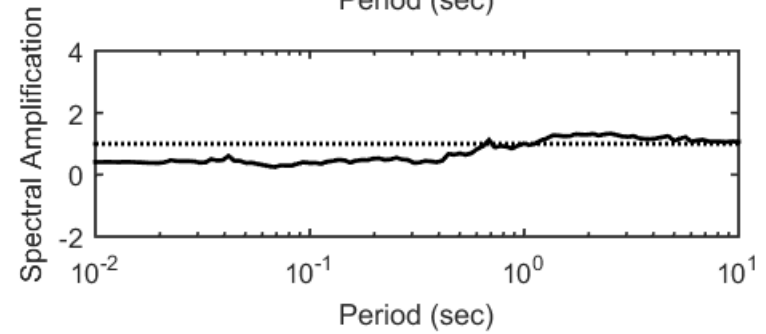
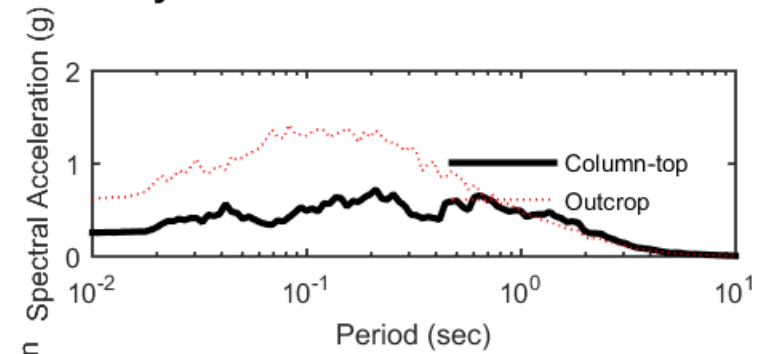
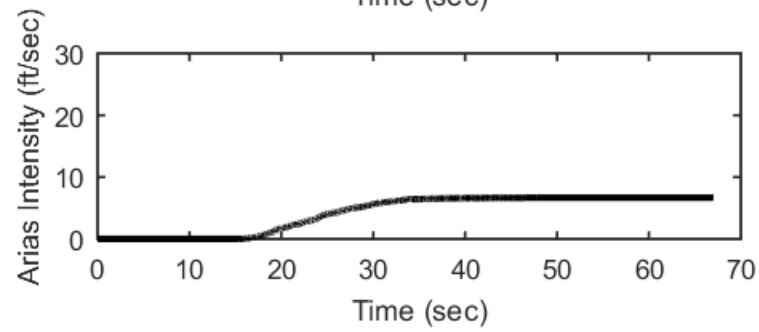
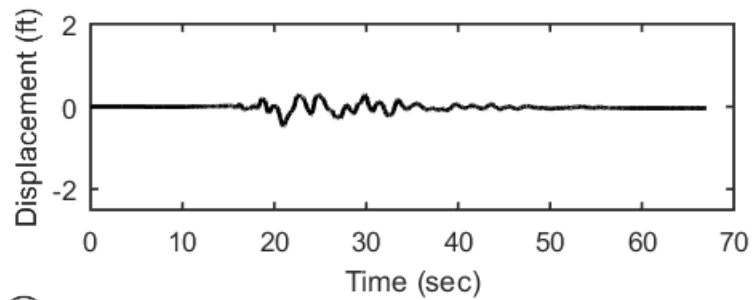
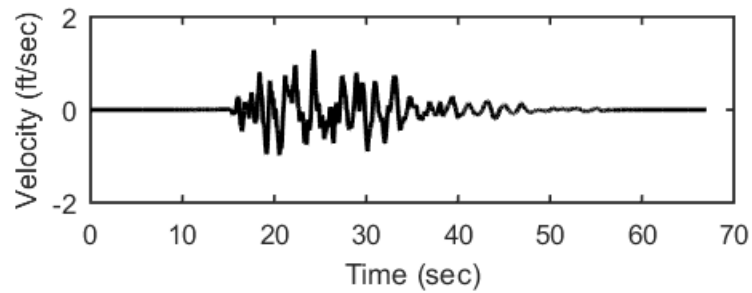
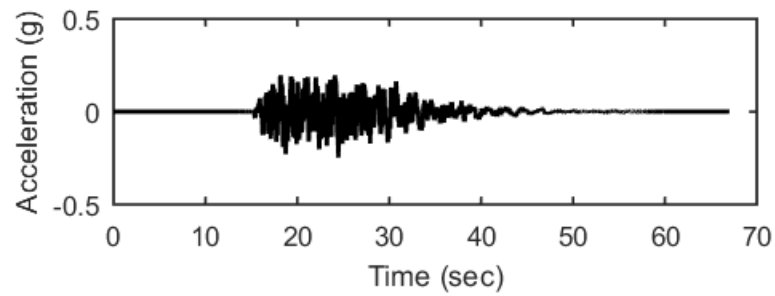




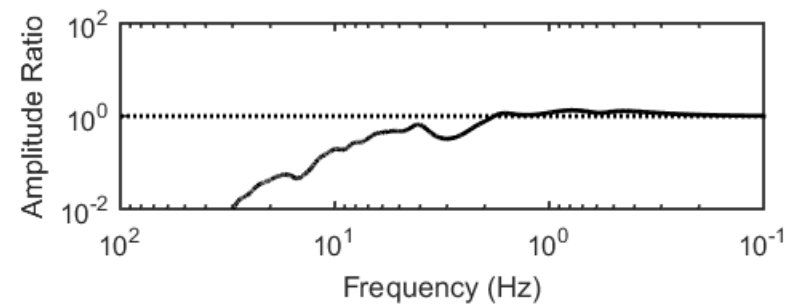
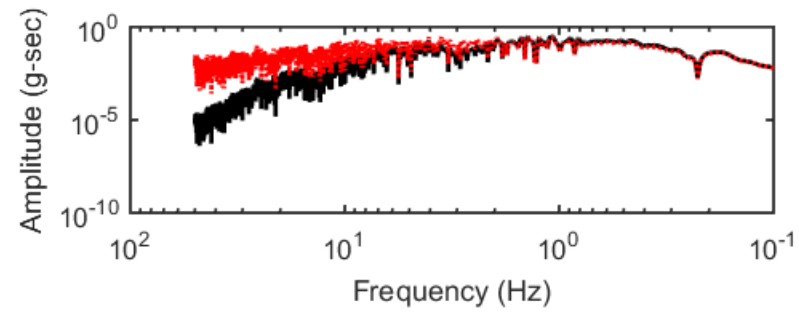
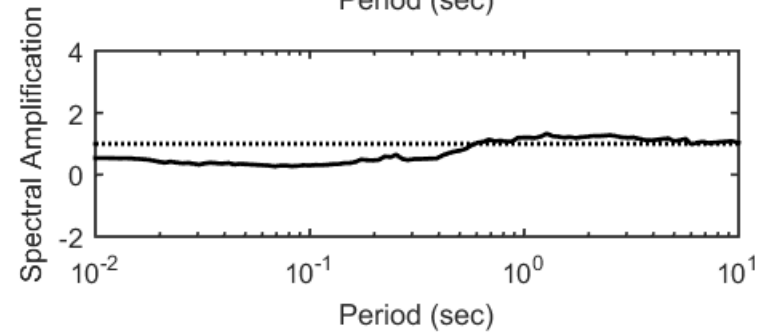
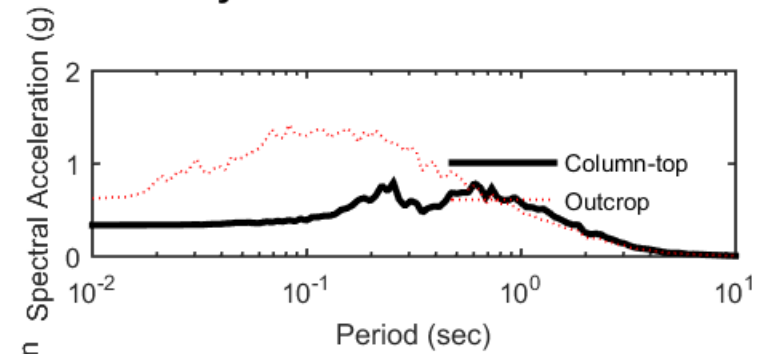
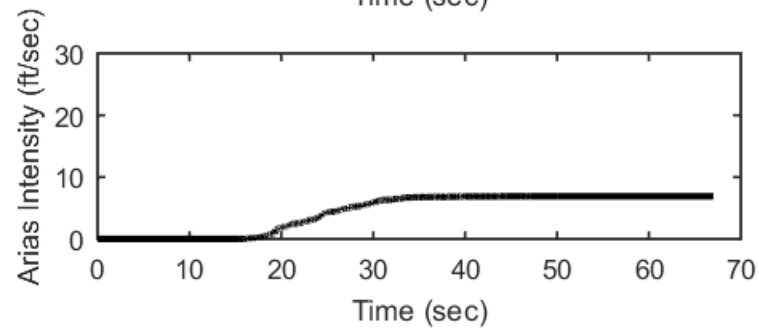
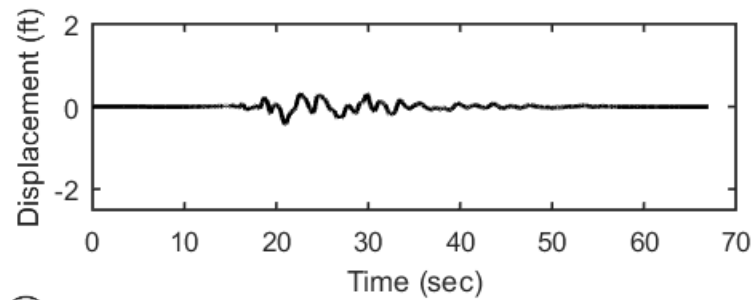
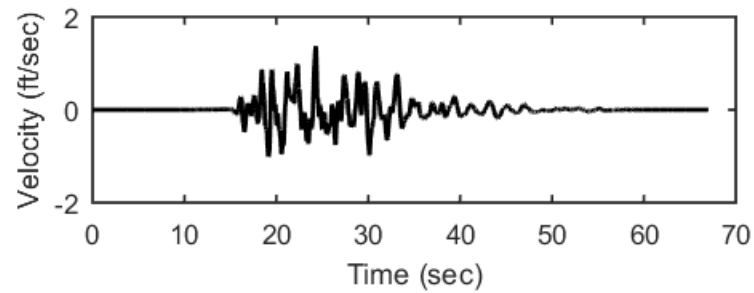
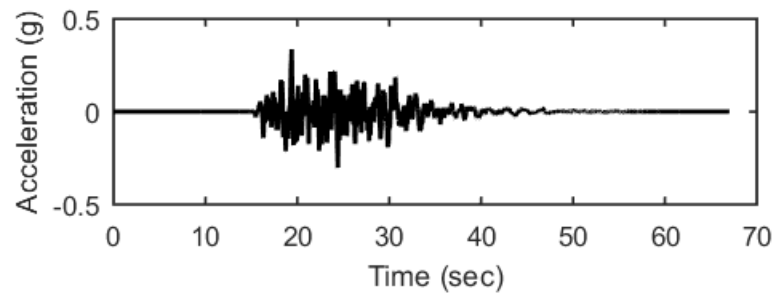
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



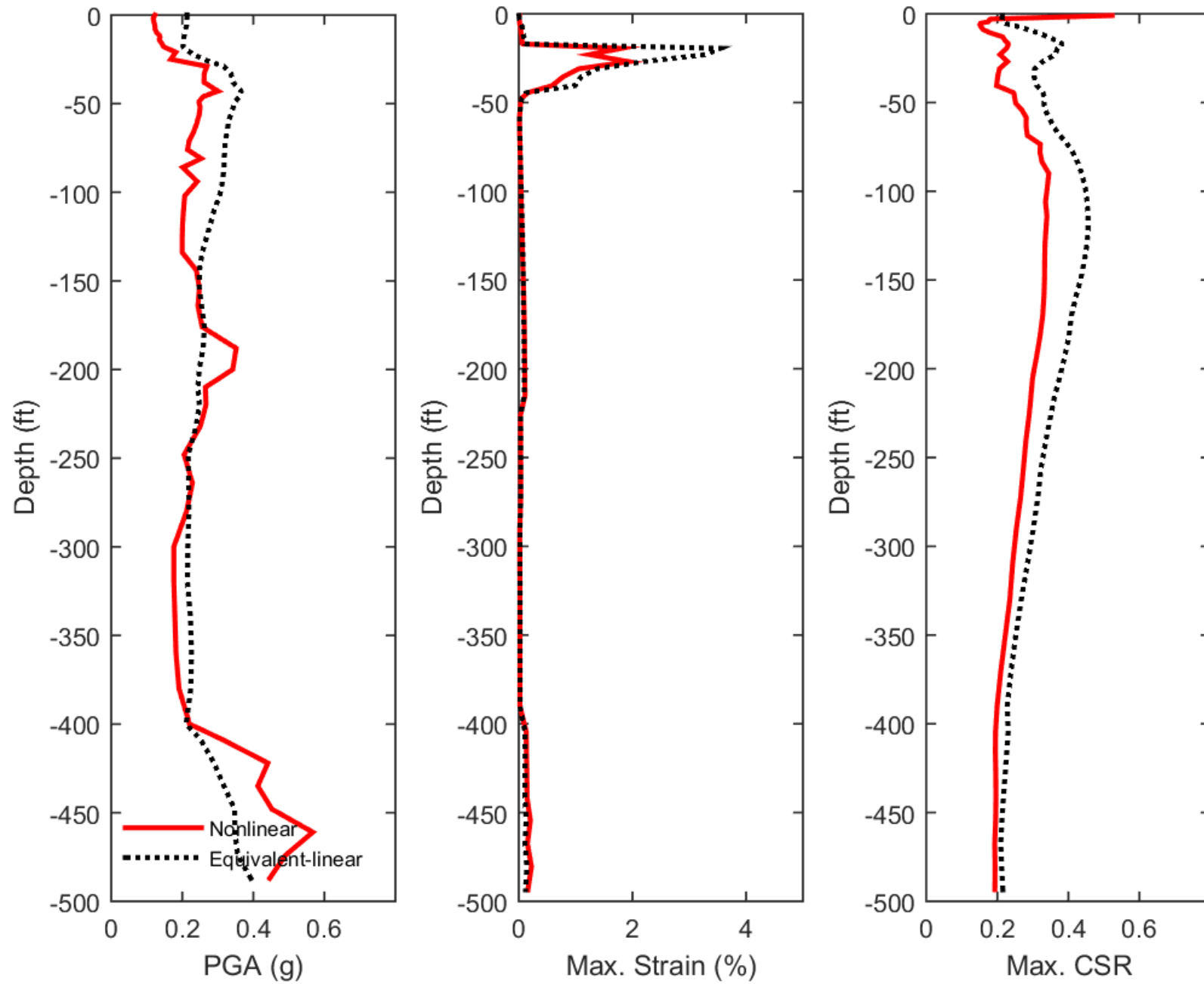
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



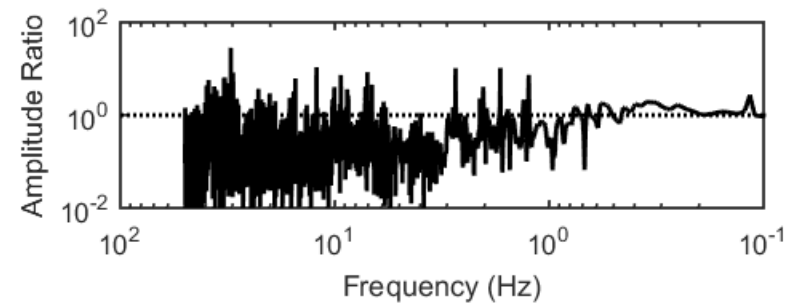
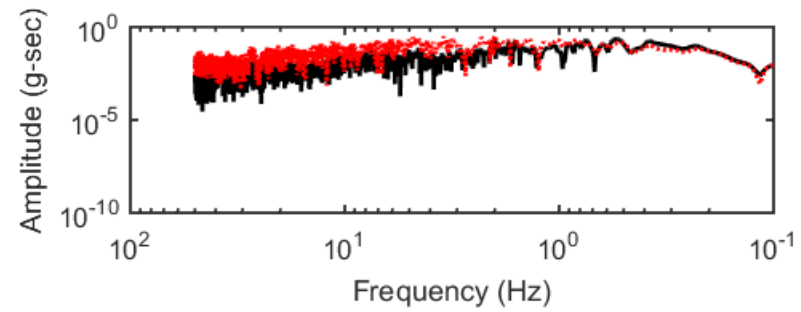
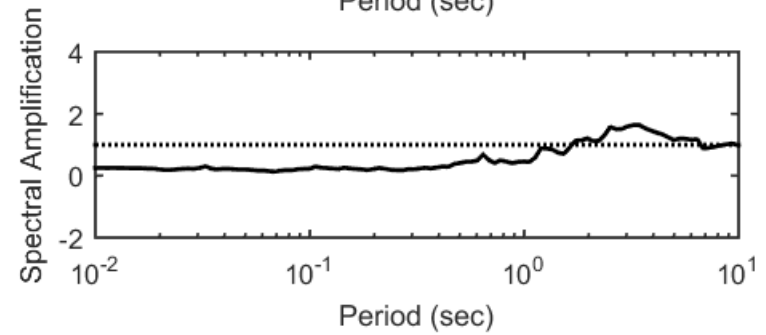
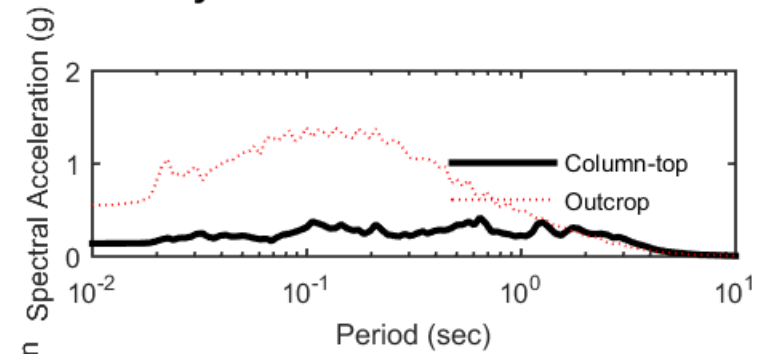
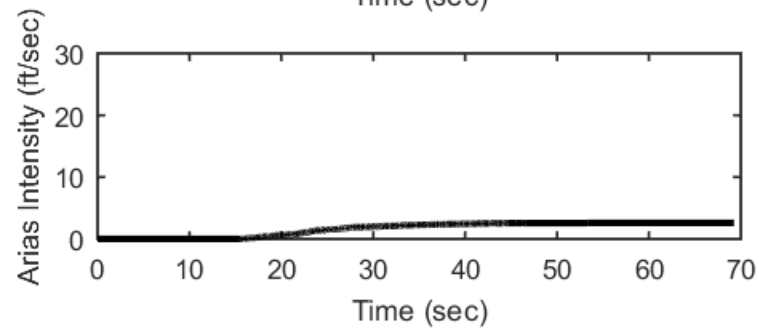
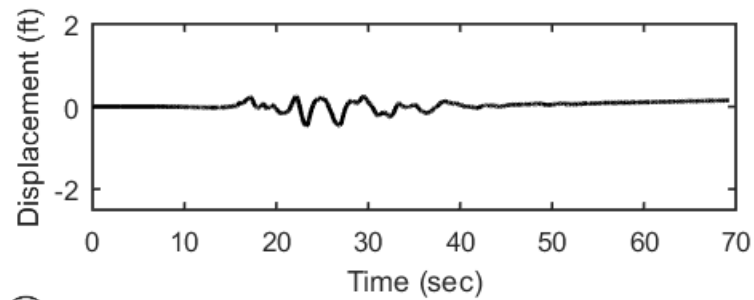
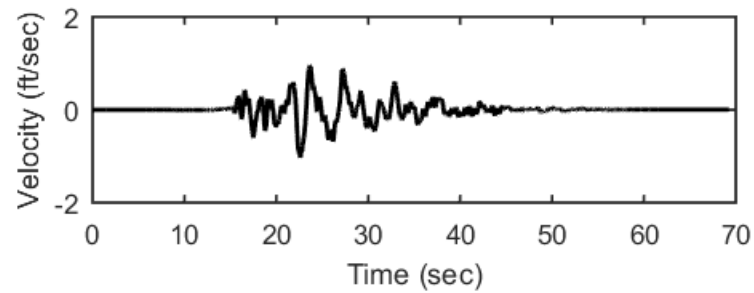
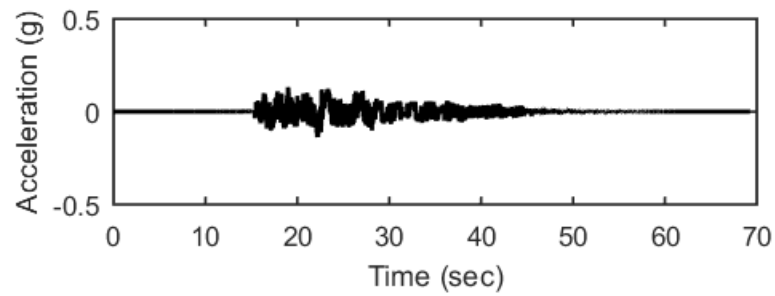
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



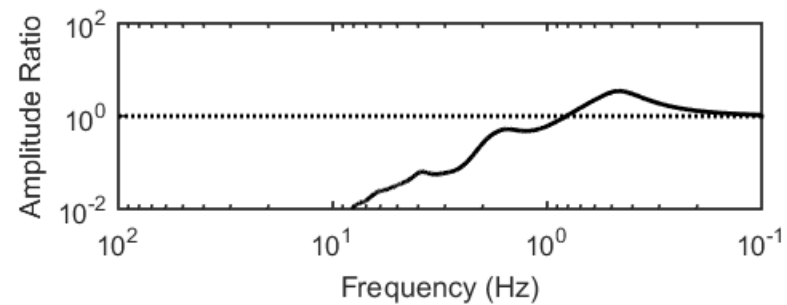
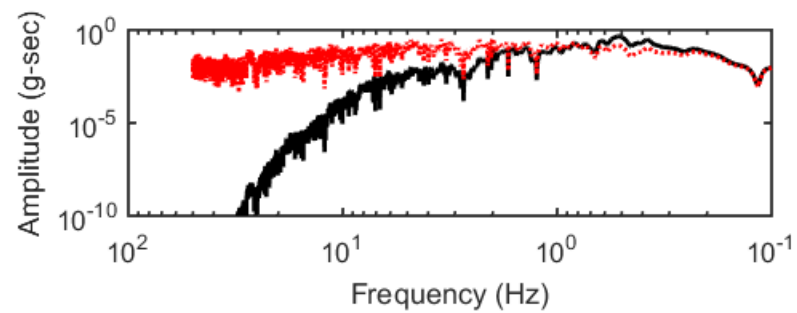
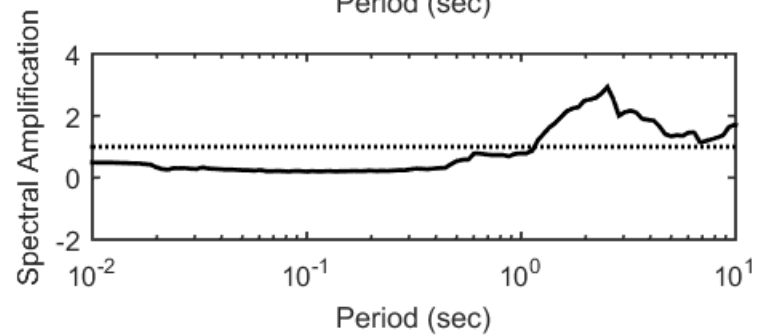
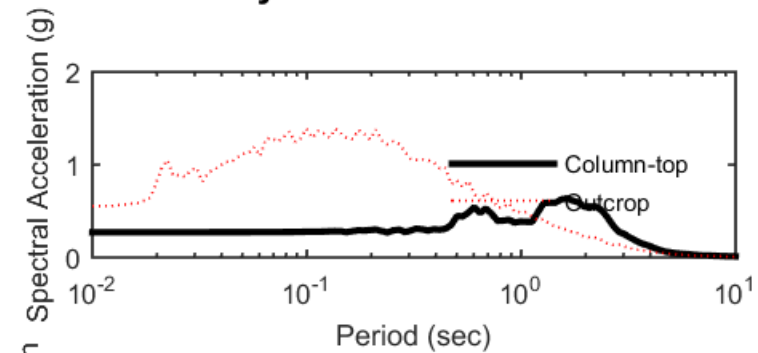
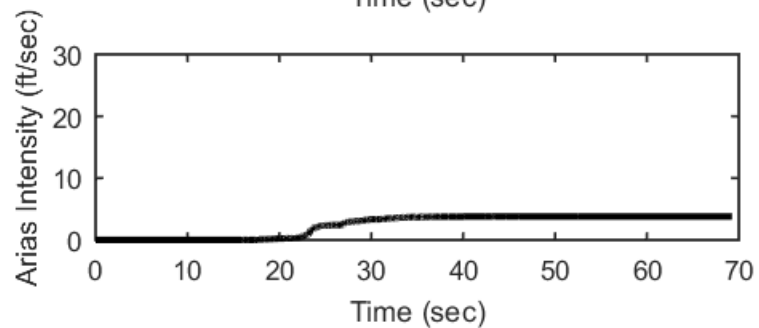
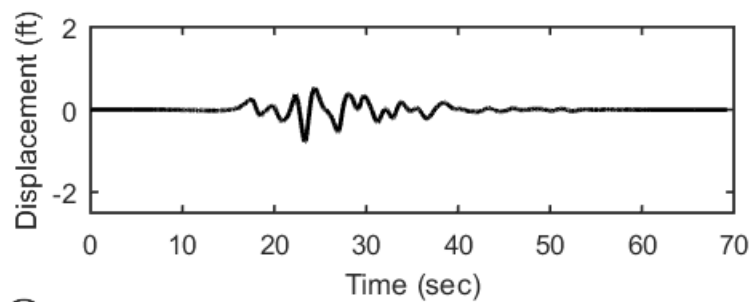
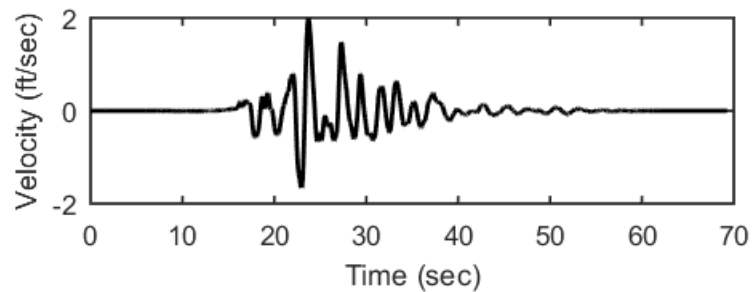
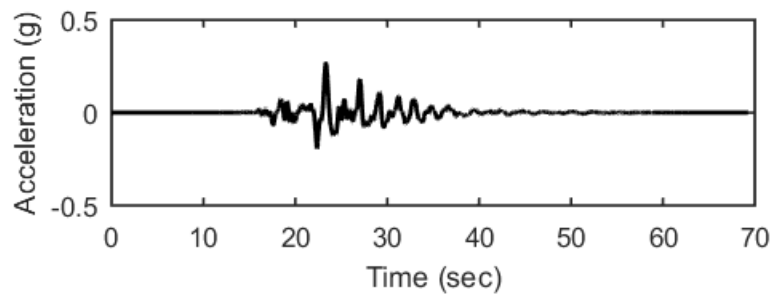
### Profile outputs for Motion: SEE2



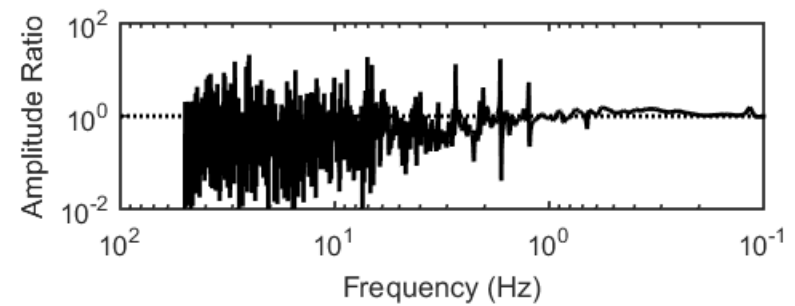
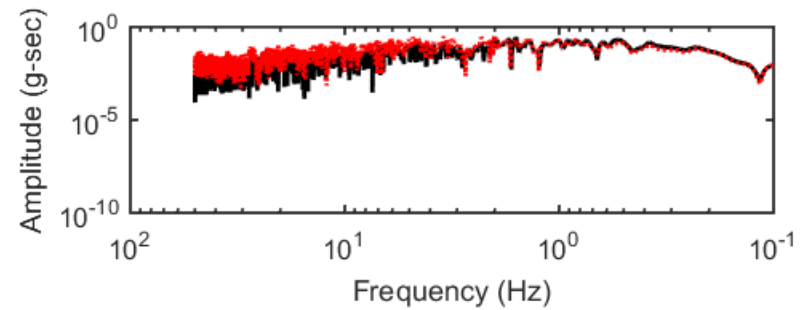
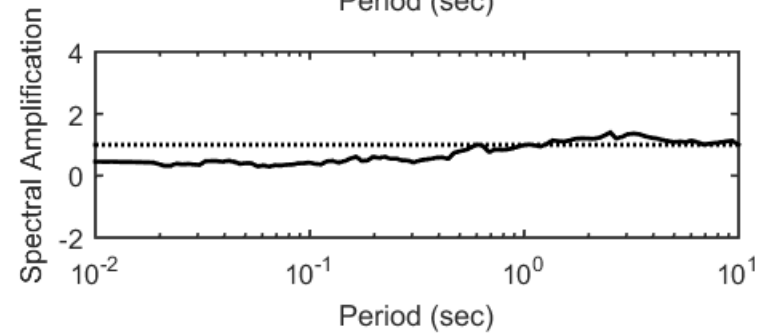
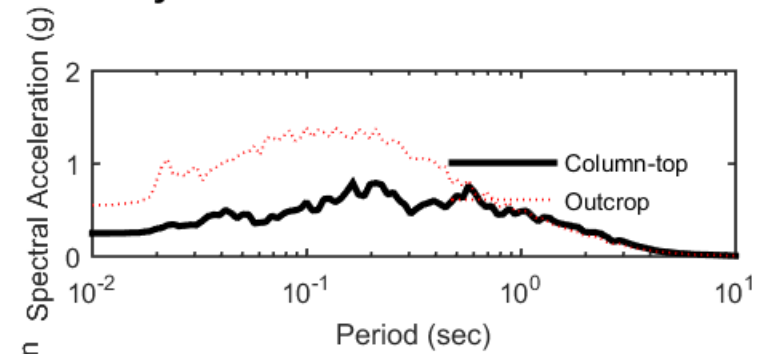
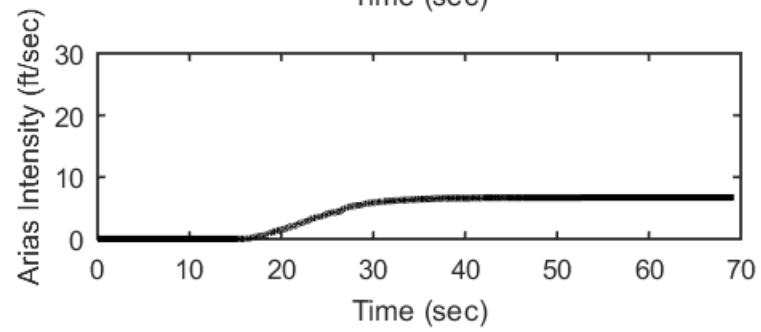
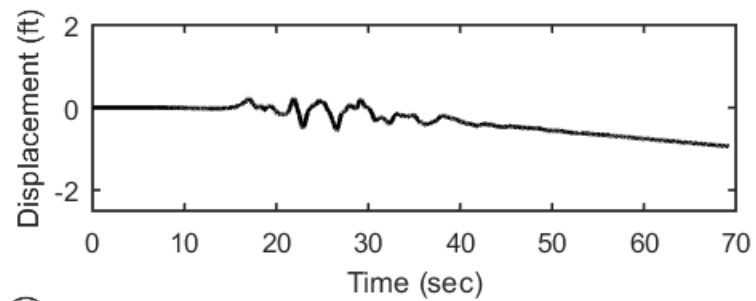
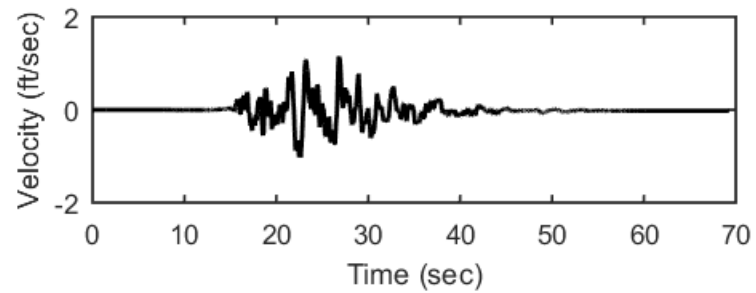
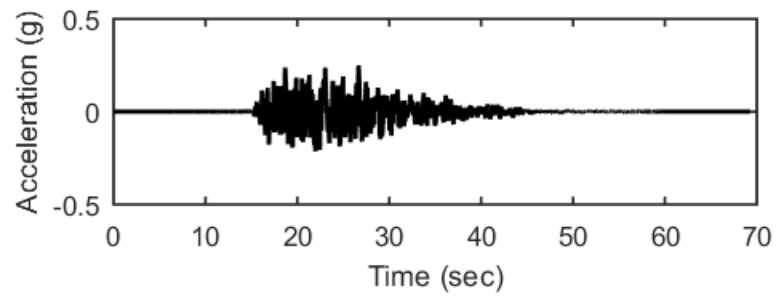
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



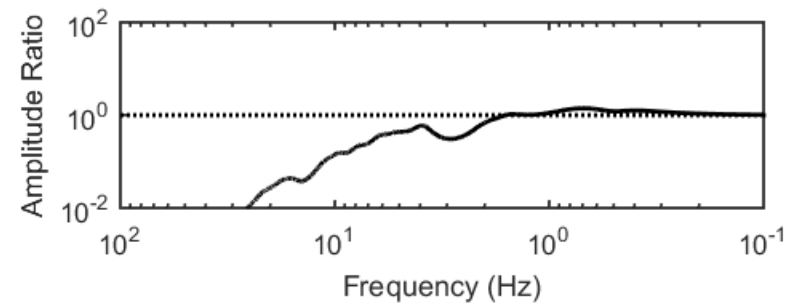
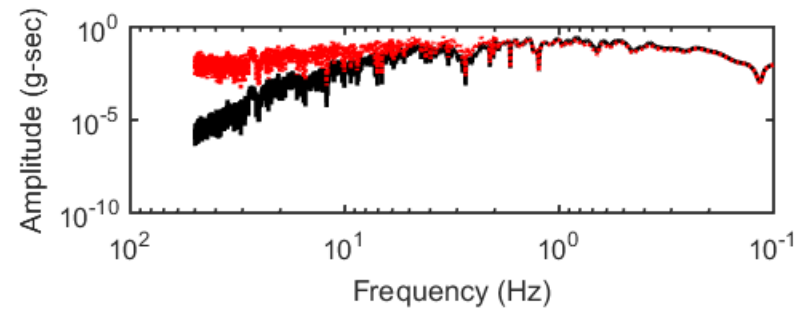
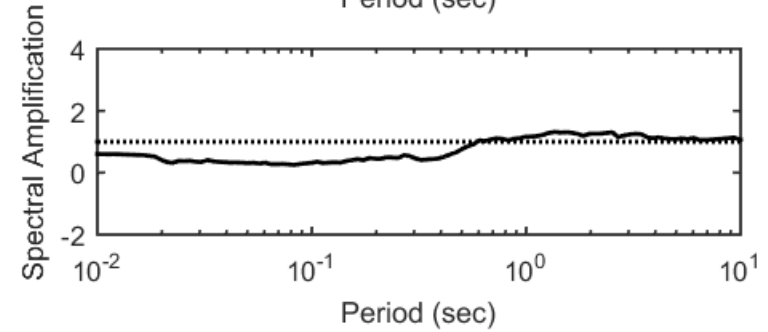
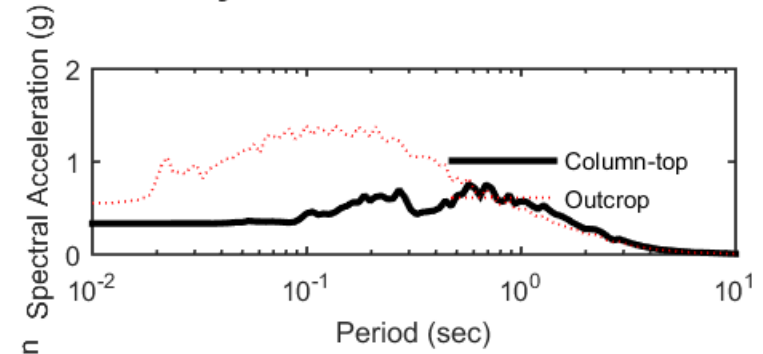
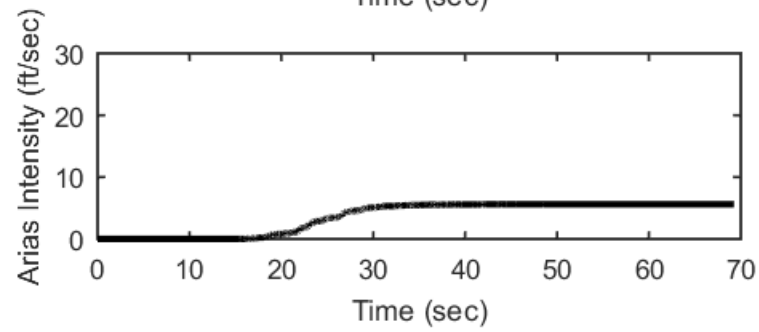
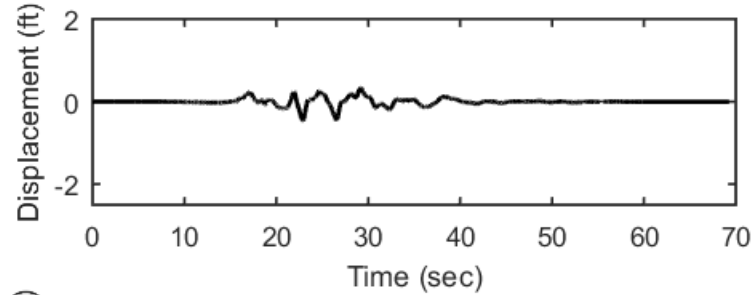
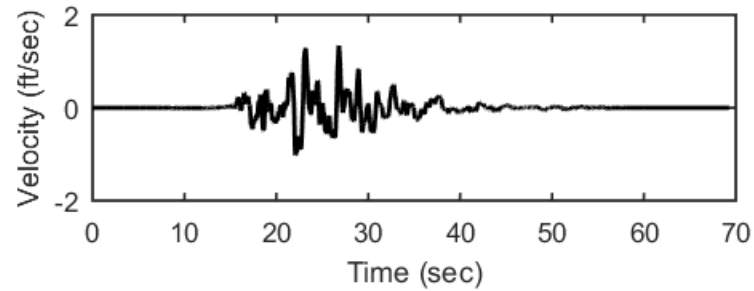
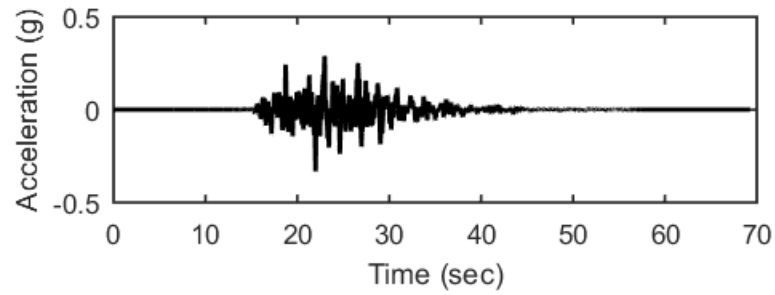
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3

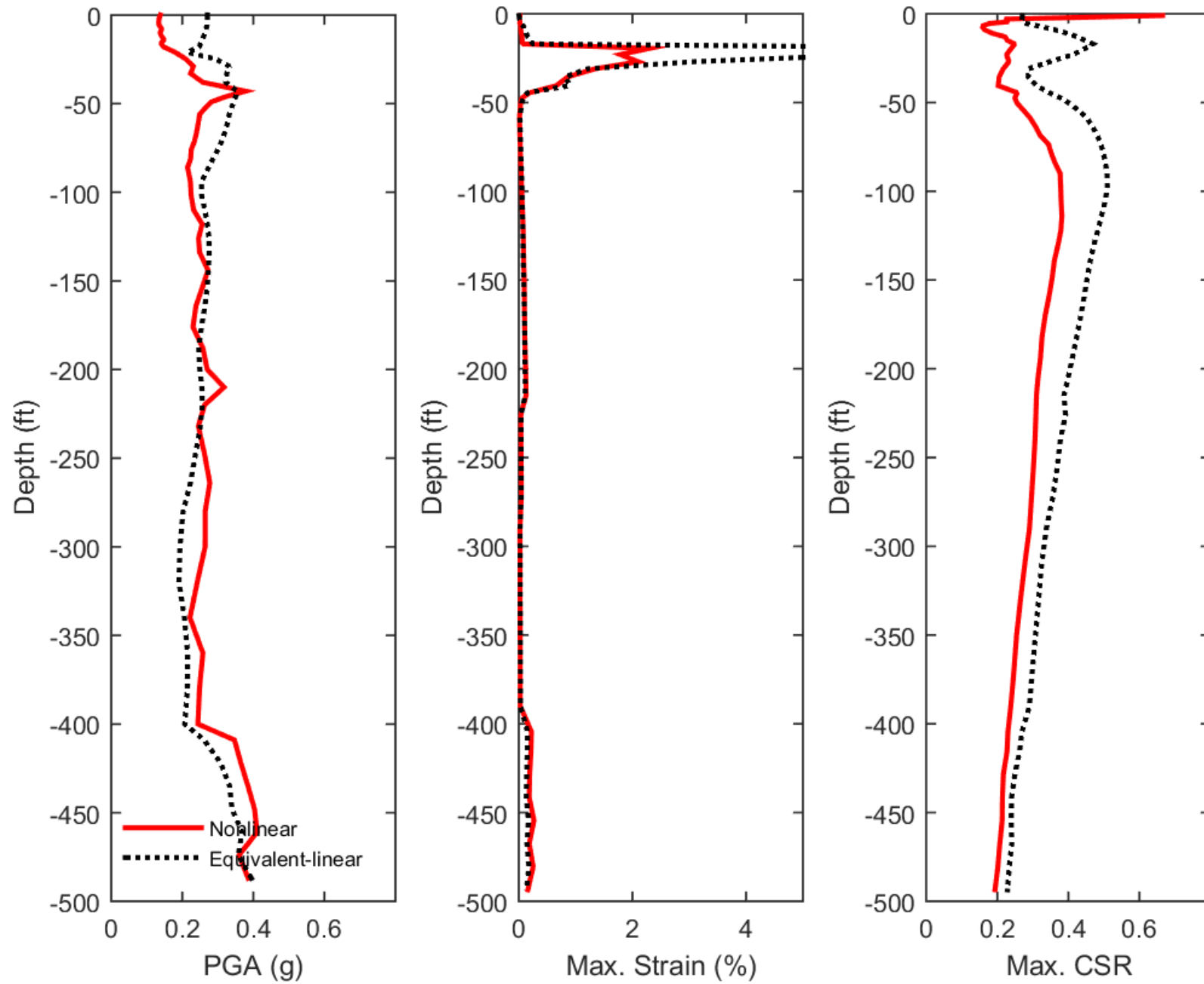


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3

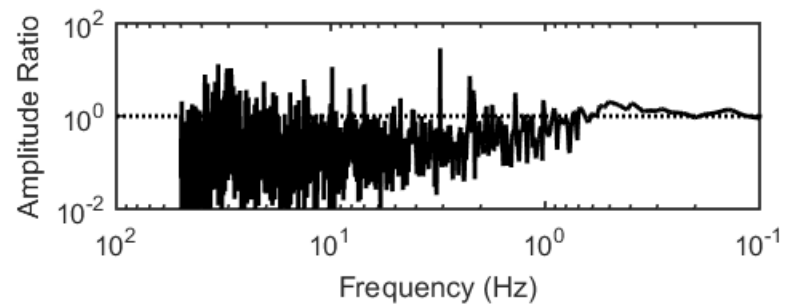
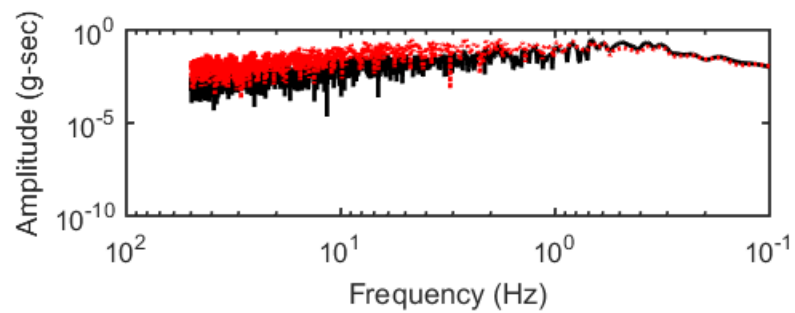
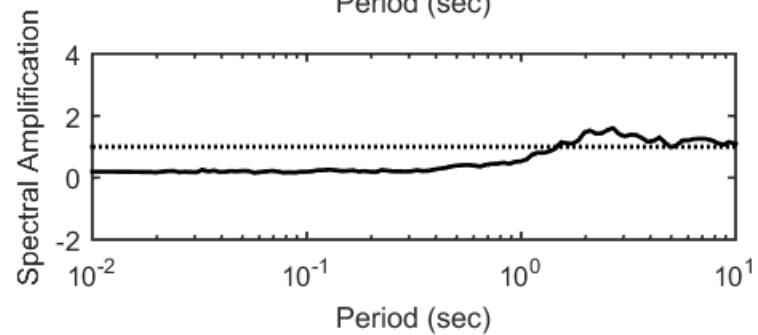
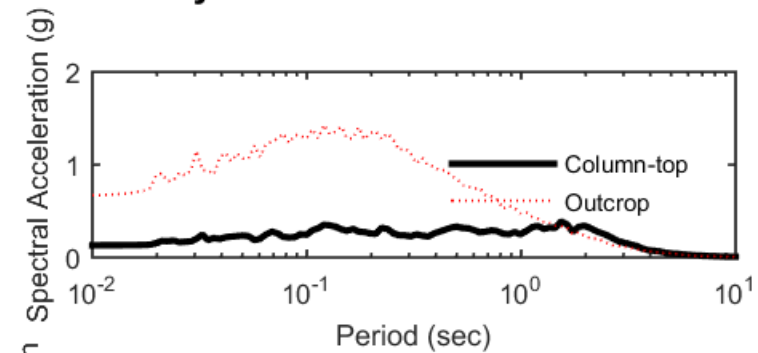
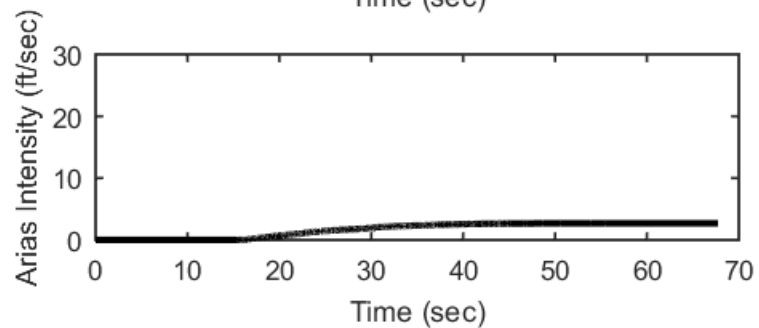
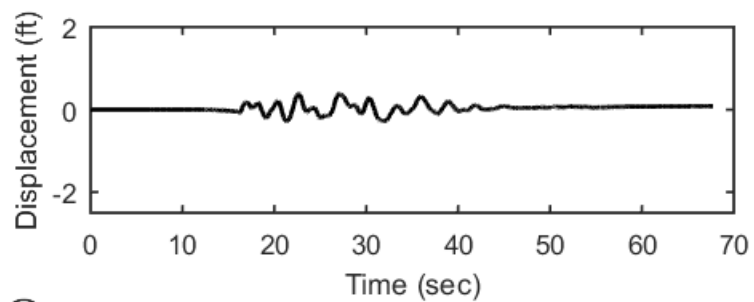
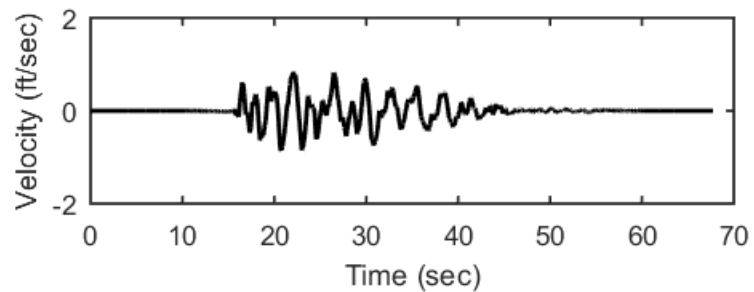
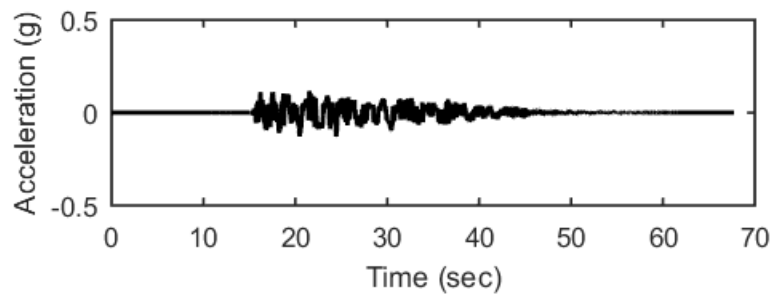




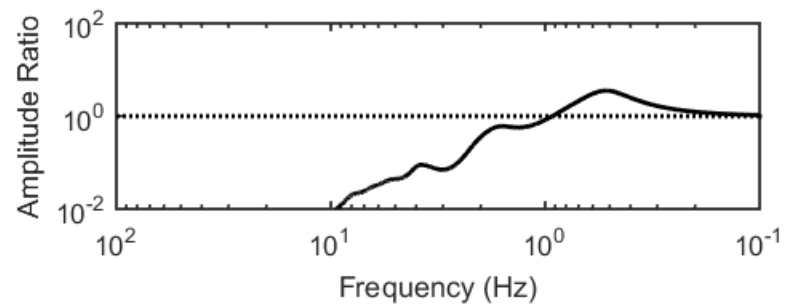
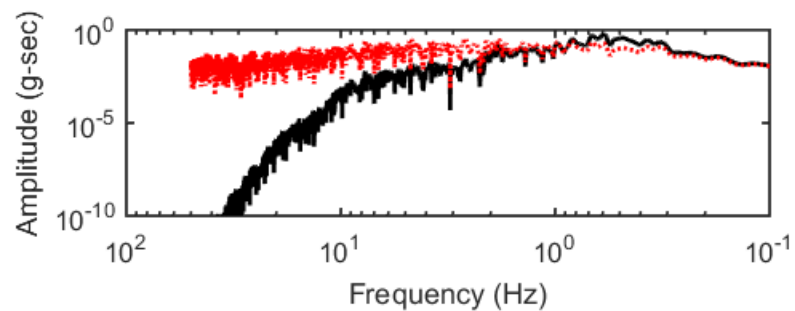
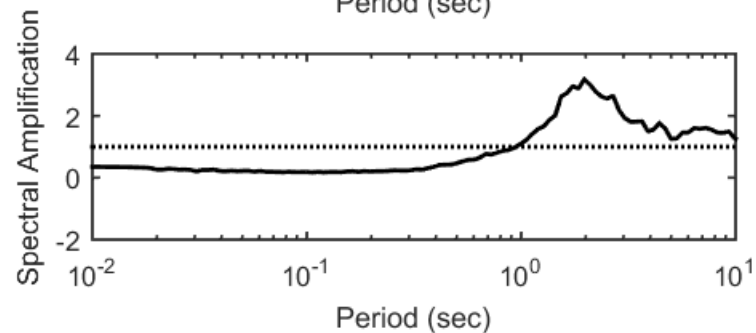
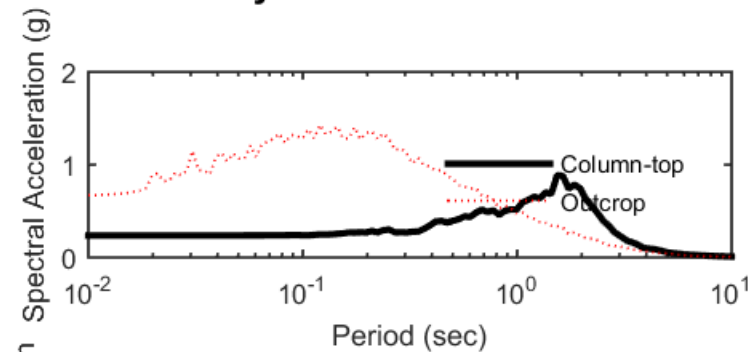
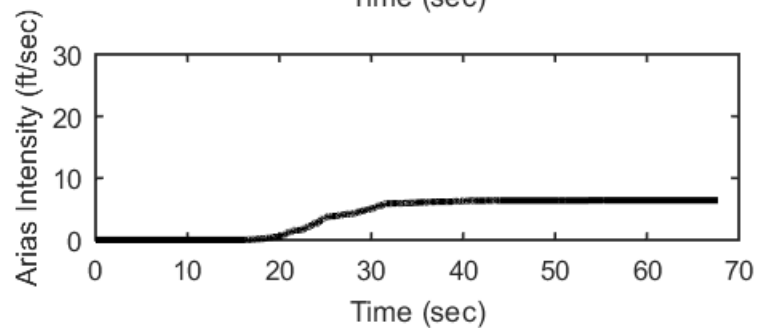
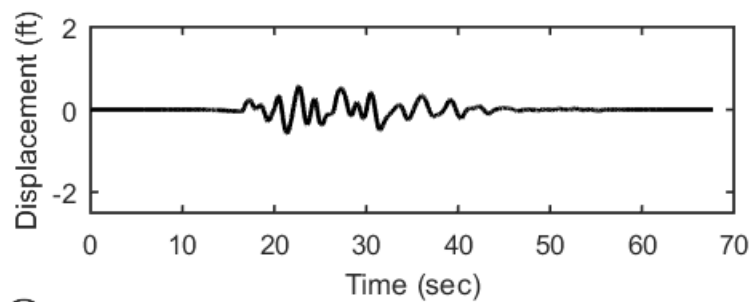
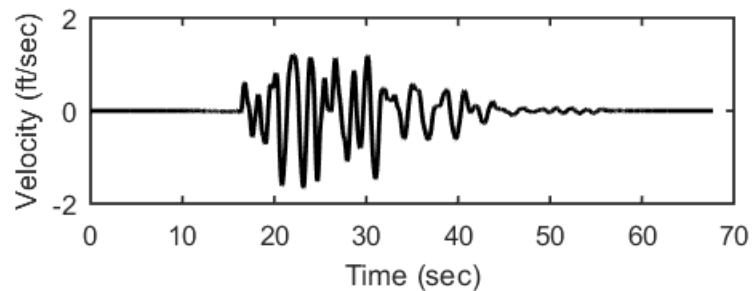
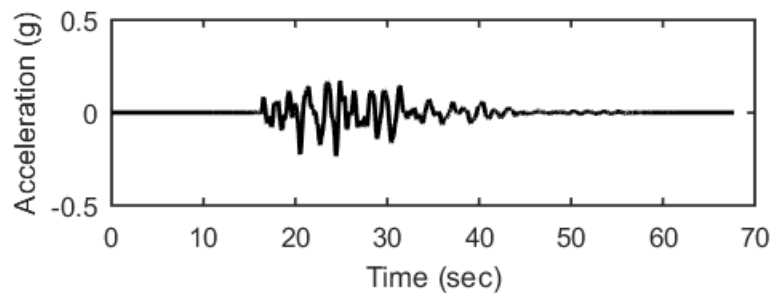
### Profile outputs for Motion: SEE3



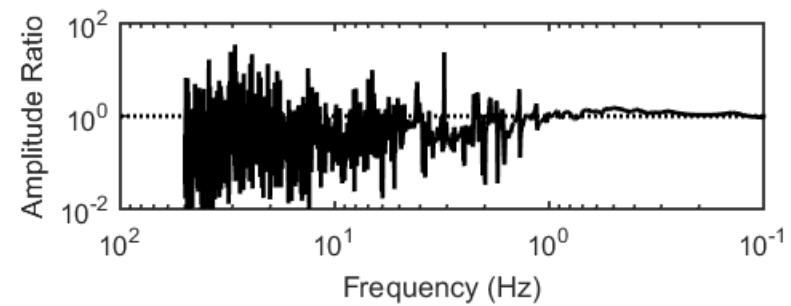
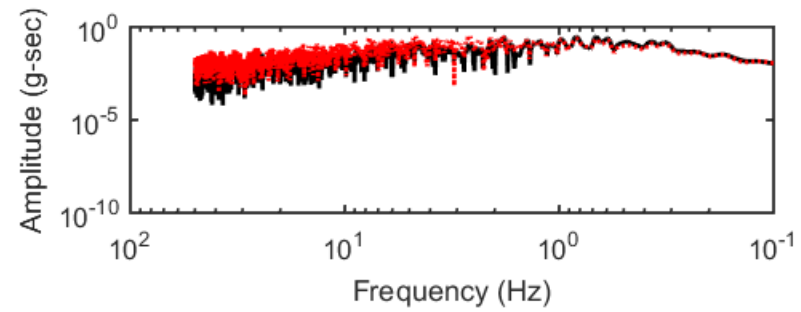
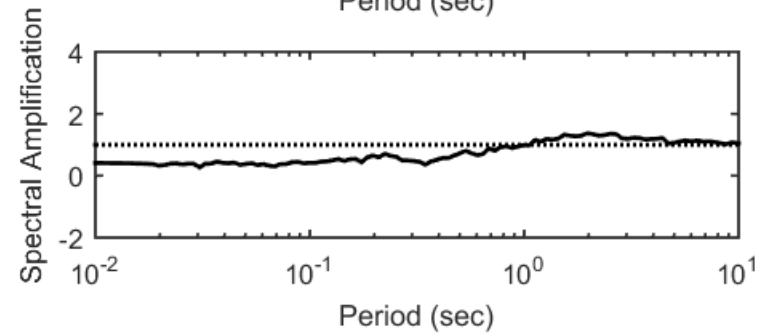
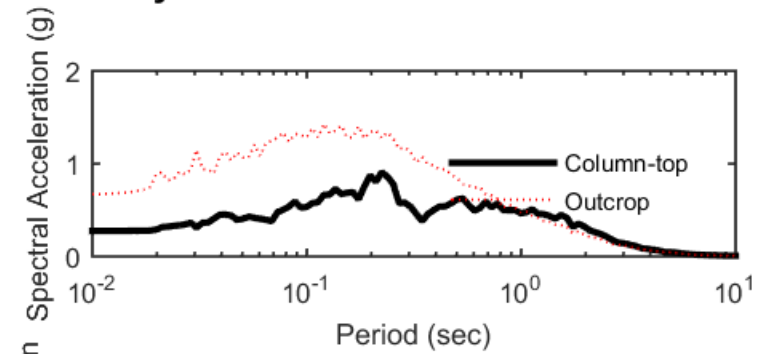
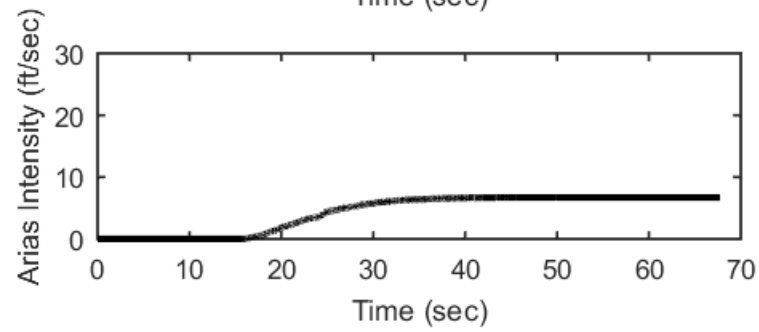
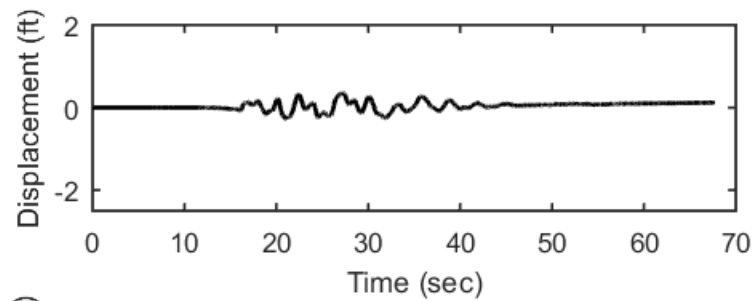
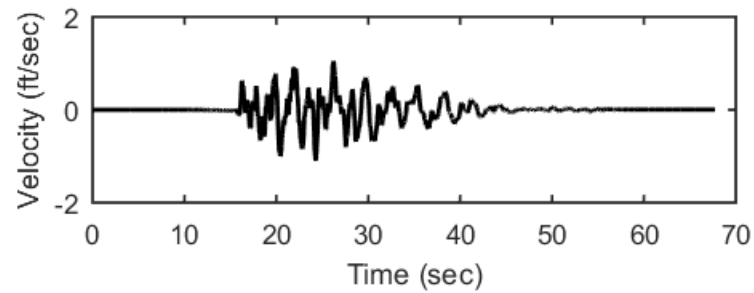
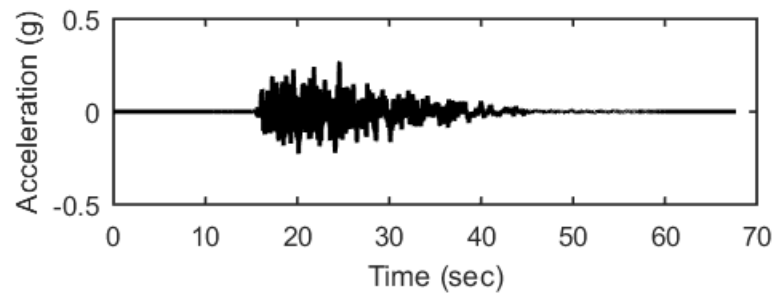
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



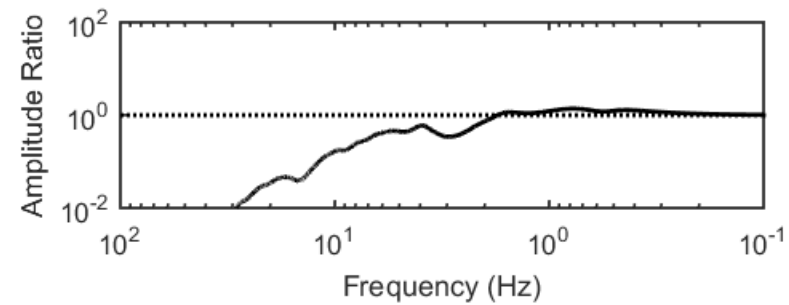
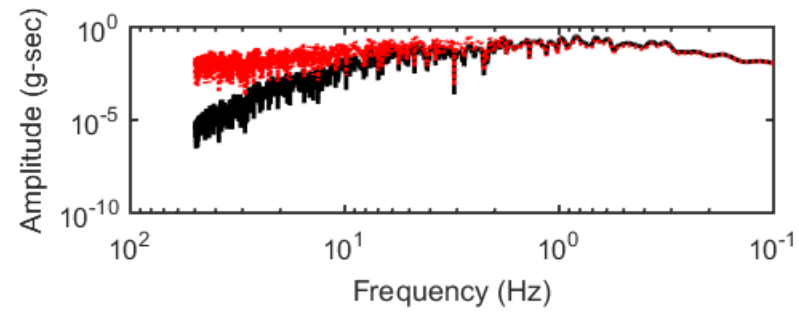
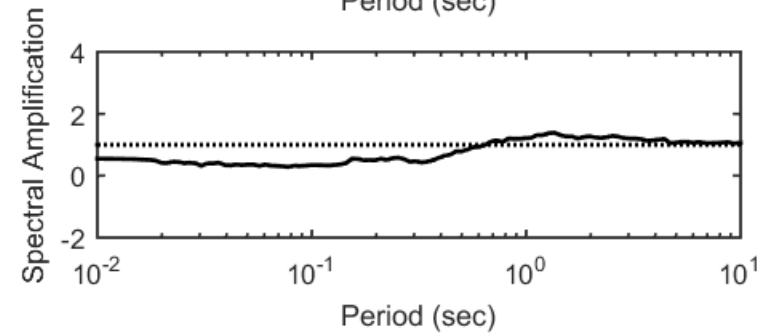
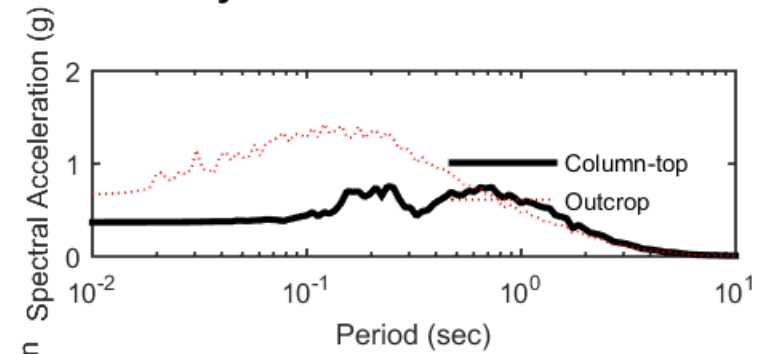
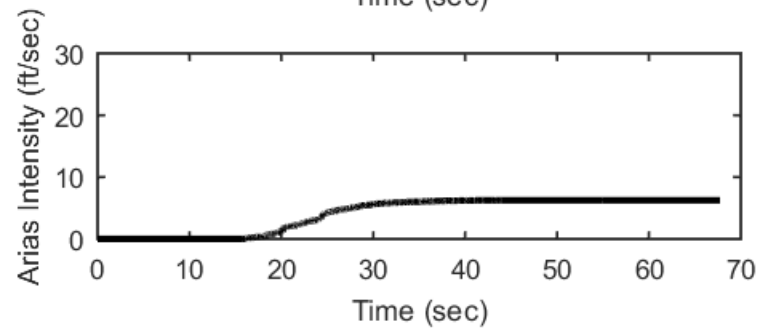
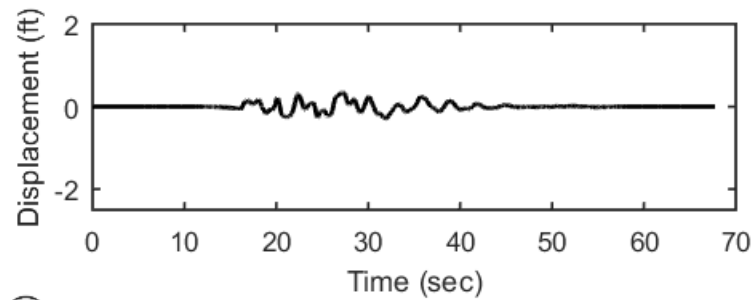
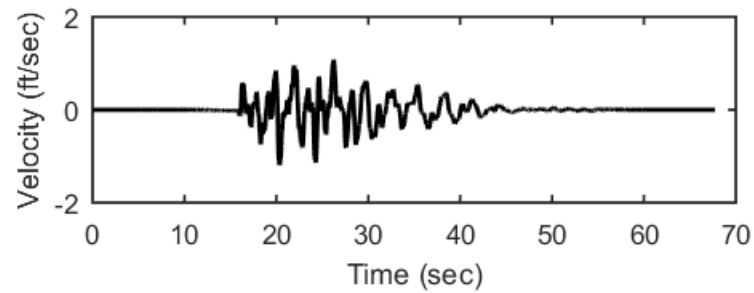
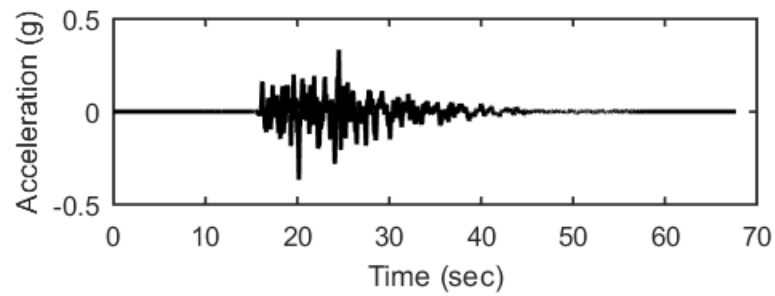
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



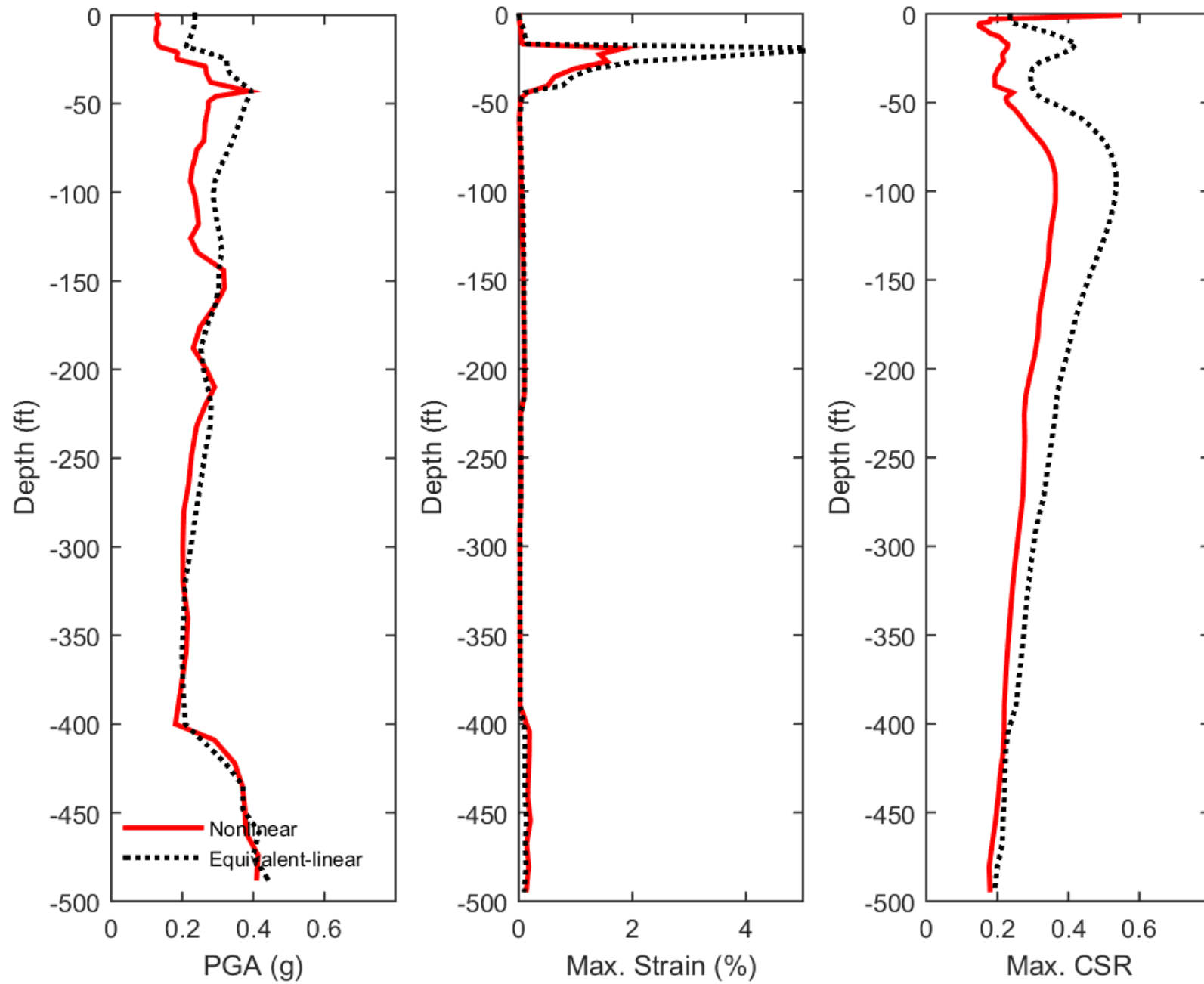
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



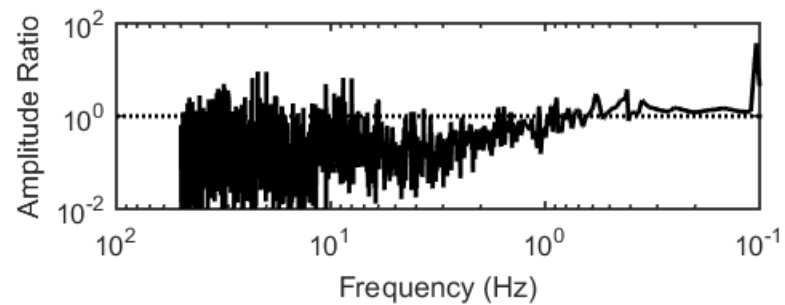
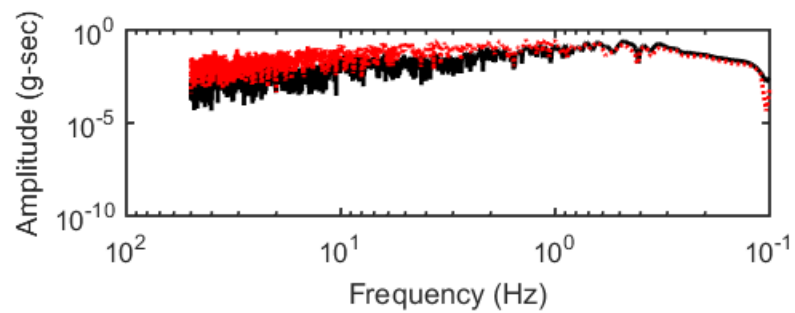
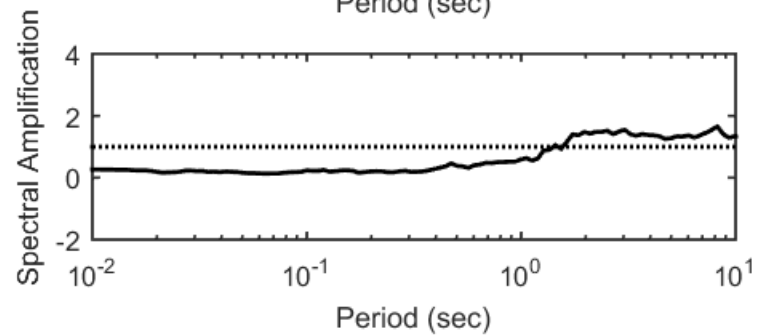
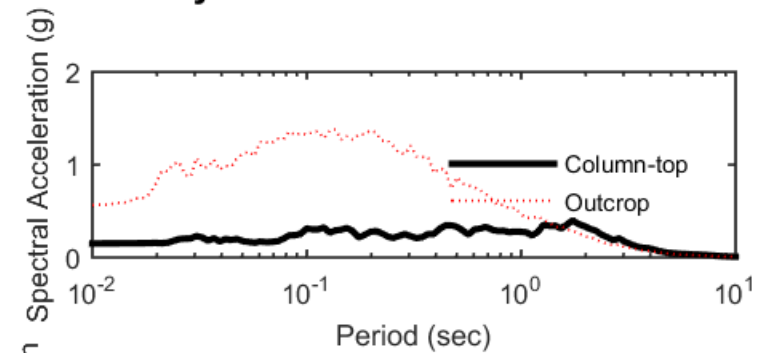
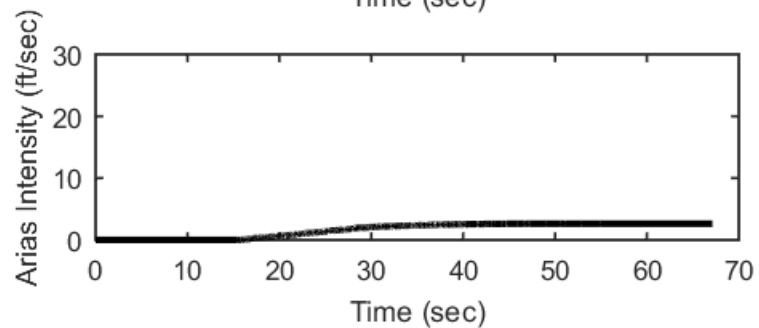
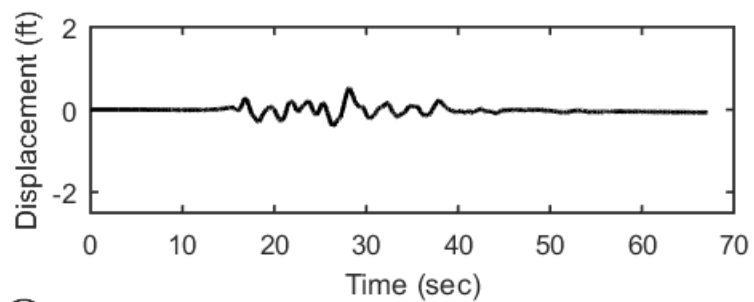
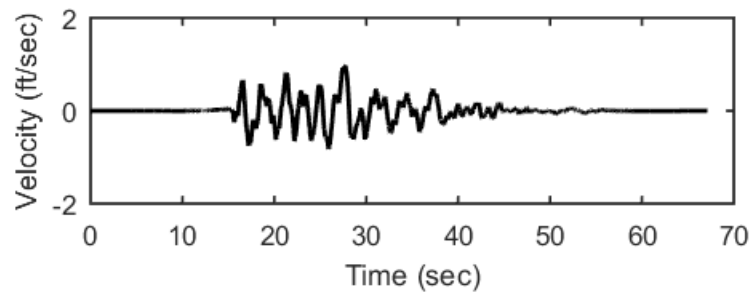
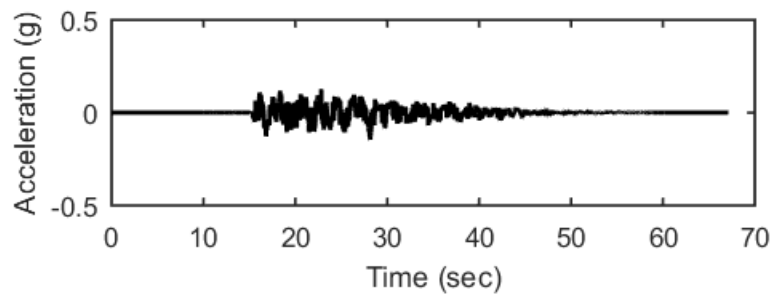
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



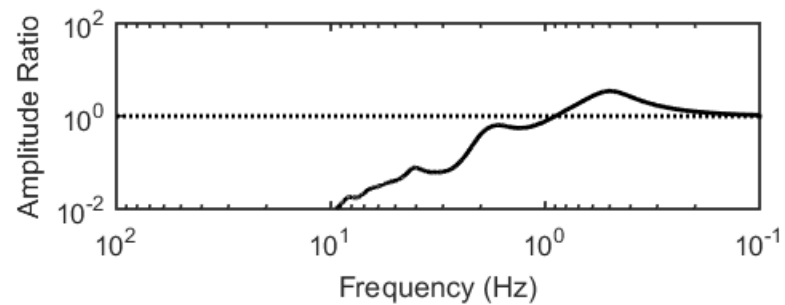
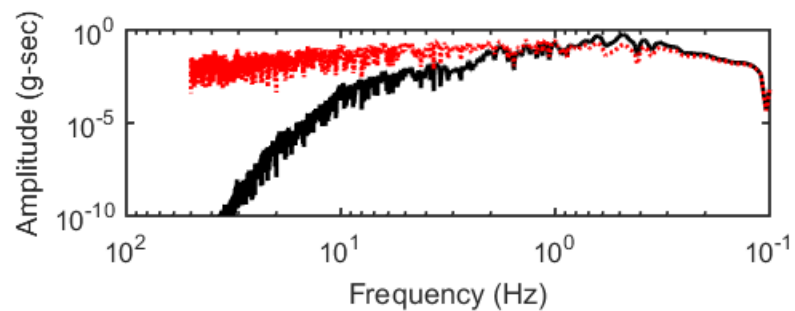
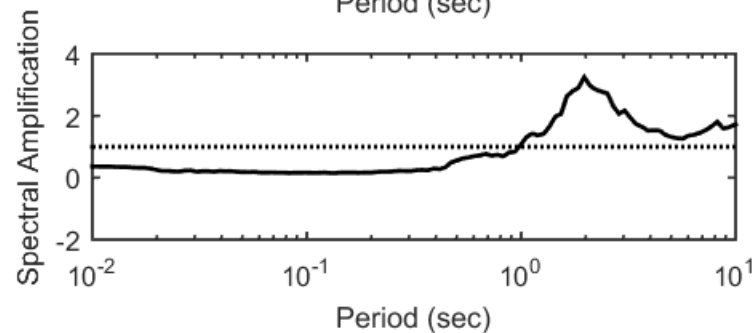
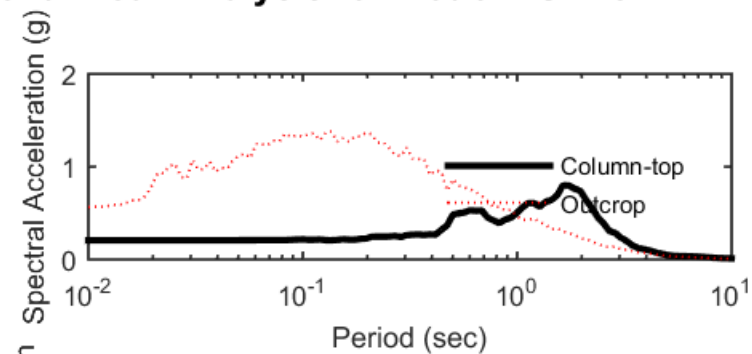
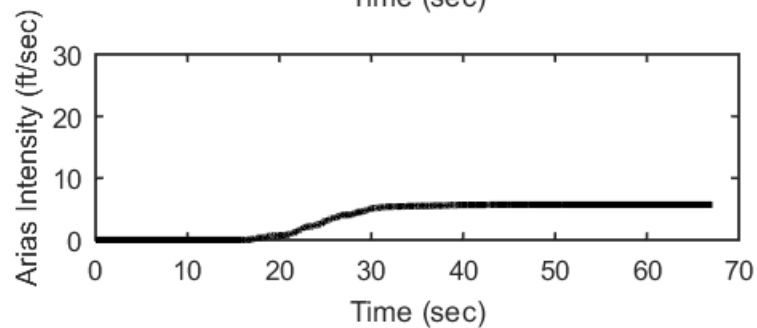
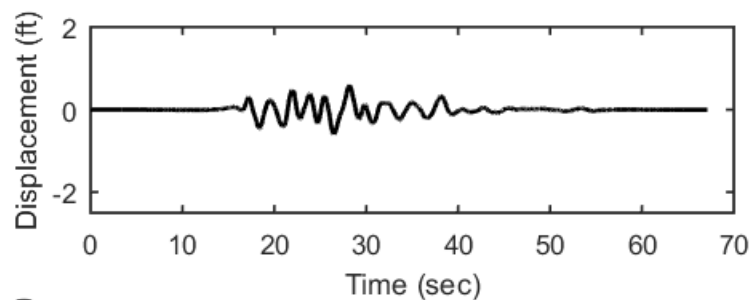
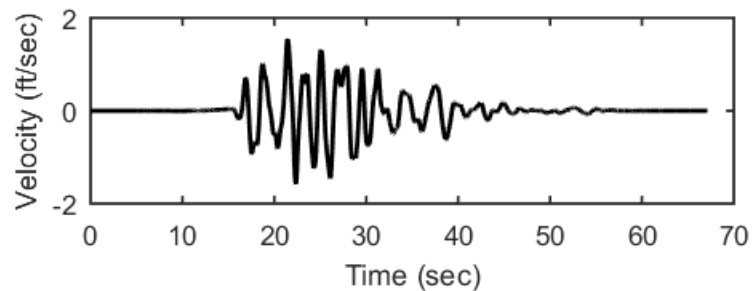
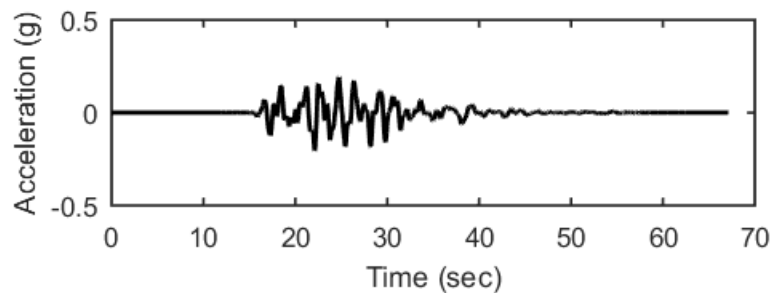
### Profile outputs for Motion: SEE4



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5

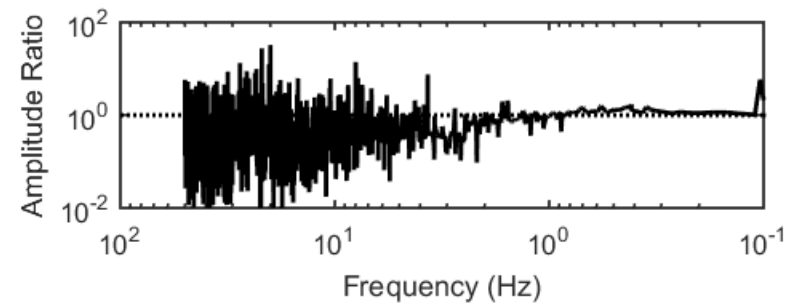
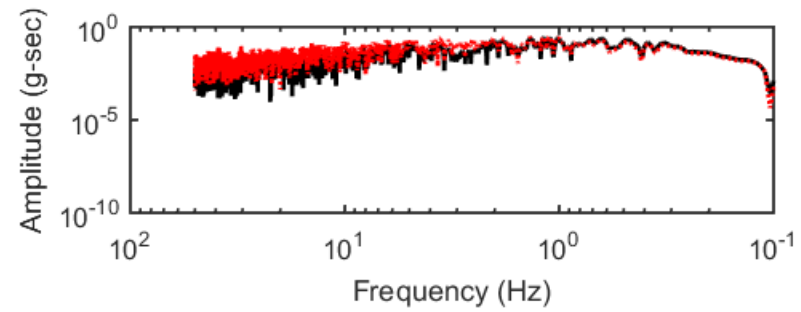
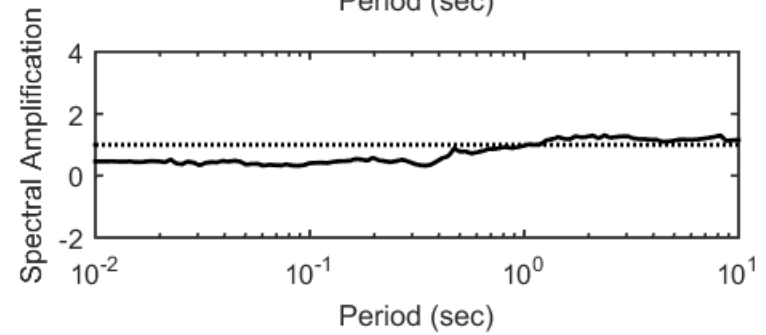
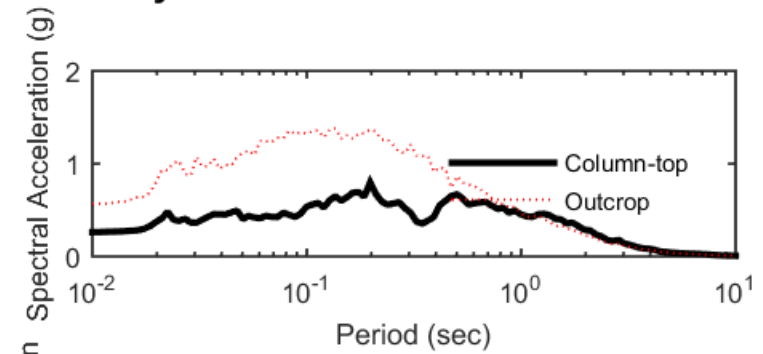
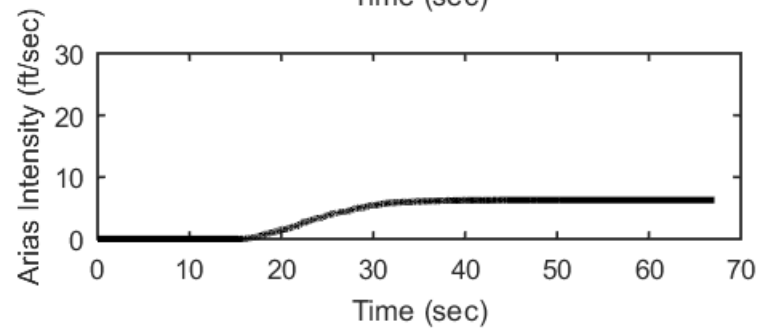
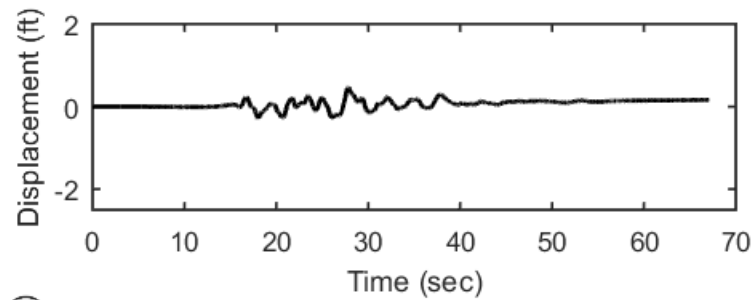
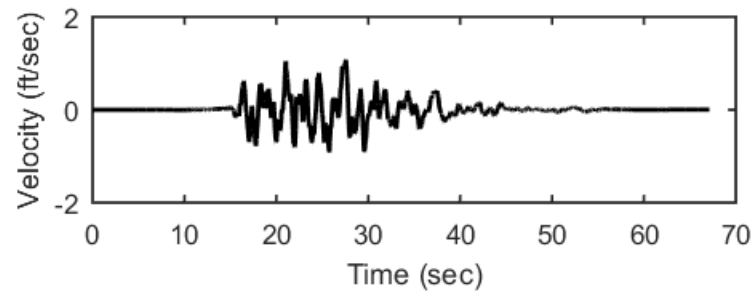
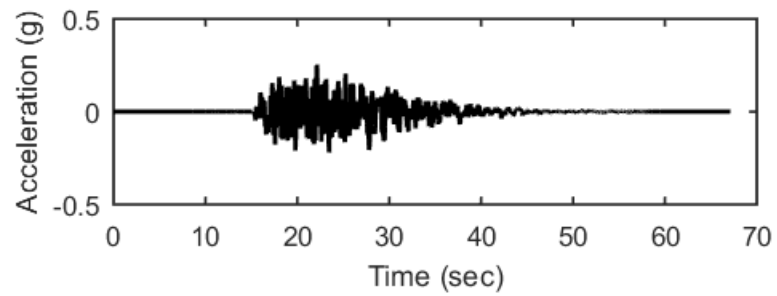


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5

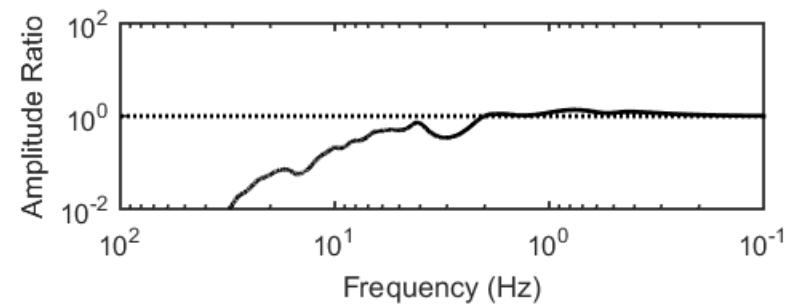
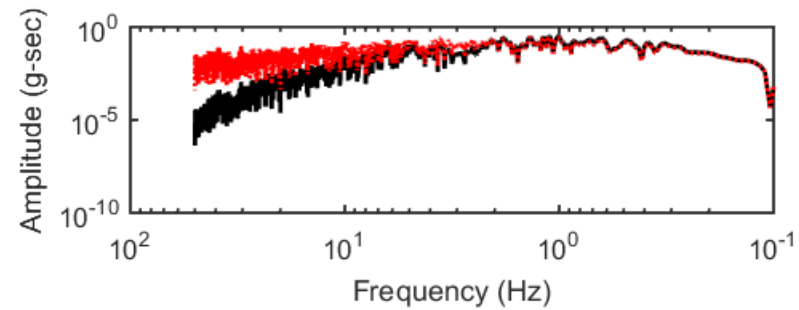
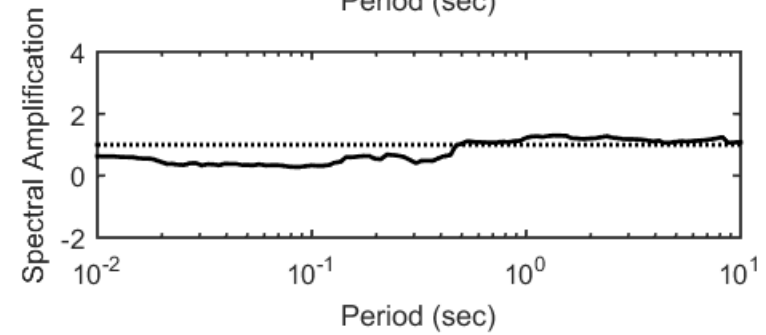
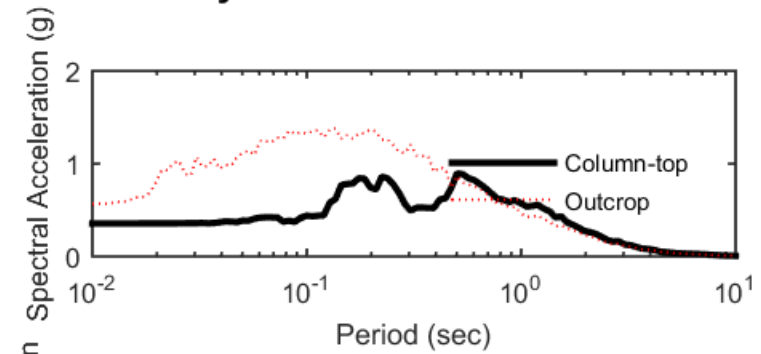
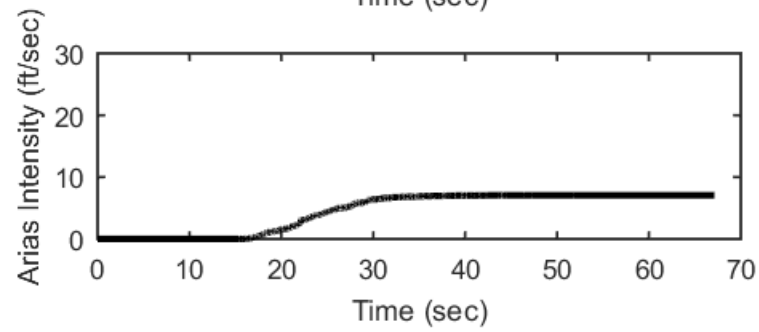
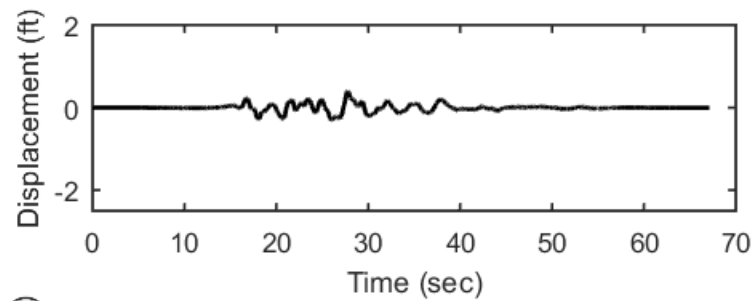
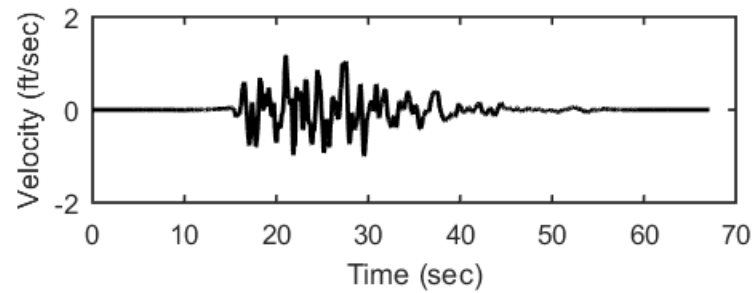
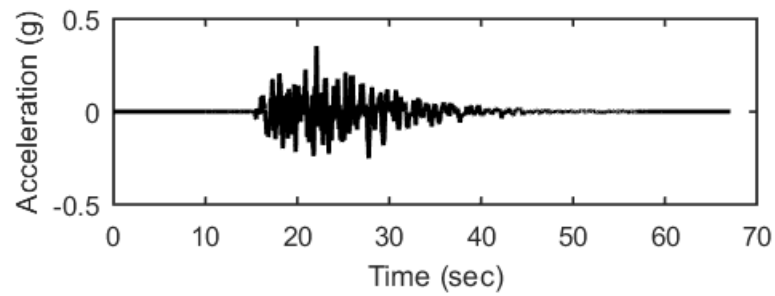




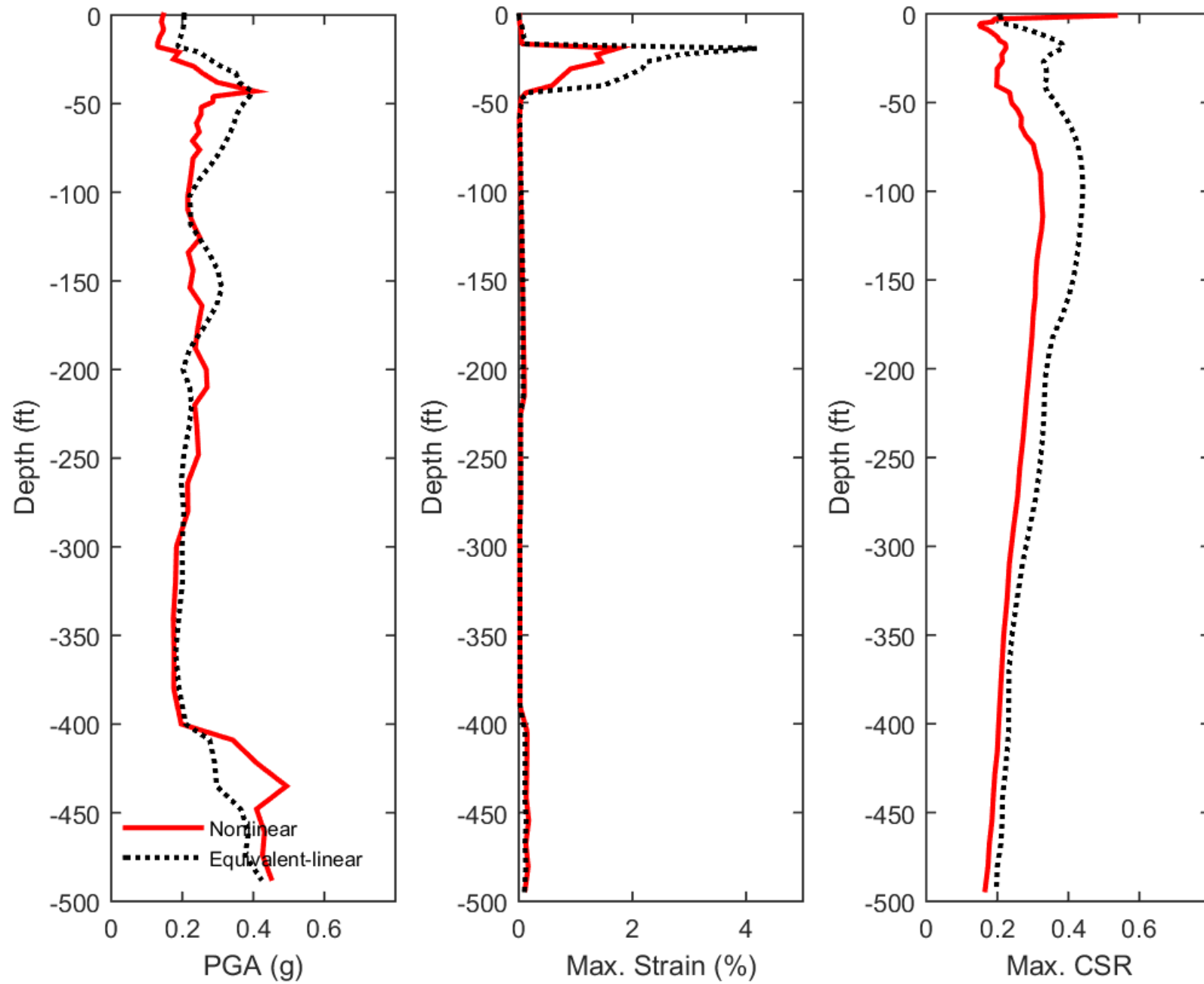
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



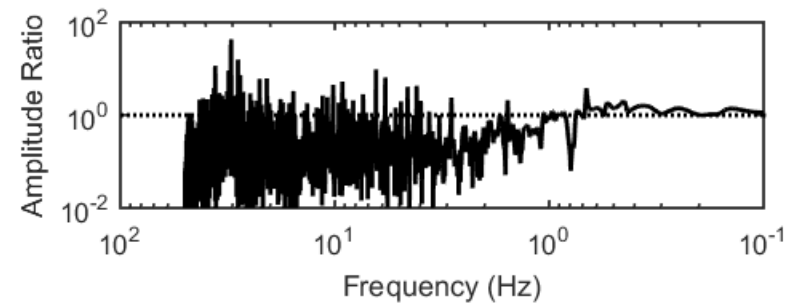
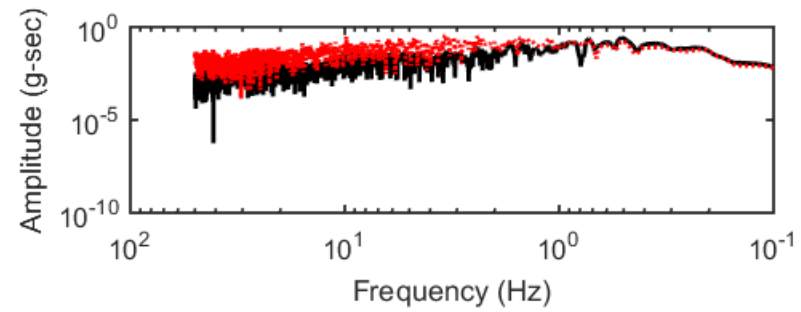
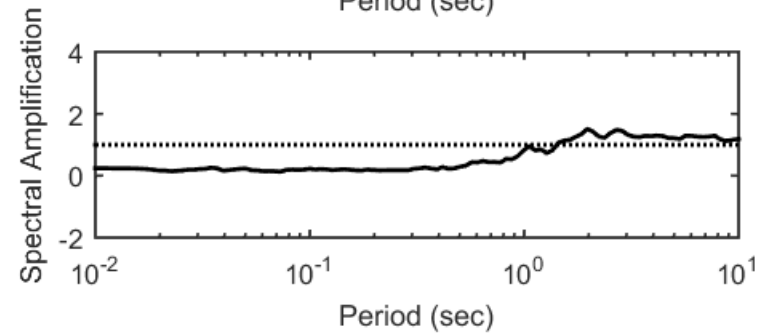
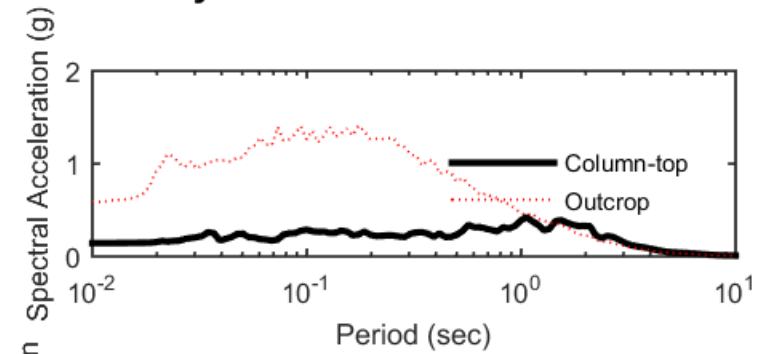
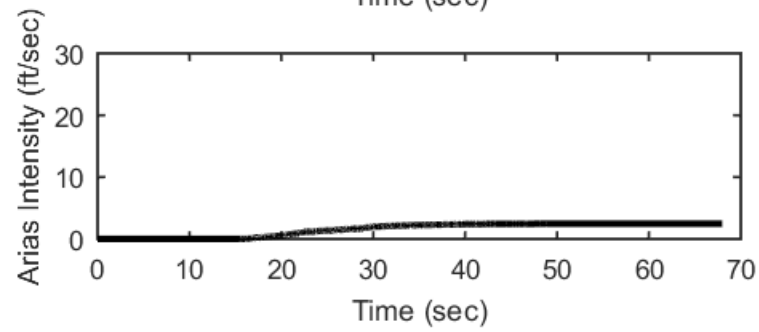
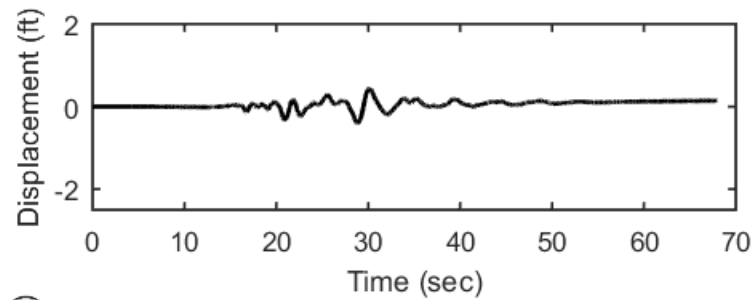
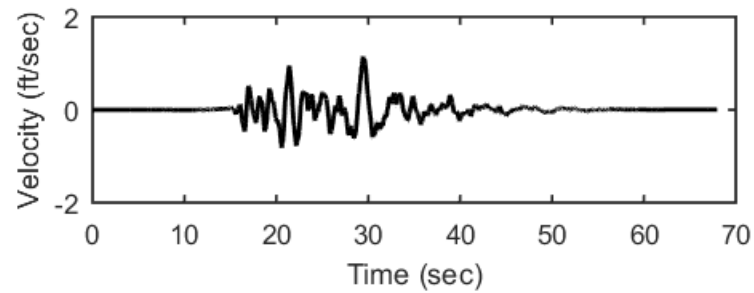
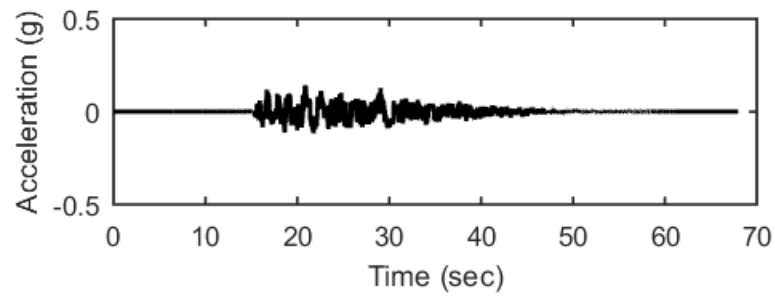
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



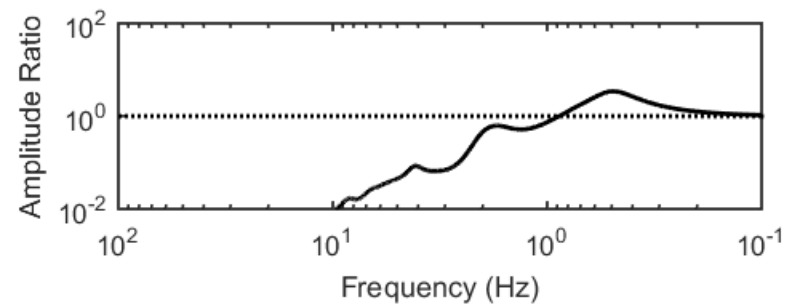
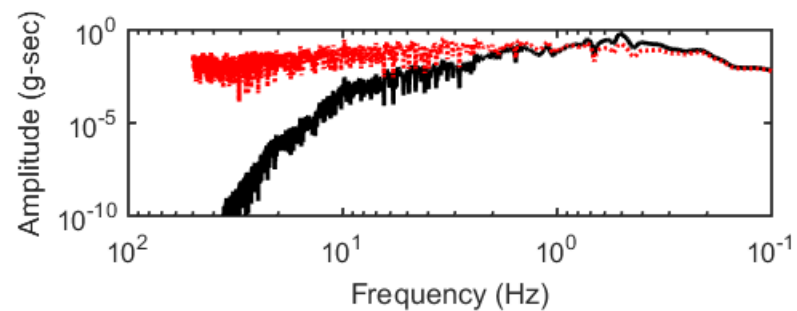
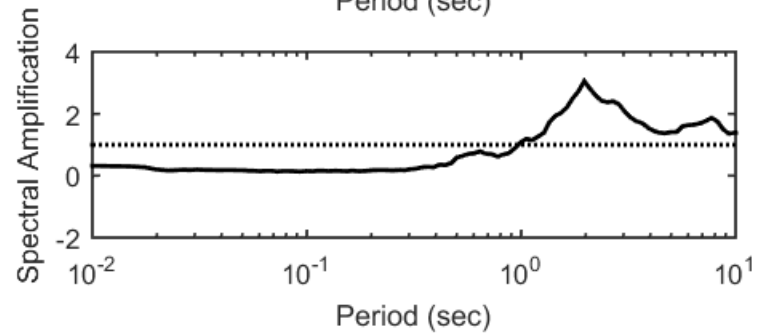
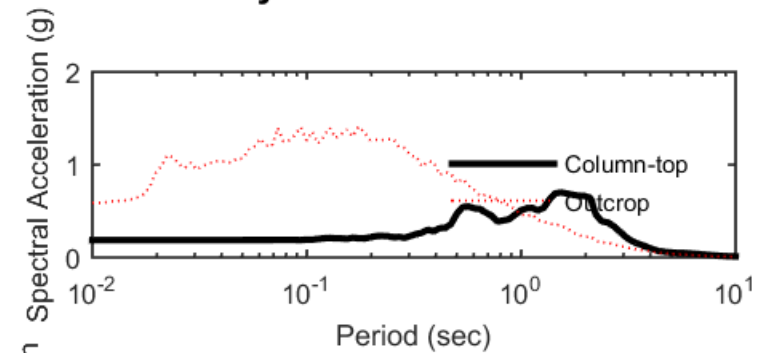
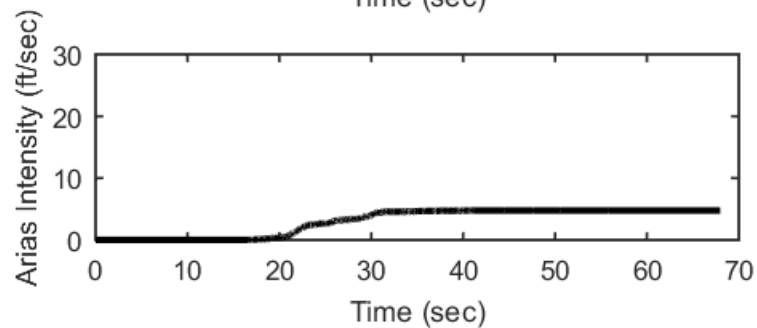
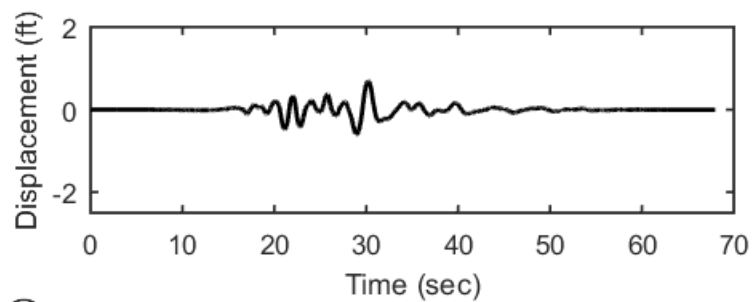
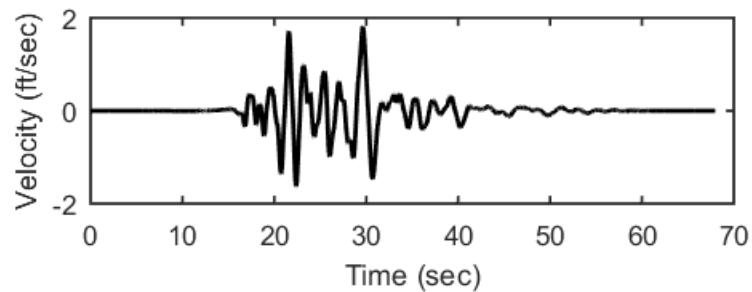
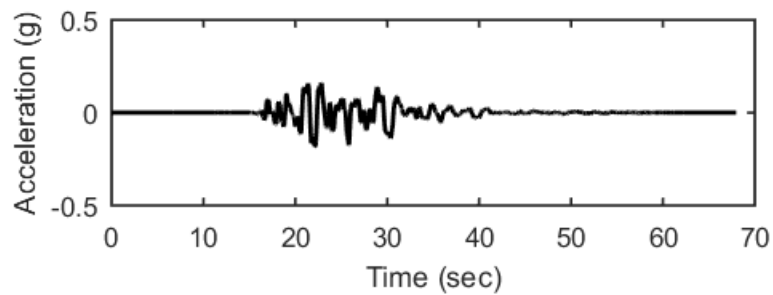
### Profile outputs for Motion: SEE5



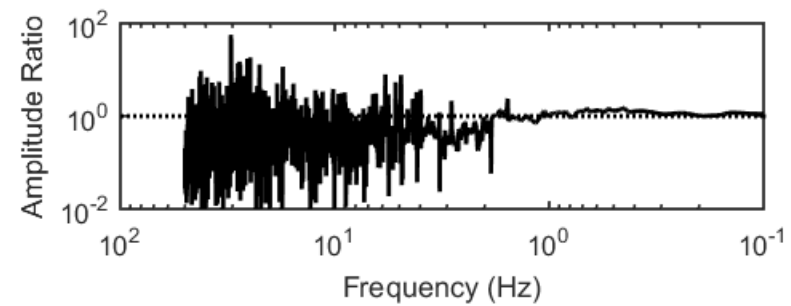
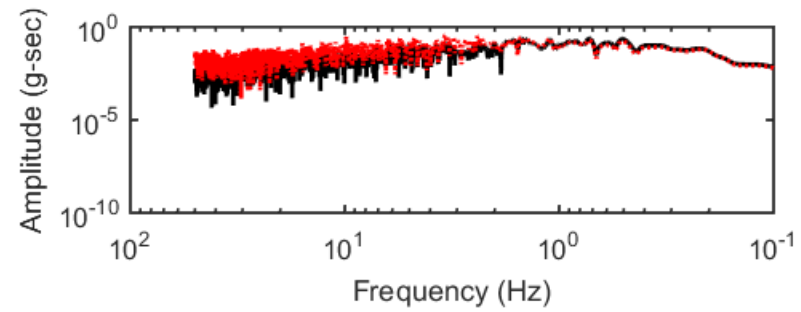
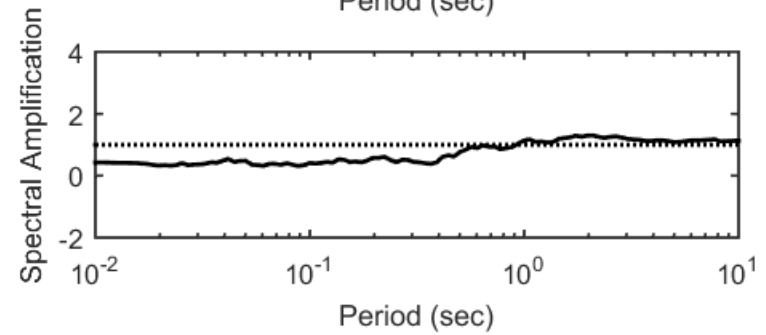
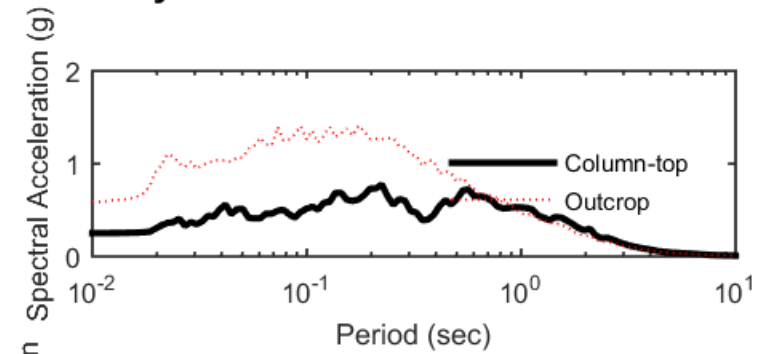
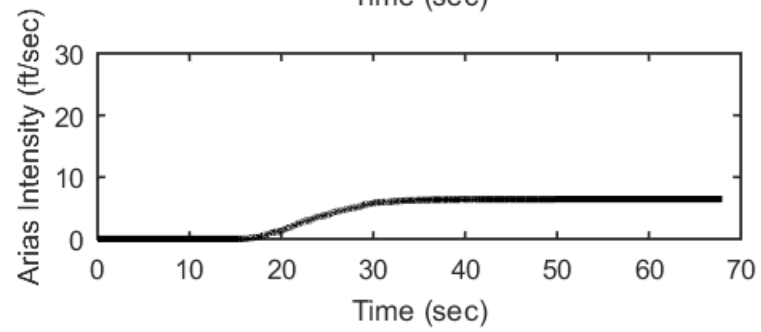
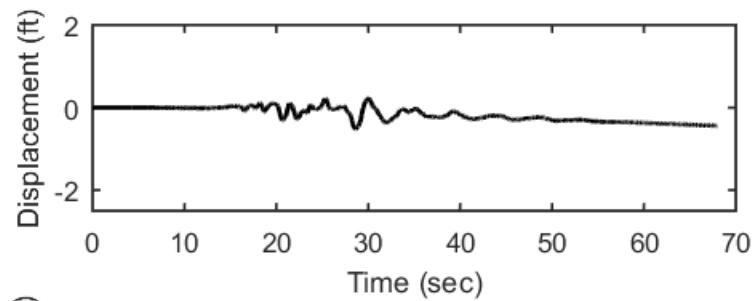
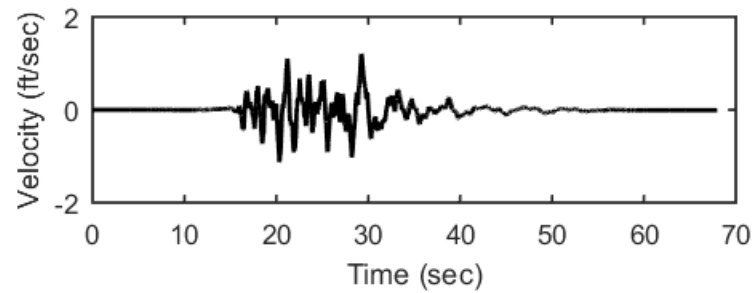
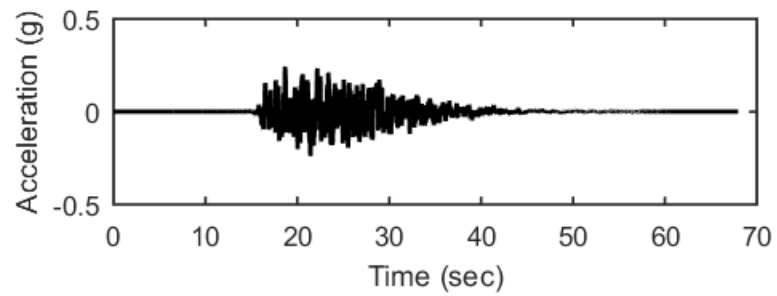
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



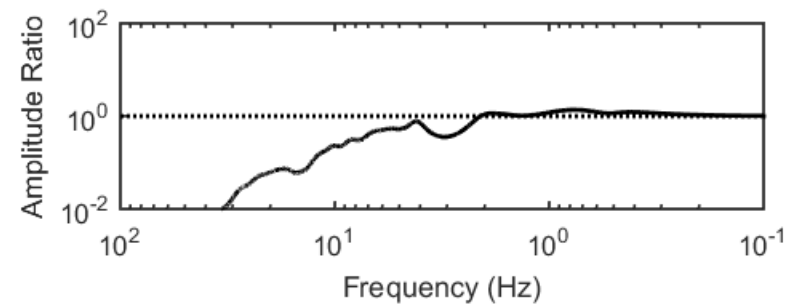
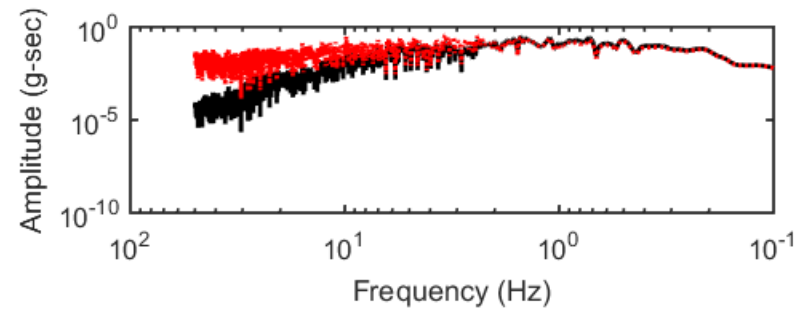
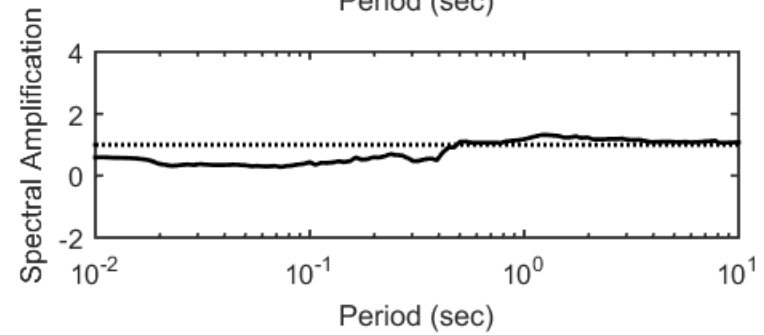
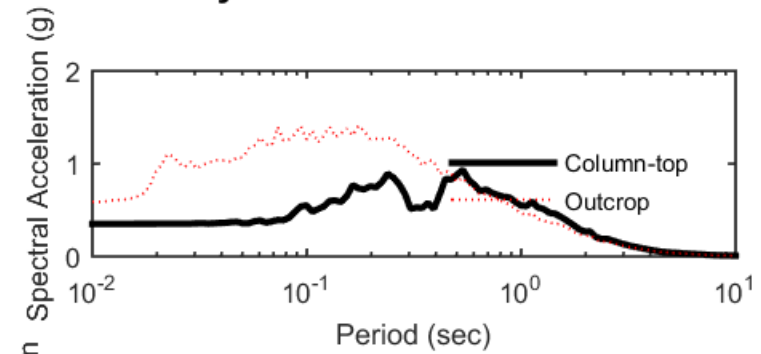
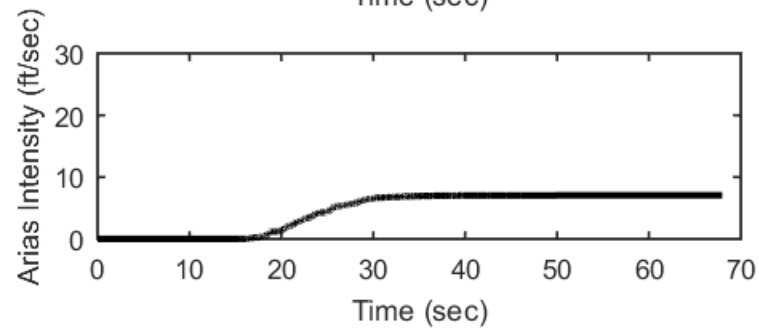
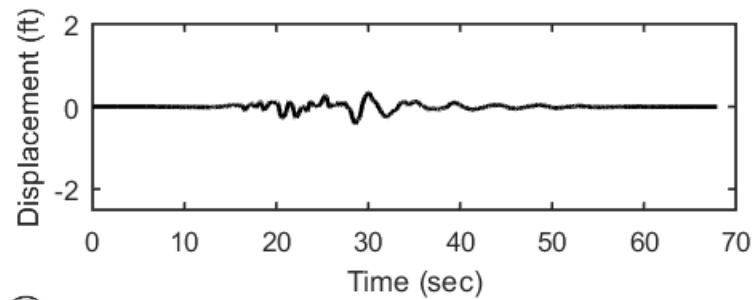
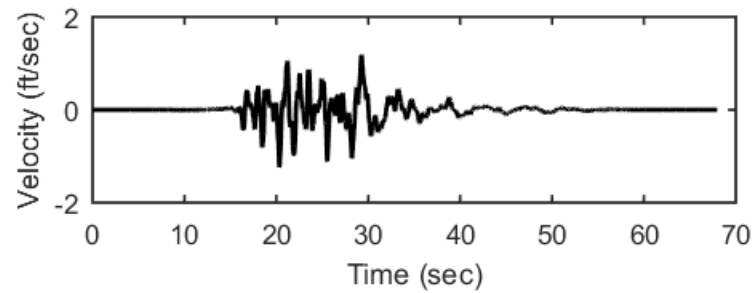
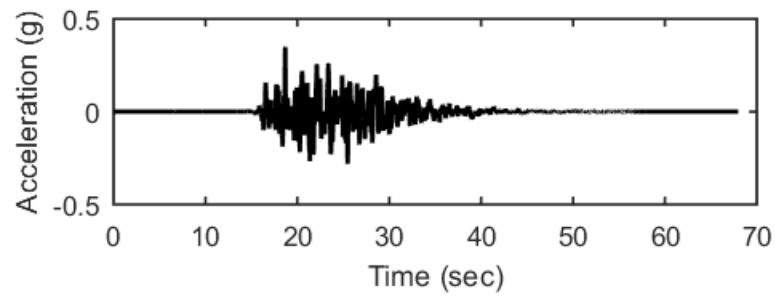
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



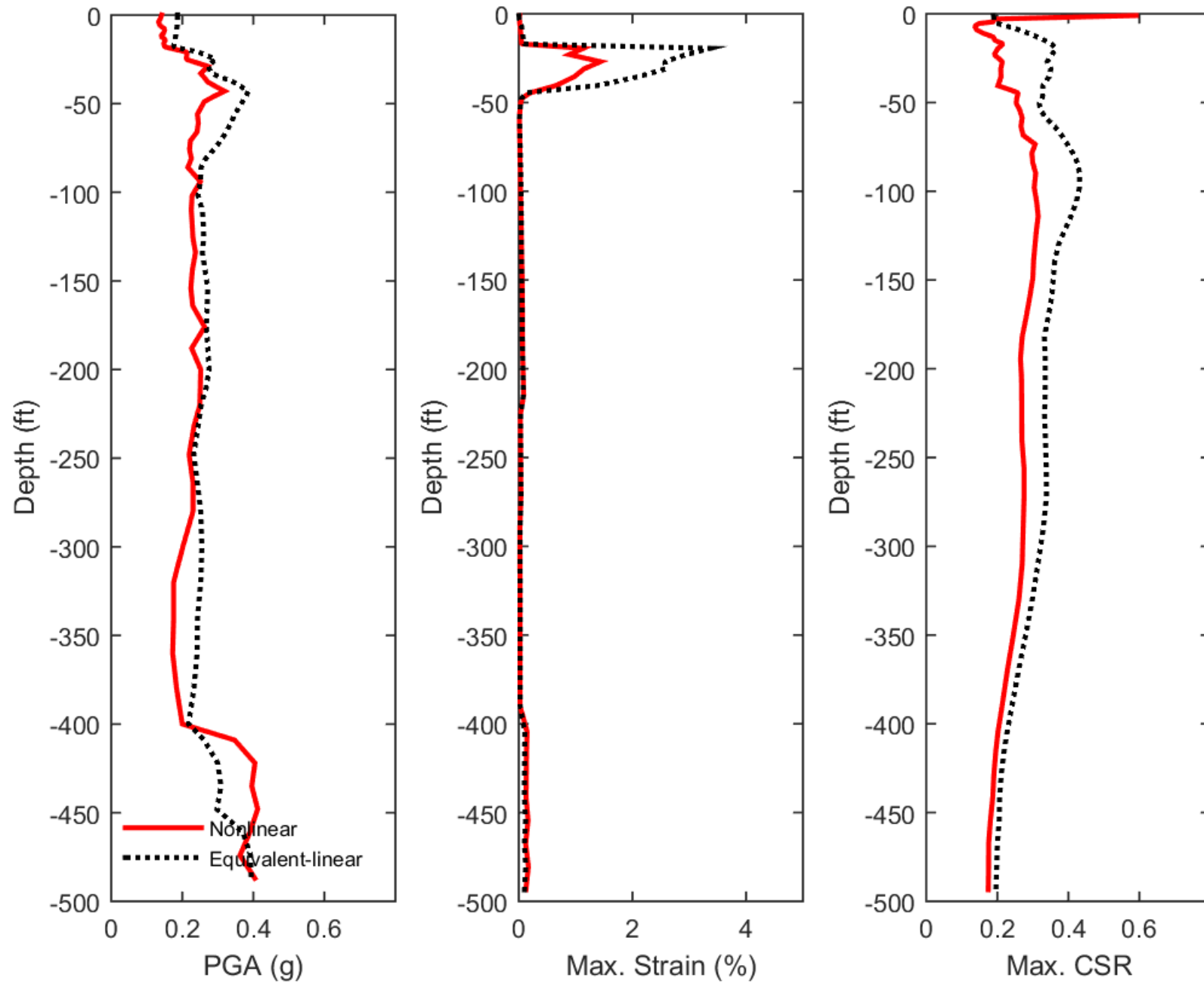
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6

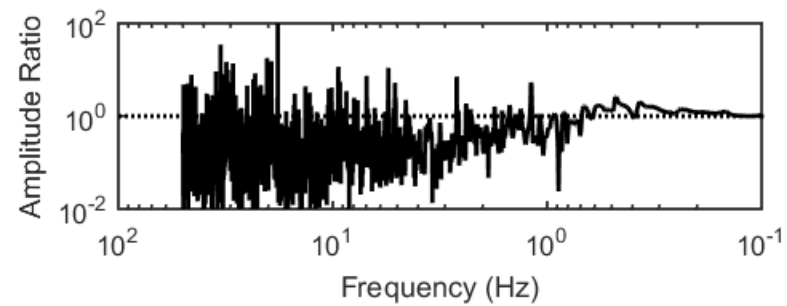
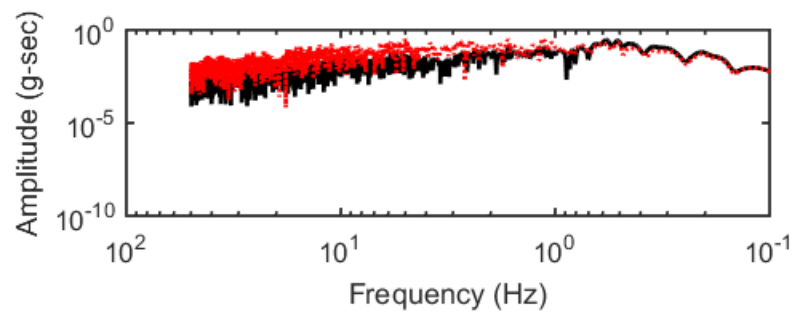
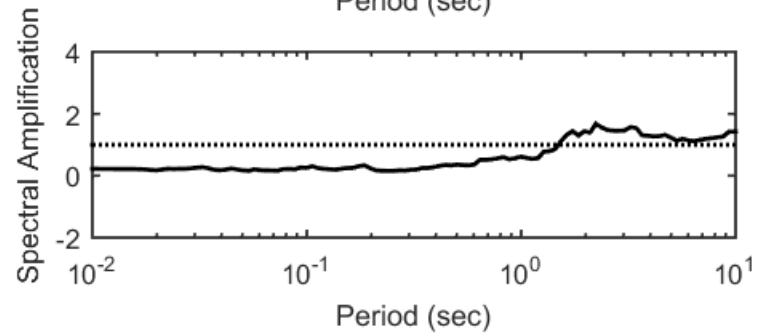
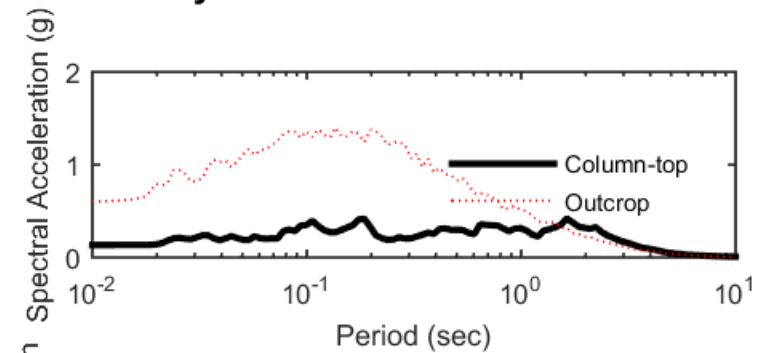
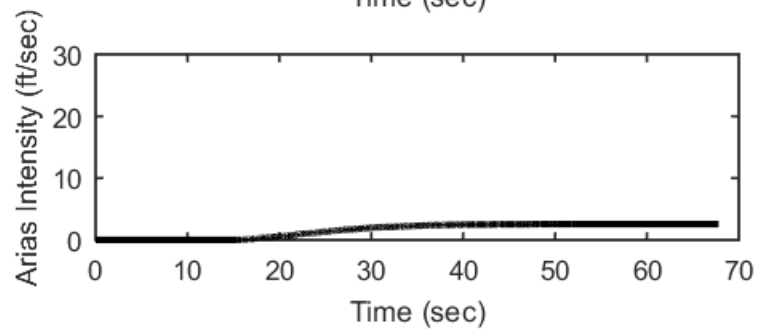
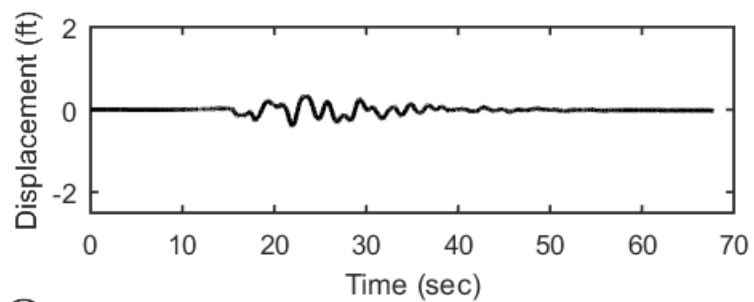
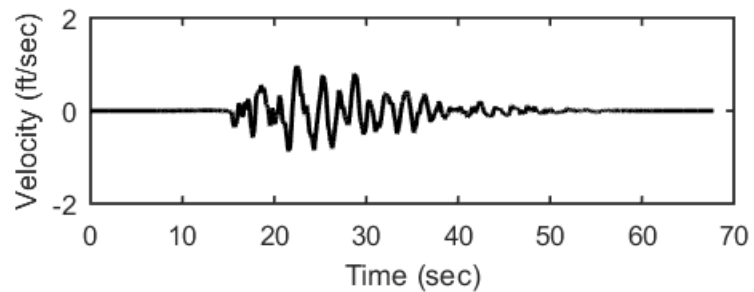
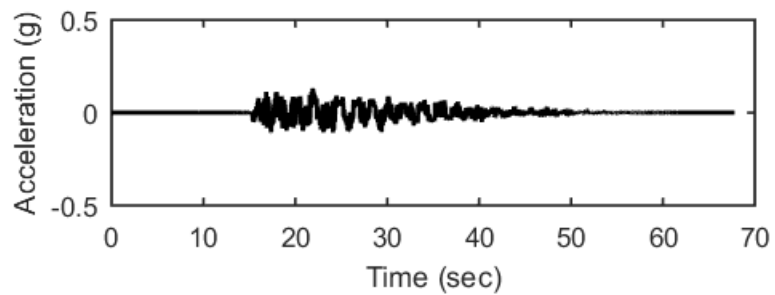


### Profile outputs for Motion: SEE6

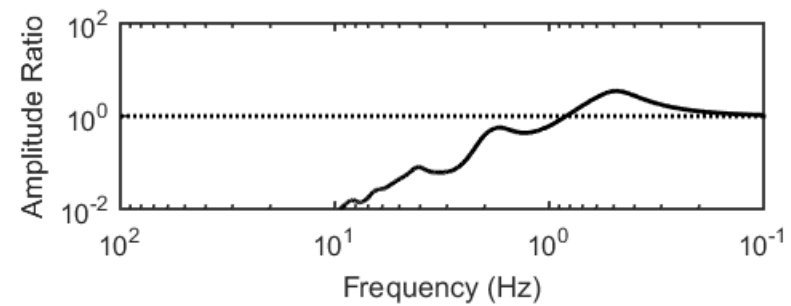
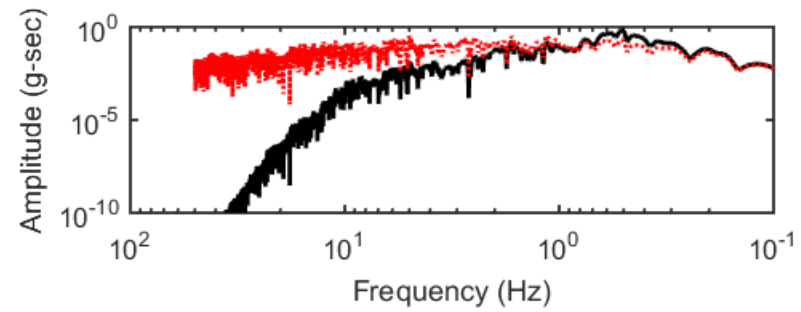
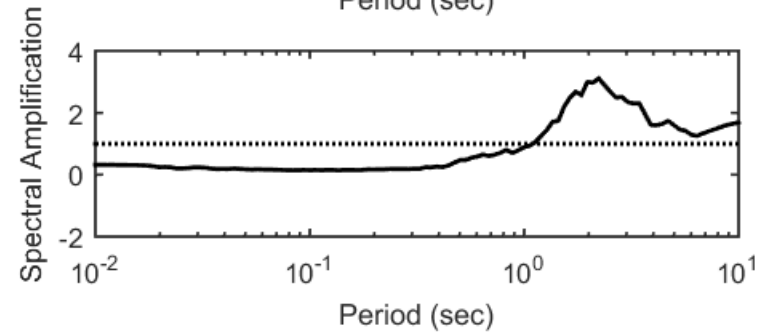
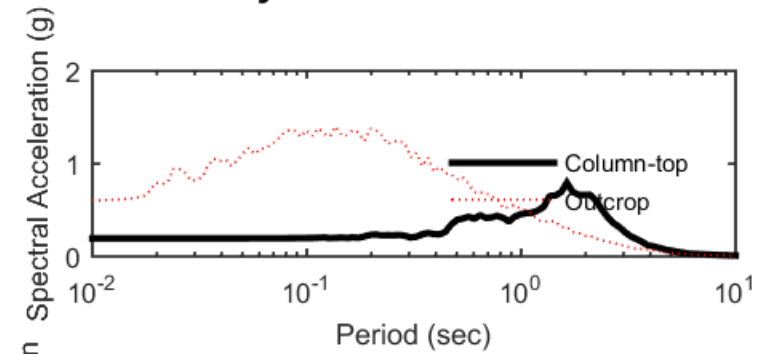
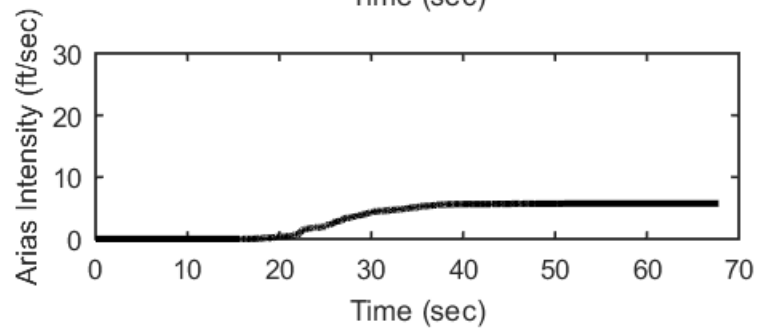
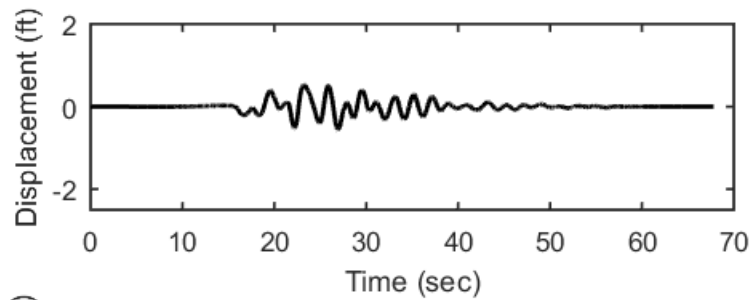
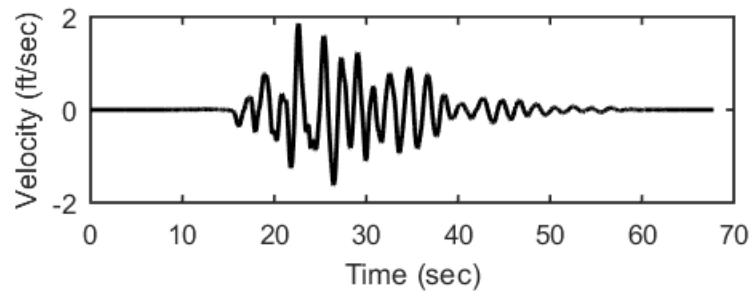
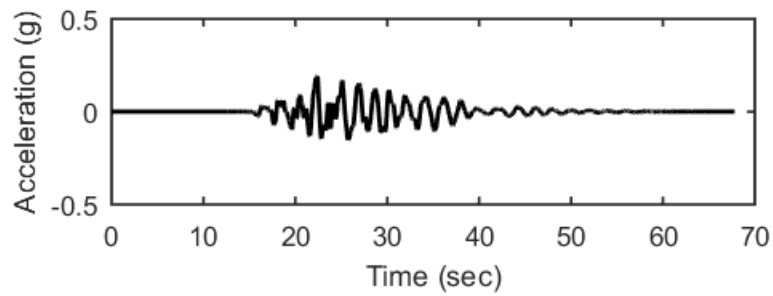




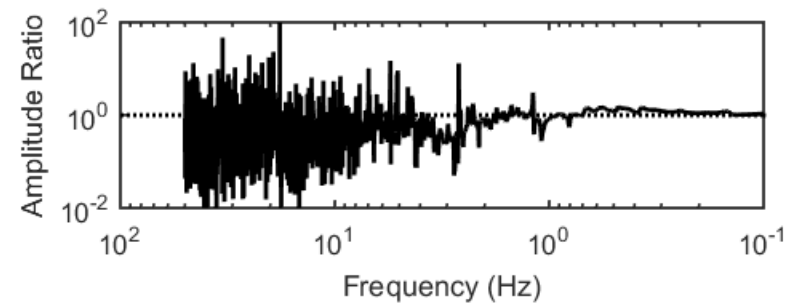
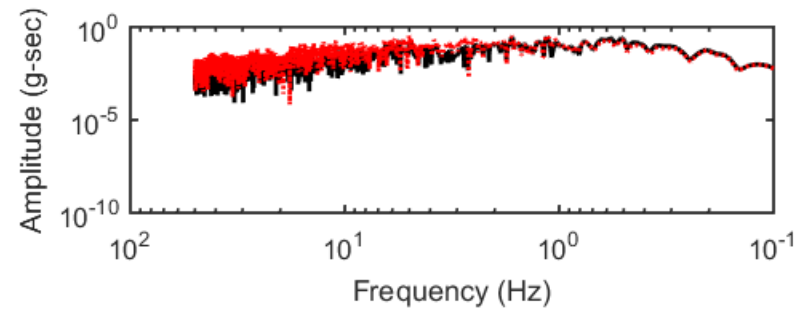
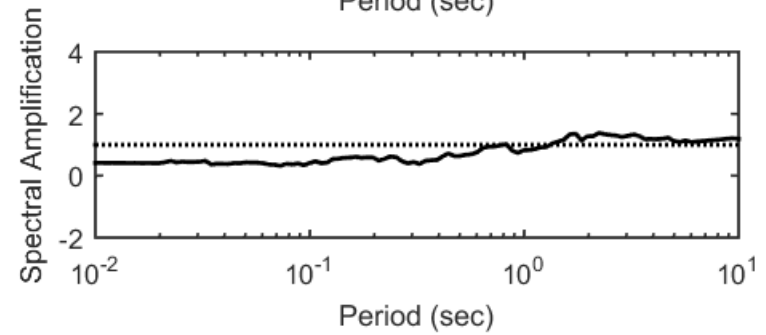
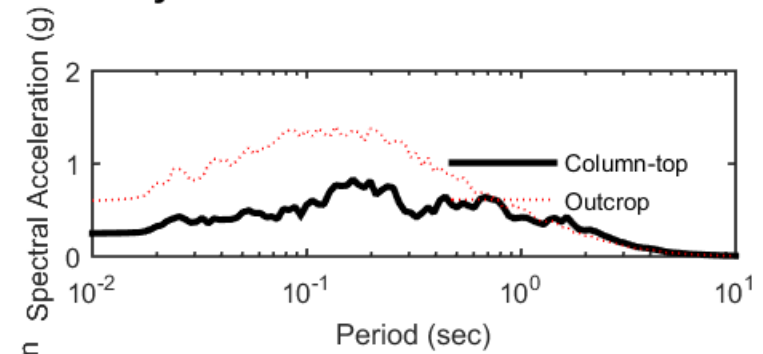
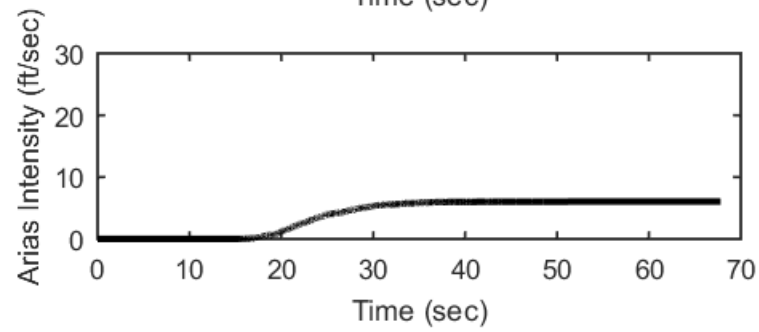
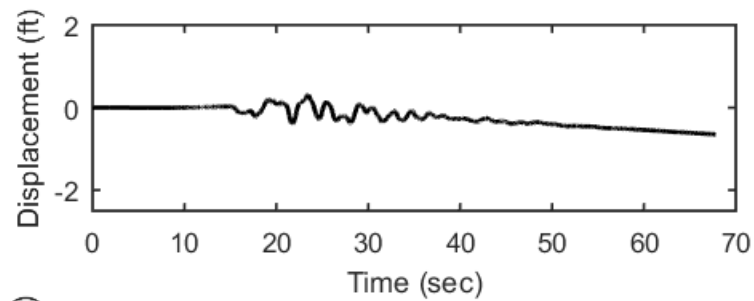
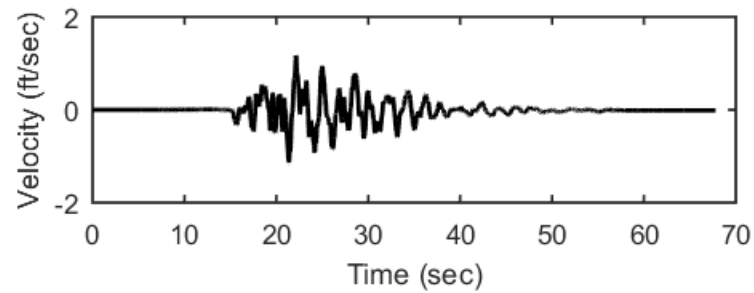
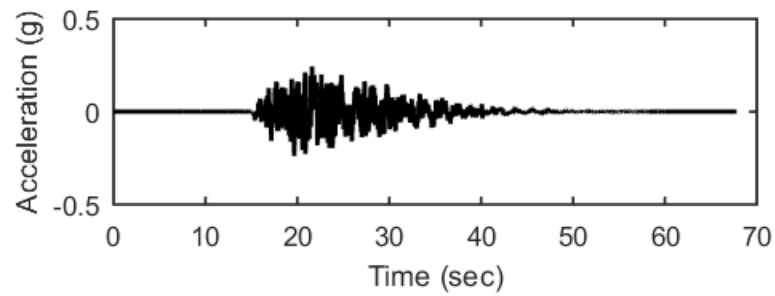
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



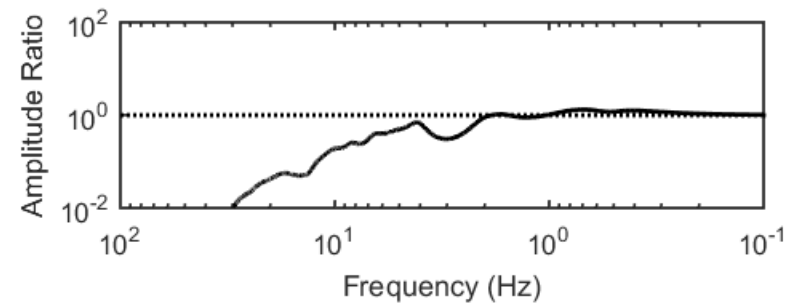
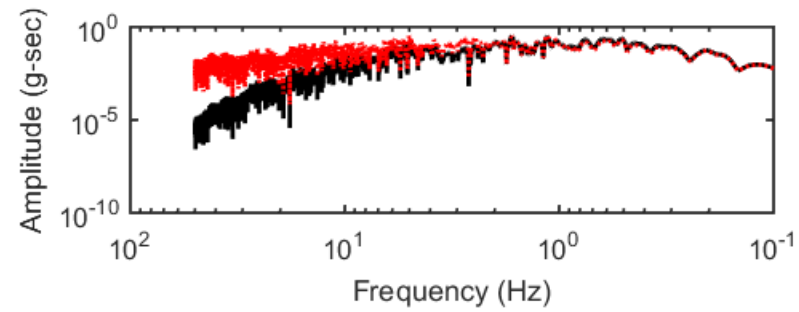
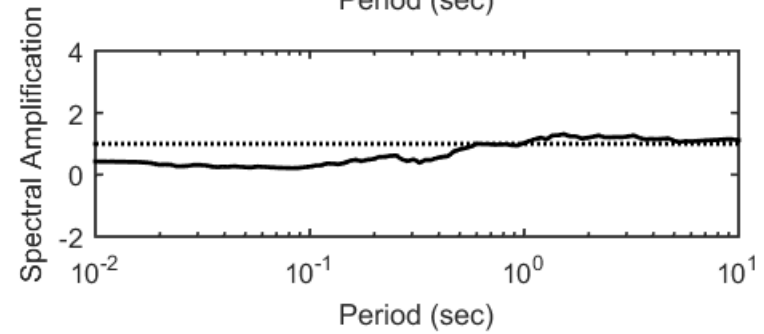
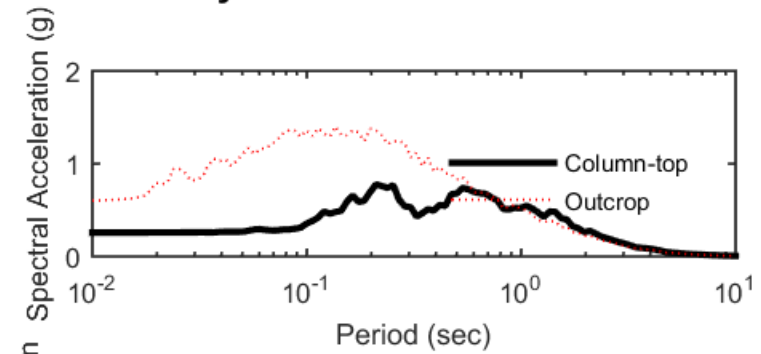
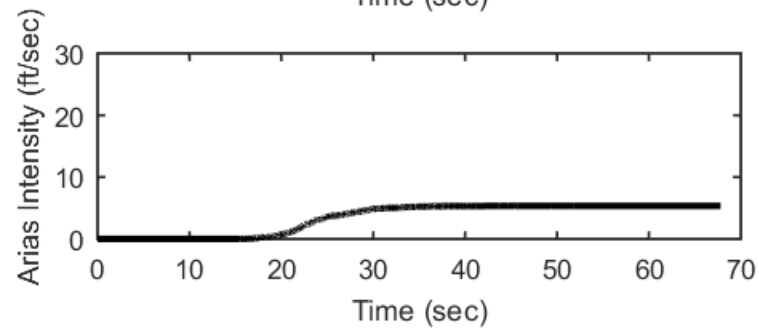
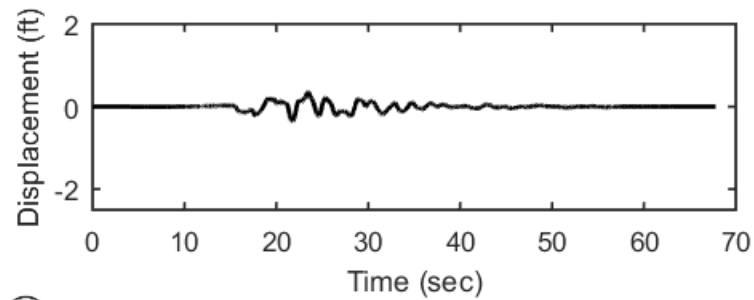
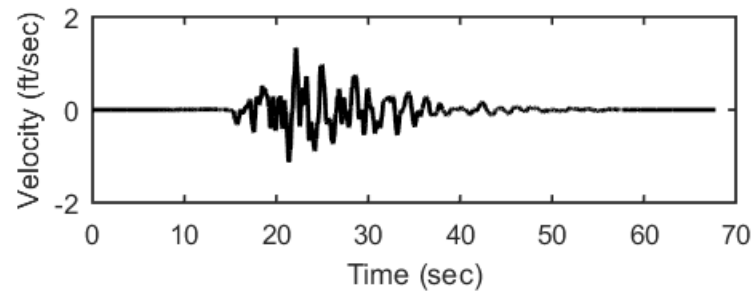
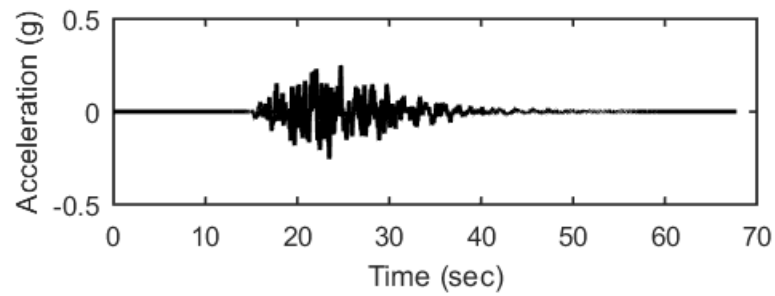
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



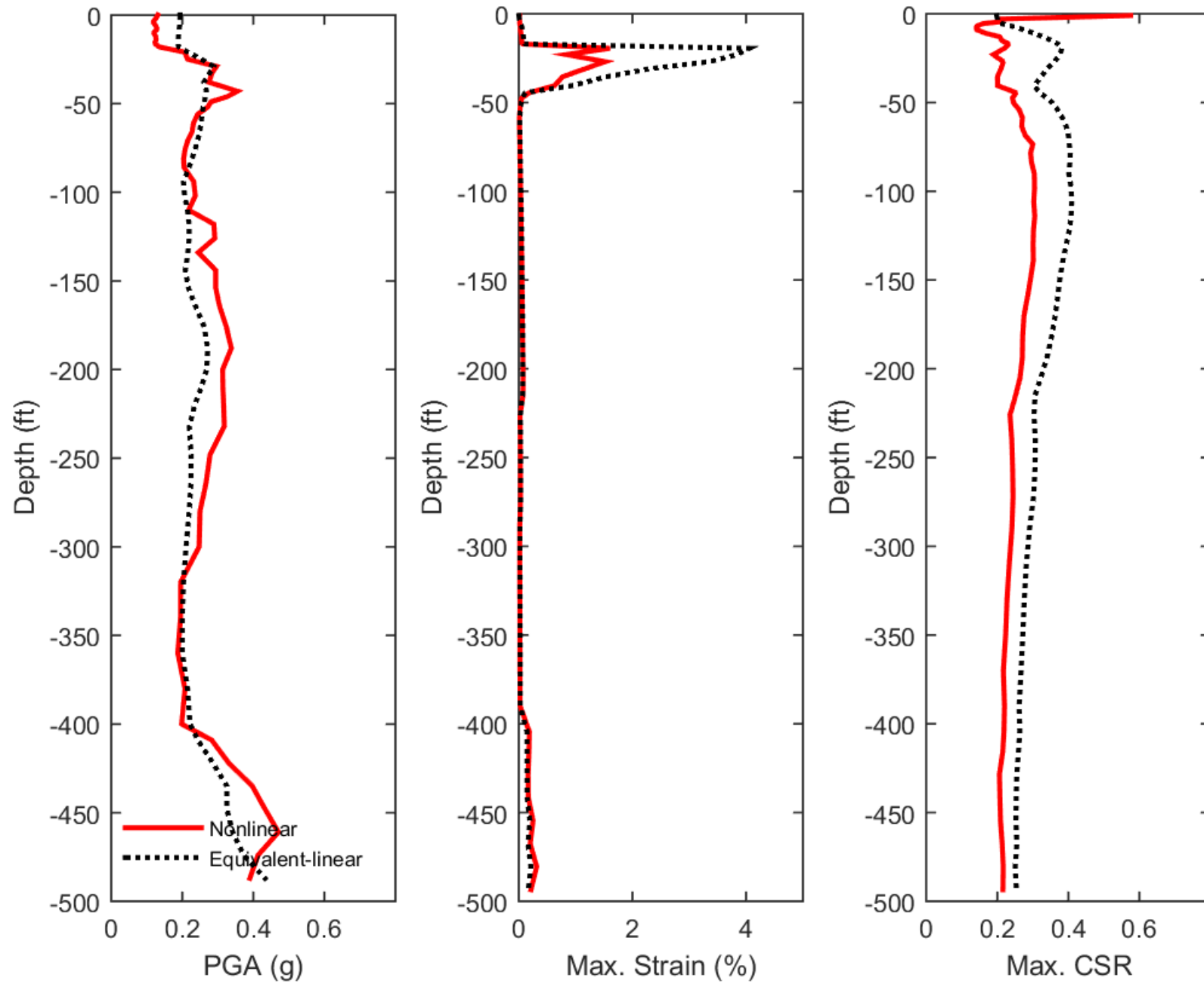
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



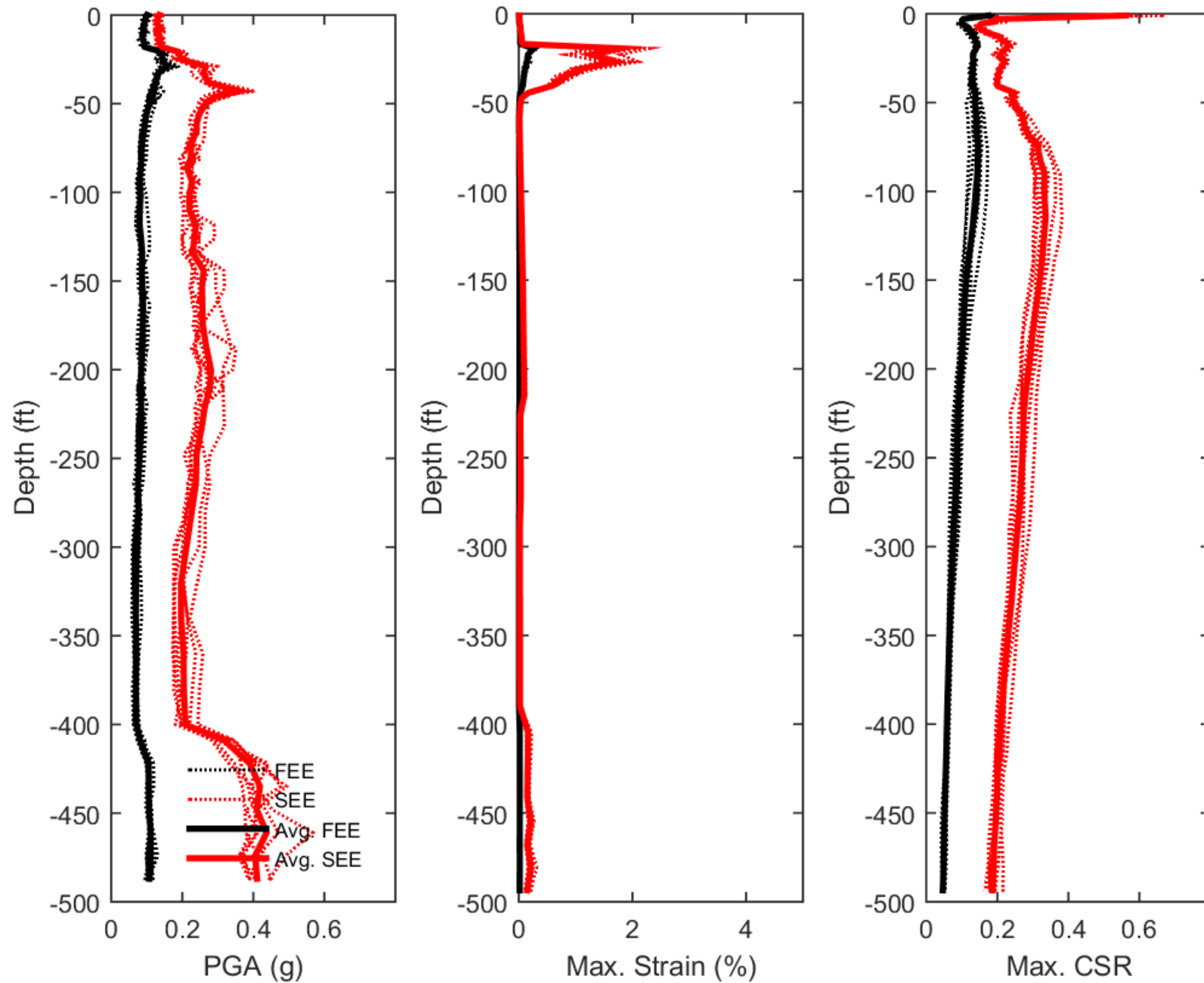
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



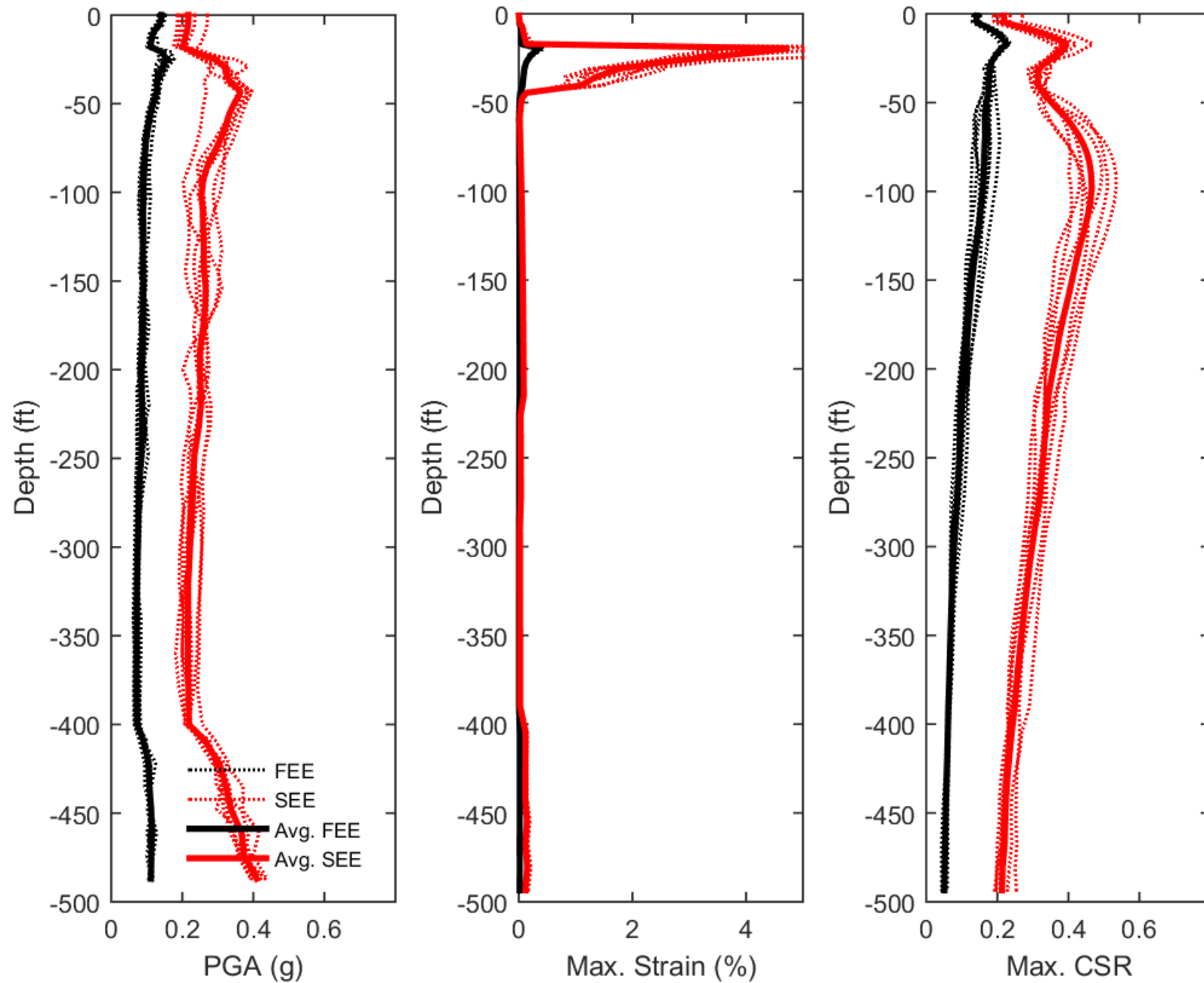
### Profile outputs for Motion: SEE7



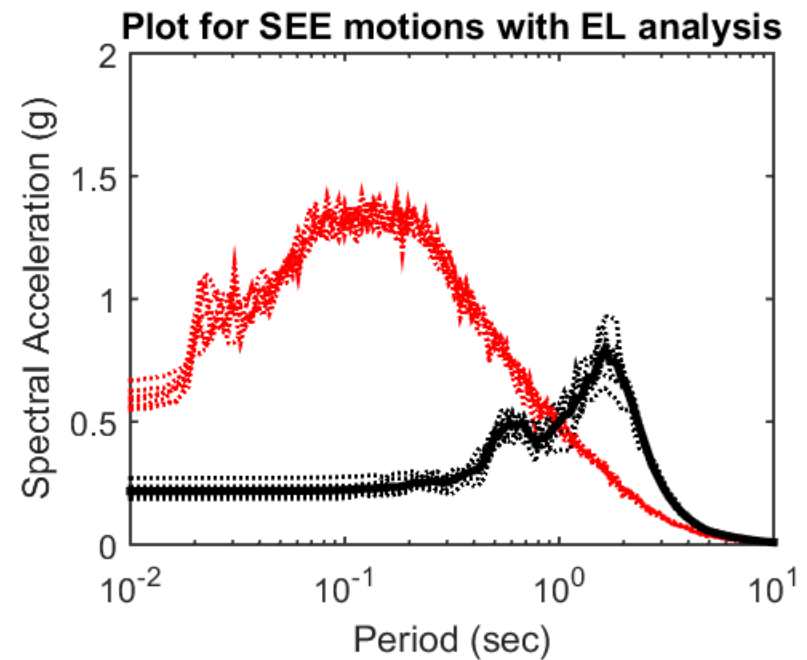
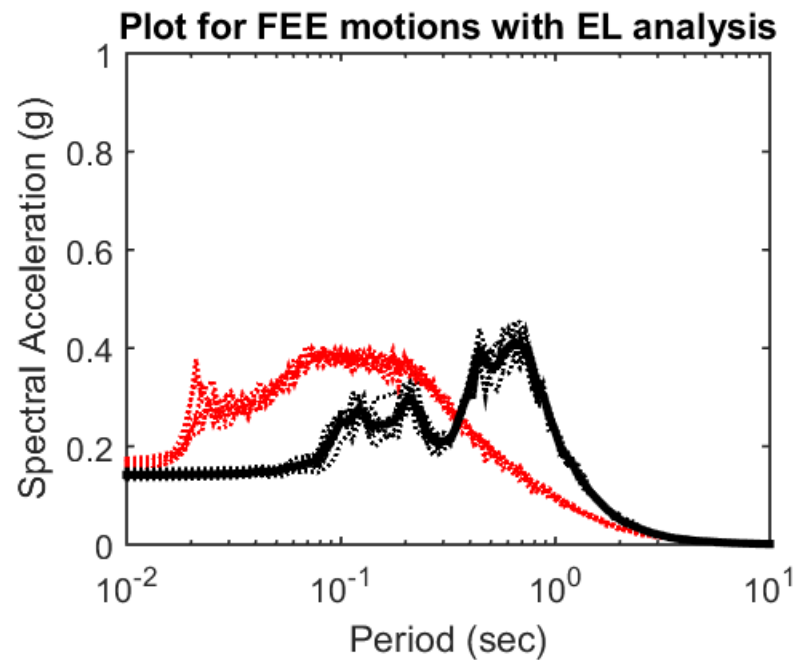
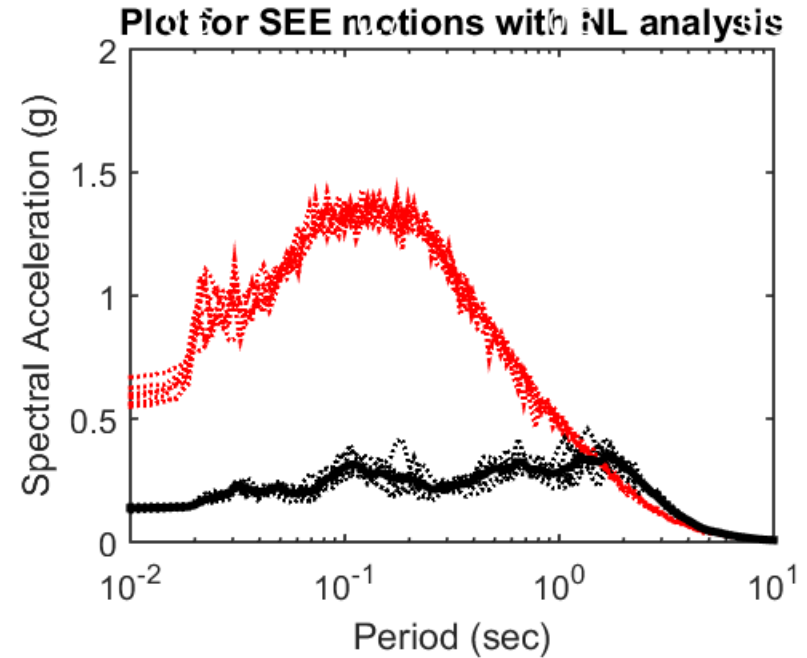
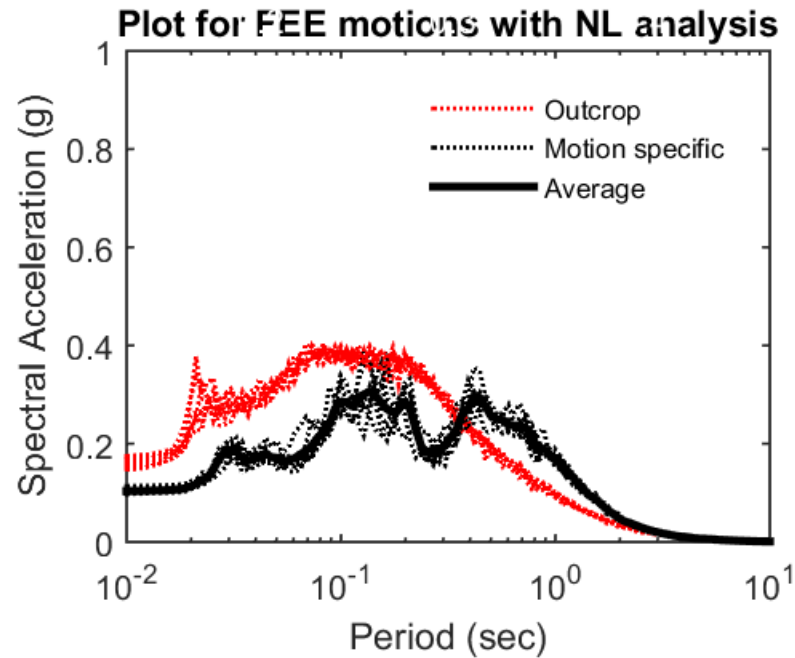
## Summary of the profile outputs for Nonlinear analysis



## Summary of the profile outputs for Equivalent-linear analysis

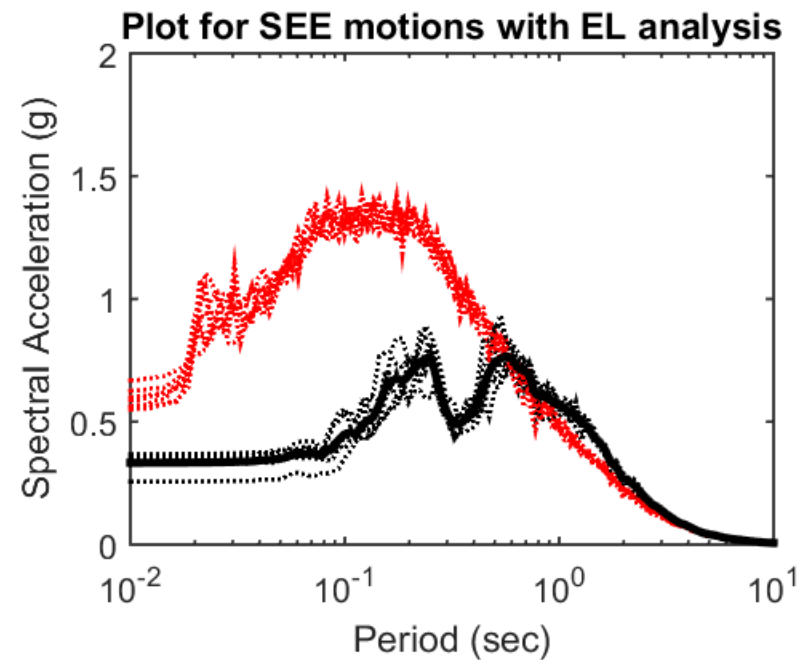
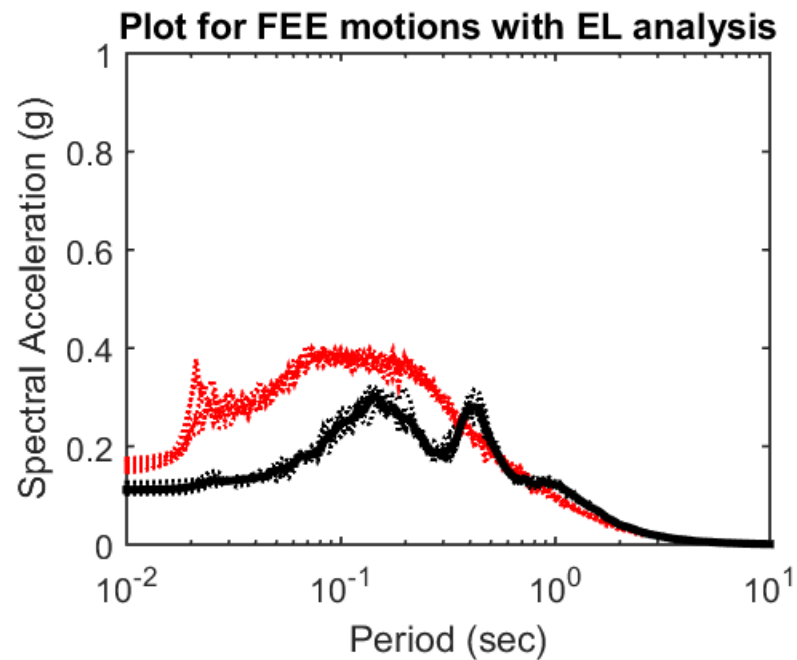
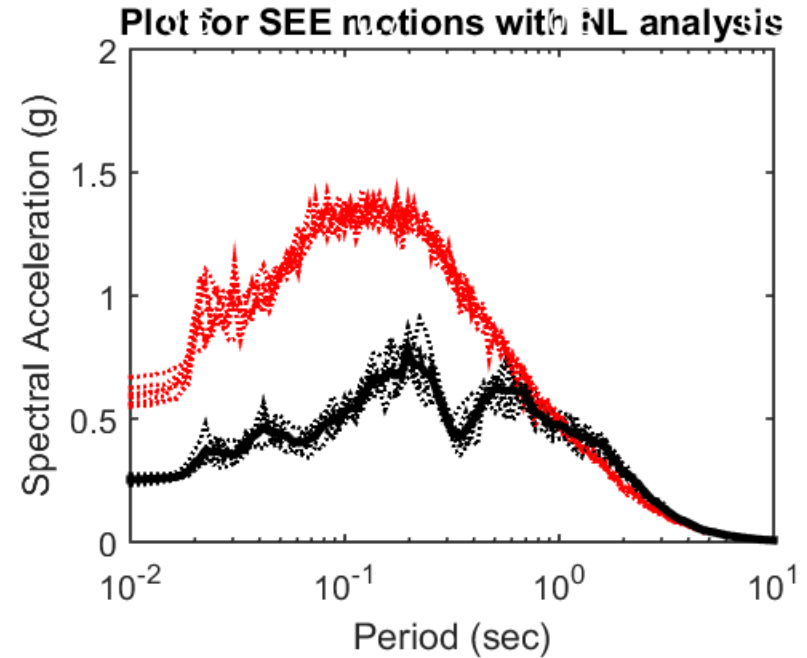
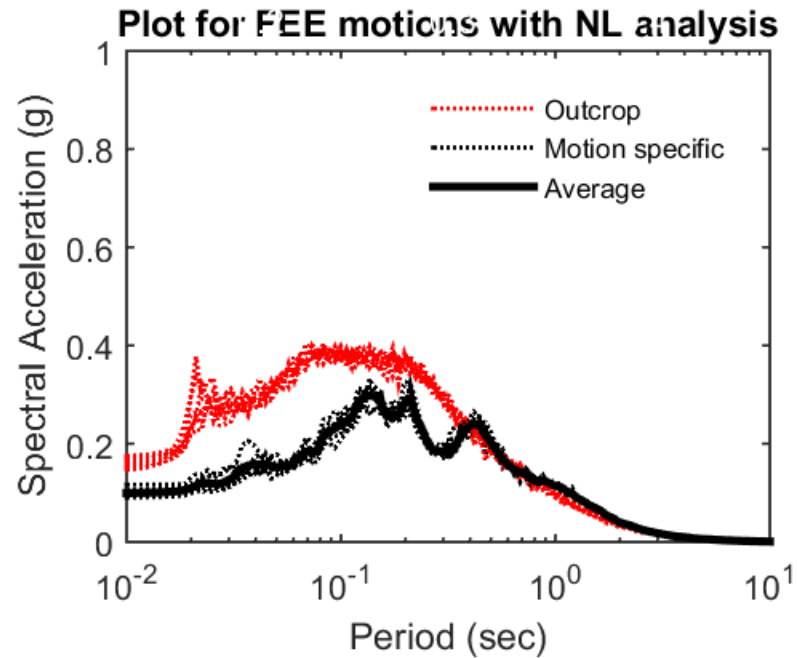


## Summary plots: RSA at ground surface

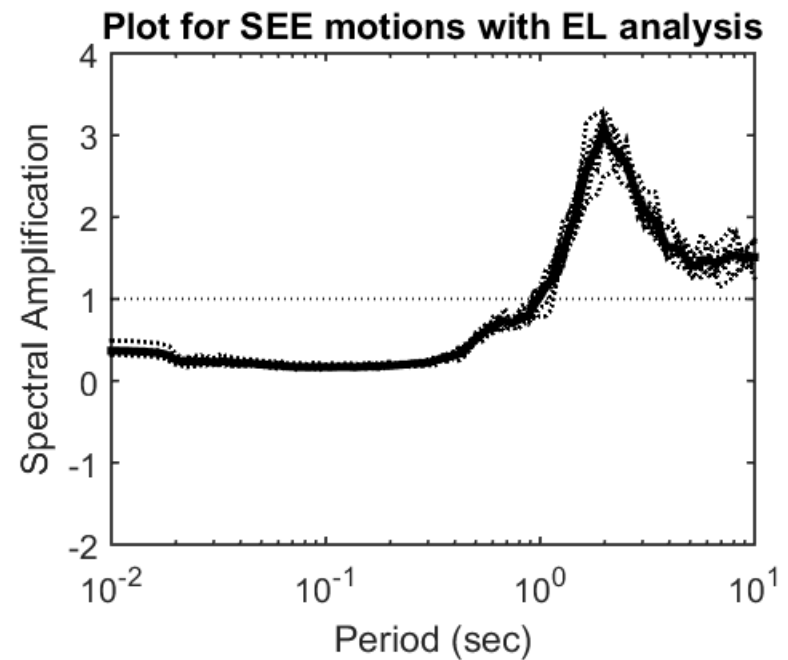
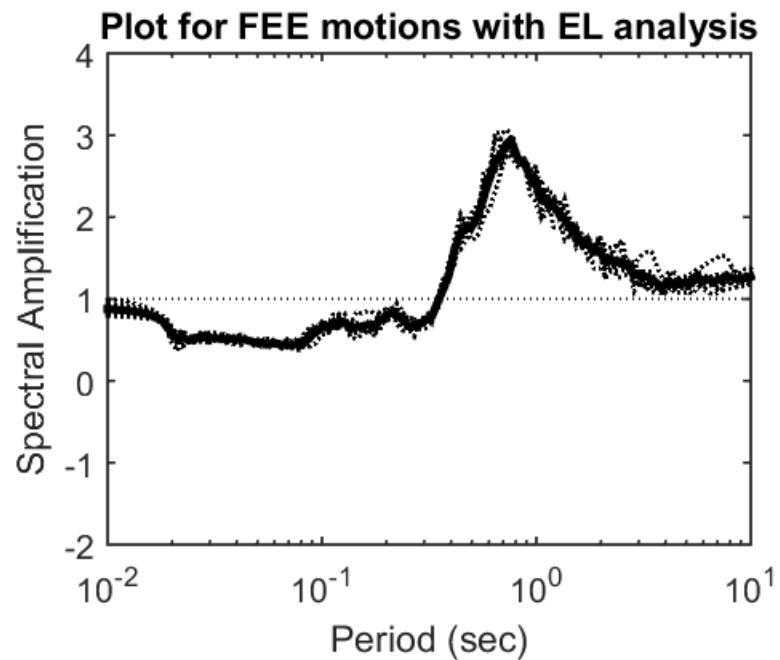
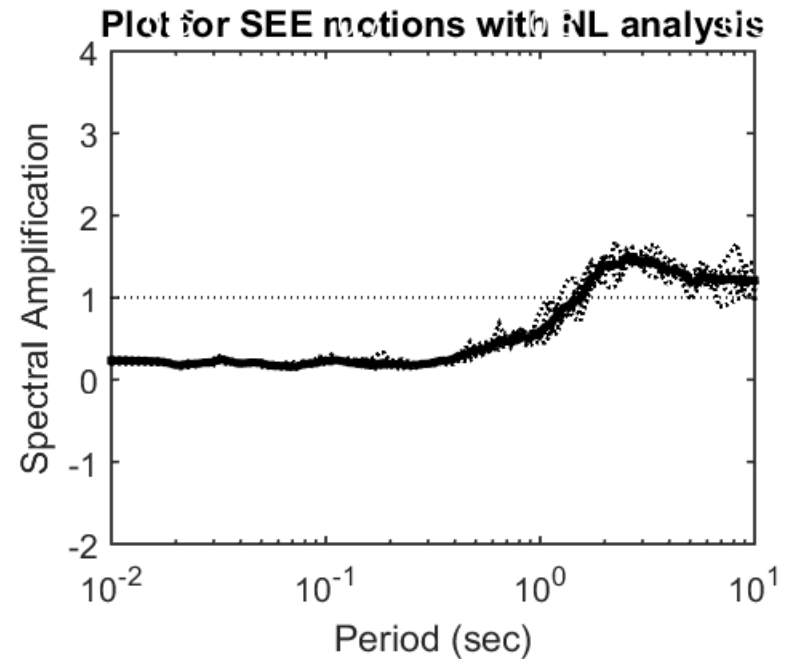
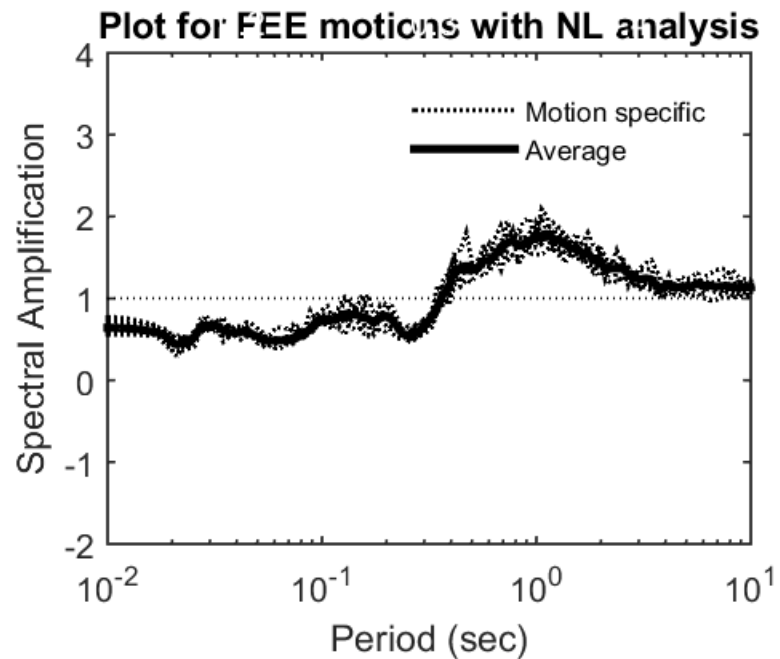




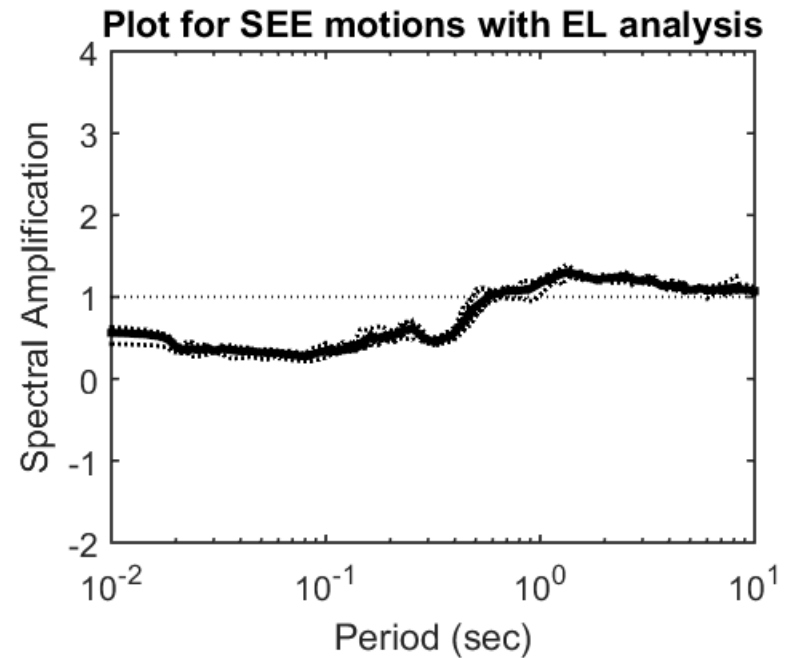
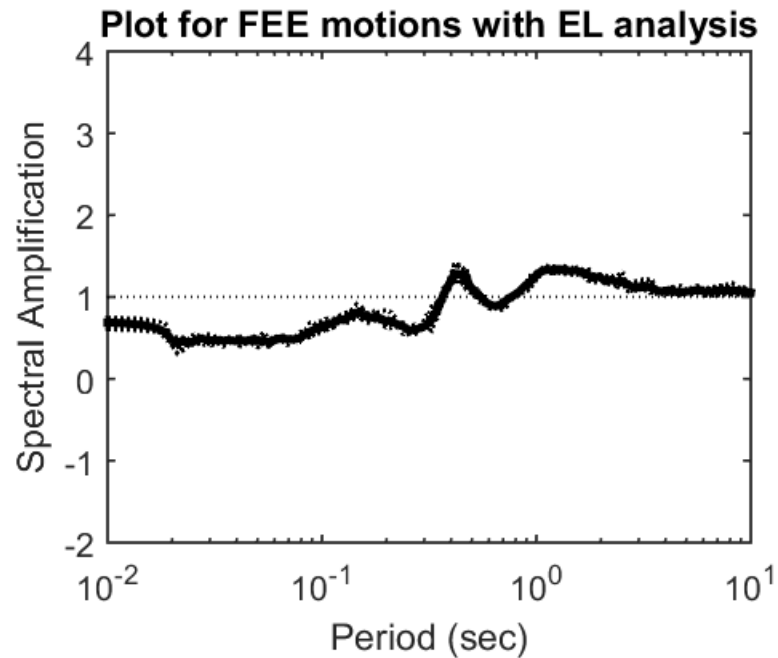
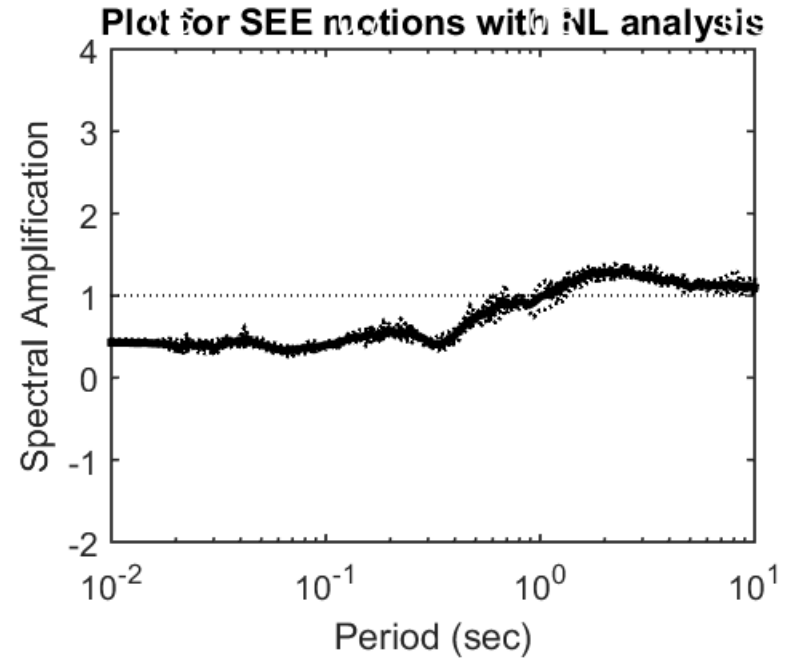
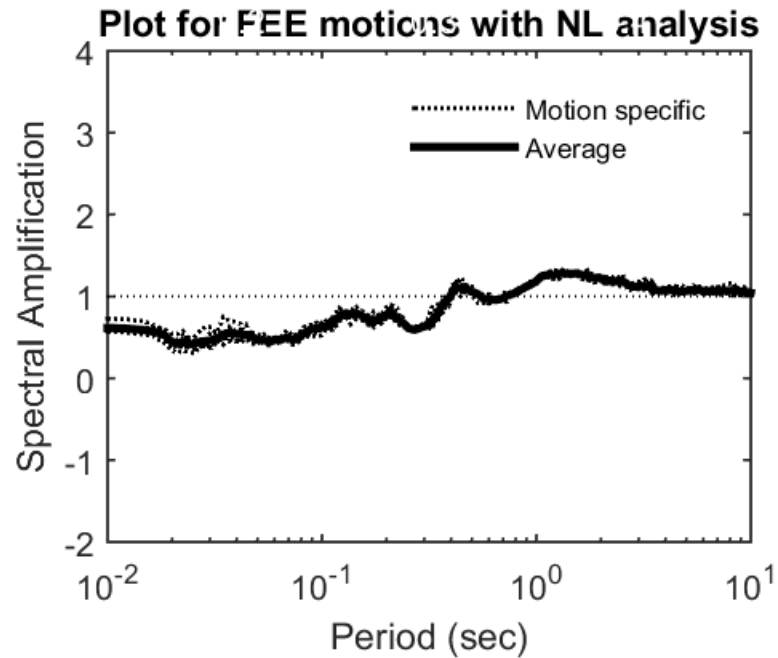
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

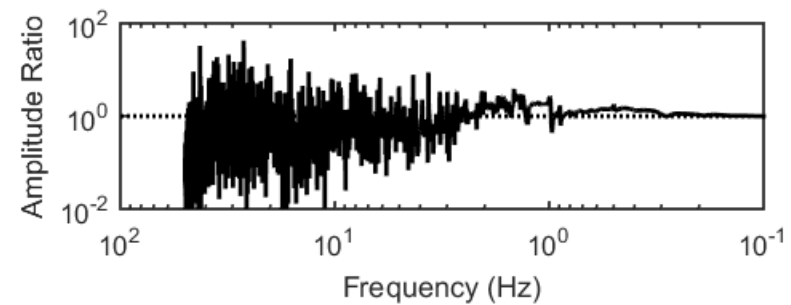
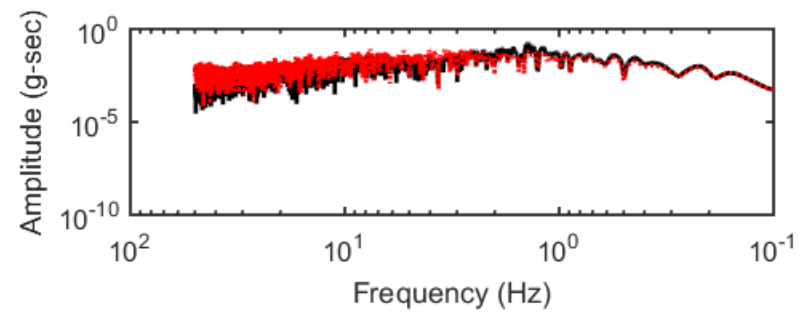
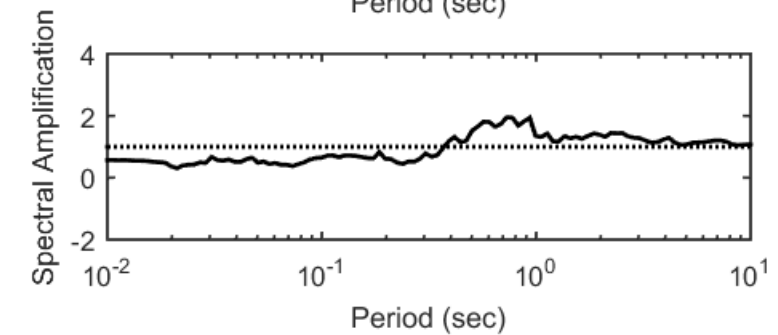
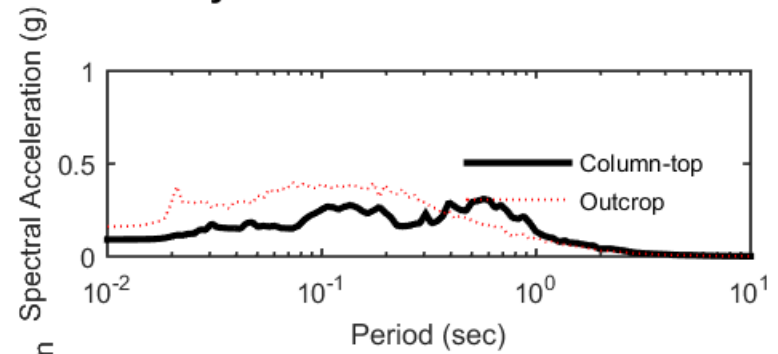
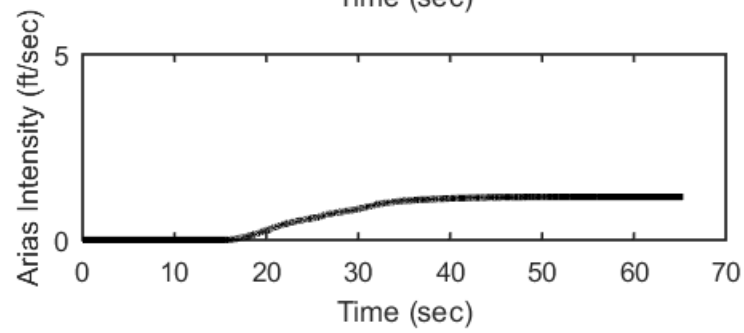
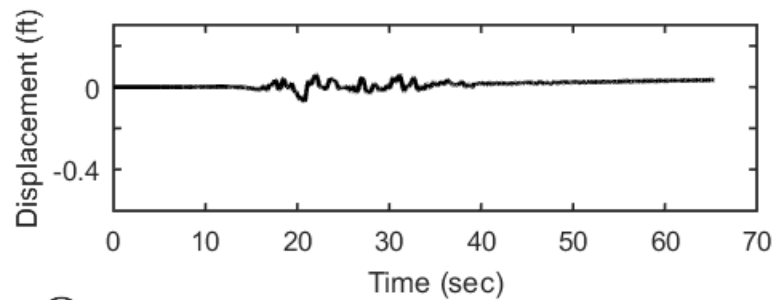
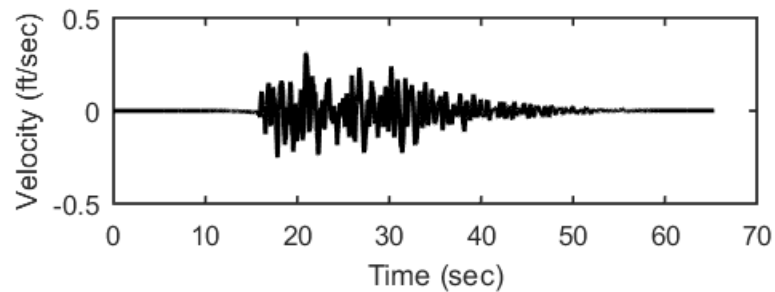
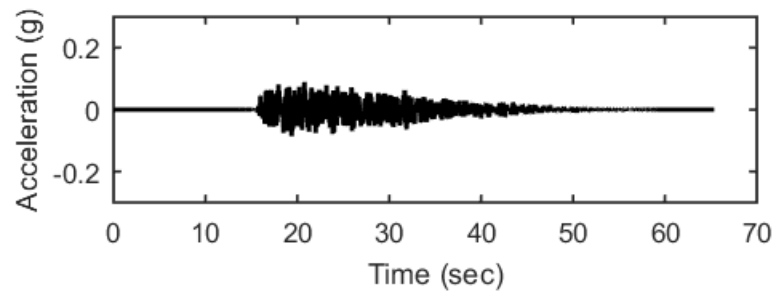


## Summary plots: Spectral amplification at top of Marl

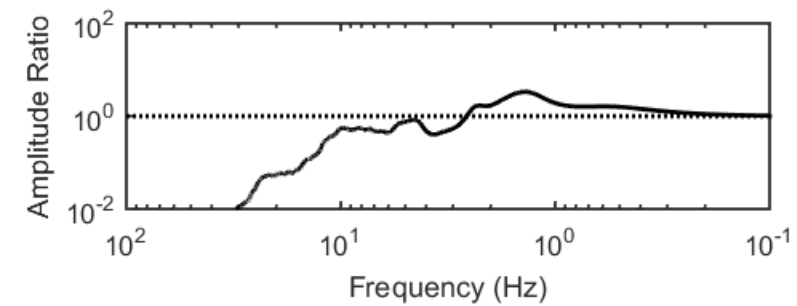
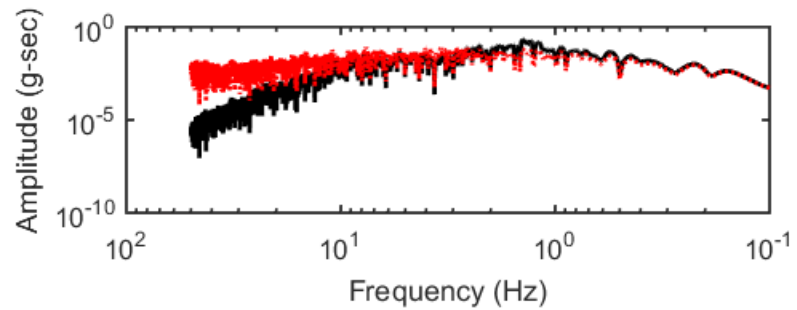
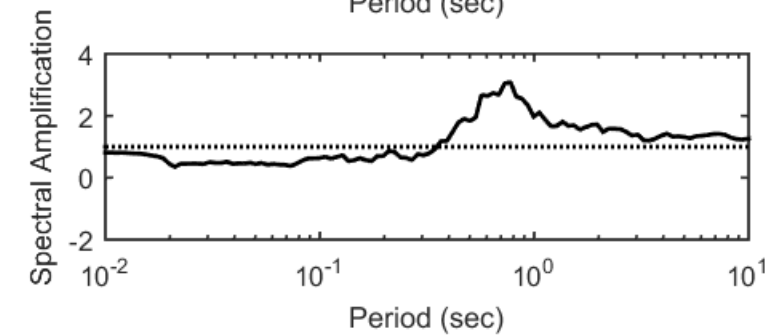
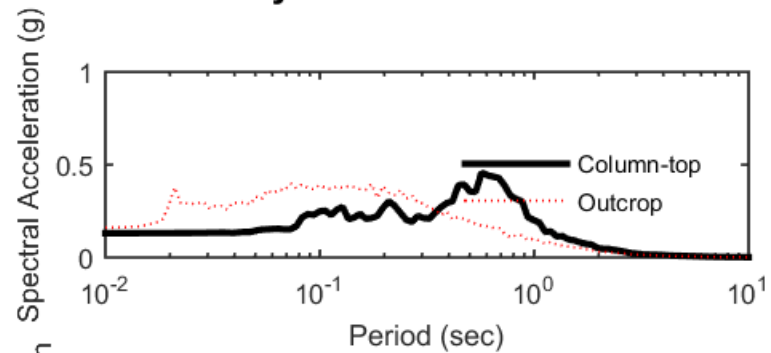
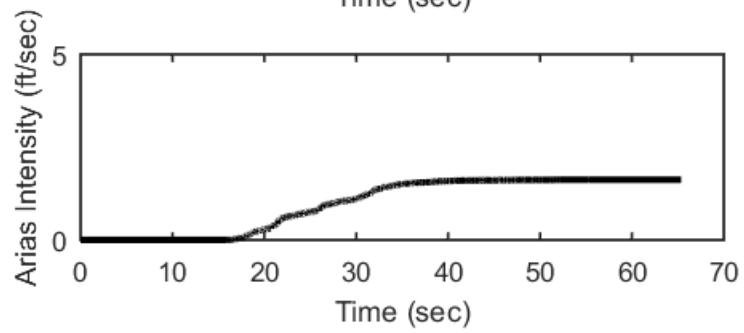
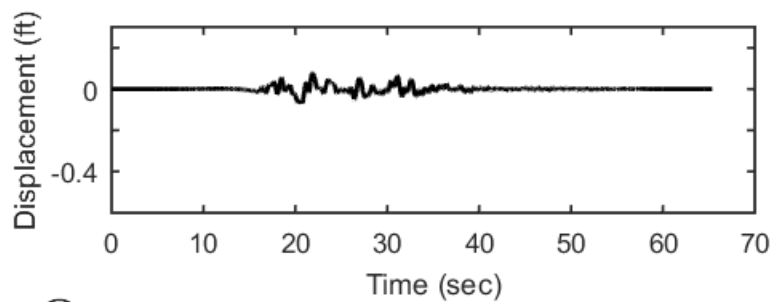
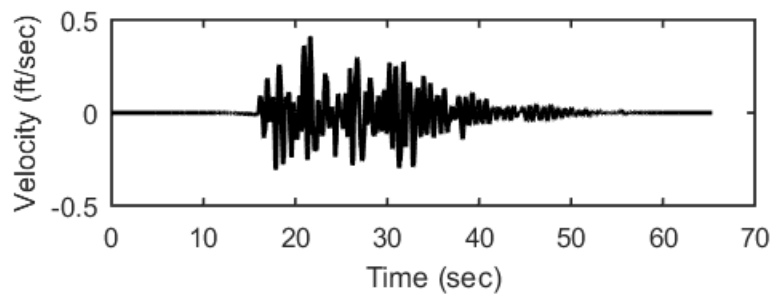
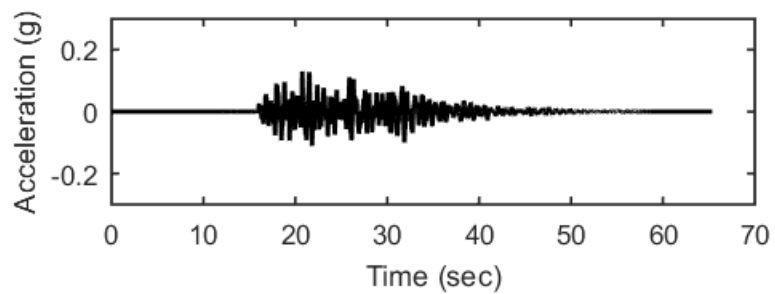


## **1,000 FT MODEL**

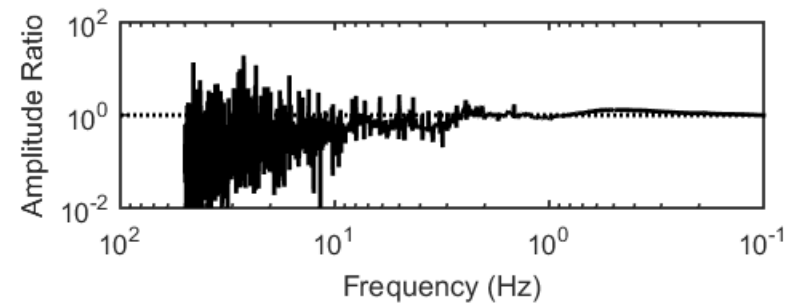
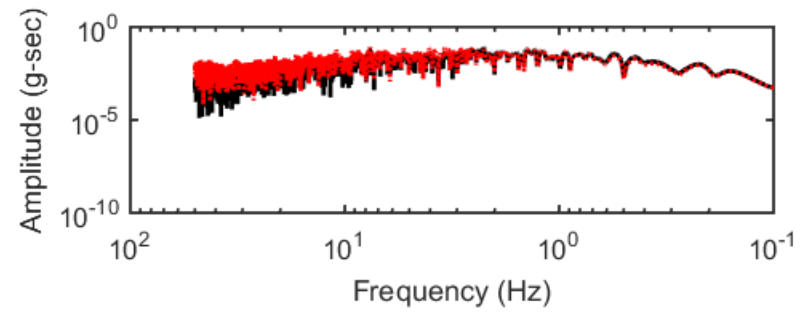
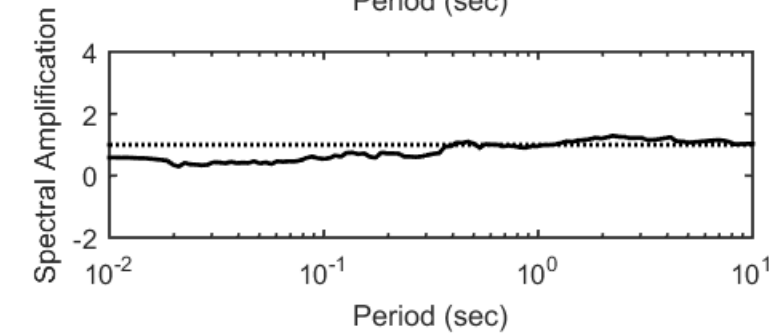
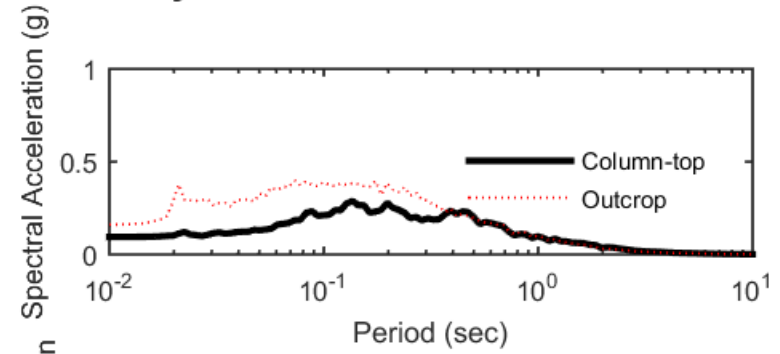
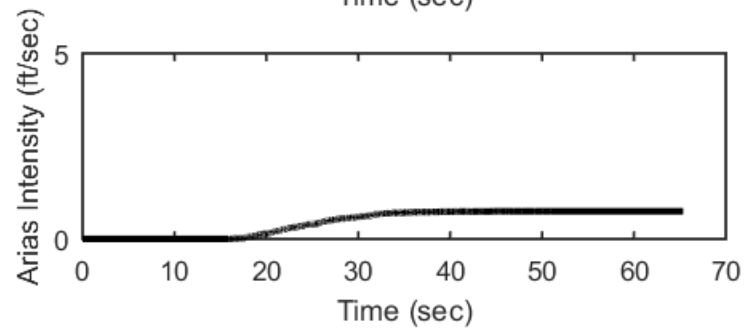
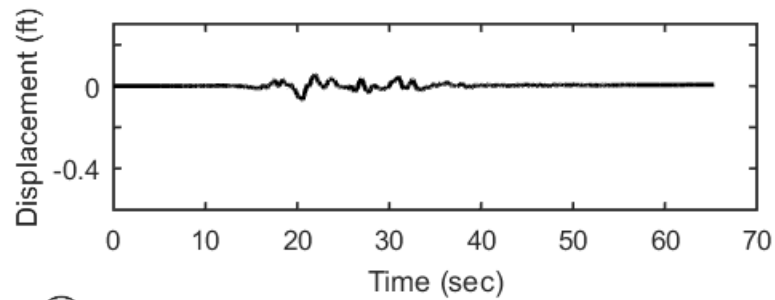
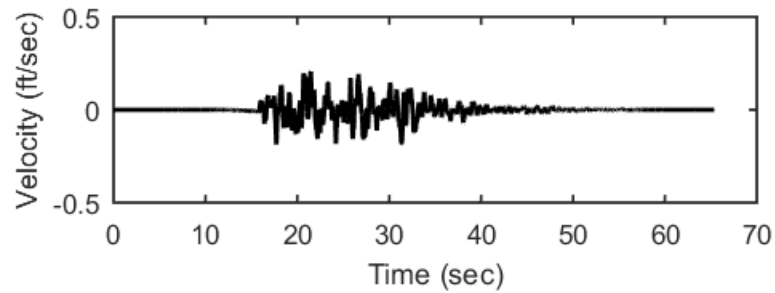
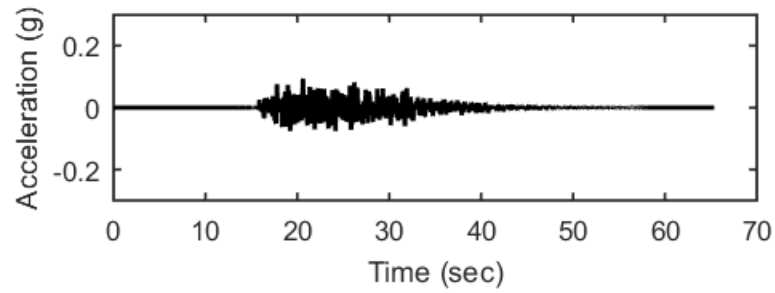
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



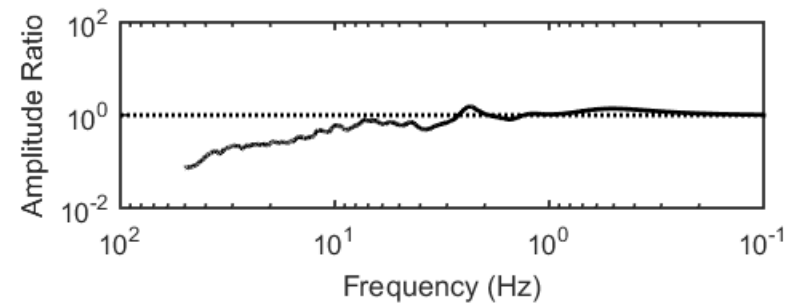
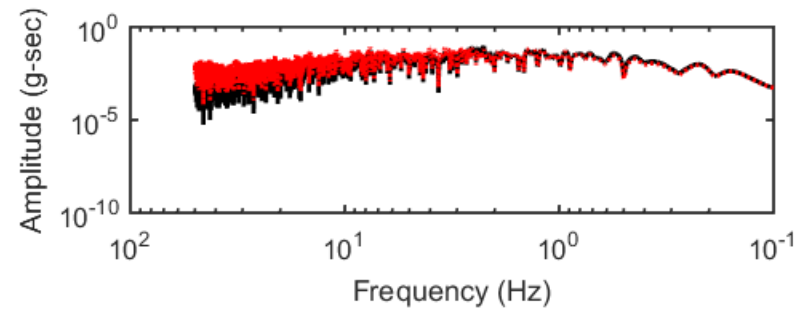
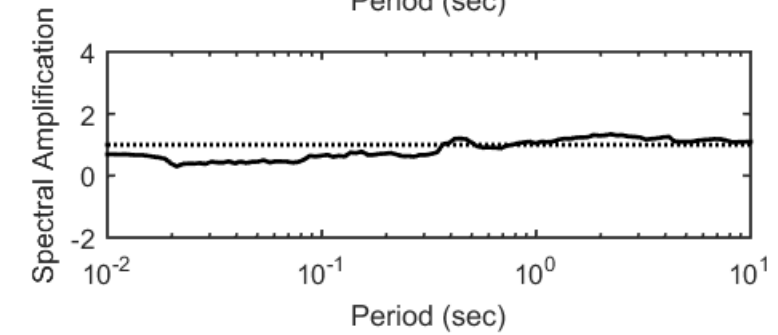
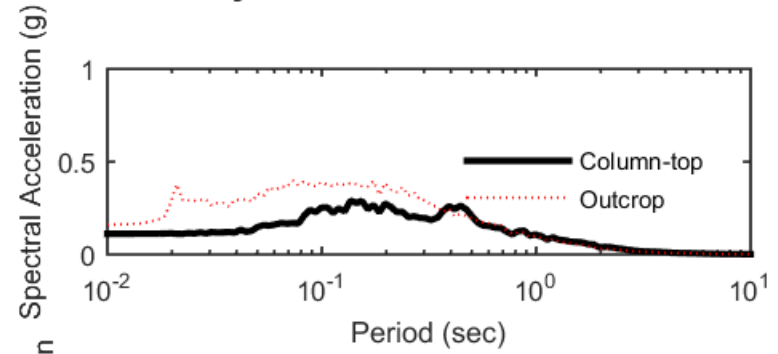
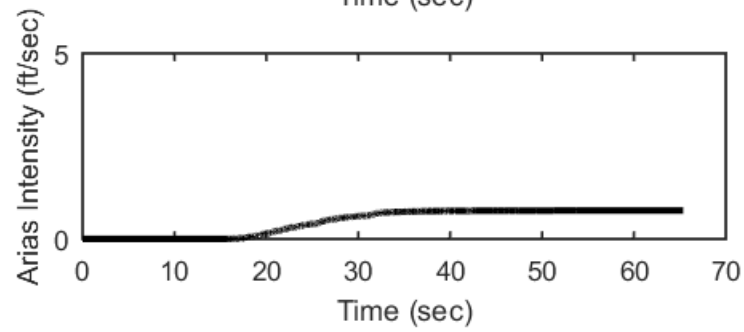
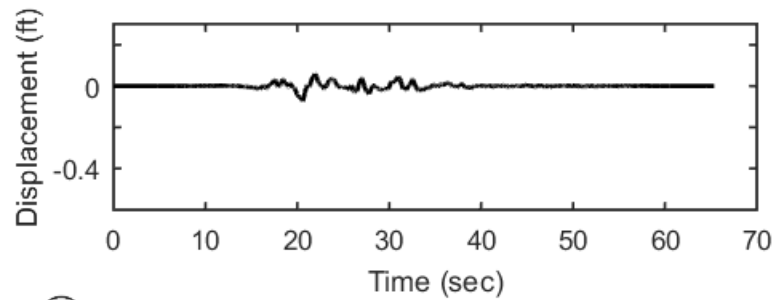
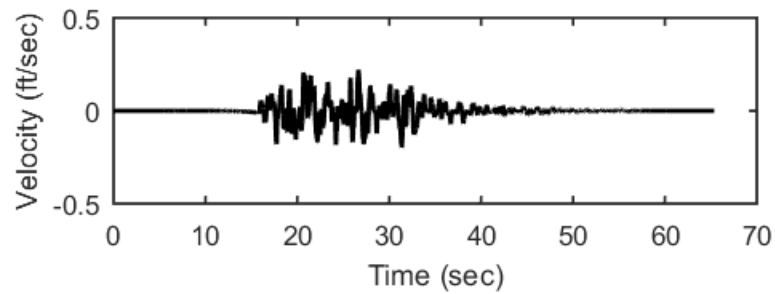
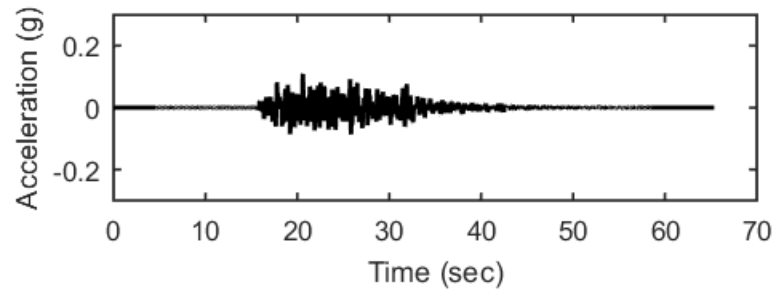
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1

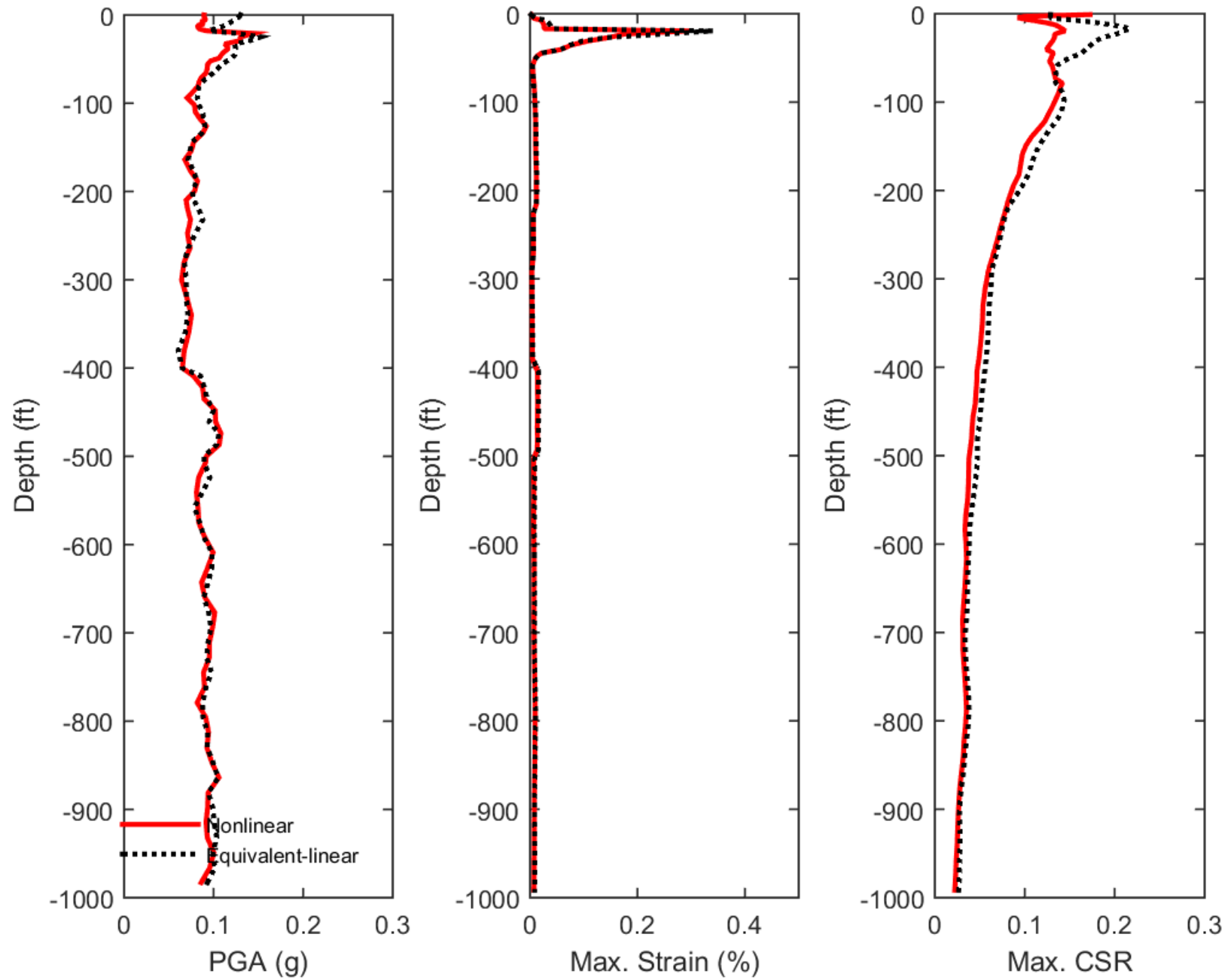


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1

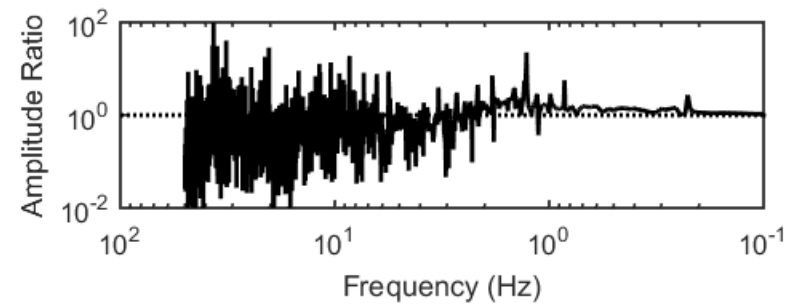
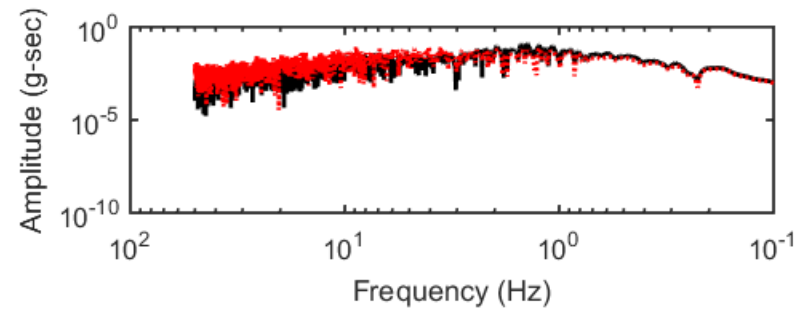
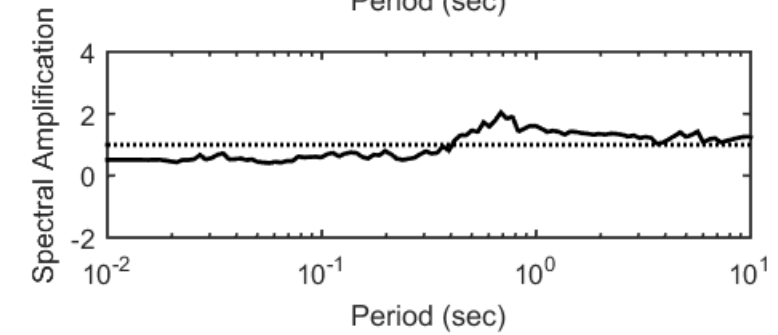
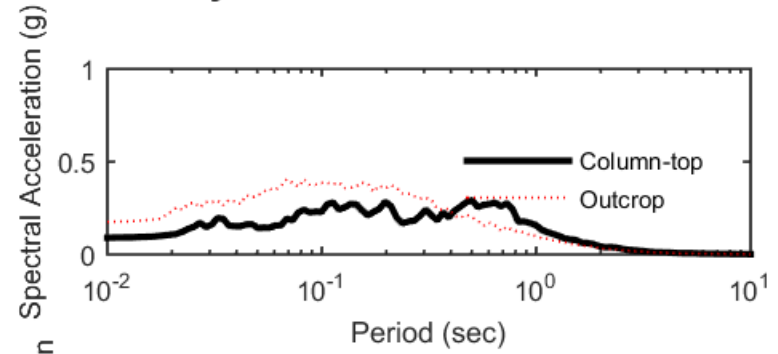
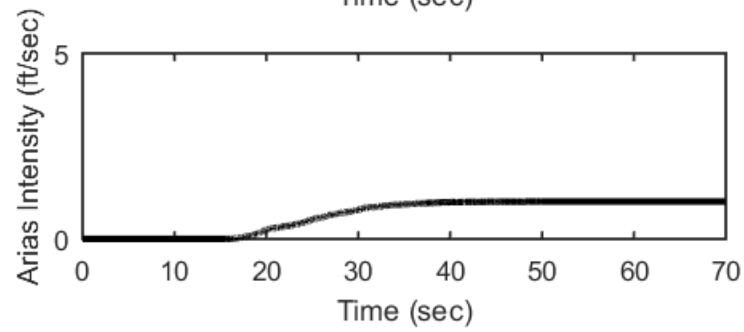
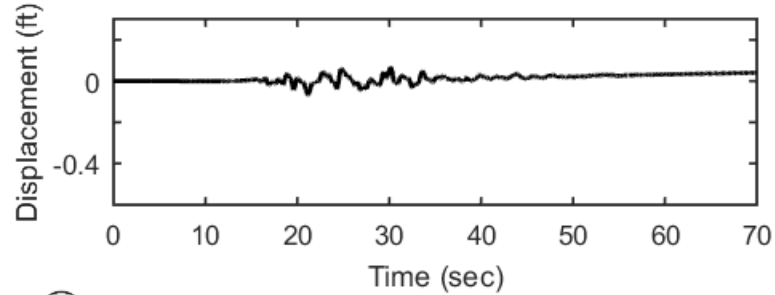
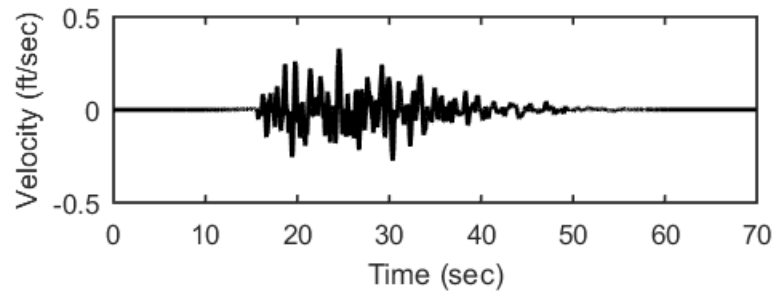
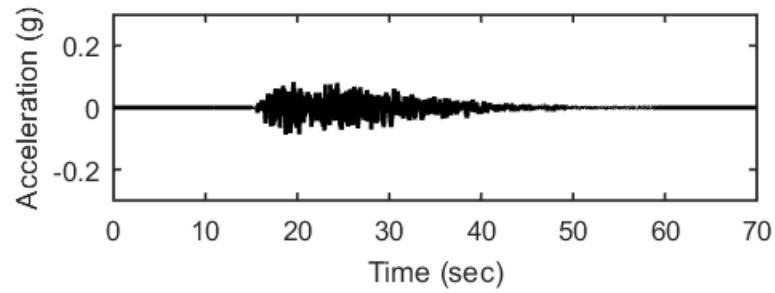




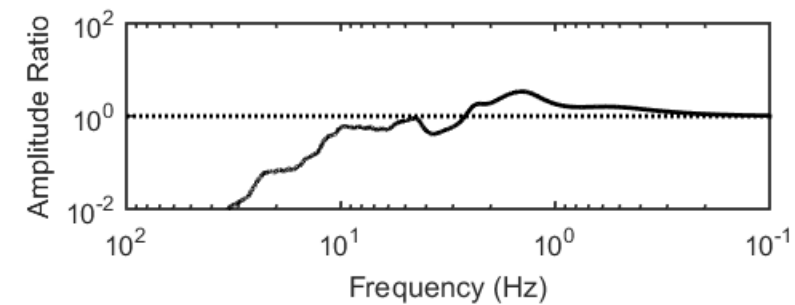
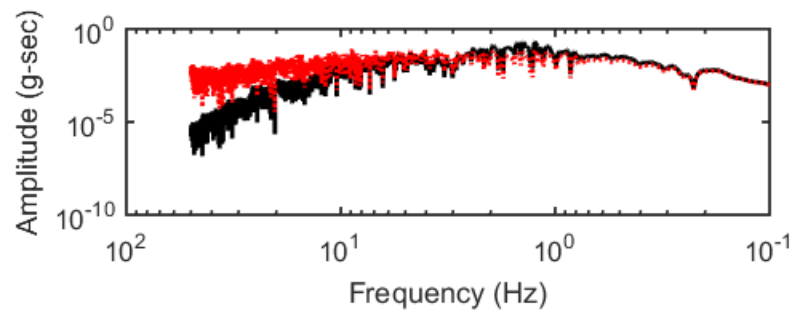
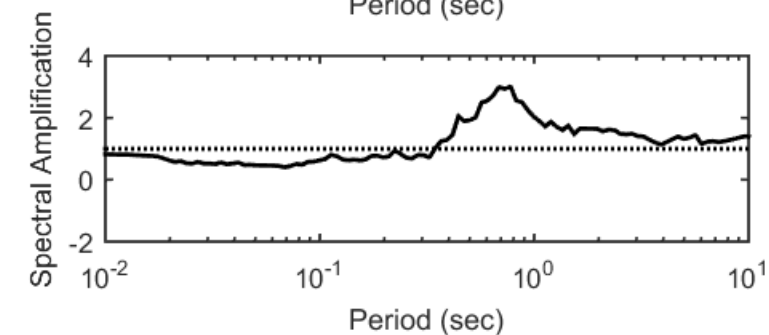
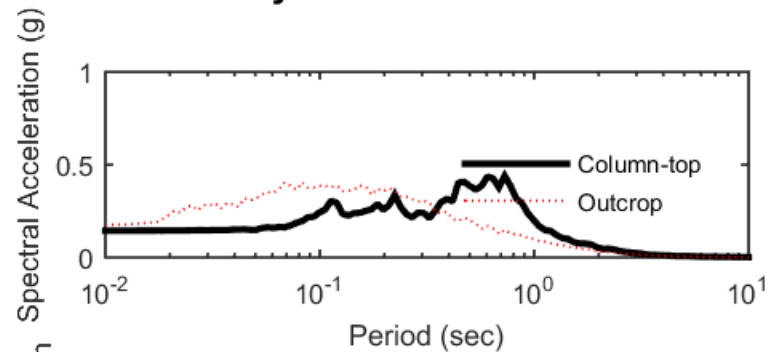
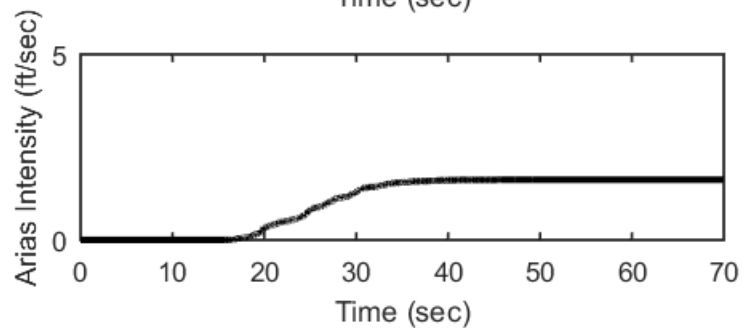
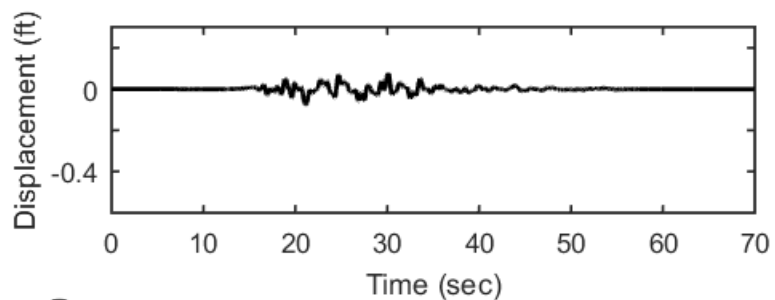
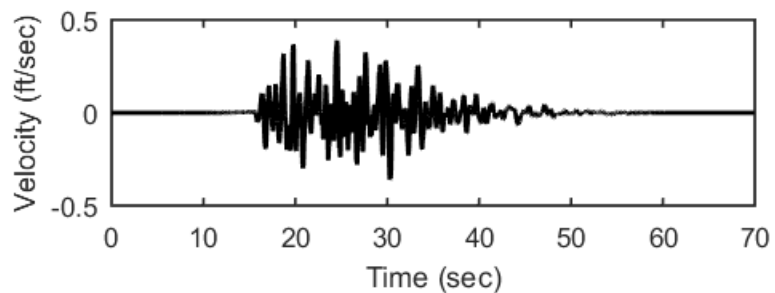
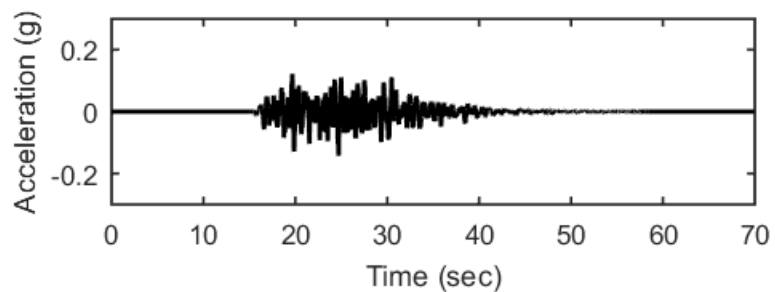
### Profile outputs for Motion: FEE1



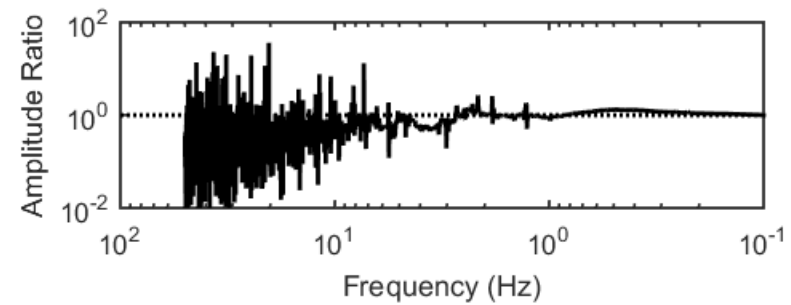
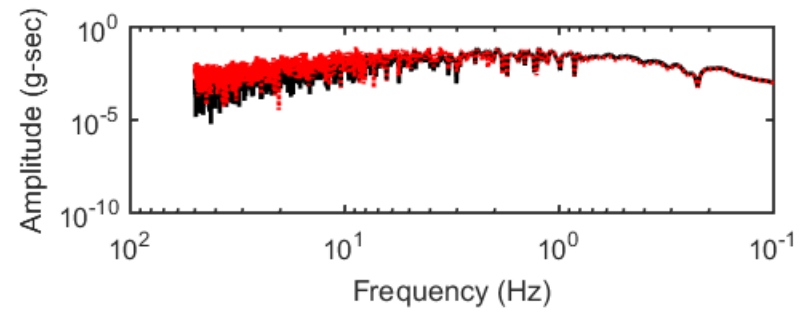
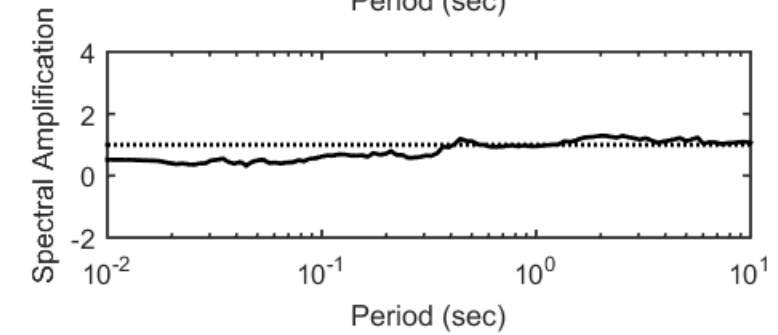
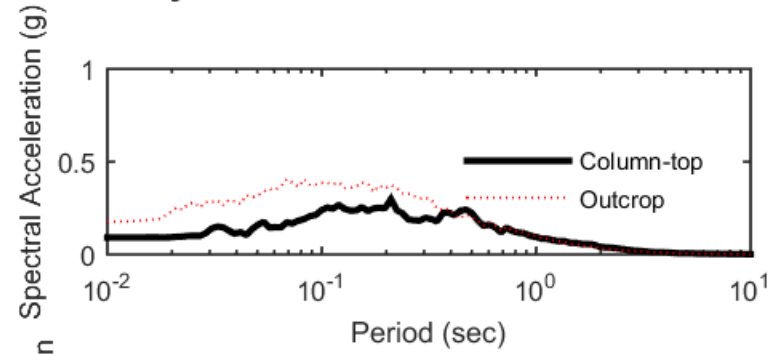
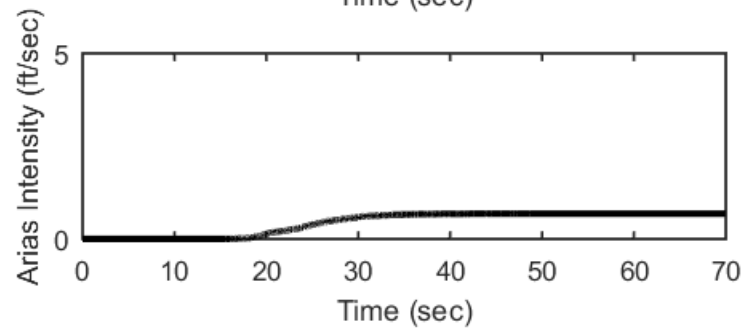
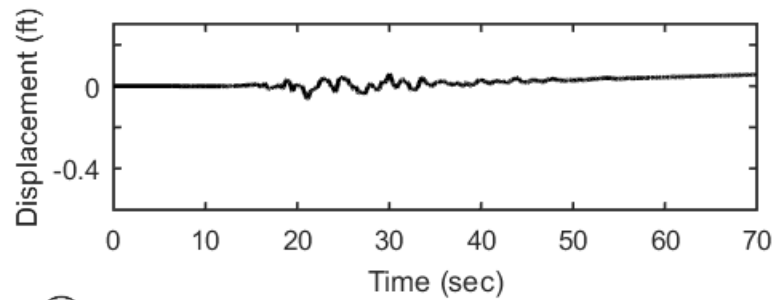
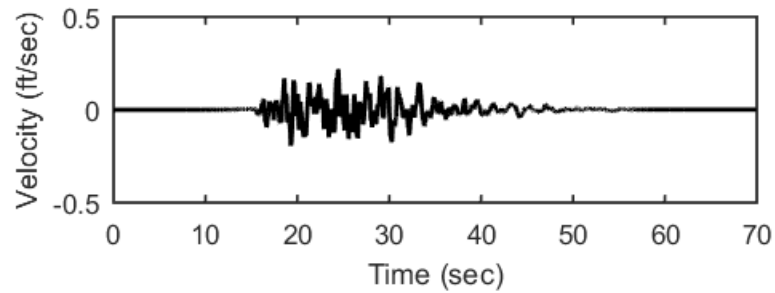
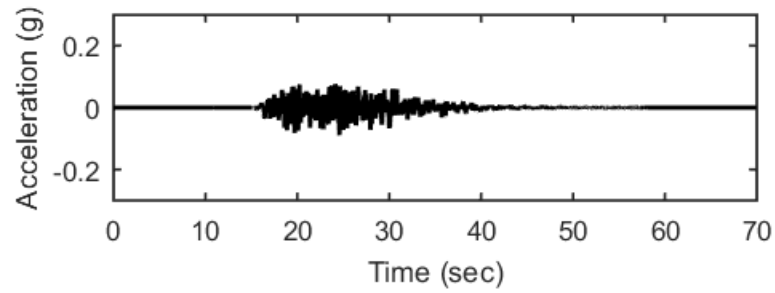
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



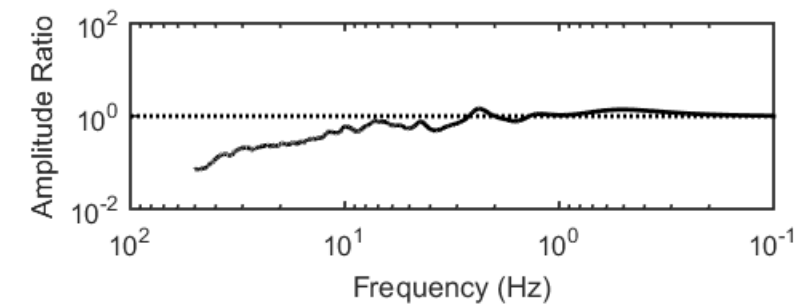
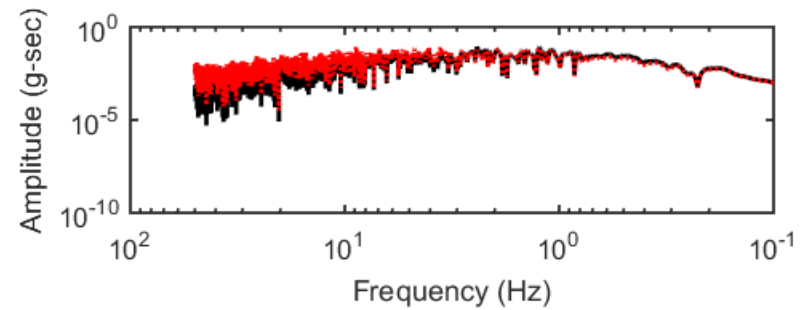
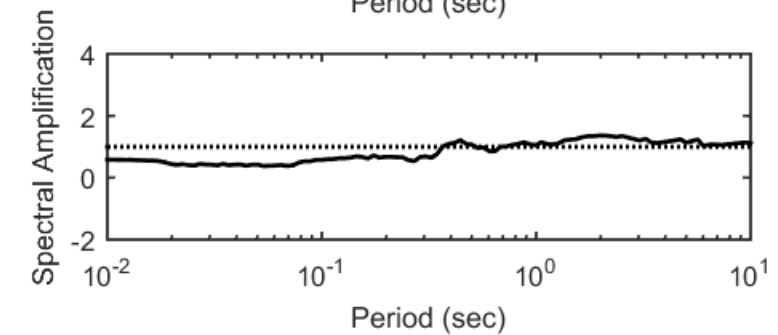
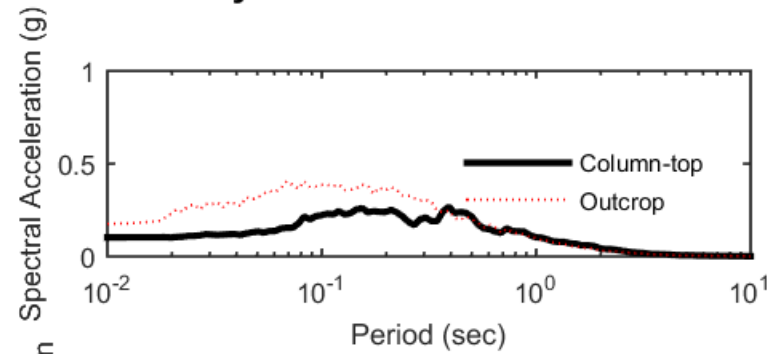
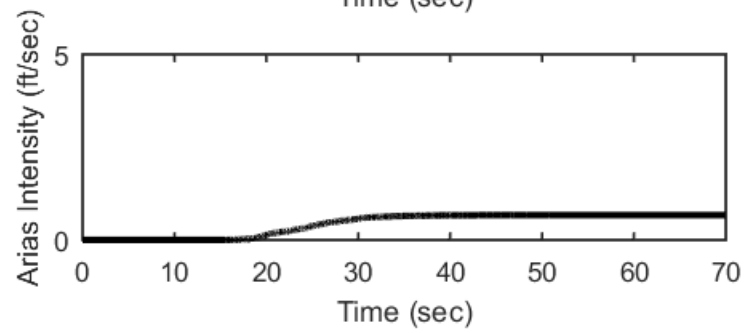
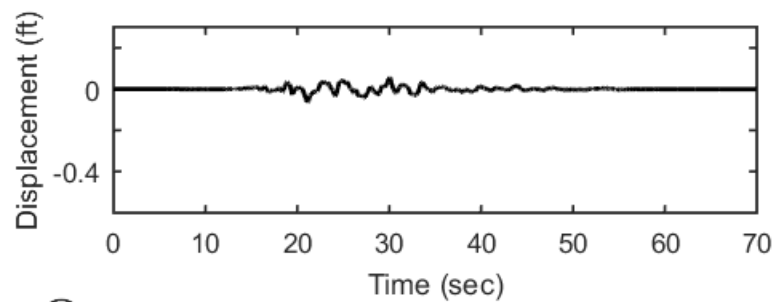
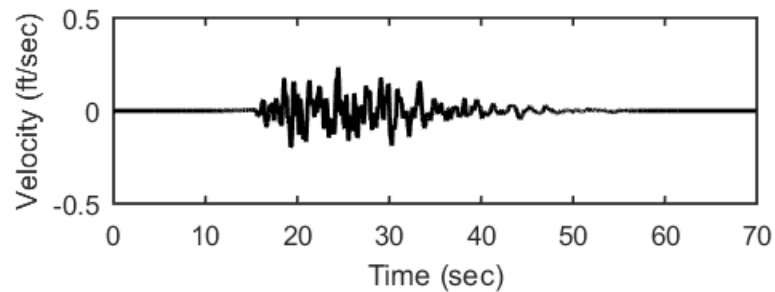
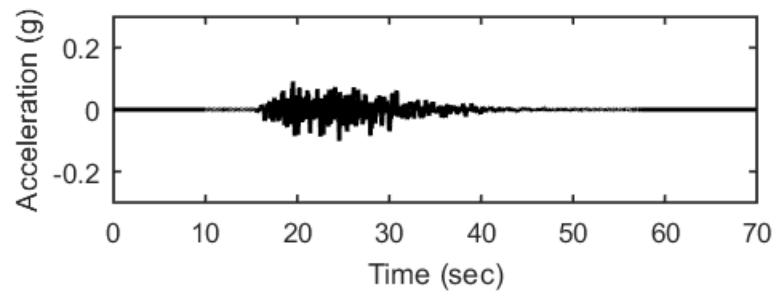
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



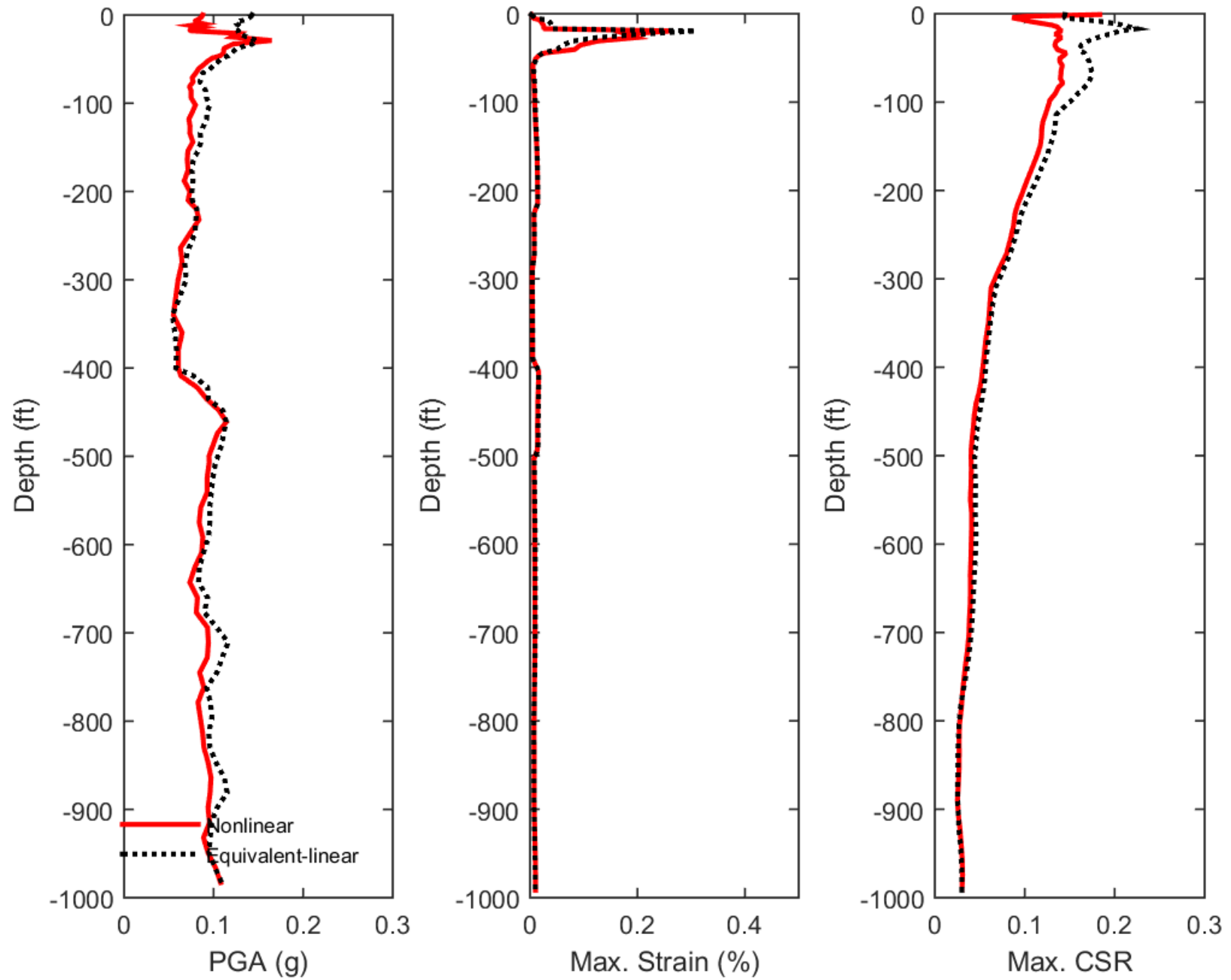
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



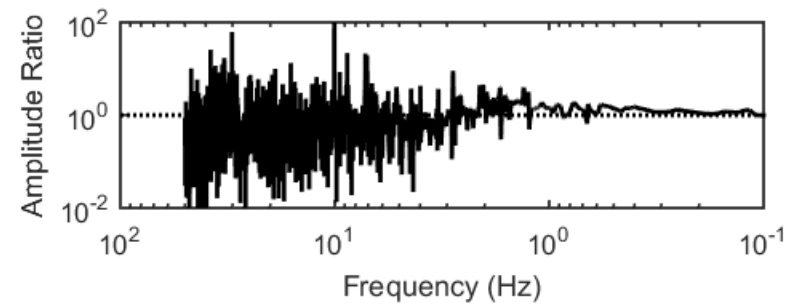
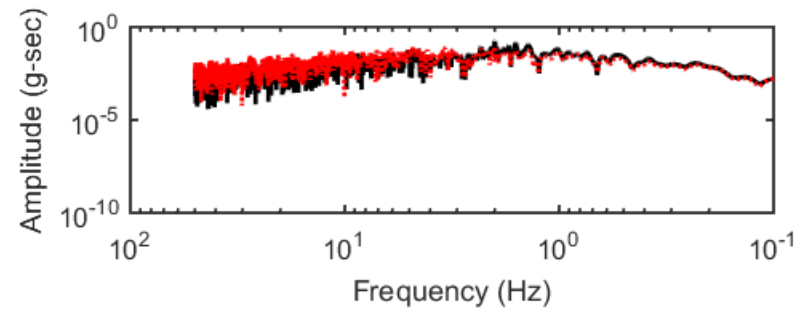
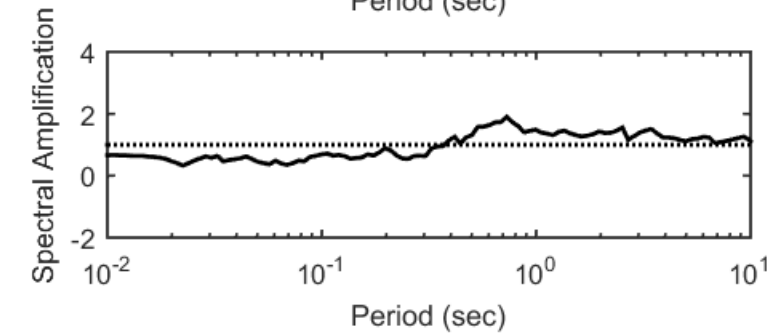
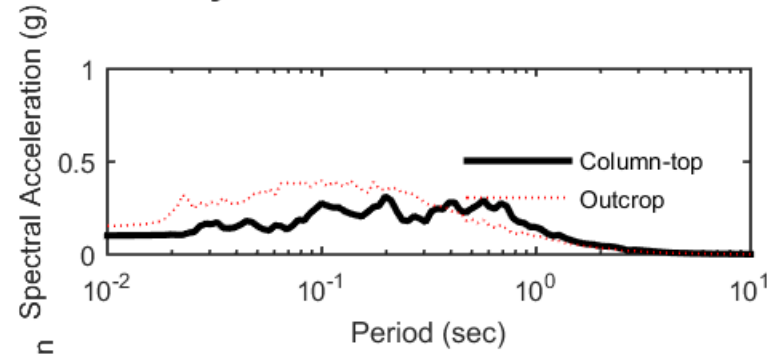
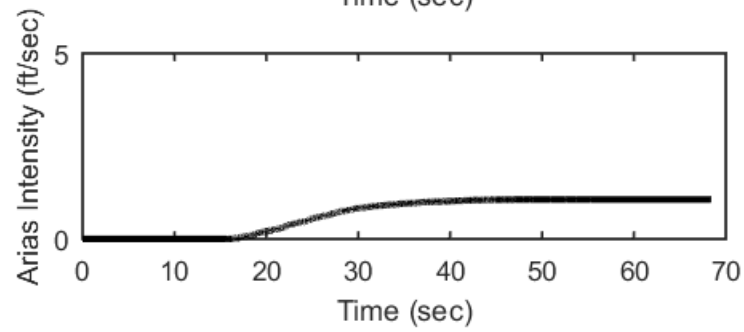
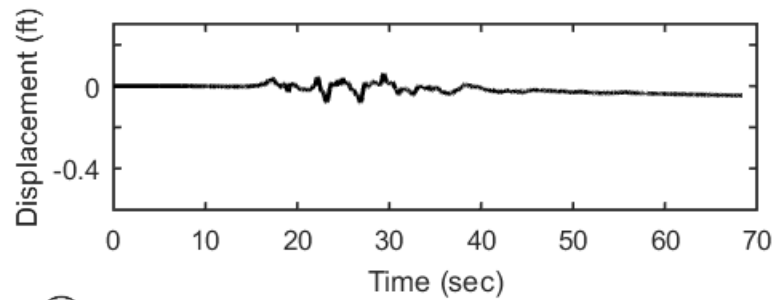
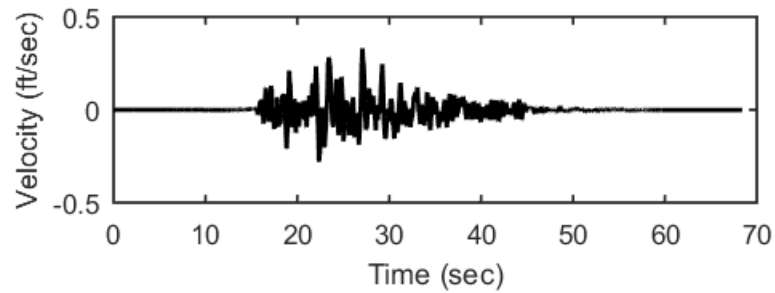
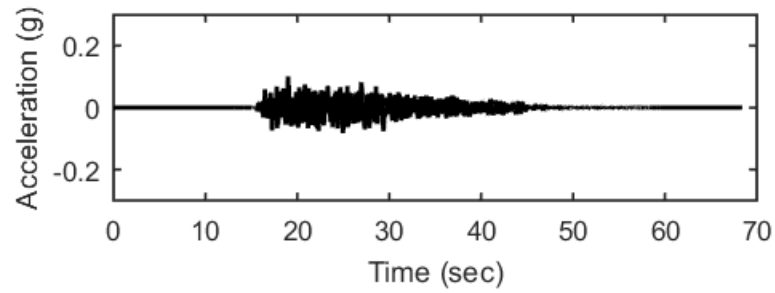
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



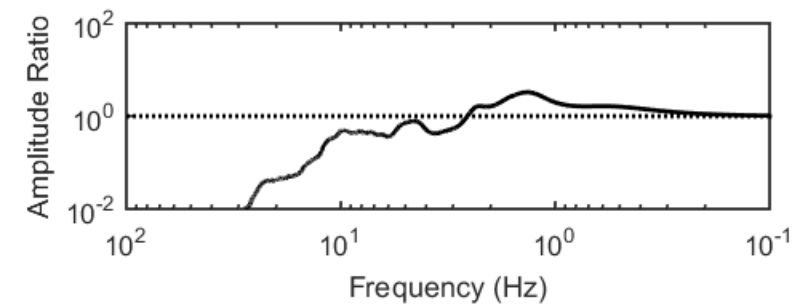
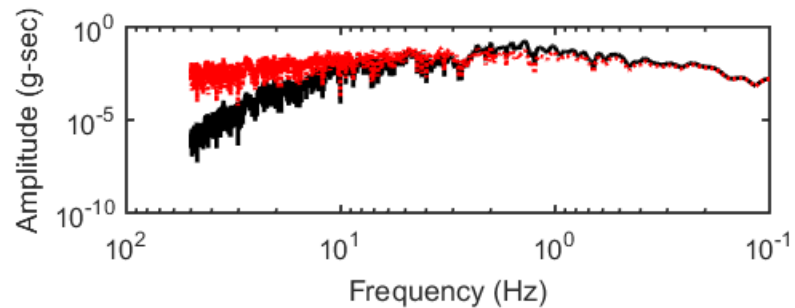
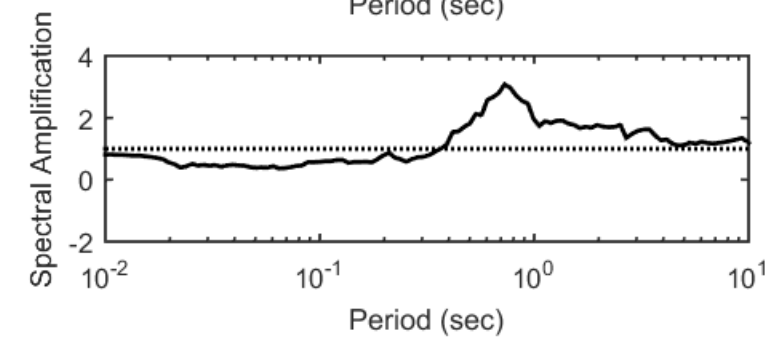
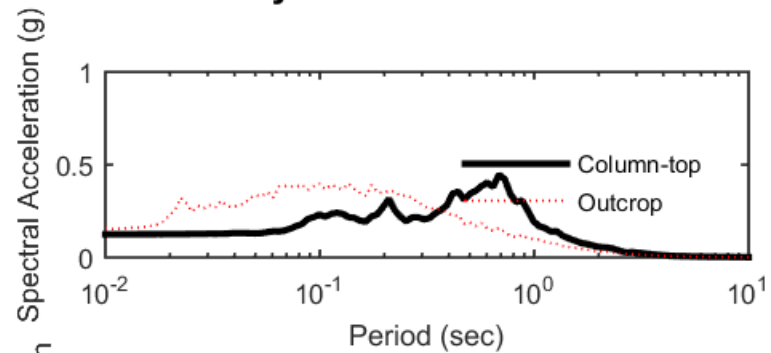
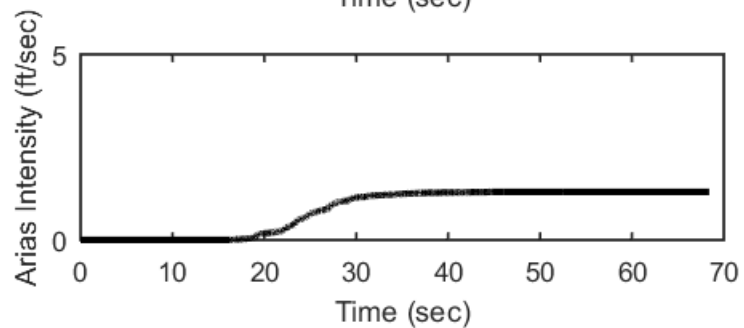
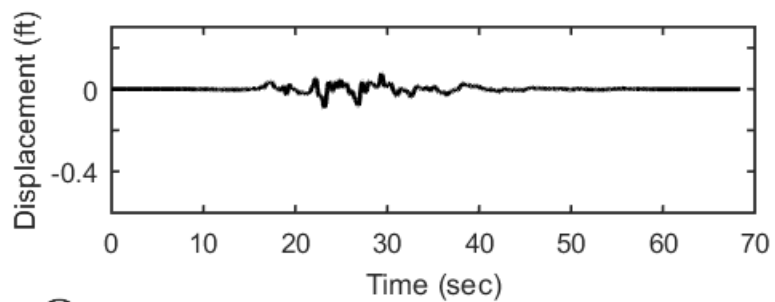
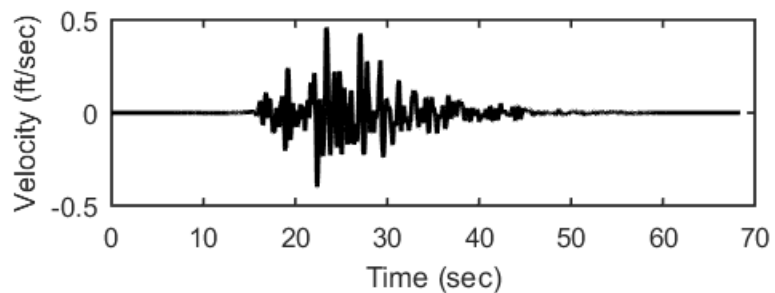
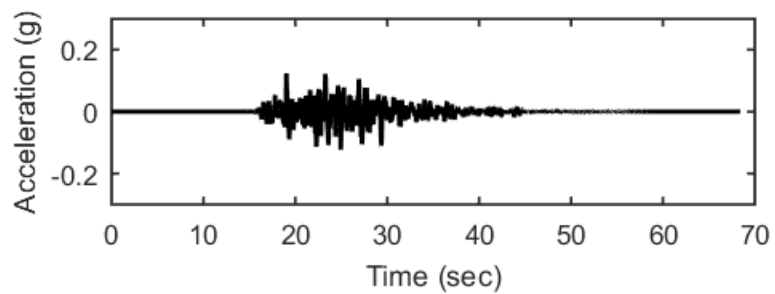
### Profile outputs for Motion: FEE2



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3

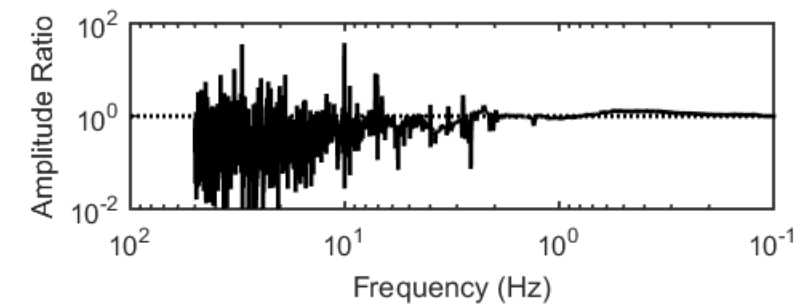
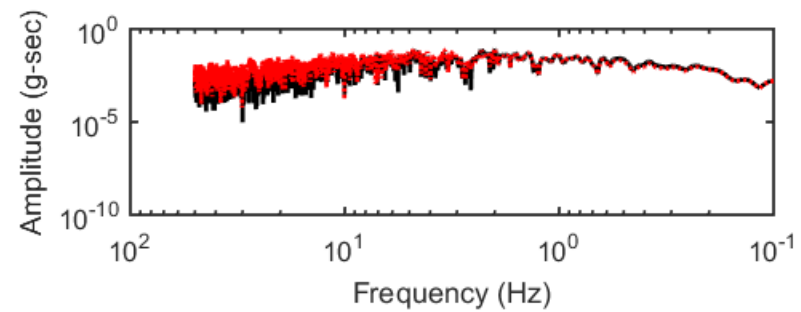
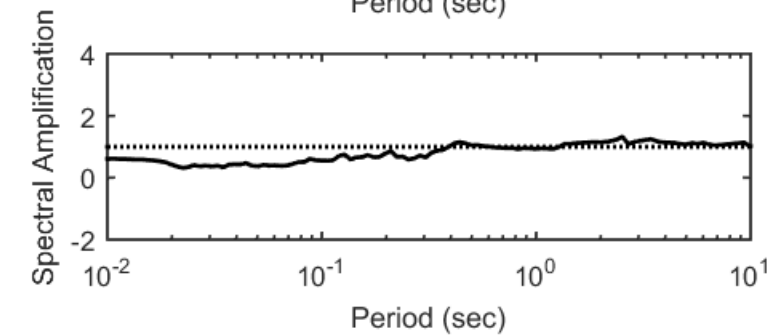
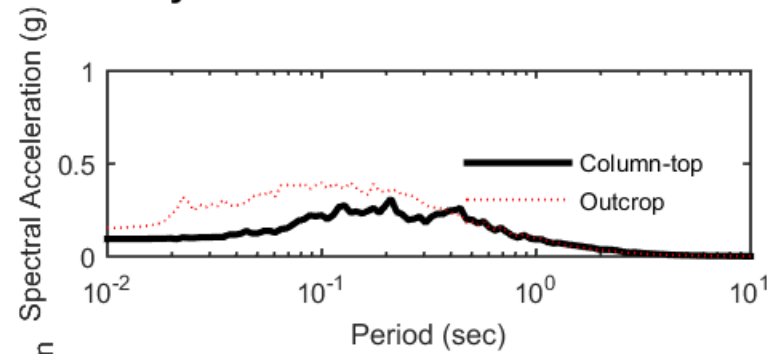
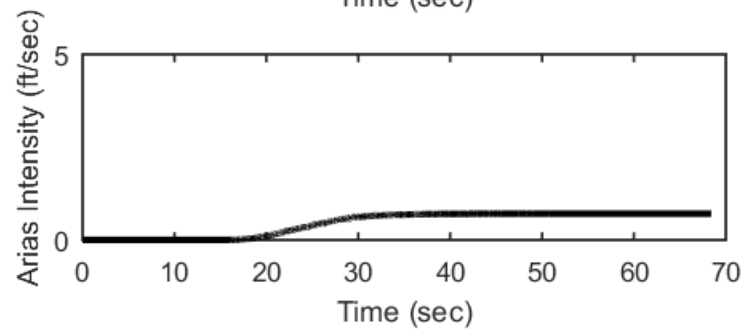
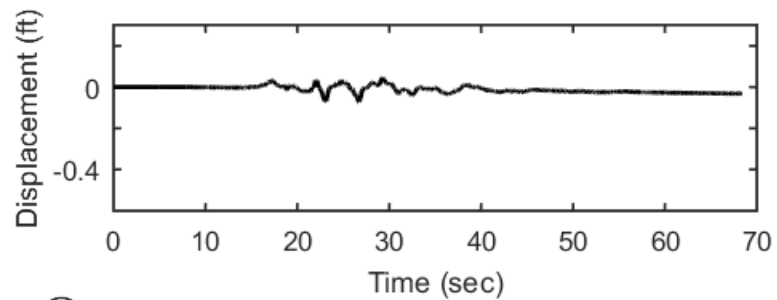
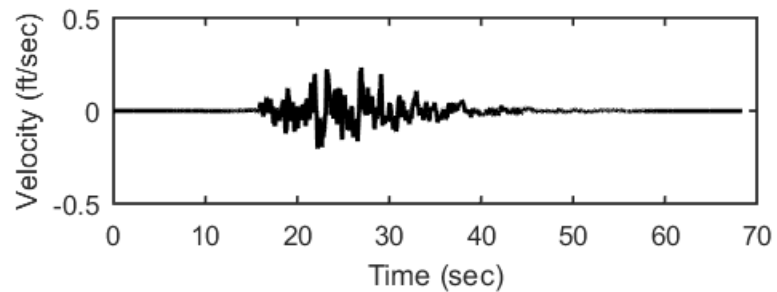
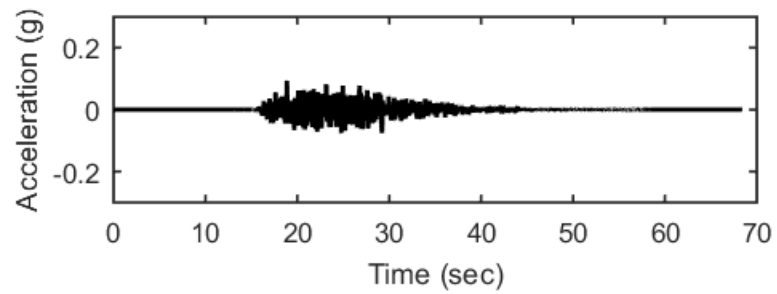


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3

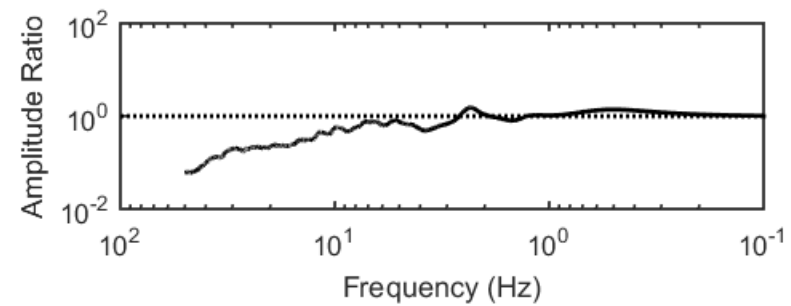
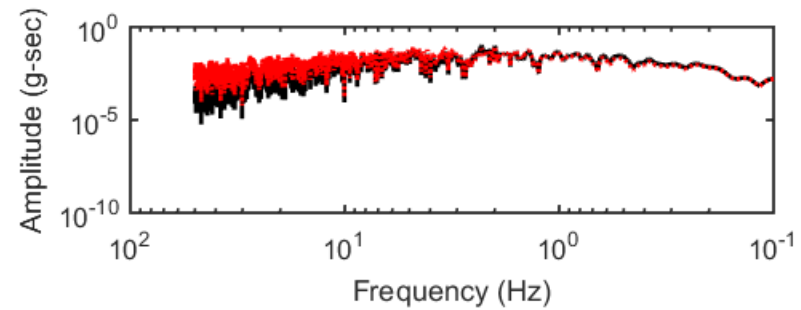
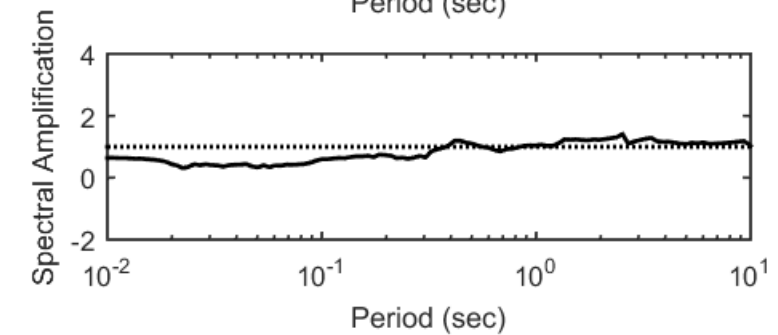
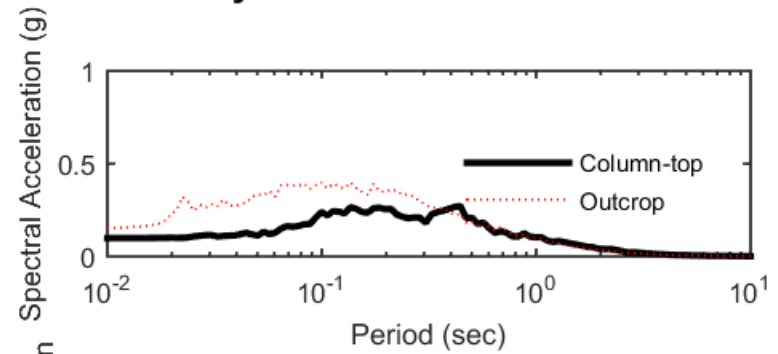
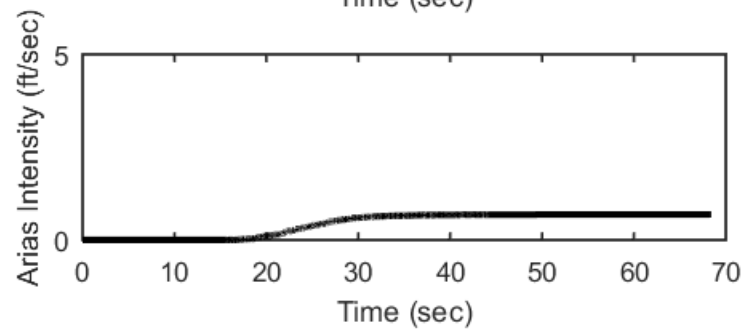
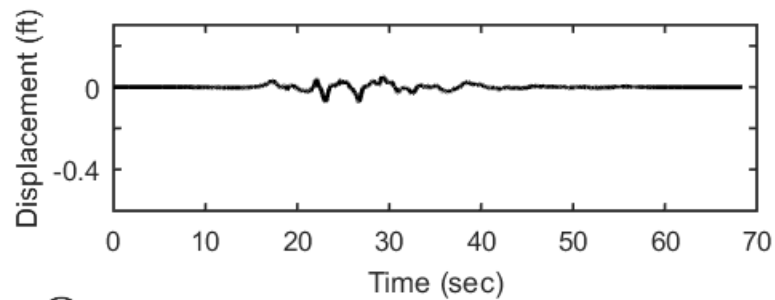
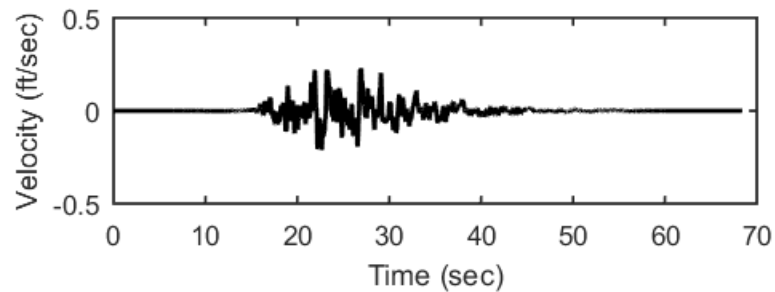
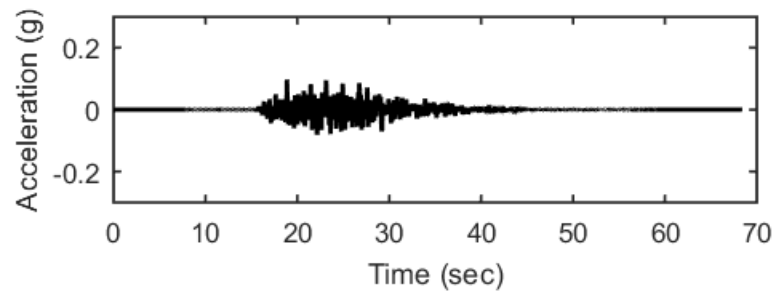




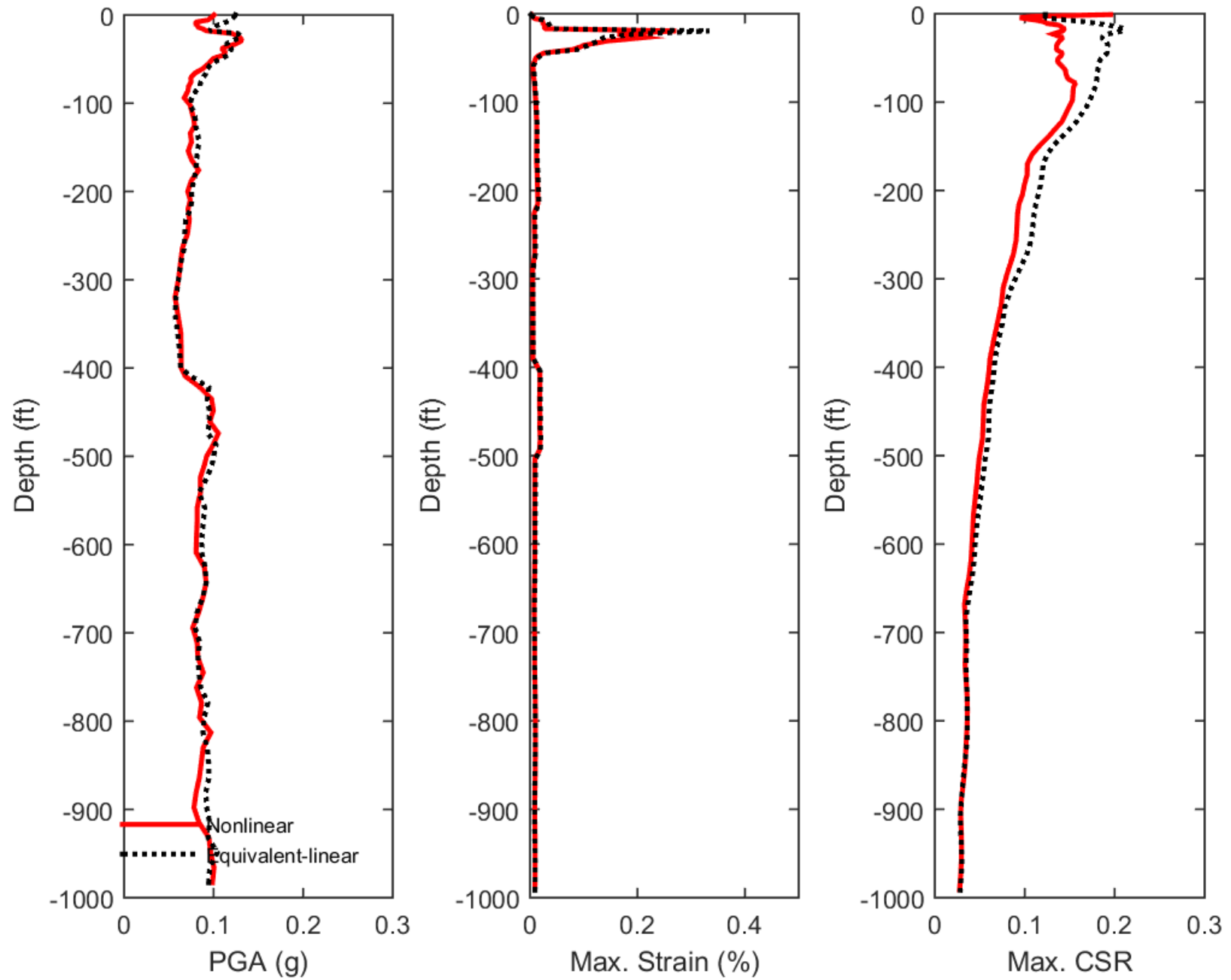
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



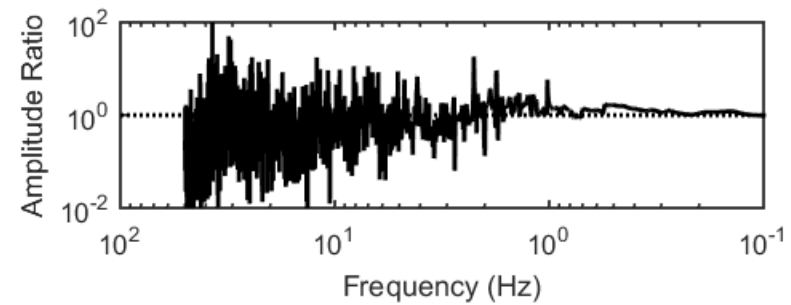
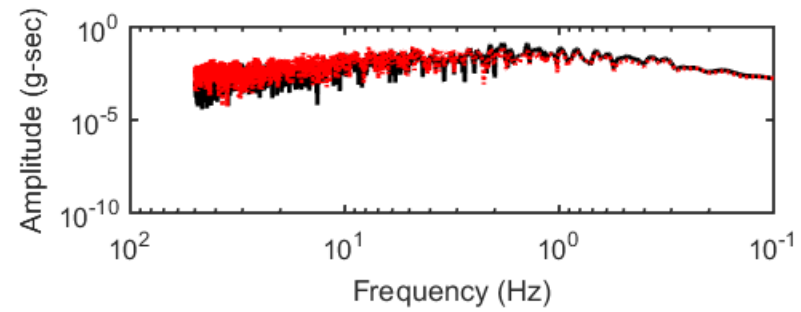
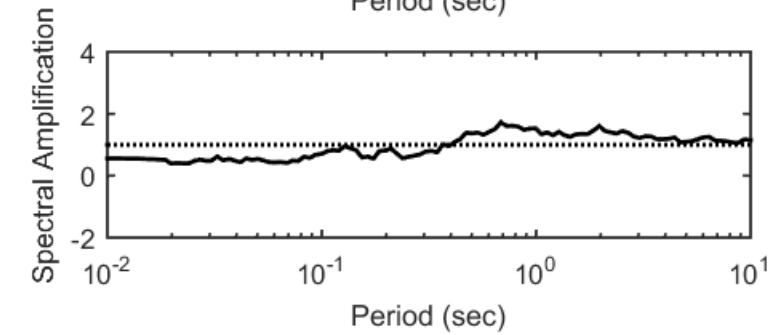
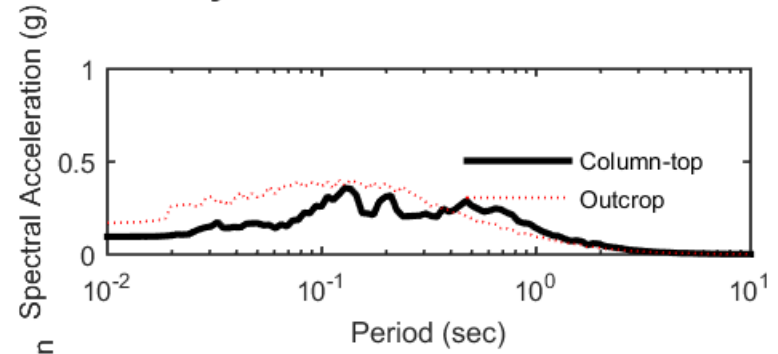
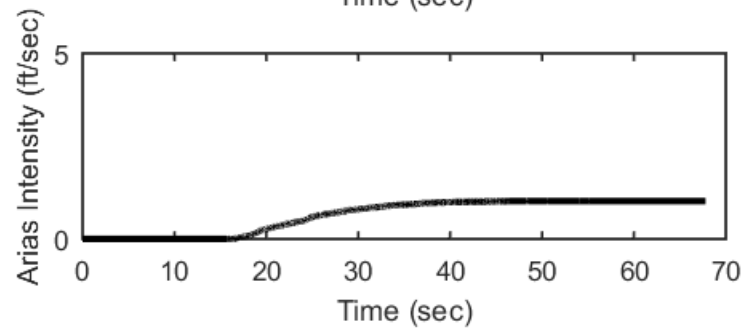
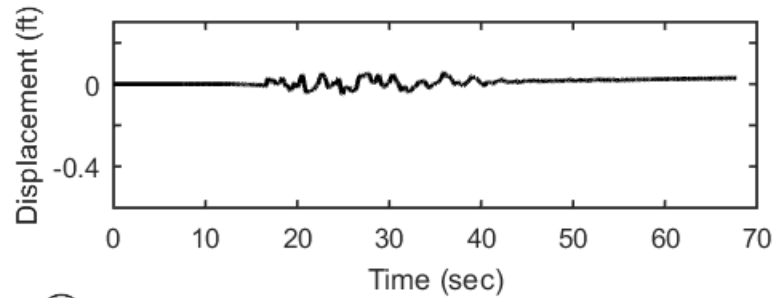
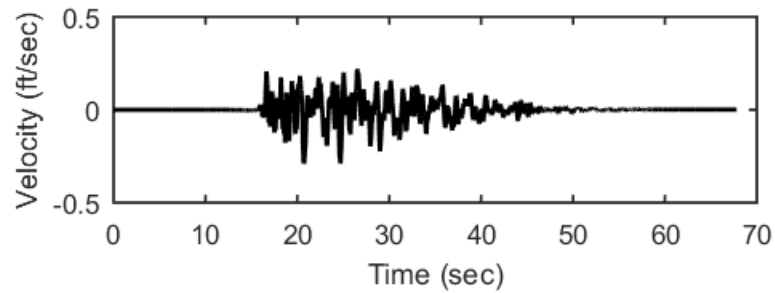
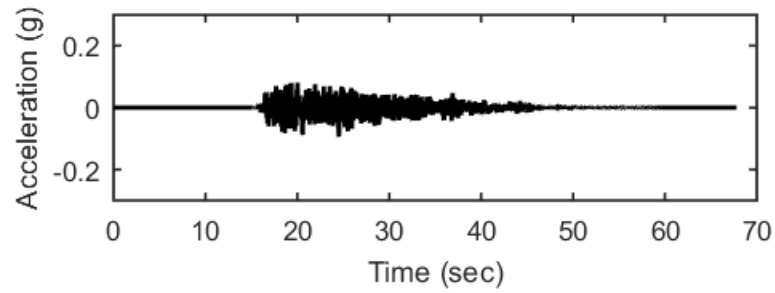
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



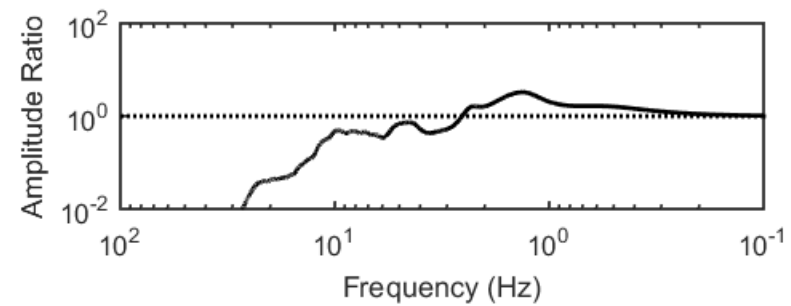
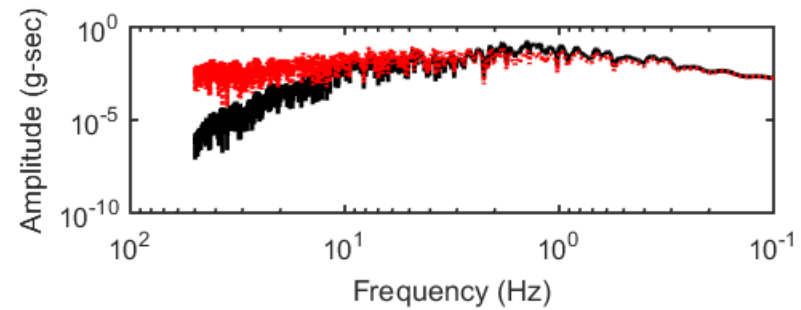
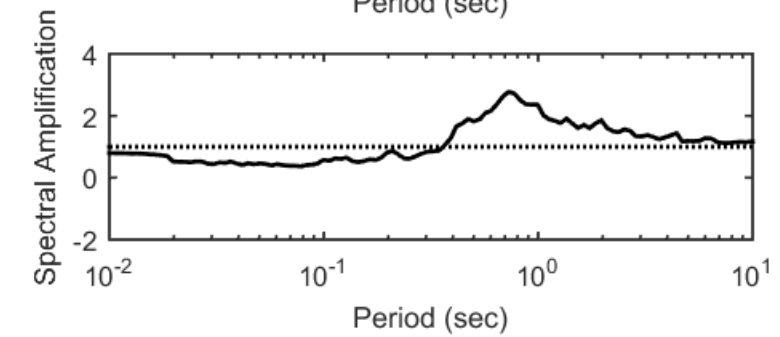
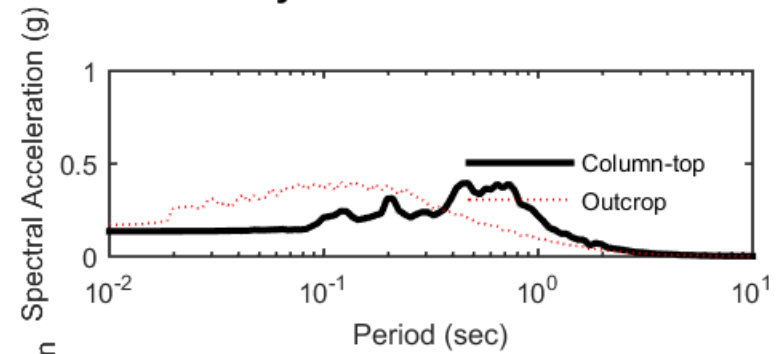
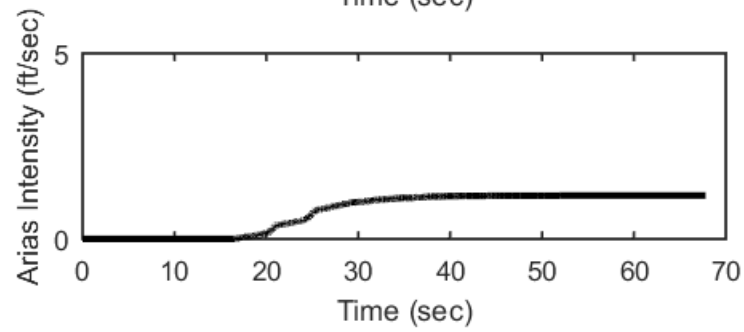
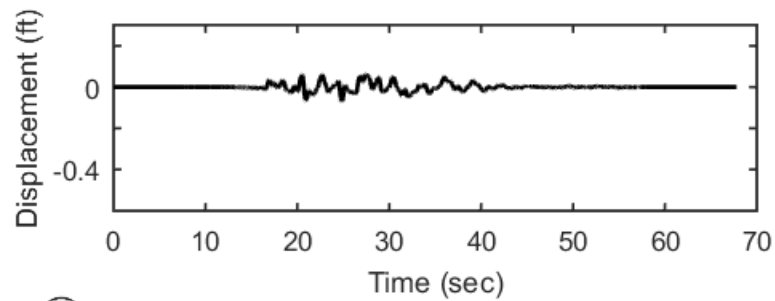
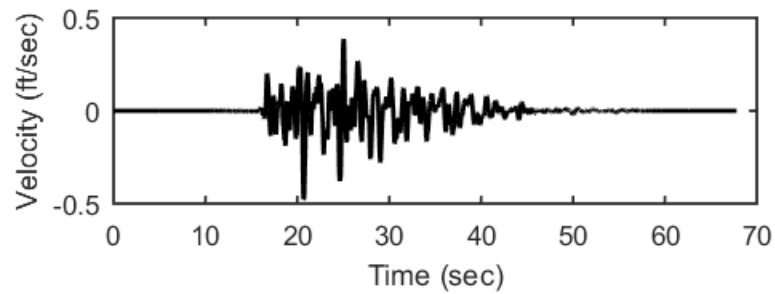
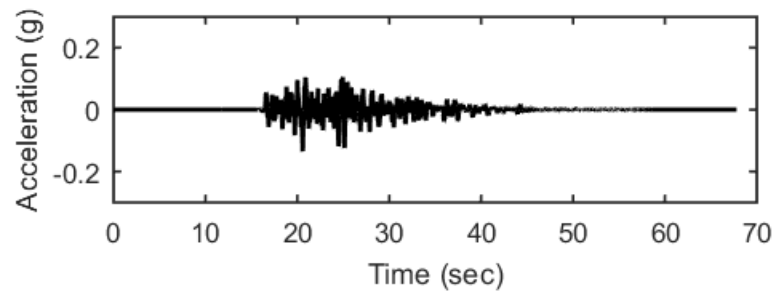
### Profile outputs for Motion: FEE3



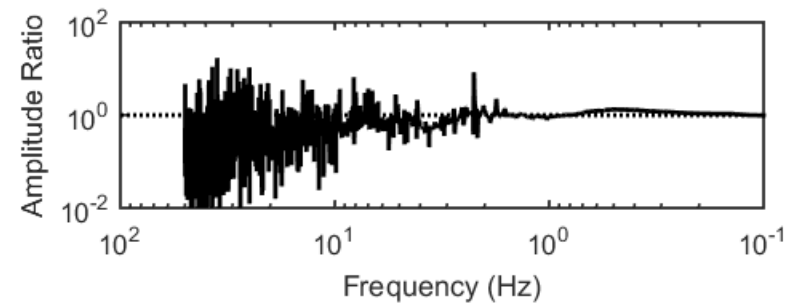
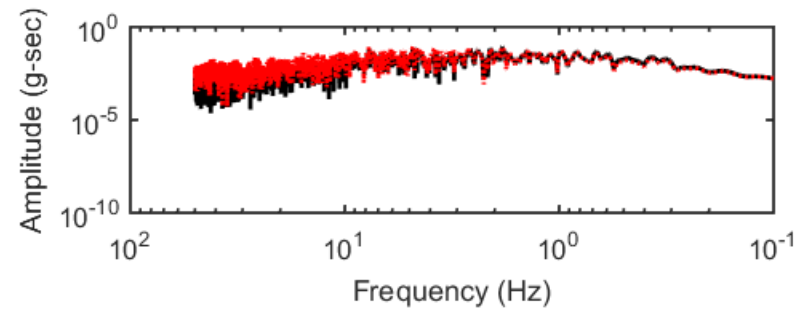
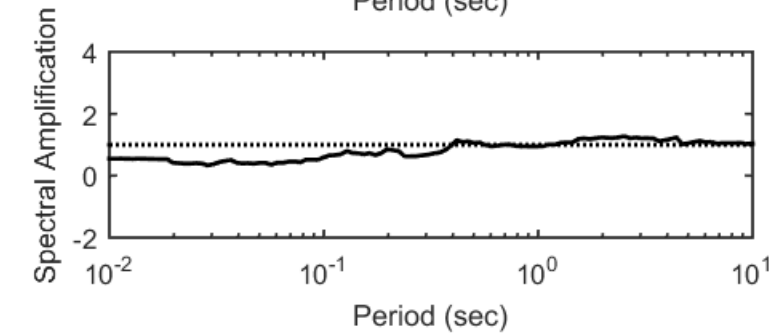
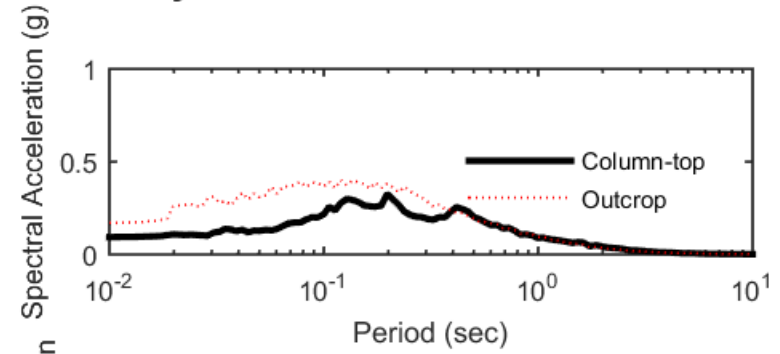
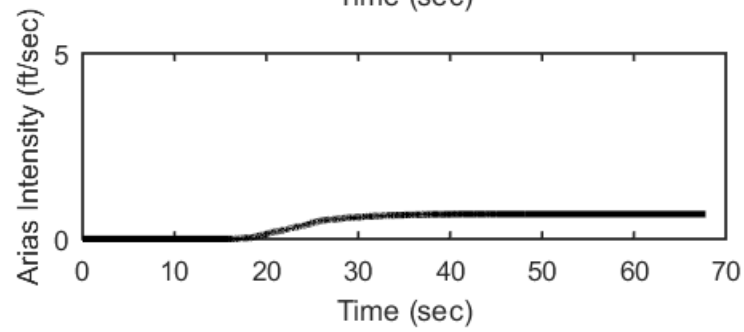
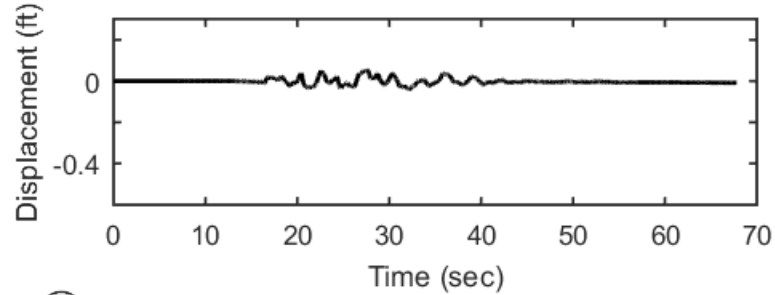
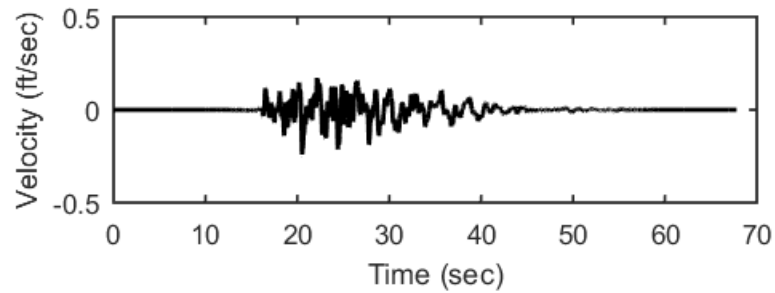
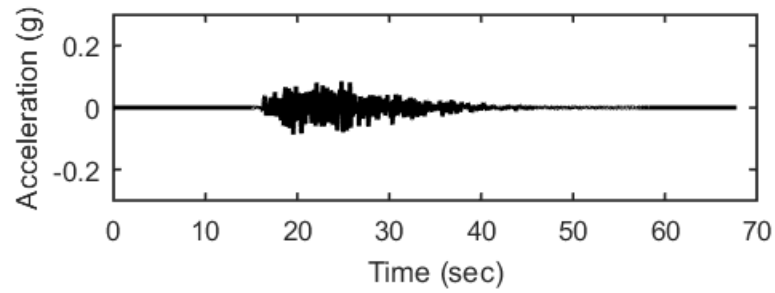
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



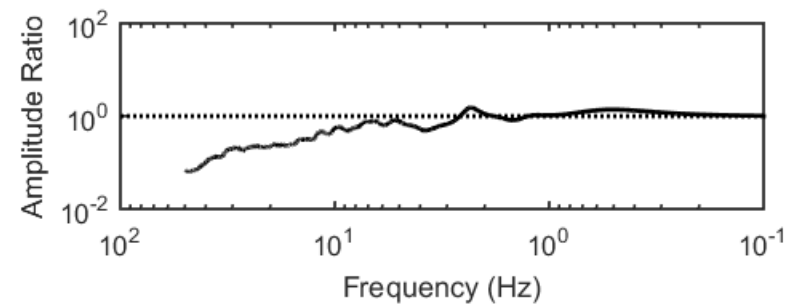
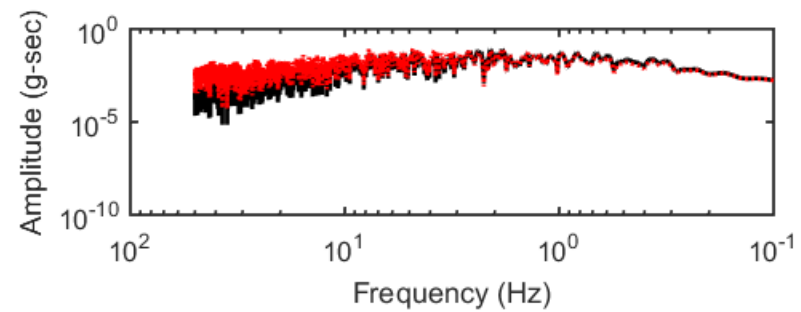
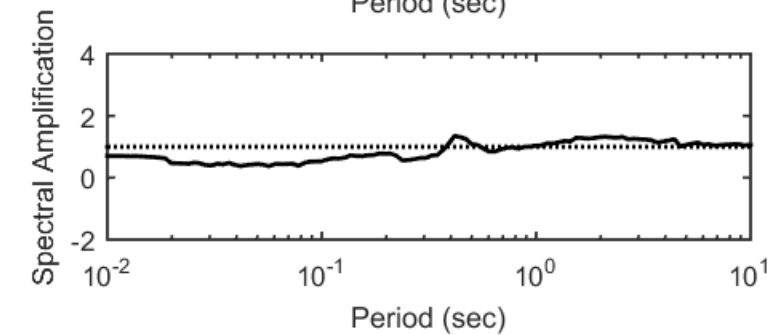
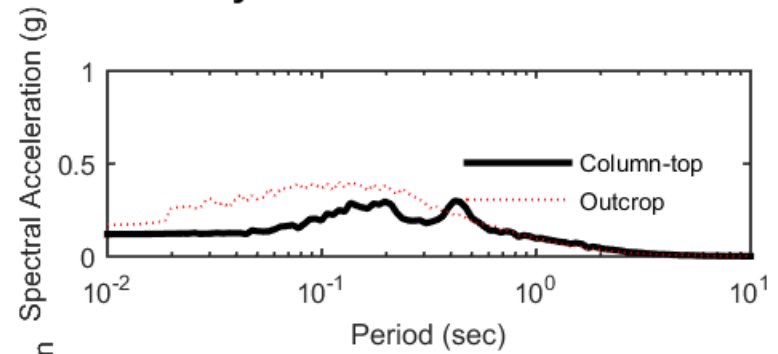
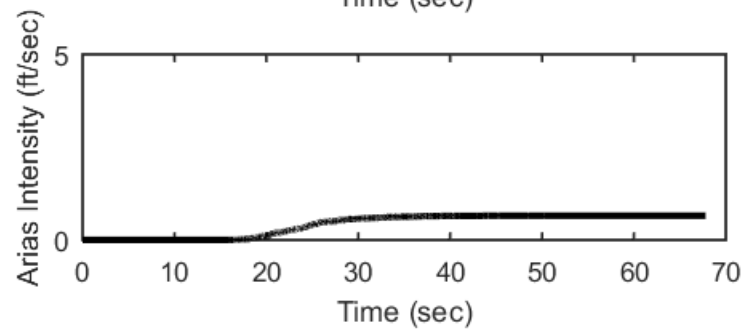
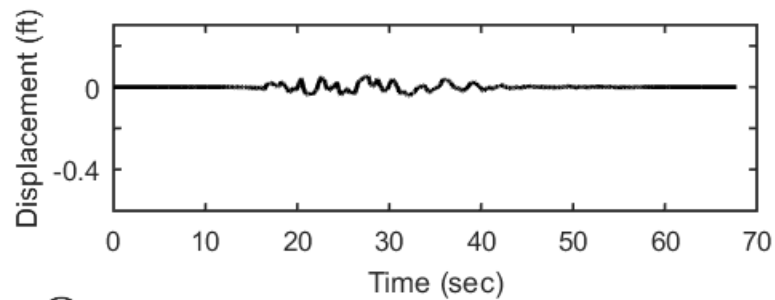
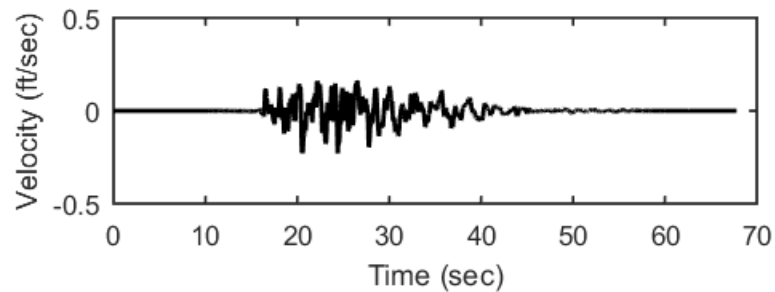
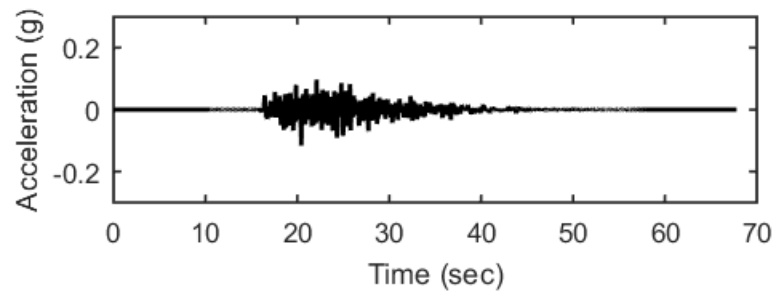
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



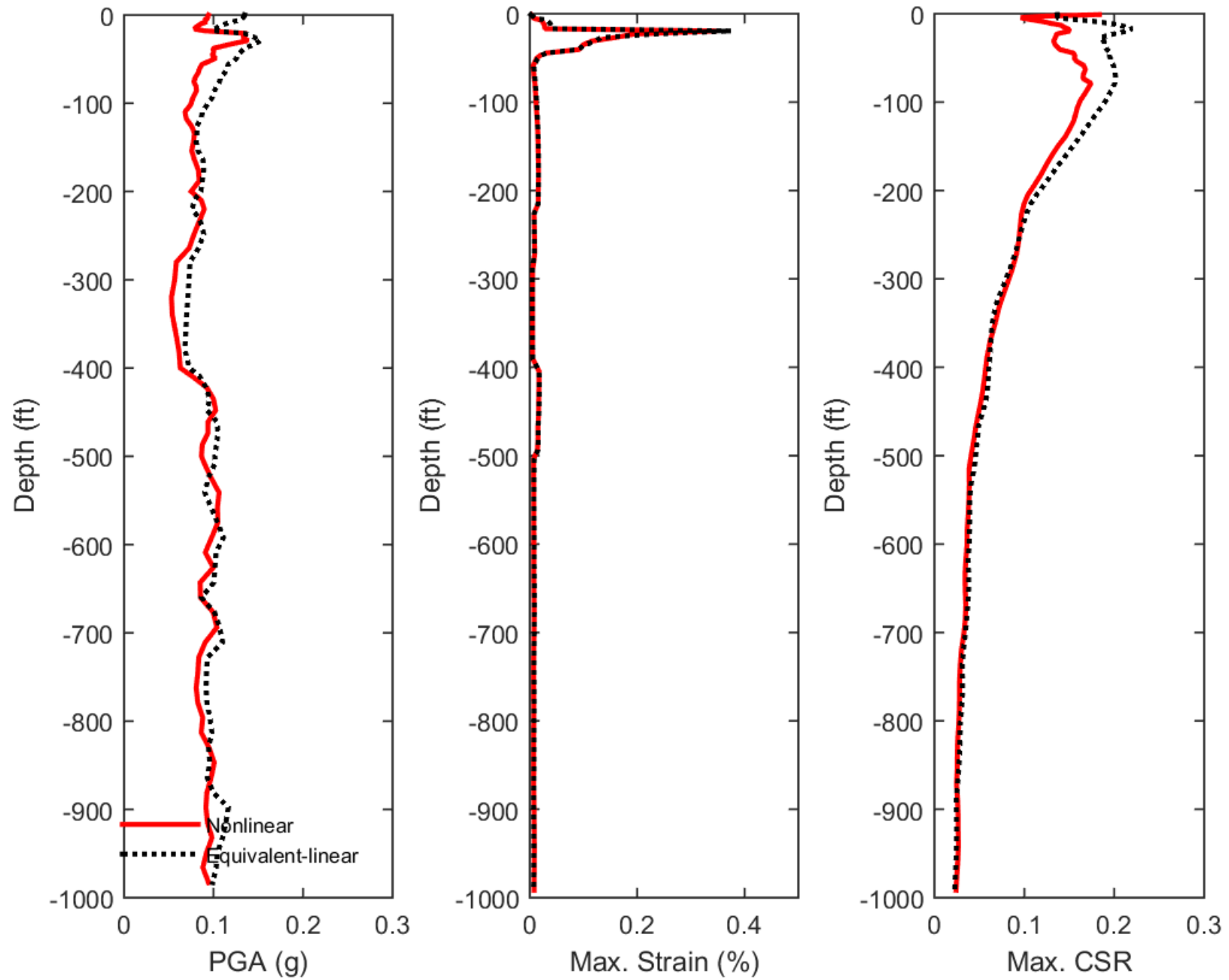
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4

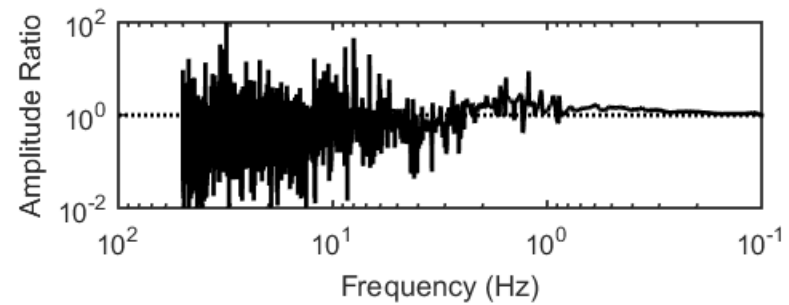
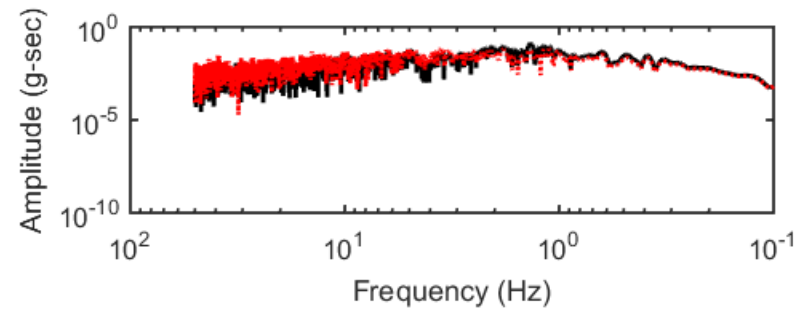
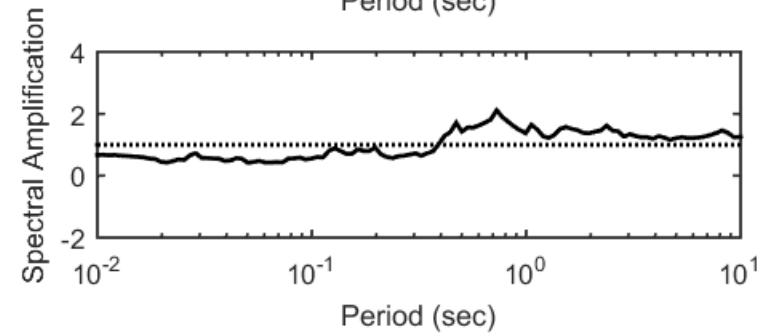
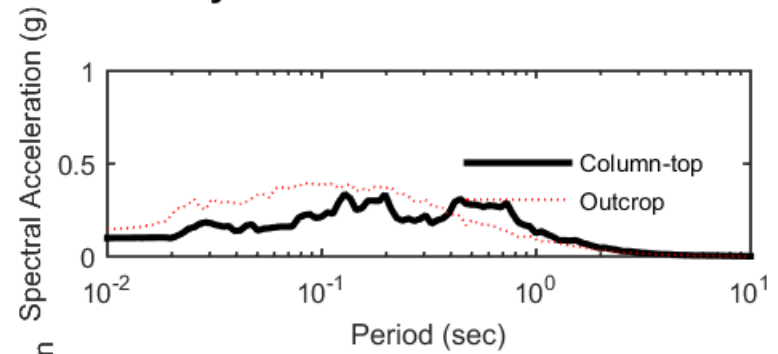
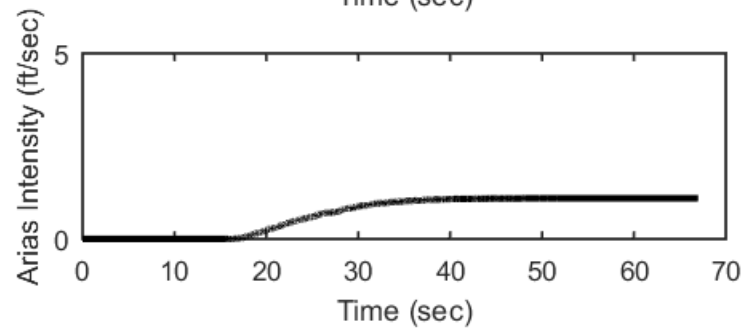
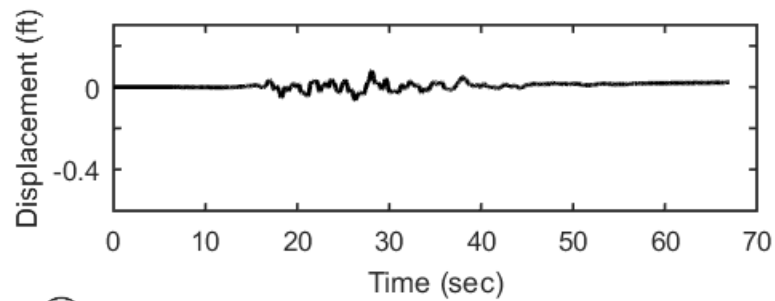
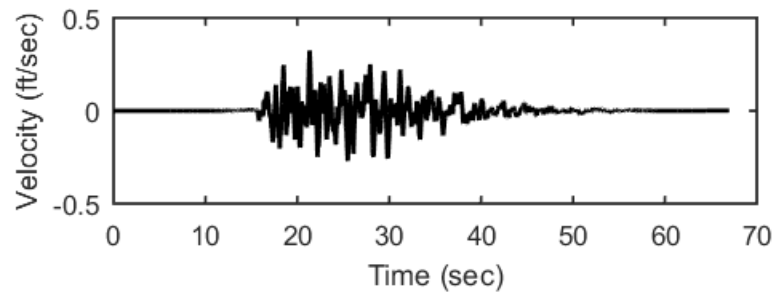
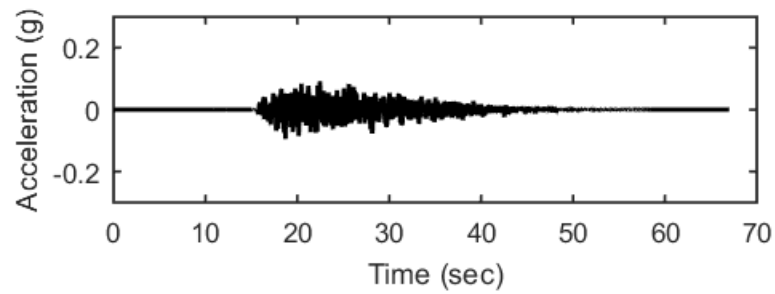


### Profile outputs for Motion: FEE4

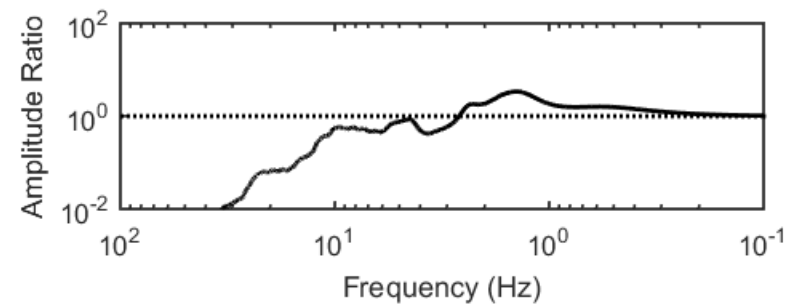
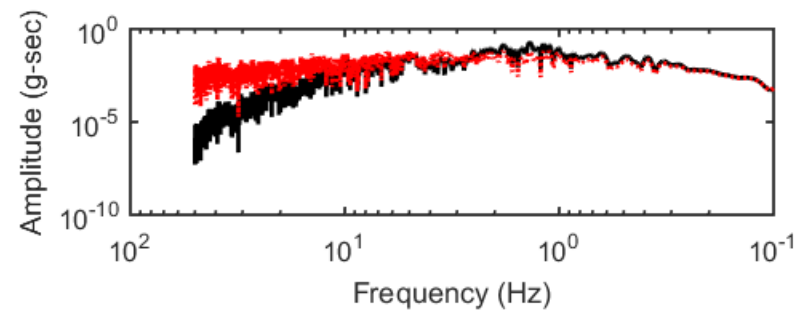
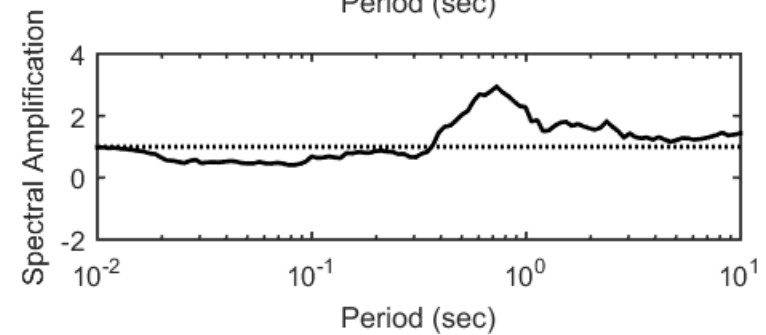
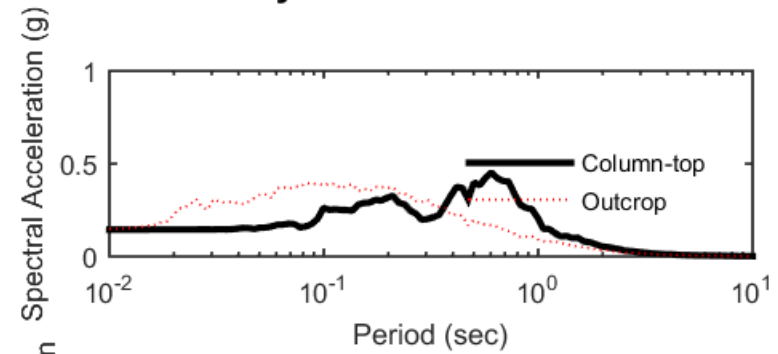
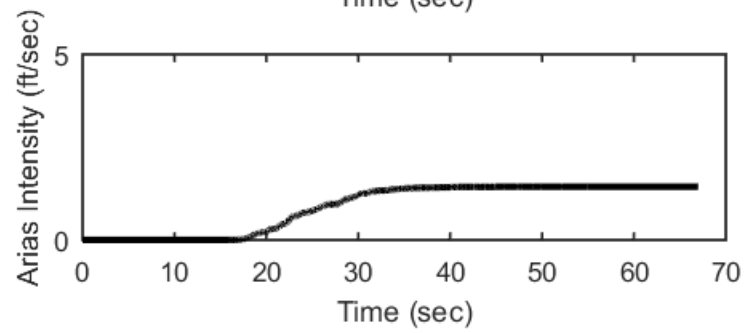
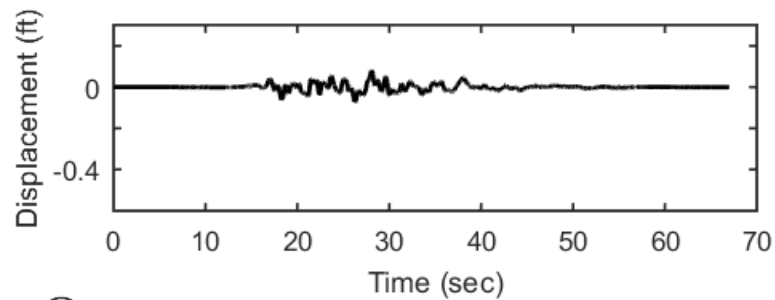
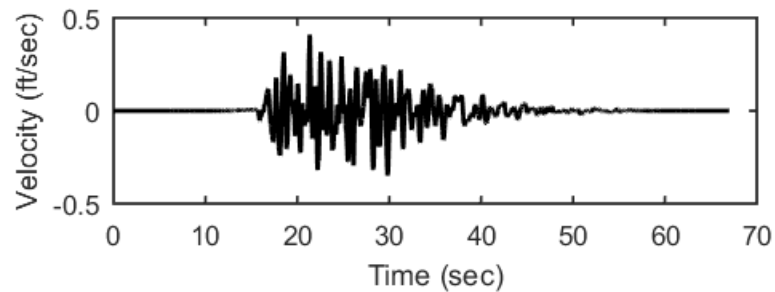
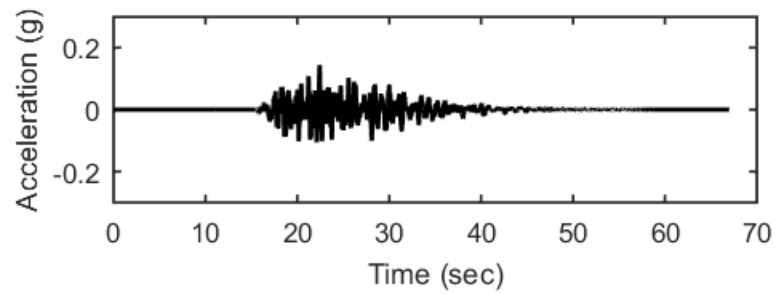




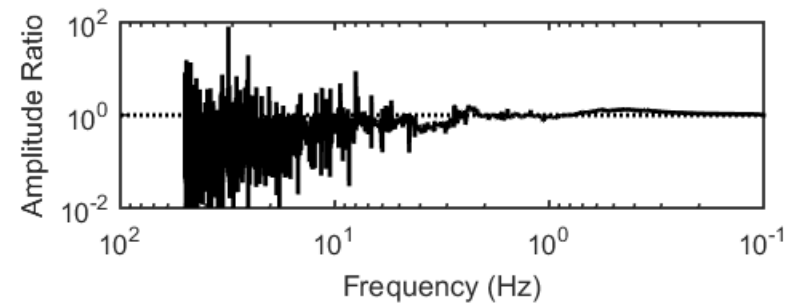
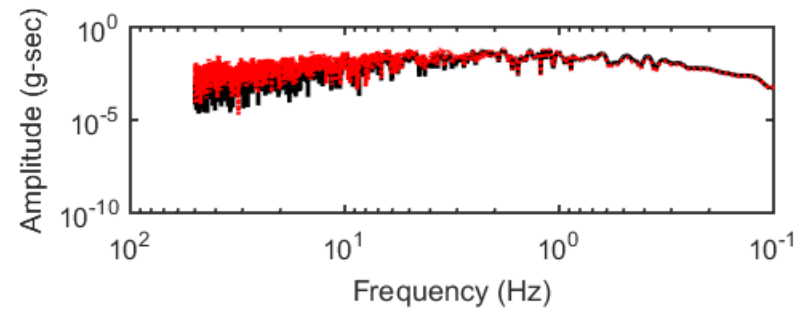
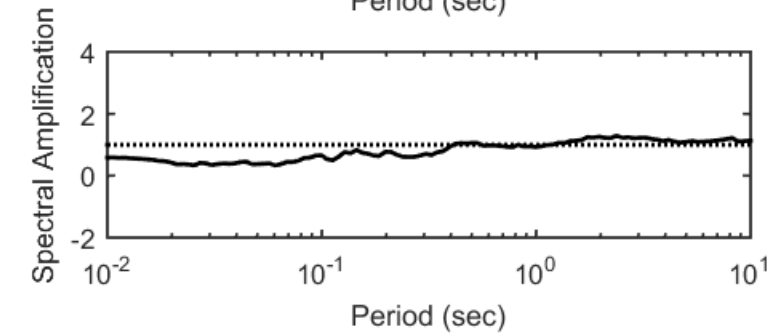
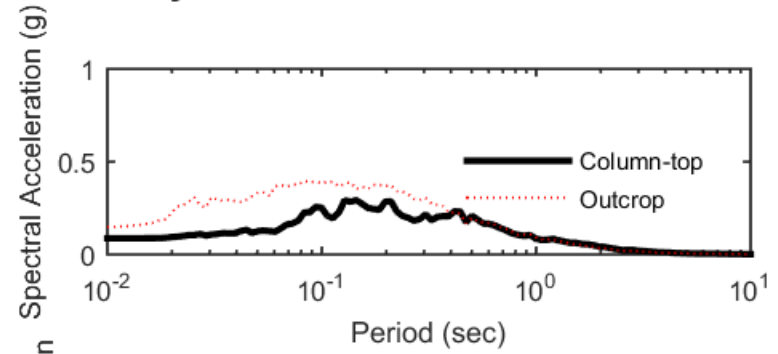
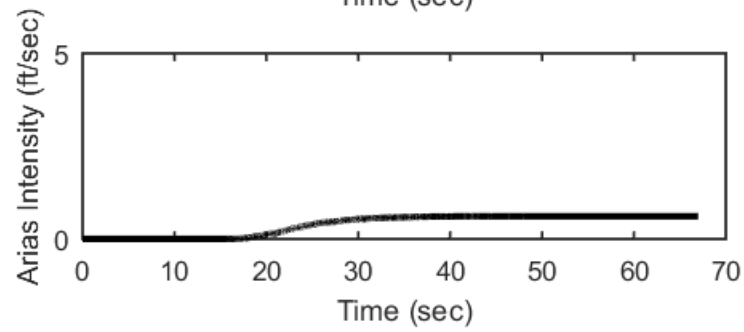
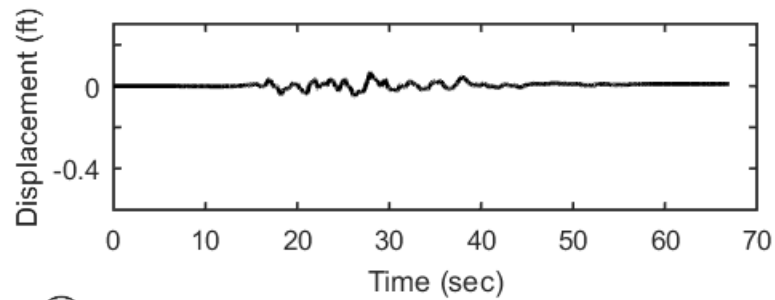
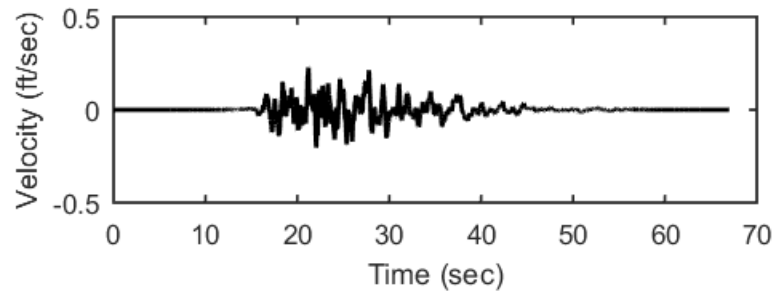
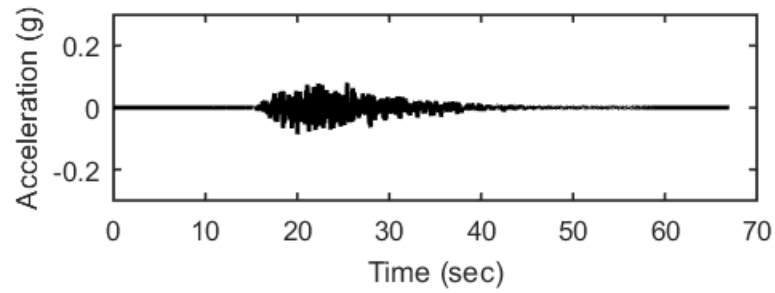
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



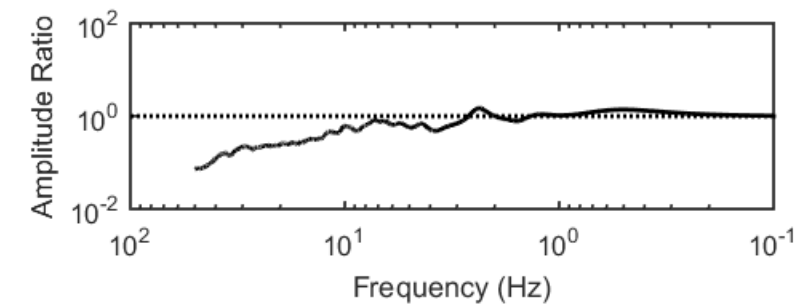
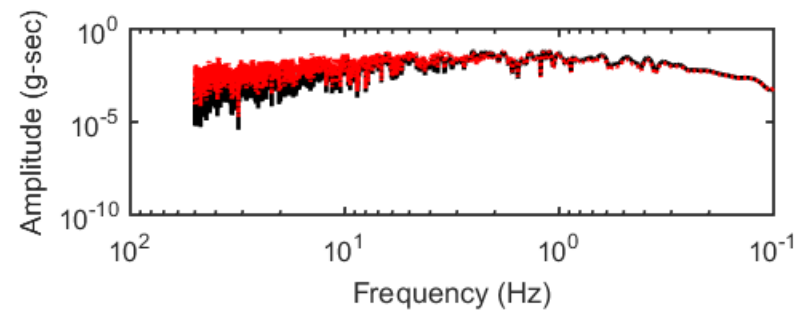
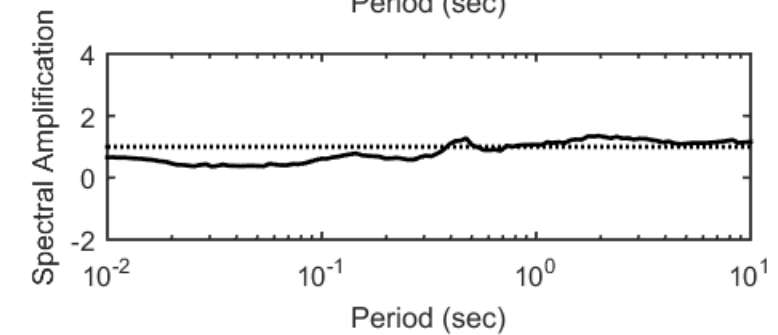
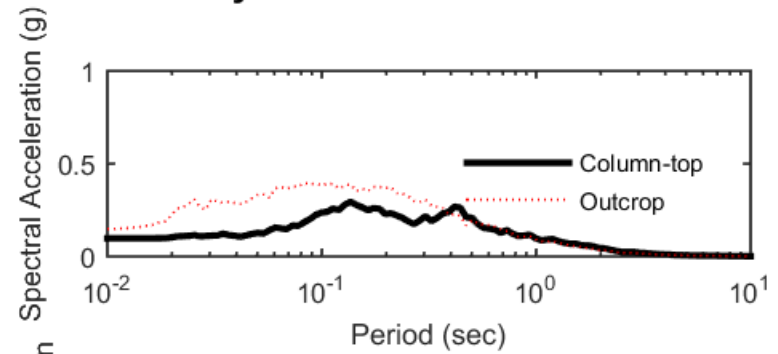
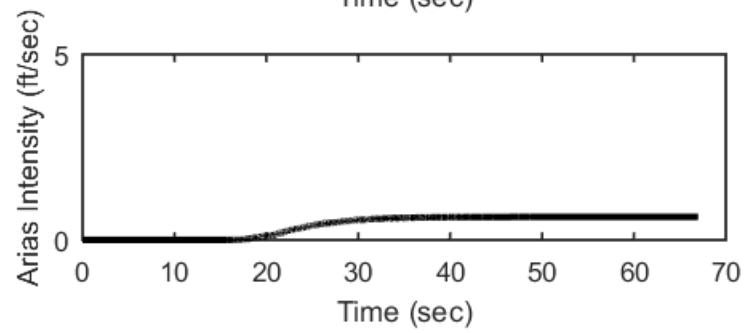
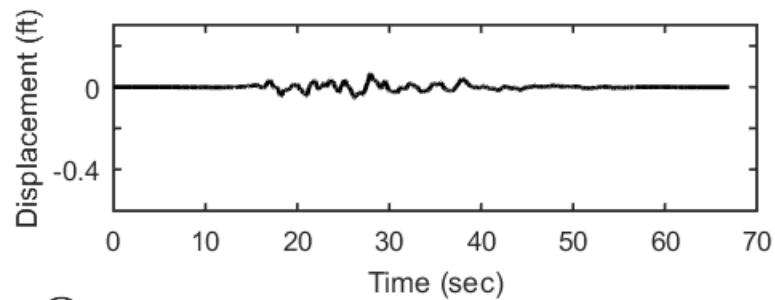
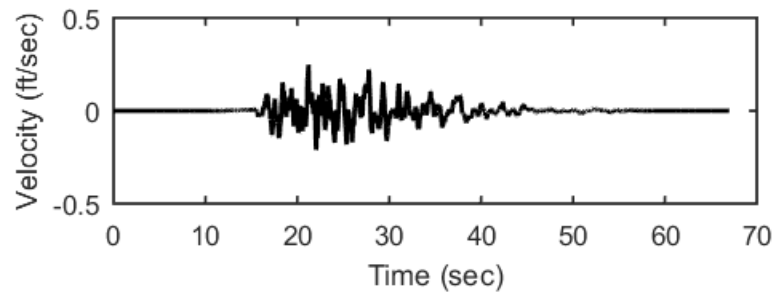
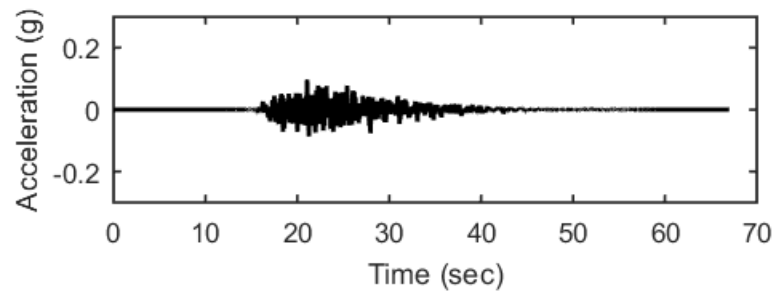
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



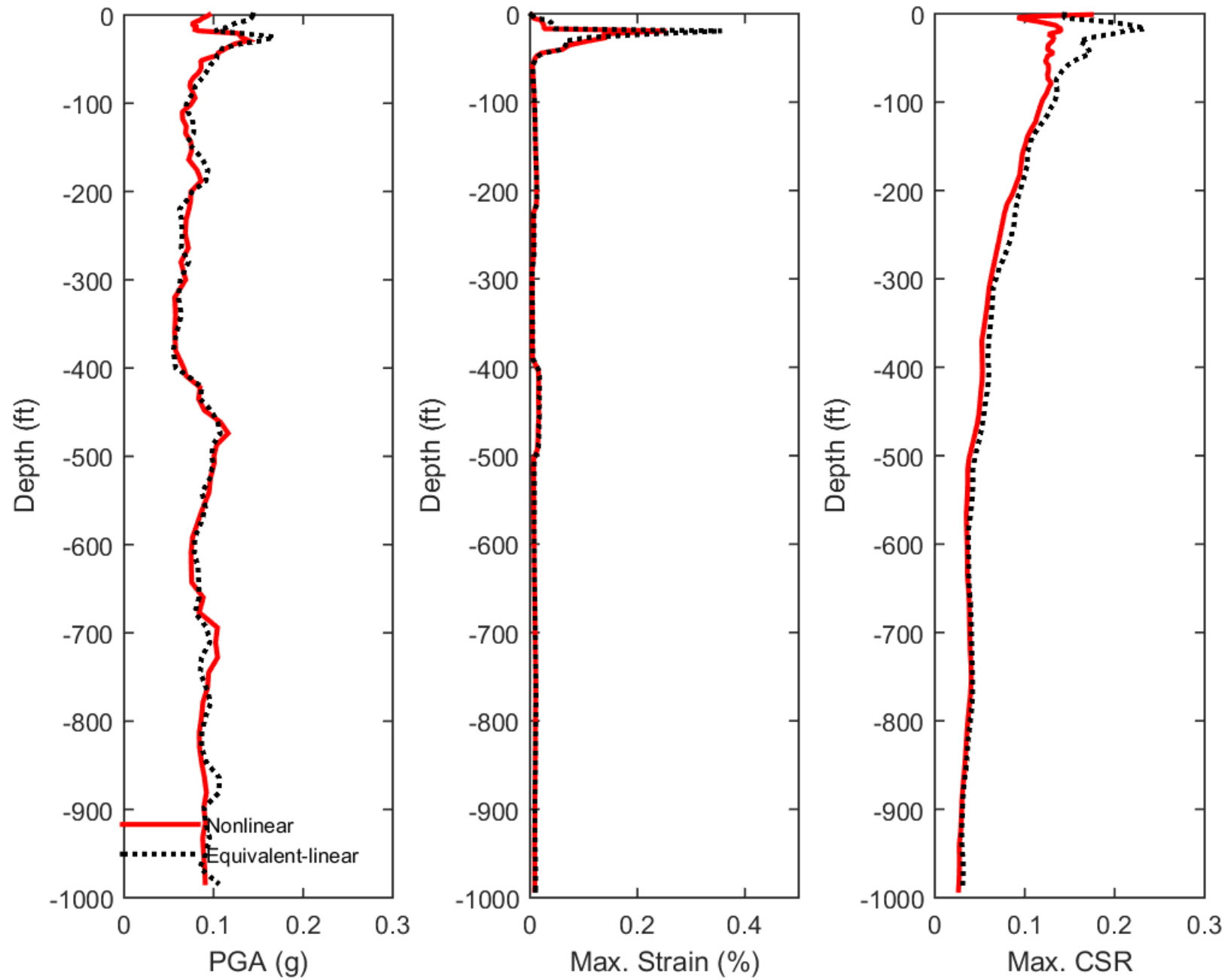
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



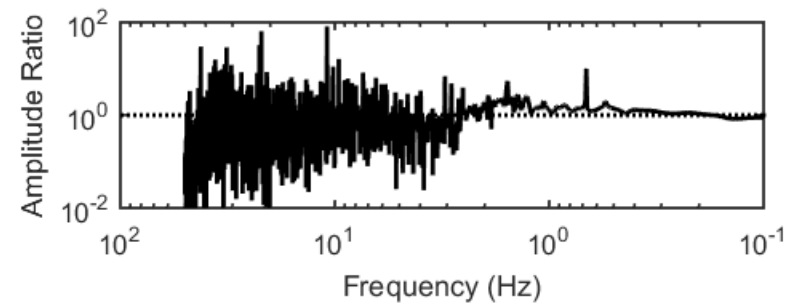
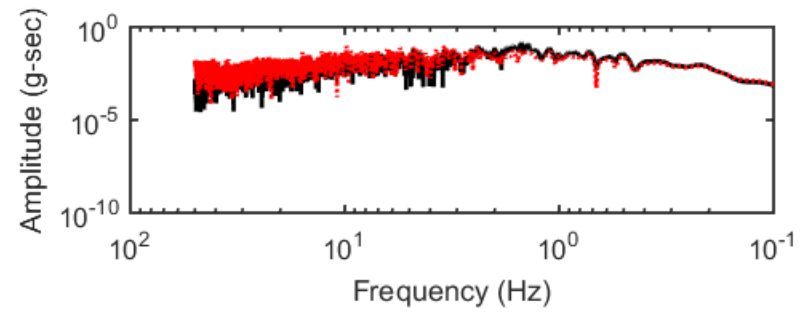
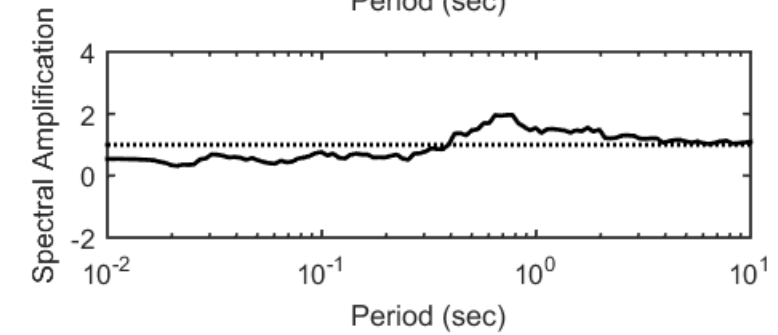
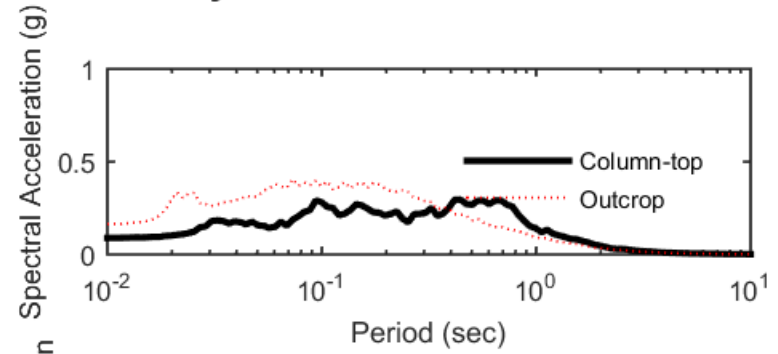
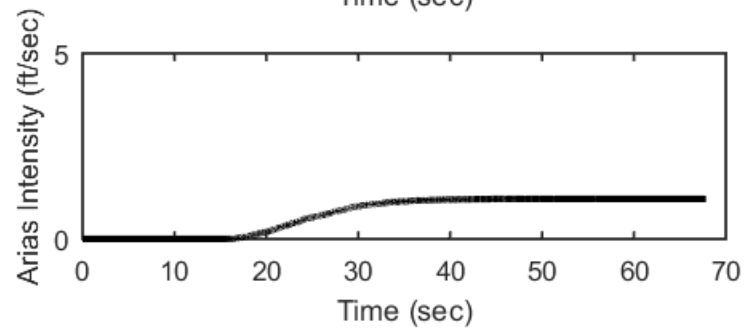
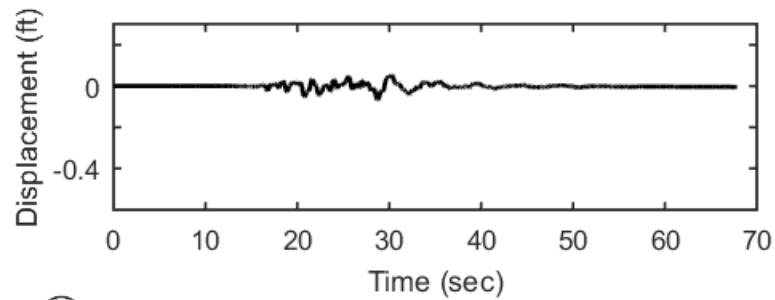
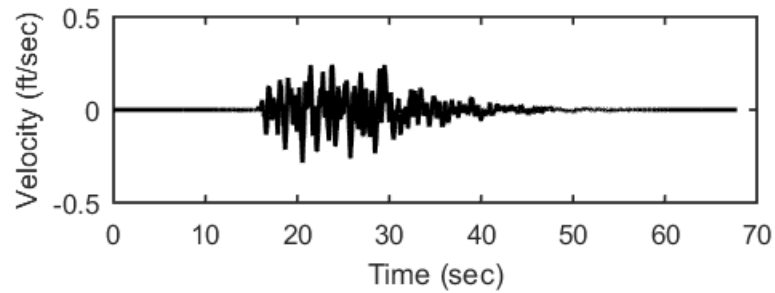
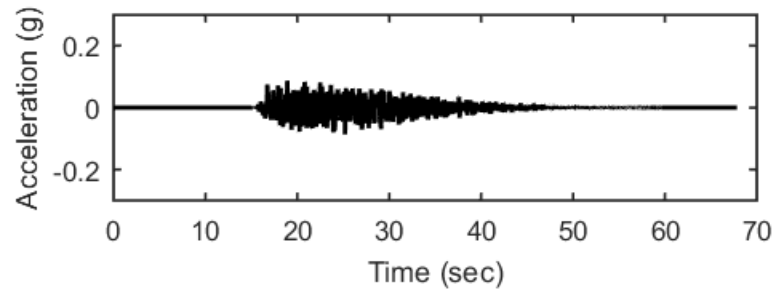
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



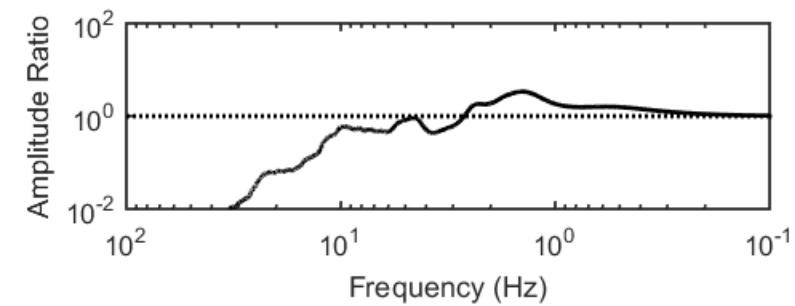
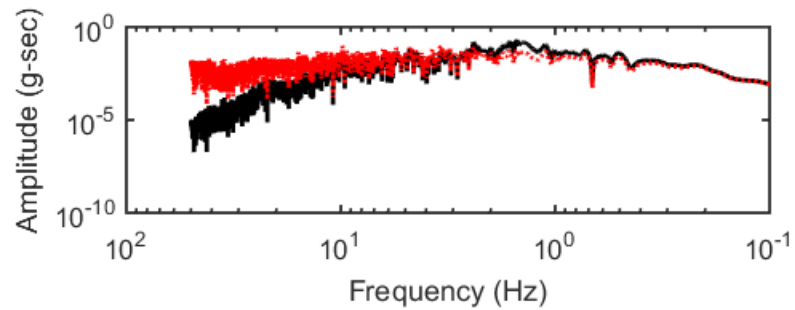
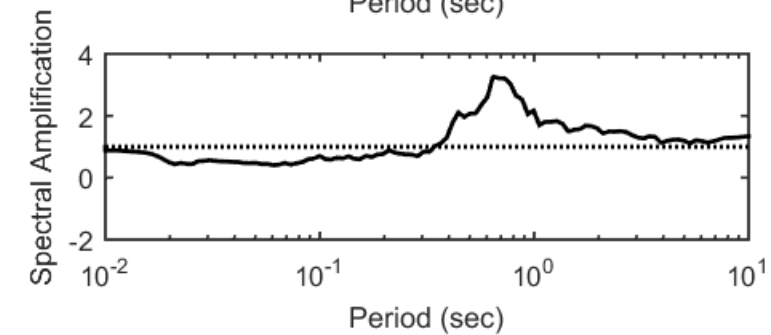
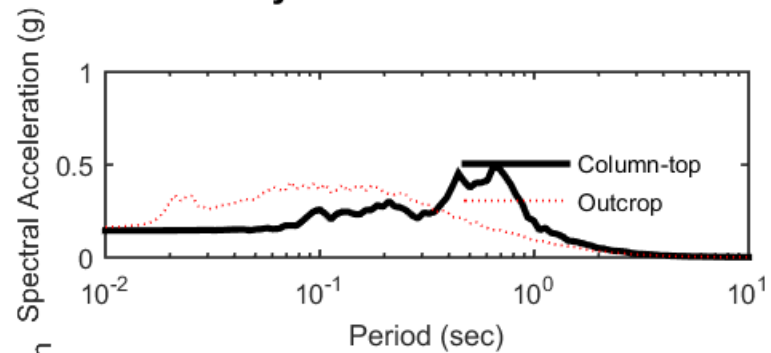
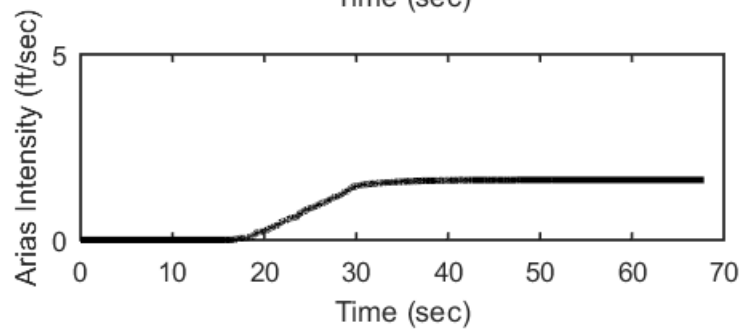
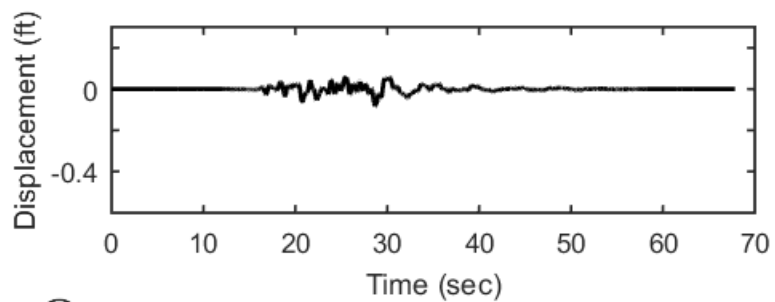
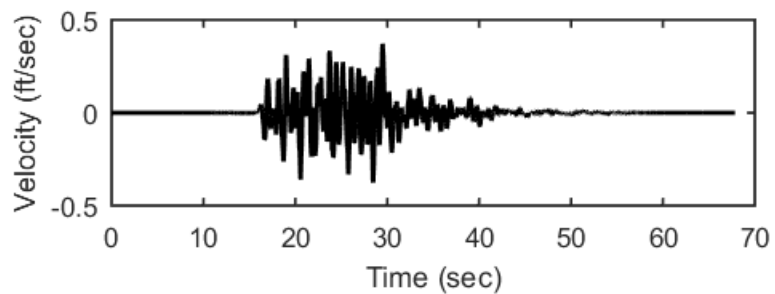
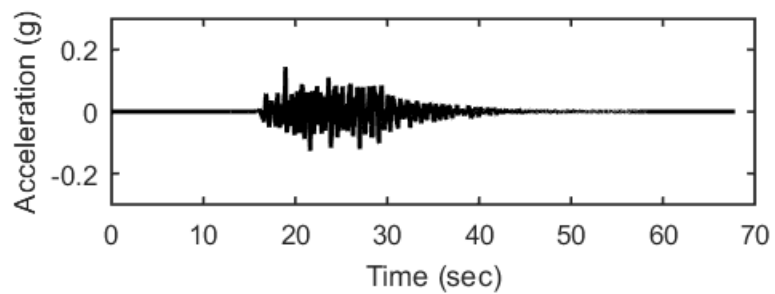
### Profile outputs for Motion: FEE5



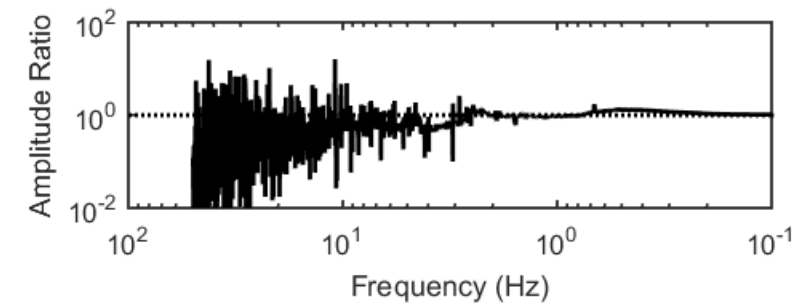
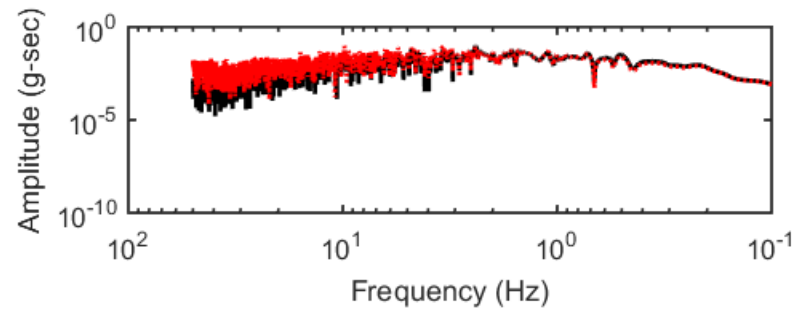
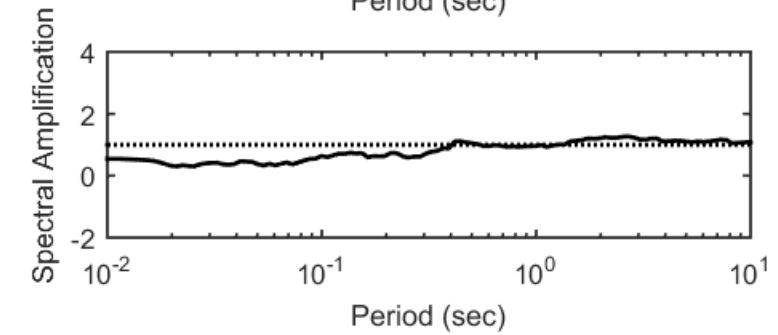
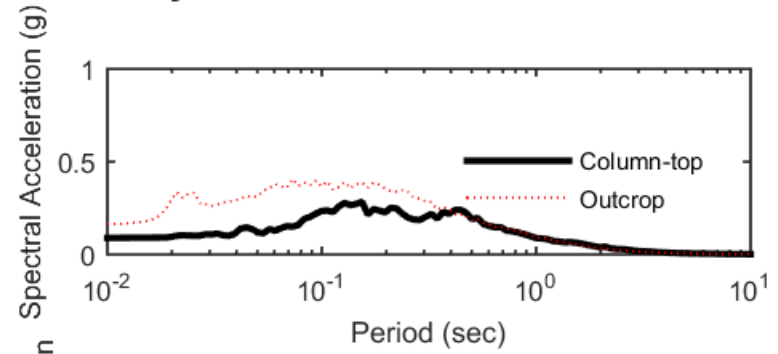
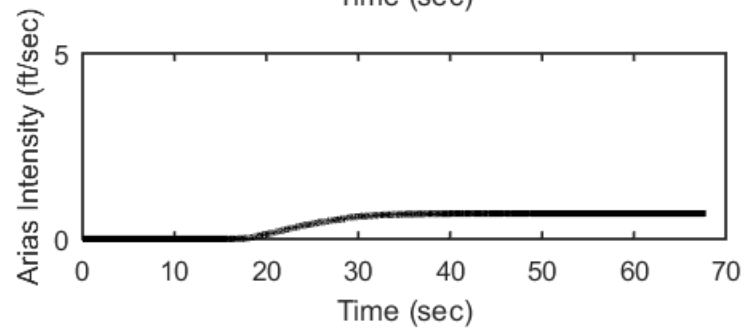
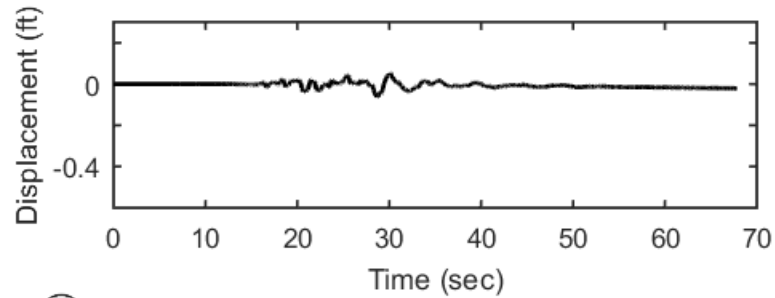
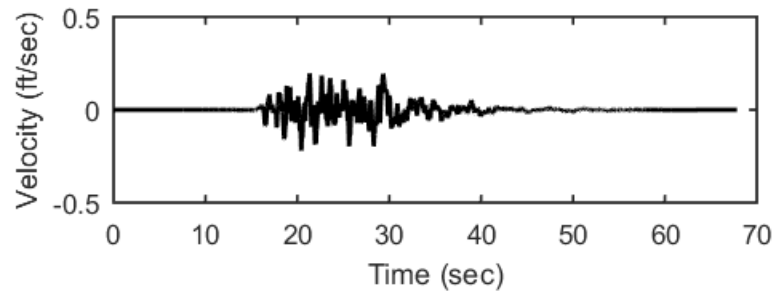
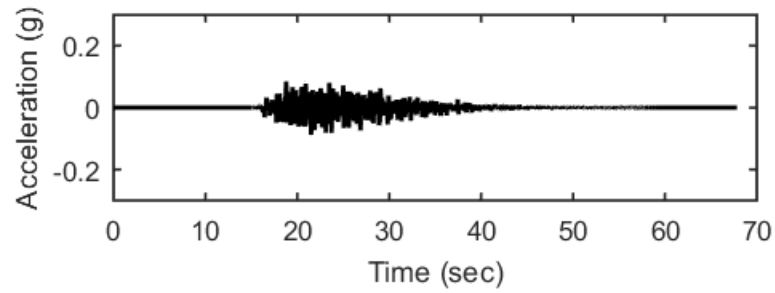
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6

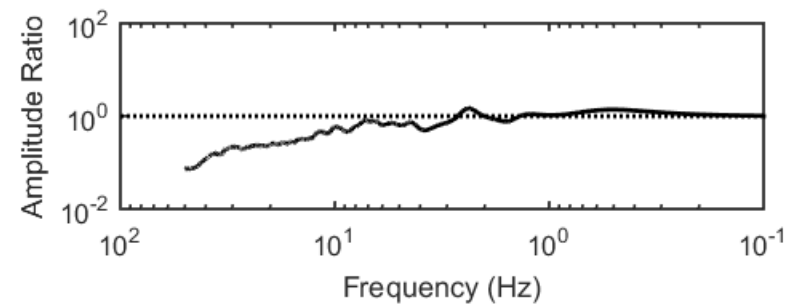
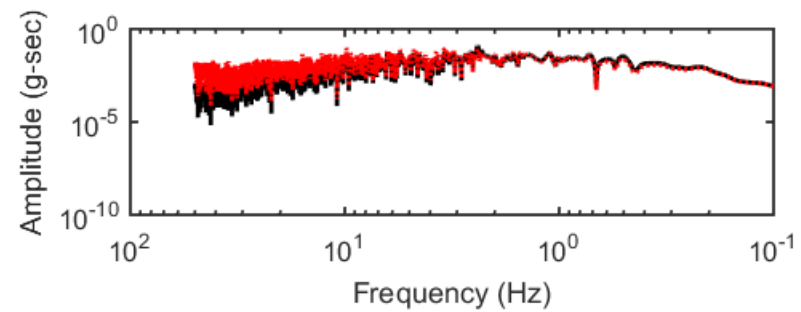
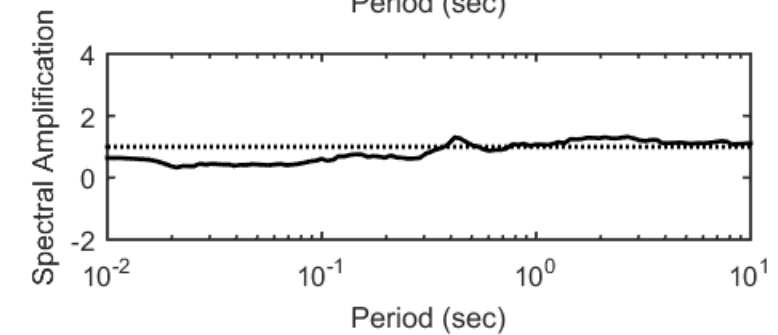
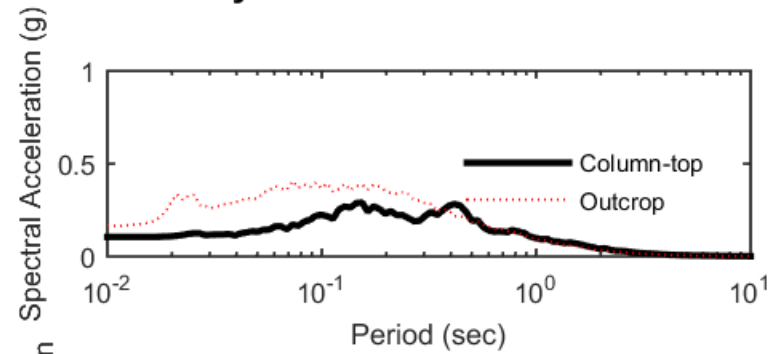
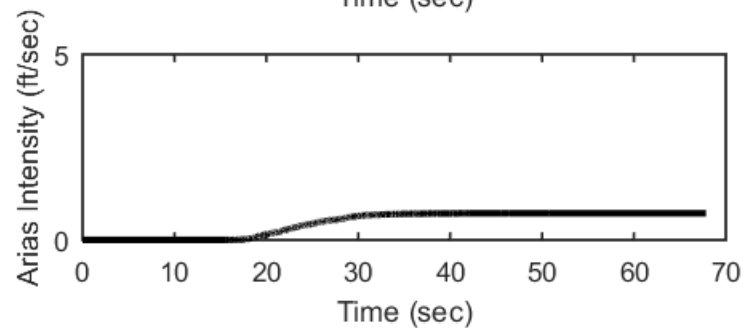
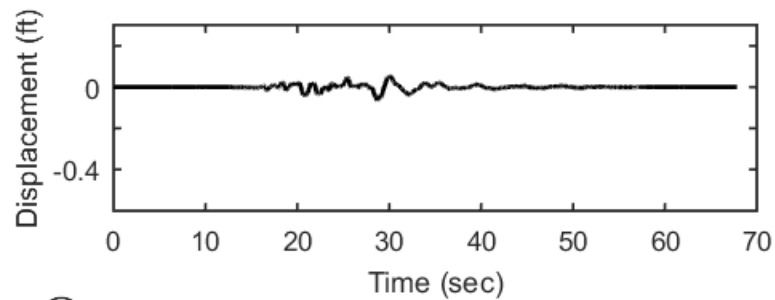
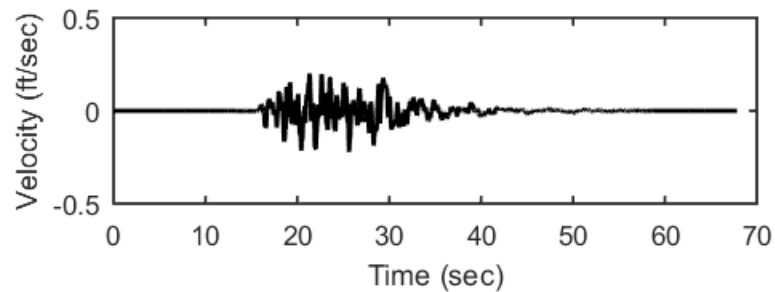
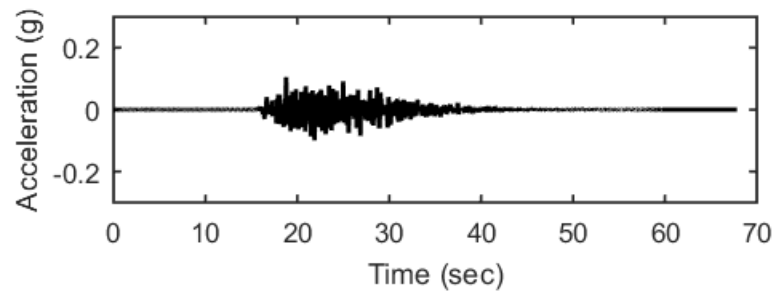


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6

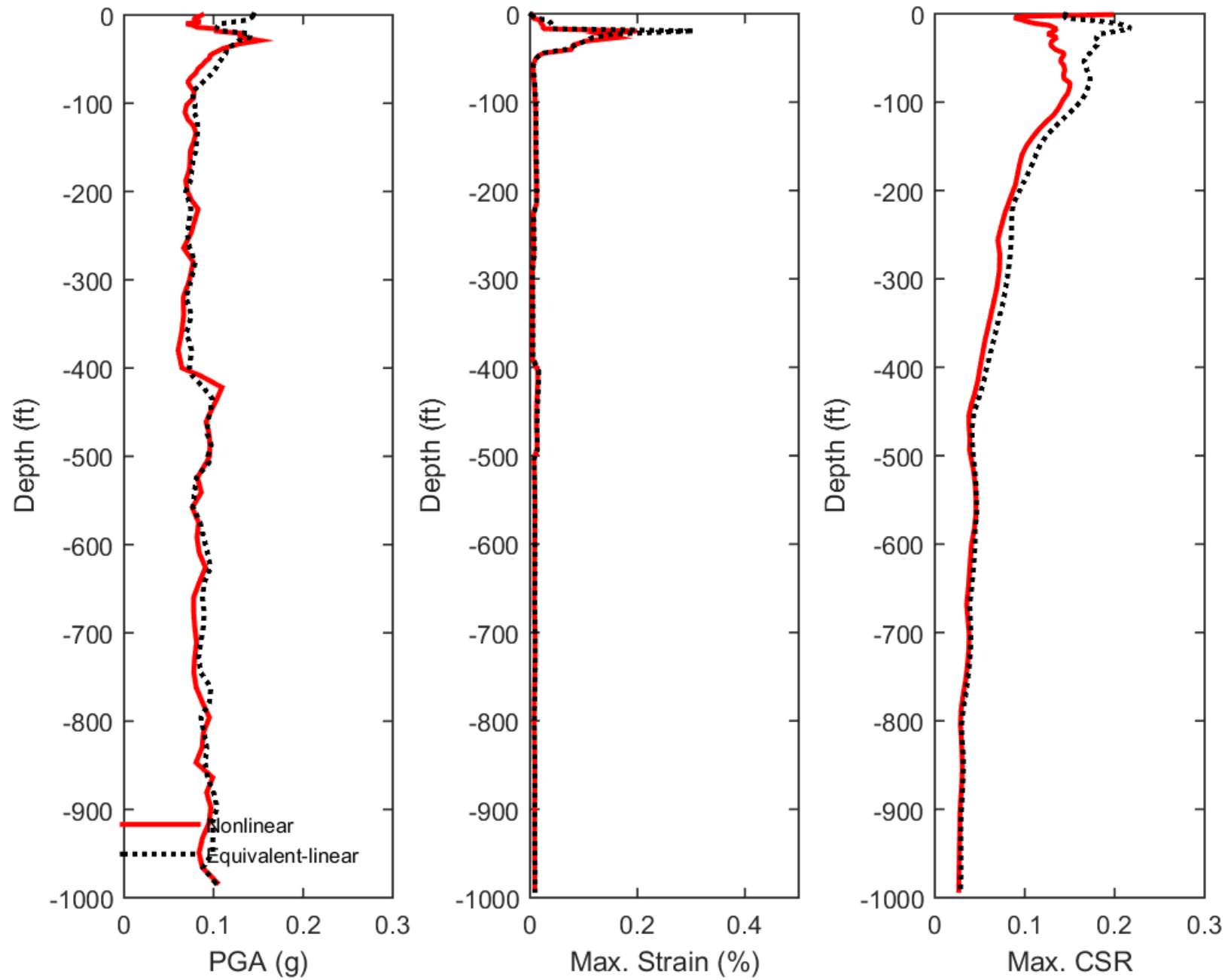




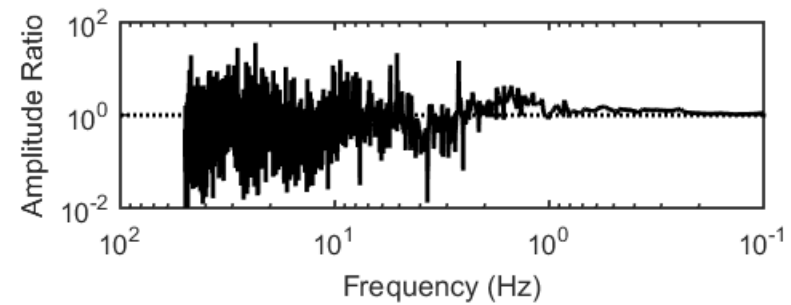
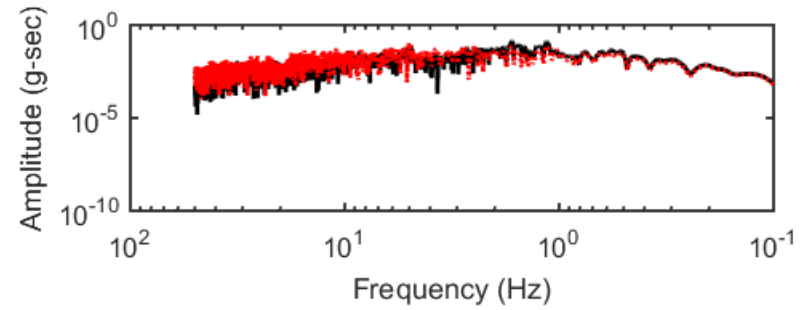
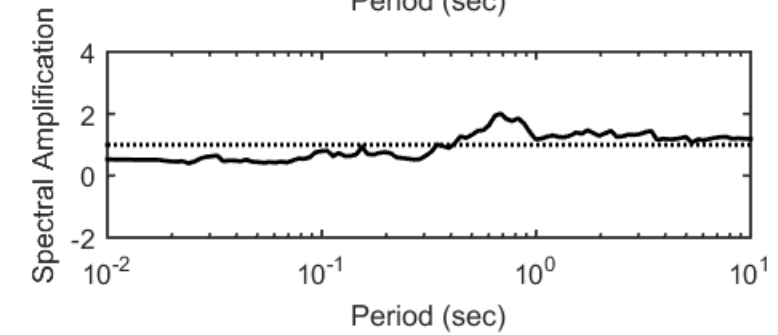
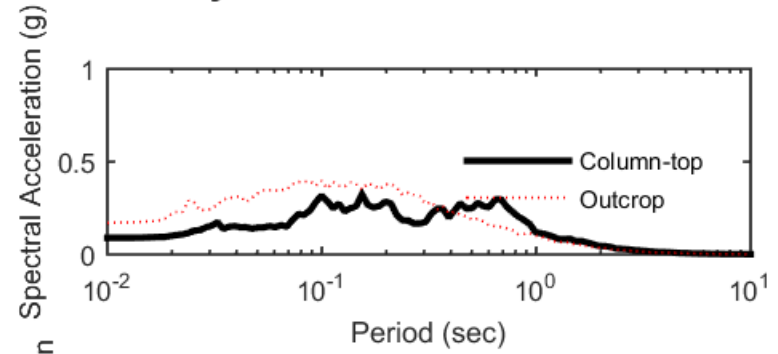
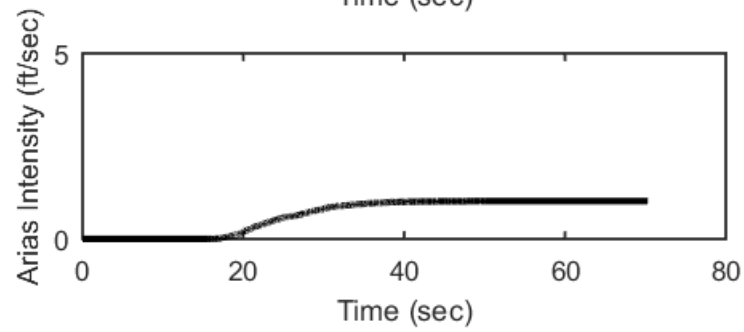
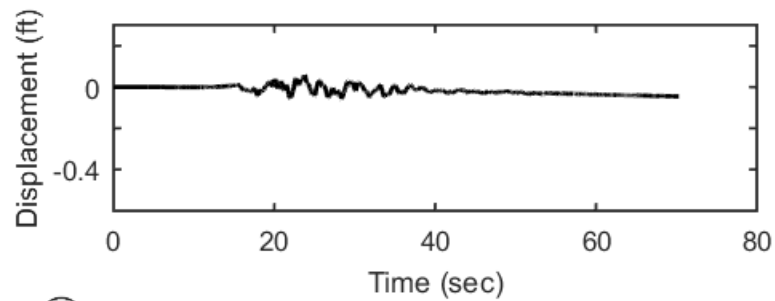
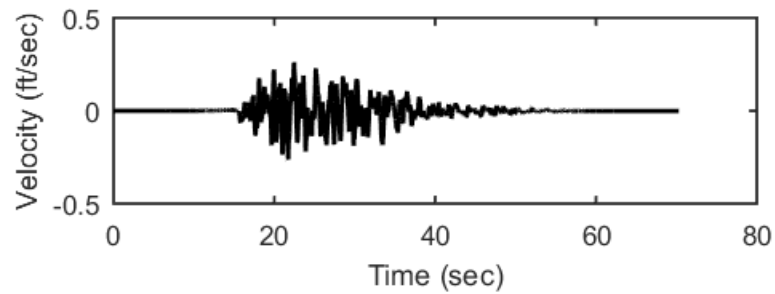
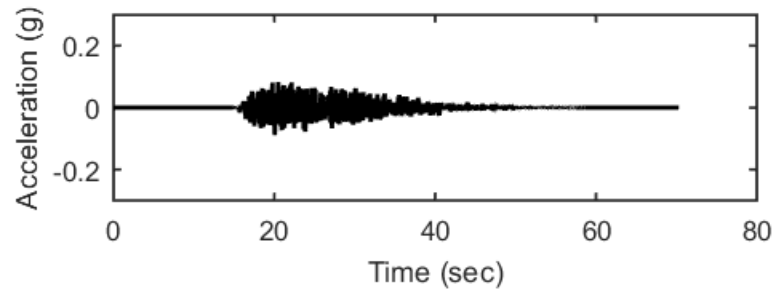
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



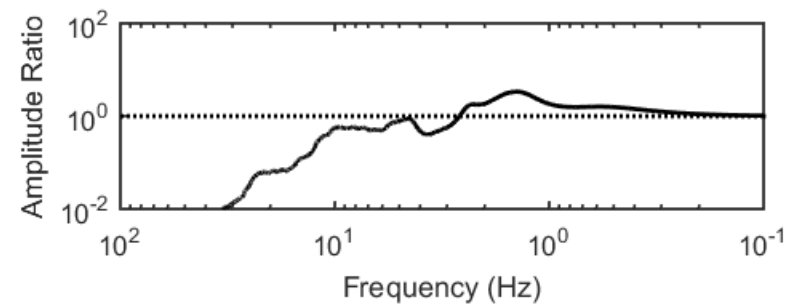
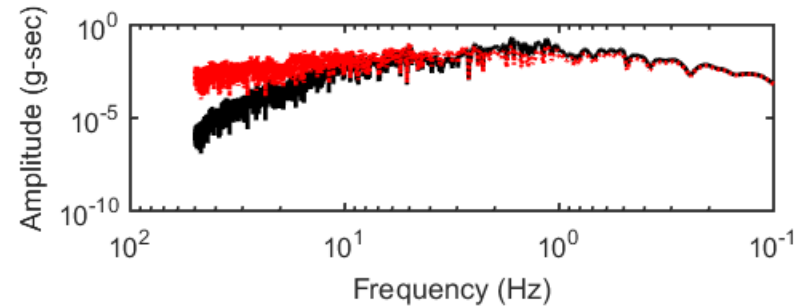
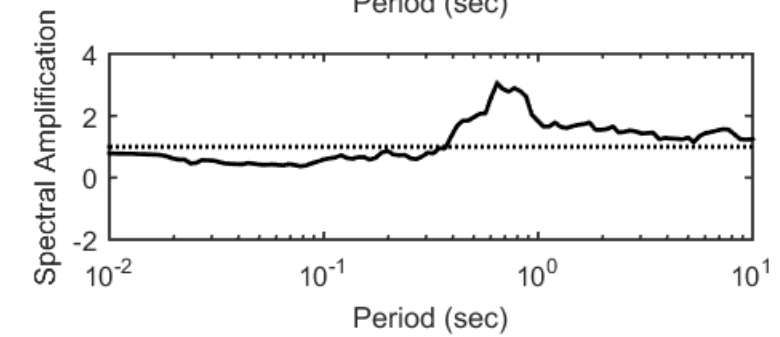
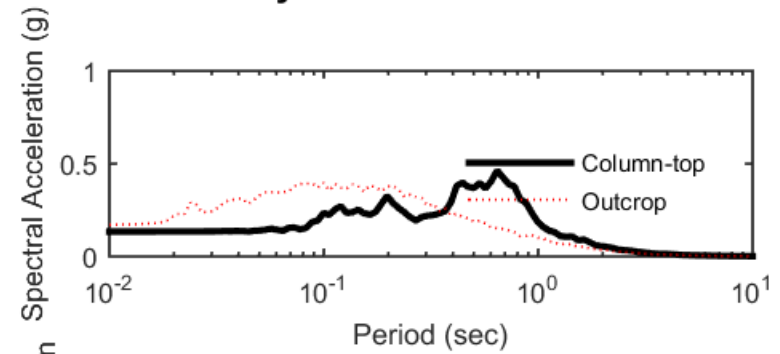
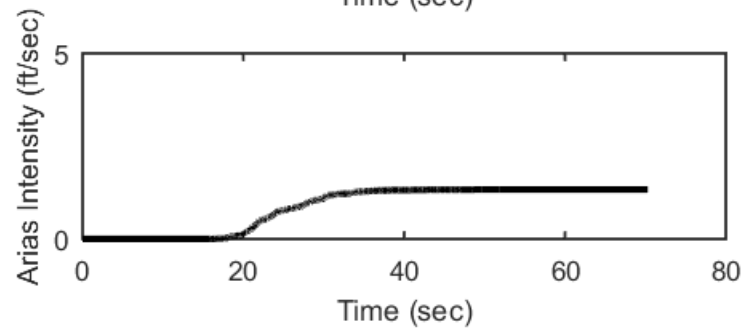
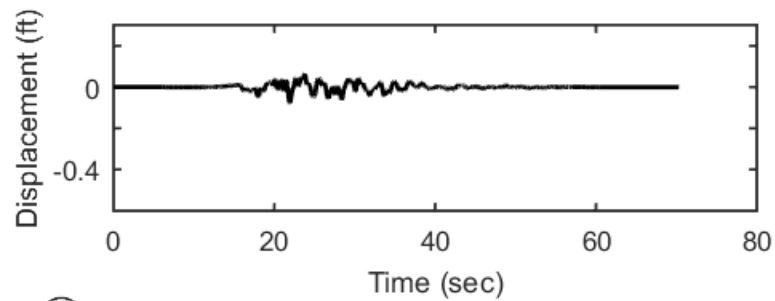
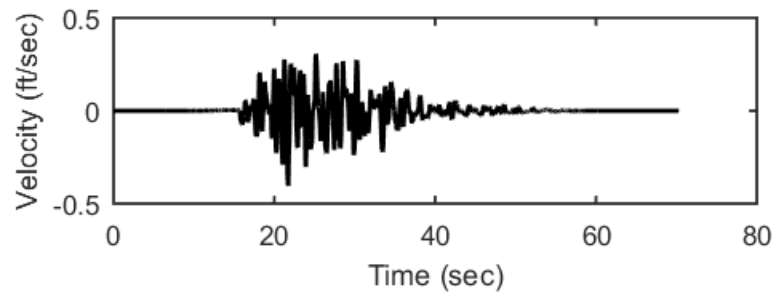
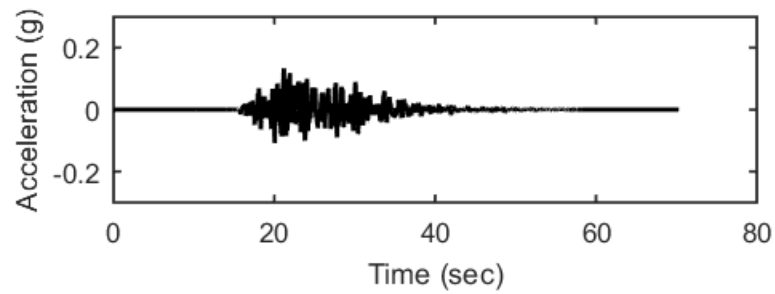
### Profile outputs for Motion: FEE6



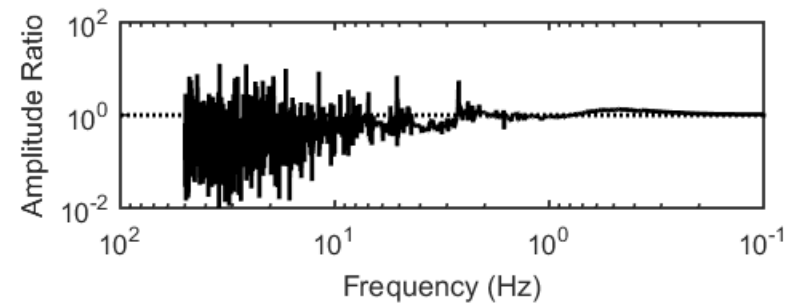
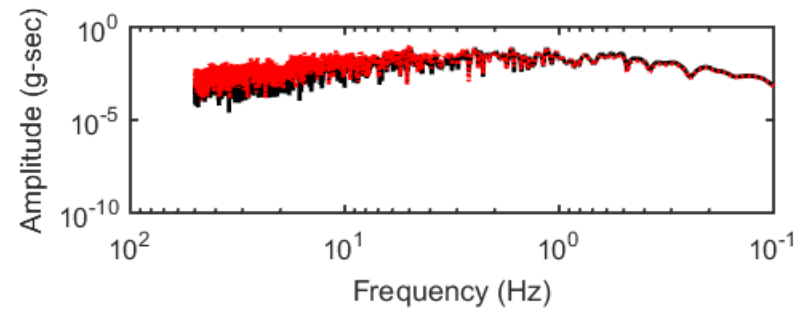
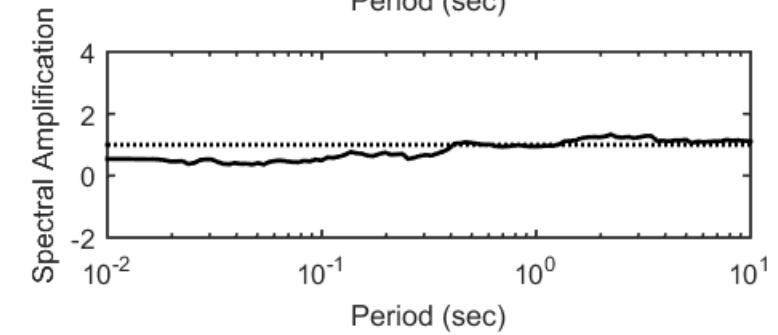
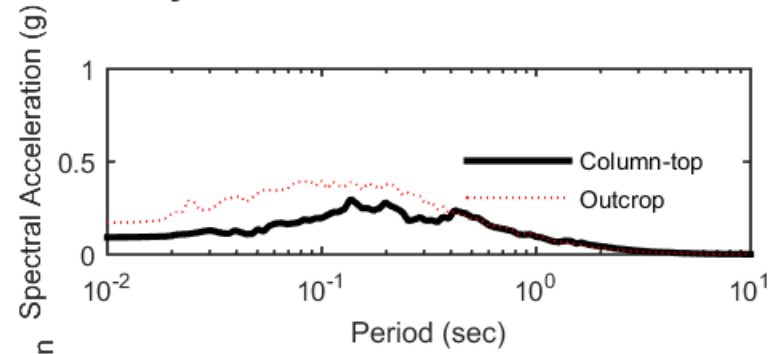
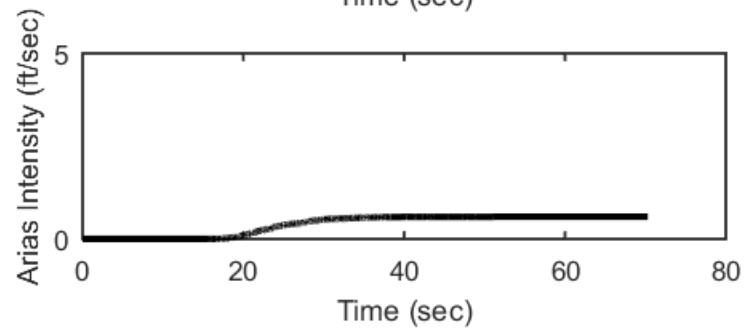
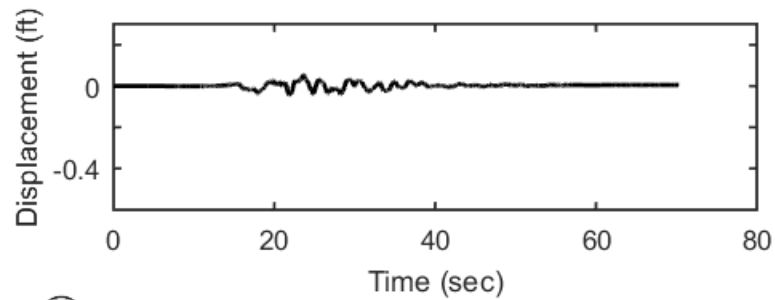
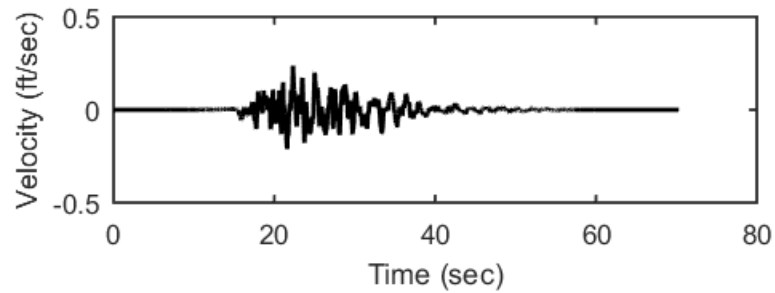
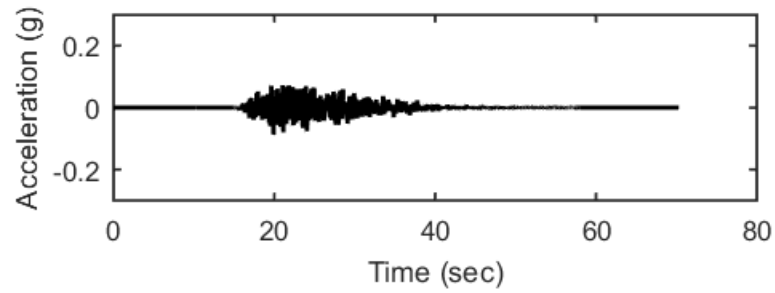
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



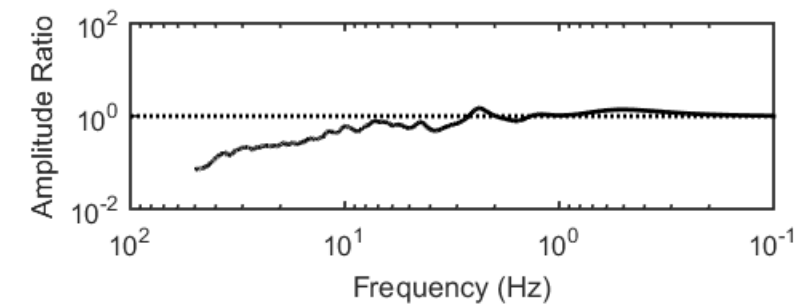
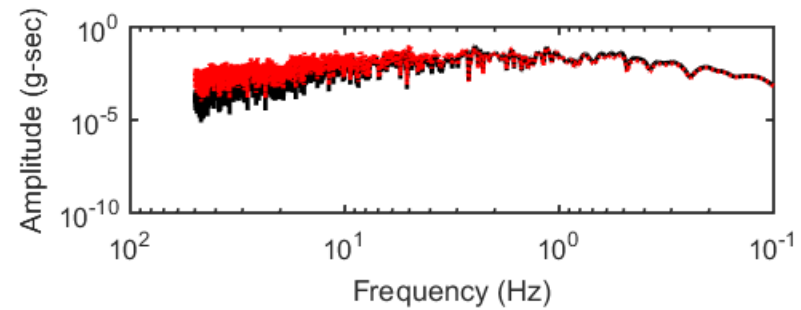
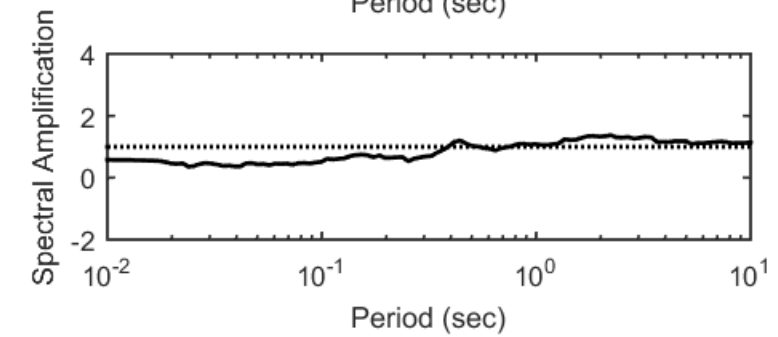
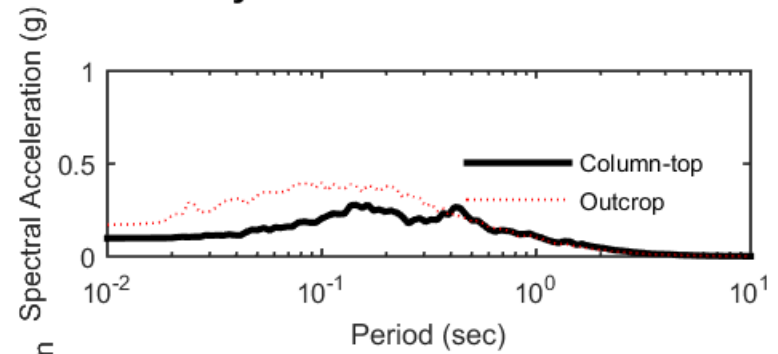
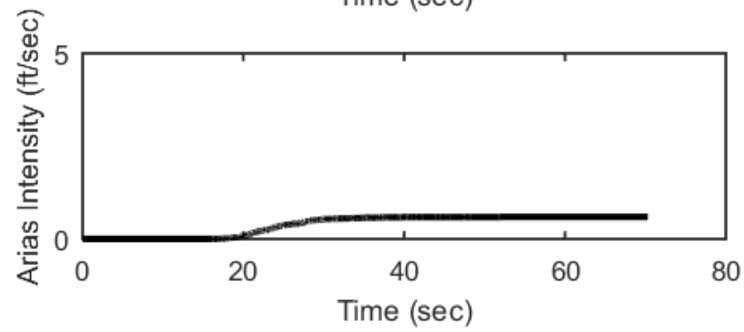
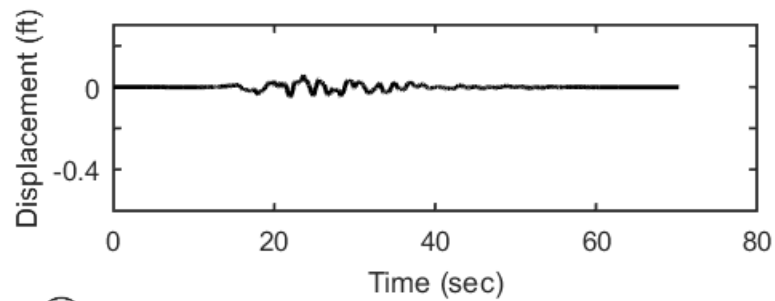
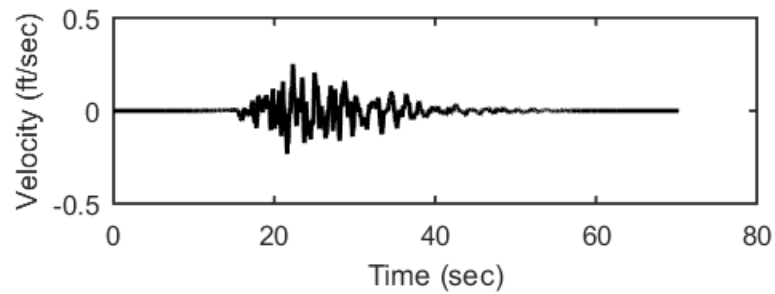
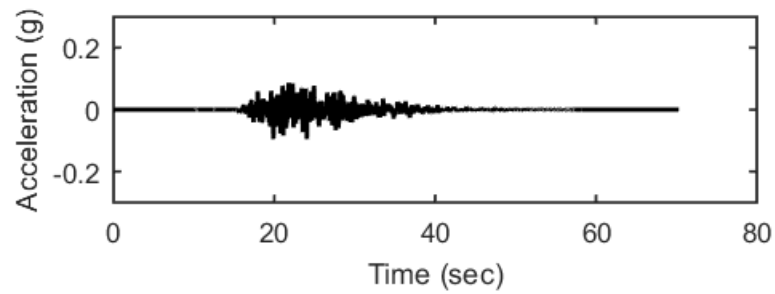
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



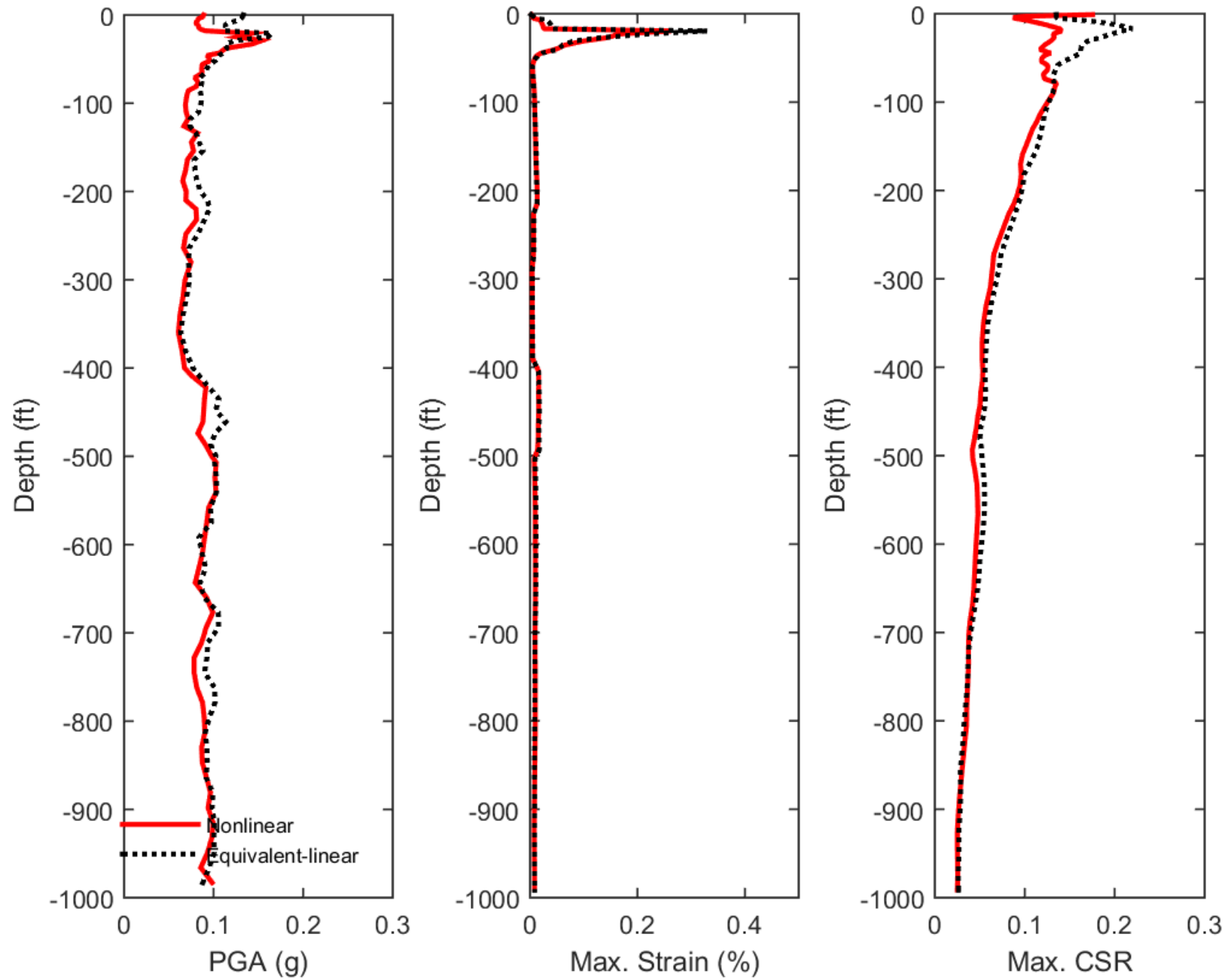
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



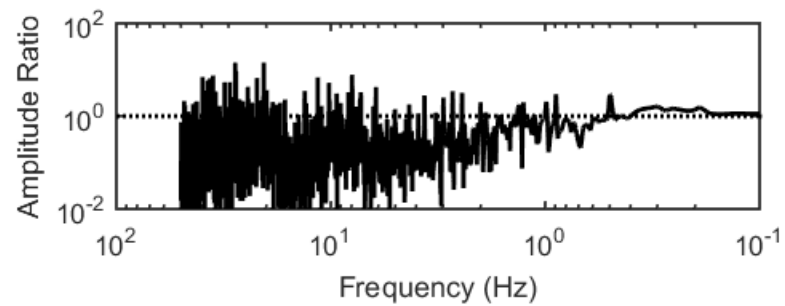
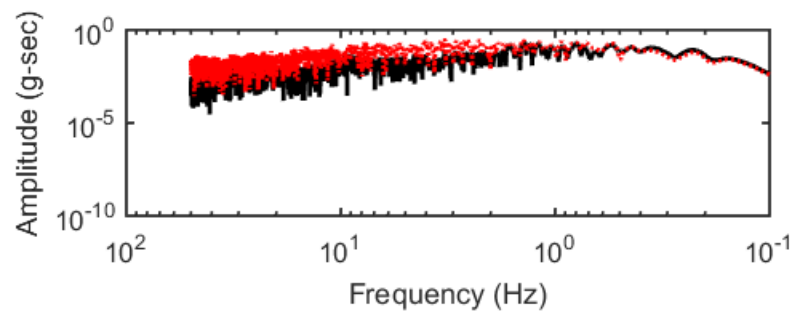
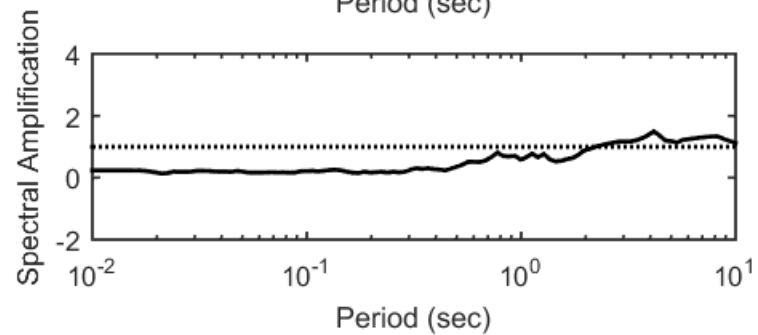
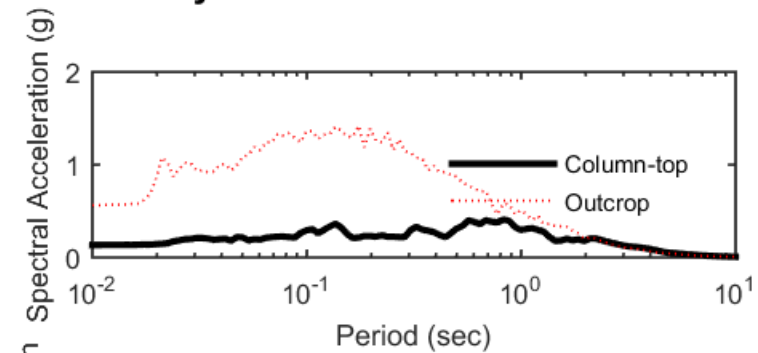
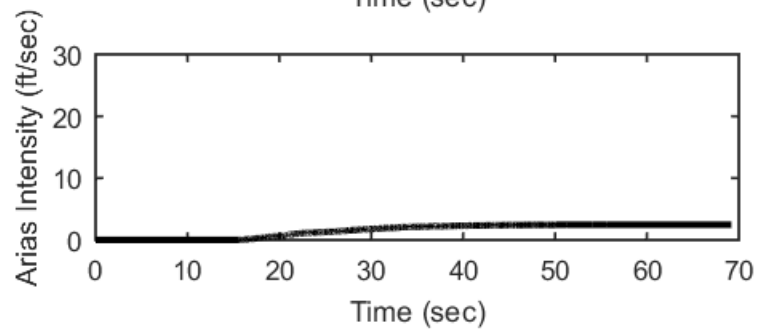
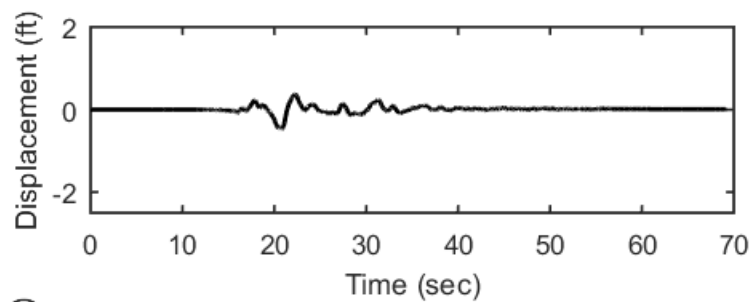
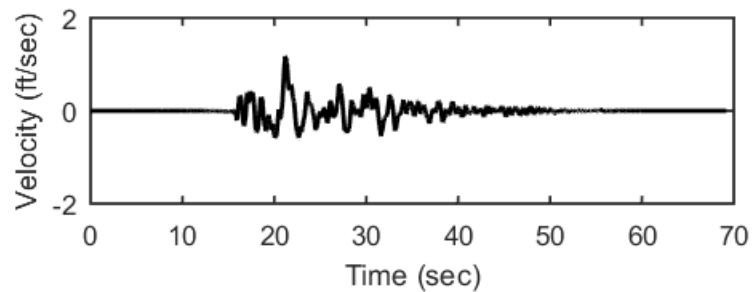
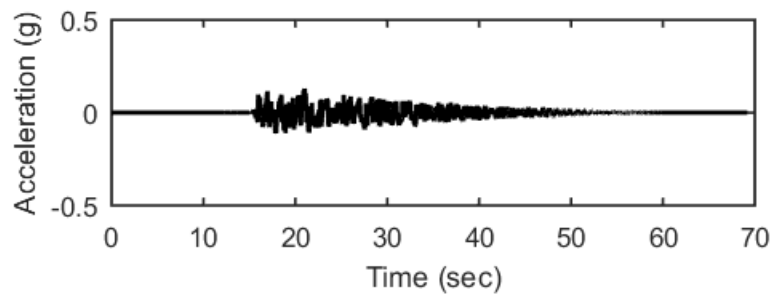
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



### Profile outputs for Motion: FEE7

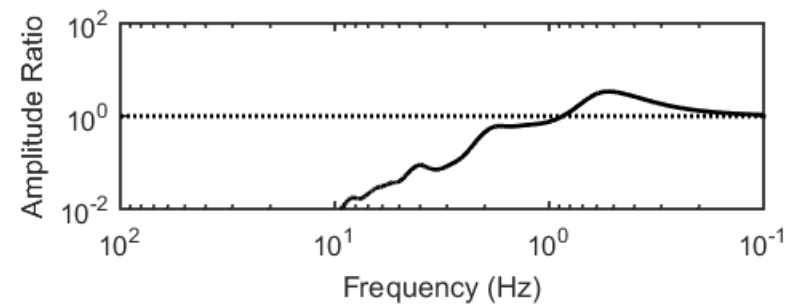
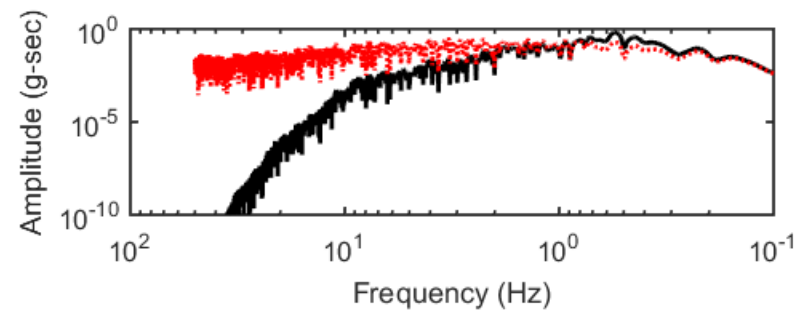
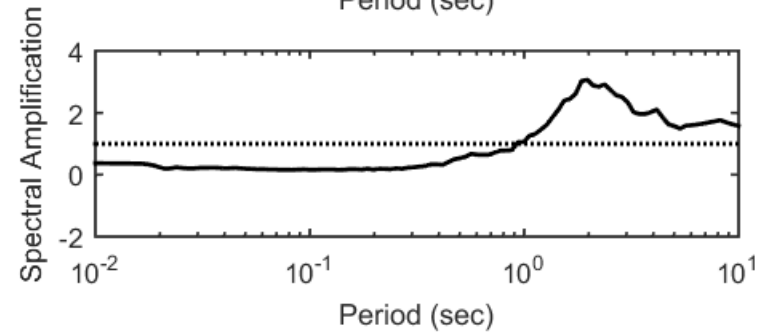
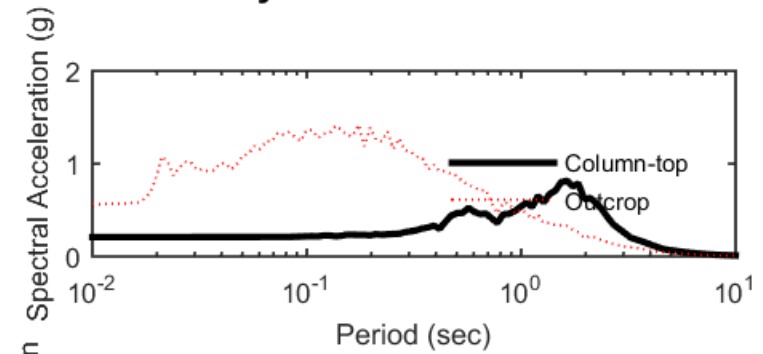
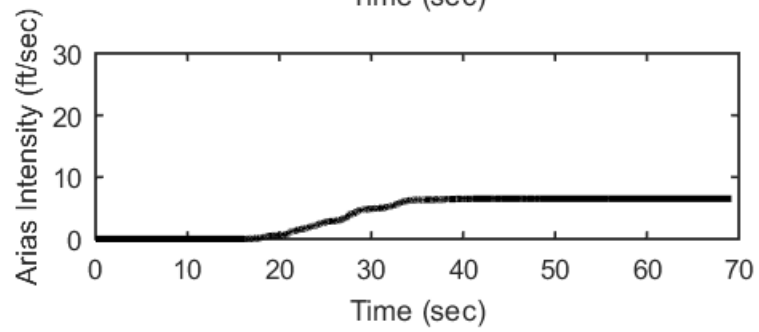
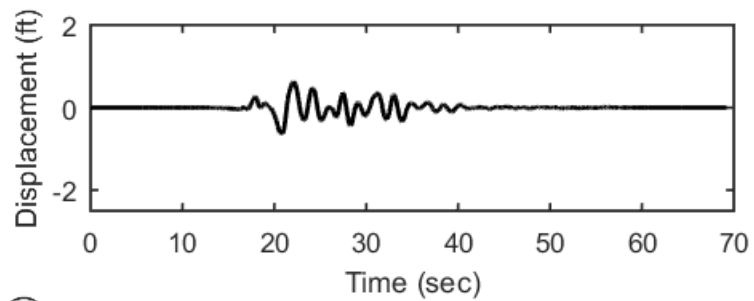
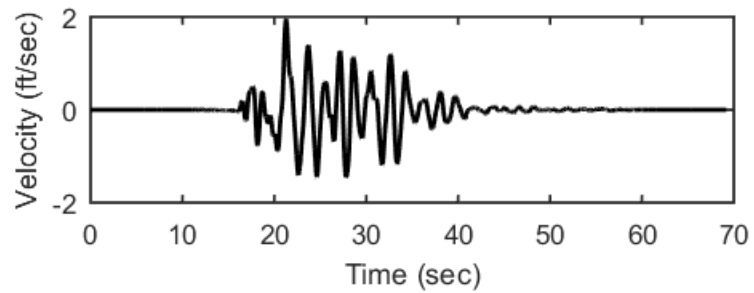
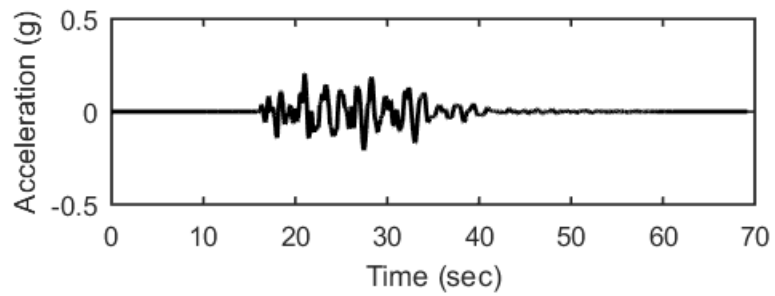


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1

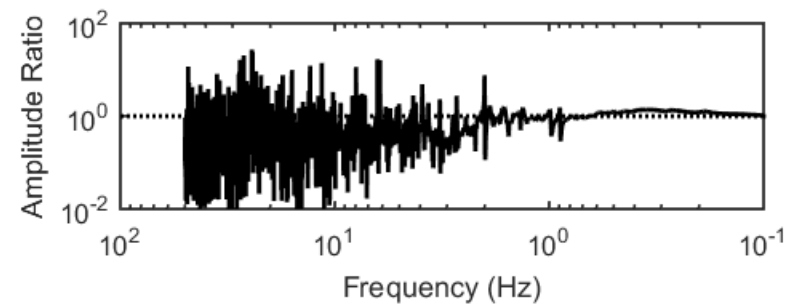
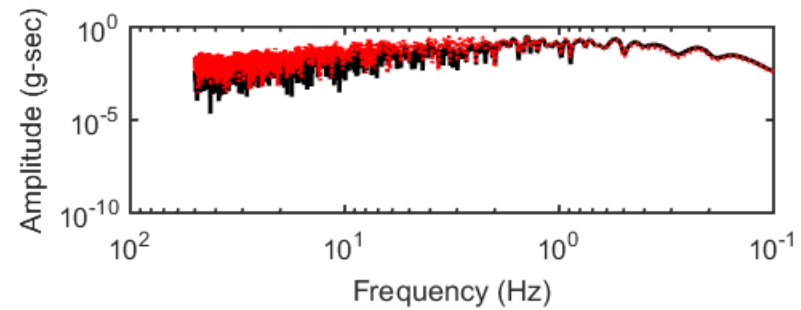
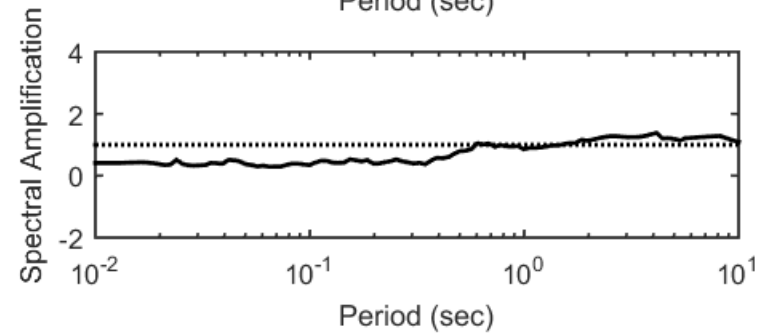
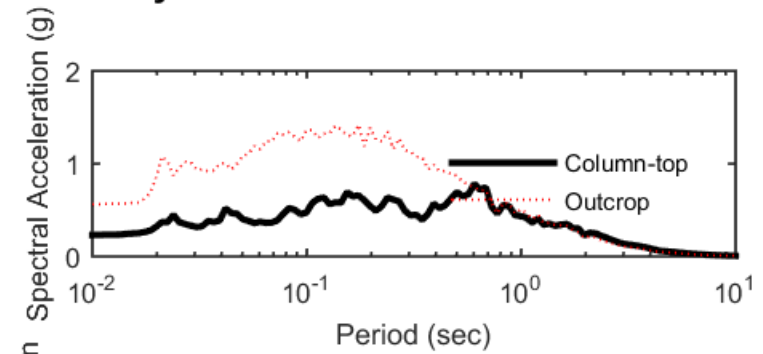
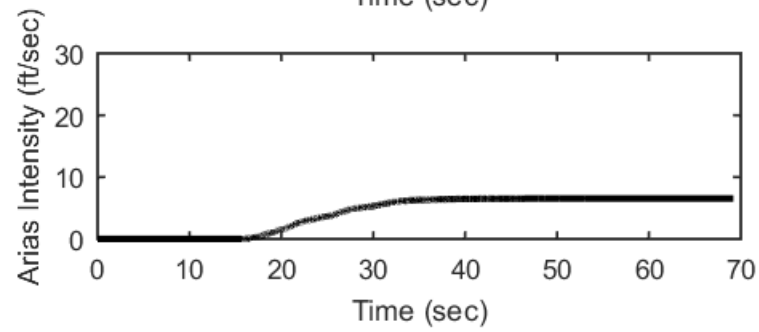
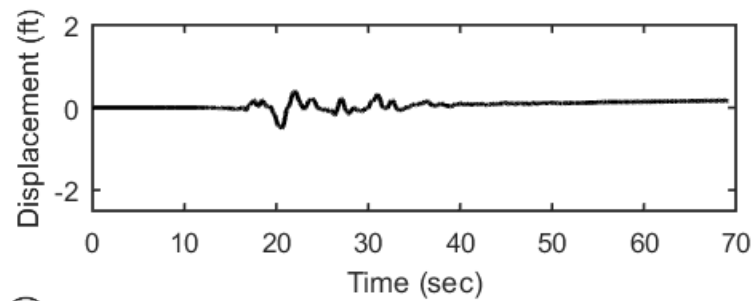
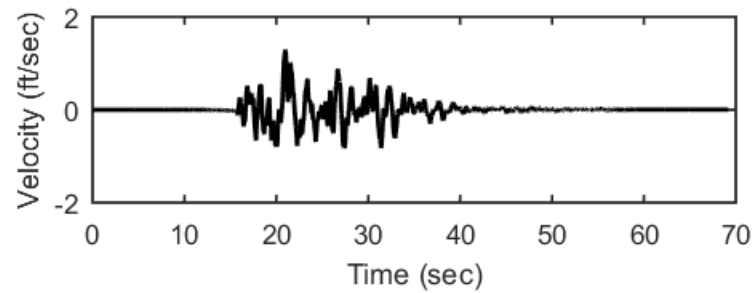
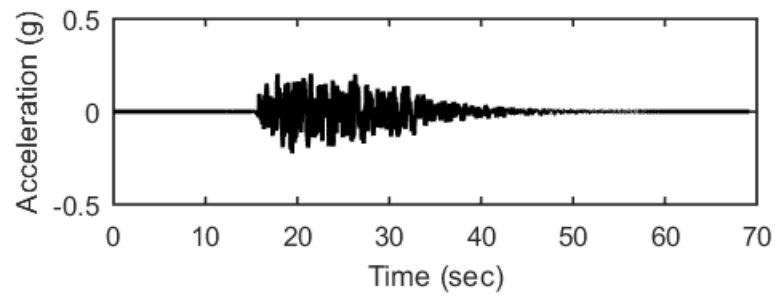




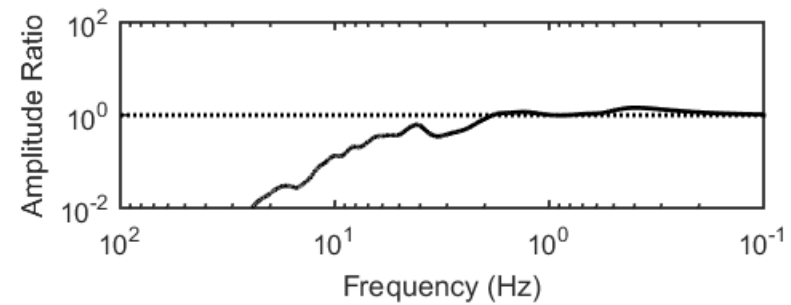
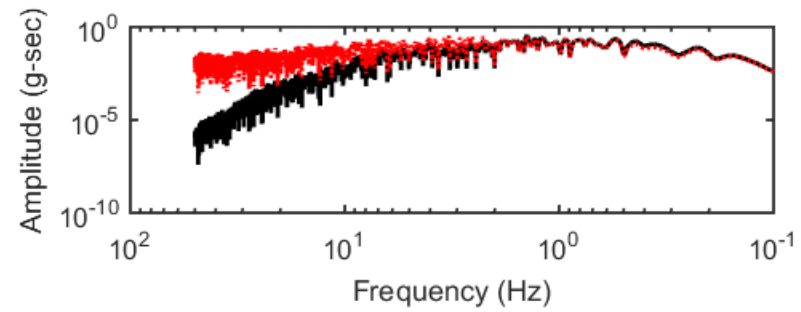
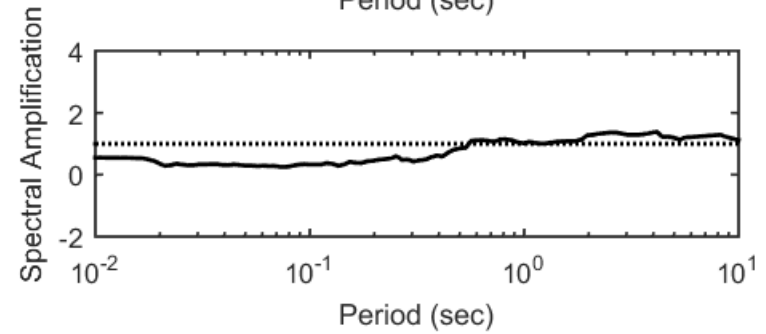
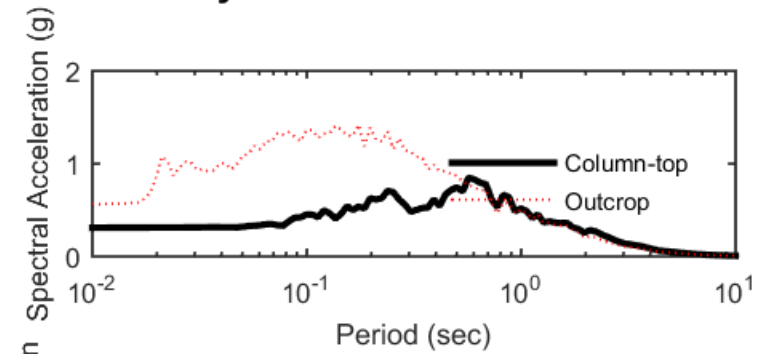
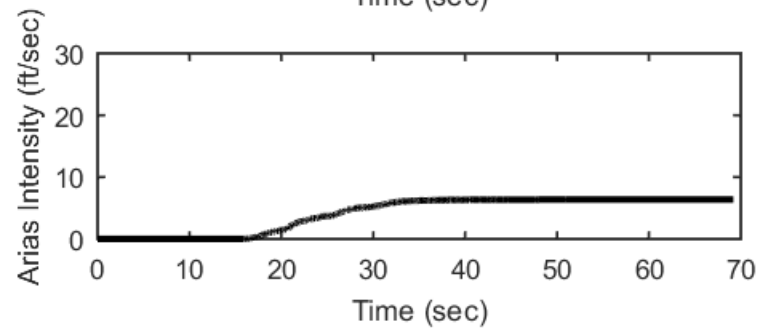
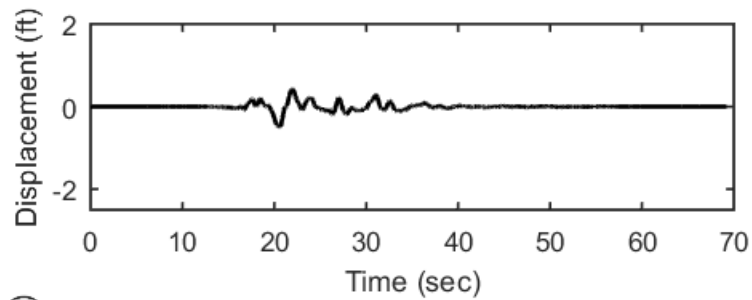
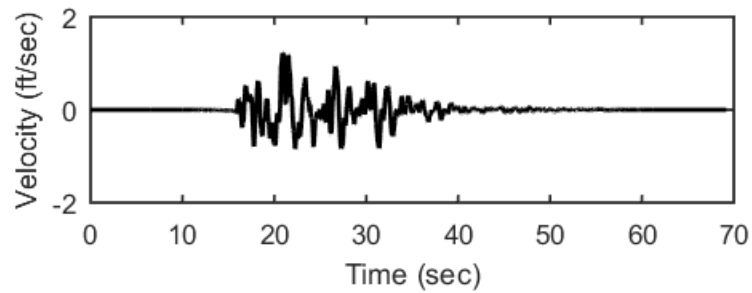
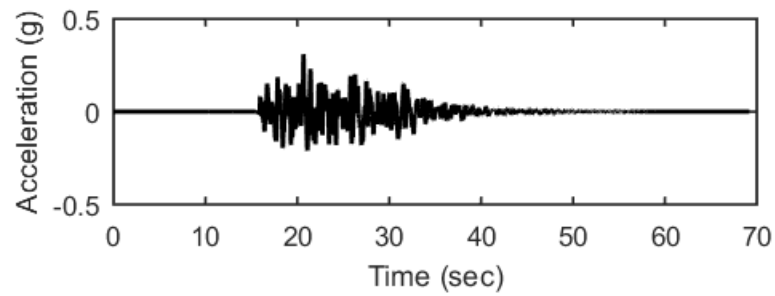
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



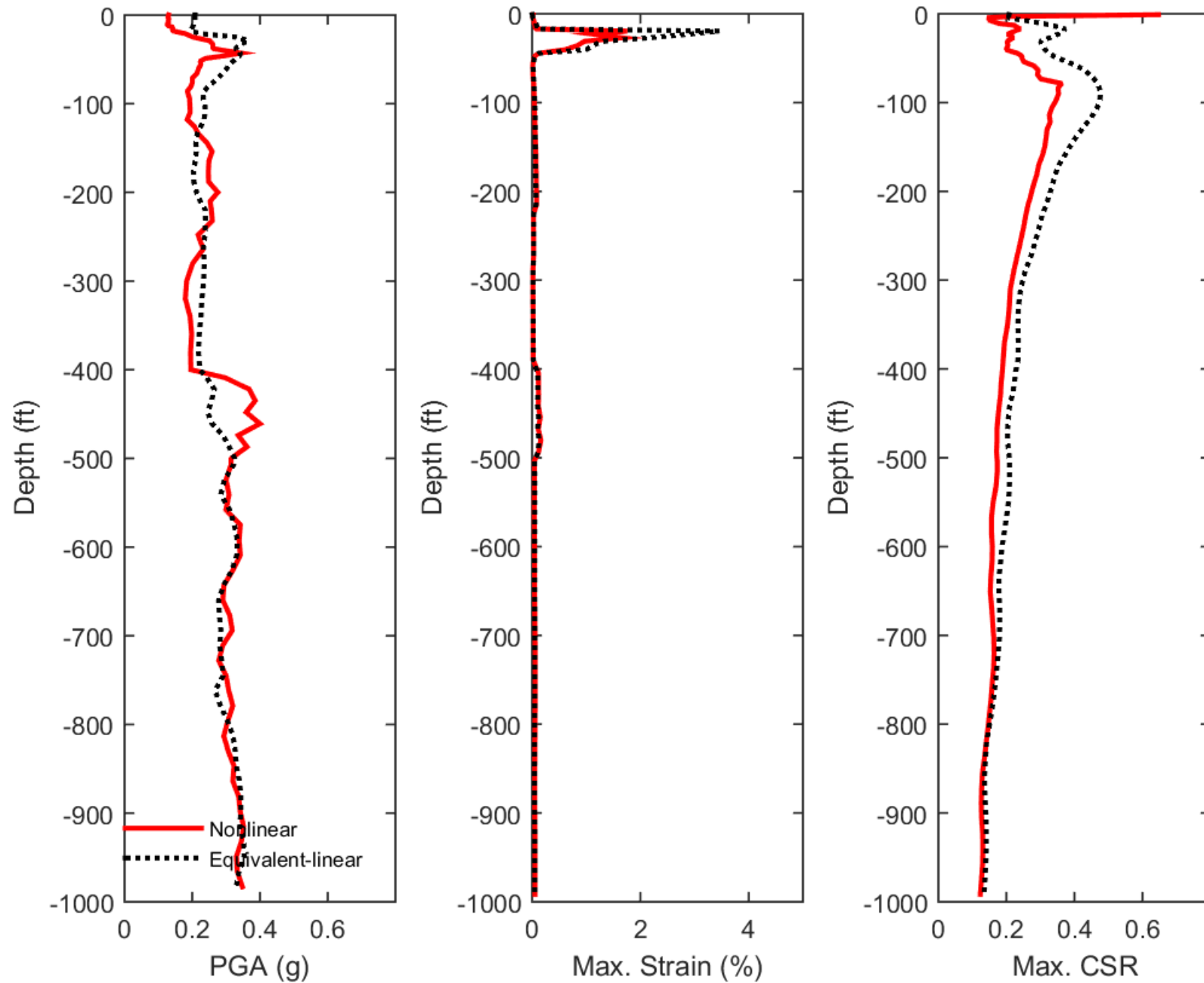
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



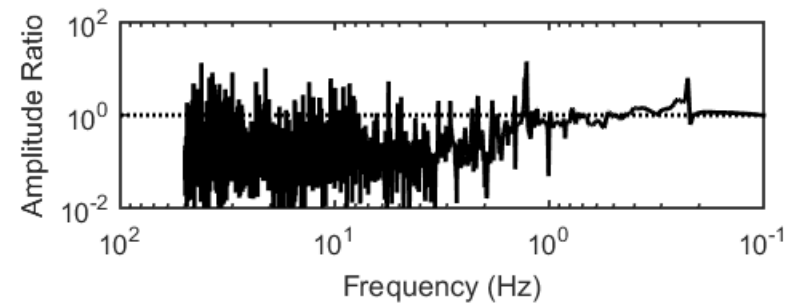
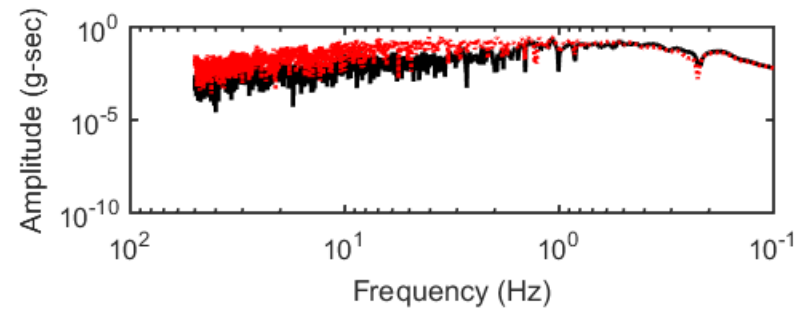
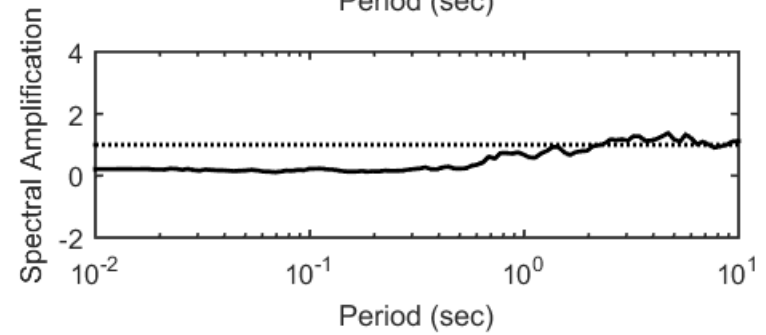
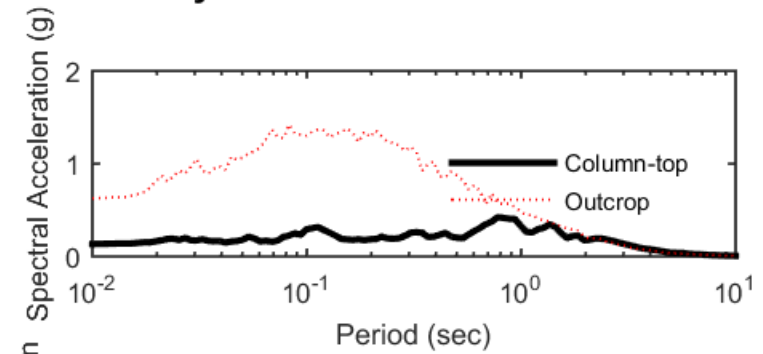
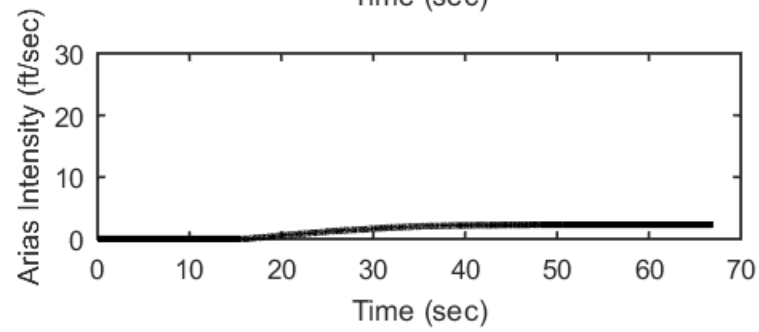
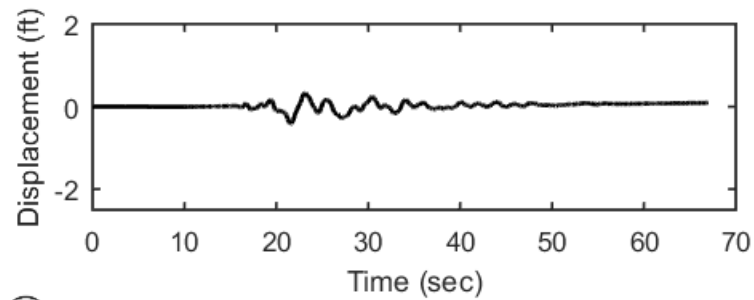
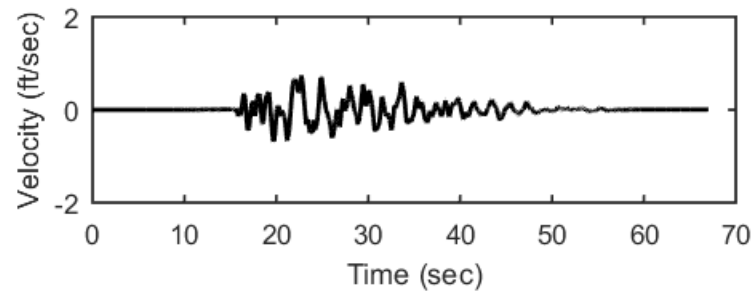
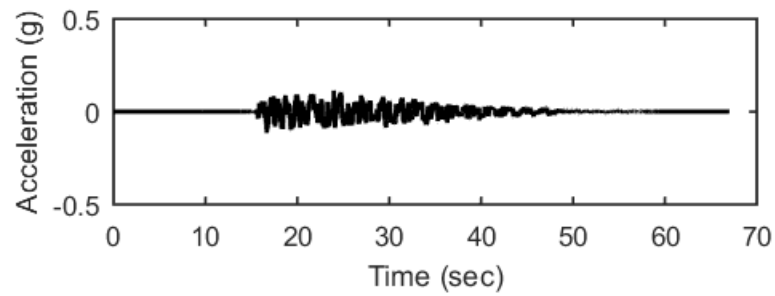
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



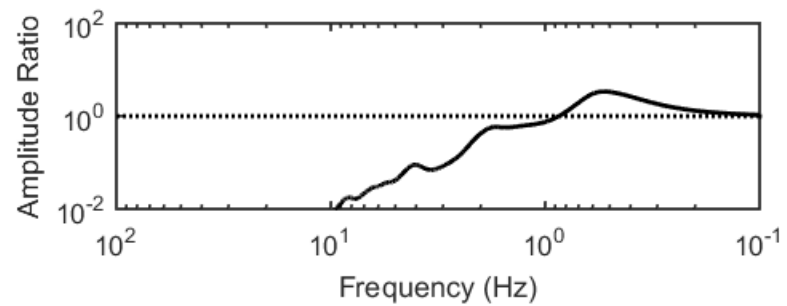
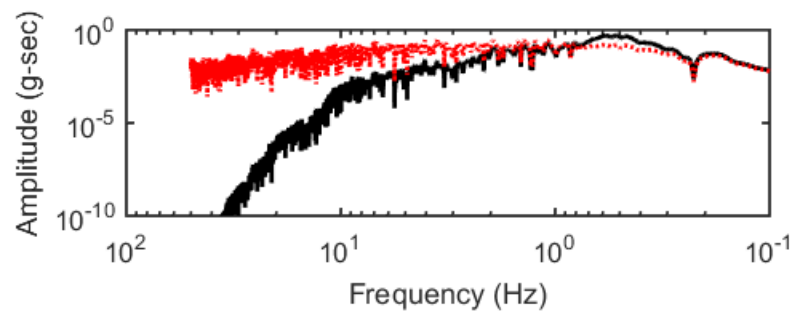
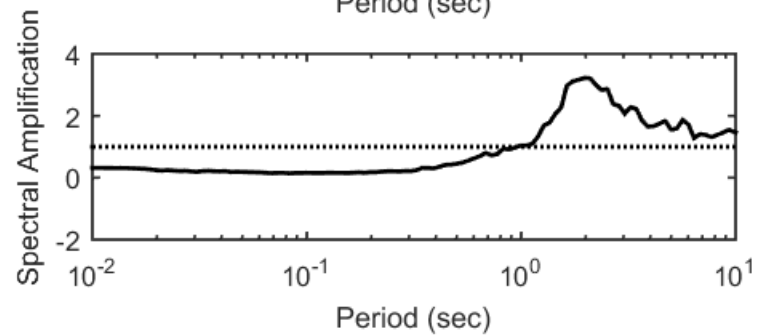
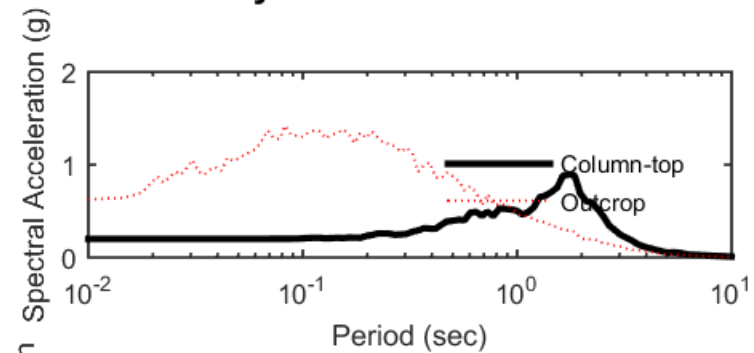
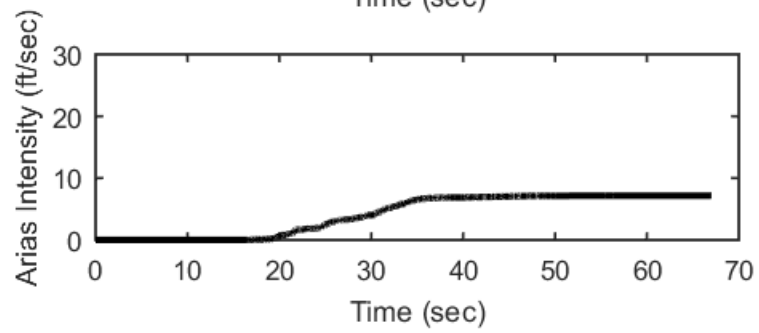
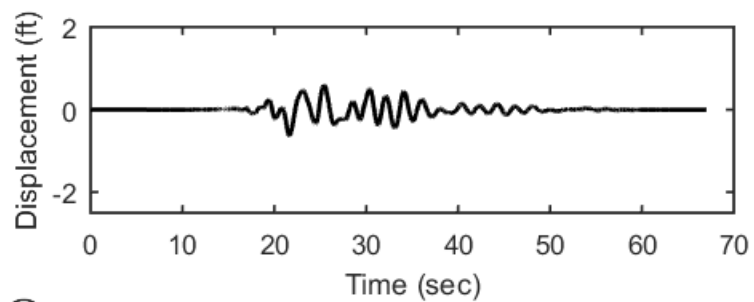
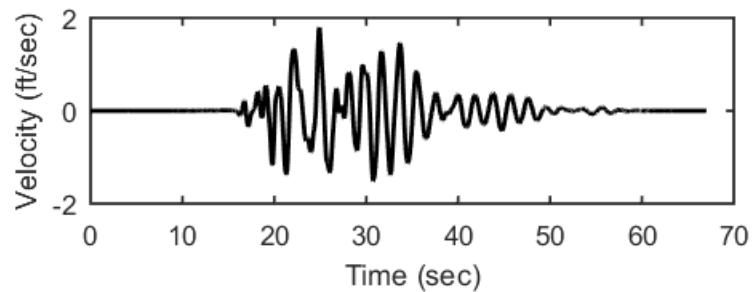
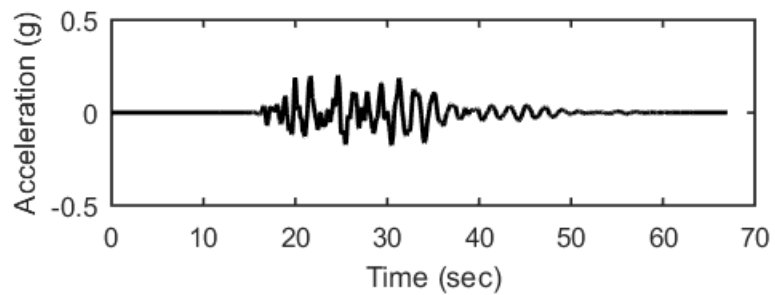
### Profile outputs for Motion: SEE1



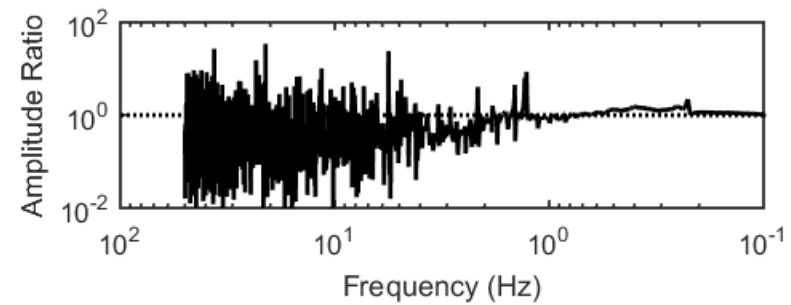
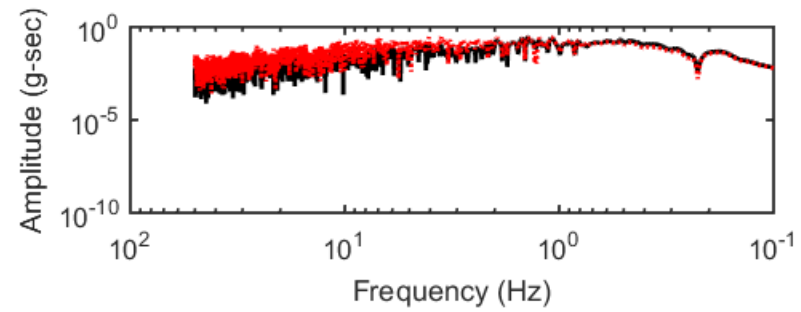
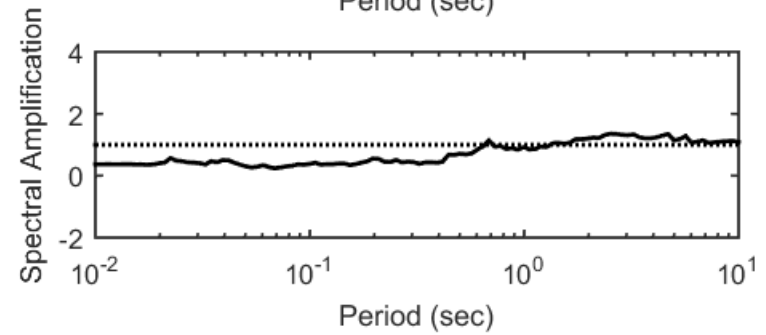
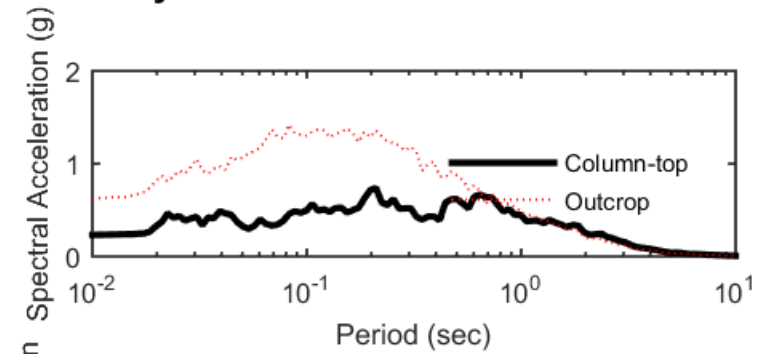
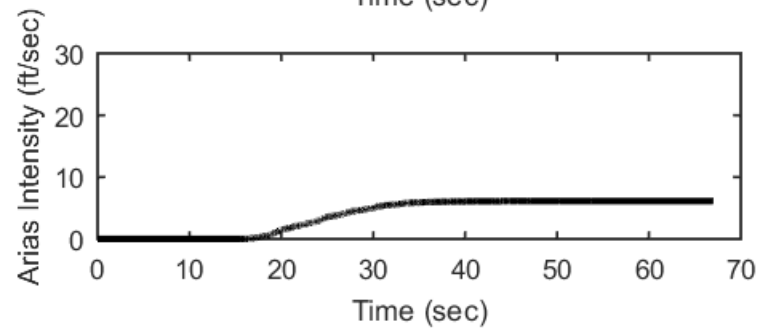
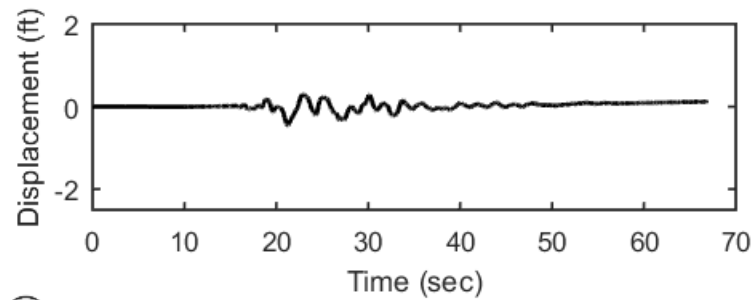
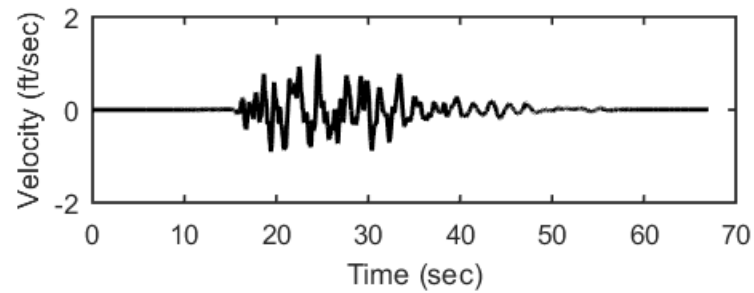
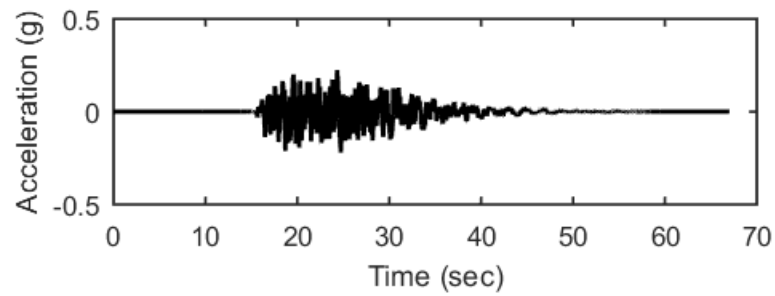
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



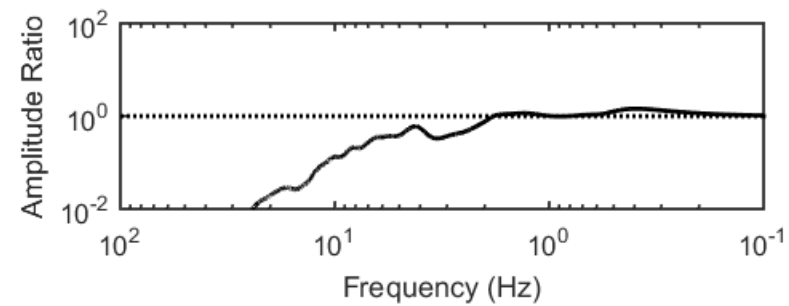
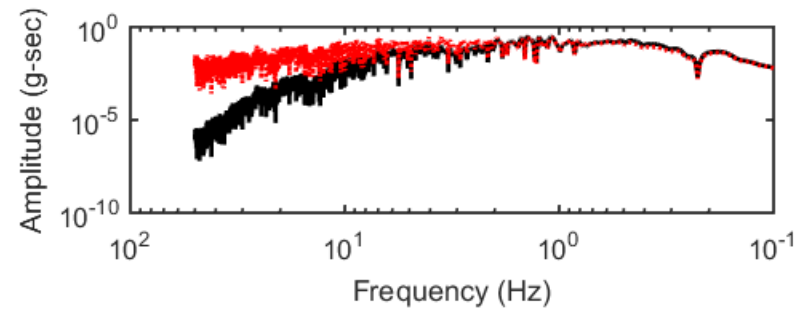
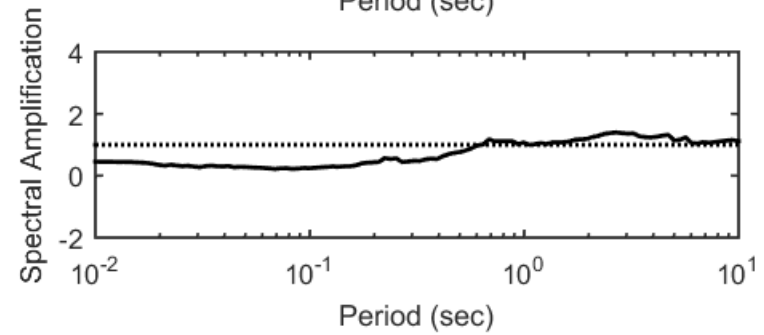
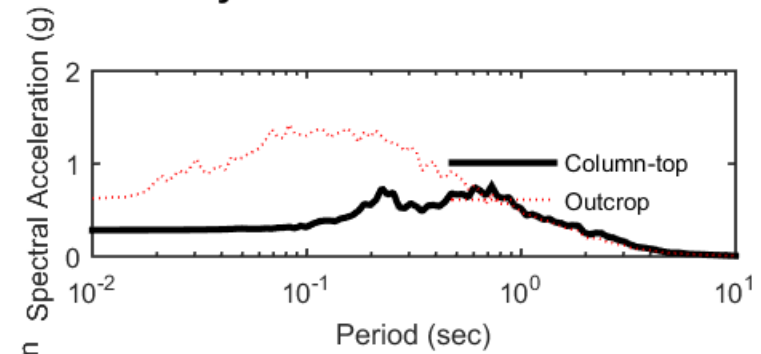
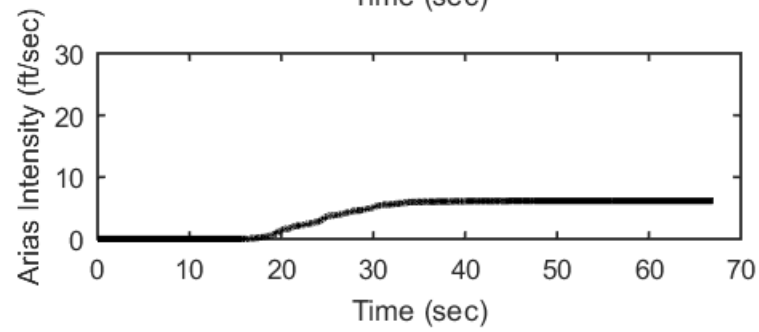
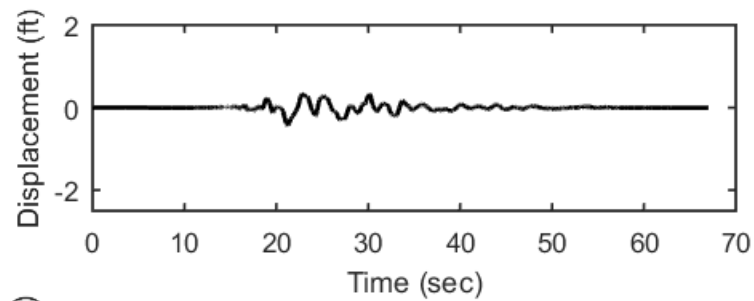
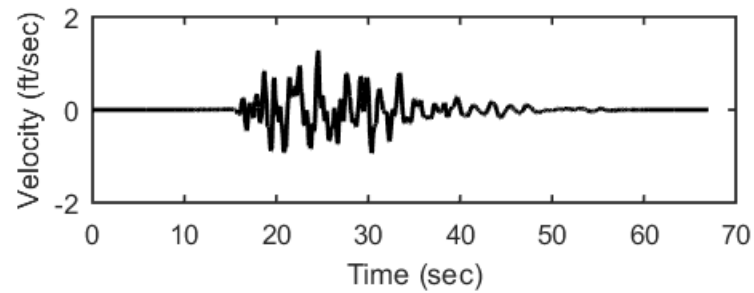
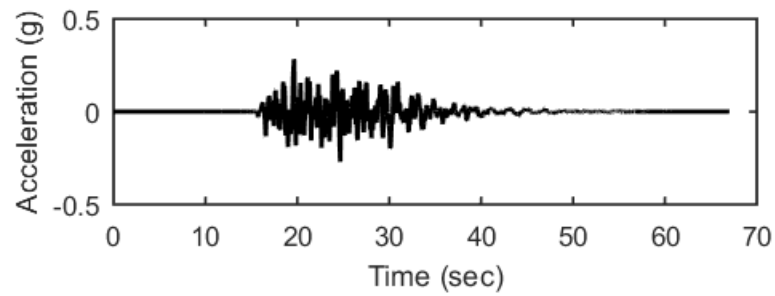
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2

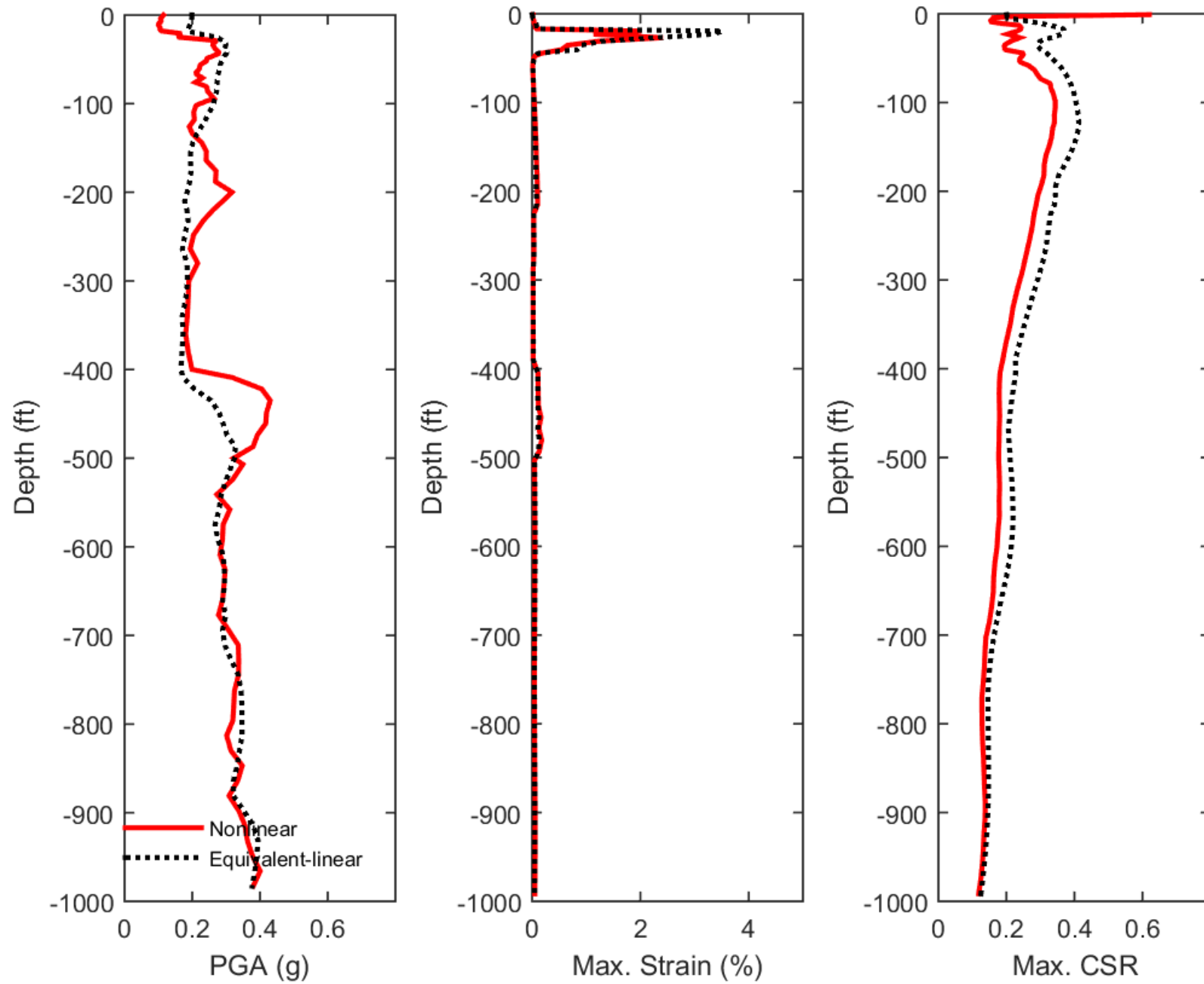


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2

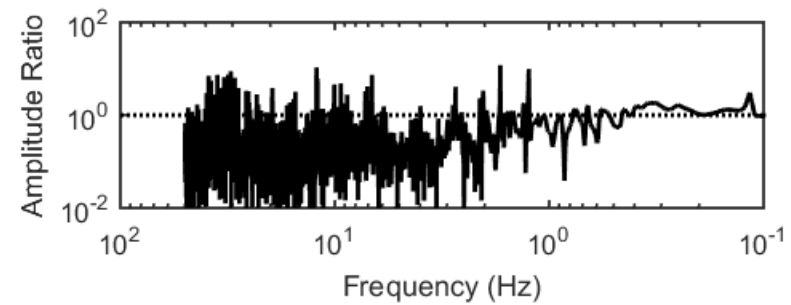
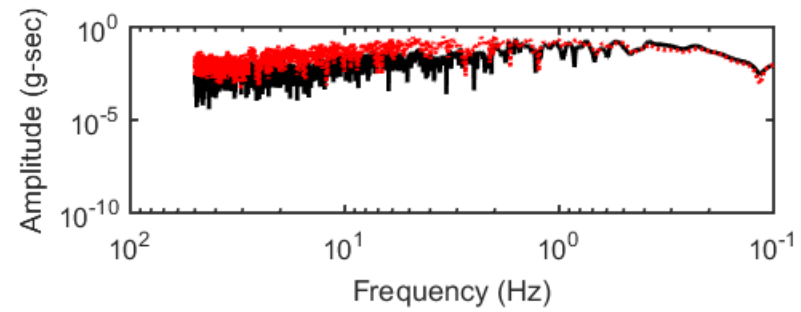
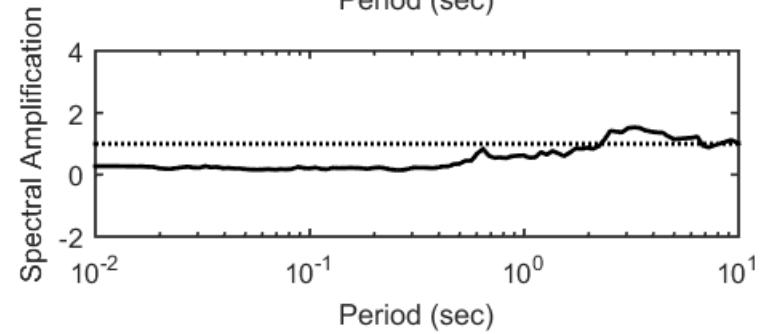
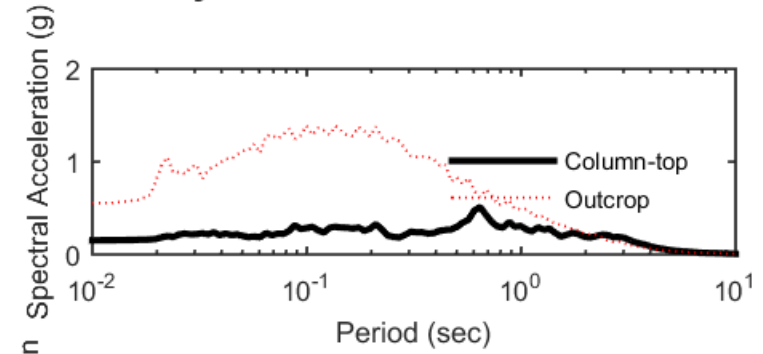
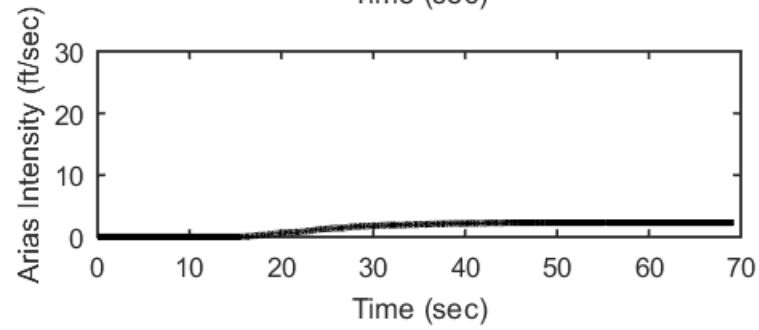
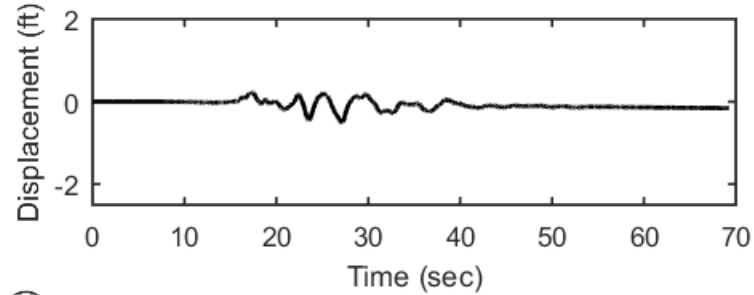
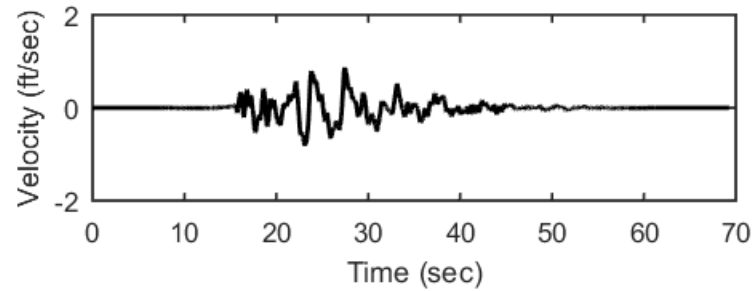
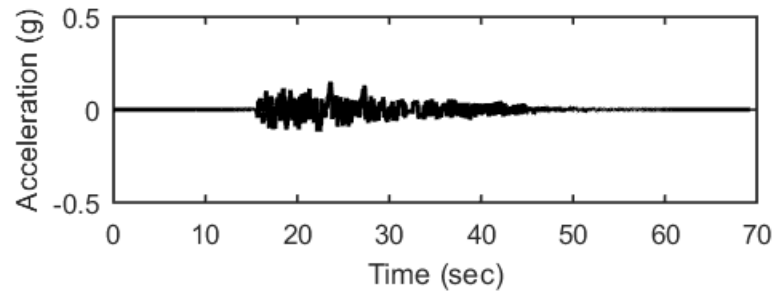




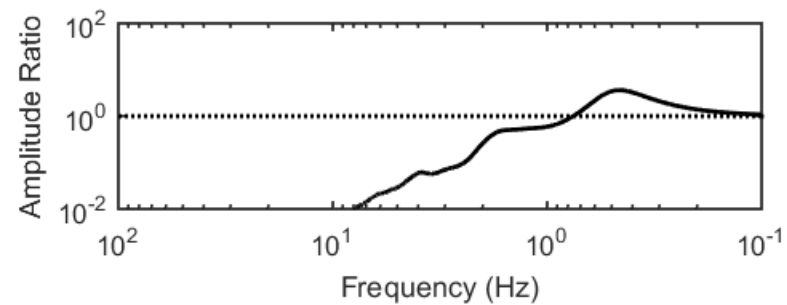
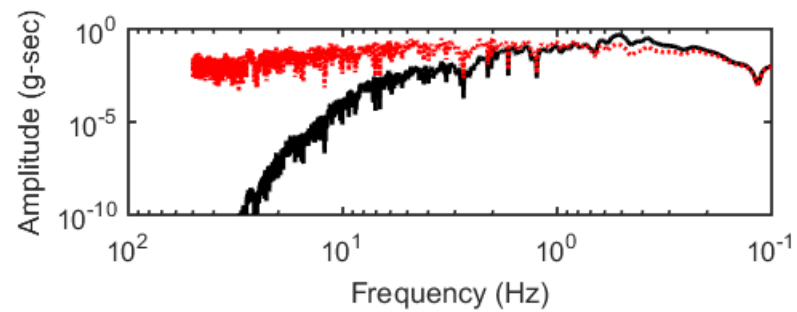
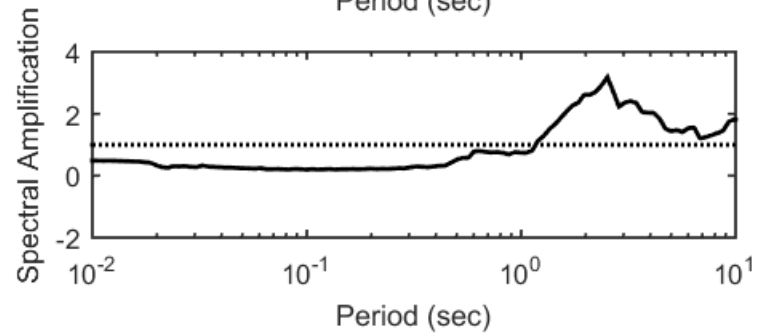
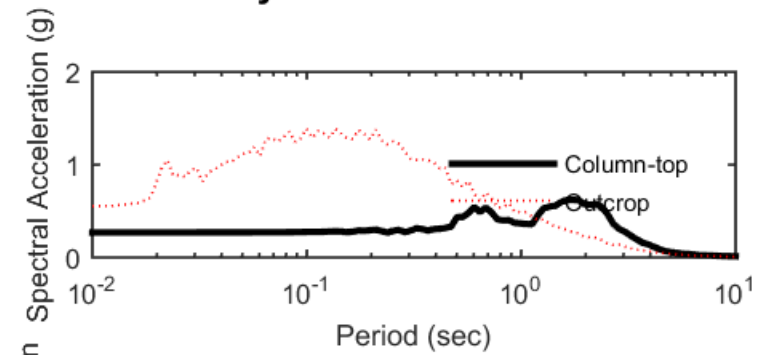
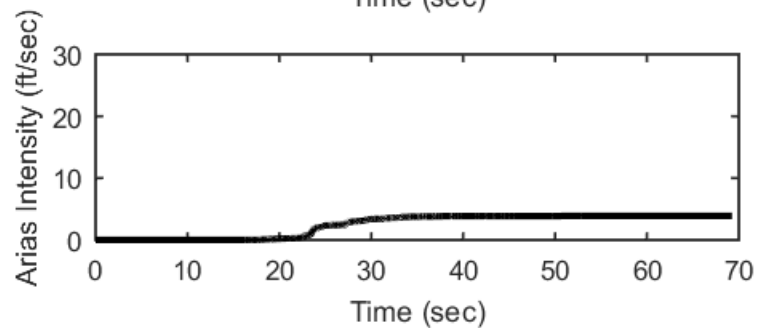
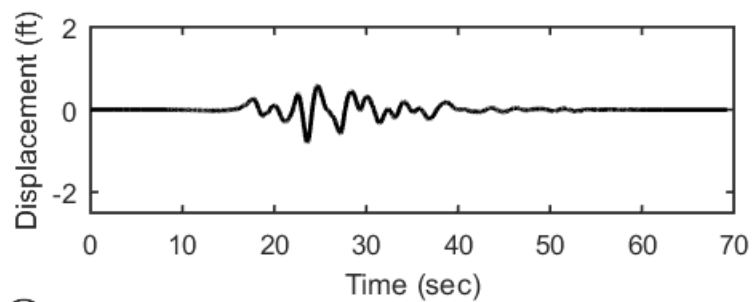
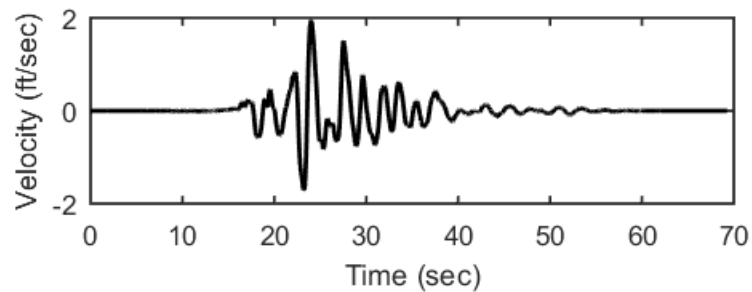
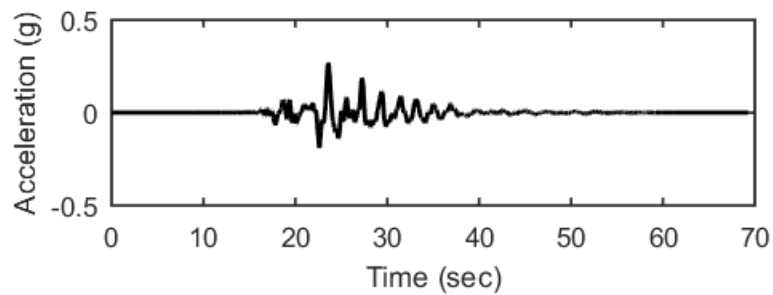
### Profile outputs for Motion: SEE2



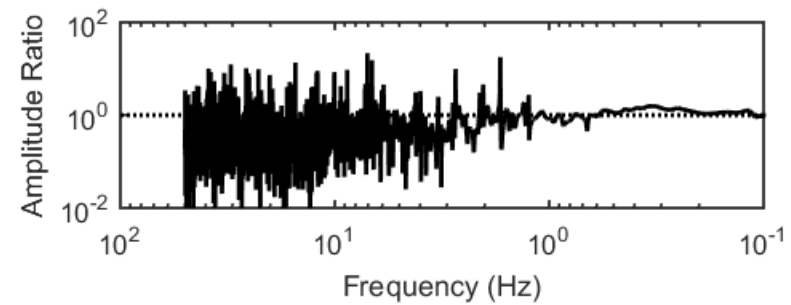
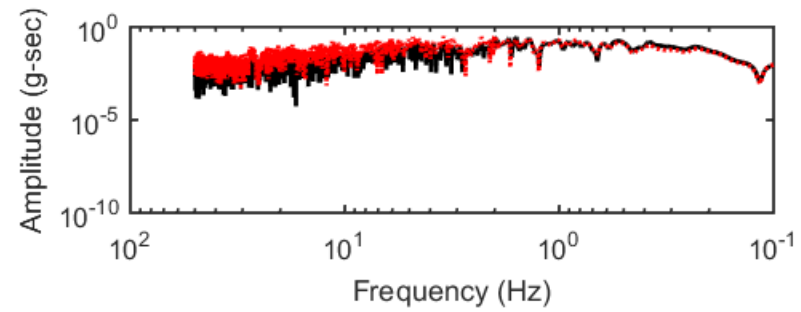
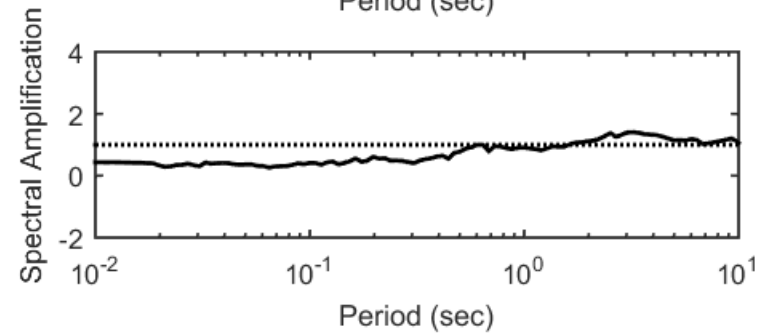
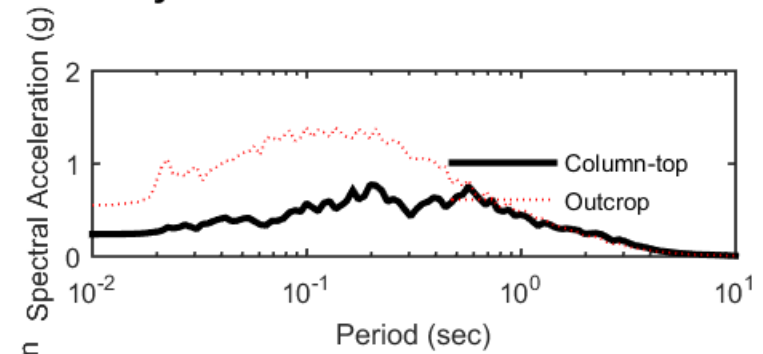
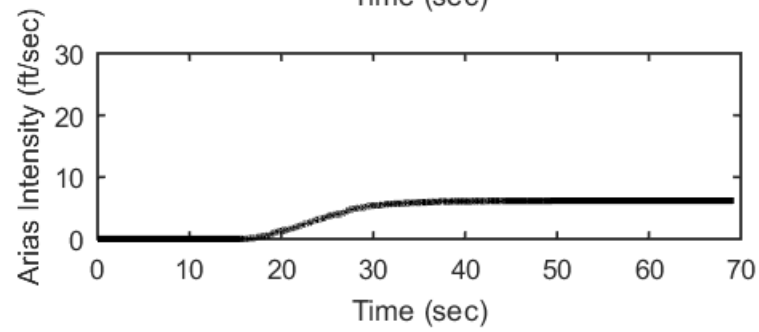
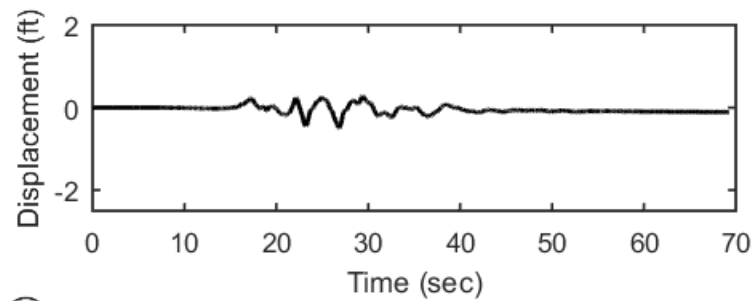
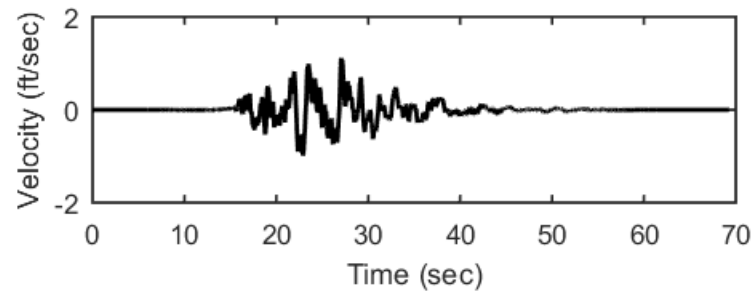
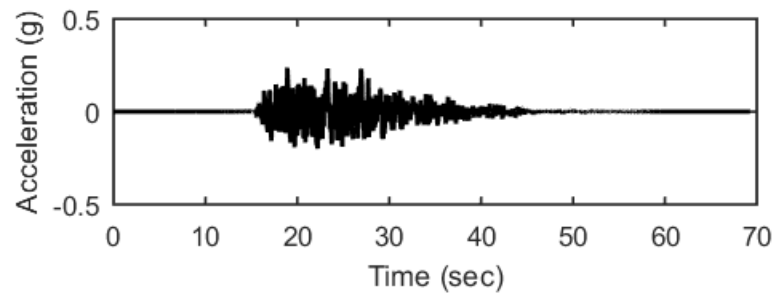
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



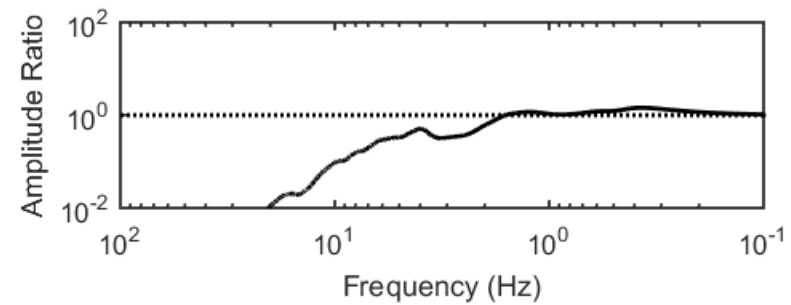
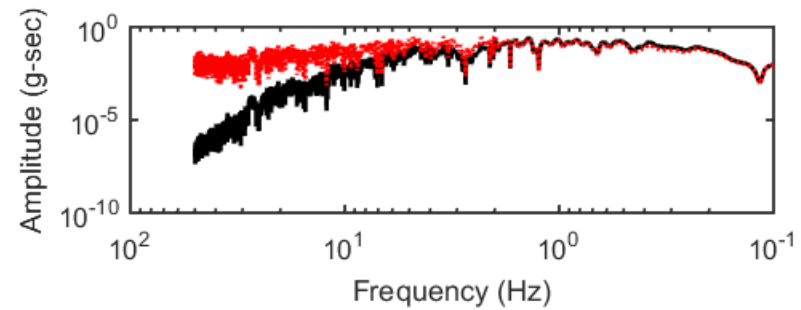
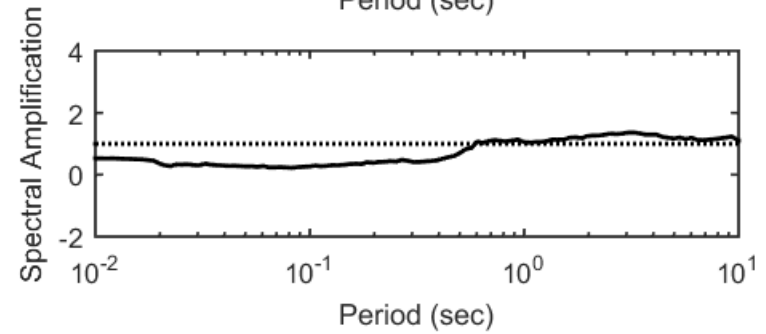
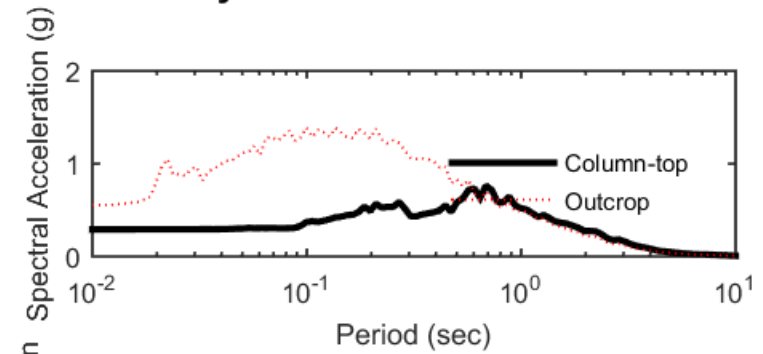
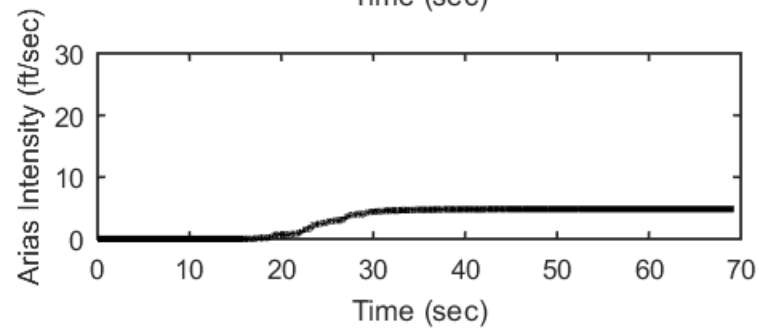
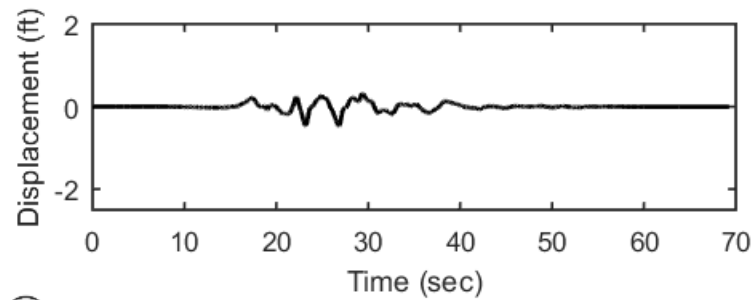
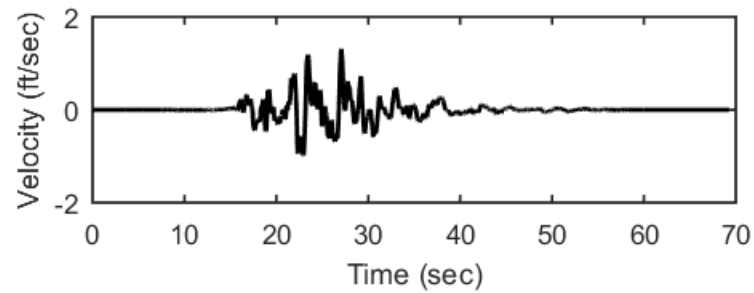
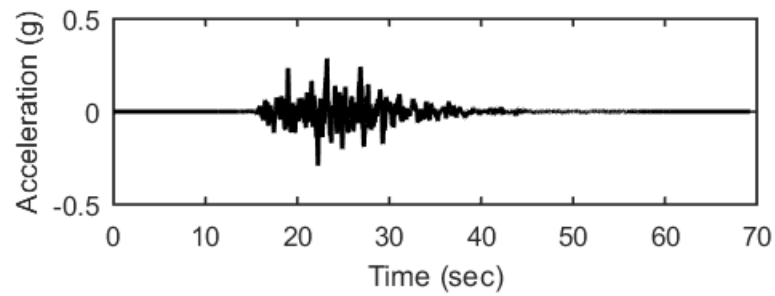
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



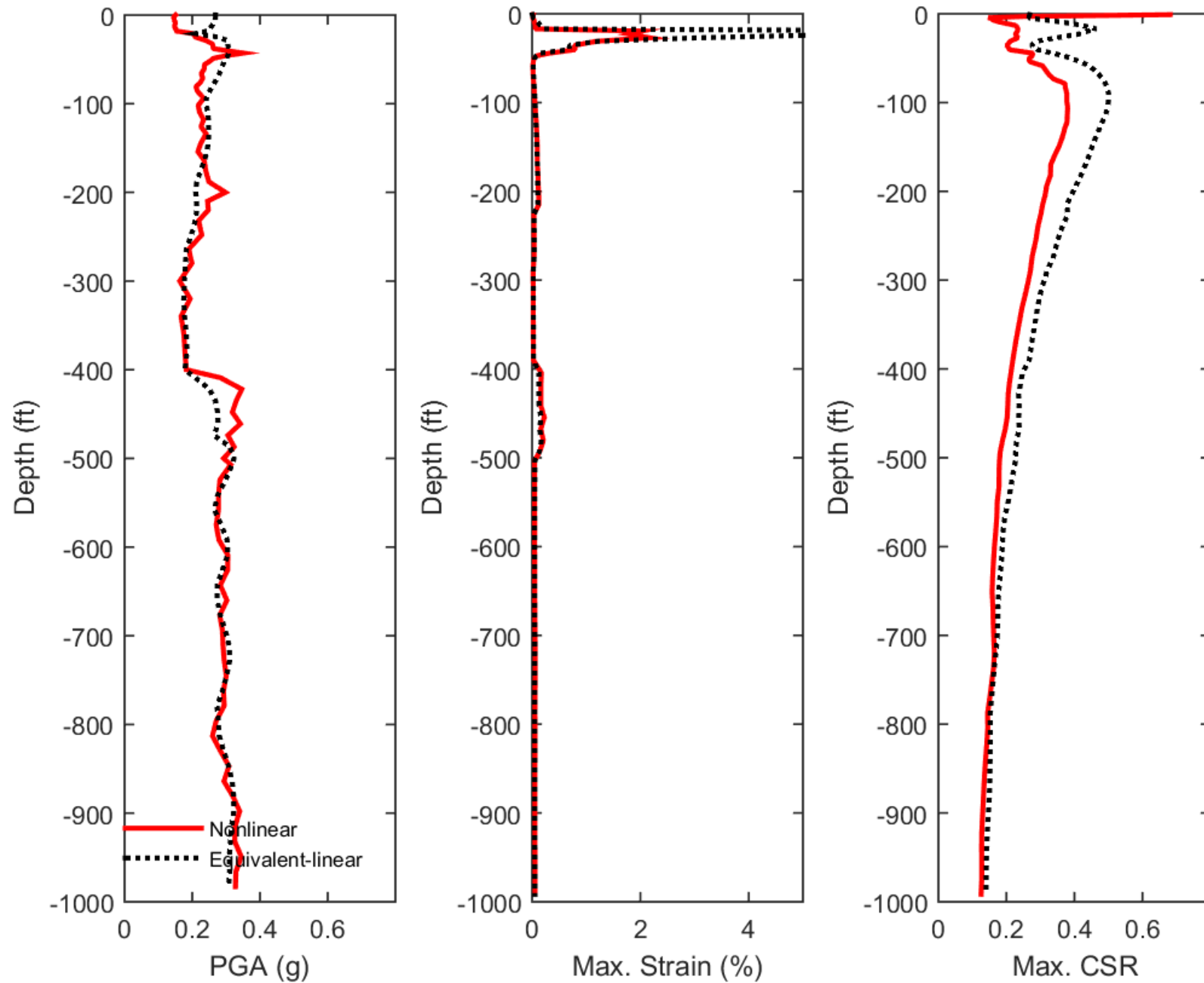
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



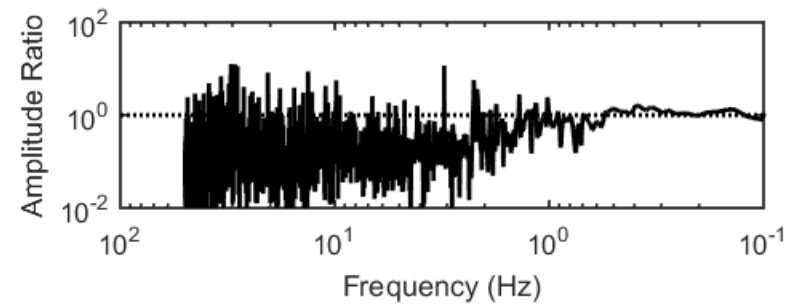
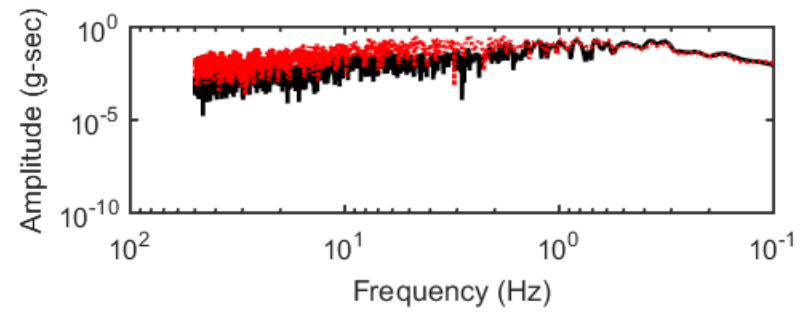
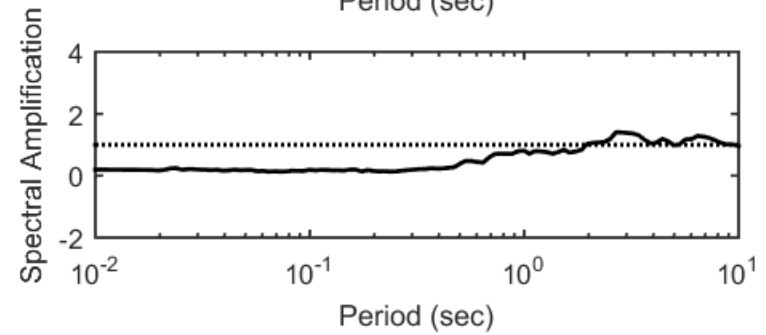
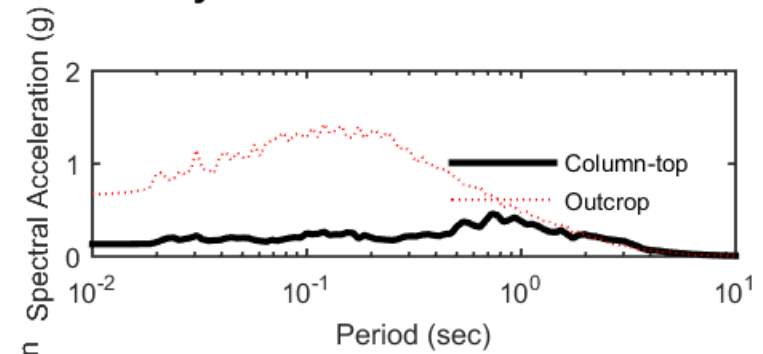
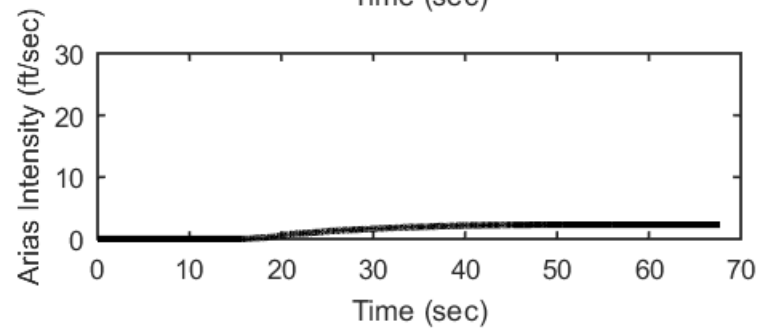
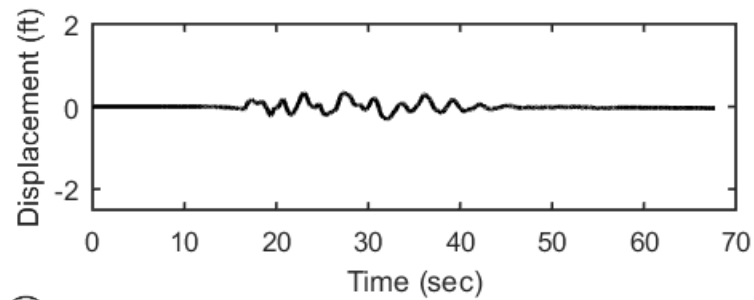
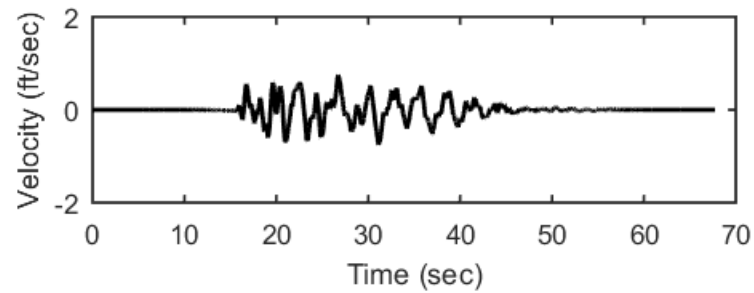
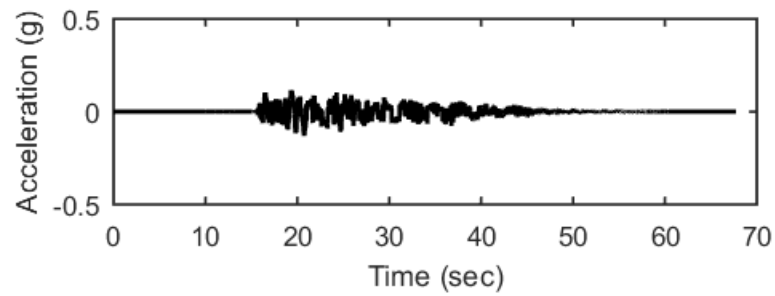
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



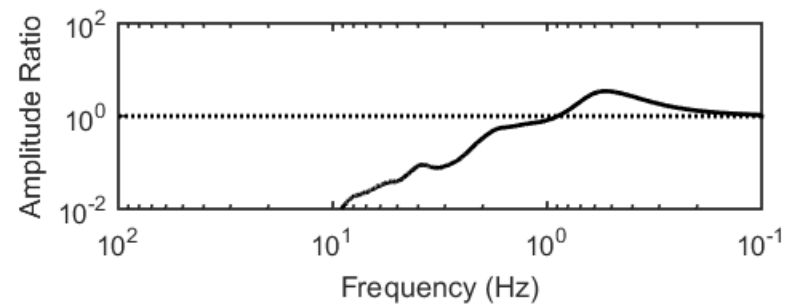
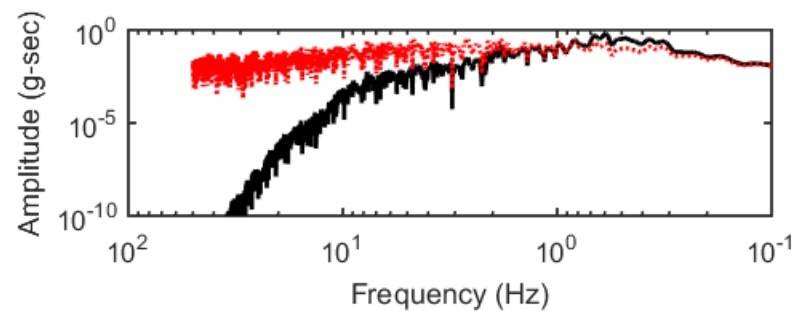
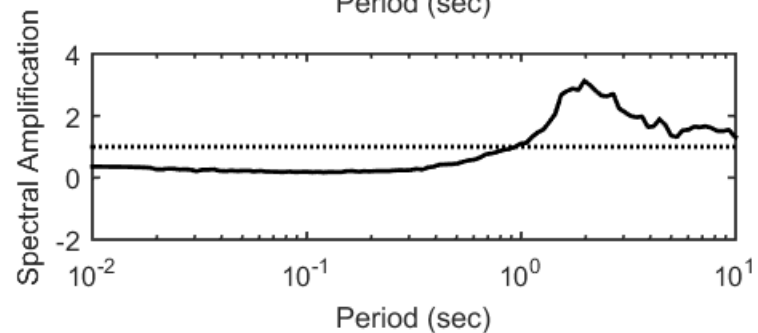
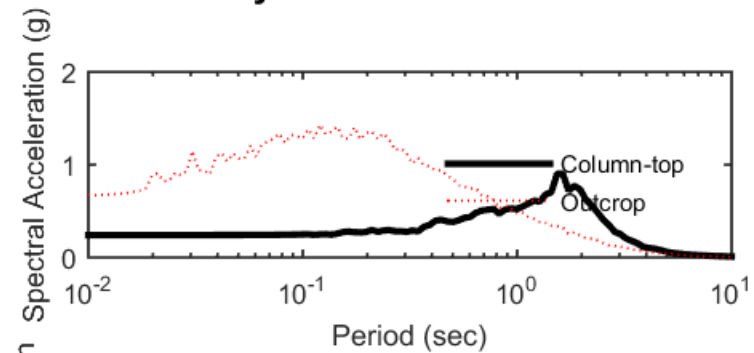
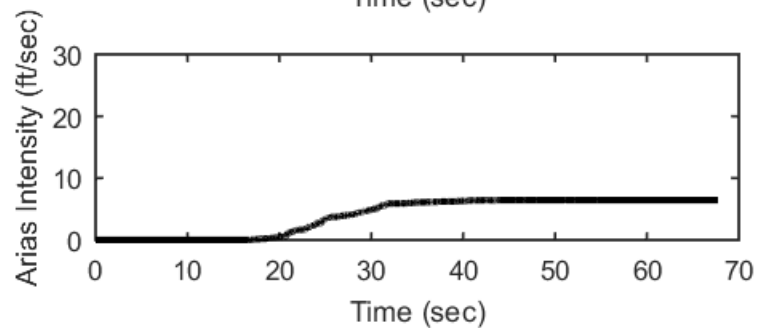
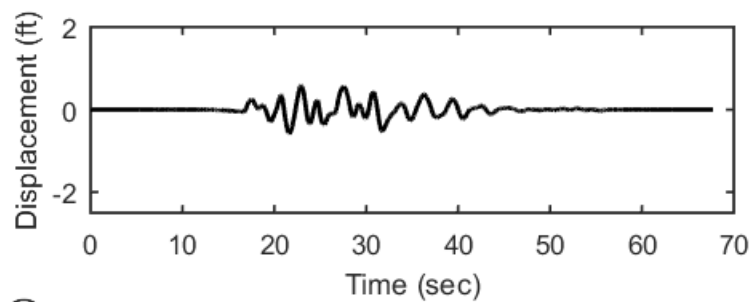
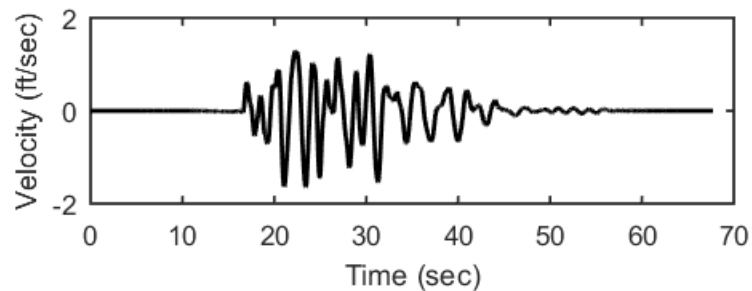
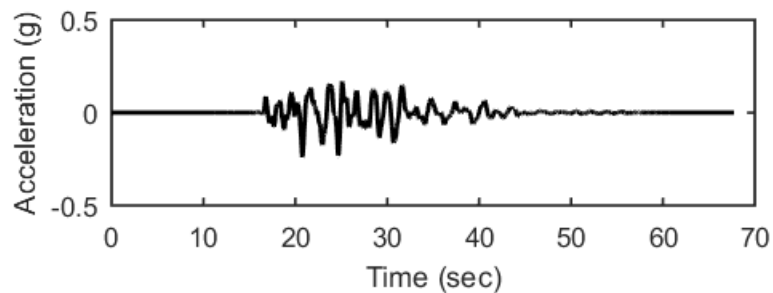
### Profile outputs for Motion: SEE3



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4

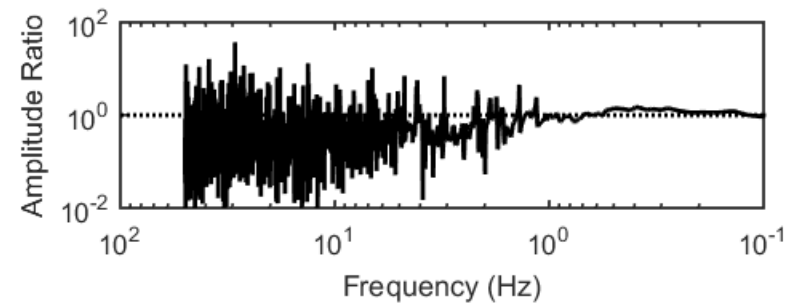
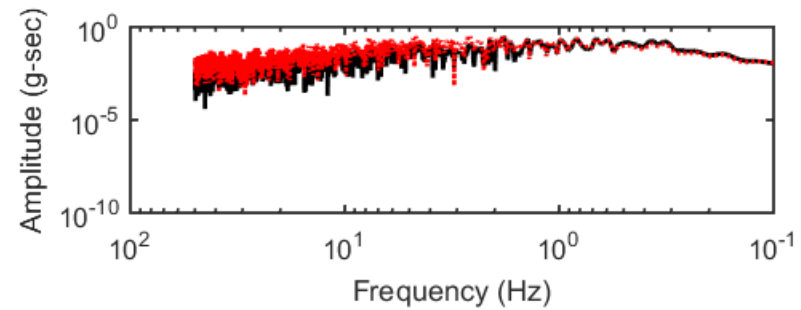
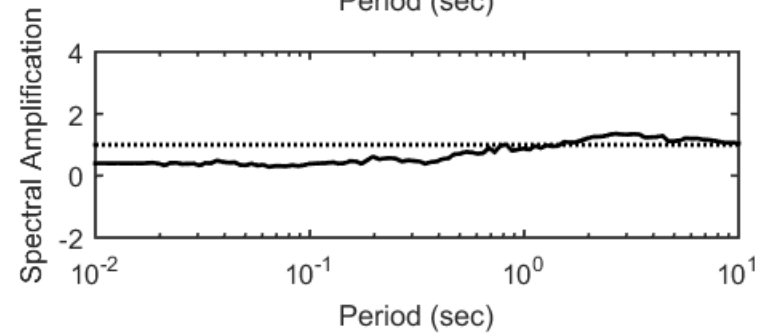
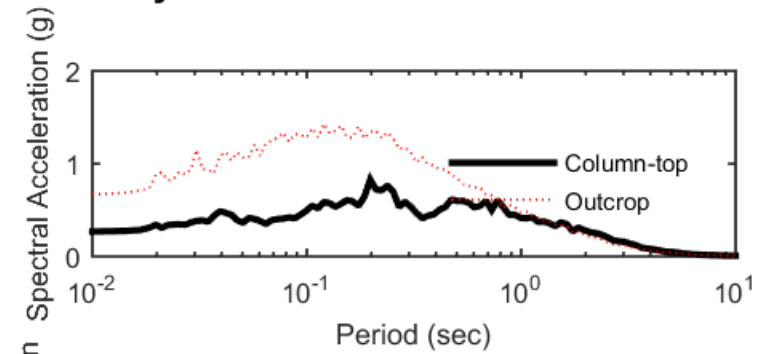
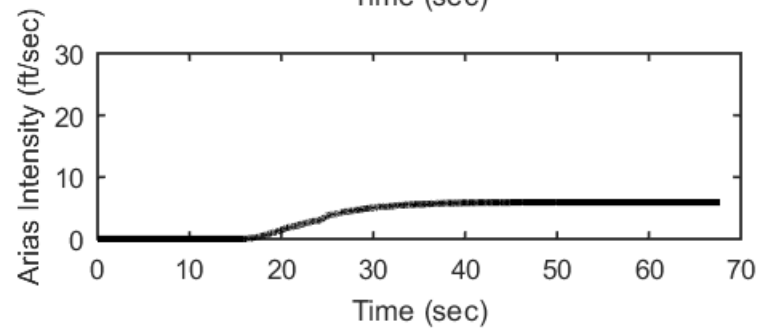
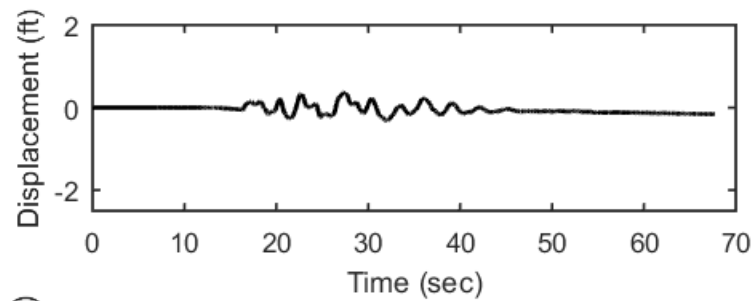
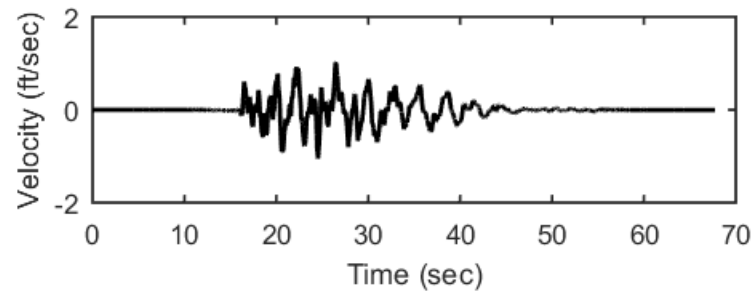
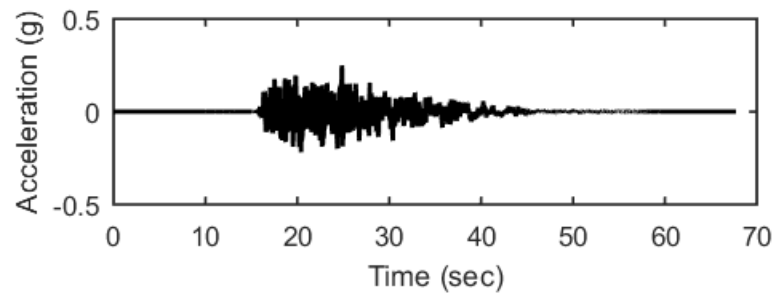


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4

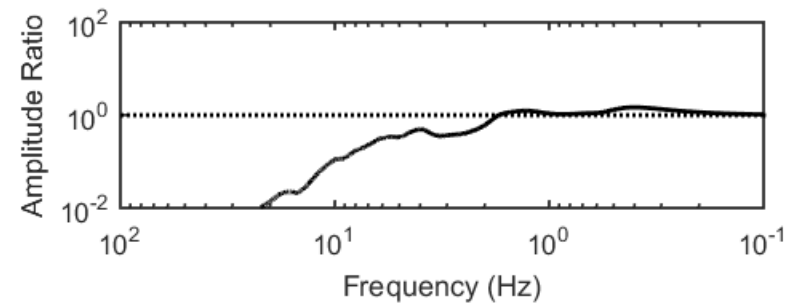
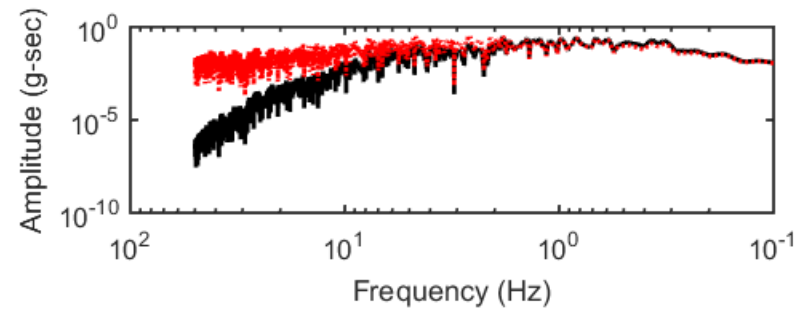
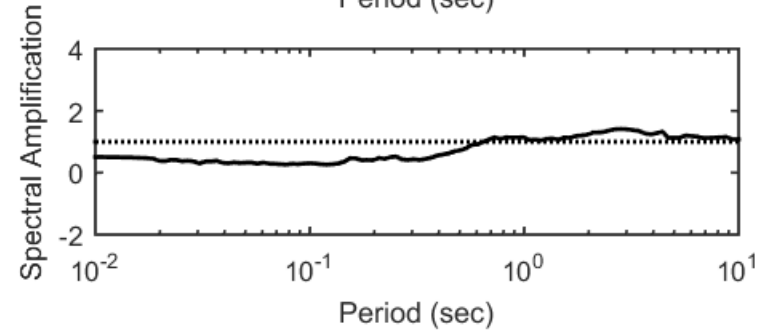
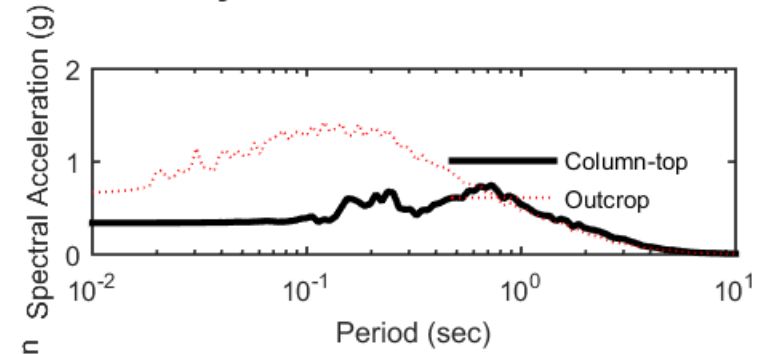
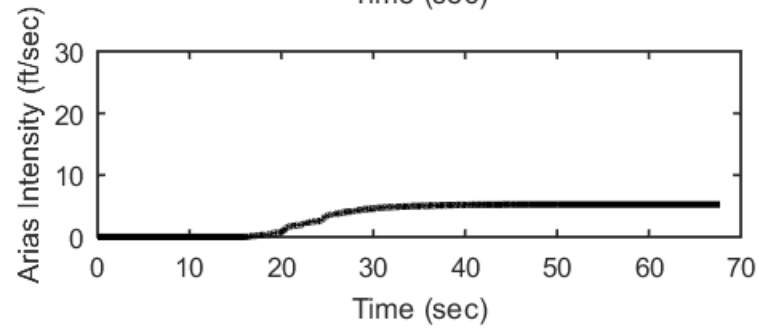
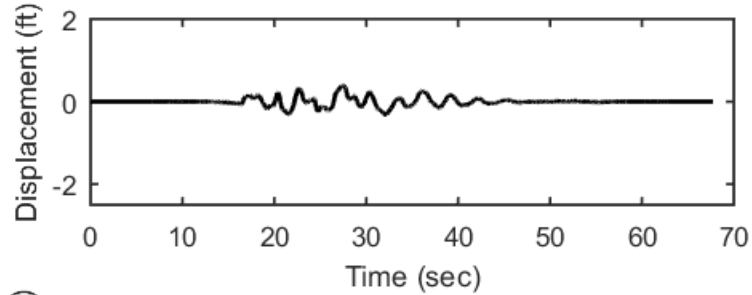
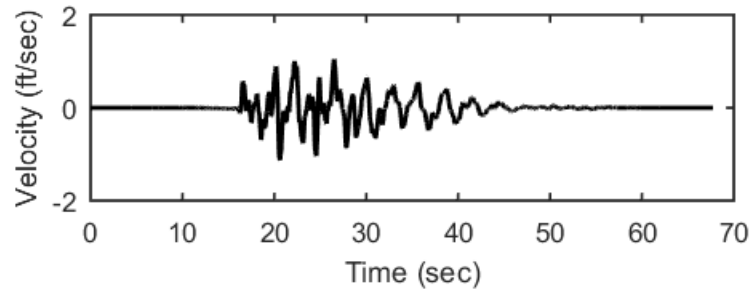
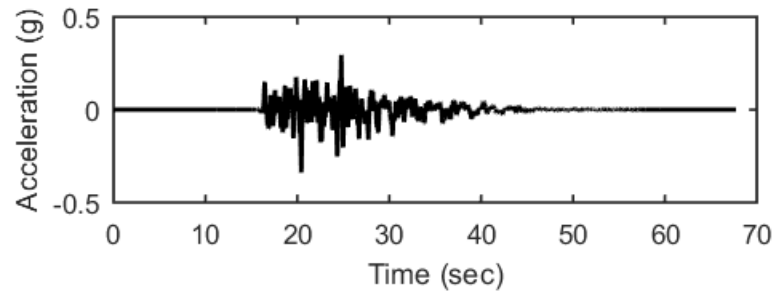




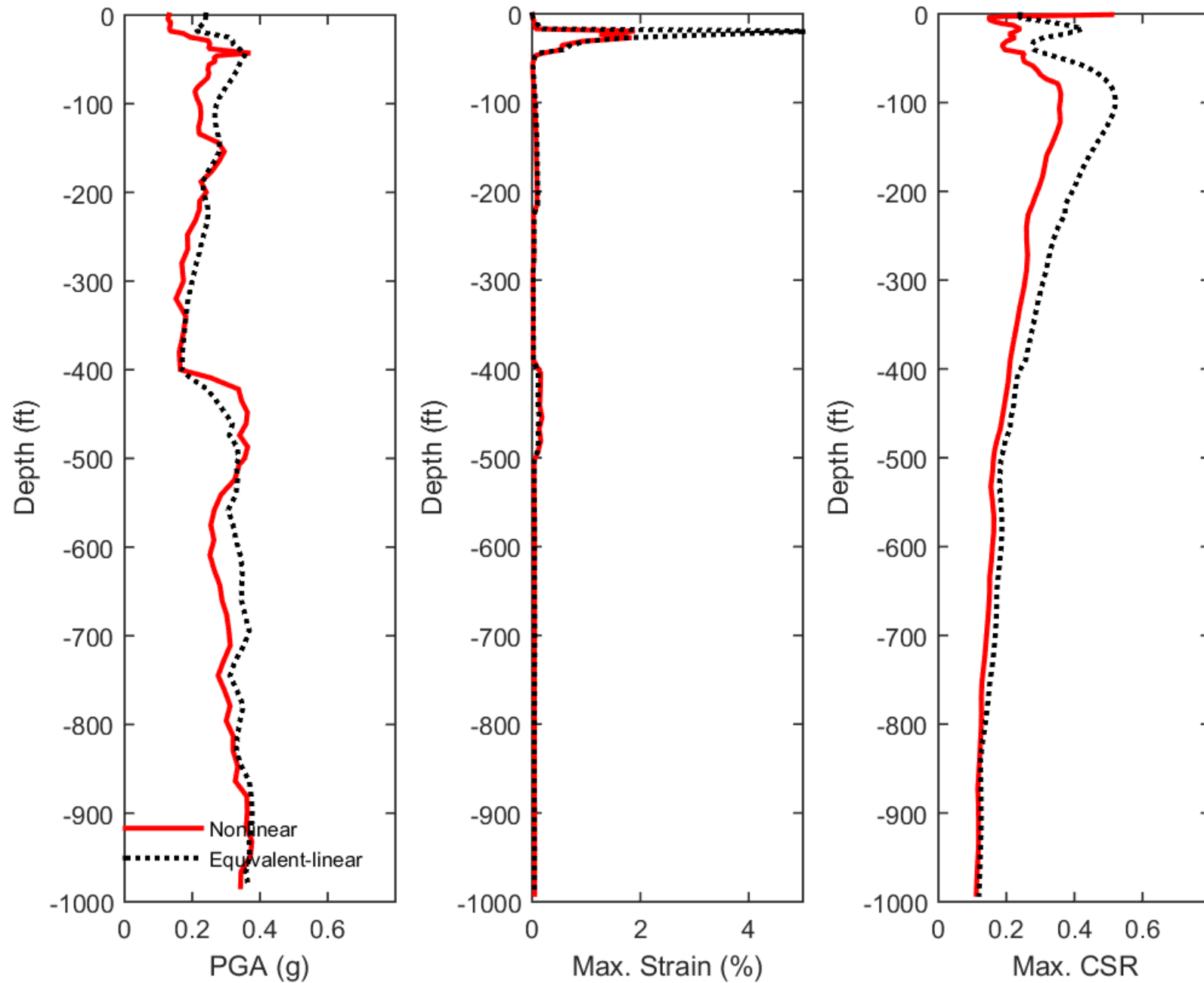
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



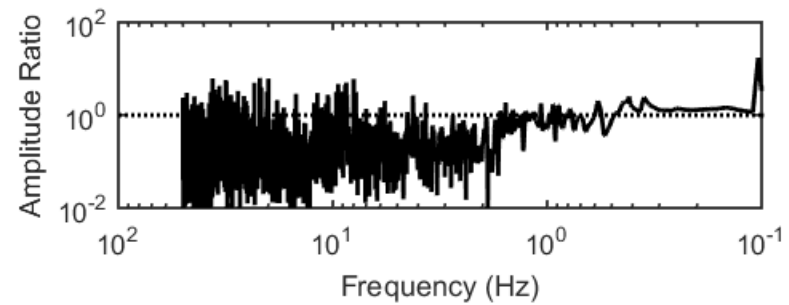
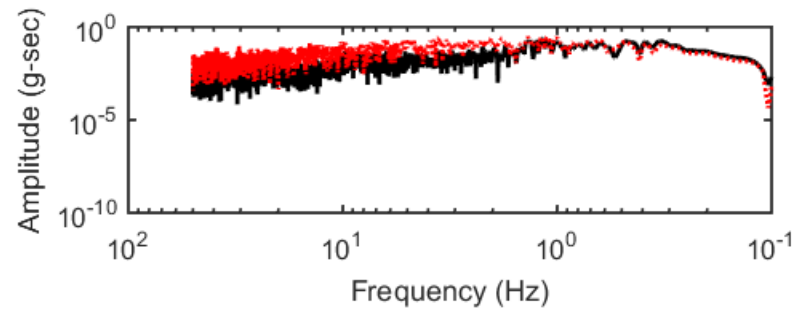
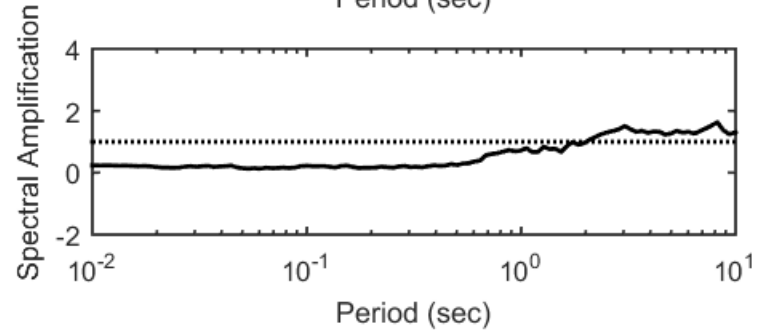
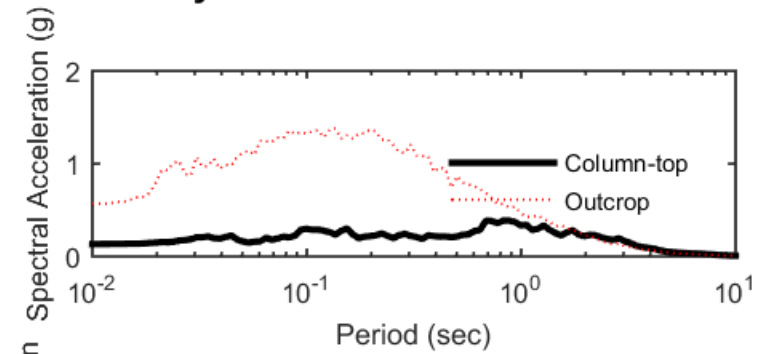
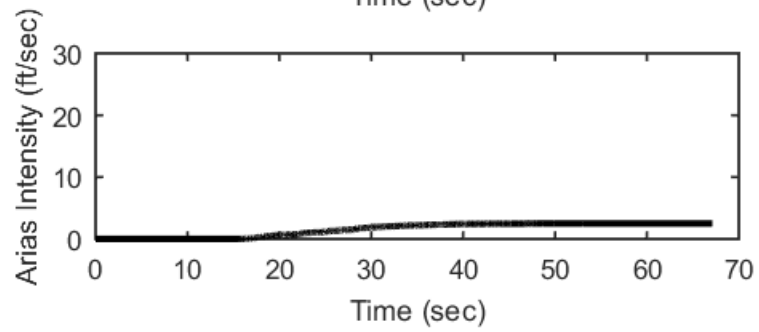
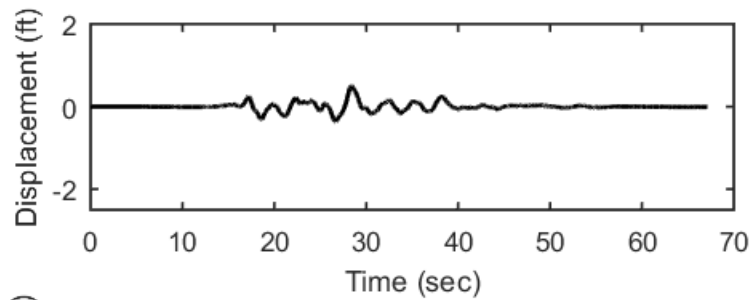
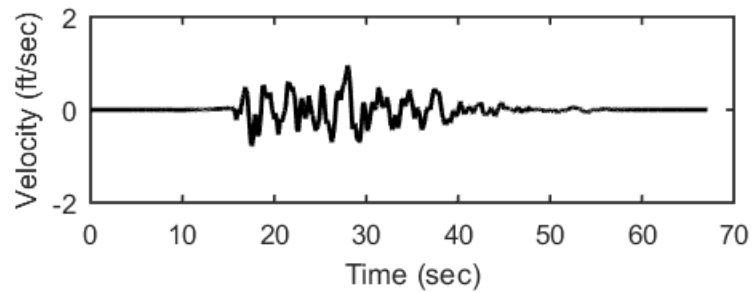
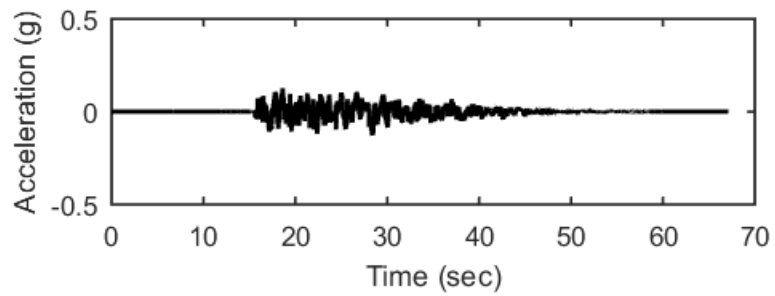
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



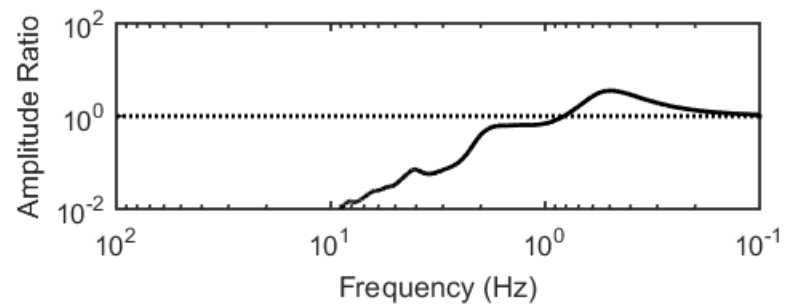
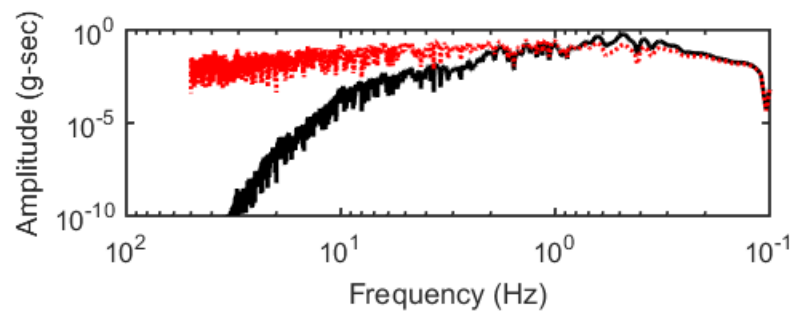
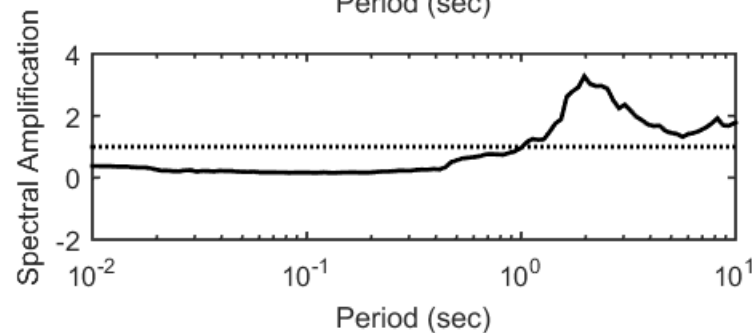
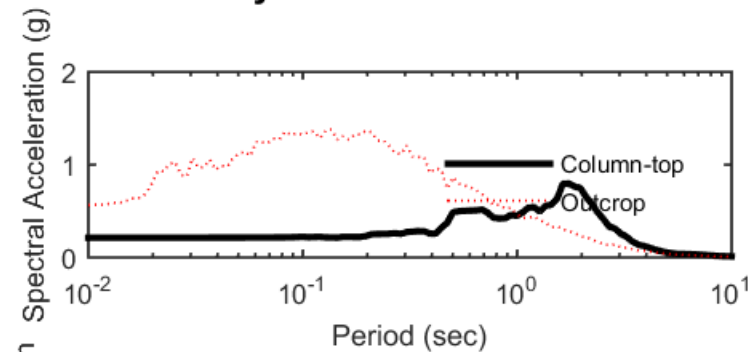
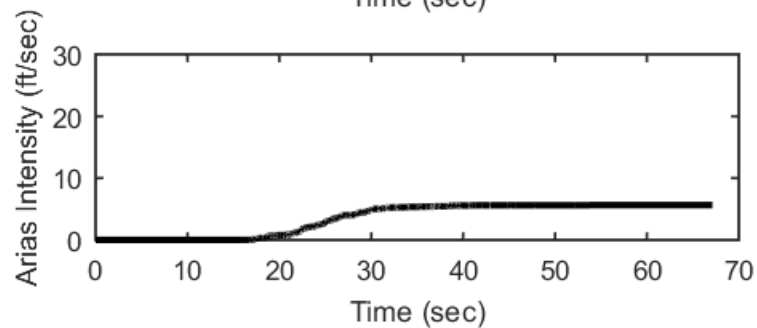
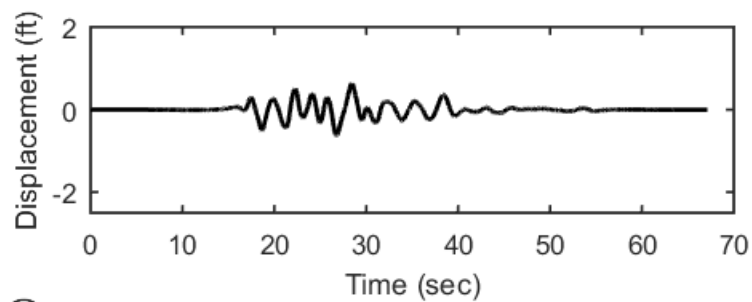
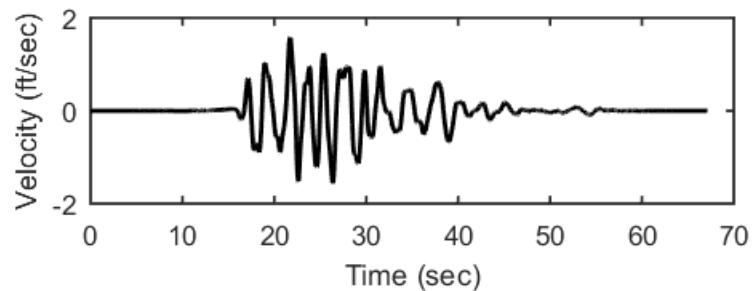
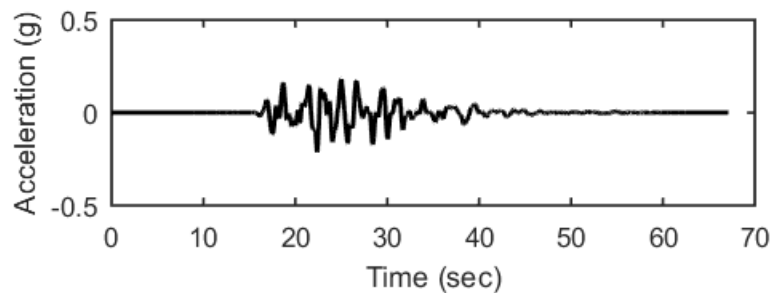
### Profile outputs for Motion: SEE4



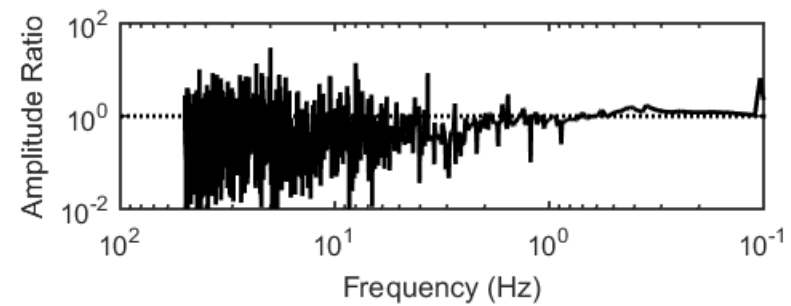
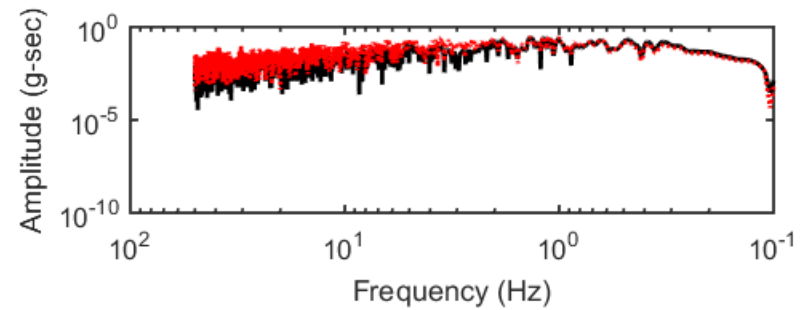
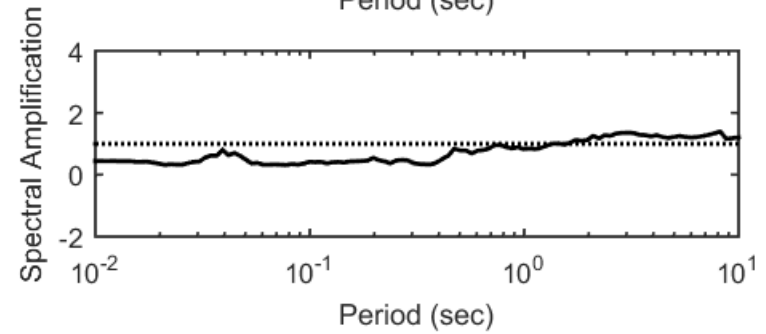
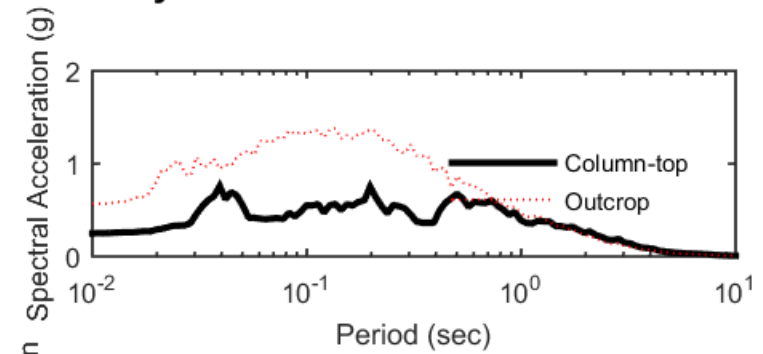
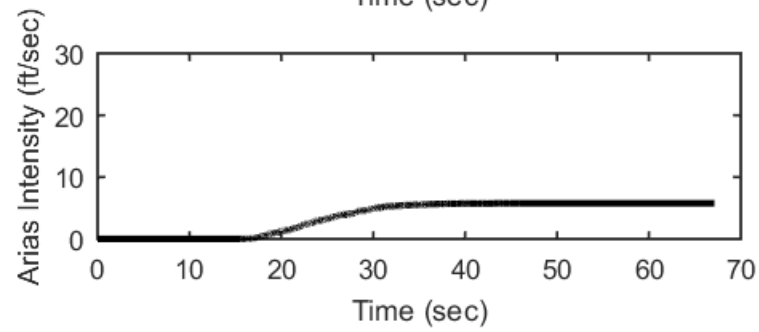
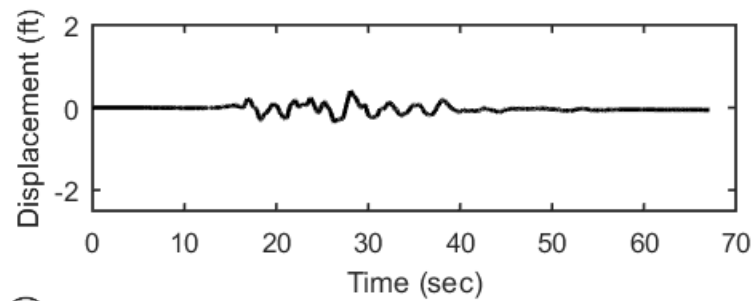
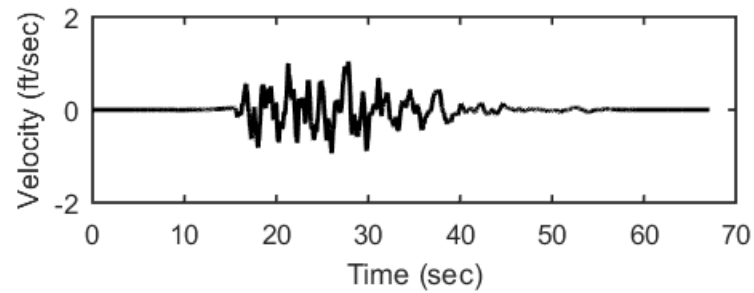
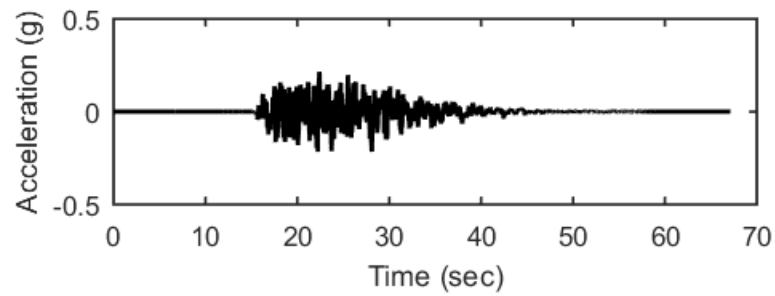
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



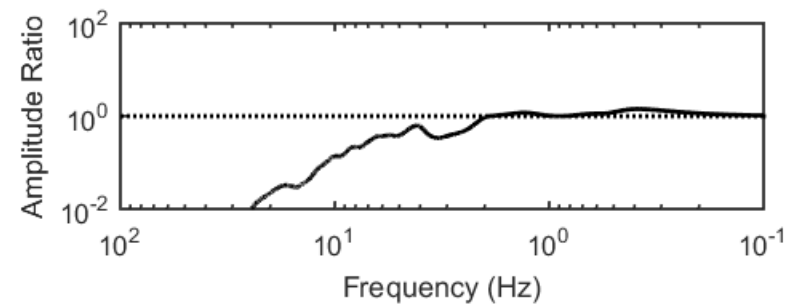
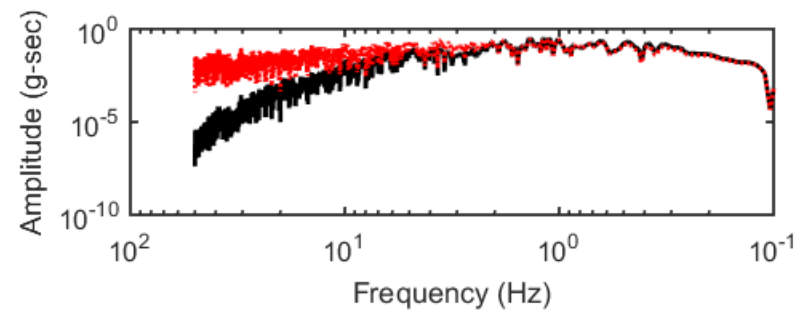
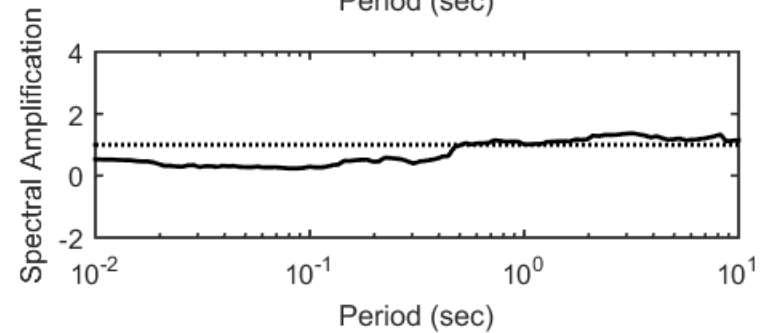
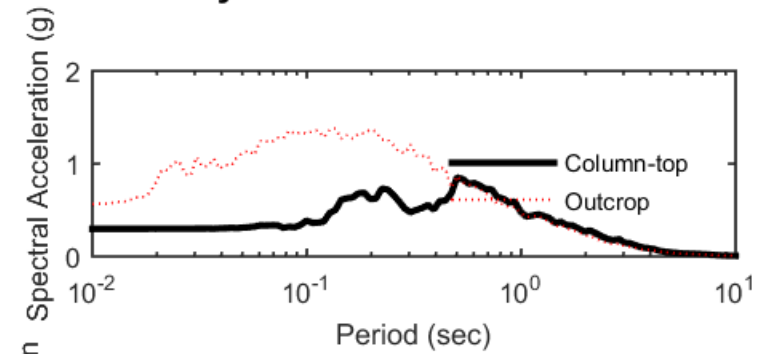
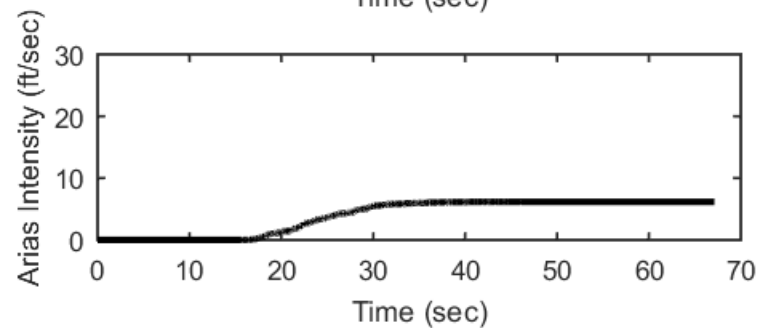
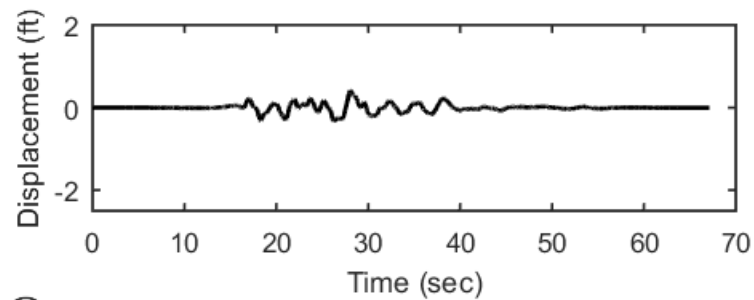
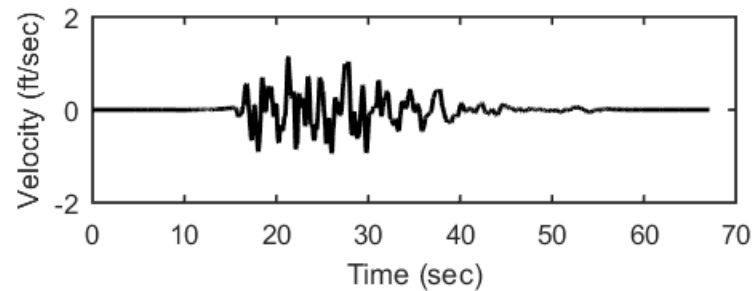
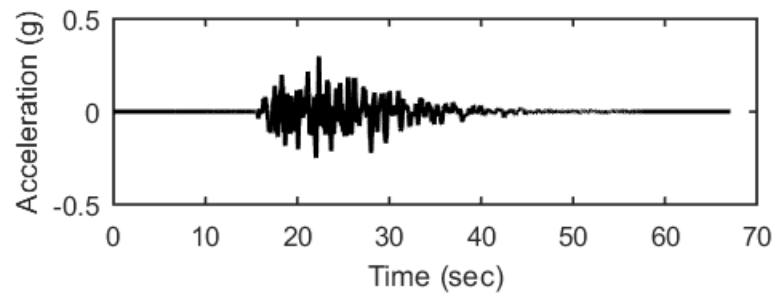
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



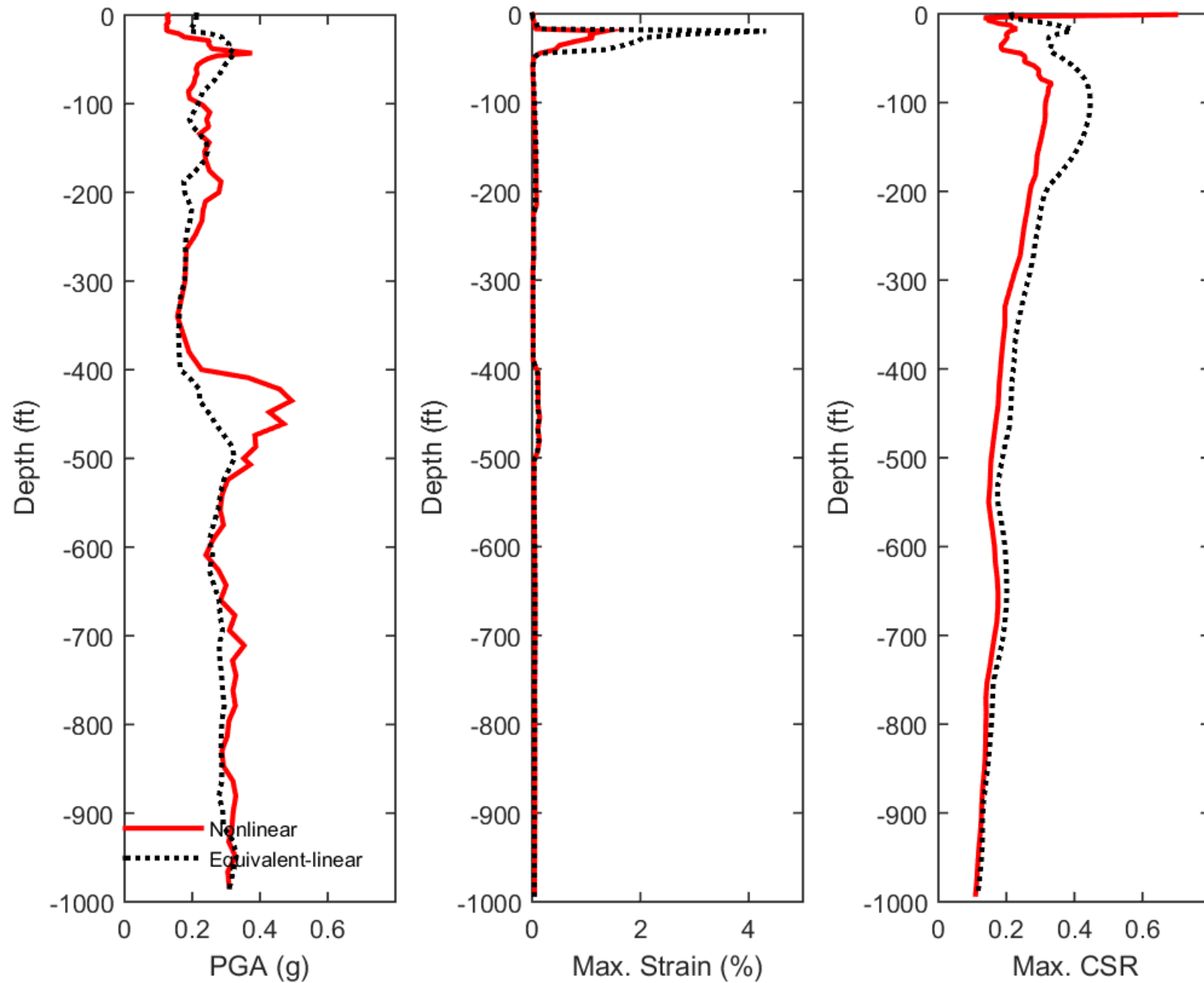
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5

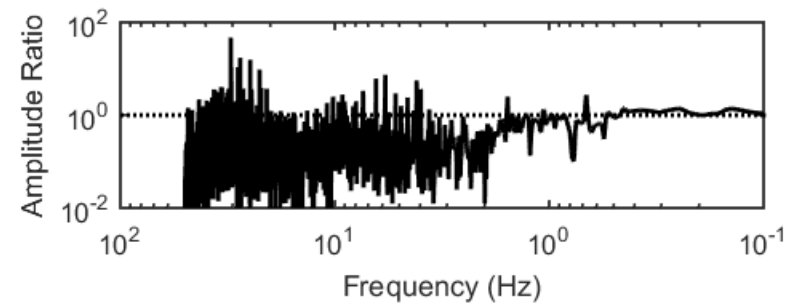
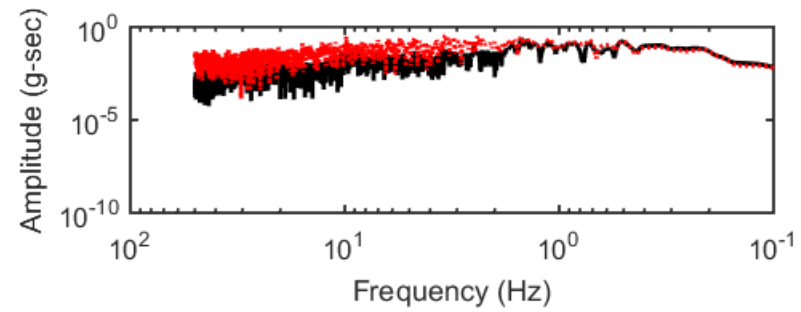
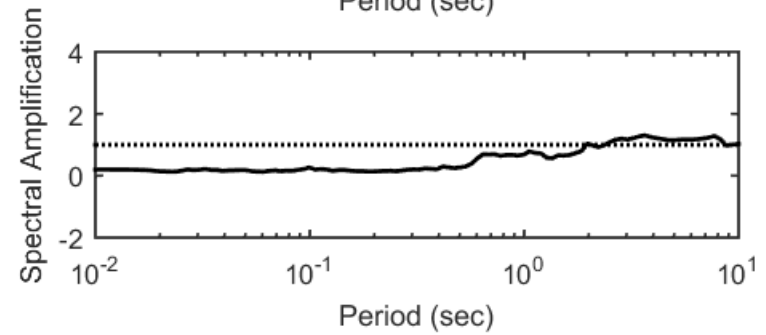
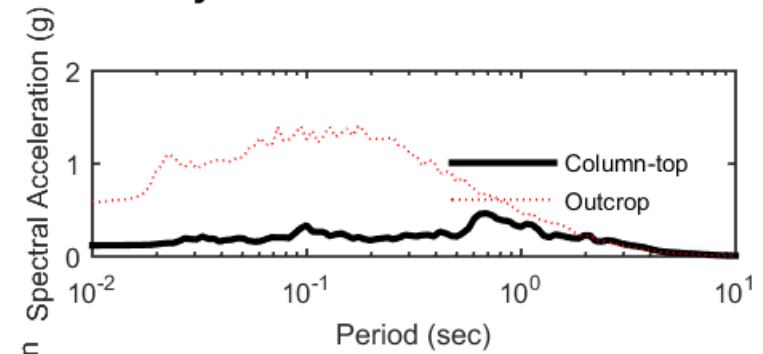
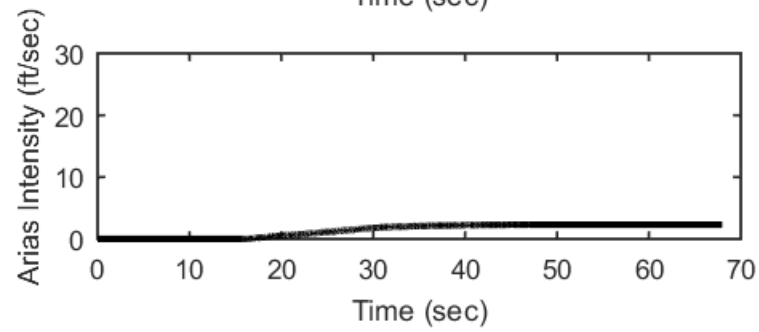
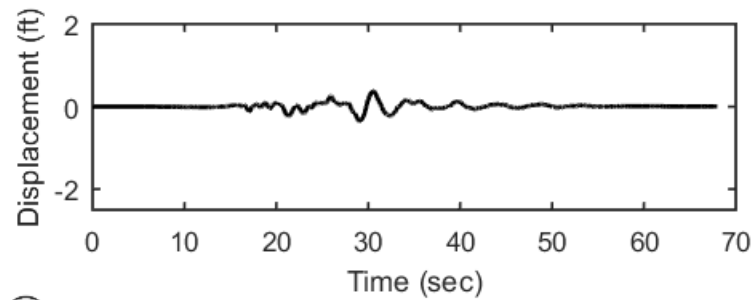
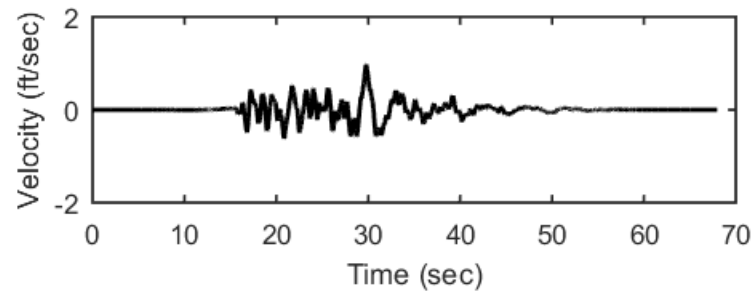
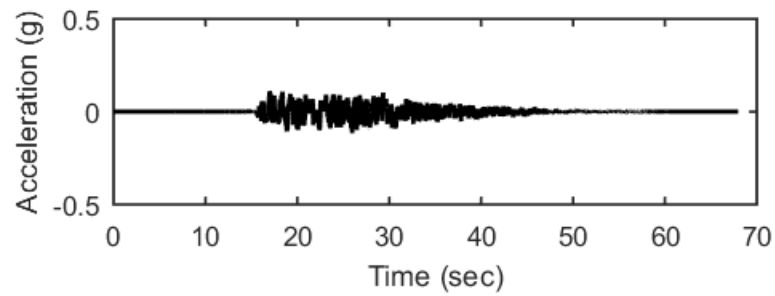


### Profile outputs for Motion: SEE5

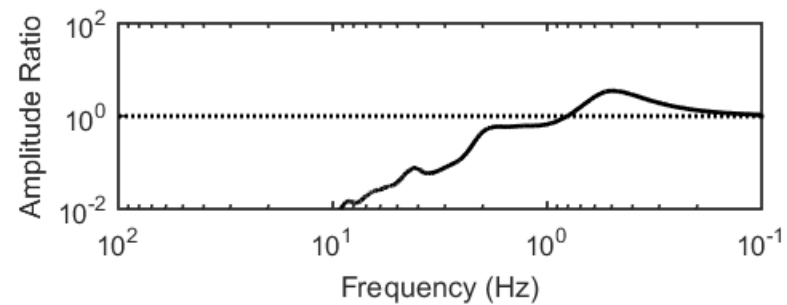
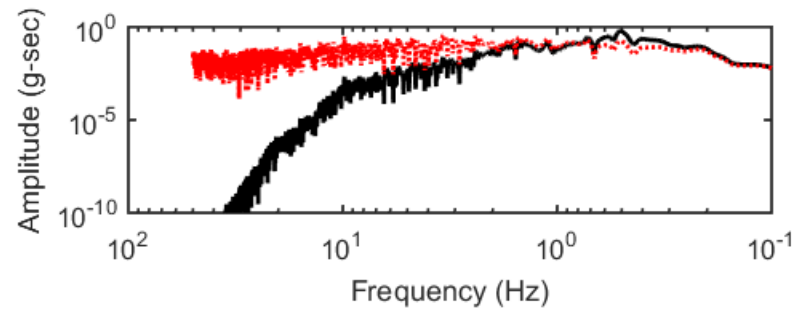
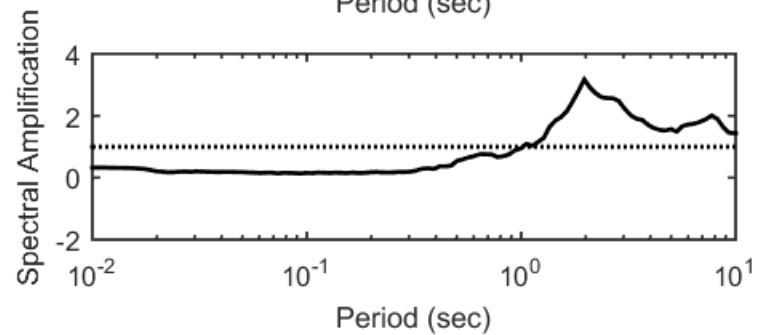
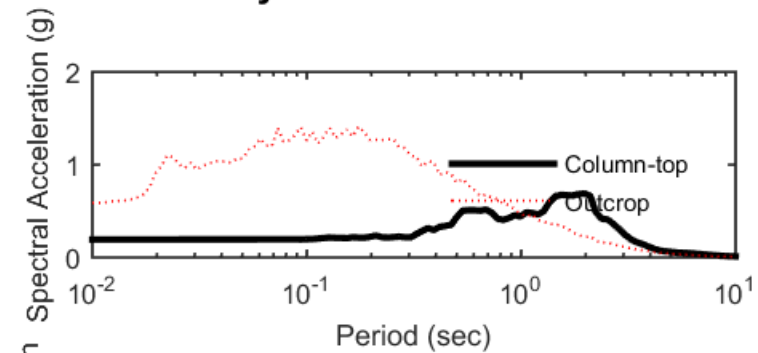
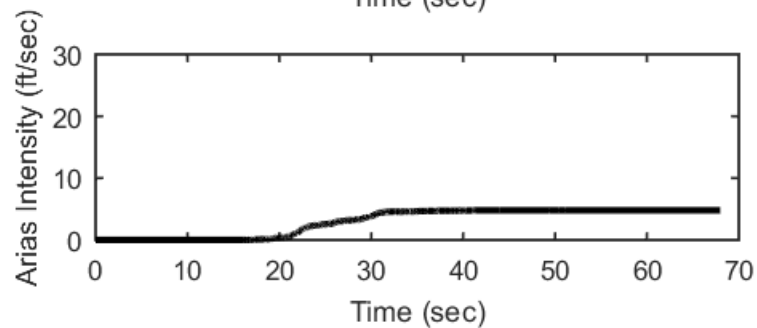
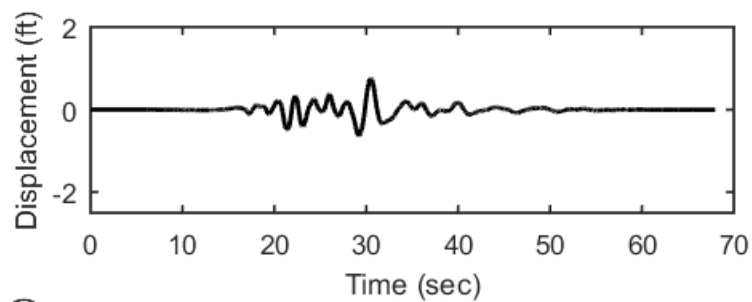
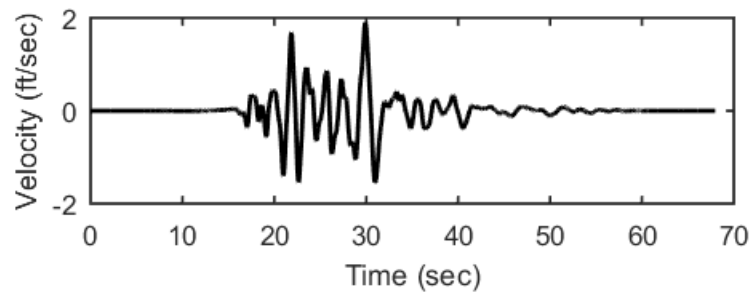
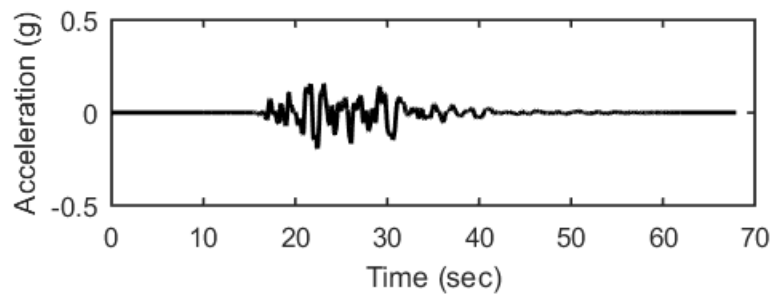




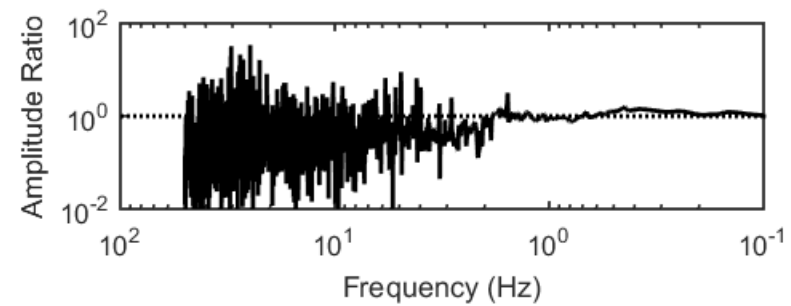
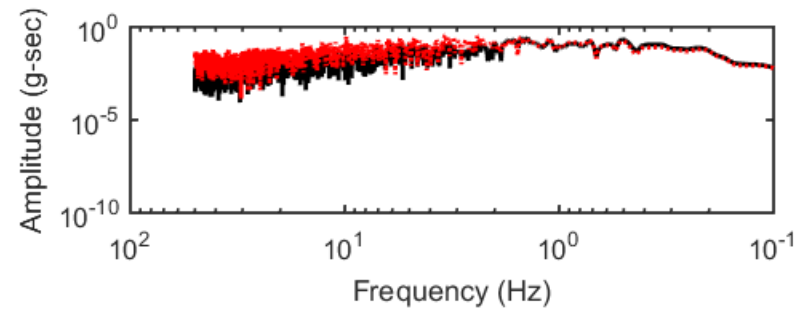
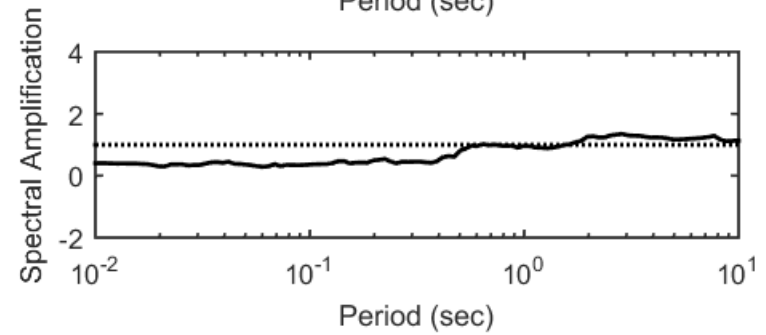
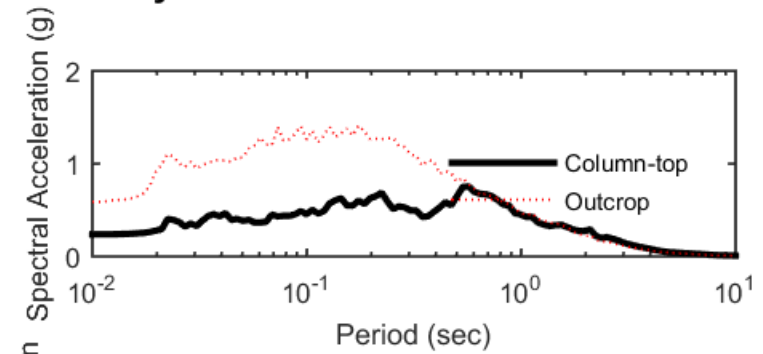
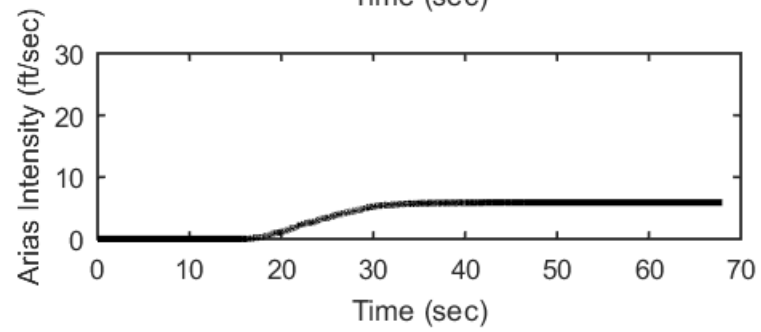
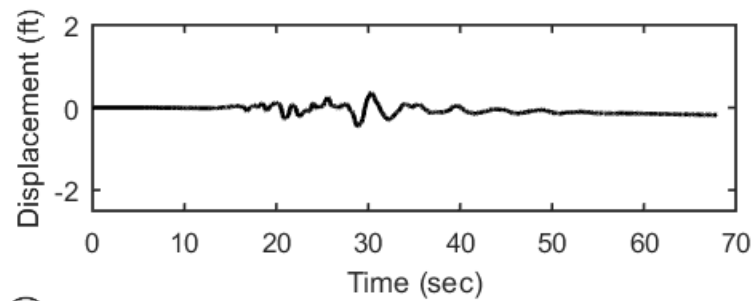
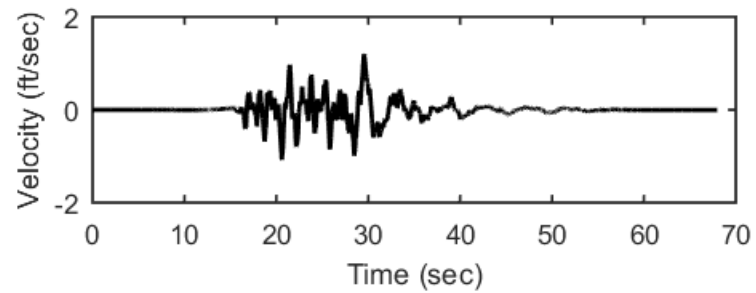
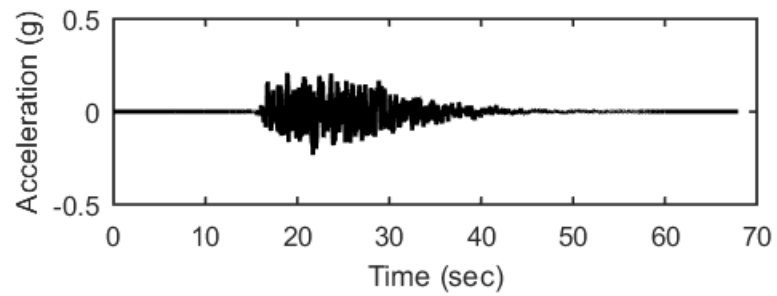
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



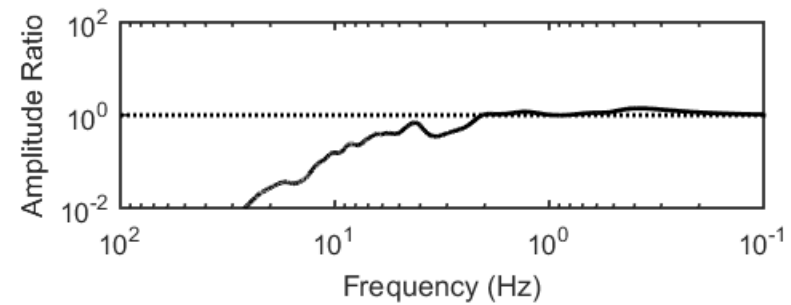
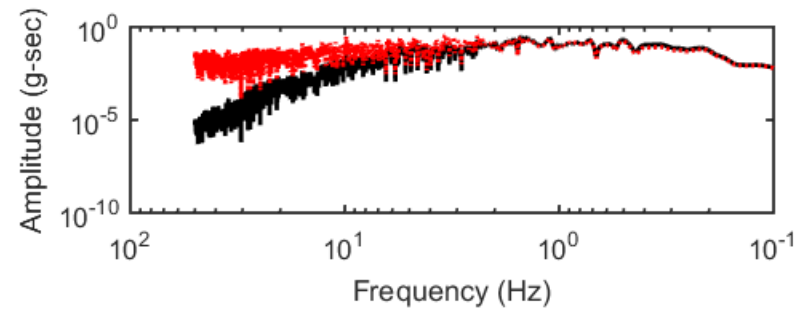
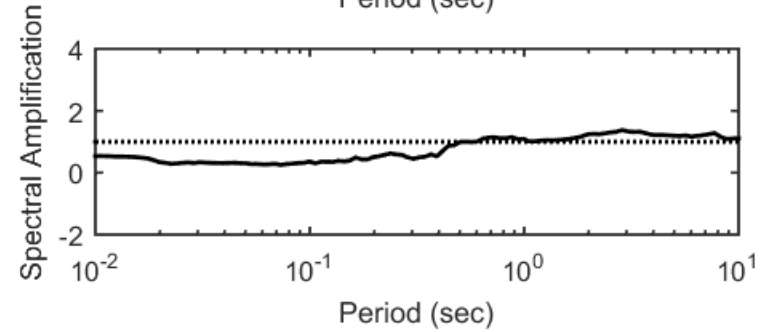
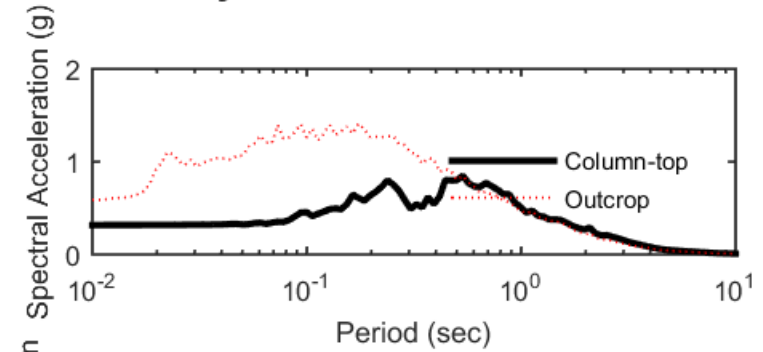
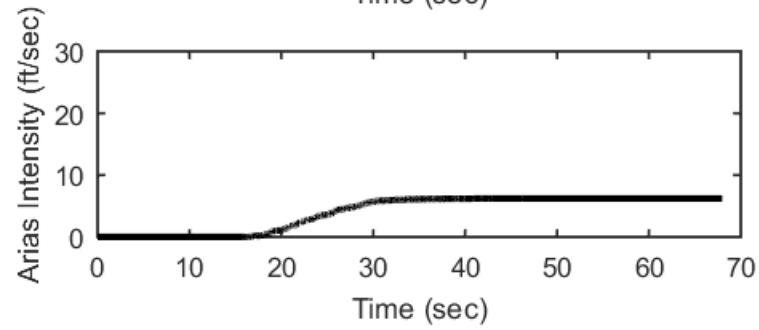
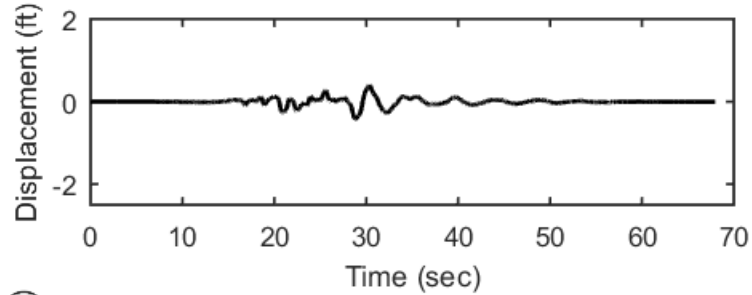
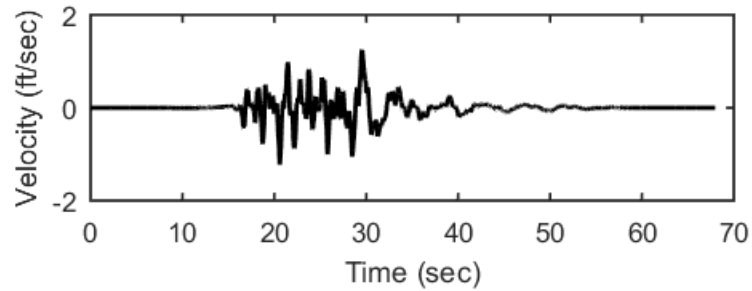
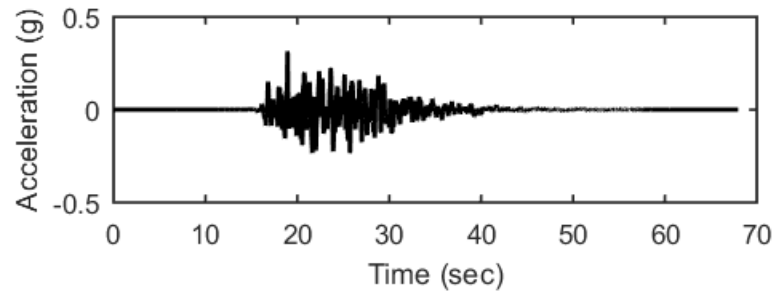
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



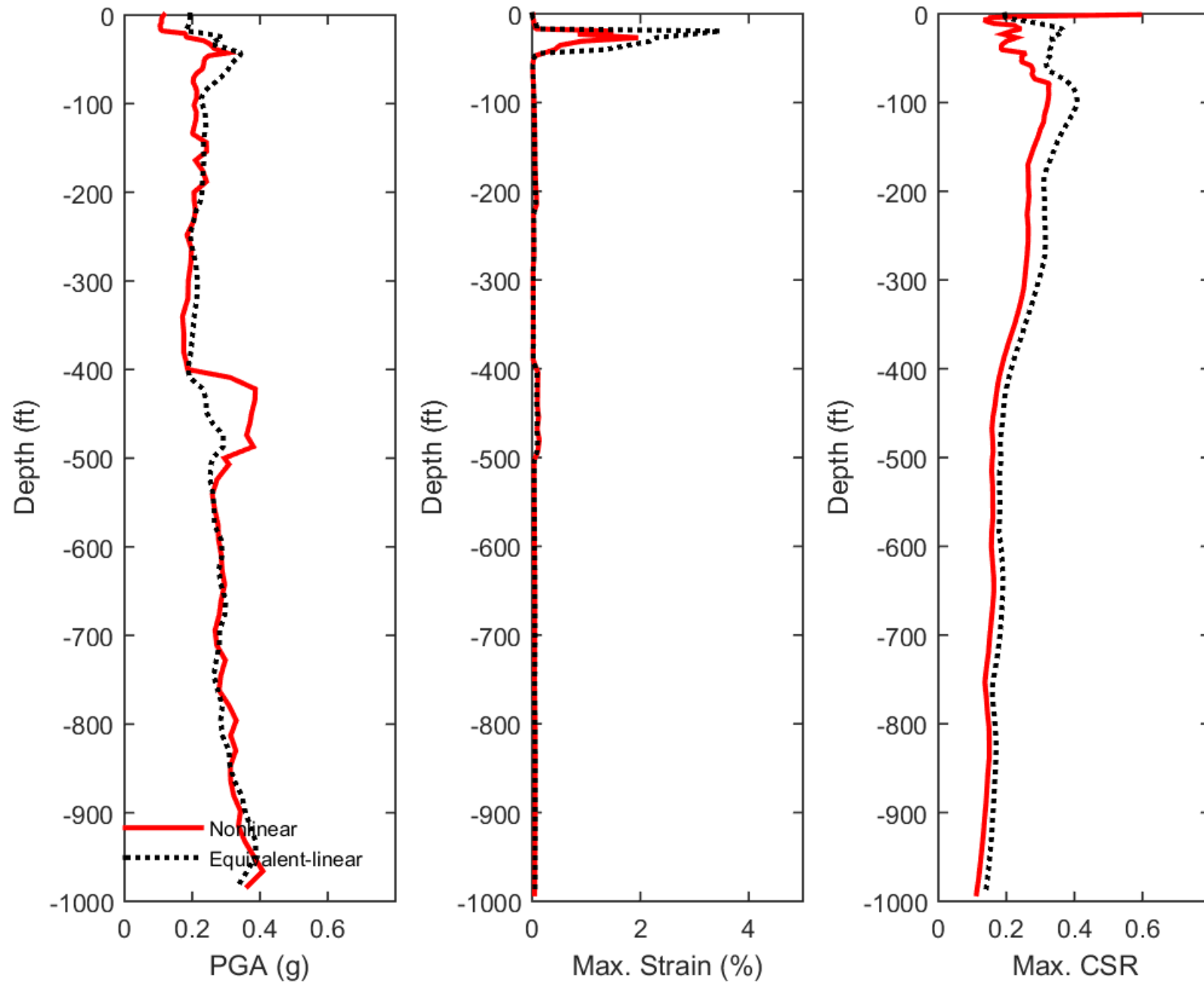
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



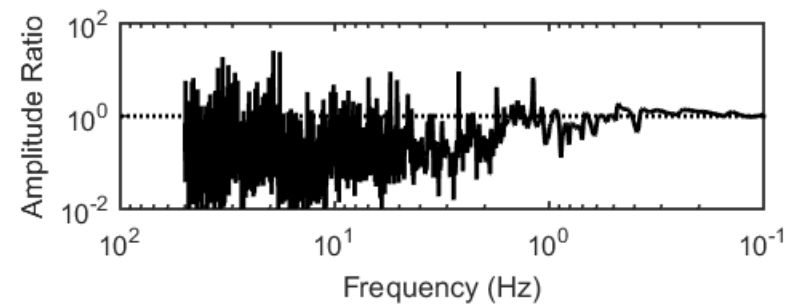
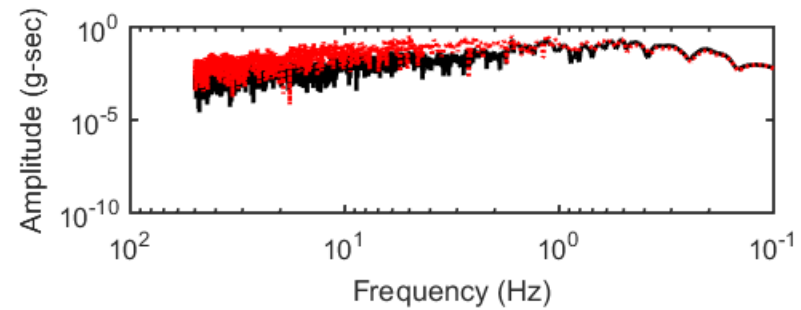
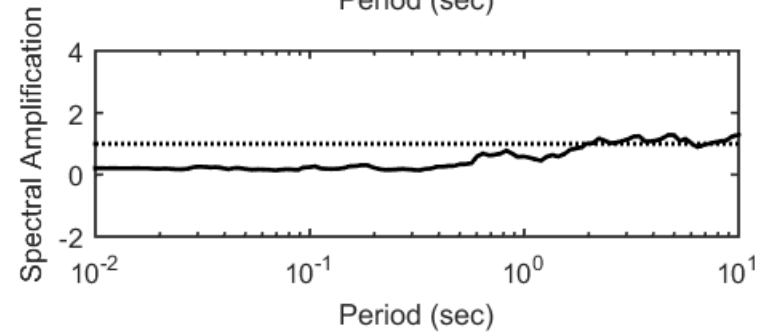
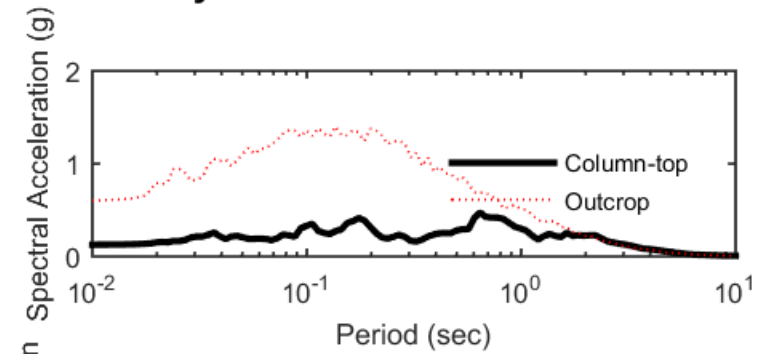
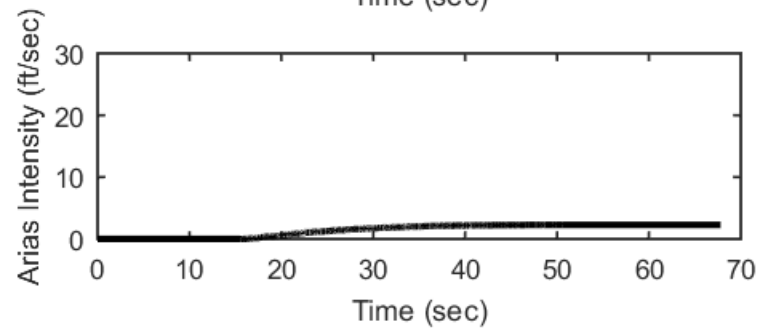
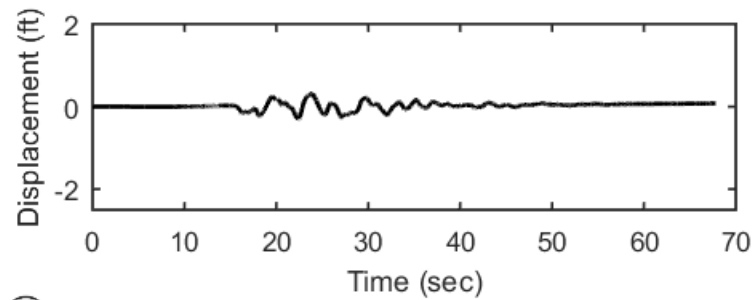
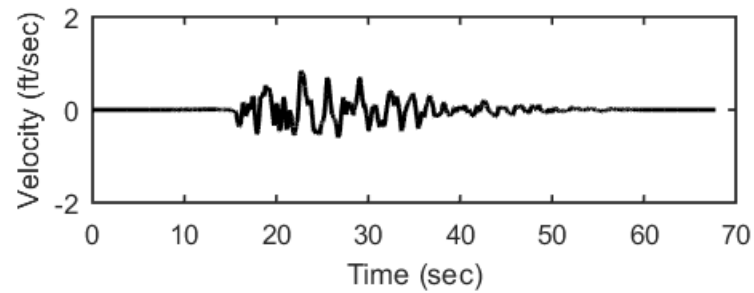
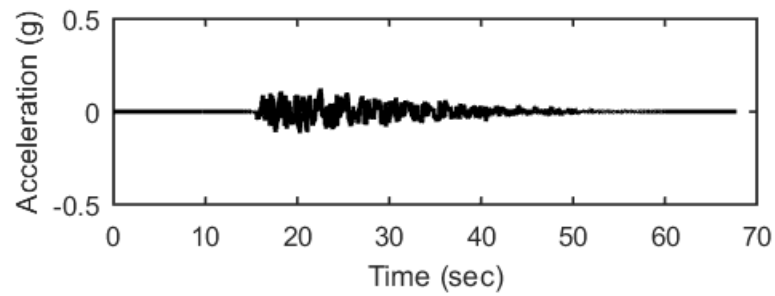
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



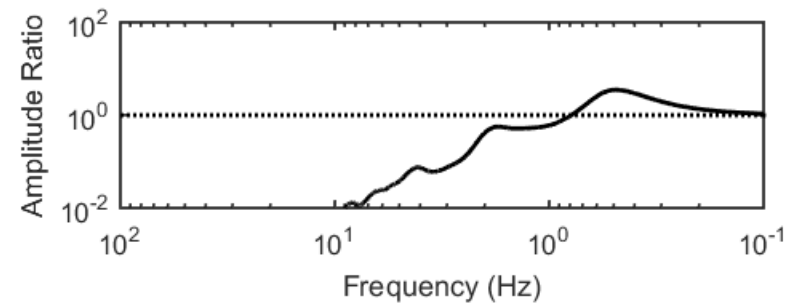
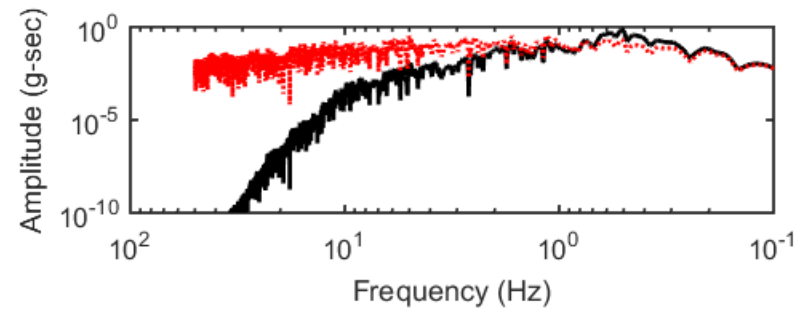
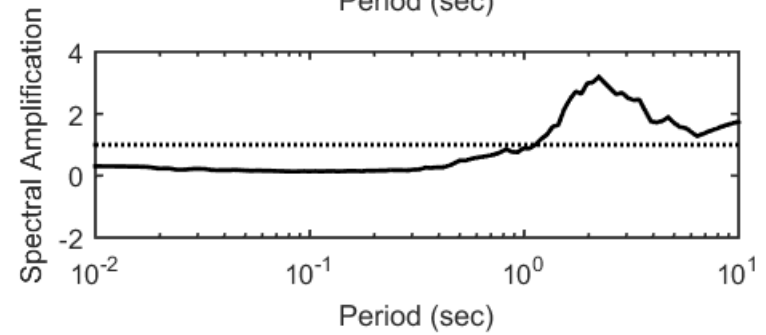
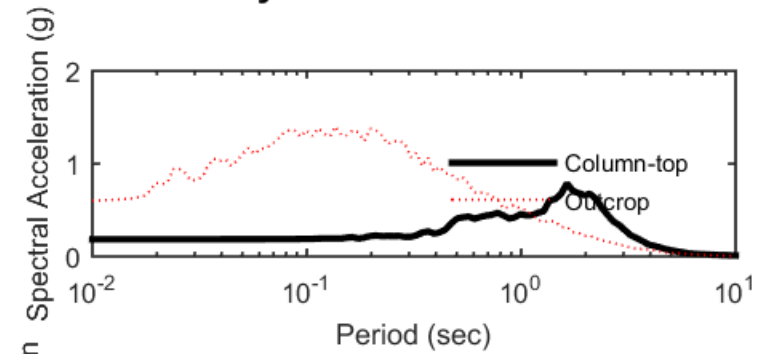
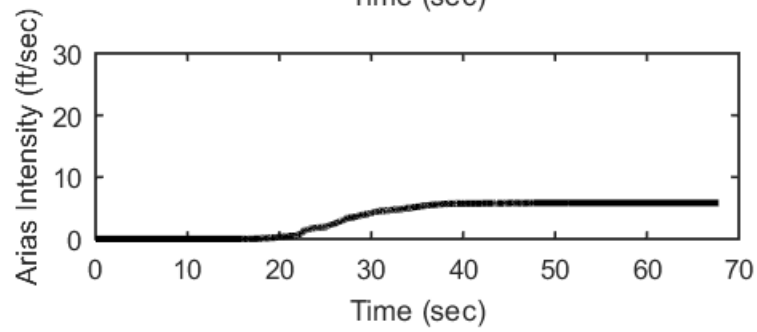
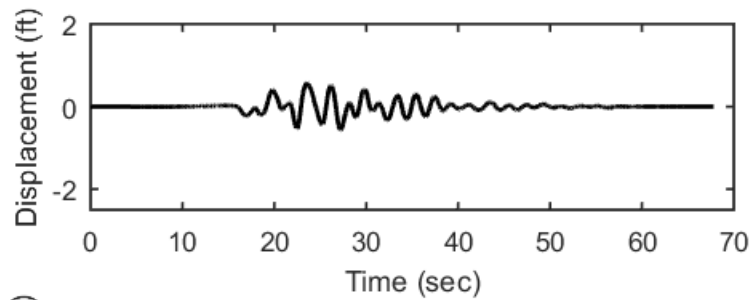
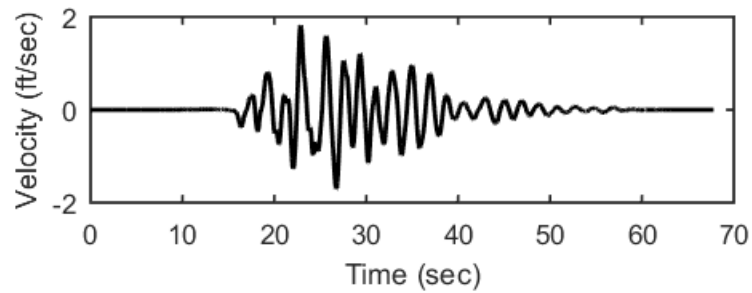
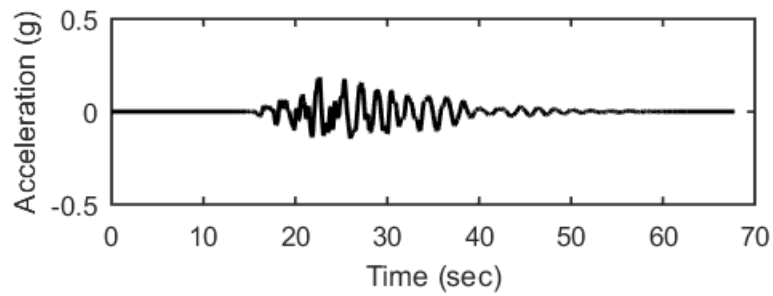
### Profile outputs for Motion: SEE6



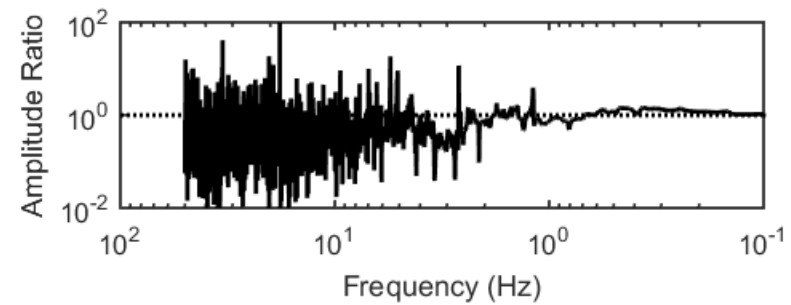
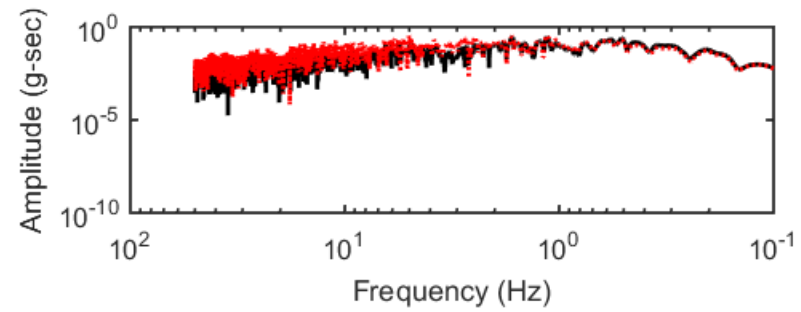
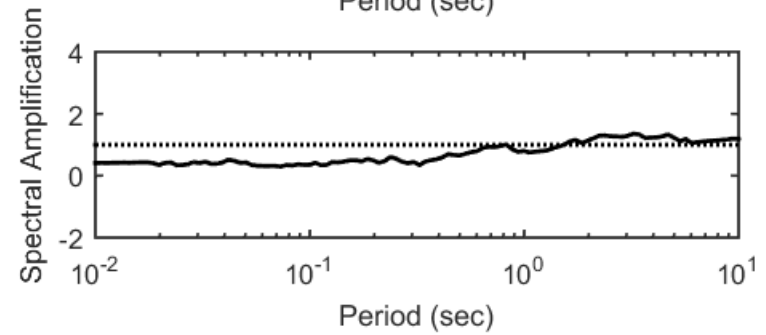
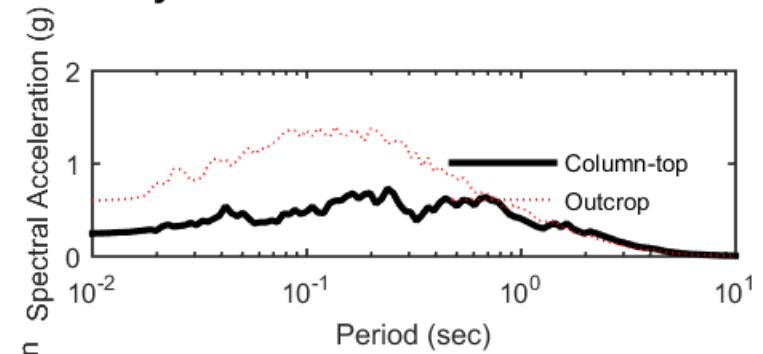
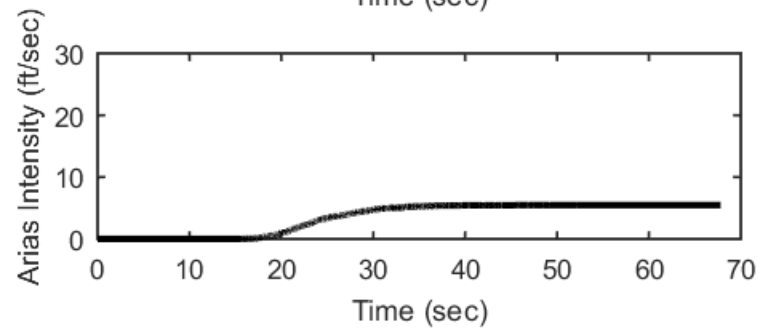
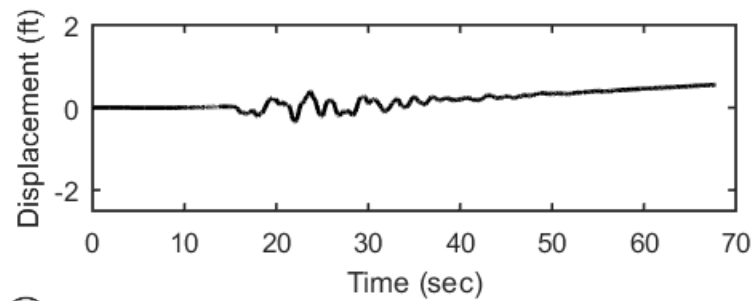
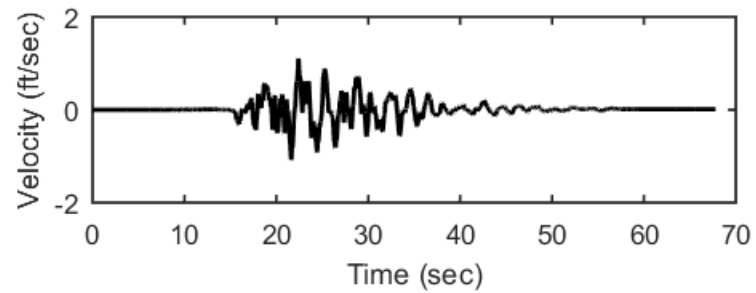
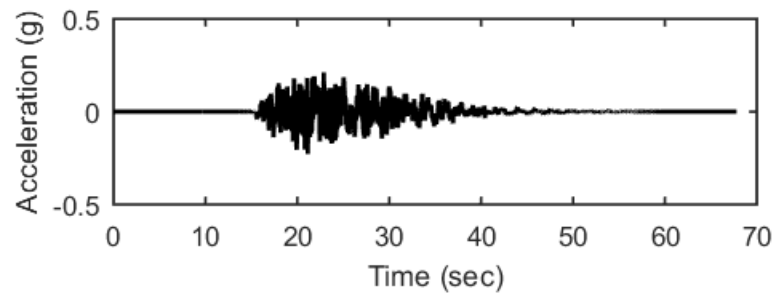
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7

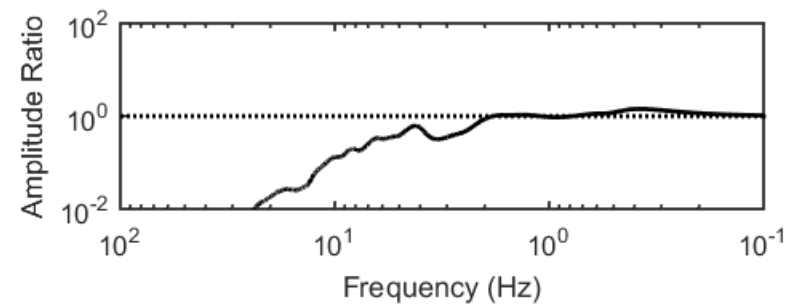
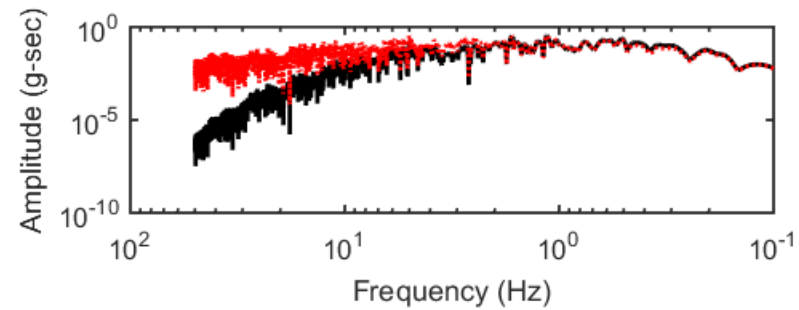
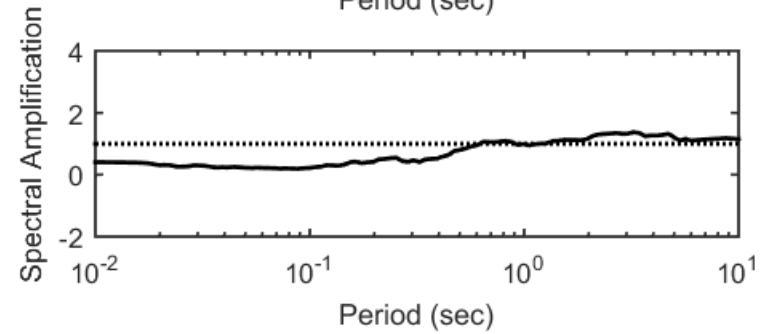
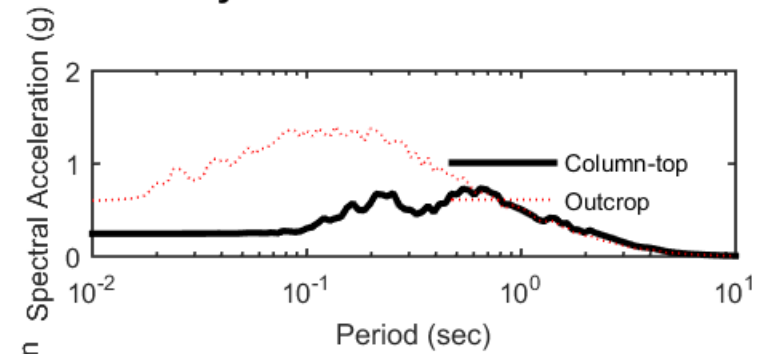
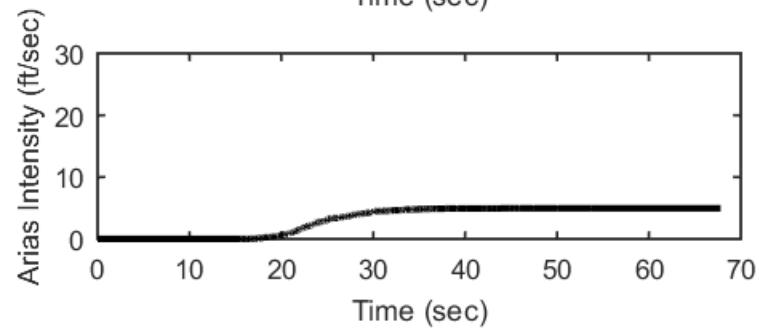
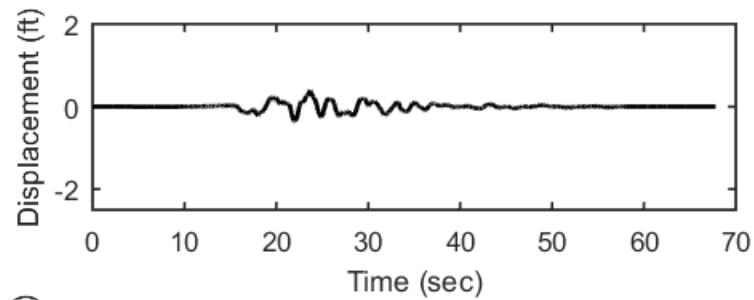
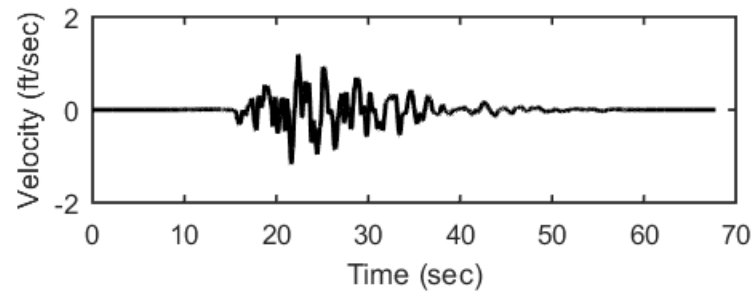
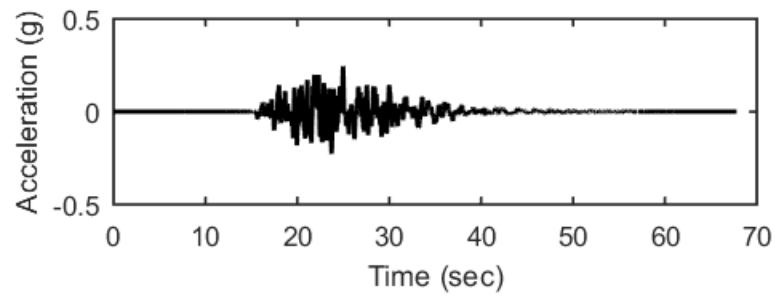


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7

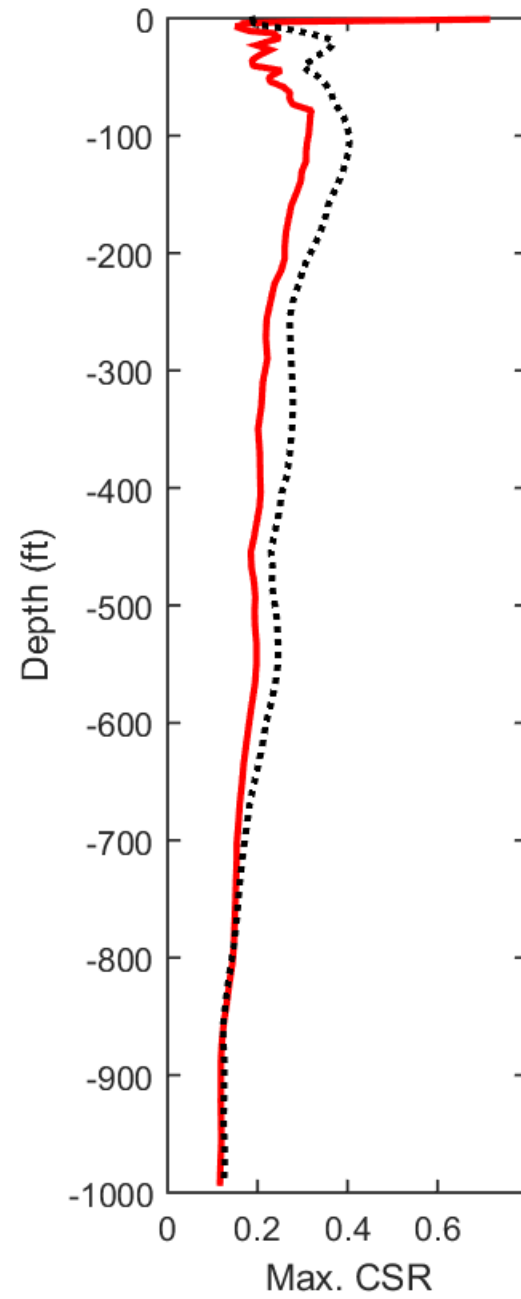
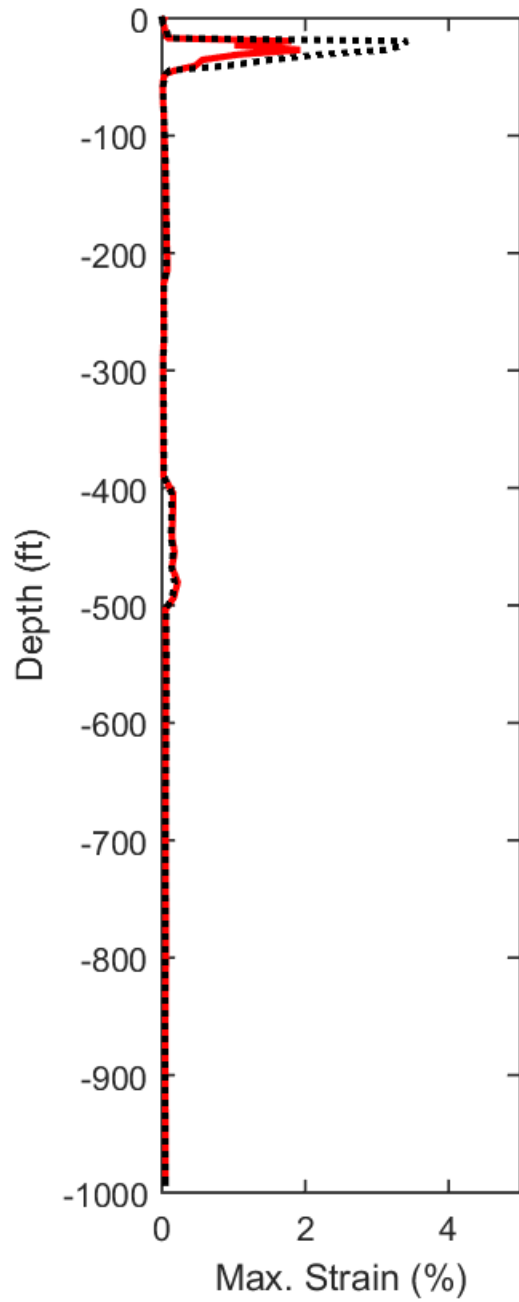
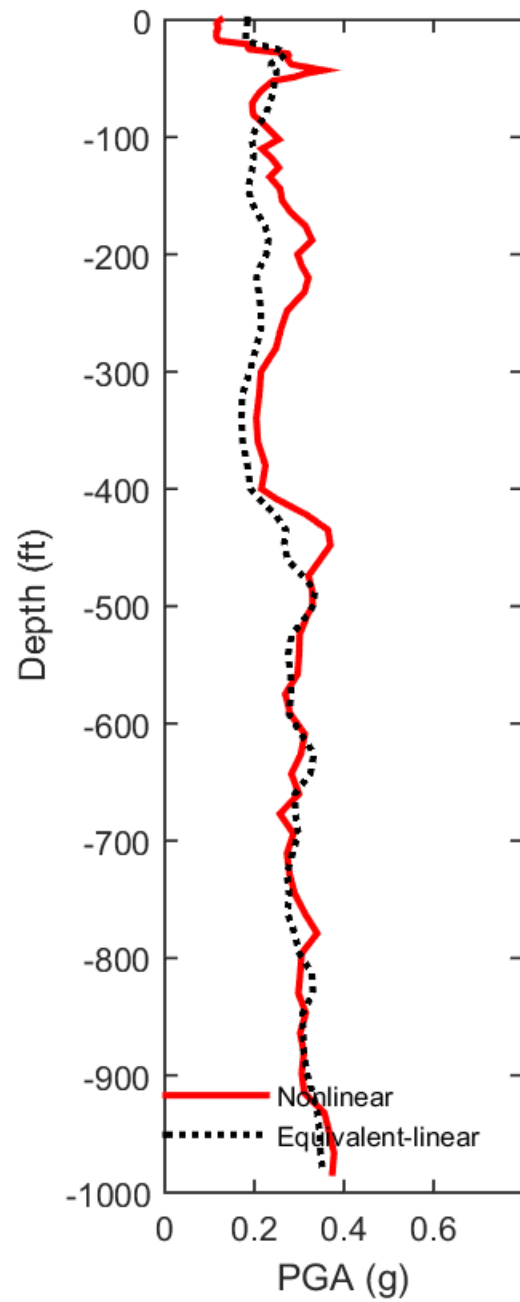




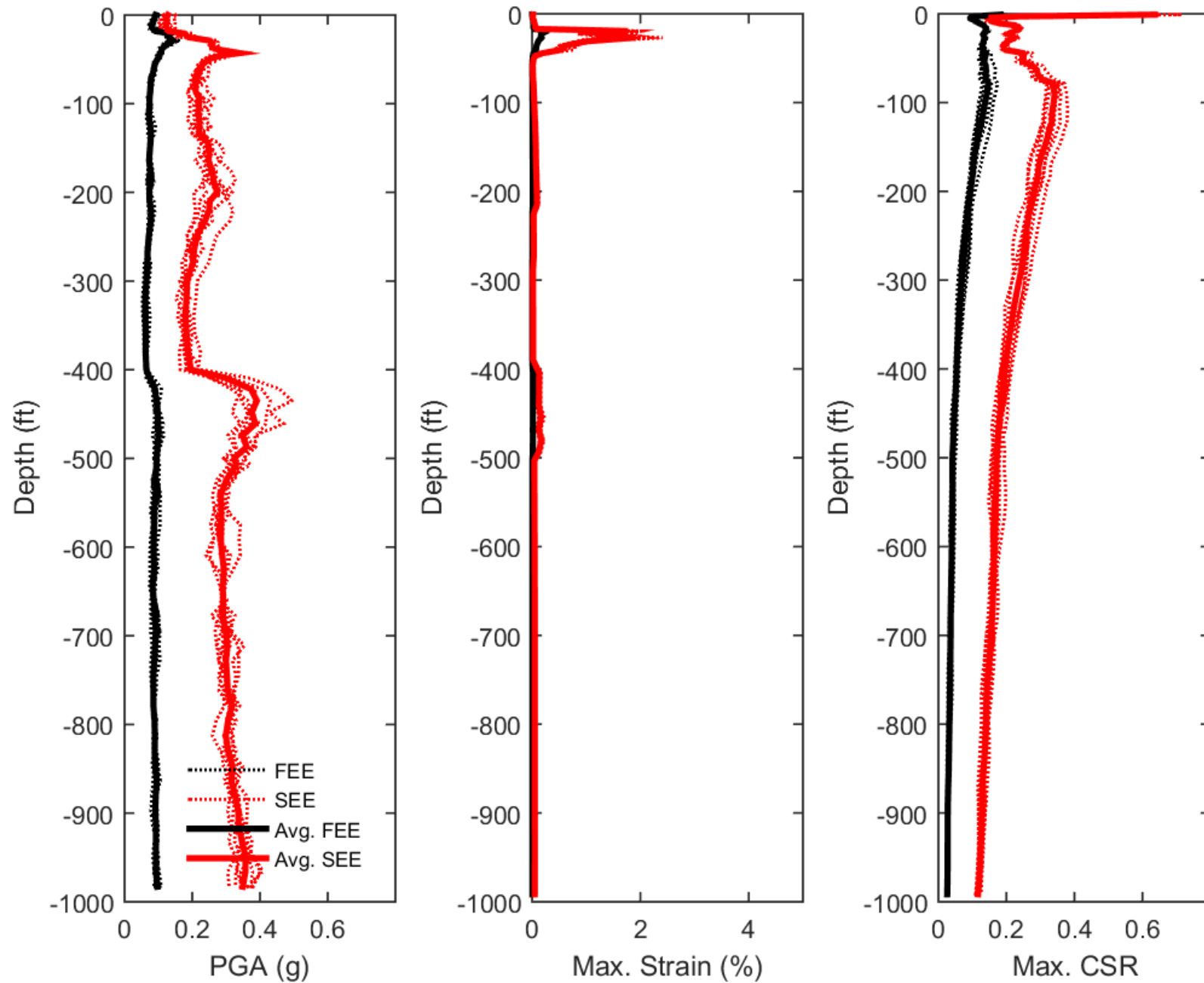
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



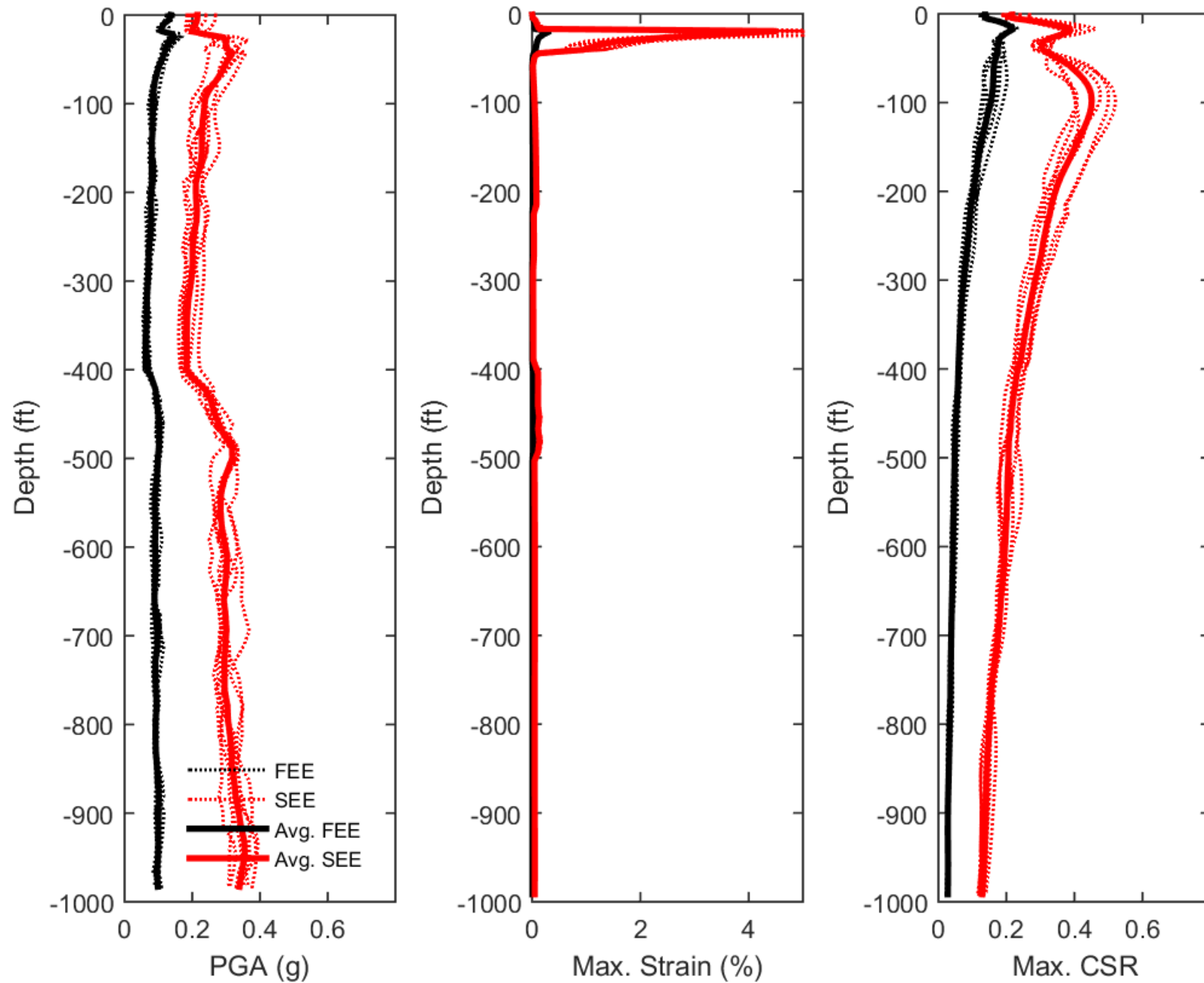
### Profile outputs for Motion: SEE7



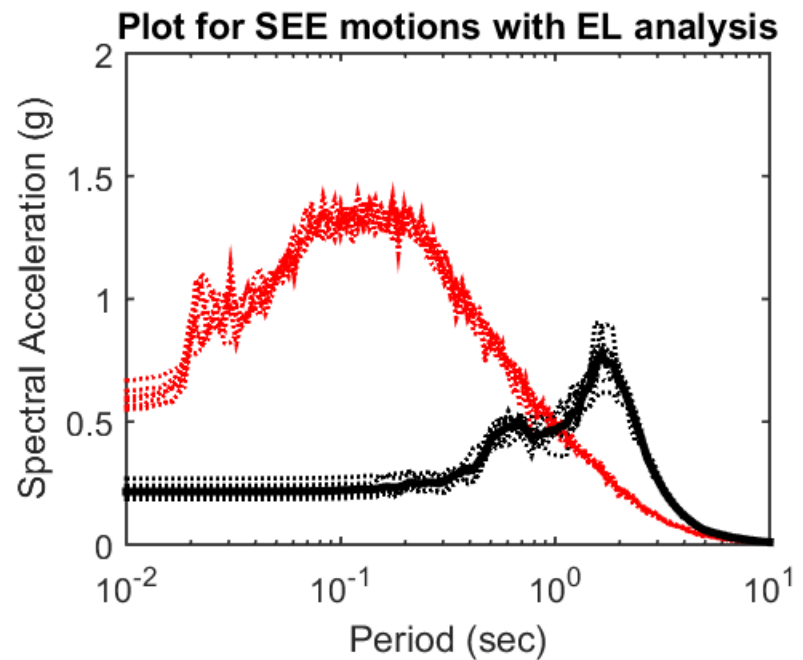
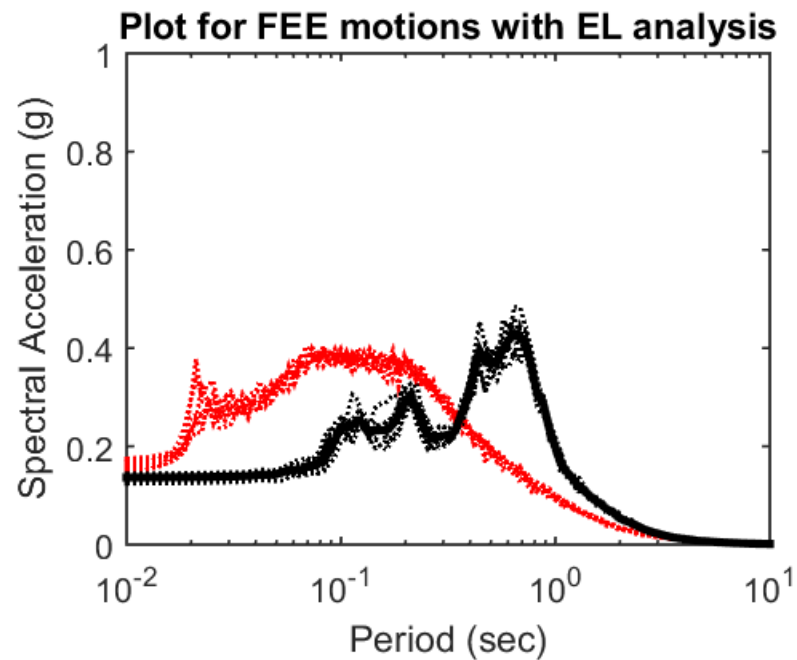
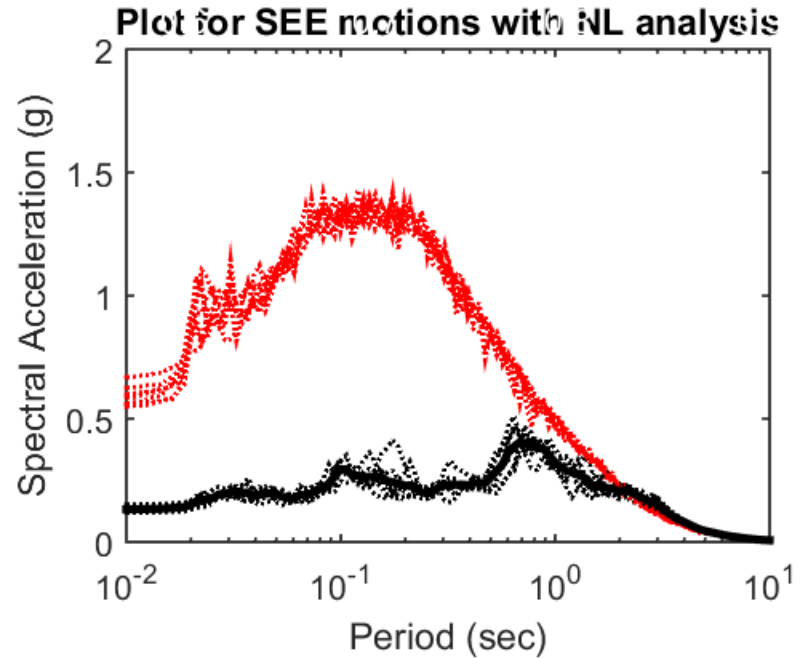
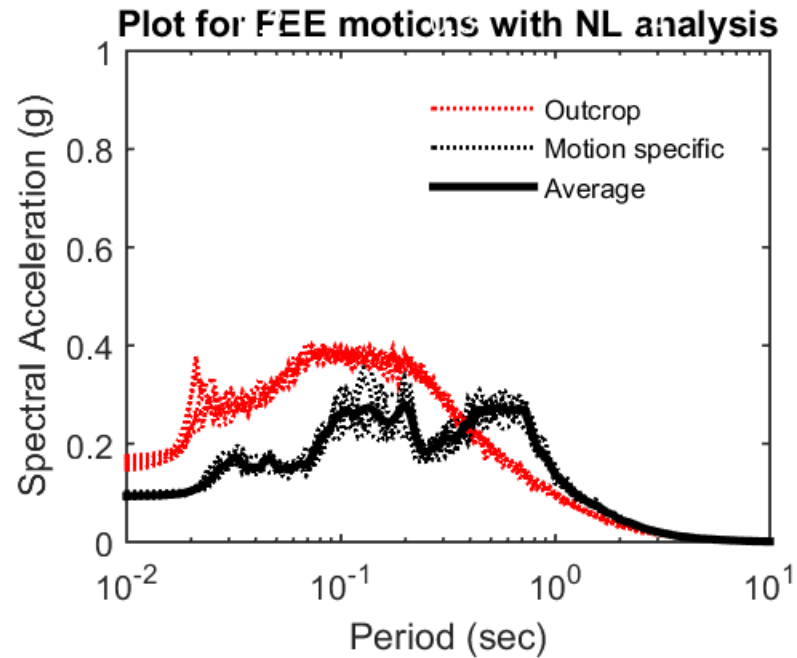
## Summary of the profile outputs for Nonlinear analysis



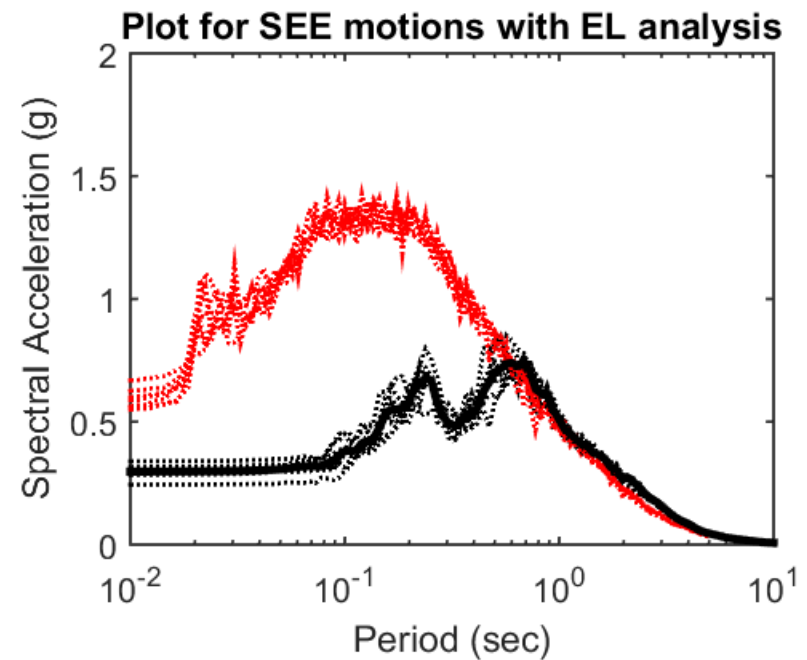
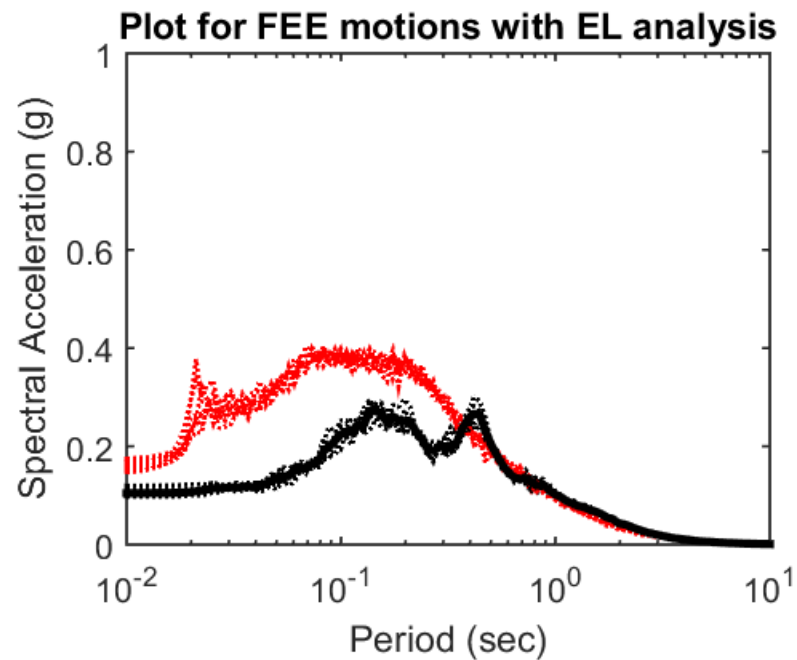
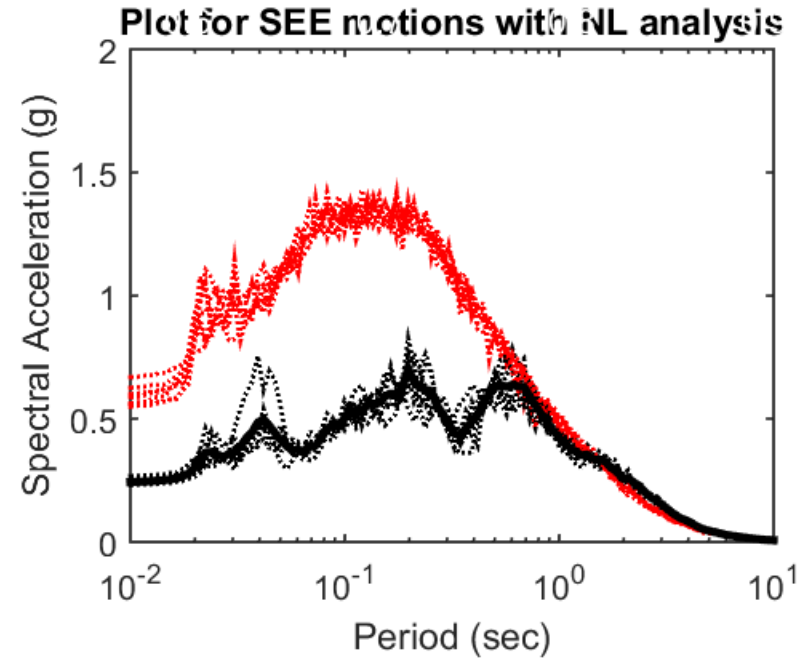
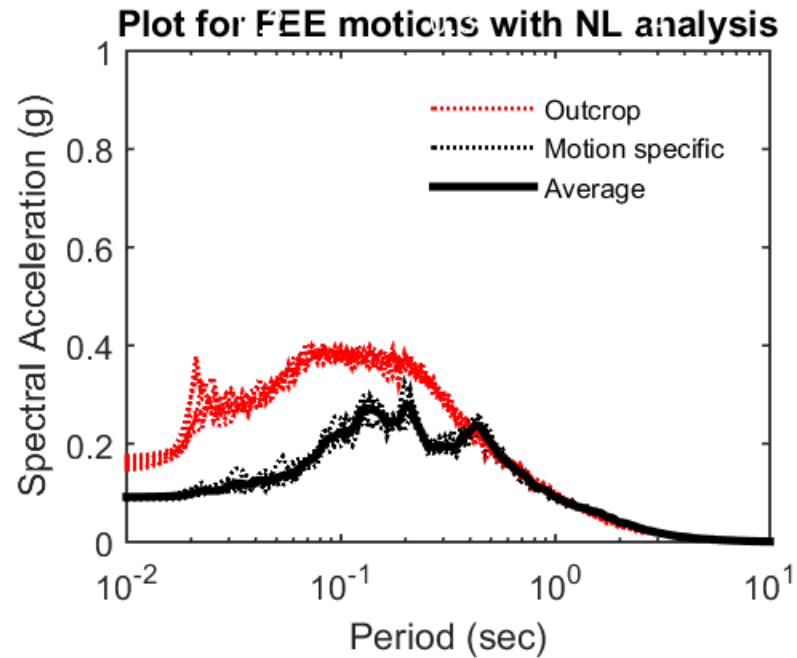
## Summary of the profile outputs for Equivalent-linear analysis



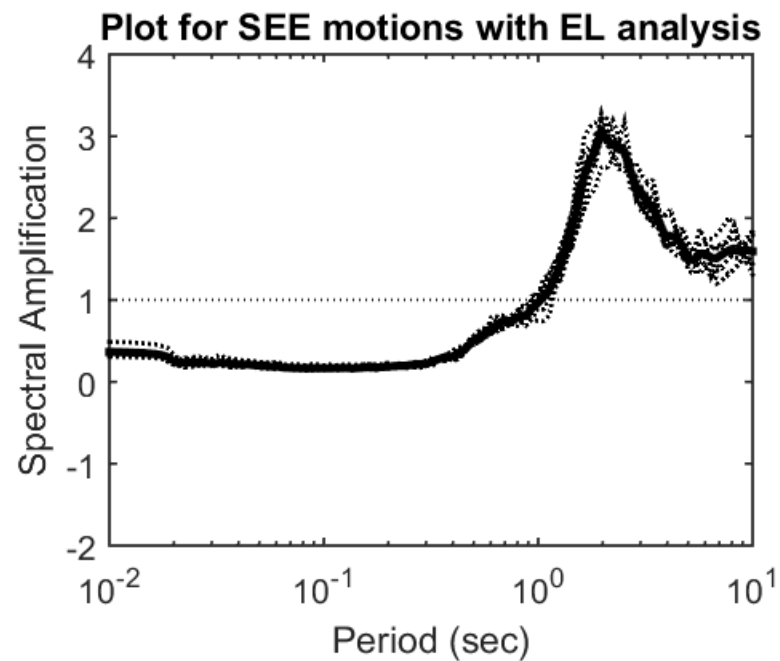
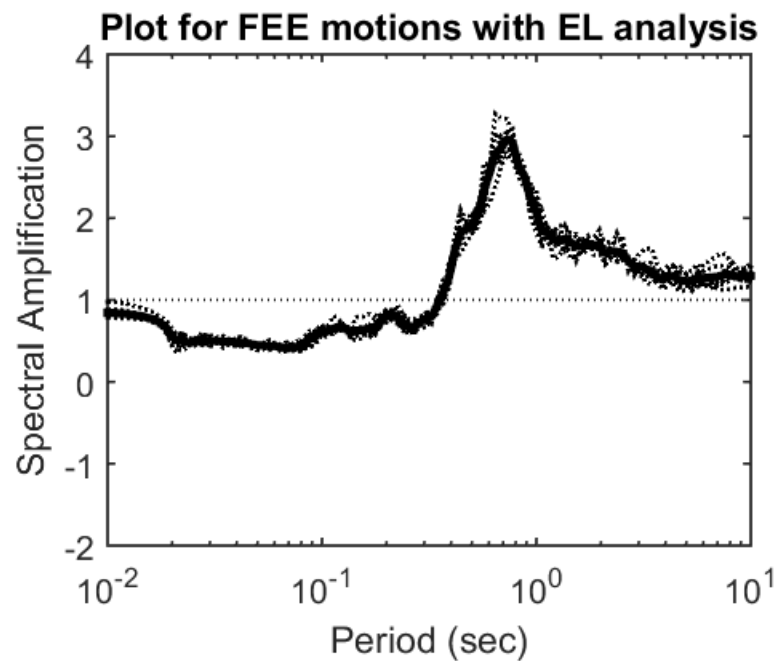
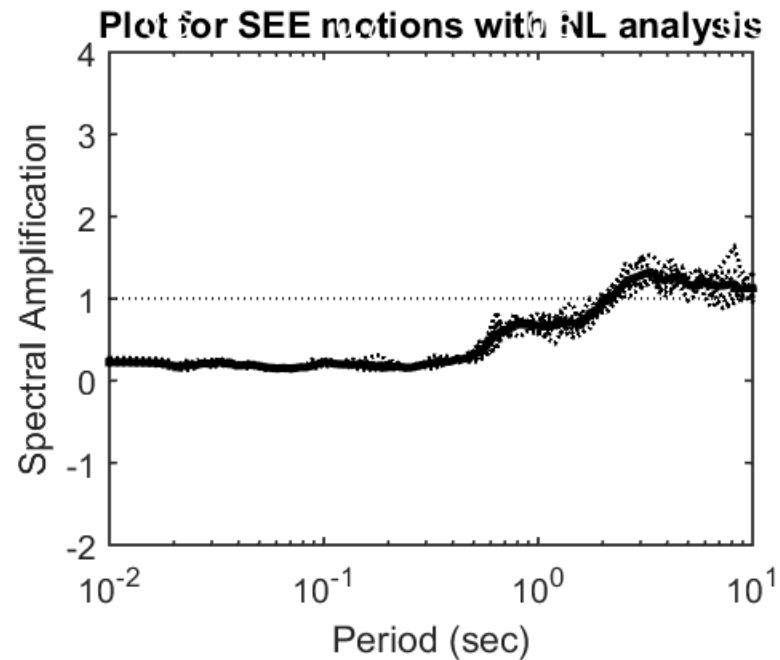
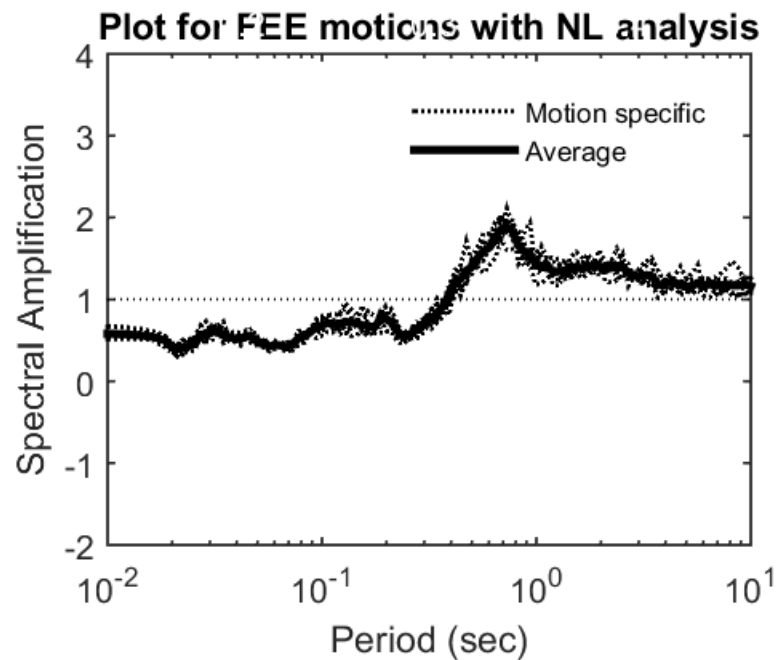
## Summary plots: RSA at ground surface



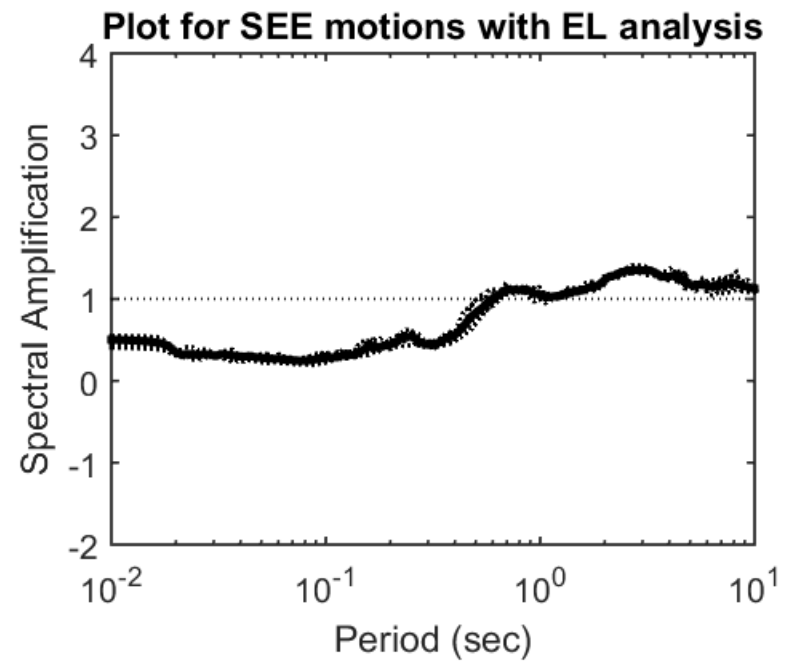
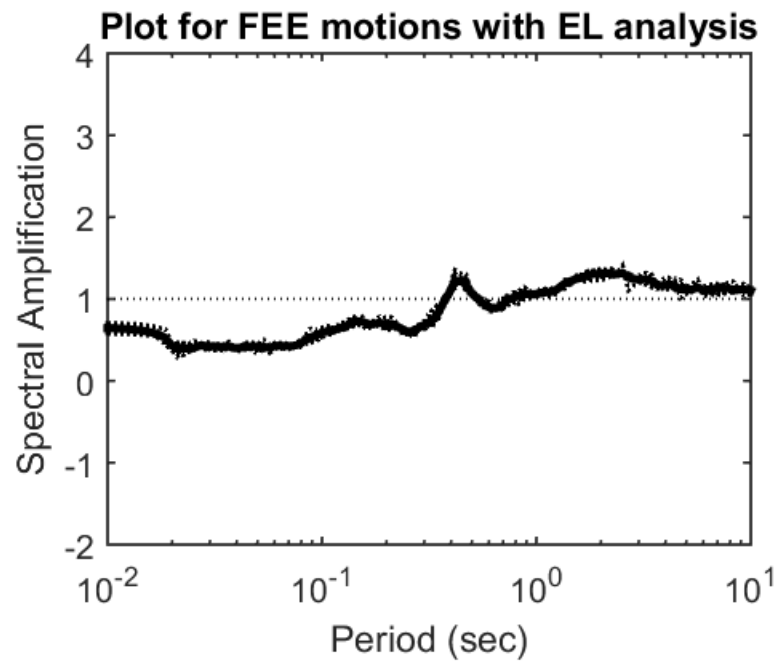
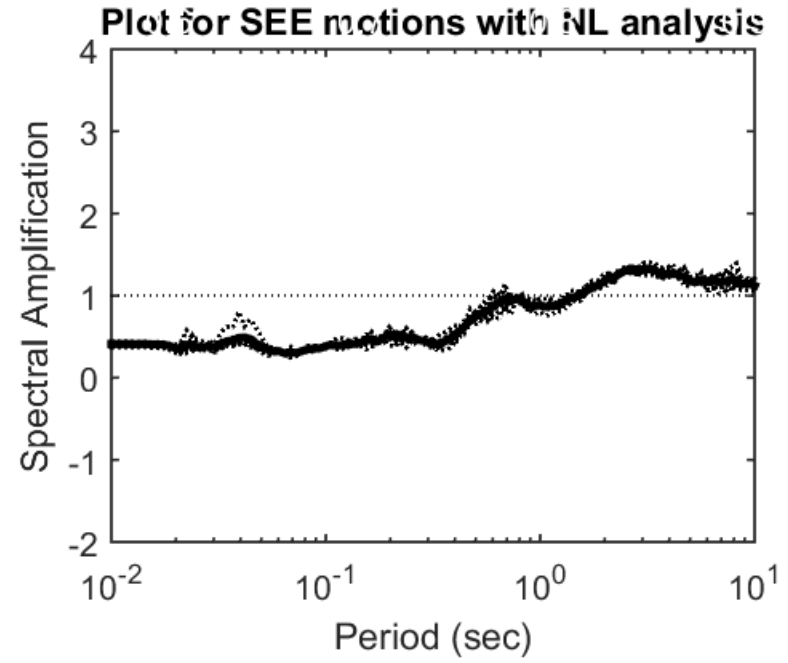
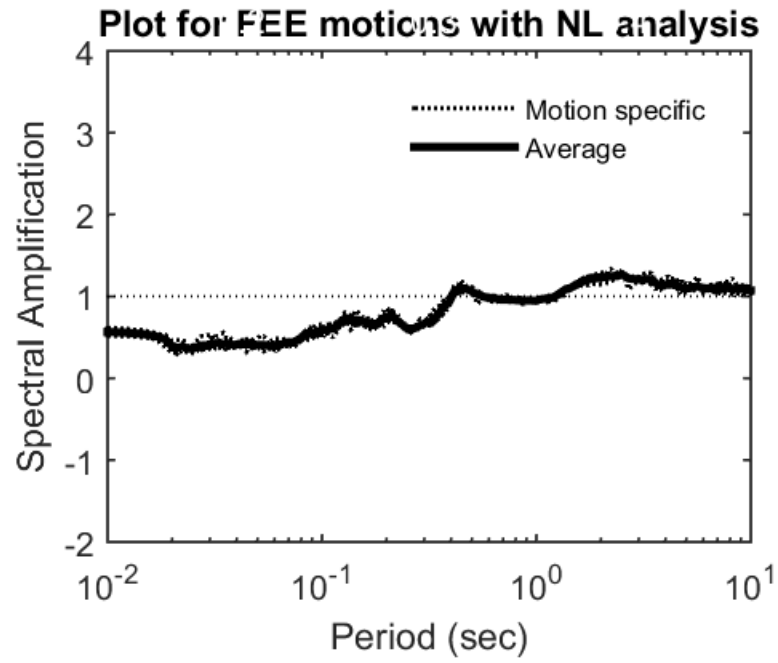
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



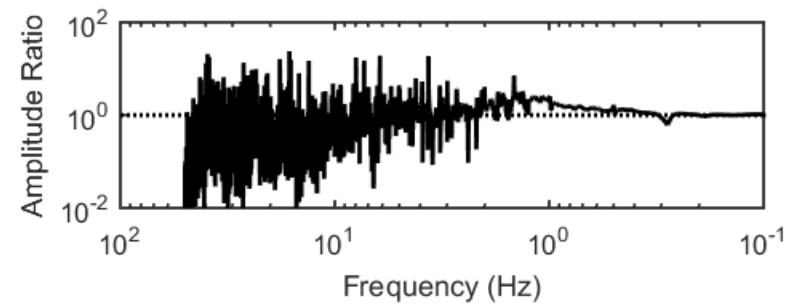
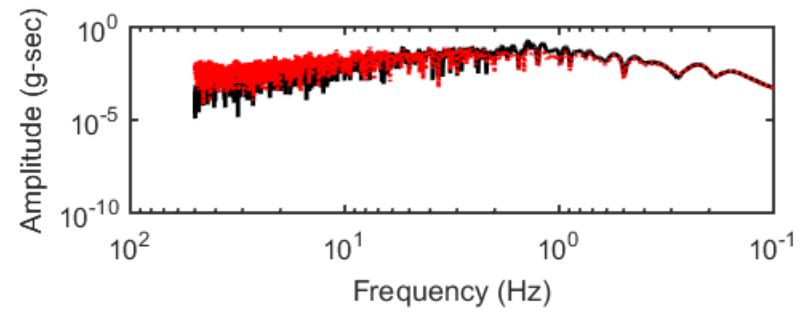
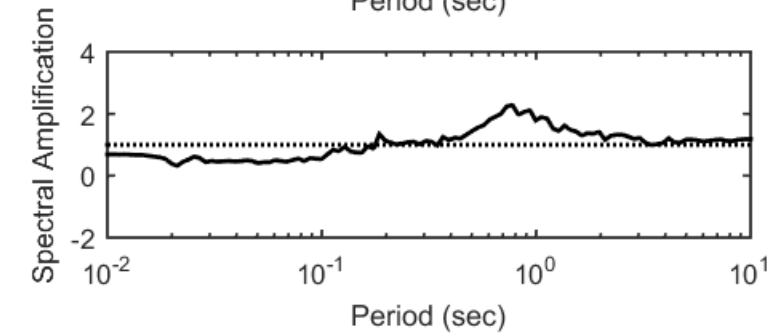
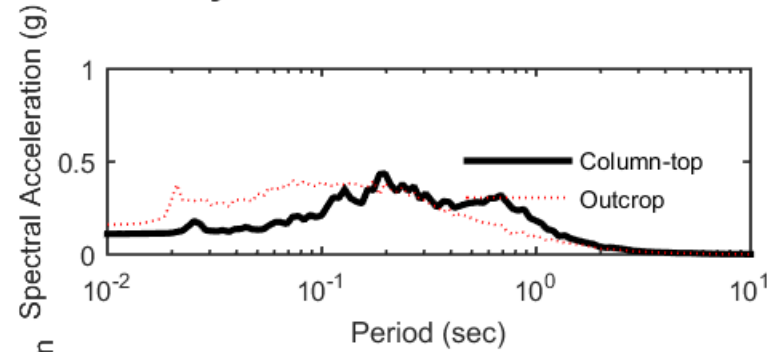
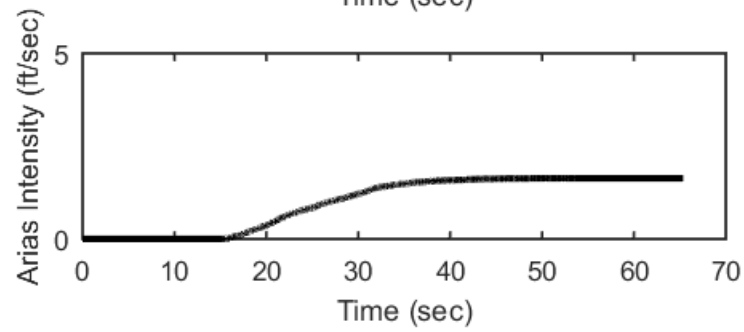
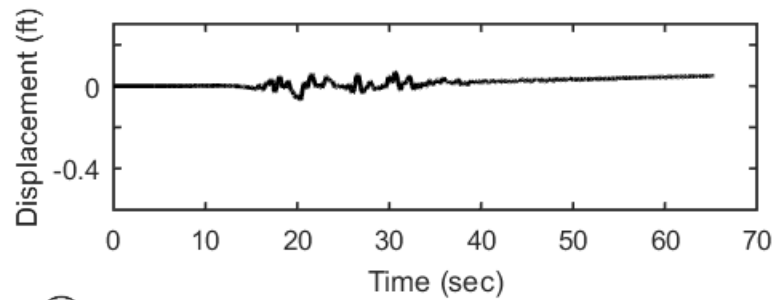
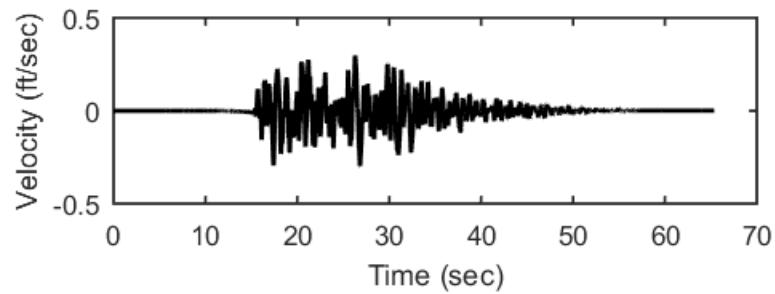
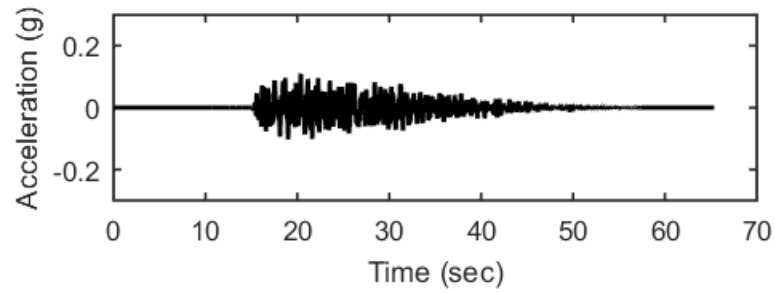
## Summary plots: Spectral amplification at top of Marl



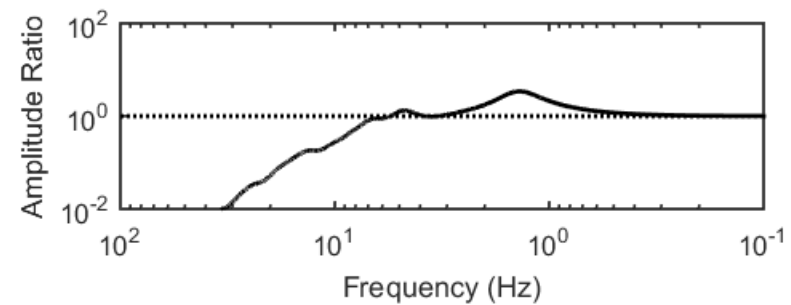
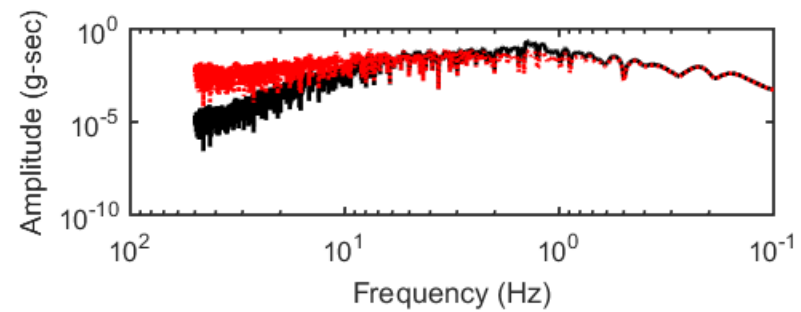
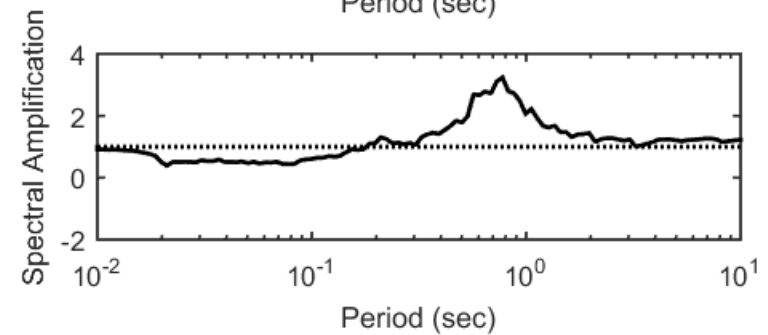
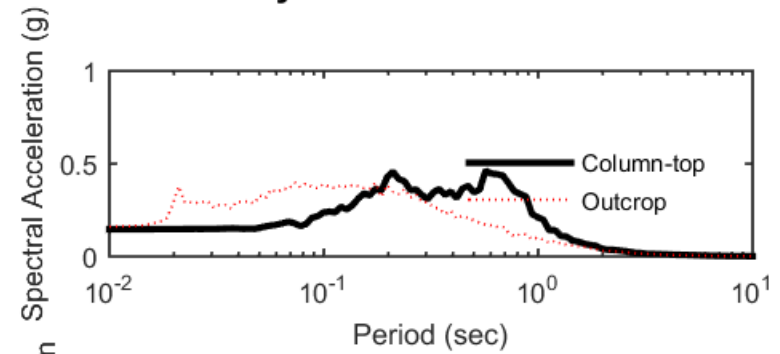
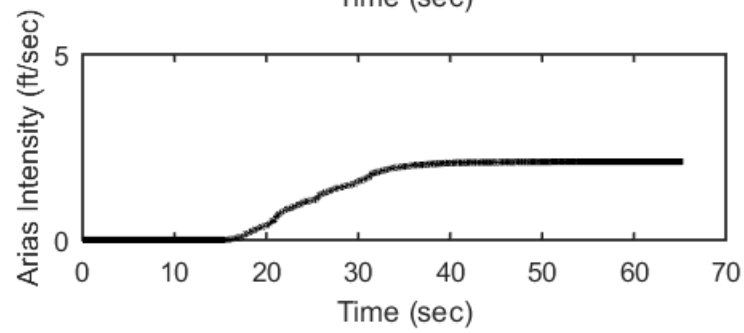
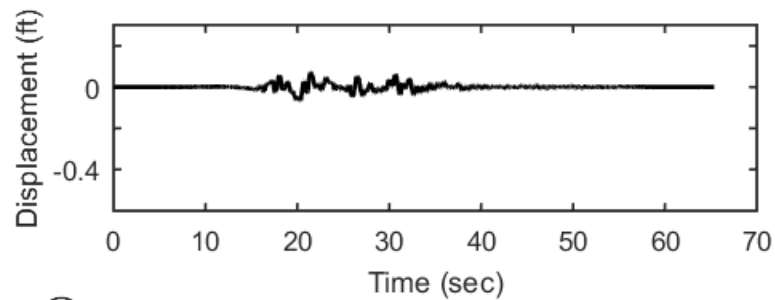
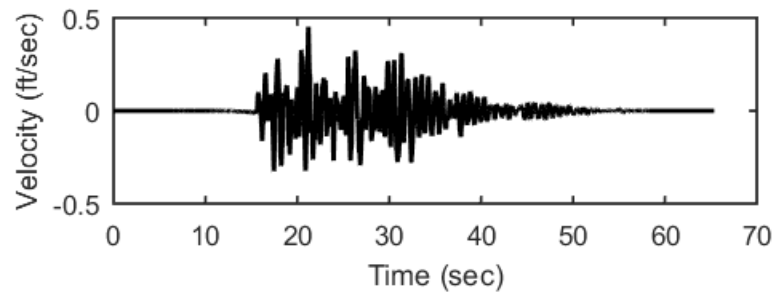
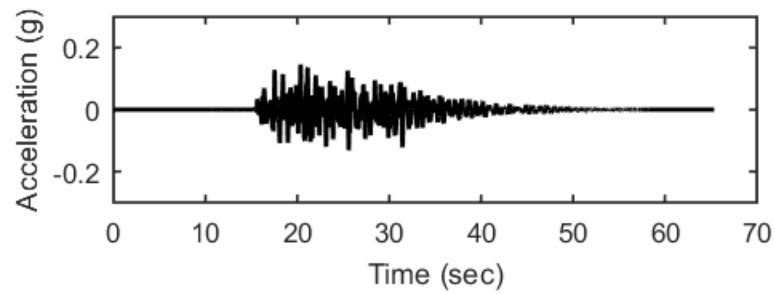


## **BASE MODEL AND HIGH SHEAR WAVE**

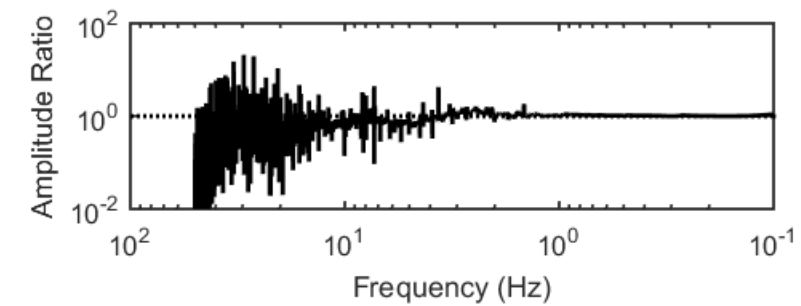
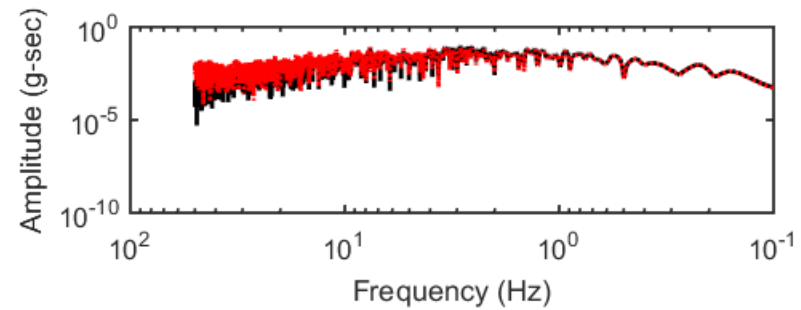
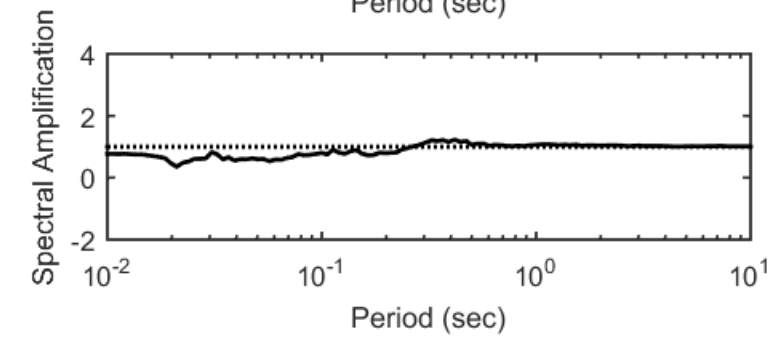
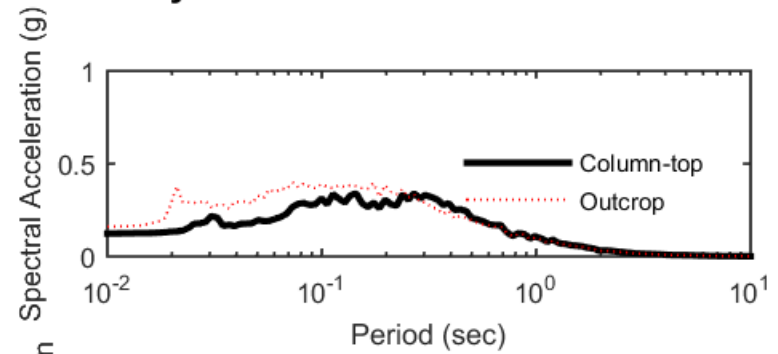
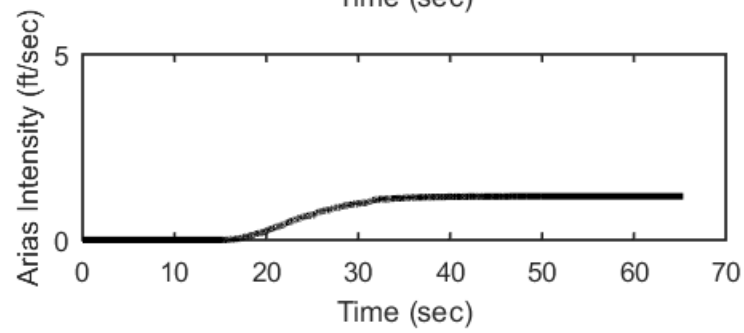
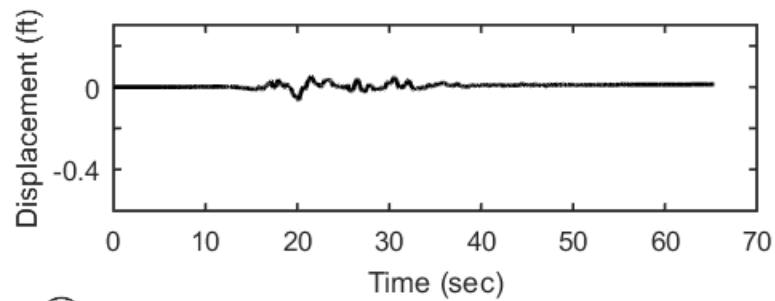
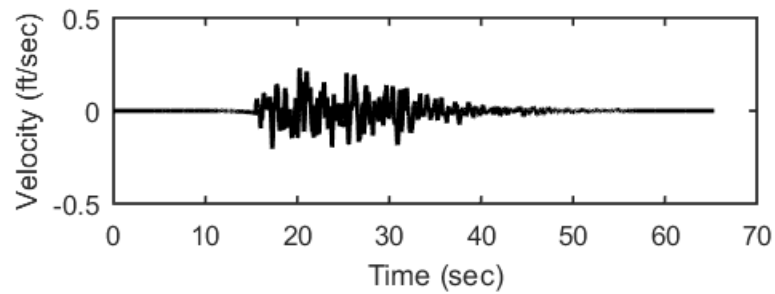
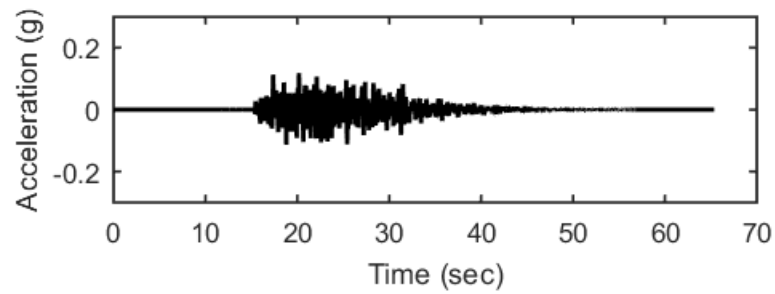
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



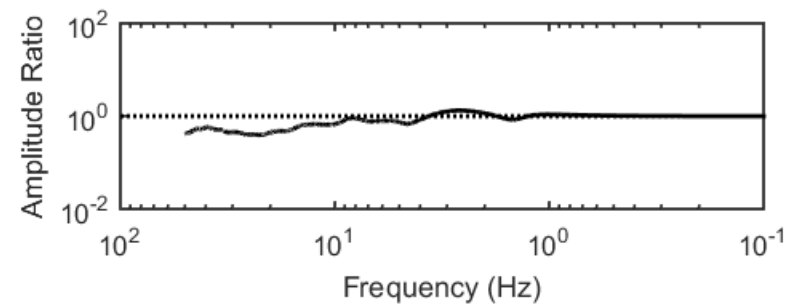
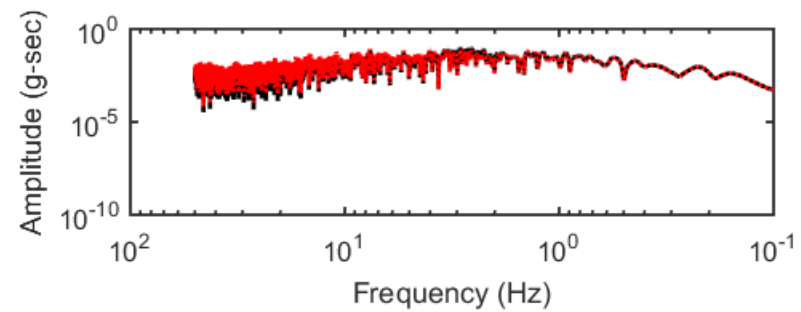
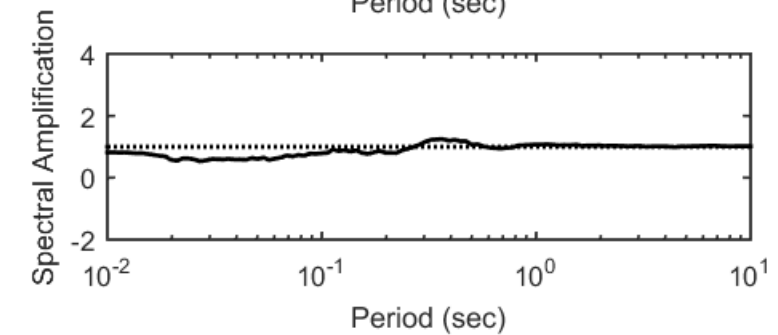
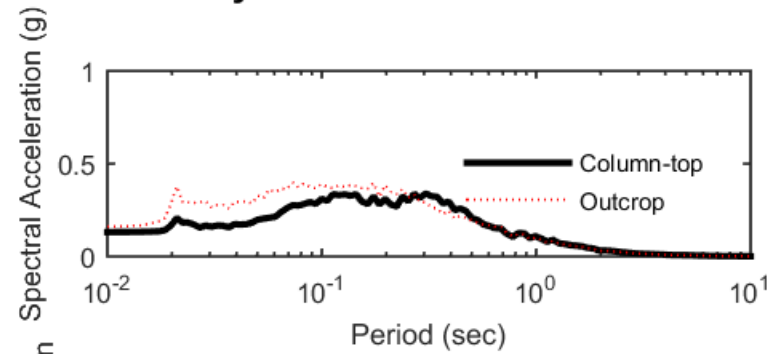
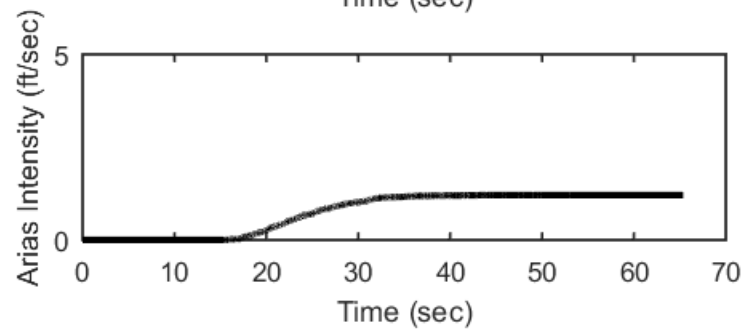
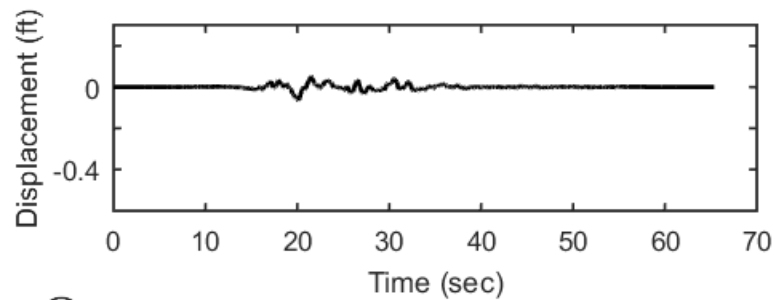
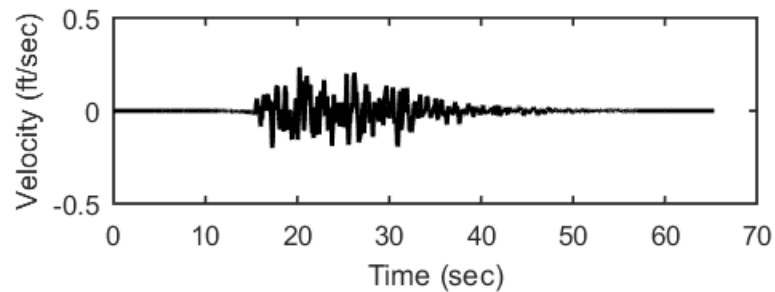
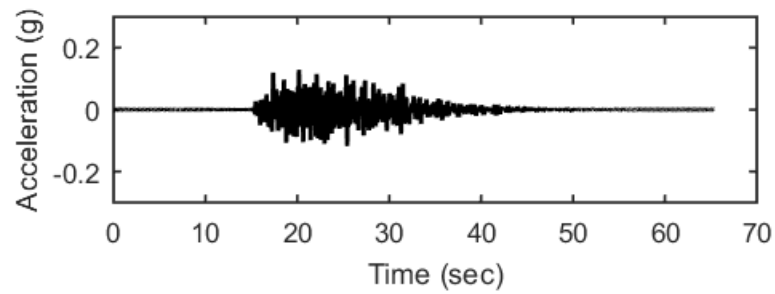
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



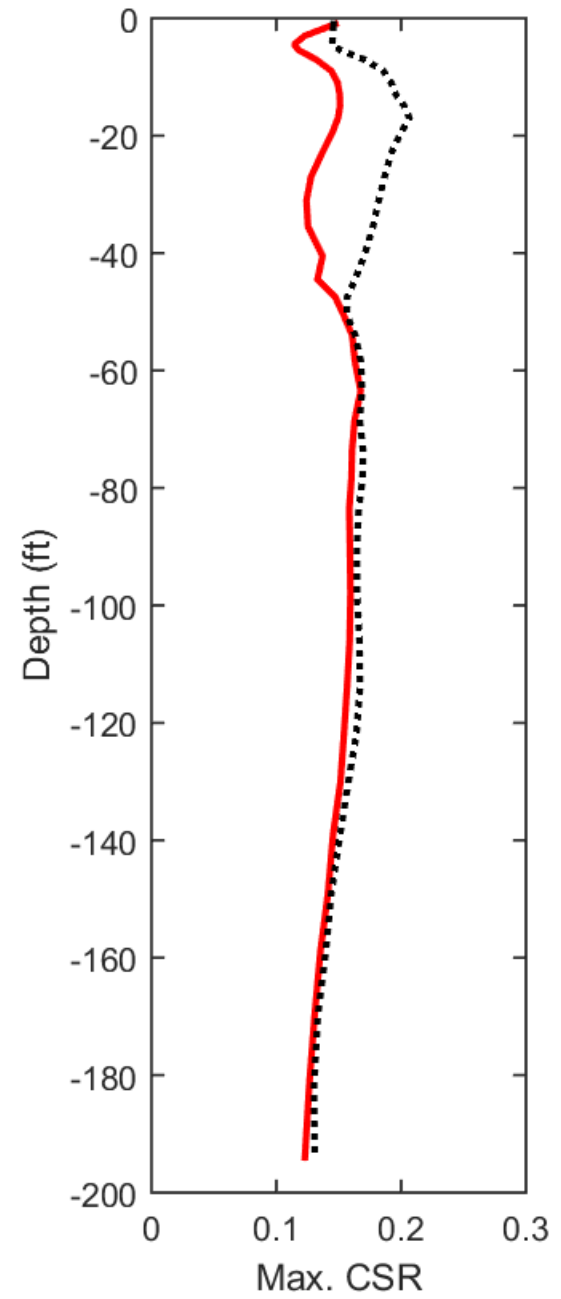
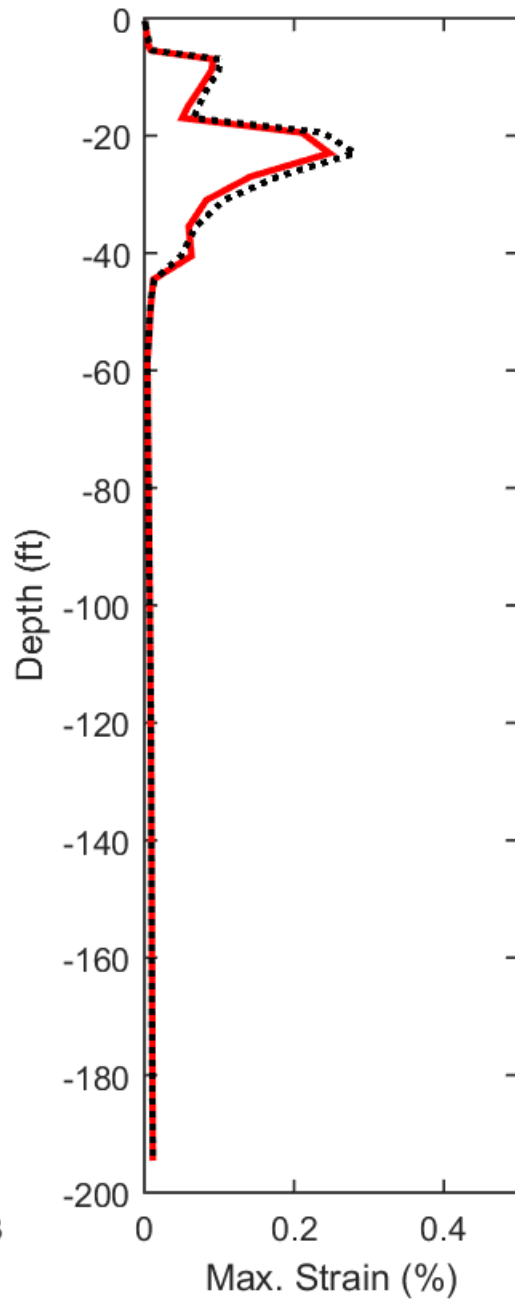
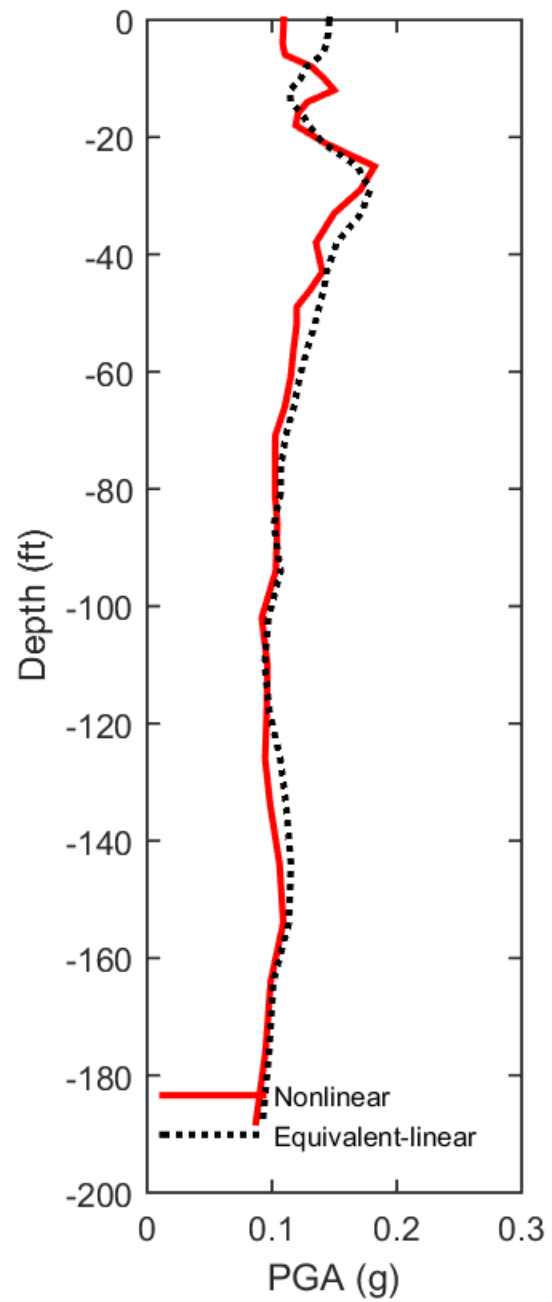
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



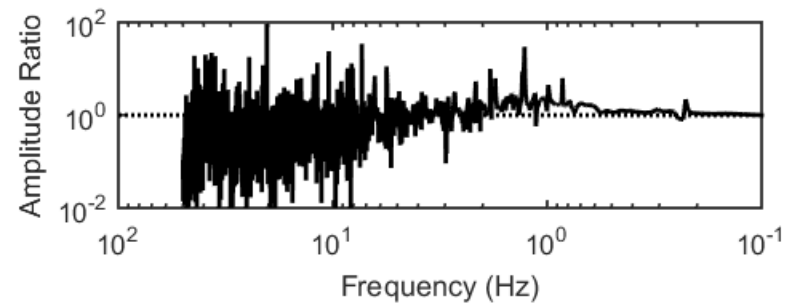
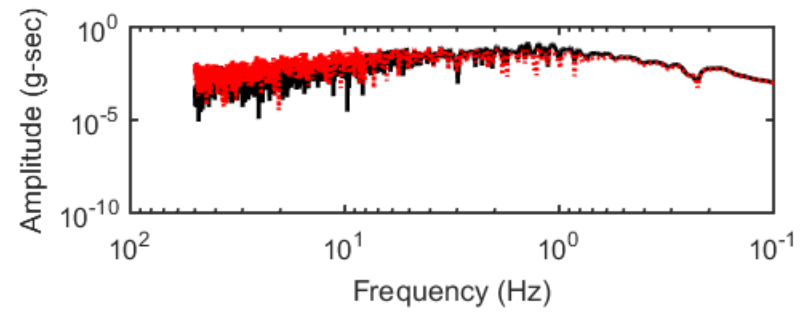
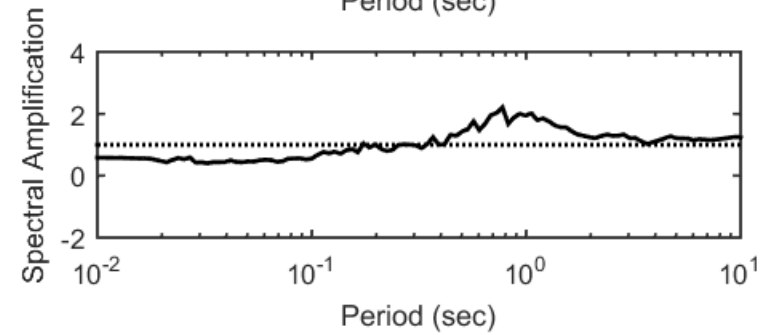
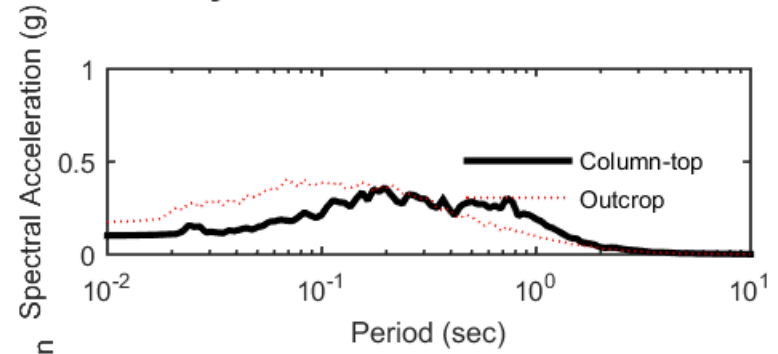
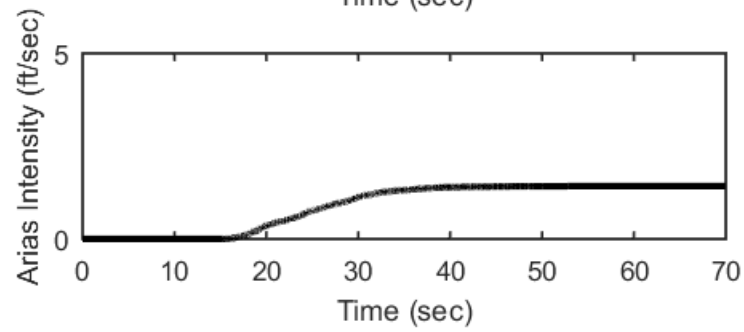
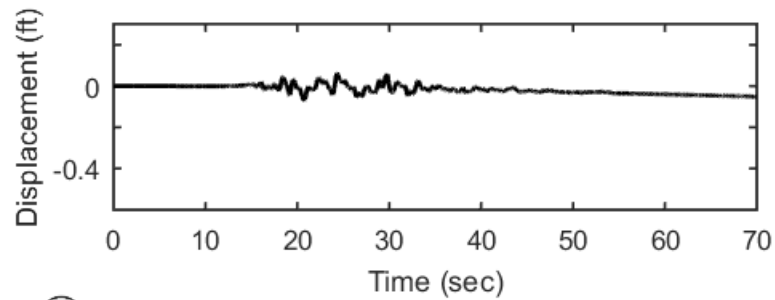
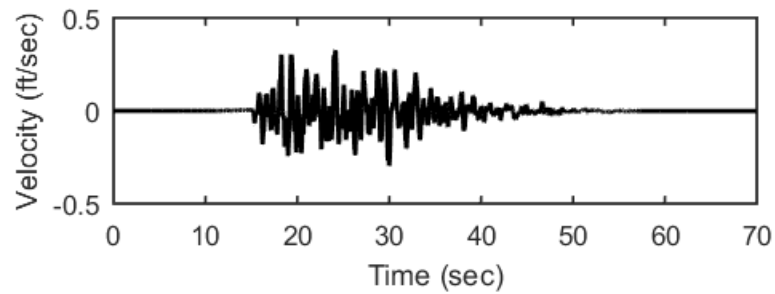
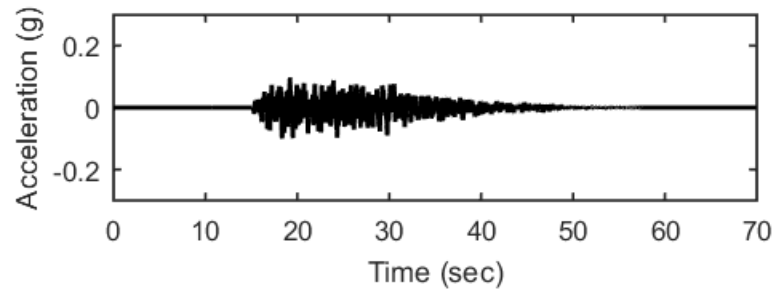
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



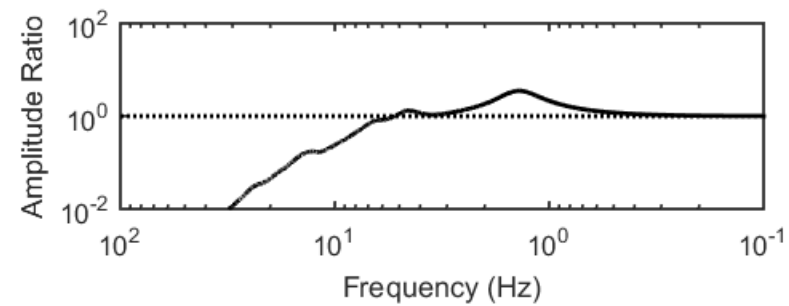
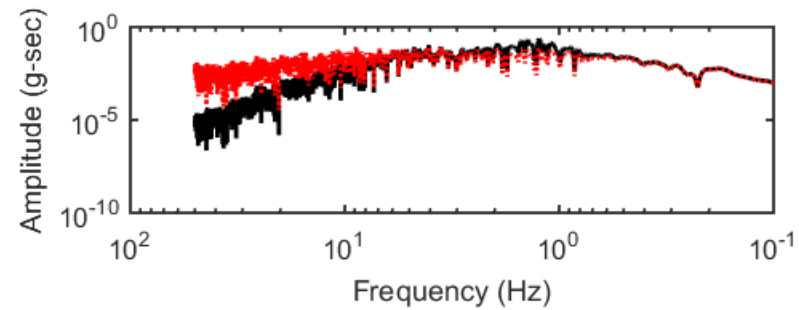
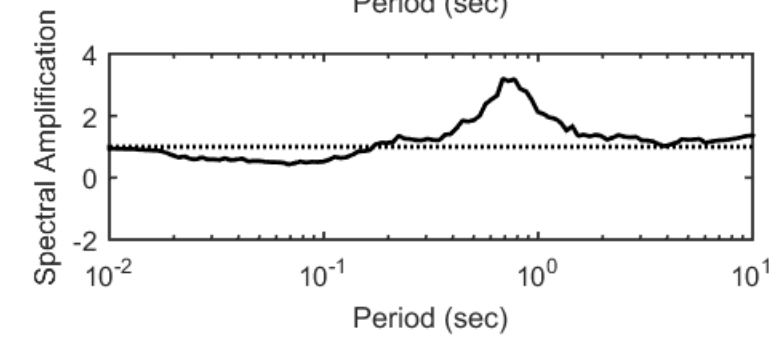
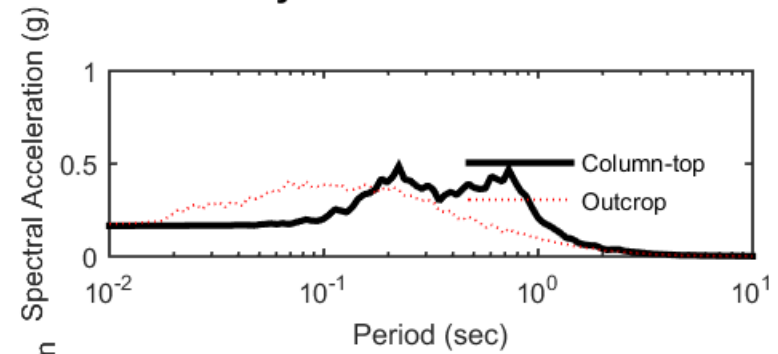
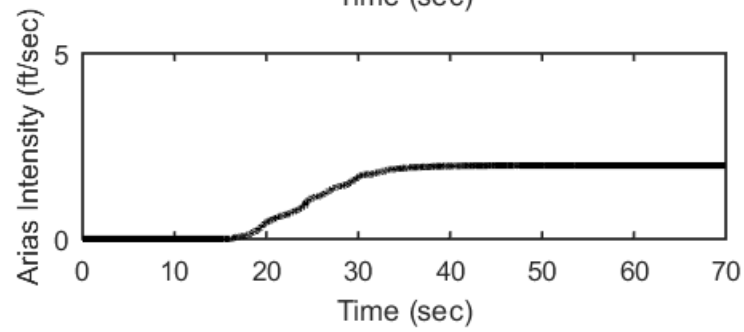
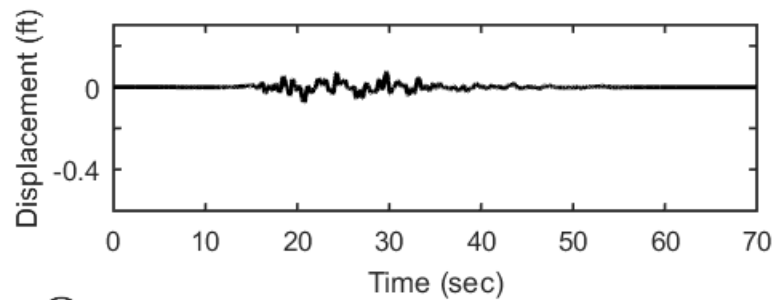
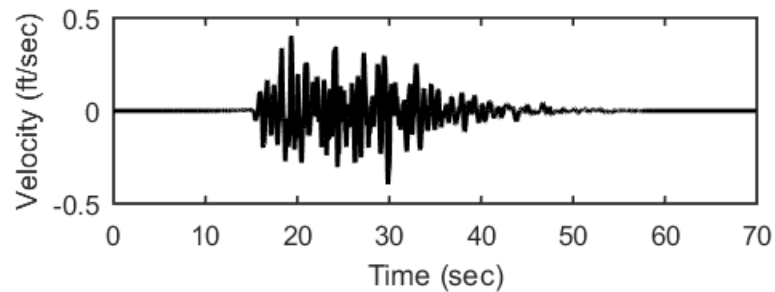
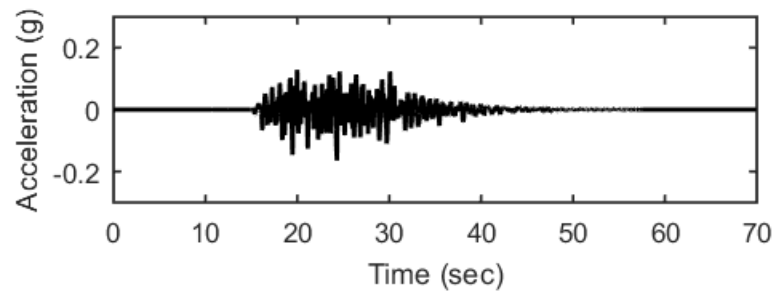
### Profile outputs for Motion: FEE1



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2

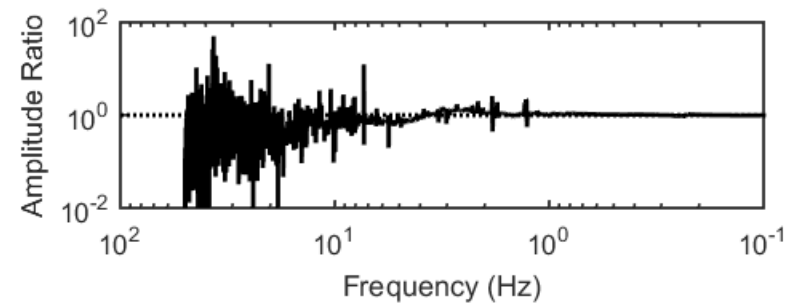
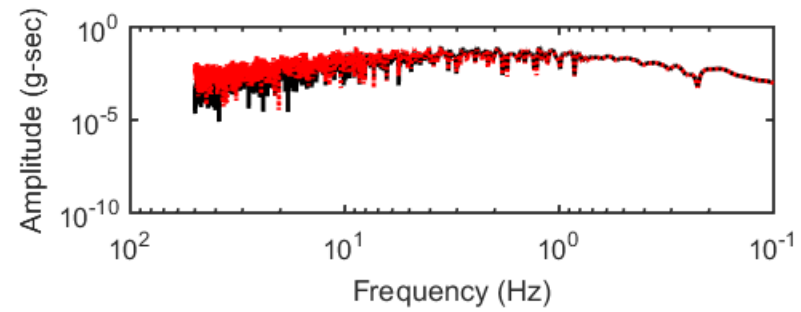
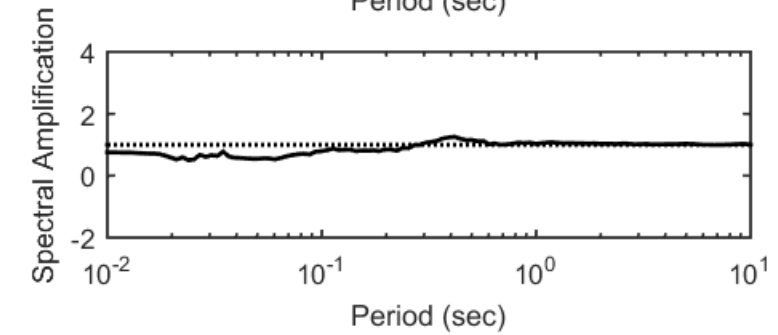
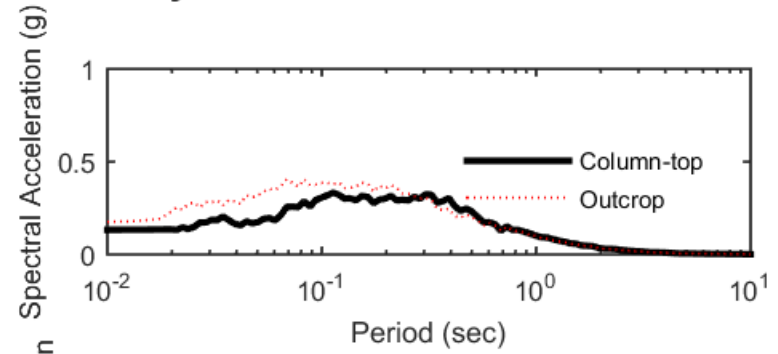
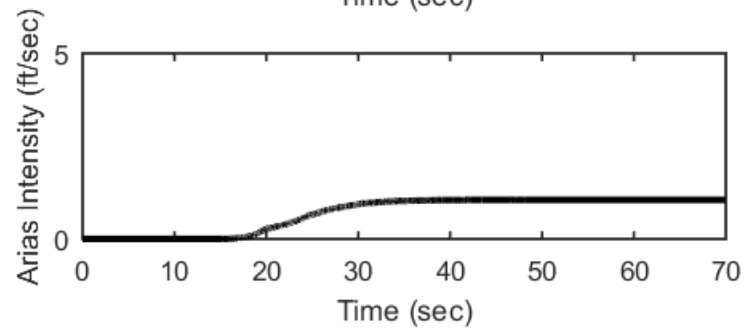
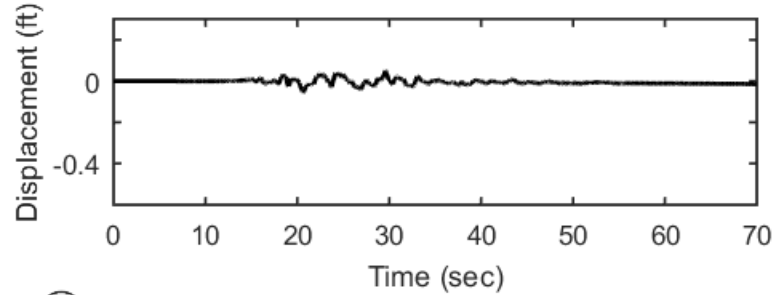
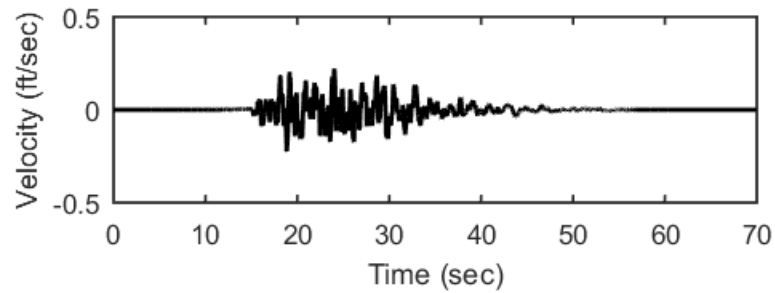
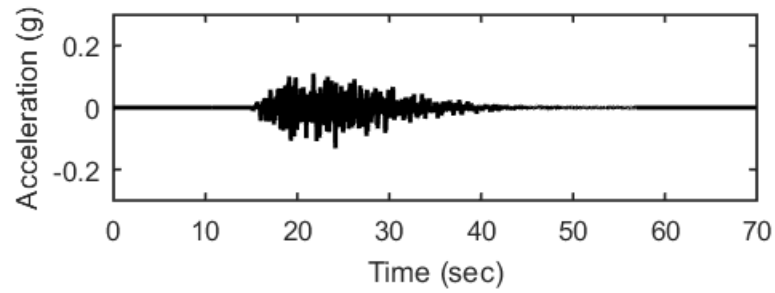


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2

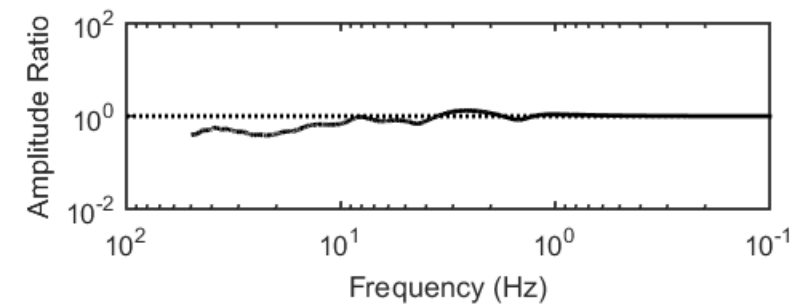
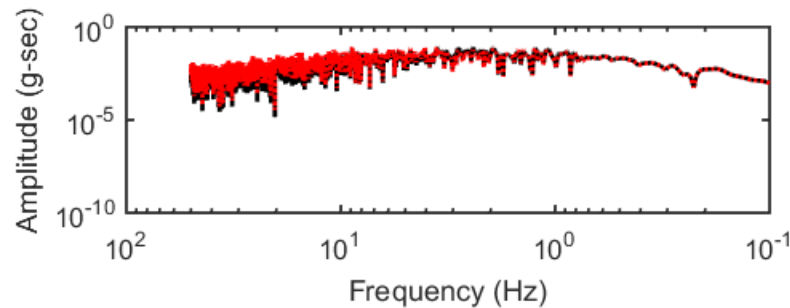
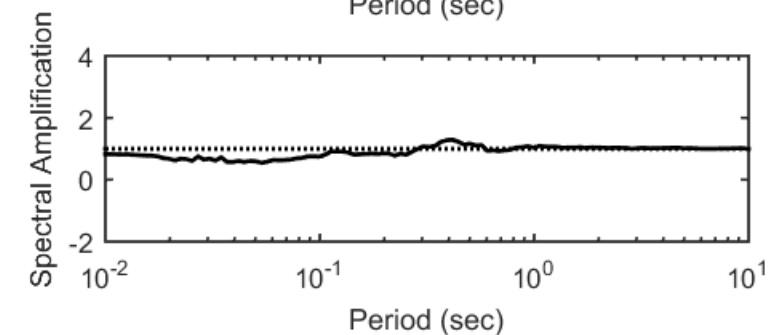
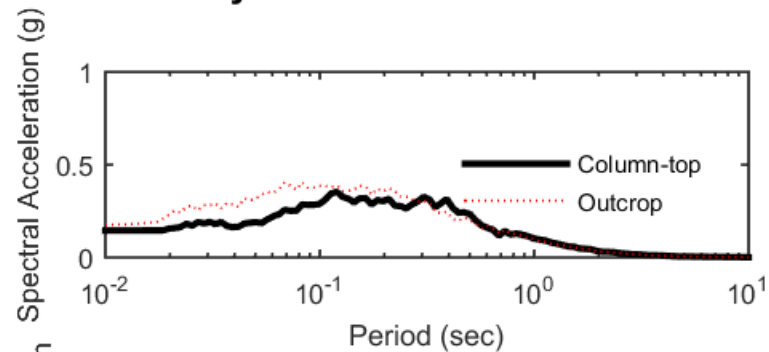
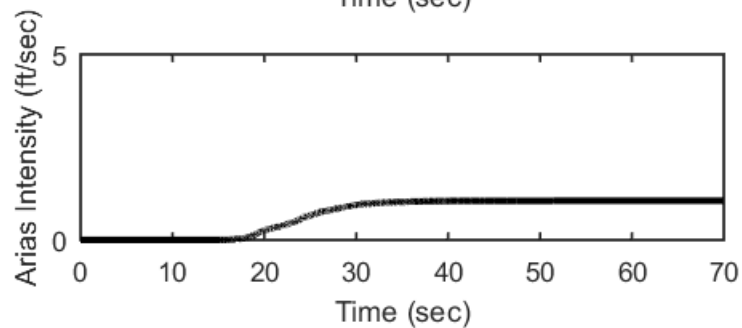
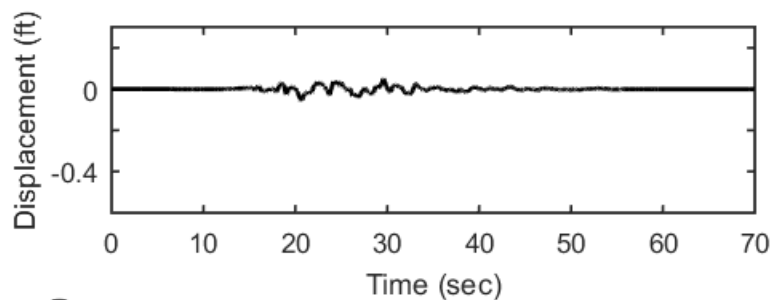
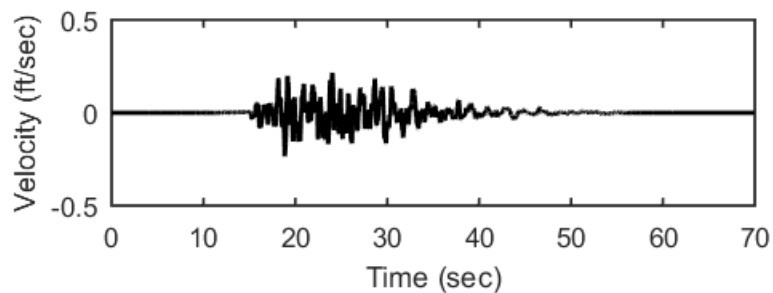
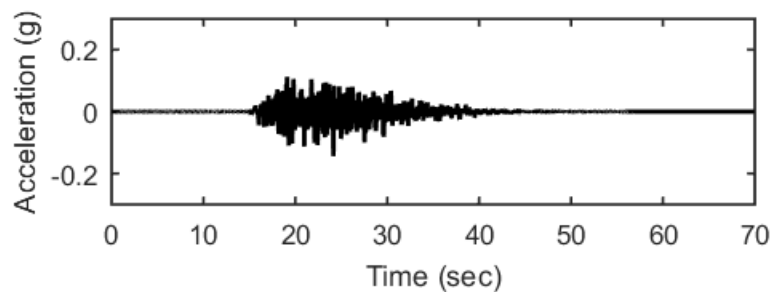




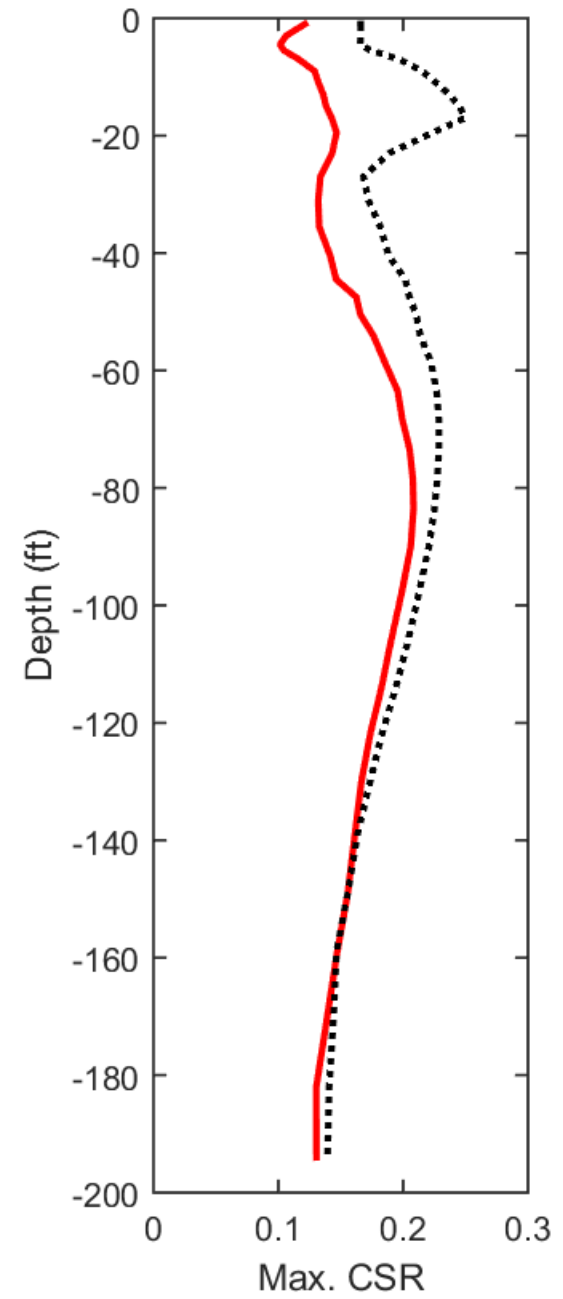
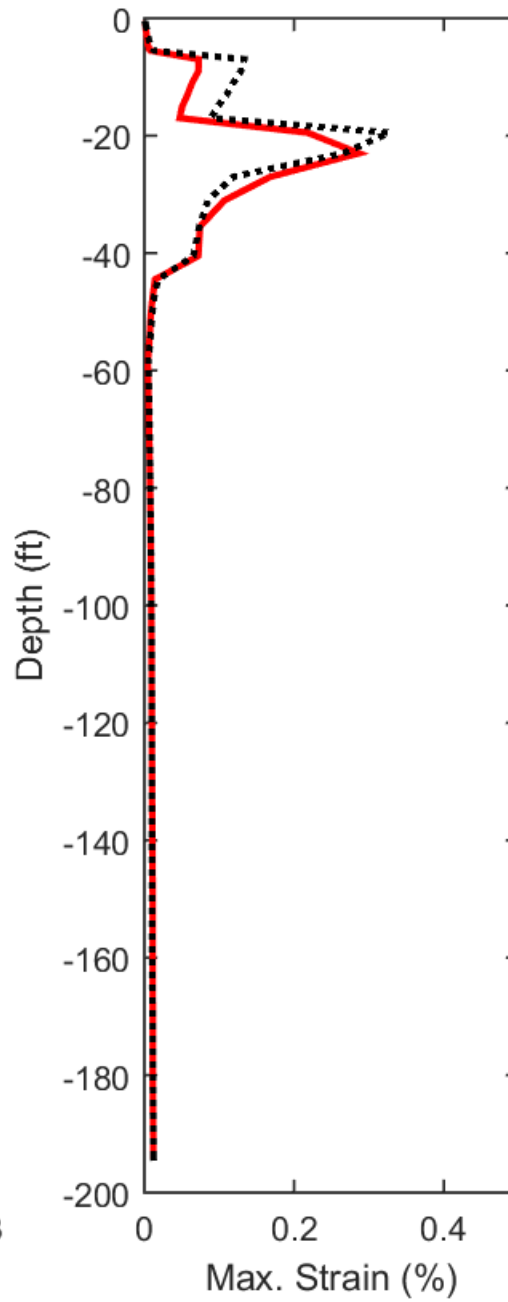
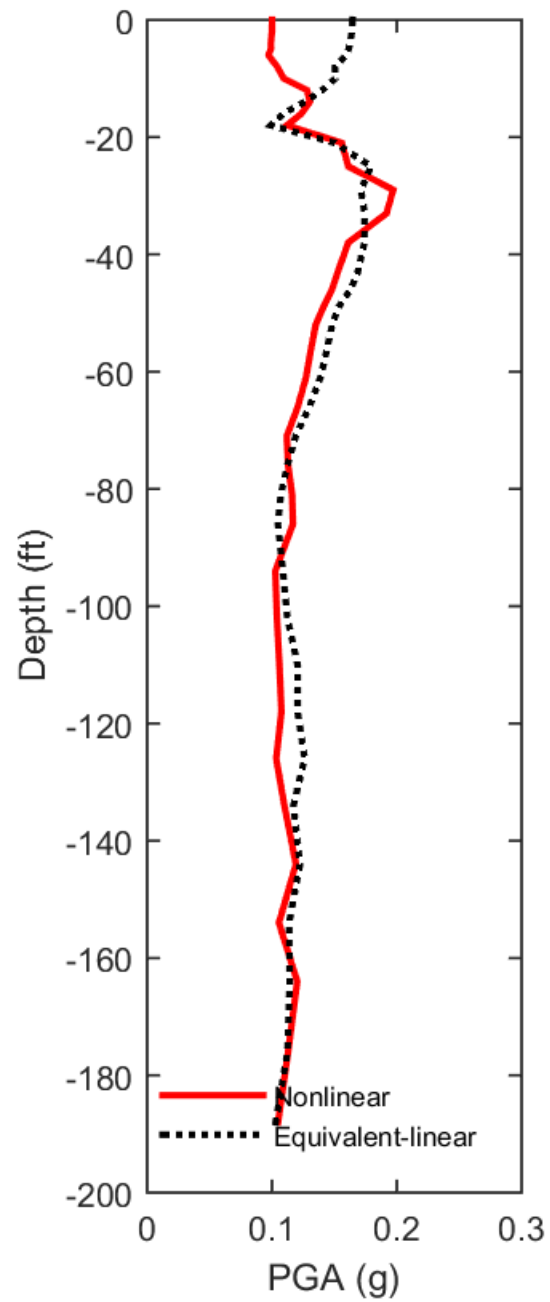
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



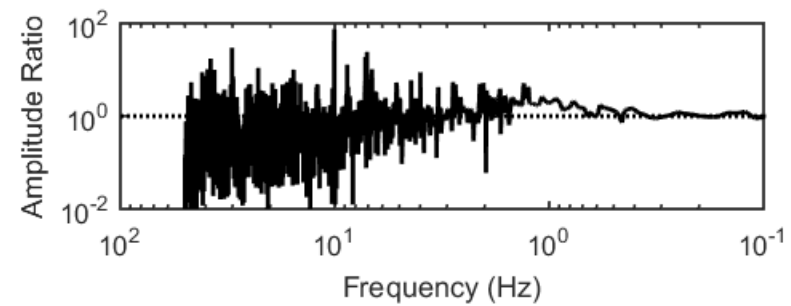
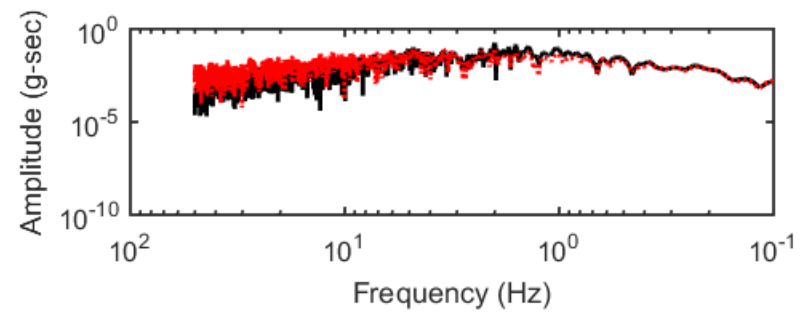
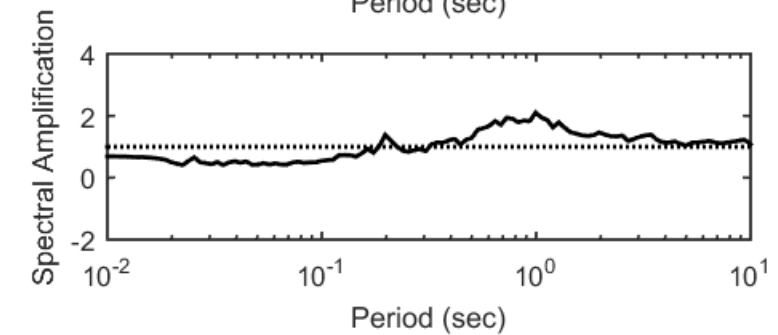
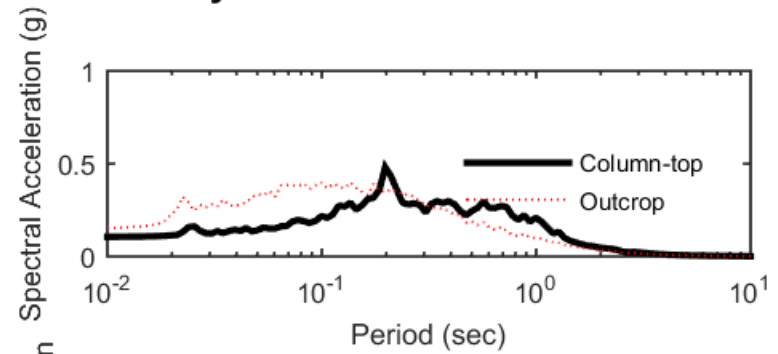
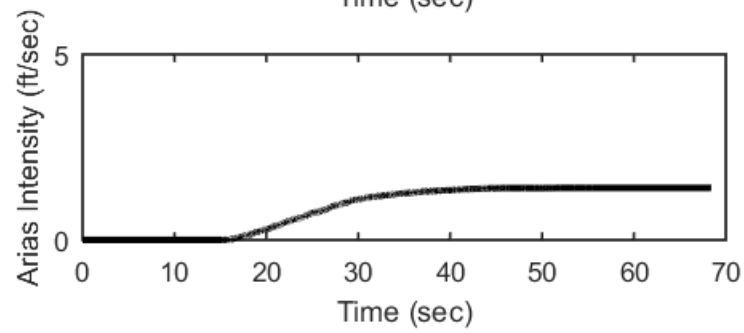
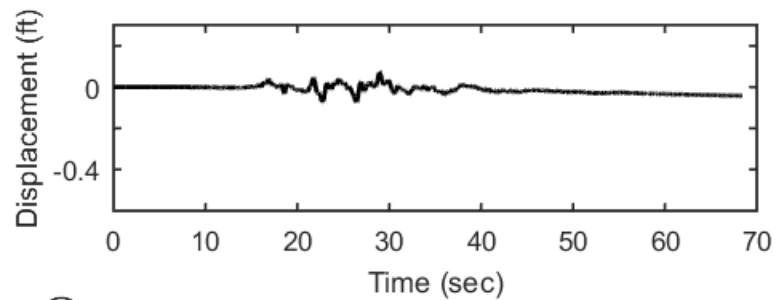
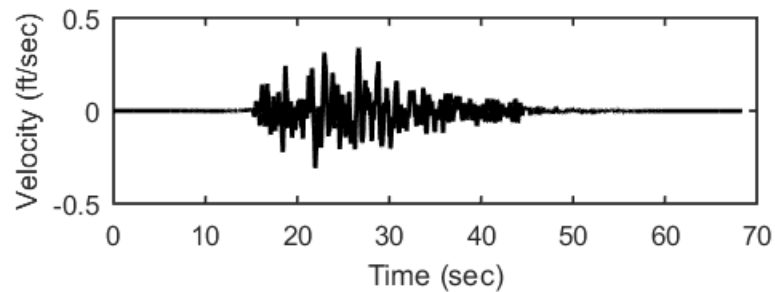
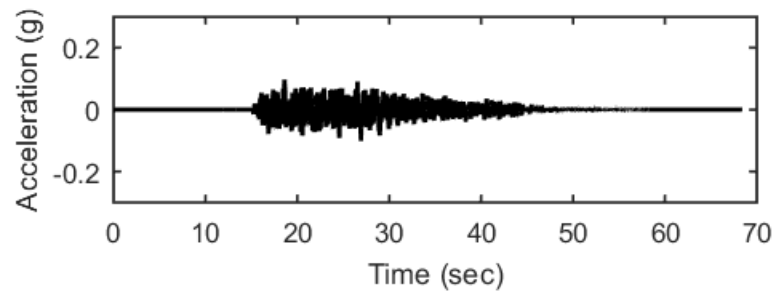
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



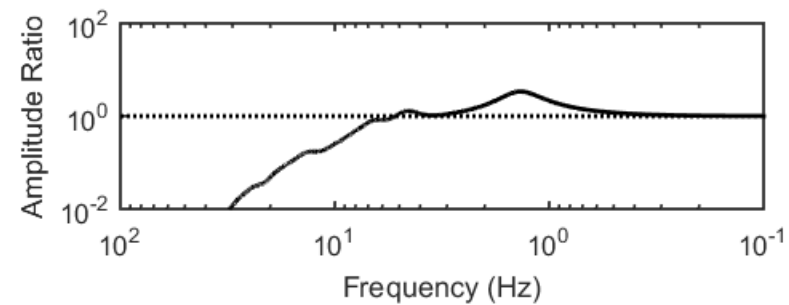
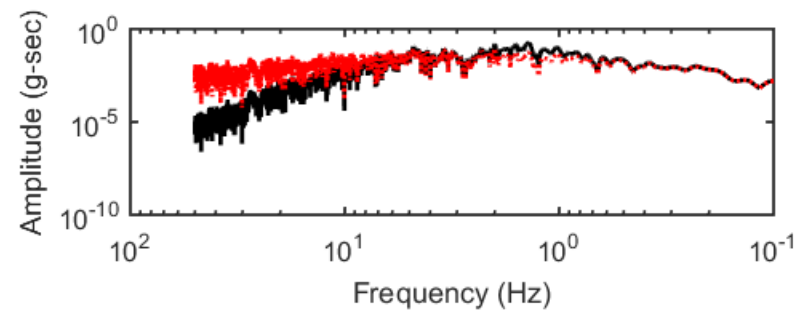
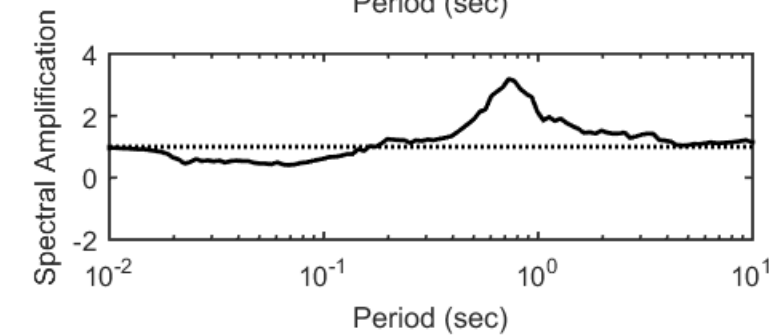
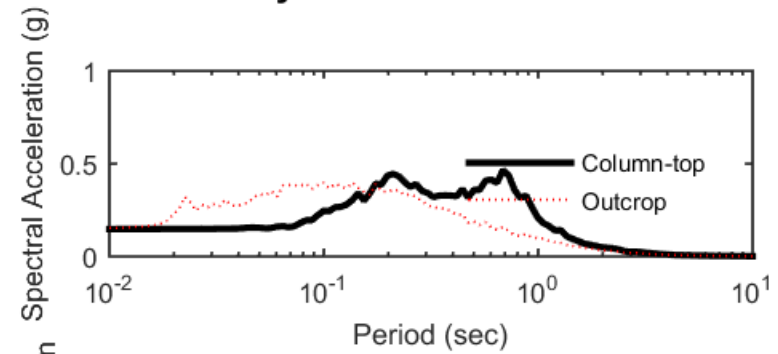
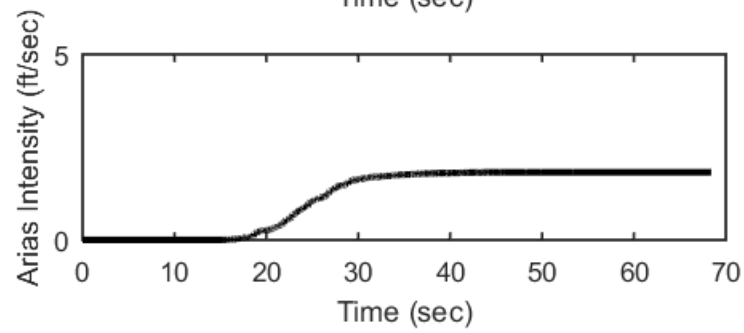
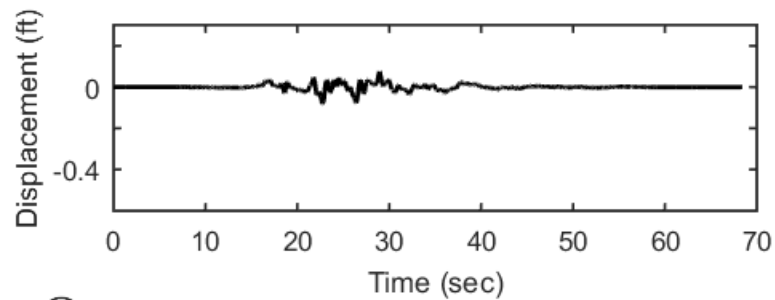
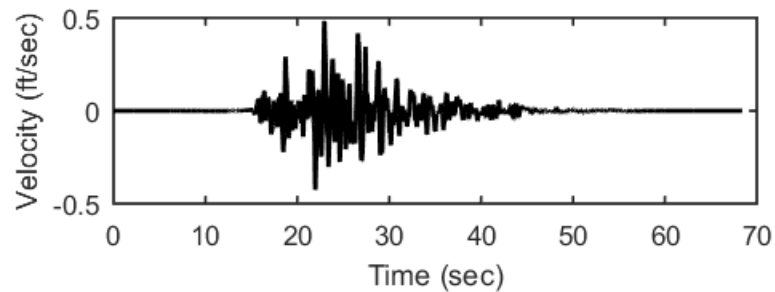
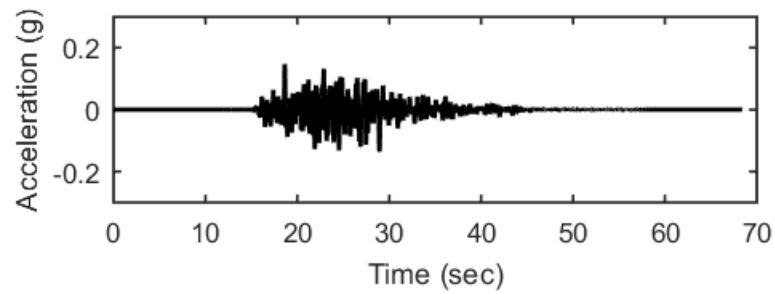
### Profile outputs for Motion: FEE2



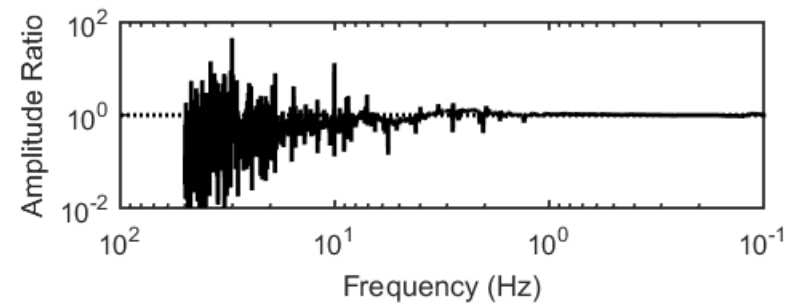
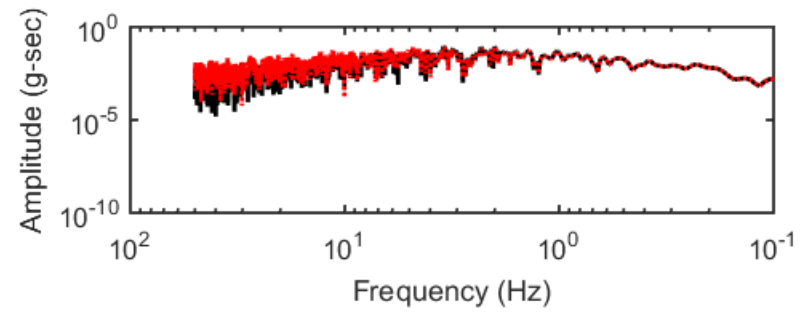
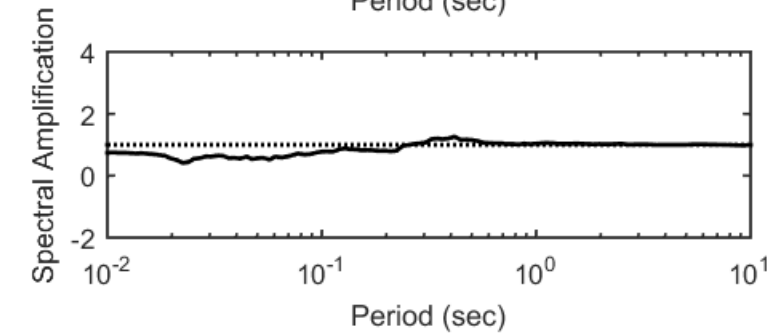
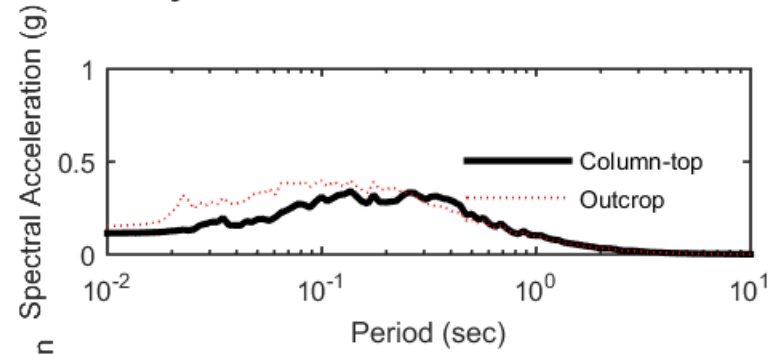
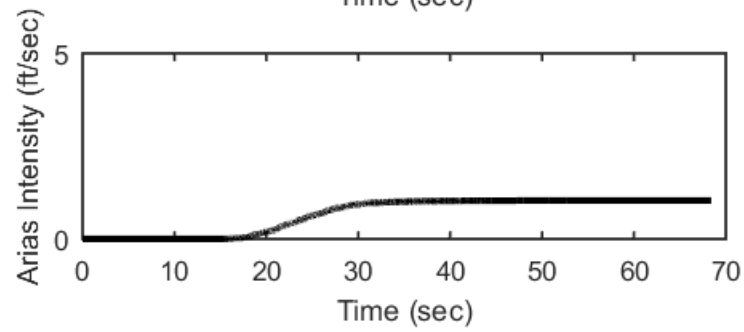
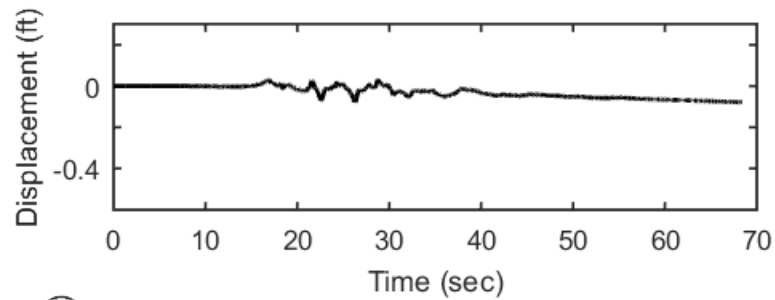
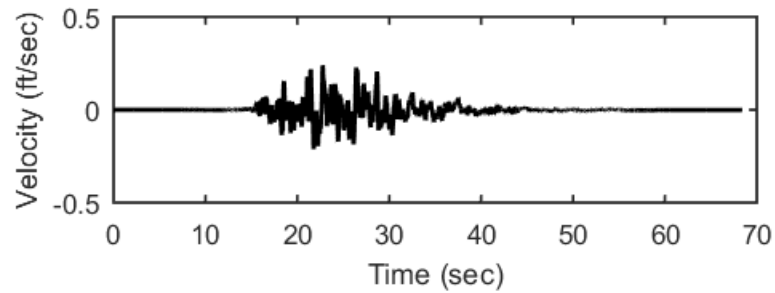
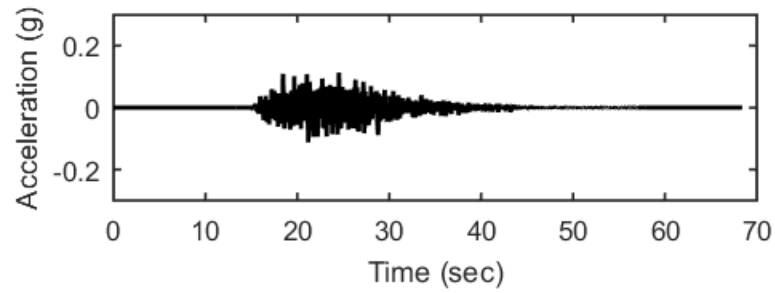
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



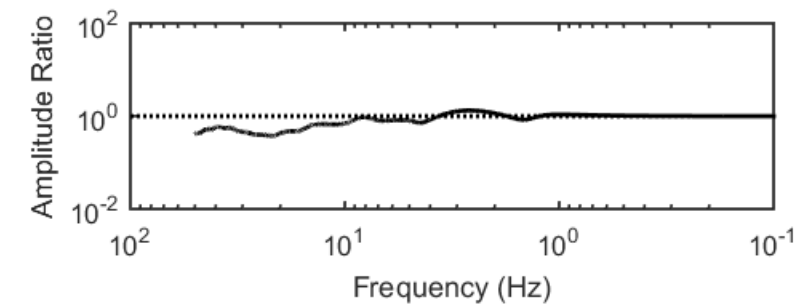
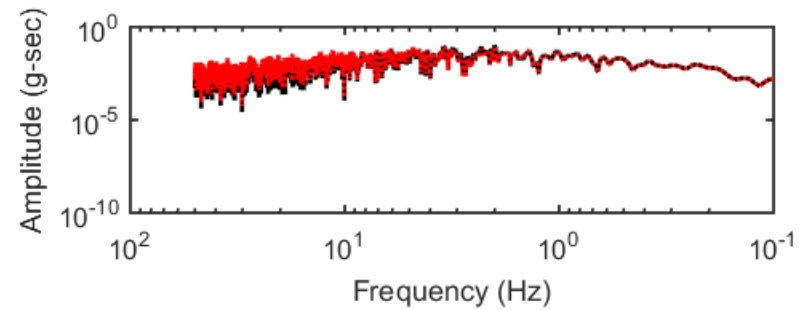
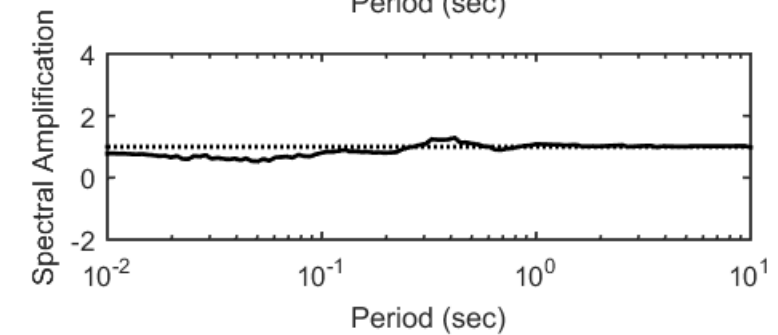
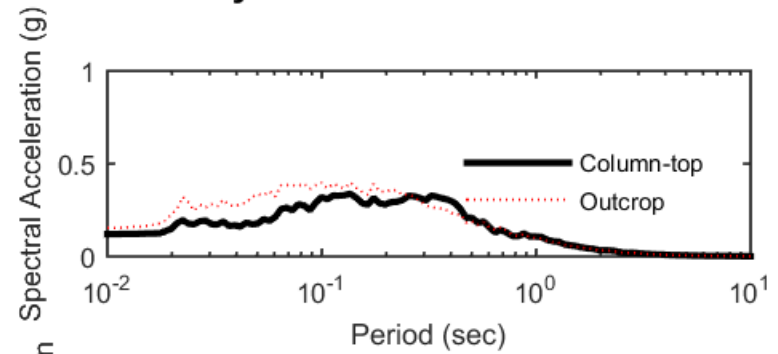
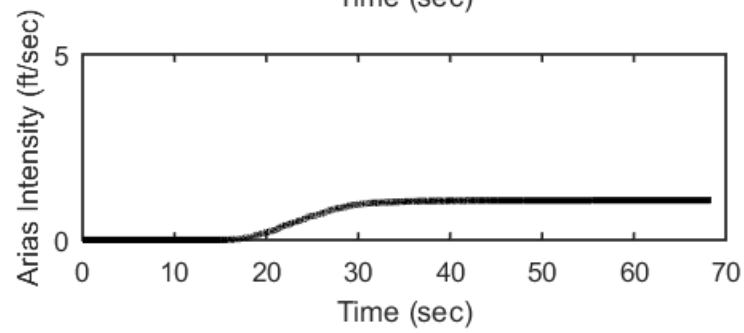
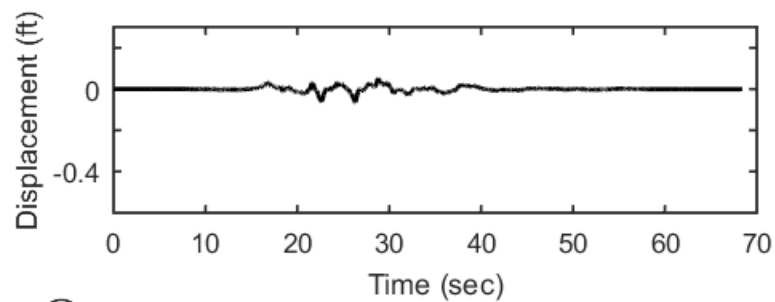
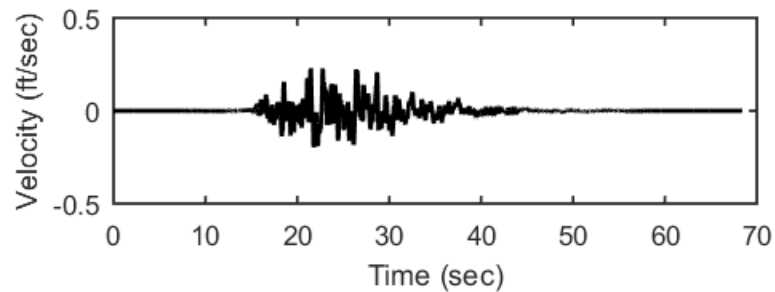
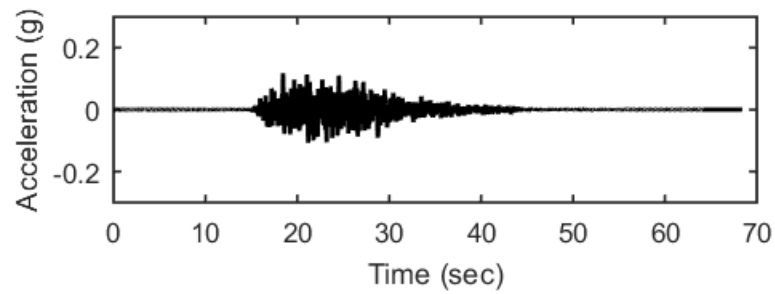
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



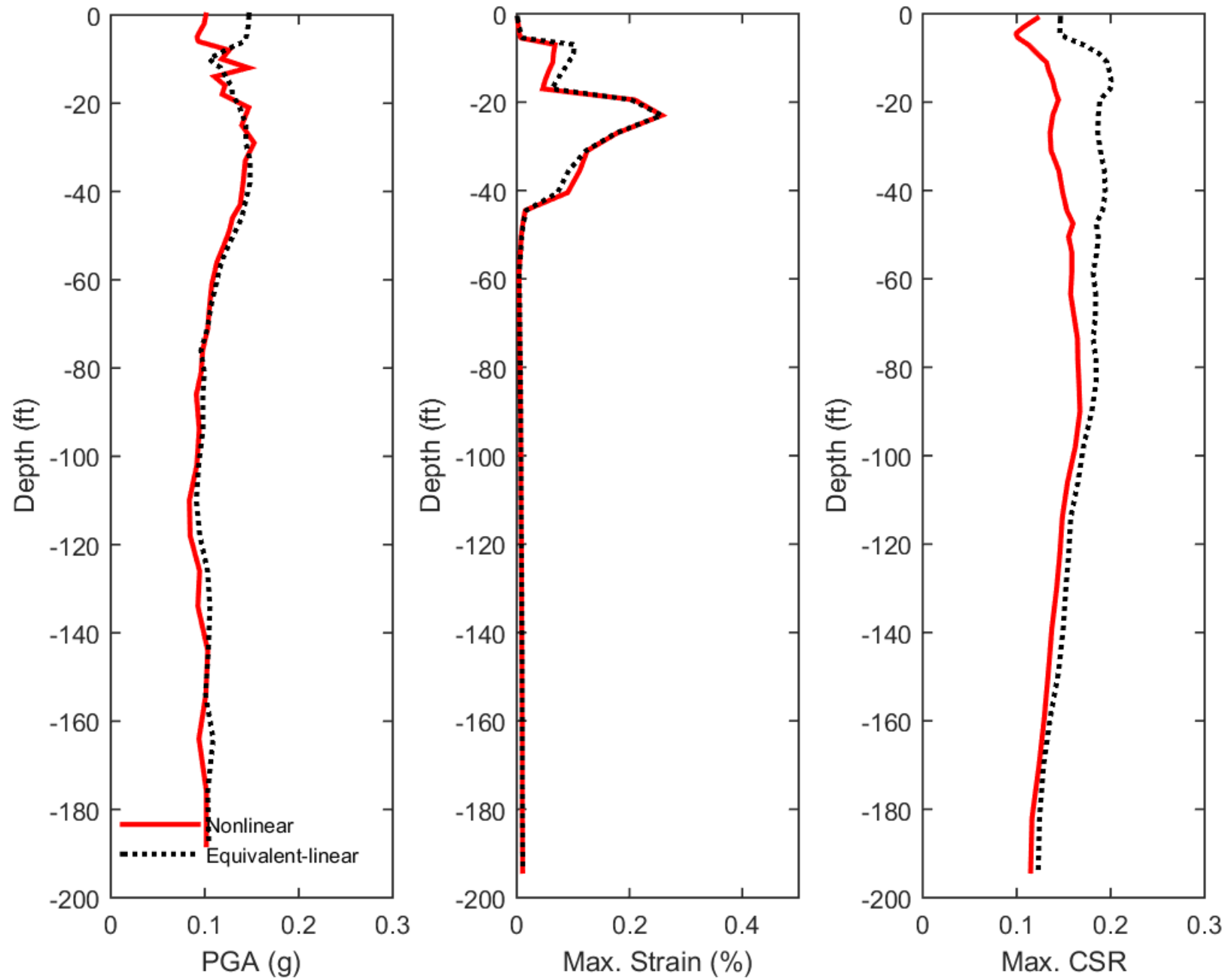
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3

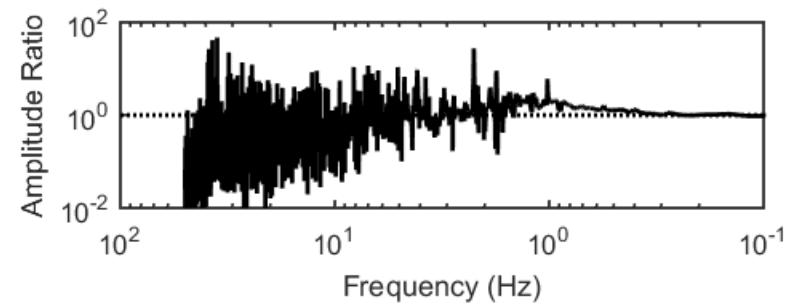
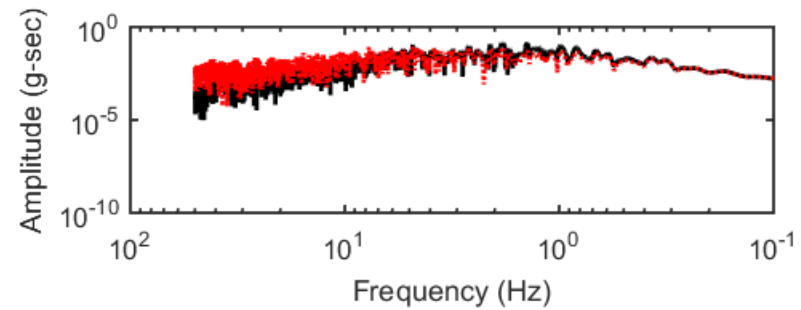
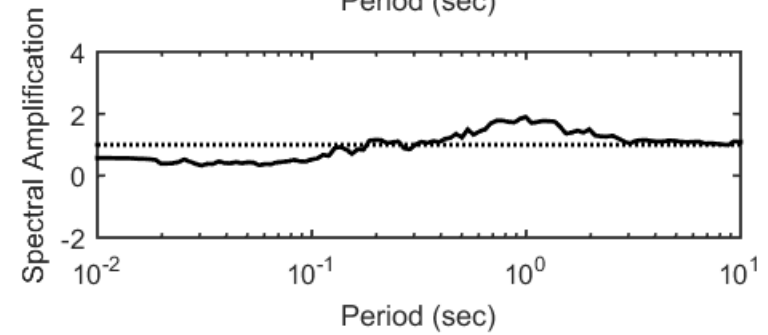
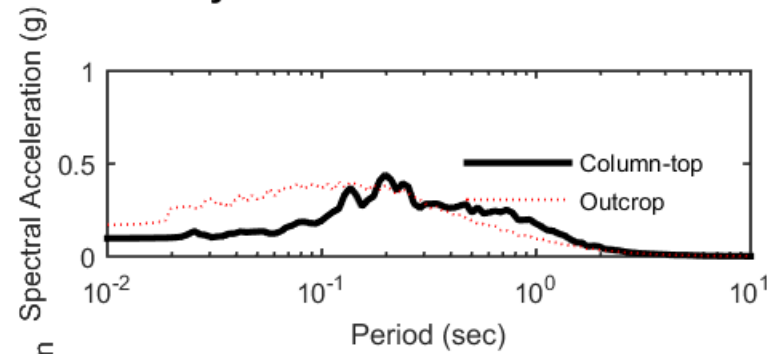
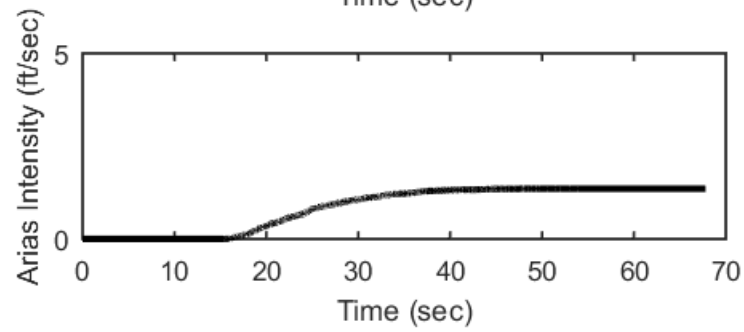
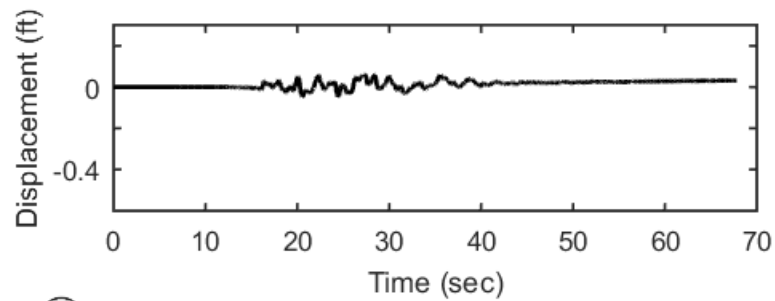
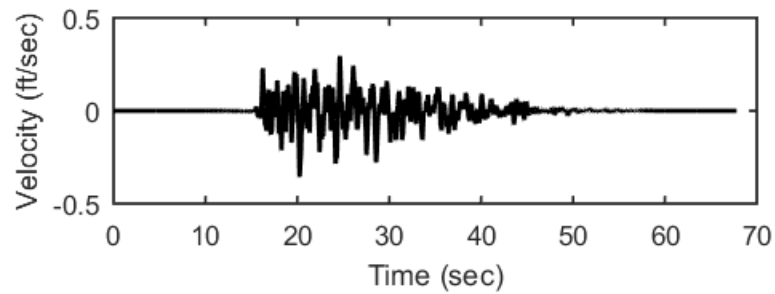
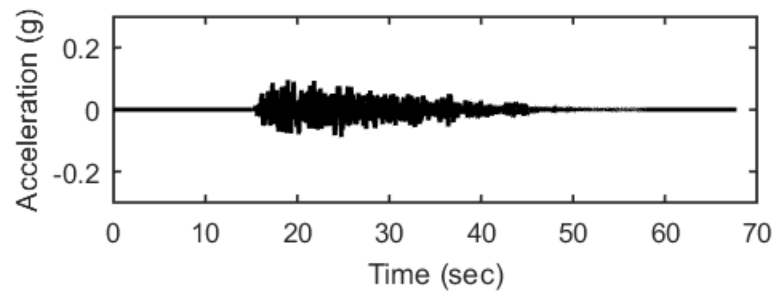


### Profile outputs for Motion: FEE3

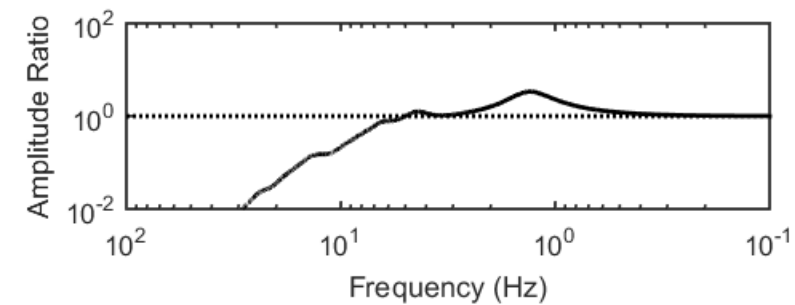
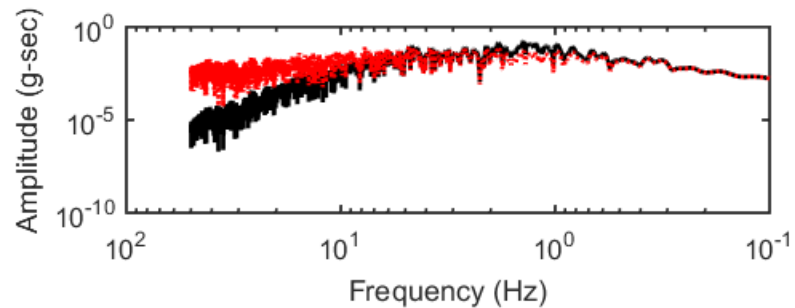
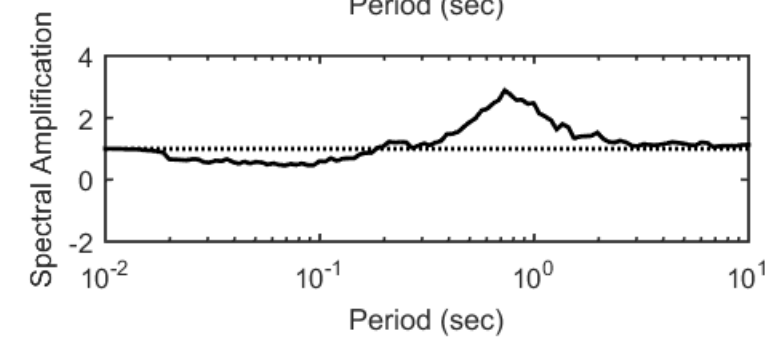
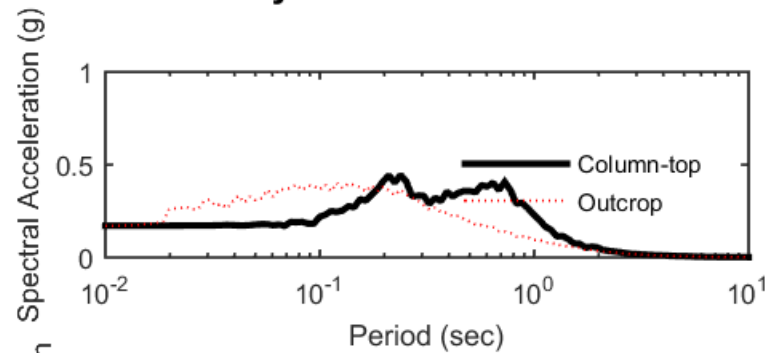
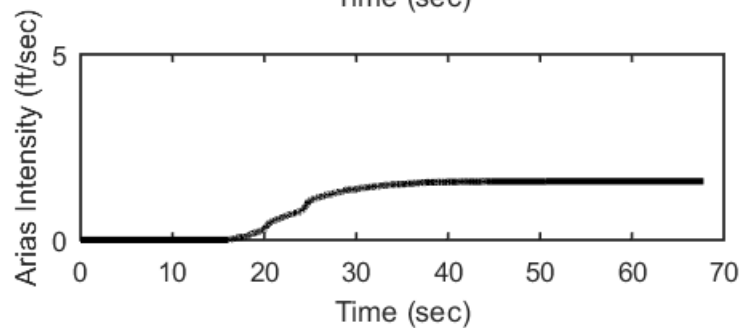
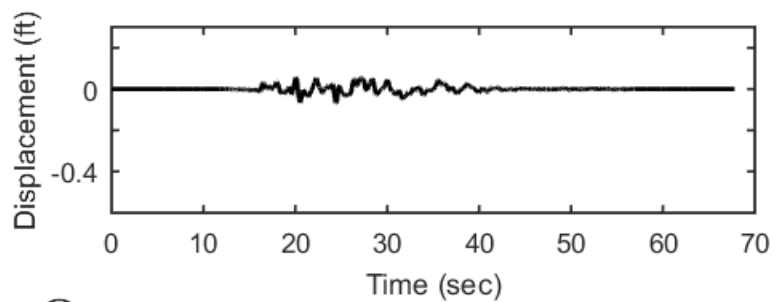
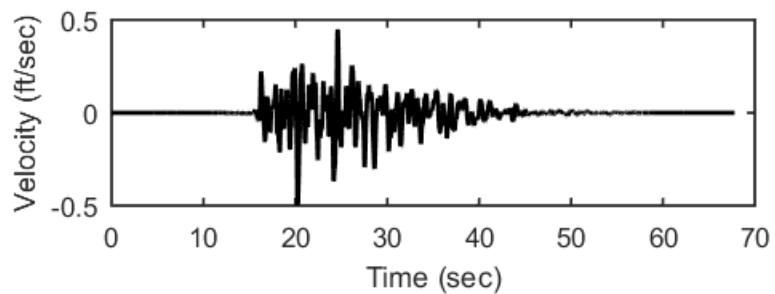
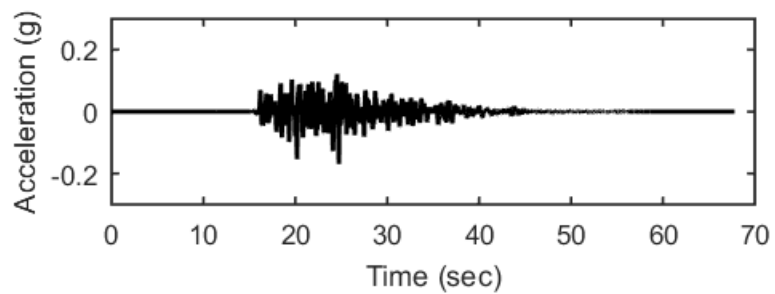




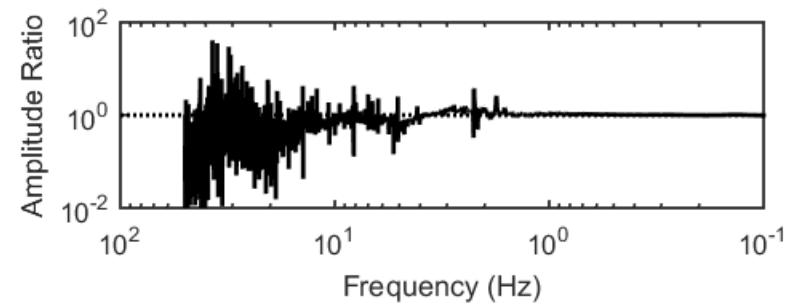
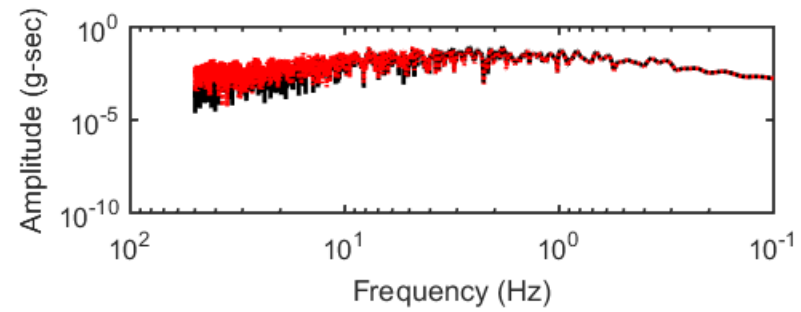
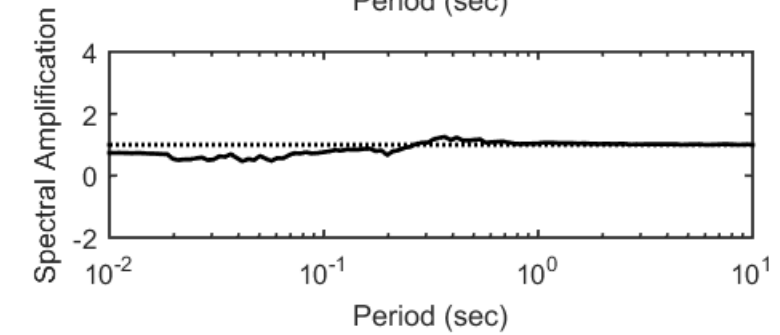
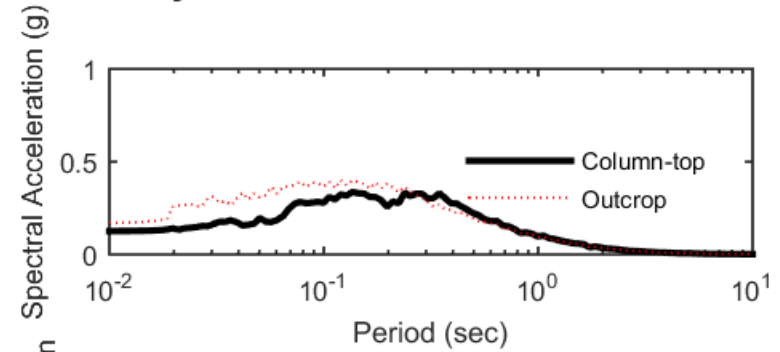
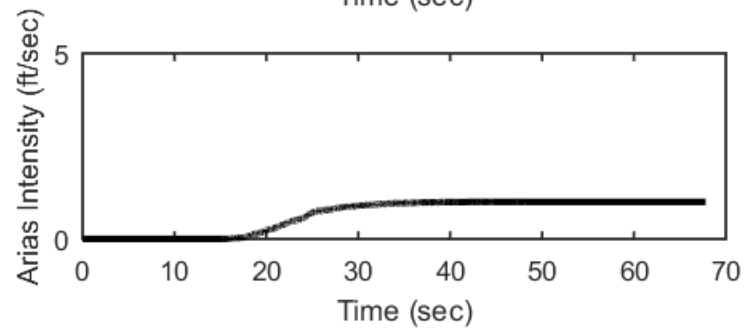
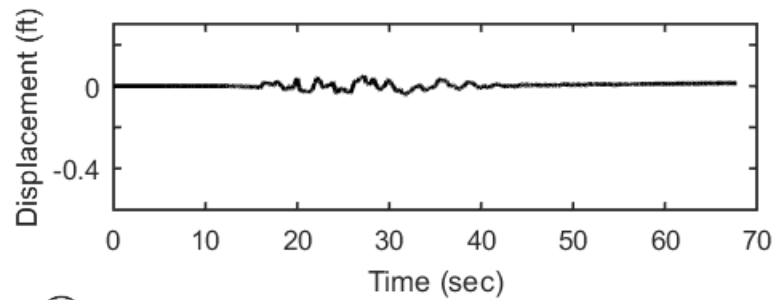
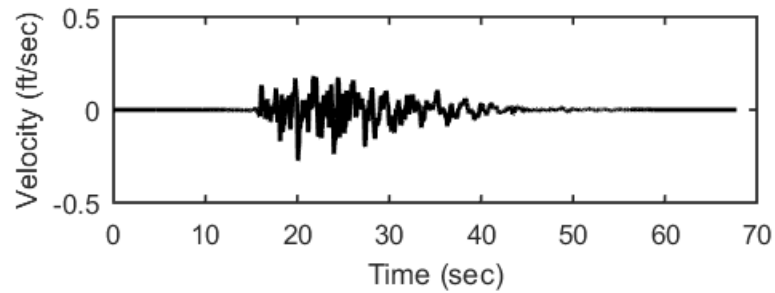
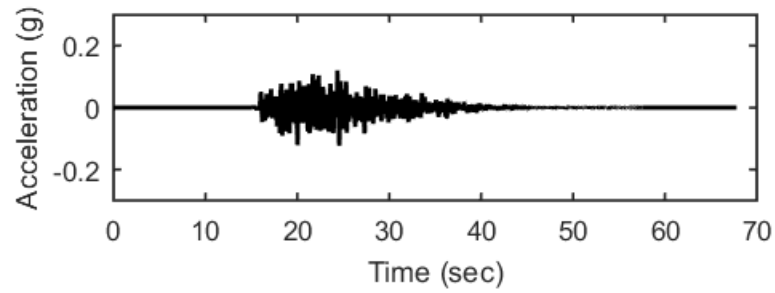
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



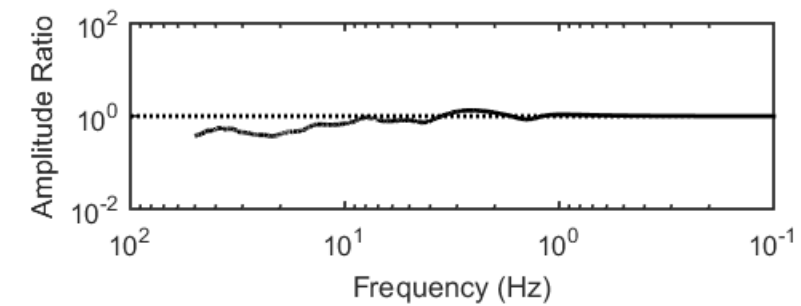
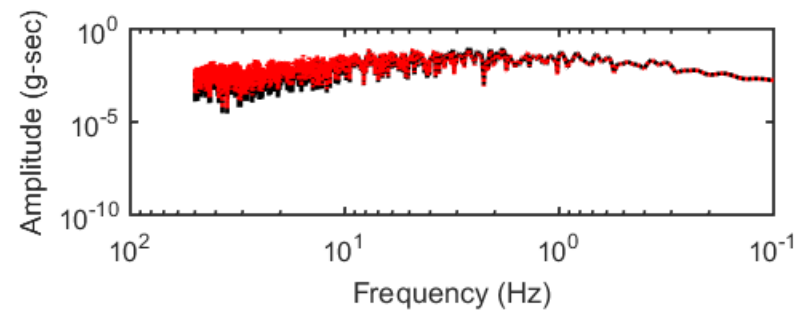
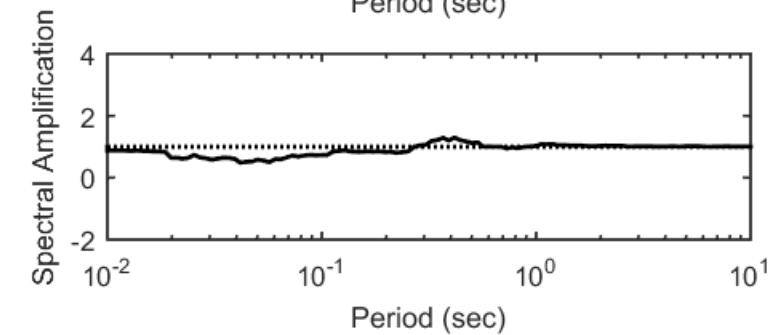
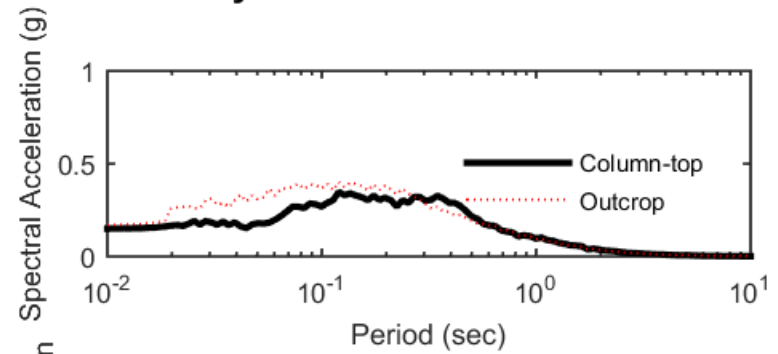
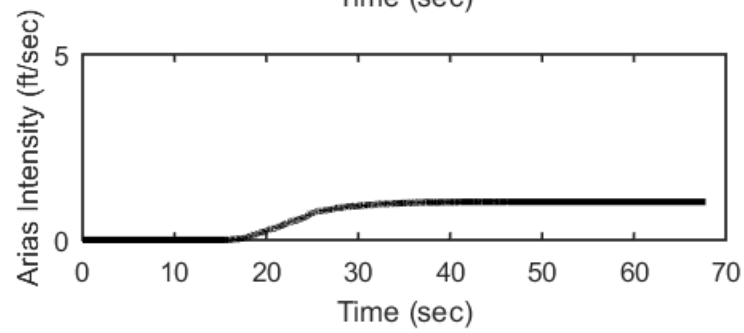
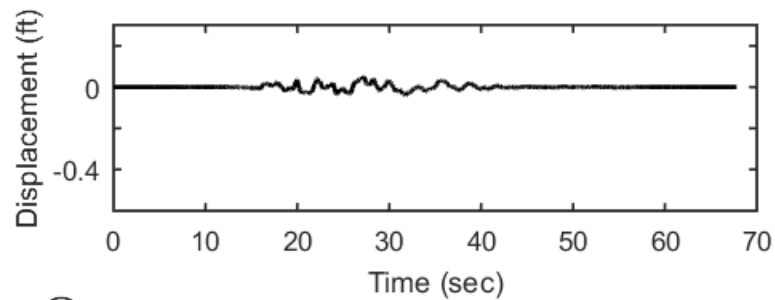
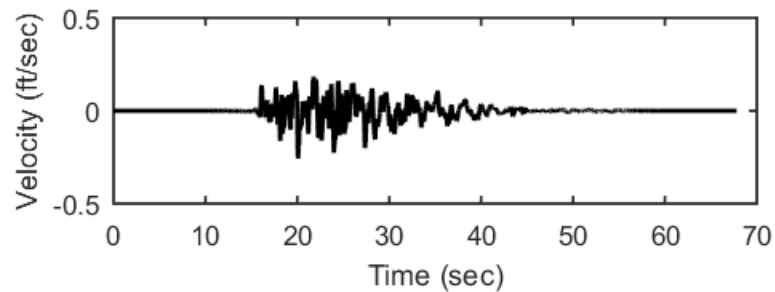
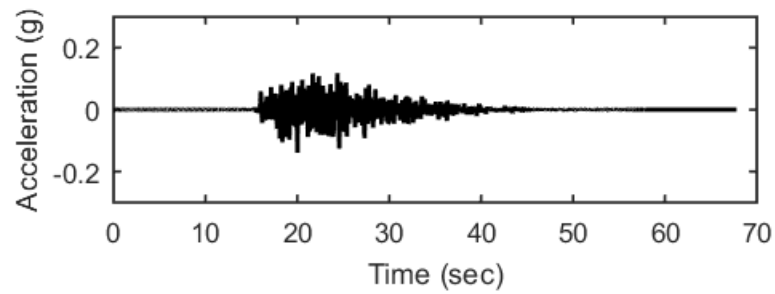
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



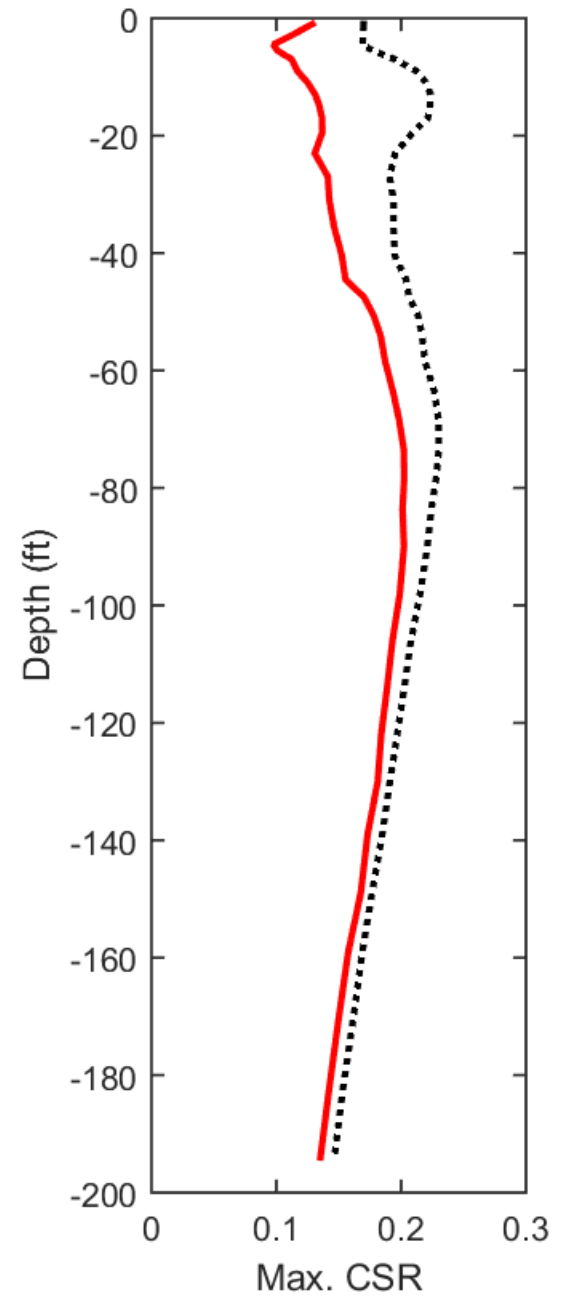
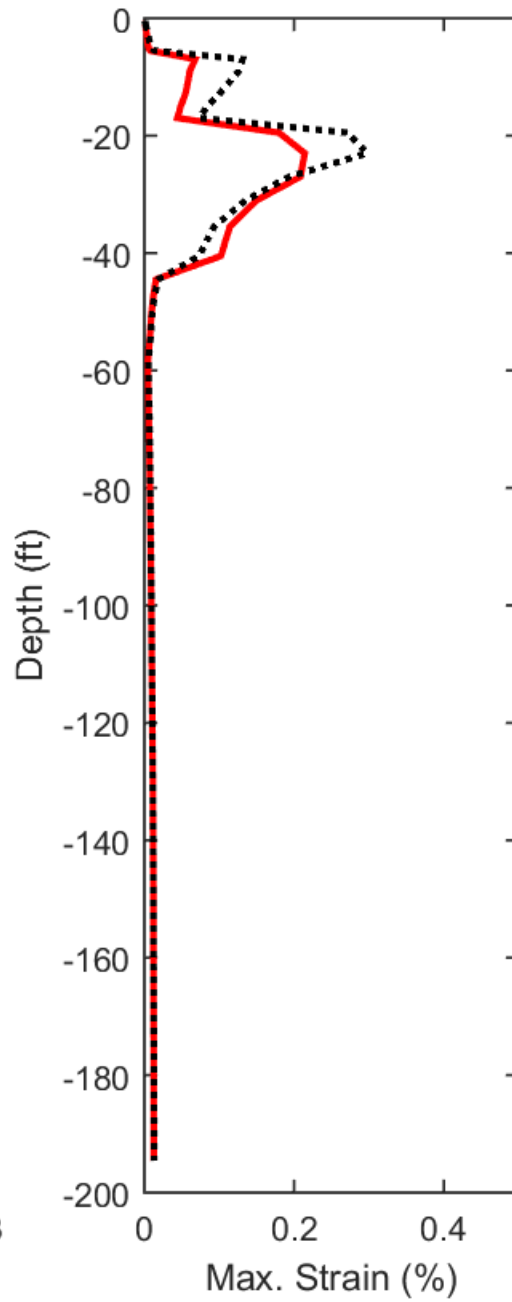
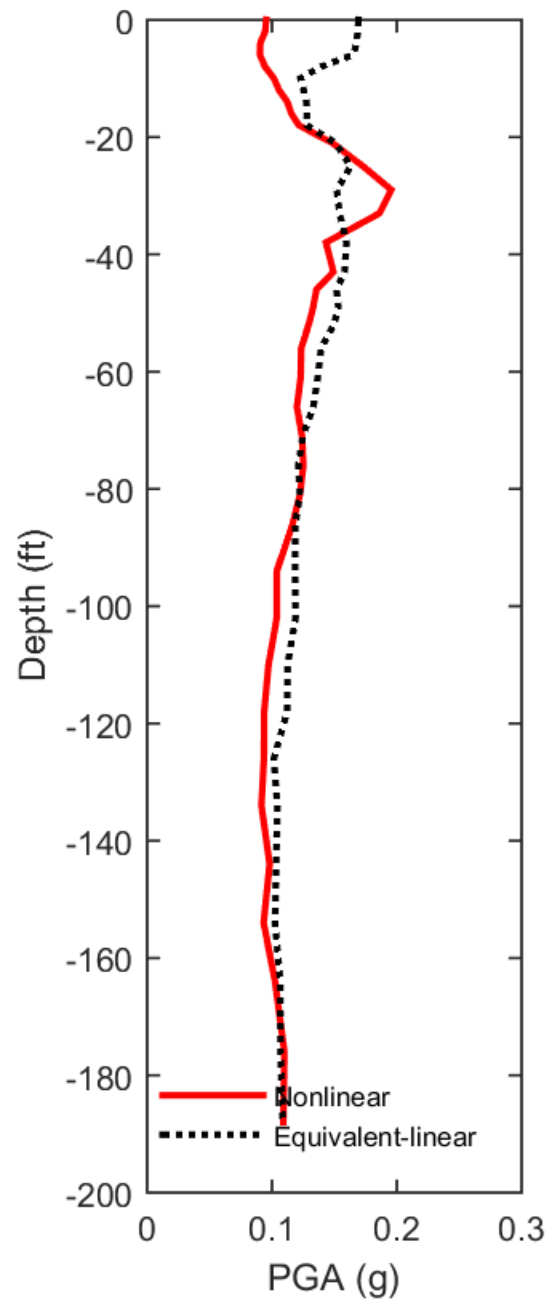
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



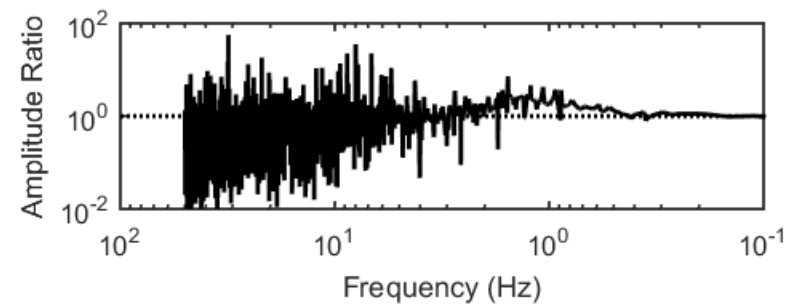
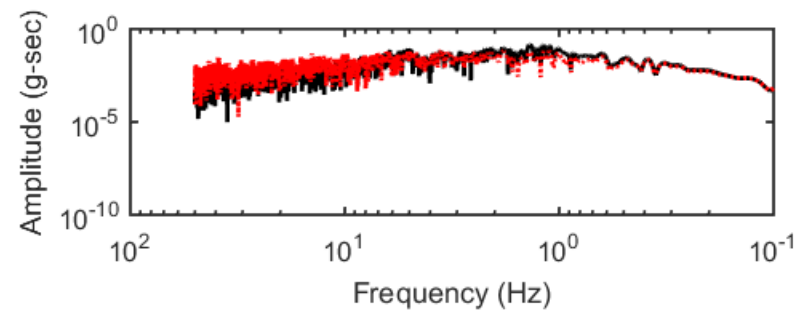
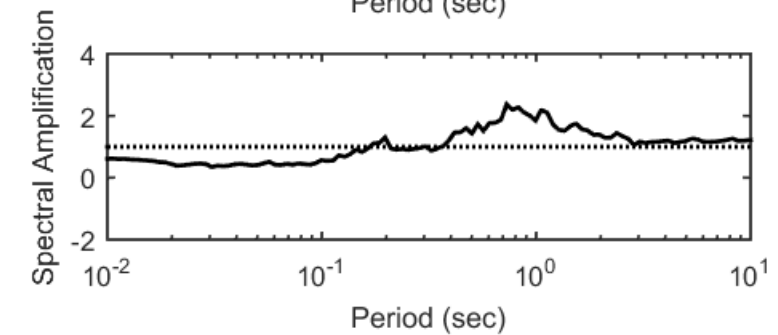
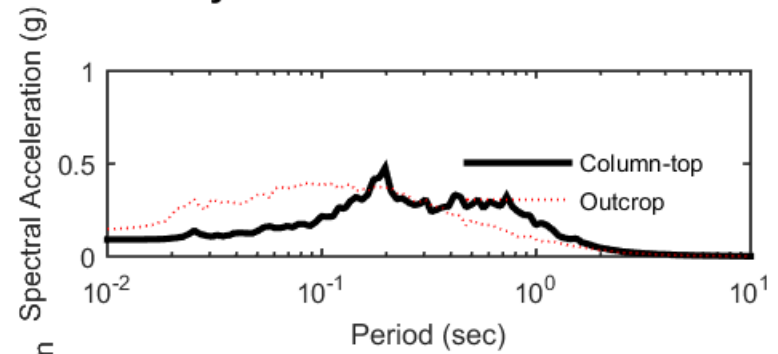
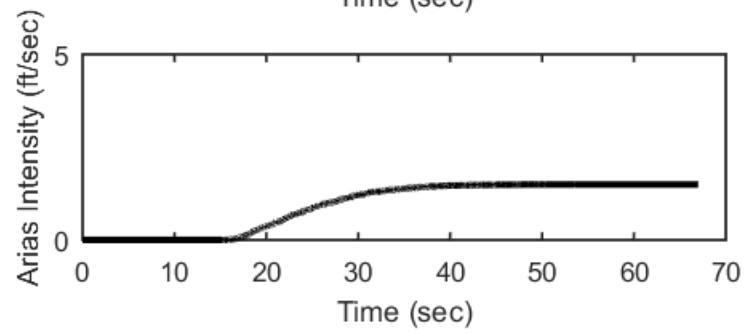
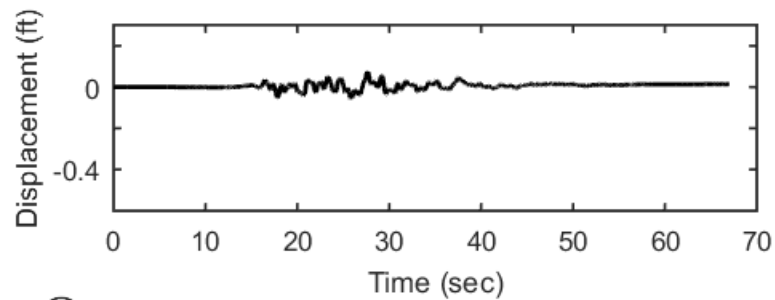
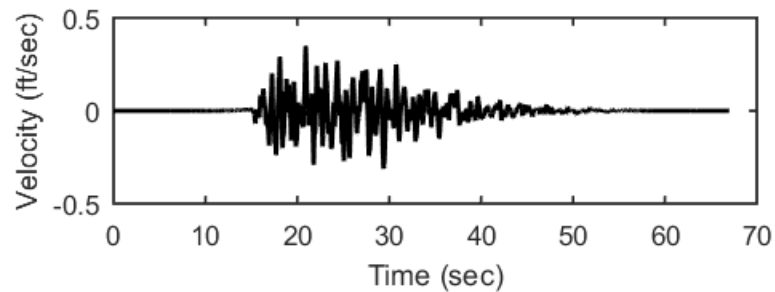
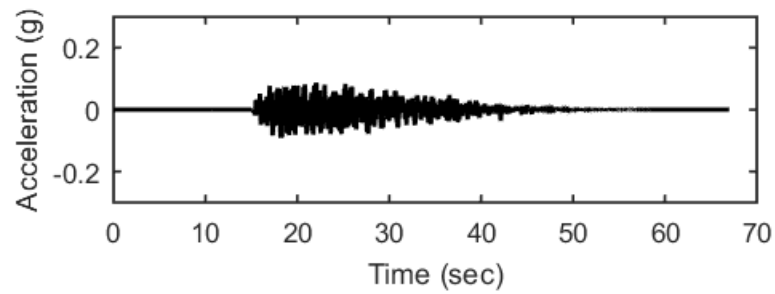
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



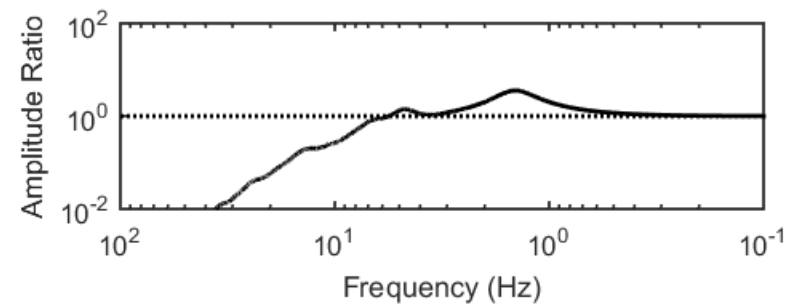
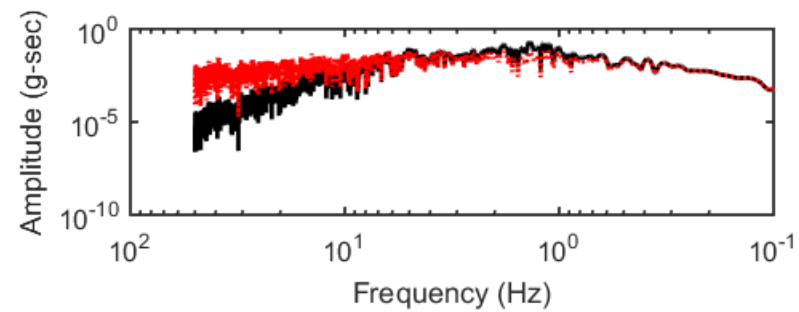
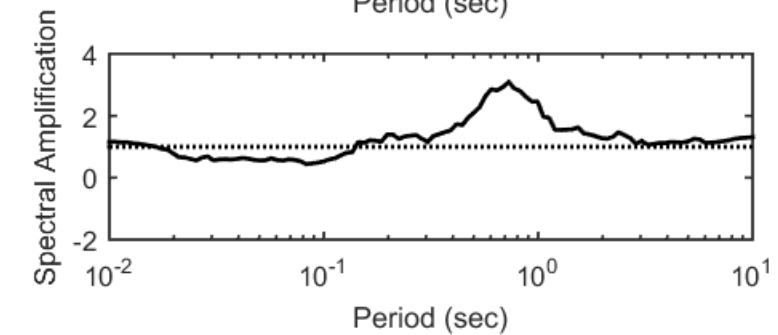
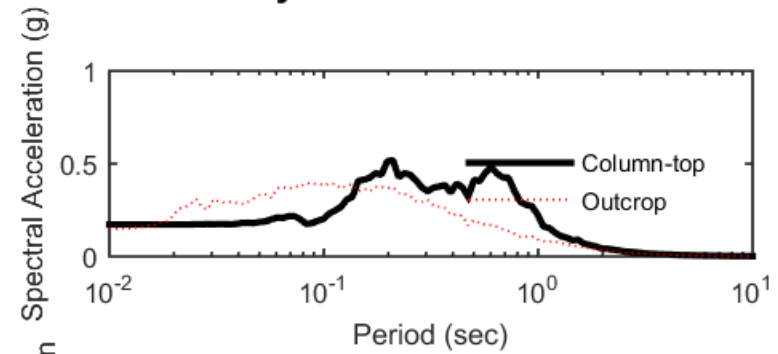
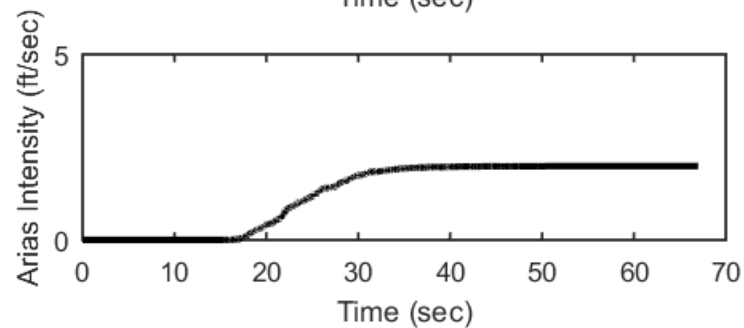
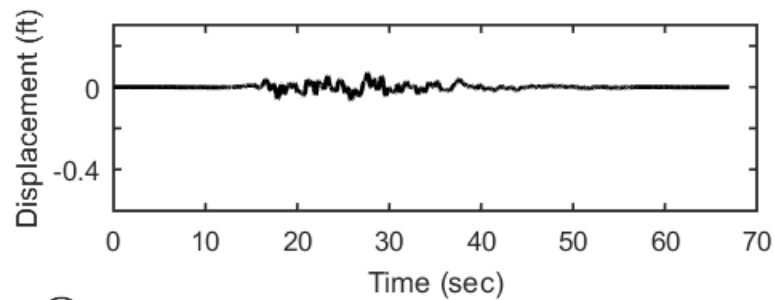
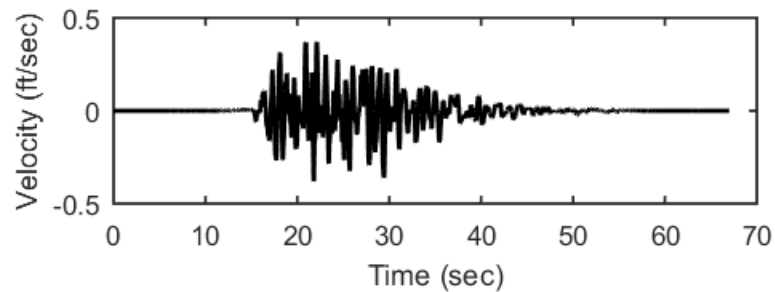
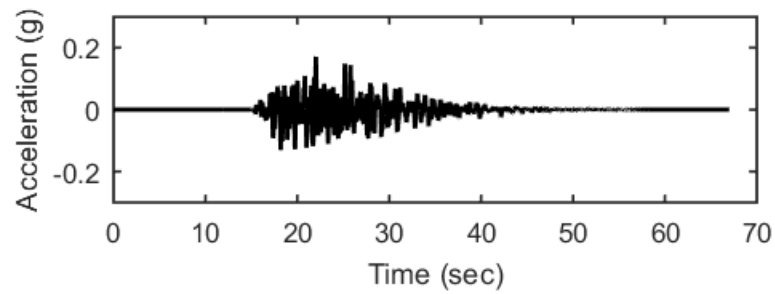
### Profile outputs for Motion: FEE4



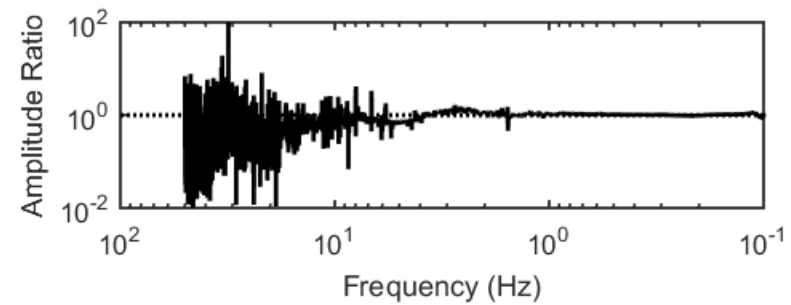
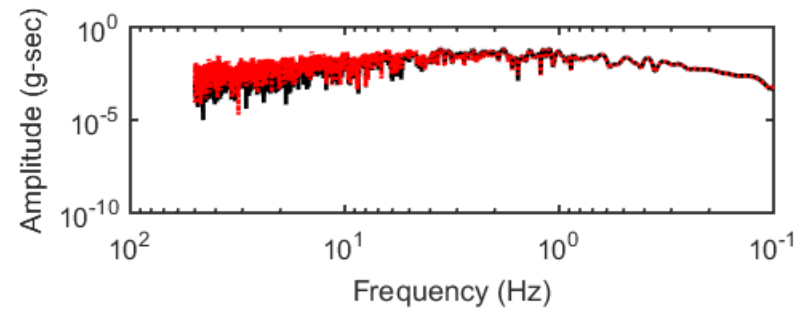
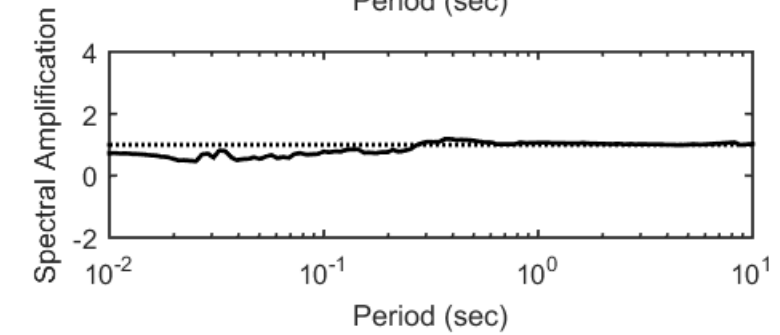
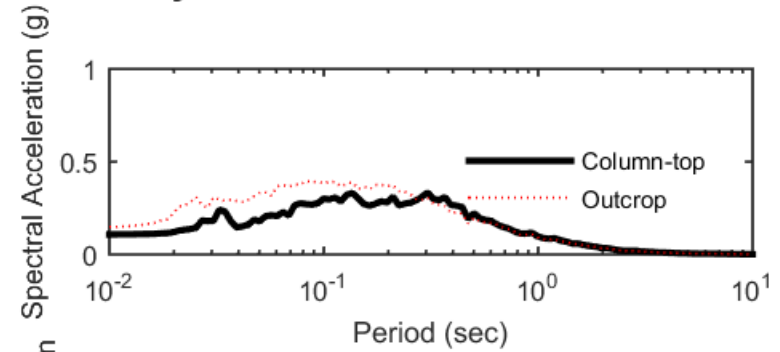
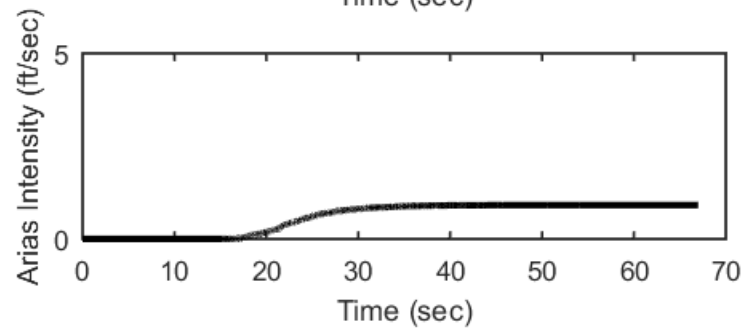
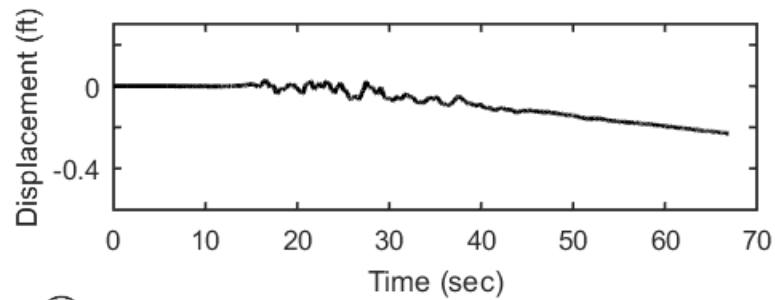
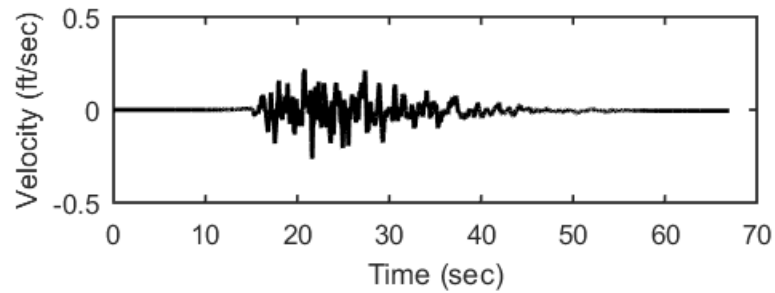
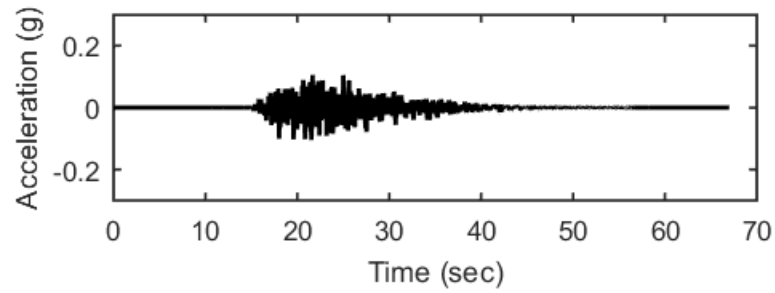
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5

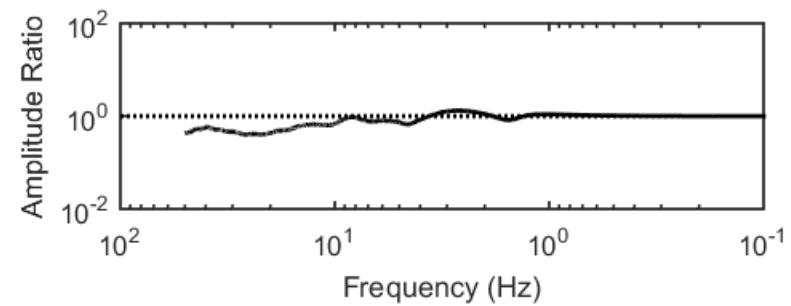
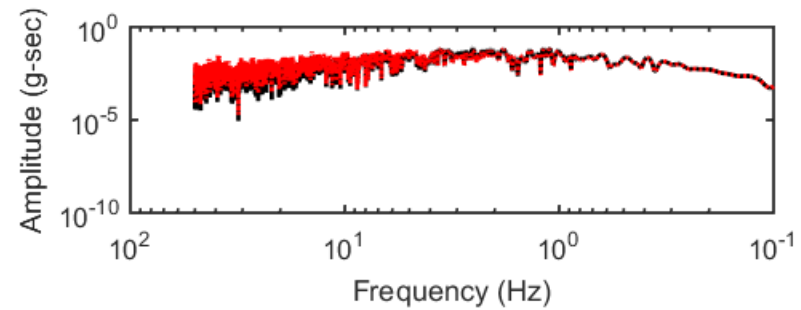
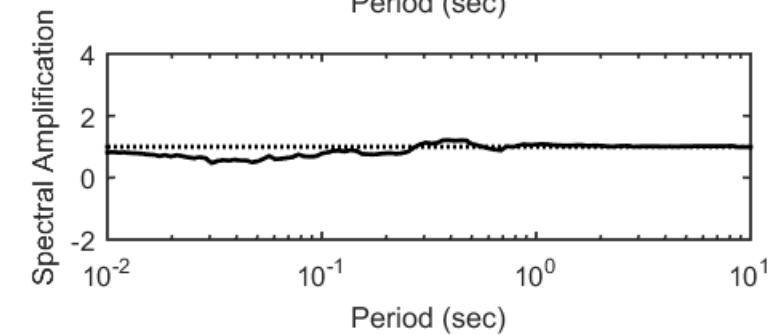
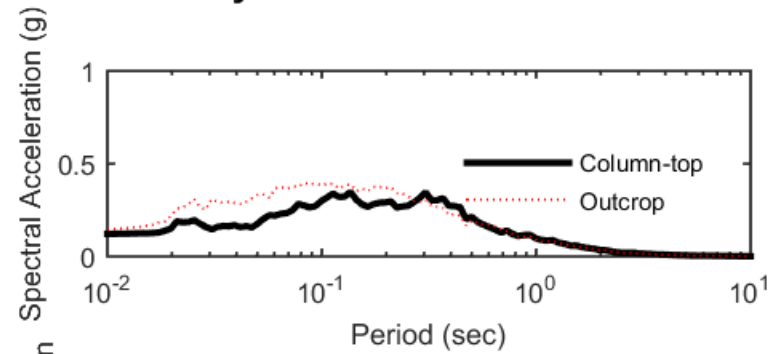
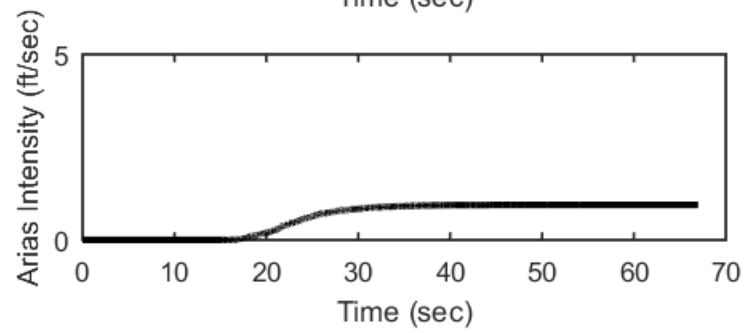
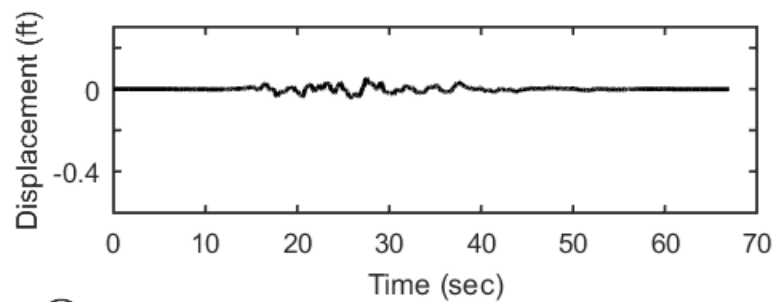
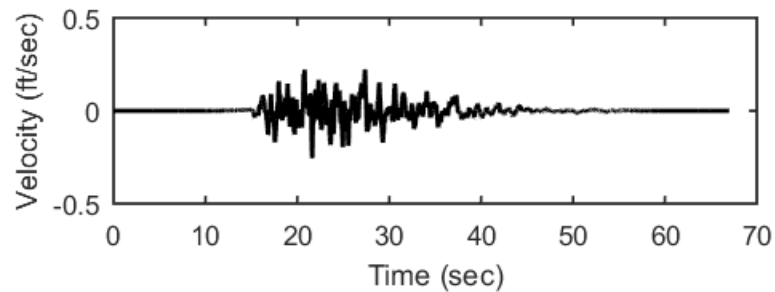
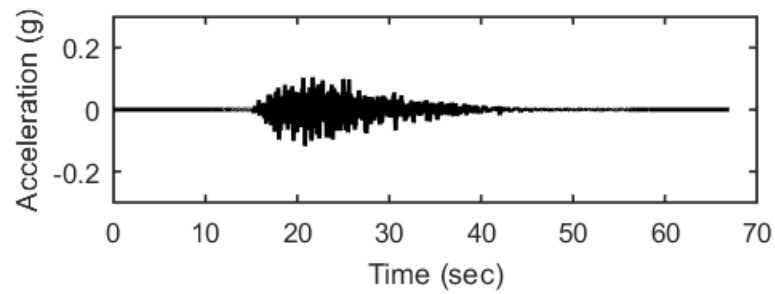


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5

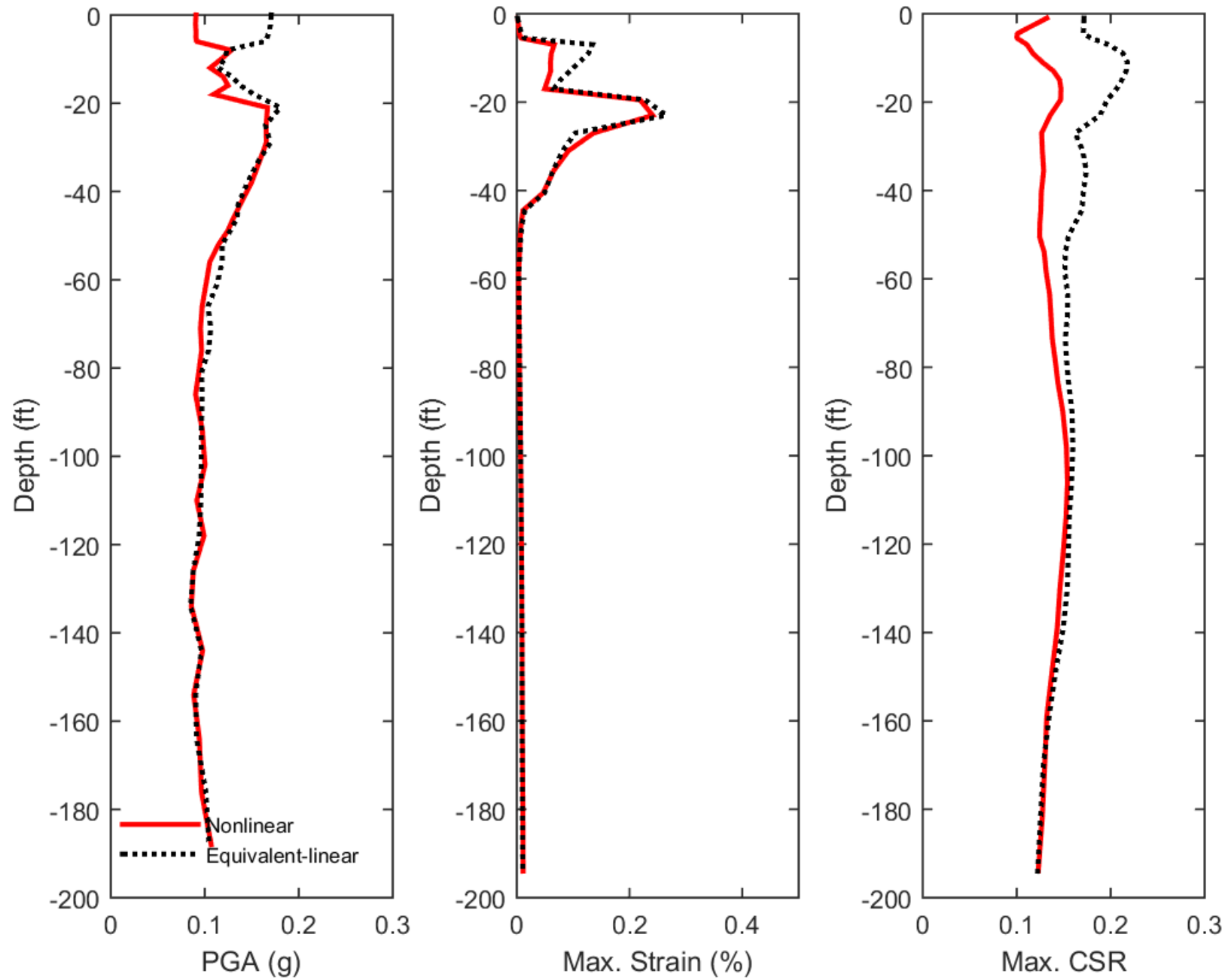




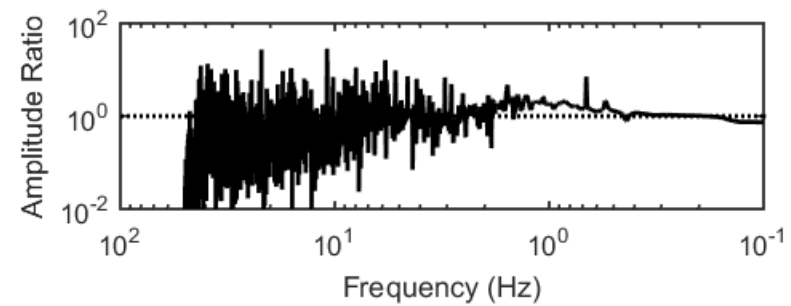
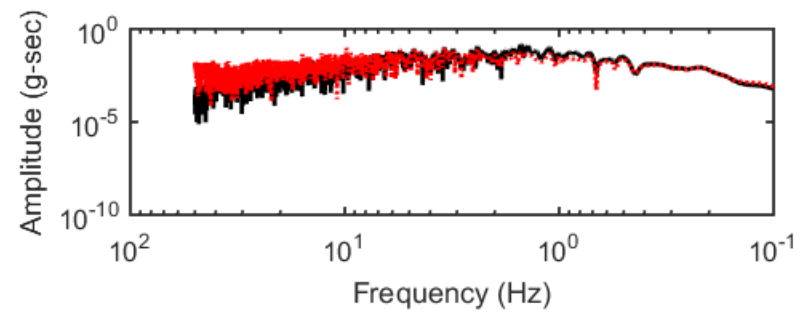
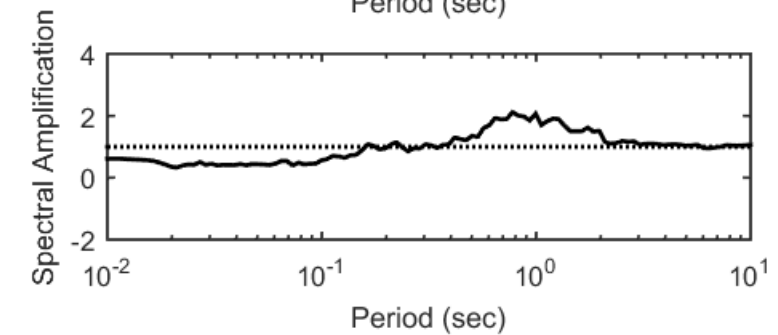
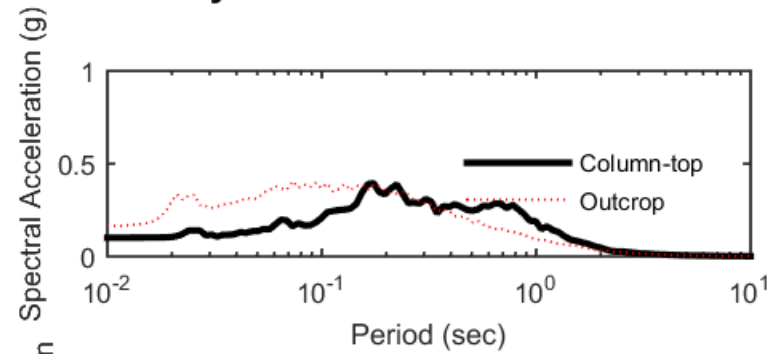
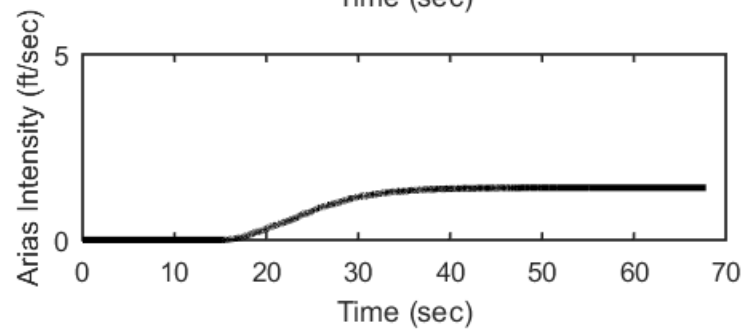
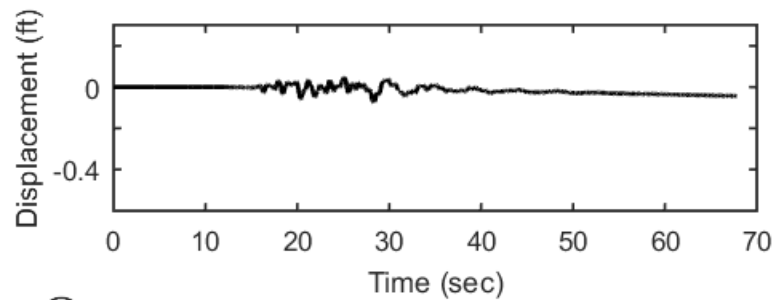
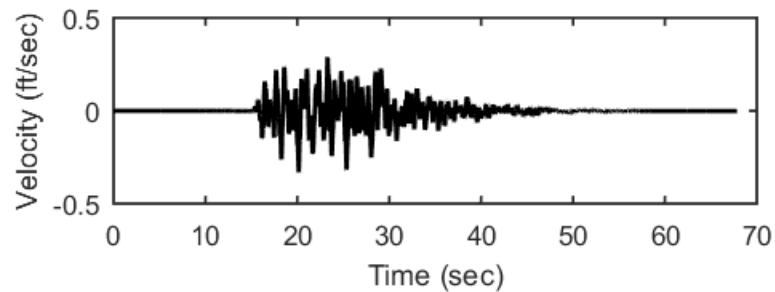
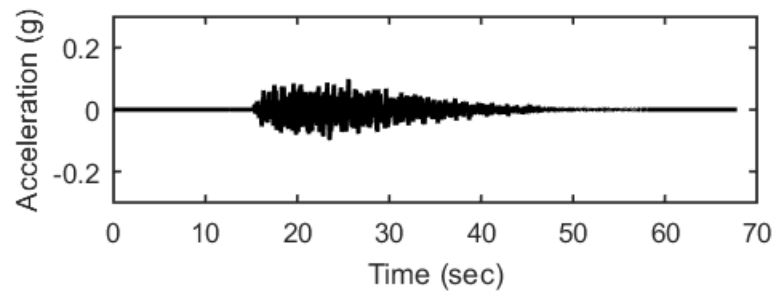
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



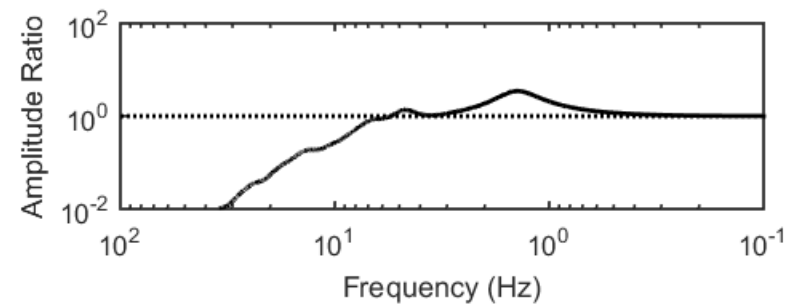
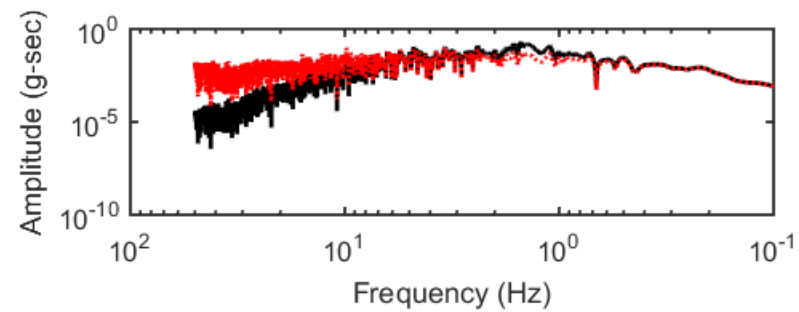
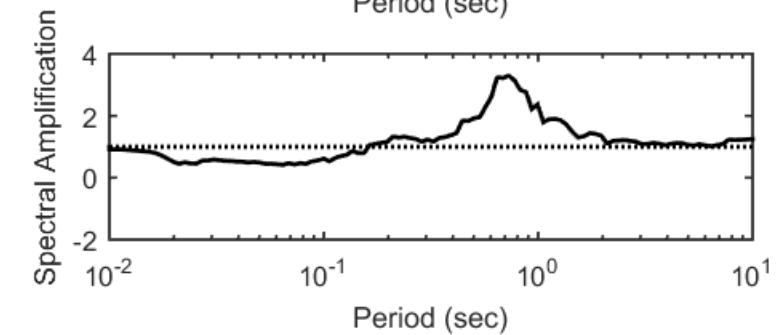
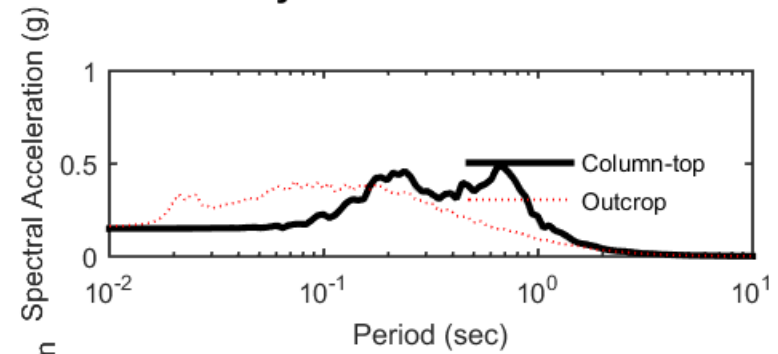
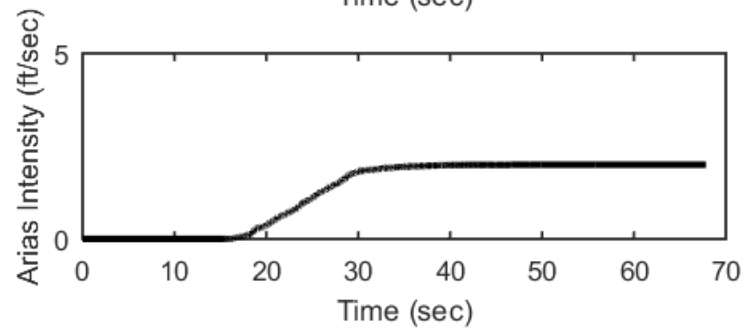
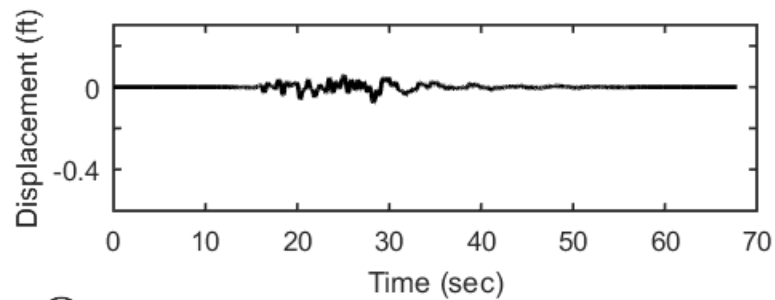
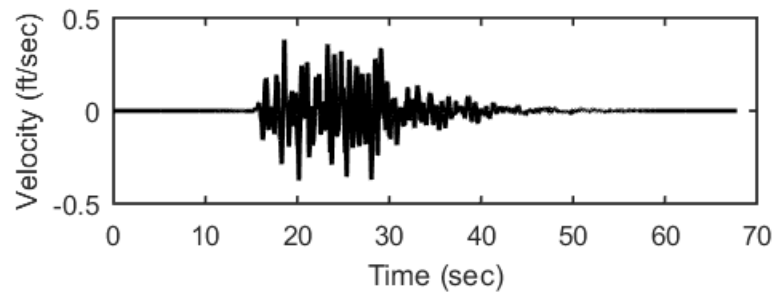
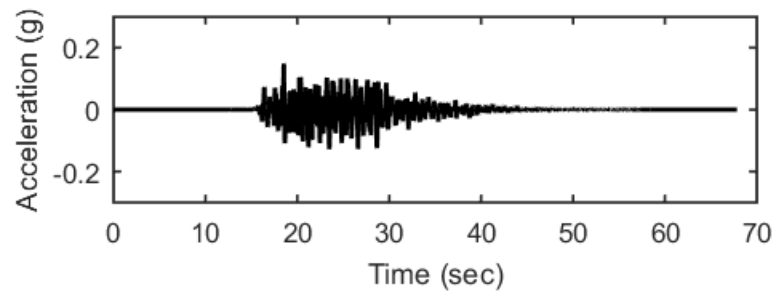
### Profile outputs for Motion: FEE5



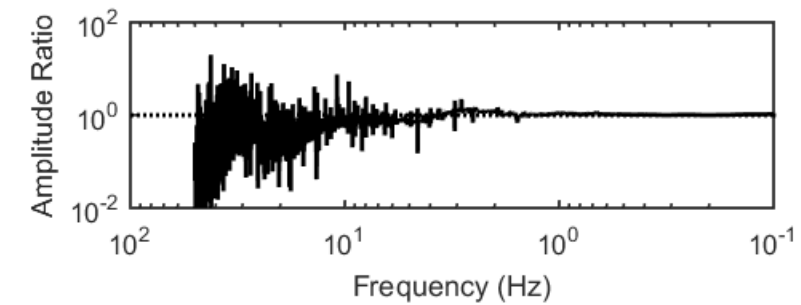
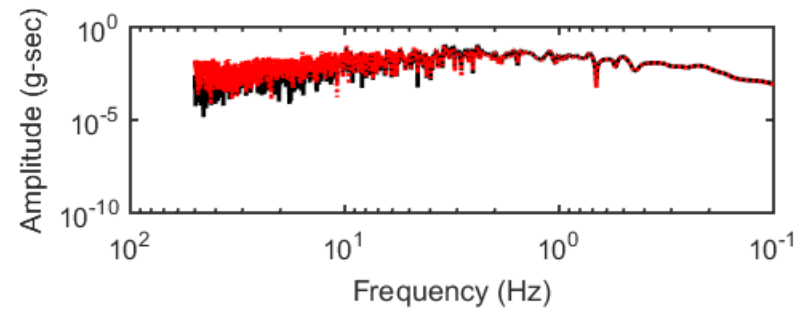
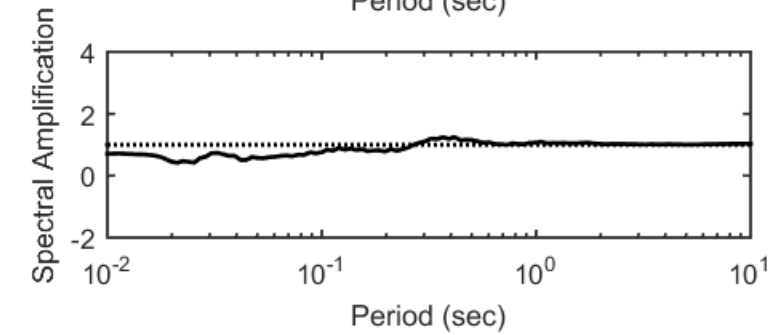
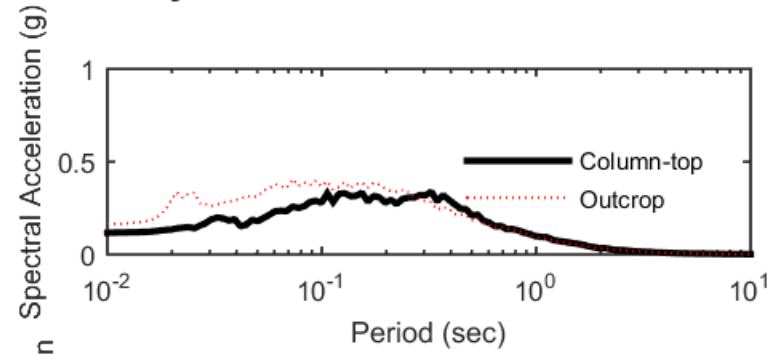
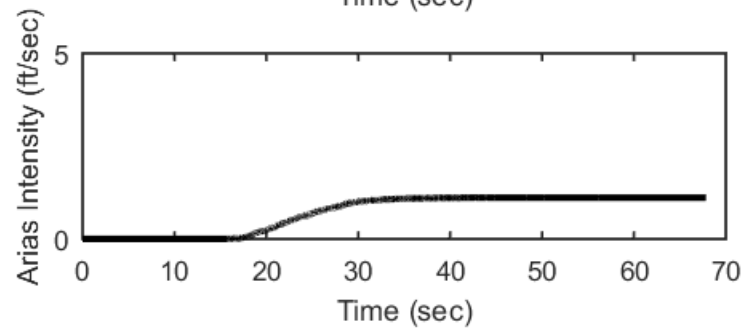
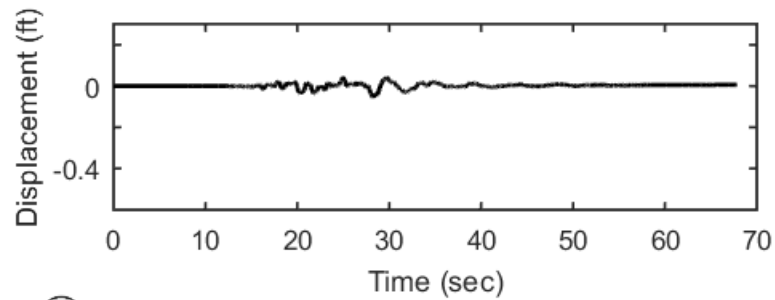
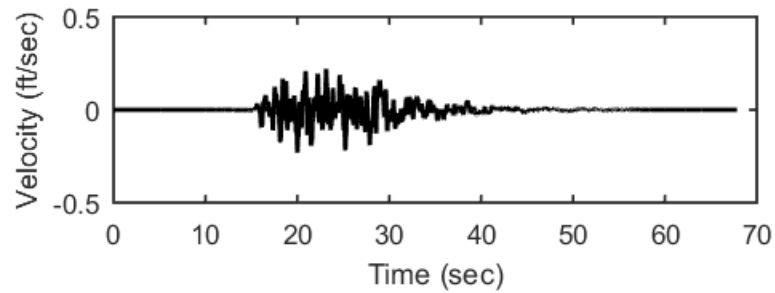
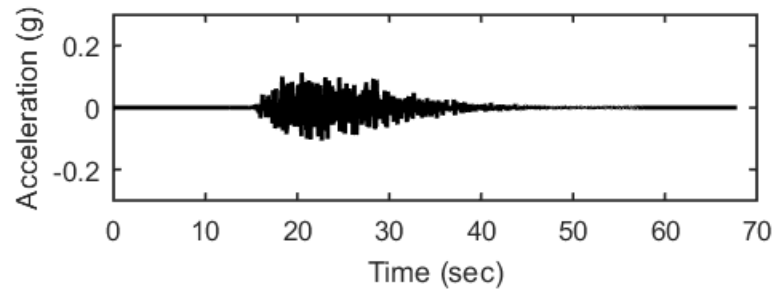
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



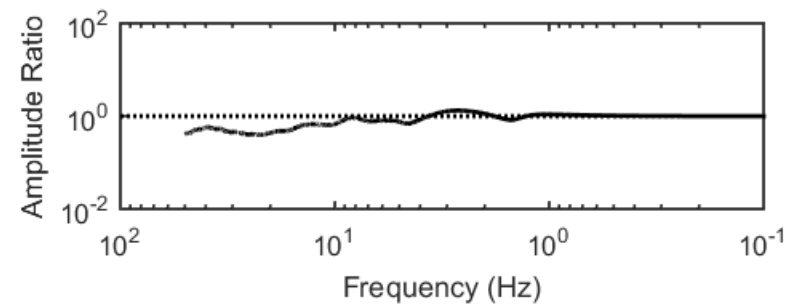
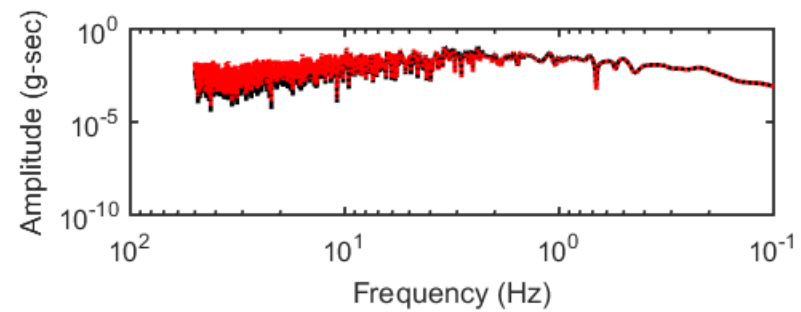
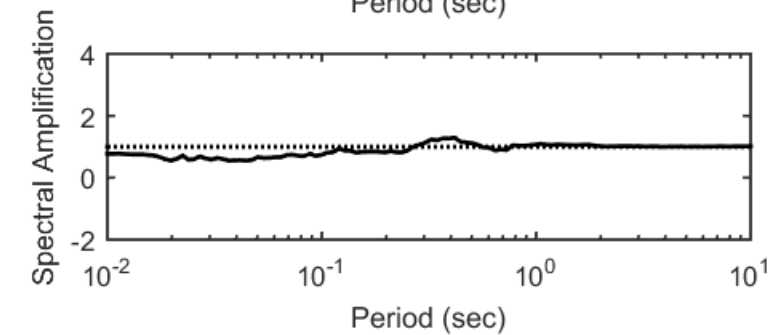
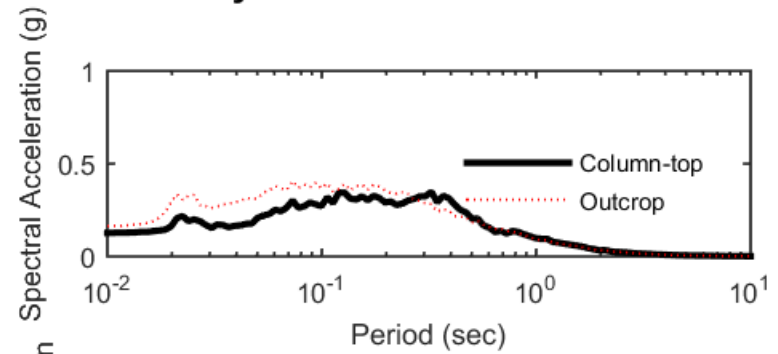
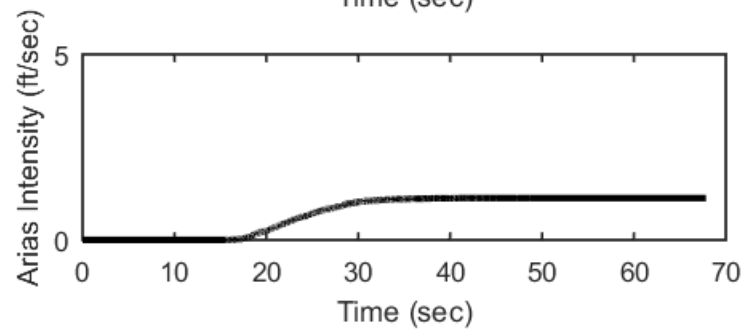
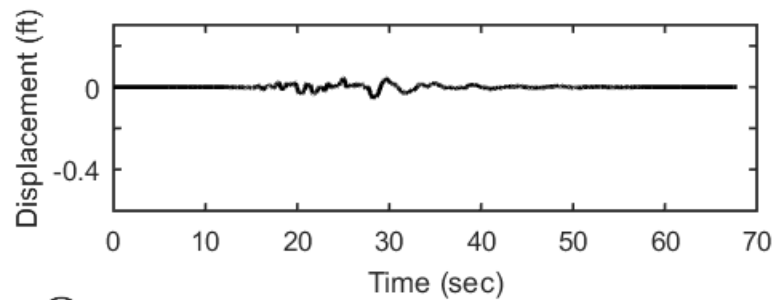
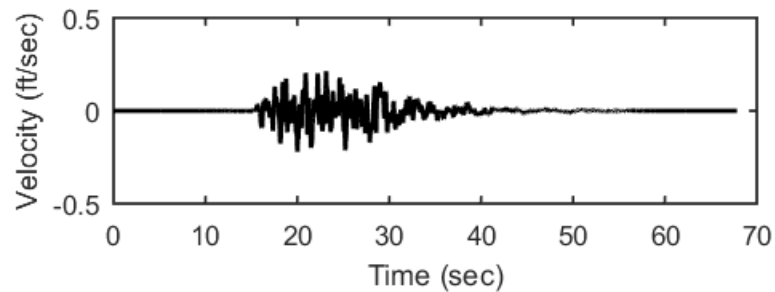
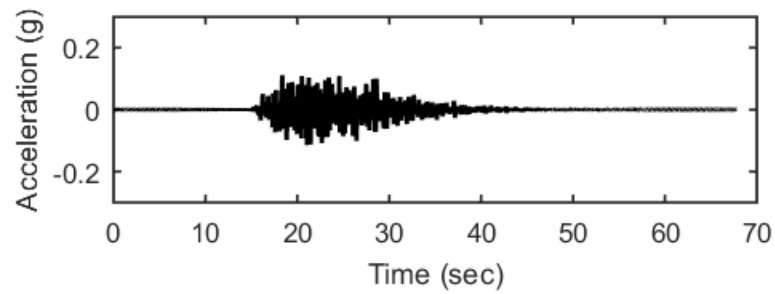
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



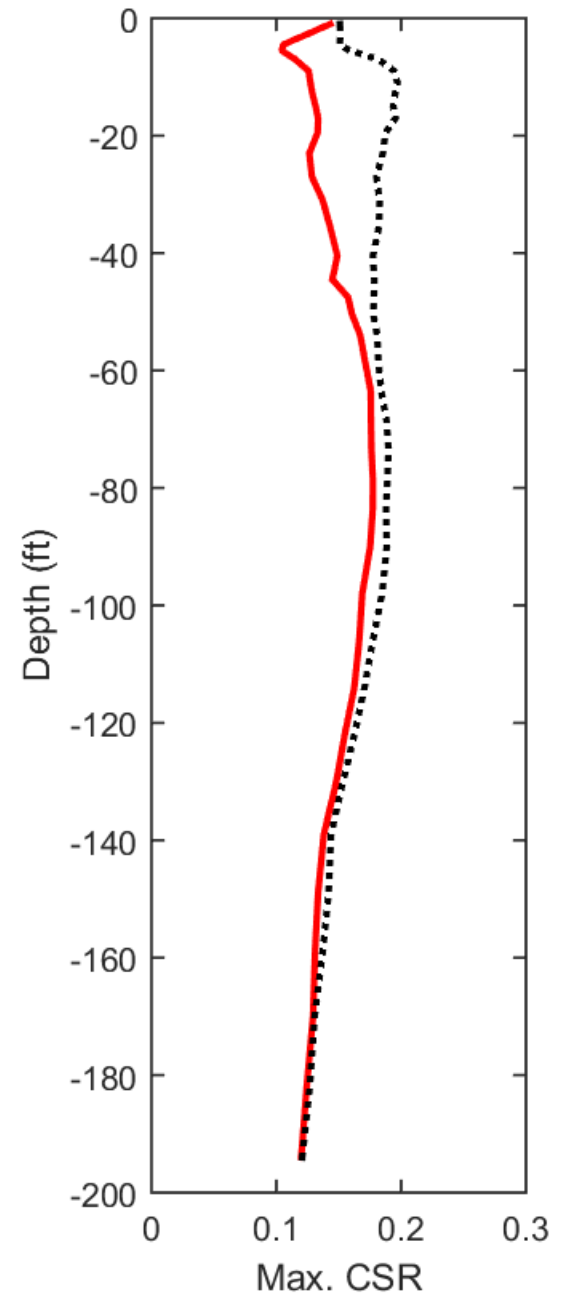
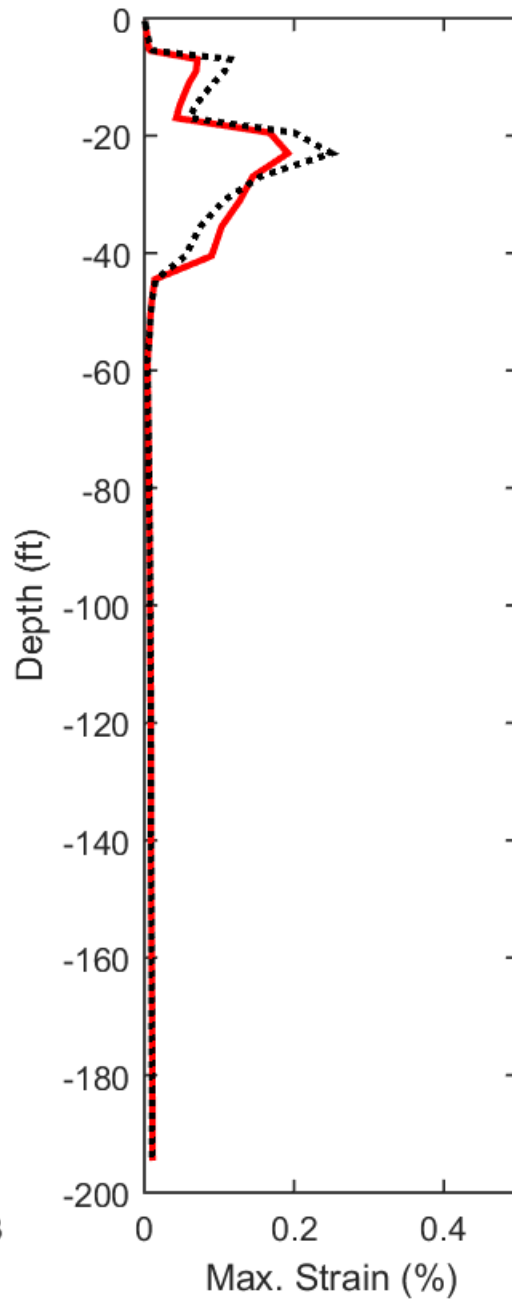
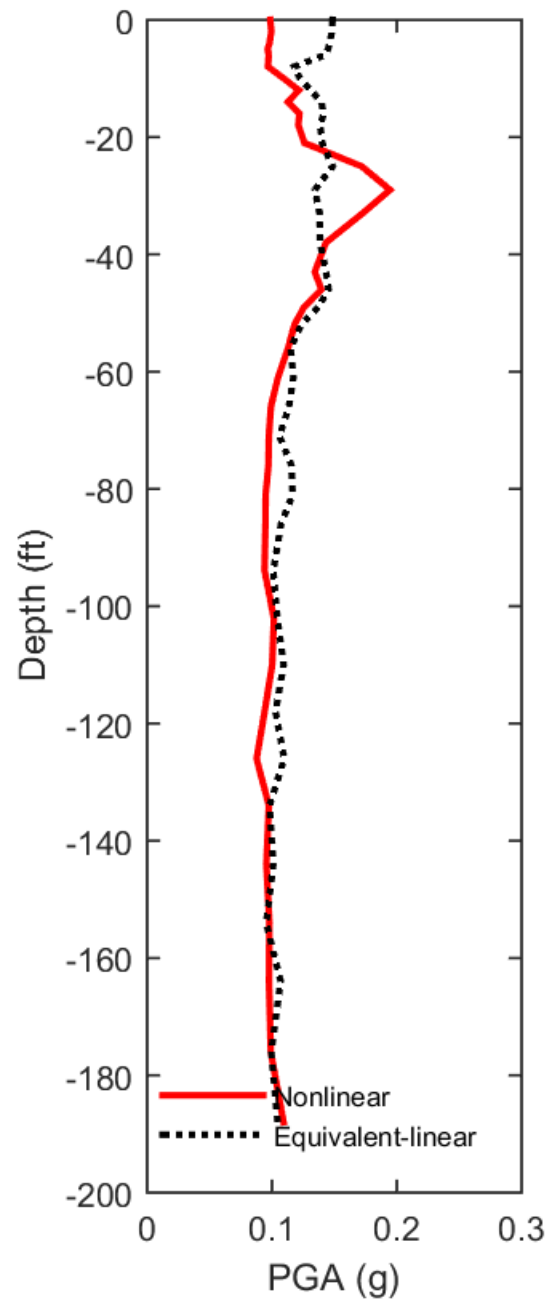
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



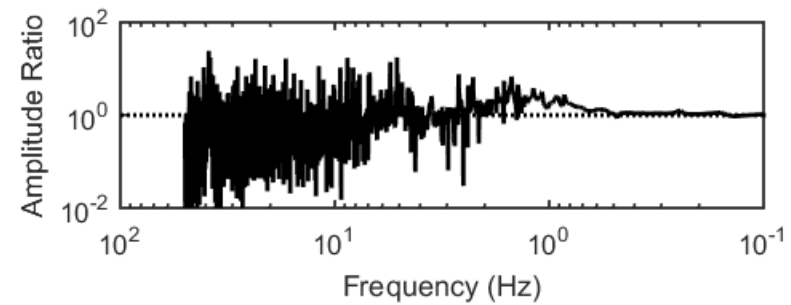
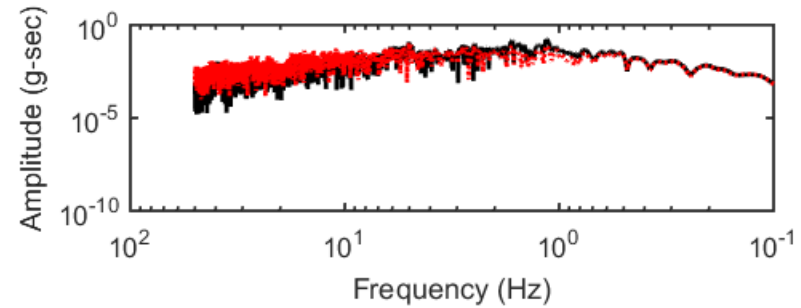
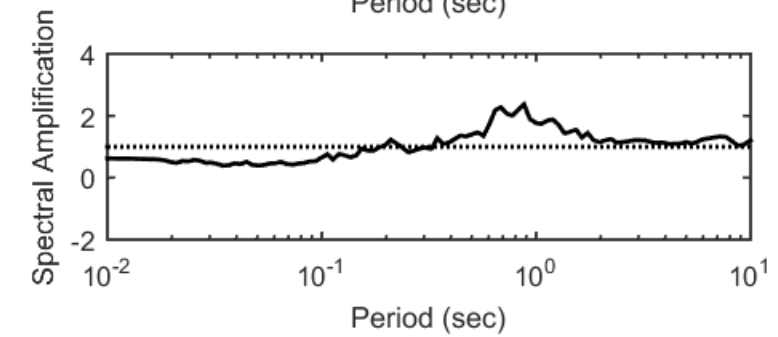
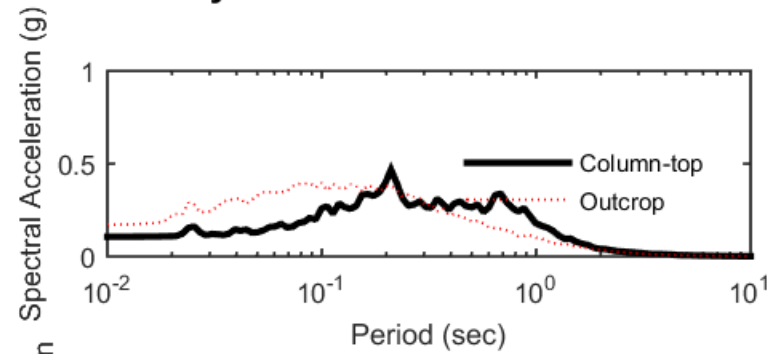
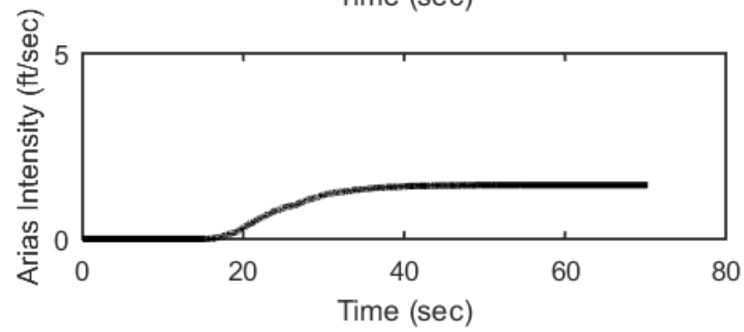
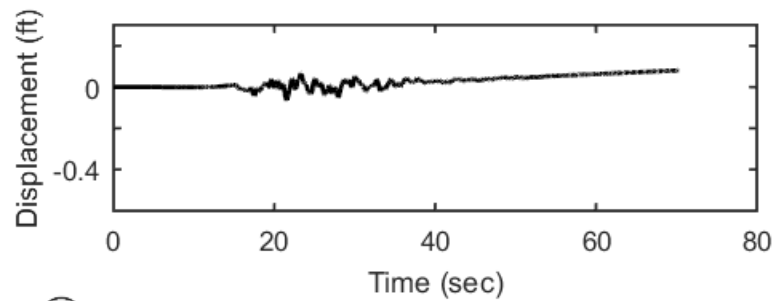
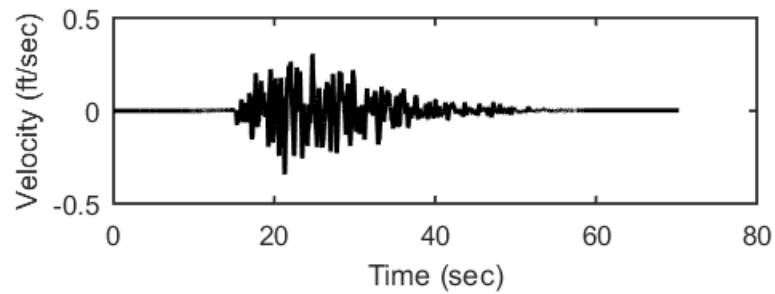
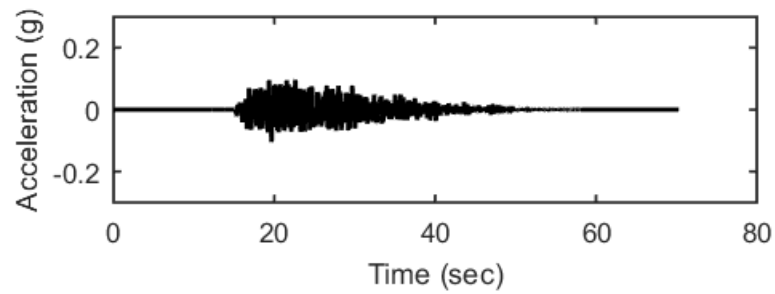
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



### Profile outputs for Motion: FEE6

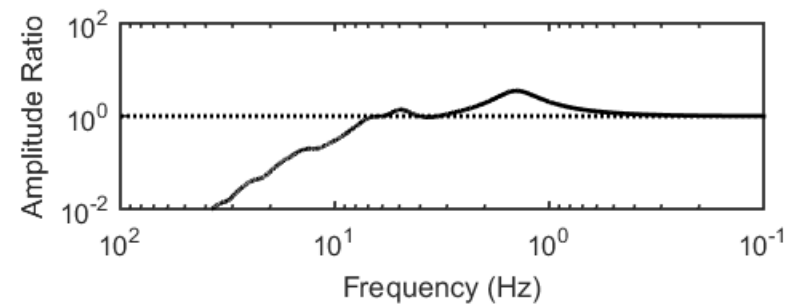
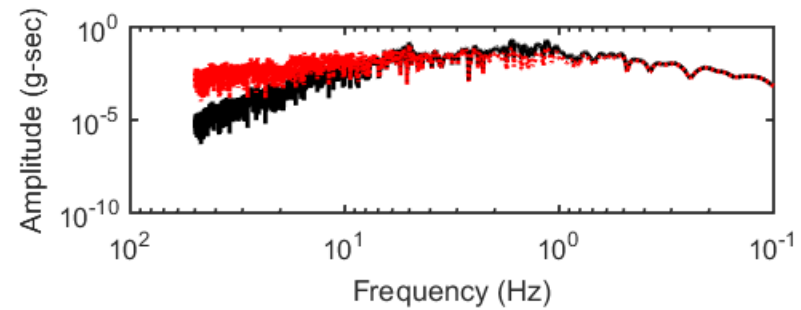
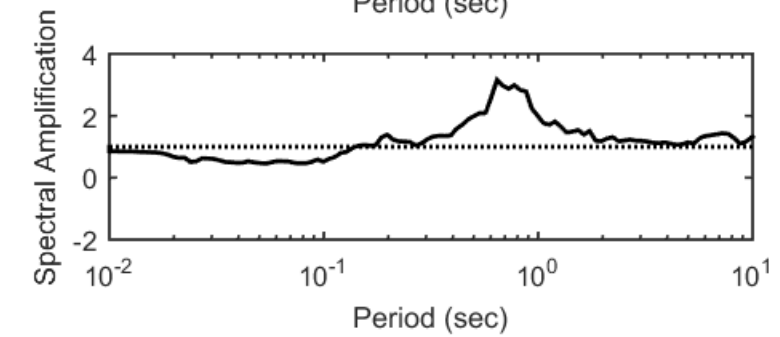
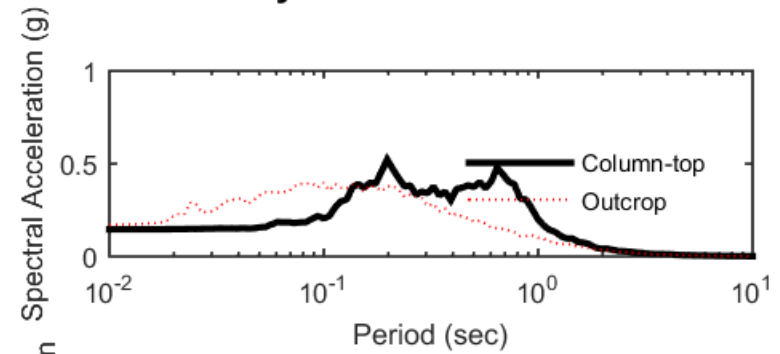
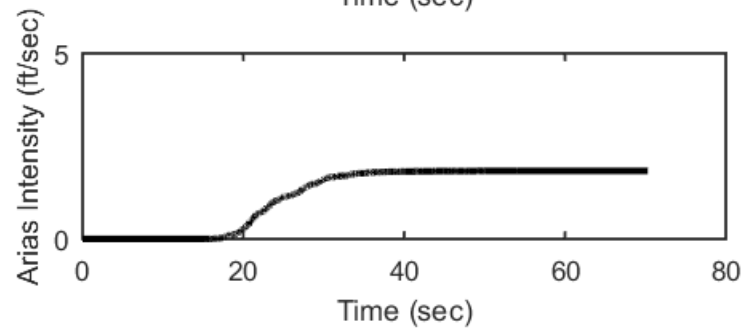
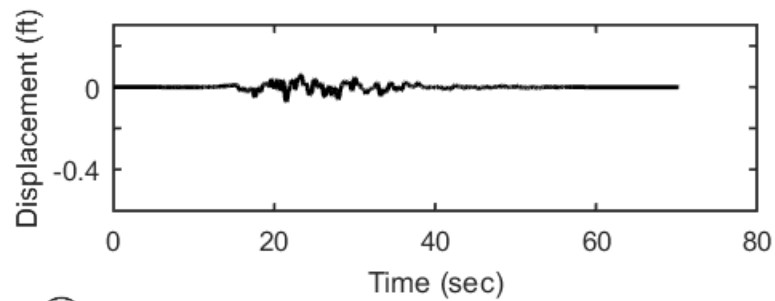
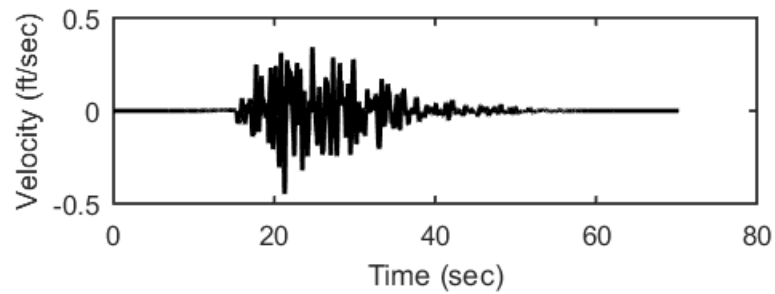
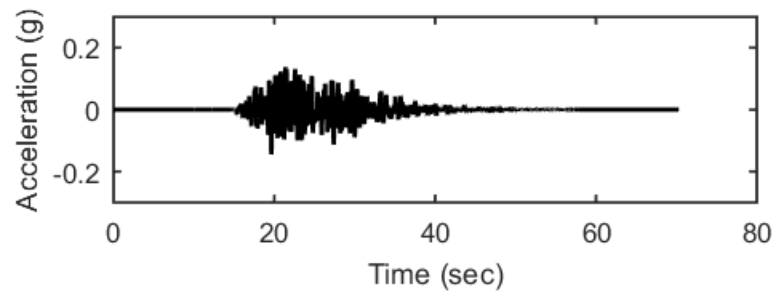


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7

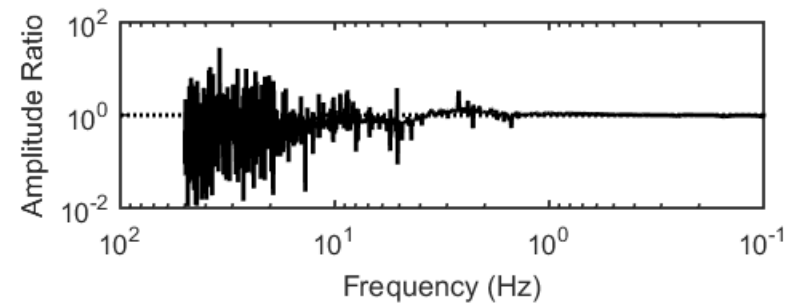
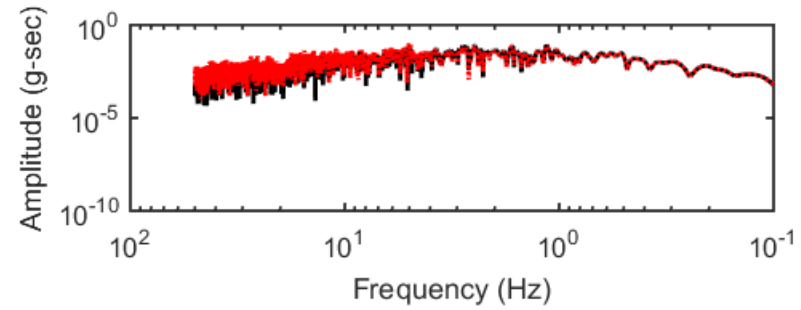
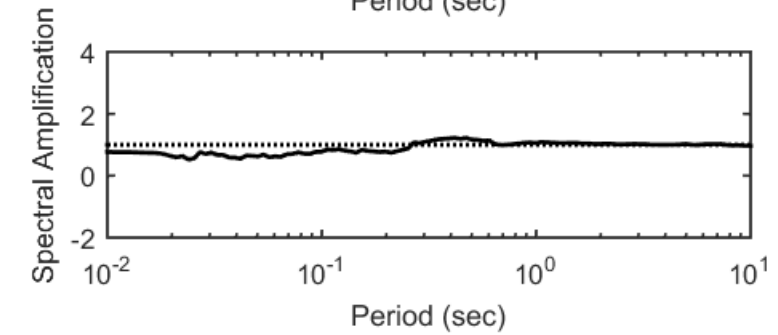
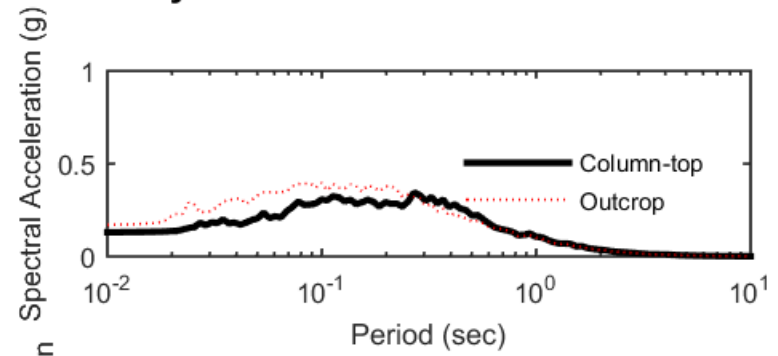
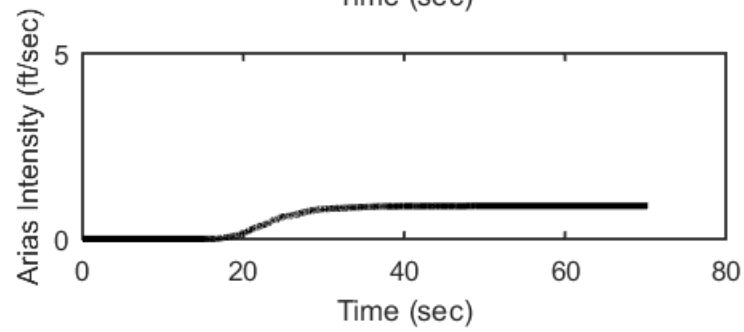
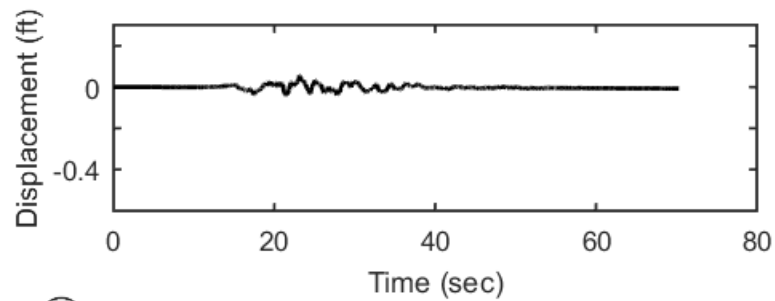
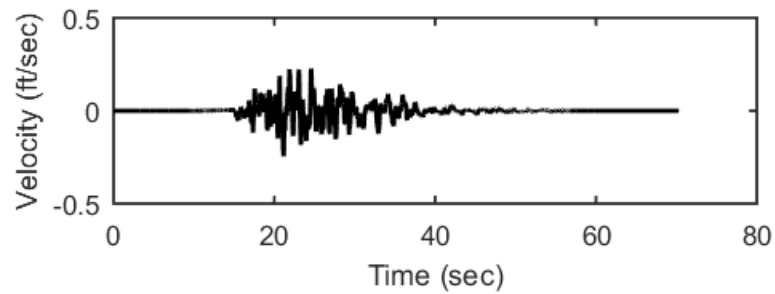
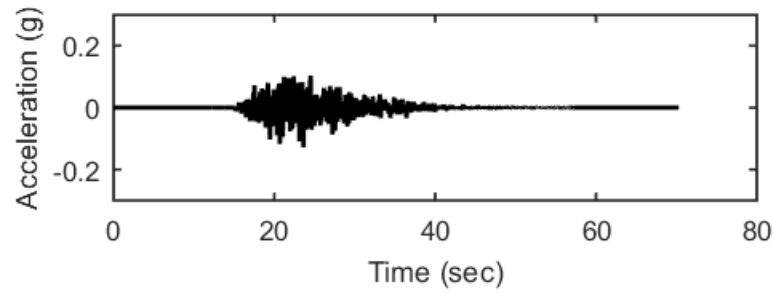




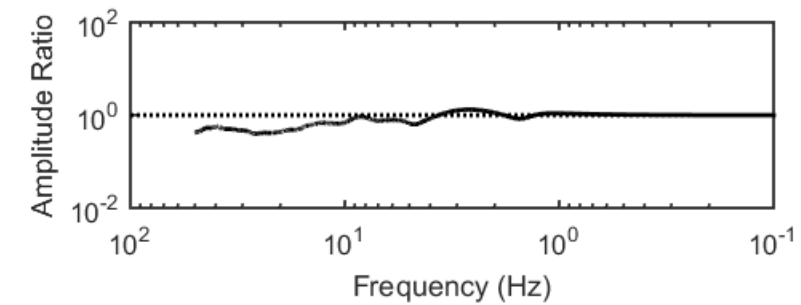
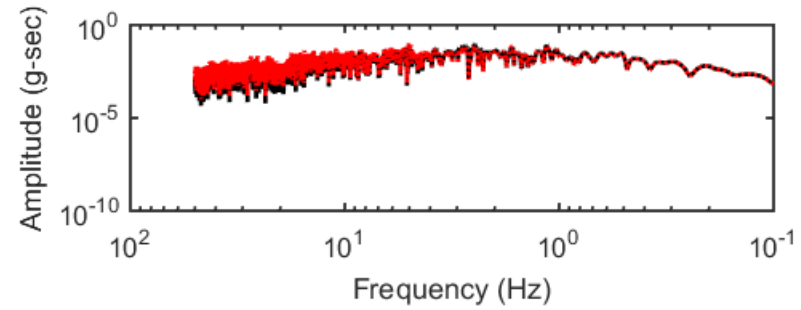
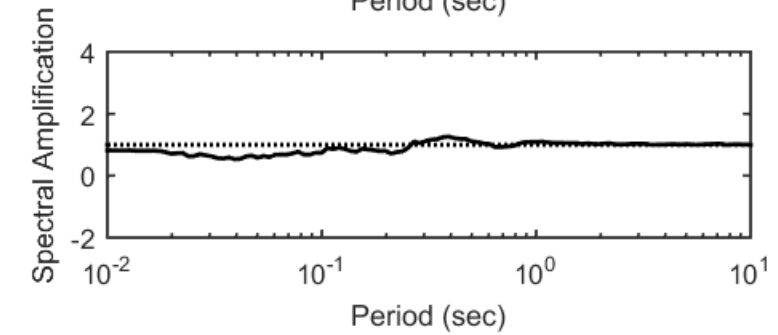
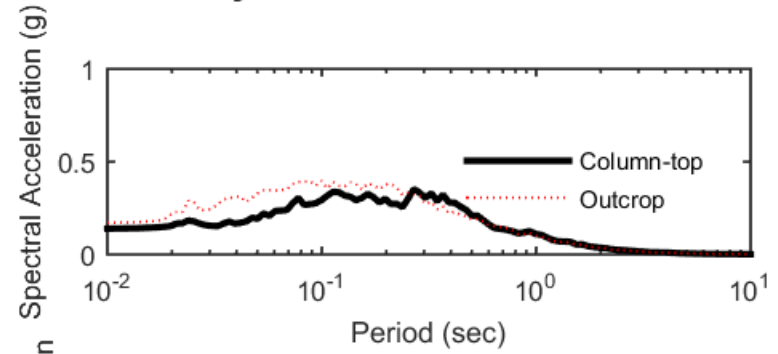
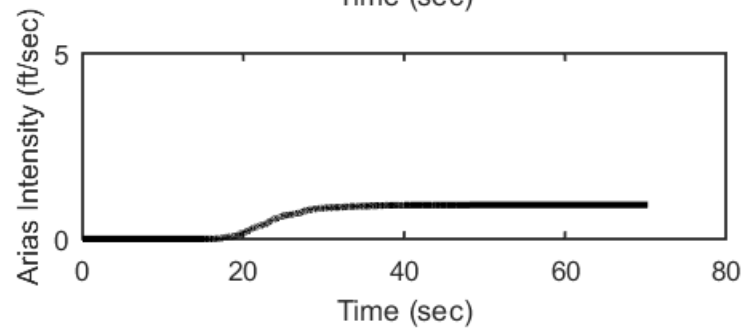
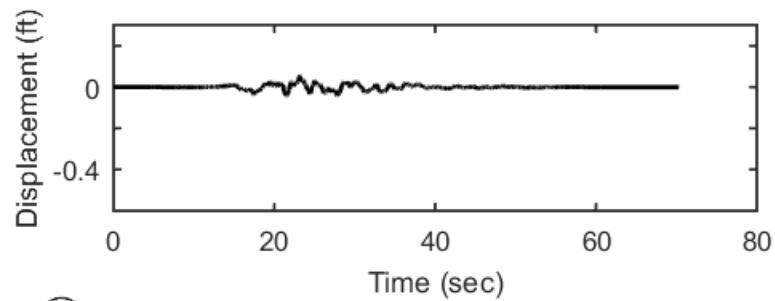
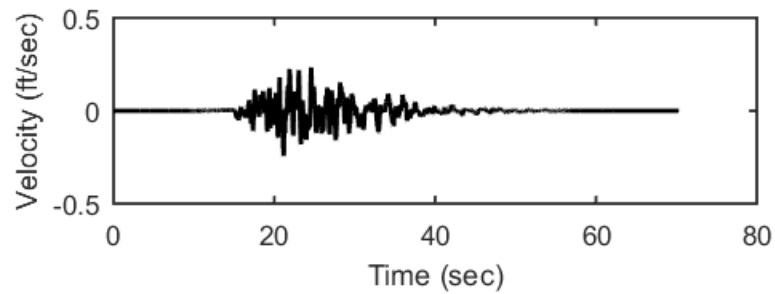
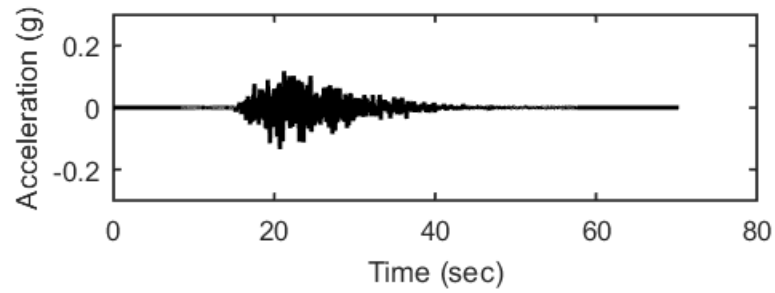
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



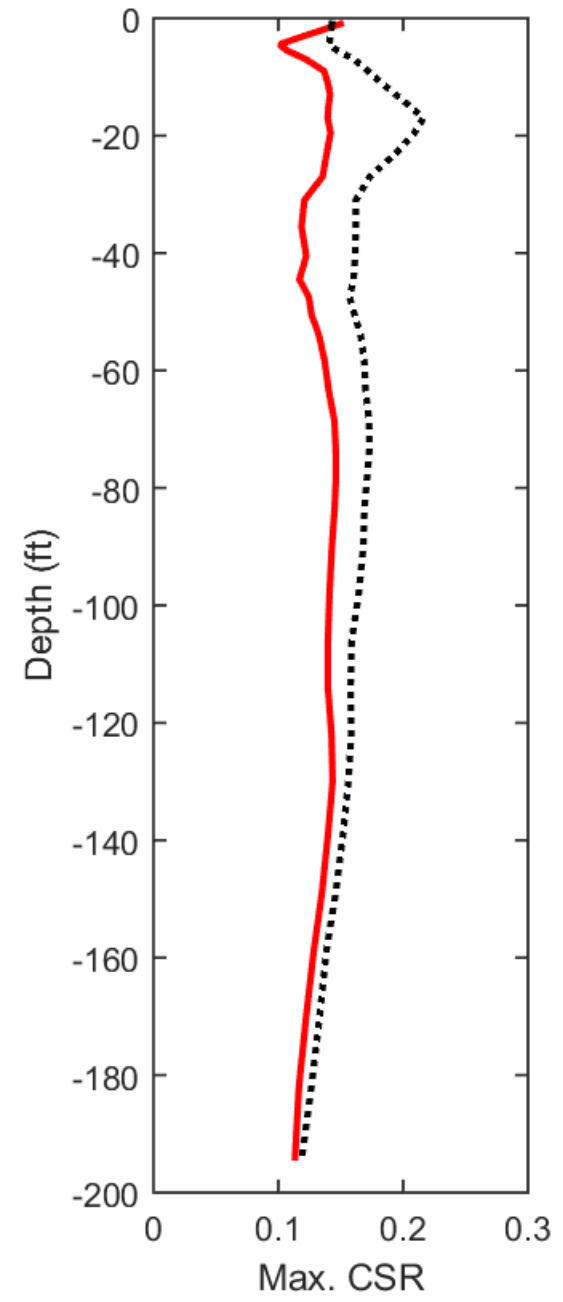
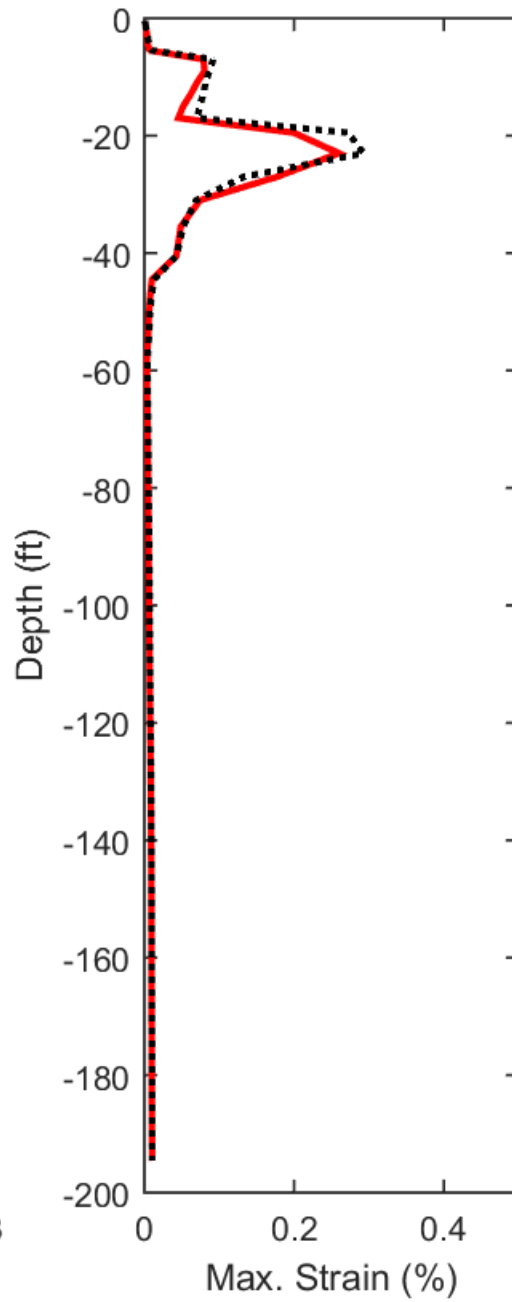
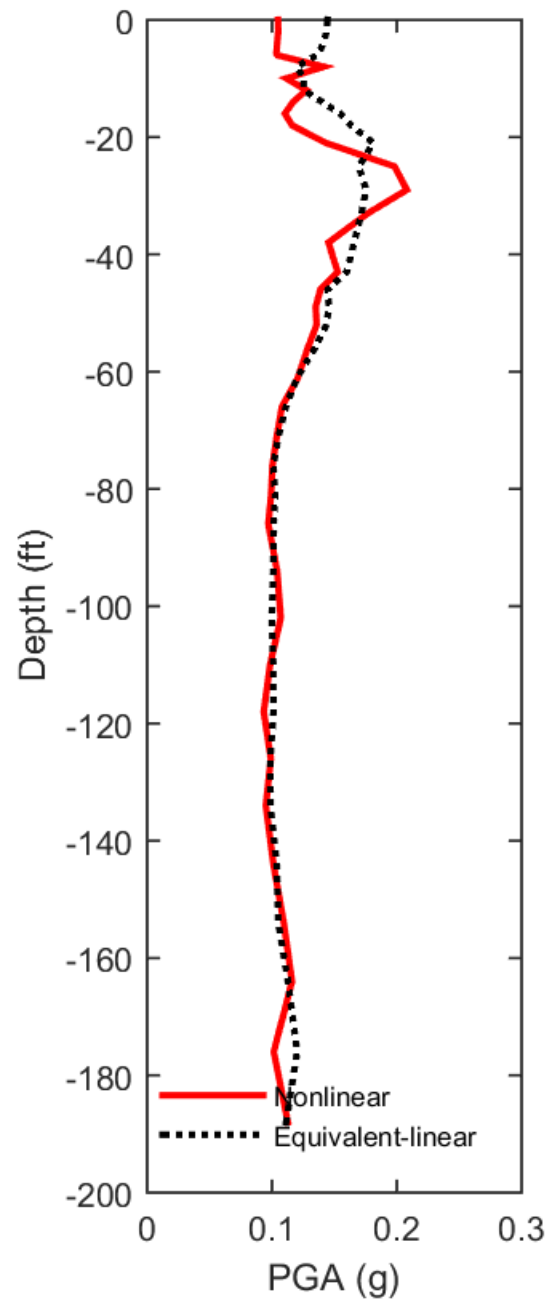
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



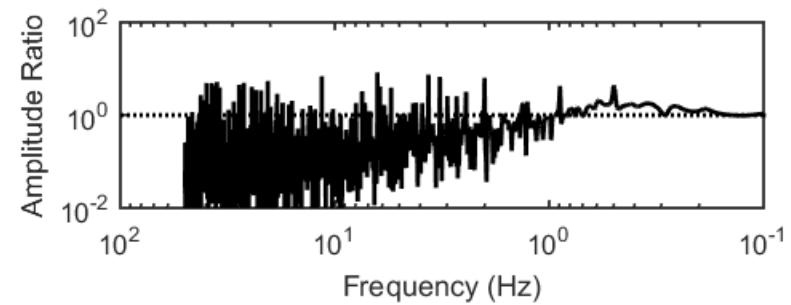
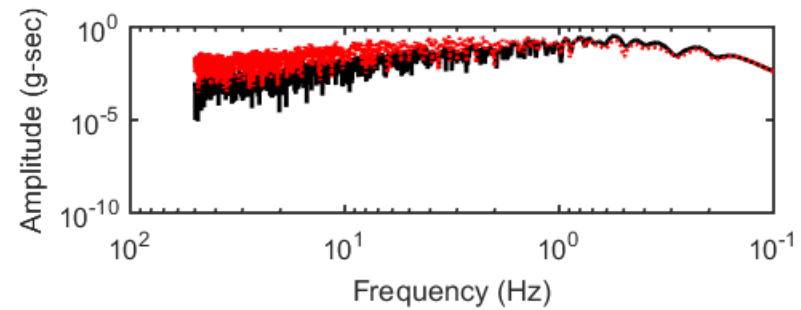
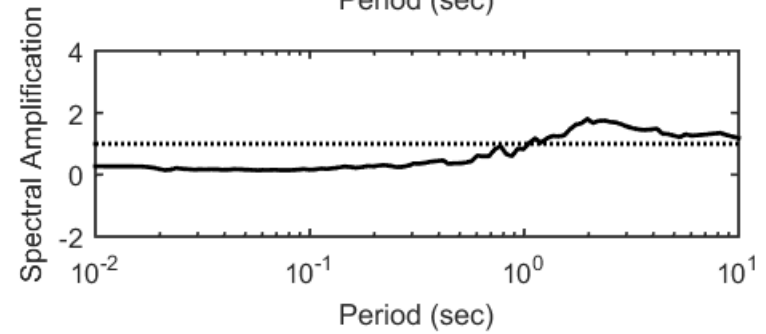
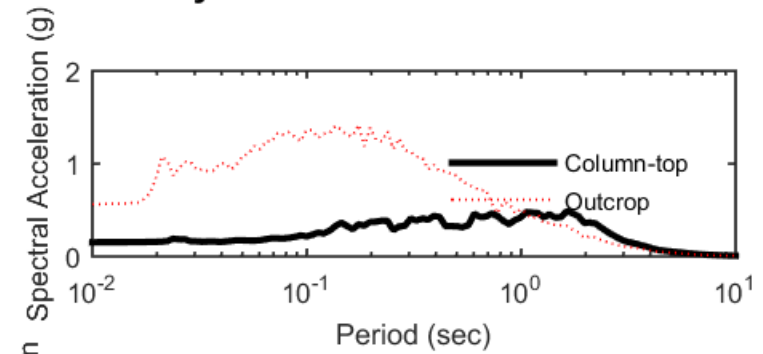
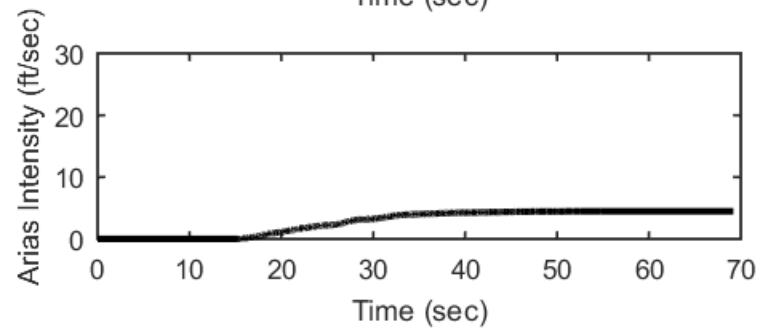
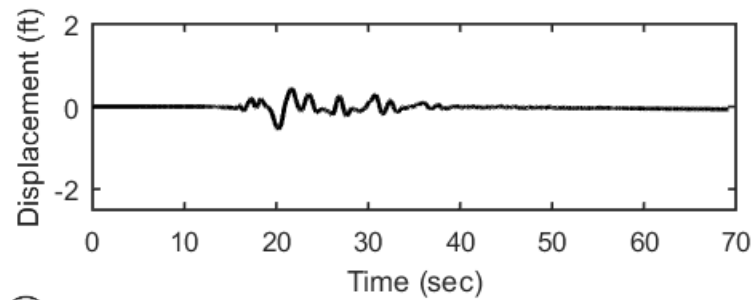
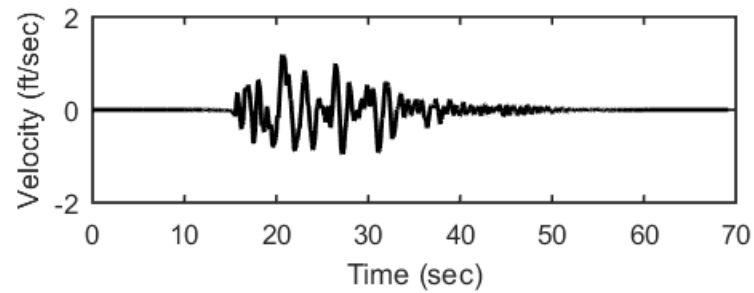
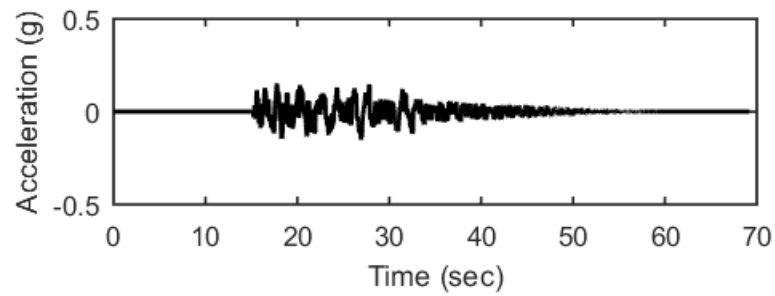
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



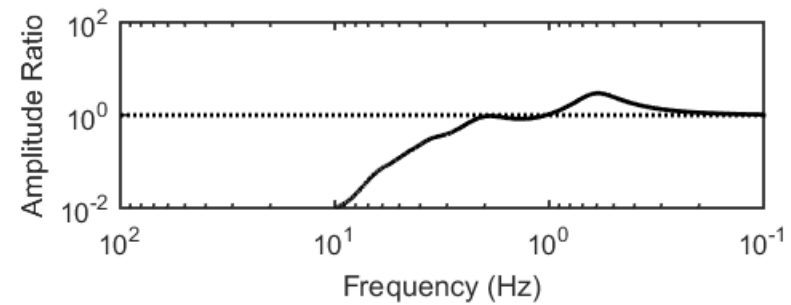
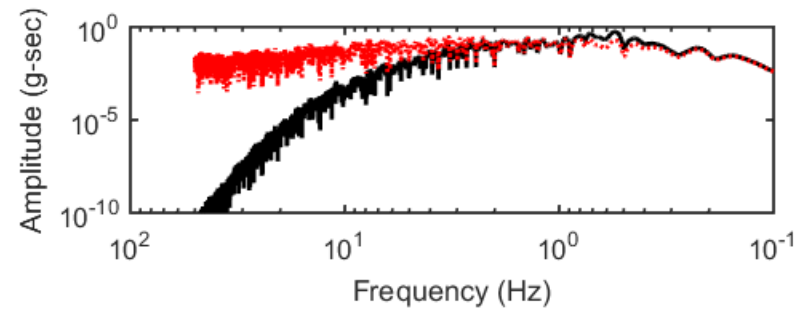
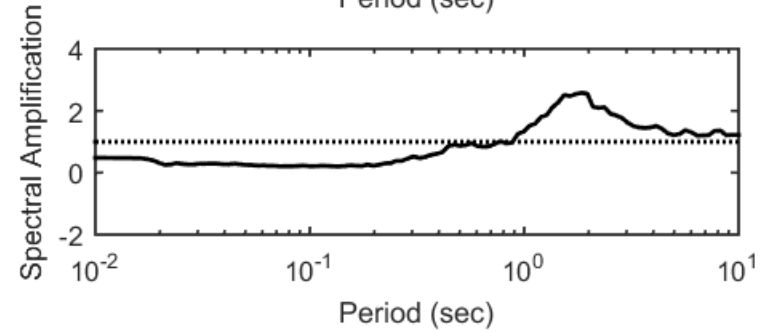
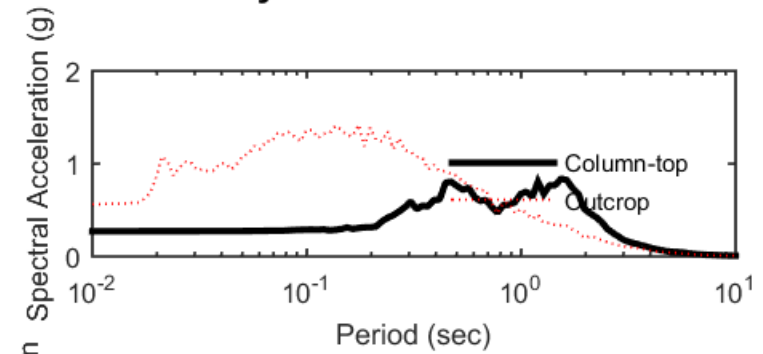
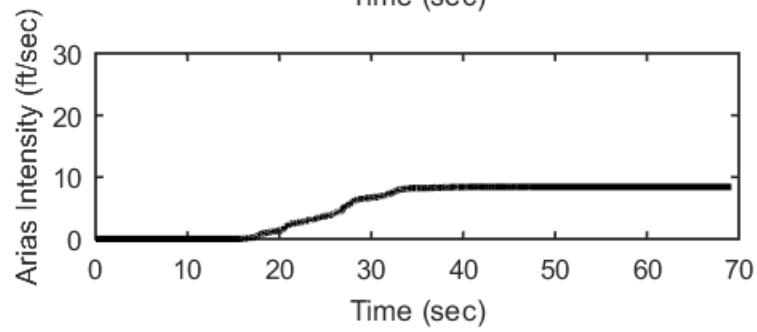
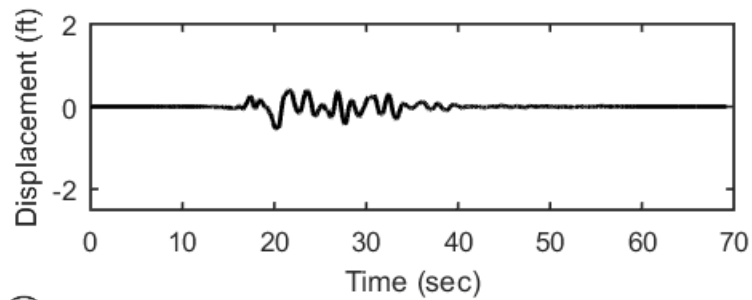
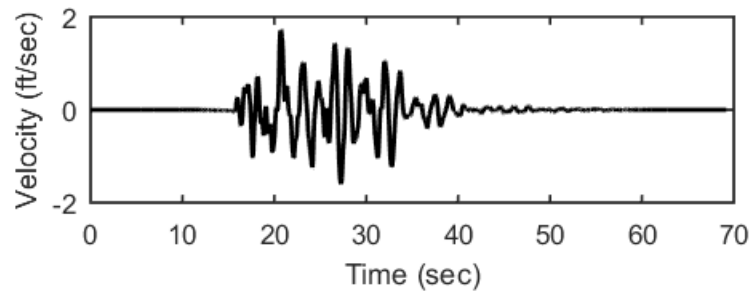
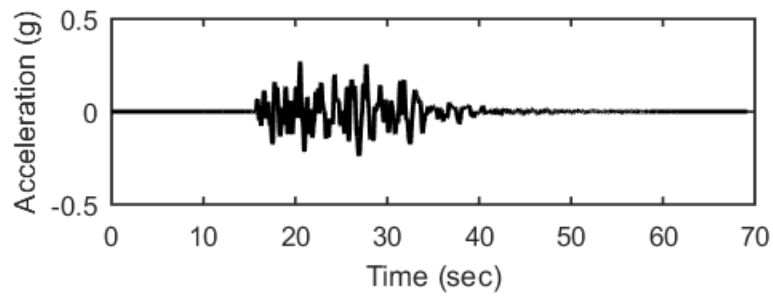
### Profile outputs for Motion: FEE7



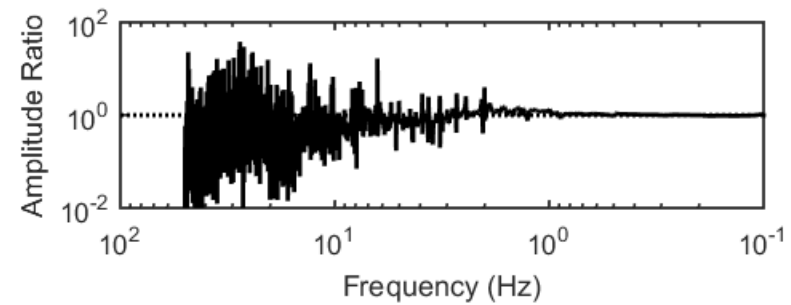
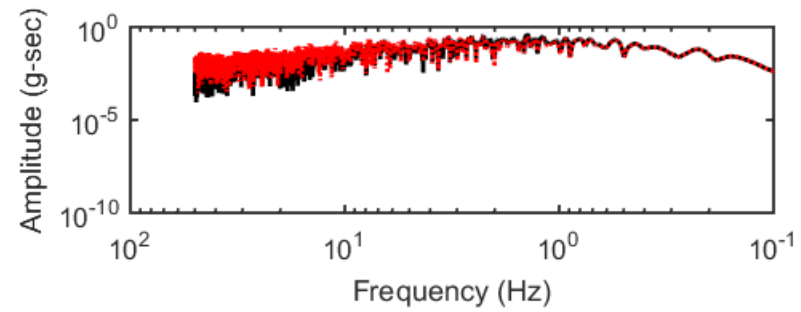
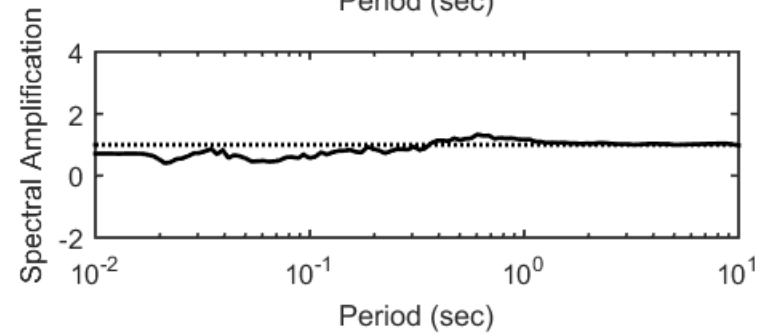
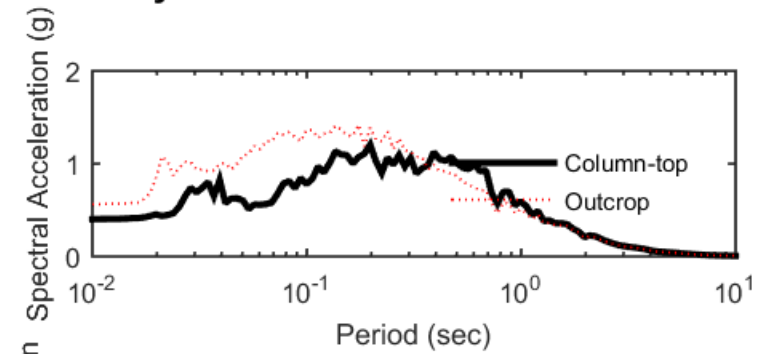
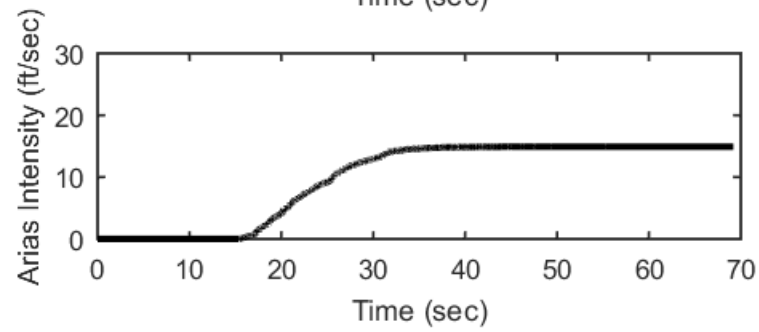
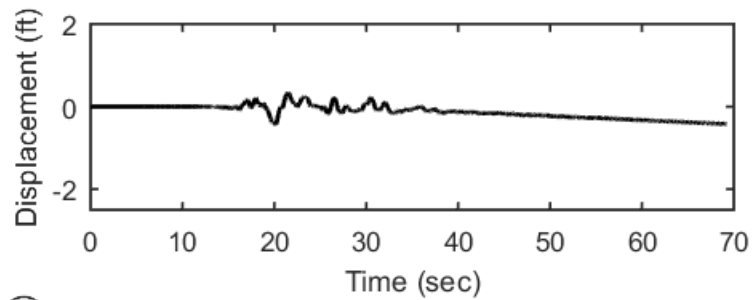
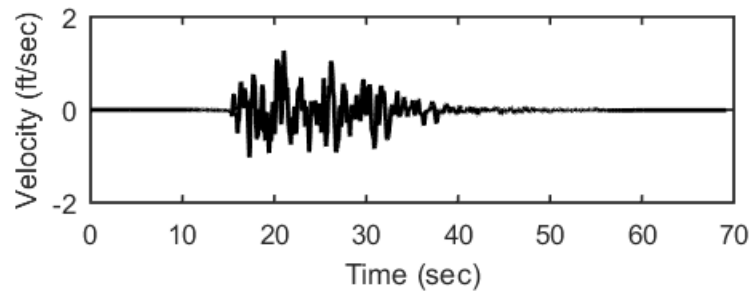
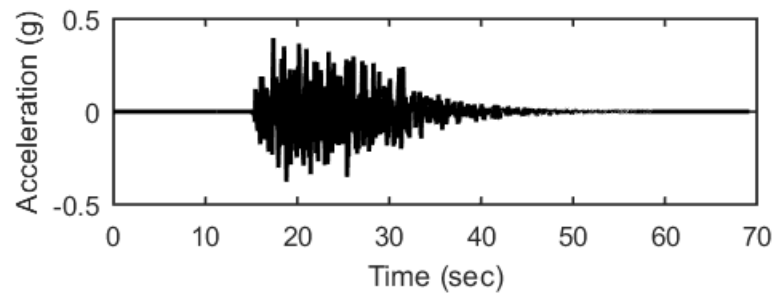
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



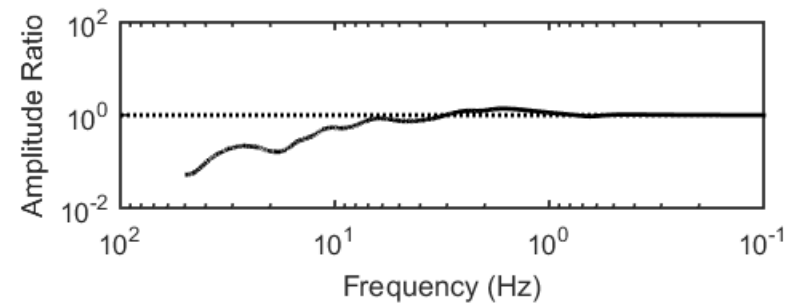
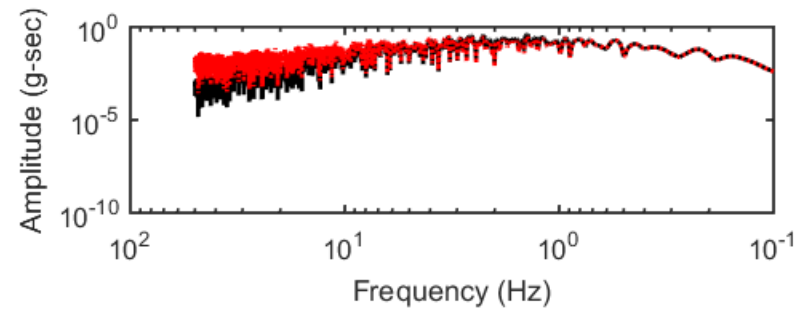
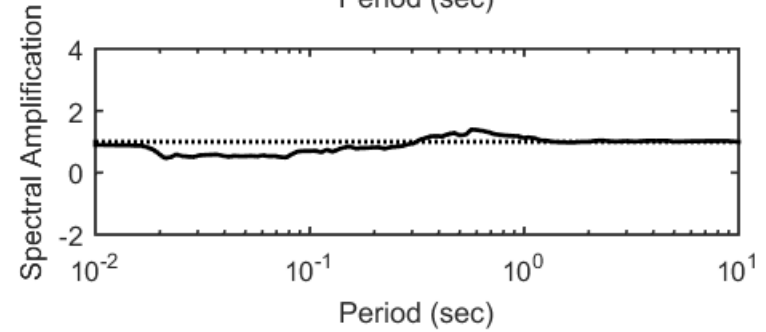
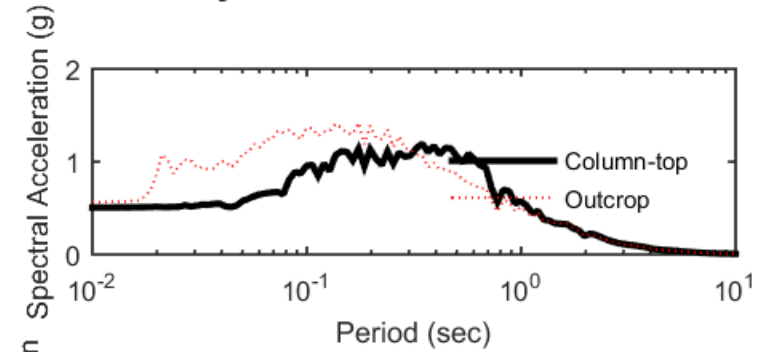
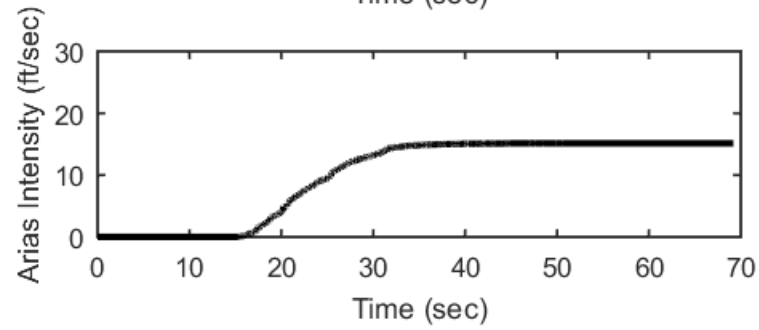
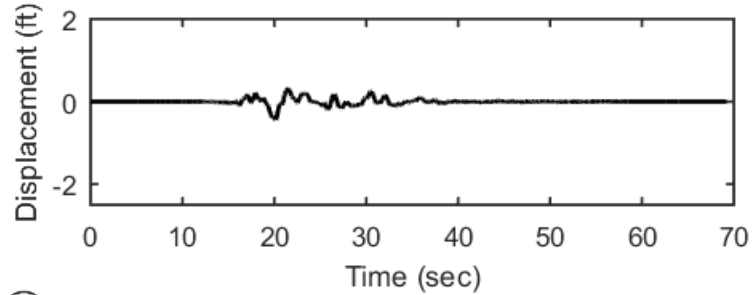
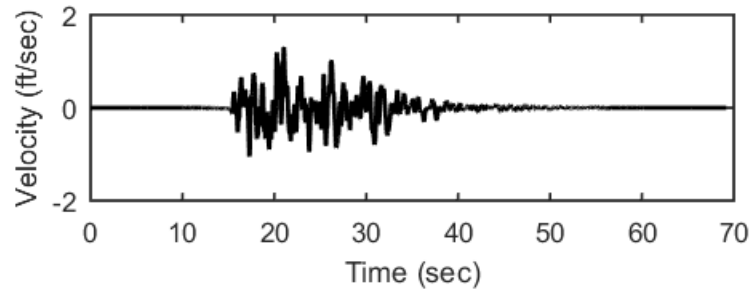
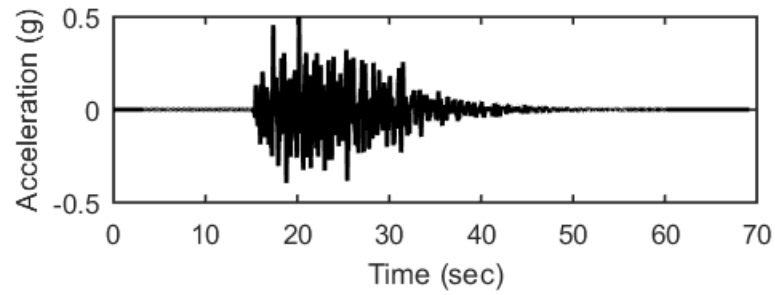
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1

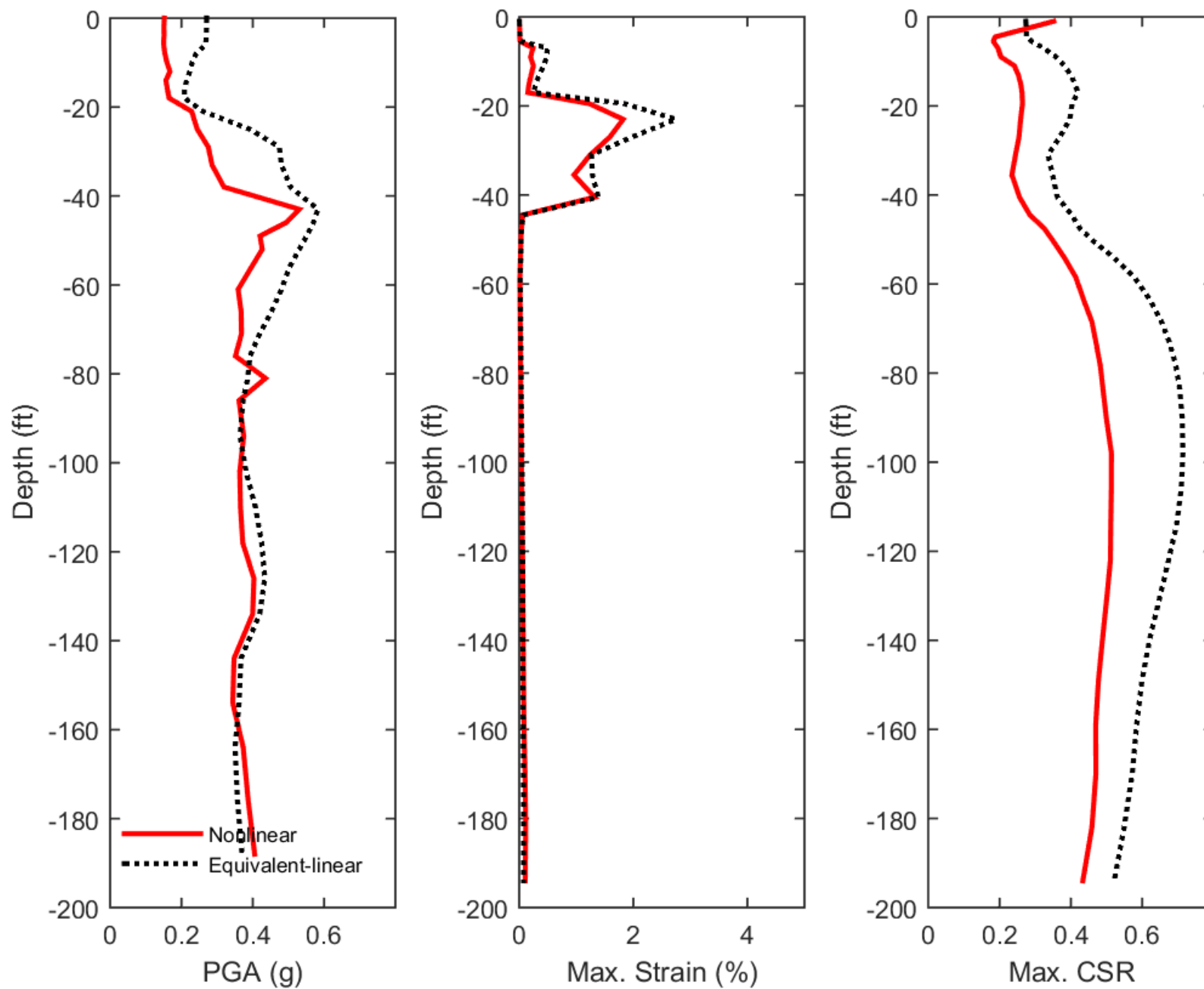


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1

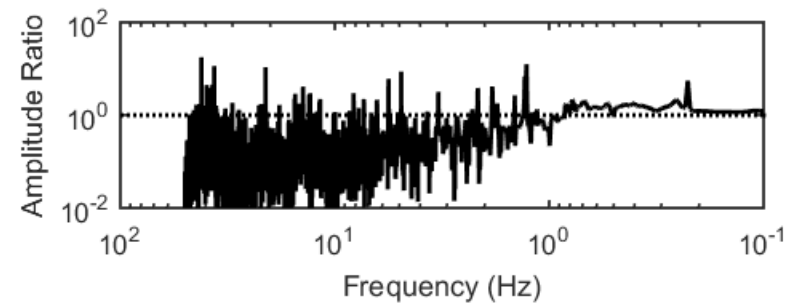
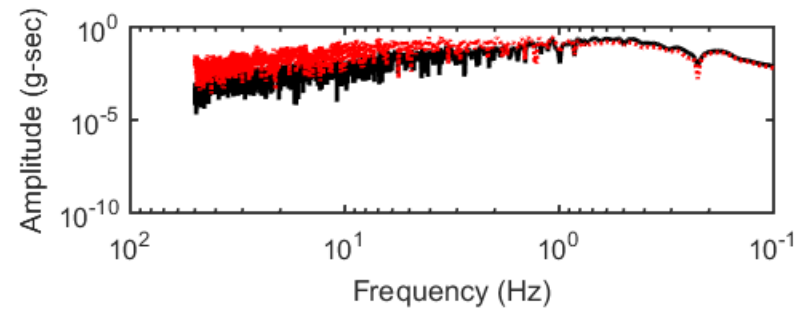
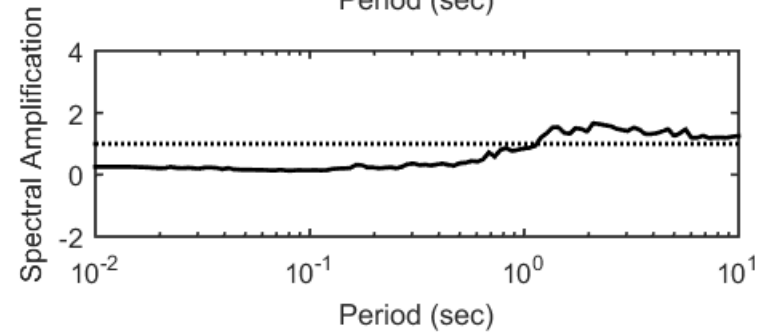
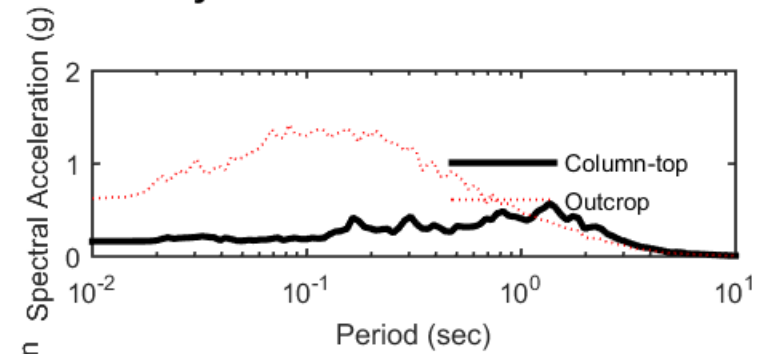
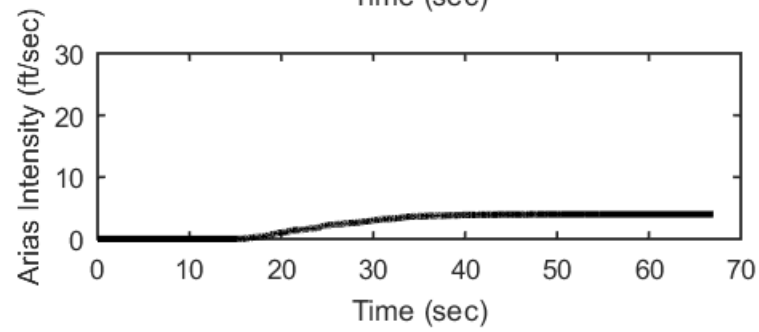
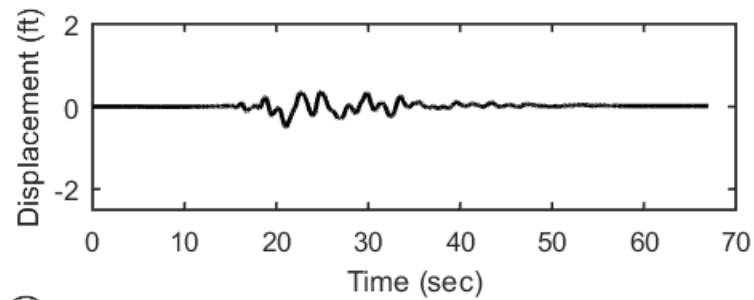
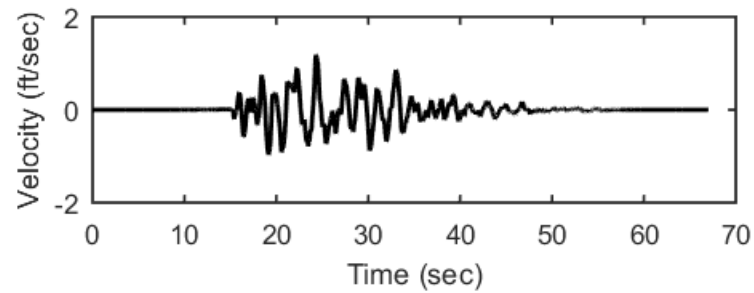
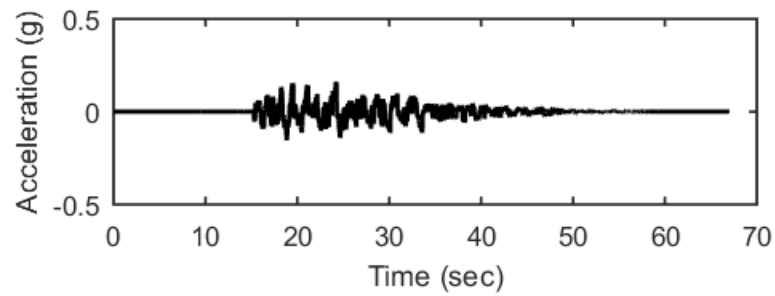




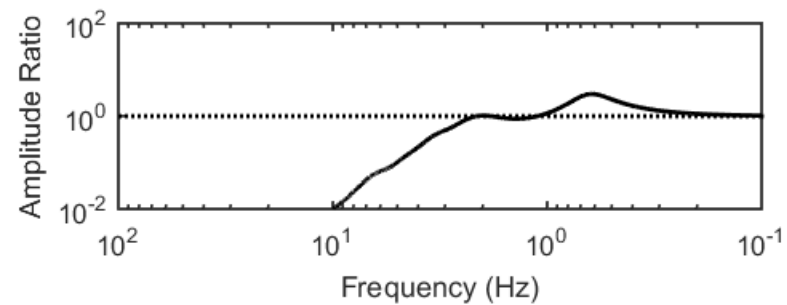
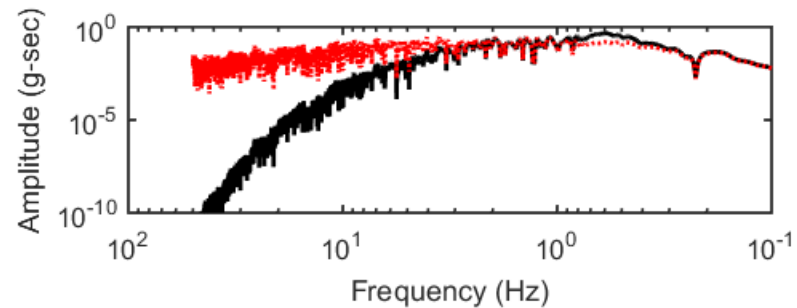
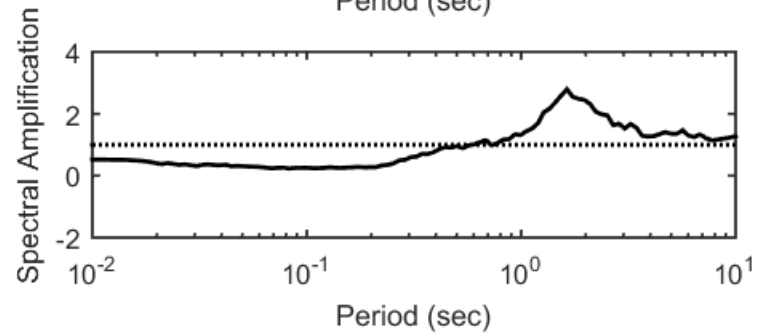
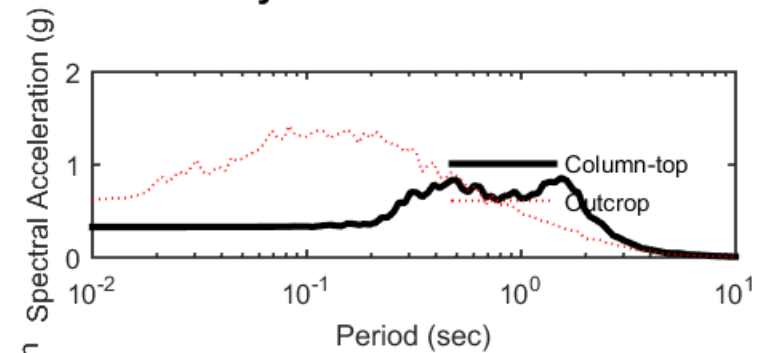
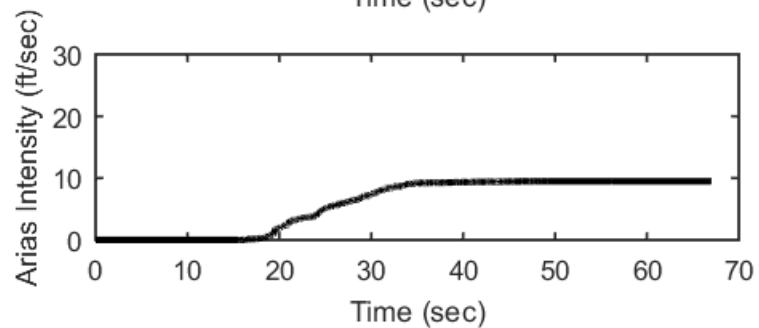
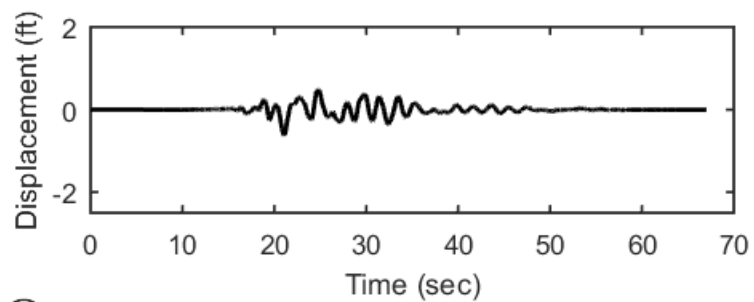
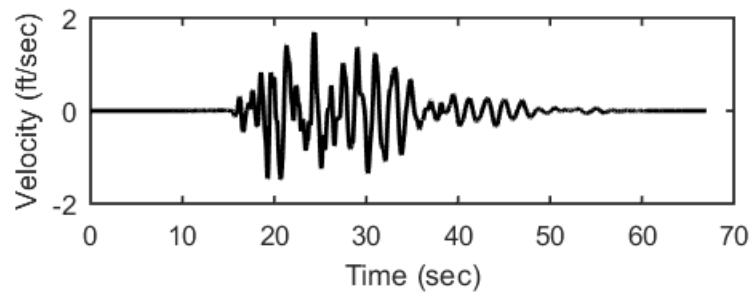
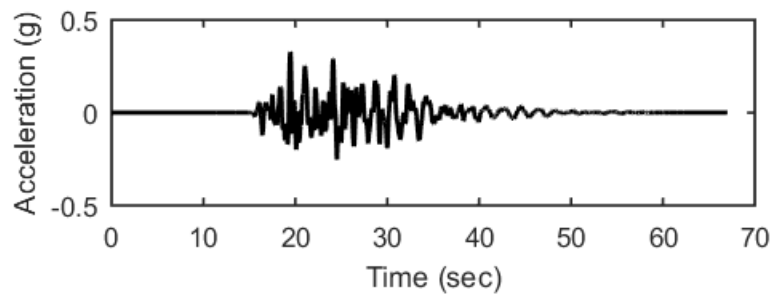
### Profile outputs for Motion: SEE1



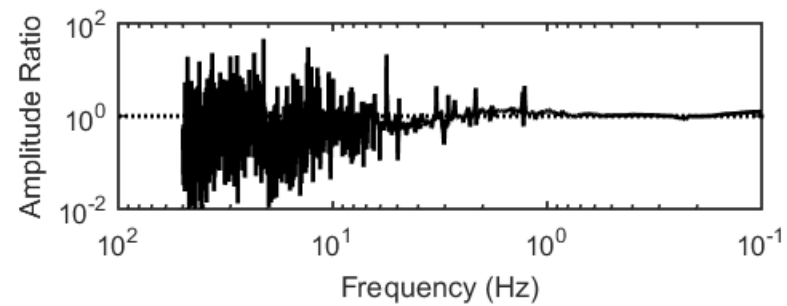
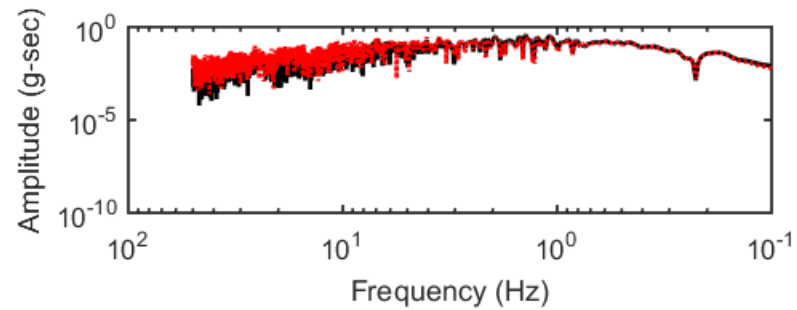
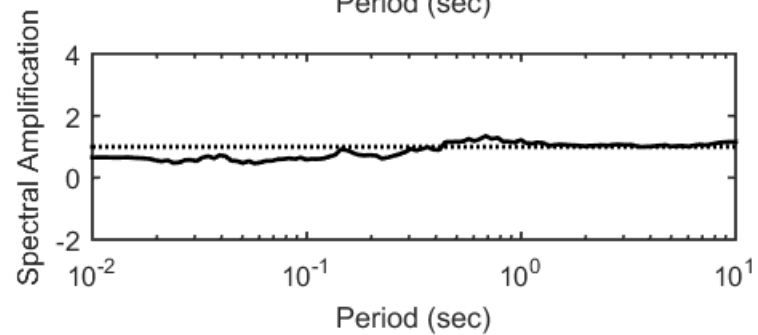
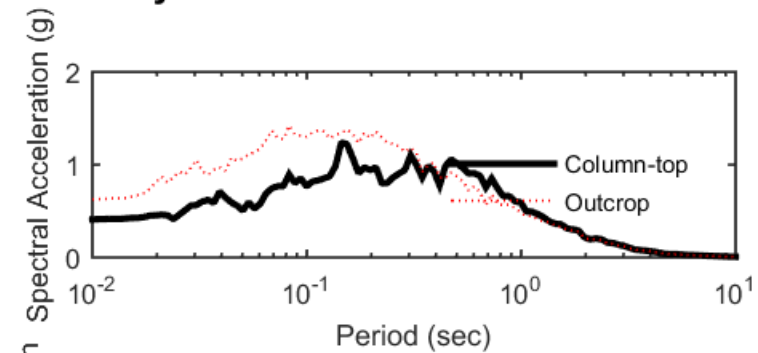
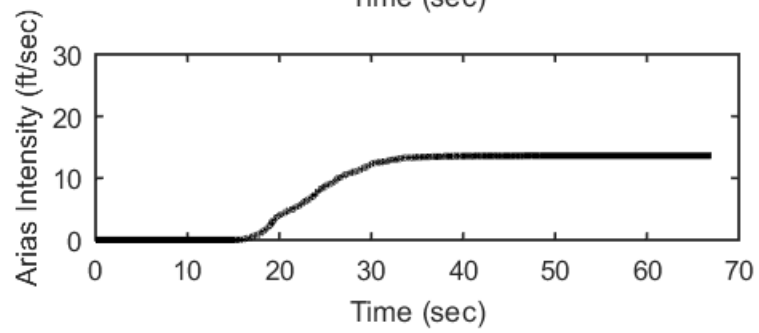
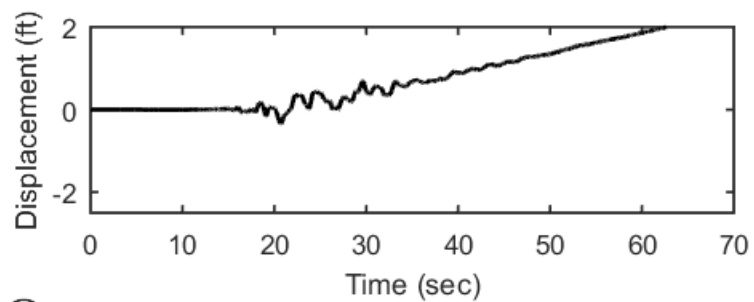
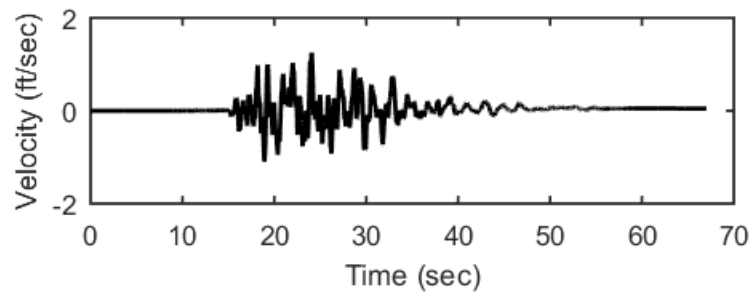
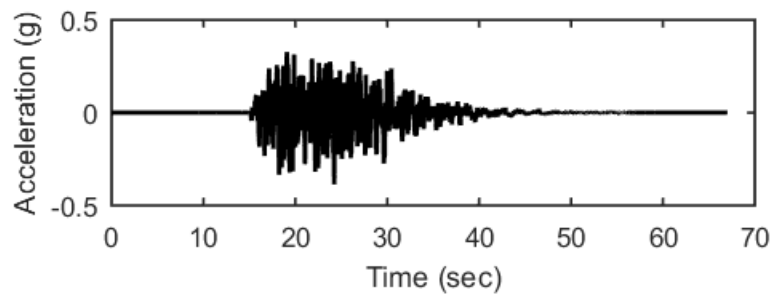
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



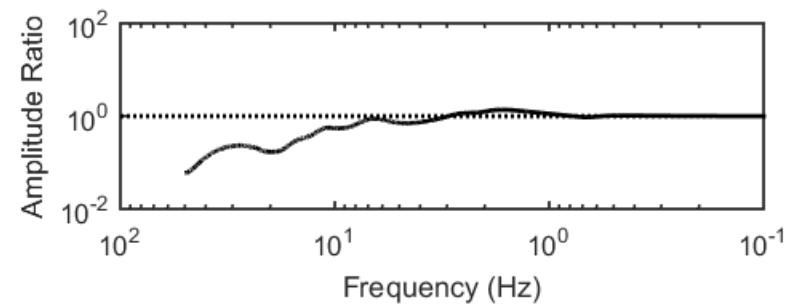
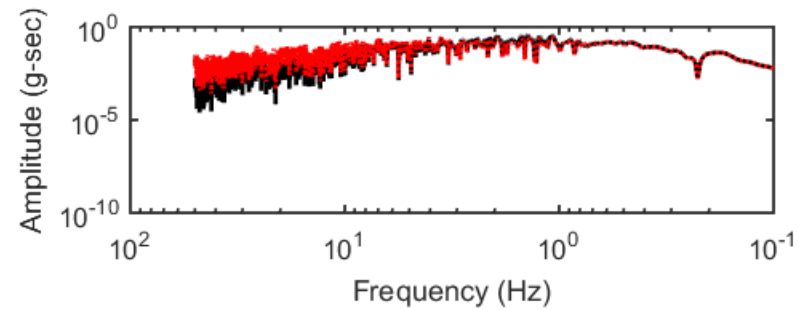
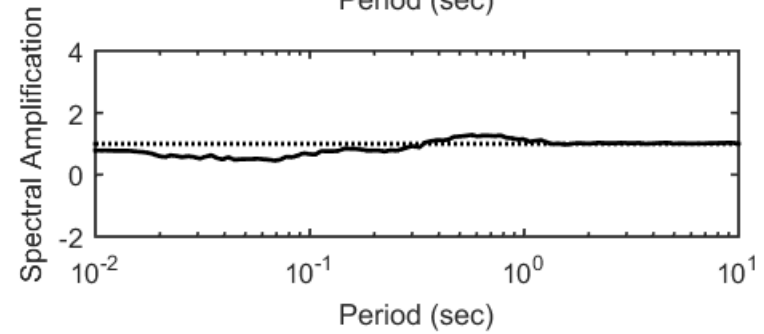
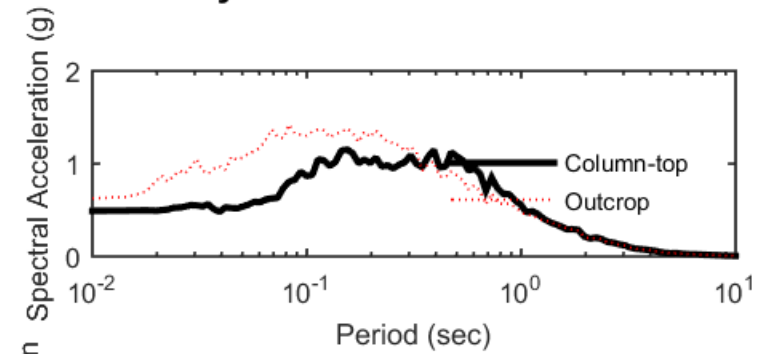
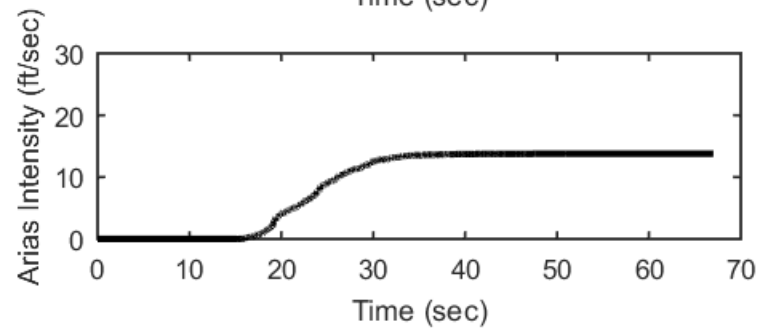
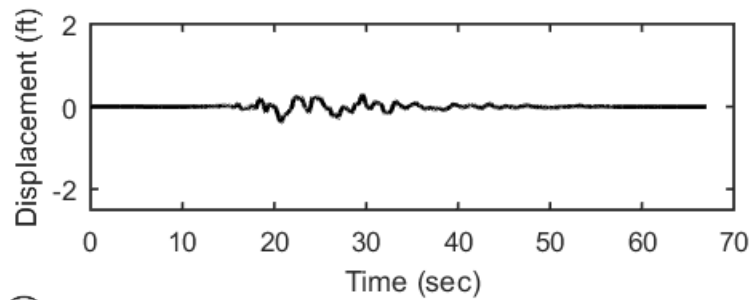
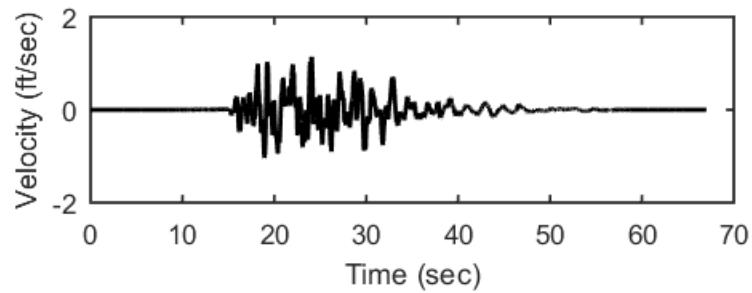
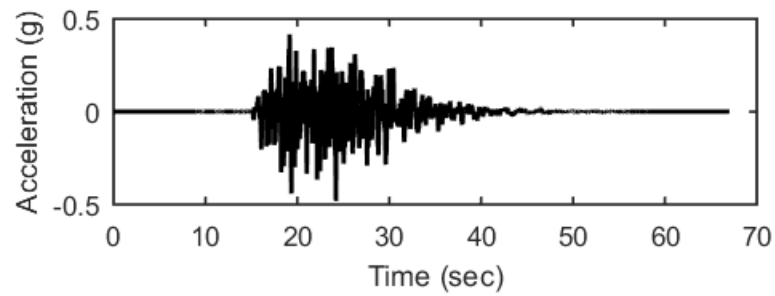
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



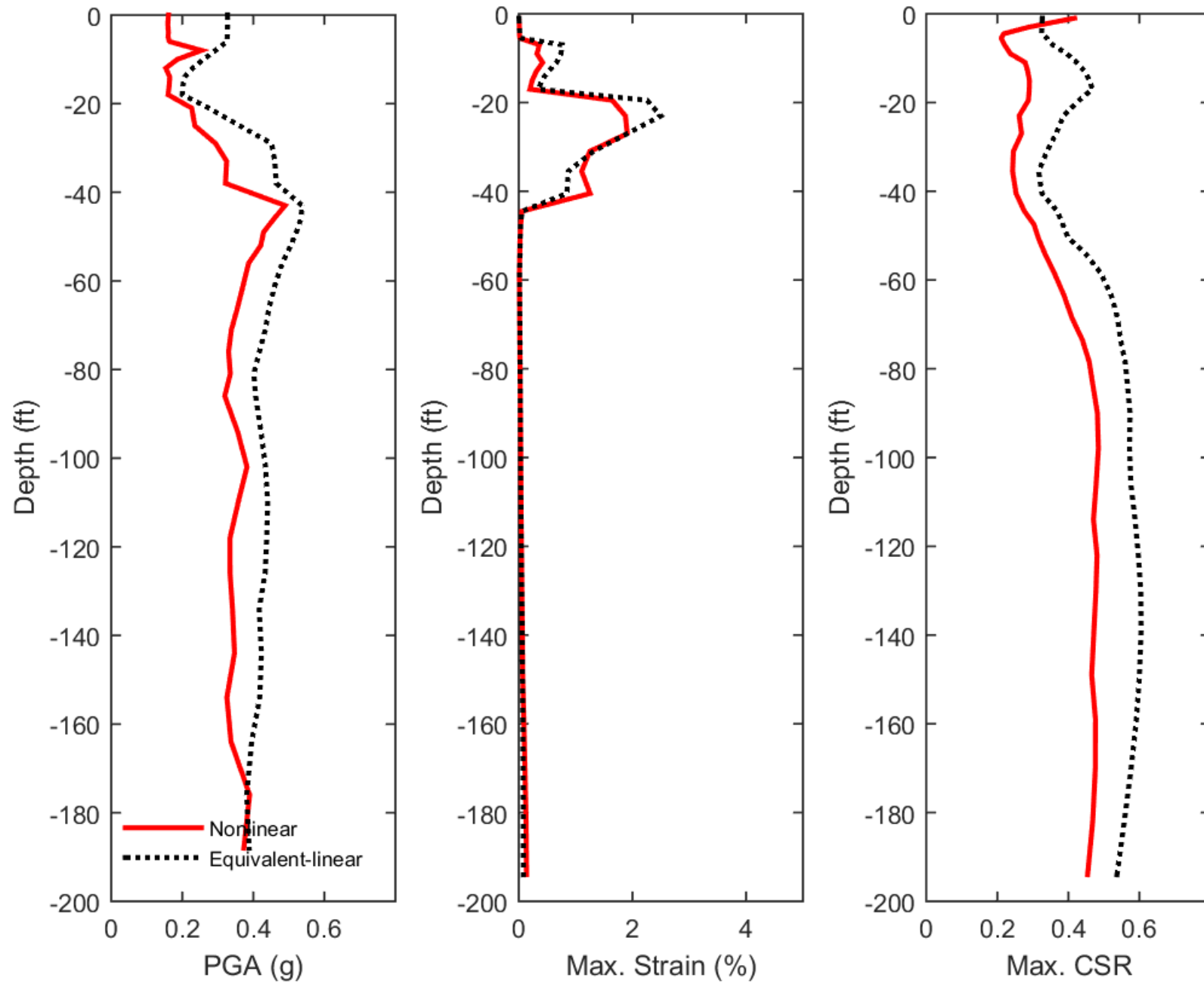
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



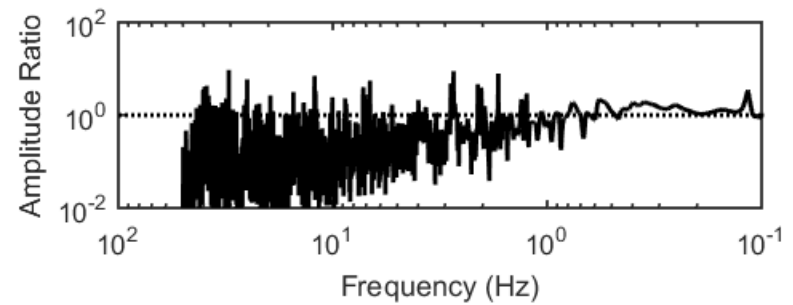
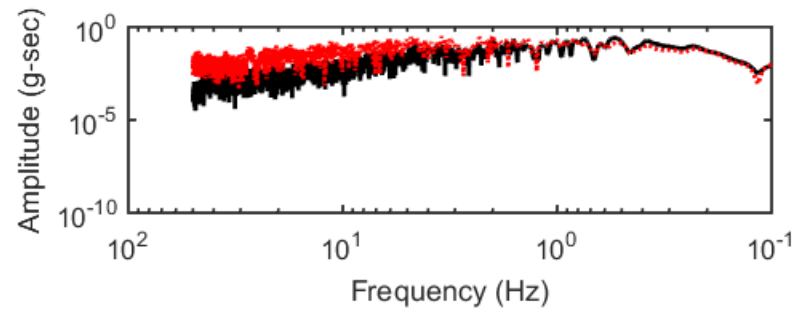
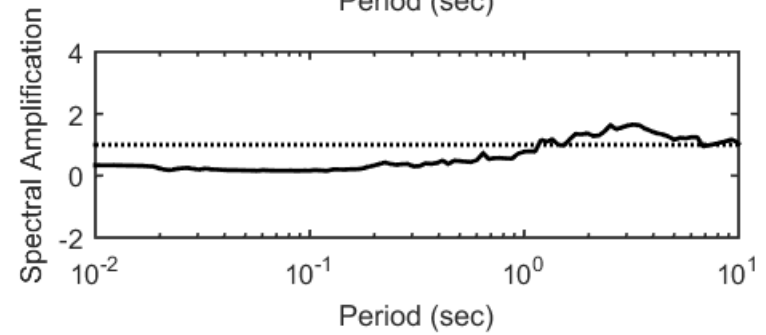
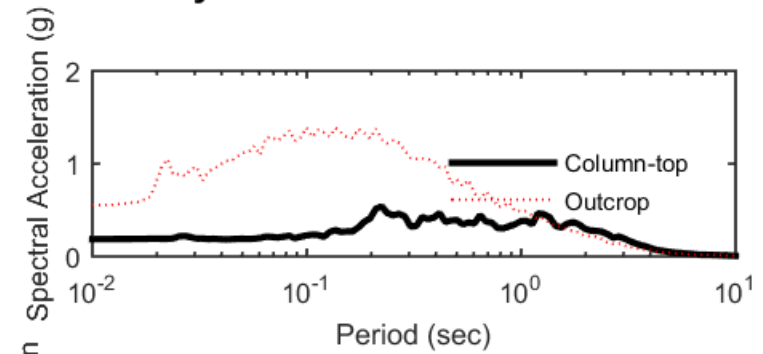
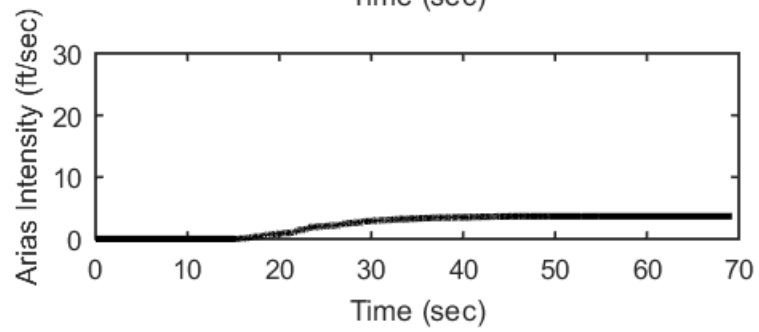
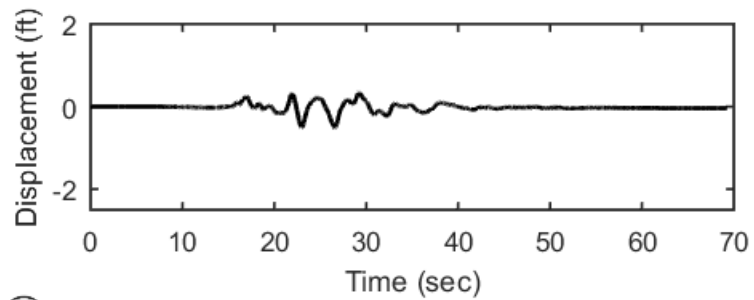
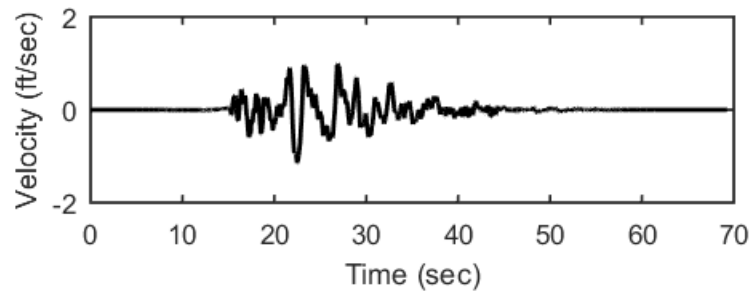
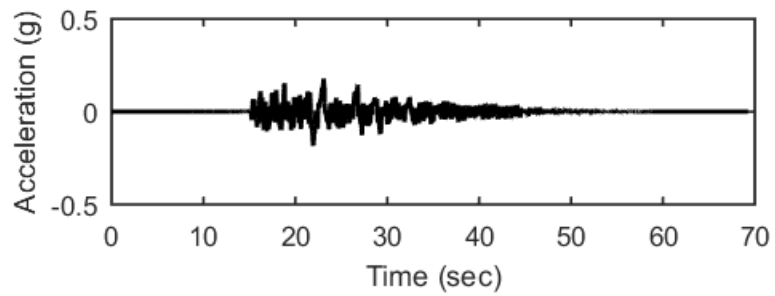
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



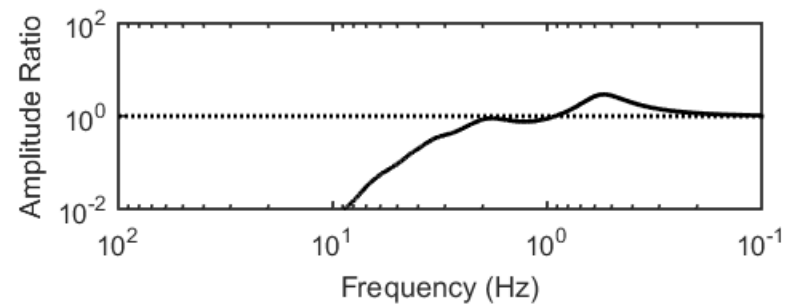
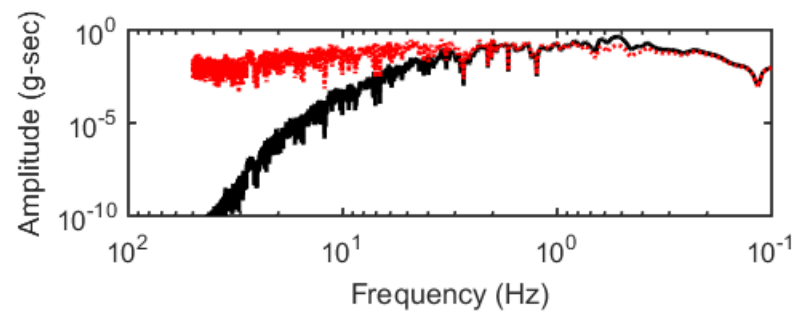
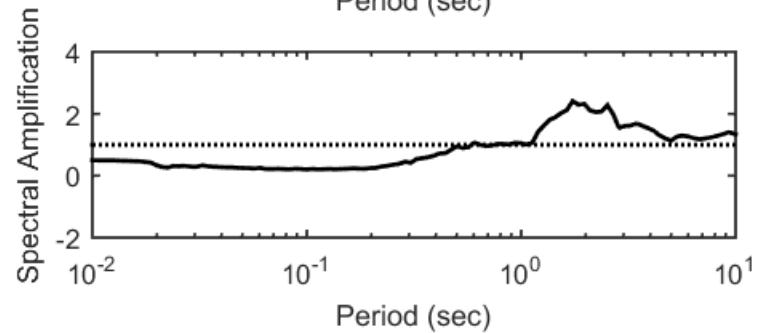
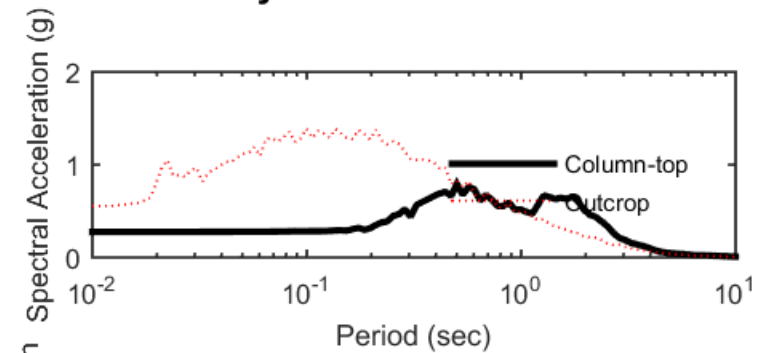
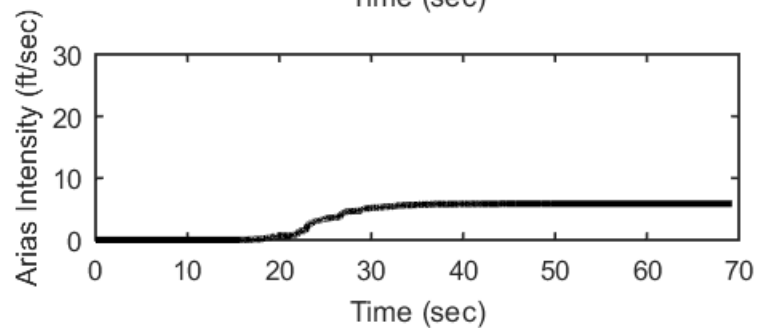
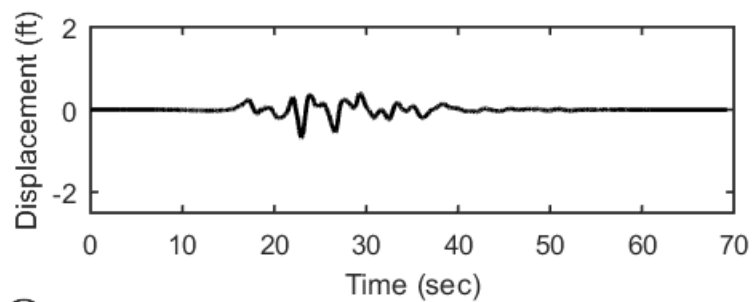
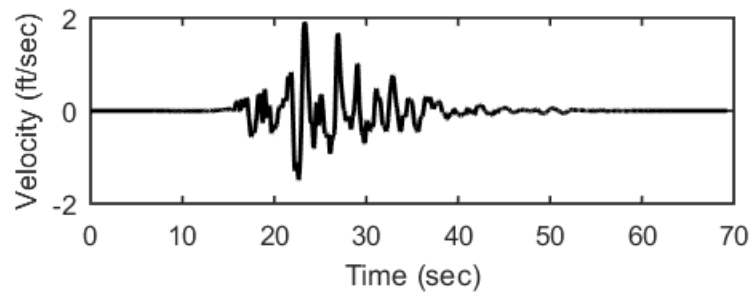
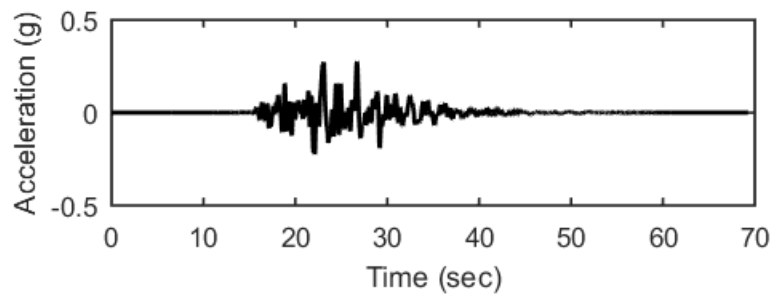
### Profile outputs for Motion: SEE2



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3

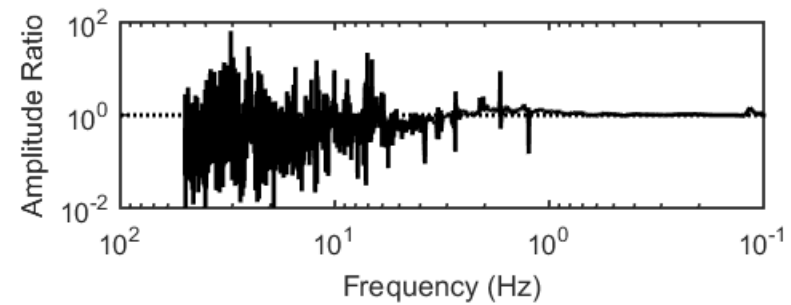
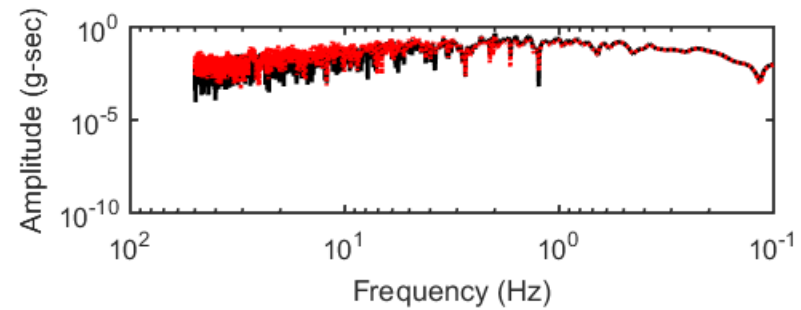
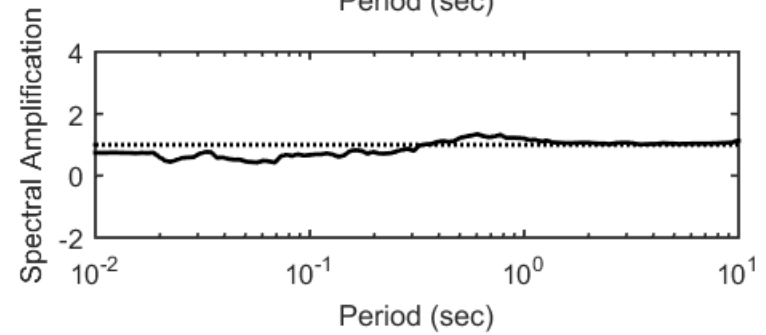
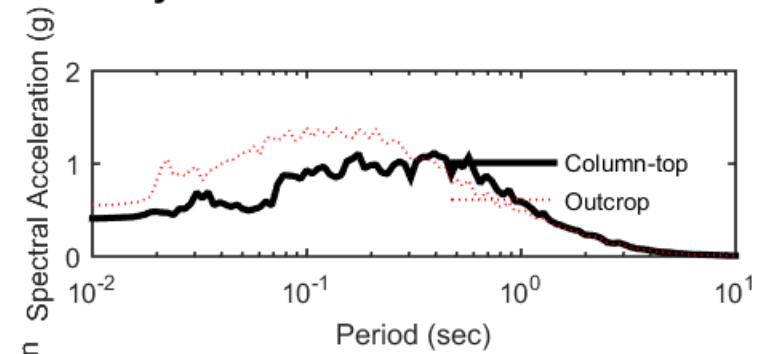
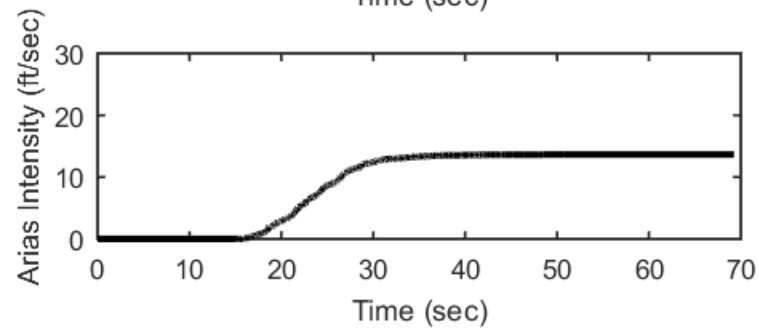
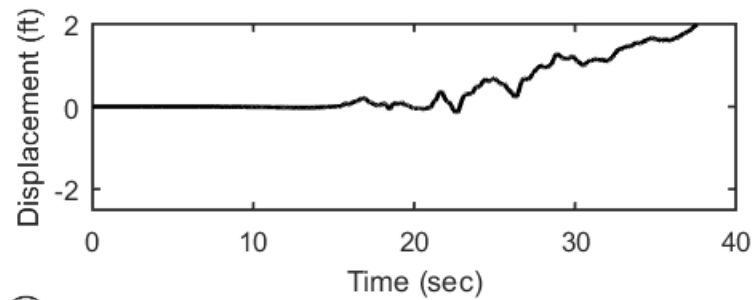
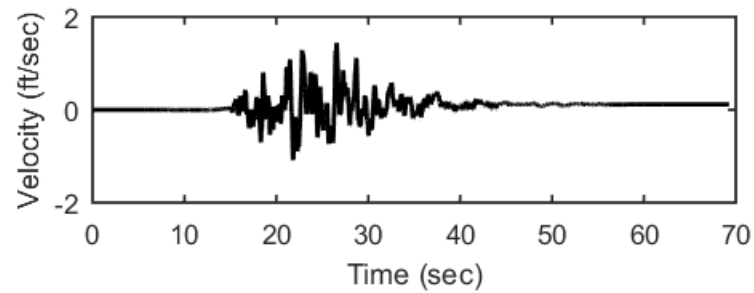
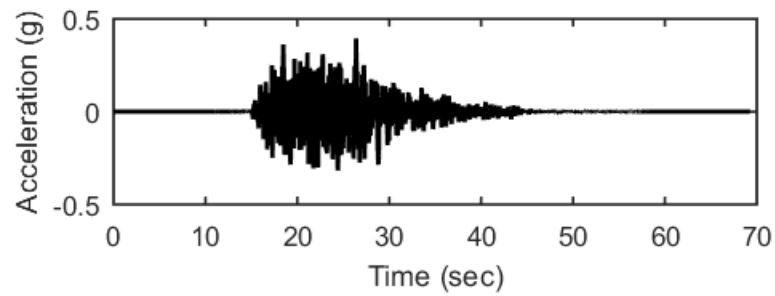


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3

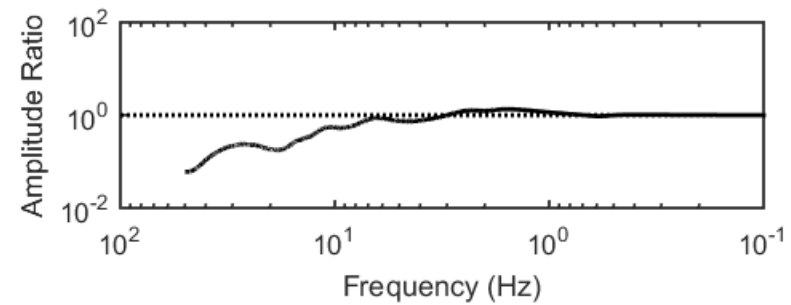
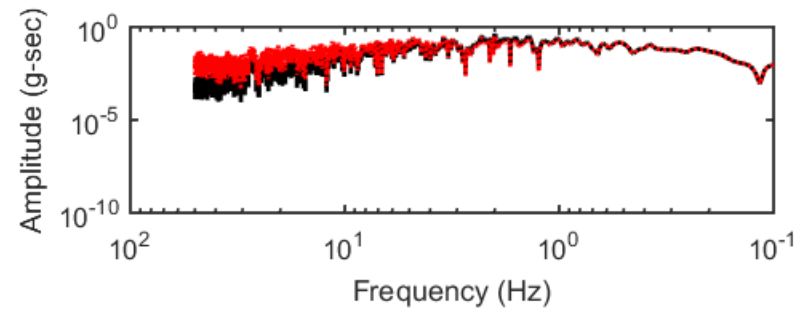
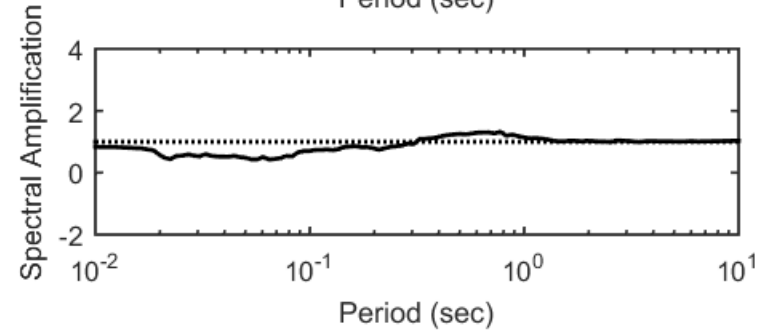
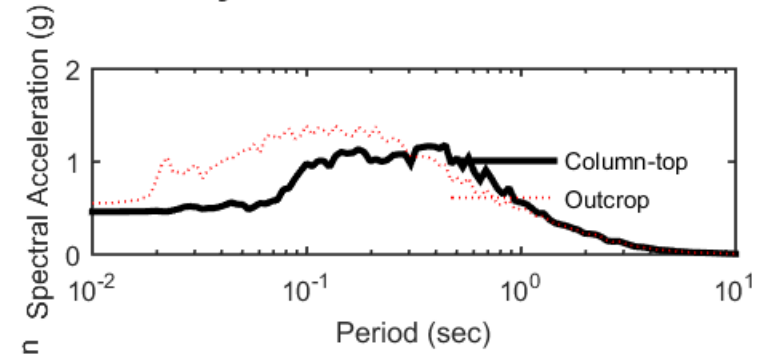
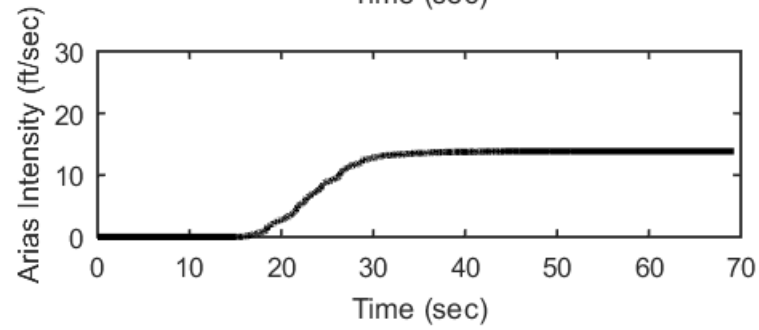
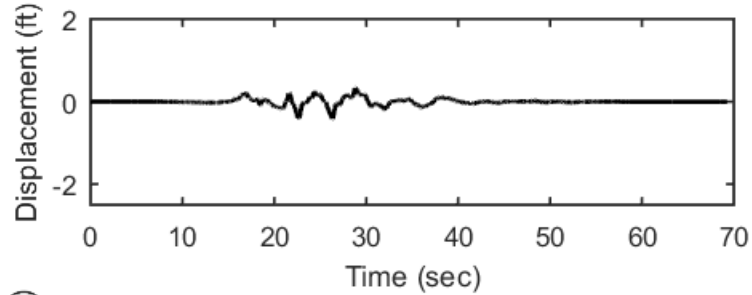
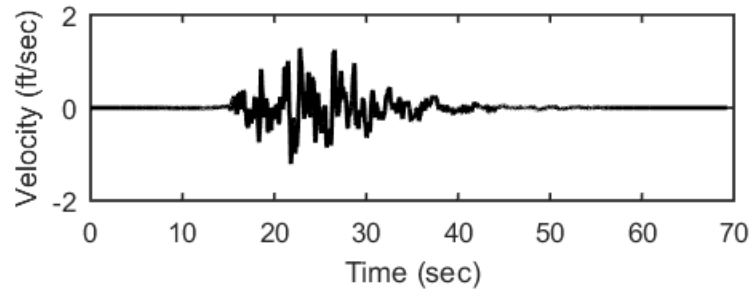
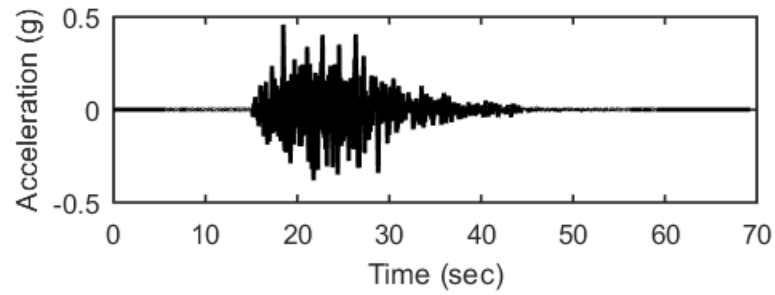




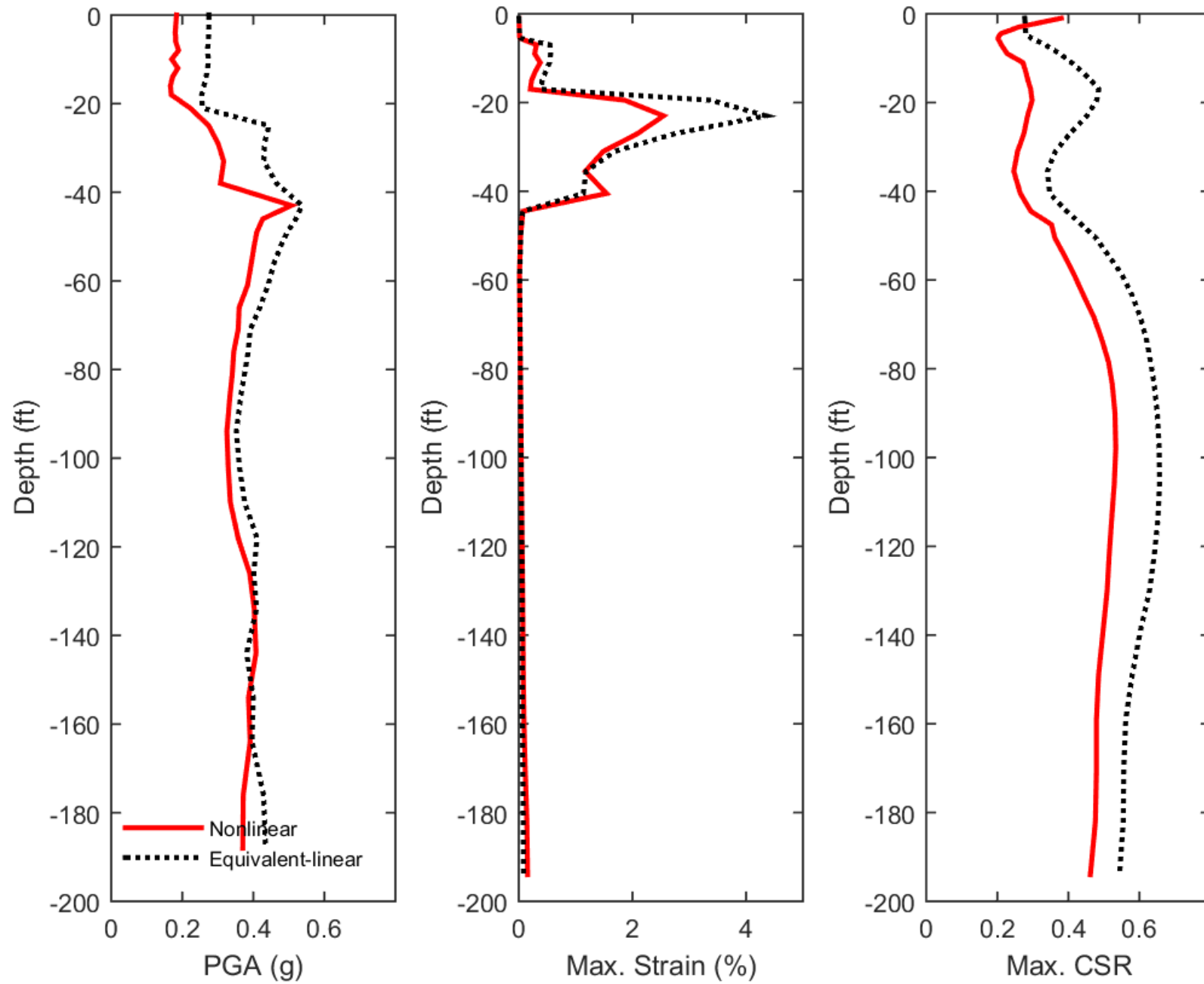
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



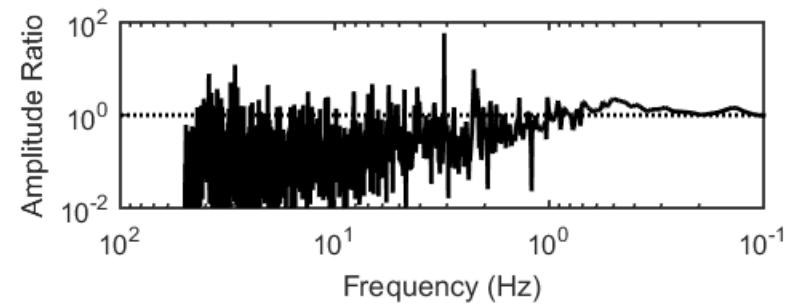
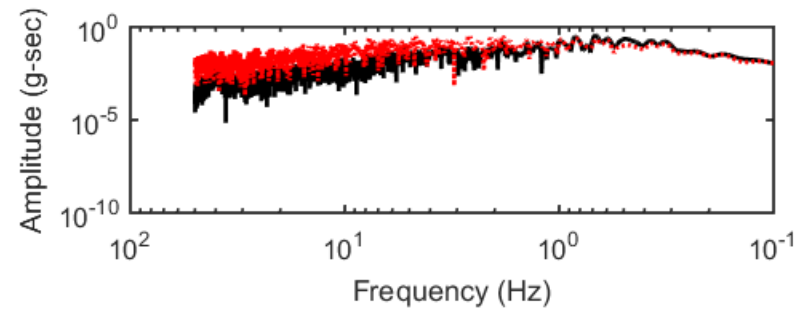
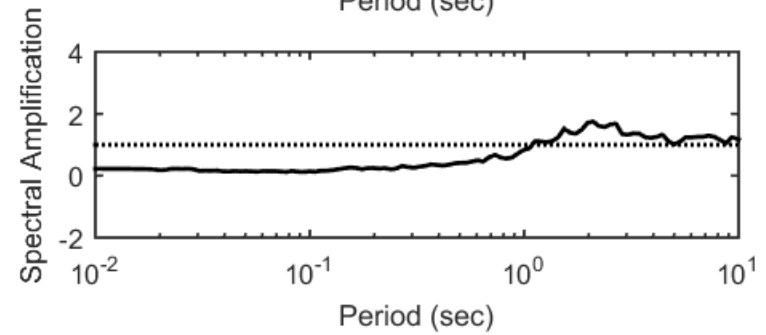
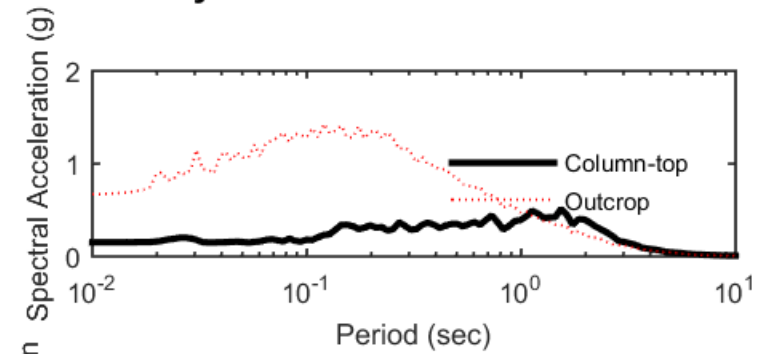
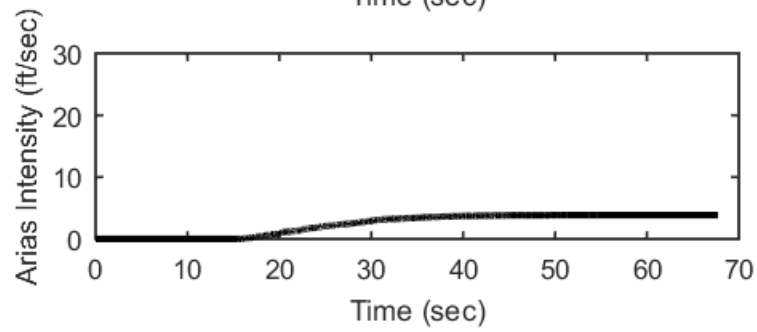
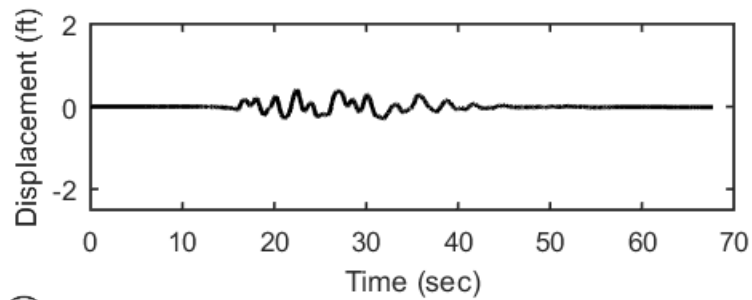
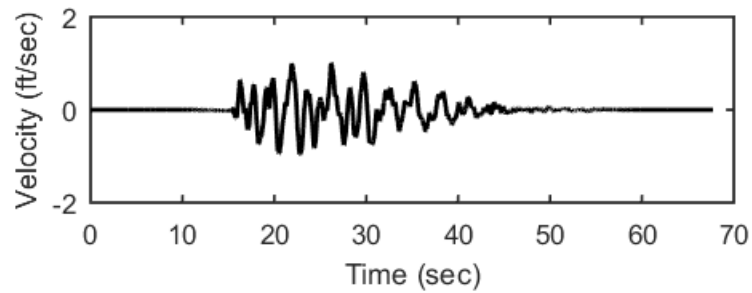
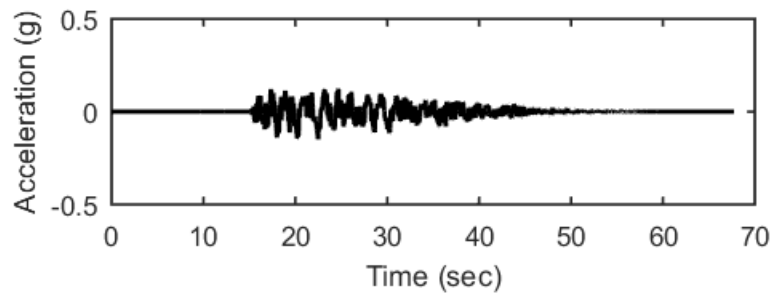
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



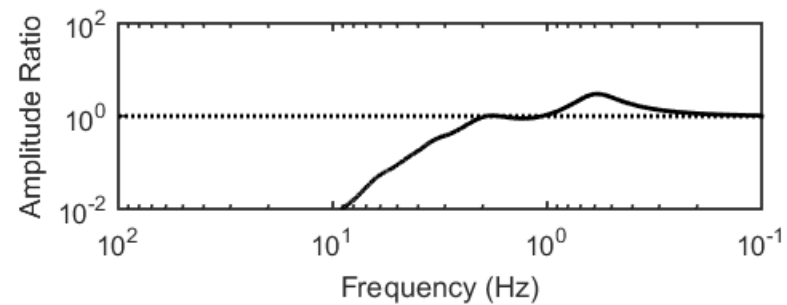
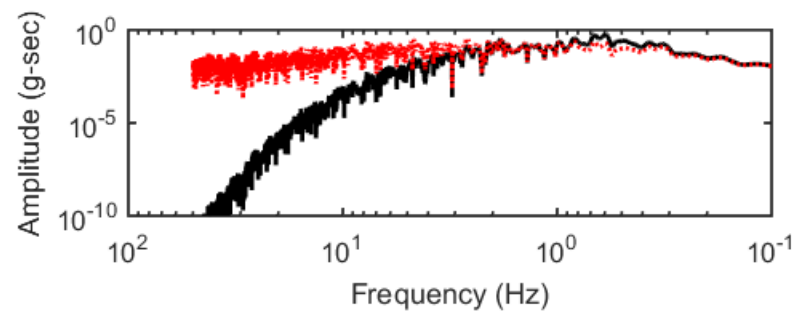
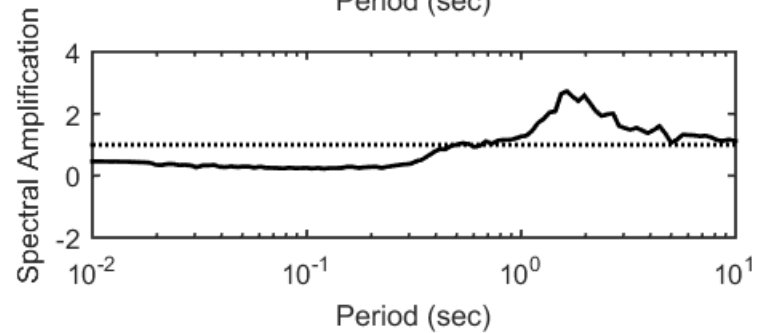
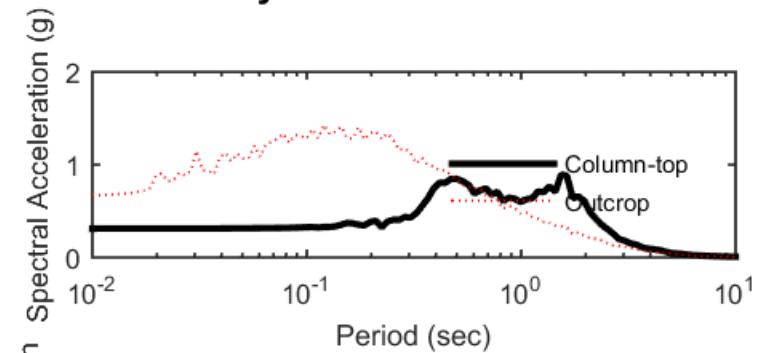
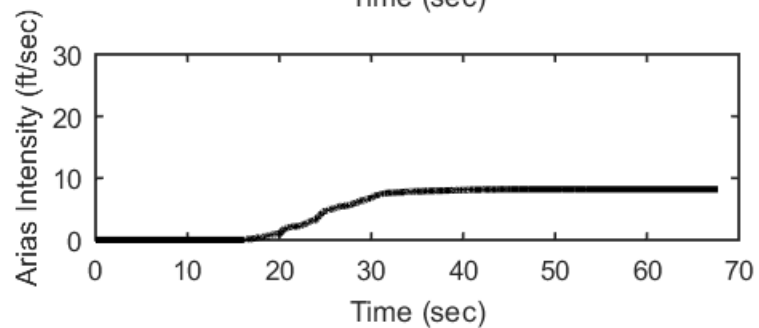
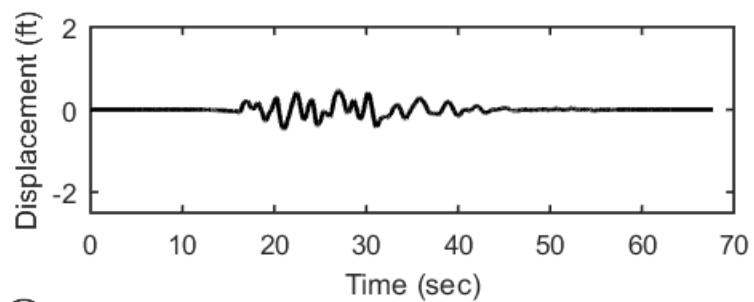
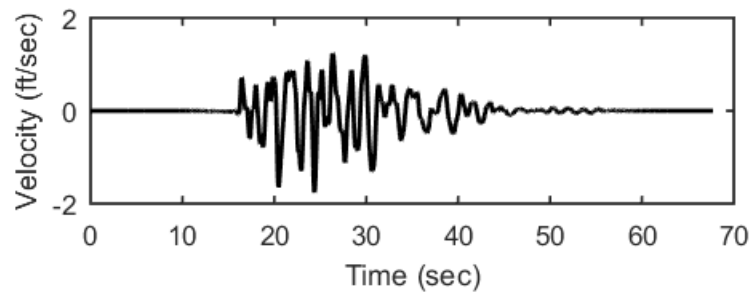
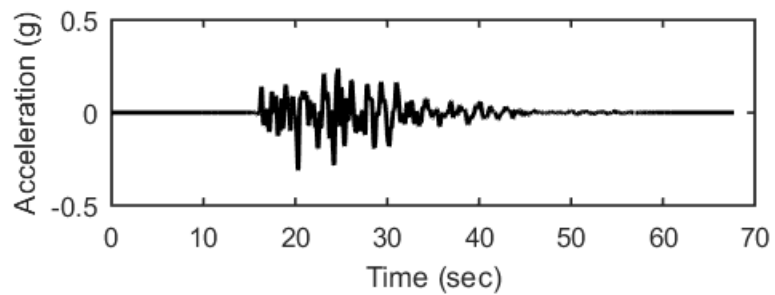
### Profile outputs for Motion: SEE3



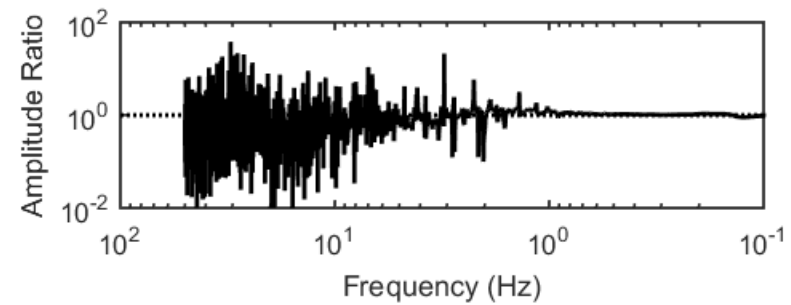
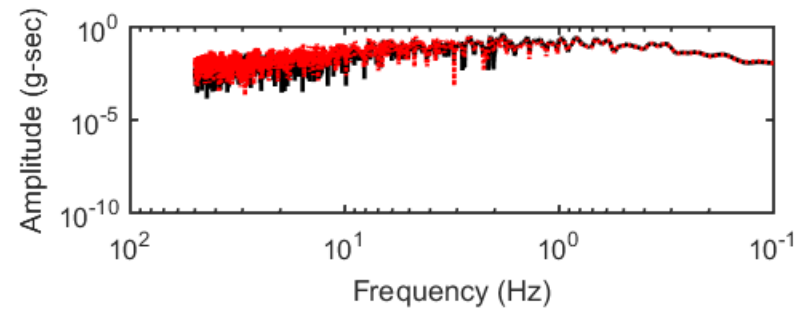
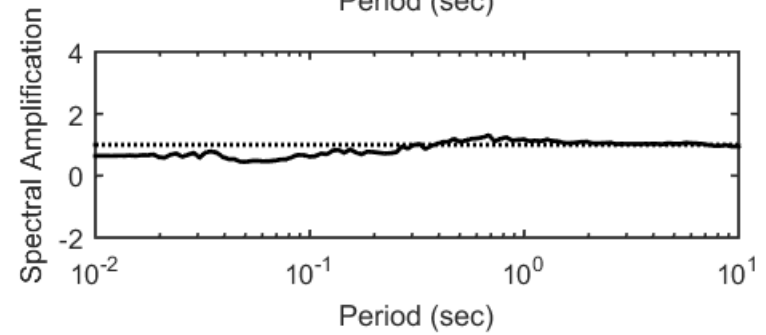
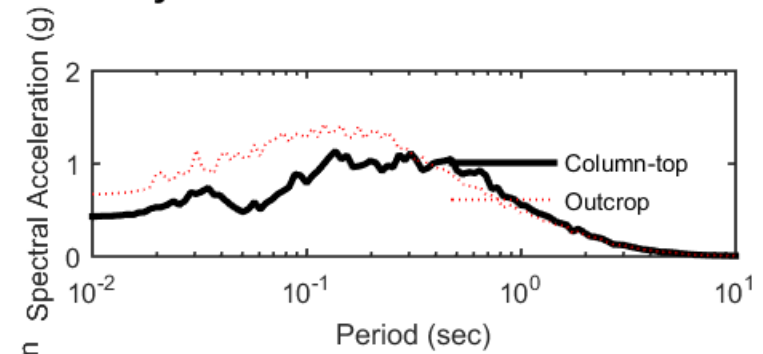
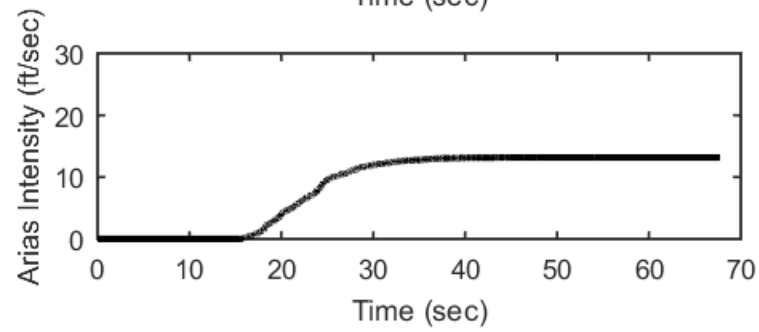
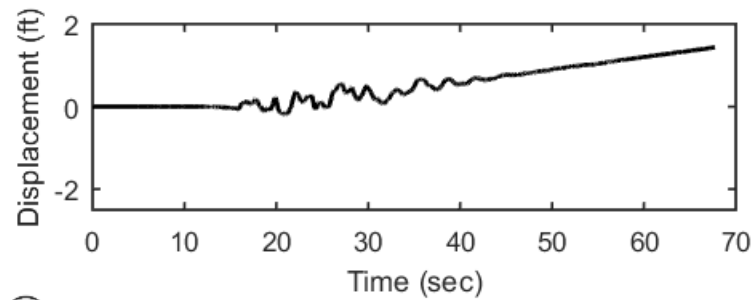
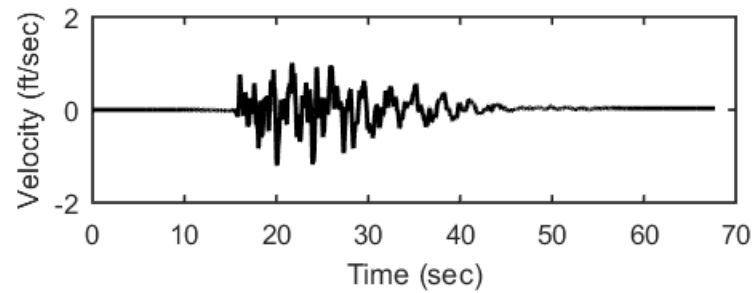
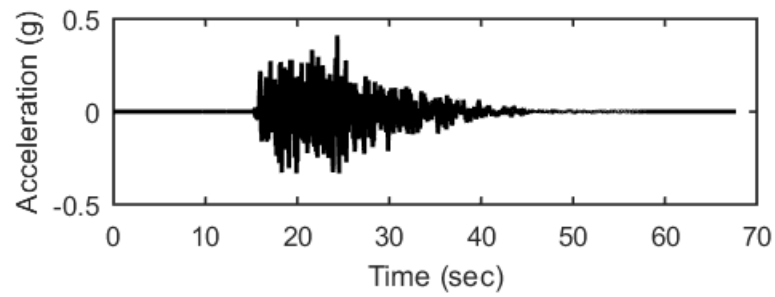
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



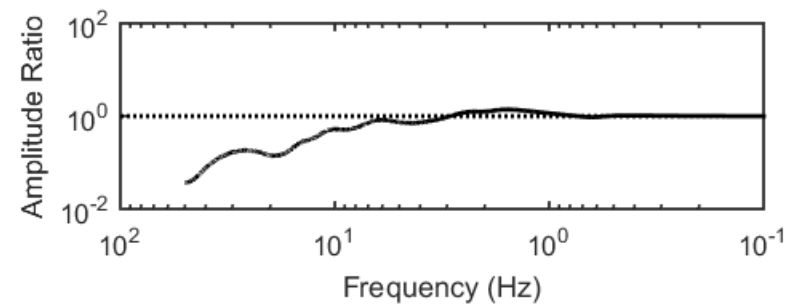
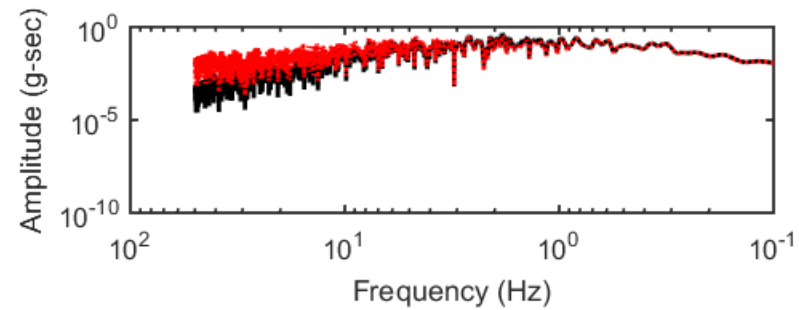
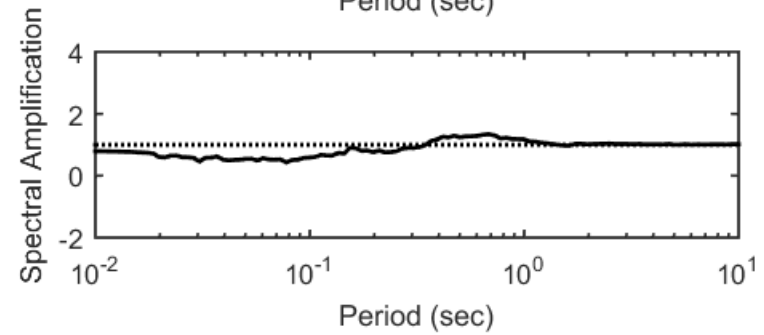
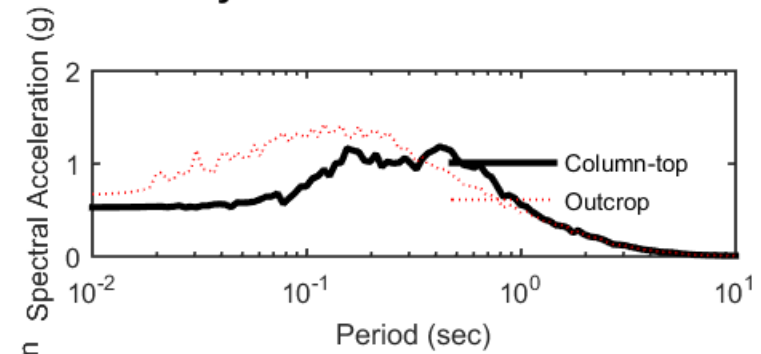
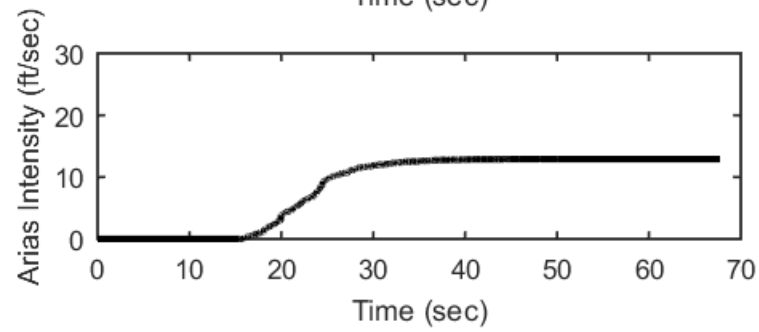
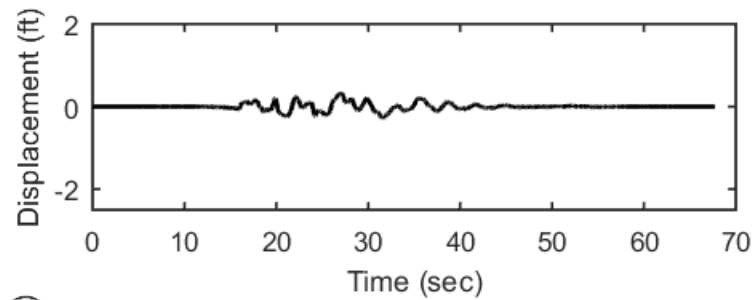
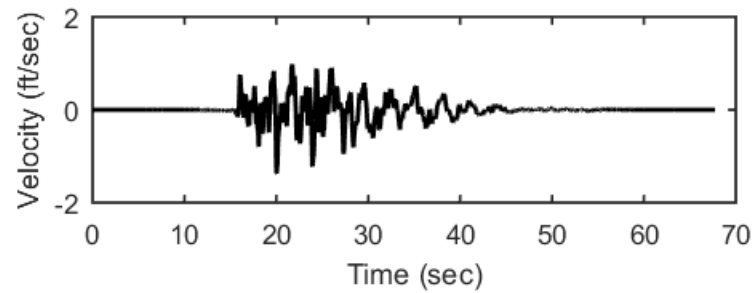
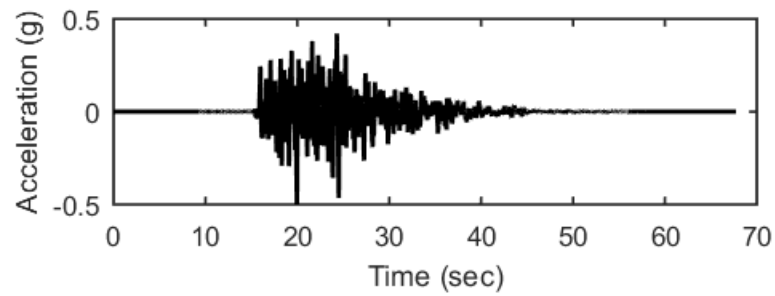
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



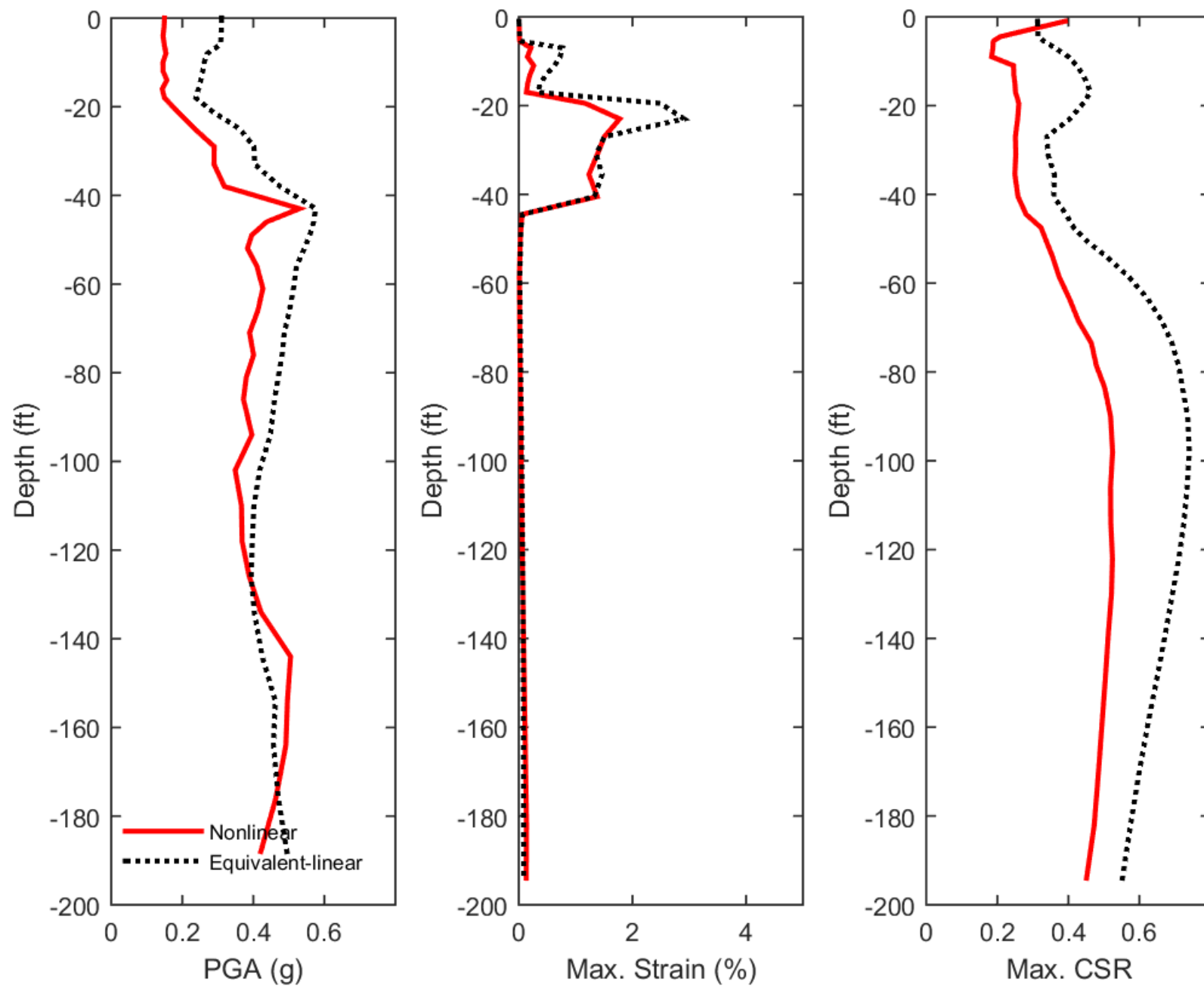
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4

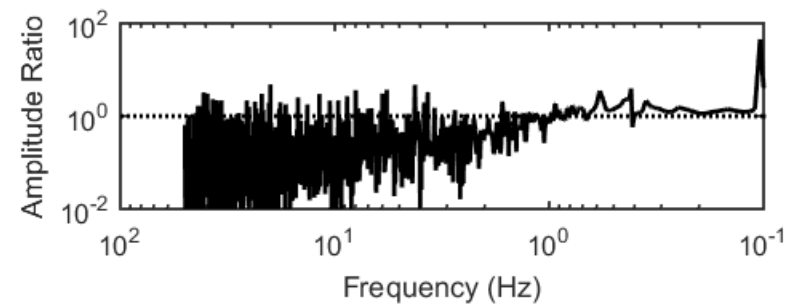
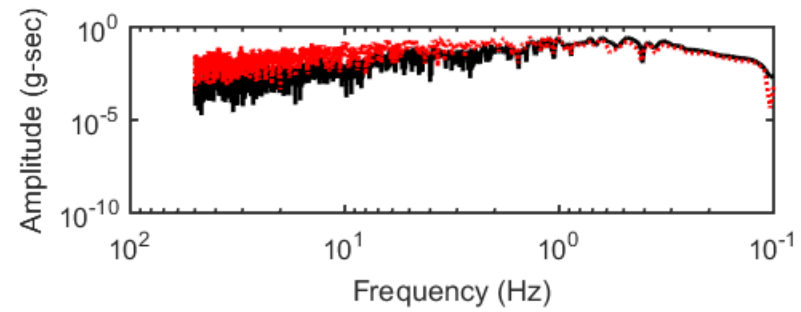
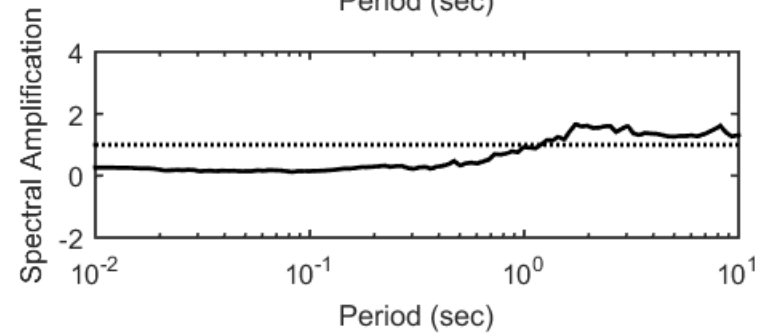
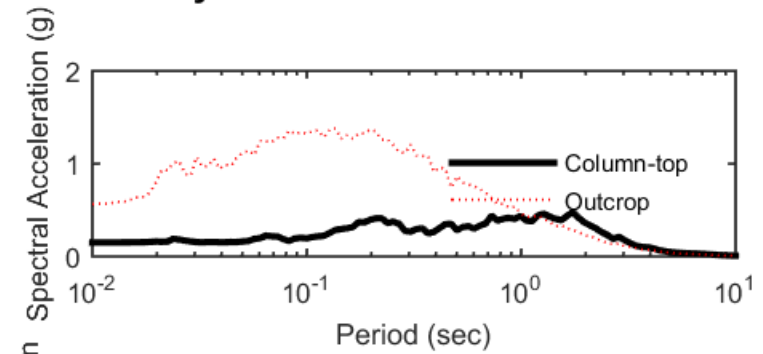
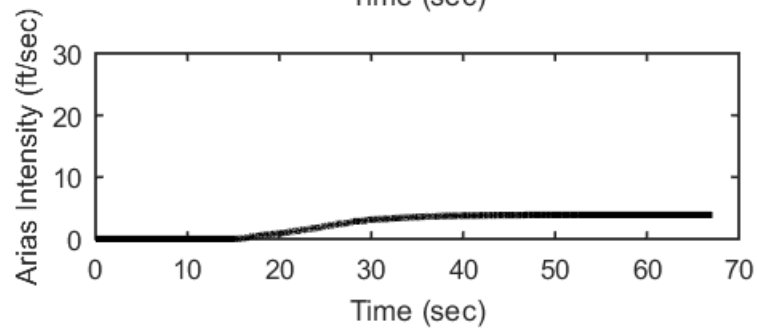
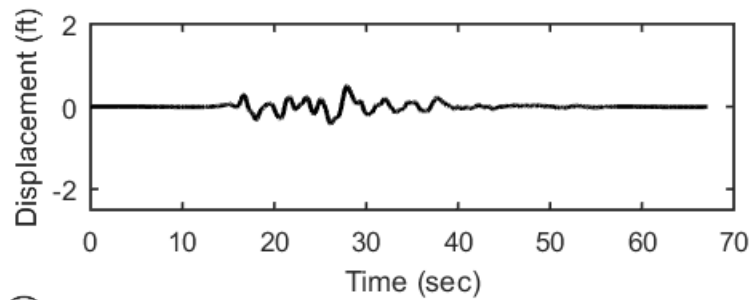
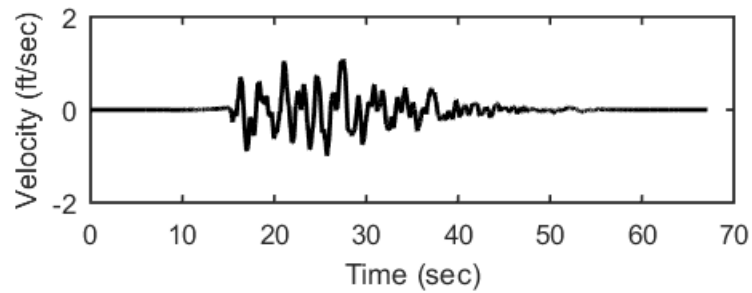
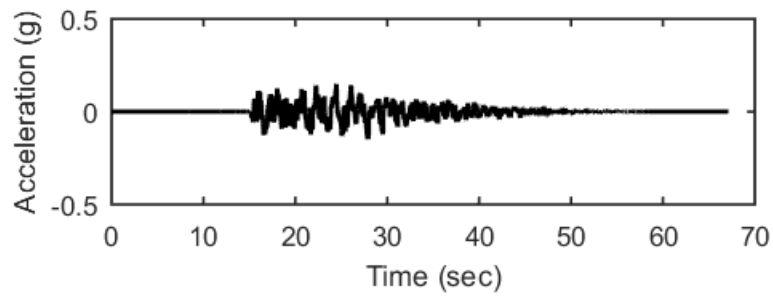


### Profile outputs for Motion: SEE4

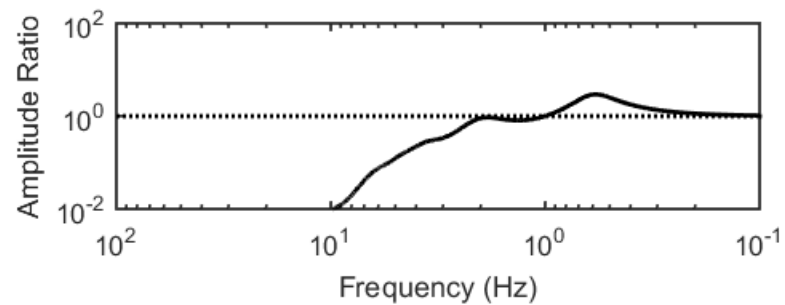
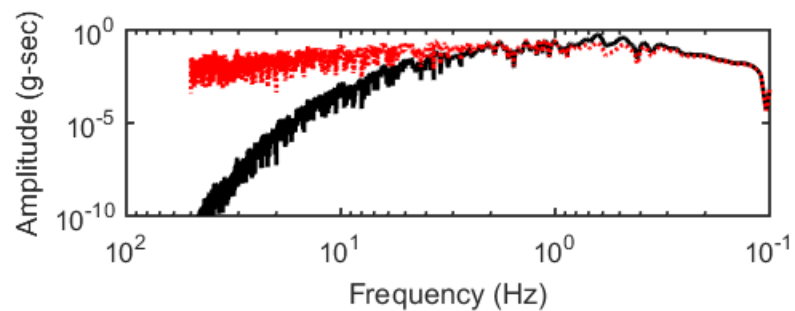
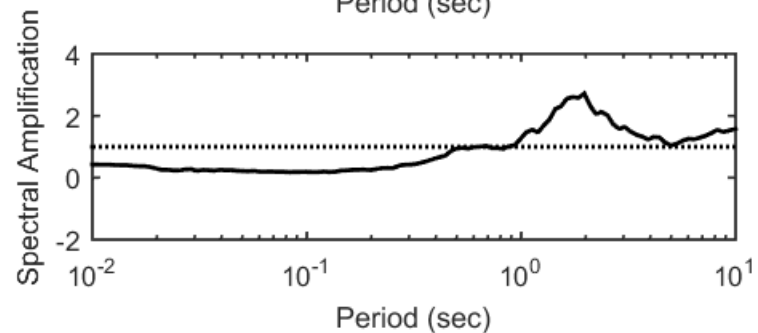
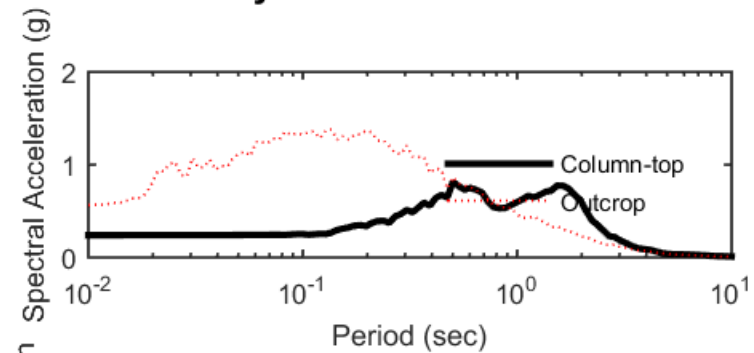
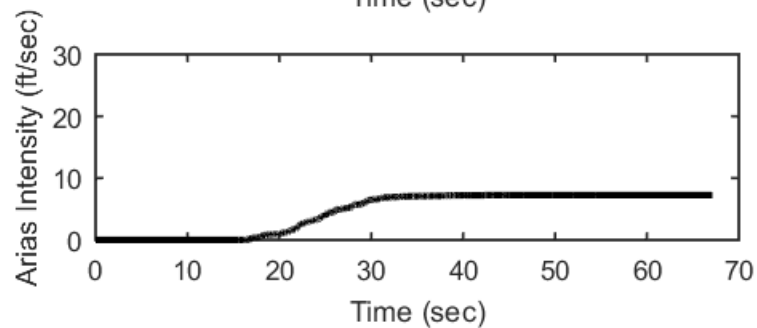
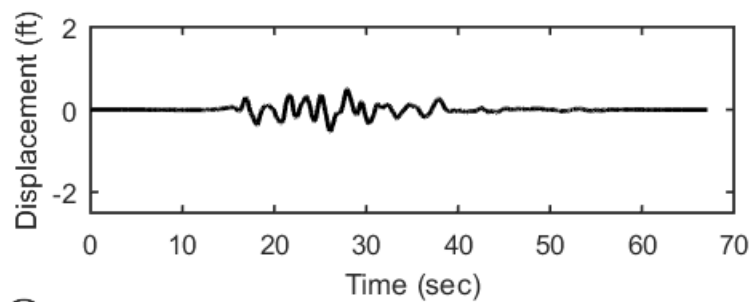
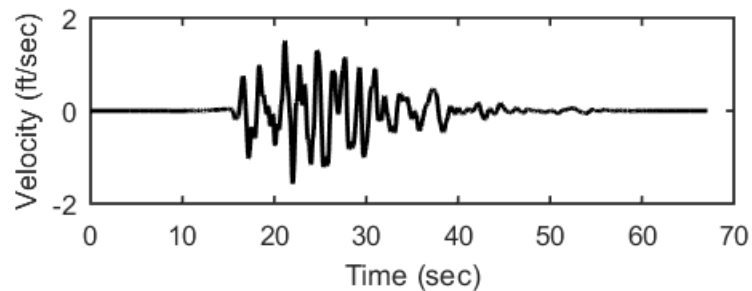
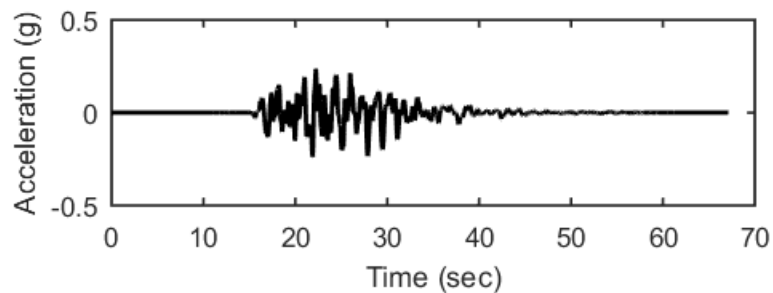




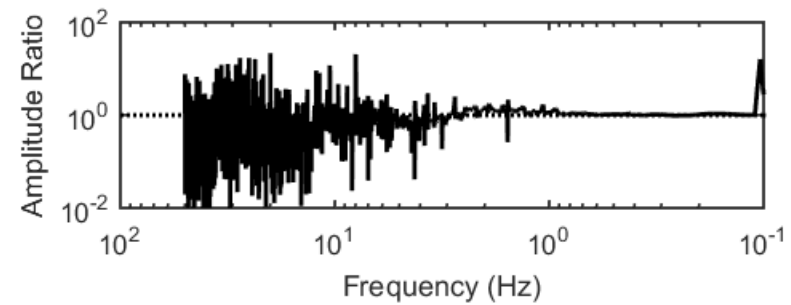
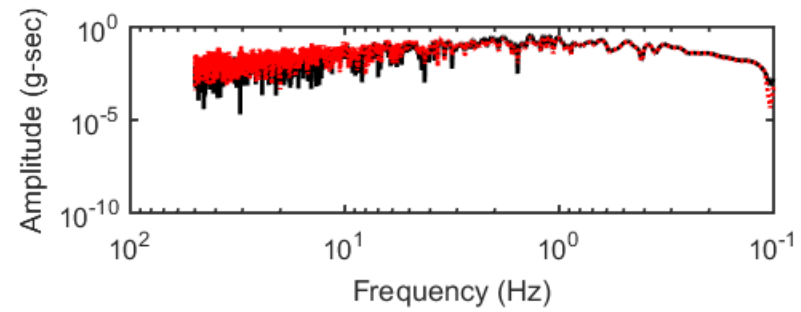
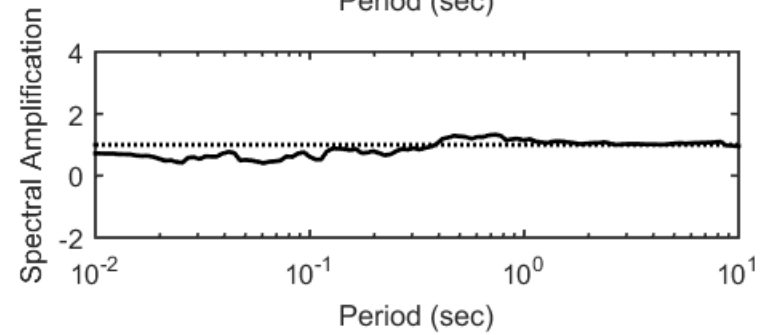
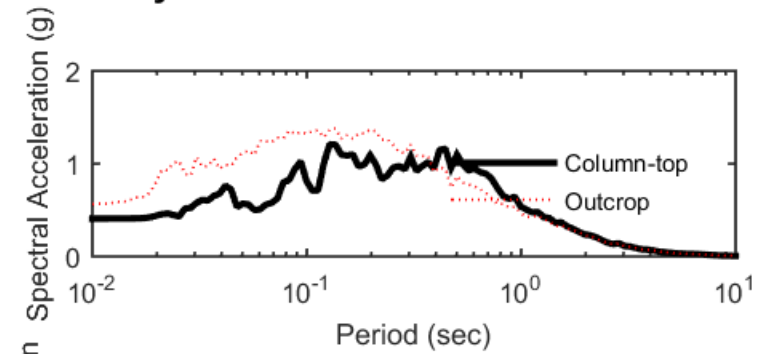
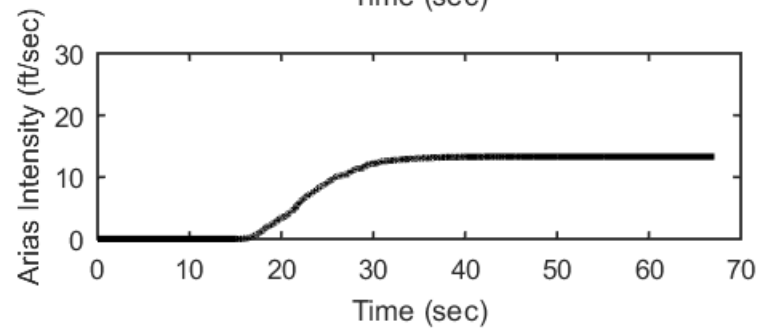
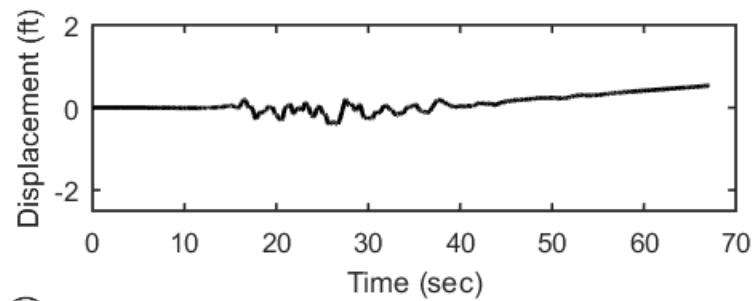
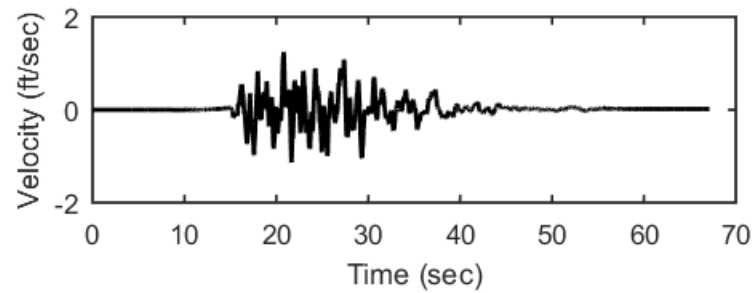
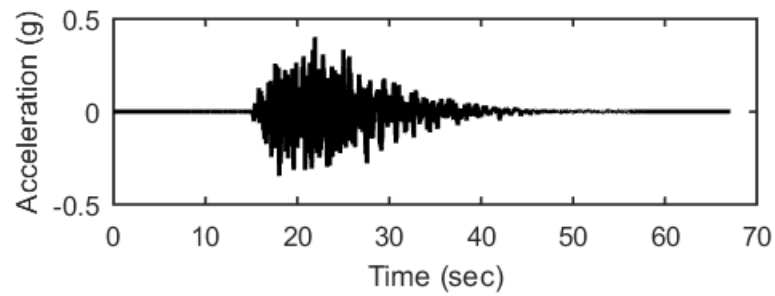
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



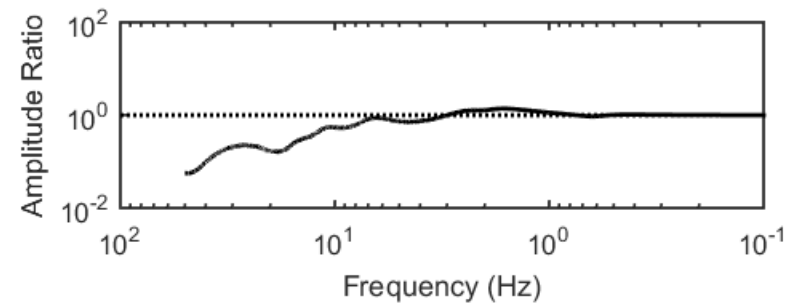
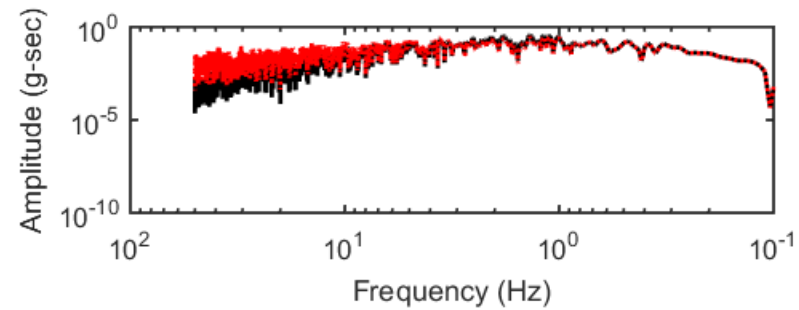
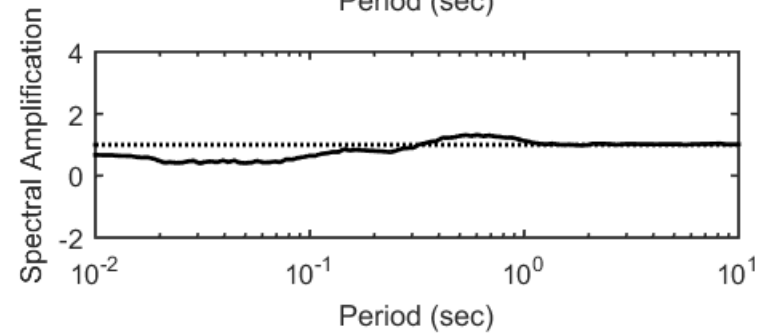
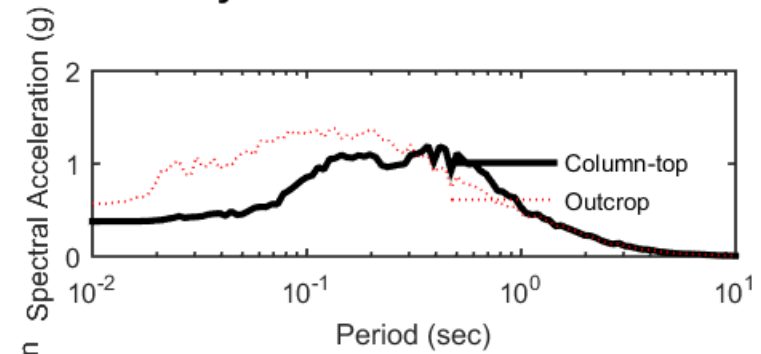
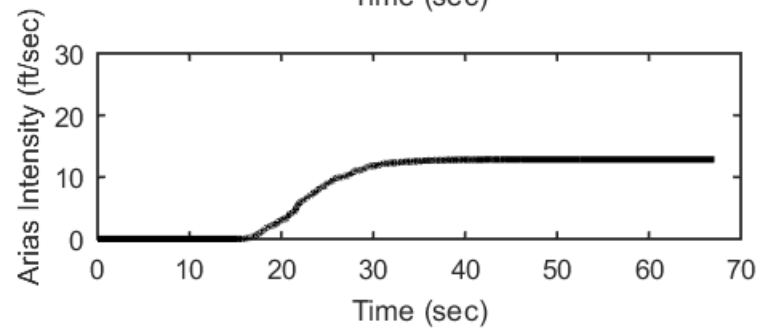
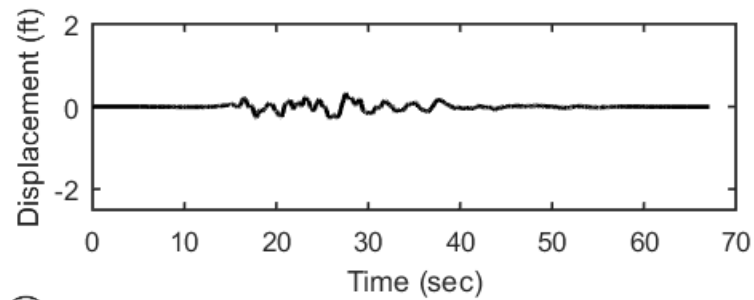
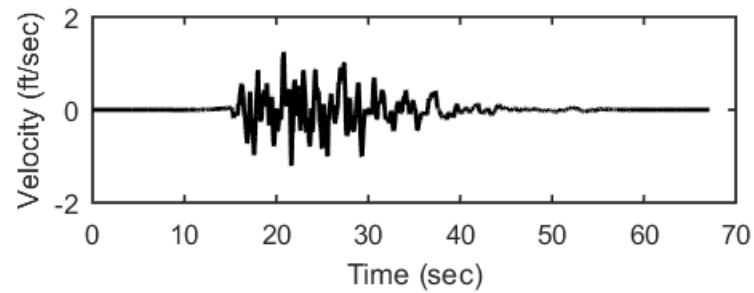
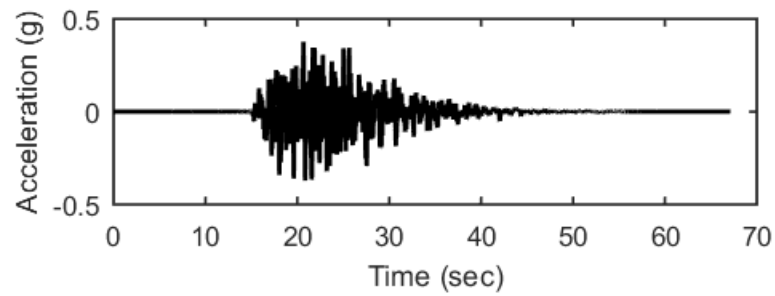
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



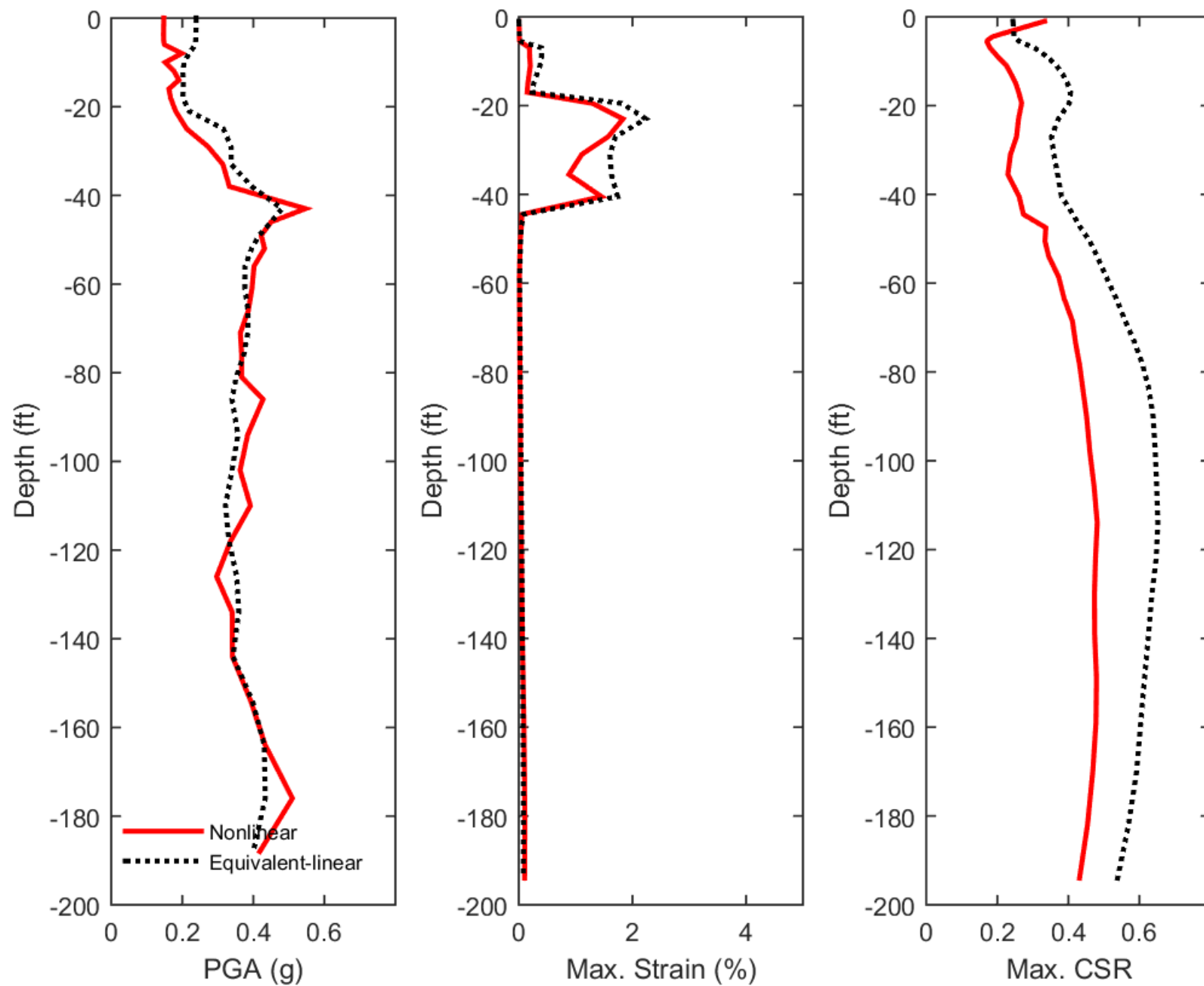
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



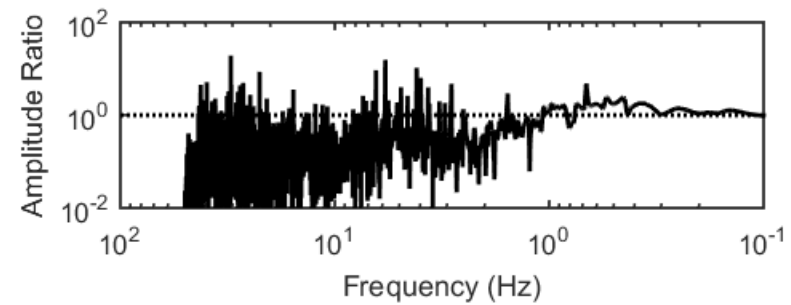
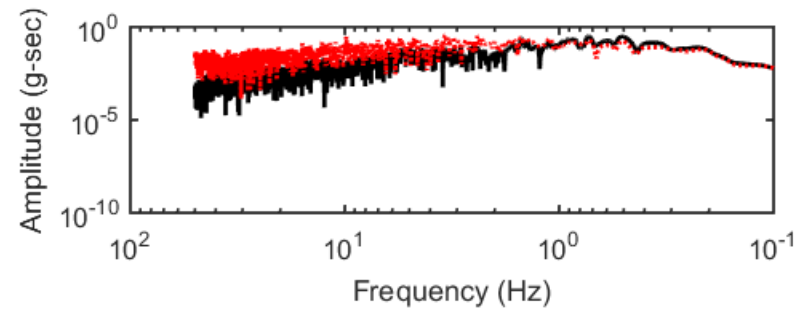
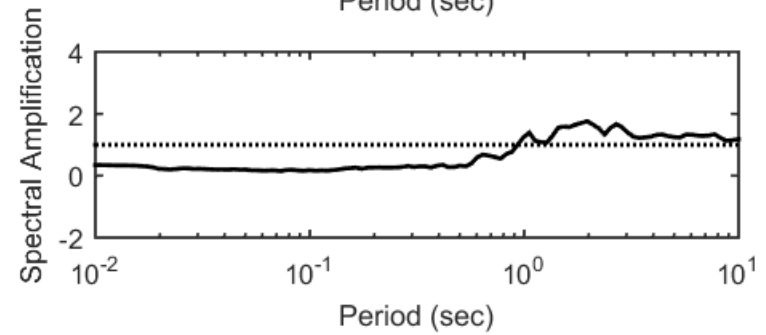
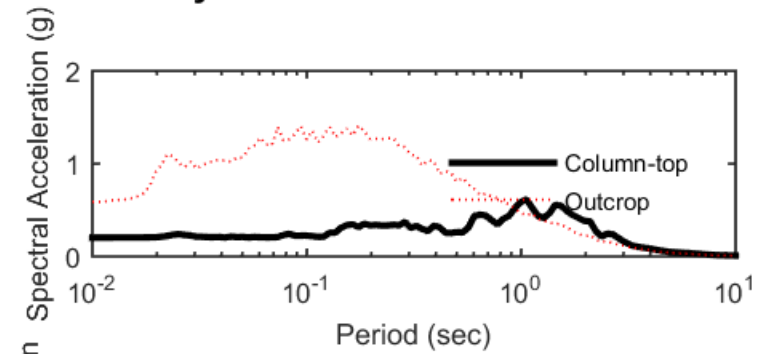
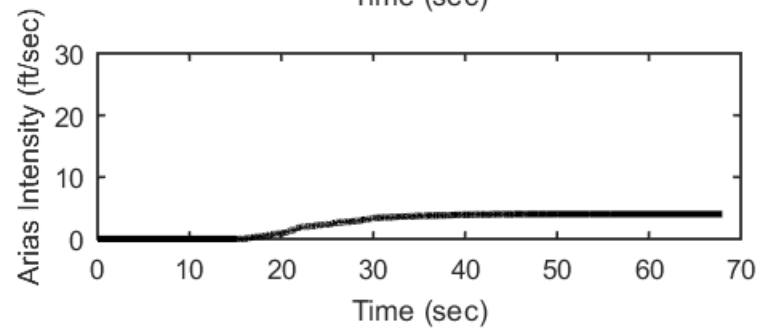
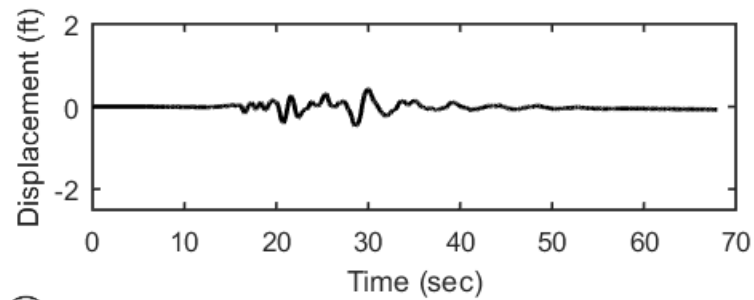
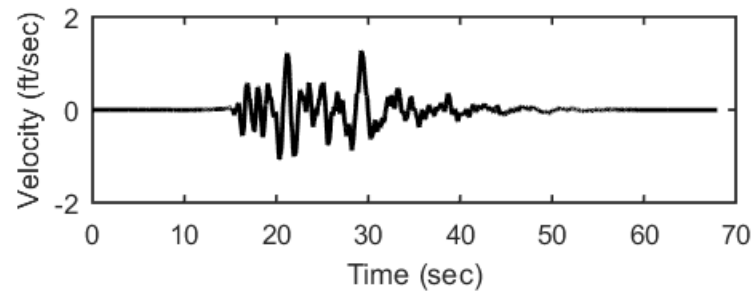
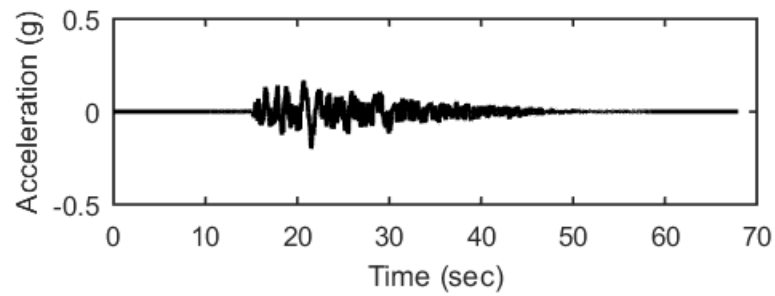
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



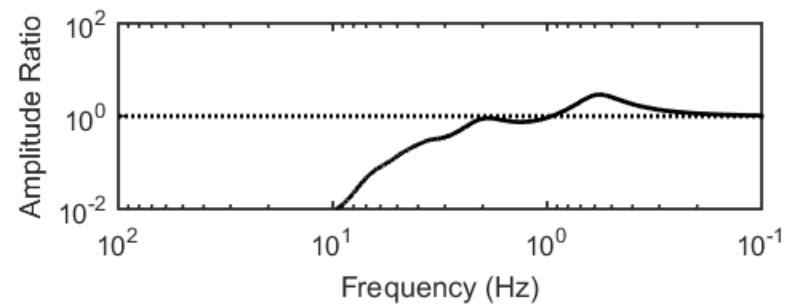
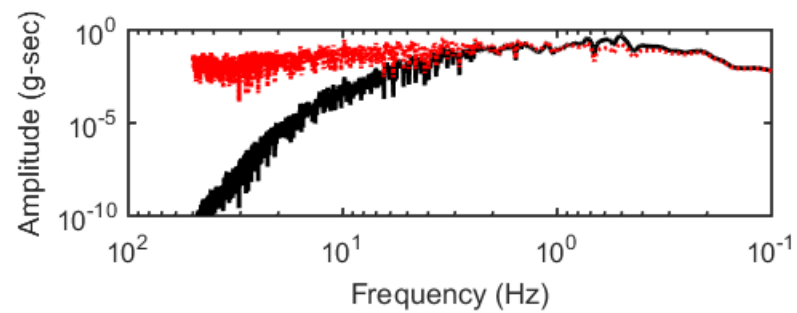
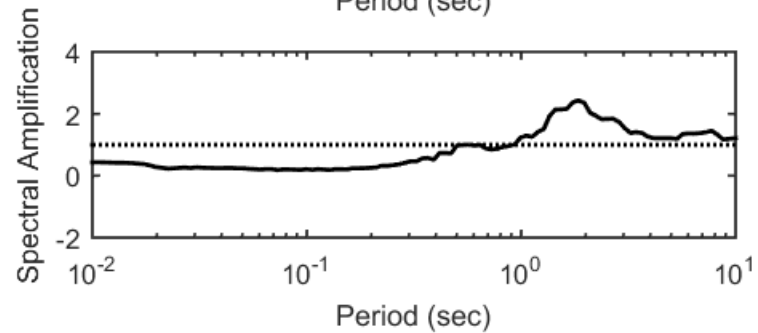
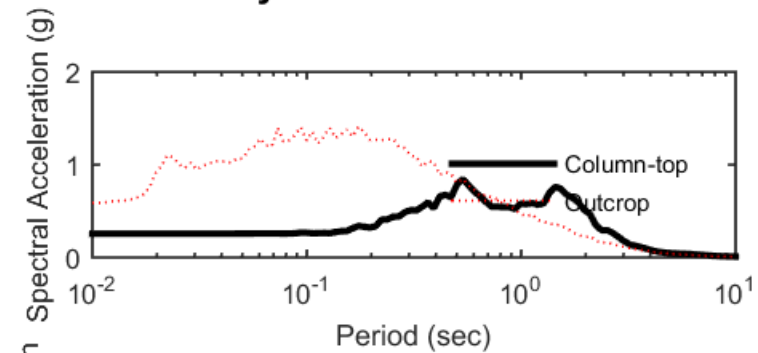
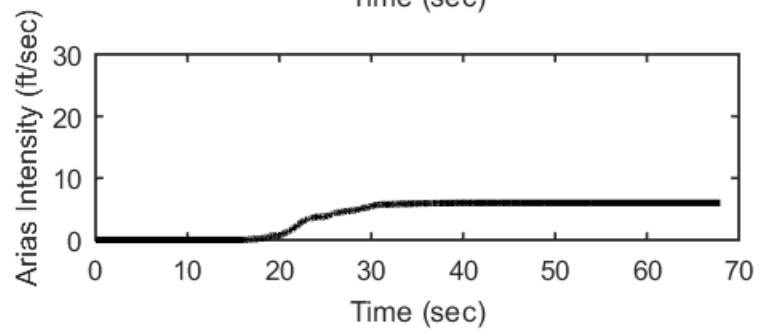
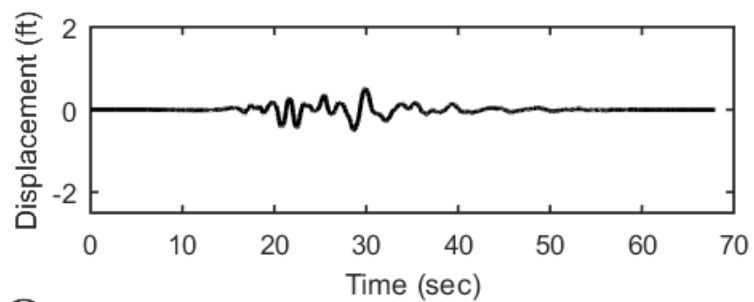
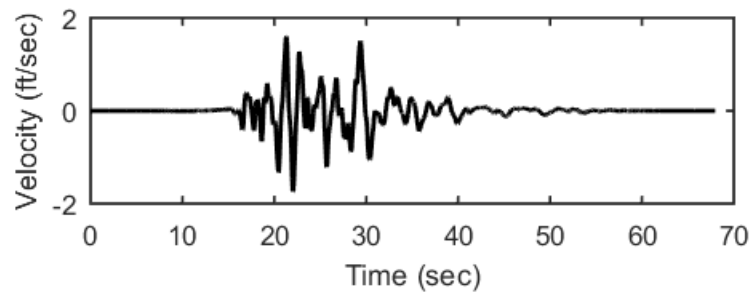
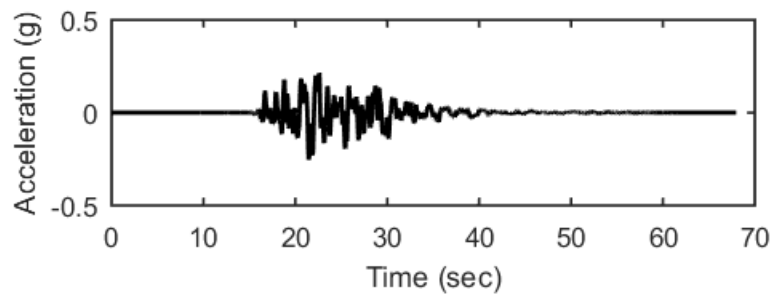
### Profile outputs for Motion: SEE5



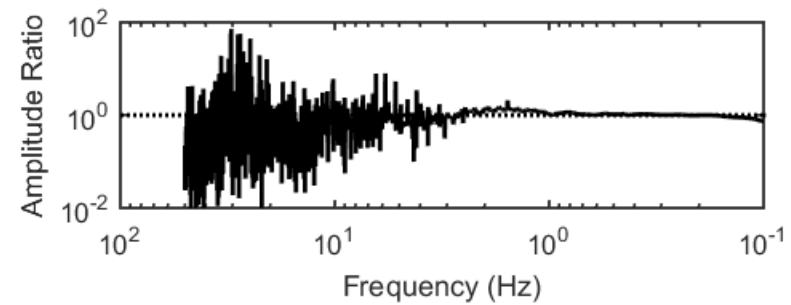
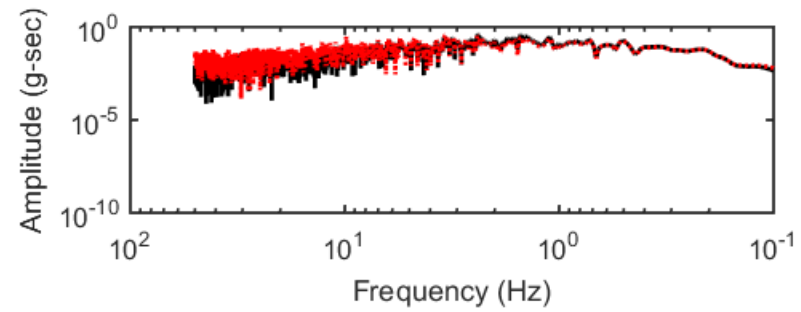
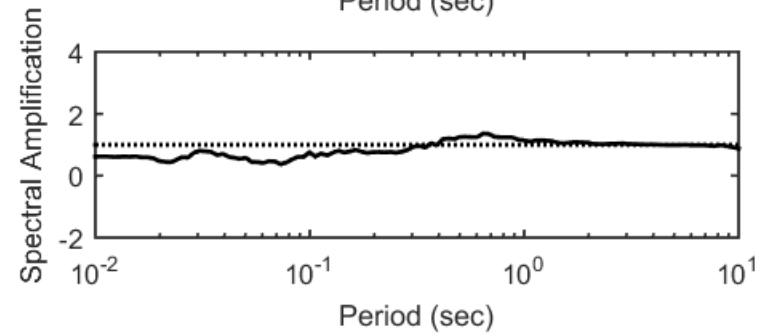
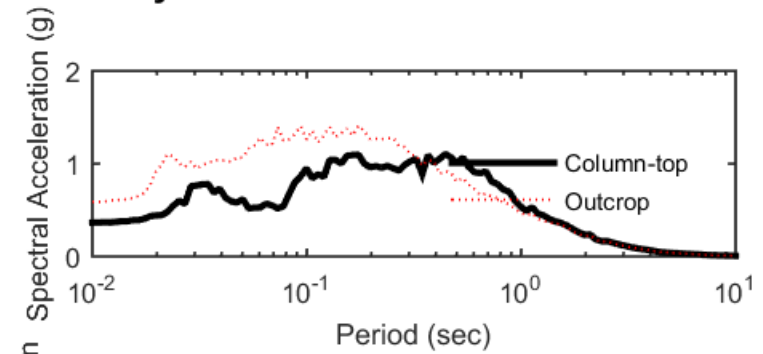
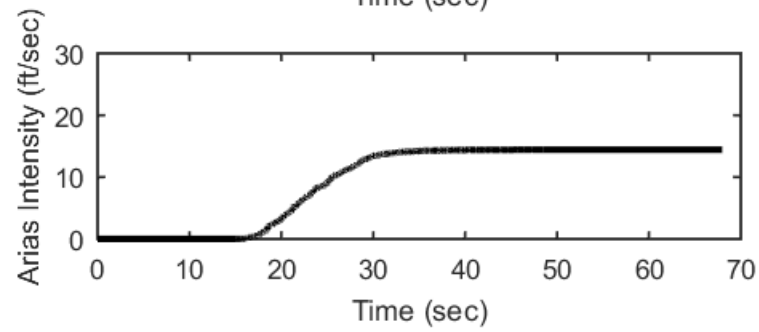
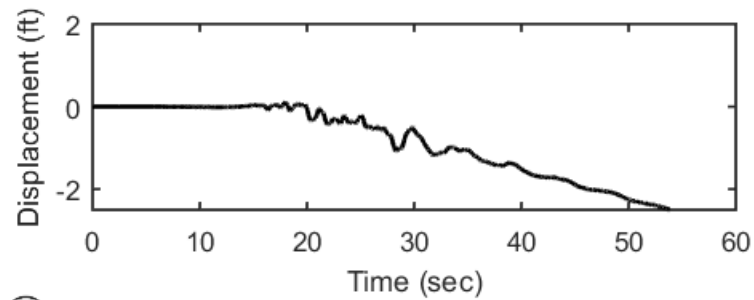
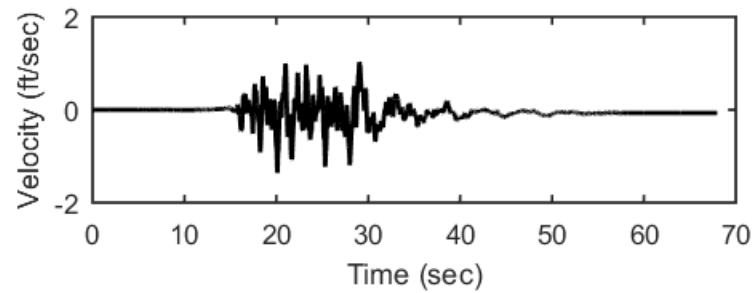
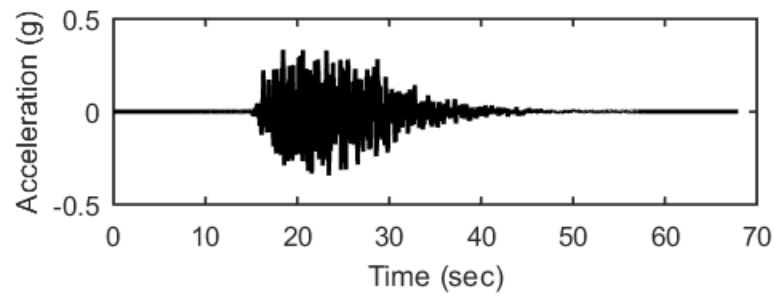
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6

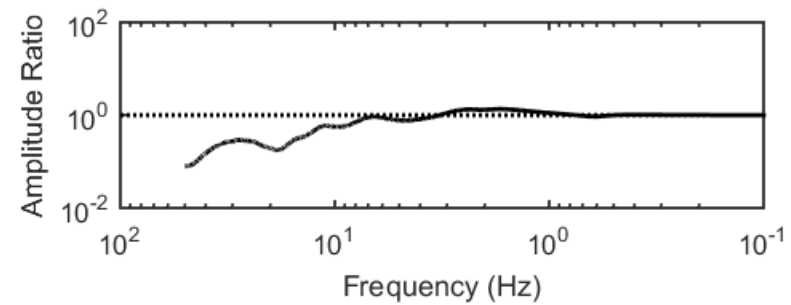
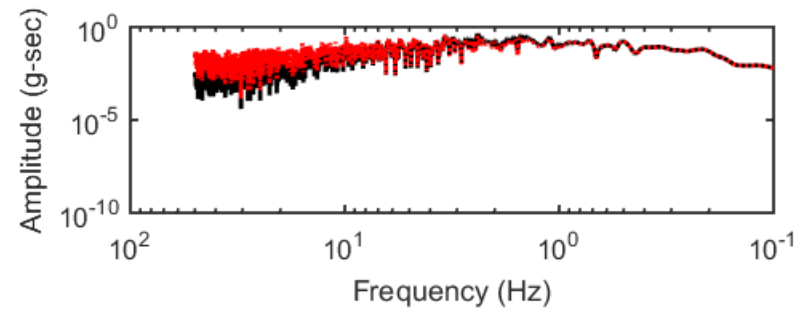
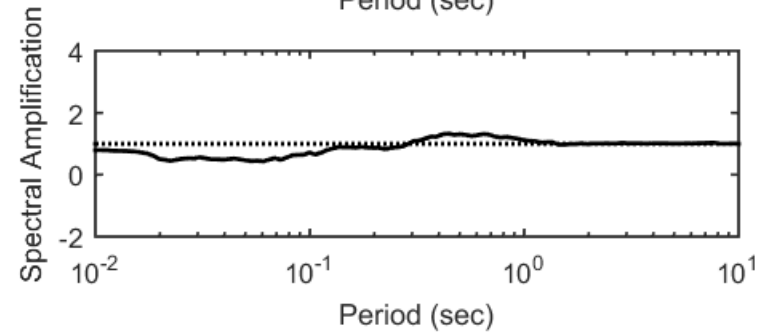
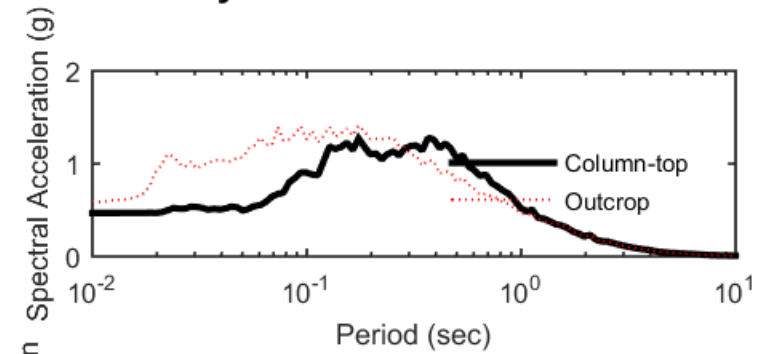
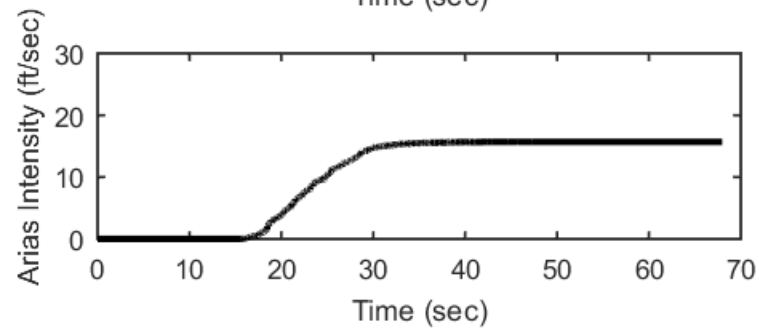
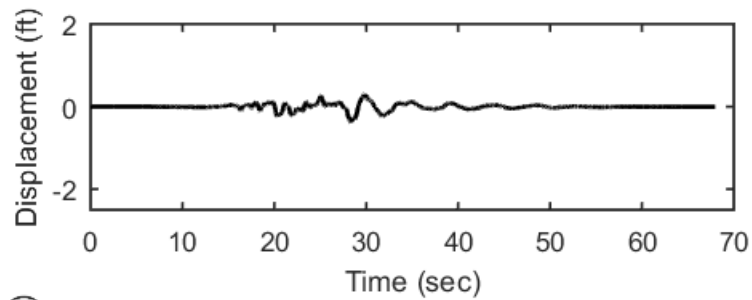
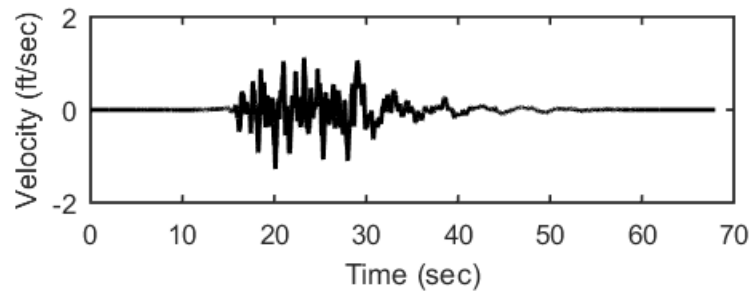
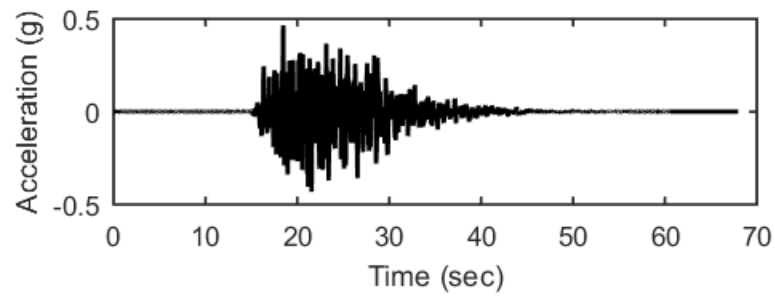


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6

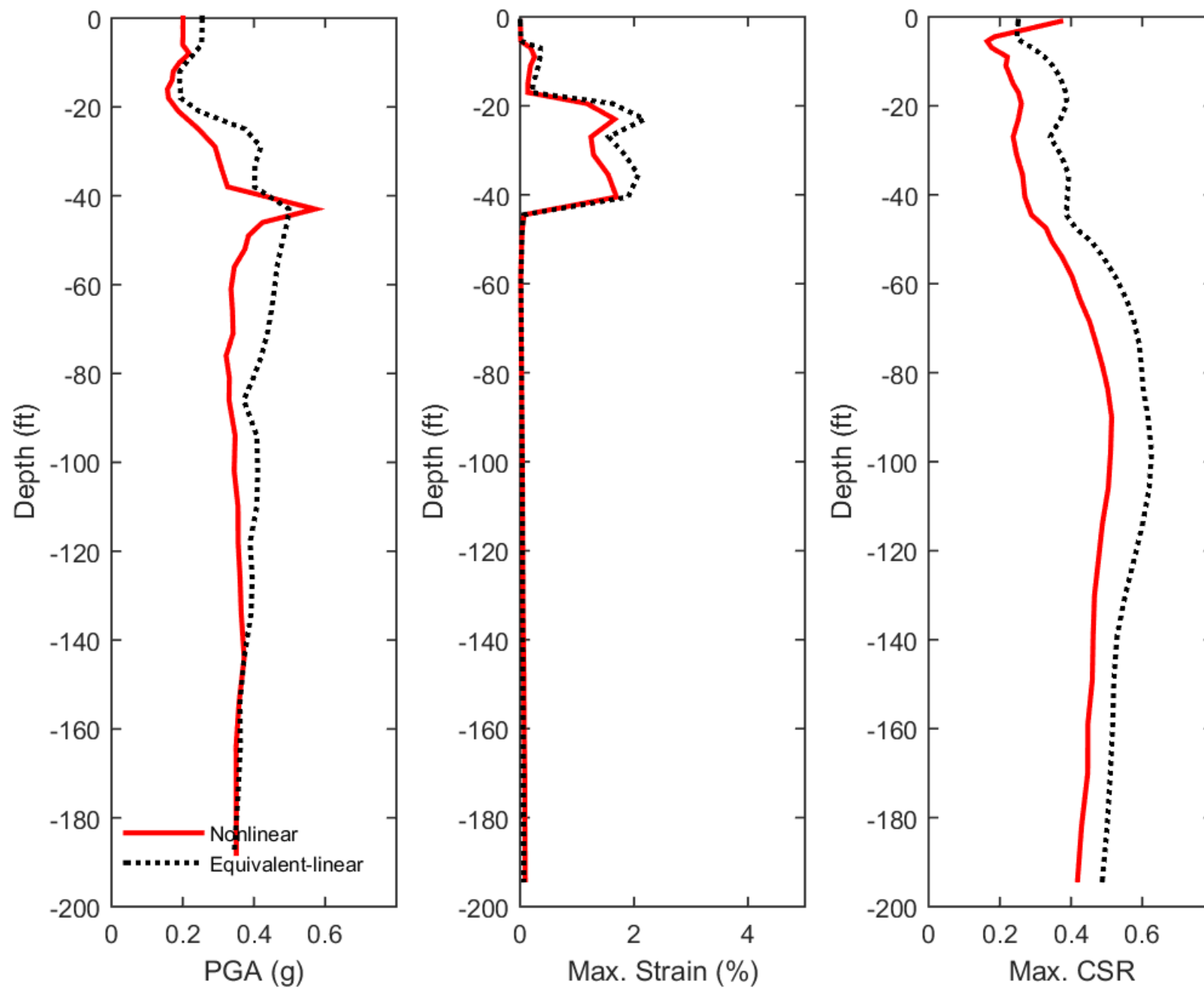




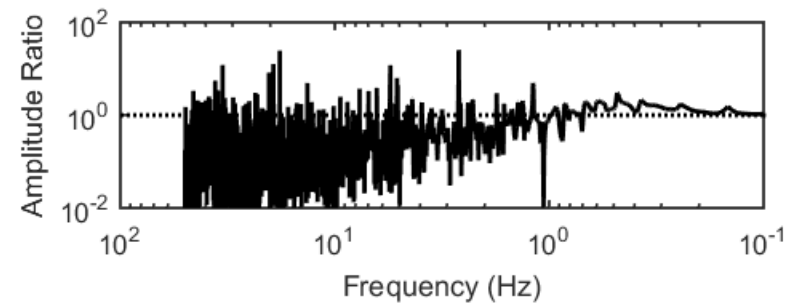
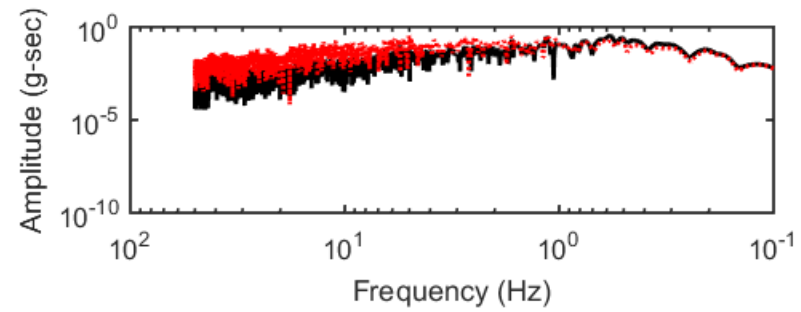
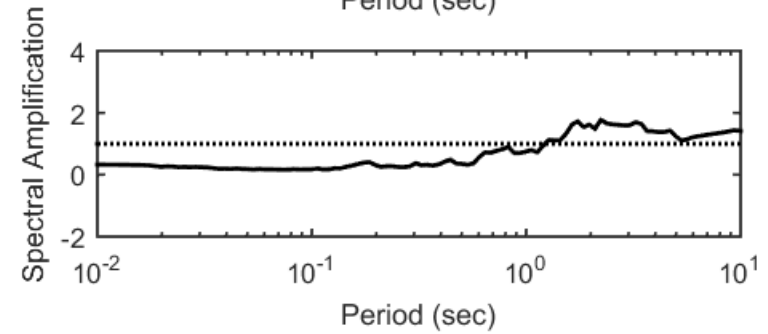
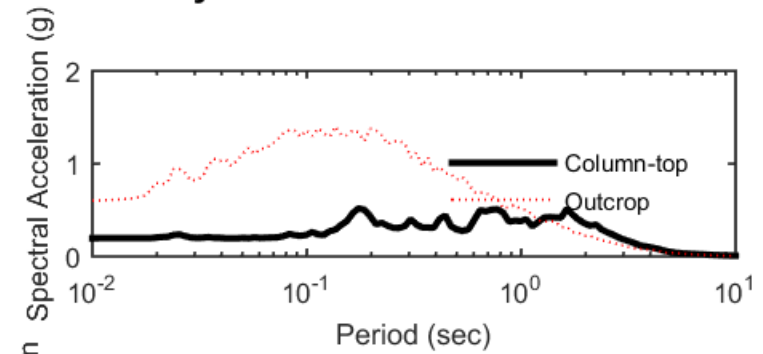
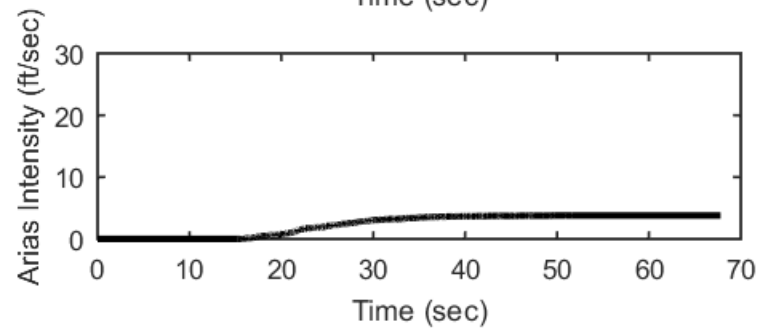
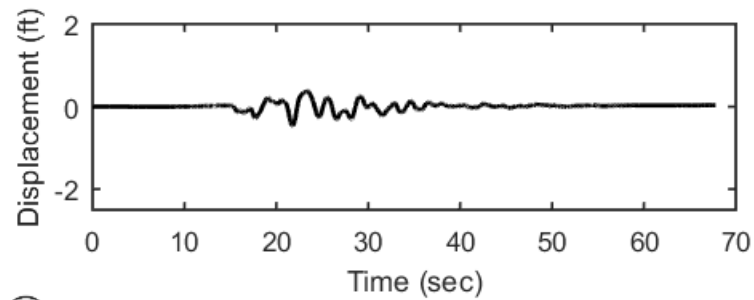
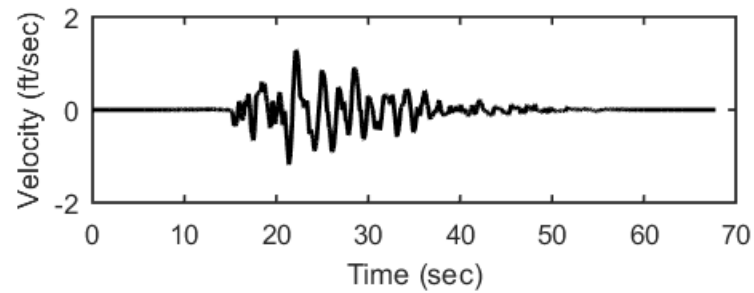
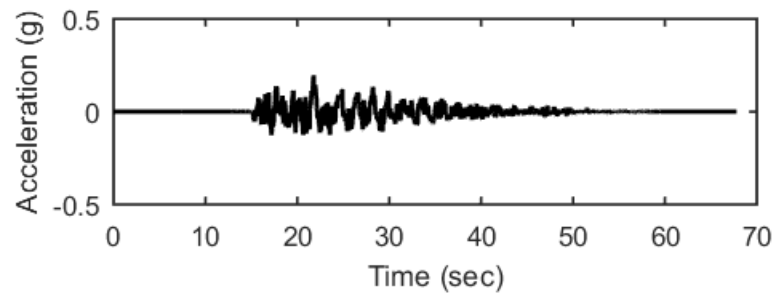
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



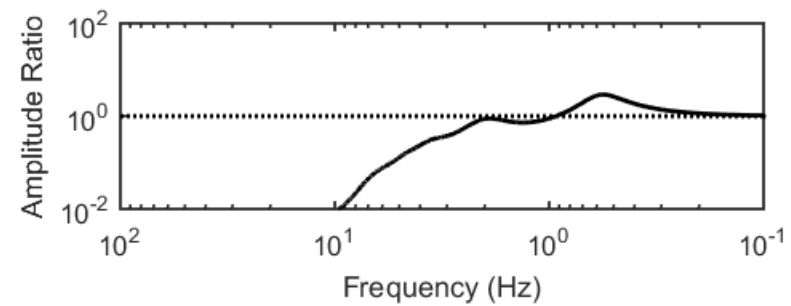
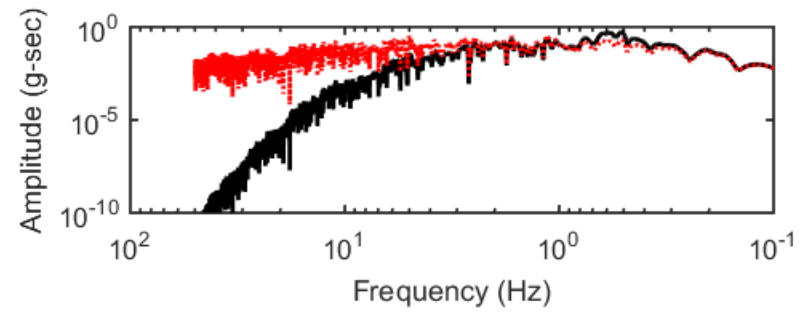
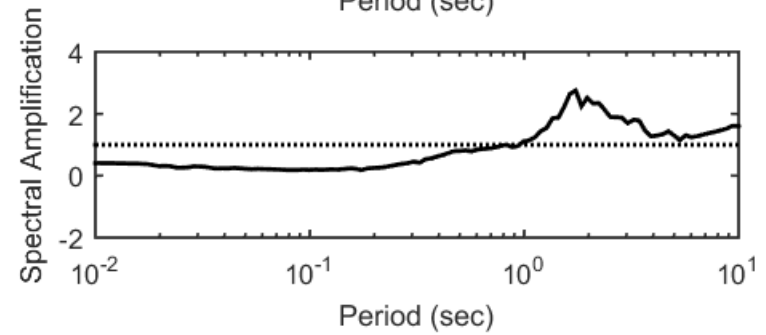
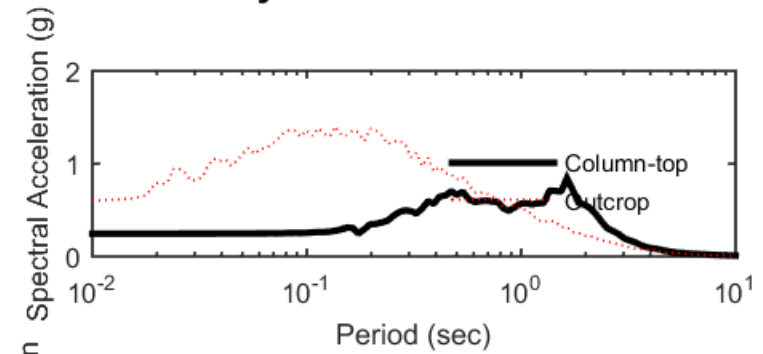
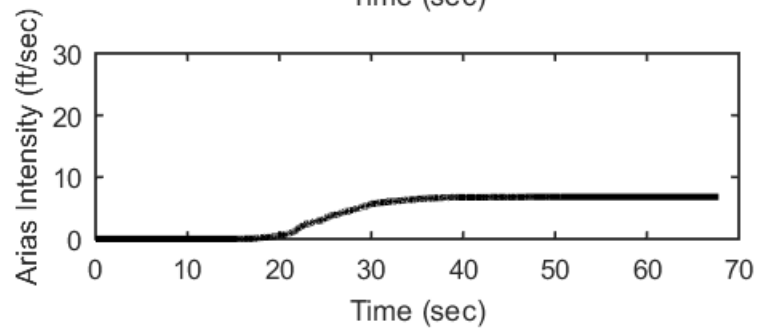
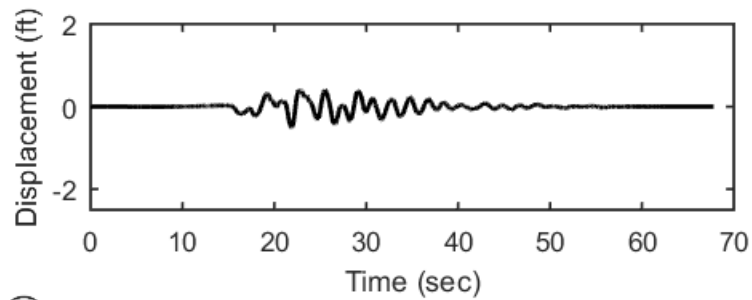
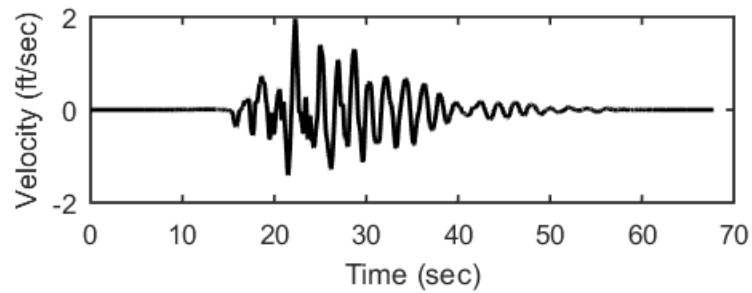
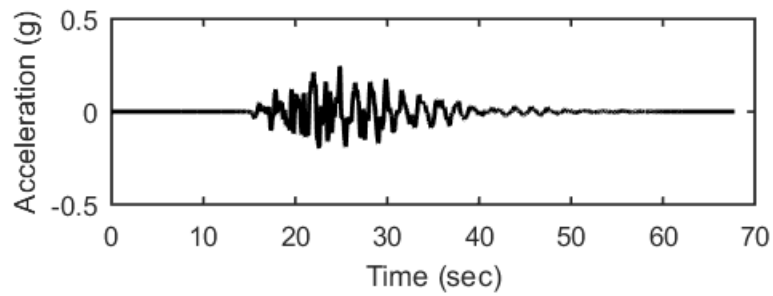
### Profile outputs for Motion: SEE6



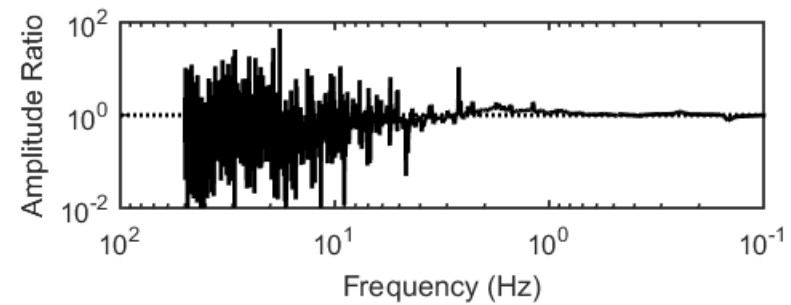
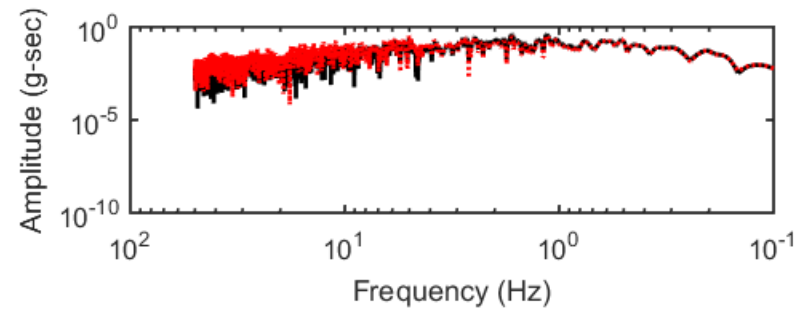
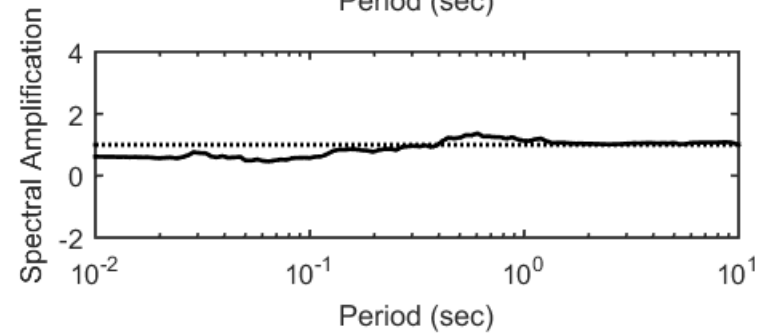
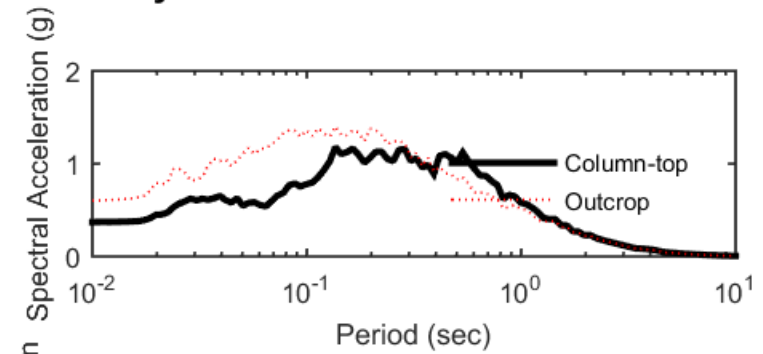
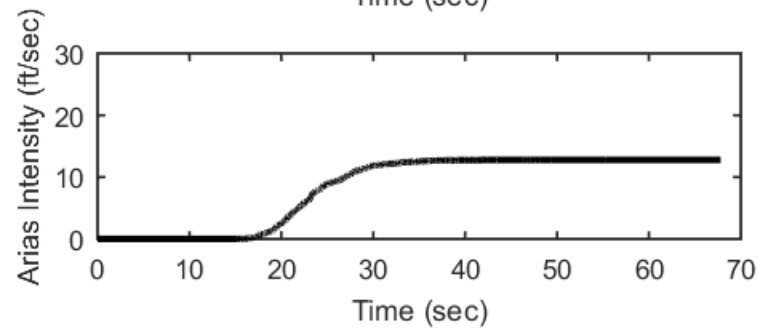
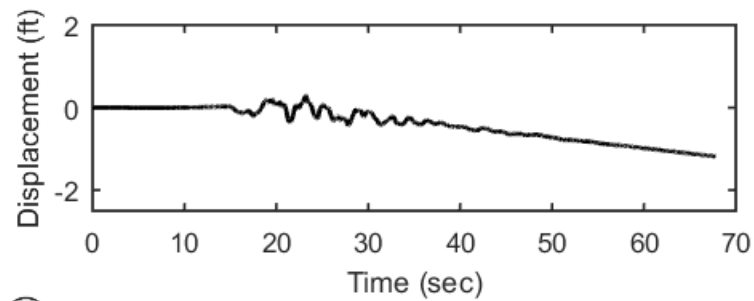
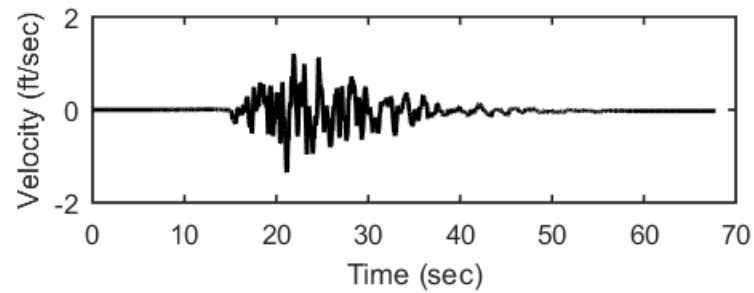
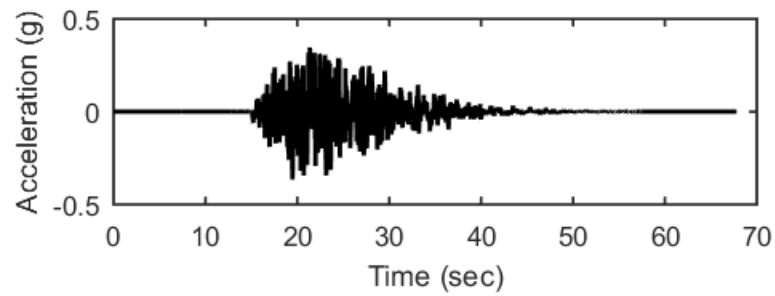
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



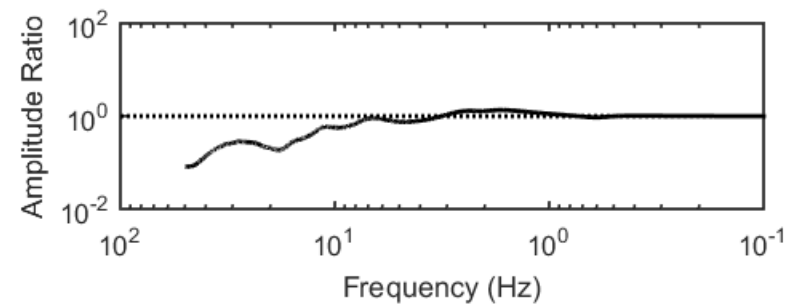
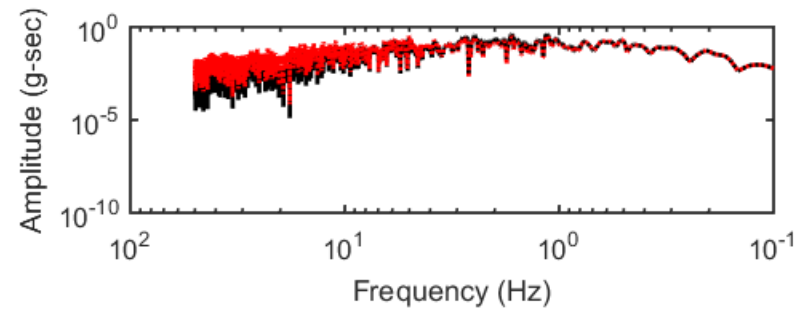
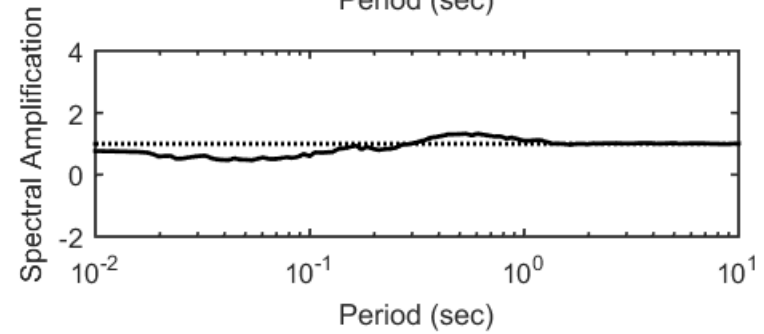
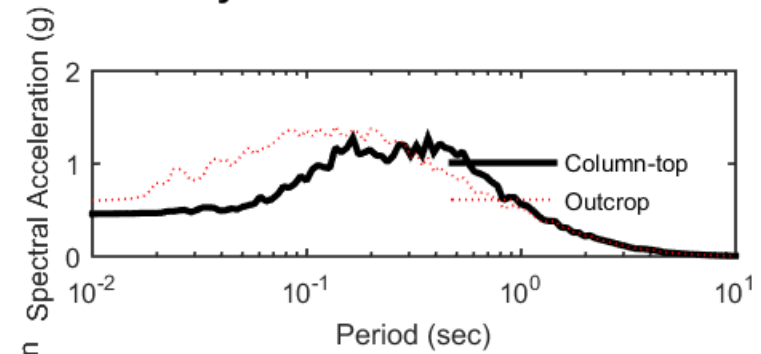
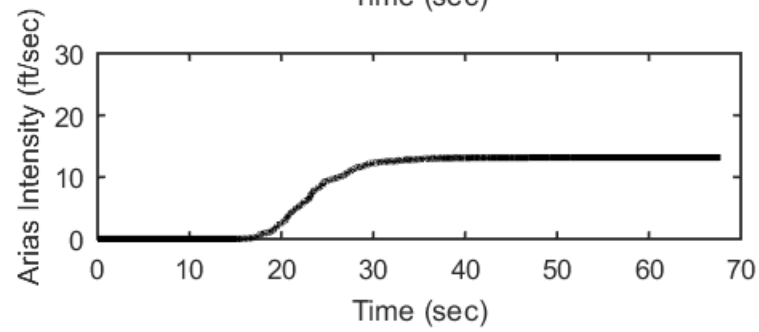
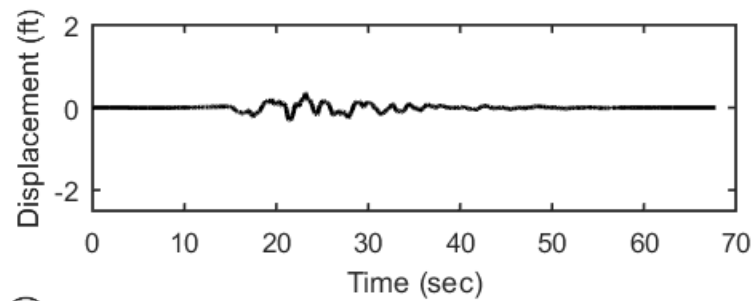
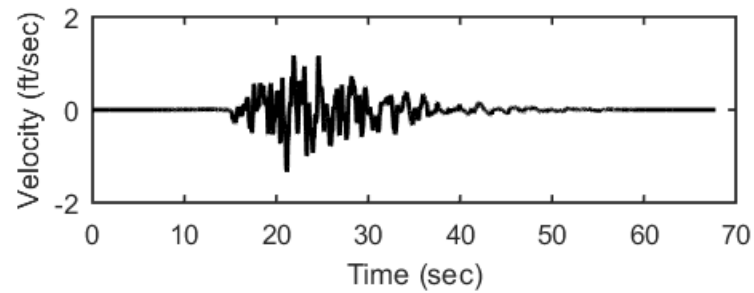
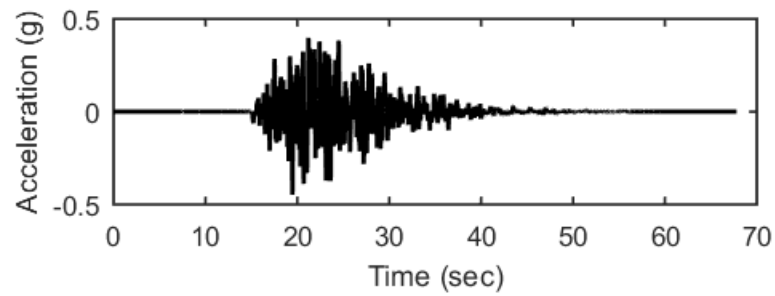
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



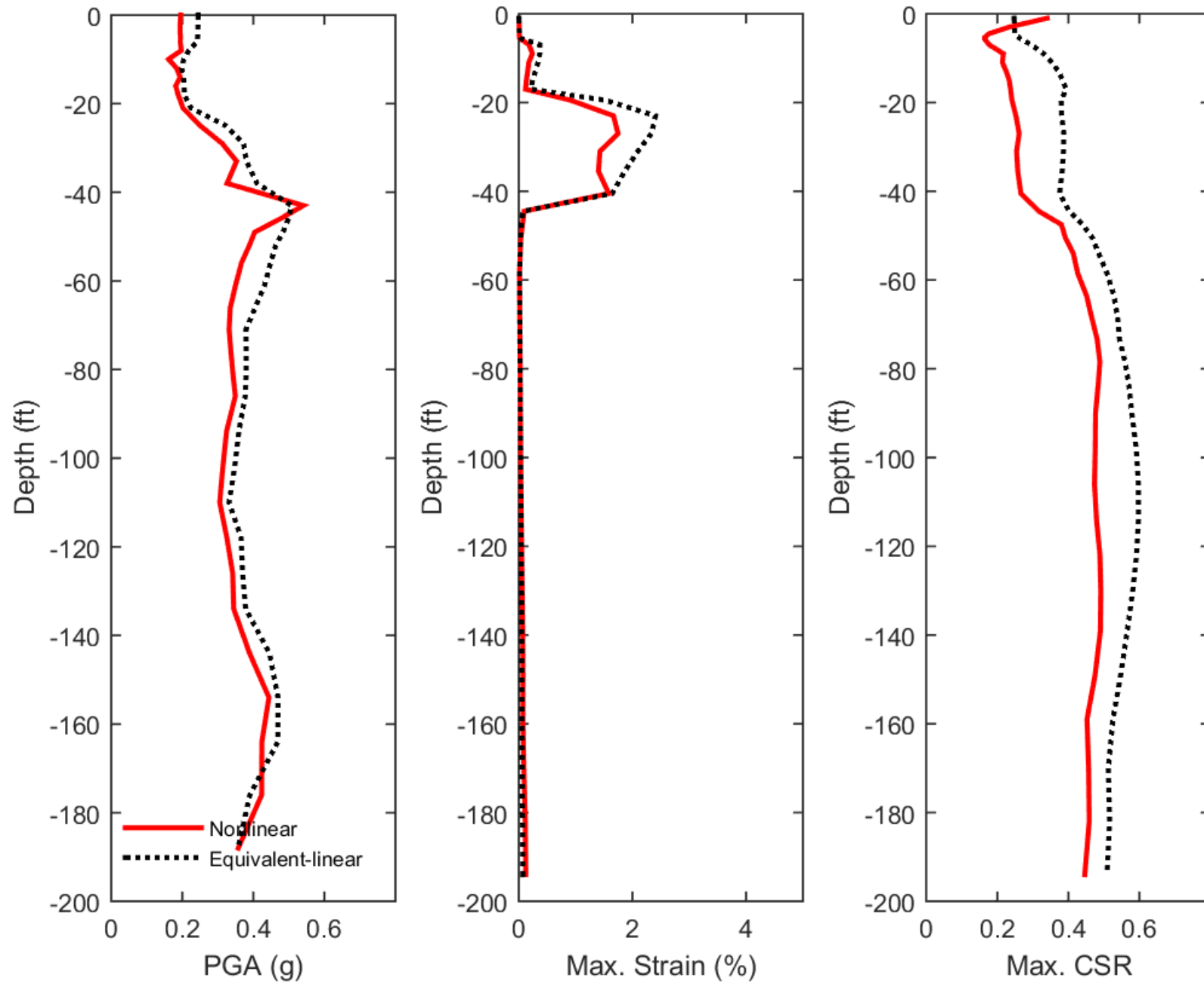
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



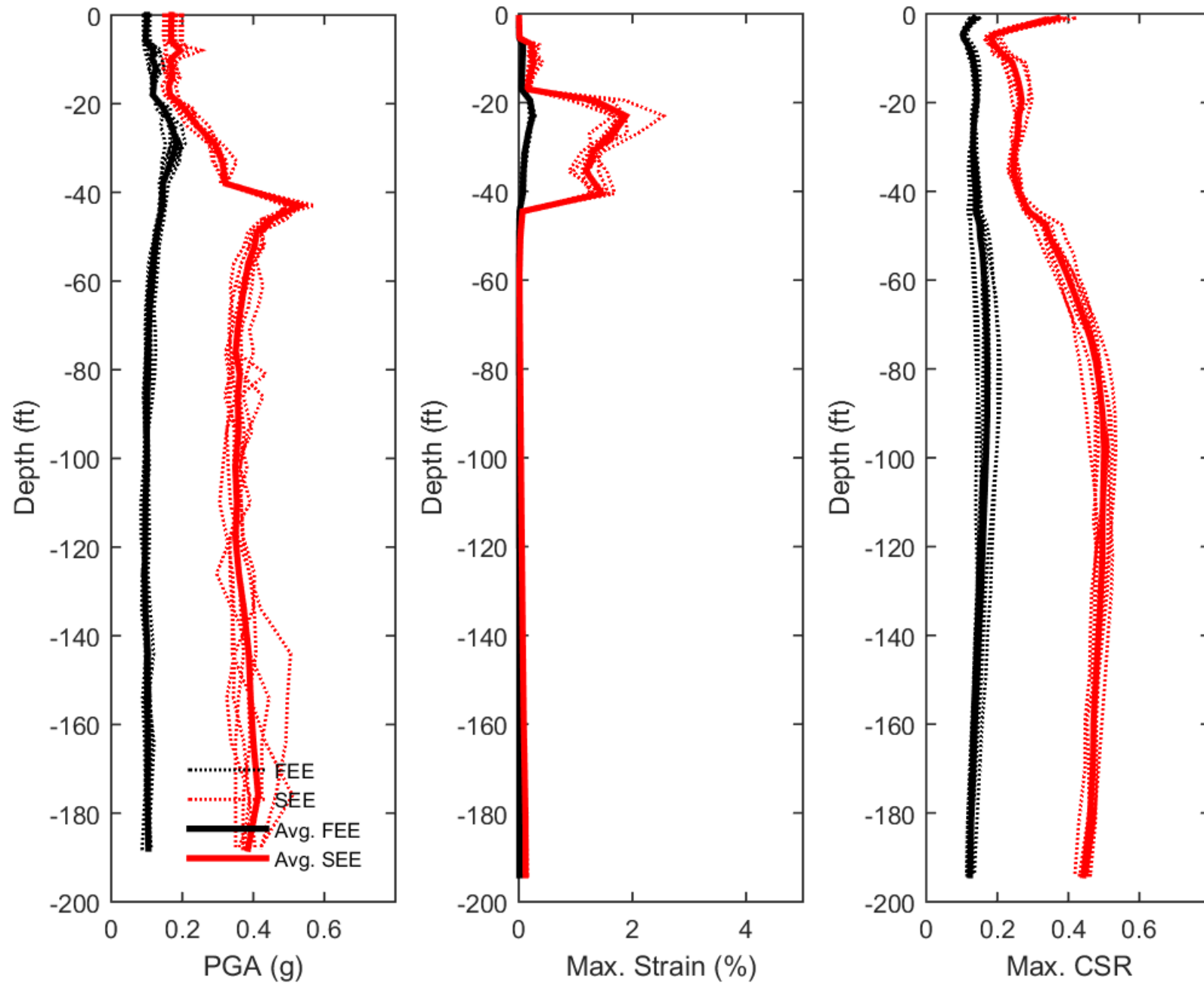
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



### Profile outputs for Motion: SEE7

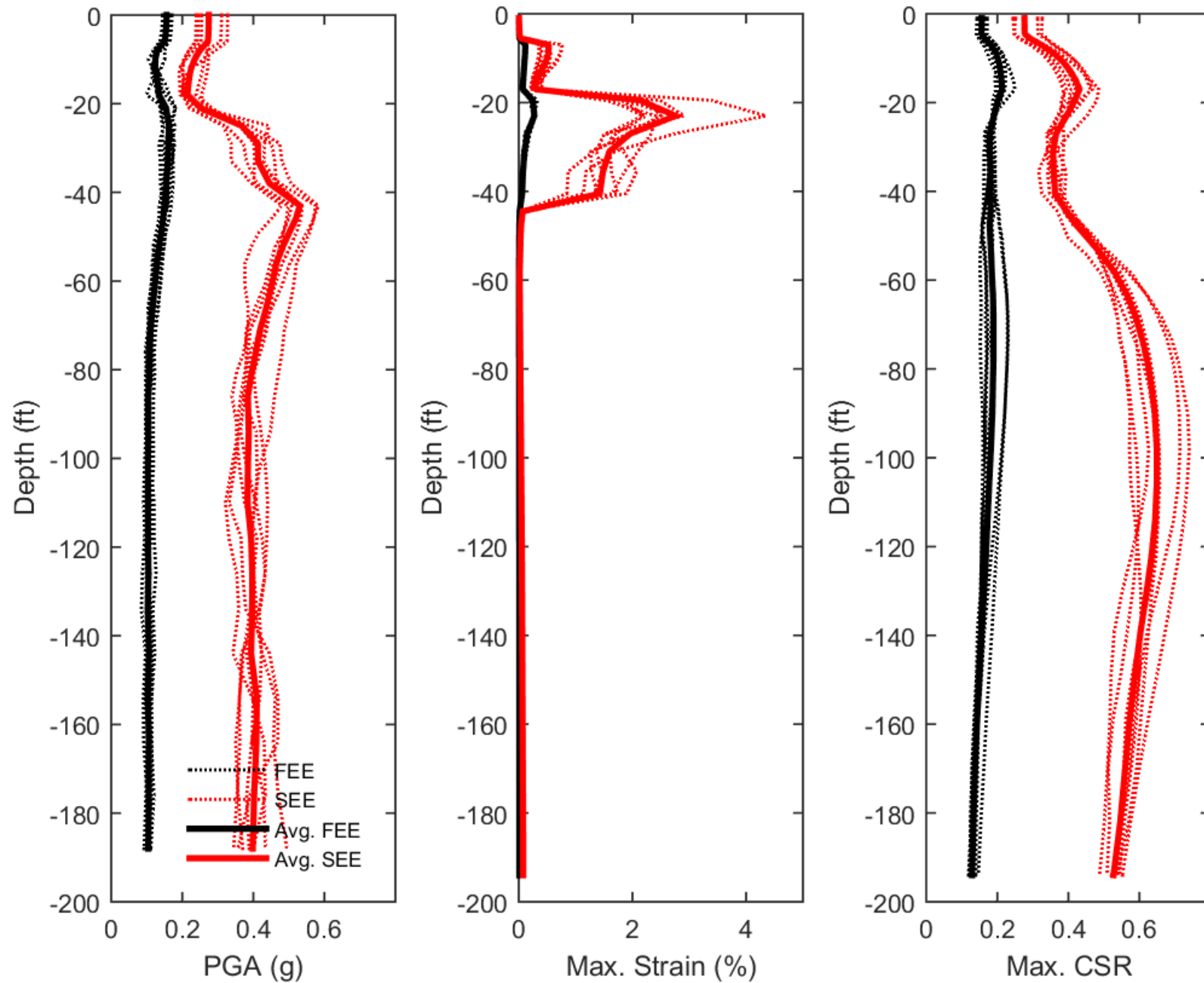


## Summary of the profile outputs for Nonlinear analysis

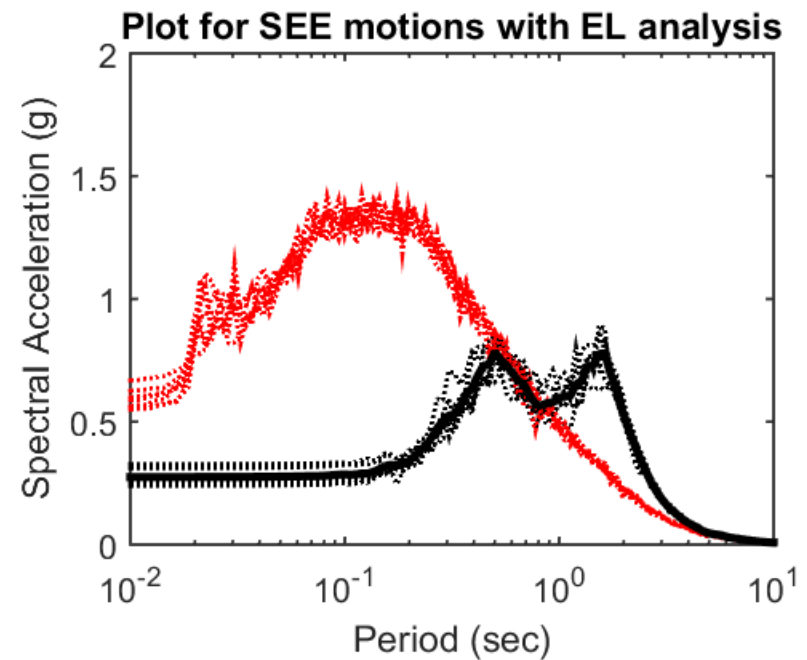
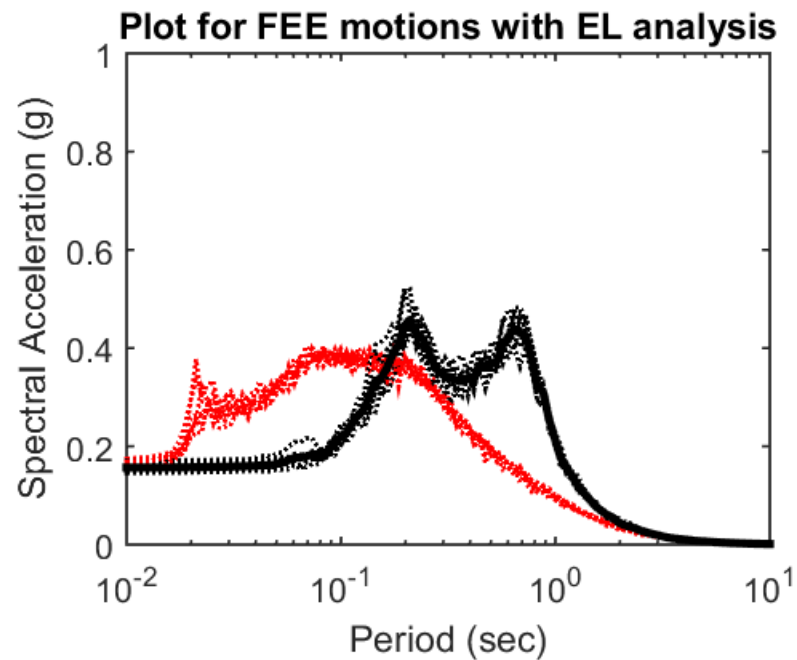
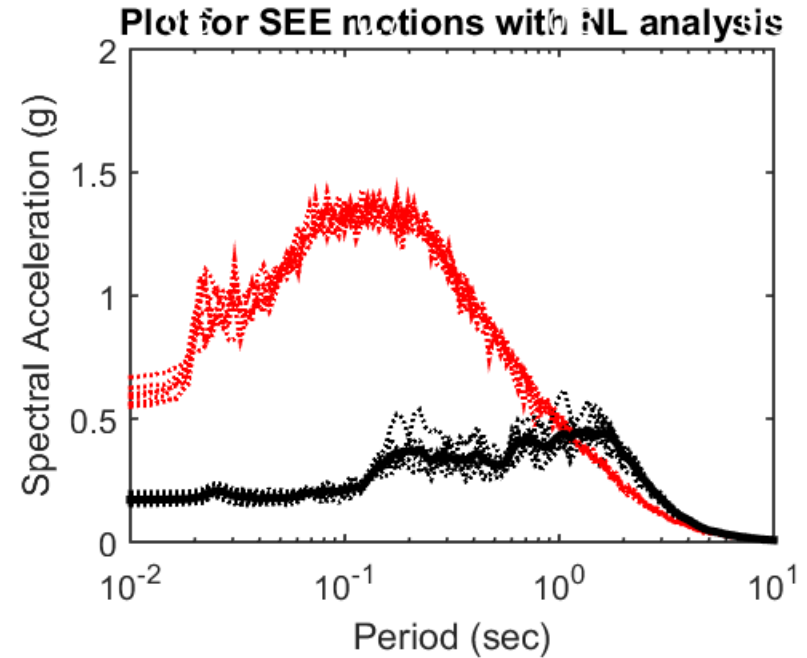
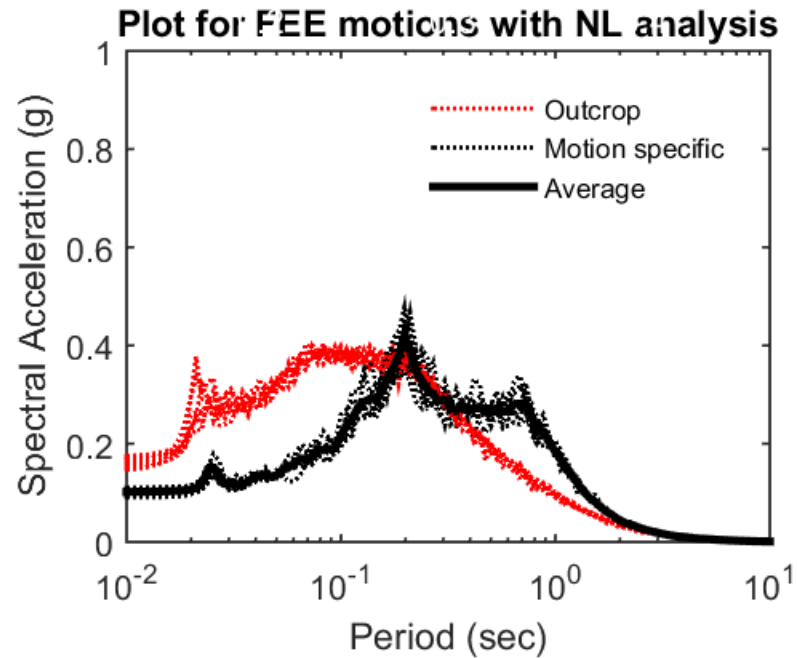




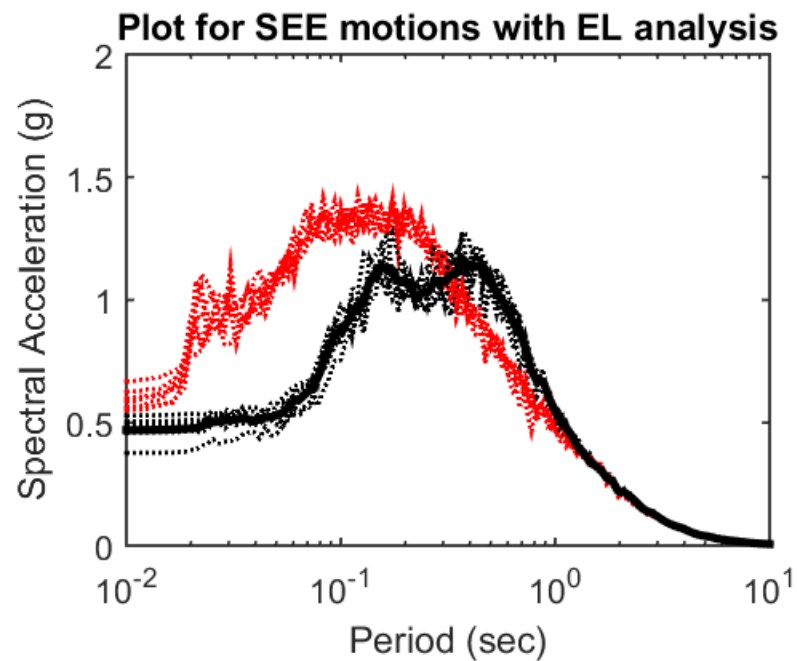
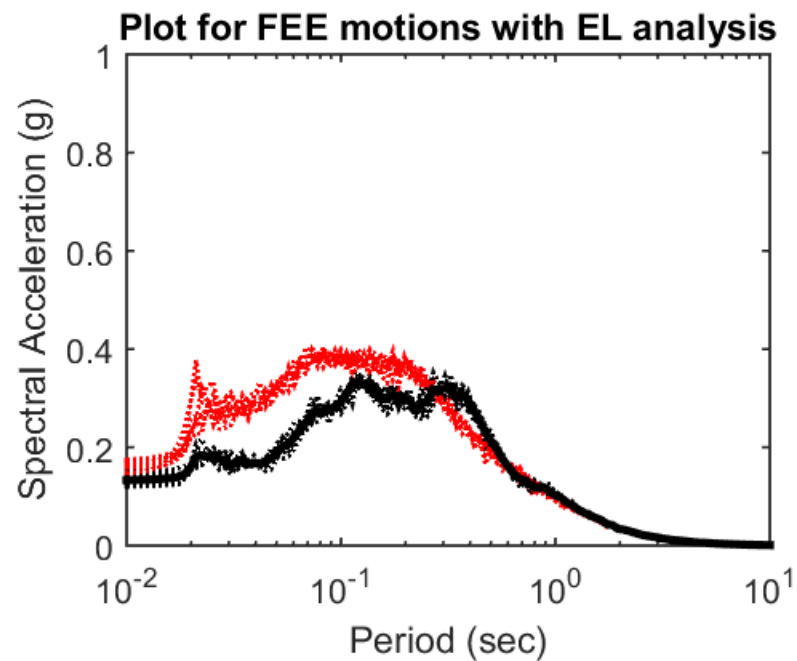
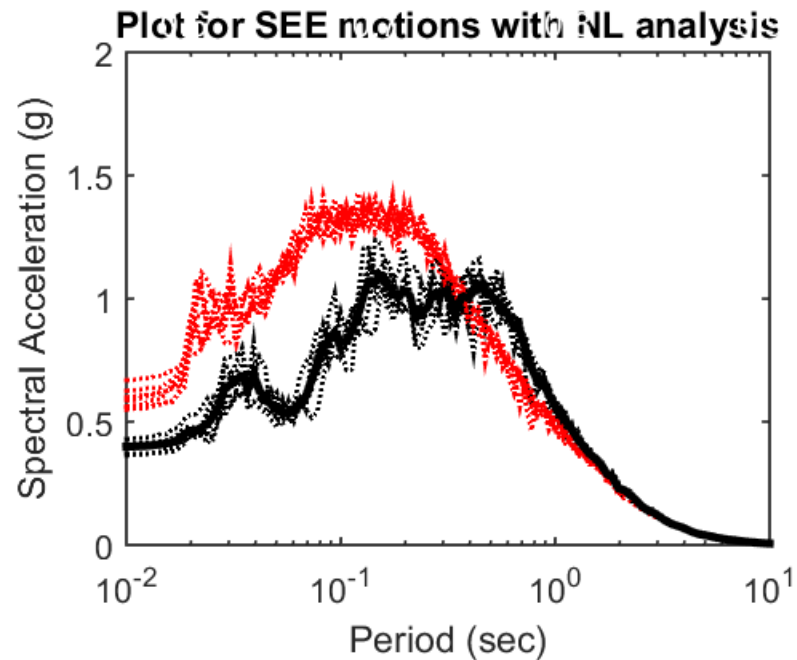
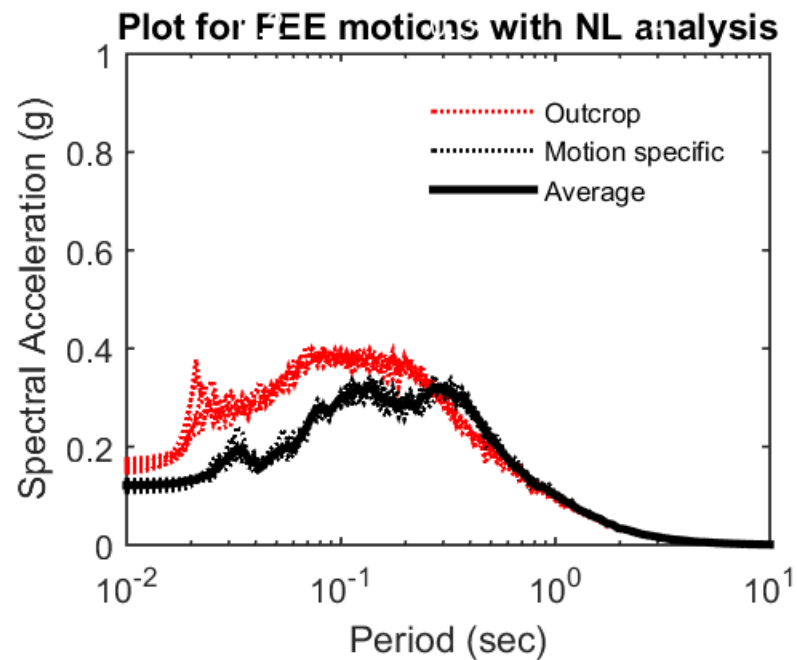
### Summary of the profile outputs for Equivalent-linear analysis



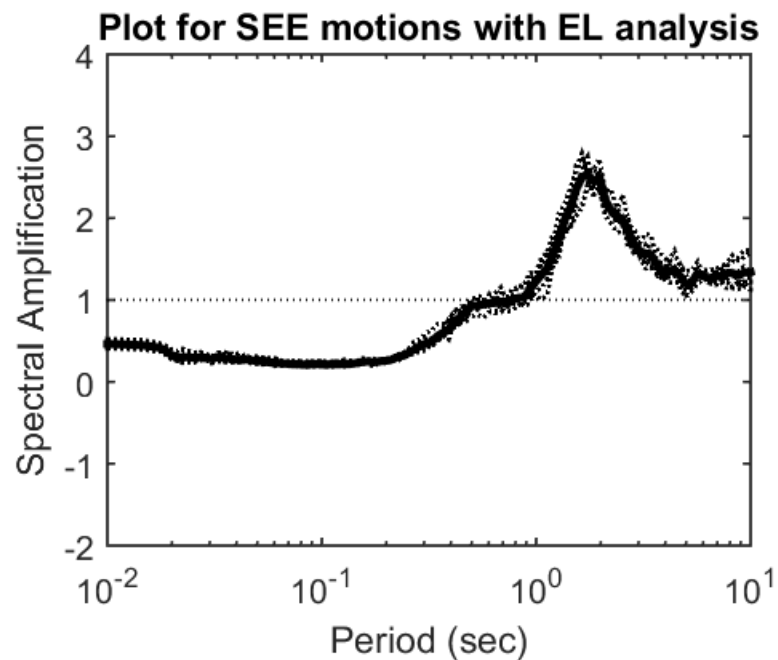
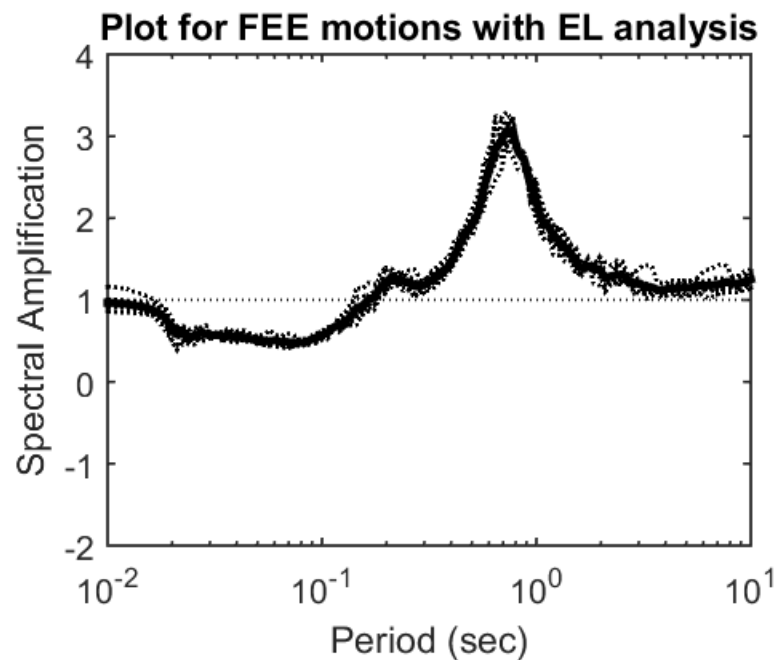
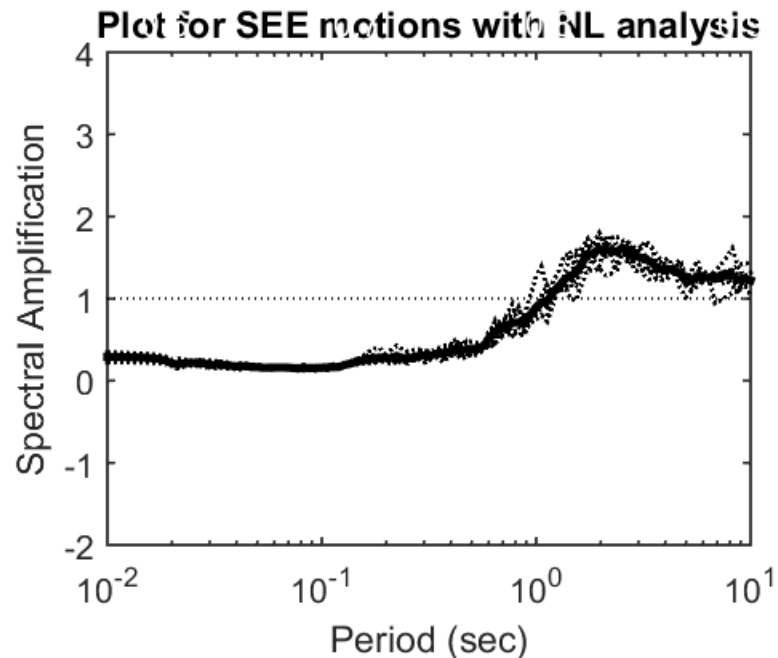
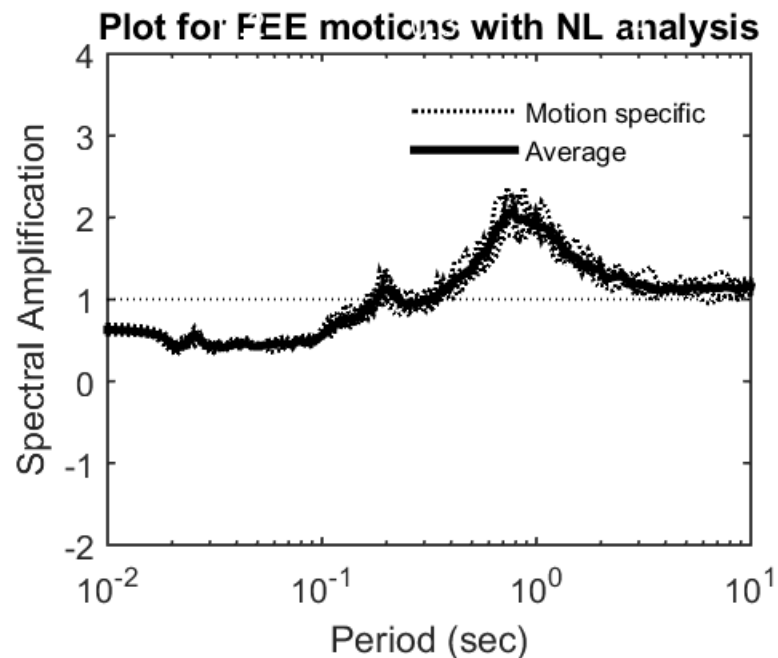
## Summary plots: RSA at ground surface



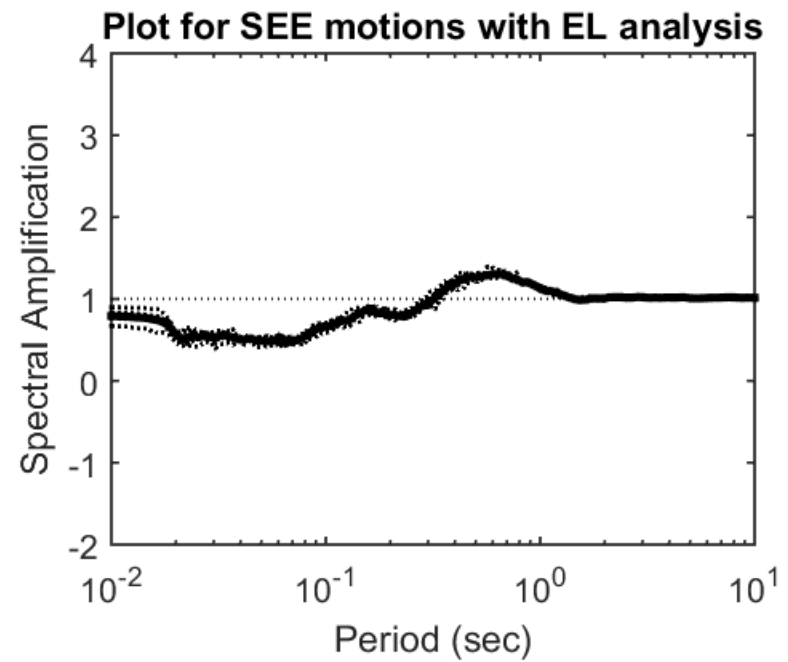
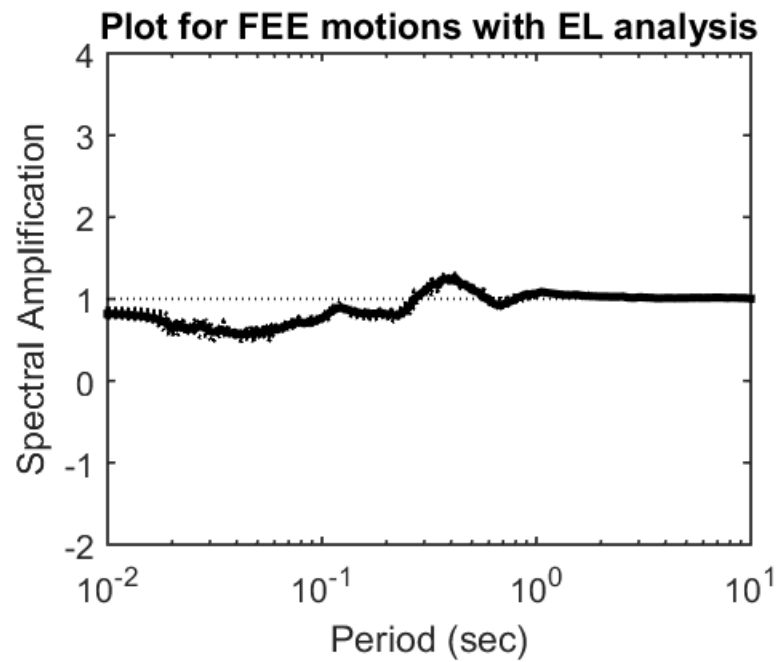
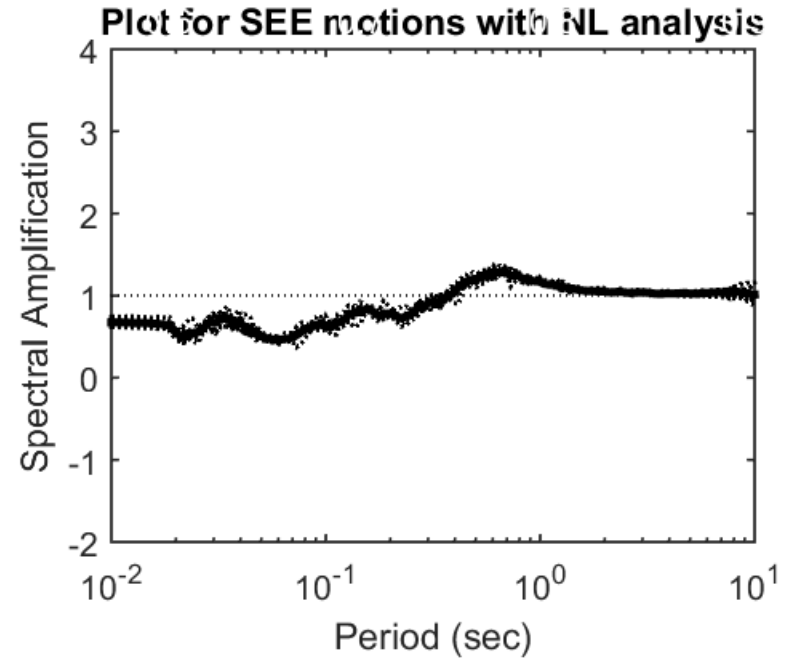
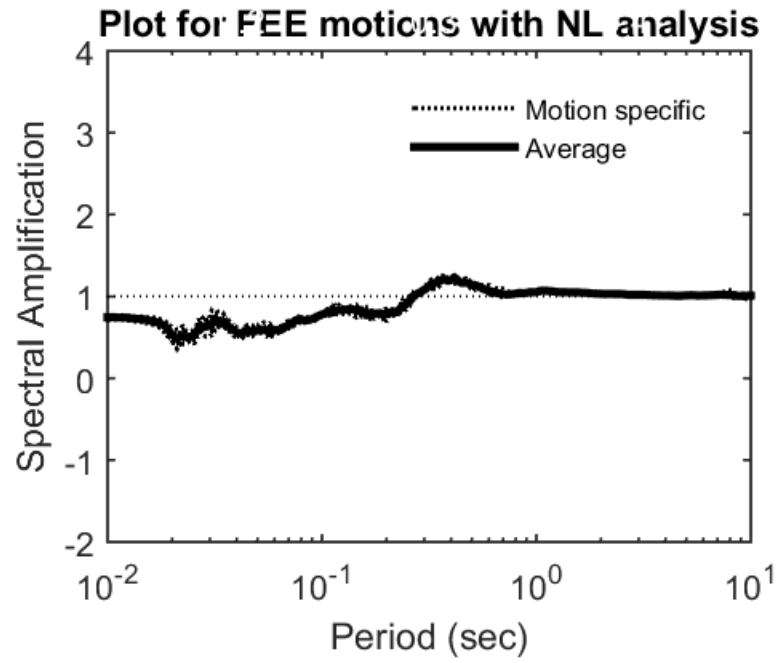
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

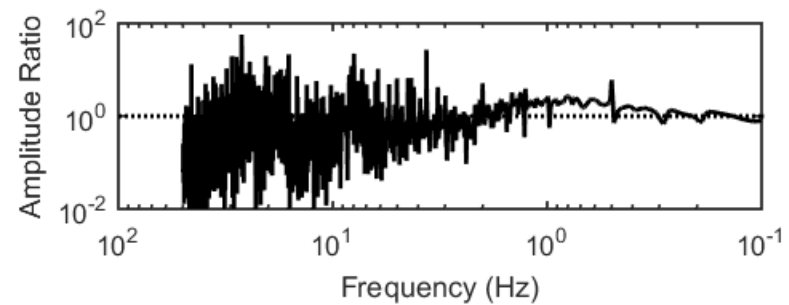
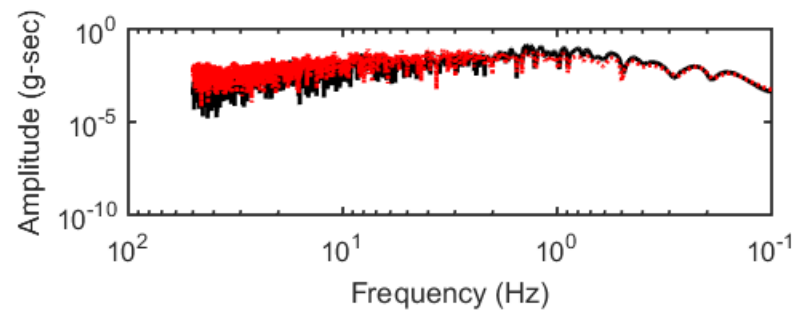
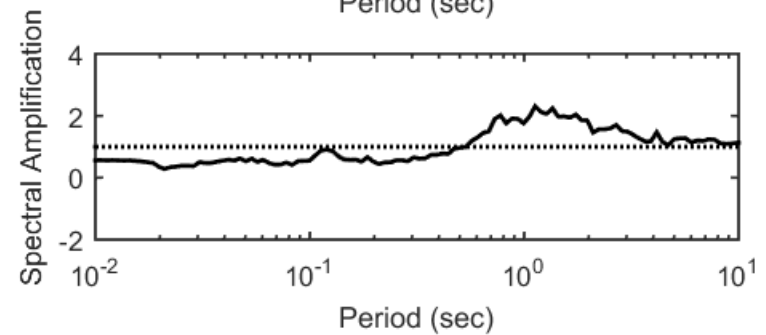
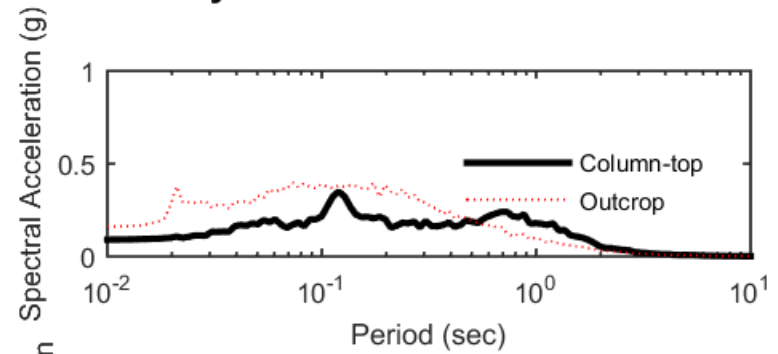
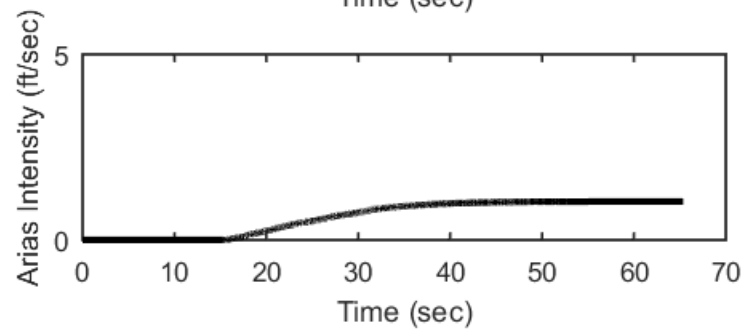
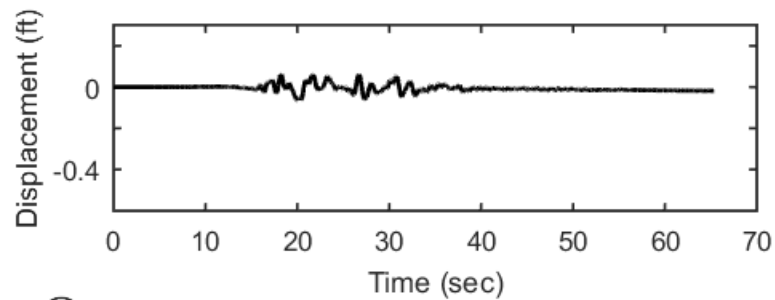
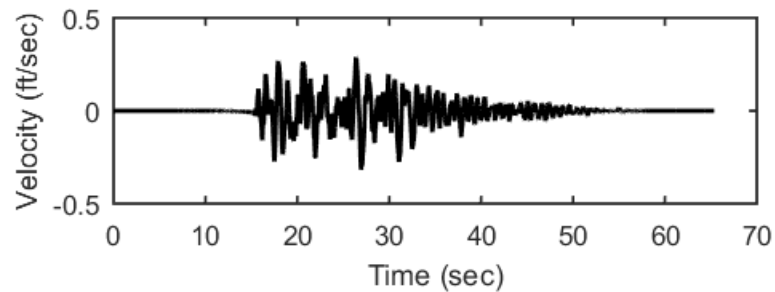
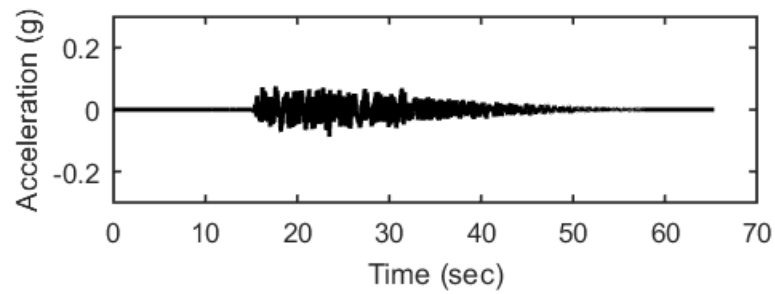


## Summary plots: Spectral amplification at top of Marl

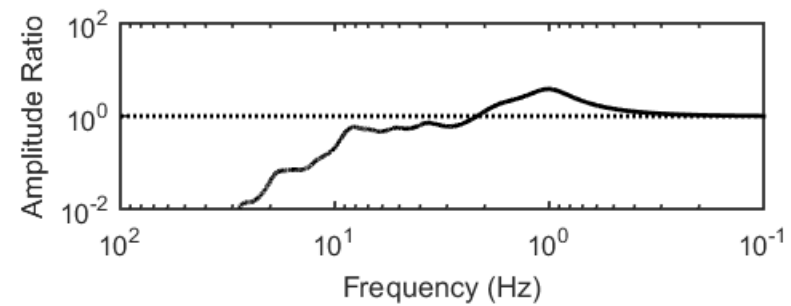
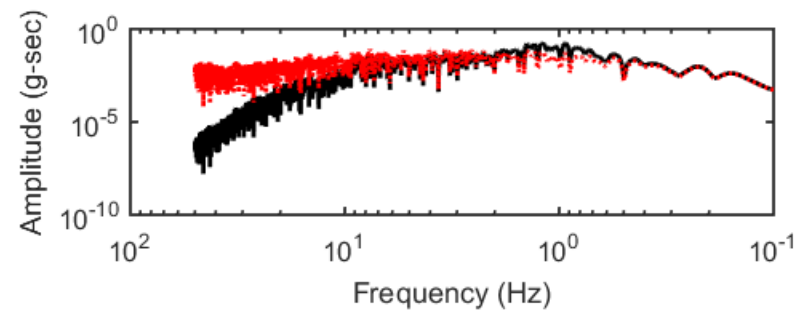
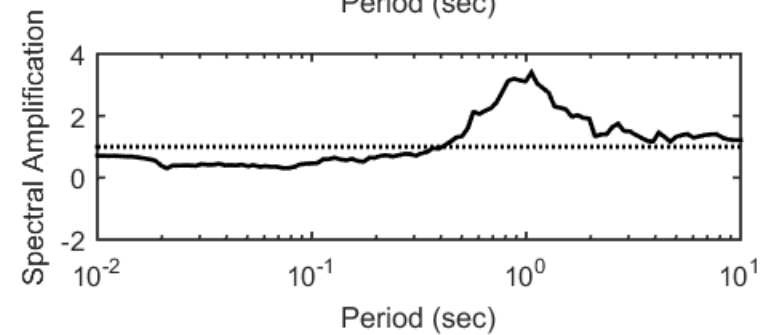
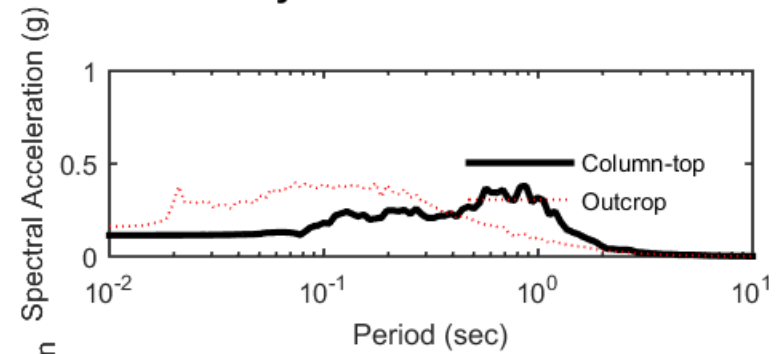
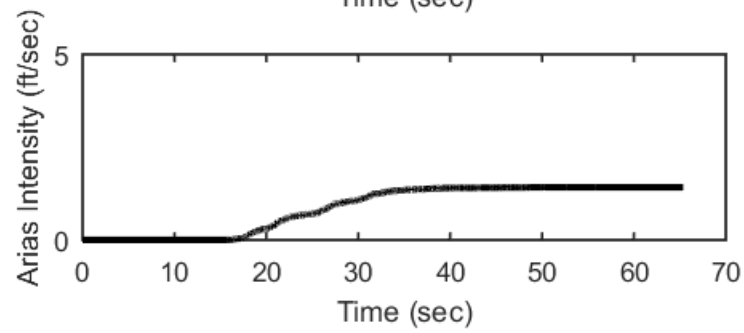
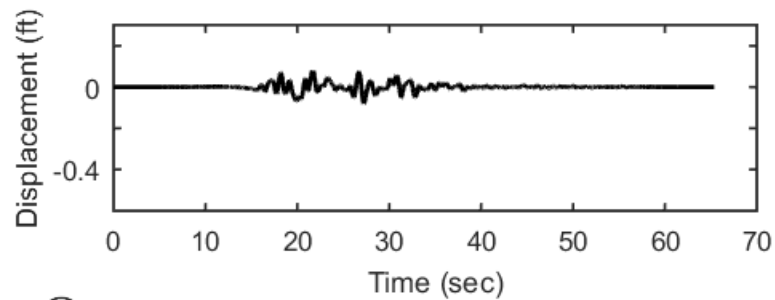
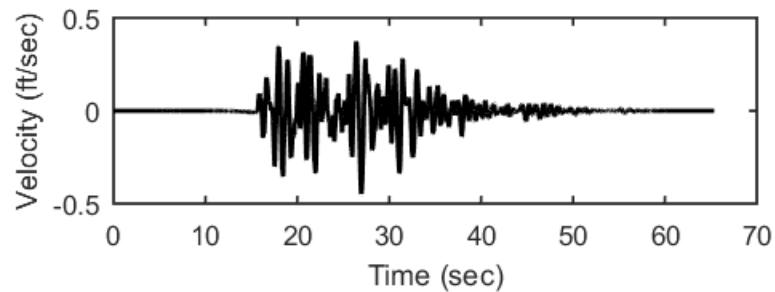
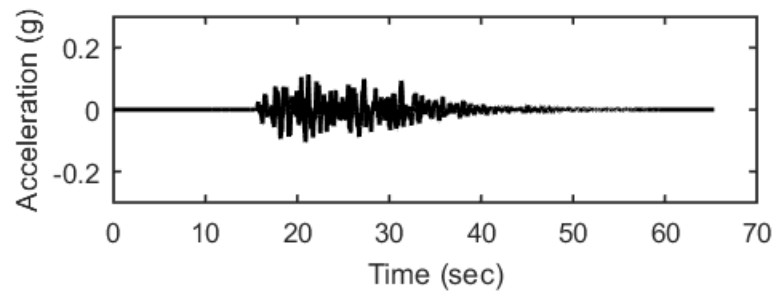


## **BASE MODEL AND LOW SHEAR WAVE**

## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1

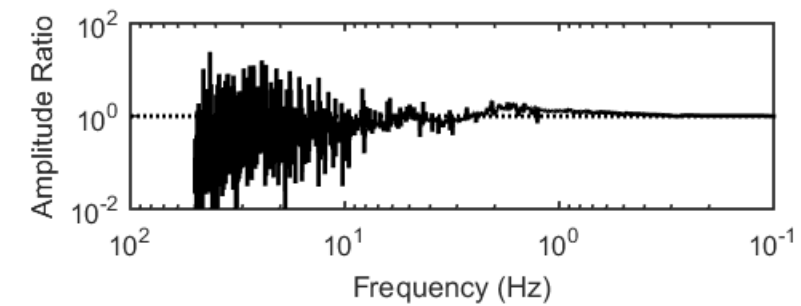
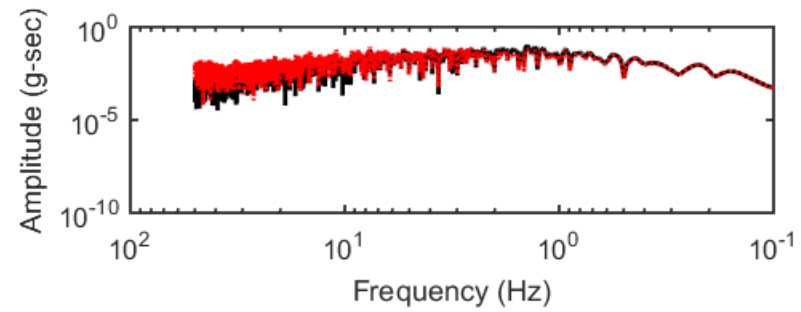
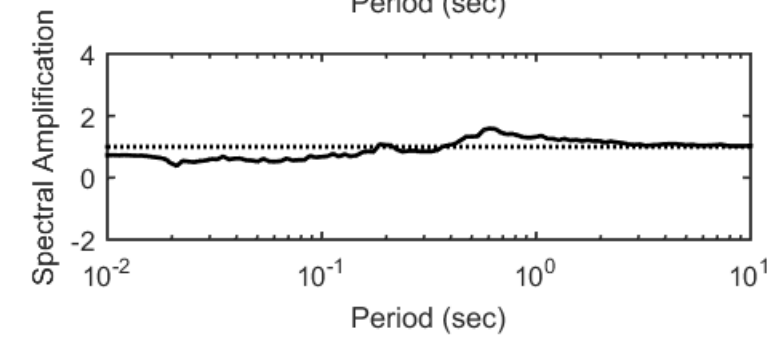
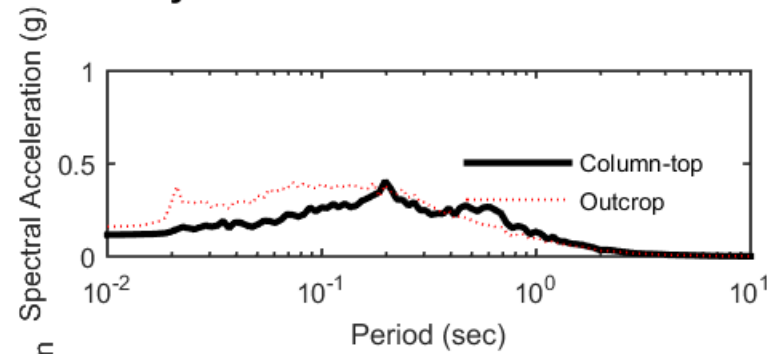
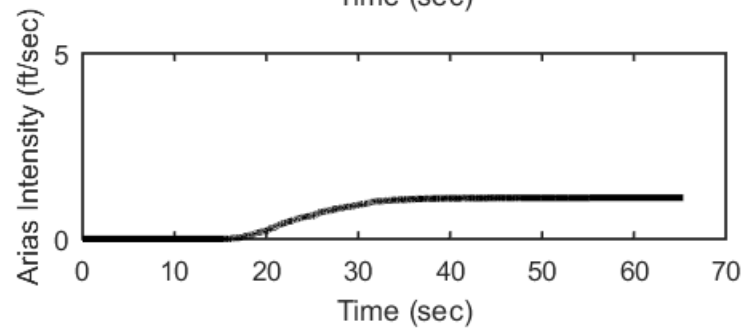
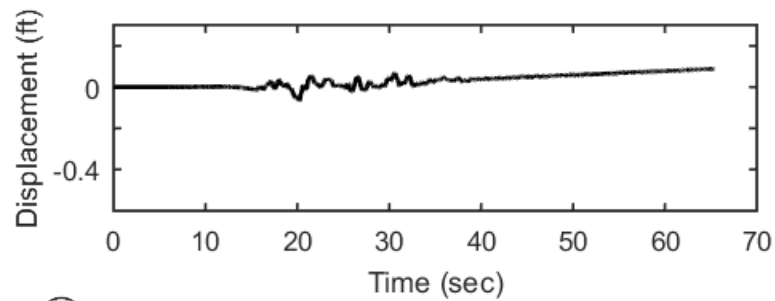
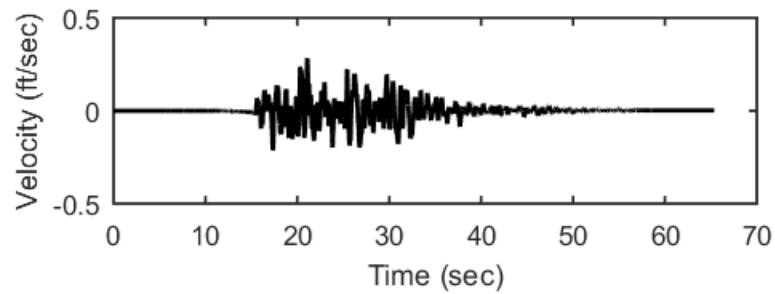
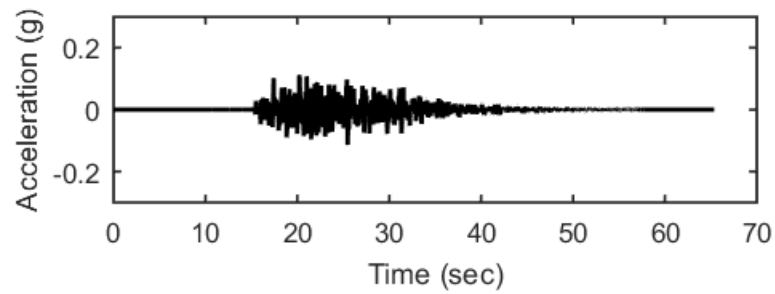


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1

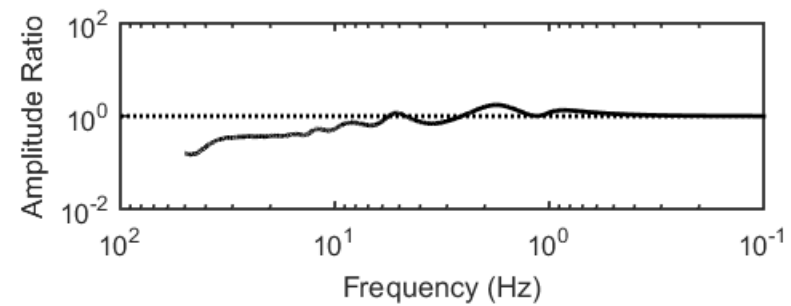
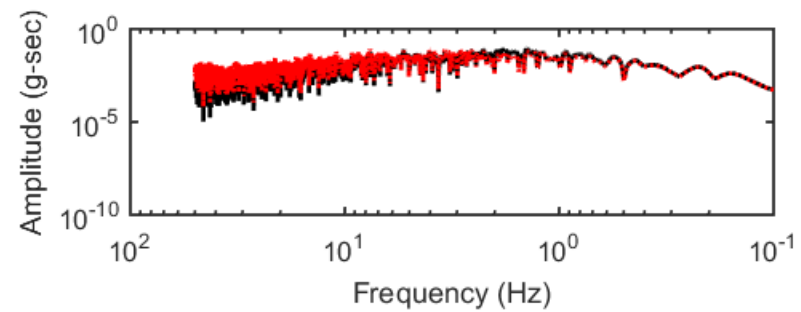
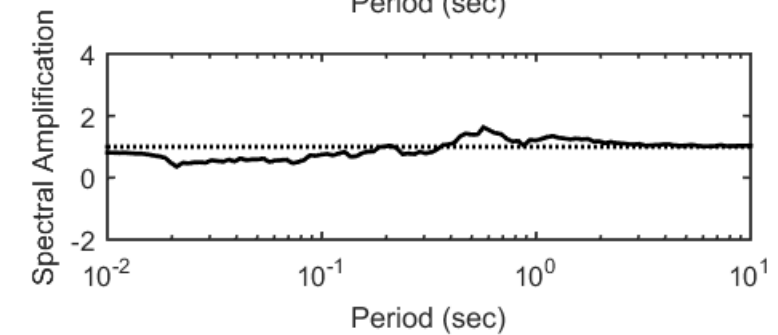
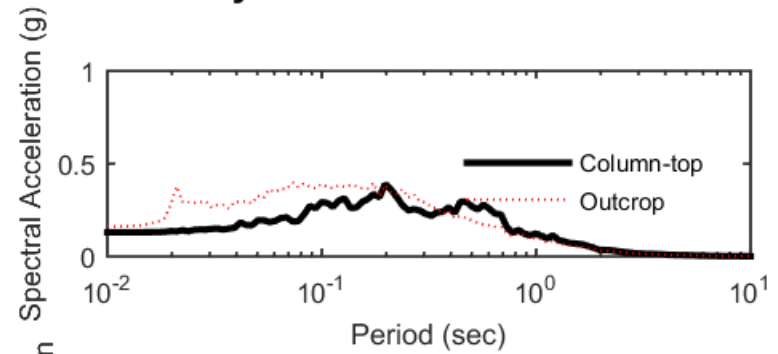
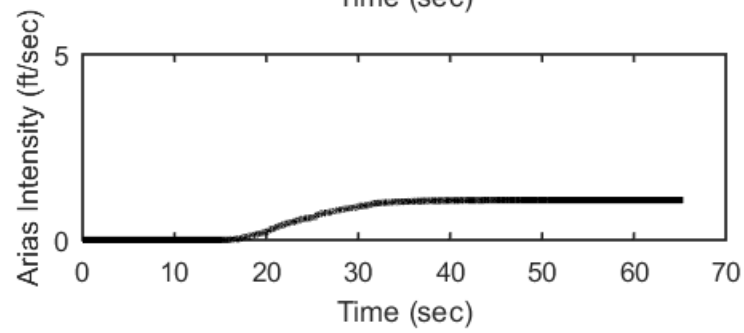
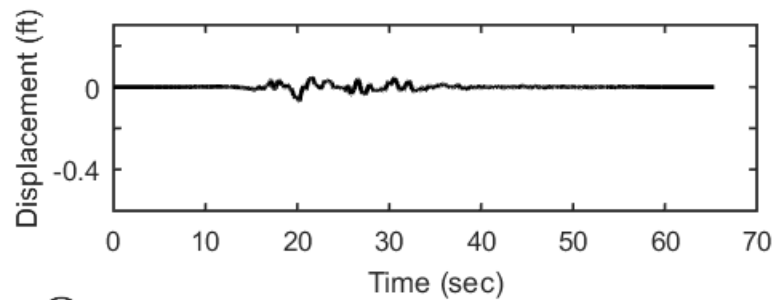
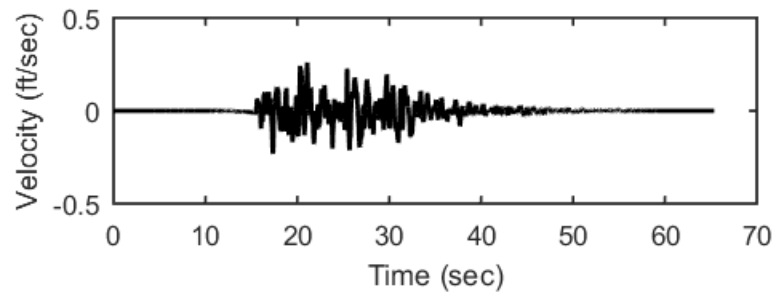
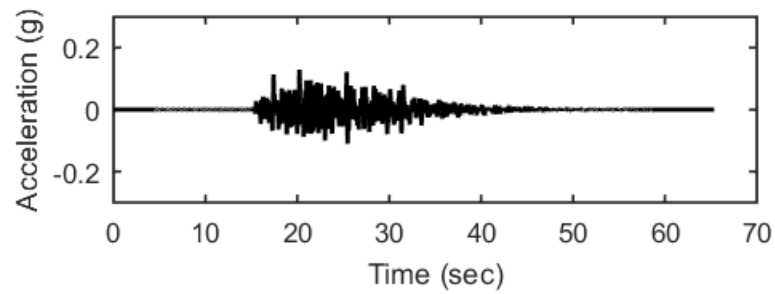




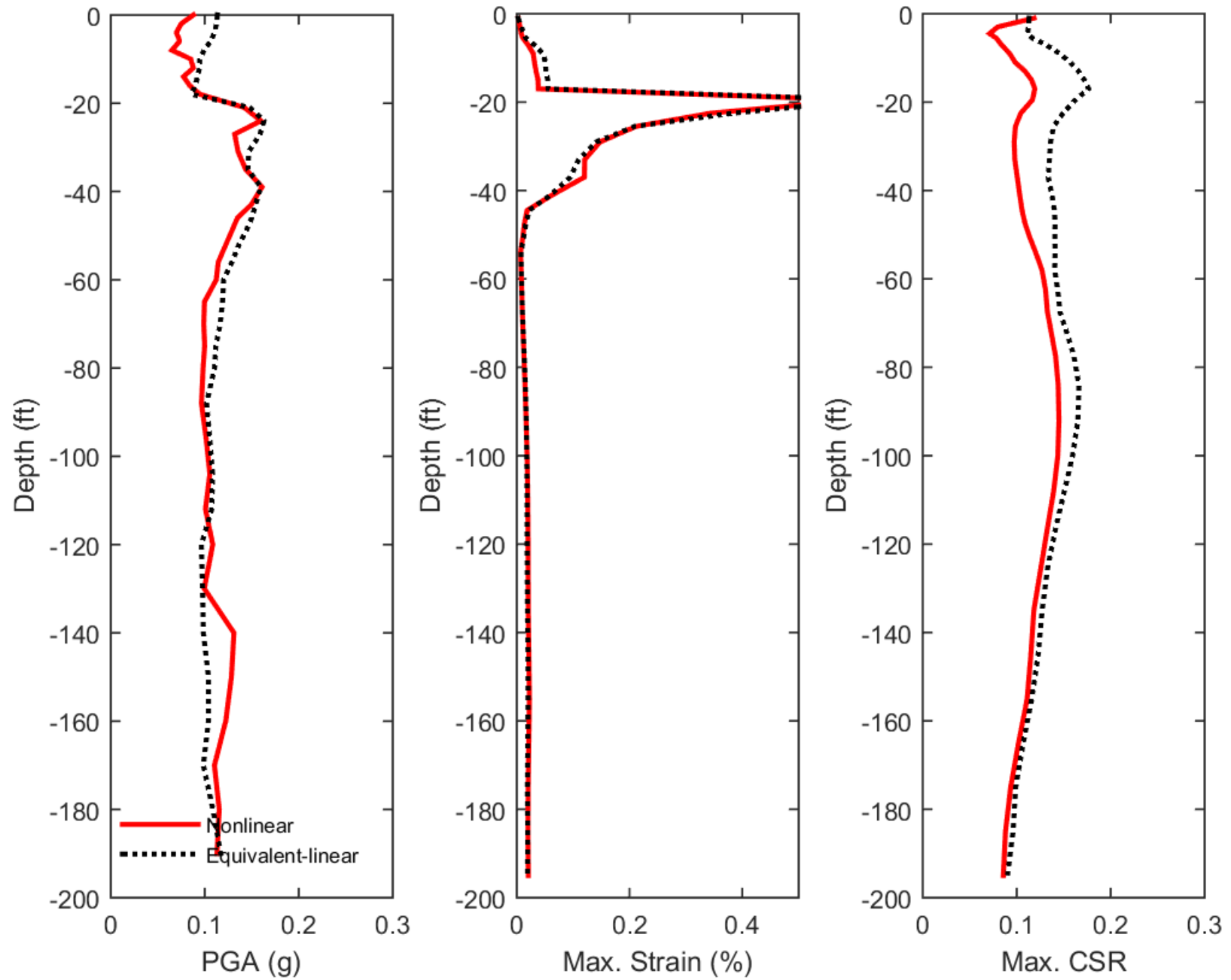
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



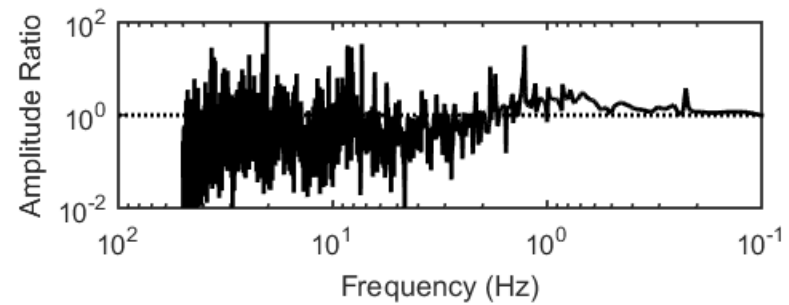
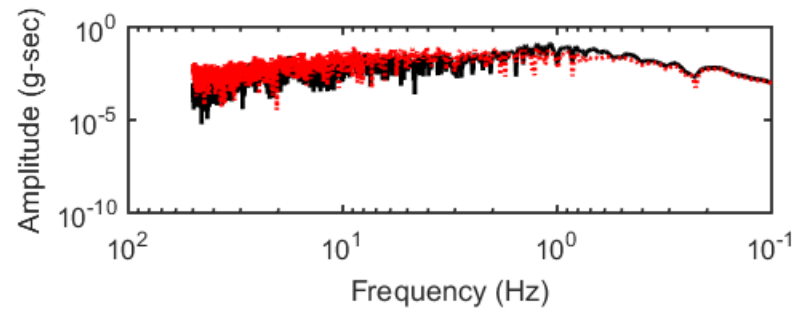
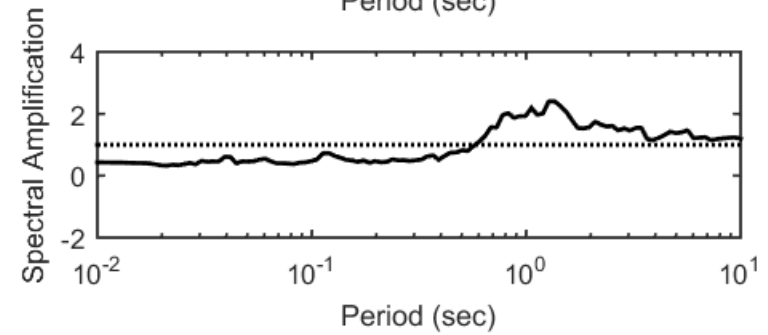
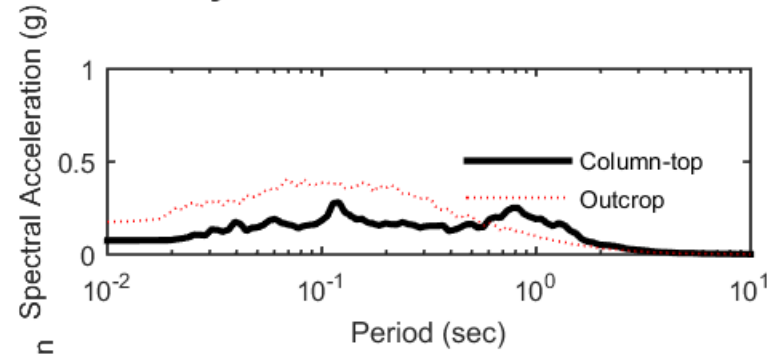
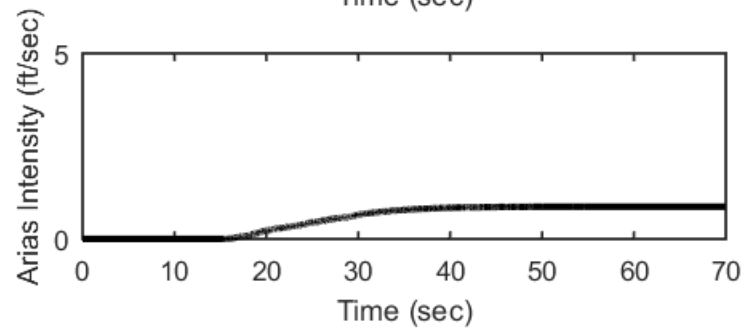
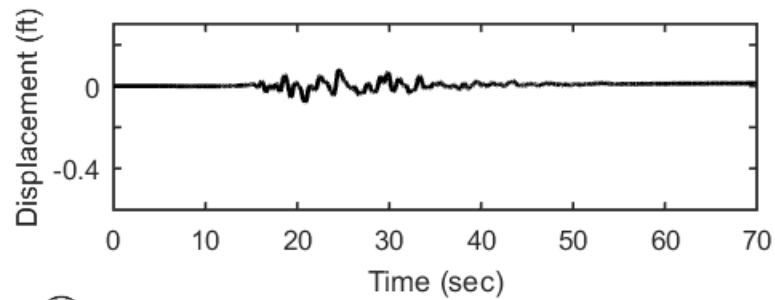
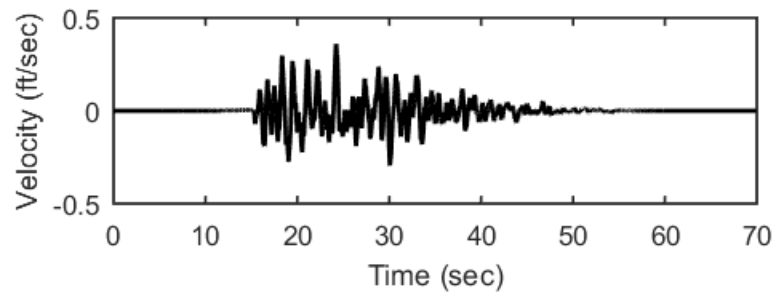
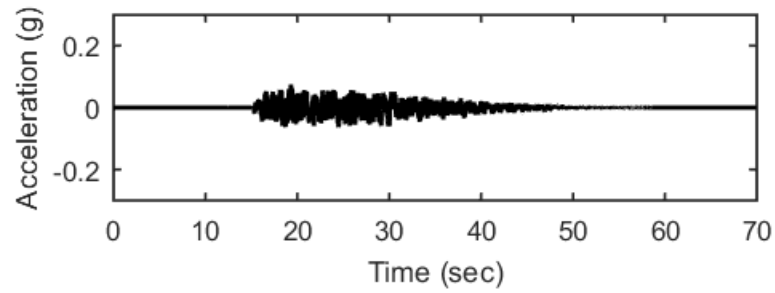
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



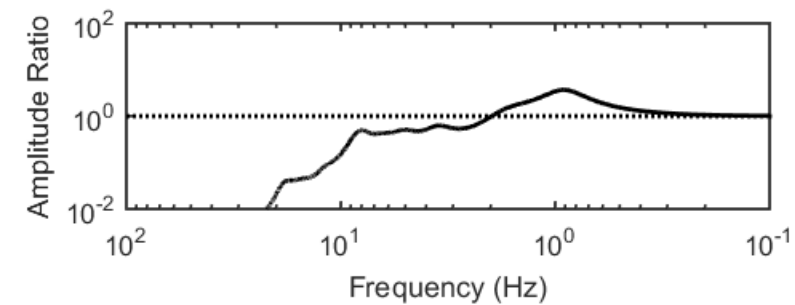
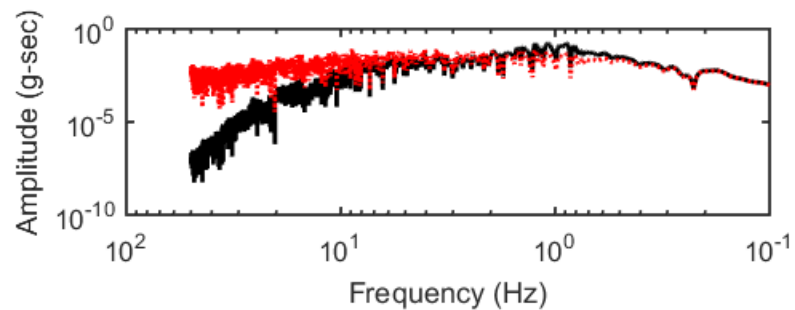
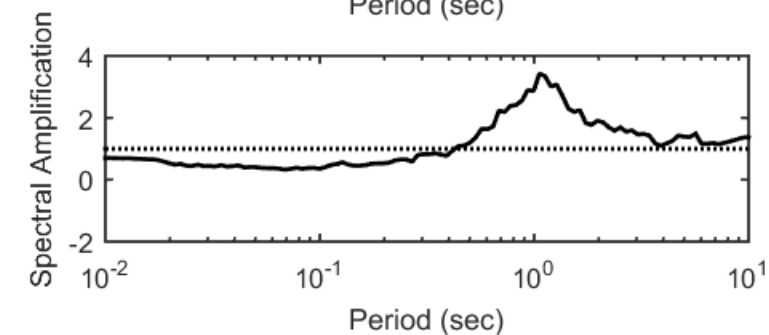
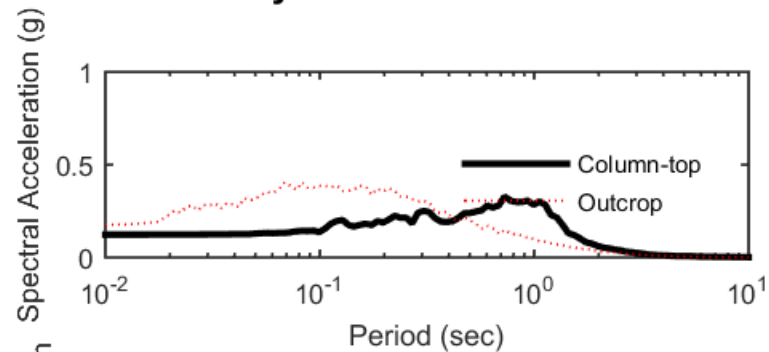
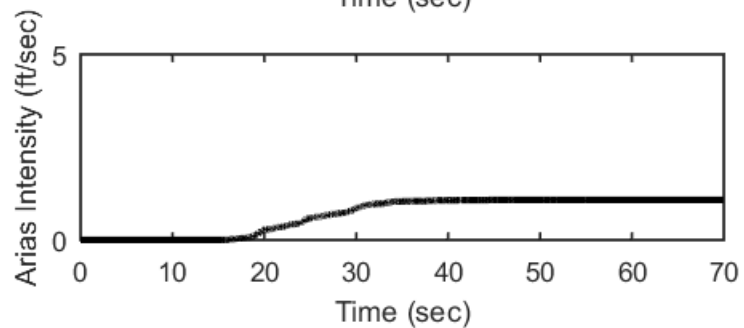
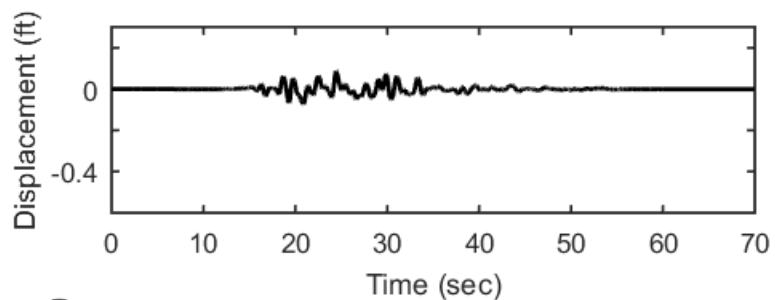
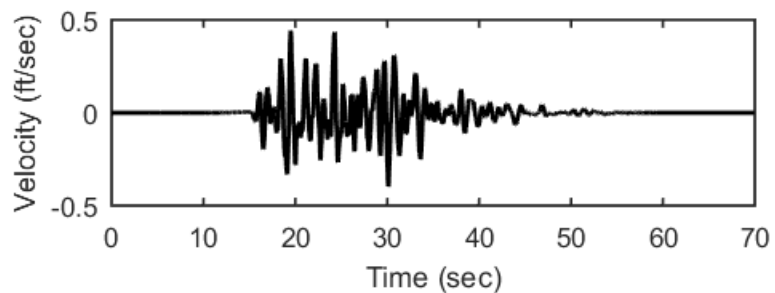
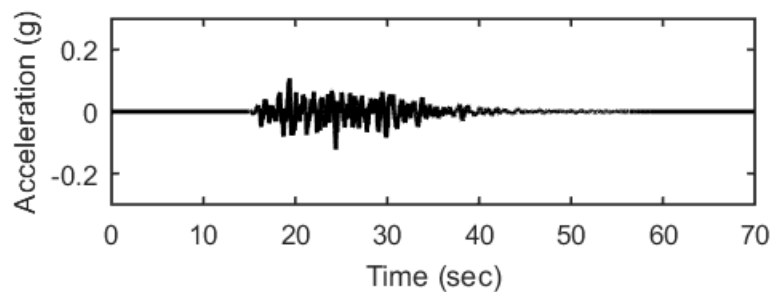
### Profile outputs for Motion: FEE1



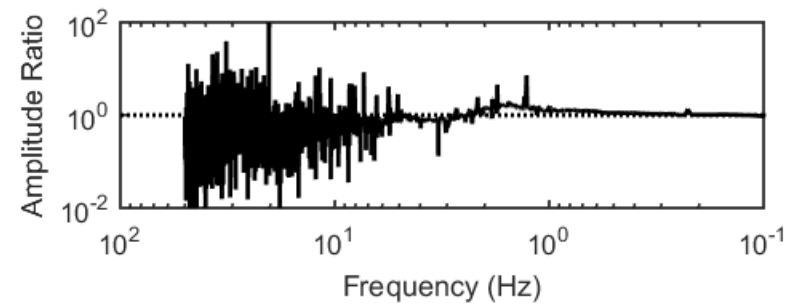
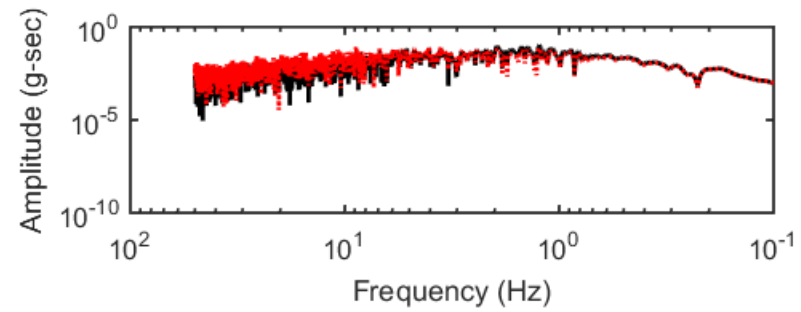
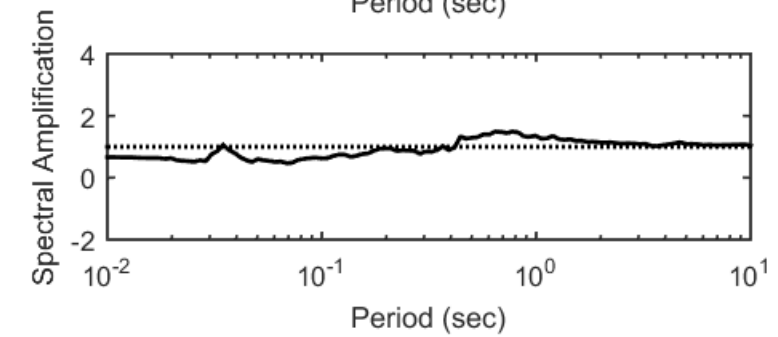
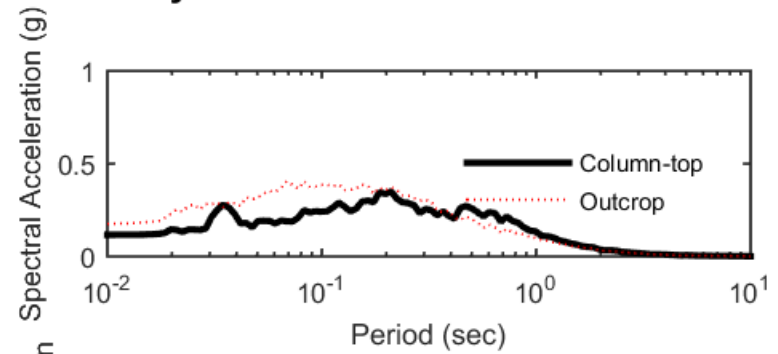
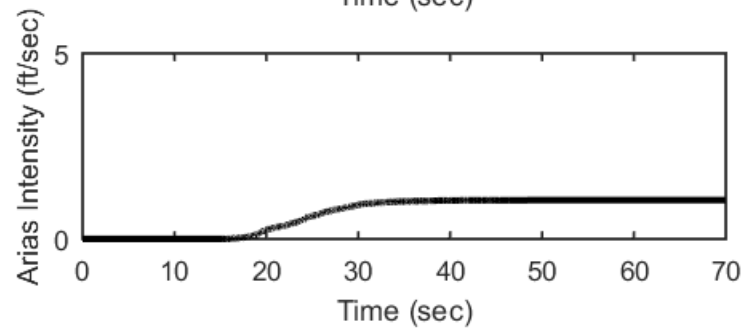
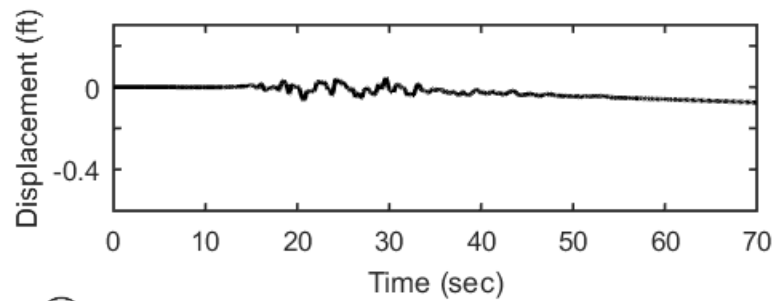
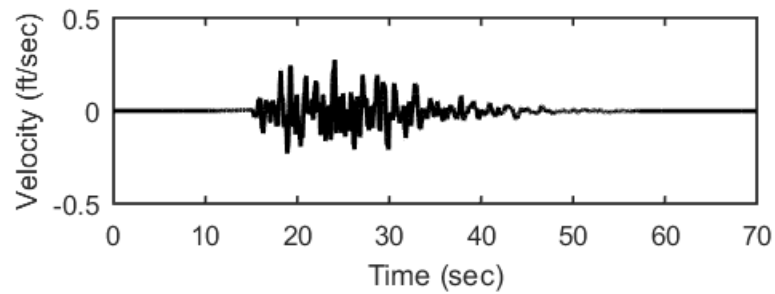
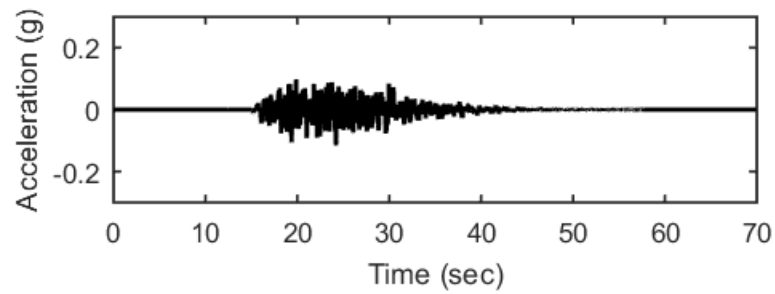
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



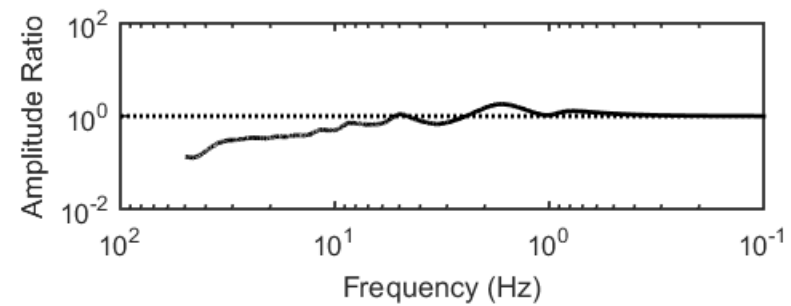
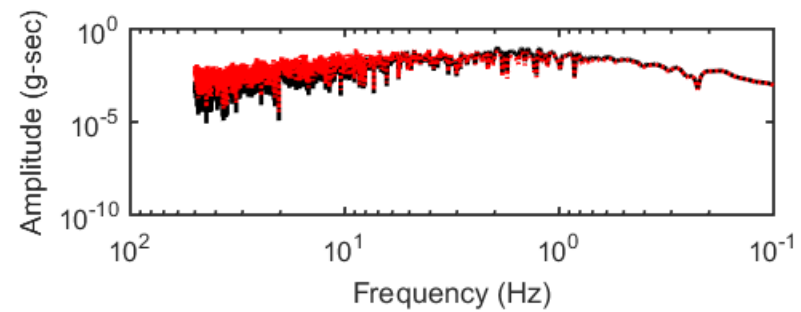
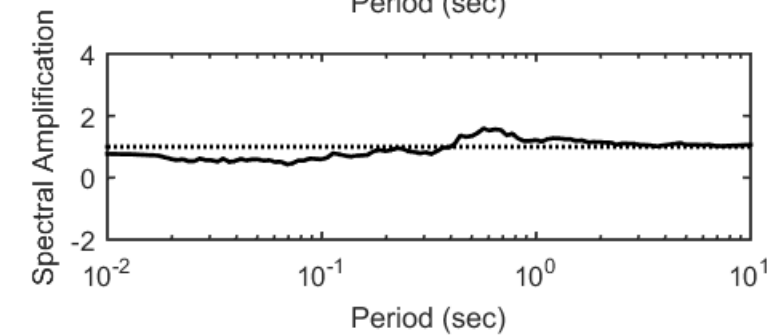
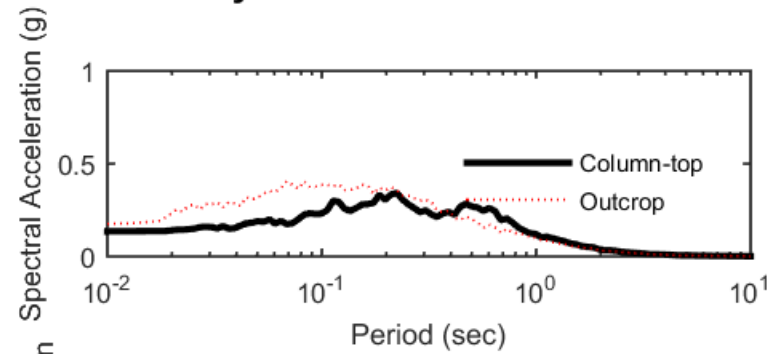
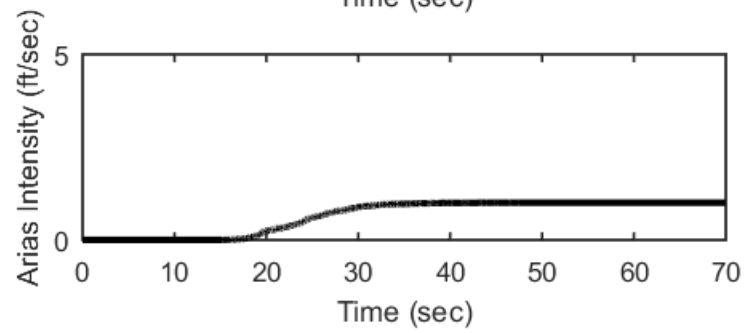
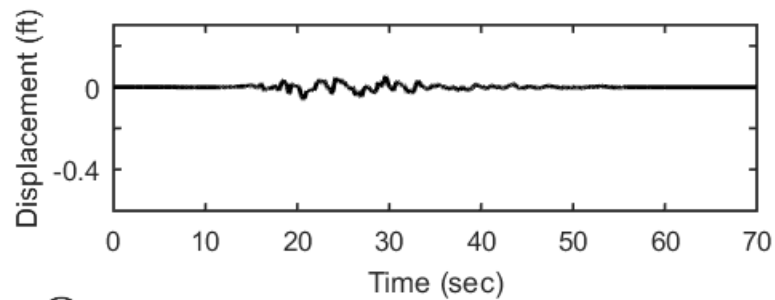
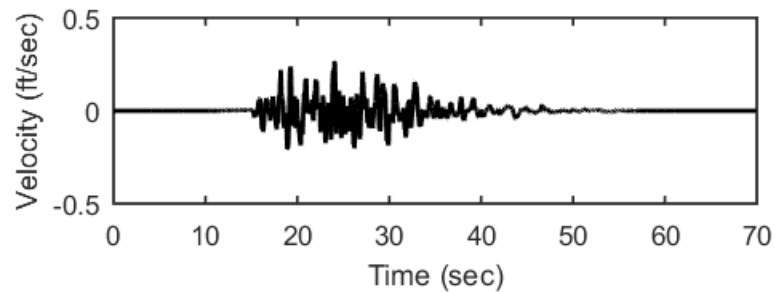
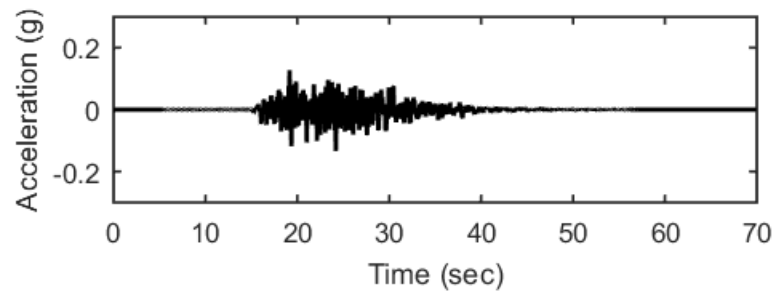
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



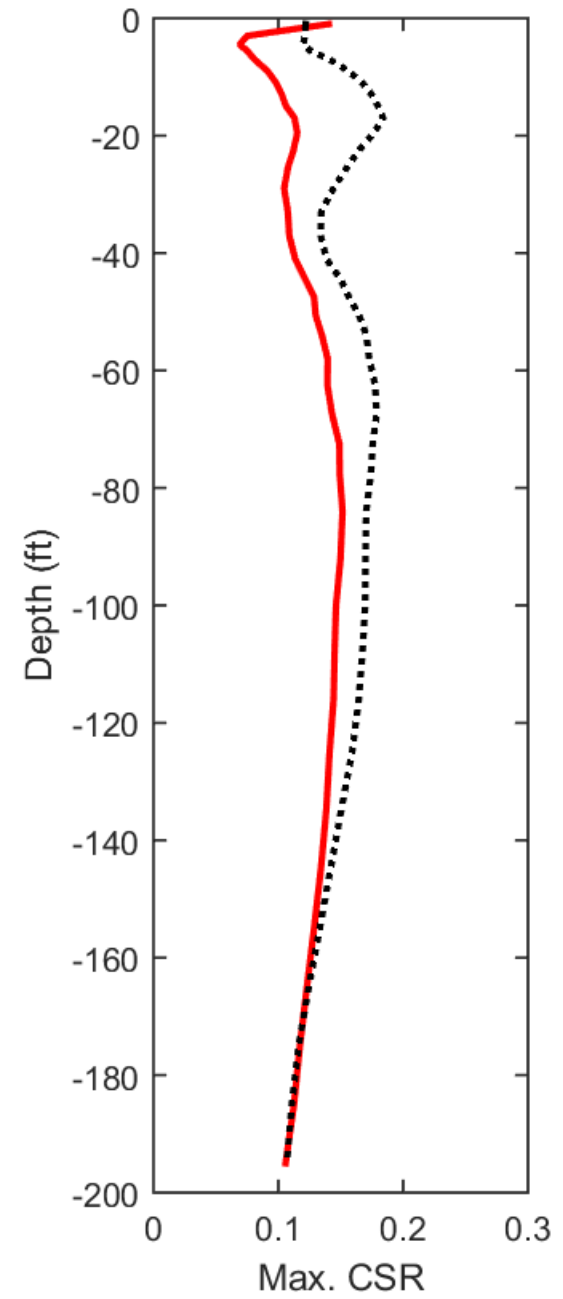
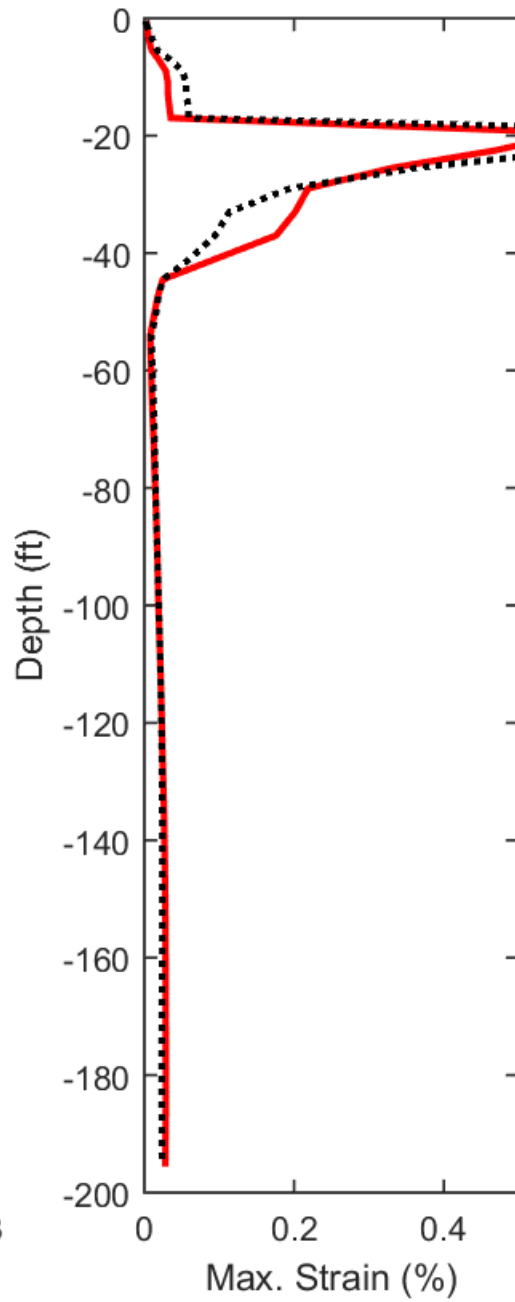
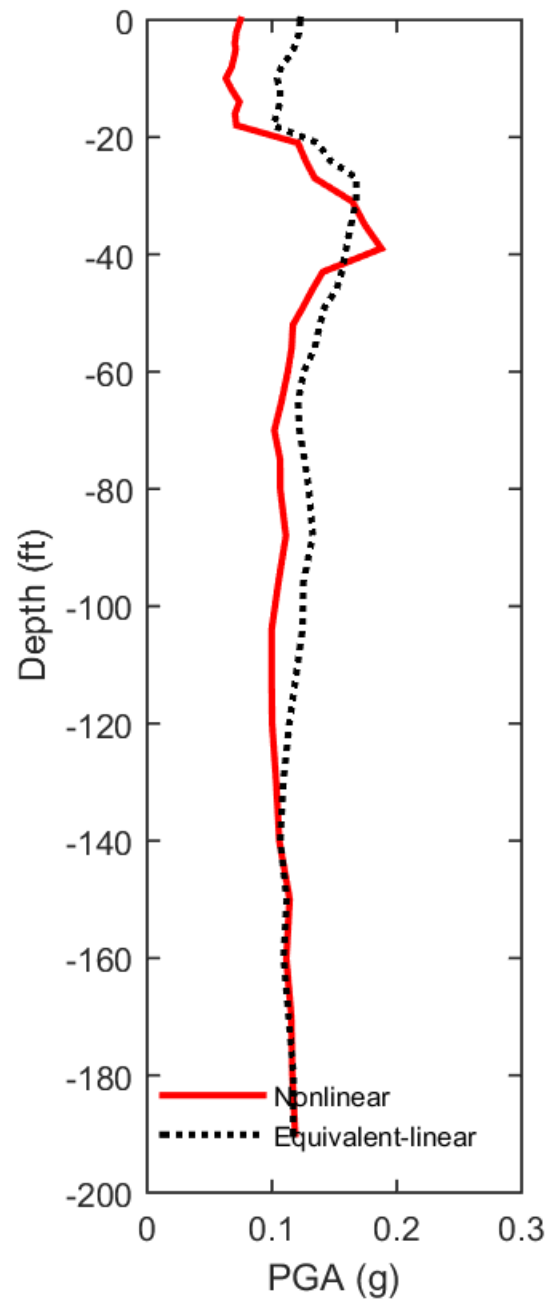
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2

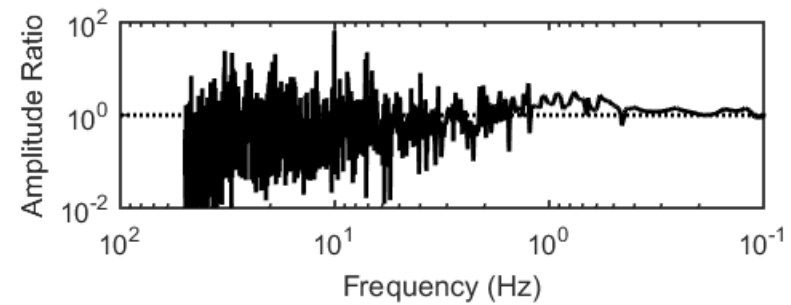
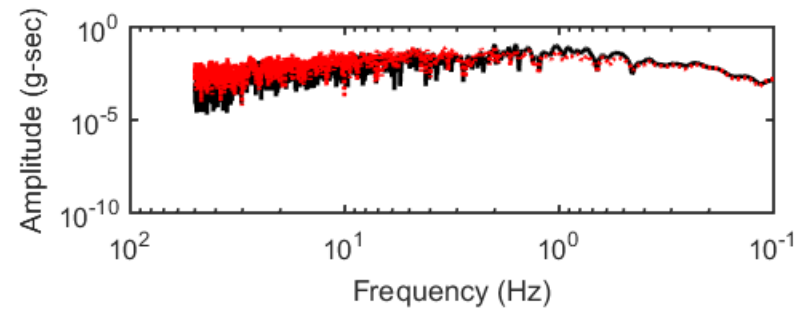
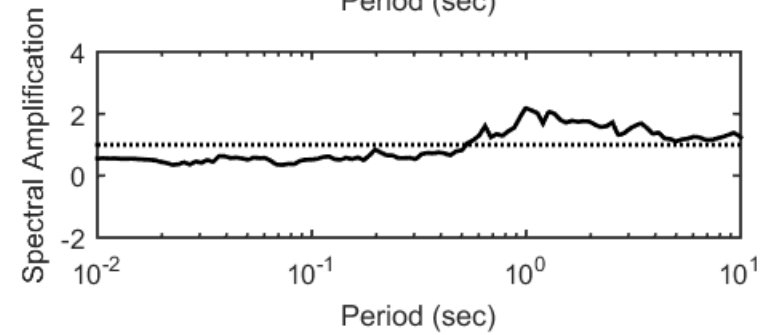
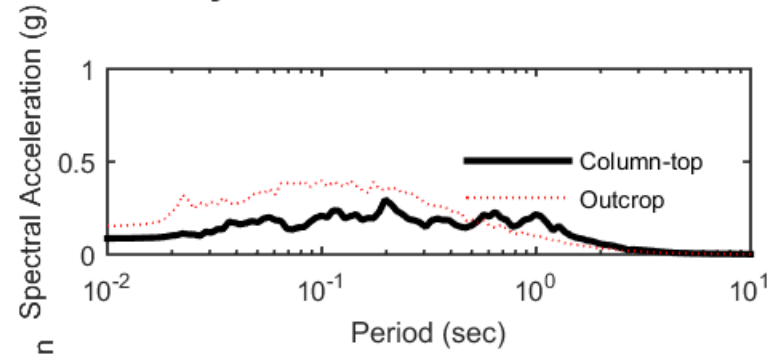
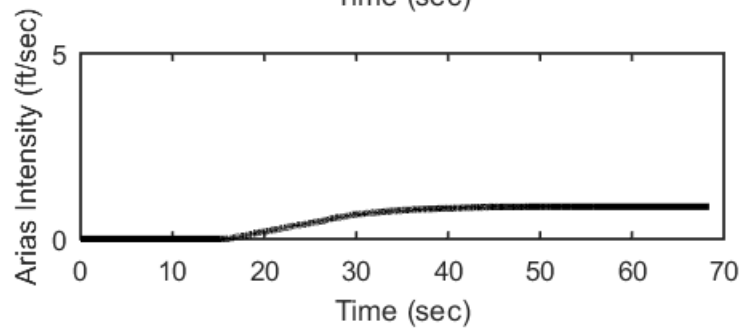
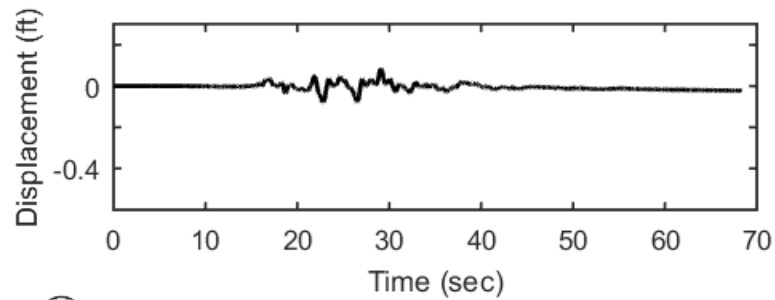
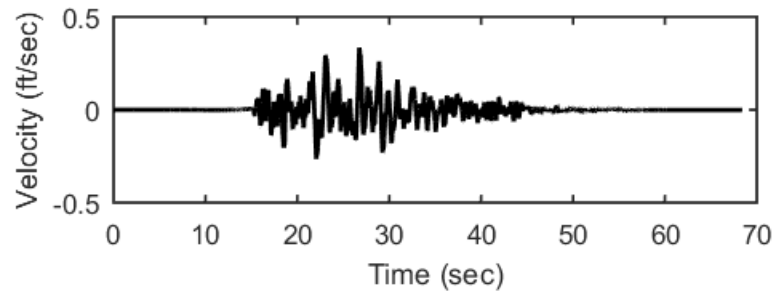
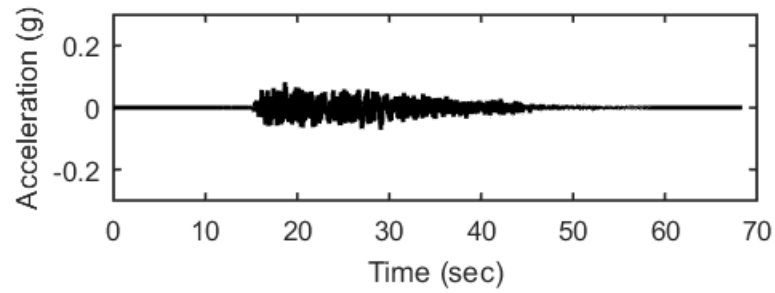


### Profile outputs for Motion: FEE2

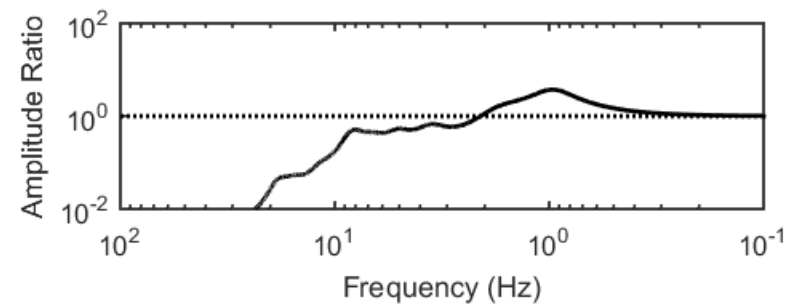
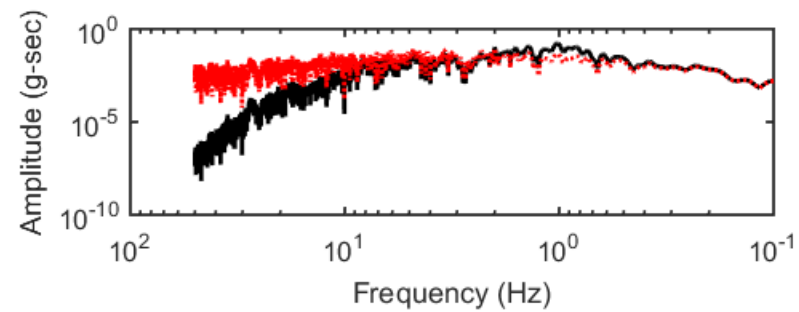
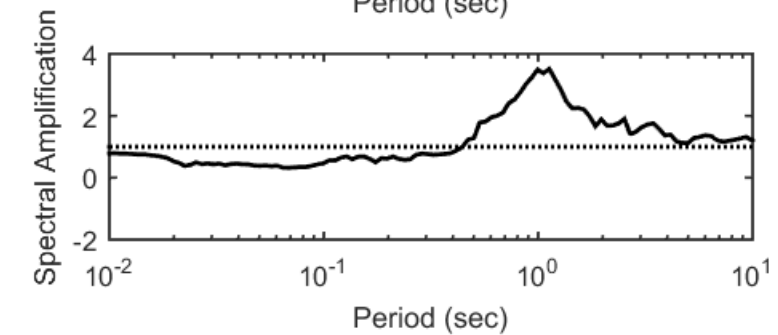
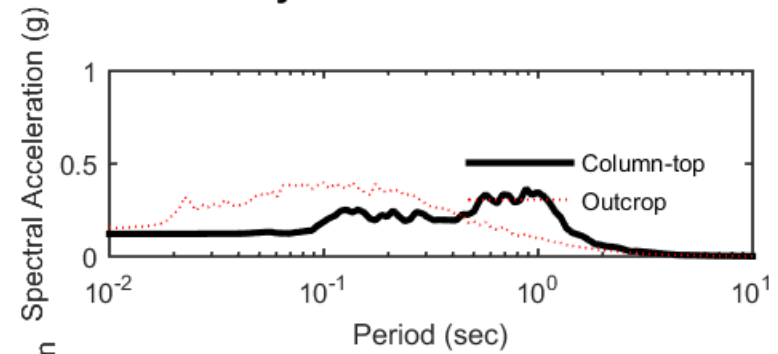
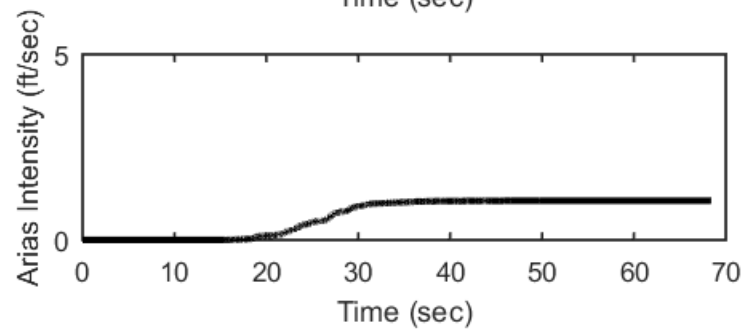
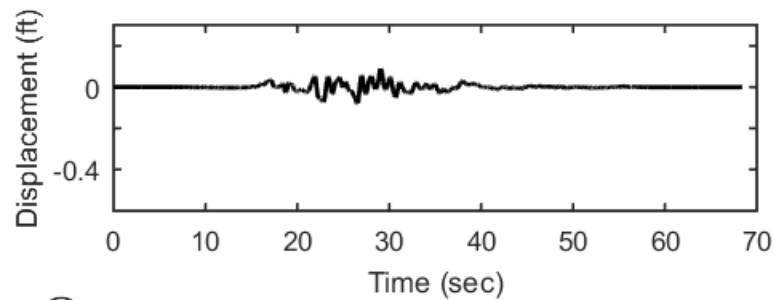
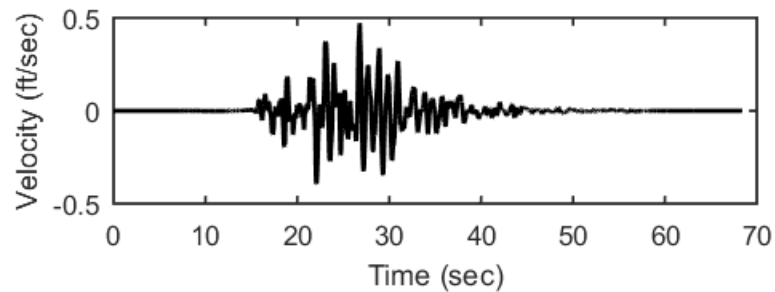
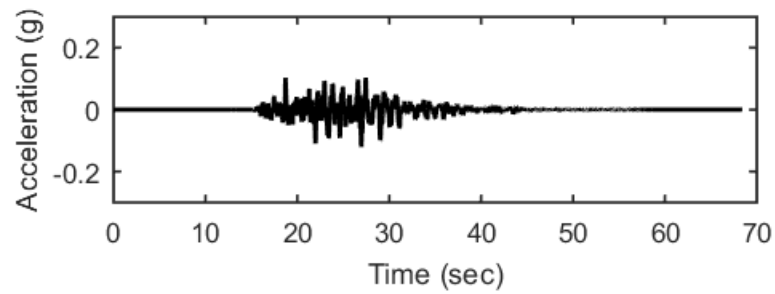




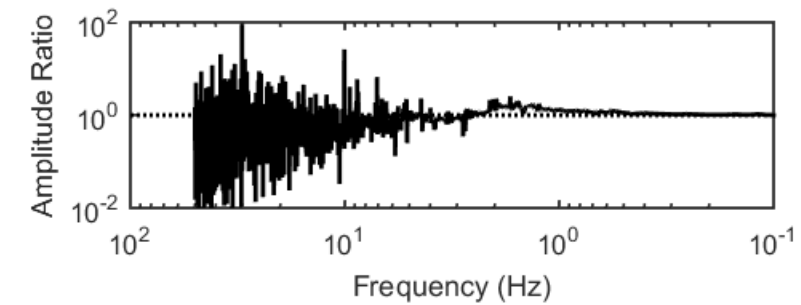
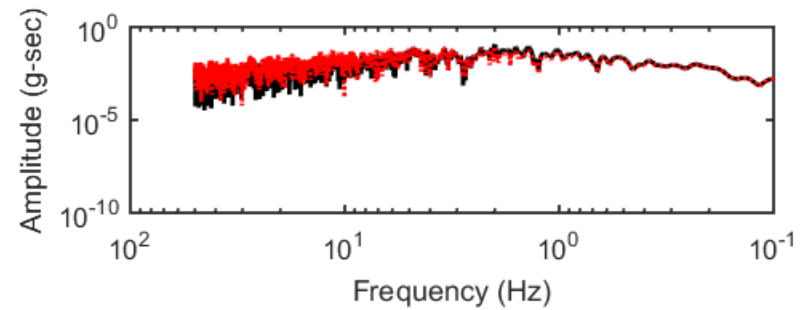
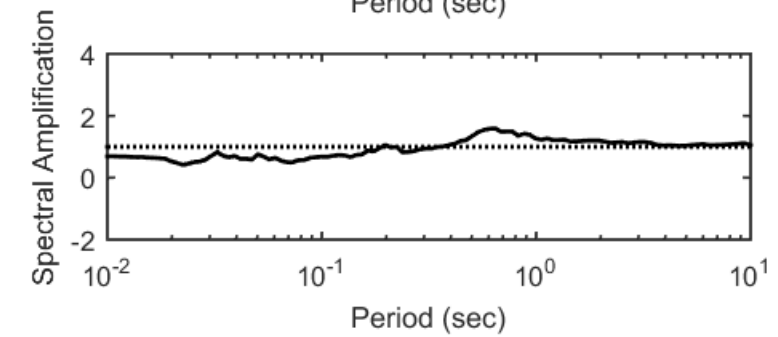
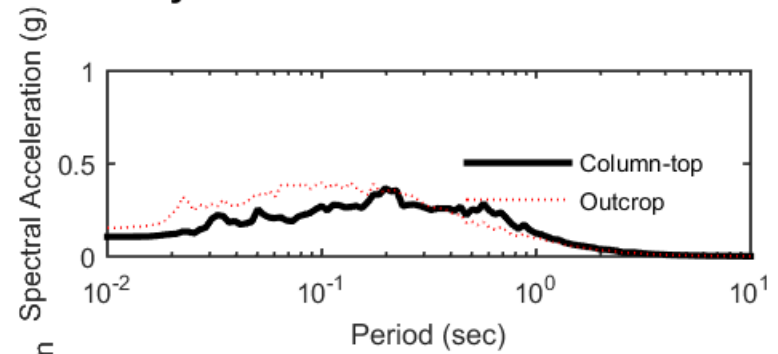
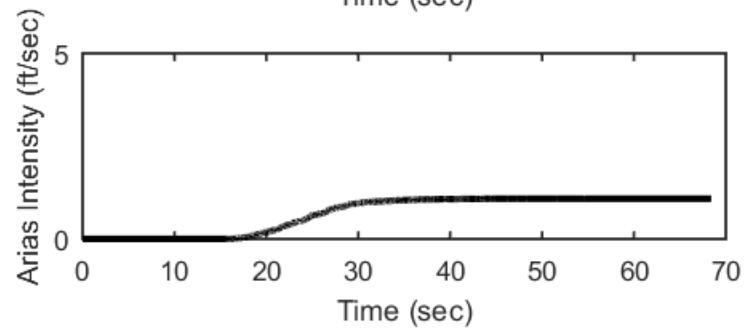
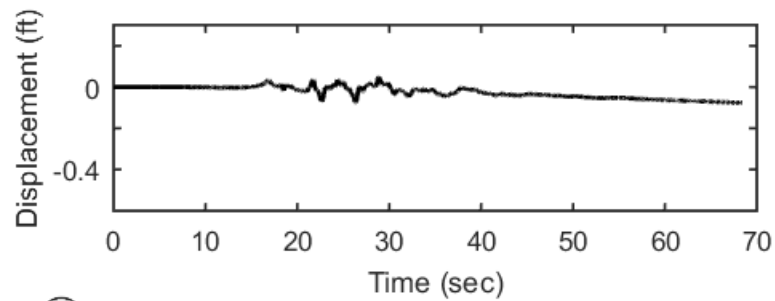
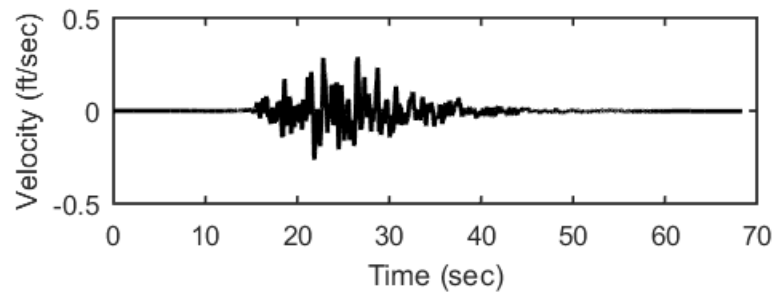
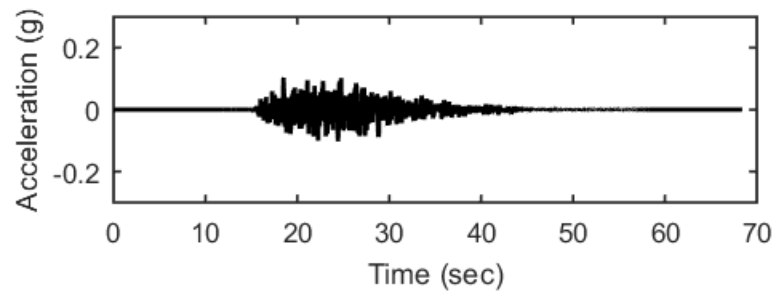
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



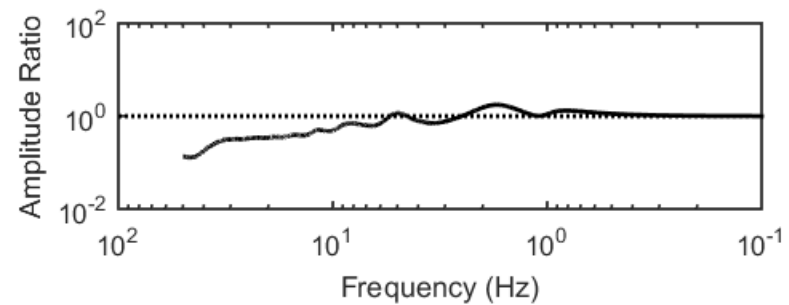
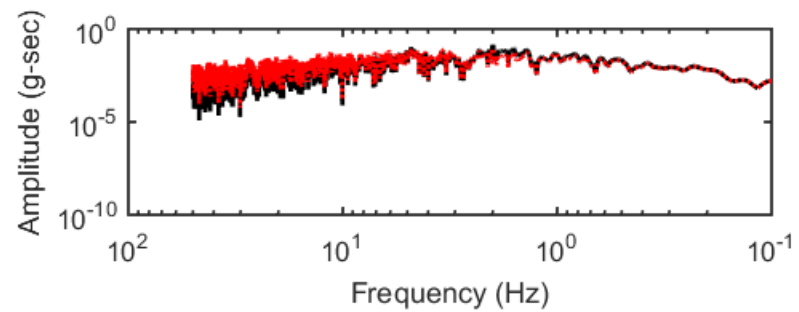
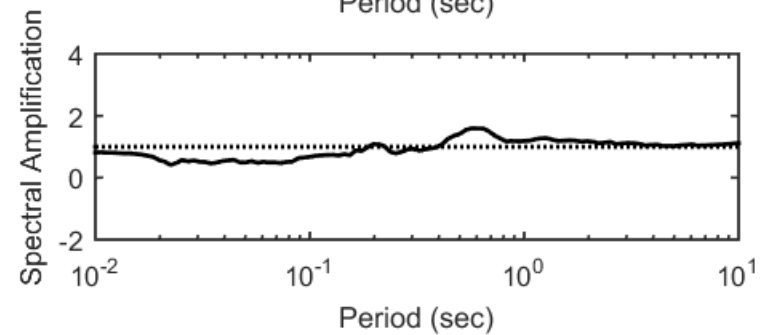
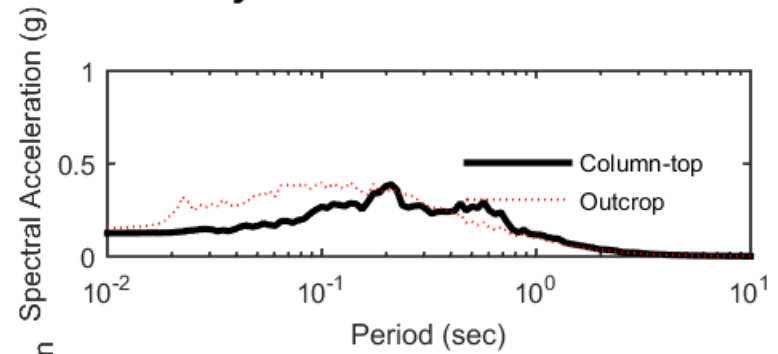
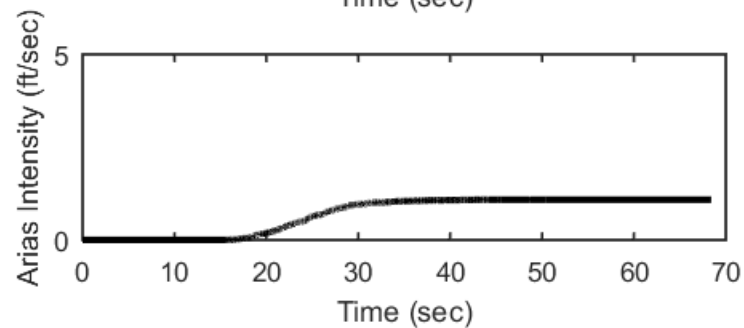
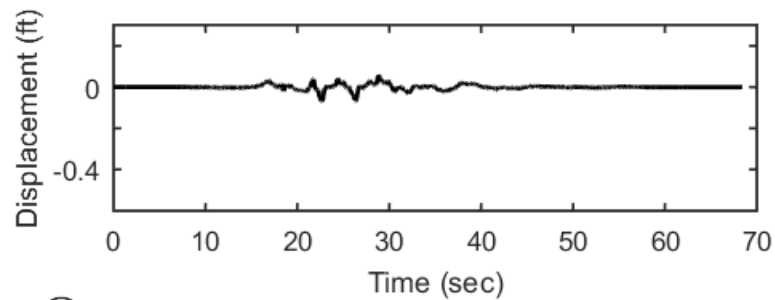
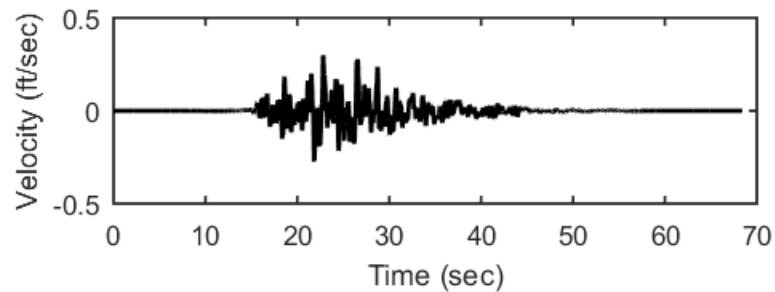
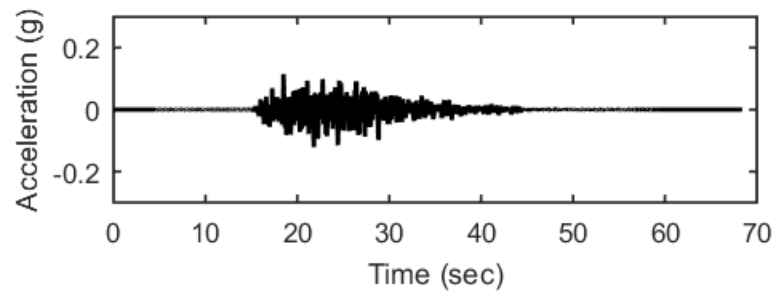
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



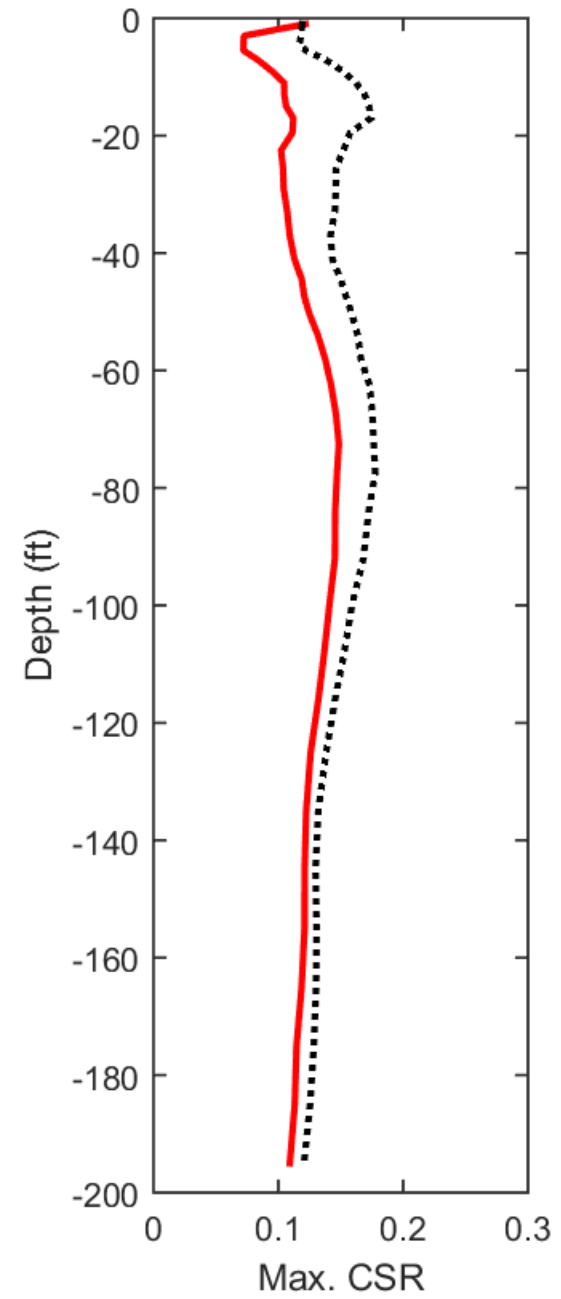
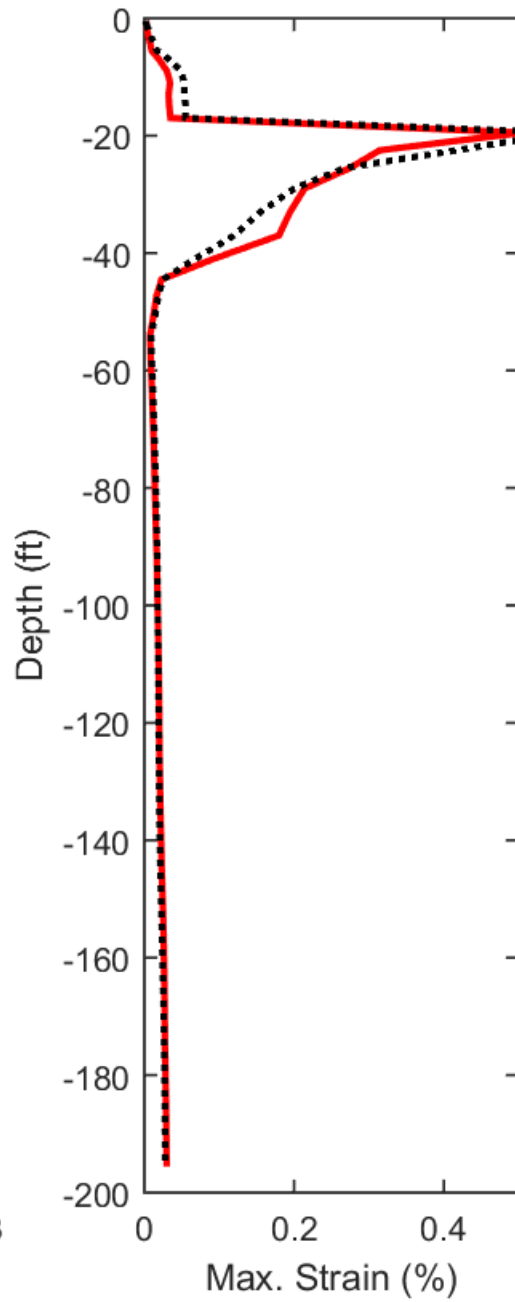
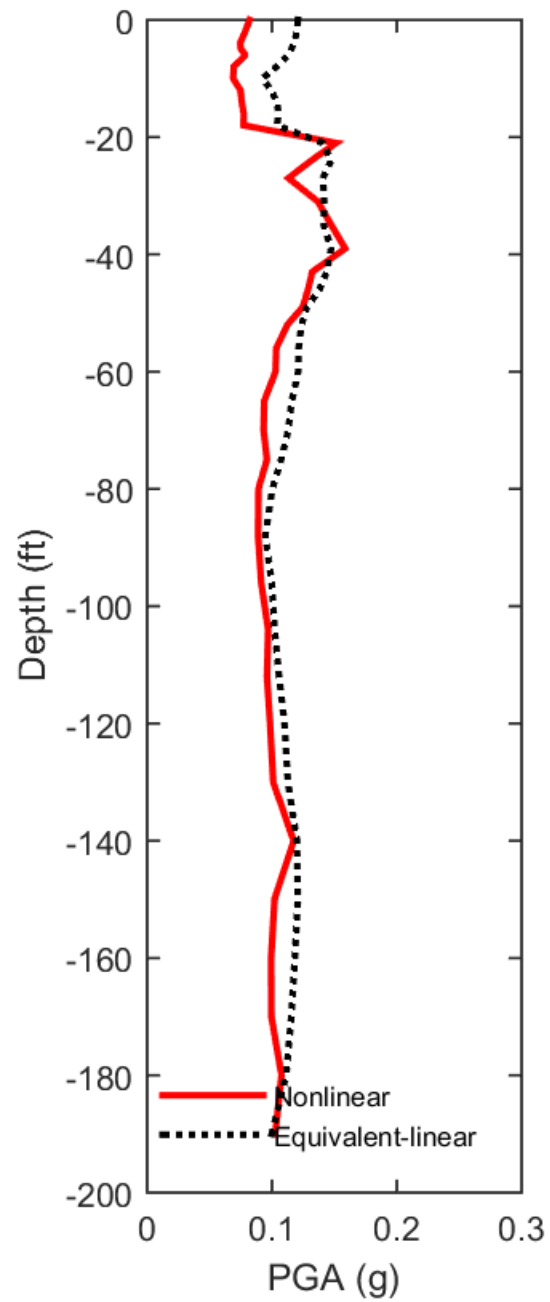
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



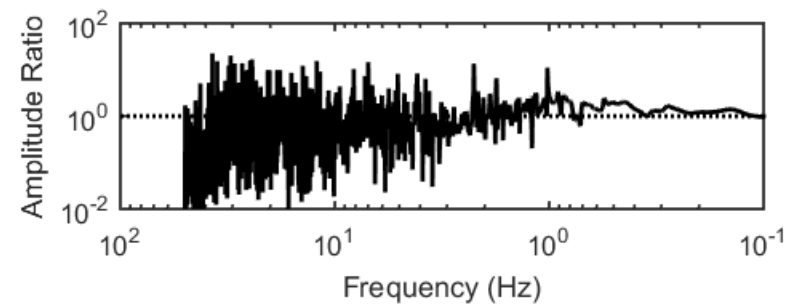
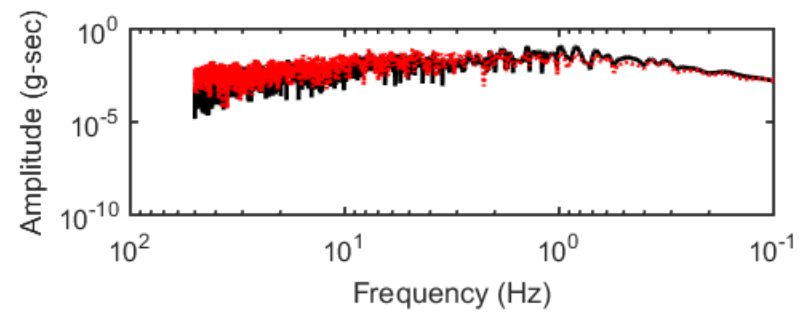
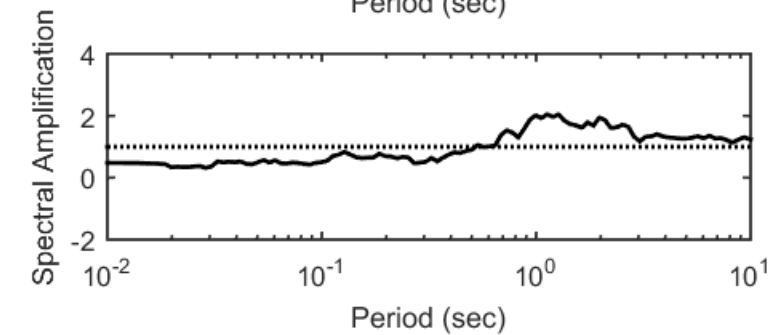
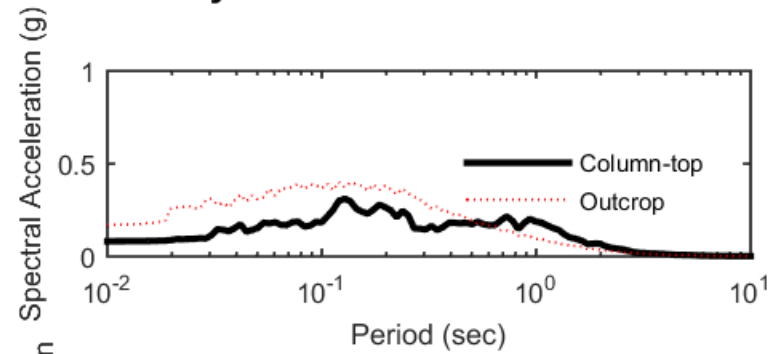
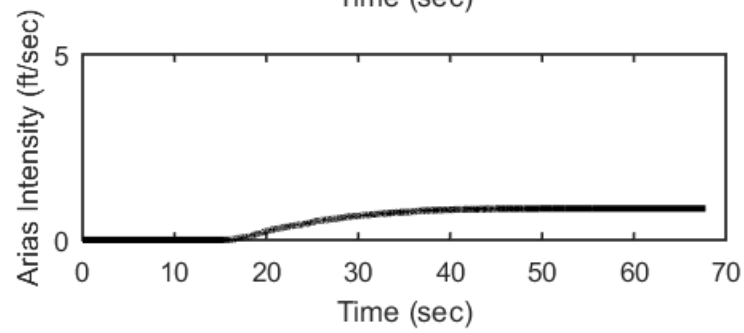
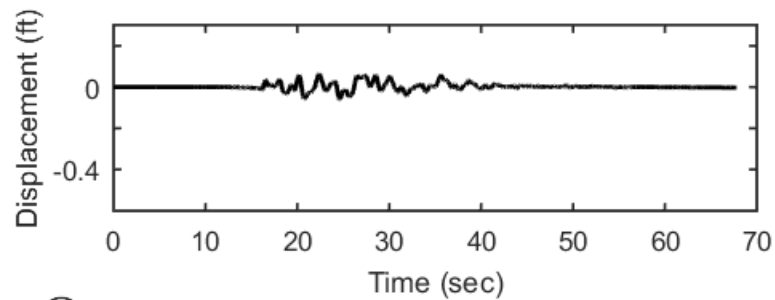
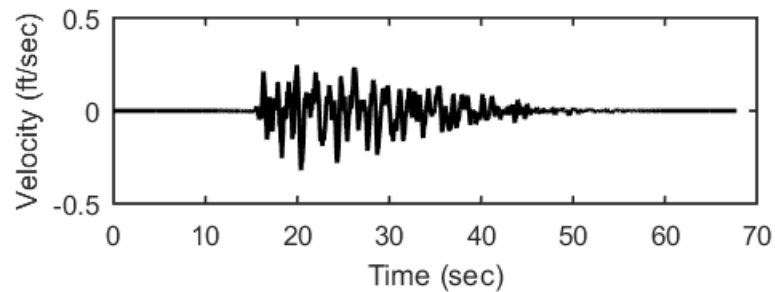
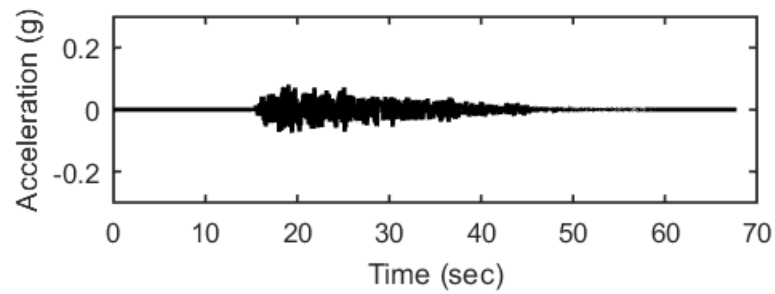
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



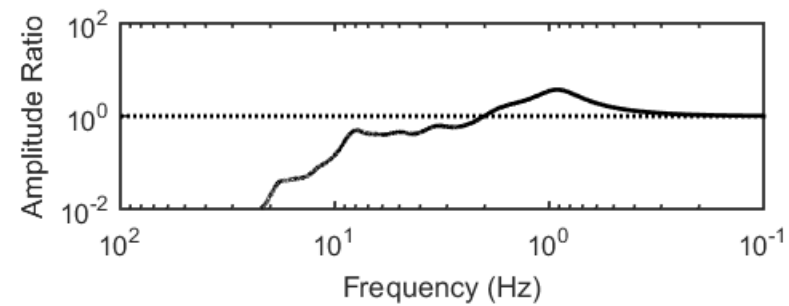
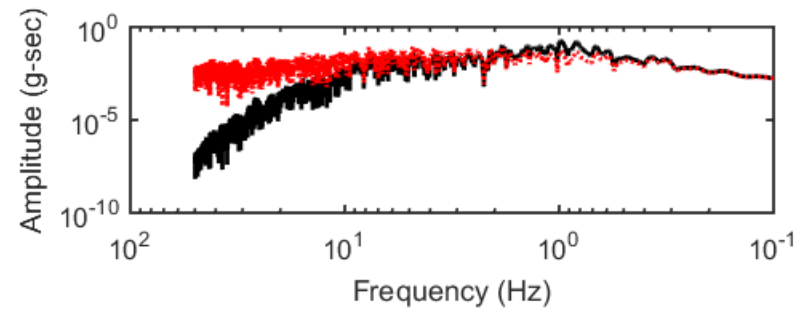
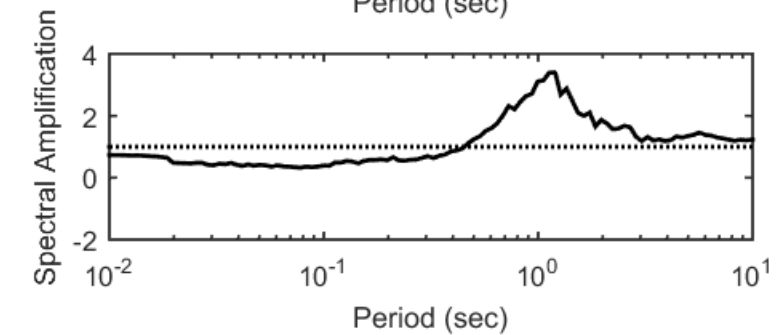
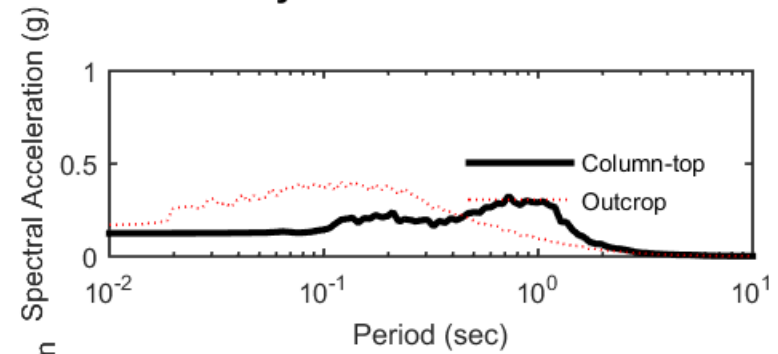
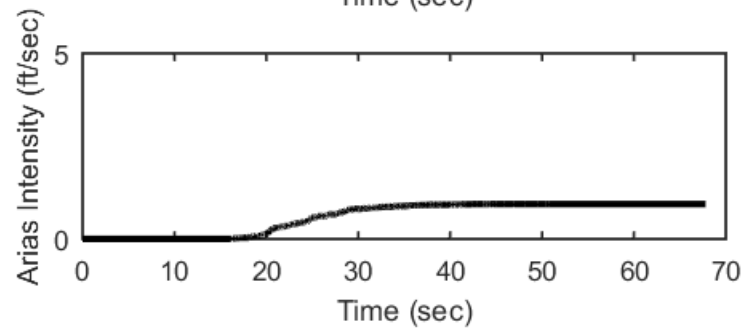
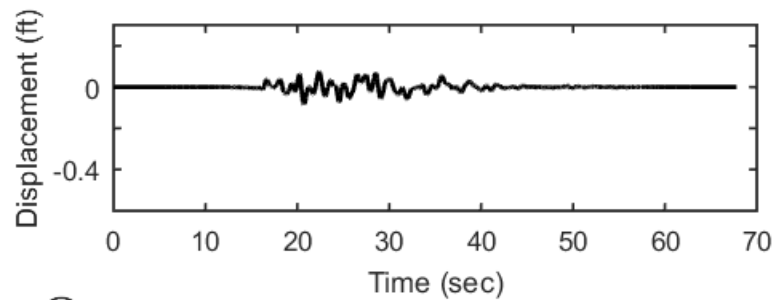
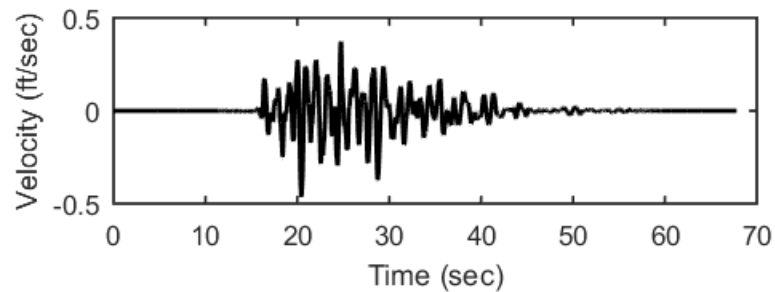
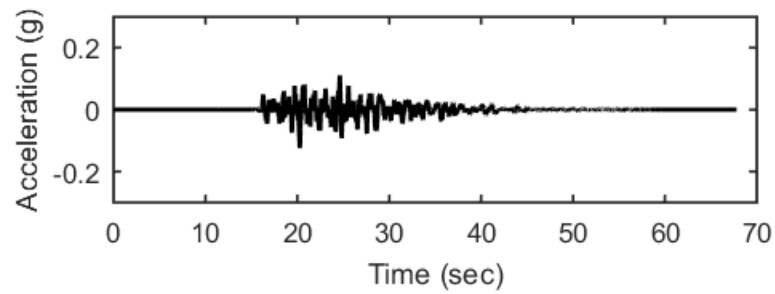
### Profile outputs for Motion: FEE3



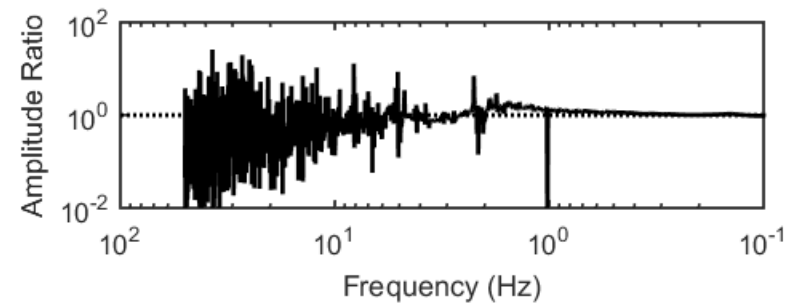
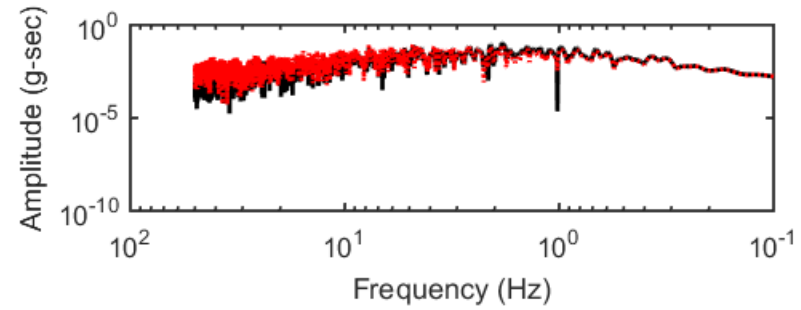
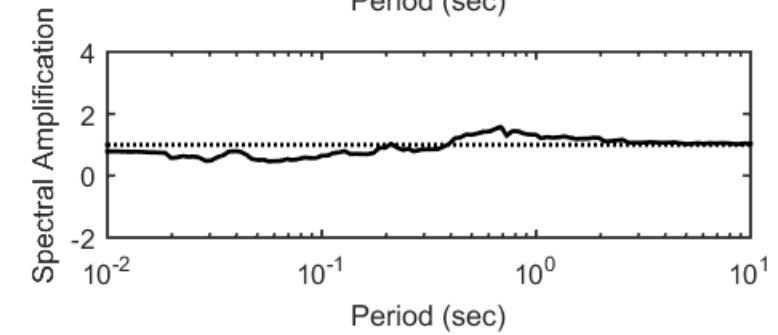
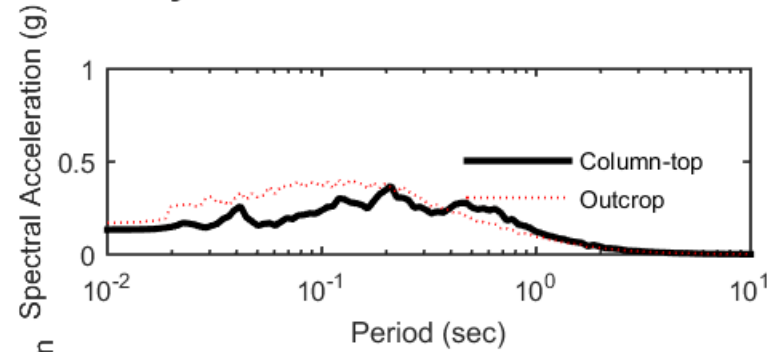
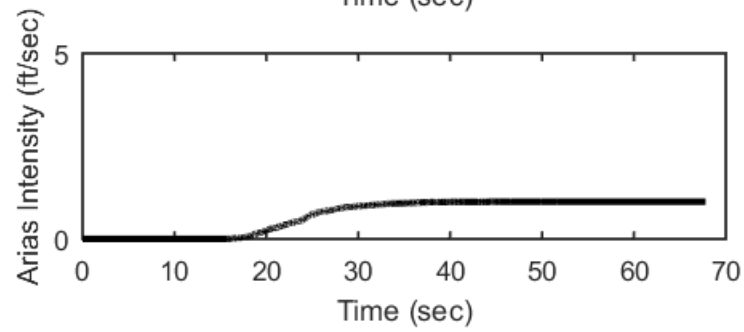
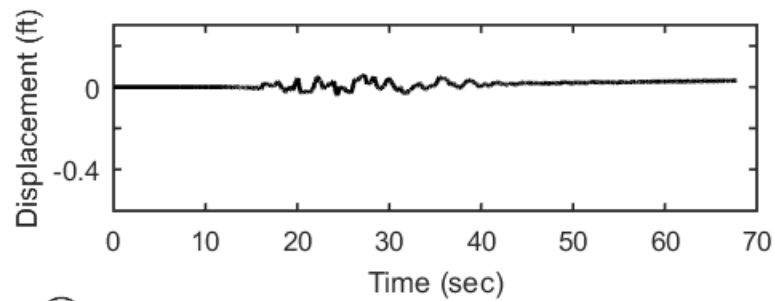
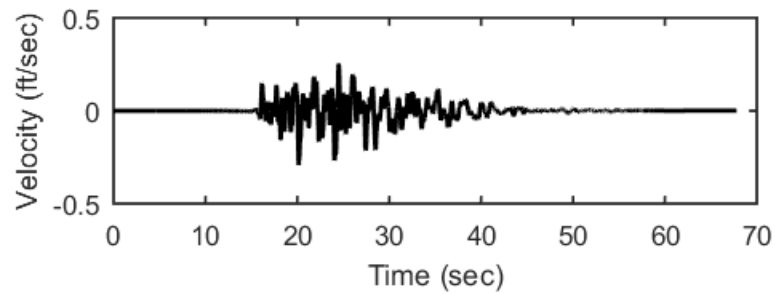
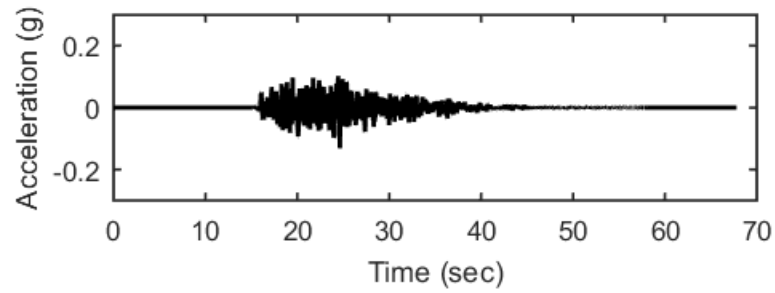
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4

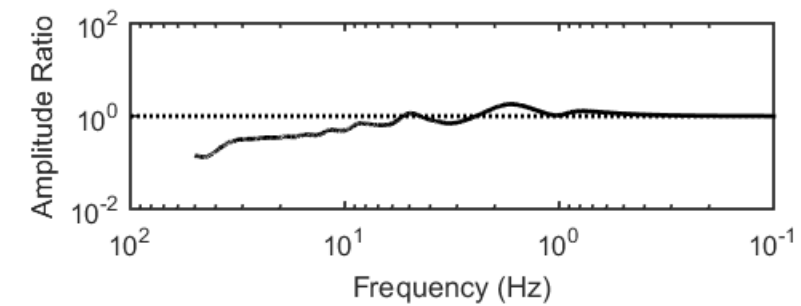
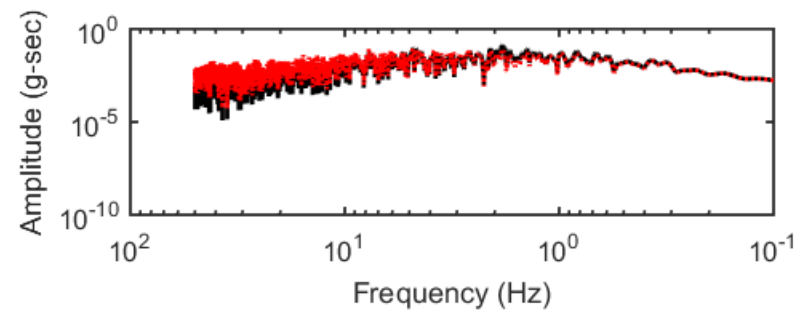
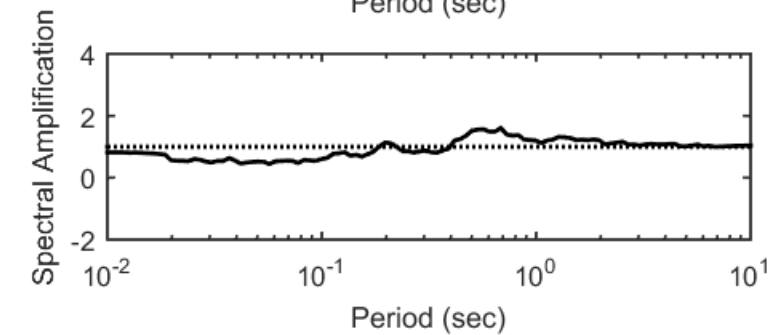
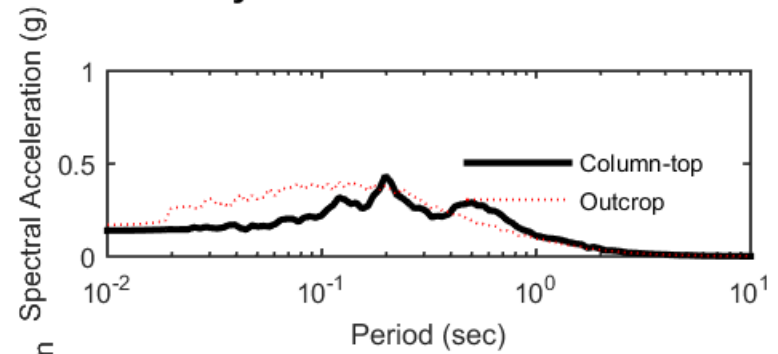
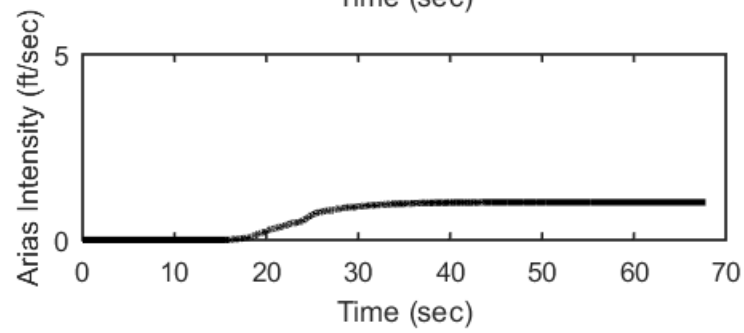
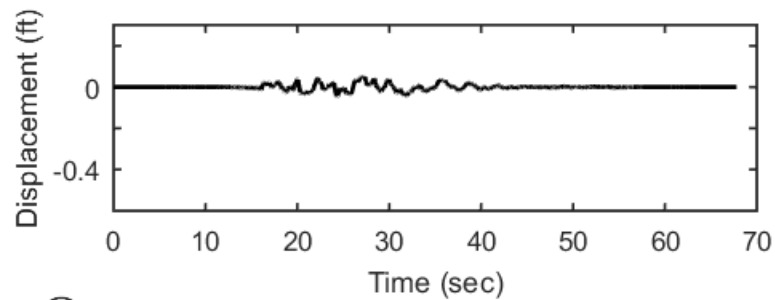
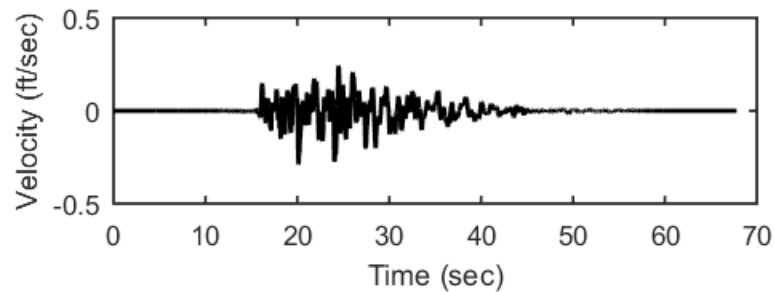
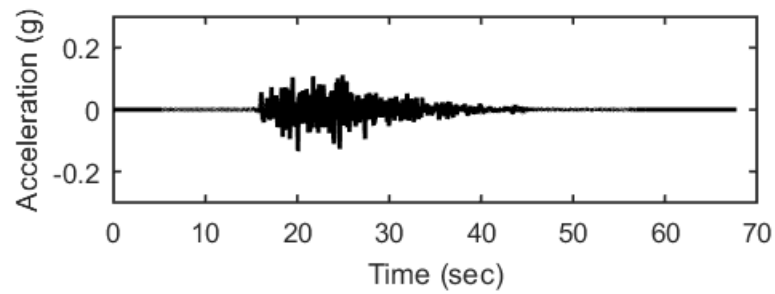


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4

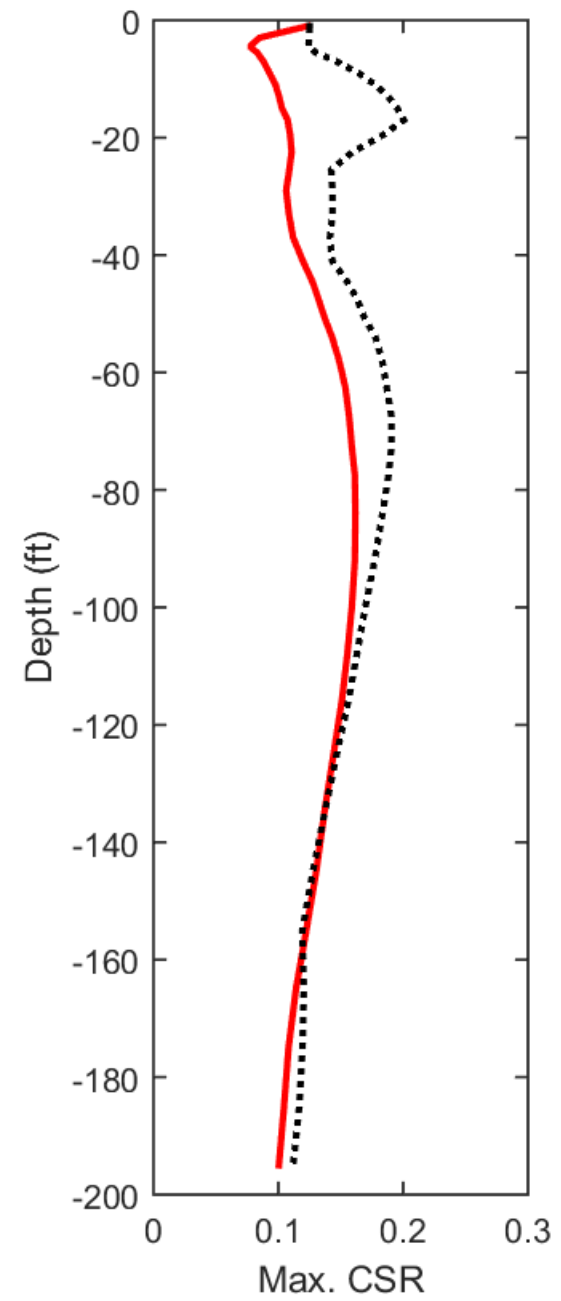
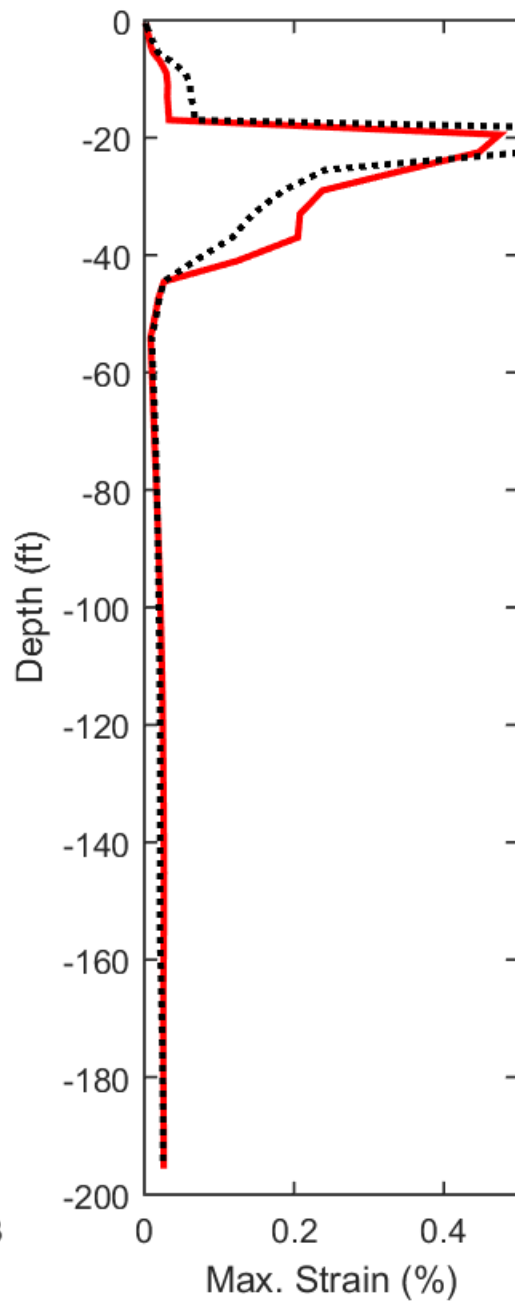
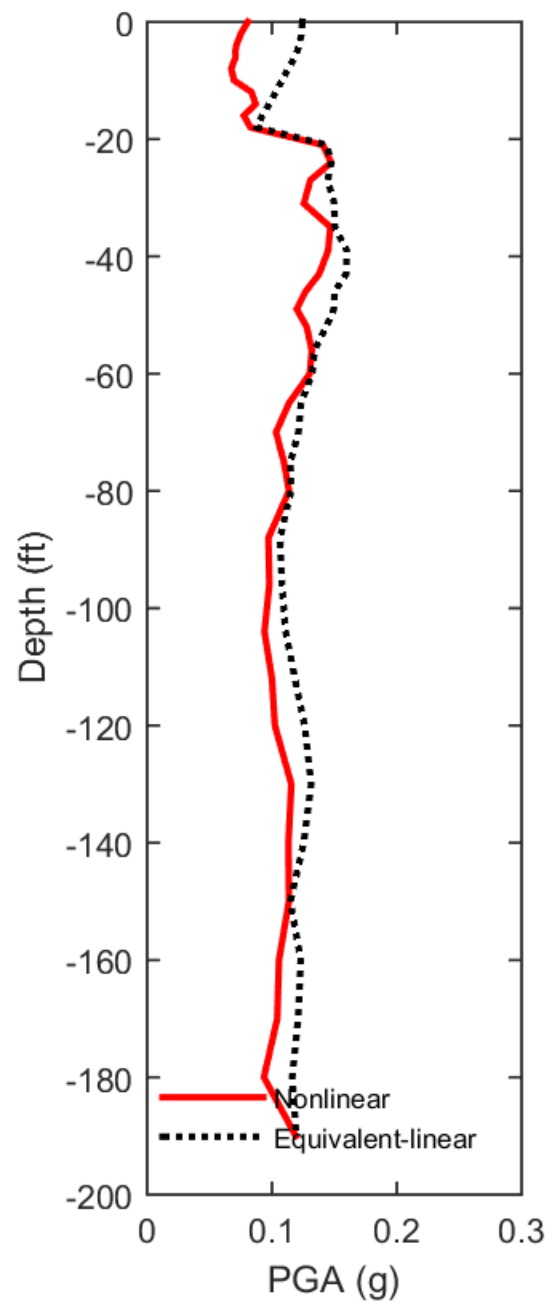




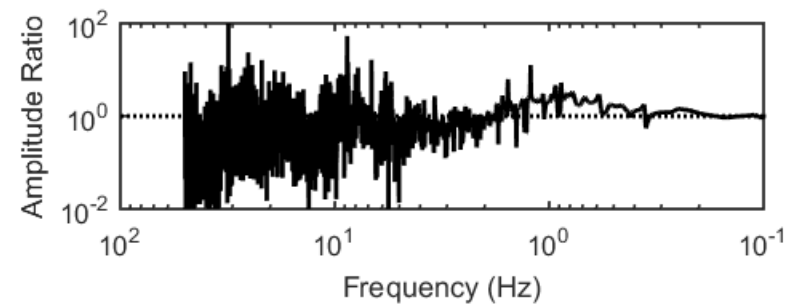
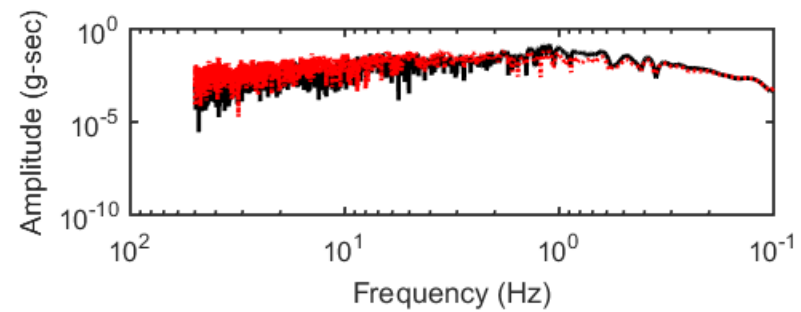
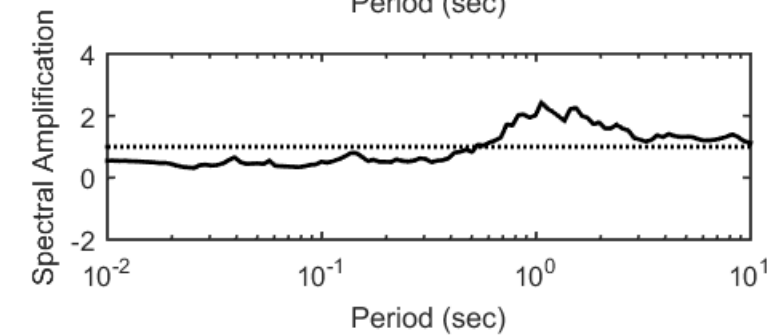
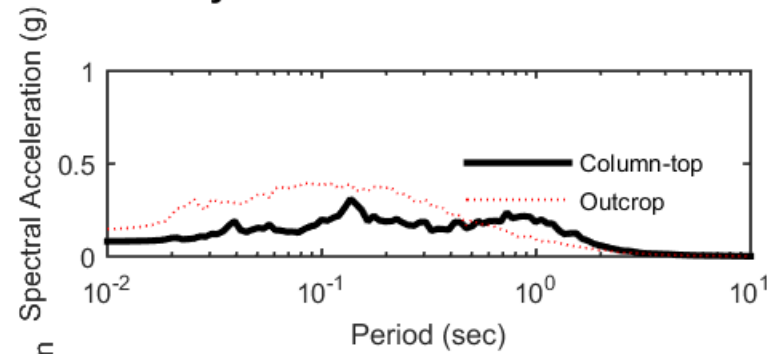
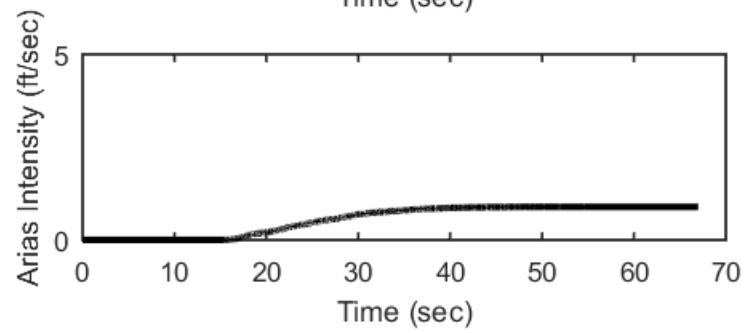
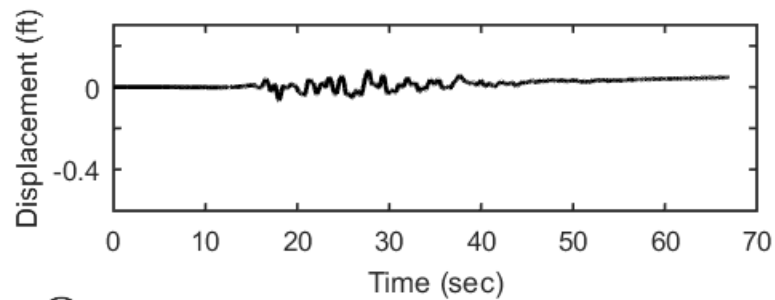
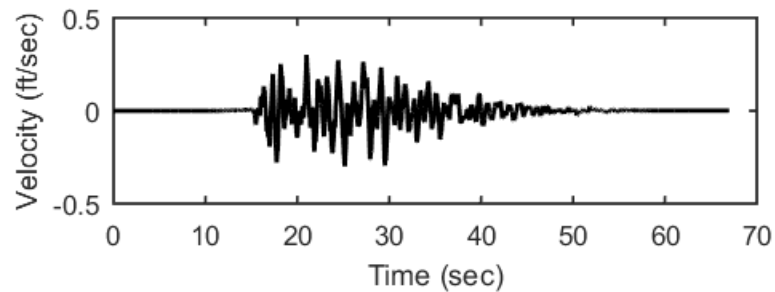
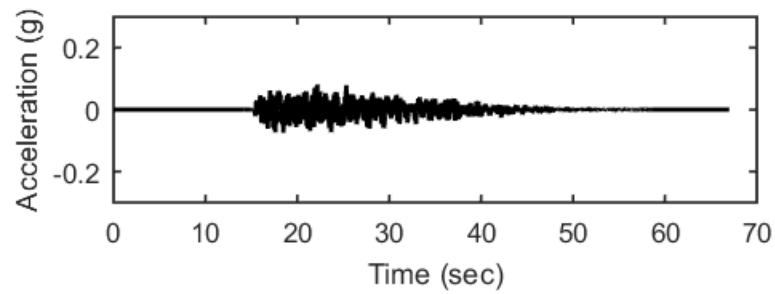
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



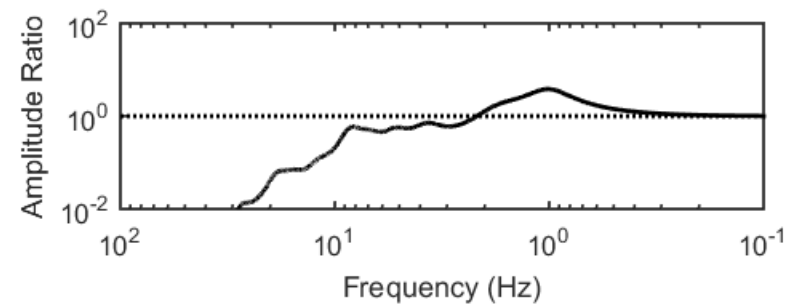
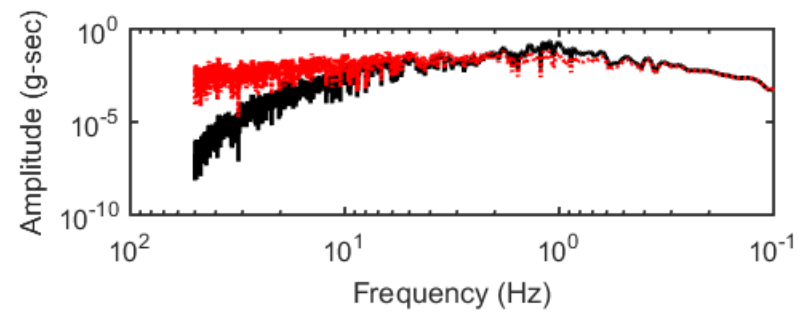
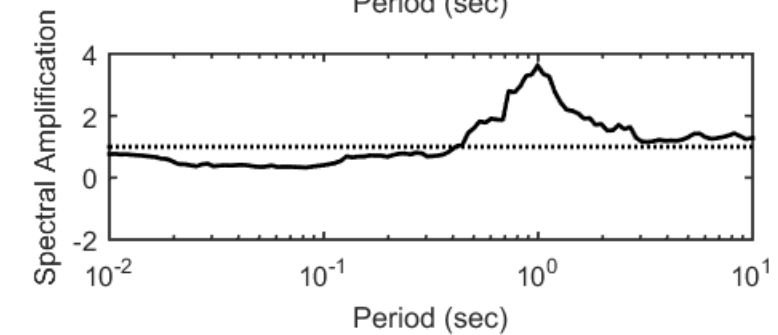
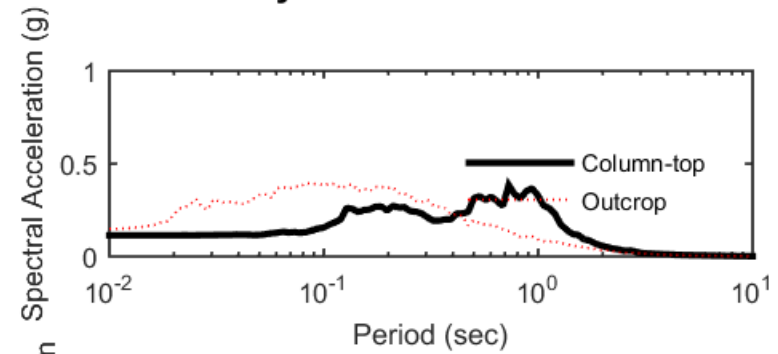
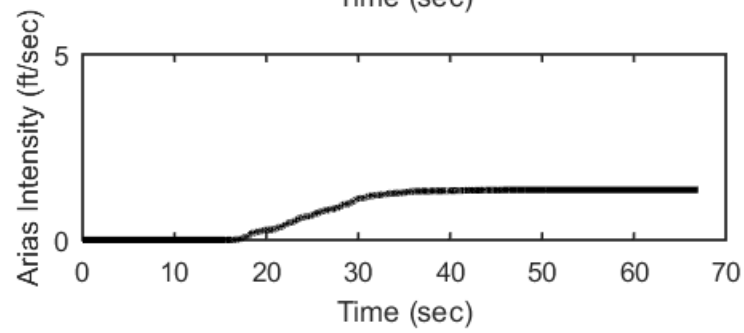
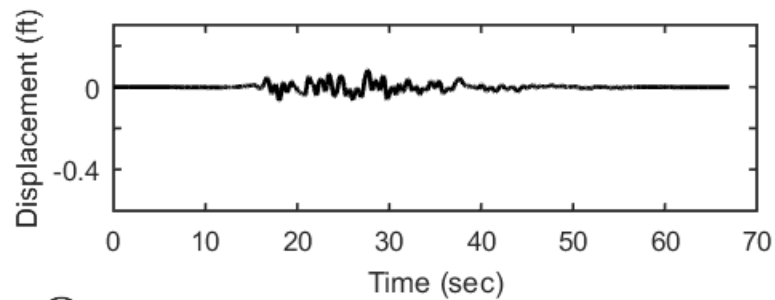
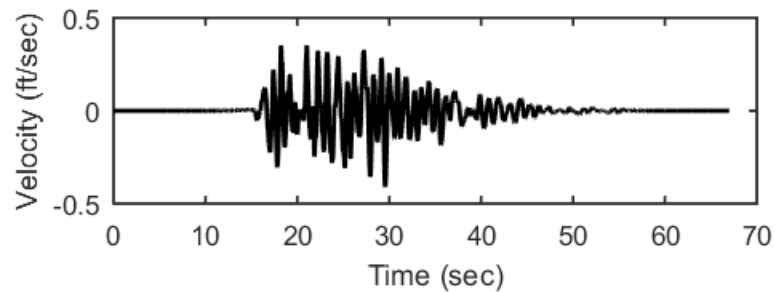
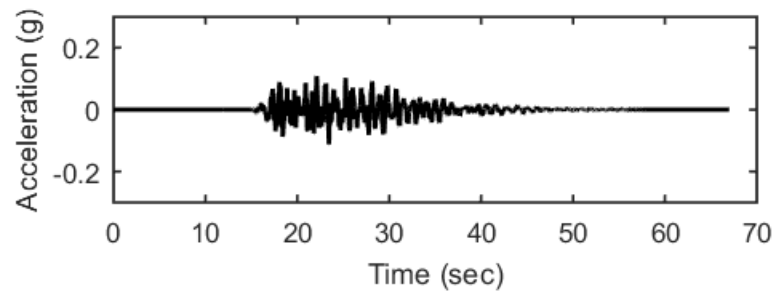
### Profile outputs for Motion: FEE4



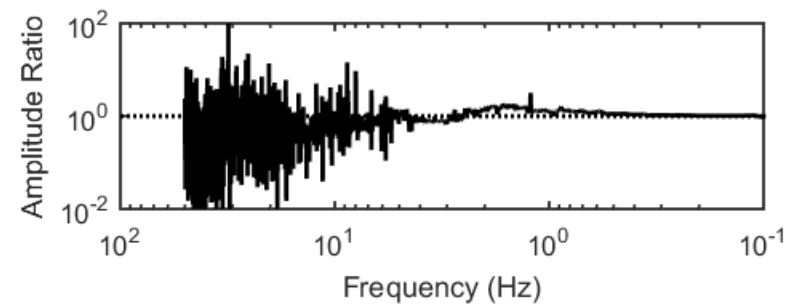
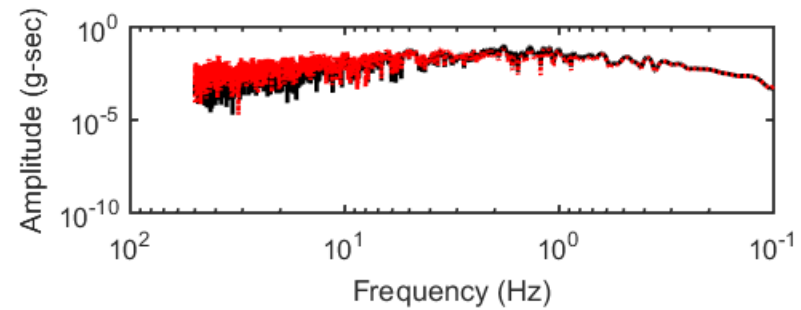
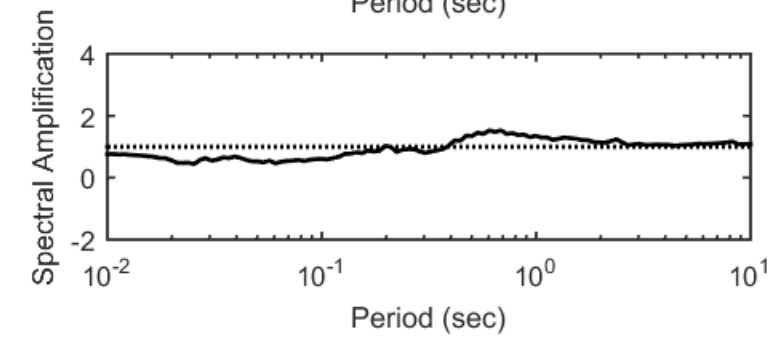
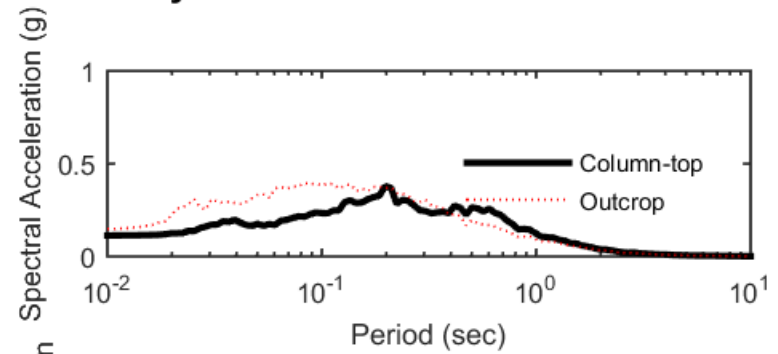
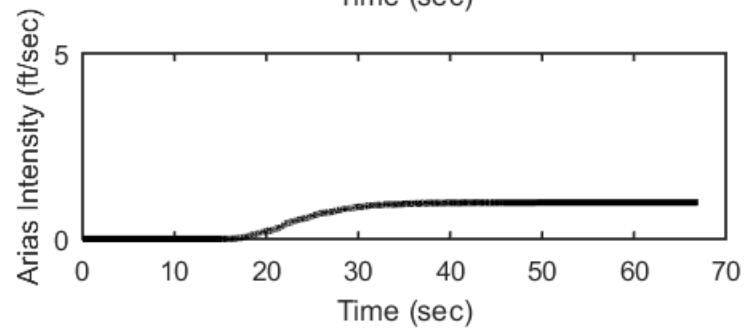
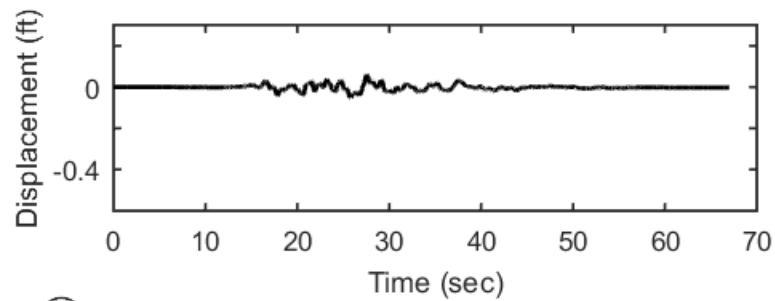
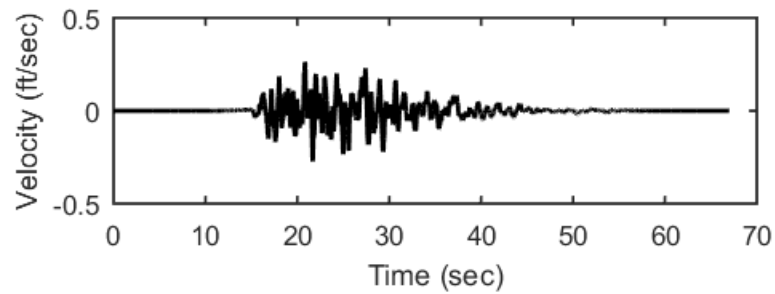
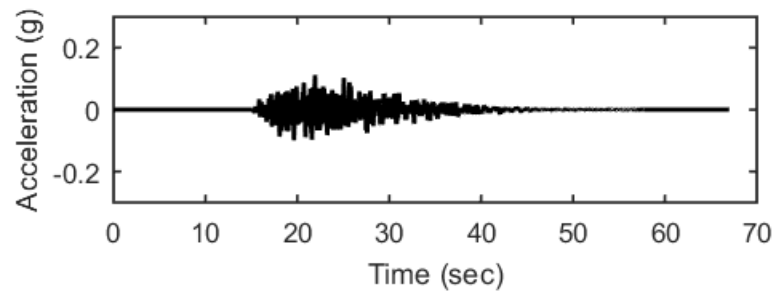
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



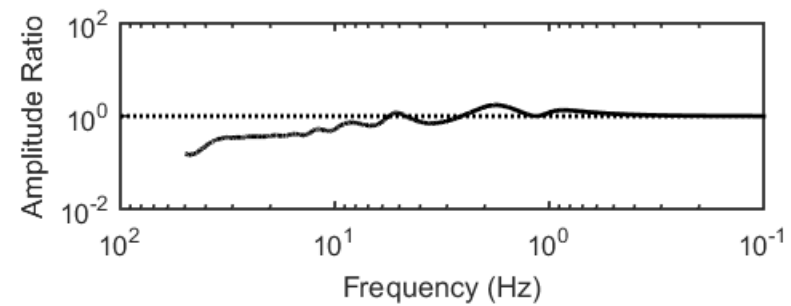
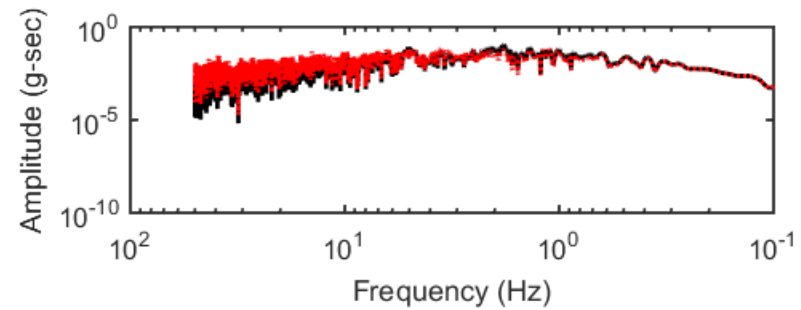
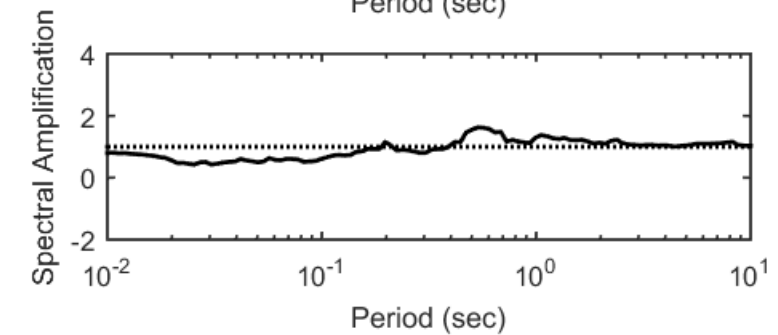
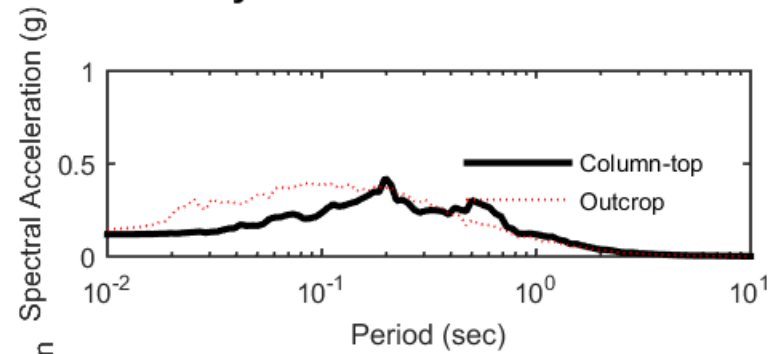
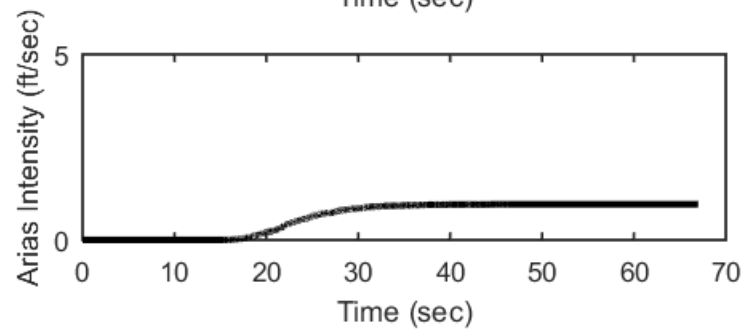
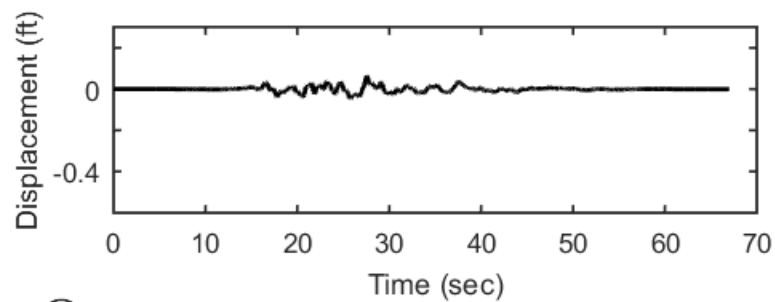
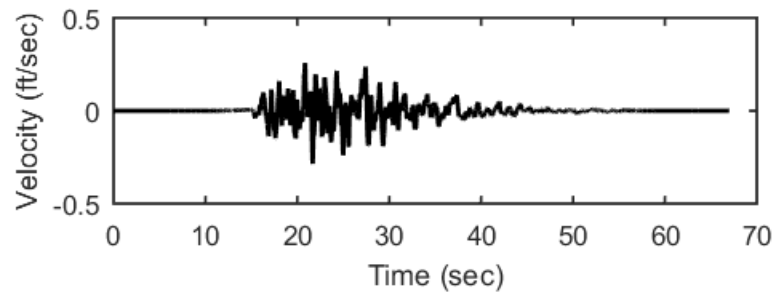
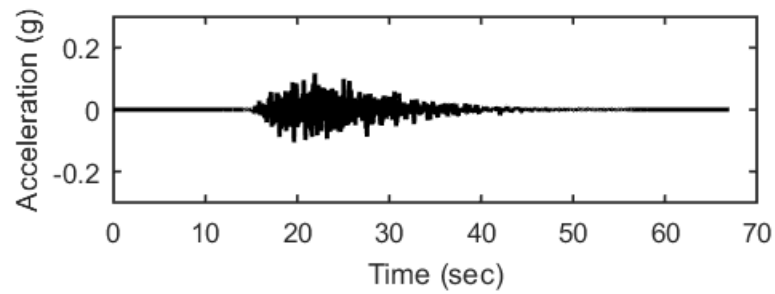
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



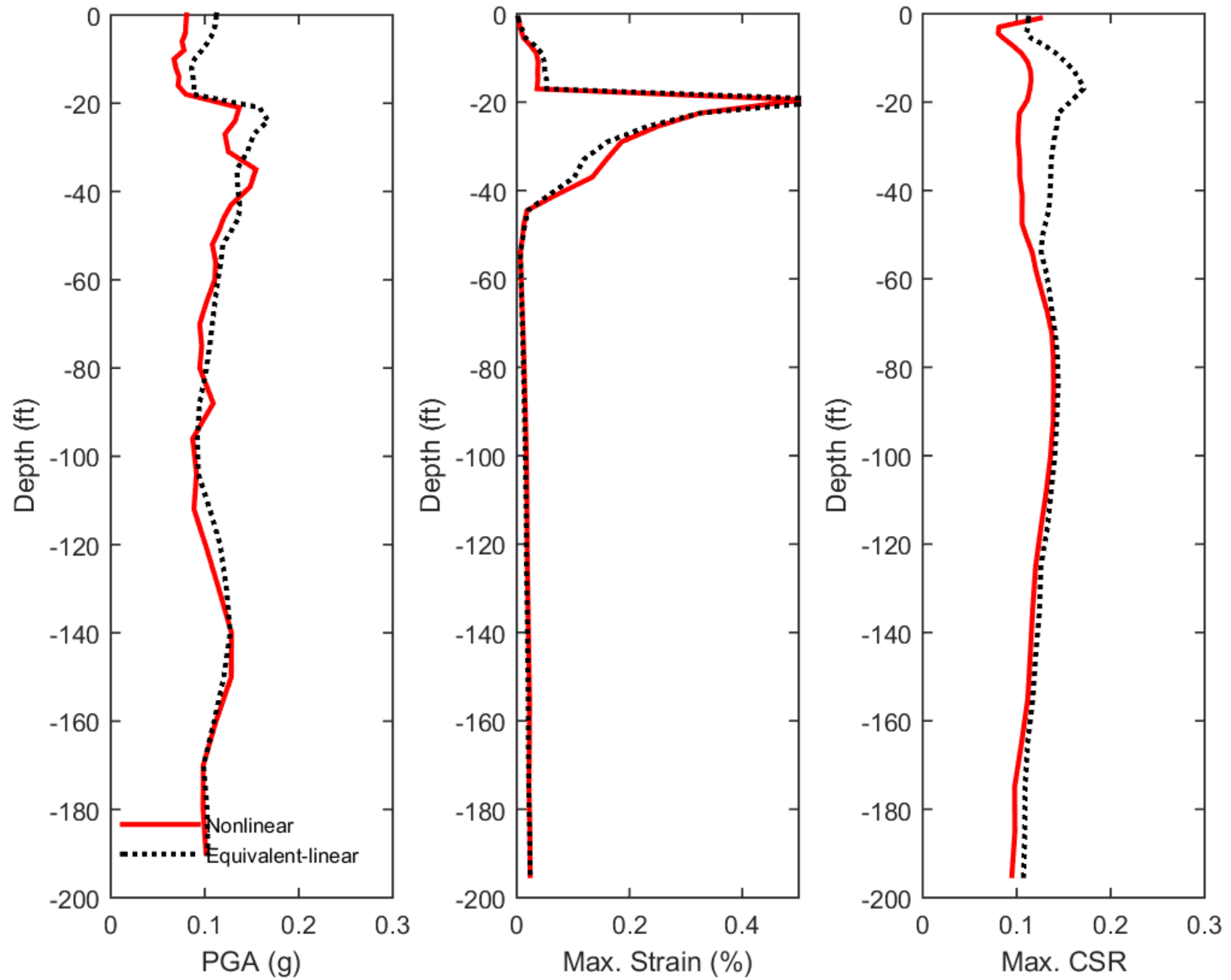
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



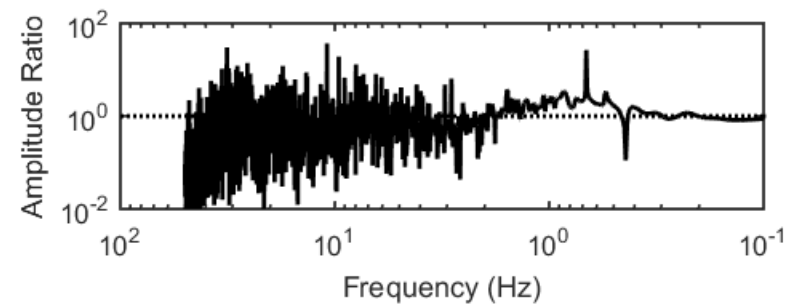
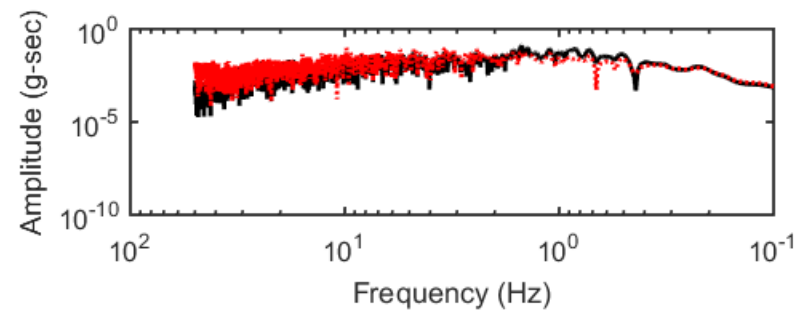
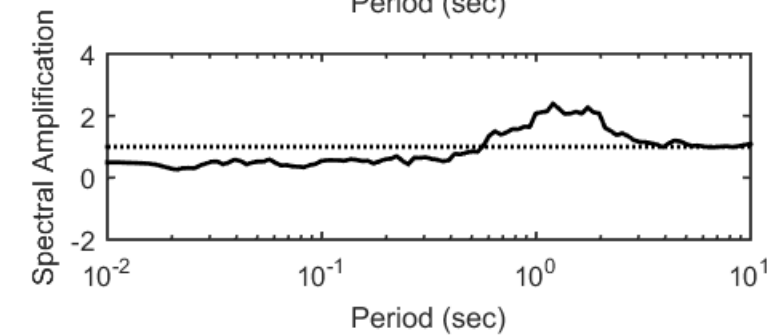
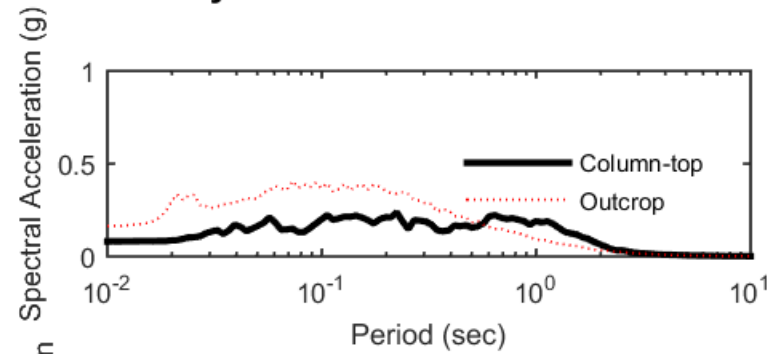
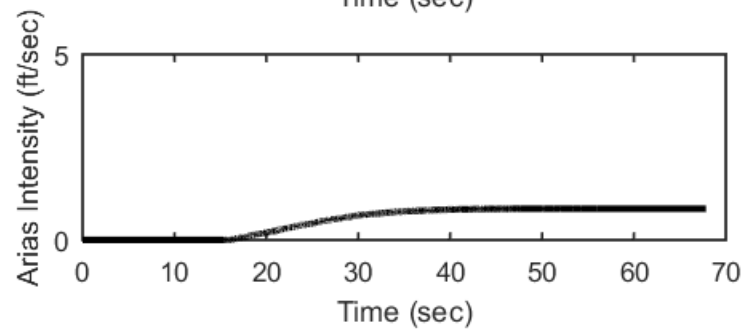
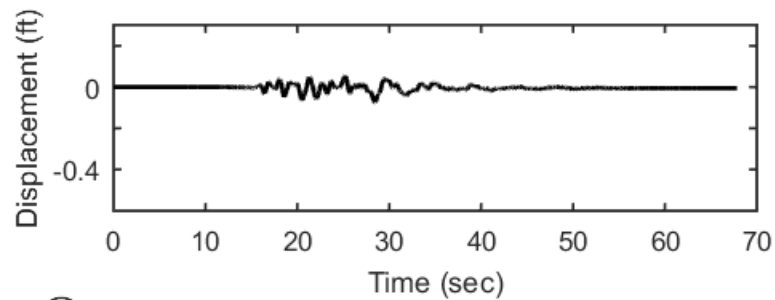
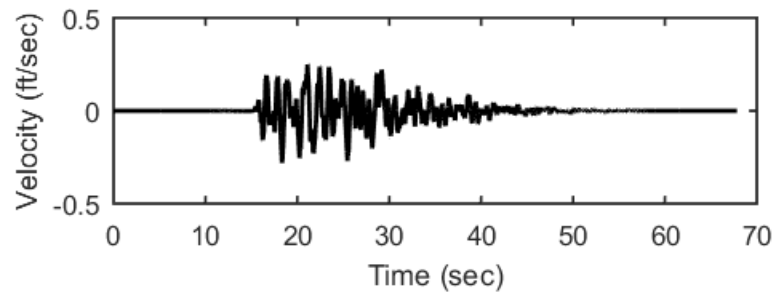
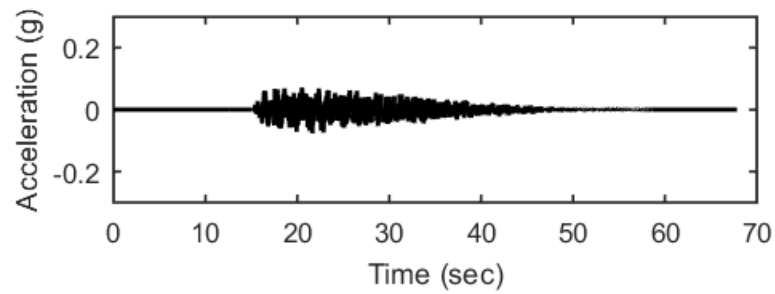
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



### Profile outputs for Motion: FEE5

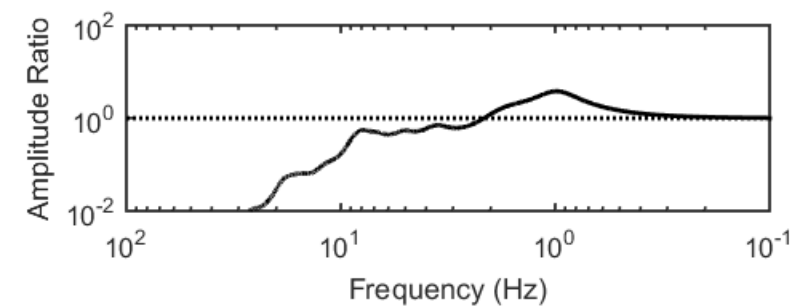
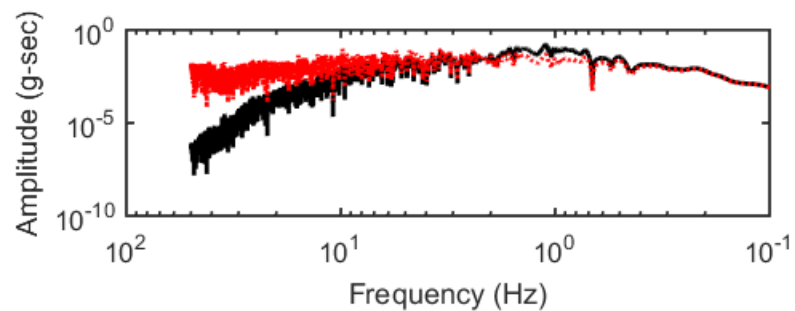
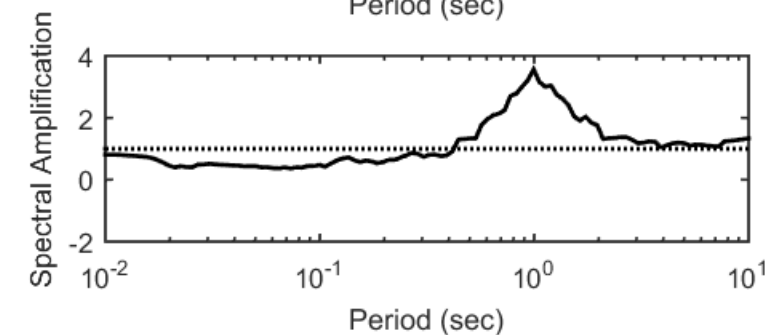
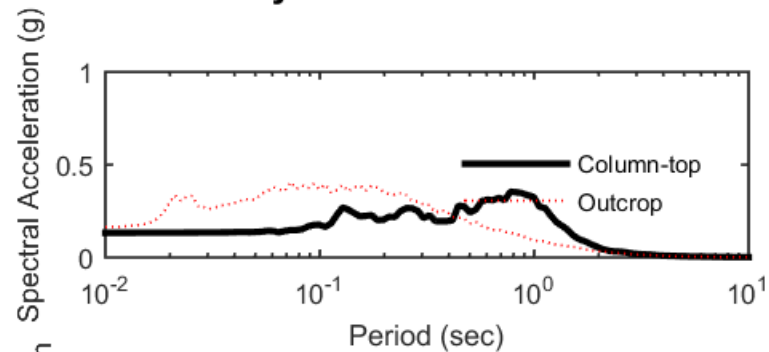
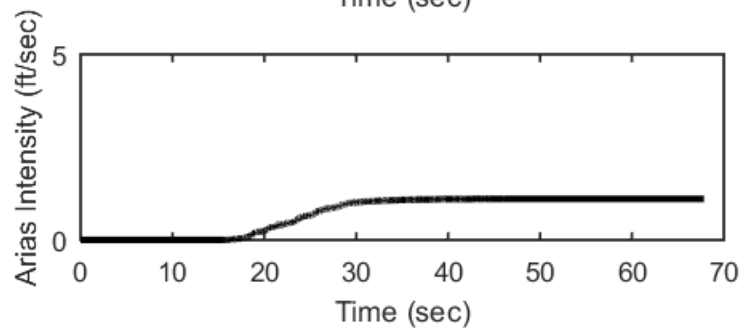
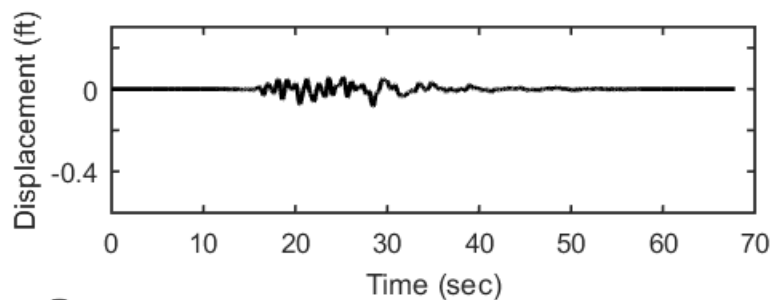
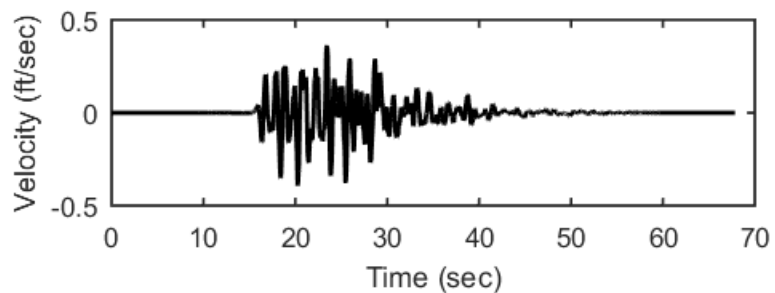
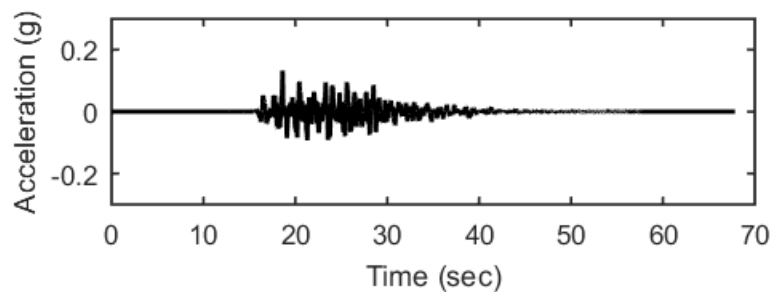


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6

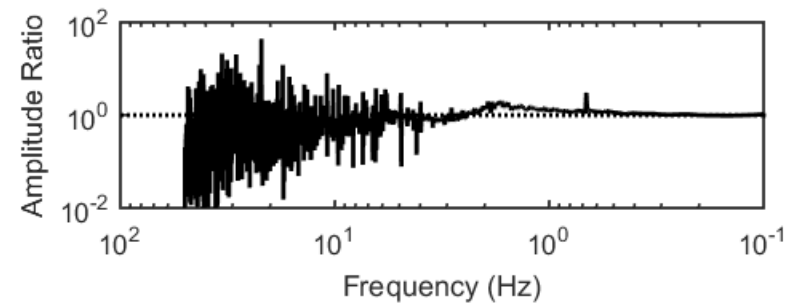
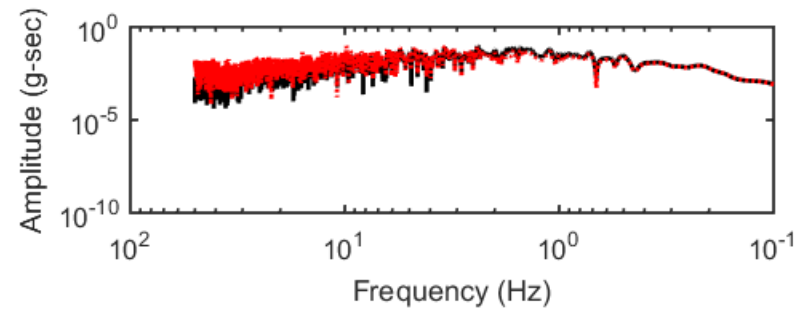
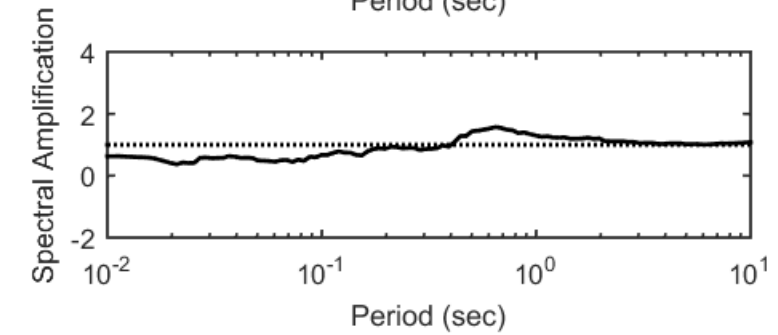
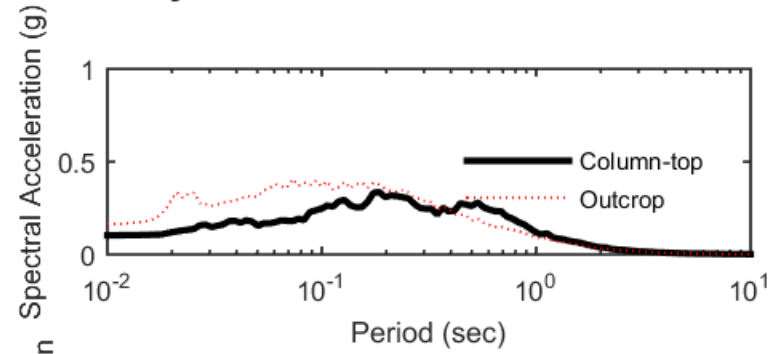
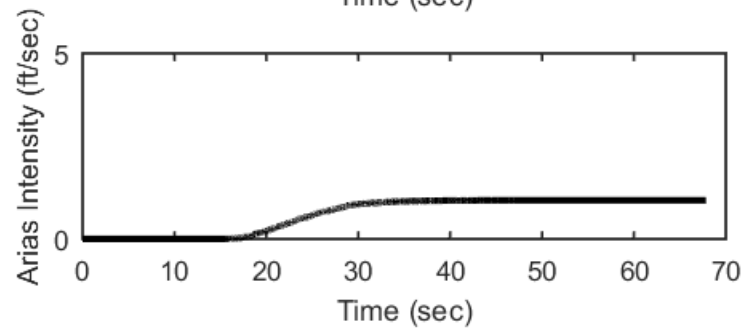
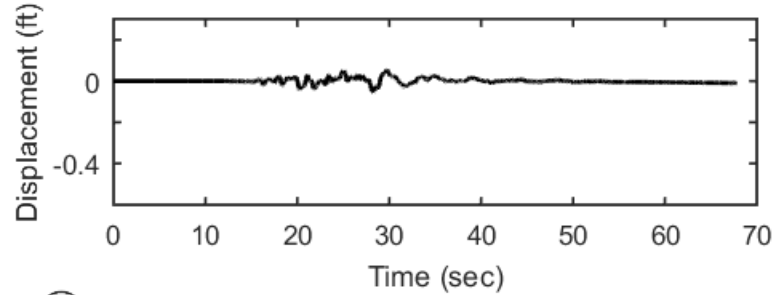
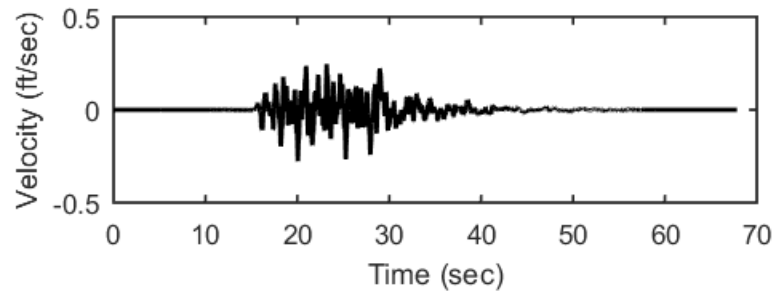
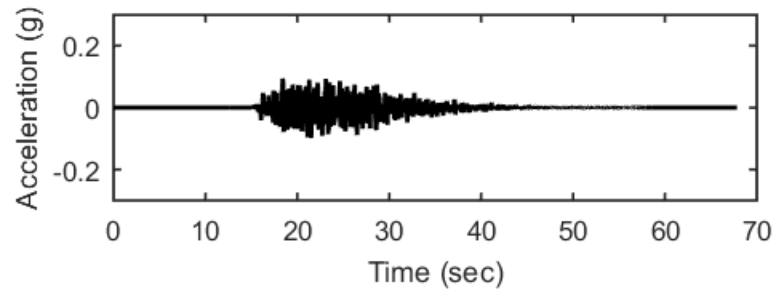




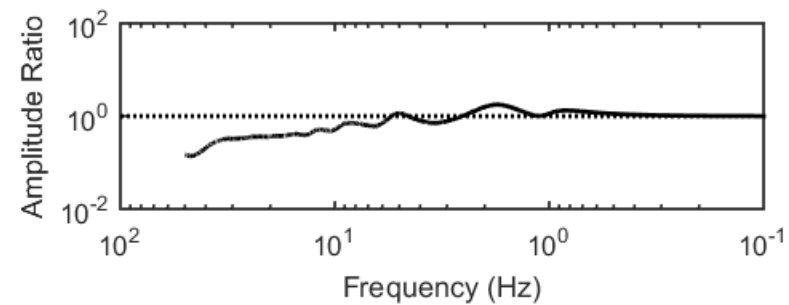
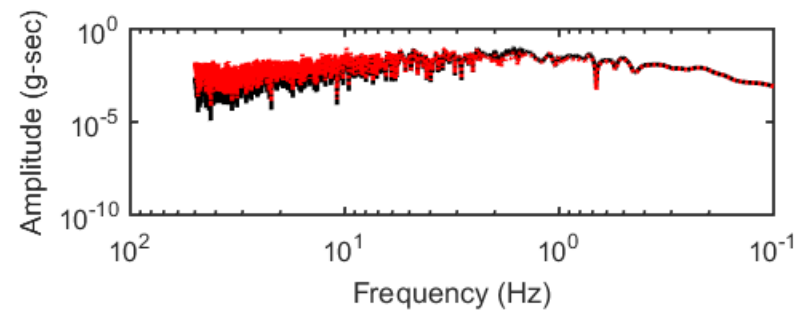
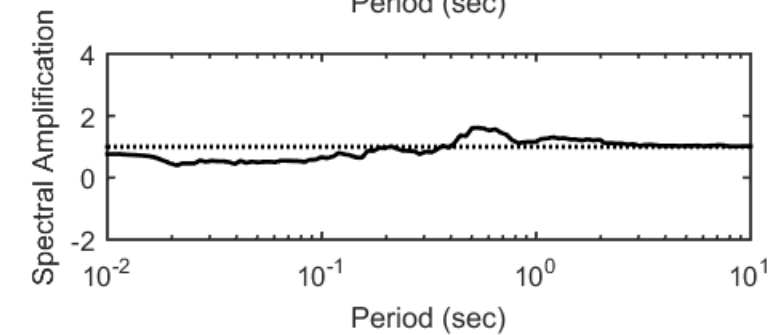
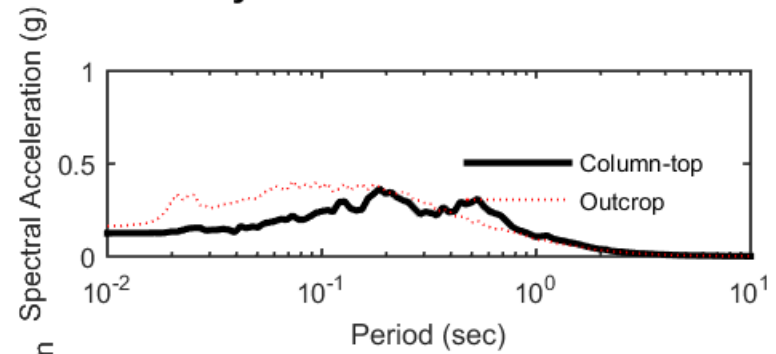
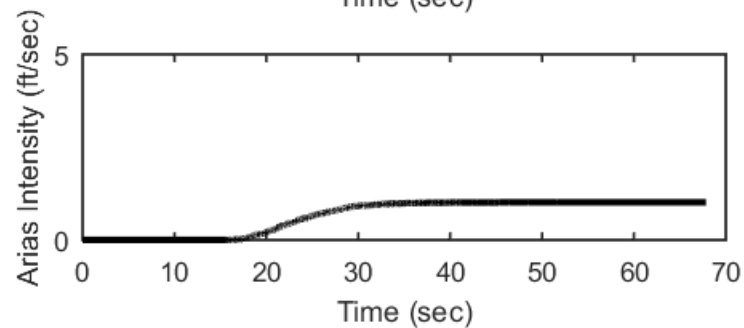
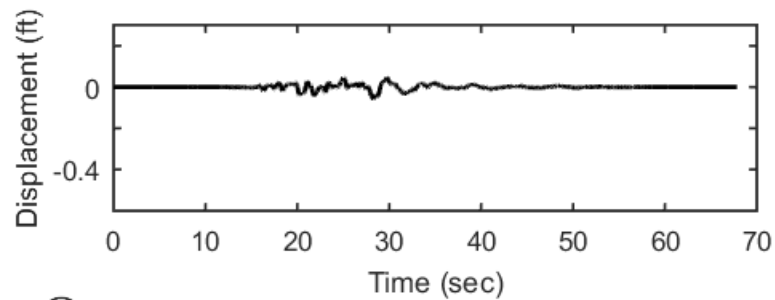
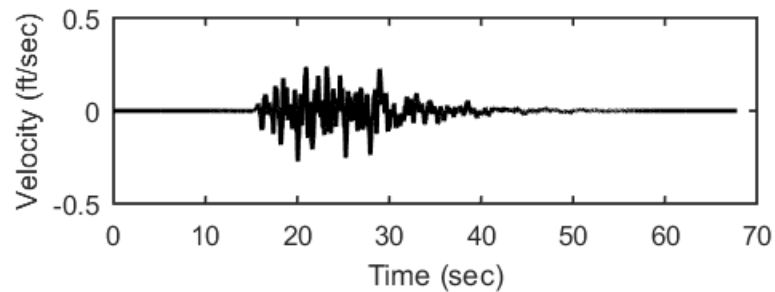
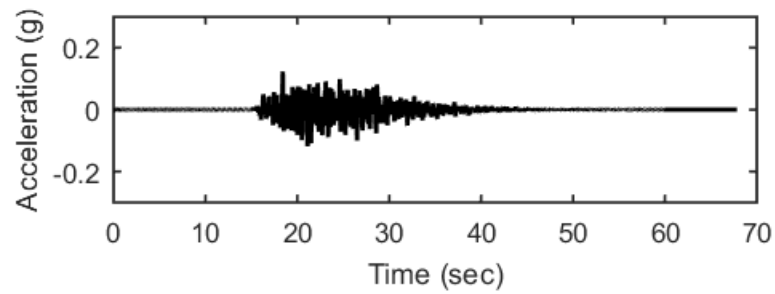
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



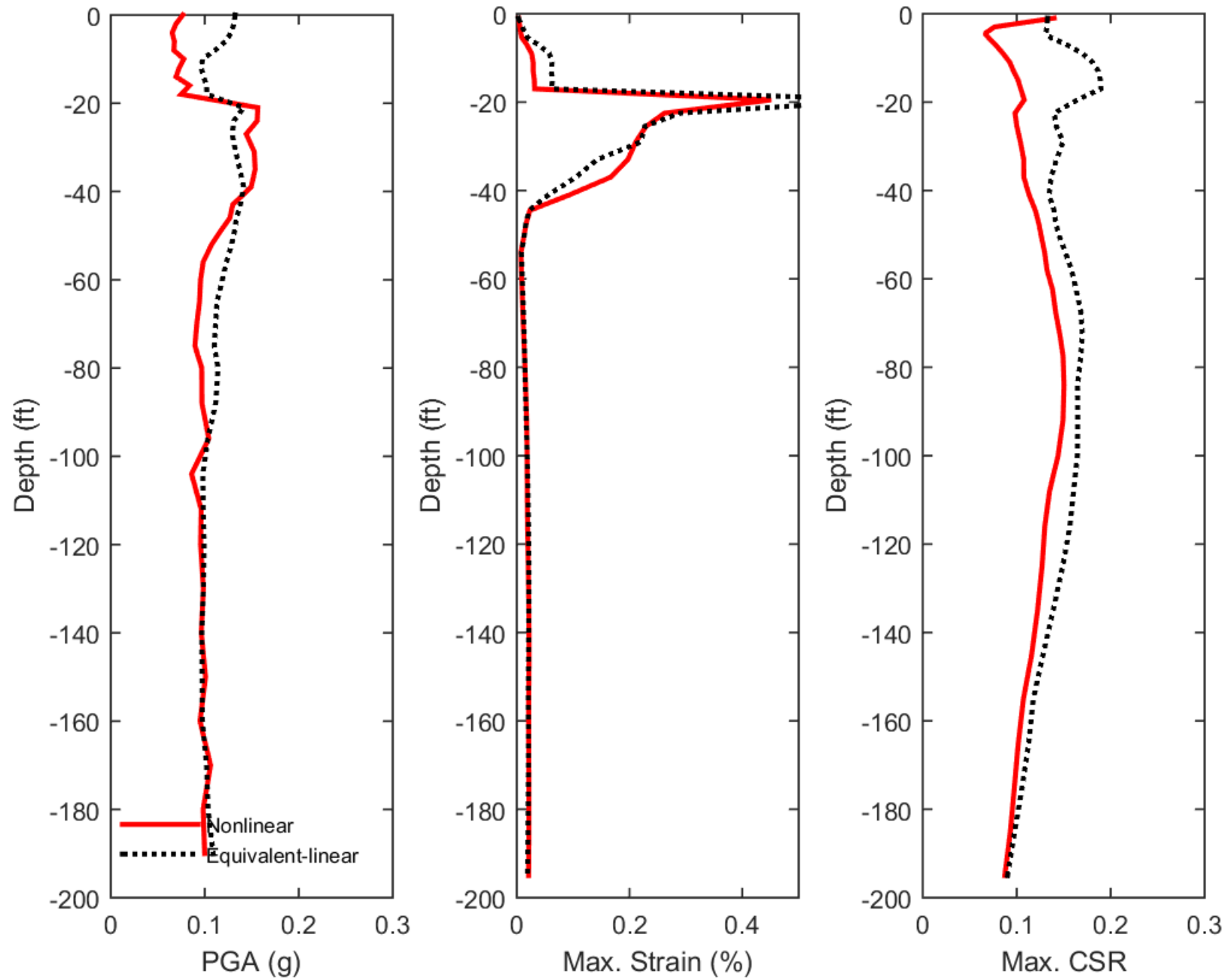
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



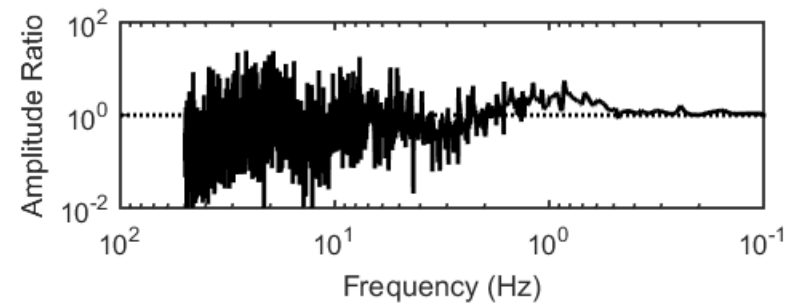
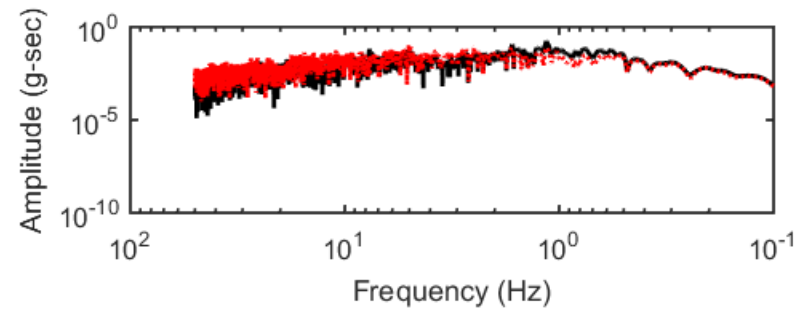
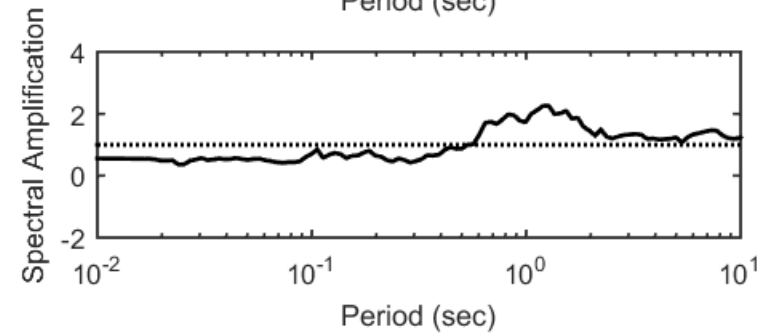
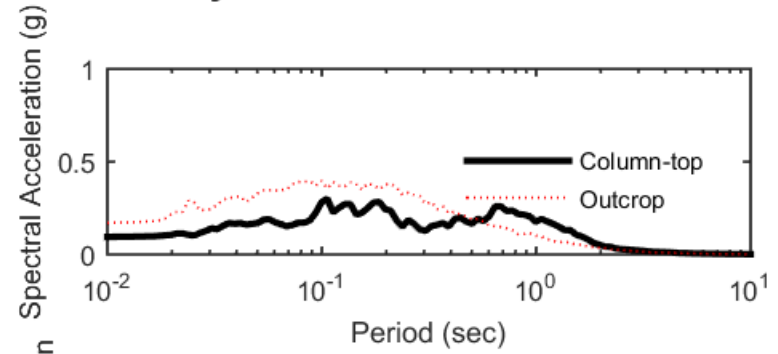
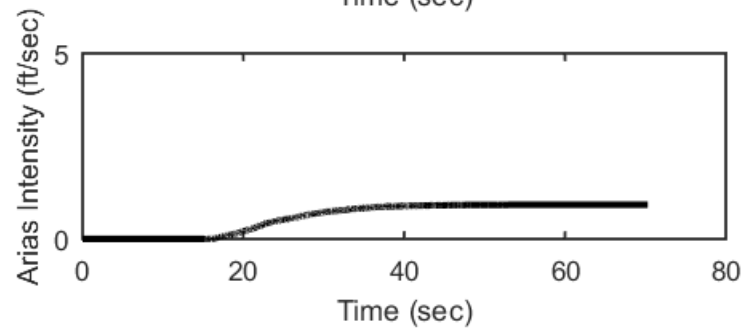
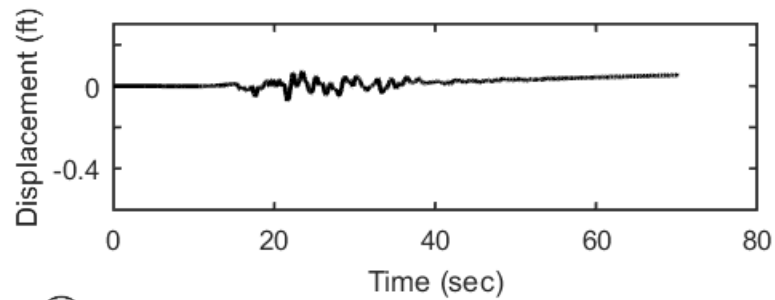
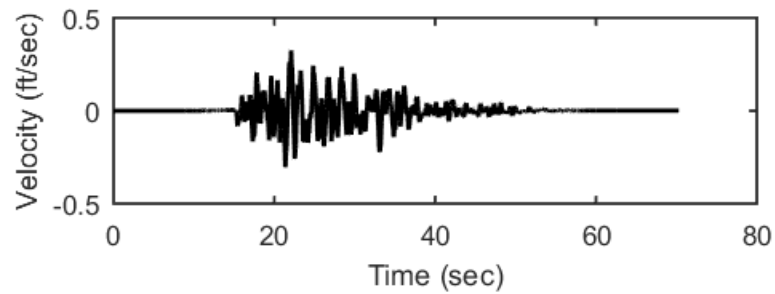
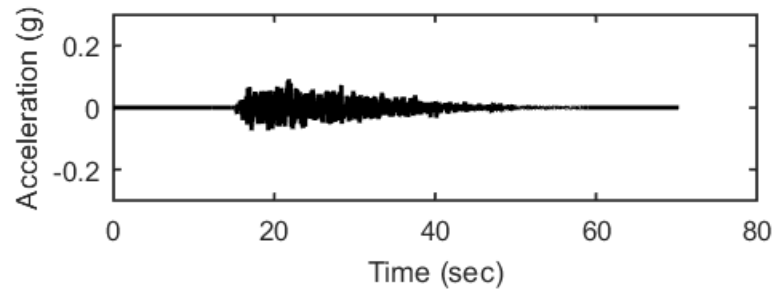
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



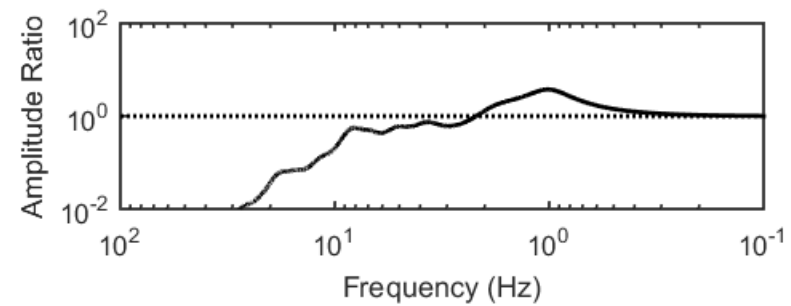
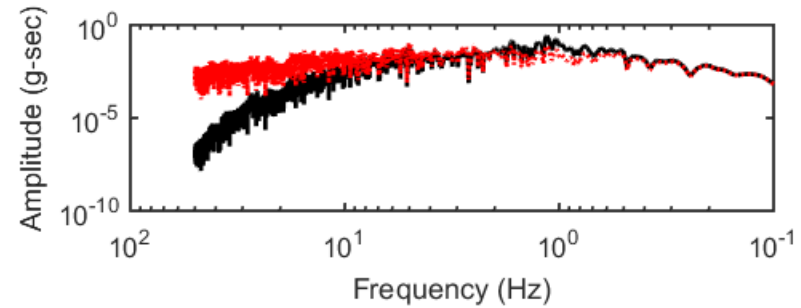
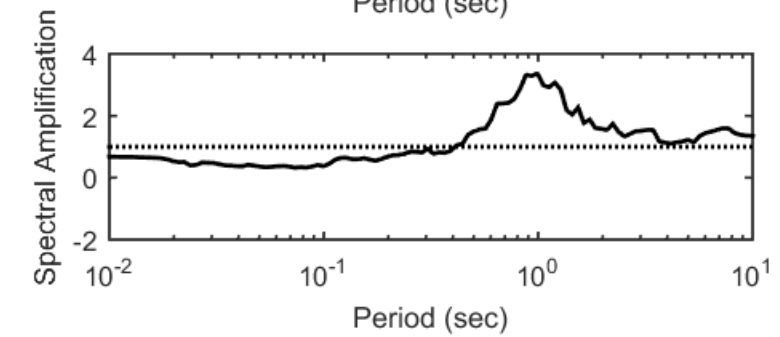
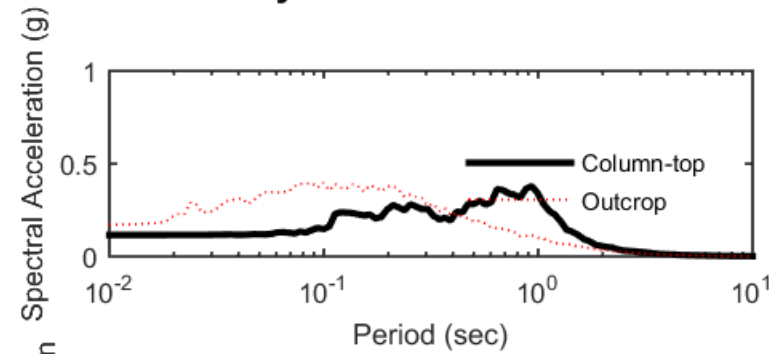
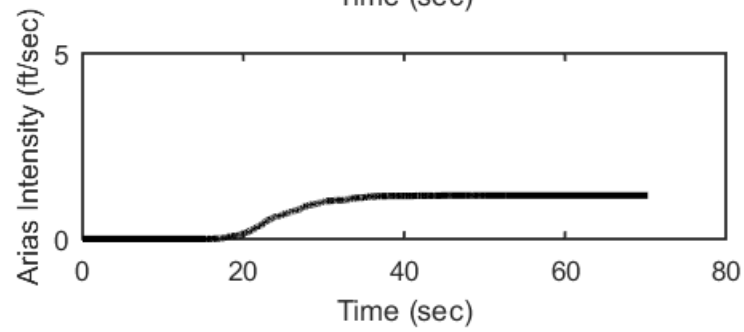
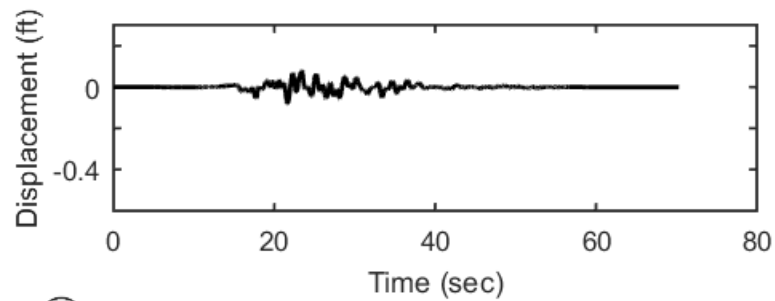
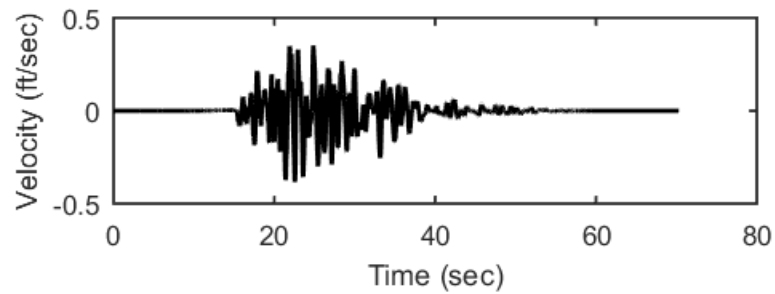
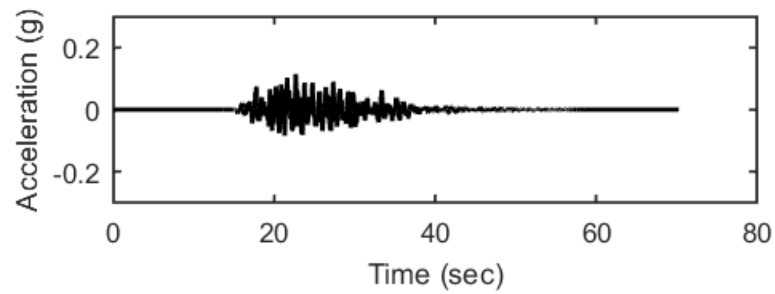
### Profile outputs for Motion: FEE6



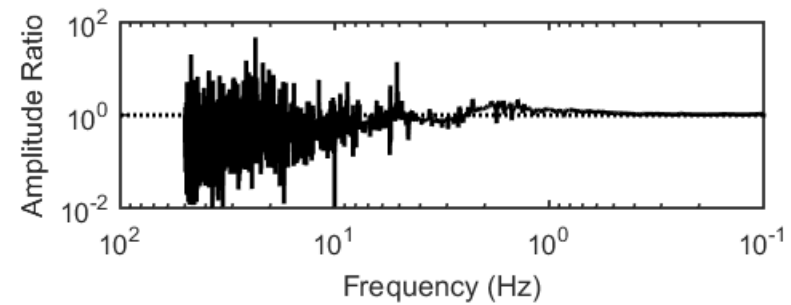
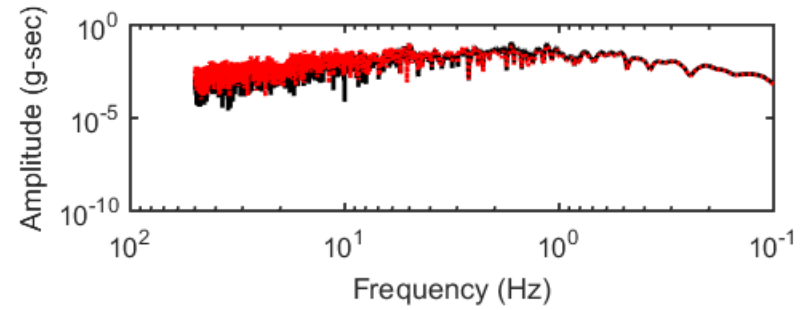
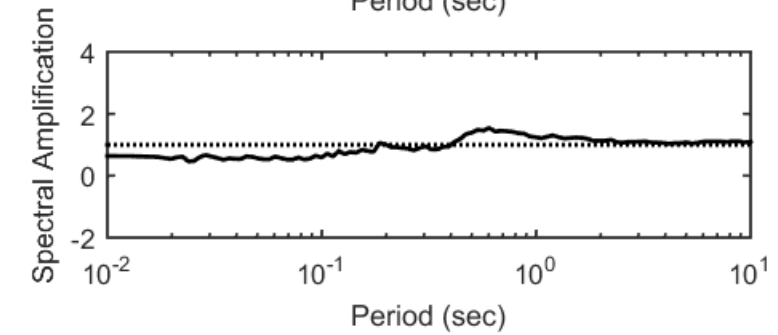
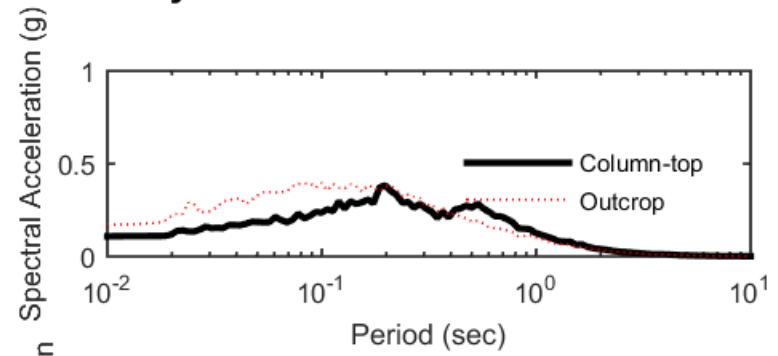
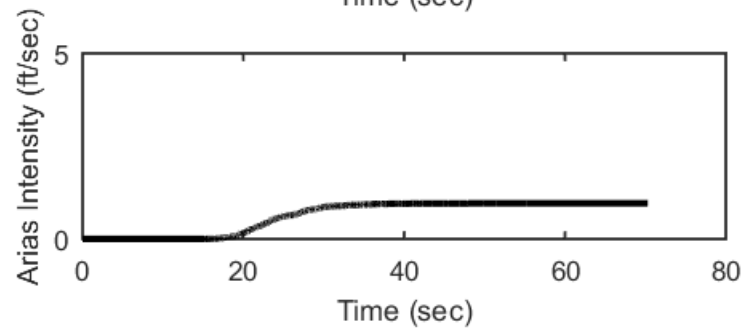
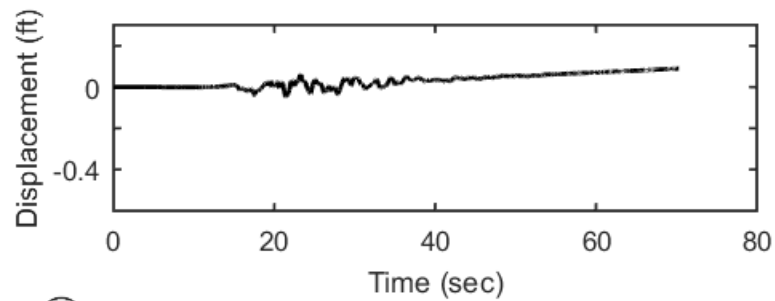
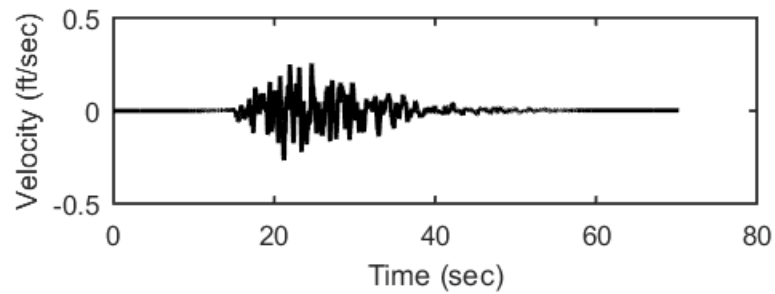
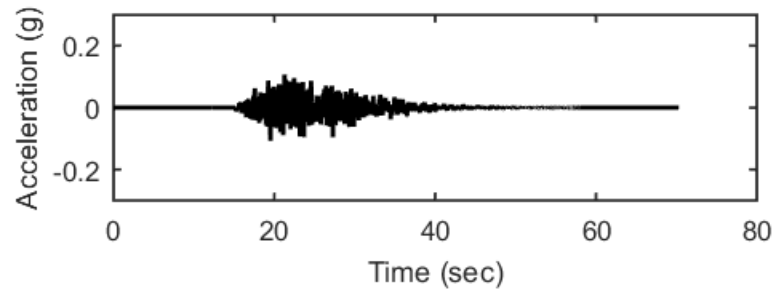
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



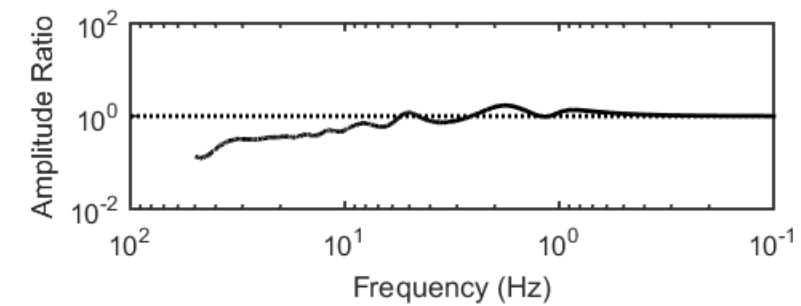
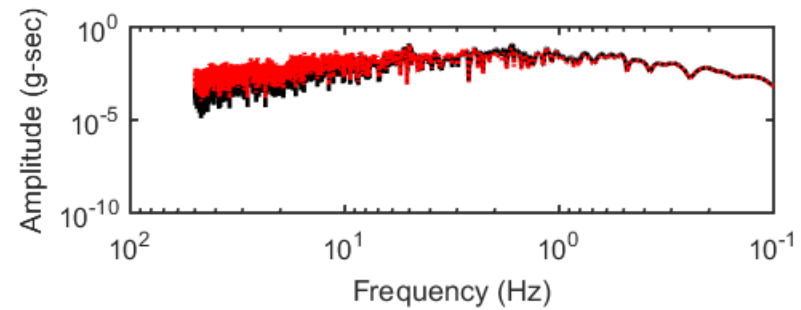
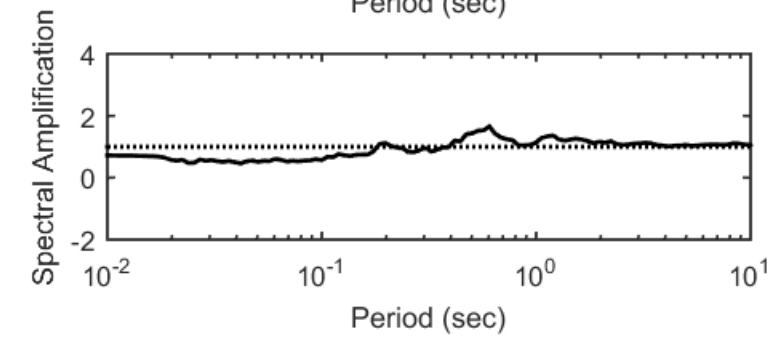
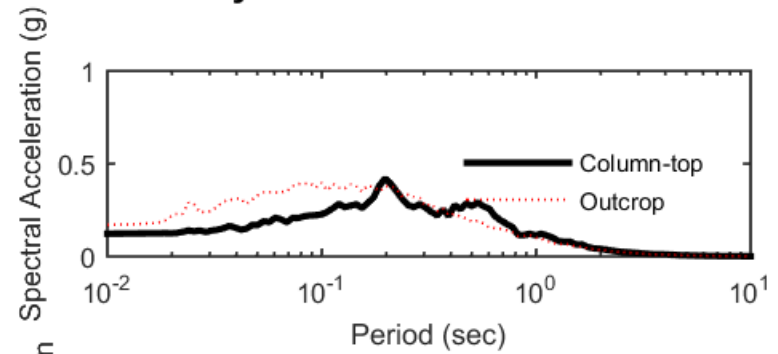
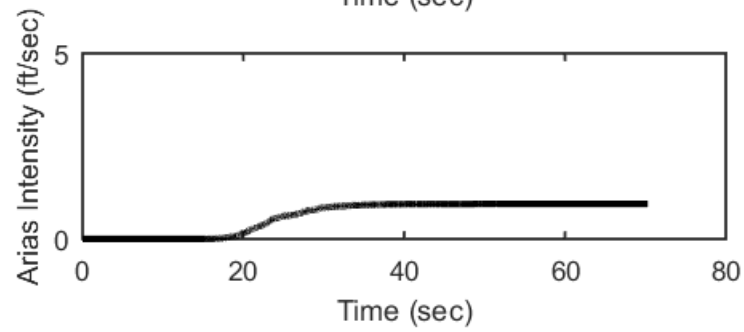
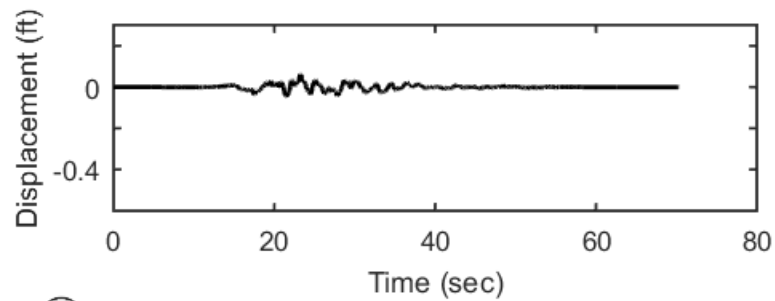
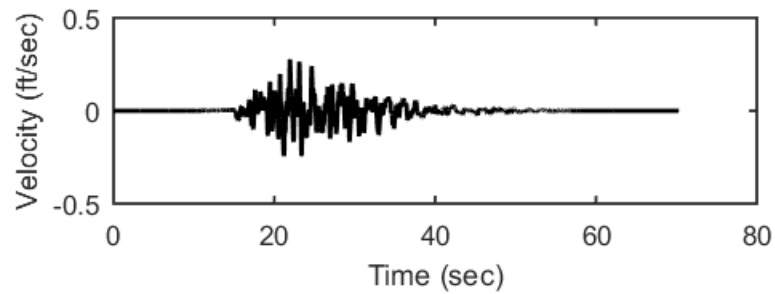
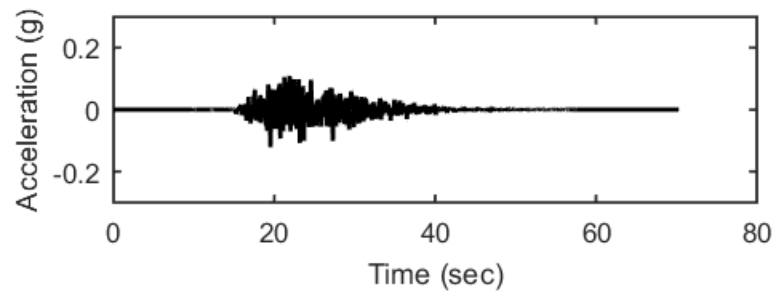
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7

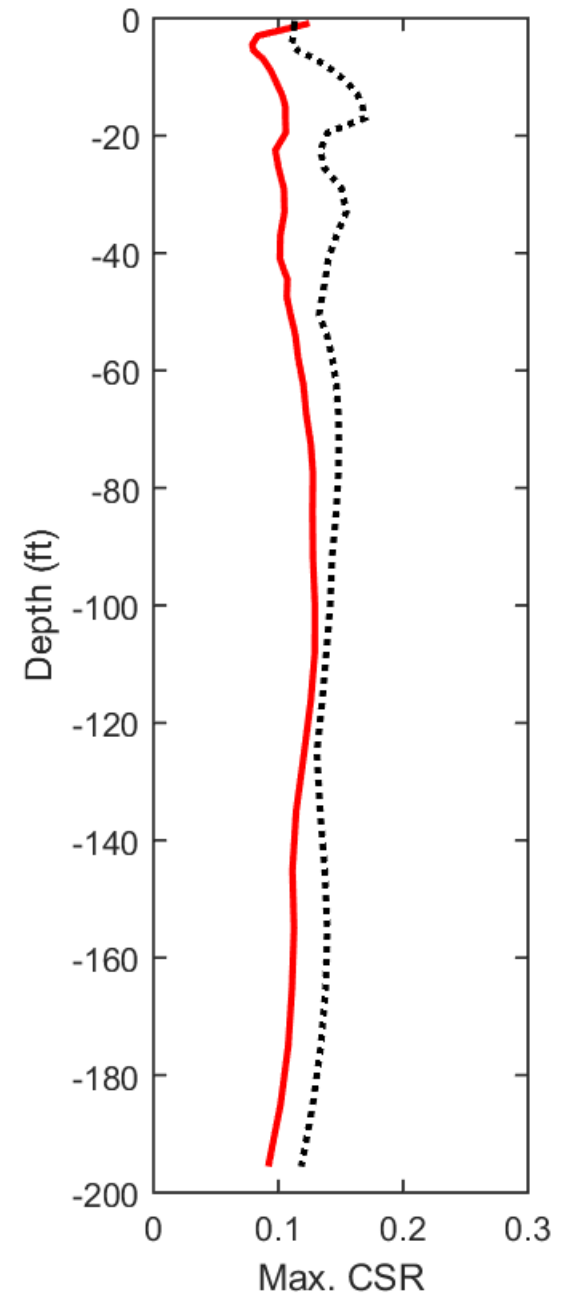
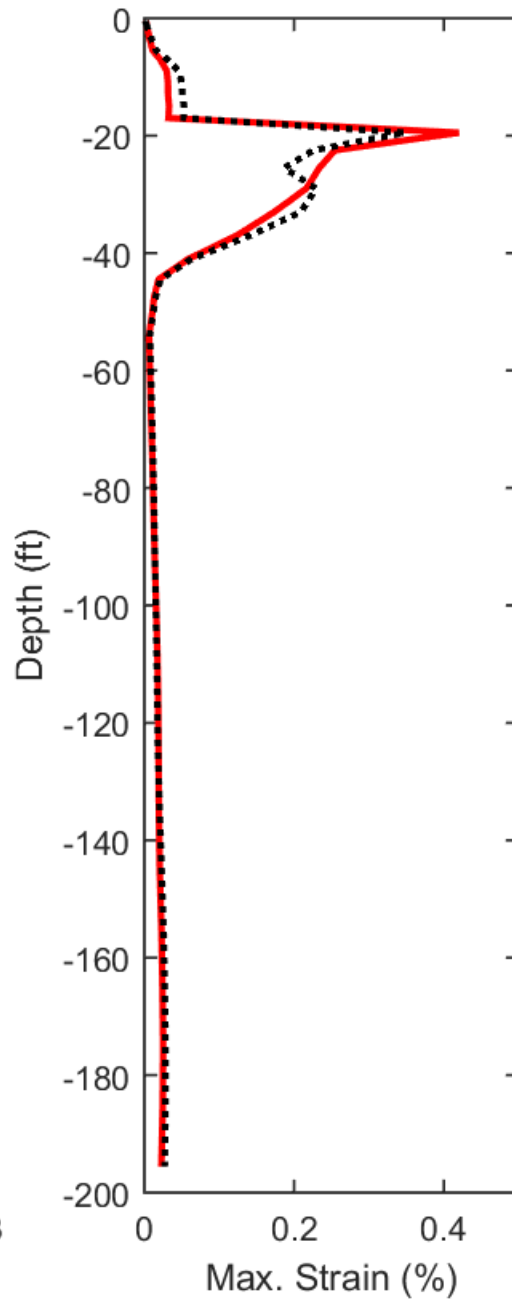
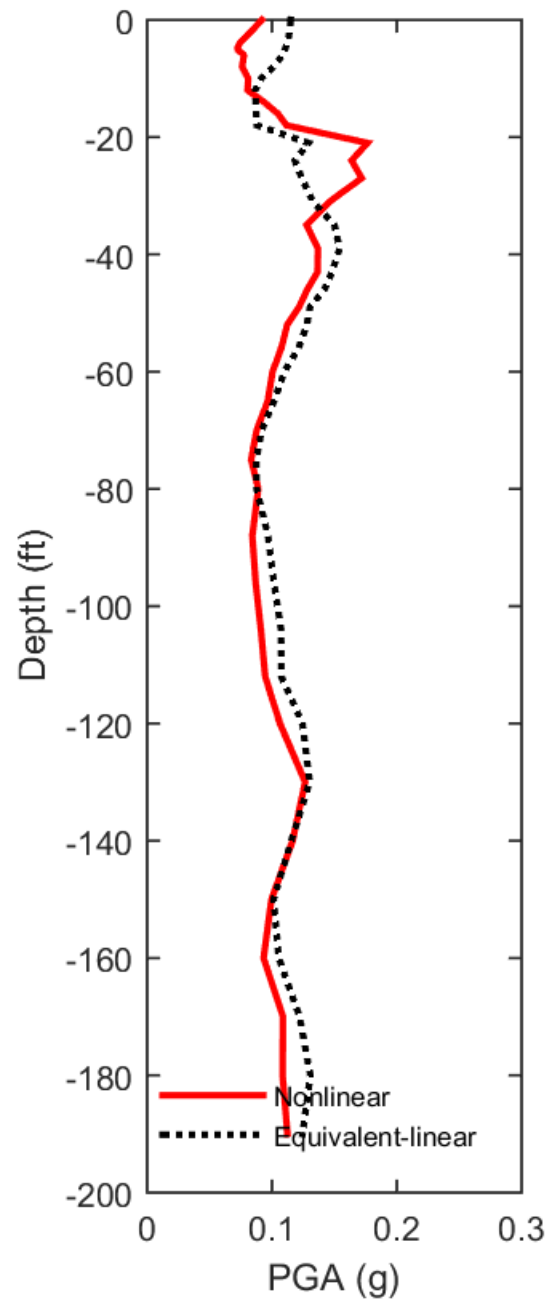


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7

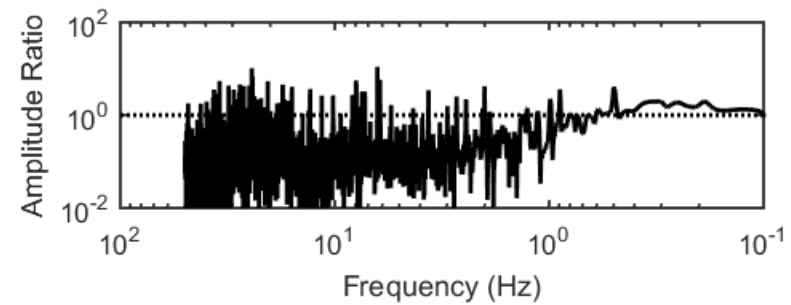
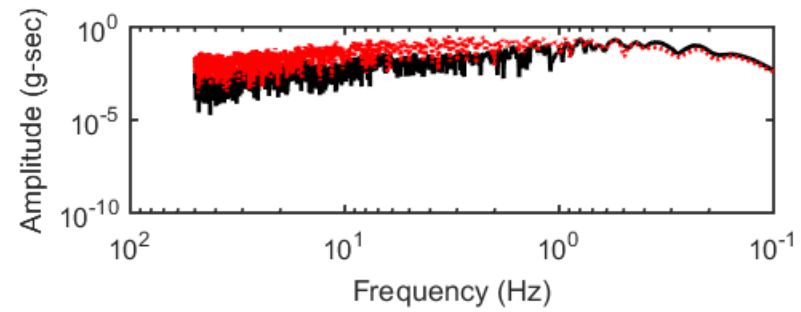
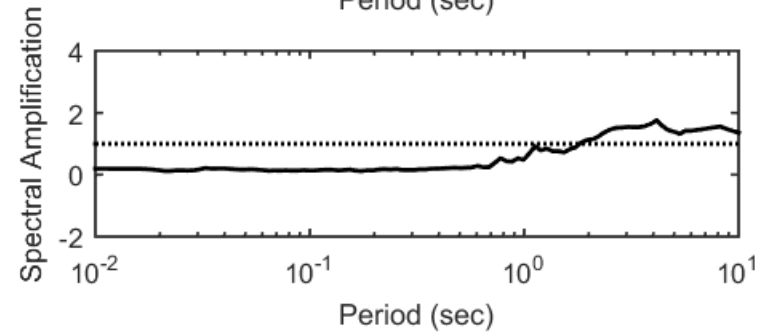
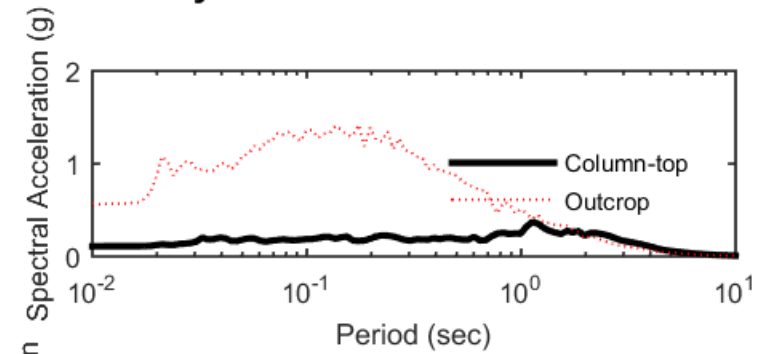
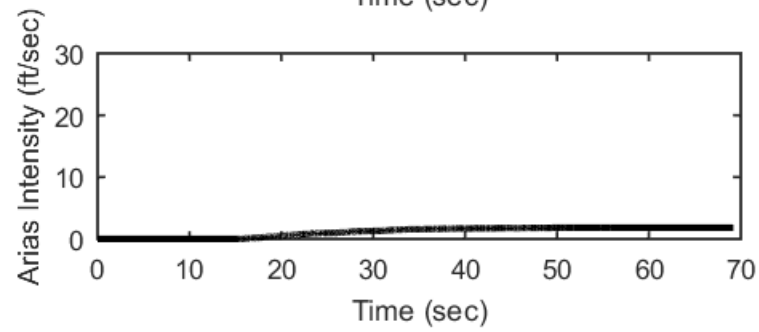
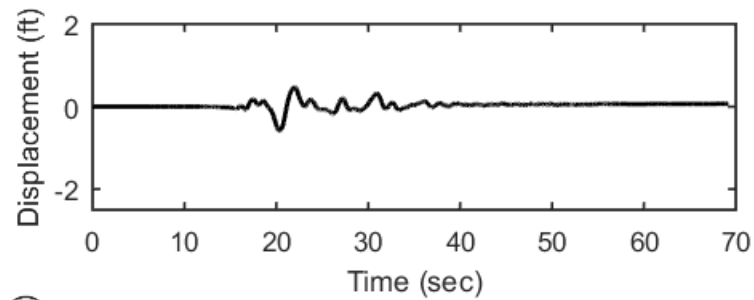
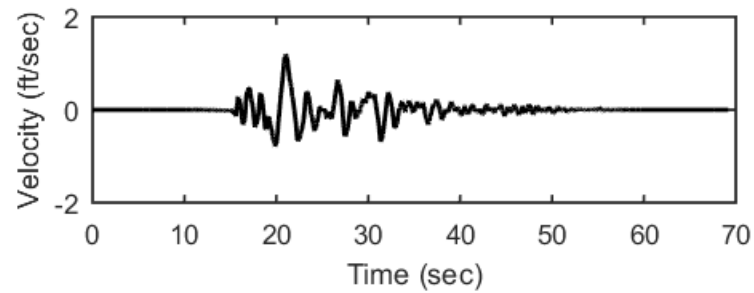
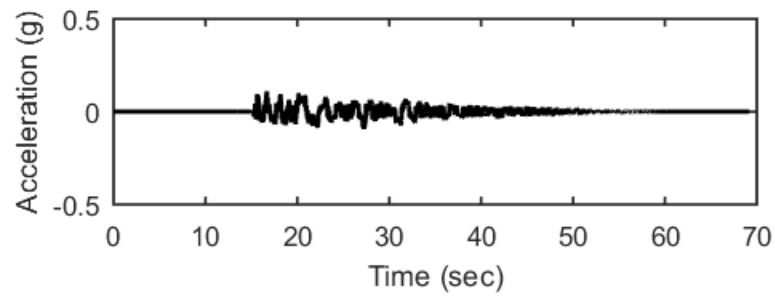




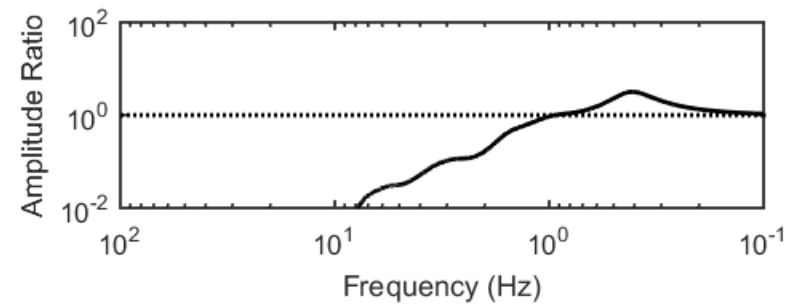
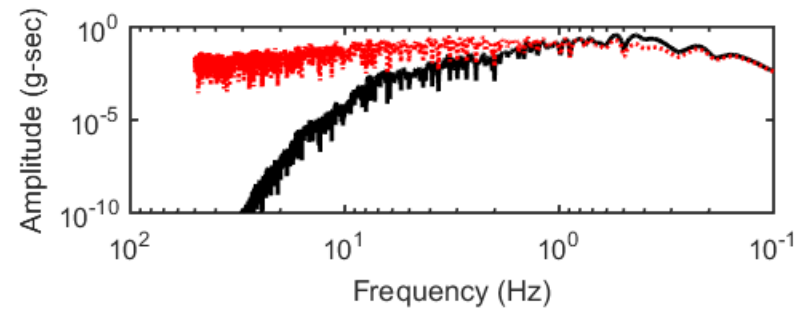
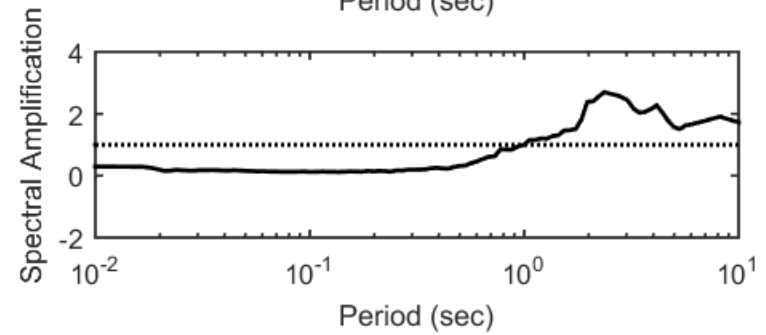
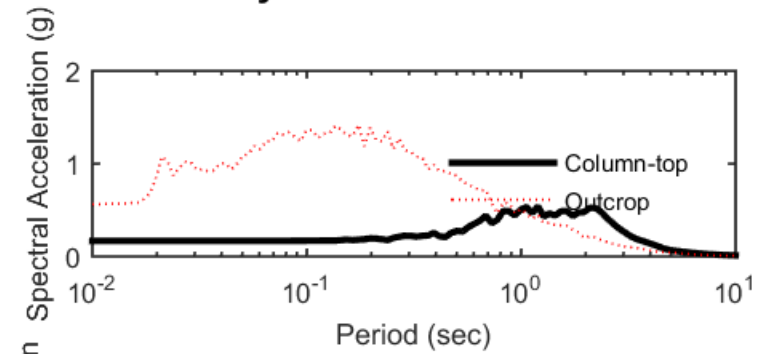
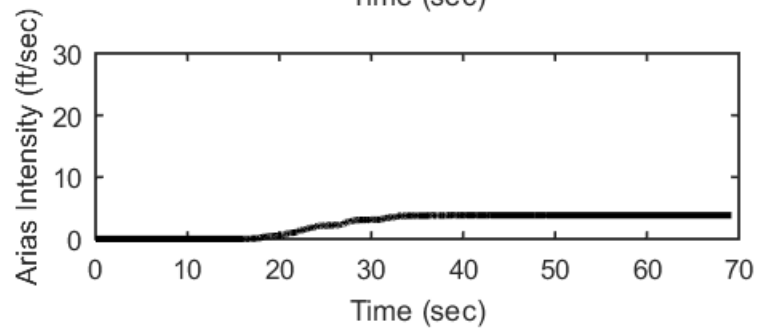
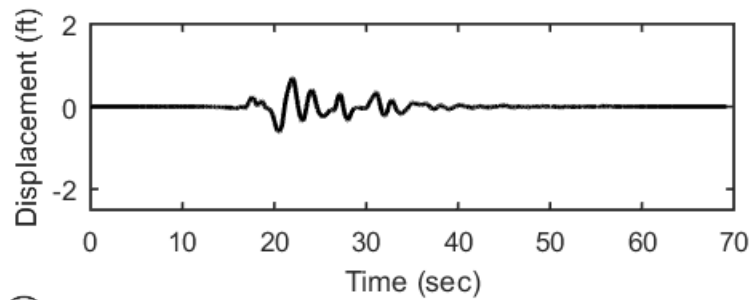
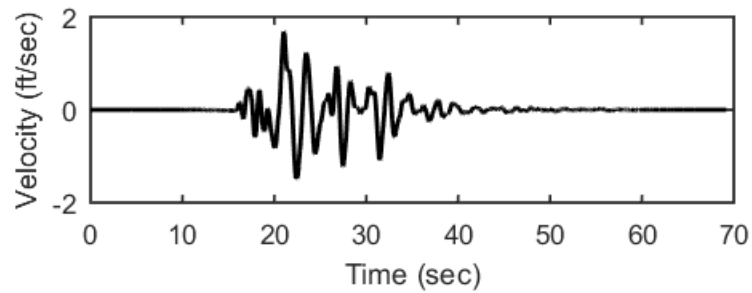
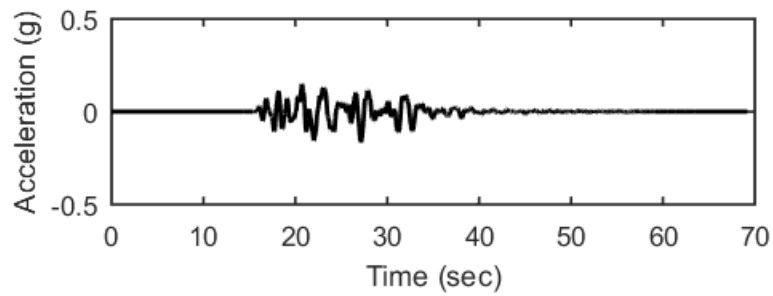
# Profile outputs for Motion: FEE7



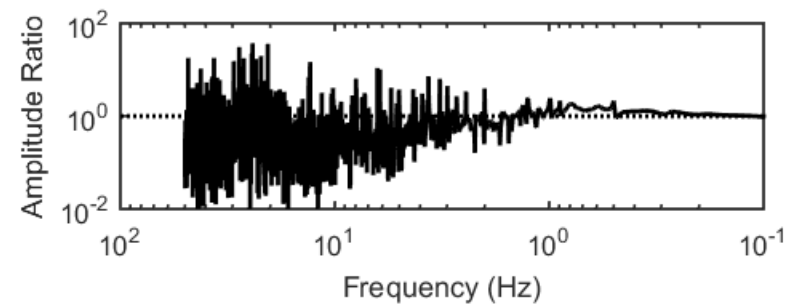
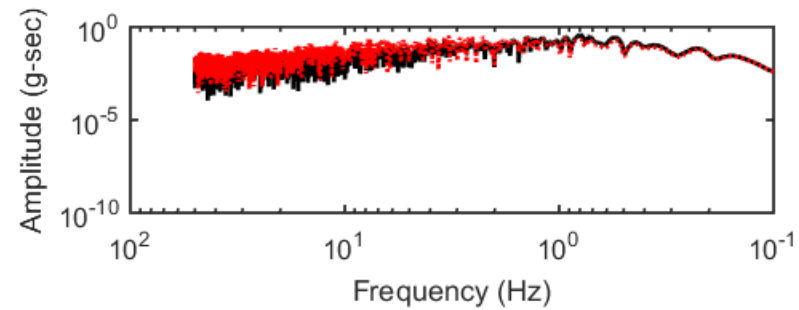
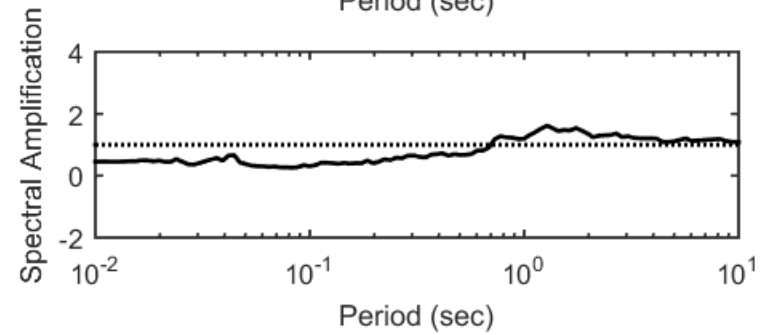
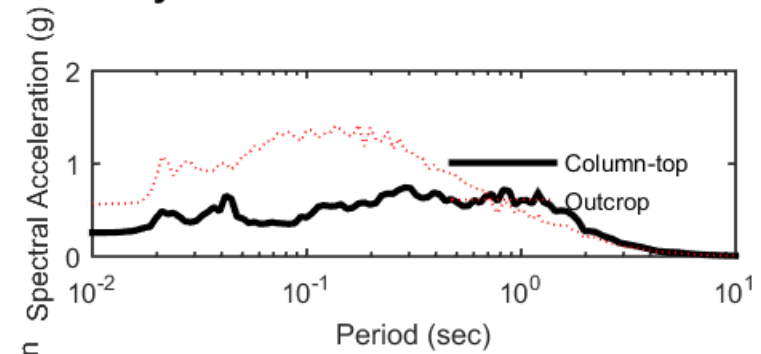
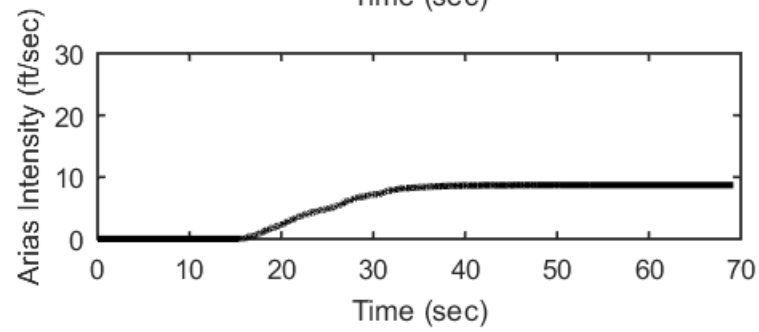
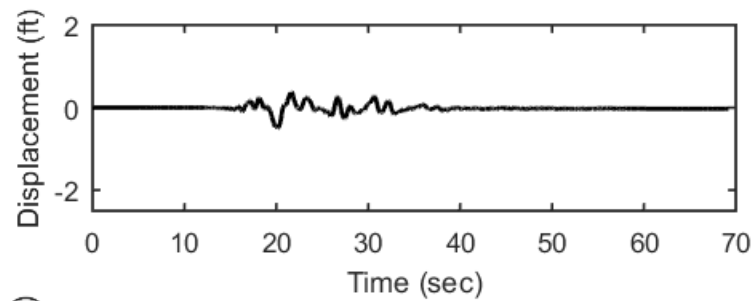
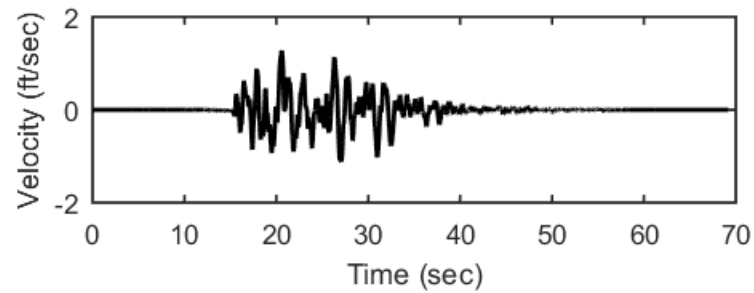
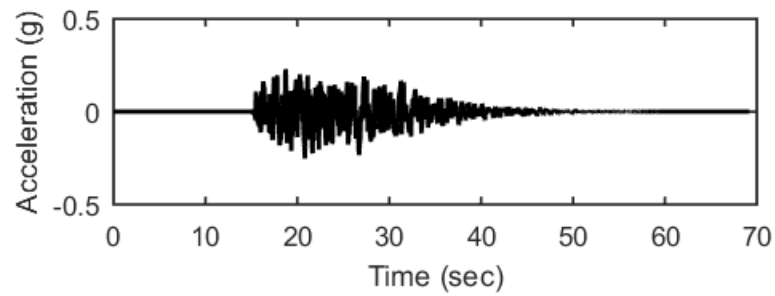
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



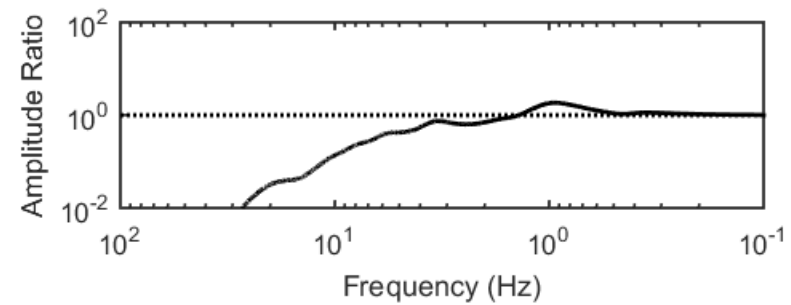
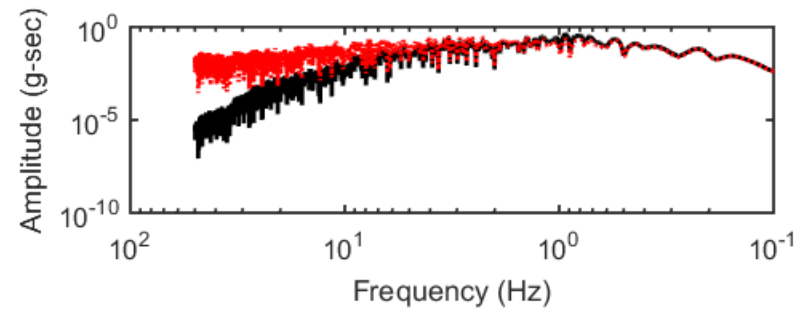
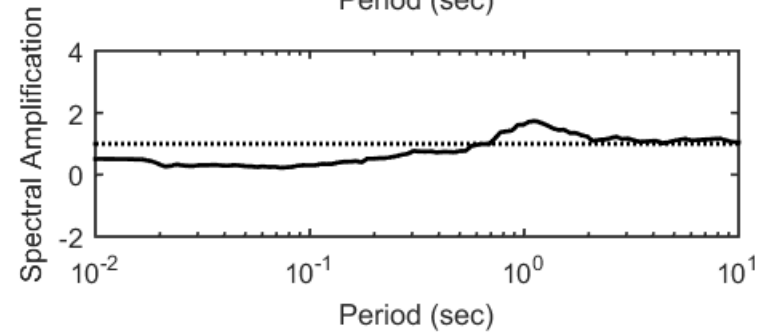
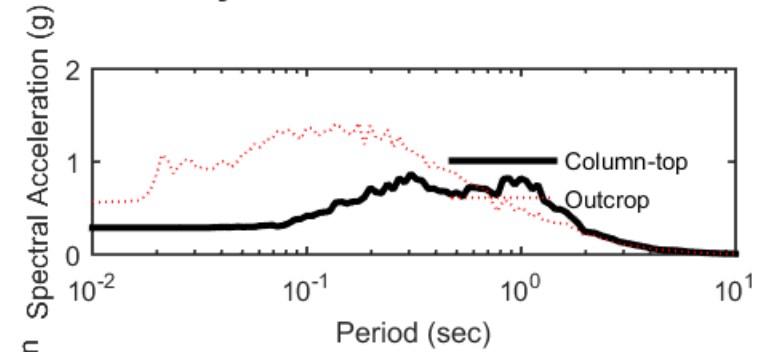
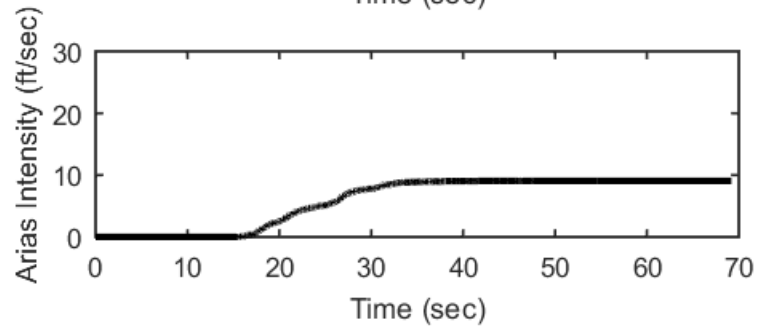
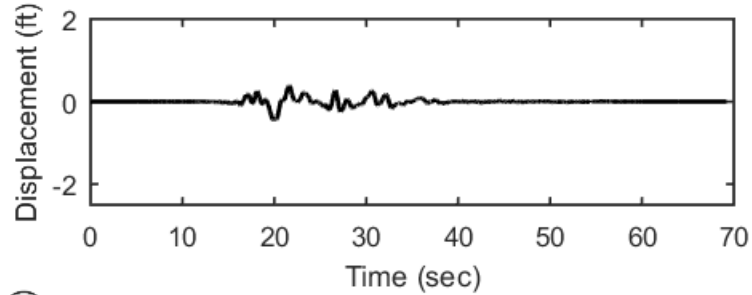
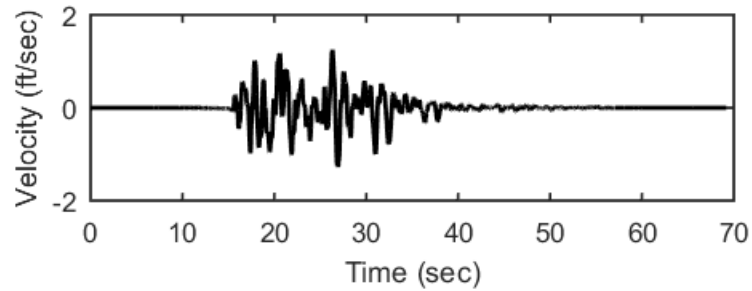
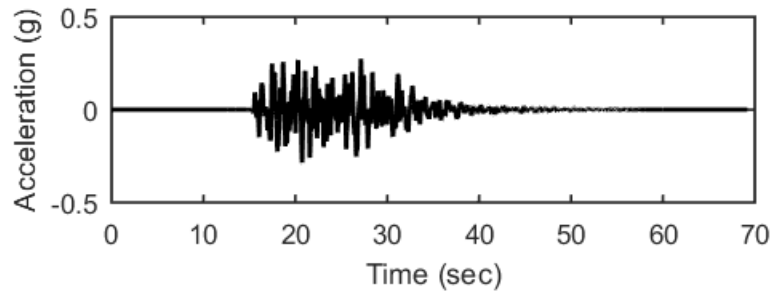
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



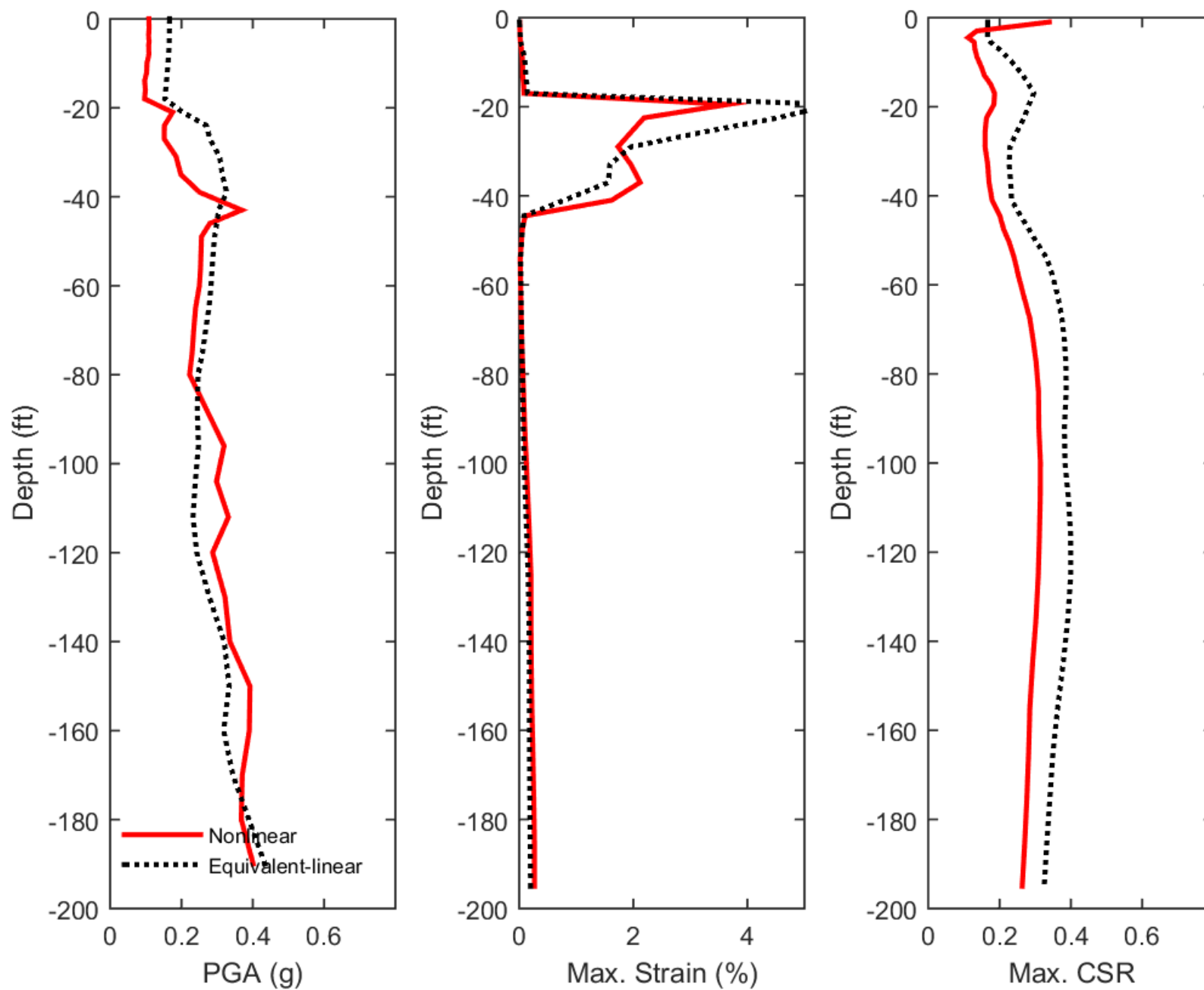
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



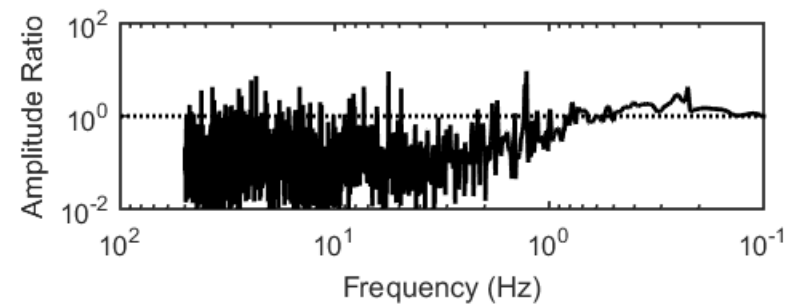
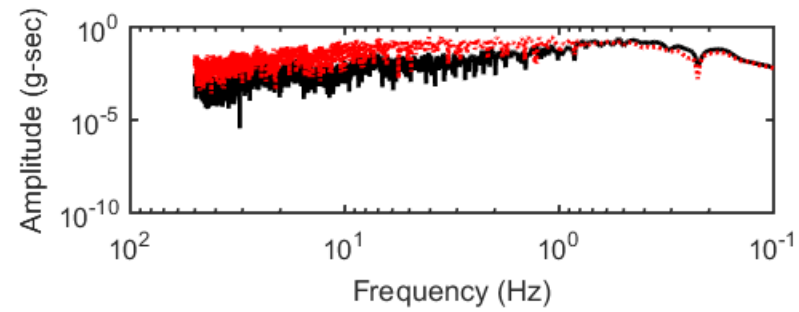
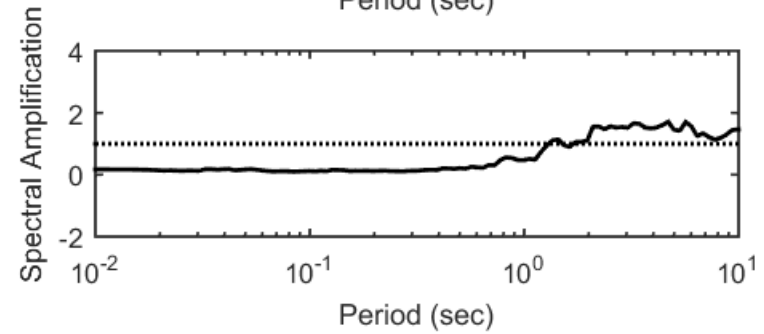
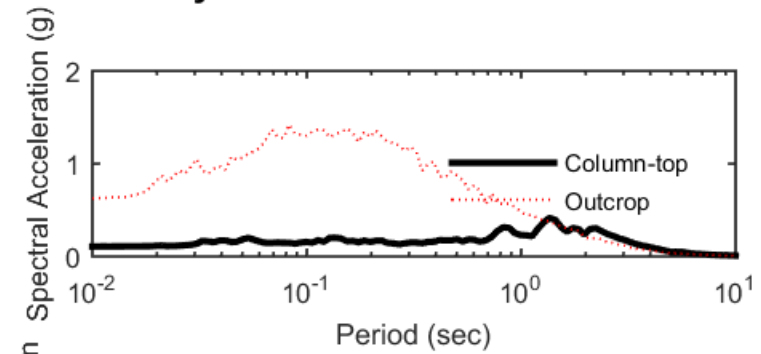
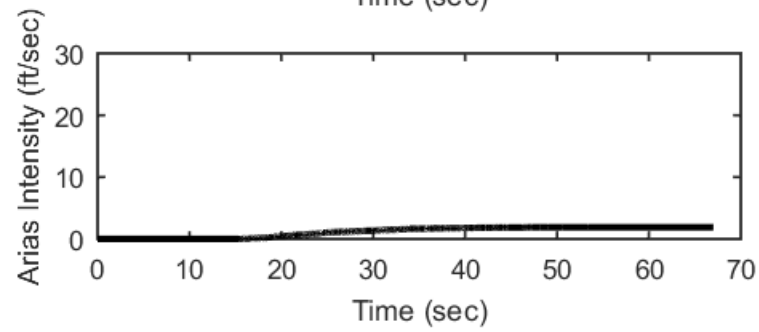
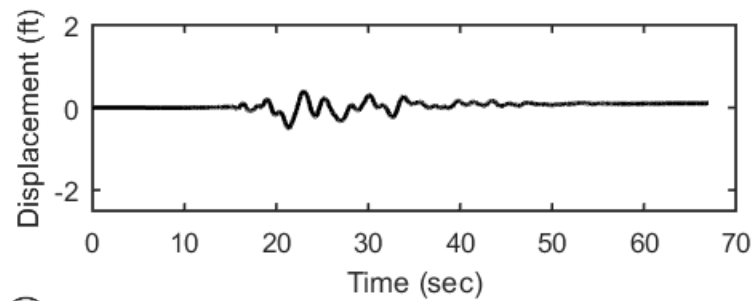
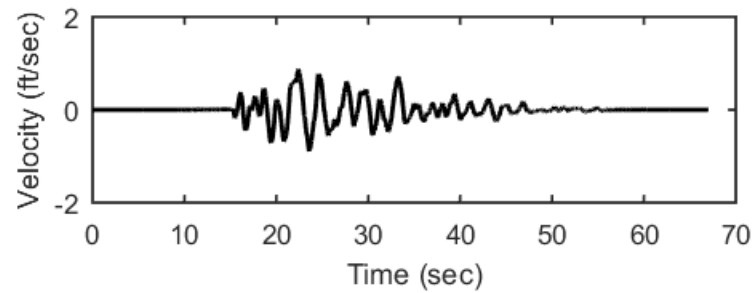
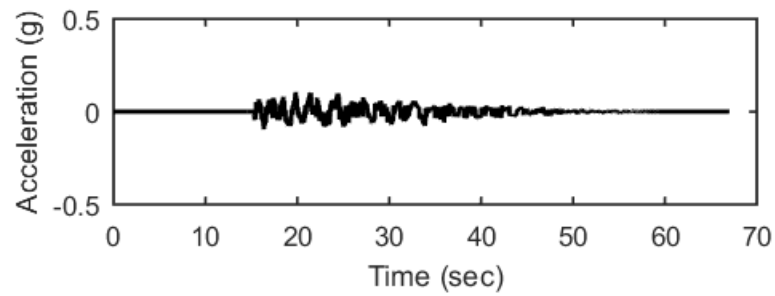
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



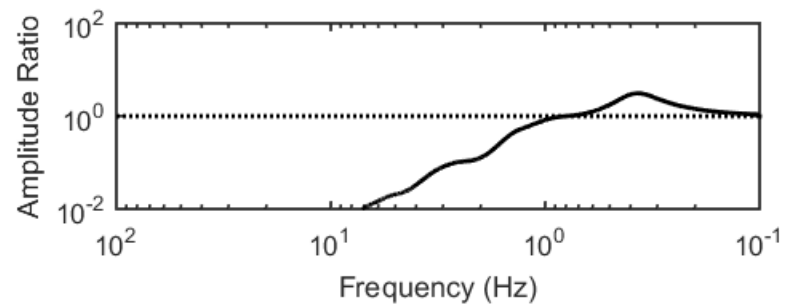
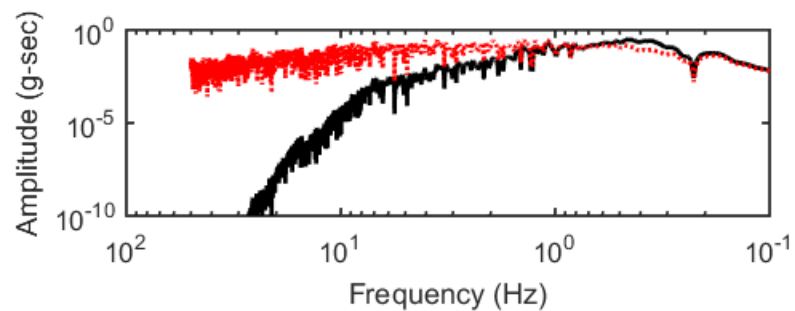
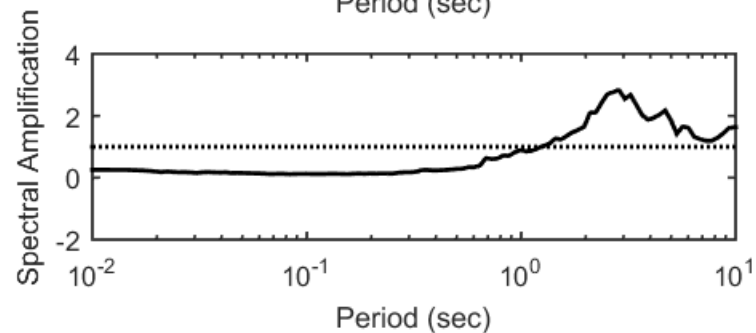
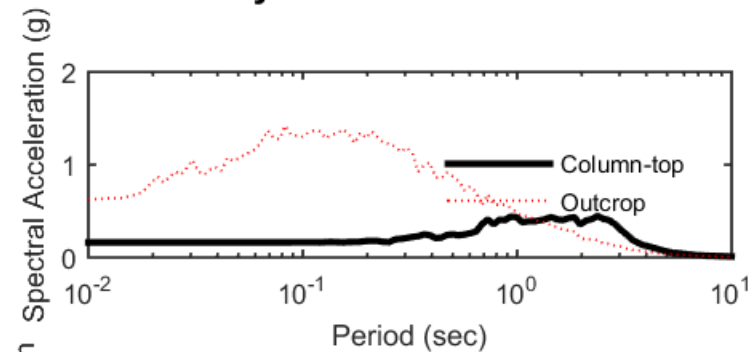
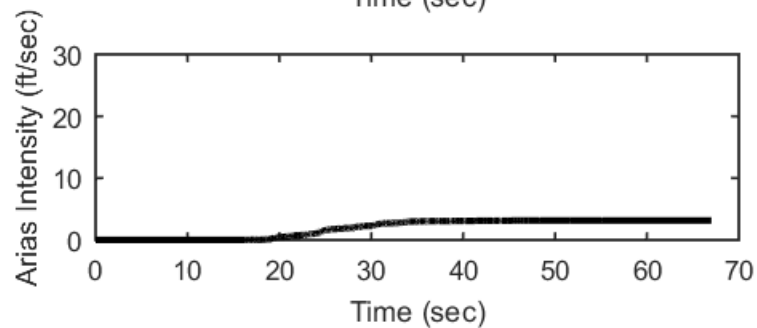
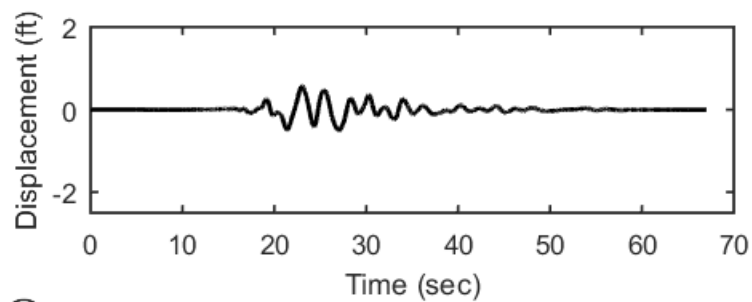
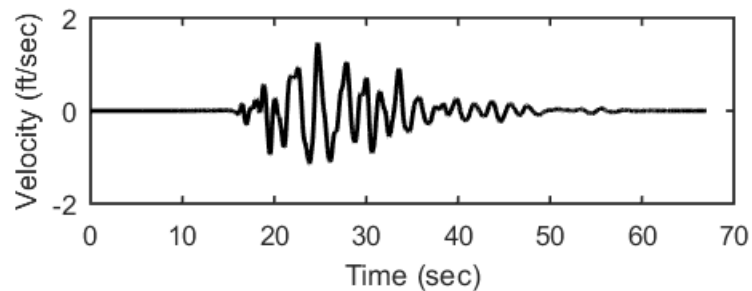
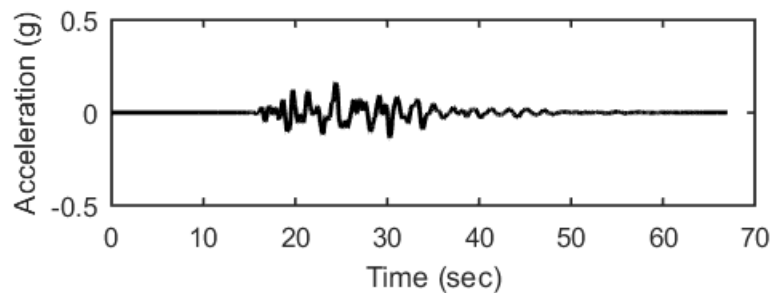
### Profile outputs for Motion: SEE1



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2

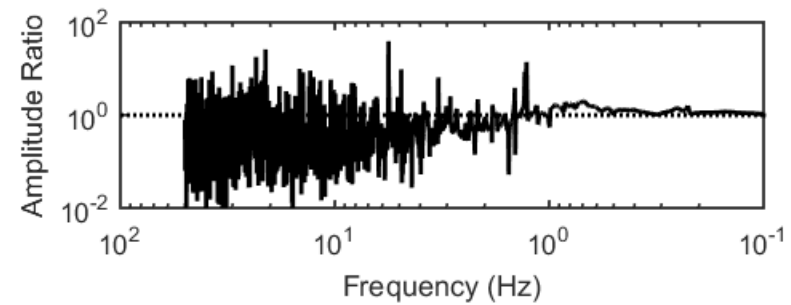
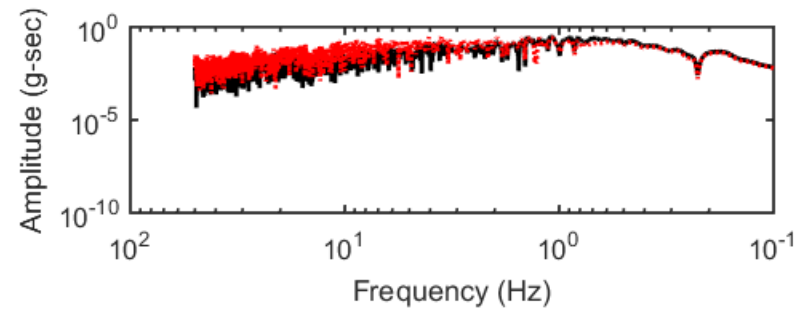
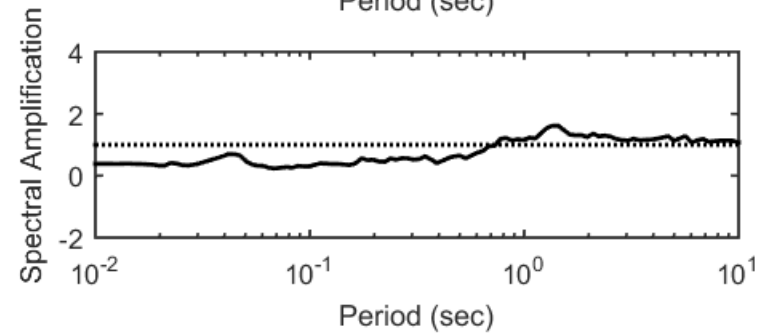
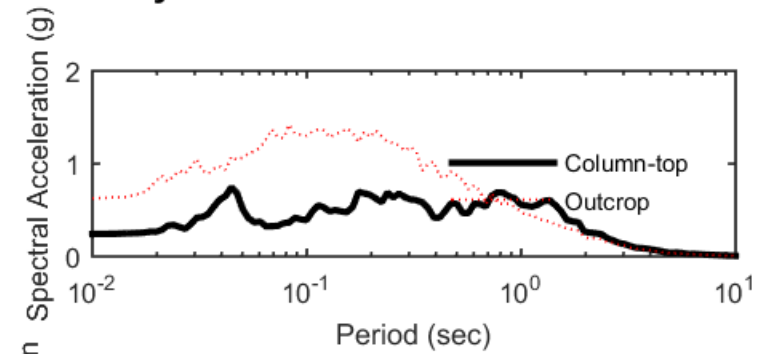
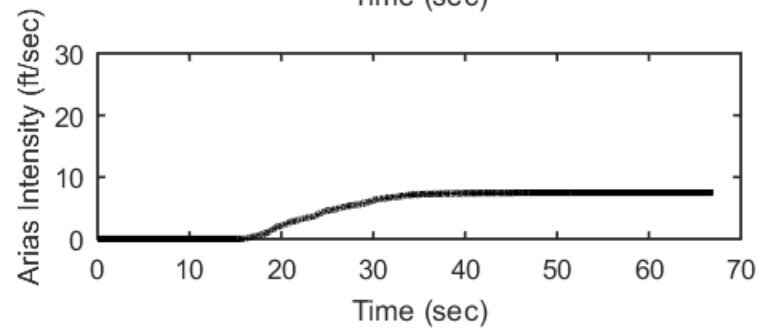
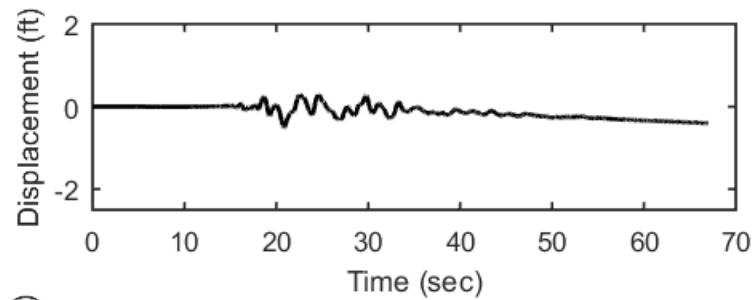
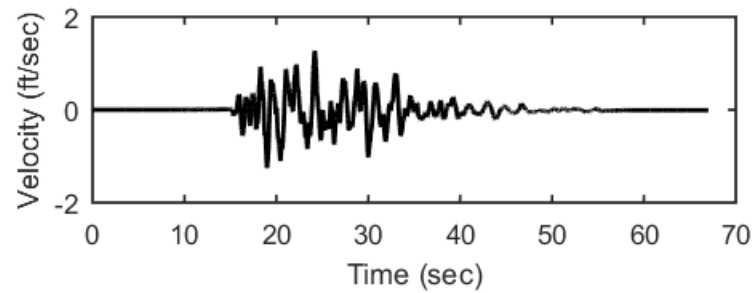
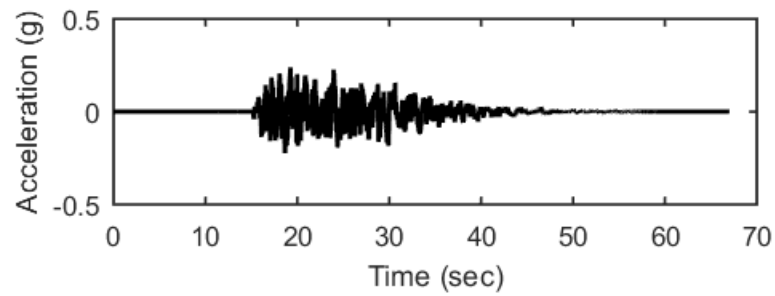


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2

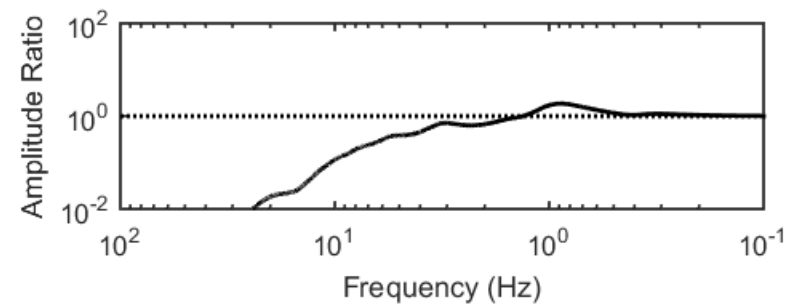
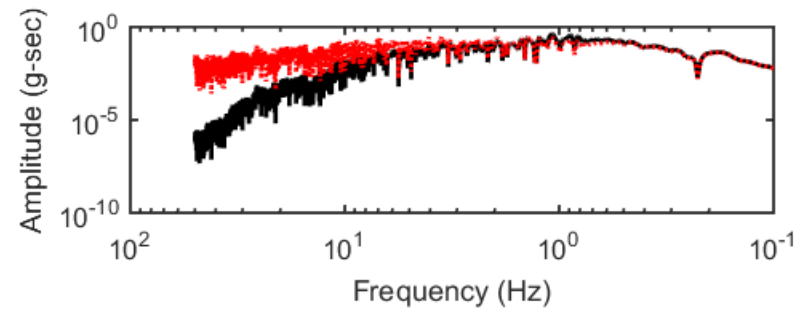
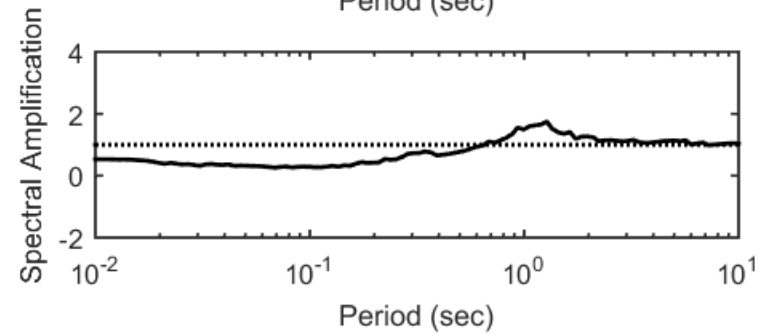
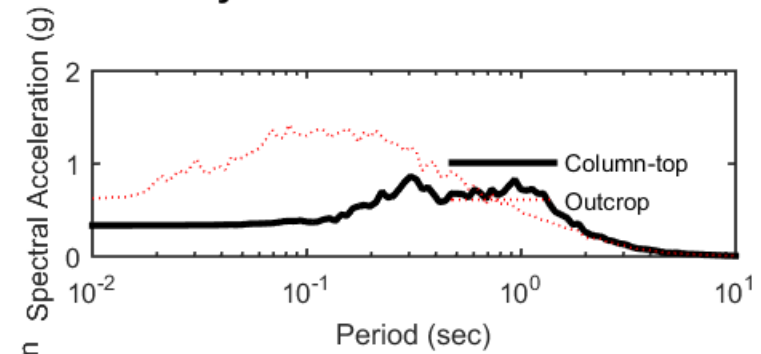
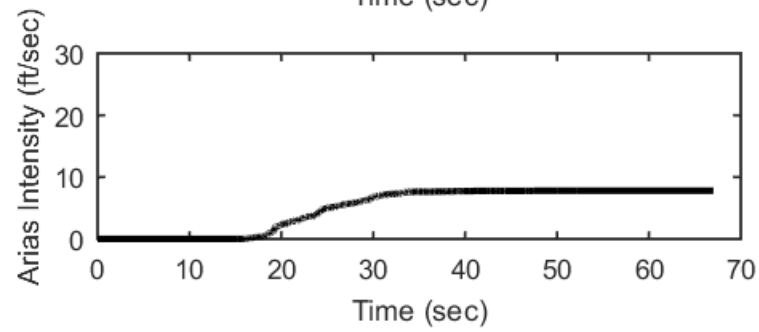
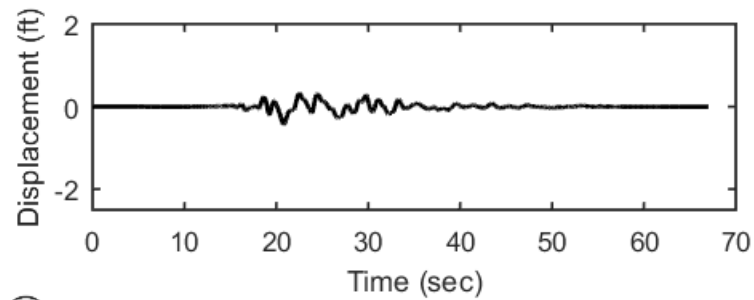
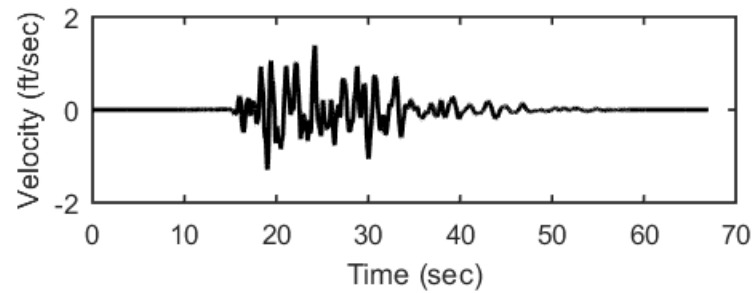
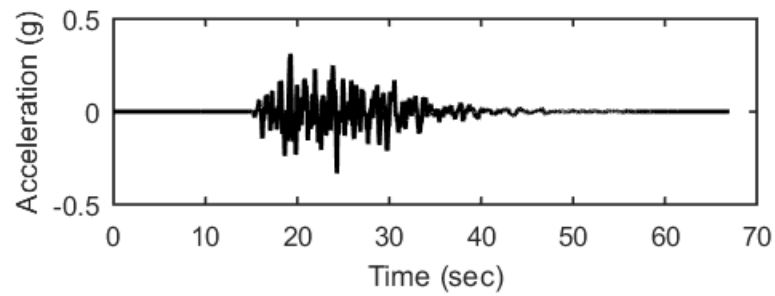




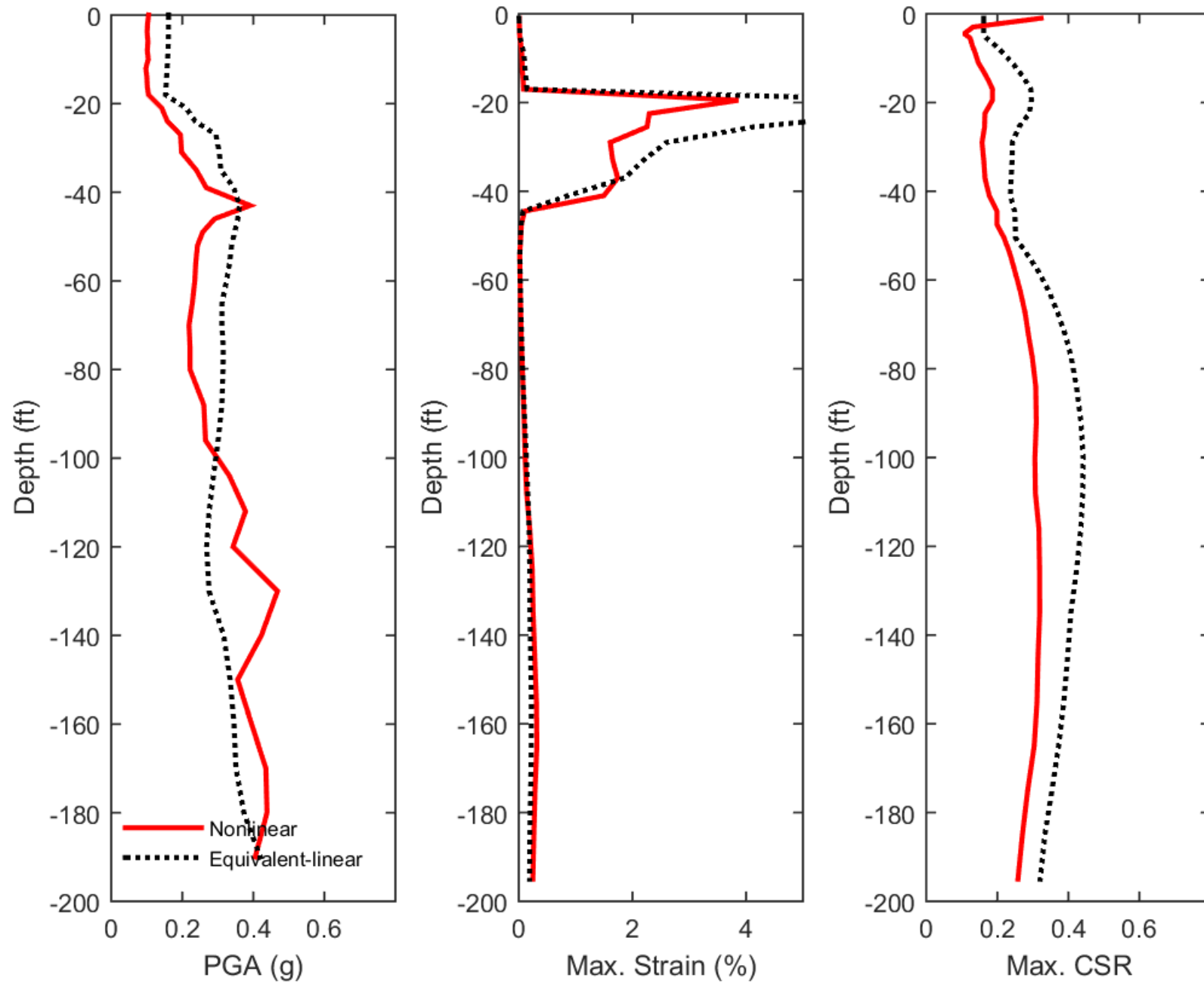
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



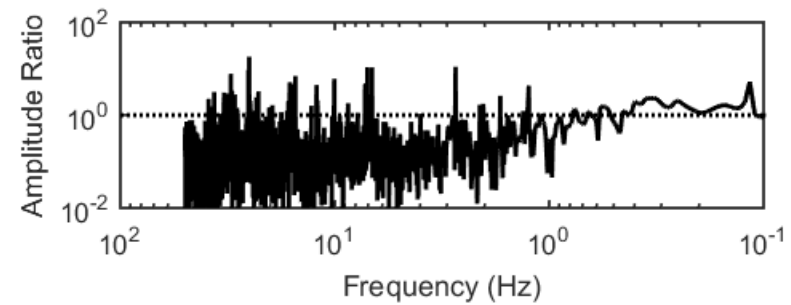
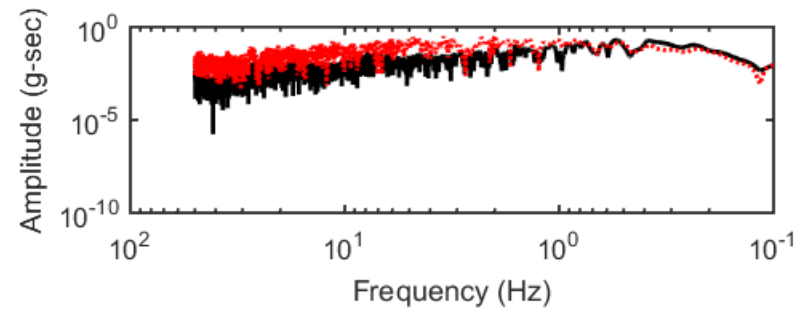
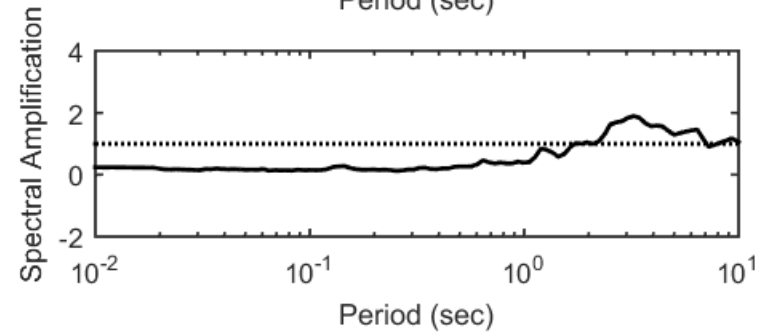
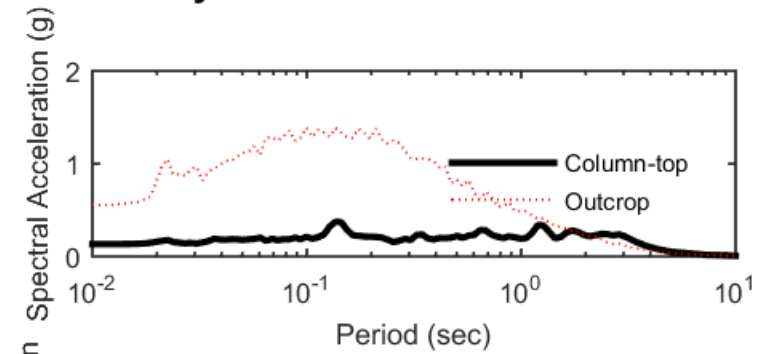
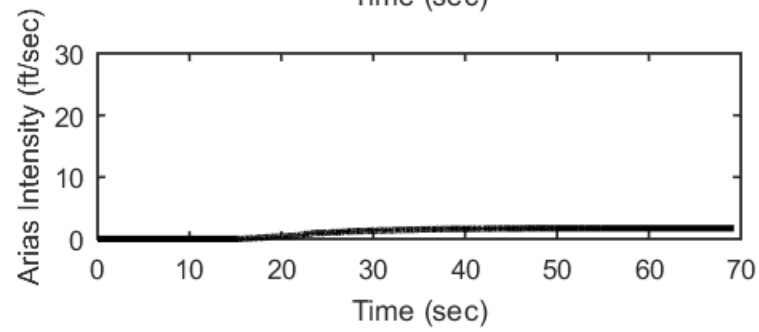
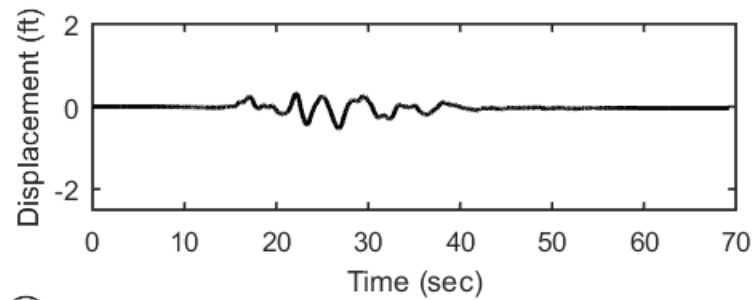
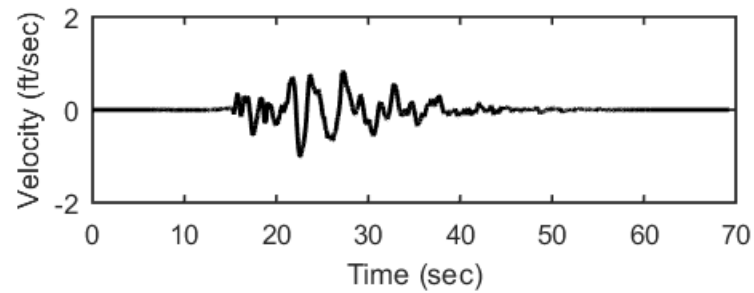
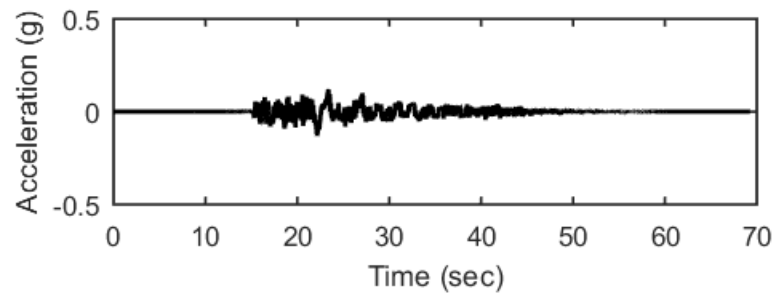
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



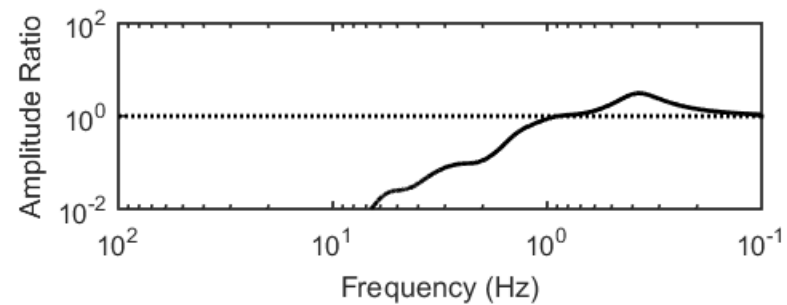
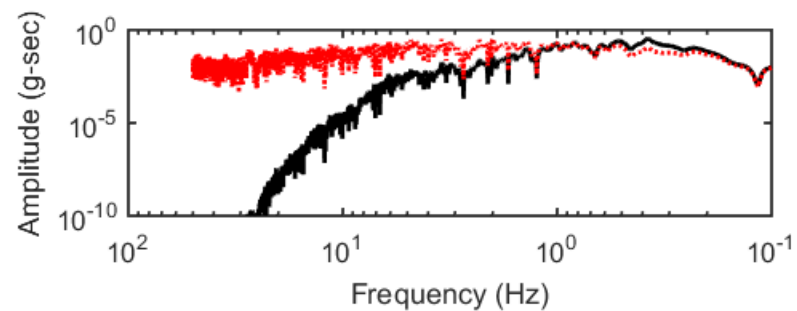
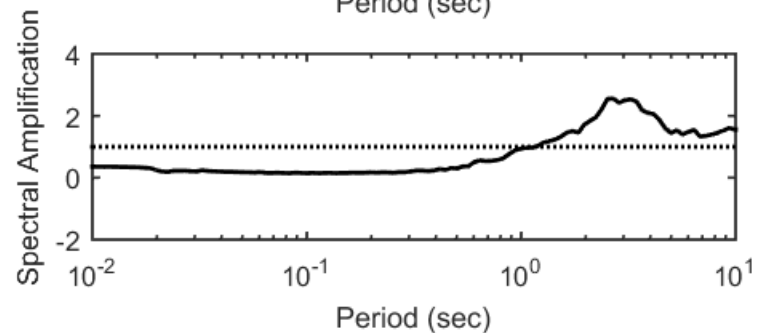
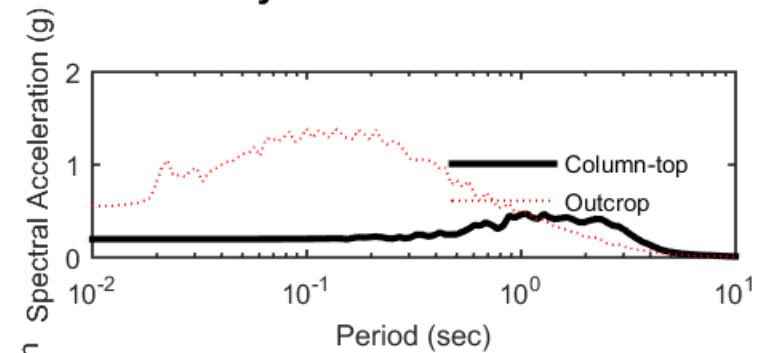
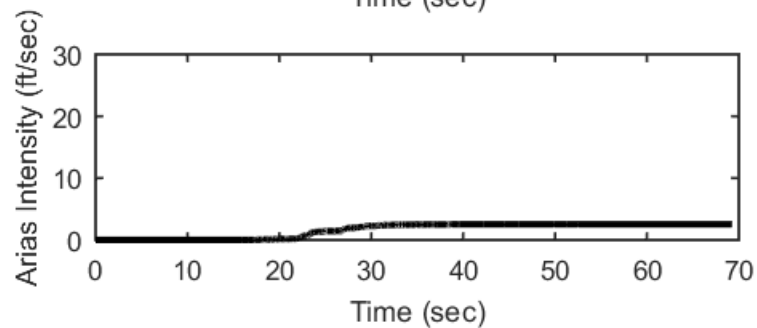
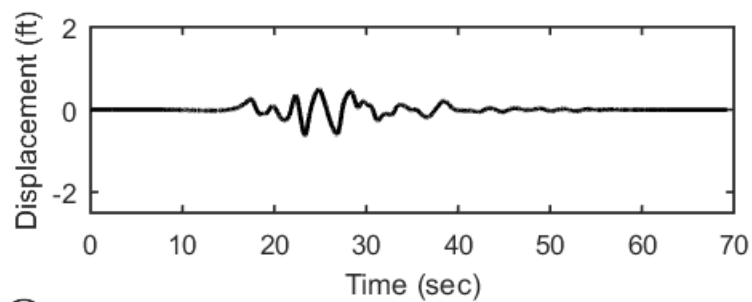
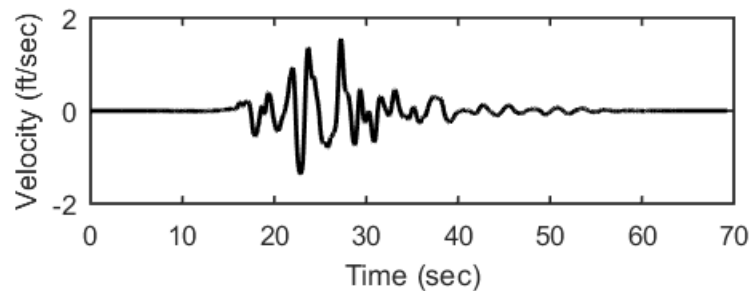
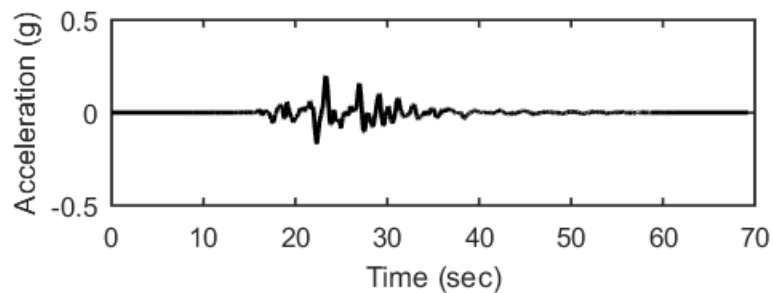
### Profile outputs for Motion: SEE2



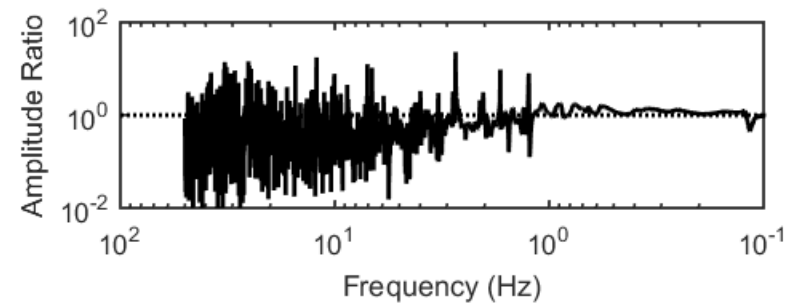
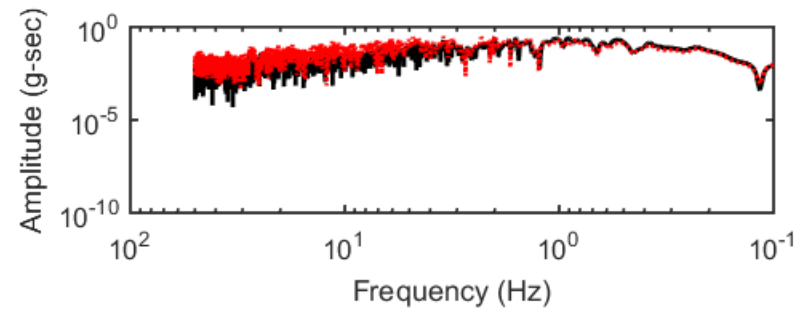
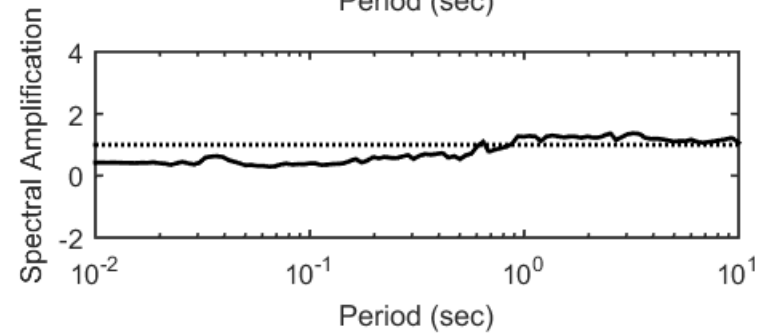
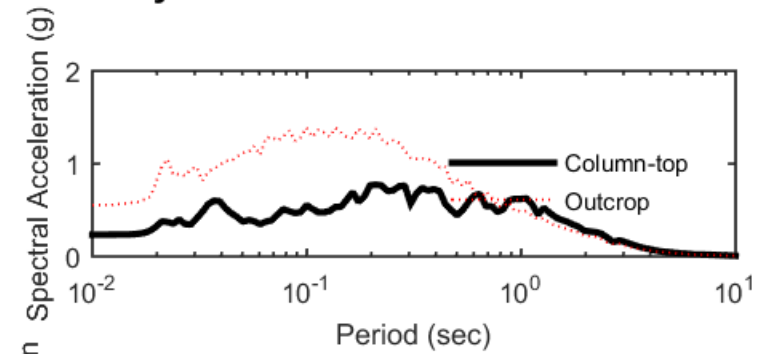
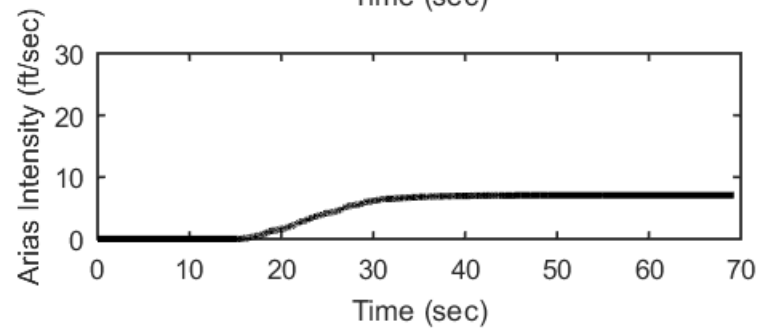
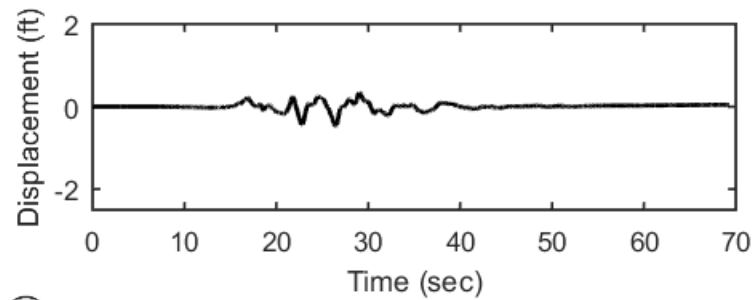
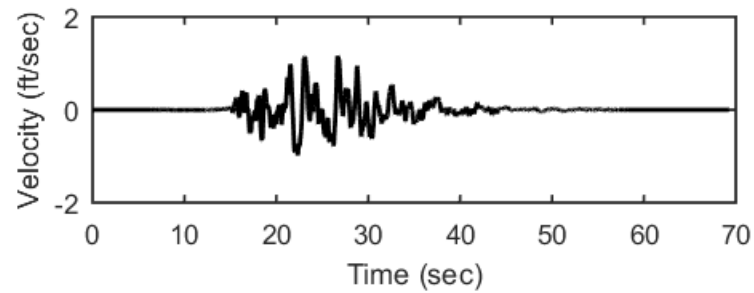
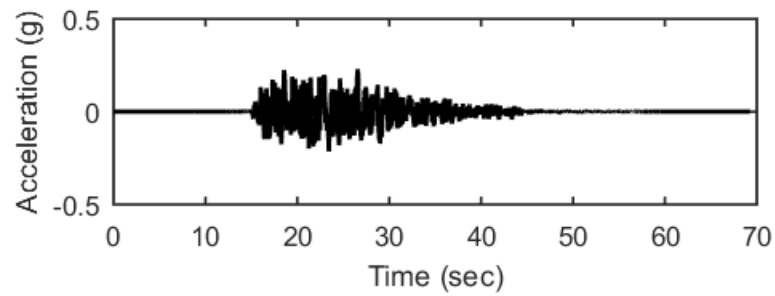
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



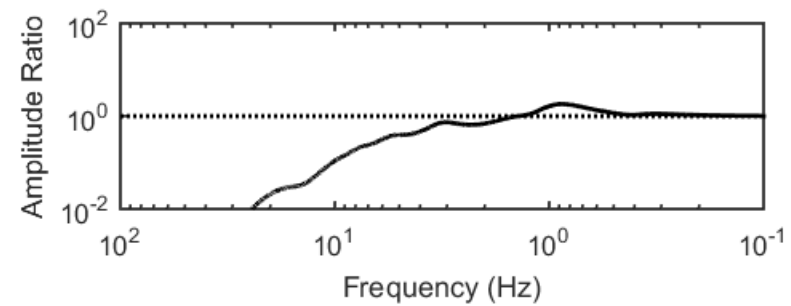
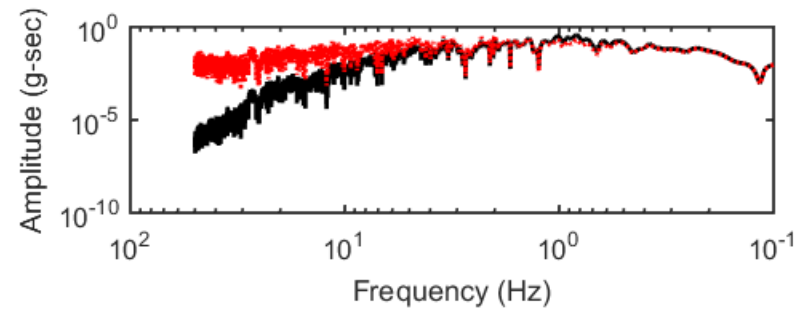
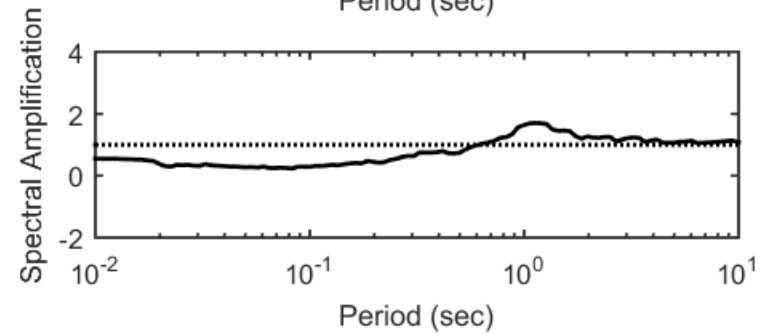
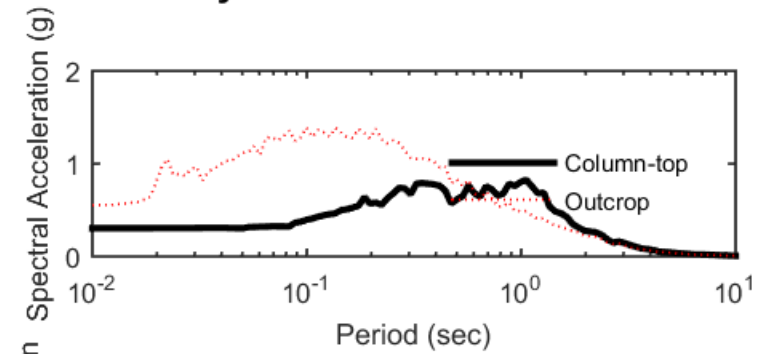
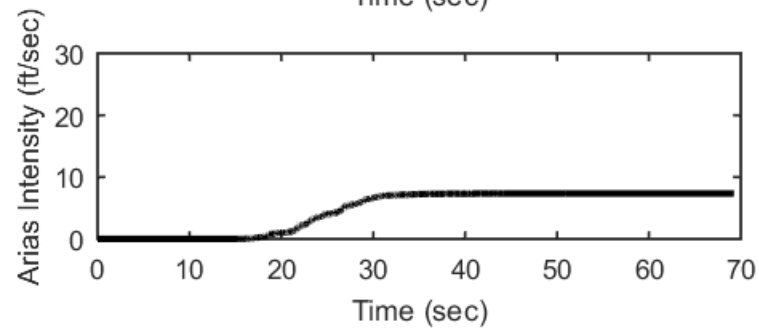
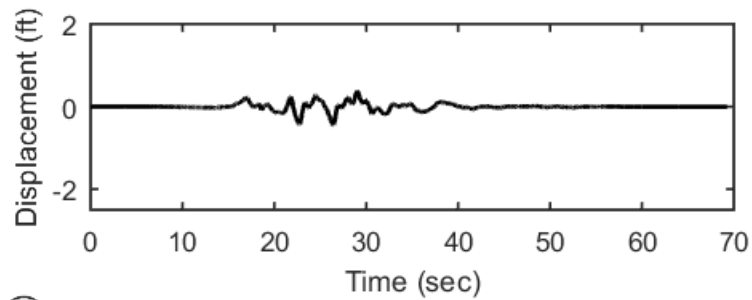
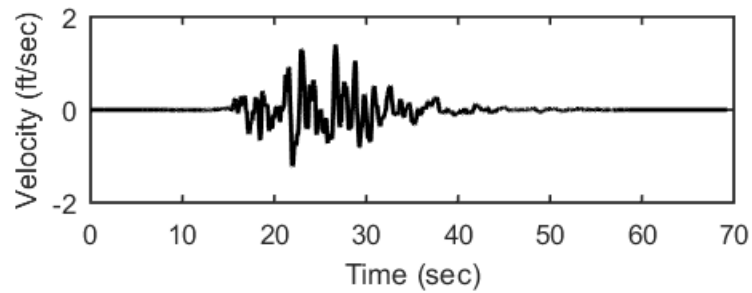
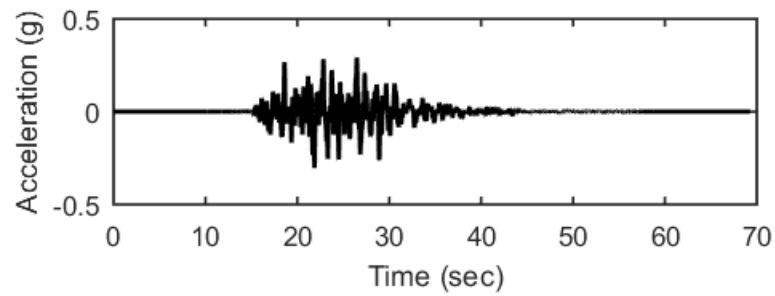
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



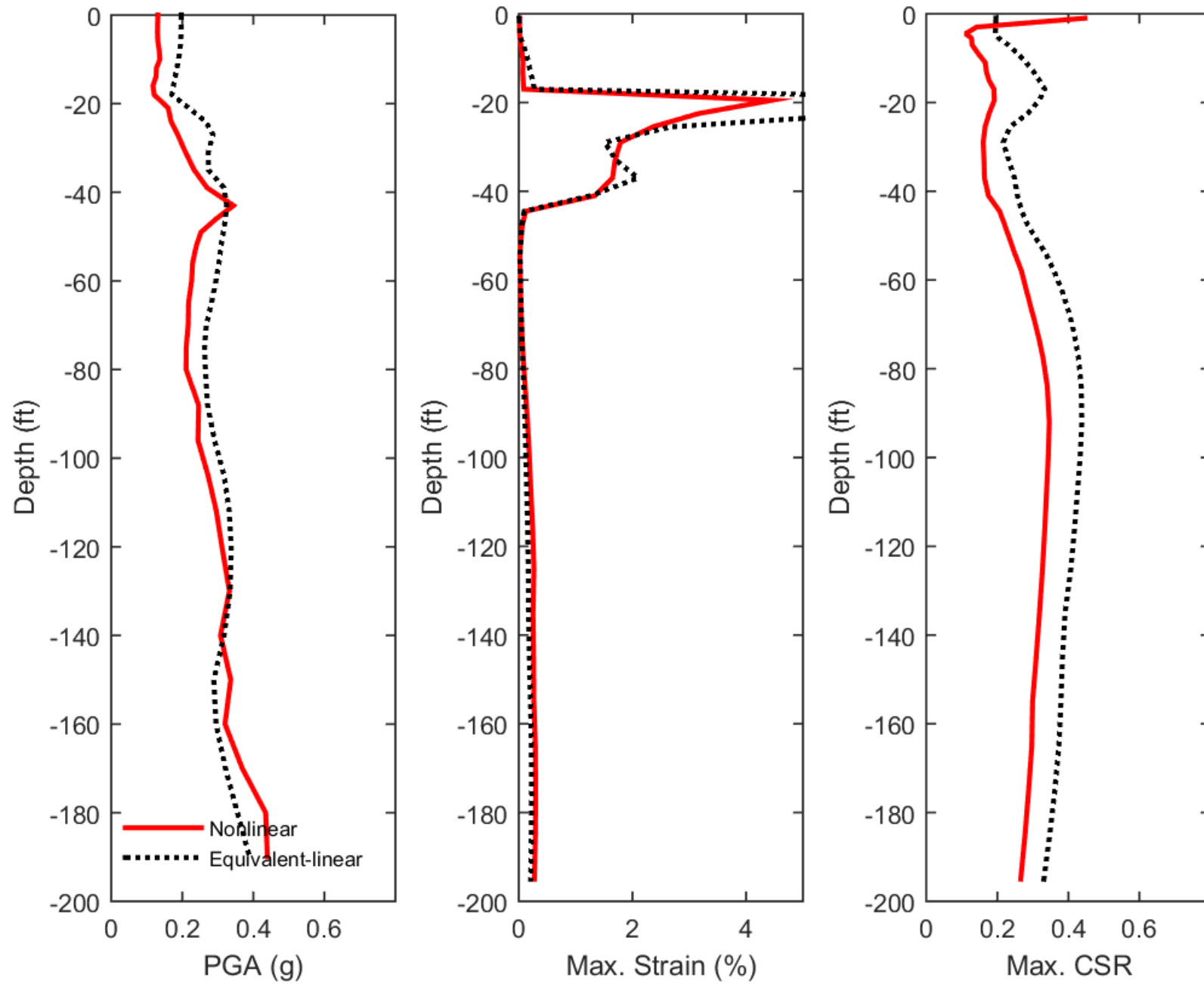
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3

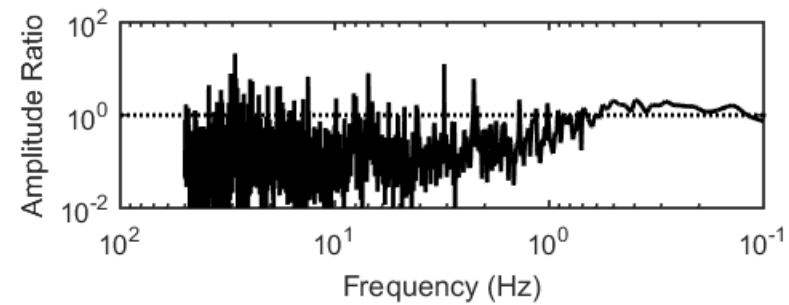
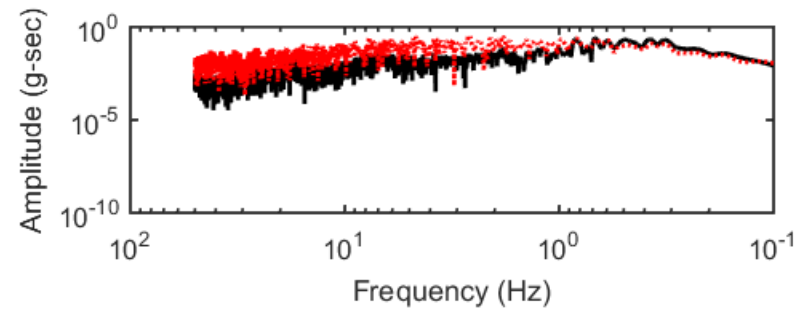
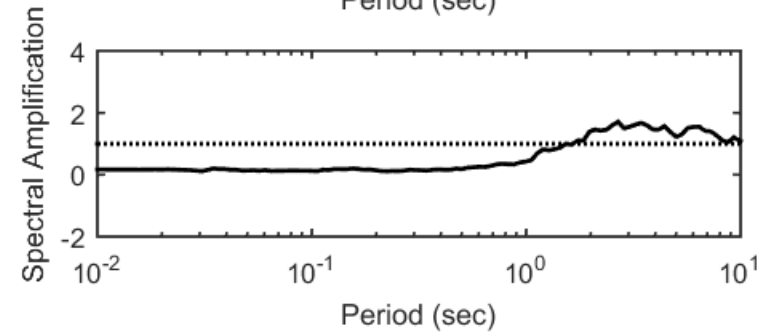
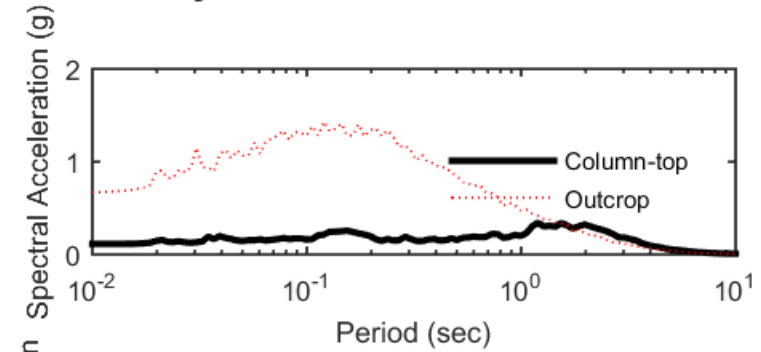
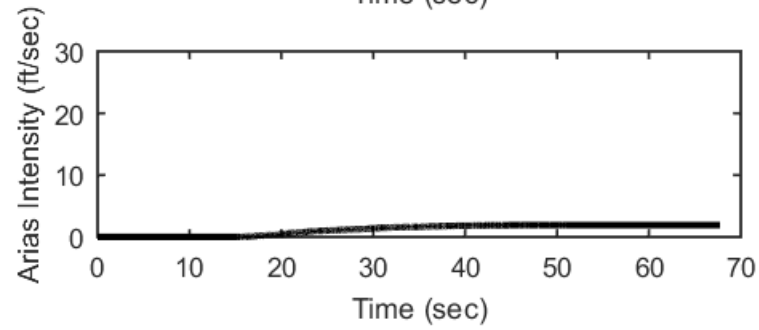
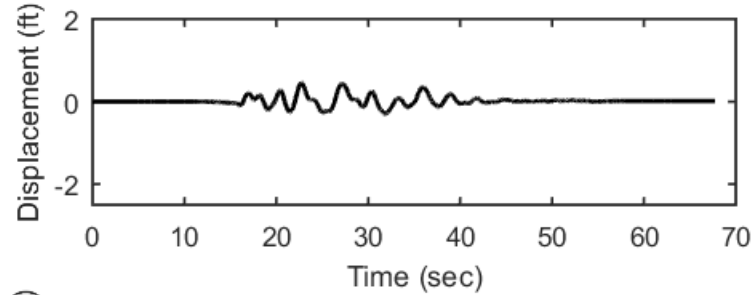
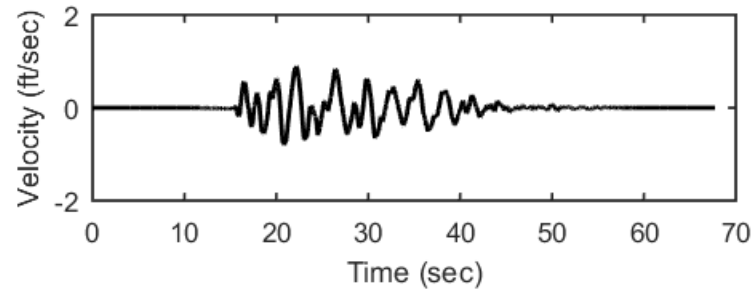
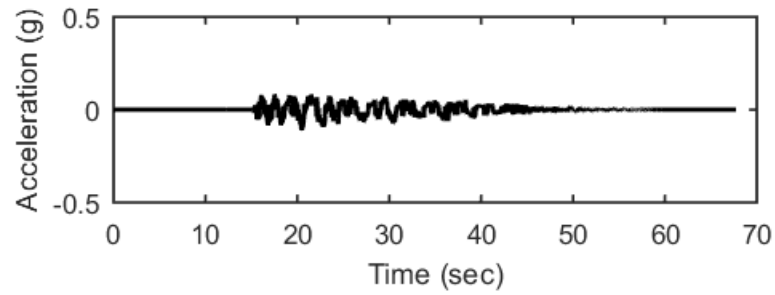


### Profile outputs for Motion: SEE3

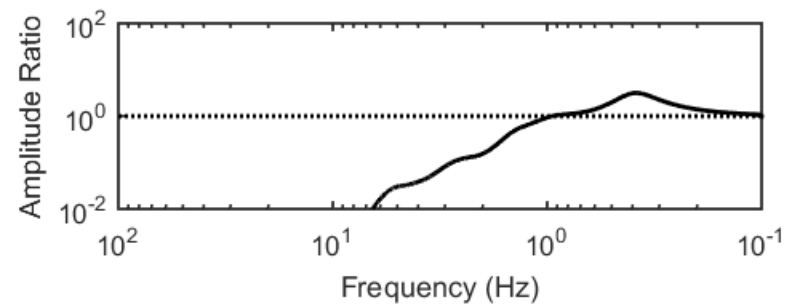
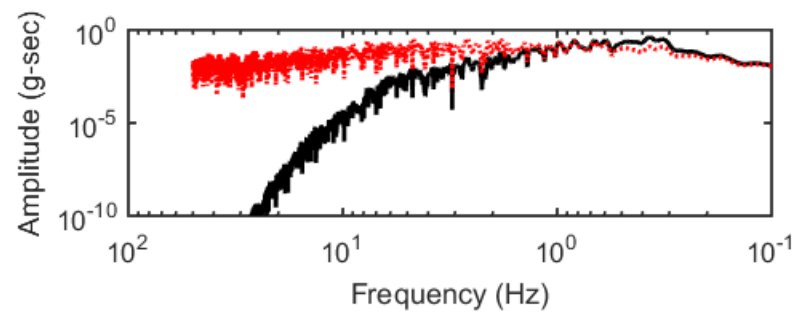
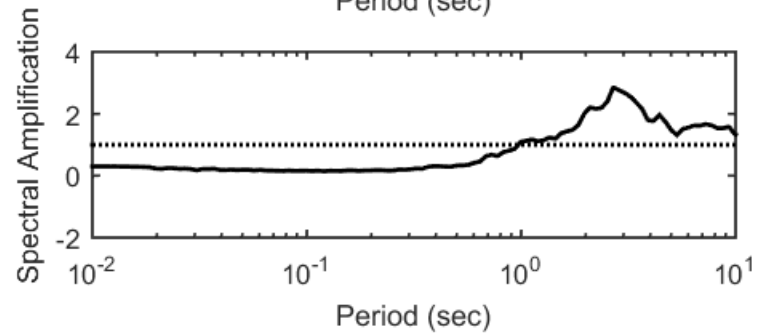
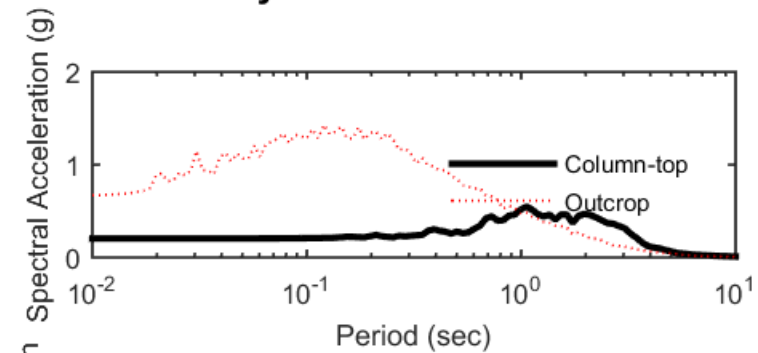
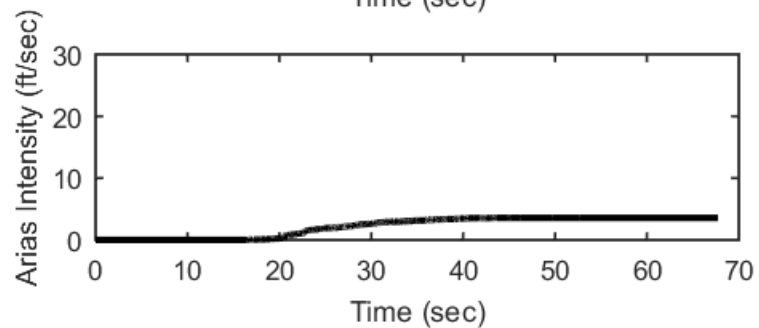
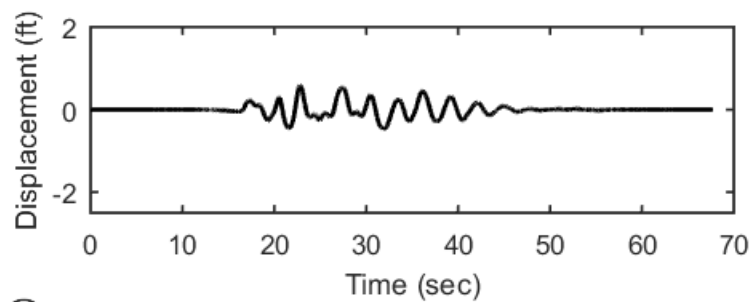
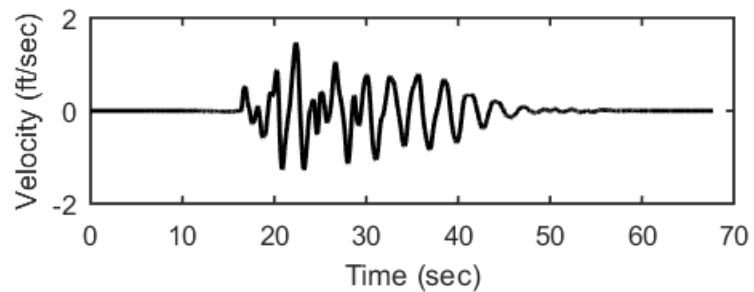
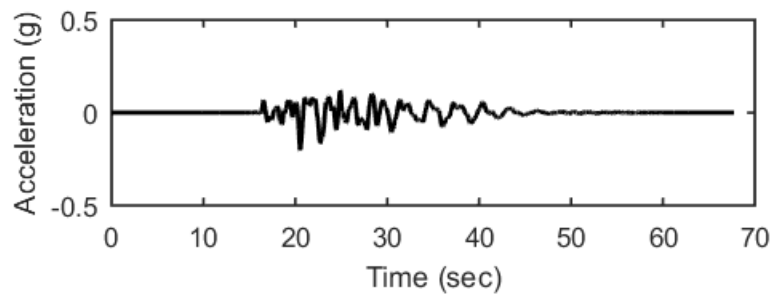




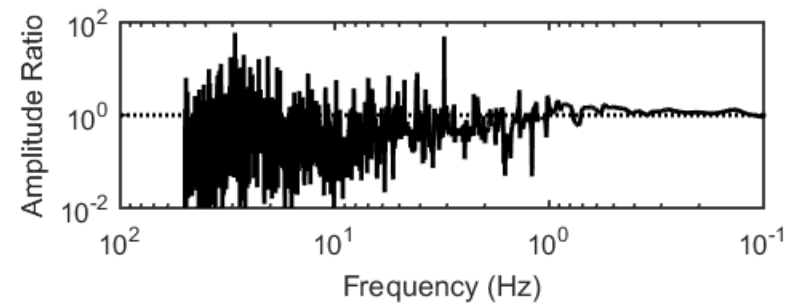
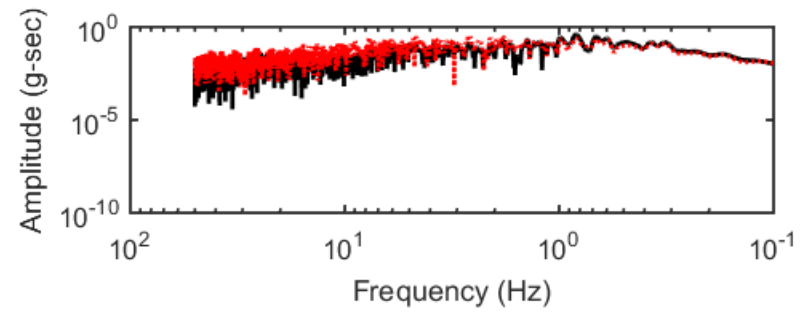
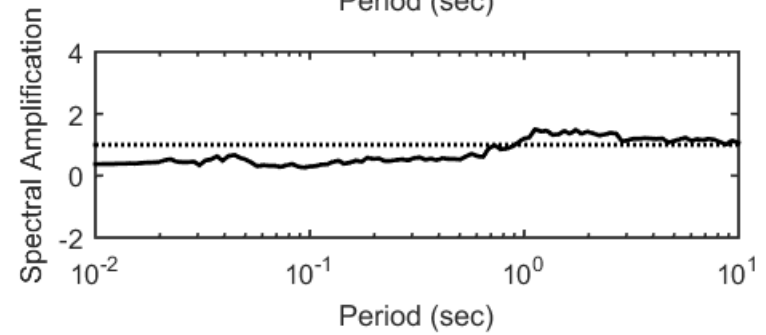
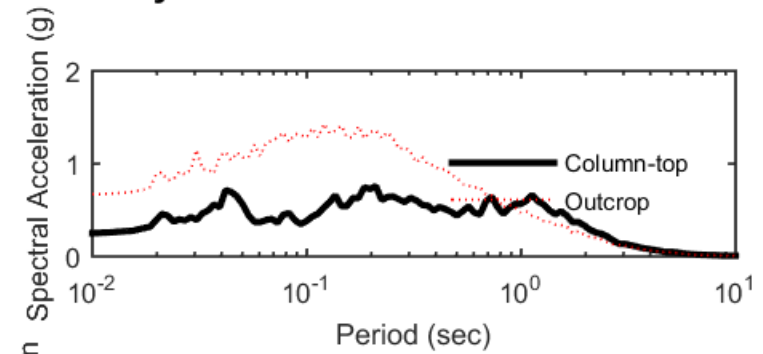
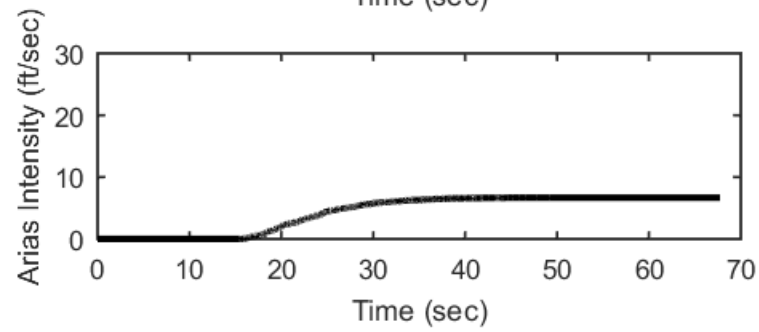
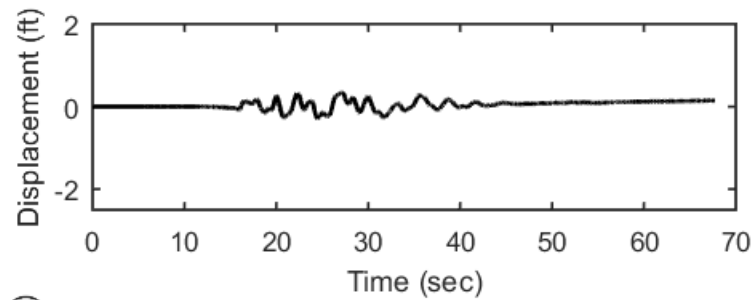
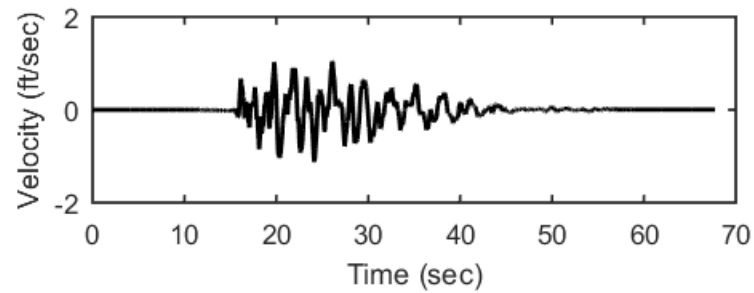
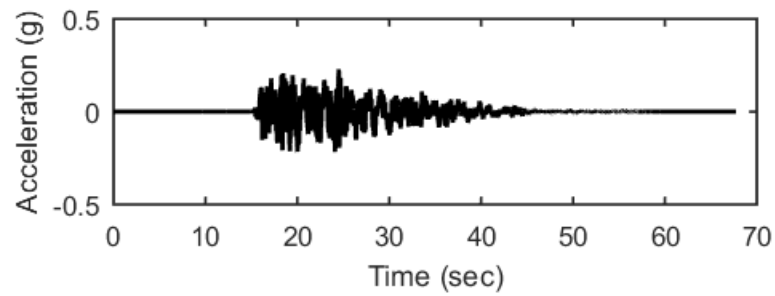
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



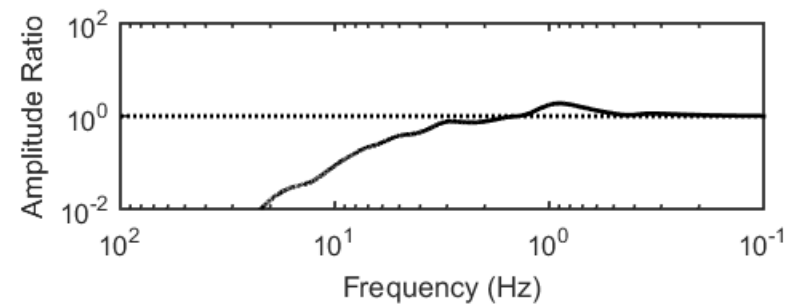
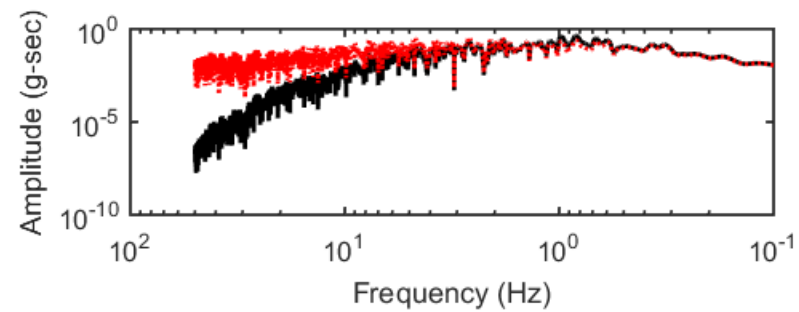
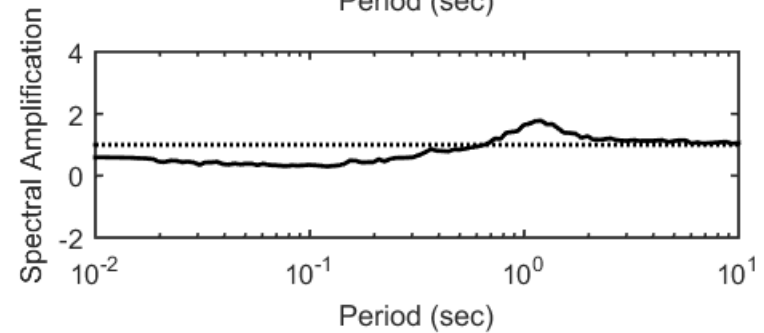
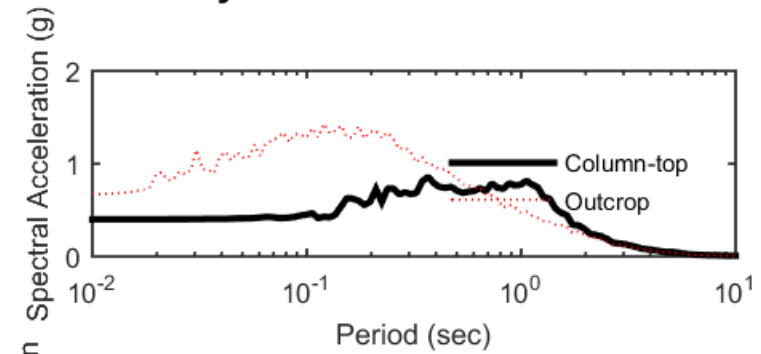
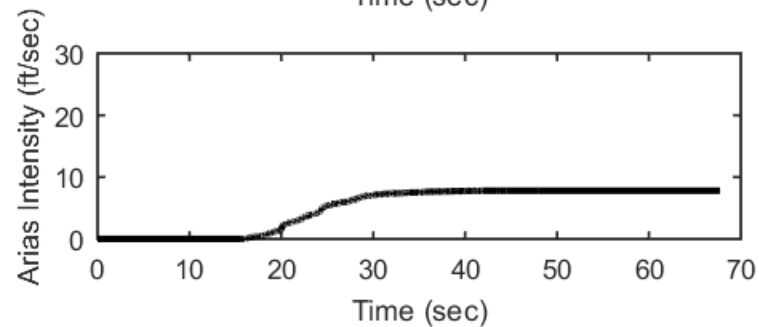
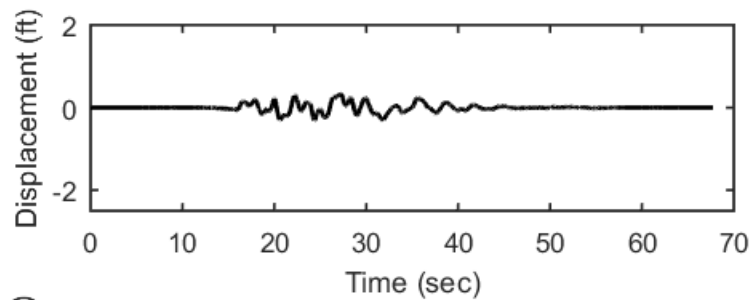
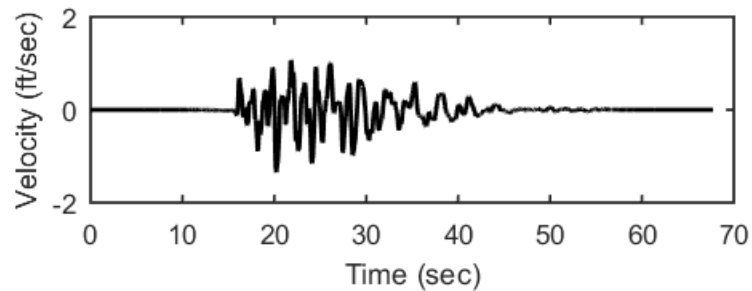
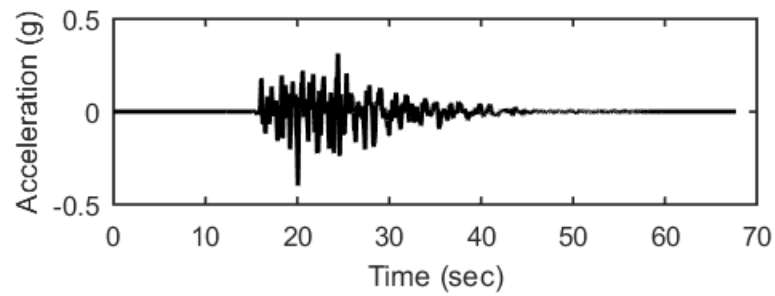
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



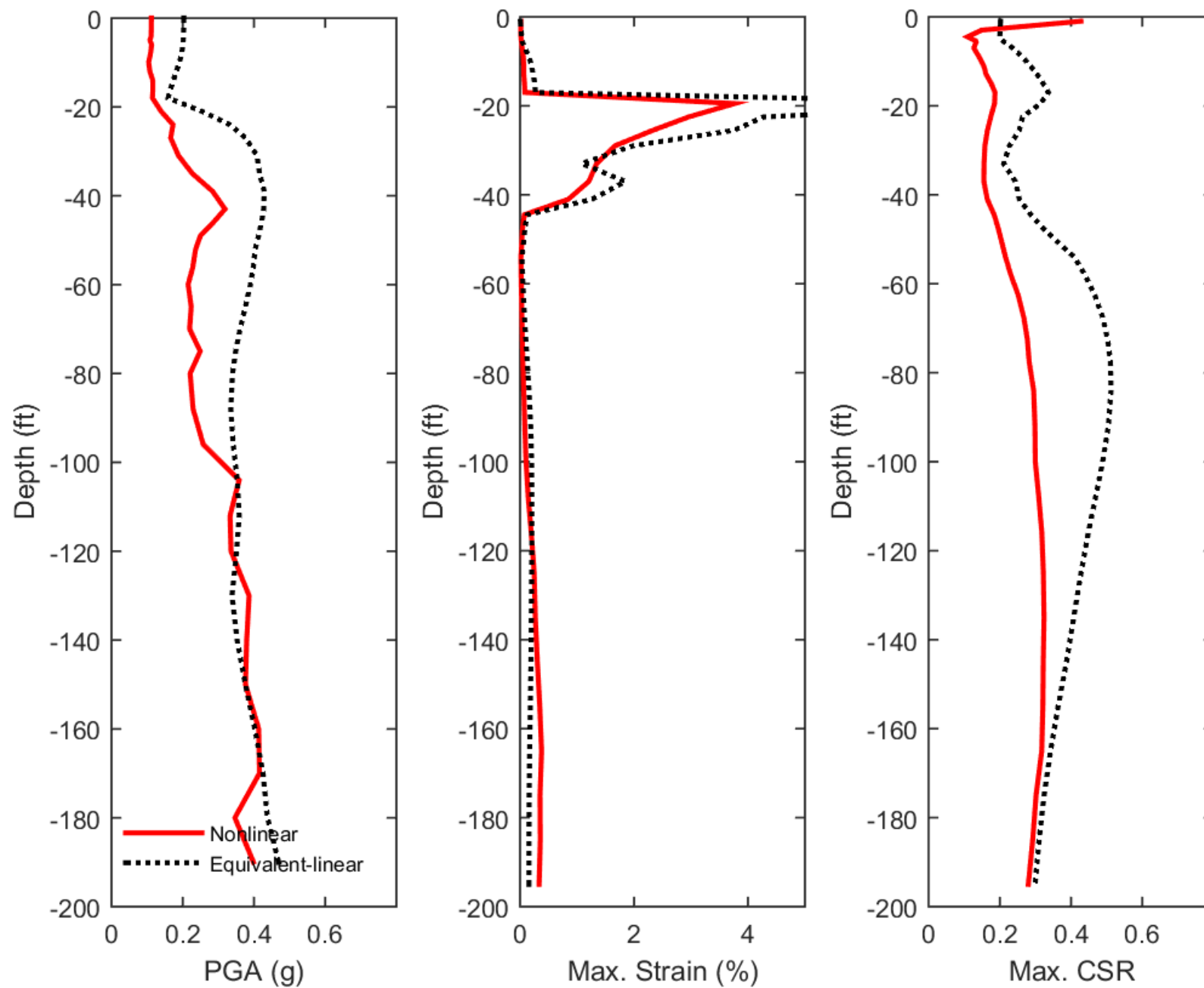
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



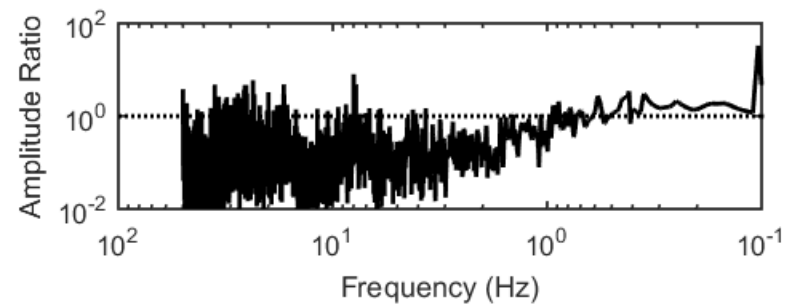
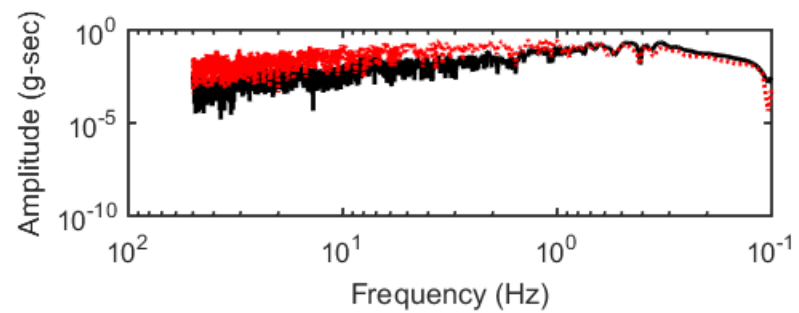
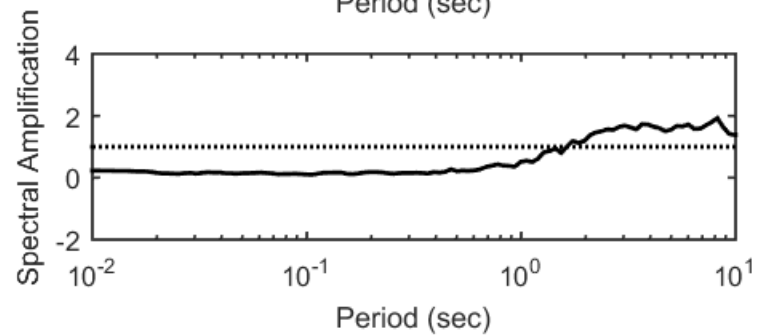
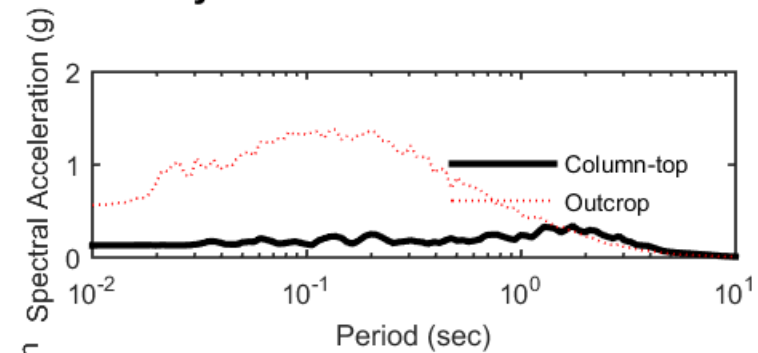
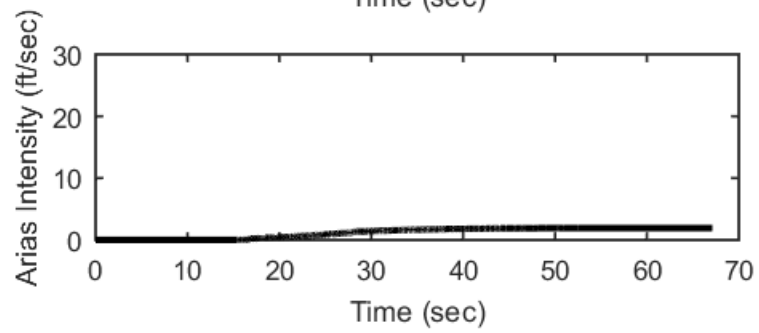
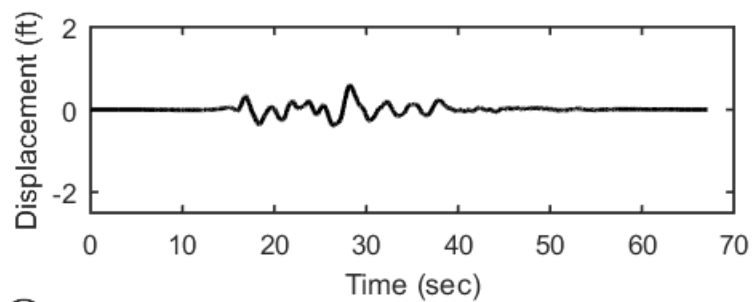
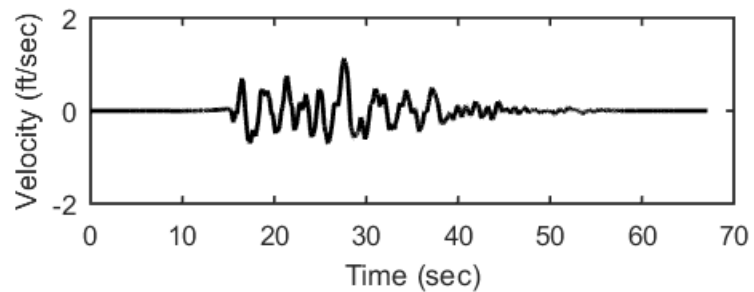
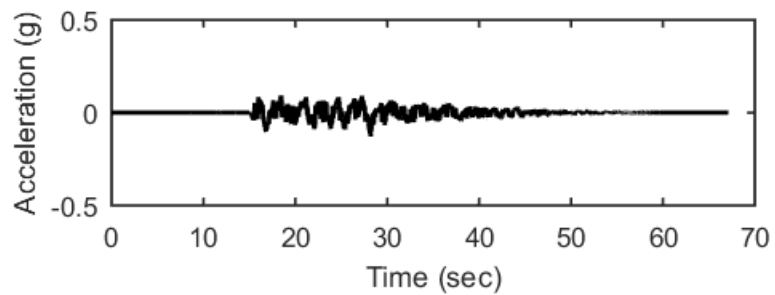
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



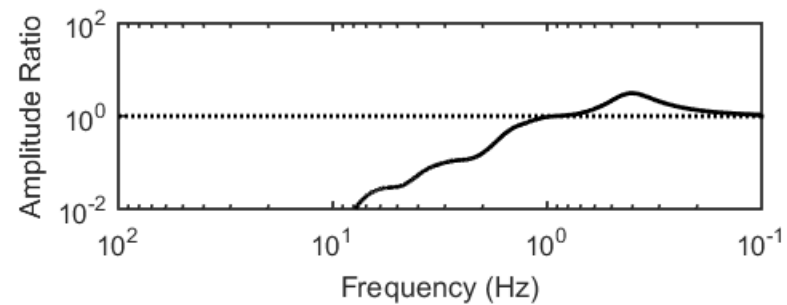
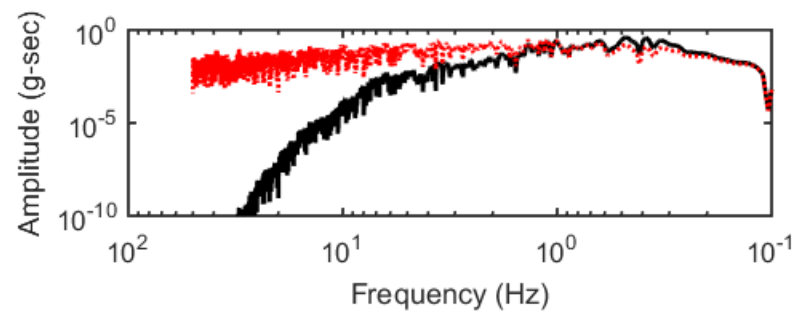
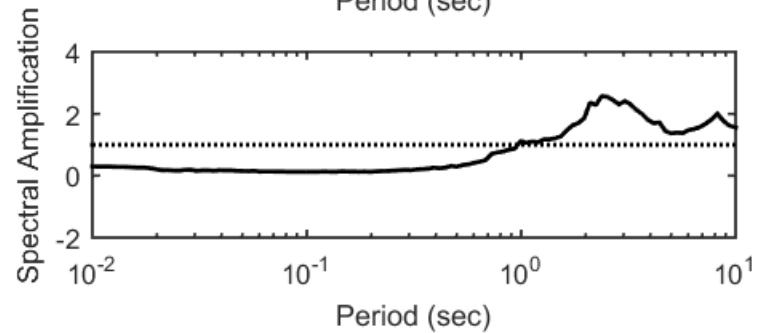
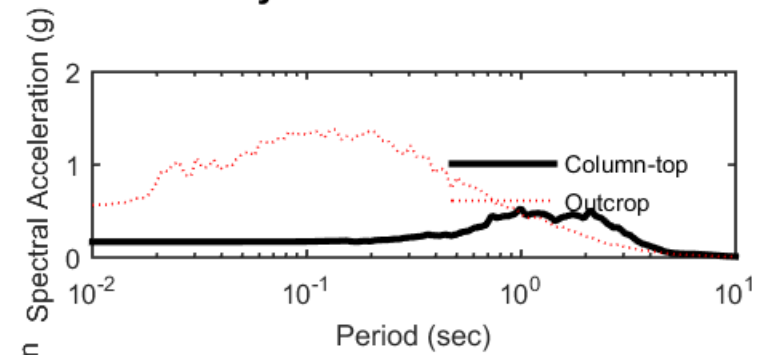
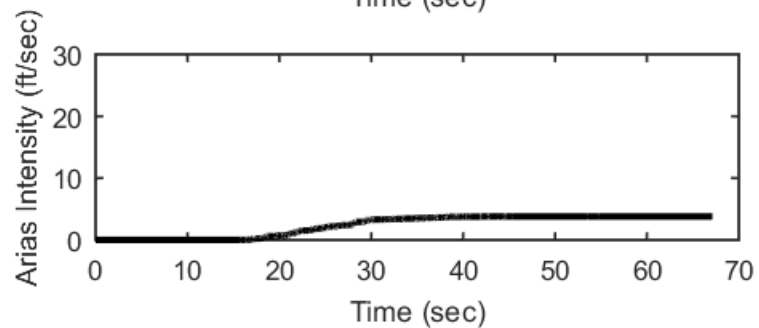
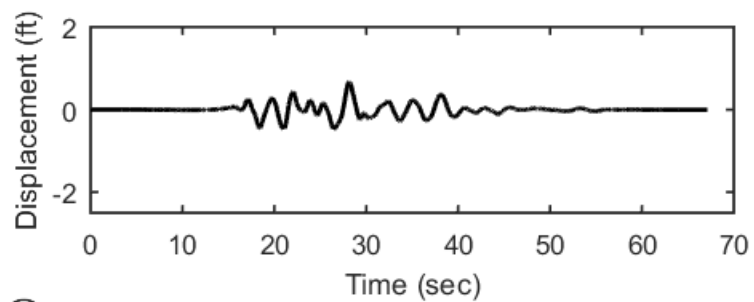
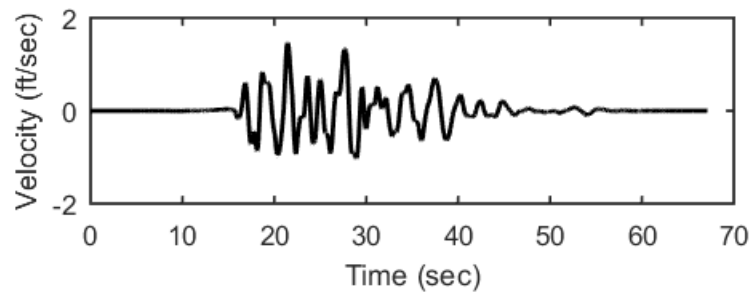
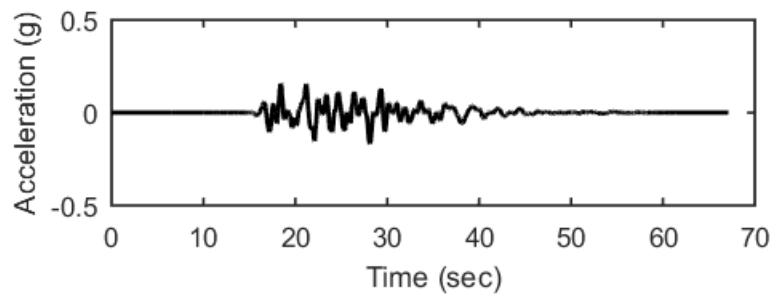
### Profile outputs for Motion: SEE4



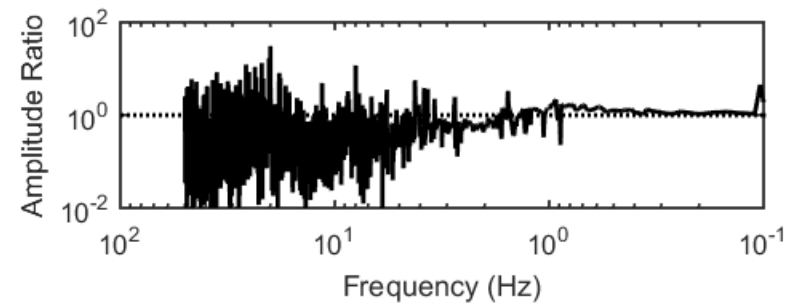
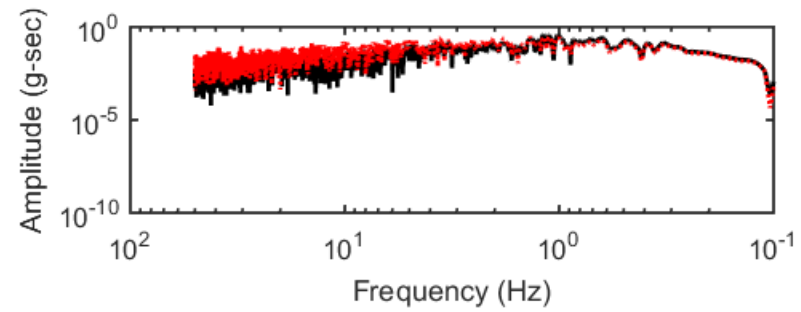
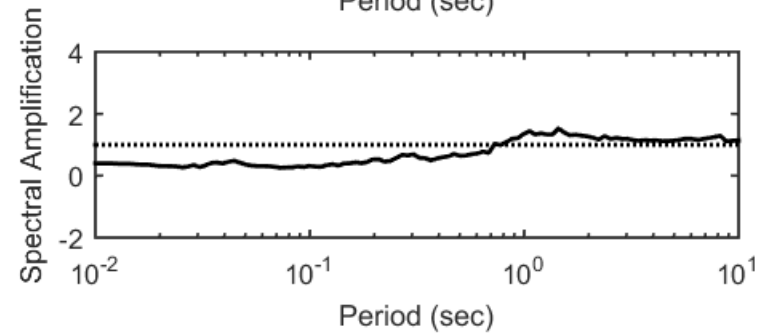
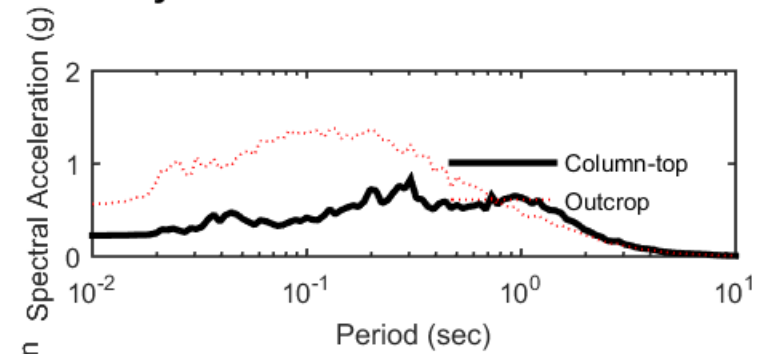
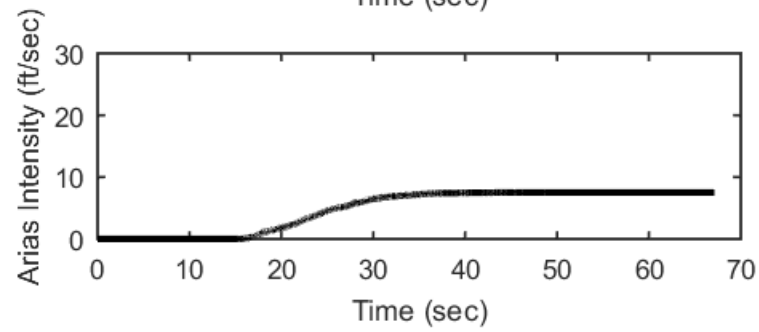
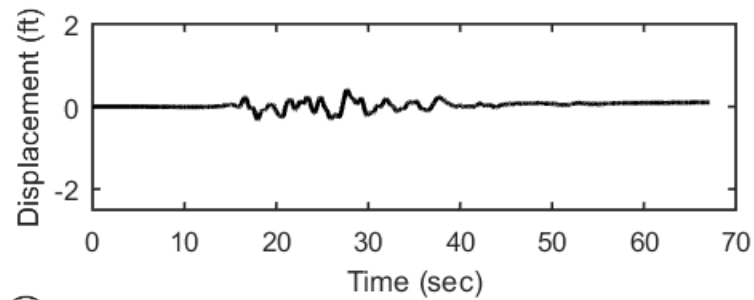
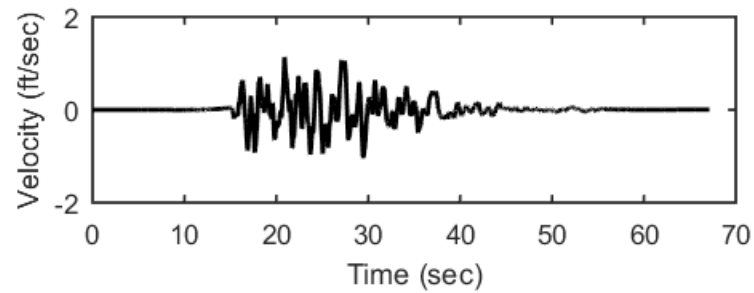
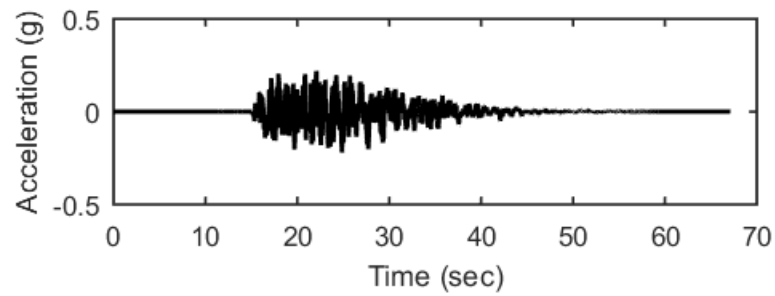
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5

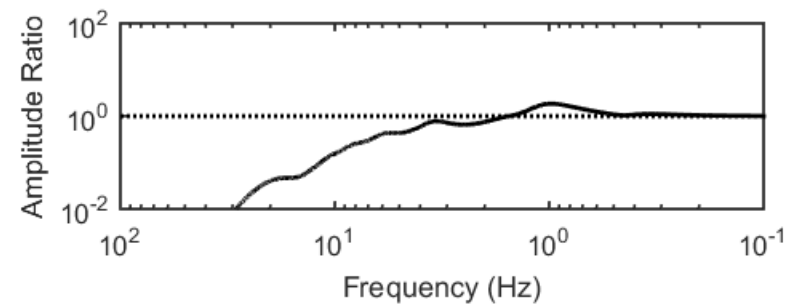
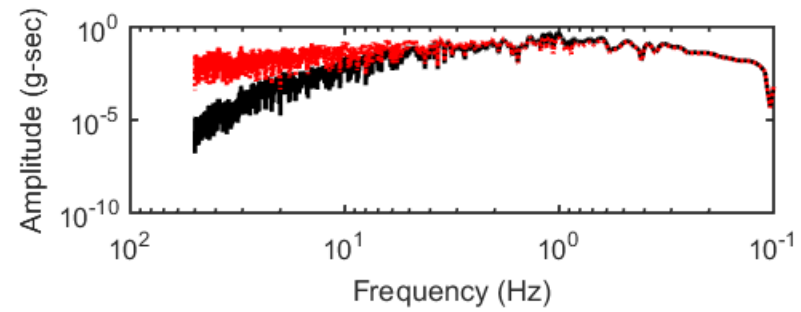
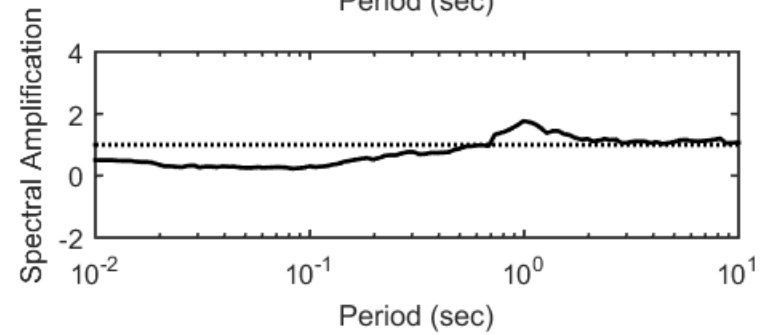
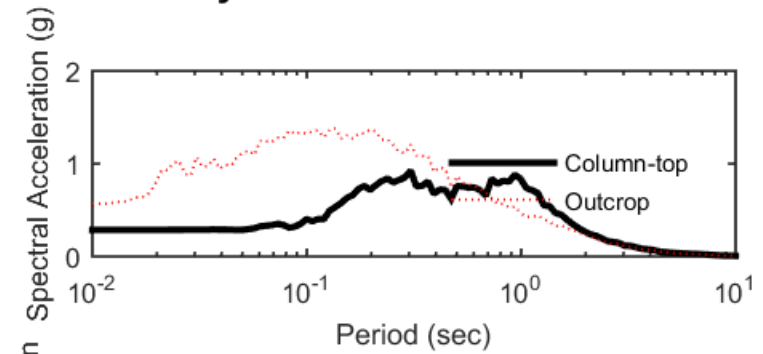
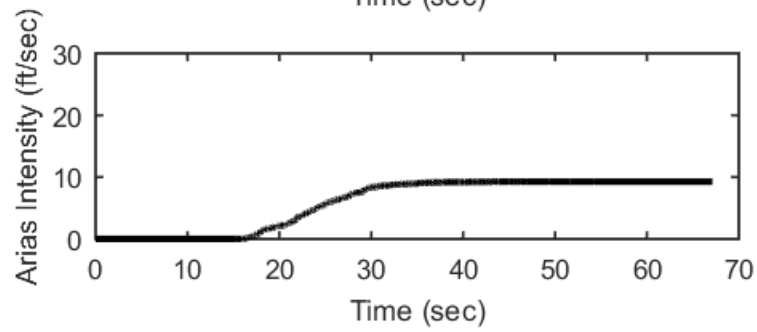
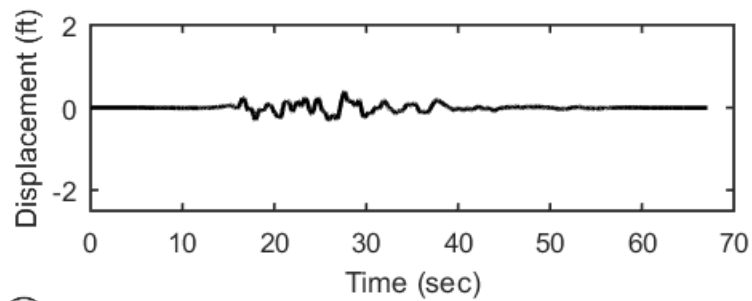
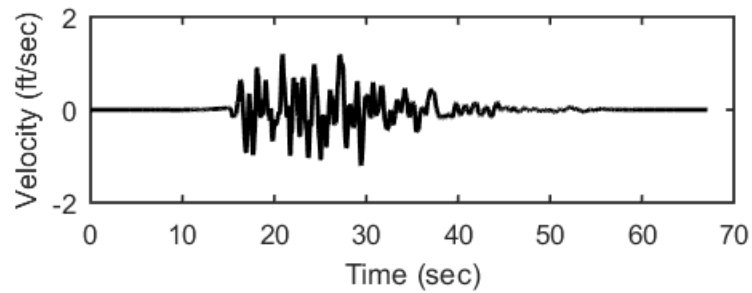
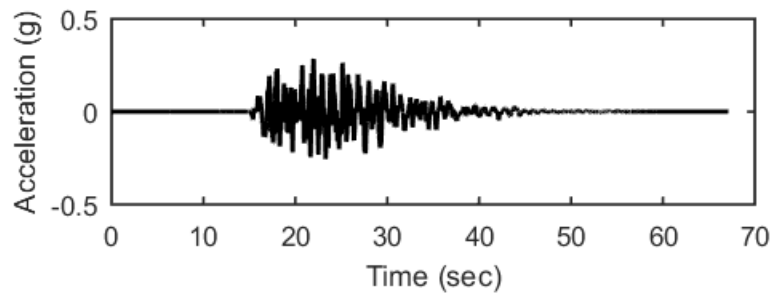


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5

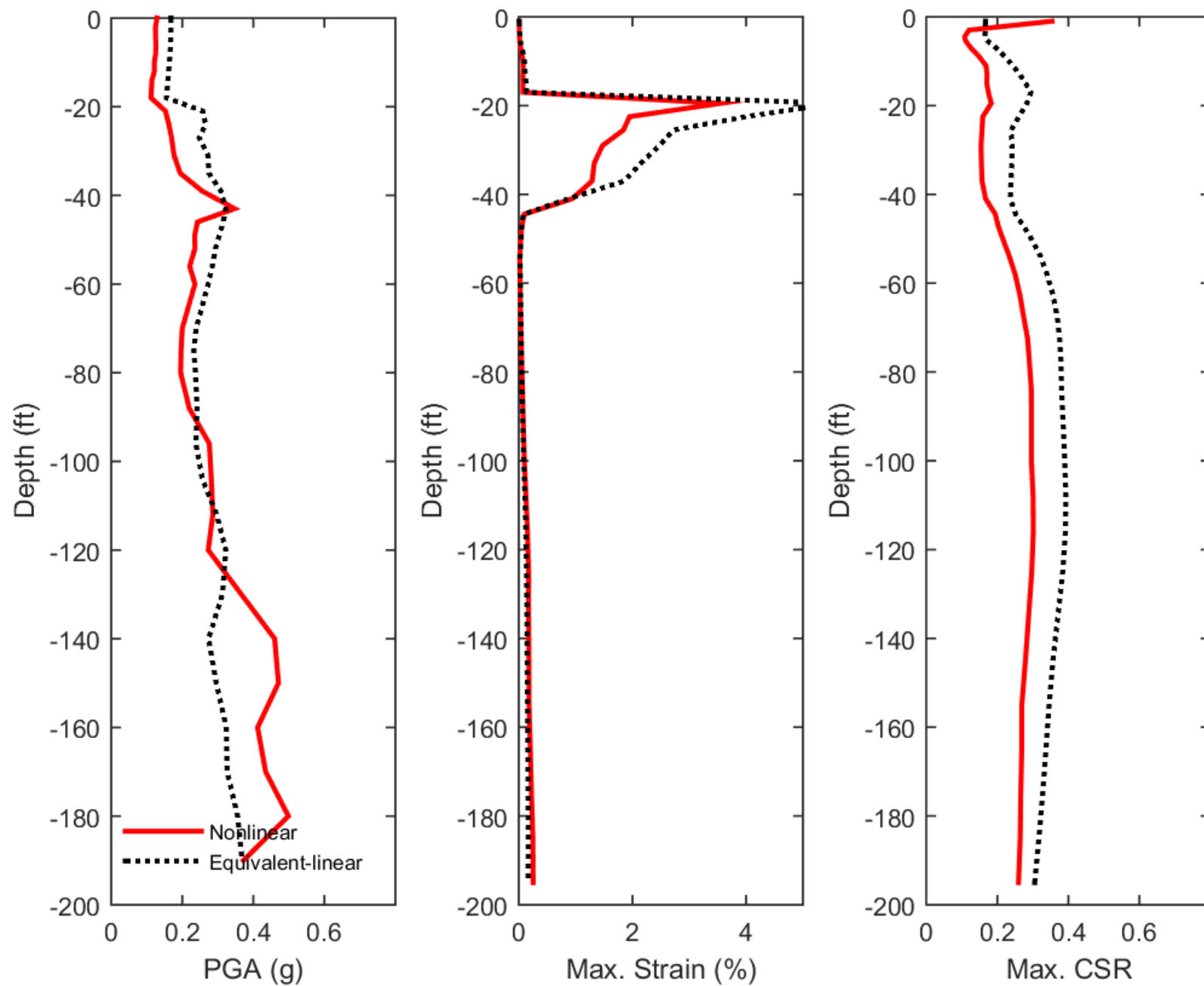




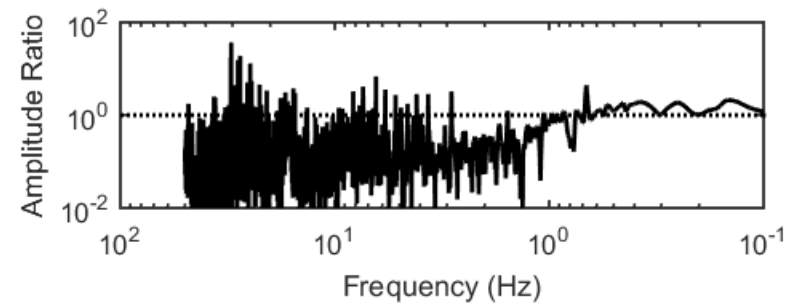
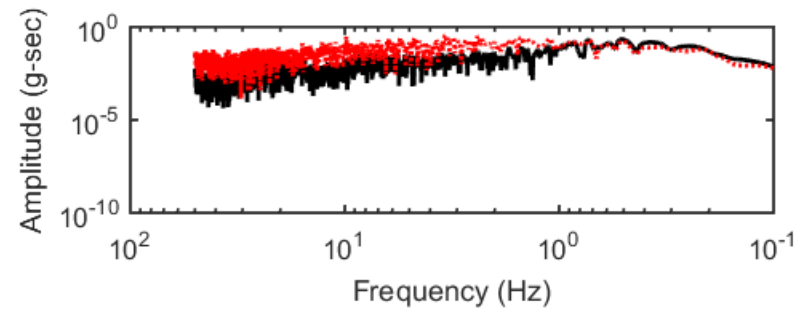
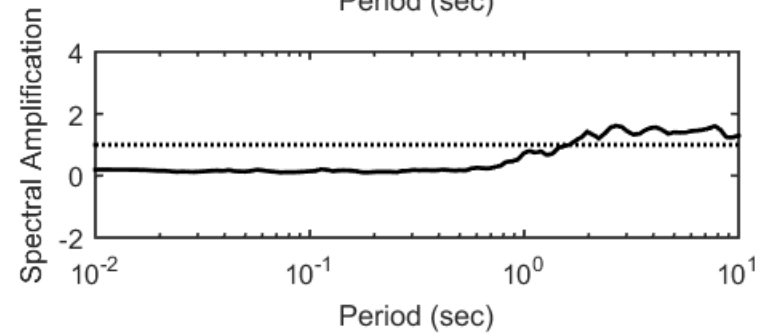
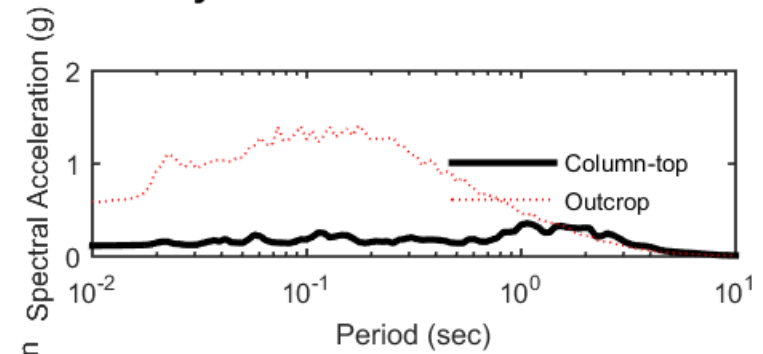
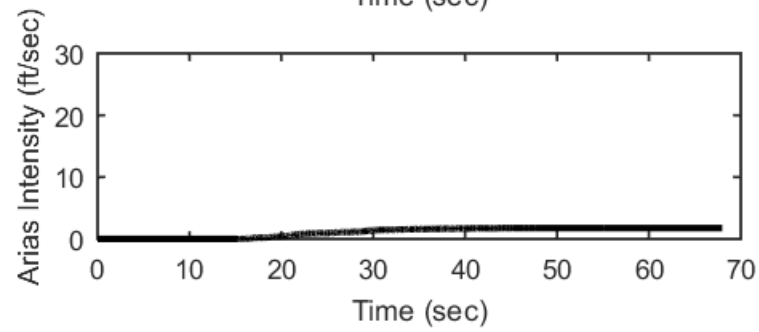
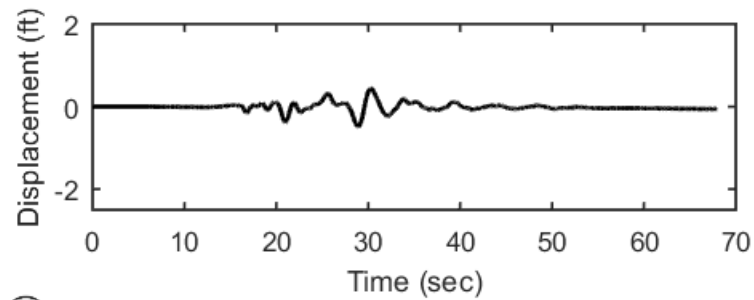
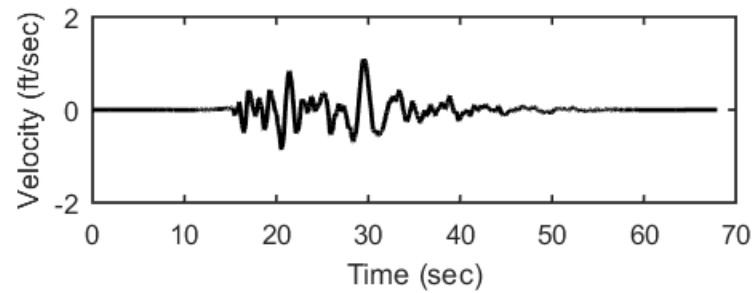
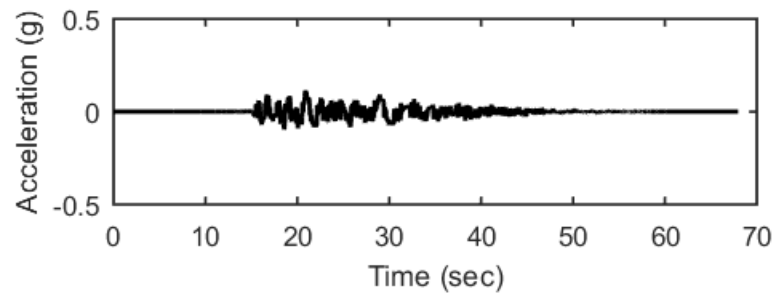
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



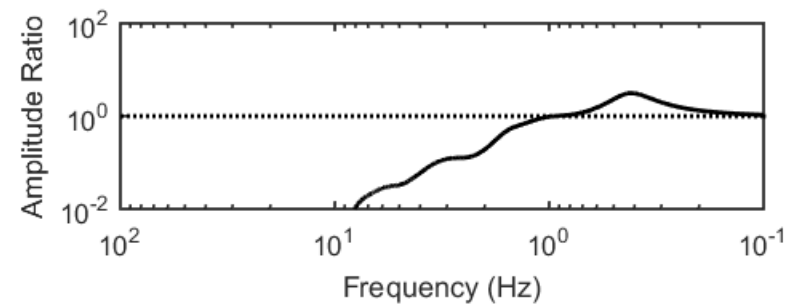
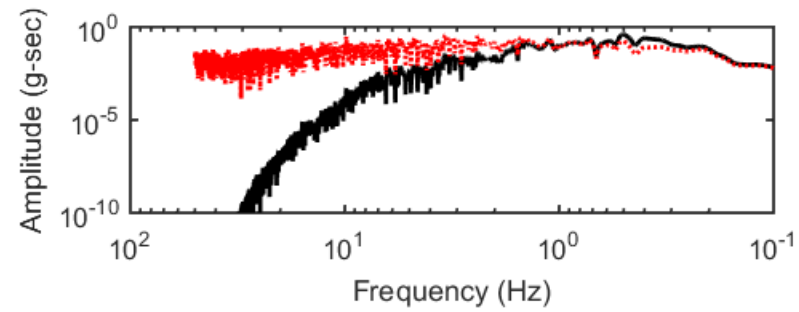
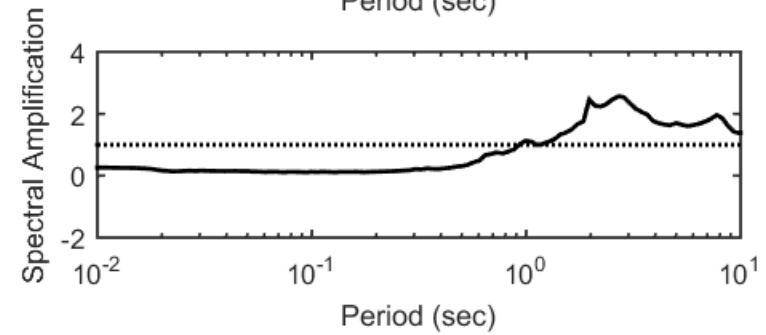
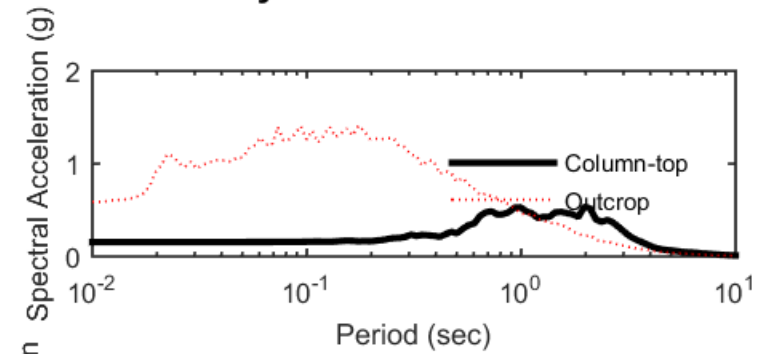
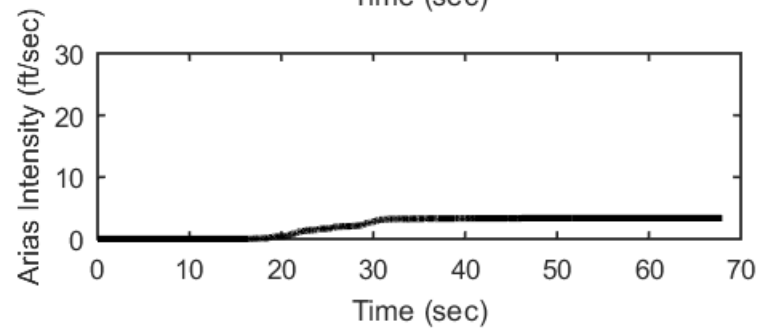
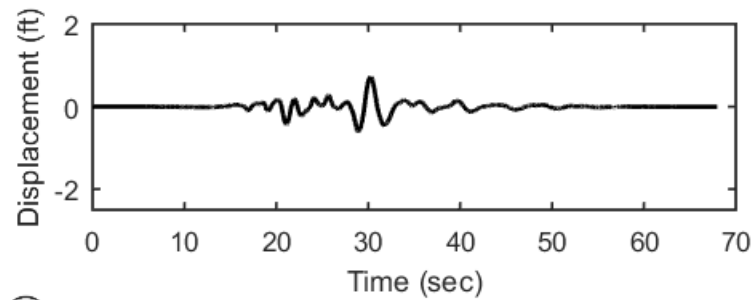
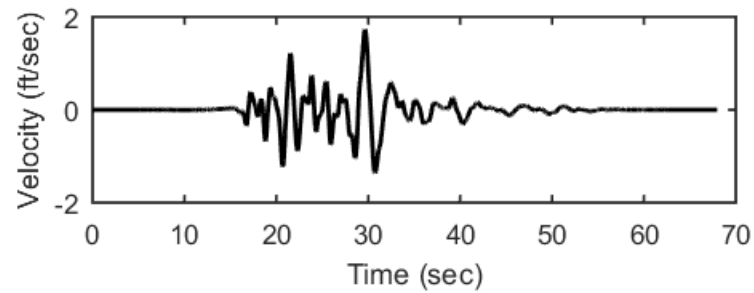
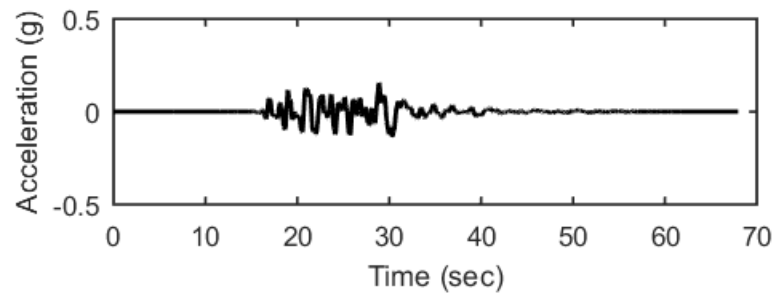
### Profile outputs for Motion: SEE5



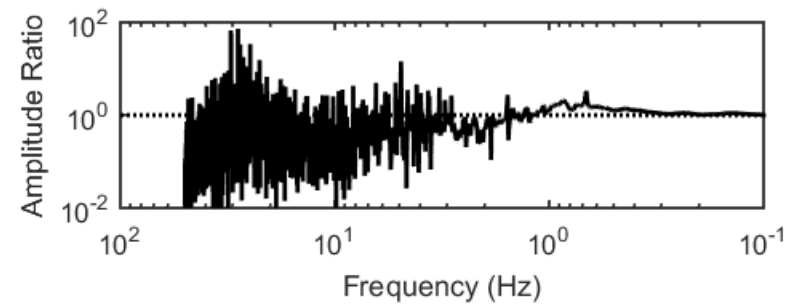
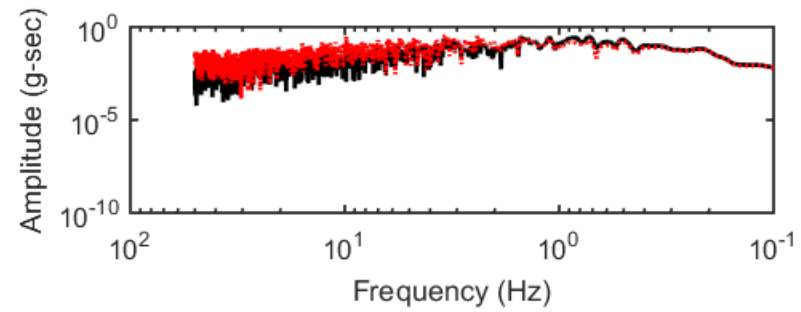
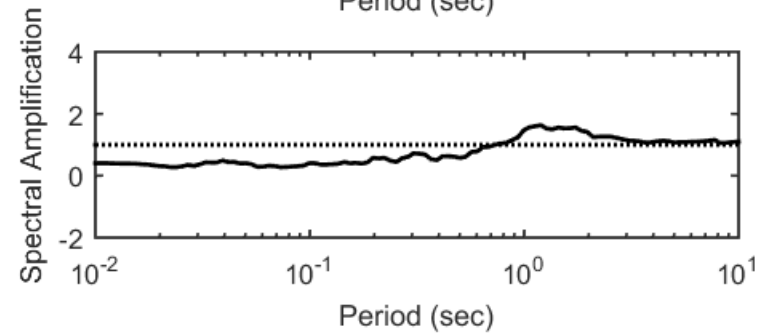
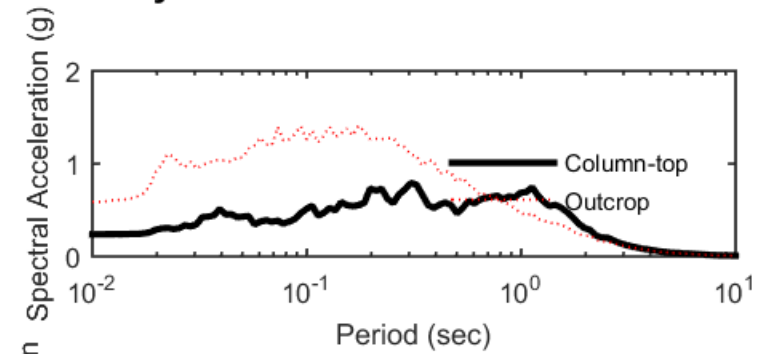
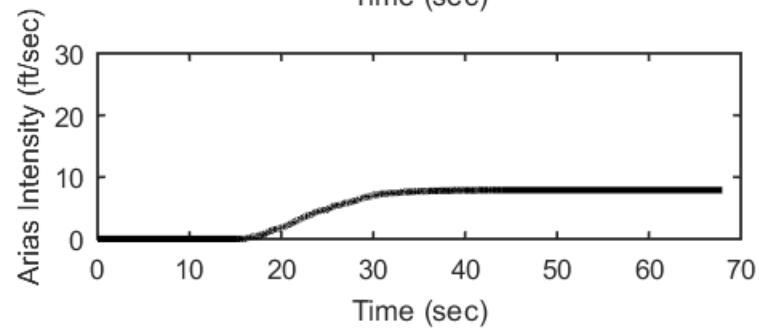
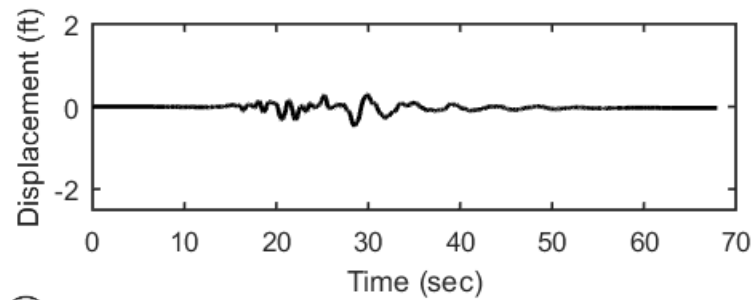
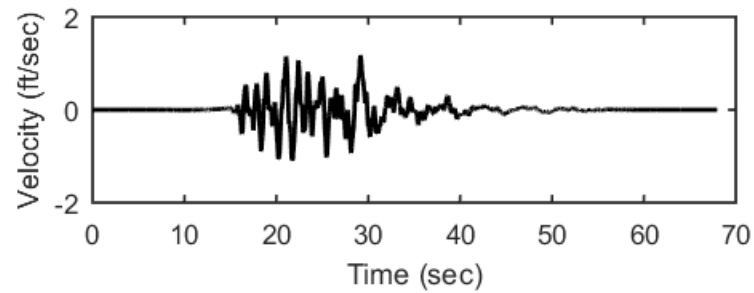
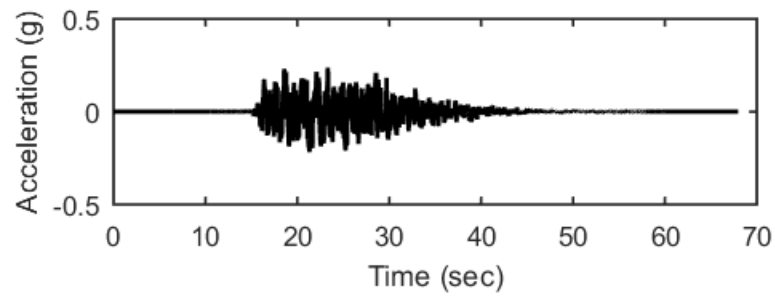
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



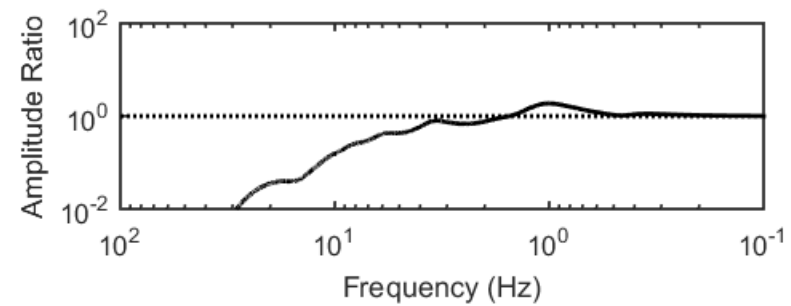
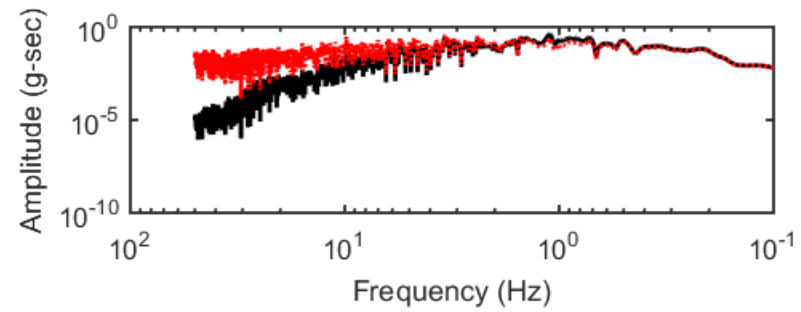
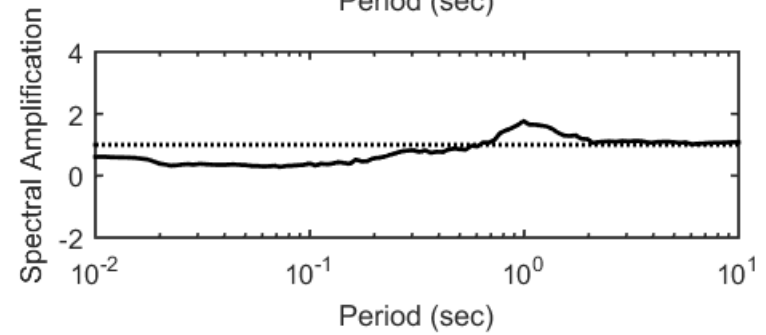
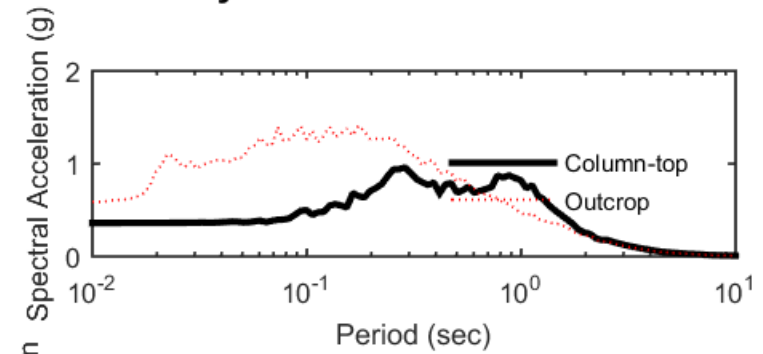
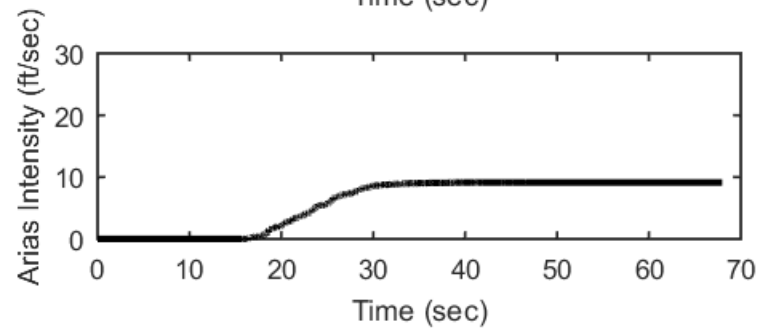
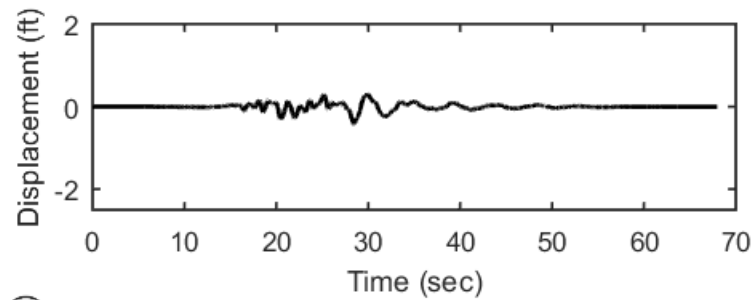
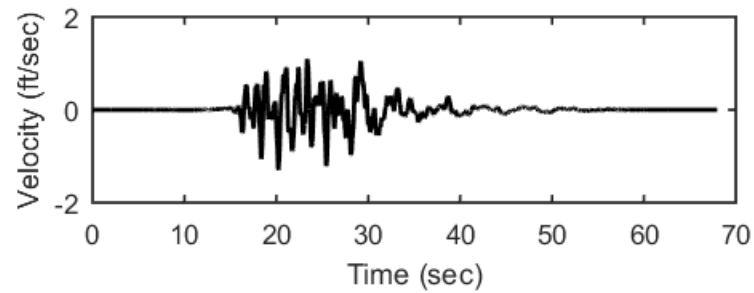
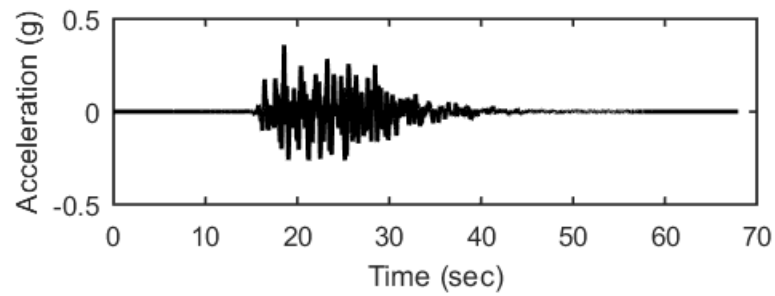
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



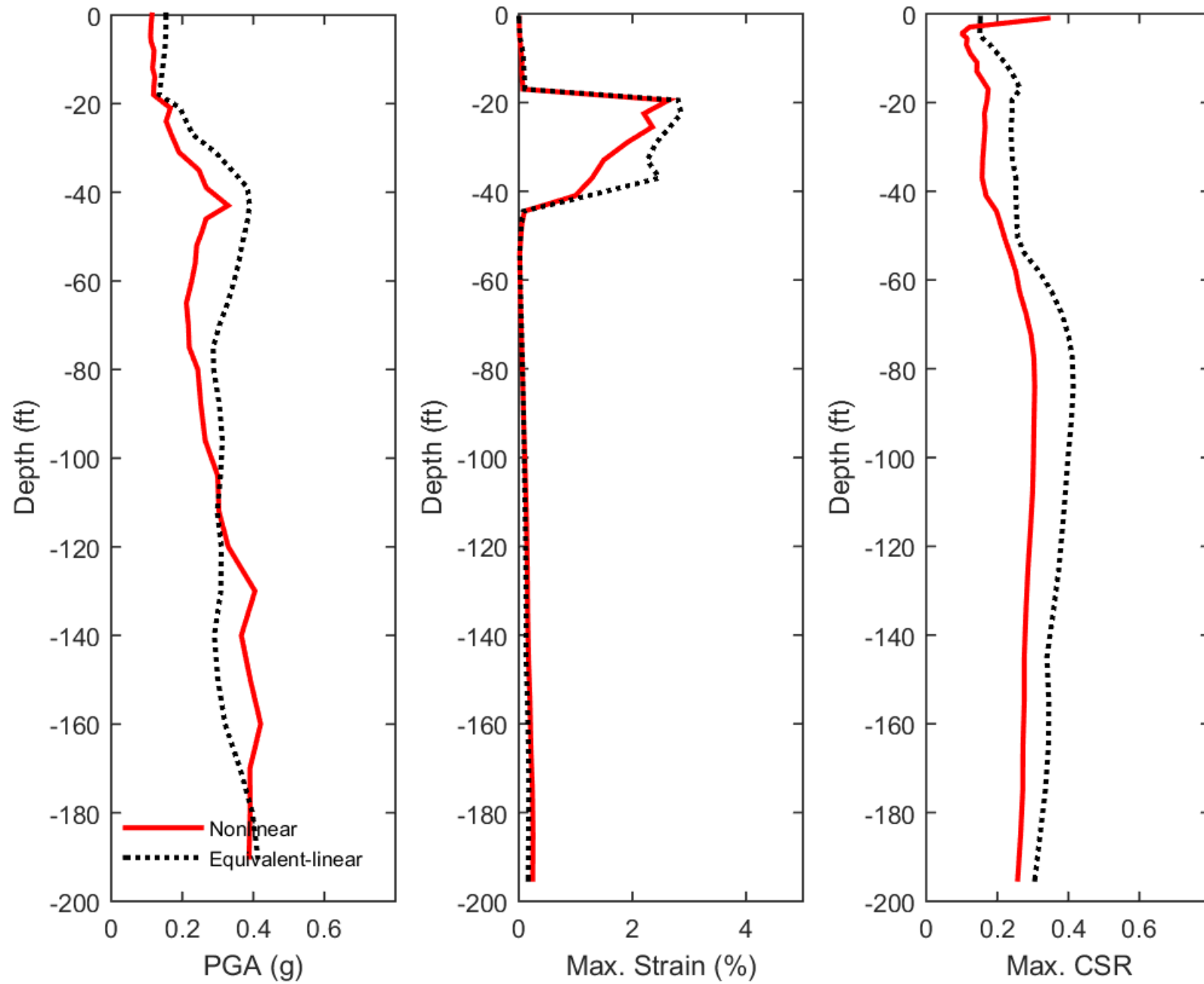
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



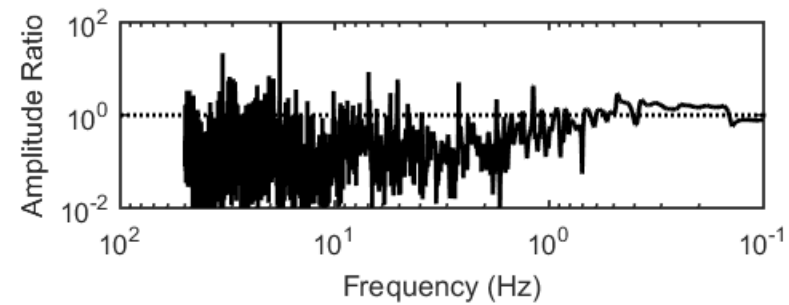
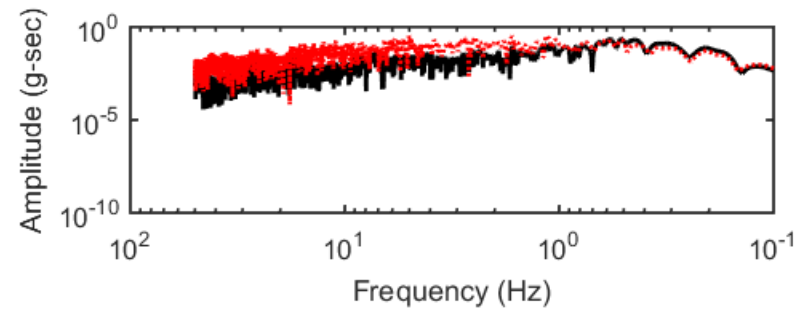
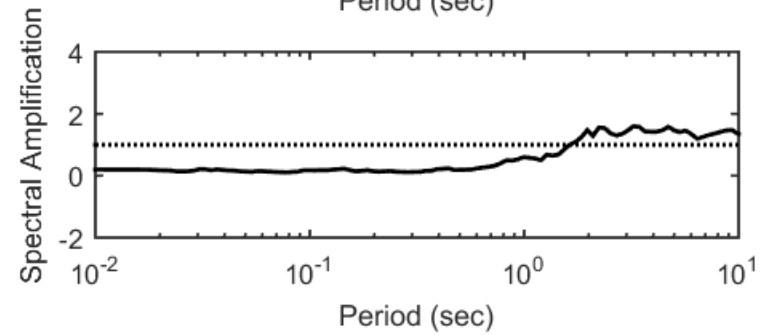
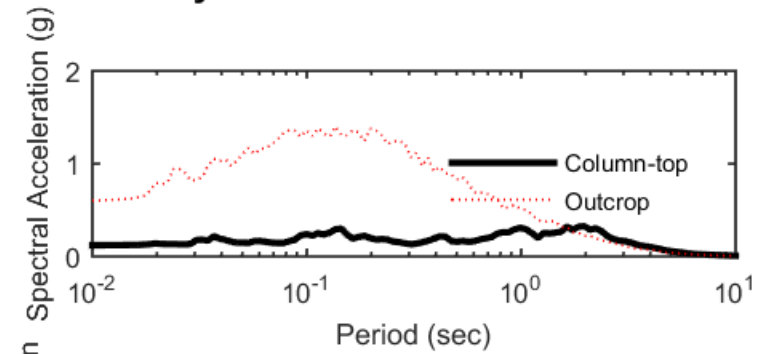
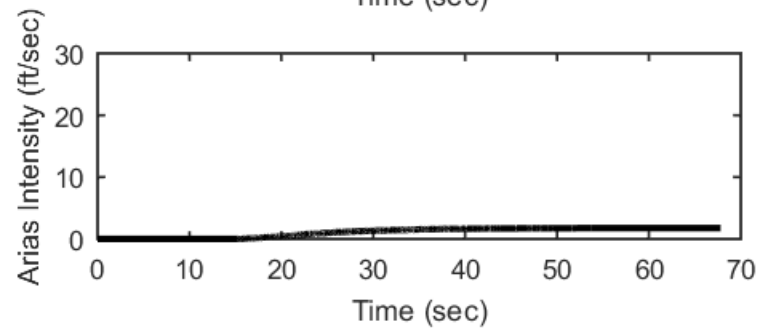
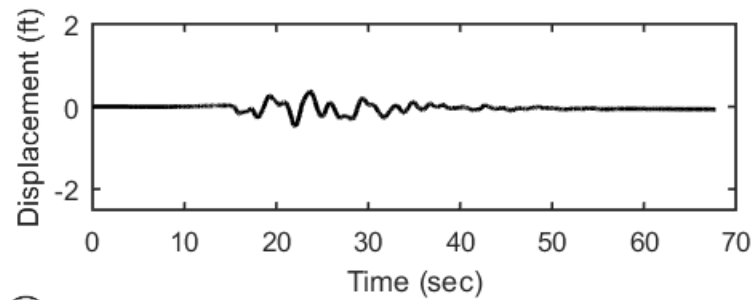
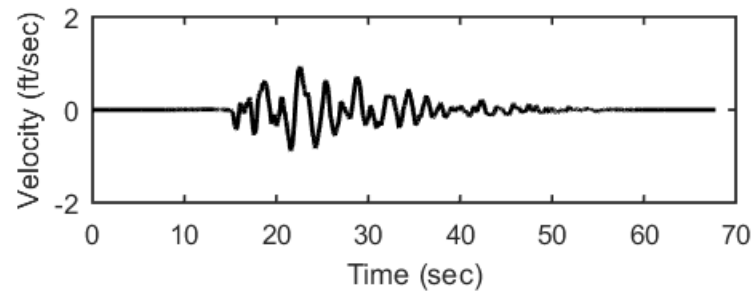
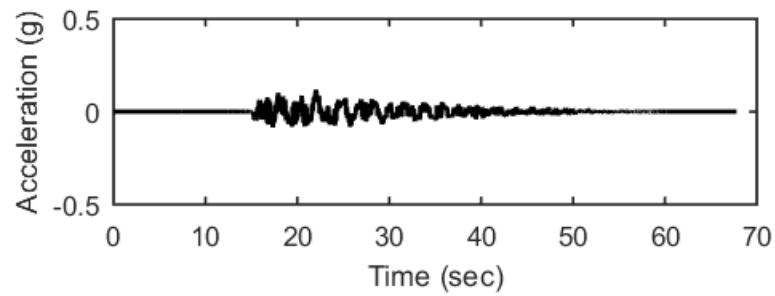
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



### Profile outputs for Motion: SEE6

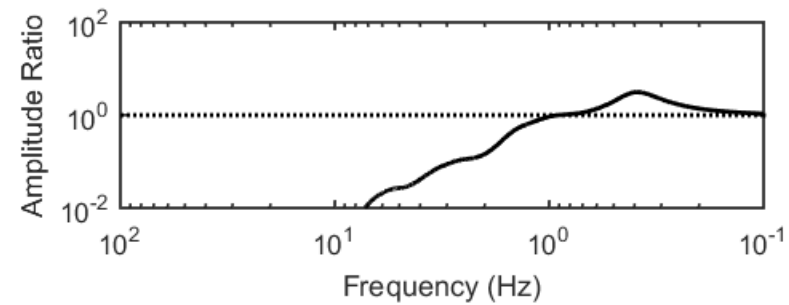
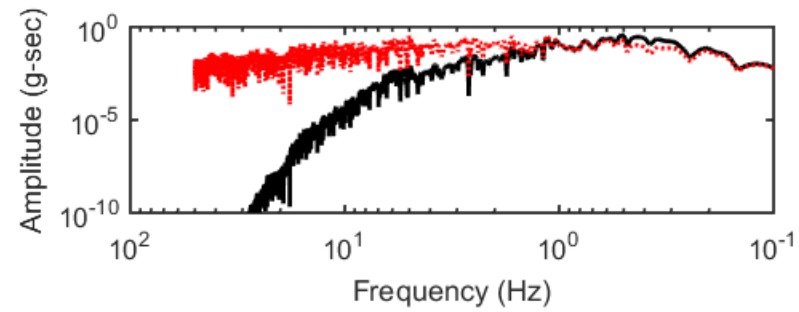
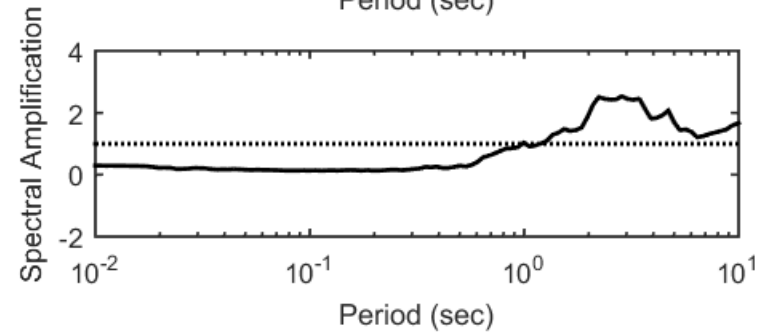
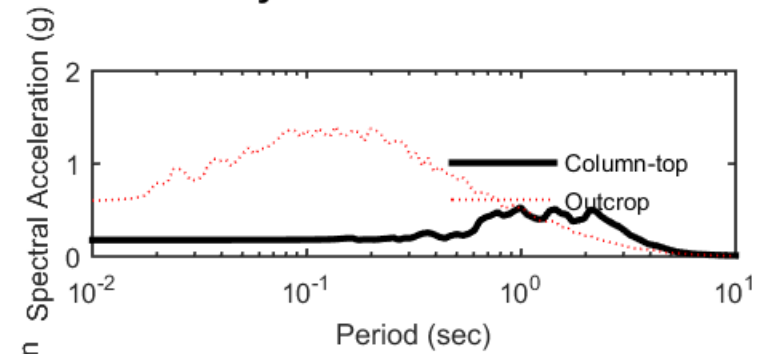
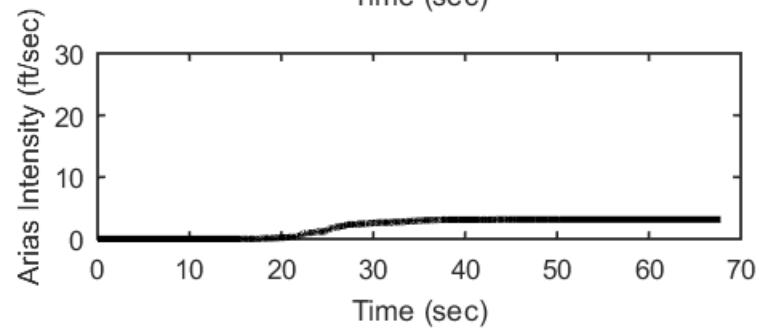
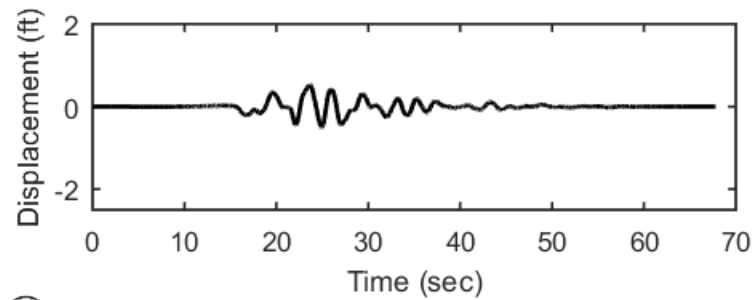
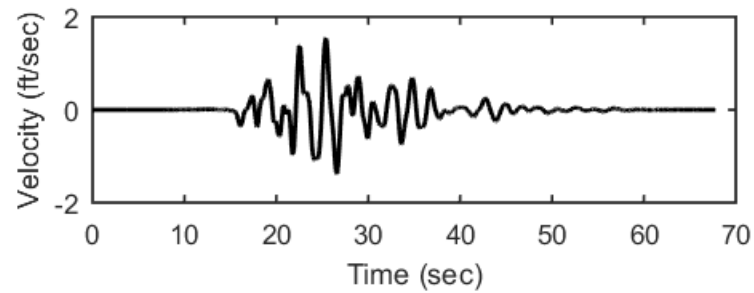
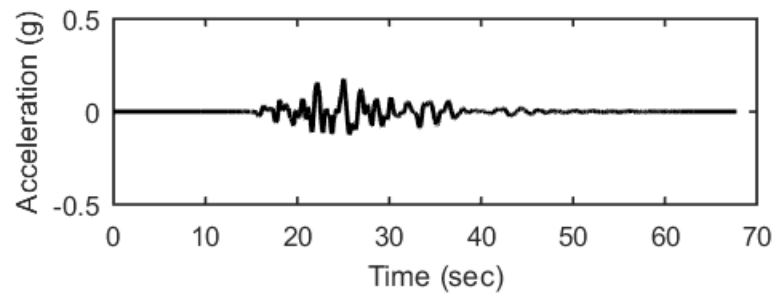


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7

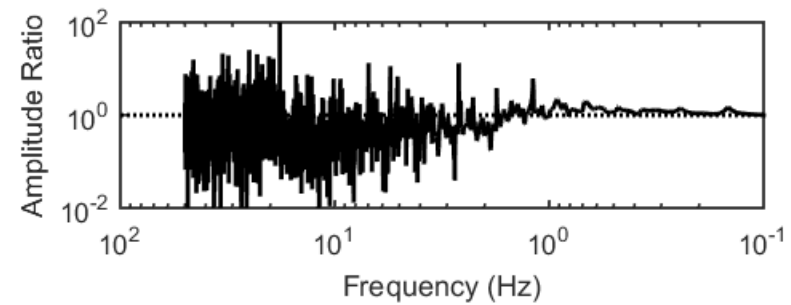
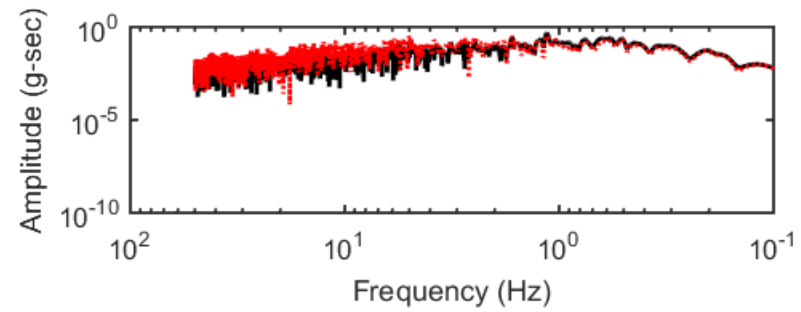
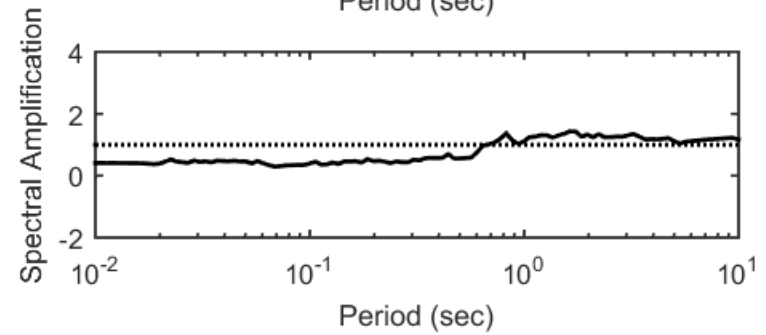
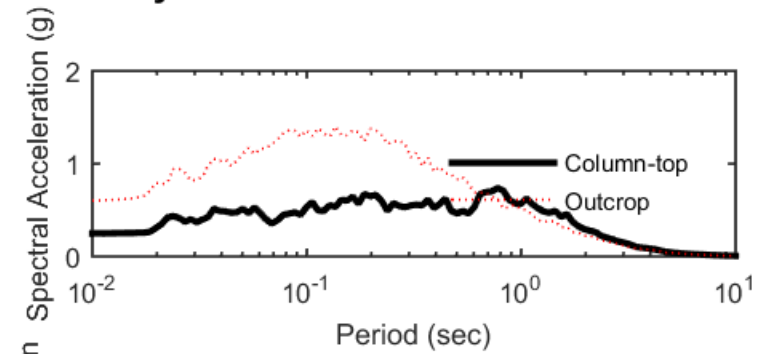
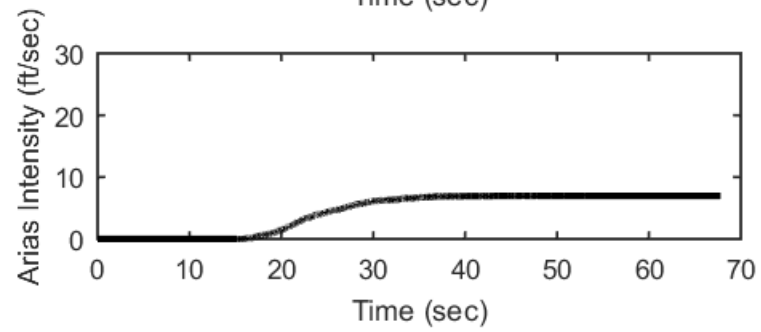
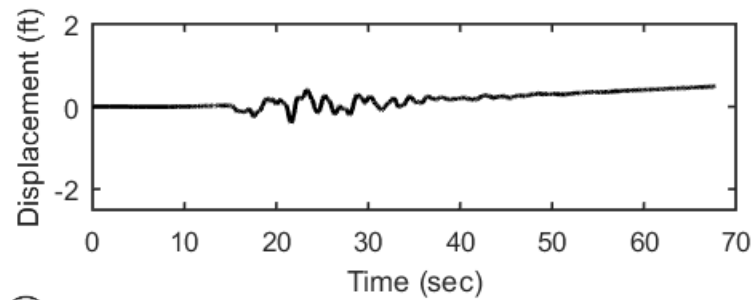
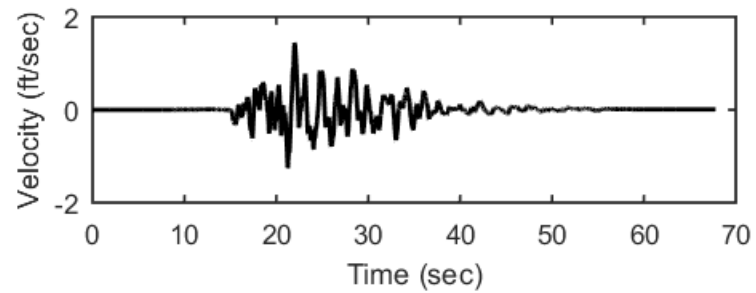
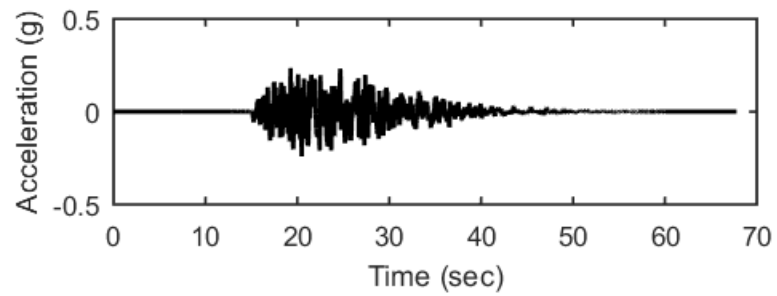




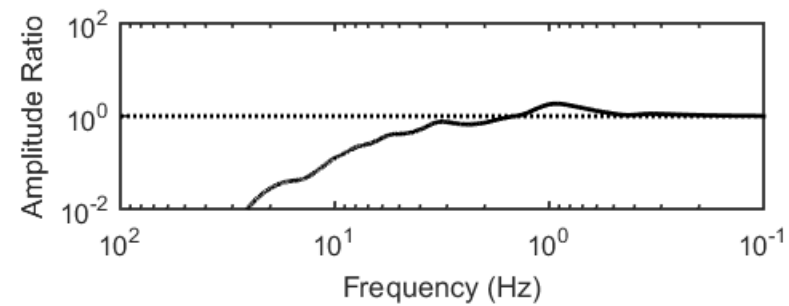
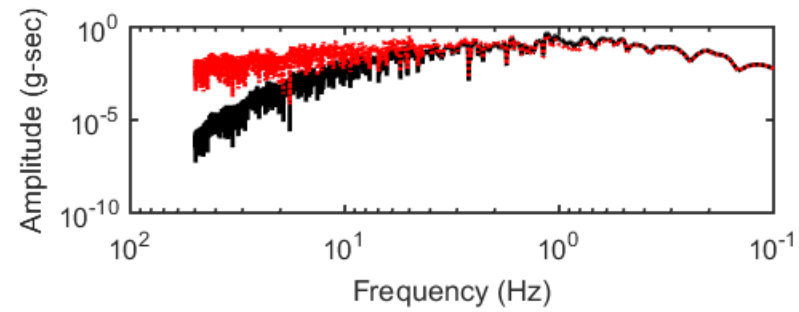
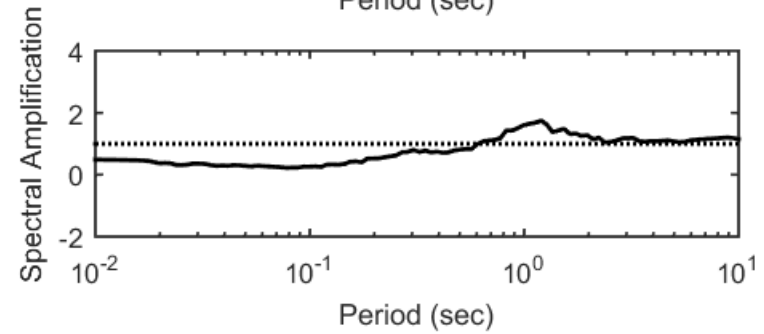
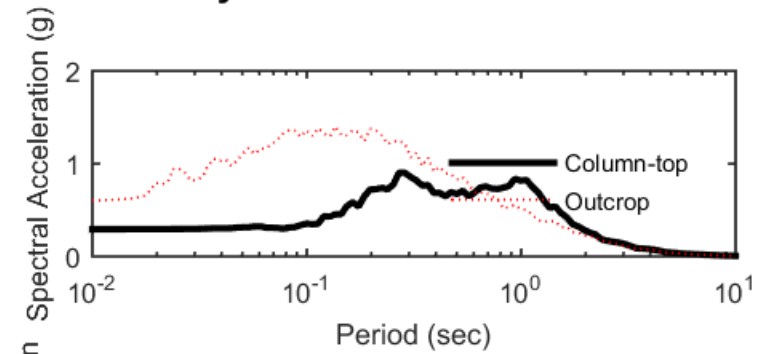
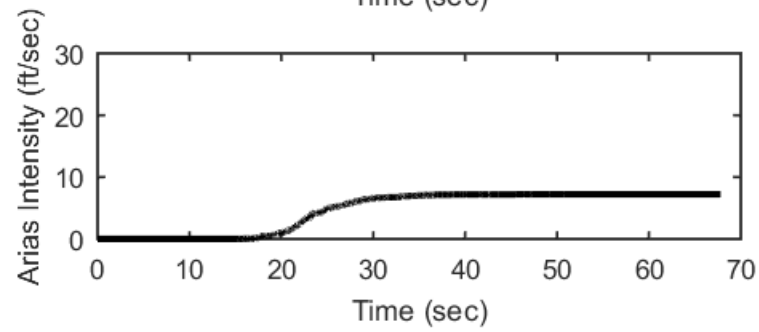
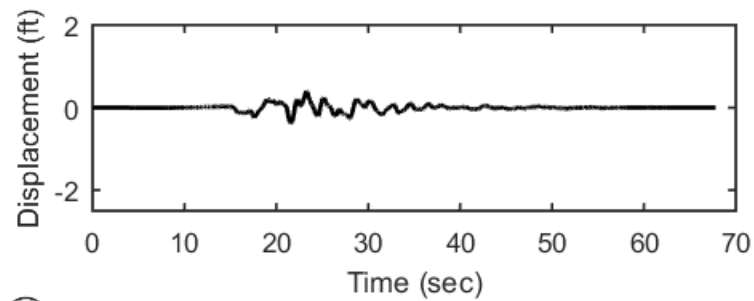
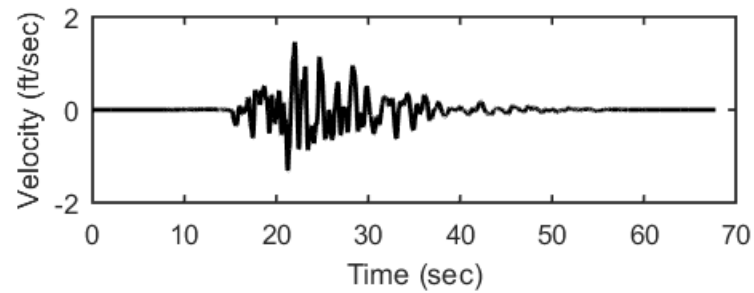
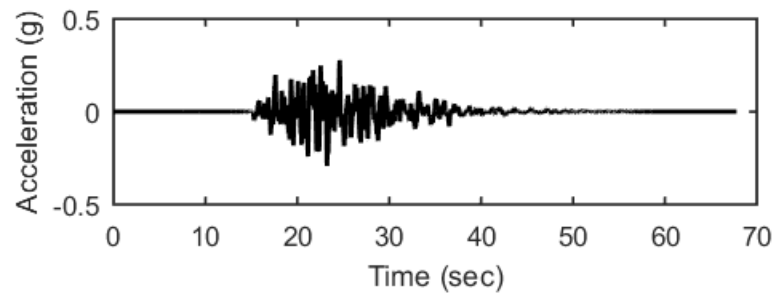
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



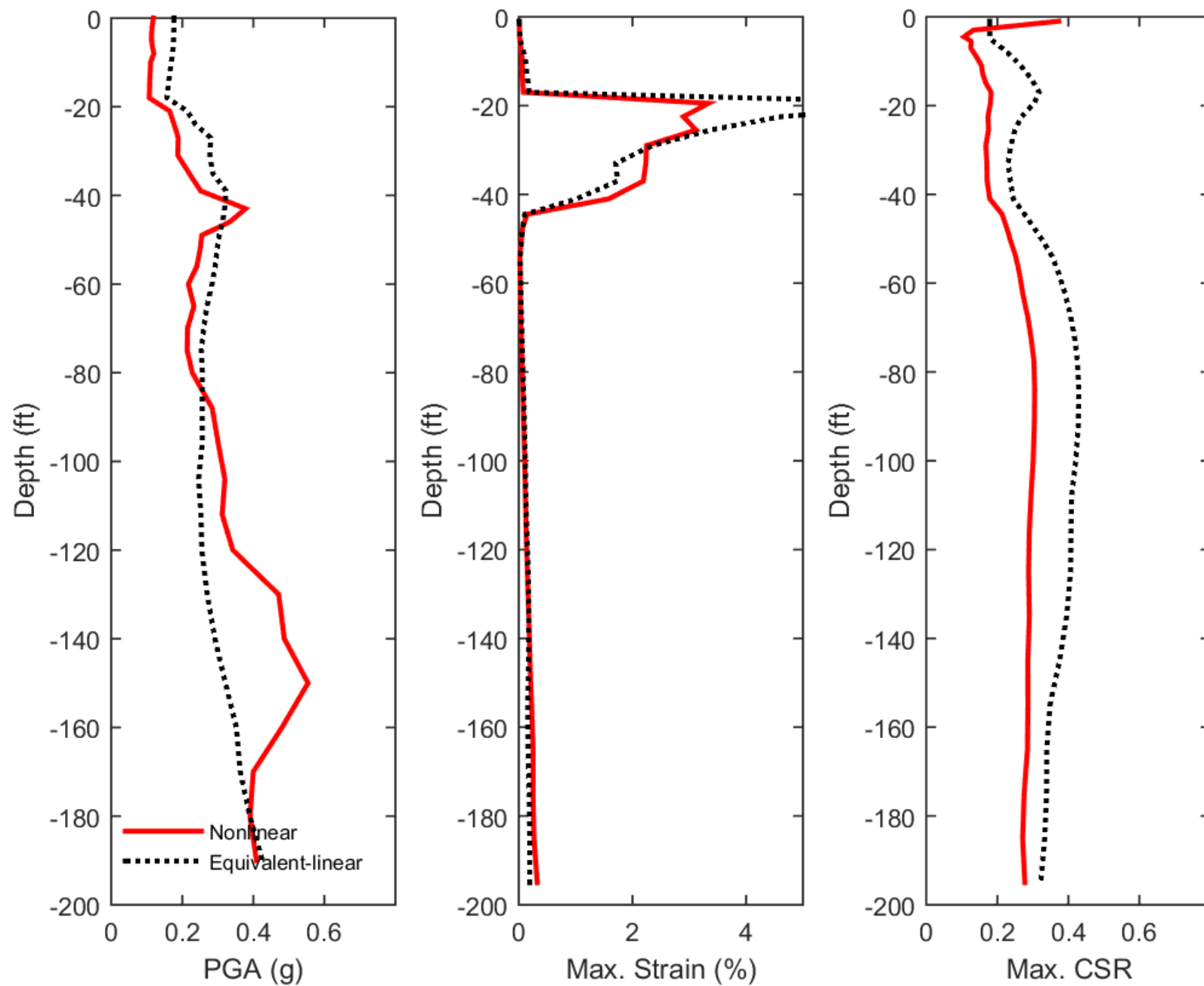
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



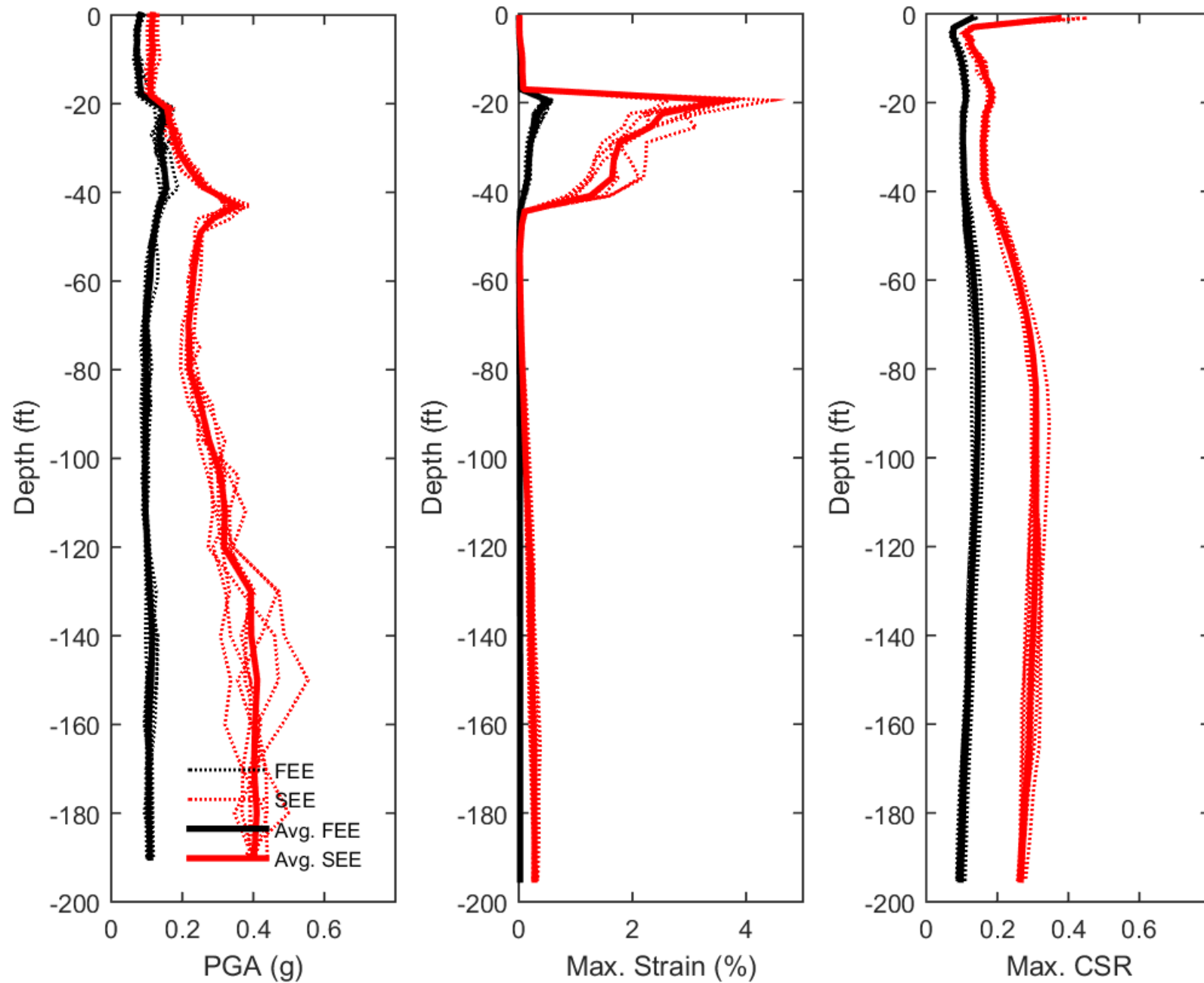
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



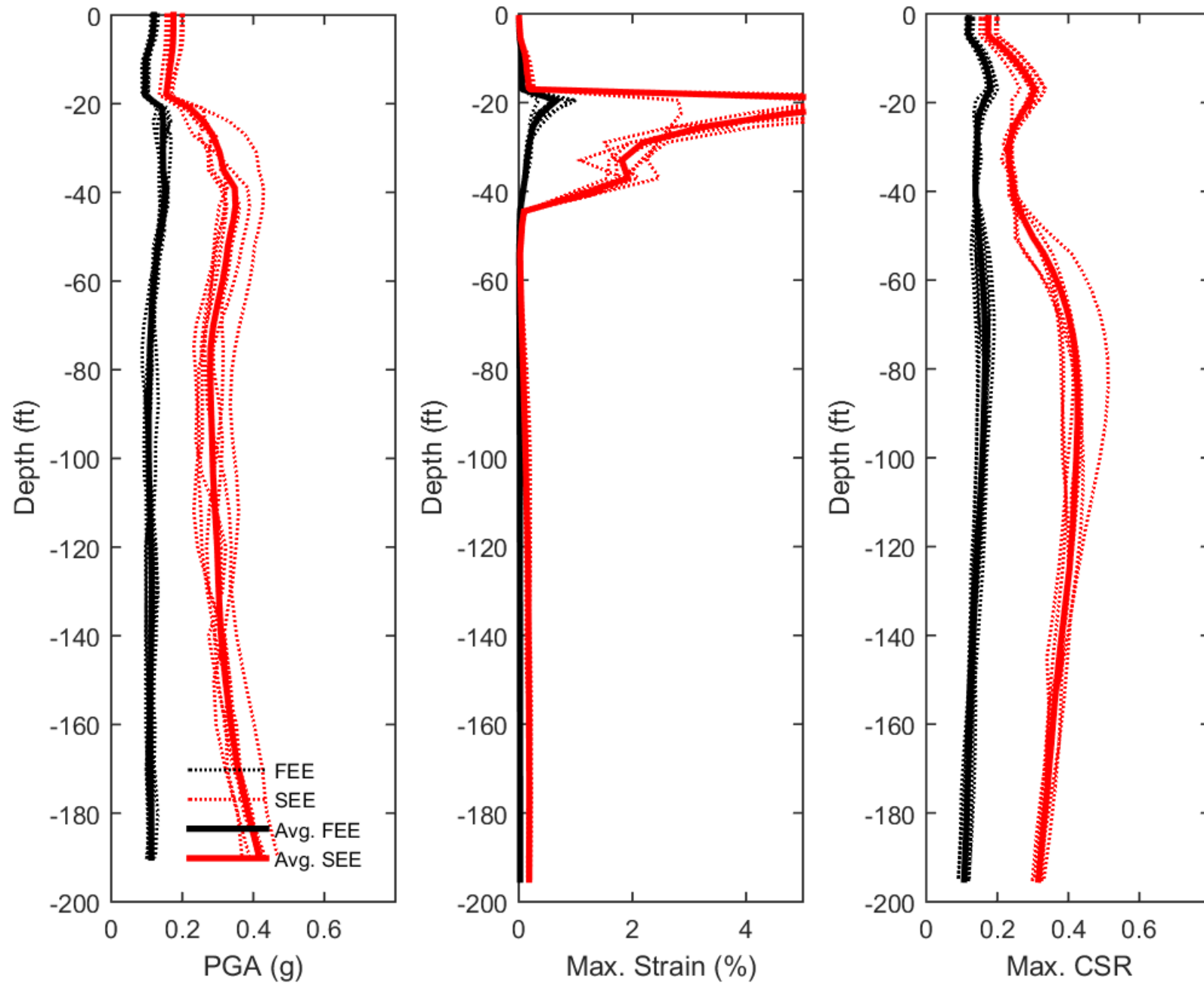
### Profile outputs for Motion: SEE7



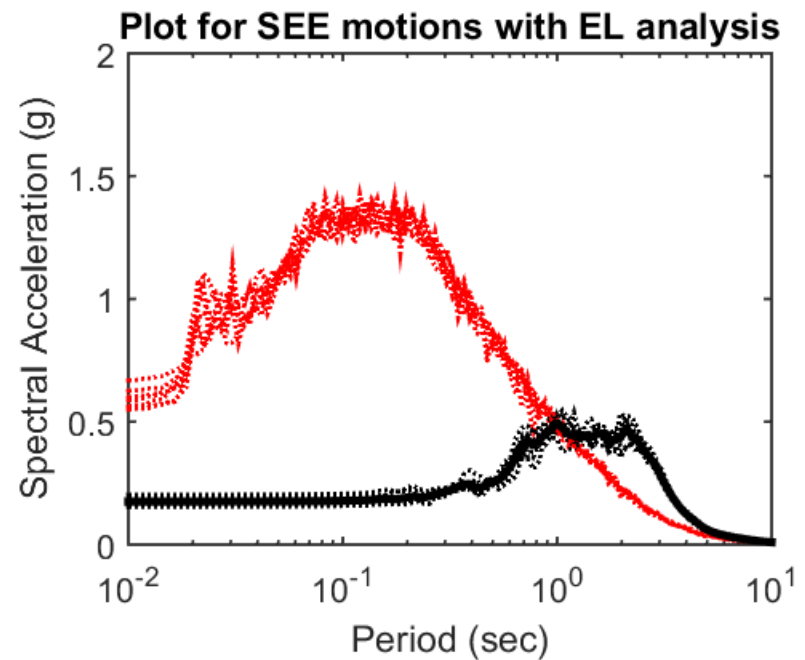
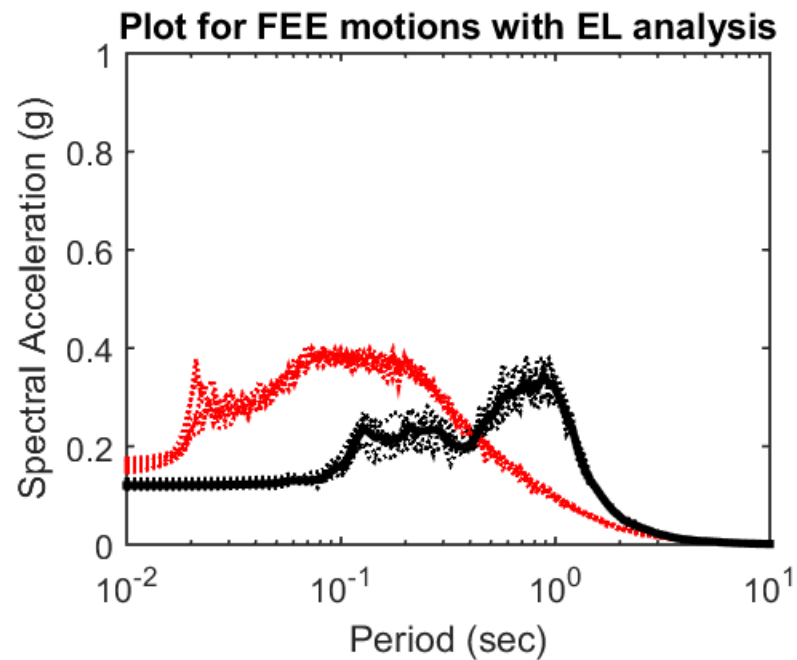
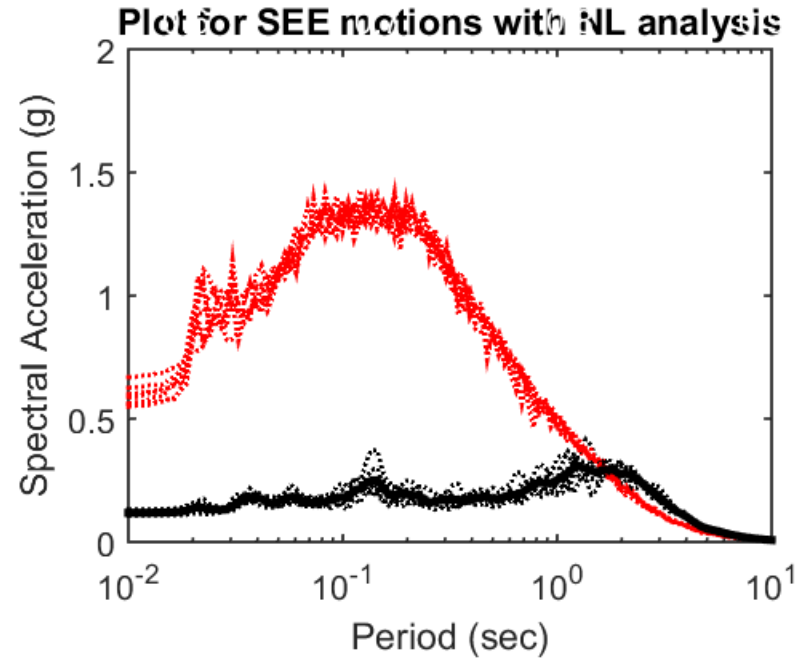
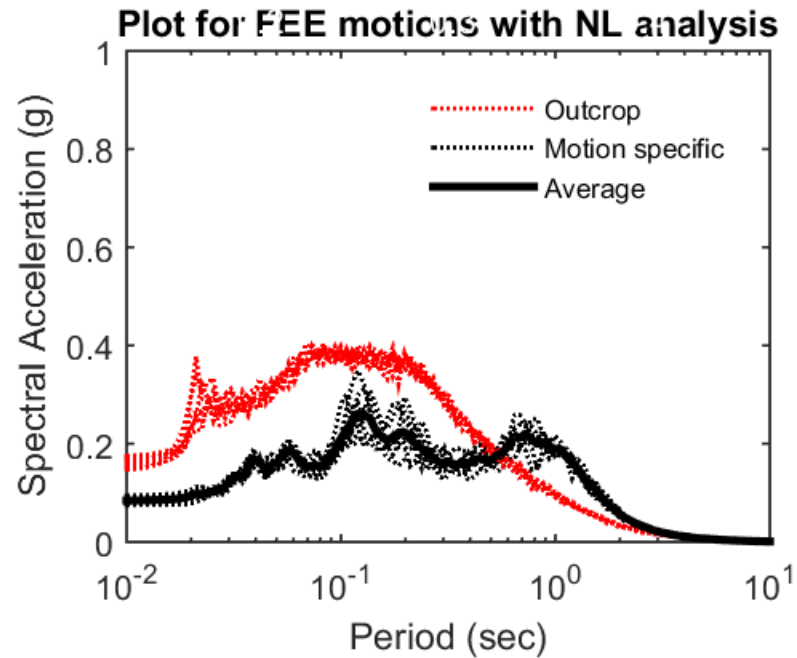
### Summary of the profile outputs for Nonlinear analysis



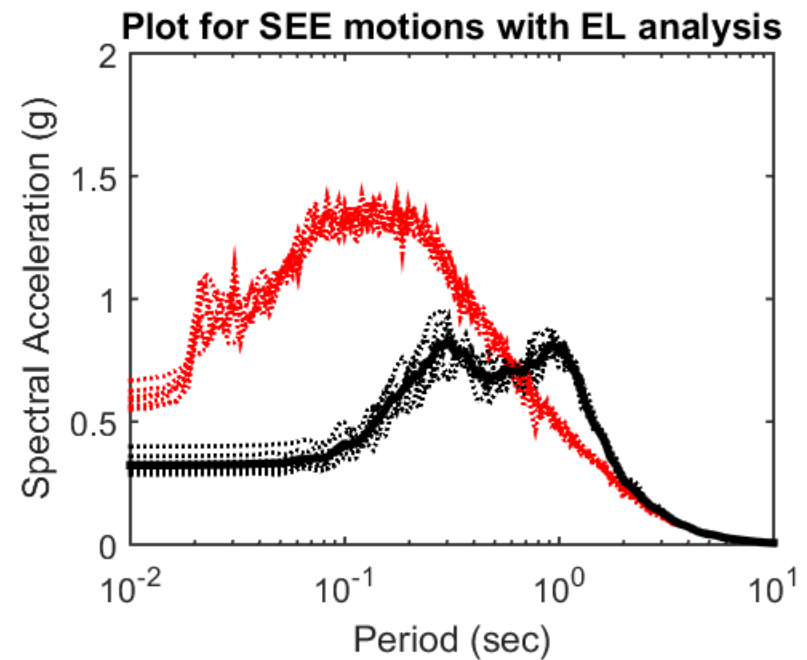
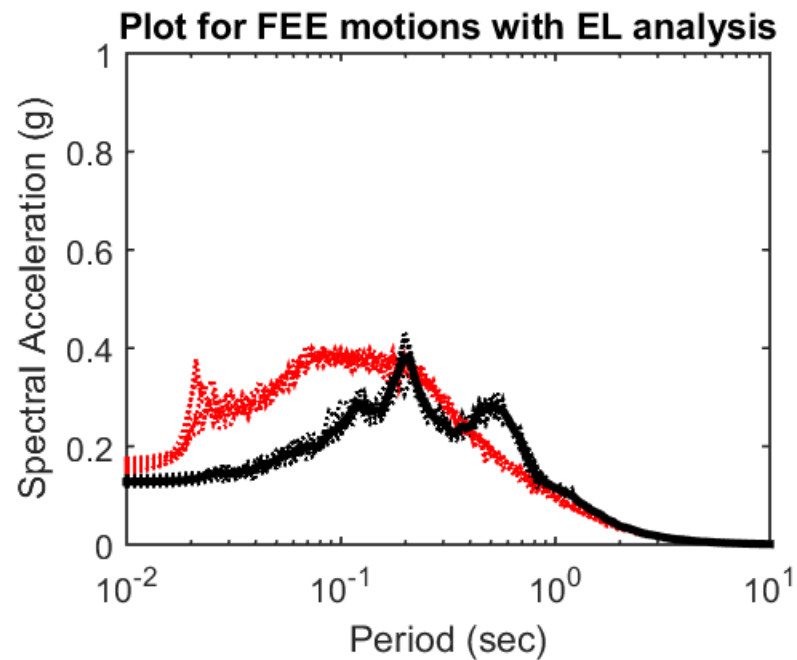
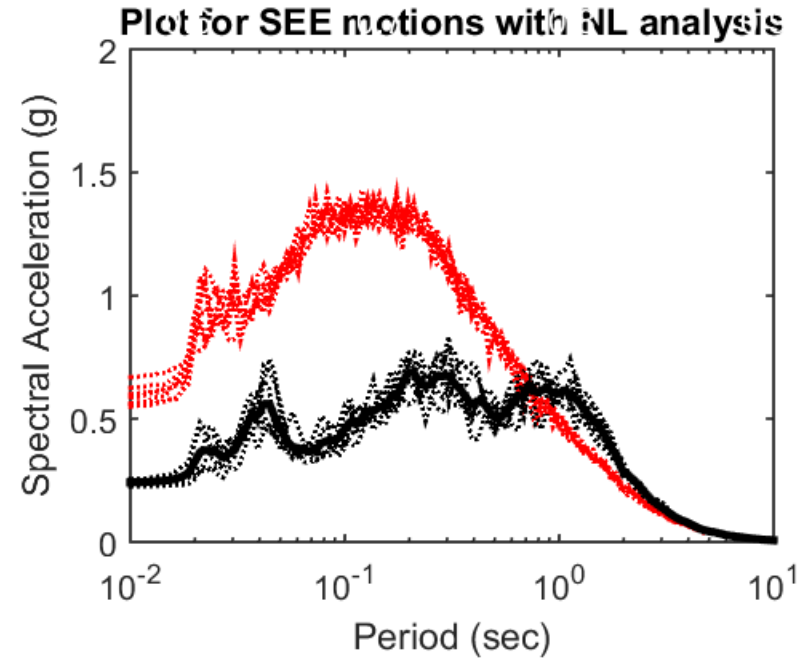
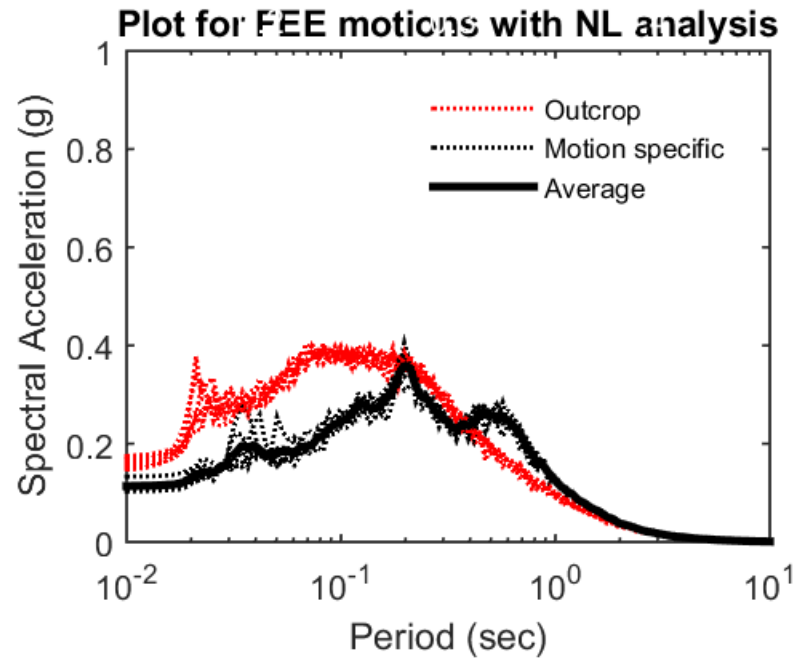
### Summary of the profile outputs for Equivalent-linear analysis



## Summary plots: RSA at ground surface

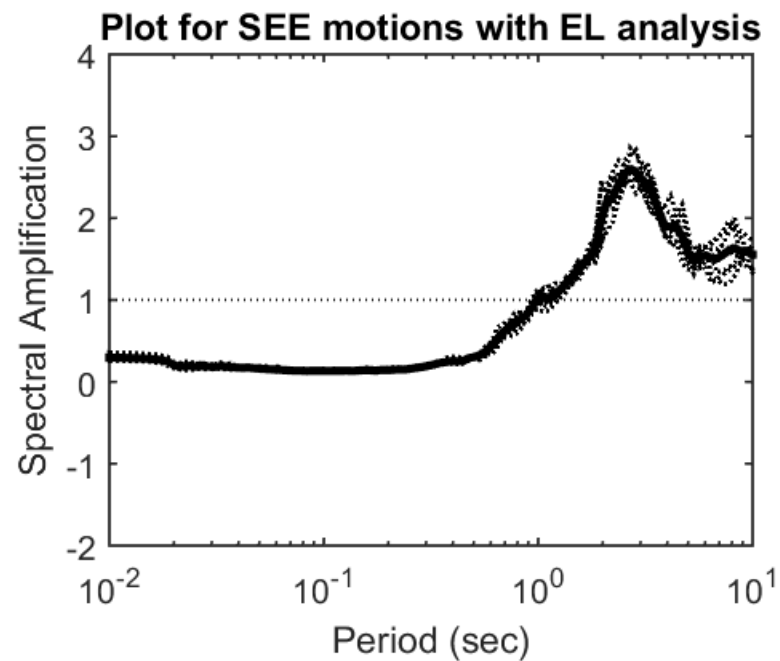
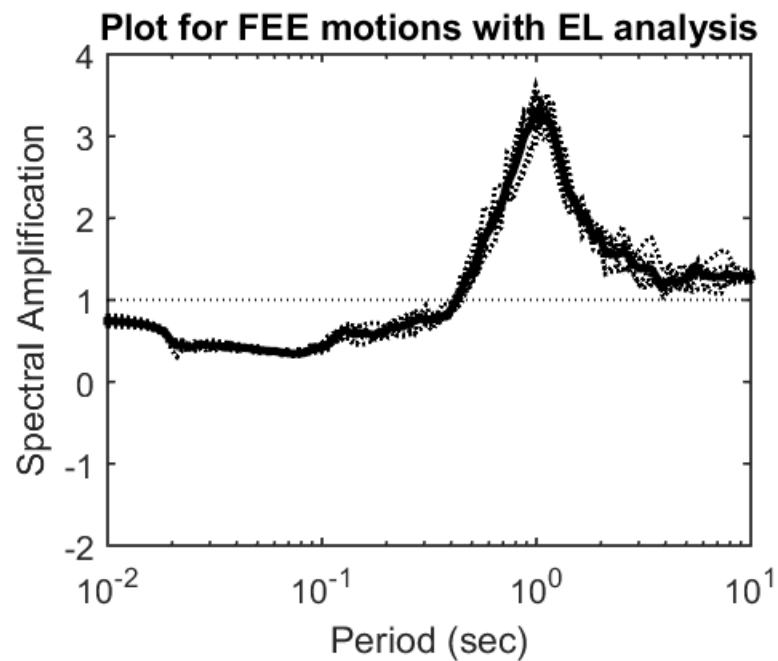
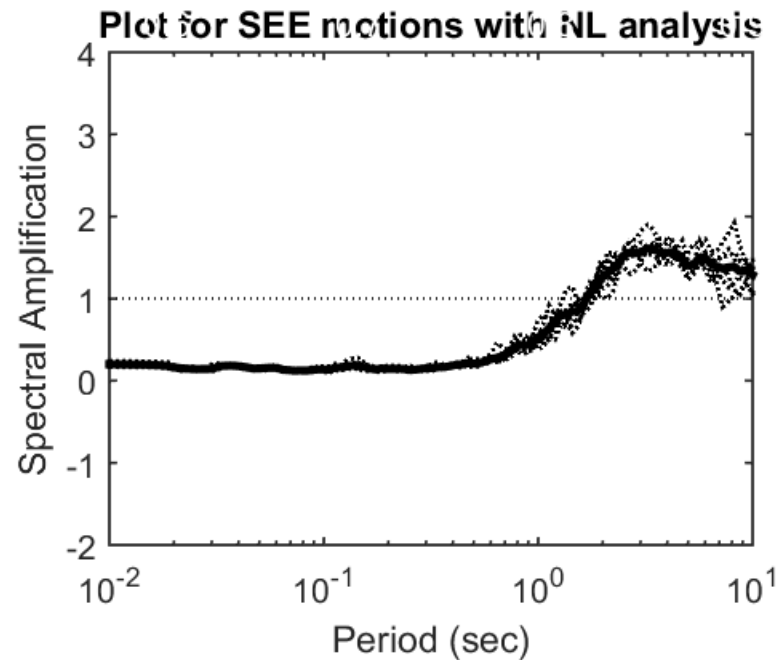
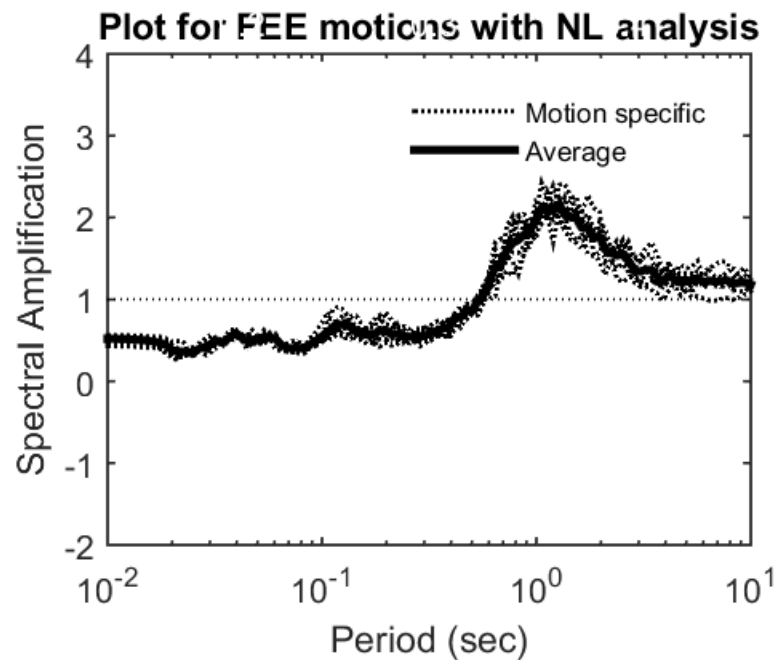


## Summary plots: RSA at top of Marl

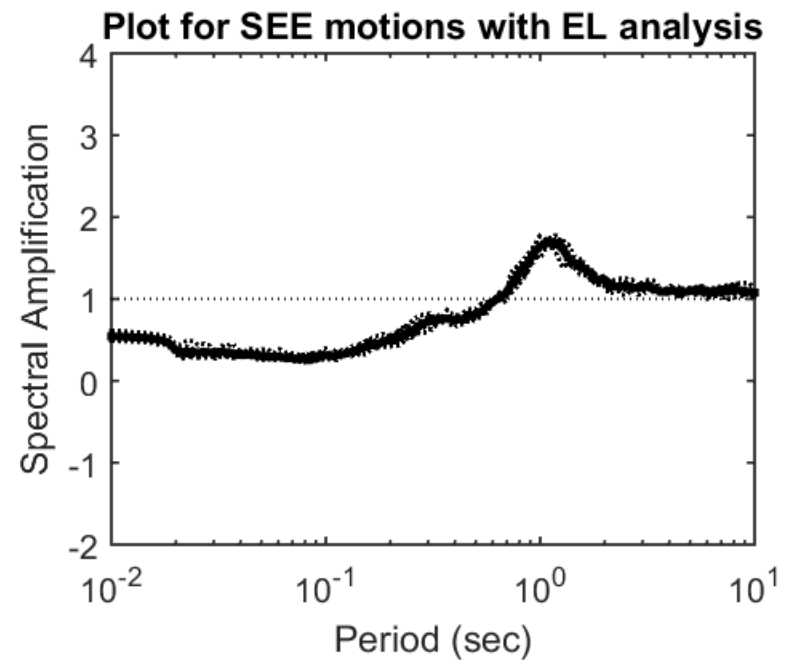
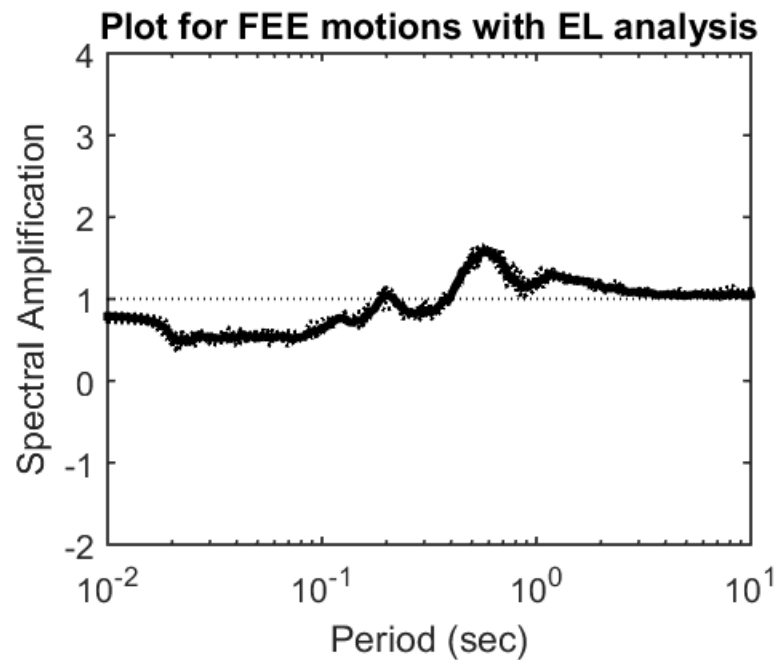
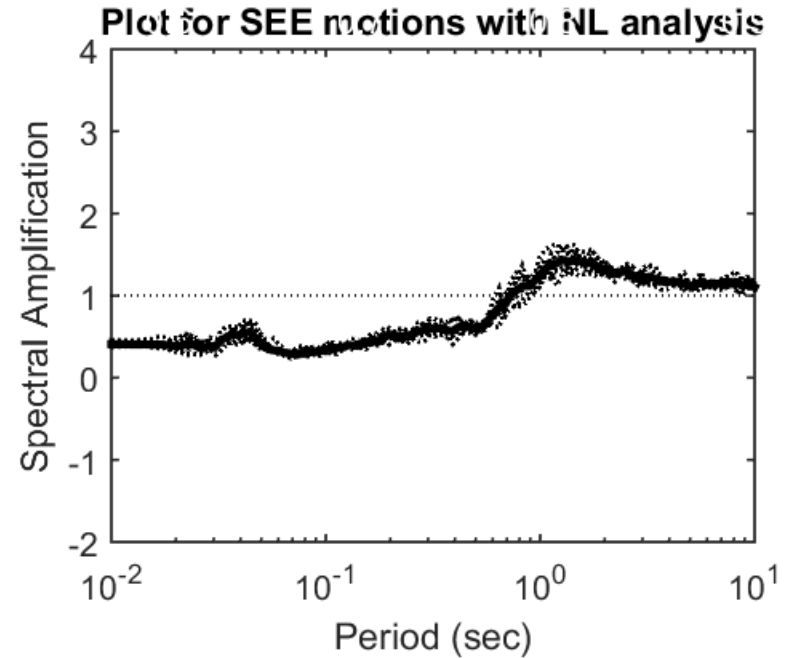
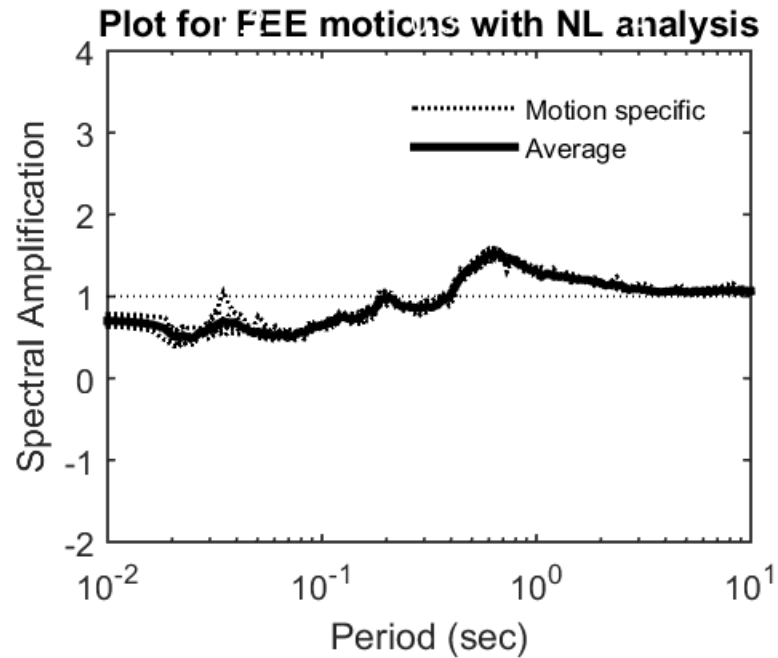




## Summary plots: Spectral amplification at ground surface

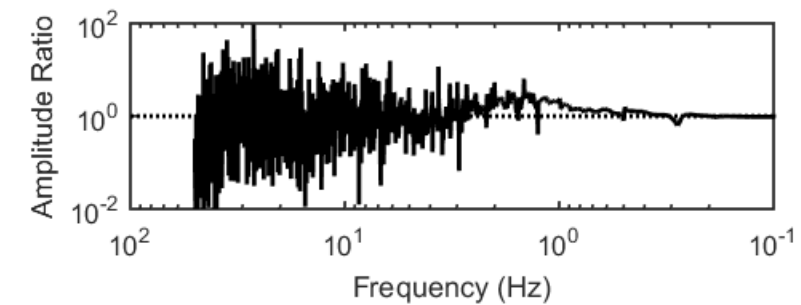
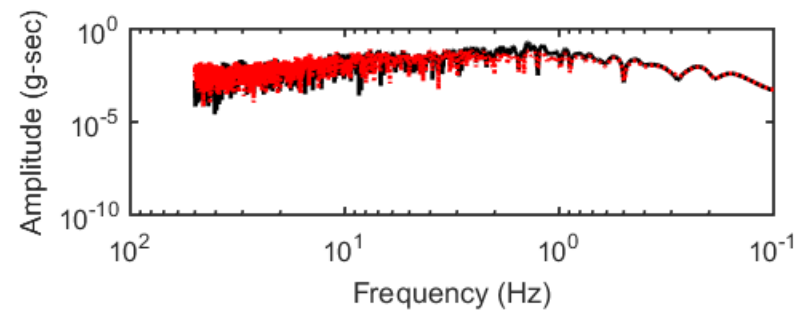
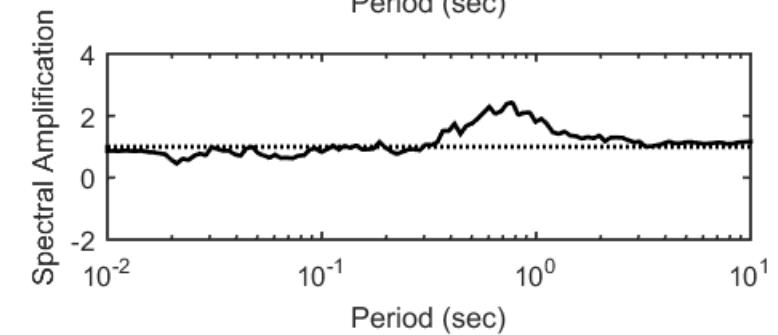
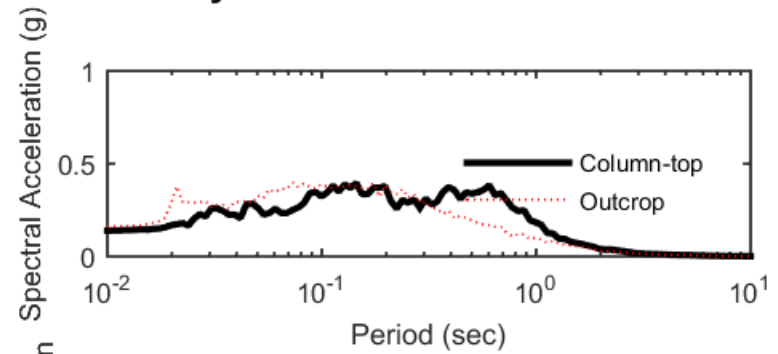
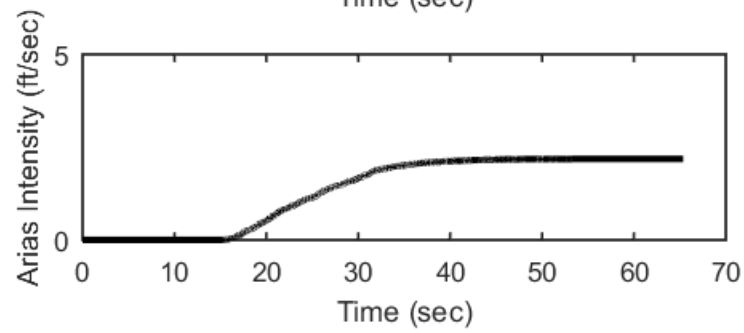
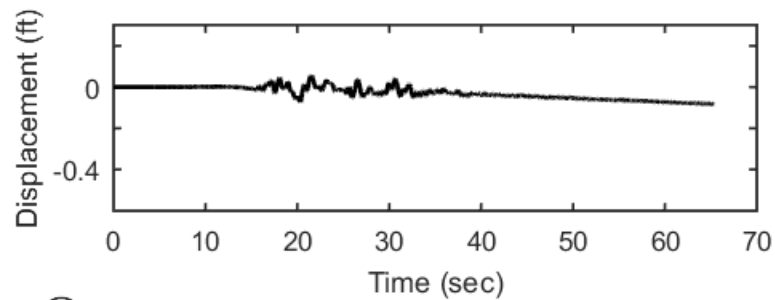
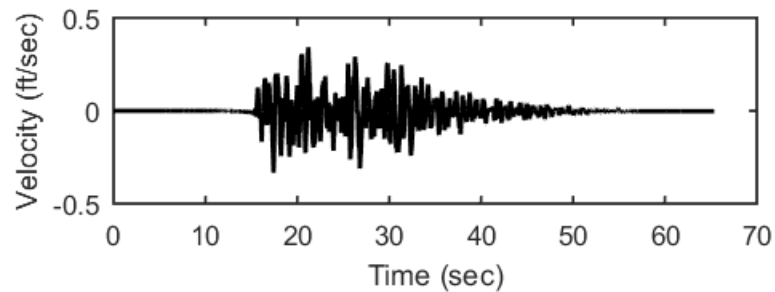
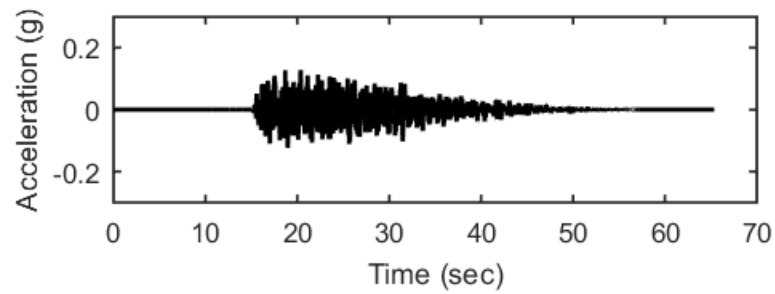


## Summary plots: Spectral amplification at top of Marl

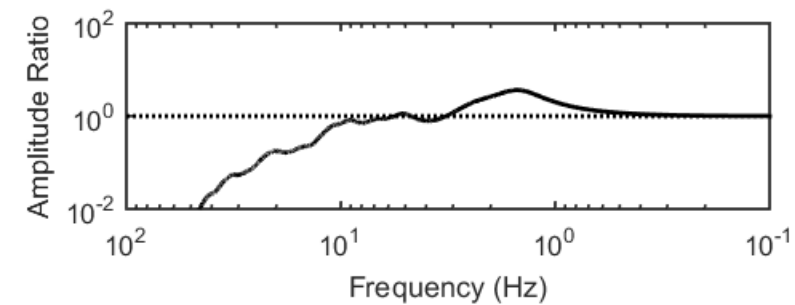
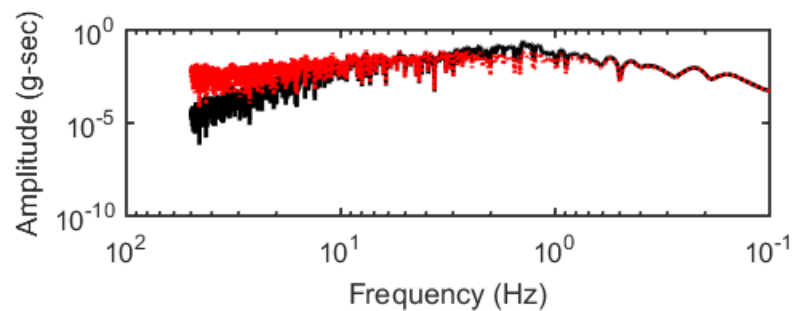
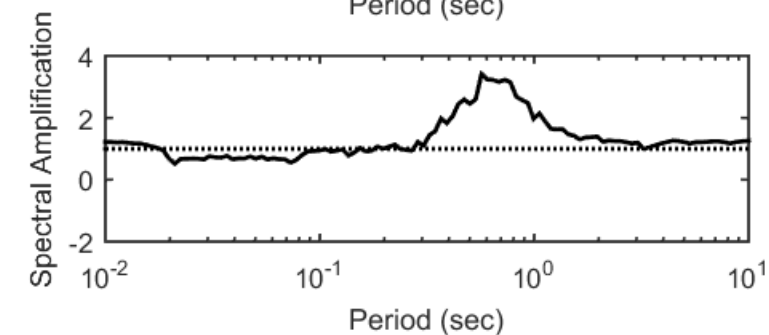
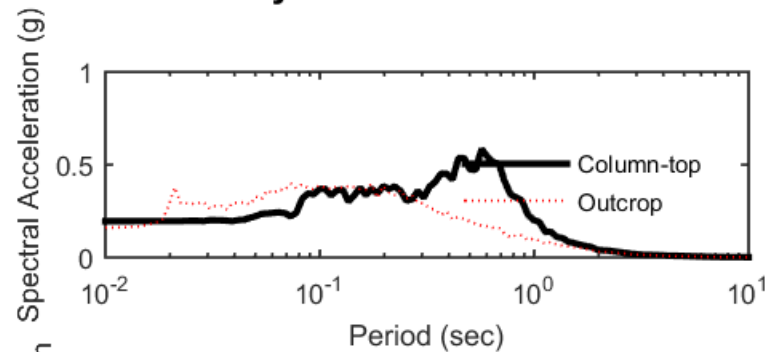
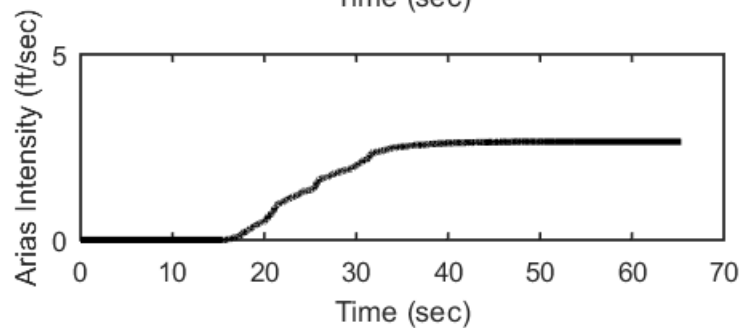
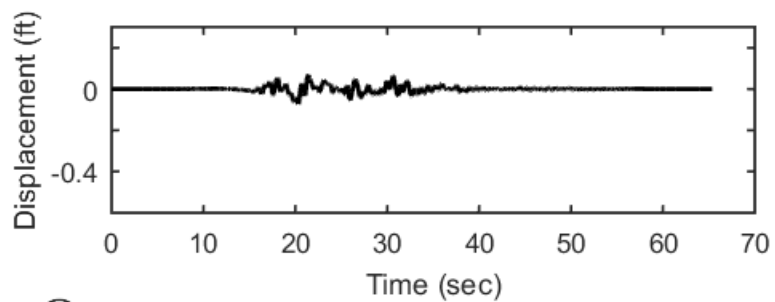
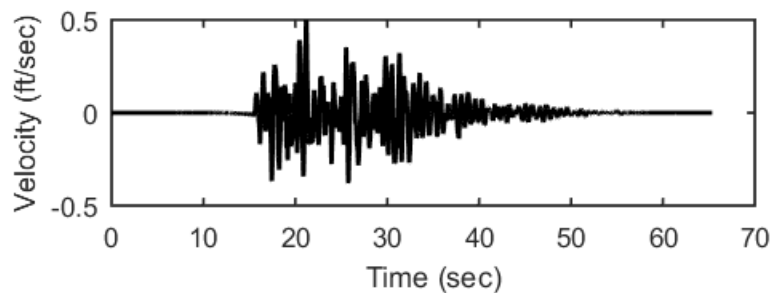
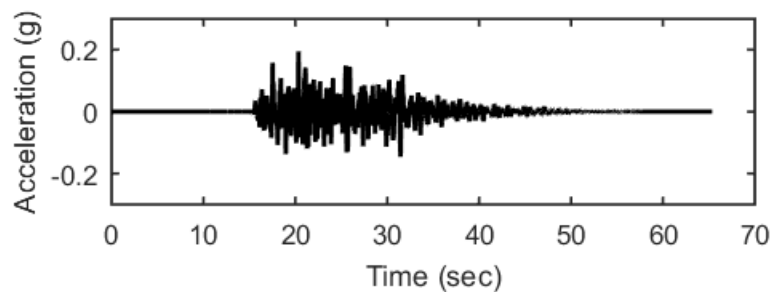


# **BASE MODEL AND HIGH PLASTICITY INDEX**

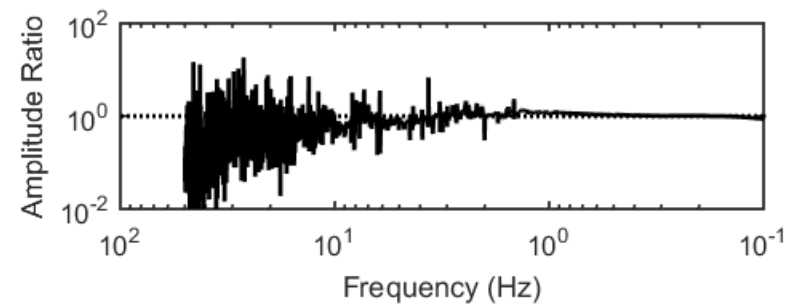
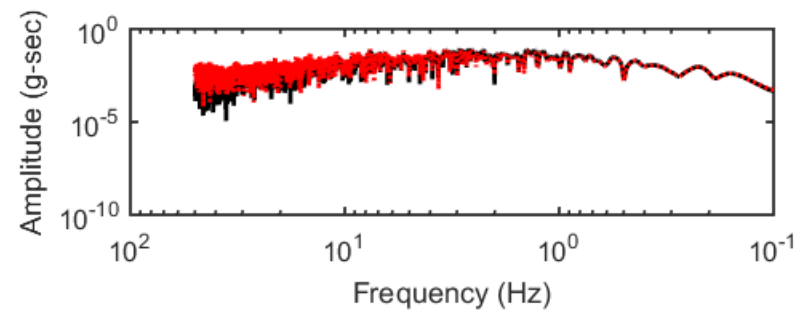
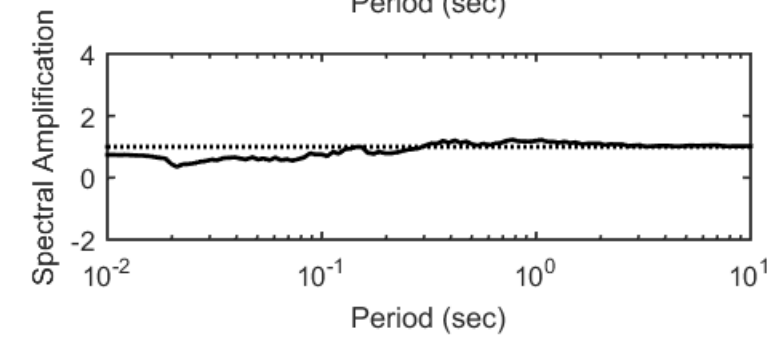
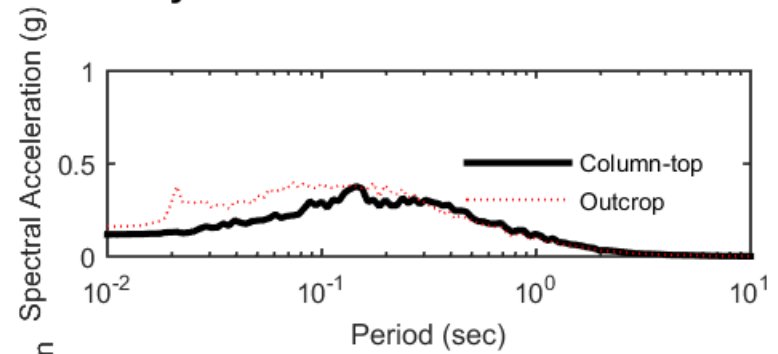
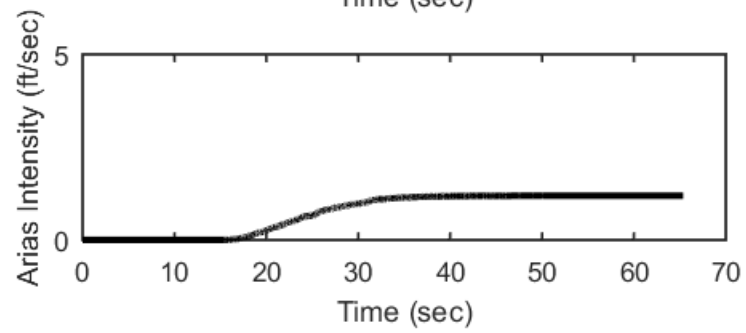
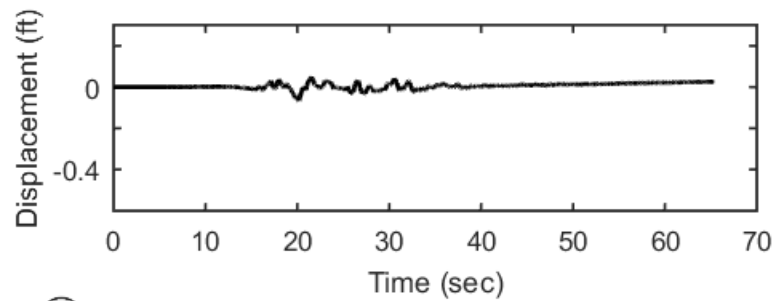
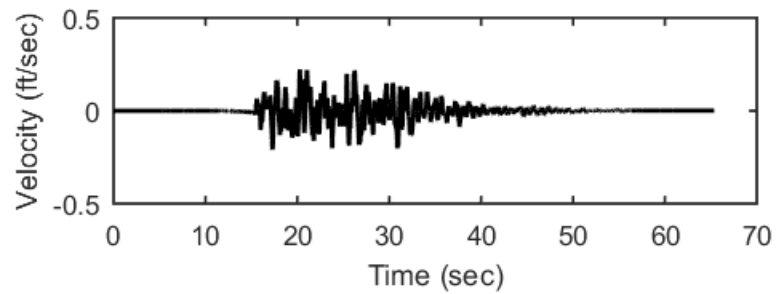
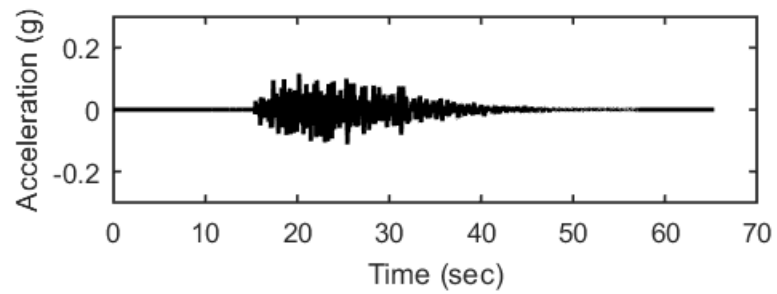
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



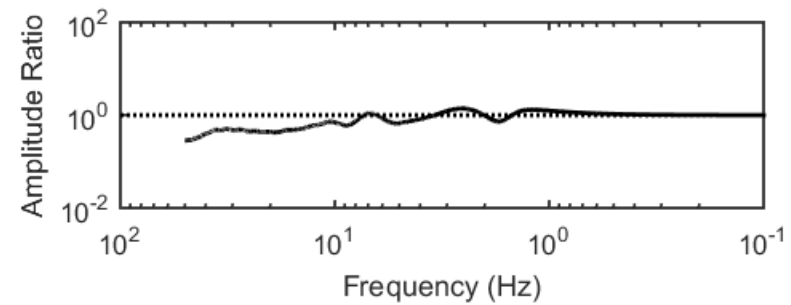
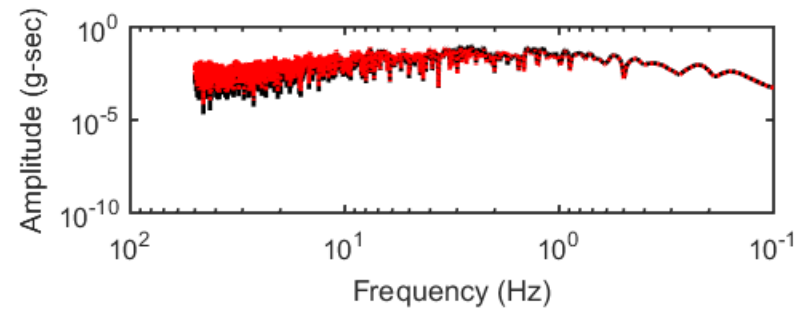
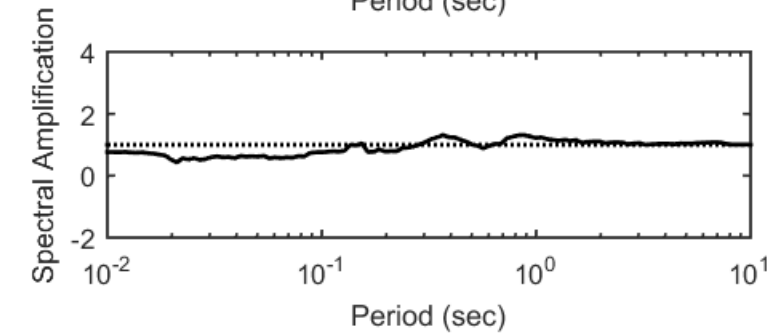
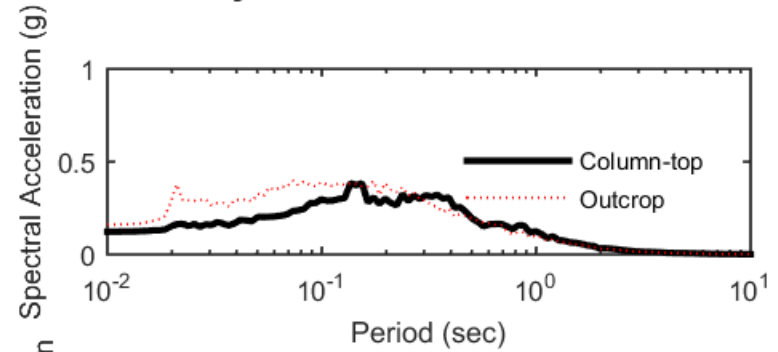
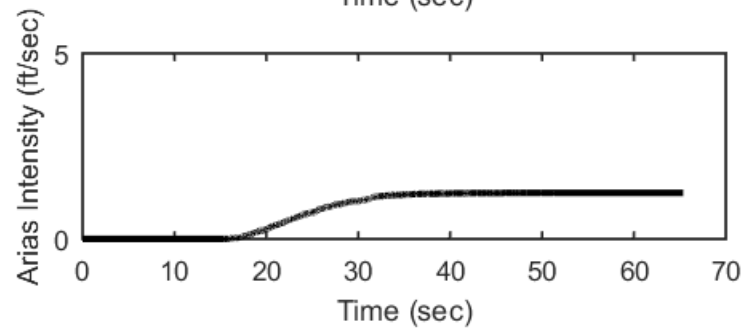
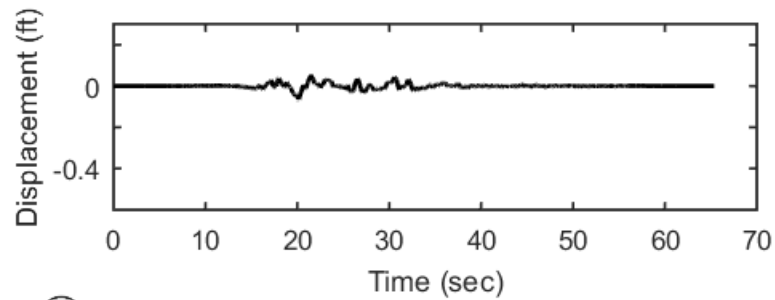
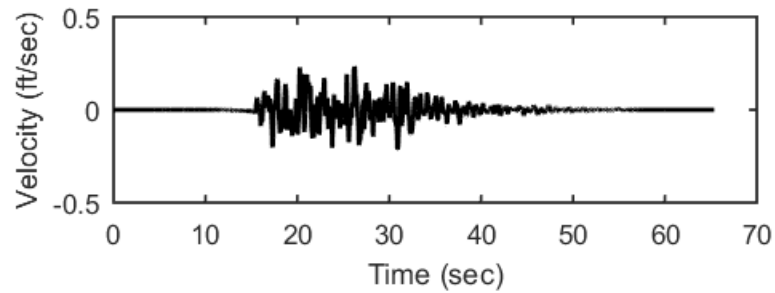
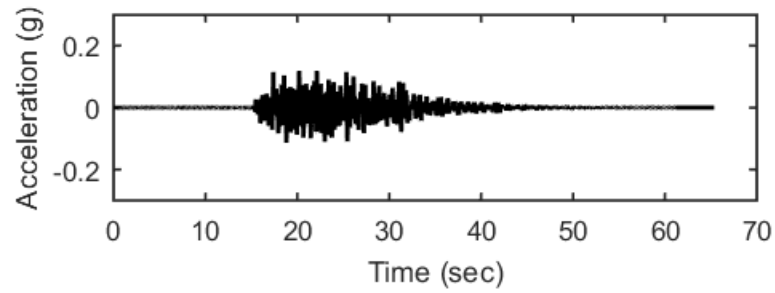
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



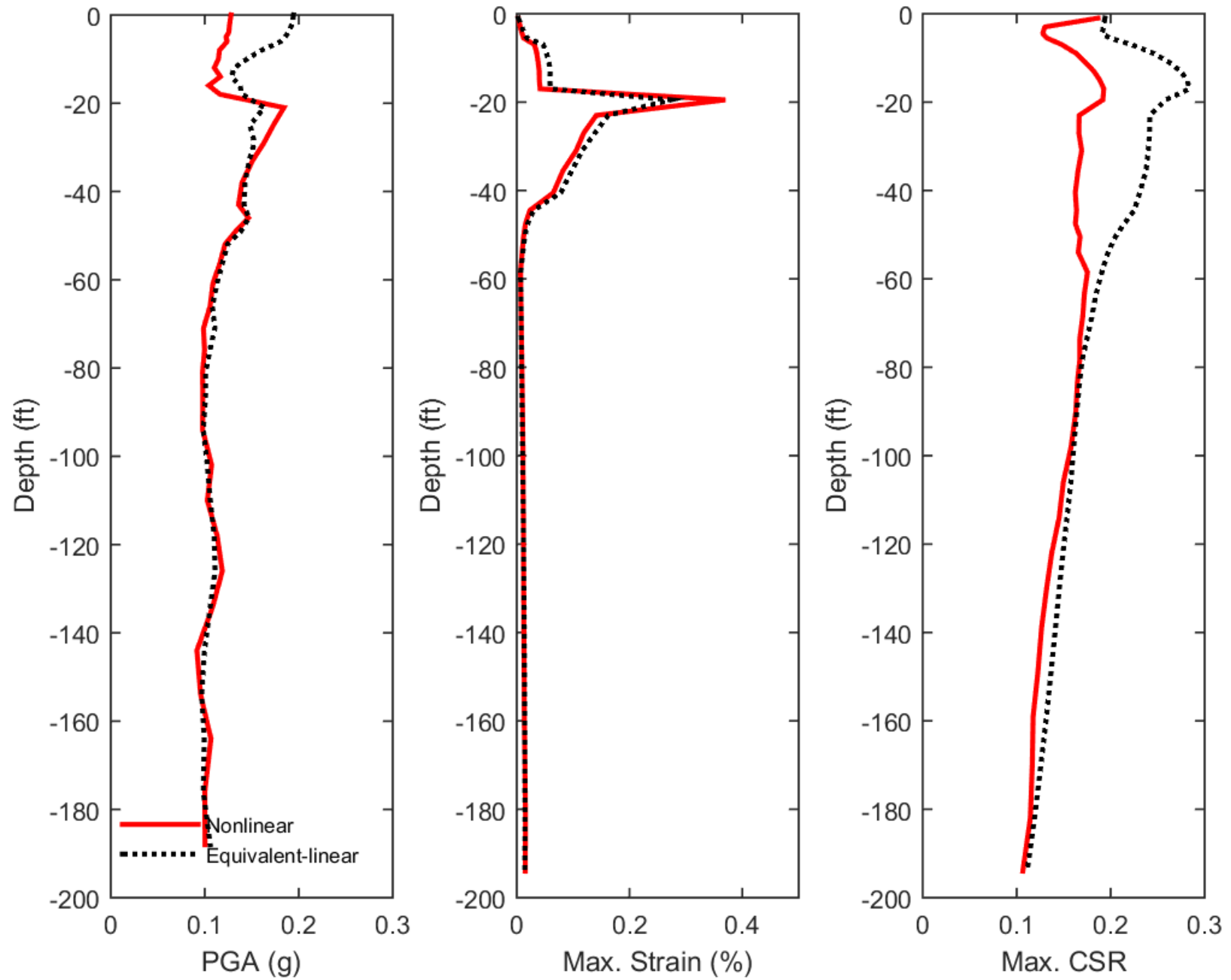
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1

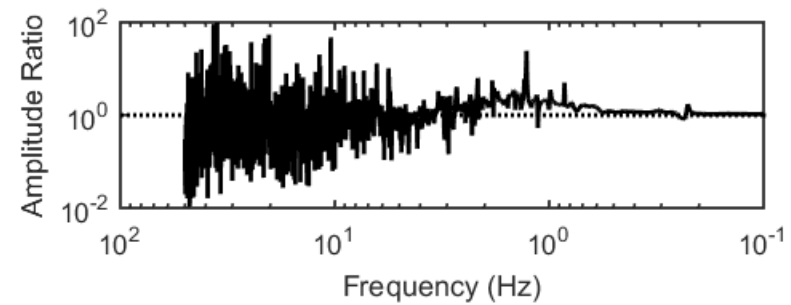
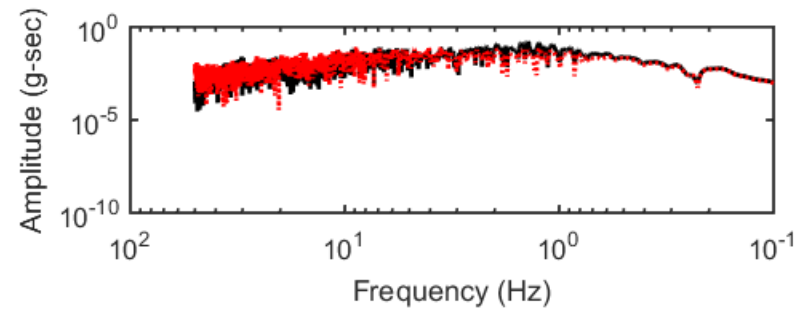
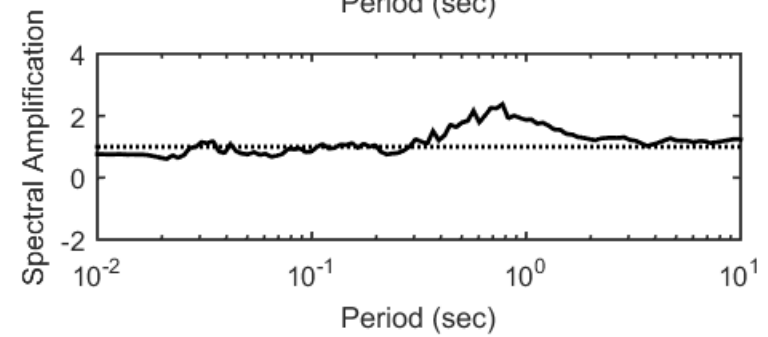
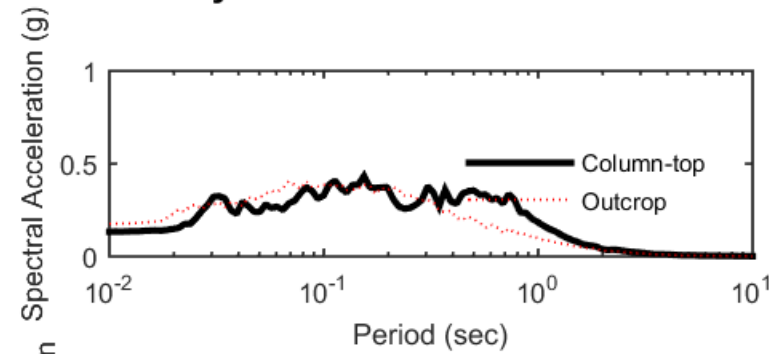
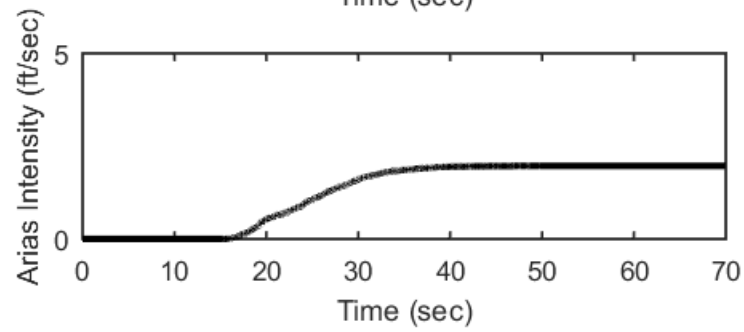
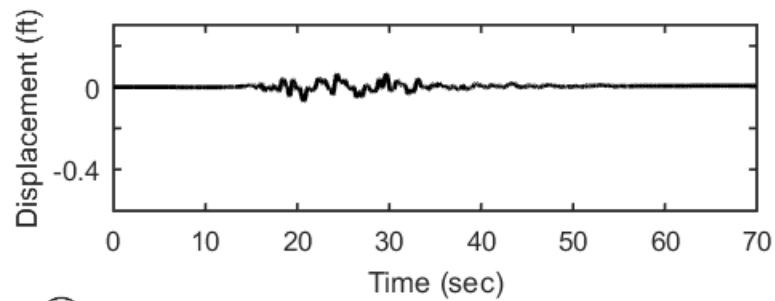
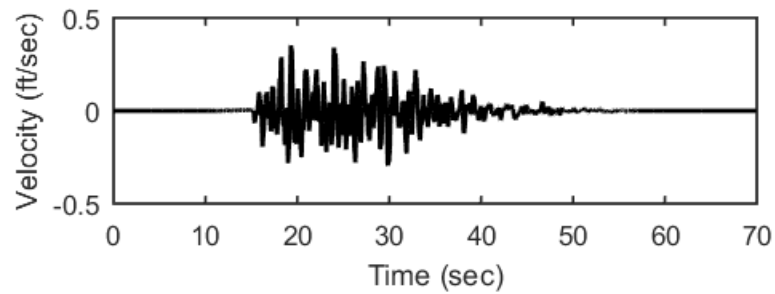
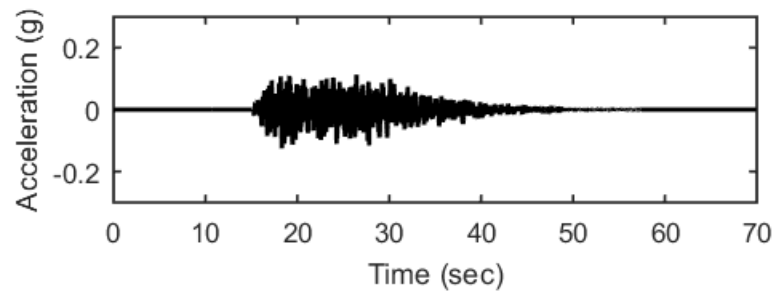


### Profile outputs for Motion: FEE1

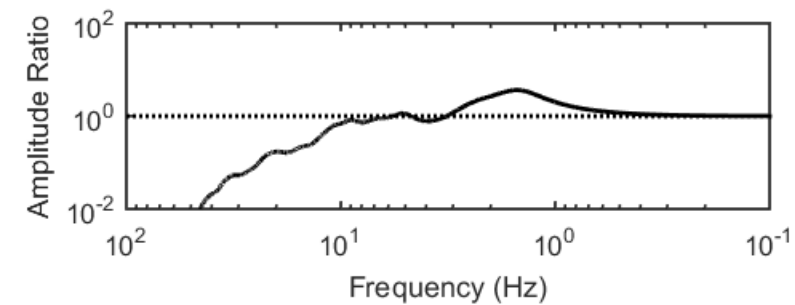
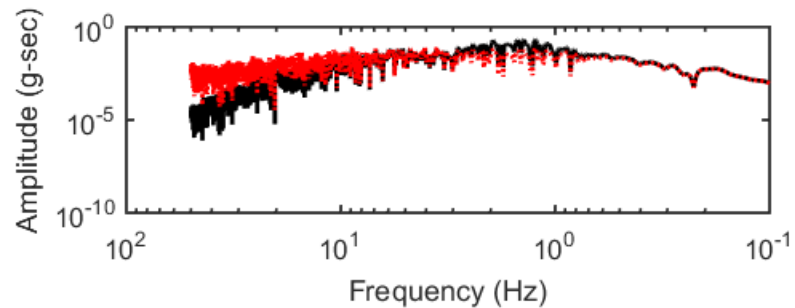
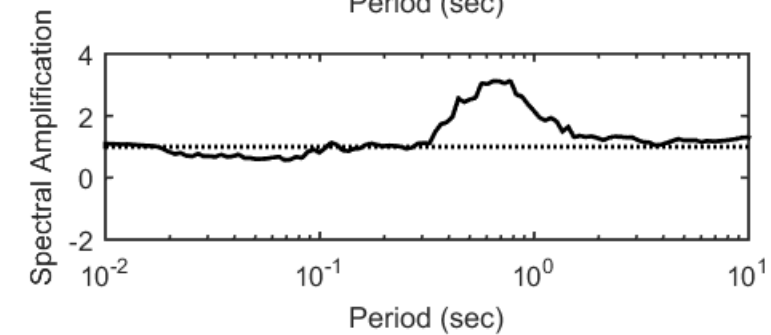
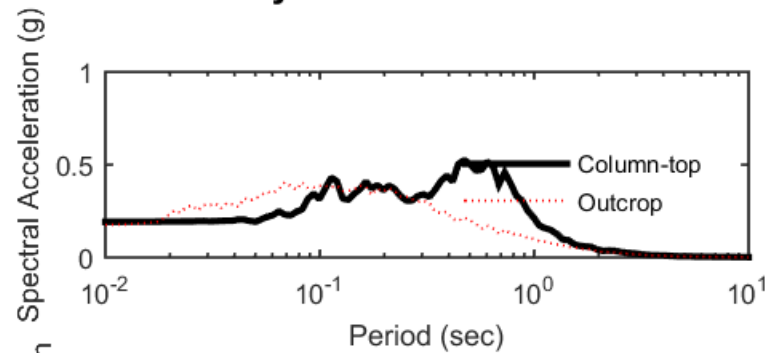
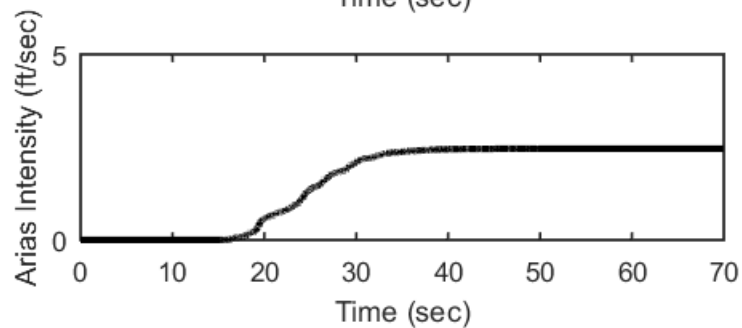
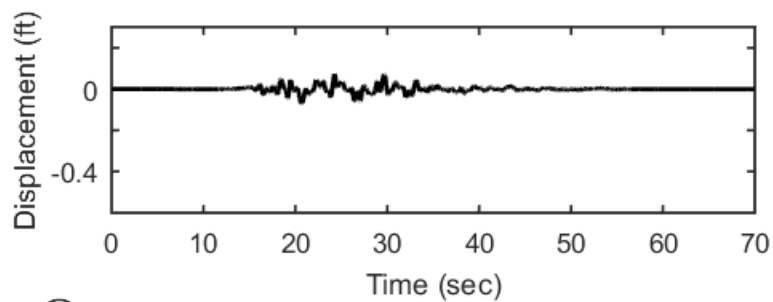
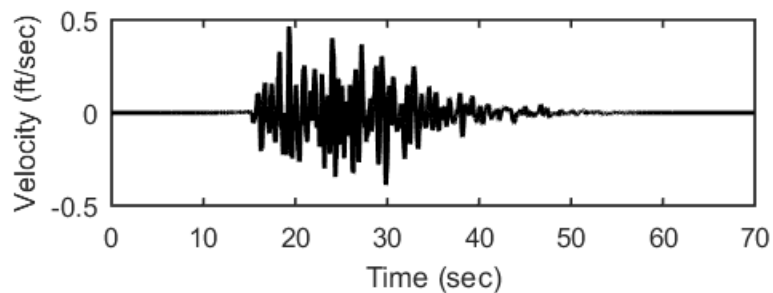
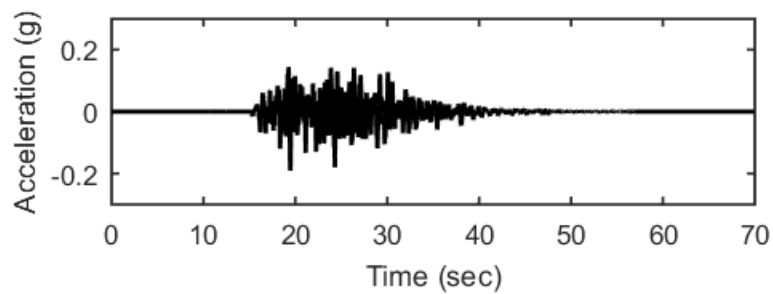




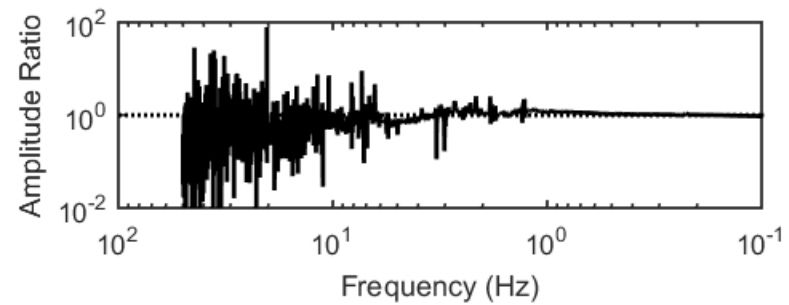
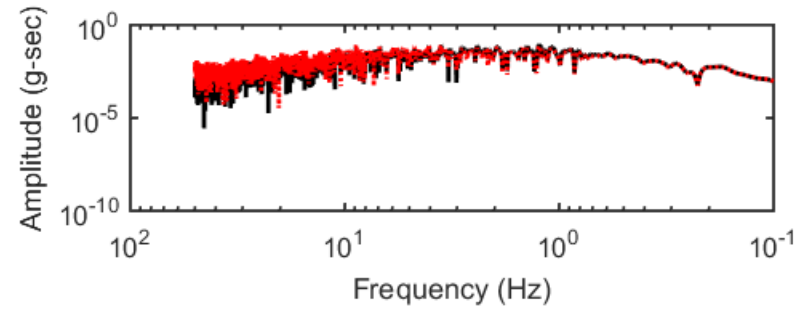
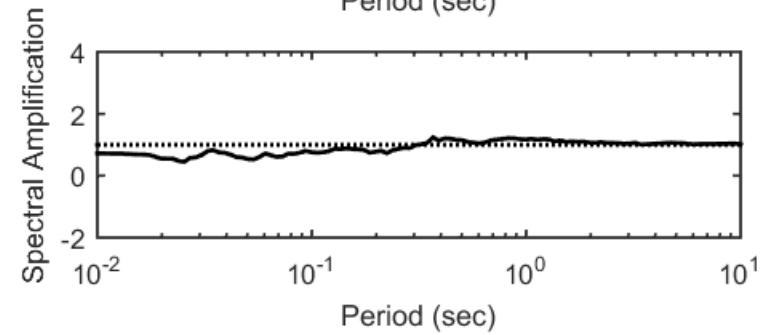
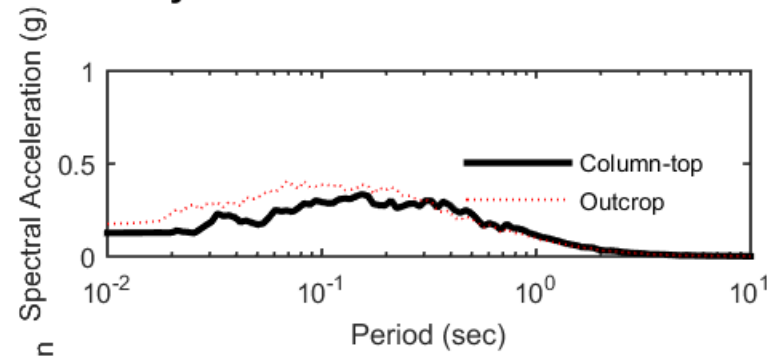
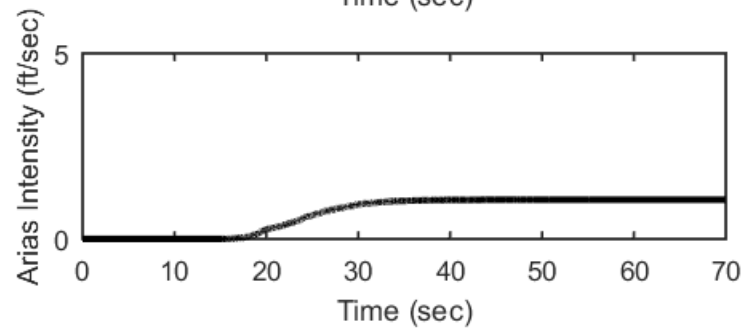
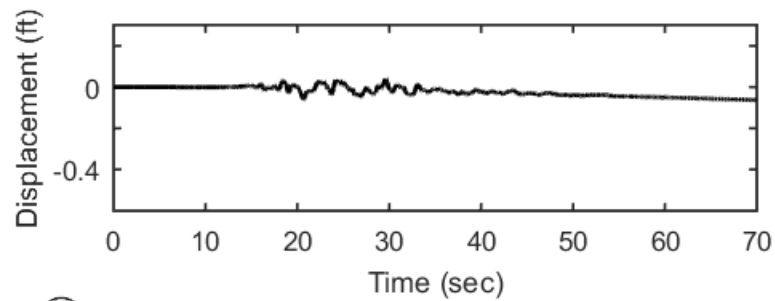
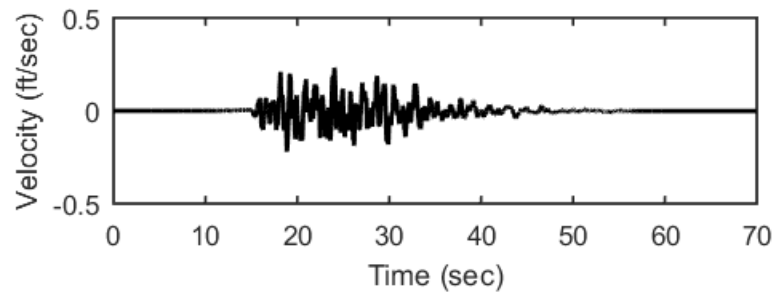
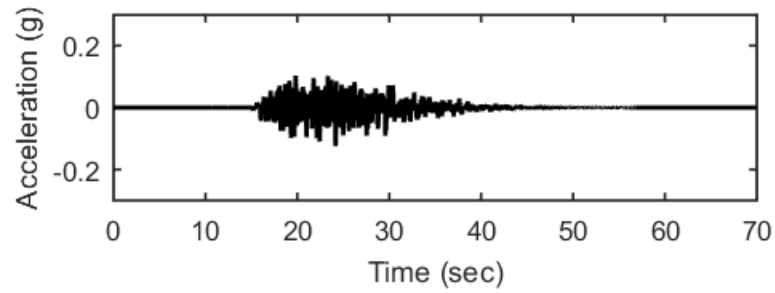
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



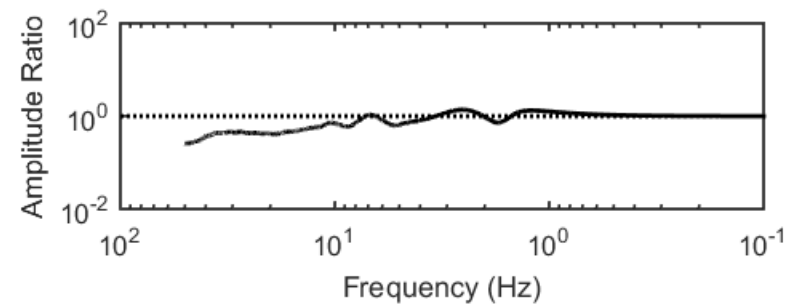
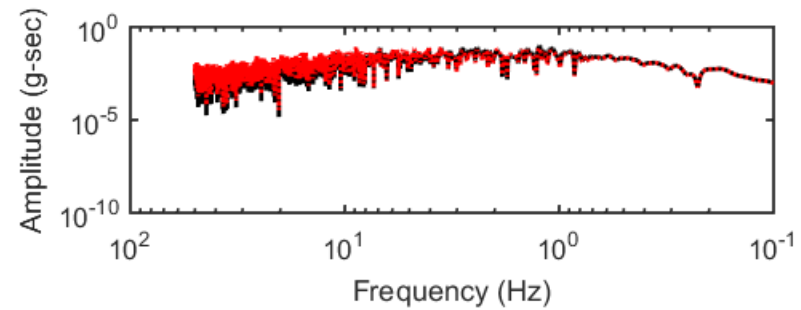
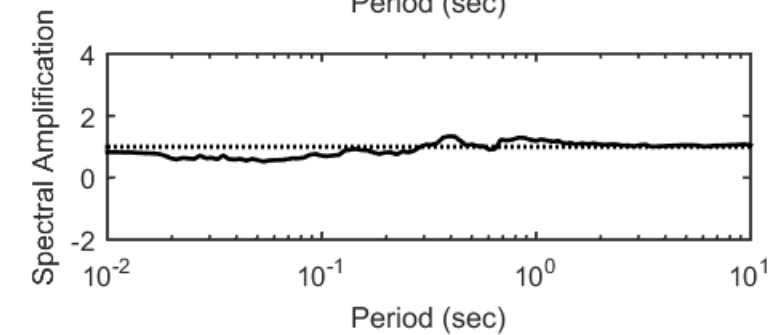
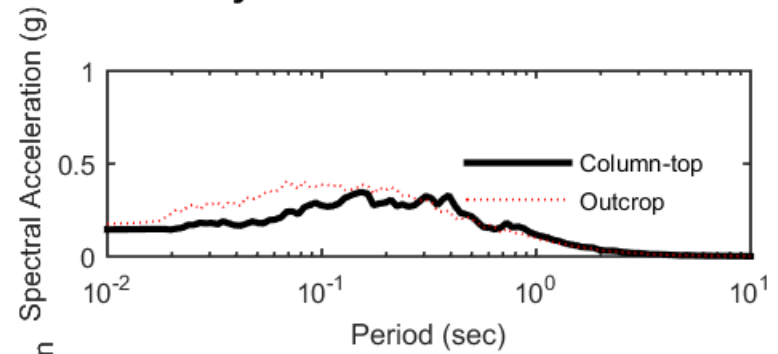
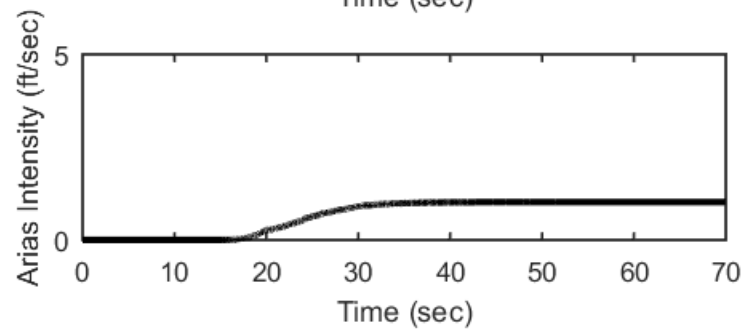
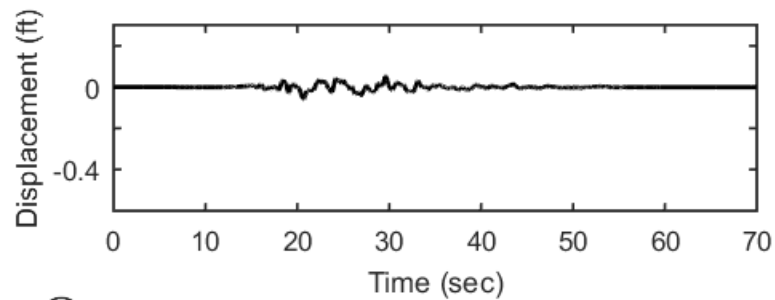
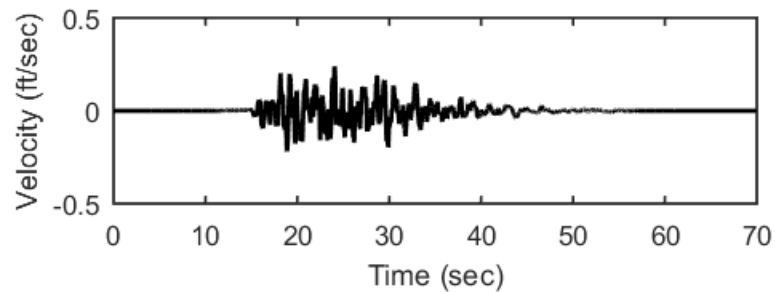
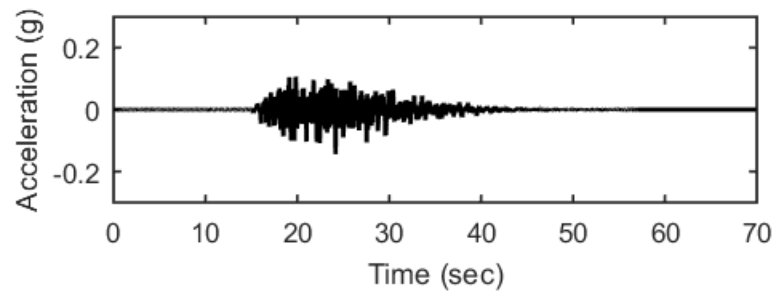
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



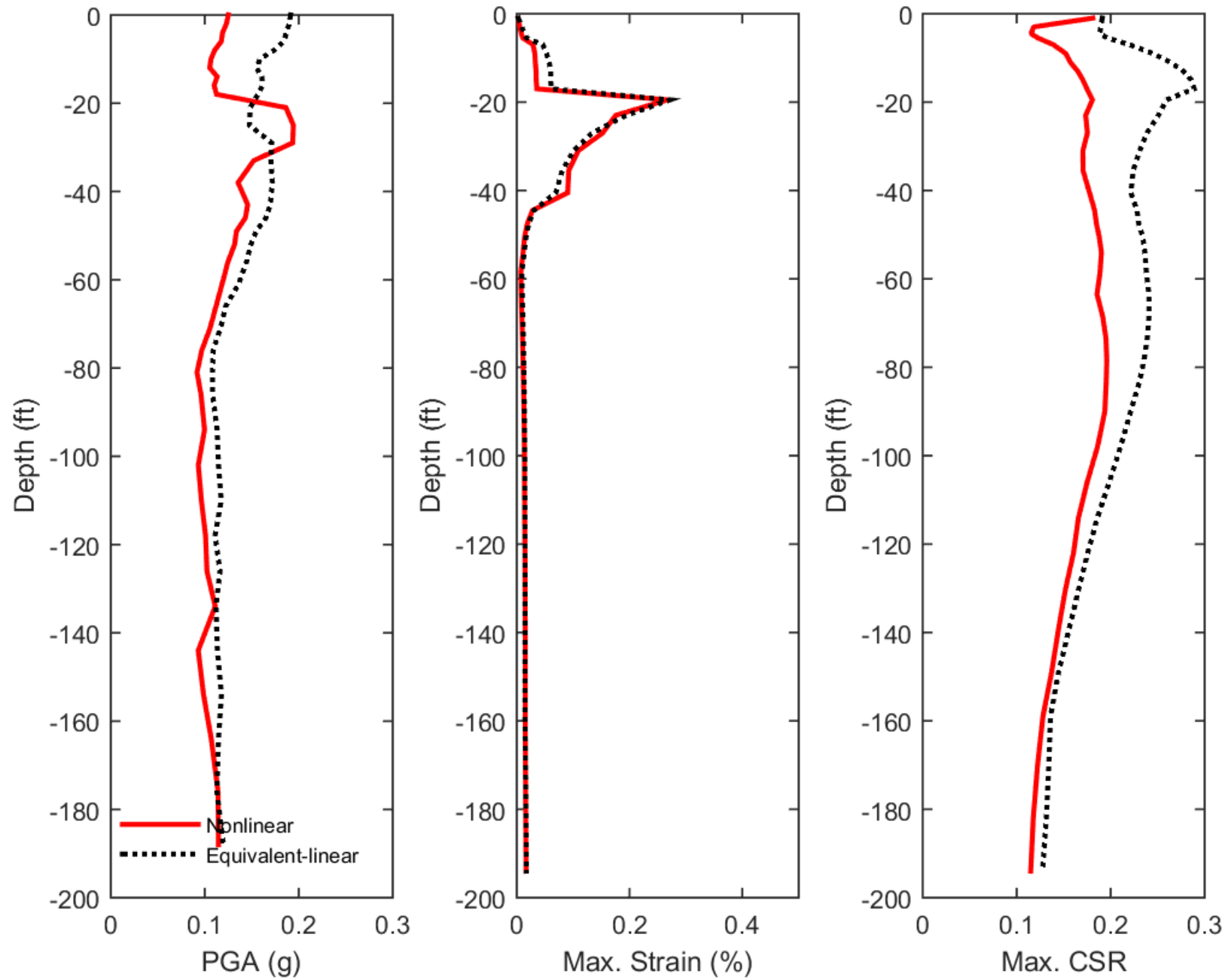
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



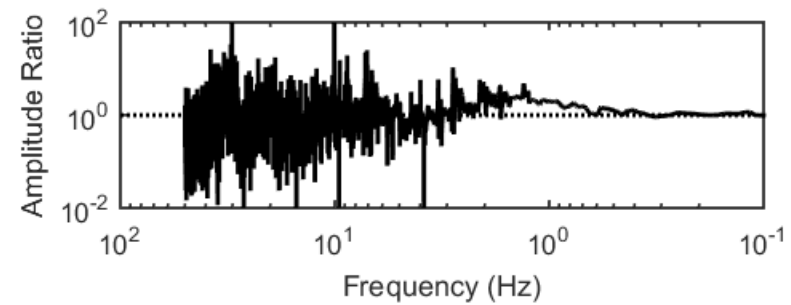
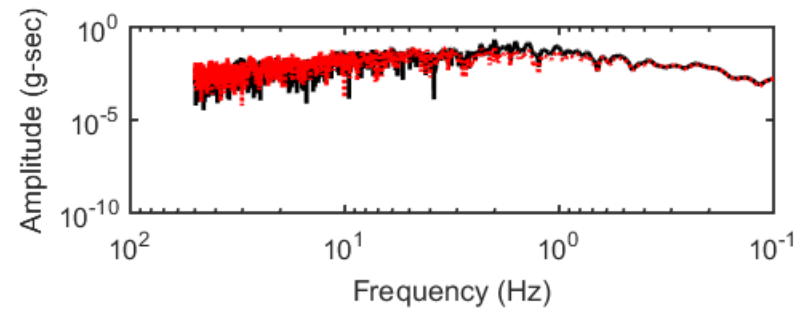
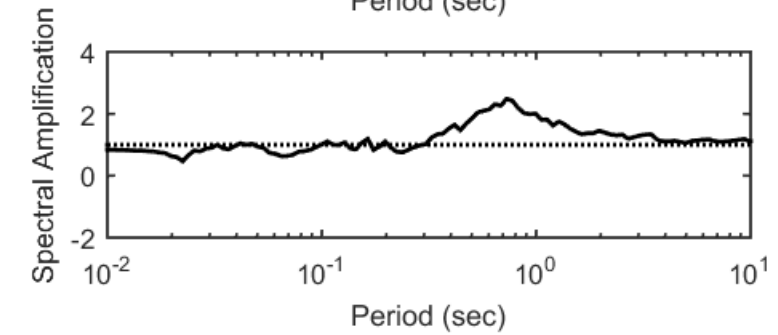
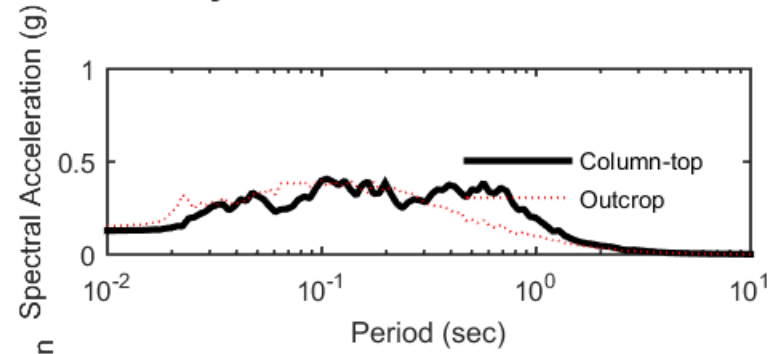
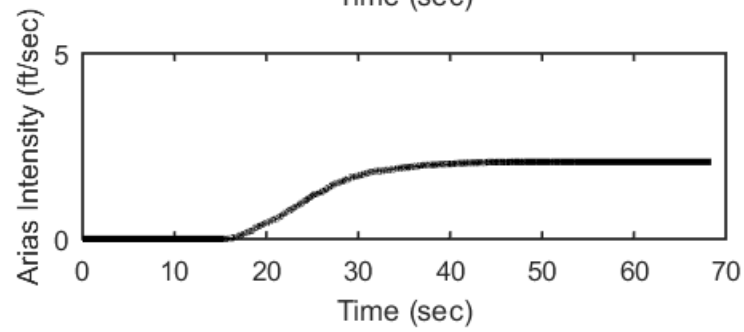
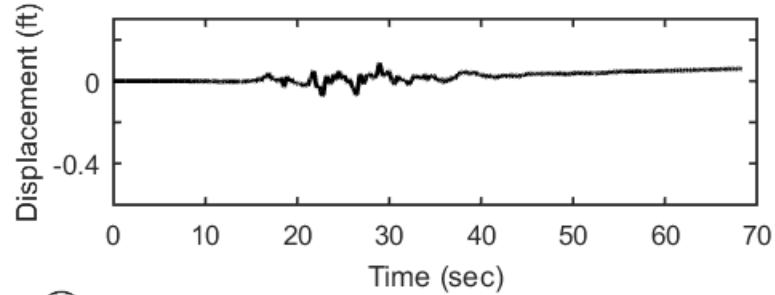
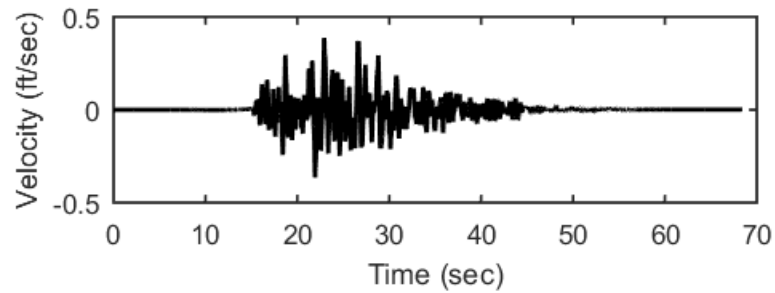
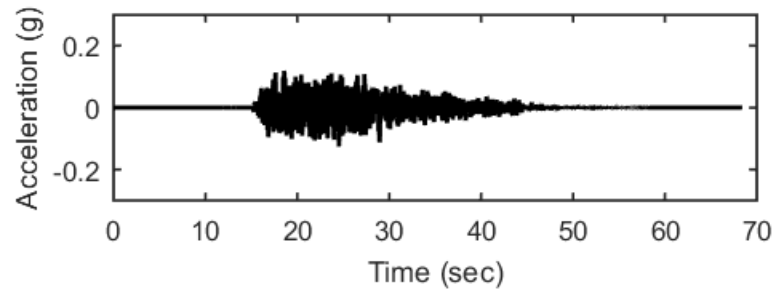
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



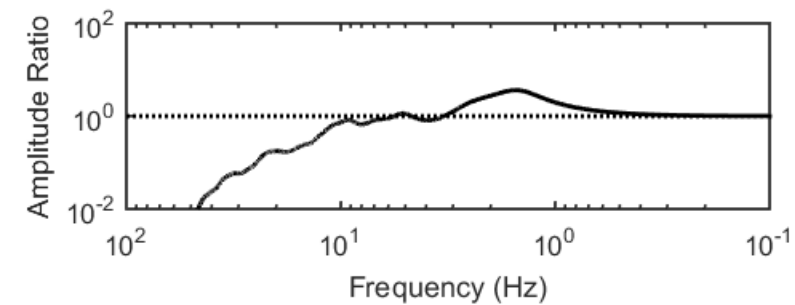
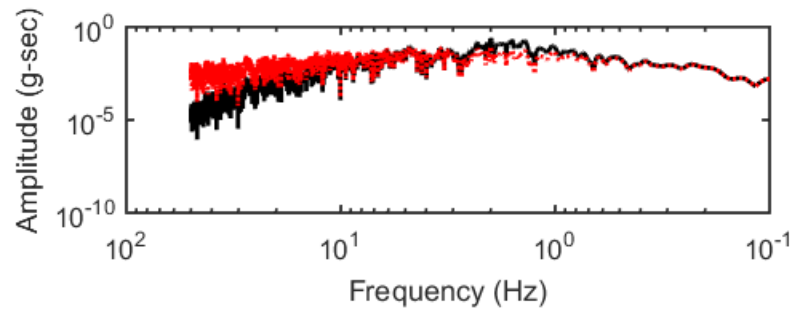
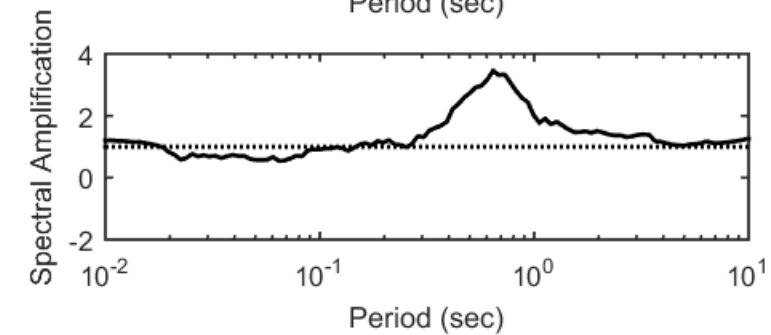
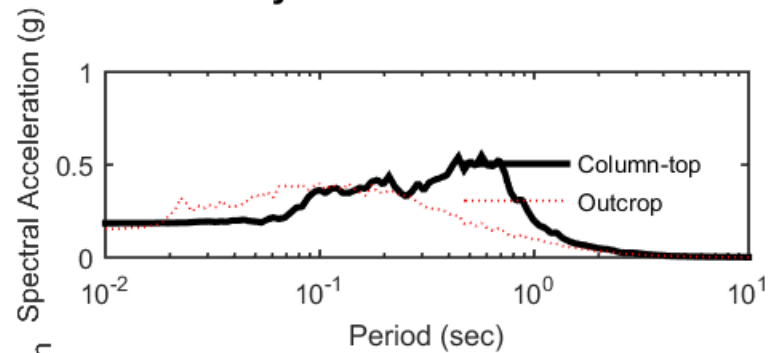
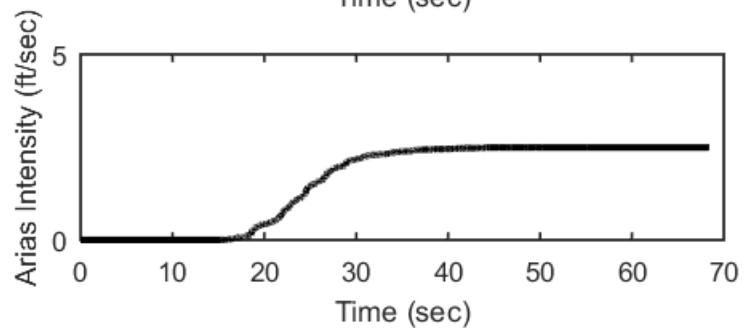
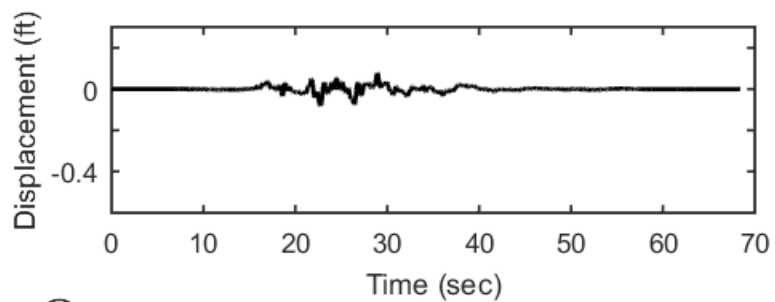
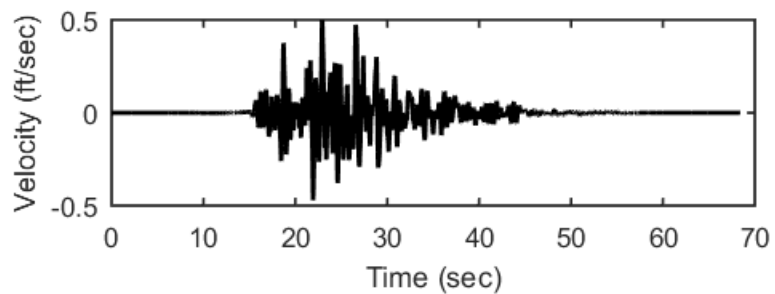
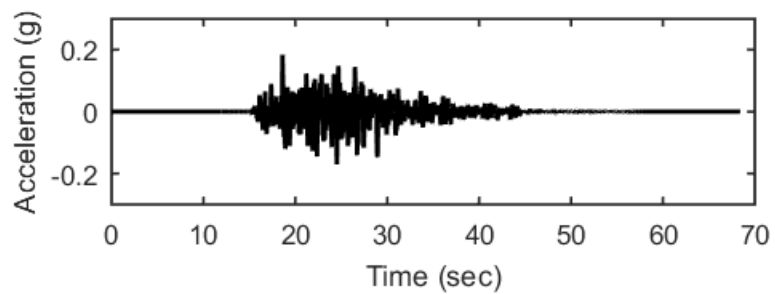
### Profile outputs for Motion: FEE2



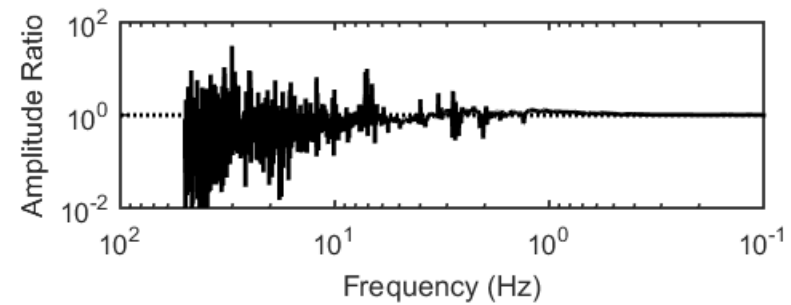
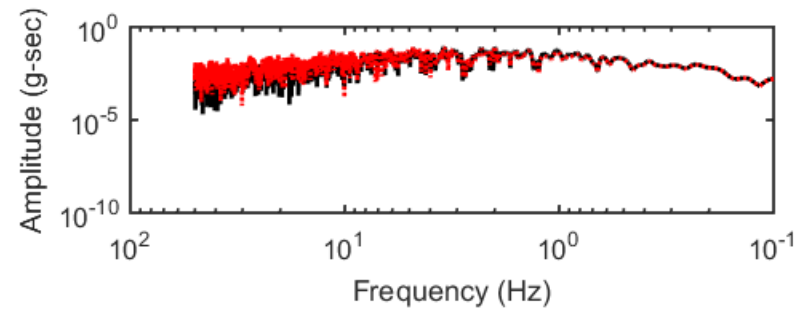
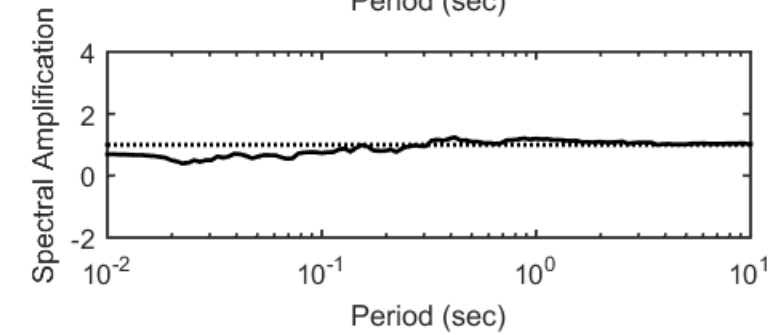
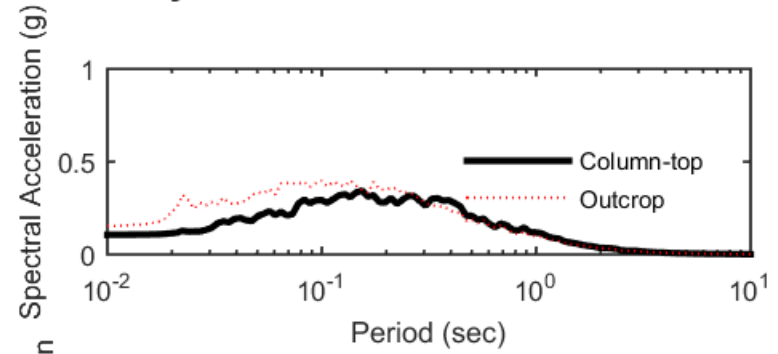
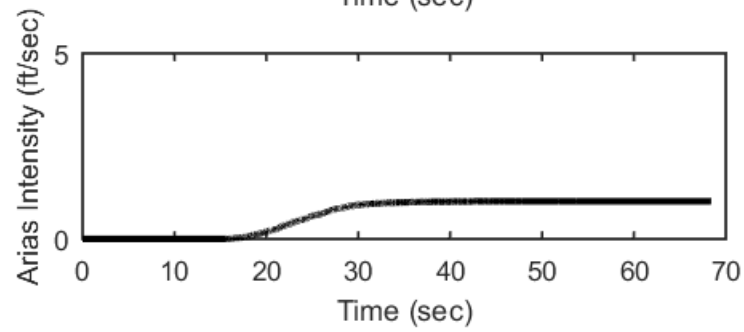
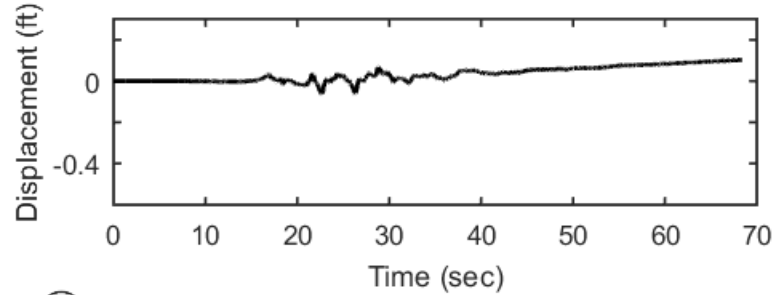
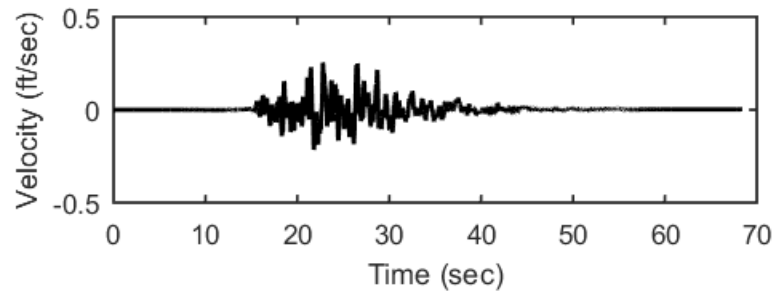
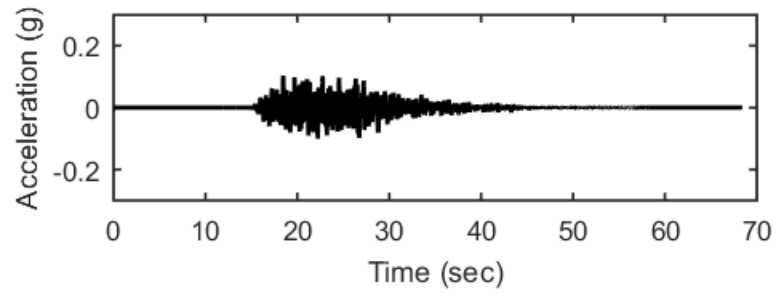
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3

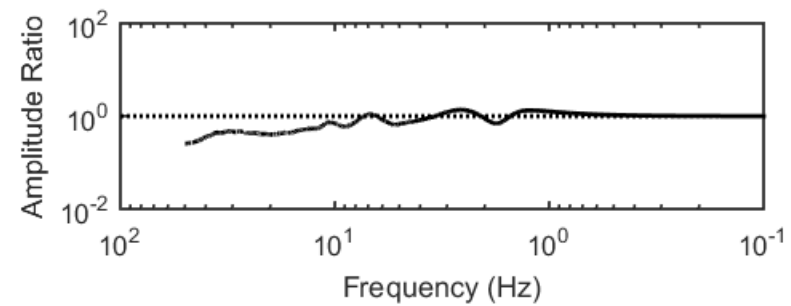
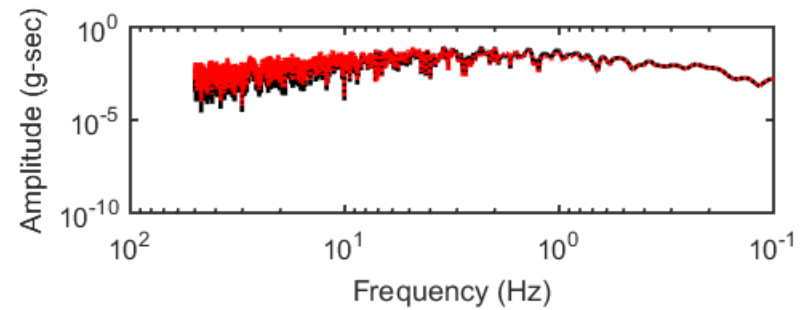
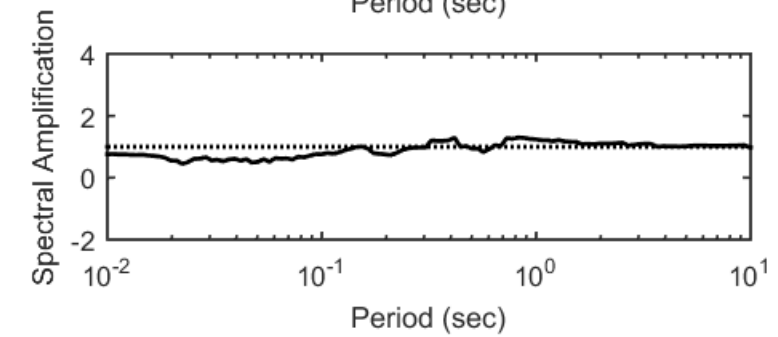
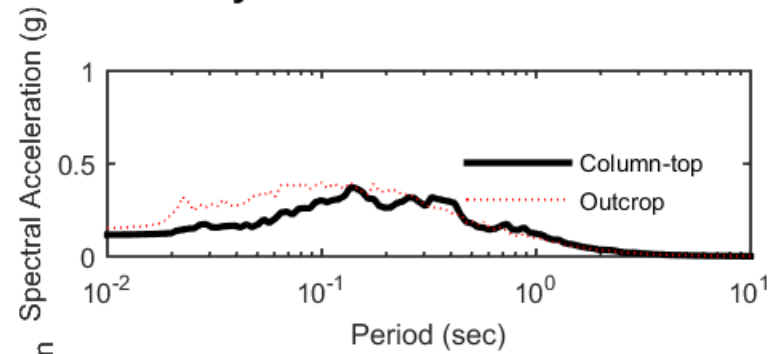
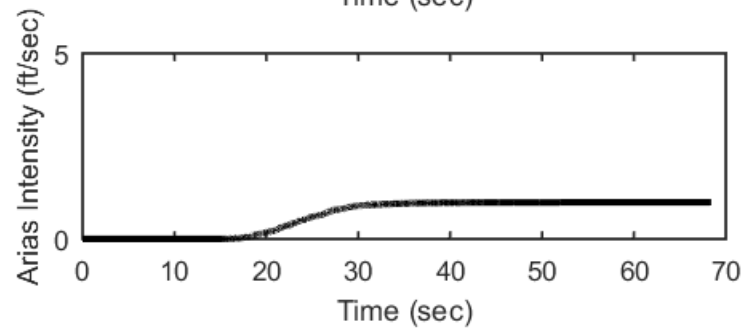
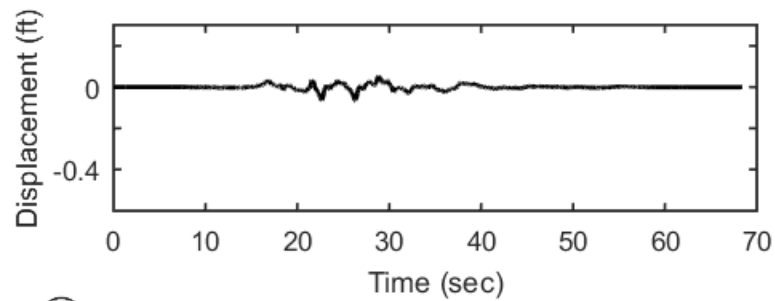
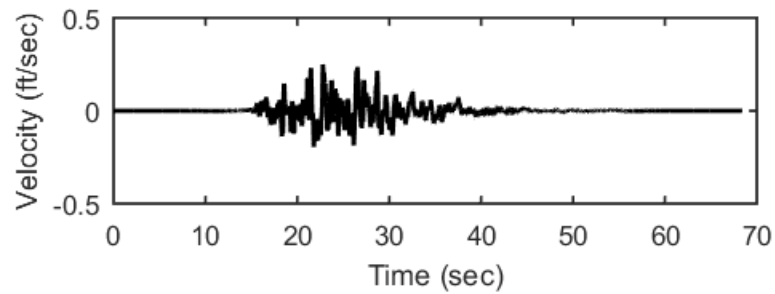
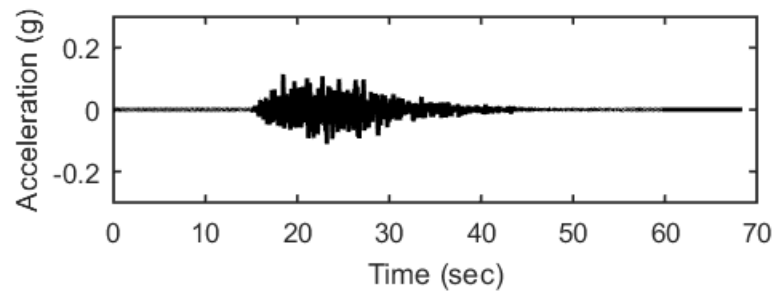


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3

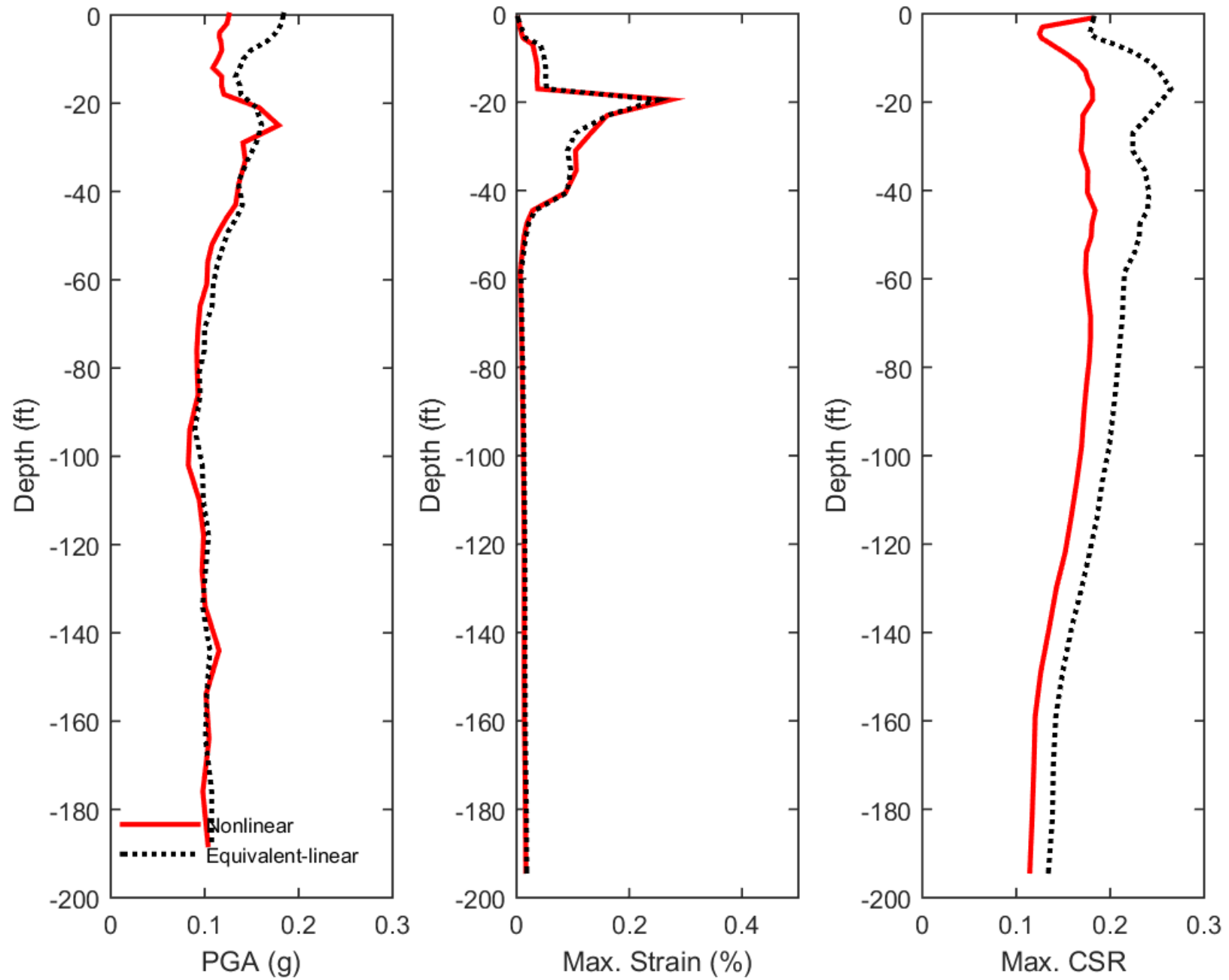




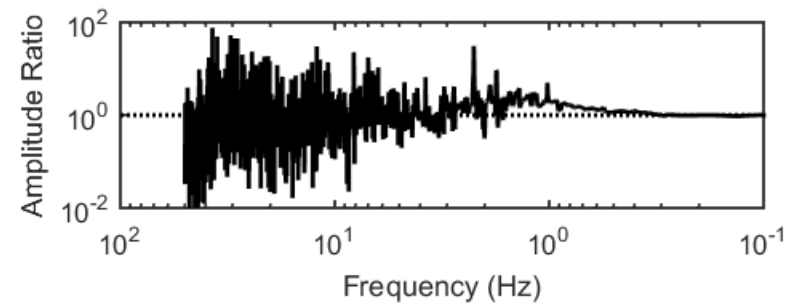
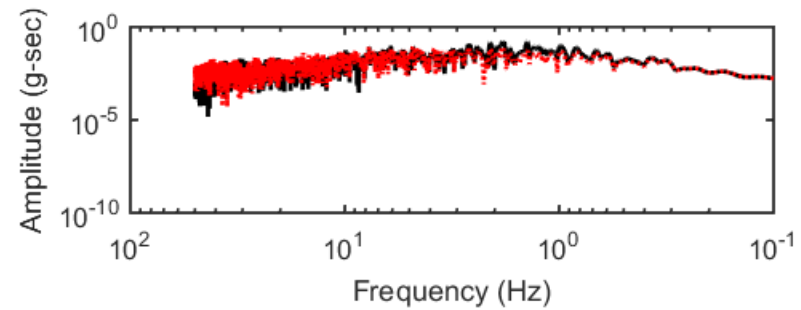
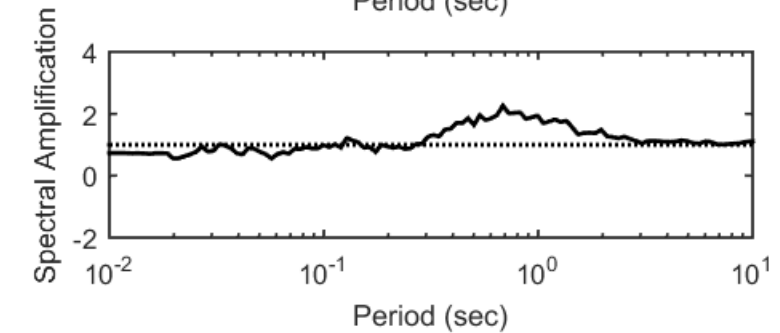
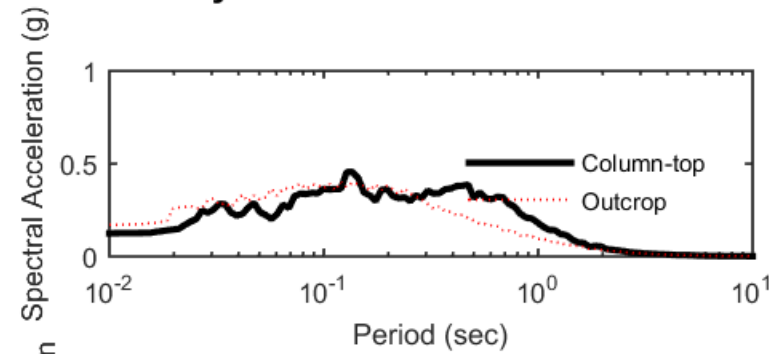
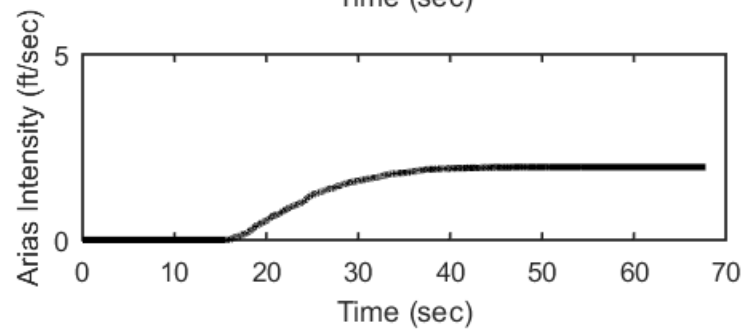
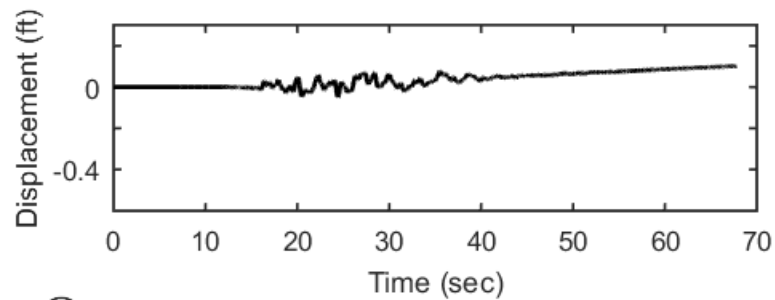
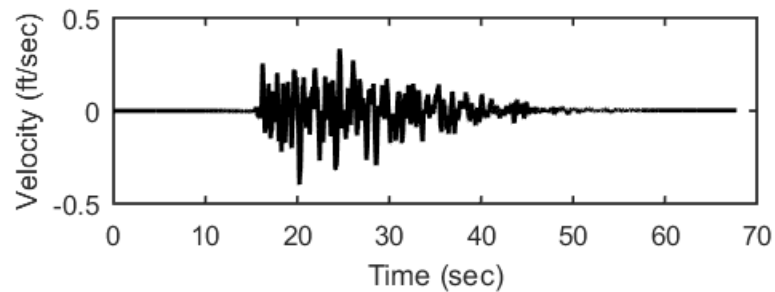
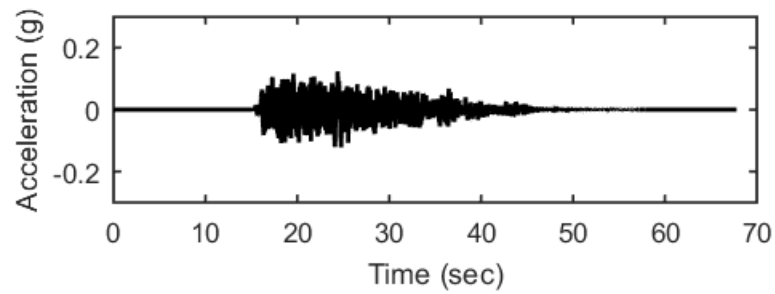
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



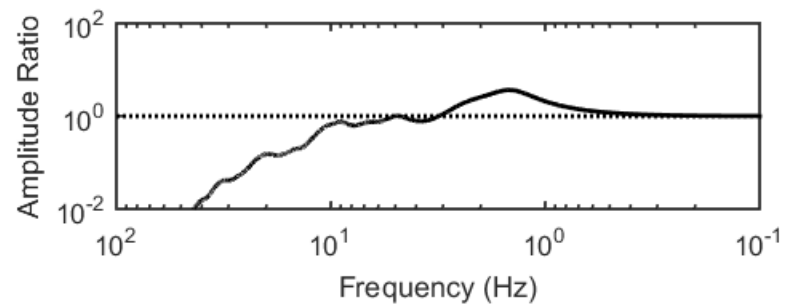
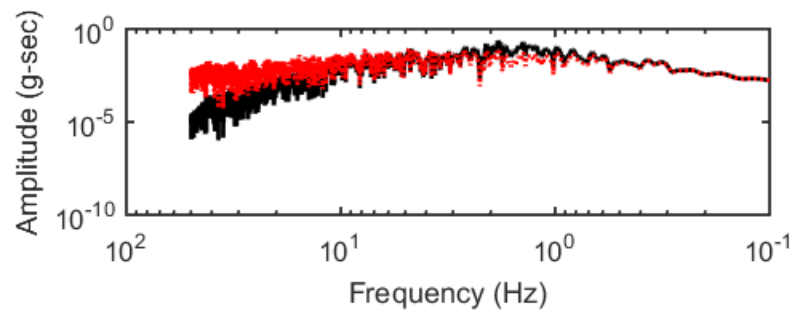
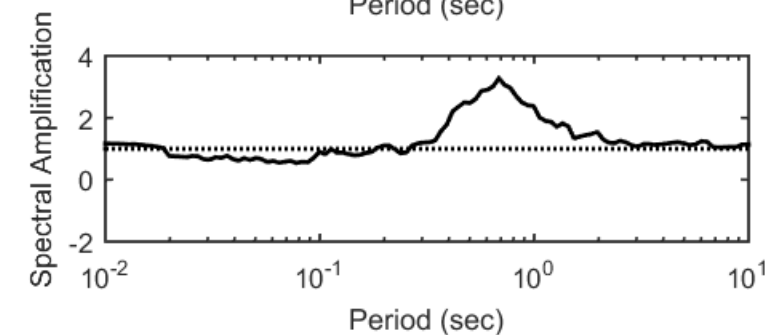
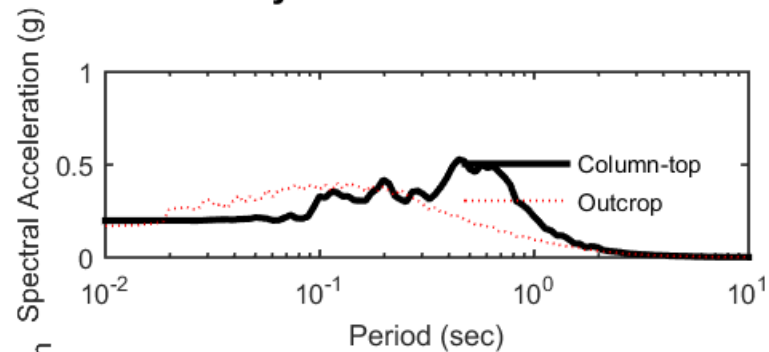
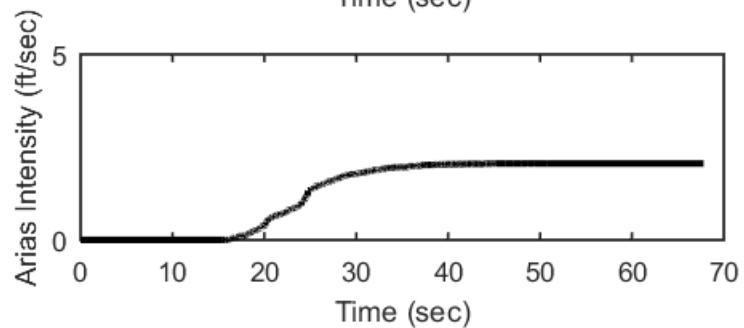
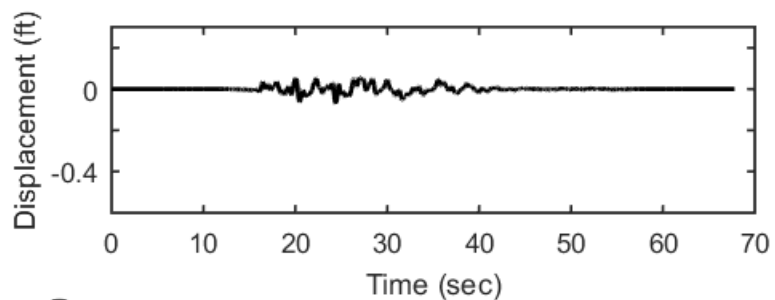
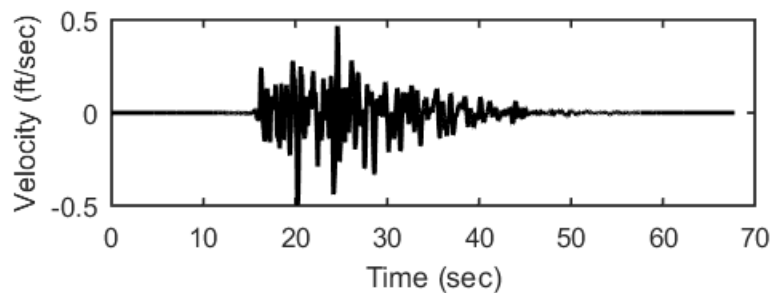
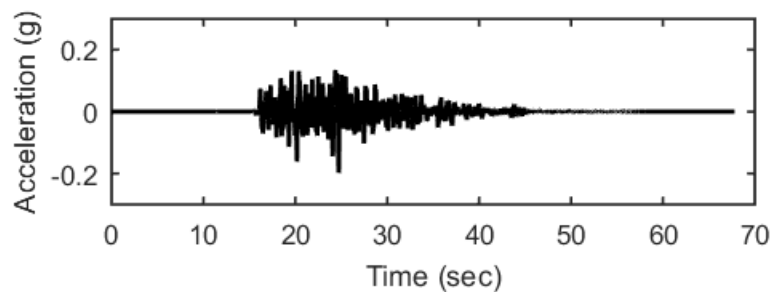
### Profile outputs for Motion: FEE3



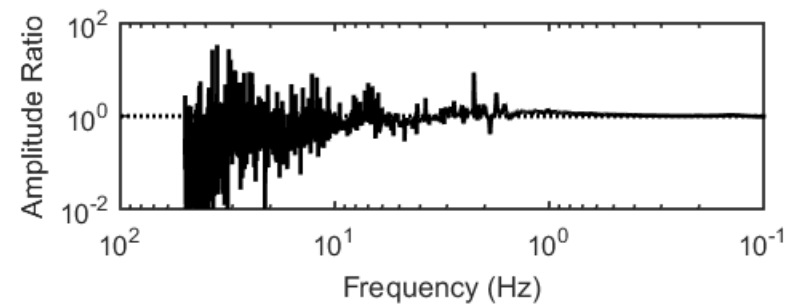
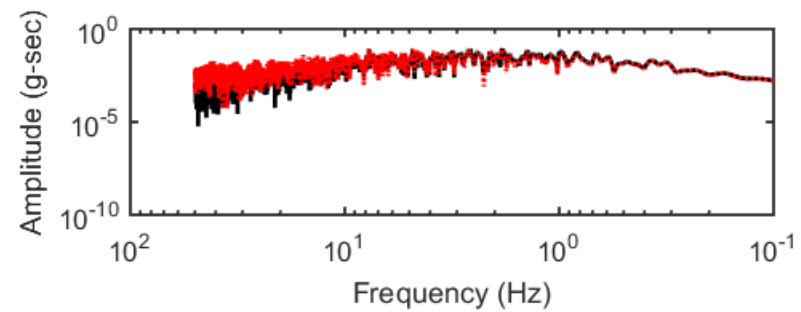
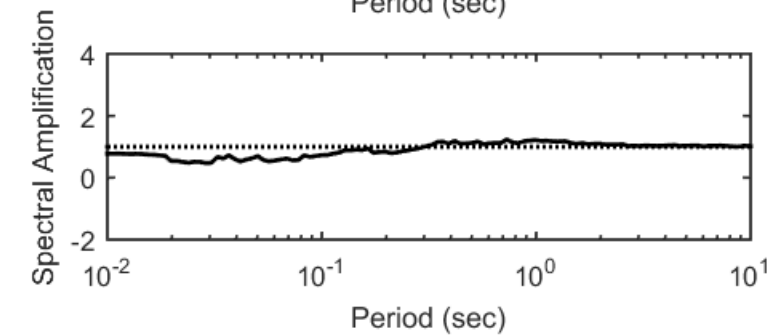
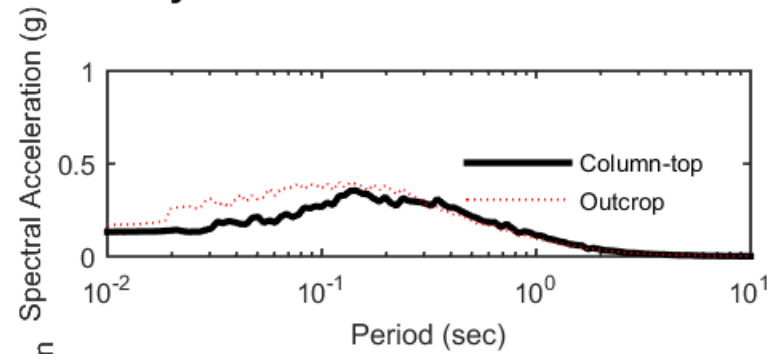
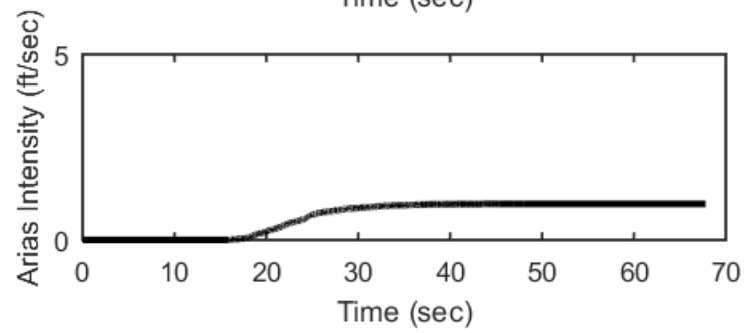
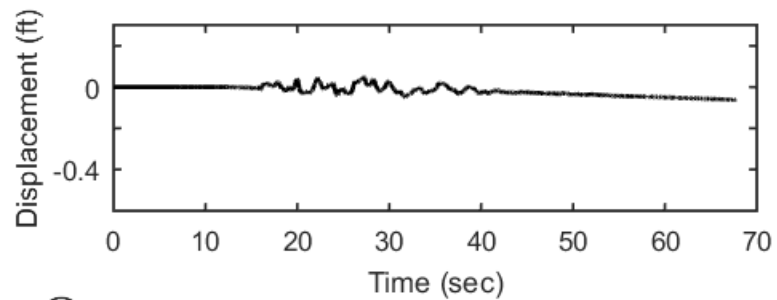
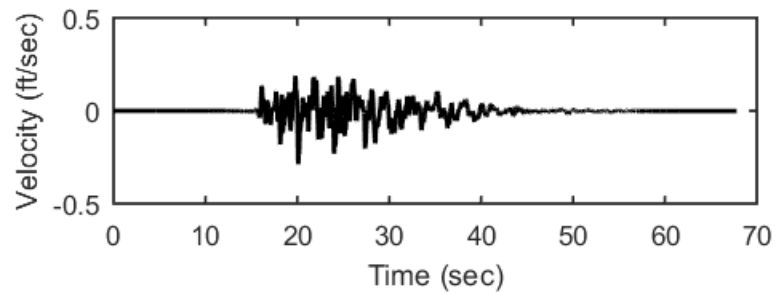
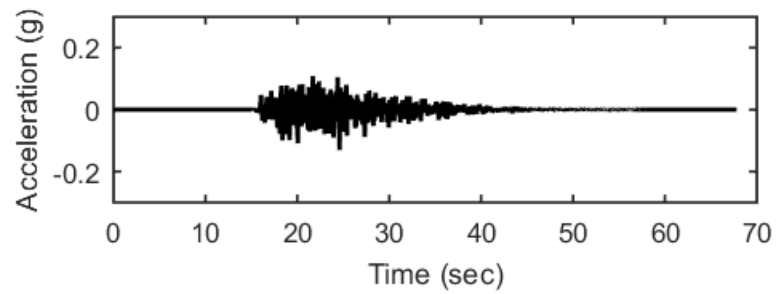
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



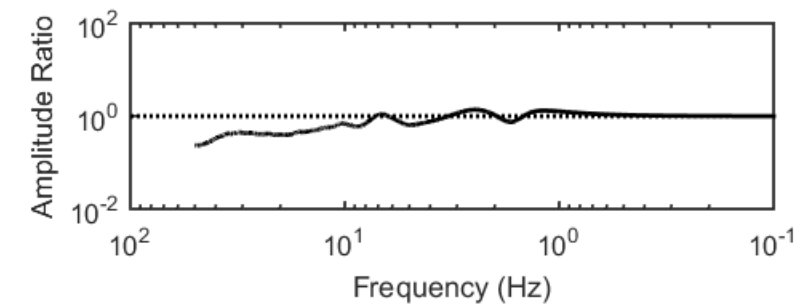
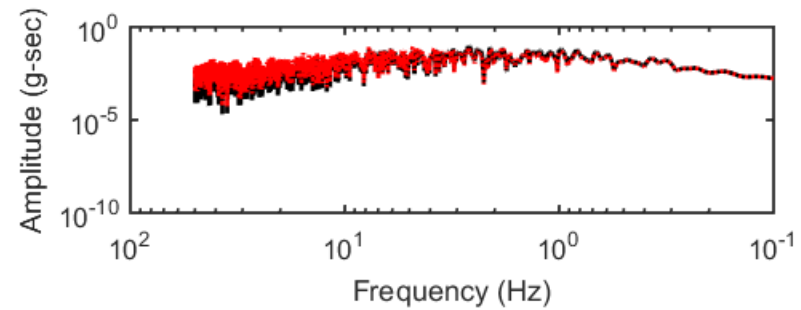
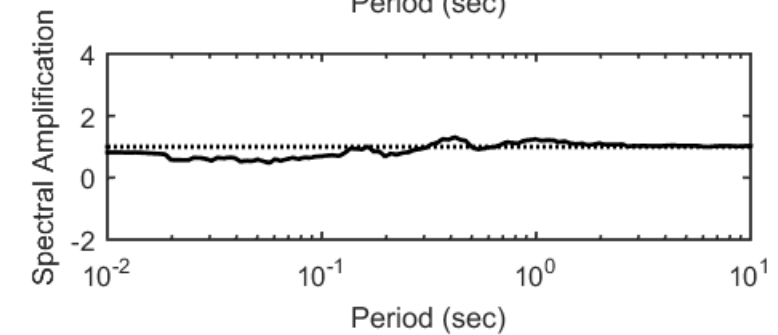
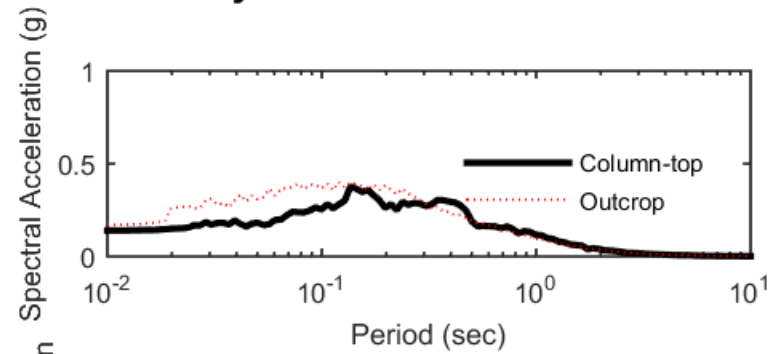
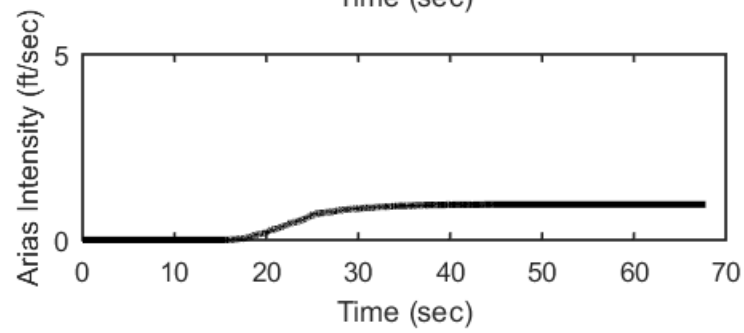
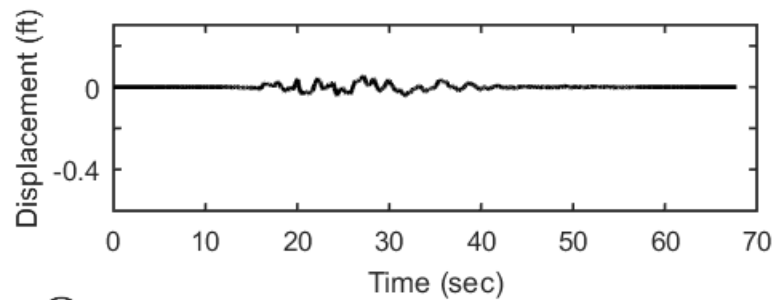
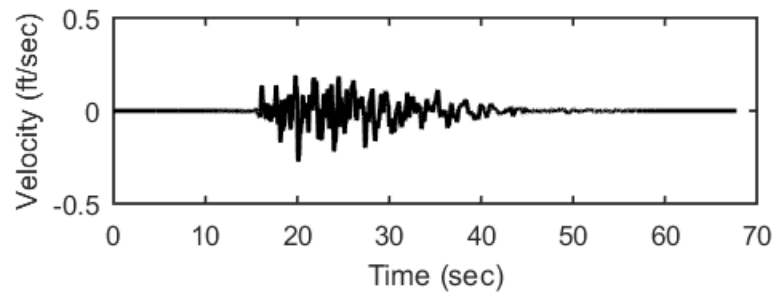
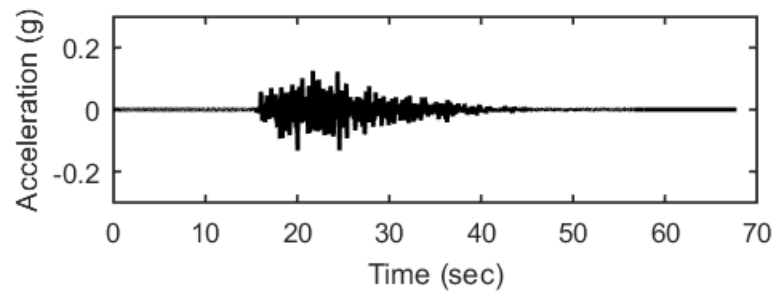
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



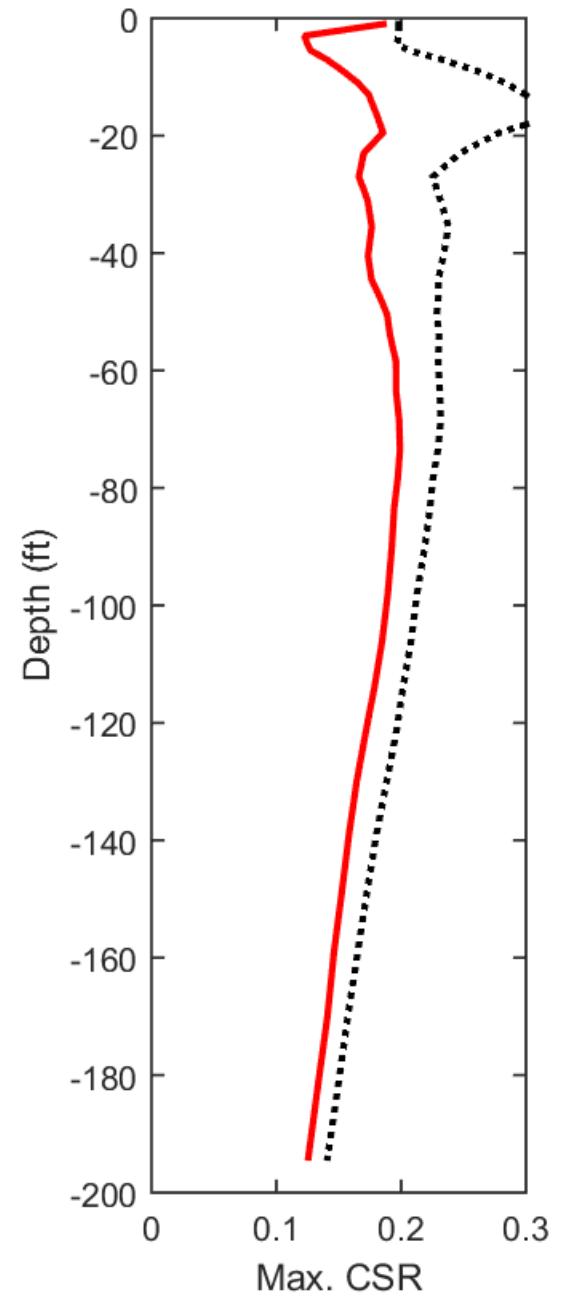
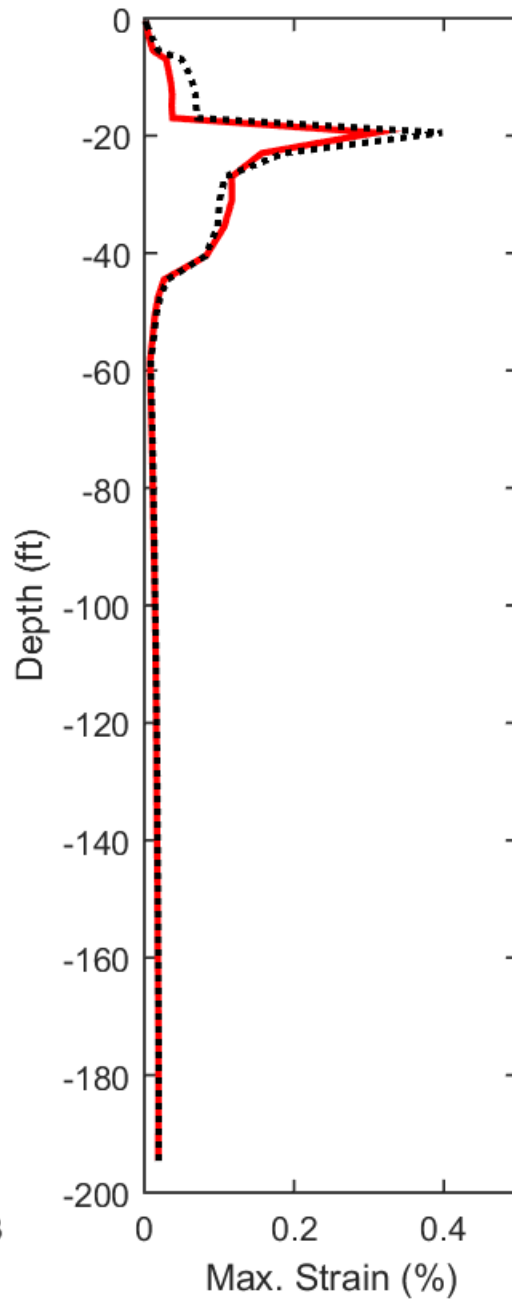
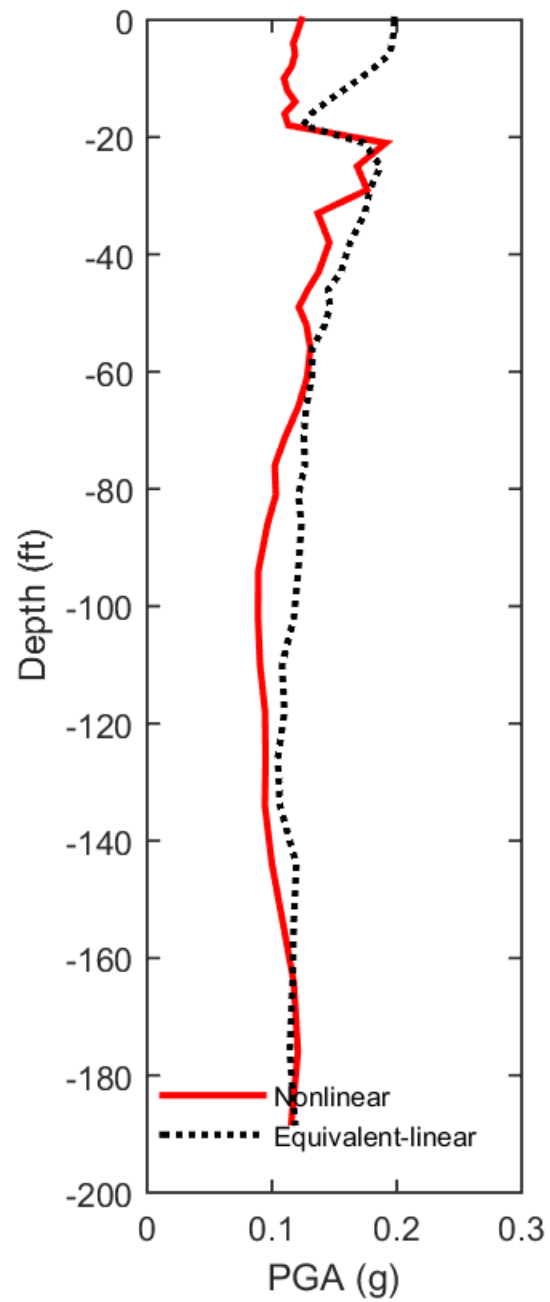
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



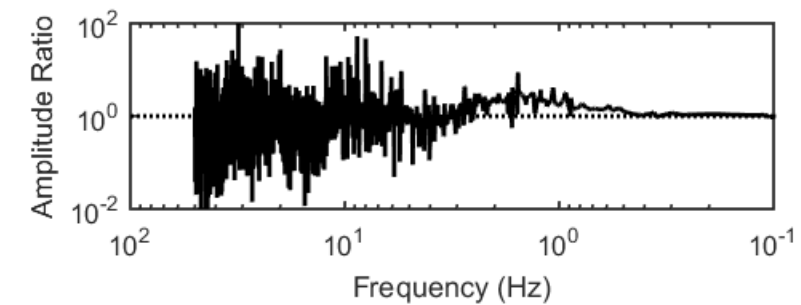
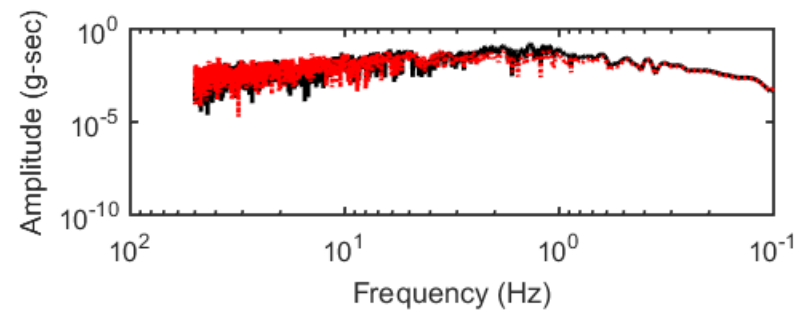
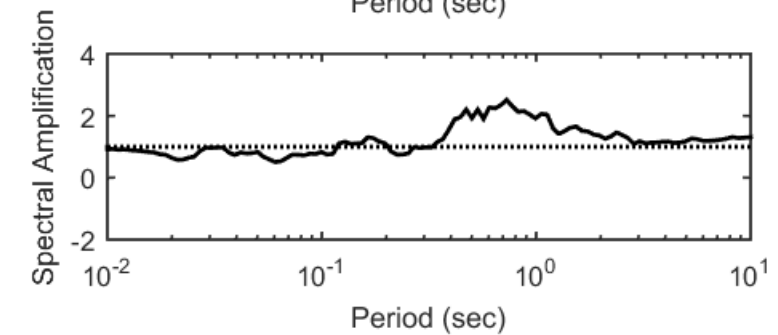
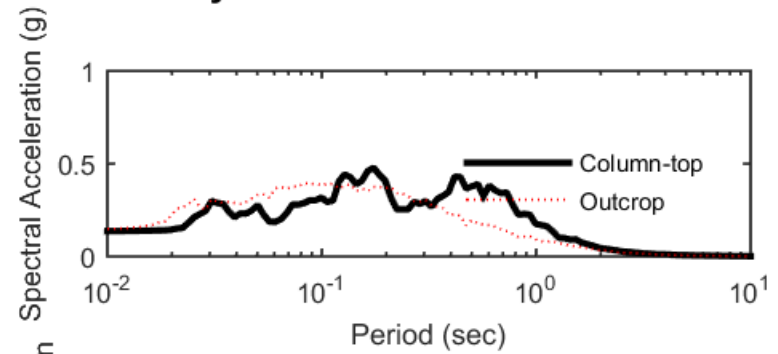
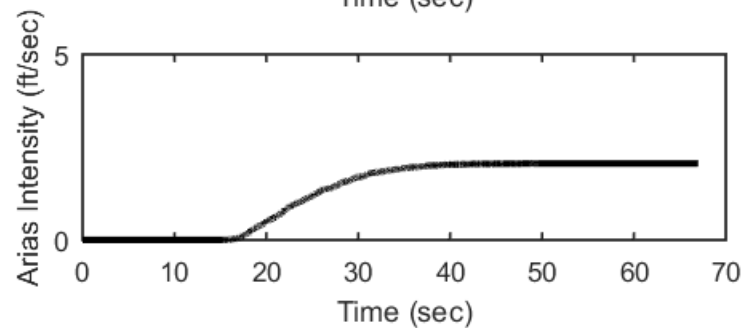
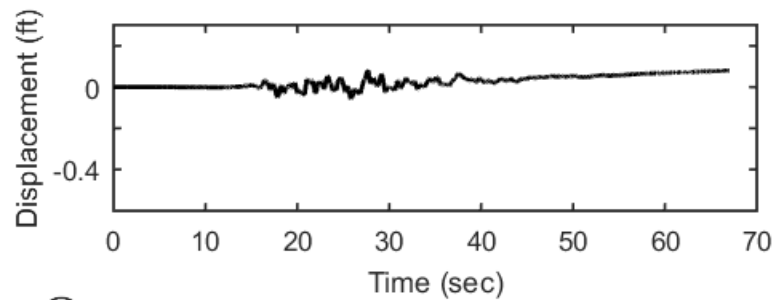
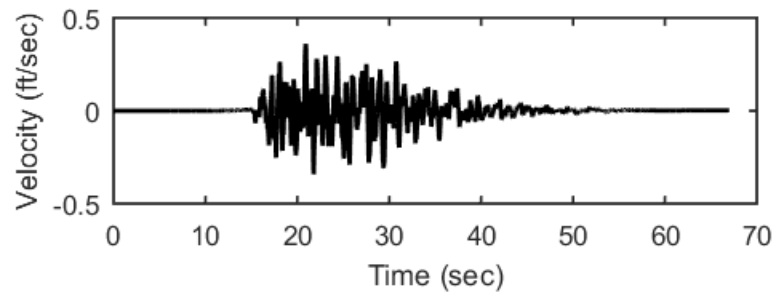
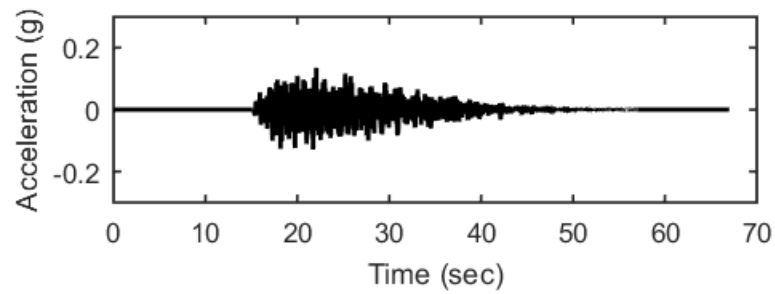
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



### Profile outputs for Motion: FEE4

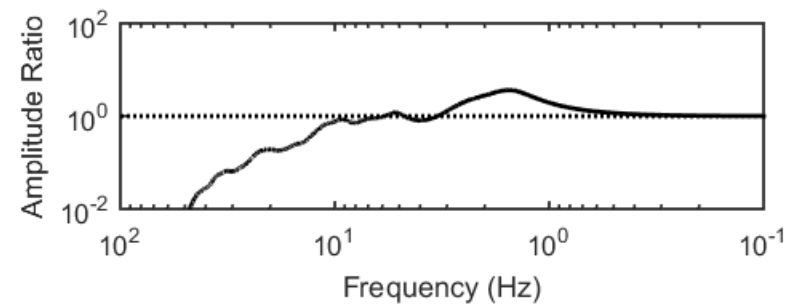
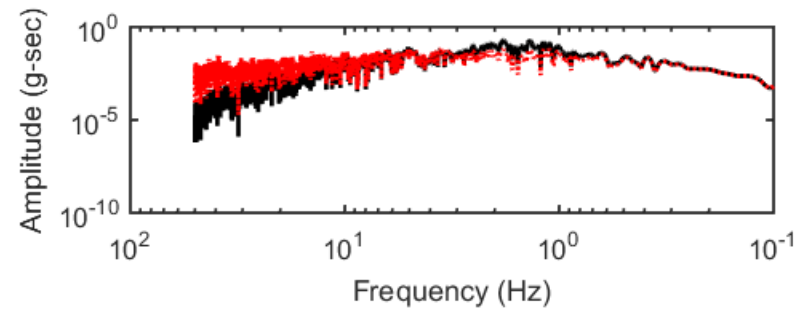
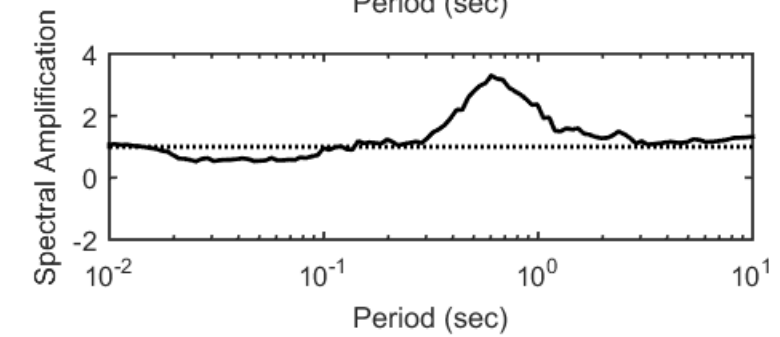
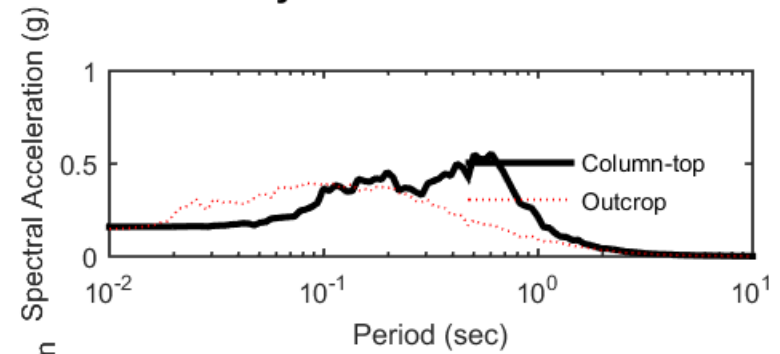
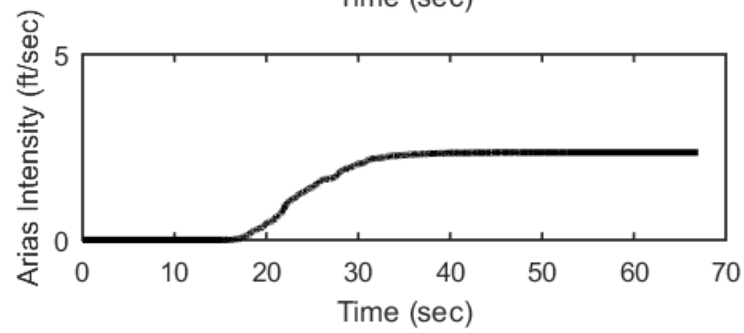
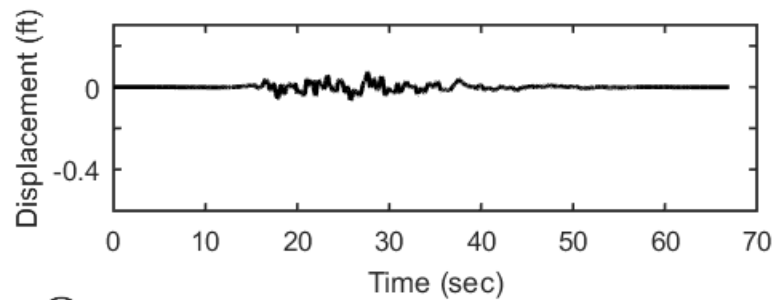
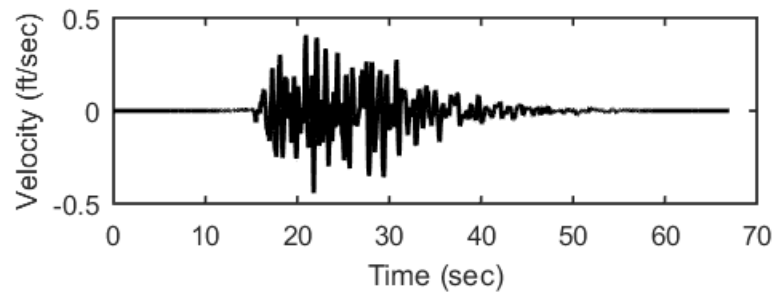
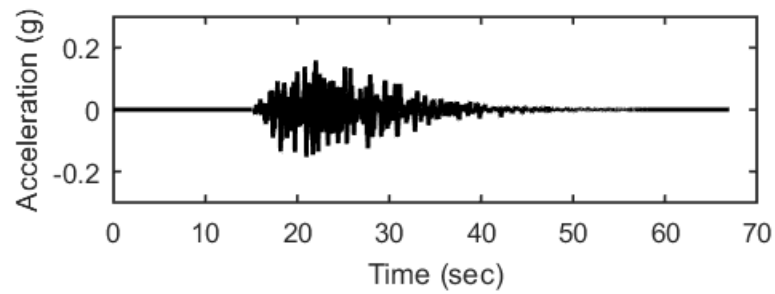


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5

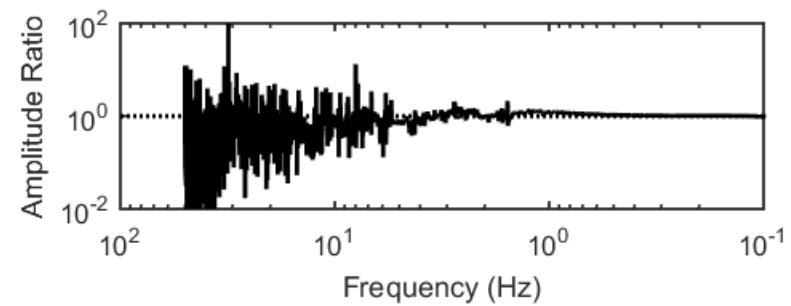
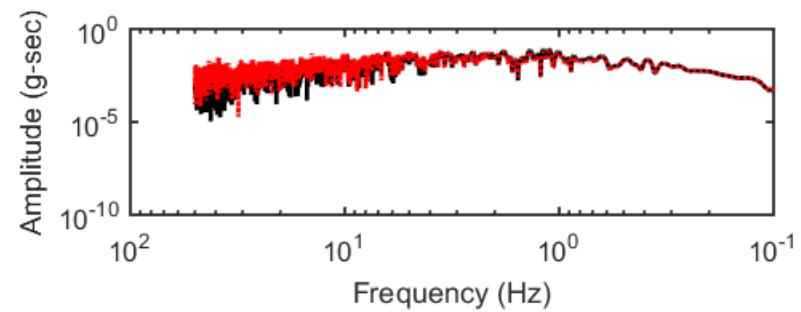
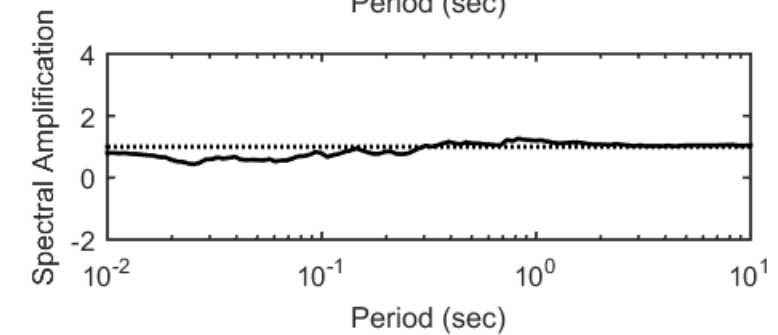
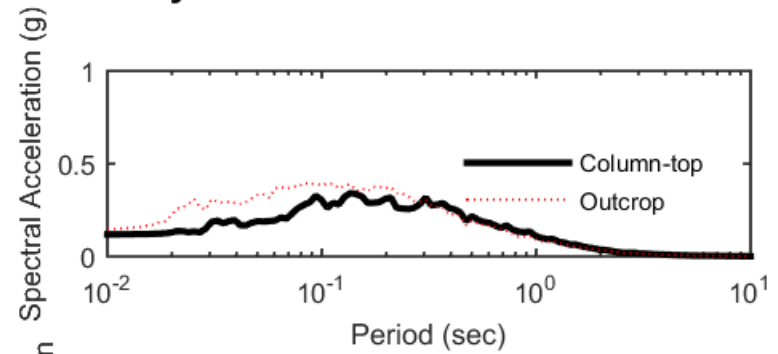
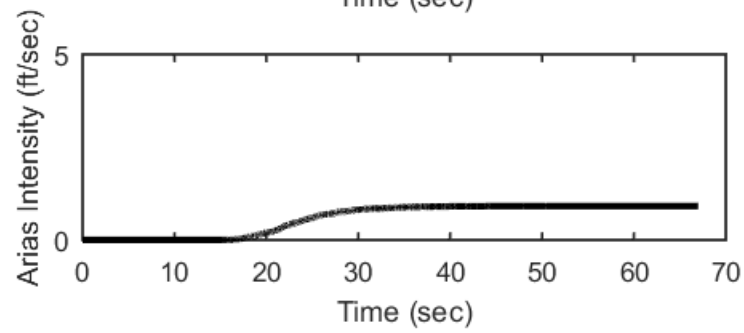
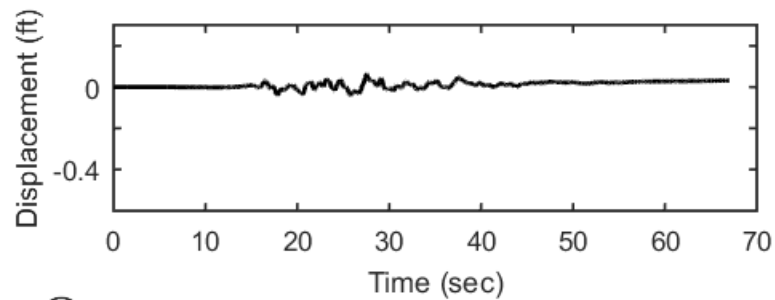
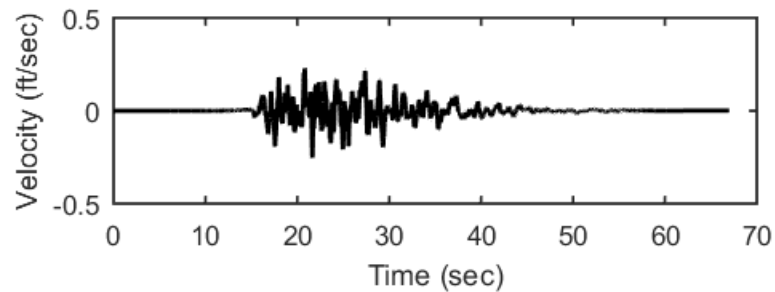
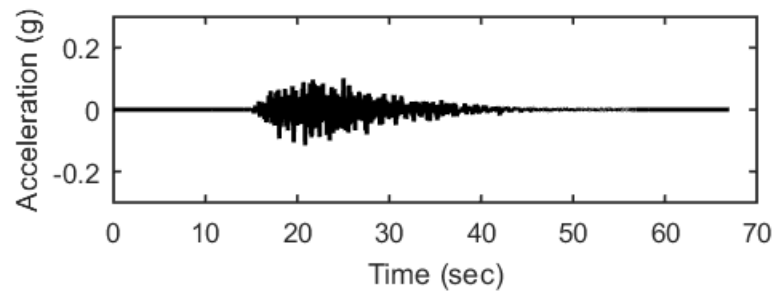




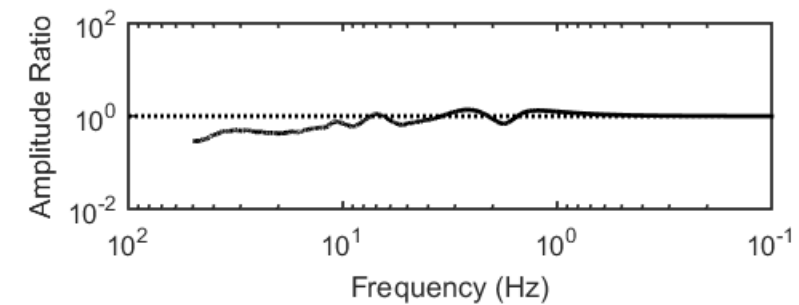
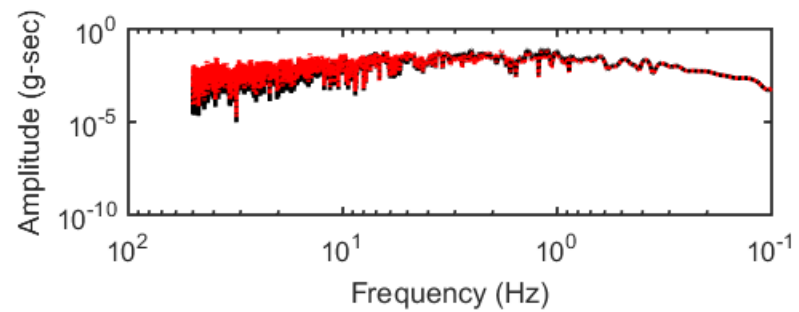
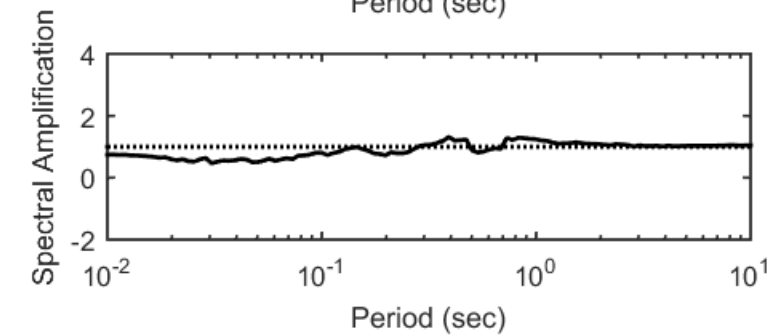
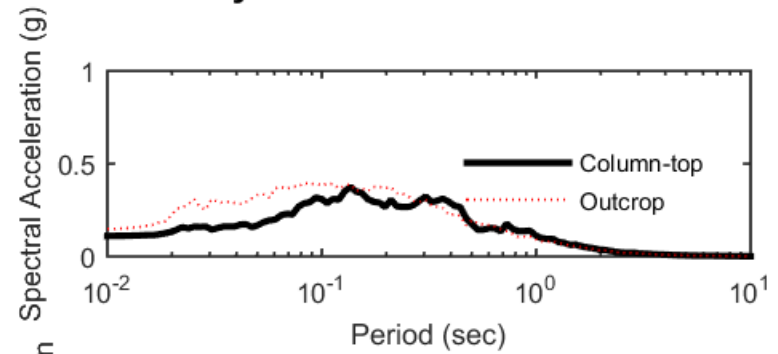
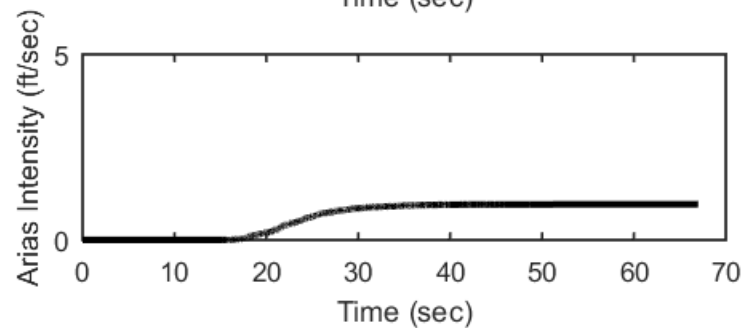
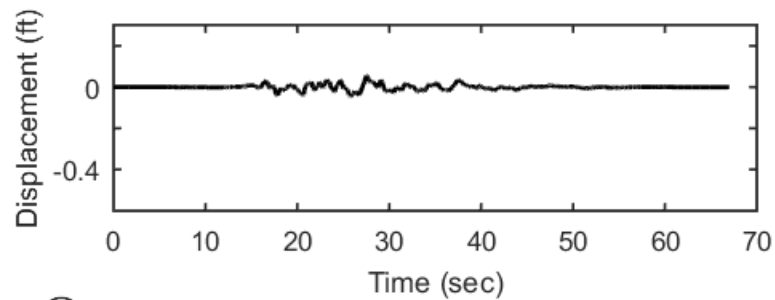
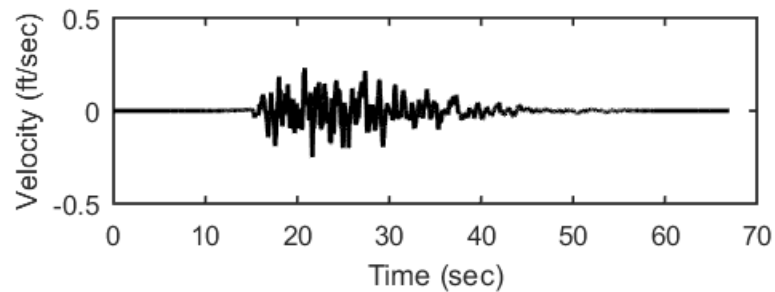
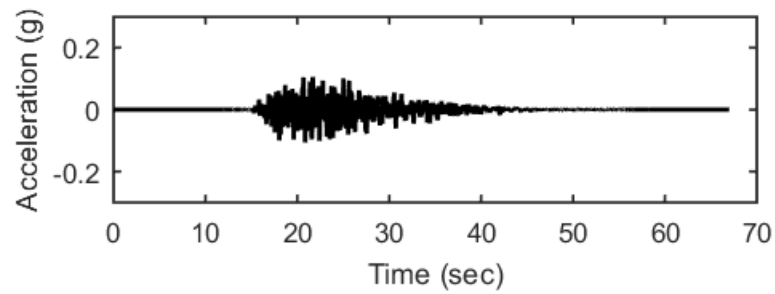
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



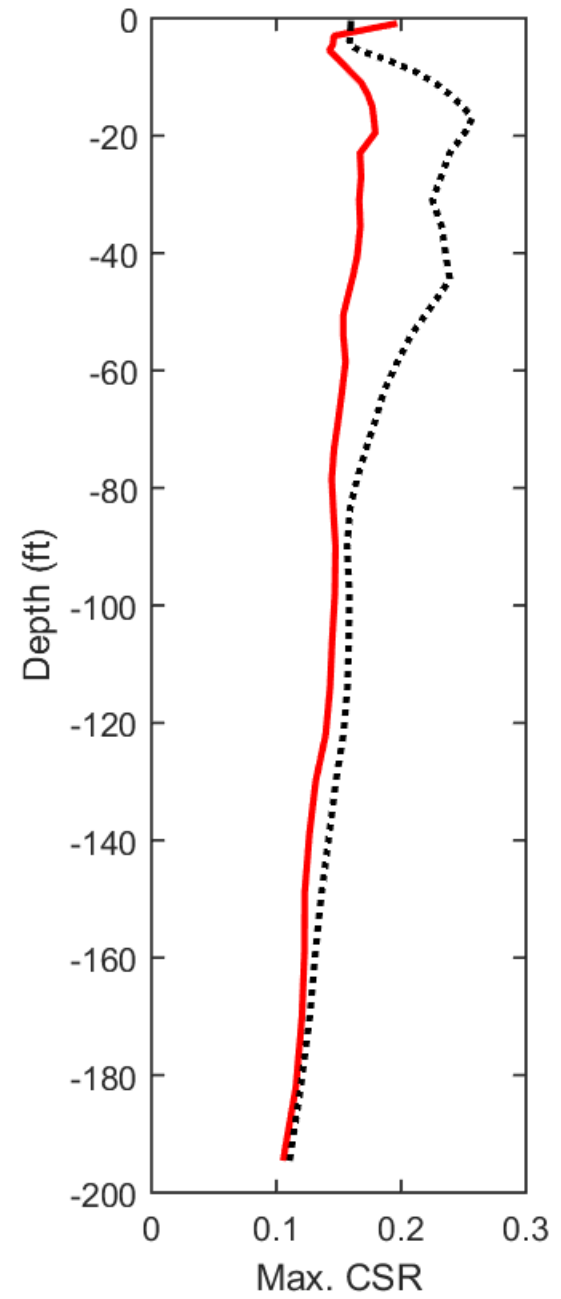
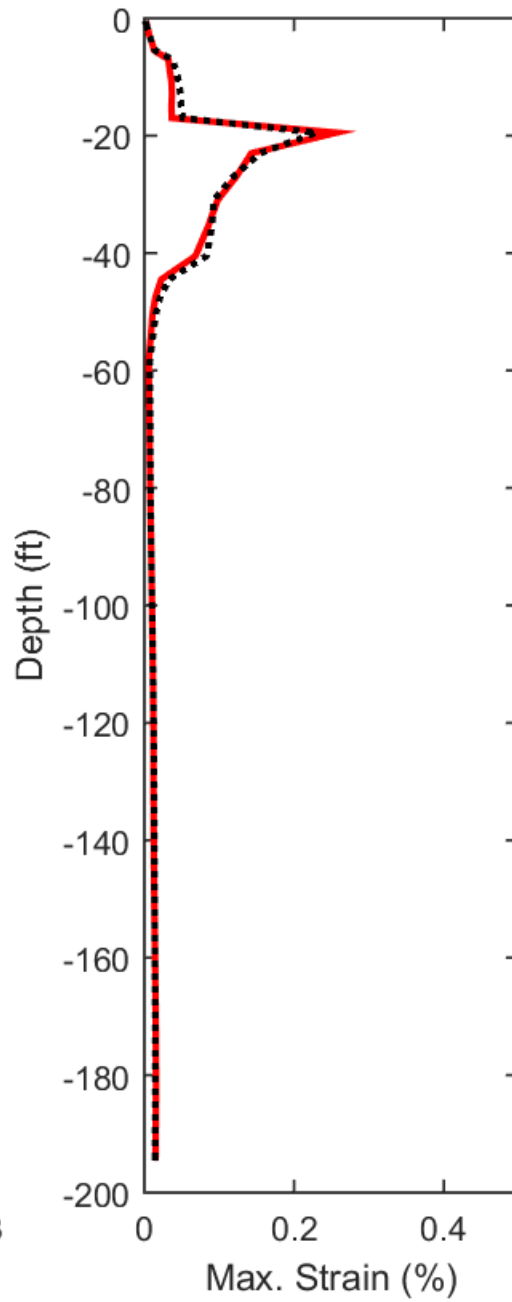
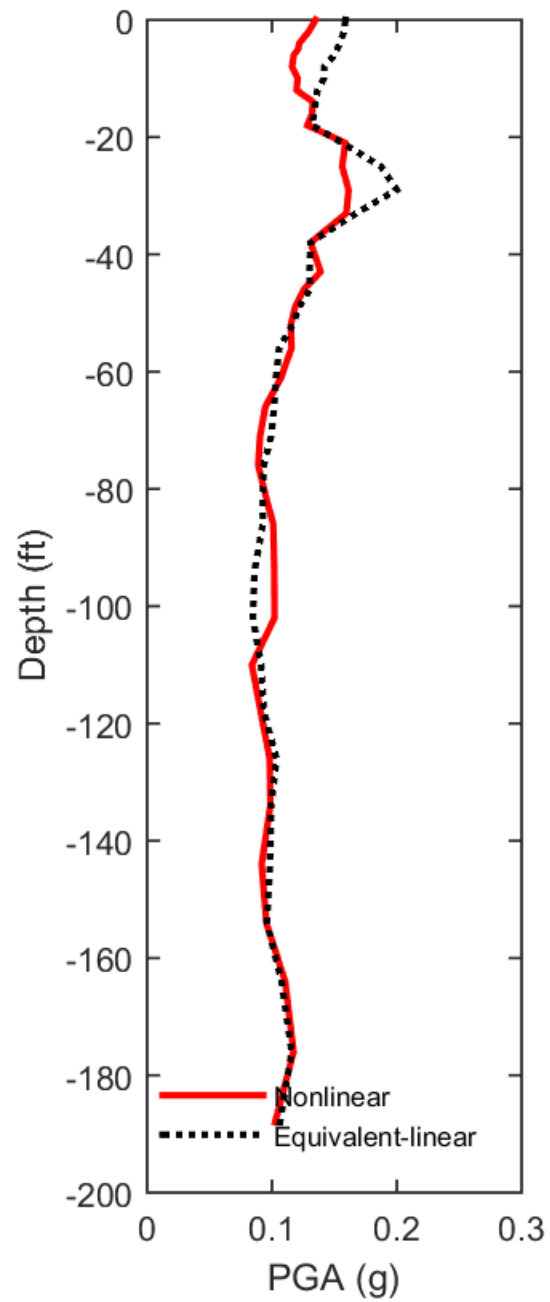
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



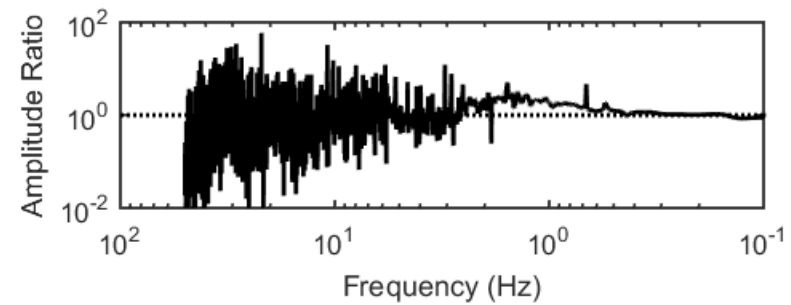
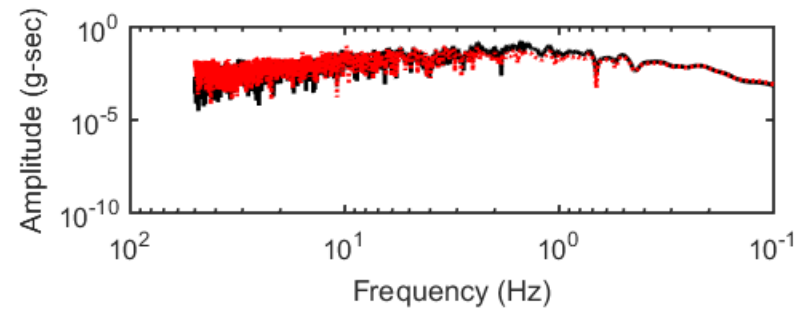
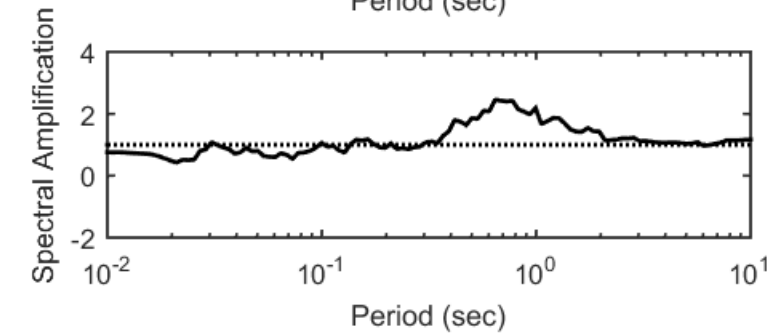
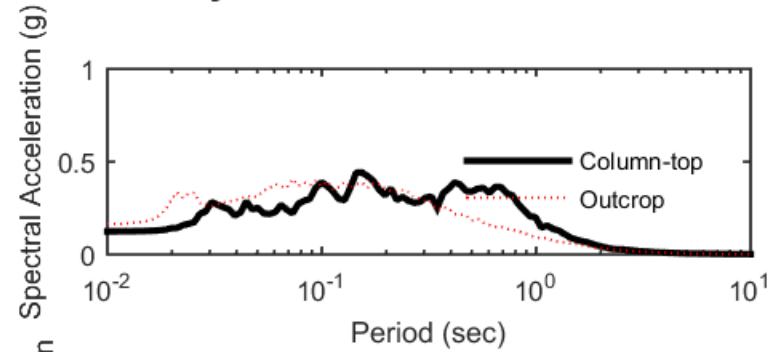
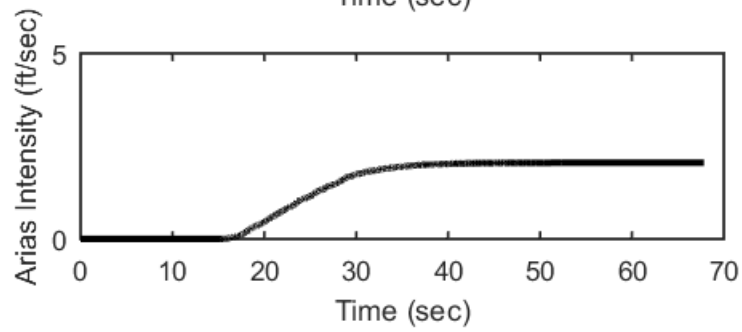
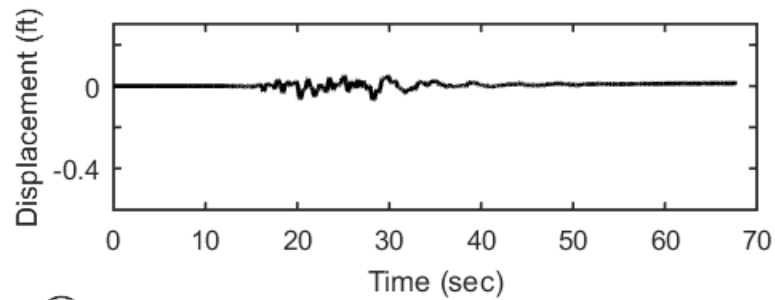
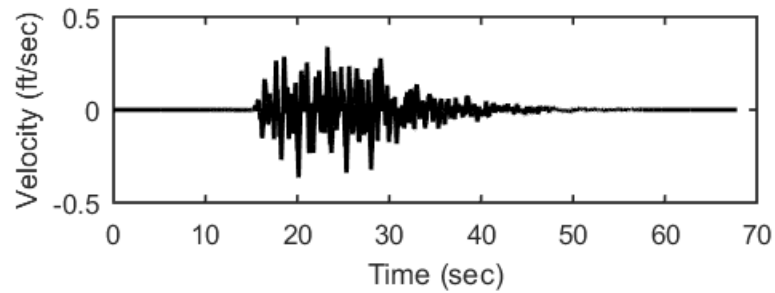
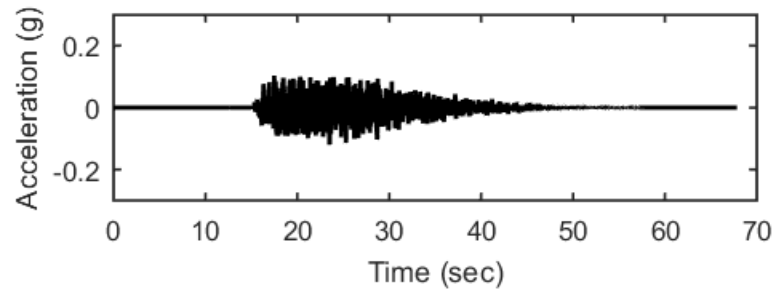
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



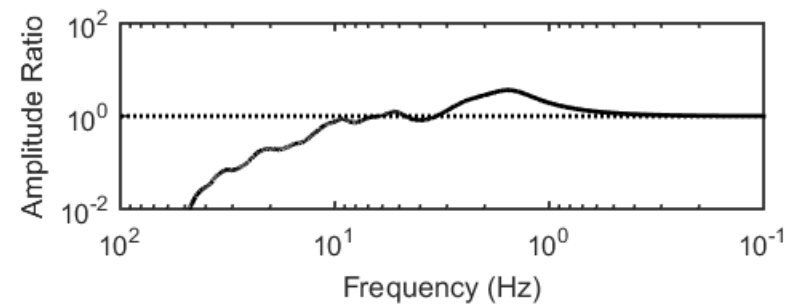
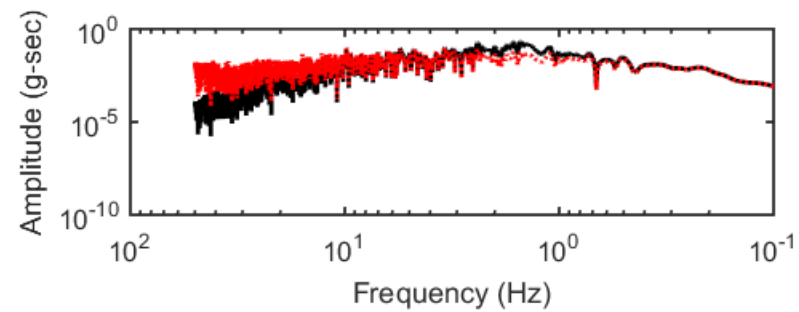
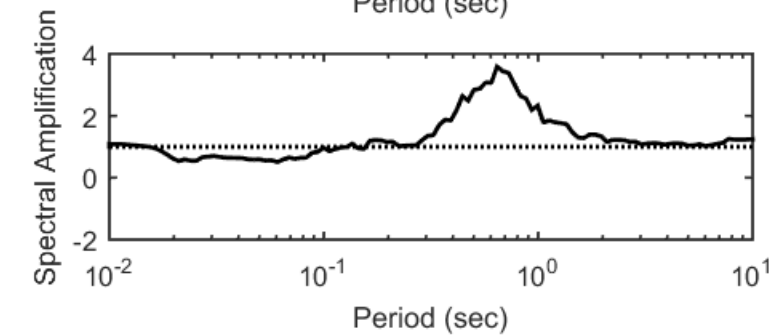
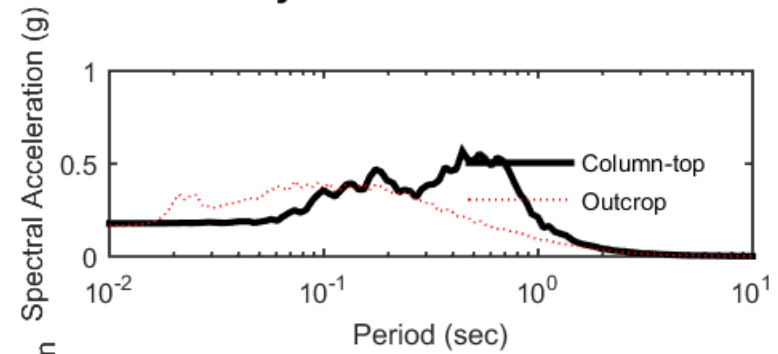
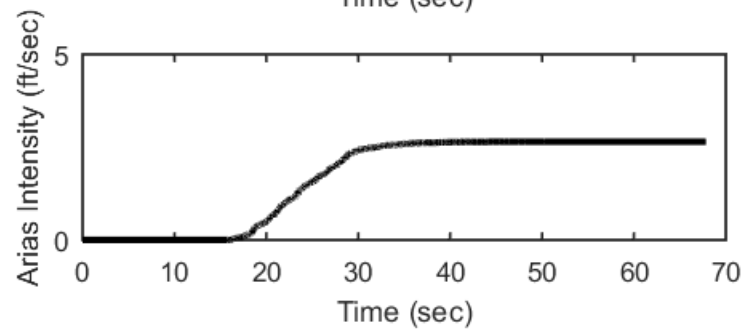
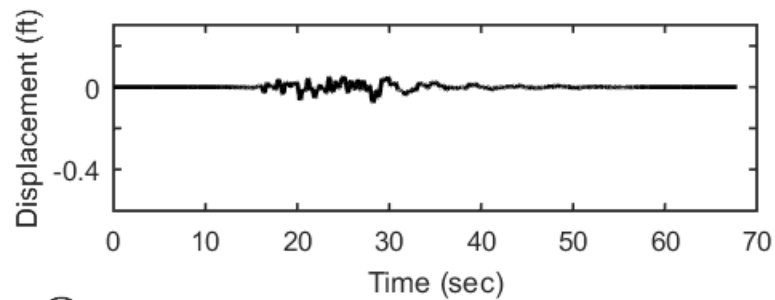
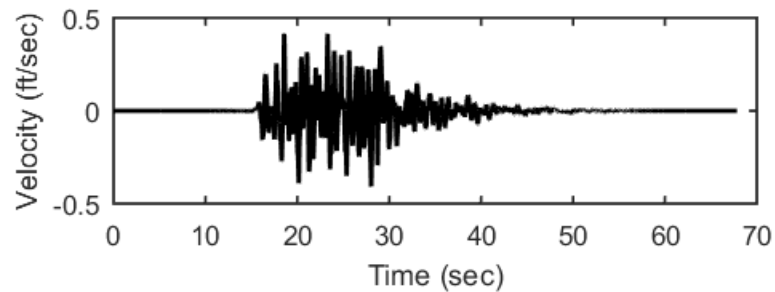
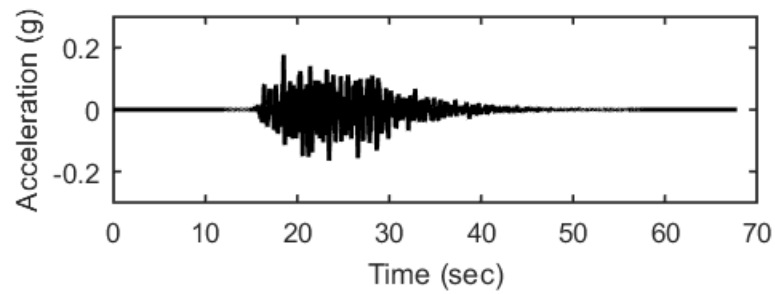
### Profile outputs for Motion: FEE5



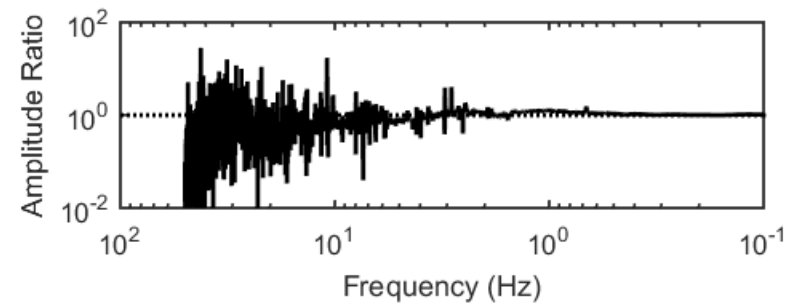
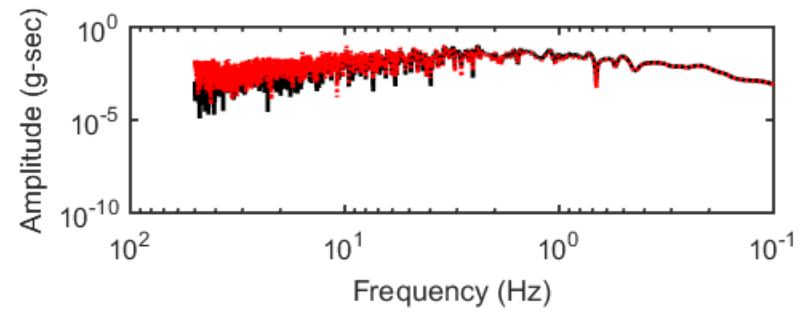
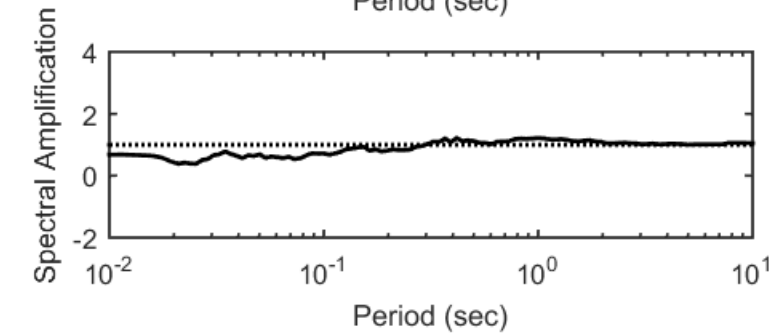
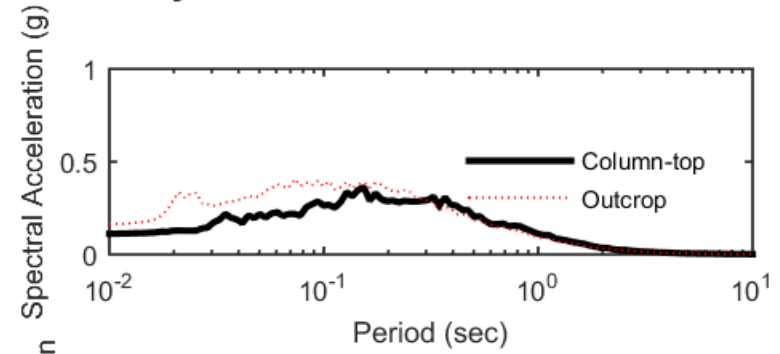
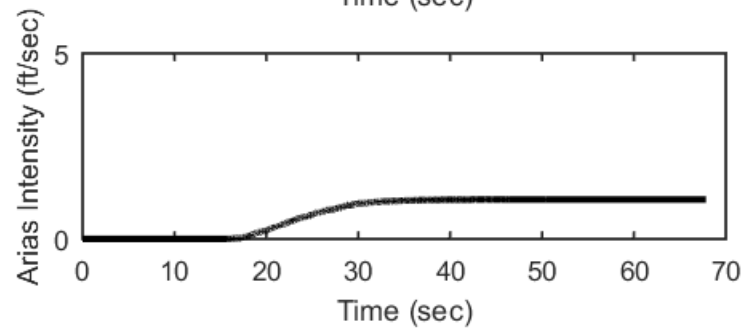
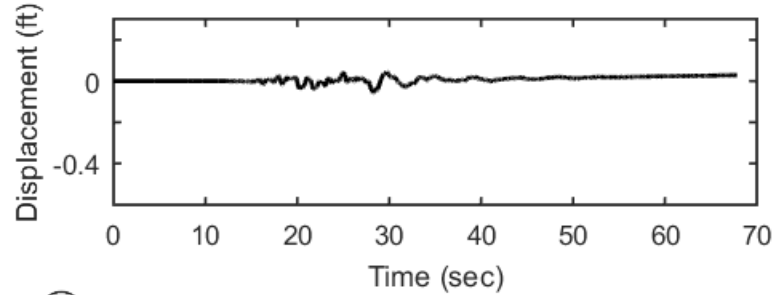
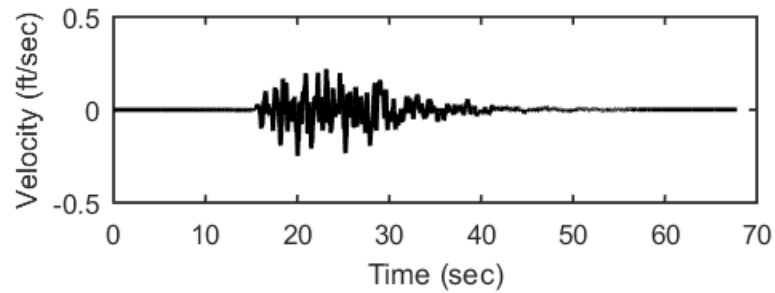
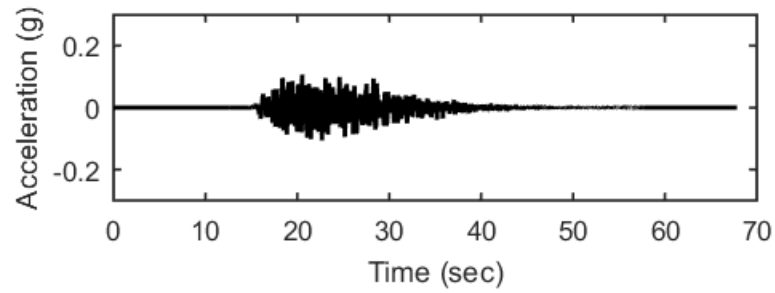
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



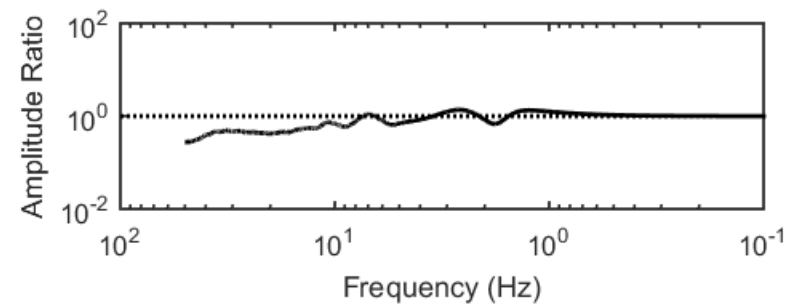
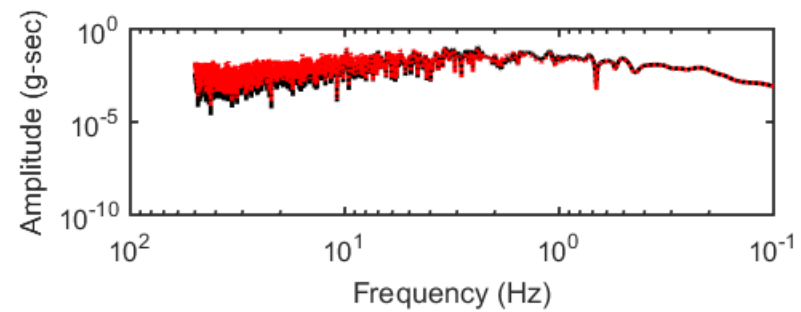
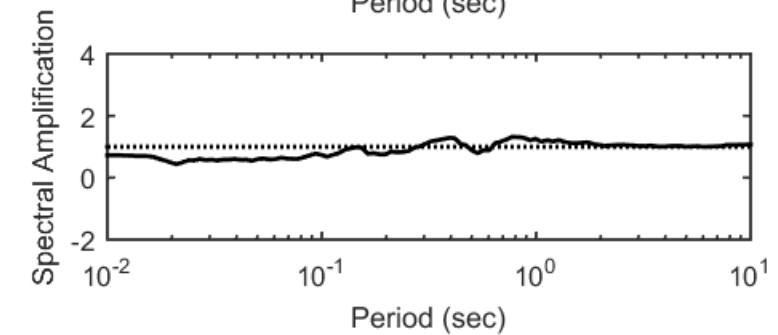
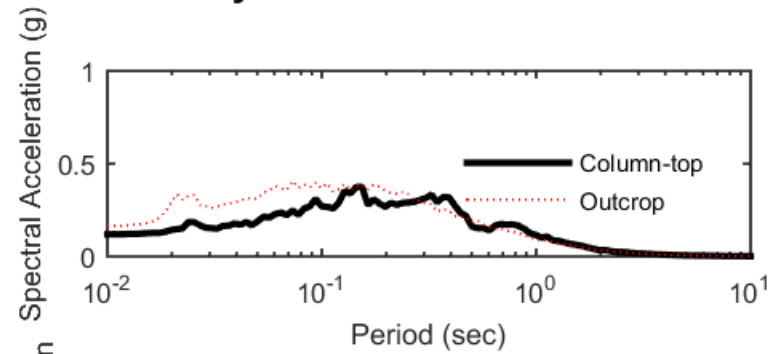
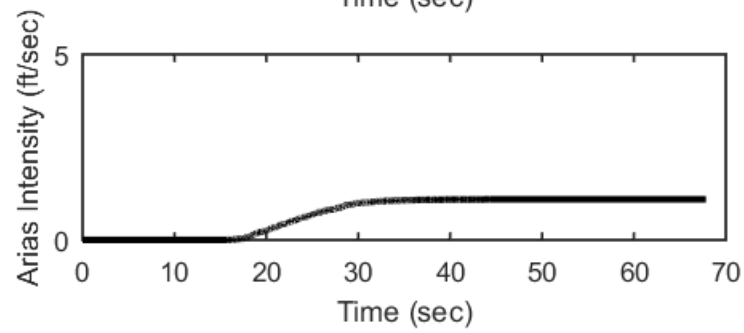
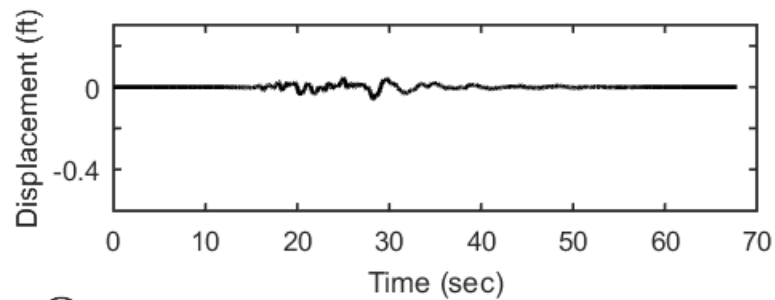
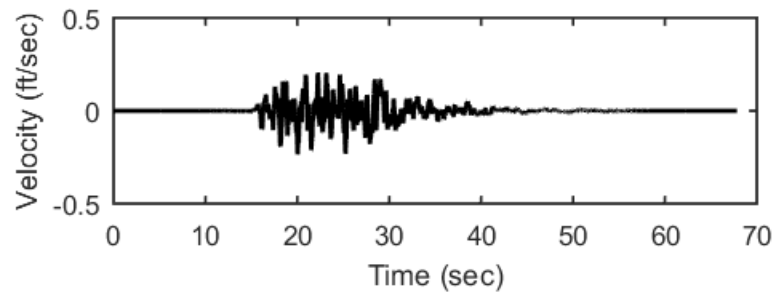
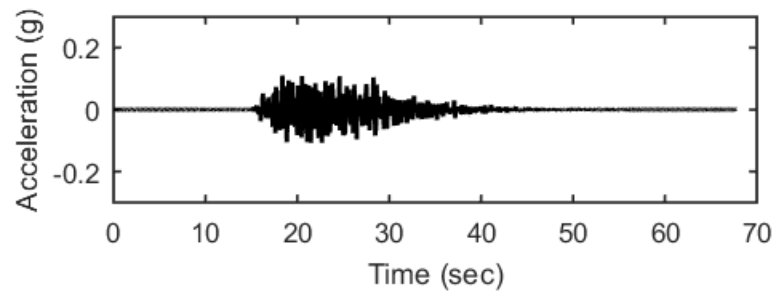
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6

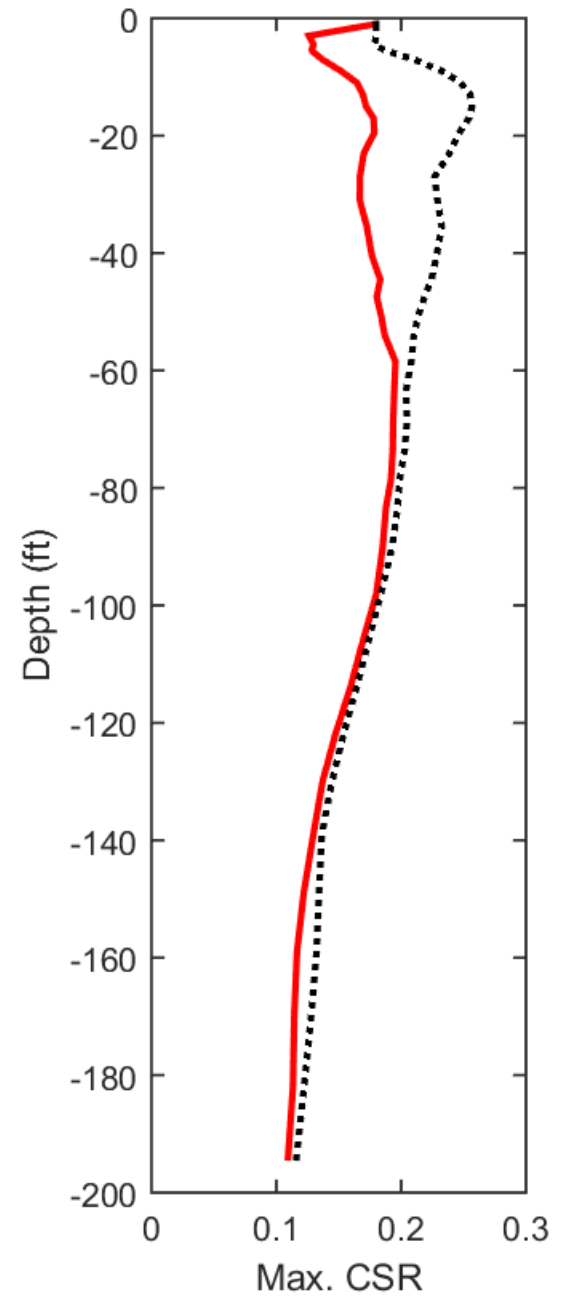
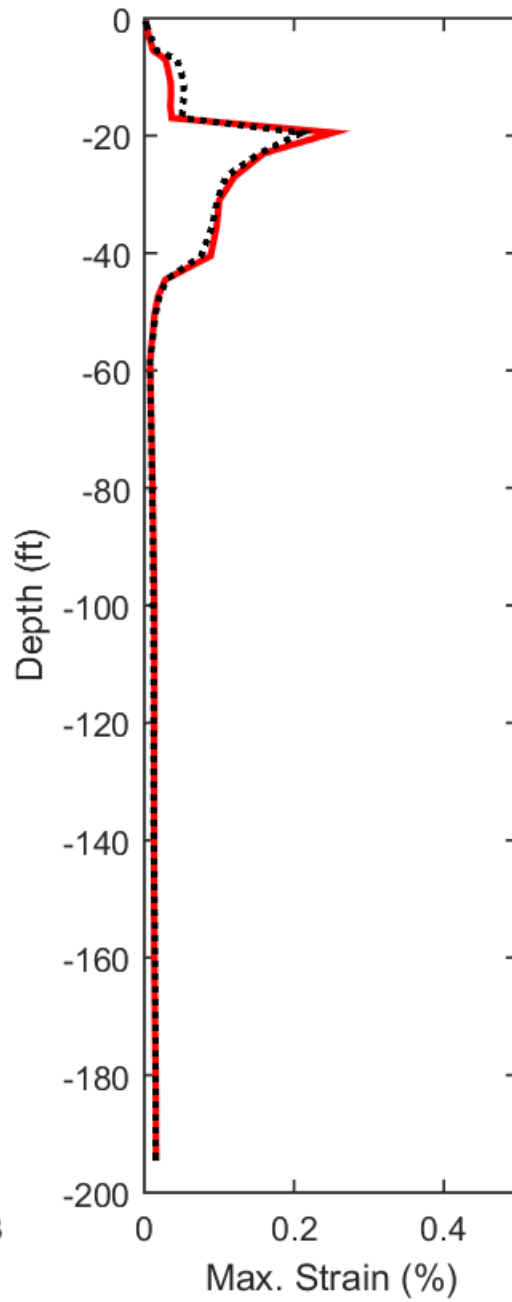
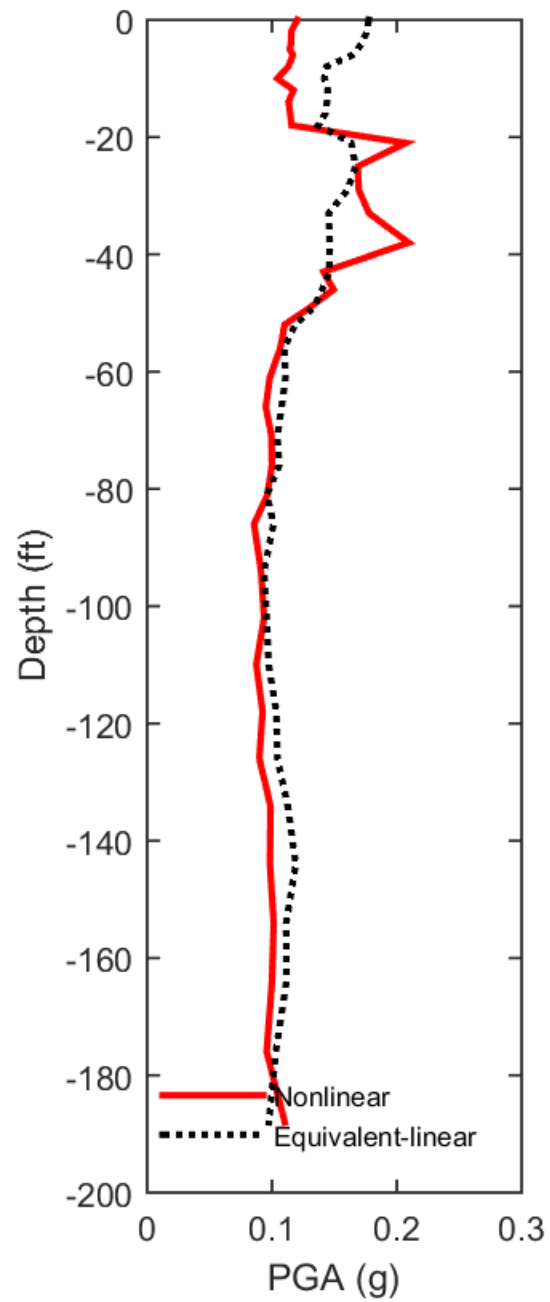


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6

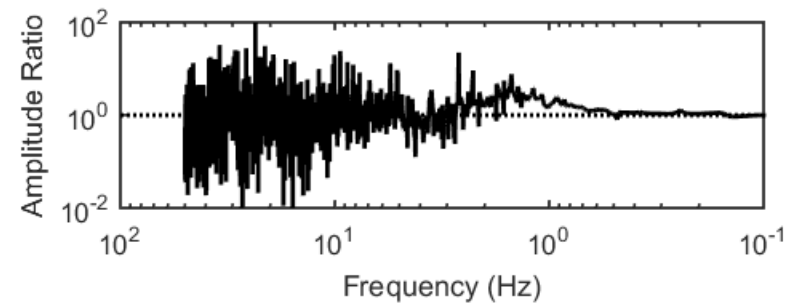
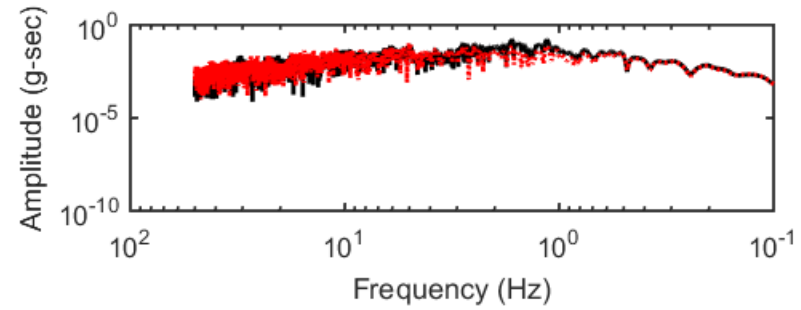
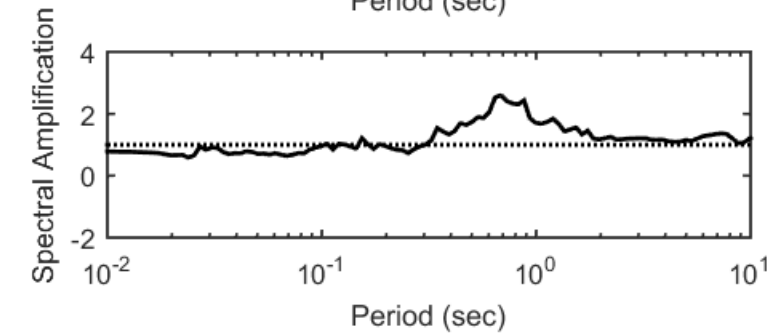
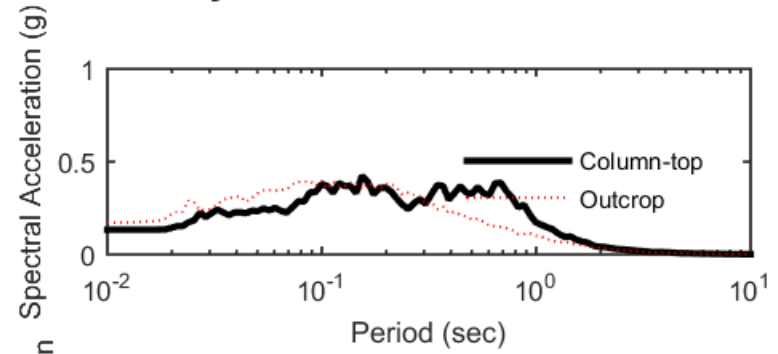
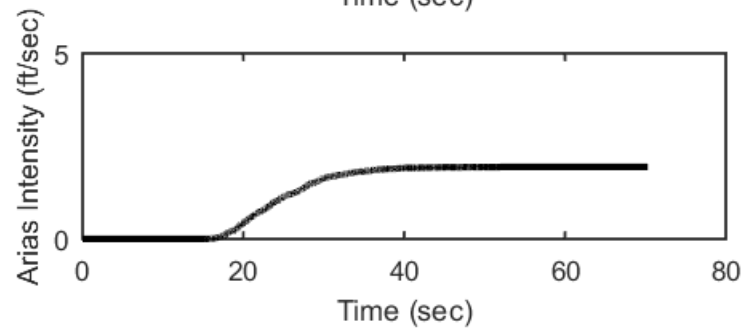
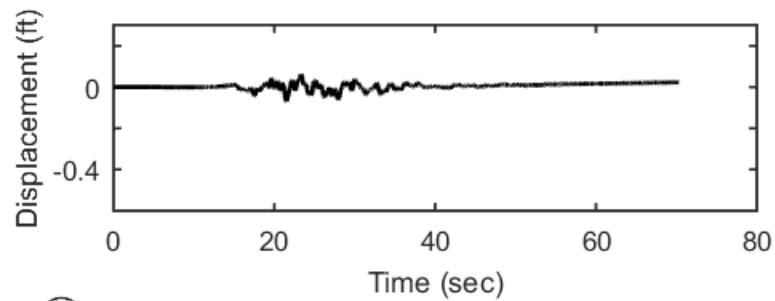
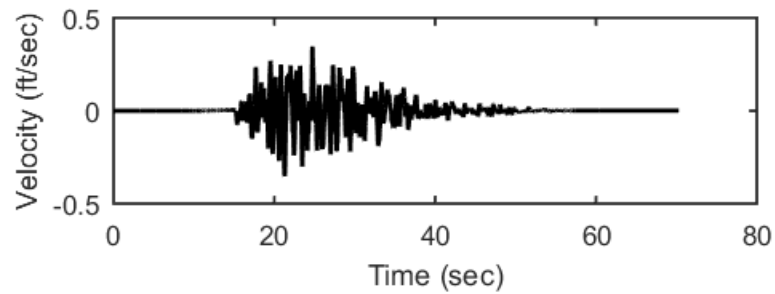
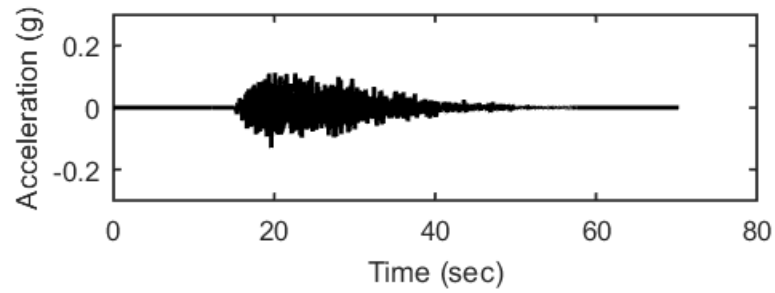




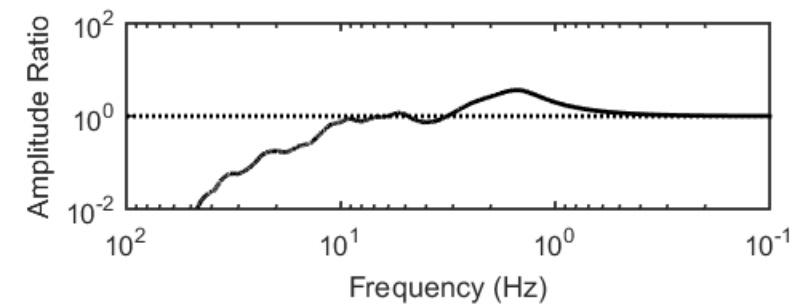
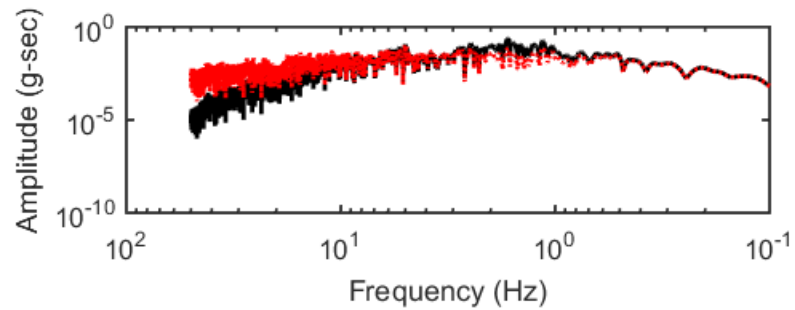
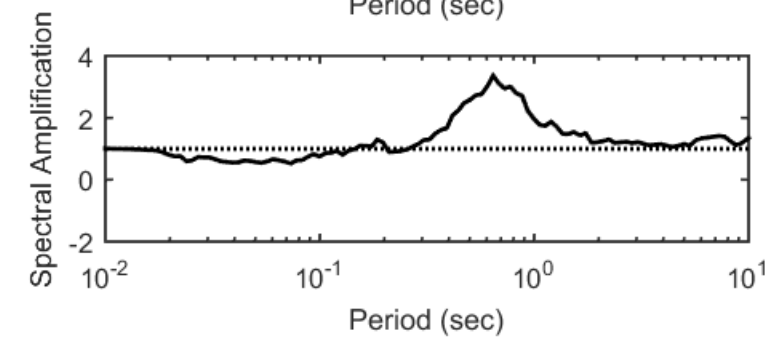
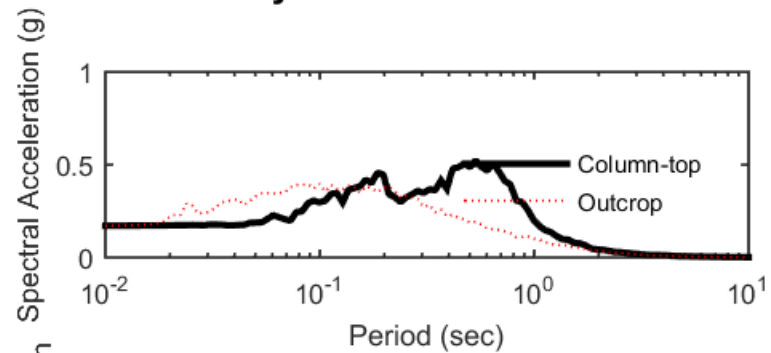
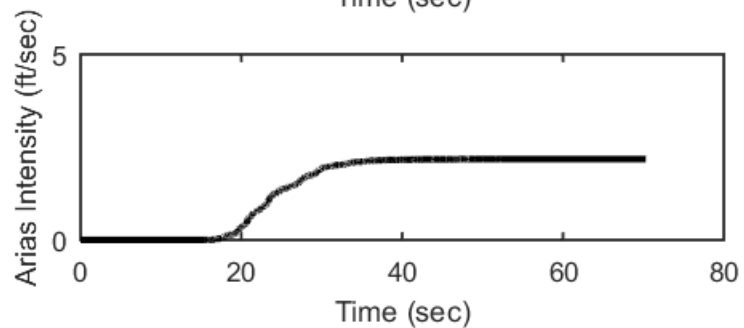
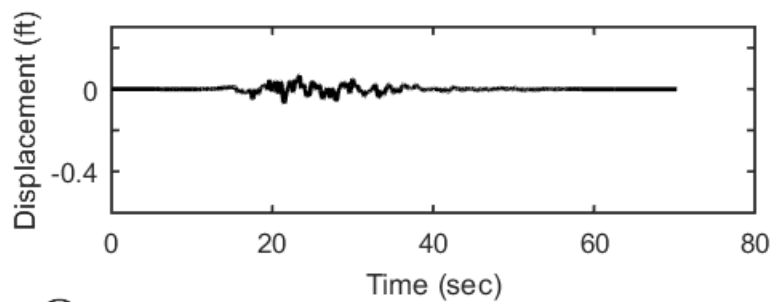
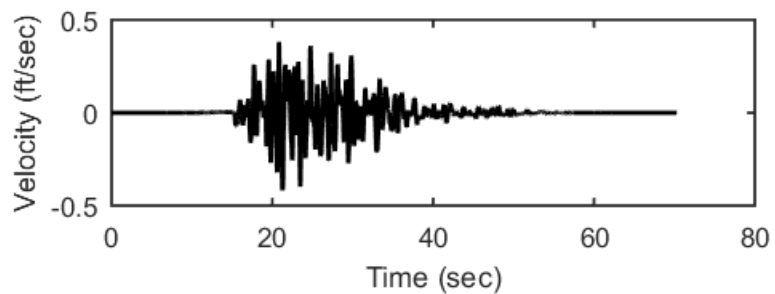
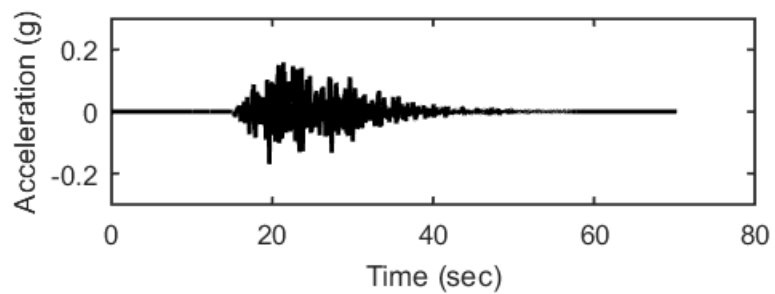
### Profile outputs for Motion: FEE6



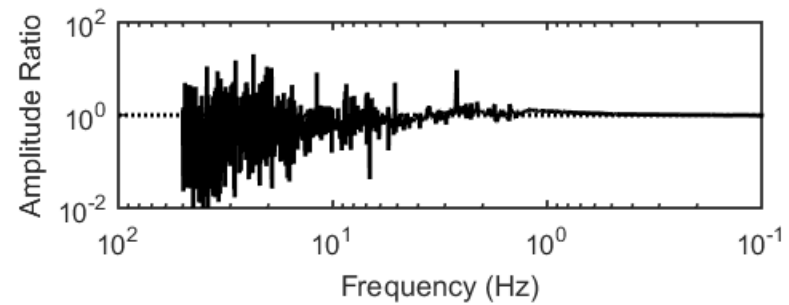
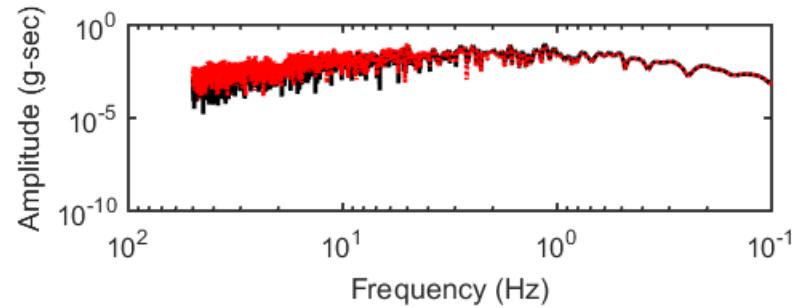
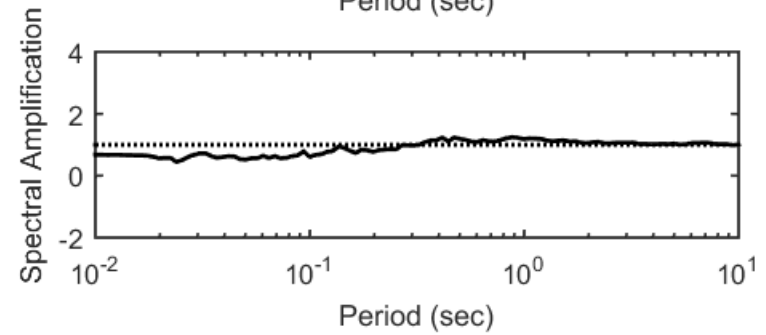
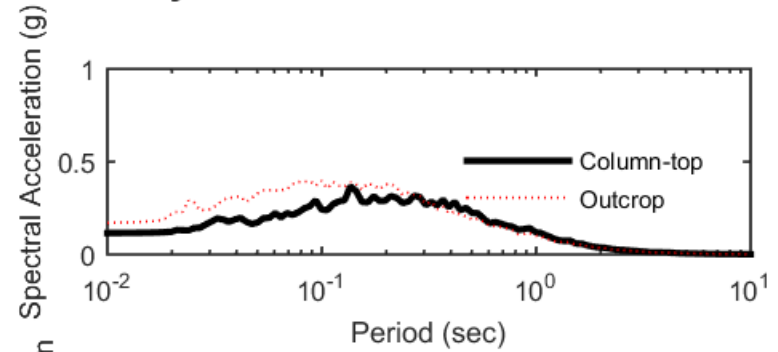
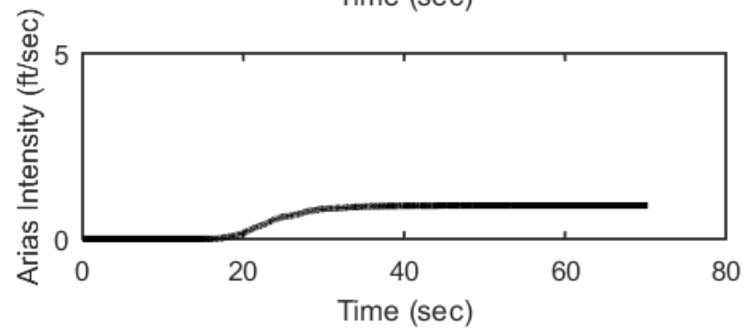
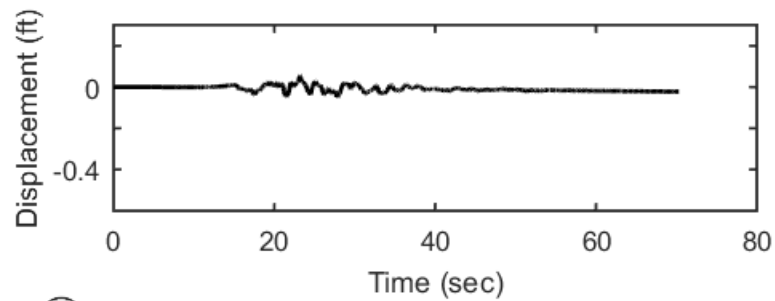
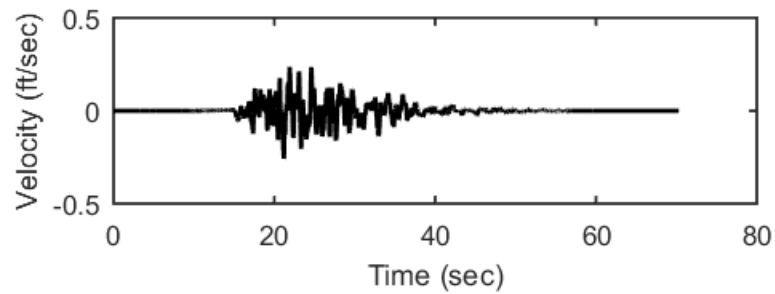
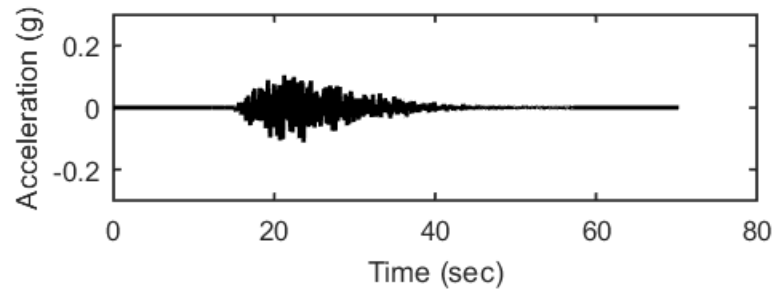
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



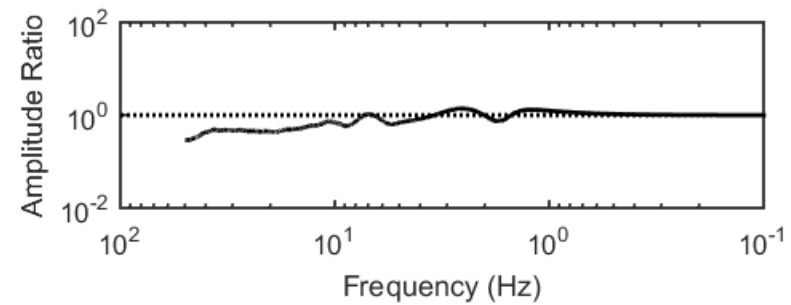
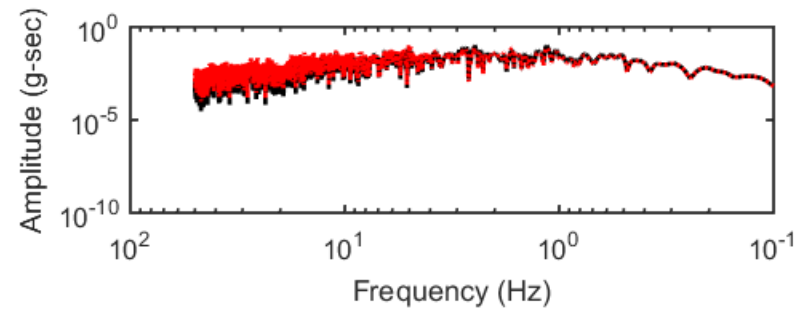
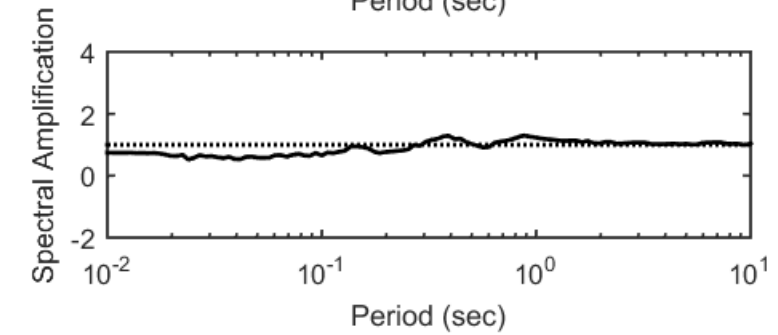
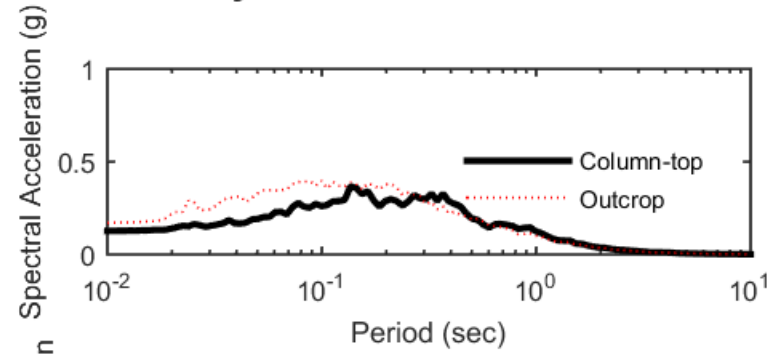
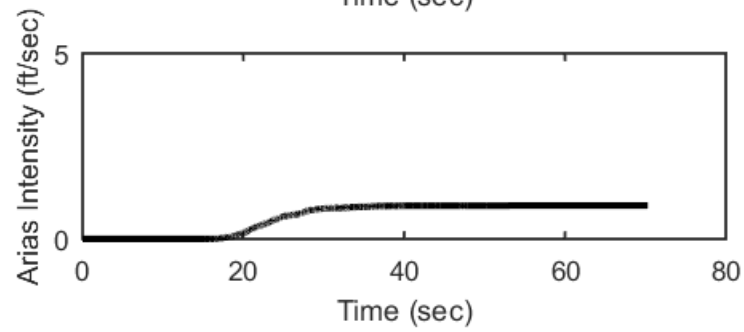
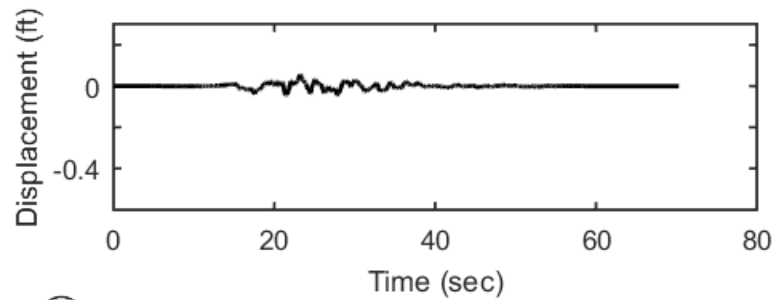
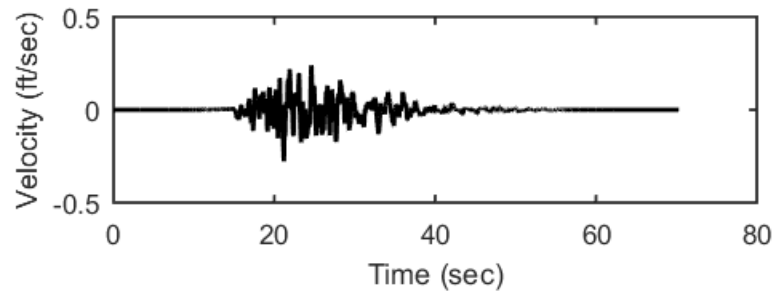
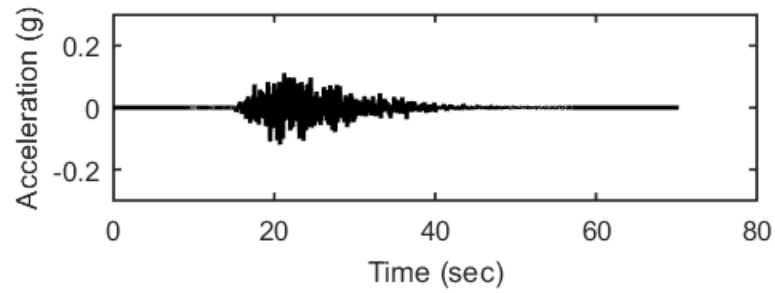
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



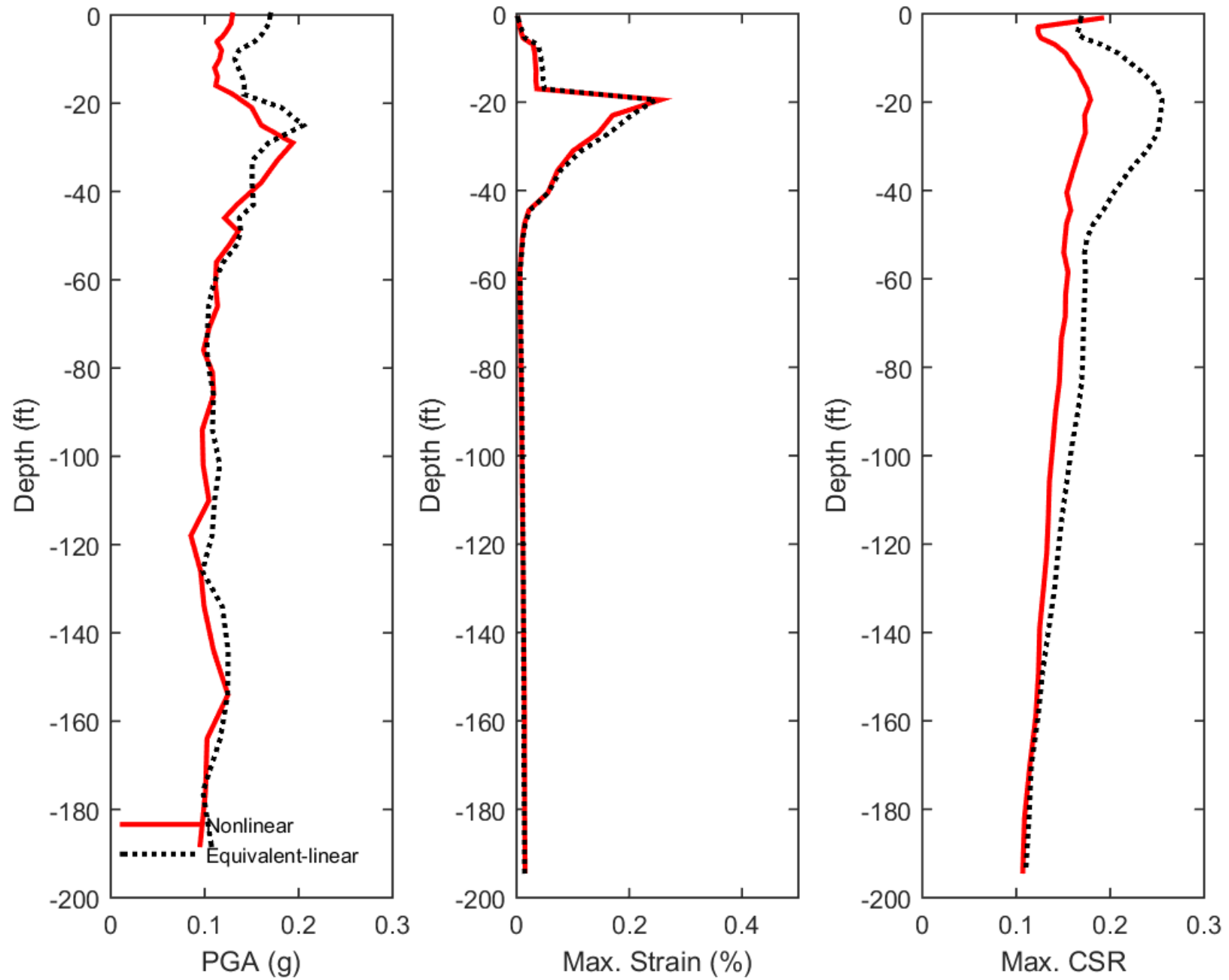
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



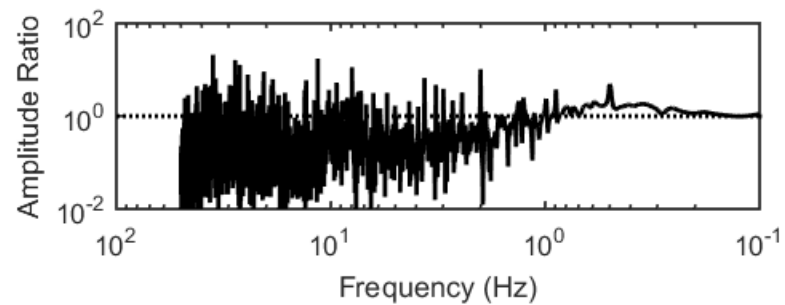
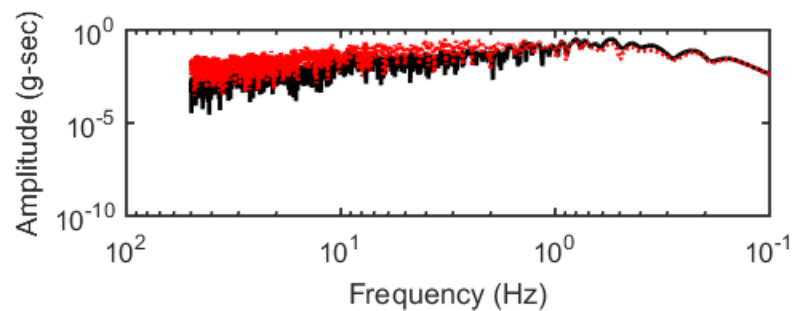
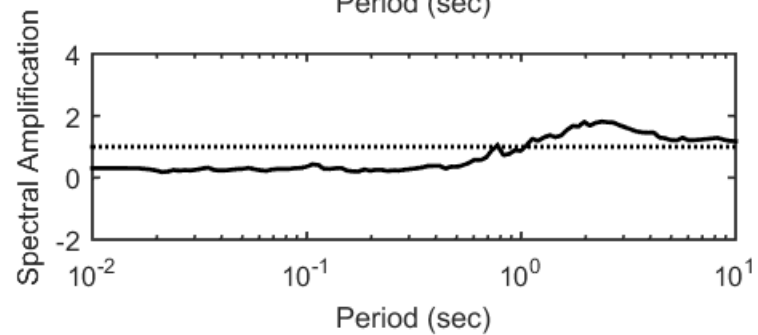
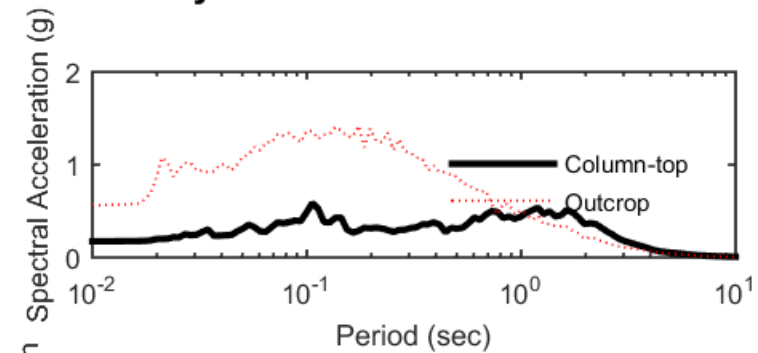
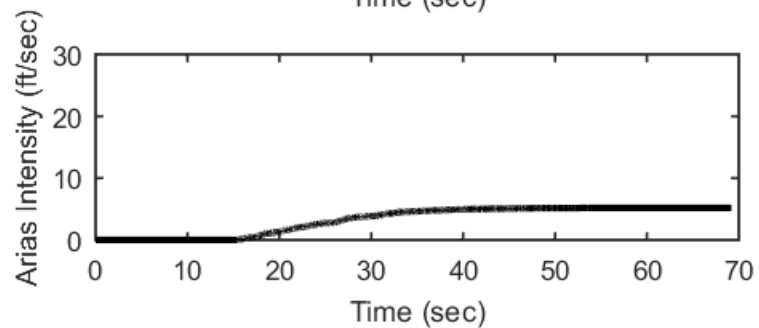
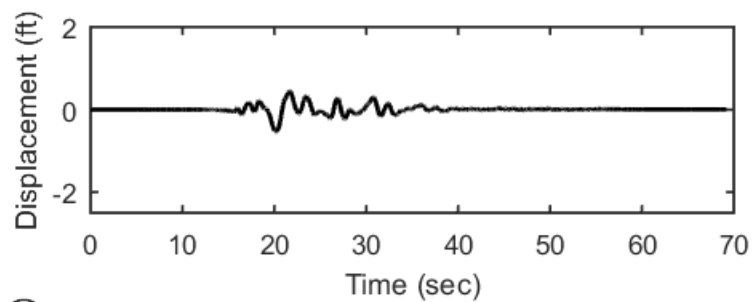
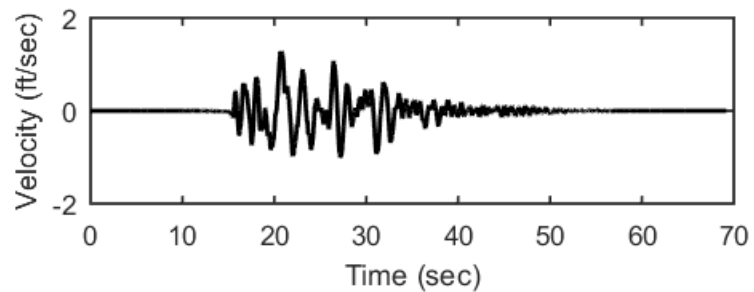
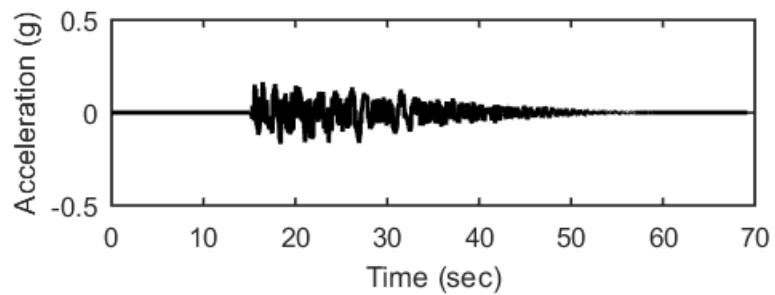
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



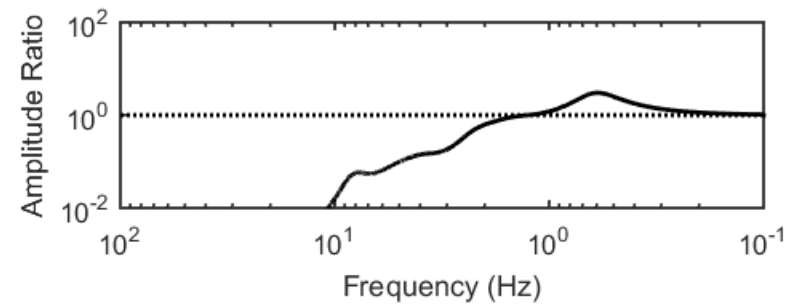
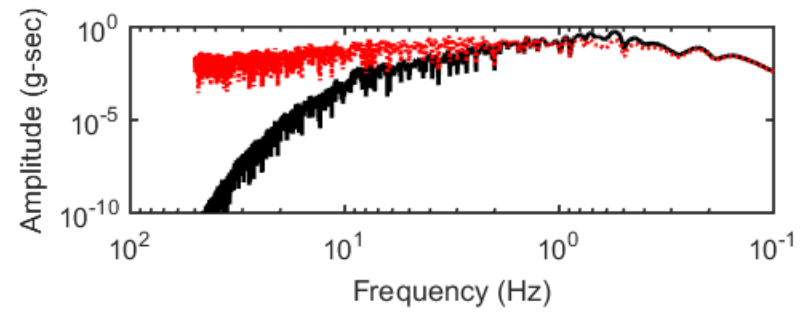
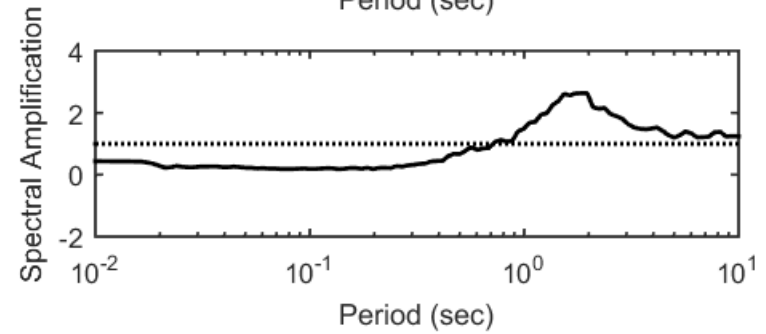
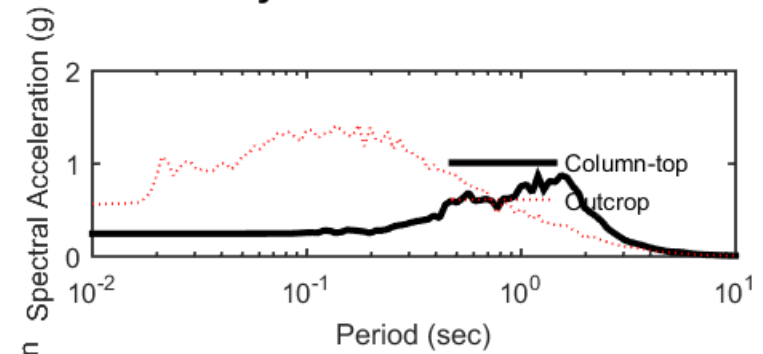
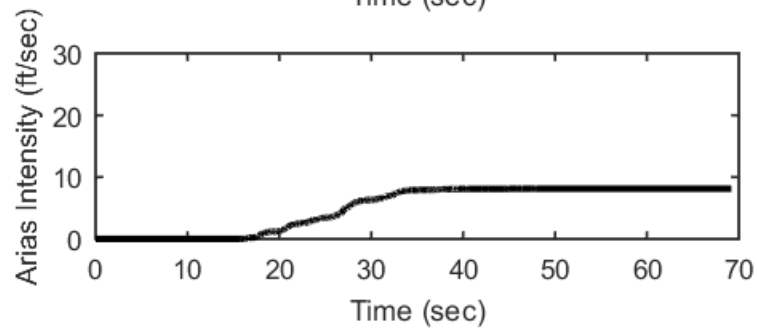
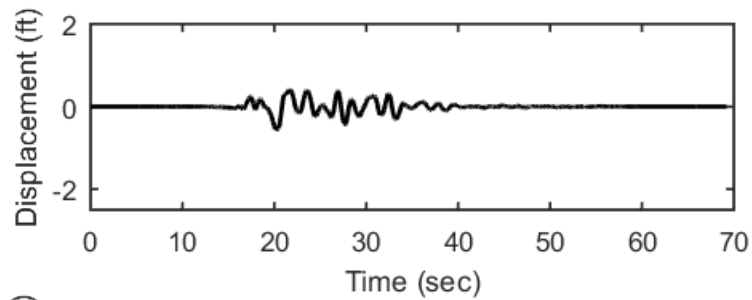
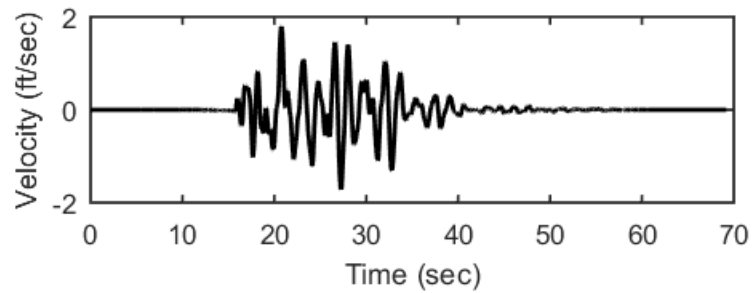
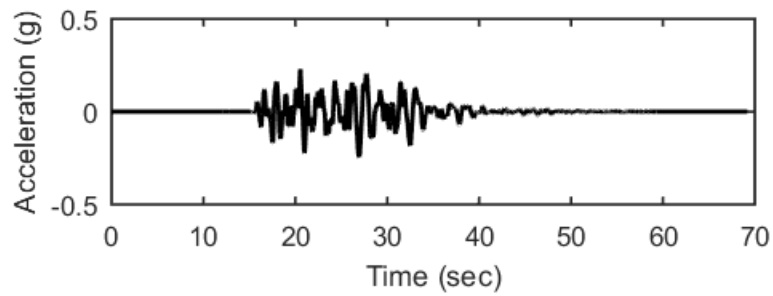
### Profile outputs for Motion: FEE7



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1

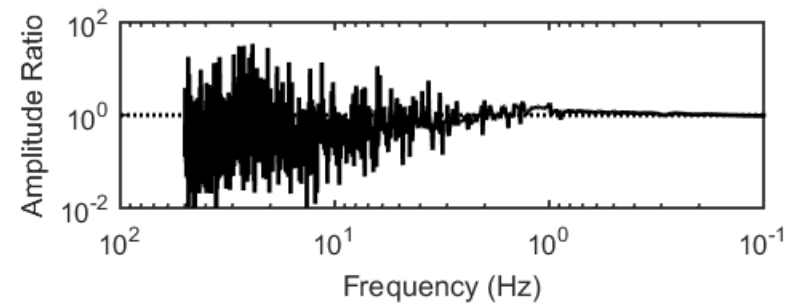
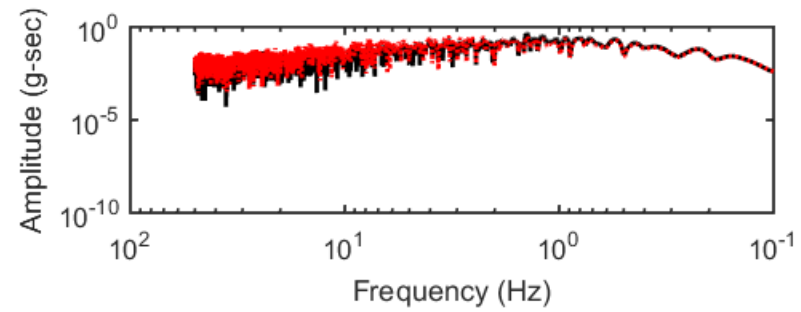
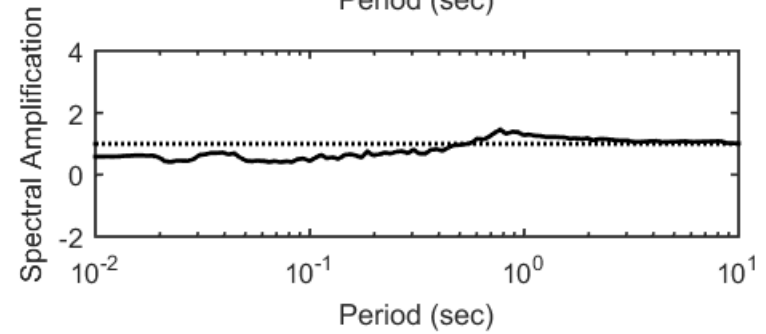
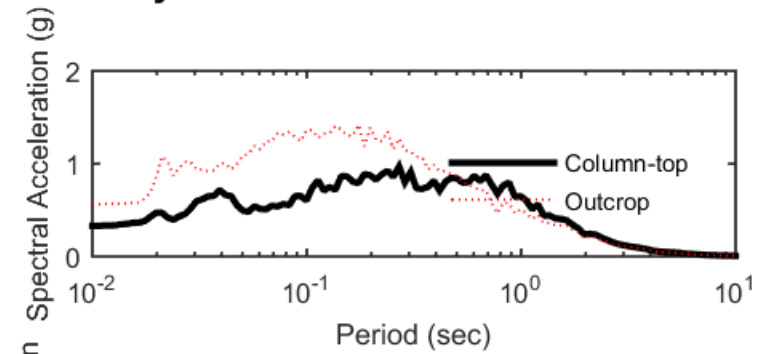
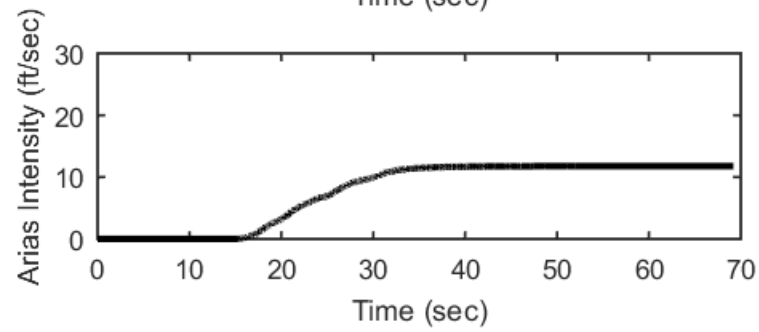
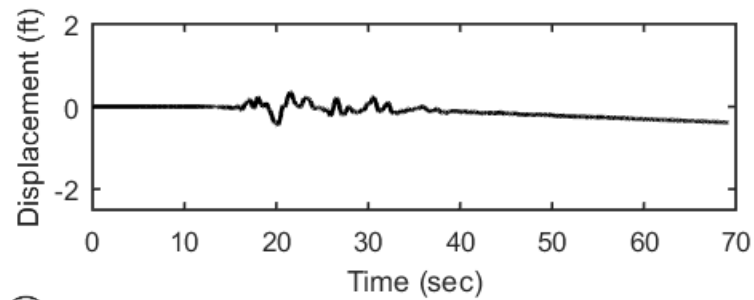
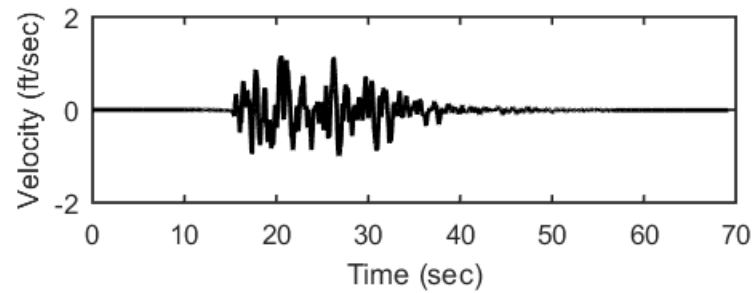
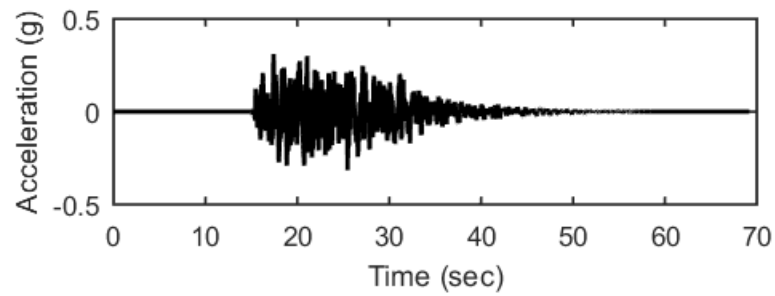


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1

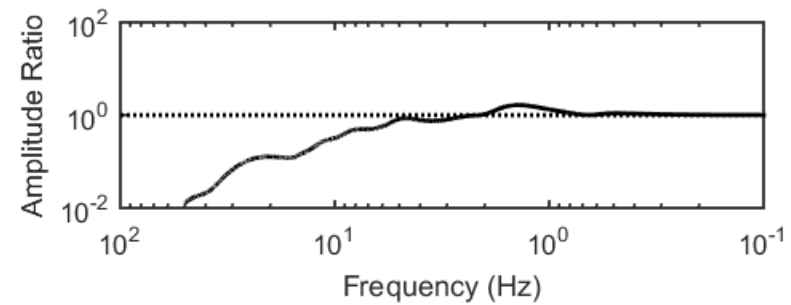
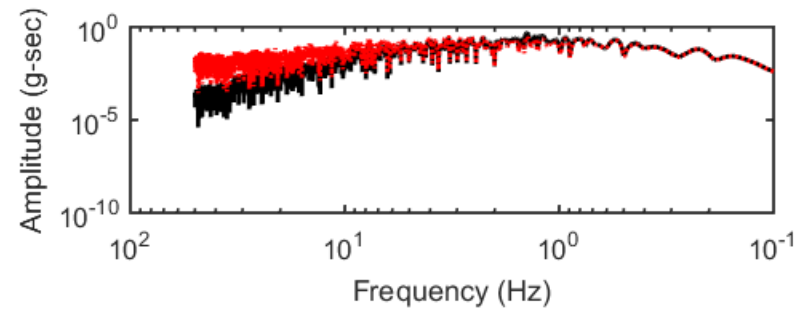
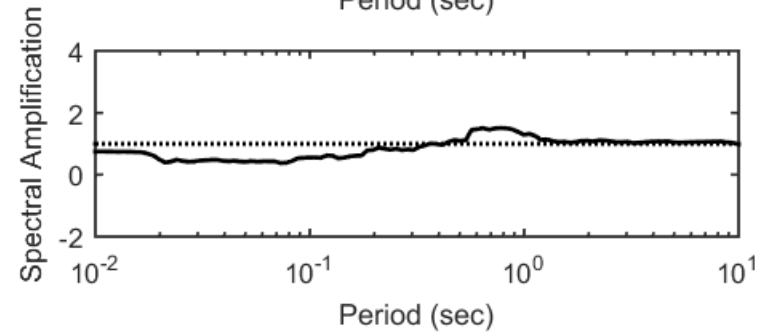
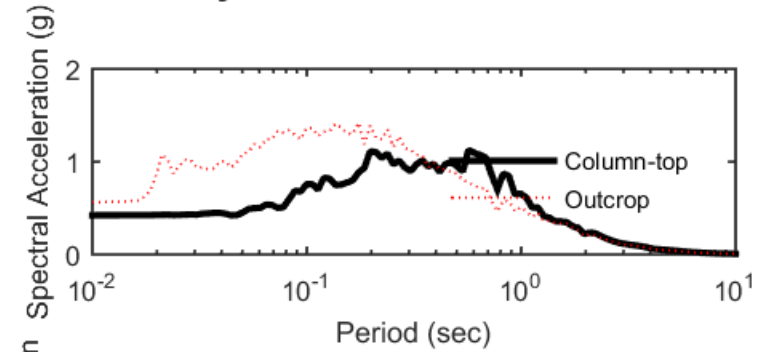
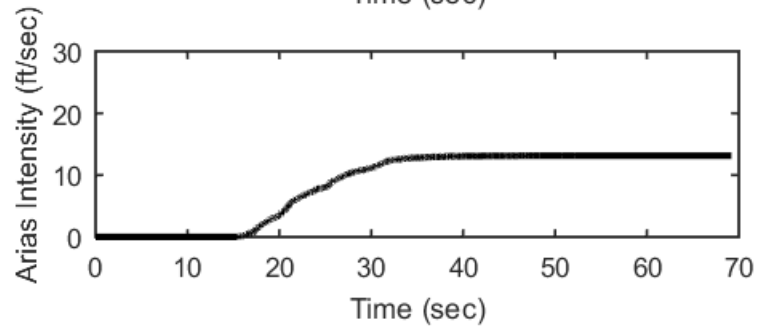
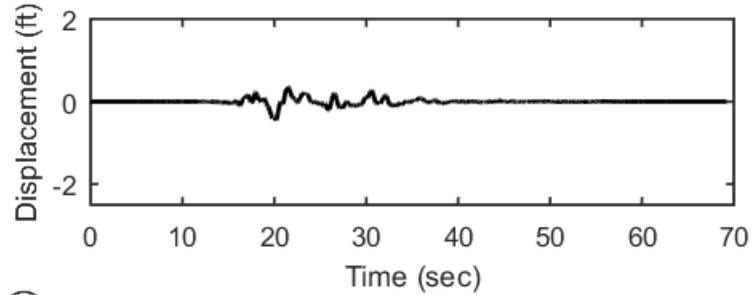
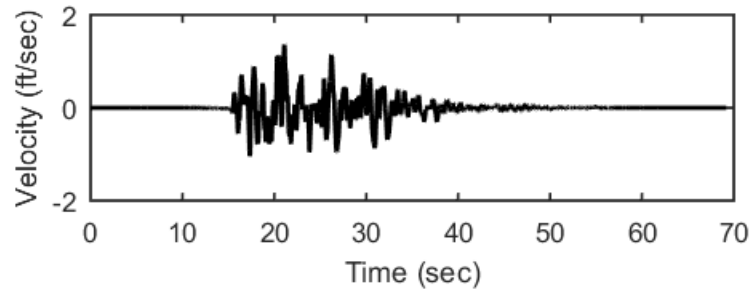
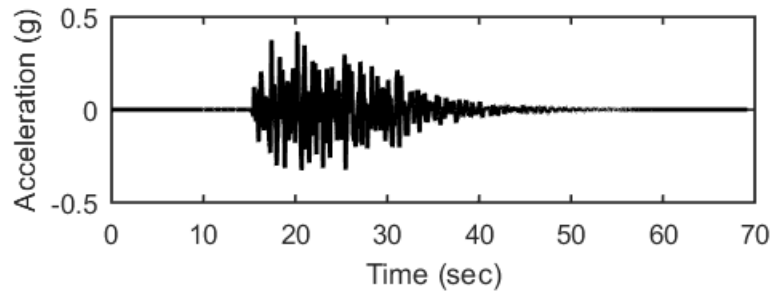




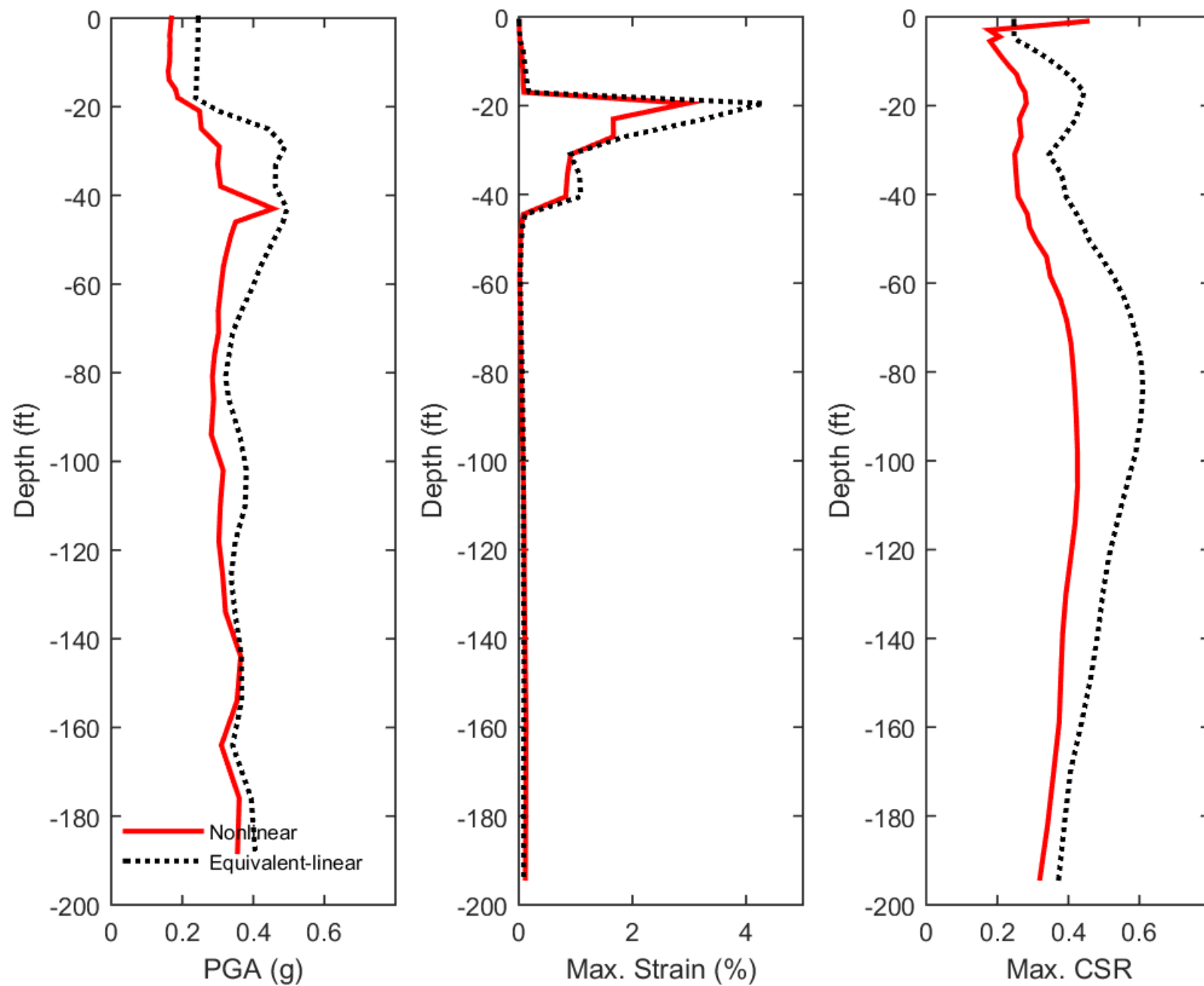
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



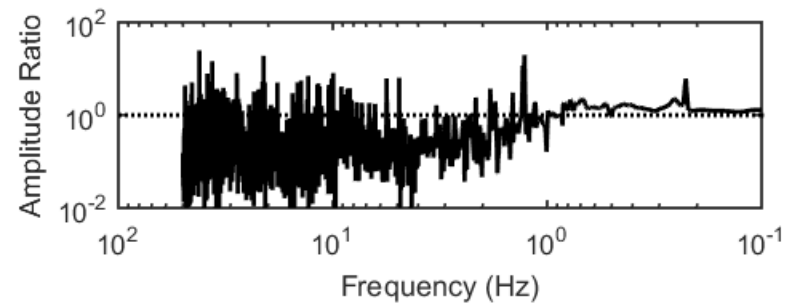
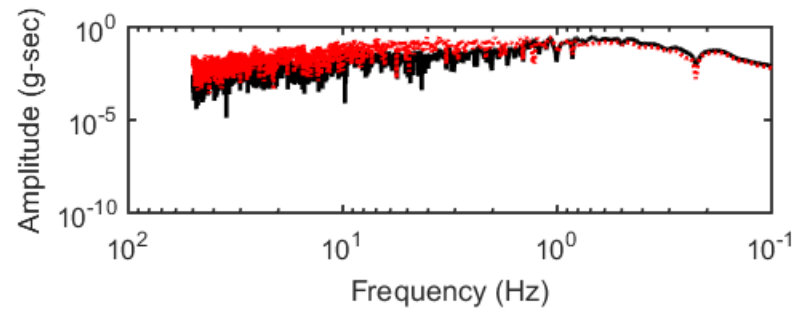
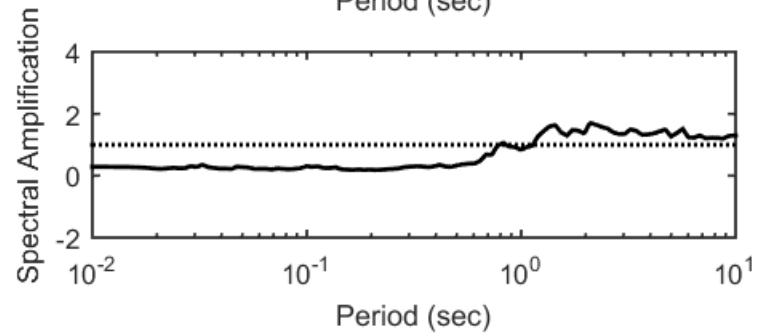
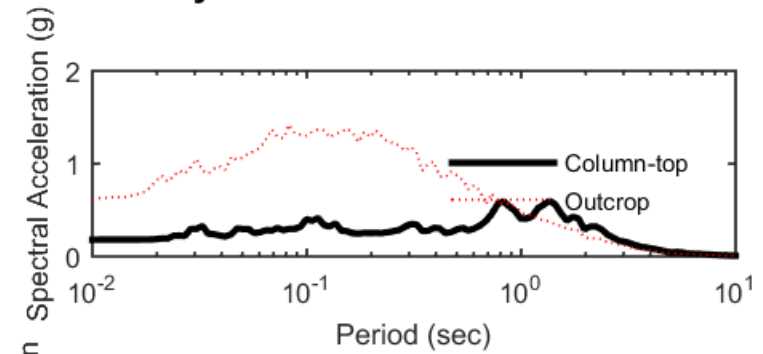
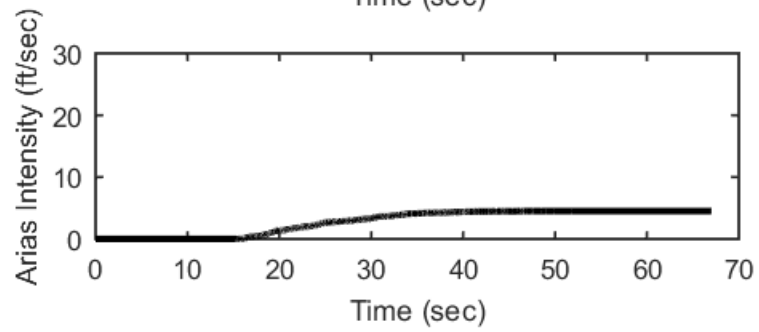
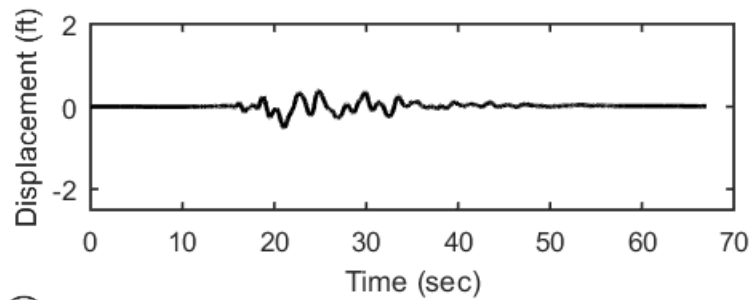
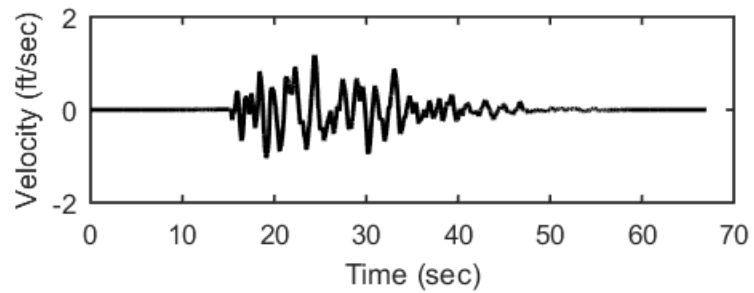
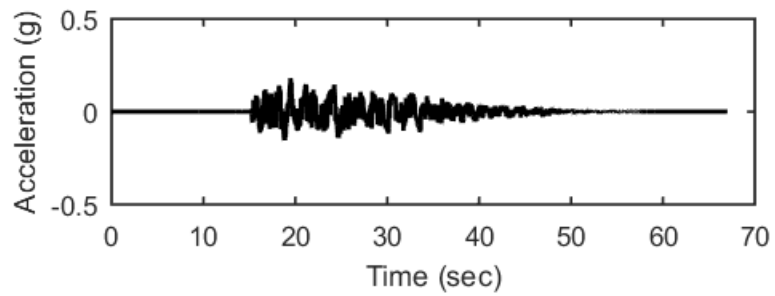
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



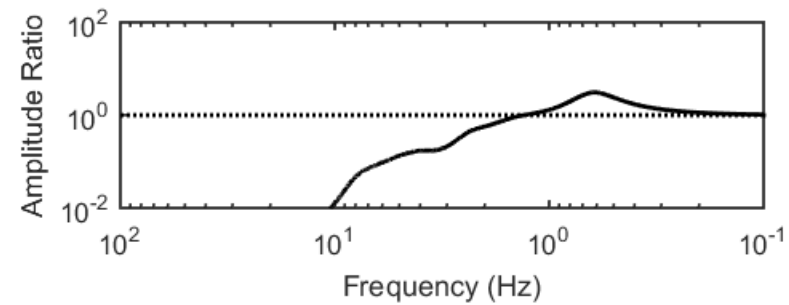
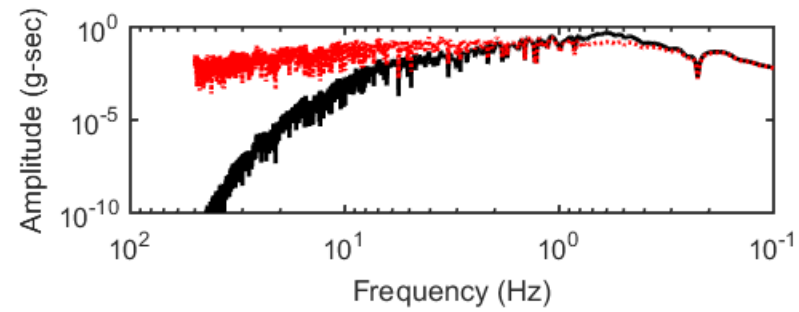
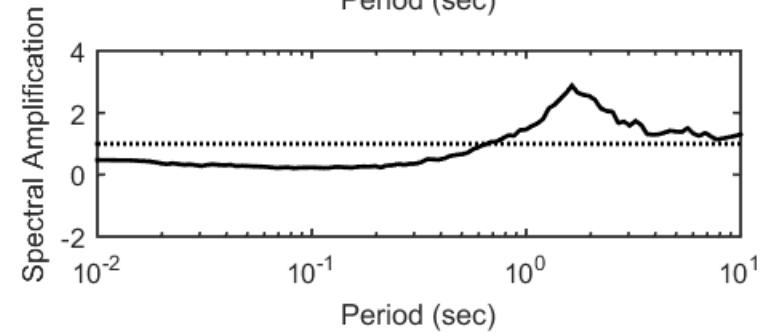
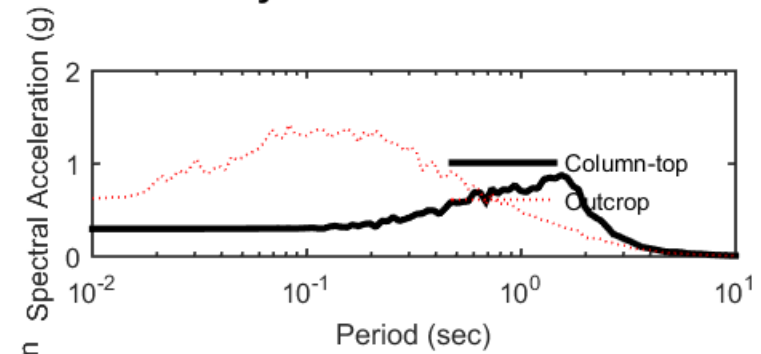
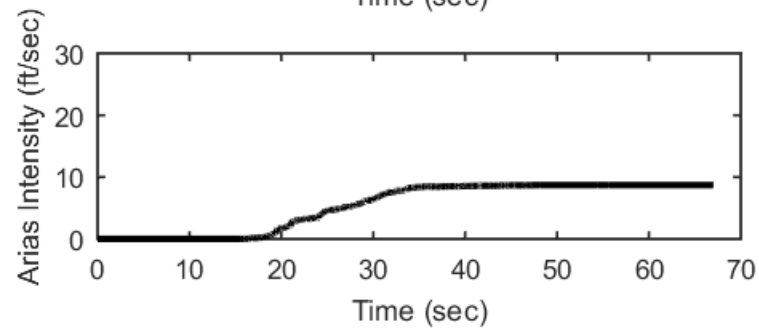
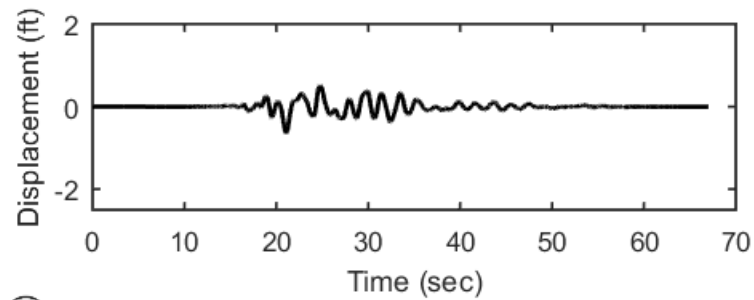
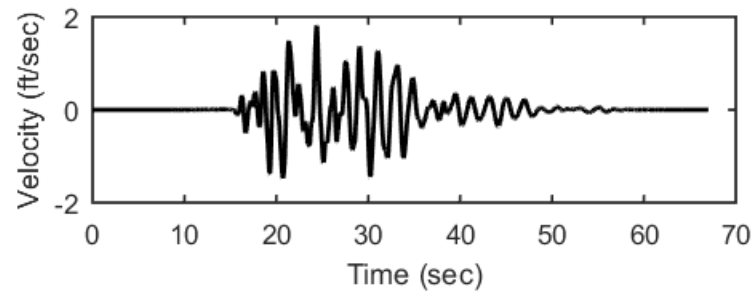
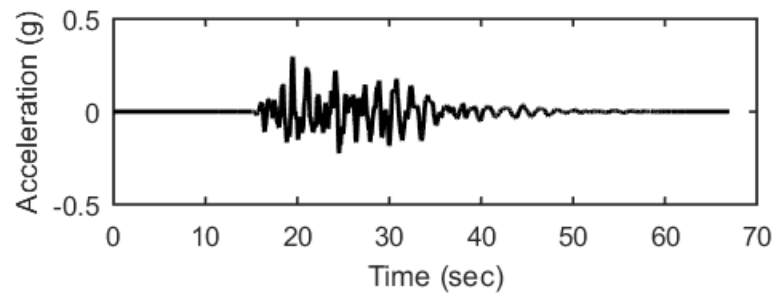
### Profile outputs for Motion: SEE1



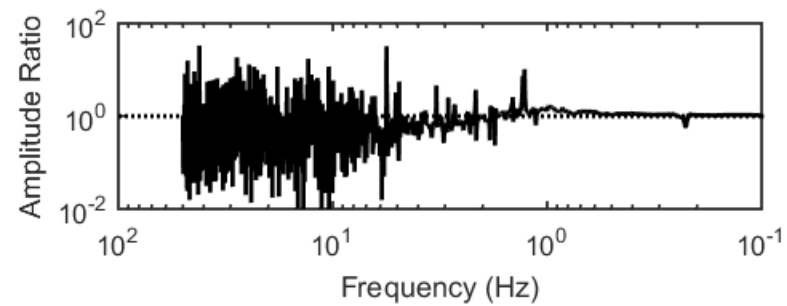
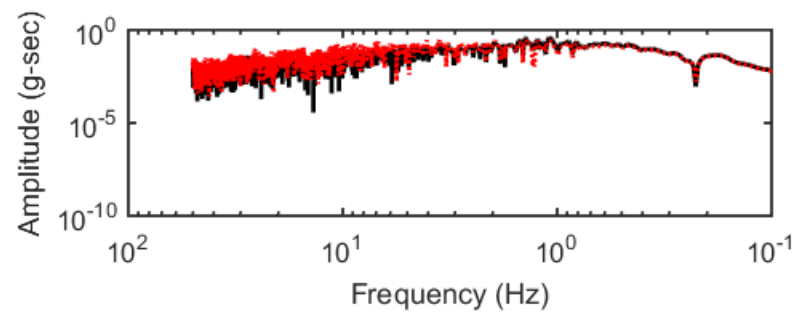
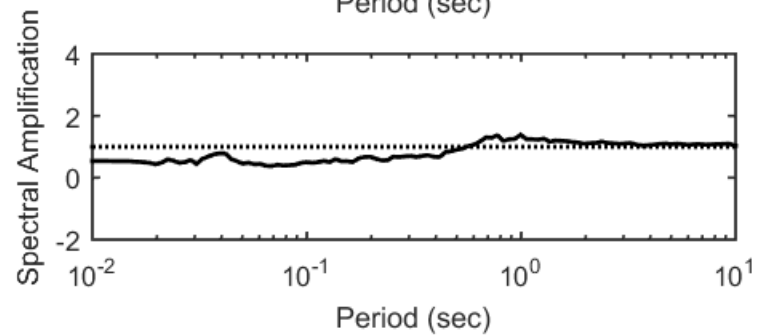
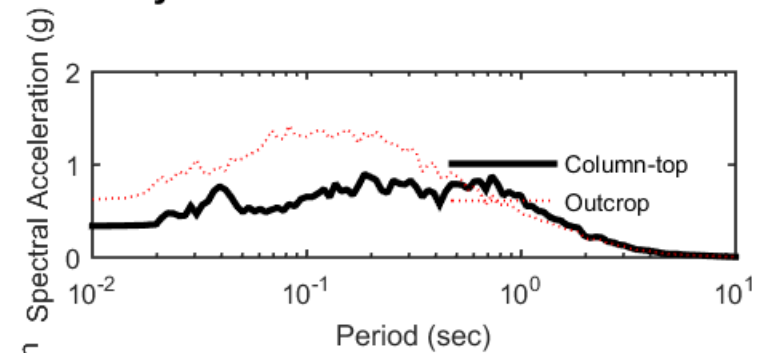
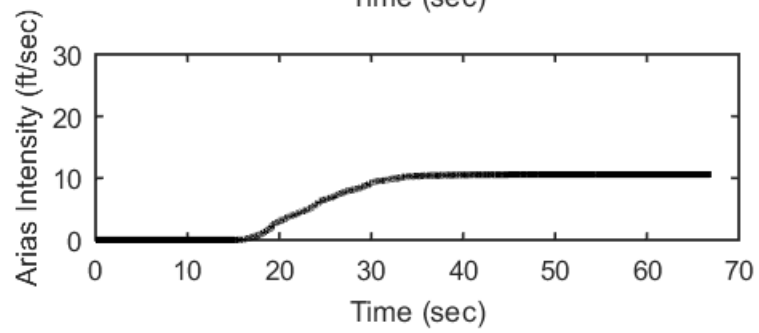
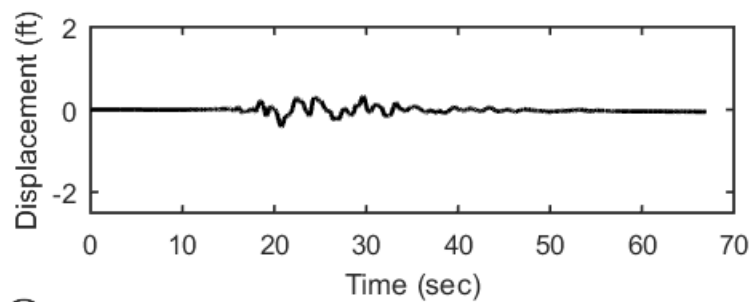
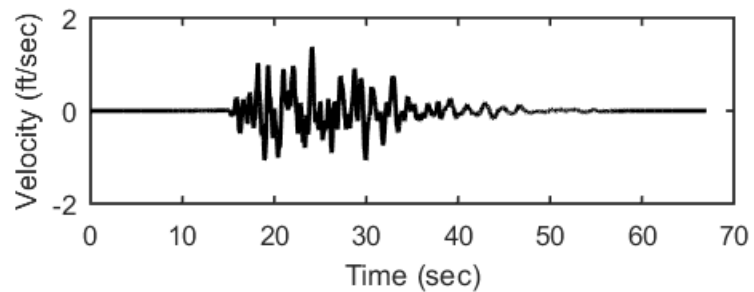
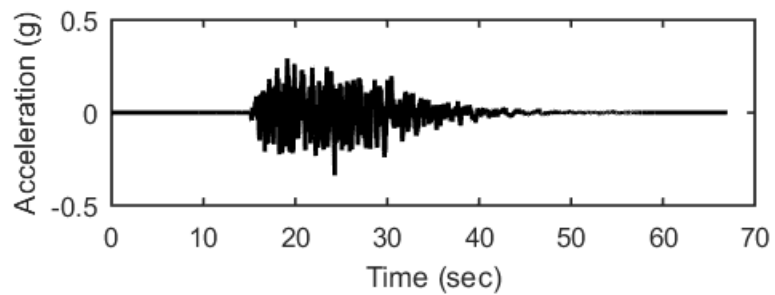
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



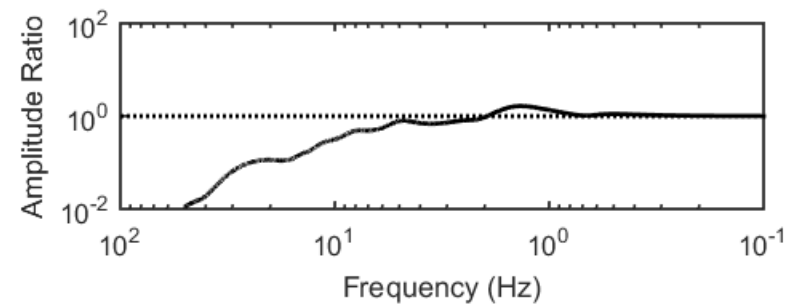
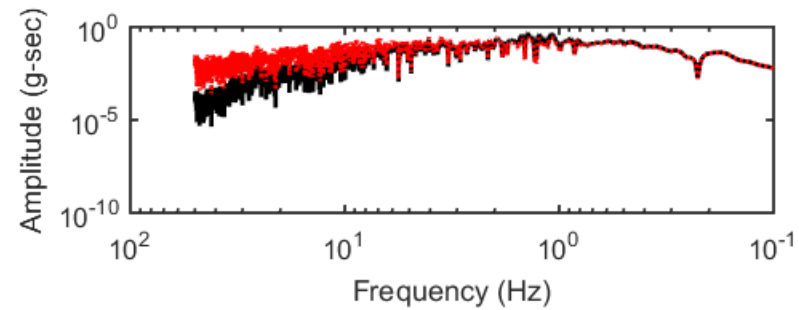
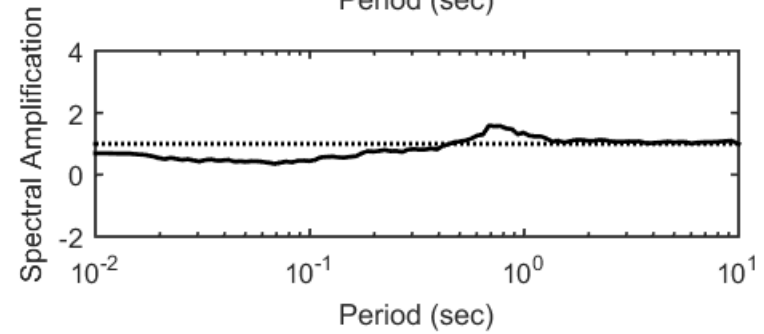
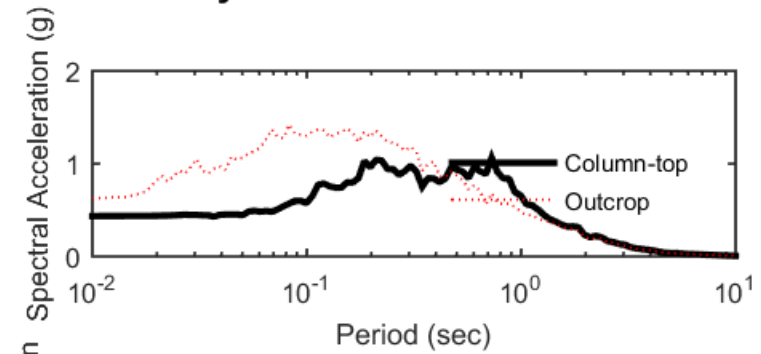
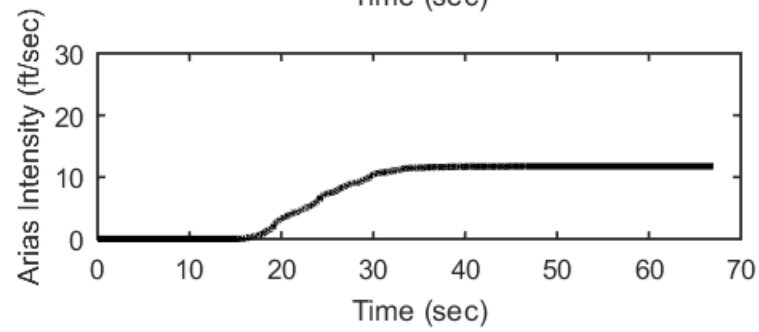
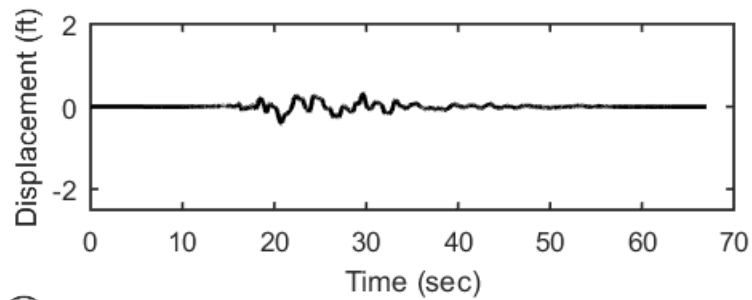
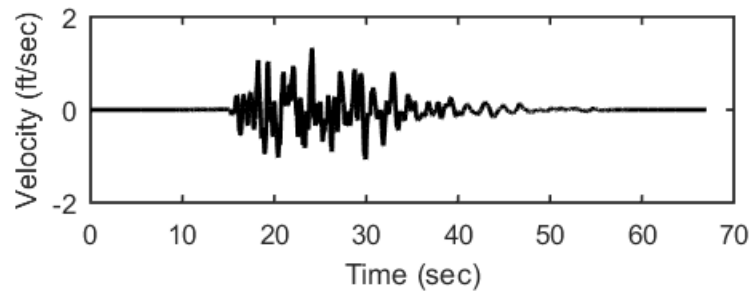
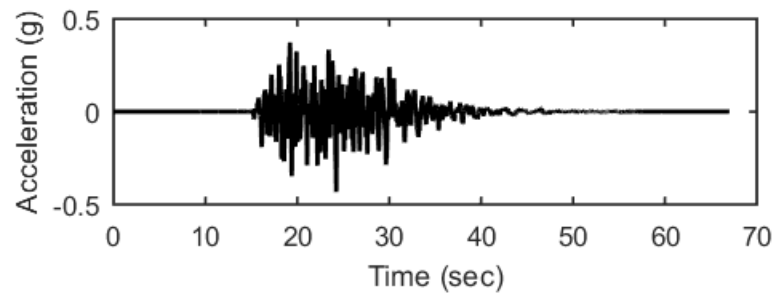
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



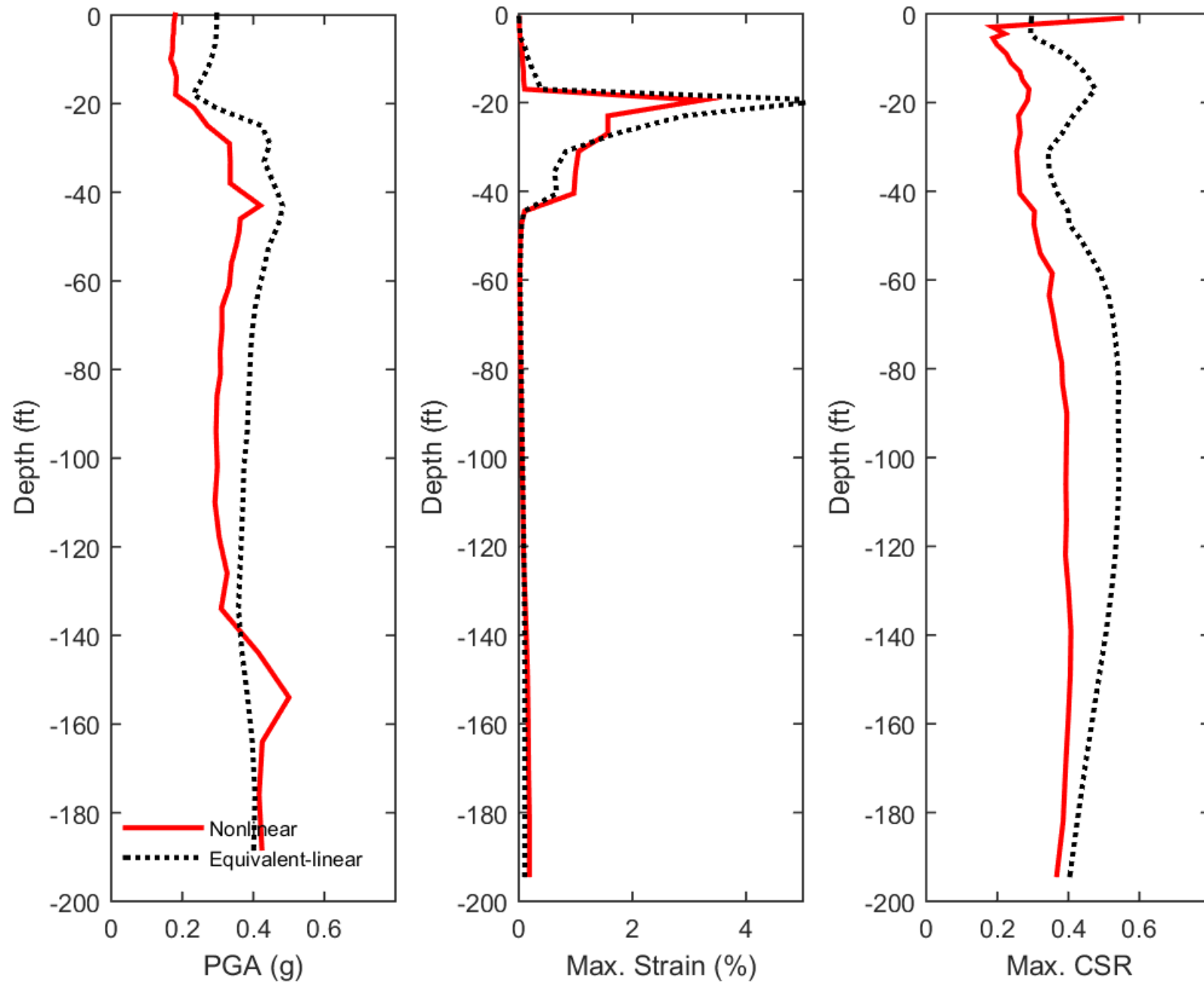
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2

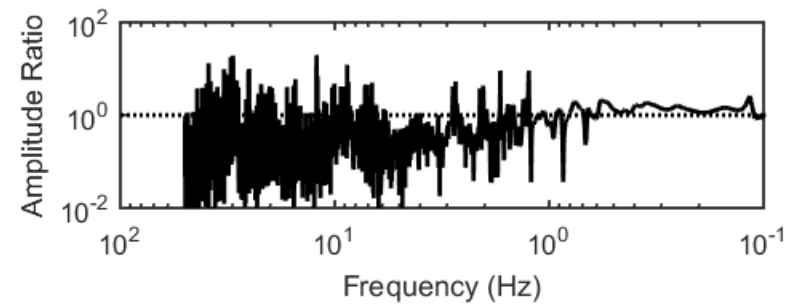
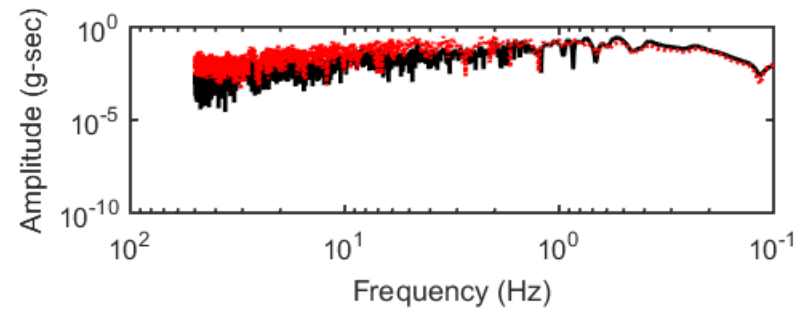
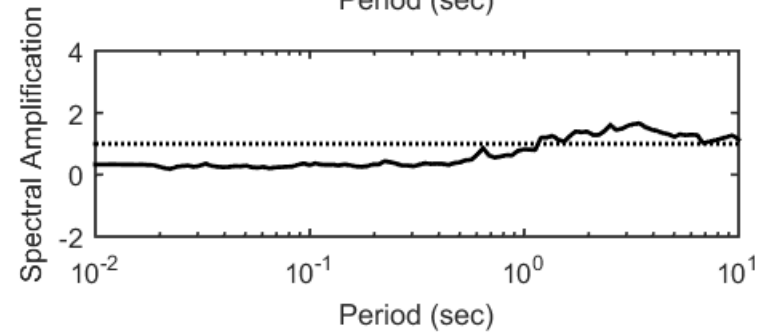
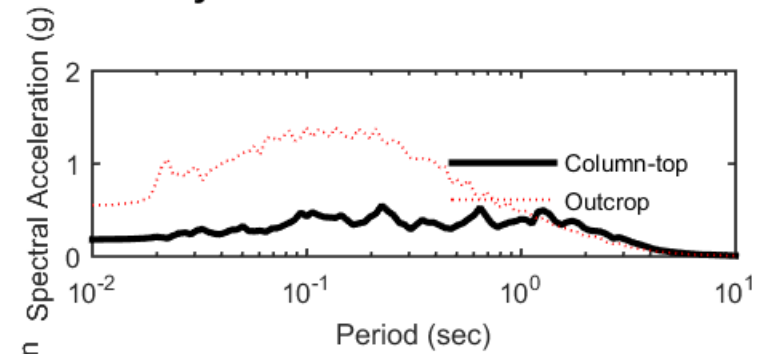
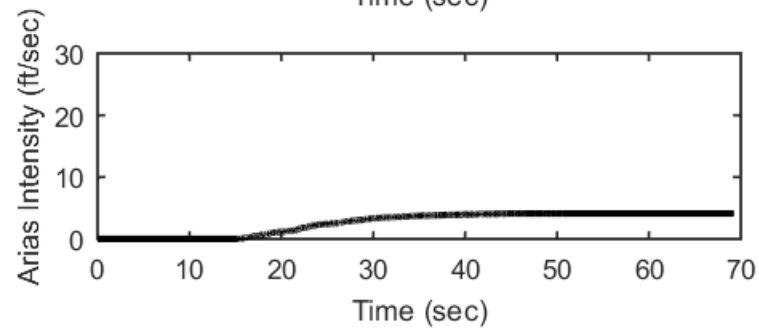
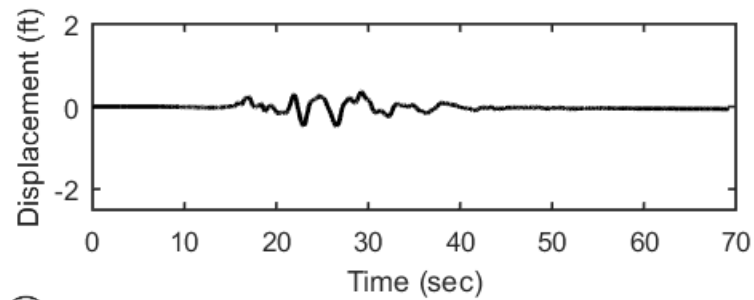
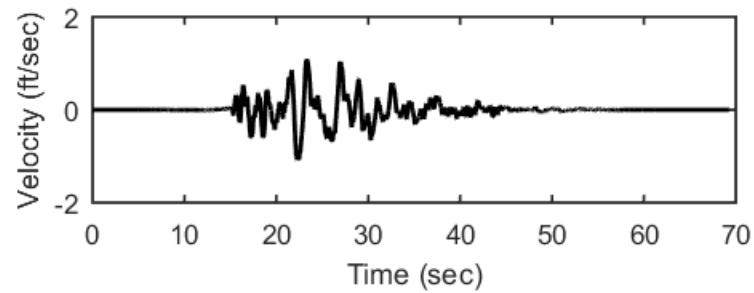
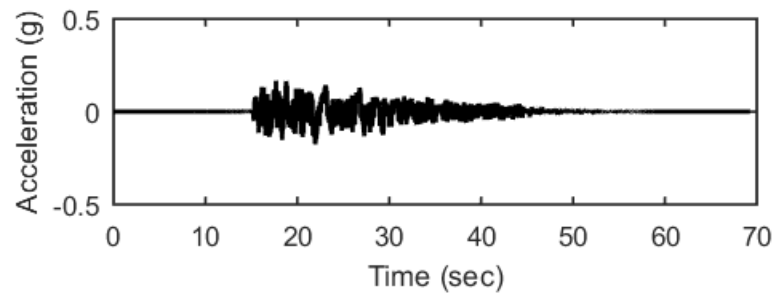


### Profile outputs for Motion: SEE2

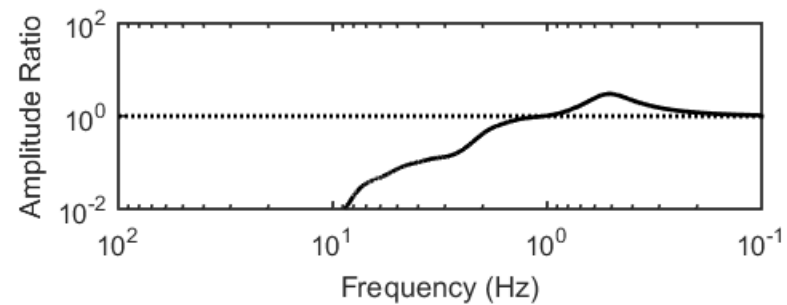
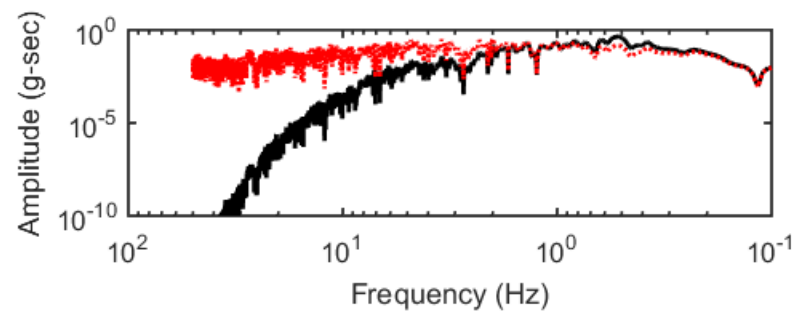
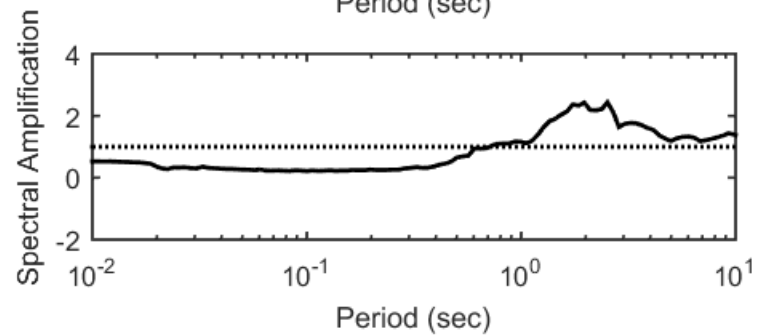
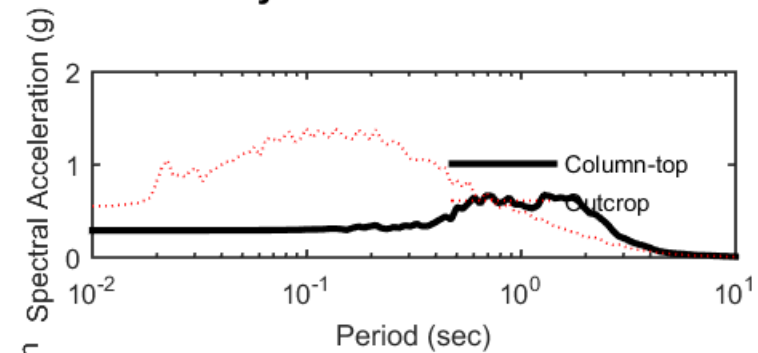
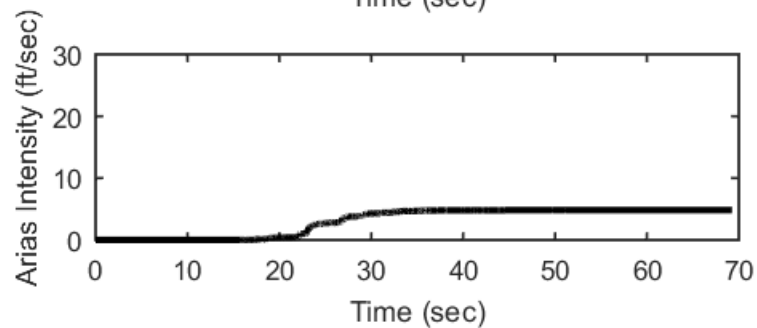
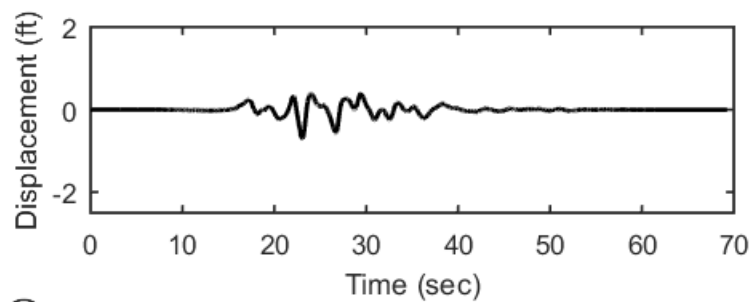
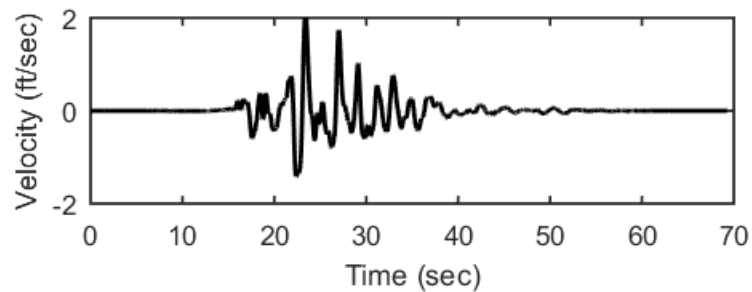
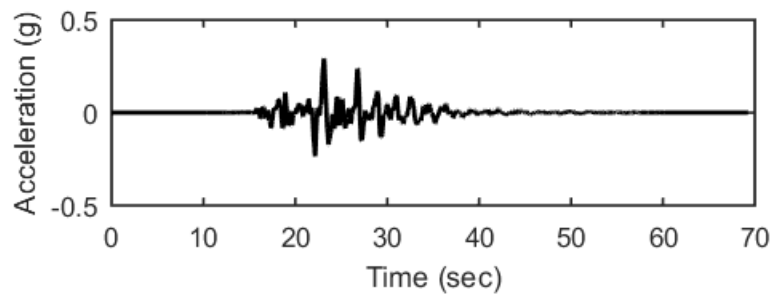




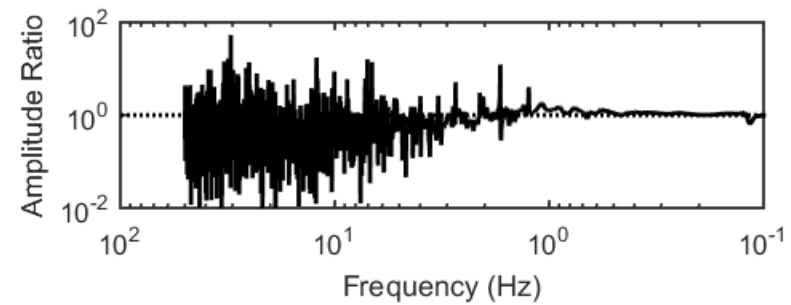
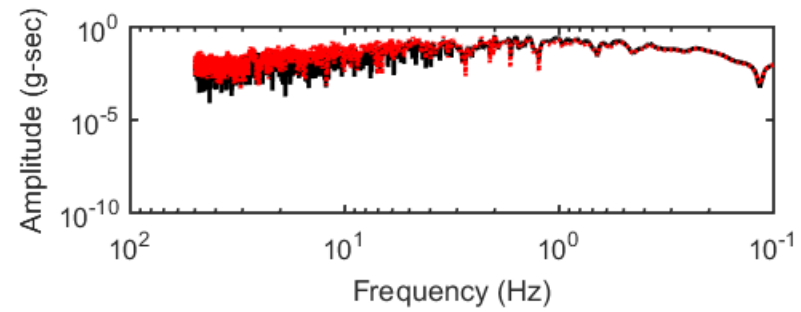
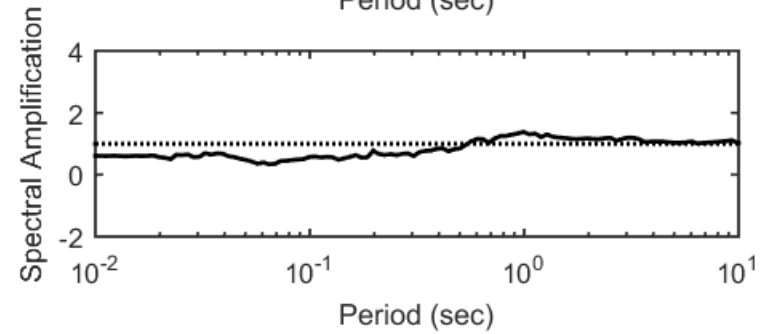
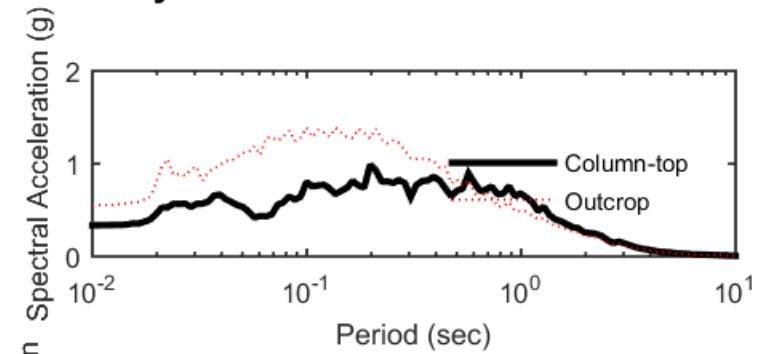
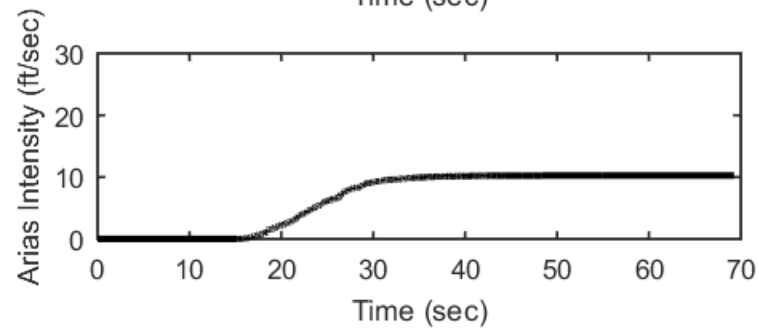
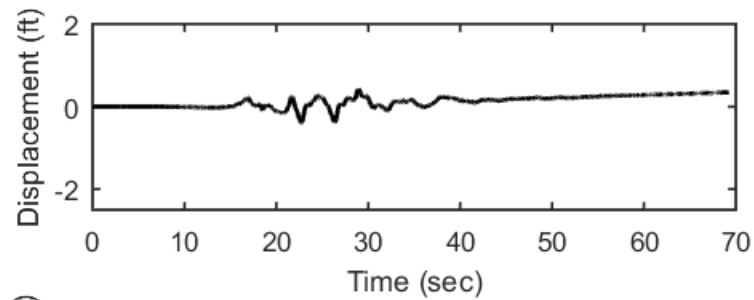
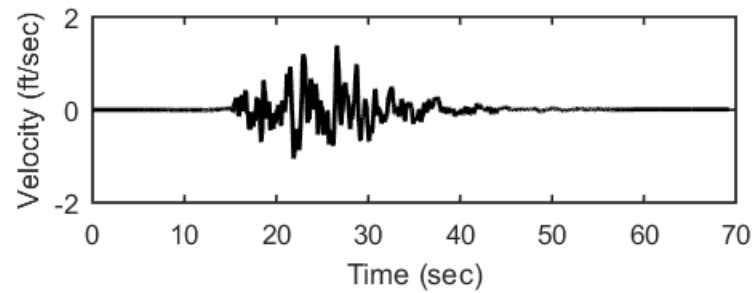
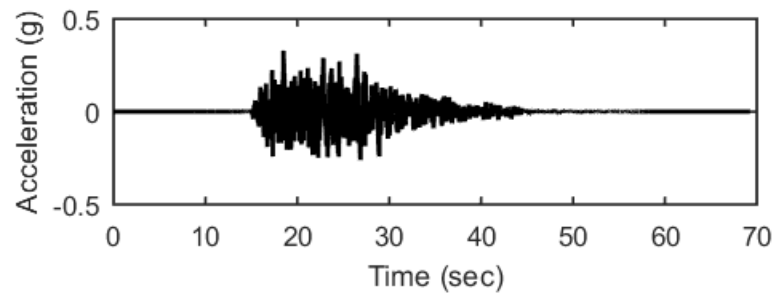
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



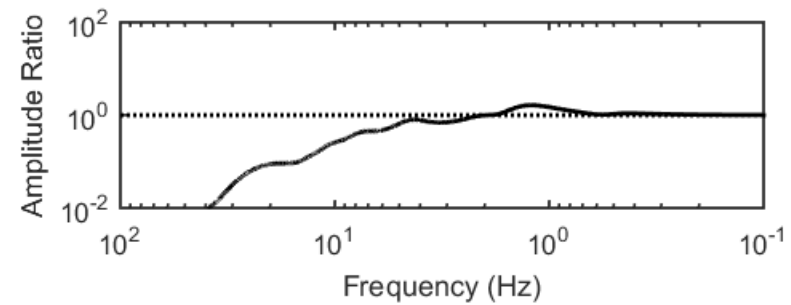
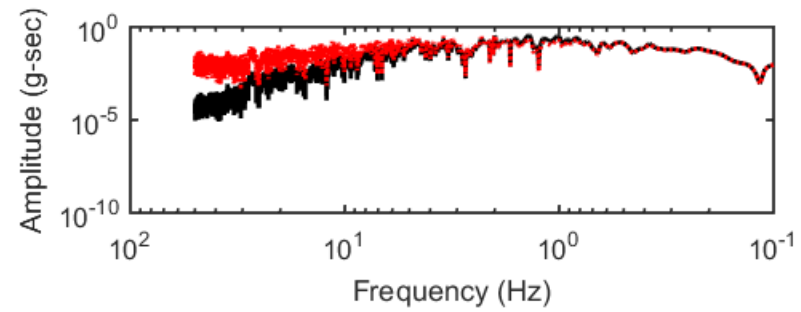
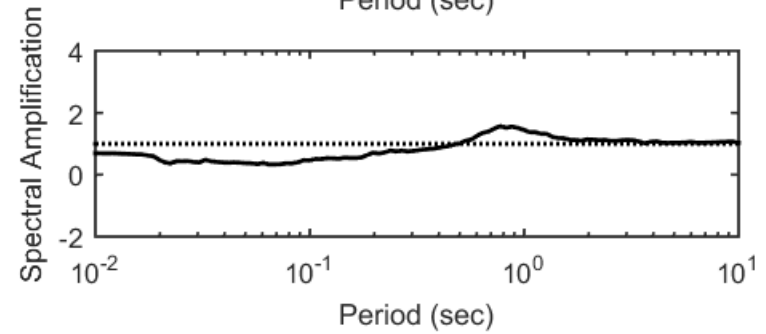
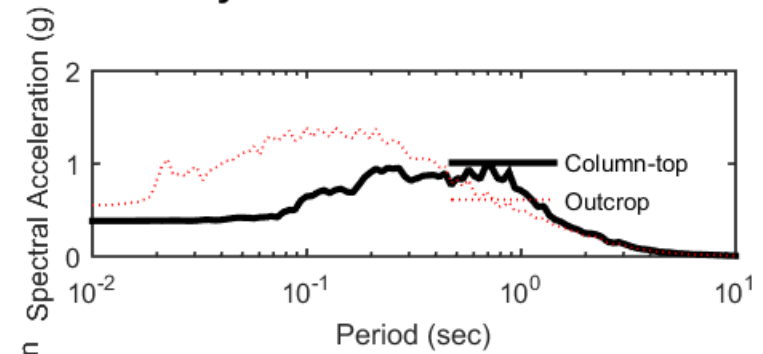
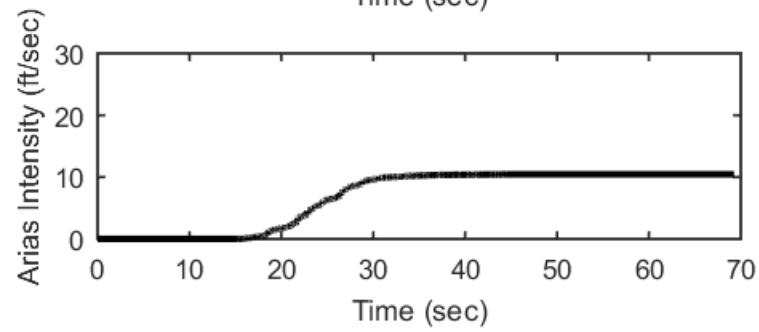
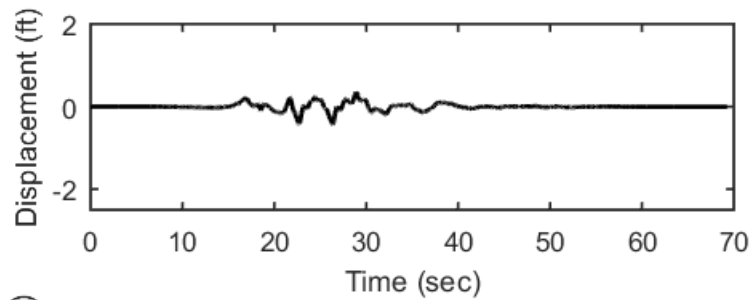
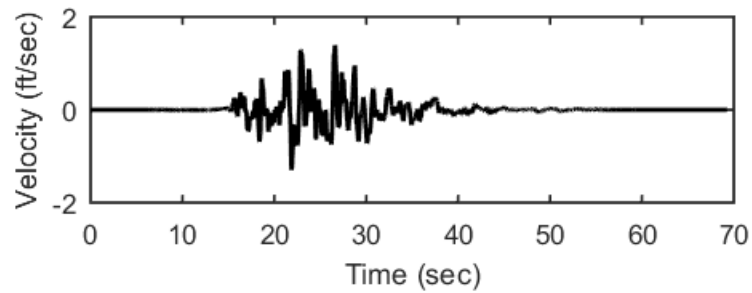
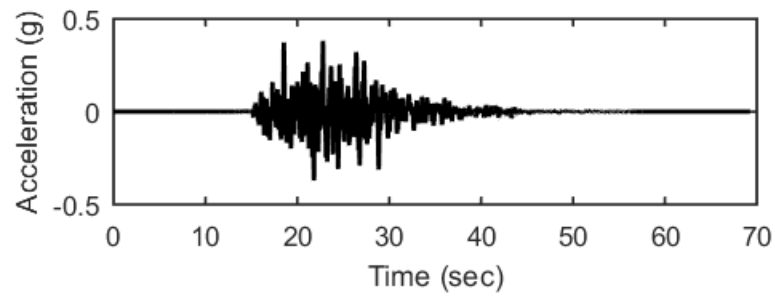
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



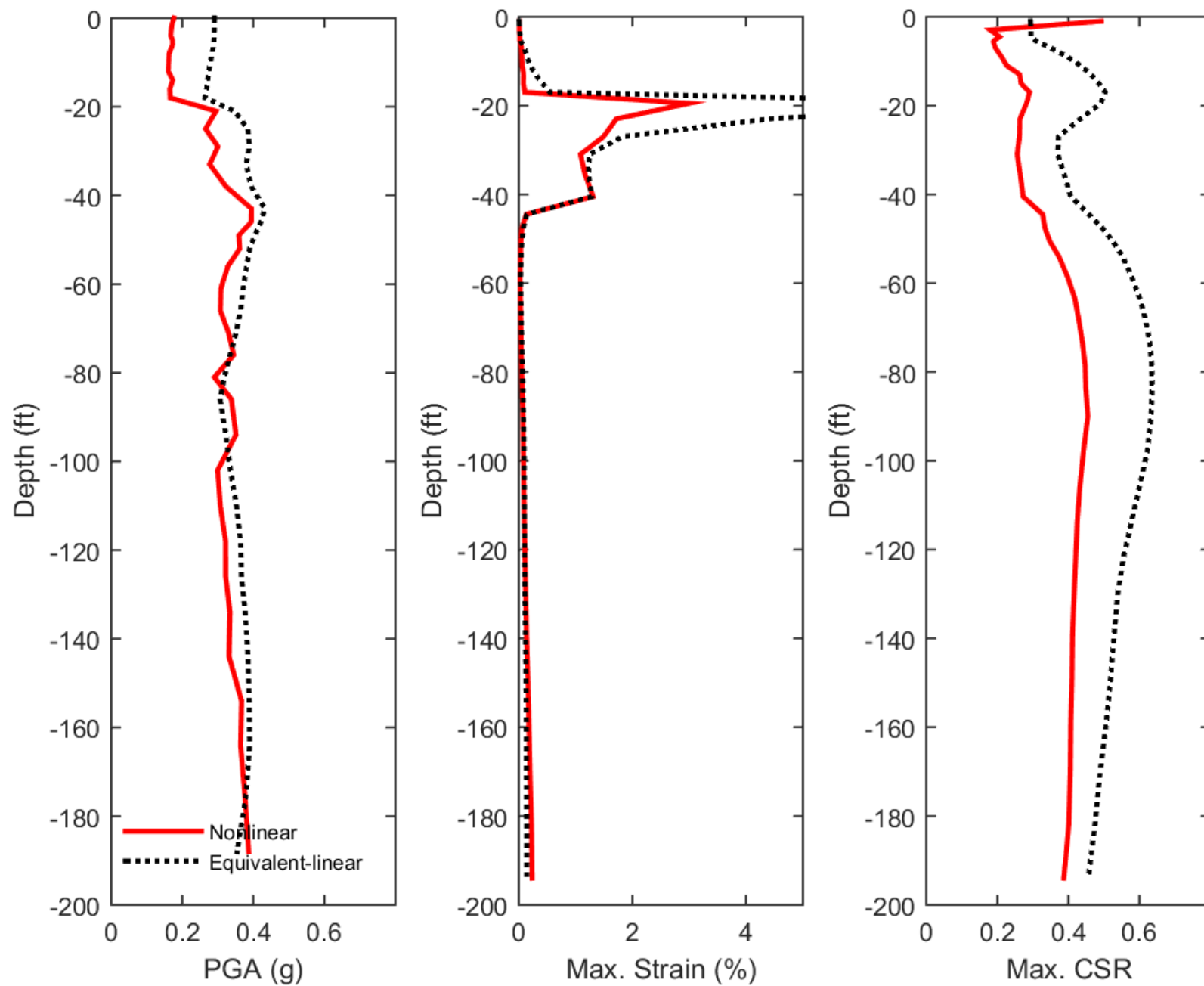
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



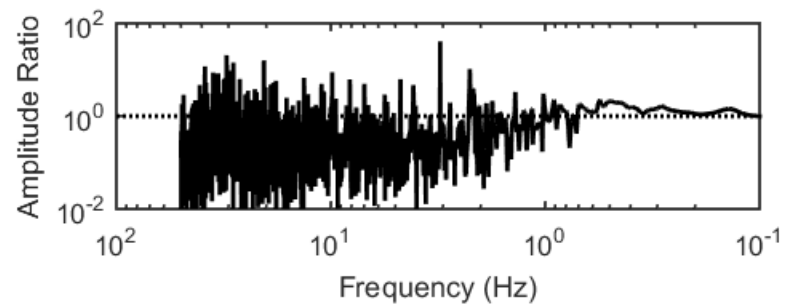
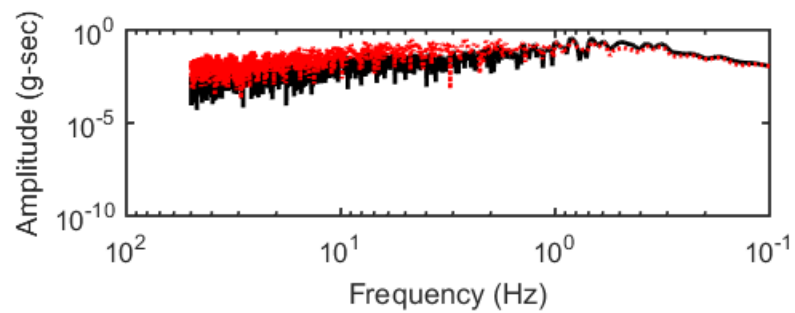
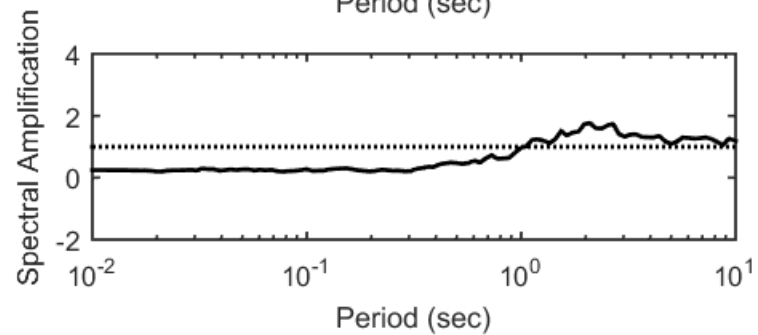
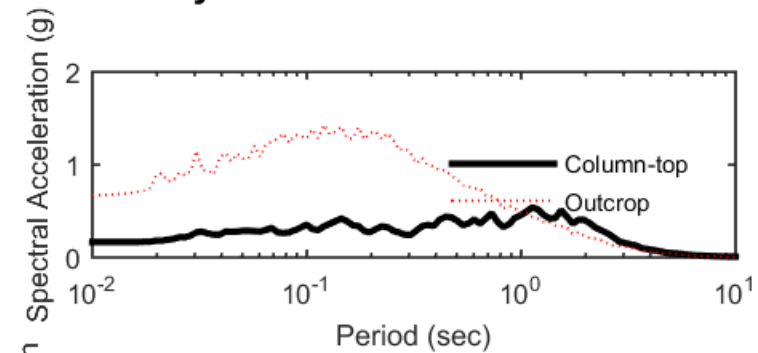
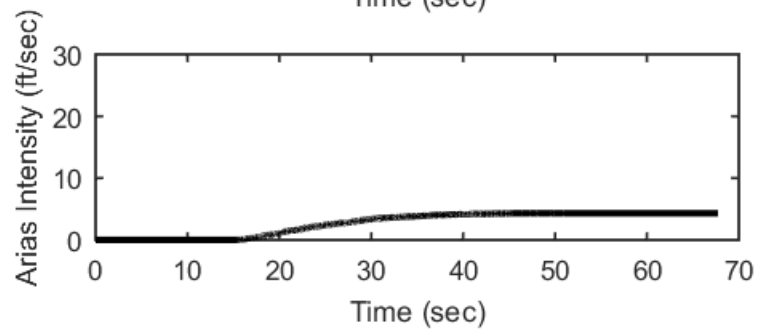
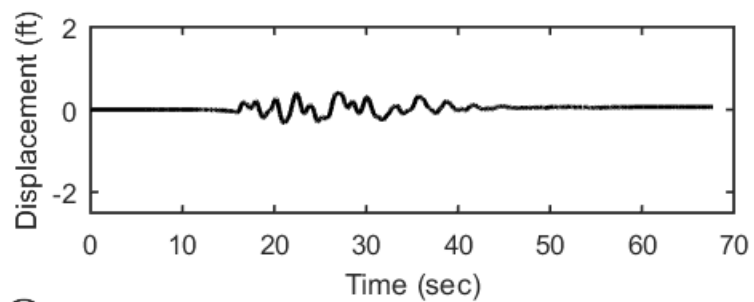
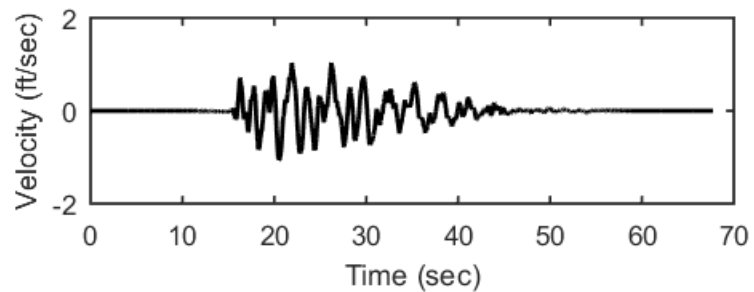
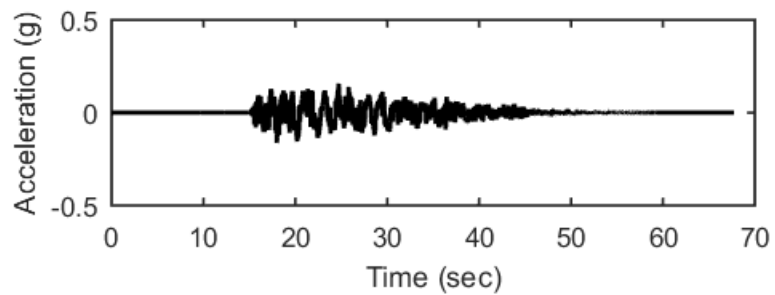
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



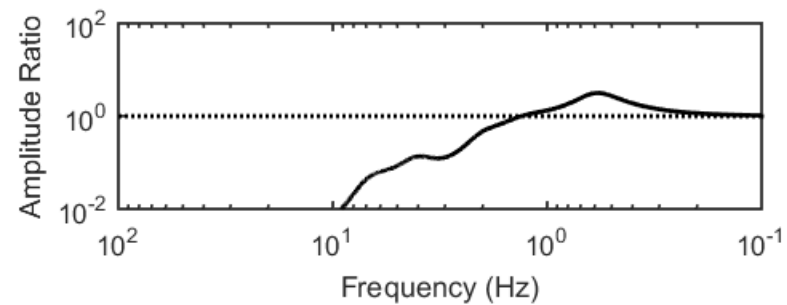
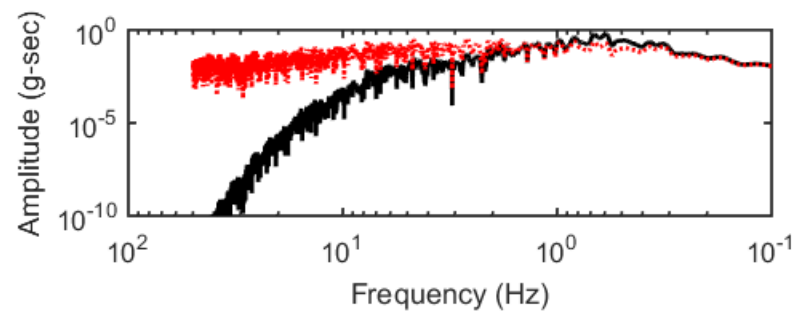
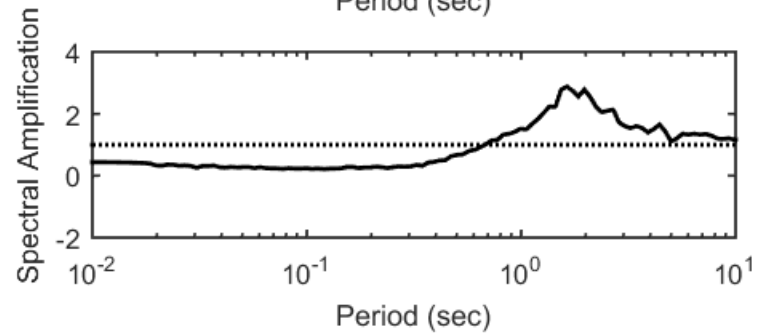
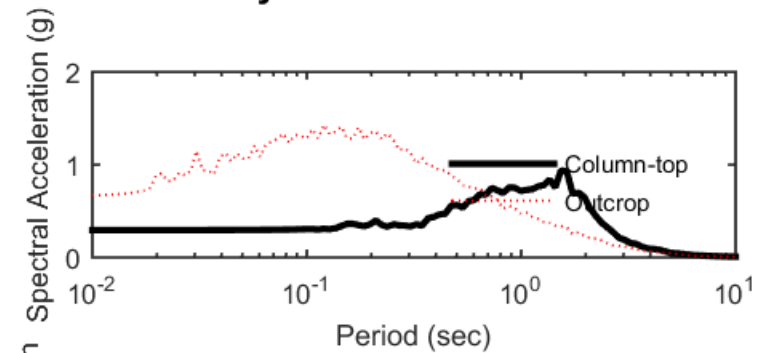
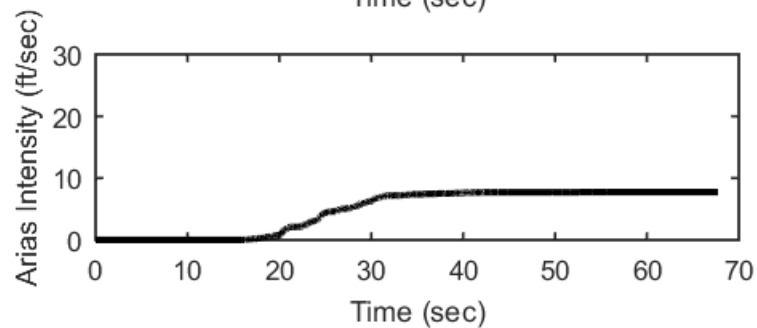
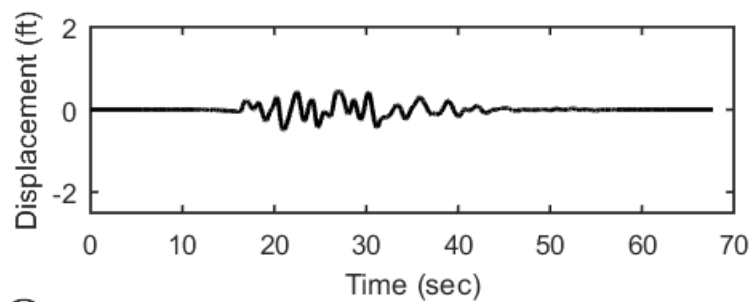
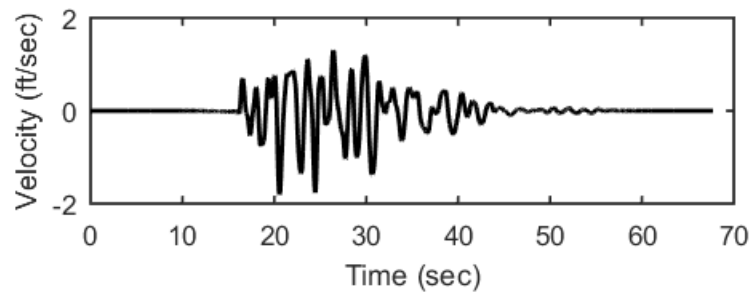
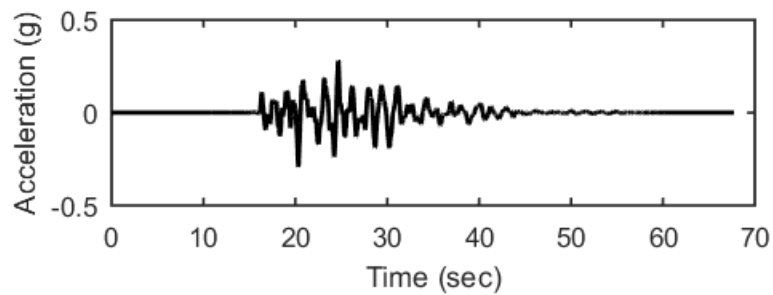
### Profile outputs for Motion: SEE3



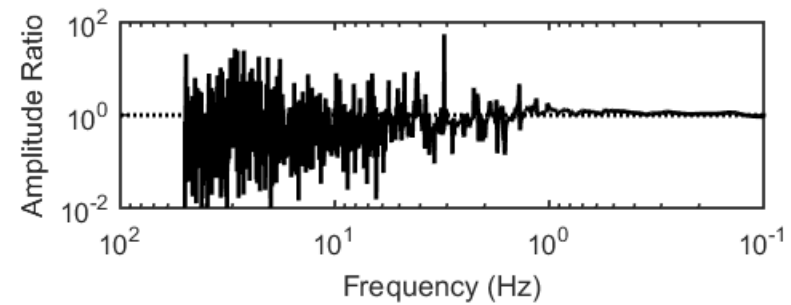
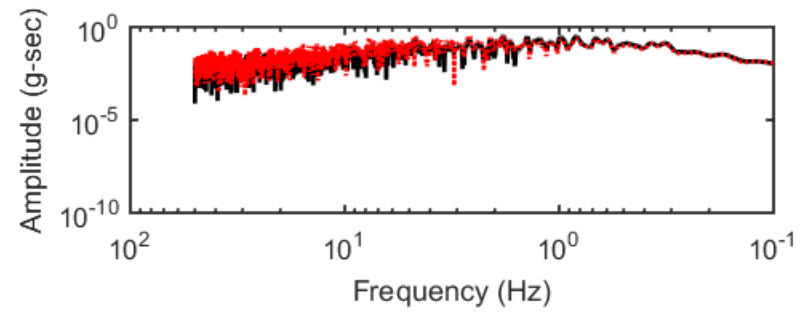
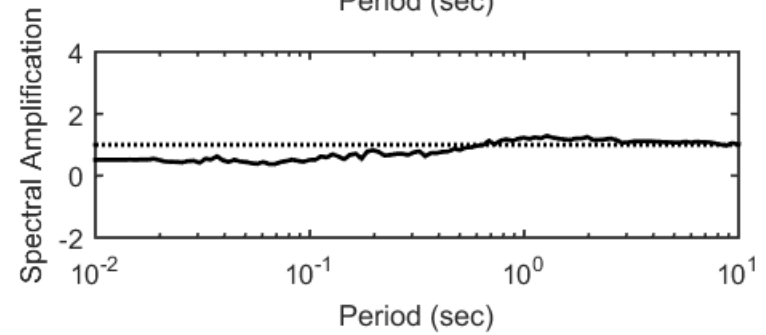
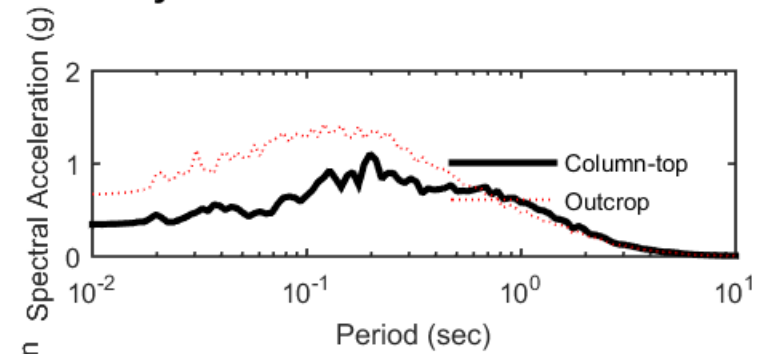
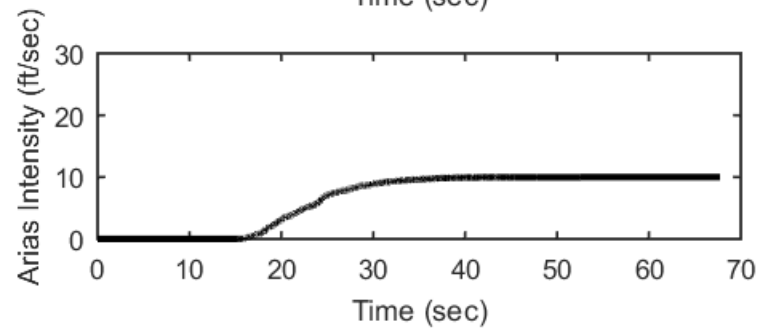
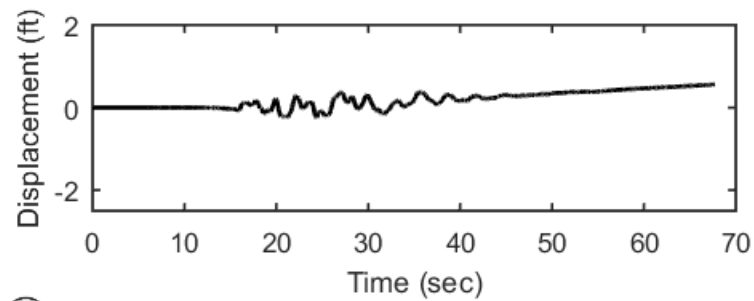
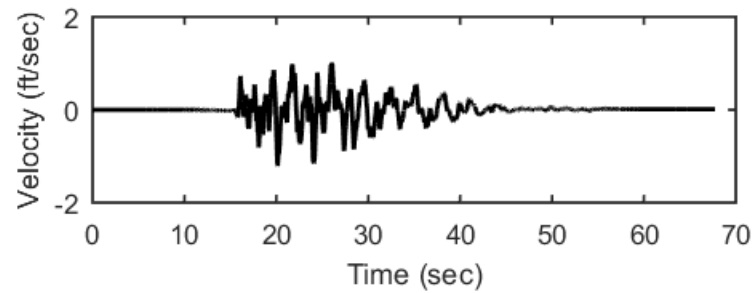
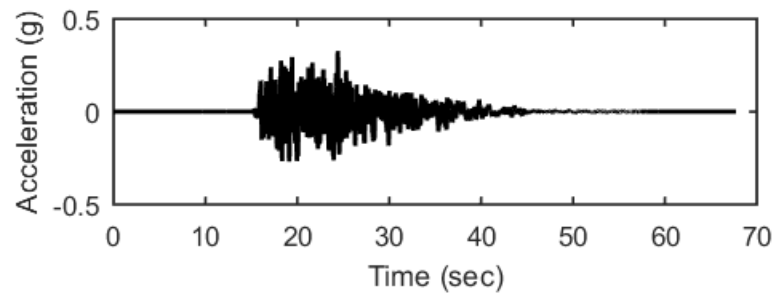
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4

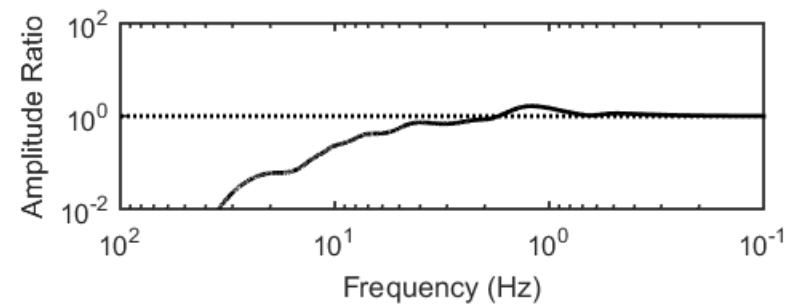
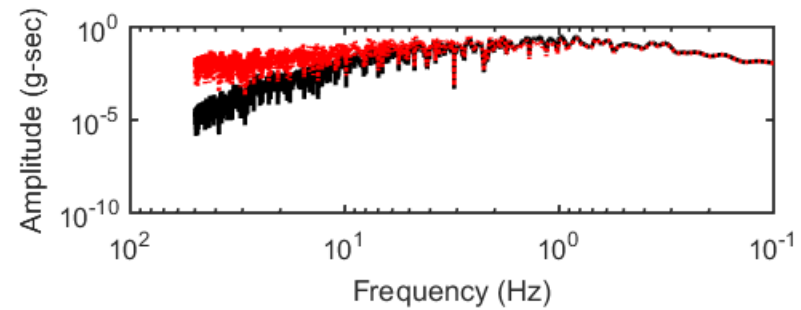
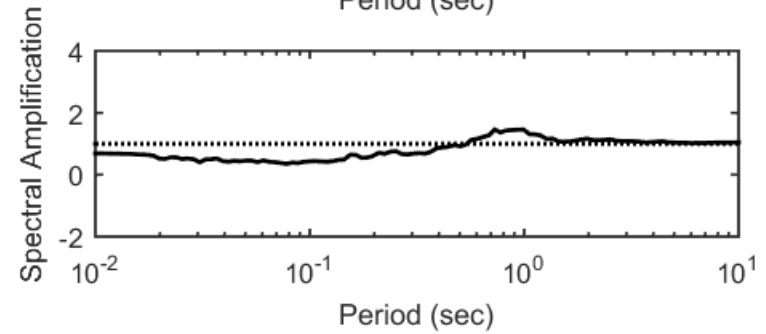
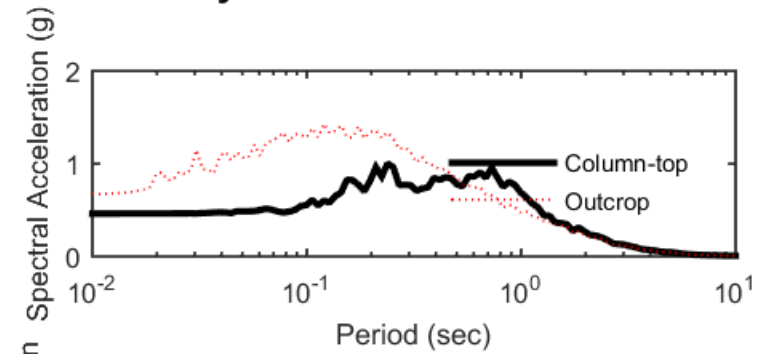
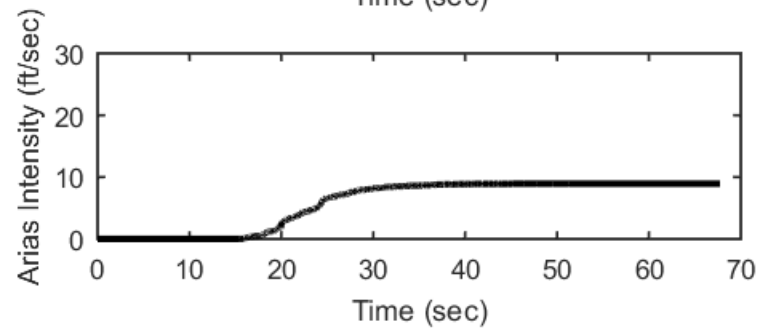
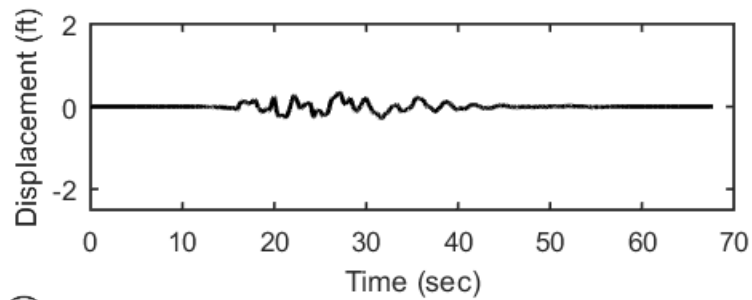
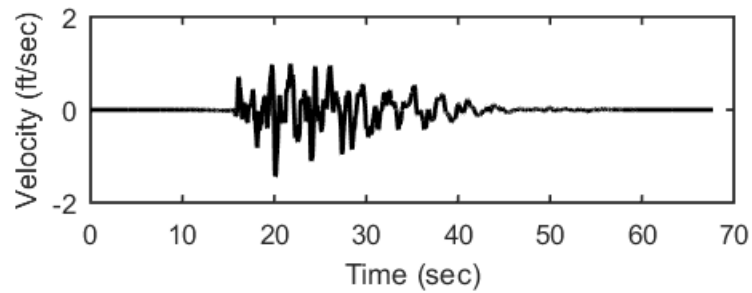
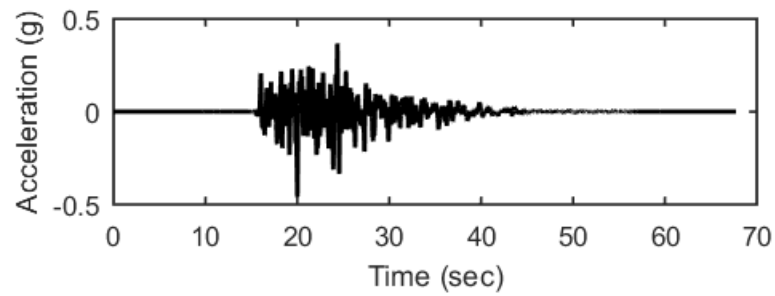


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4

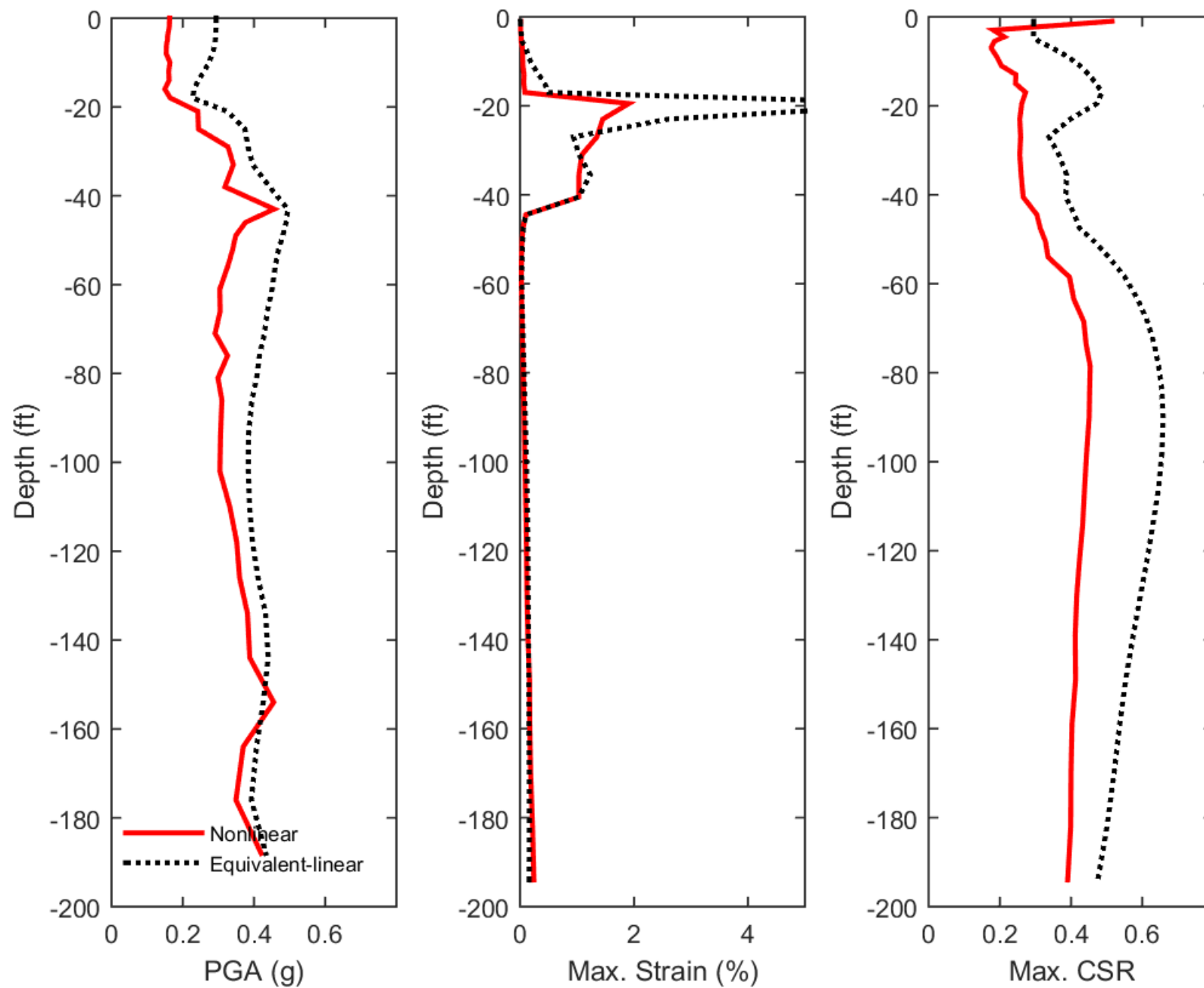




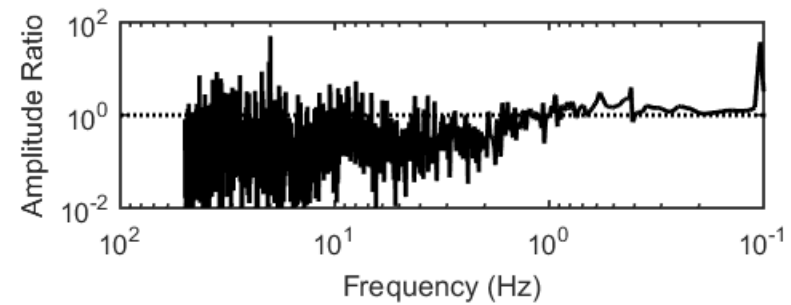
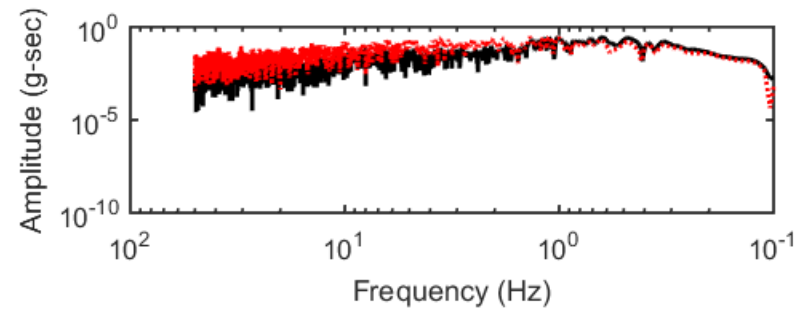
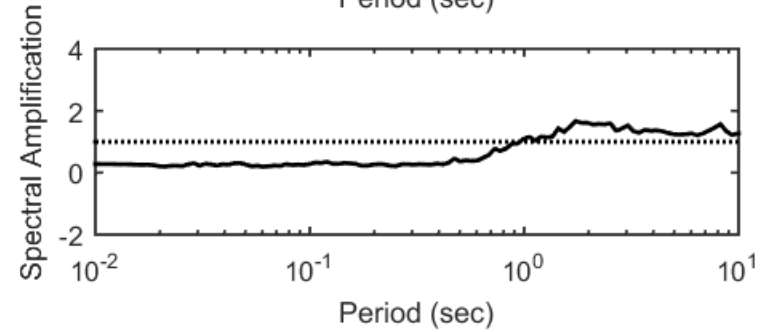
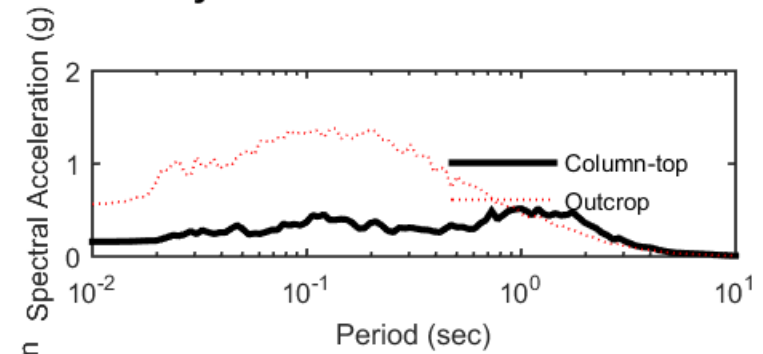
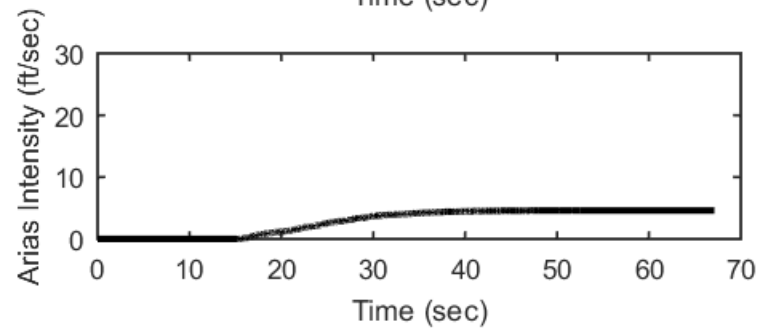
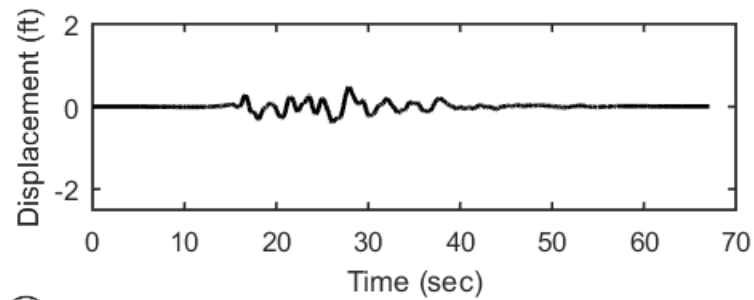
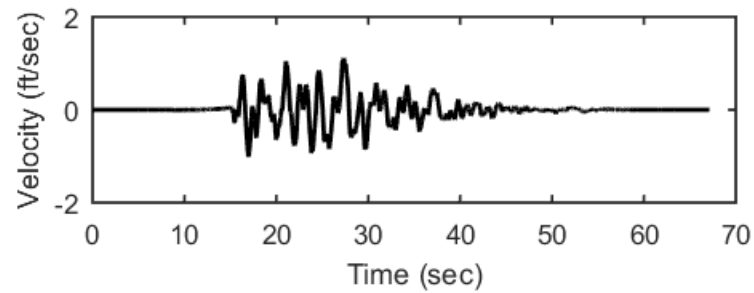
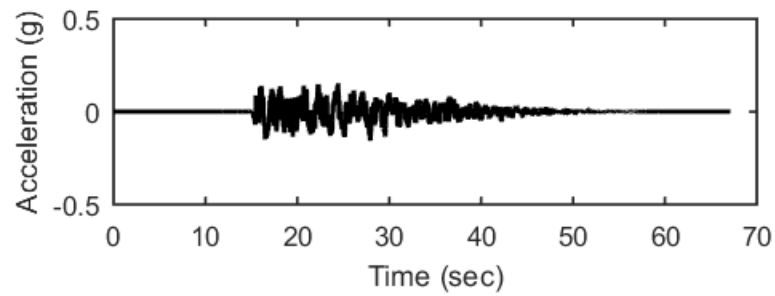
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



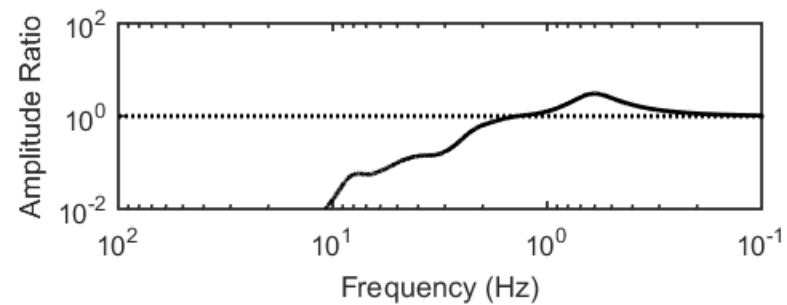
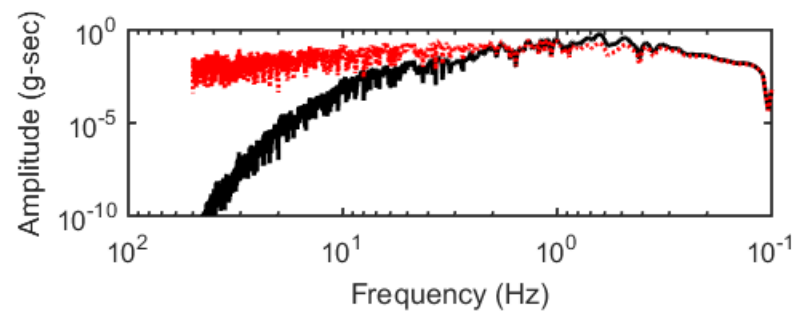
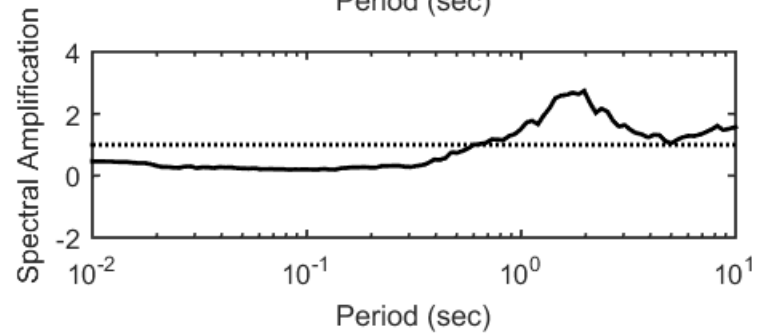
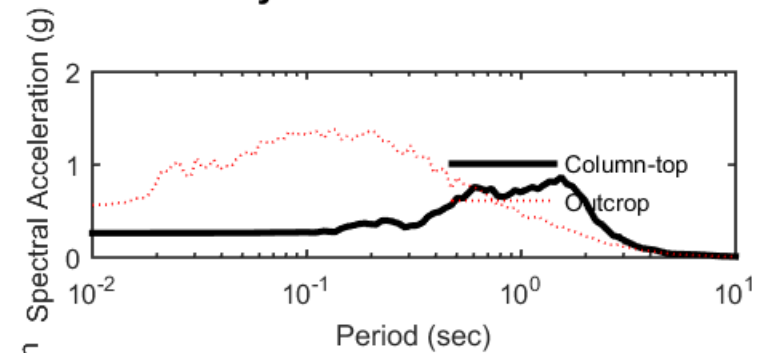
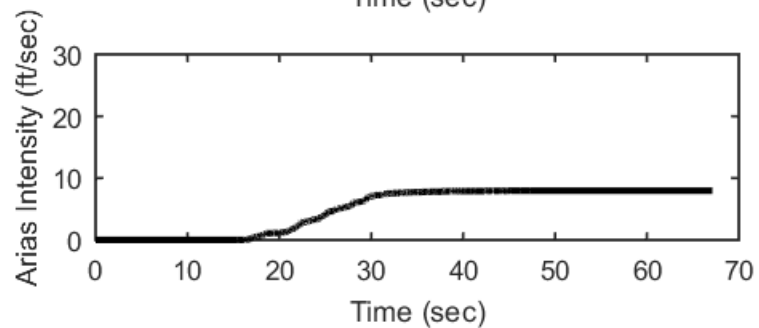
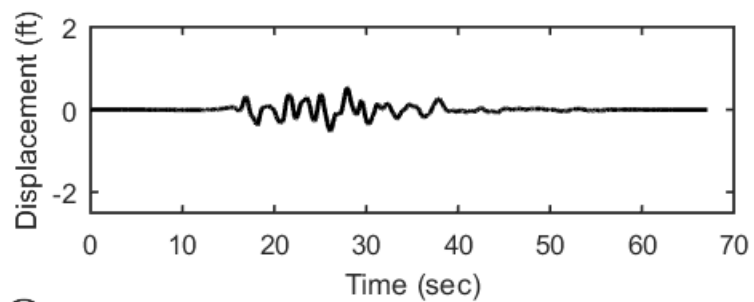
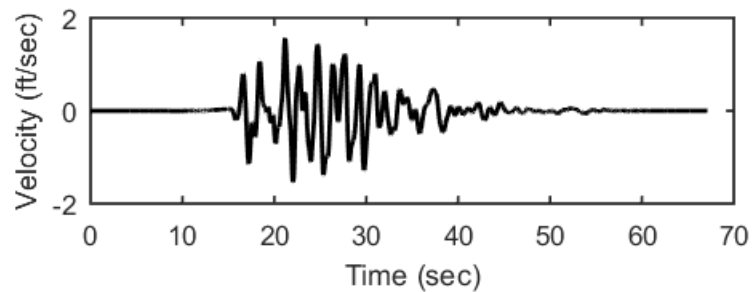
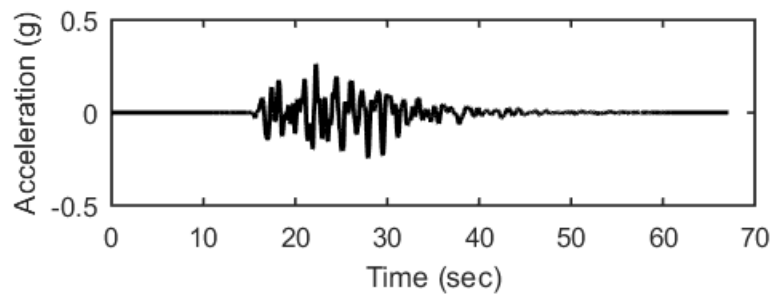
### Profile outputs for Motion: SEE4



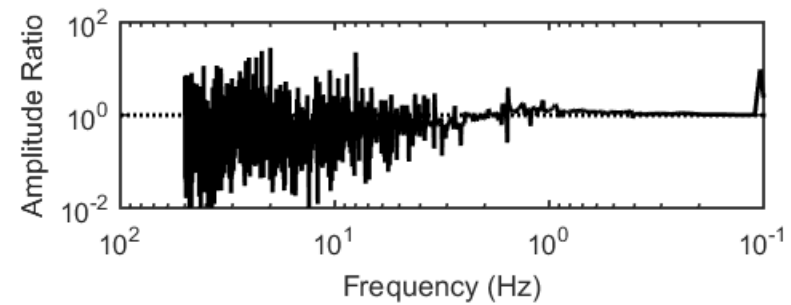
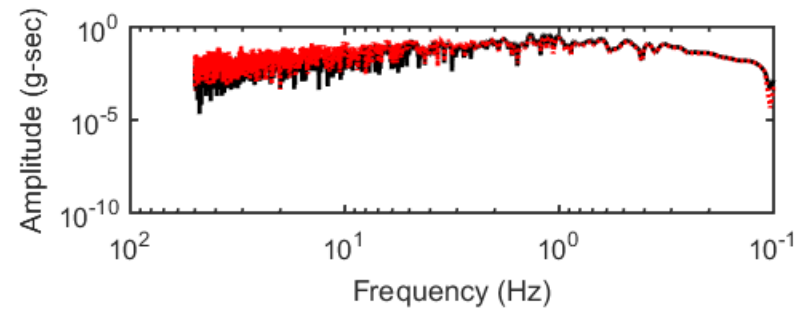
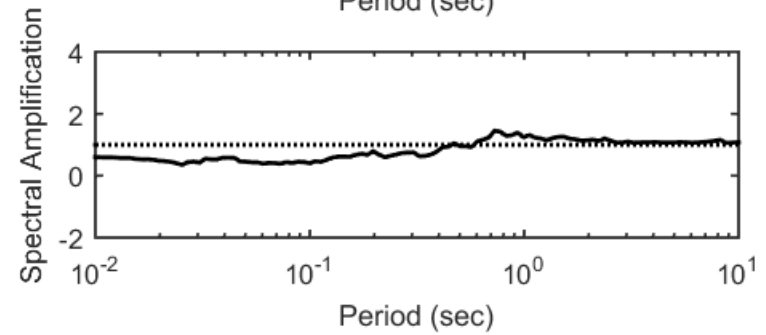
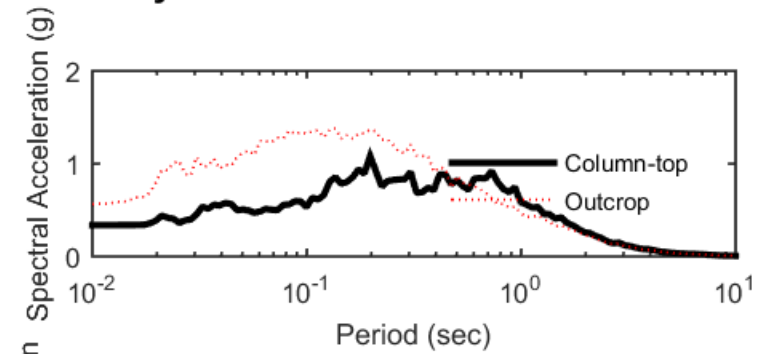
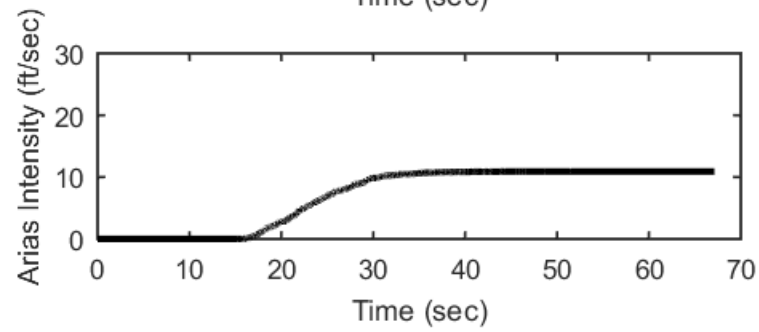
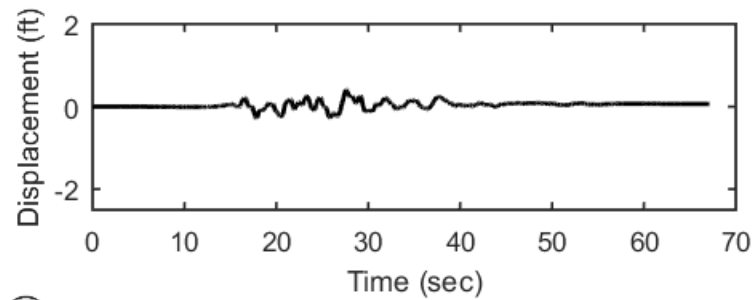
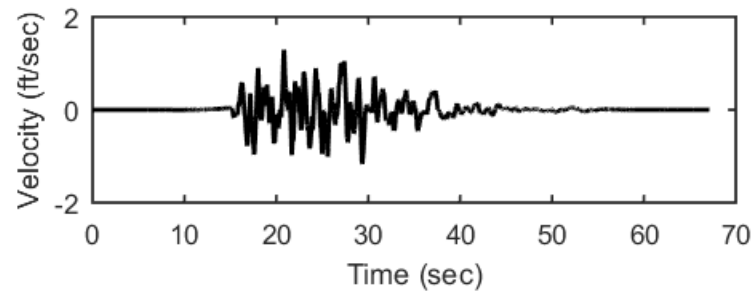
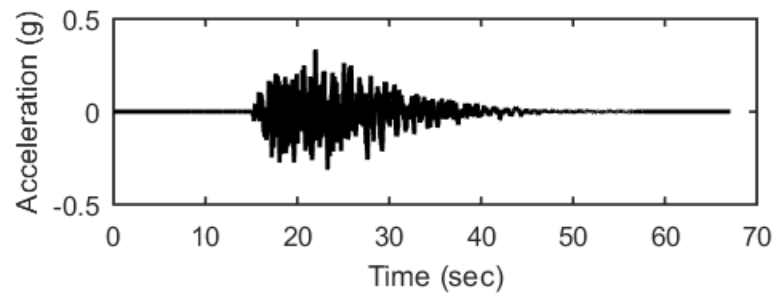
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



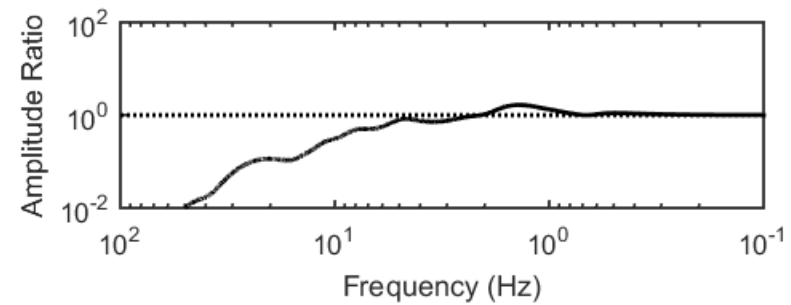
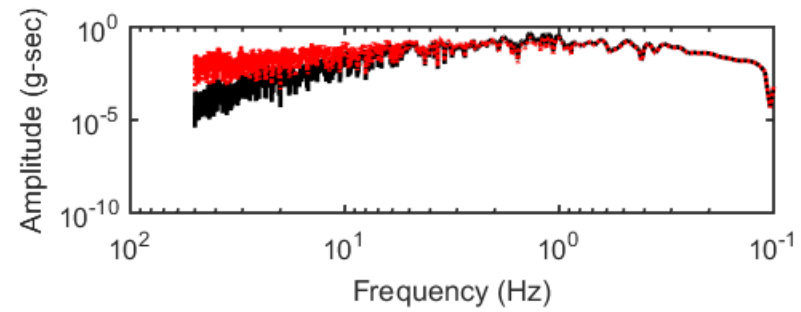
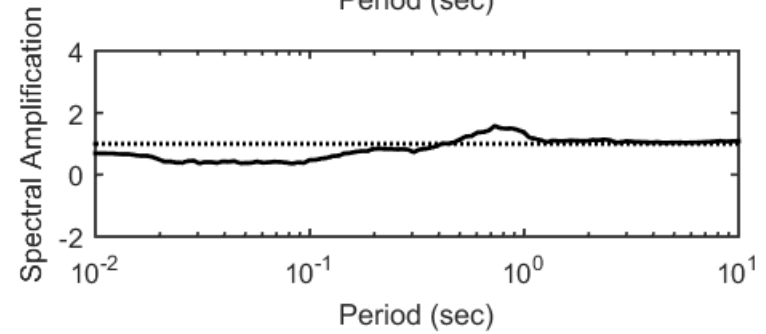
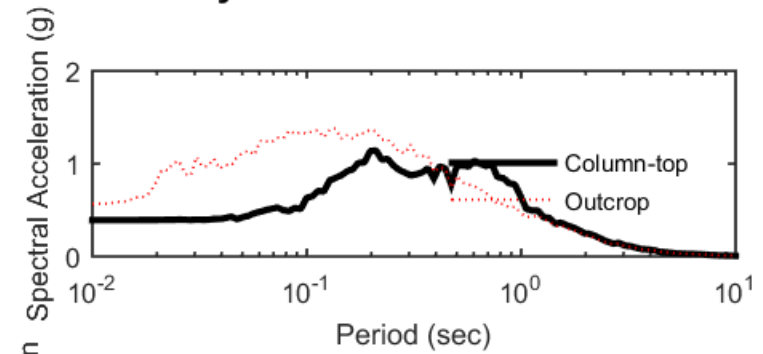
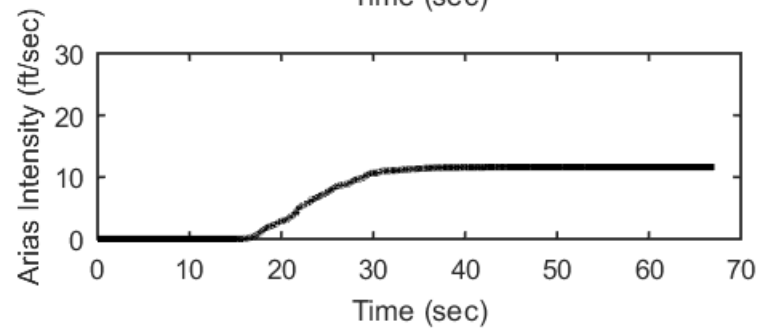
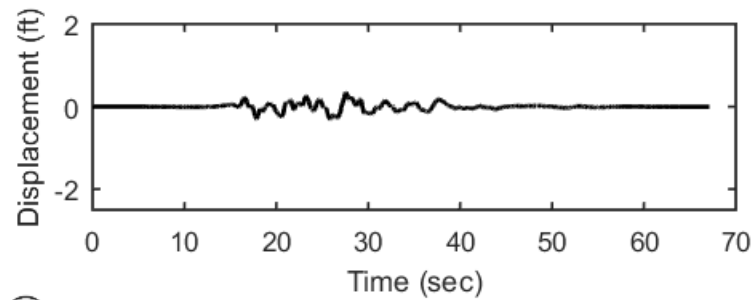
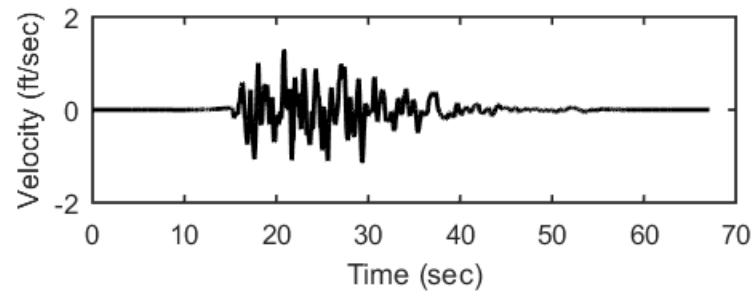
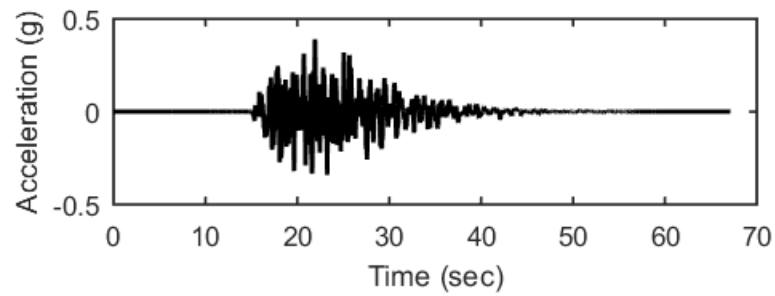
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



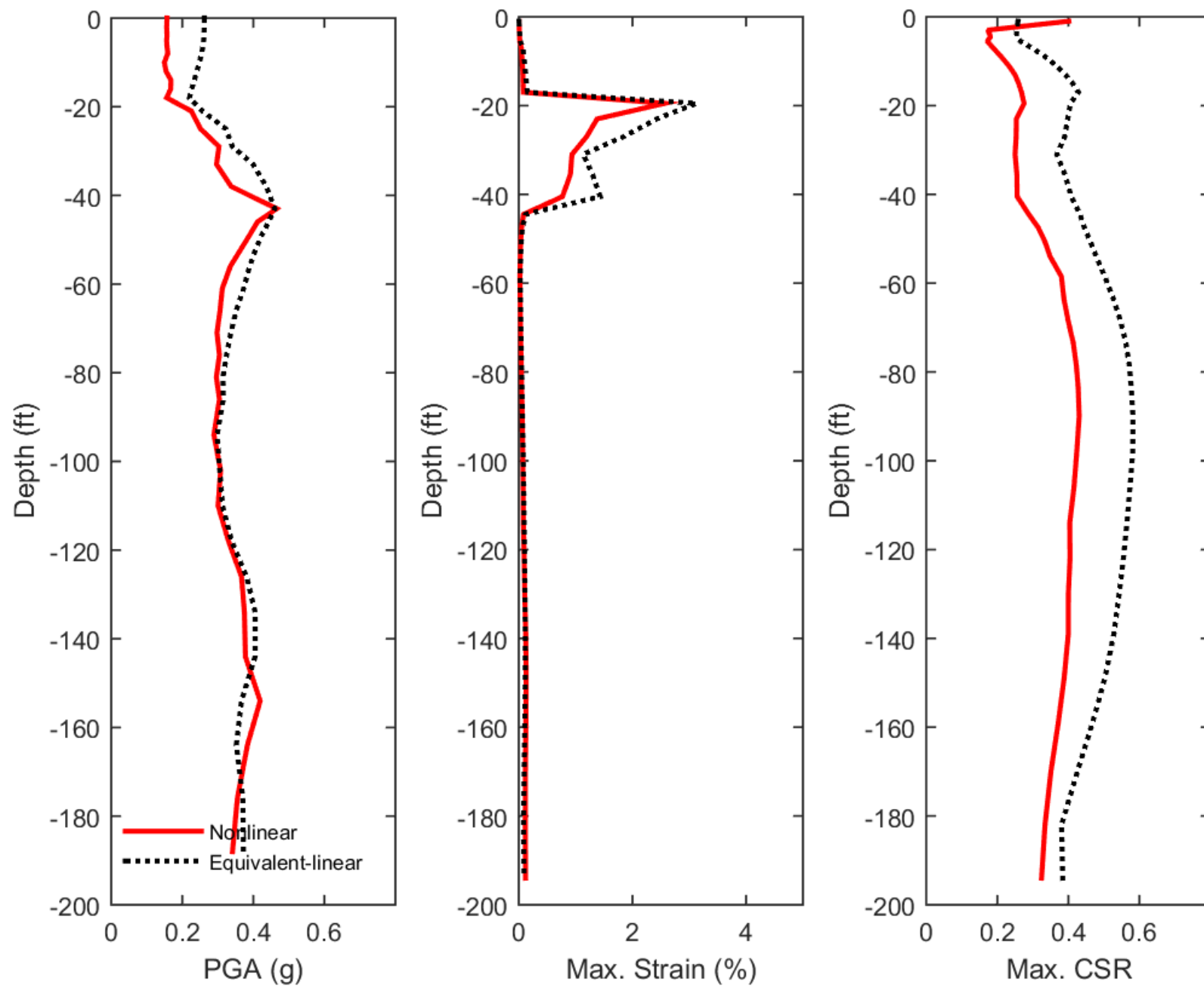
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



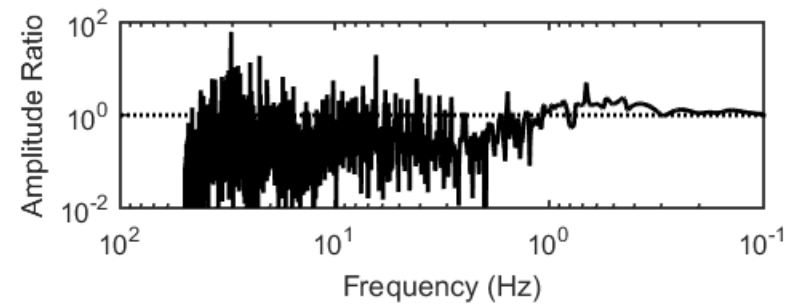
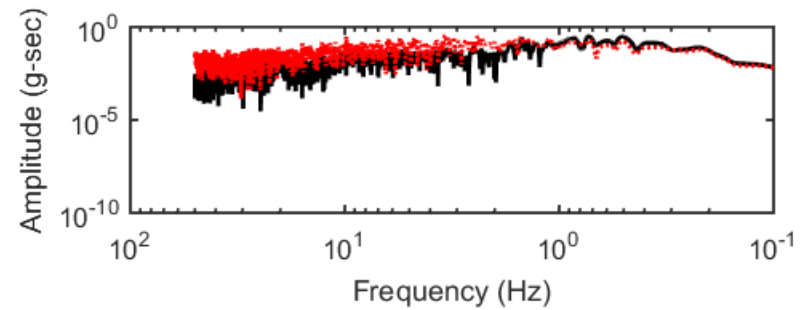
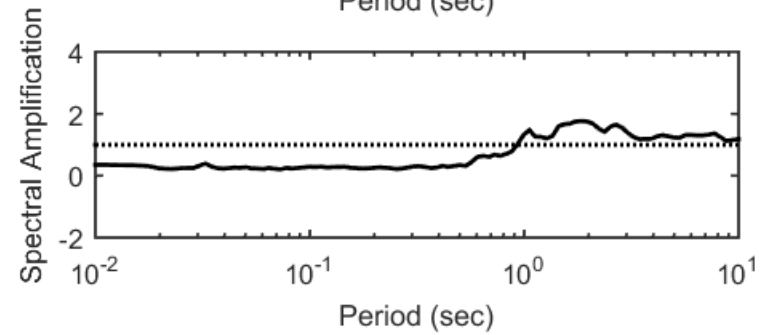
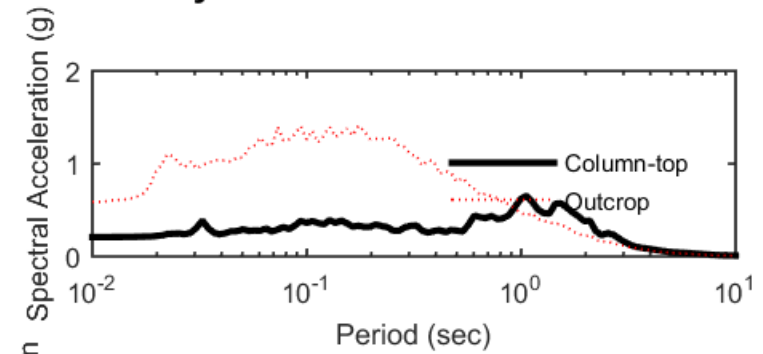
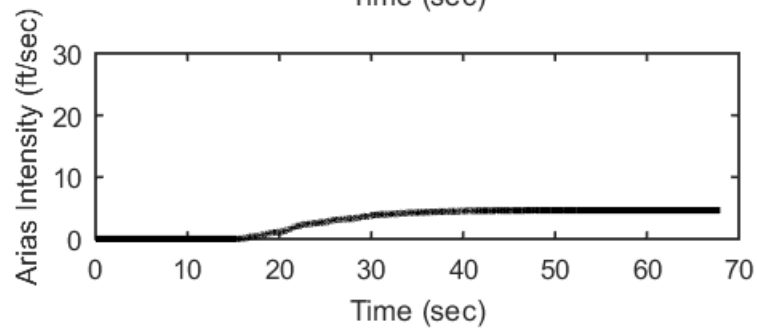
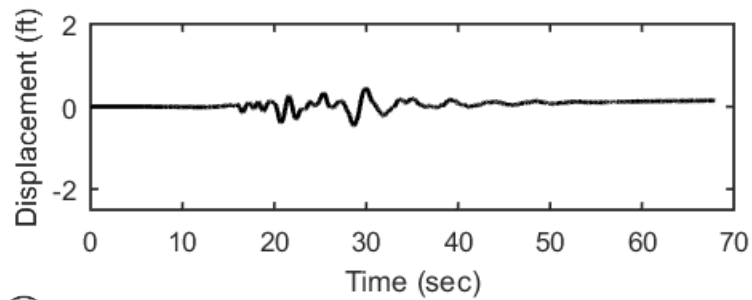
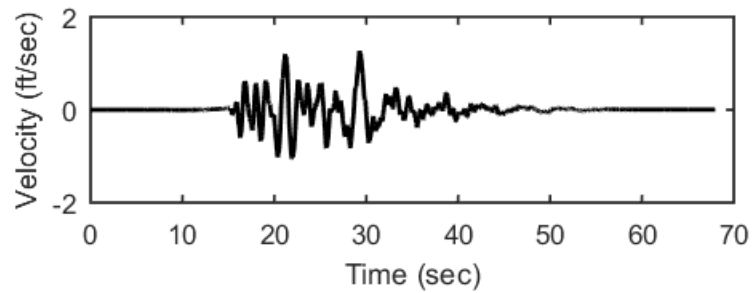
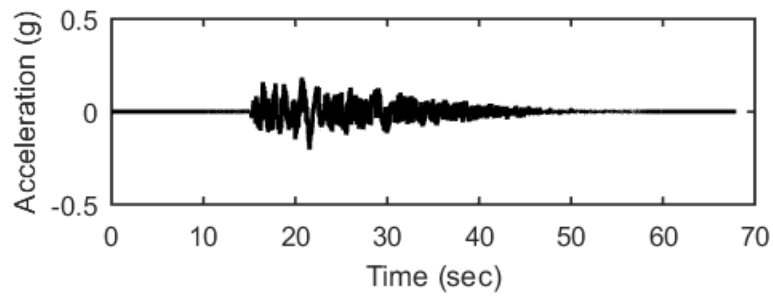
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



### Profile outputs for Motion: SEE5

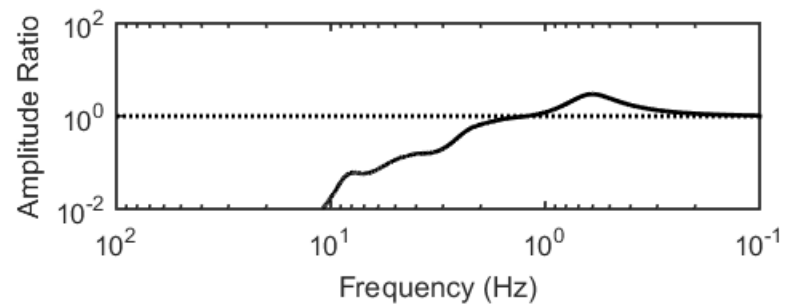
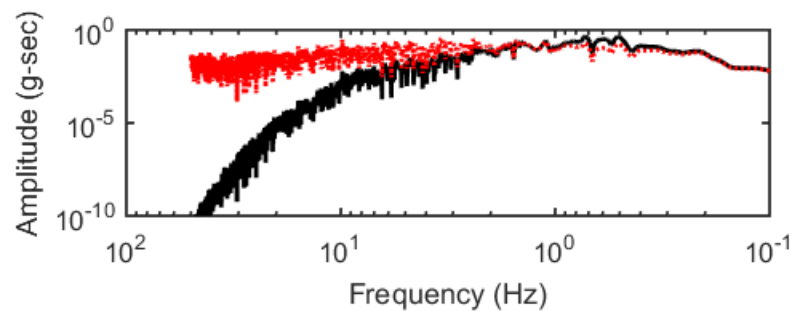
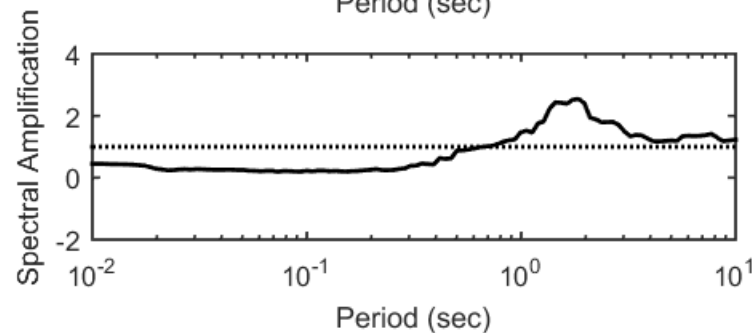
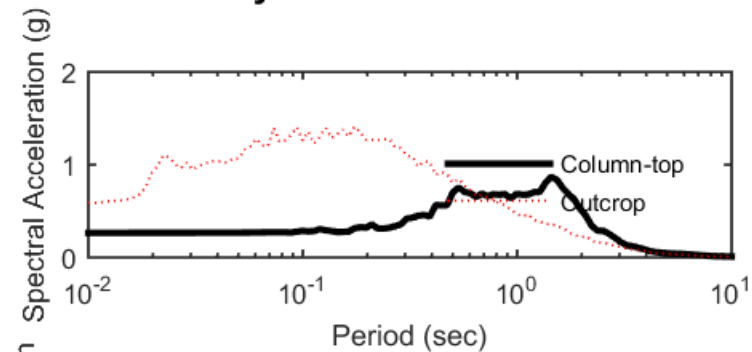
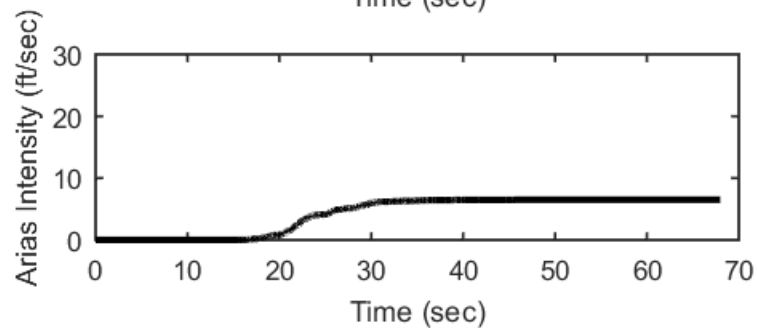
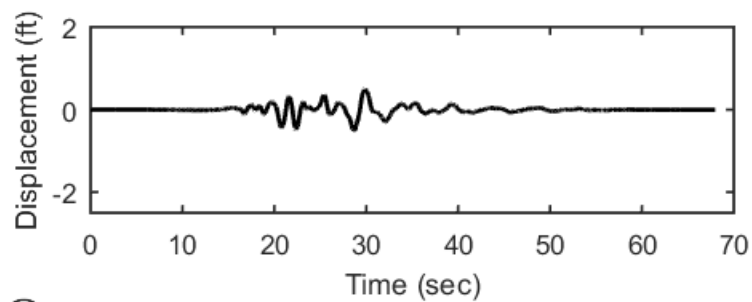
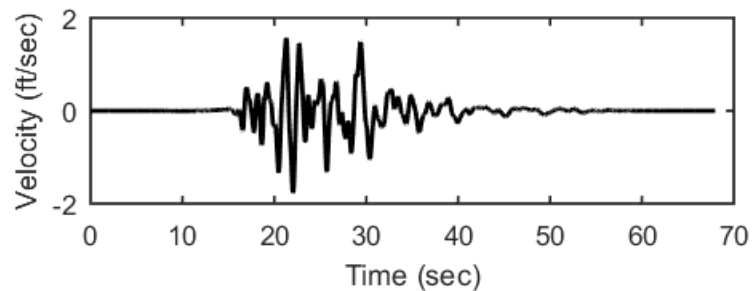
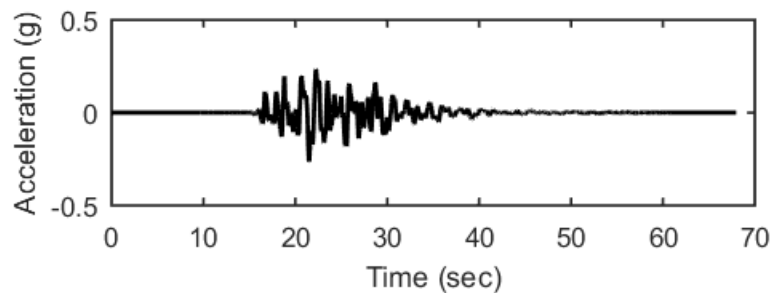


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6

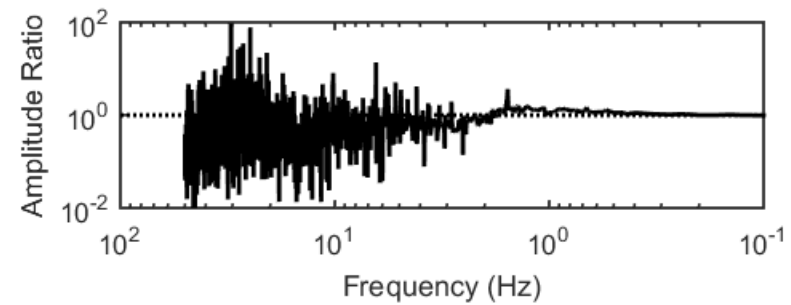
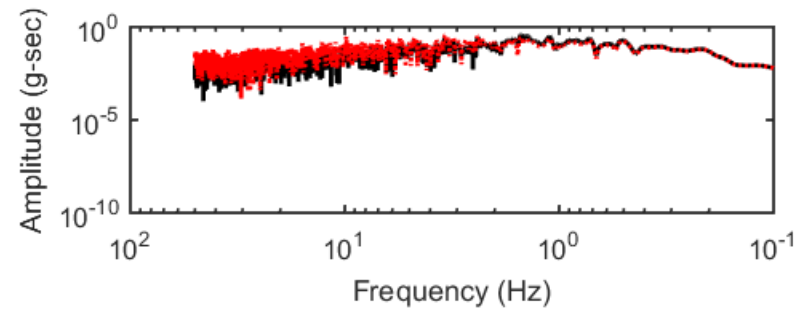
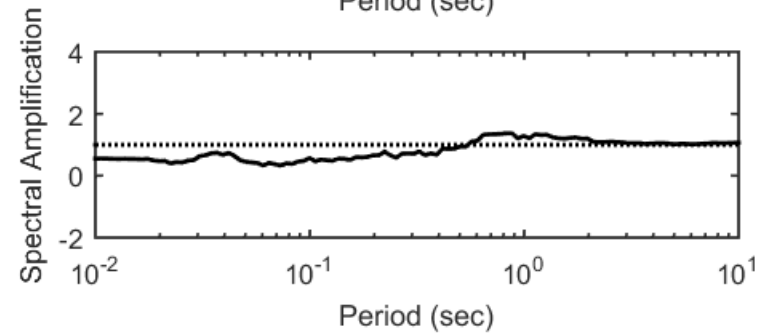
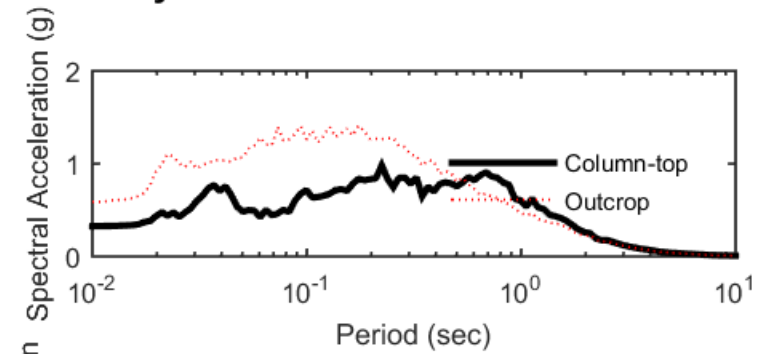
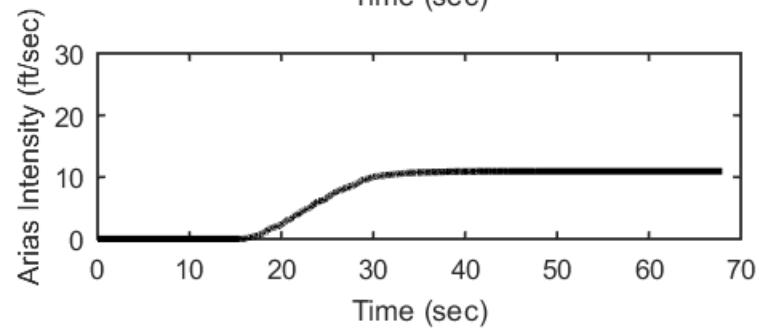
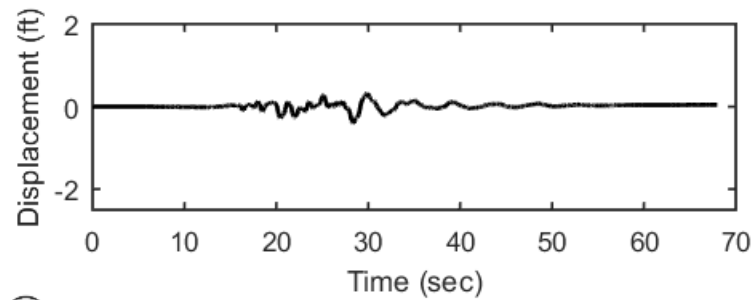
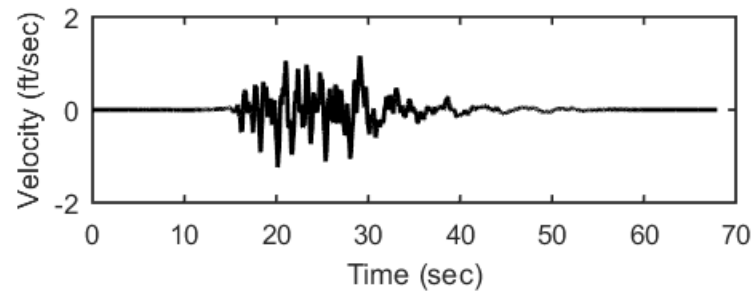
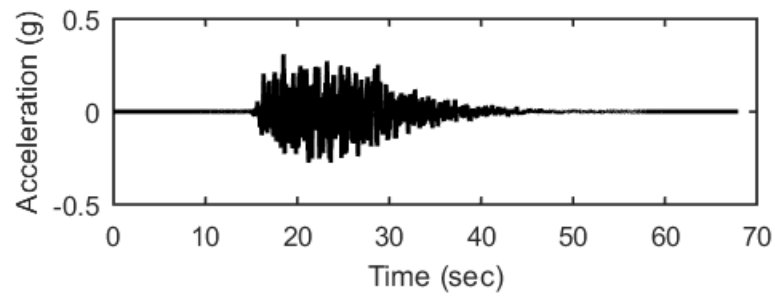




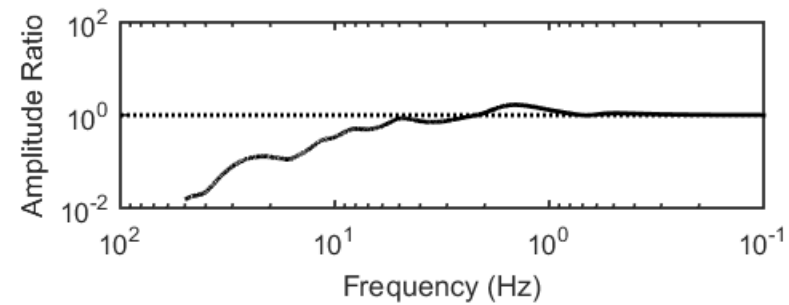
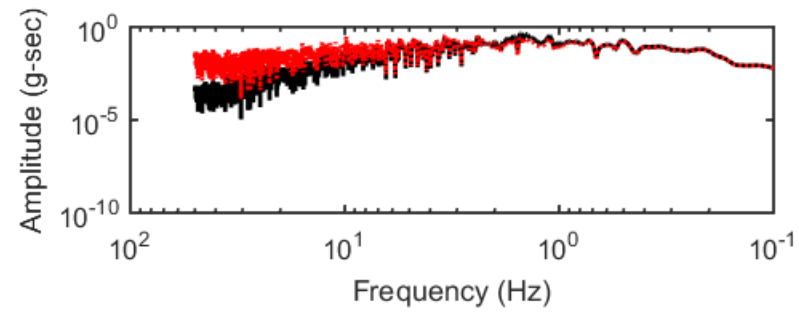
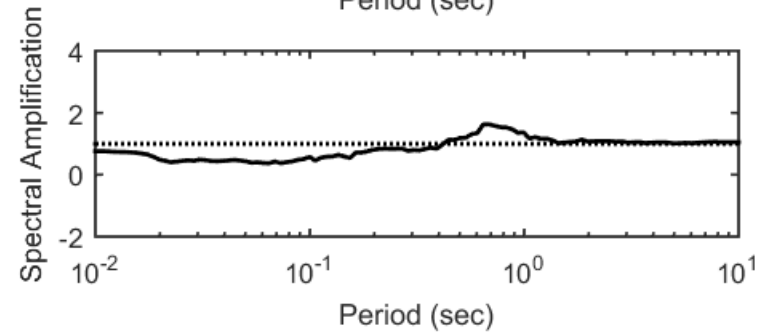
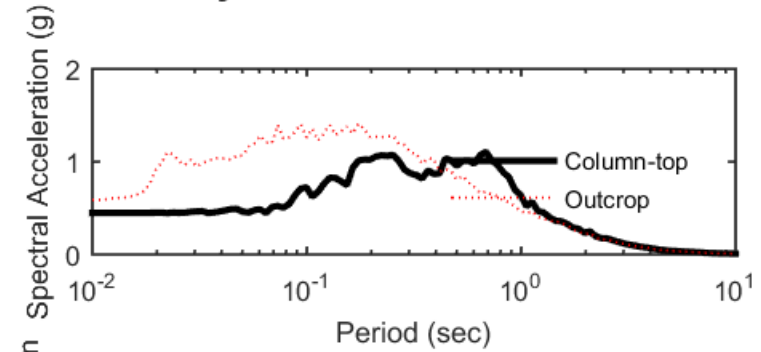
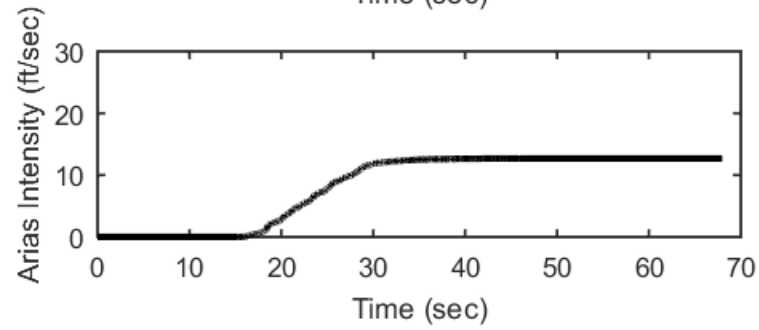
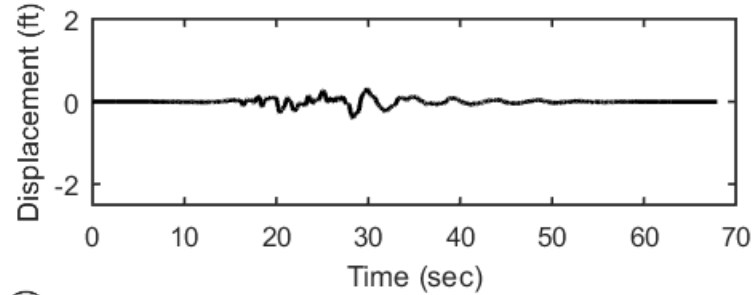
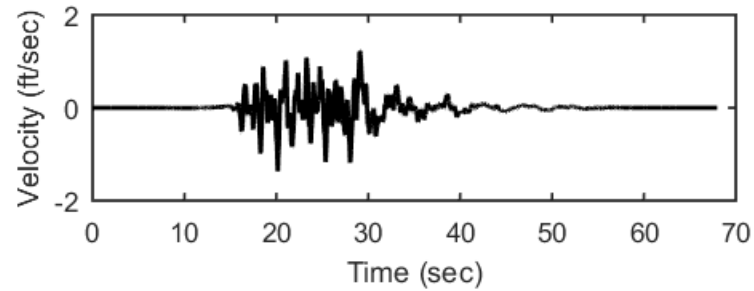
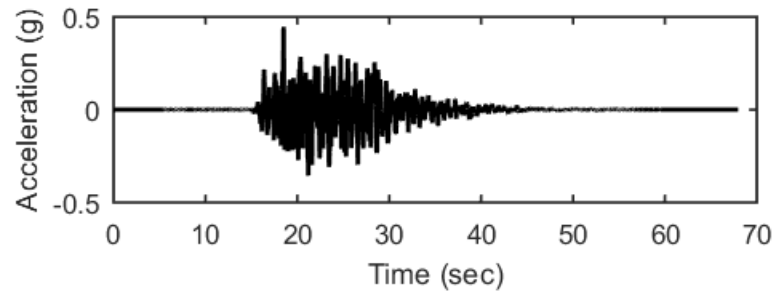
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



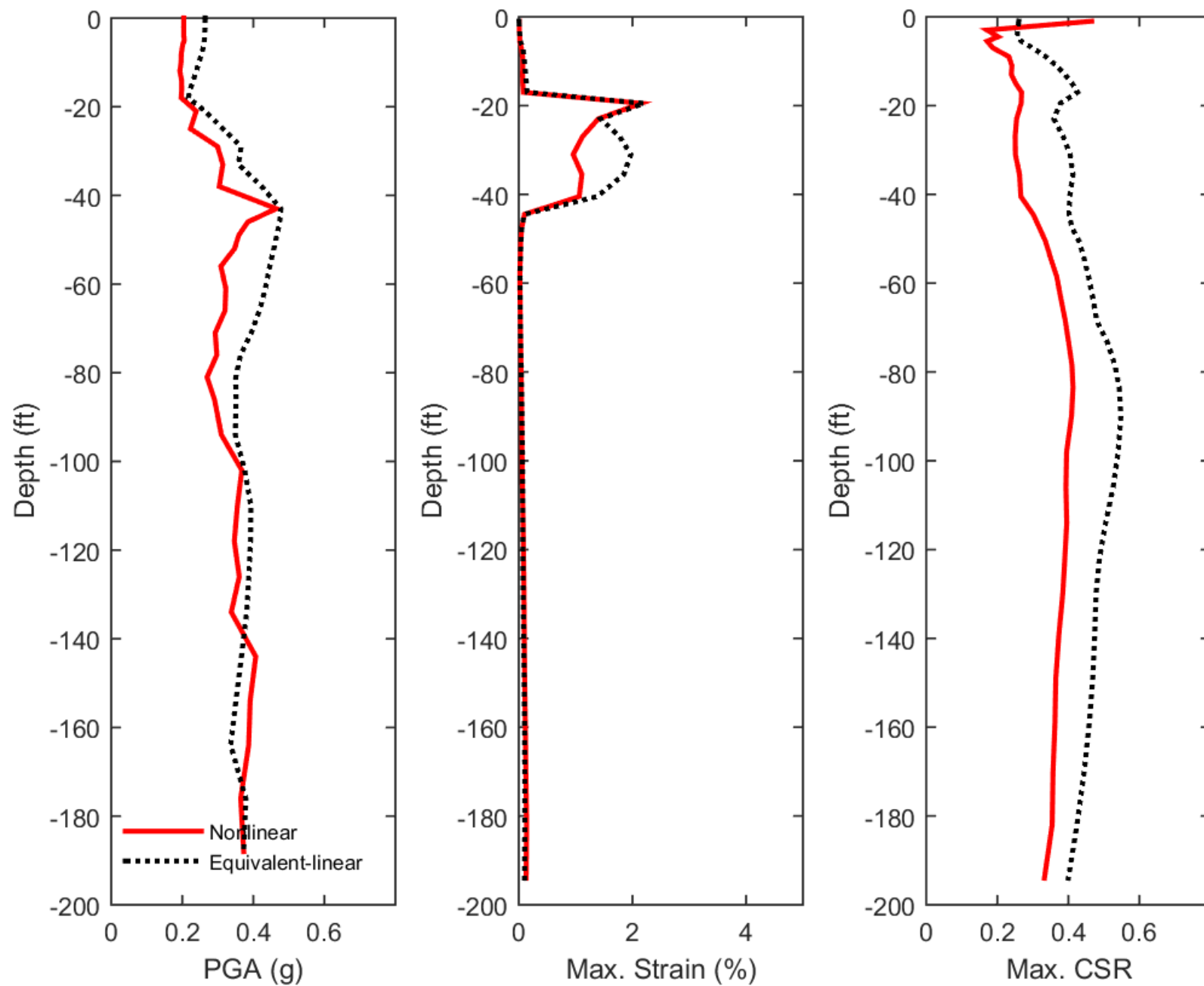
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



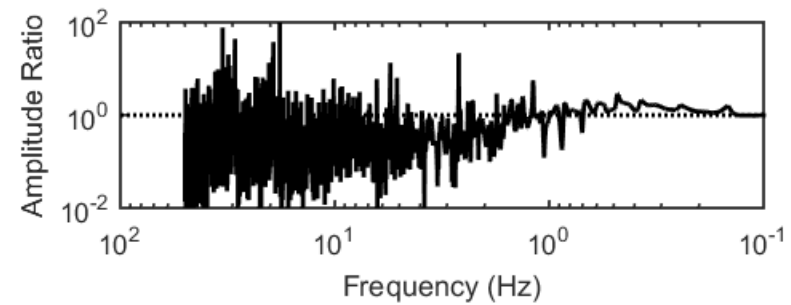
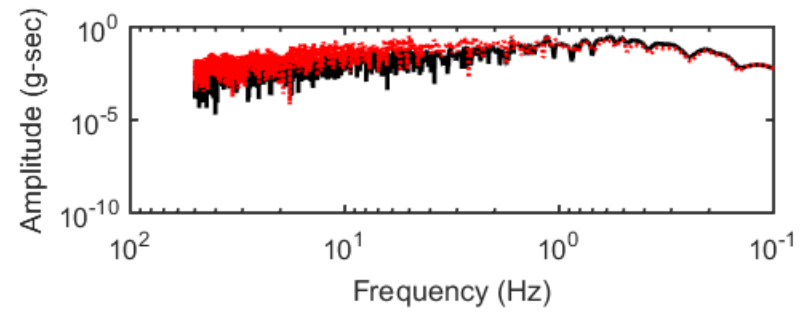
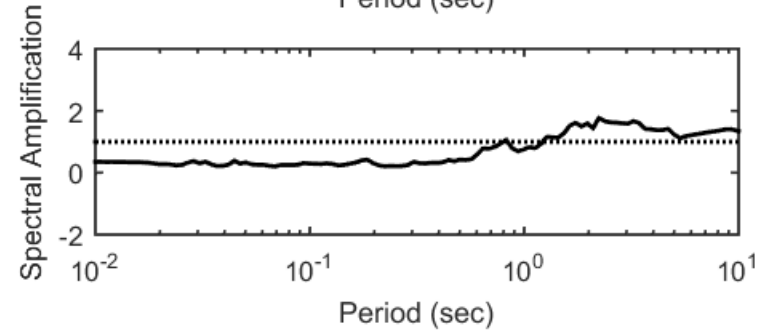
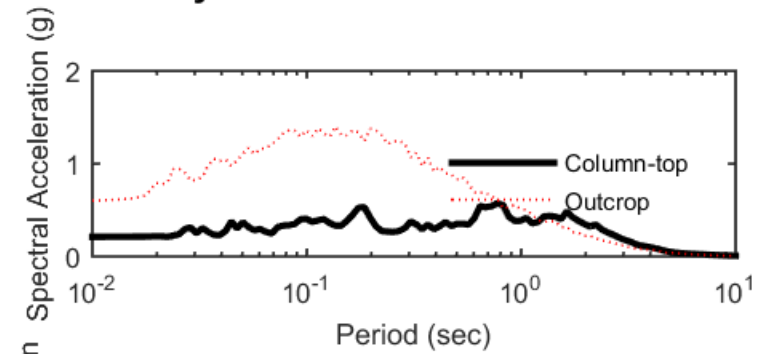
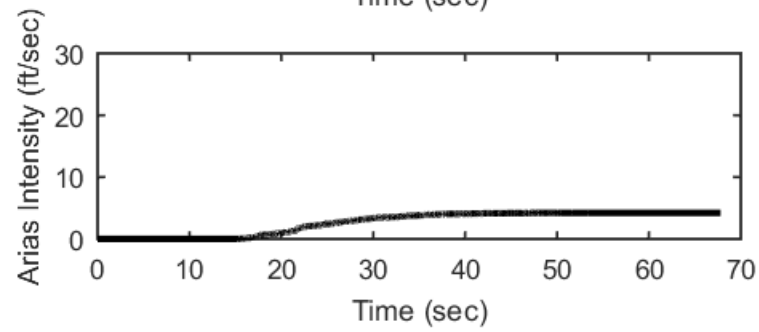
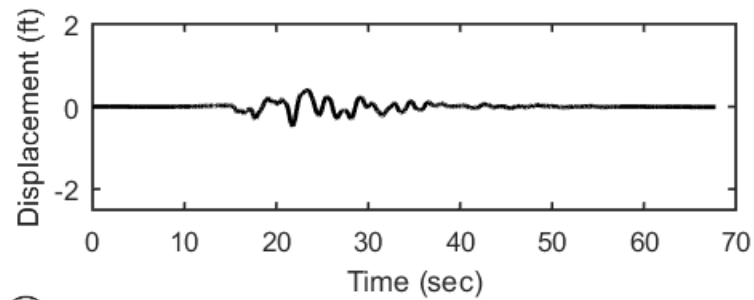
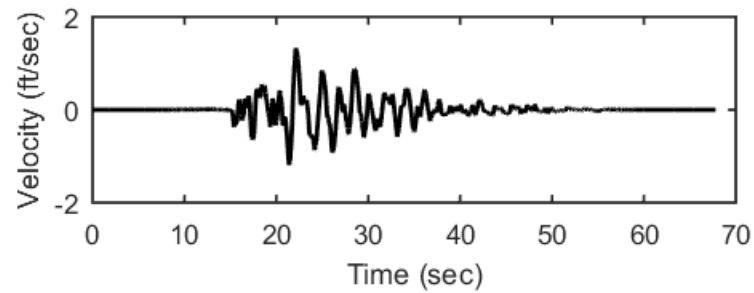
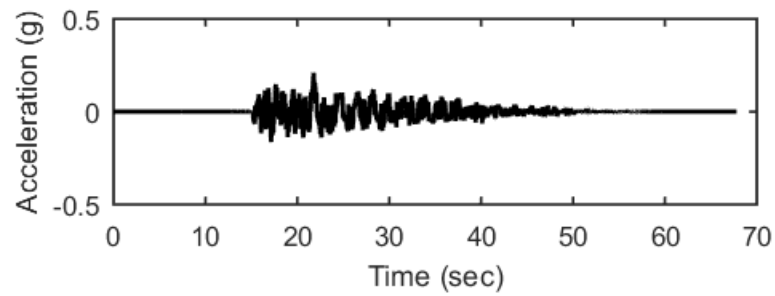
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



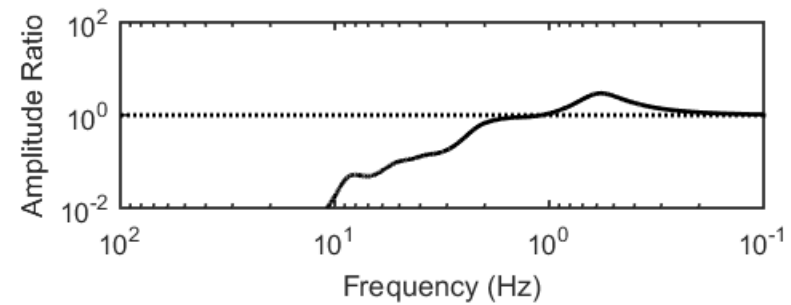
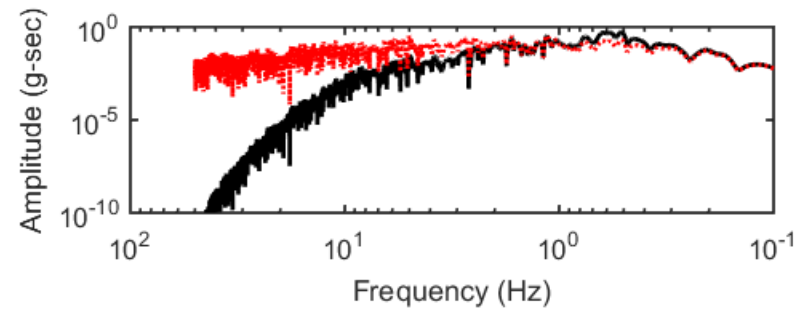
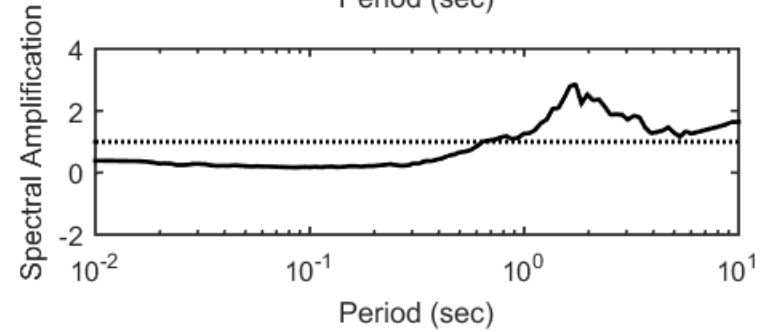
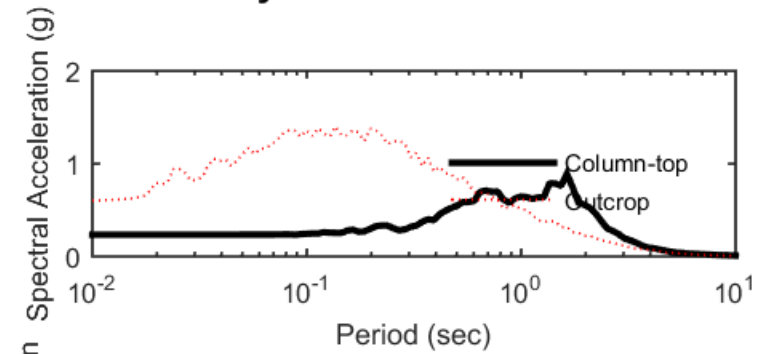
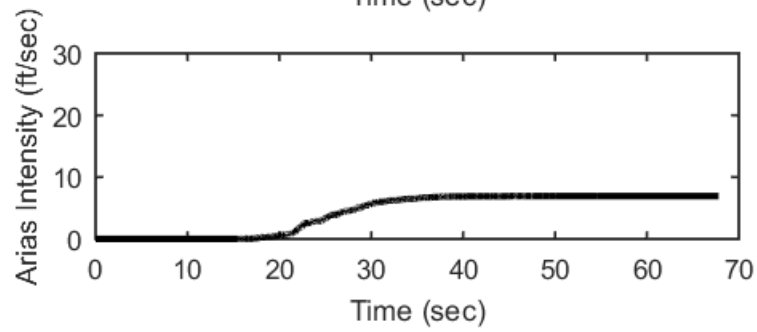
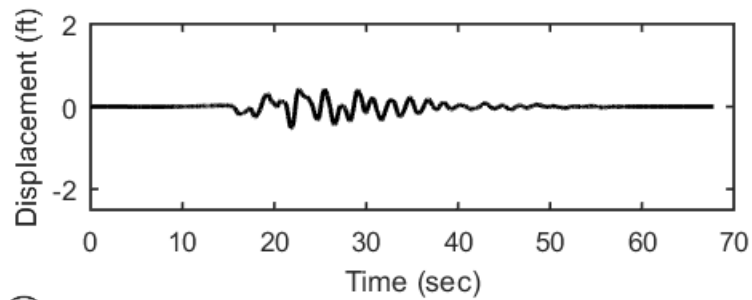
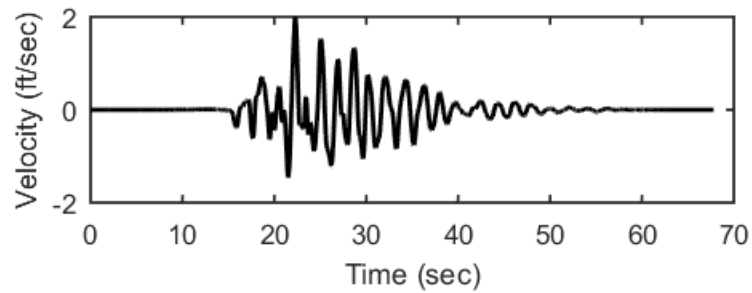
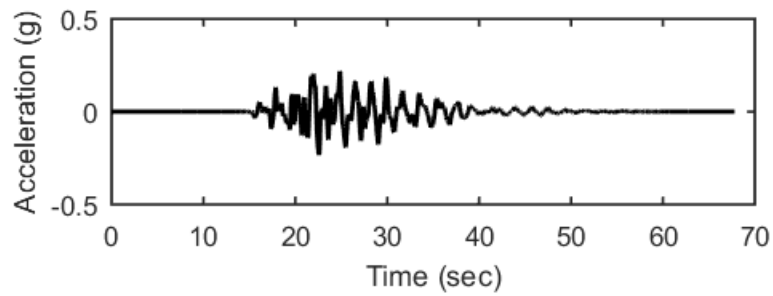
### Profile outputs for Motion: SEE6



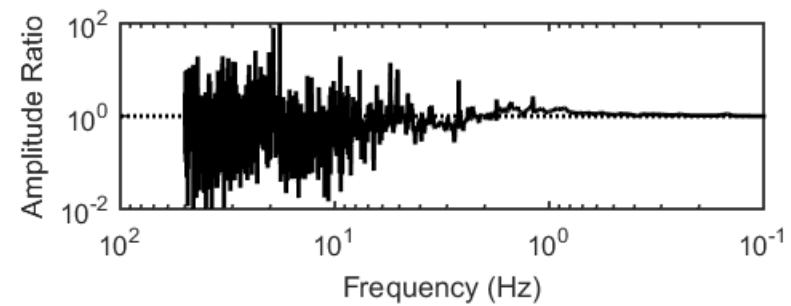
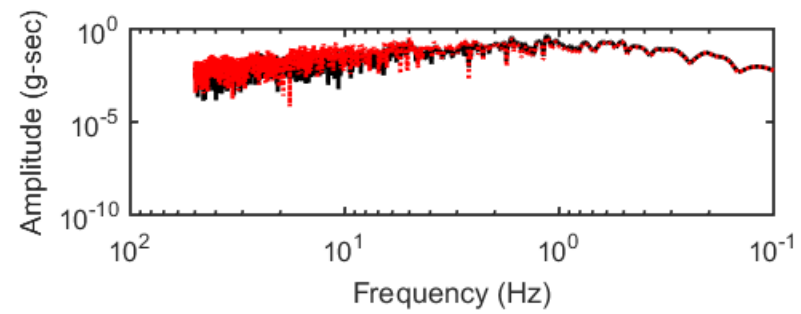
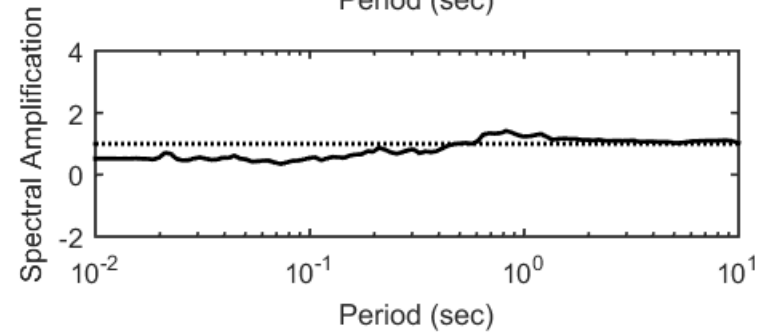
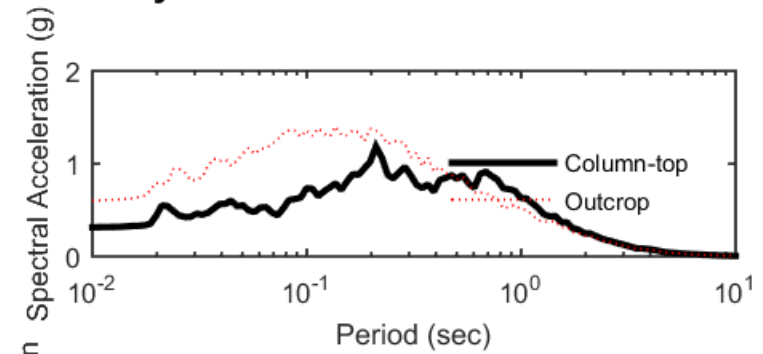
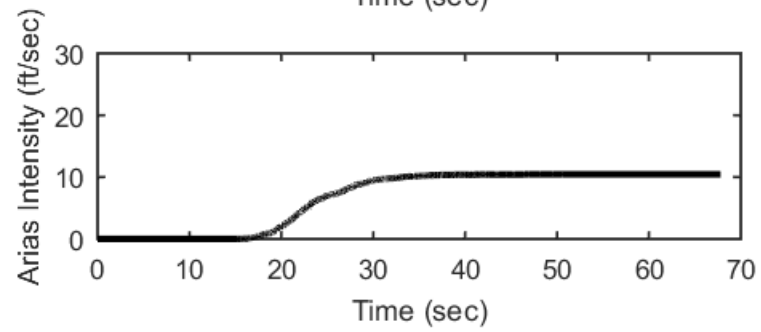
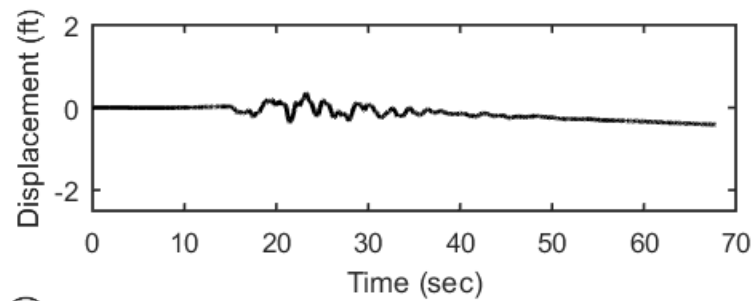
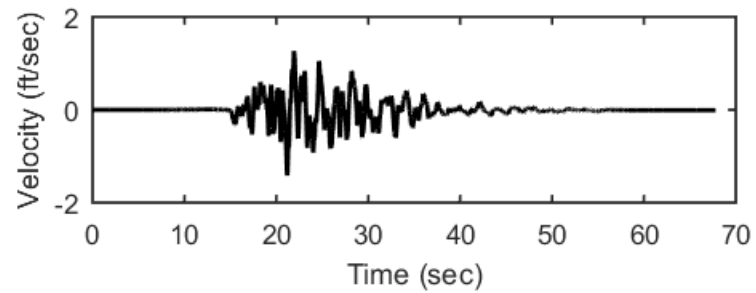
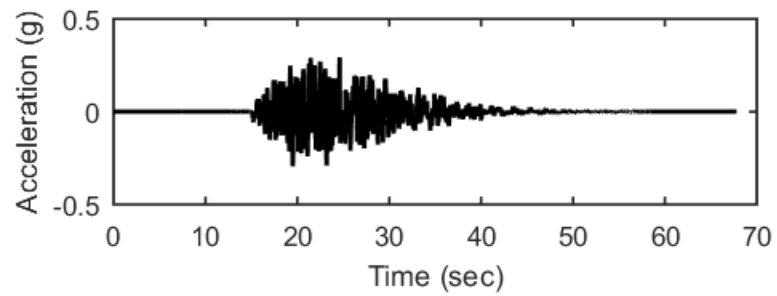
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



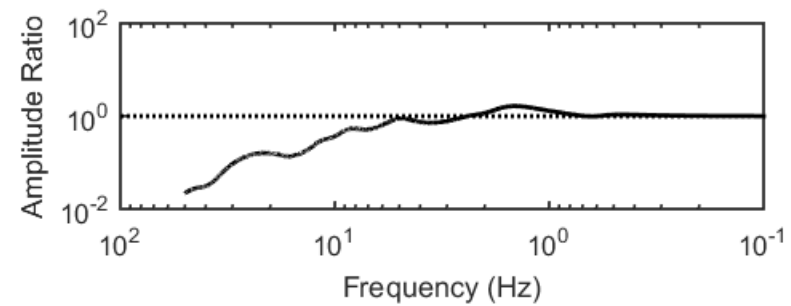
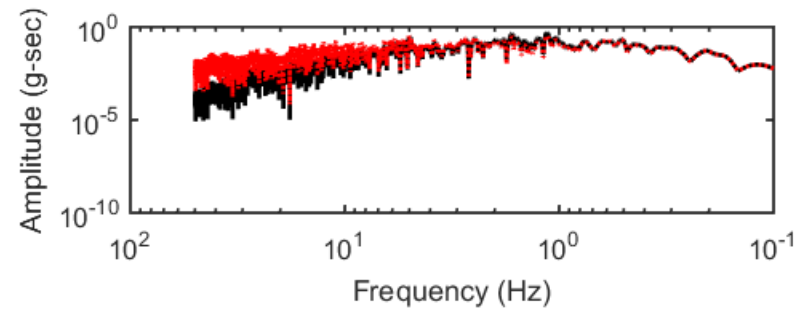
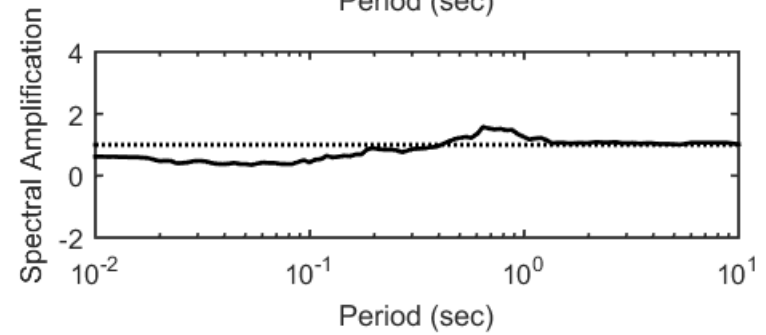
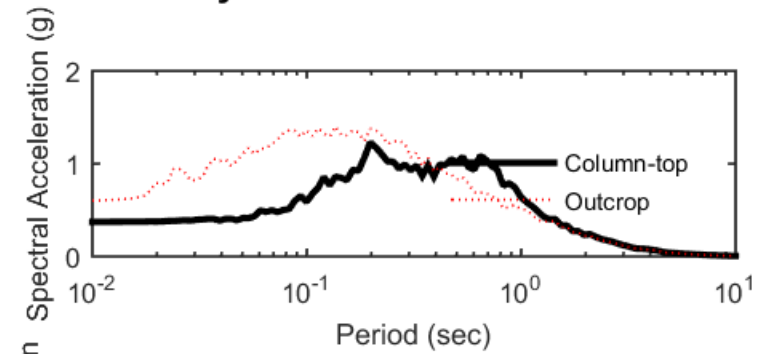
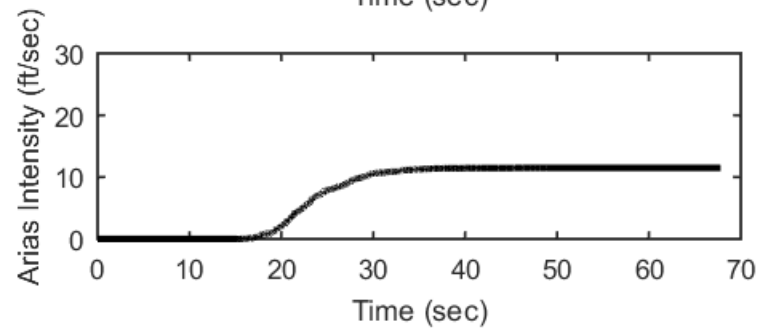
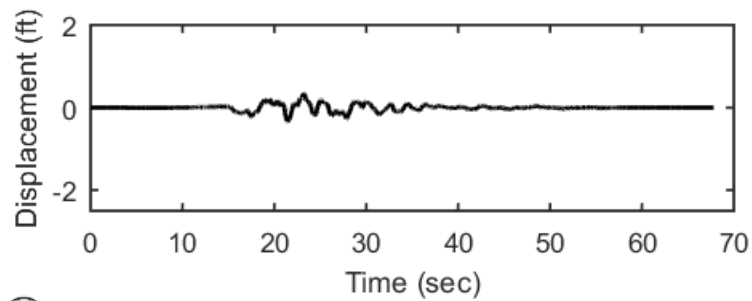
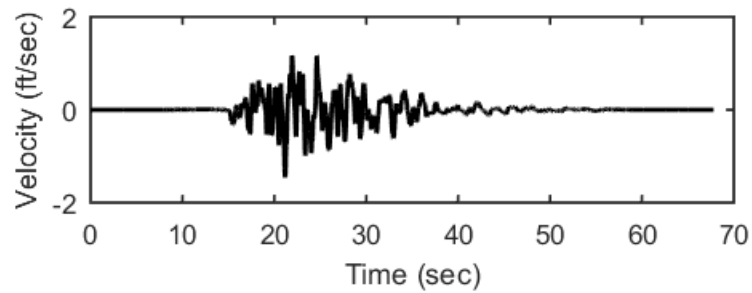
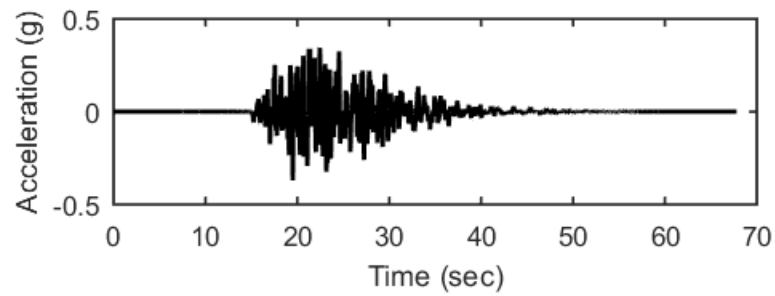
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7

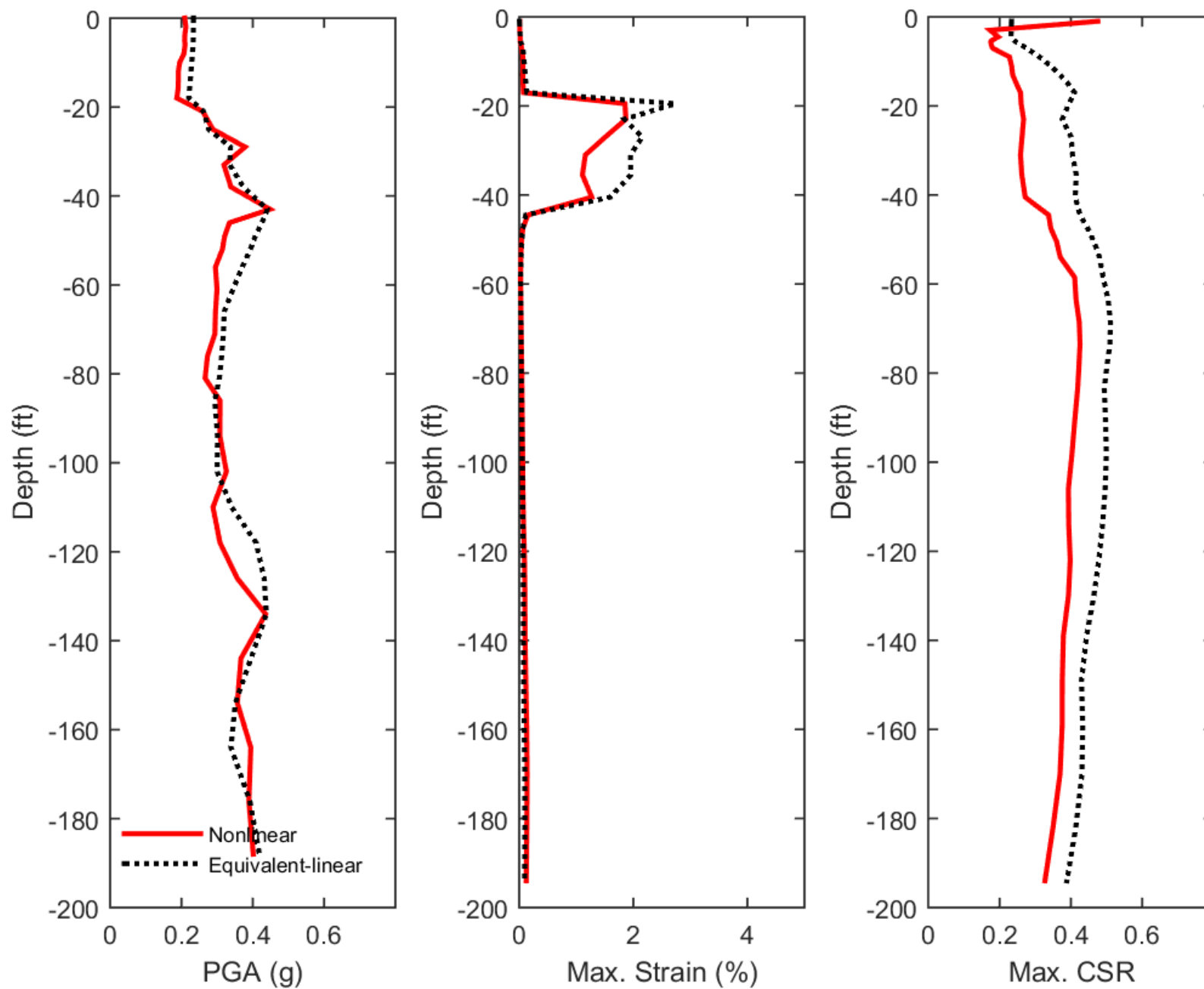


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7

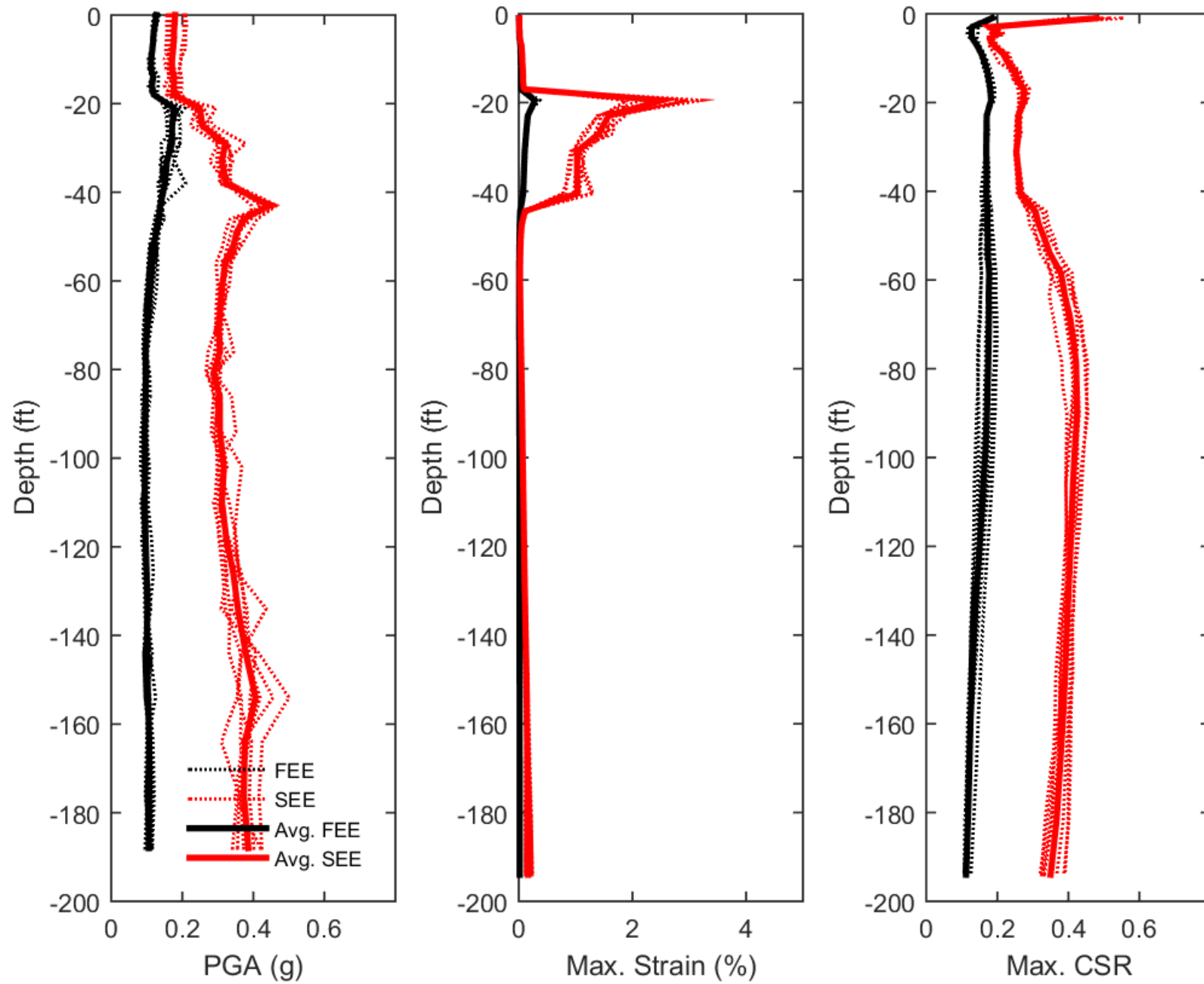




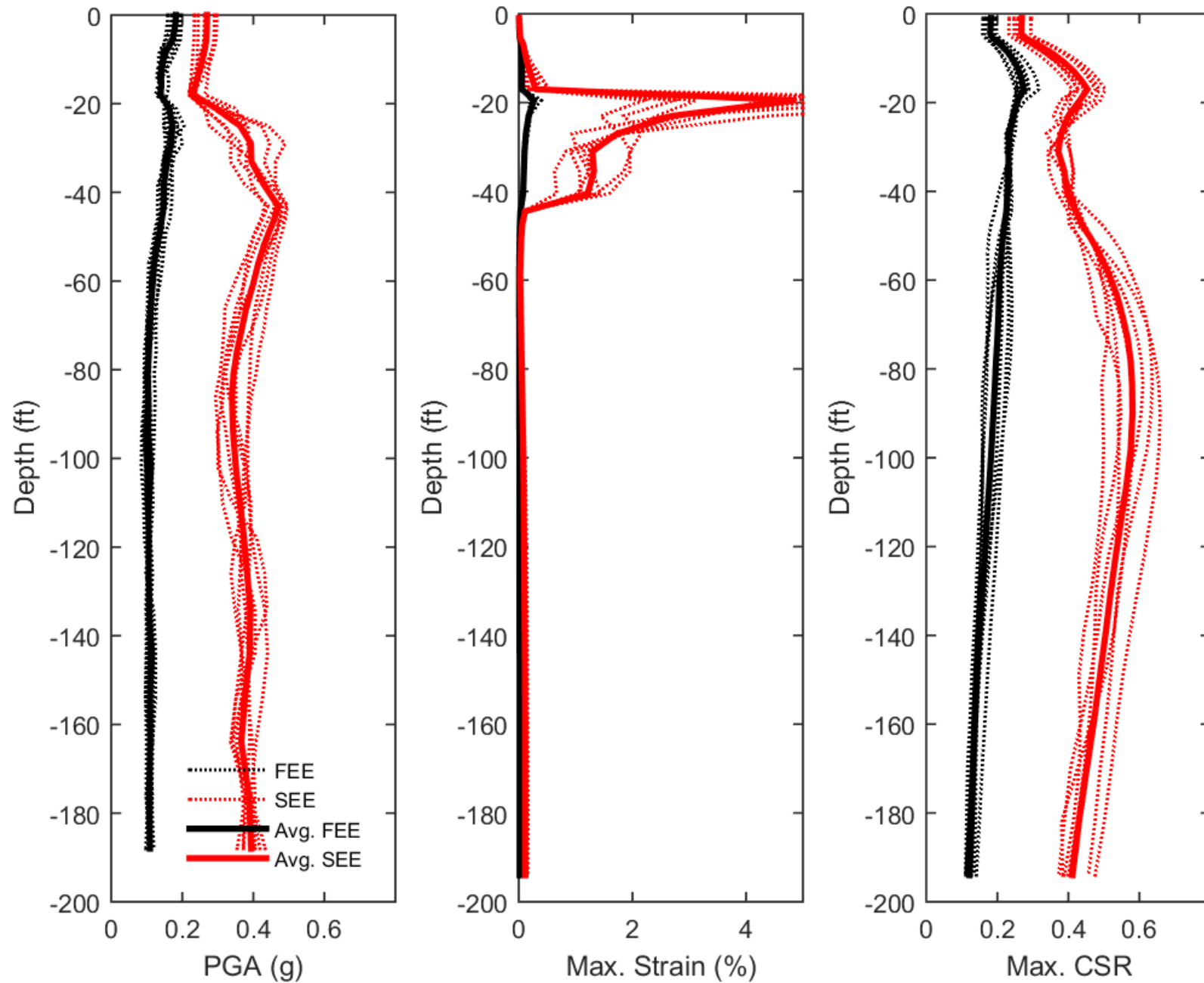
### Profile outputs for Motion: SEE7



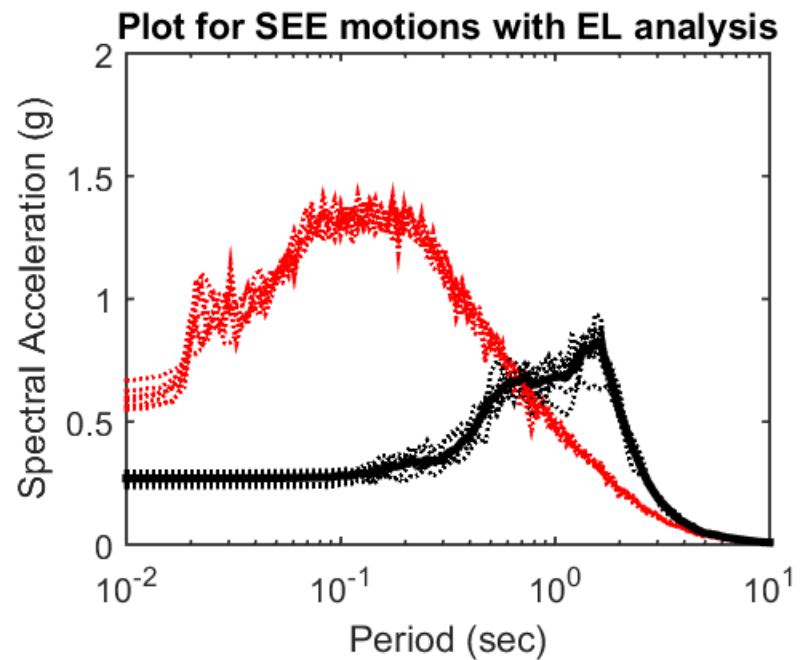
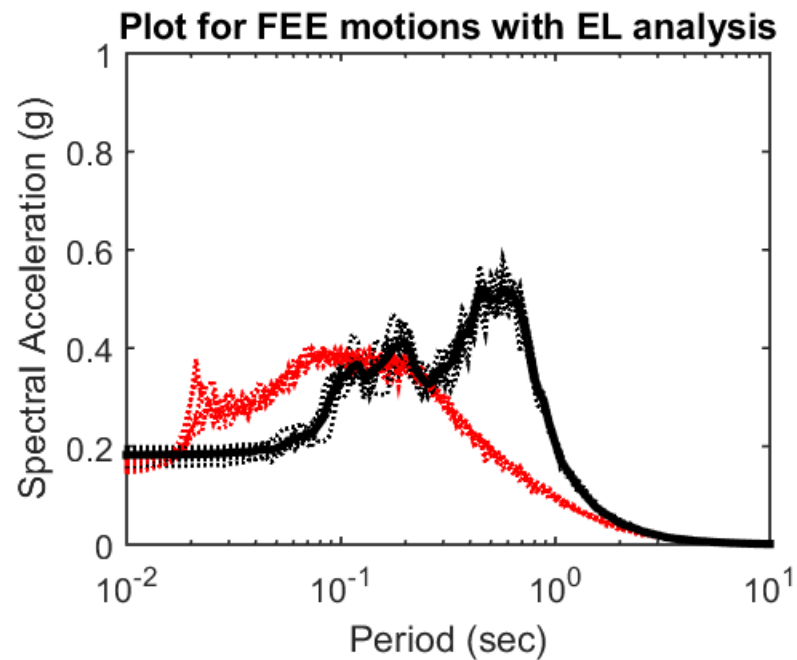
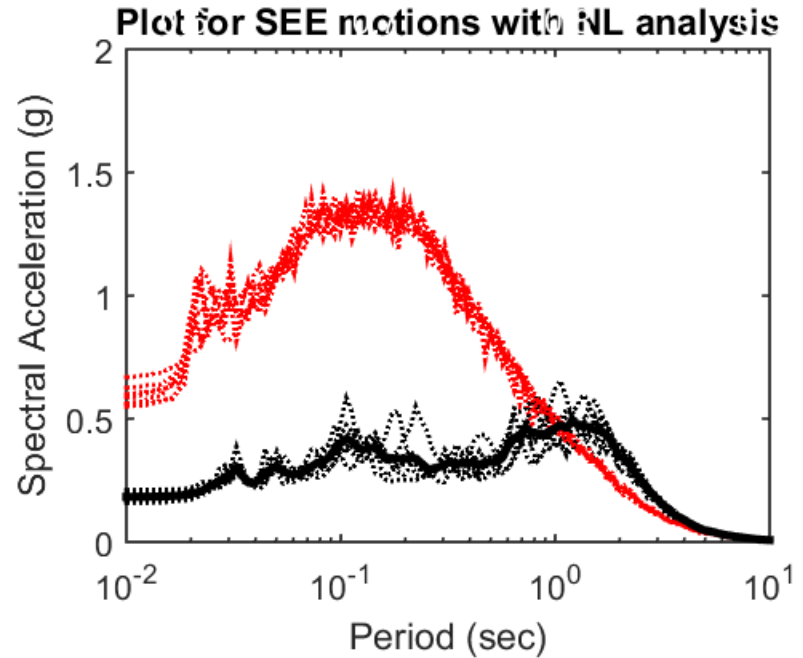
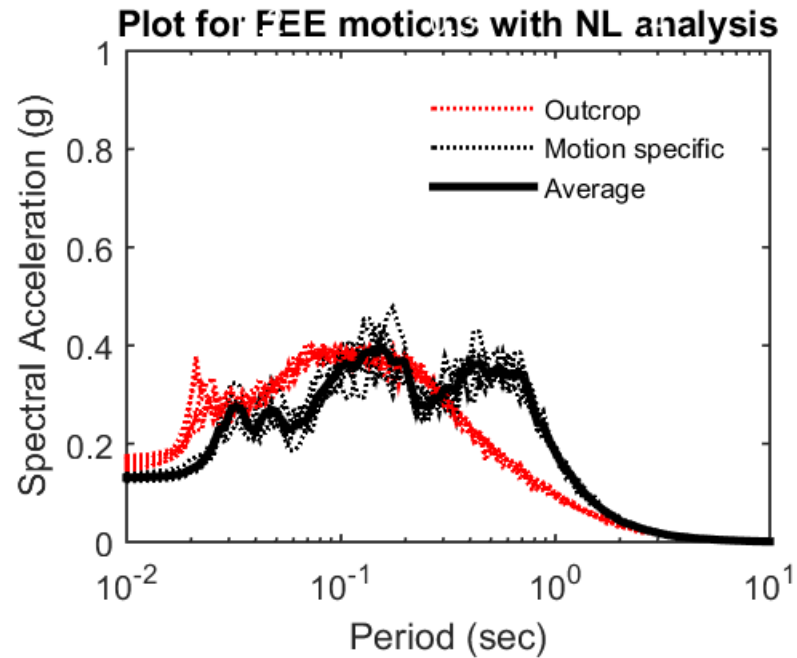
### Summary of the profile outputs for Nonlinear analysis



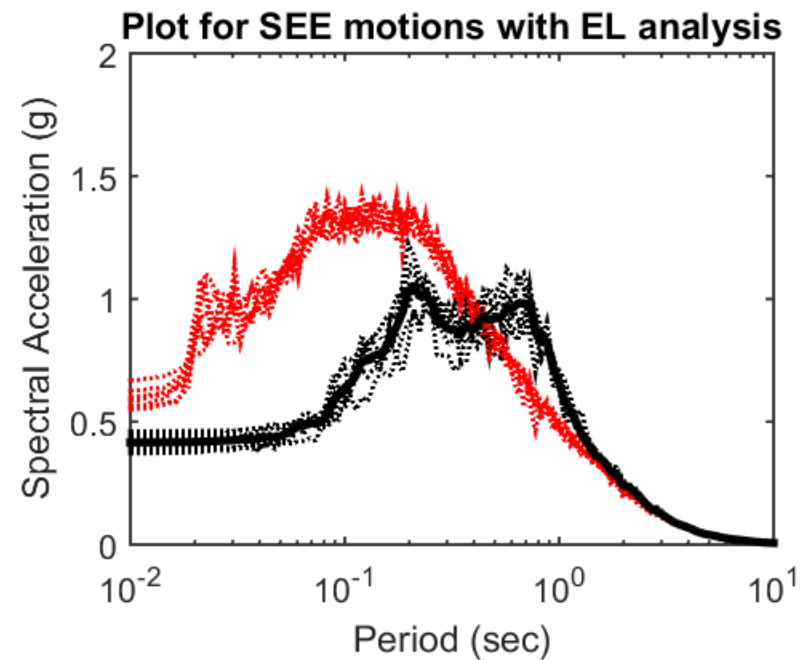
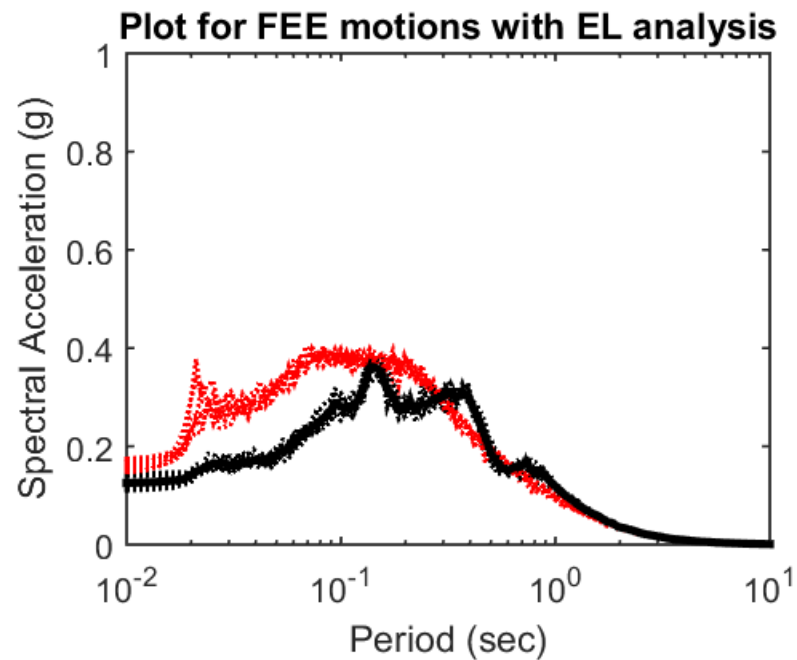
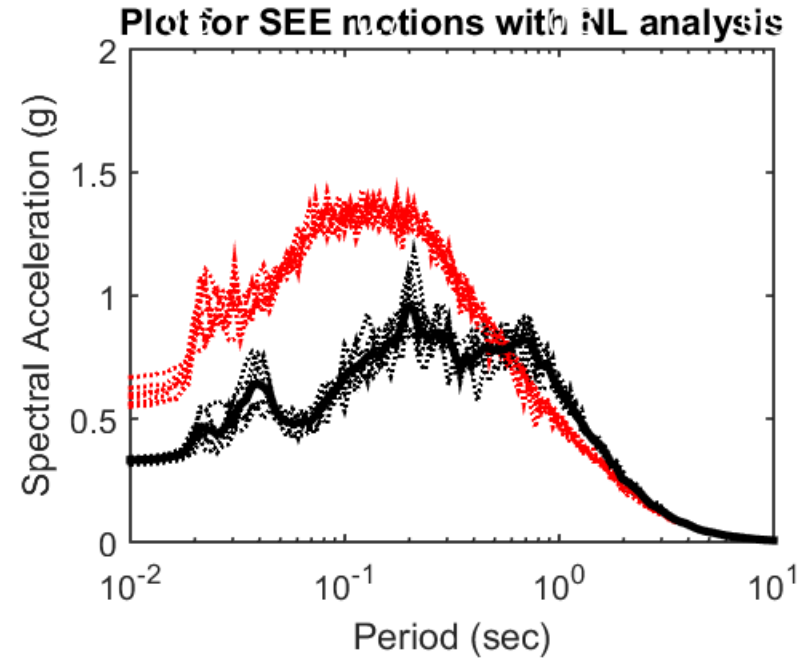
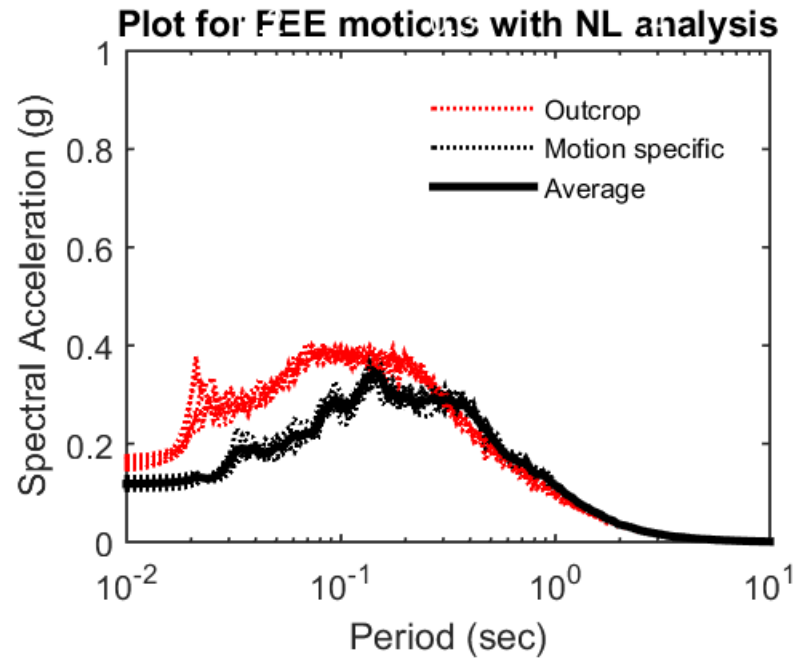
### Summary of the profile outputs for Equivalent-linear analysis



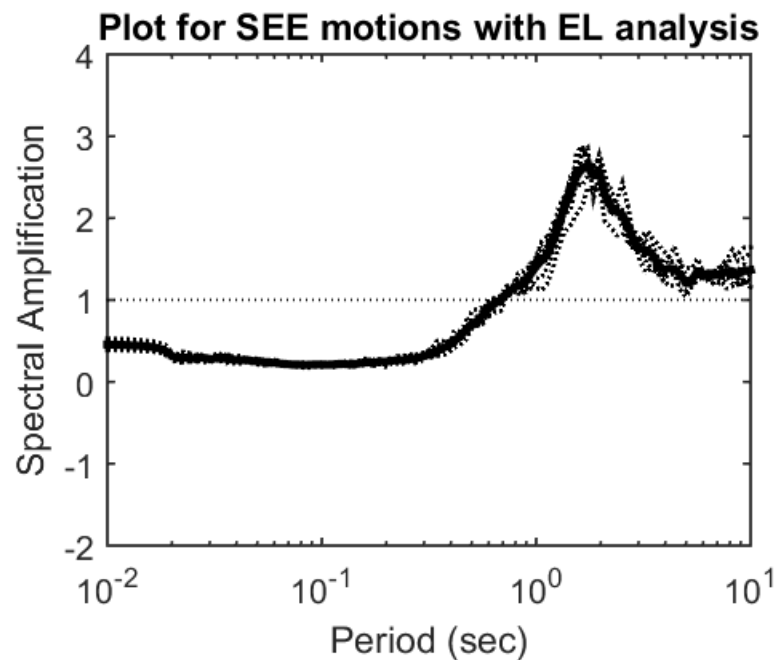
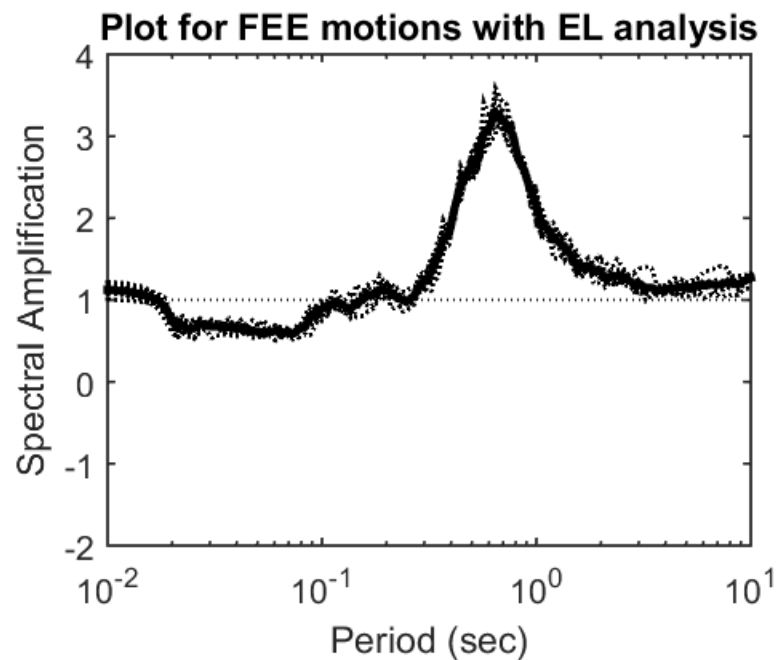
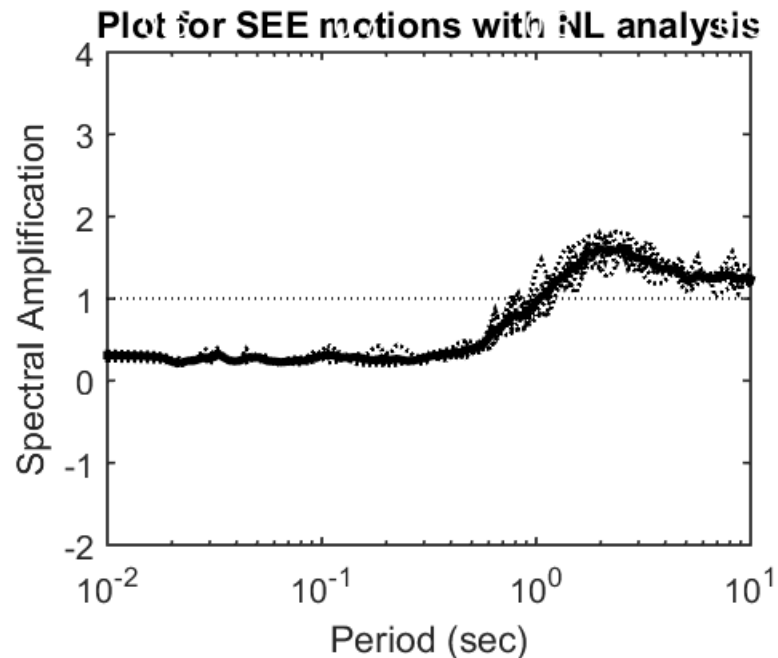
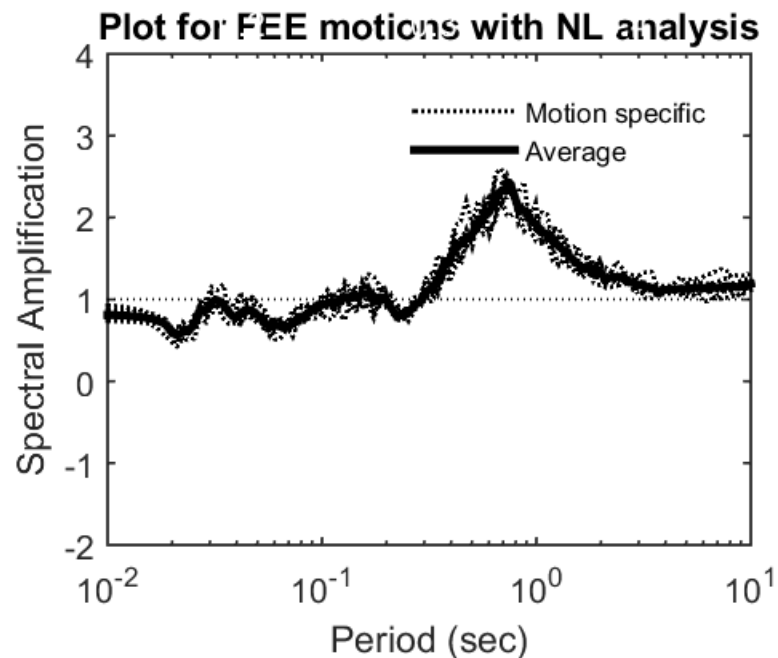
## Summary plots: RSA at ground surface



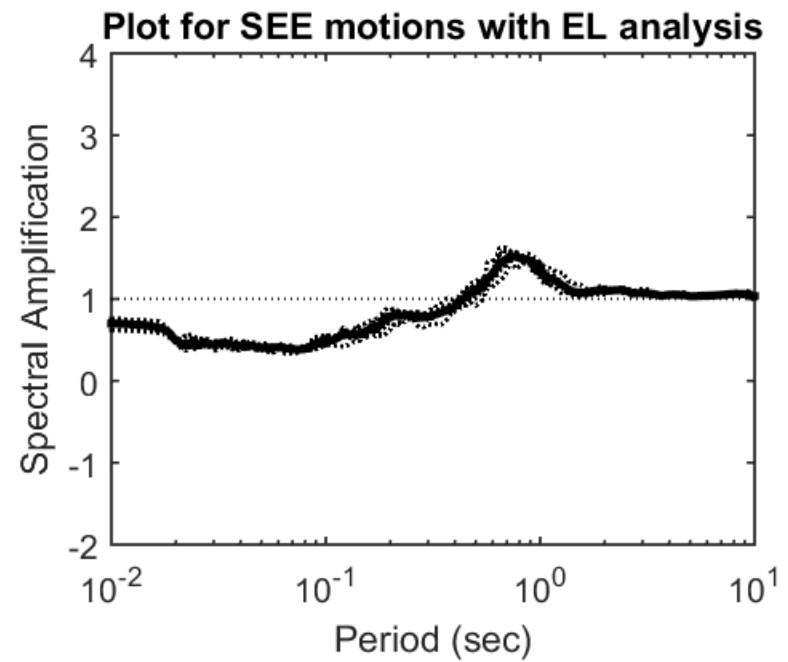
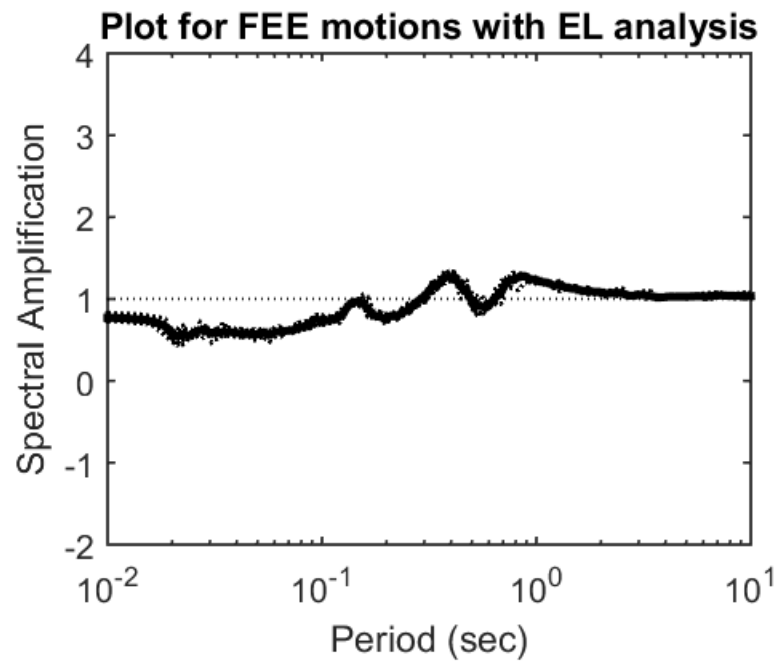
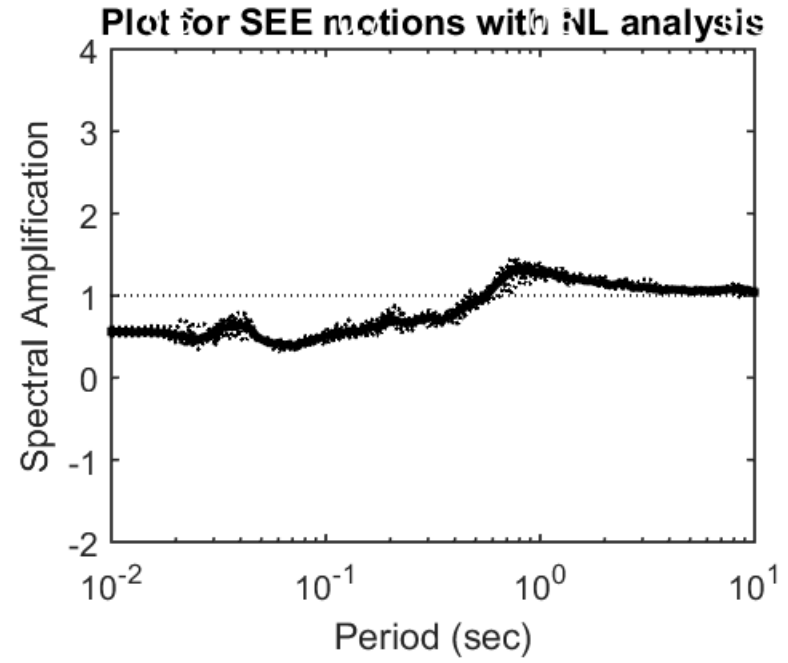
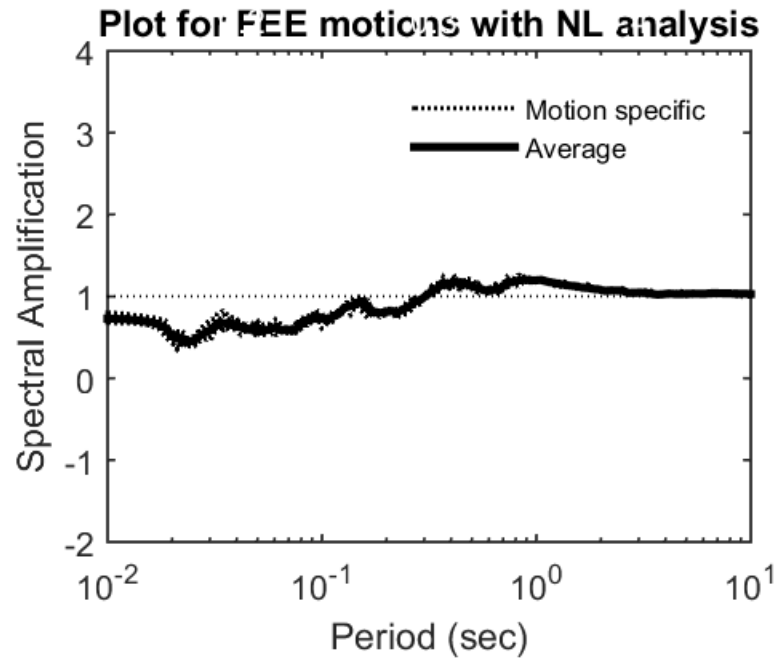
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



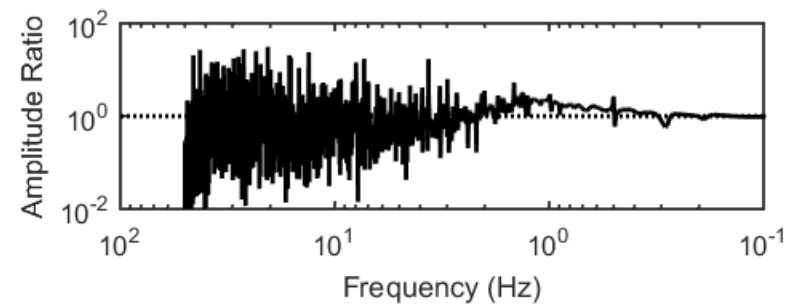
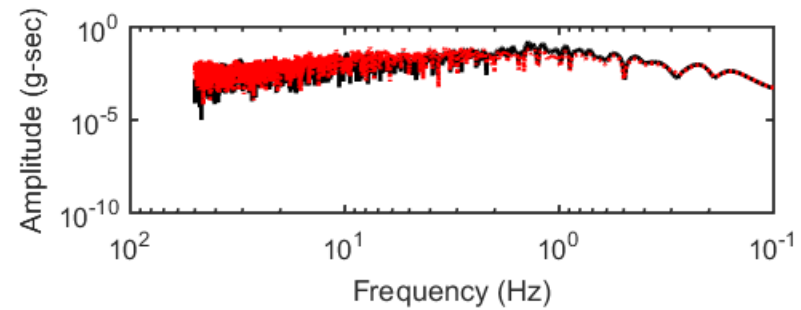
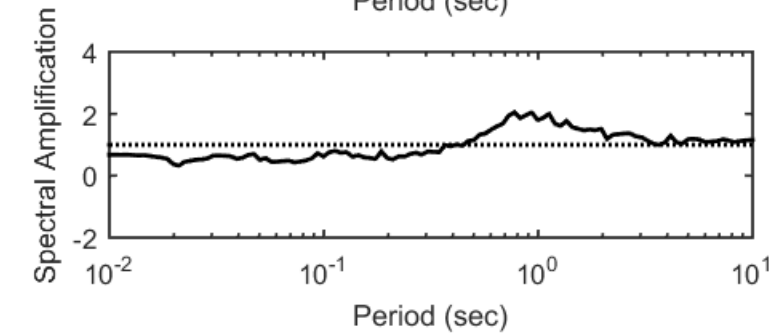
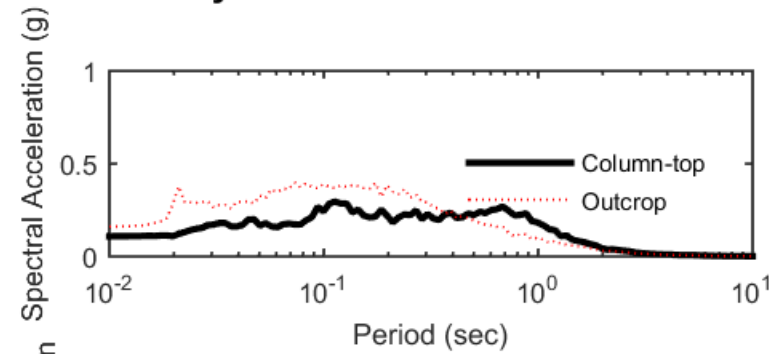
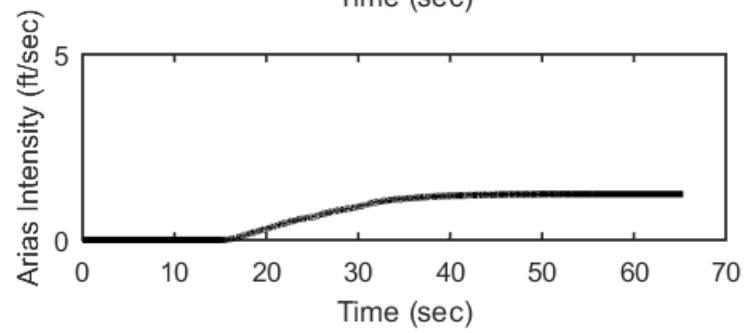
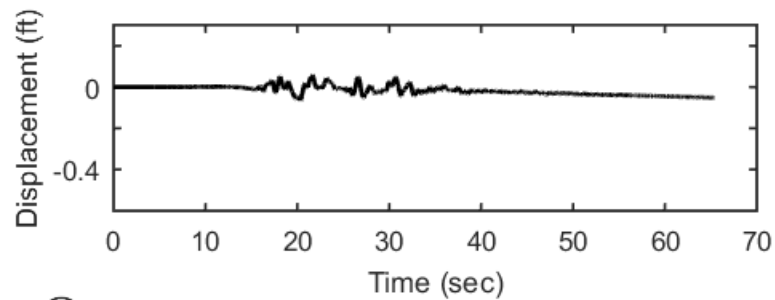
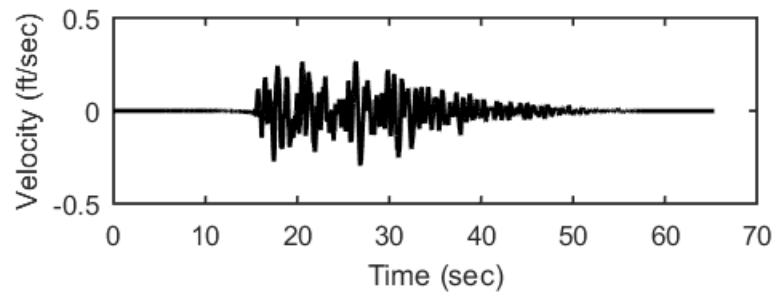
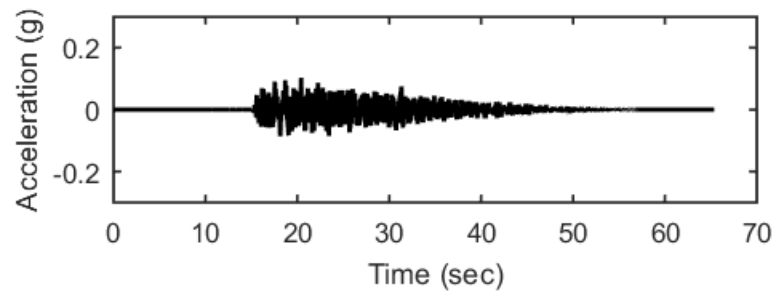
## Summary plots: Spectral amplification at top of Marl



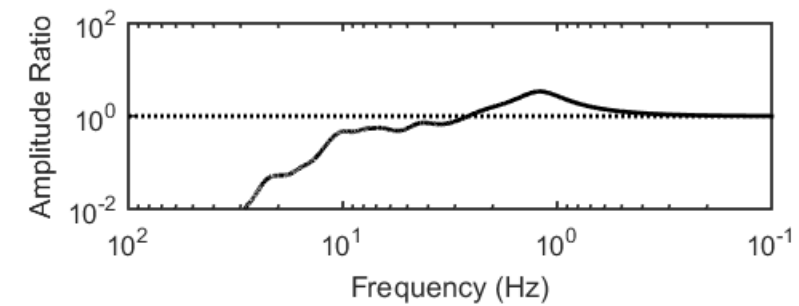
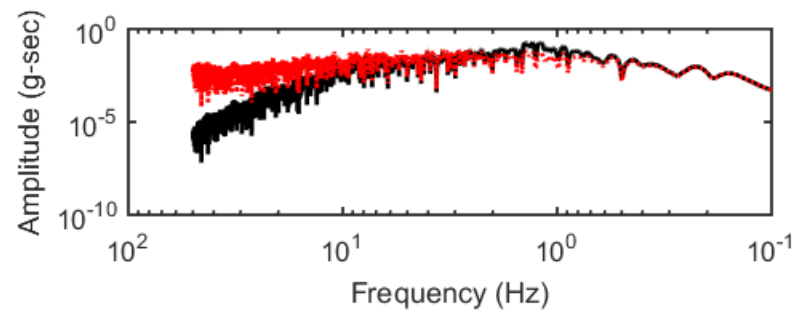
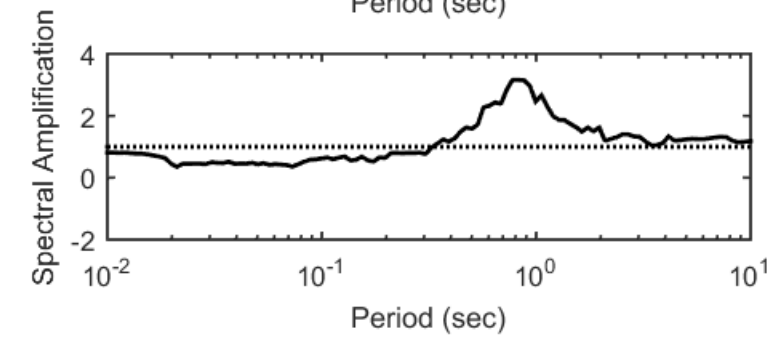
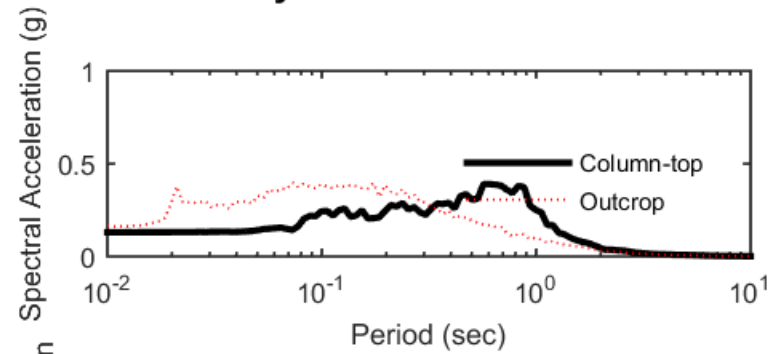
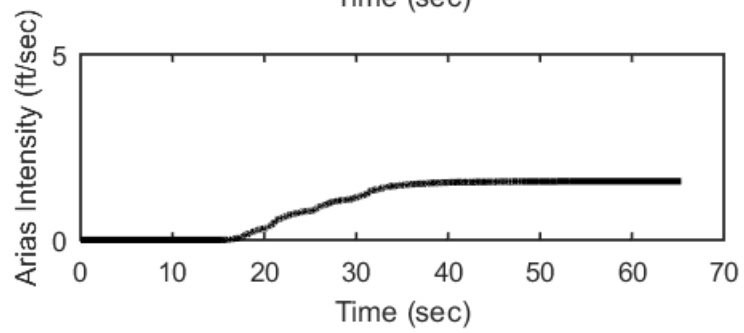
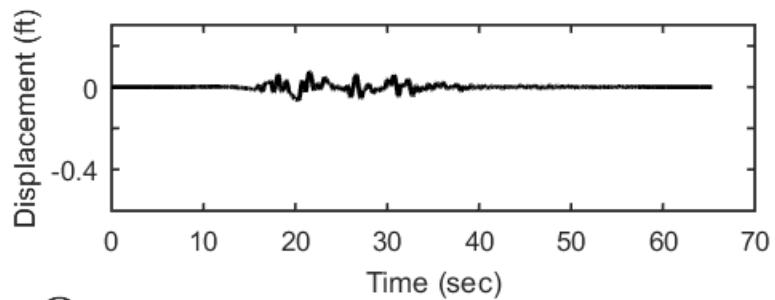
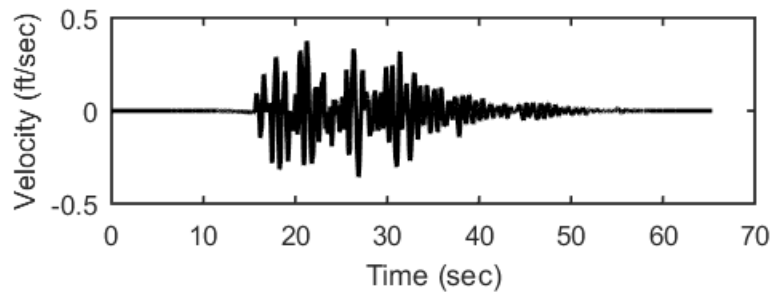
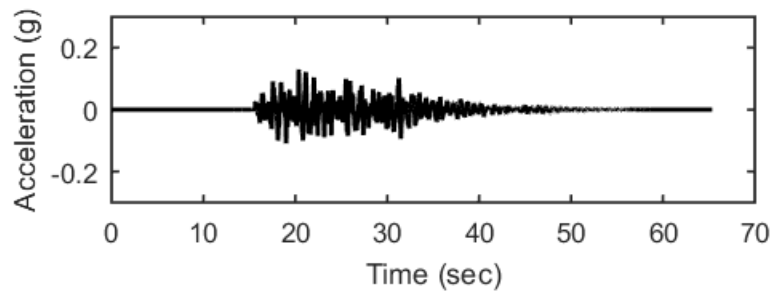
# **BASE MODEL AND LOW PLASTICITY INDEX**



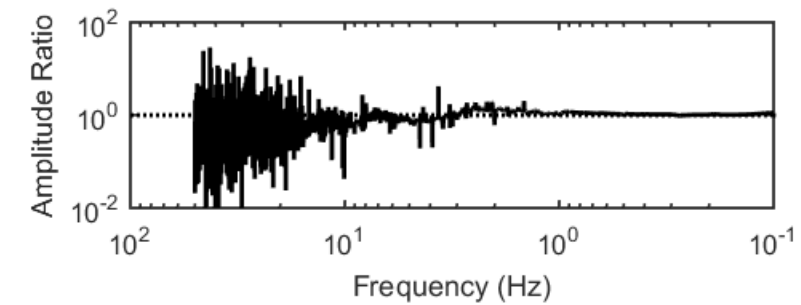
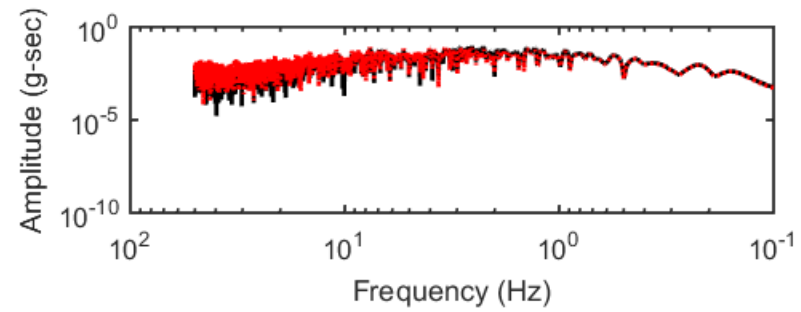
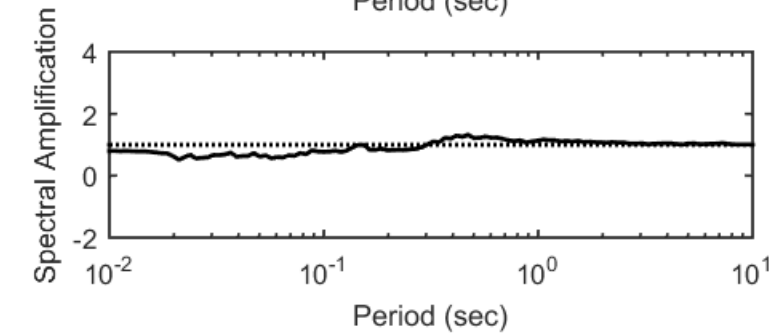
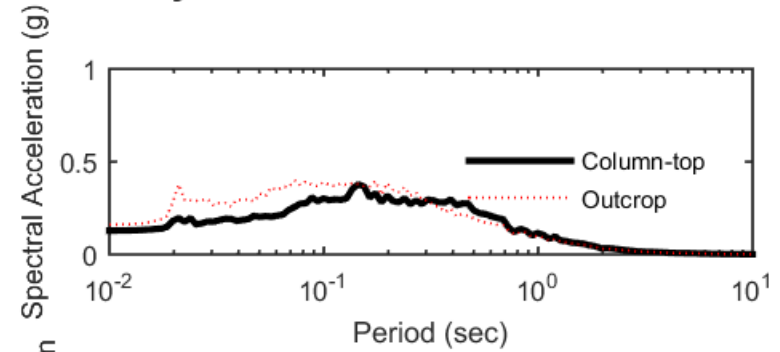
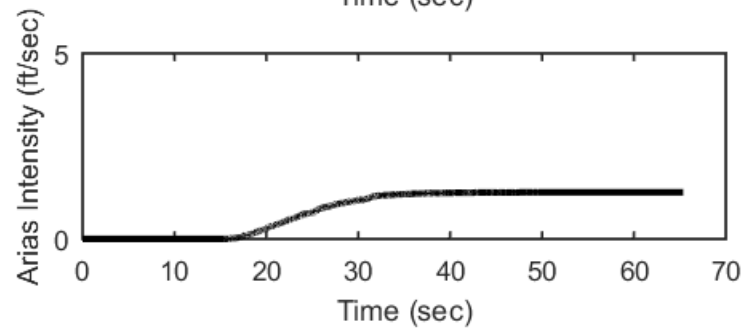
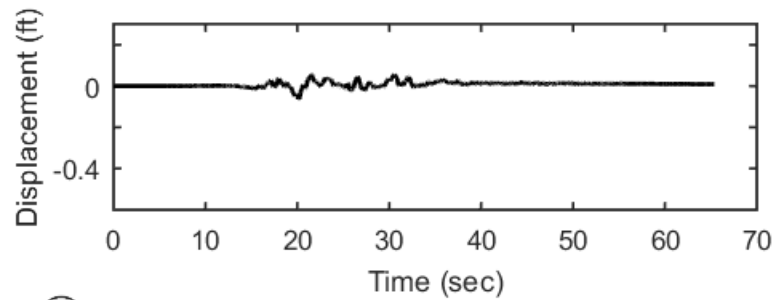
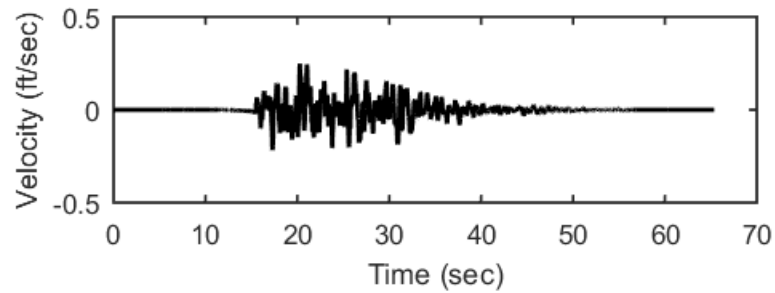
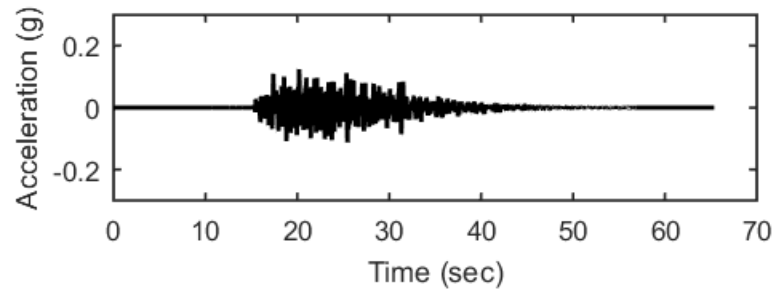
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



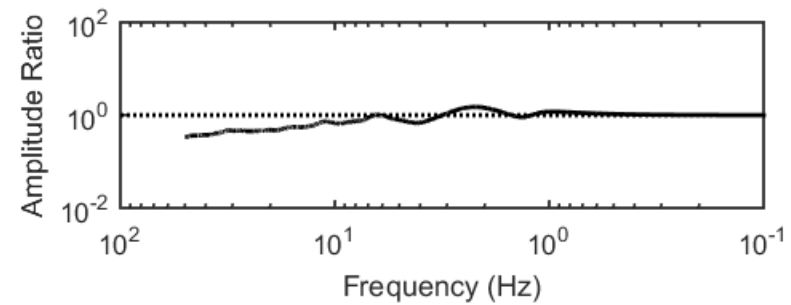
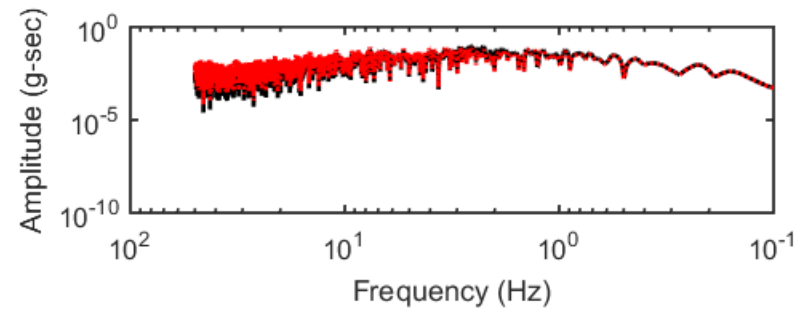
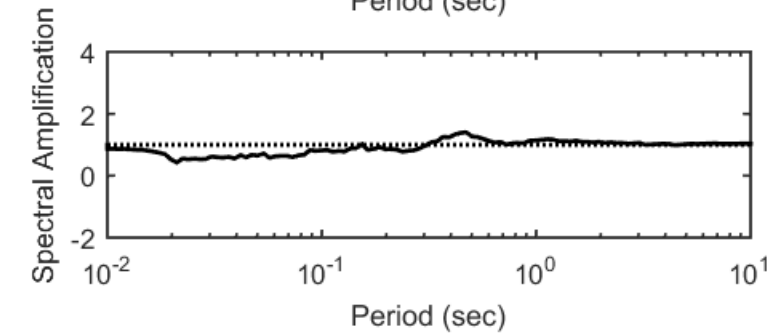
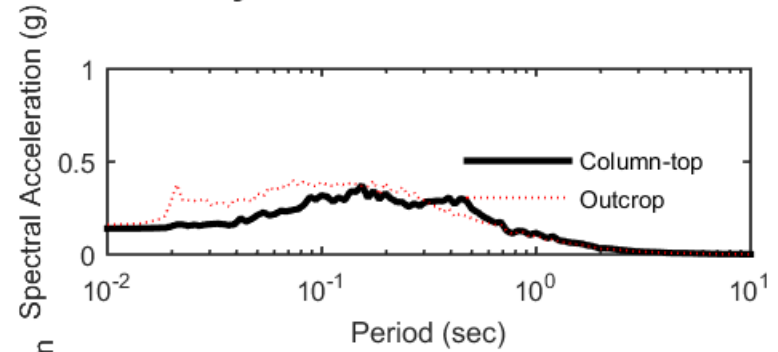
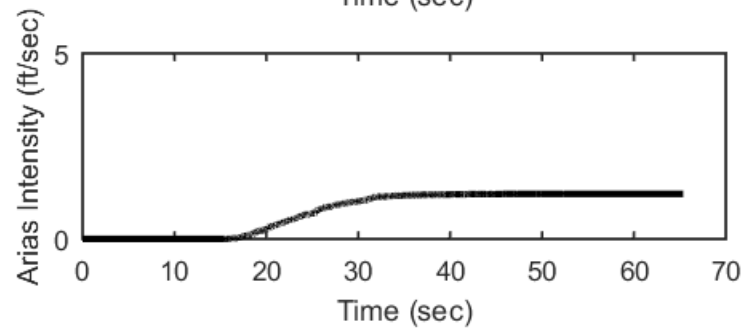
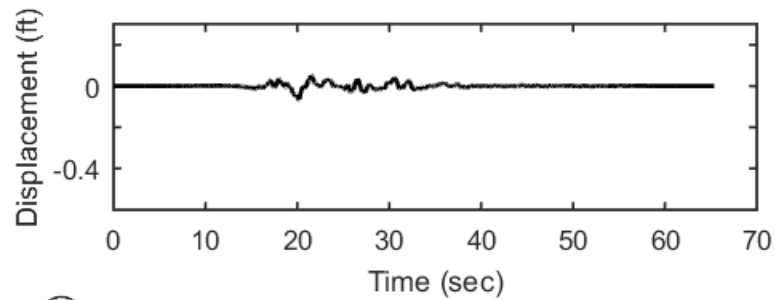
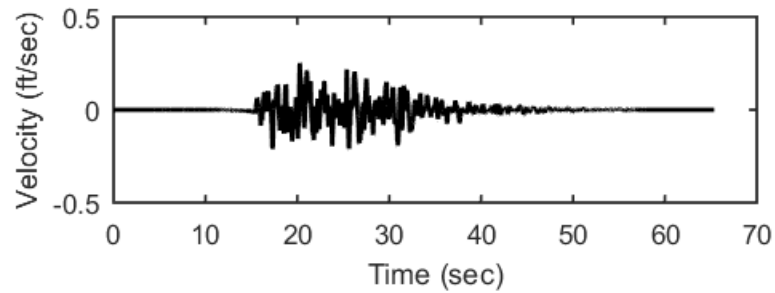
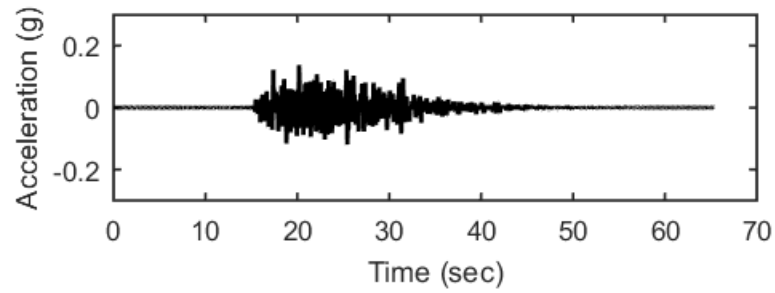
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



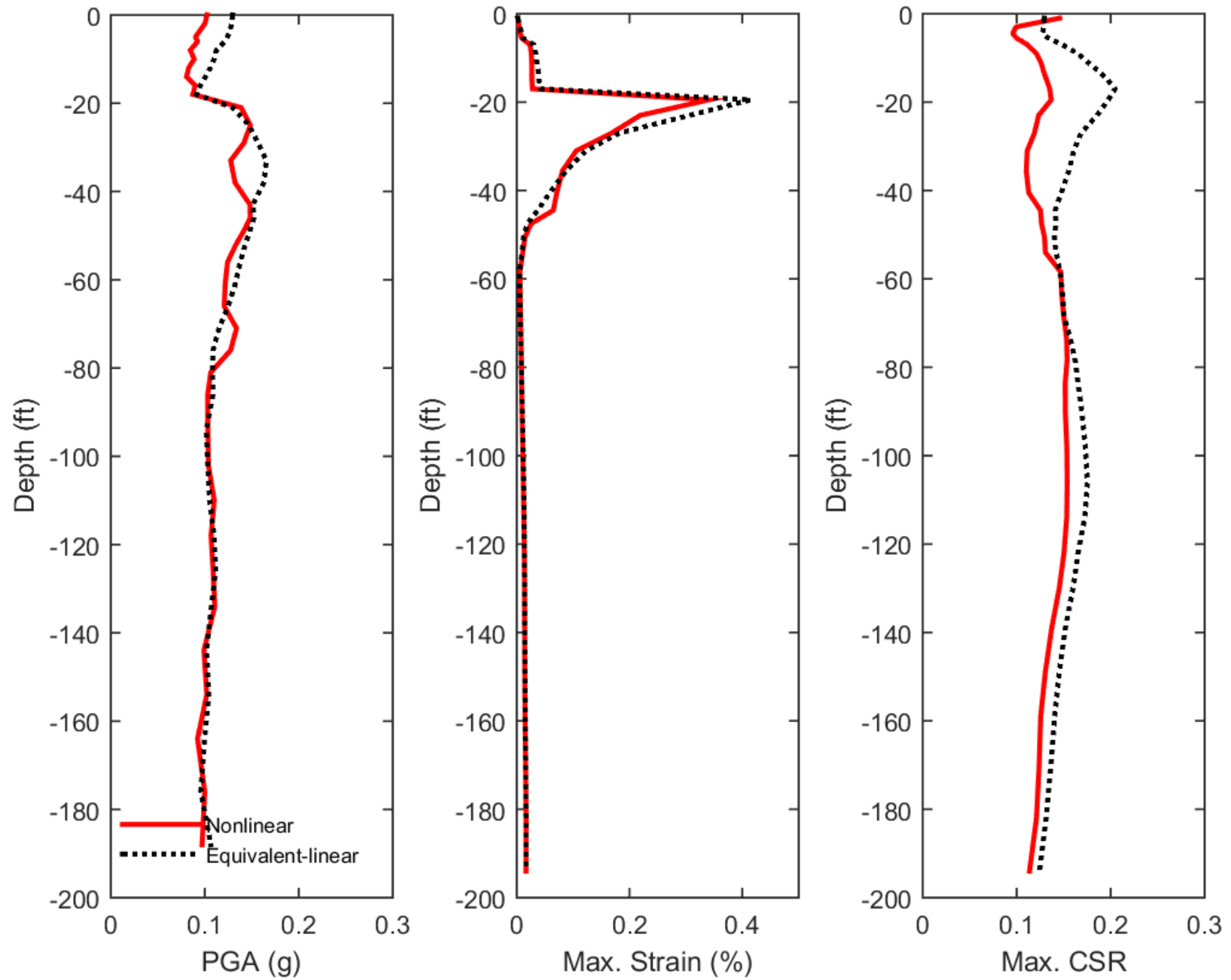
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



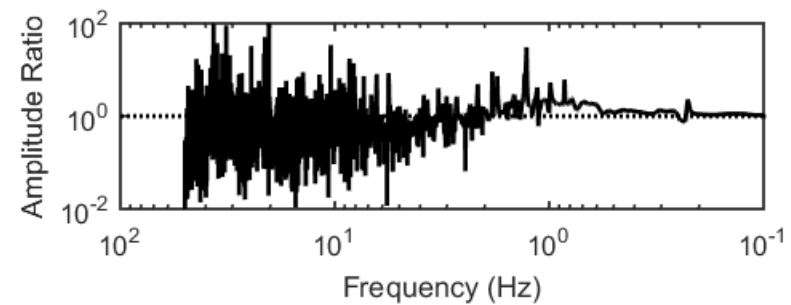
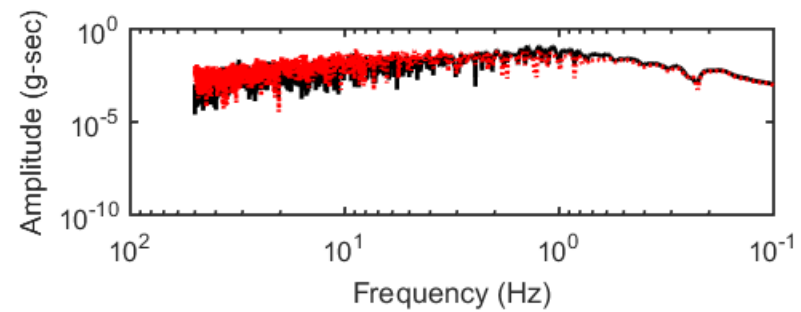
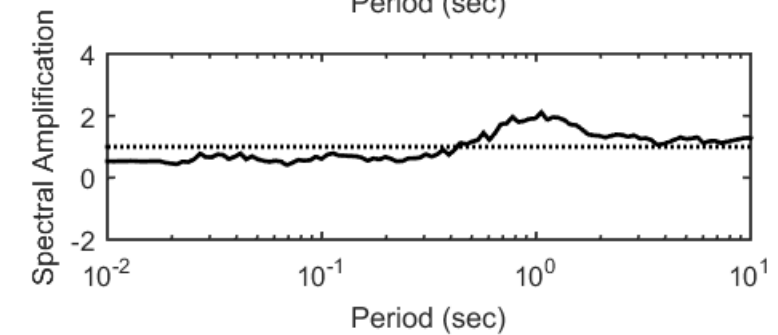
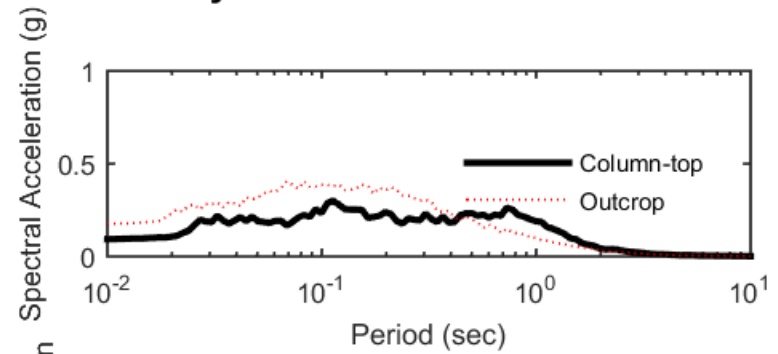
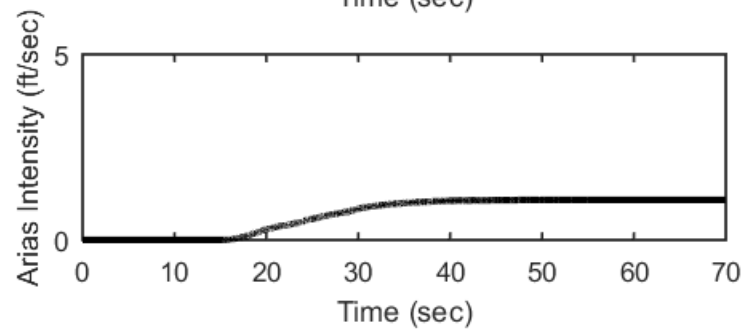
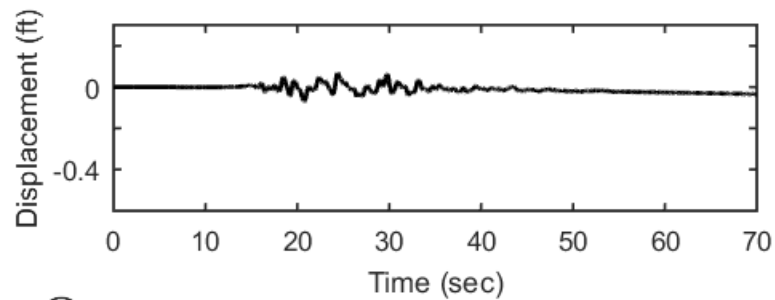
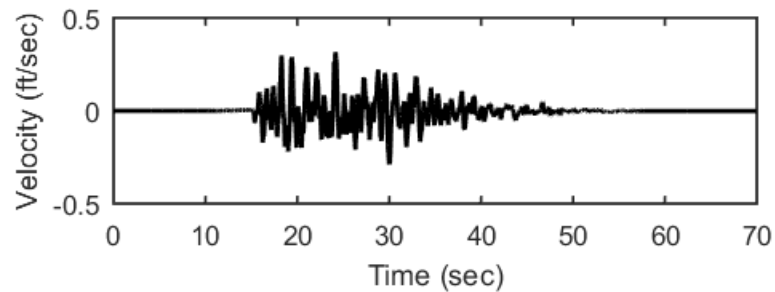
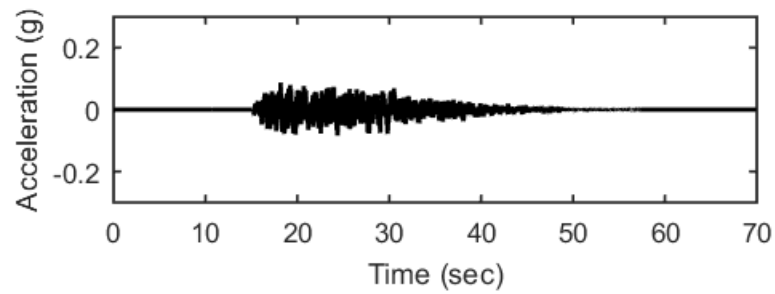
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



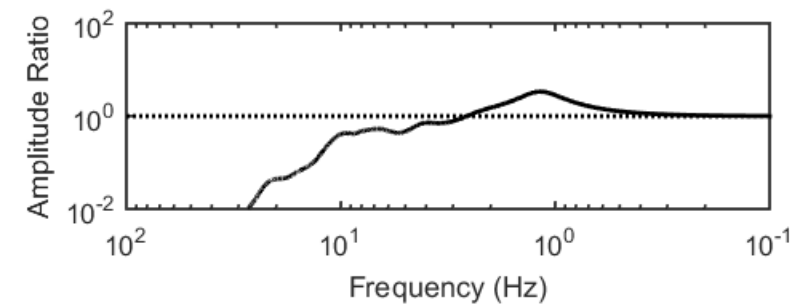
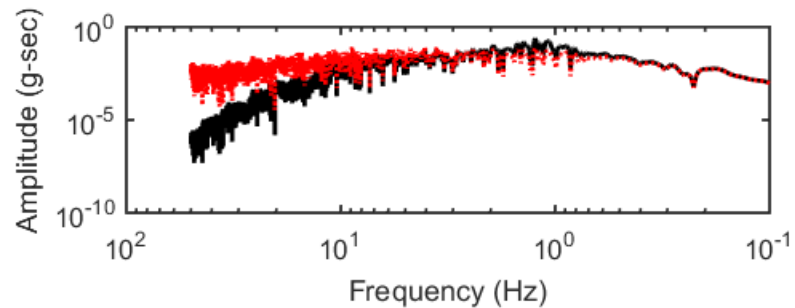
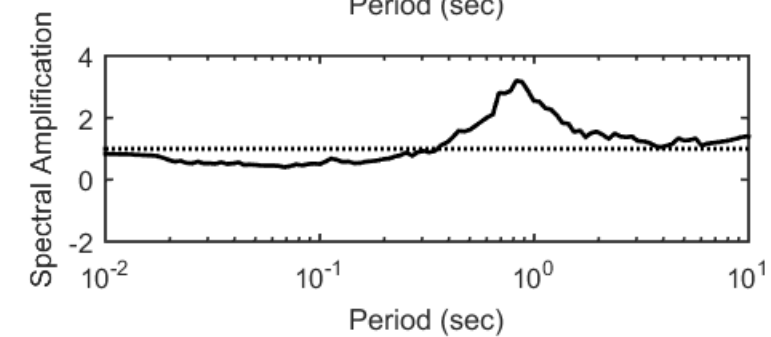
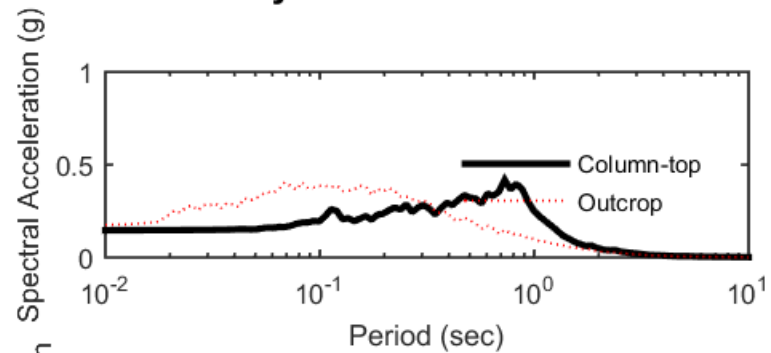
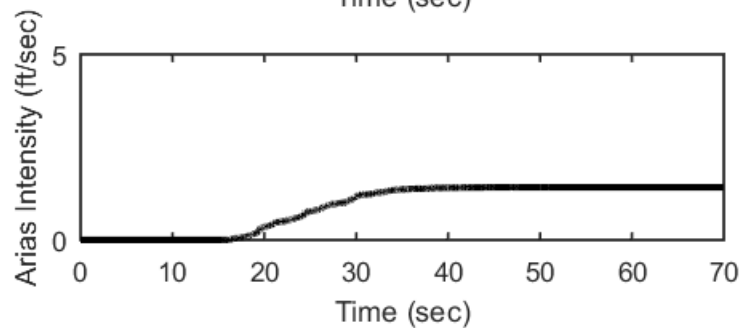
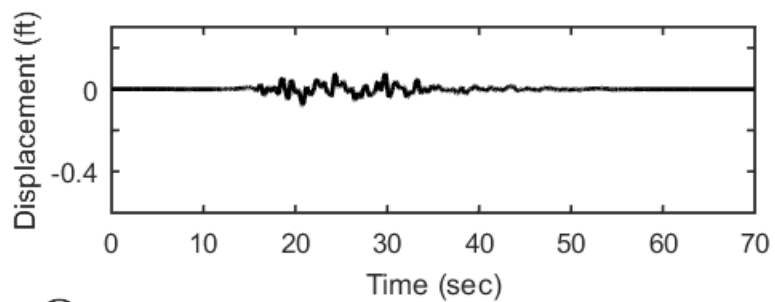
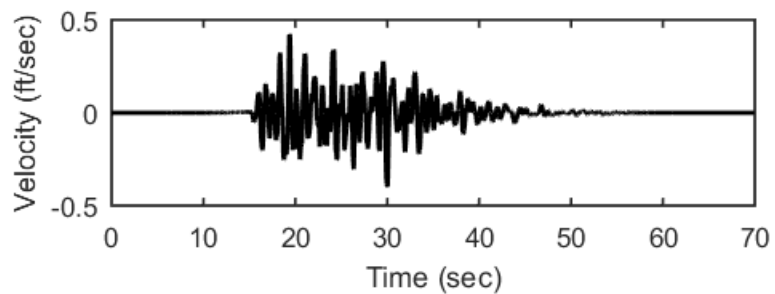
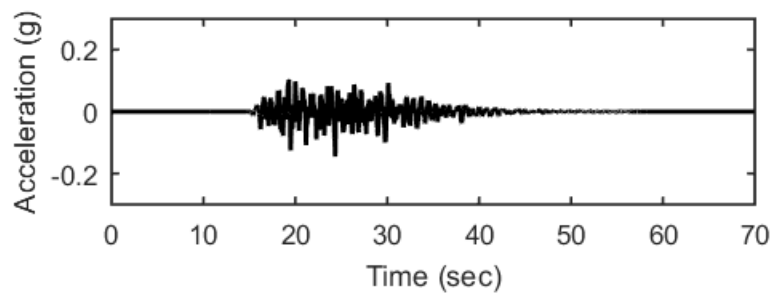
### Profile outputs for Motion: FEE1



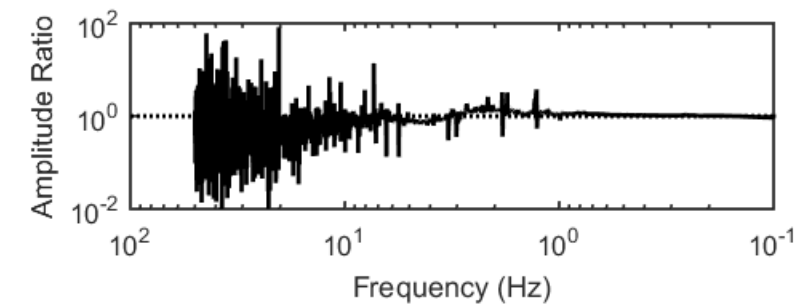
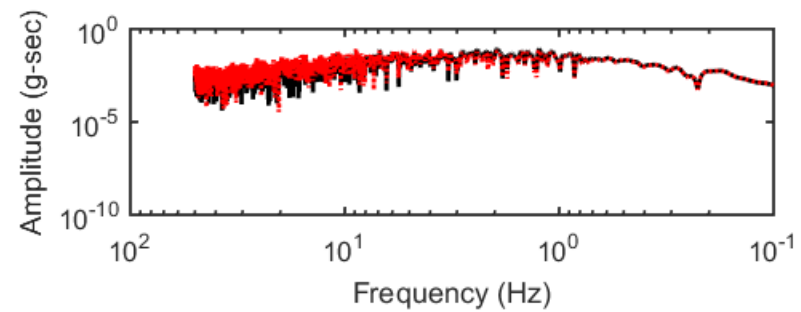
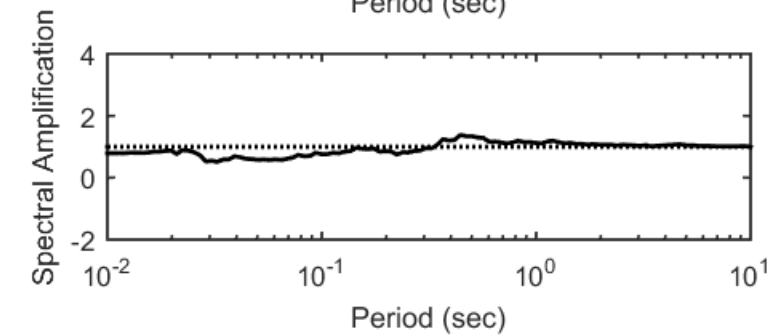
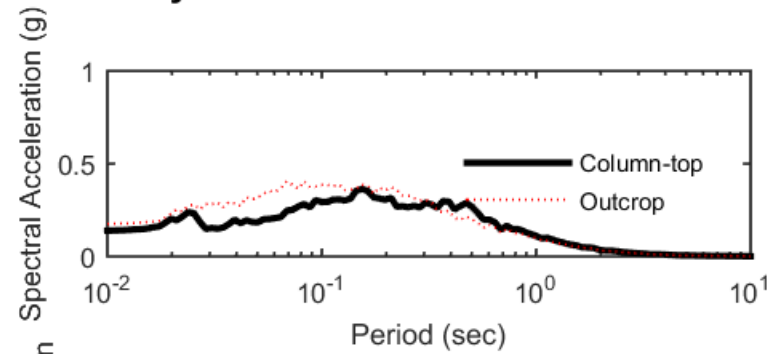
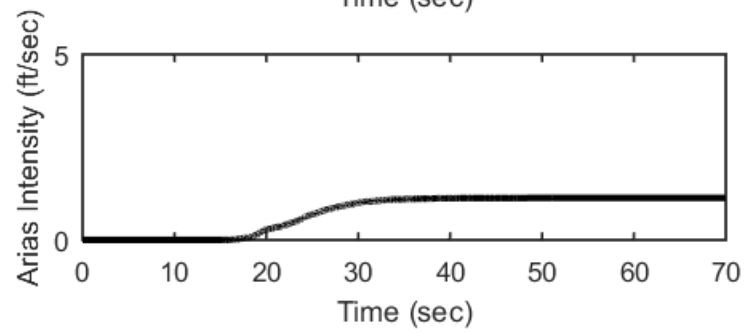
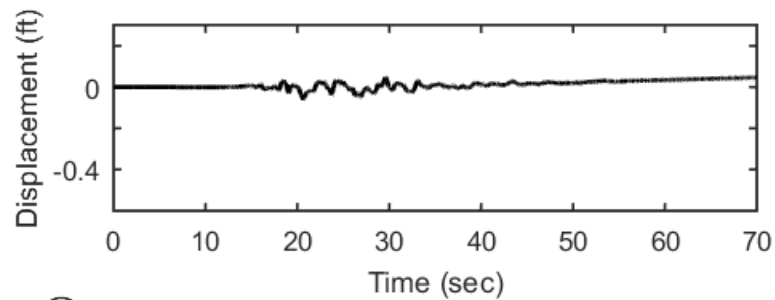
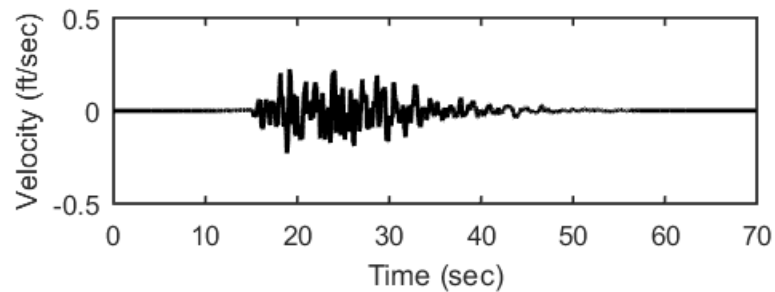
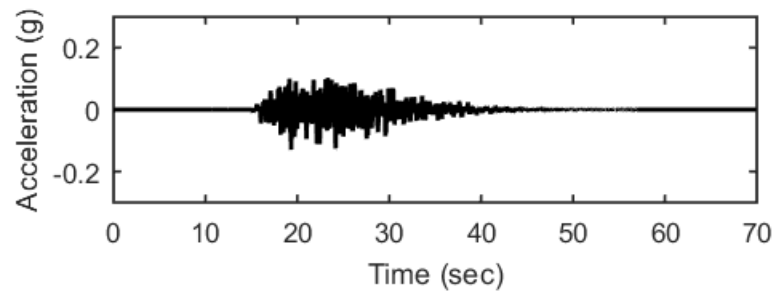
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2

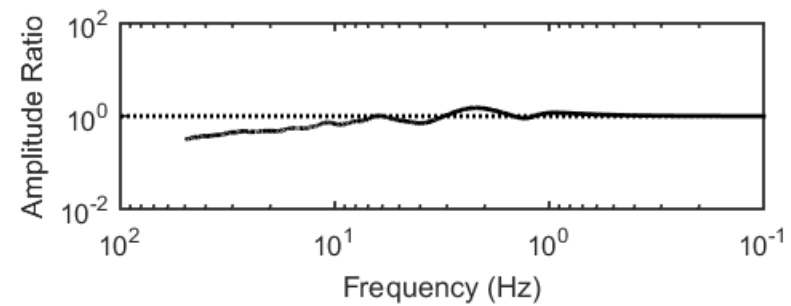
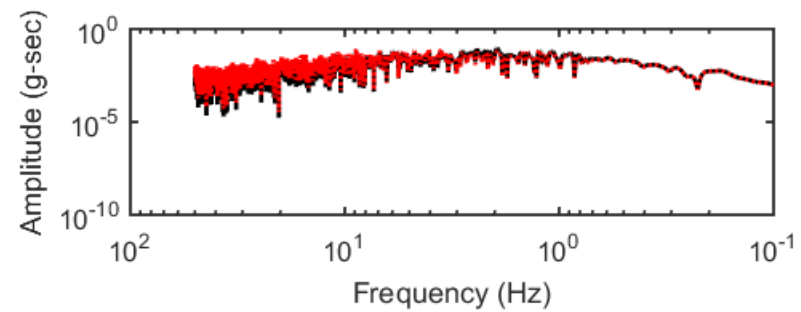
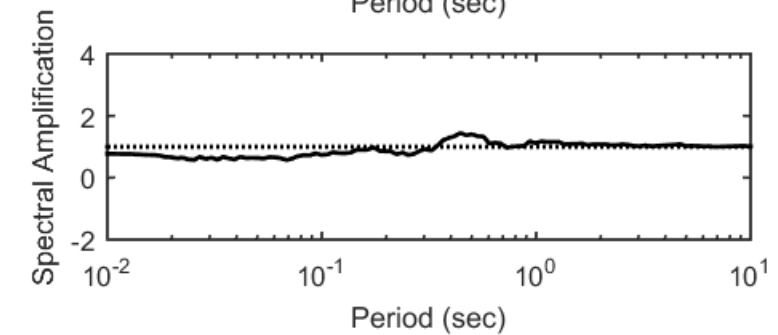
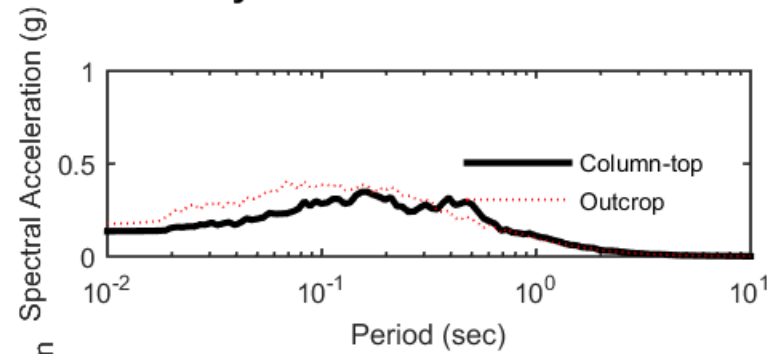
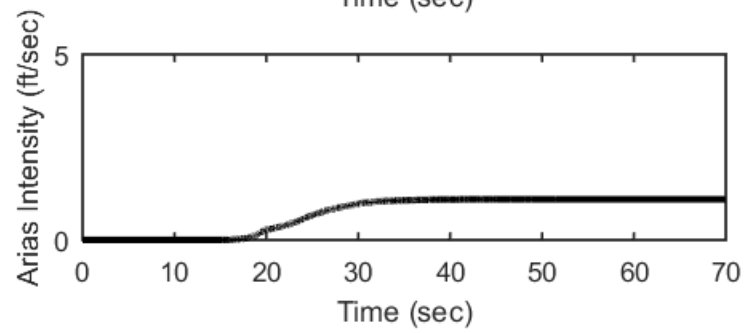
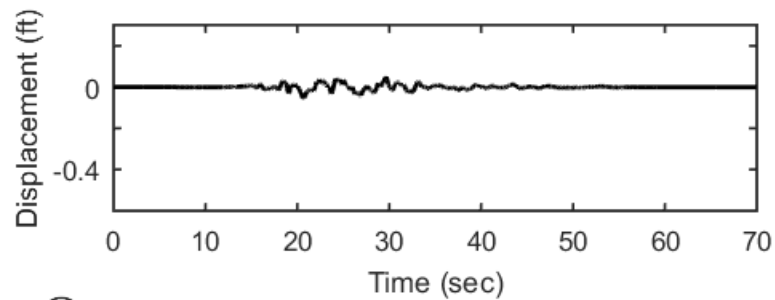
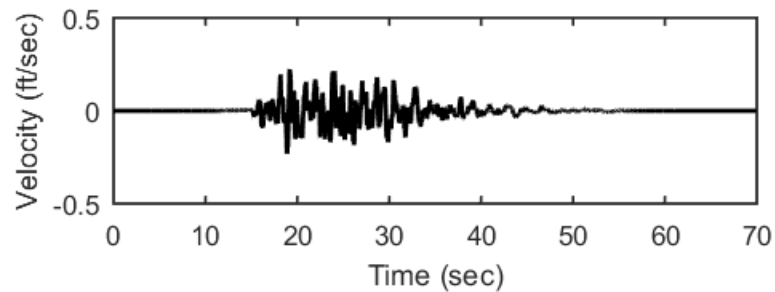
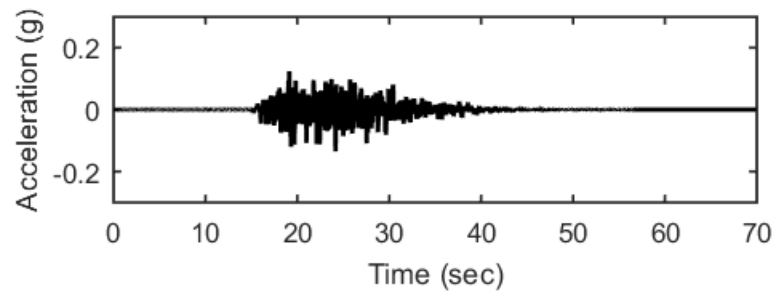


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2

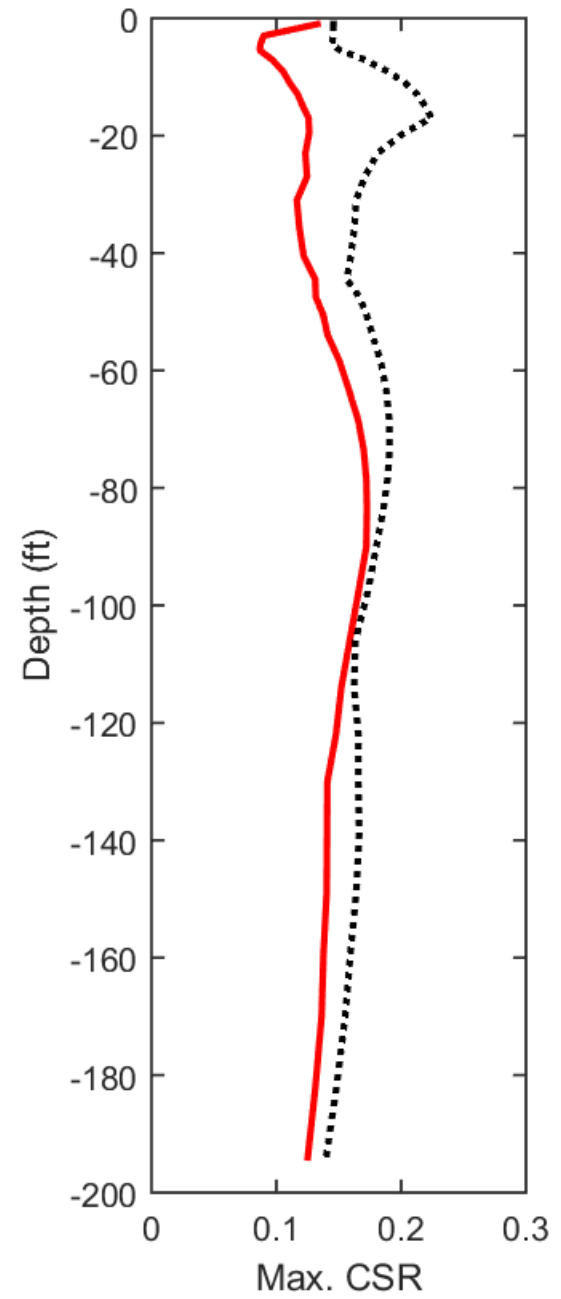
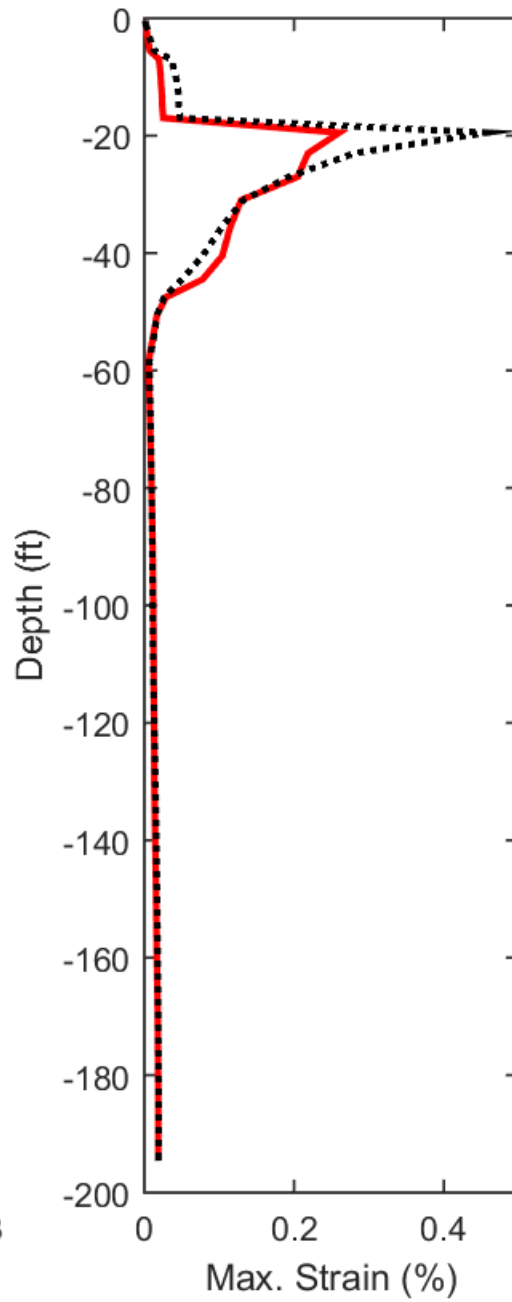
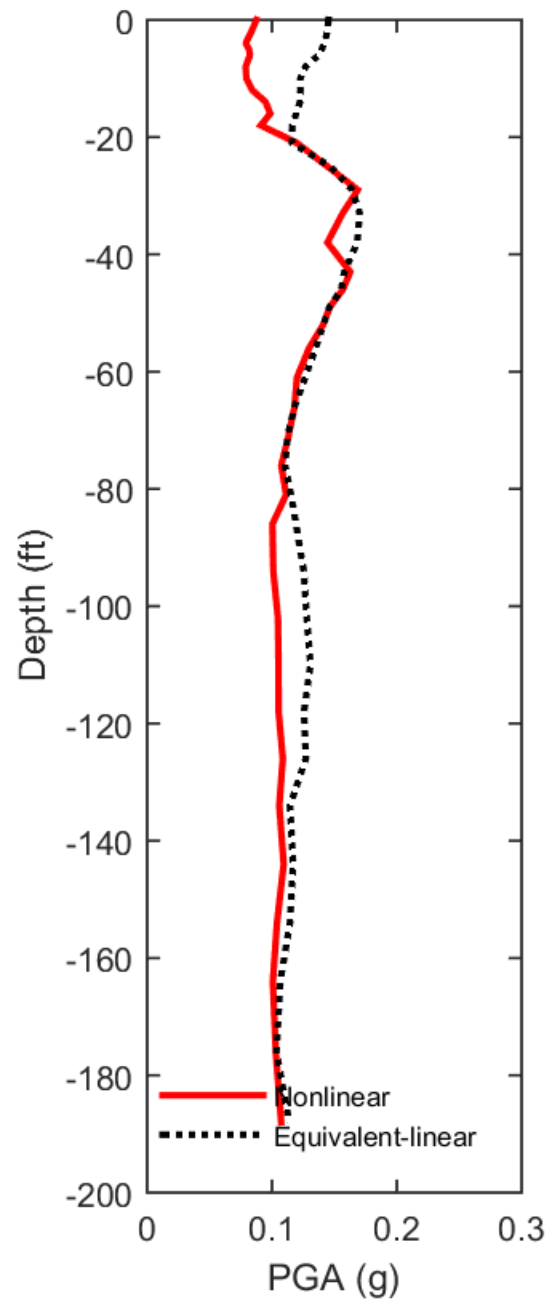




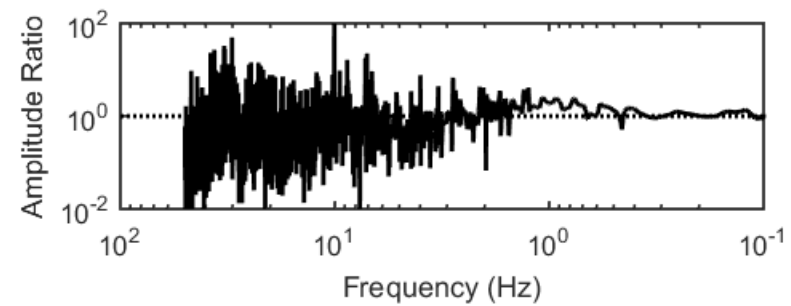
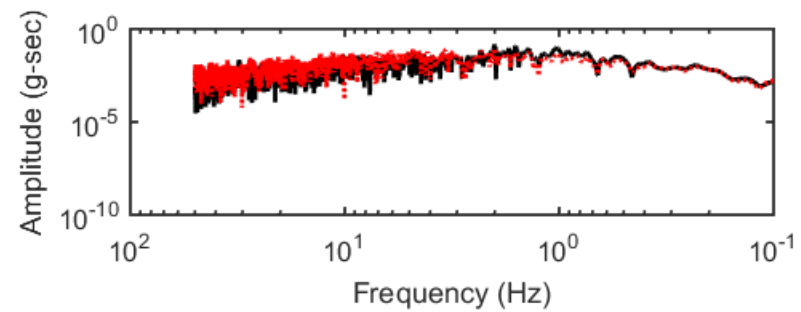
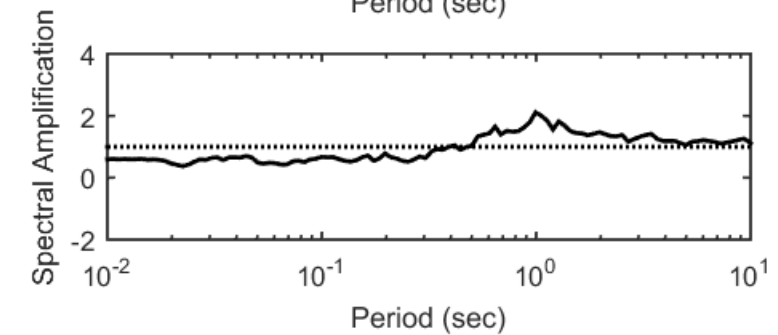
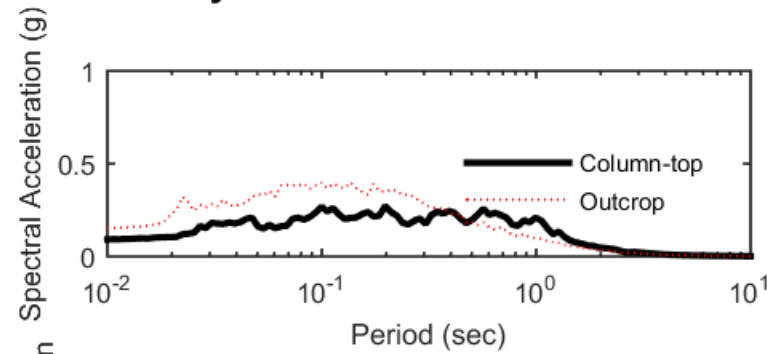
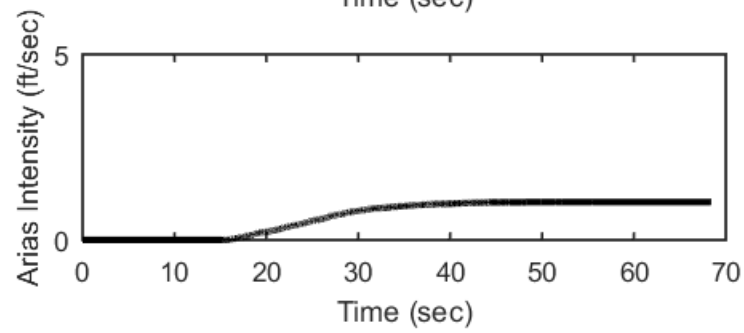
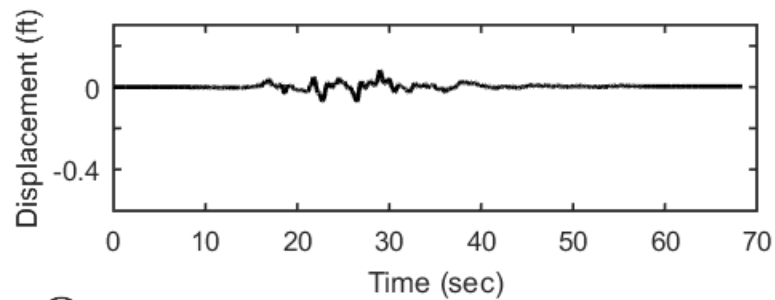
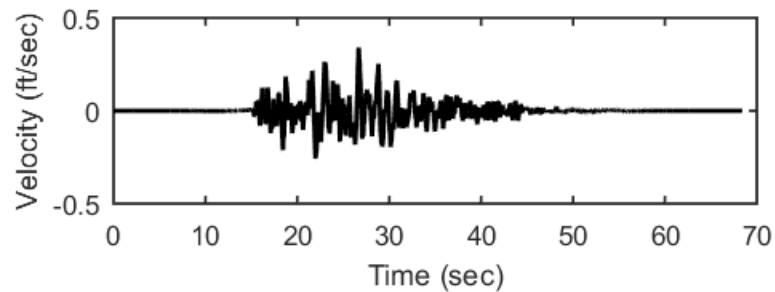
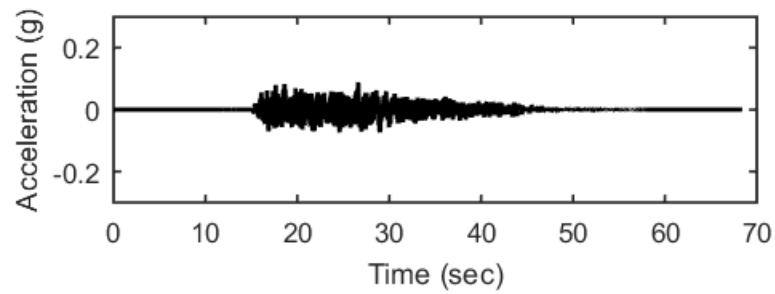
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



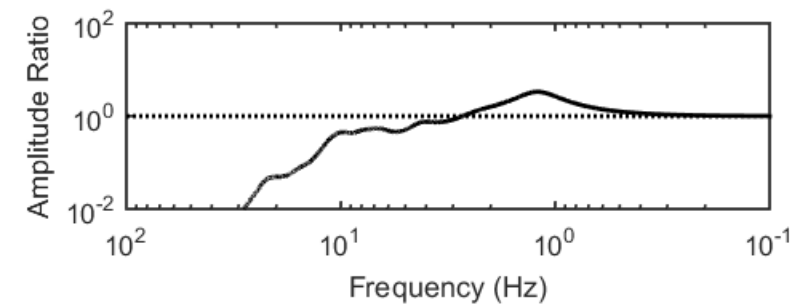
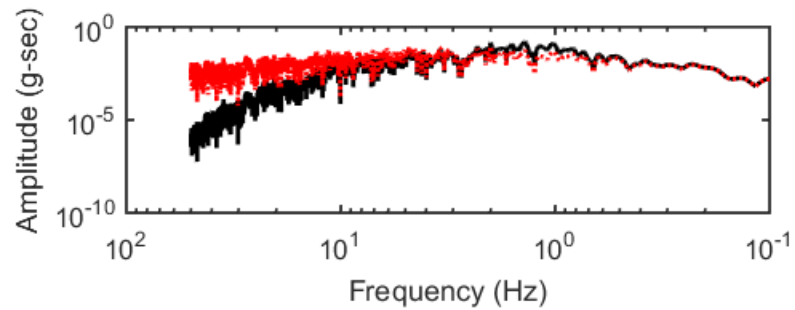
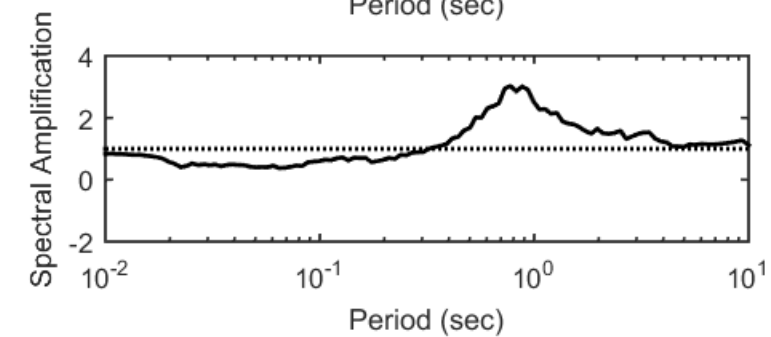
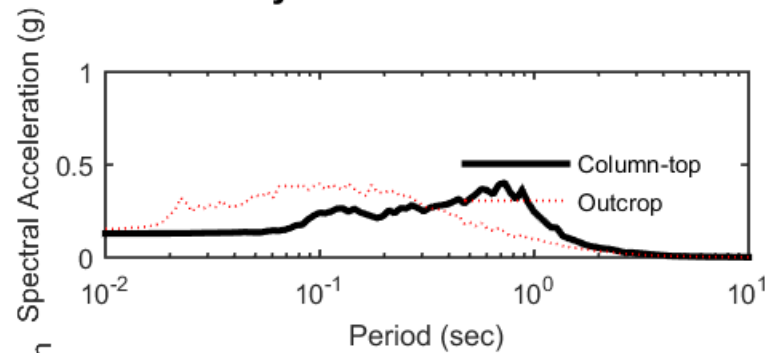
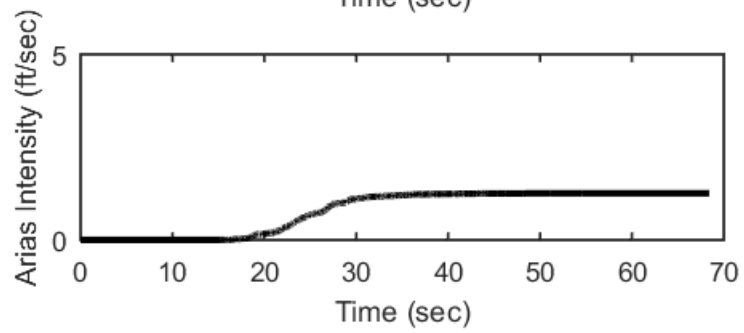
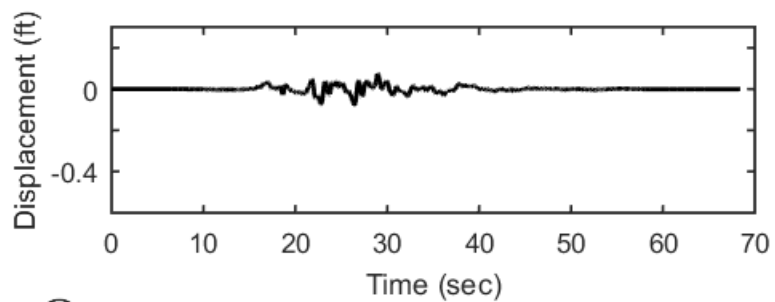
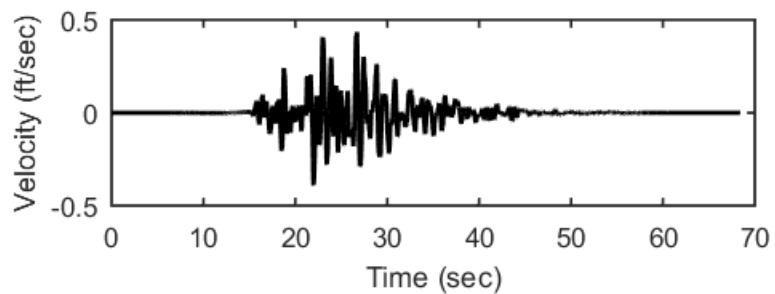
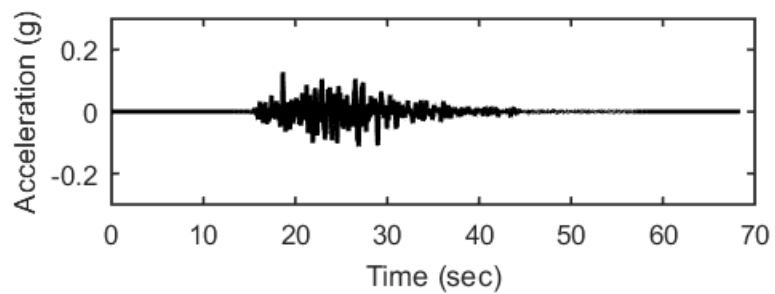
### Profile outputs for Motion: FEE2



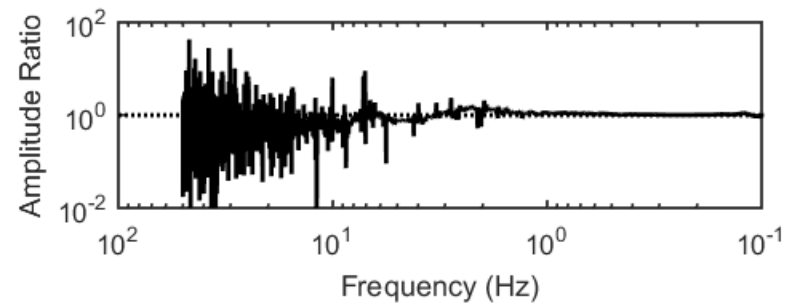
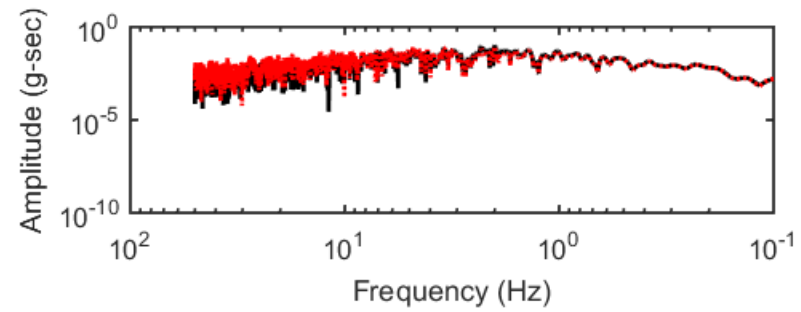
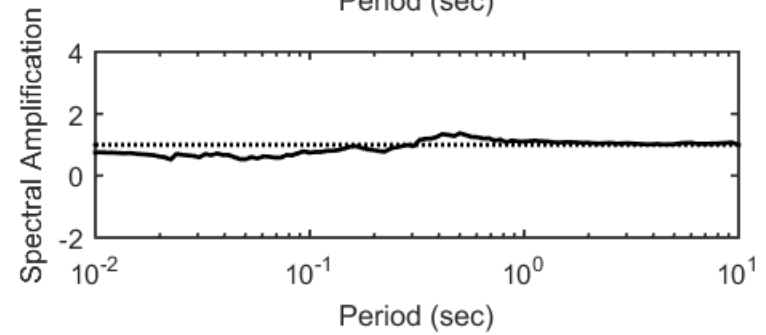
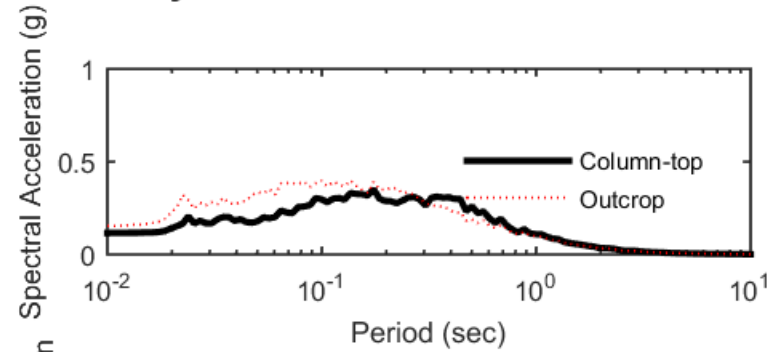
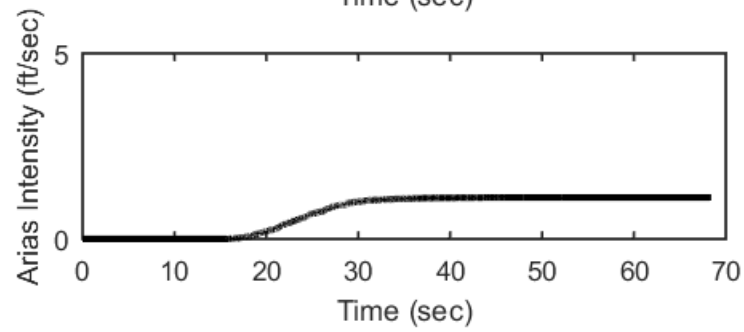
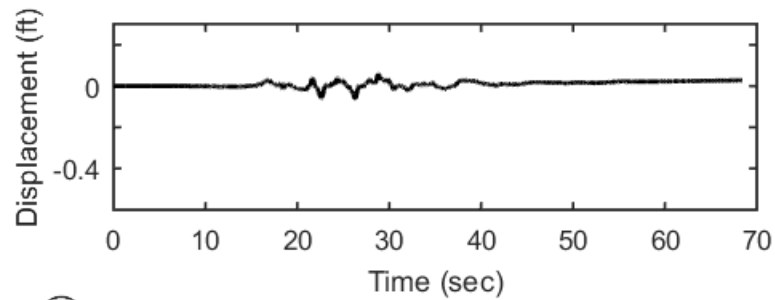
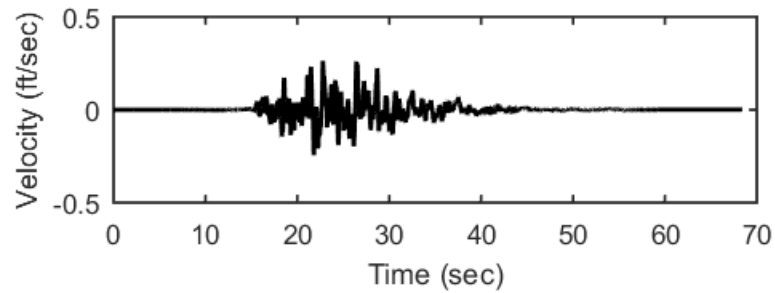
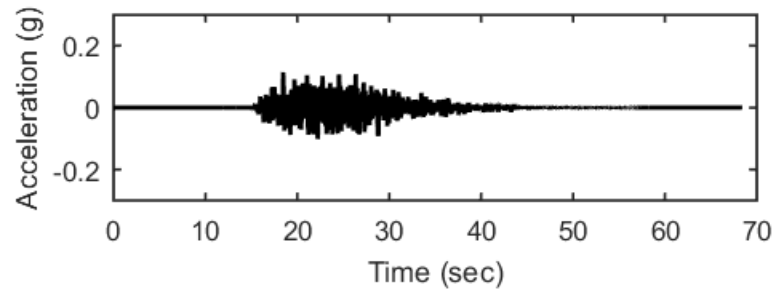
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



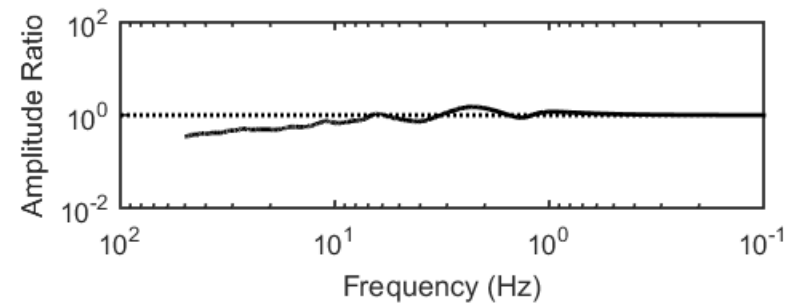
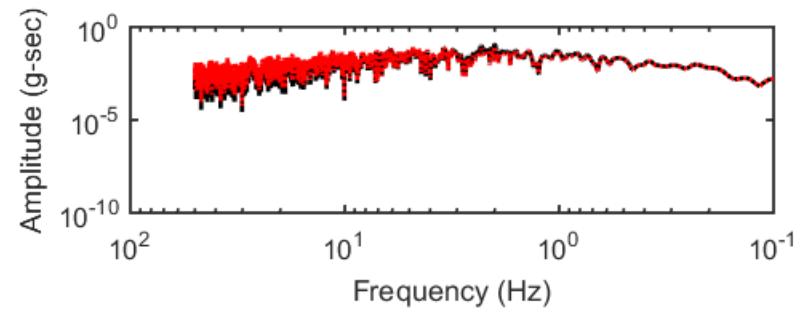
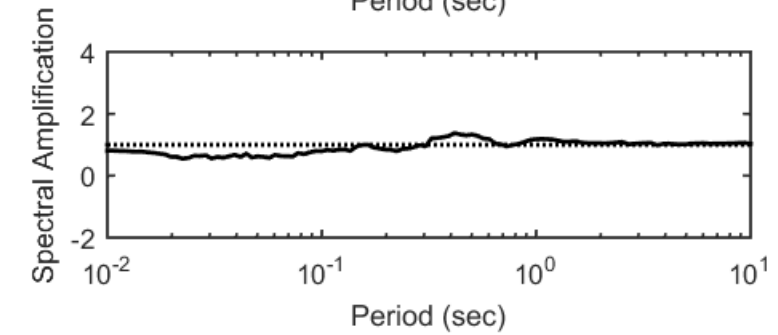
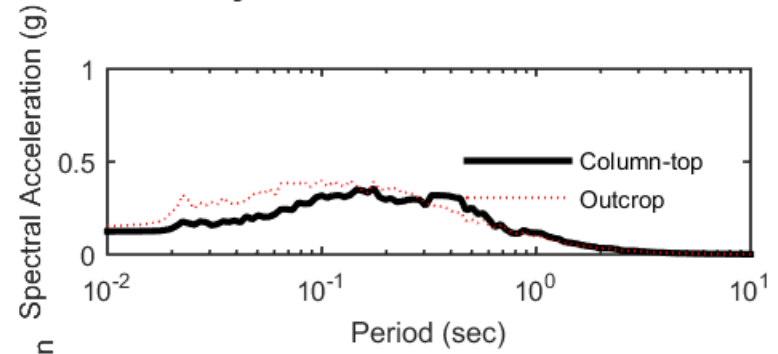
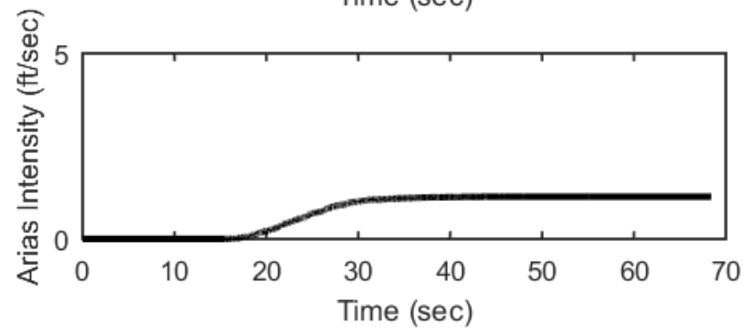
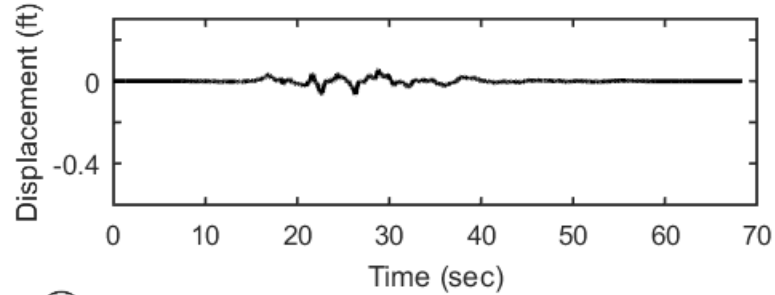
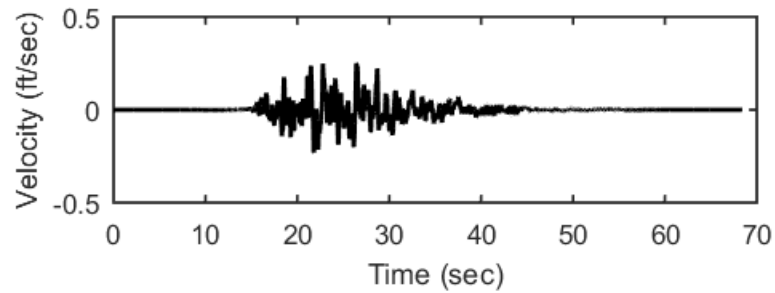
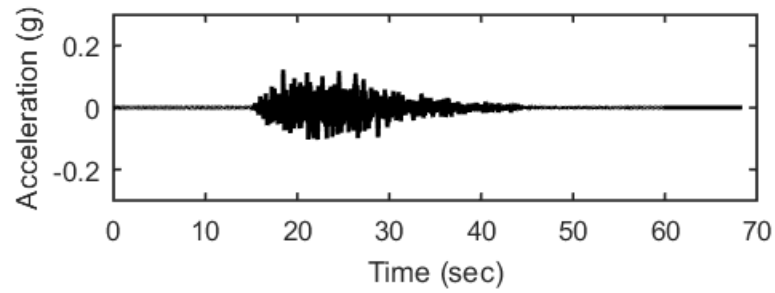
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



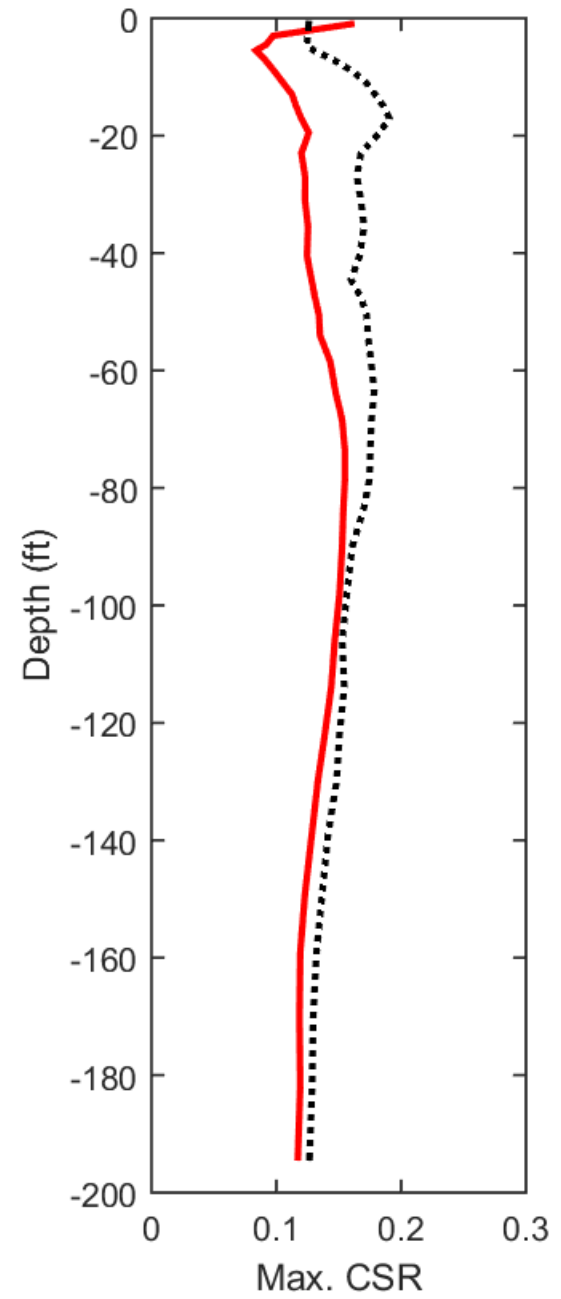
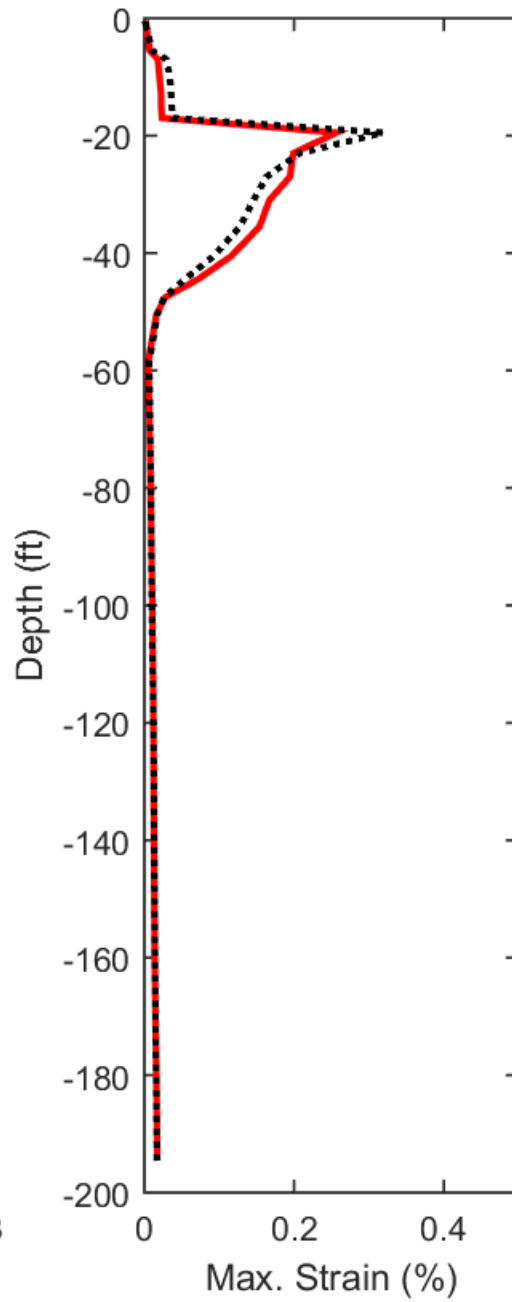
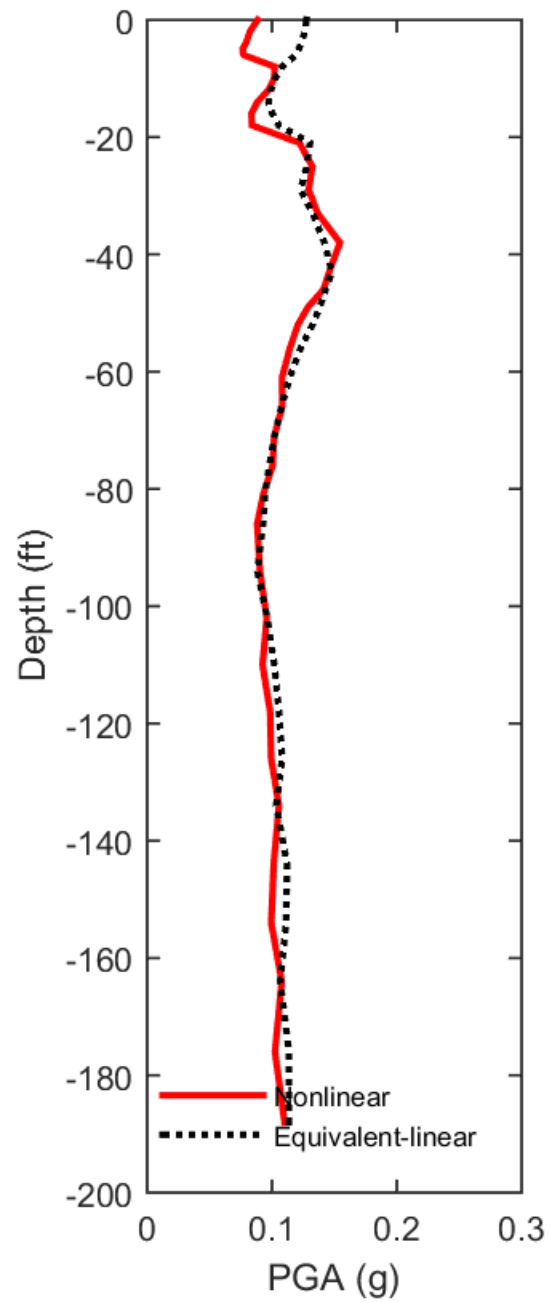
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



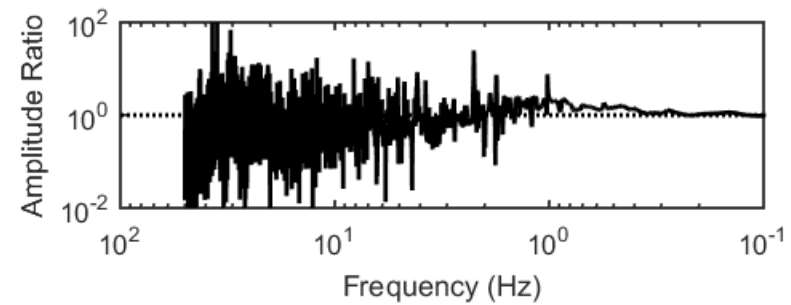
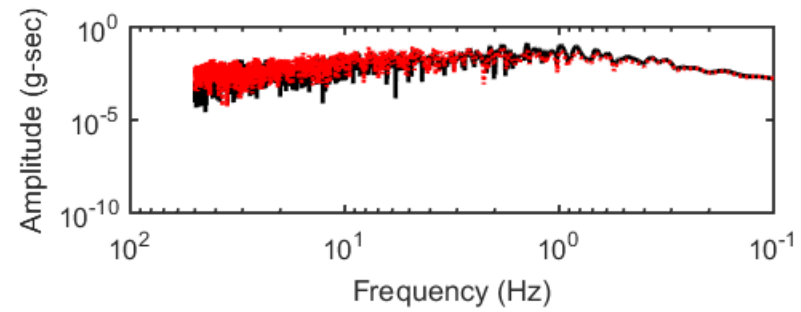
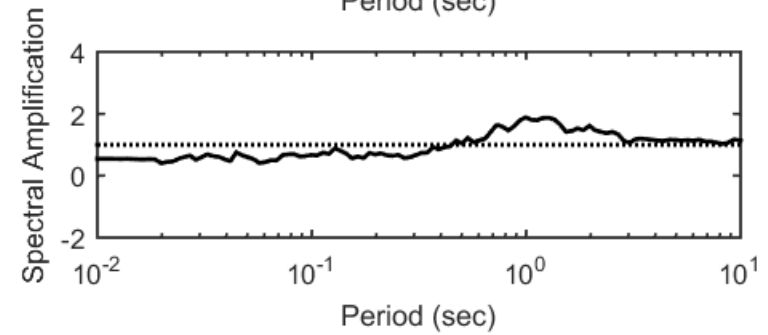
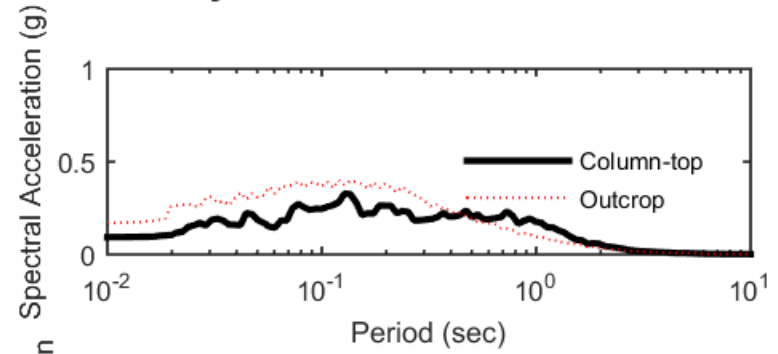
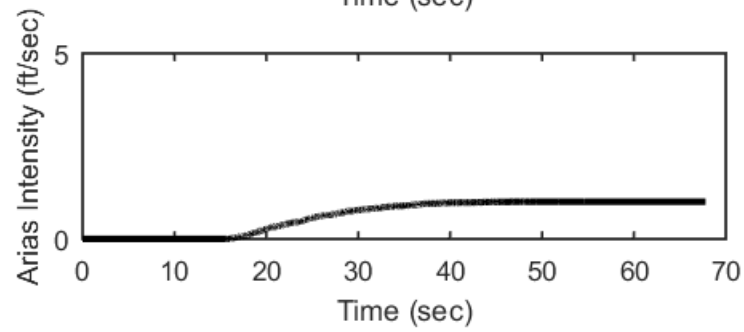
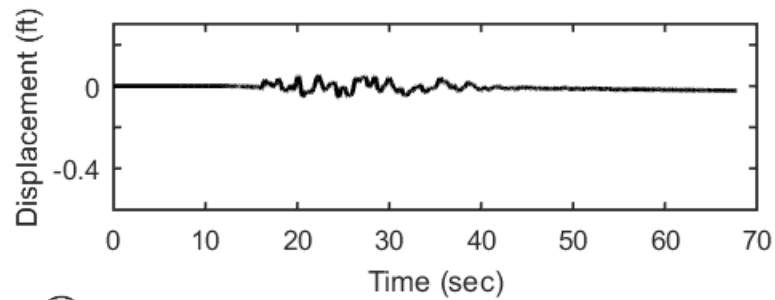
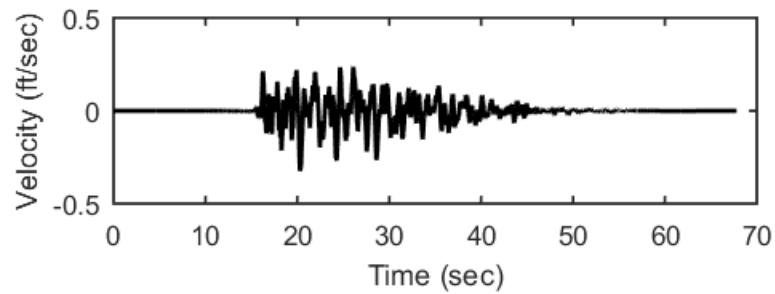
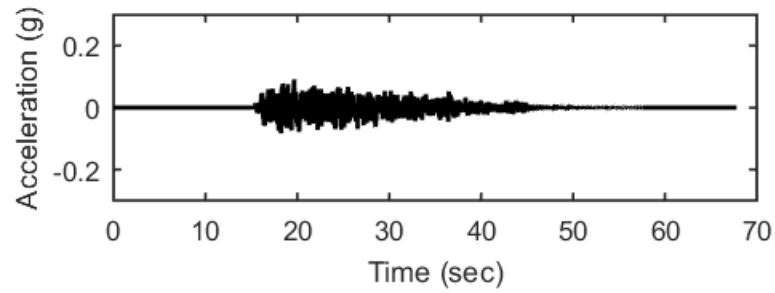
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



### Profile outputs for Motion: FEE3

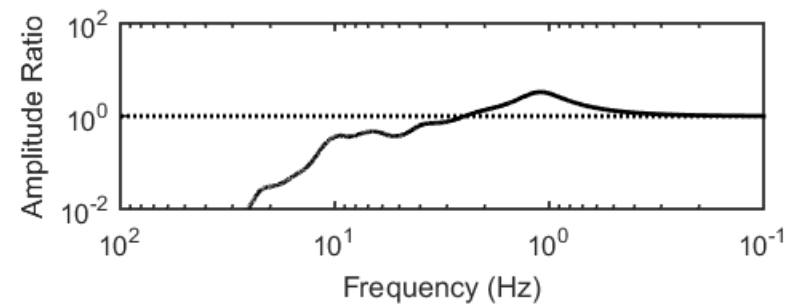
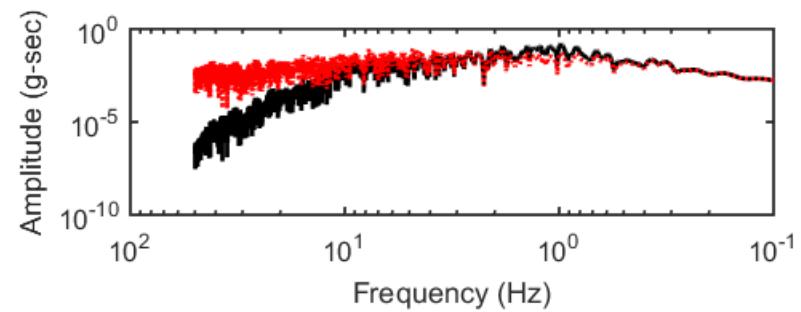
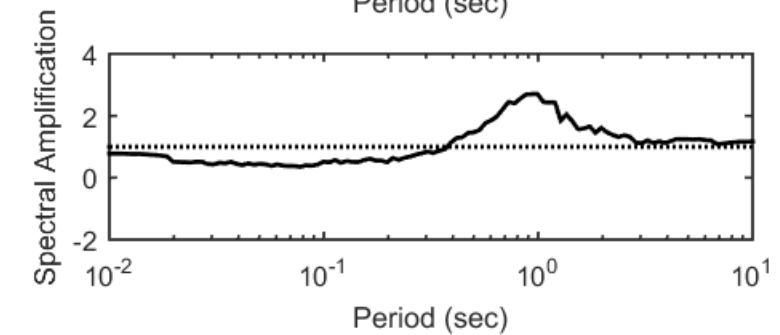
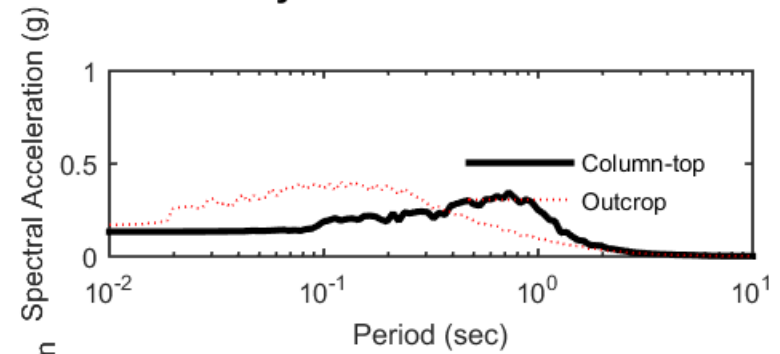
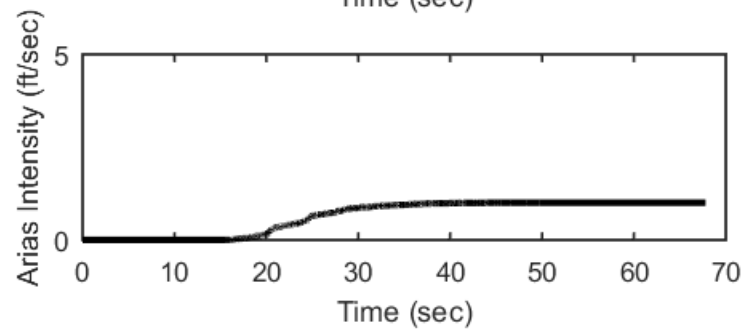
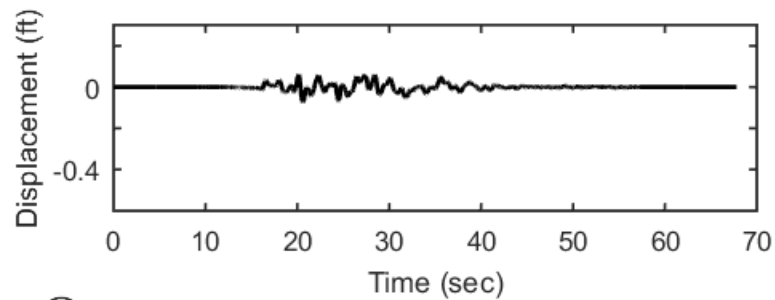
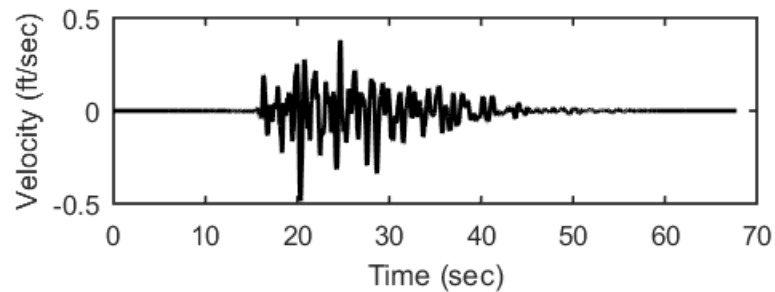
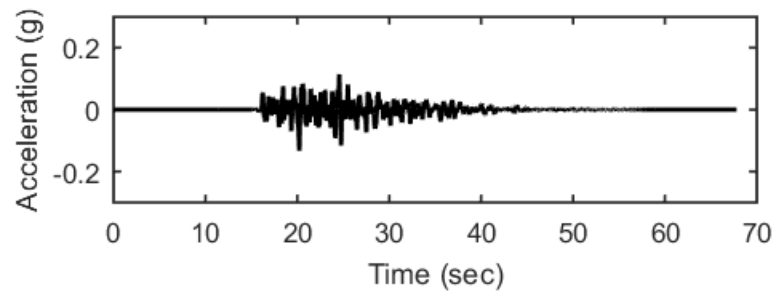


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4

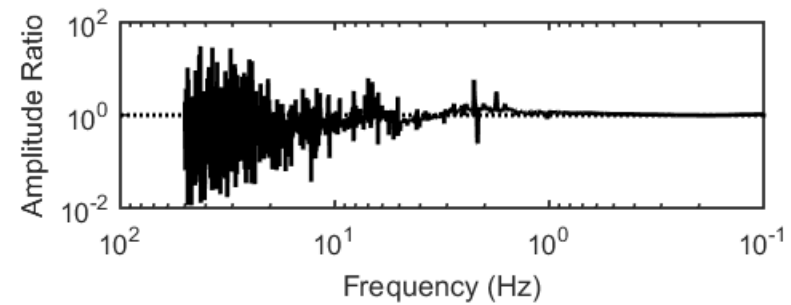
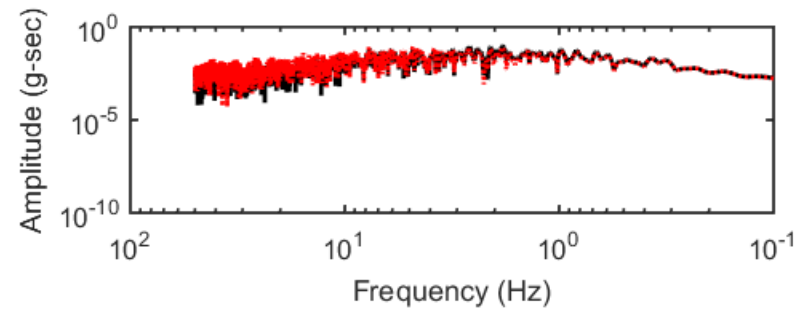
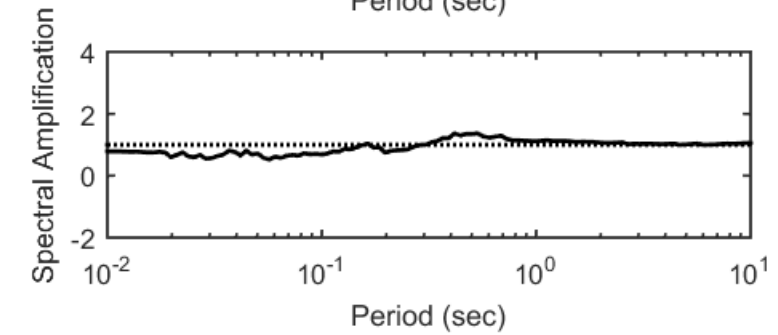
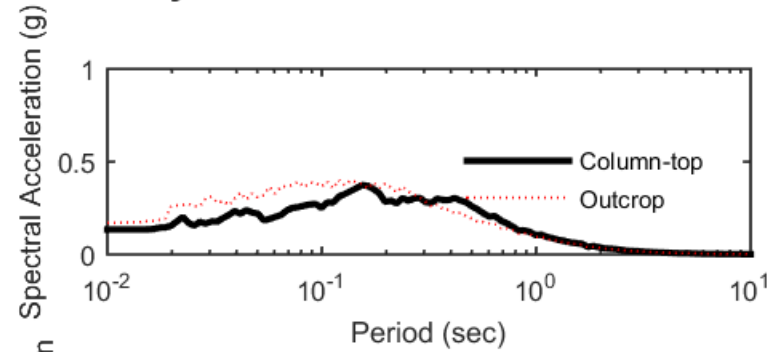
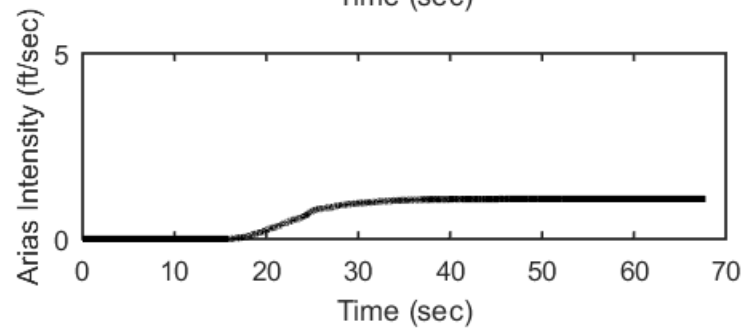
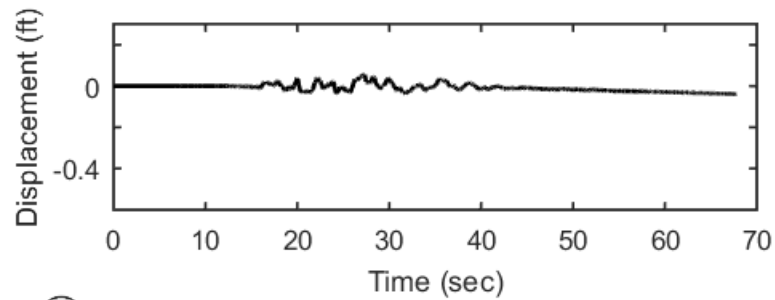
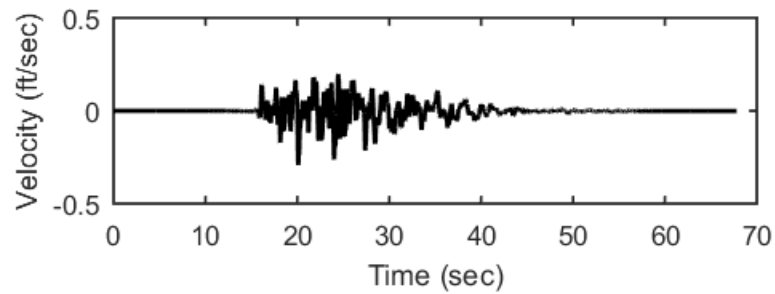
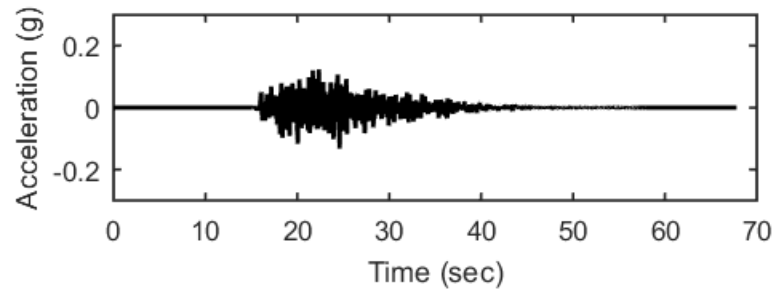




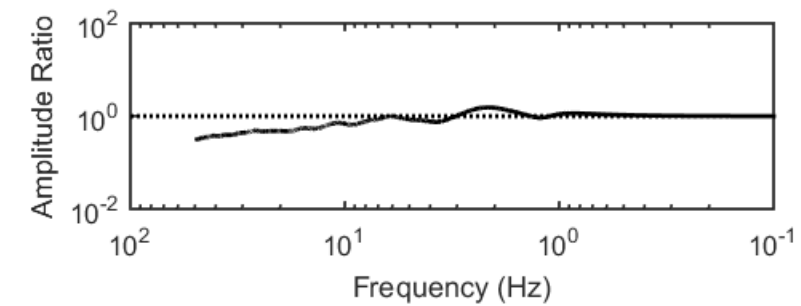
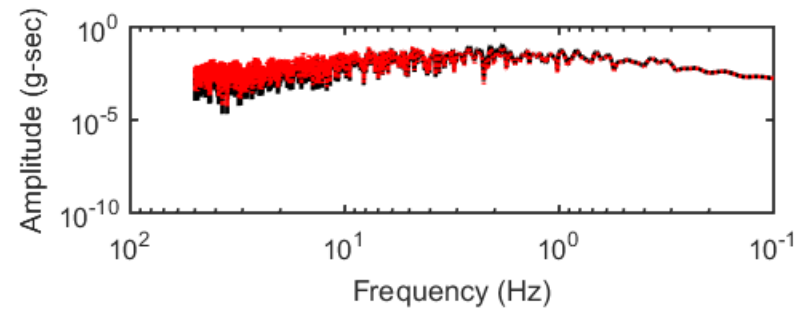
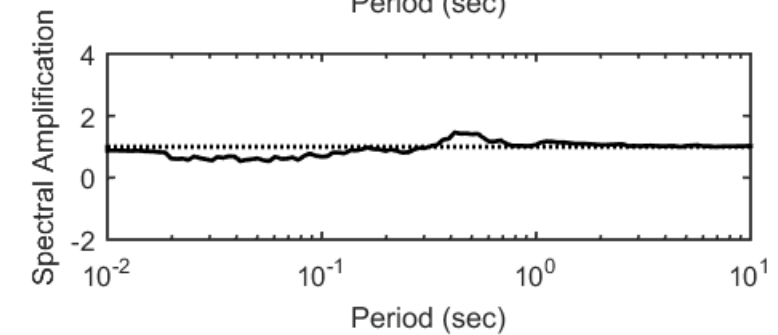
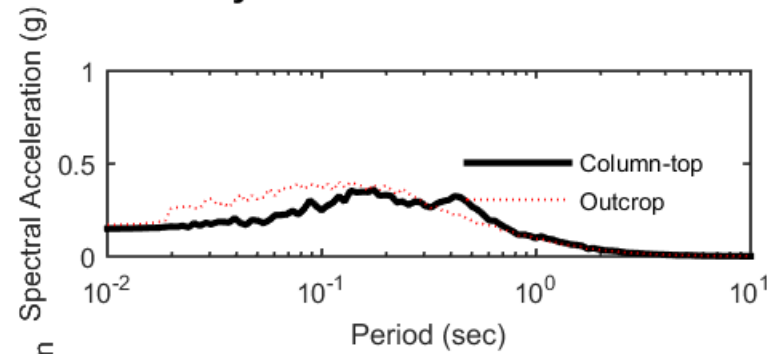
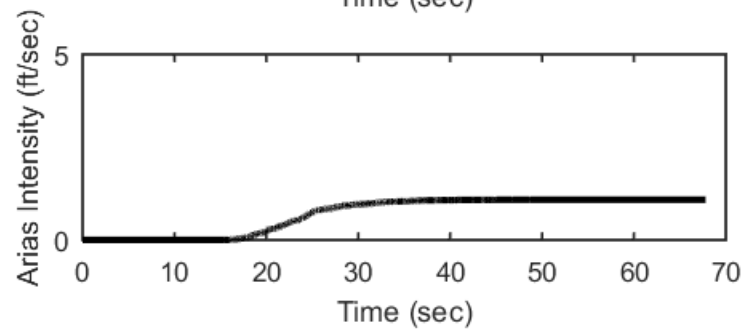
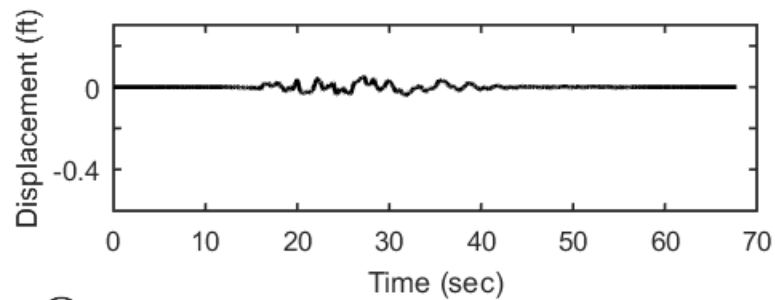
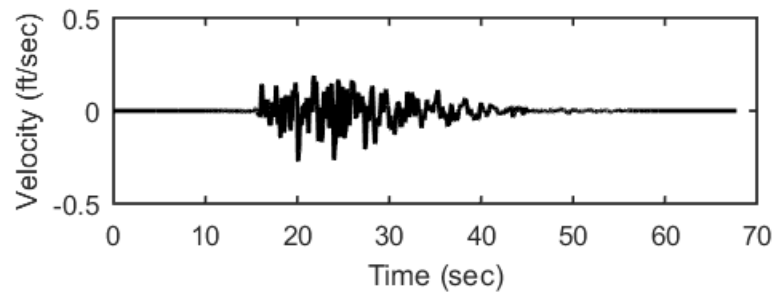
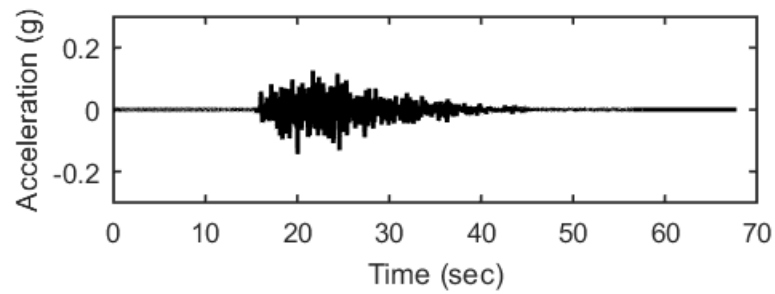
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



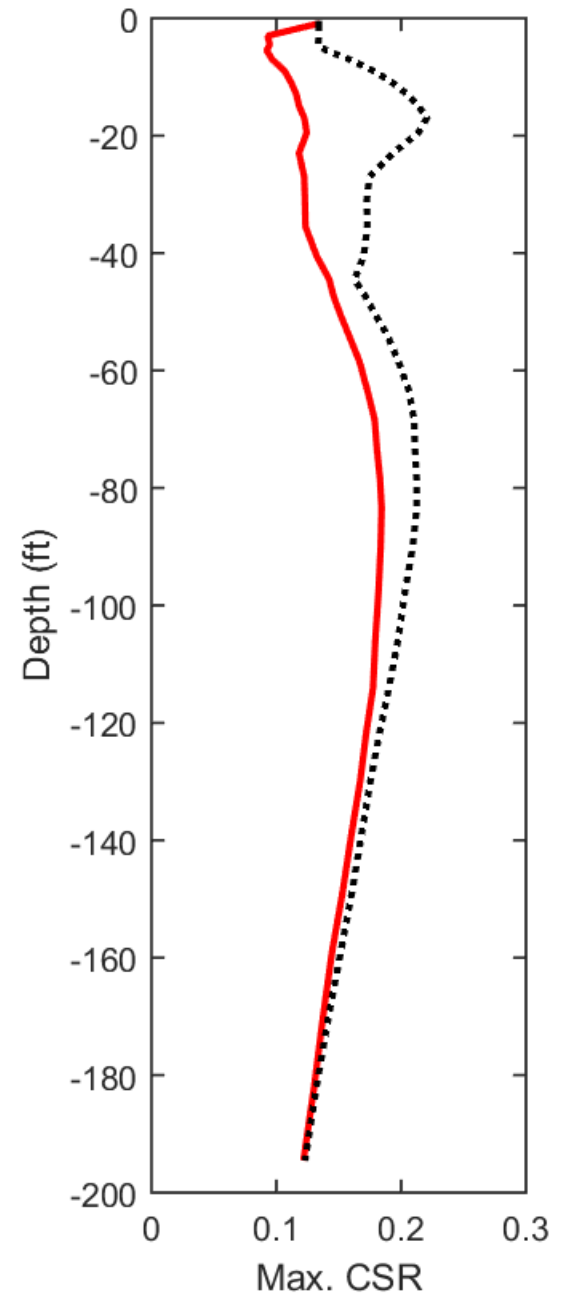
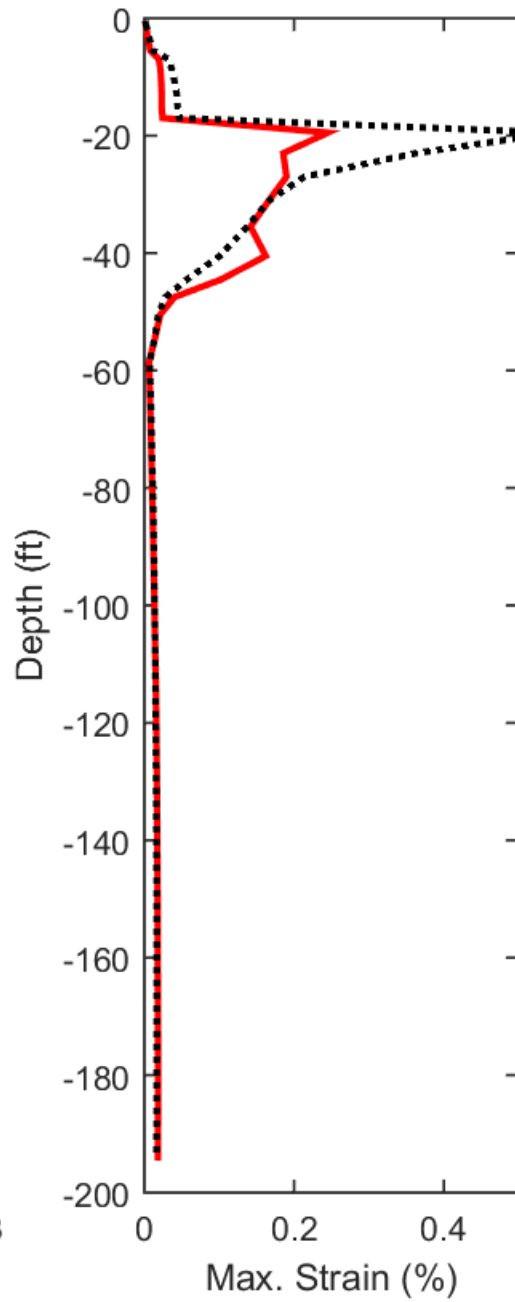
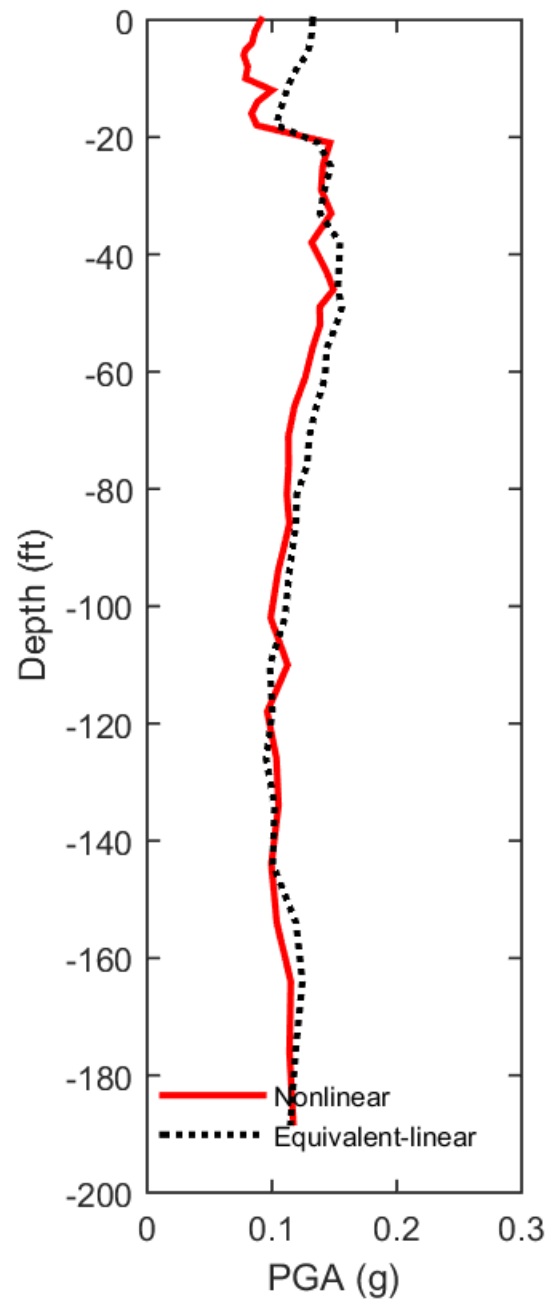
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



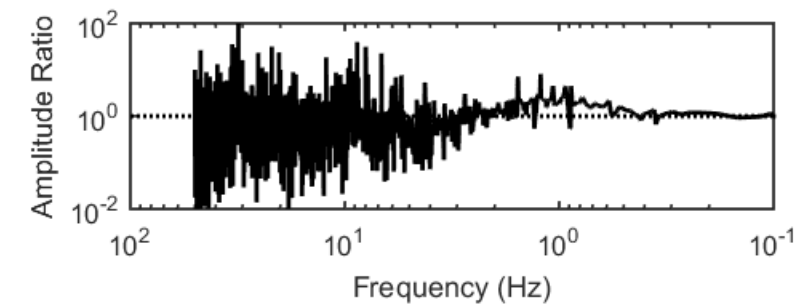
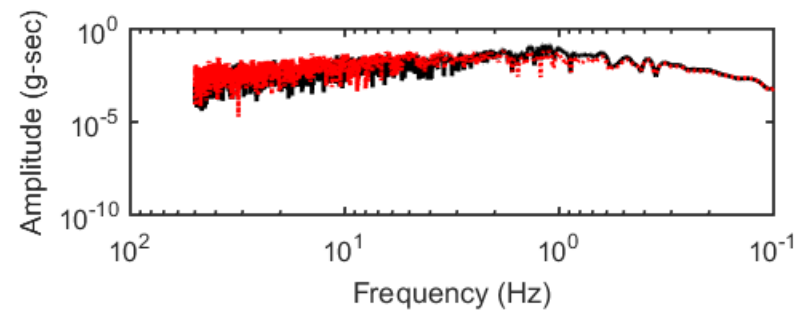
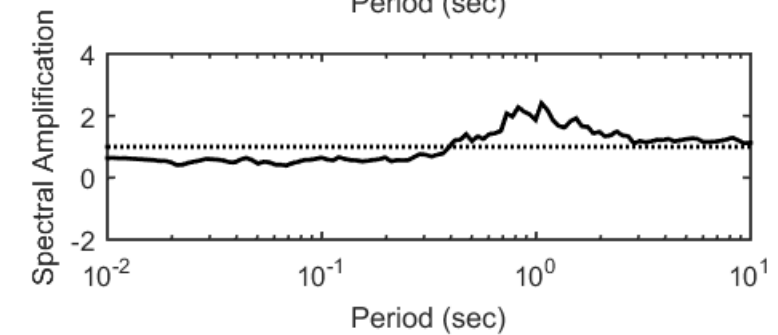
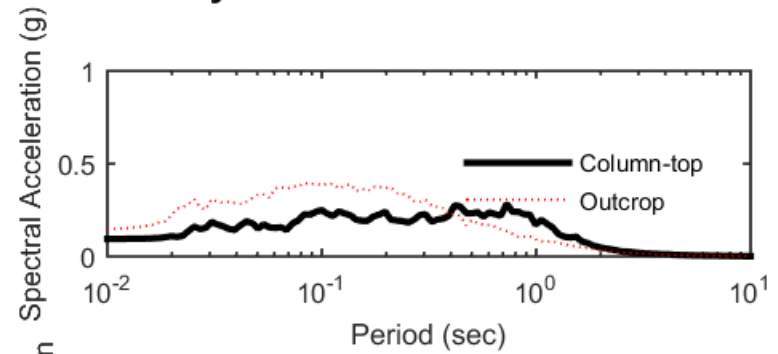
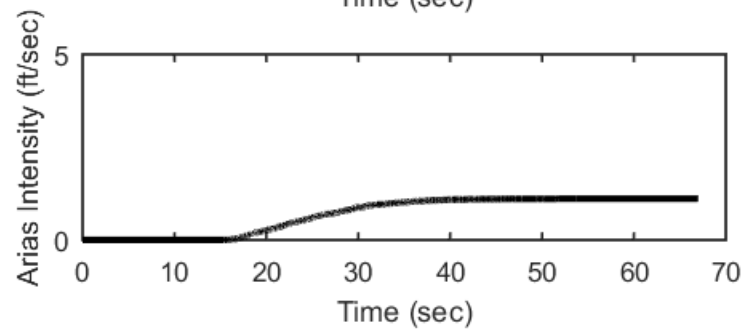
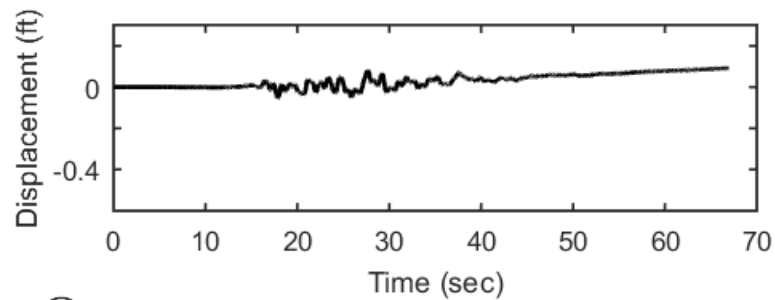
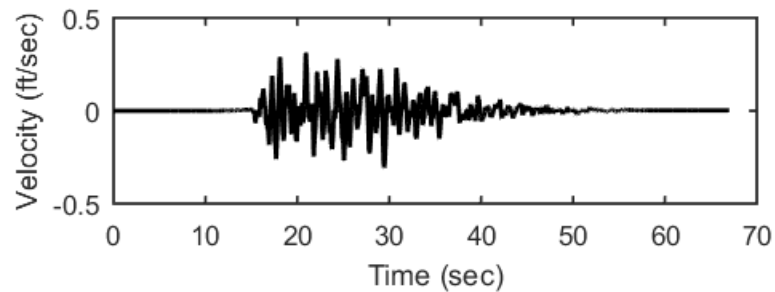
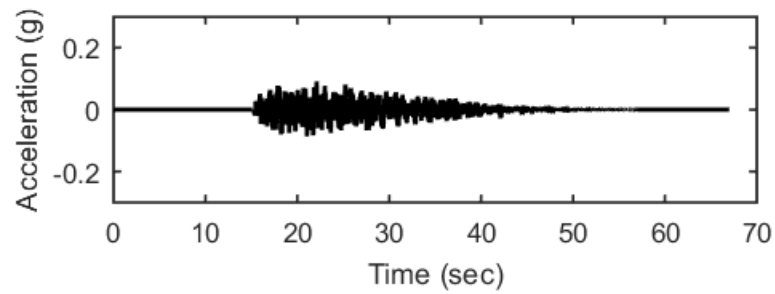
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



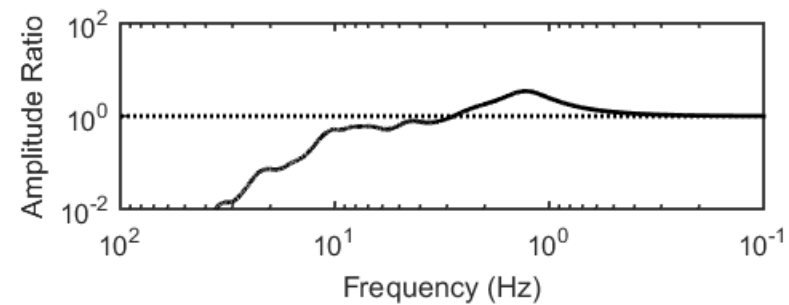
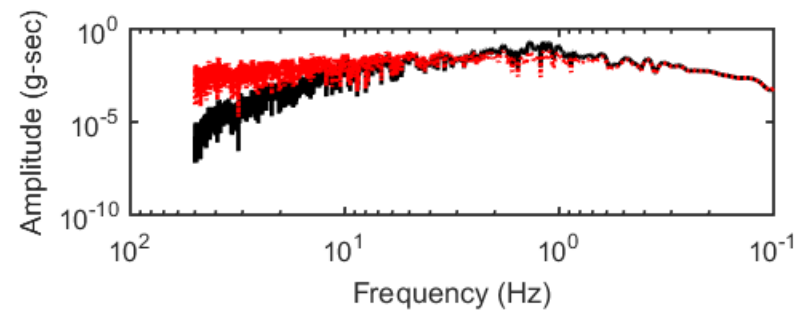
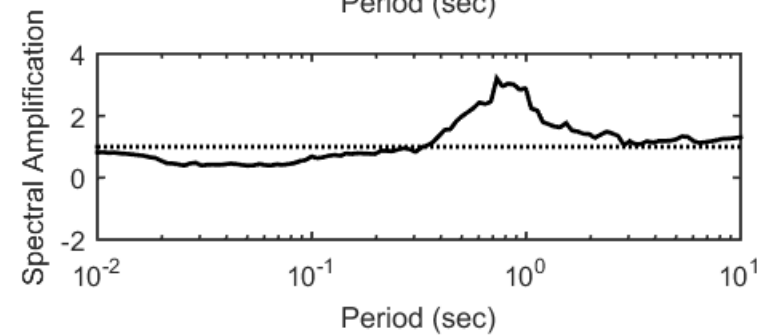
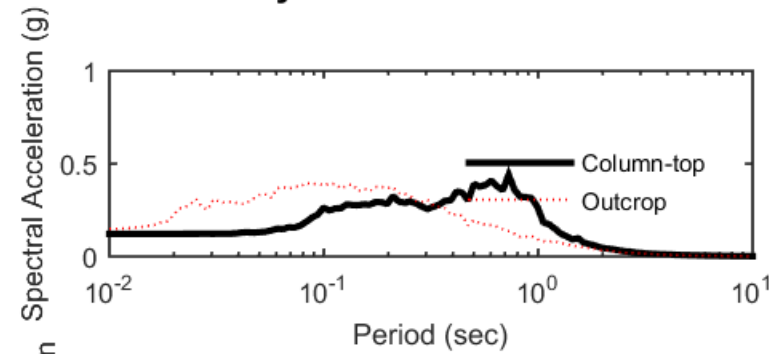
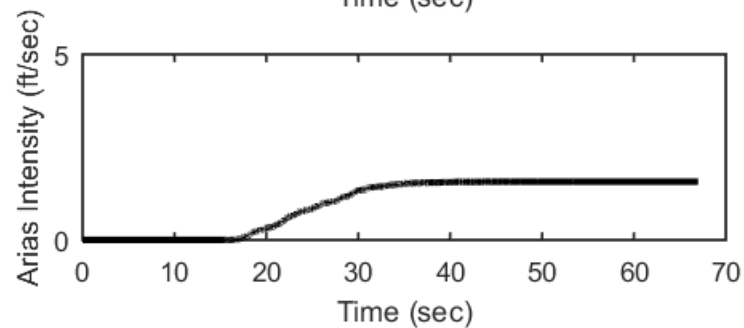
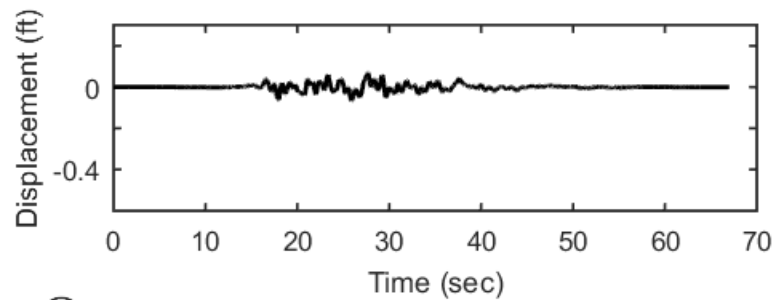
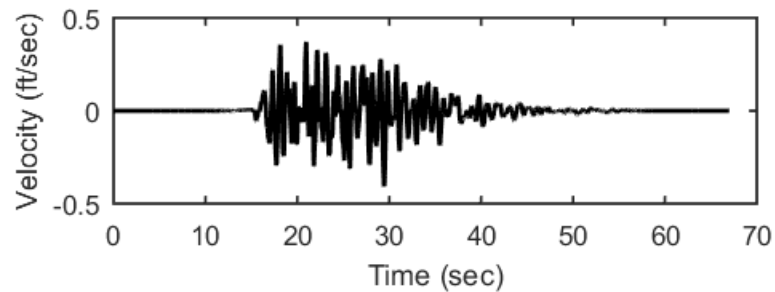
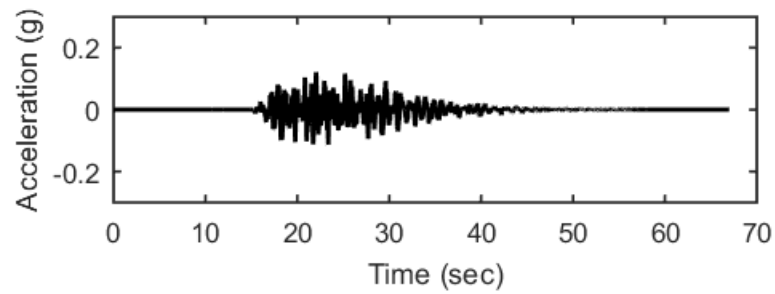
### Profile outputs for Motion: FEE4



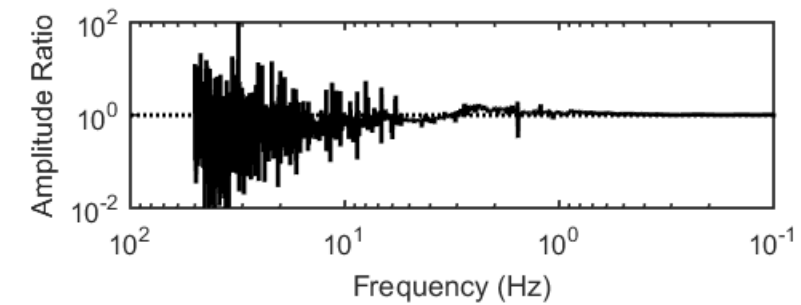
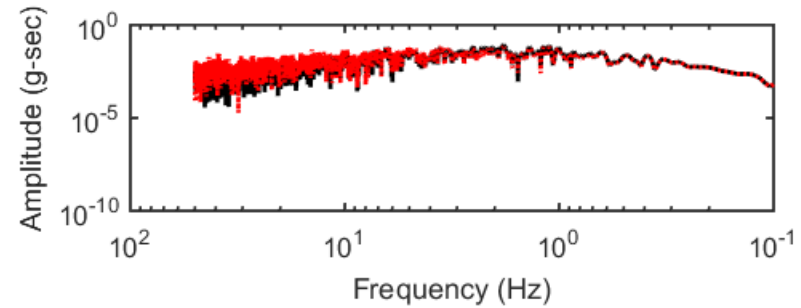
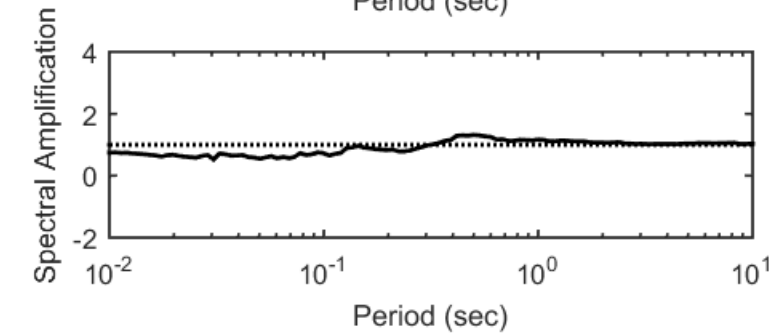
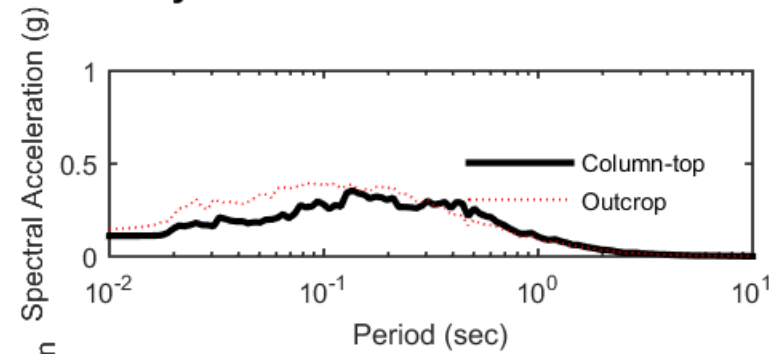
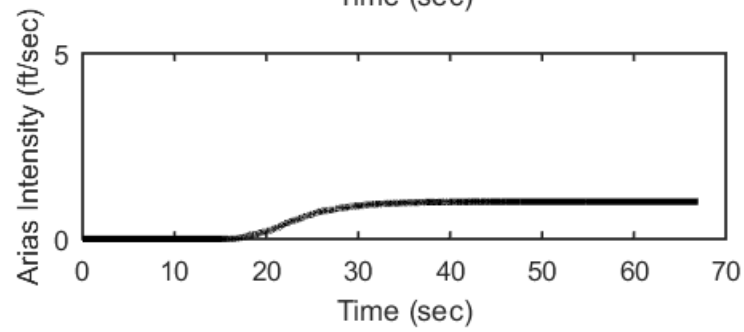
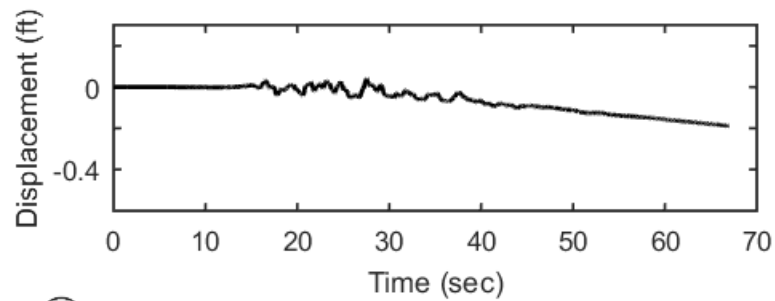
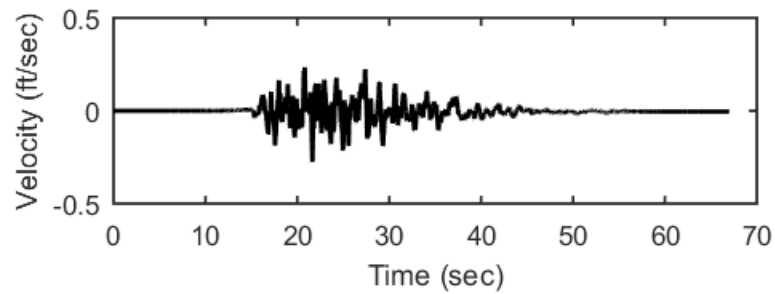
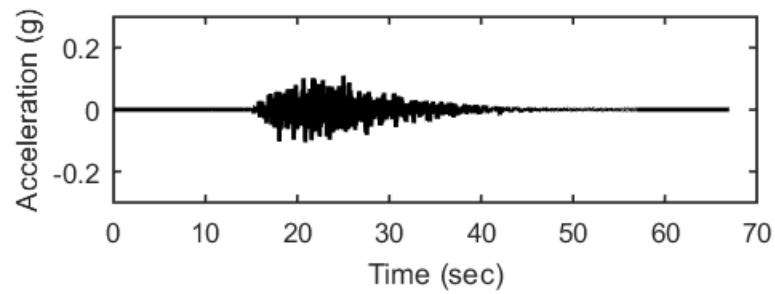
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



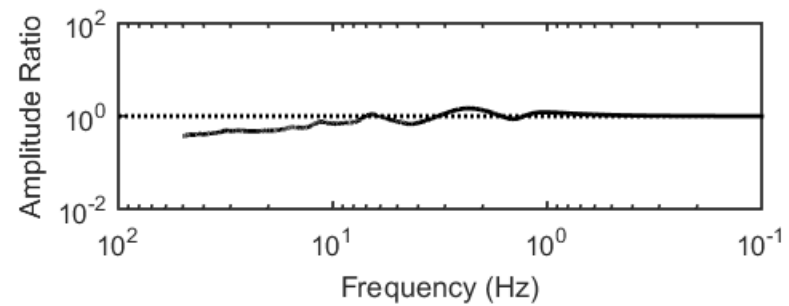
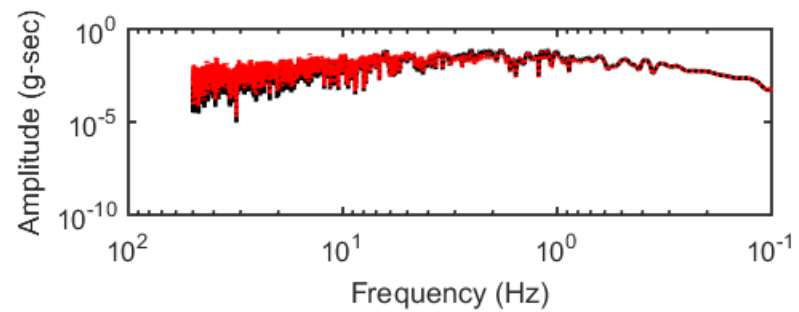
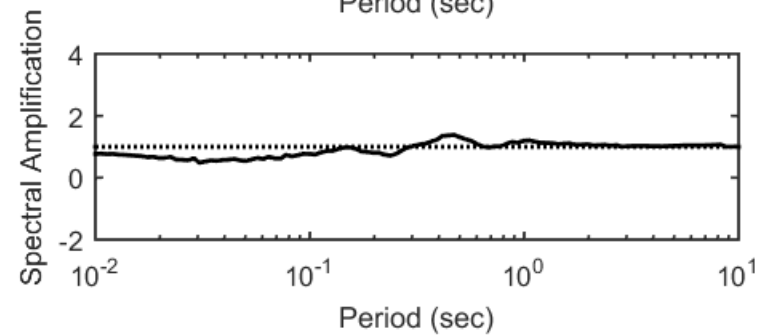
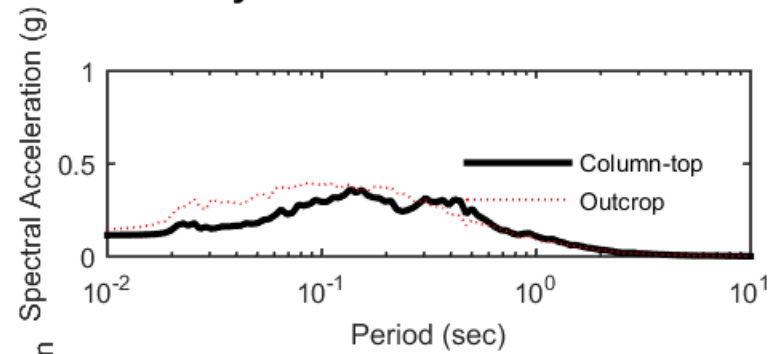
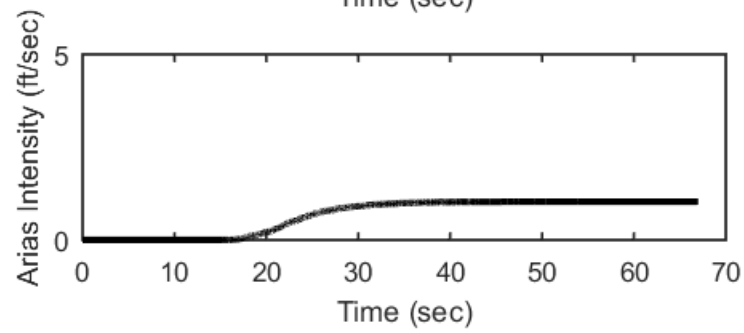
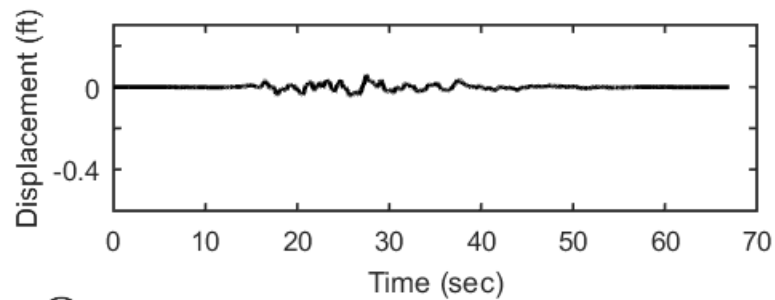
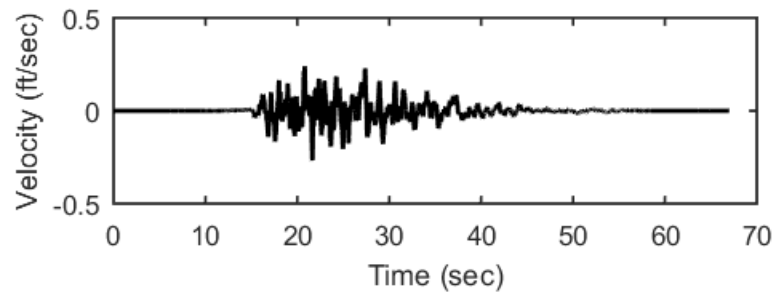
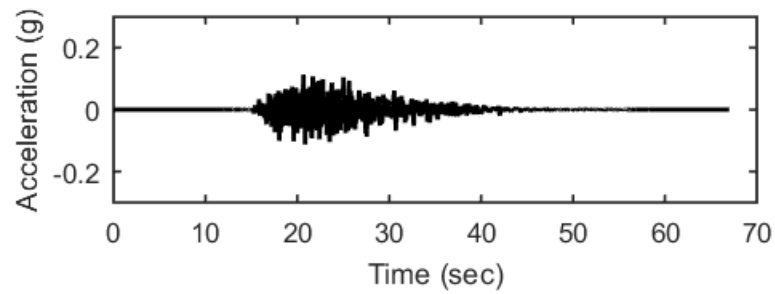
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5

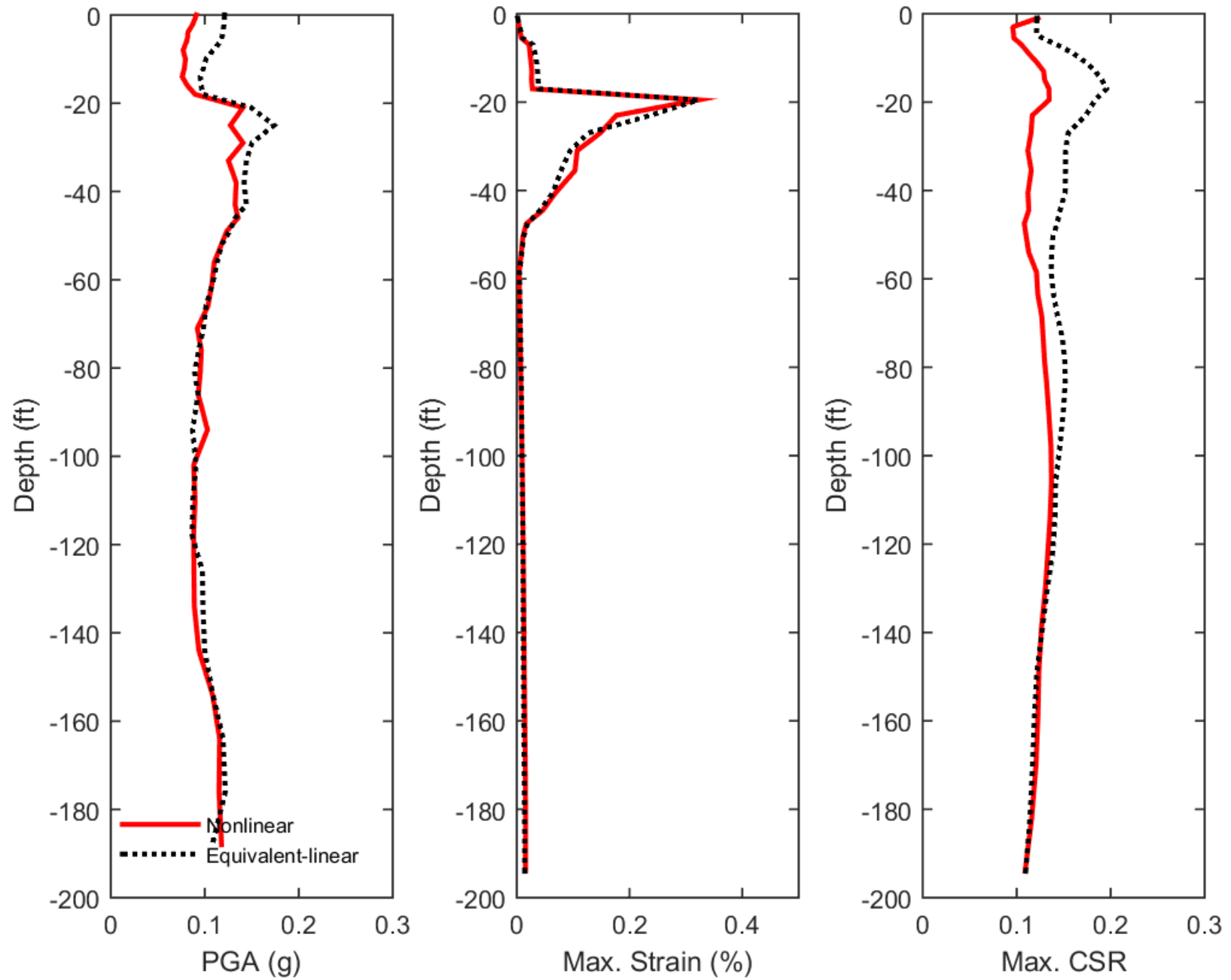


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5

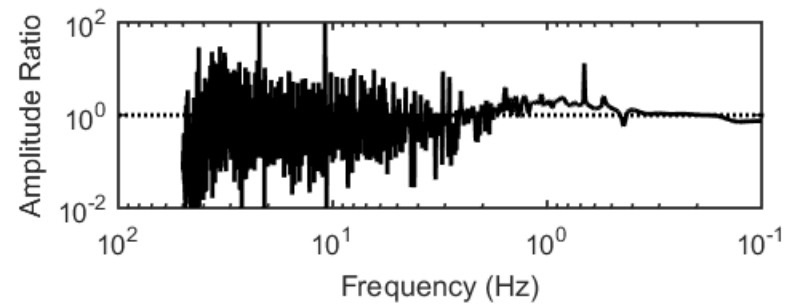
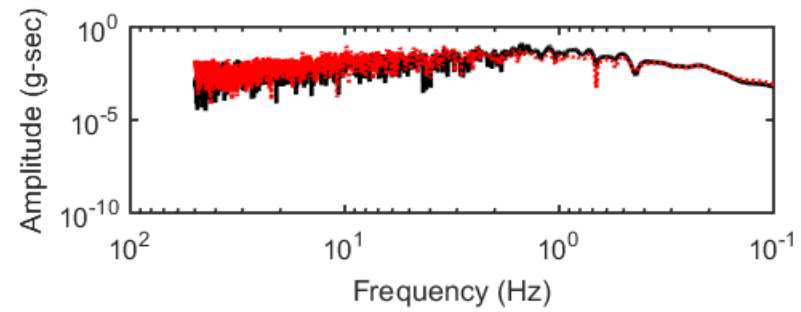
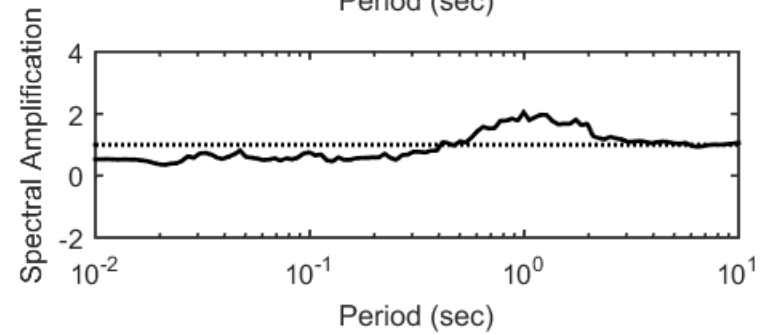
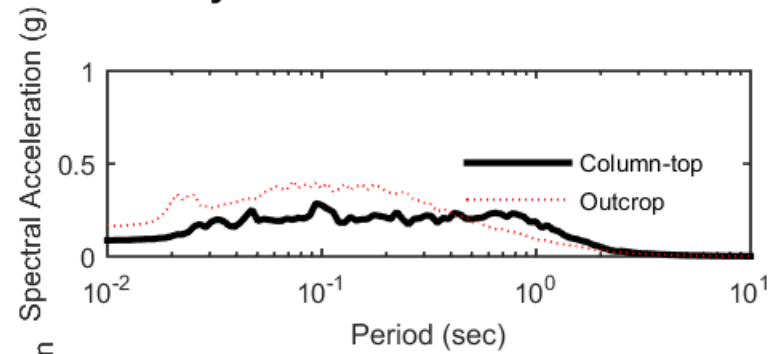
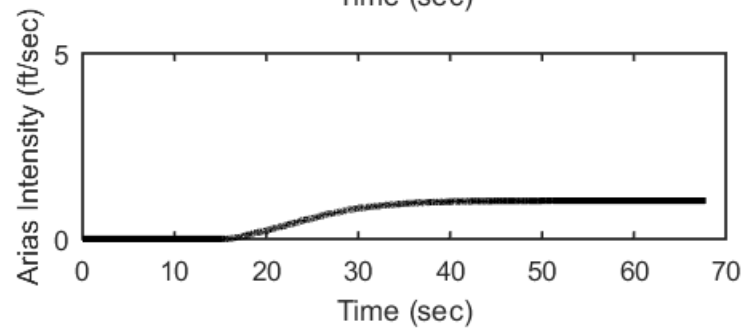
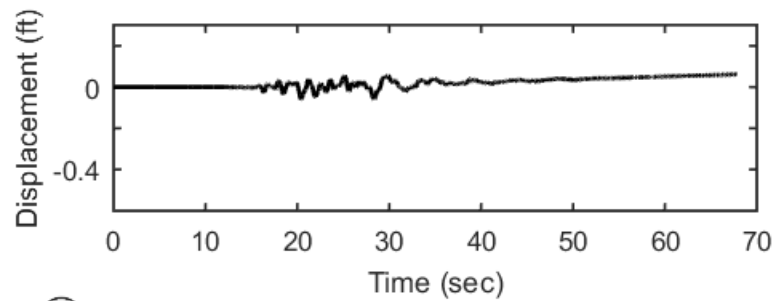
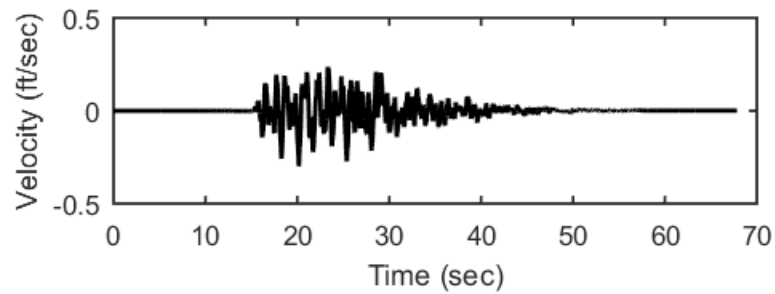
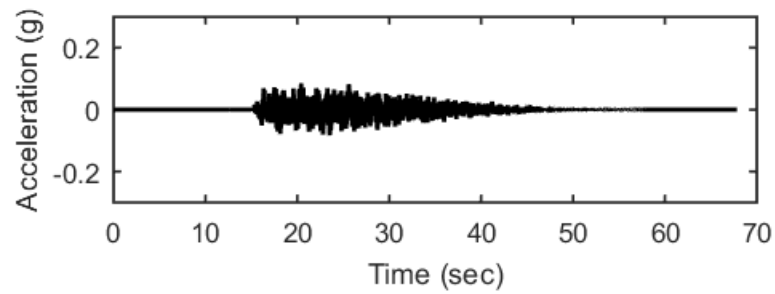




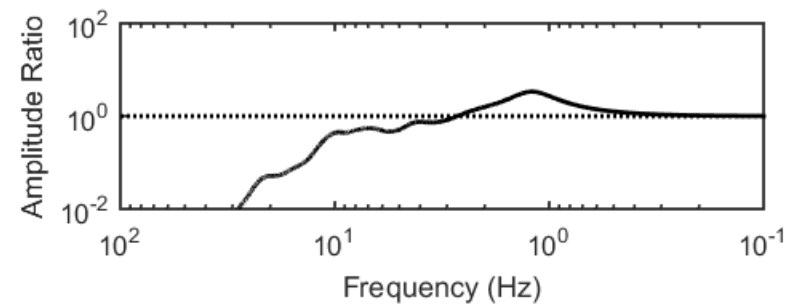
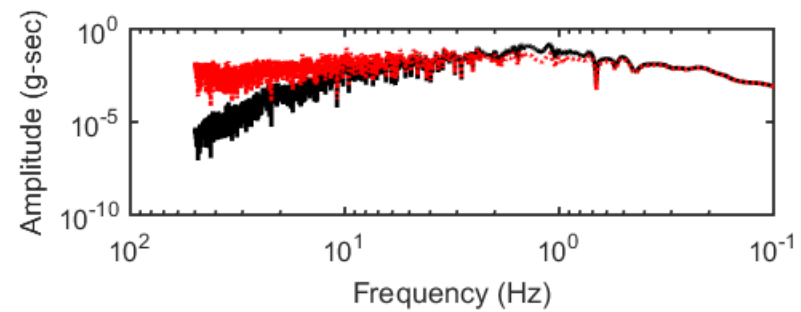
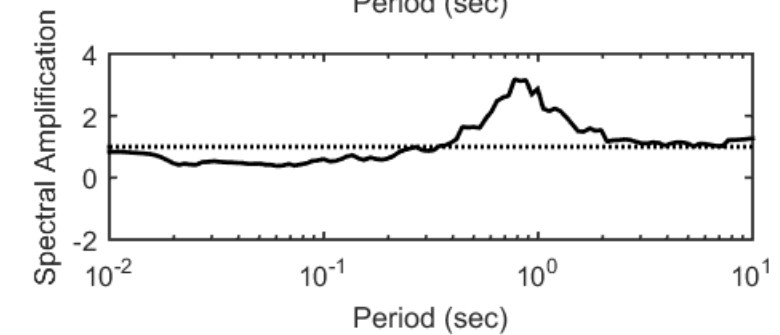
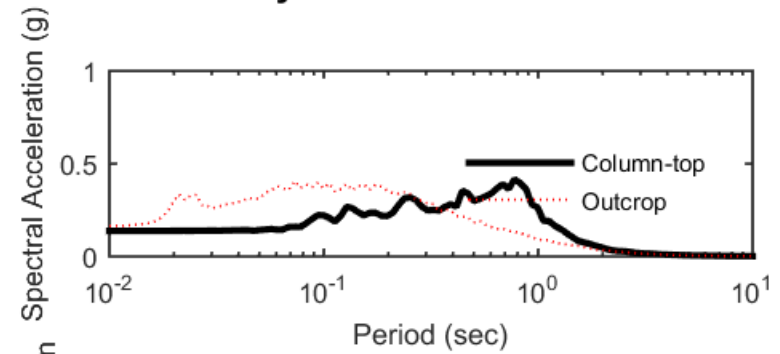
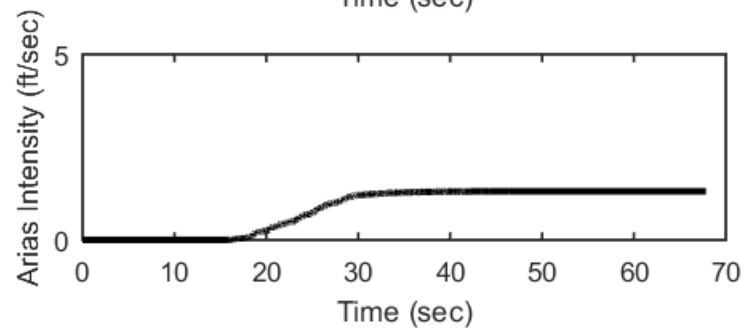
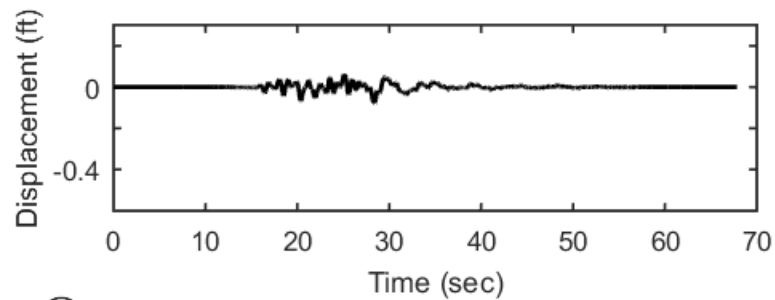
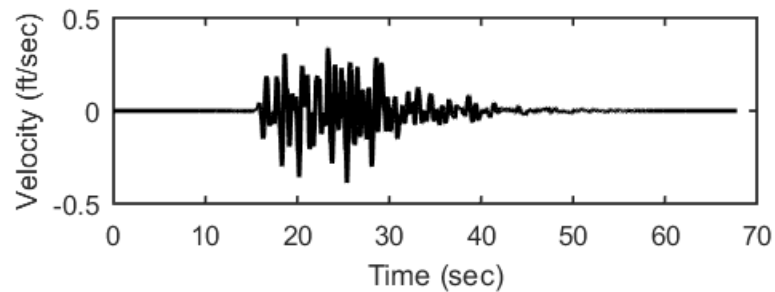
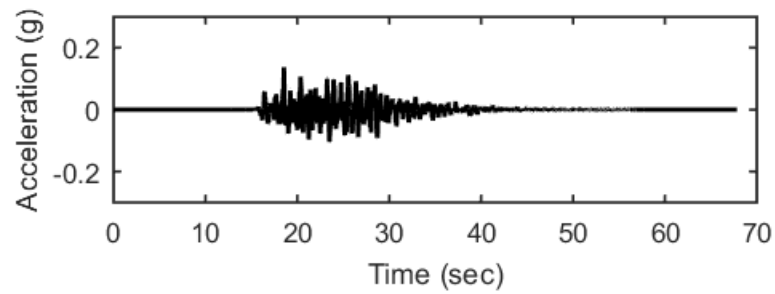
### Profile outputs for Motion: FEE5



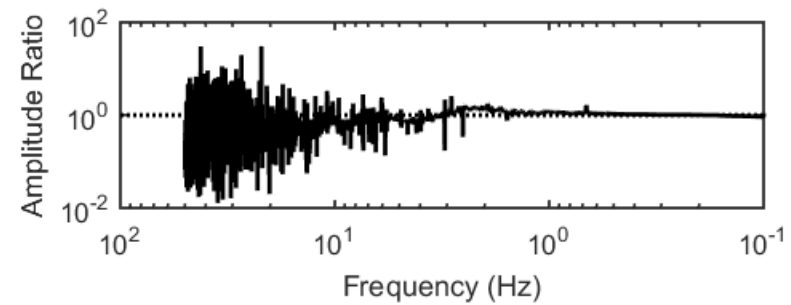
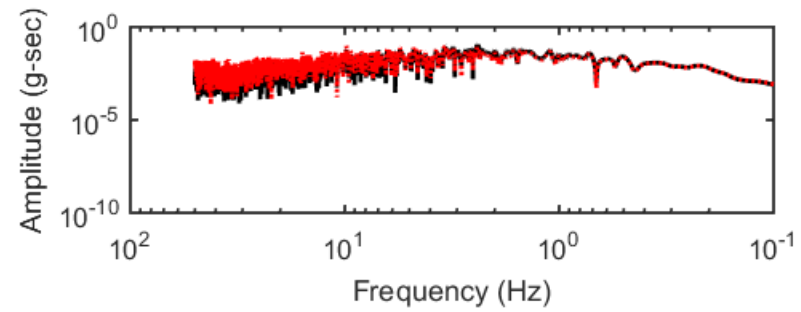
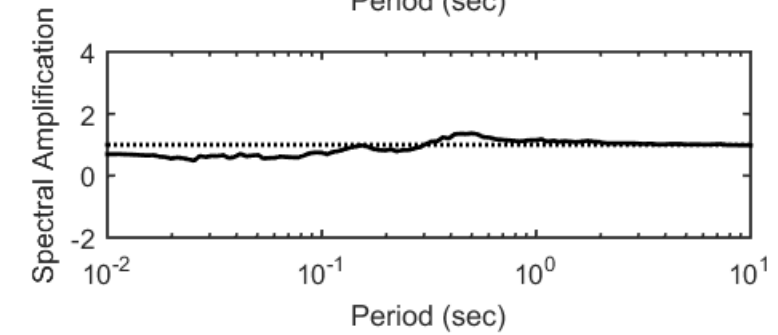
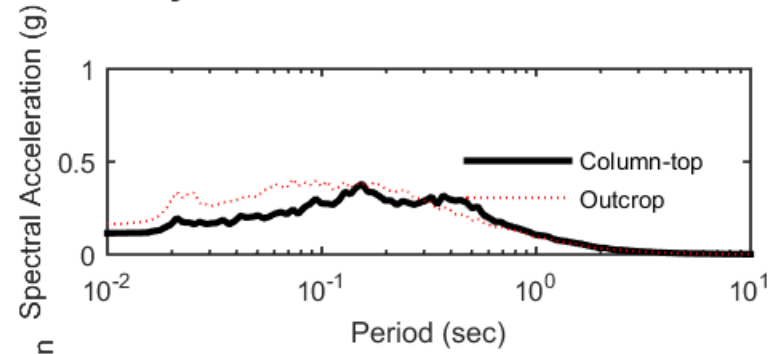
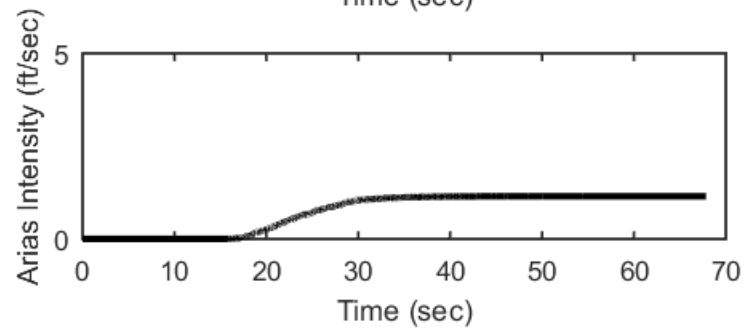
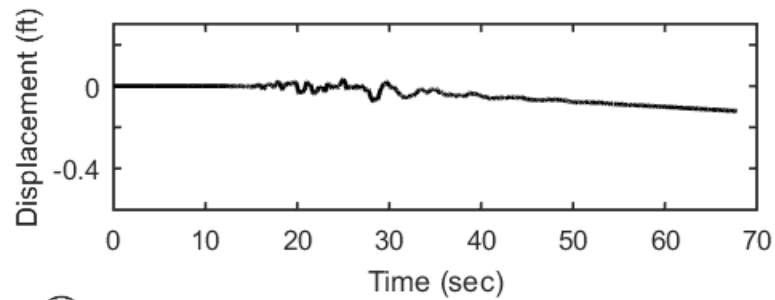
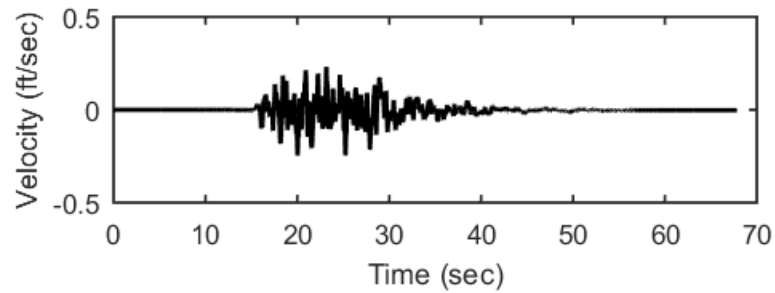
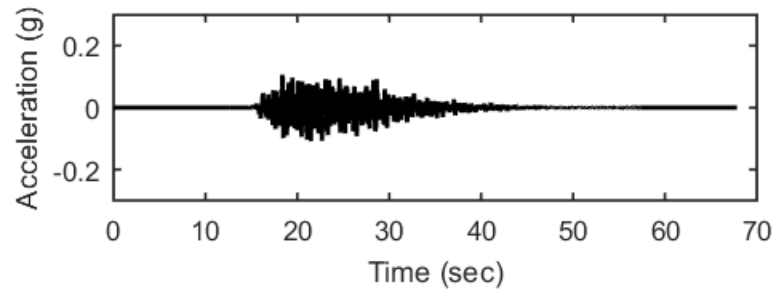
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



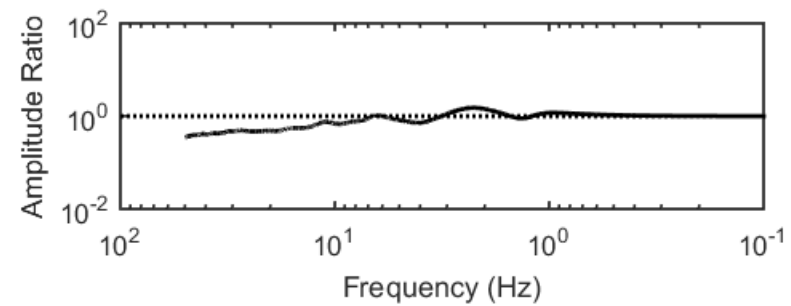
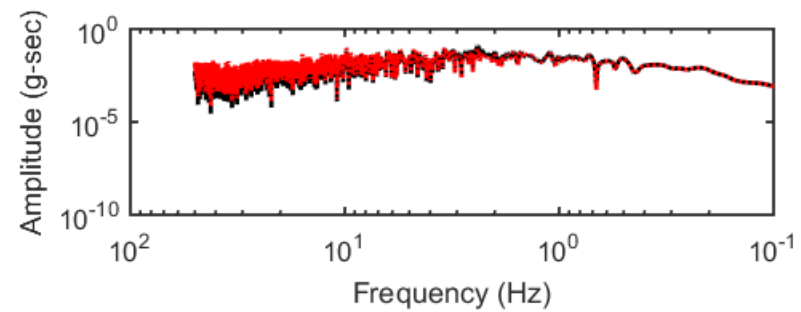
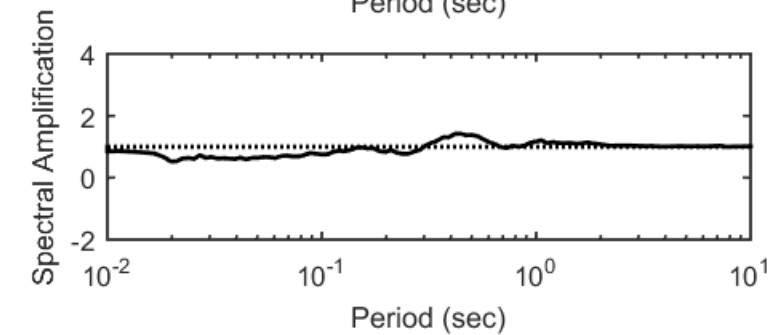
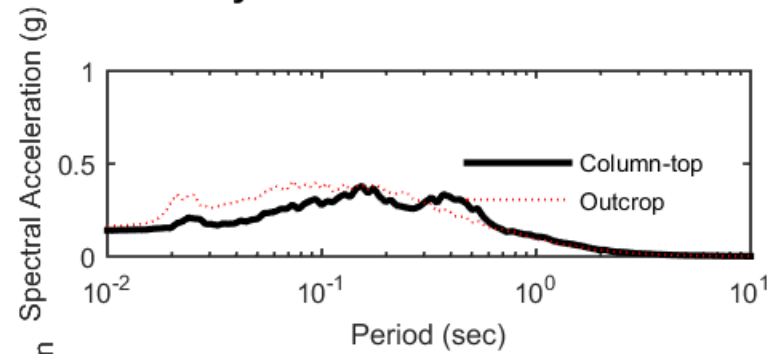
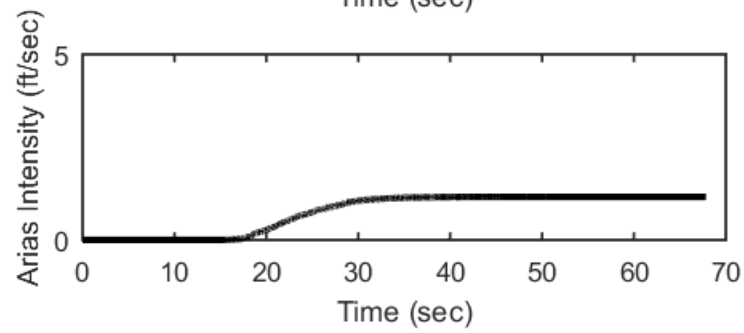
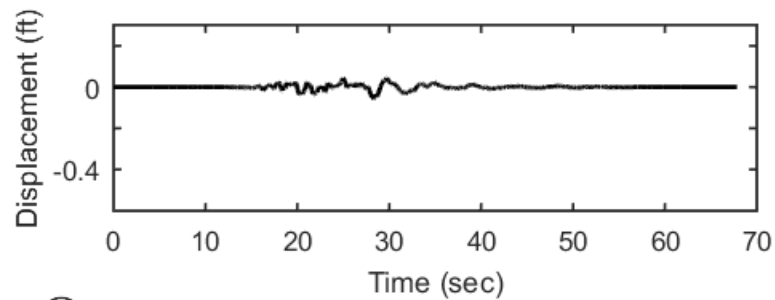
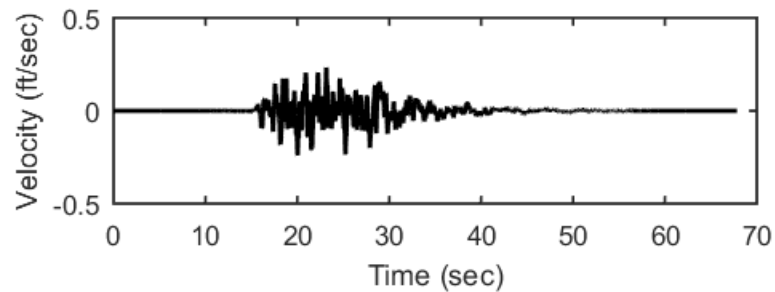
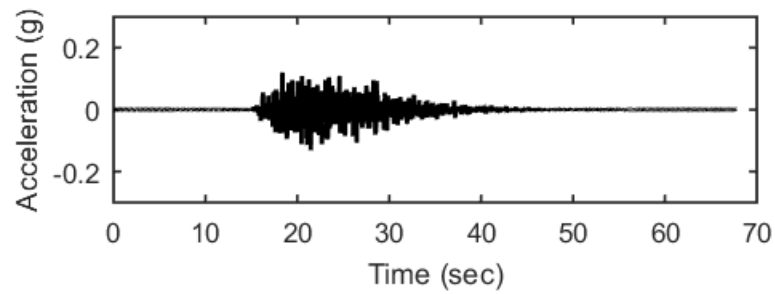
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



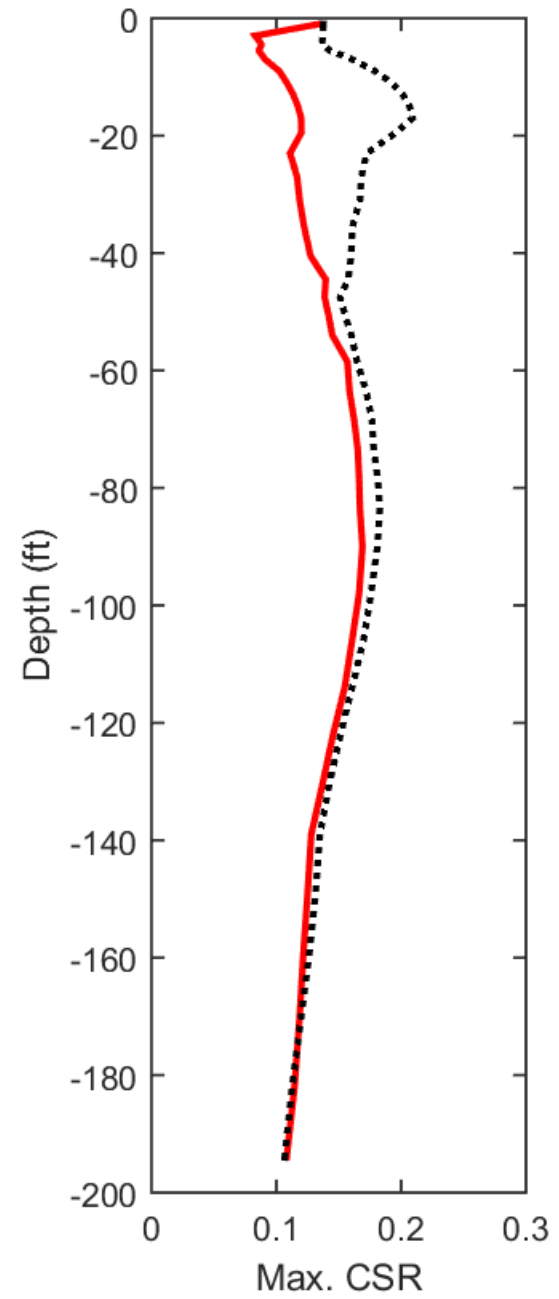
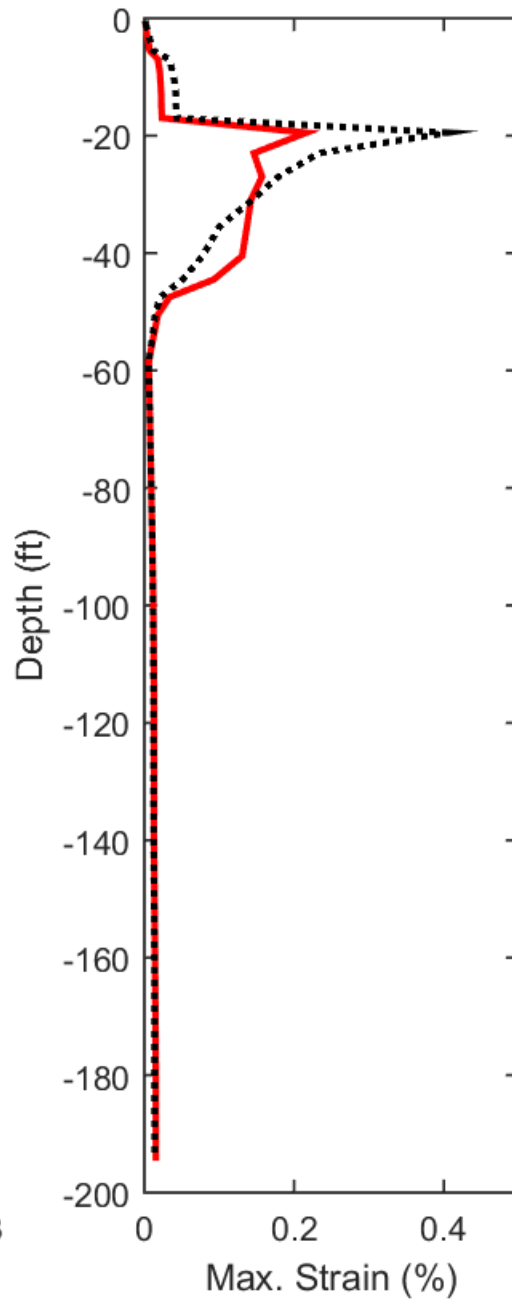
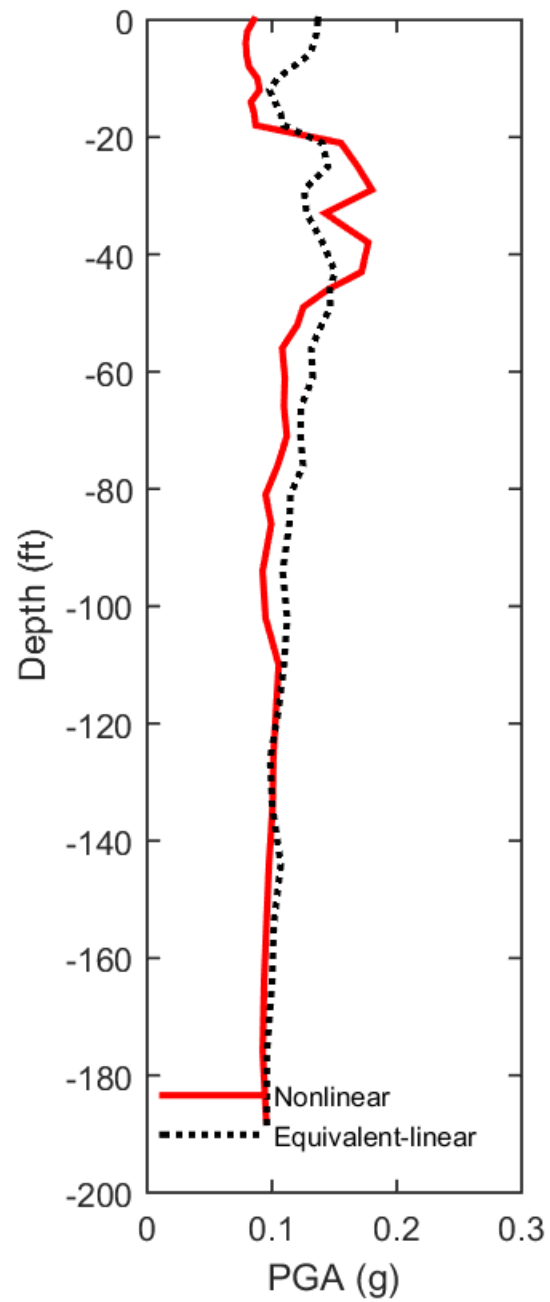
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



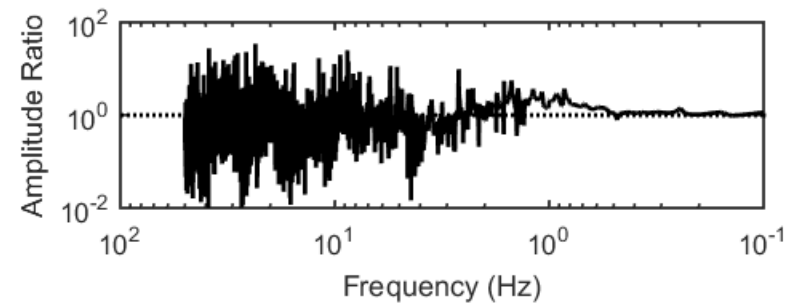
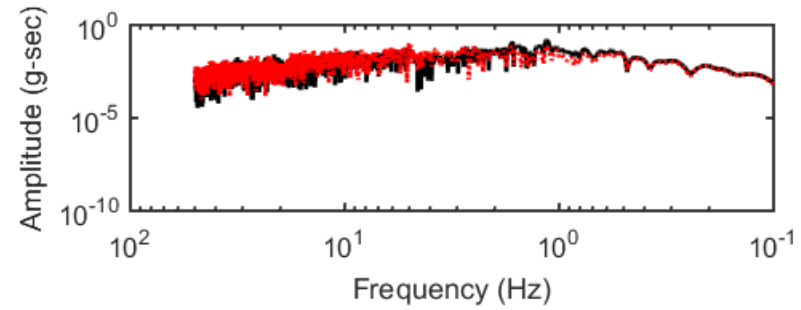
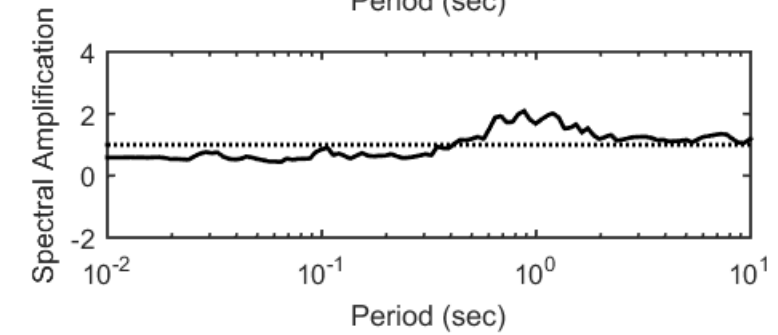
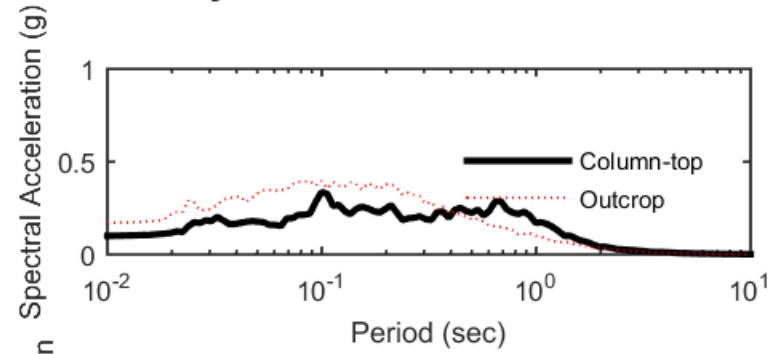
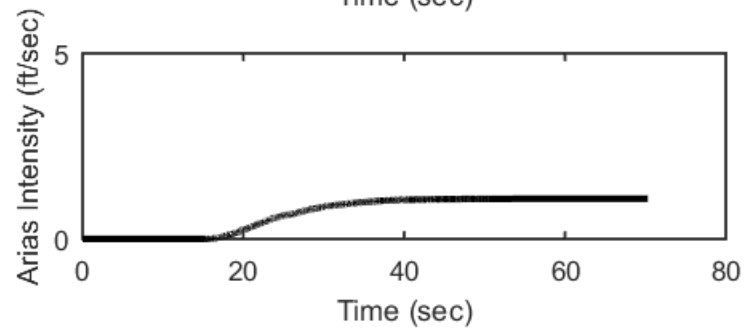
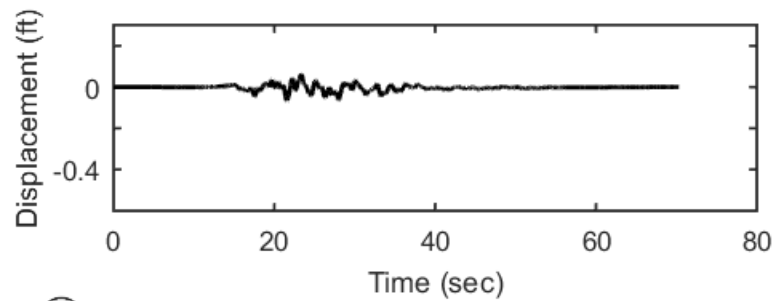
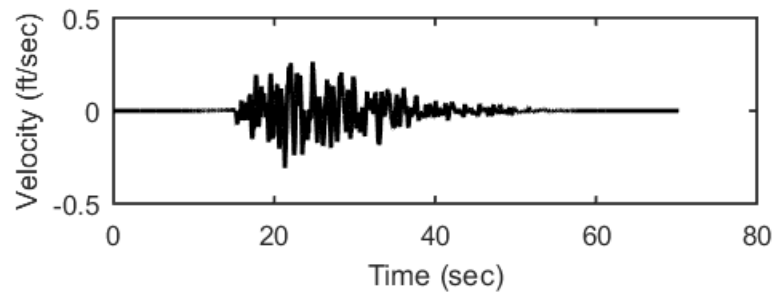
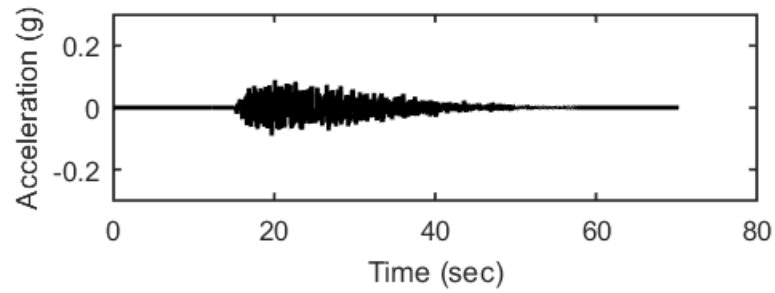
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



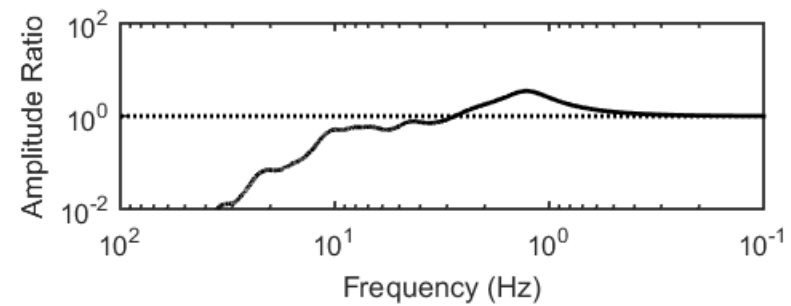
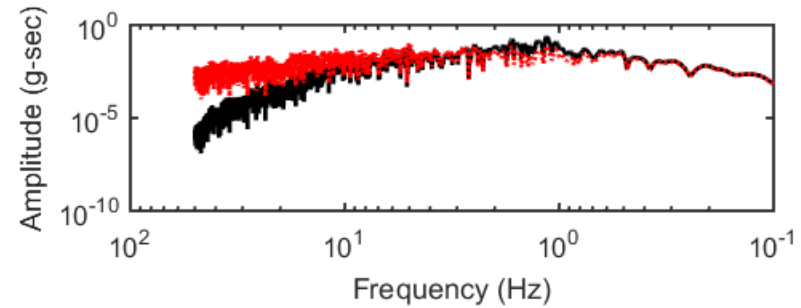
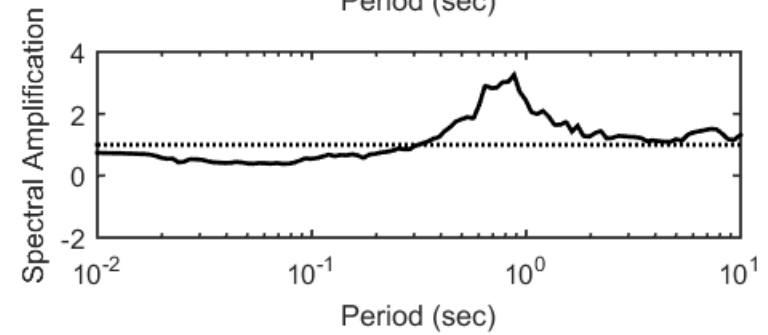
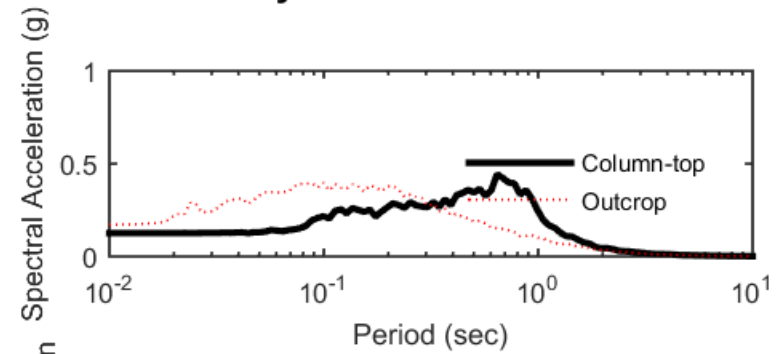
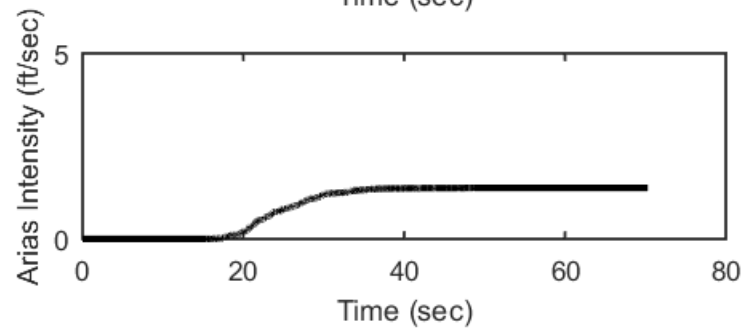
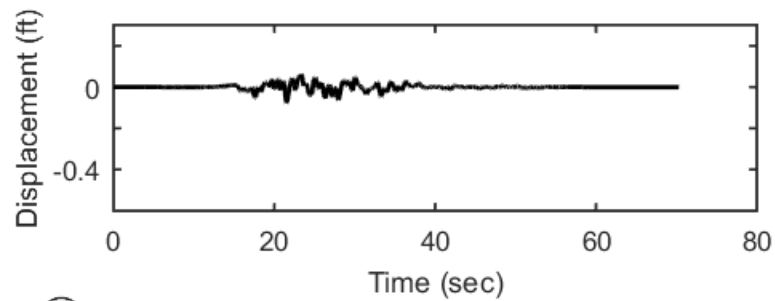
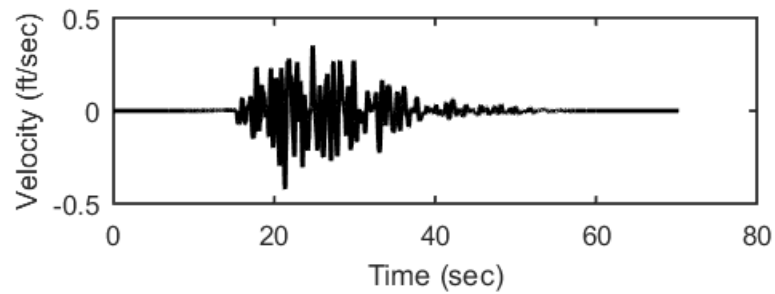
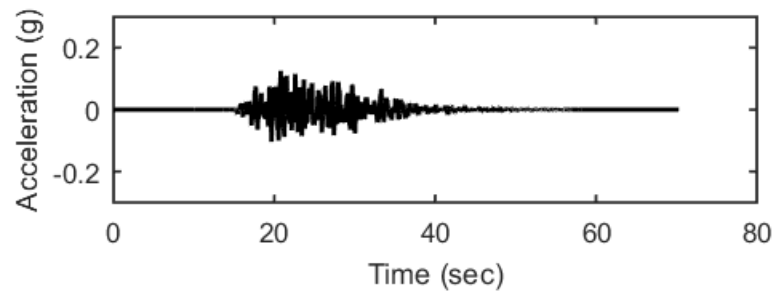
### Profile outputs for Motion: FEE6



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7

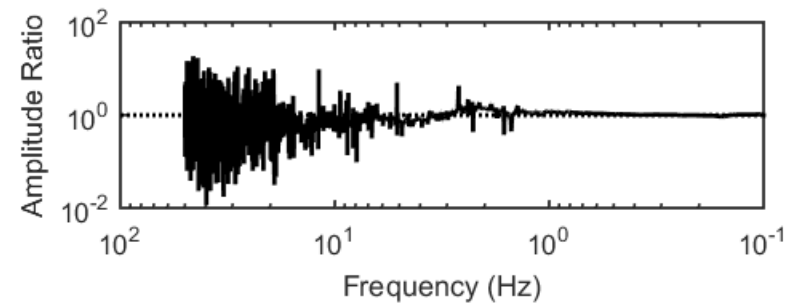
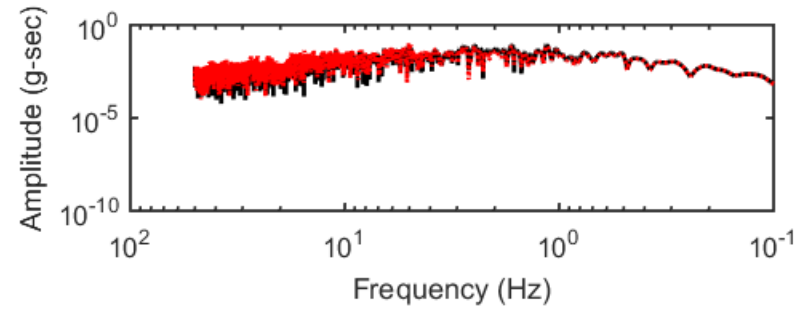
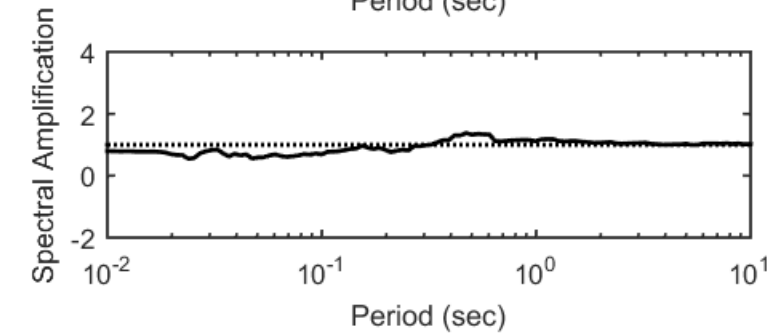
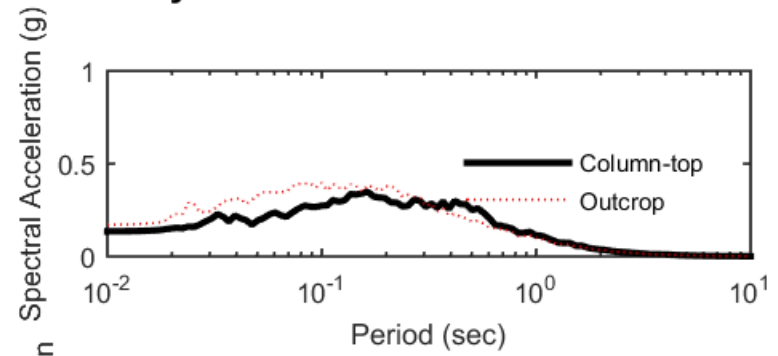
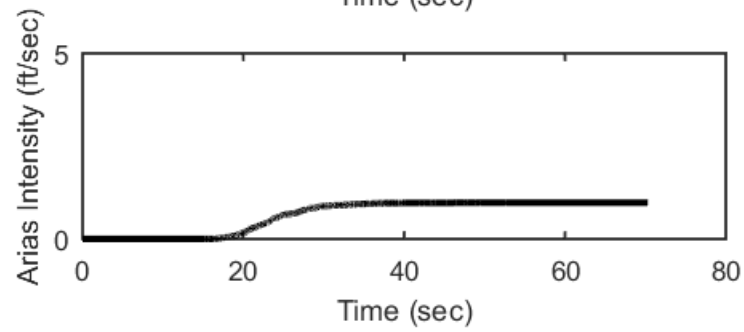
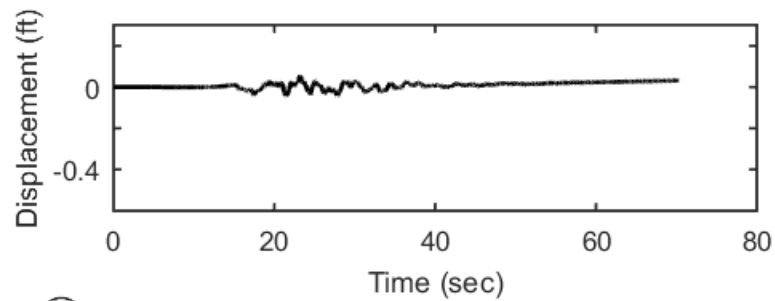
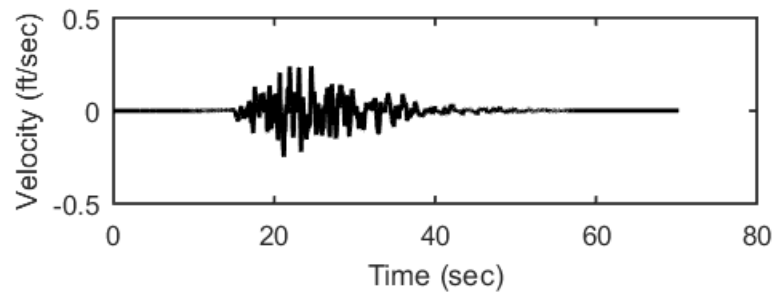
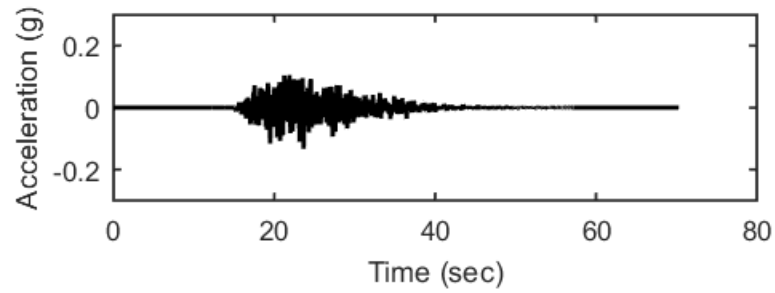


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7

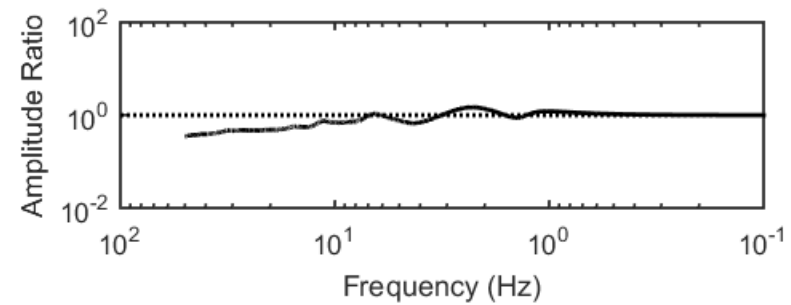
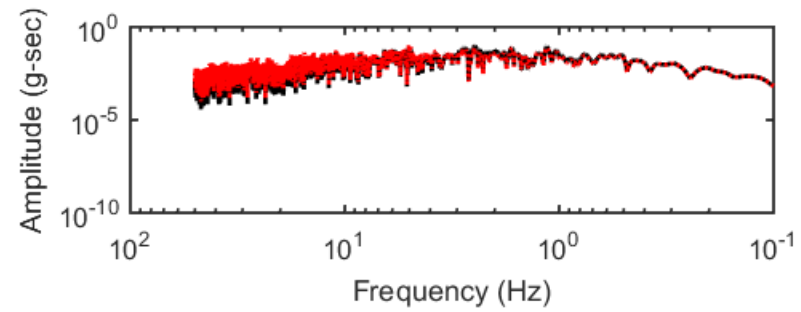
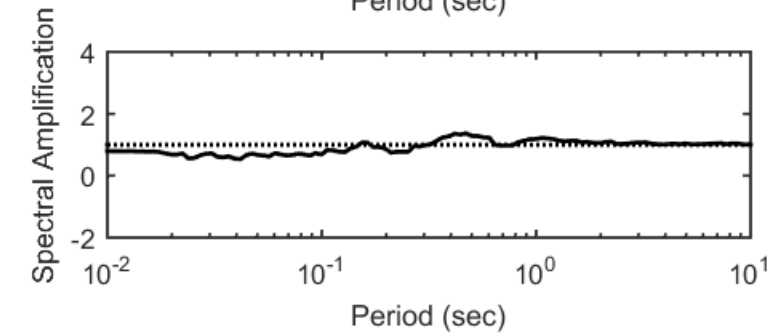
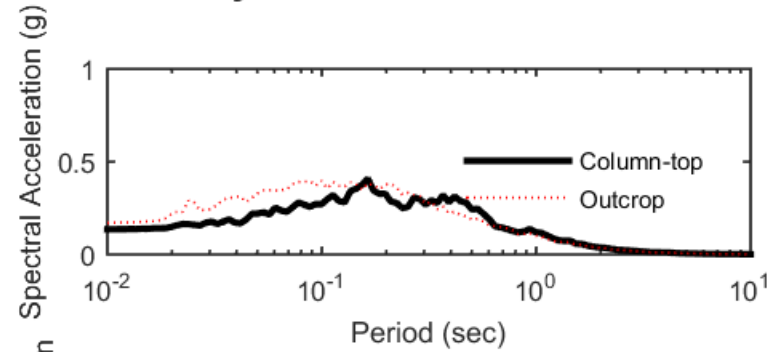
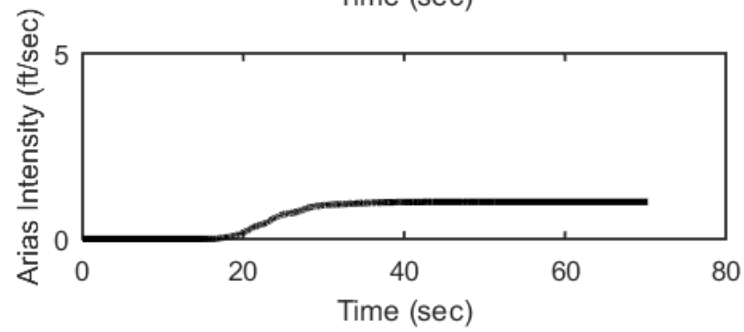
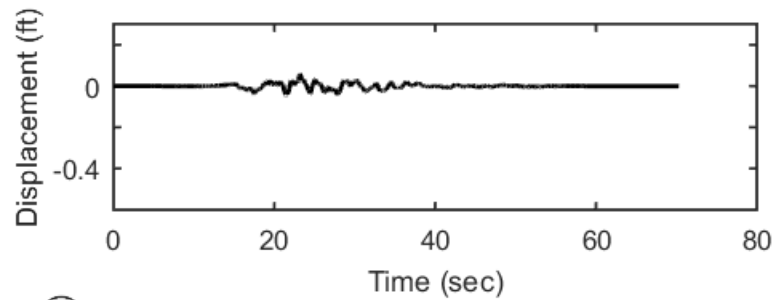
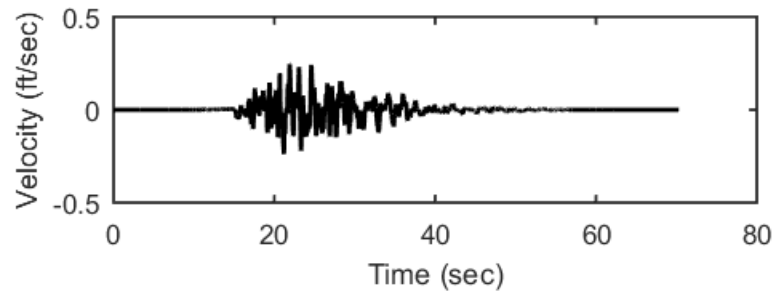
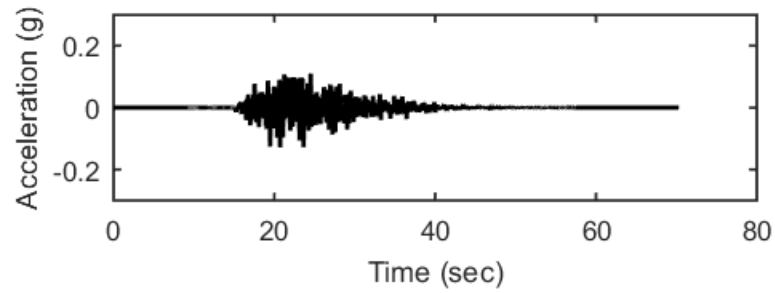




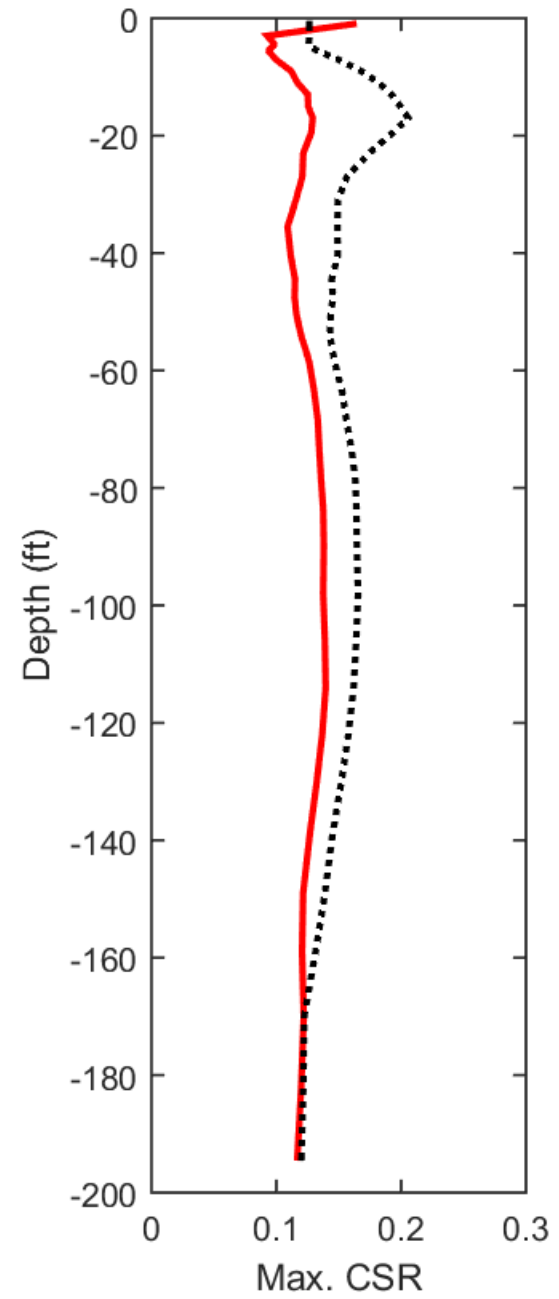
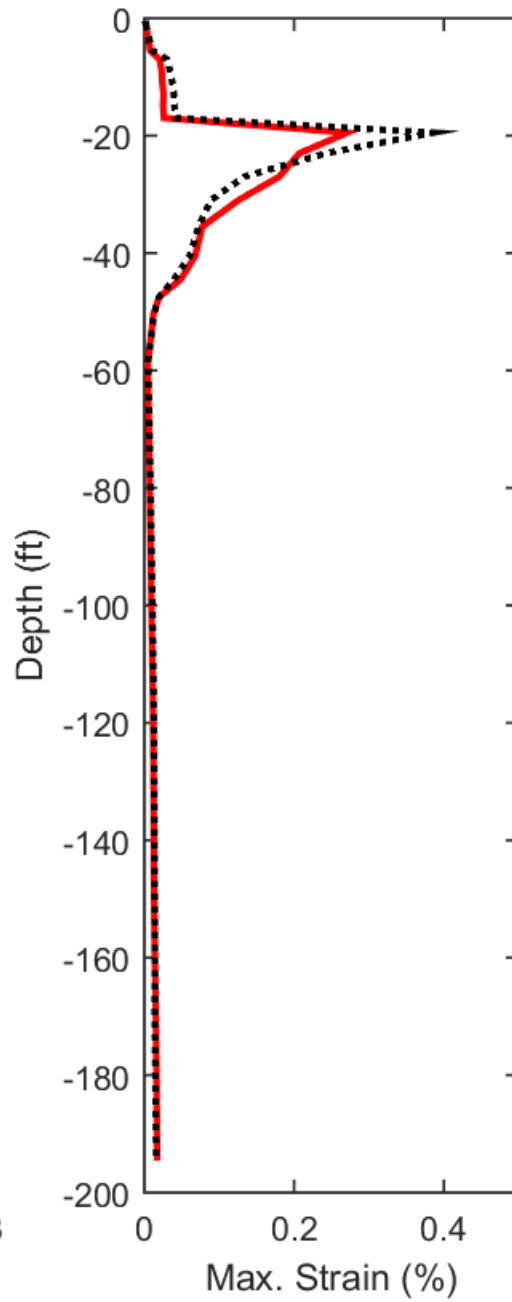
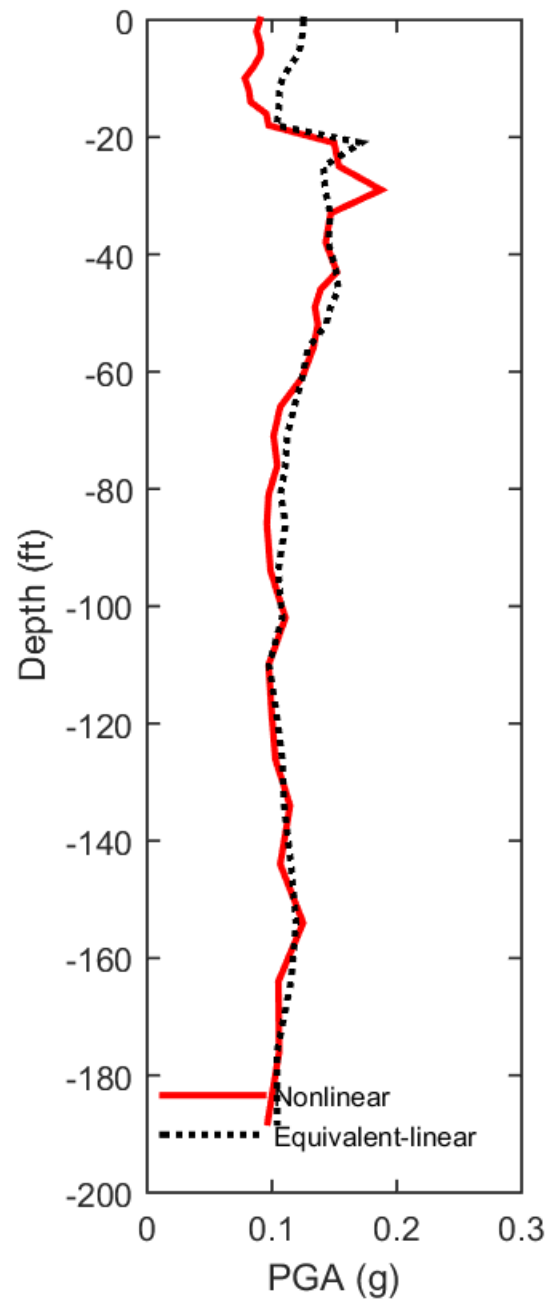
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



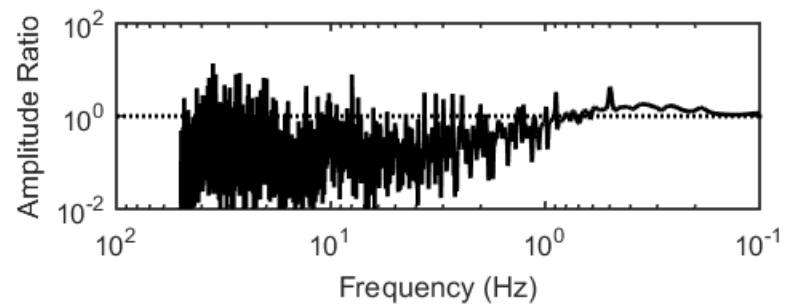
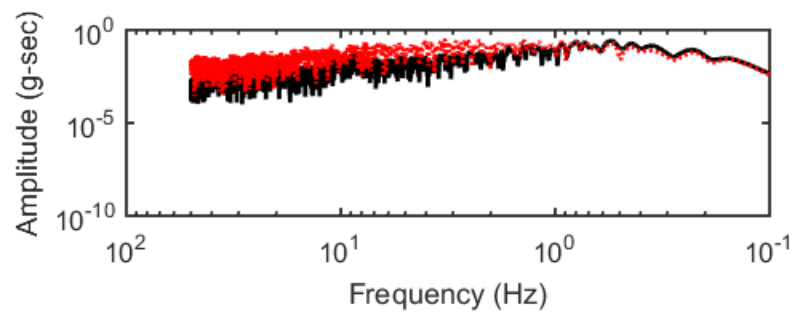
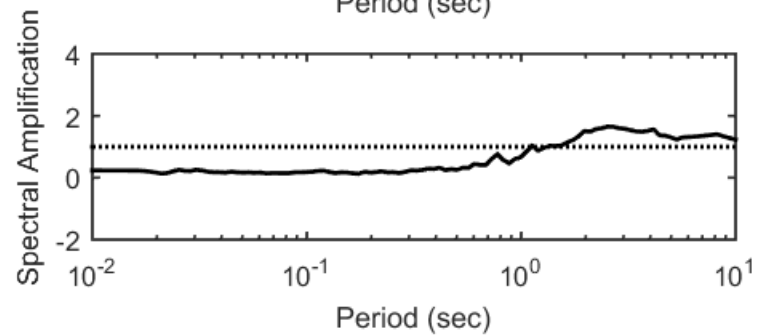
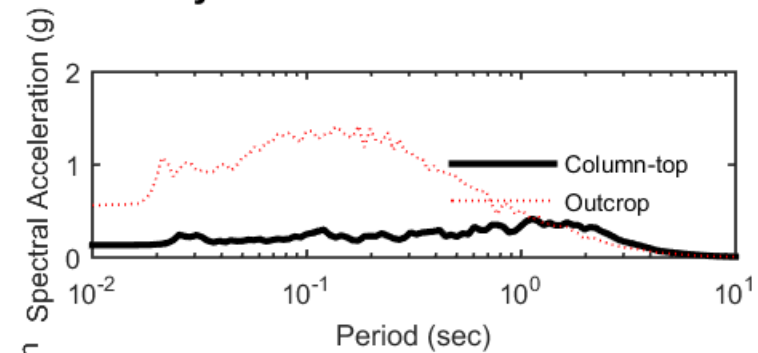
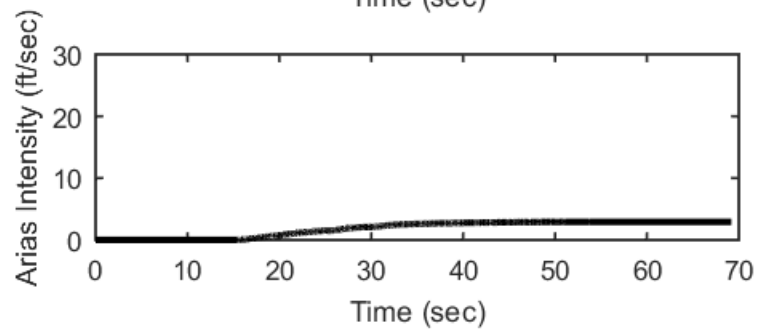
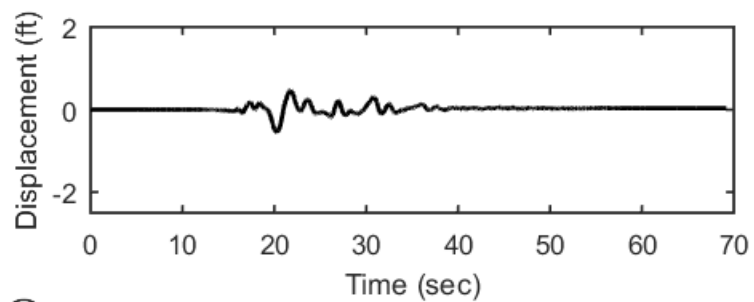
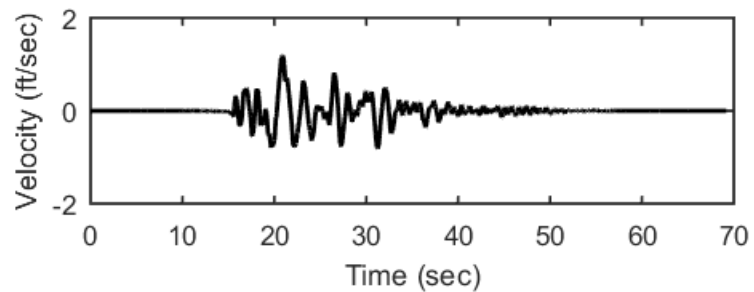
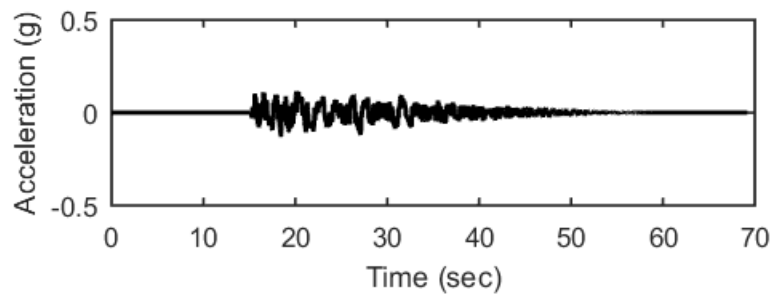
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



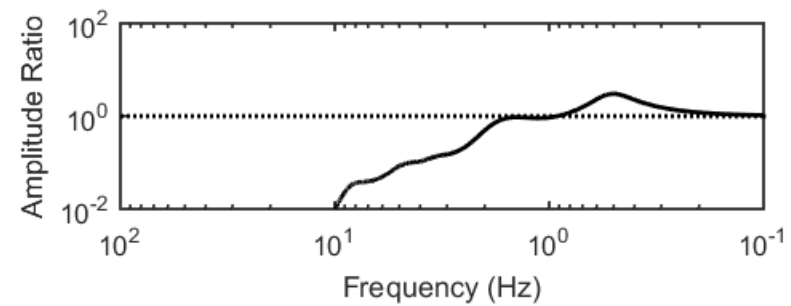
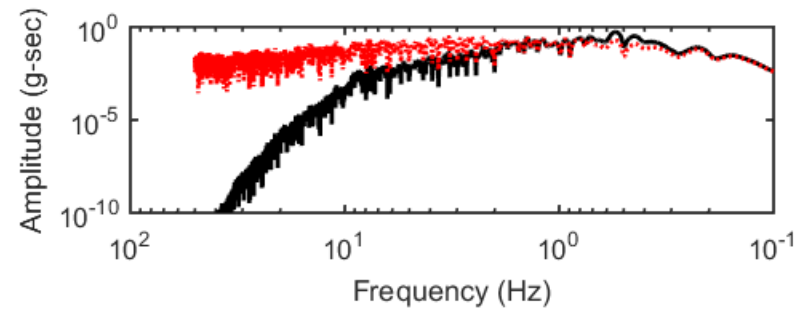
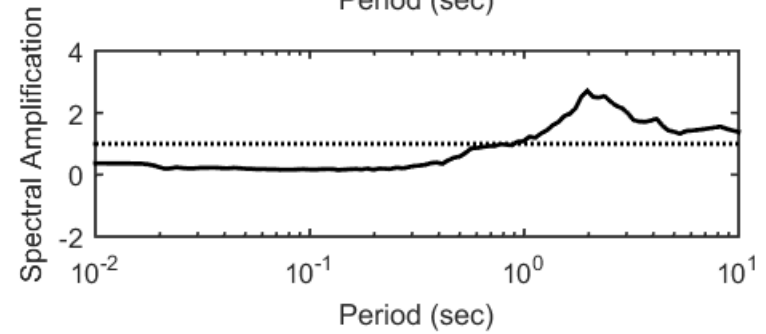
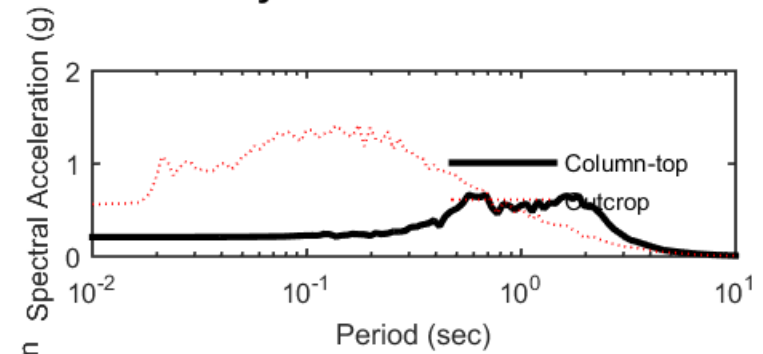
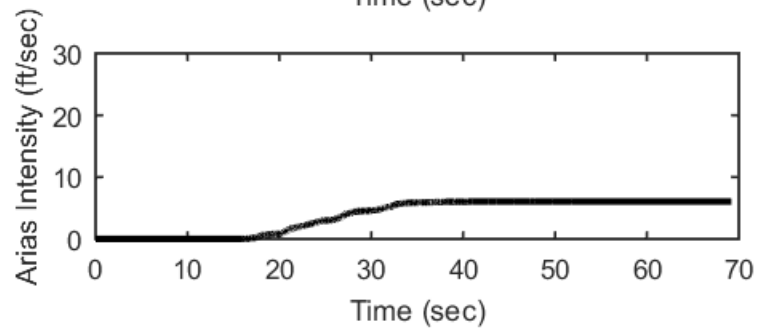
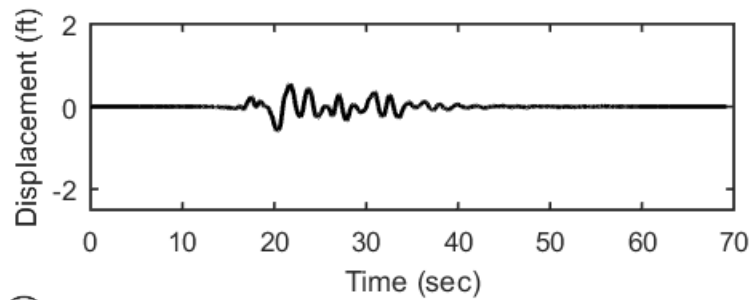
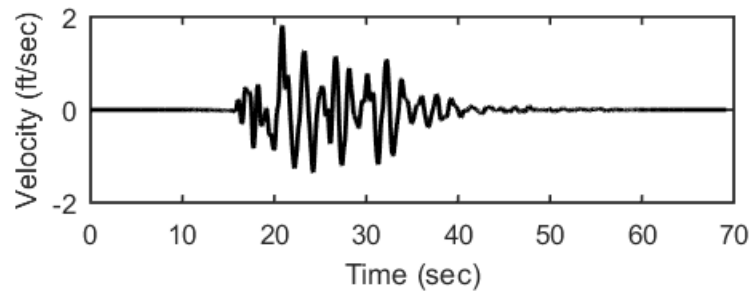
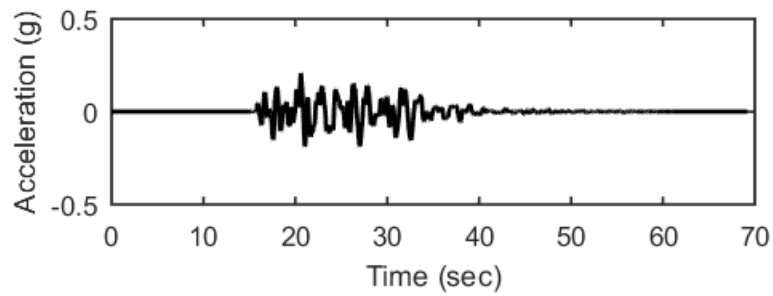
### Profile outputs for Motion: FEE7



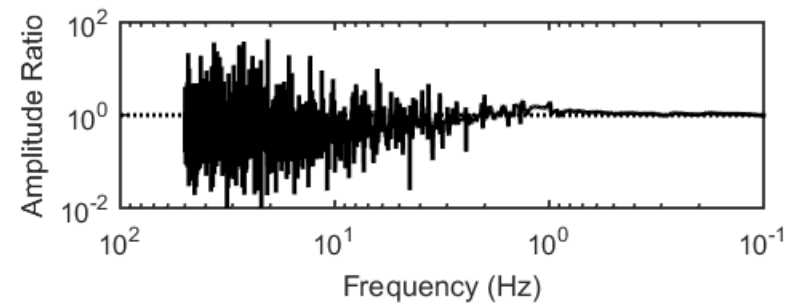
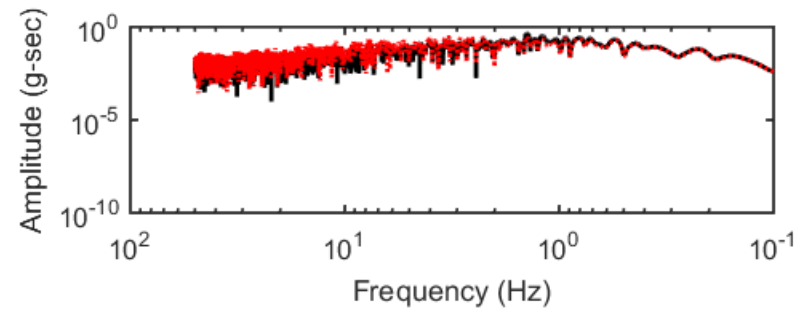
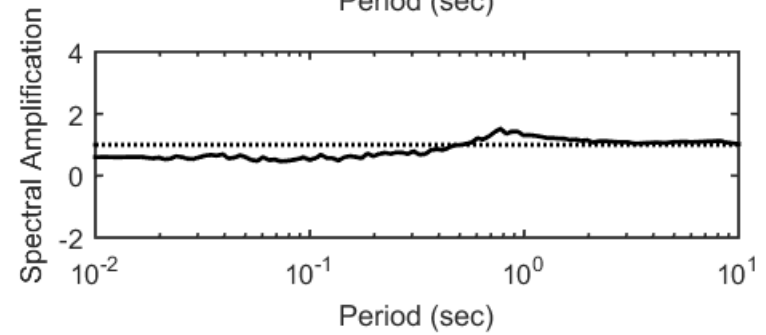
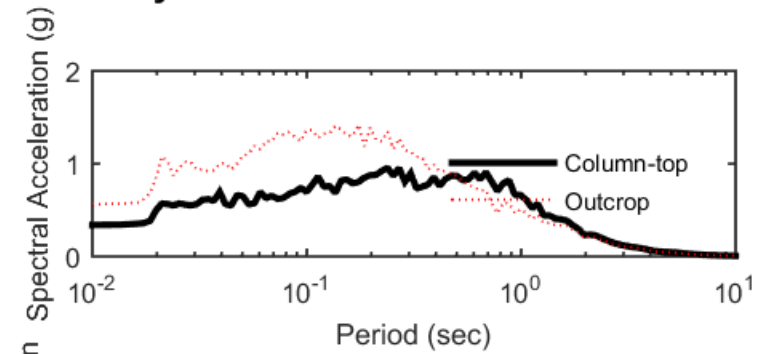
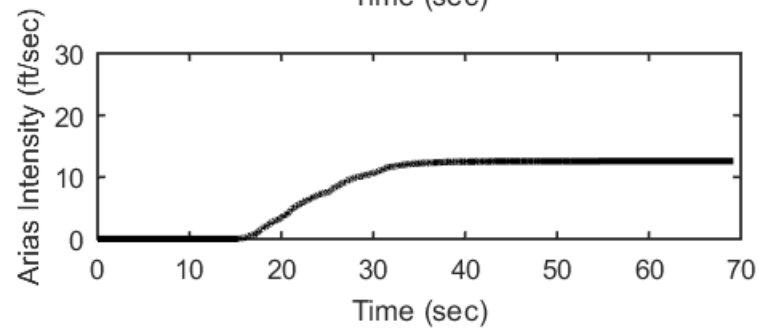
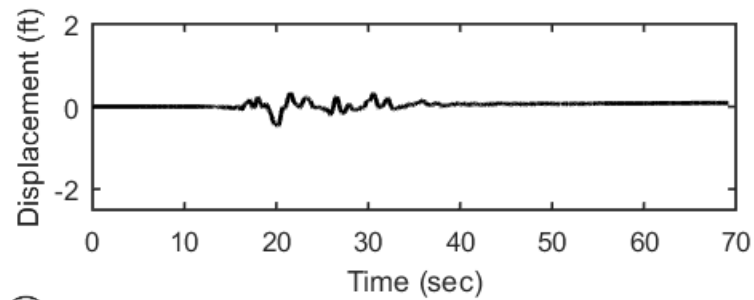
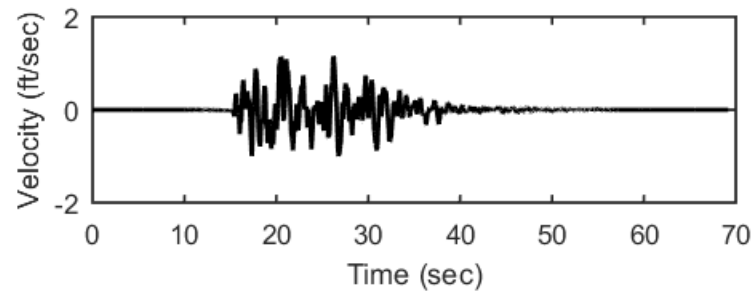
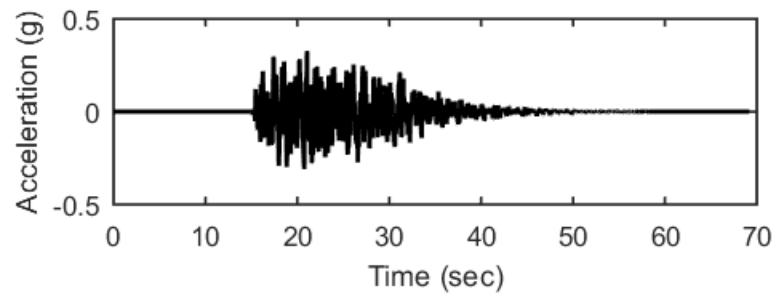
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



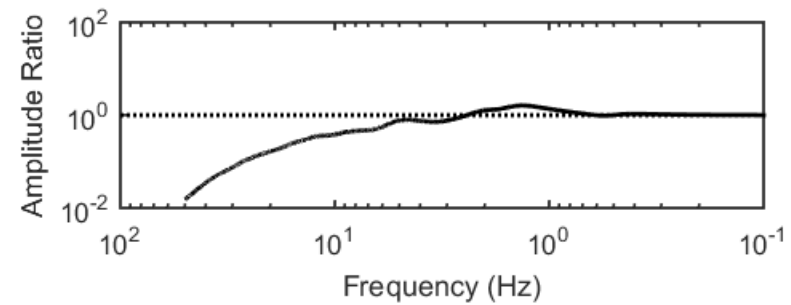
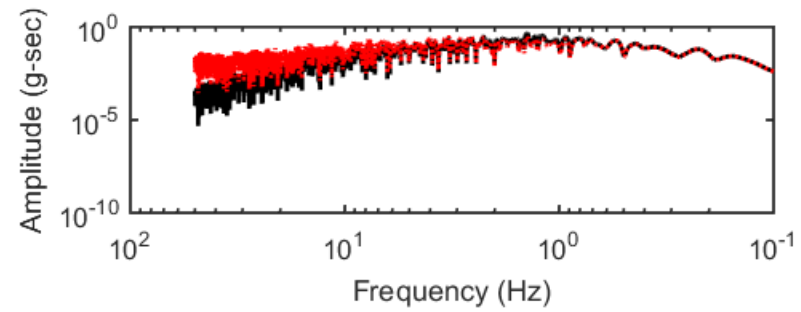
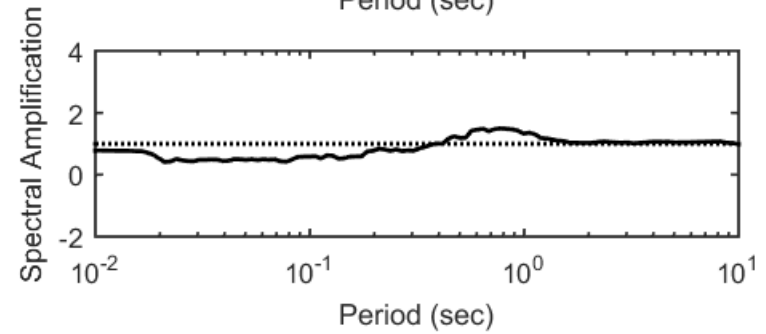
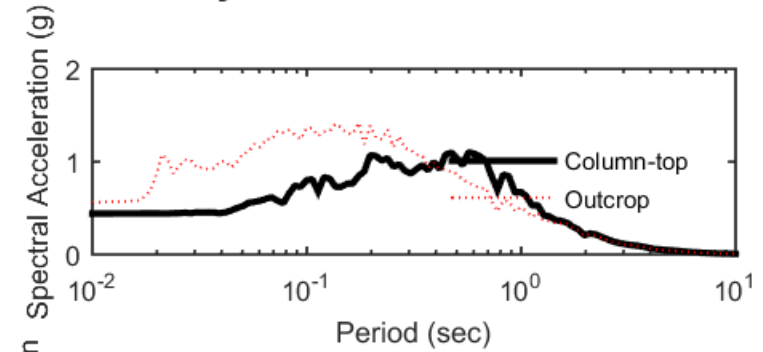
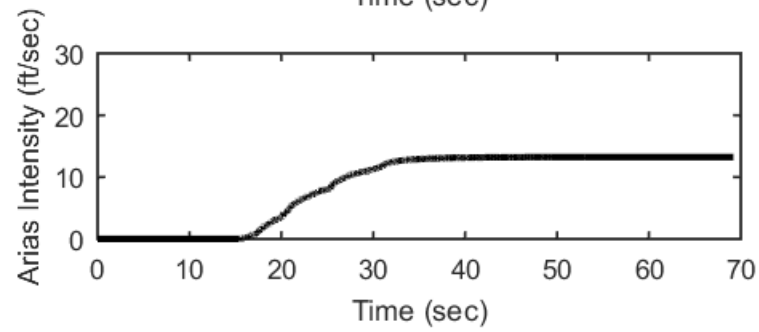
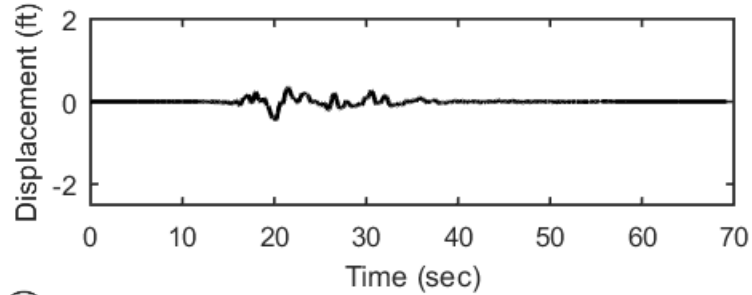
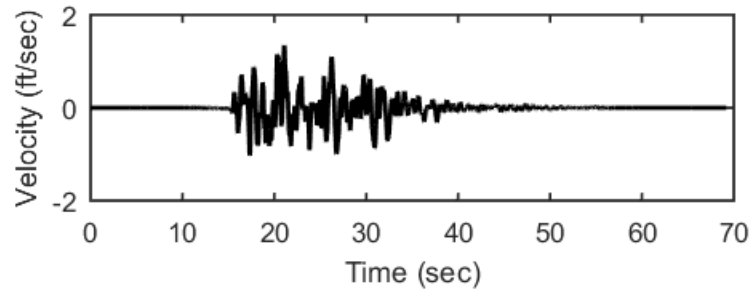
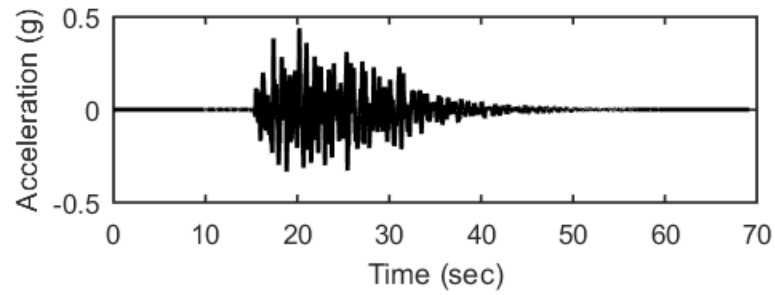
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



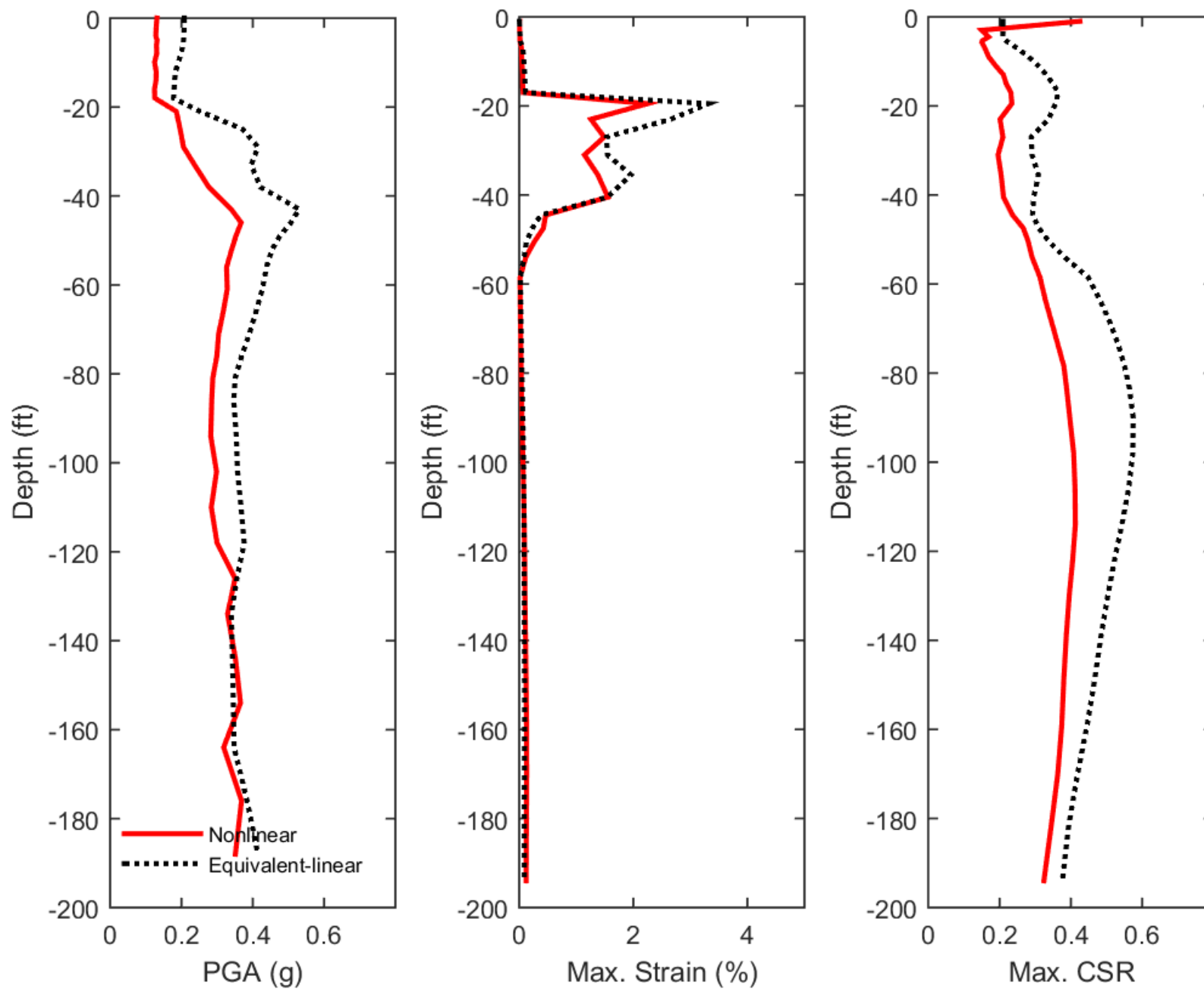
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1

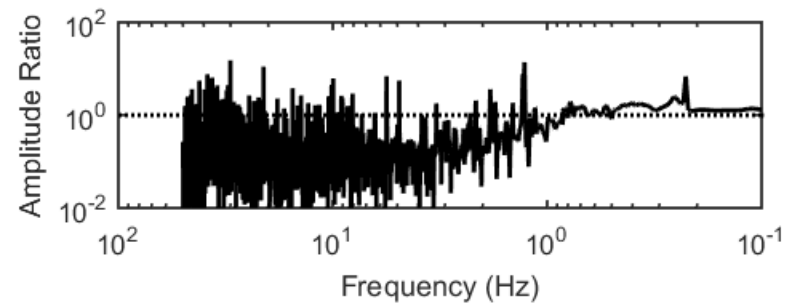
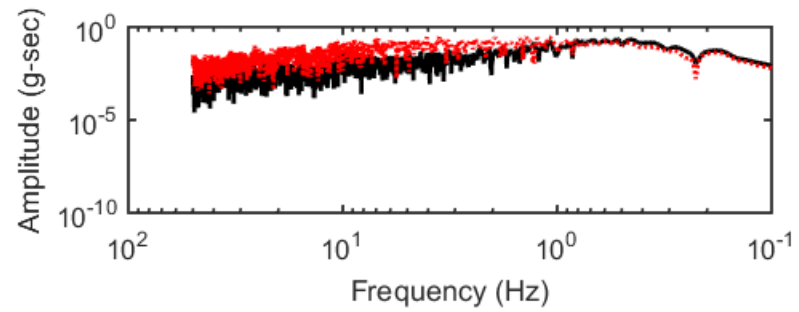
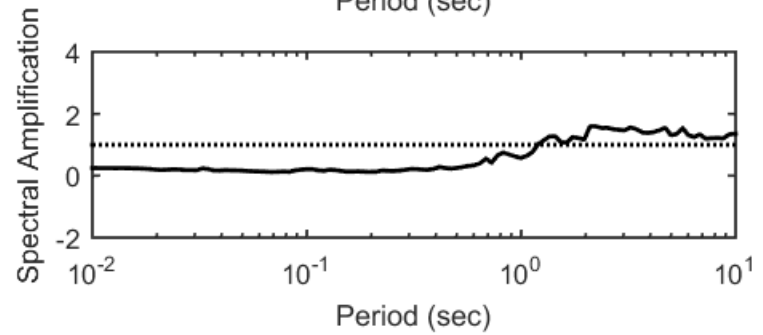
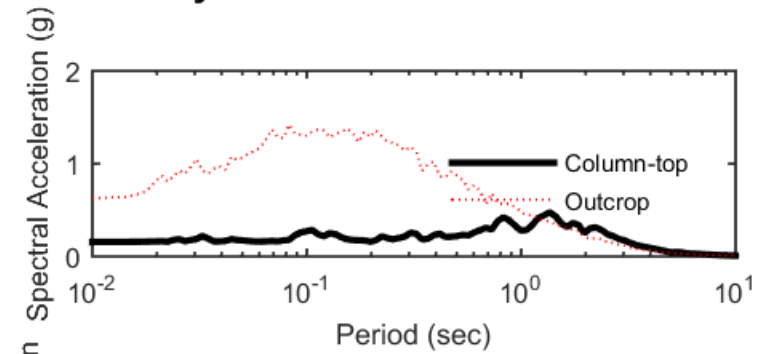
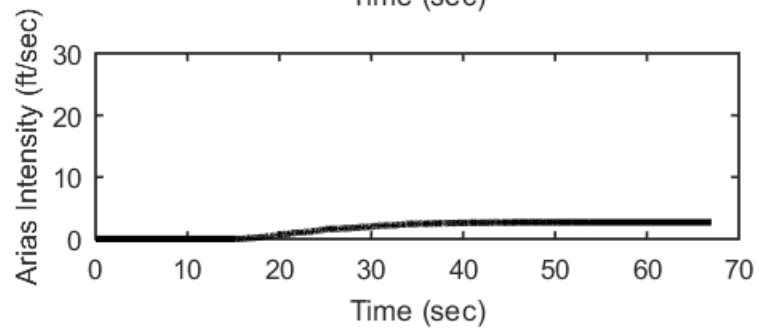
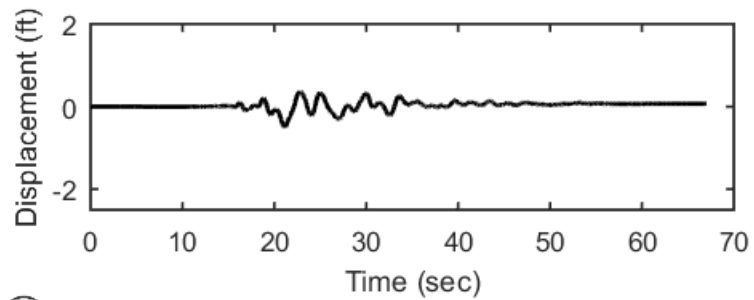
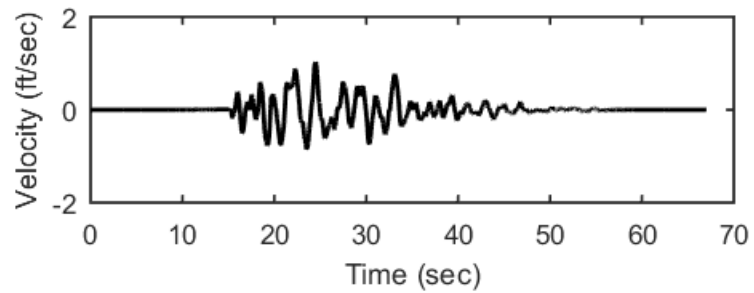
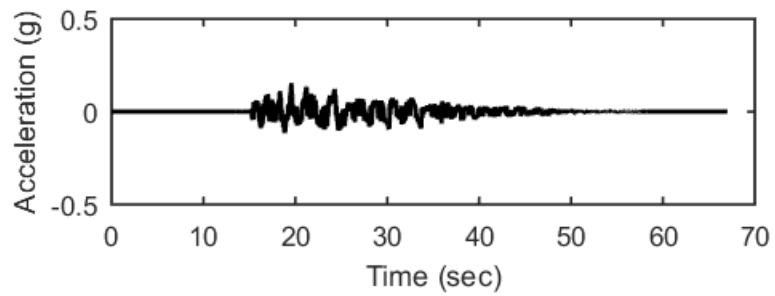


### Profile outputs for Motion: SEE1

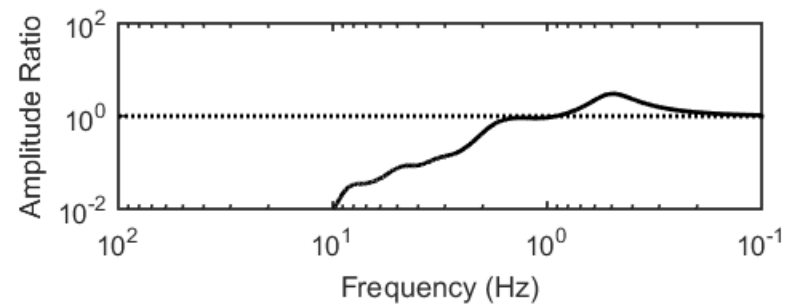
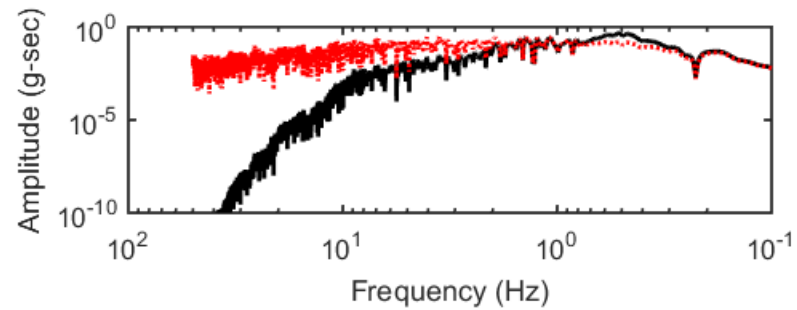
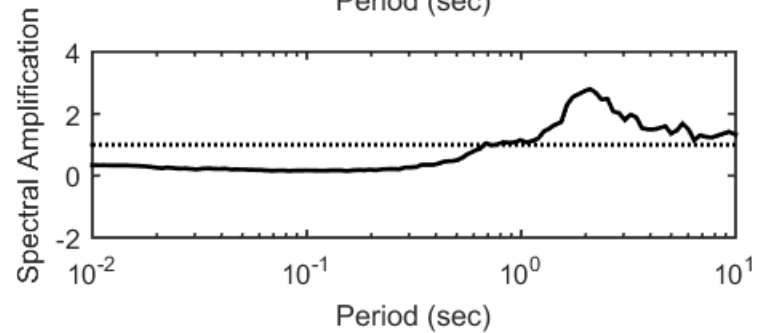
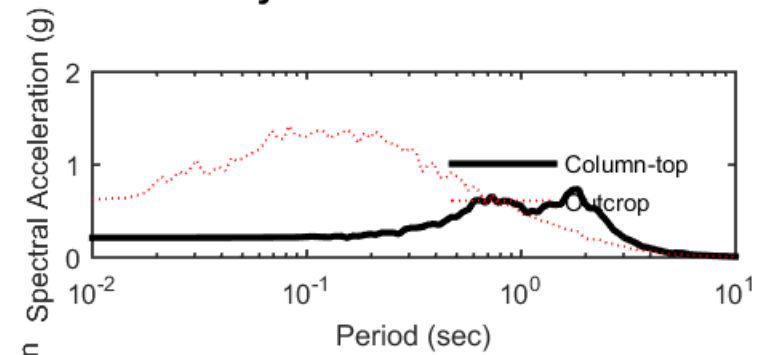
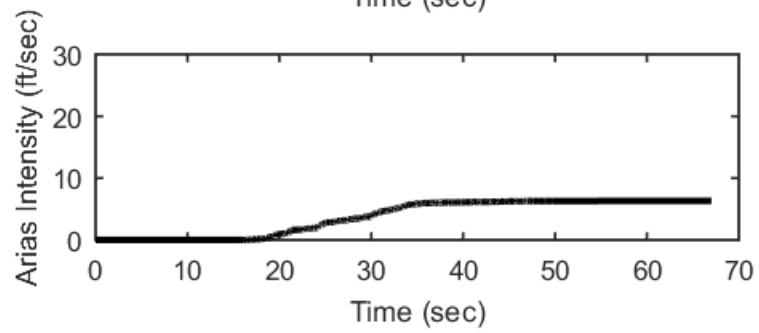
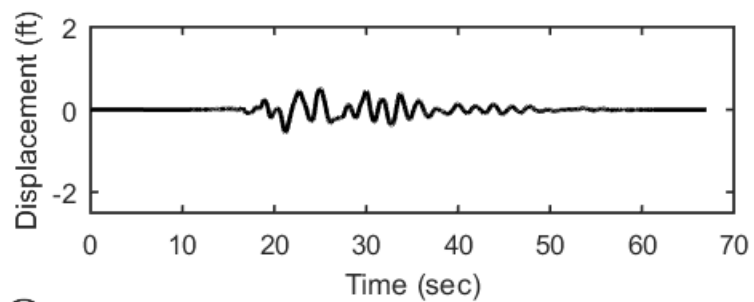
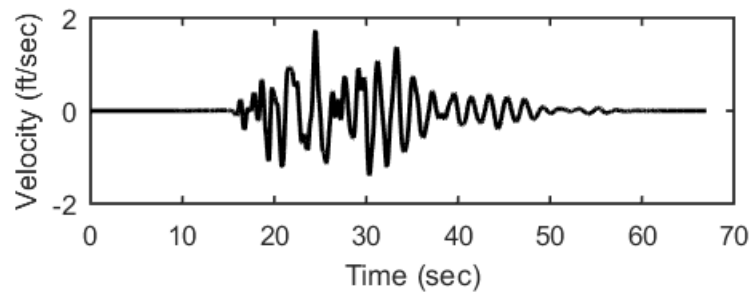
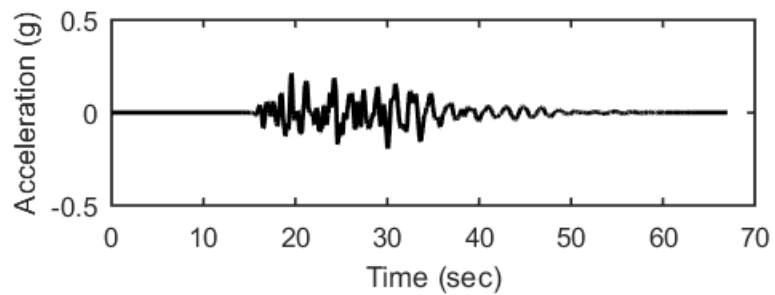




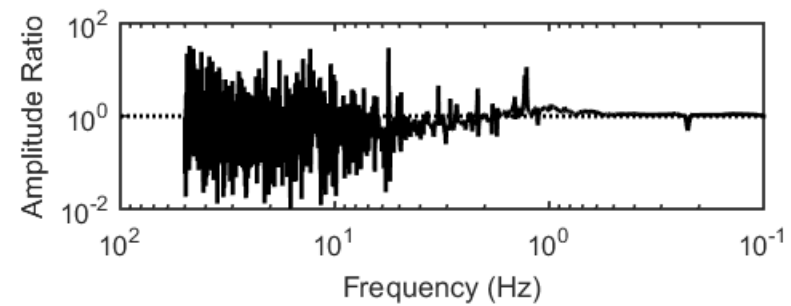
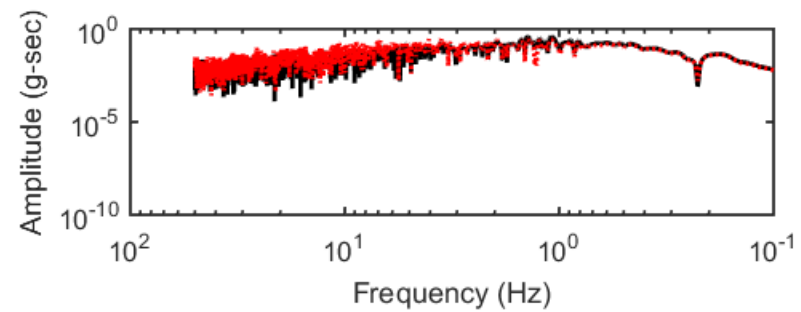
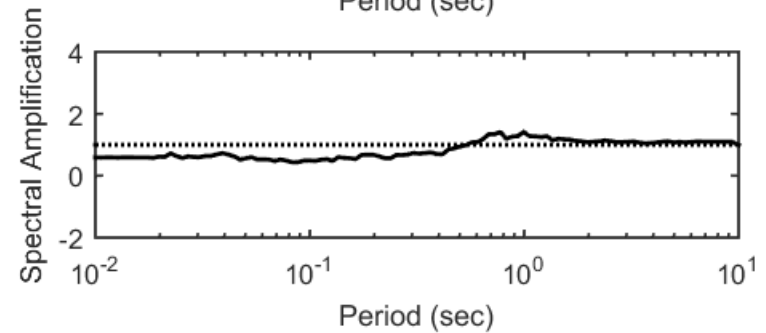
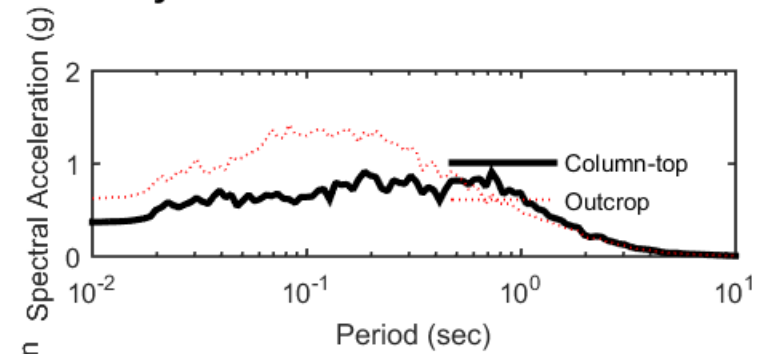
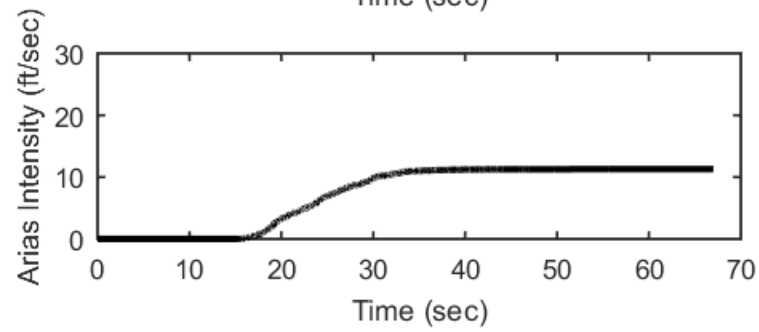
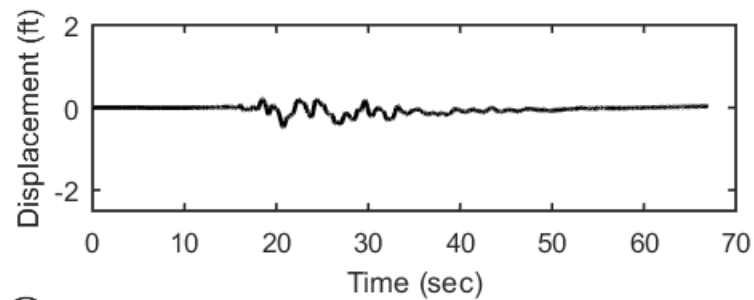
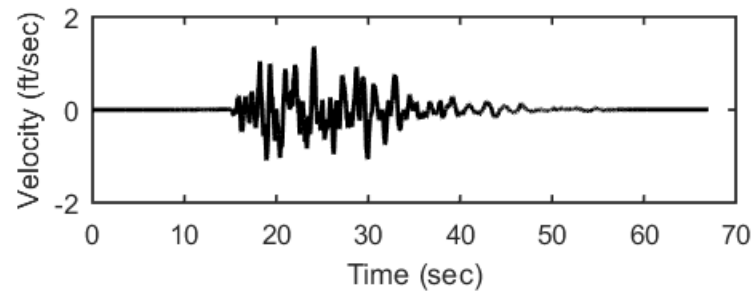
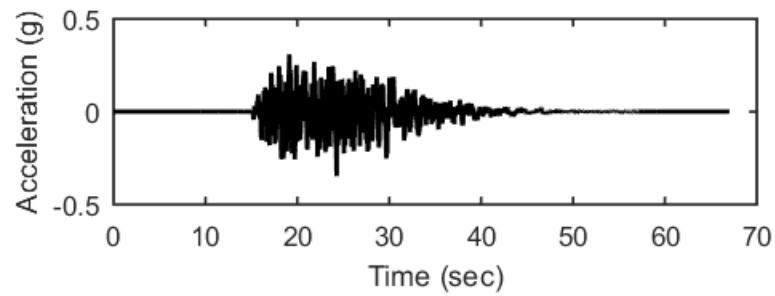
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



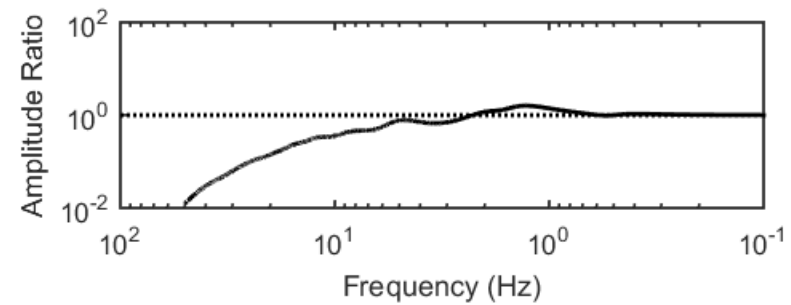
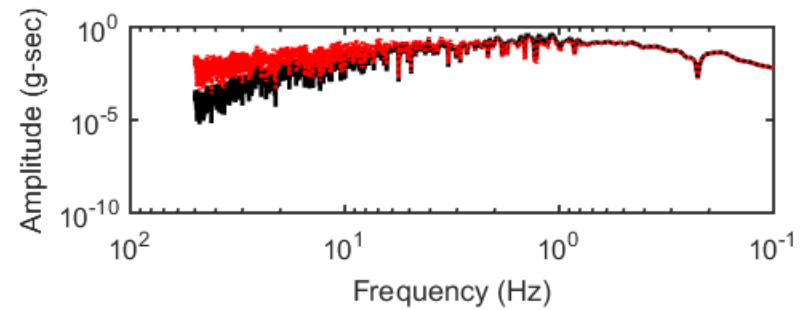
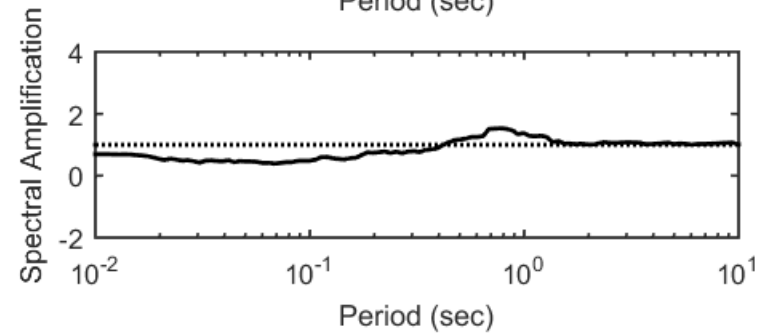
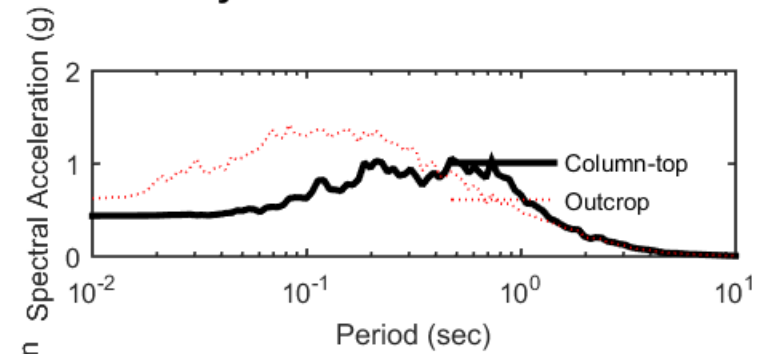
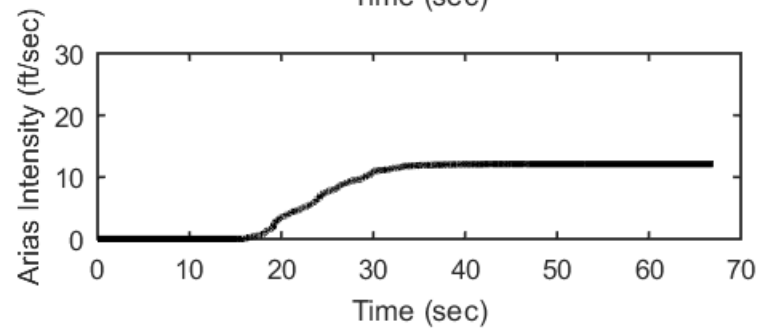
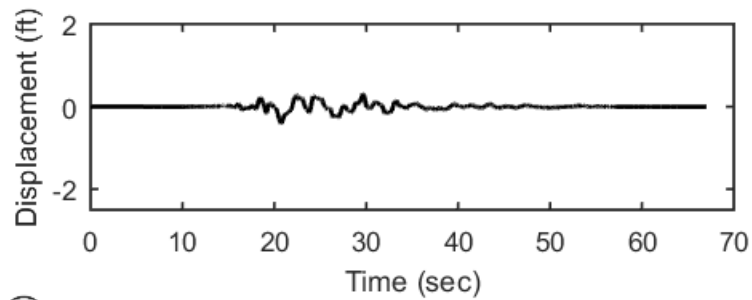
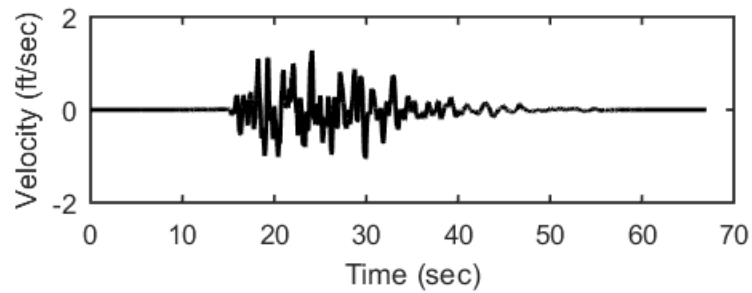
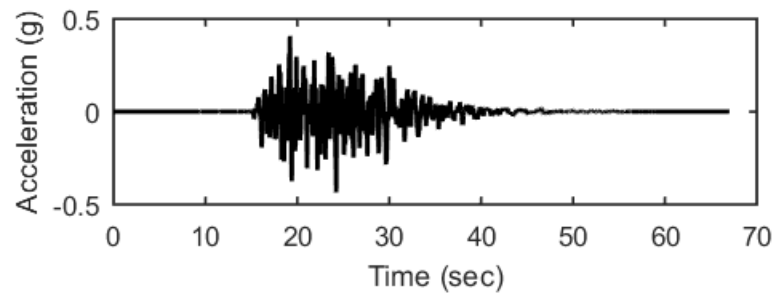
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



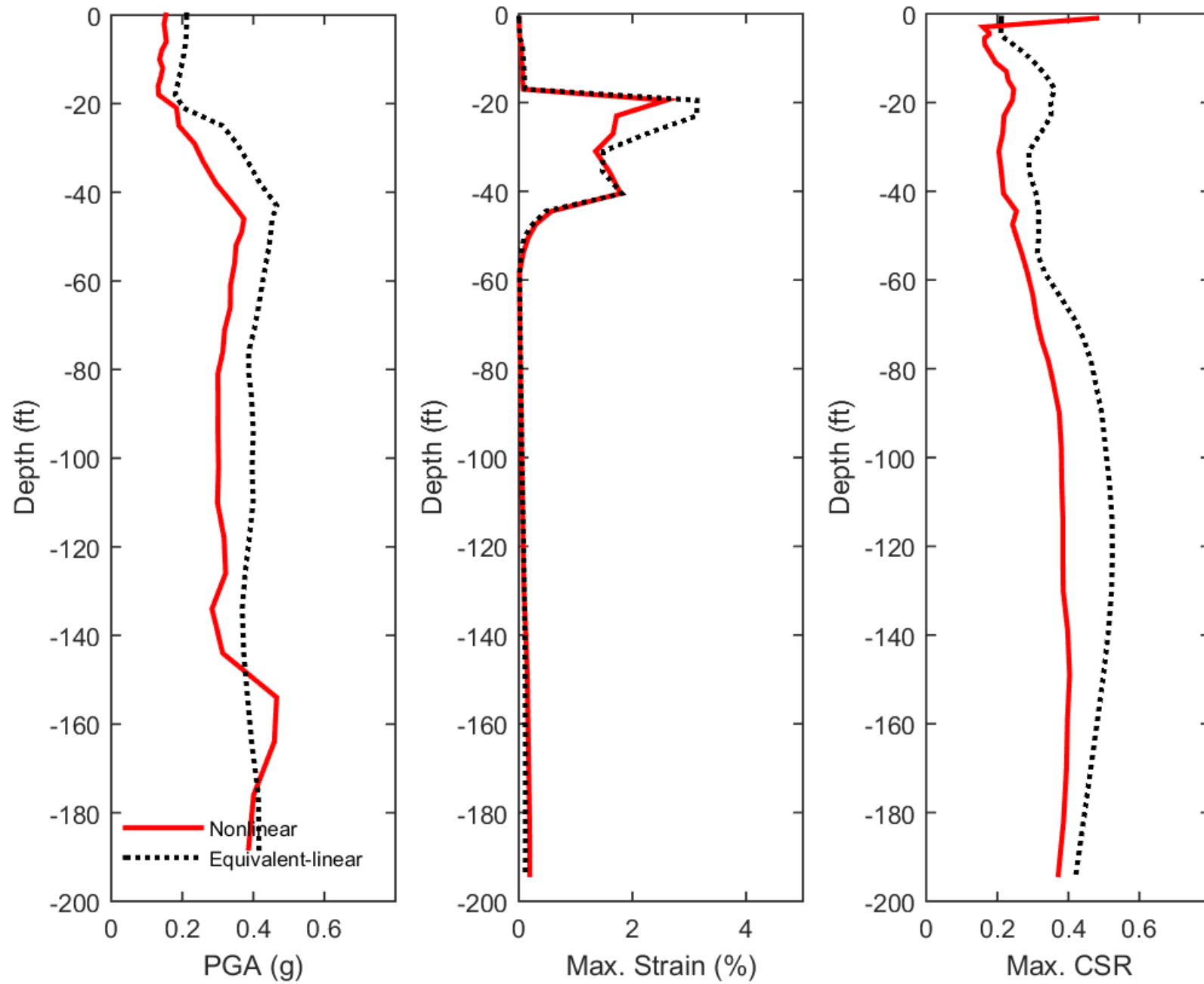
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



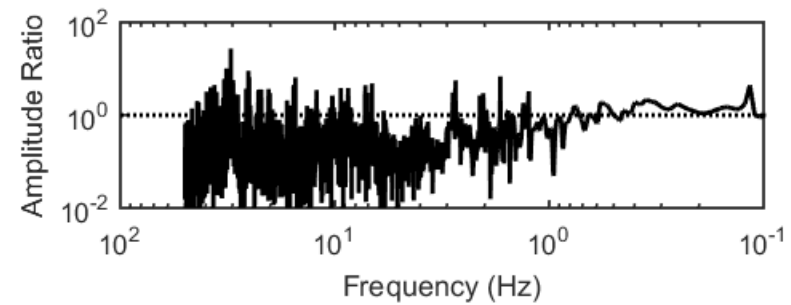
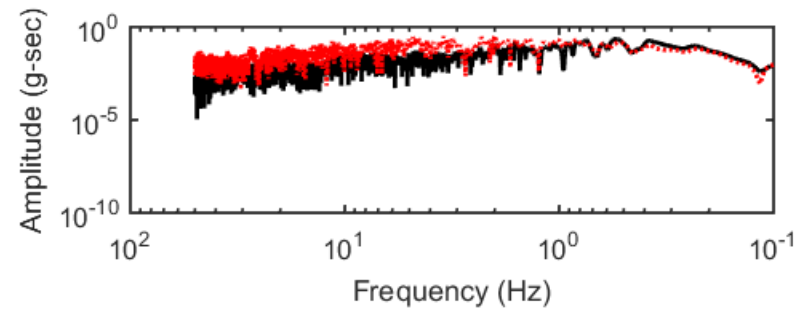
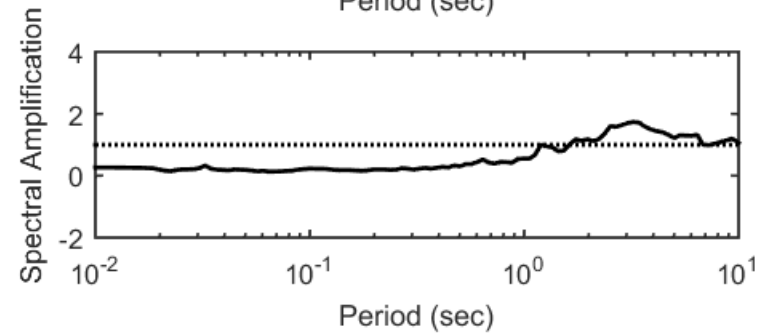
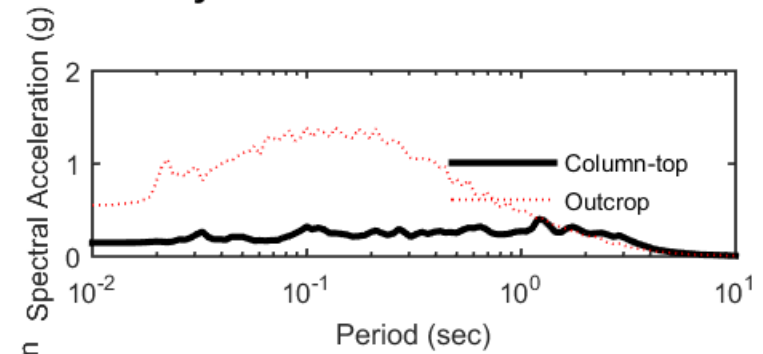
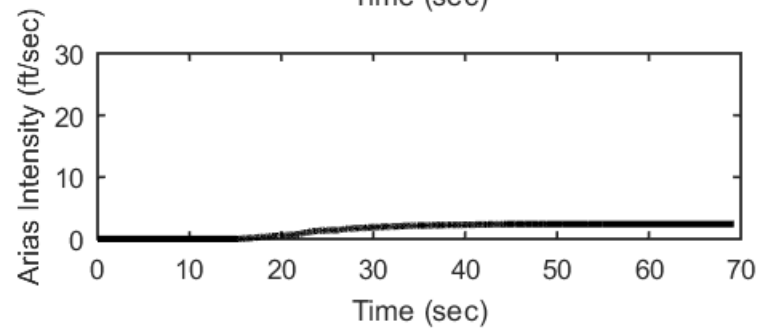
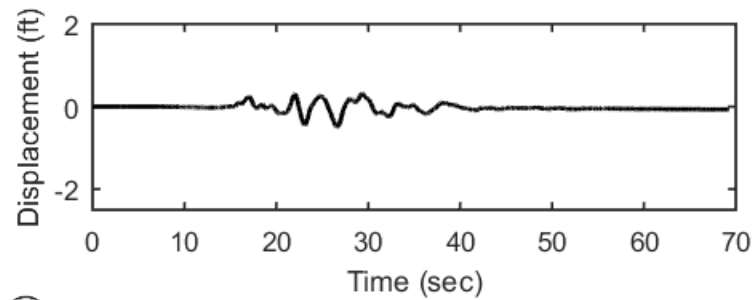
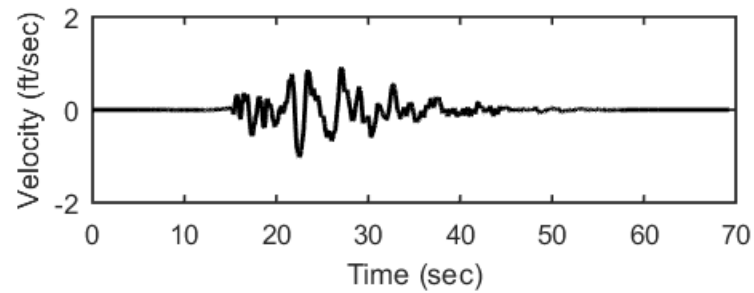
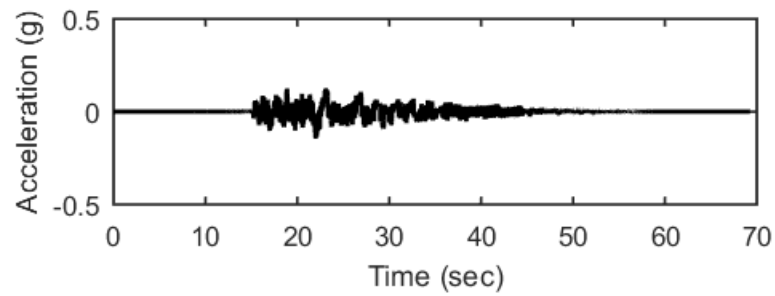
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



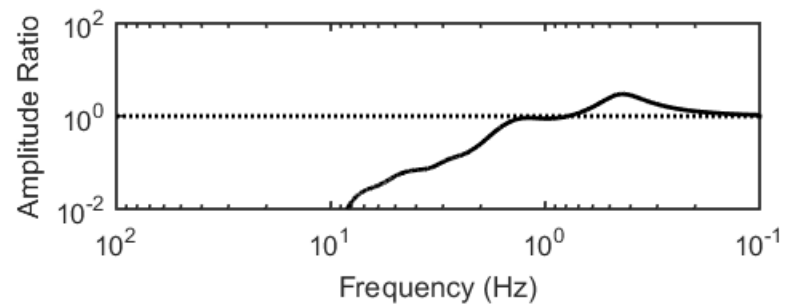
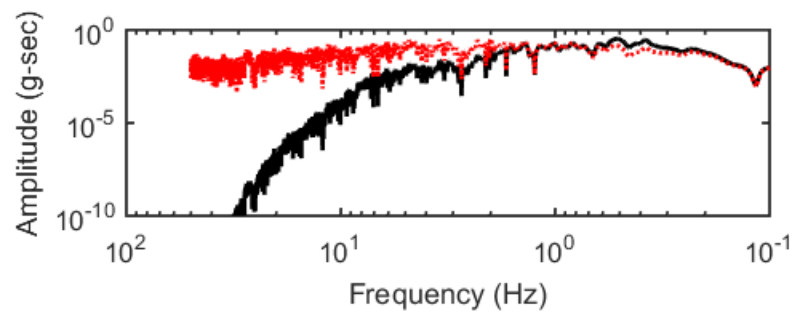
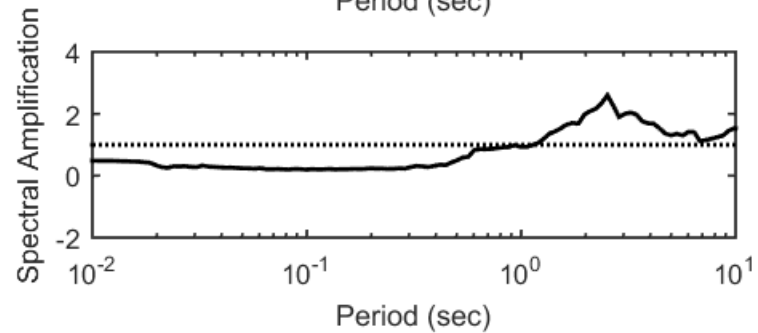
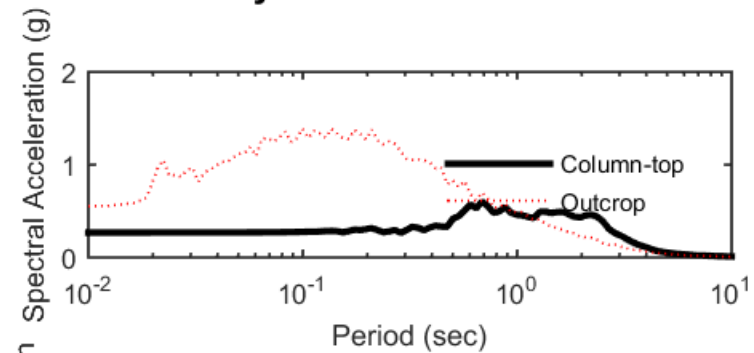
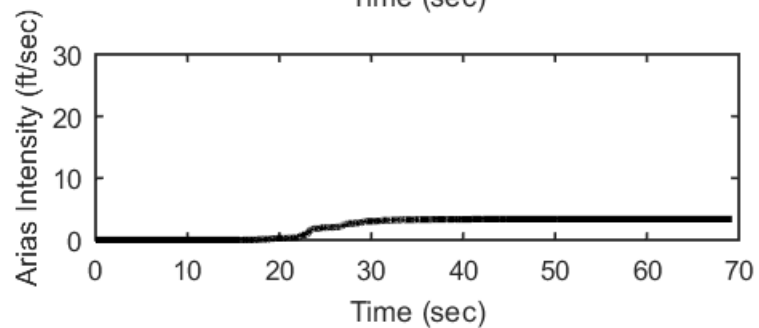
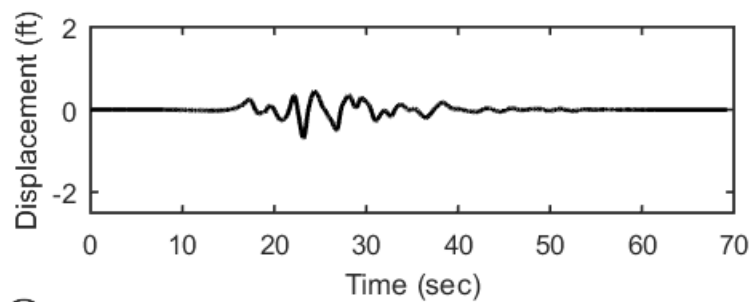
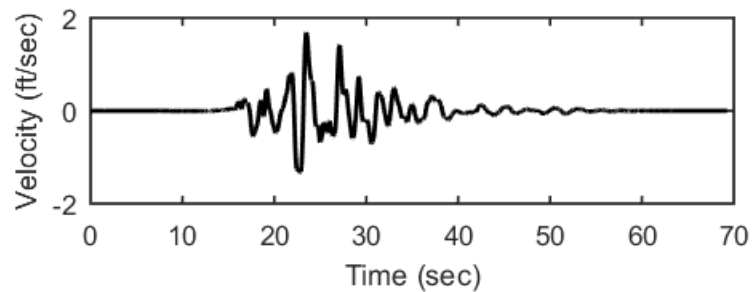
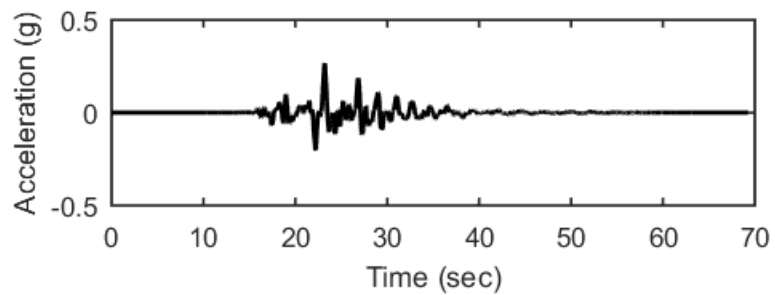
### Profile outputs for Motion: SEE2



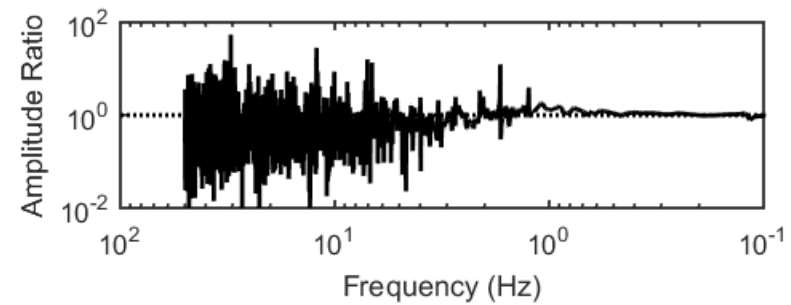
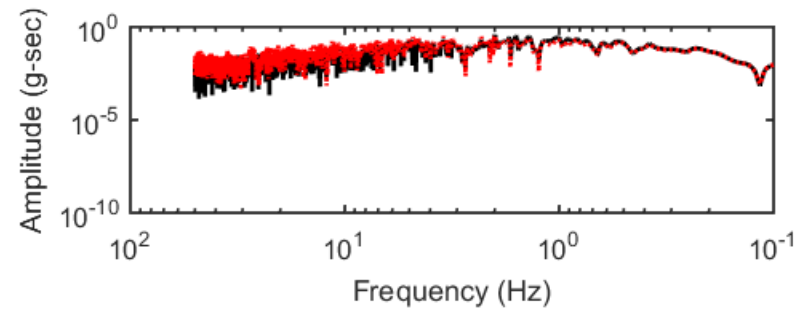
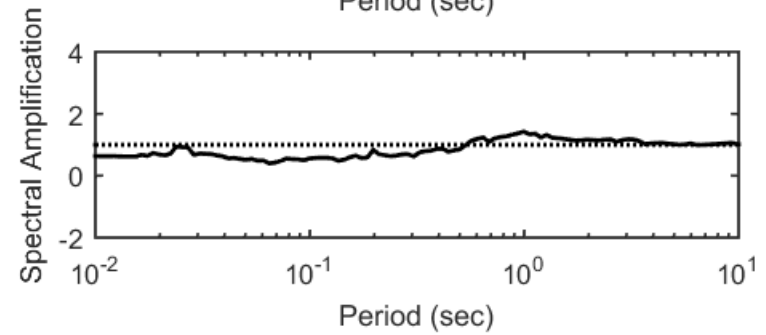
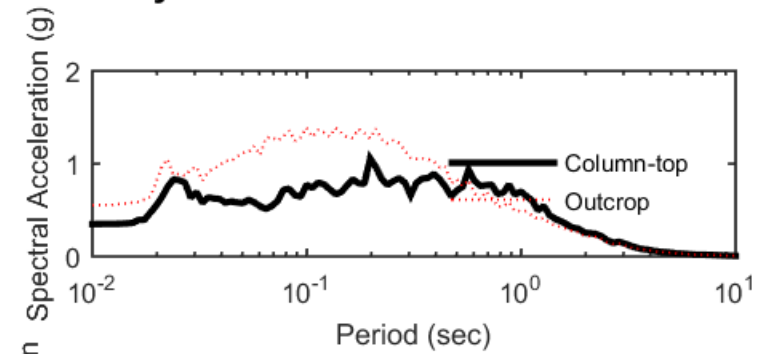
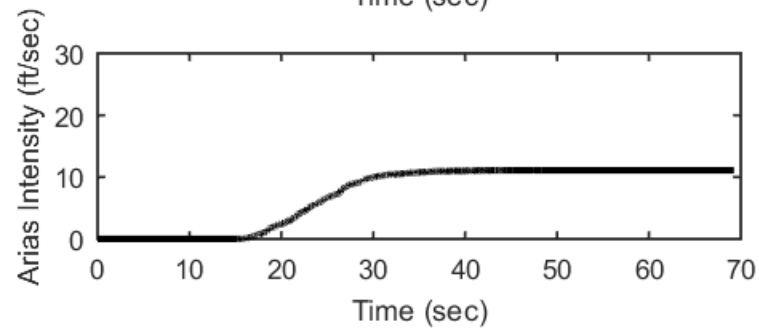
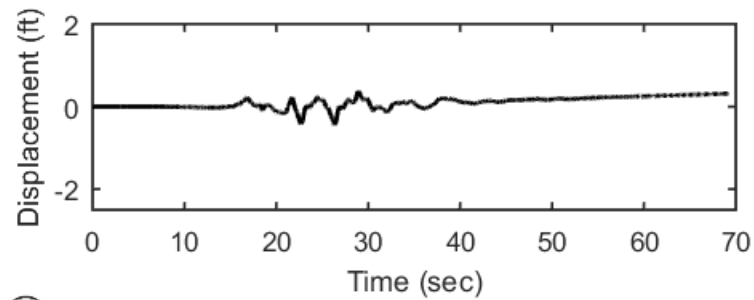
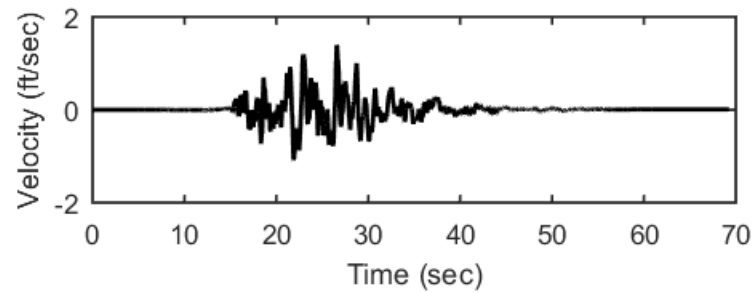
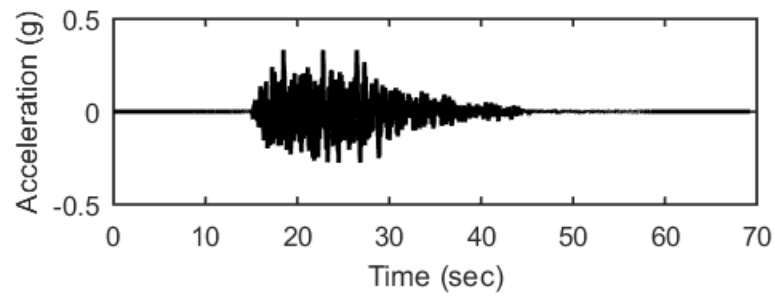
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3

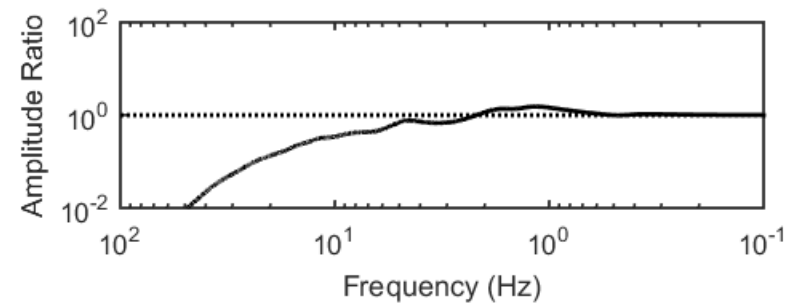
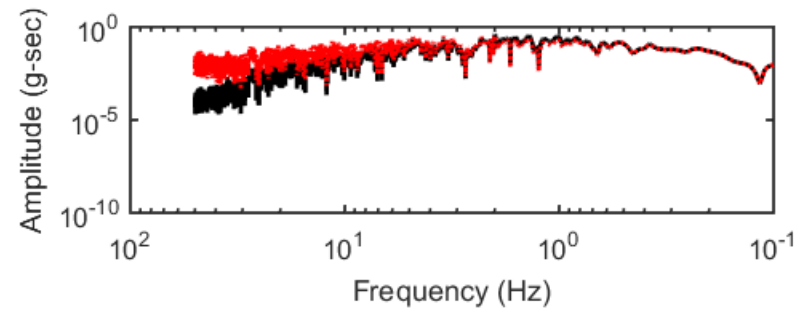
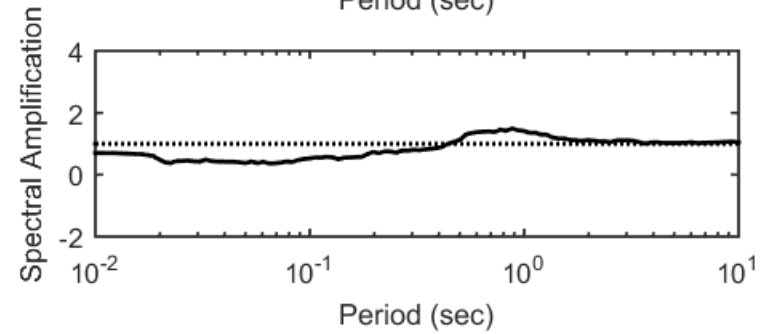
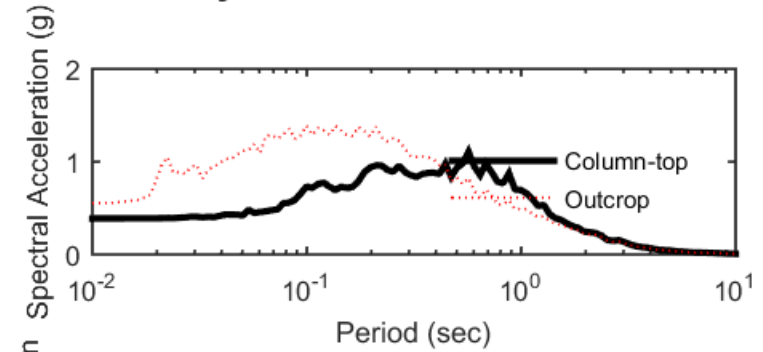
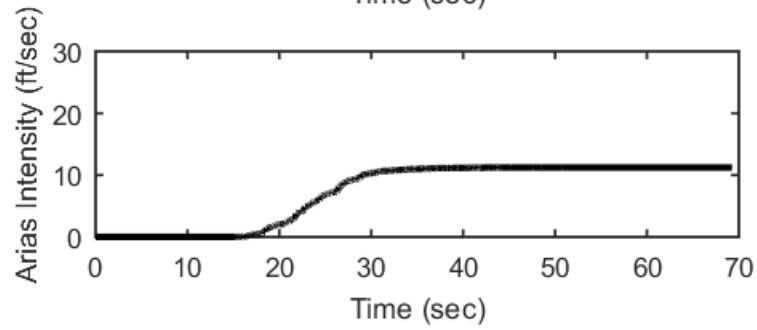
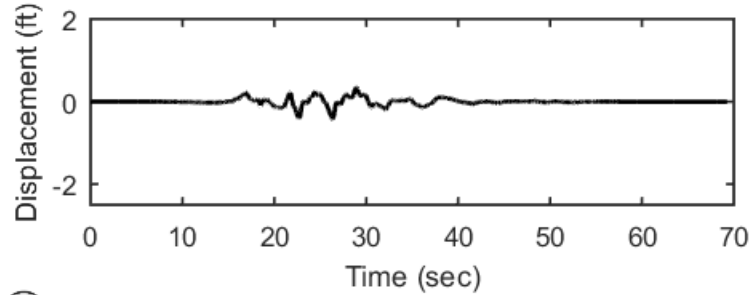
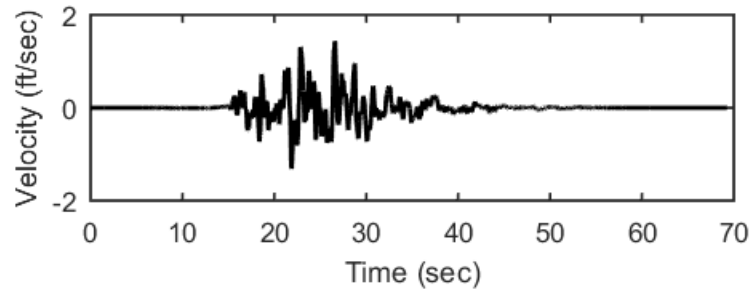
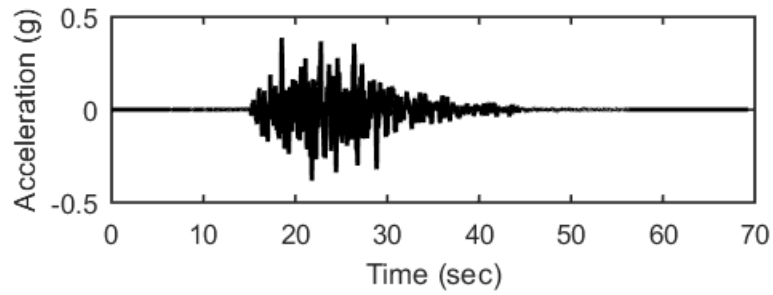


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3

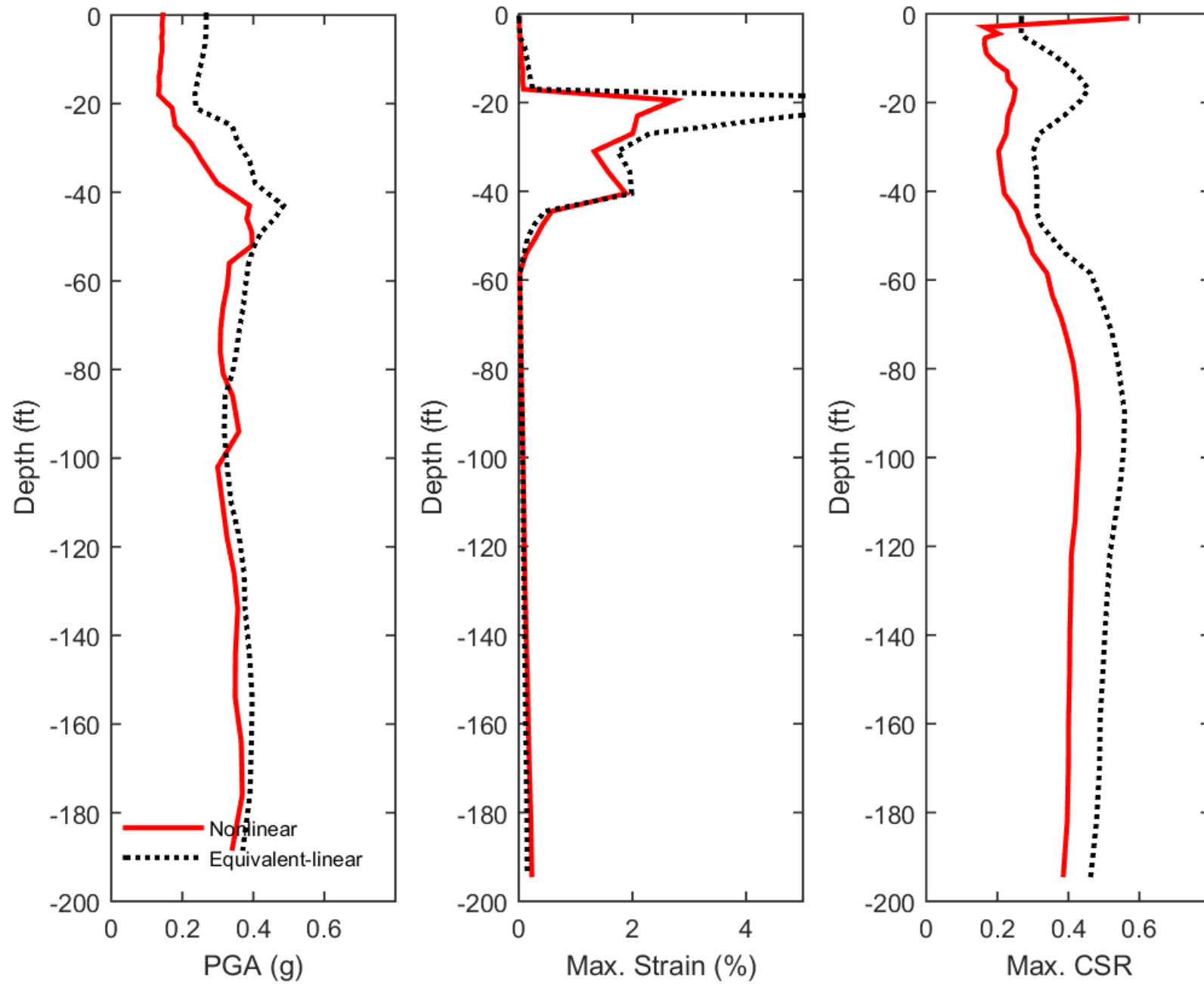




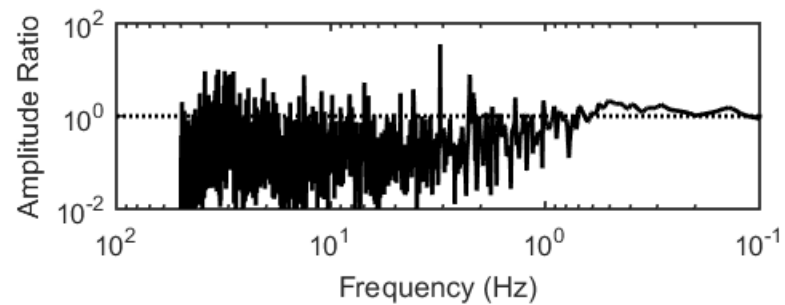
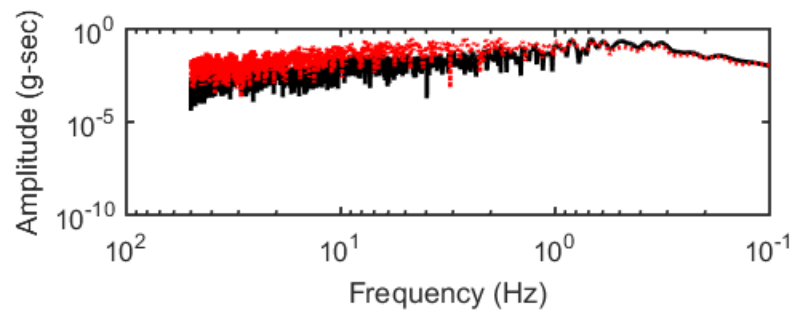
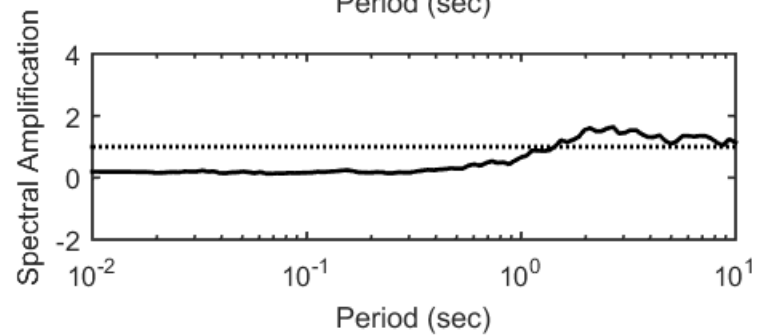
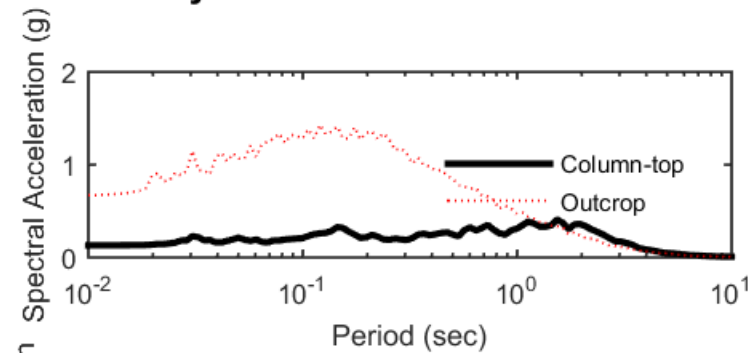
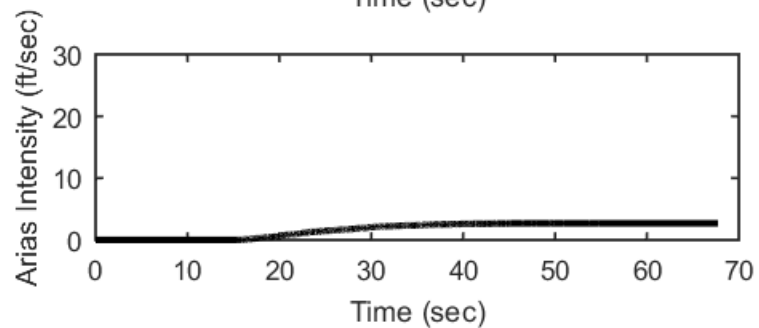
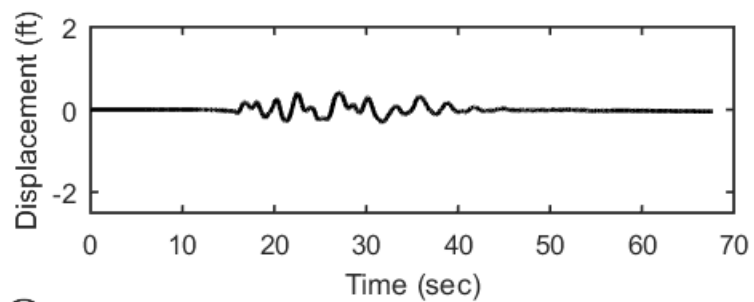
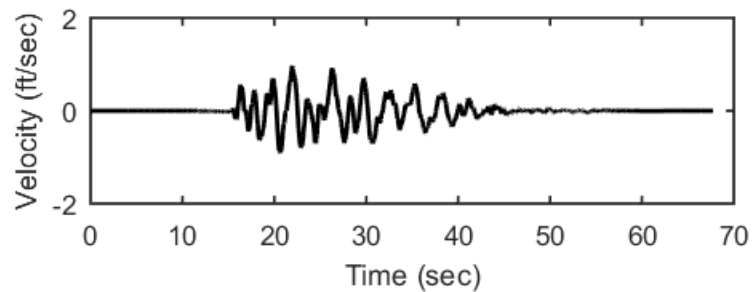
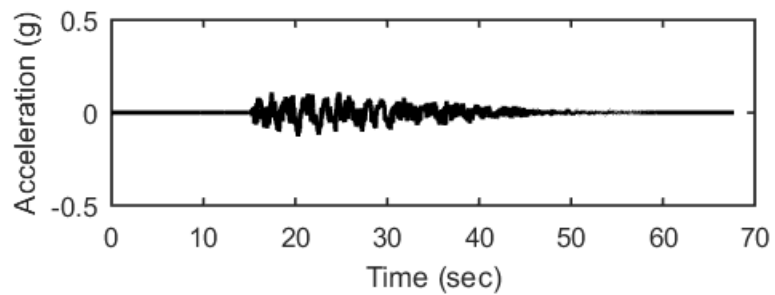
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



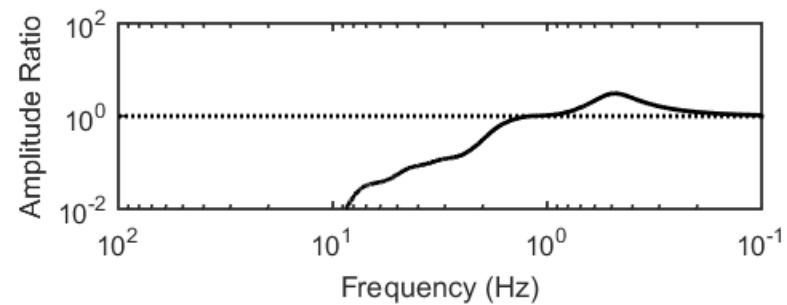
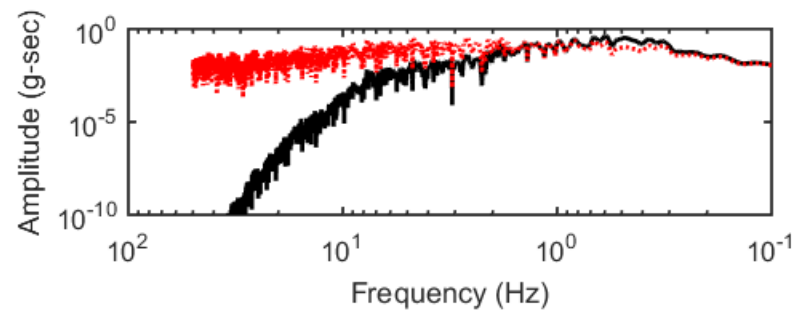
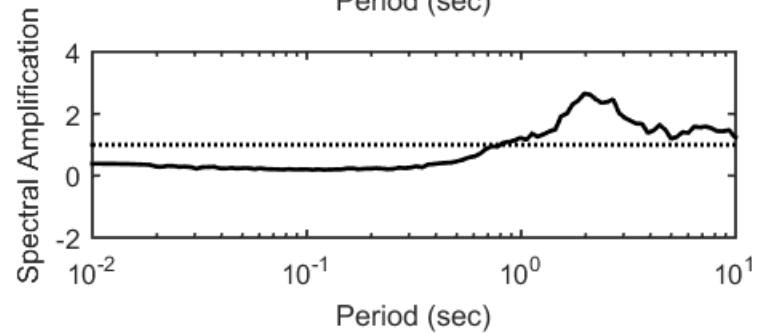
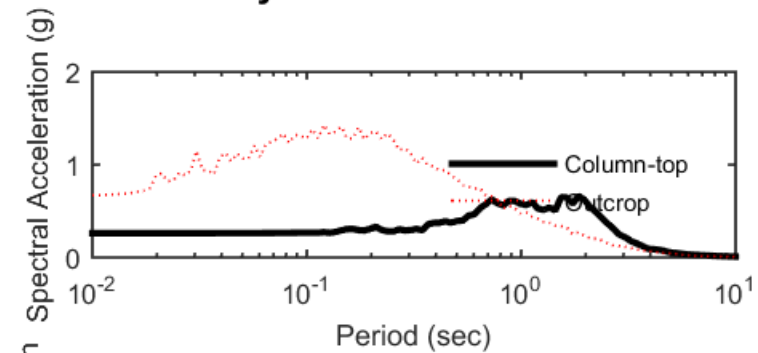
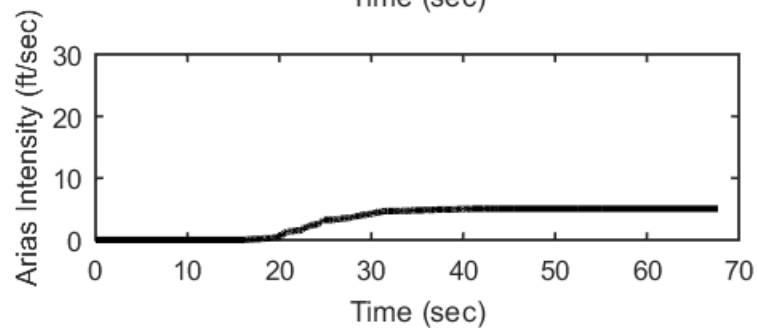
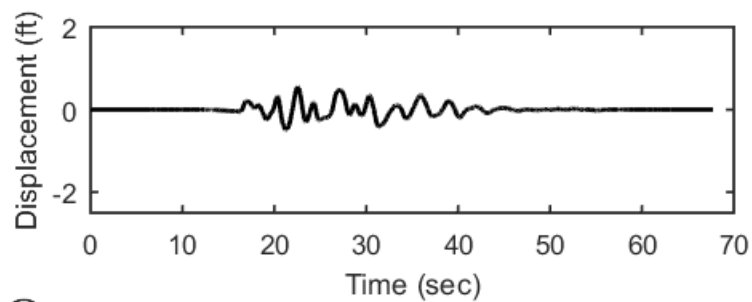
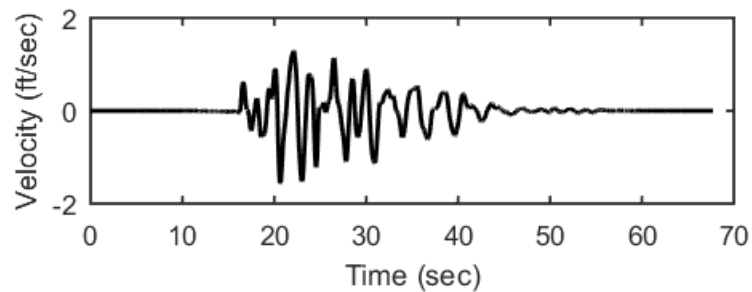
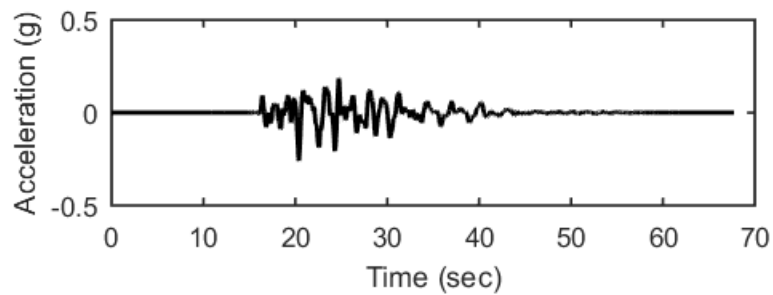
### Profile outputs for Motion: SEE3



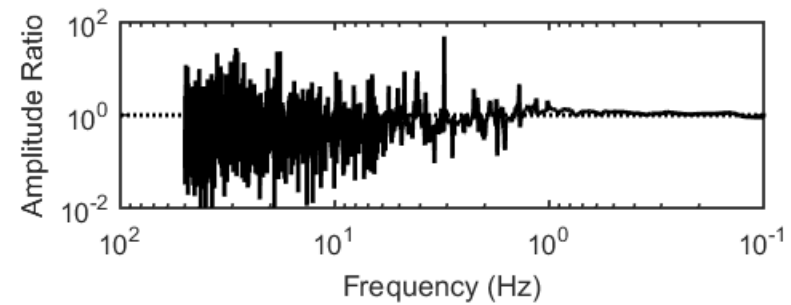
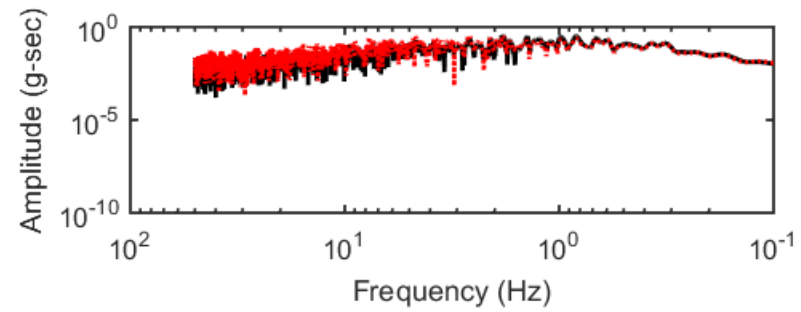
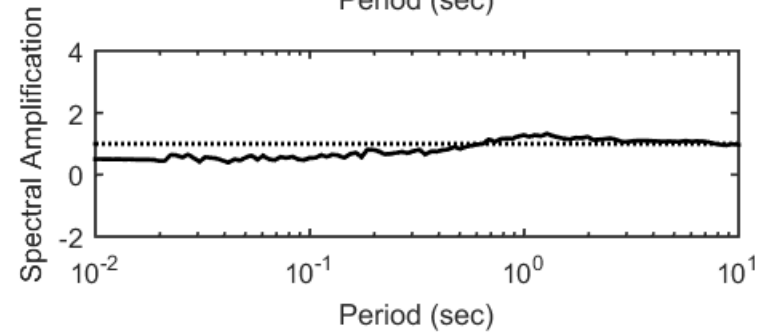
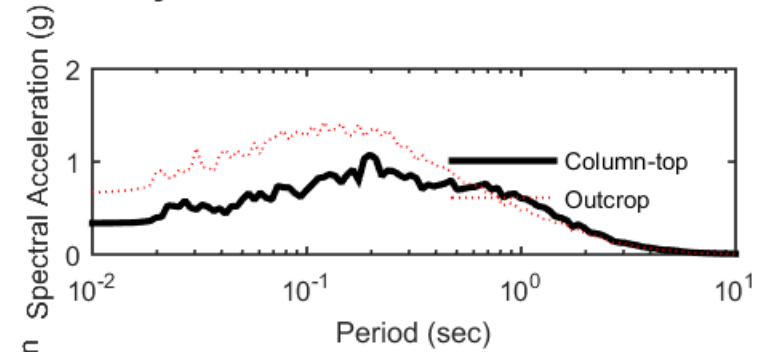
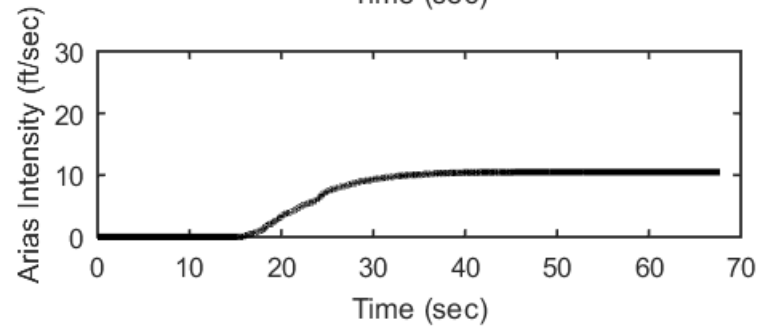
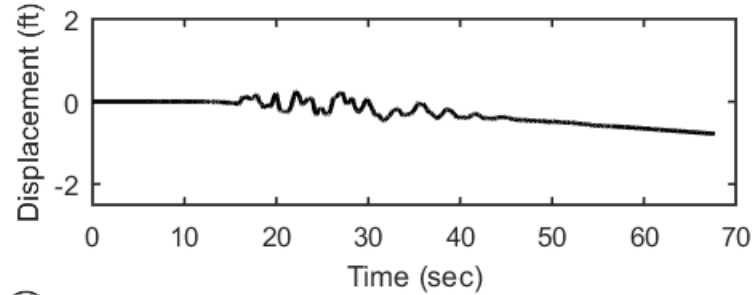
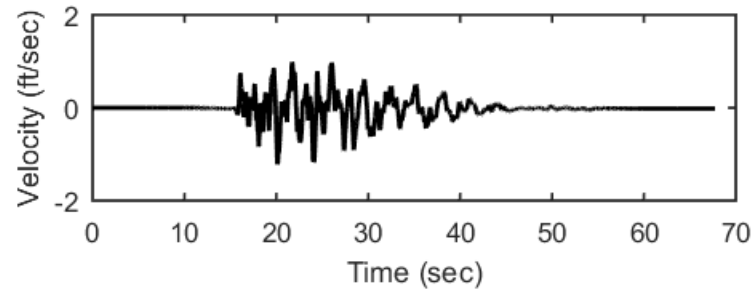
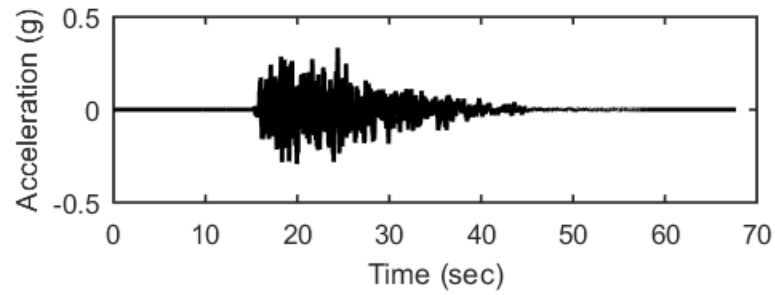
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



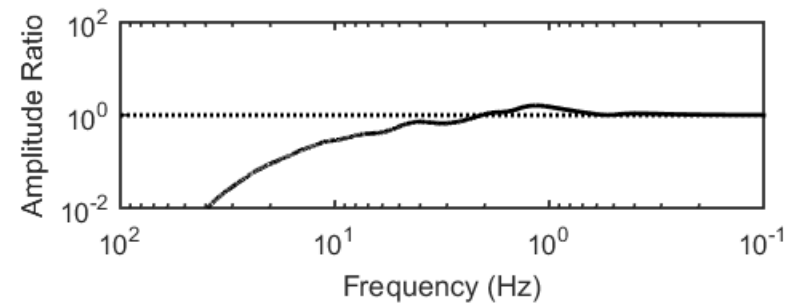
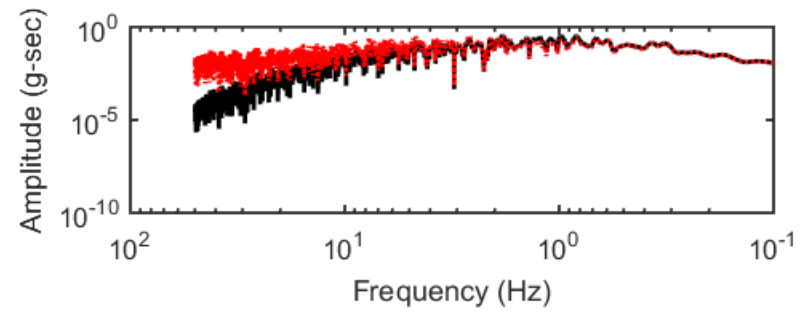
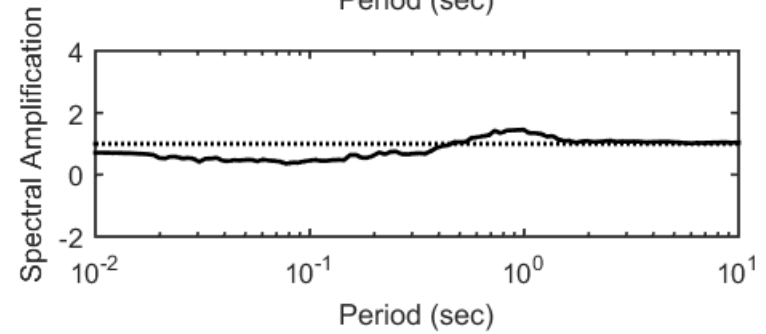
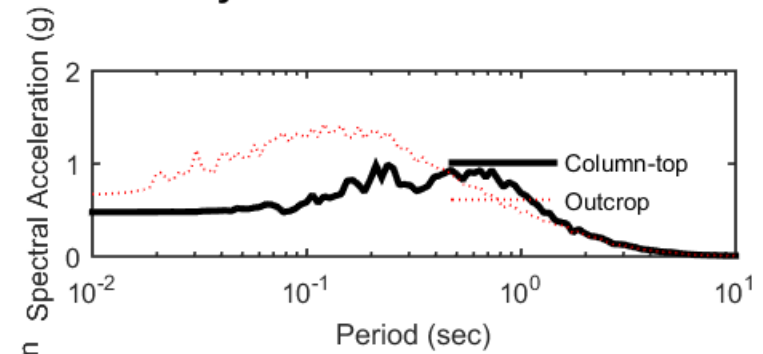
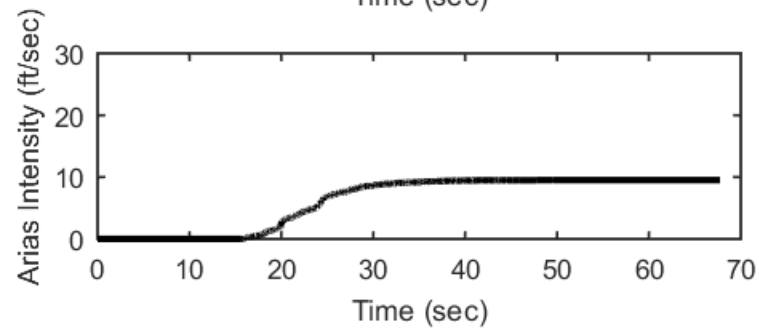
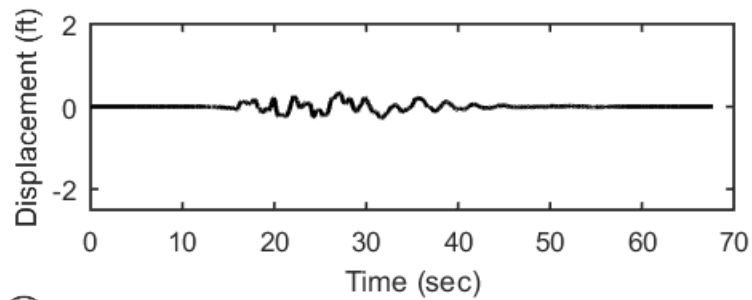
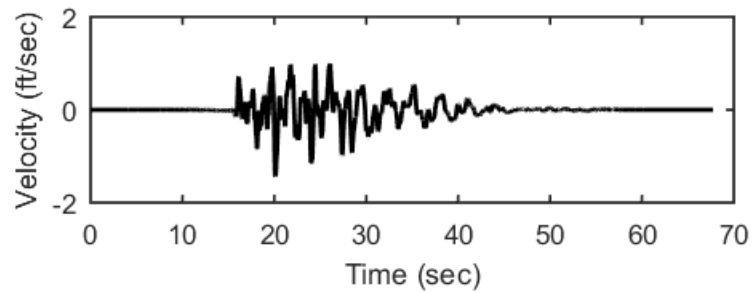
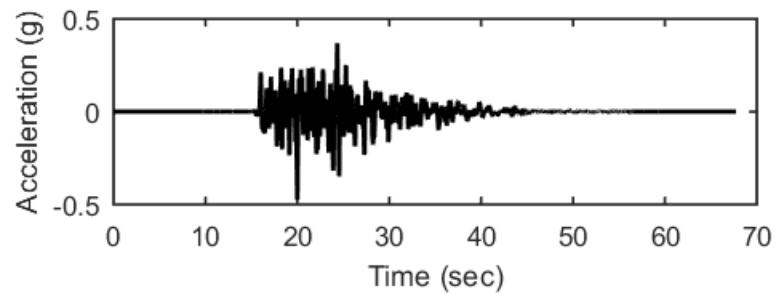
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



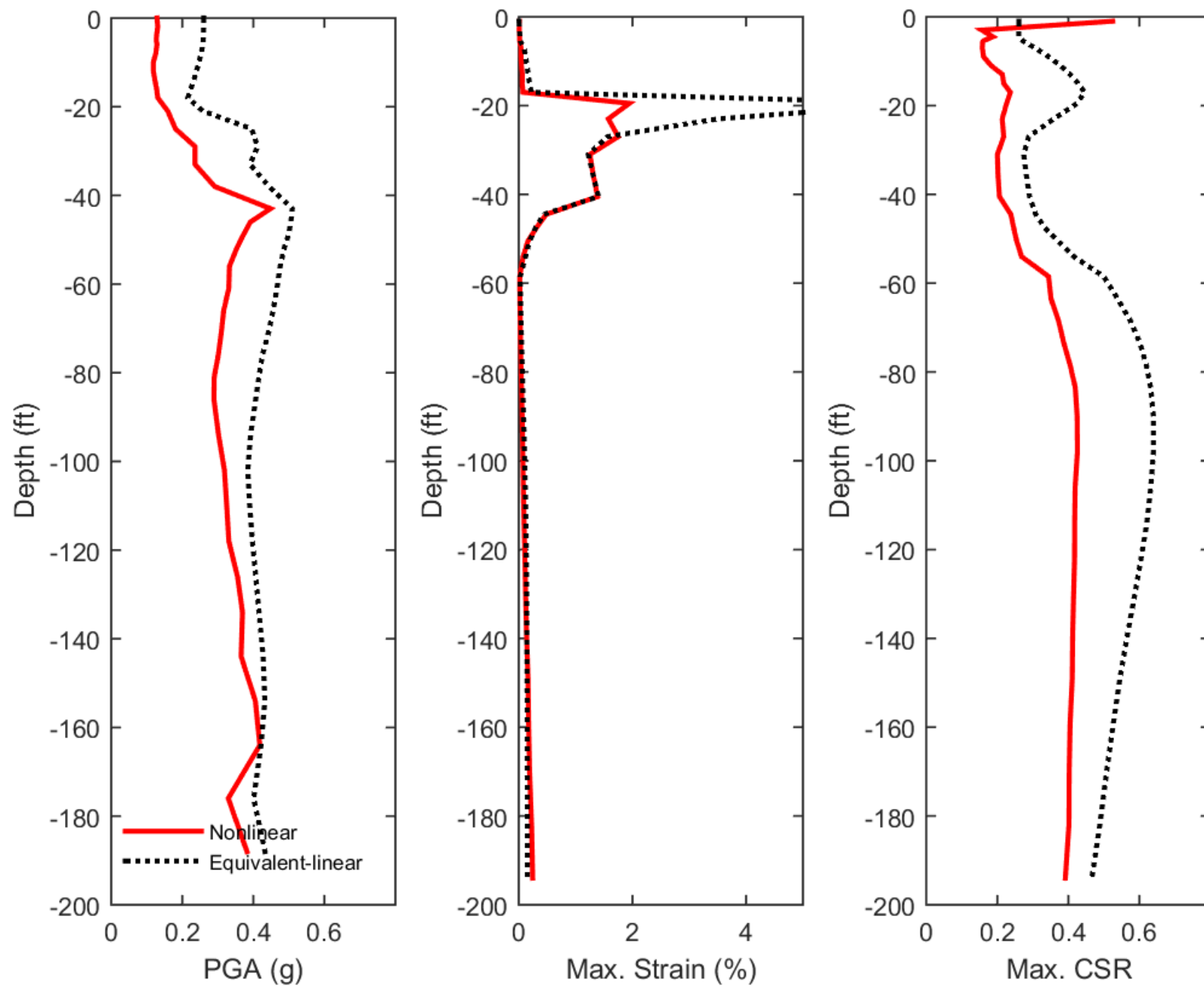
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



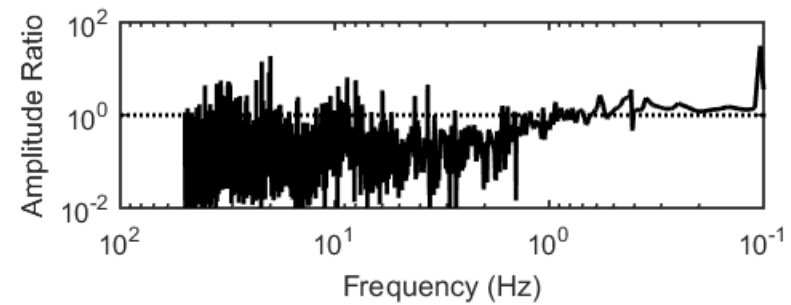
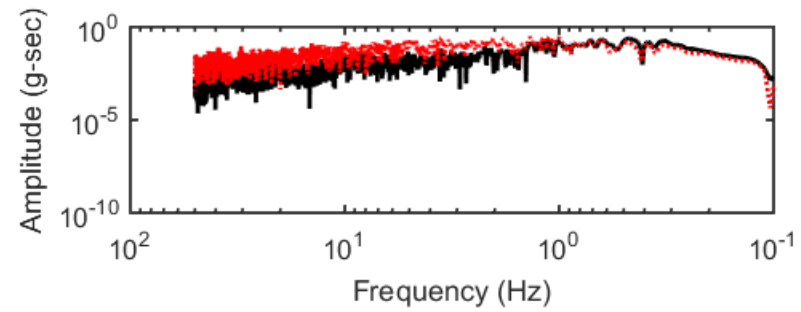
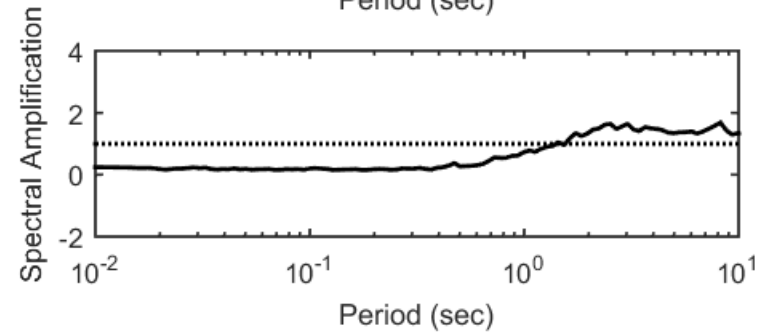
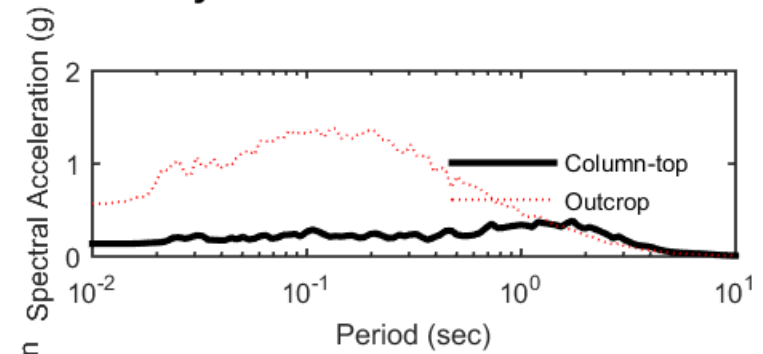
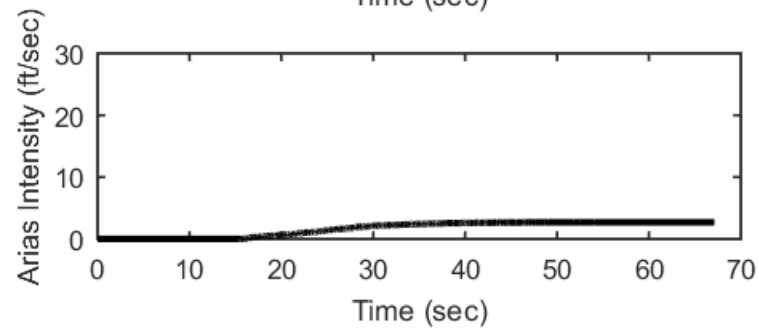
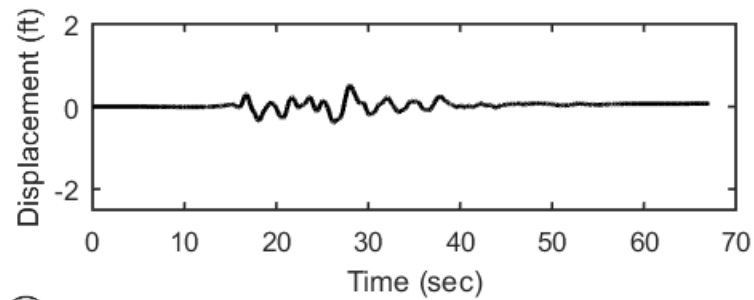
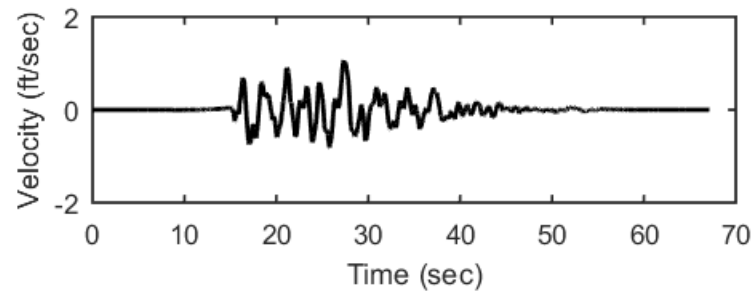
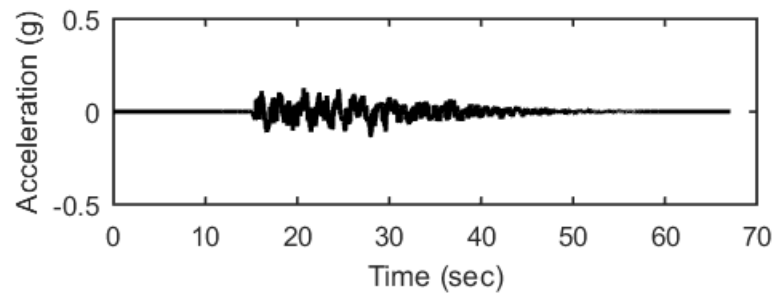
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



### Profile outputs for Motion: SEE4

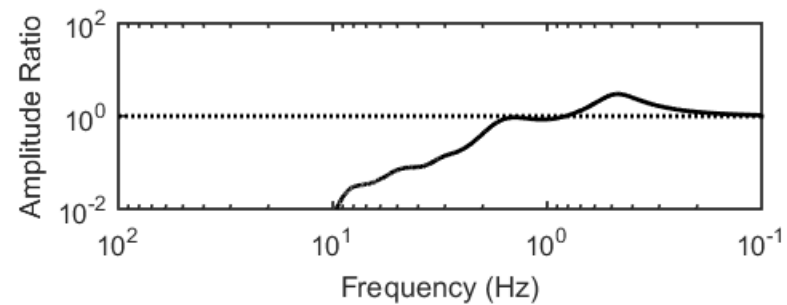
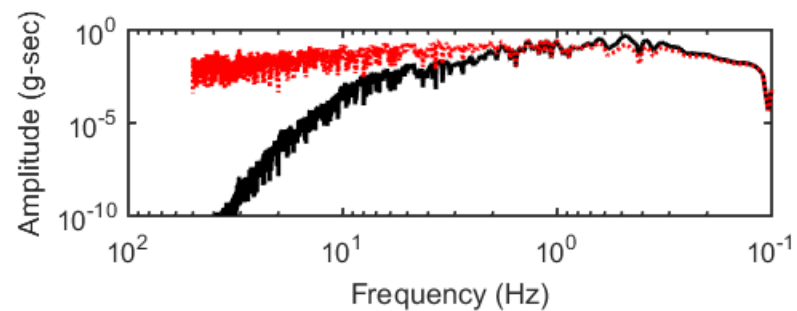
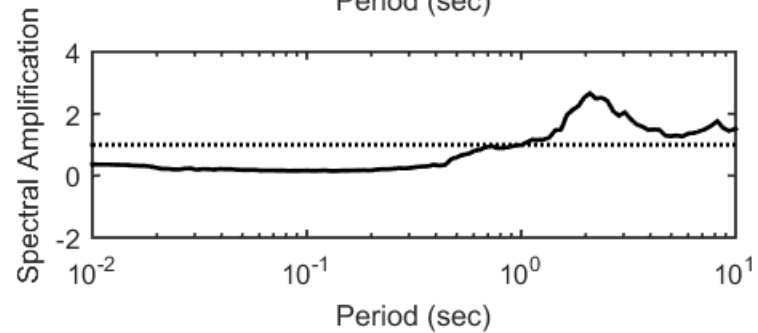
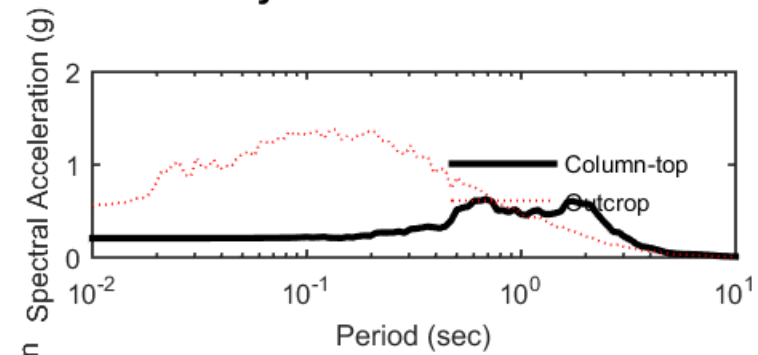
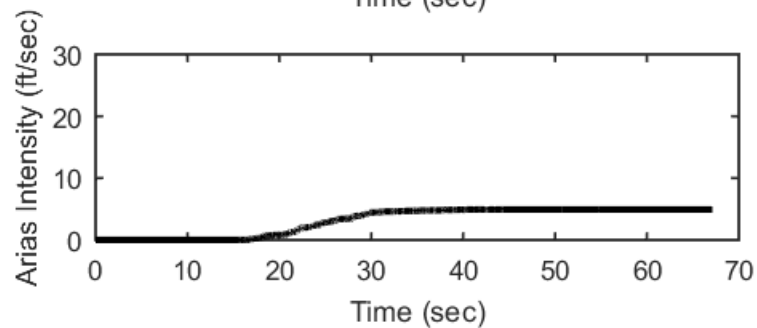
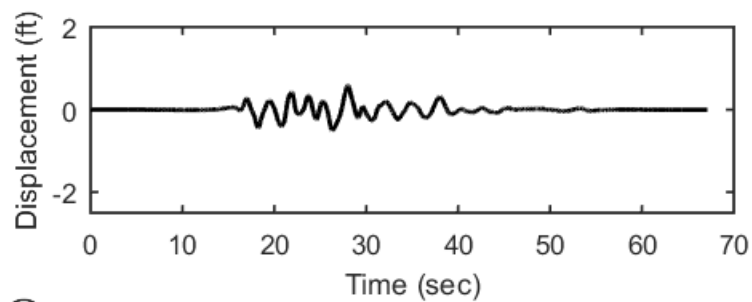
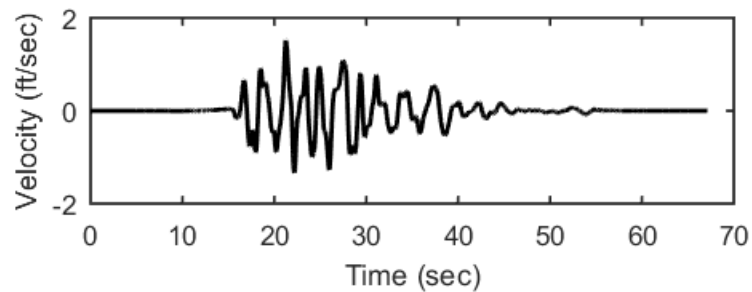
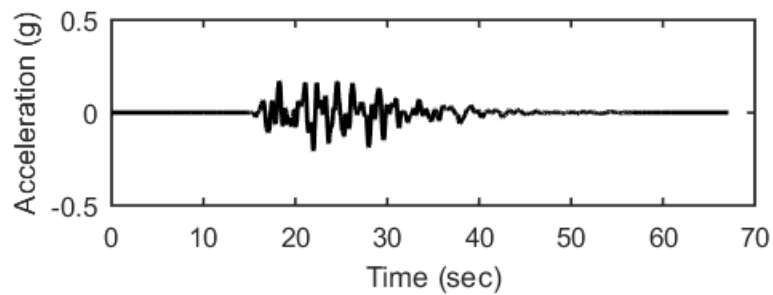


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5

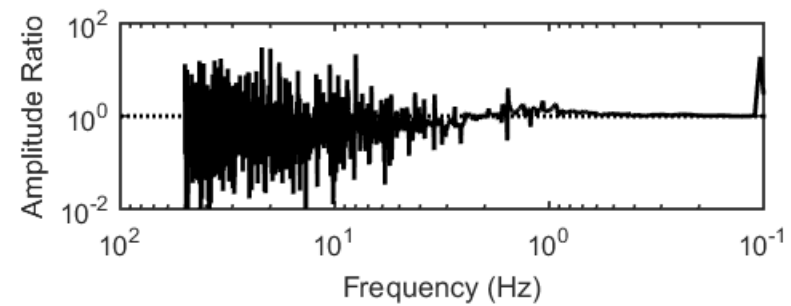
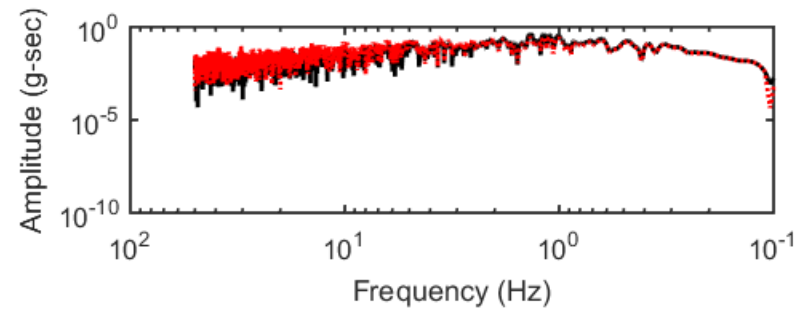
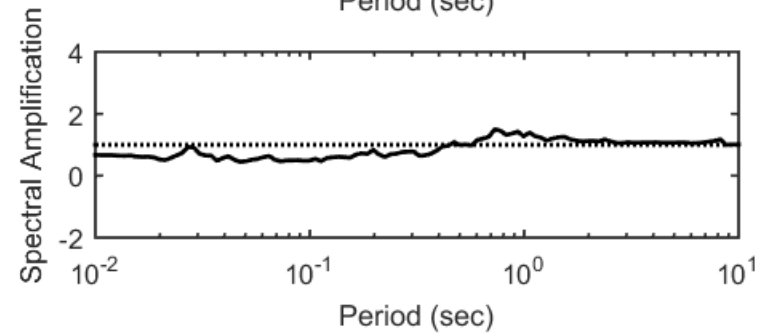
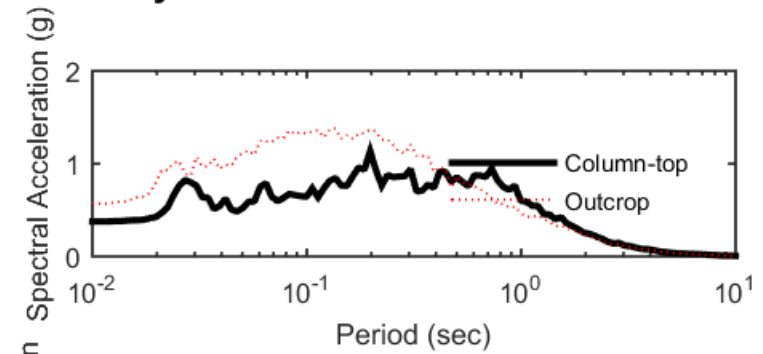
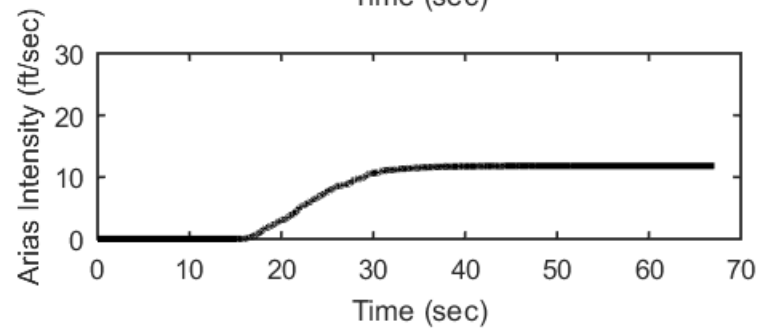
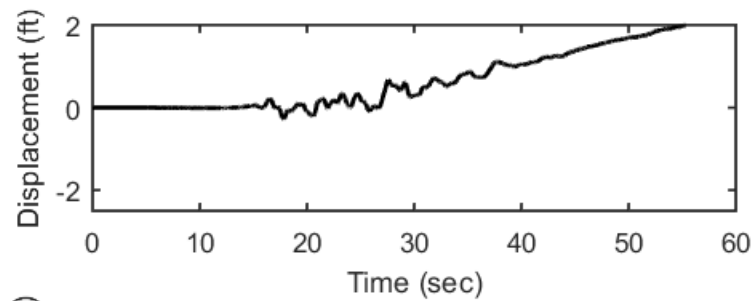
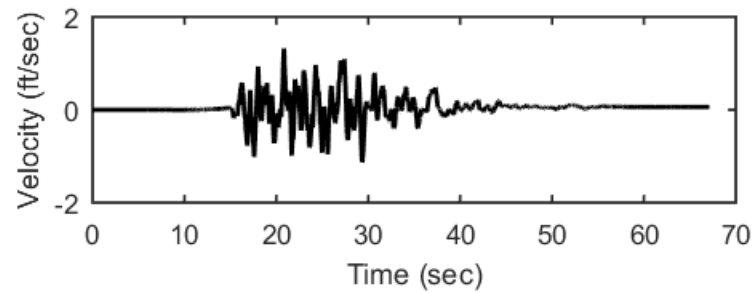
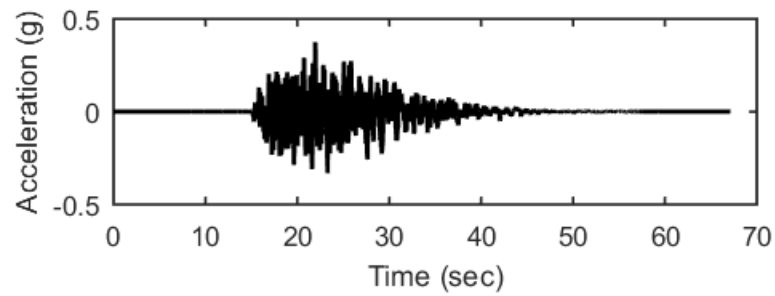




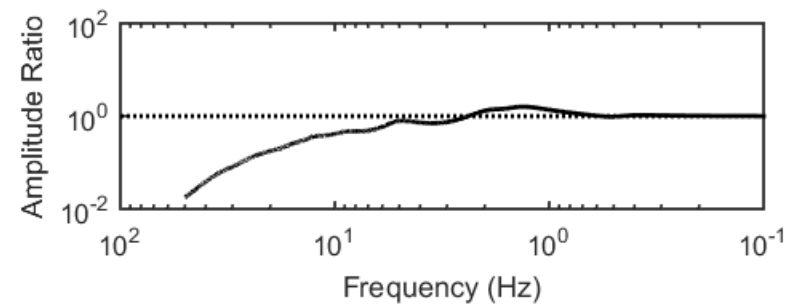
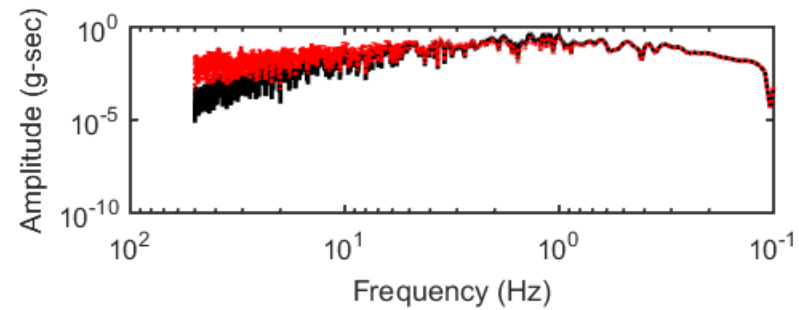
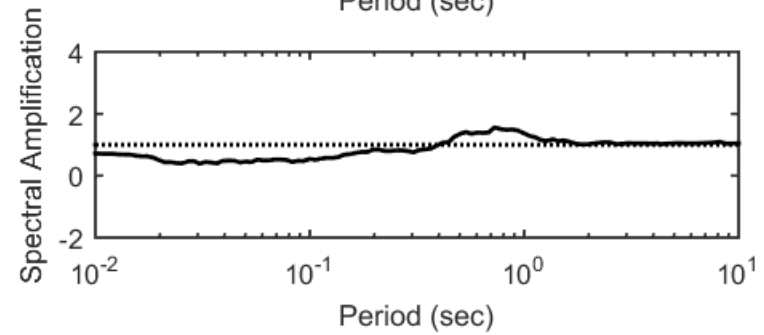
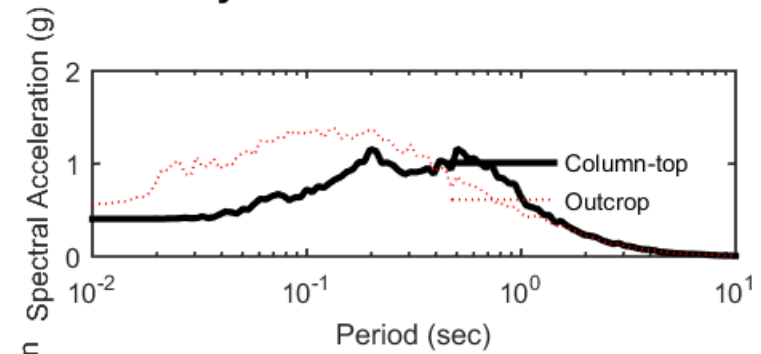
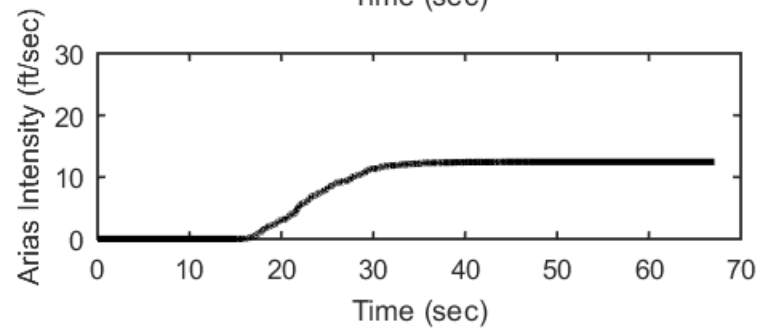
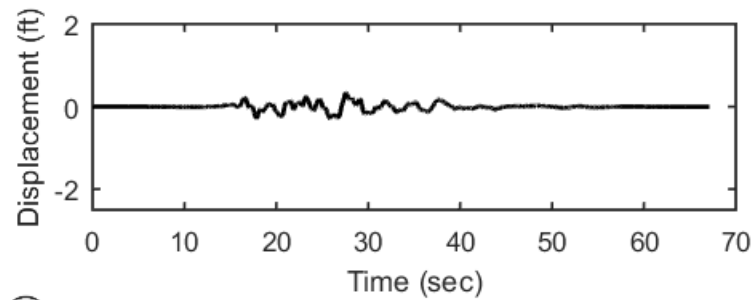
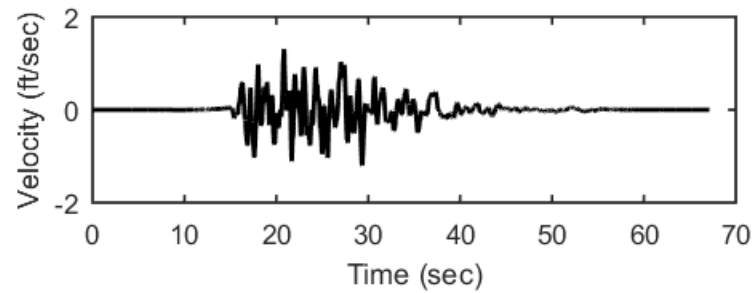
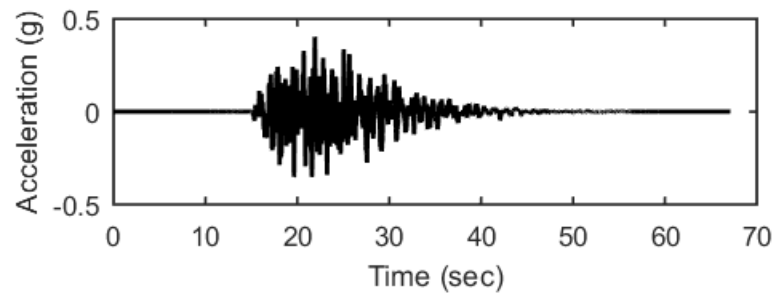
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



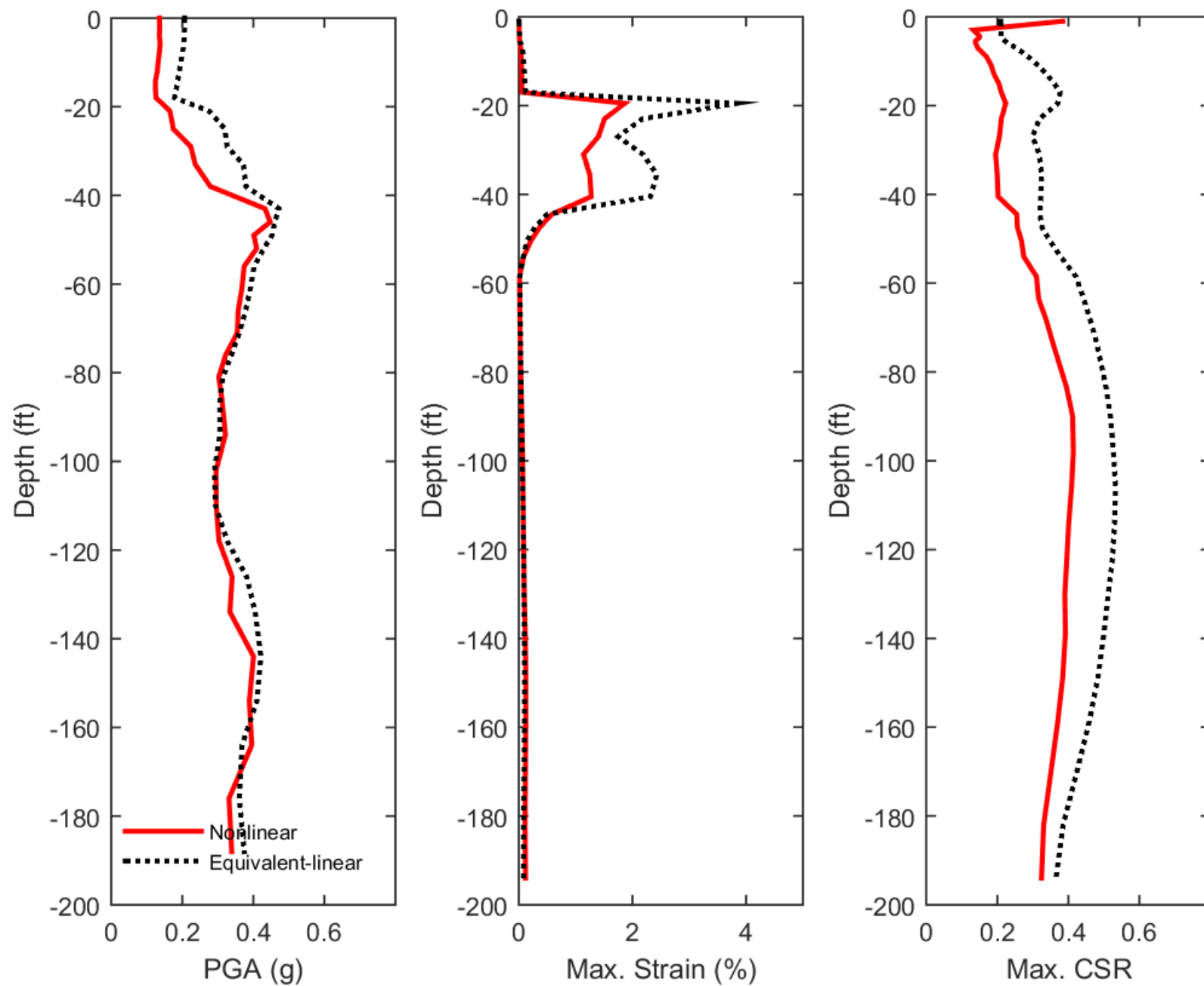
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



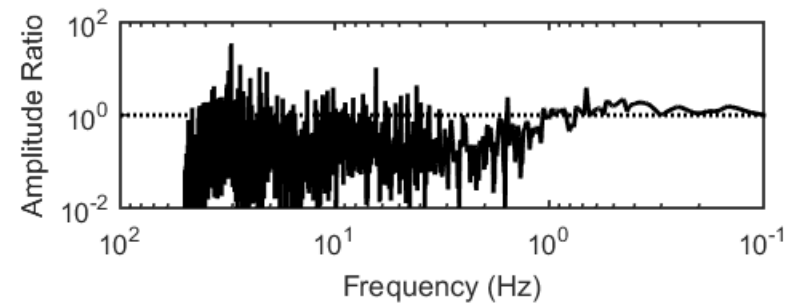
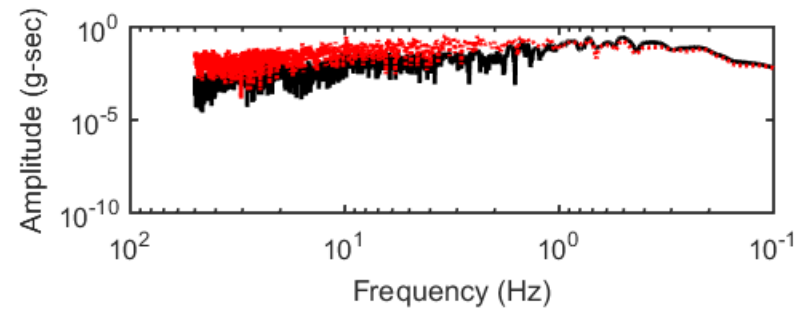
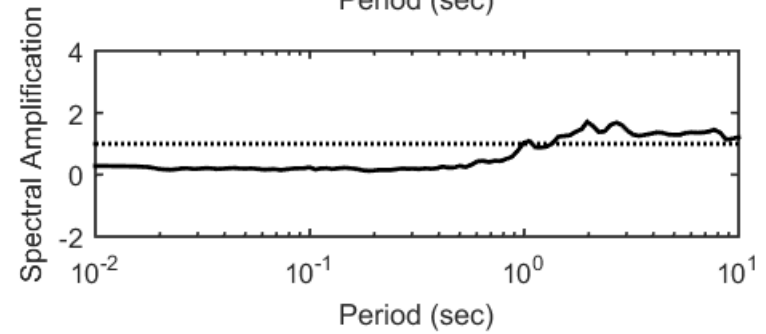
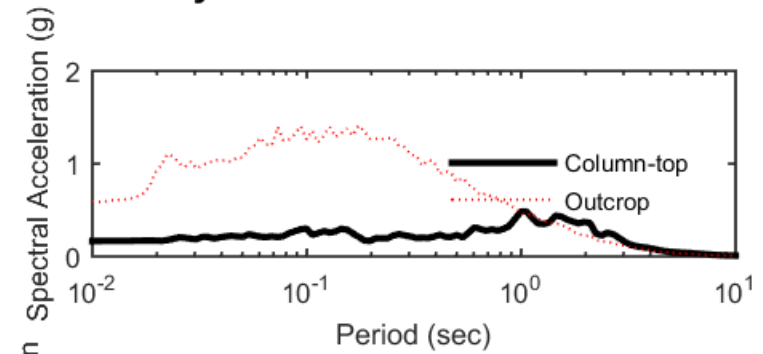
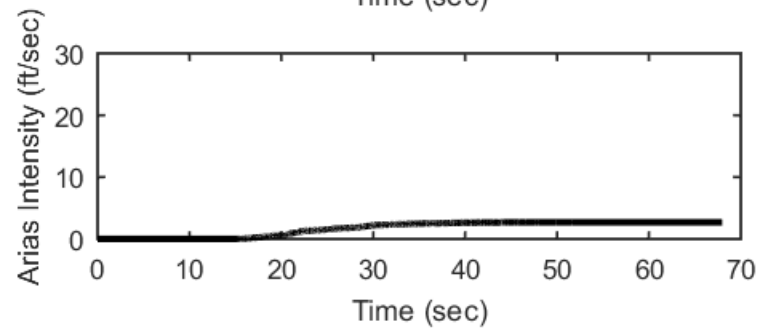
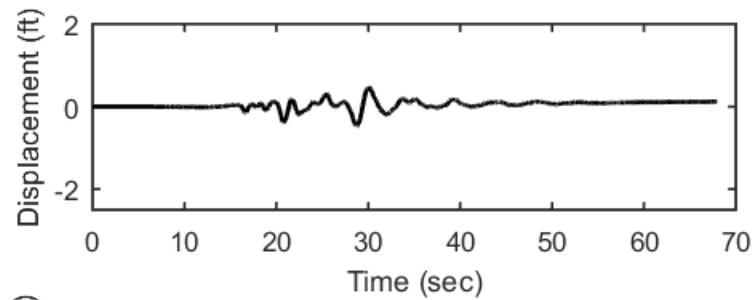
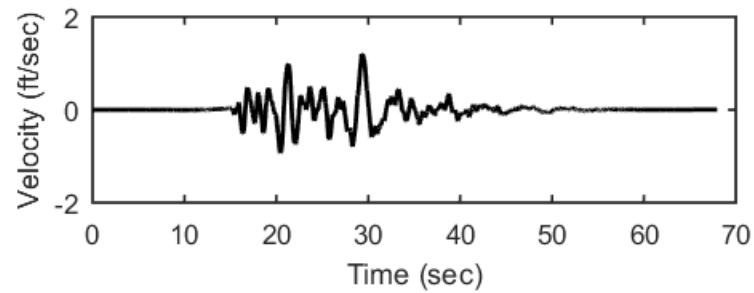
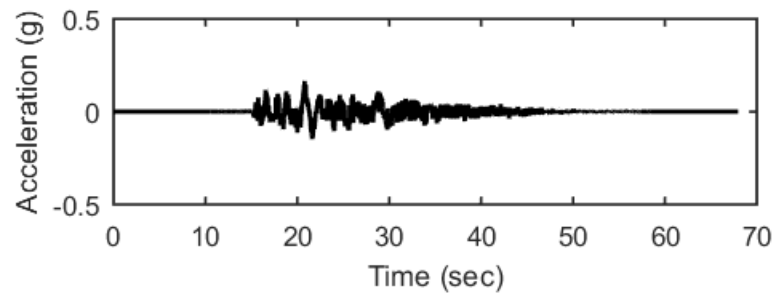
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



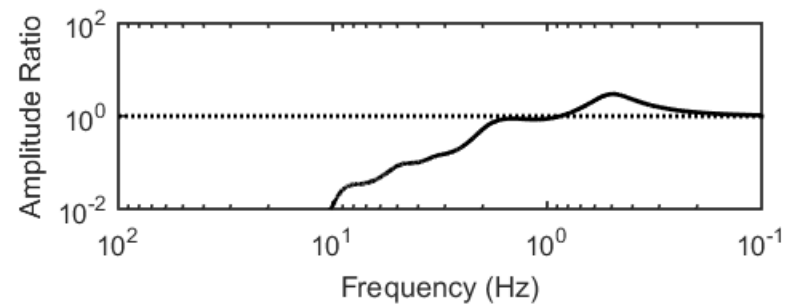
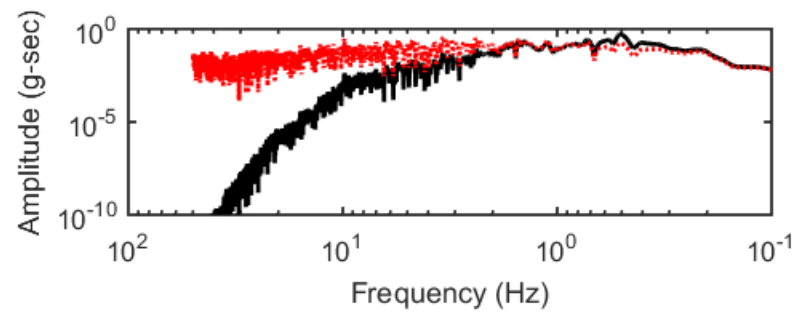
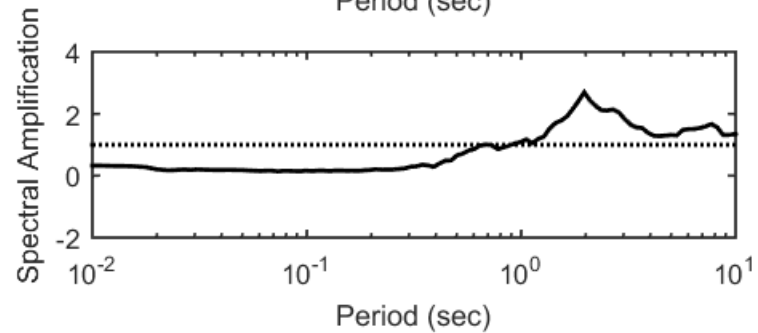
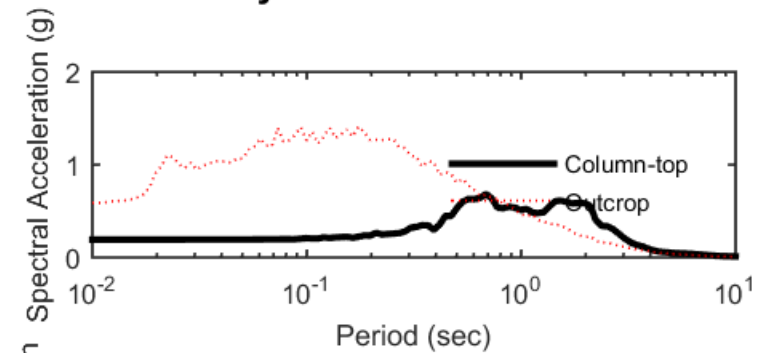
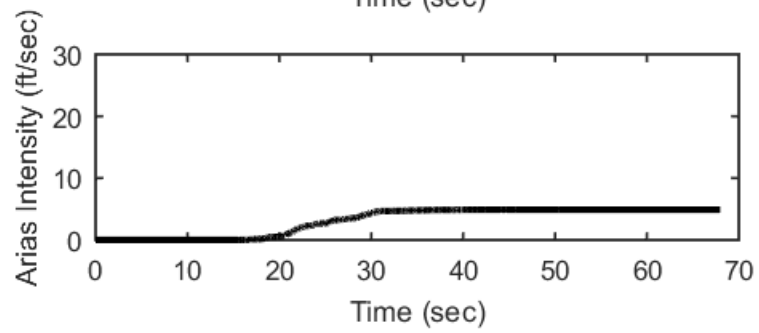
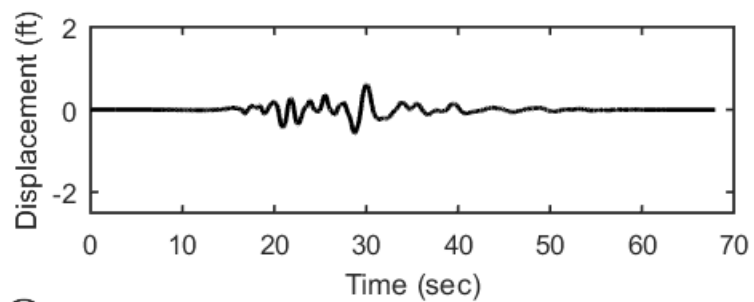
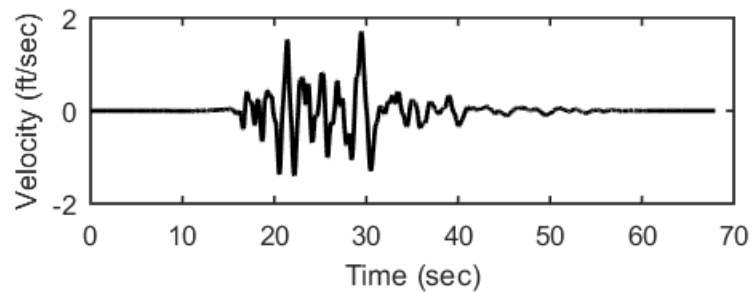
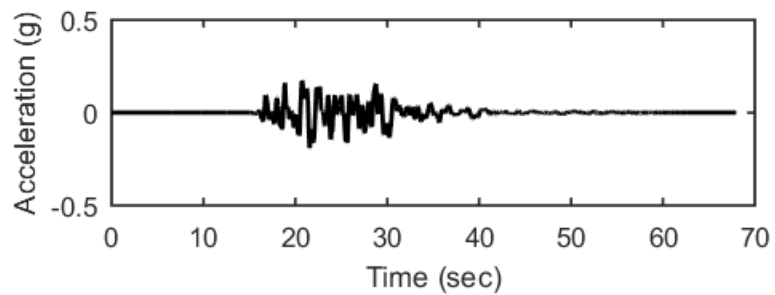
### Profile outputs for Motion: SEE5



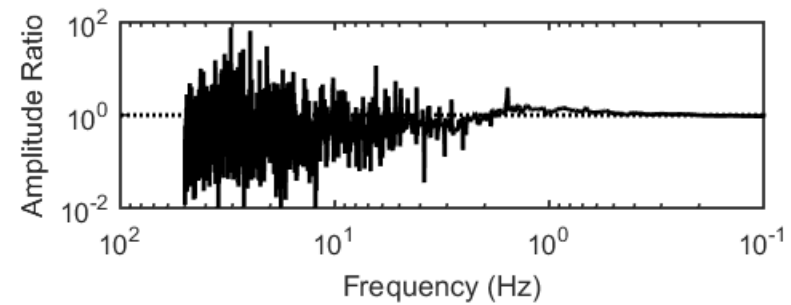
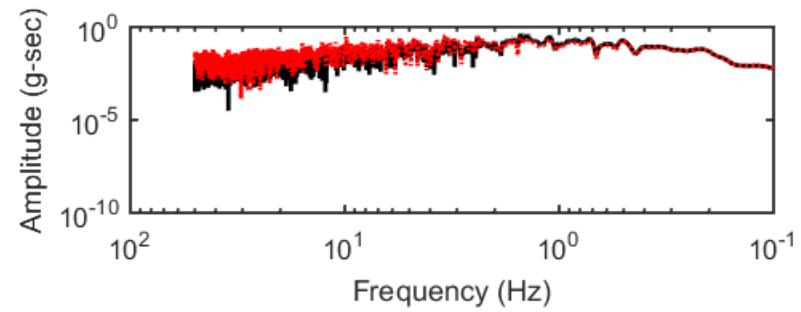
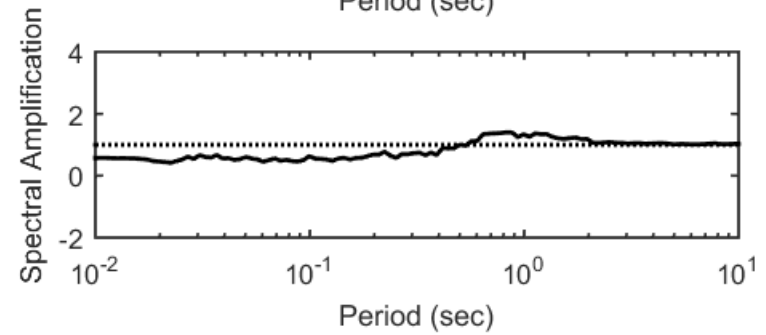
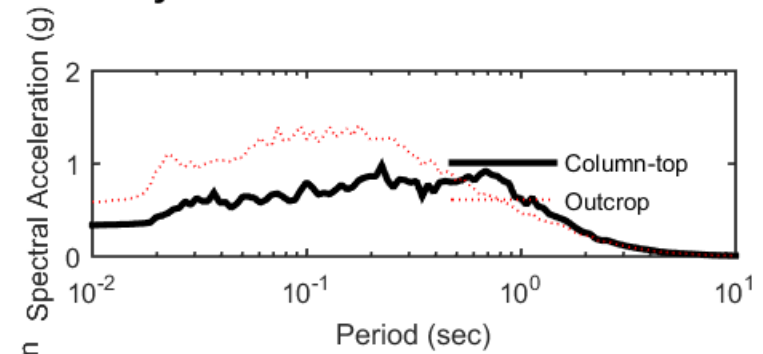
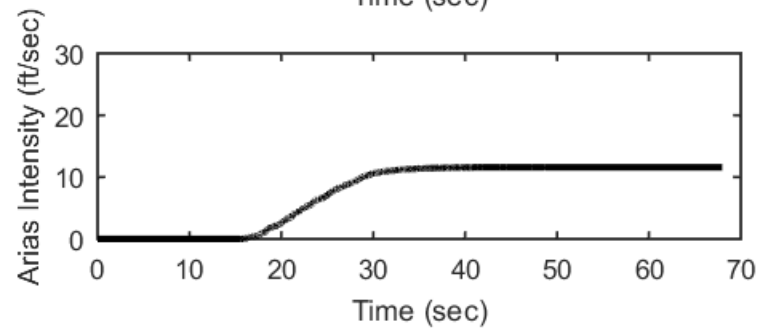
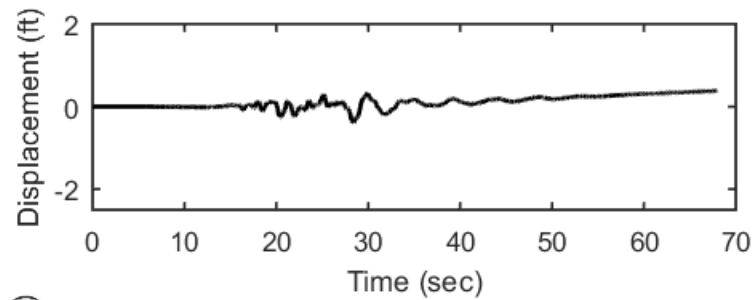
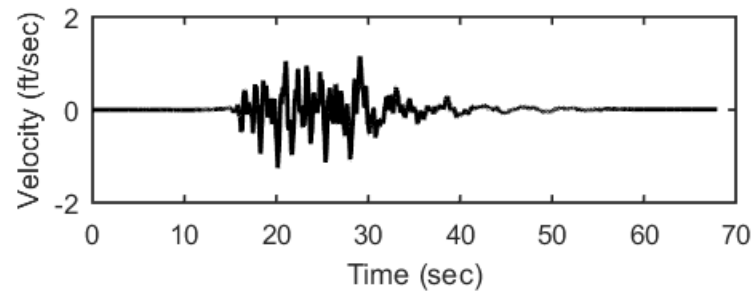
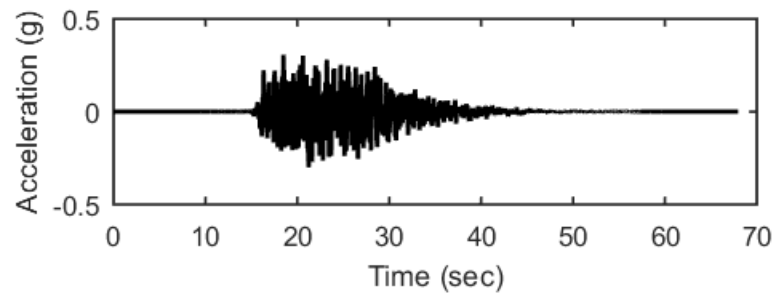
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



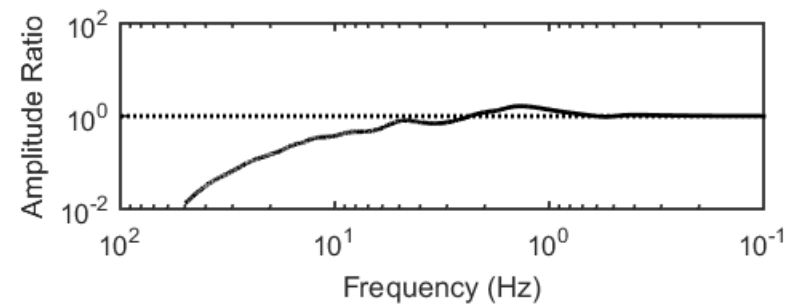
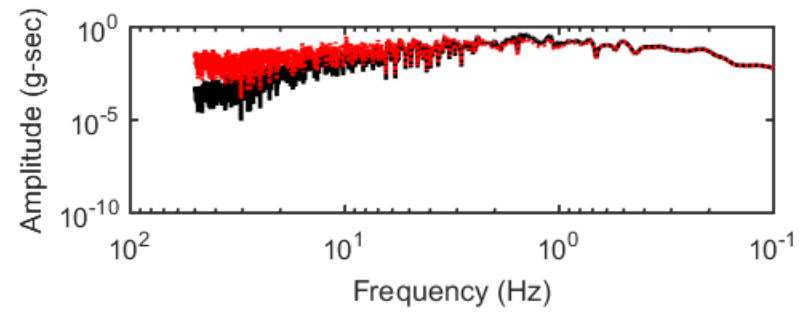
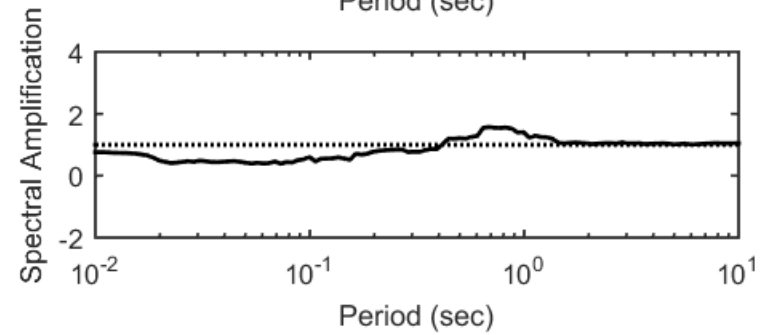
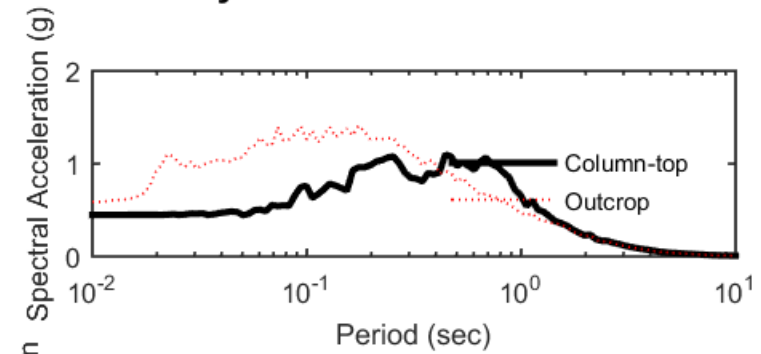
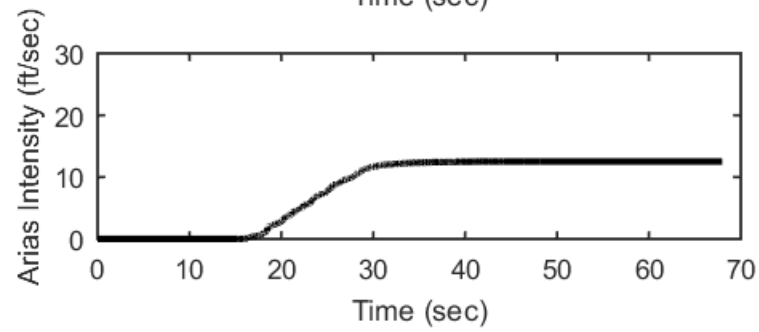
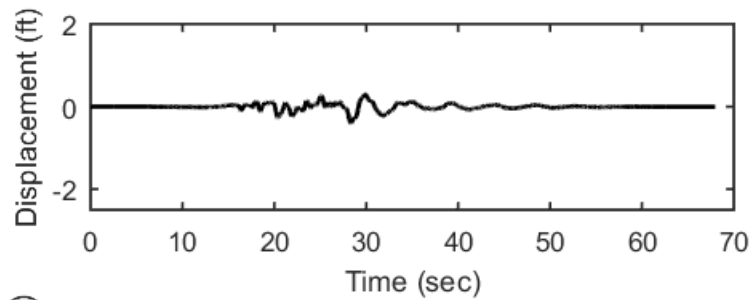
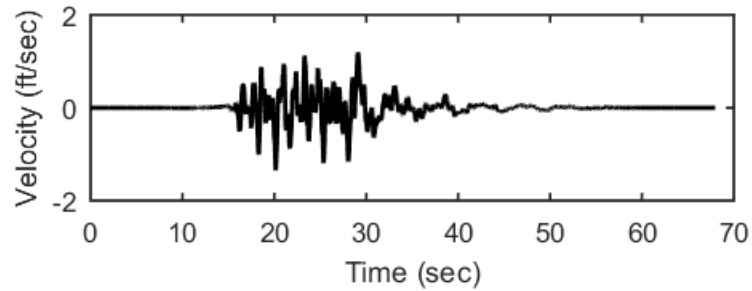
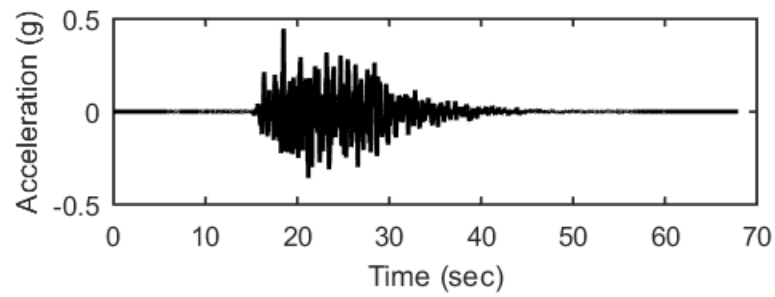
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6

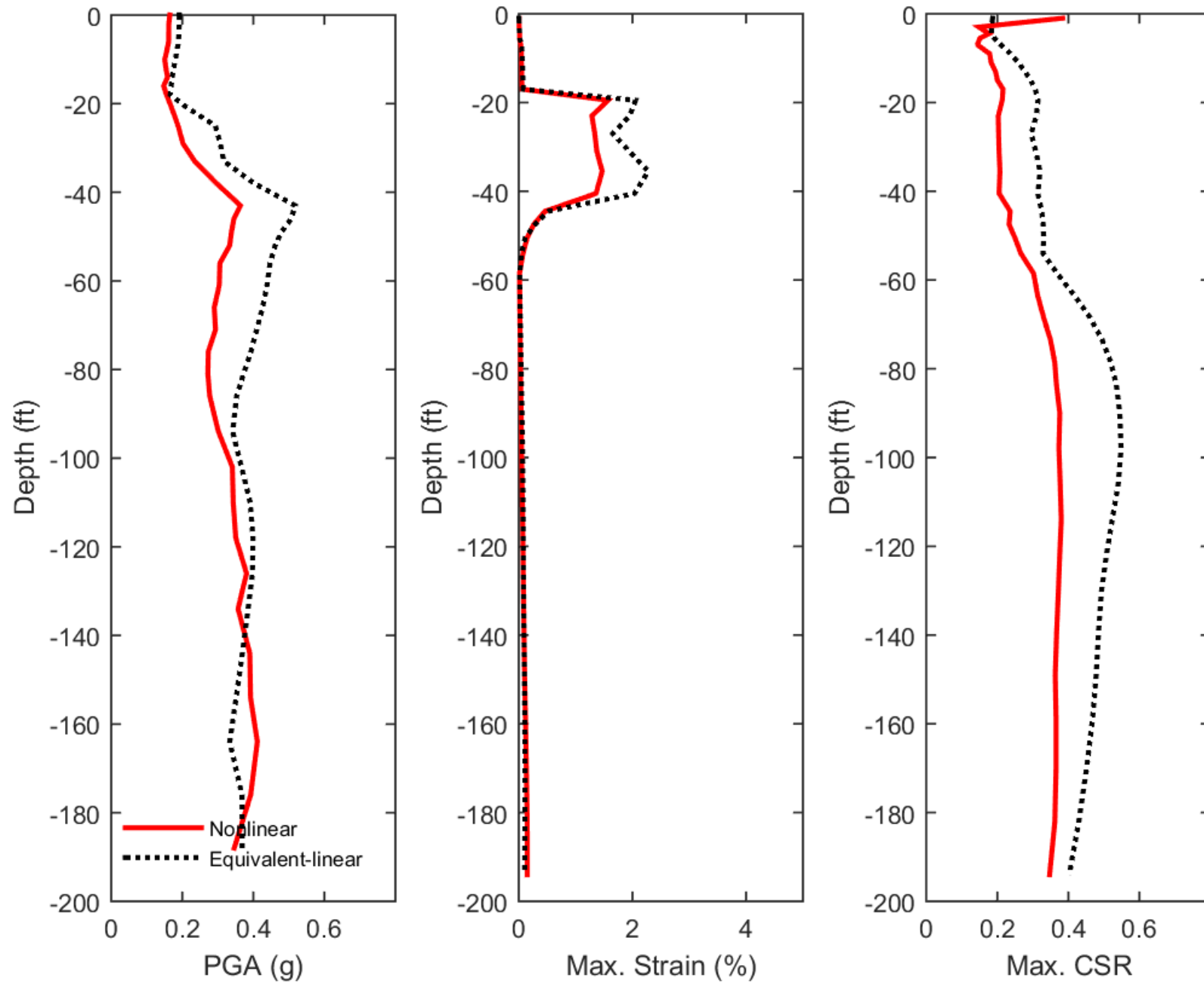


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6

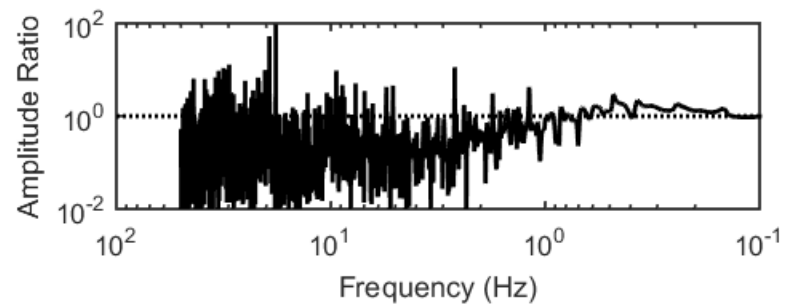
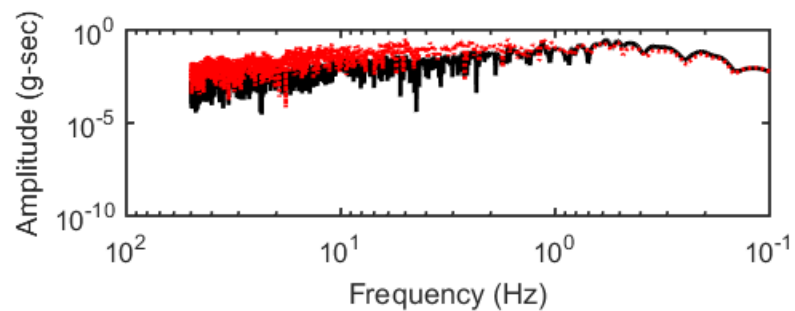
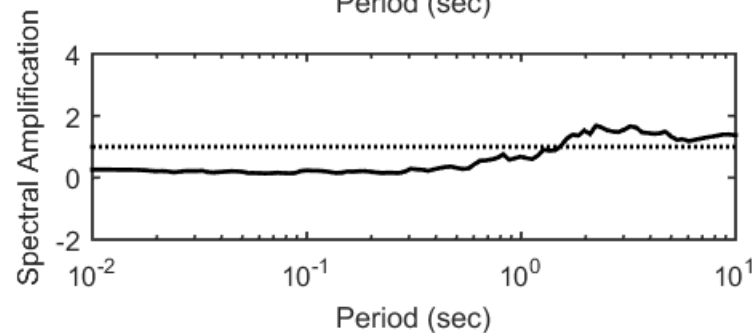
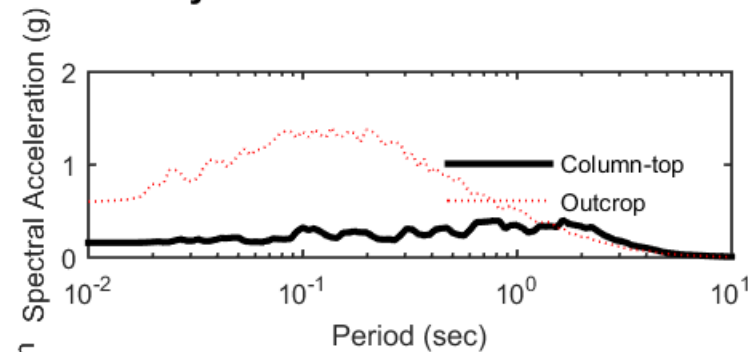
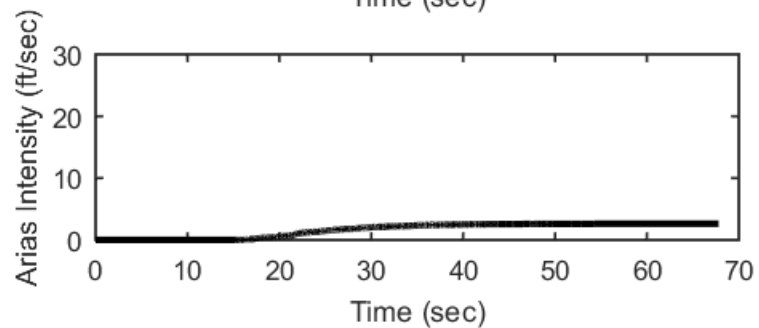
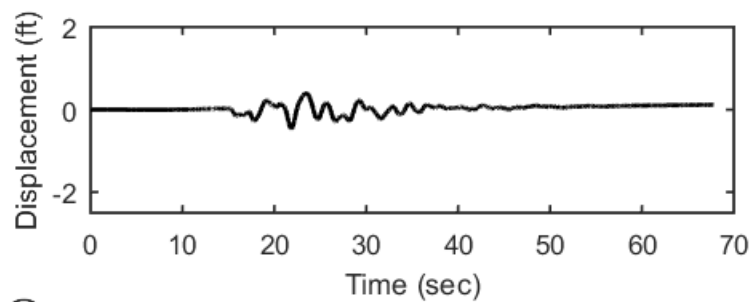
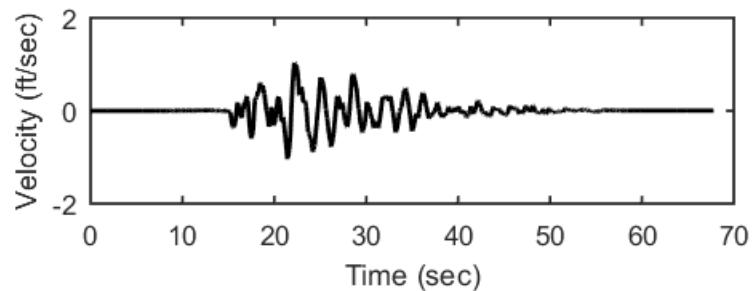
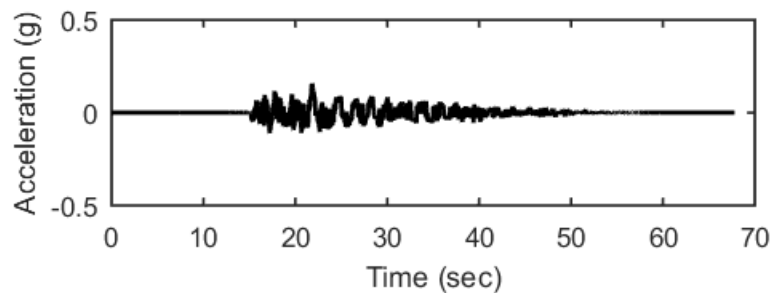




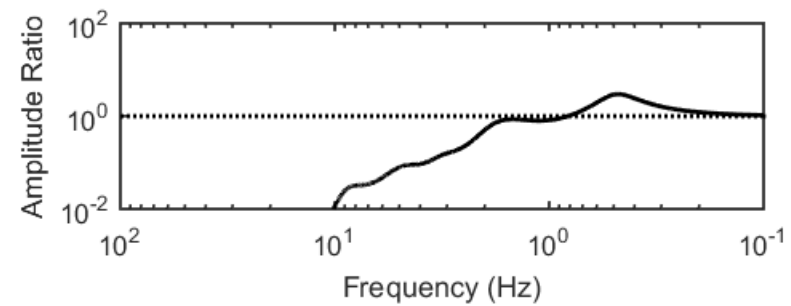
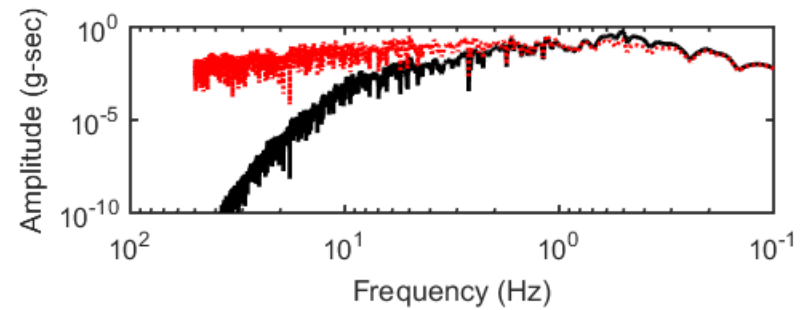
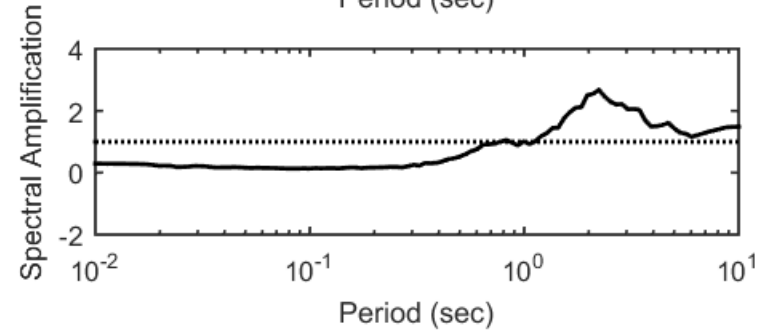
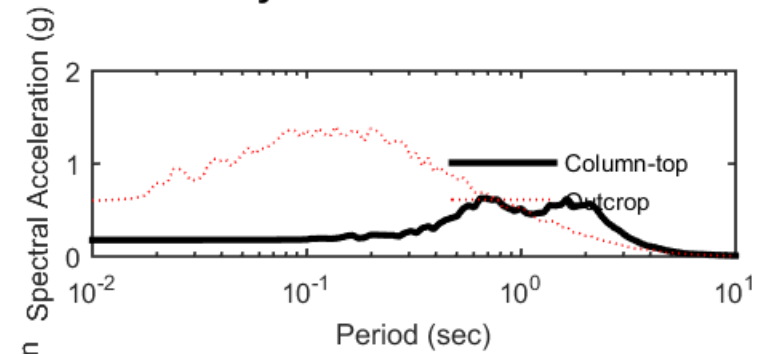
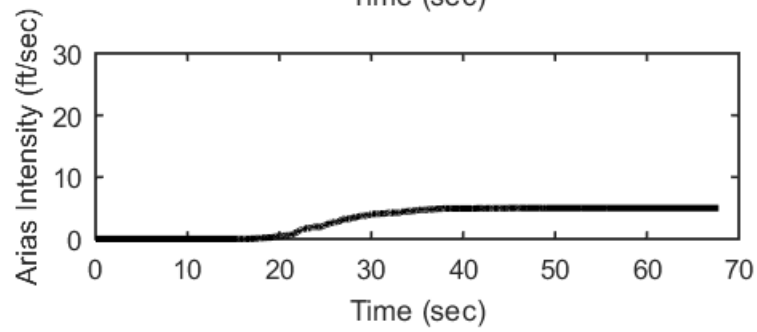
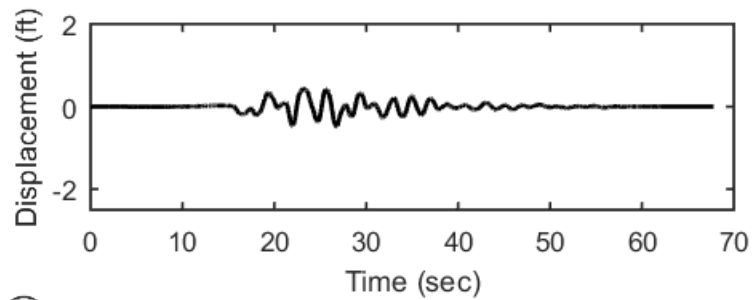
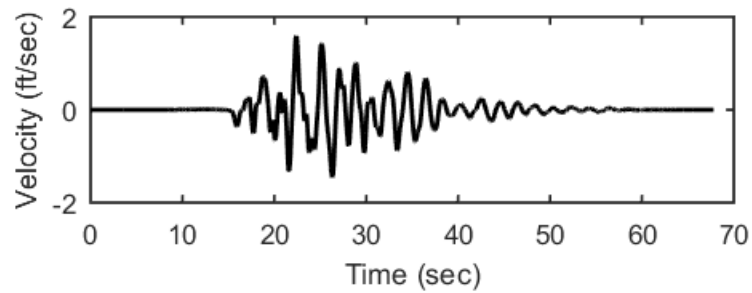
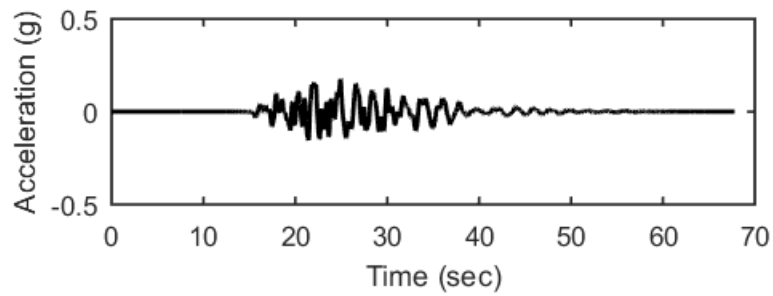
### Profile outputs for Motion: SEE6



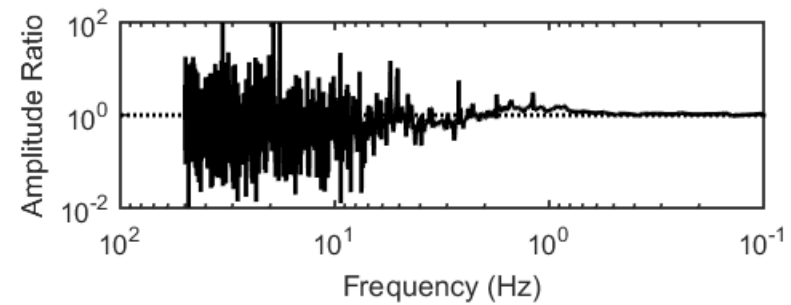
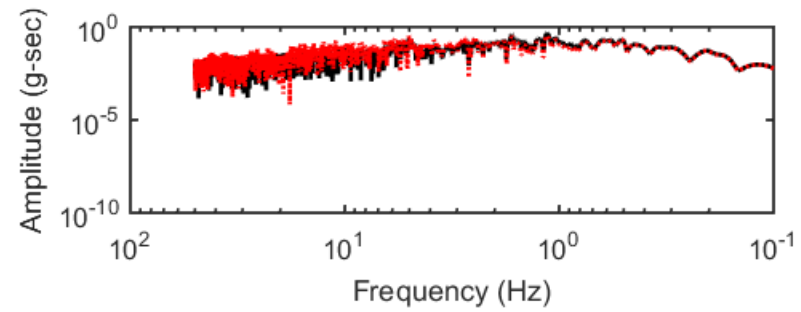
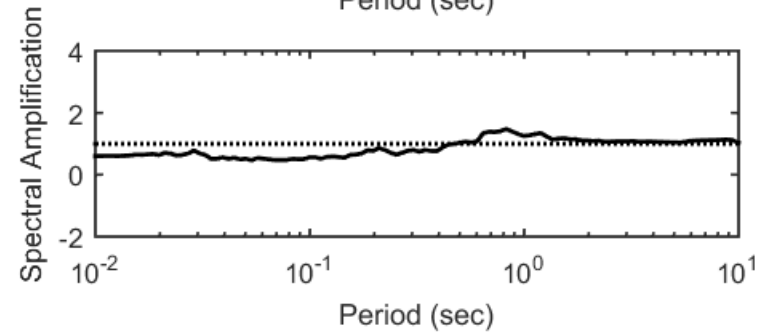
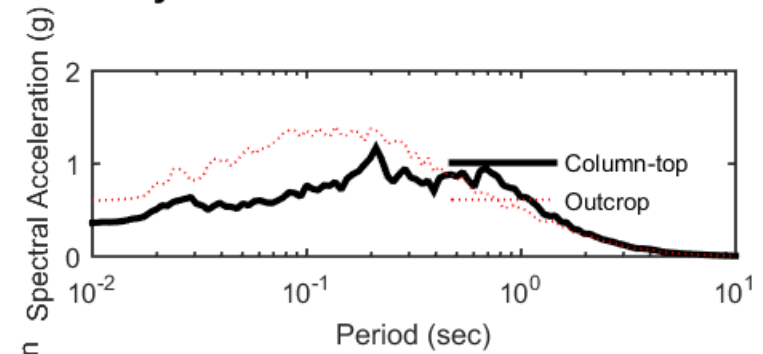
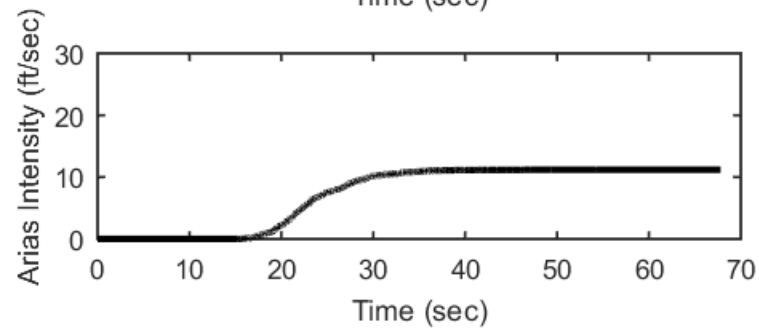
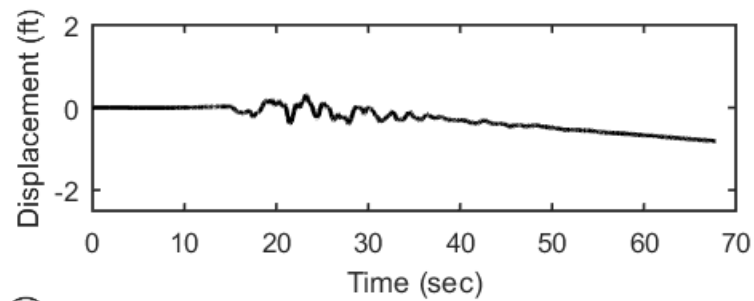
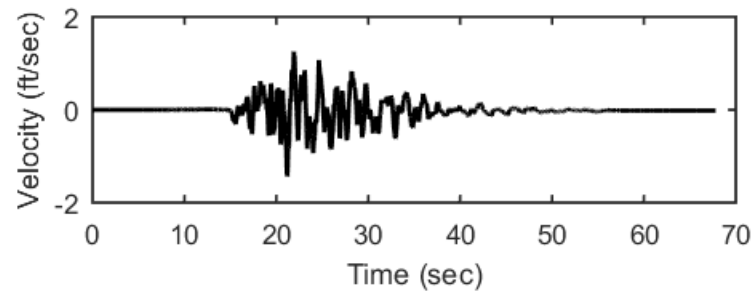
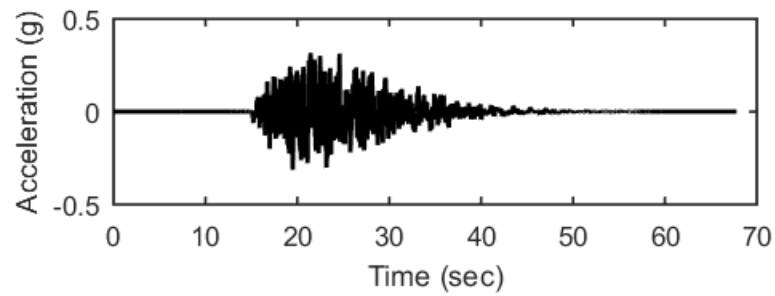
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



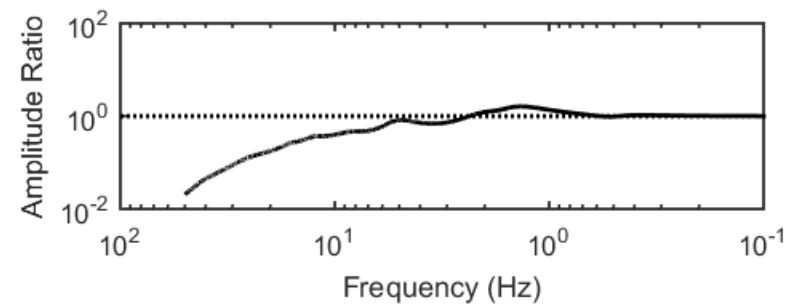
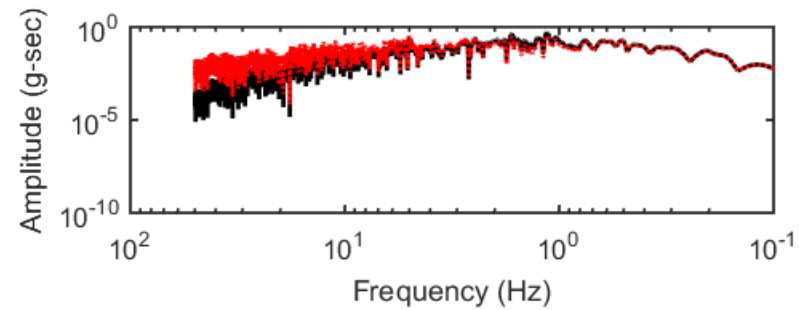
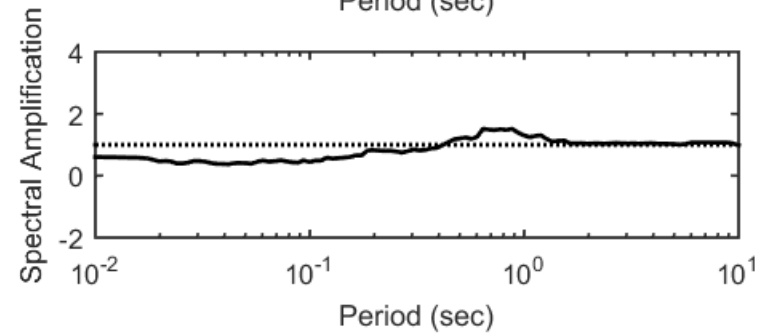
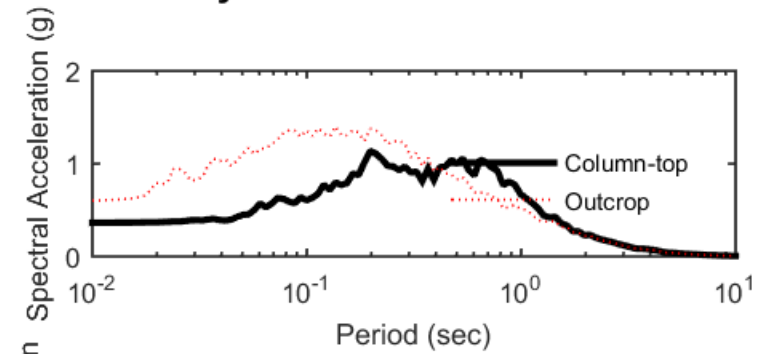
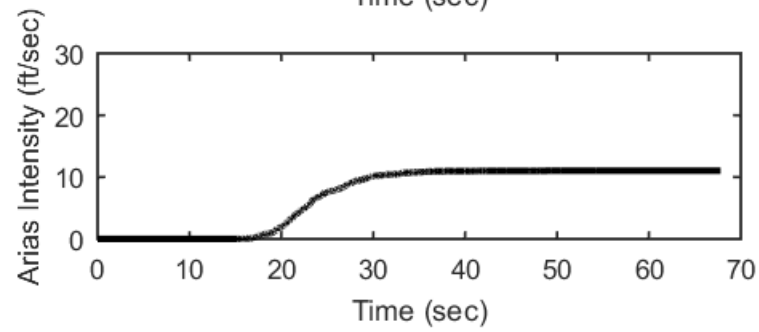
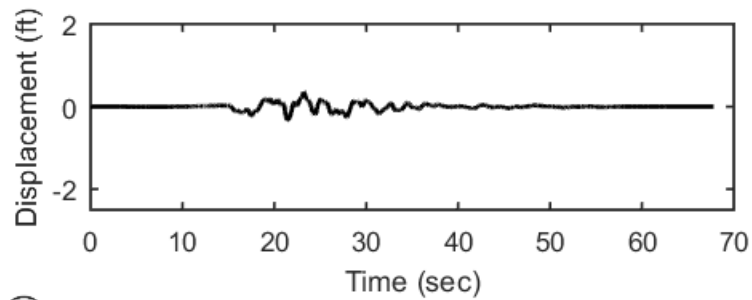
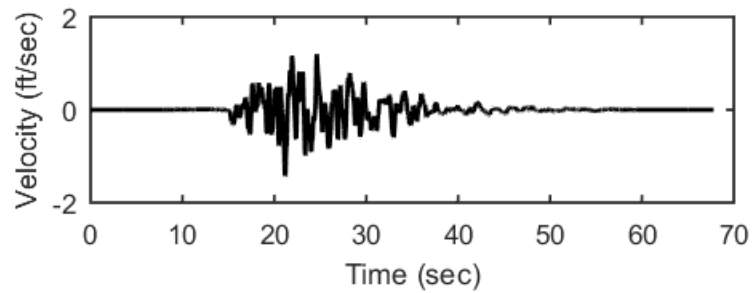
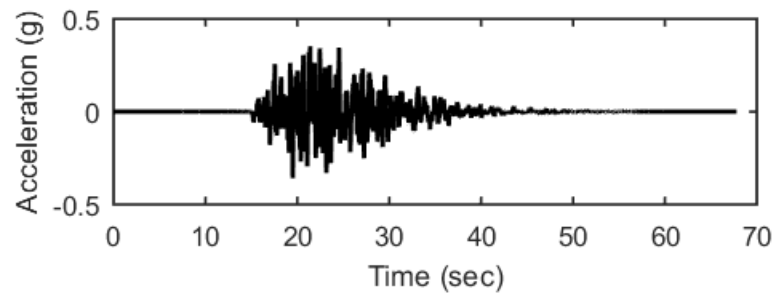
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



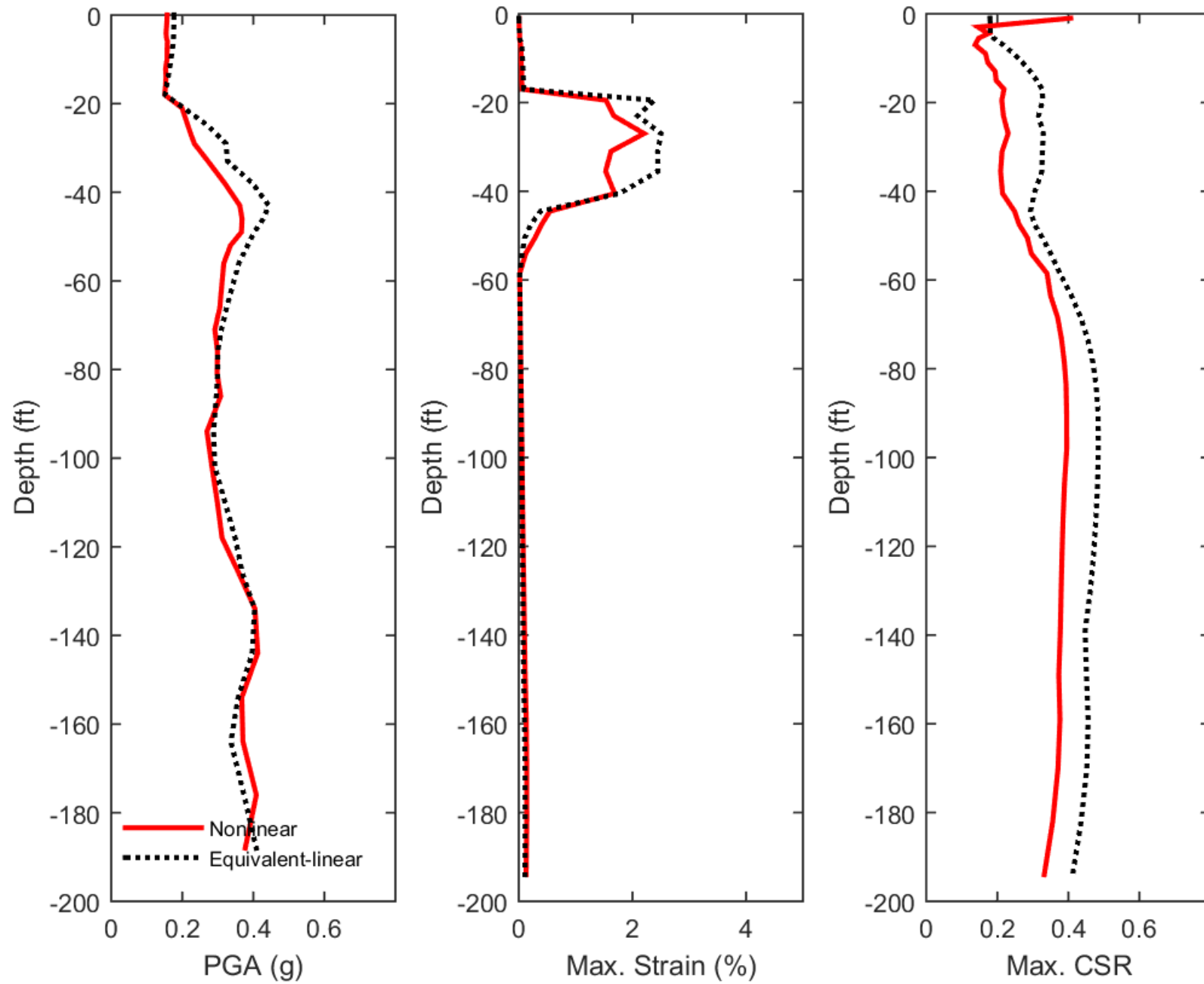
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



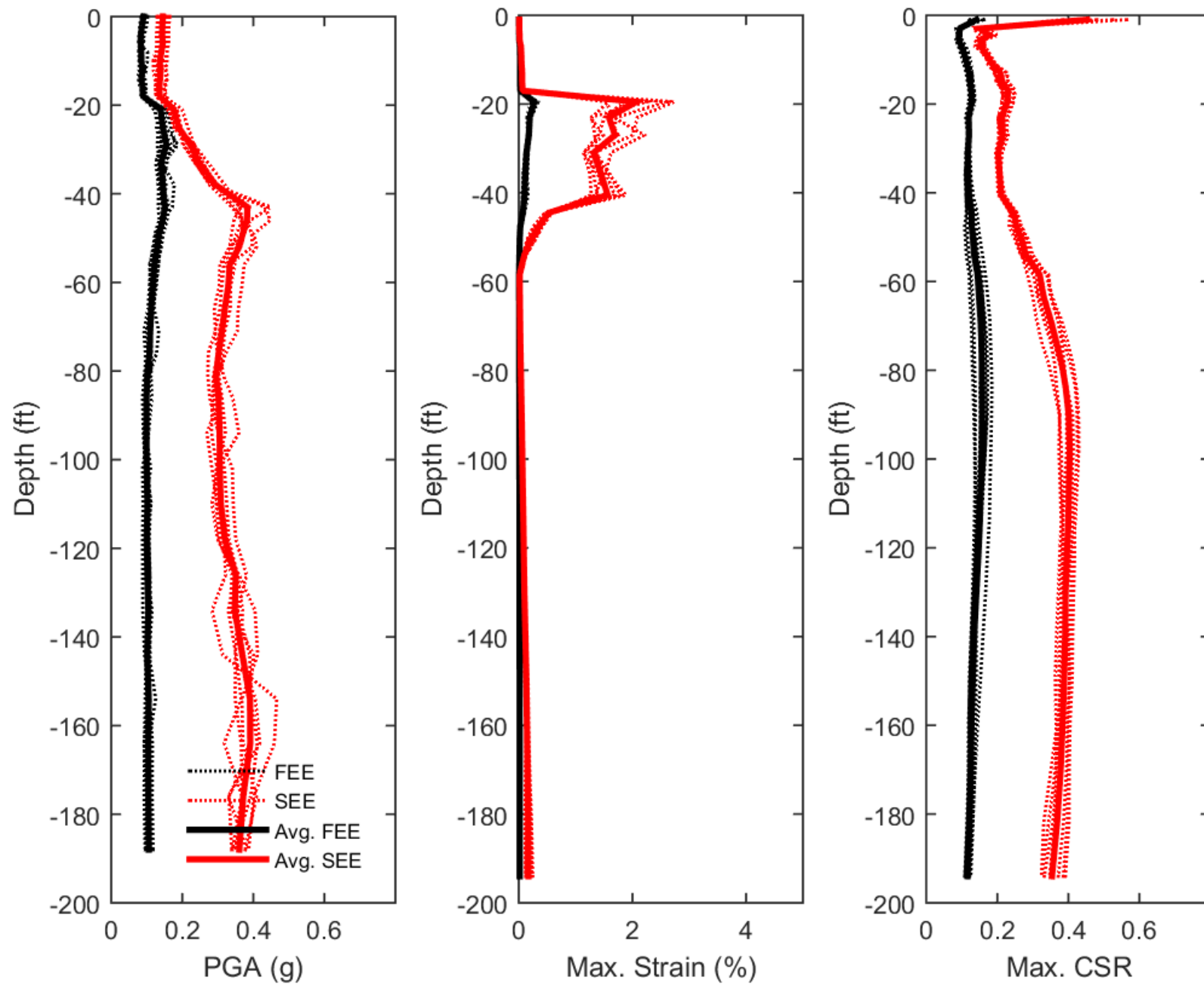
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



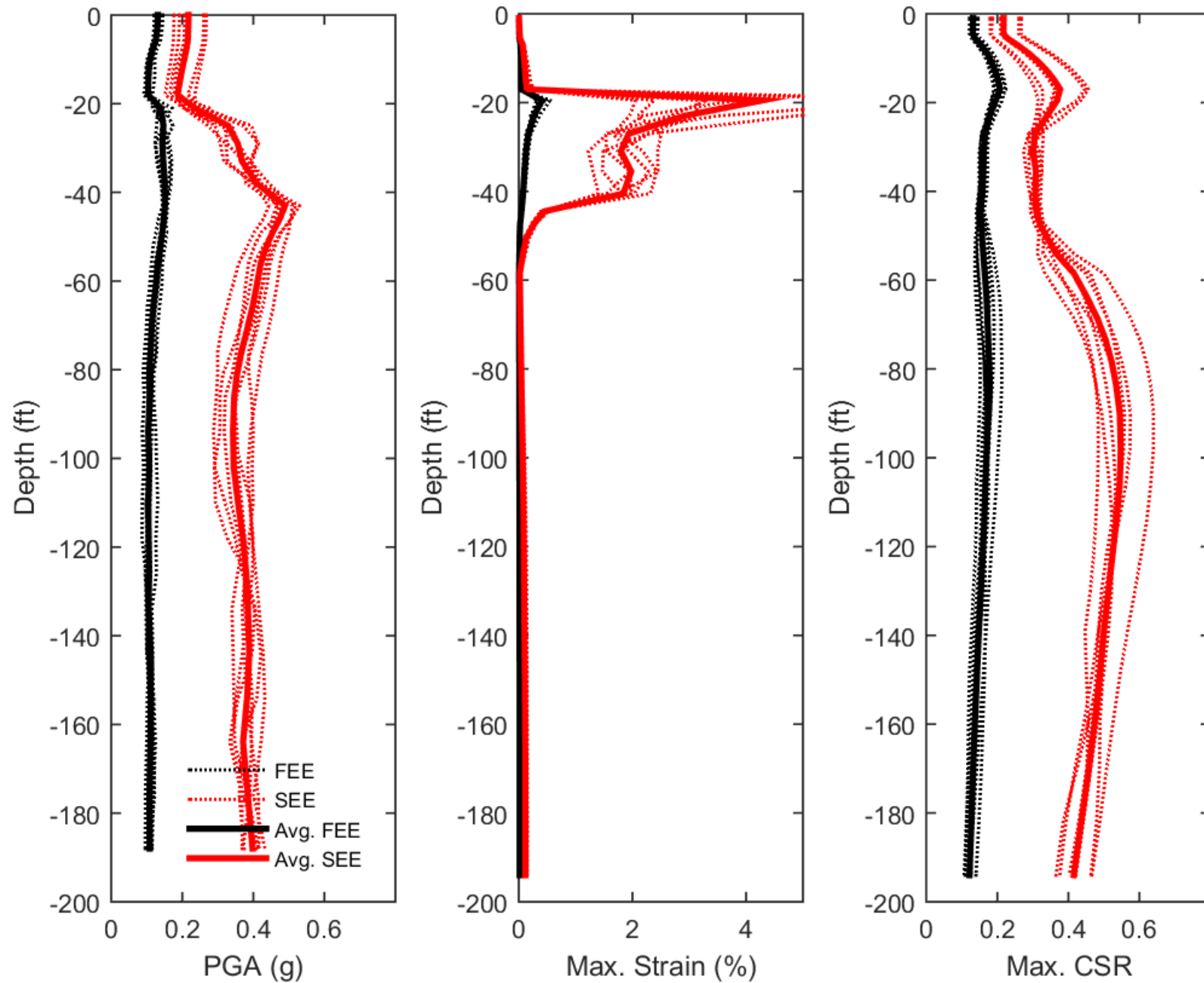
### Profile outputs for Motion: SEE7



## Summary of the profile outputs for Nonlinear analysis

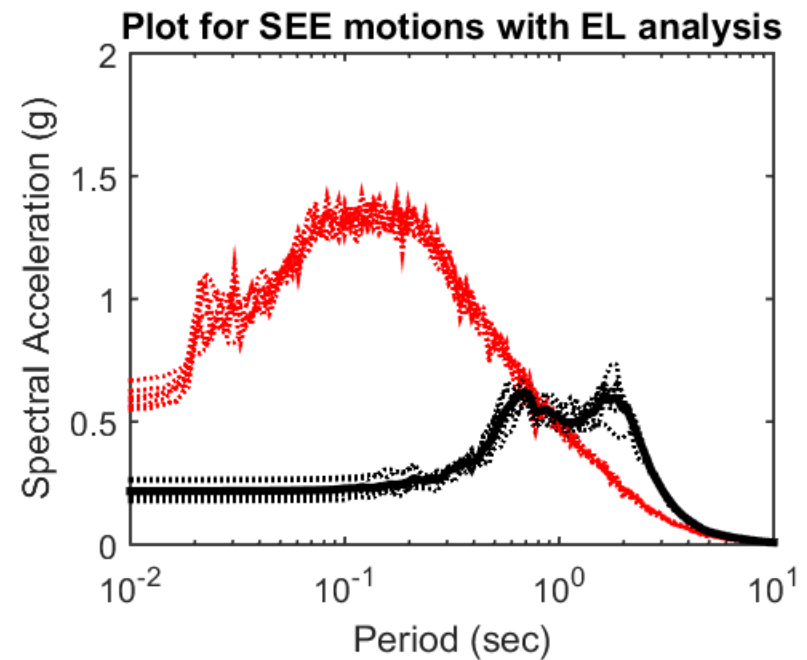
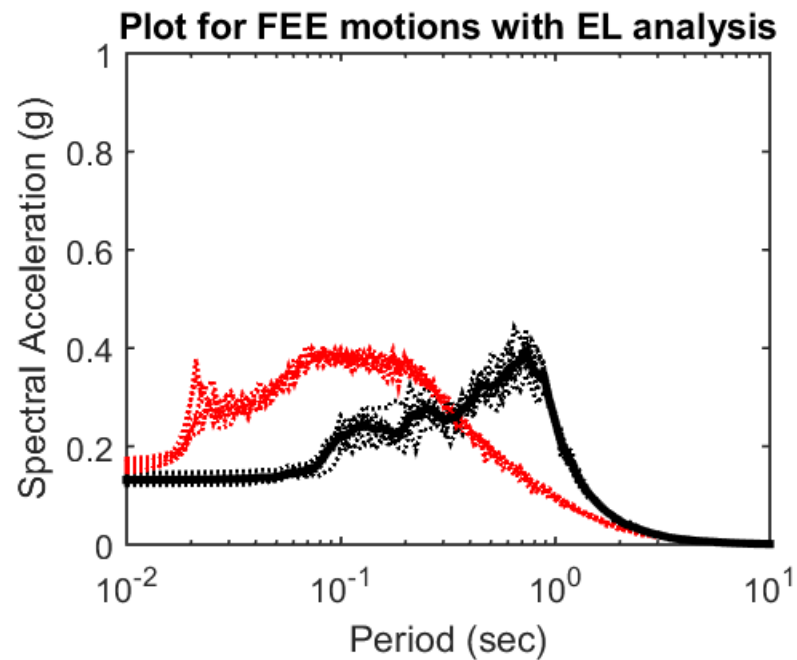
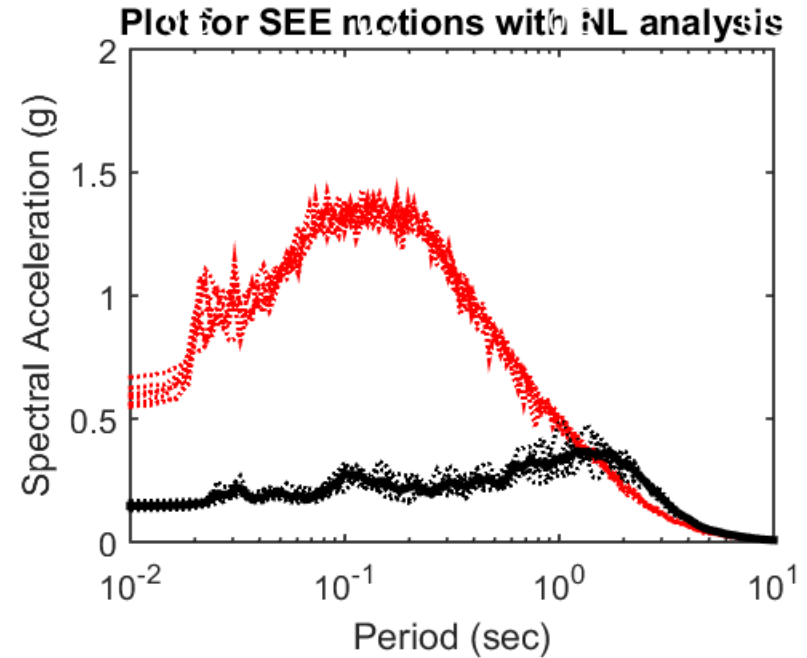
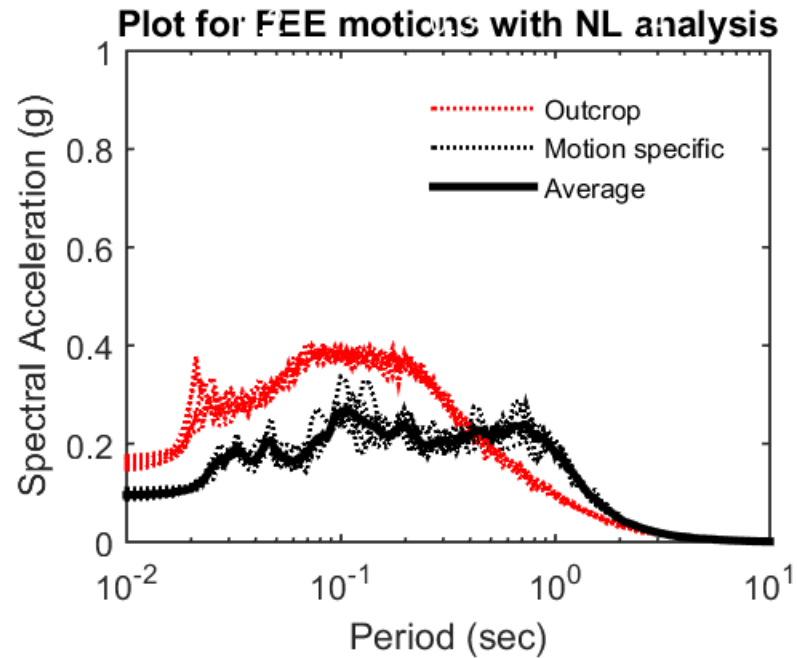


## Summary of the profile outputs for Equivalent-linear analysis

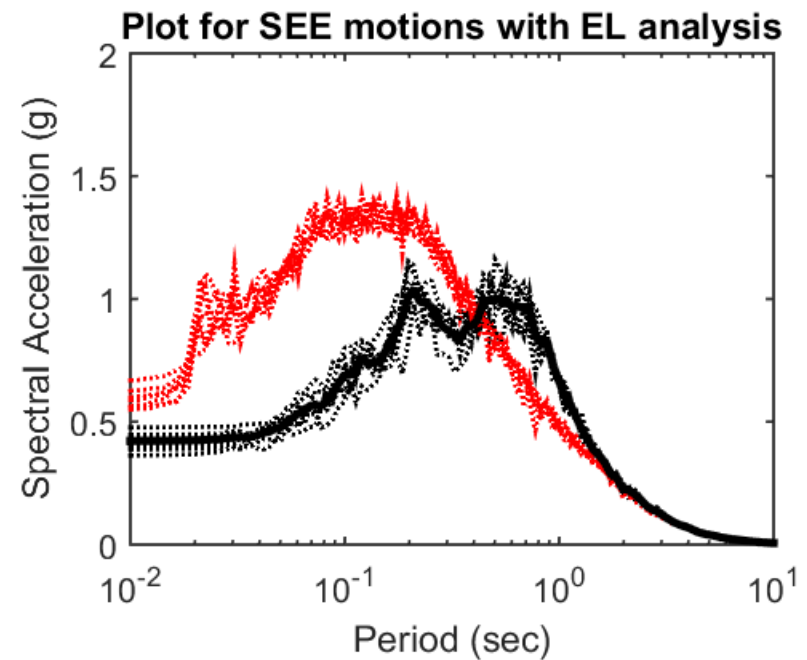
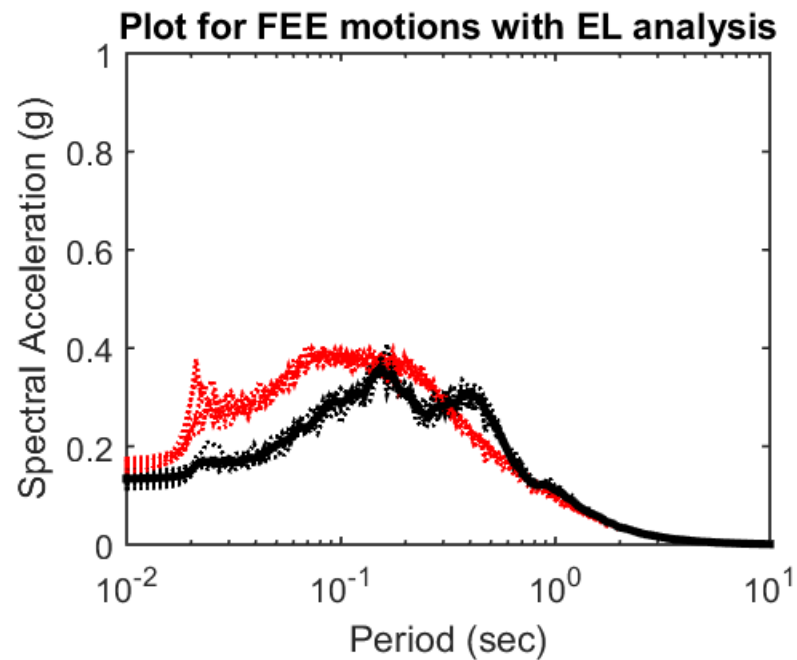
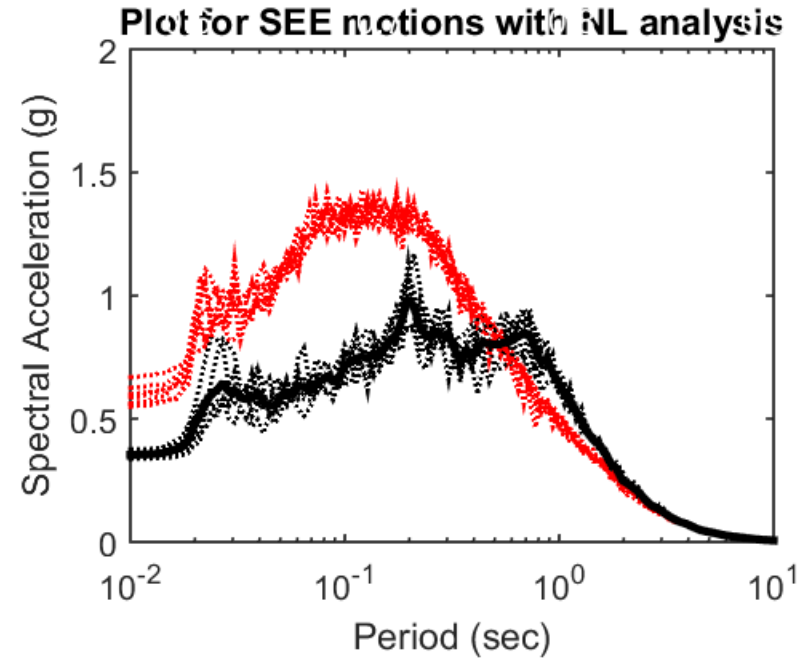
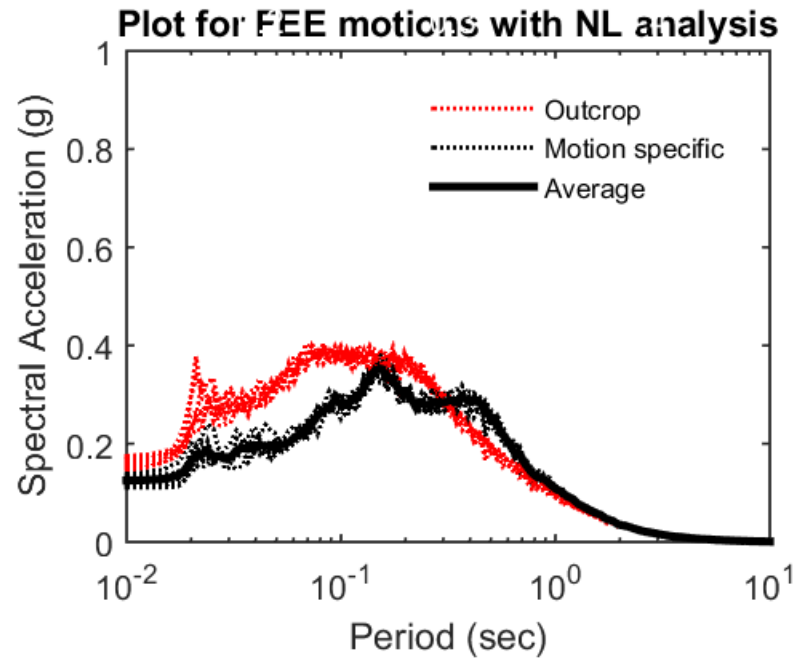




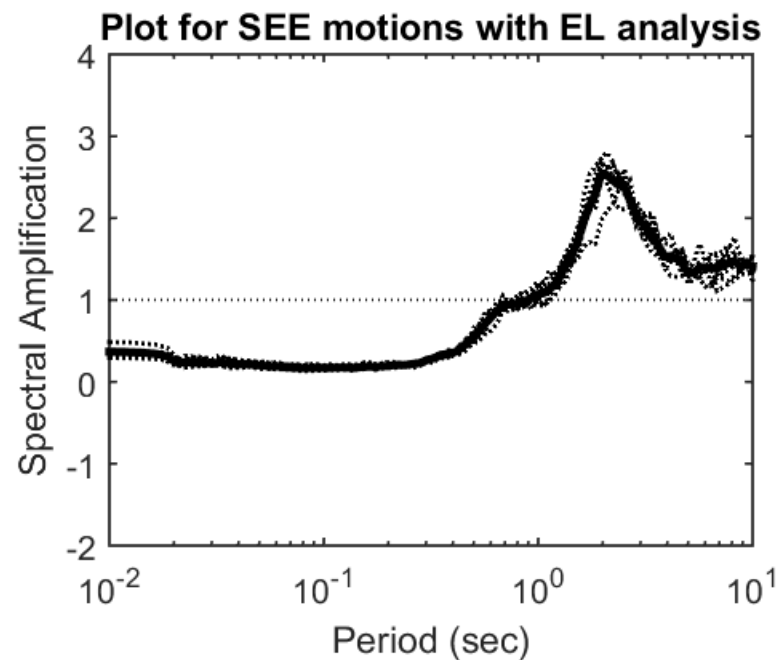
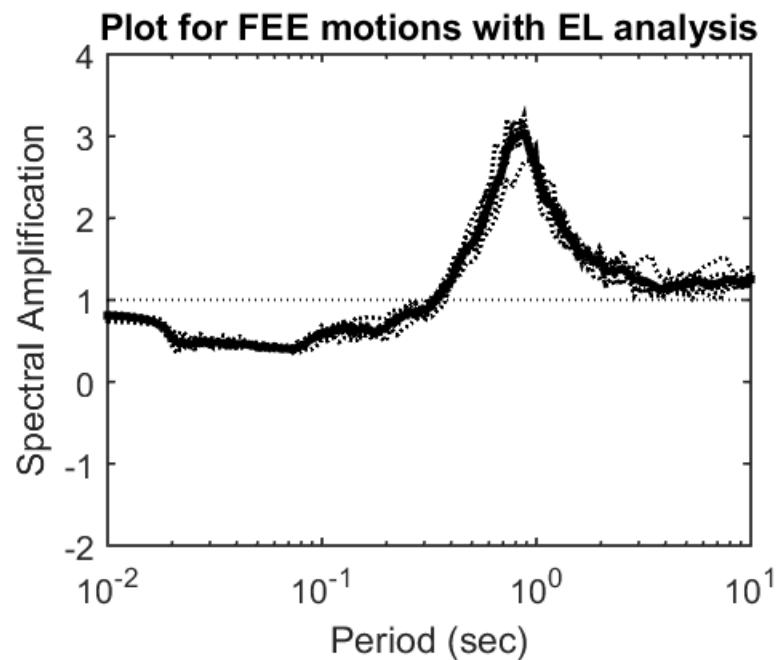
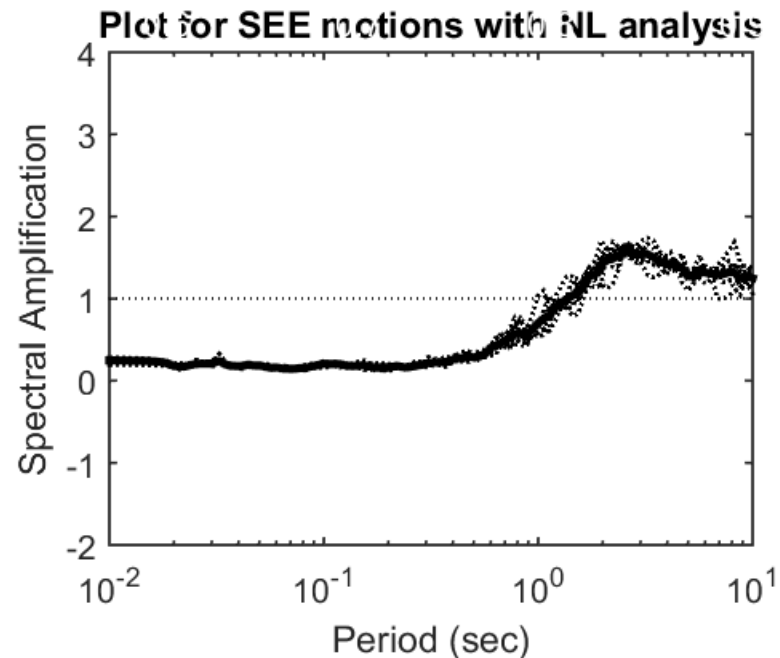
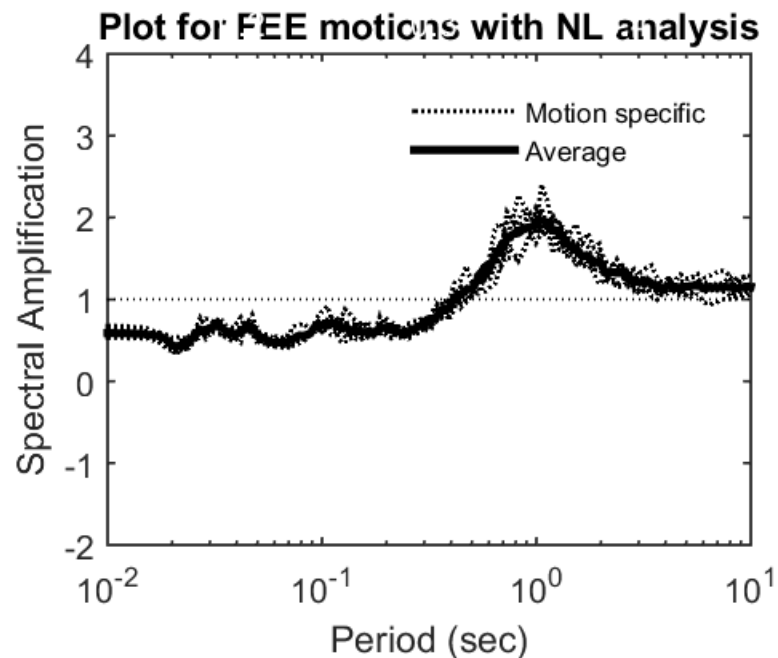
## Summary plots: RSA at ground surface



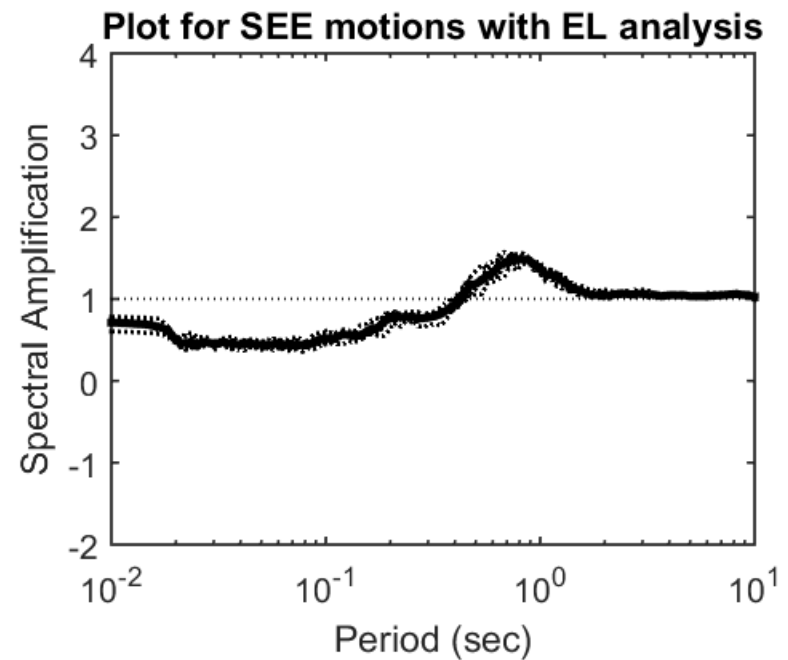
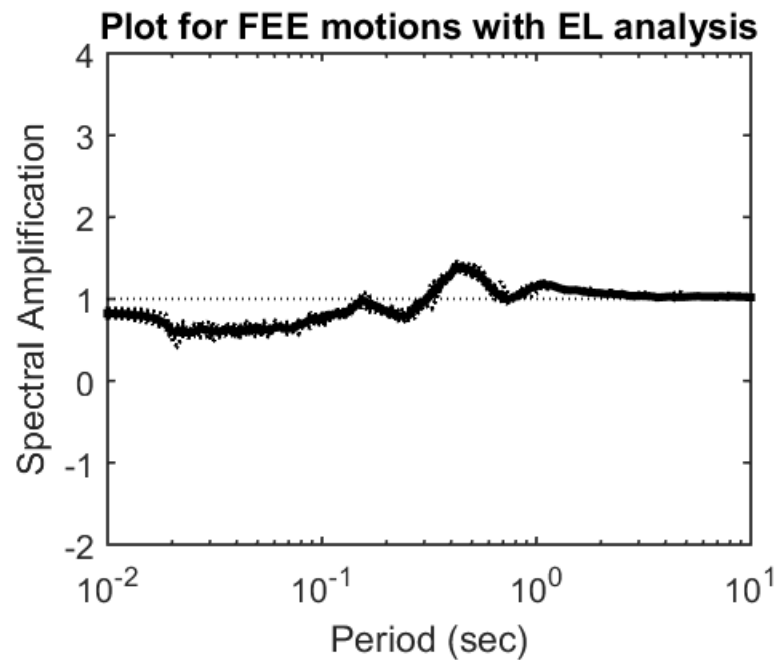
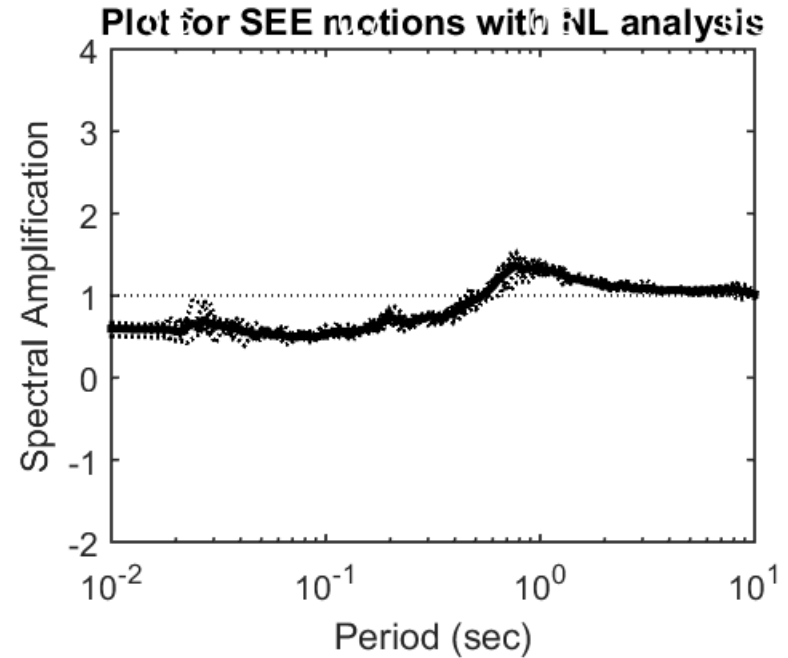
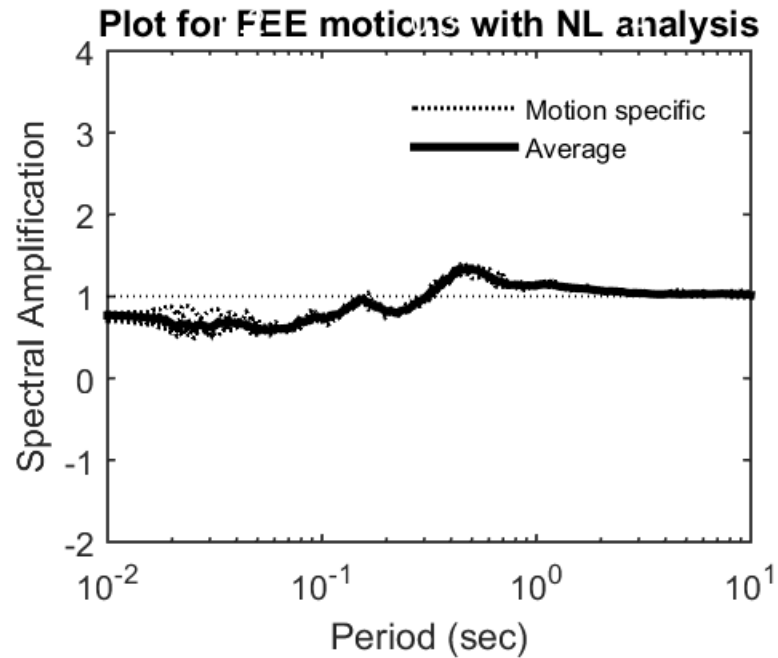
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



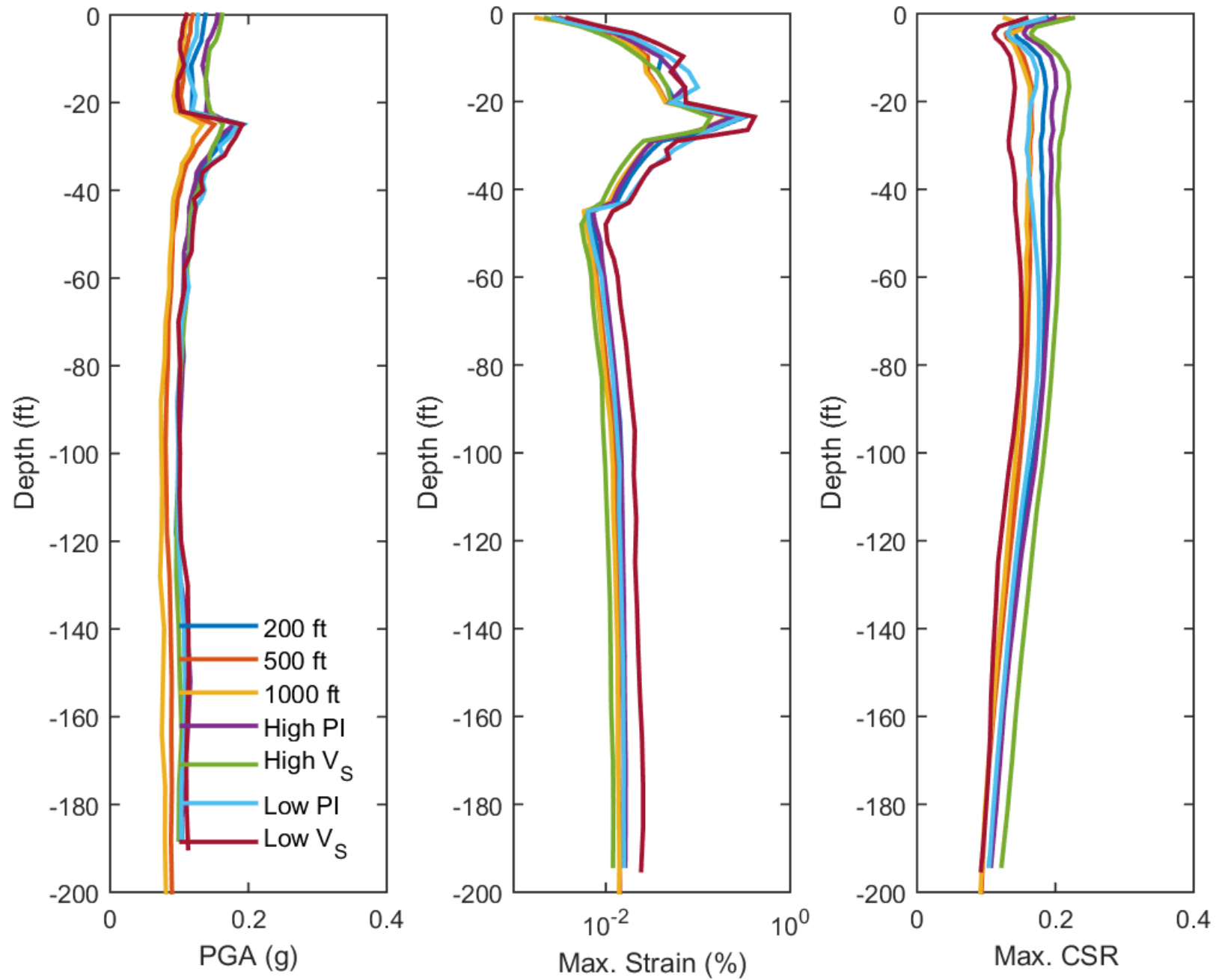
## Summary plots: Spectral amplification at top of Marl



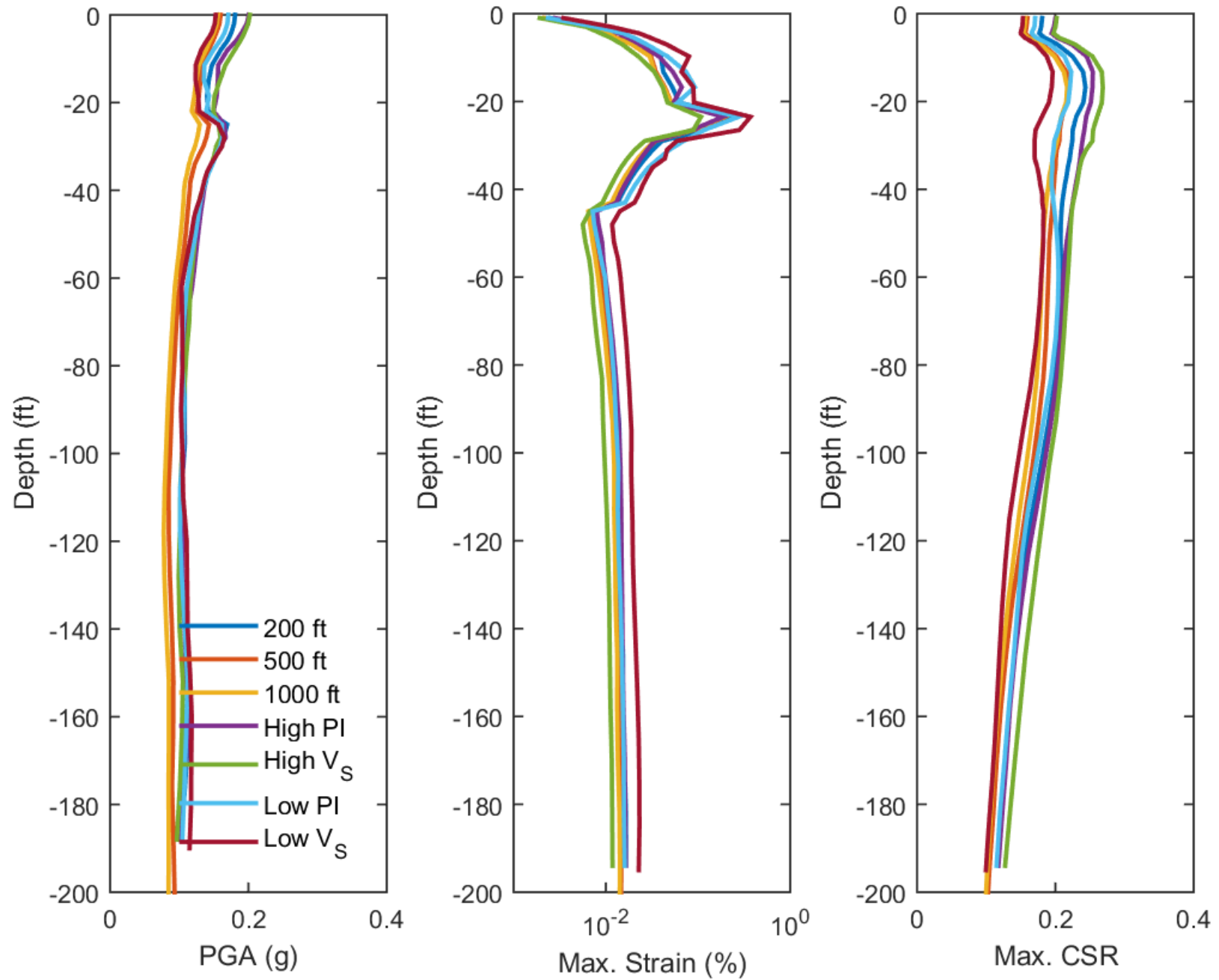
## **Appendix IV – Main Line Output**

## **FEE SUMMARY PLOTS**

### Nonlinear Analysis for All Scenarios: Main Line

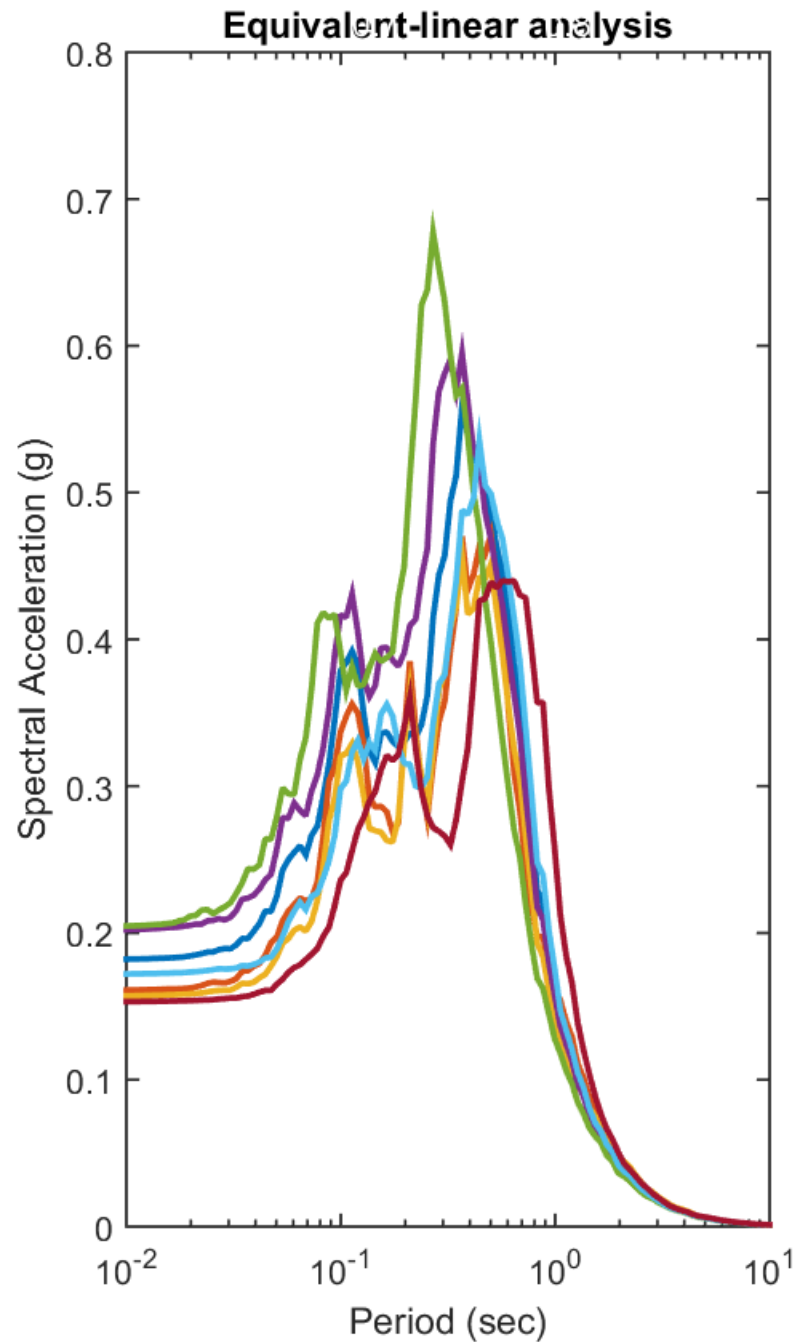
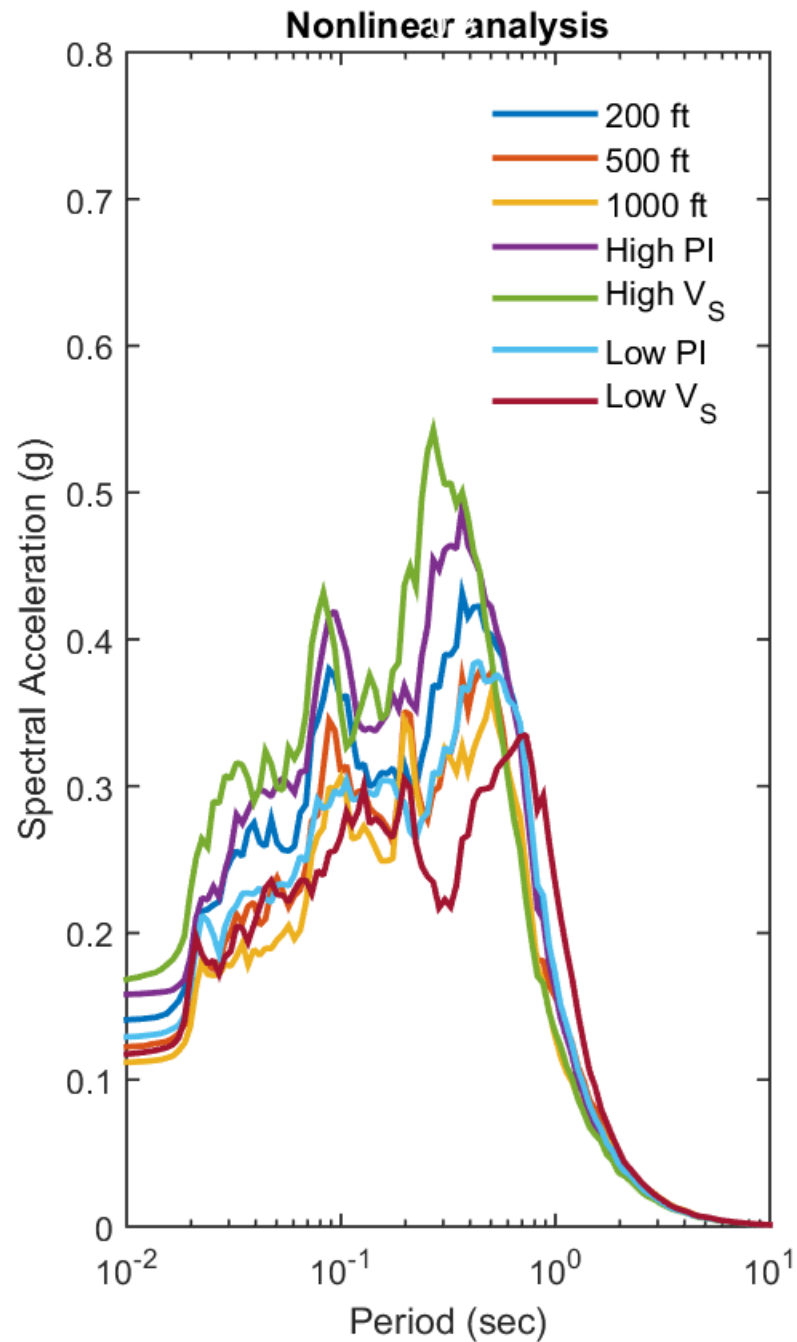


### Equivalent Linear Analysis for All Scenarios: Main Line

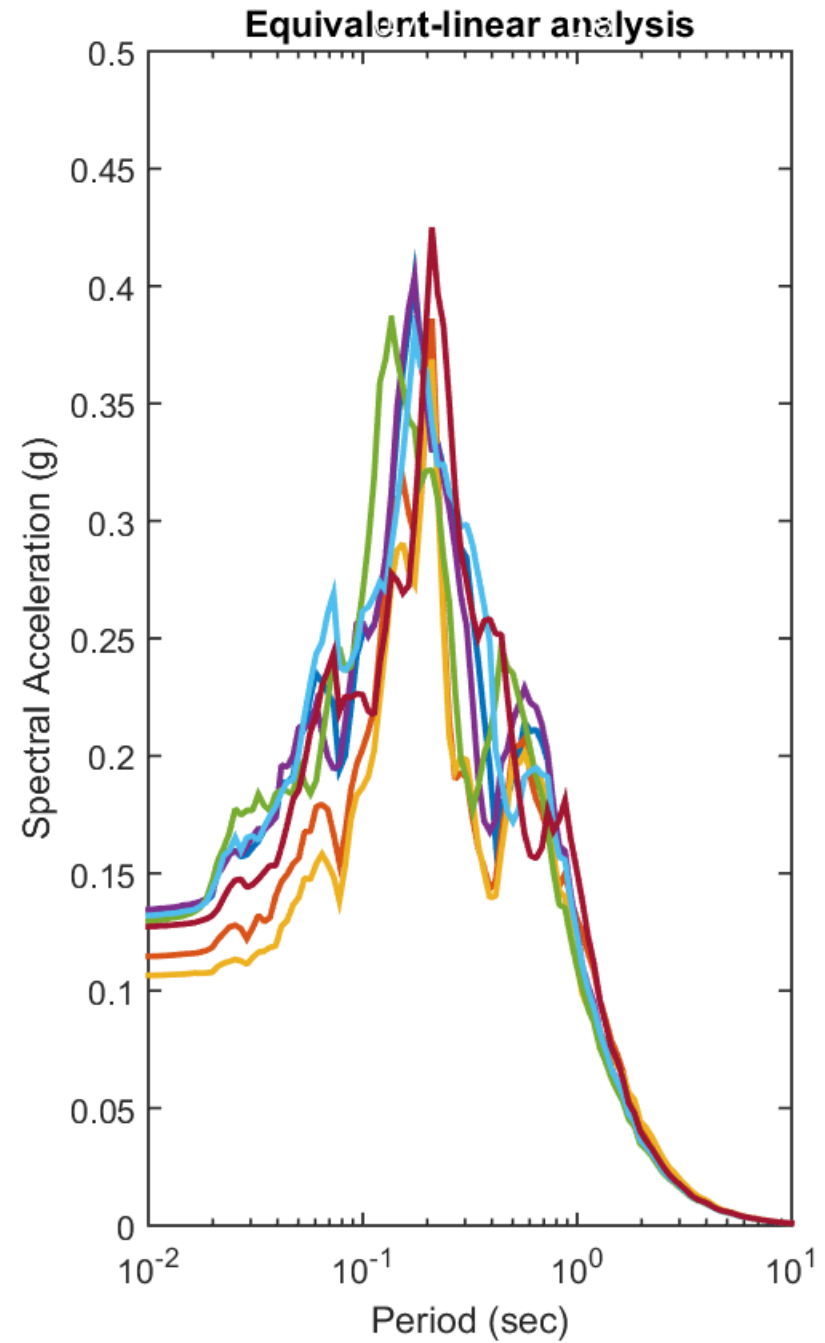
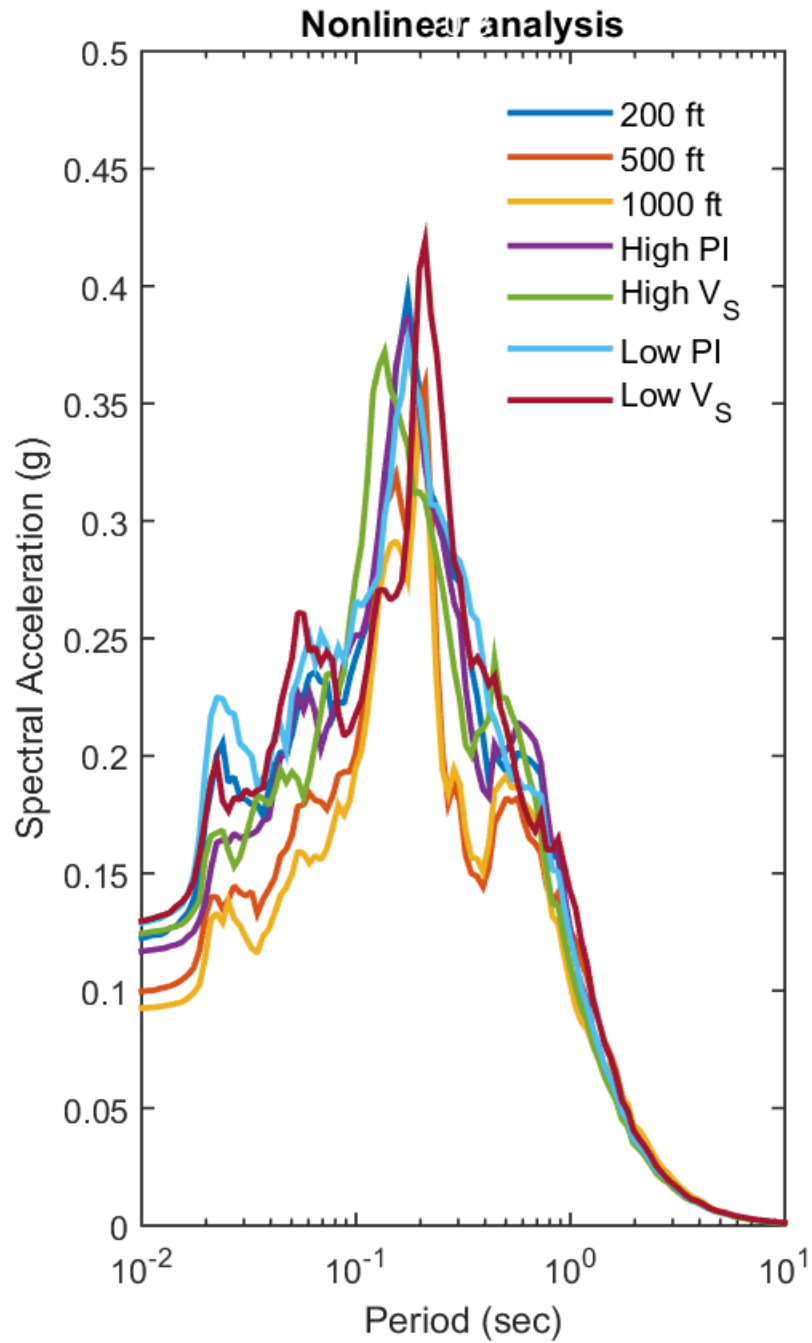




## Ground Surface RS for All Scenarios: Main Line

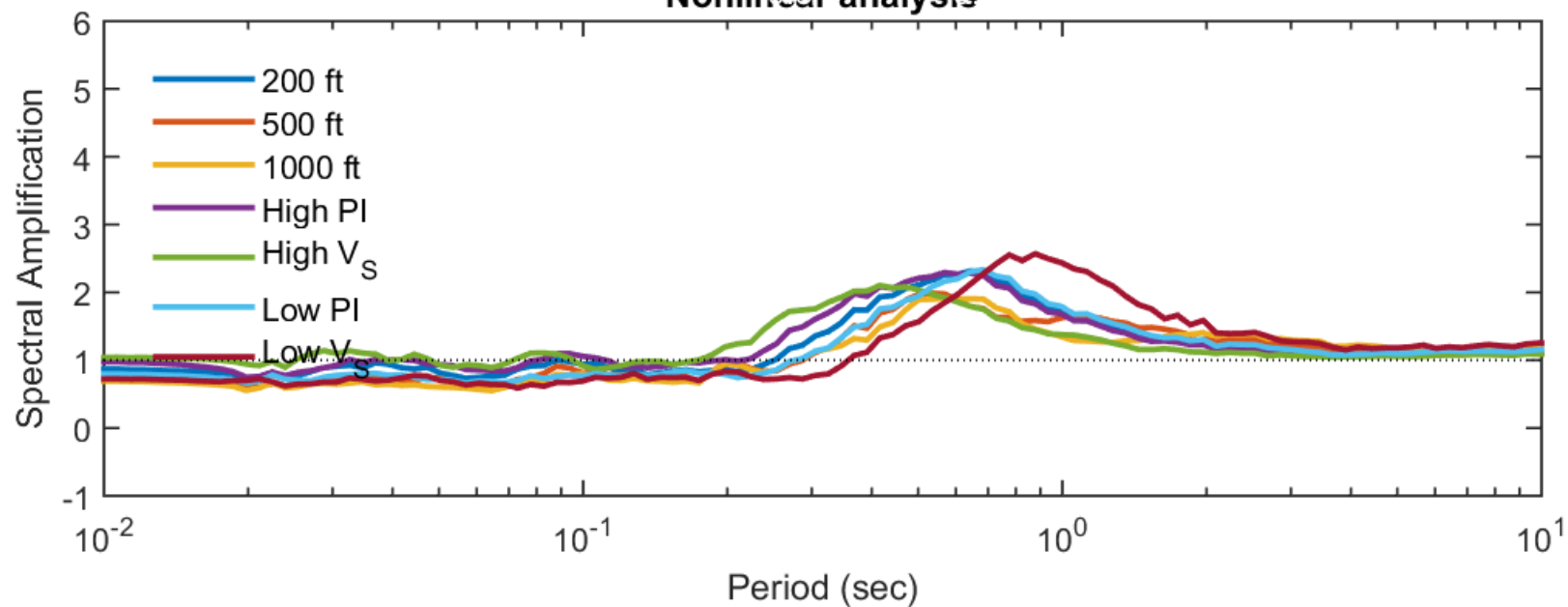


## Top of Marl RS for All Scenarios: Main Line

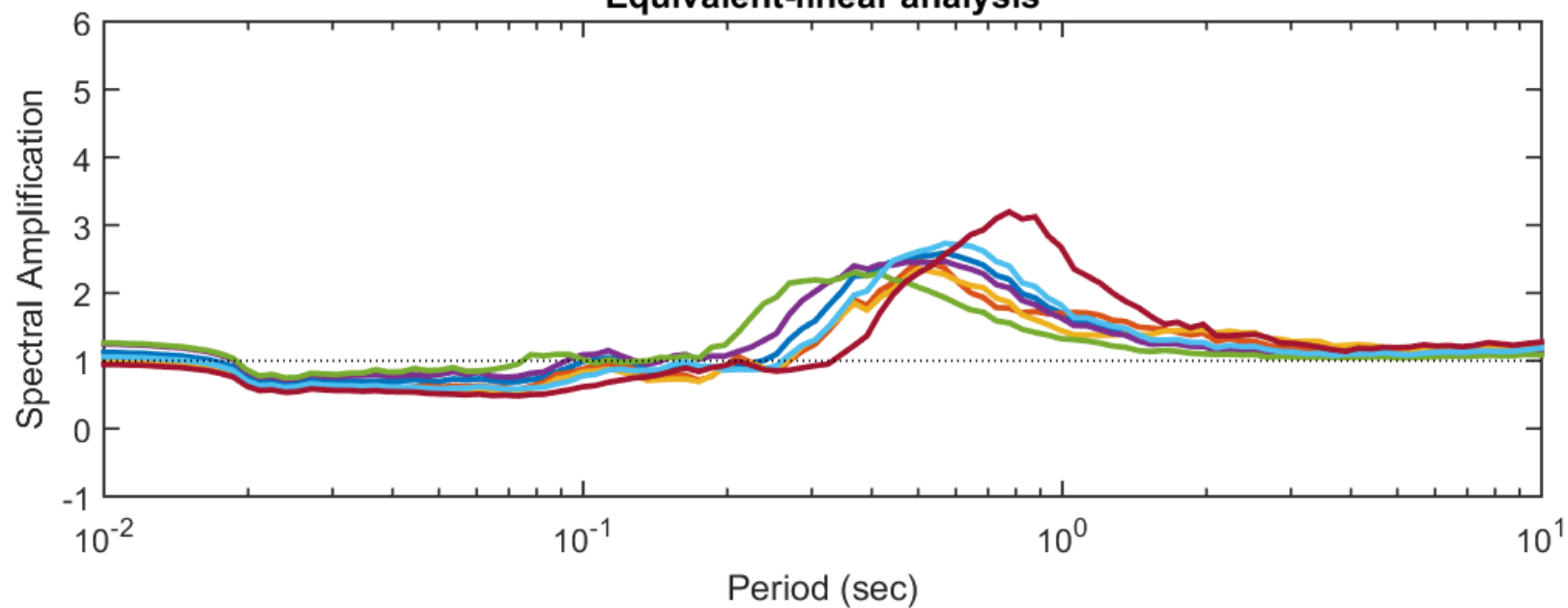


## Ground Surface Amplification for All Scenarios: Main Line

### Nonlinear analysis

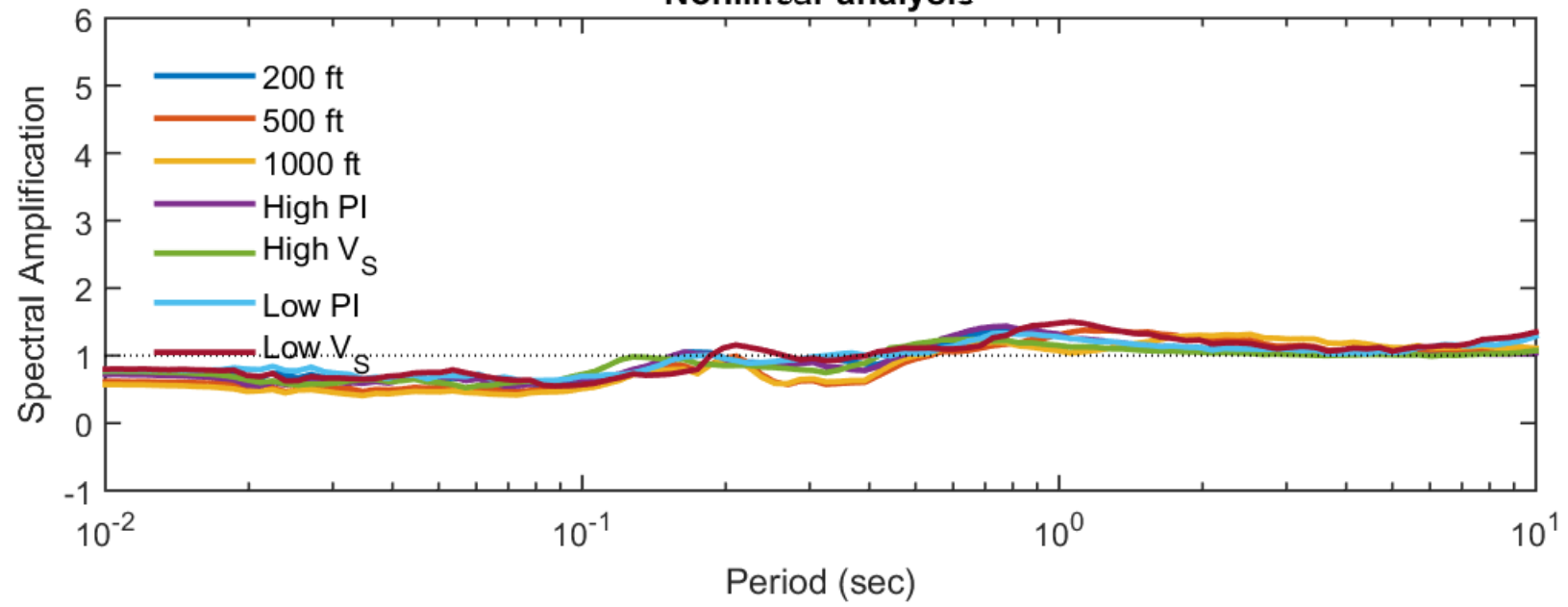


### Equivalent-linear analysis

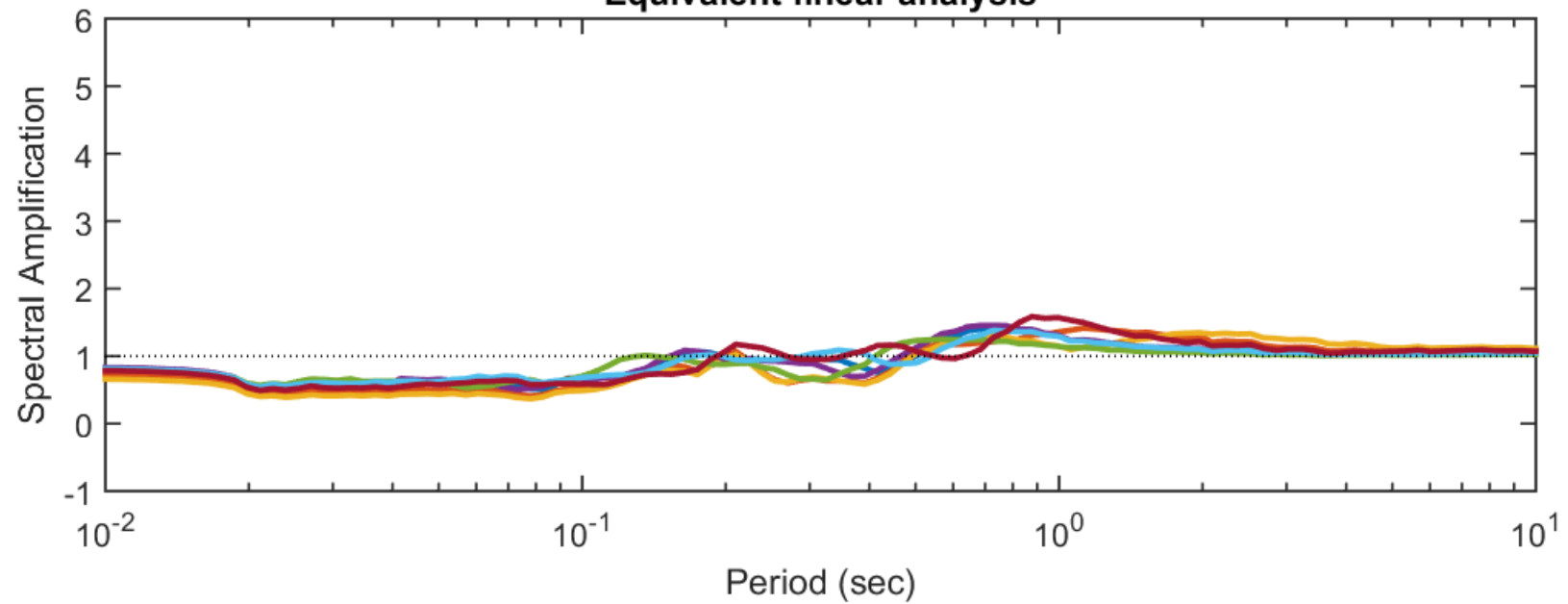


## Top of Marl Amplification for All Scenarios: Main Line

### Nonlinear analysis

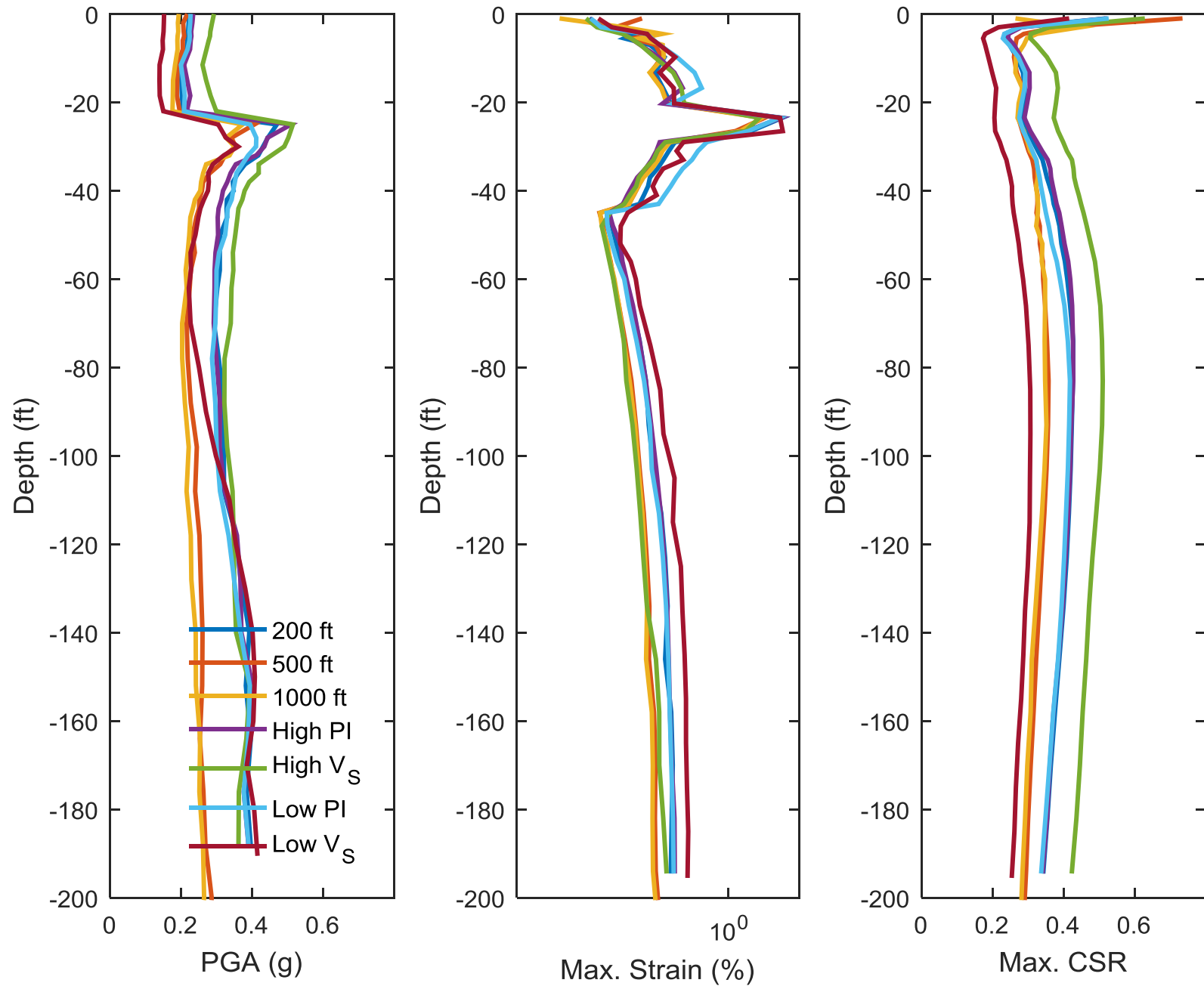


### Equivalent-linear analysis

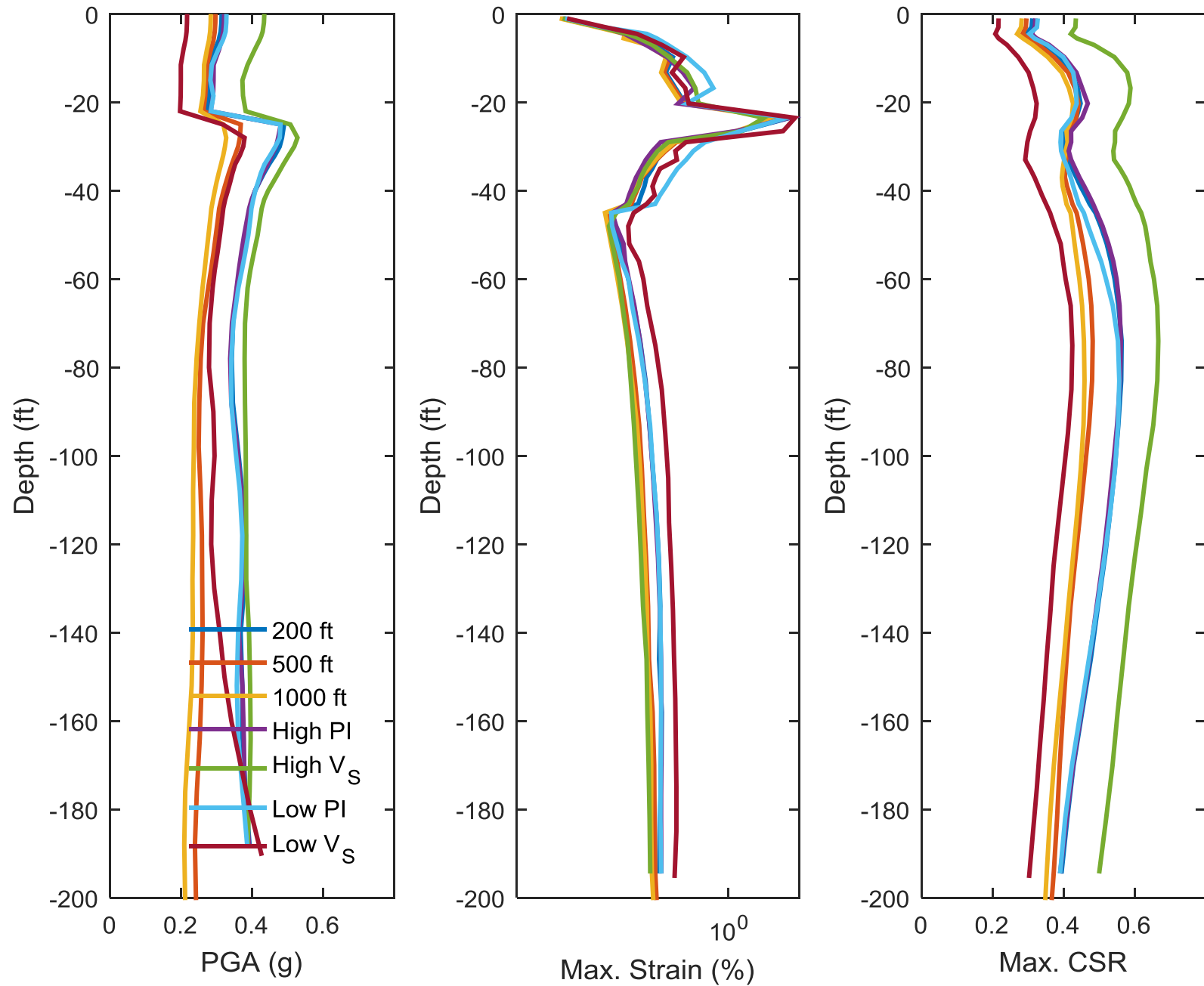


**SEE SUMMARY PLOTS**

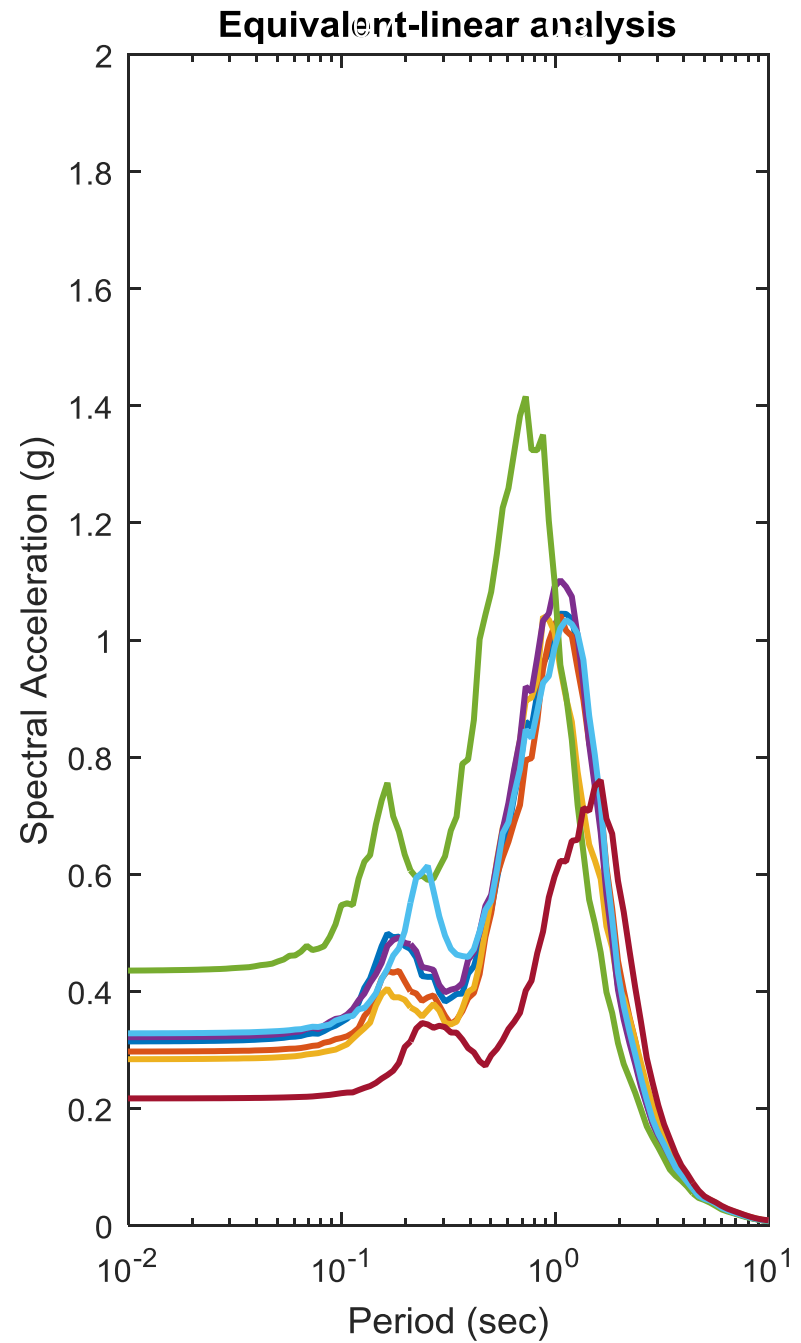
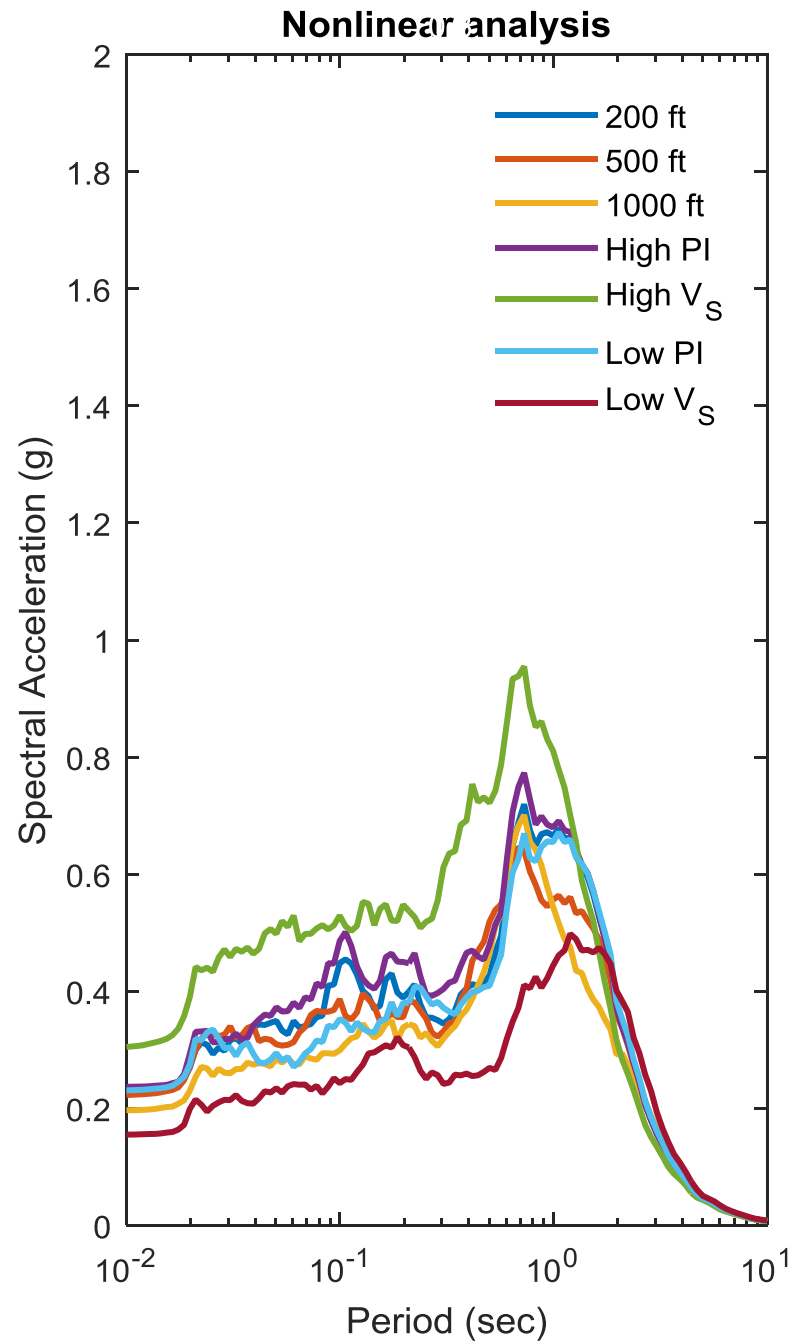
# Nonlinear Analysis for All Scenarios: Main Line



# Equivalent Linear Analysis for All Scenarios: Main Line

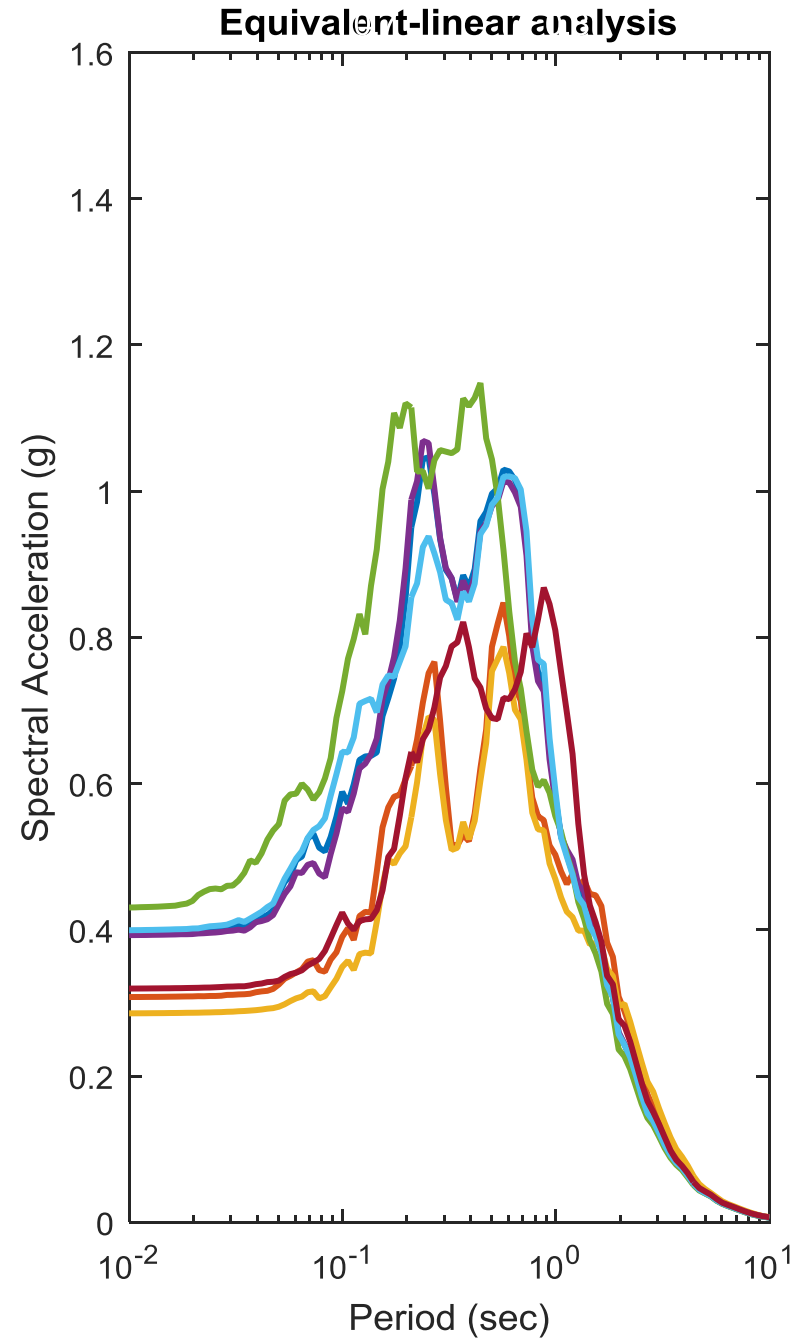
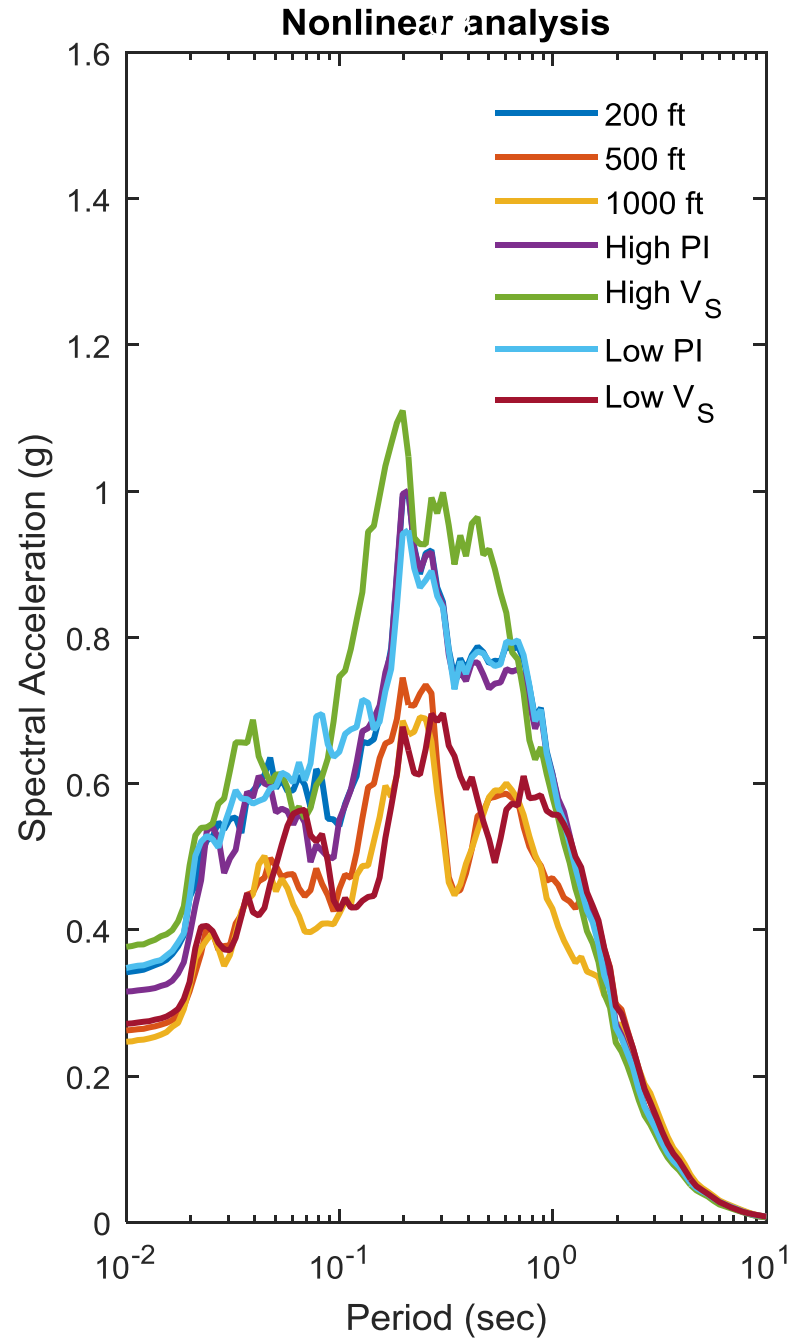


## Ground Surface RS for All Scenarios: Main Line



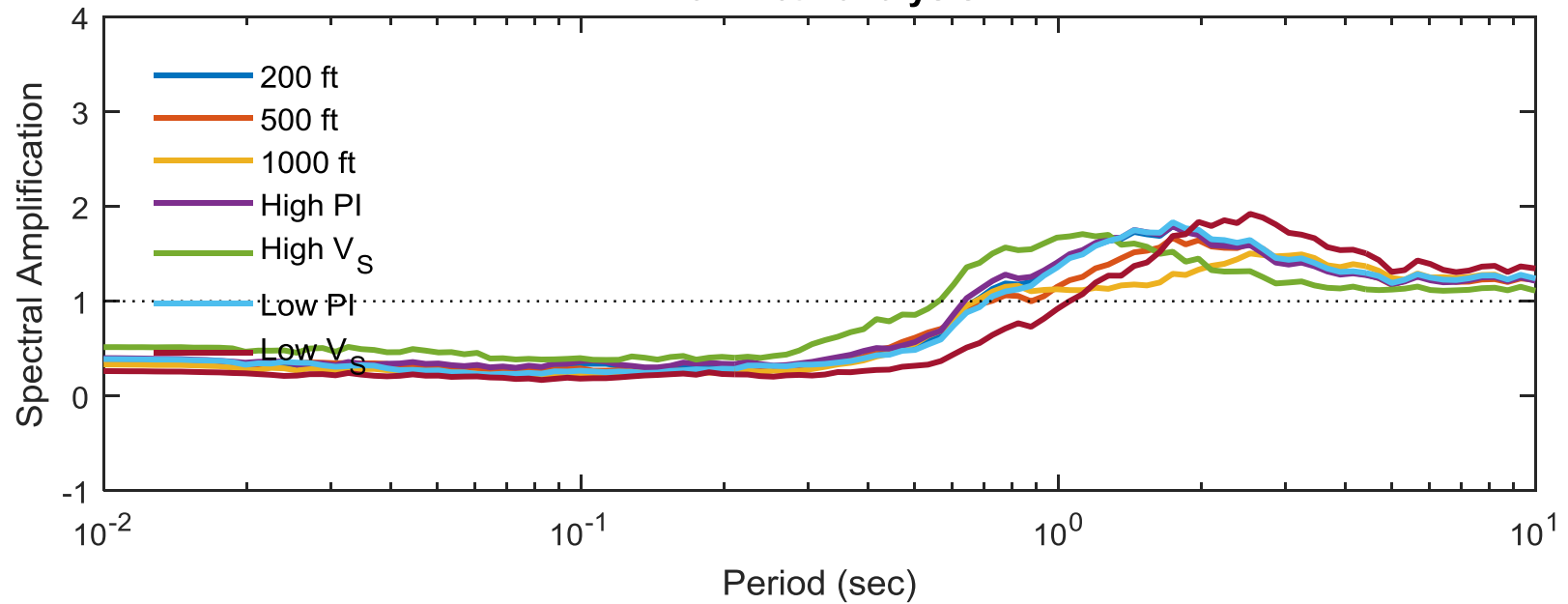


## Top of Marl RS for All Scenarios: Main Line

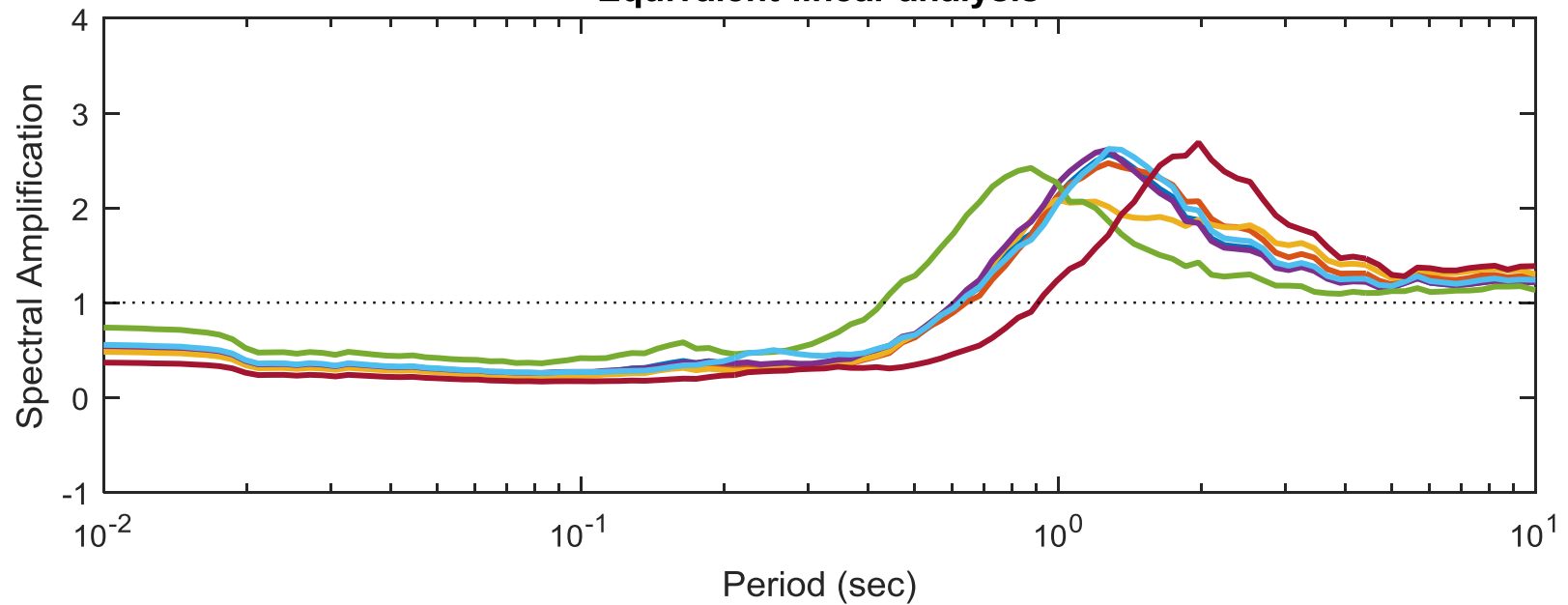


## Ground Surface Amplification for All Scenarios: Main Line

### Nonlinear analysis

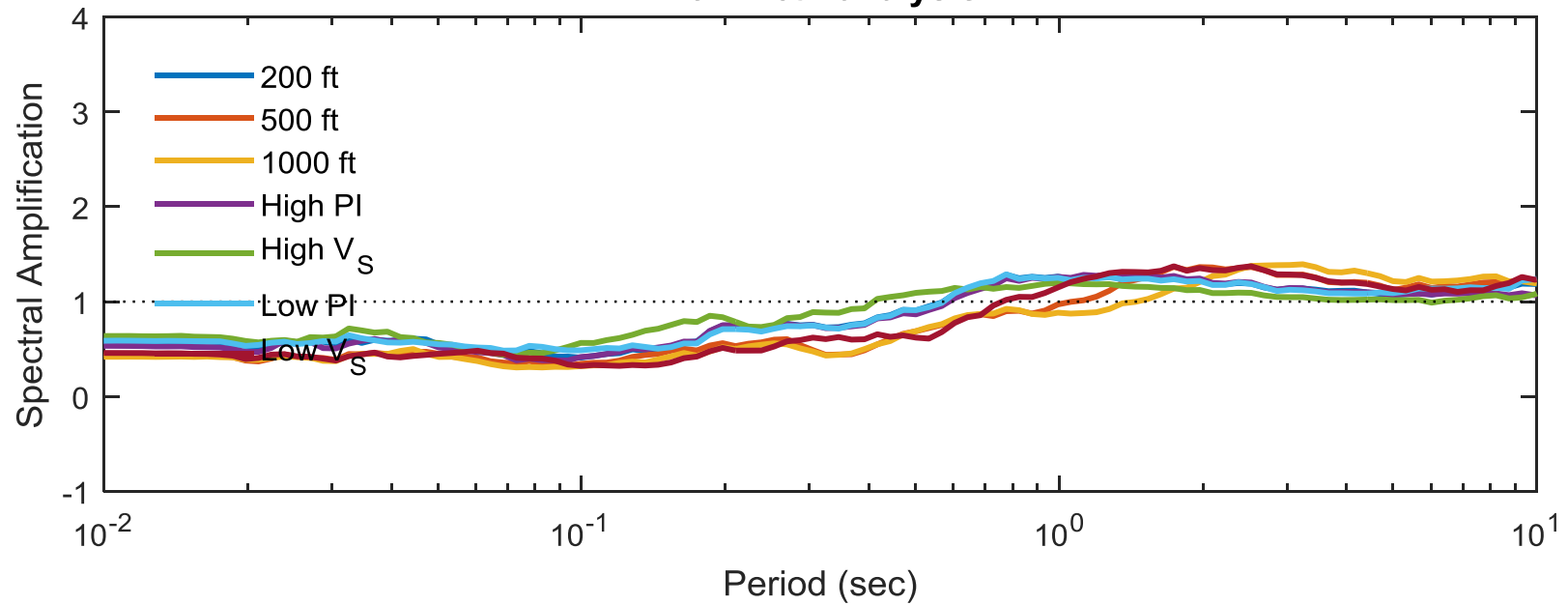


### Equivalent-linear analysis

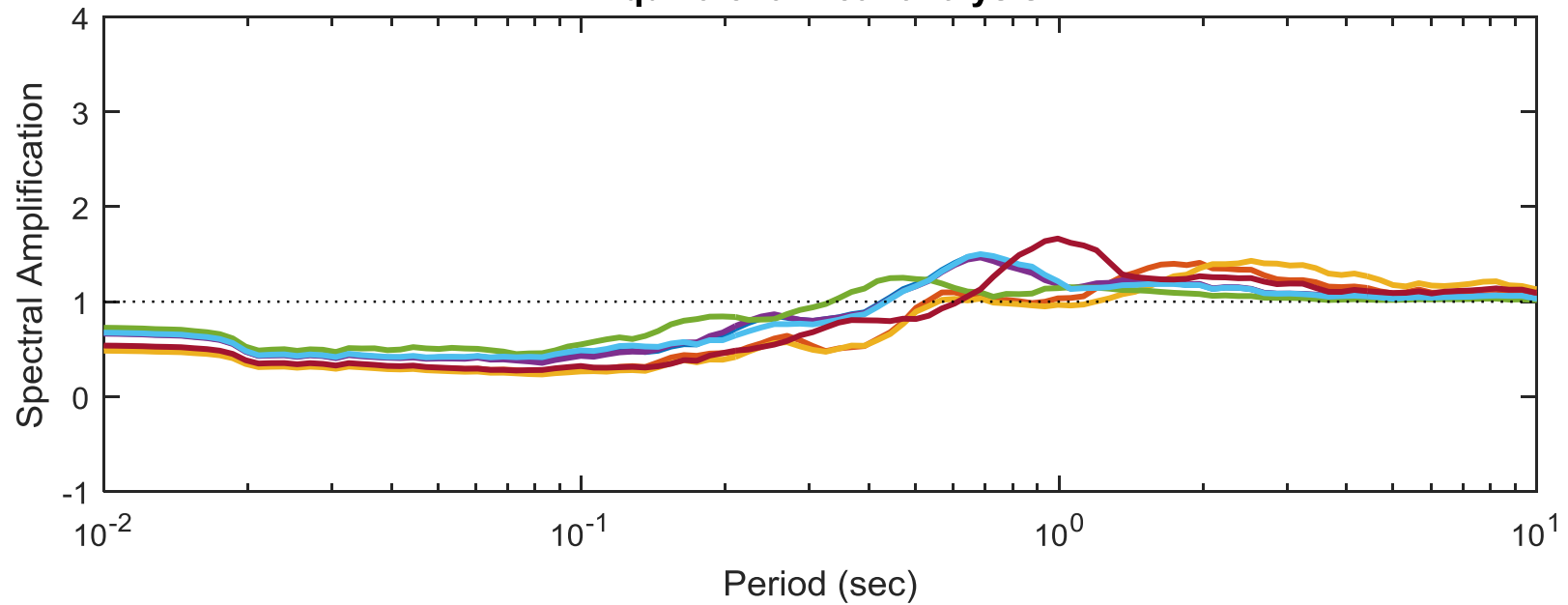


## Top of Marl Amplification for All Scenarios: Main Line

### Nonlinear analysis

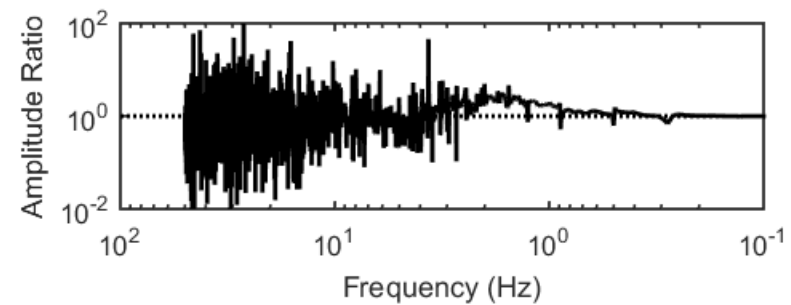
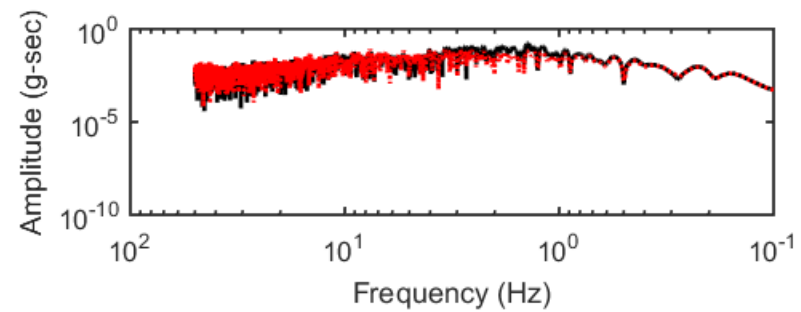
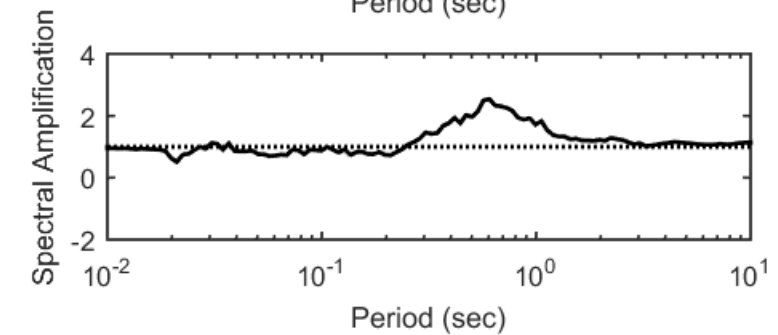
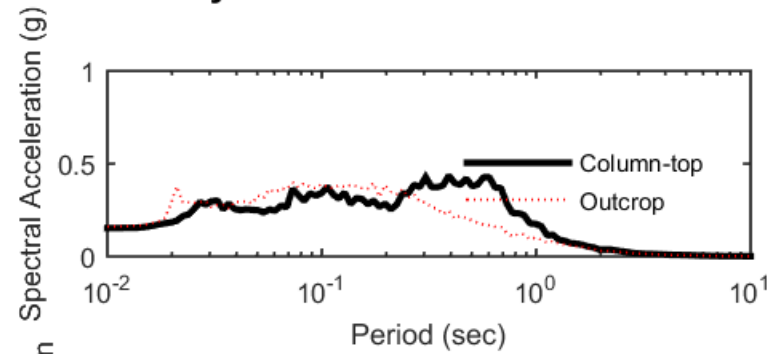
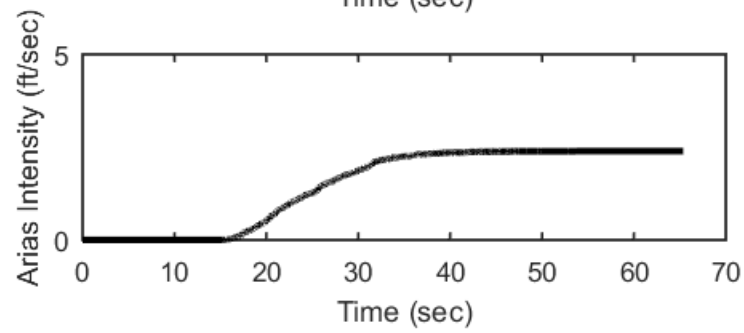
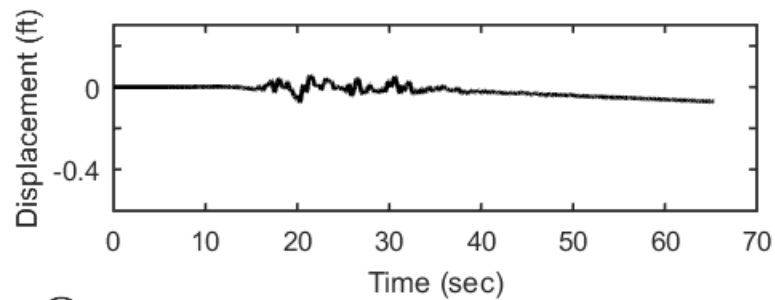
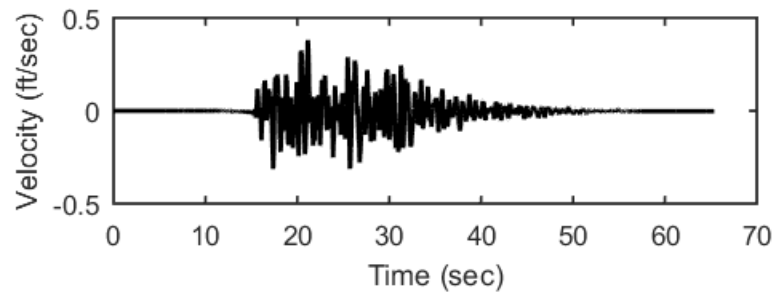
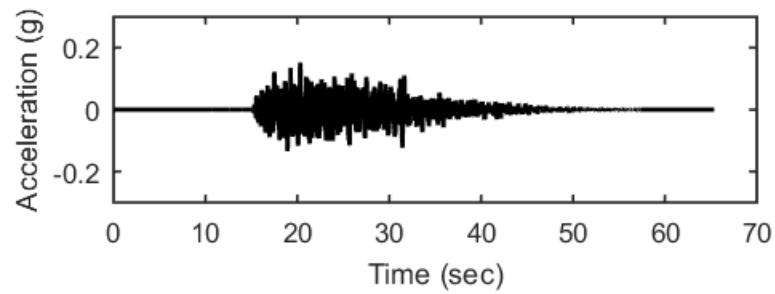


### Equivalent-linear analysis

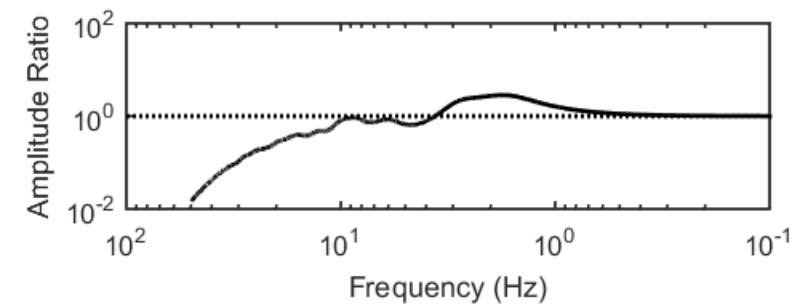
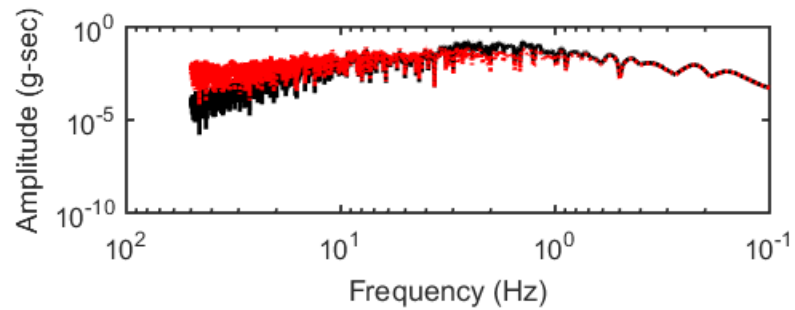
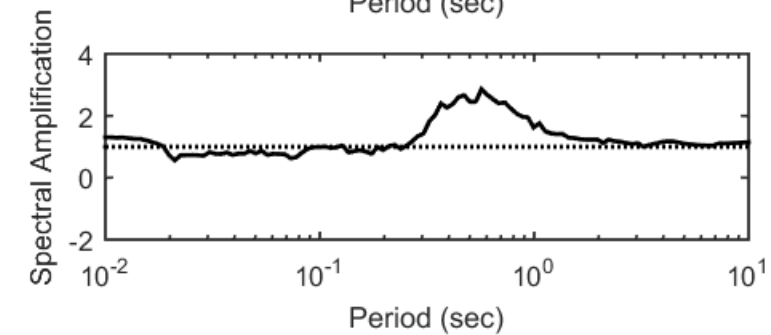
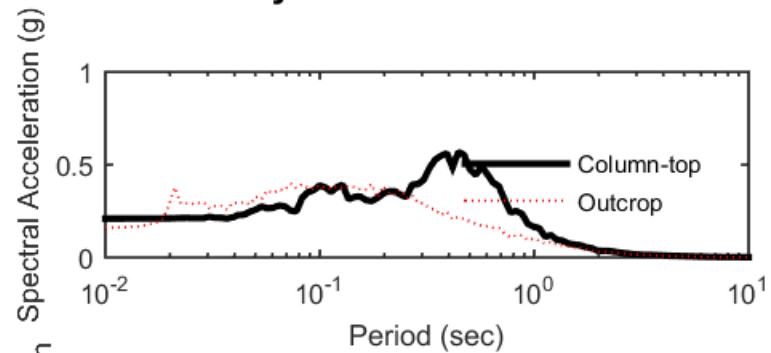
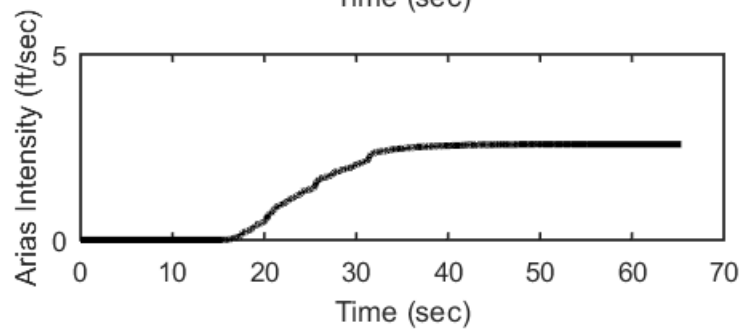
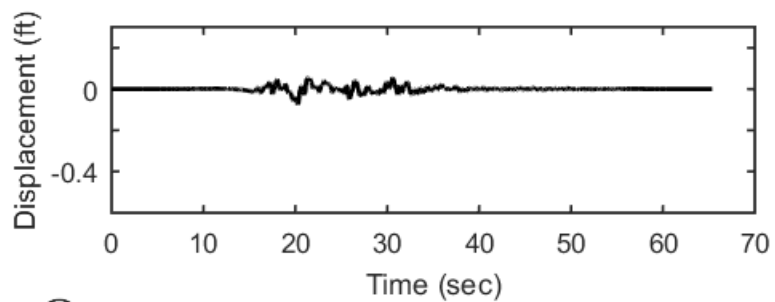
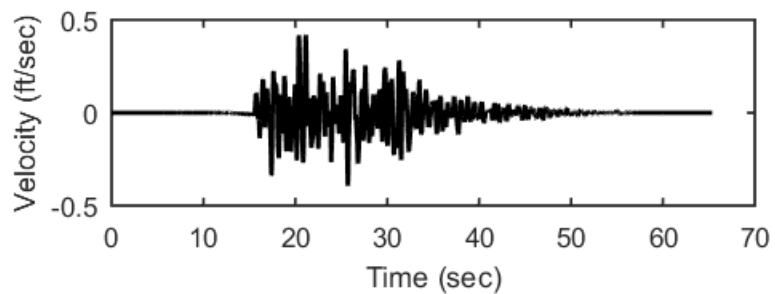
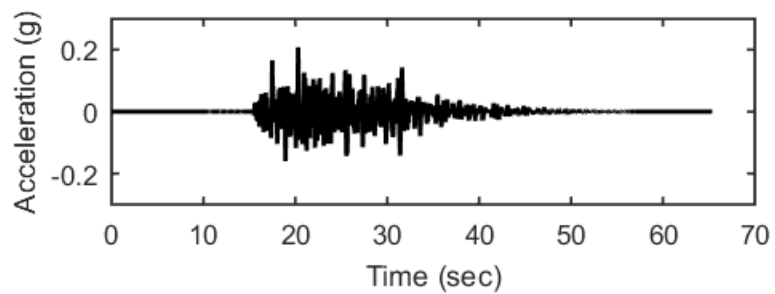


## **200 FT BASE MODEL**

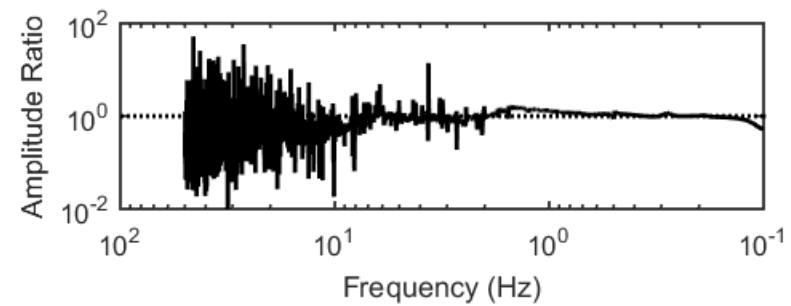
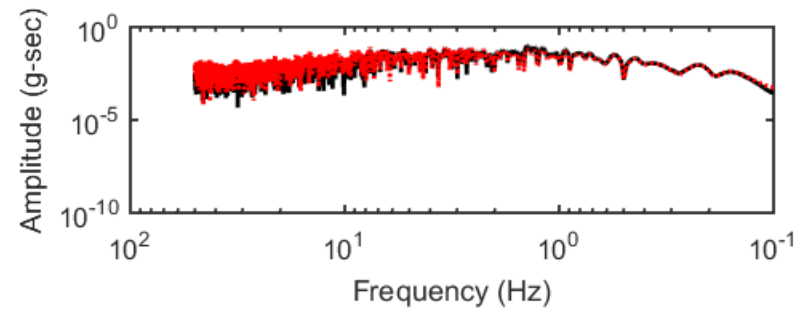
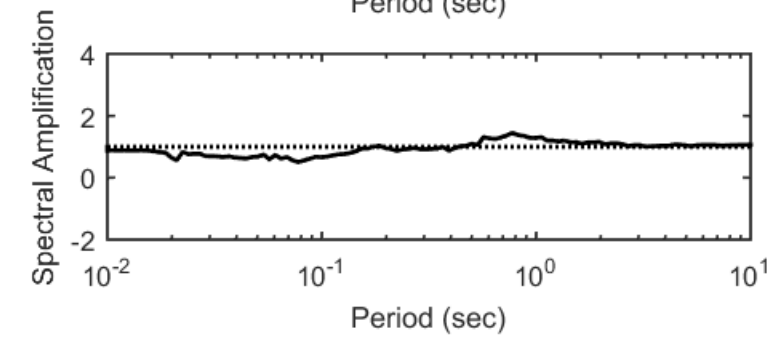
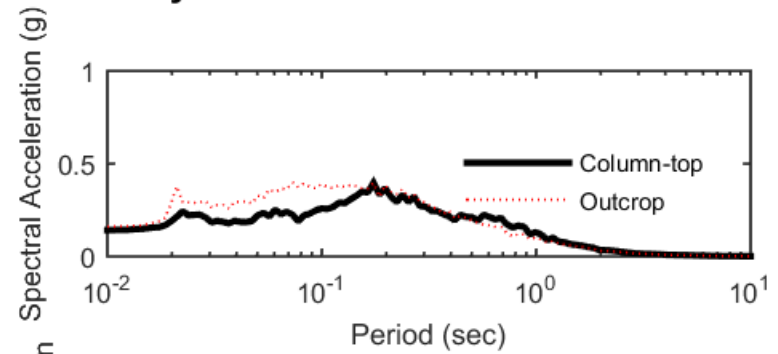
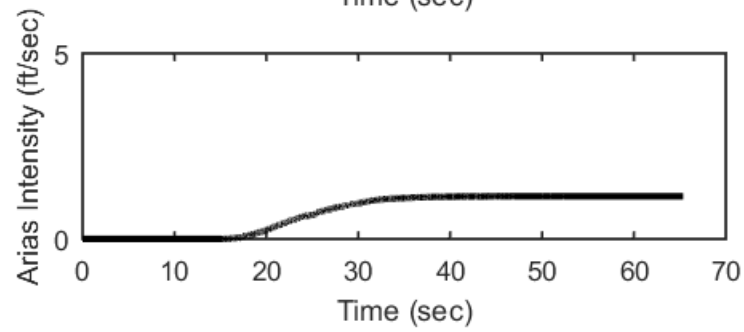
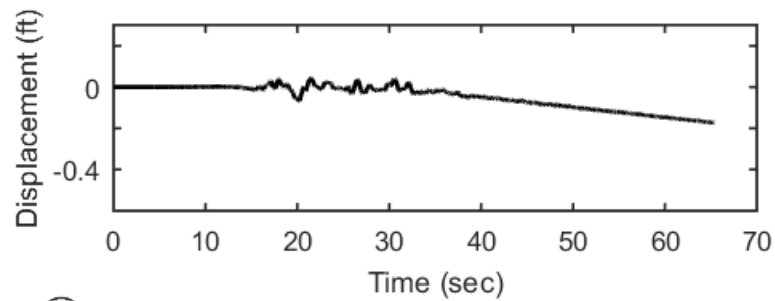
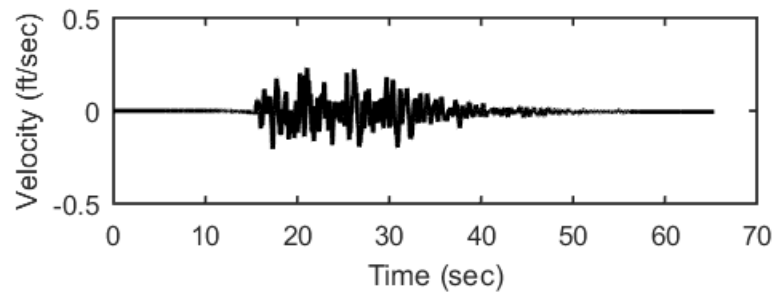
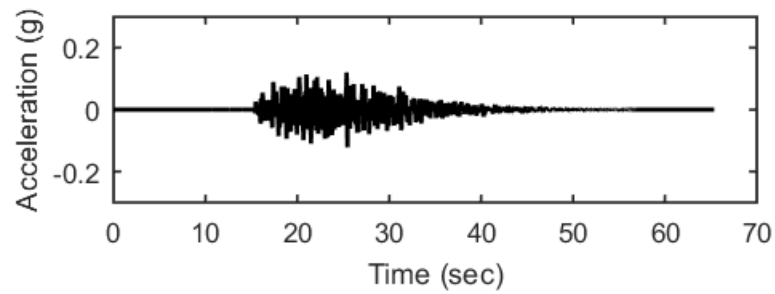
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



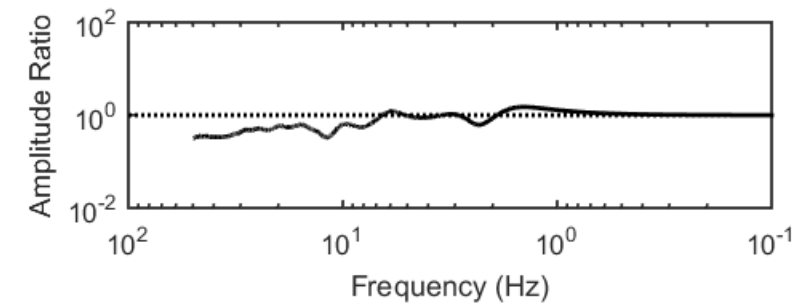
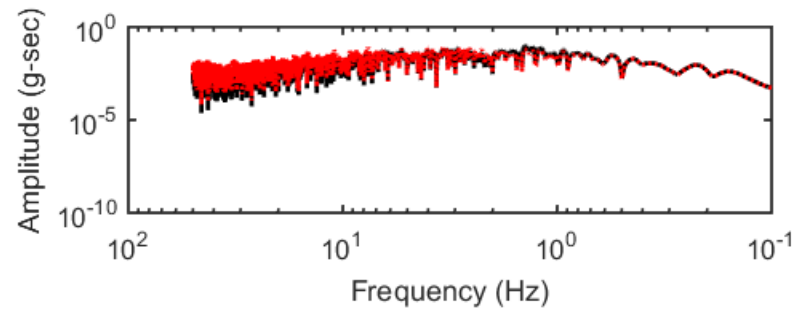
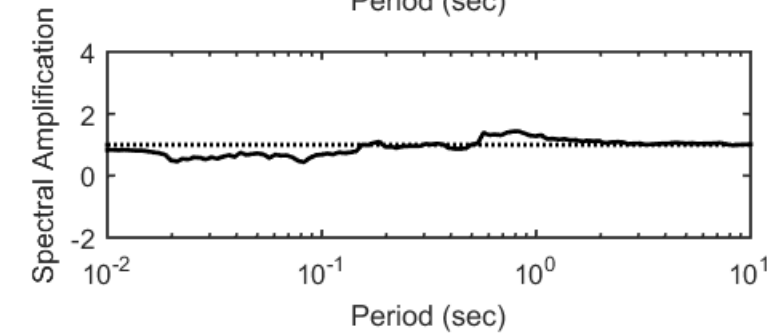
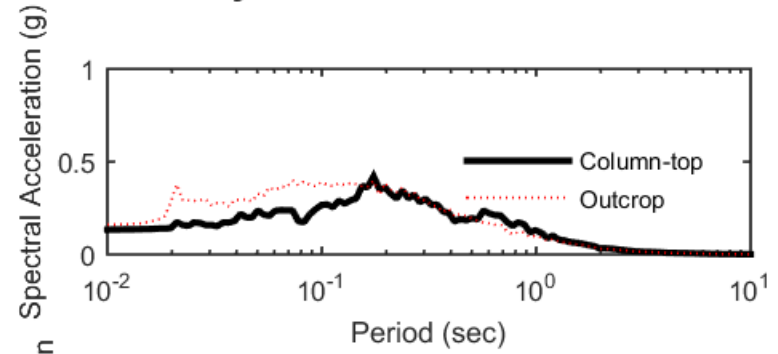
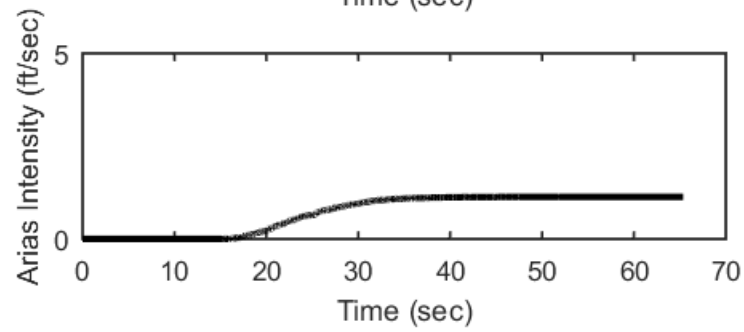
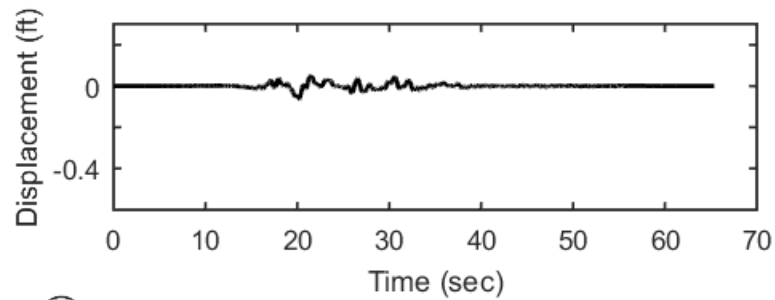
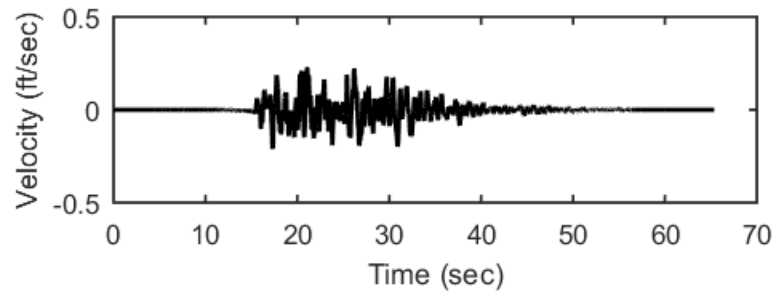
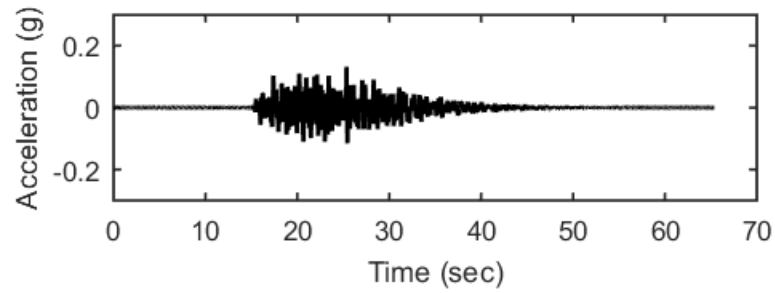
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1

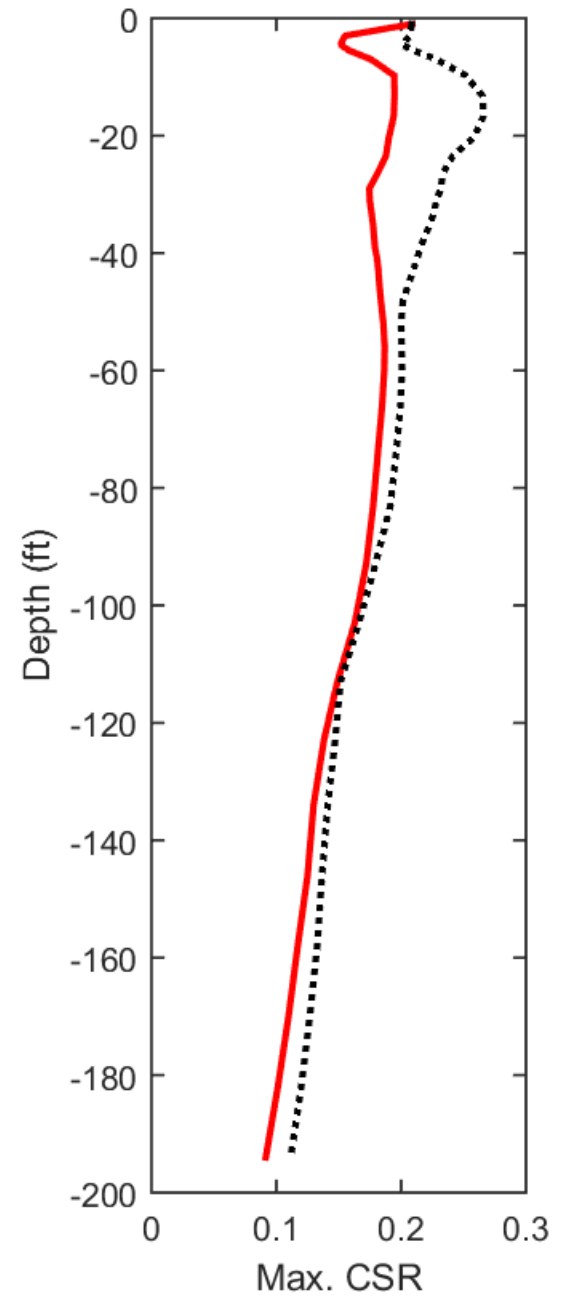
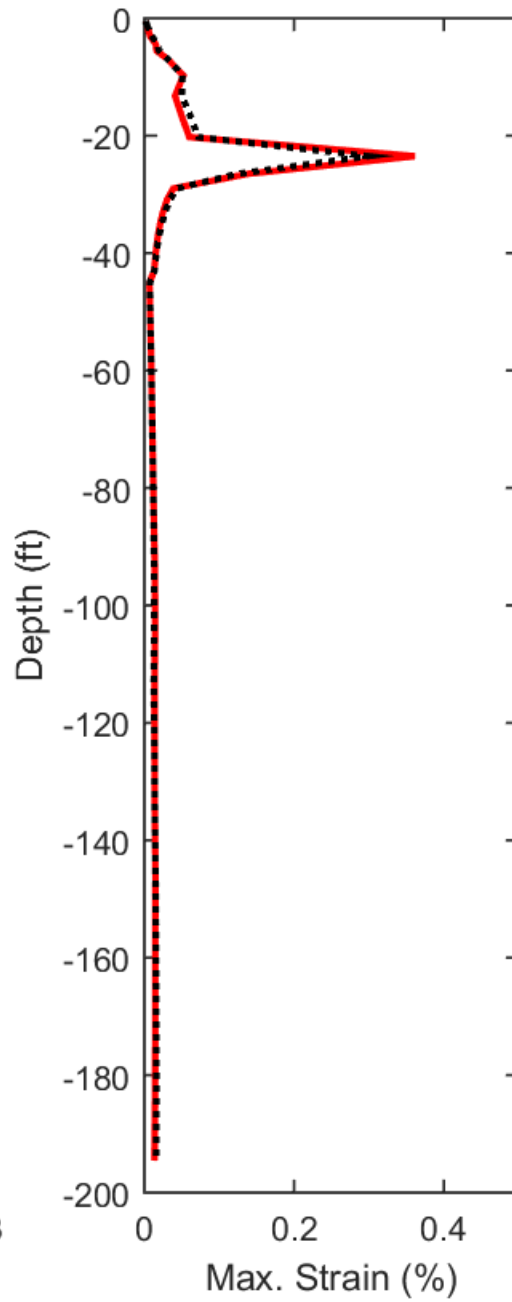
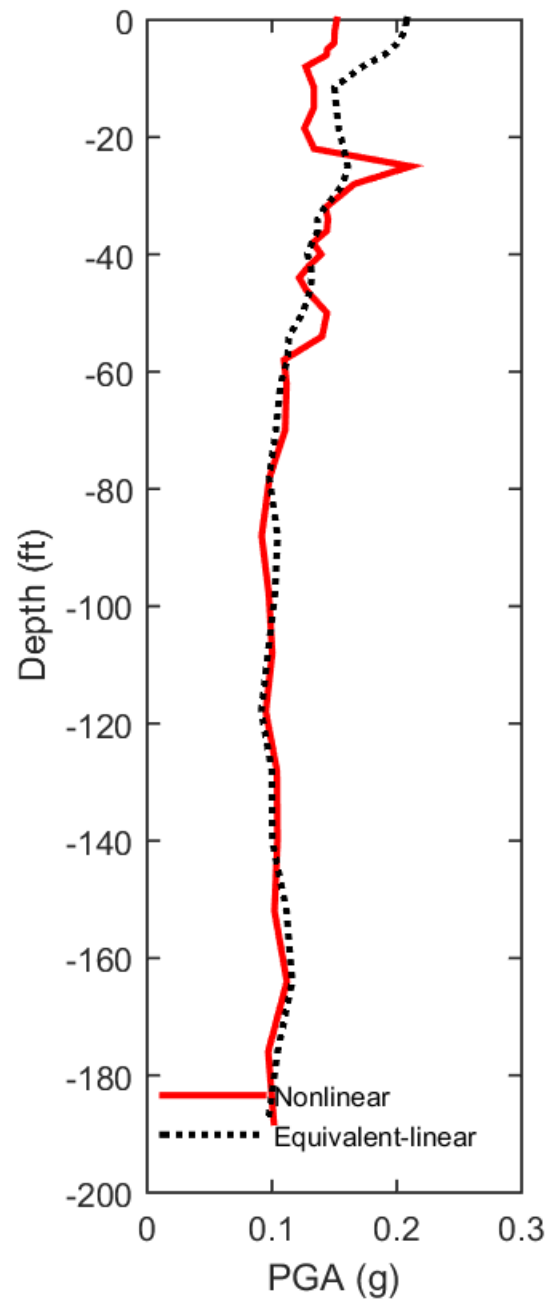


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1

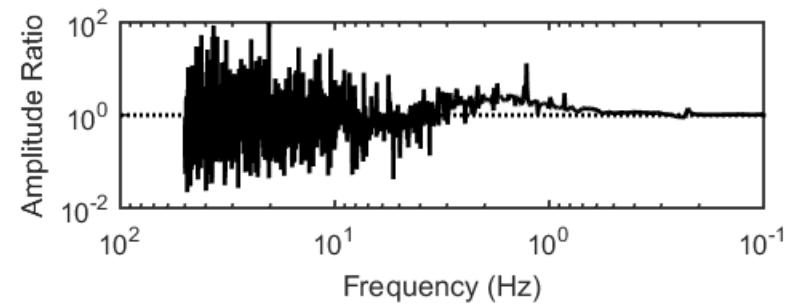
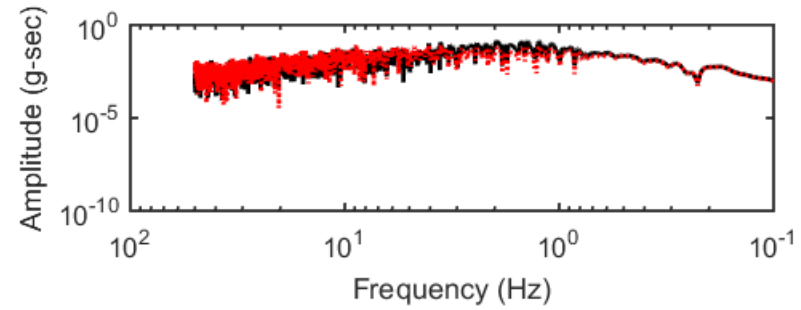
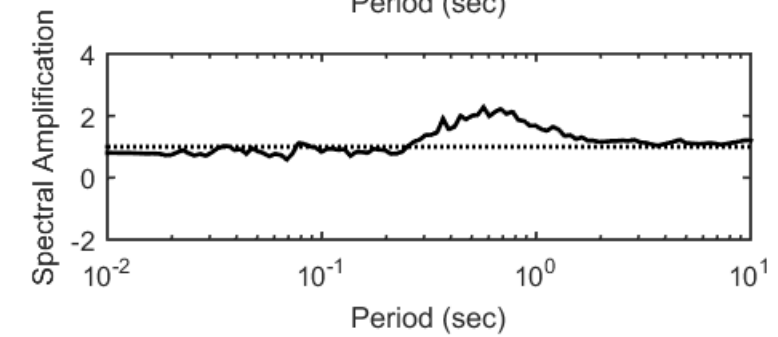
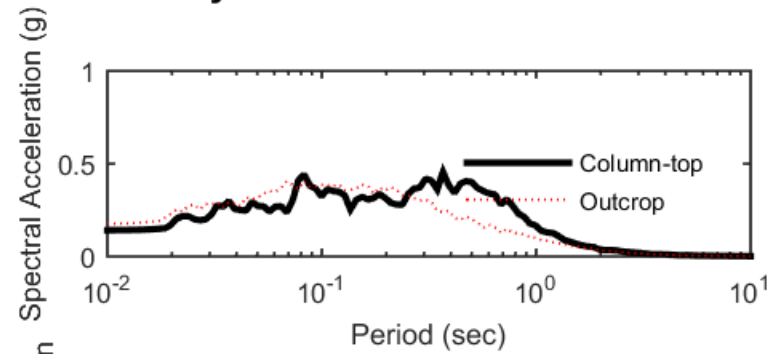
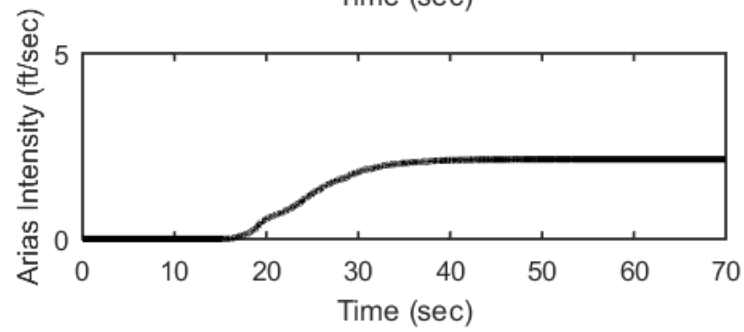
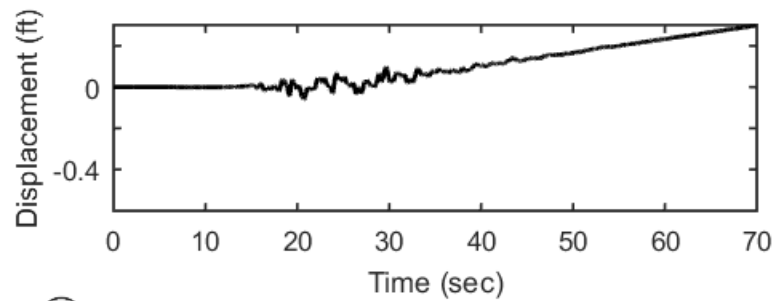
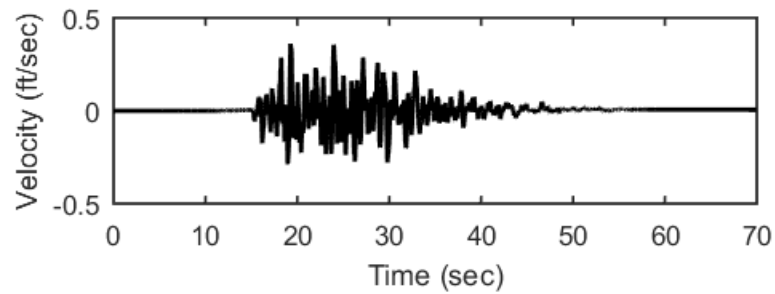
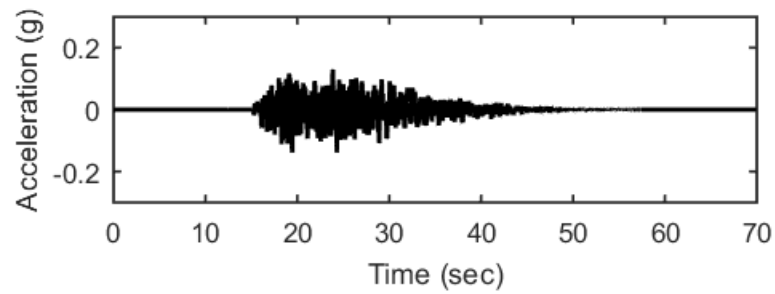




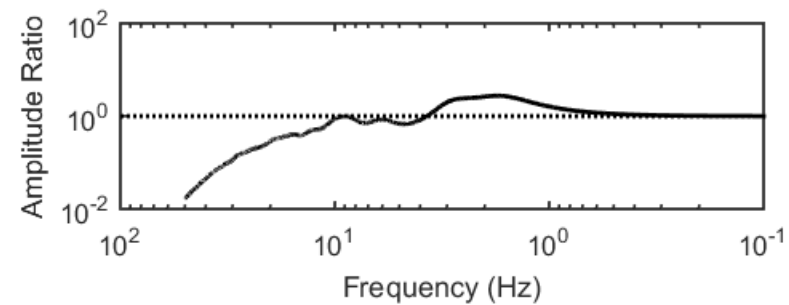
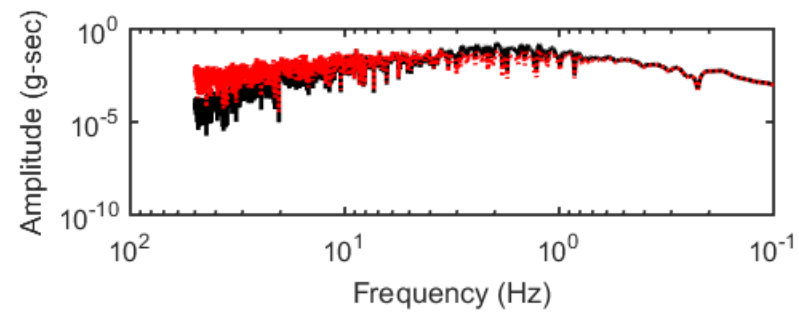
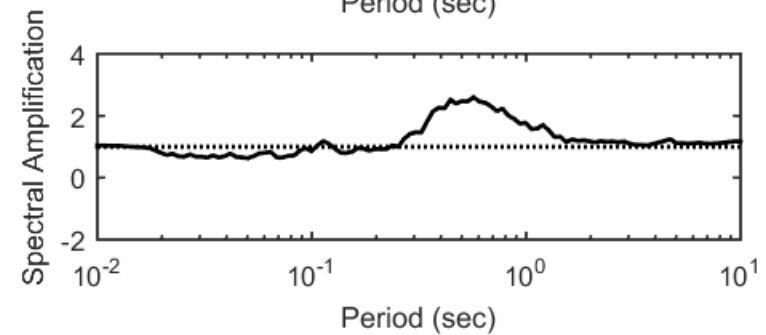
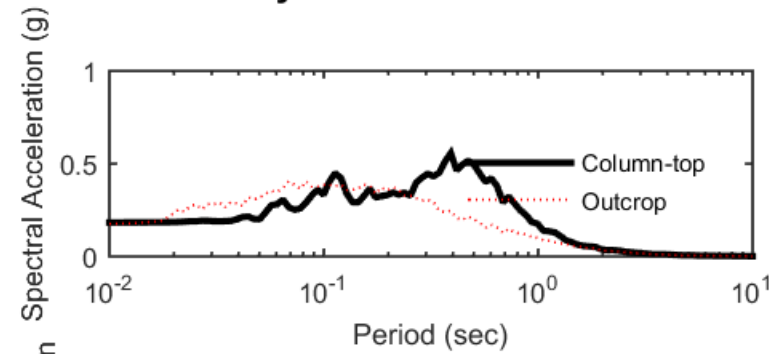
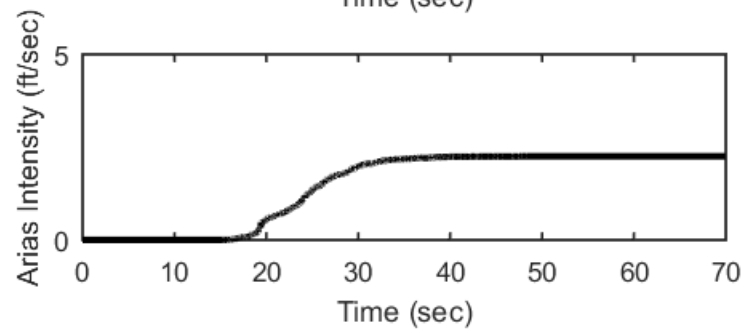
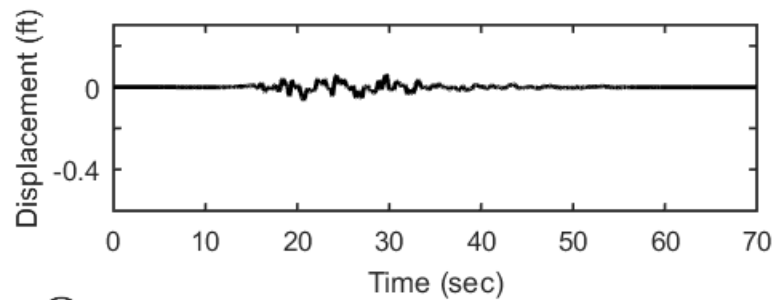
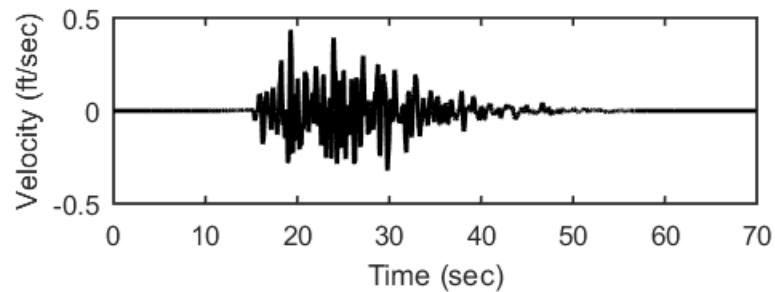
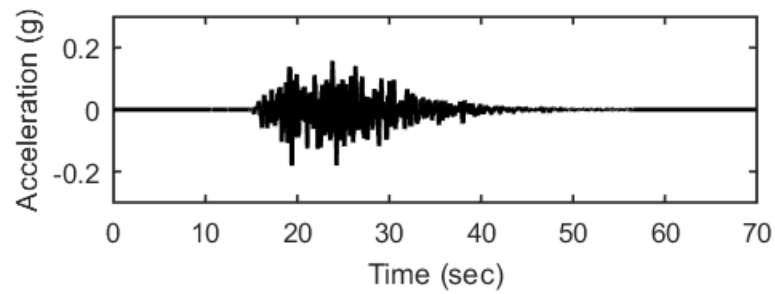
### Profile outputs for Motion: FEE1



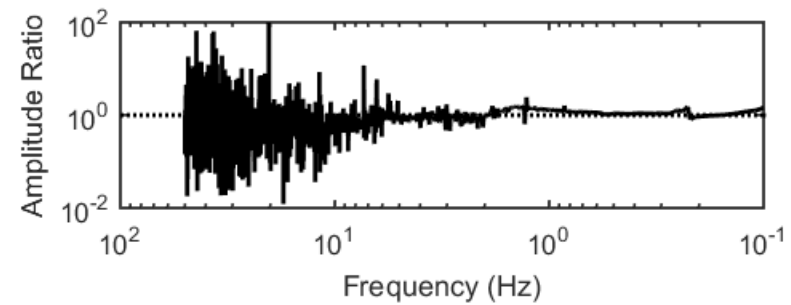
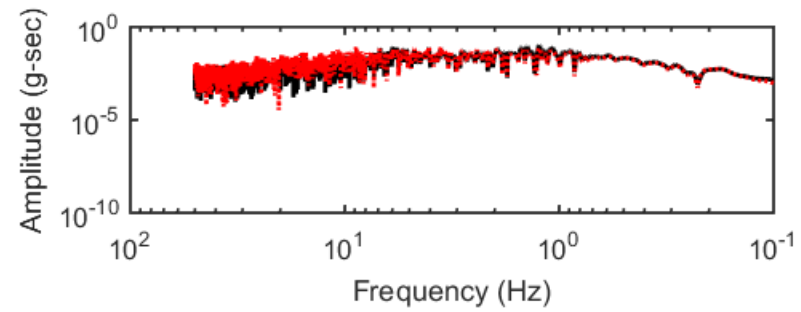
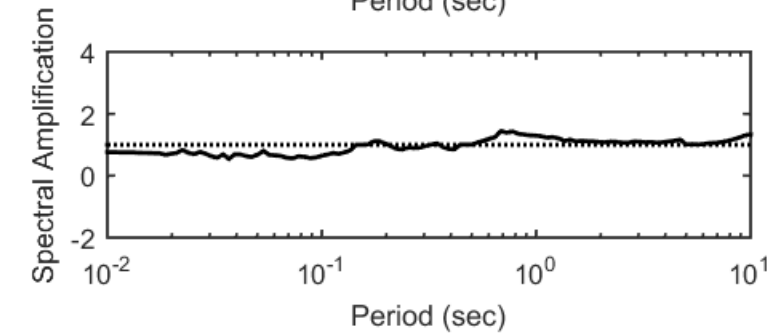
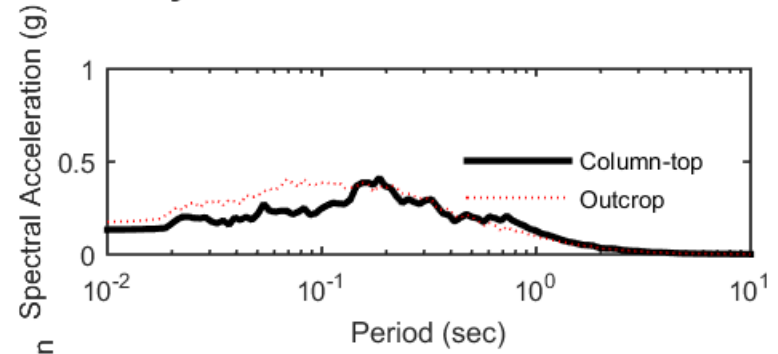
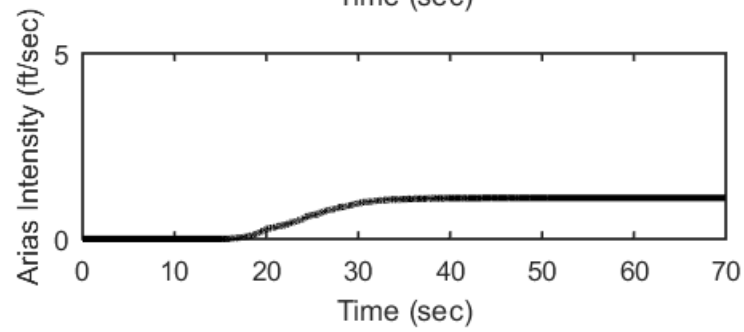
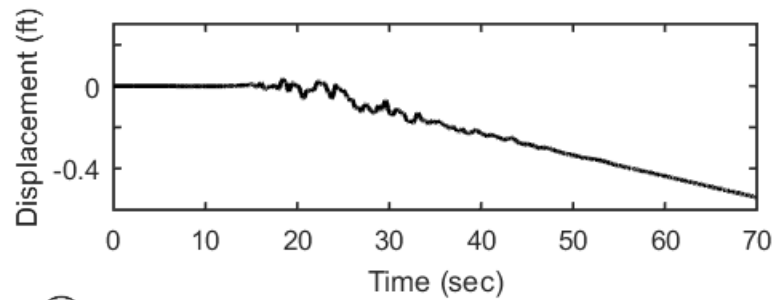
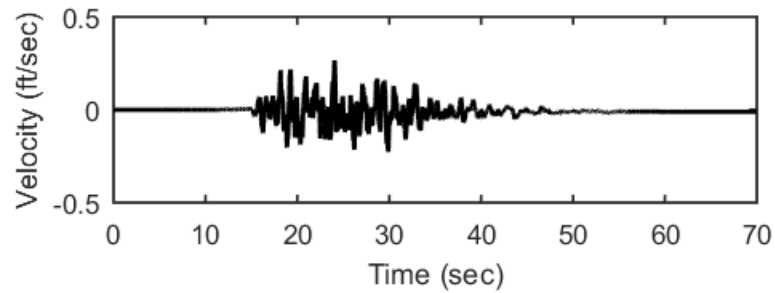
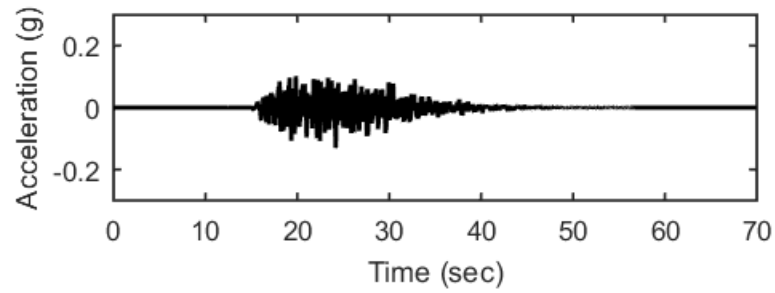
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



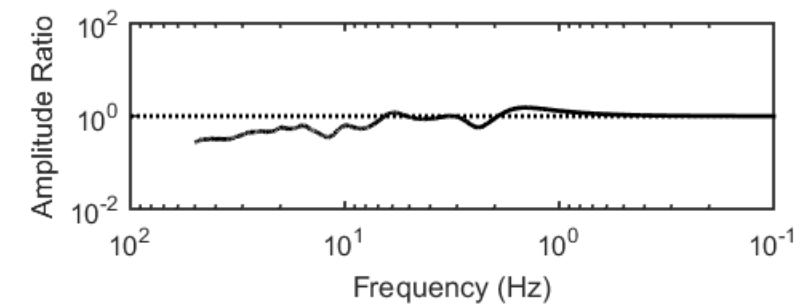
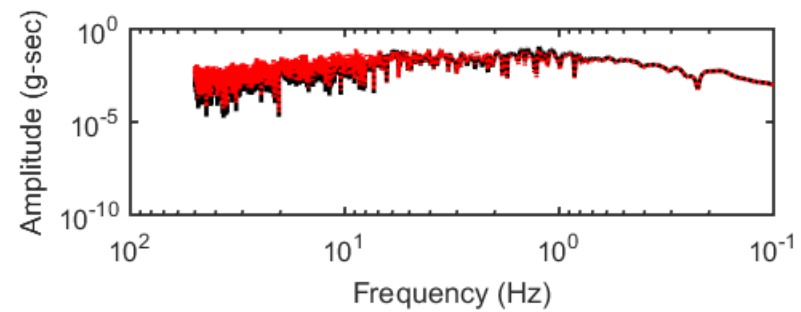
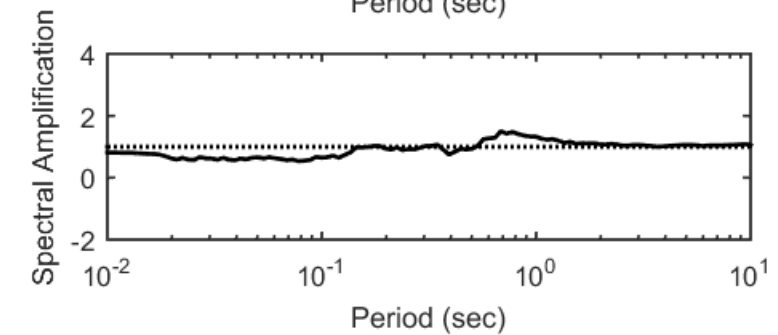
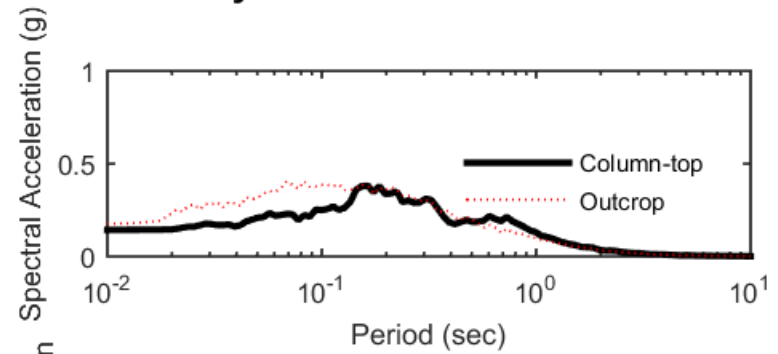
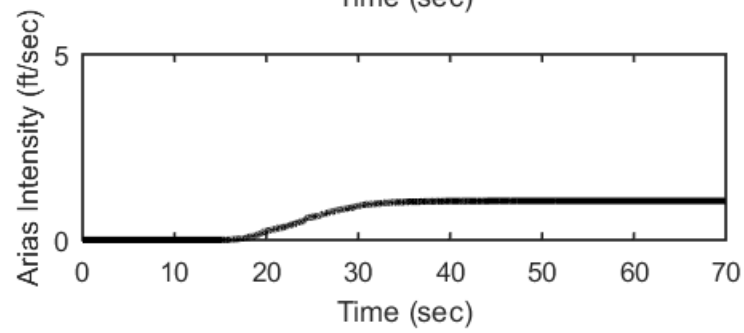
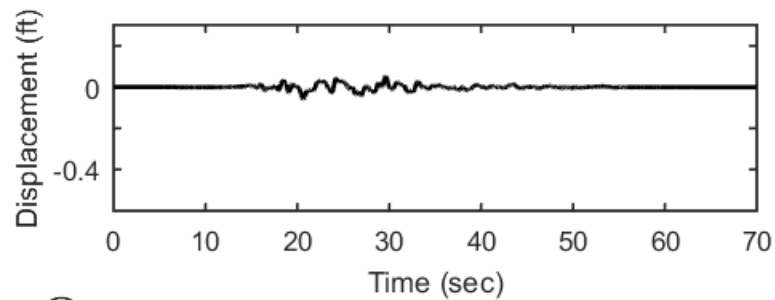
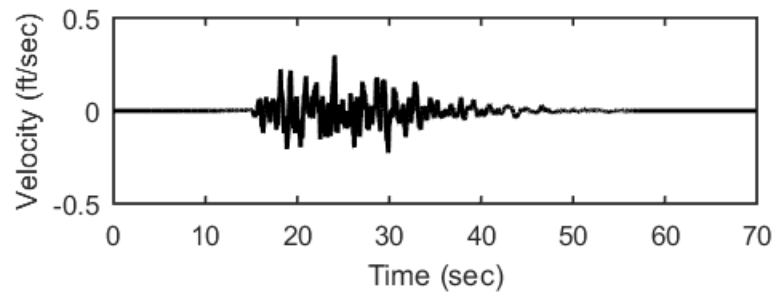
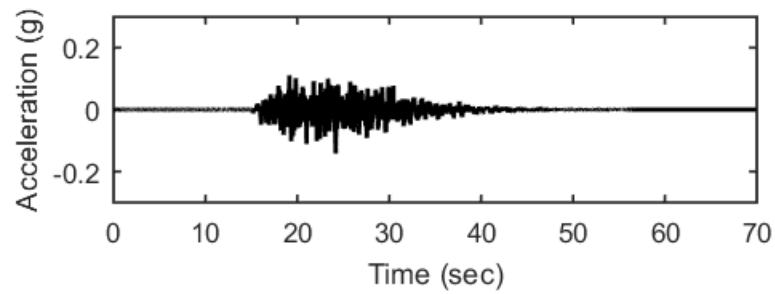
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



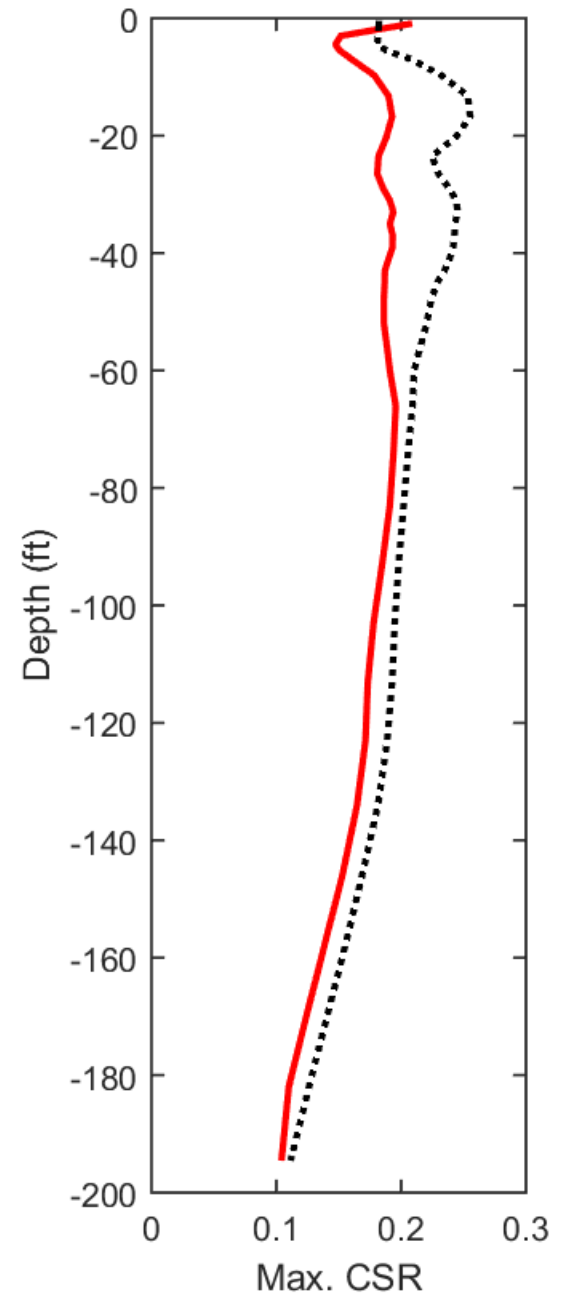
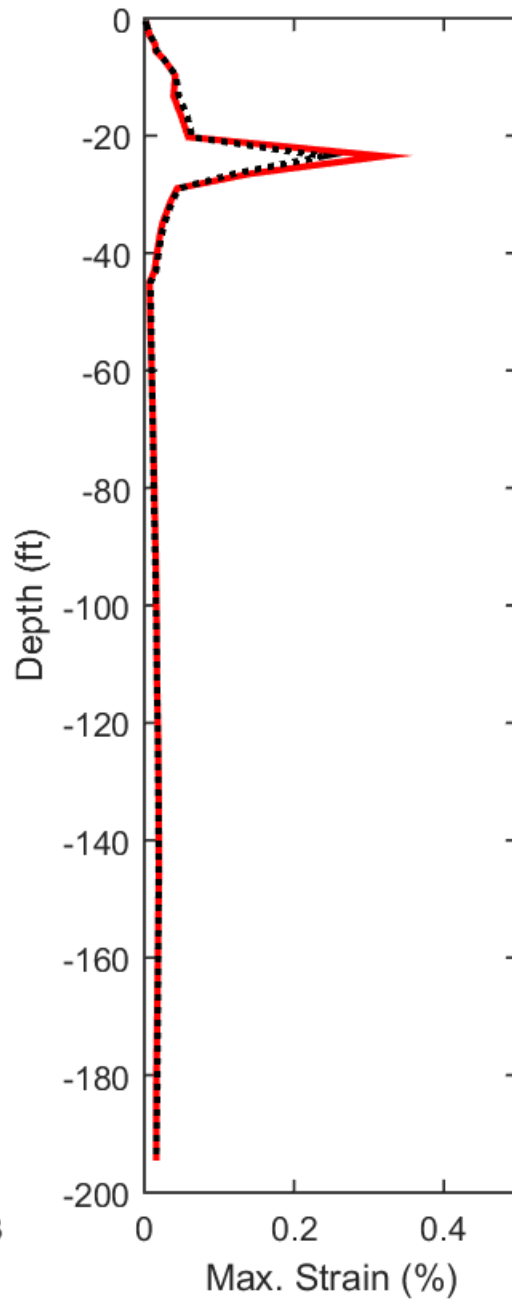
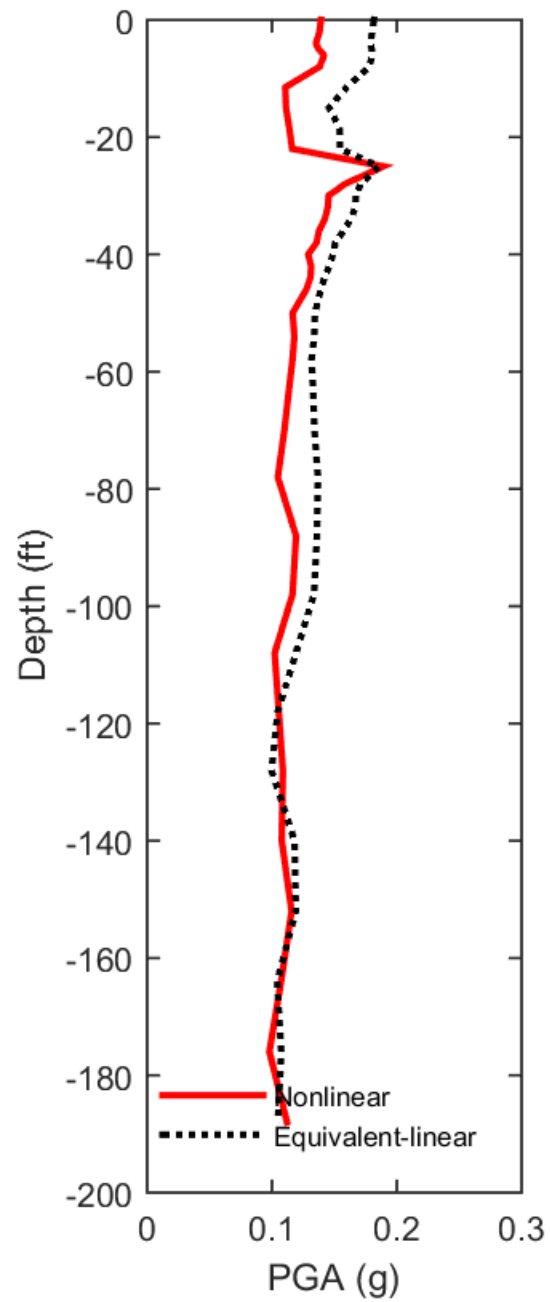
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



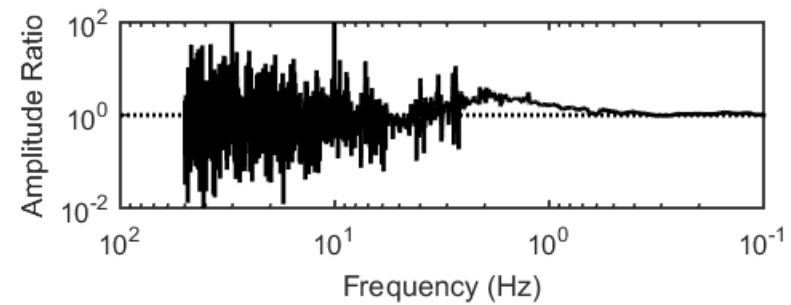
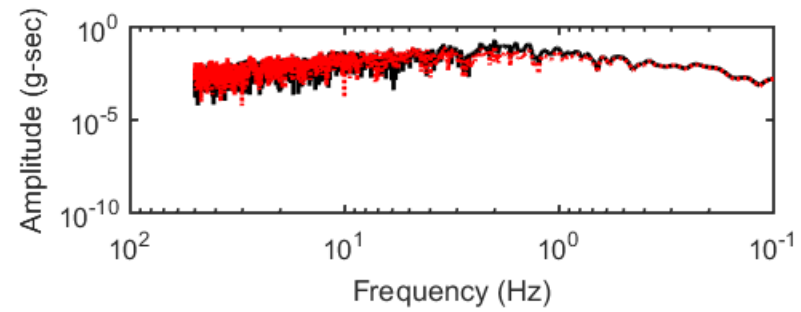
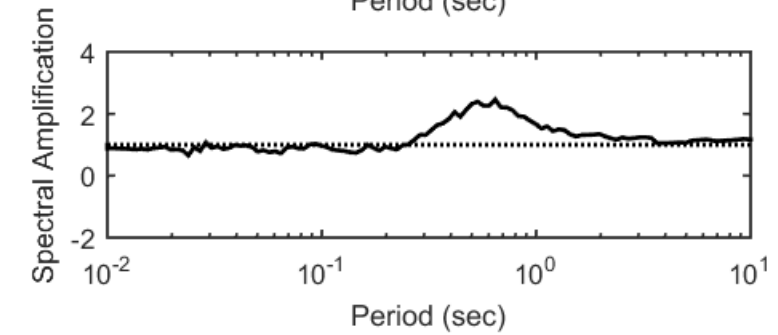
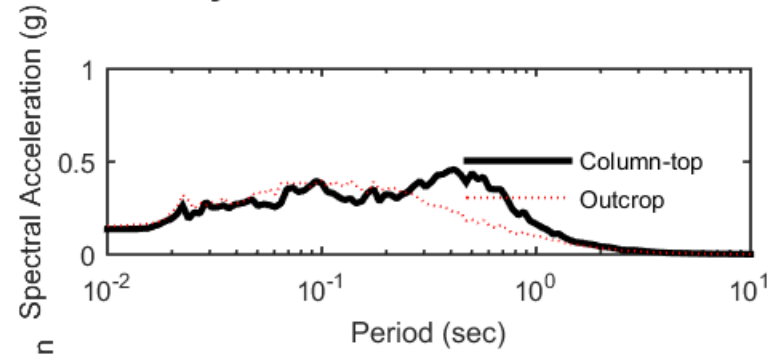
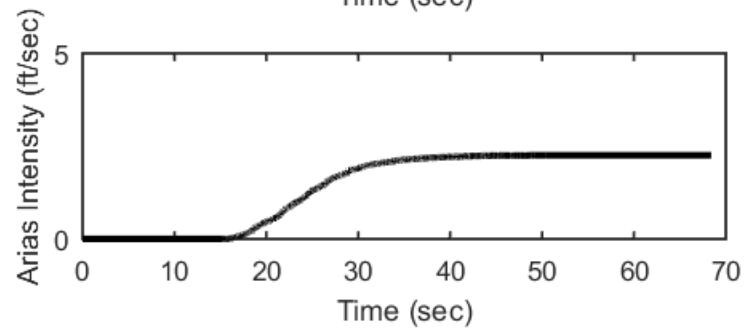
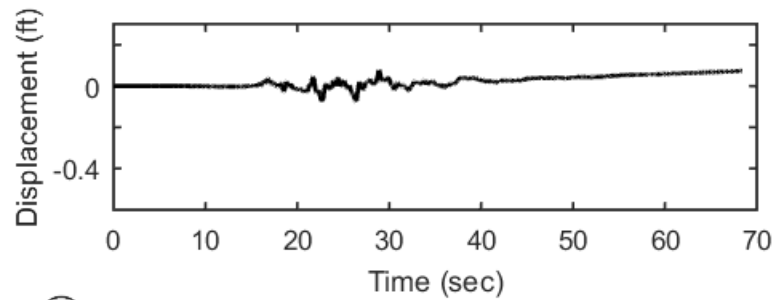
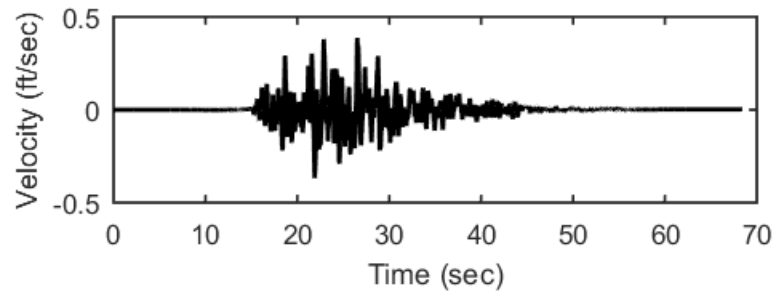
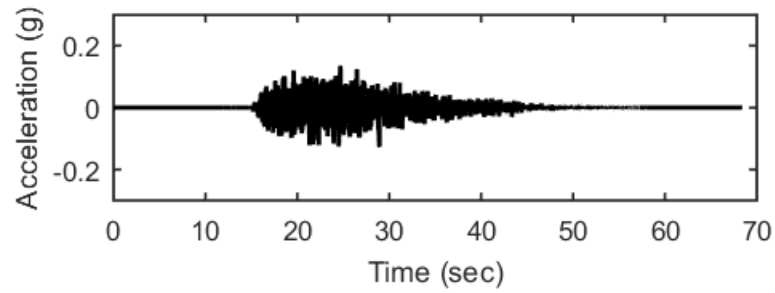
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



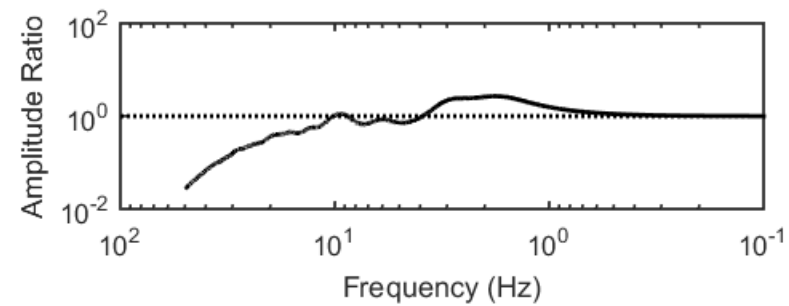
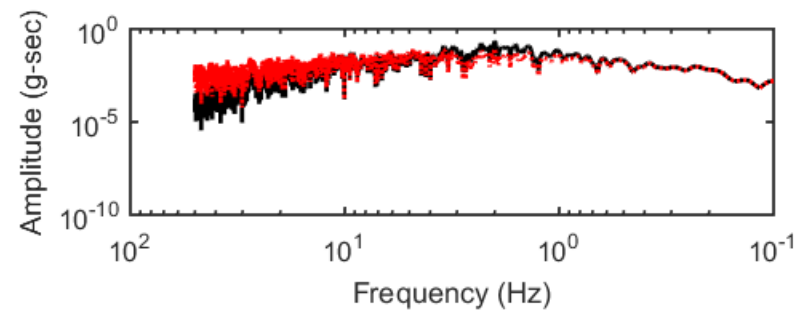
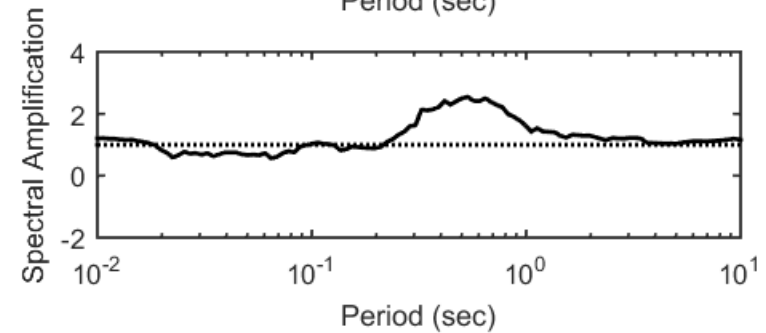
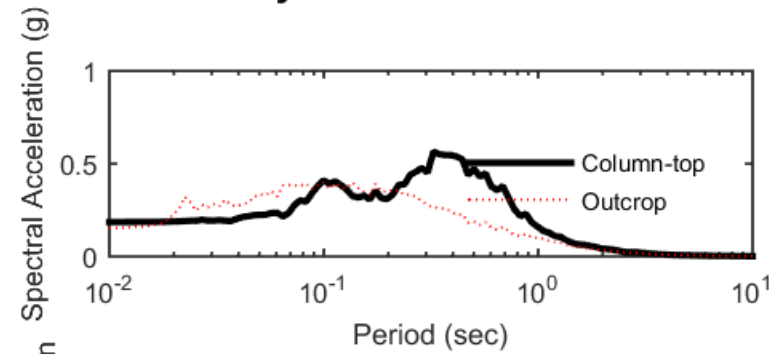
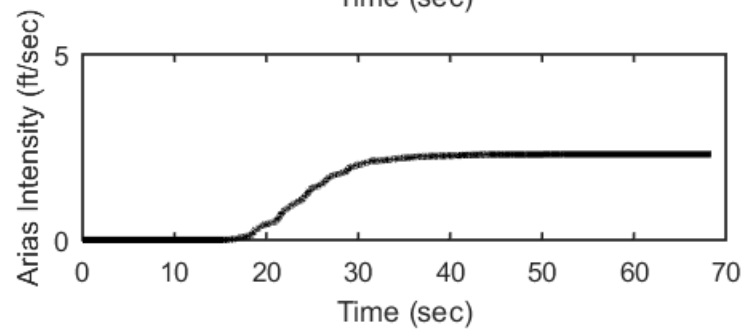
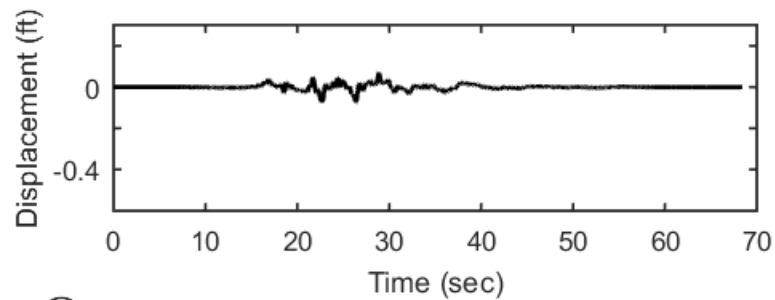
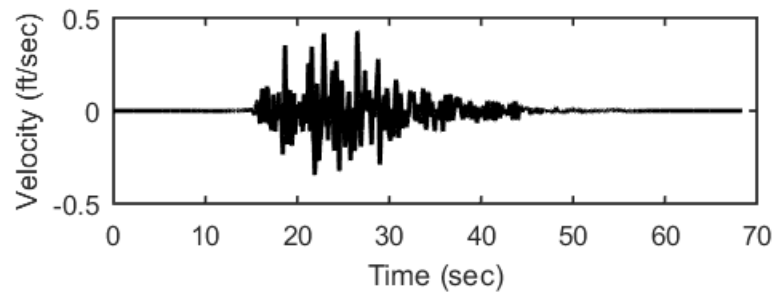
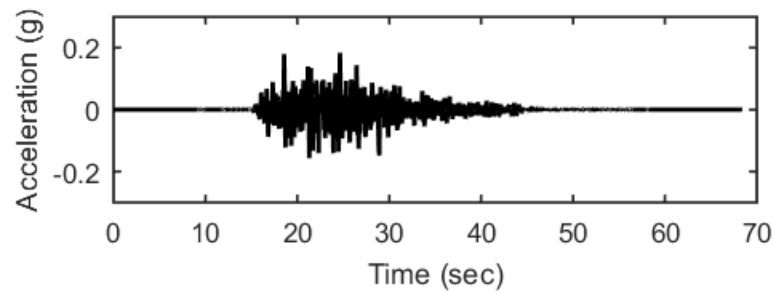
### Profile outputs for Motion: FEE2



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3

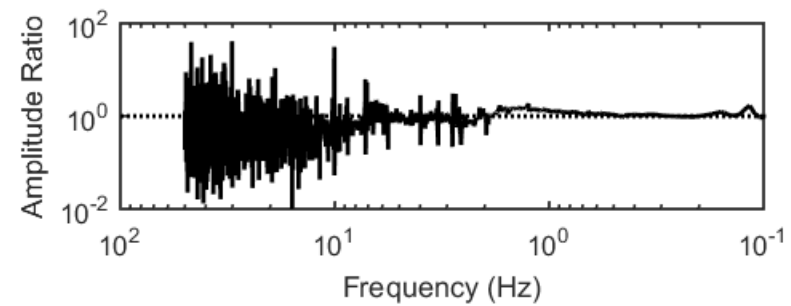
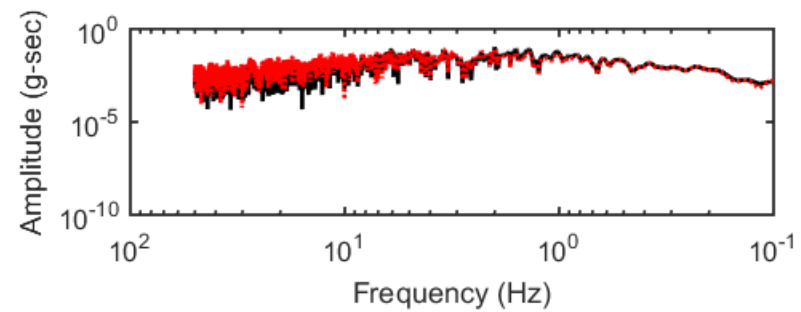
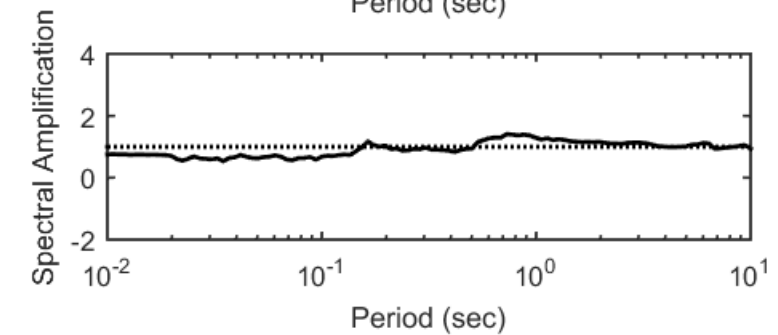
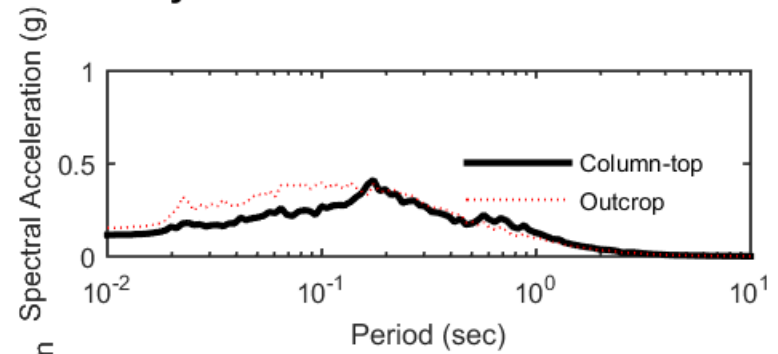
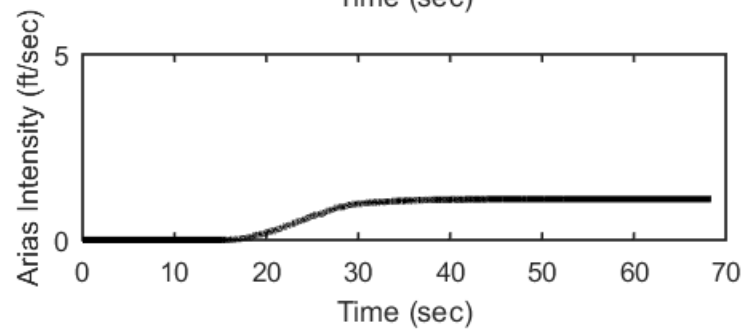
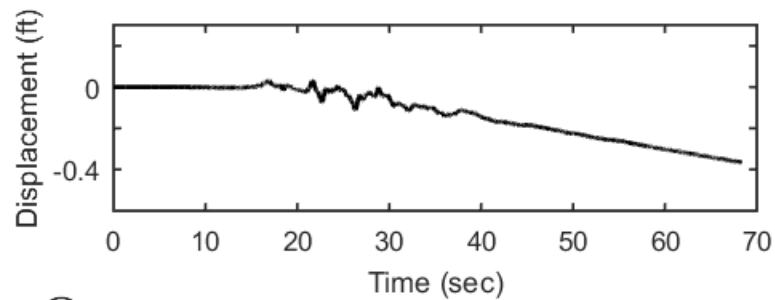
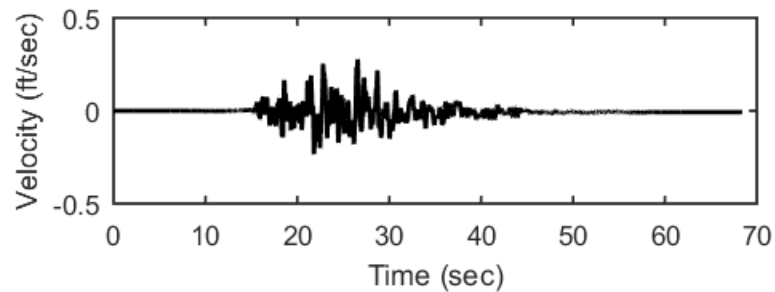
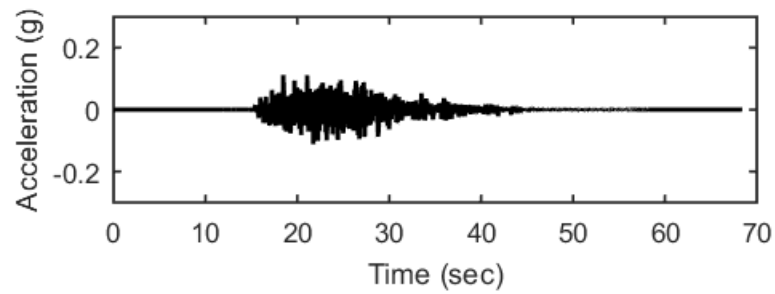


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3

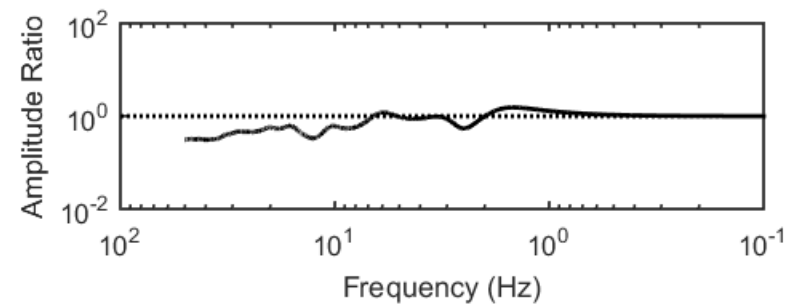
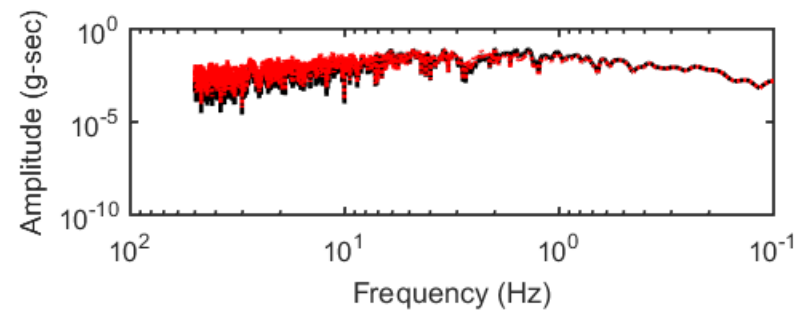
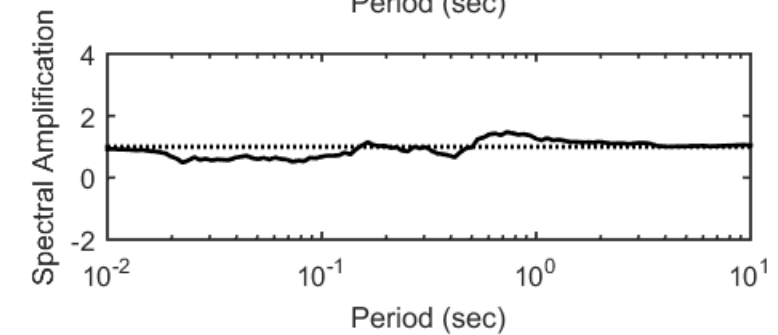
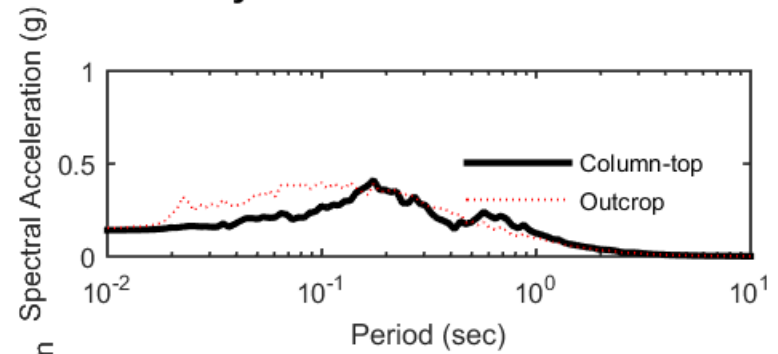
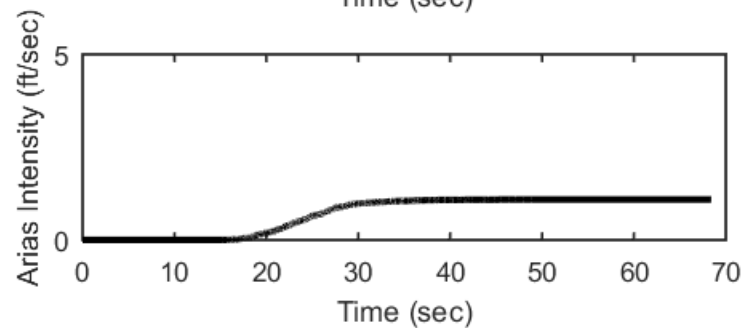
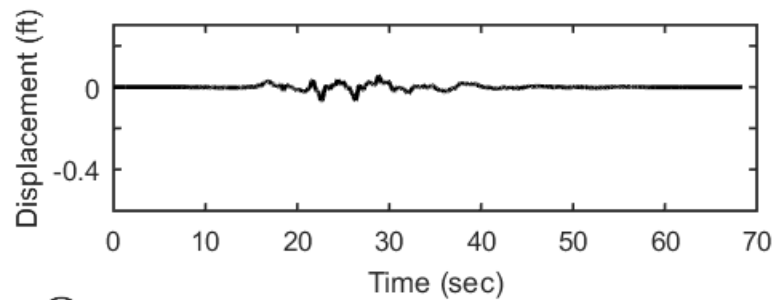
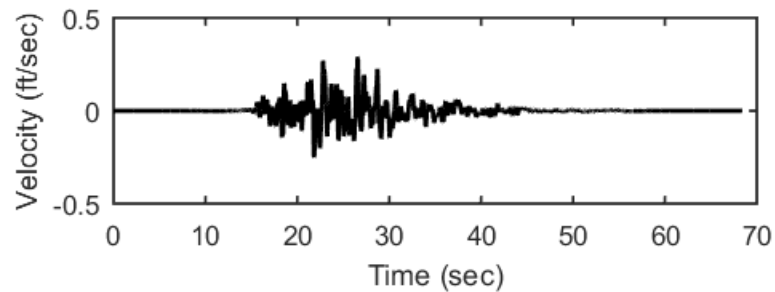
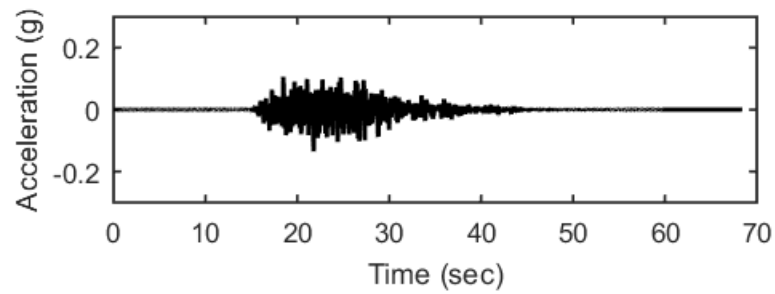




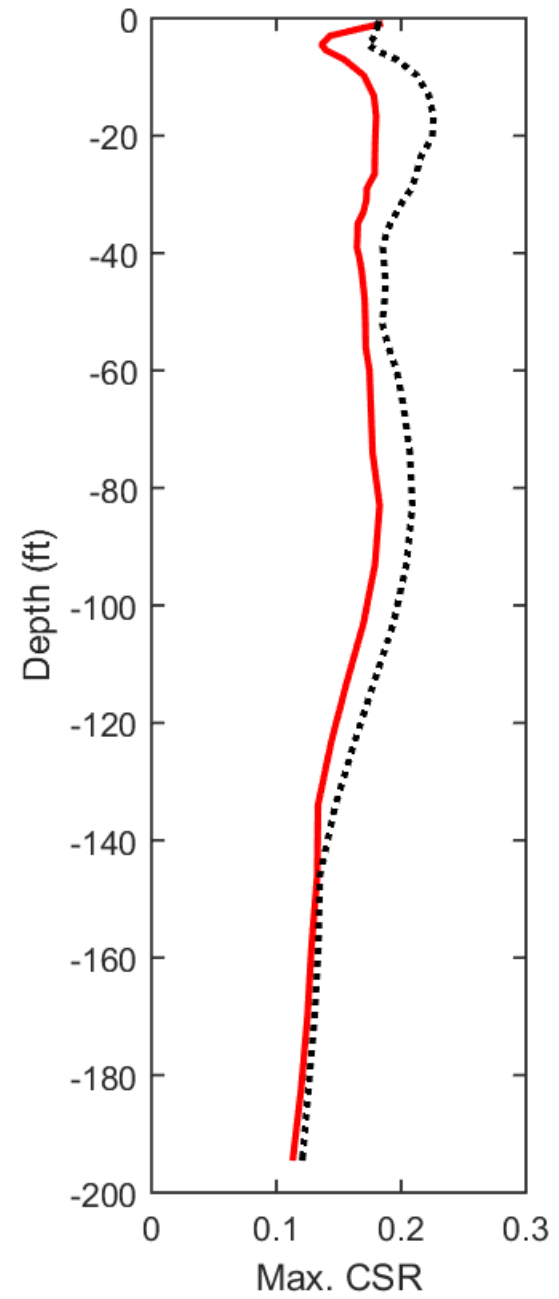
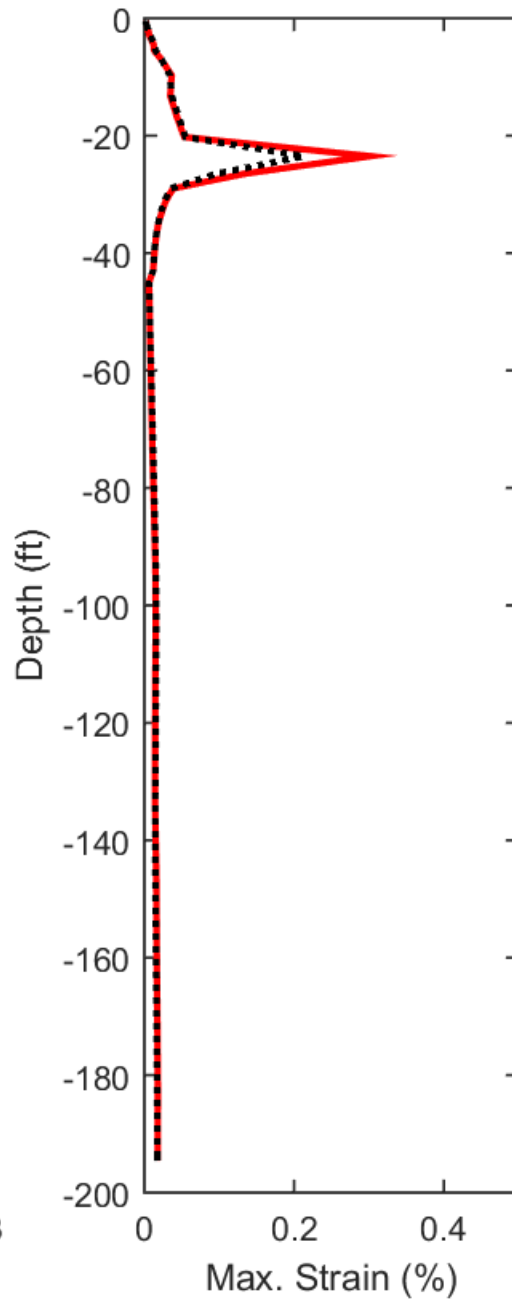
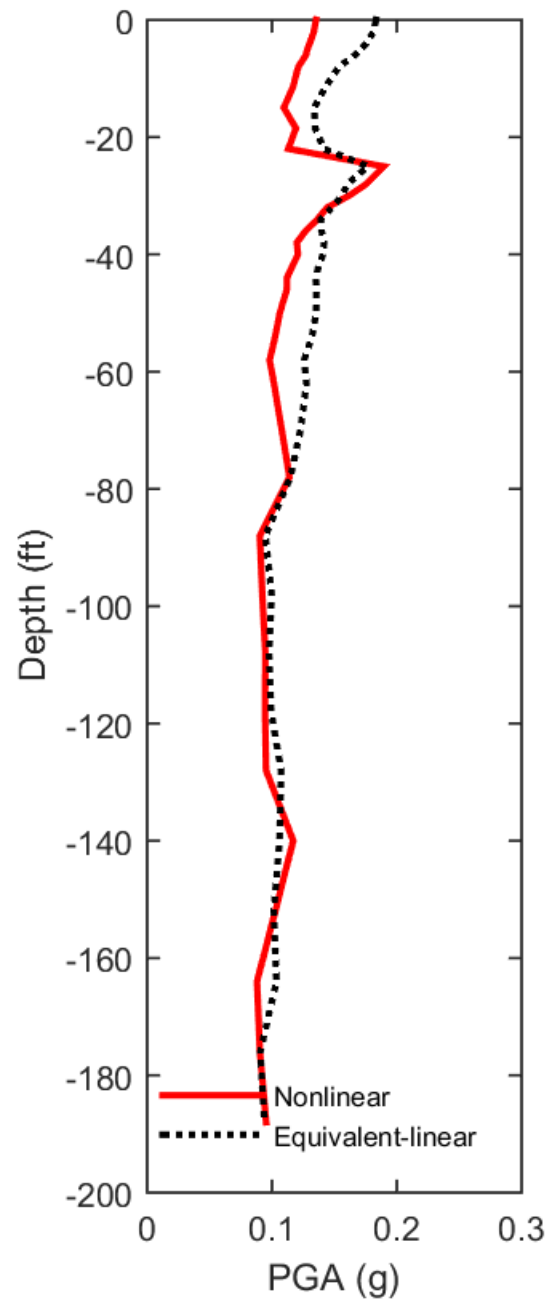
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



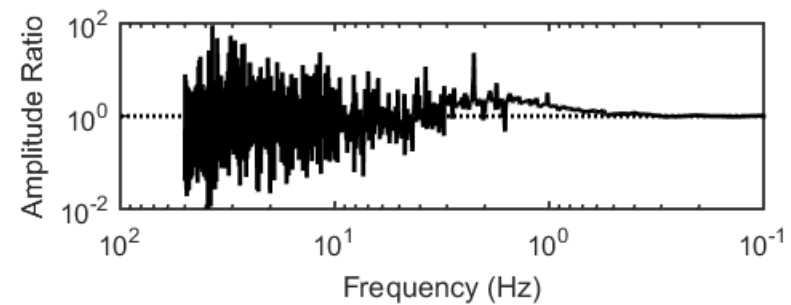
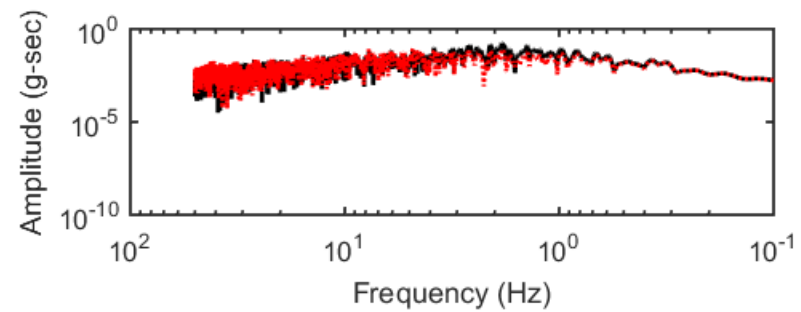
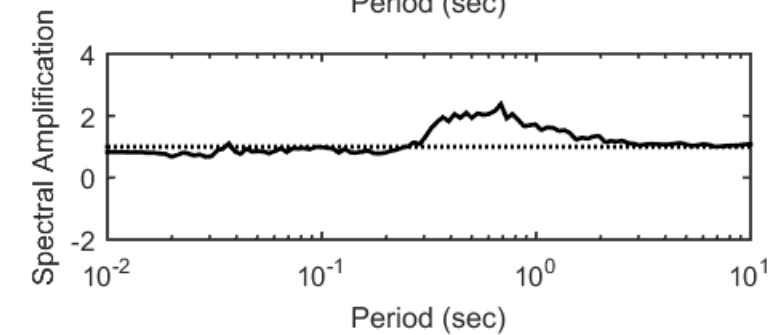
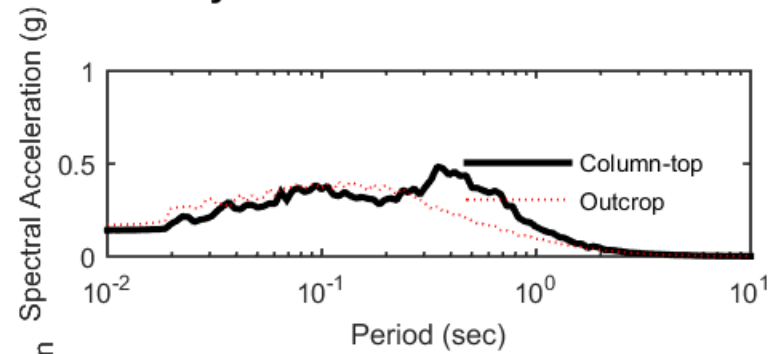
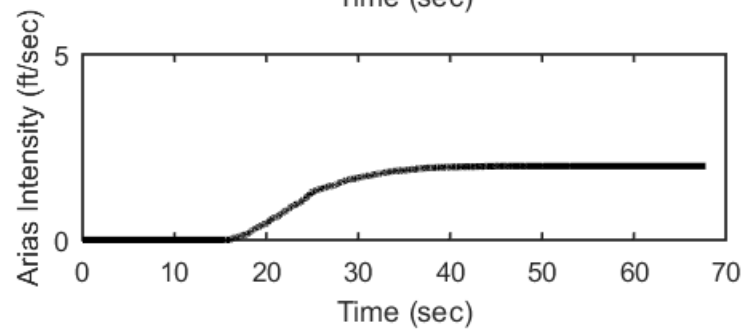
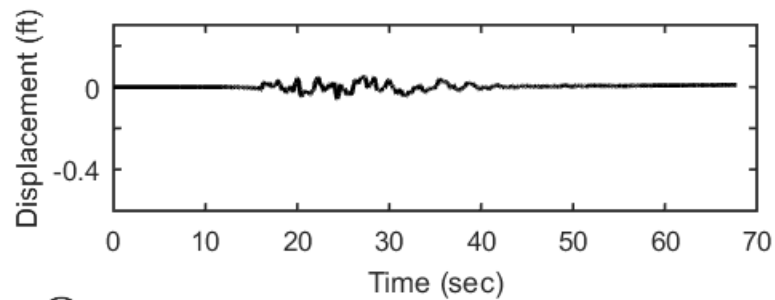
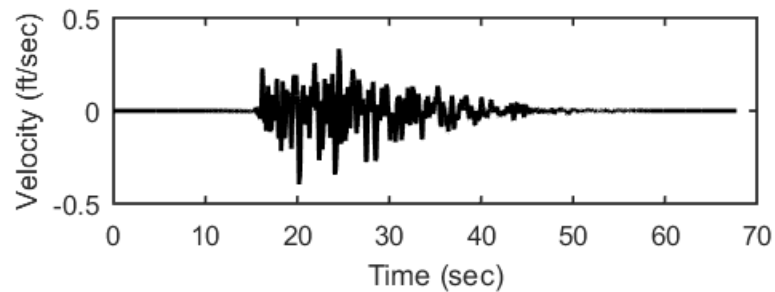
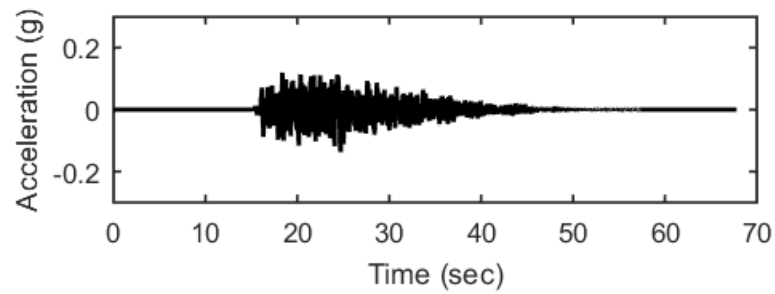
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



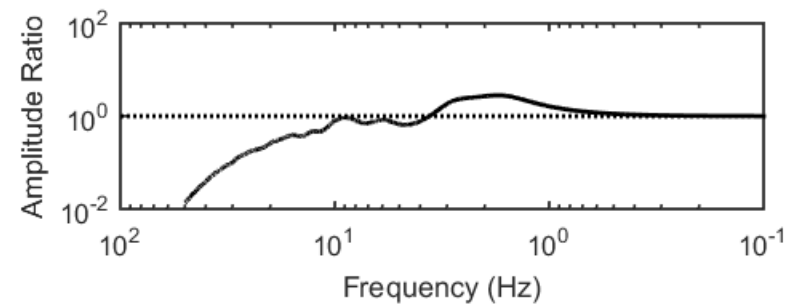
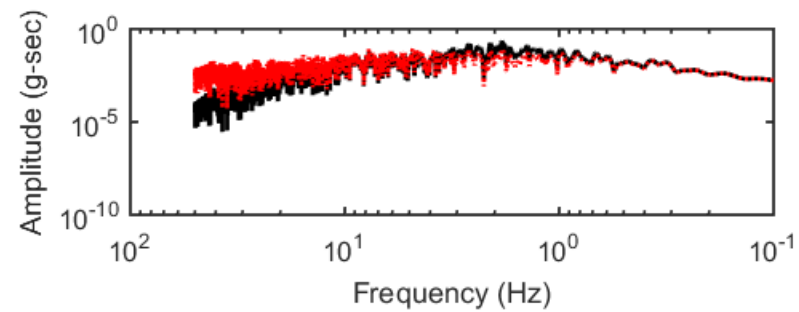
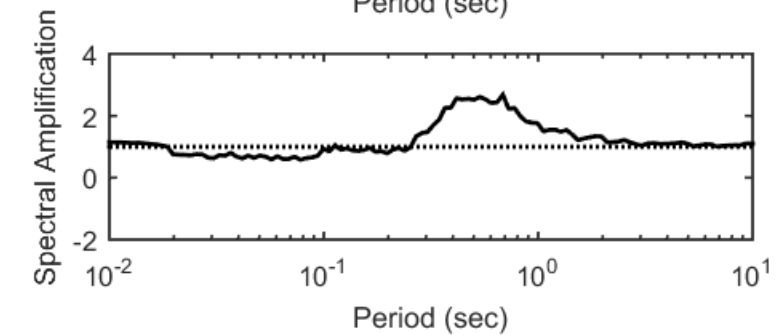
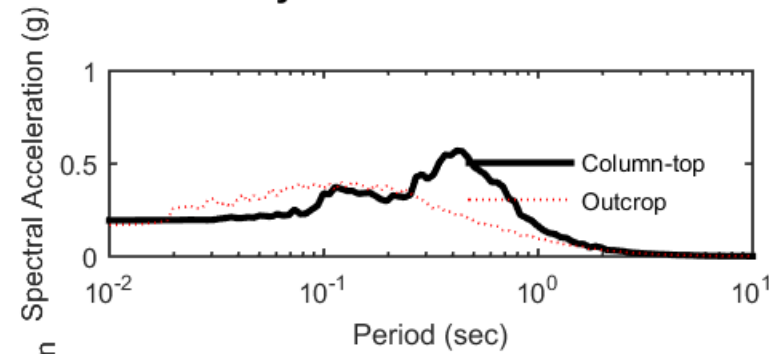
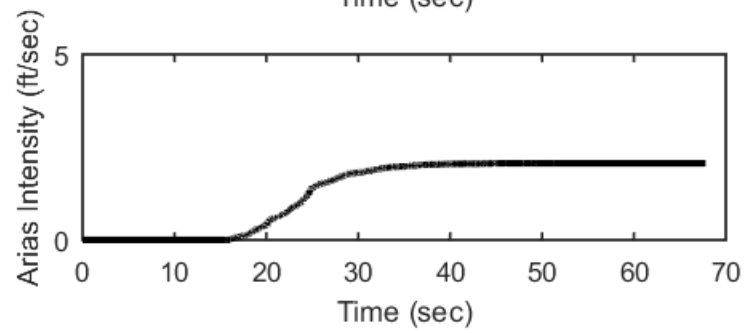
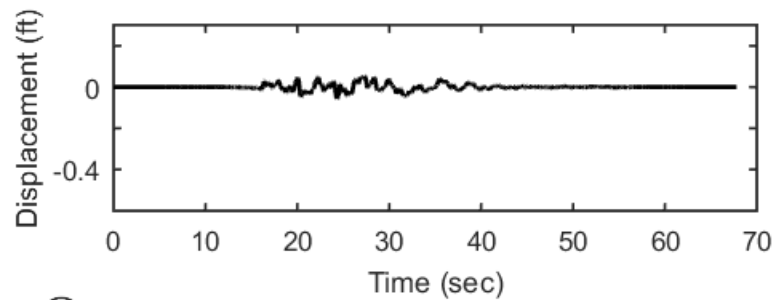
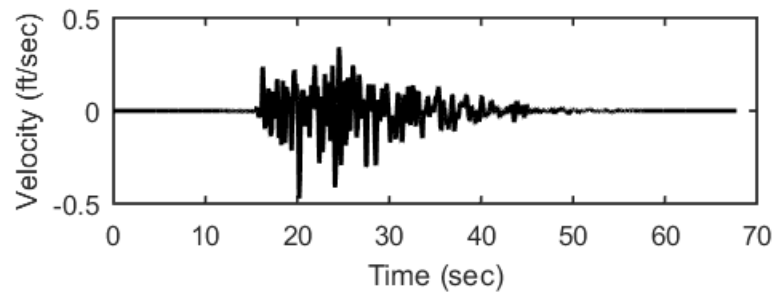
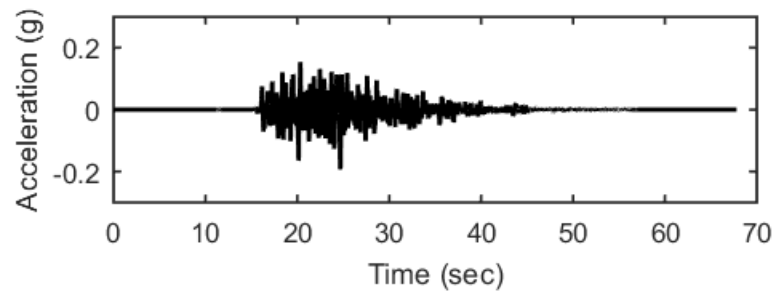
### Profile outputs for Motion: FEE3



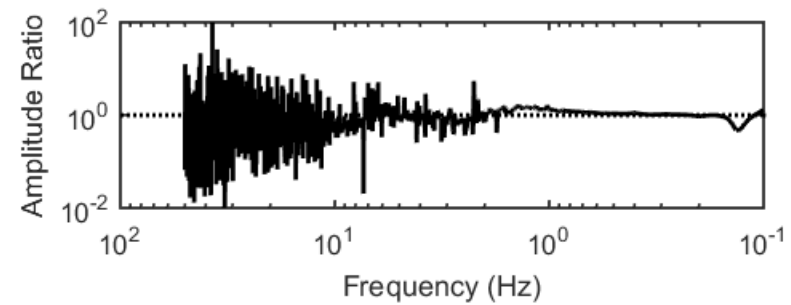
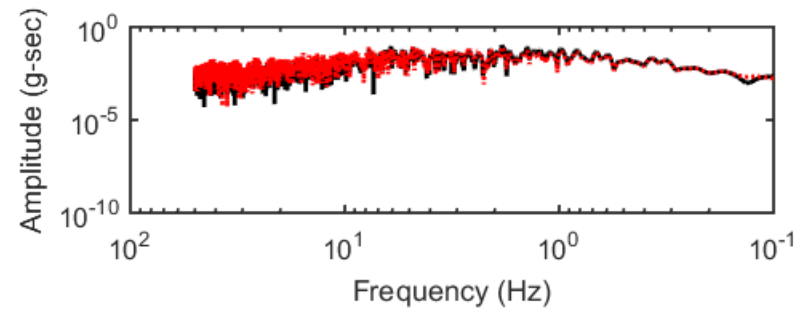
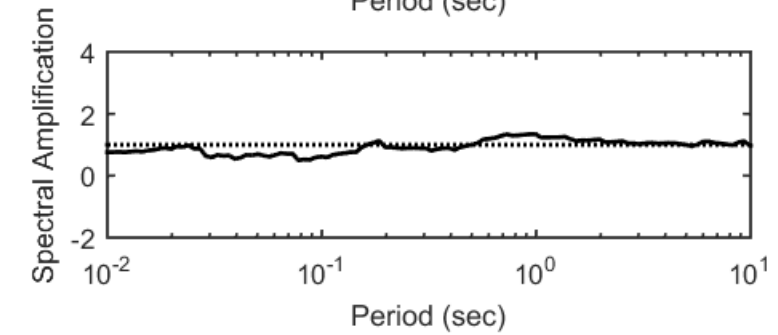
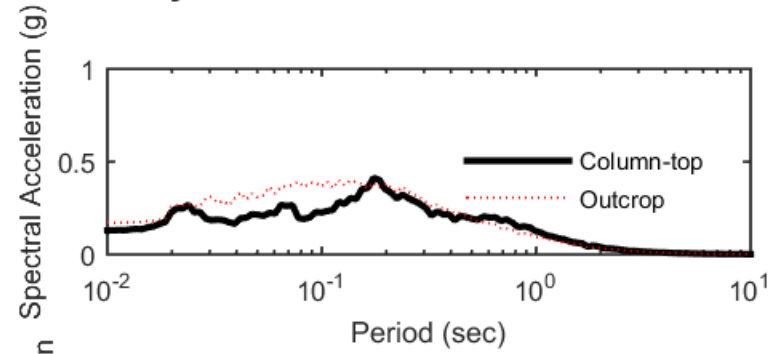
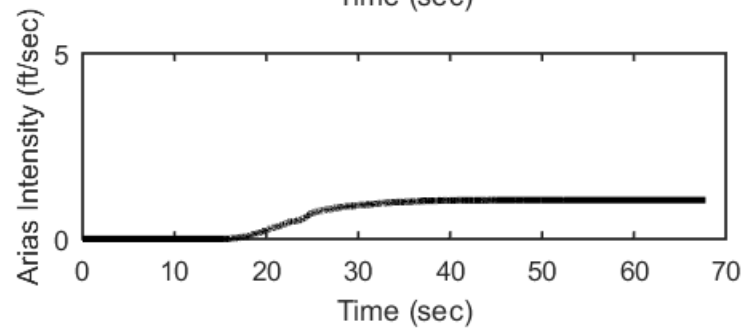
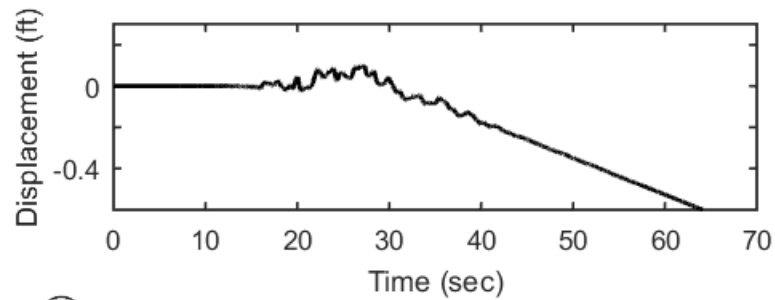
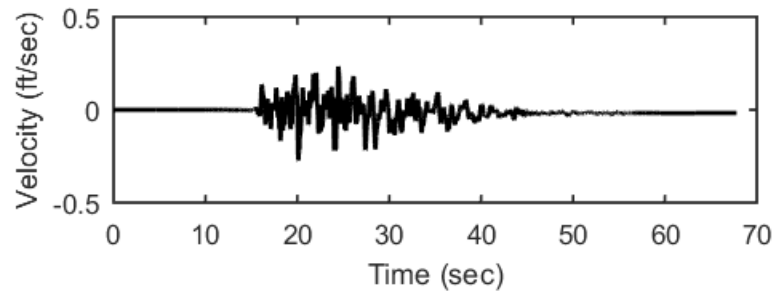
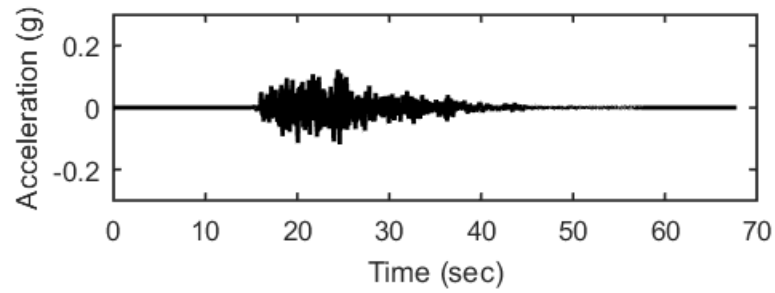
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



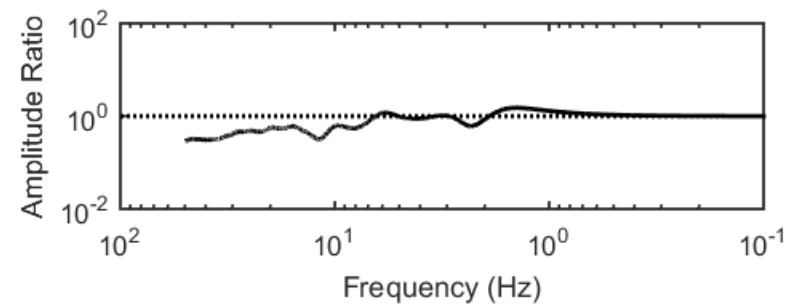
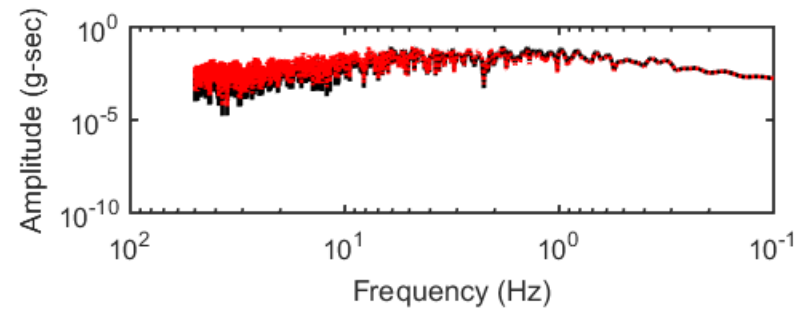
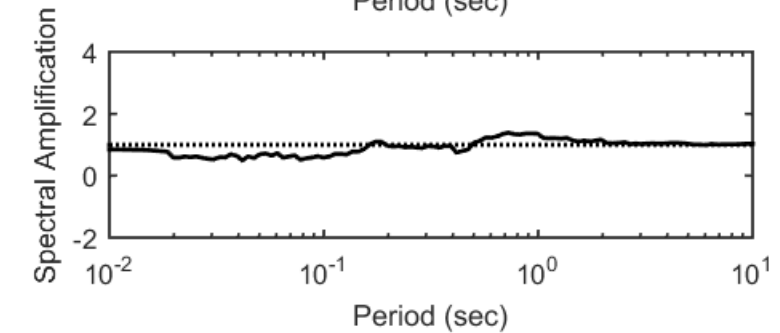
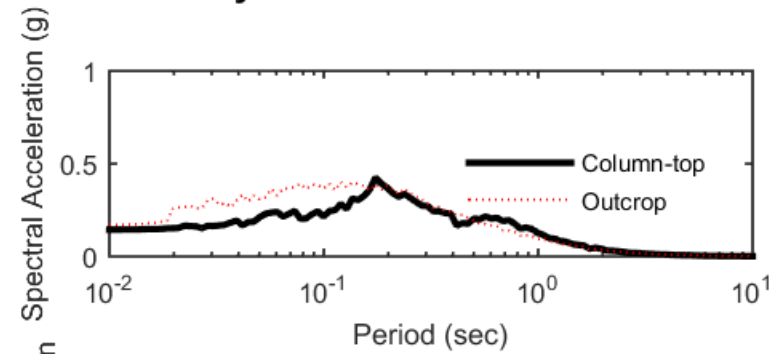
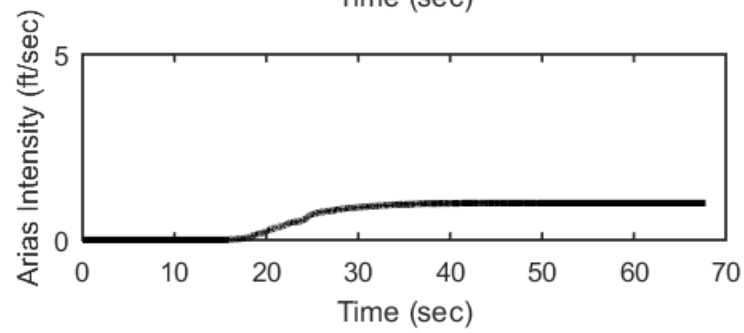
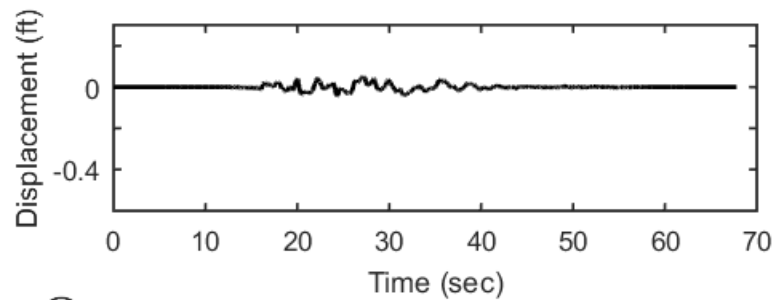
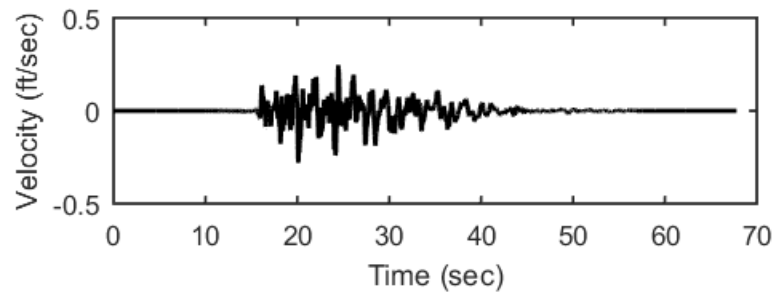
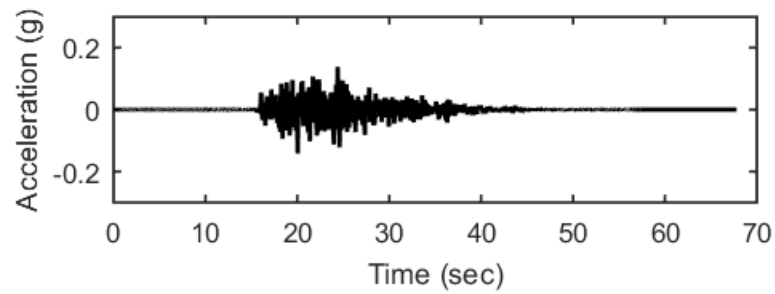
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



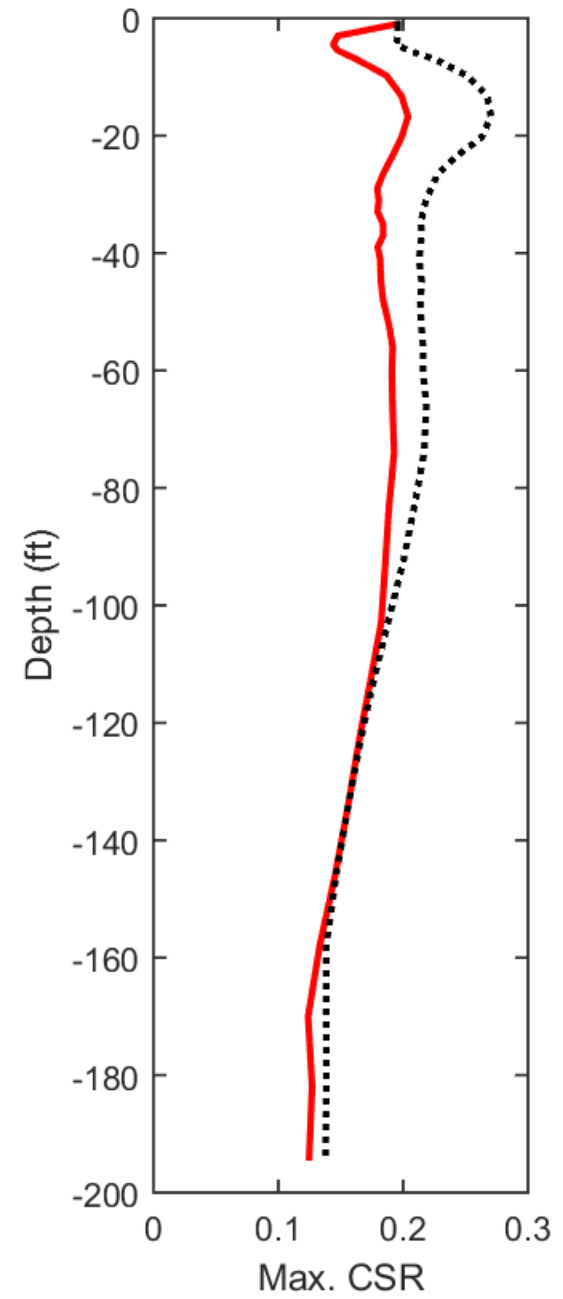
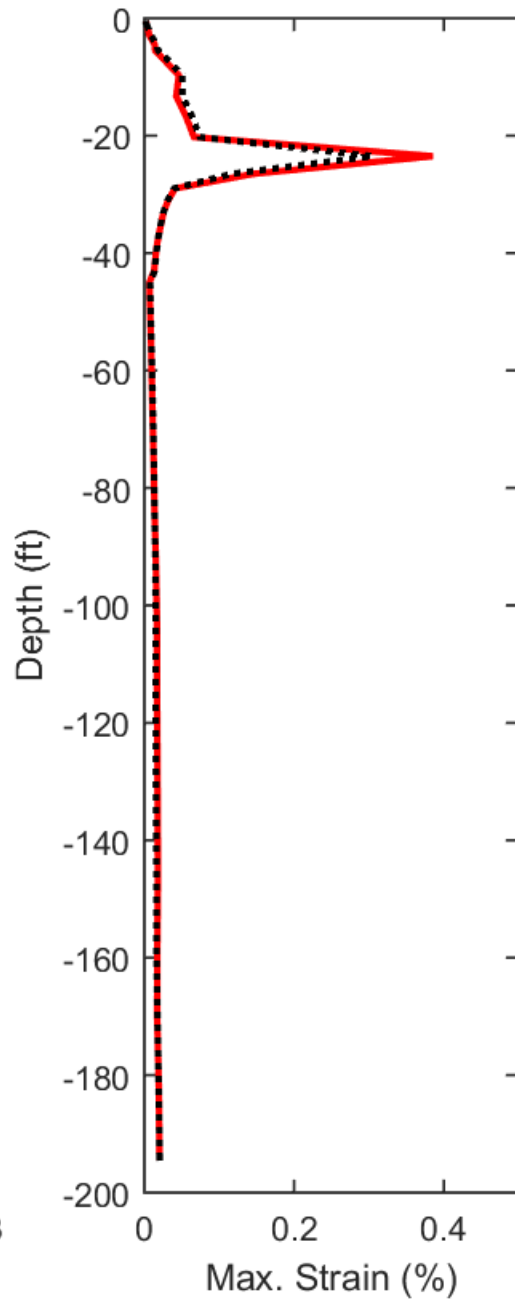
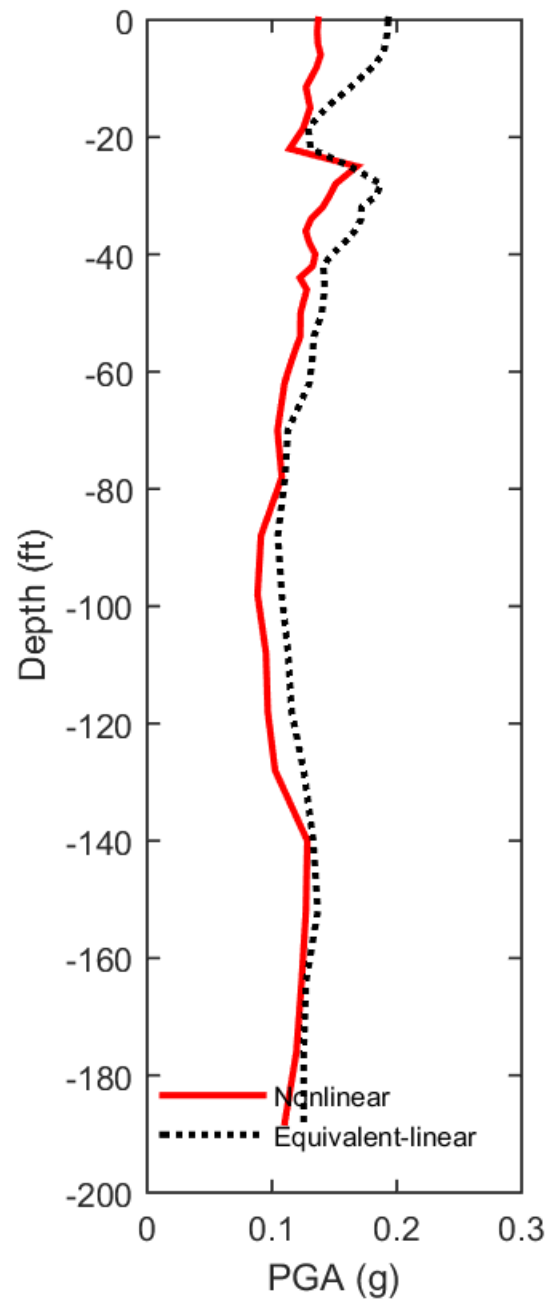
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4

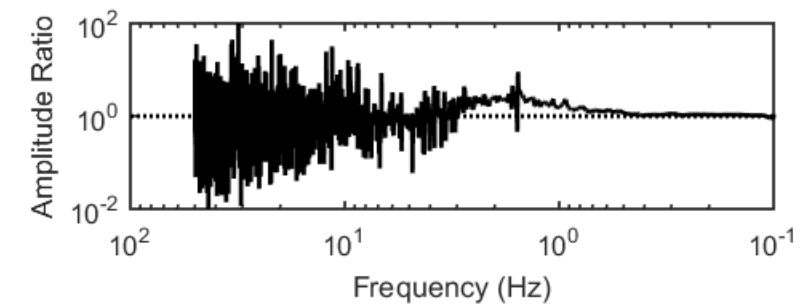
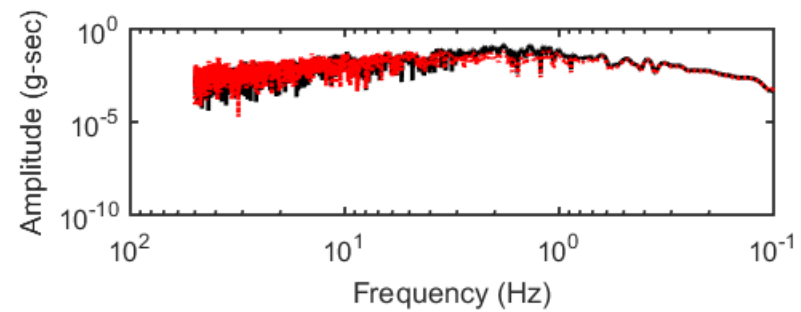
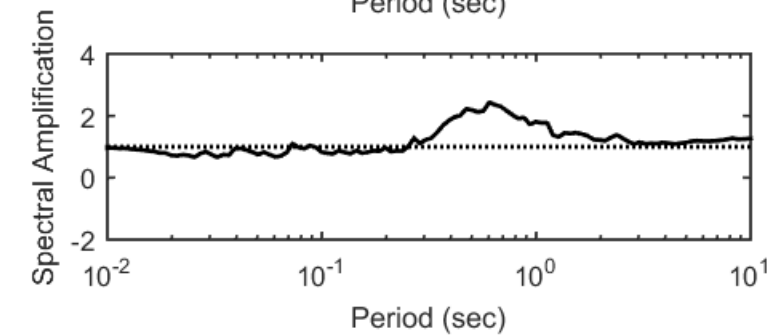
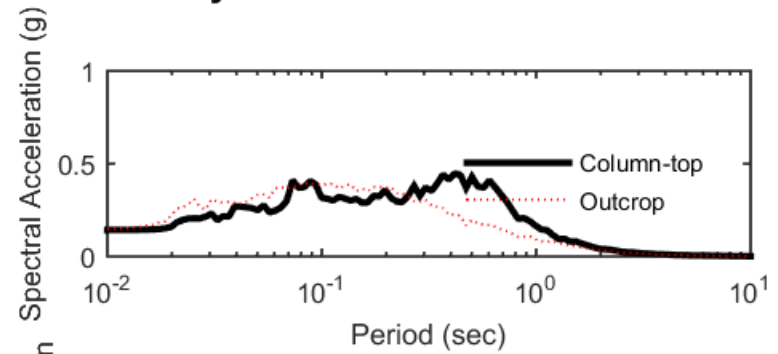
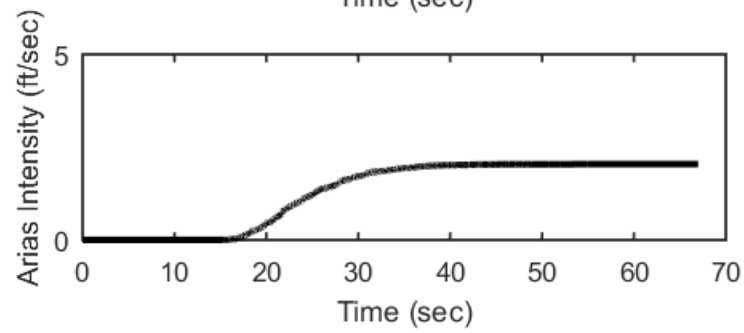
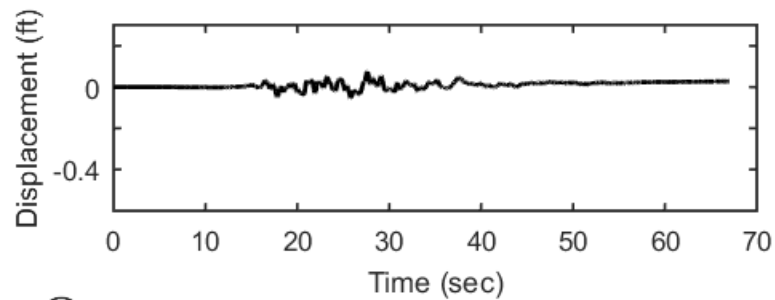
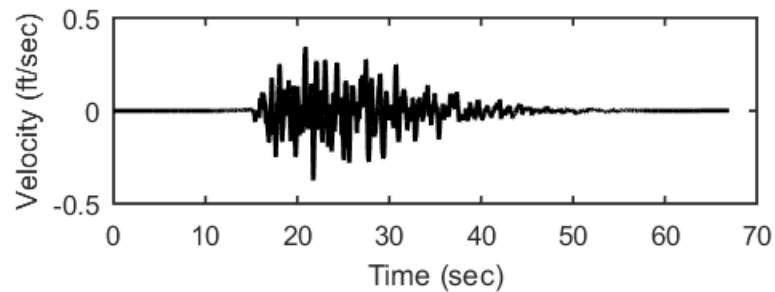
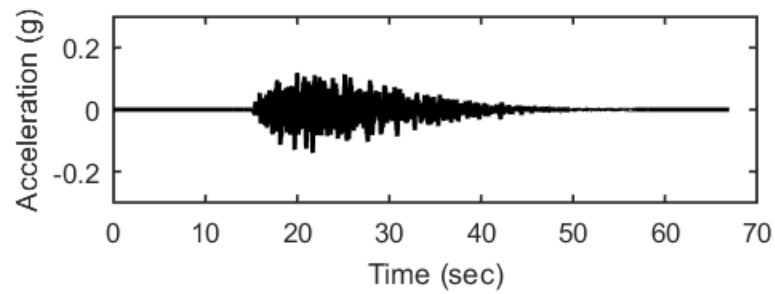


### Profile outputs for Motion: FEE4

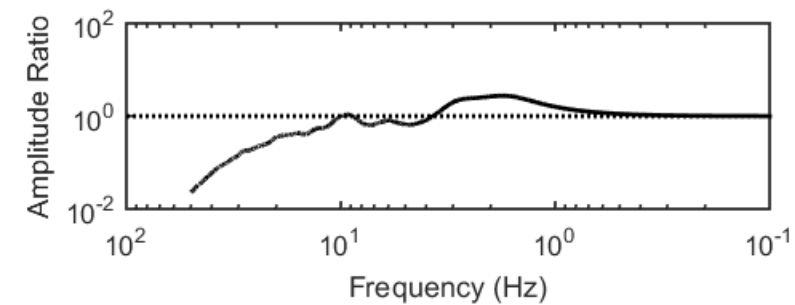
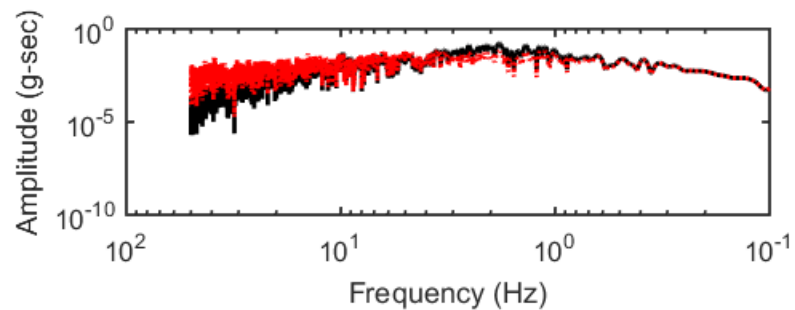
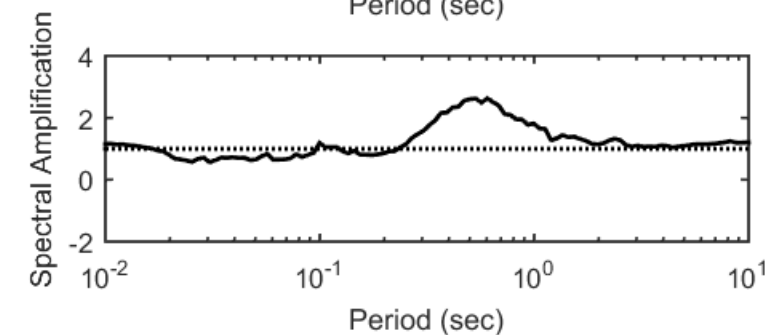
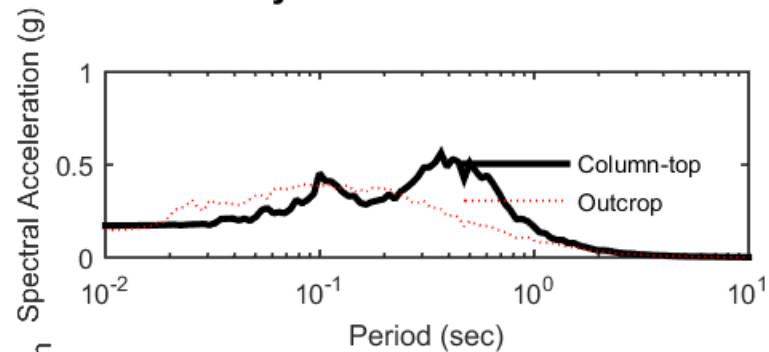
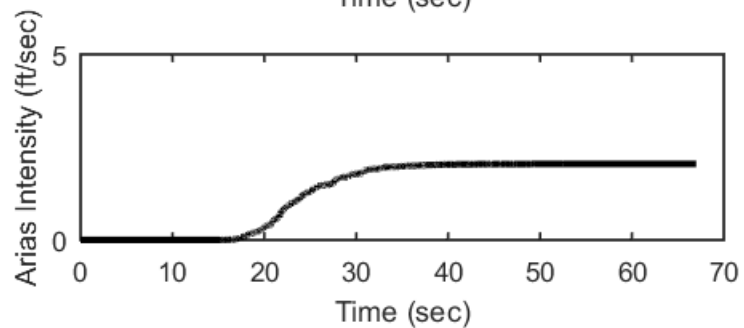
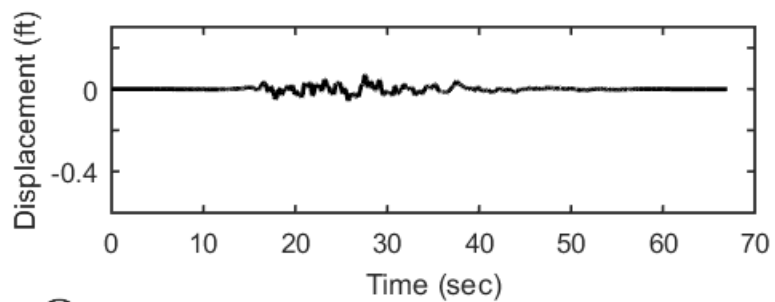
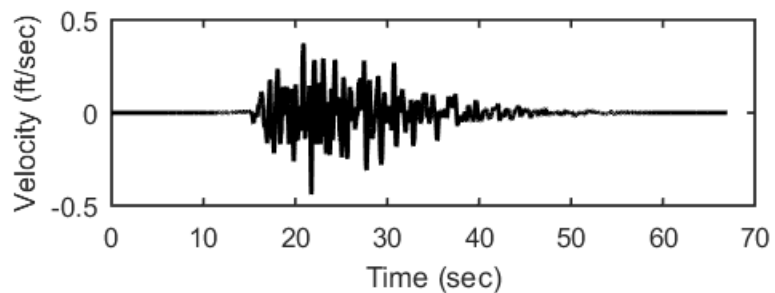
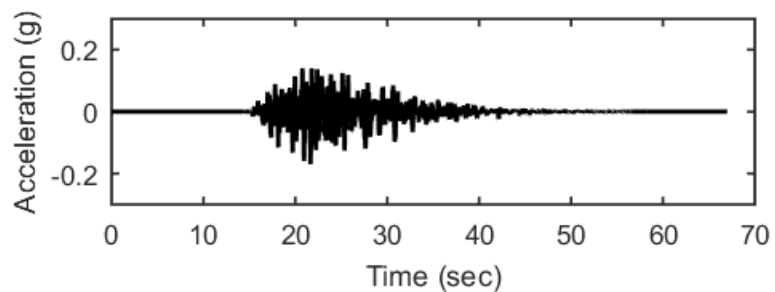




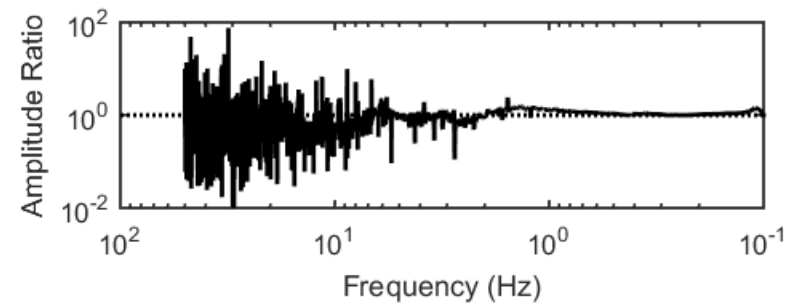
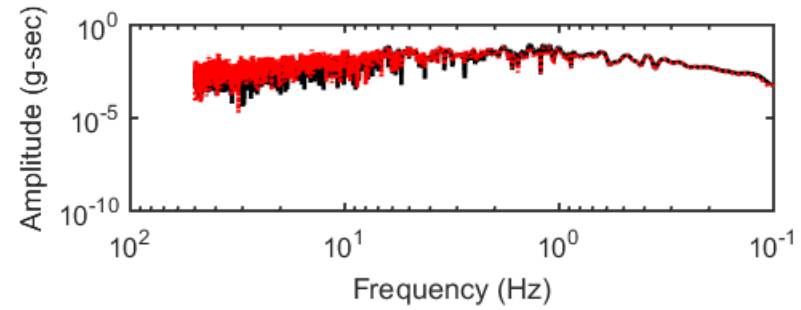
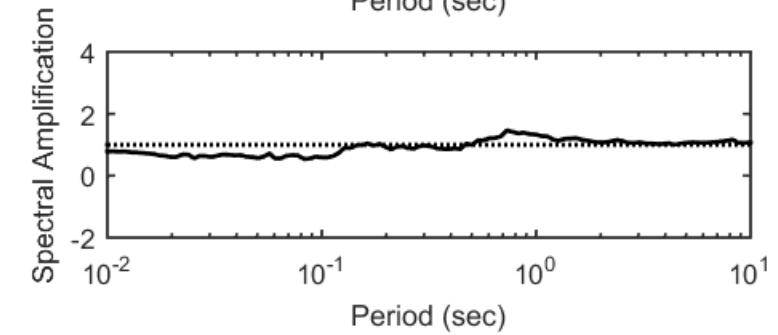
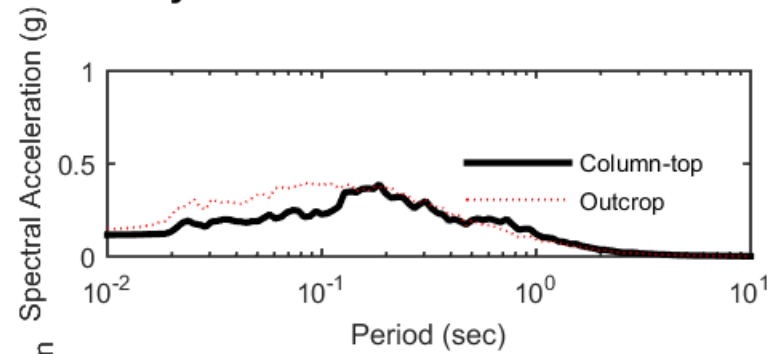
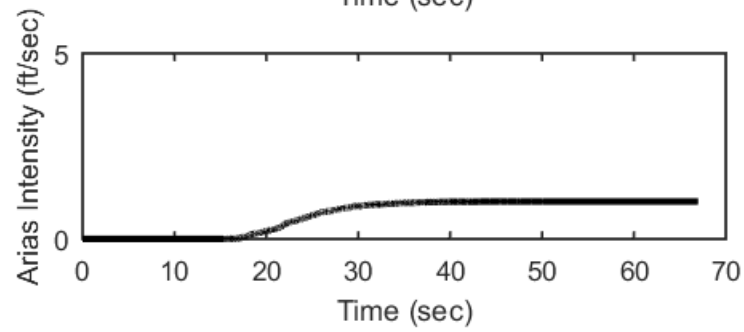
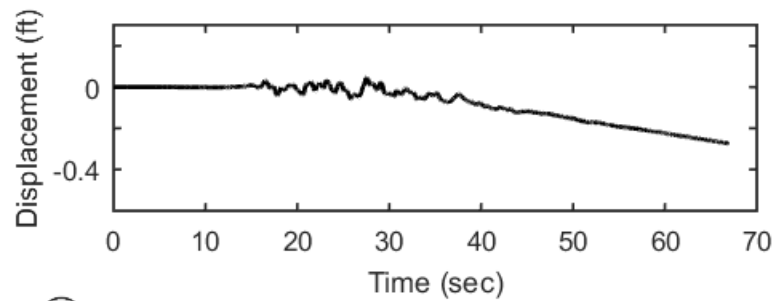
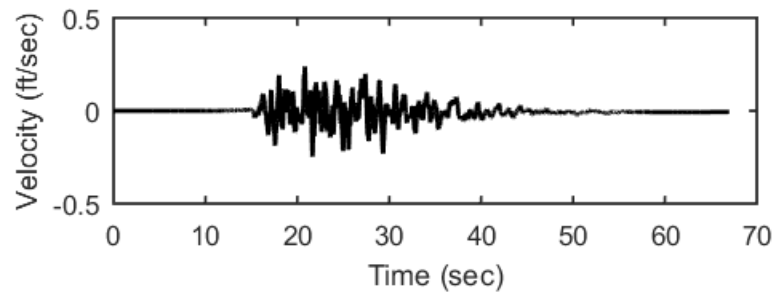
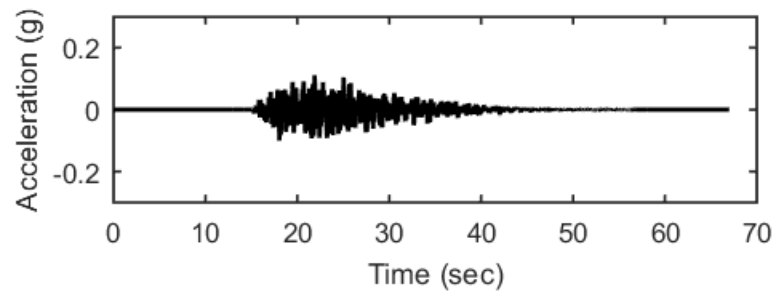
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



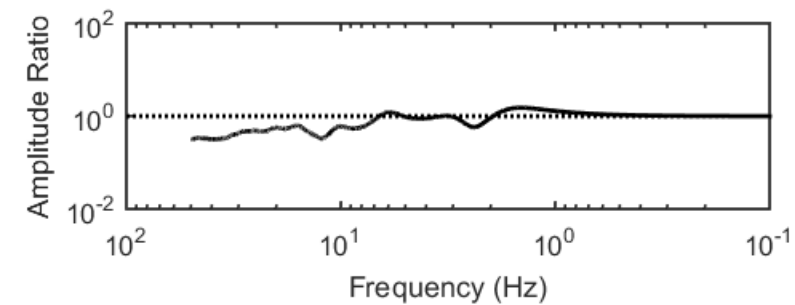
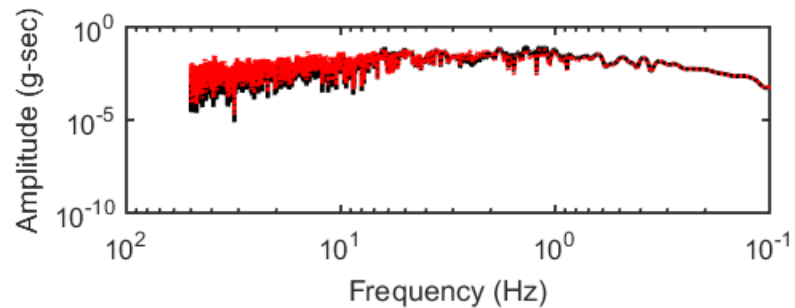
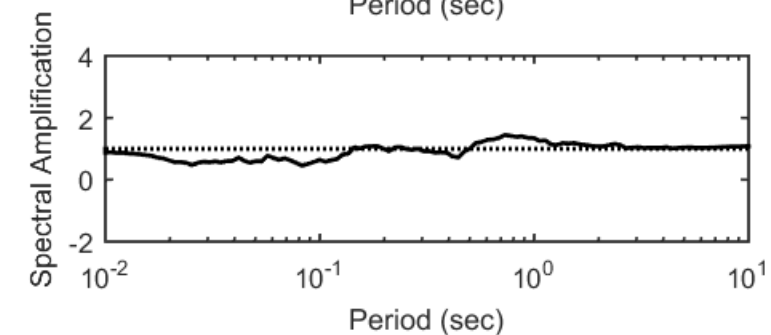
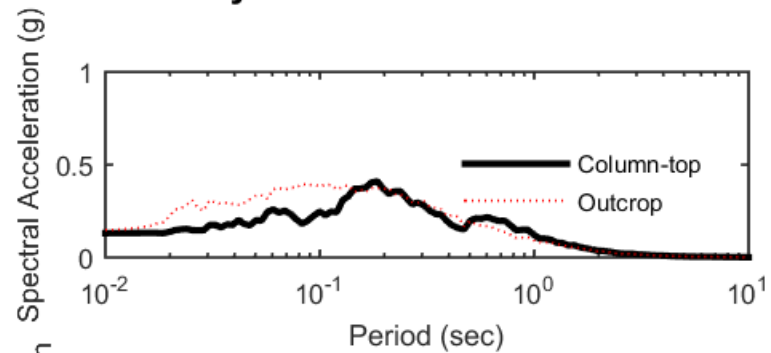
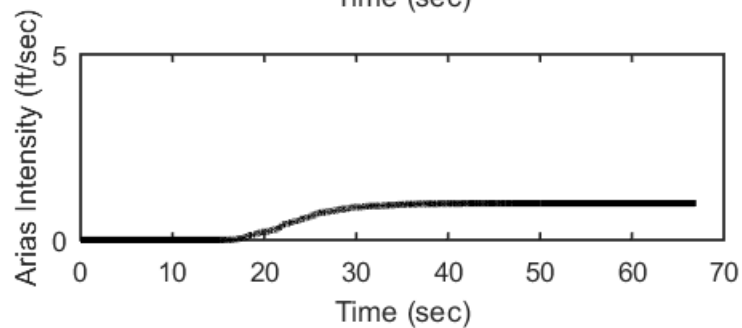
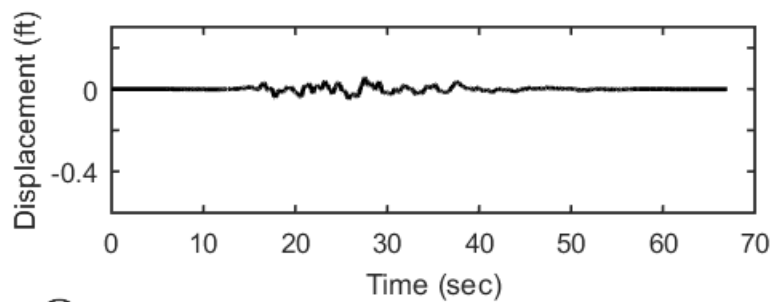
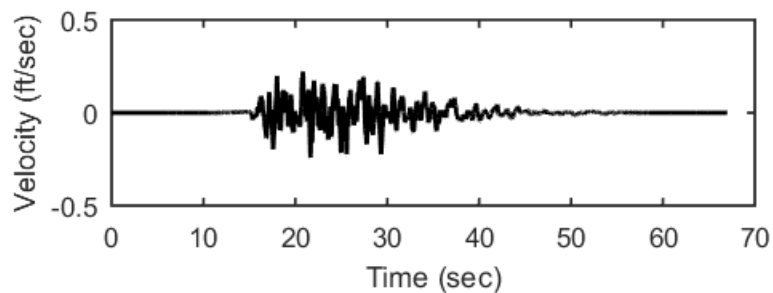
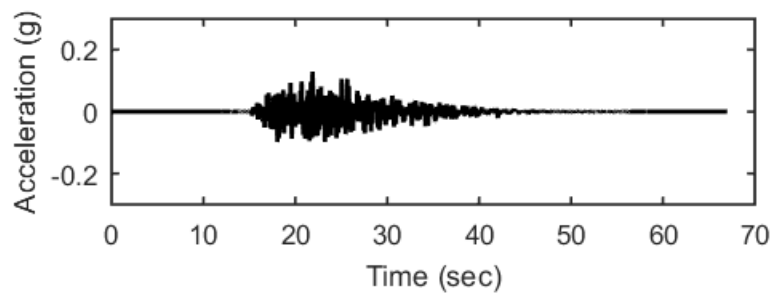
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



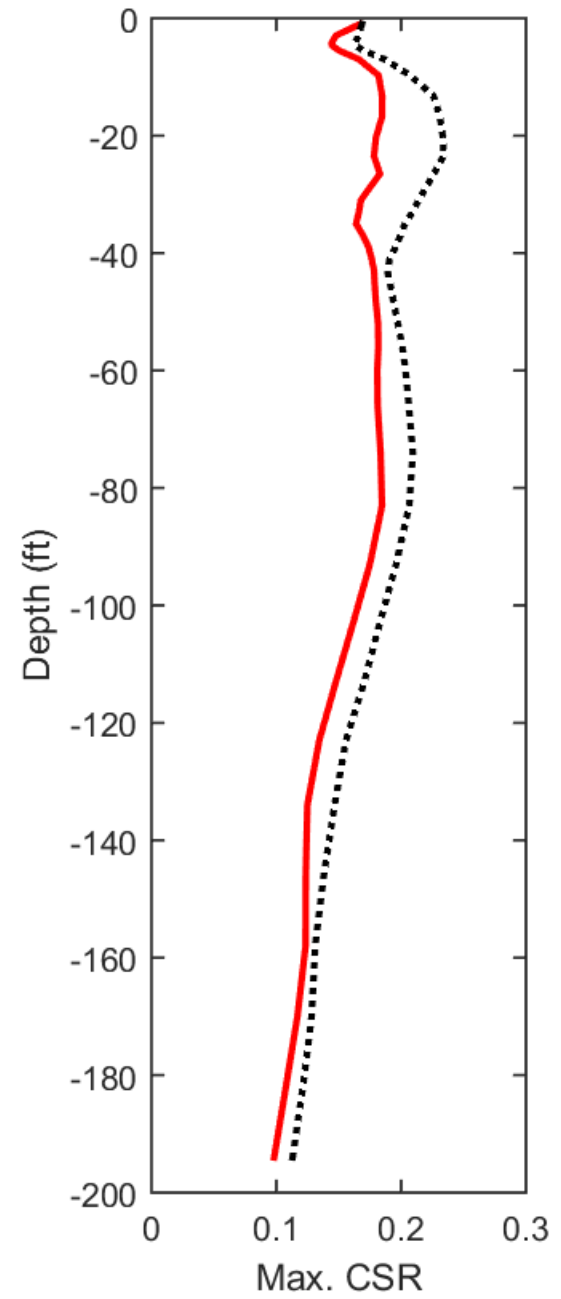
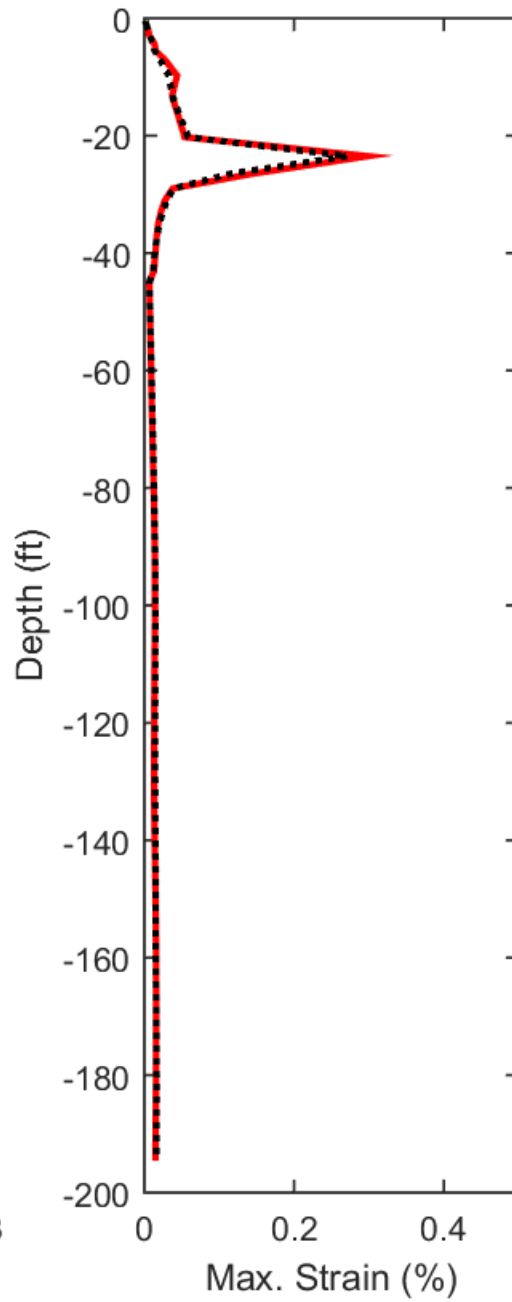
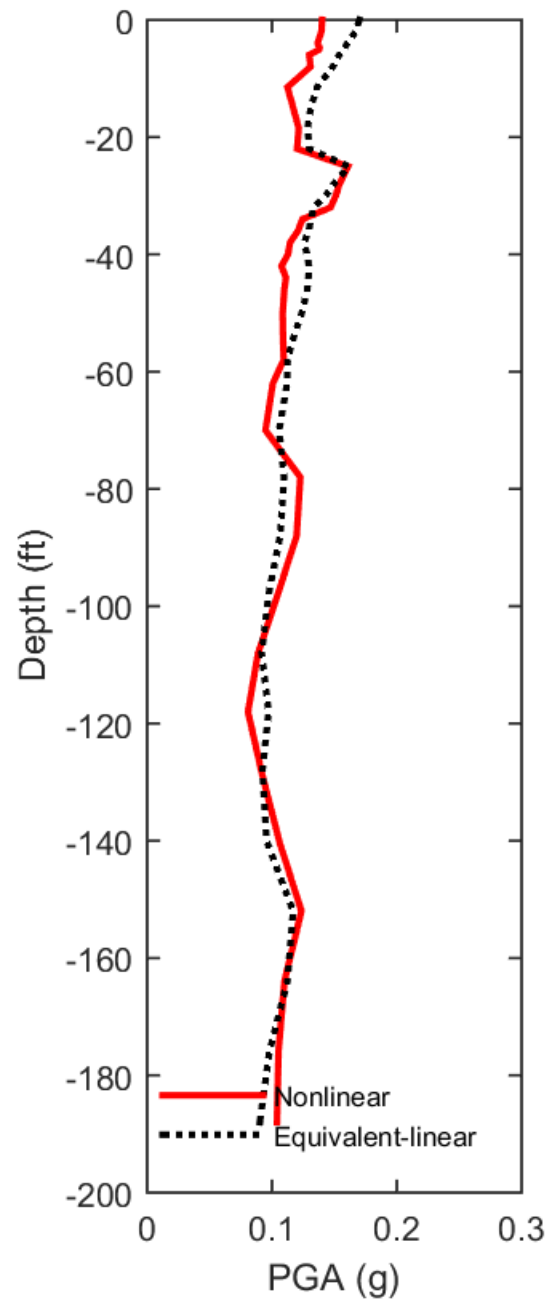
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



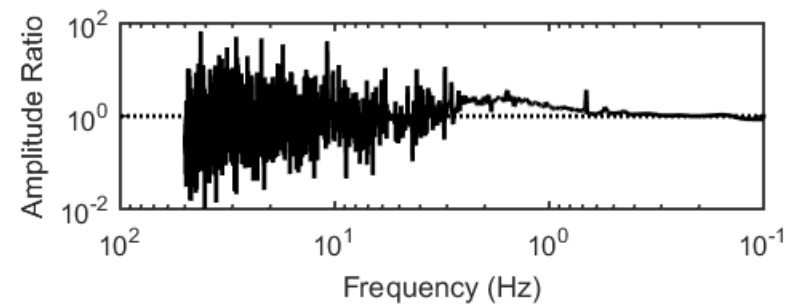
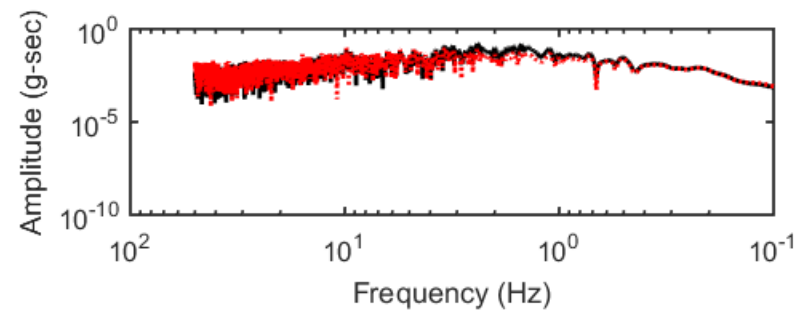
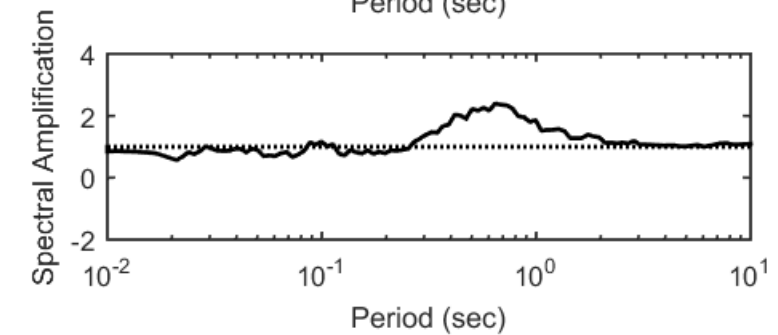
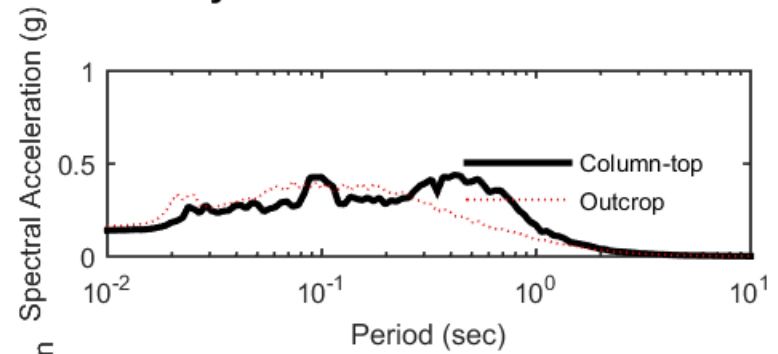
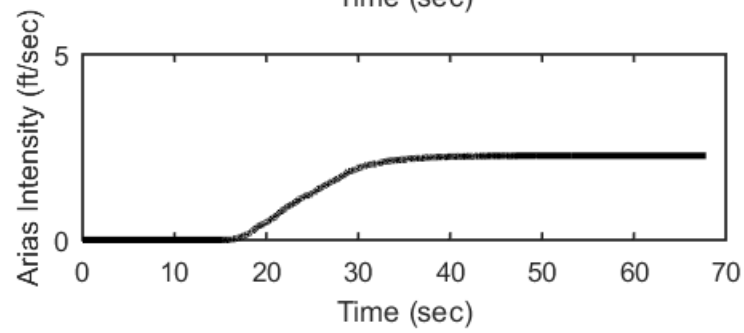
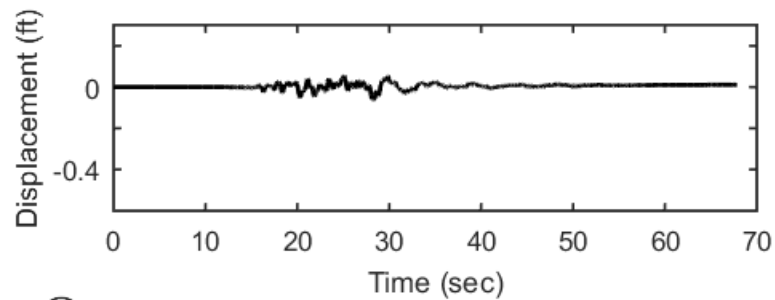
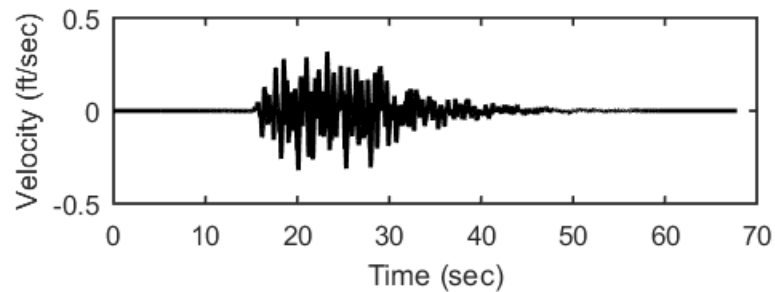
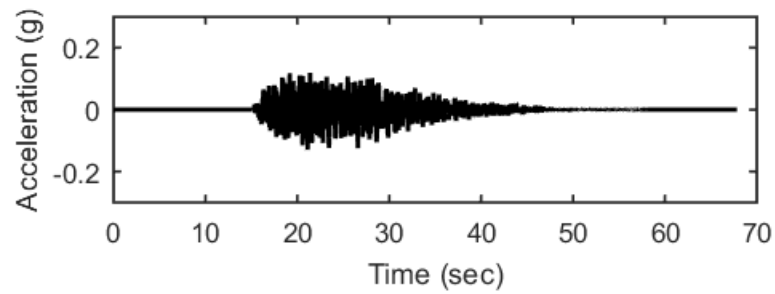
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



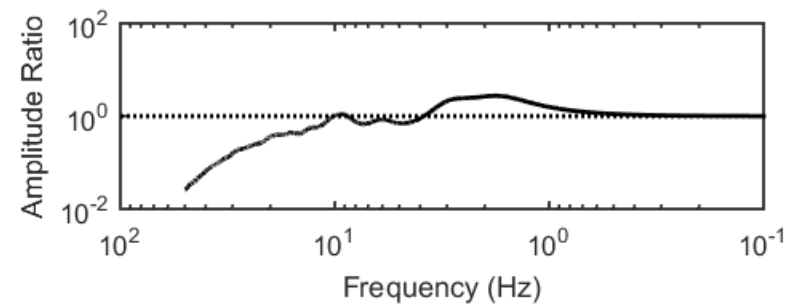
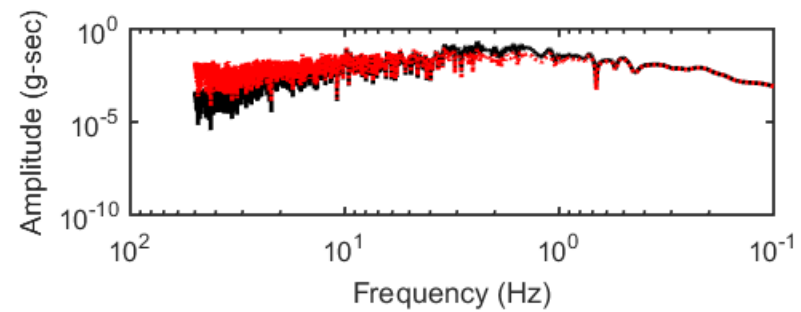
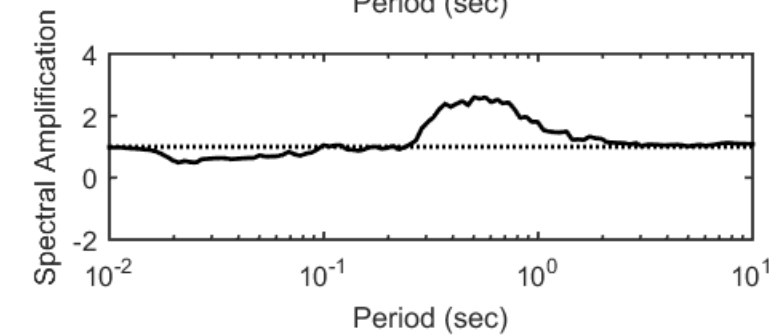
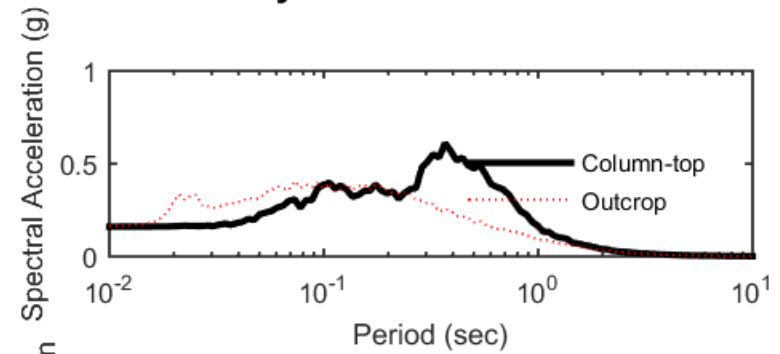
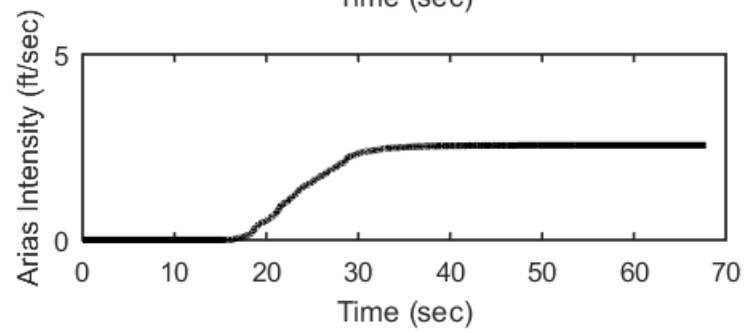
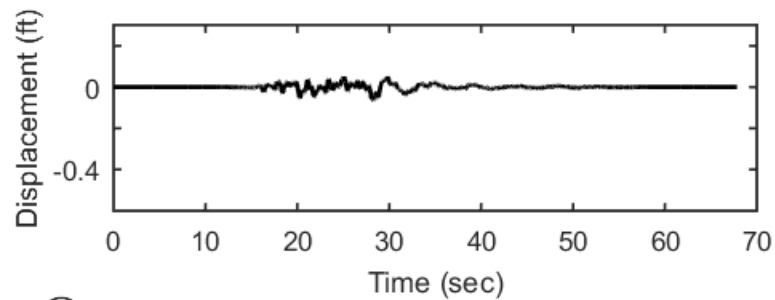
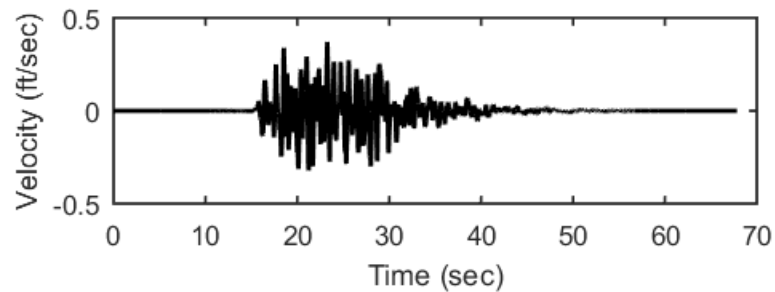
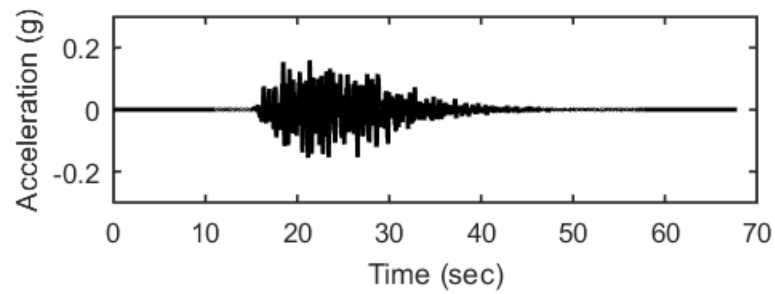
### Profile outputs for Motion: FEE5



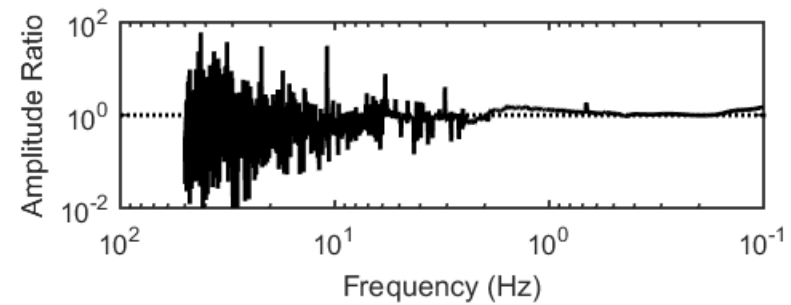
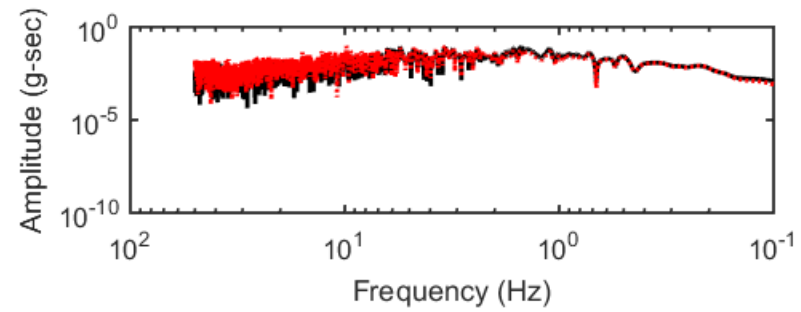
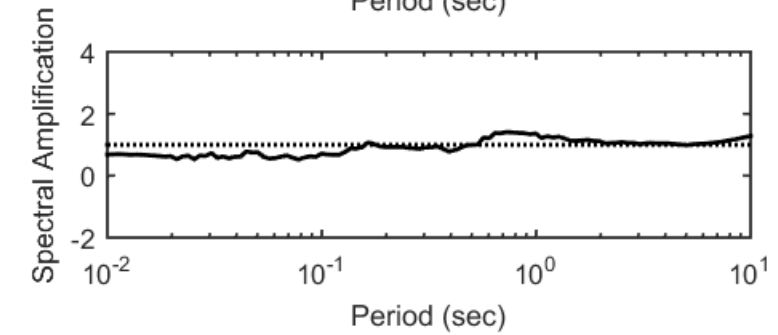
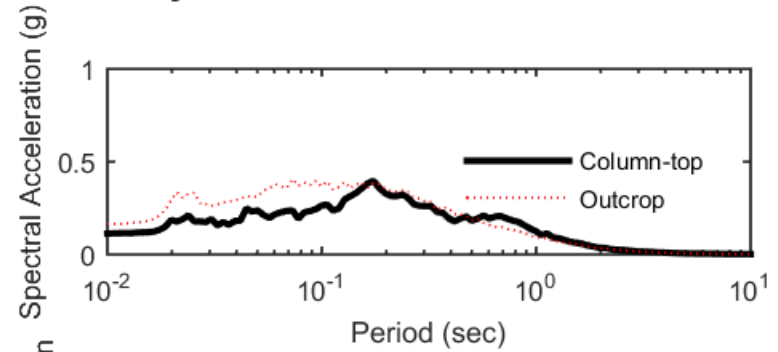
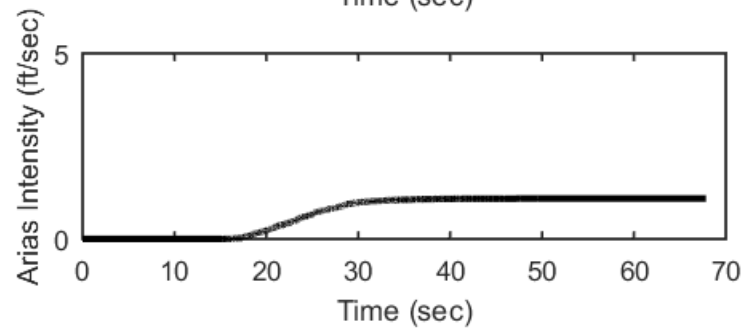
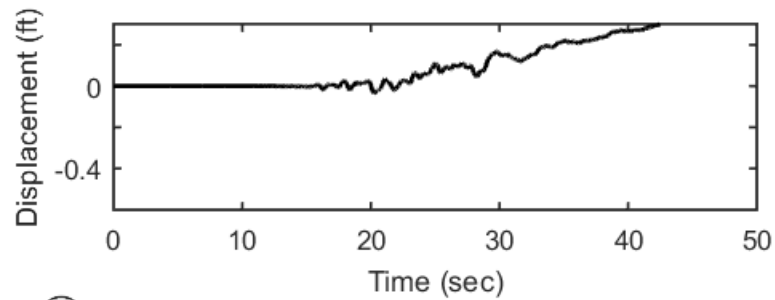
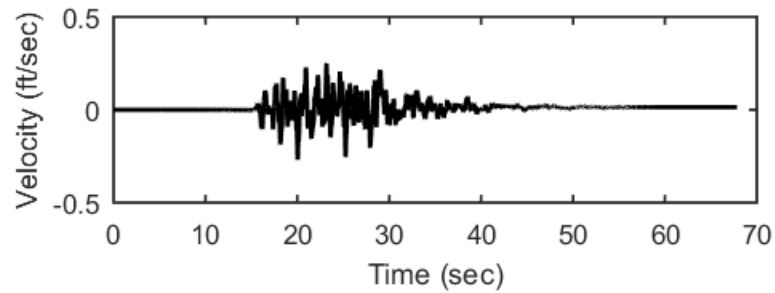
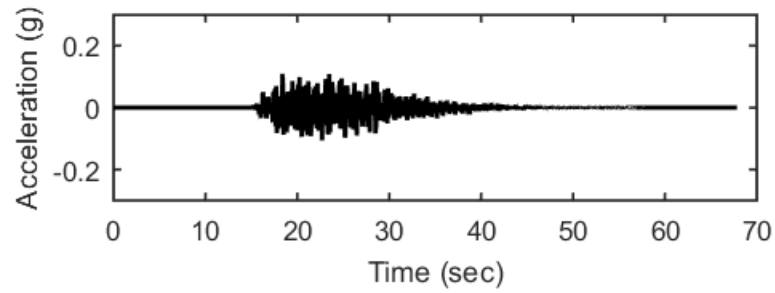
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6

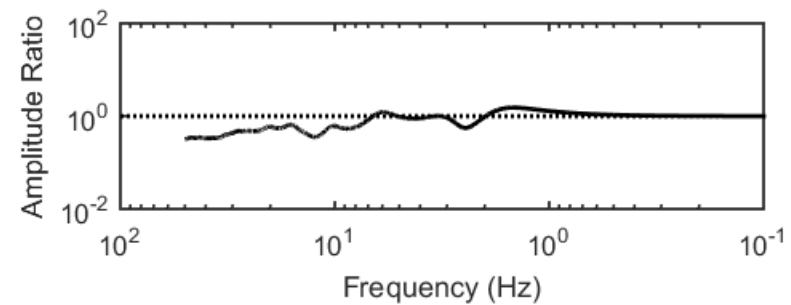
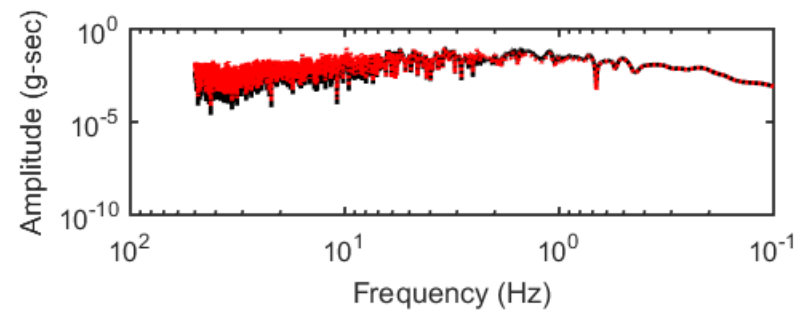
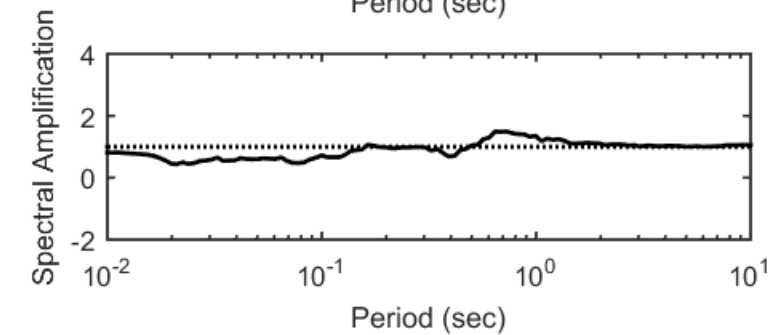
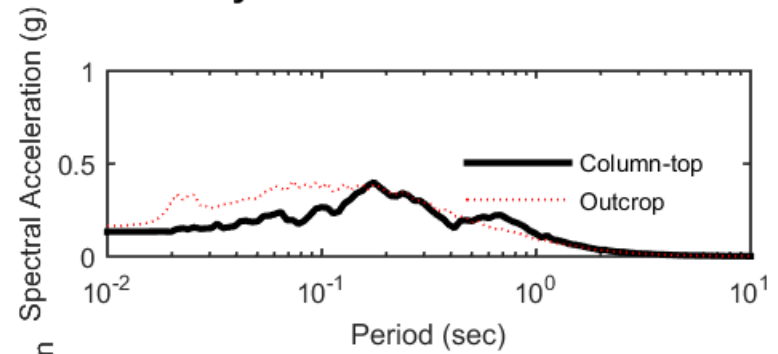
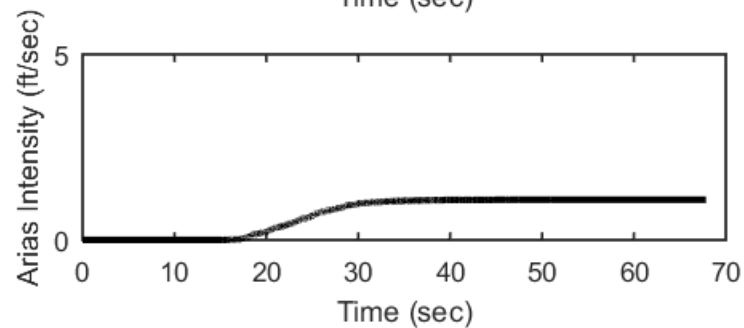
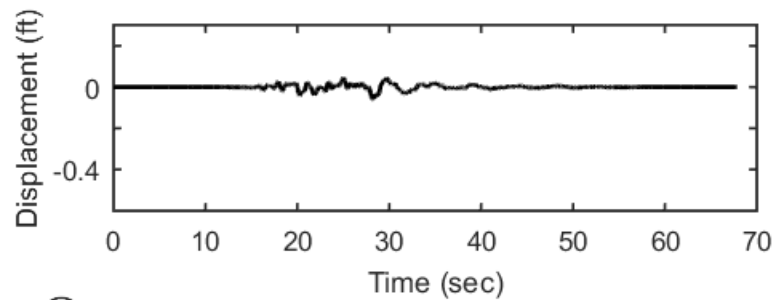
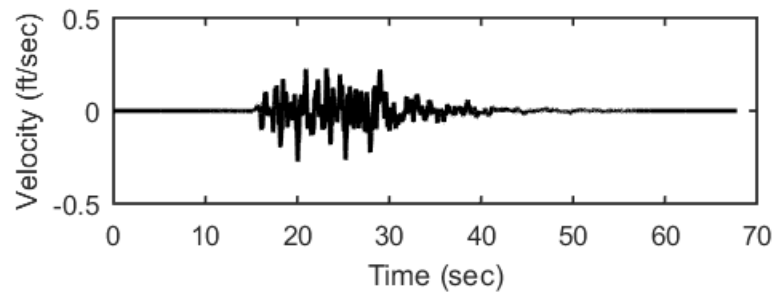
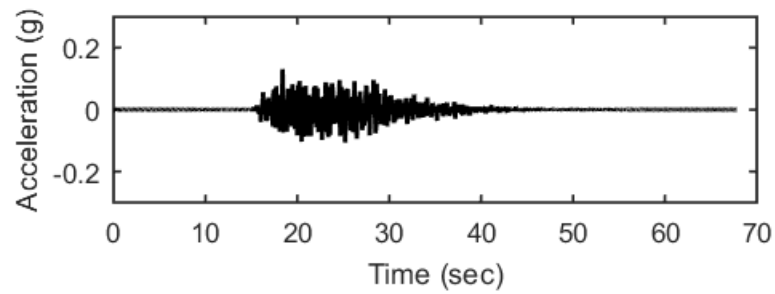


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6

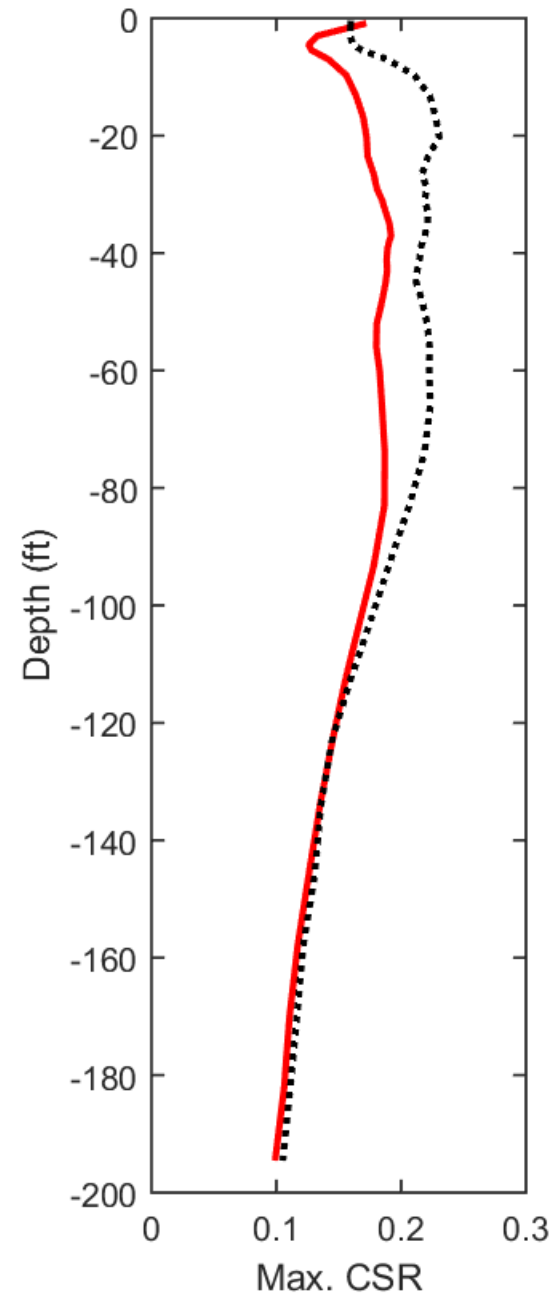
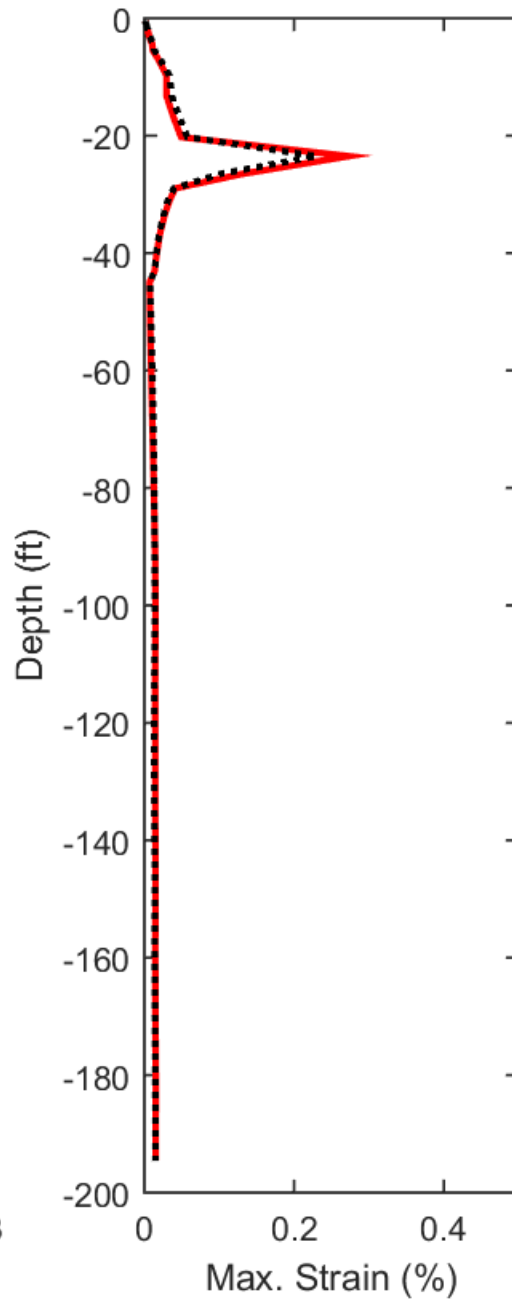
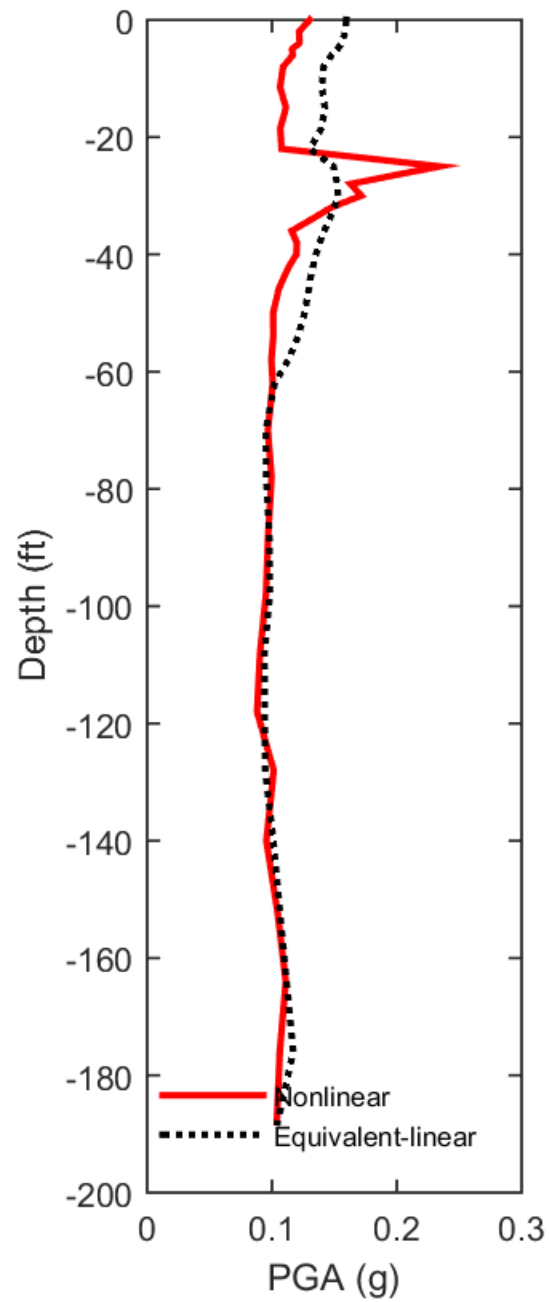




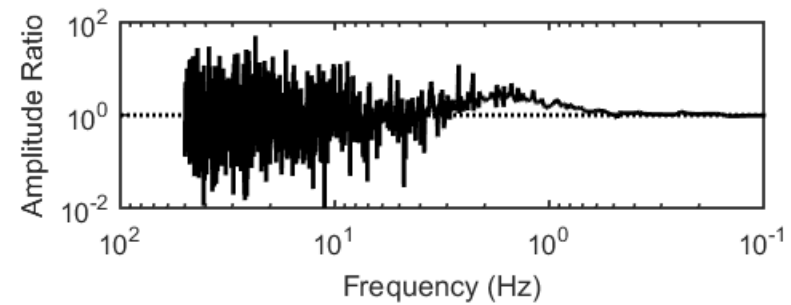
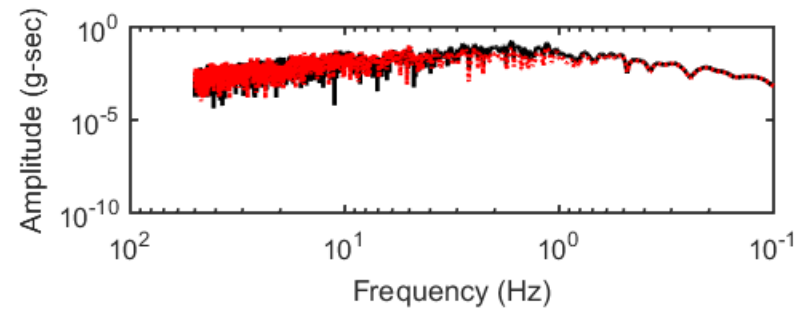
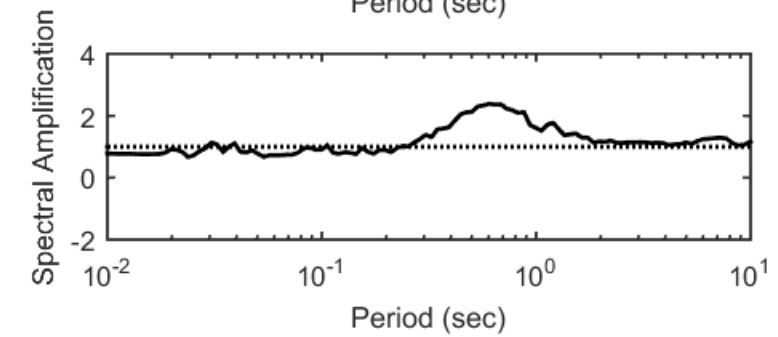
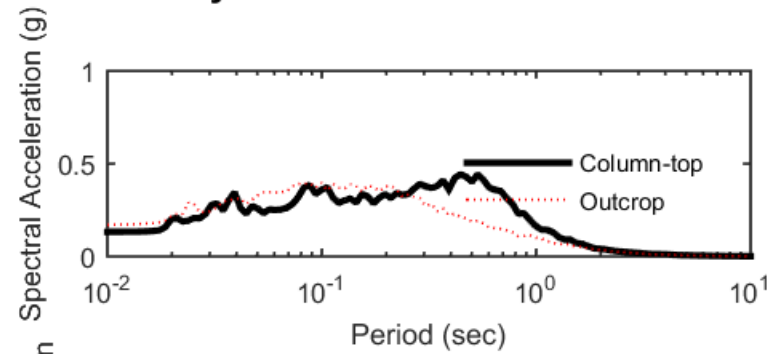
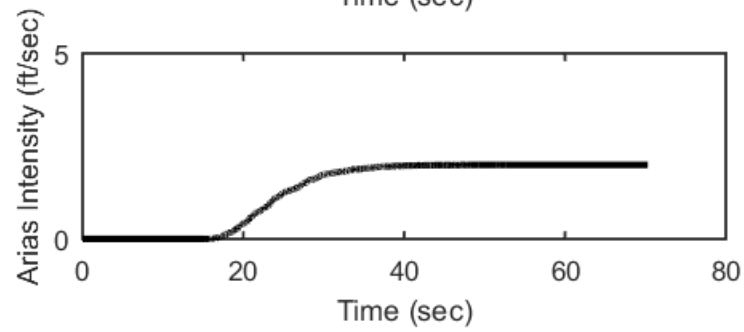
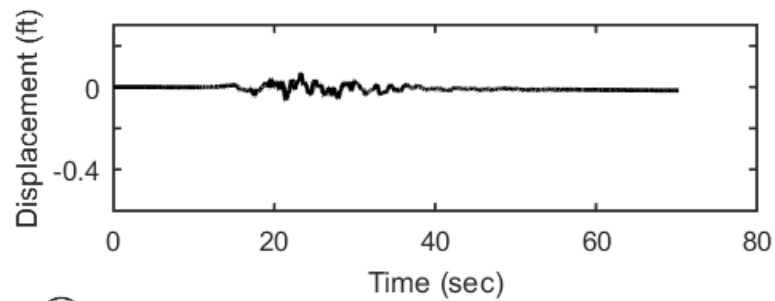
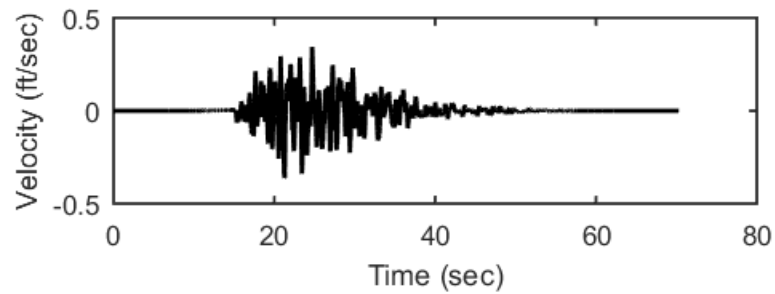
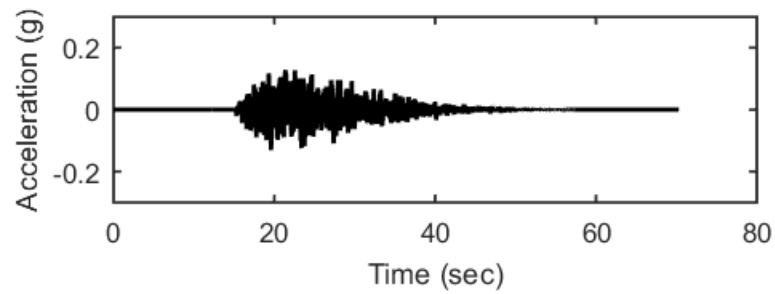
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



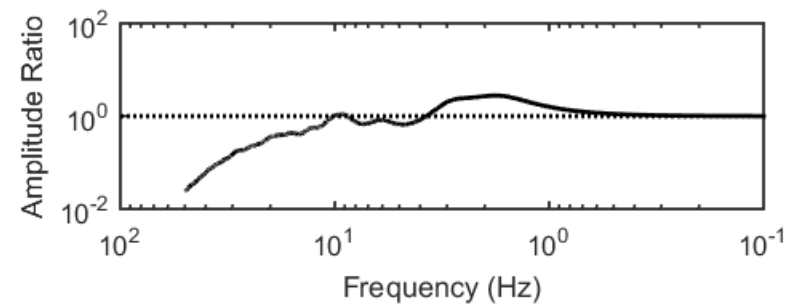
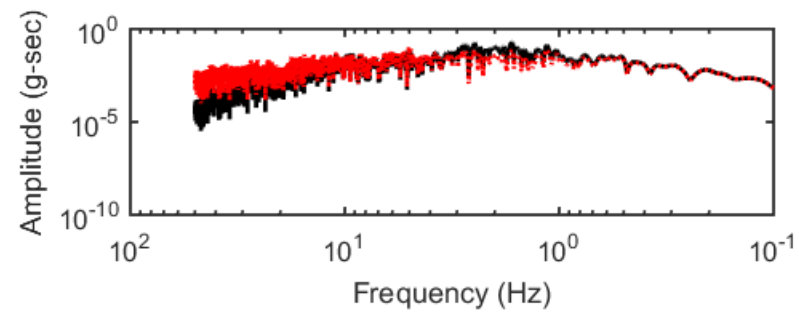
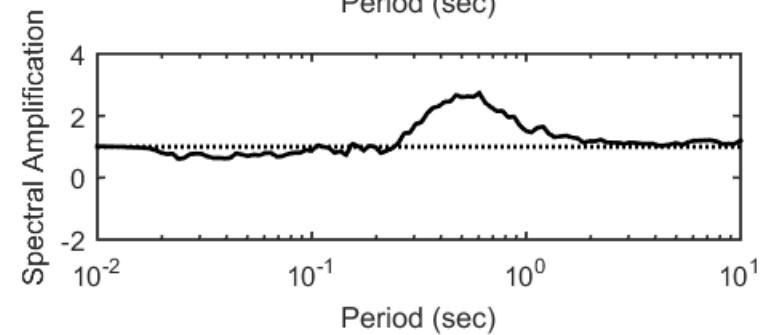
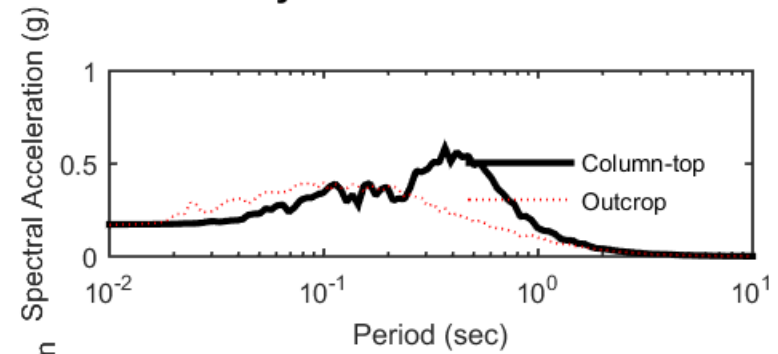
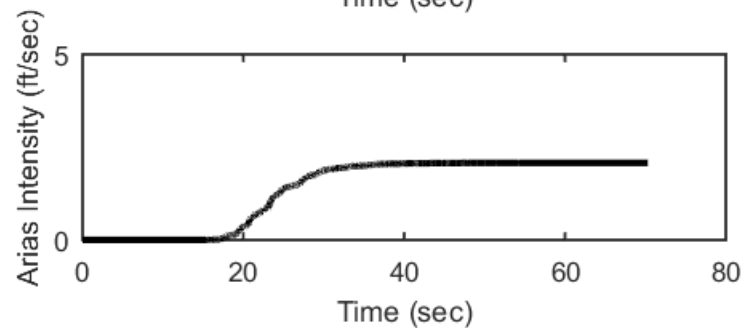
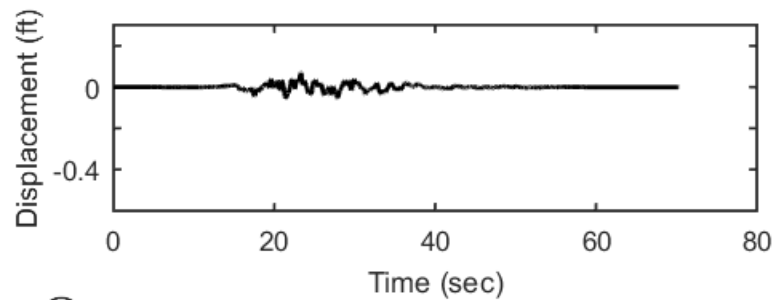
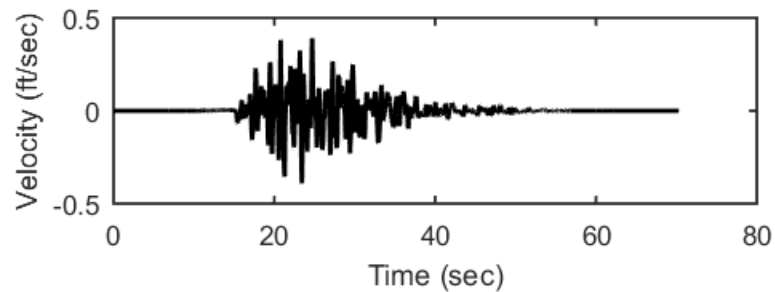
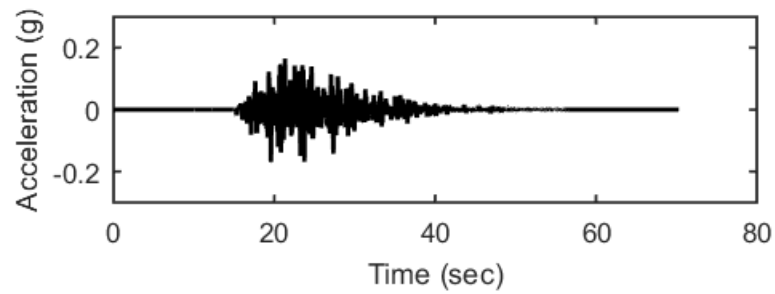
### Profile outputs for Motion: FEE6



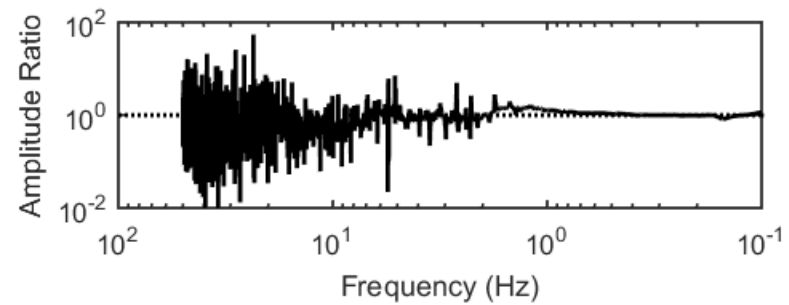
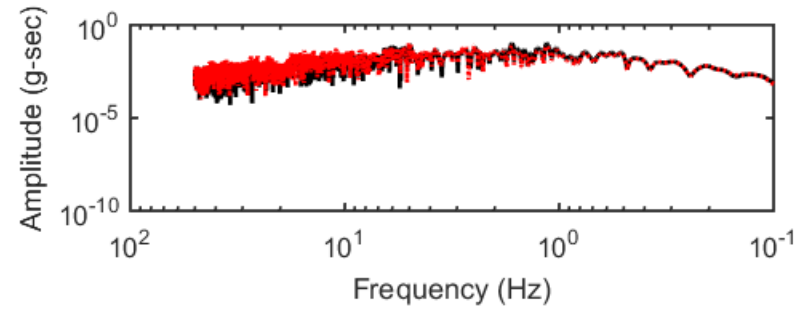
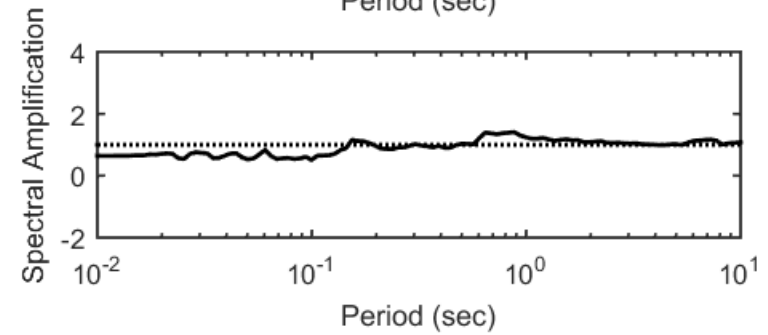
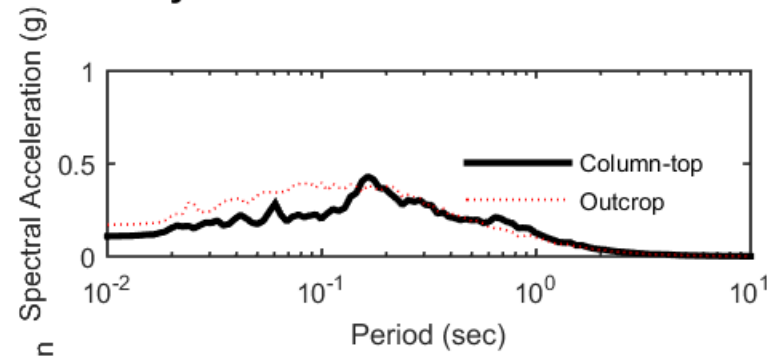
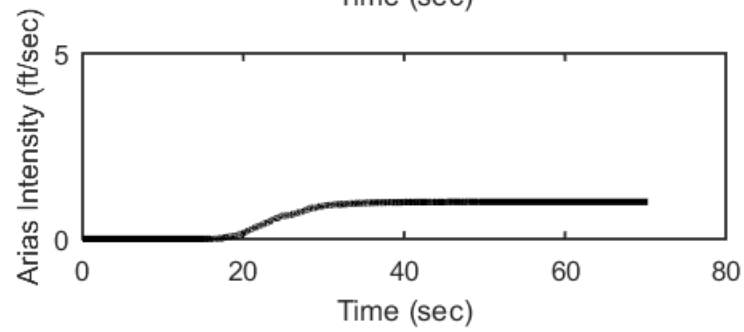
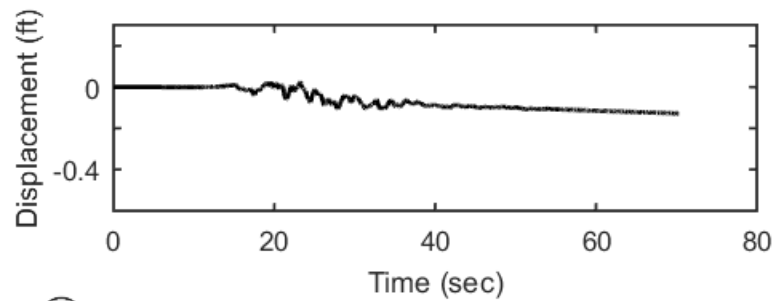
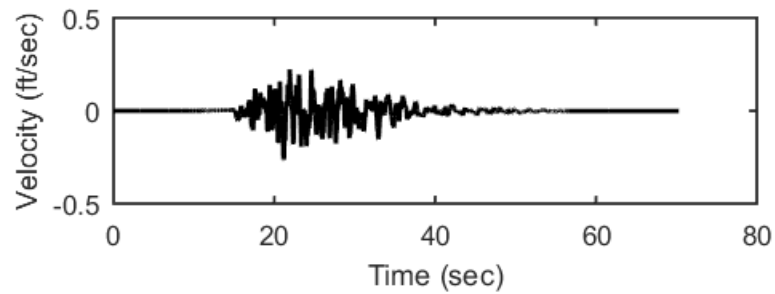
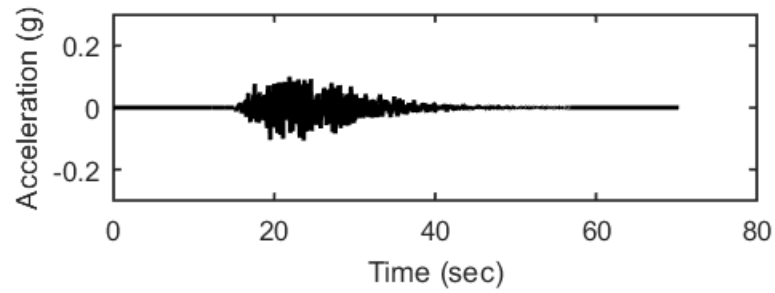
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



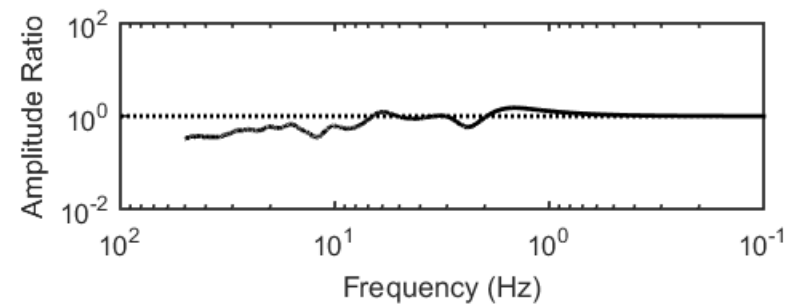
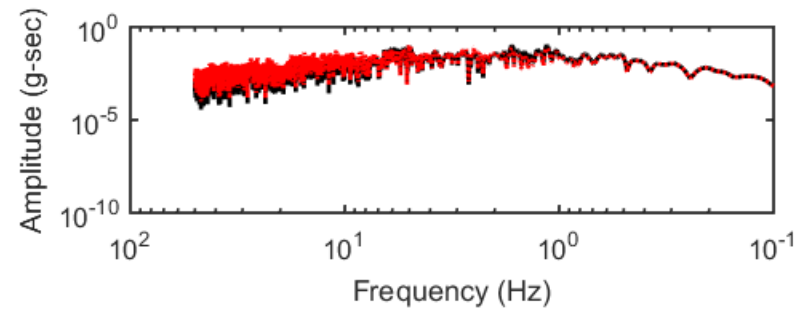
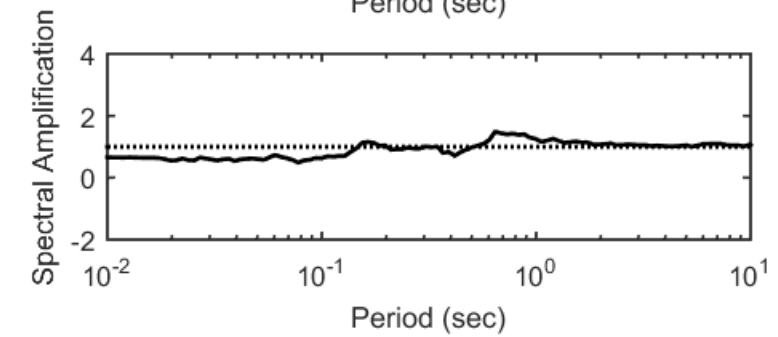
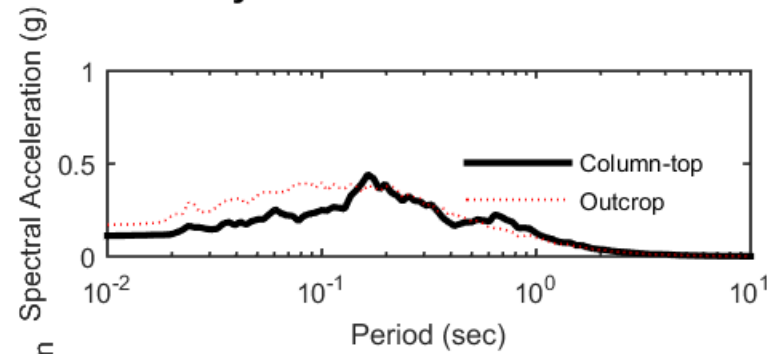
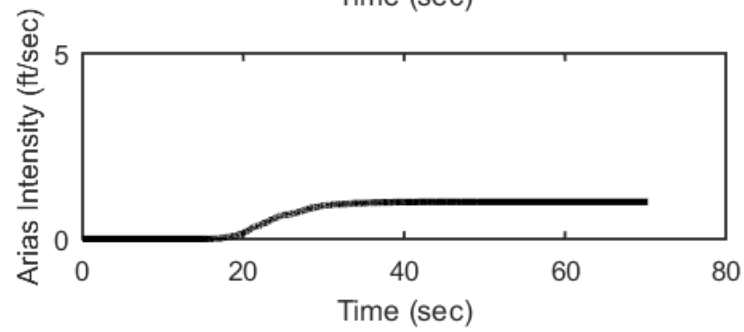
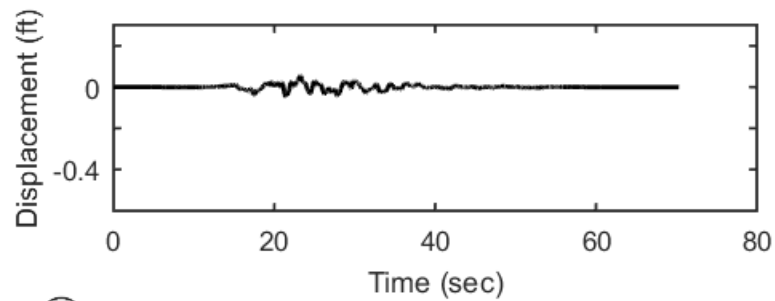
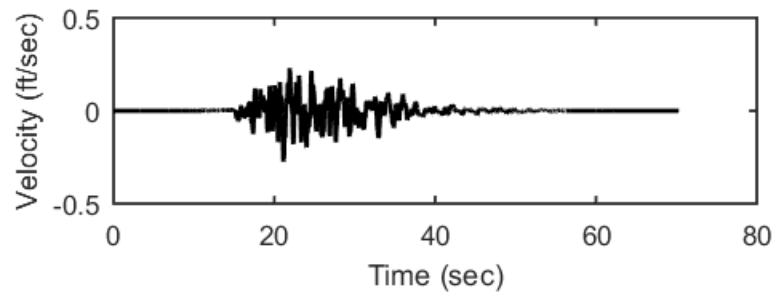
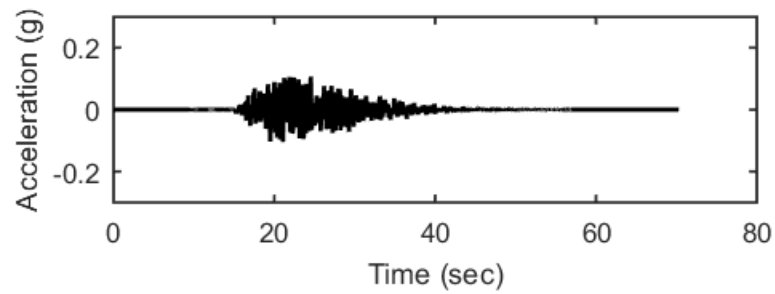
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



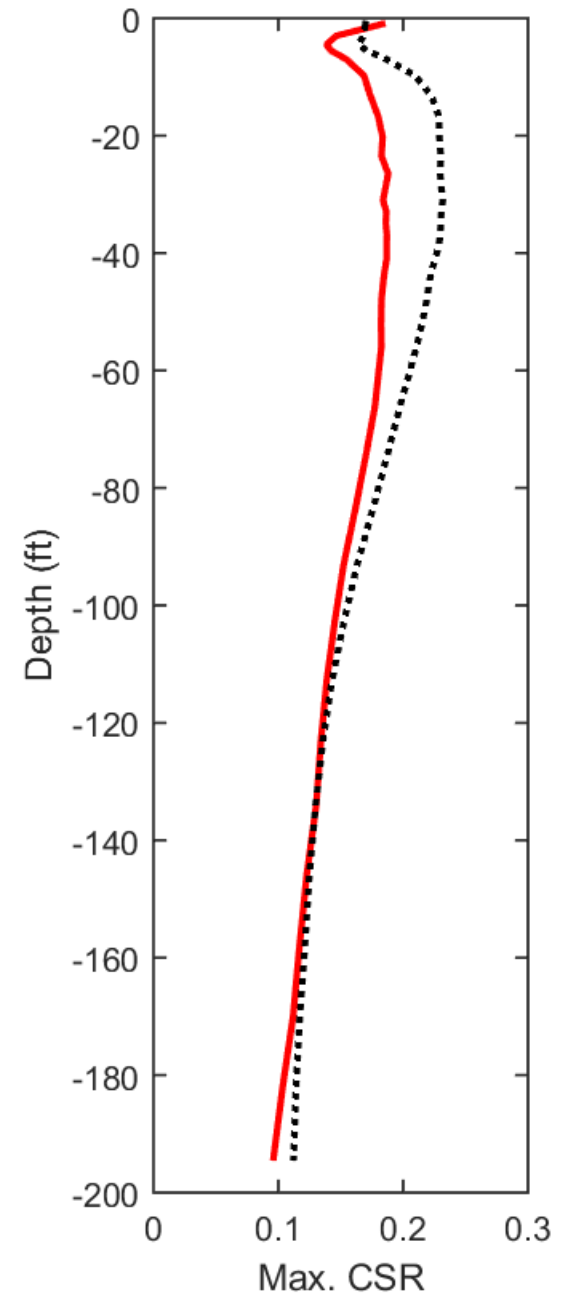
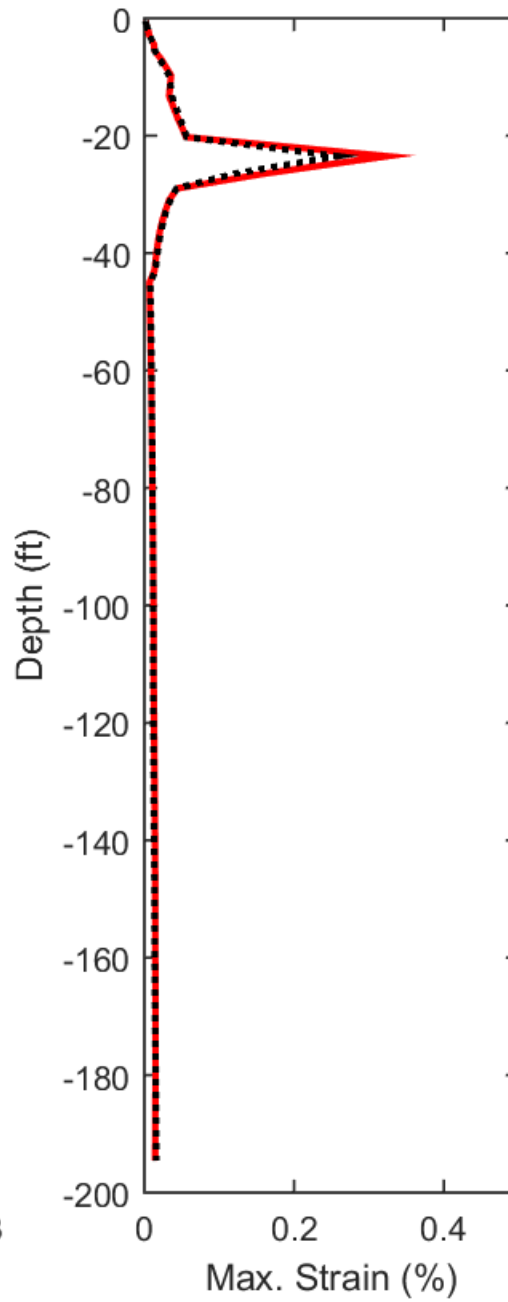
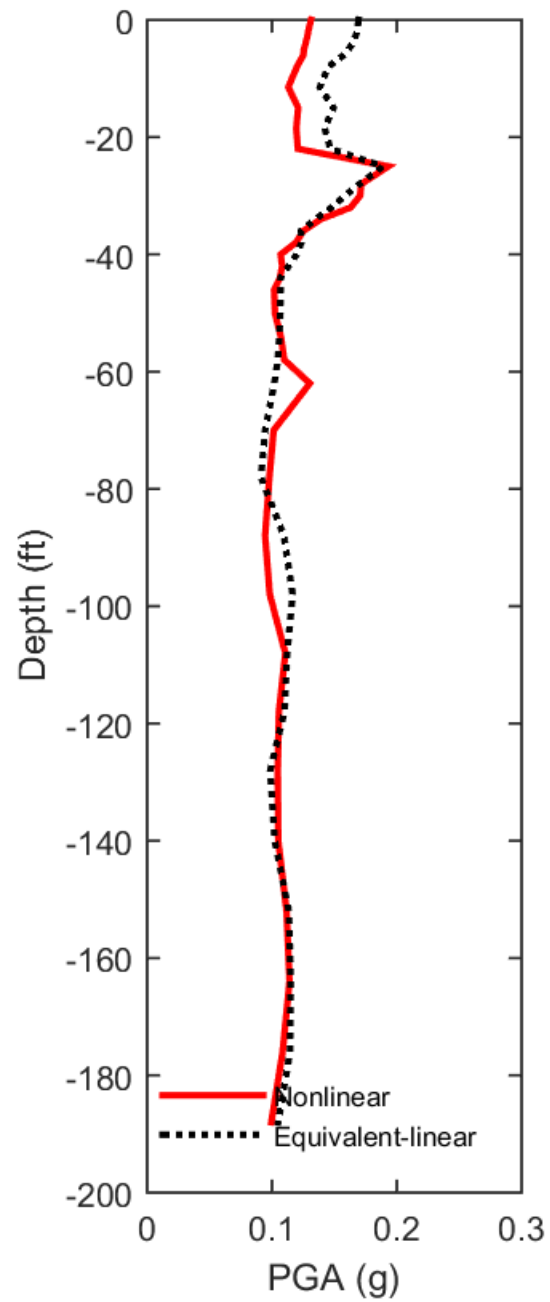
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



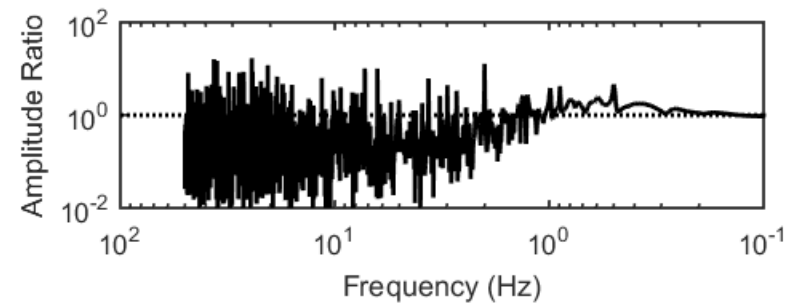
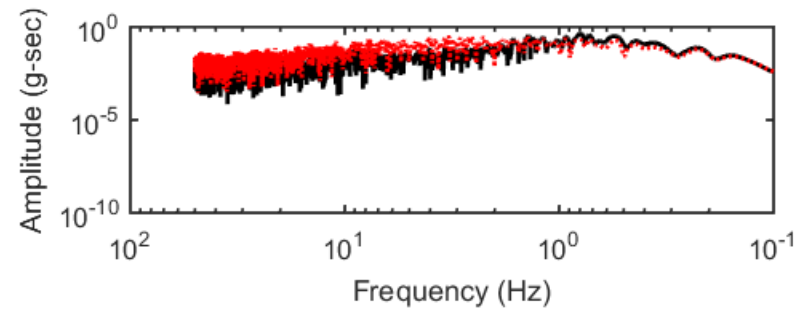
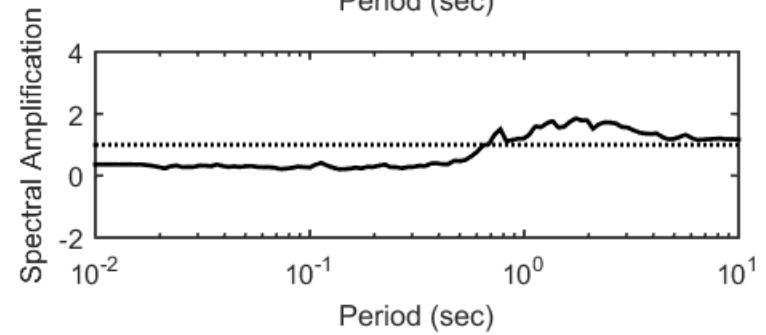
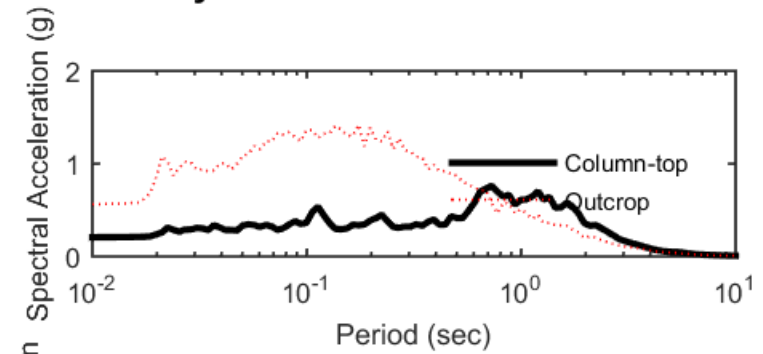
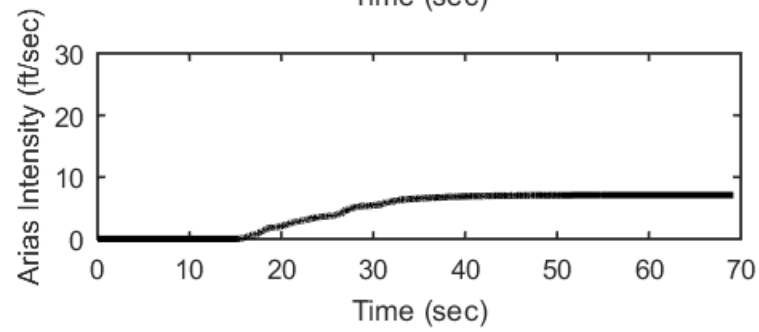
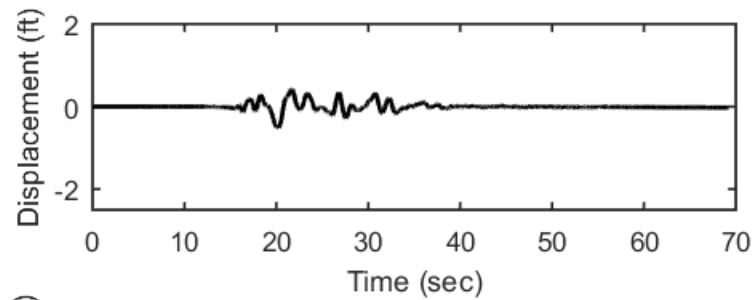
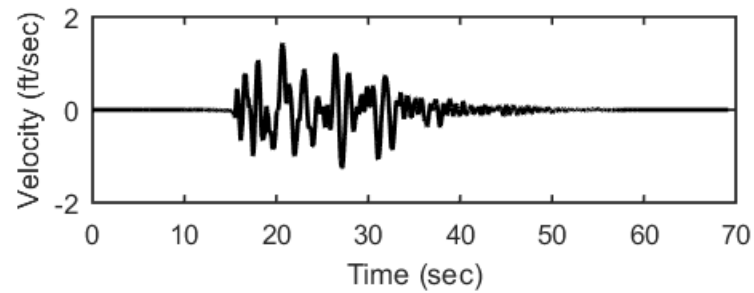
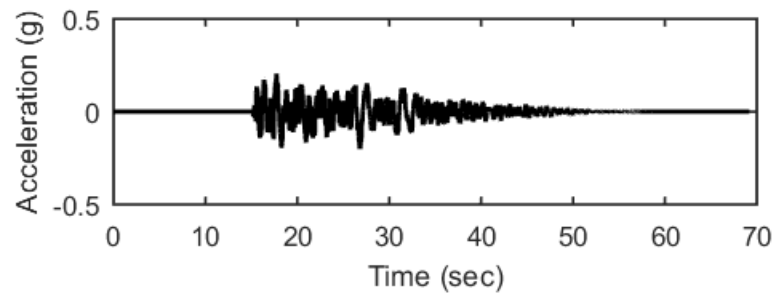
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



### Profile outputs for Motion: FEE7

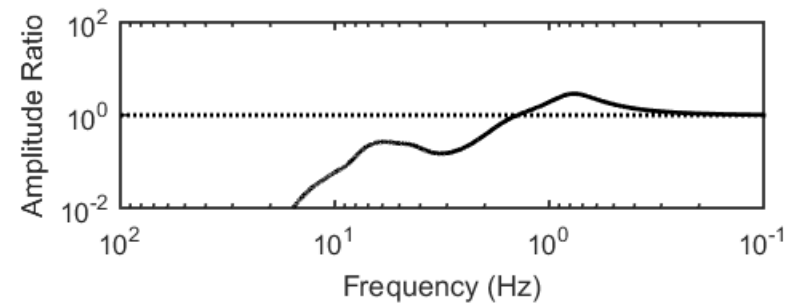
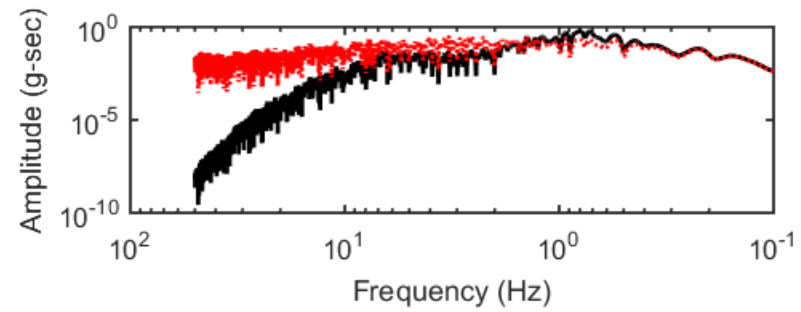
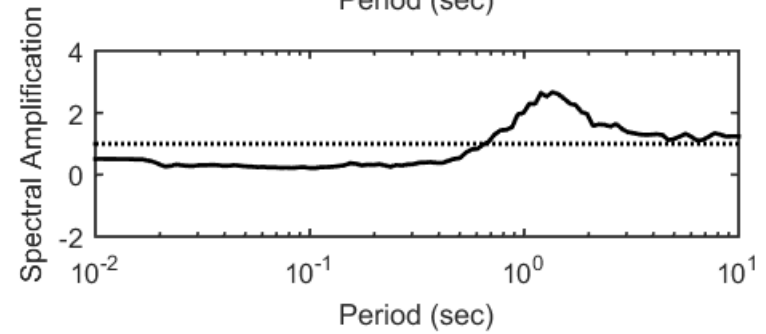
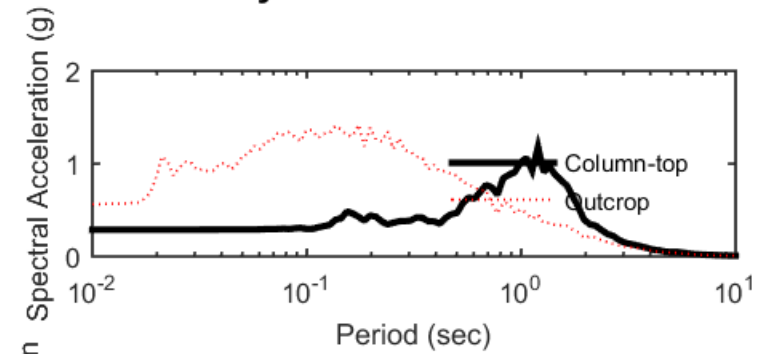
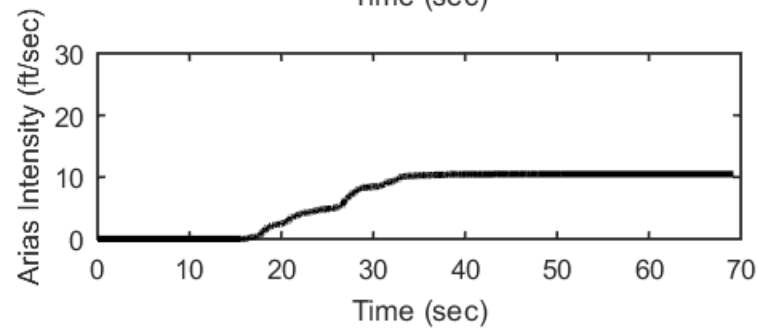
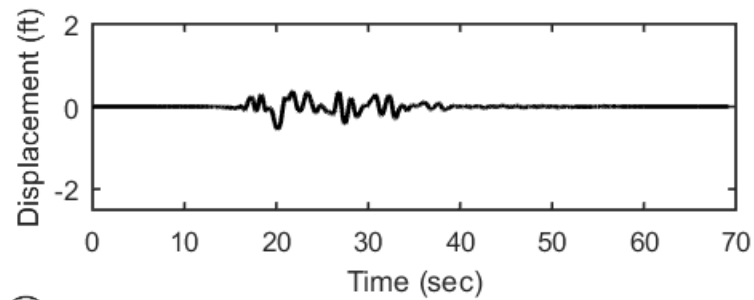
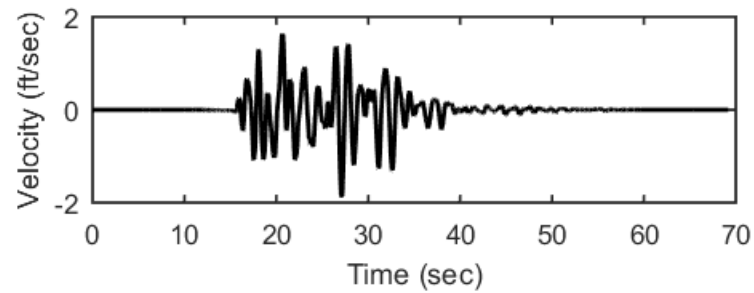
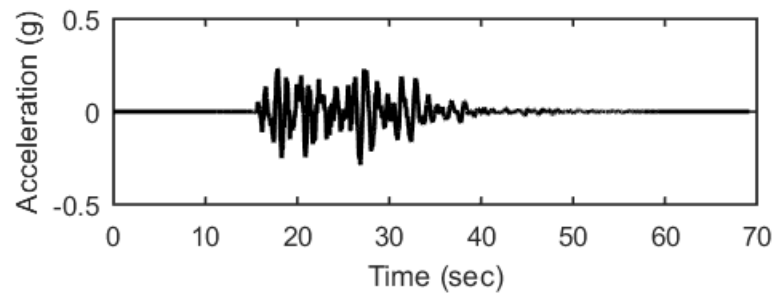


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1

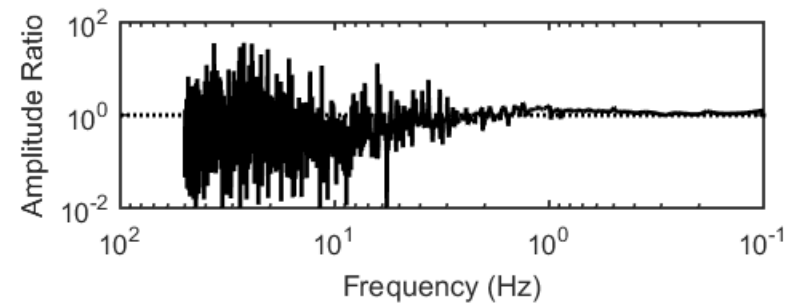
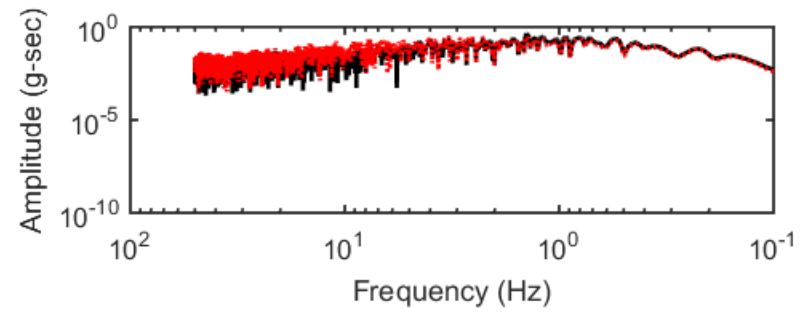
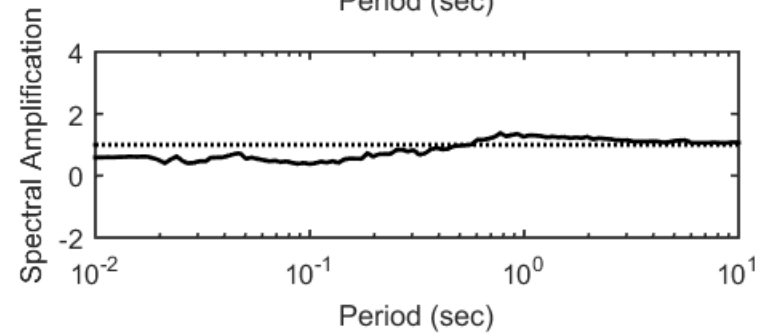
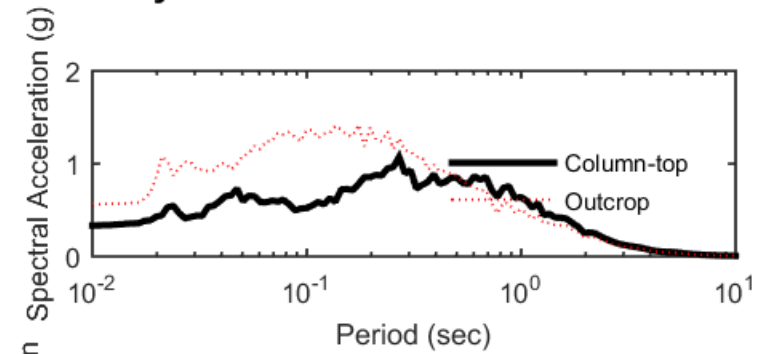
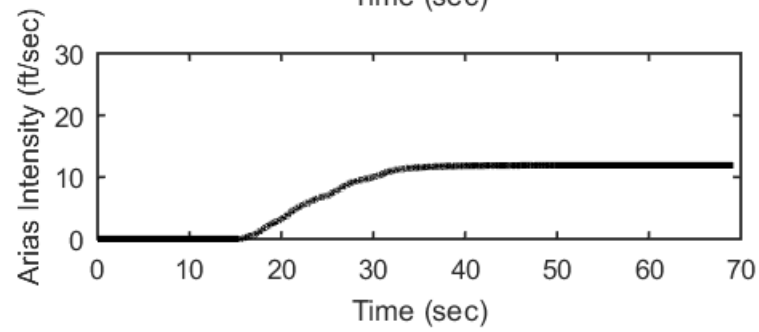
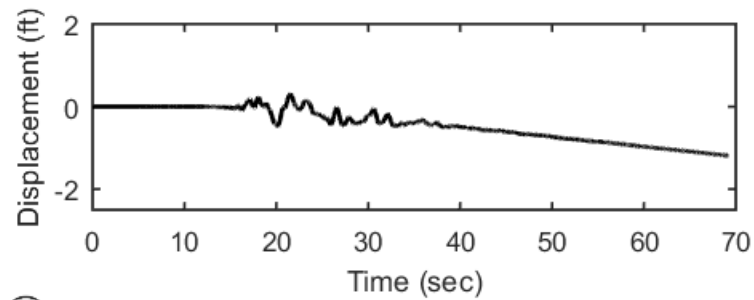
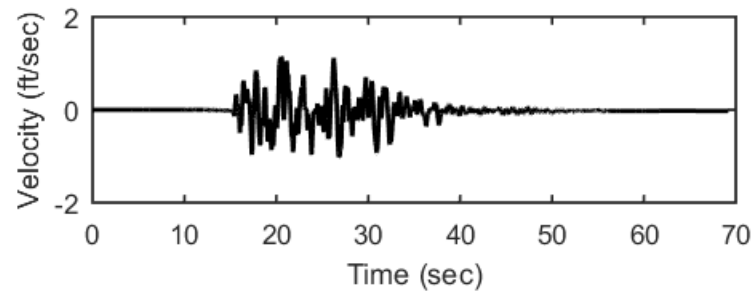
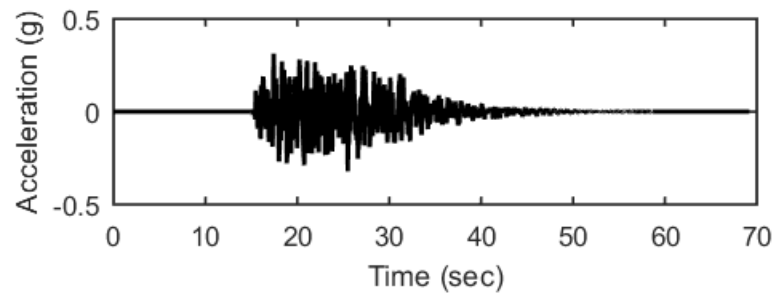




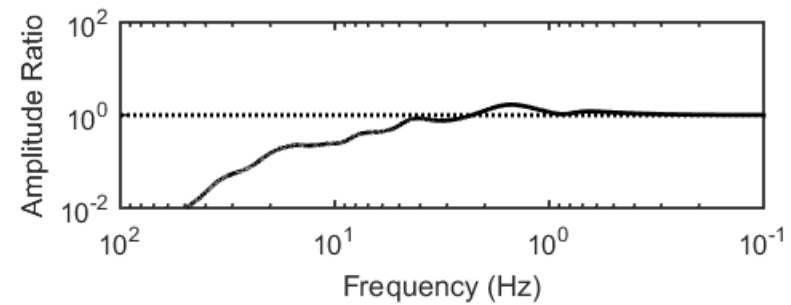
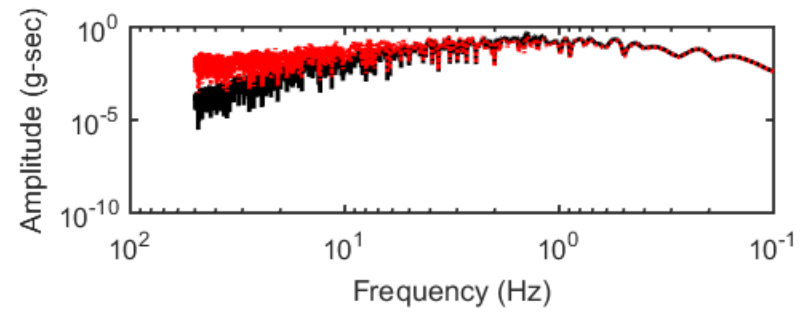
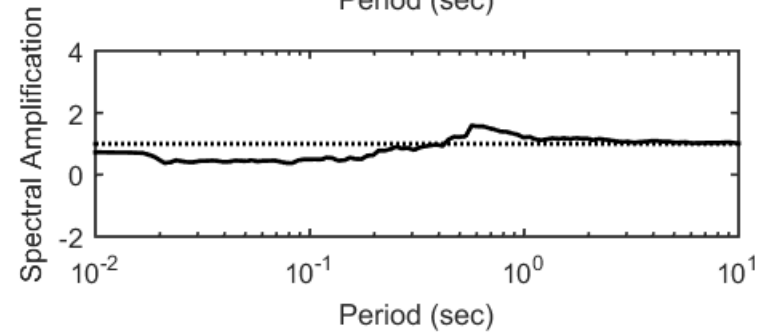
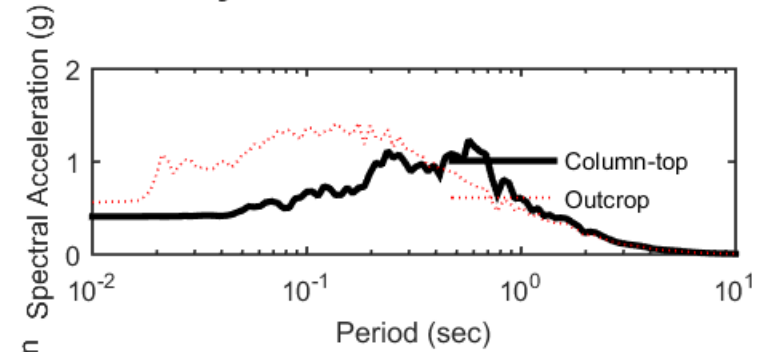
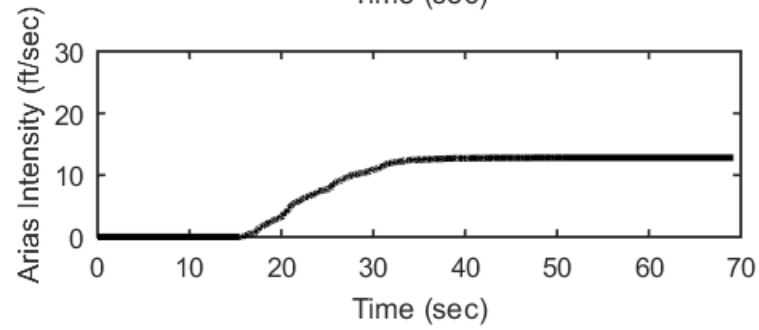
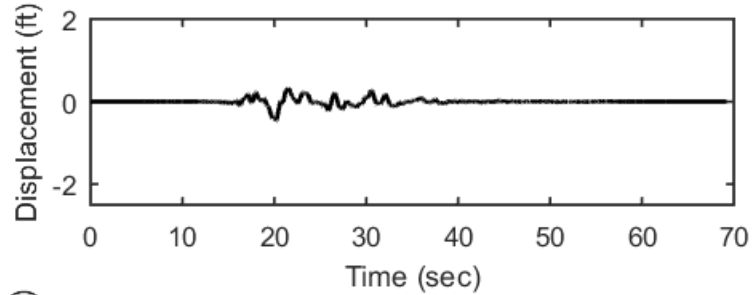
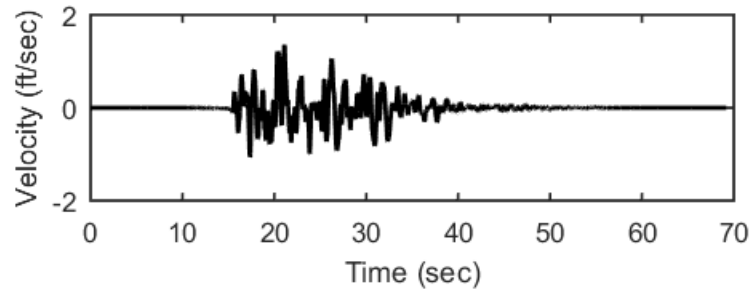
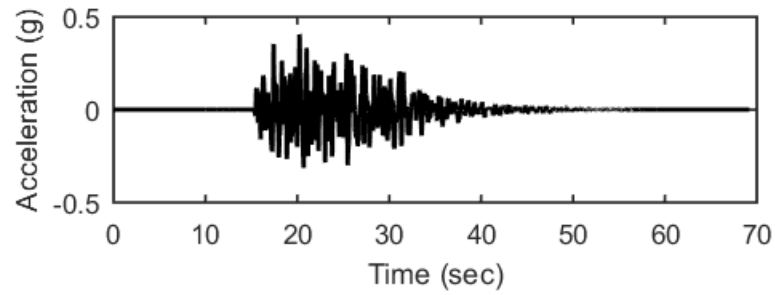
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



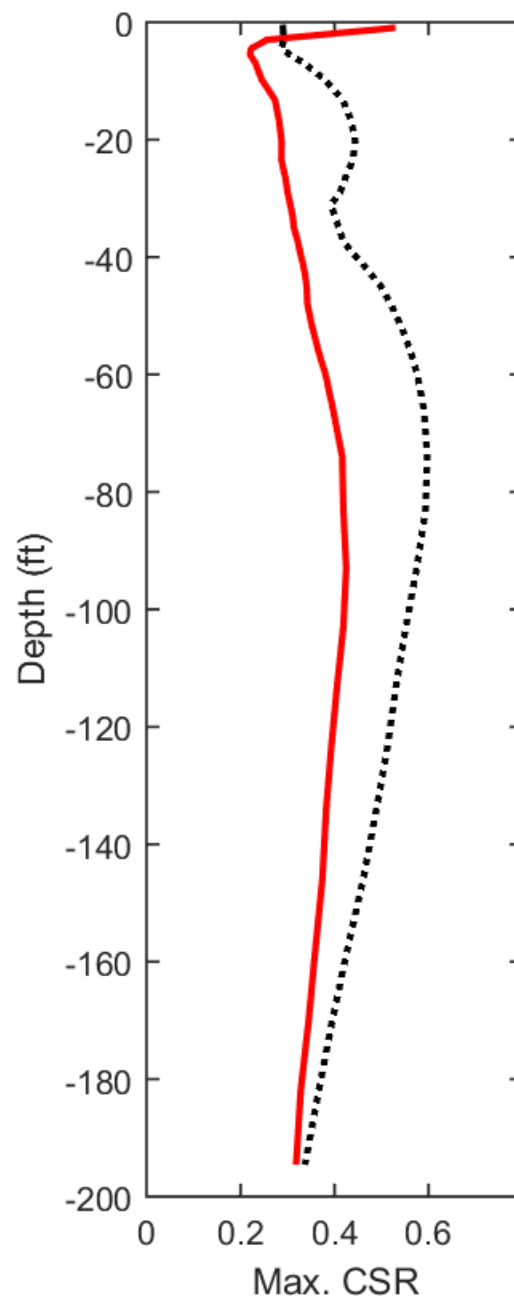
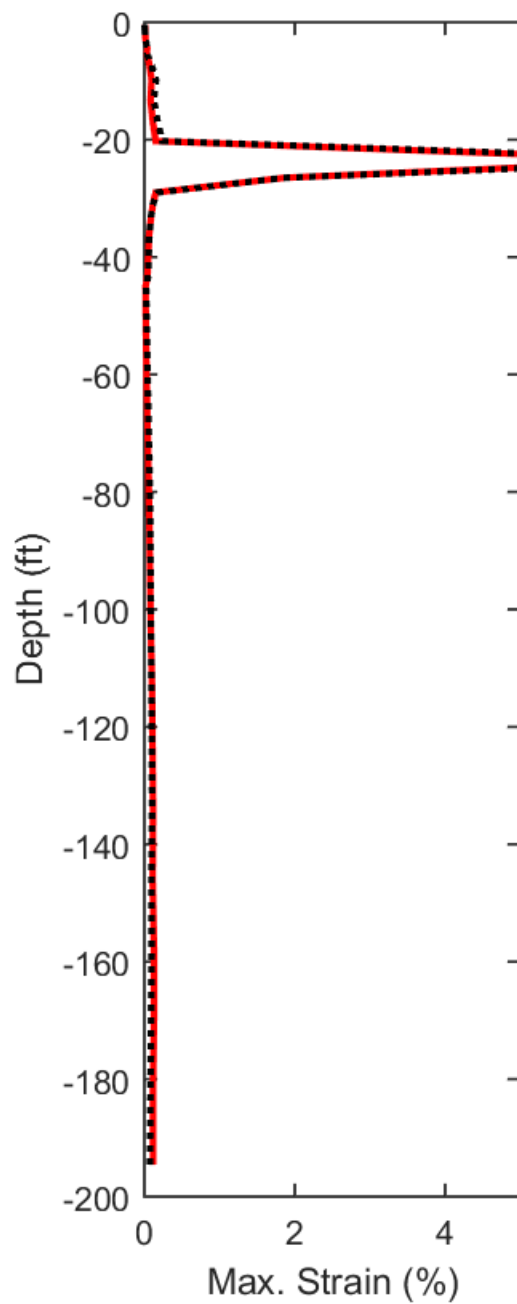
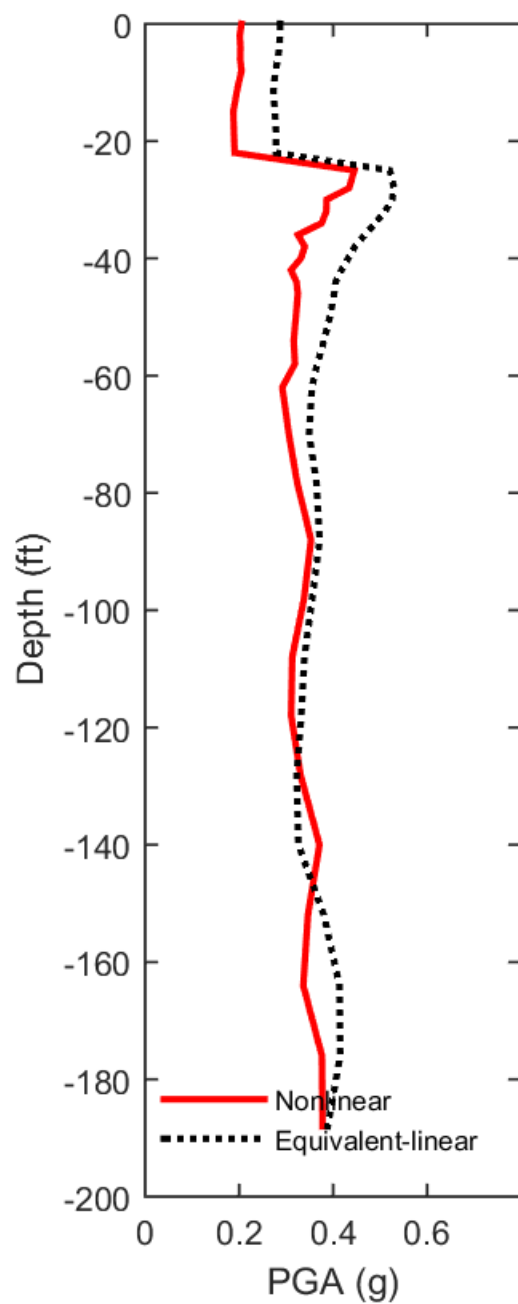
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



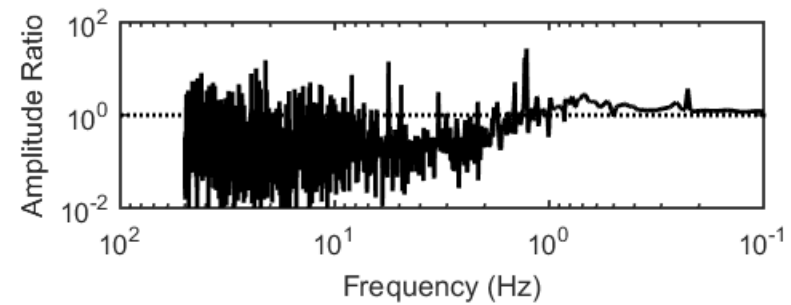
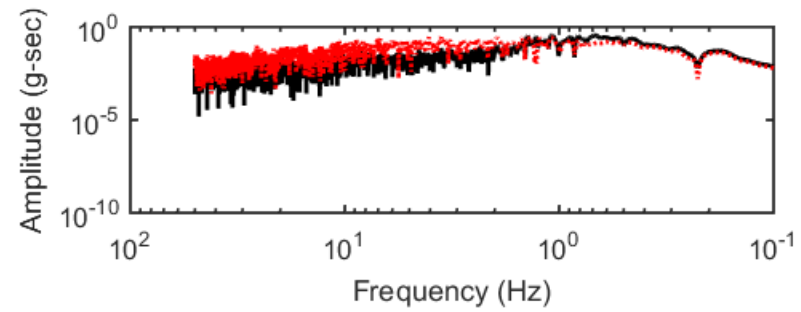
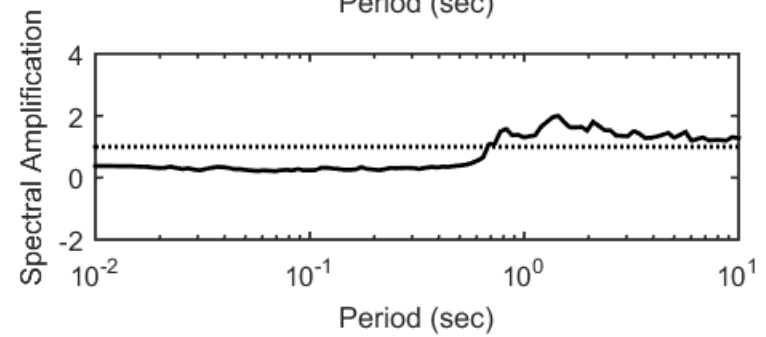
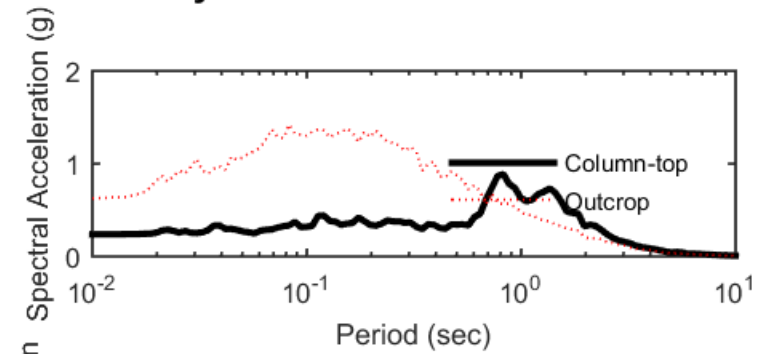
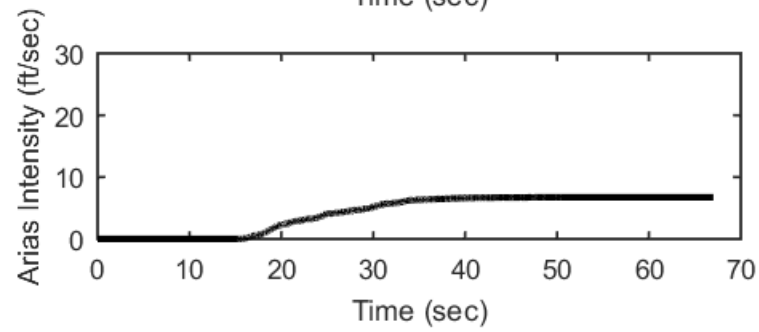
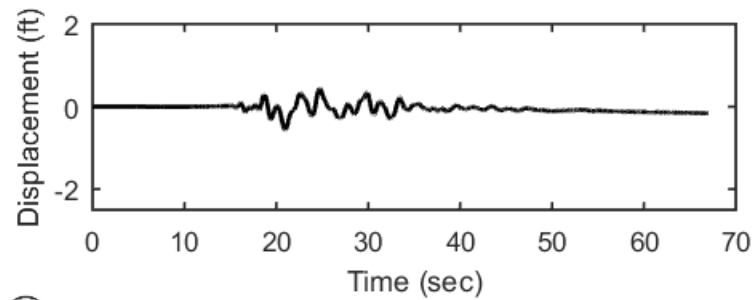
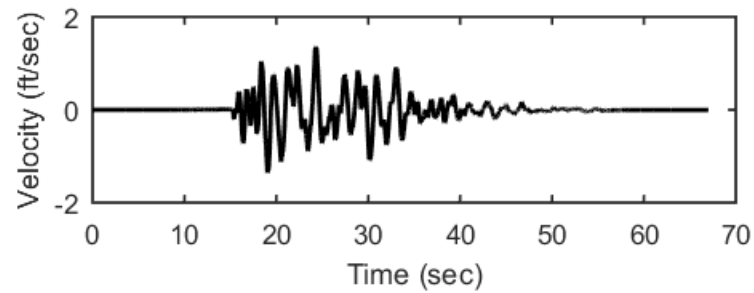
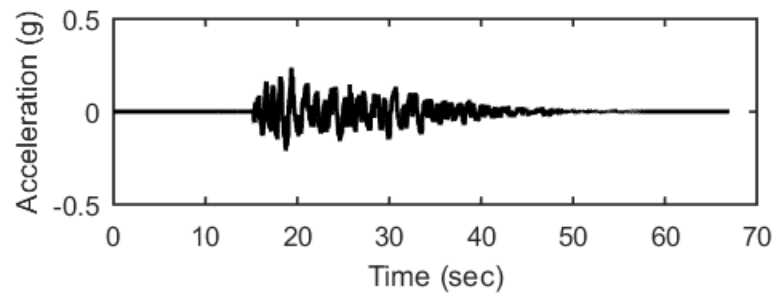
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



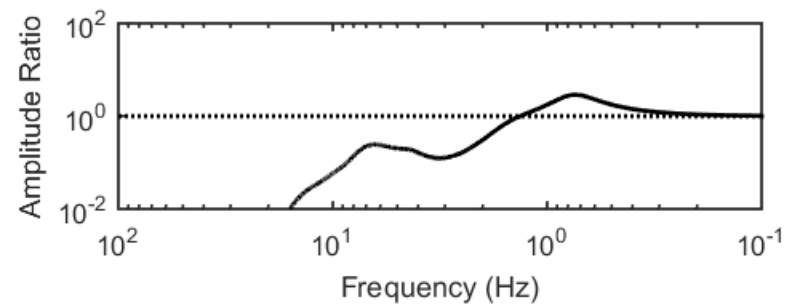
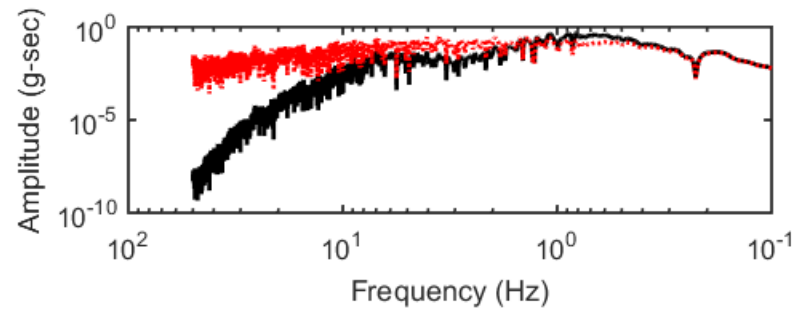
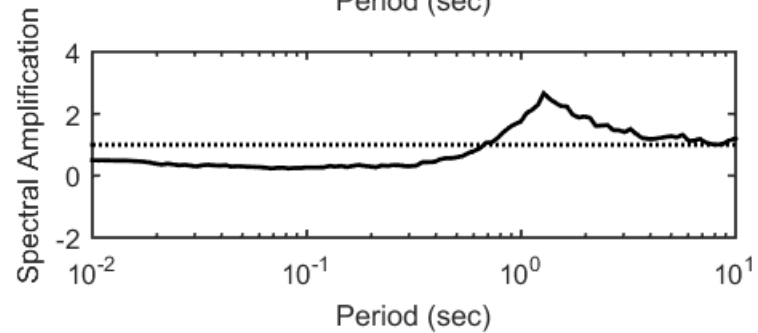
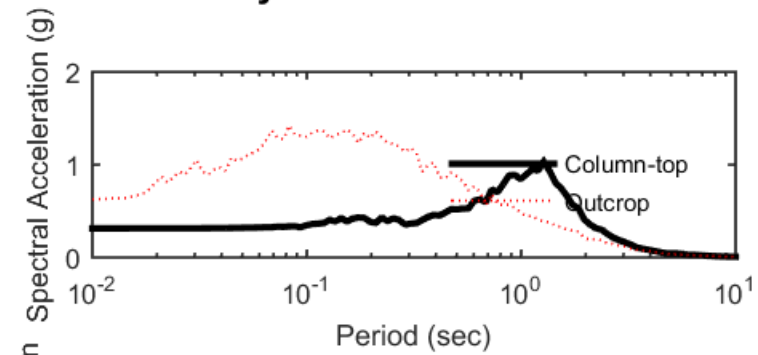
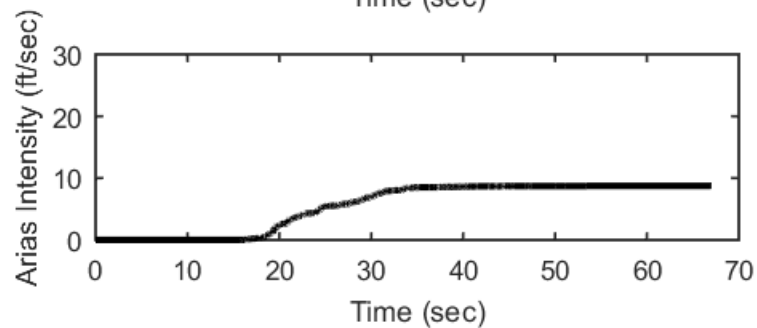
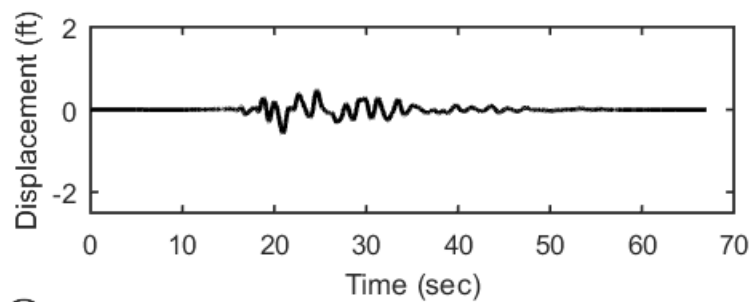
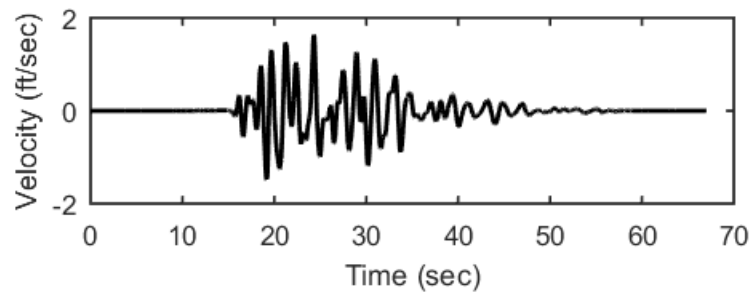
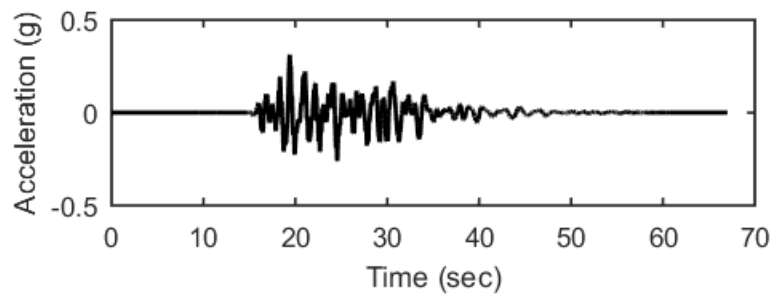
### Profile outputs for Motion: SEE1



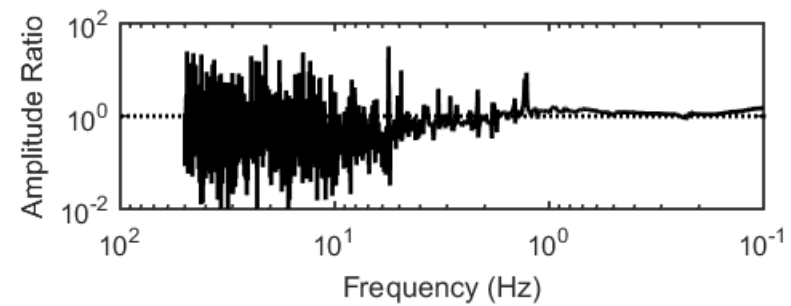
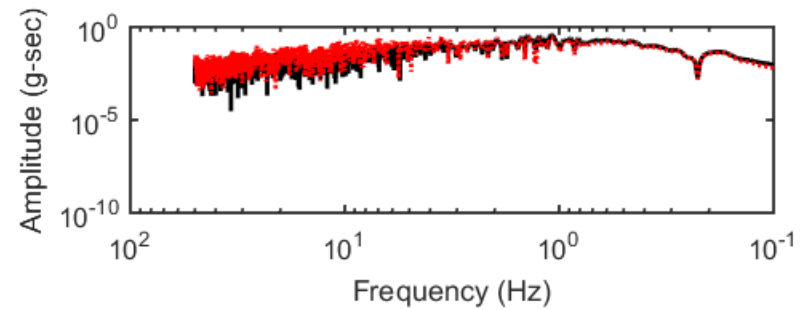
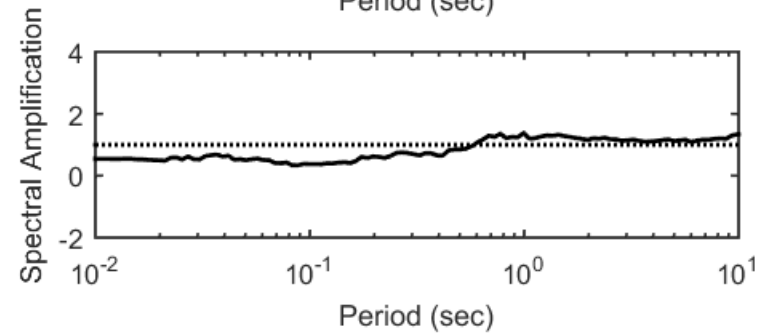
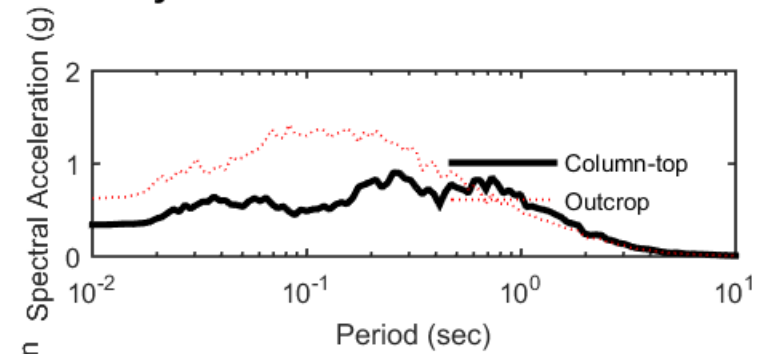
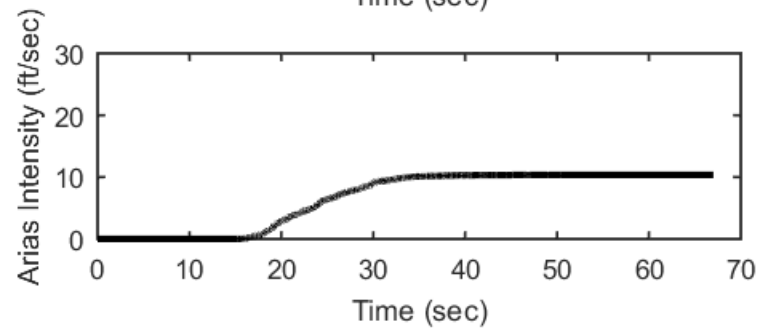
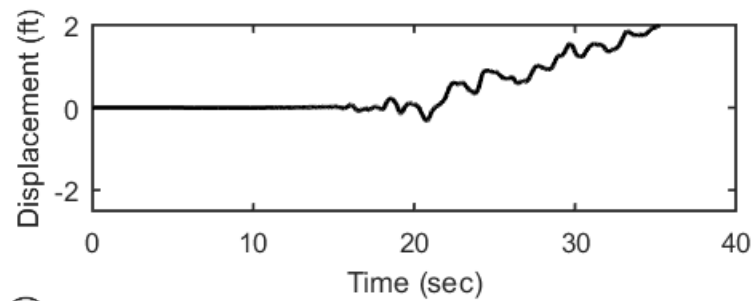
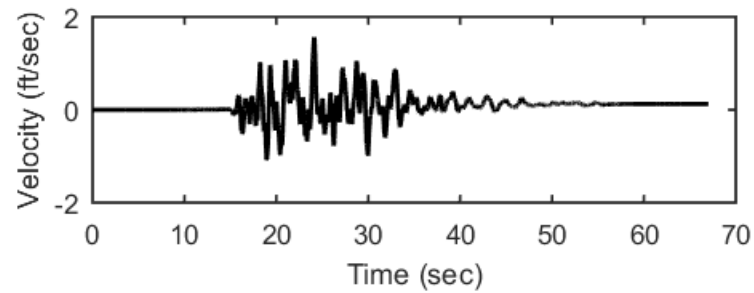
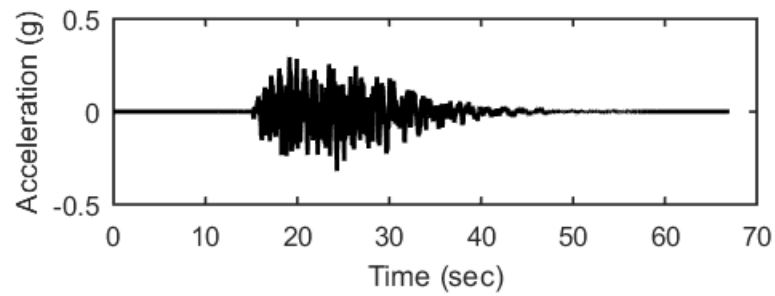
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



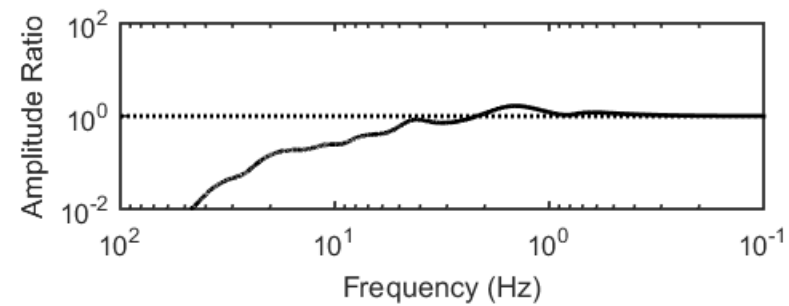
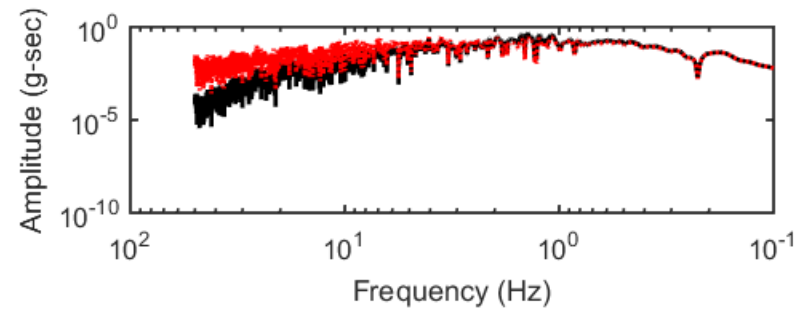
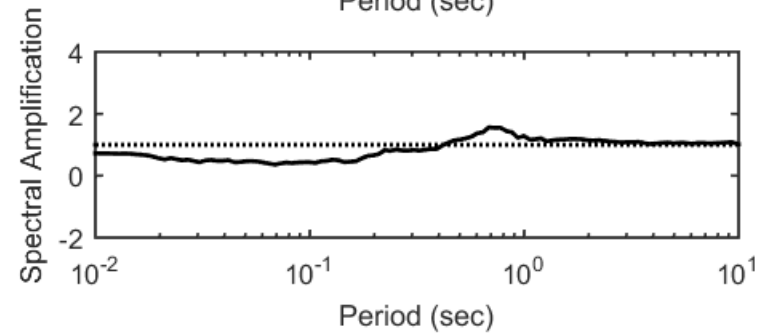
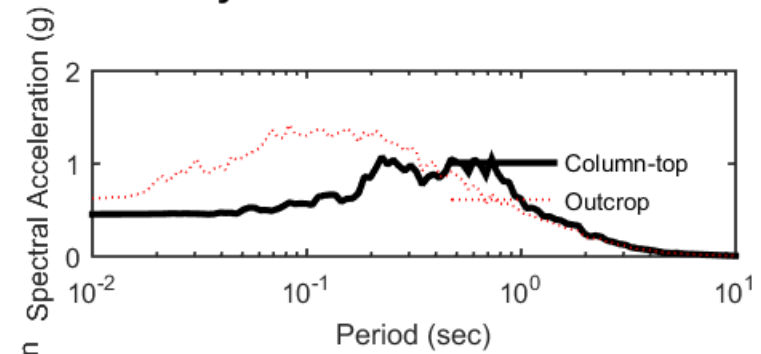
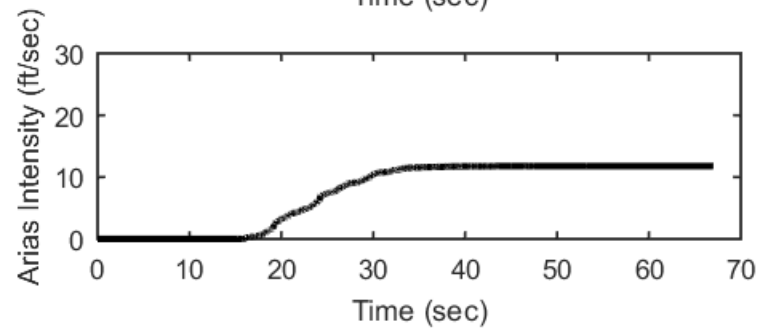
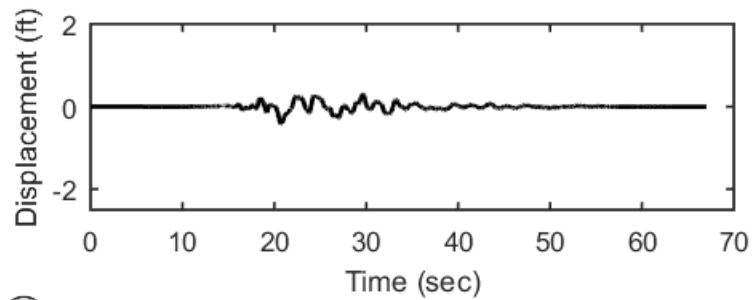
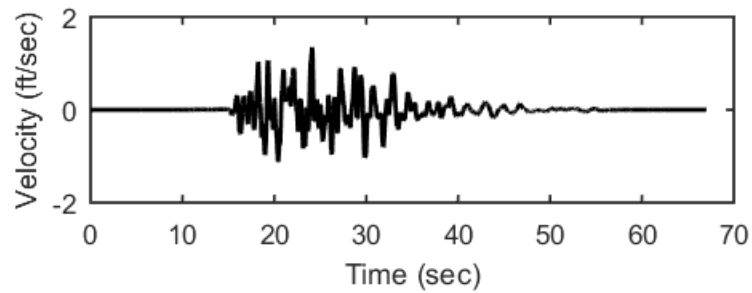
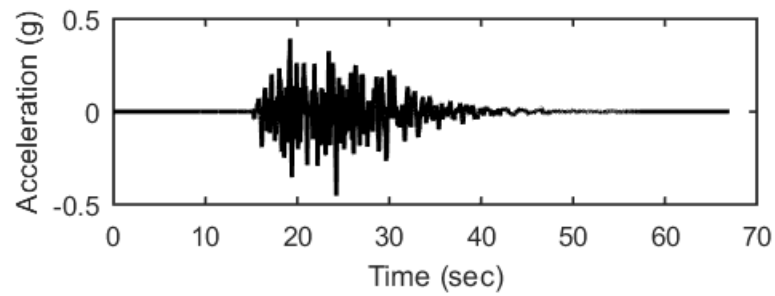
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2

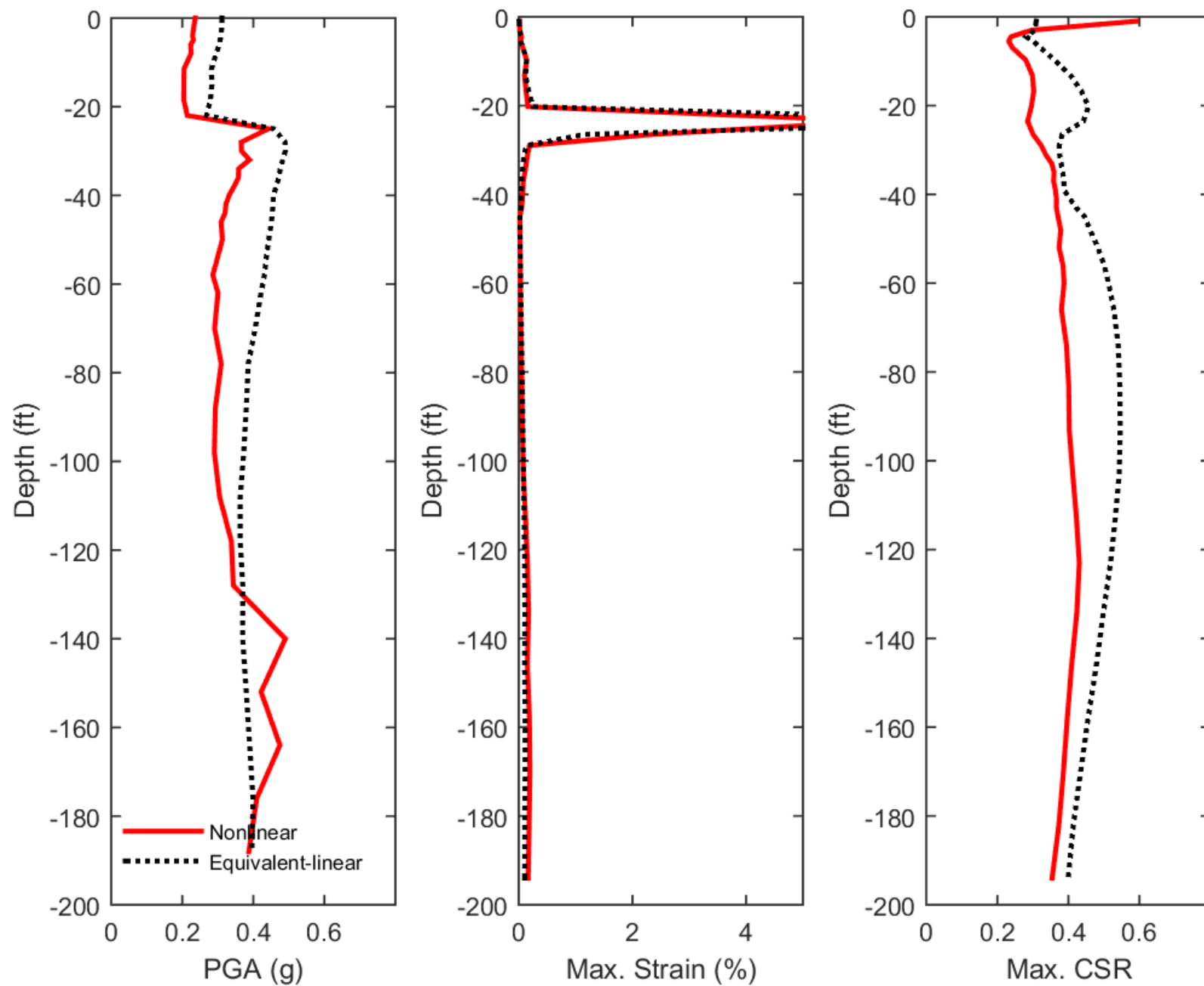


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2

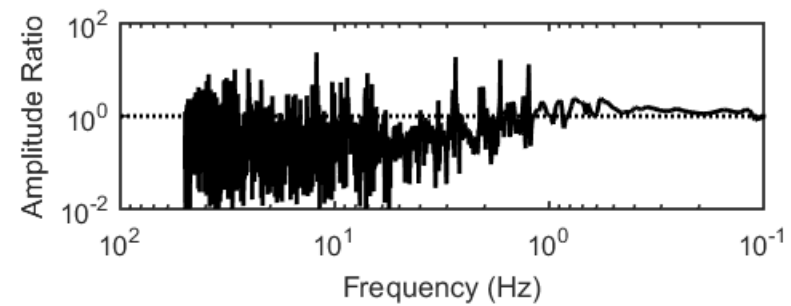
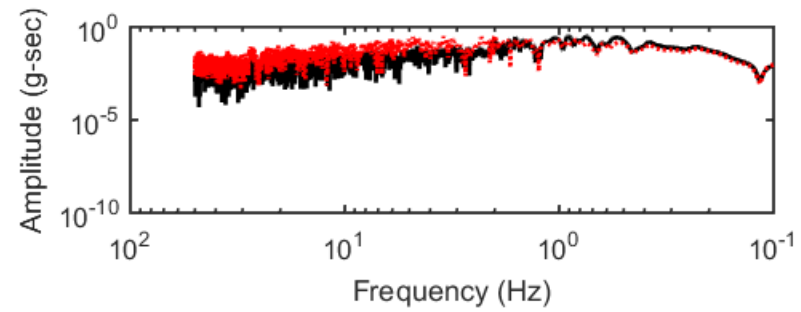
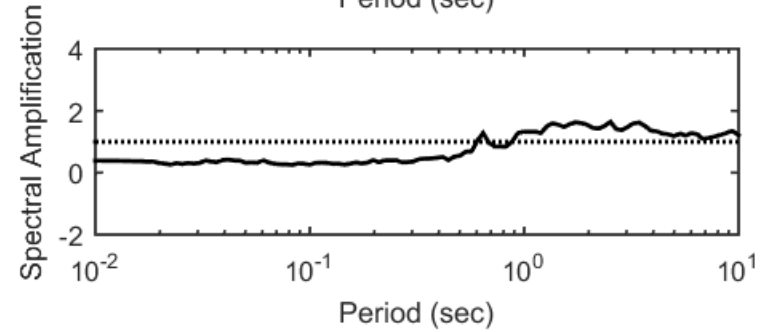
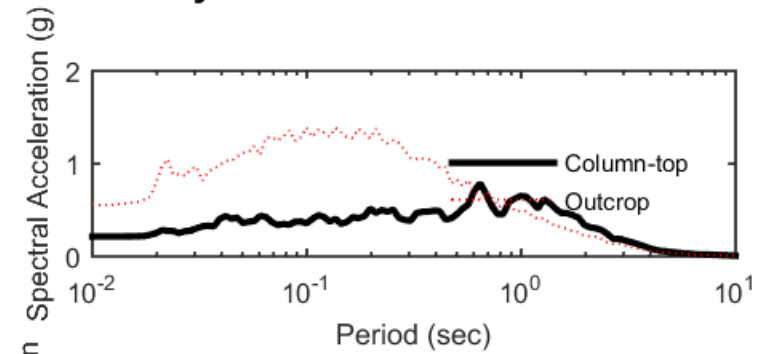
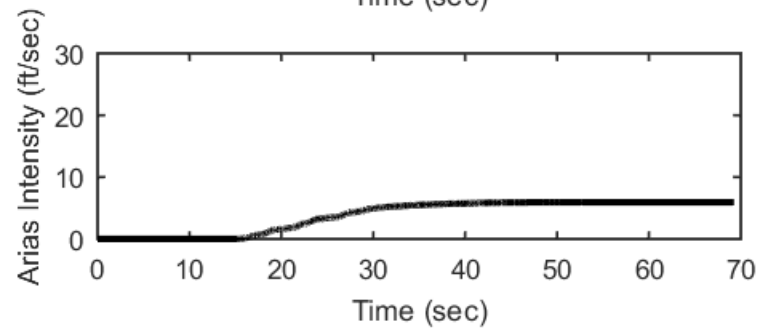
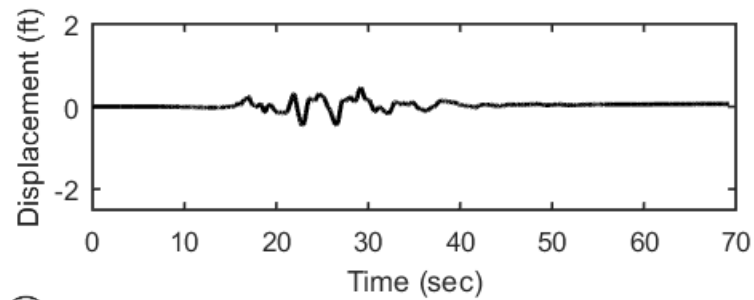
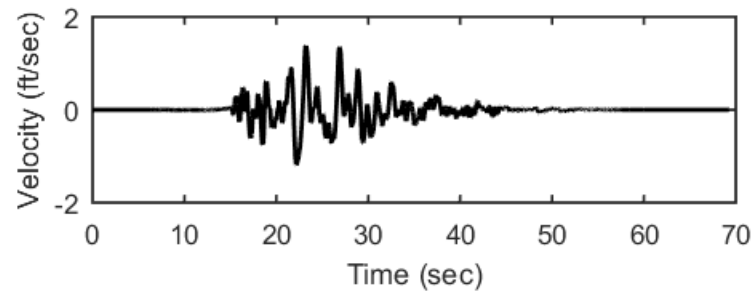
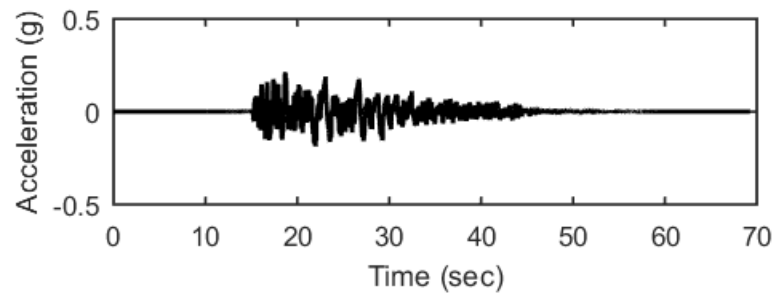




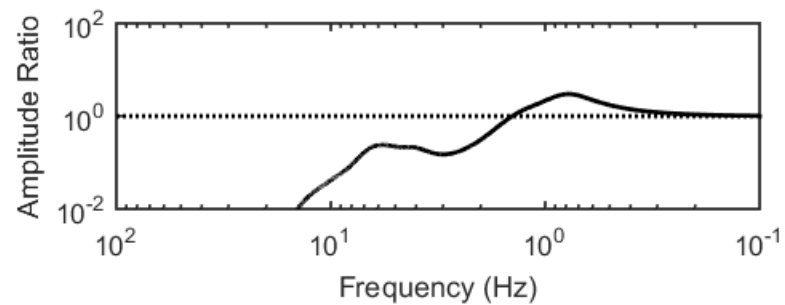
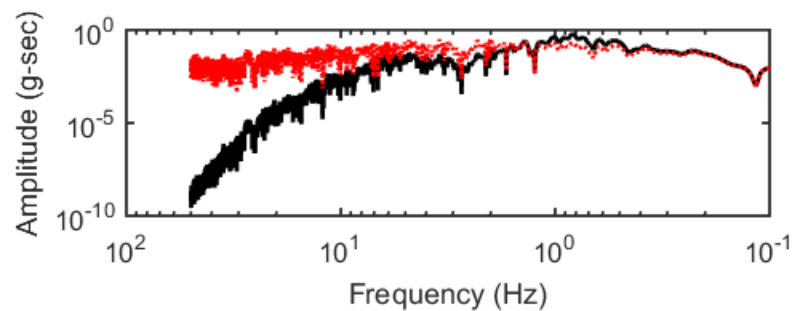
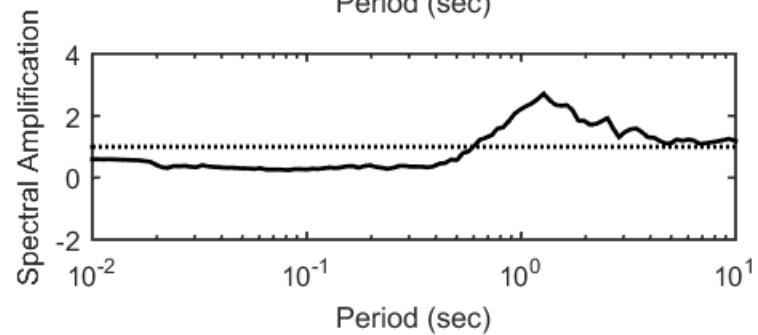
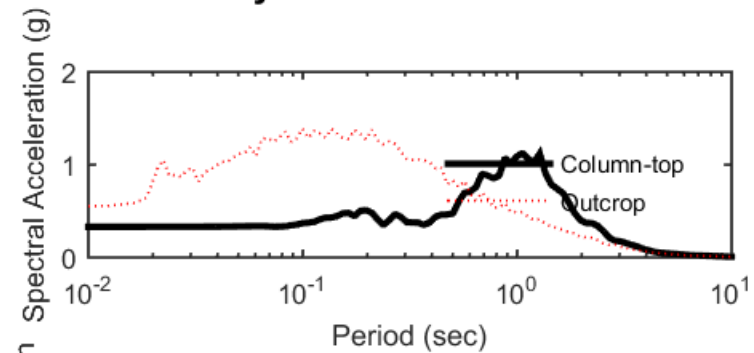
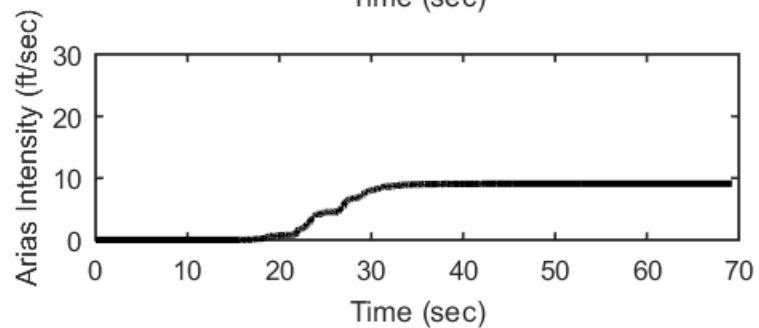
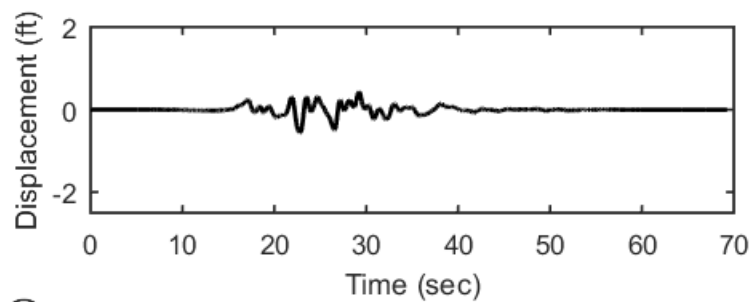
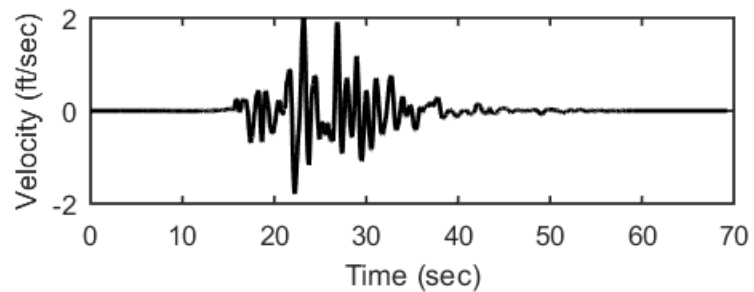
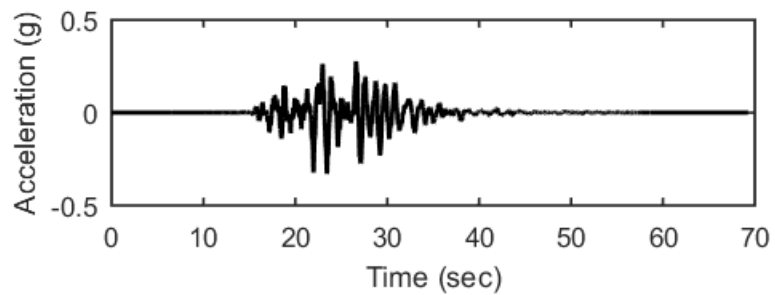
### Profile outputs for Motion: SEE2



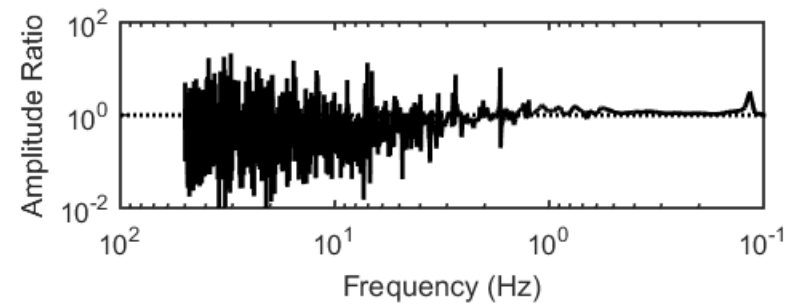
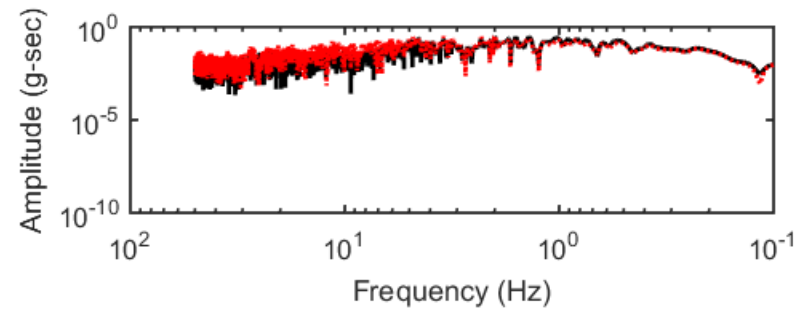
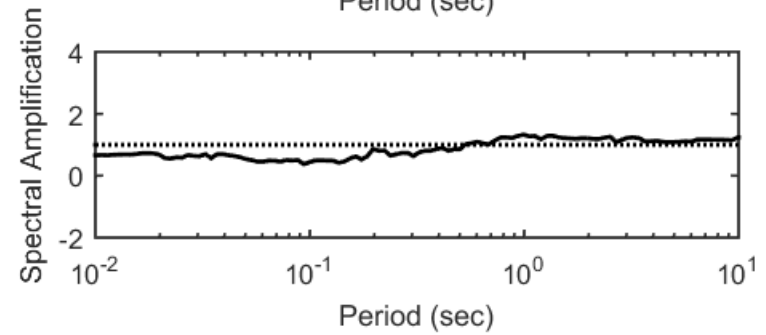
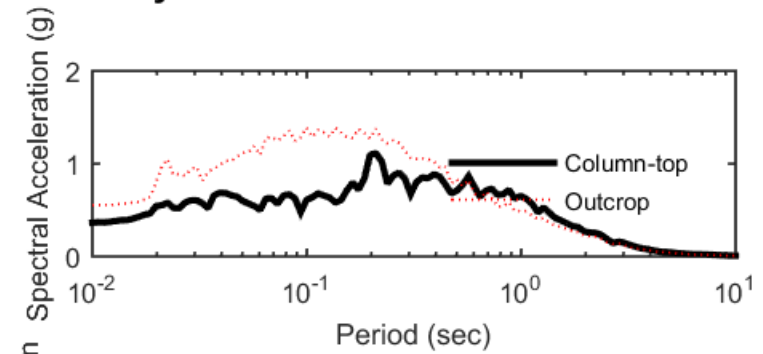
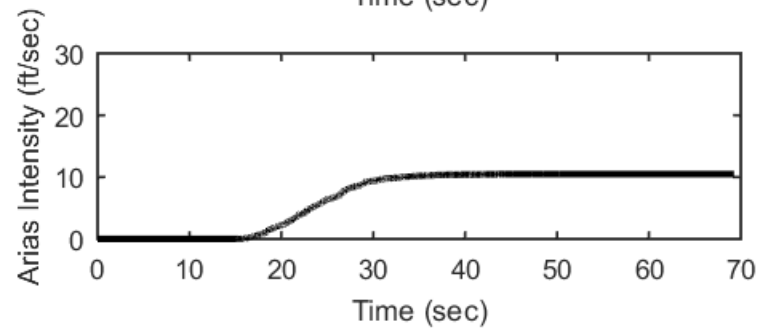
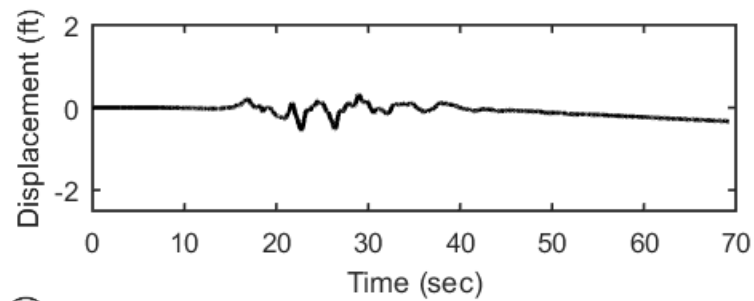
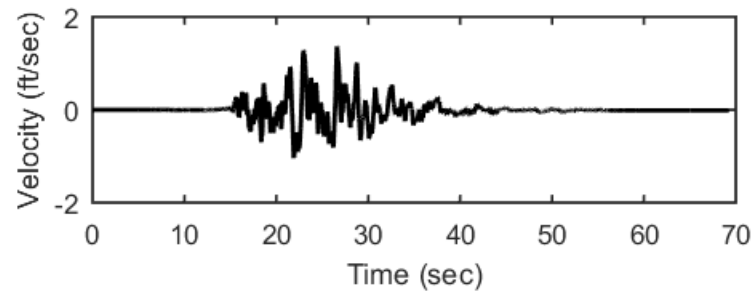
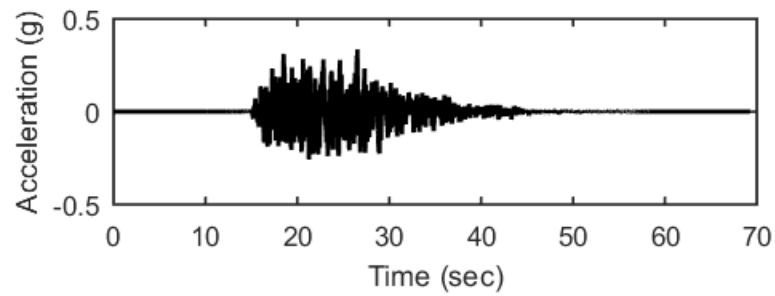
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



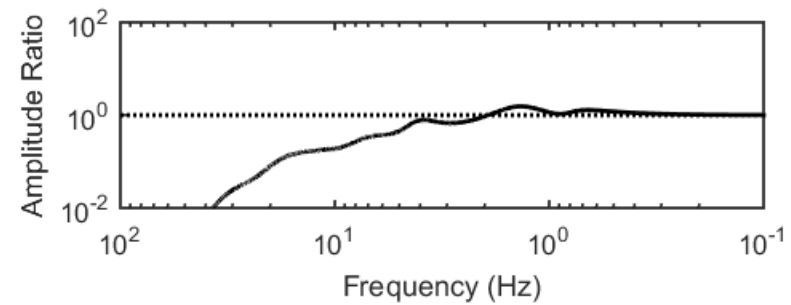
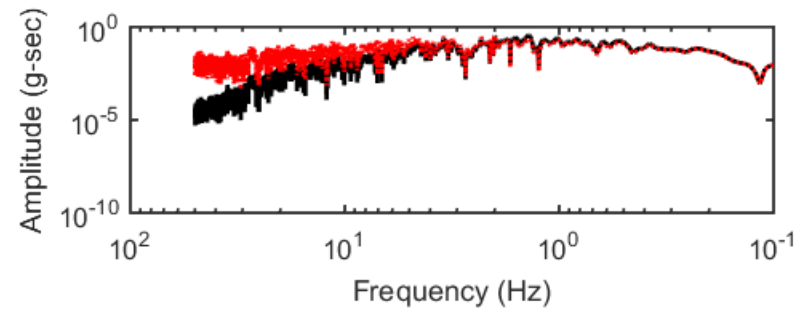
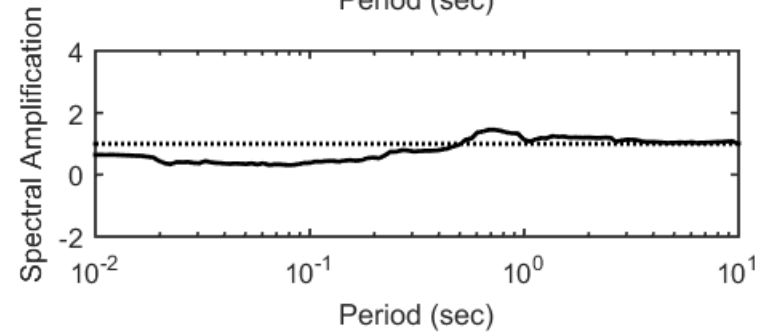
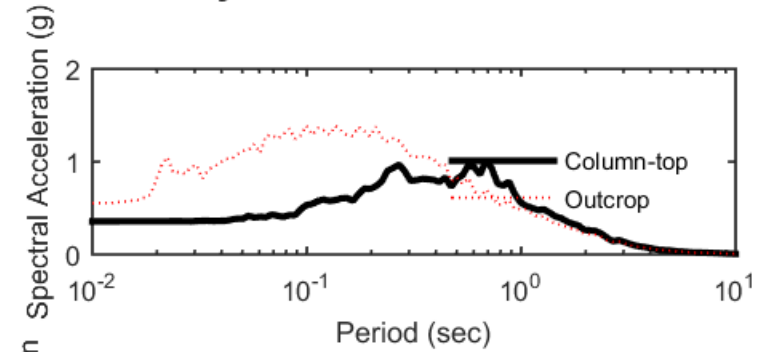
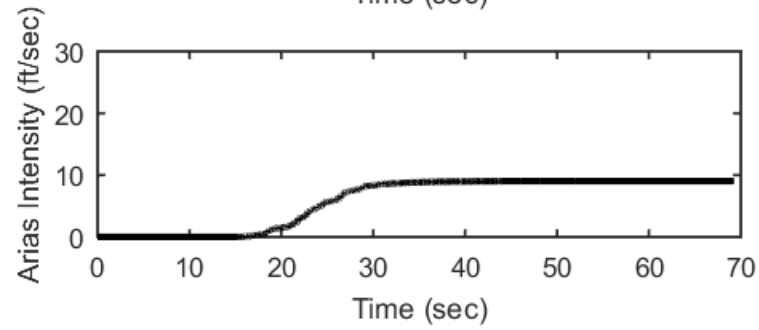
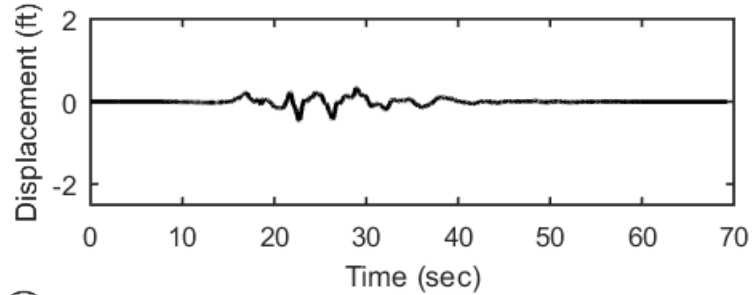
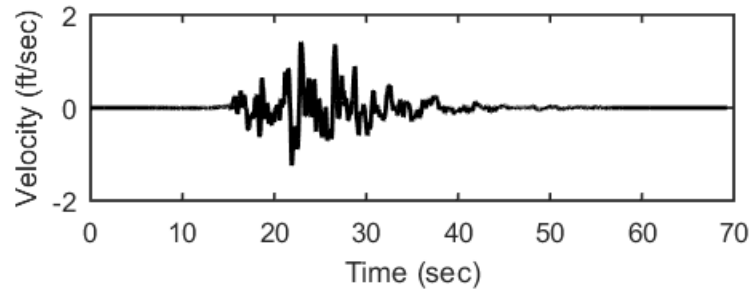
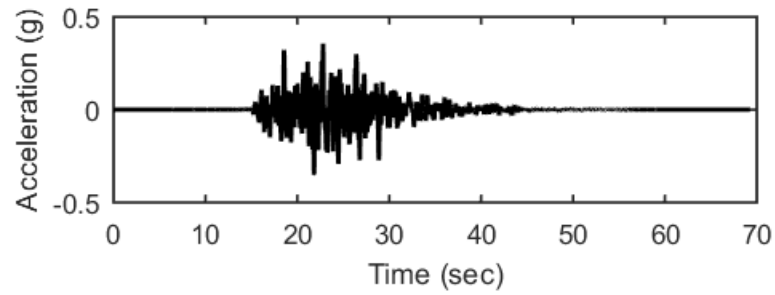
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



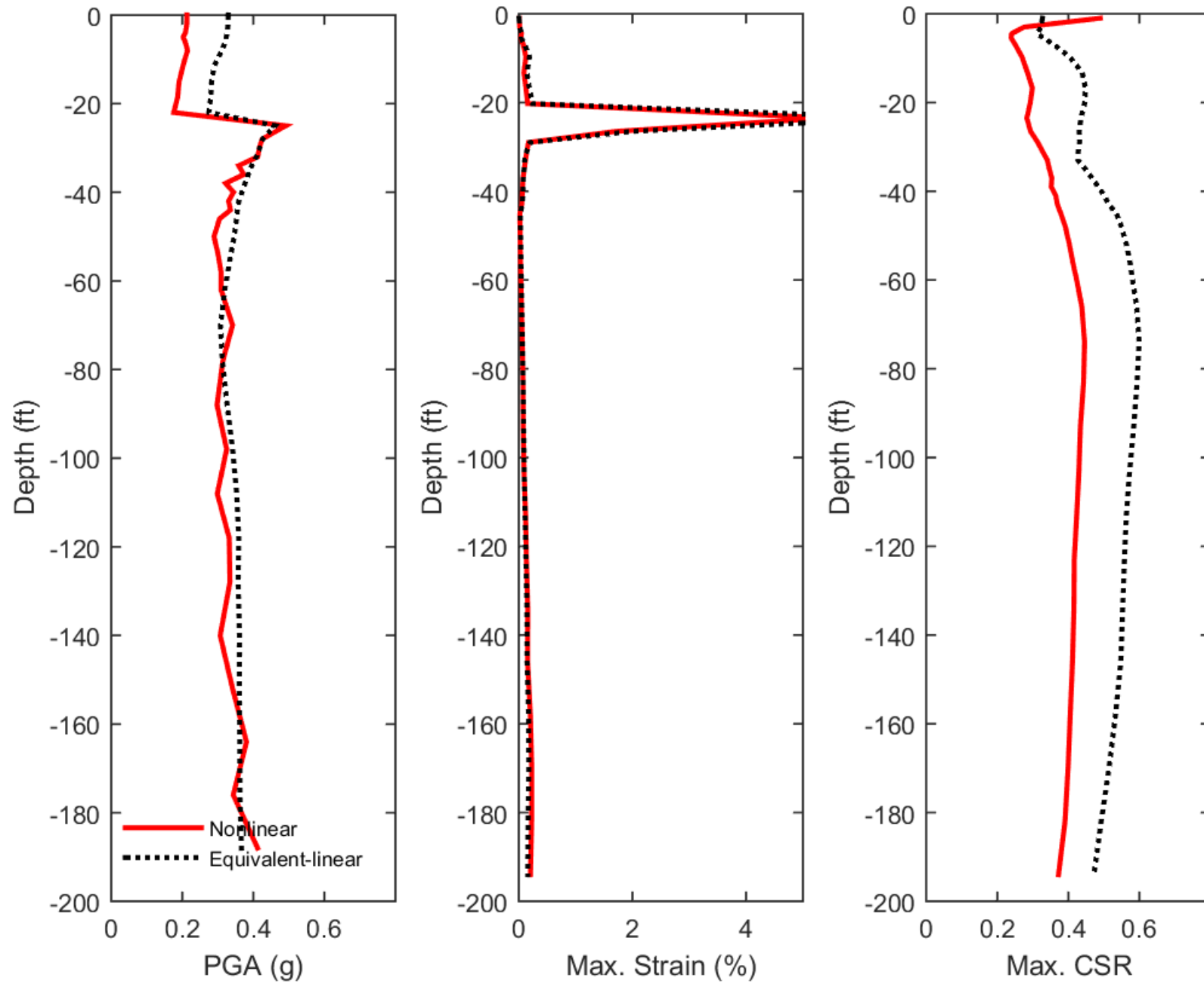
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



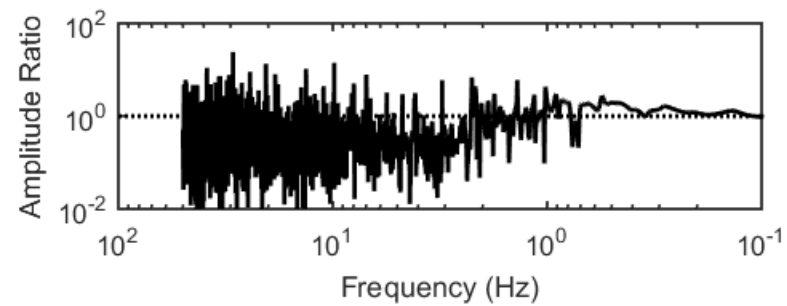
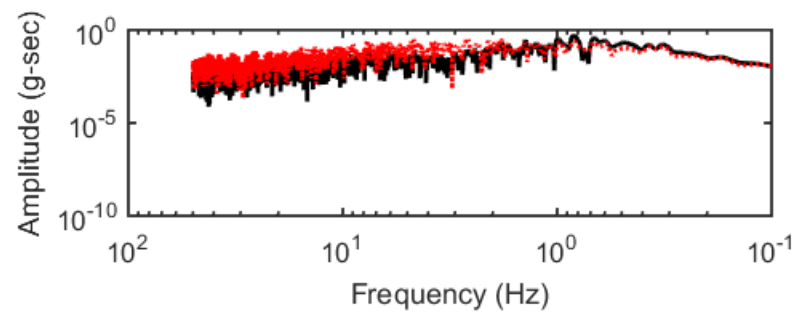
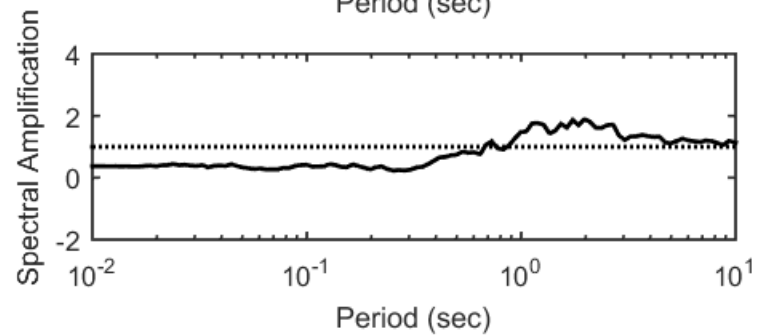
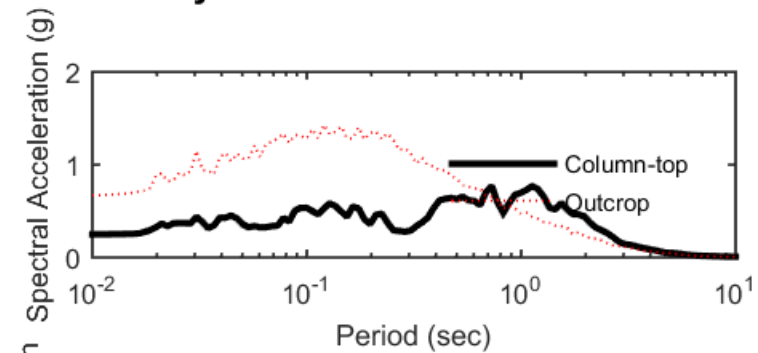
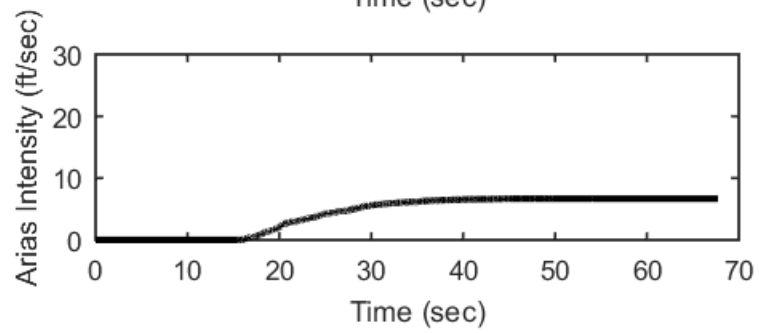
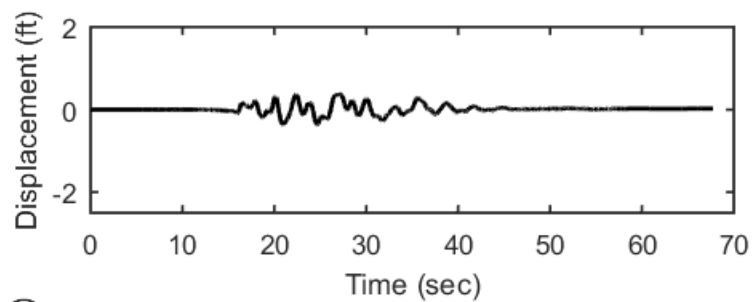
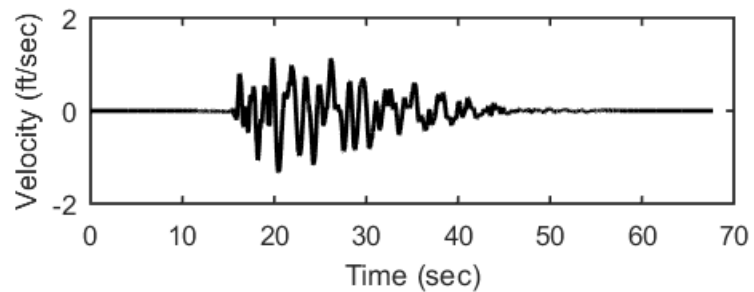
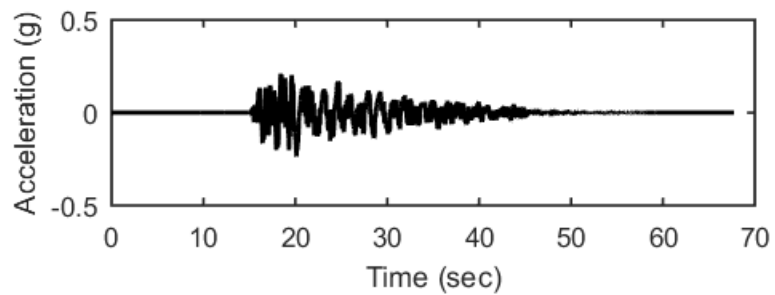
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



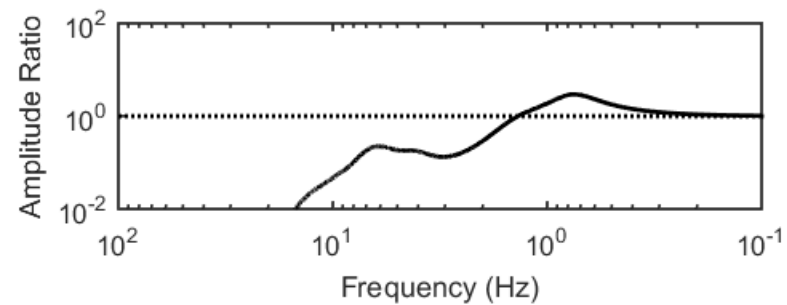
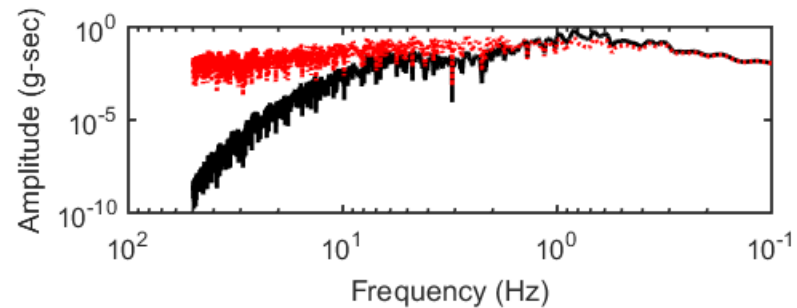
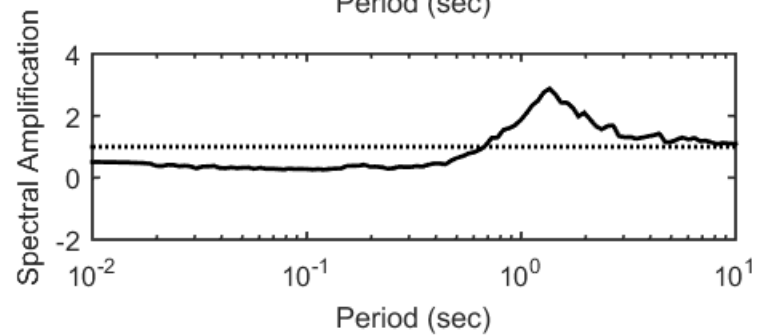
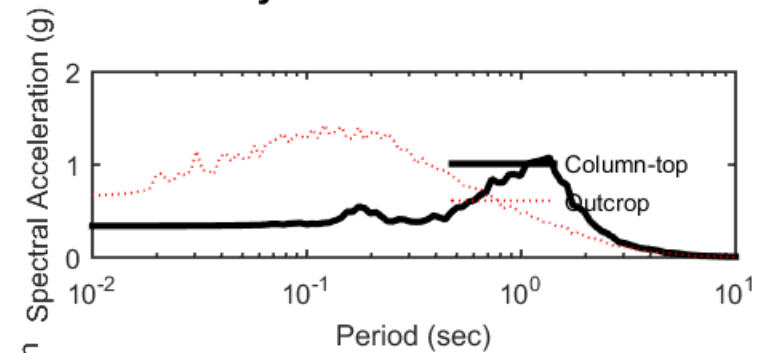
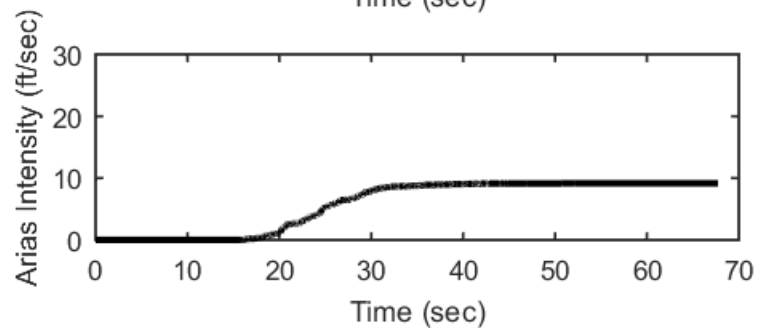
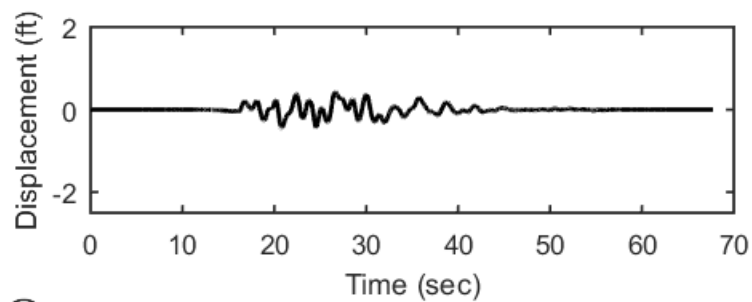
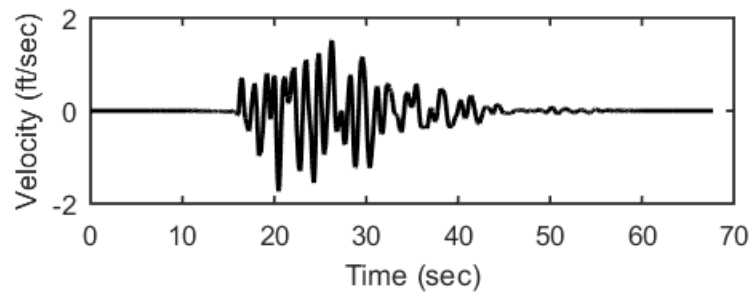
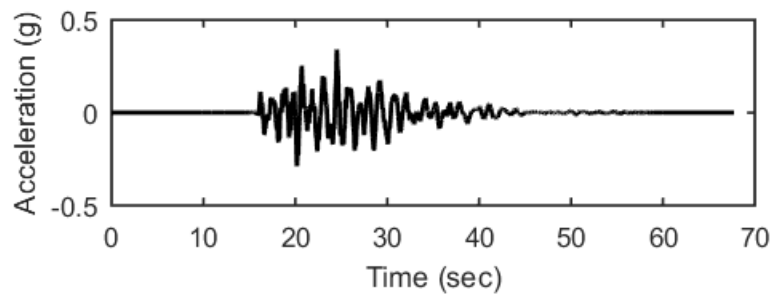
### Profile outputs for Motion: SEE3



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4

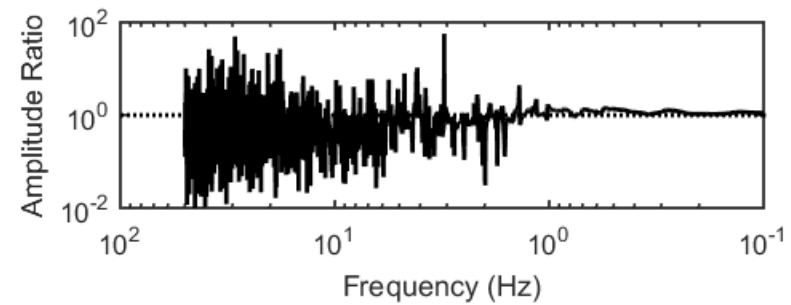
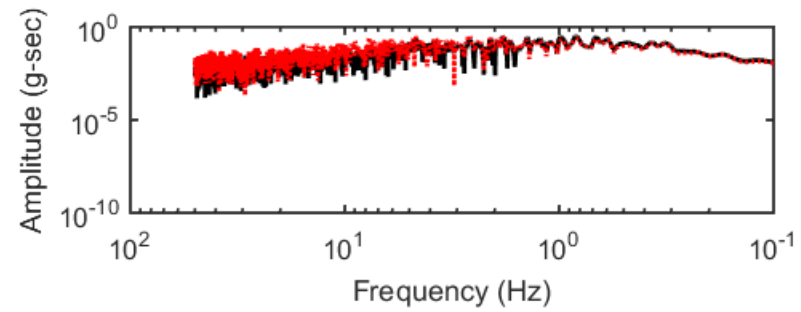
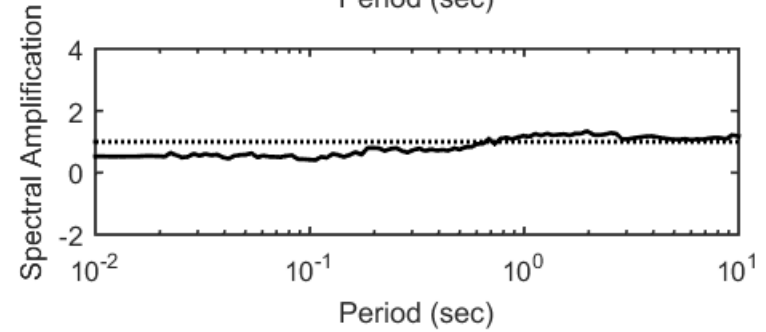
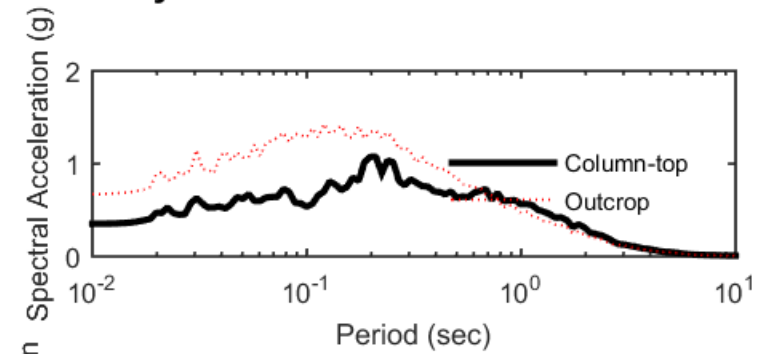
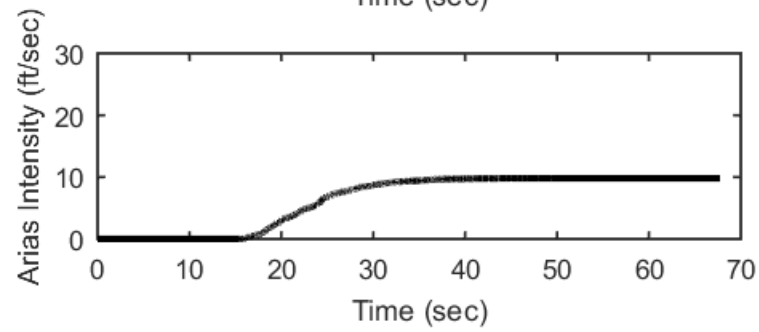
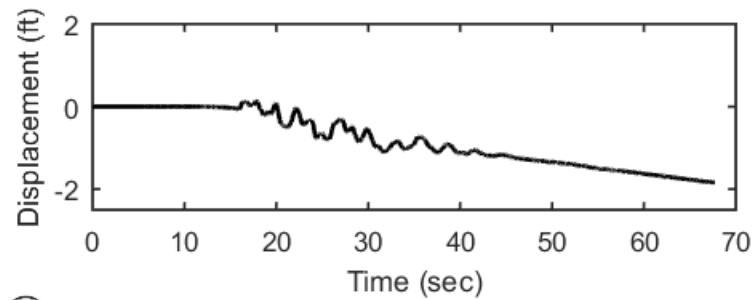
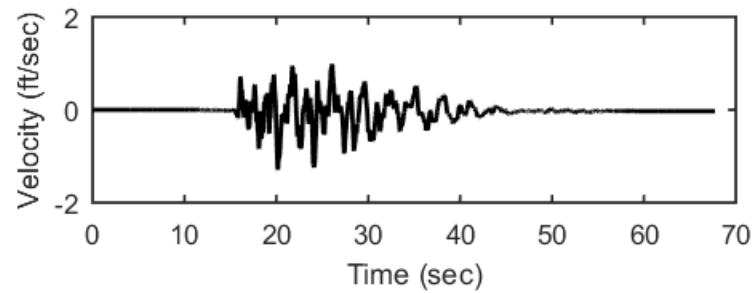
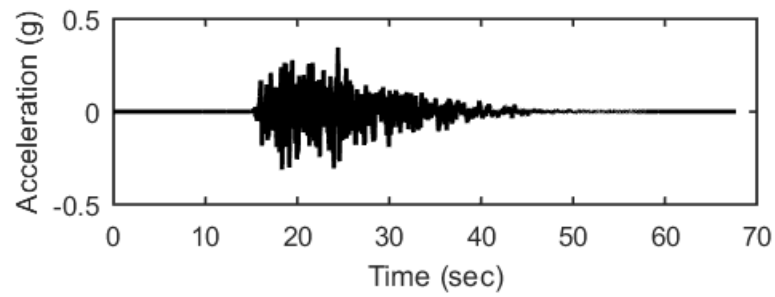


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4

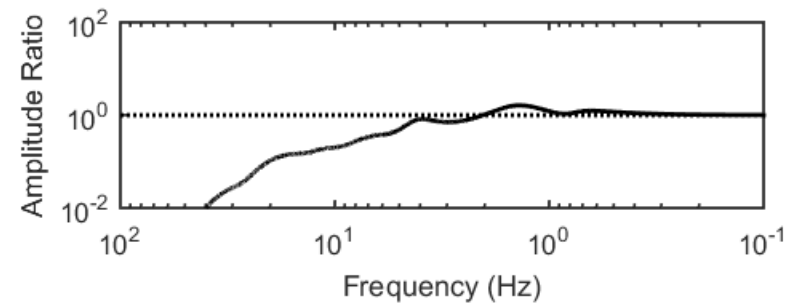
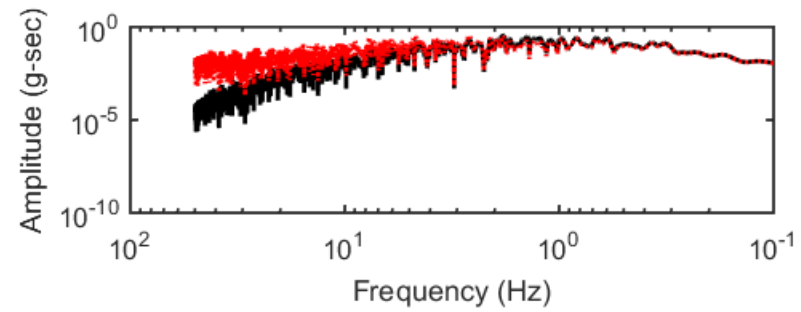
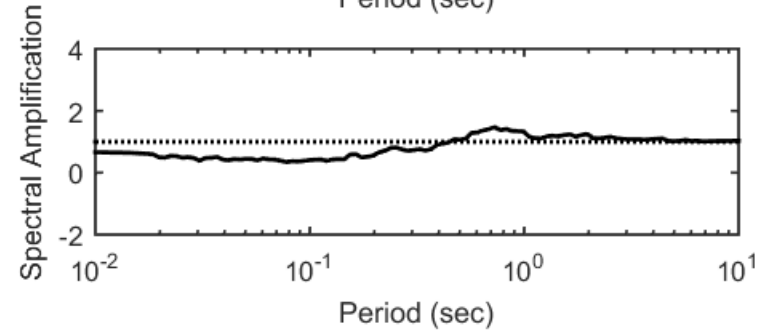
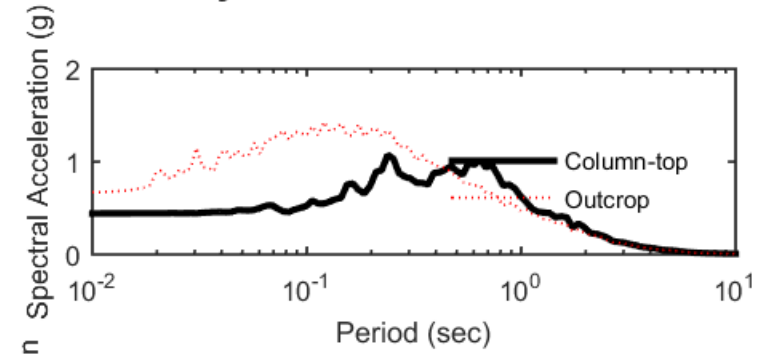
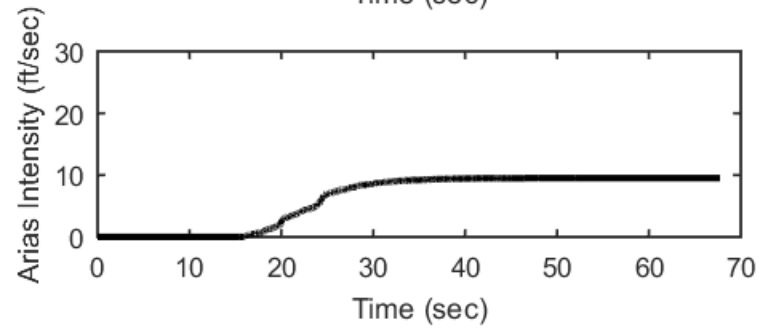
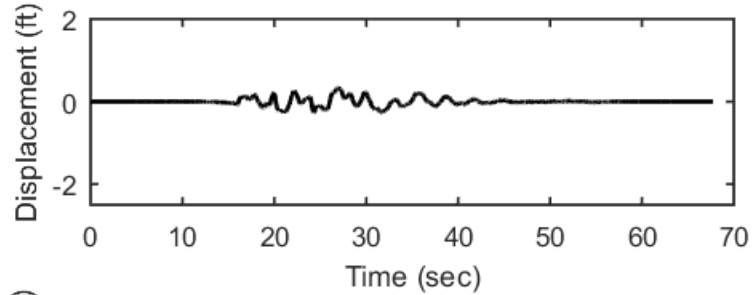
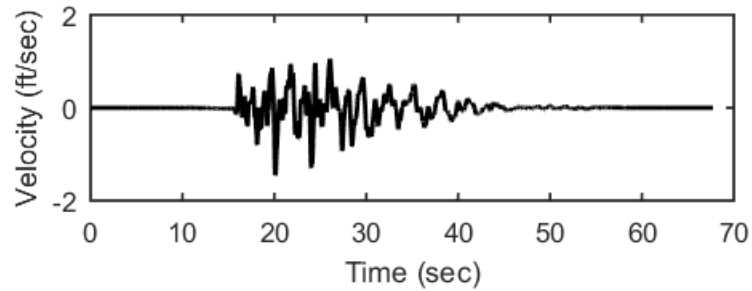
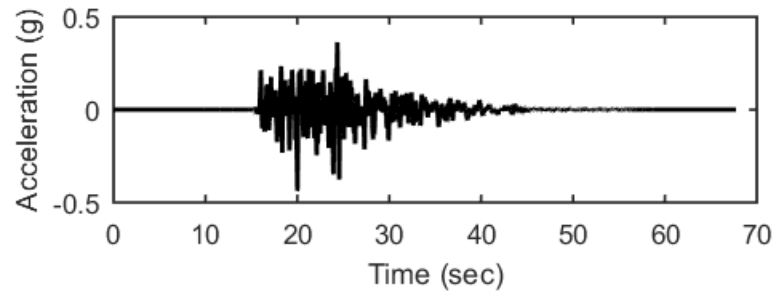




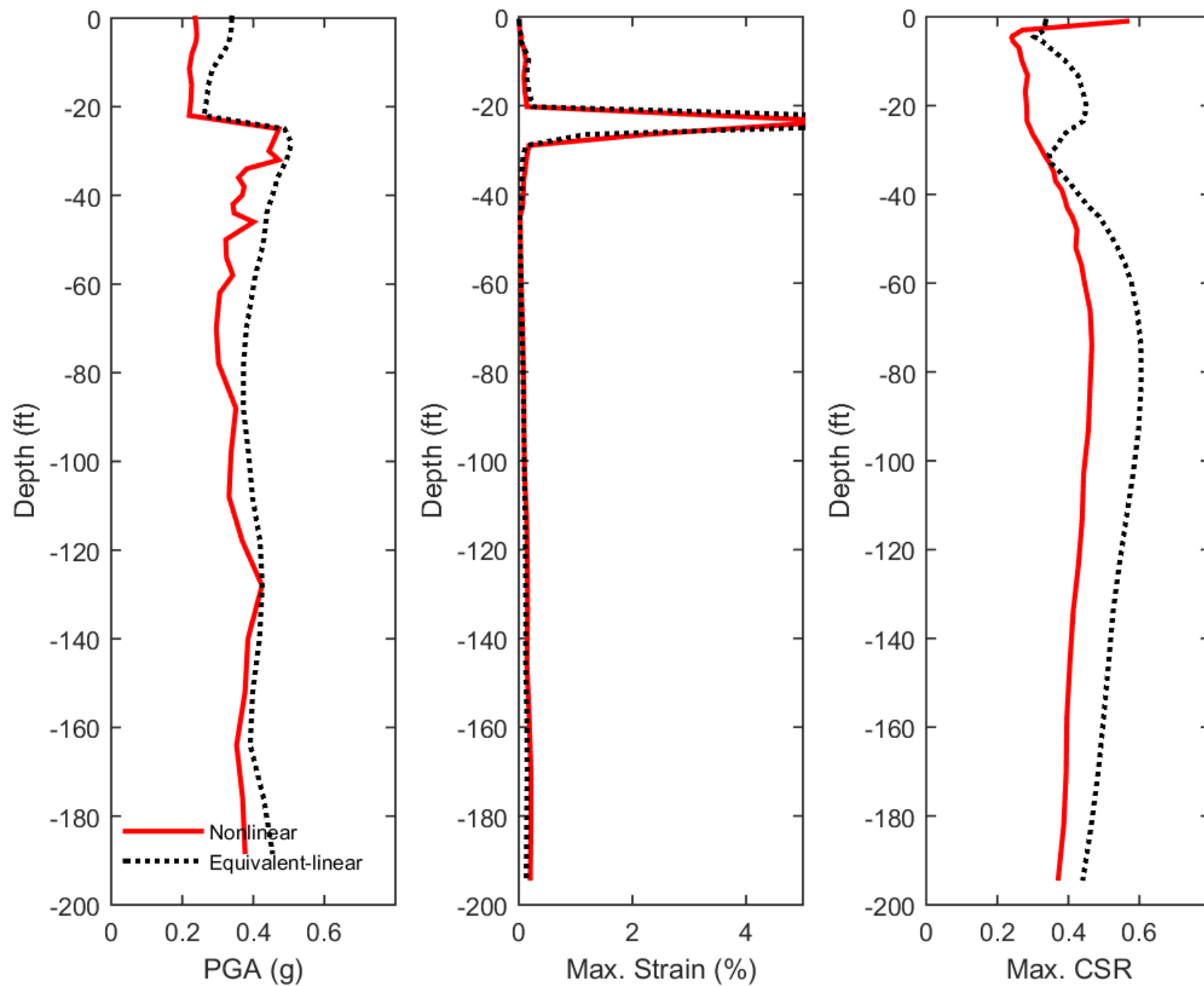
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



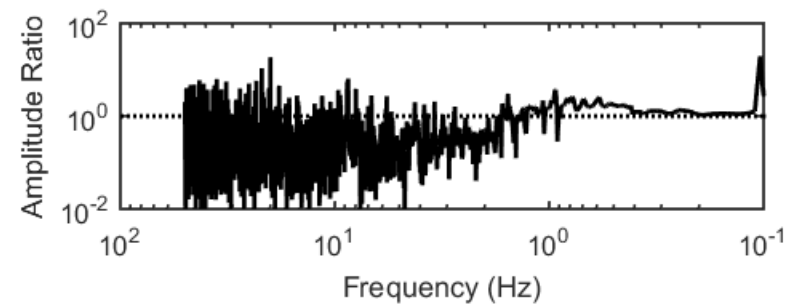
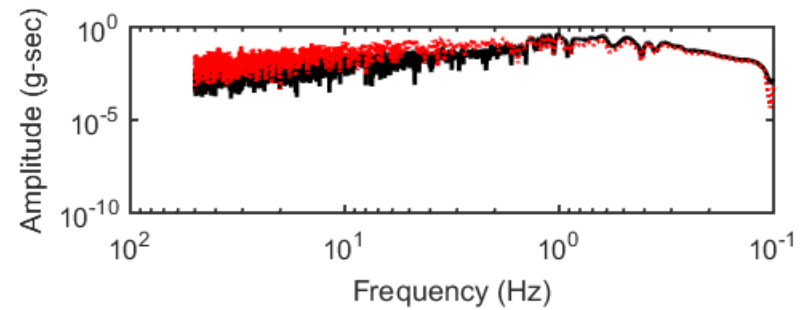
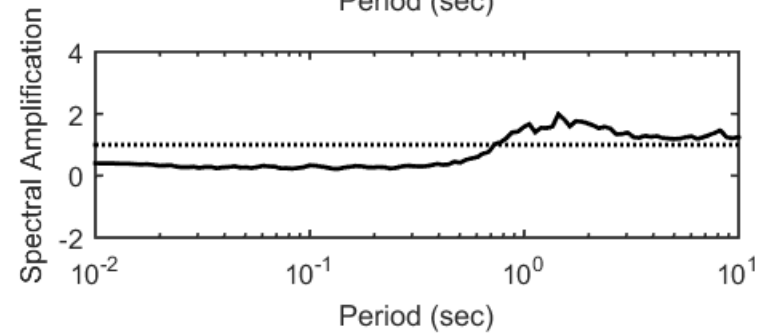
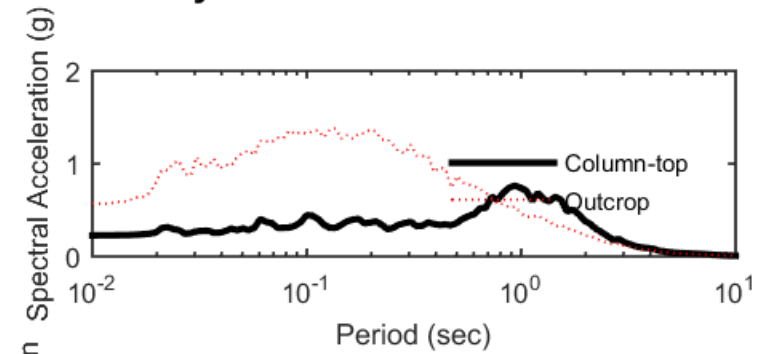
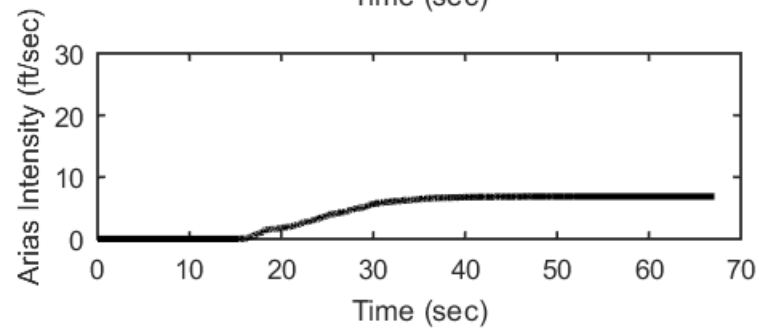
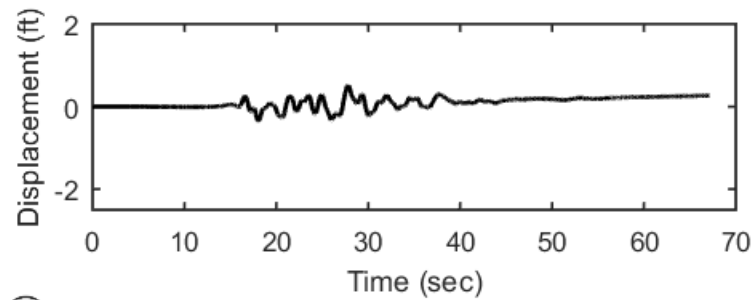
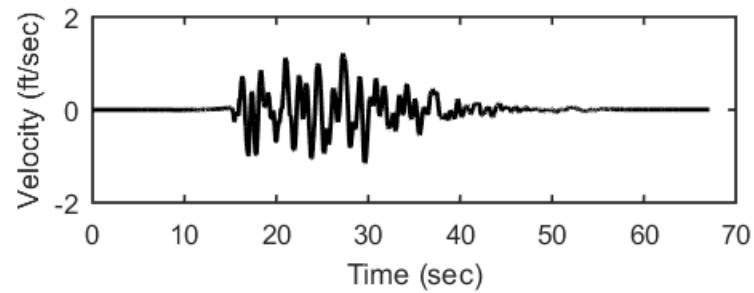
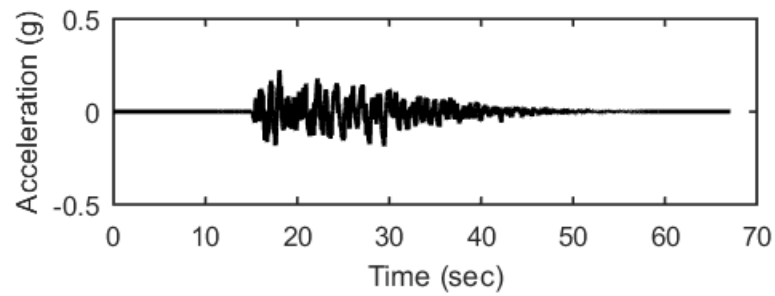
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



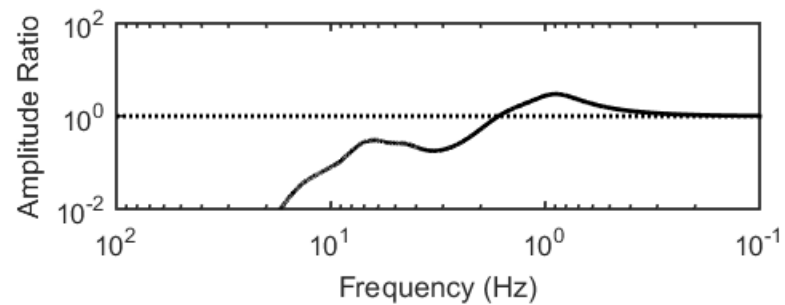
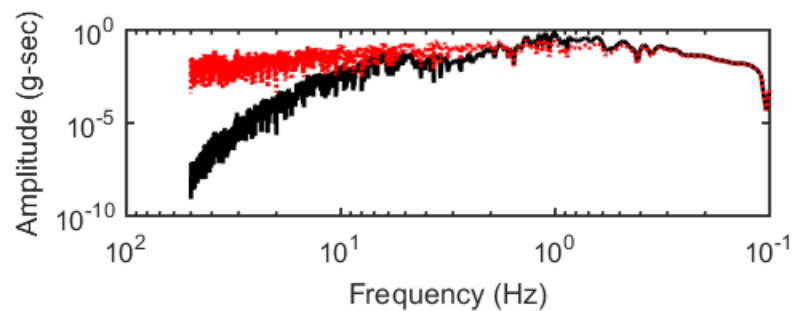
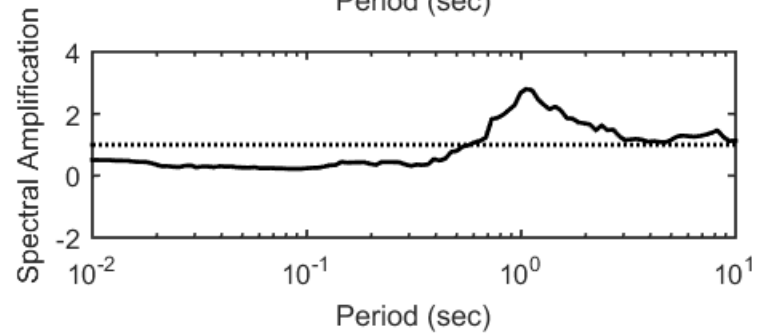
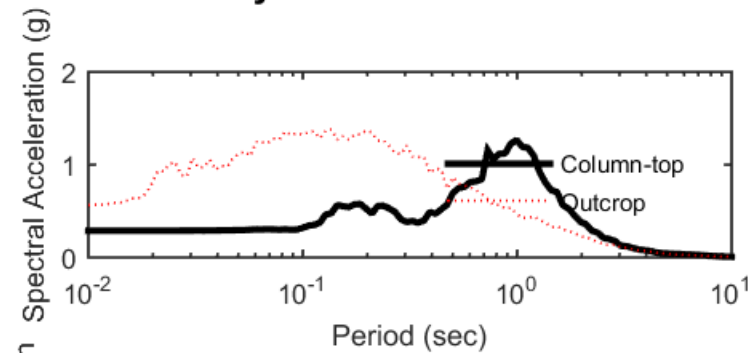
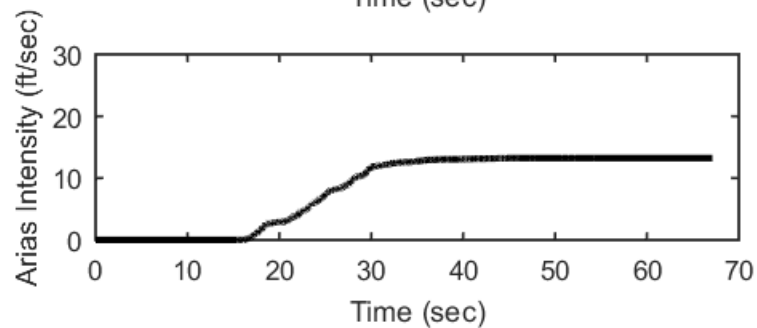
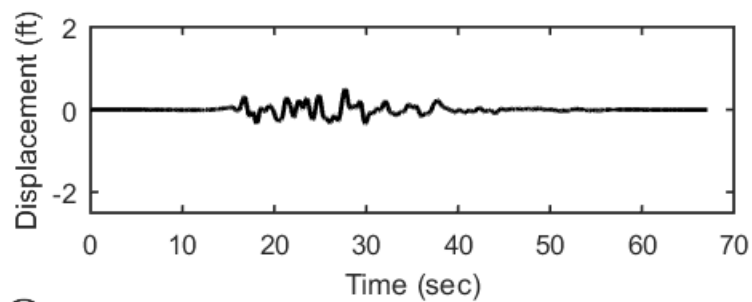
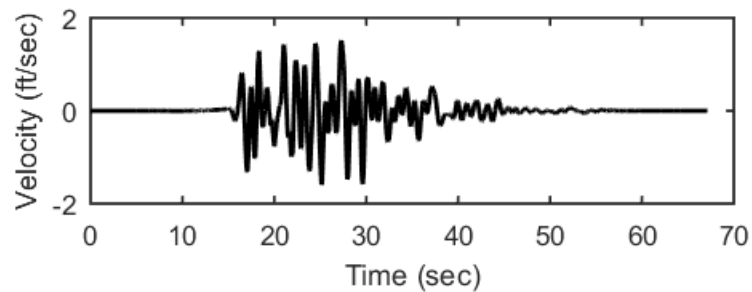
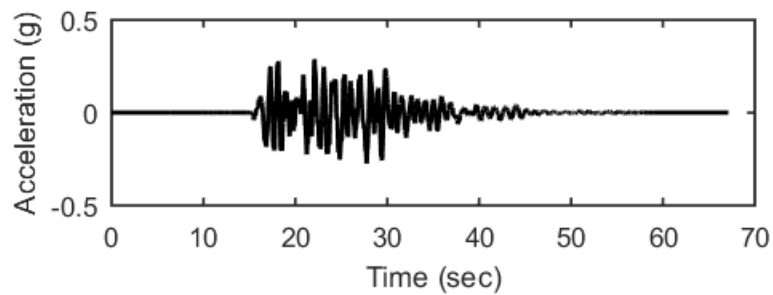
### Profile outputs for Motion: SEE4



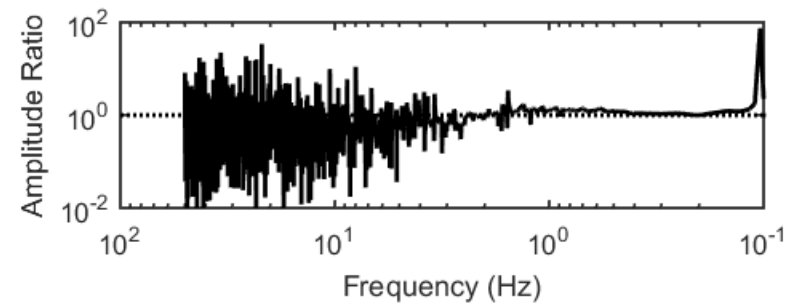
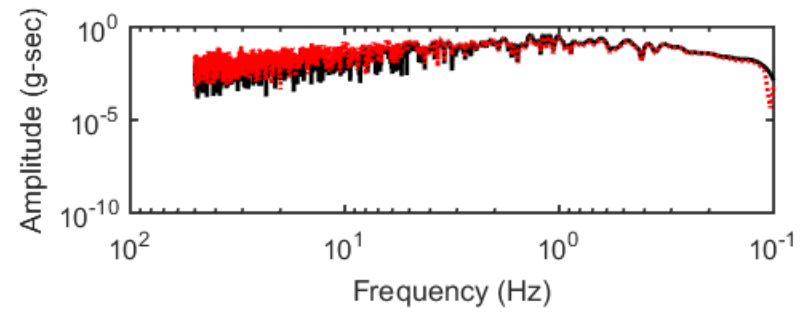
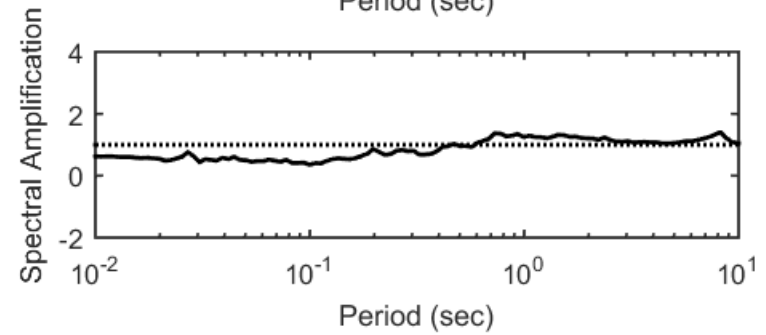
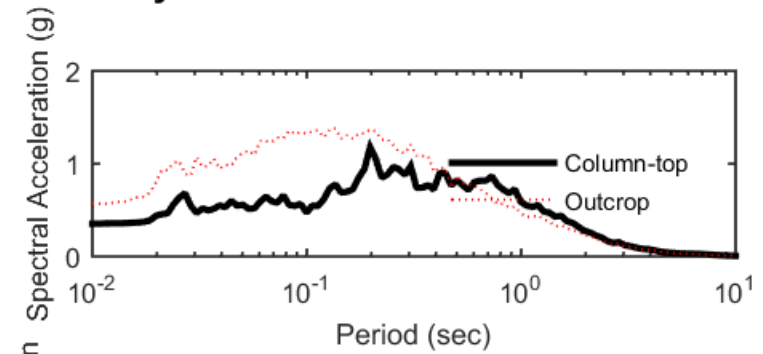
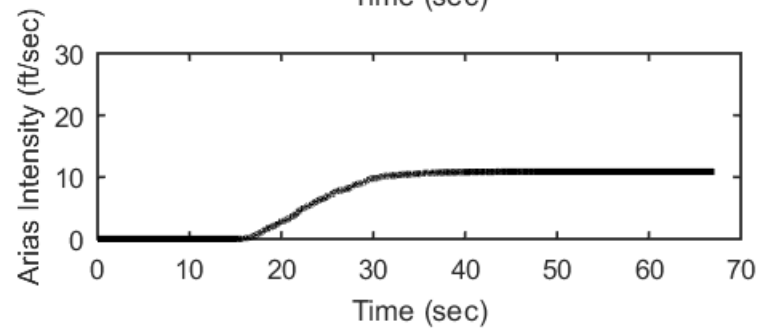
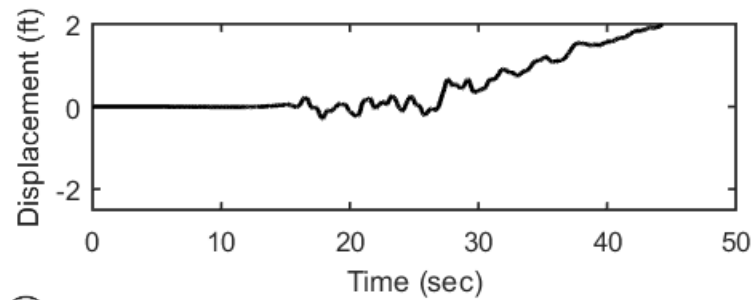
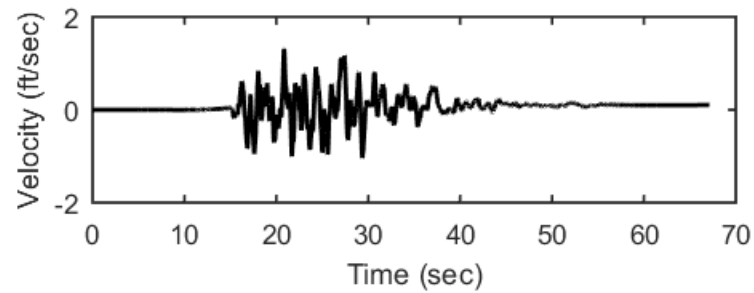
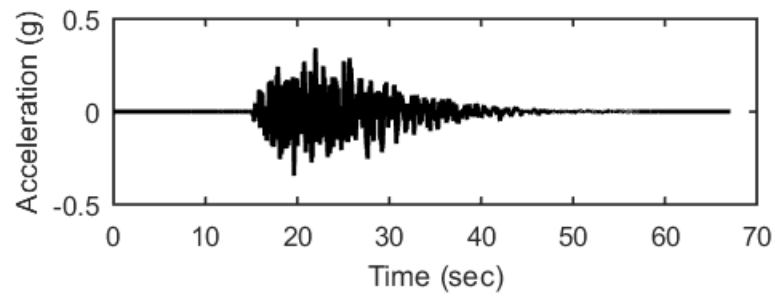
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



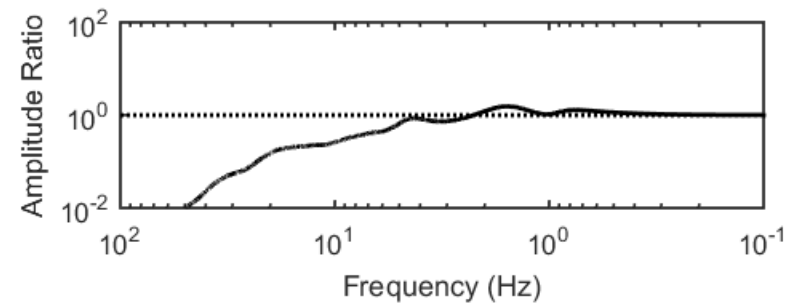
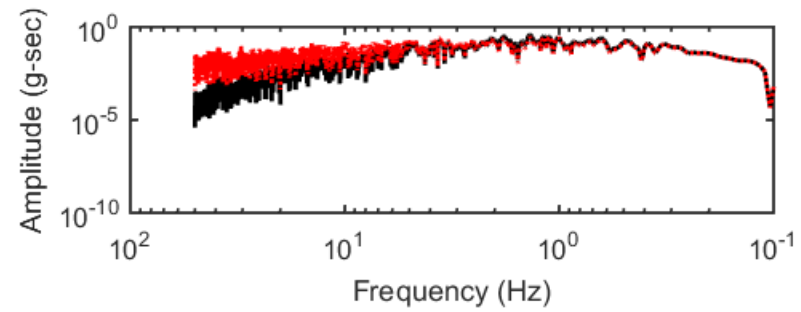
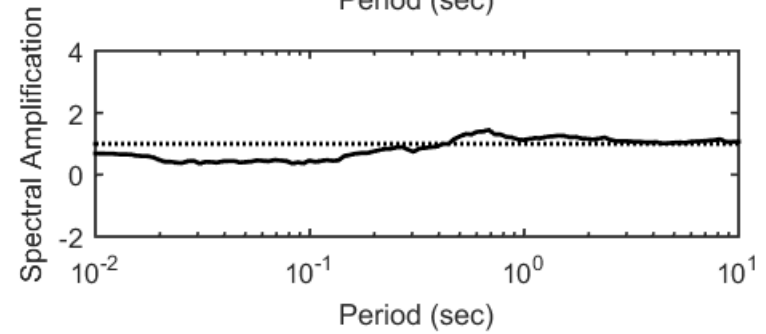
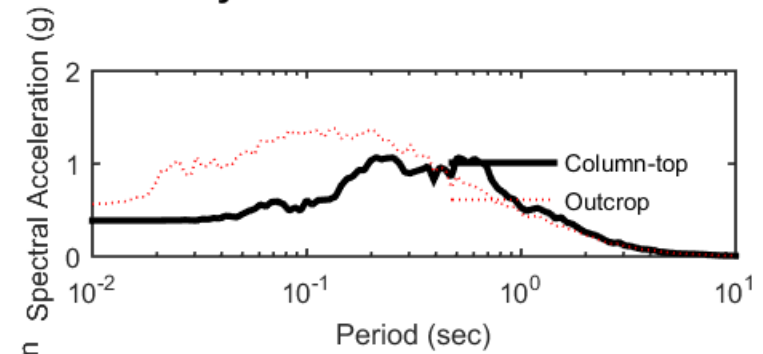
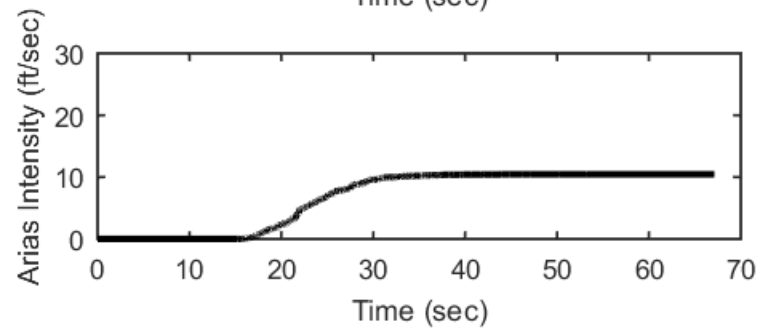
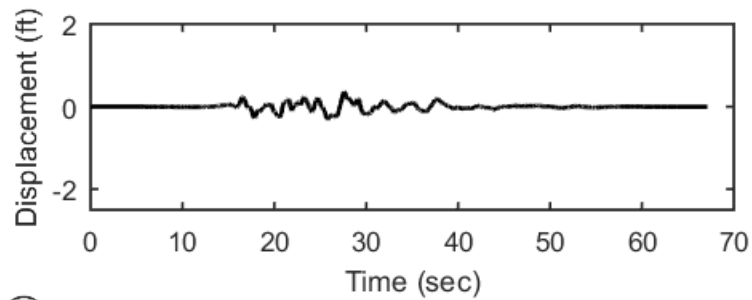
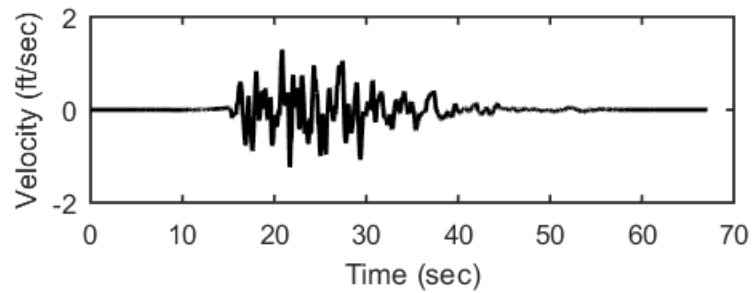
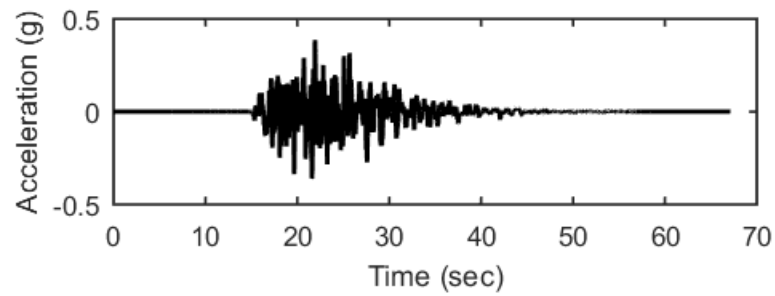
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



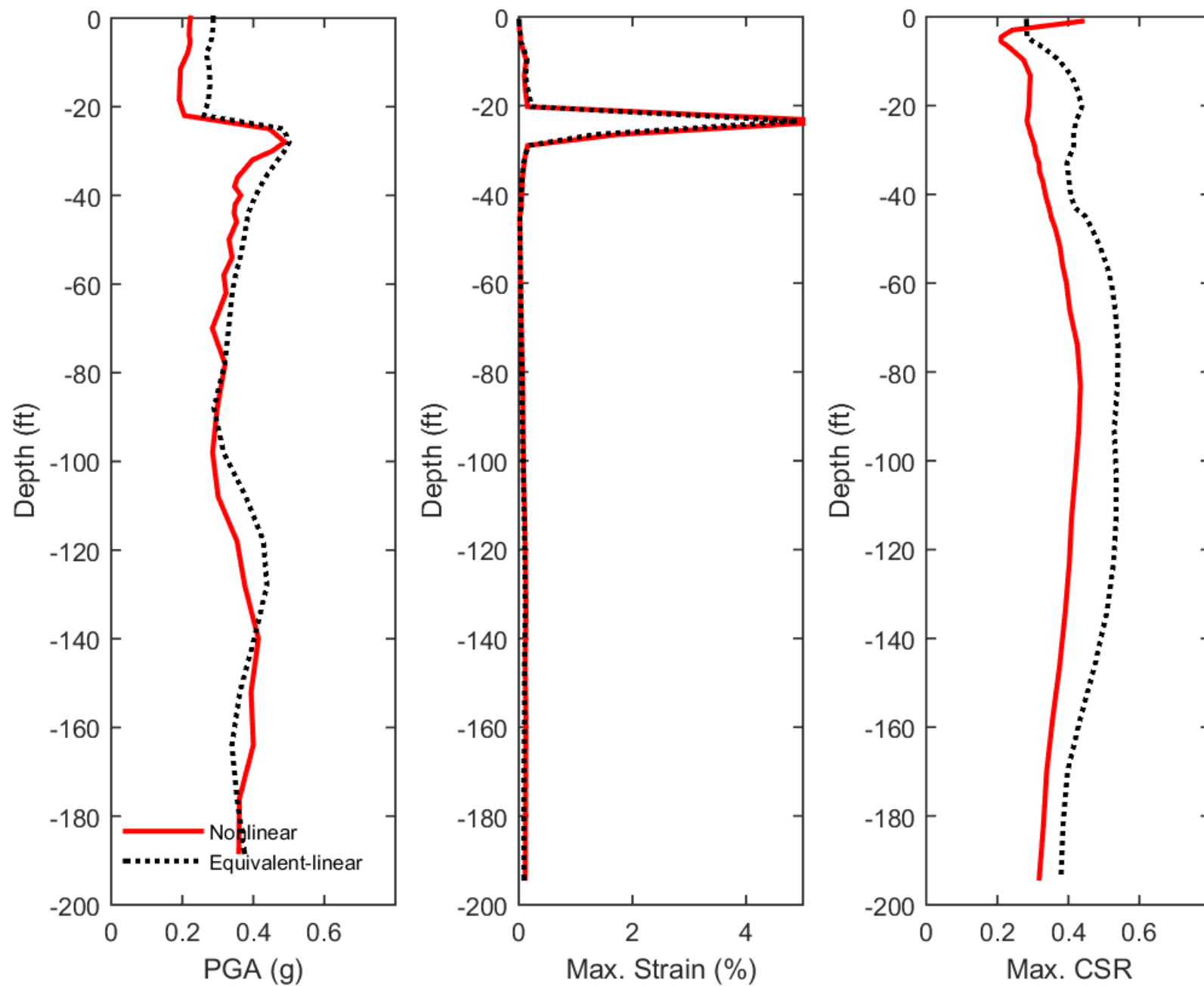
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5

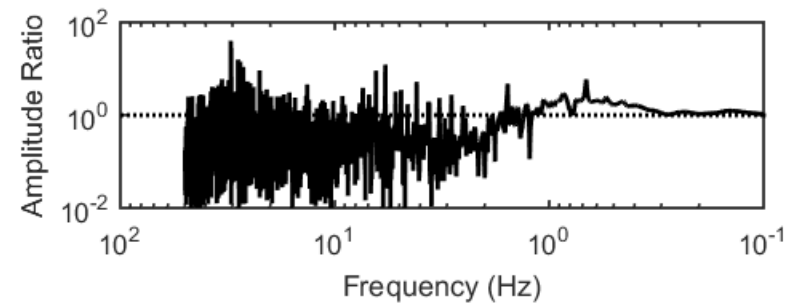
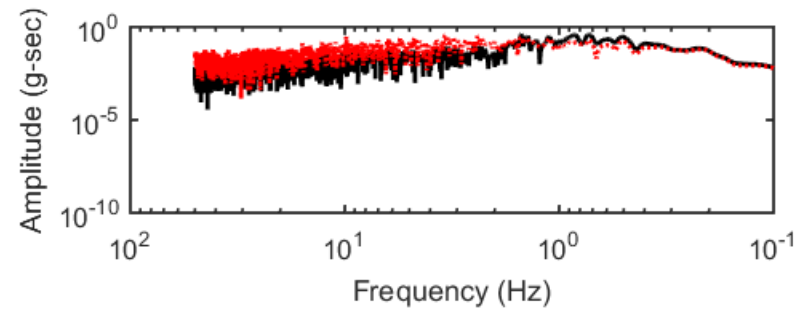
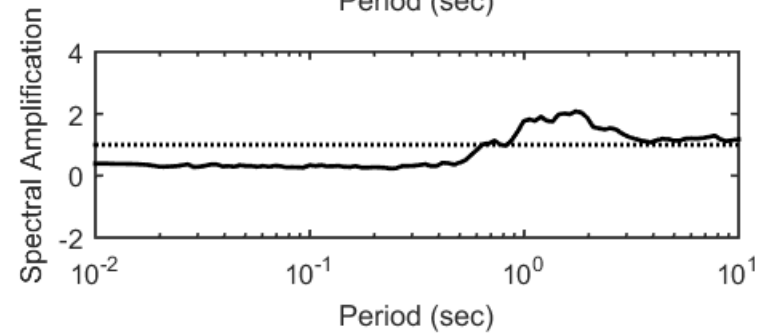
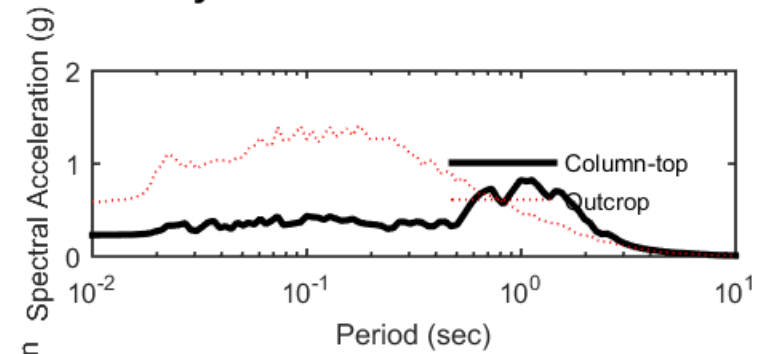
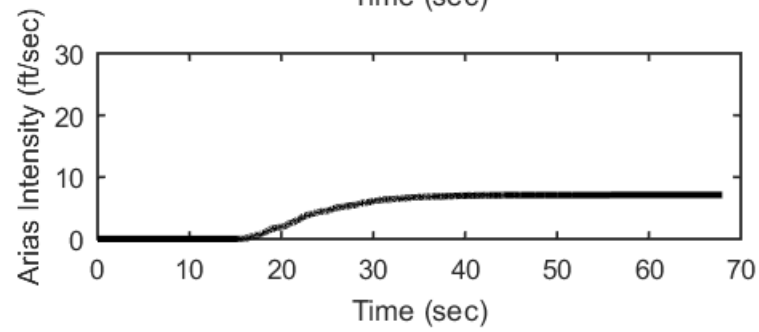
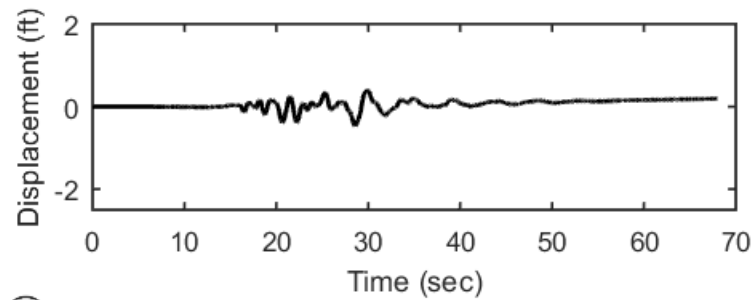
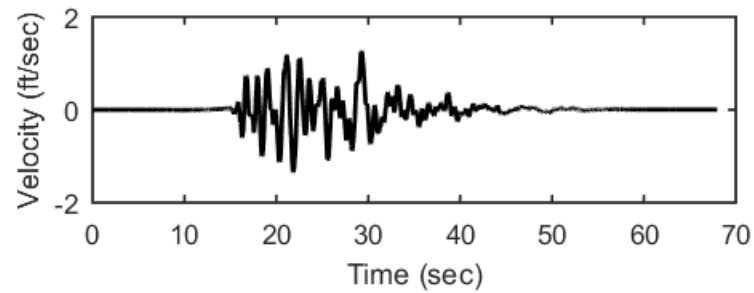
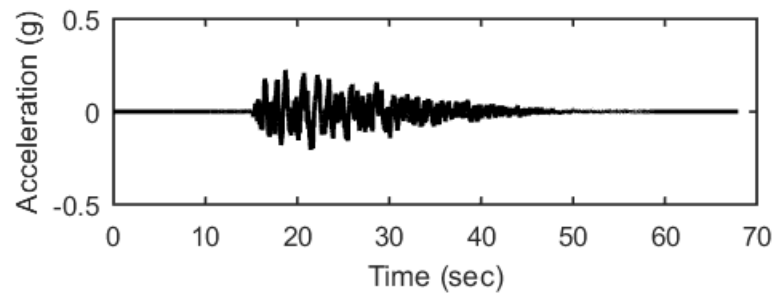


### Profile outputs for Motion: SEE5

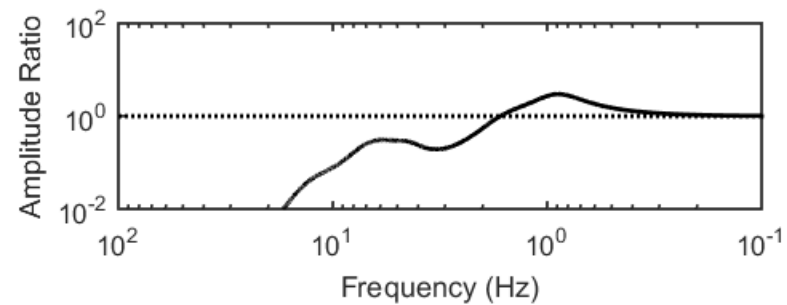
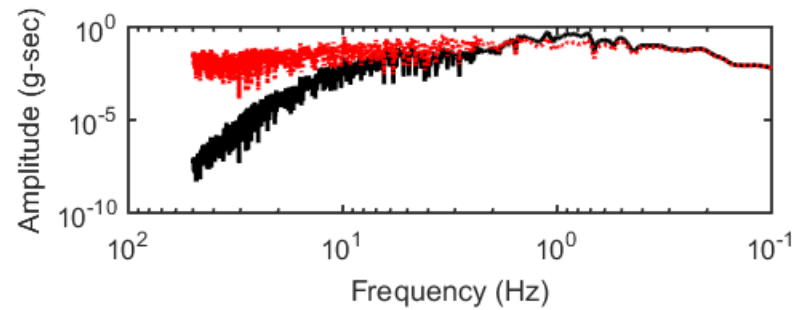
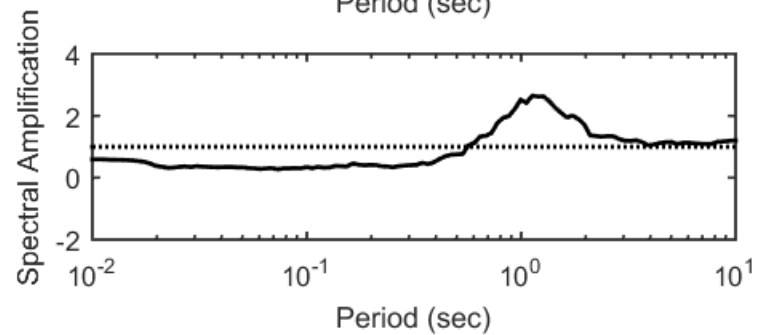
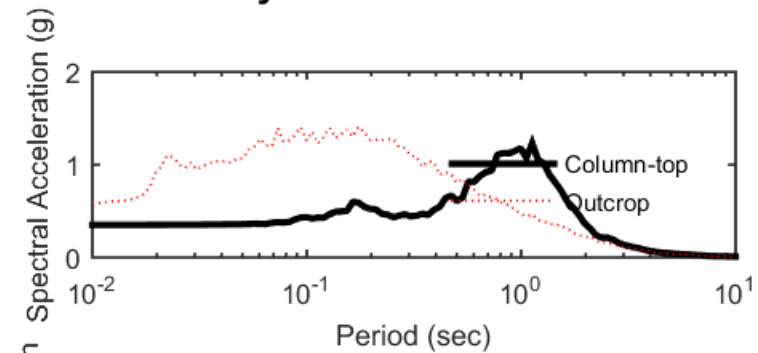
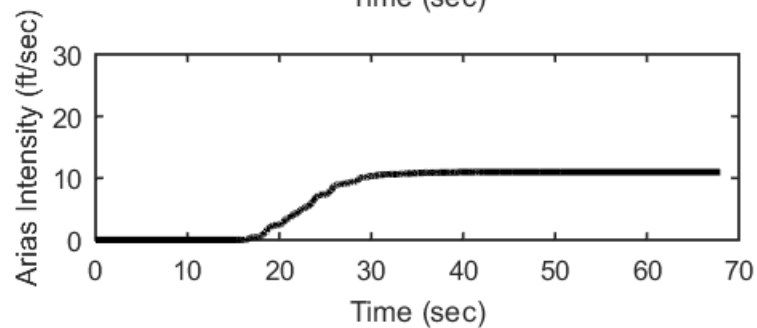
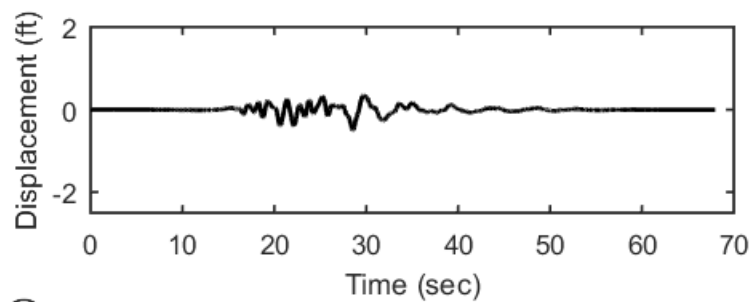
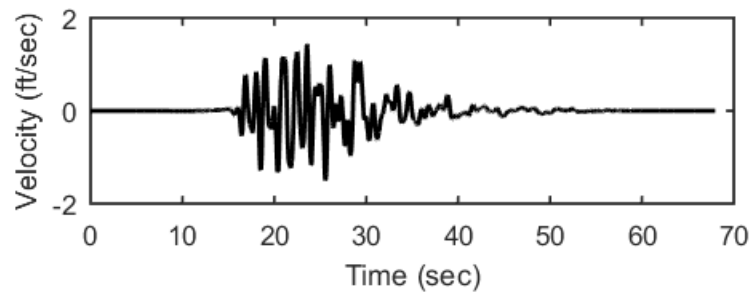
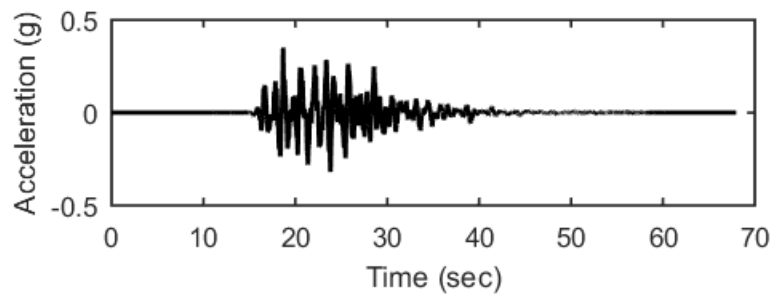




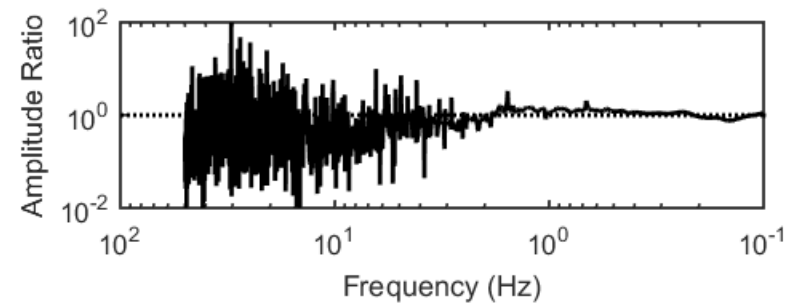
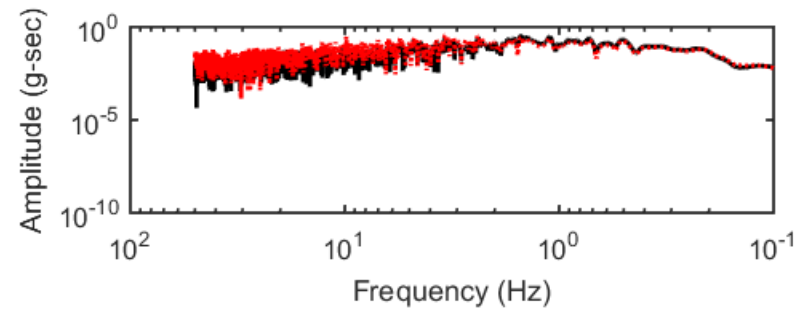
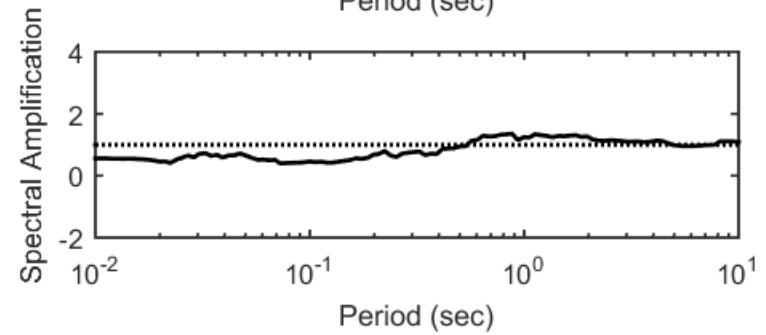
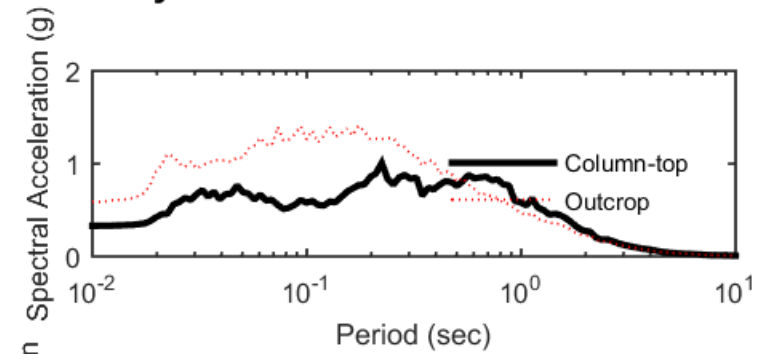
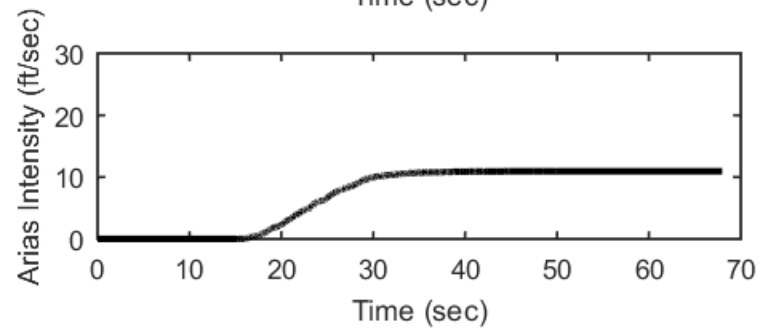
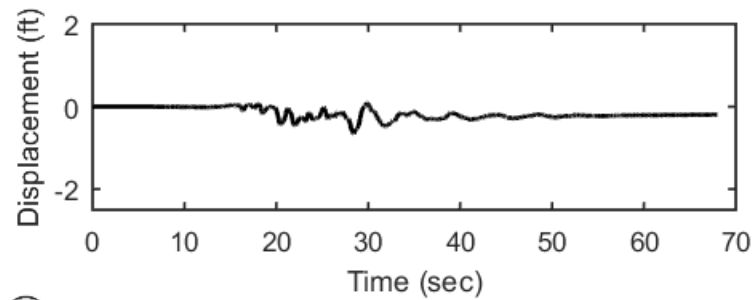
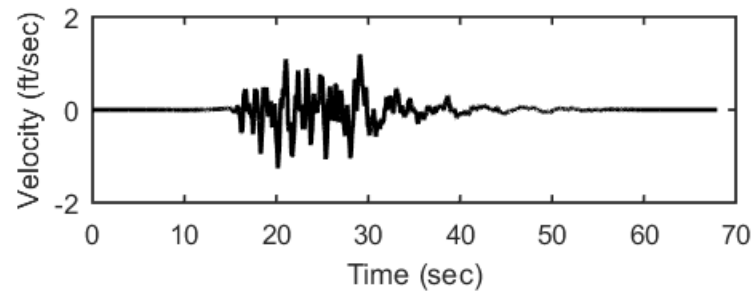
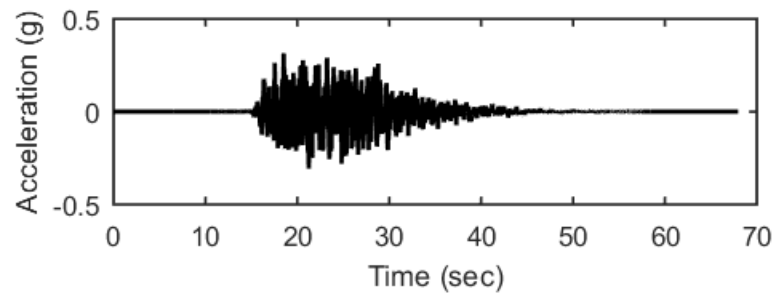
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



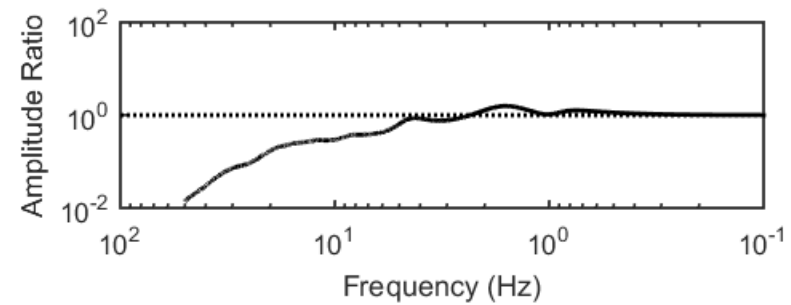
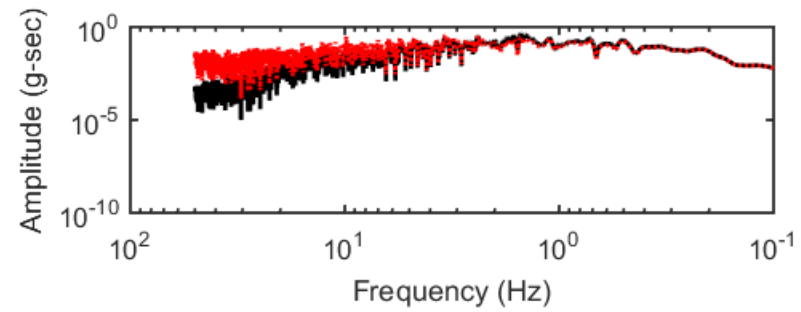
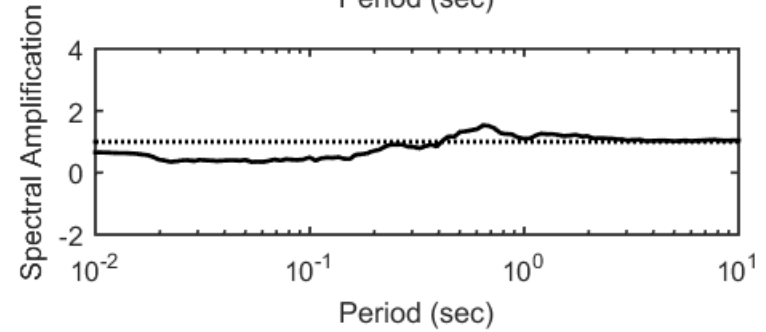
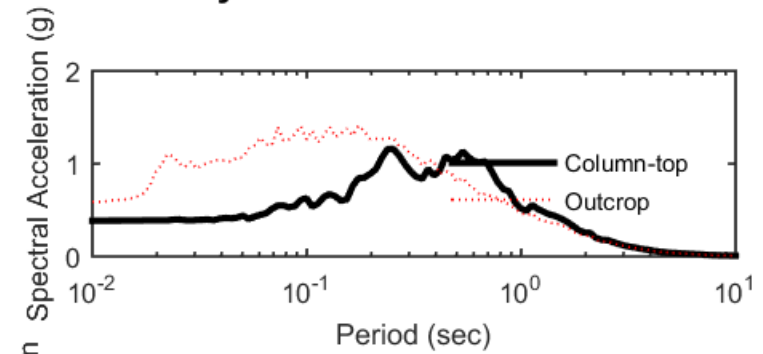
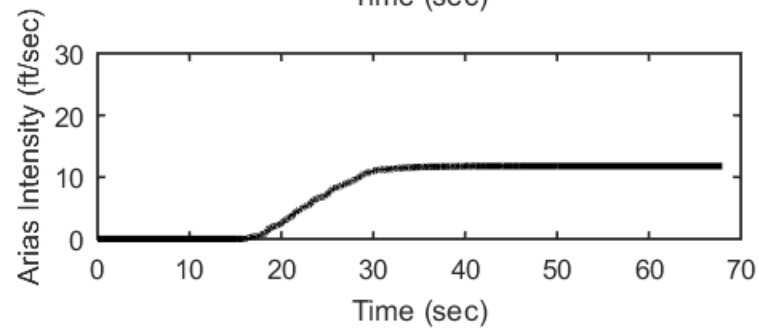
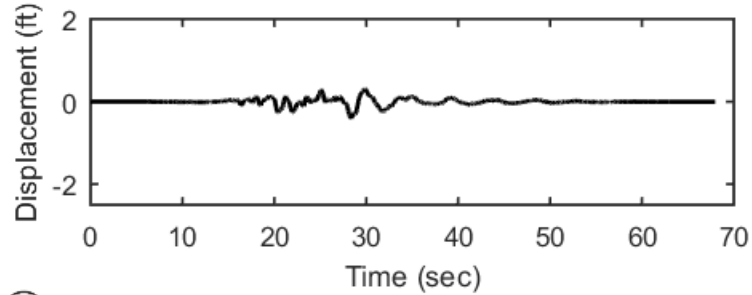
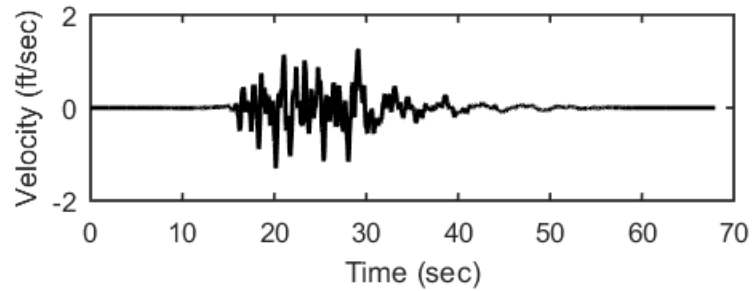
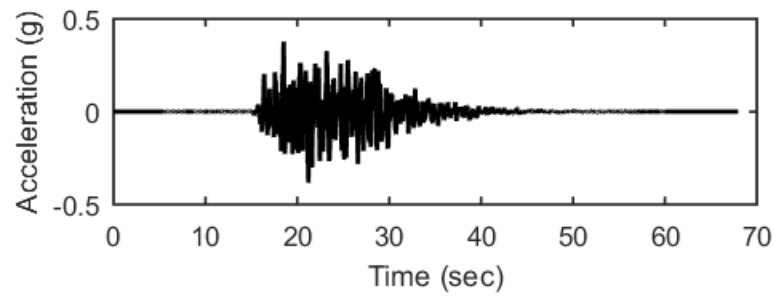
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



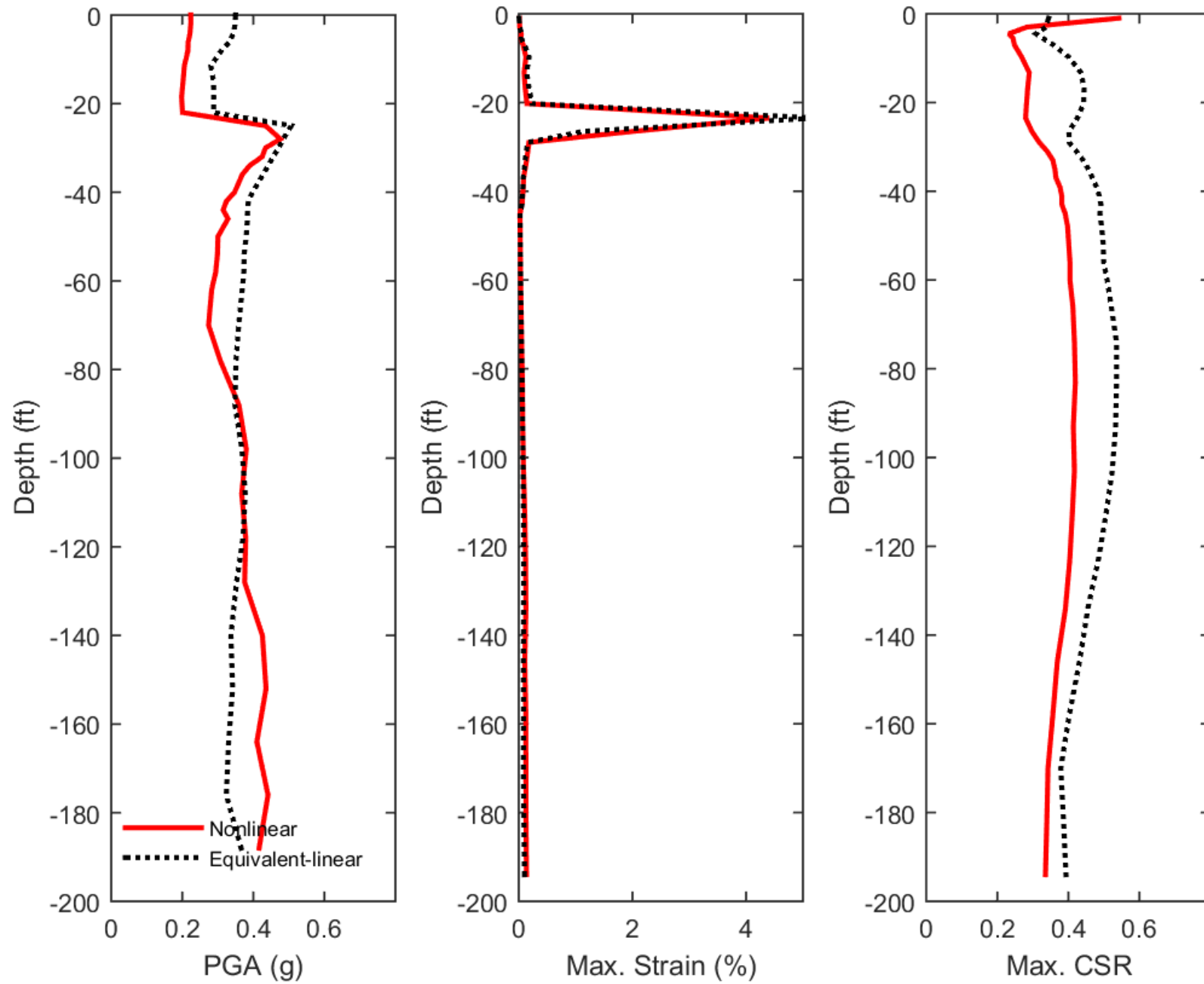
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



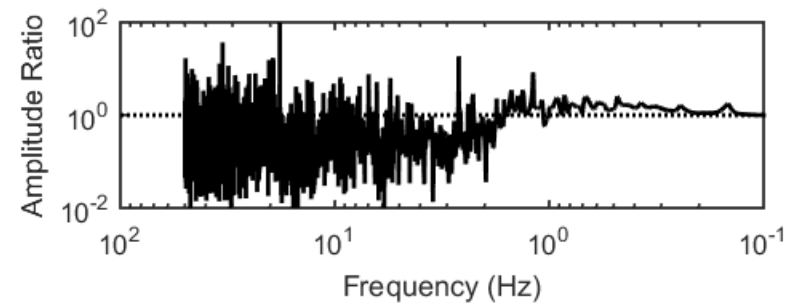
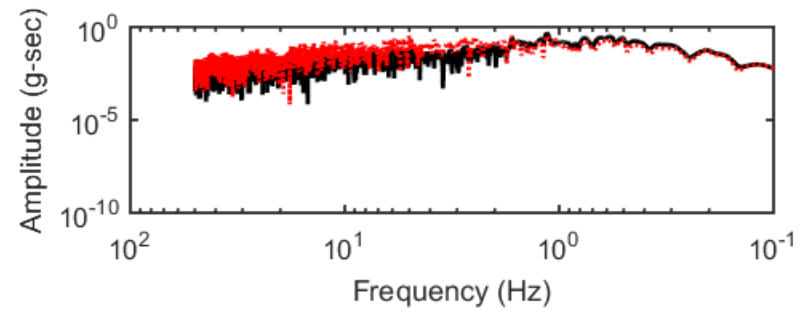
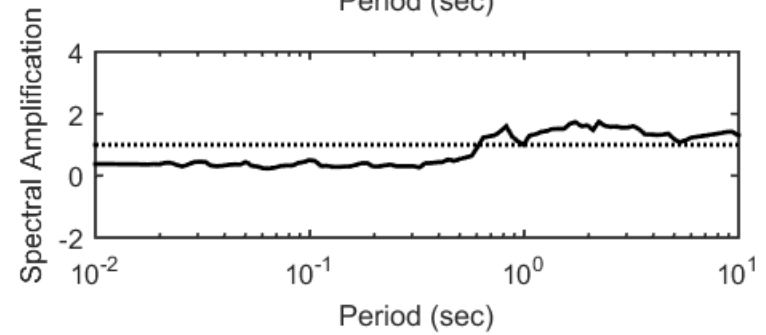
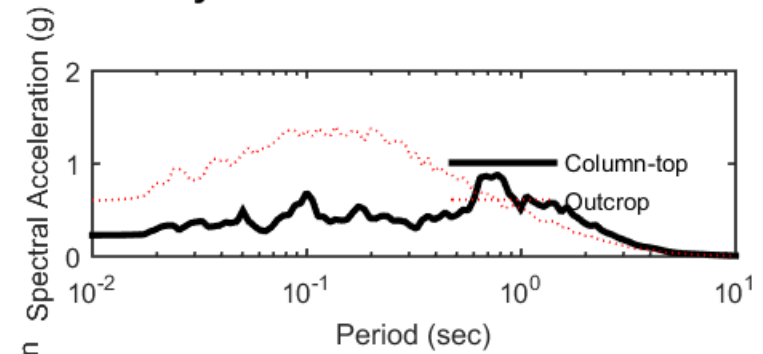
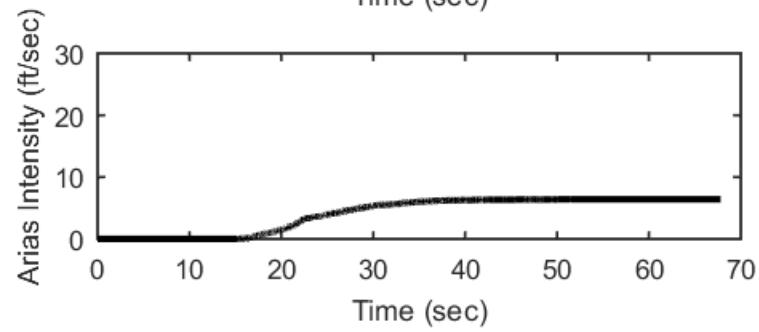
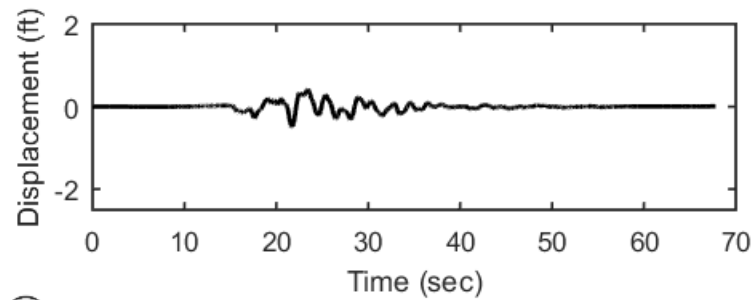
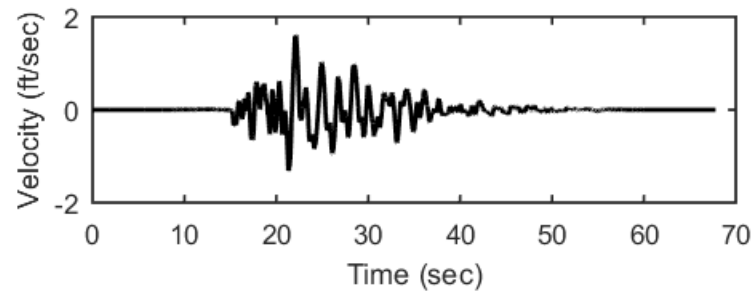
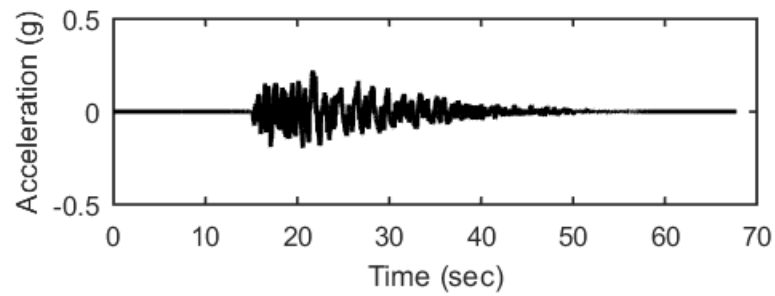
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



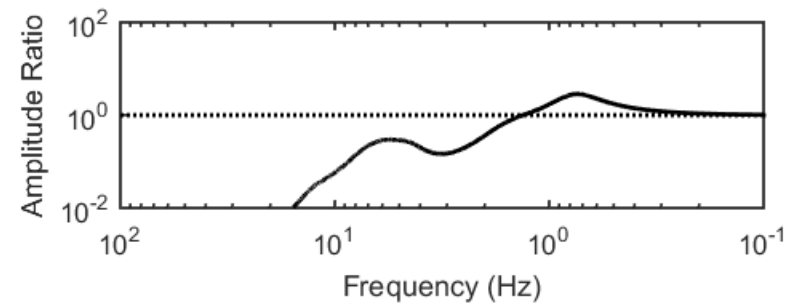
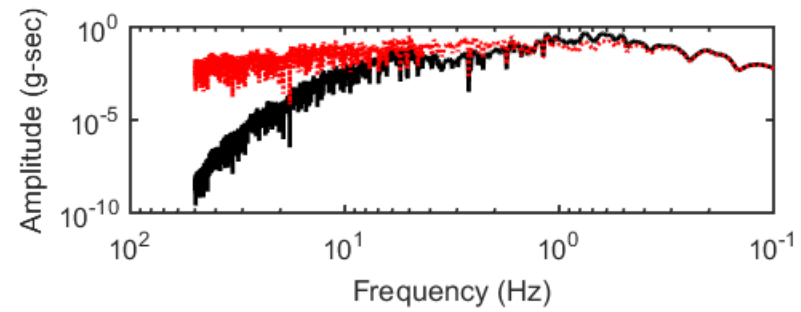
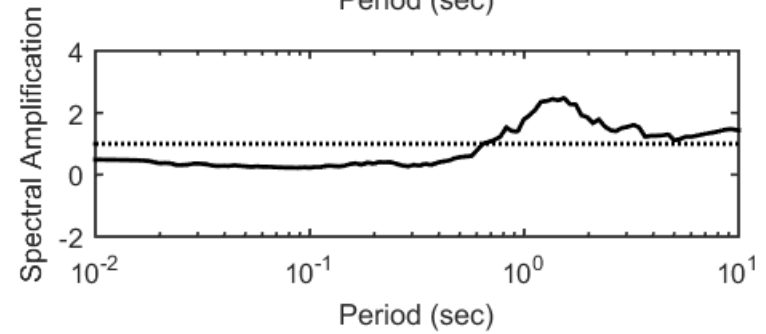
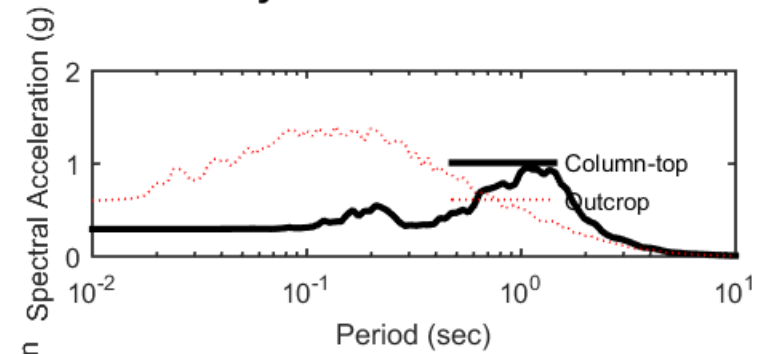
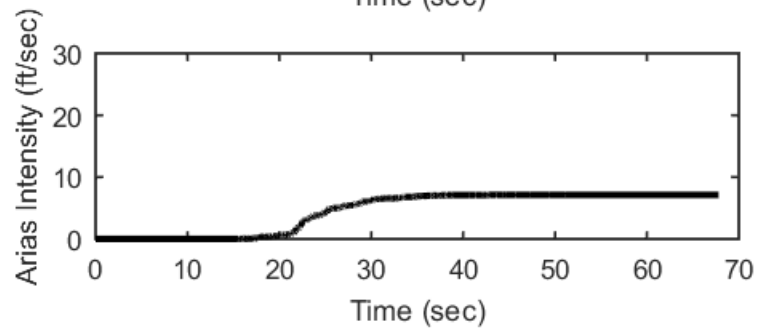
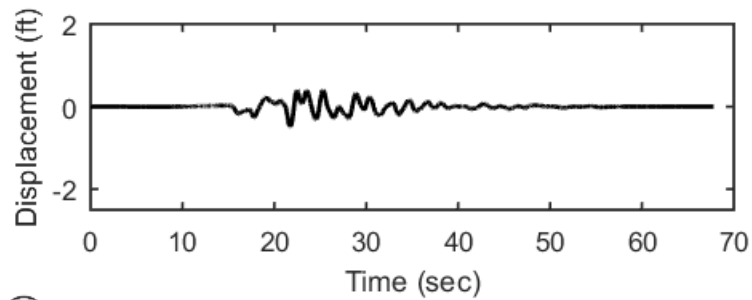
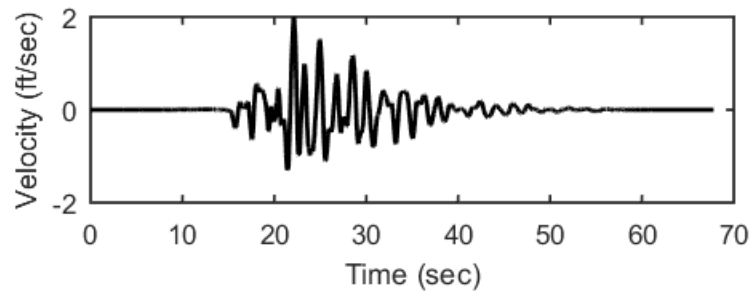
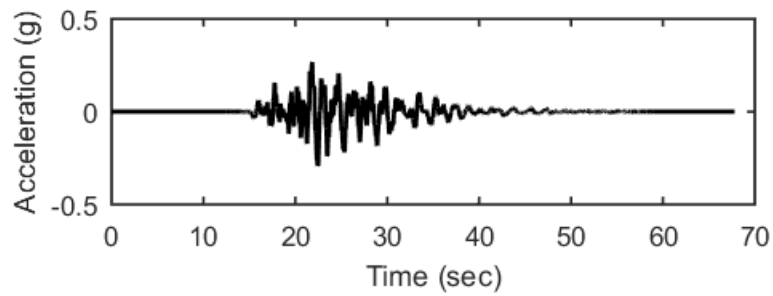
### Profile outputs for Motion: SEE6



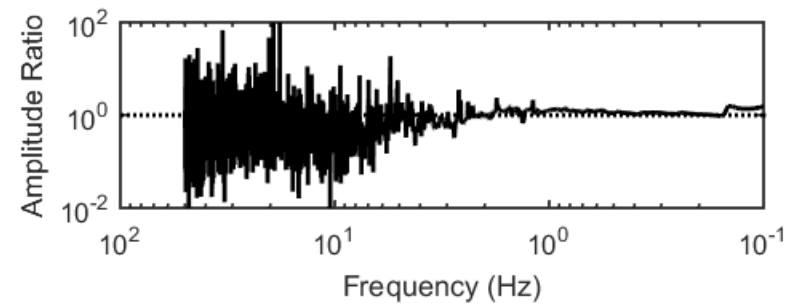
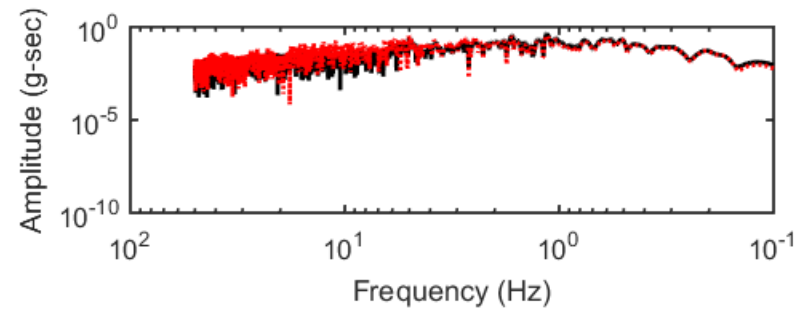
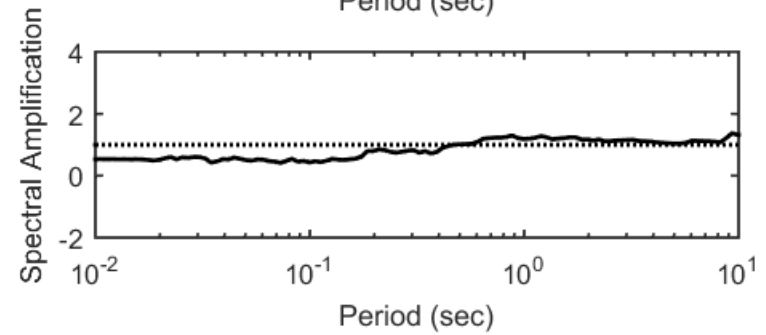
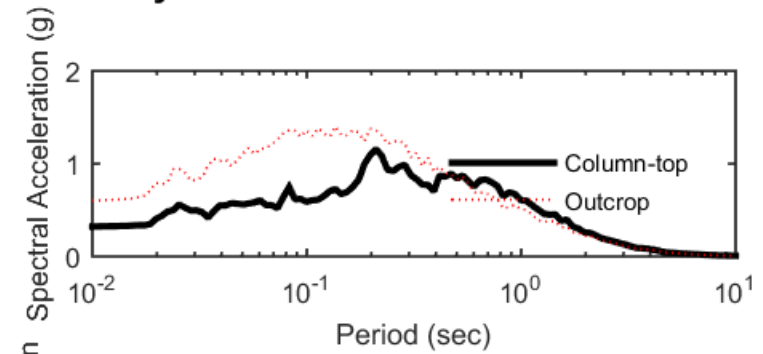
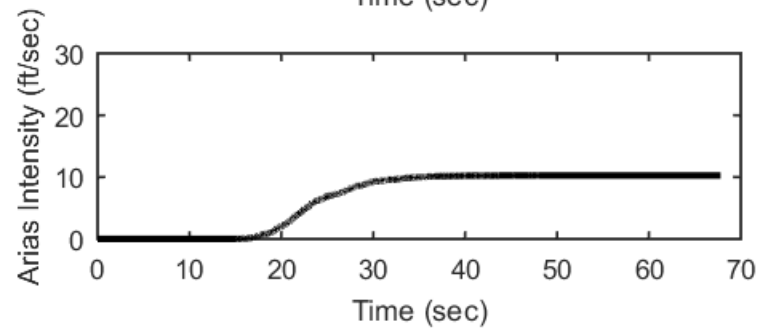
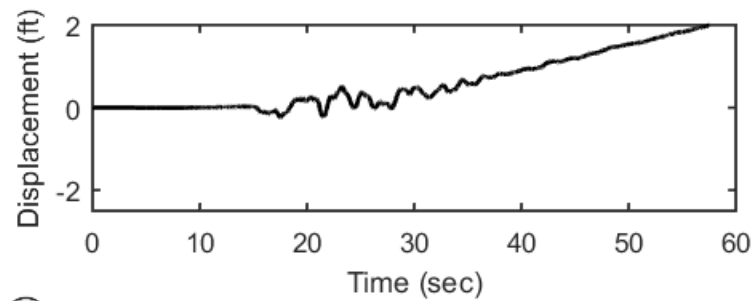
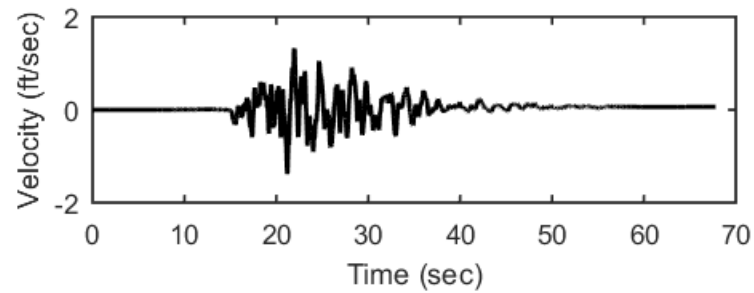
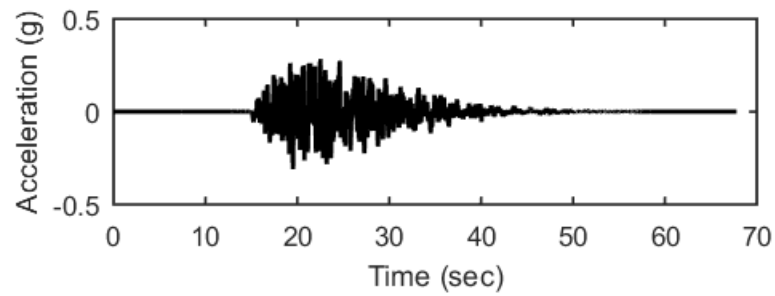
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7

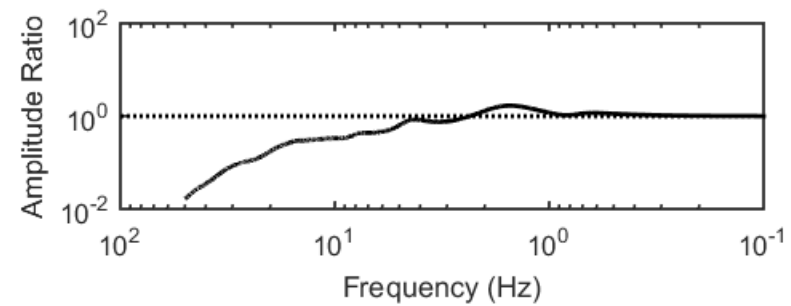
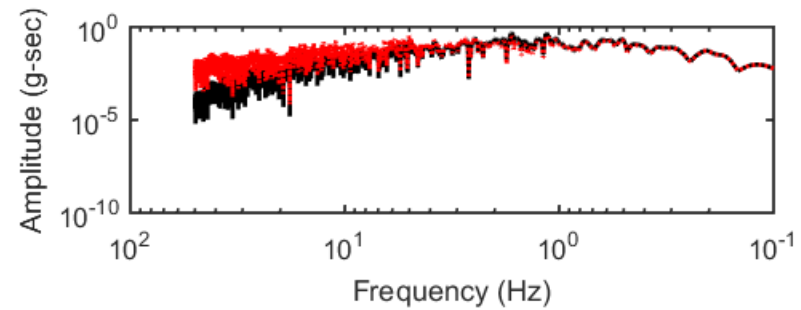
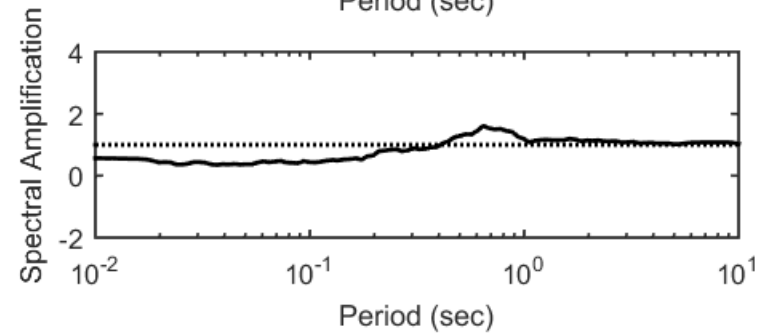
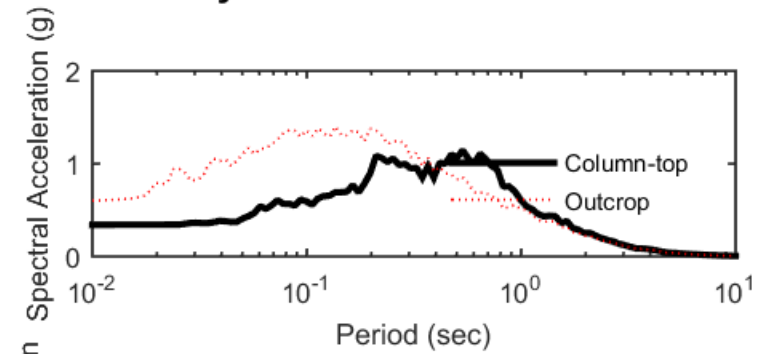
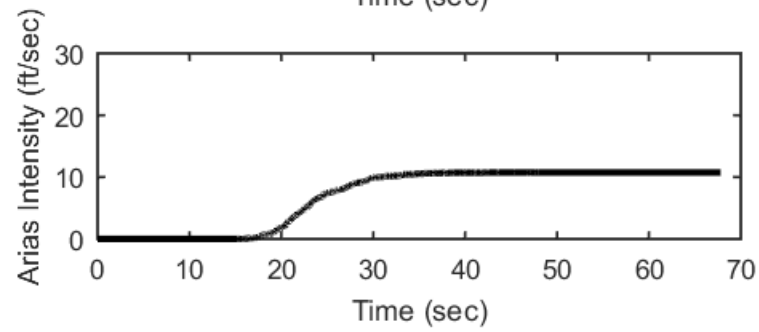
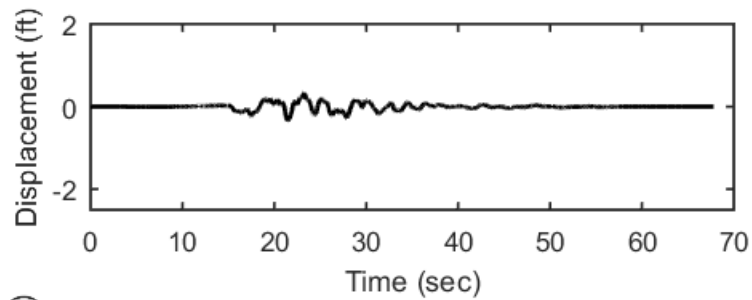
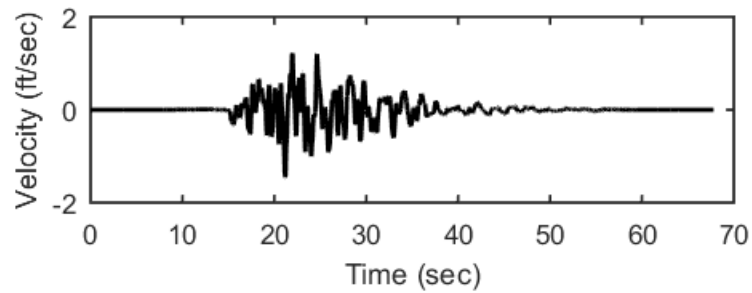
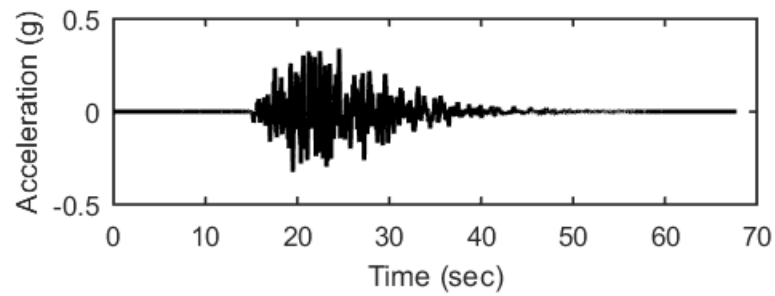


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7

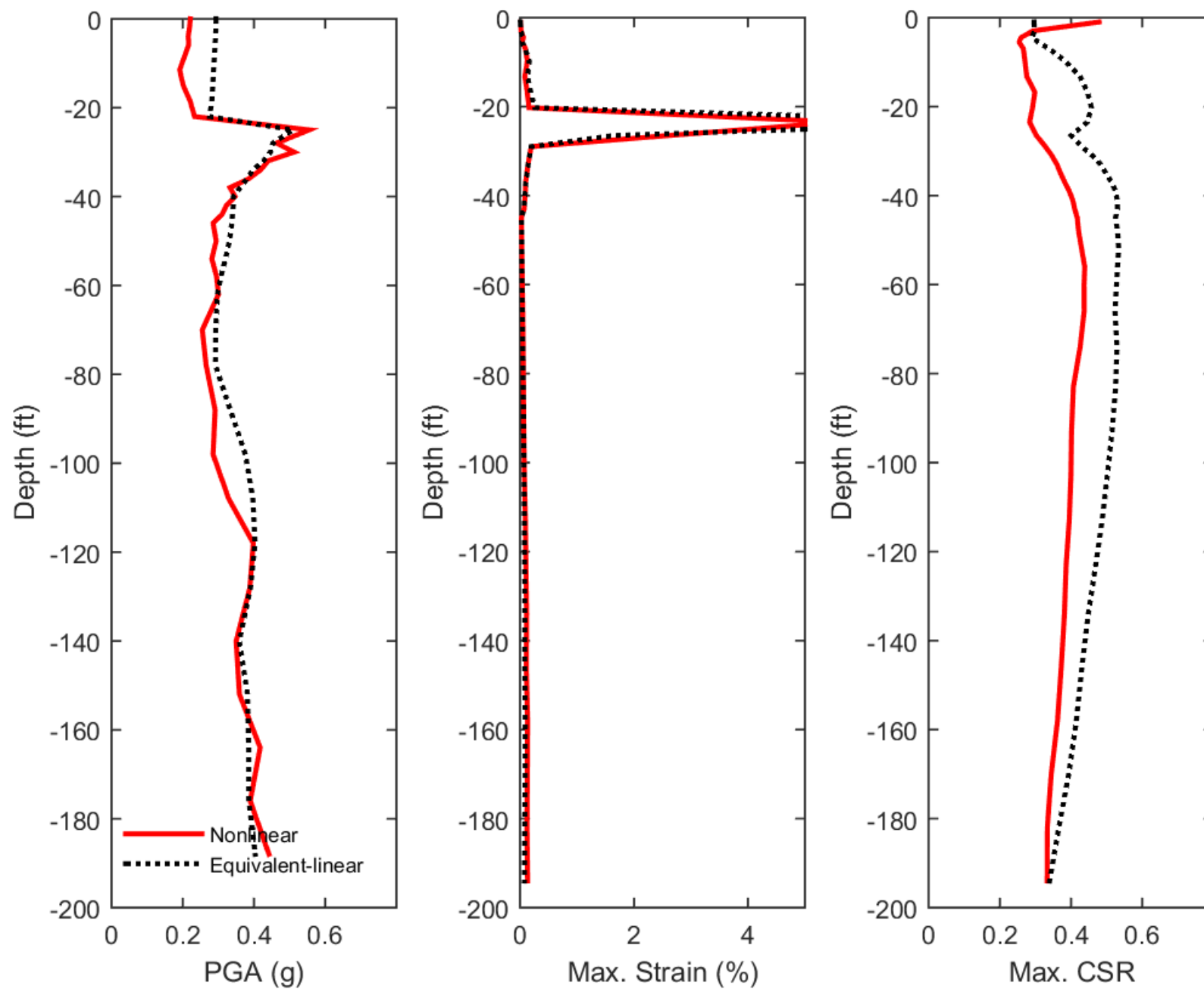




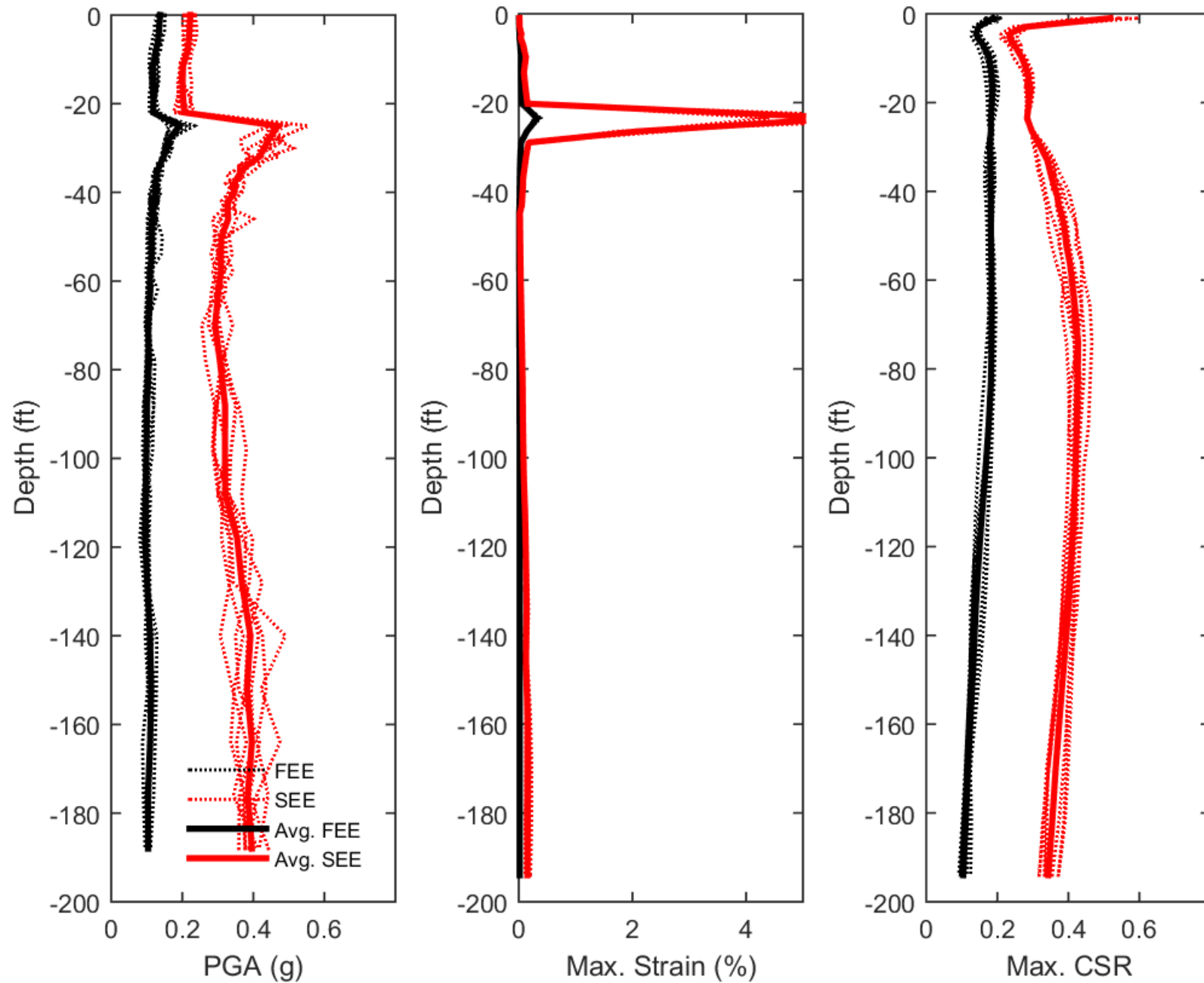
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



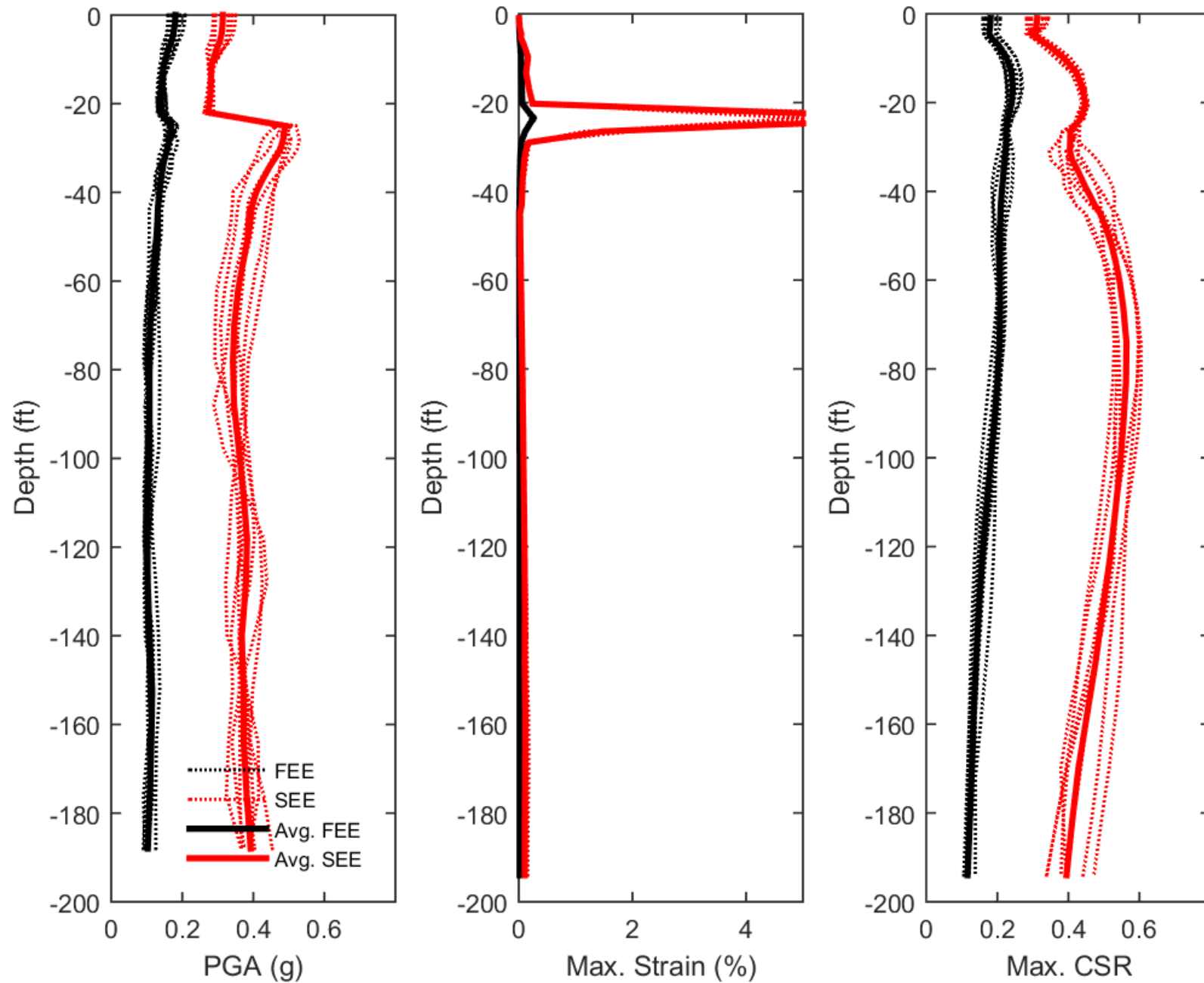
### Profile outputs for Motion: SEE7



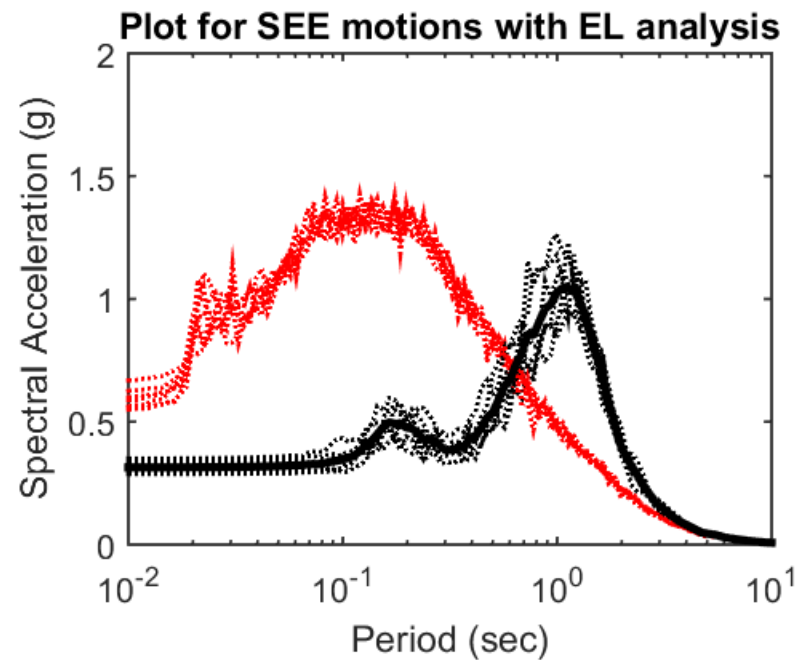
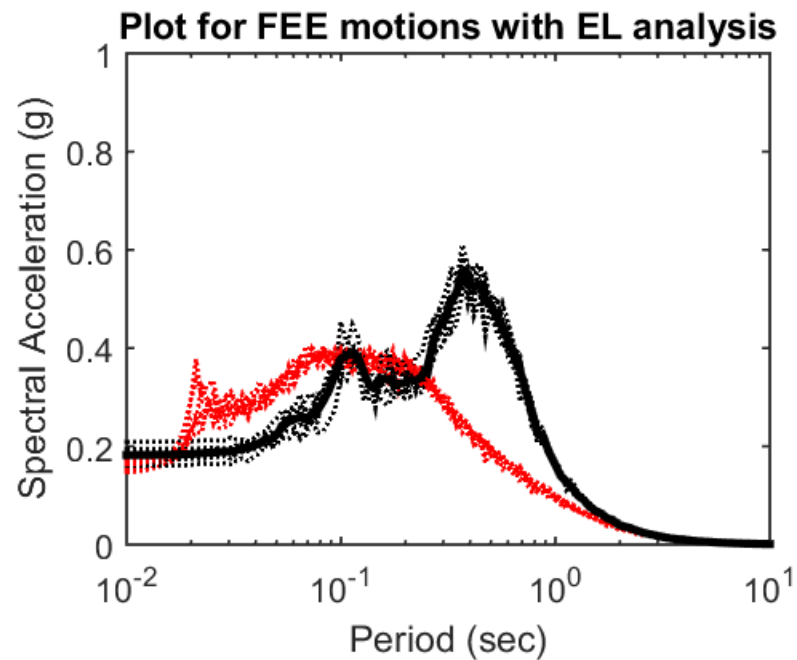
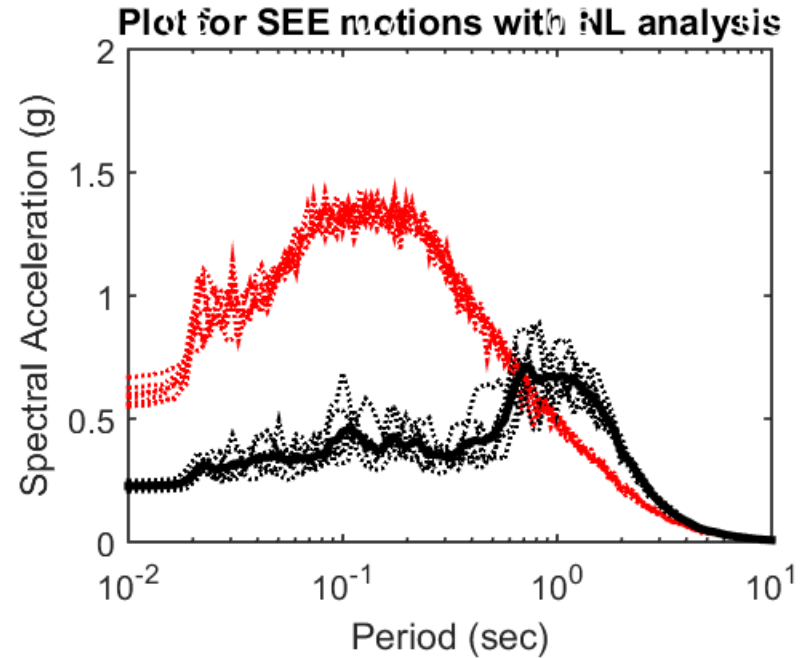
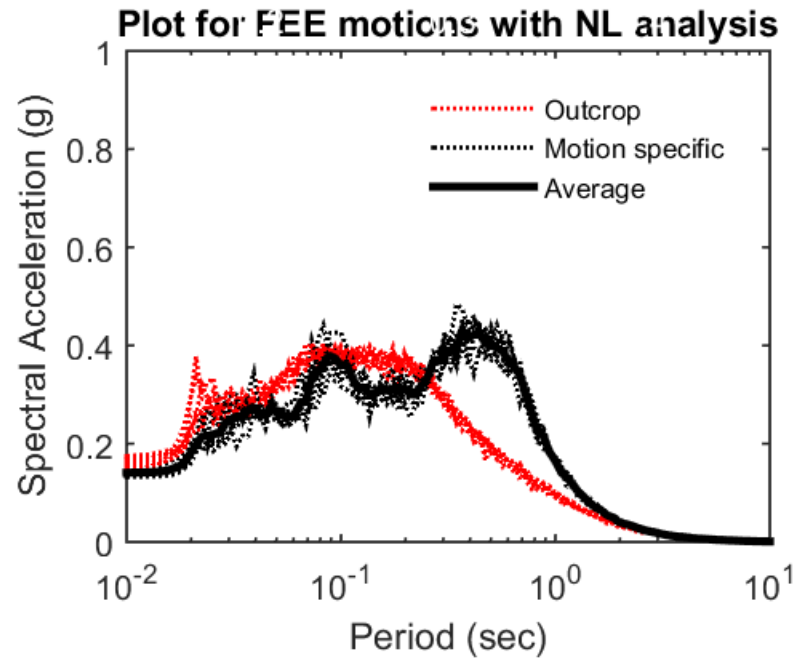
## Summary of the profile outputs for Nonlinear analysis



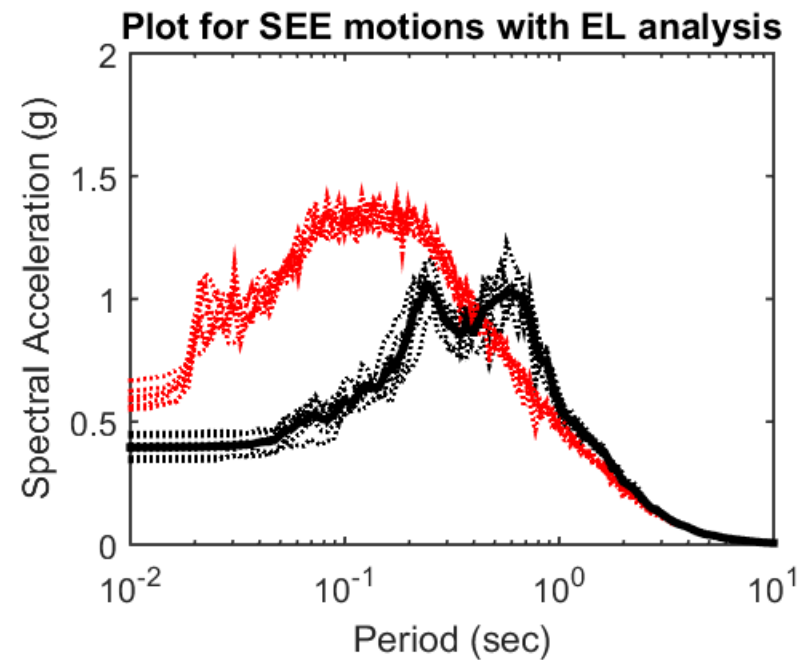
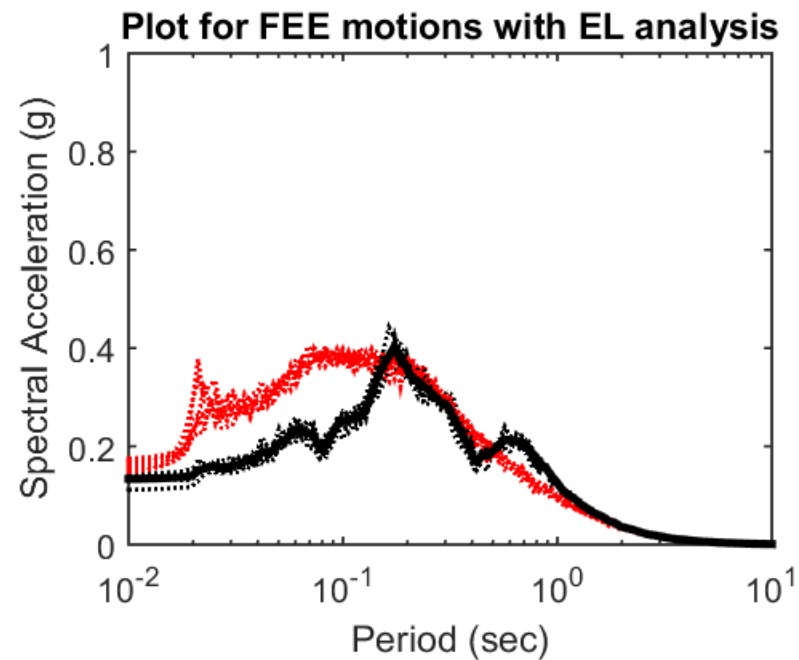
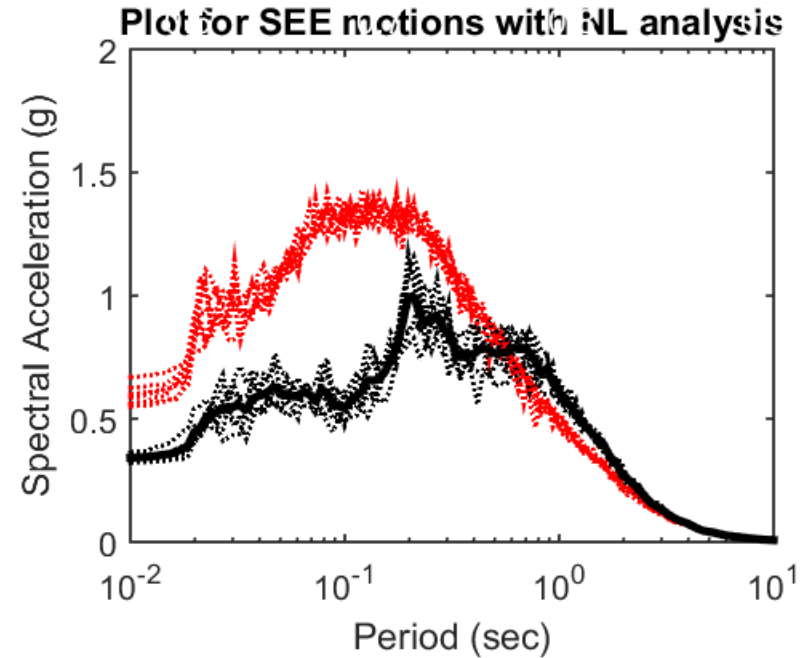
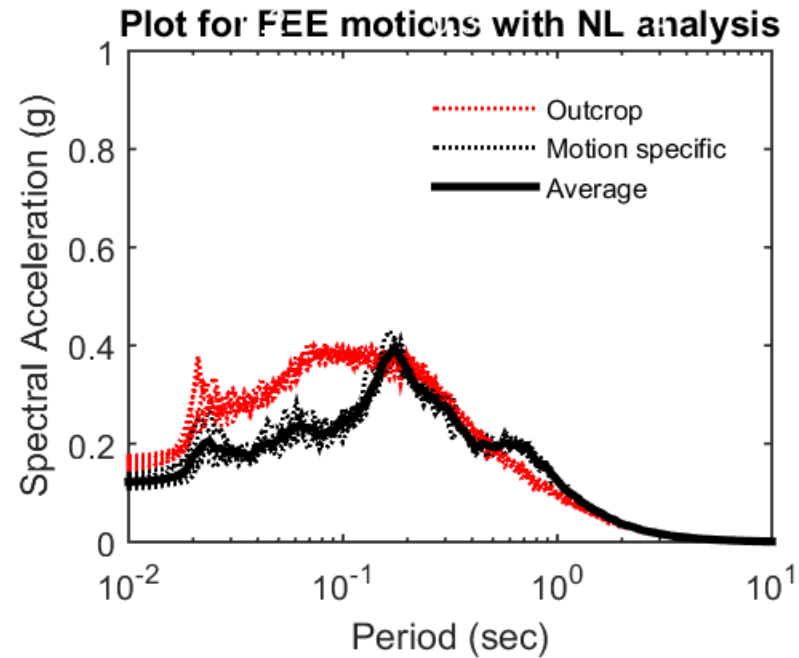
### Summary of the profile outputs for Equivalent-linear analysis



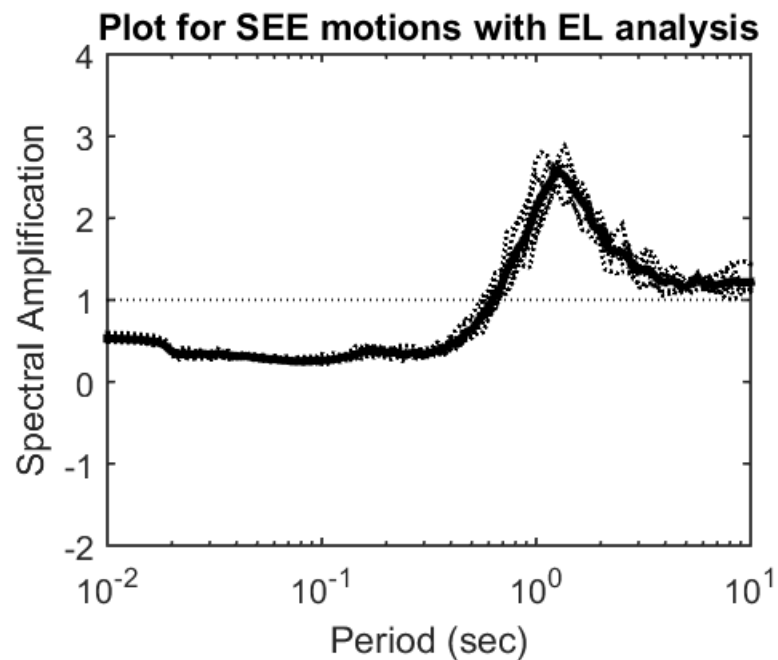
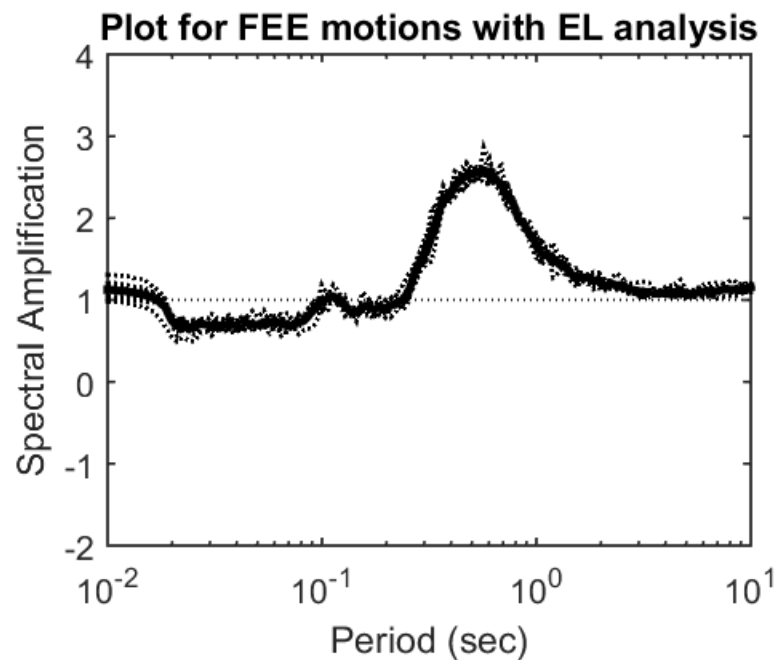
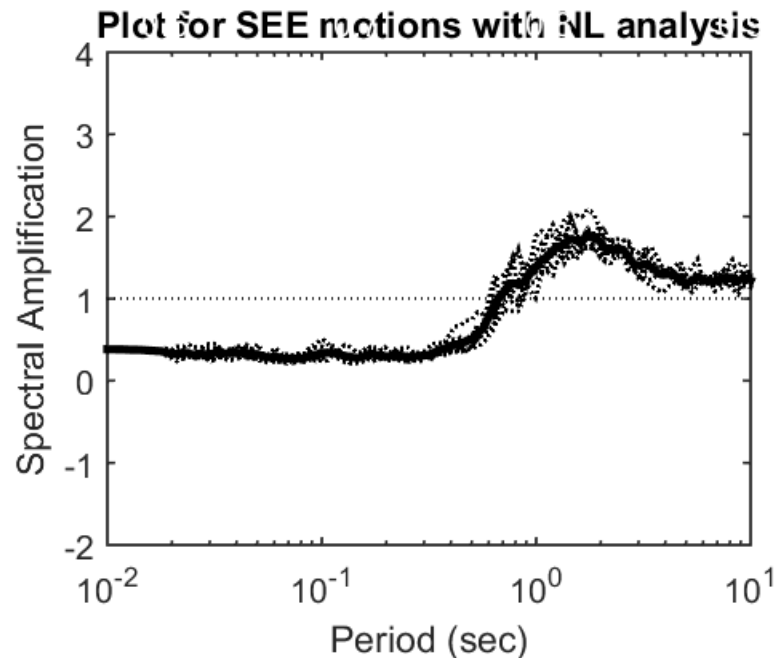
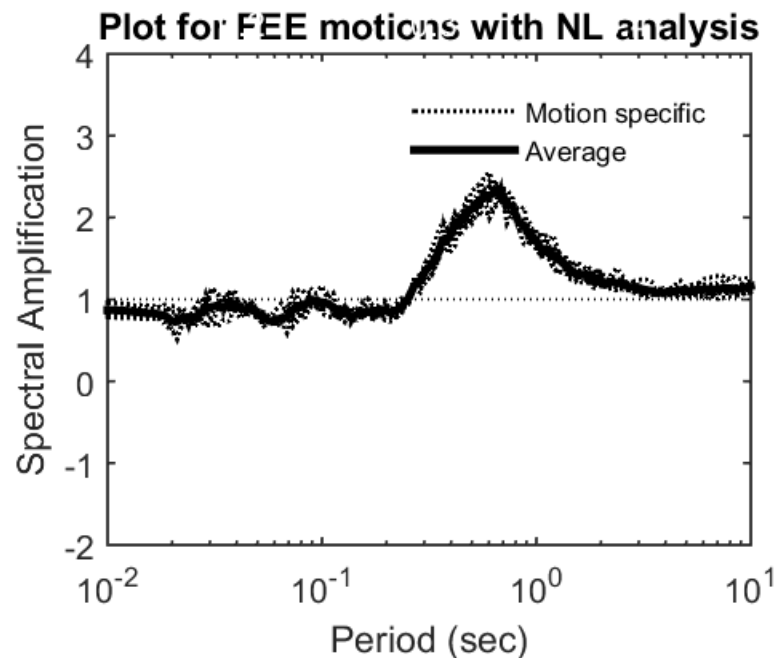
## Summary plots: RSA at ground surface



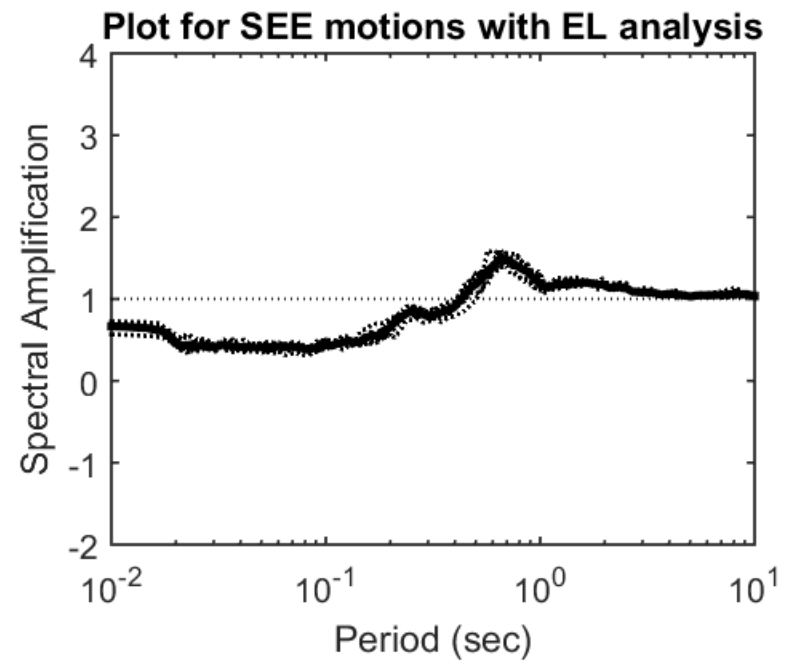
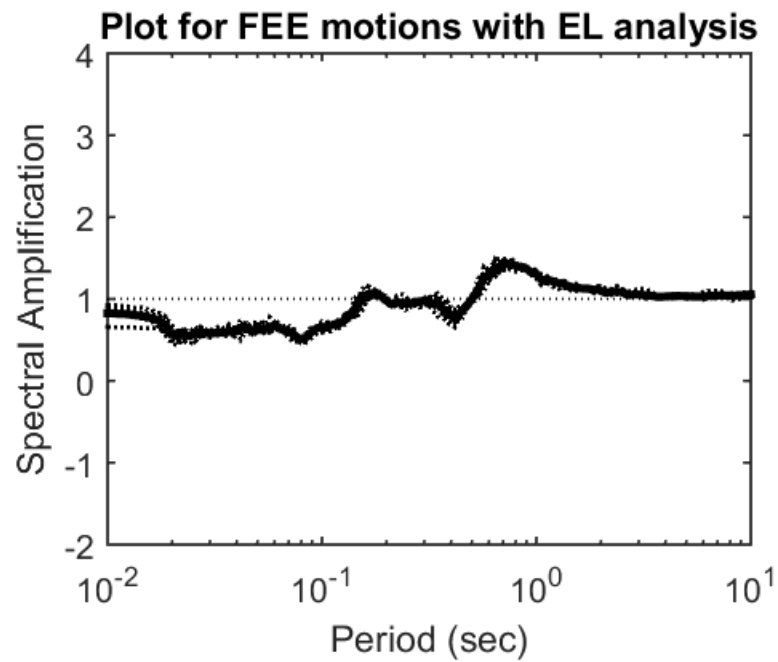
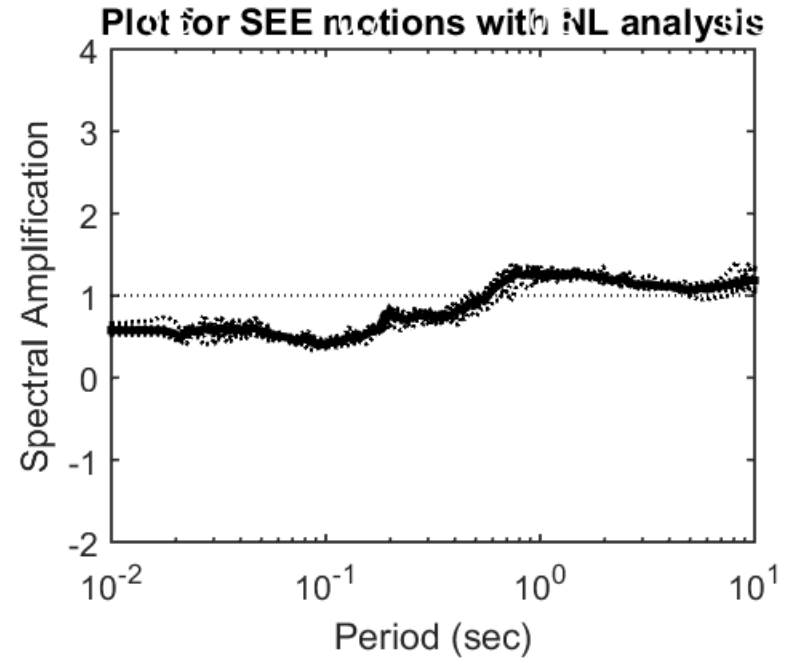
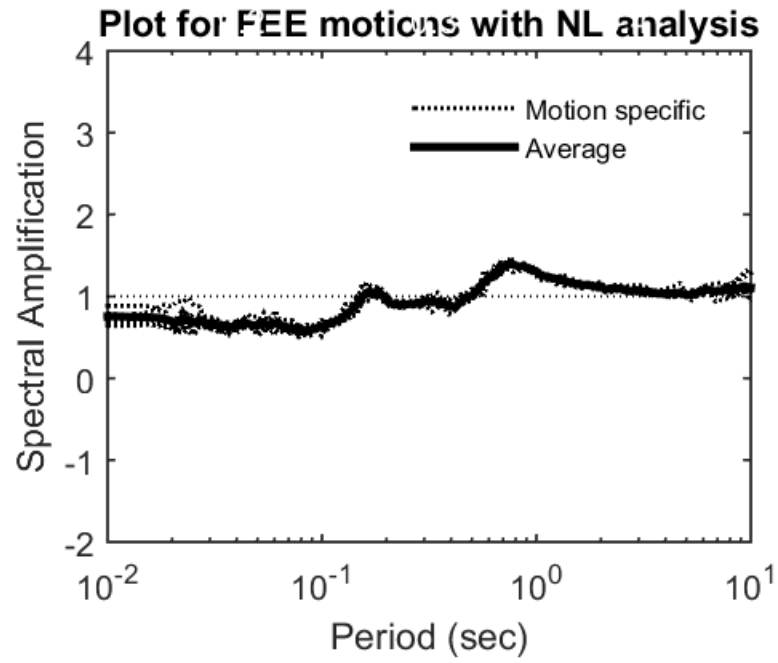
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



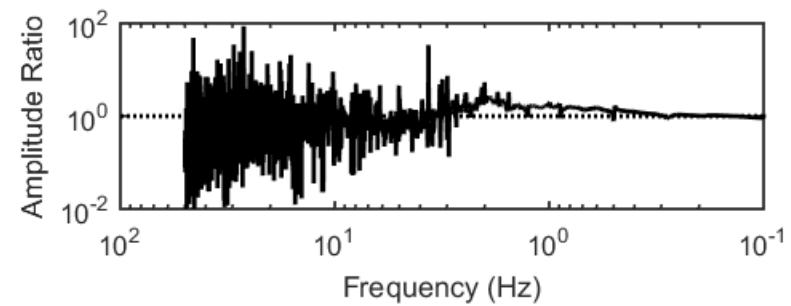
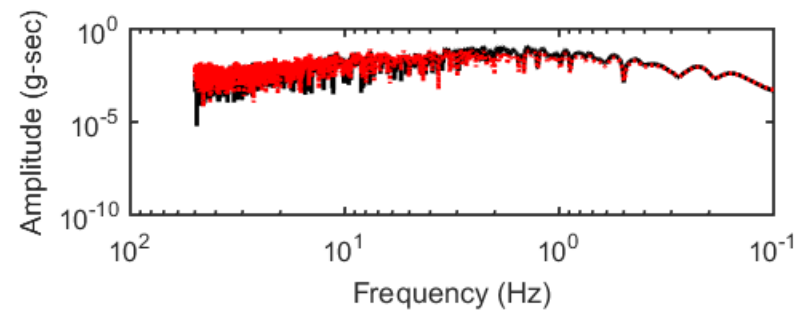
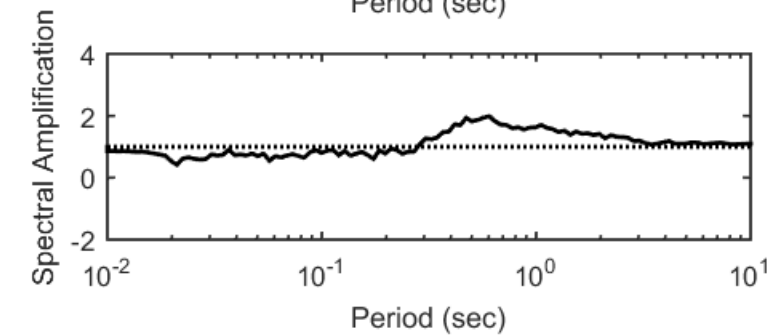
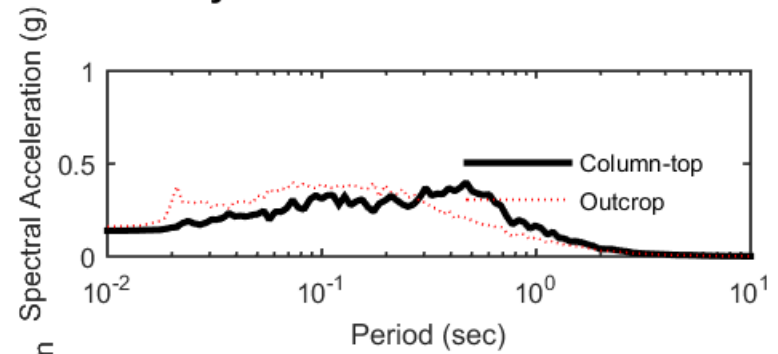
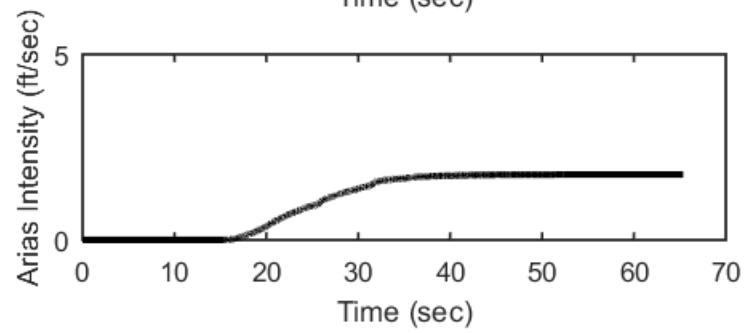
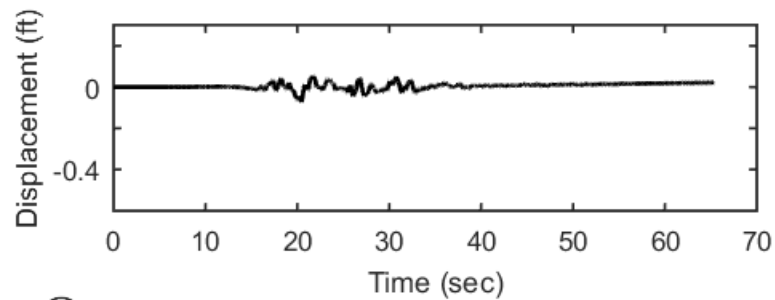
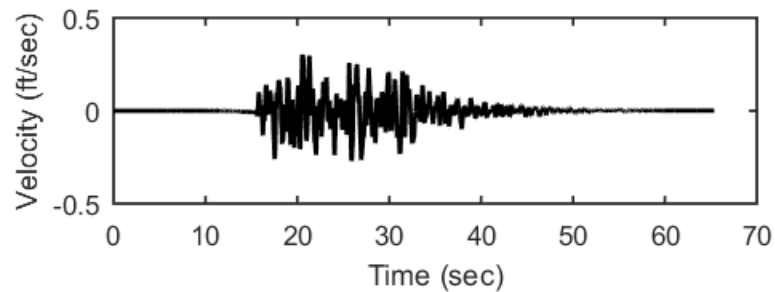
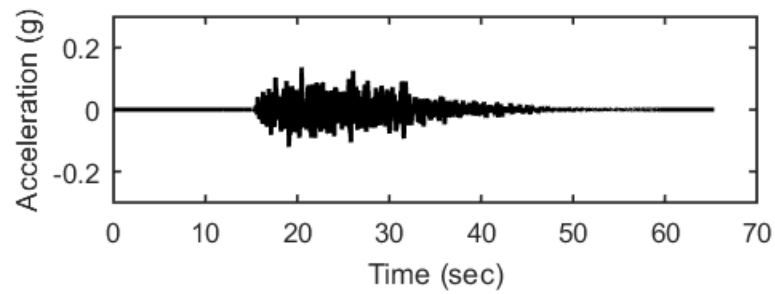
## Summary plots: Spectral amplification at top of Marl



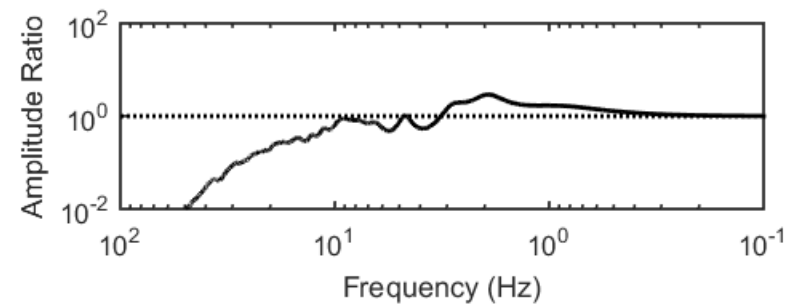
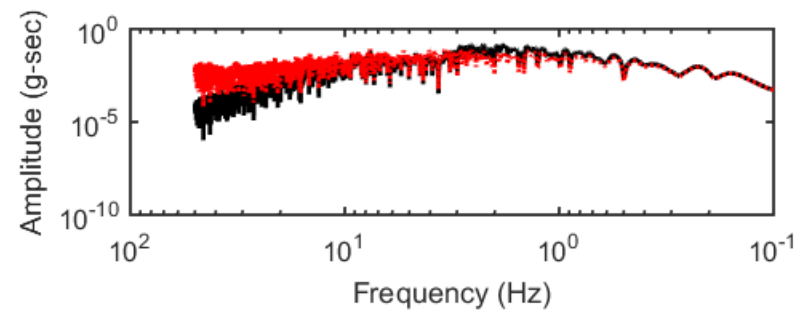
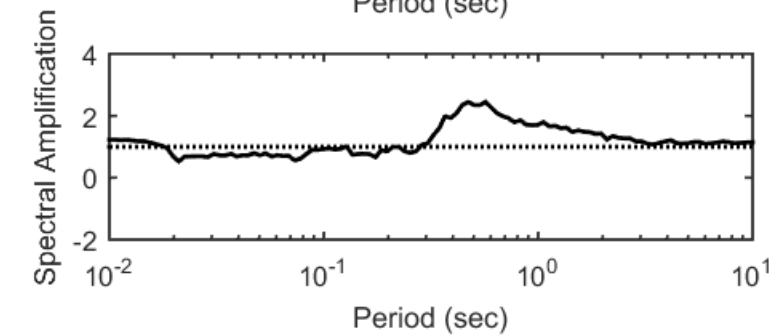
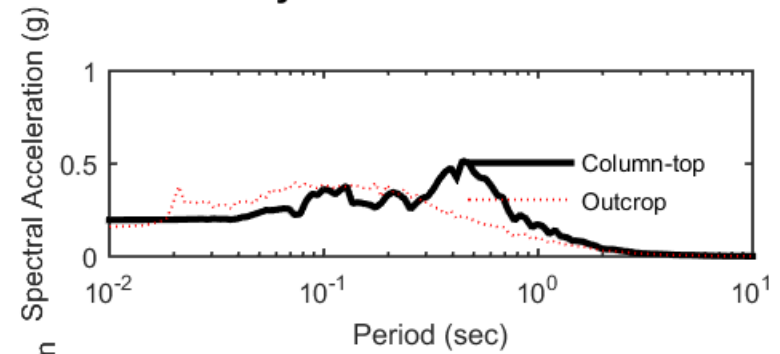
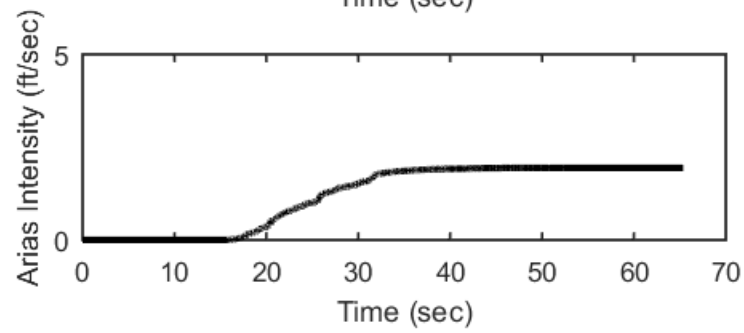
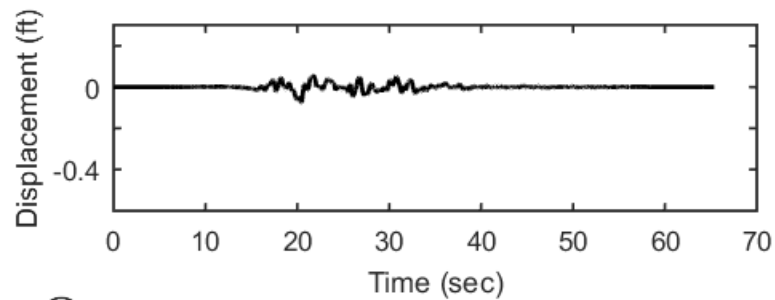
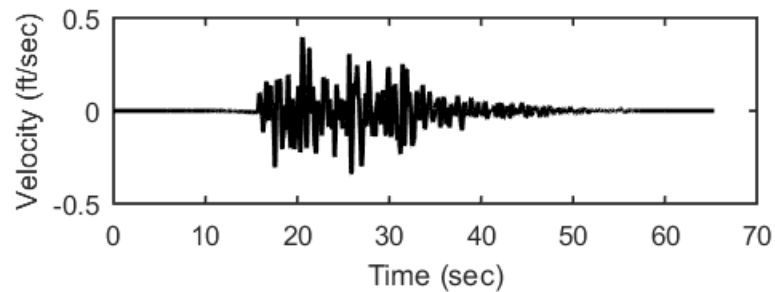
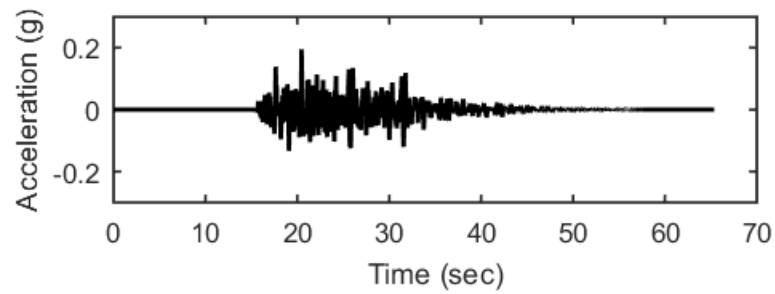


## **500 FT MODEL**

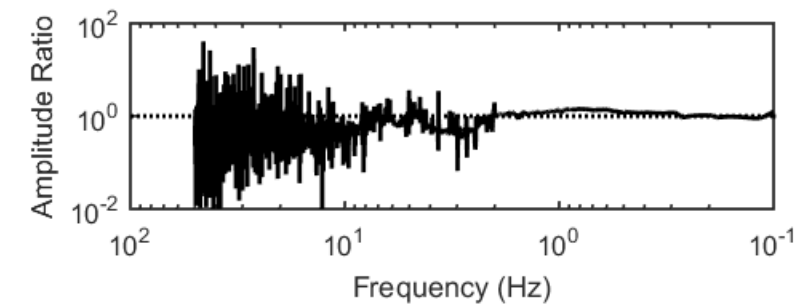
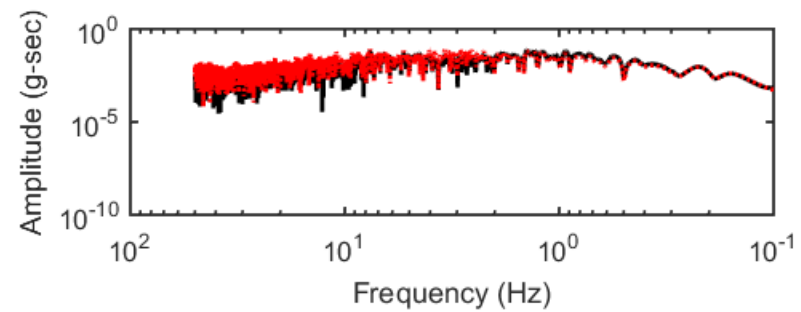
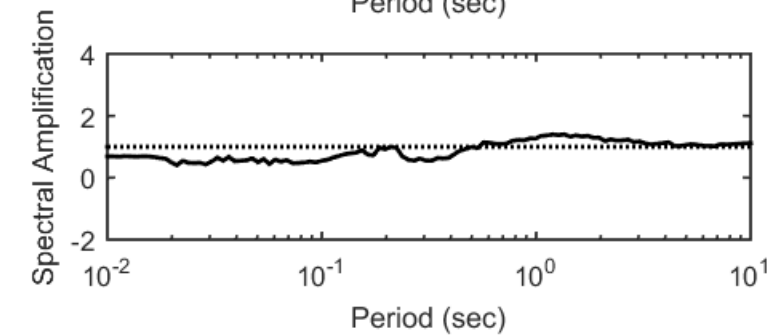
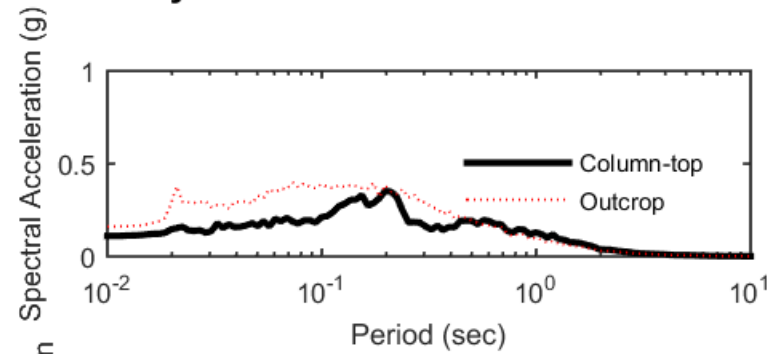
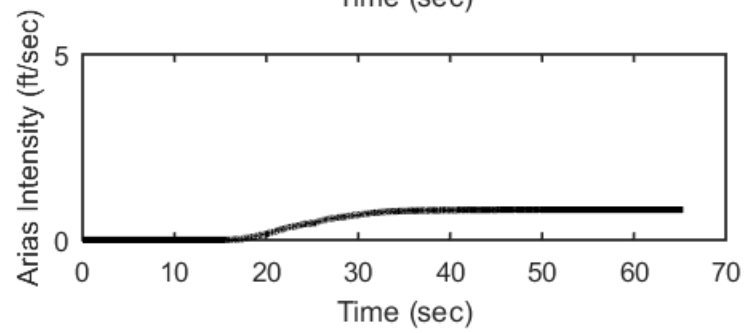
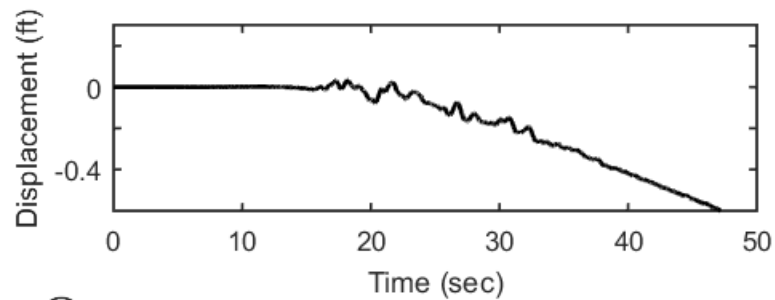
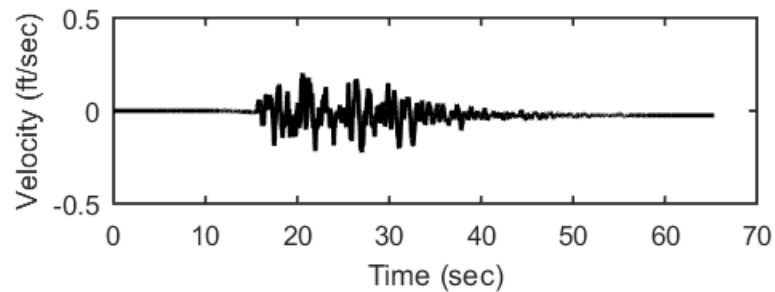
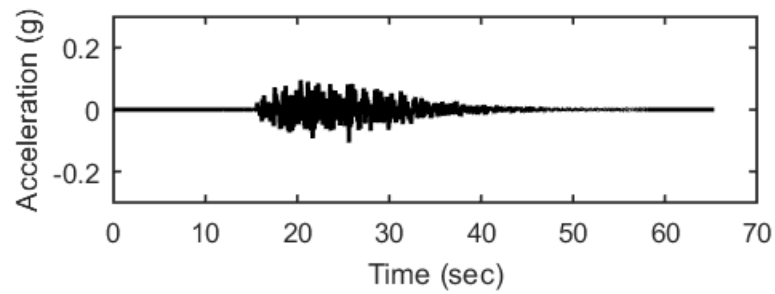
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



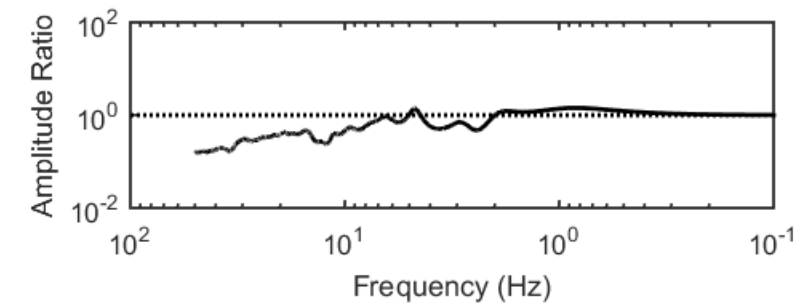
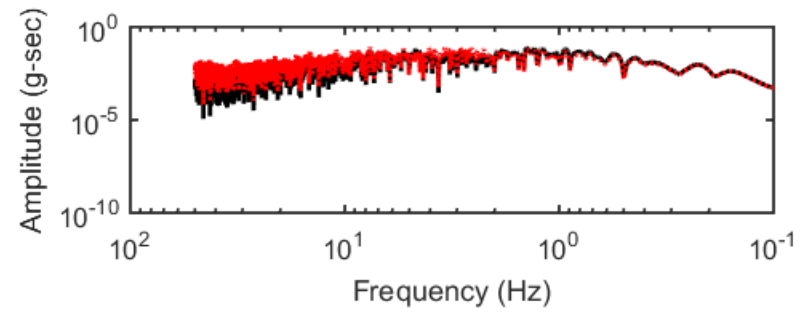
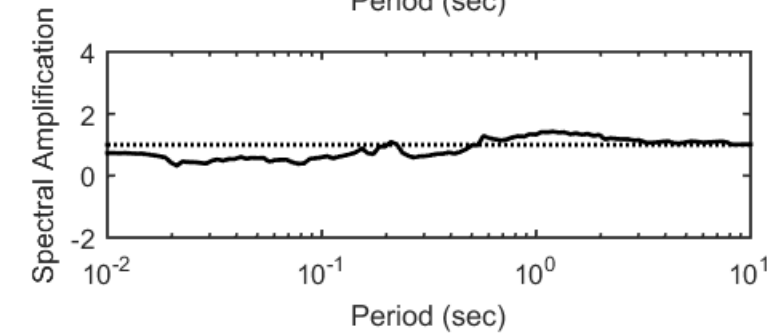
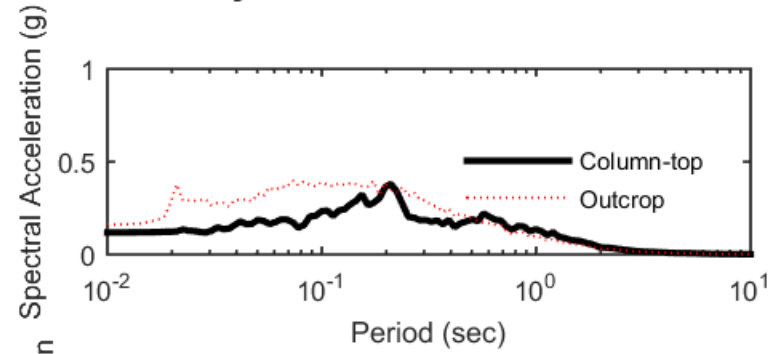
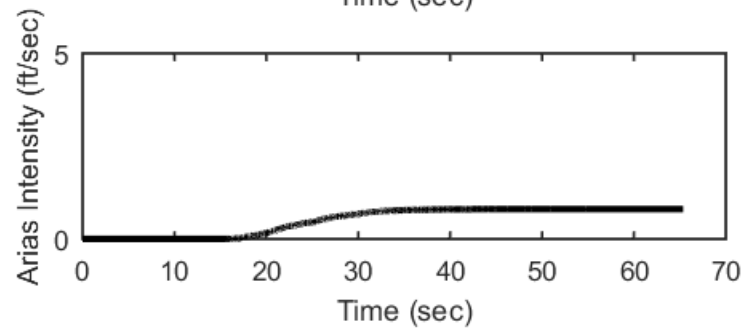
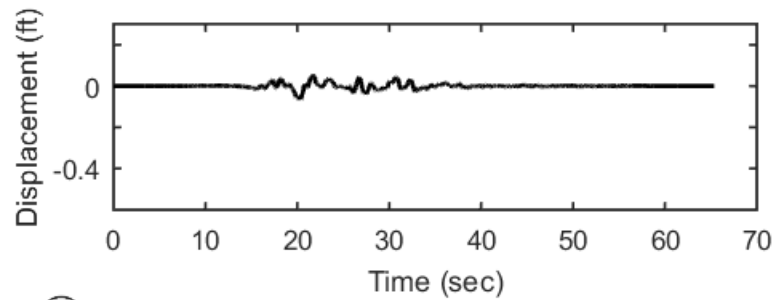
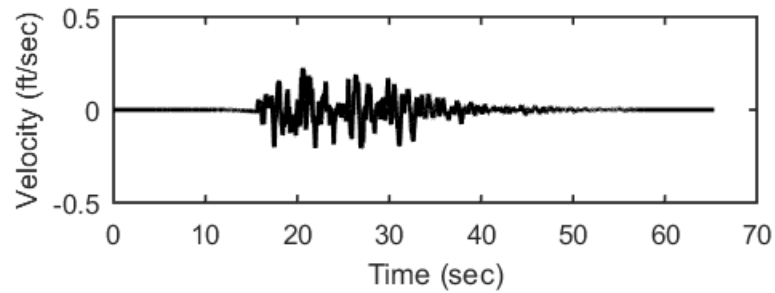
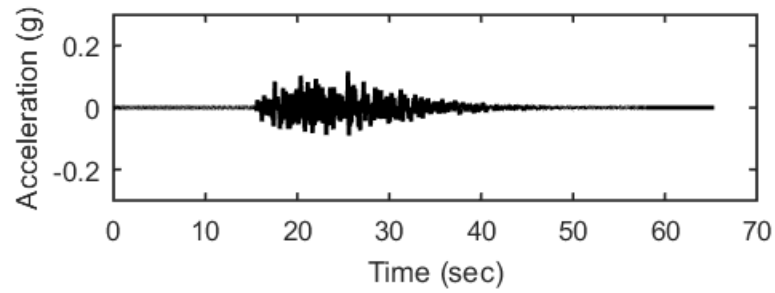
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



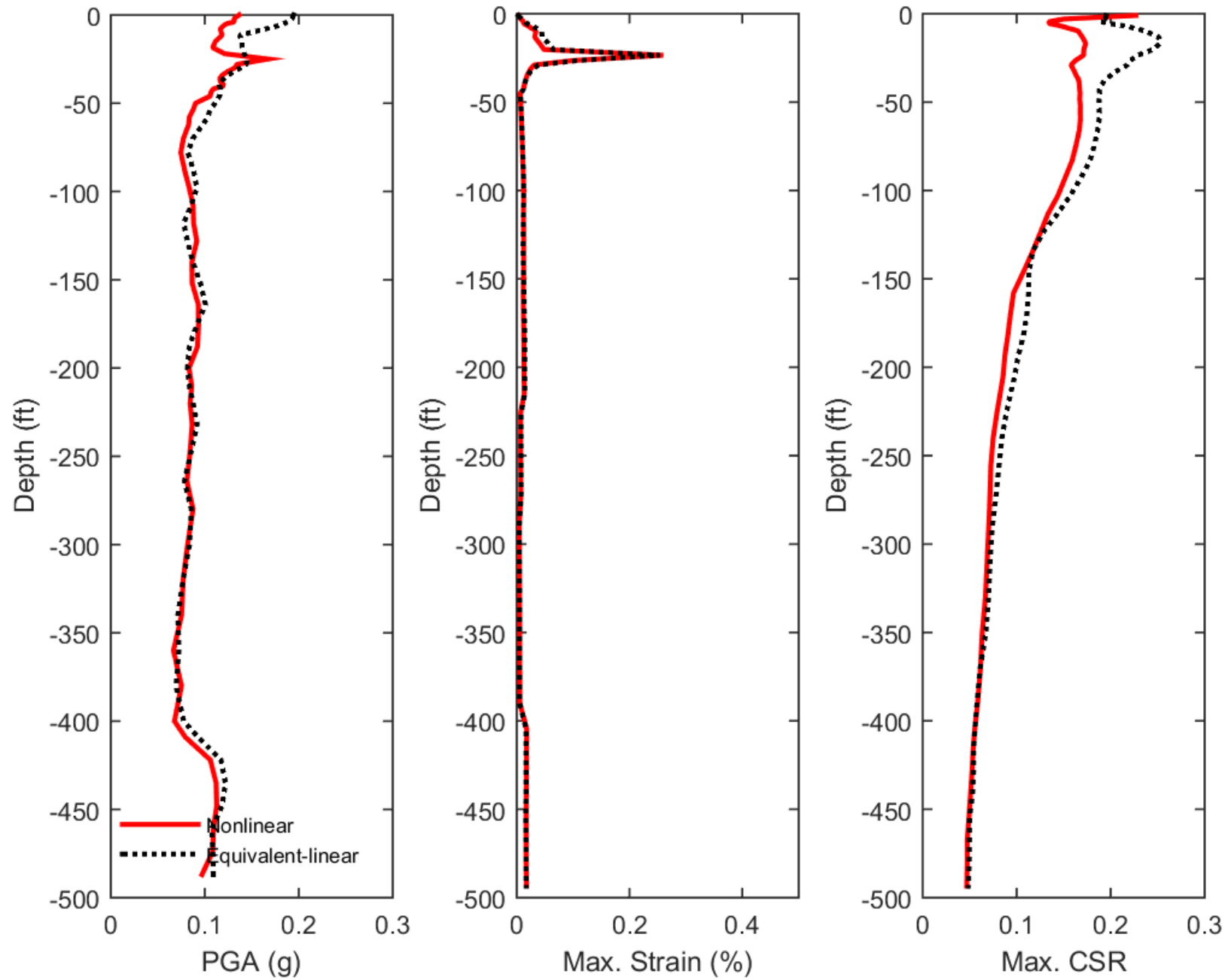
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



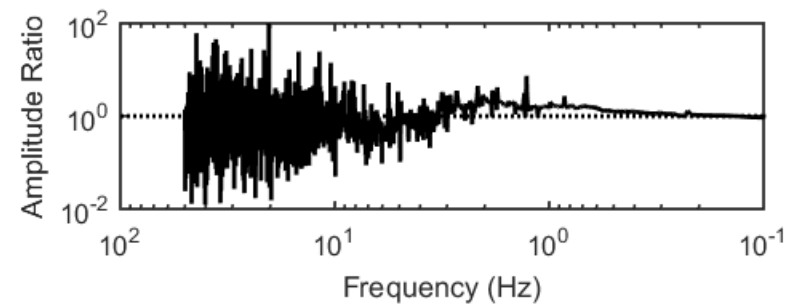
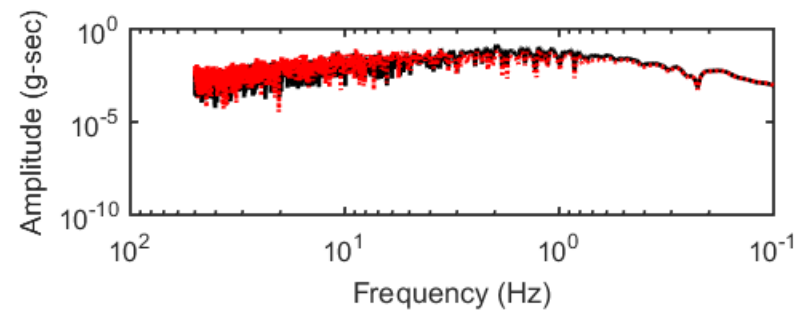
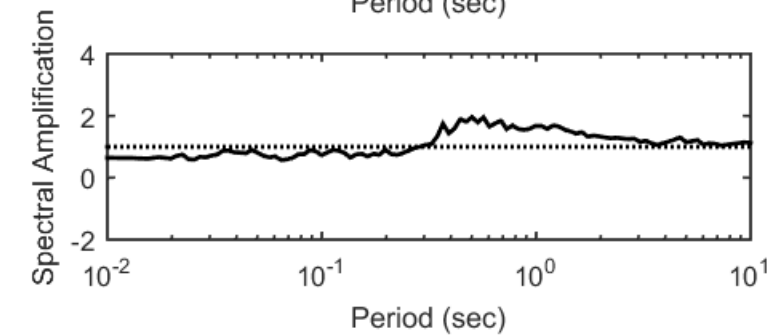
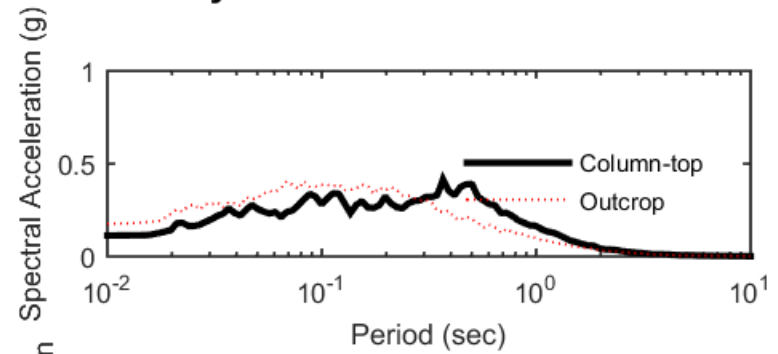
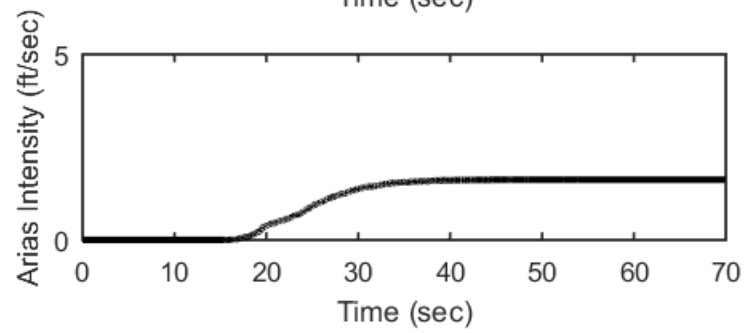
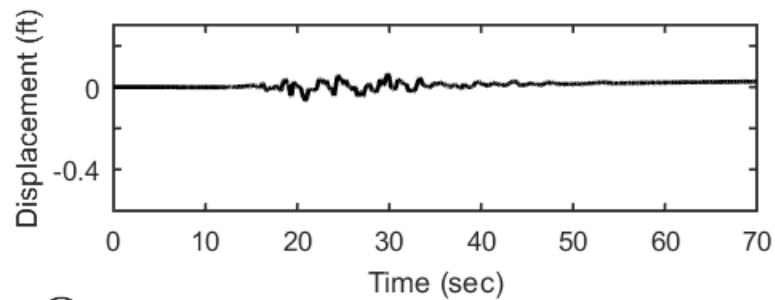
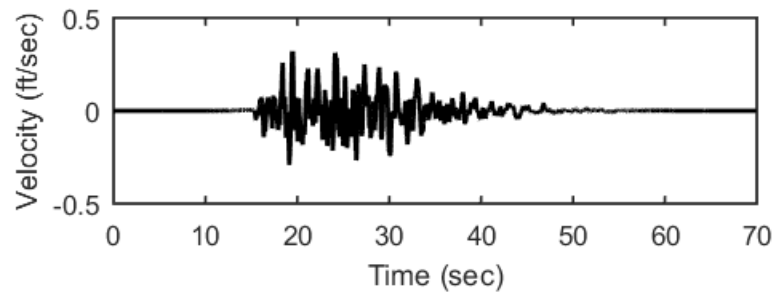
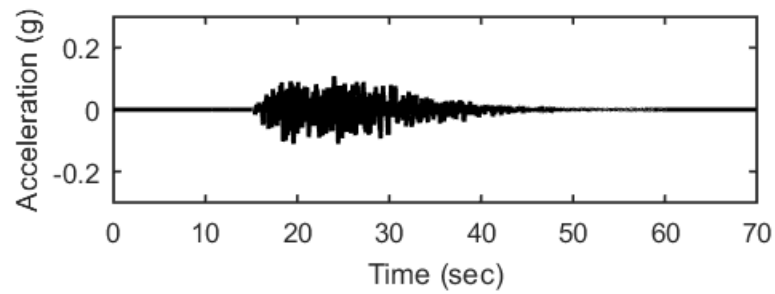
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



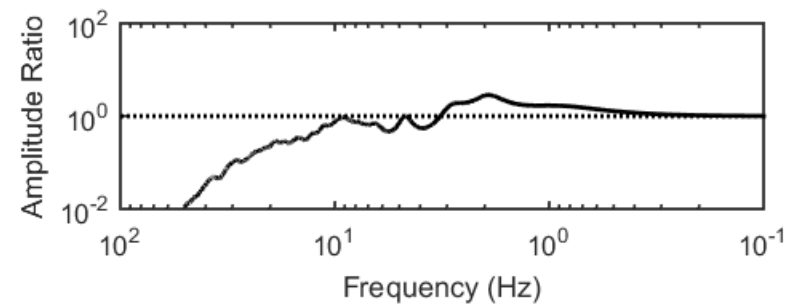
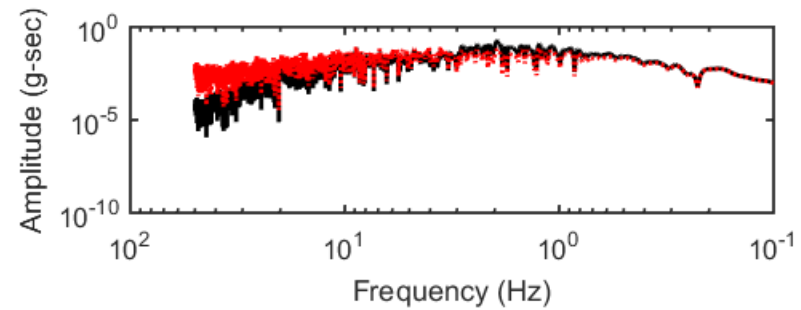
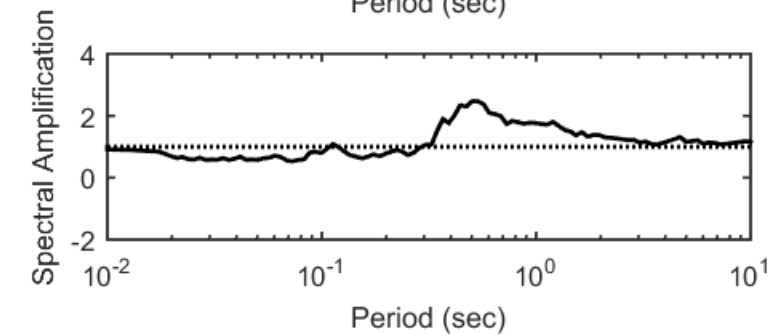
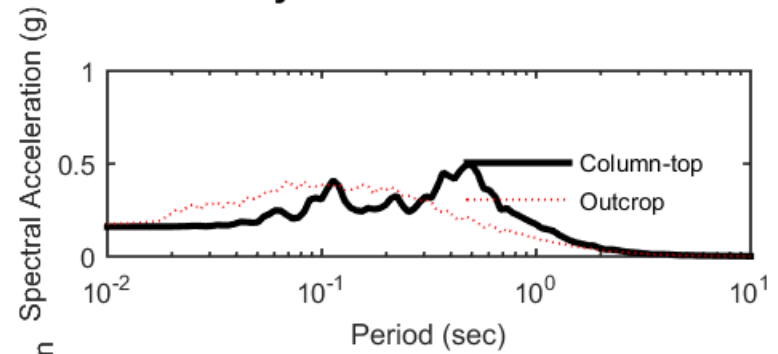
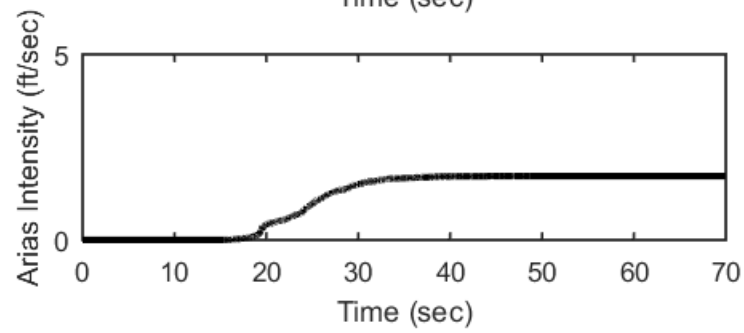
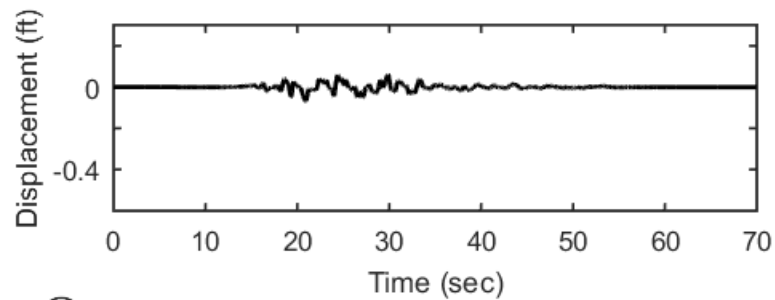
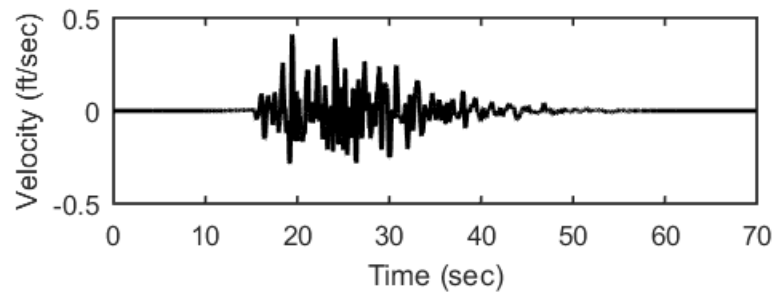
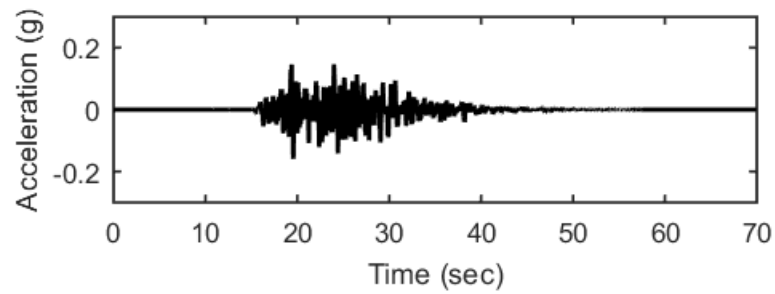
### Profile outputs for Motion: FEE1



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2

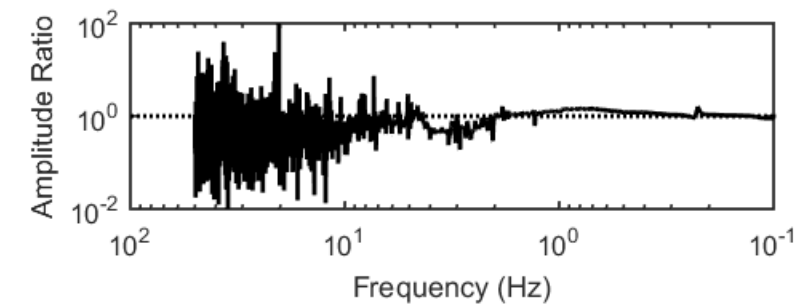
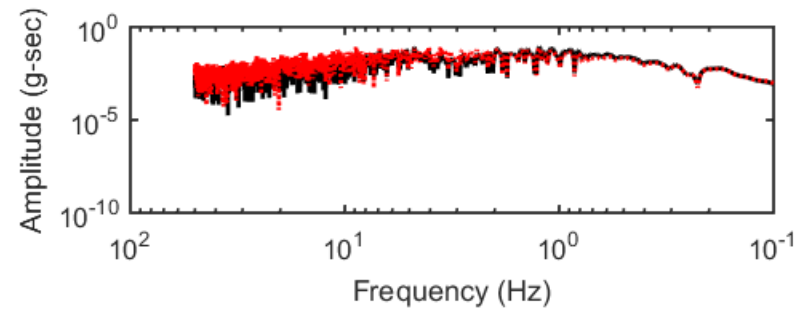
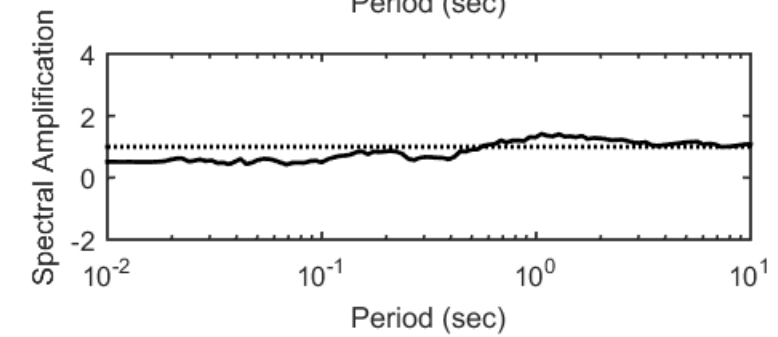
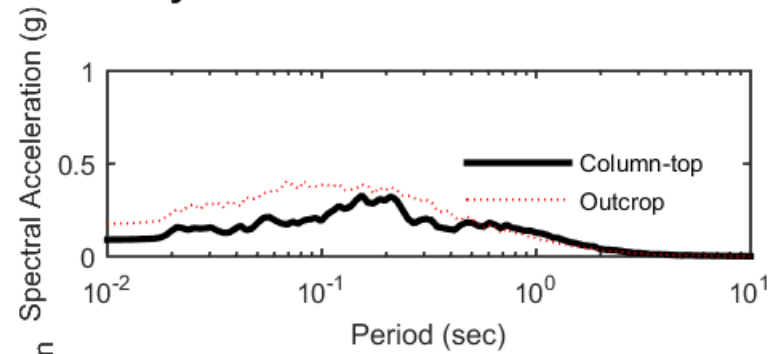
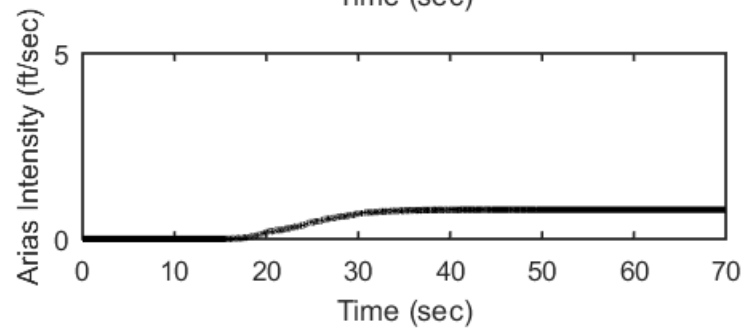
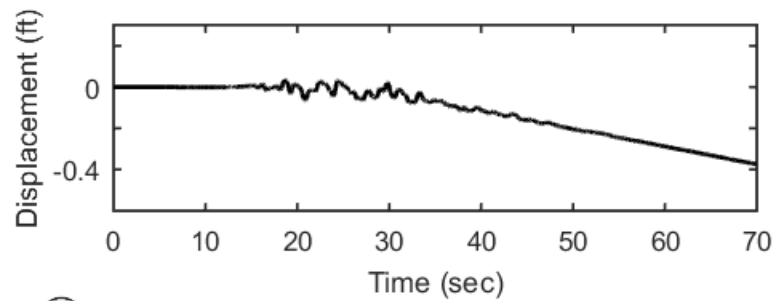
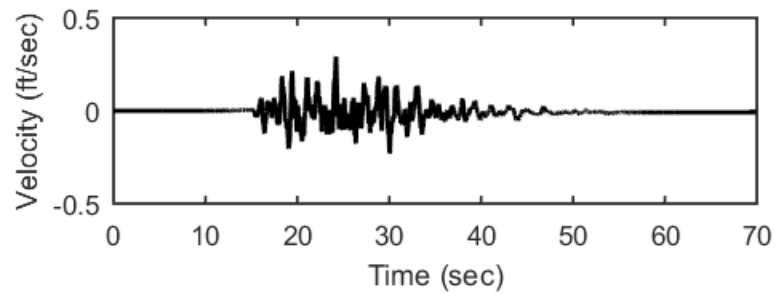
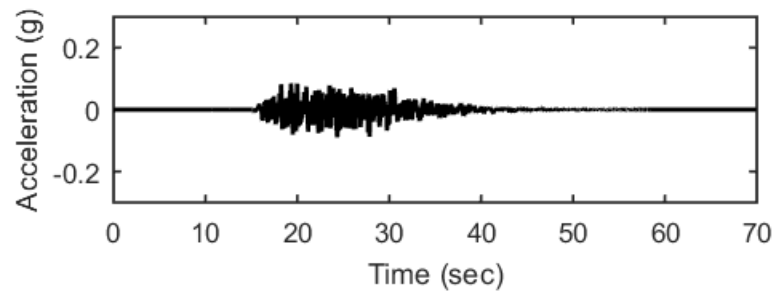


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2

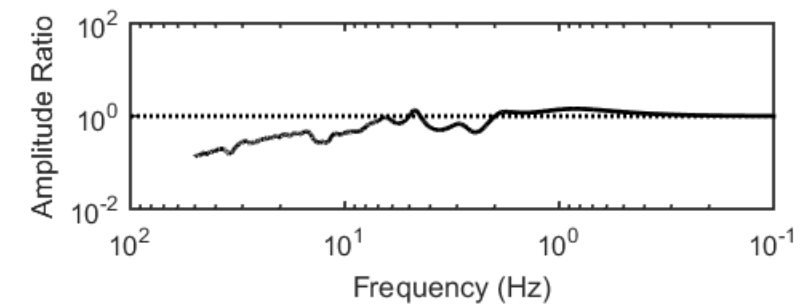
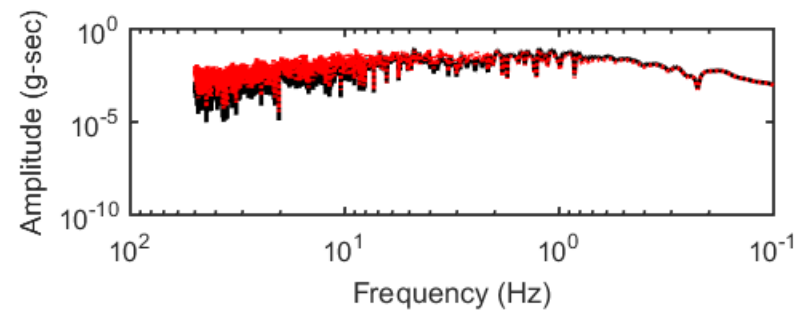
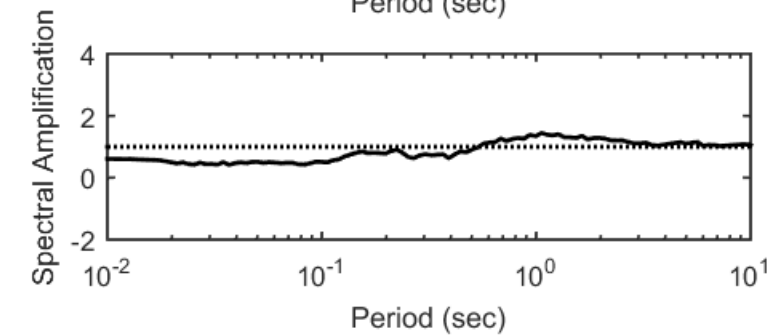
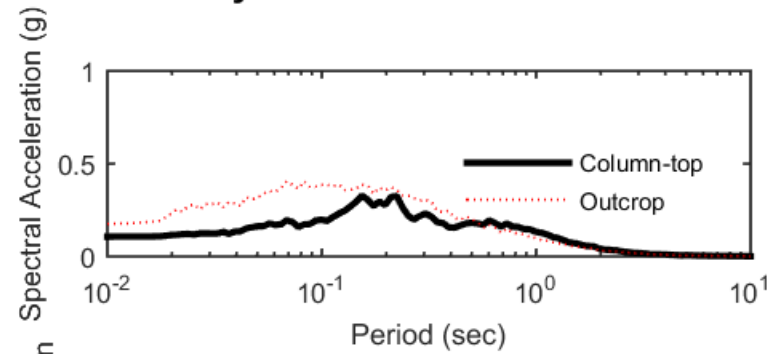
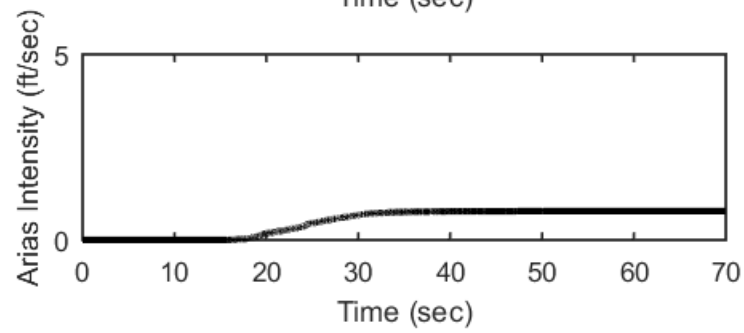
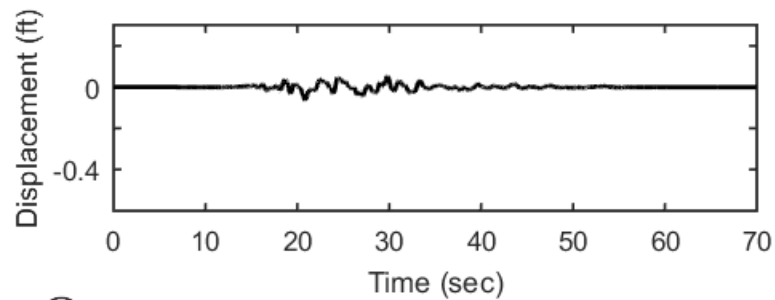
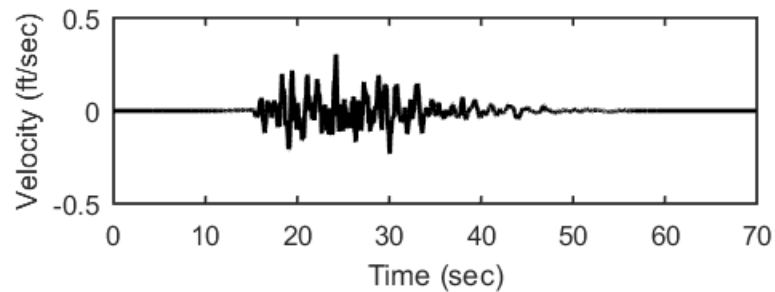
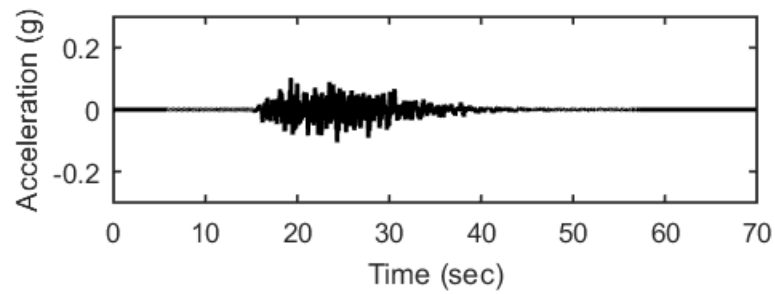




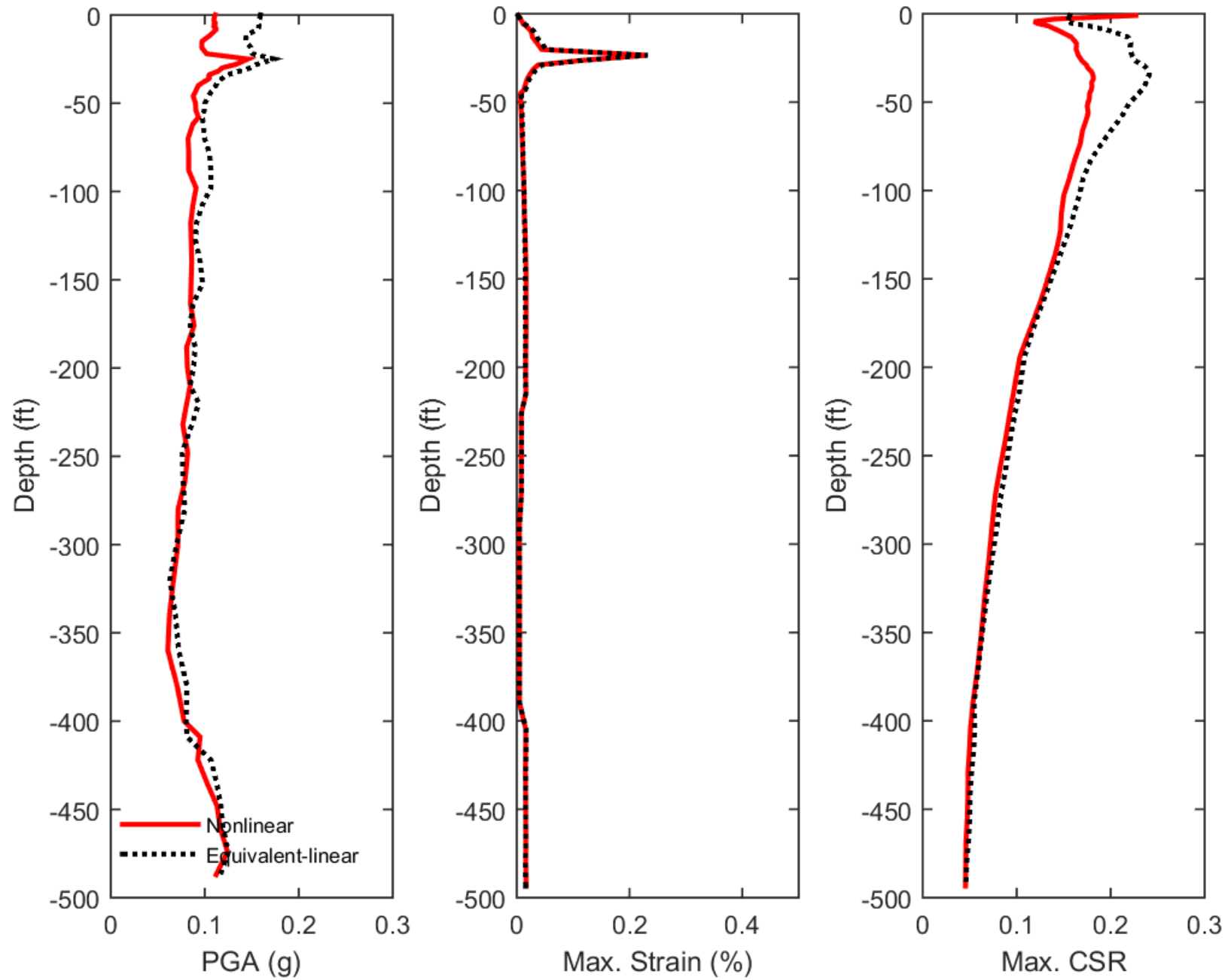
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



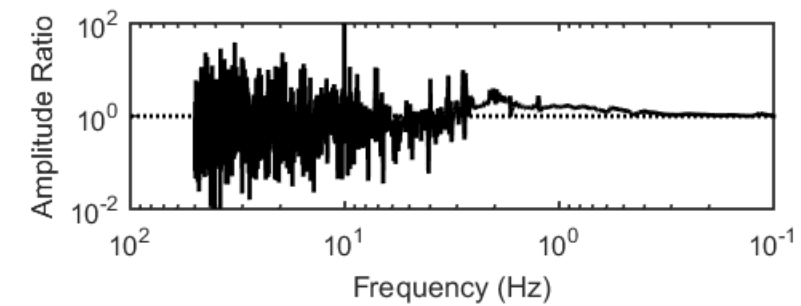
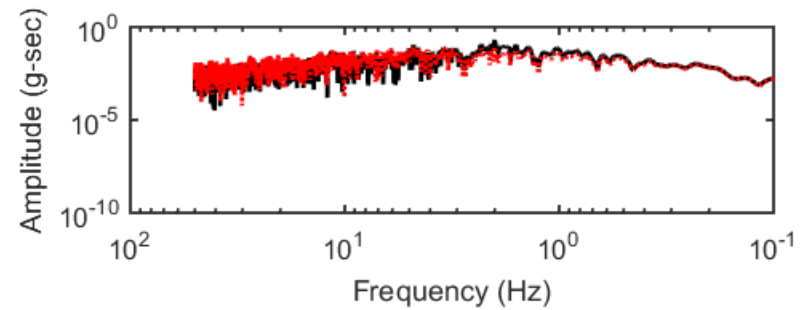
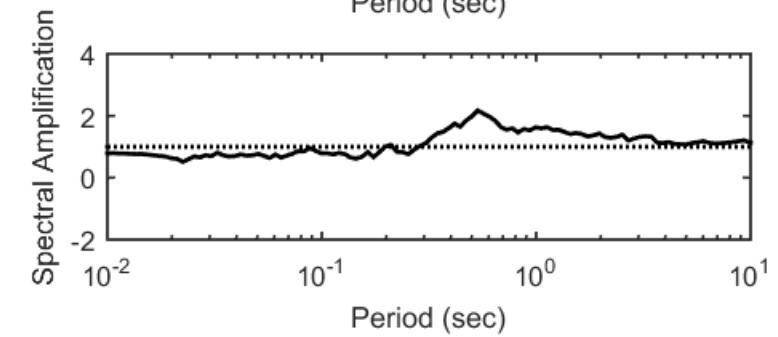
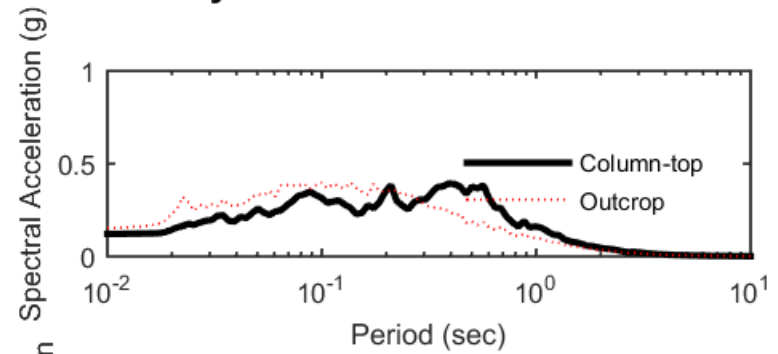
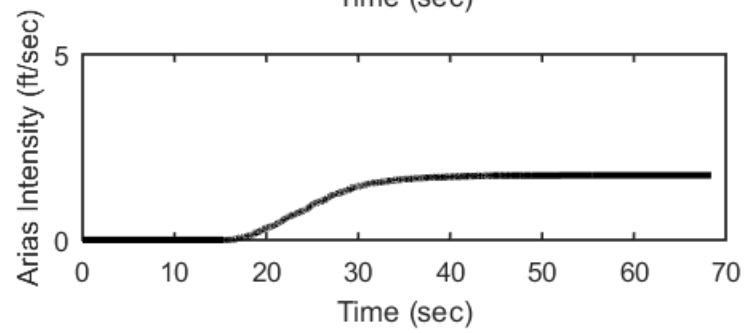
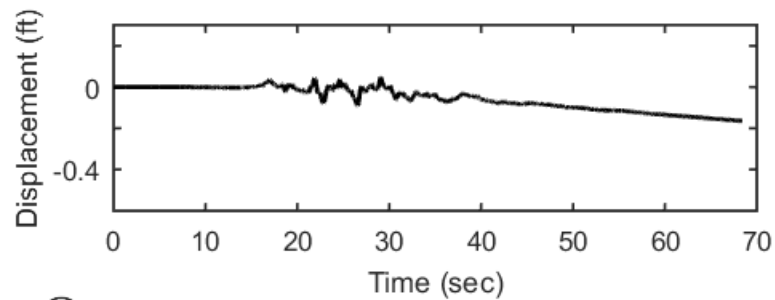
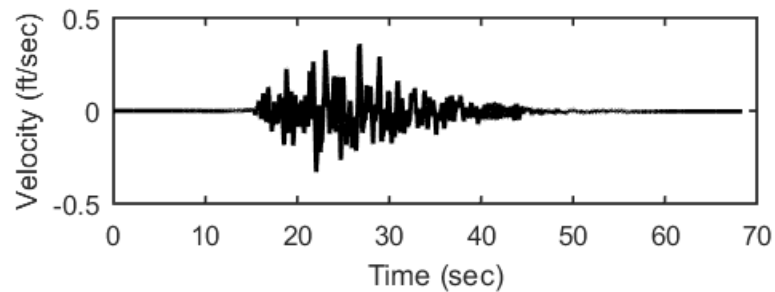
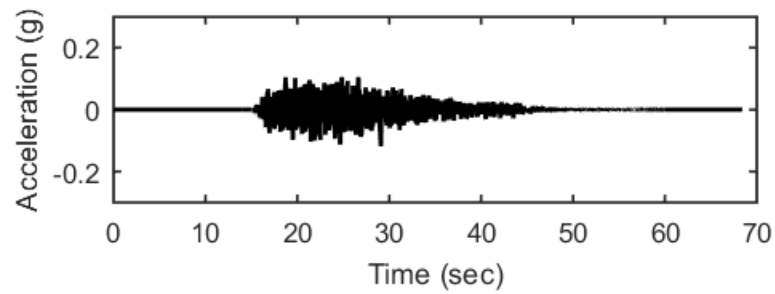
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



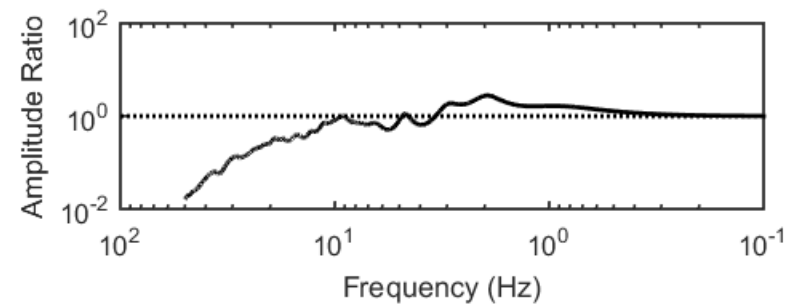
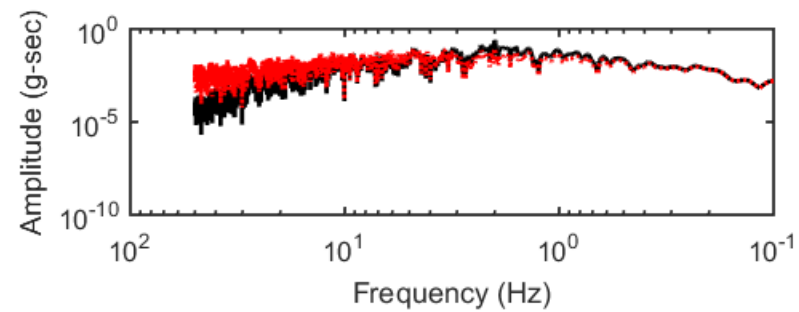
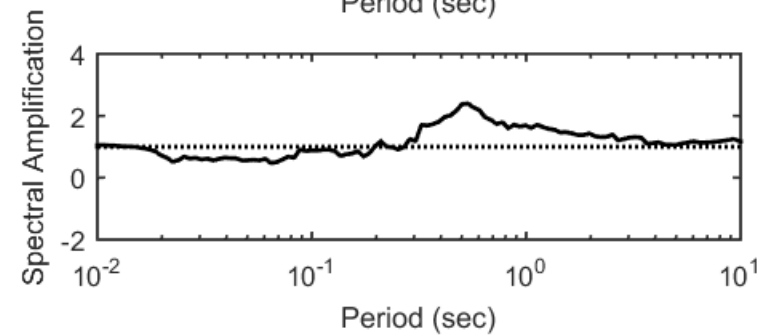
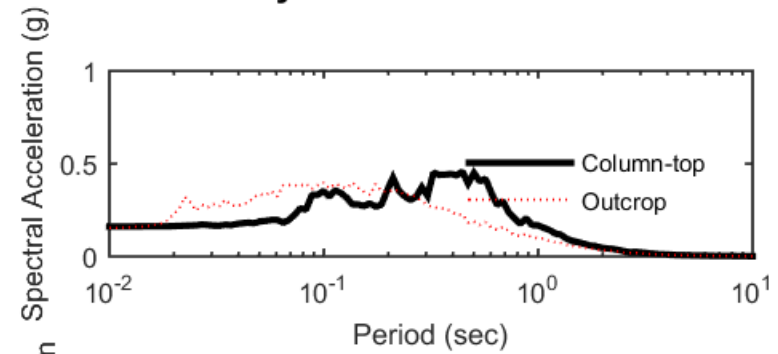
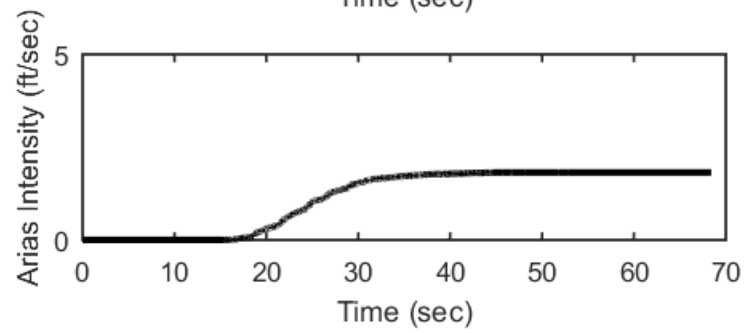
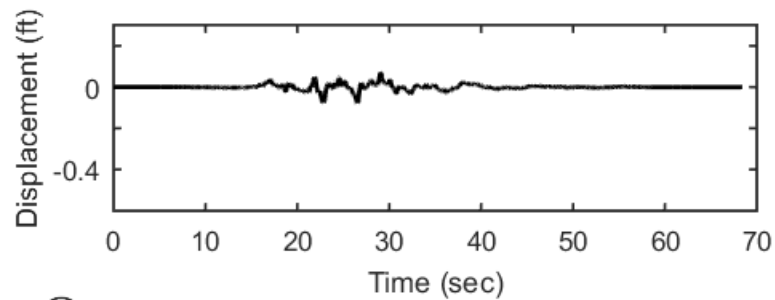
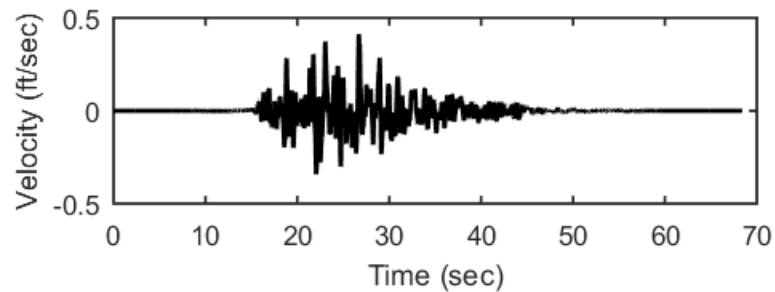
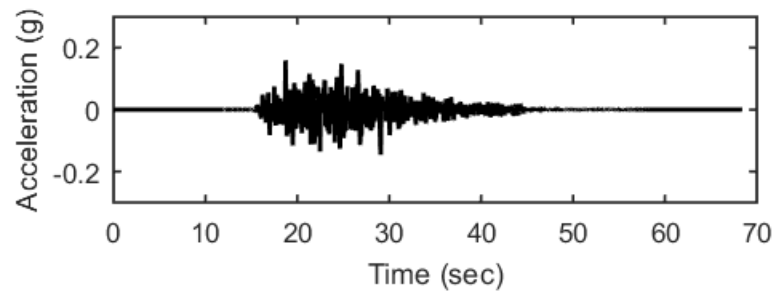
### Profile outputs for Motion: FEE2



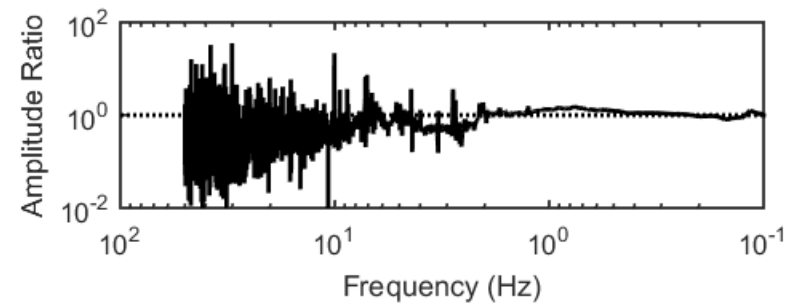
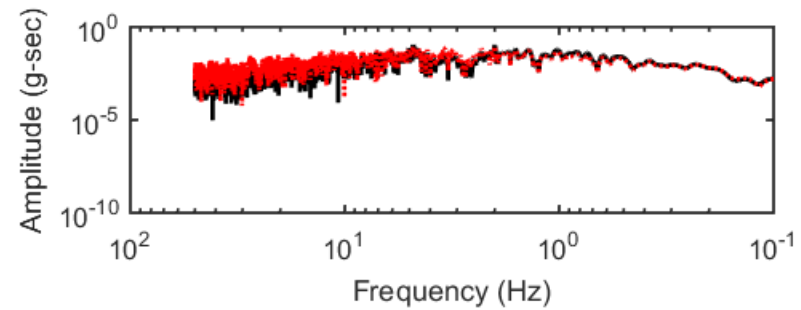
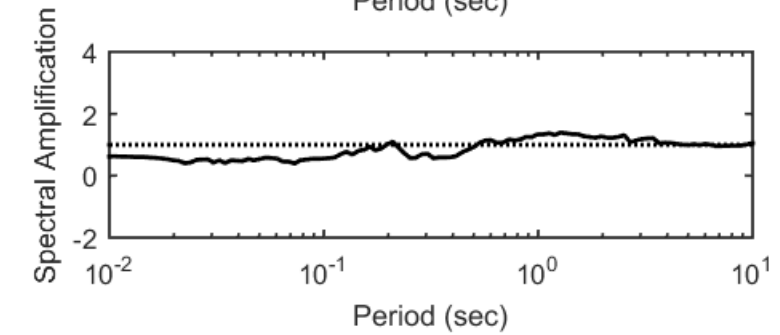
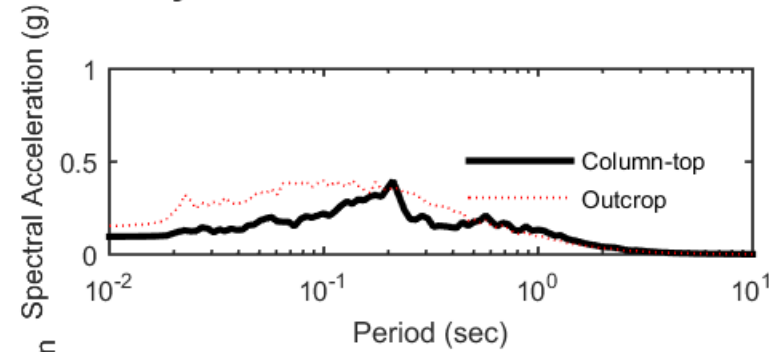
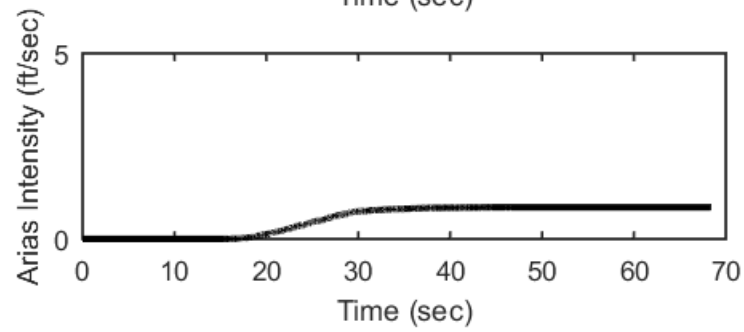
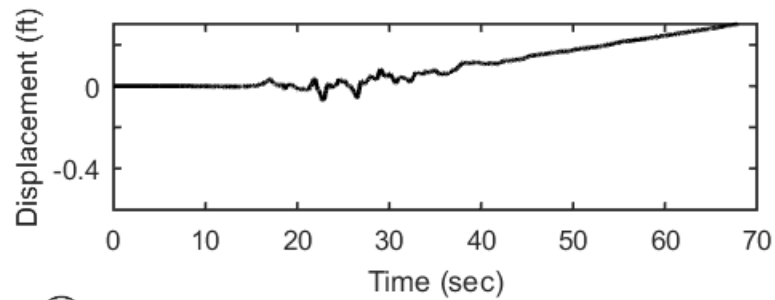
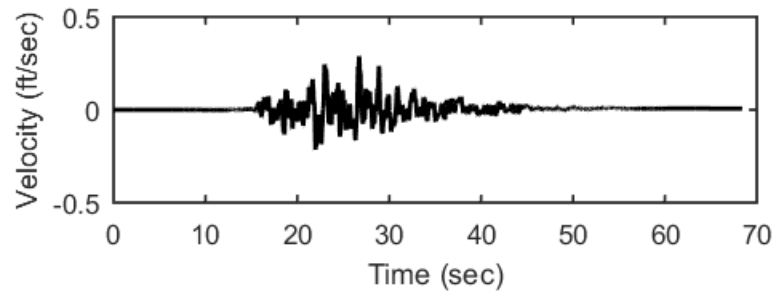
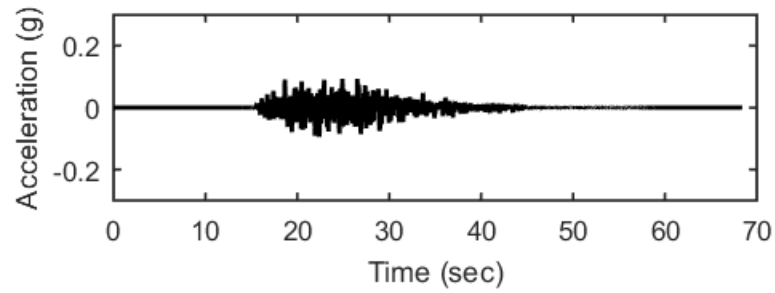
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



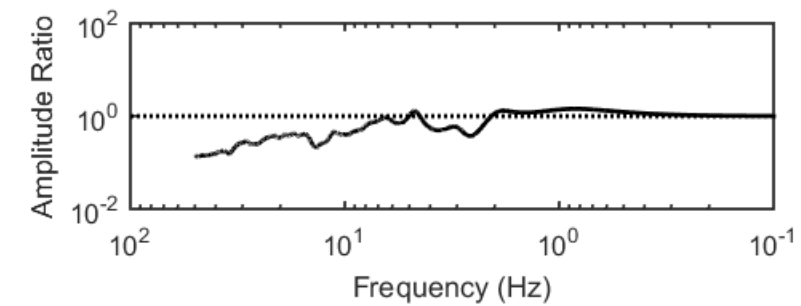
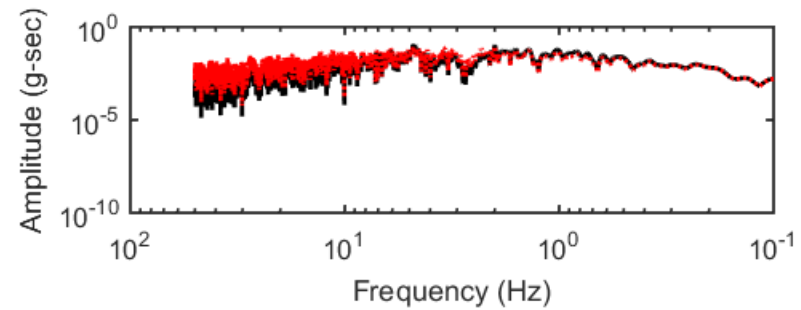
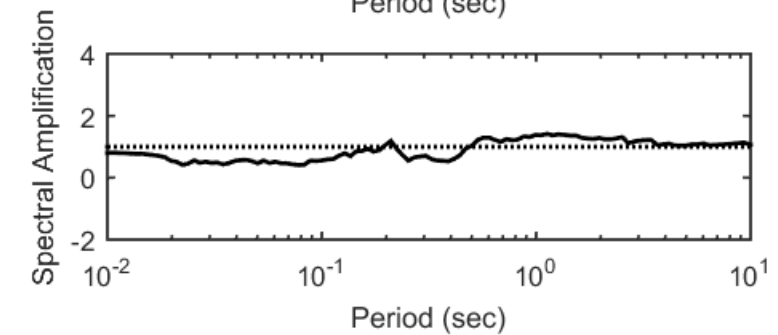
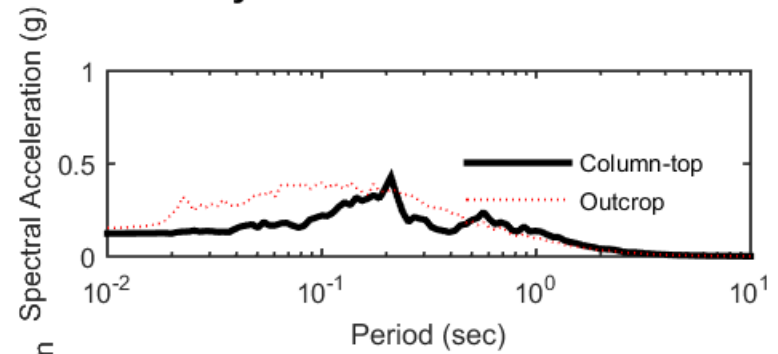
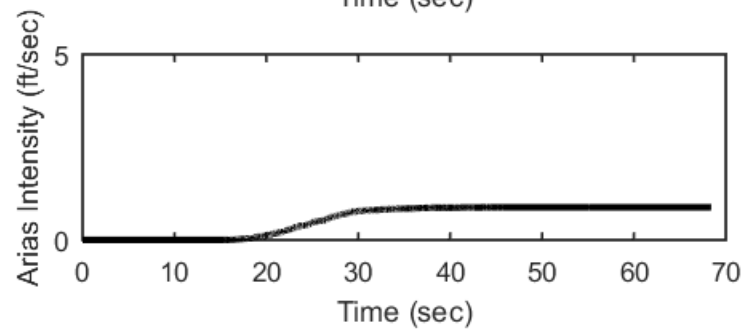
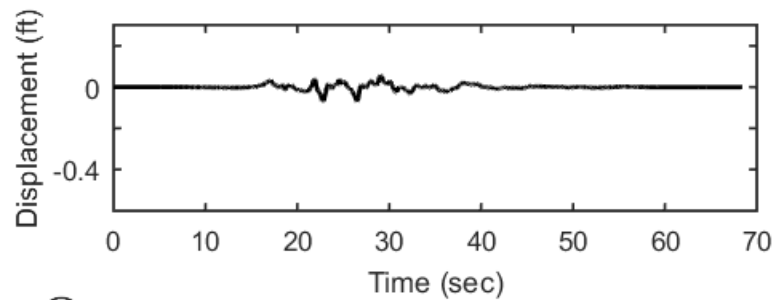
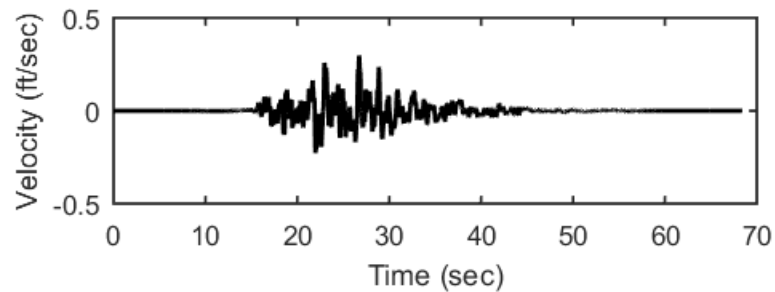
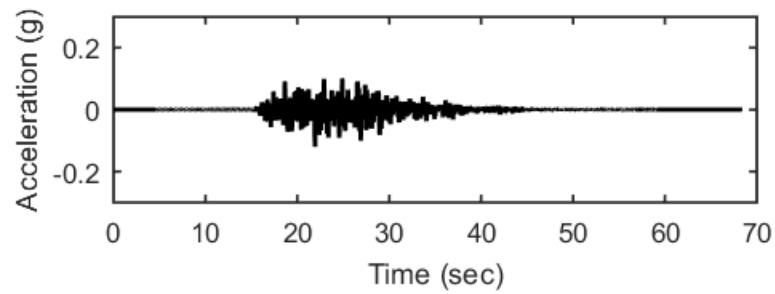
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



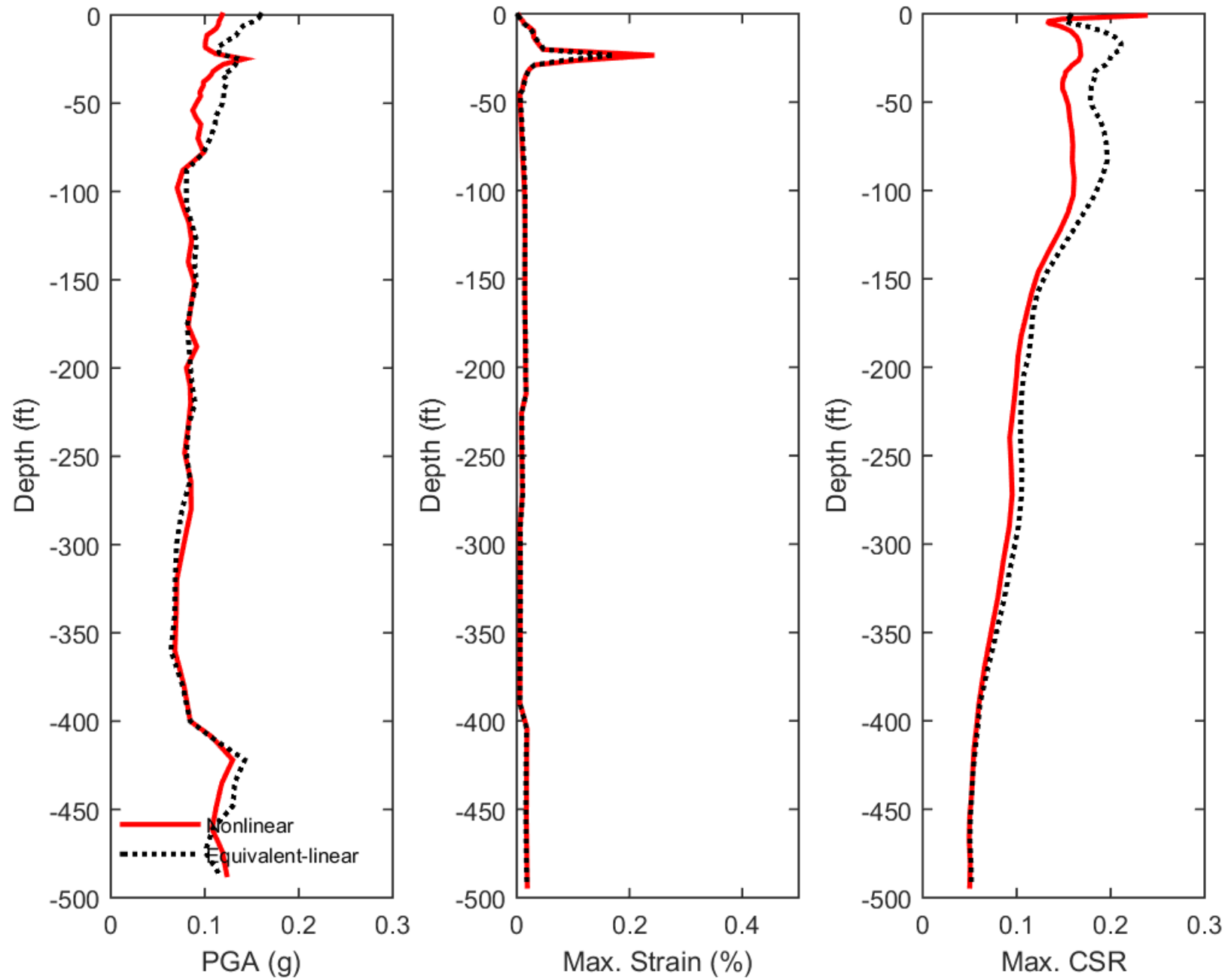
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3

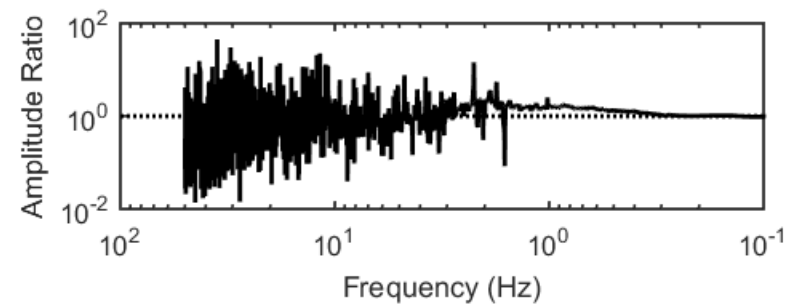
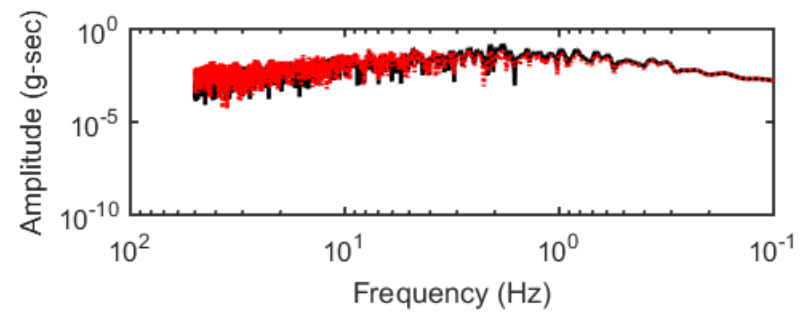
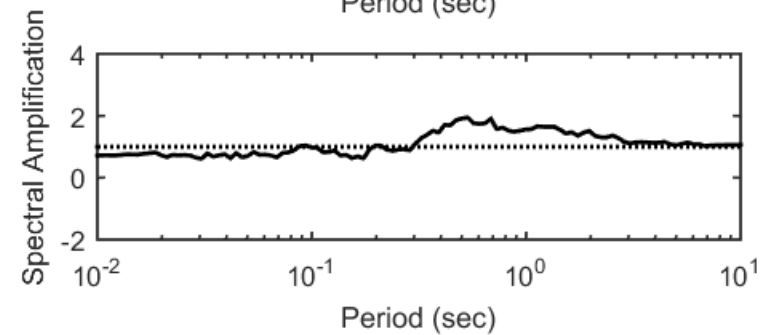
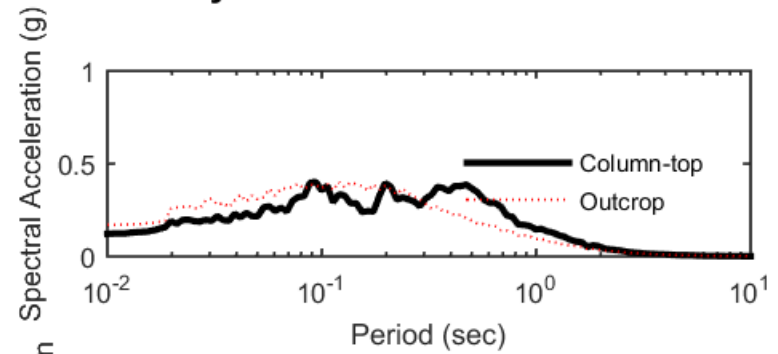
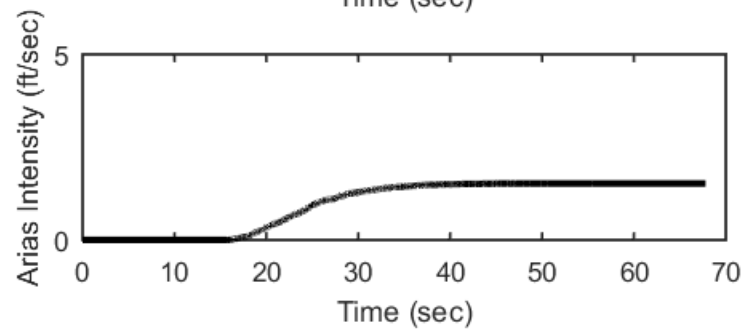
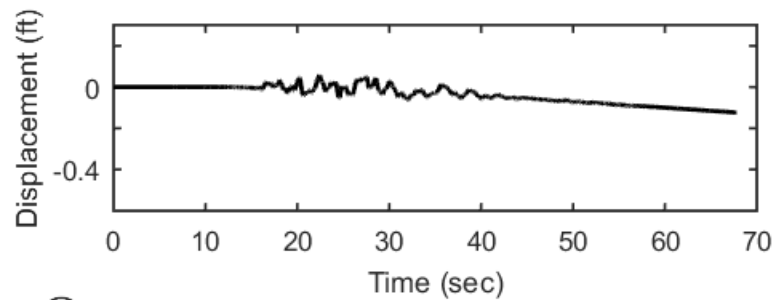
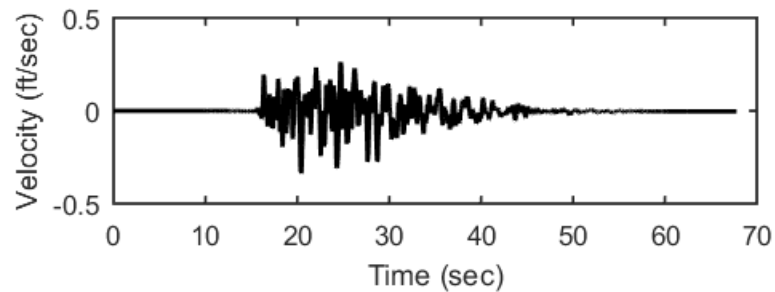
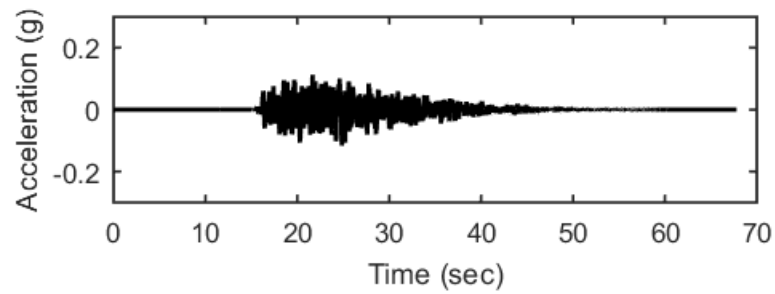


### Profile outputs for Motion: FEE3

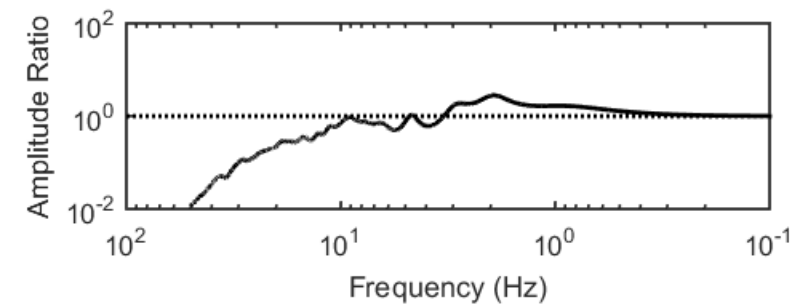
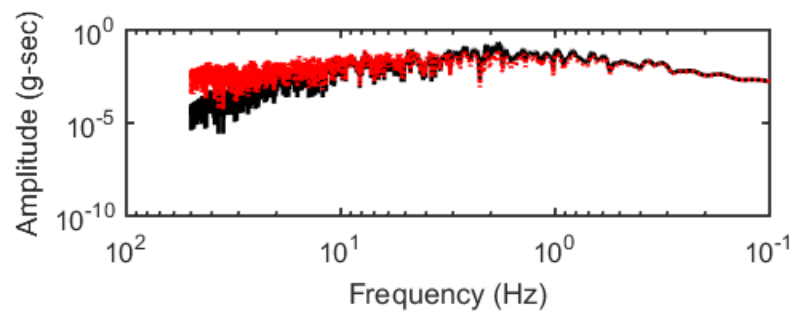
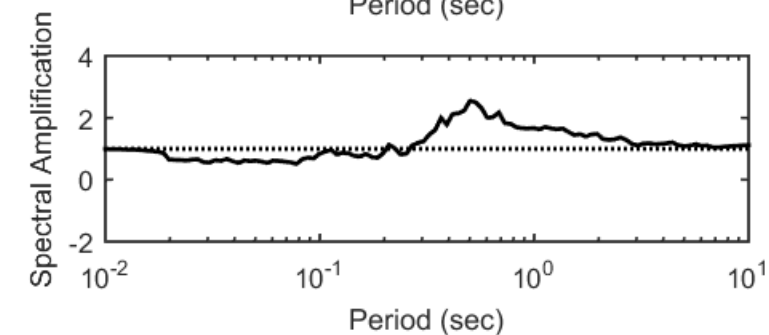
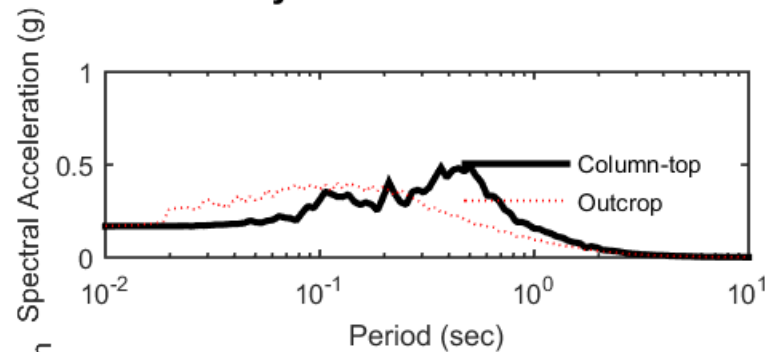
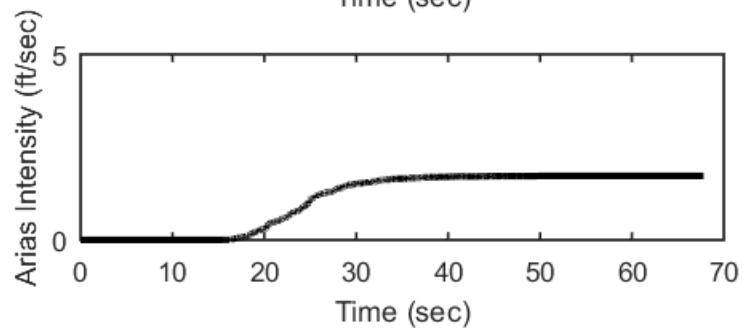
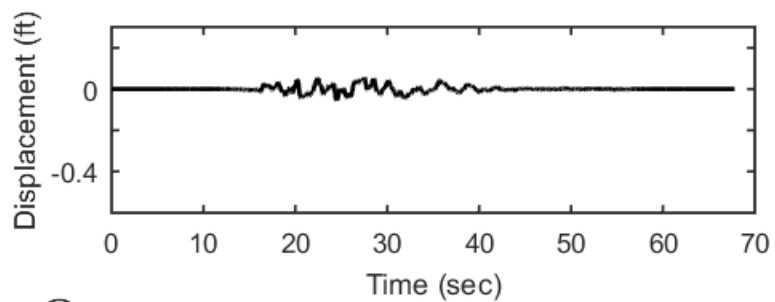
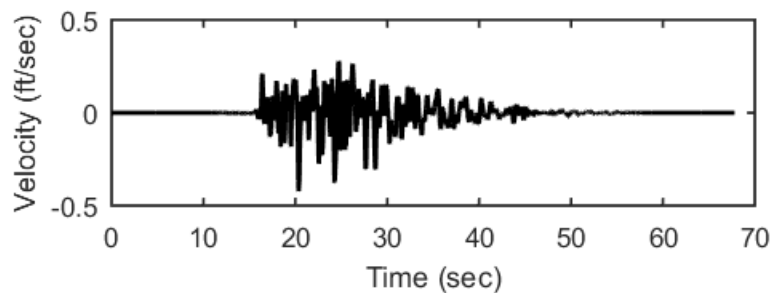
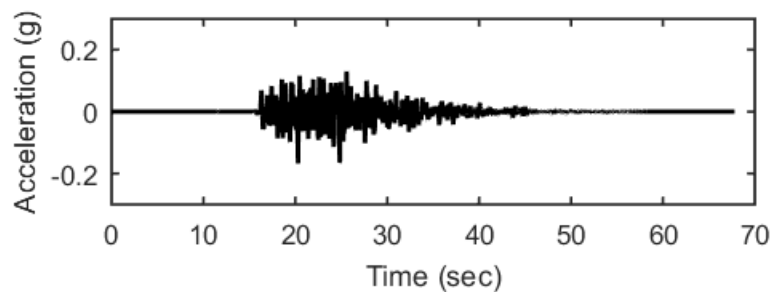




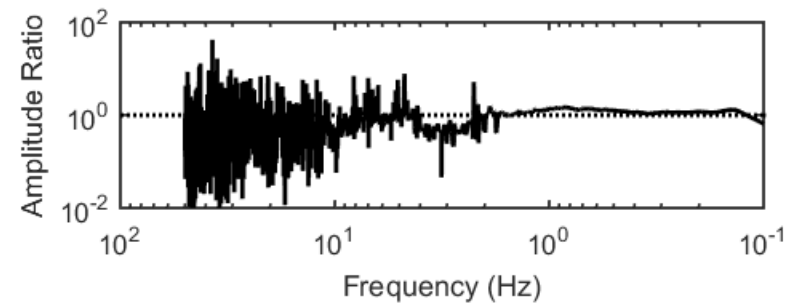
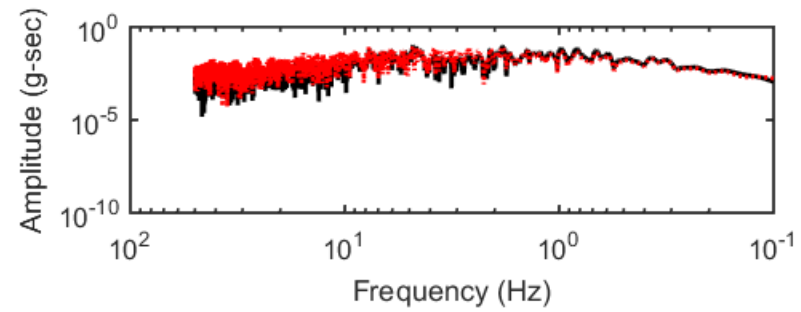
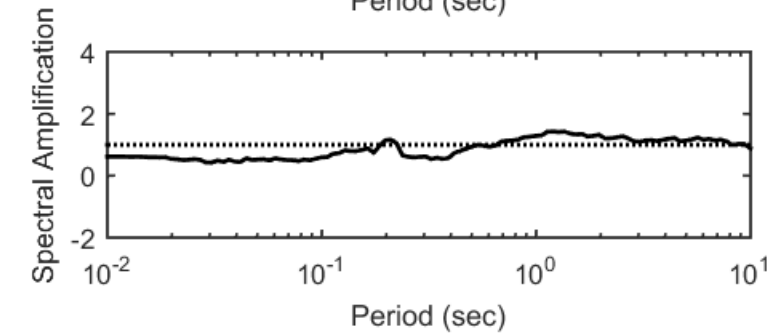
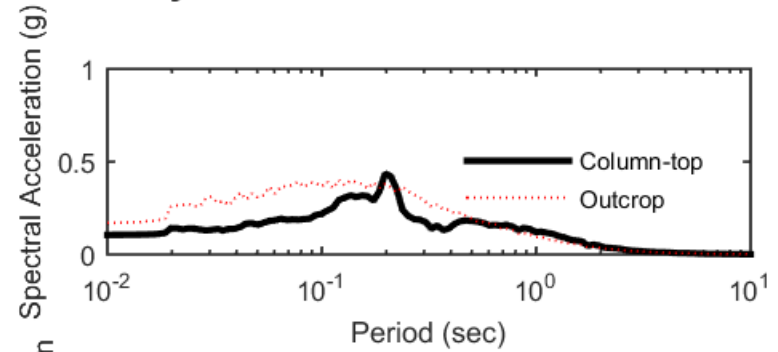
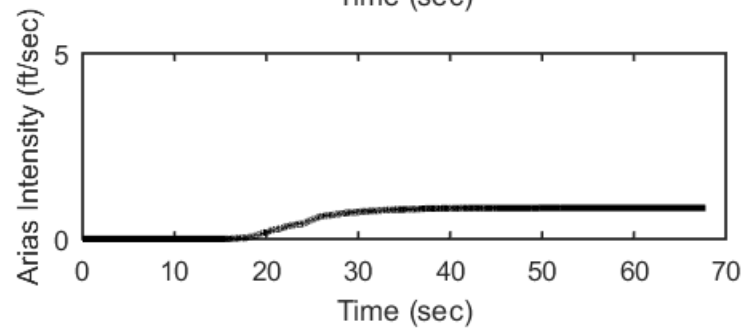
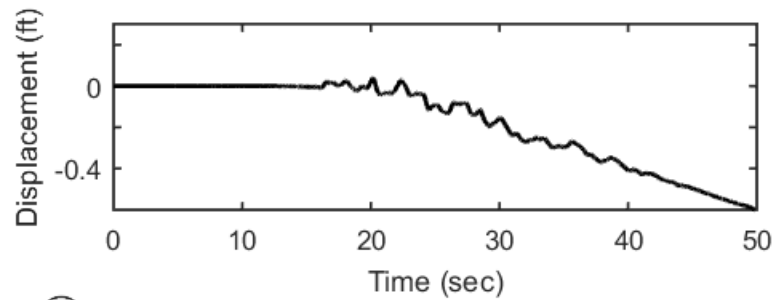
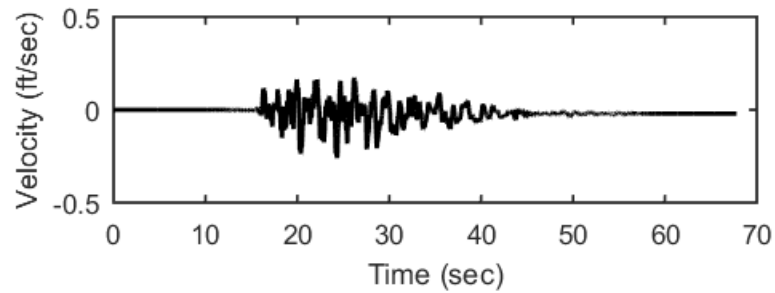
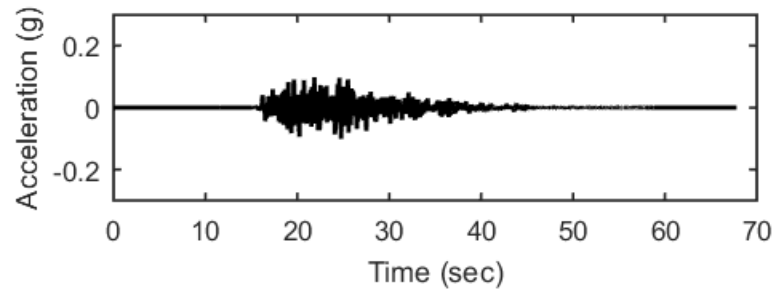
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



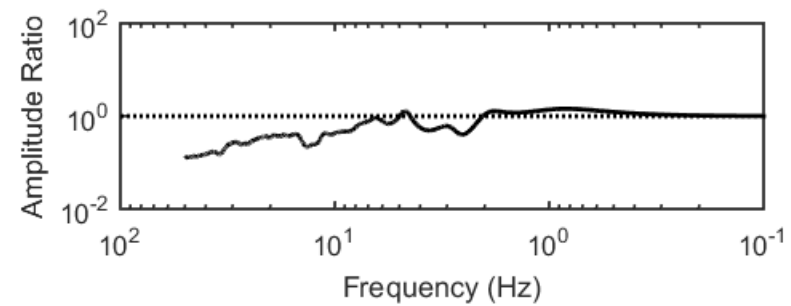
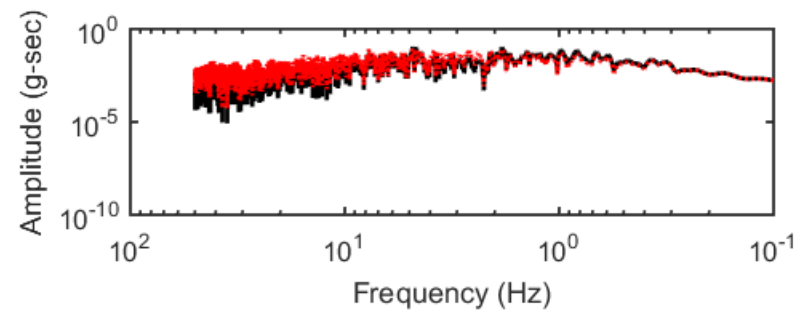
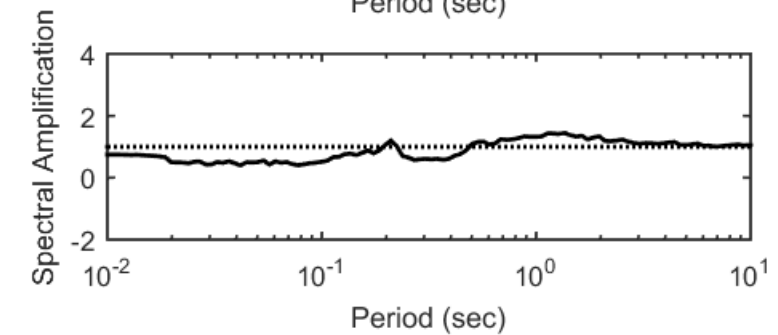
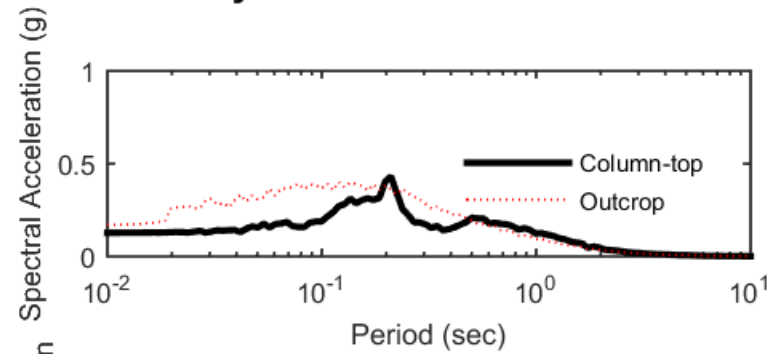
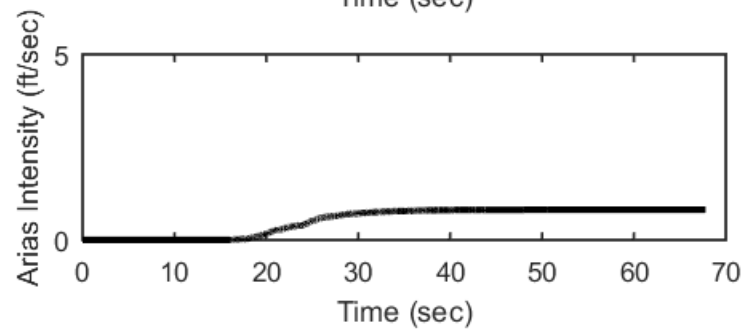
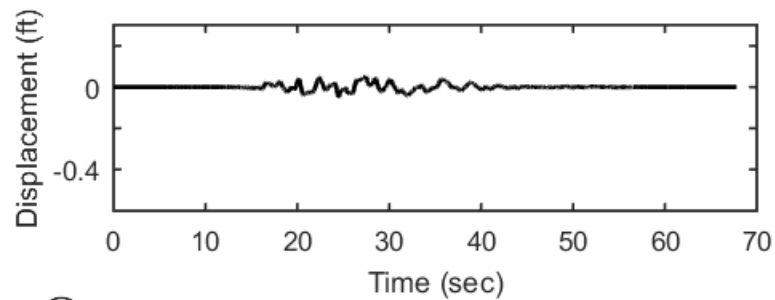
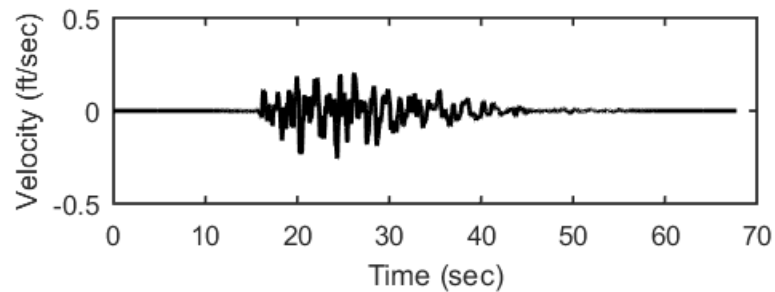
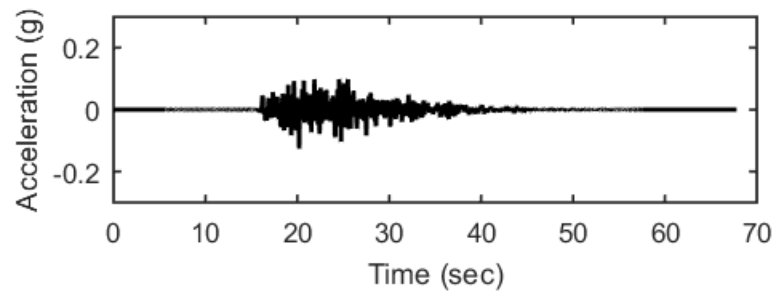
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



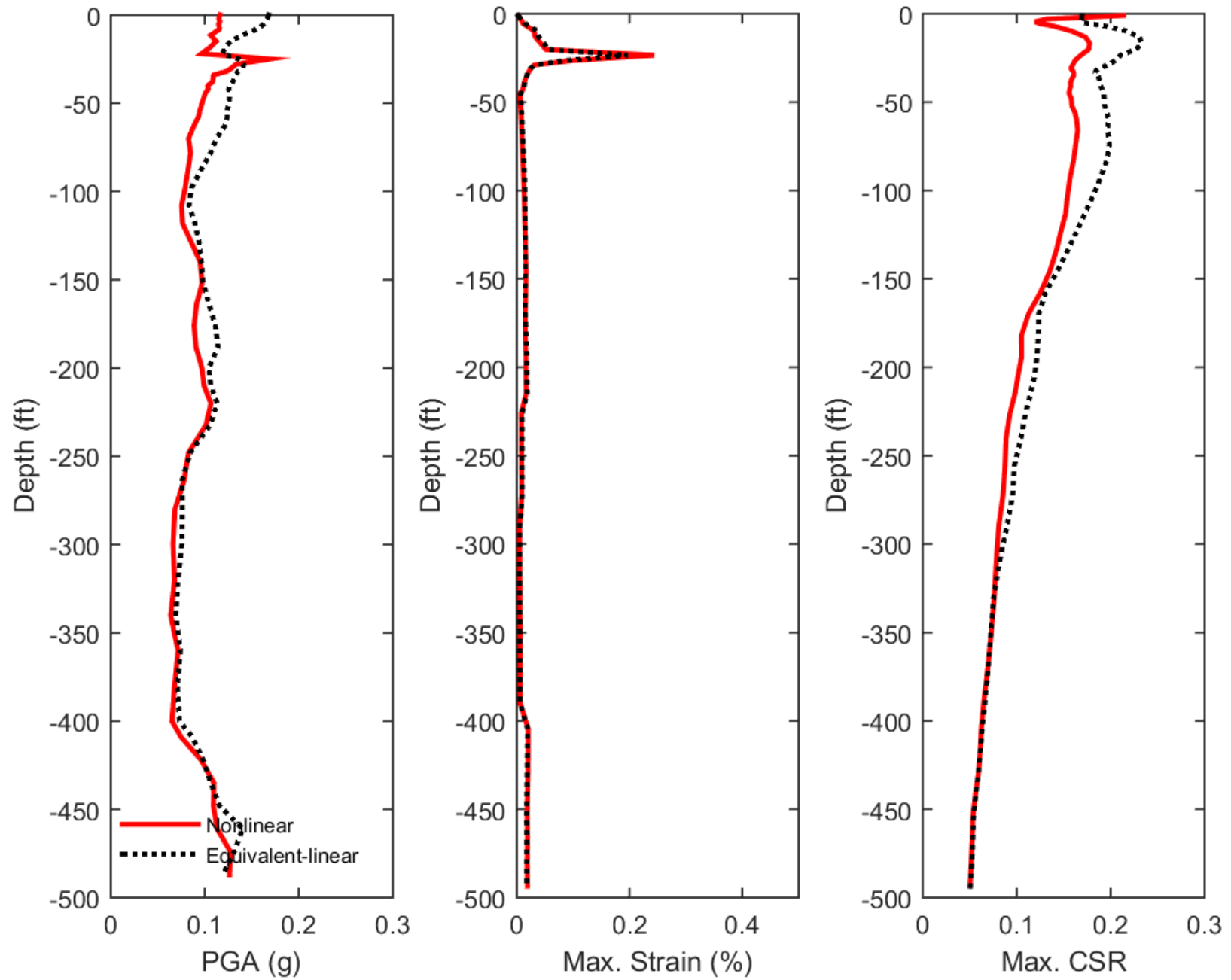
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



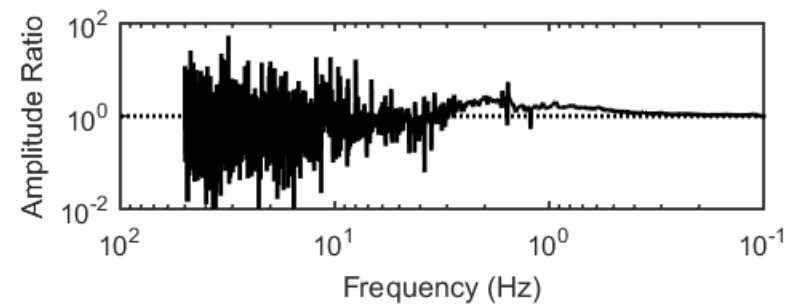
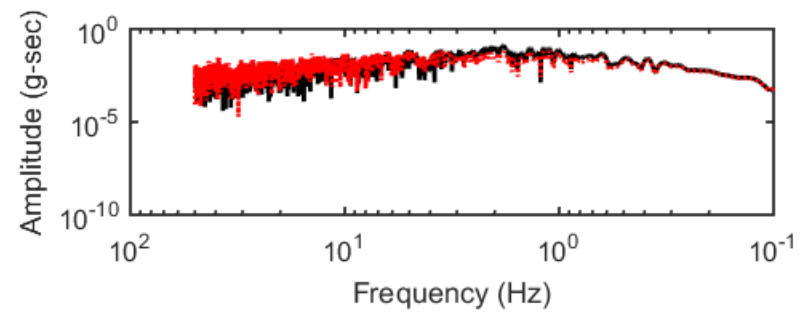
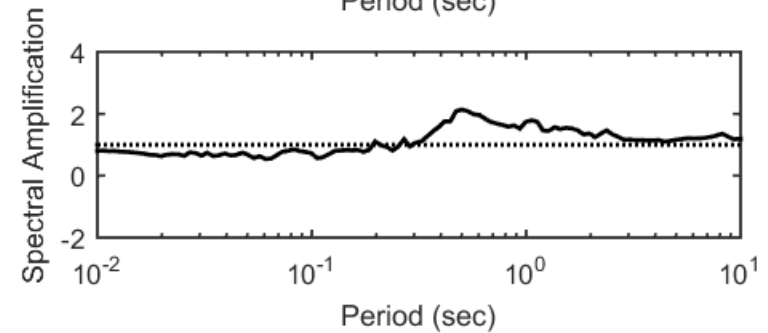
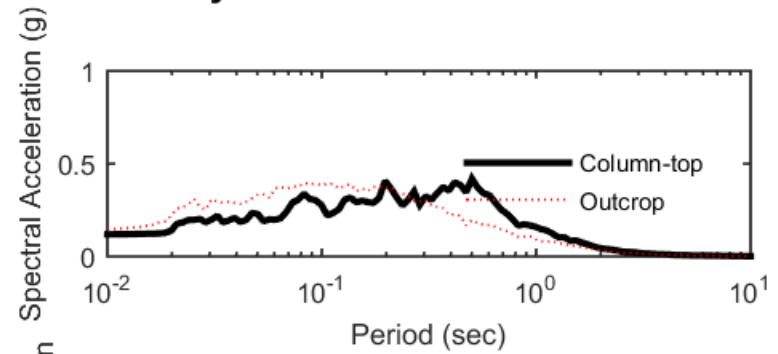
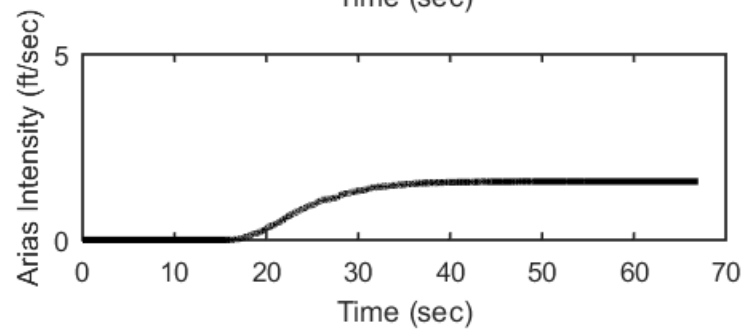
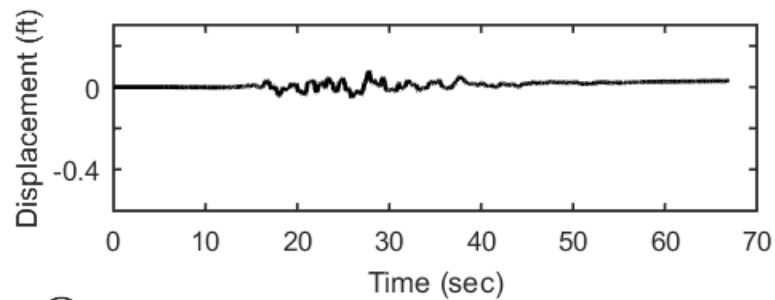
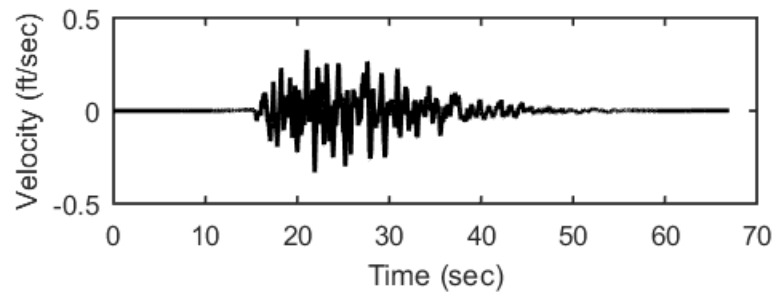
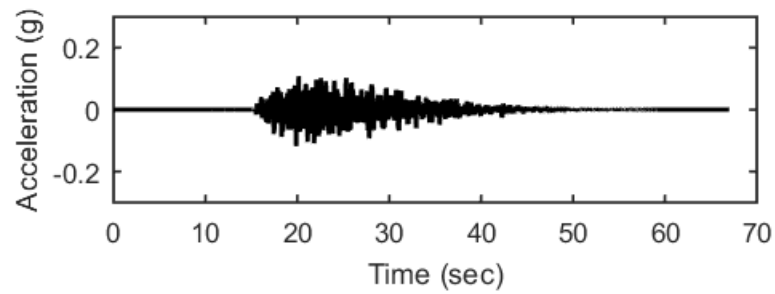
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



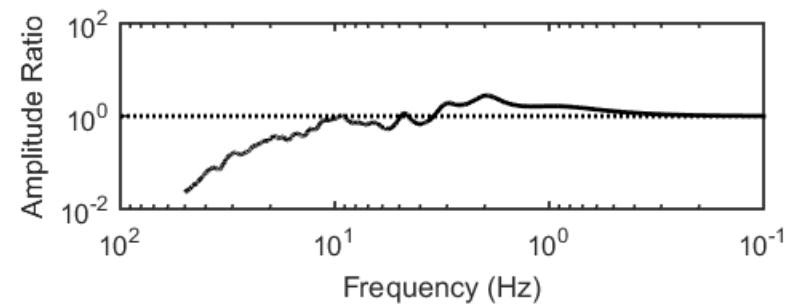
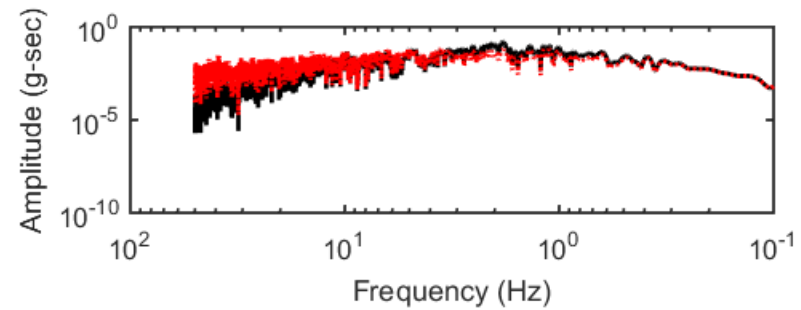
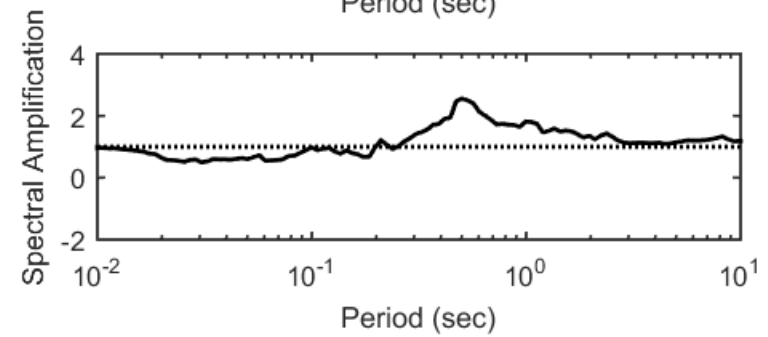
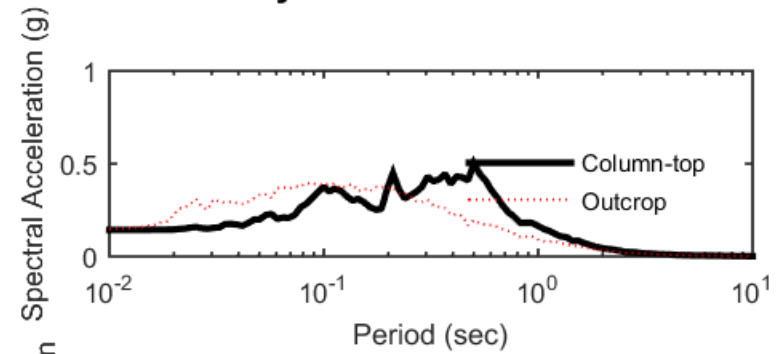
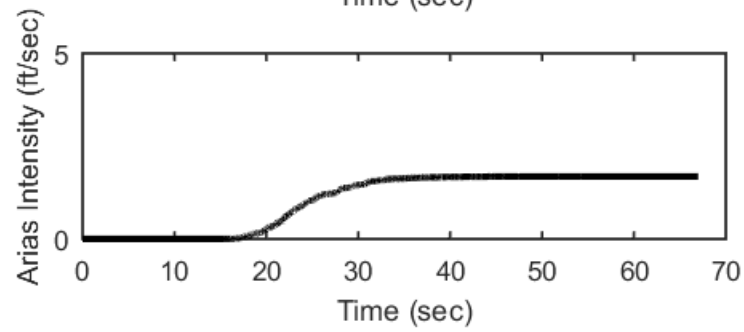
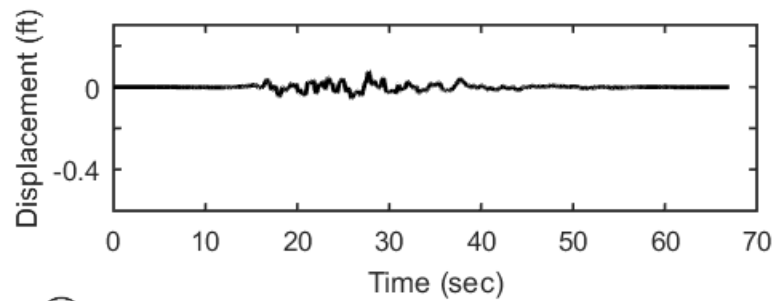
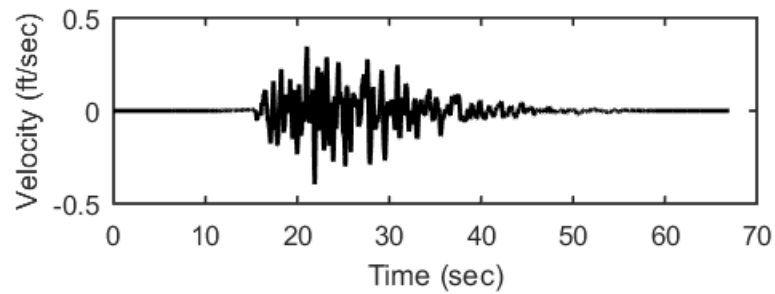
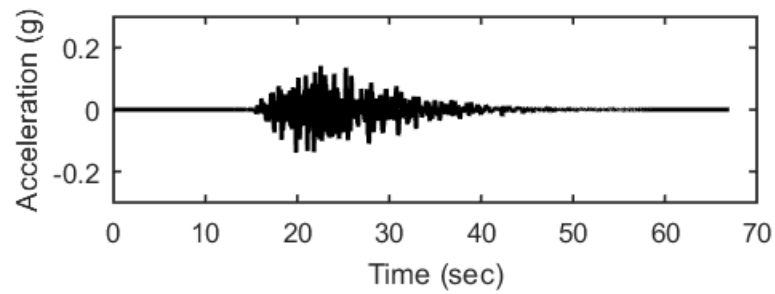
### Profile outputs for Motion: FEE4



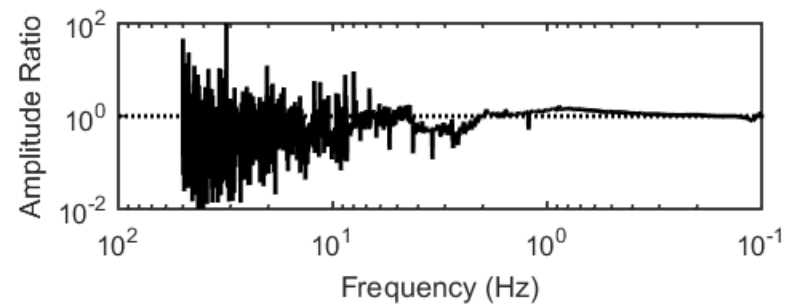
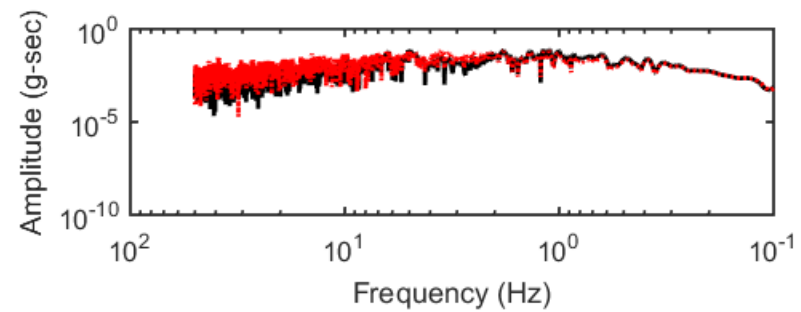
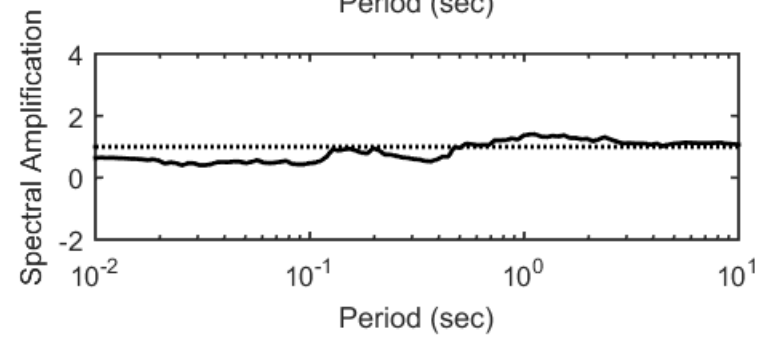
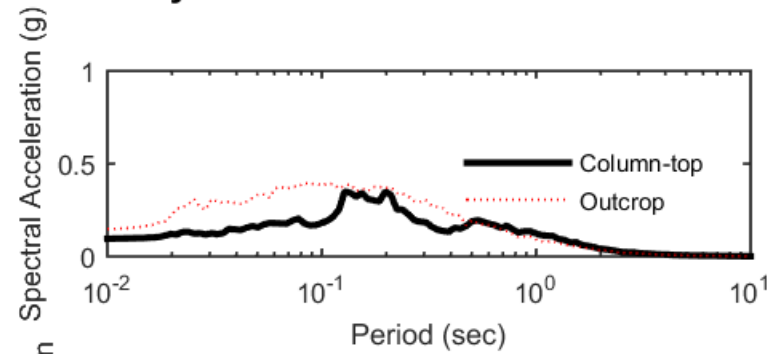
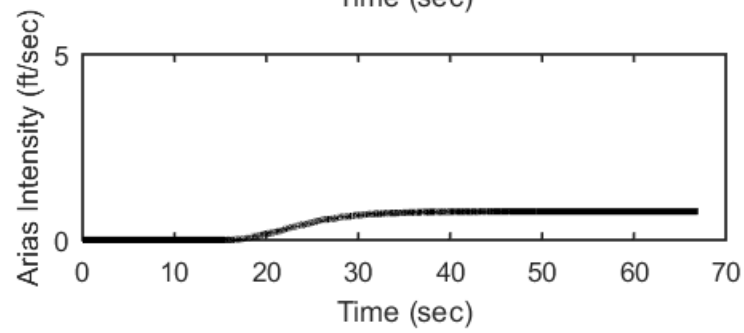
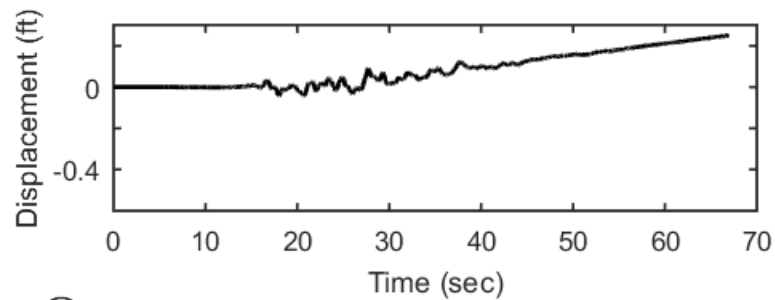
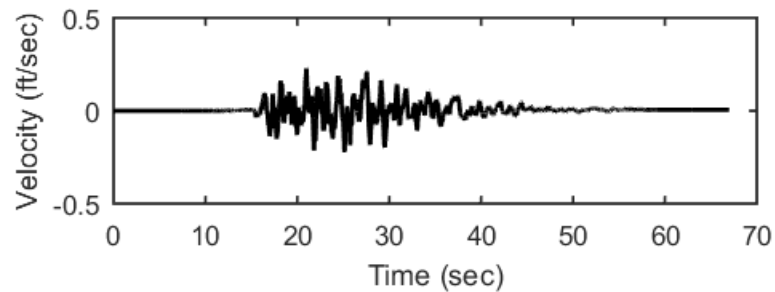
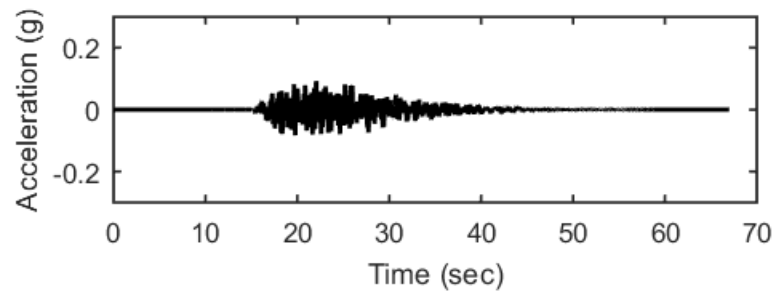
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5

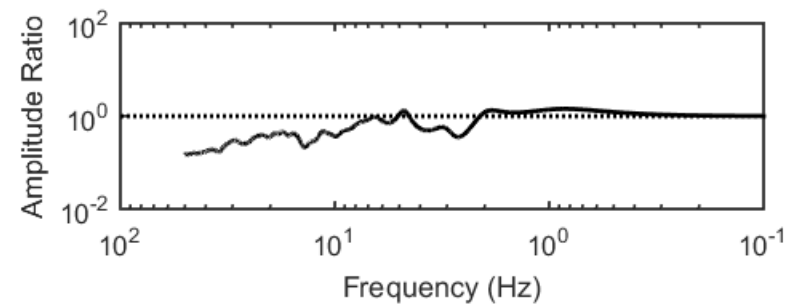
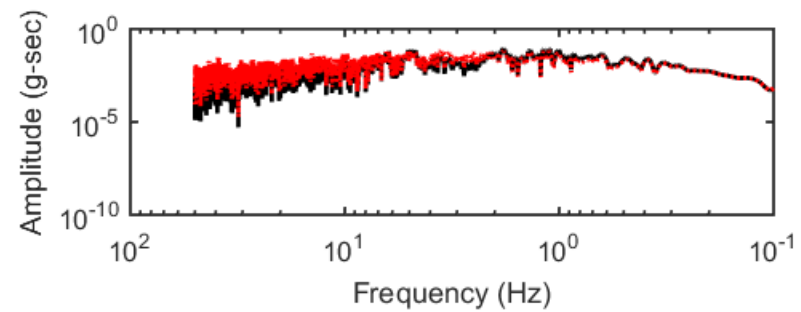
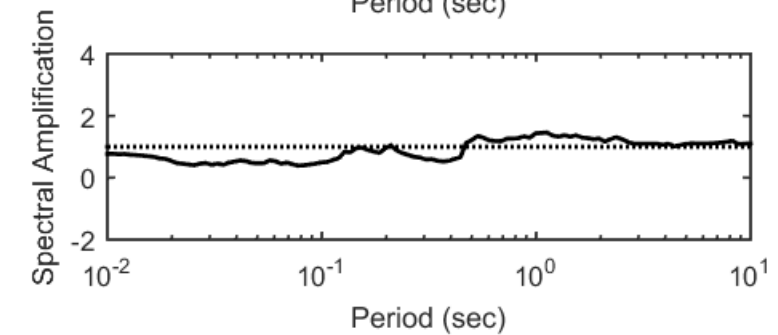
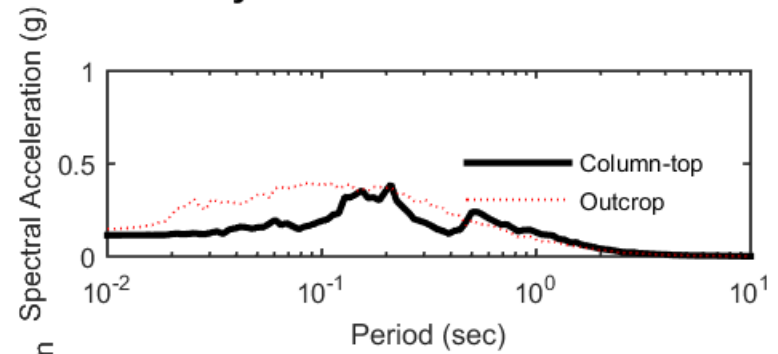
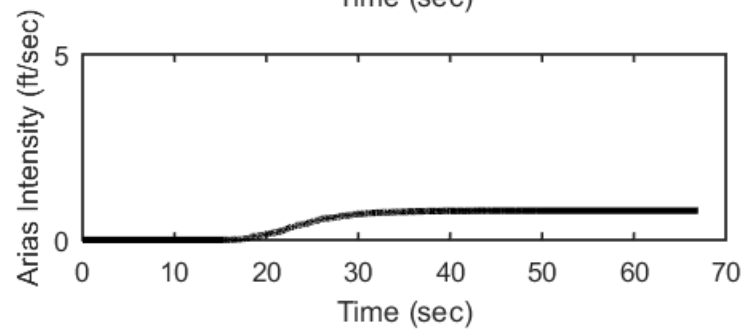
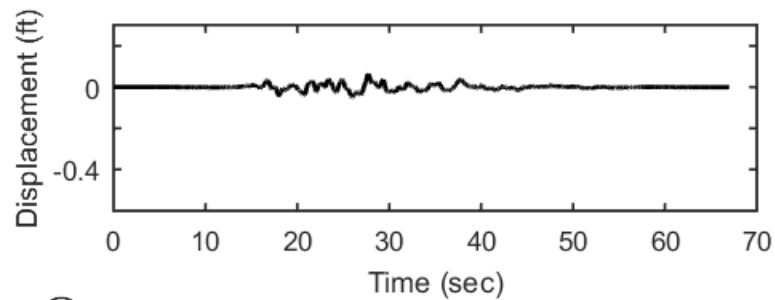
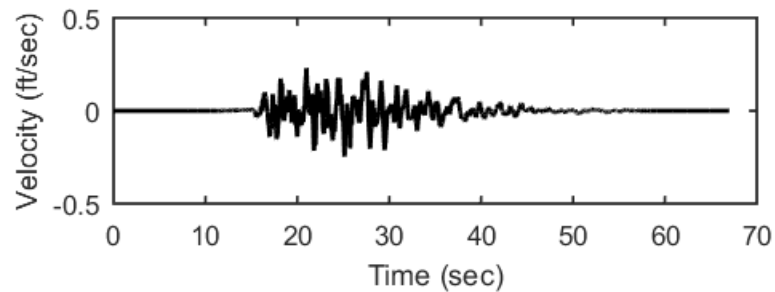
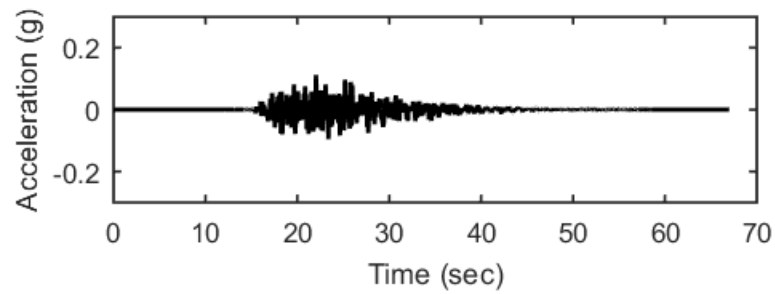


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5

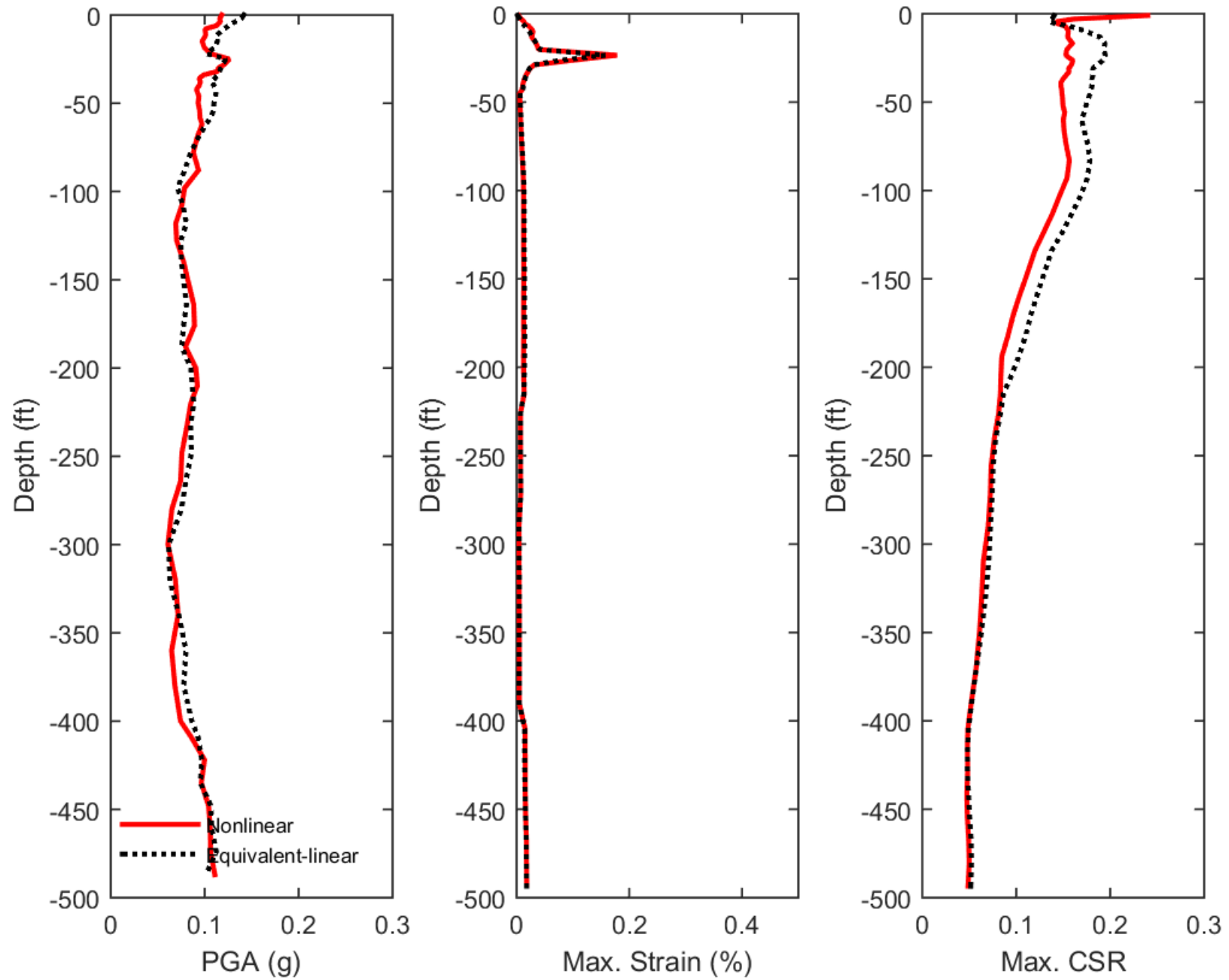




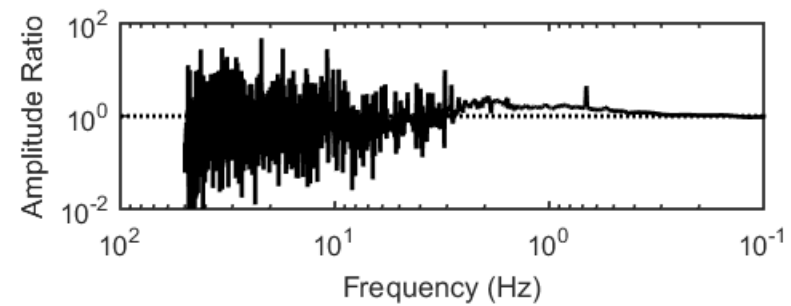
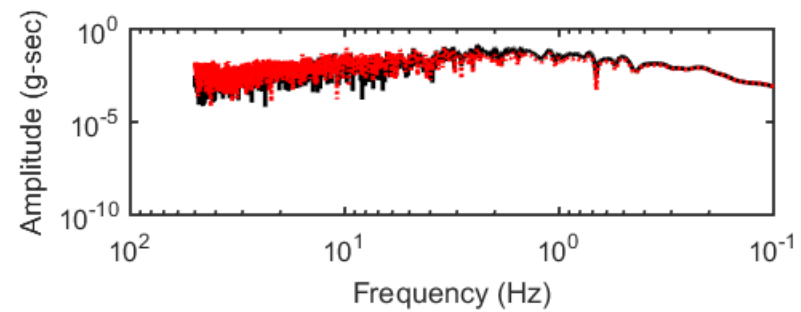
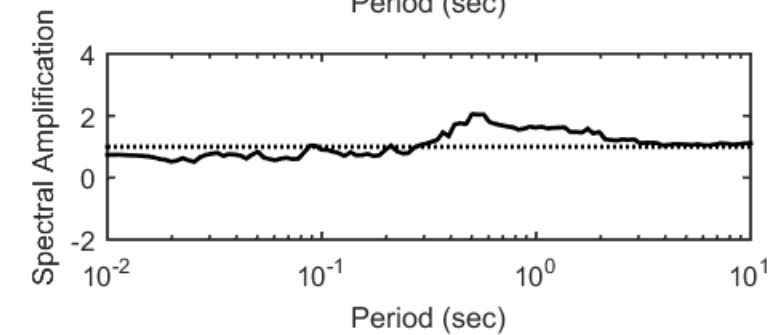
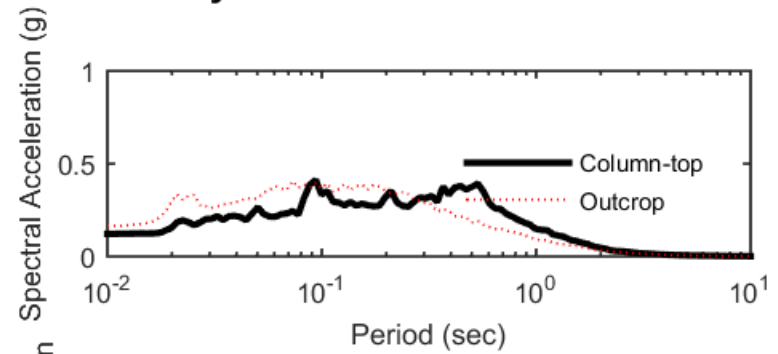
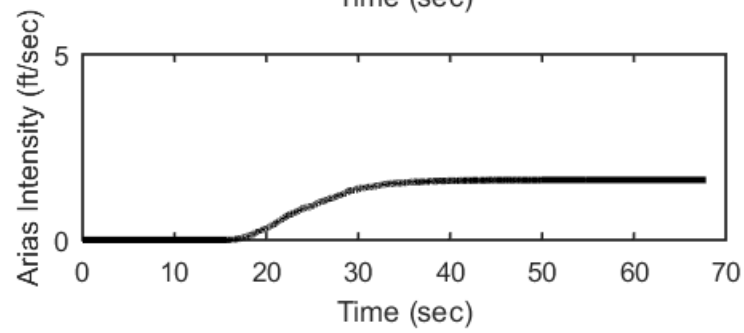
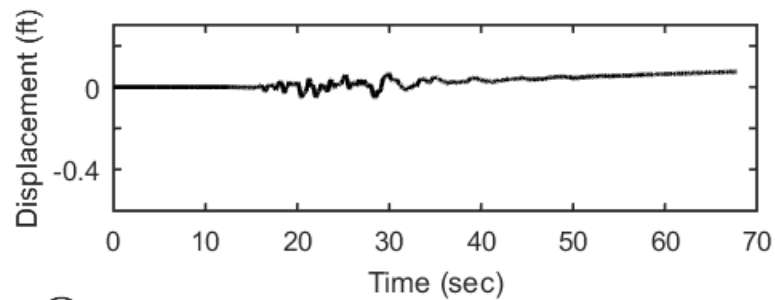
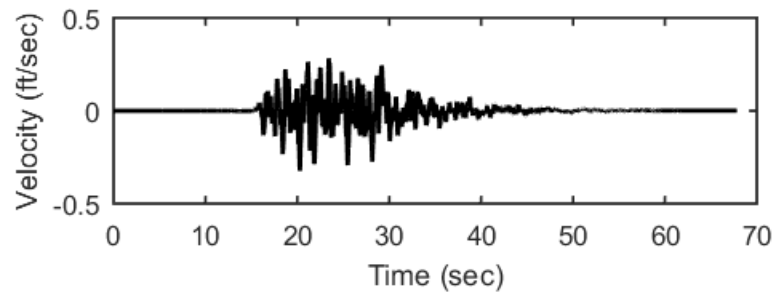
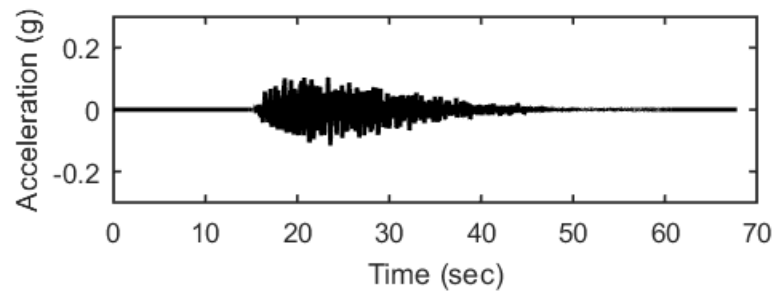
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



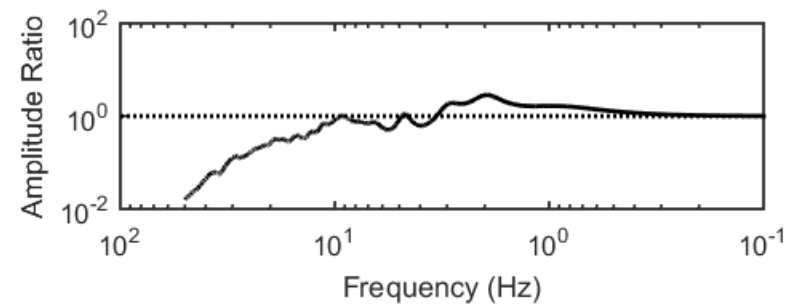
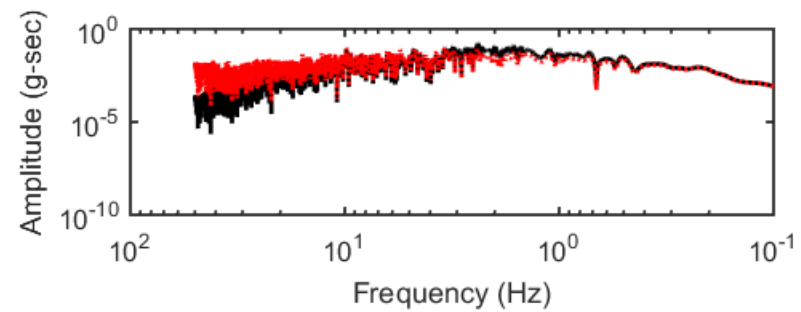
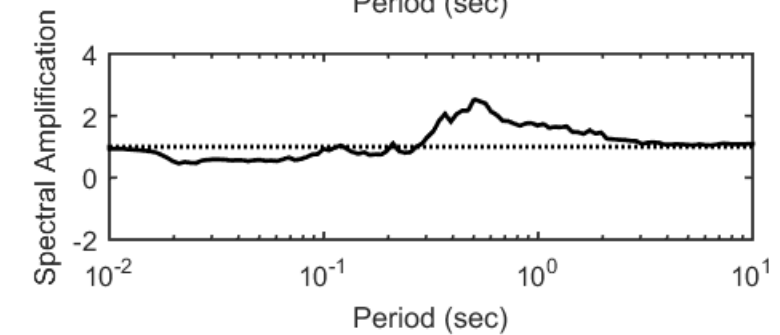
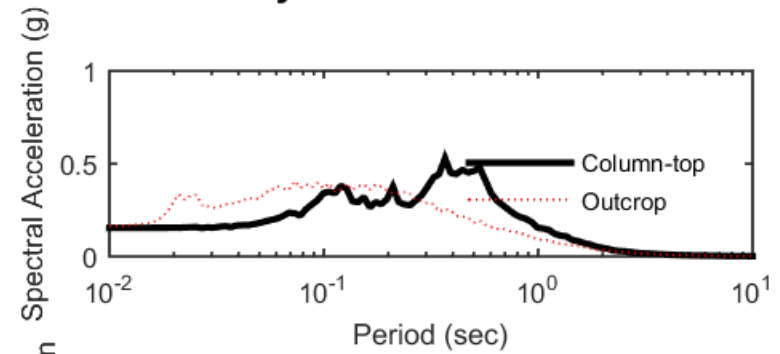
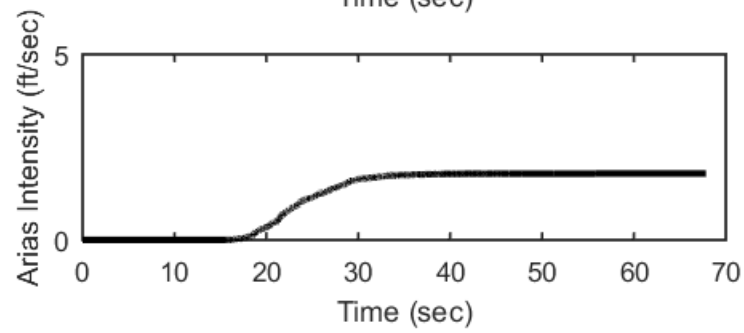
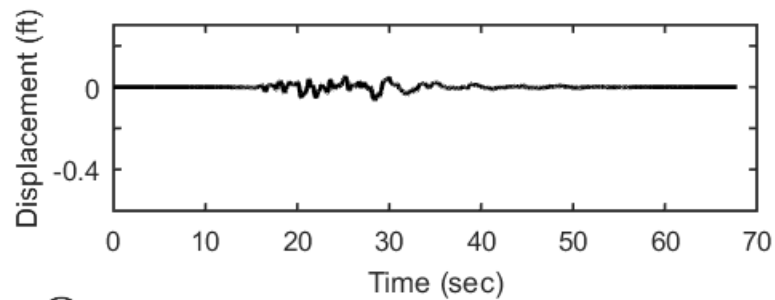
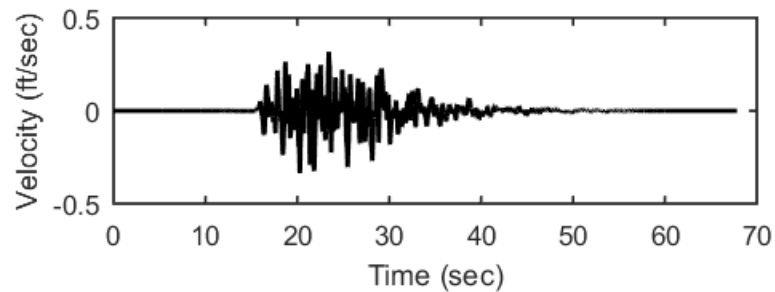
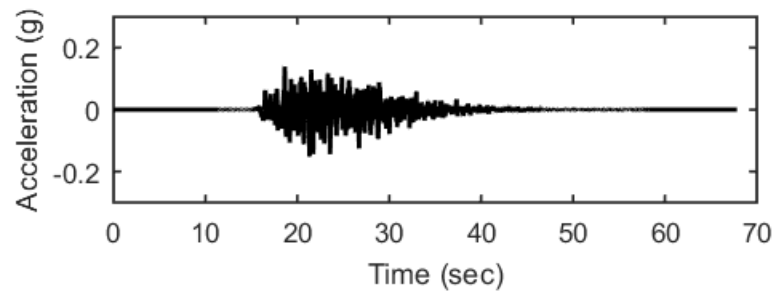
### Profile outputs for Motion: FEE5



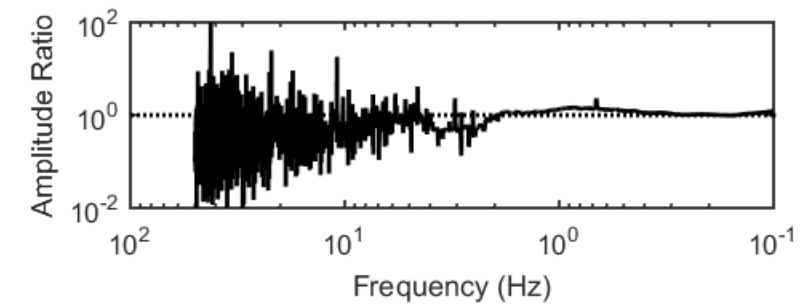
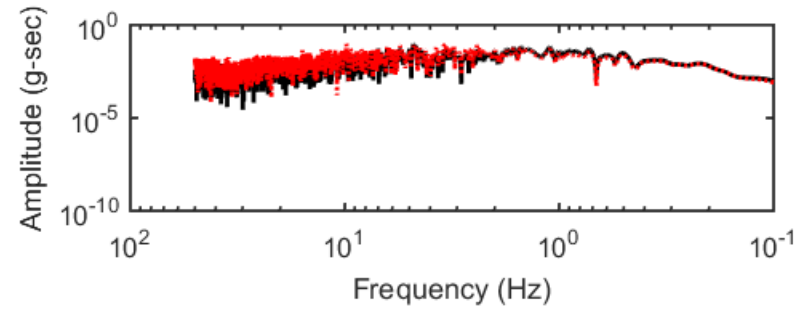
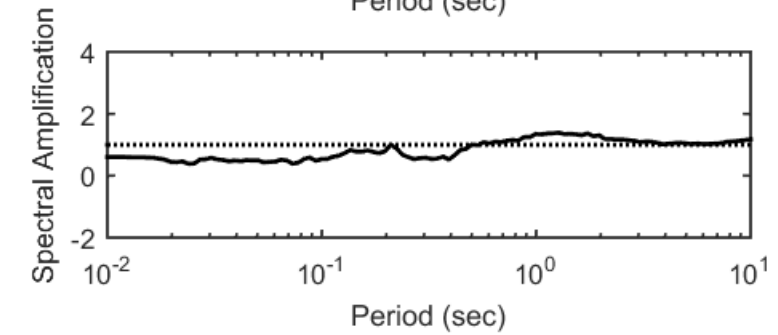
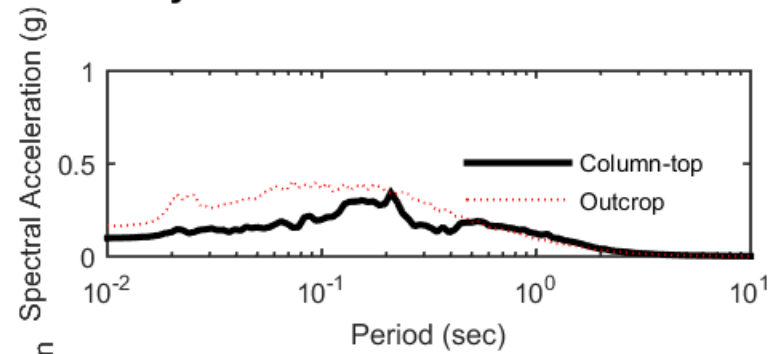
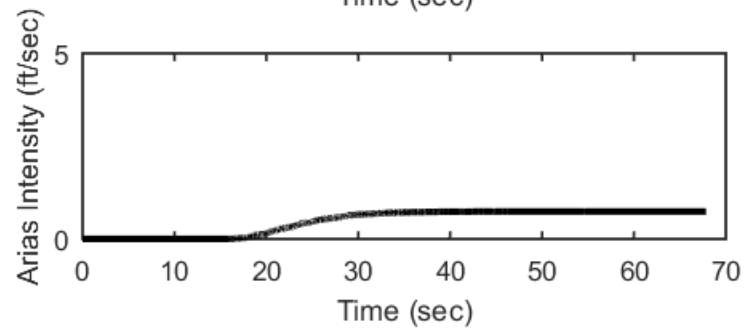
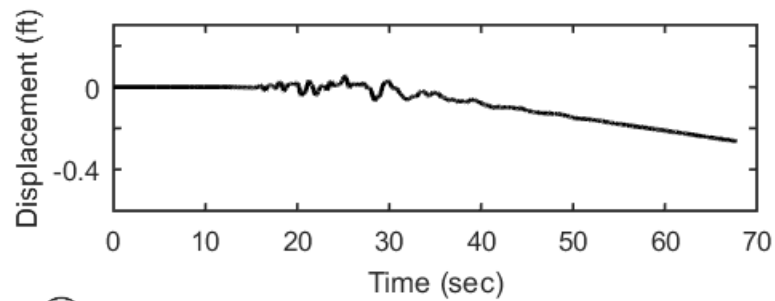
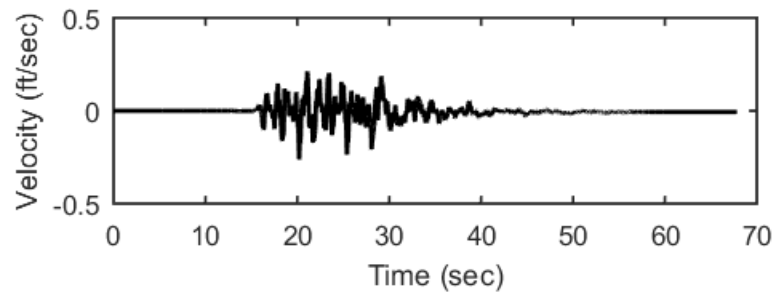
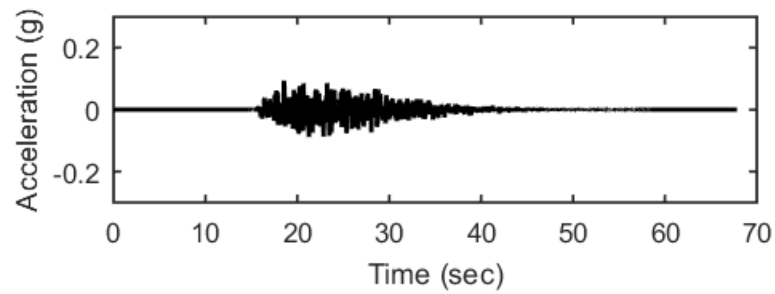
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



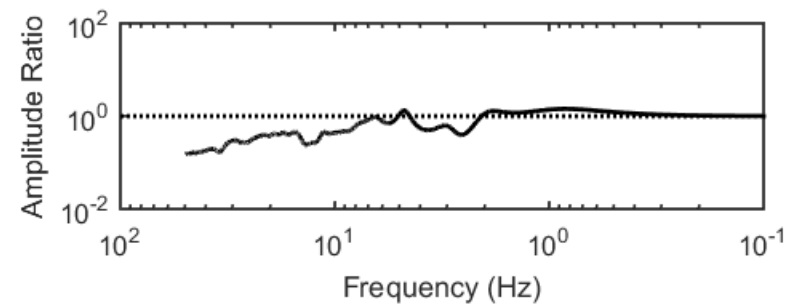
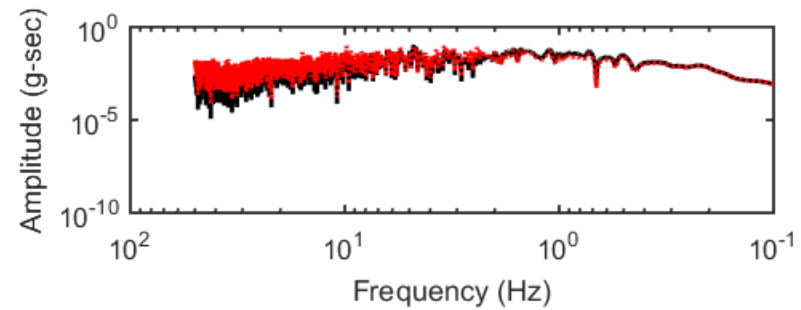
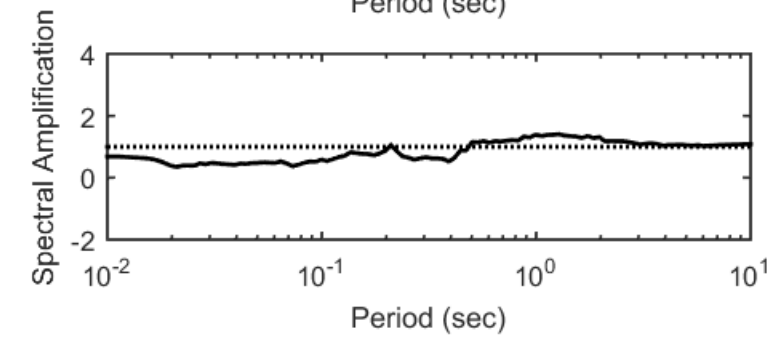
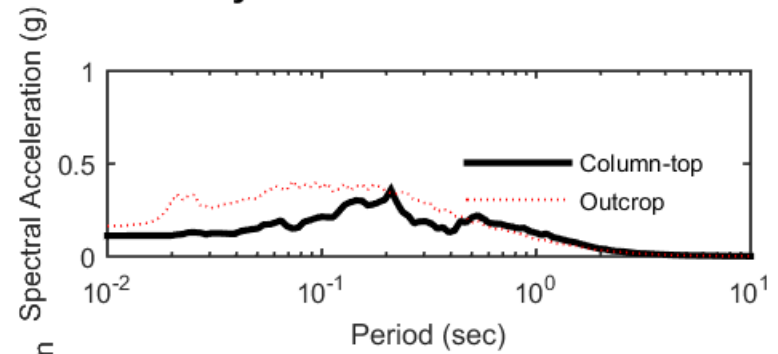
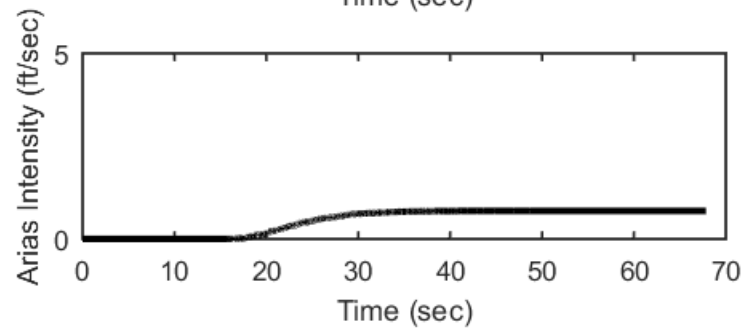
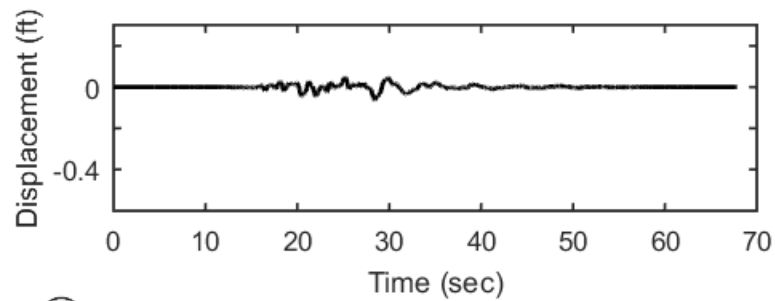
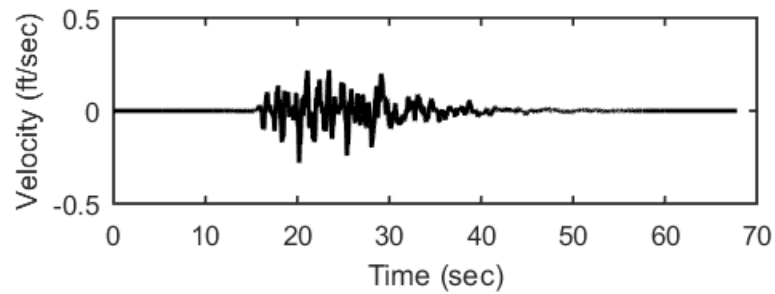
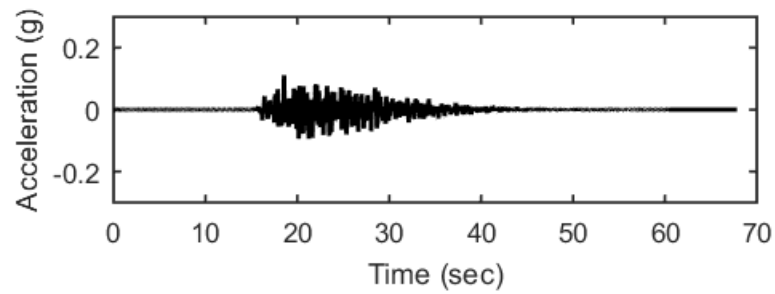
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



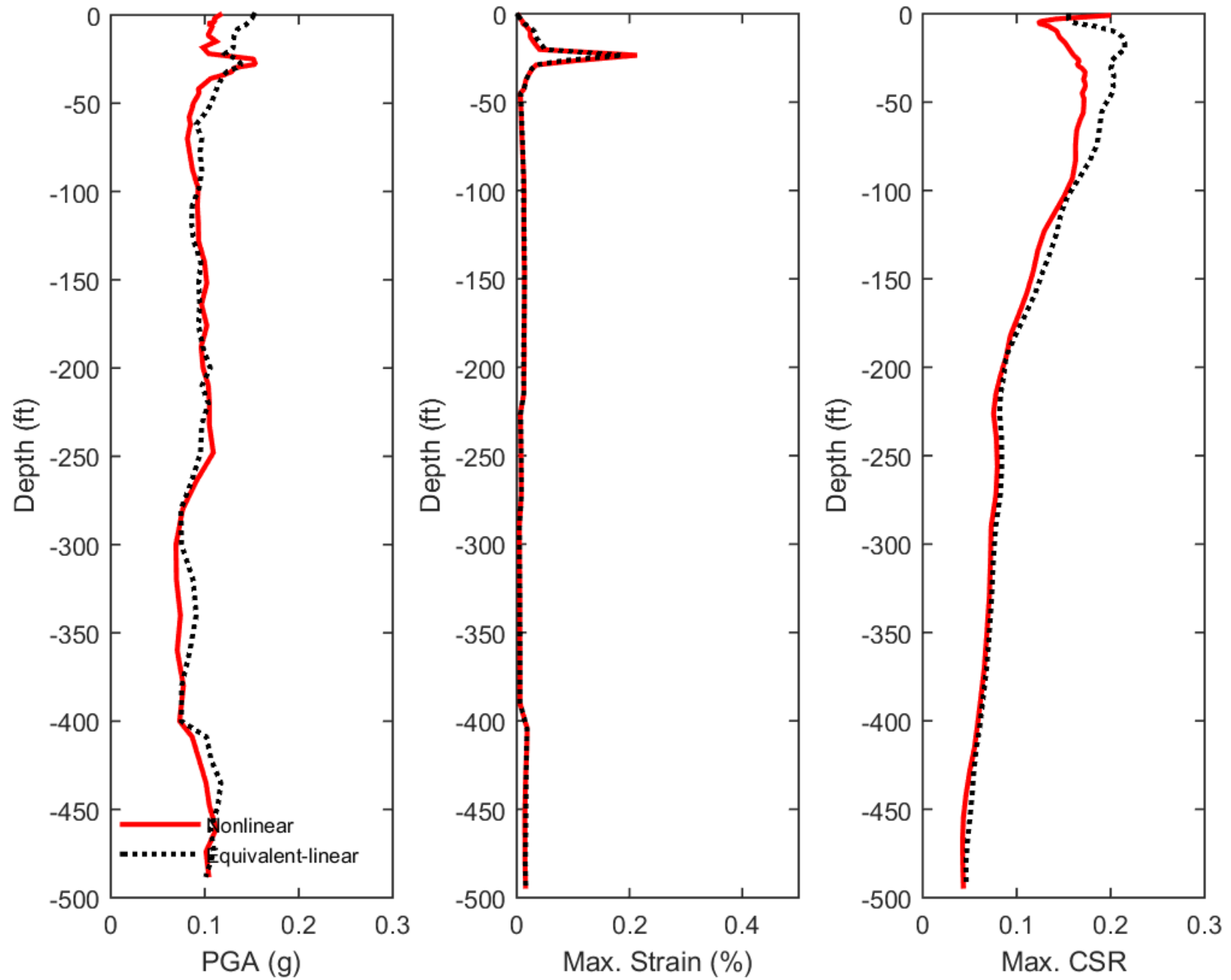
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



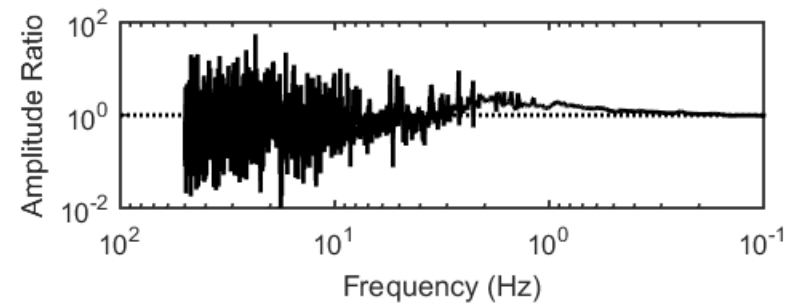
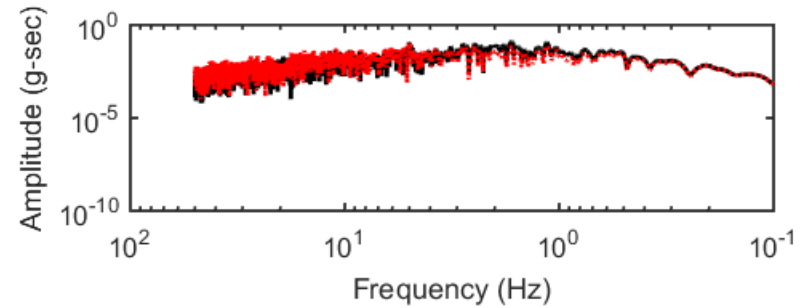
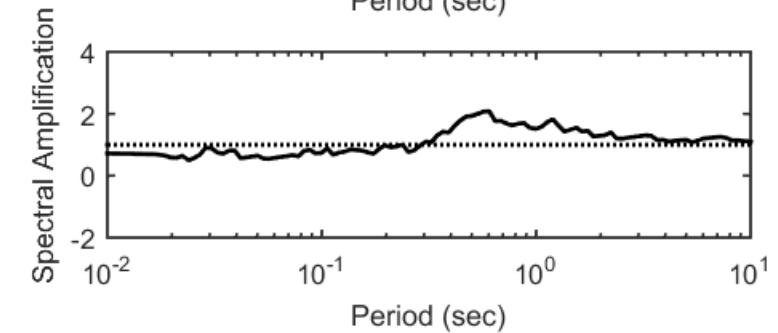
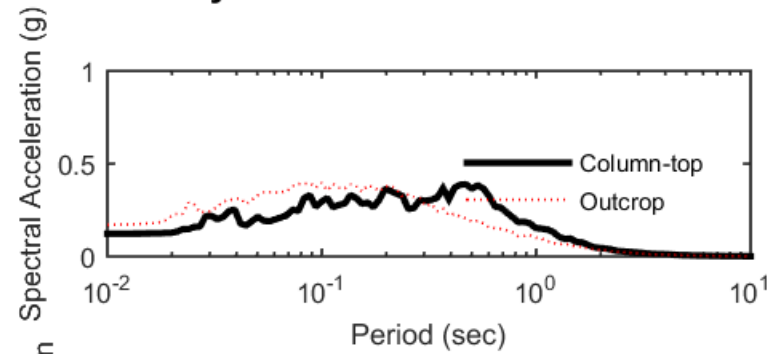
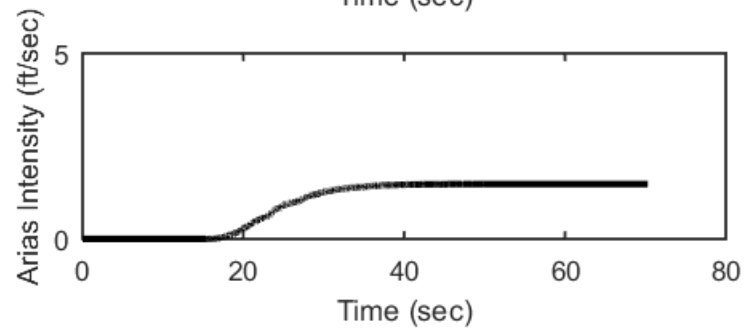
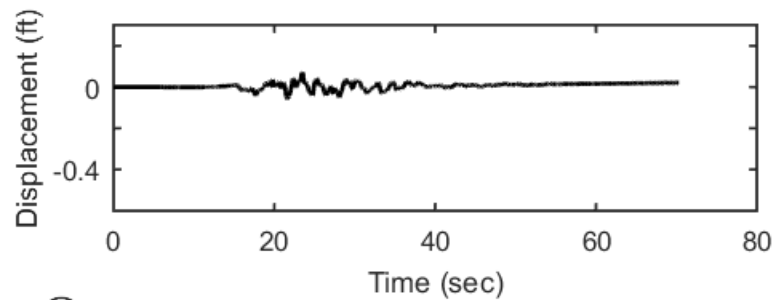
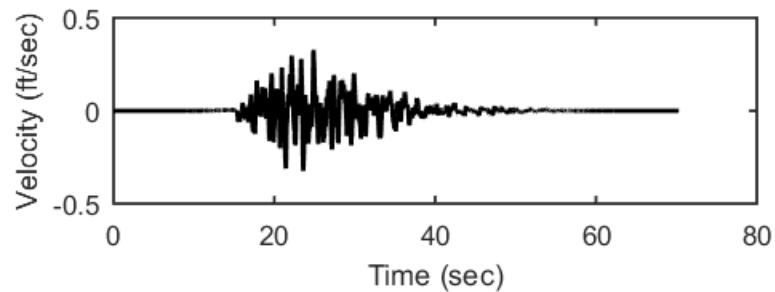
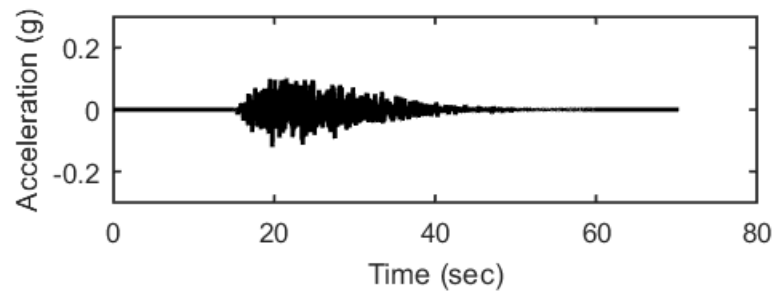
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



### Profile outputs for Motion: FEE6

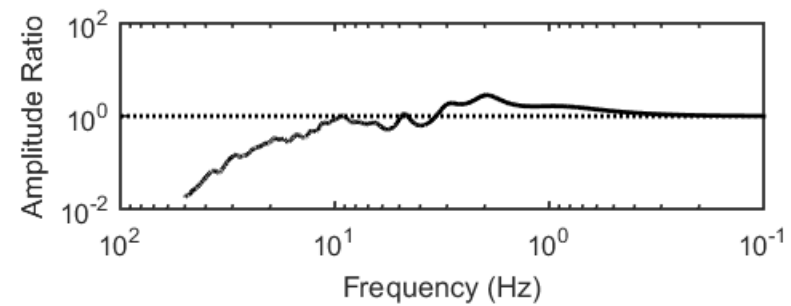
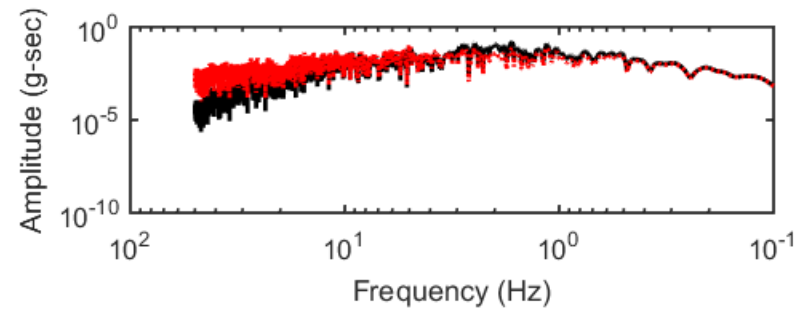
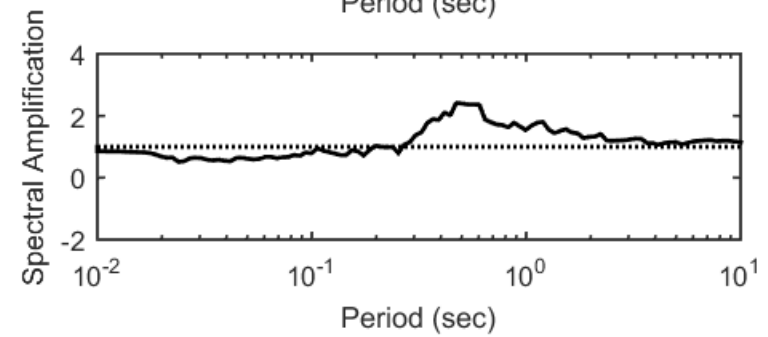
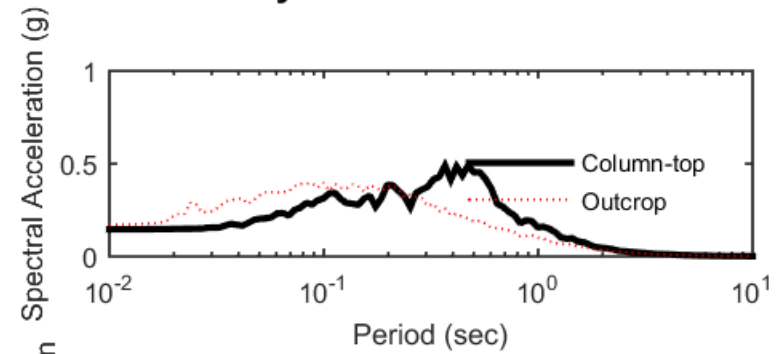
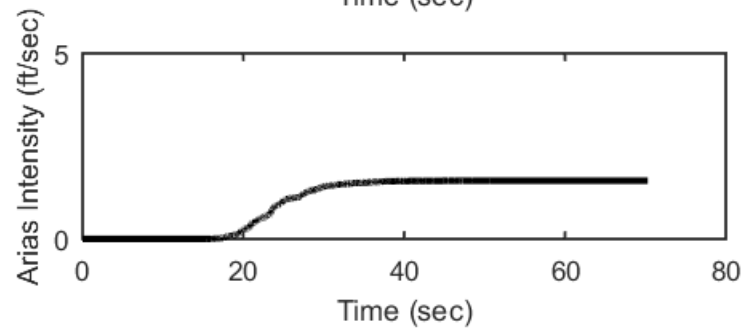
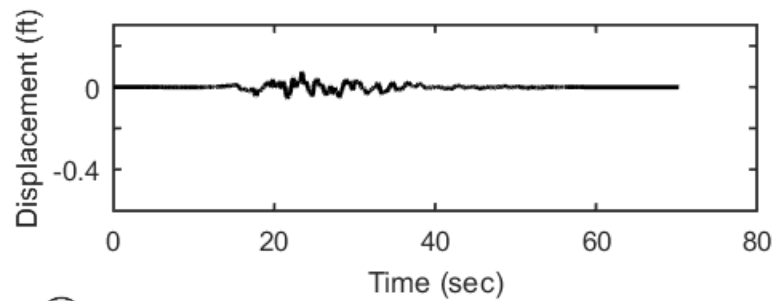
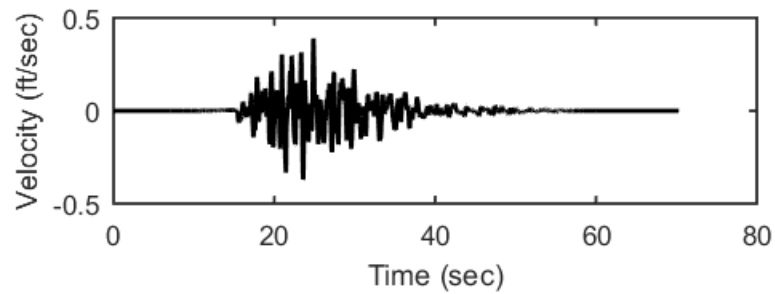
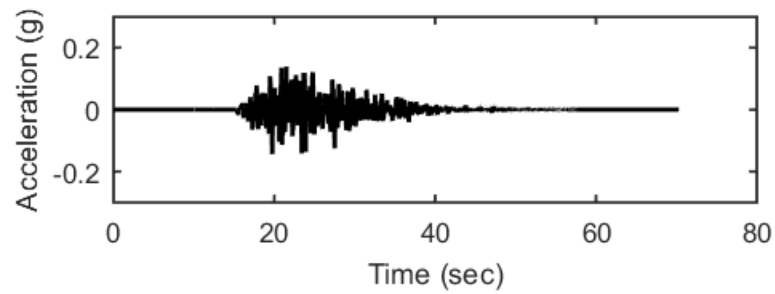


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7

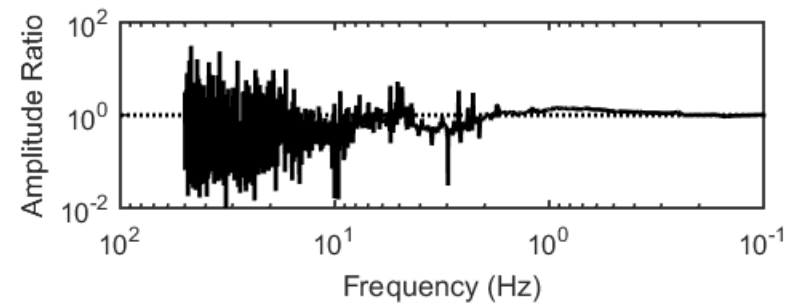
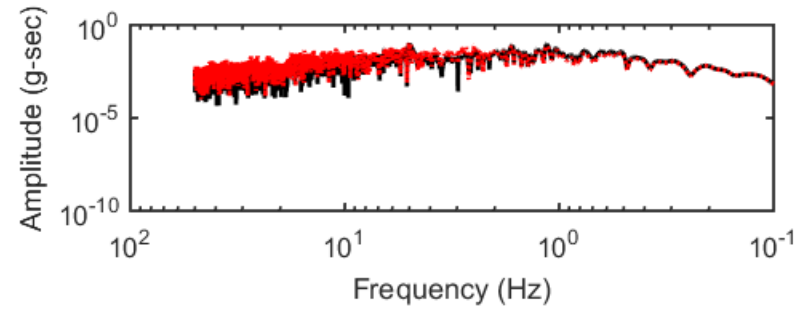
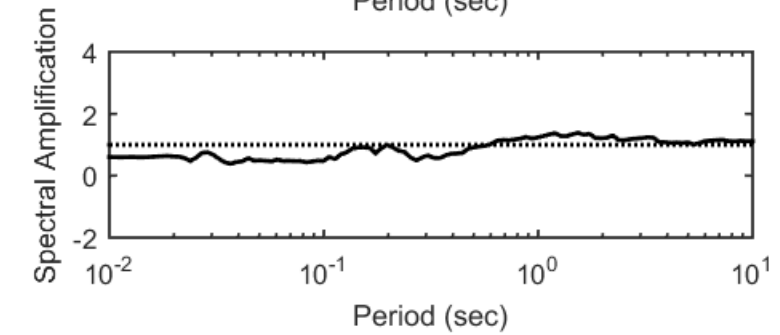
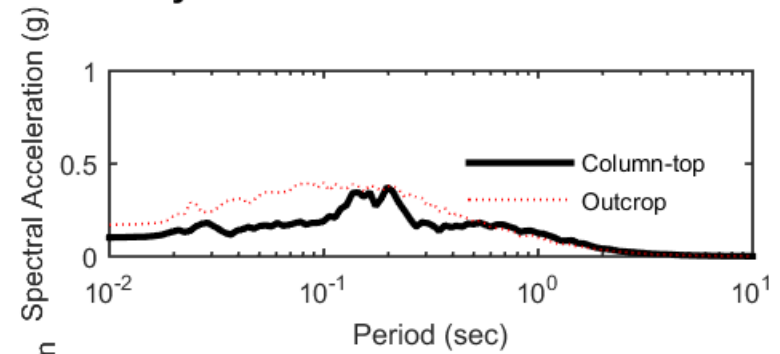
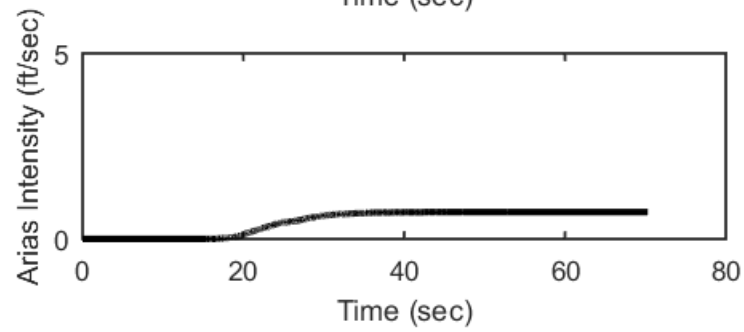
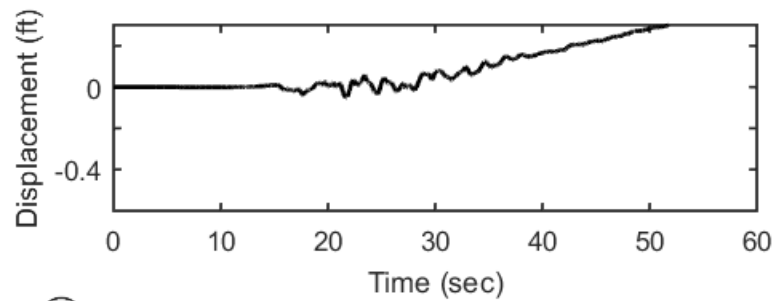
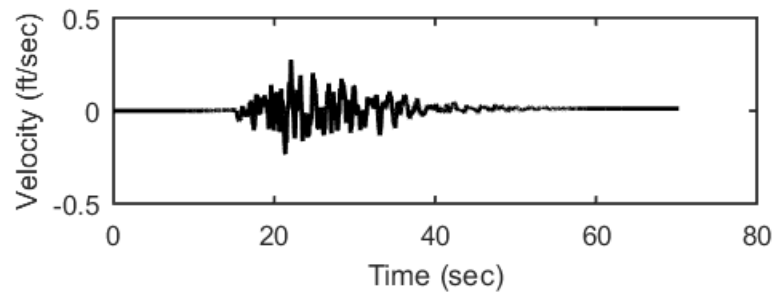
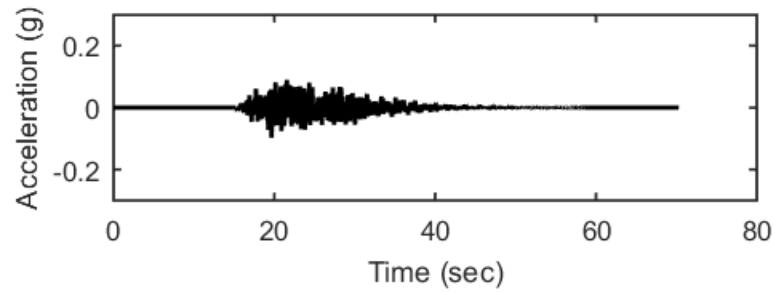




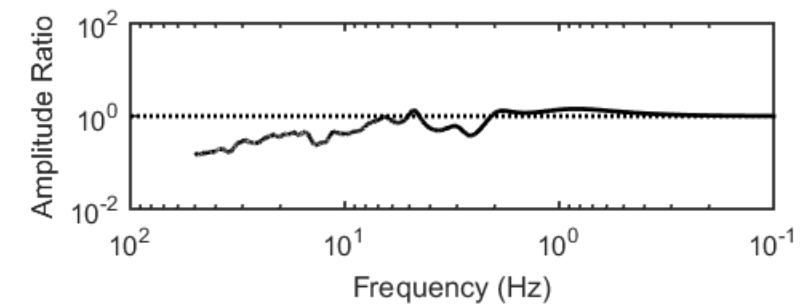
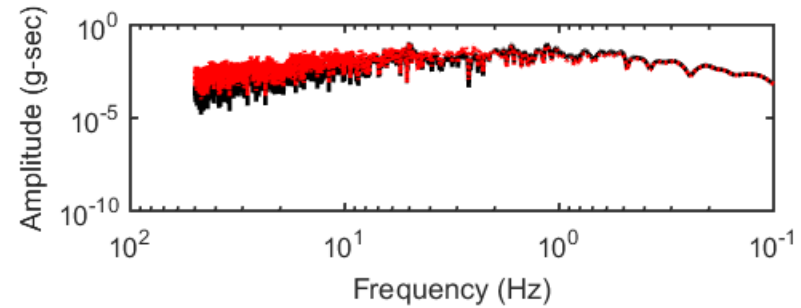
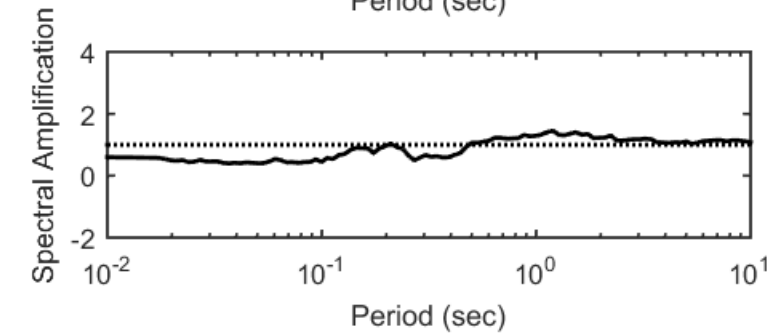
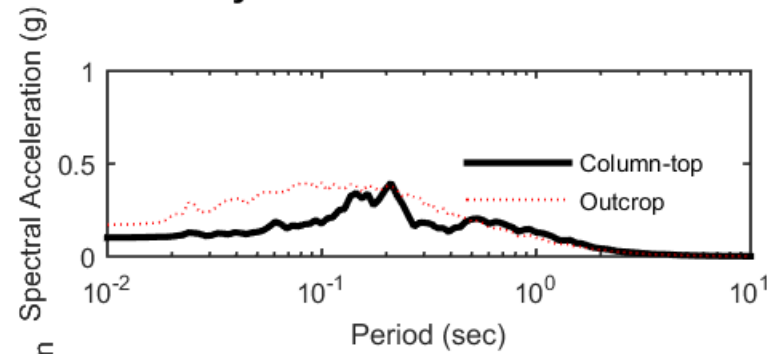
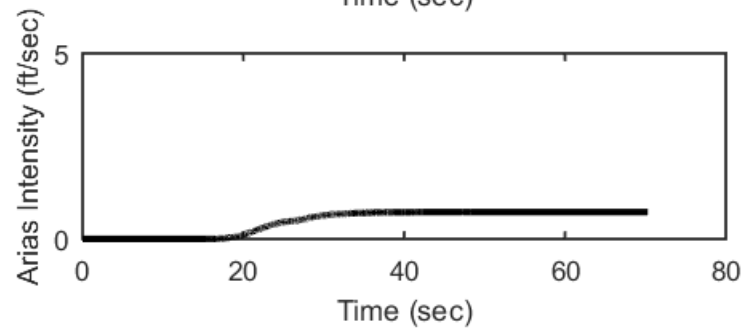
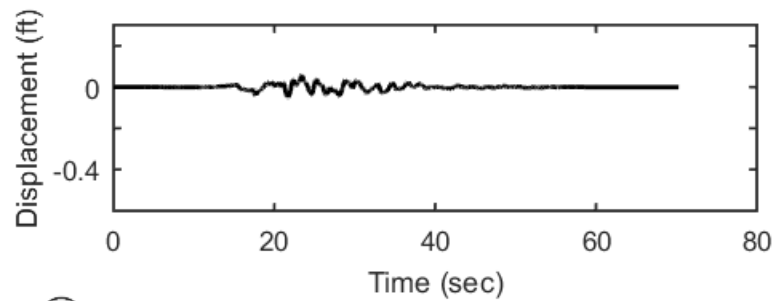
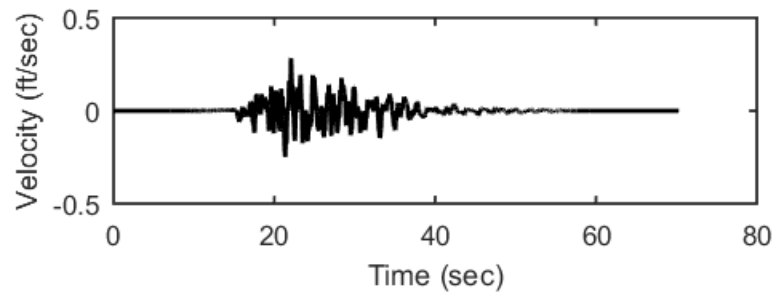
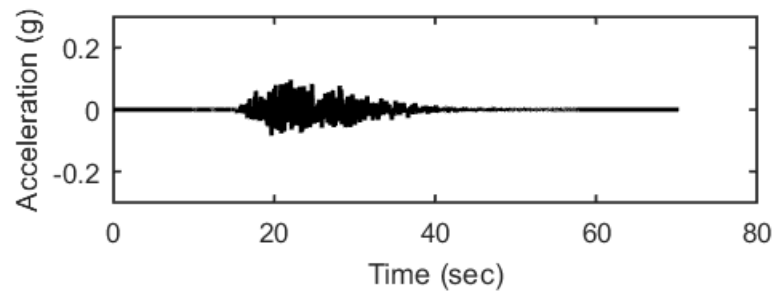
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



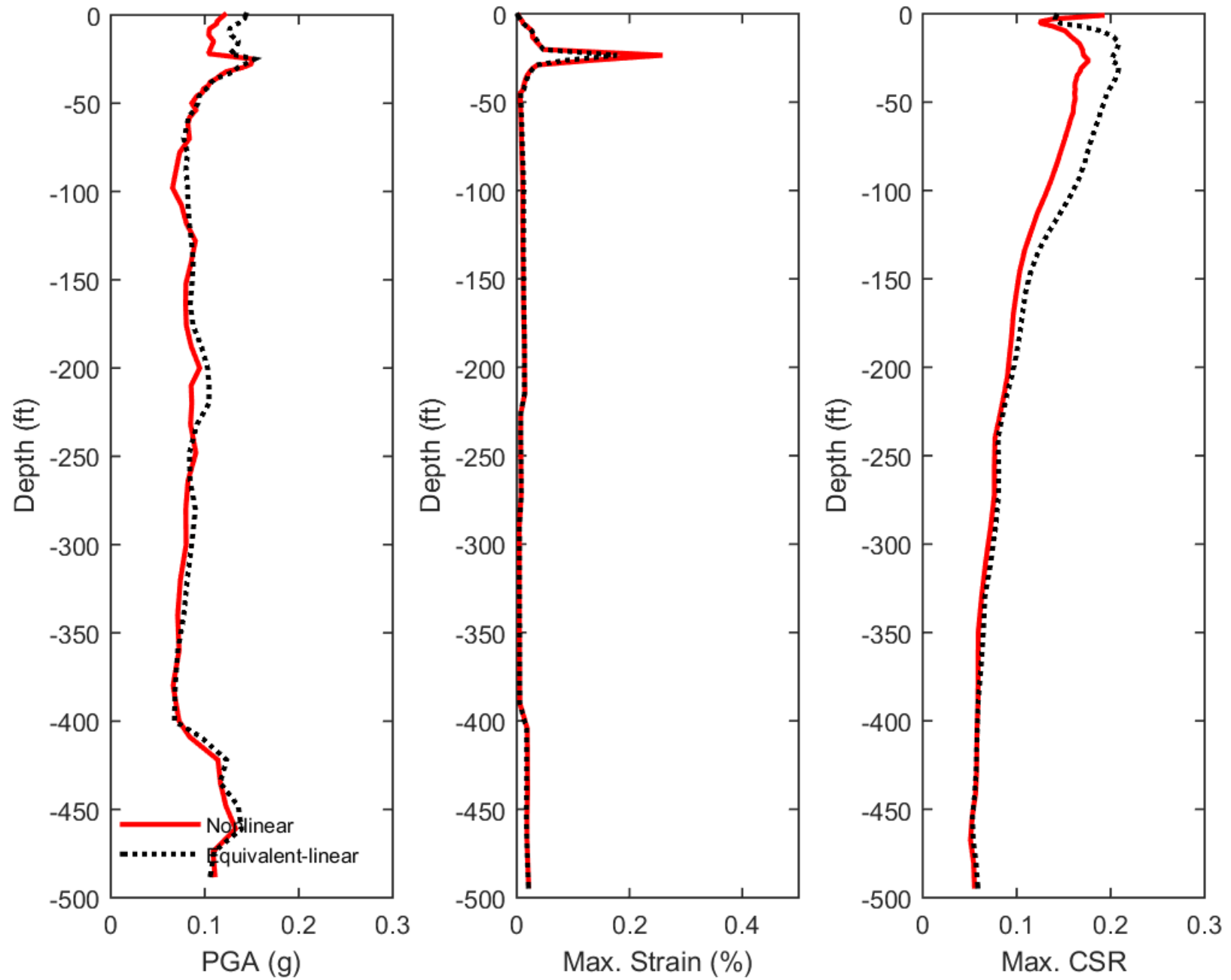
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



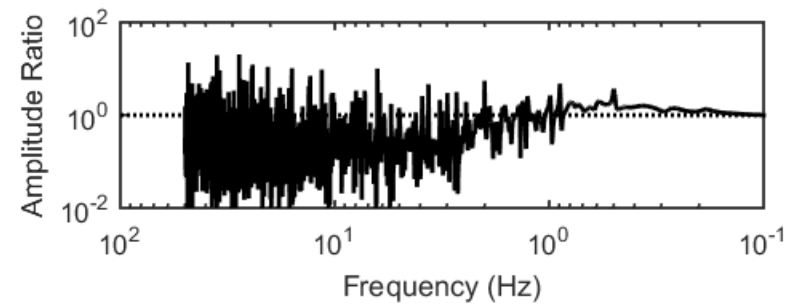
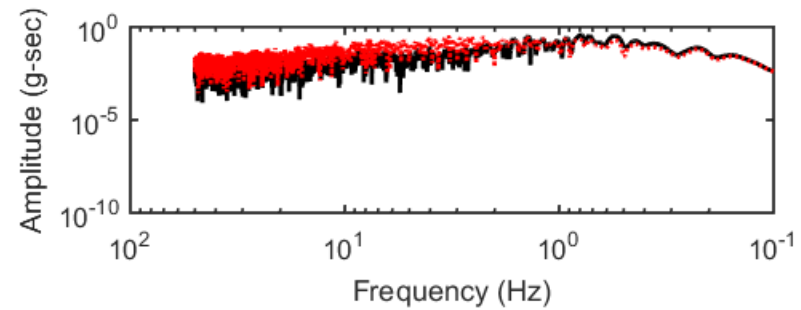
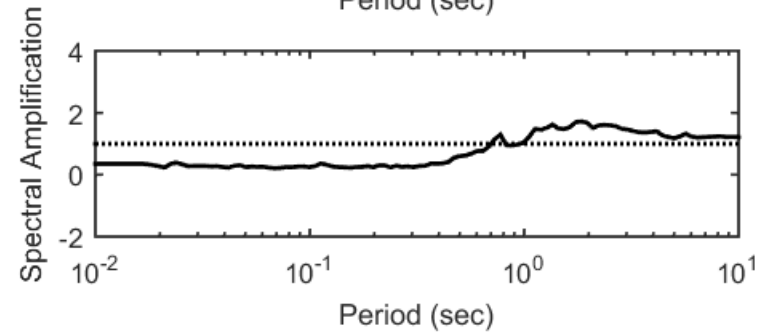
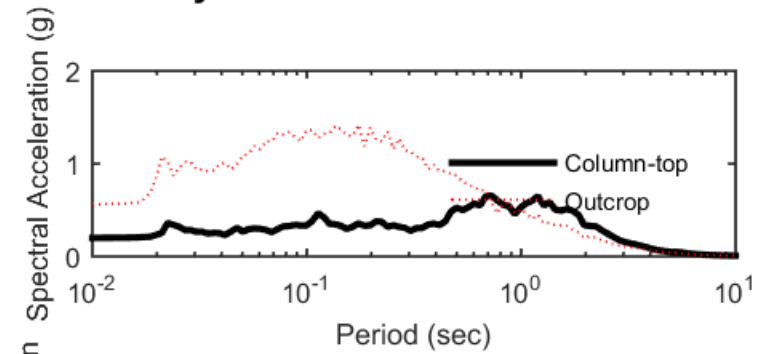
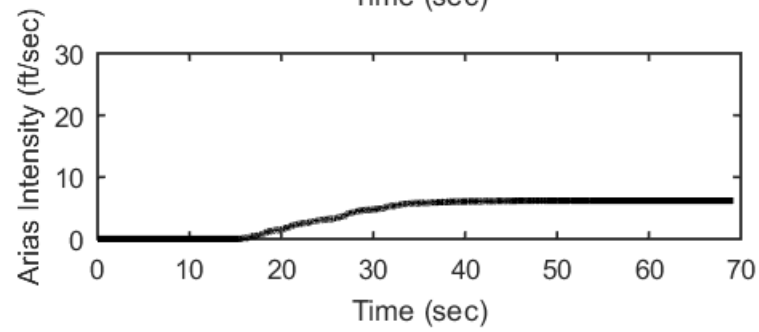
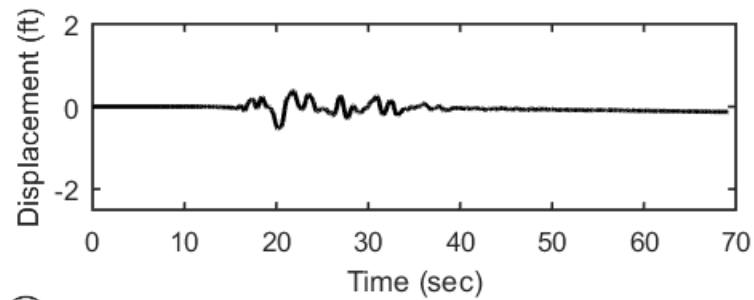
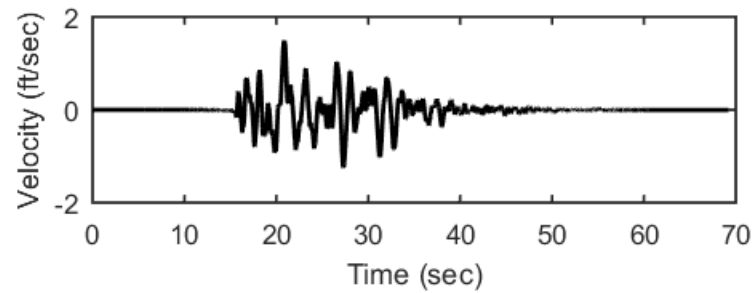
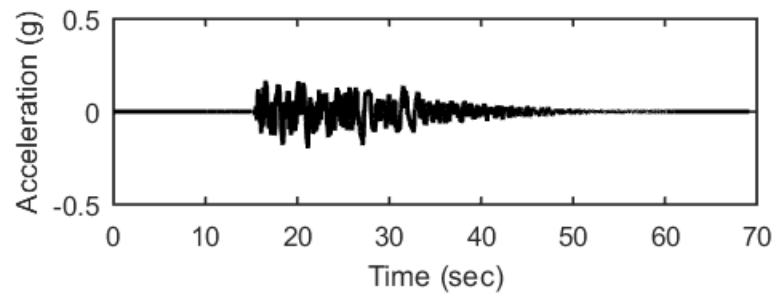
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



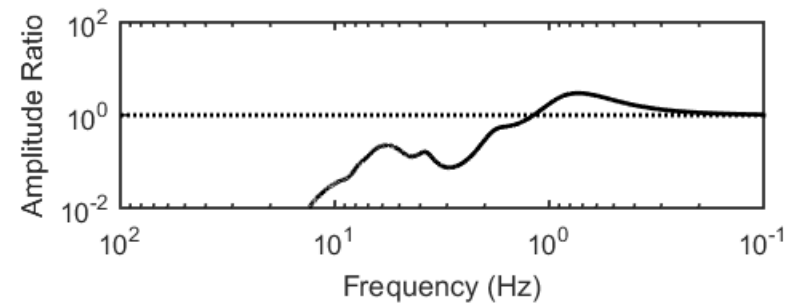
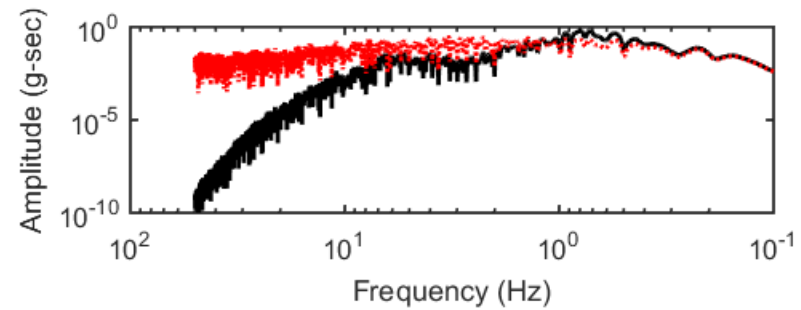
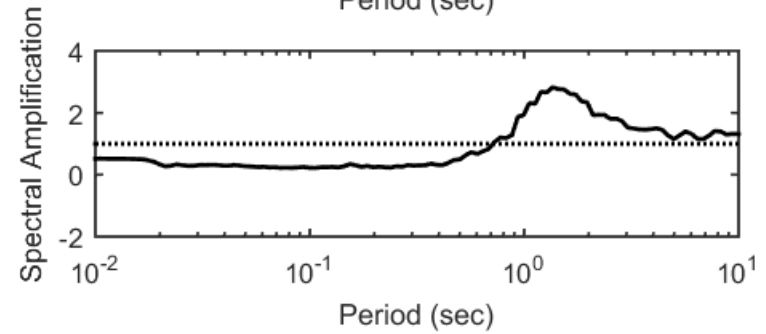
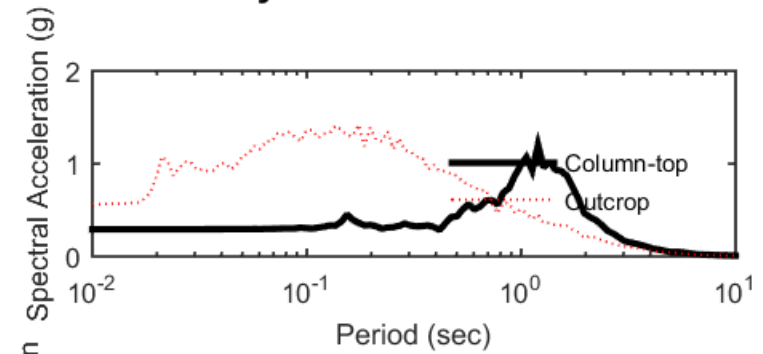
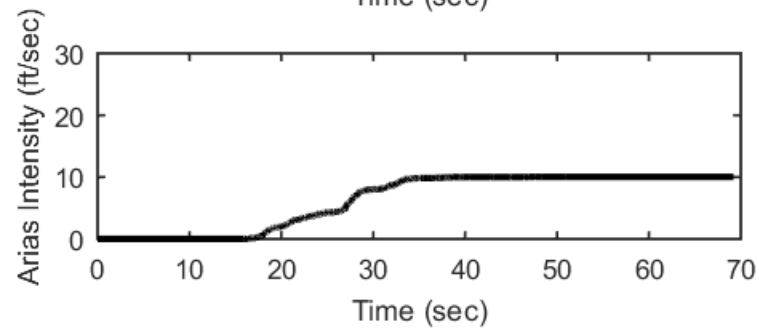
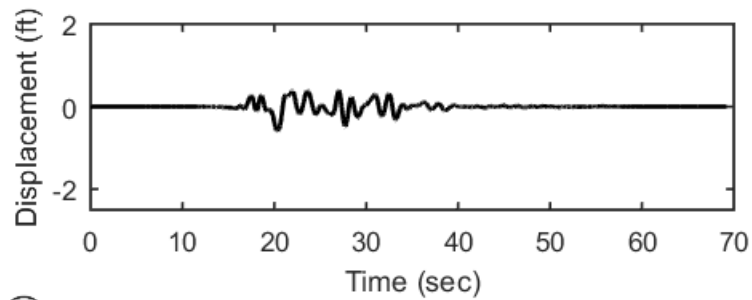
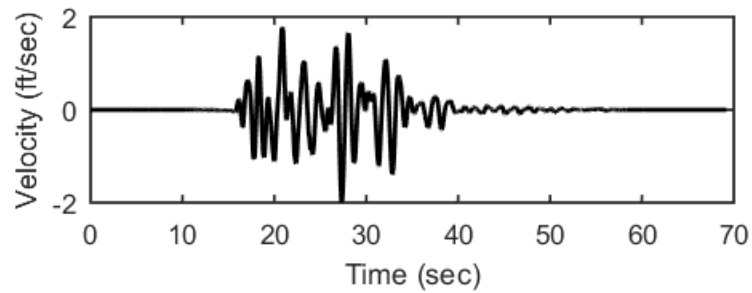
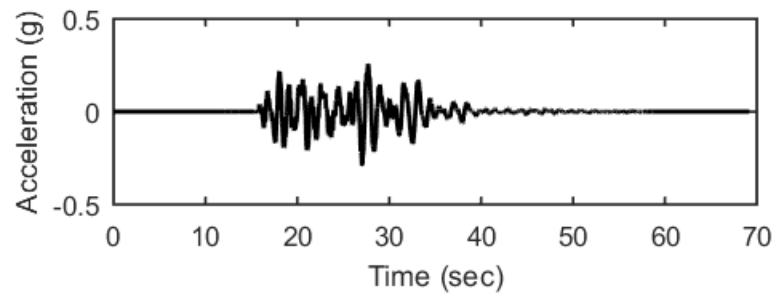
### Profile outputs for Motion: FEE7



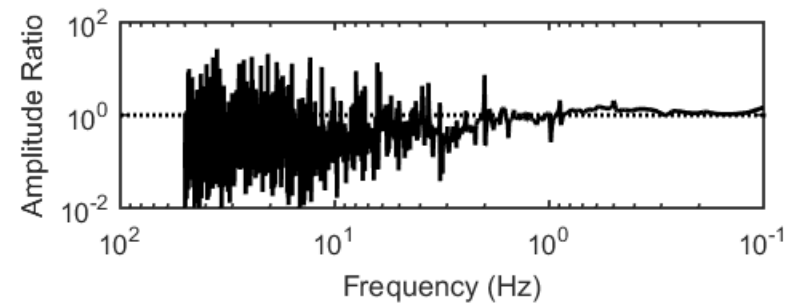
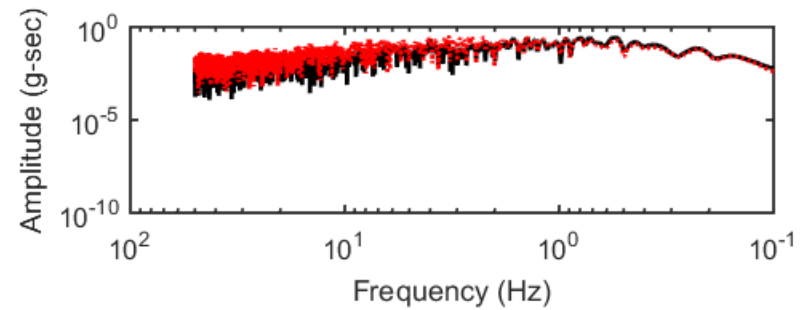
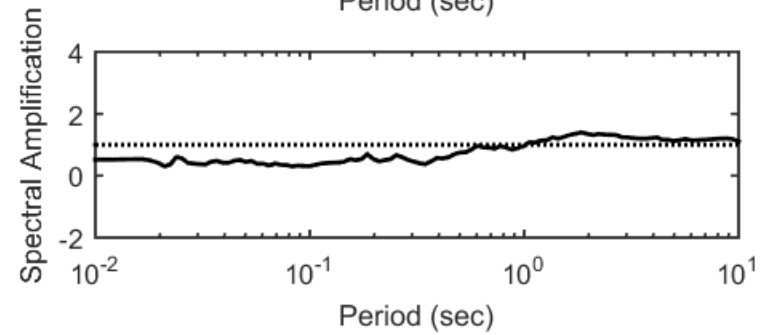
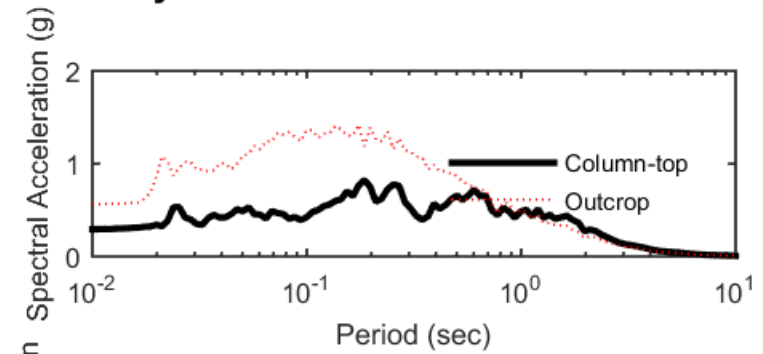
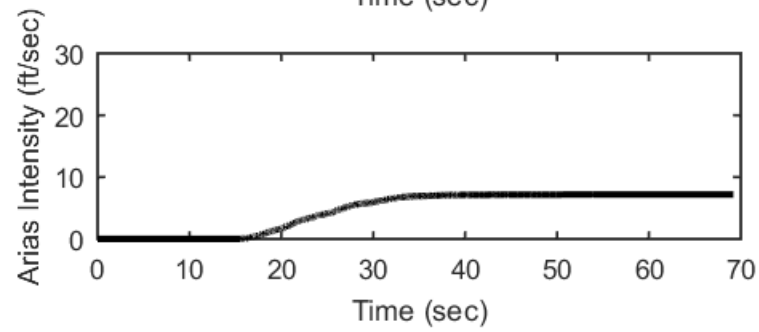
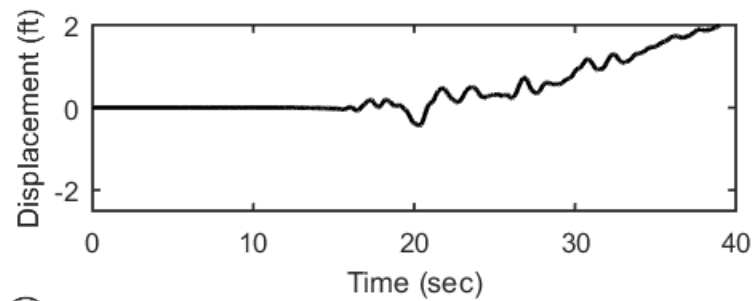
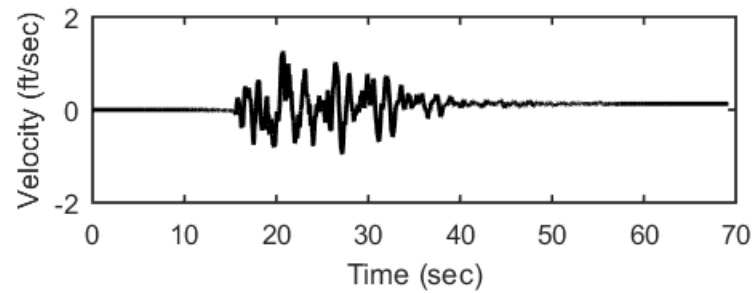
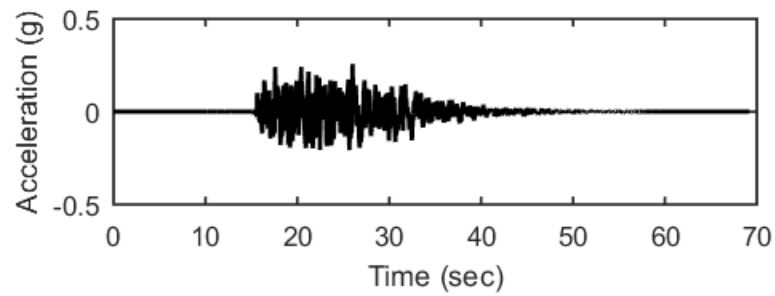
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



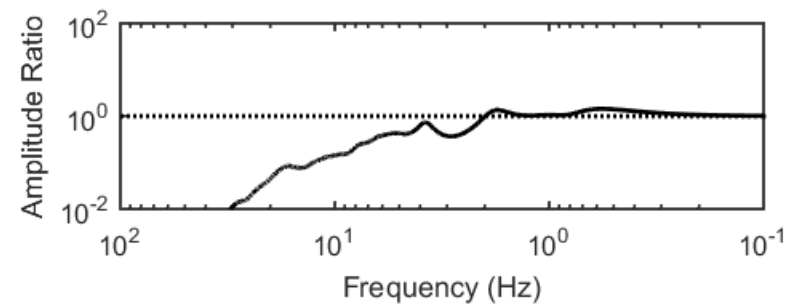
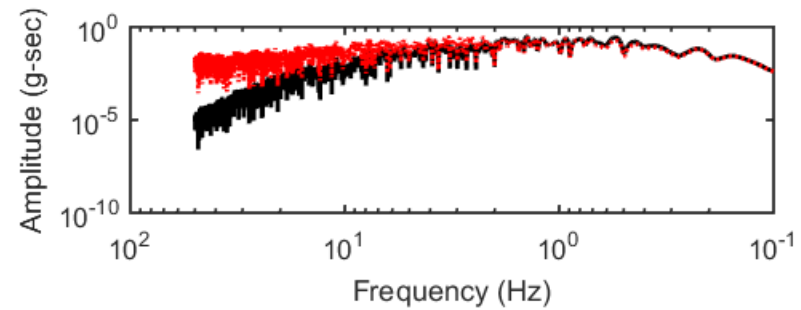
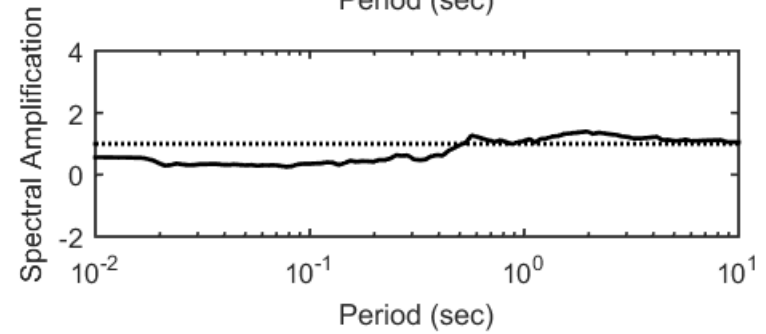
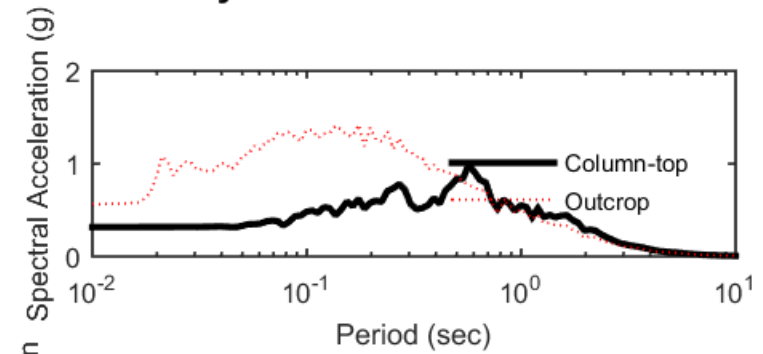
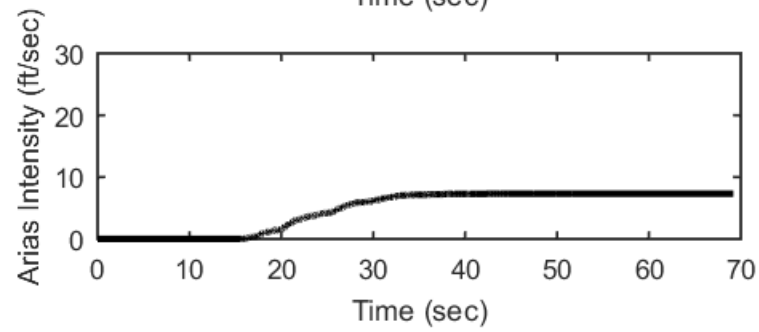
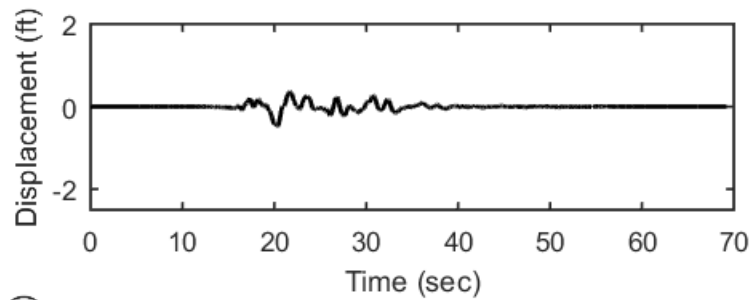
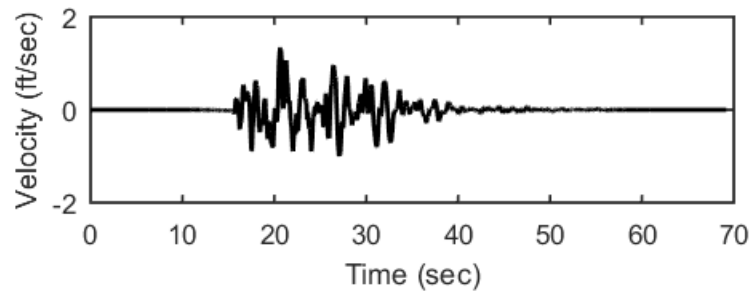
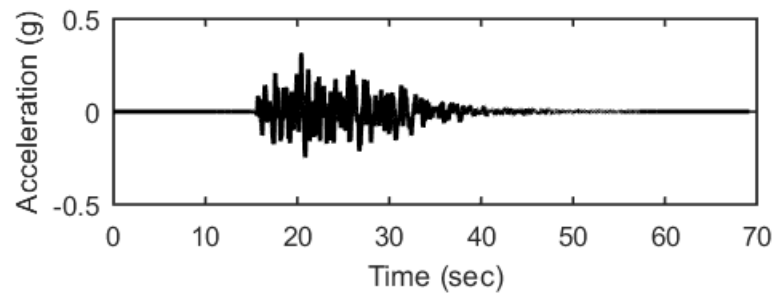
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1

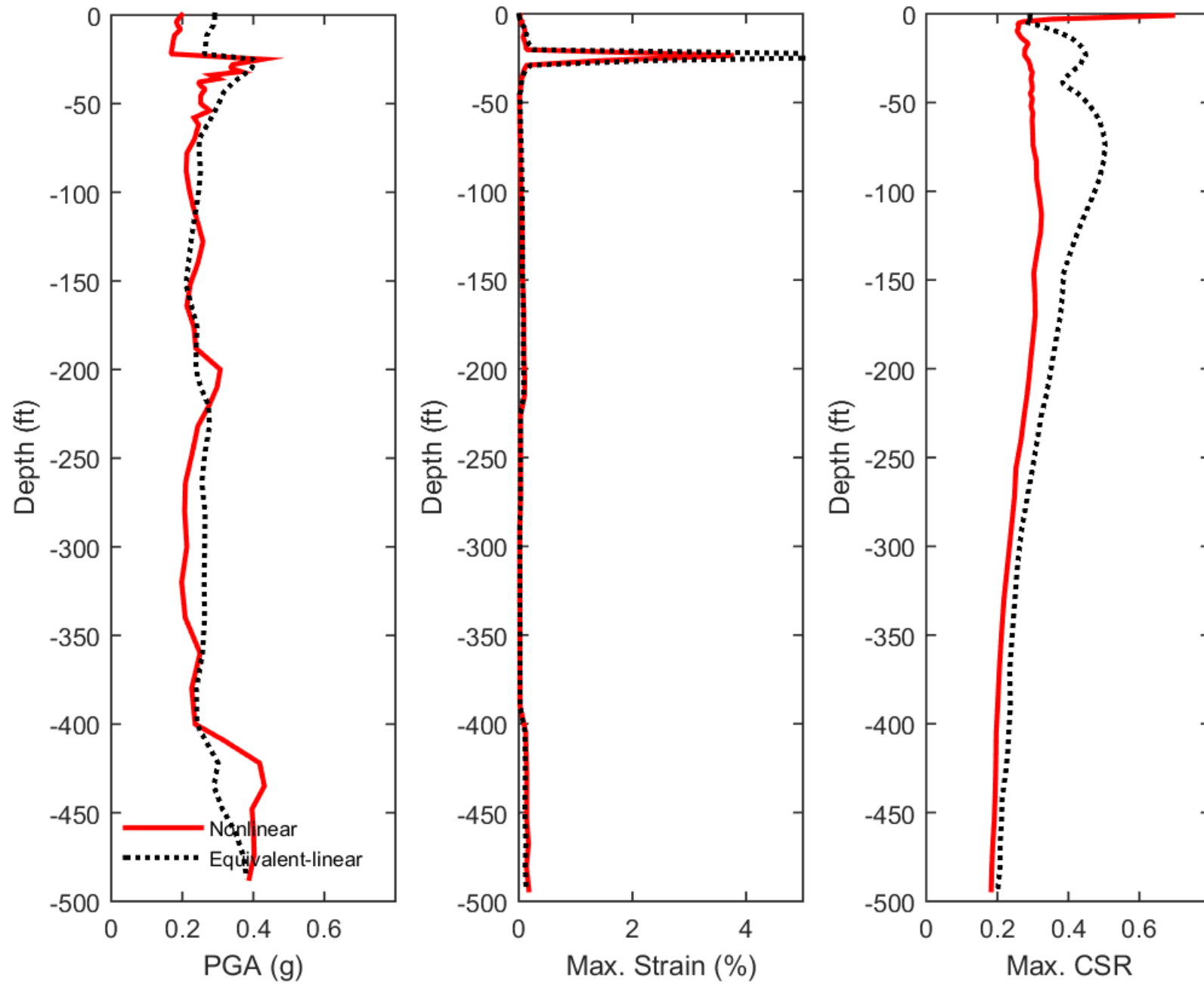


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1

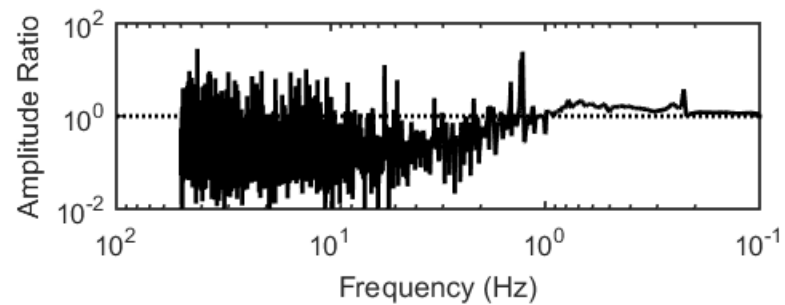
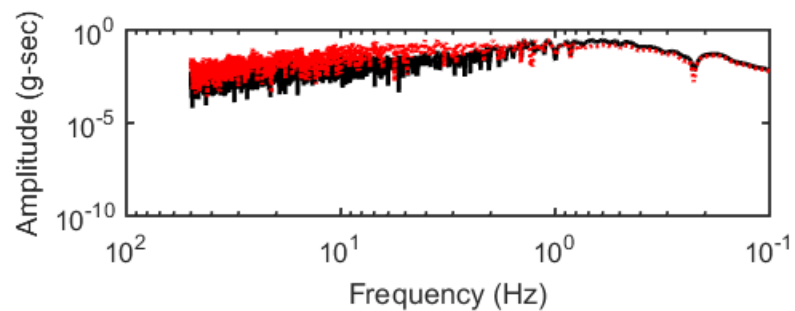
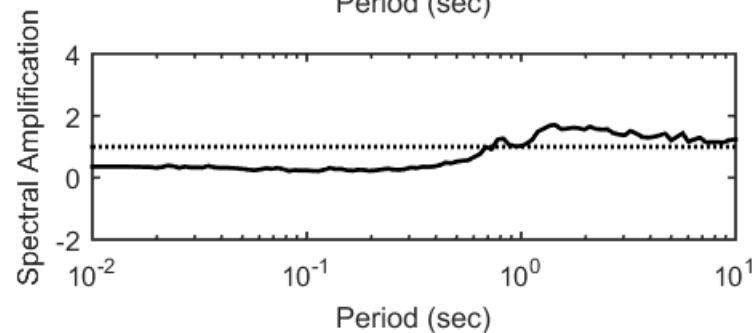
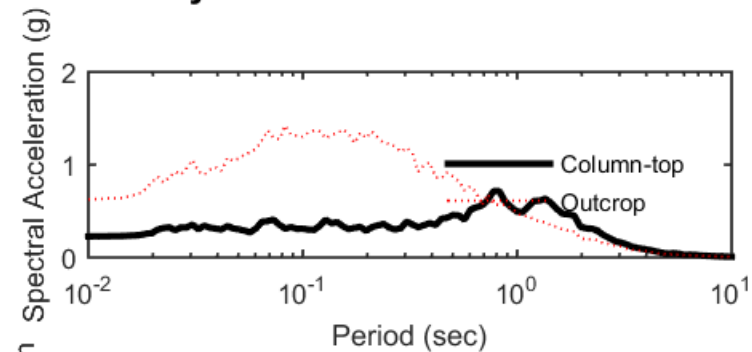
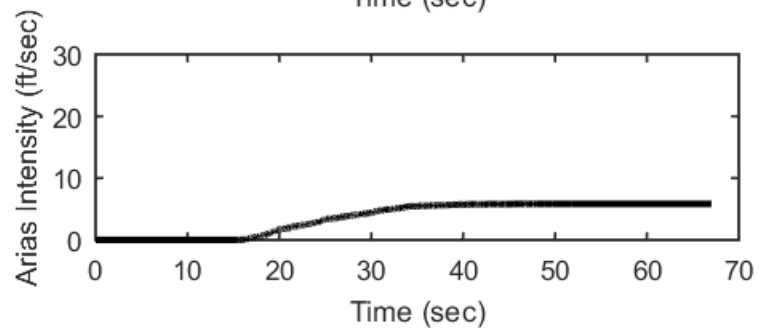
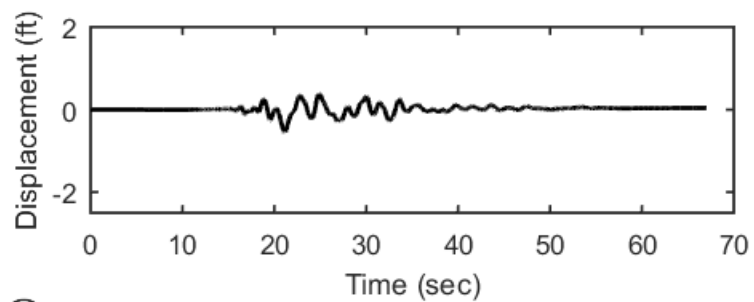
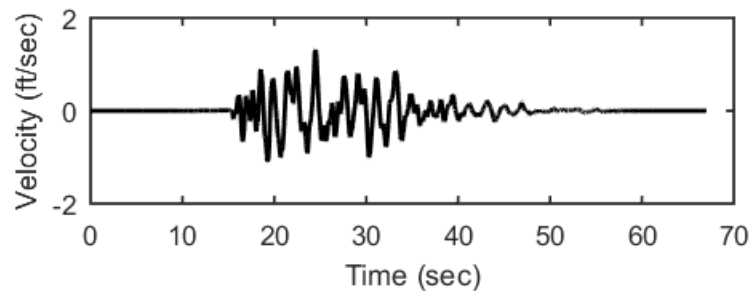
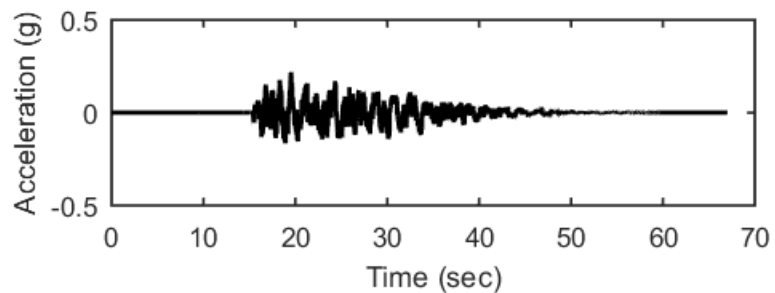




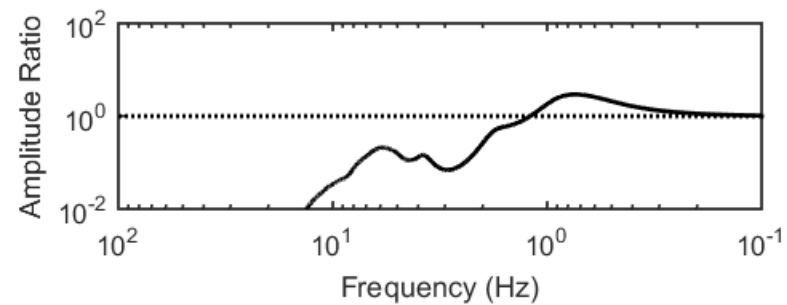
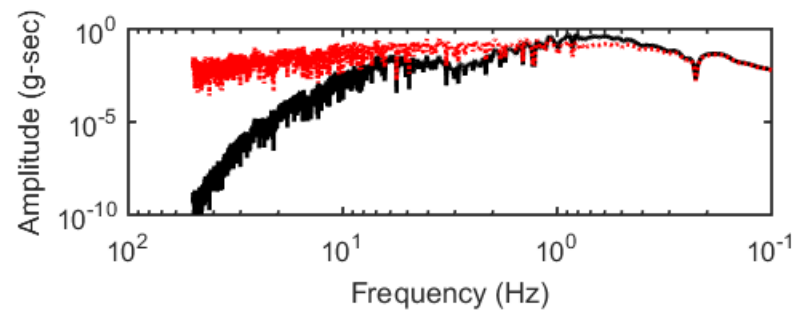
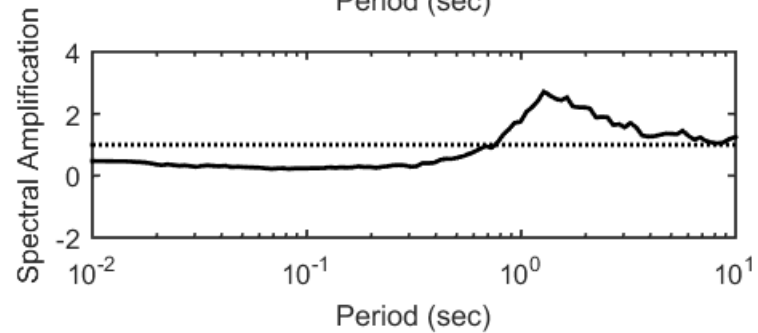
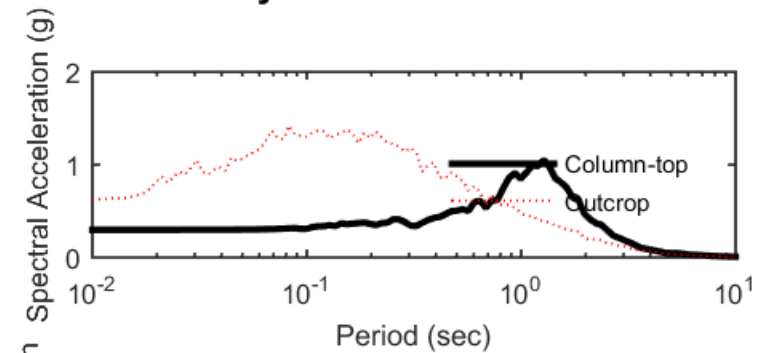
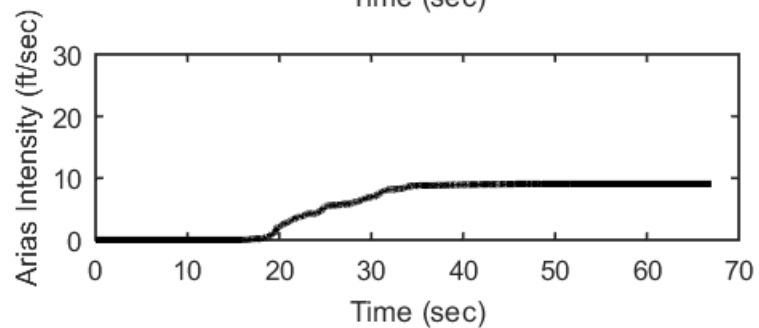
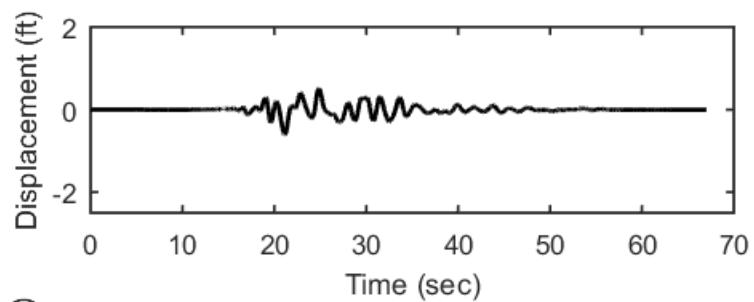
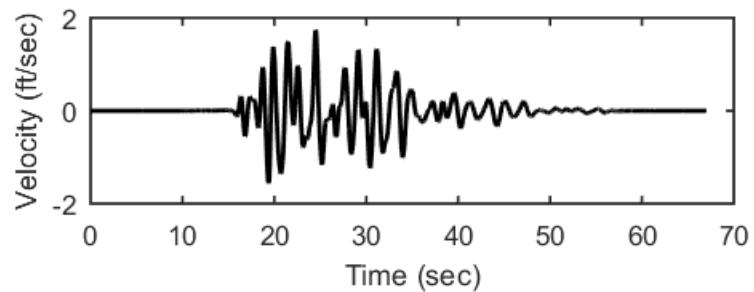
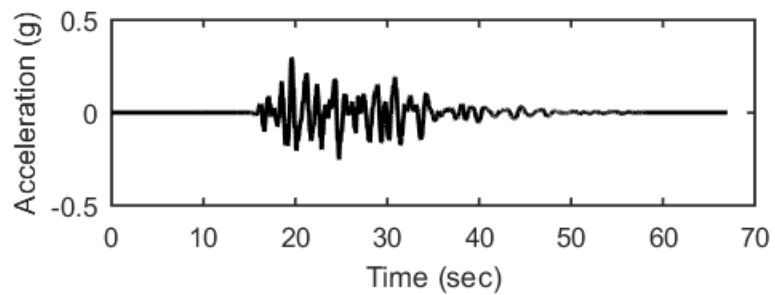
### Profile outputs for Motion: SEE1



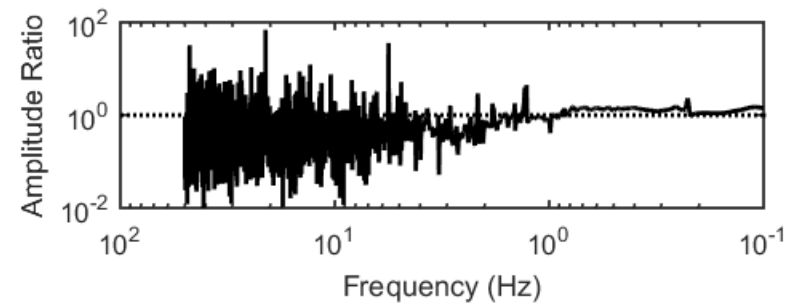
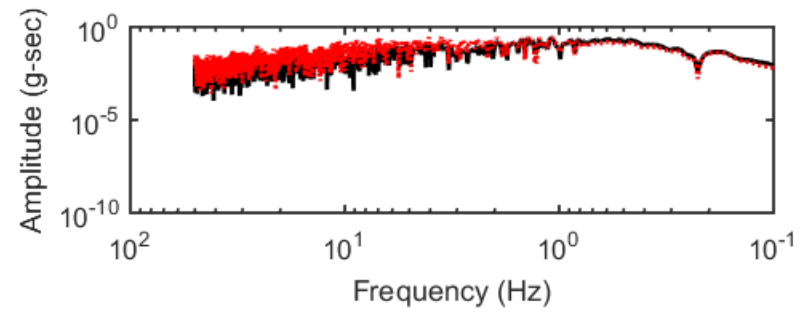
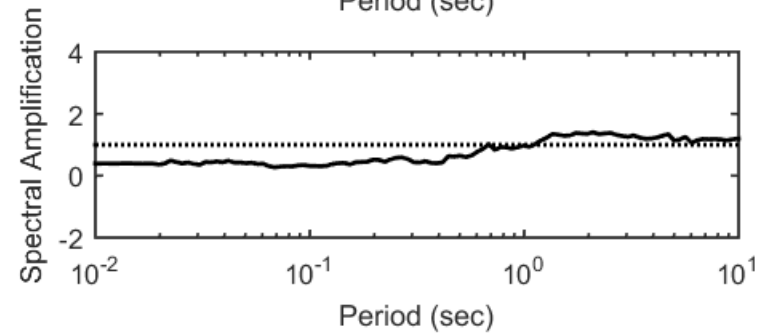
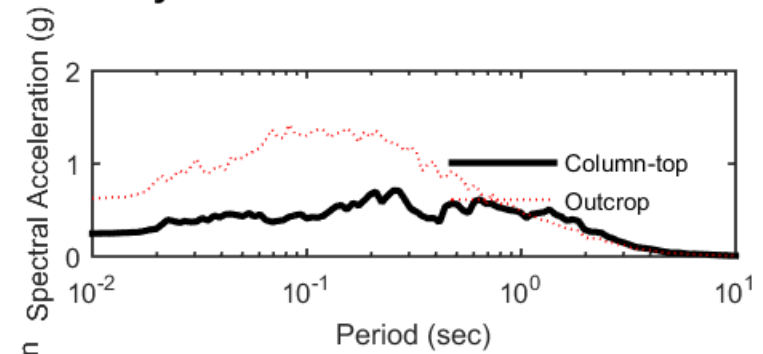
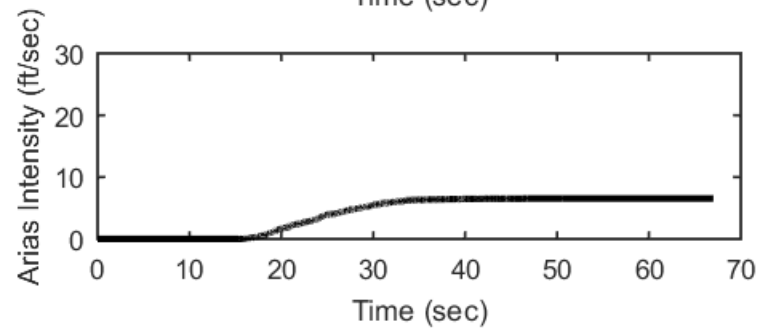
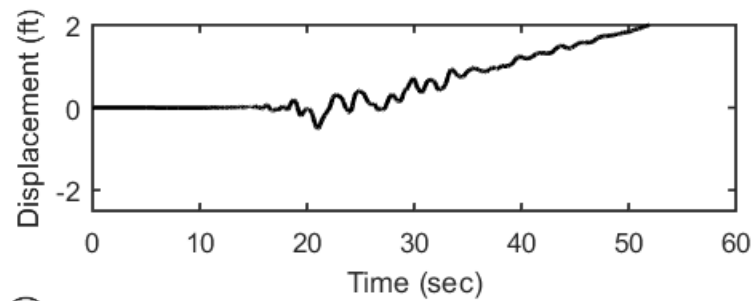
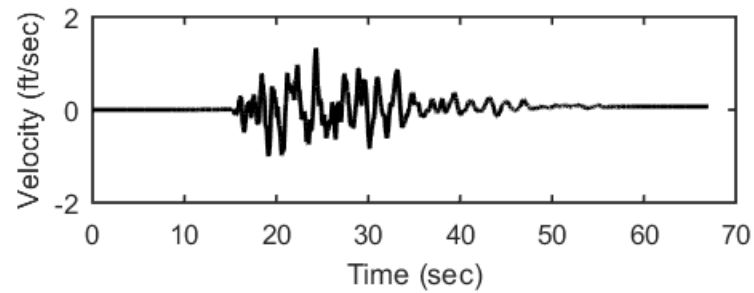
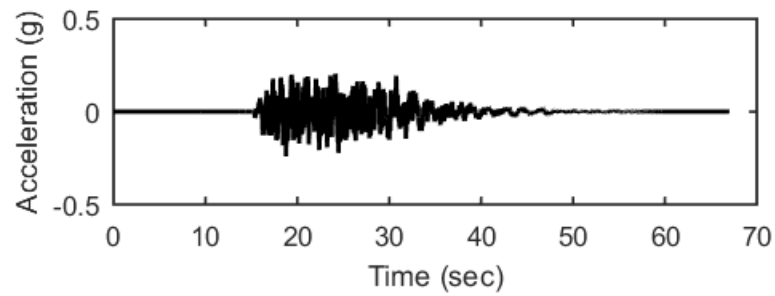
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



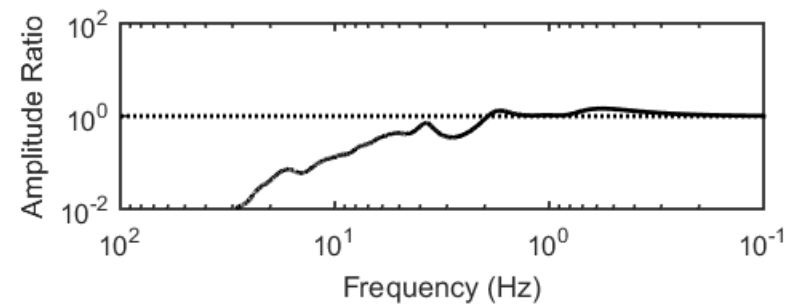
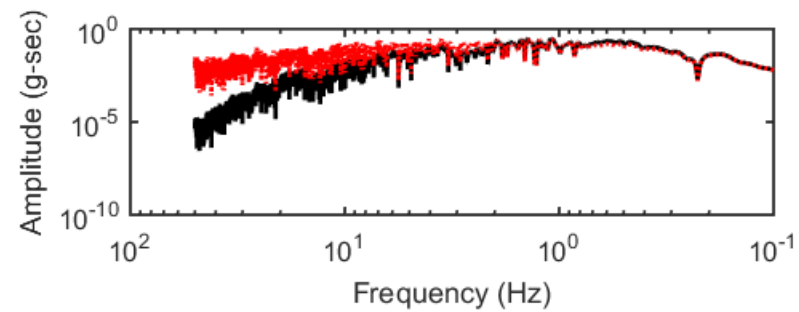
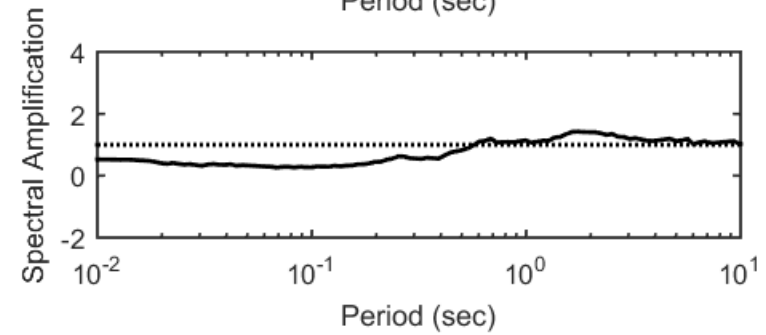
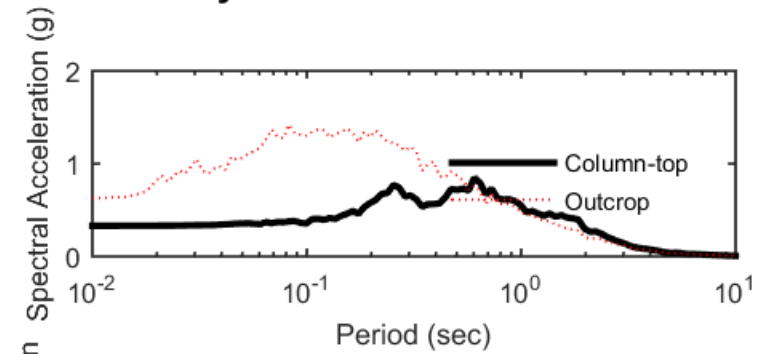
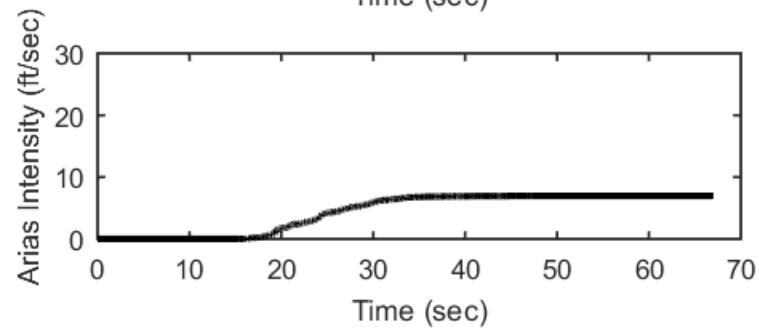
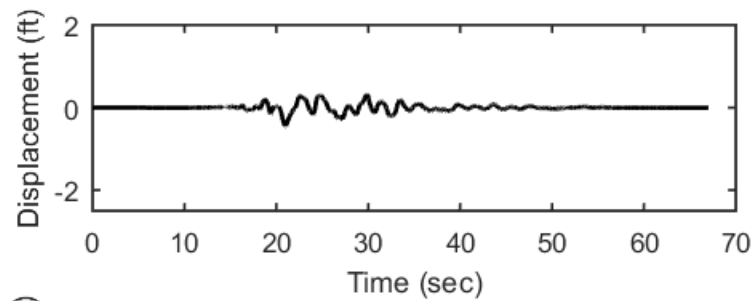
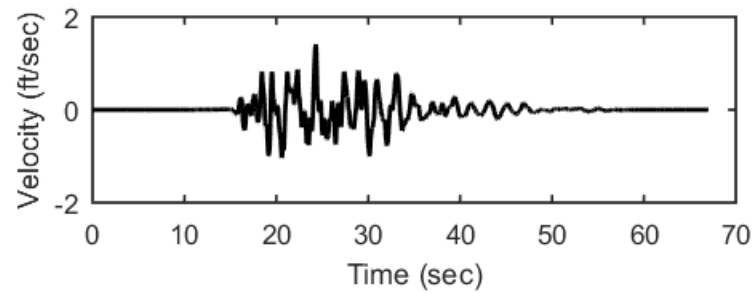
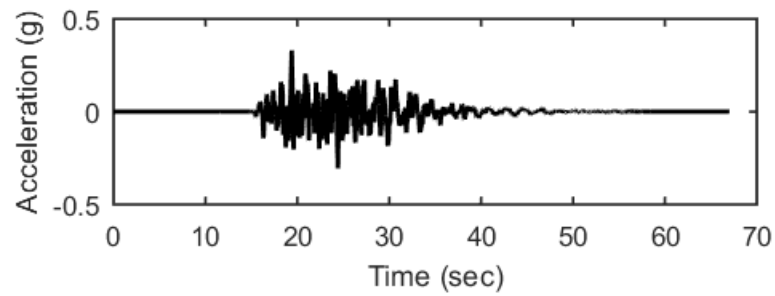
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



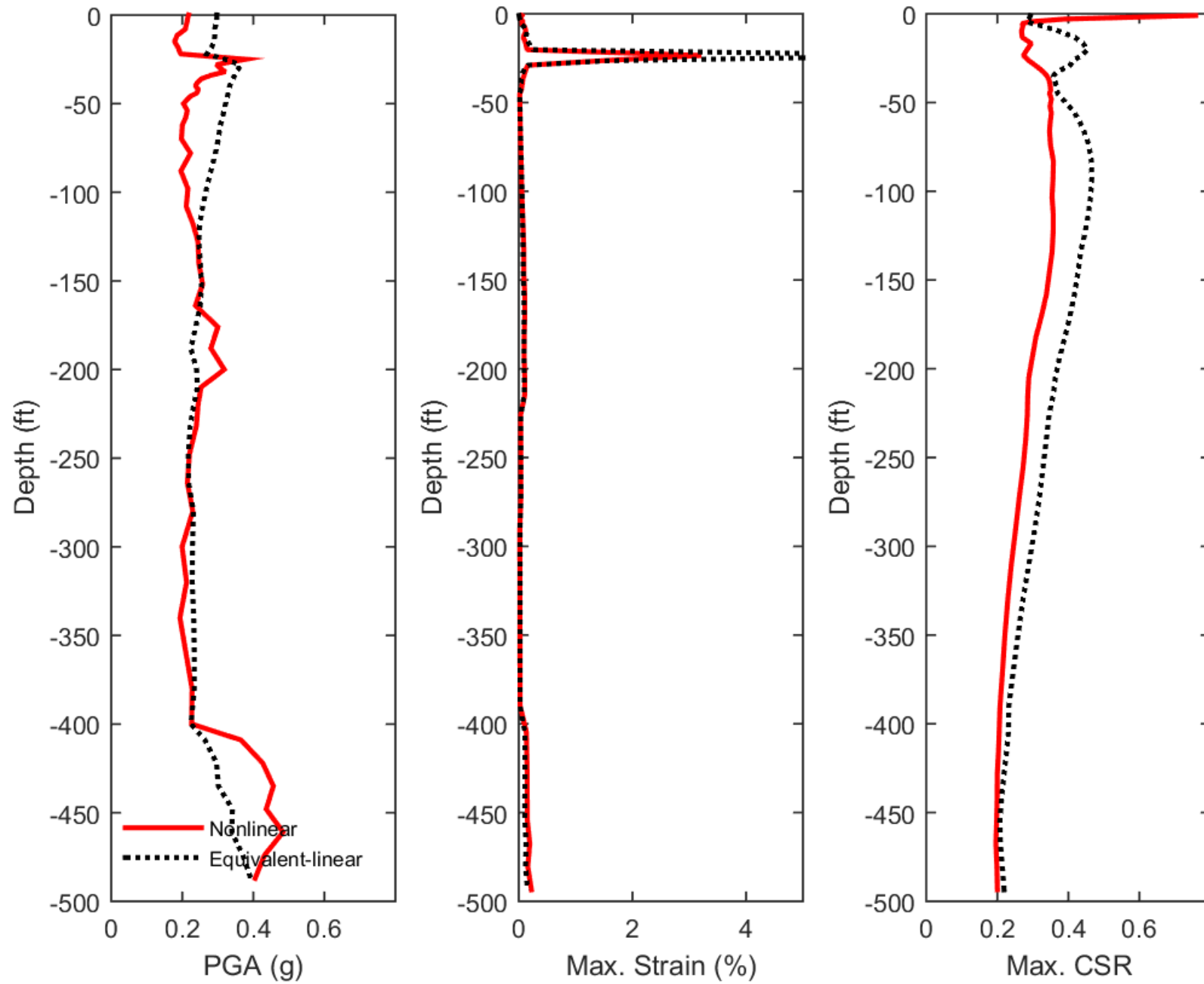
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



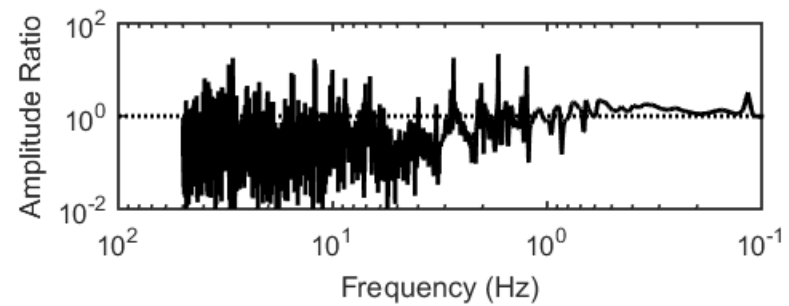
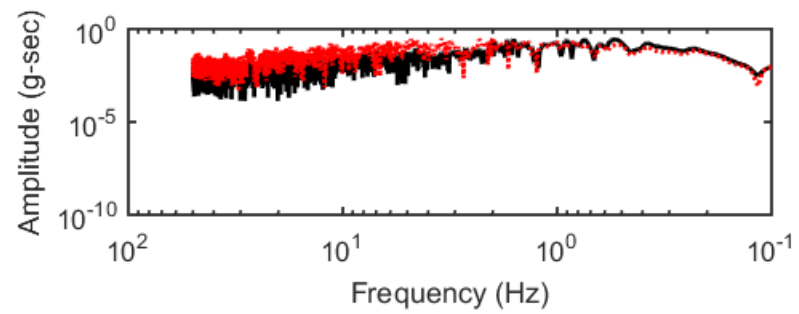
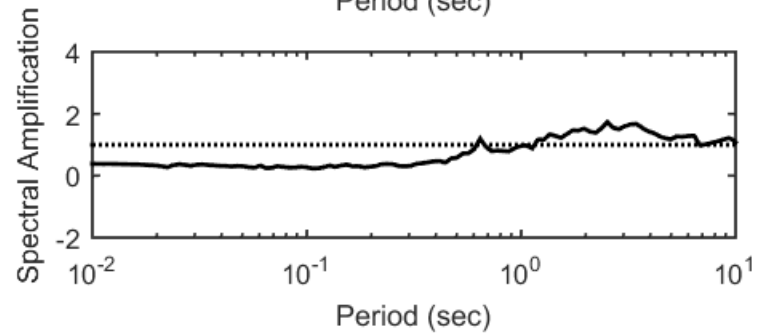
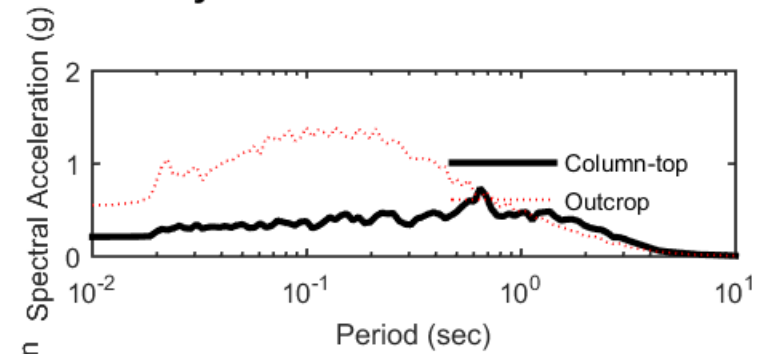
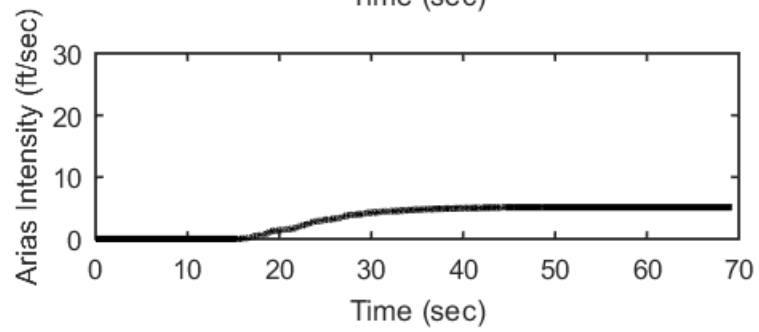
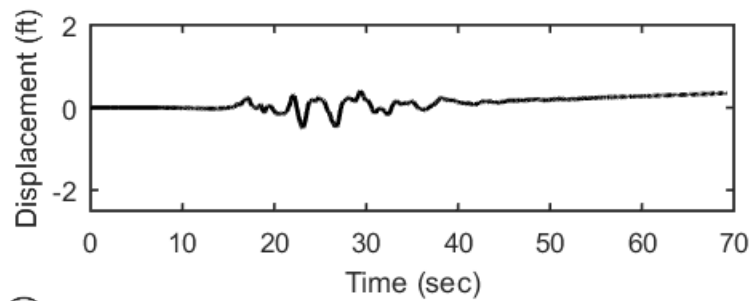
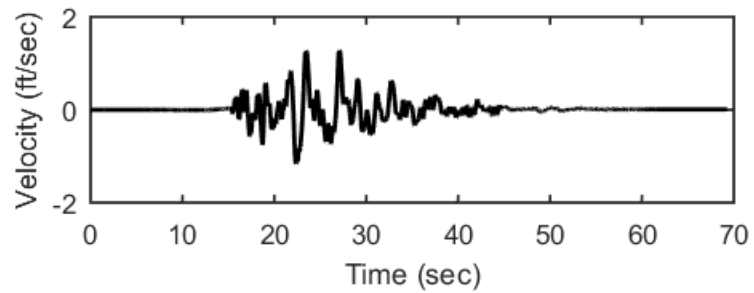
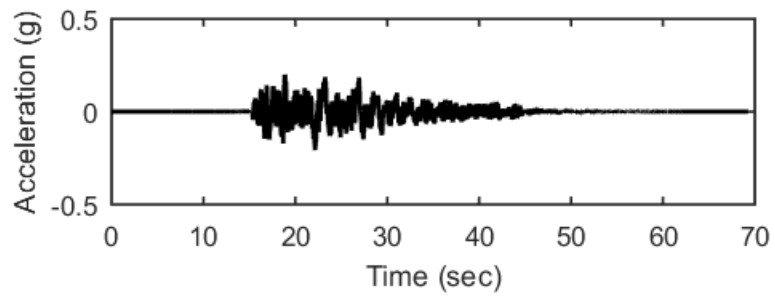
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



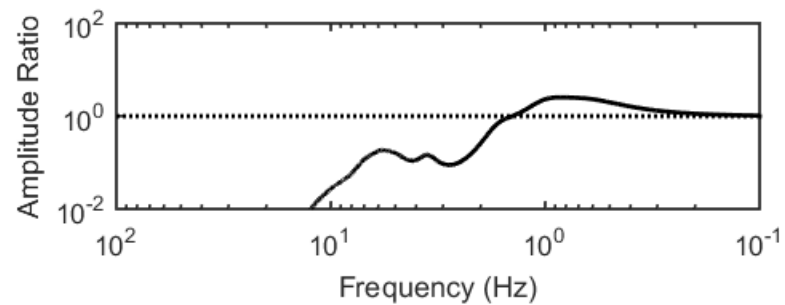
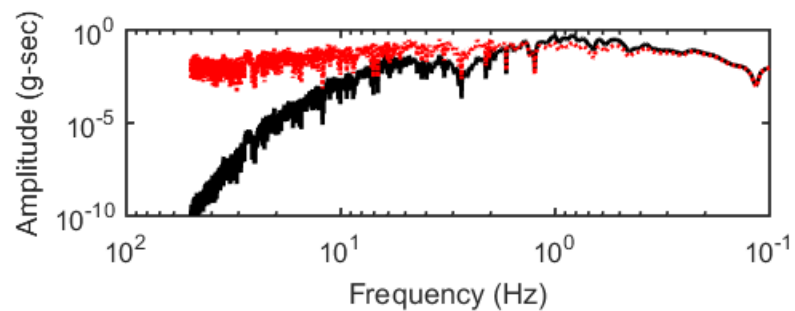
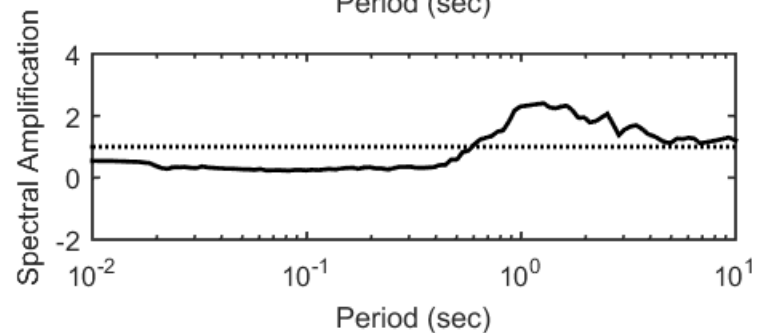
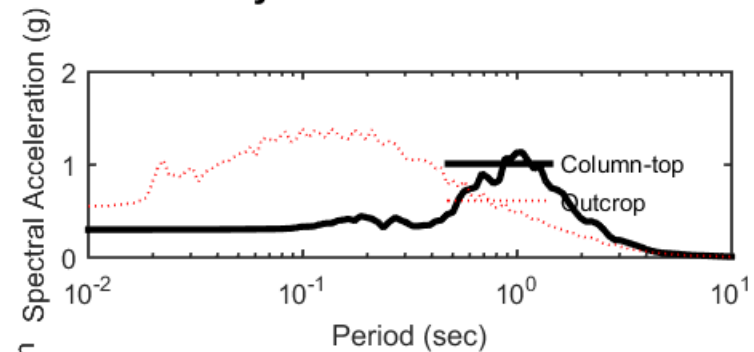
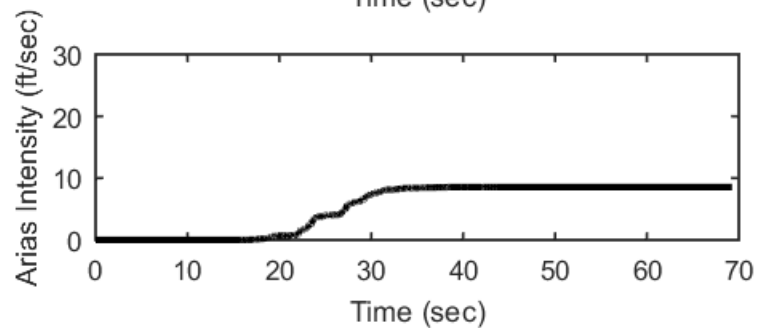
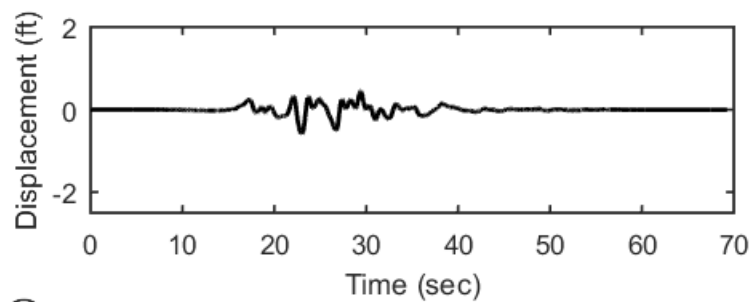
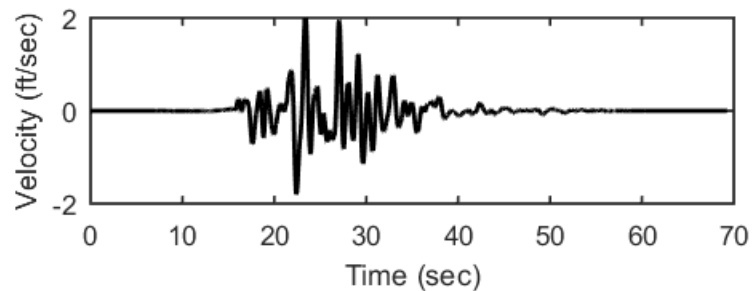
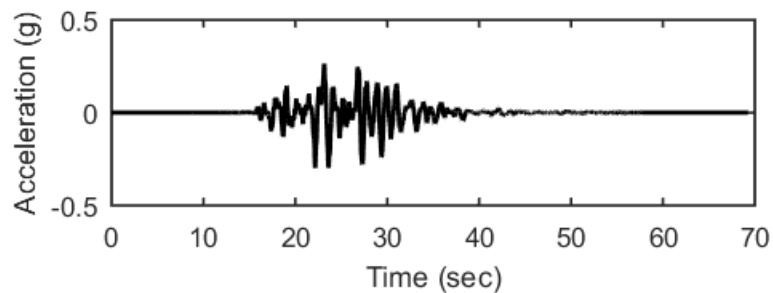
### Profile outputs for Motion: SEE2



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3

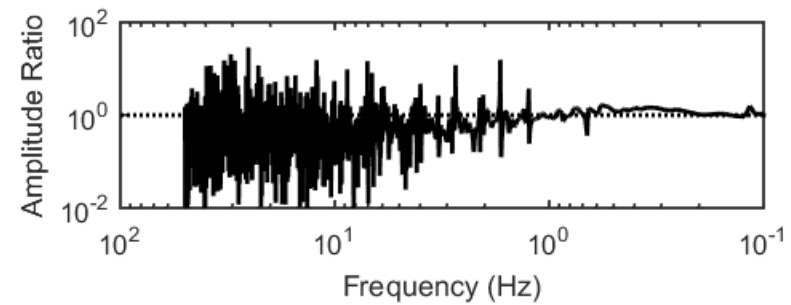
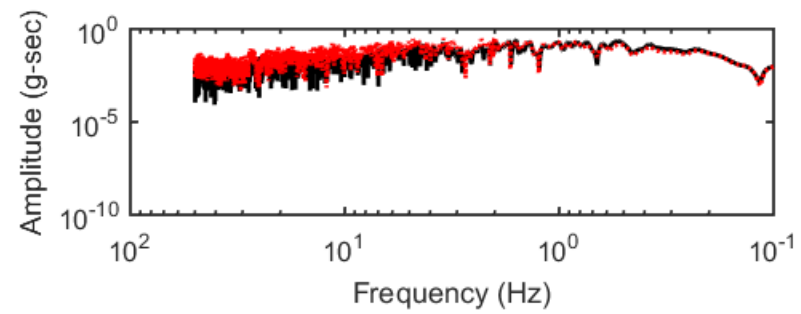
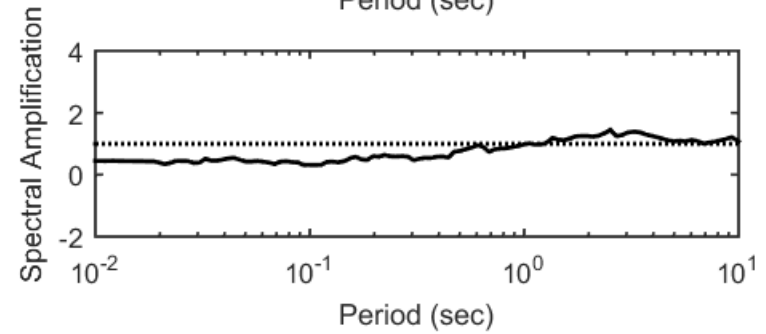
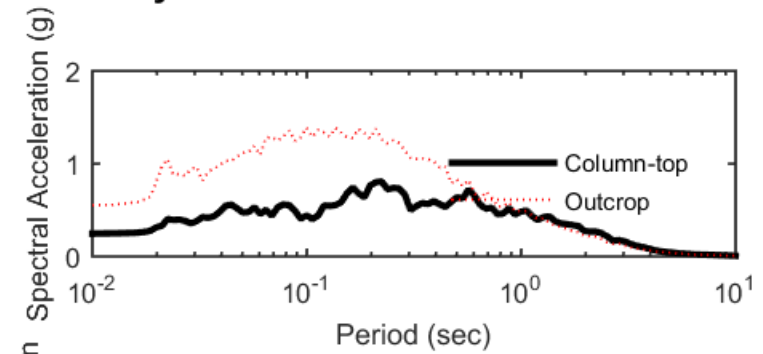
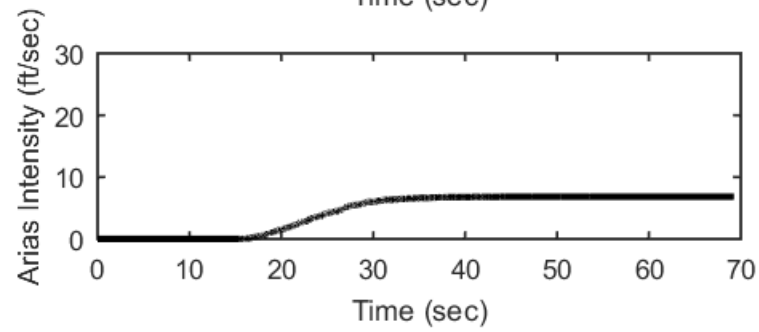
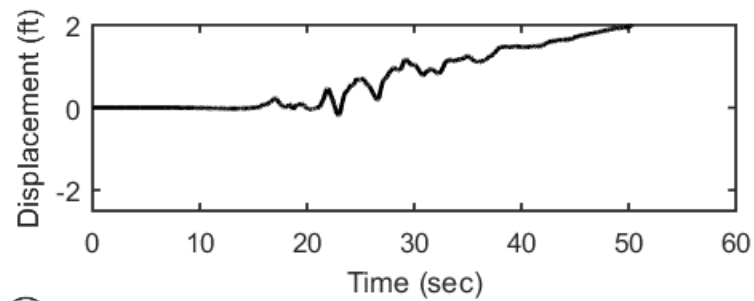
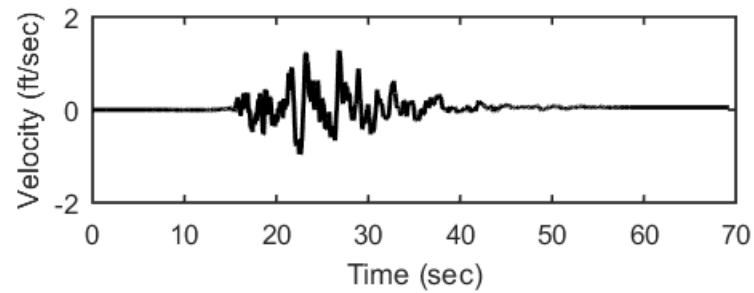
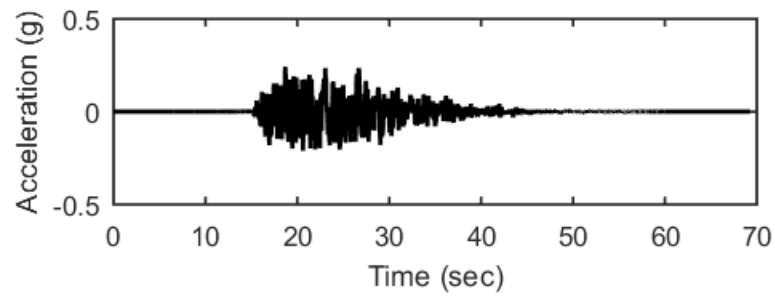


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3

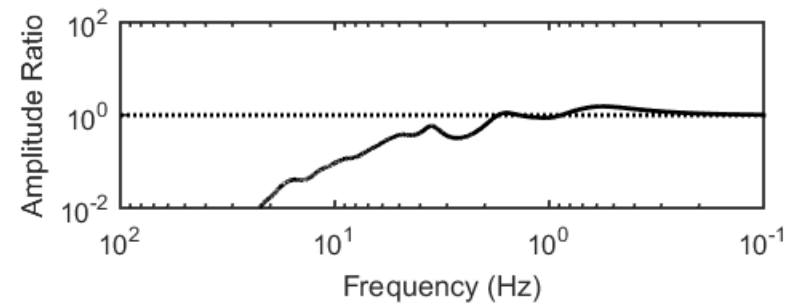
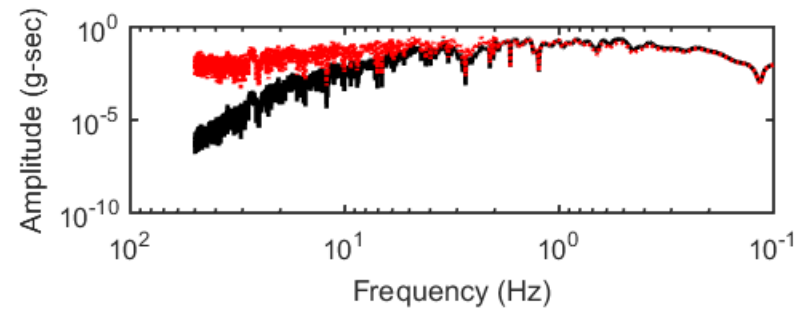
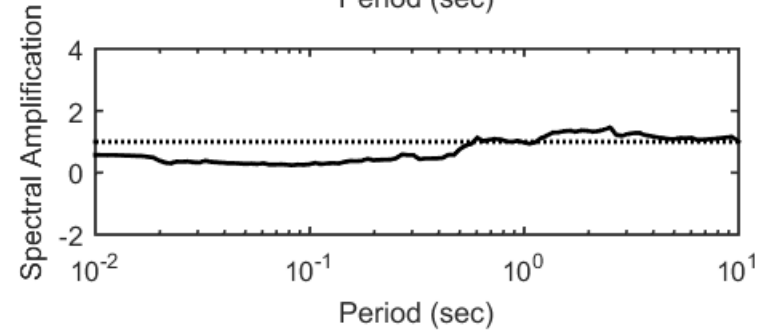
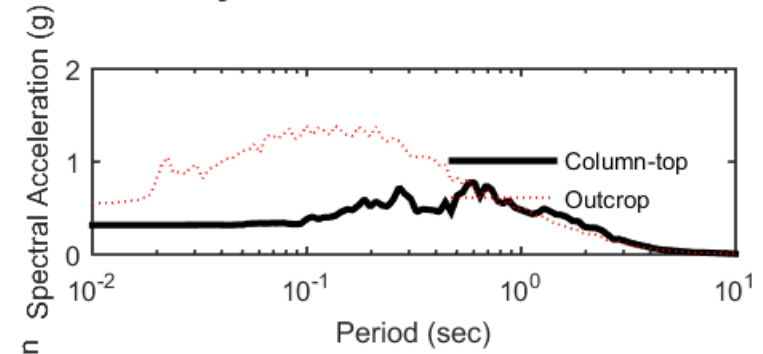
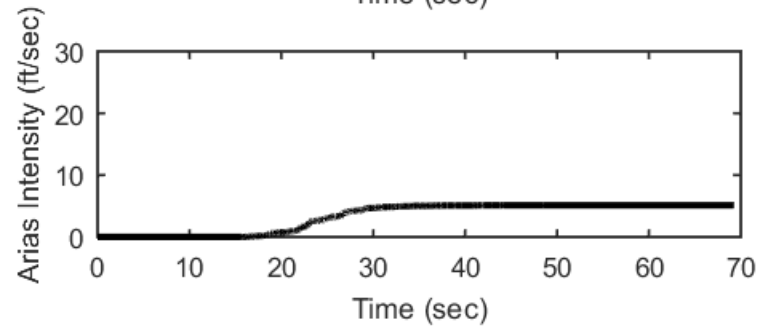
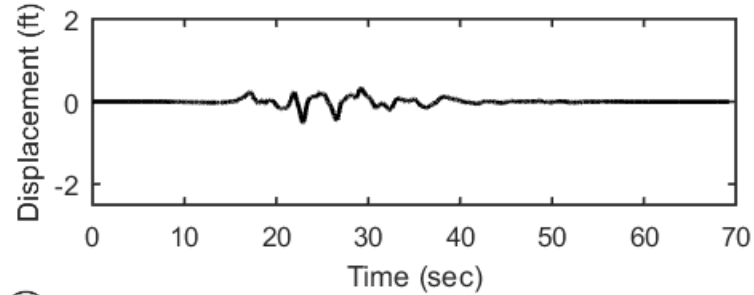
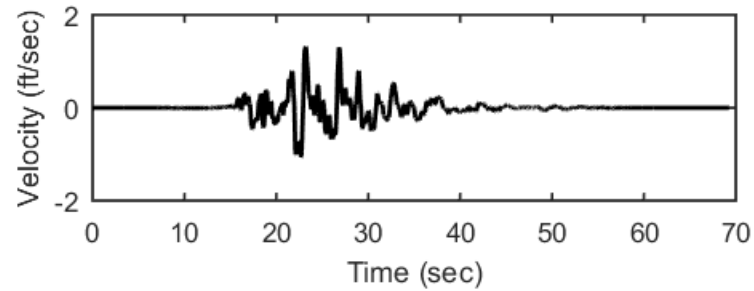
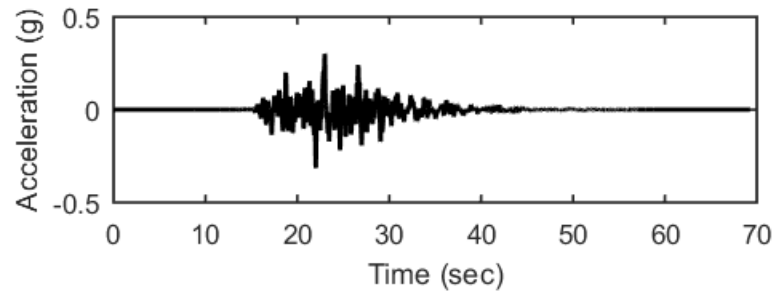




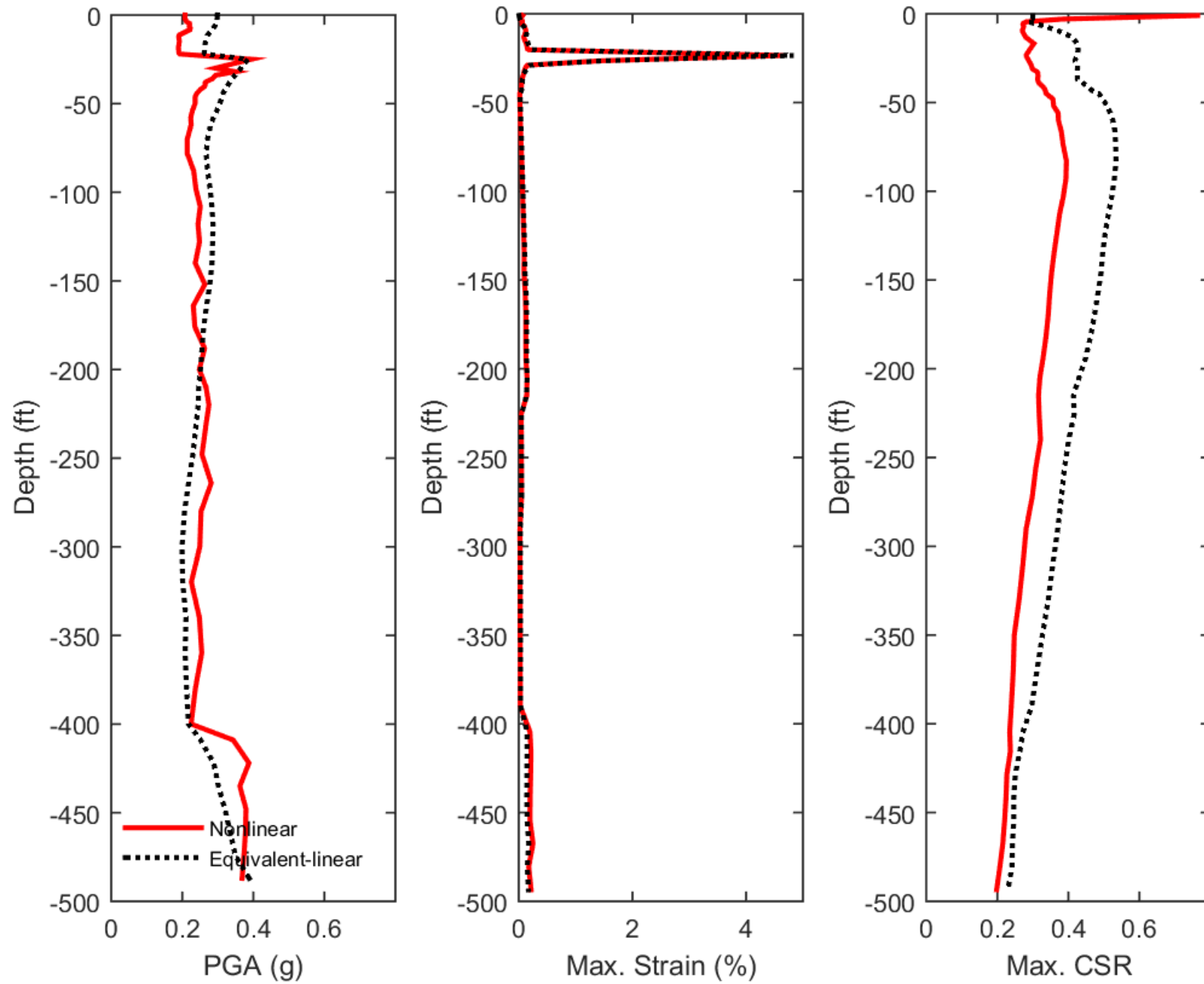
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



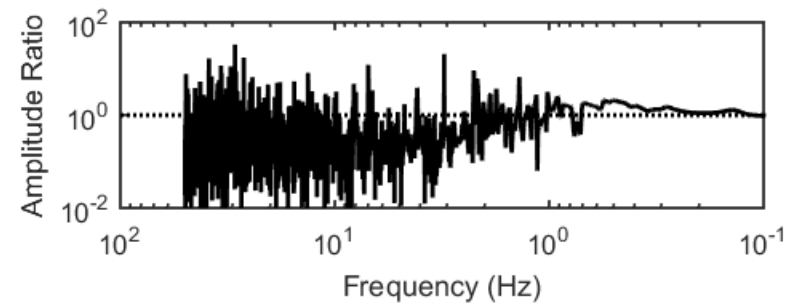
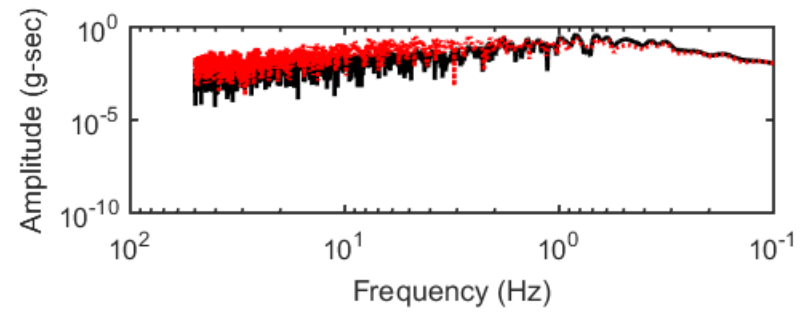
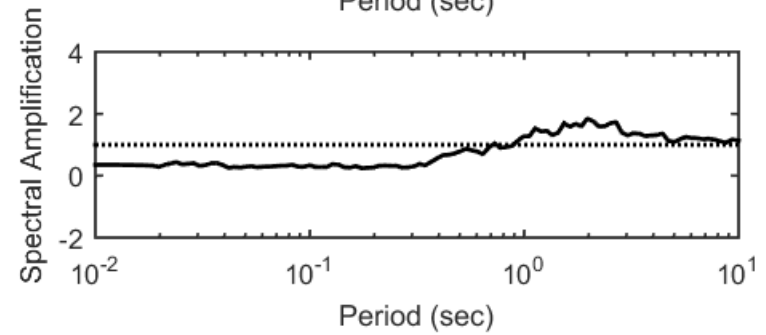
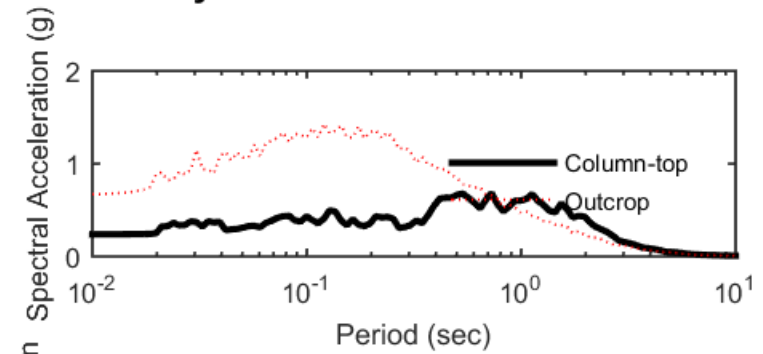
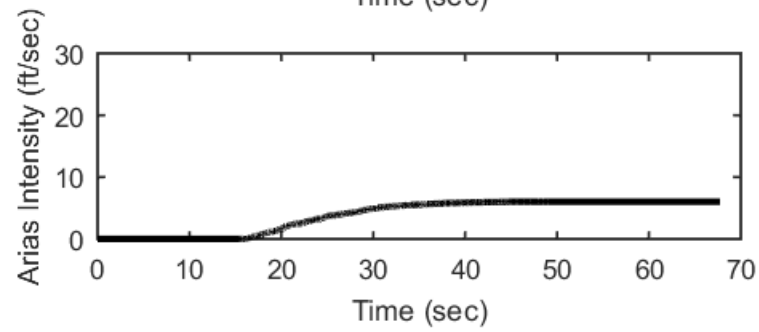
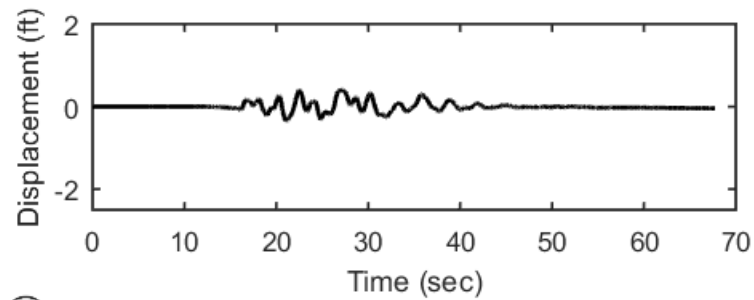
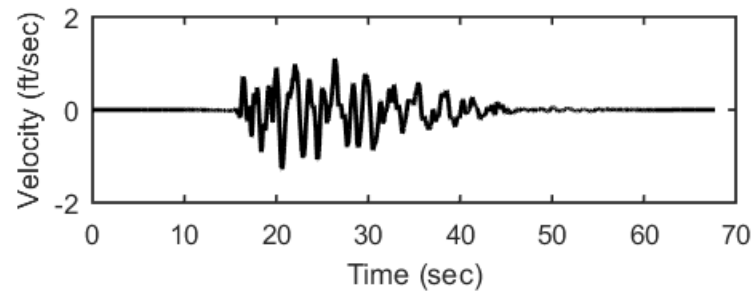
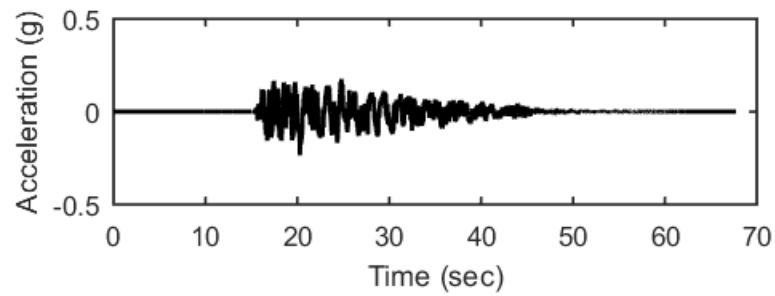
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



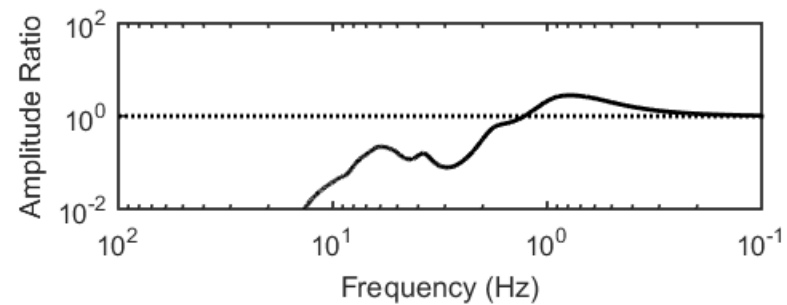
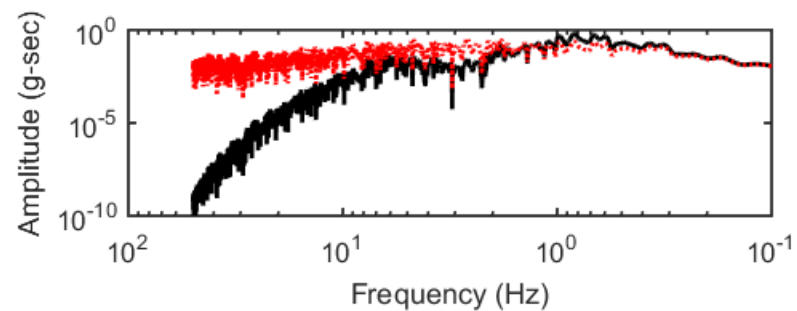
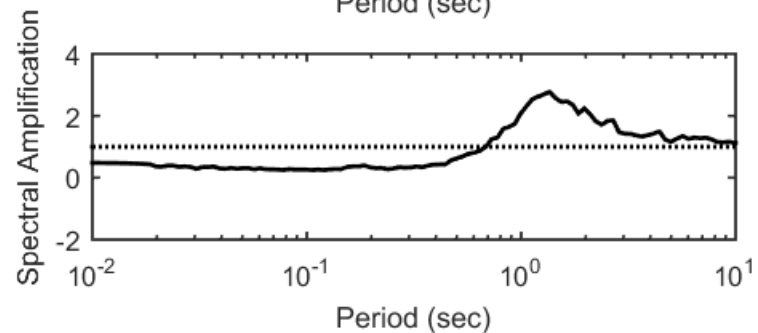
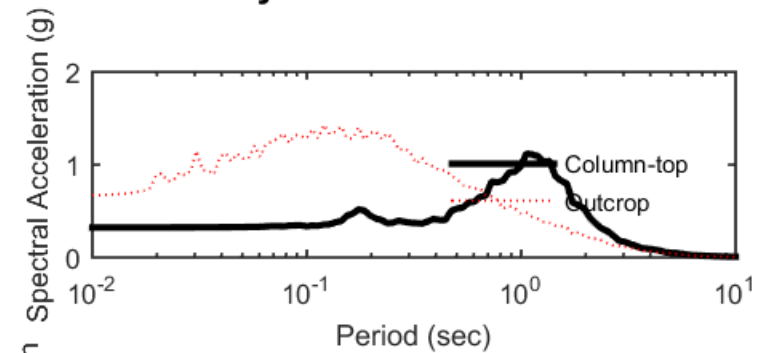
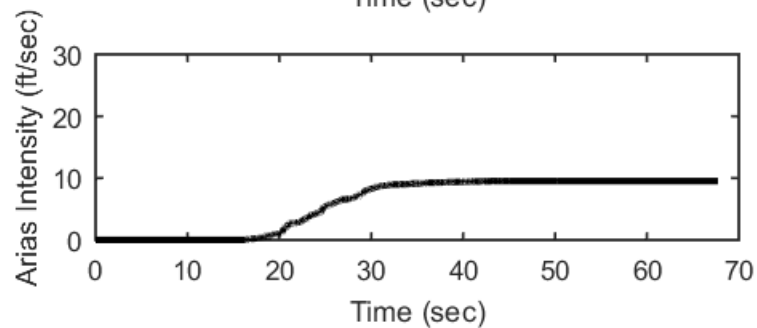
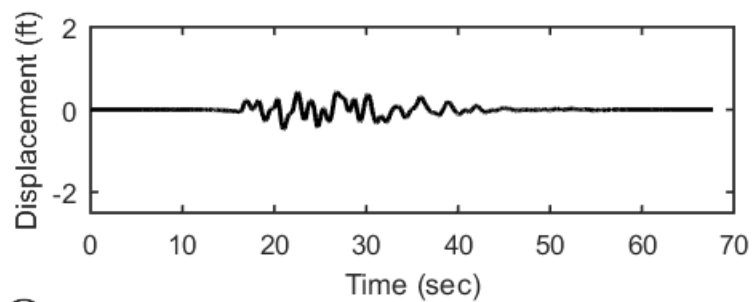
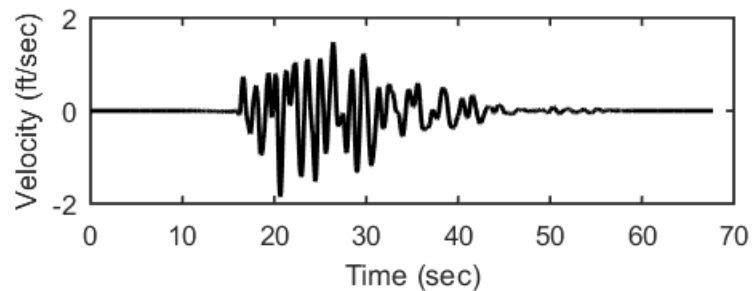
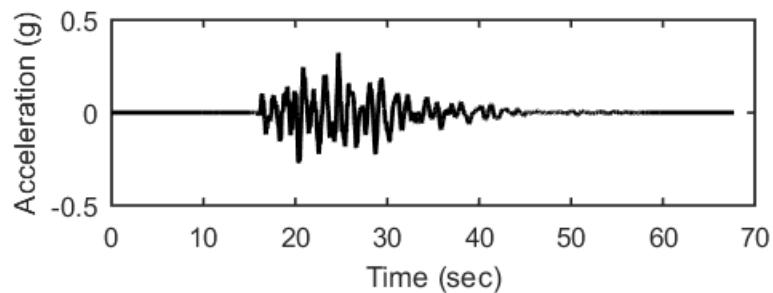
### Profile outputs for Motion: SEE3



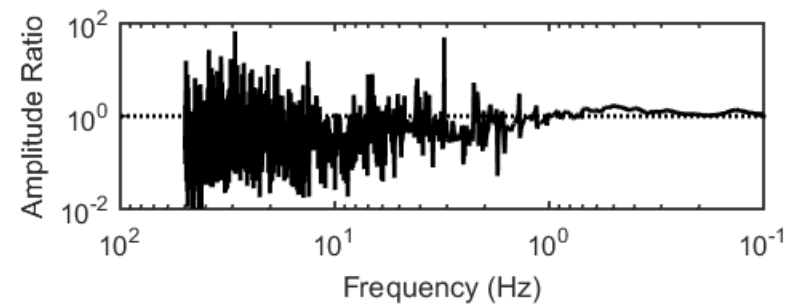
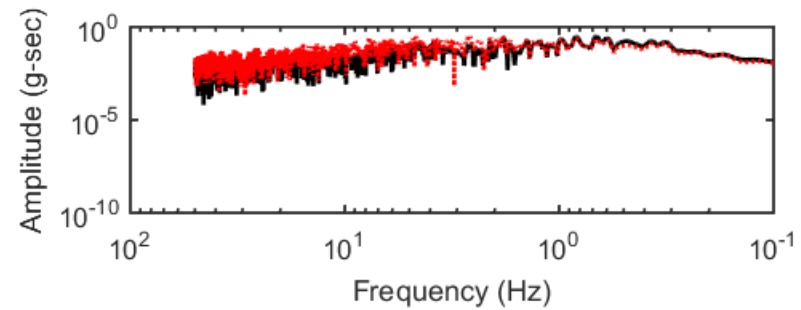
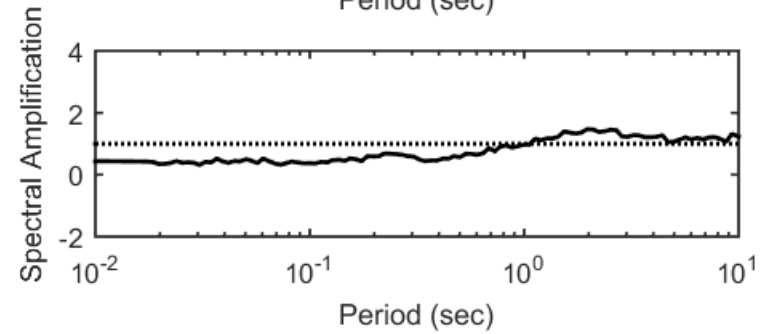
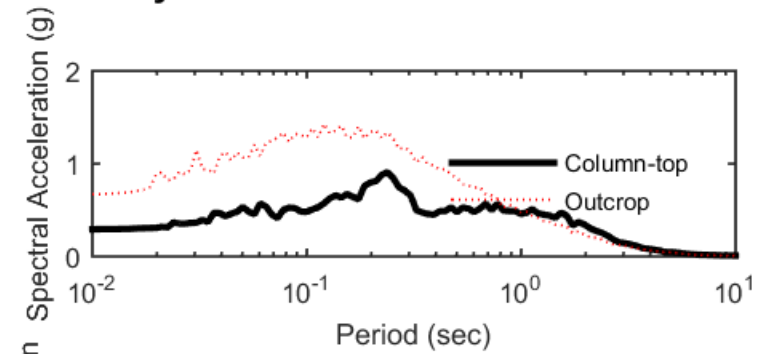
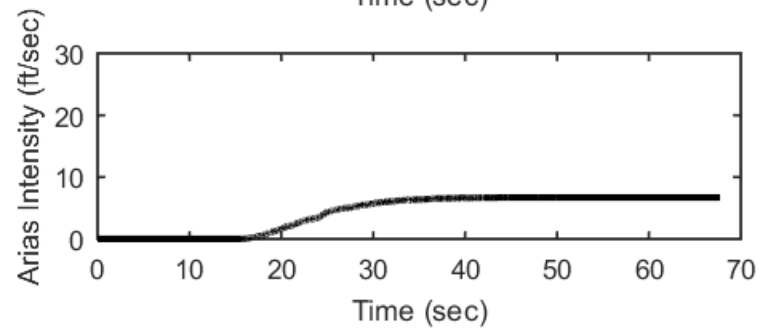
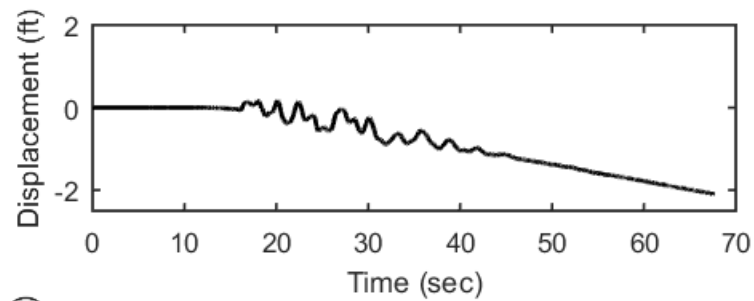
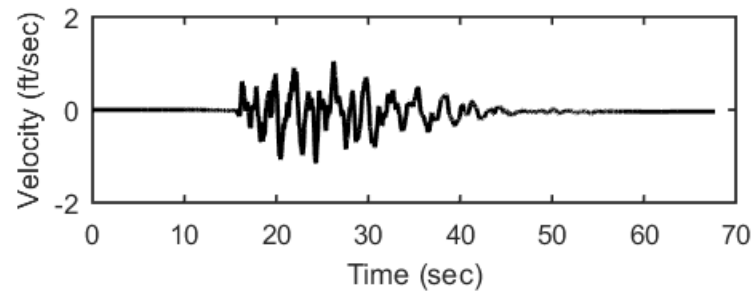
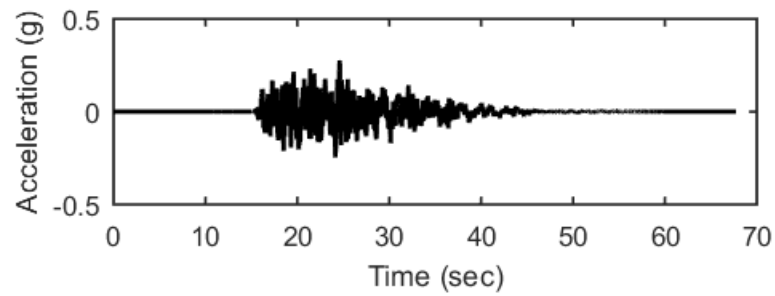
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



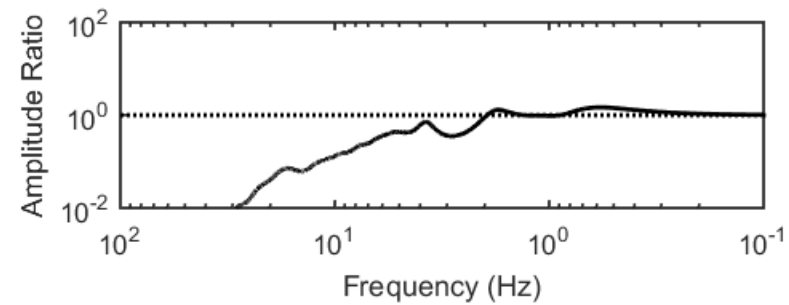
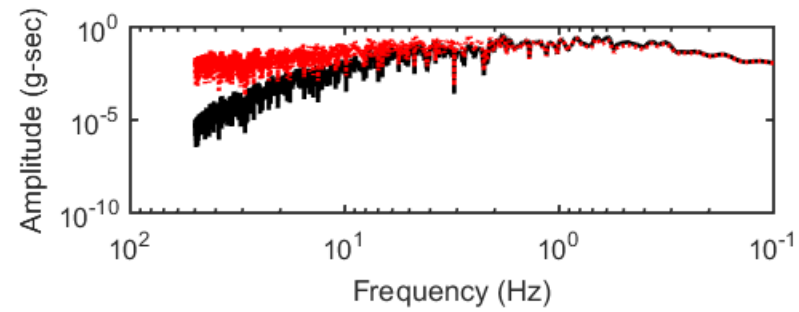
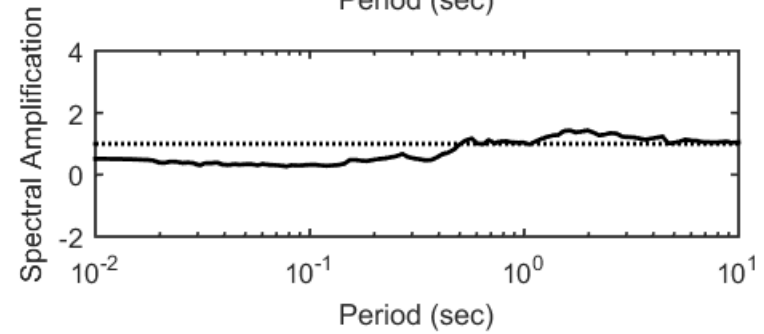
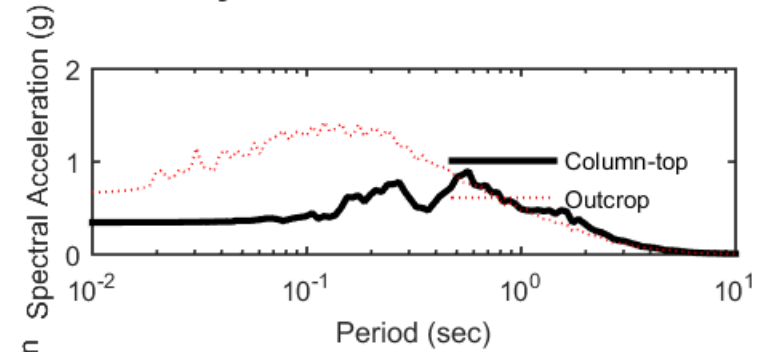
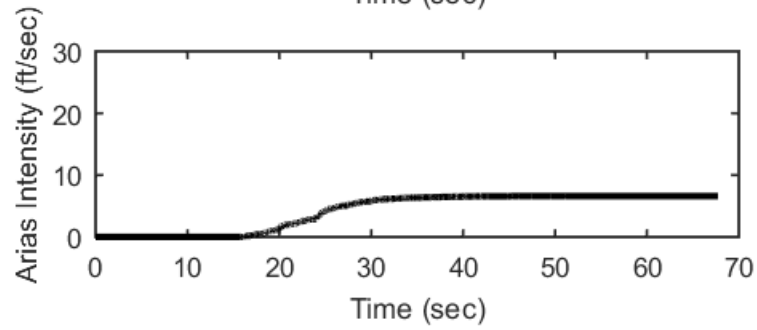
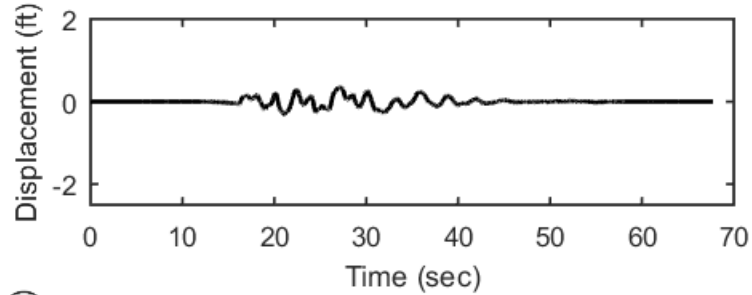
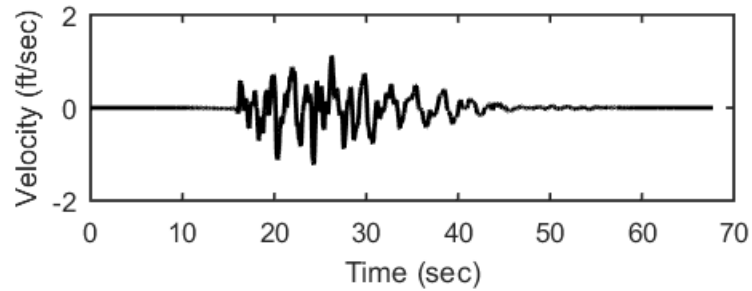
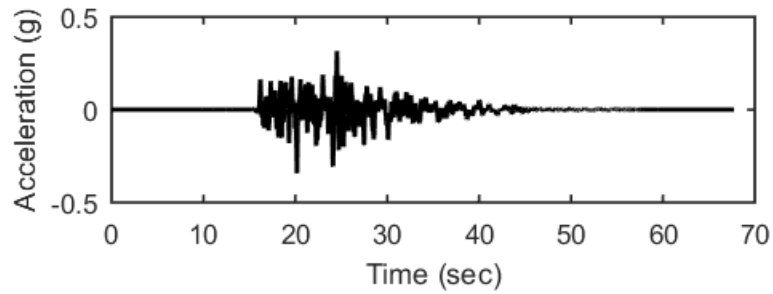
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



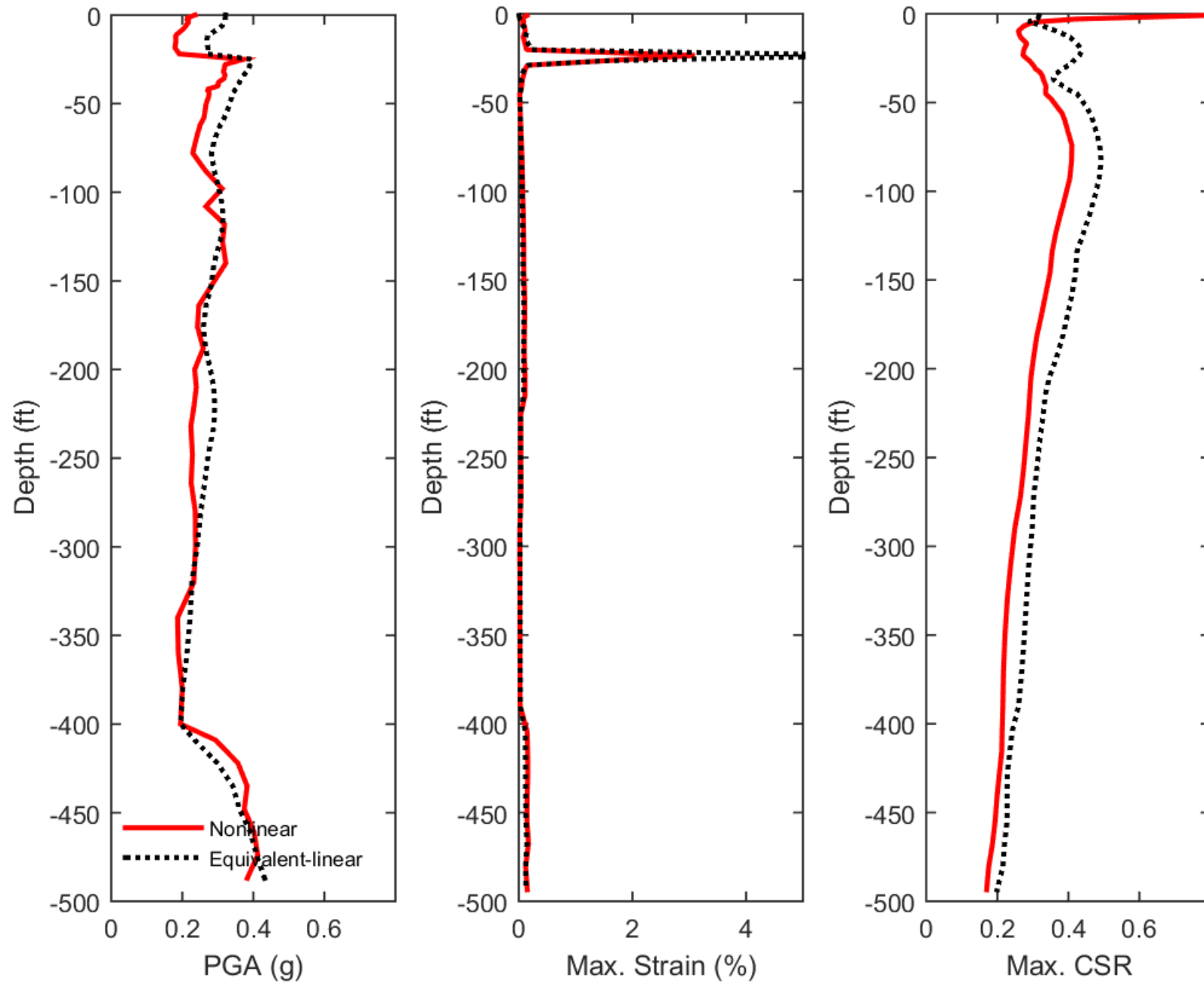
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4

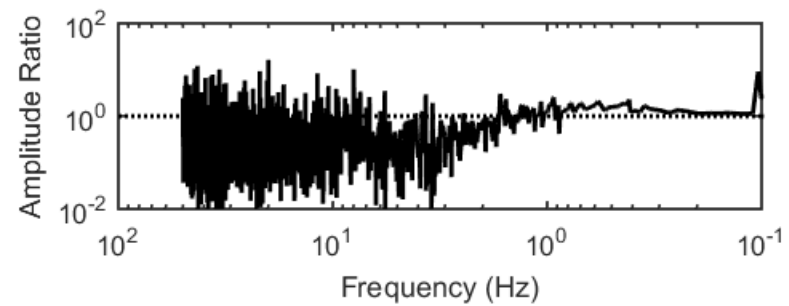
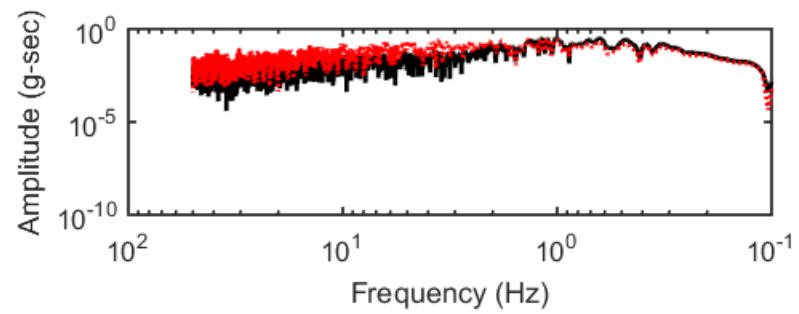
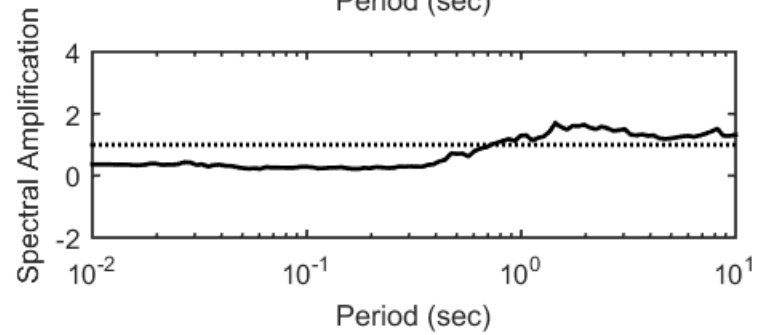
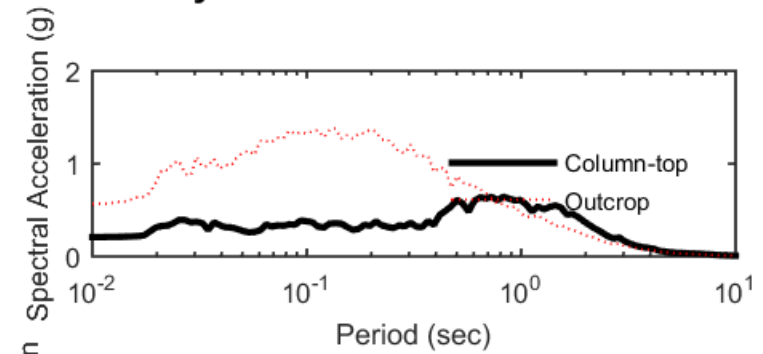
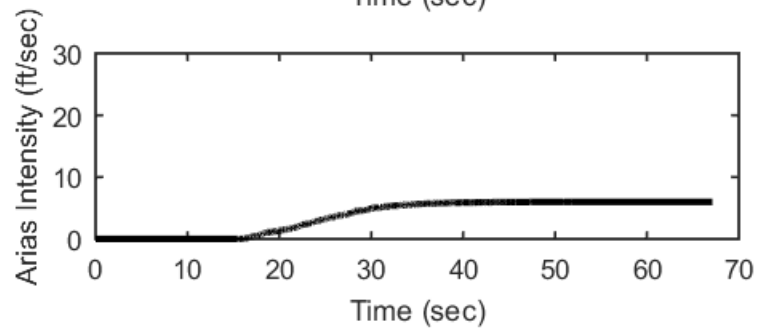
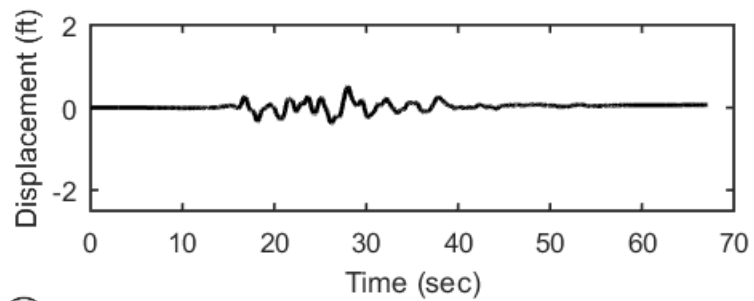
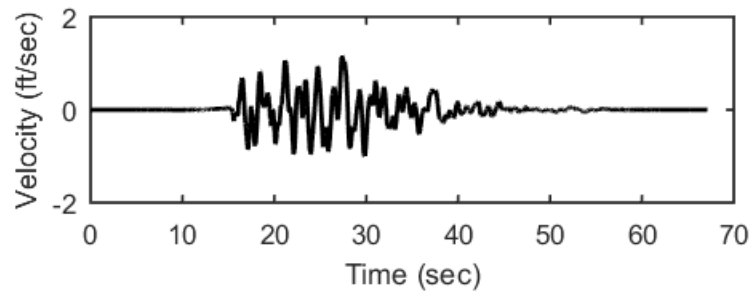
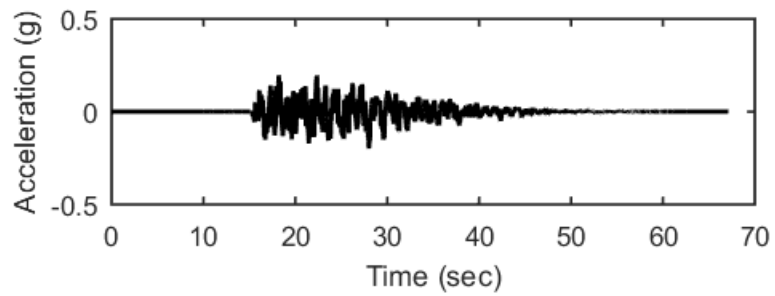


### Profile outputs for Motion: SEE4

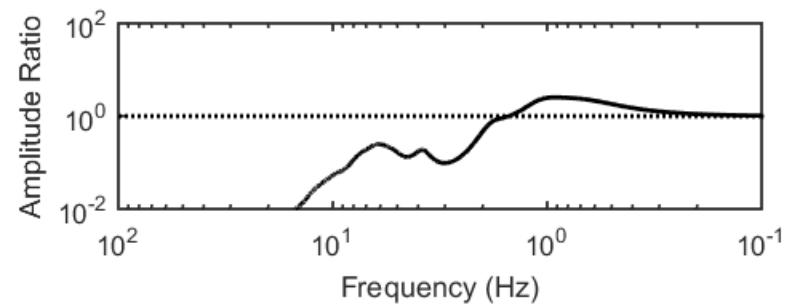
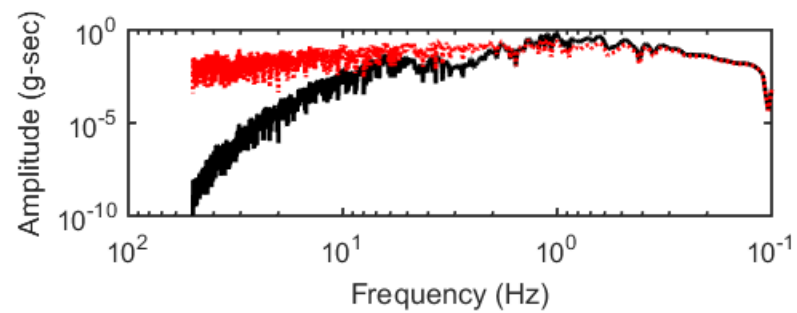
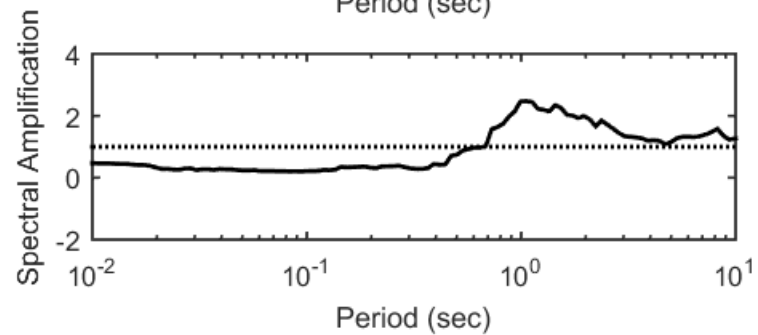
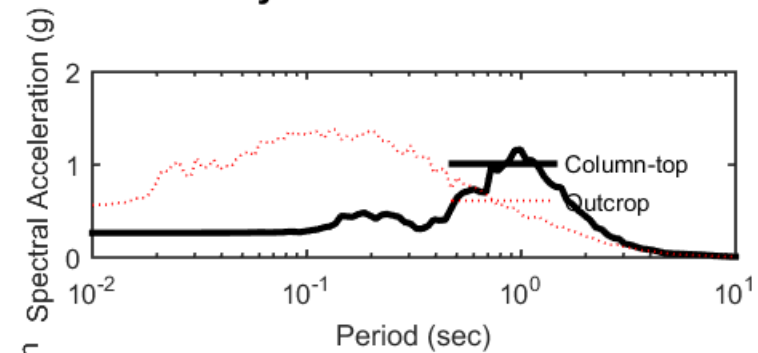
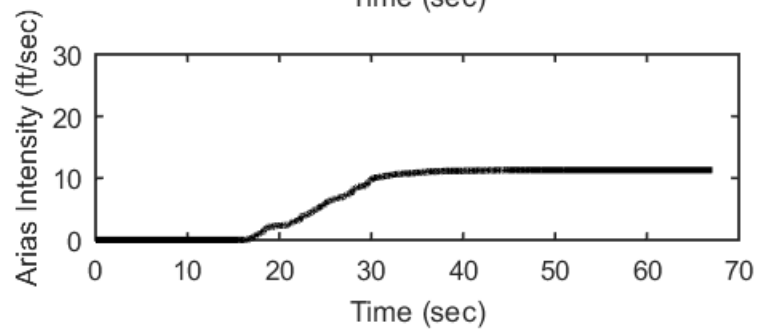
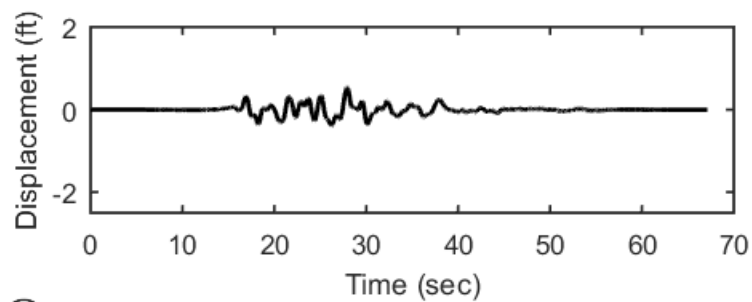
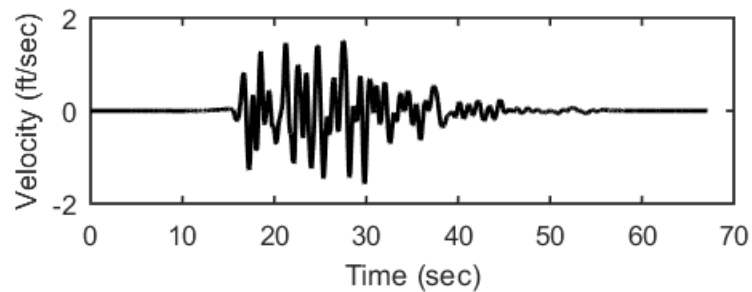
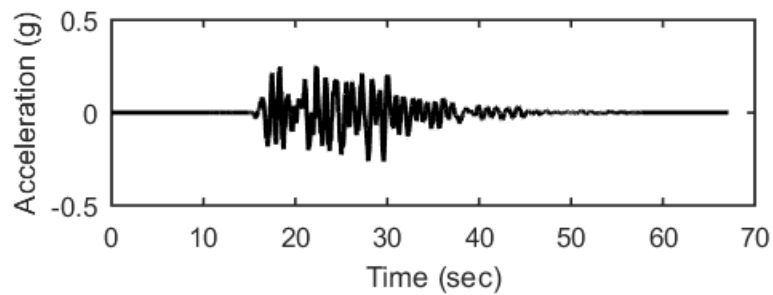




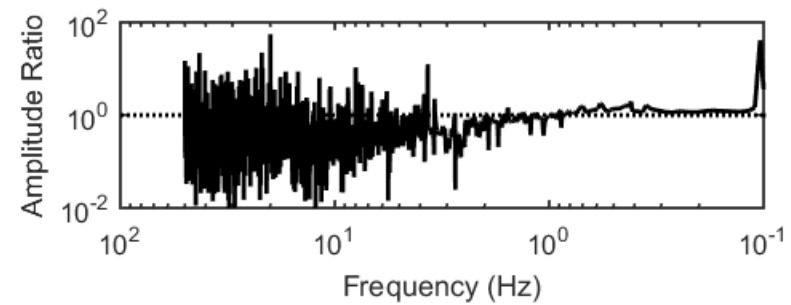
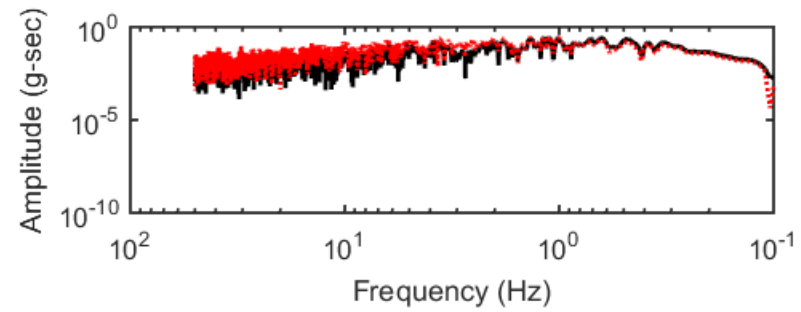
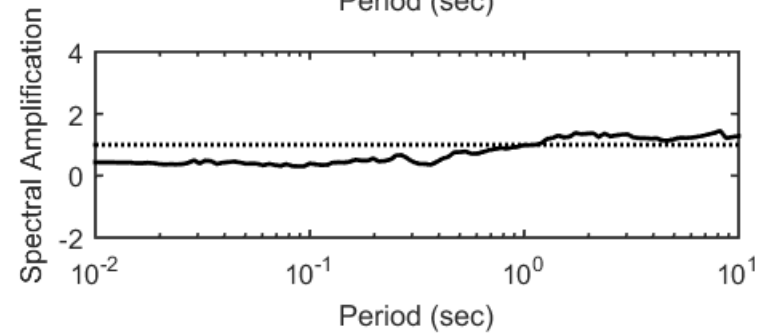
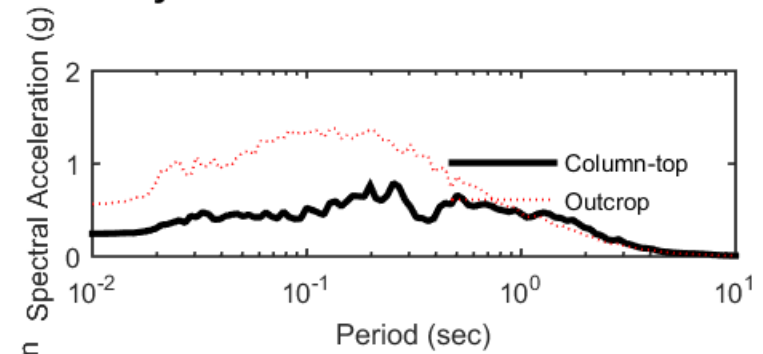
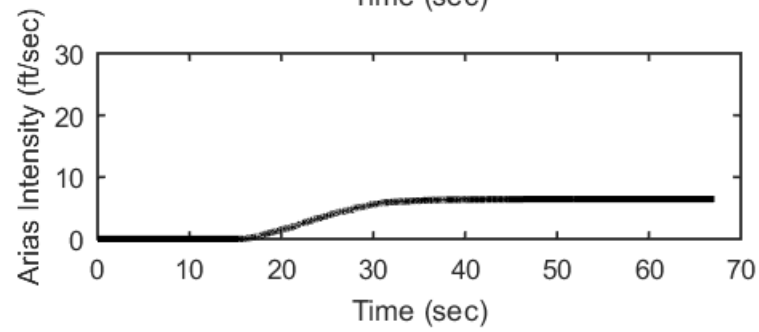
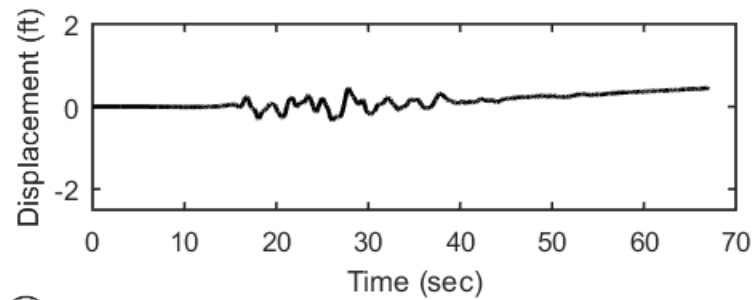
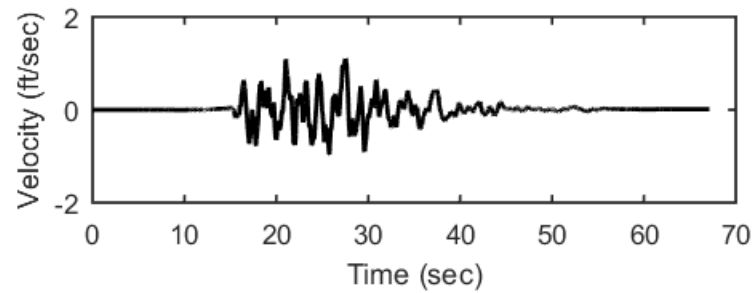
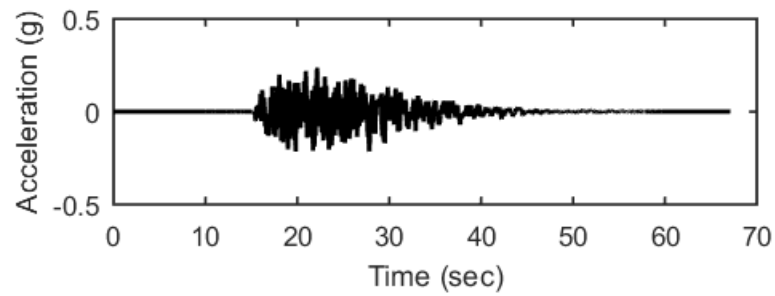
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



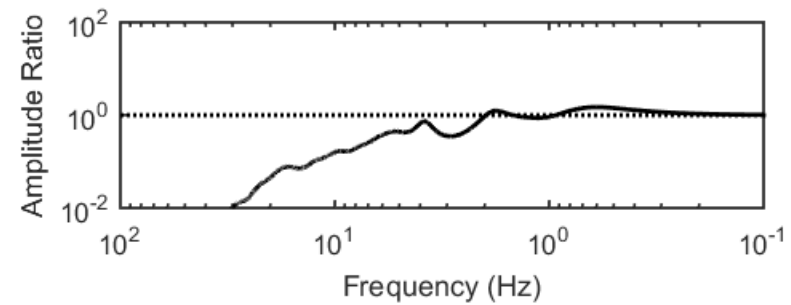
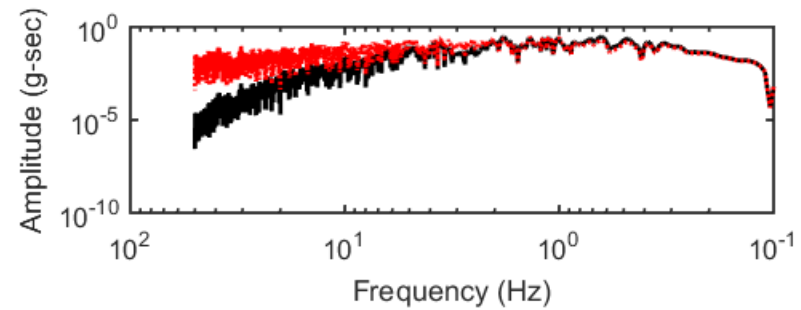
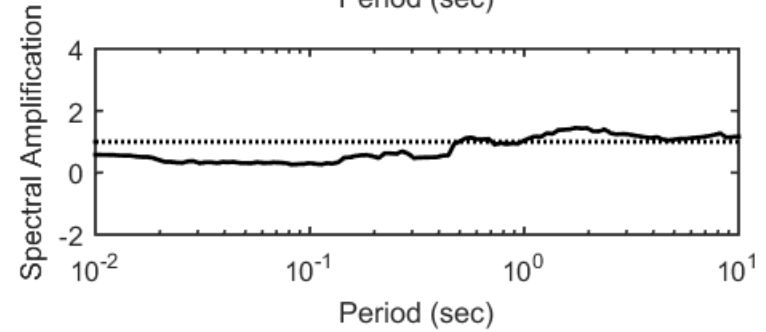
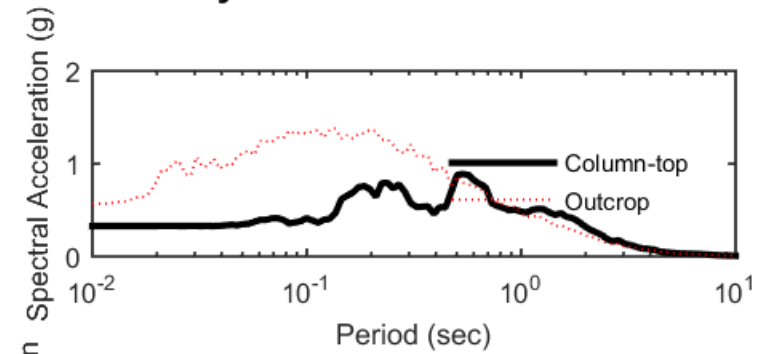
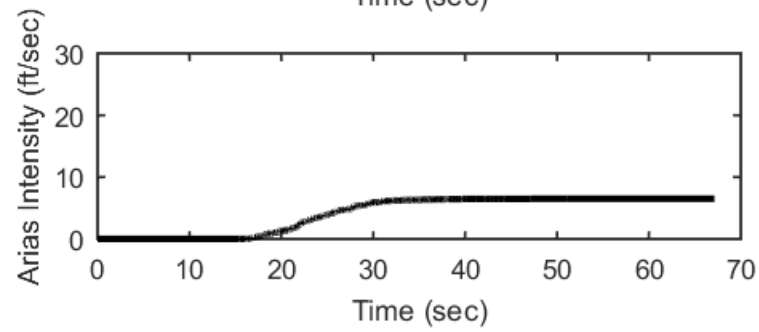
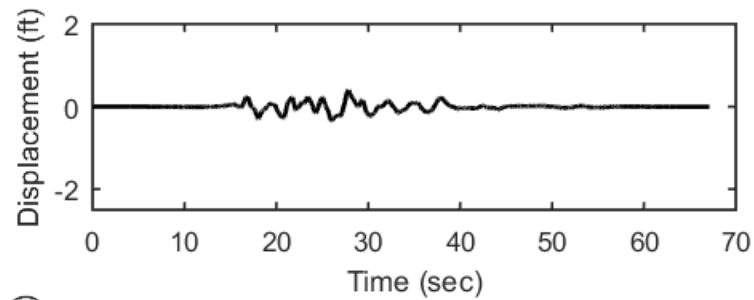
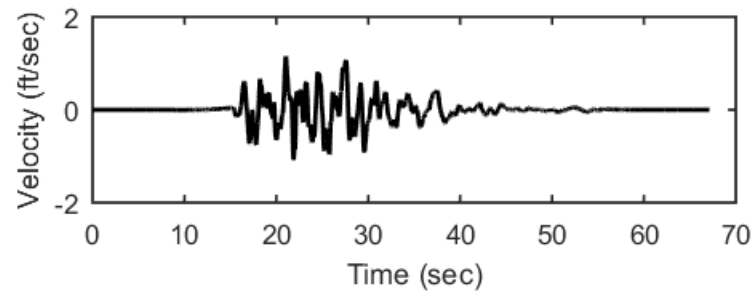
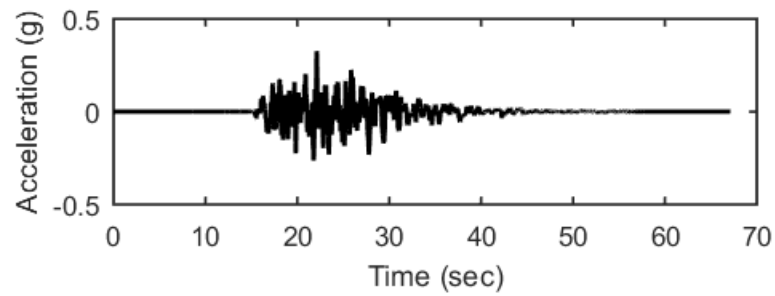
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



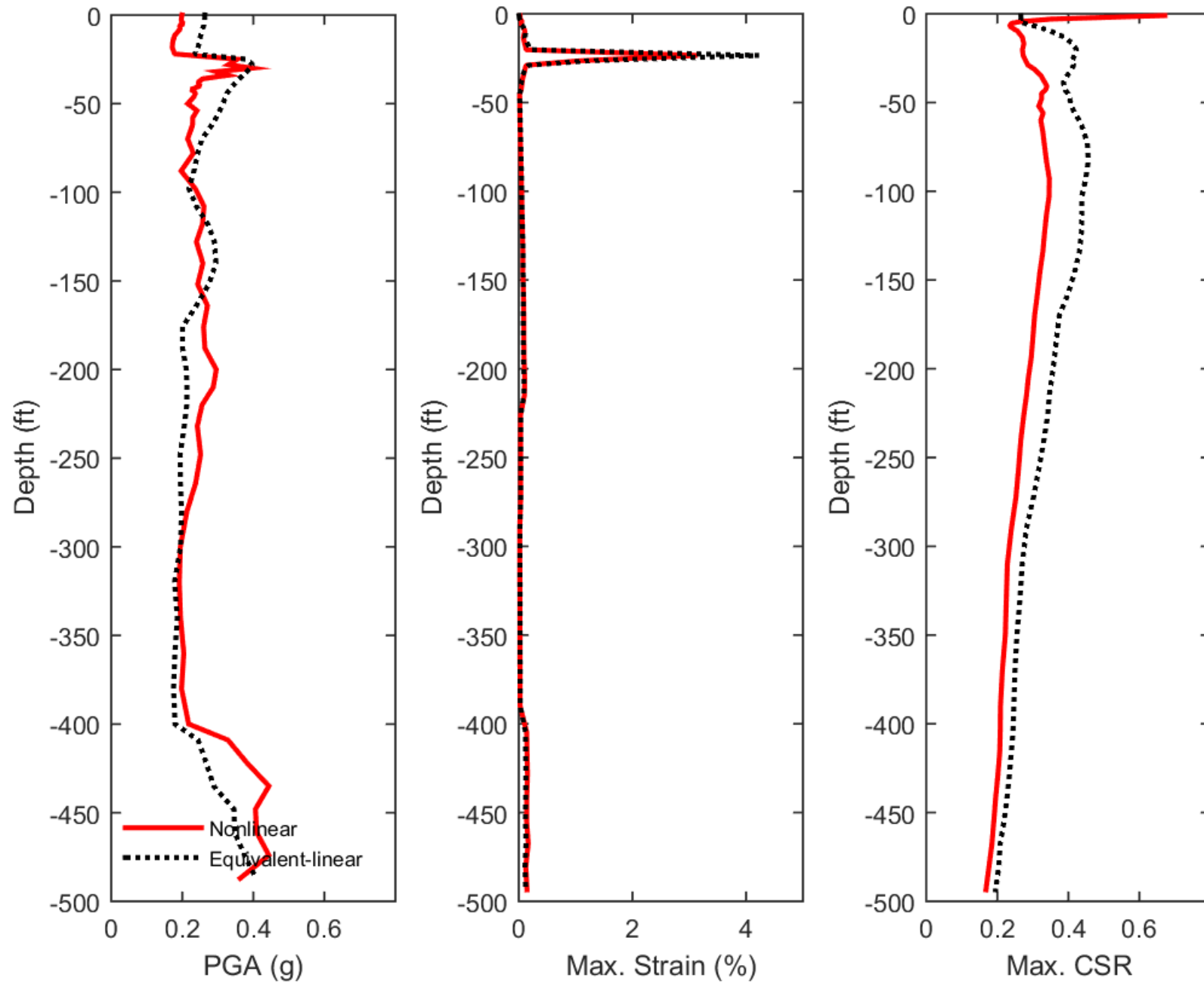
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



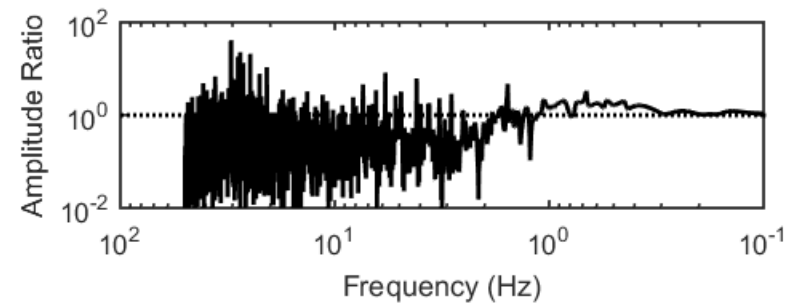
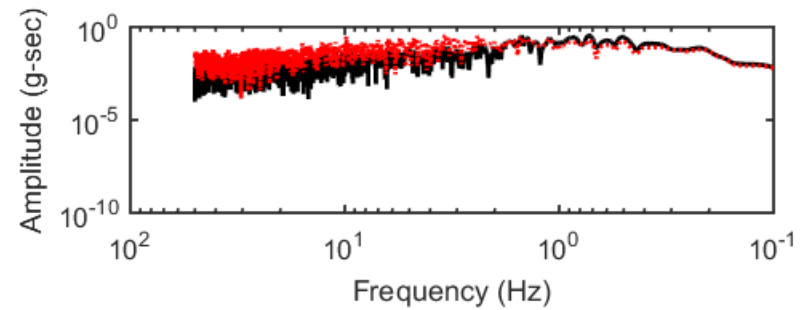
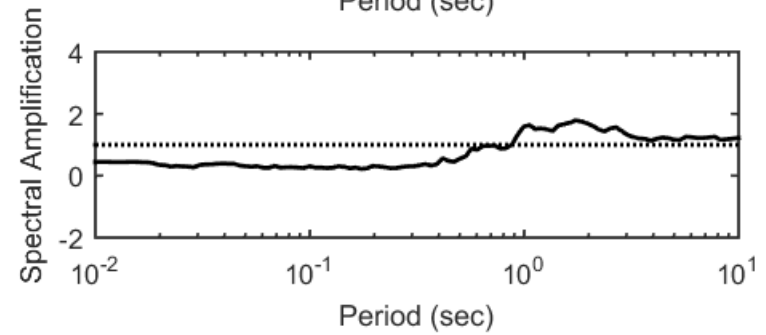
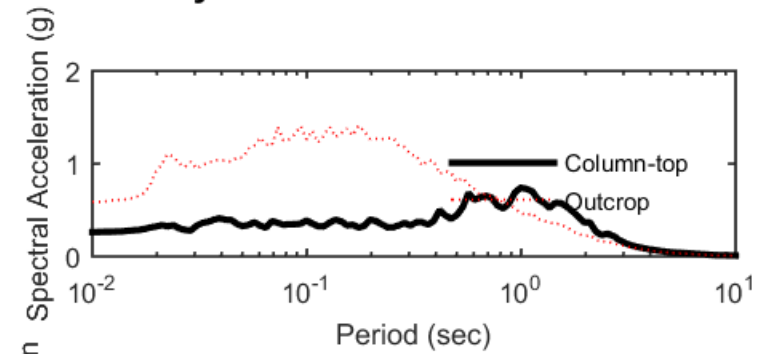
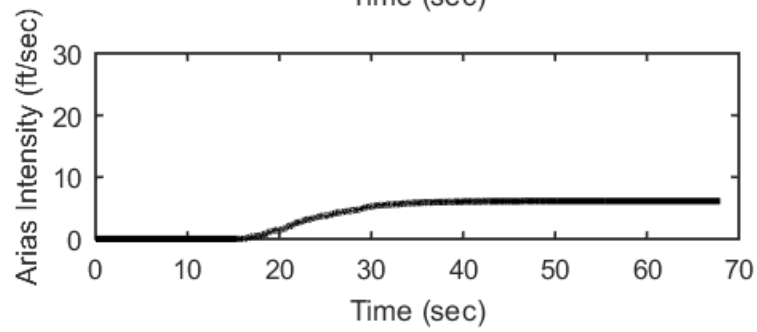
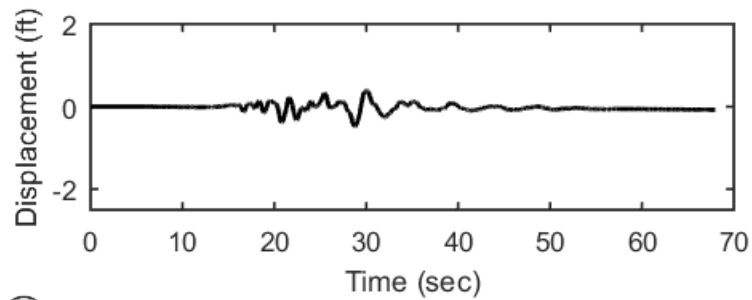
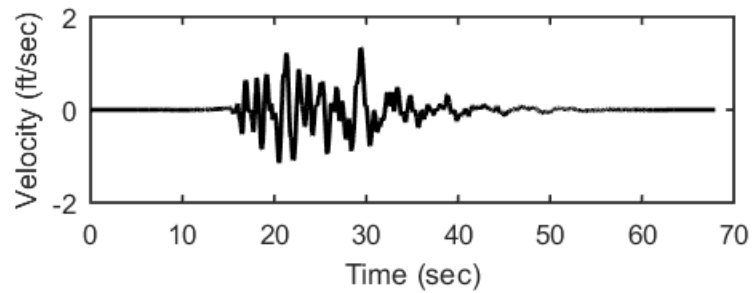
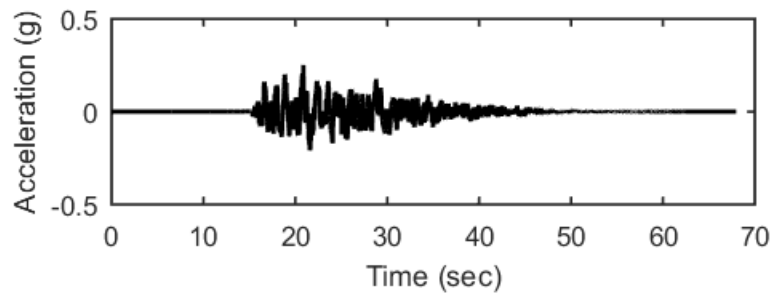
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



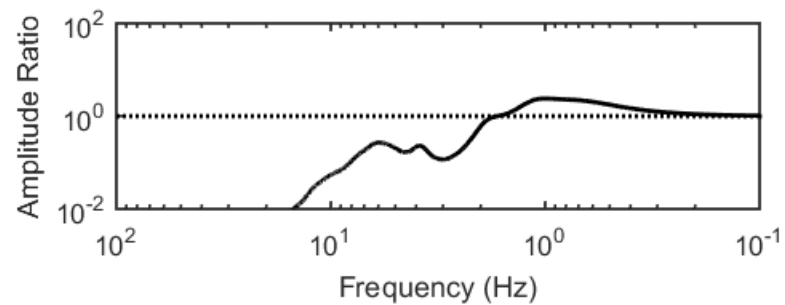
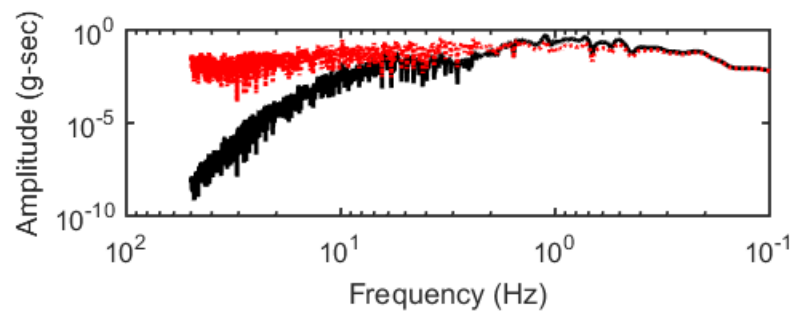
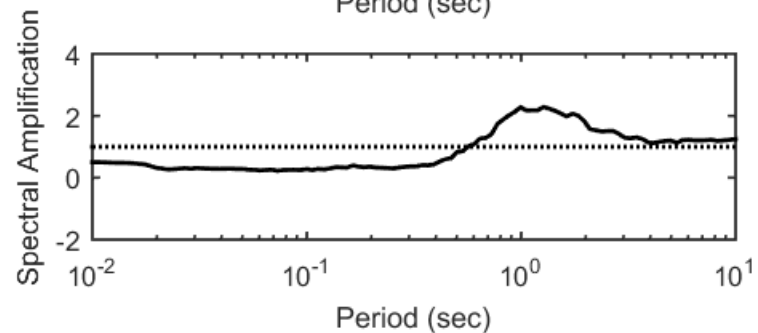
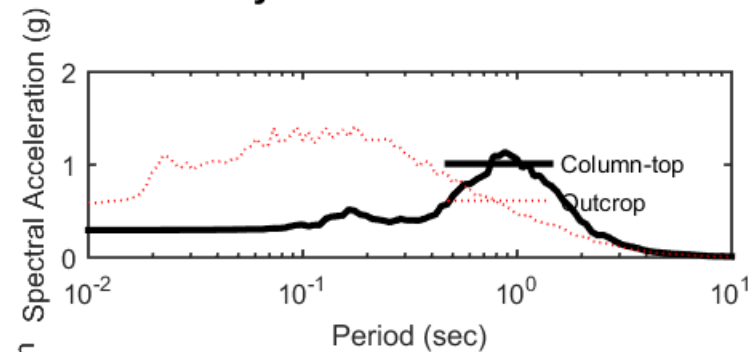
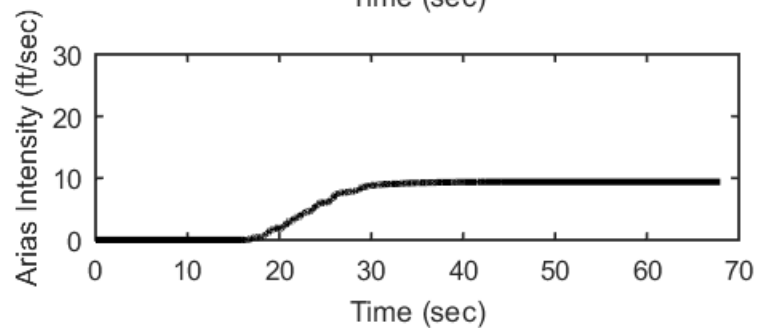
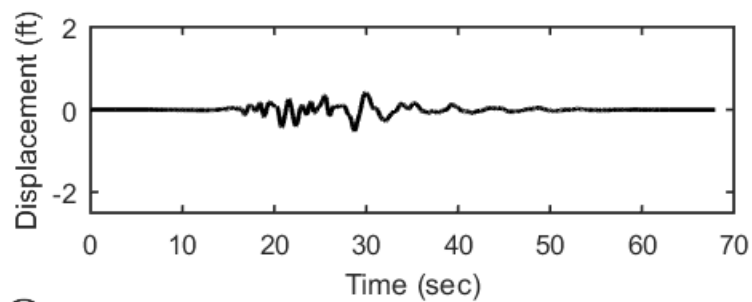
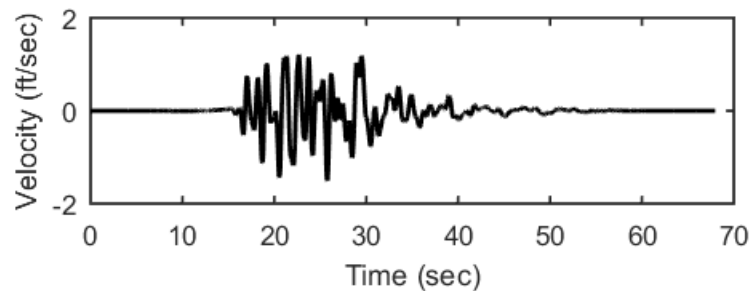
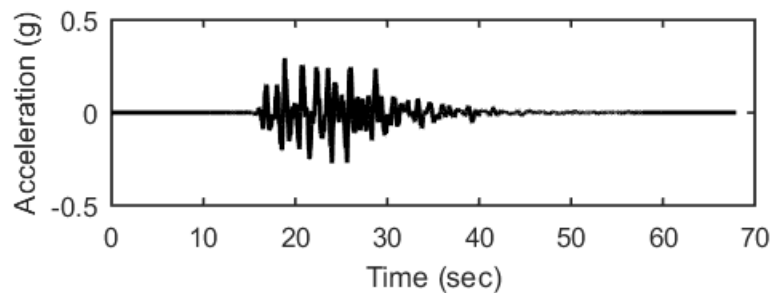
### Profile outputs for Motion: SEE5



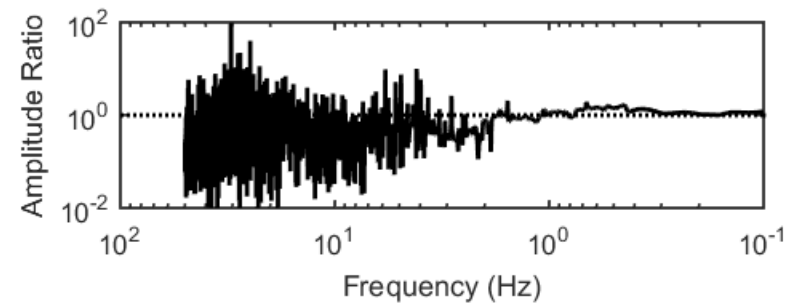
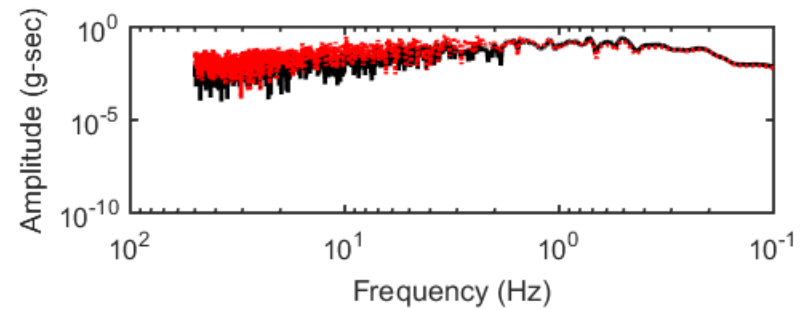
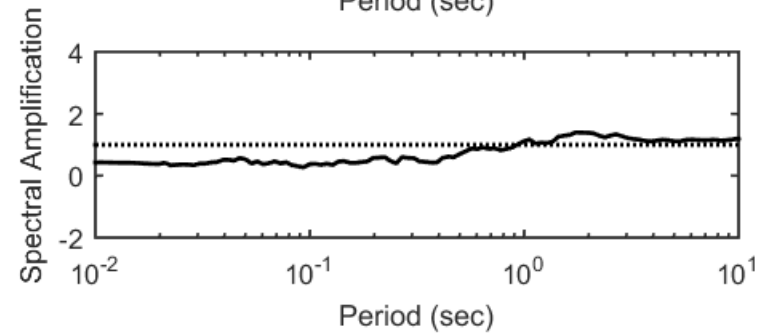
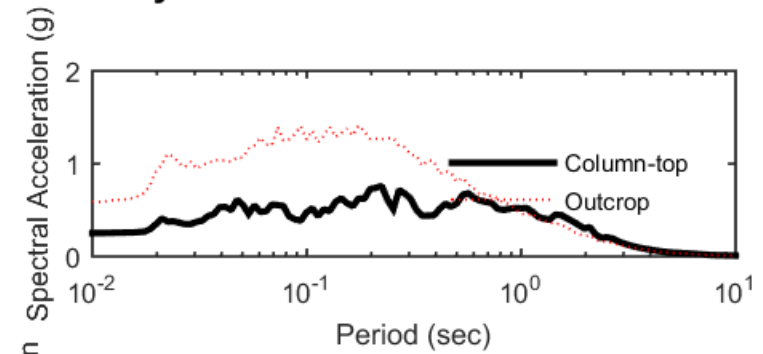
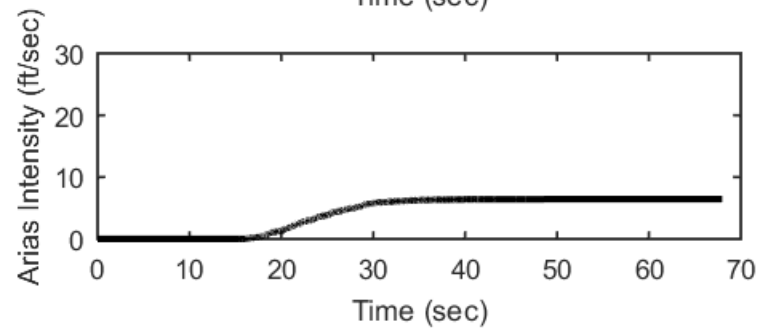
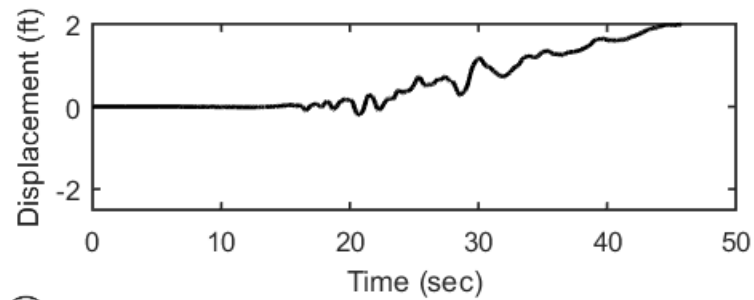
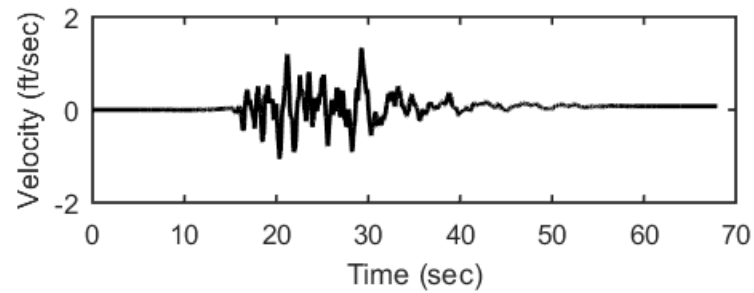
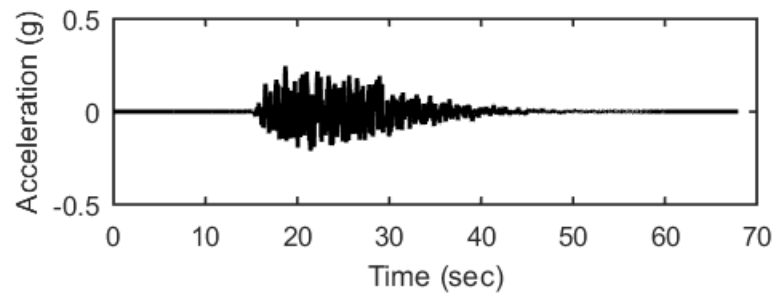
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6

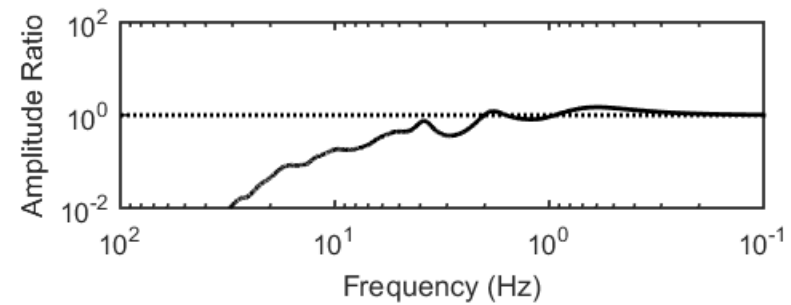
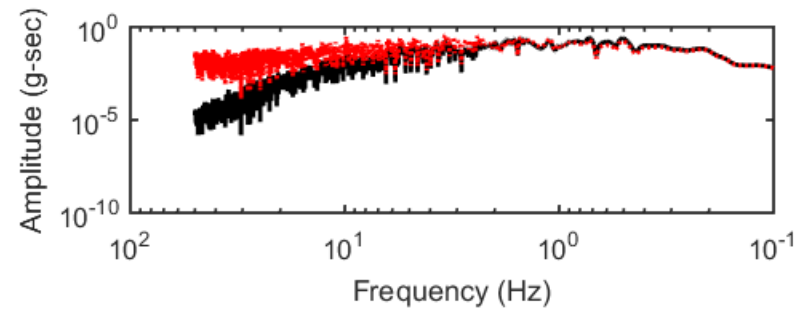
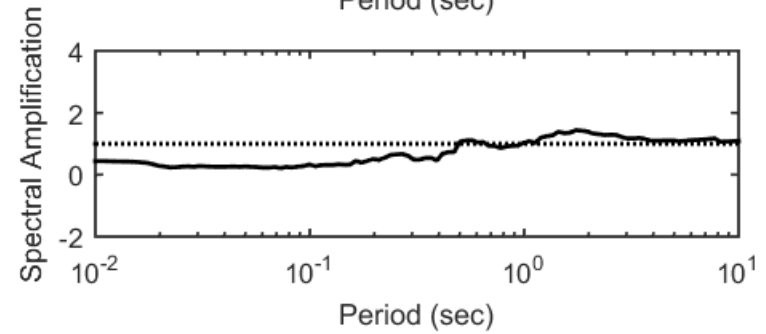
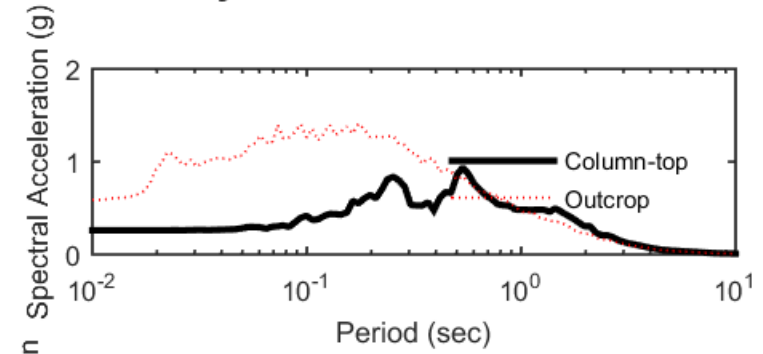
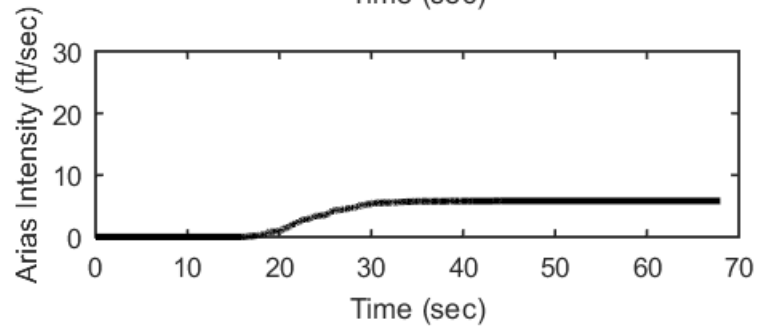
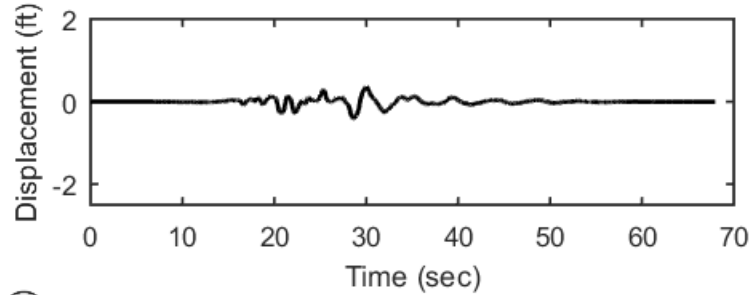
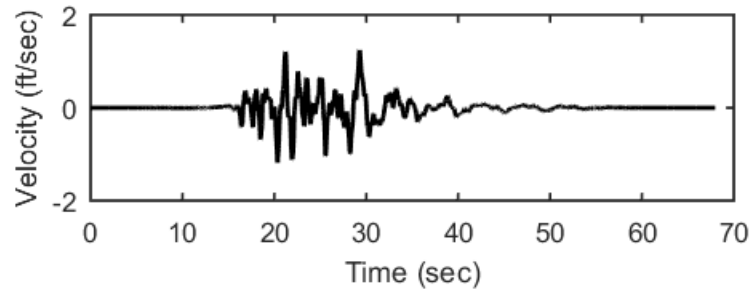
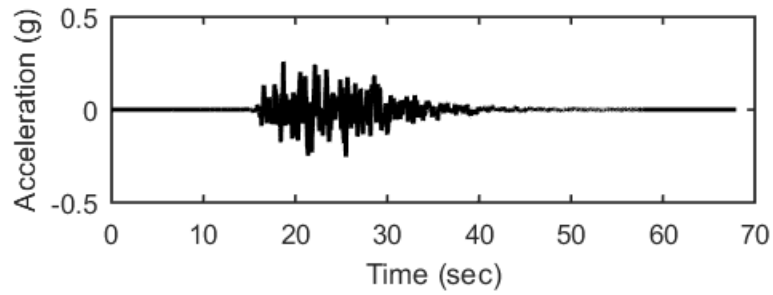


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6

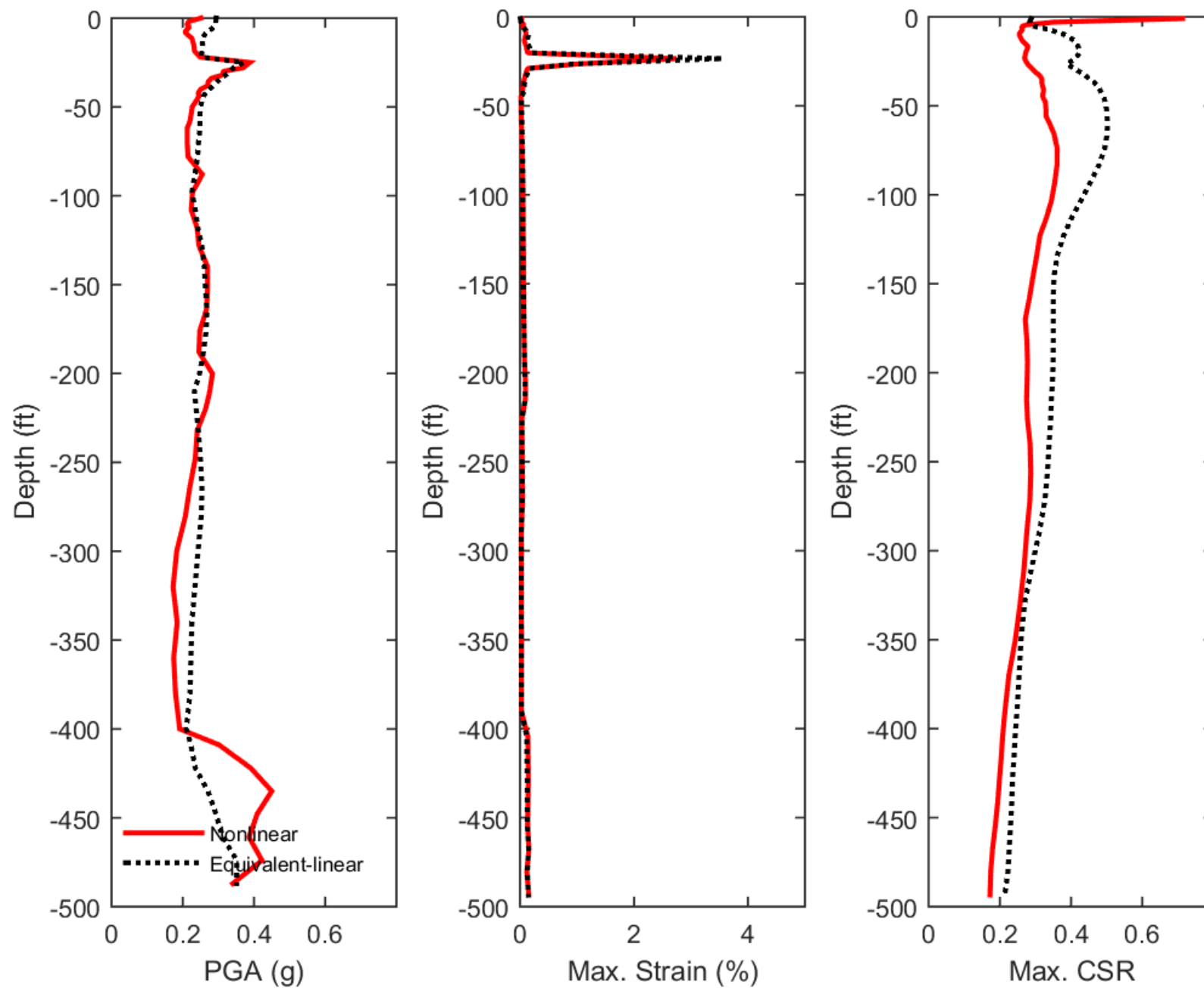




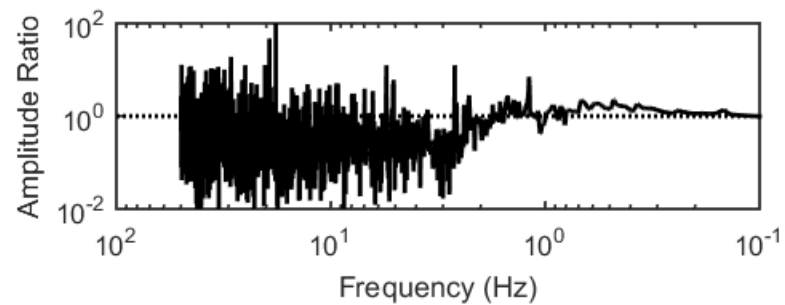
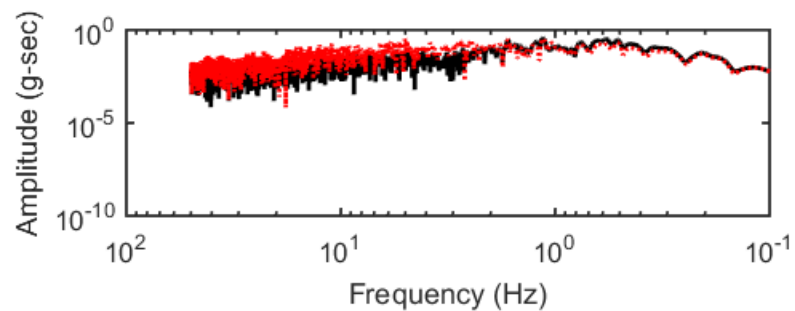
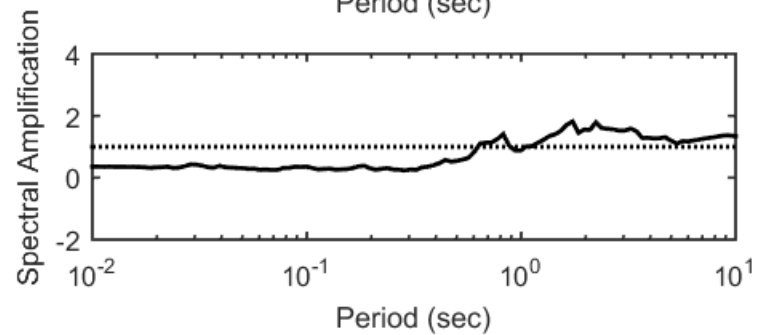
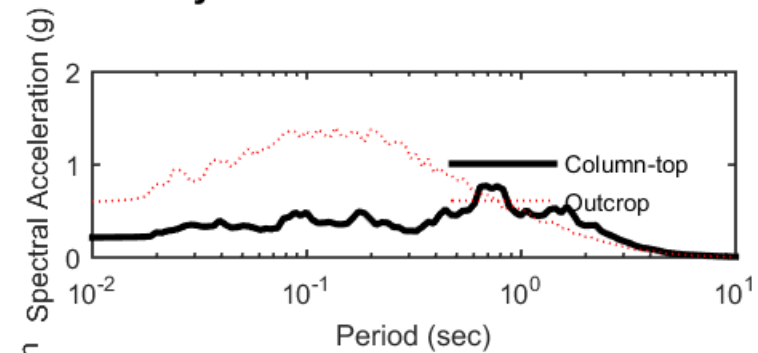
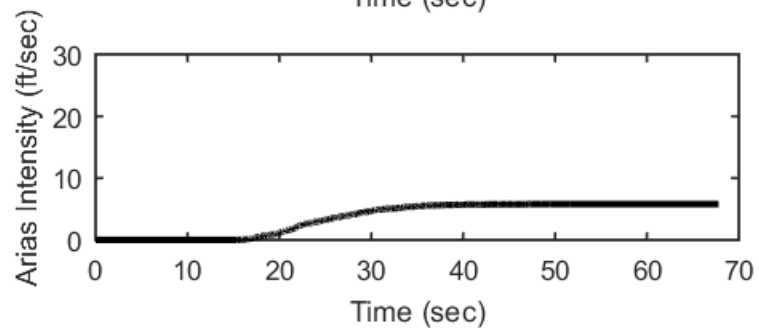
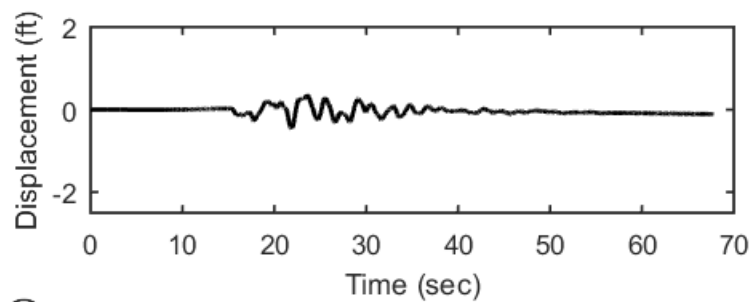
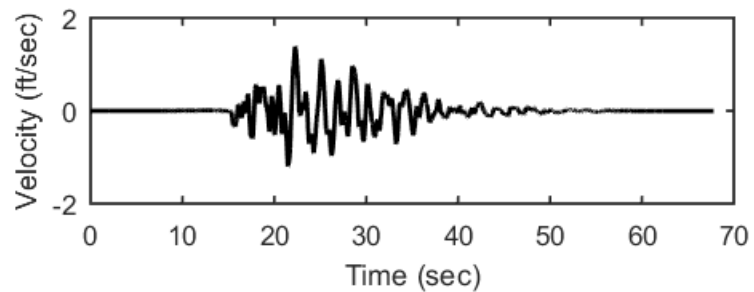
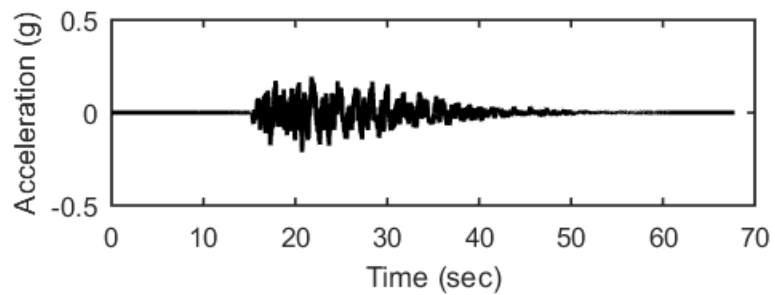
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



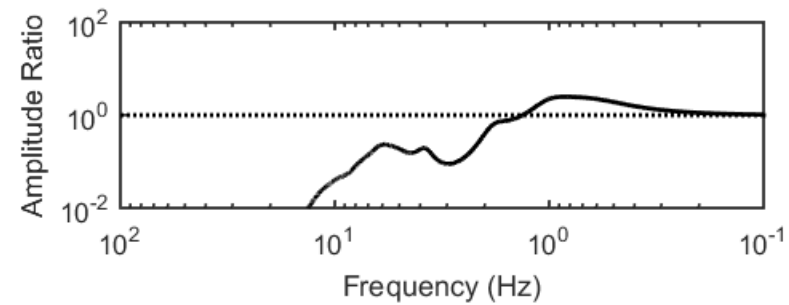
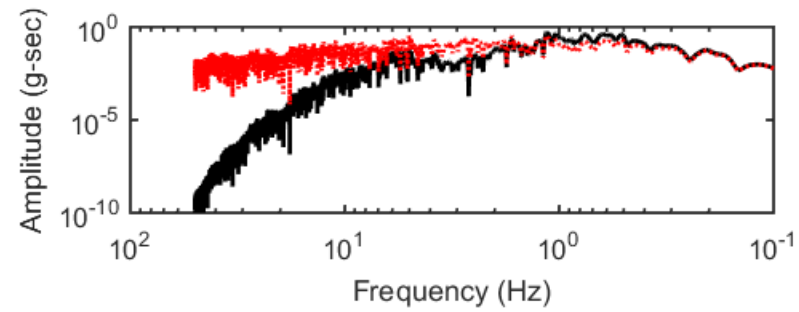
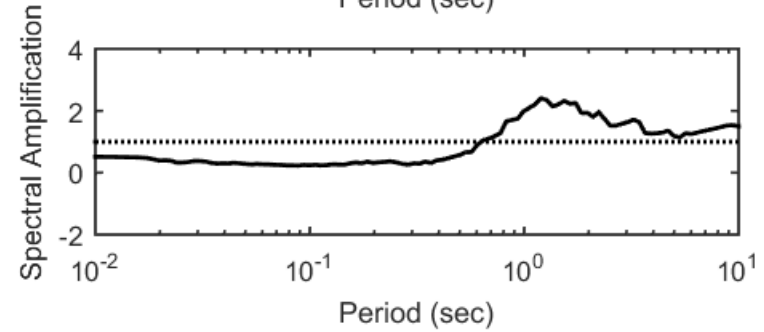
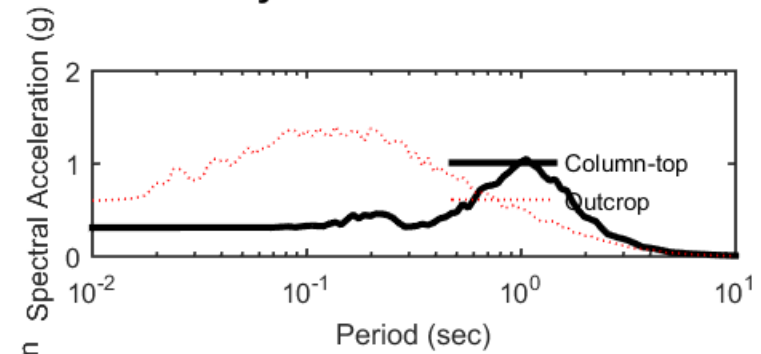
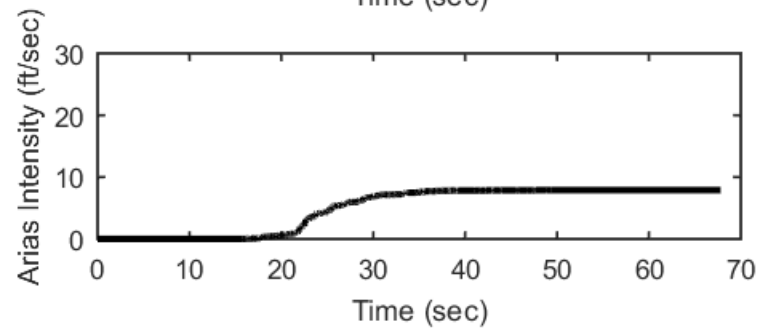
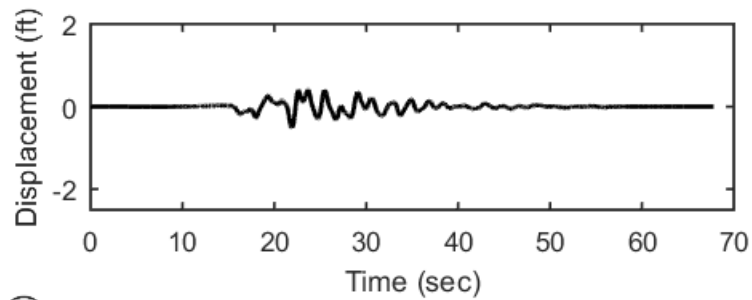
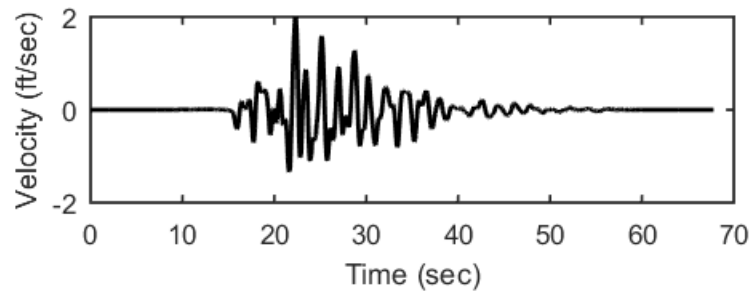
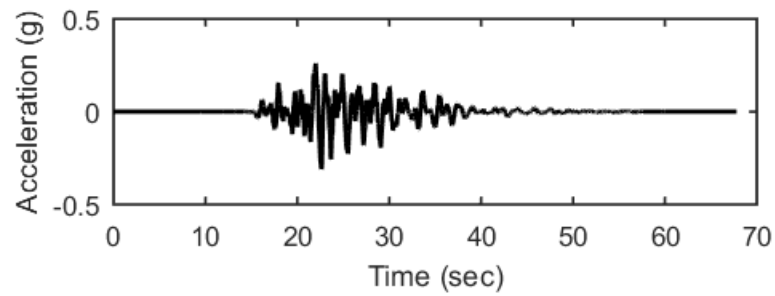
### Profile outputs for Motion: SEE6



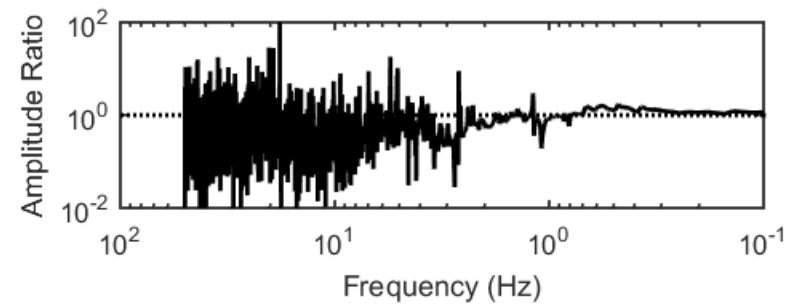
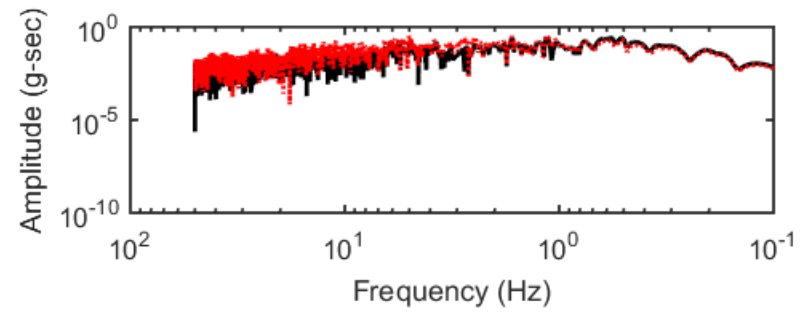
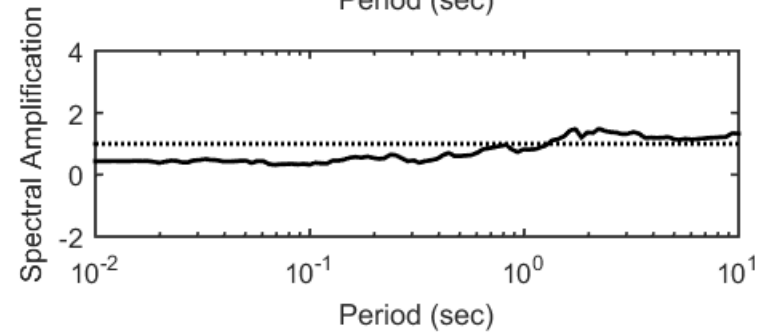
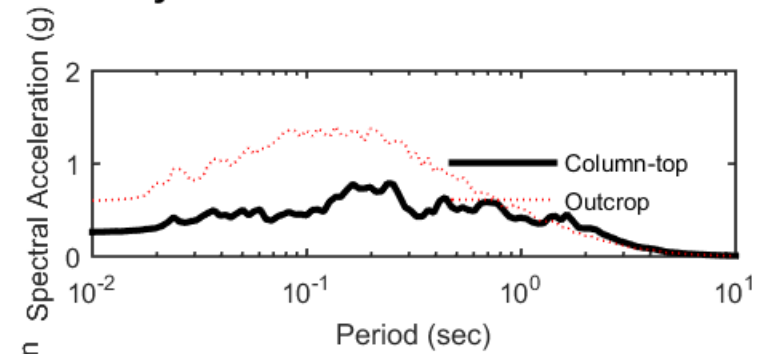
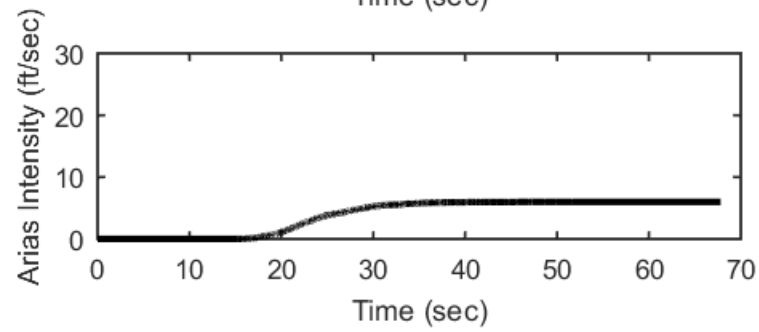
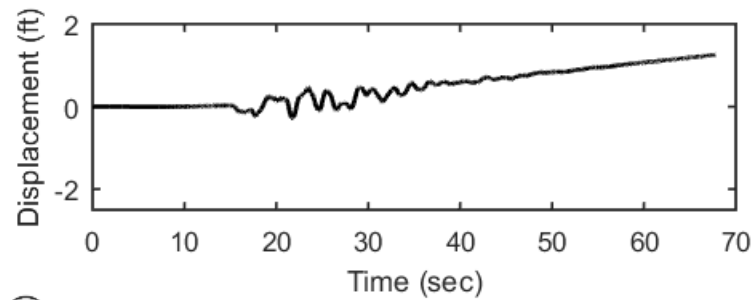
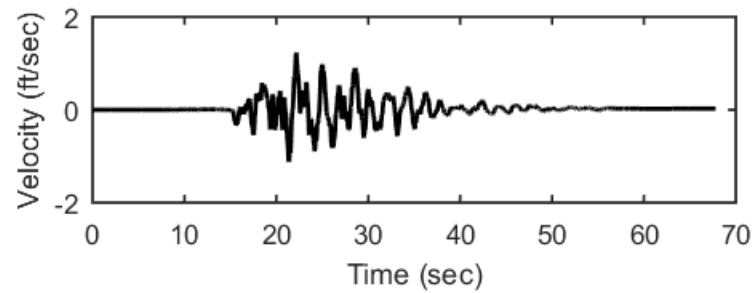
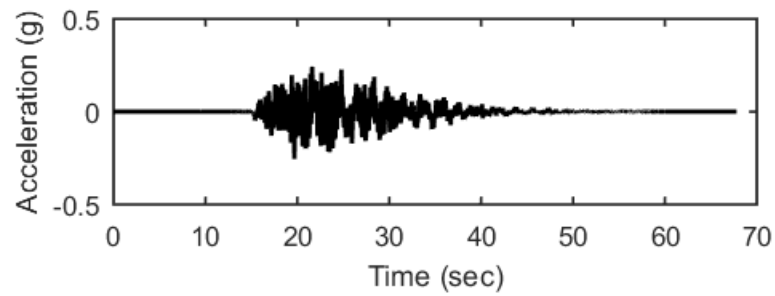
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



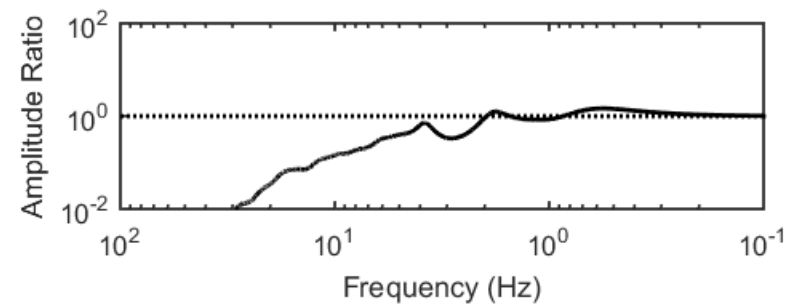
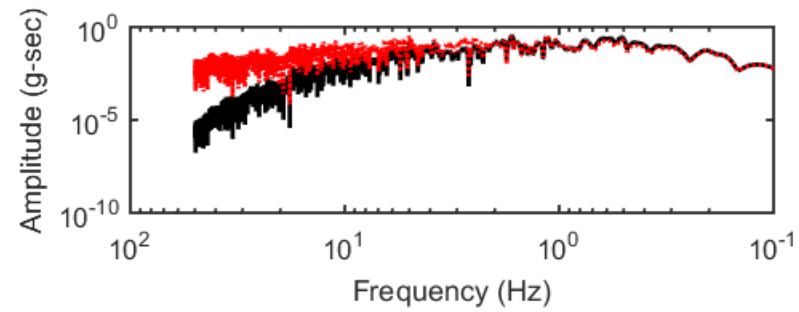
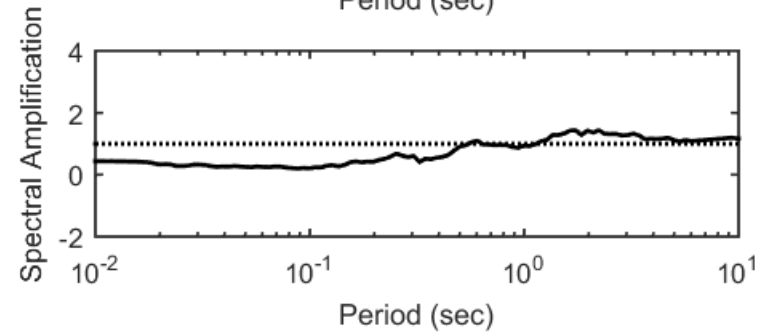
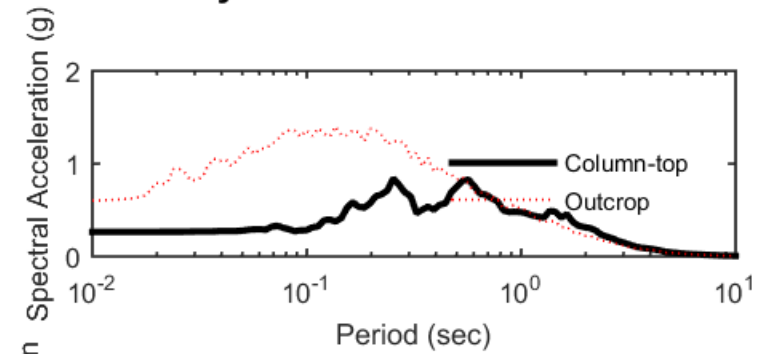
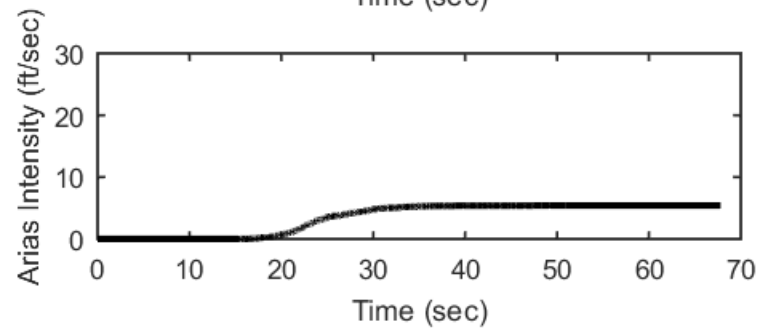
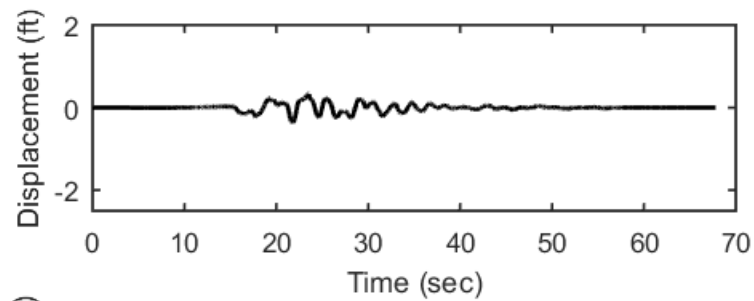
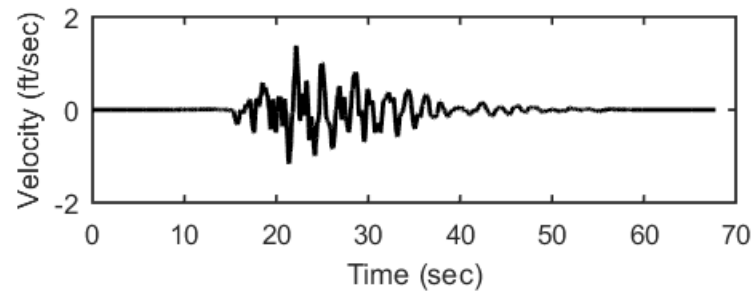
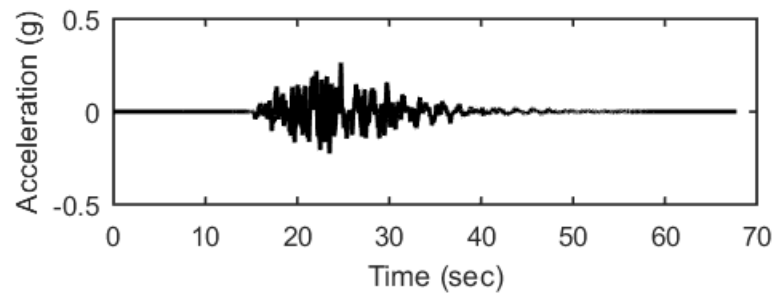
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



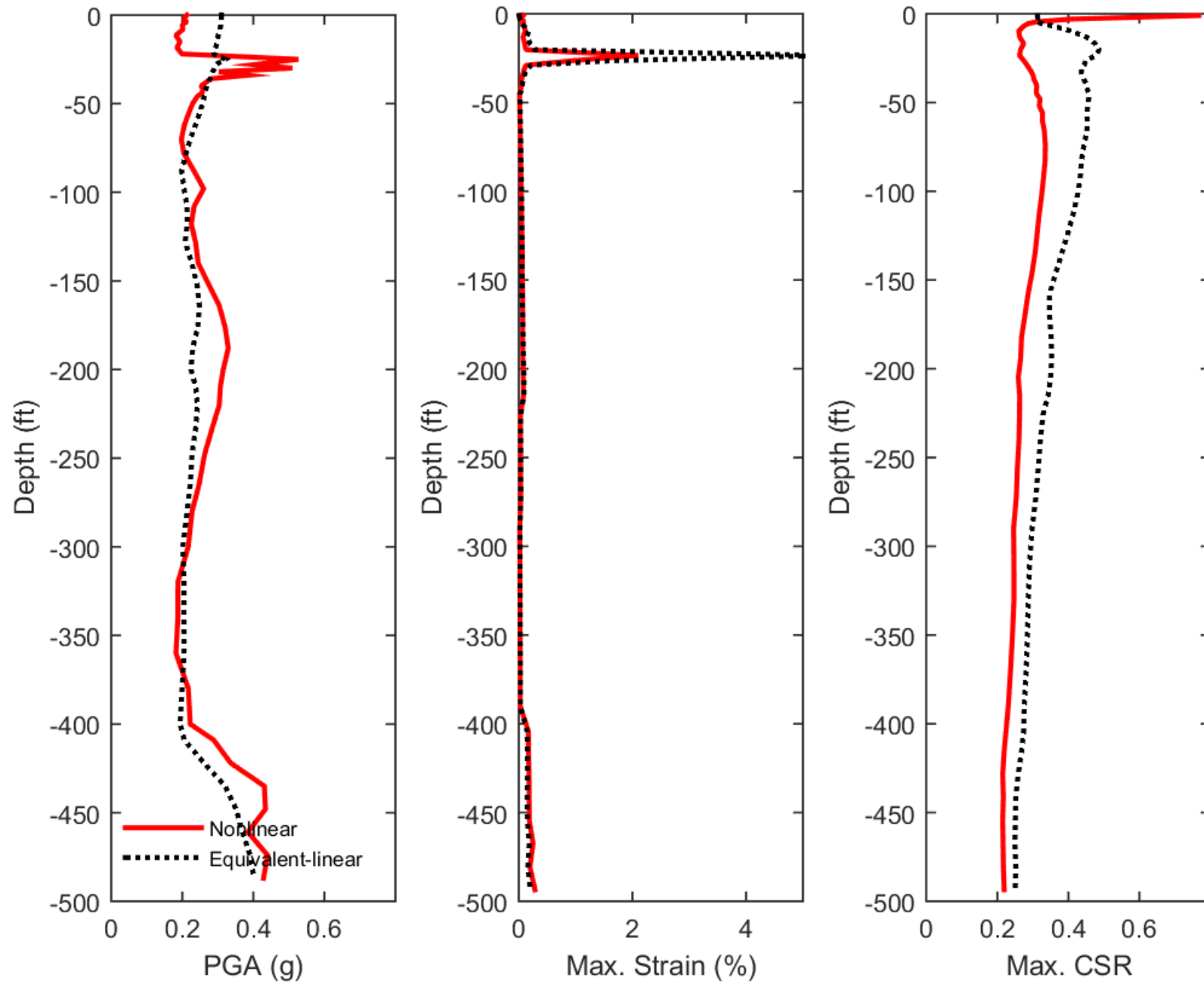
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



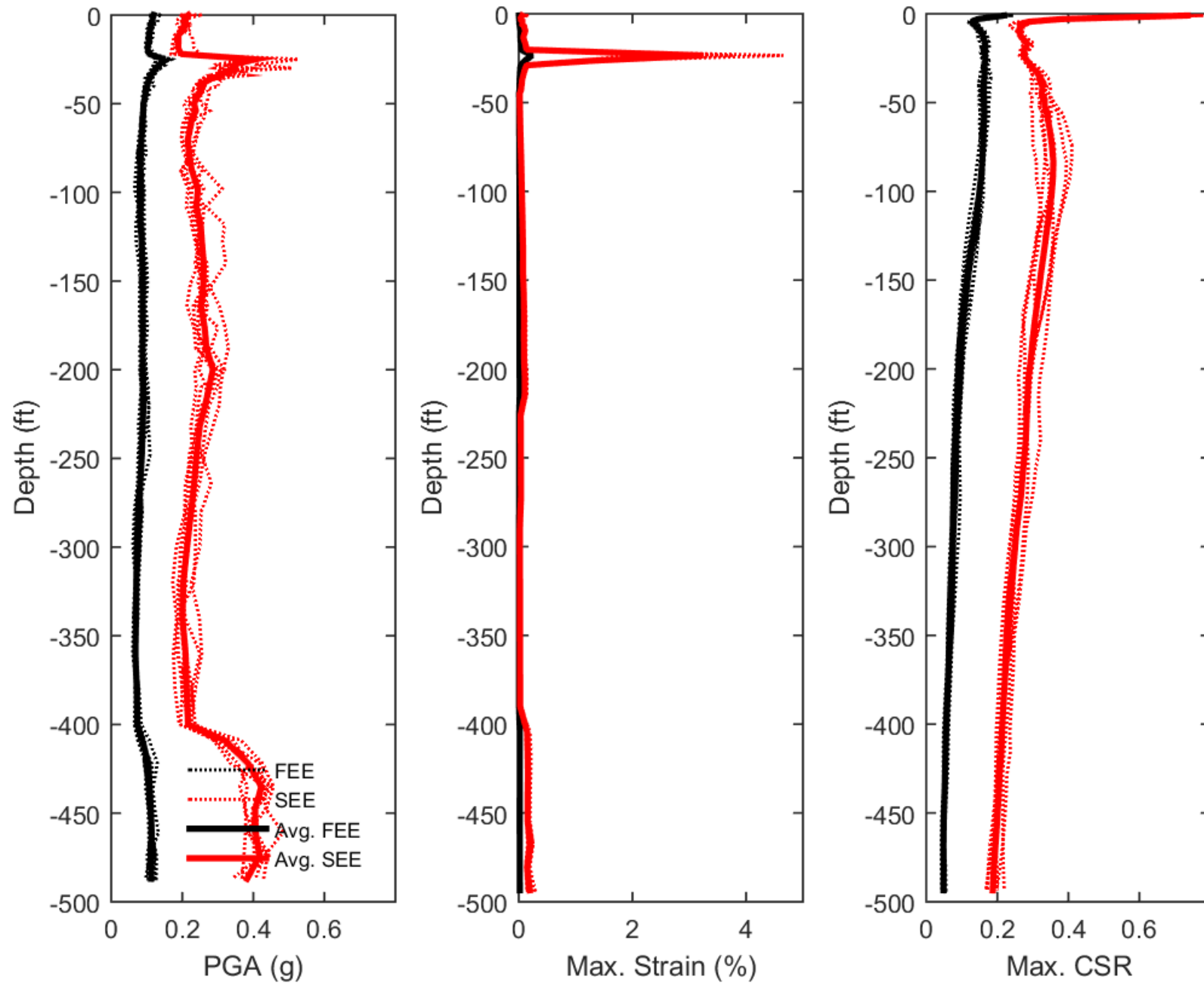
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



### Profile outputs for Motion: SEE7

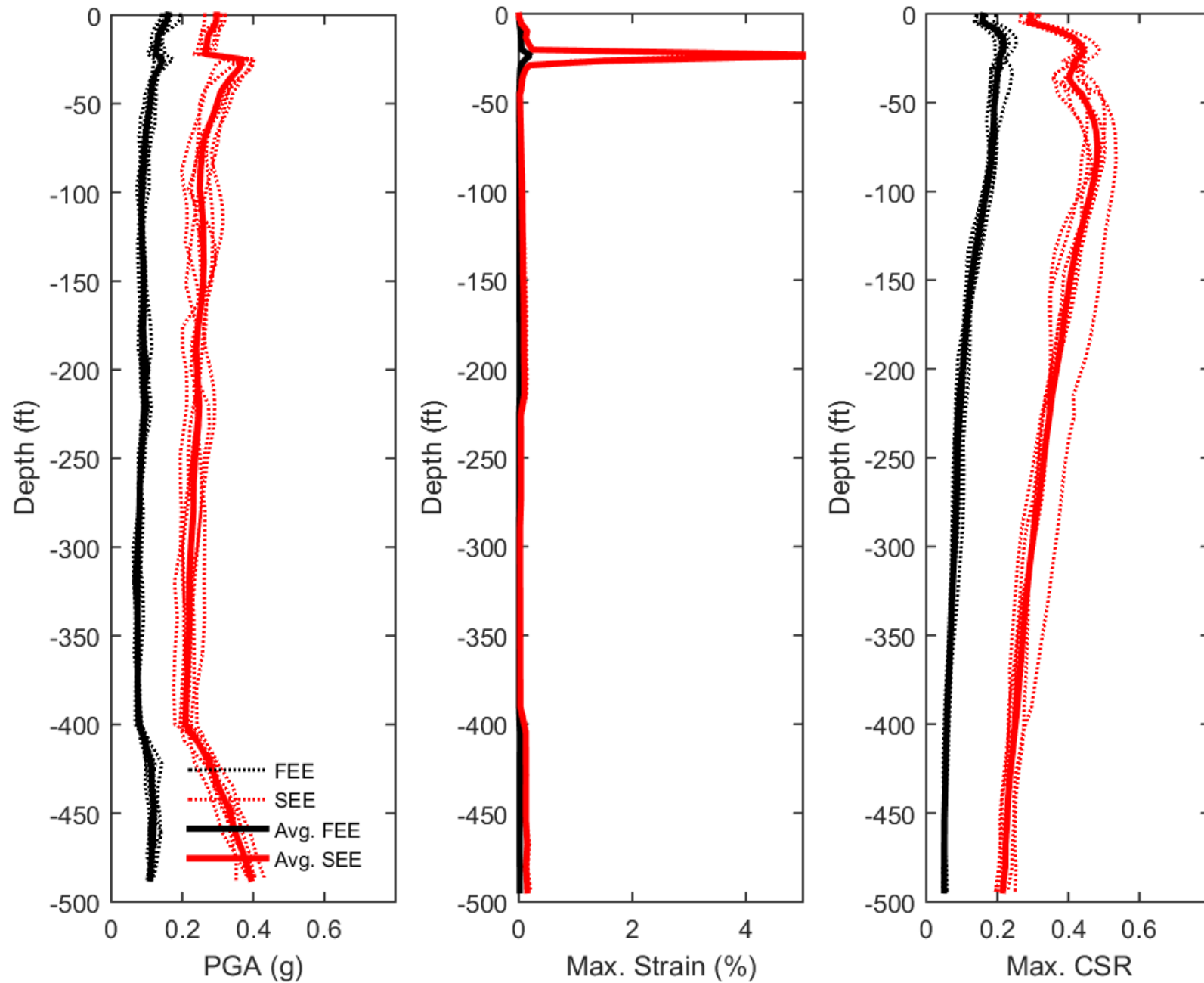


## Summary of the profile outputs for Nonlinear analysis

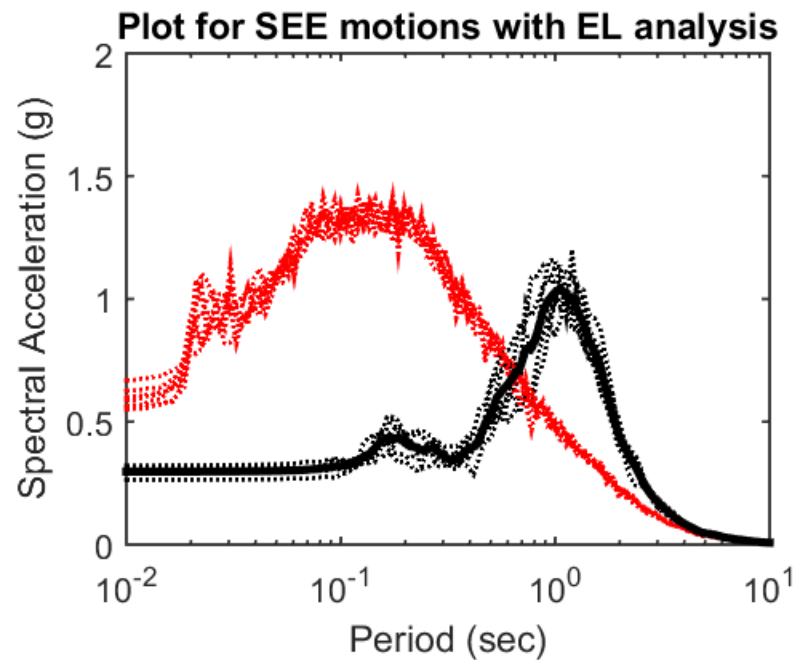
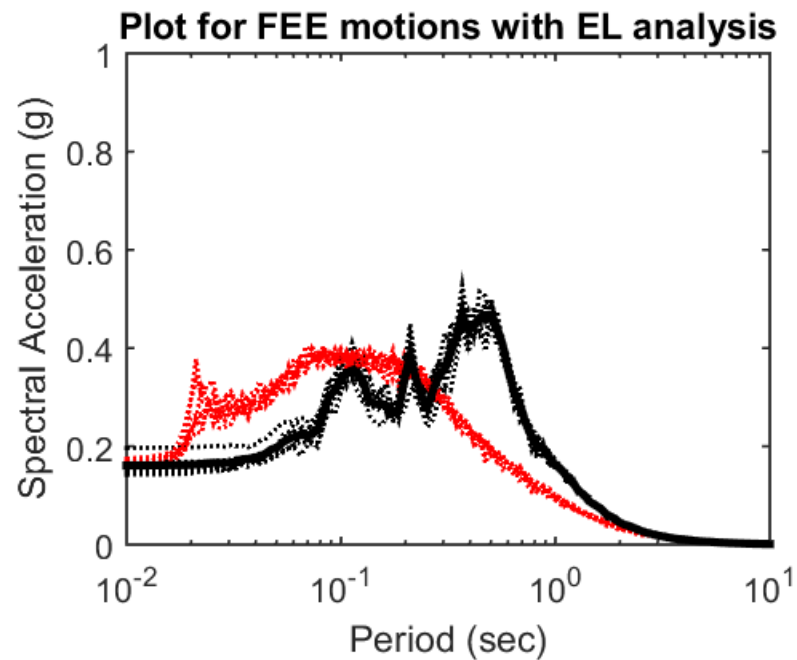
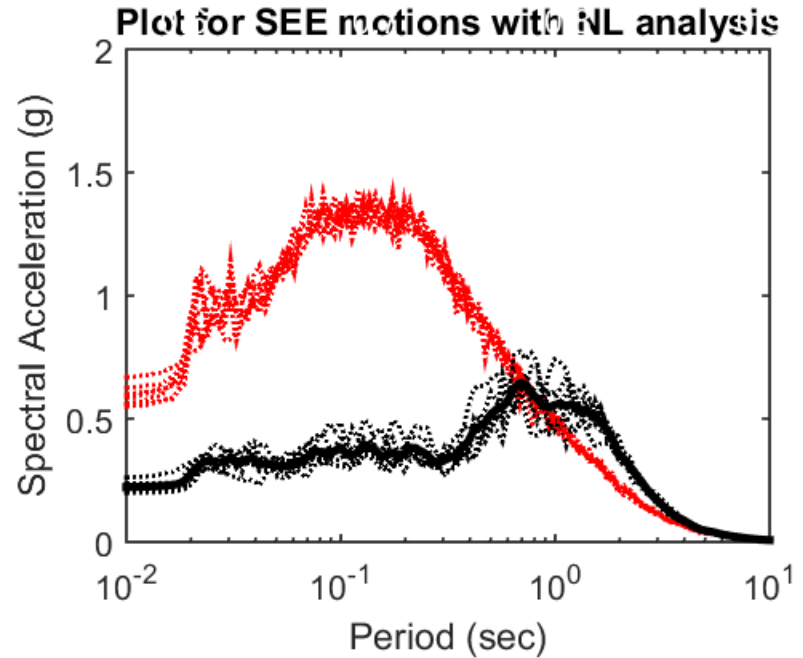
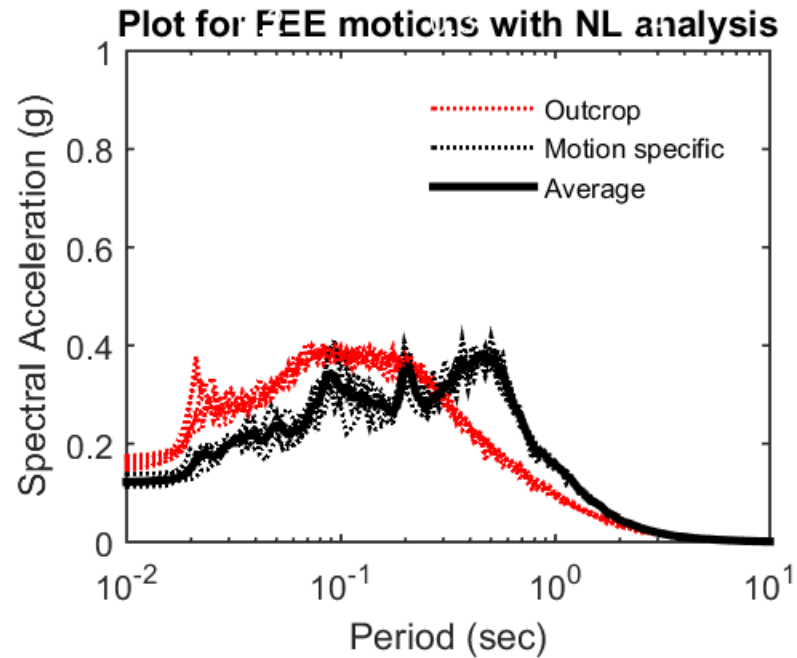




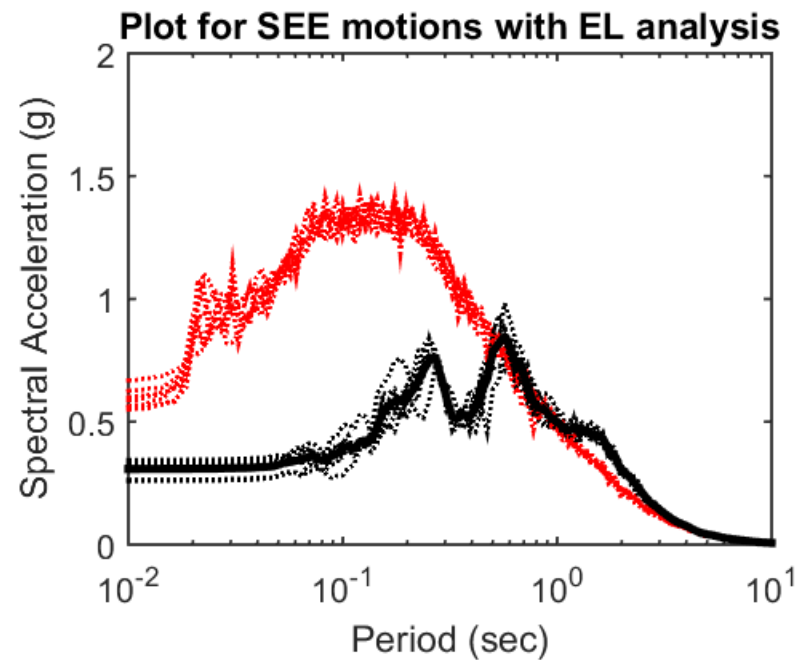
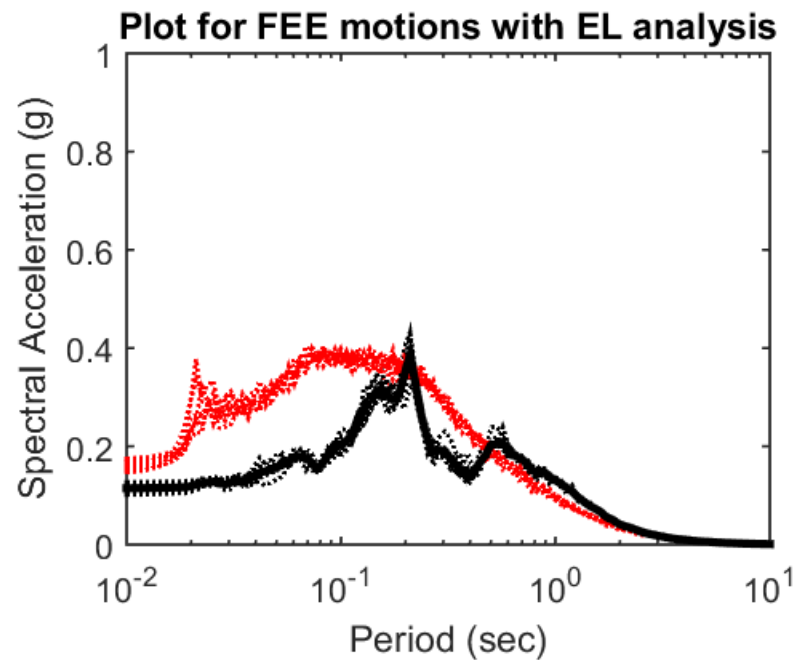
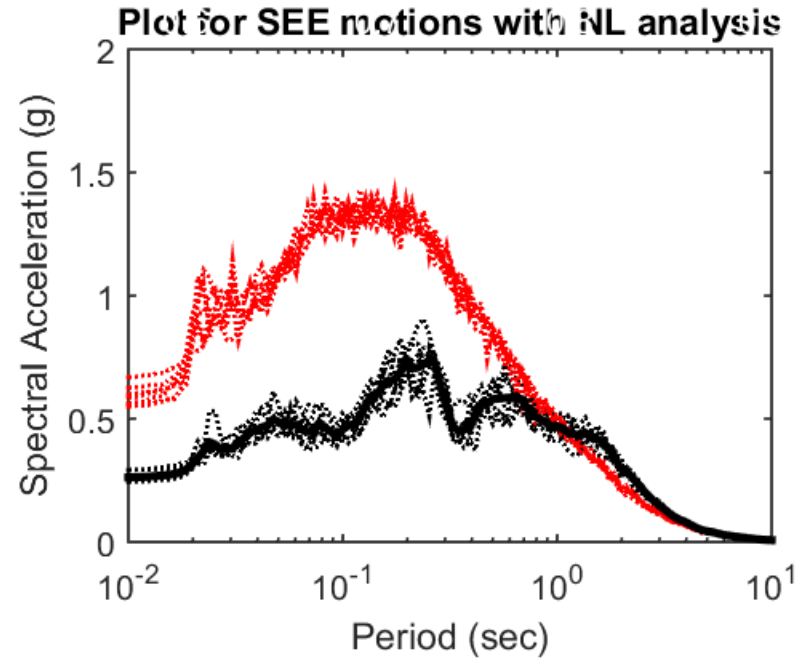
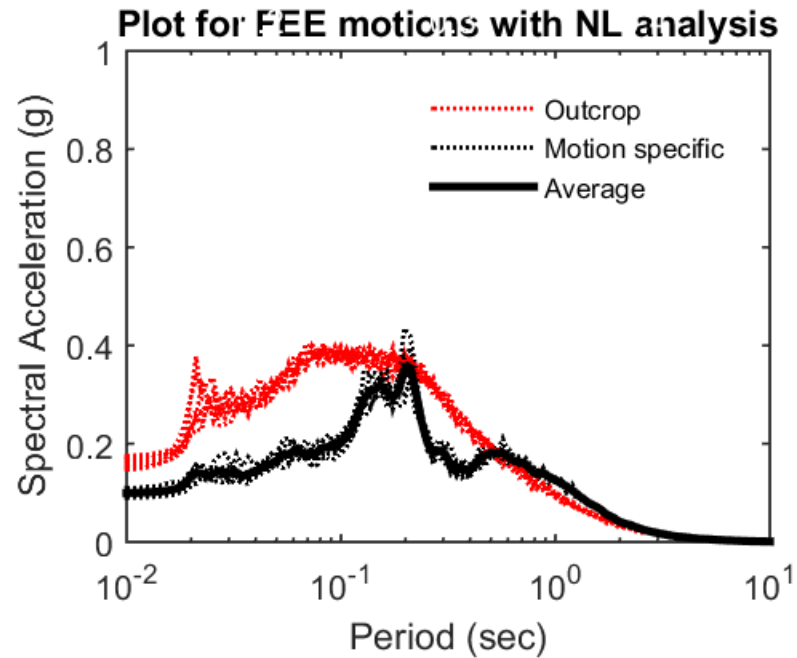
## Summary of the profile outputs for Equivalent-linear analysis



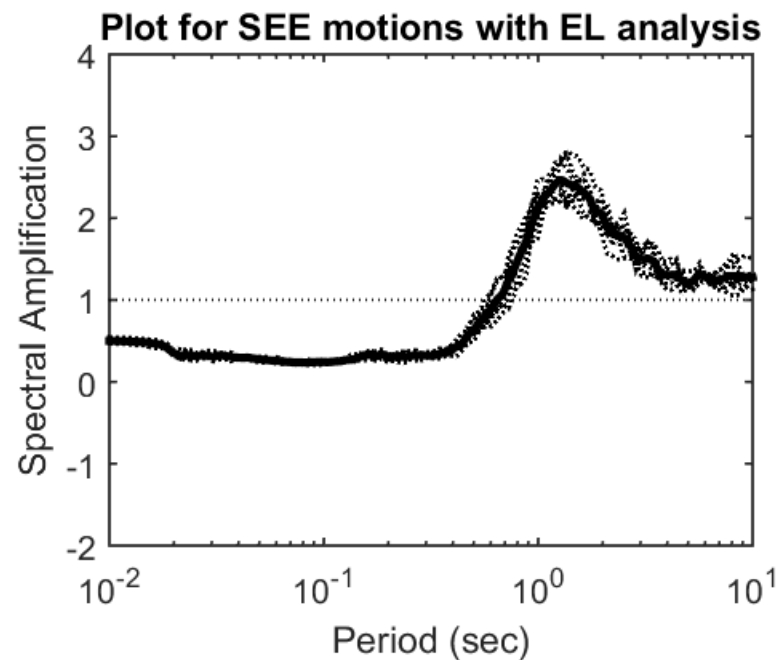
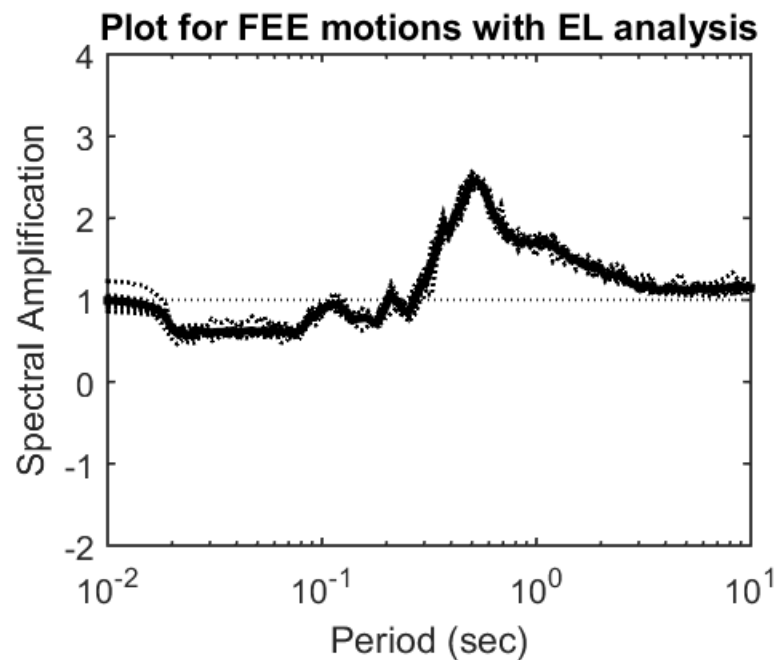
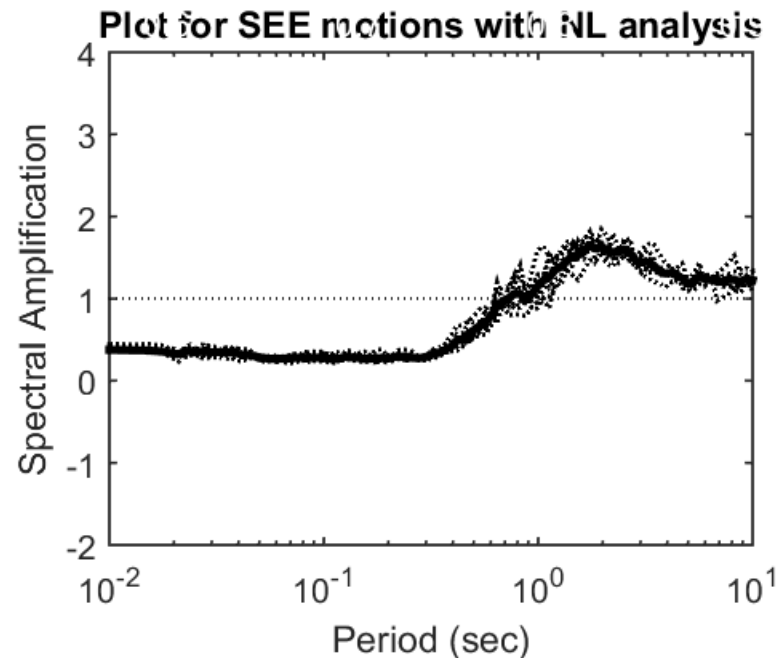
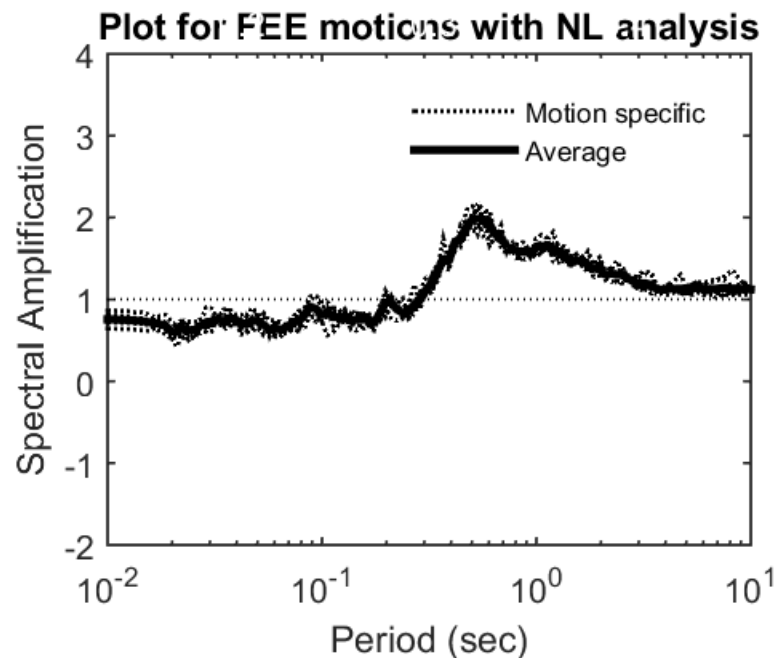
## Summary plots: RSA at ground surface



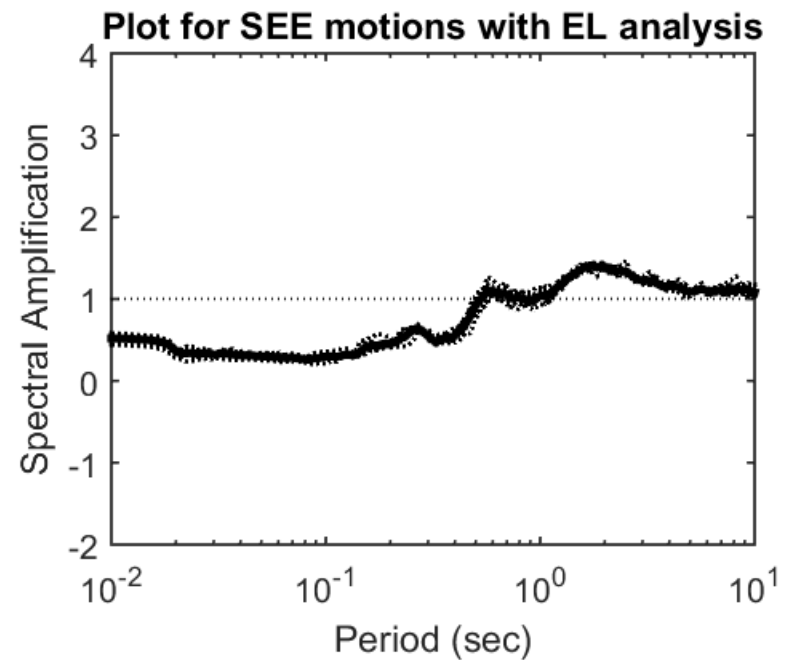
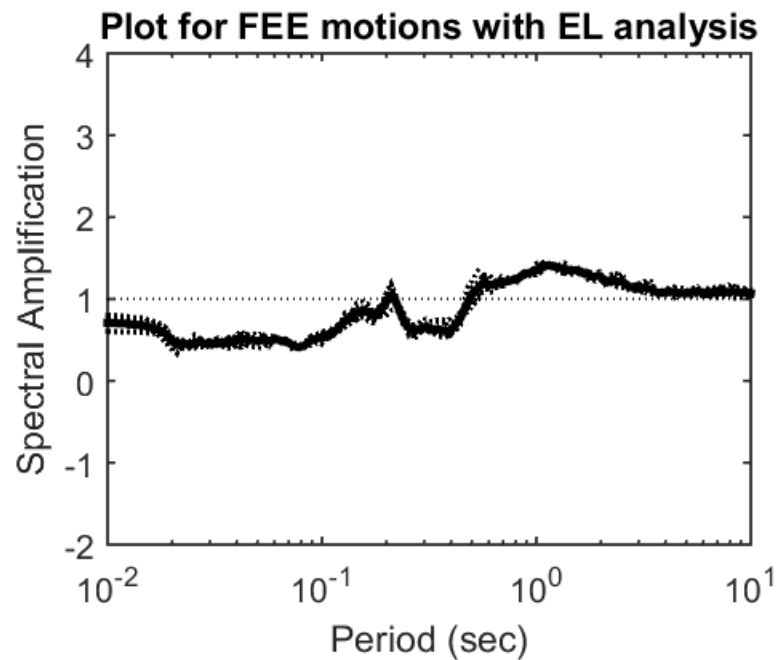
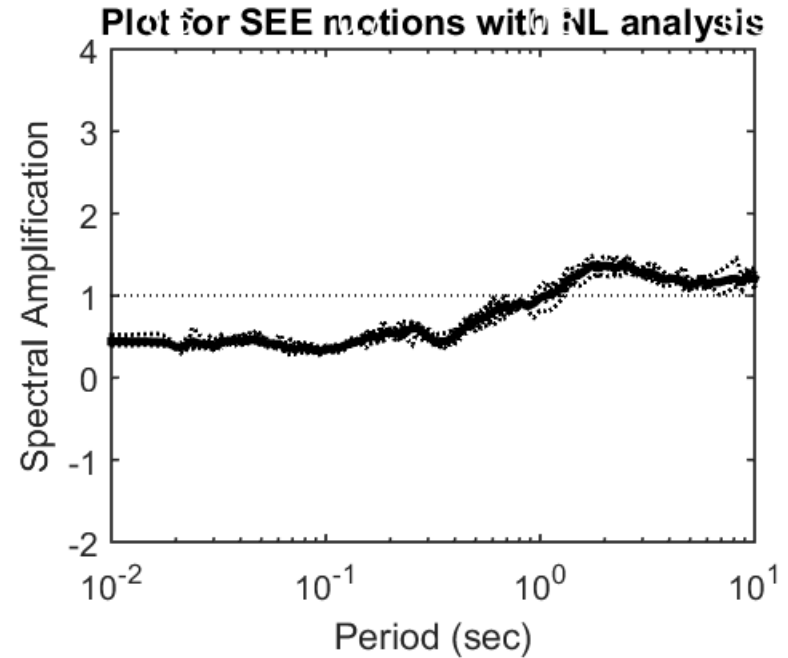
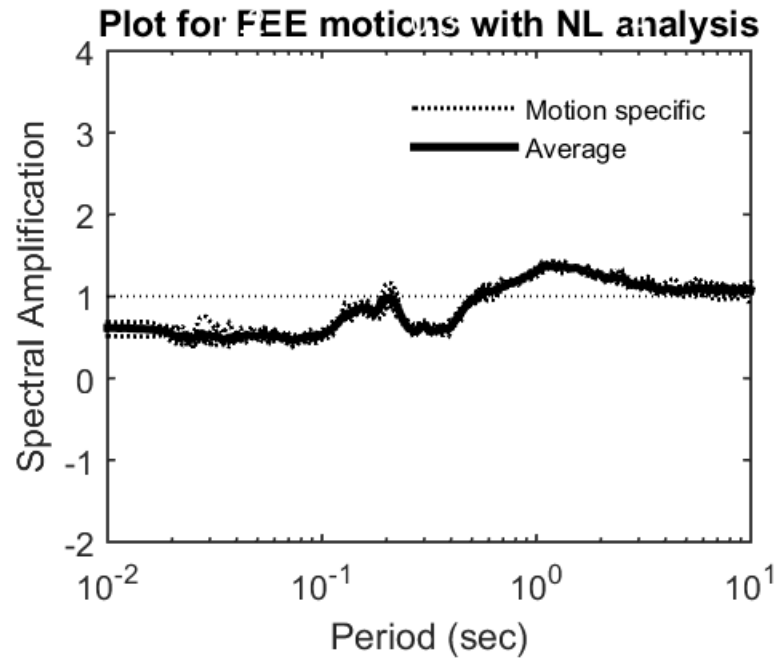
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

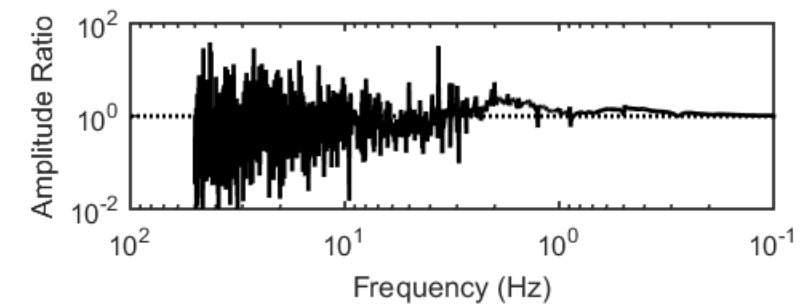
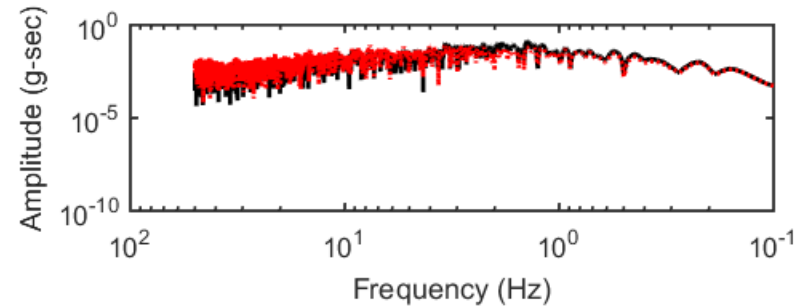
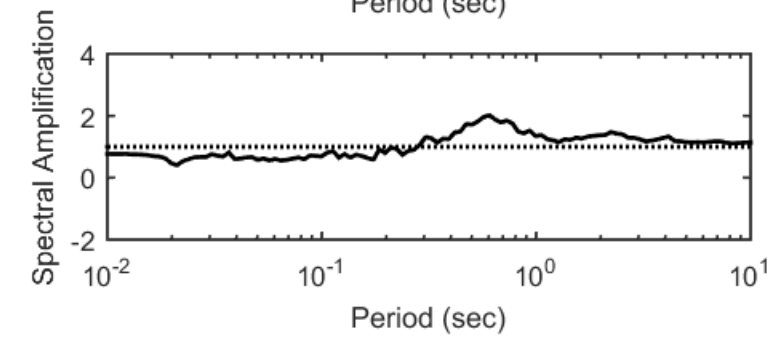
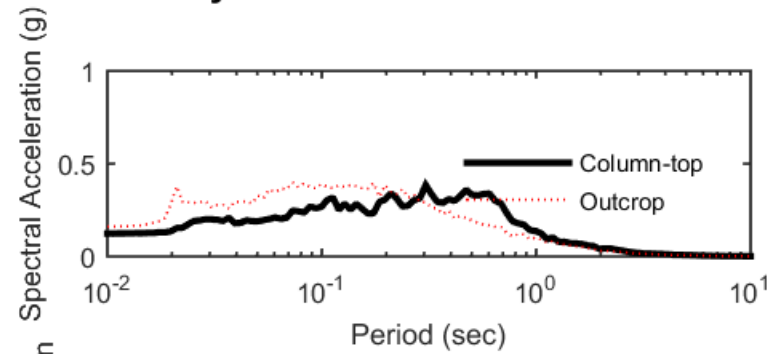
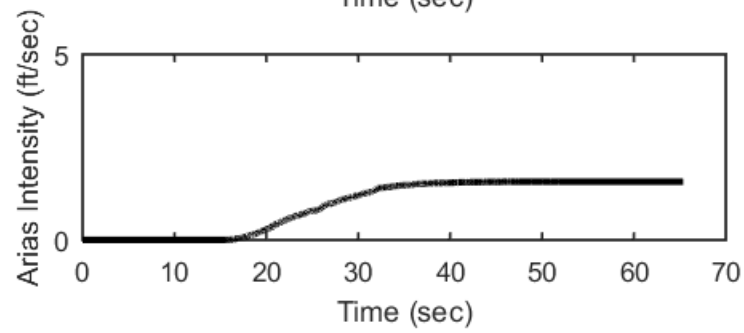
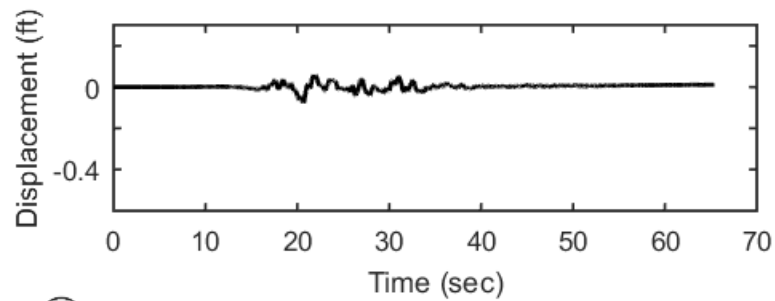
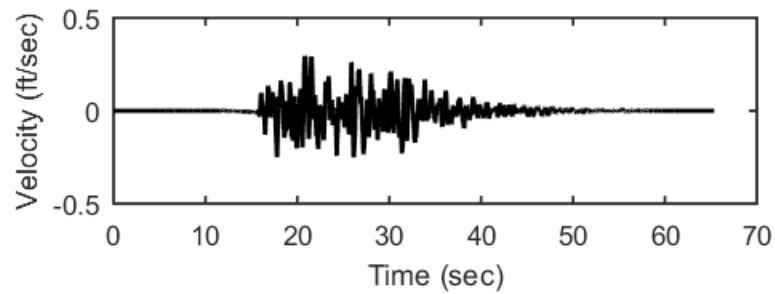
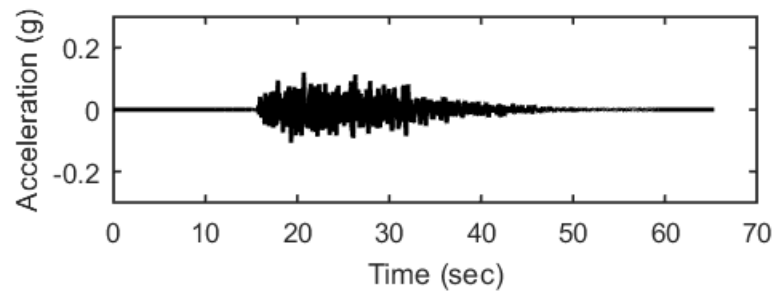


## Summary plots: Spectral amplification at top of Marl

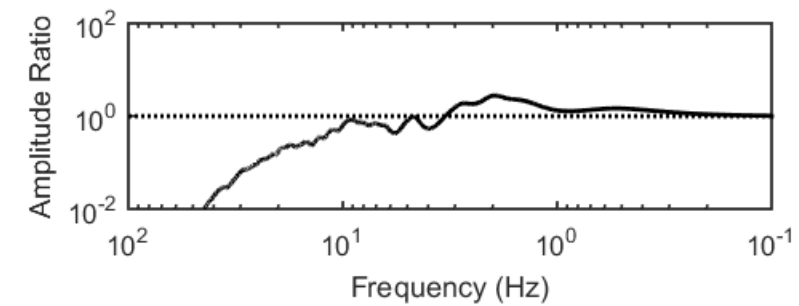
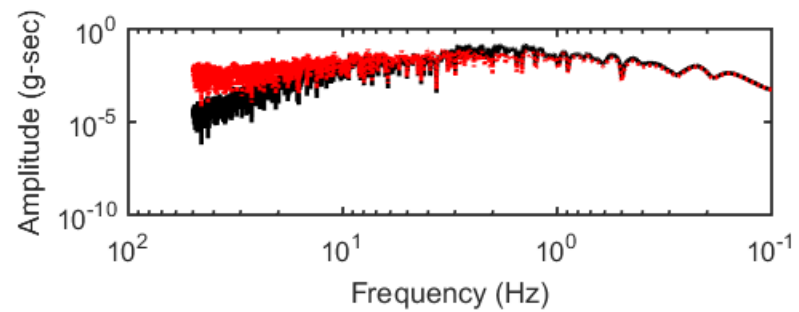
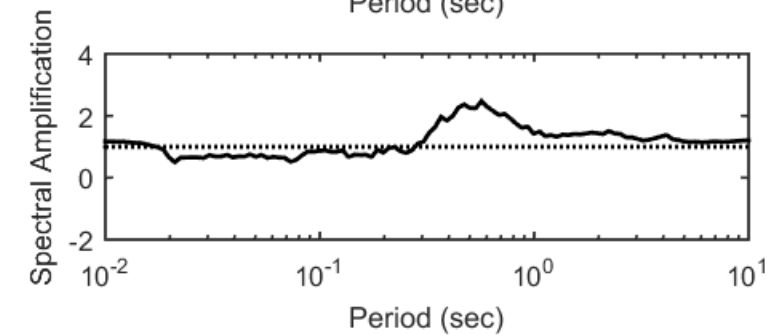
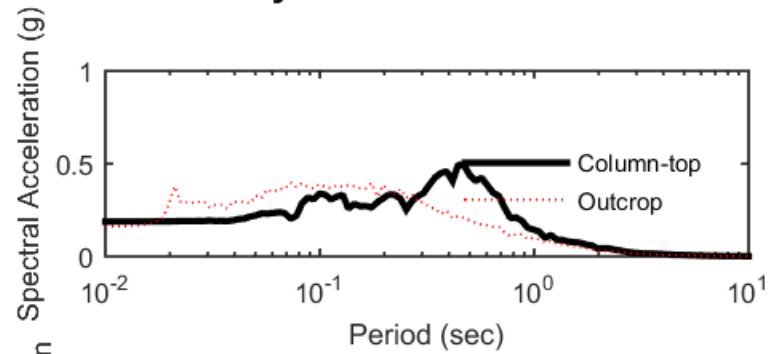
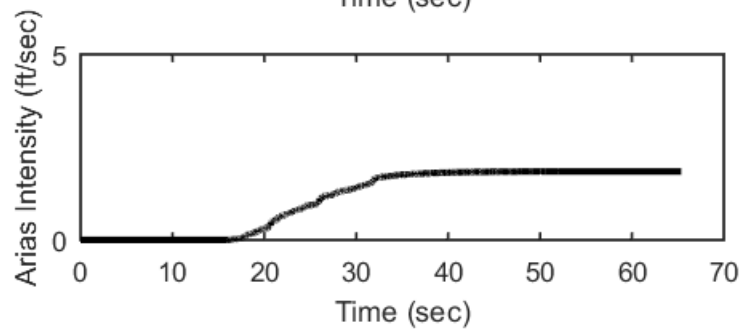
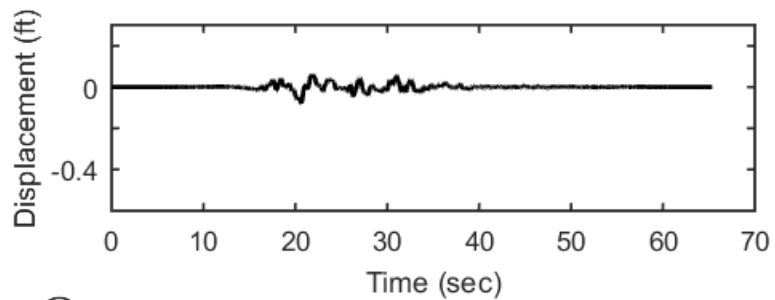
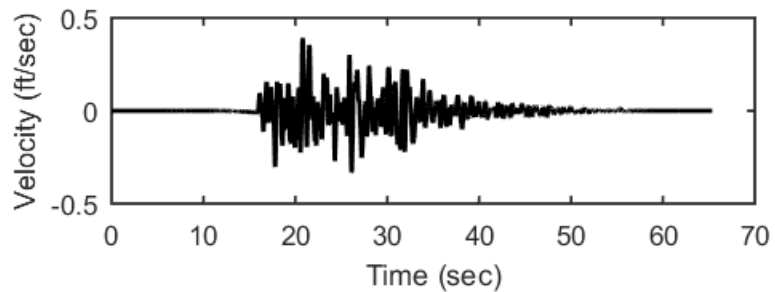
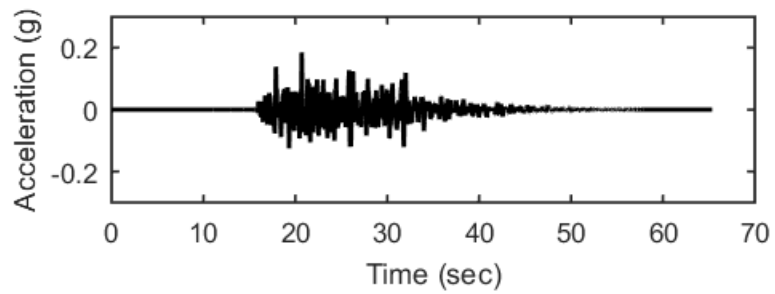


## **1,000 FT MODEL**

## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1

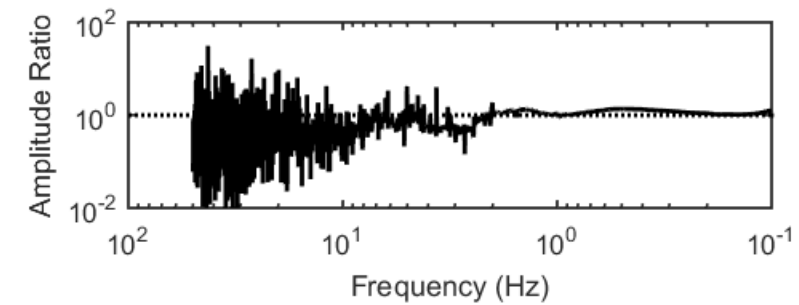
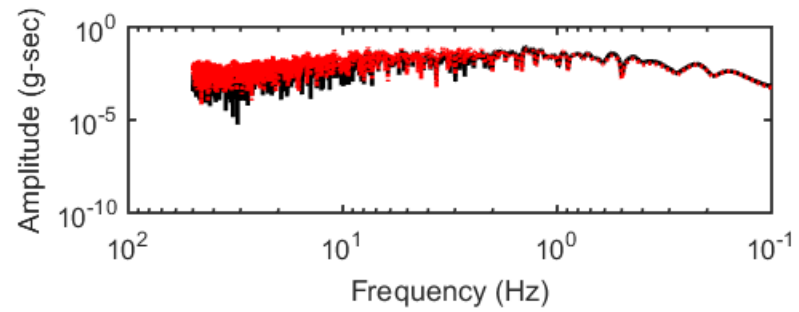
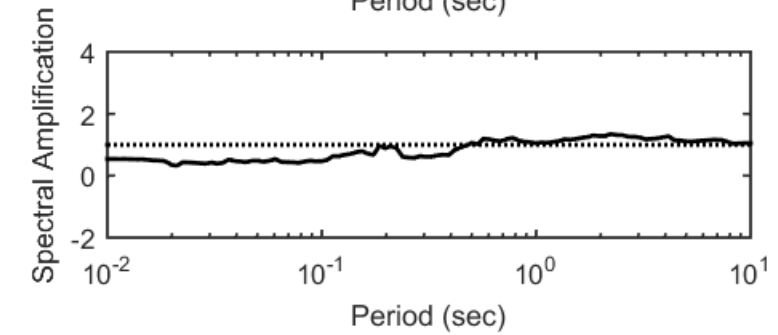
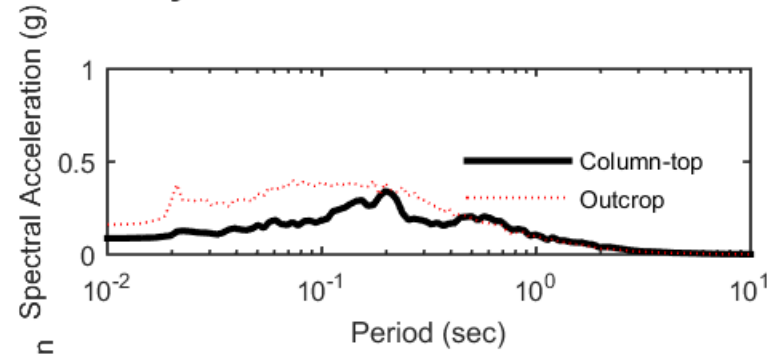
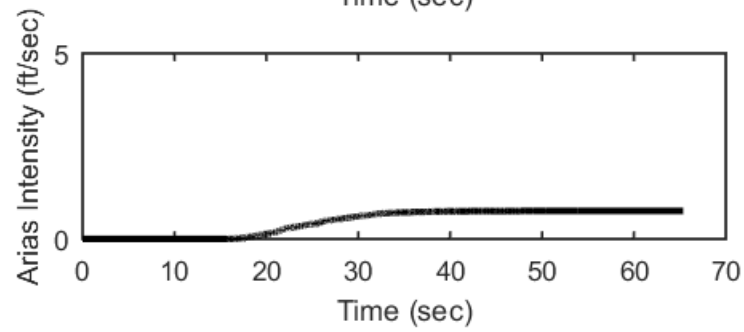
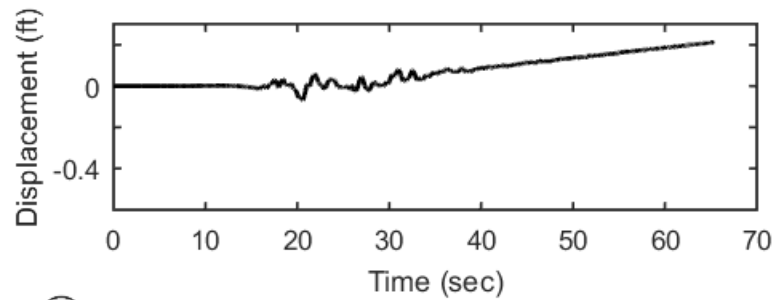
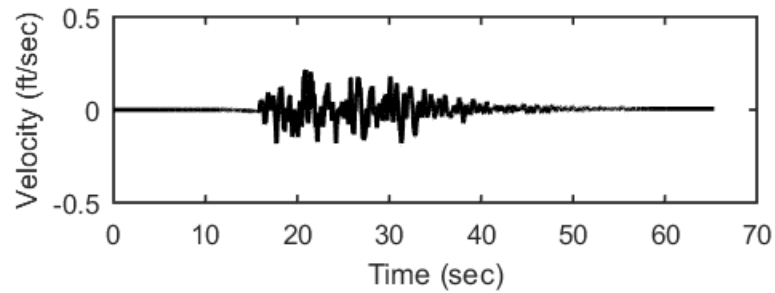
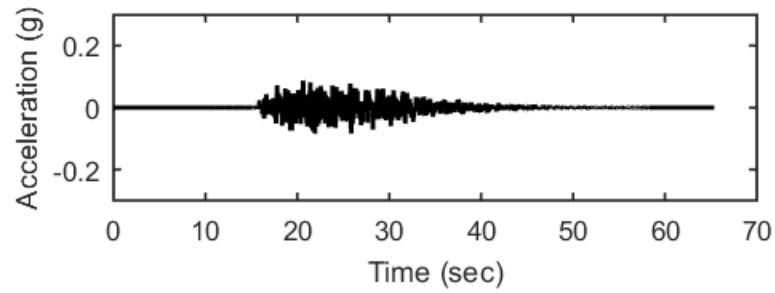


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1

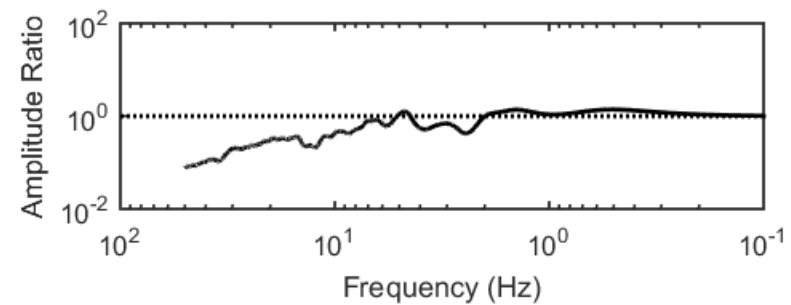
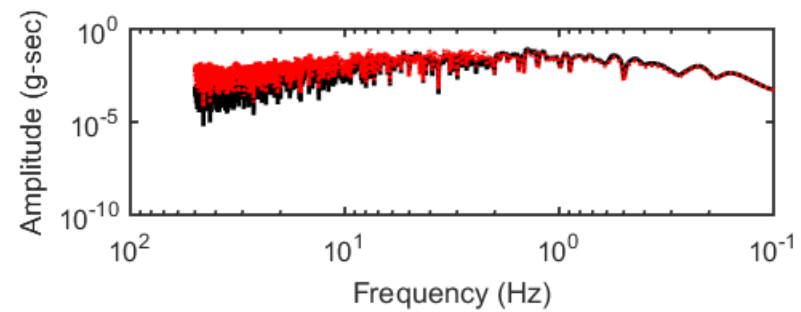
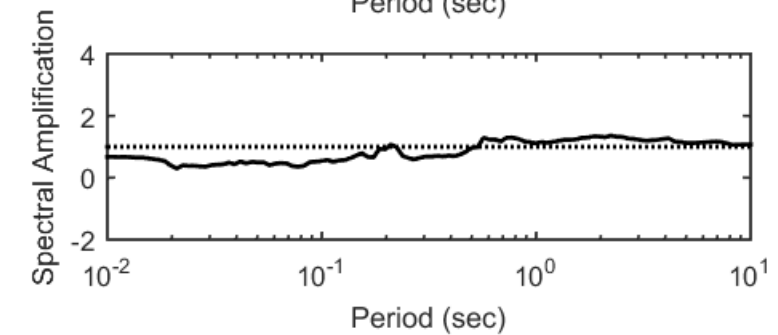
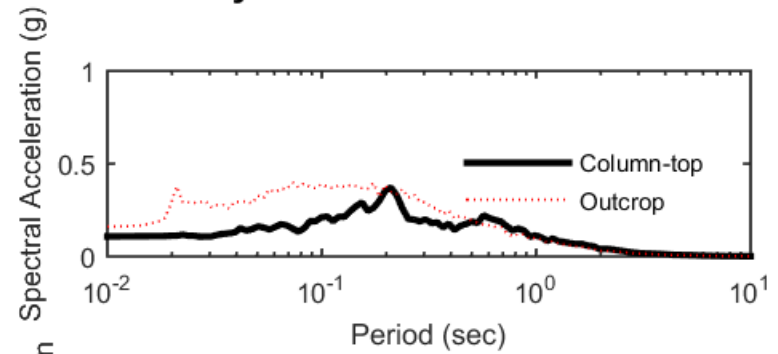
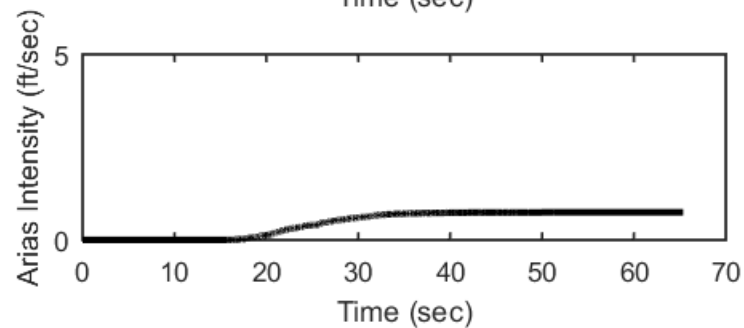
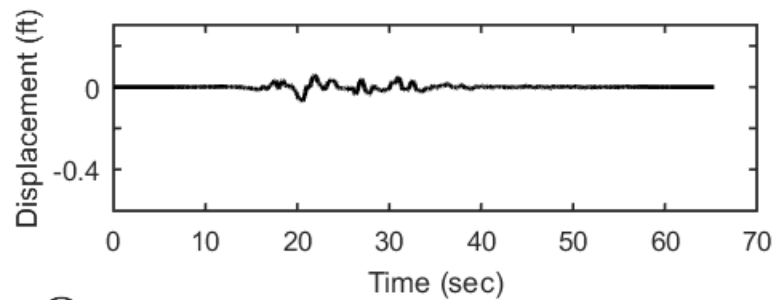
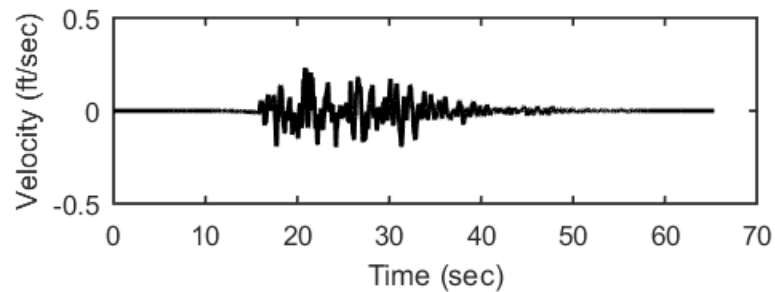
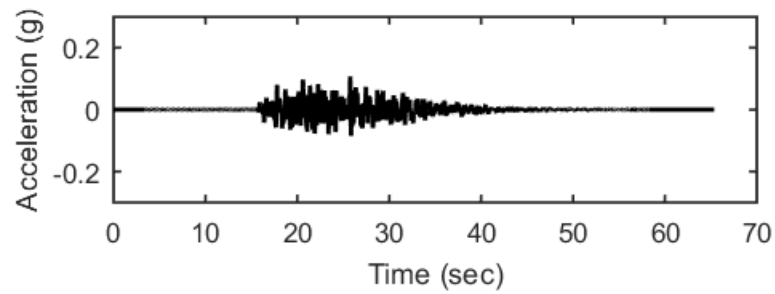




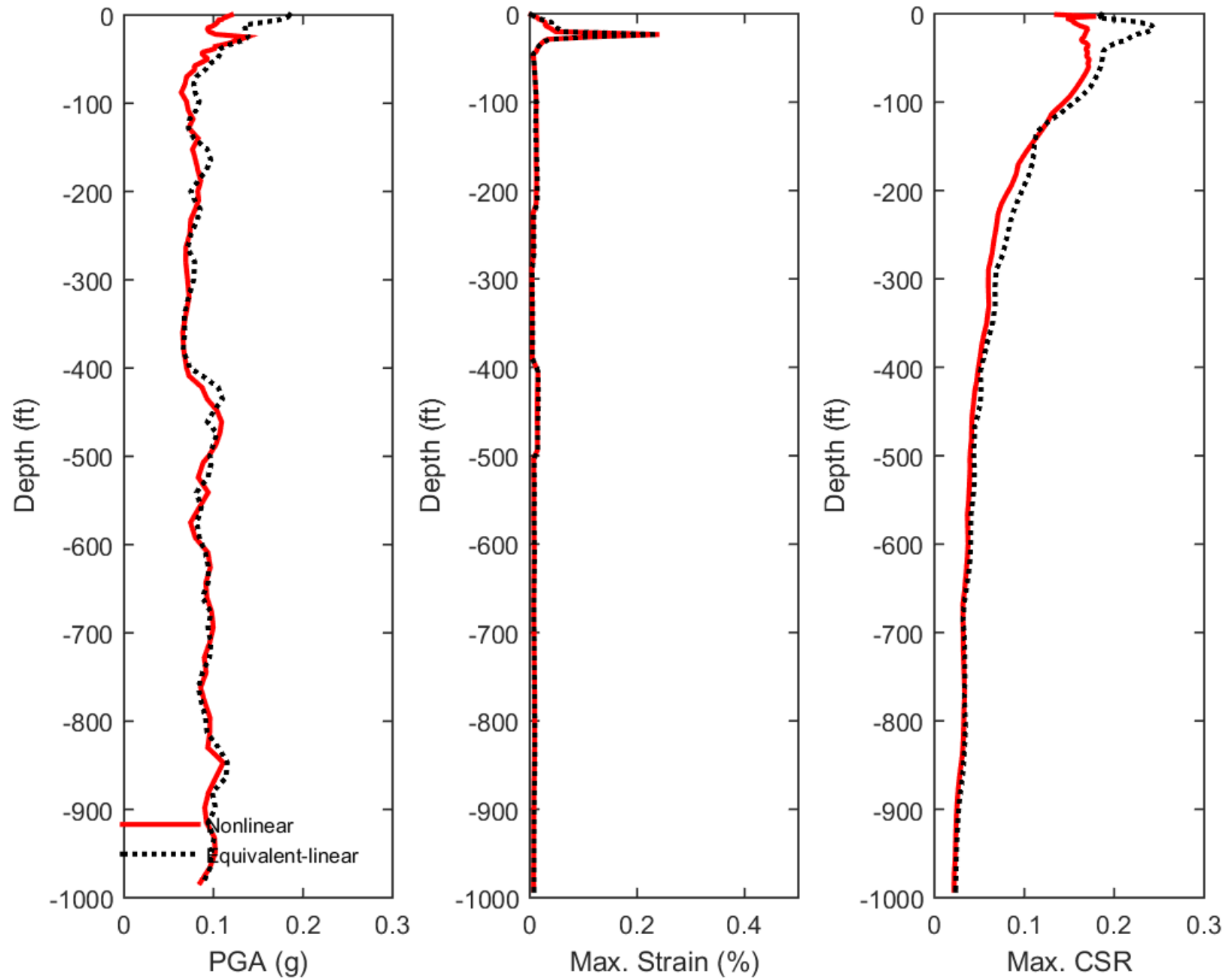
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



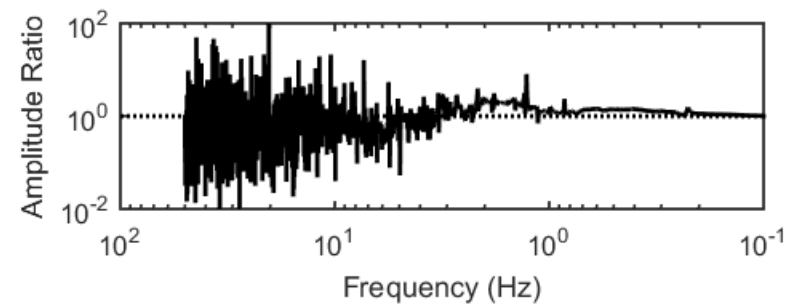
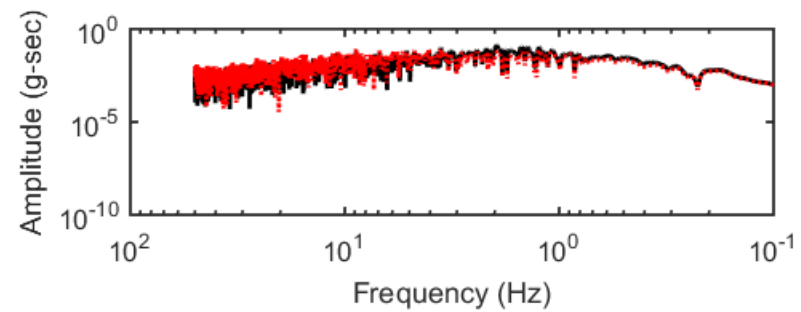
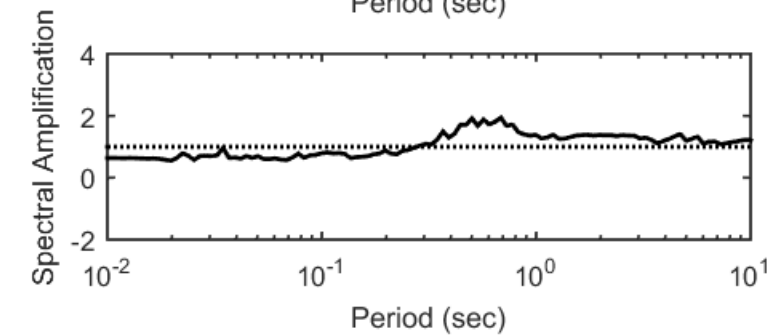
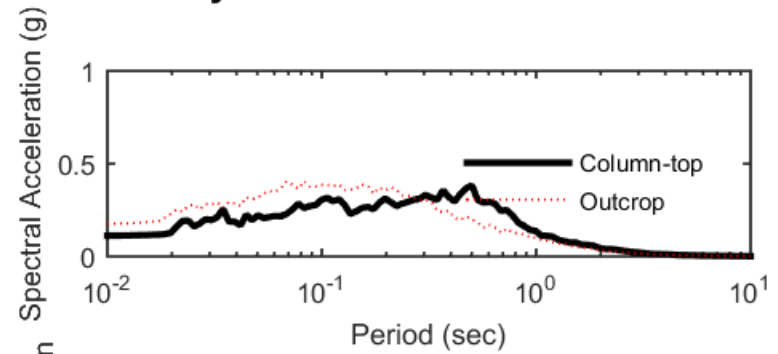
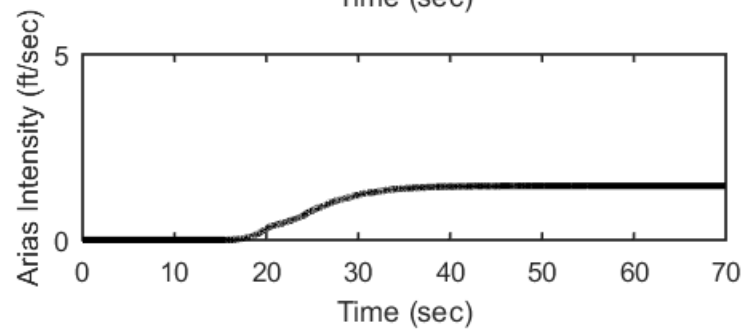
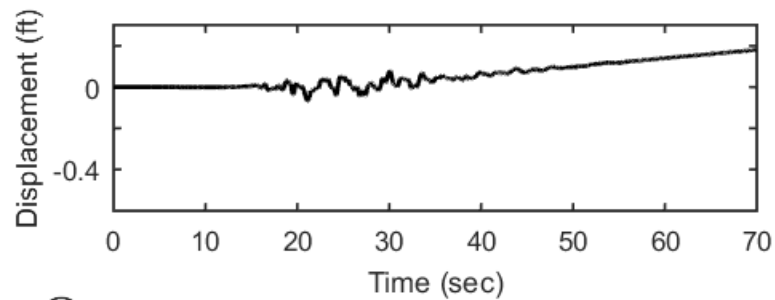
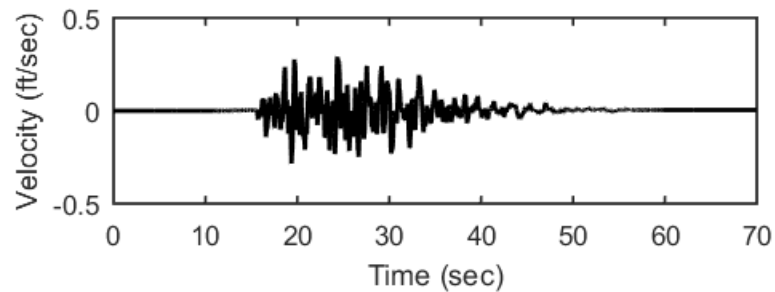
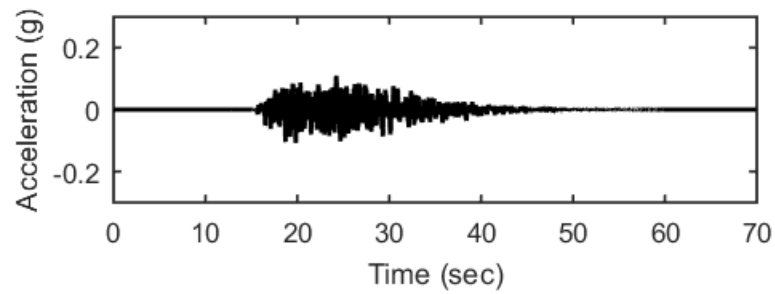
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



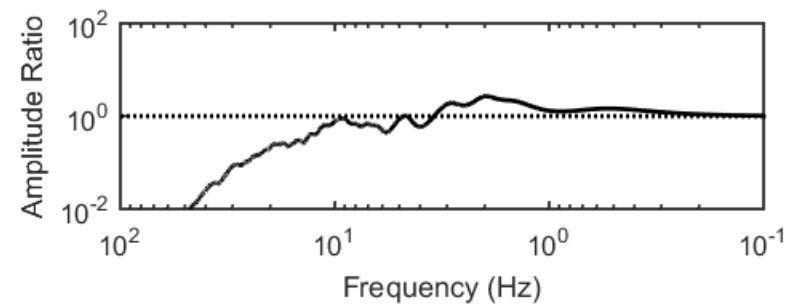
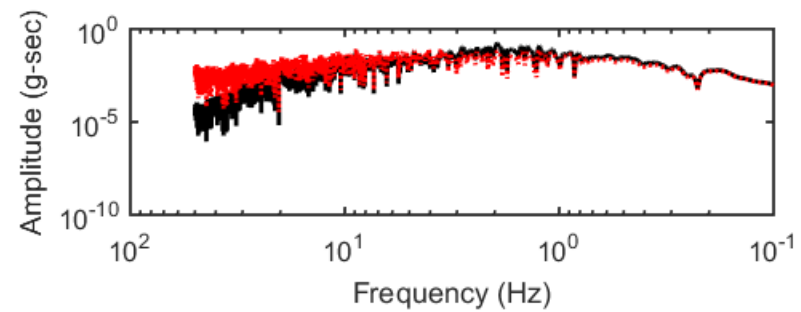
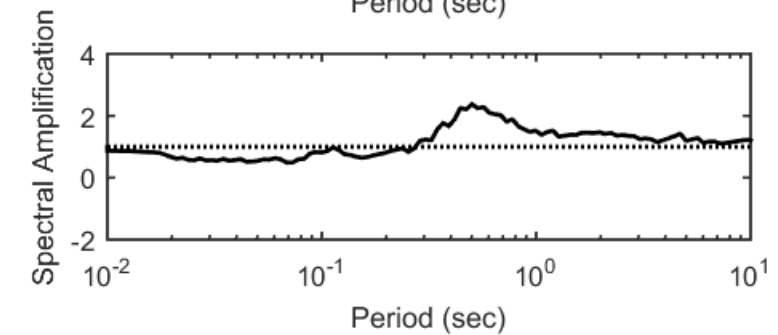
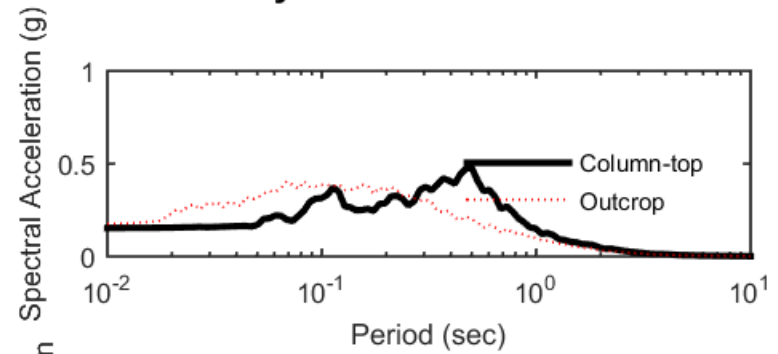
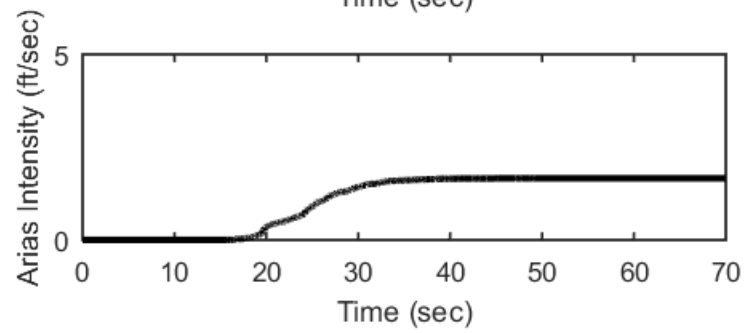
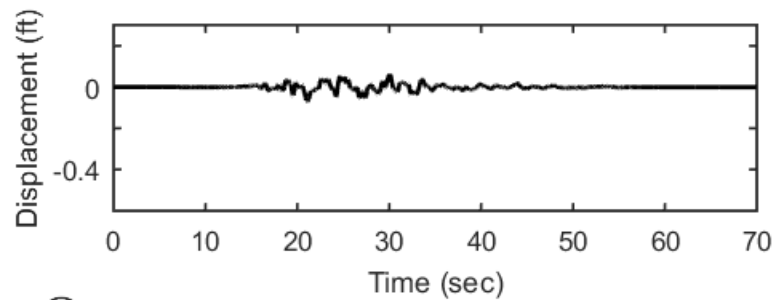
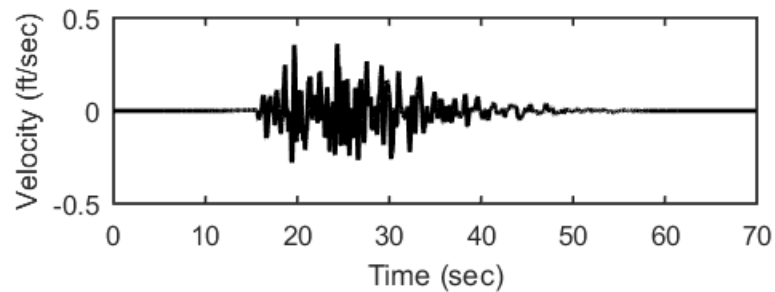
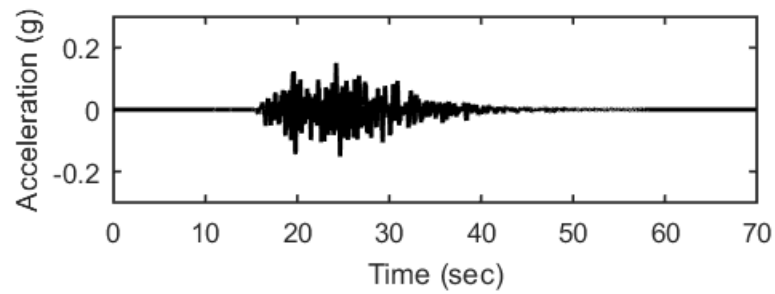
### Profile outputs for Motion: FEE1



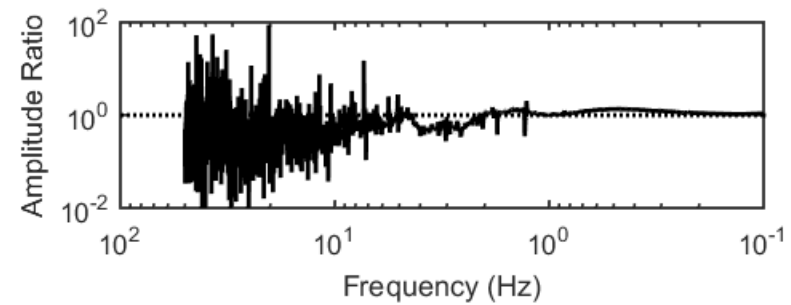
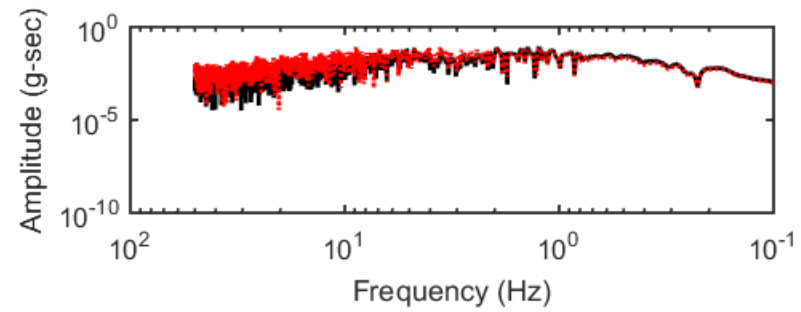
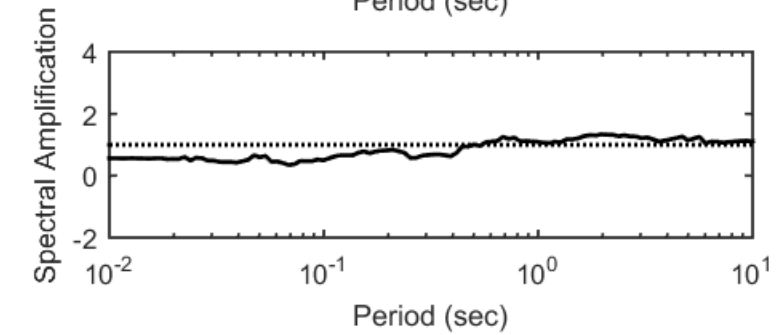
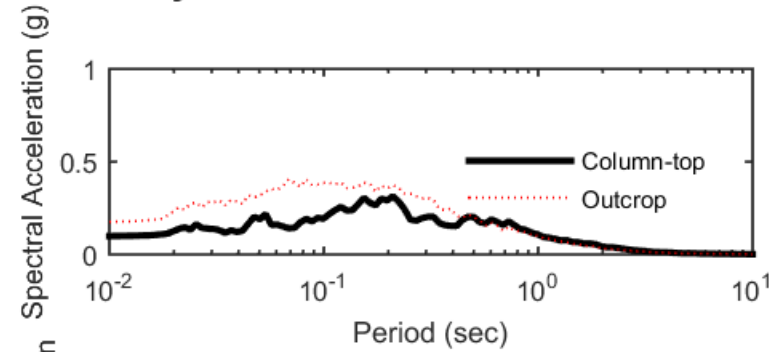
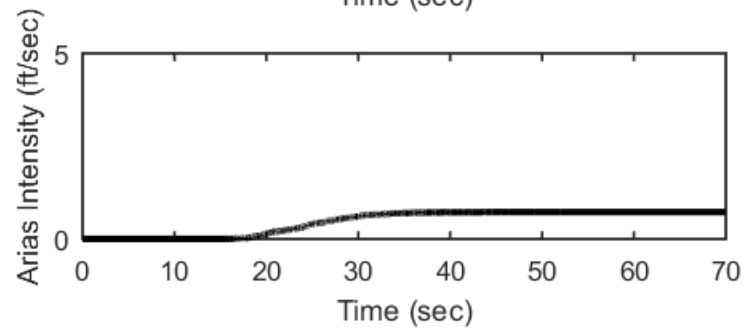
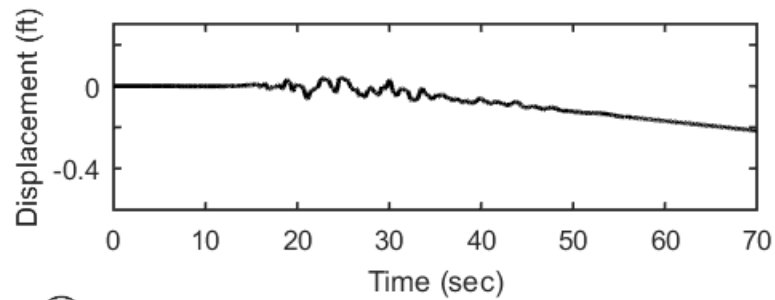
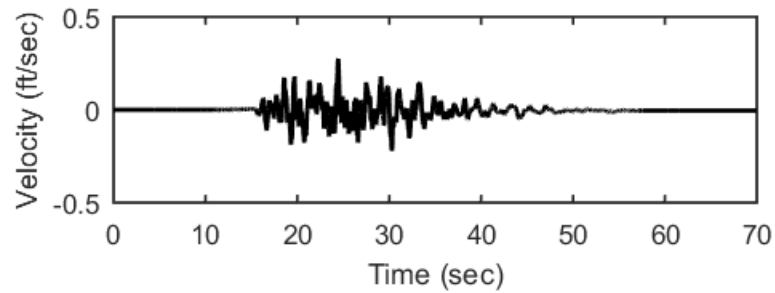
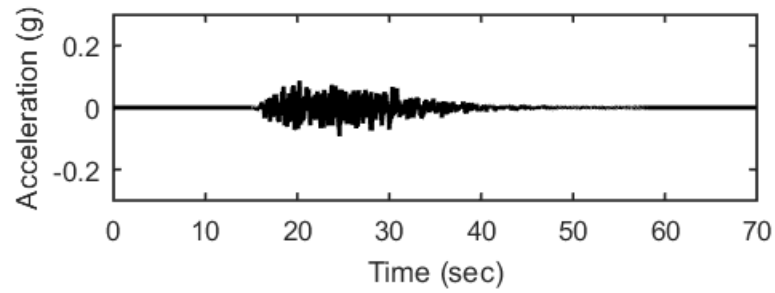
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



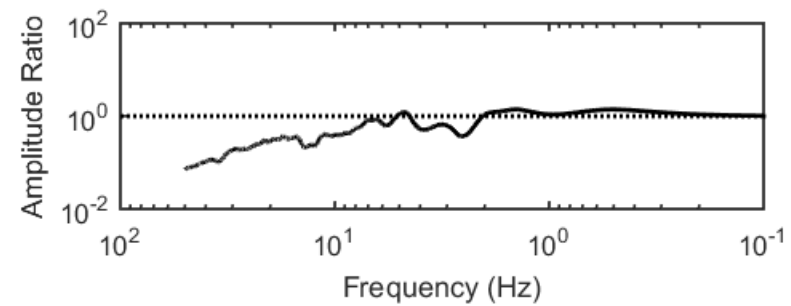
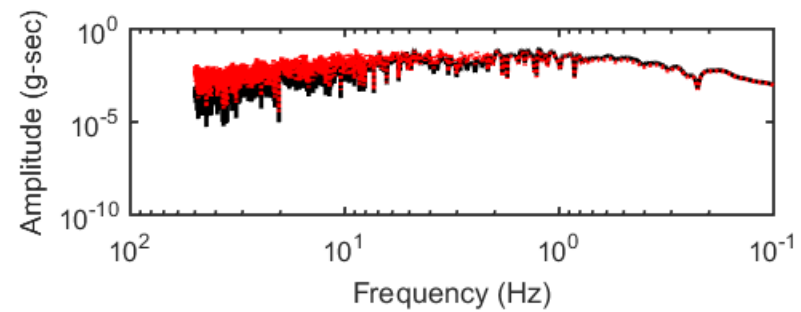
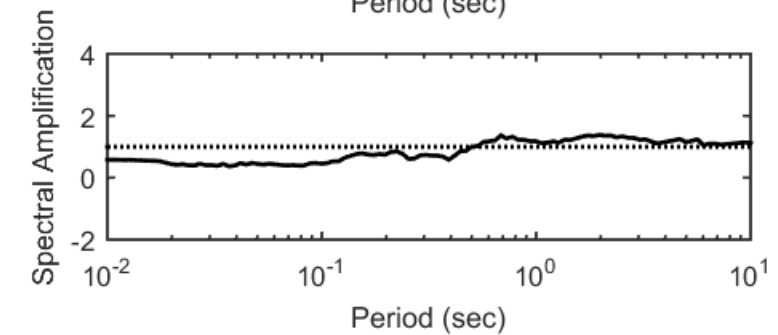
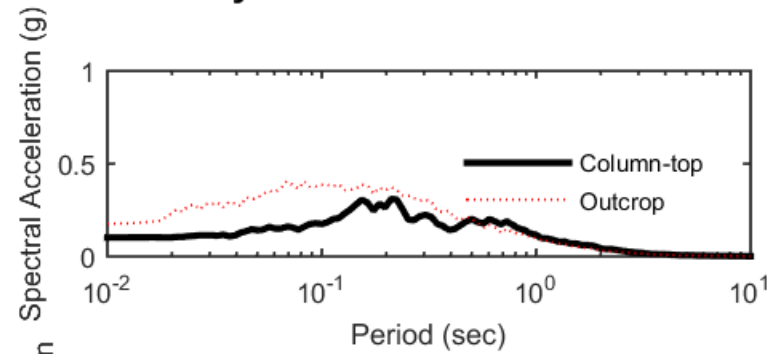
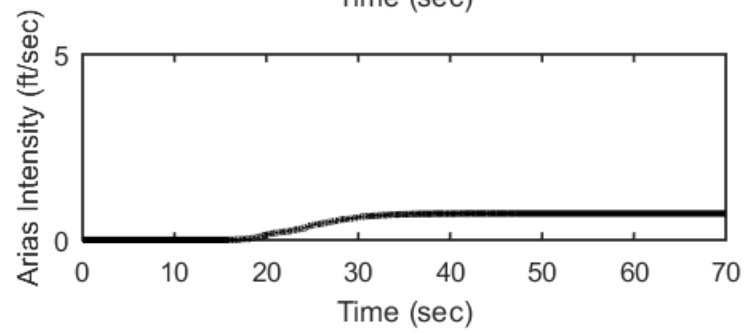
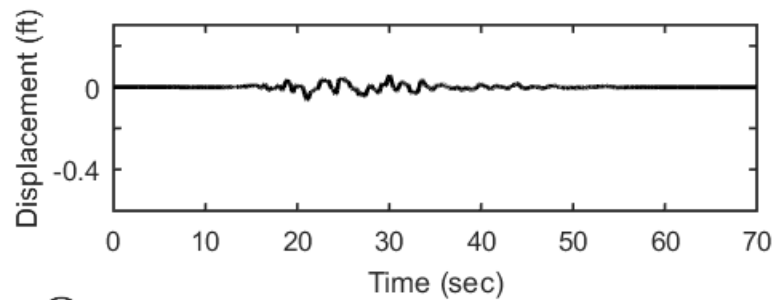
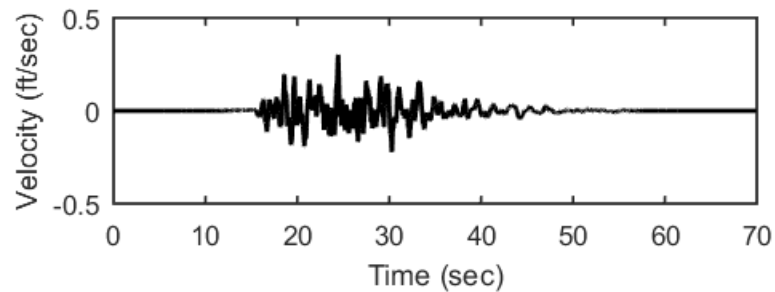
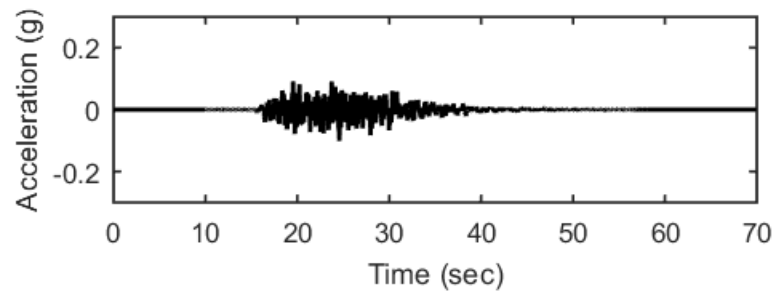
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



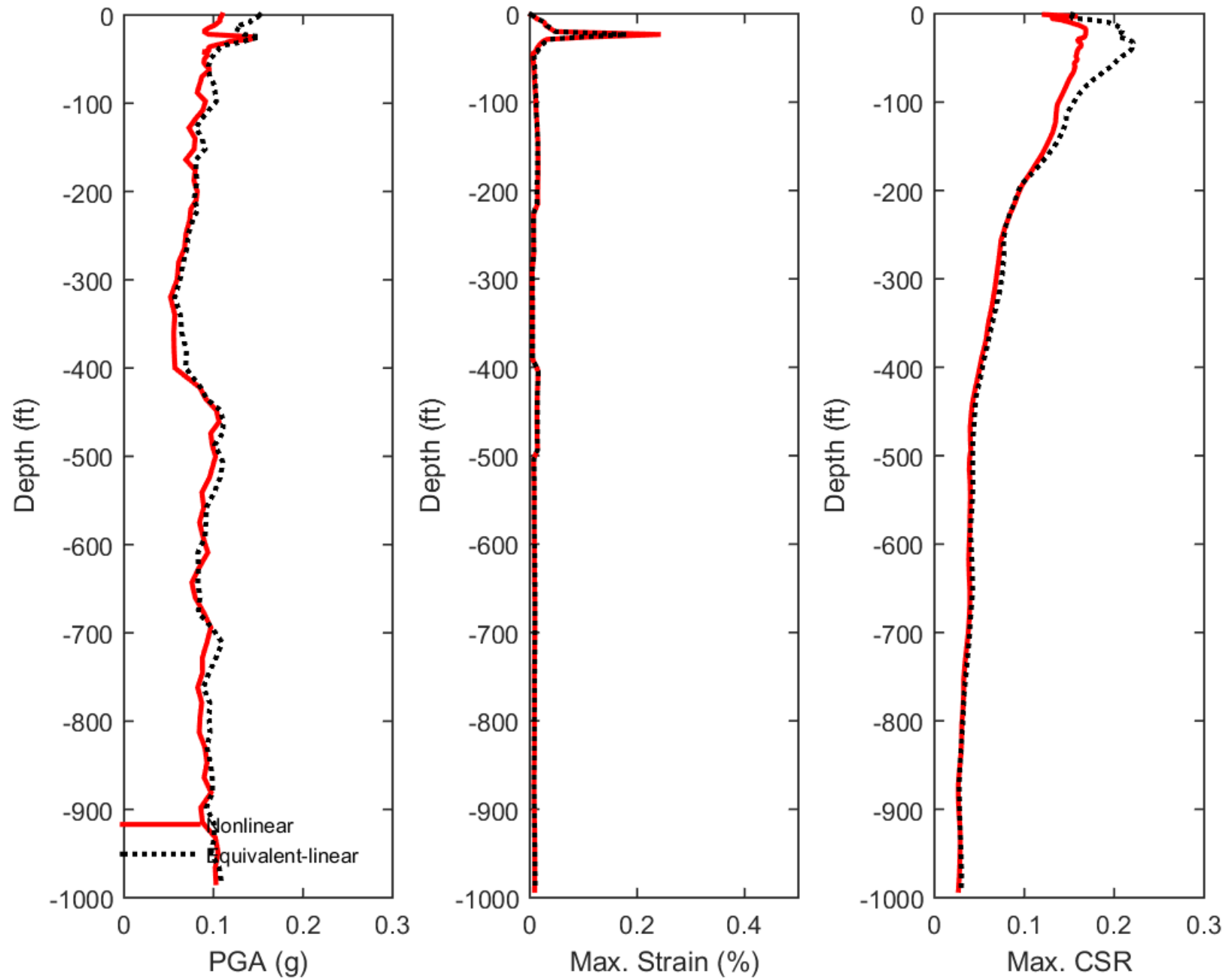
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2

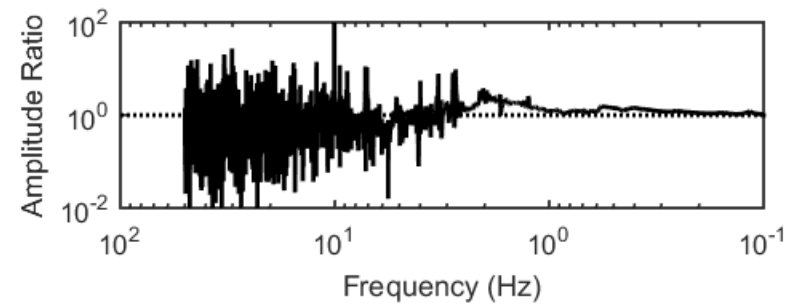
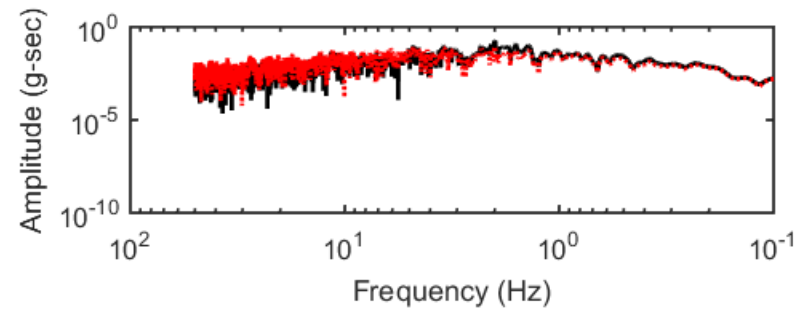
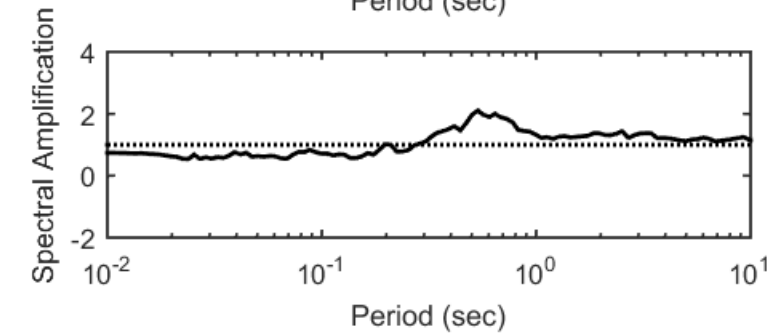
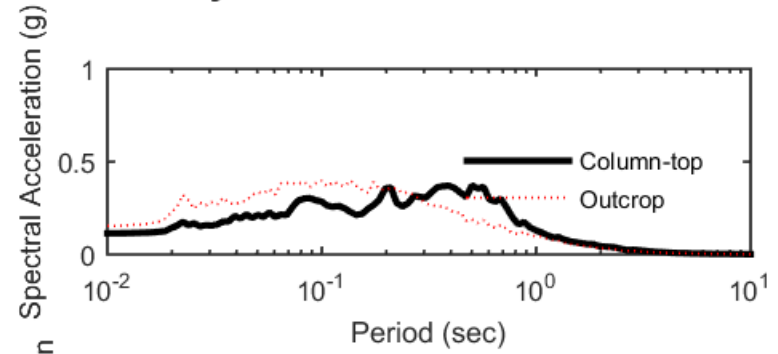
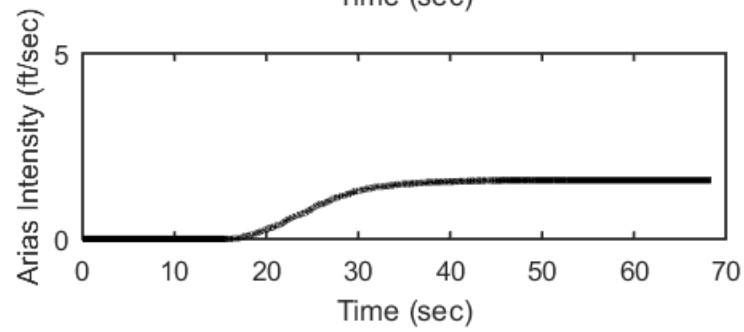
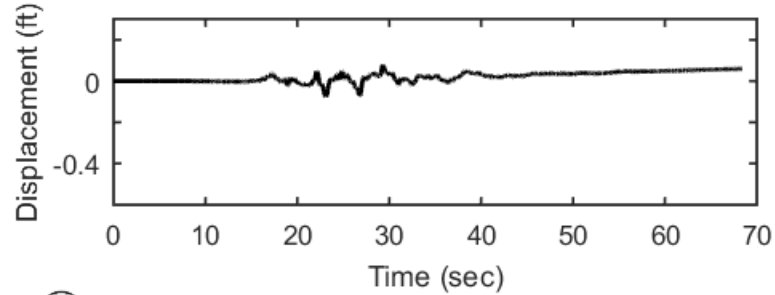
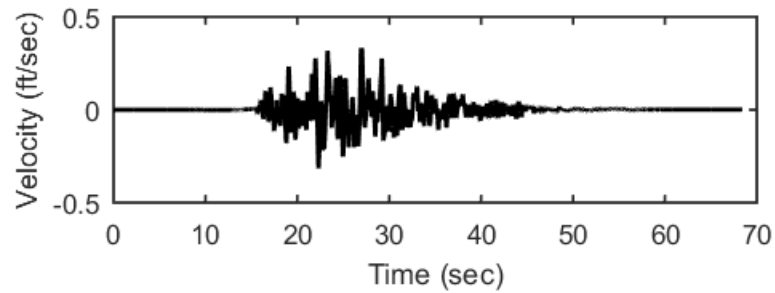
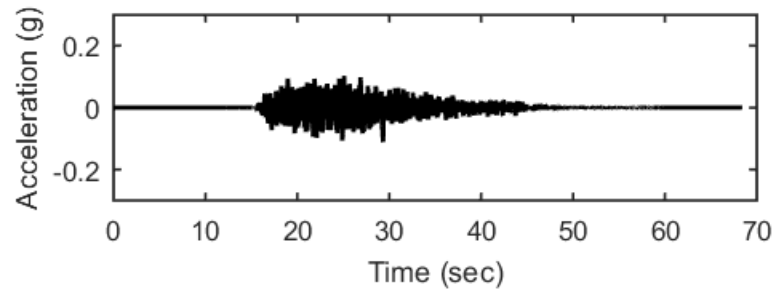


### Profile outputs for Motion: FEE2

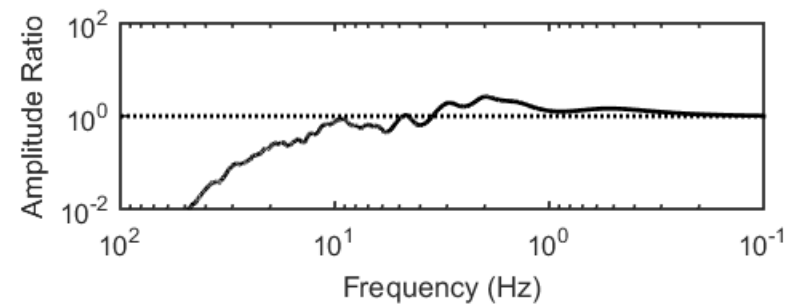
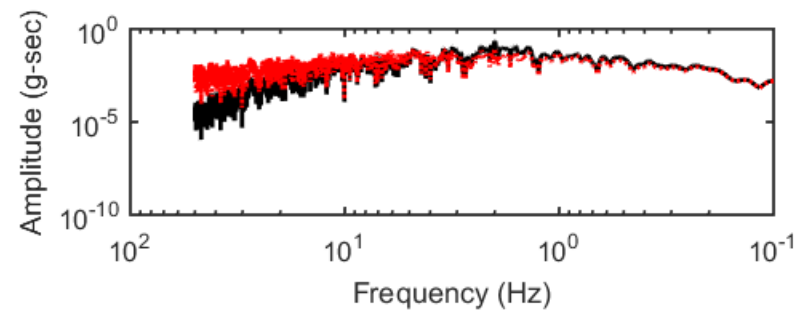
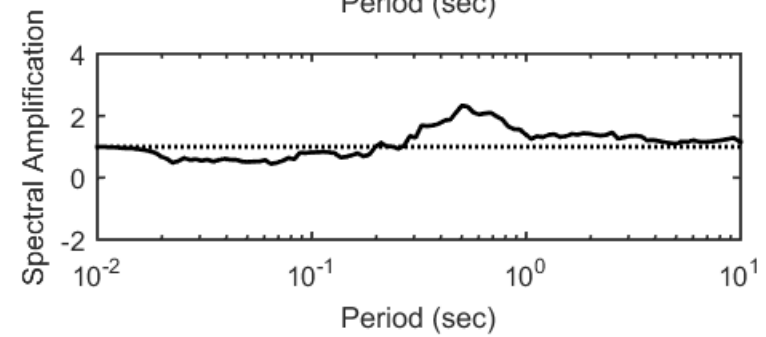
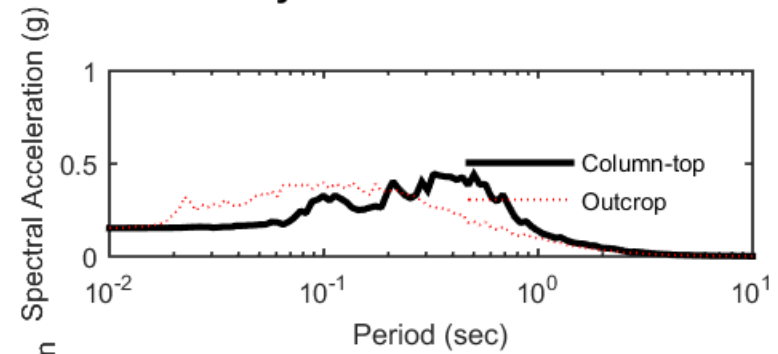
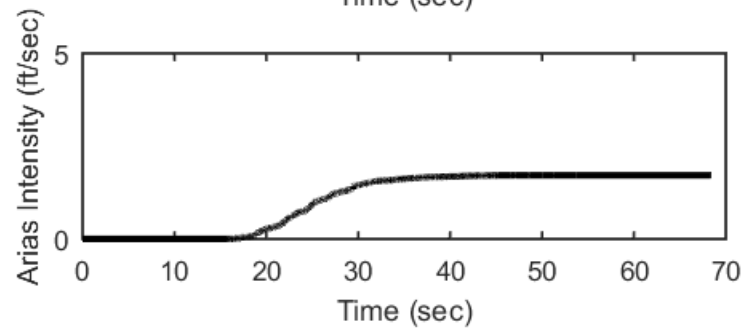
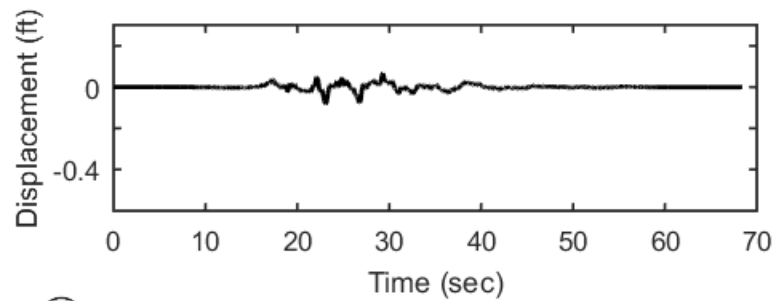
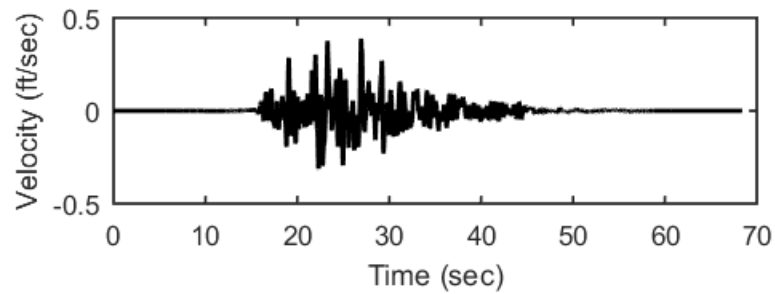
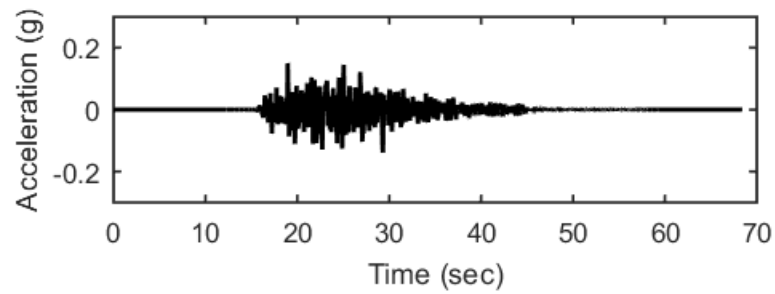




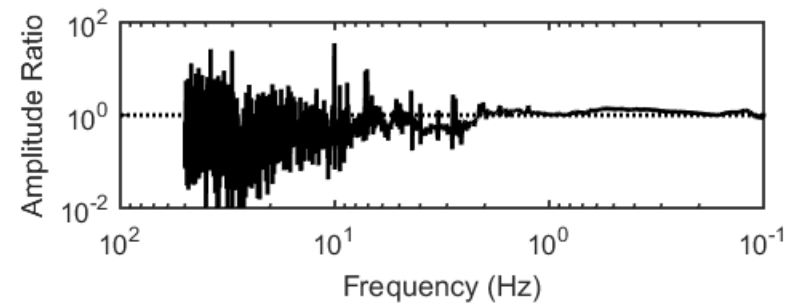
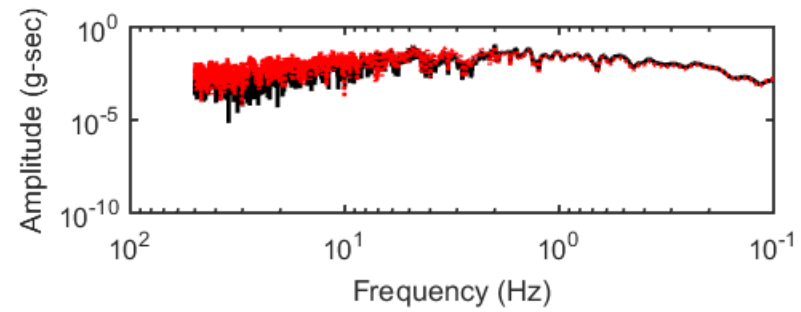
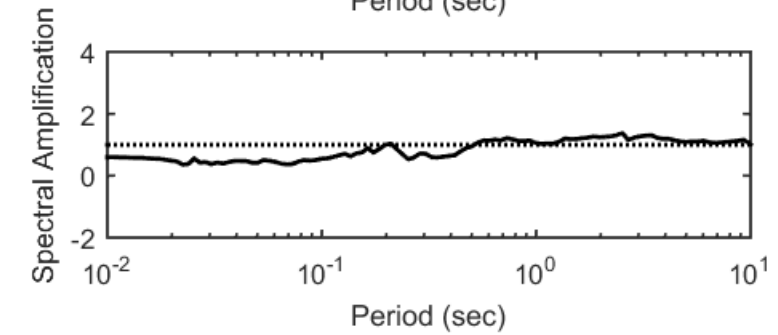
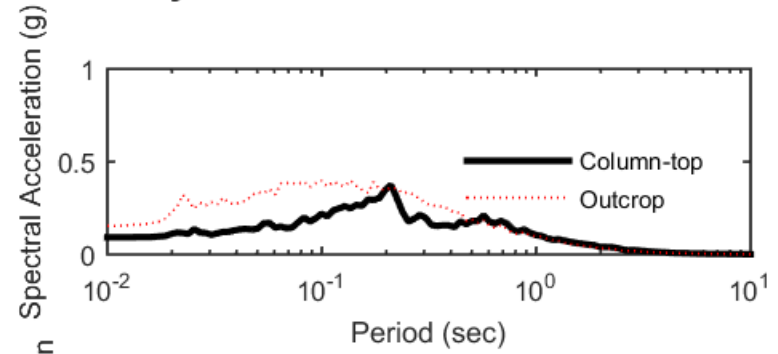
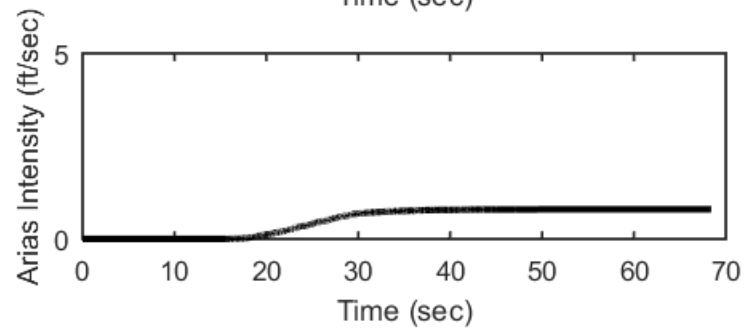
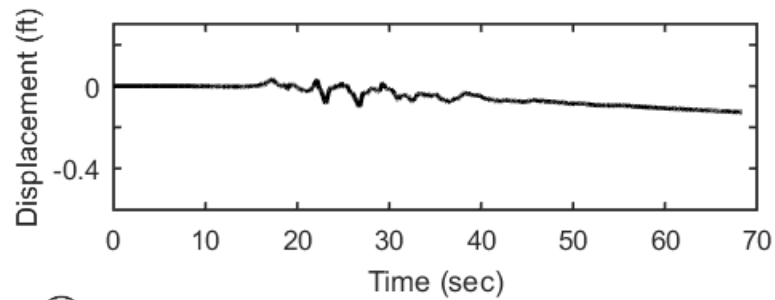
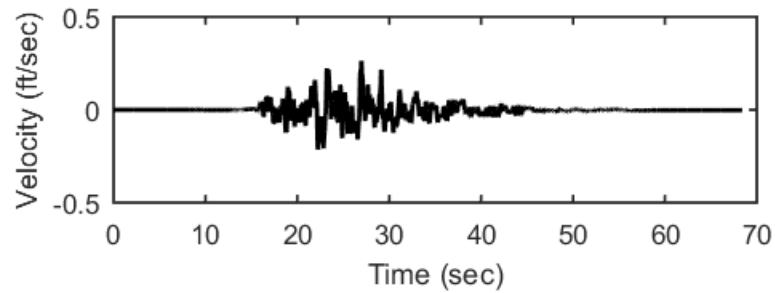
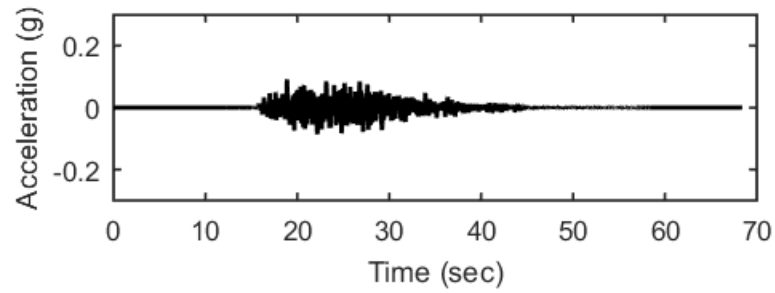
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



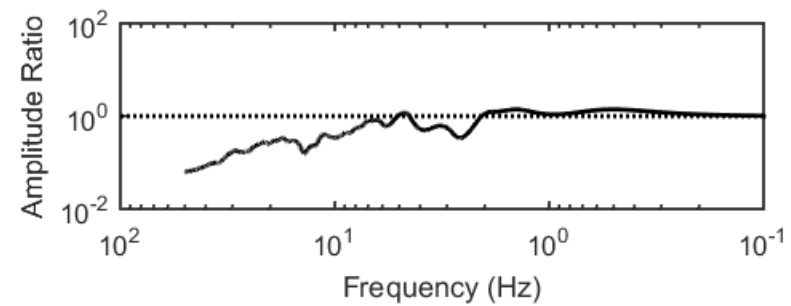
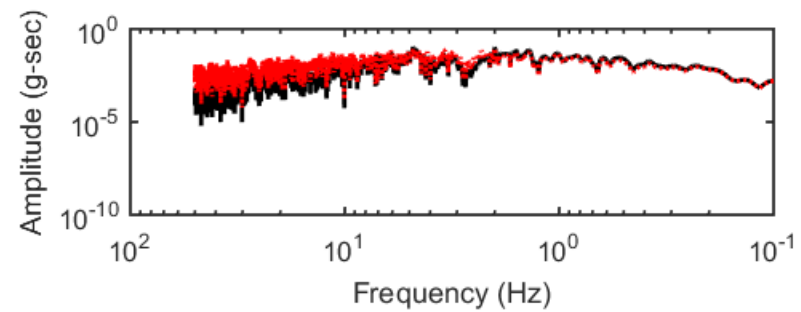
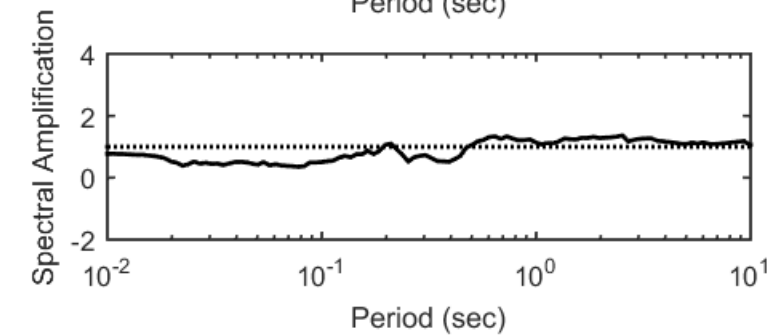
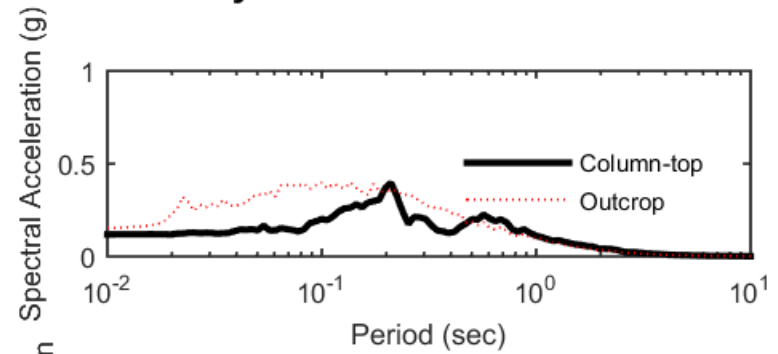
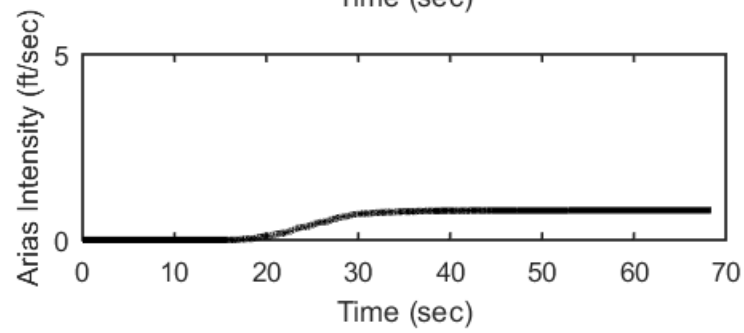
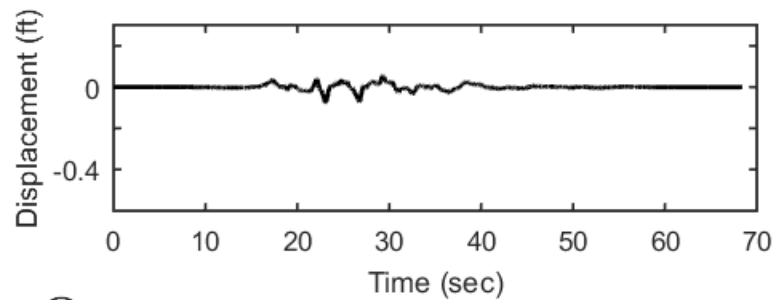
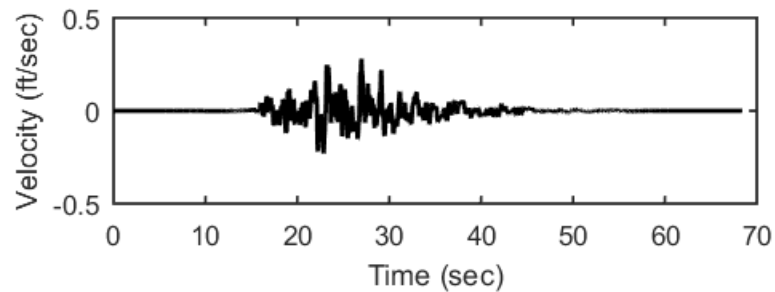
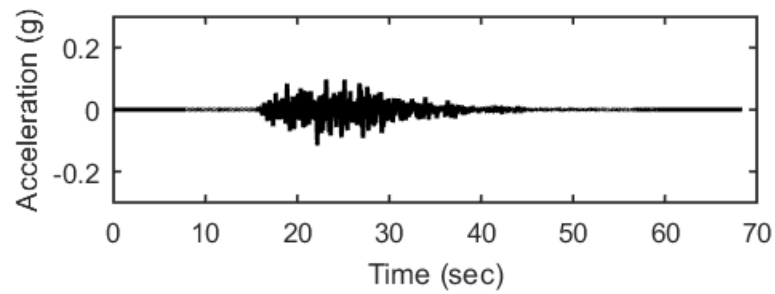
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



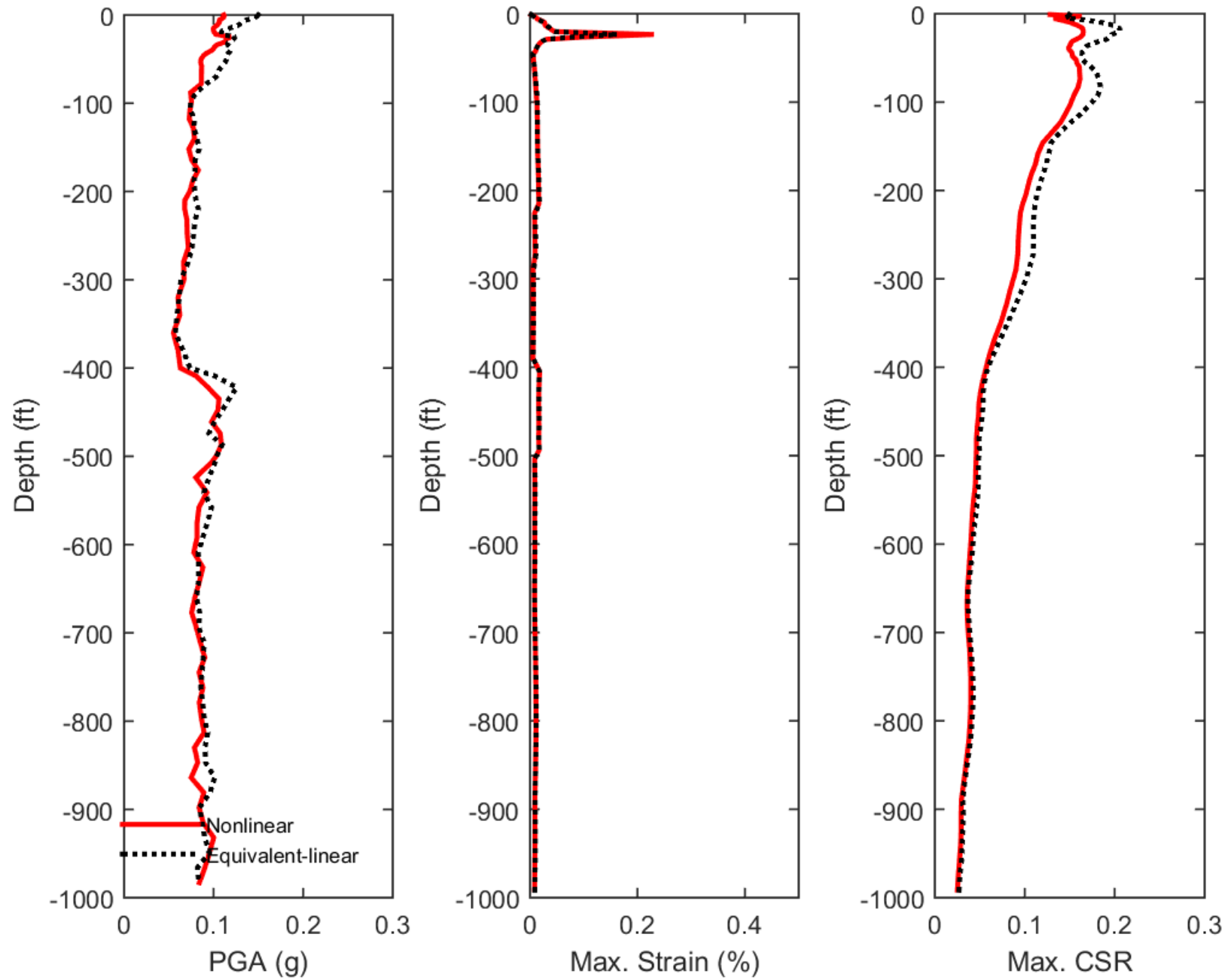
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



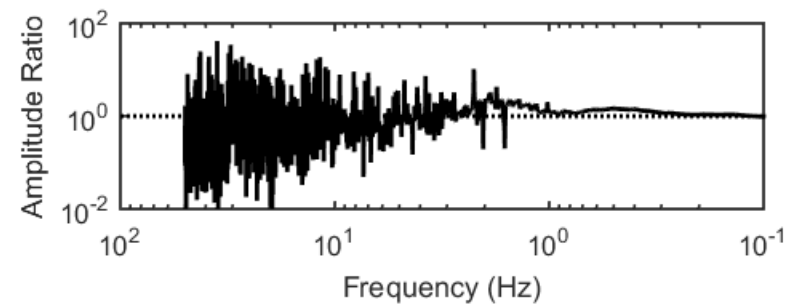
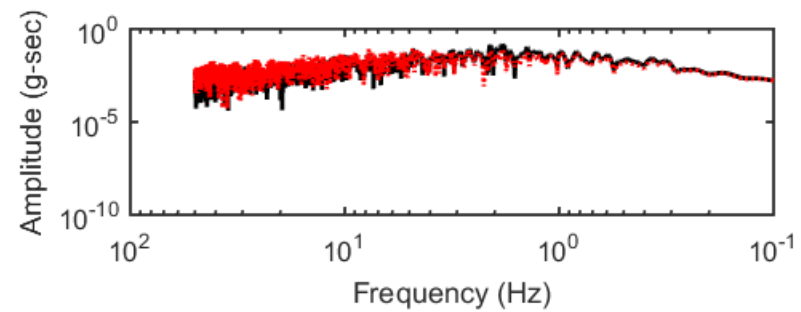
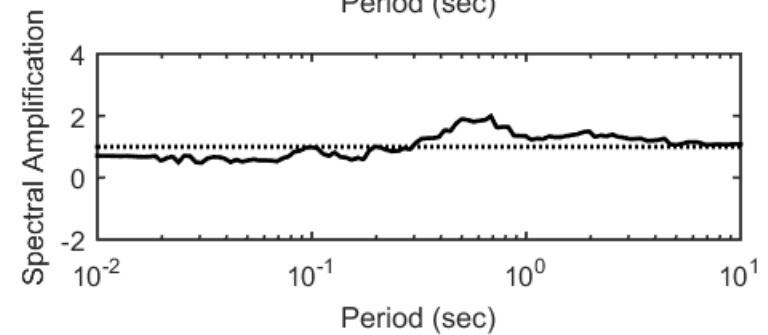
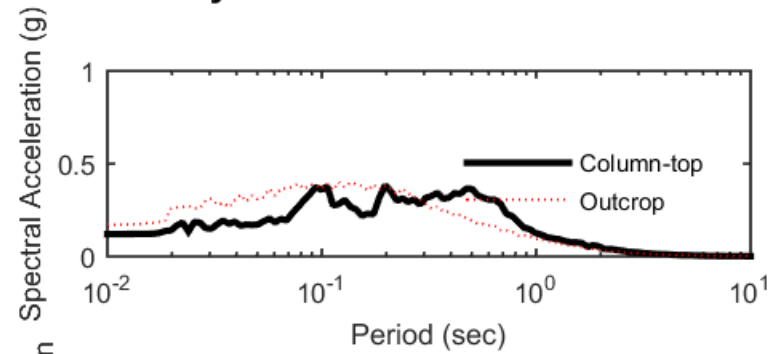
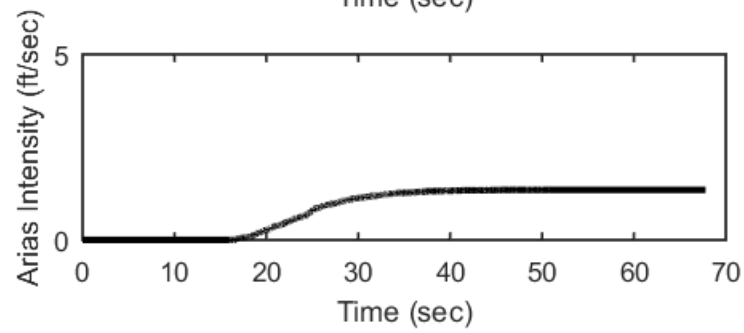
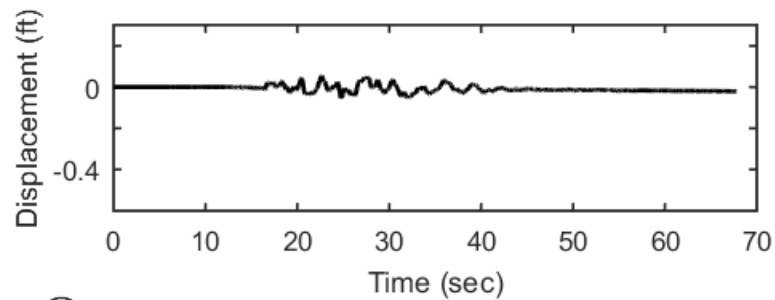
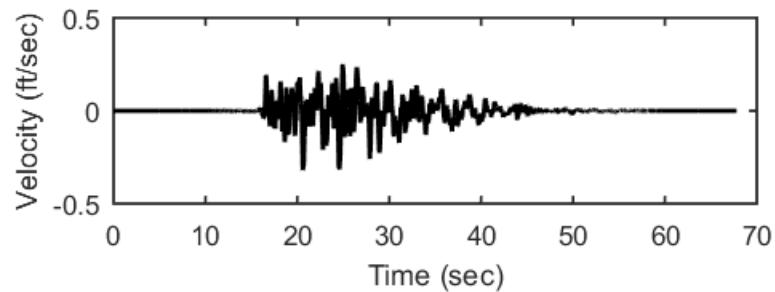
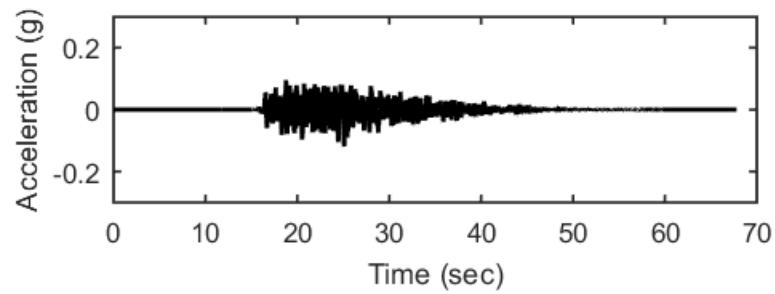
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



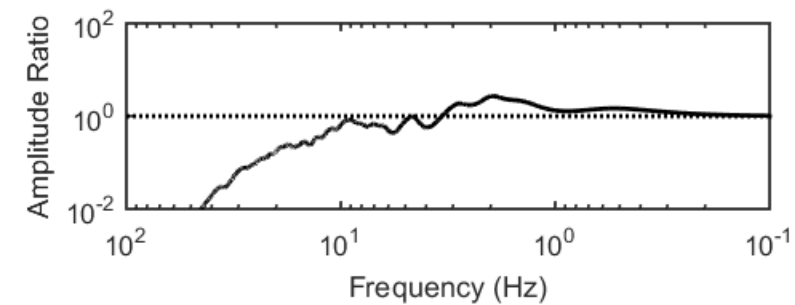
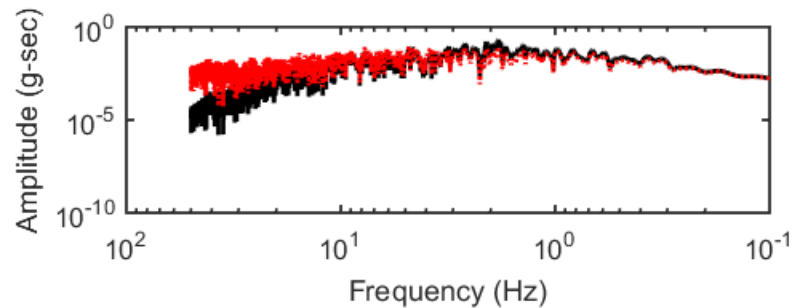
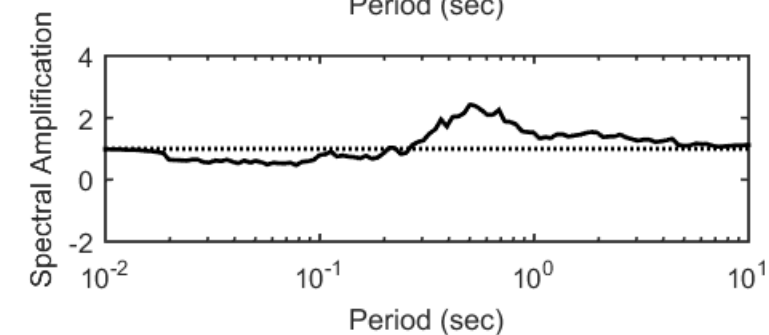
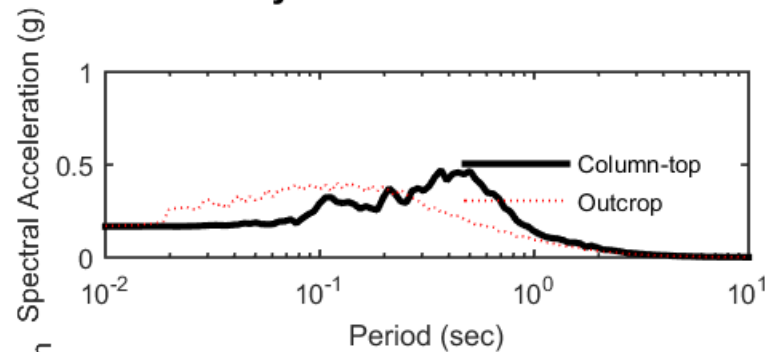
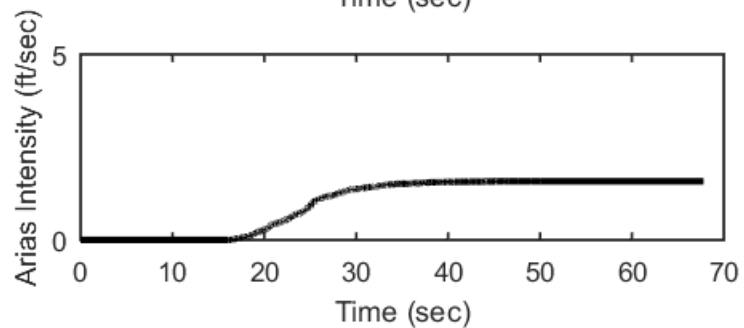
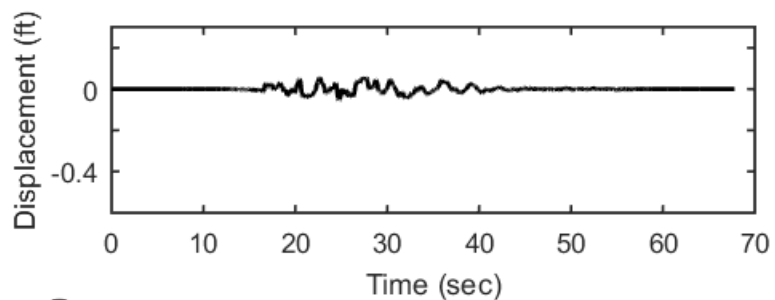
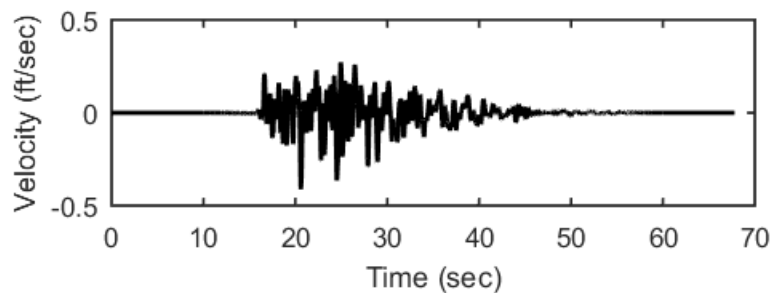
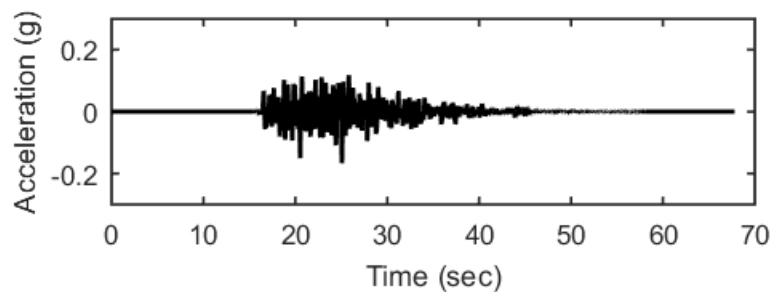
### Profile outputs for Motion: FEE3



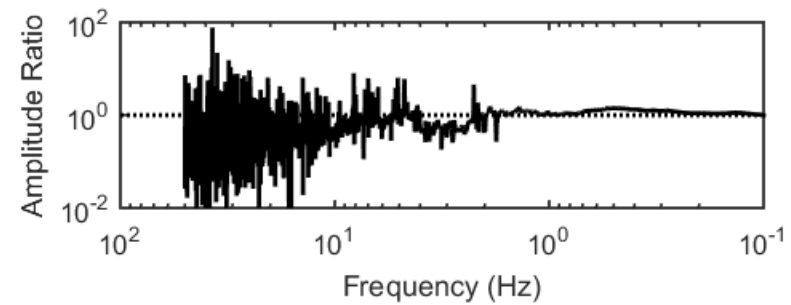
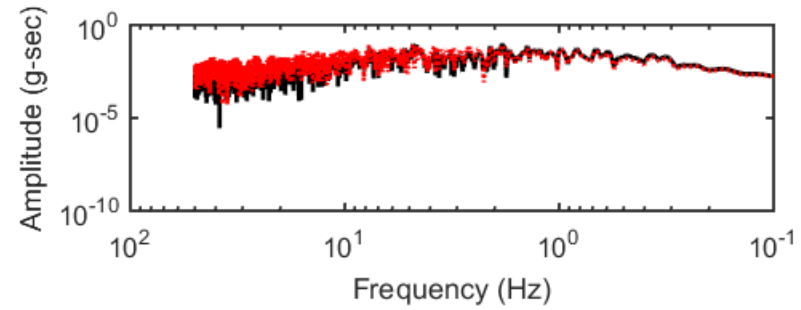
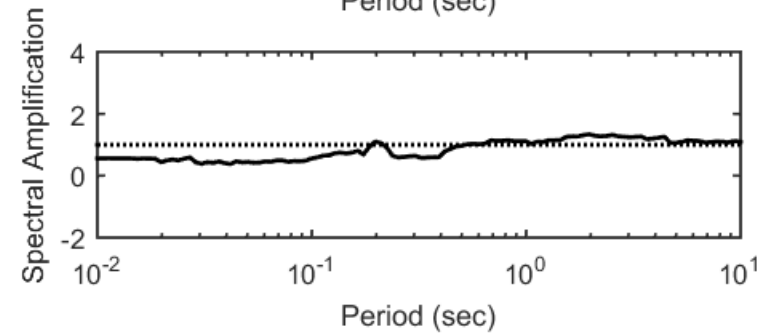
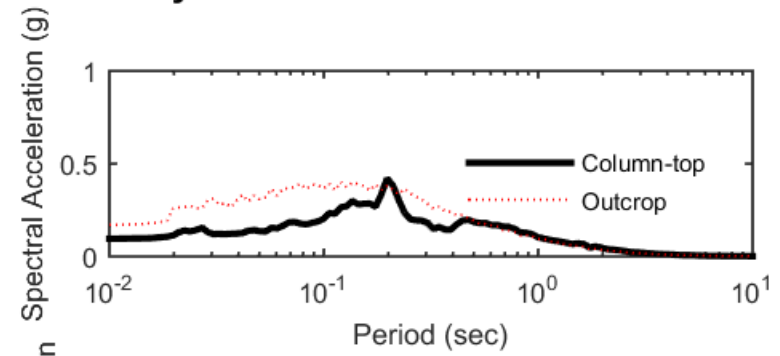
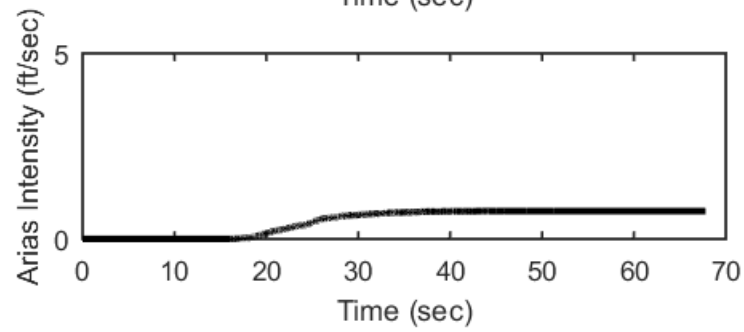
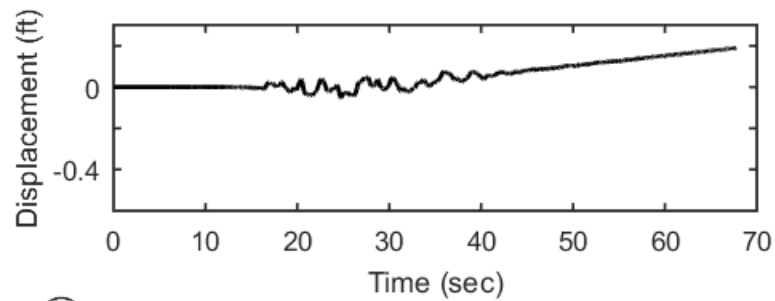
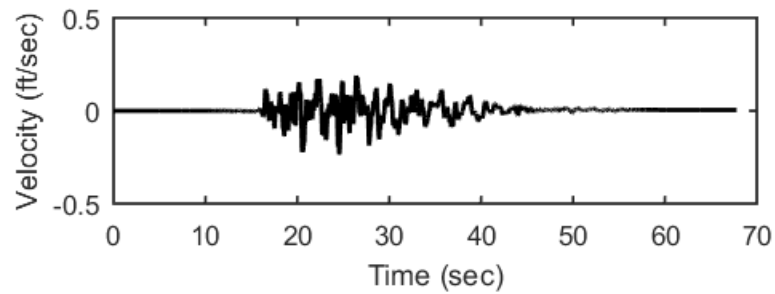
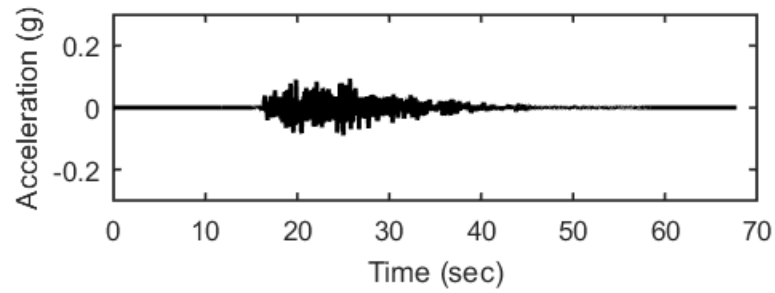
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4

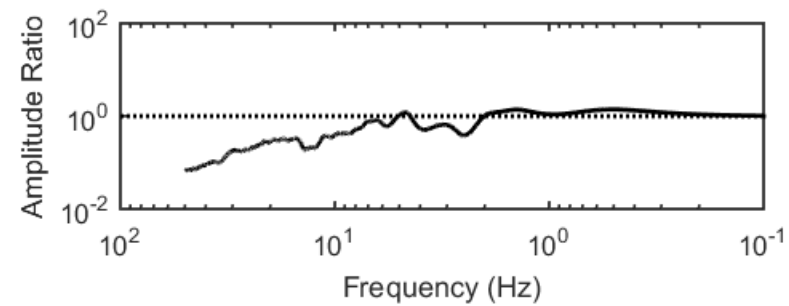
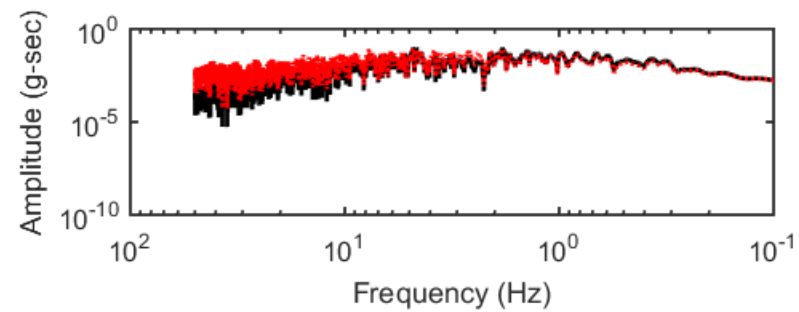
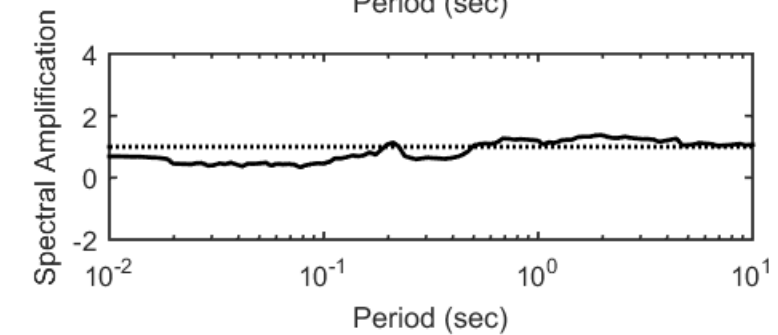
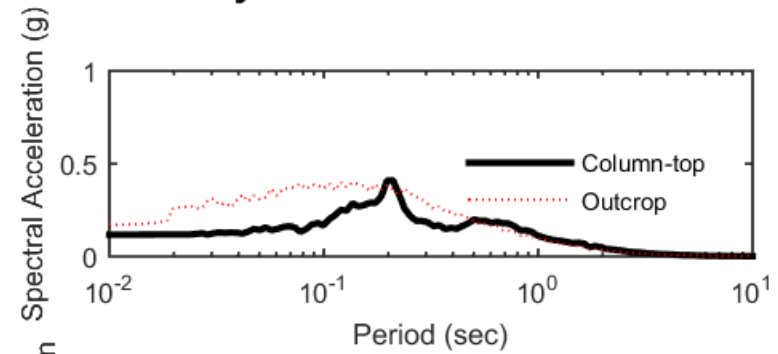
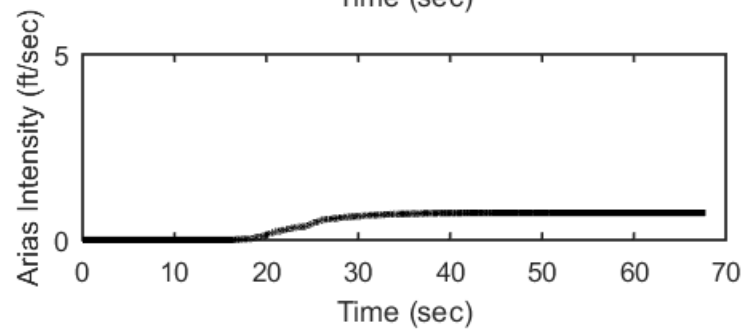
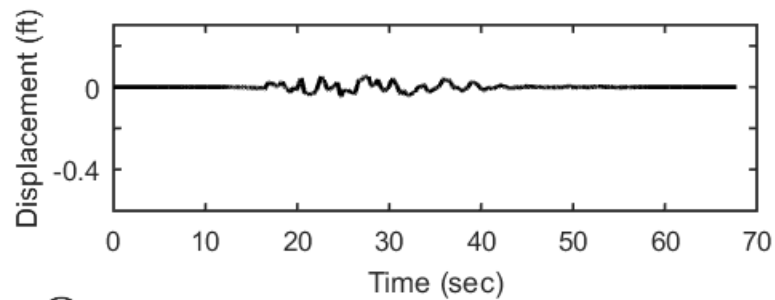
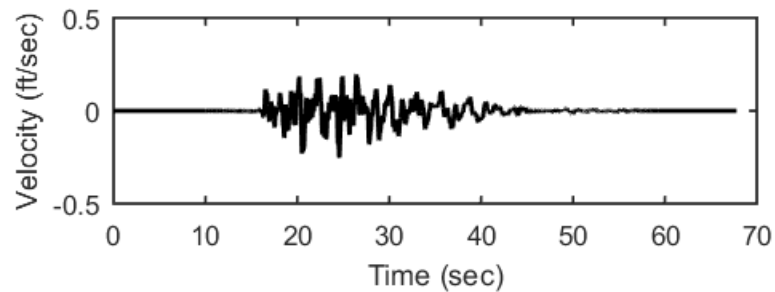
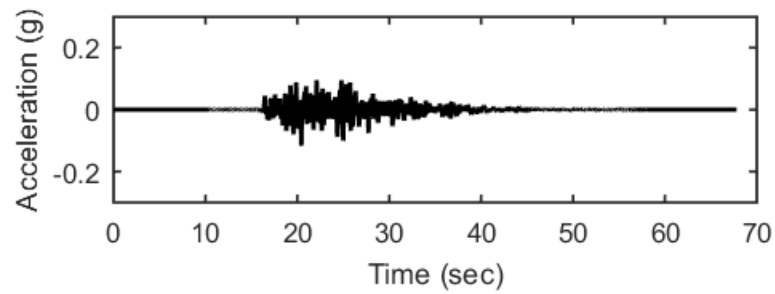


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4

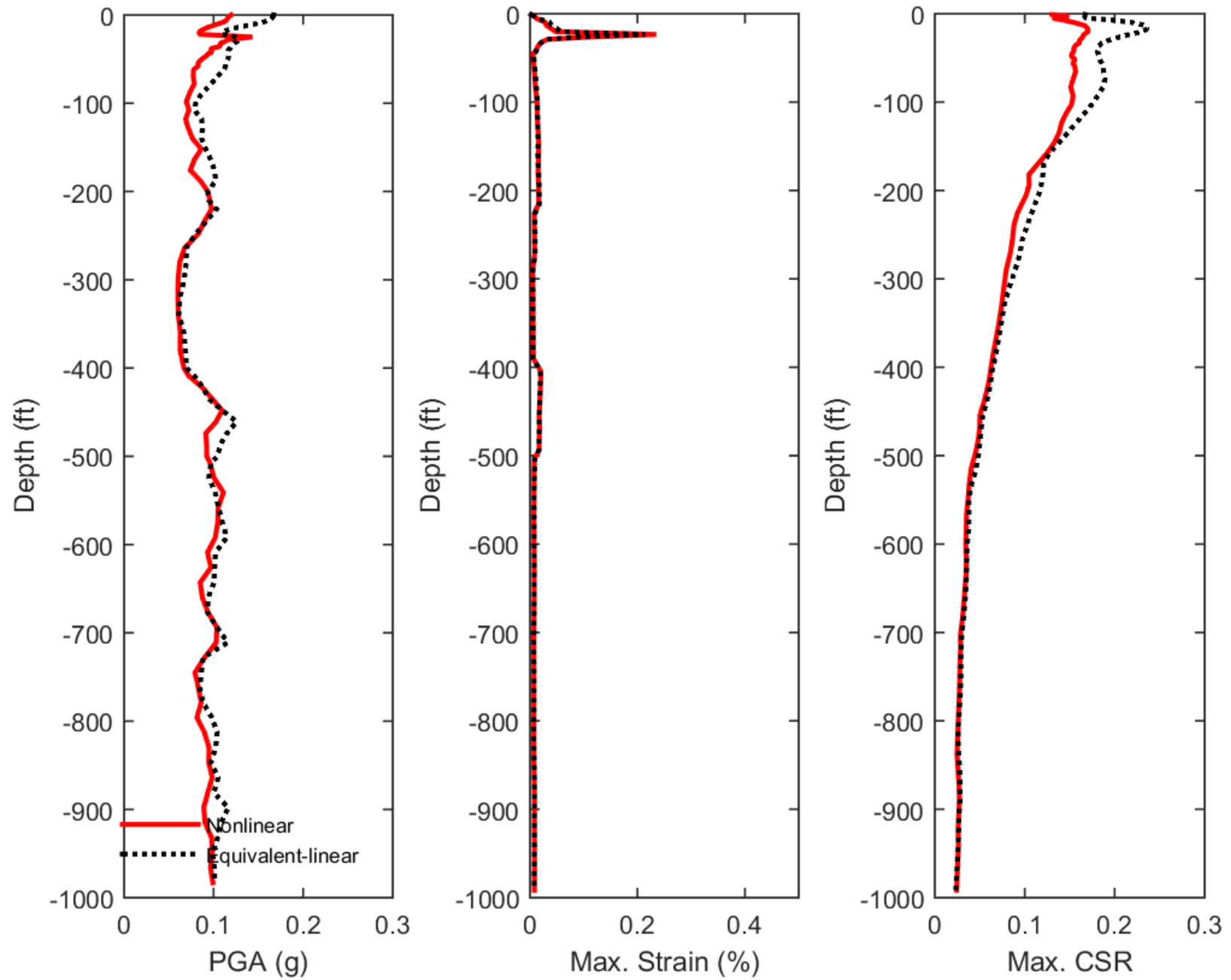




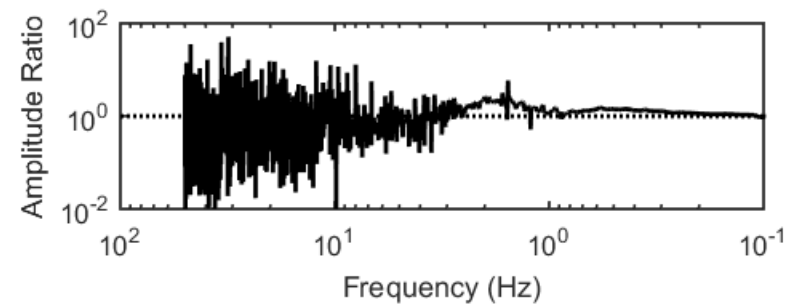
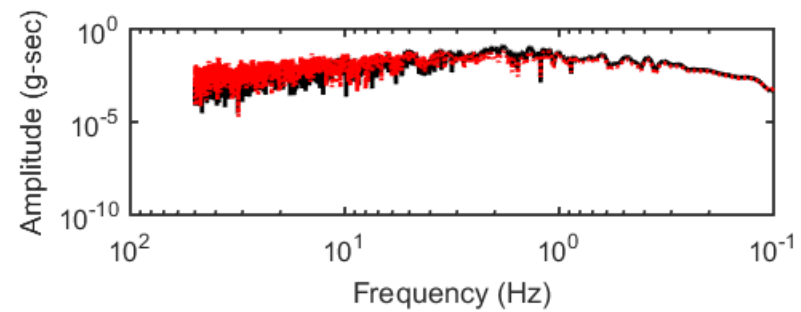
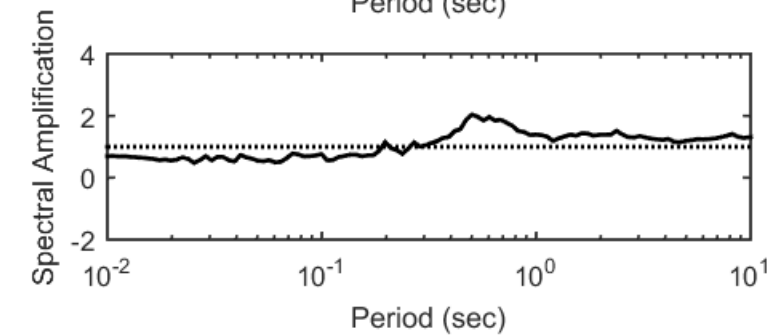
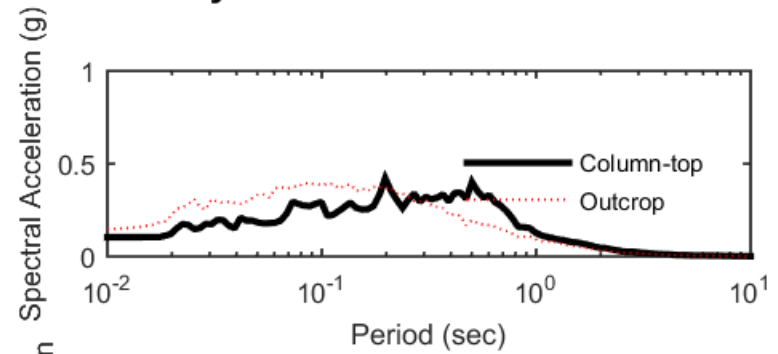
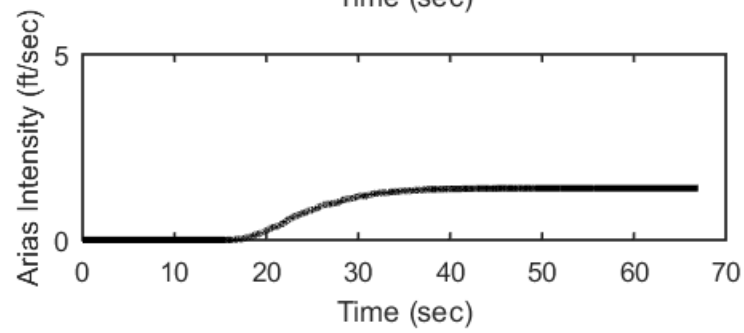
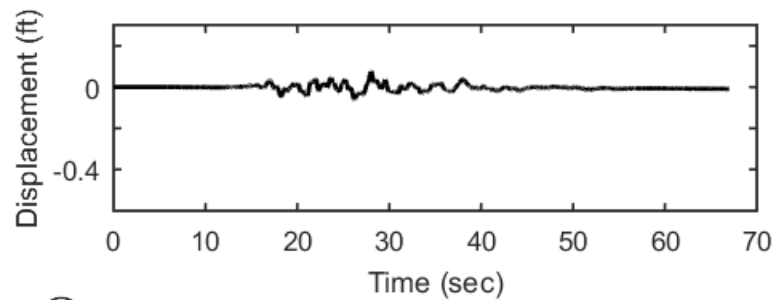
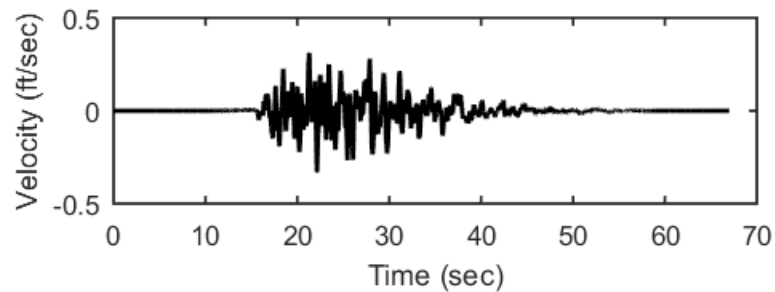
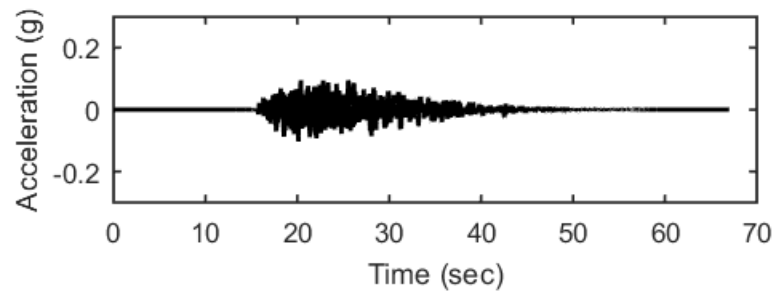
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



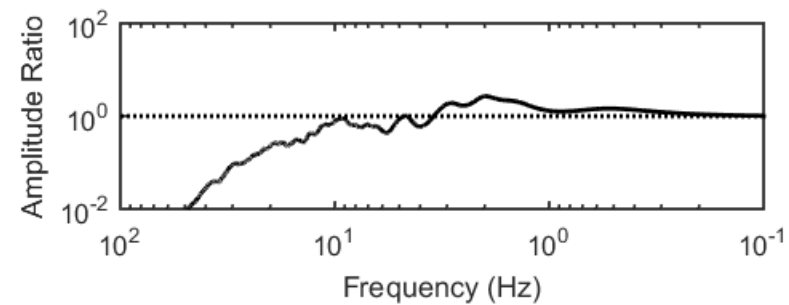
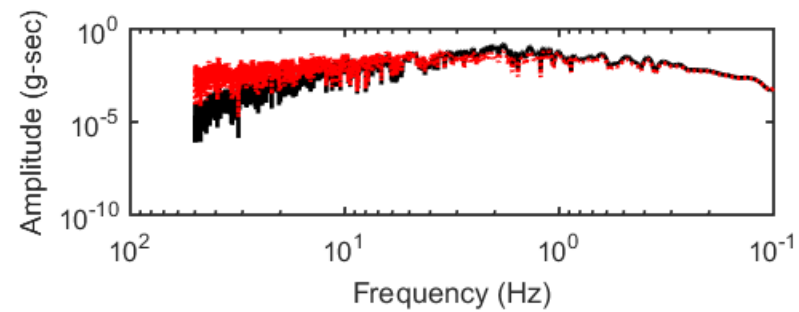
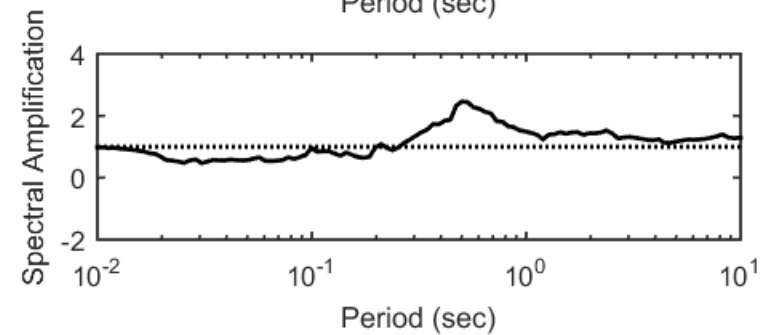
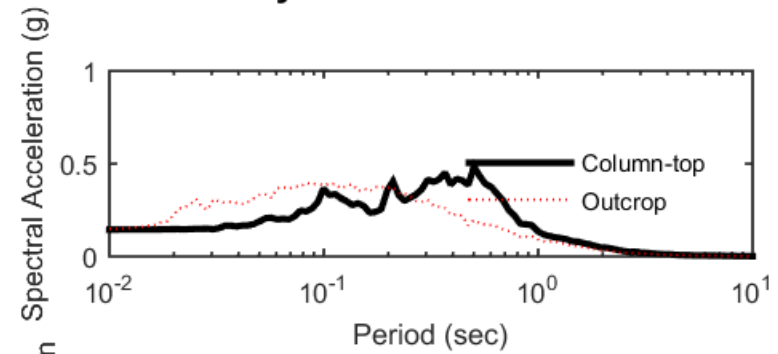
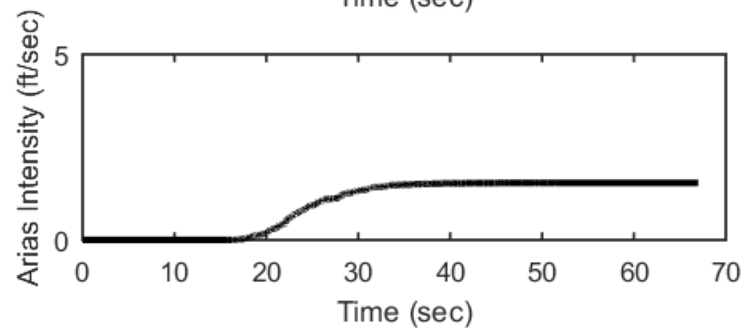
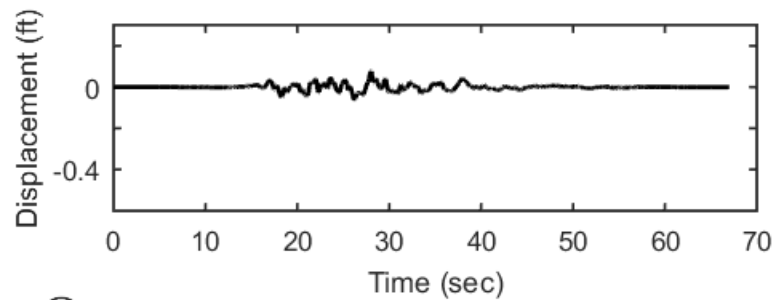
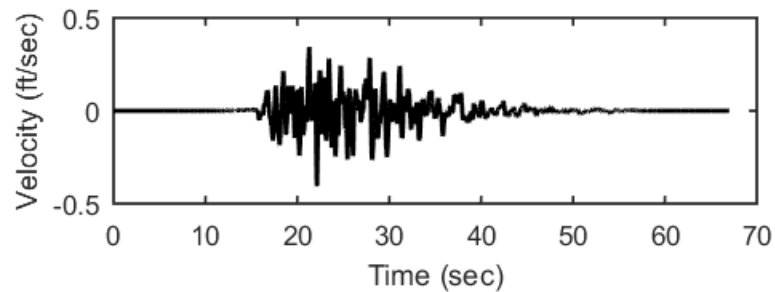
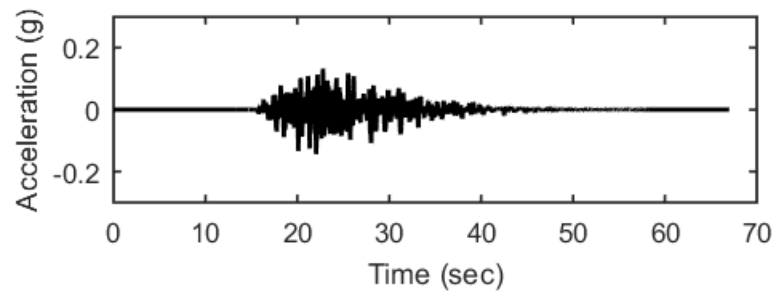
### Profile outputs for Motion: FEE4



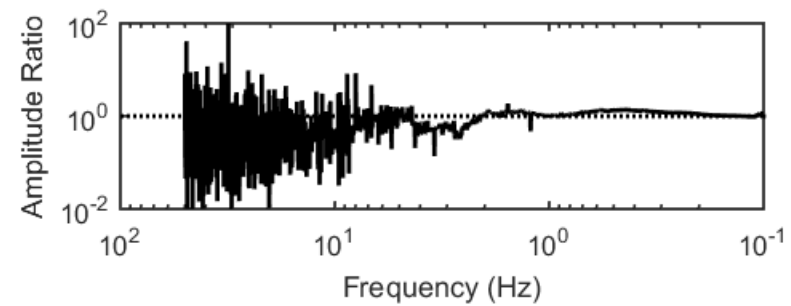
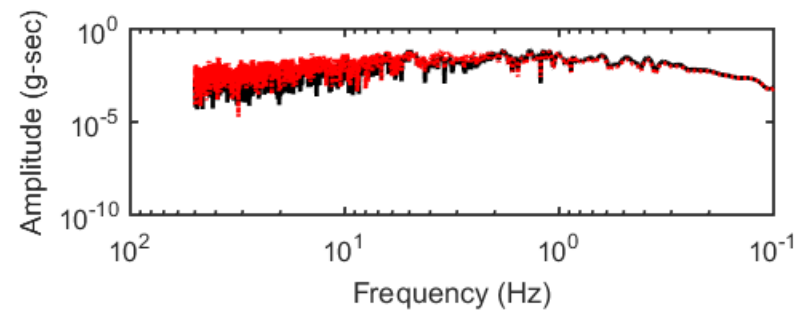
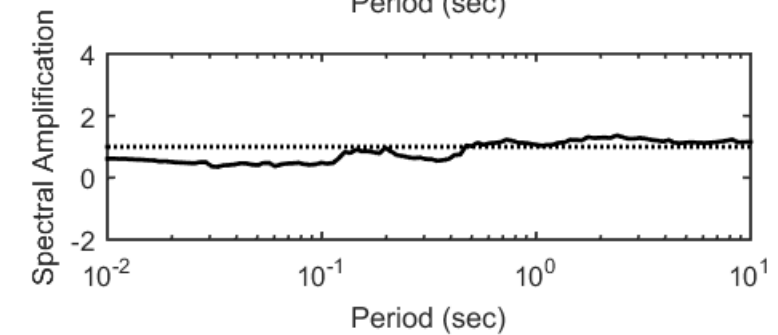
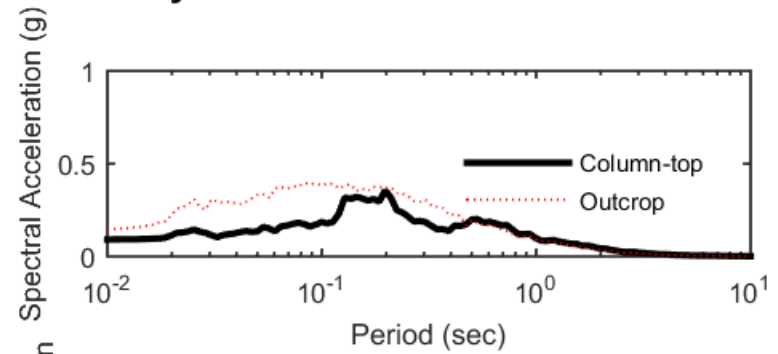
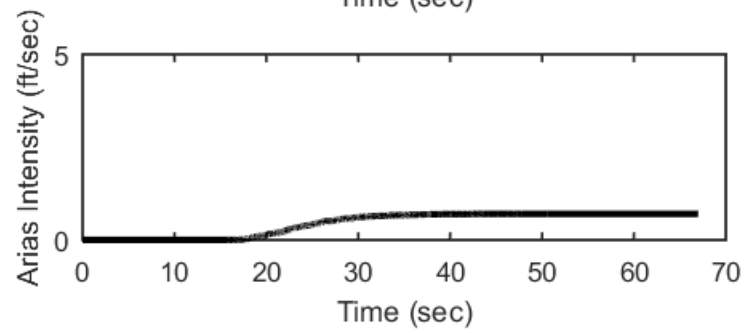
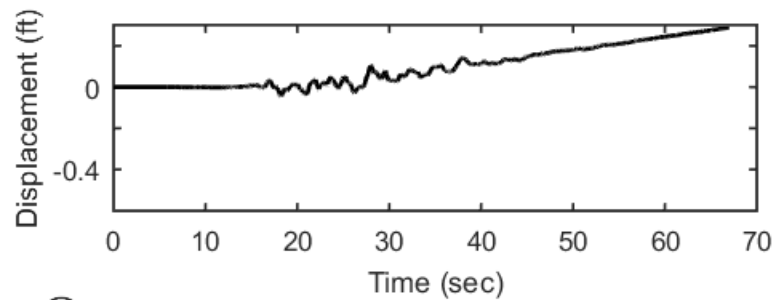
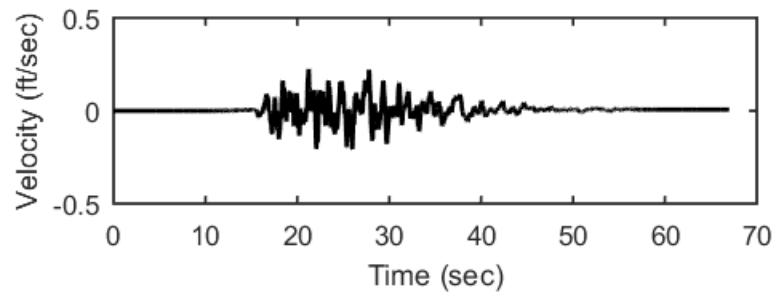
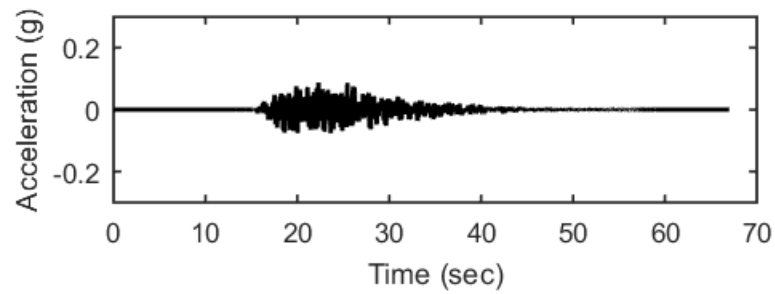
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



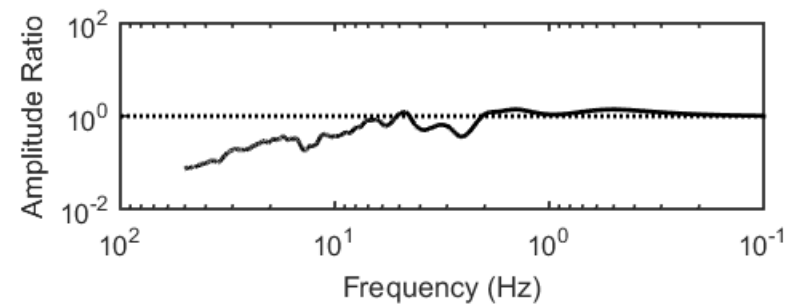
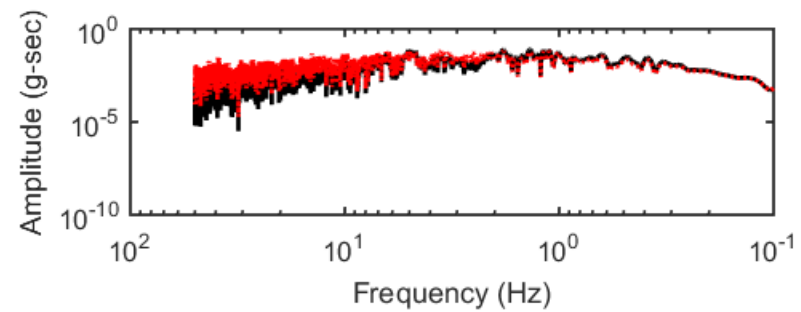
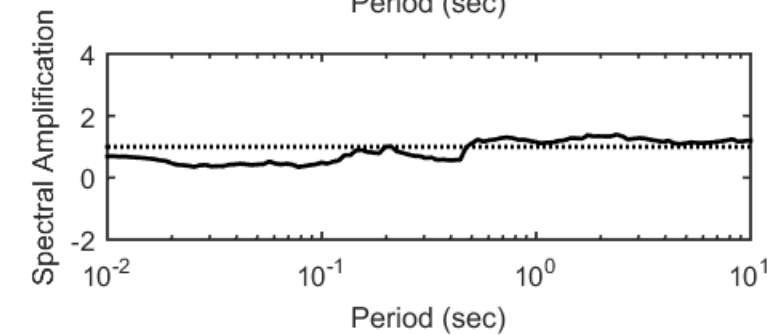
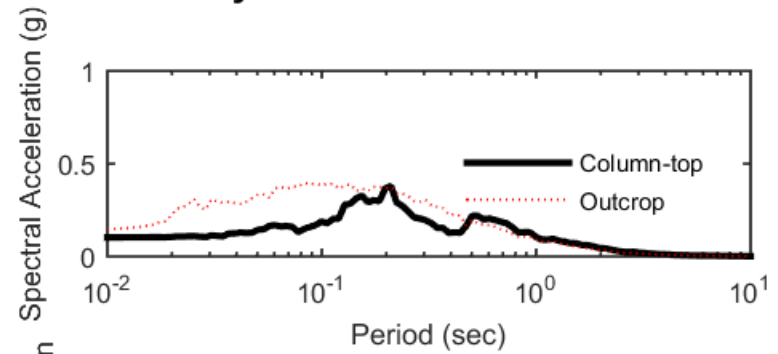
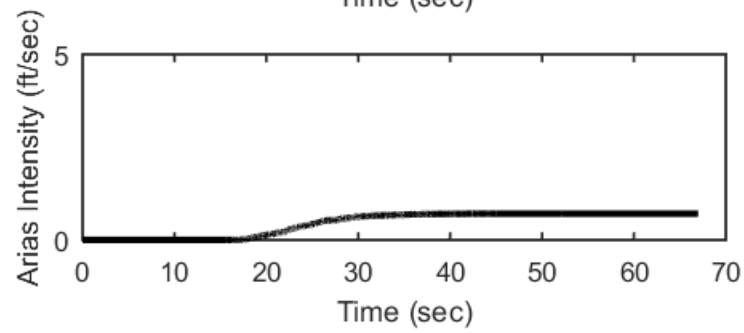
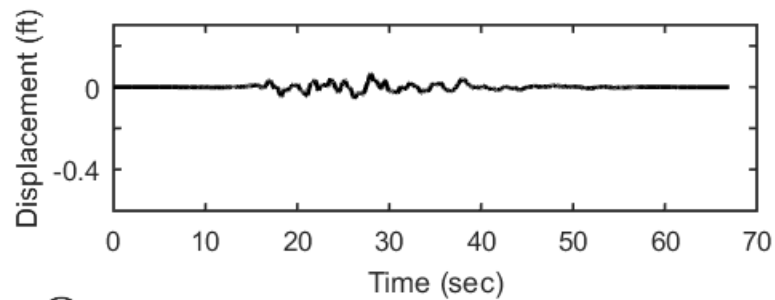
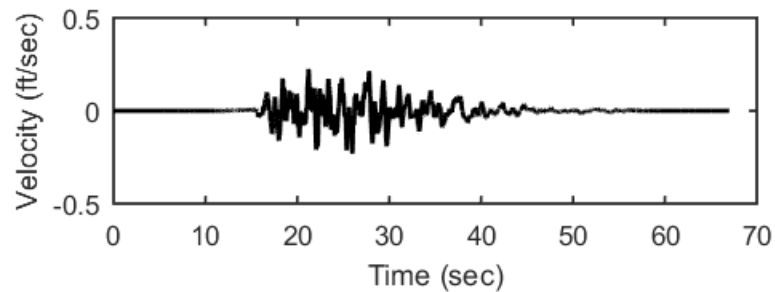
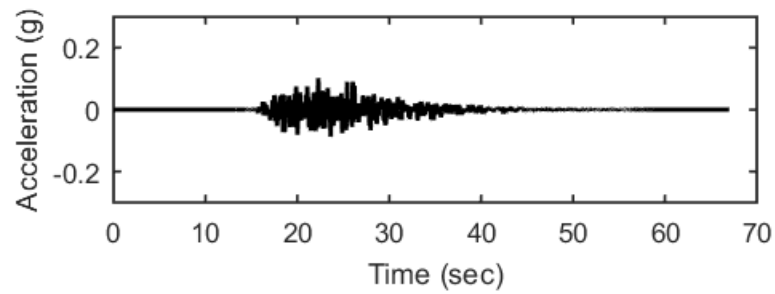
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



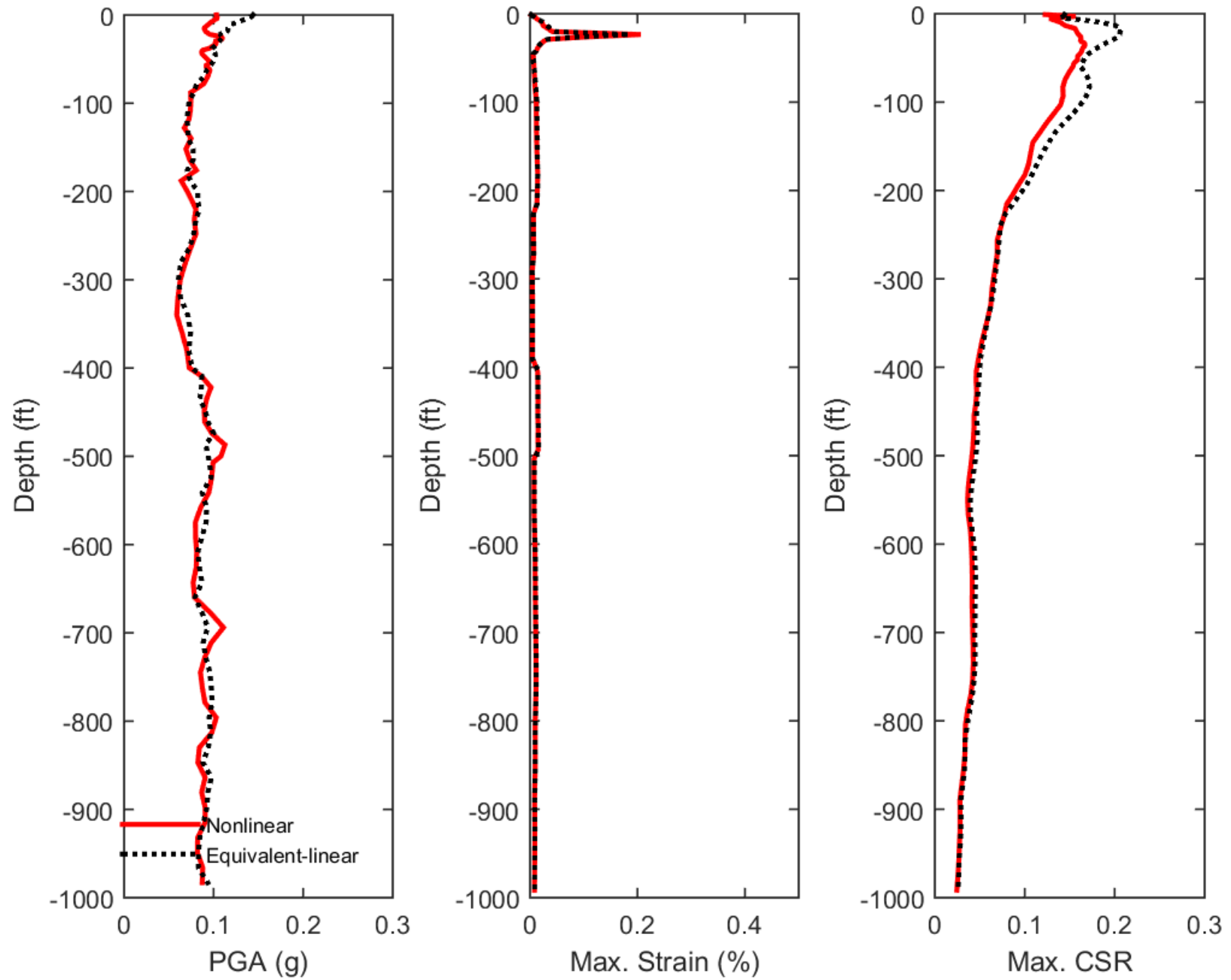
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



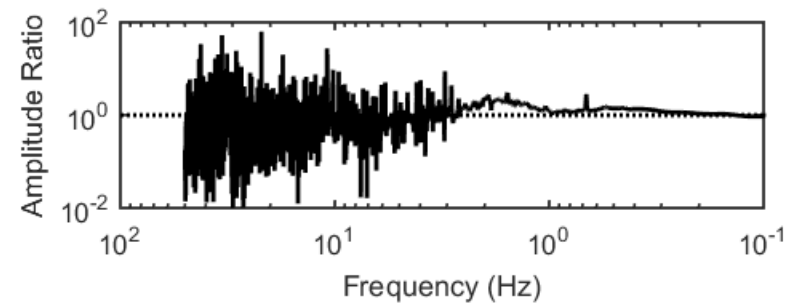
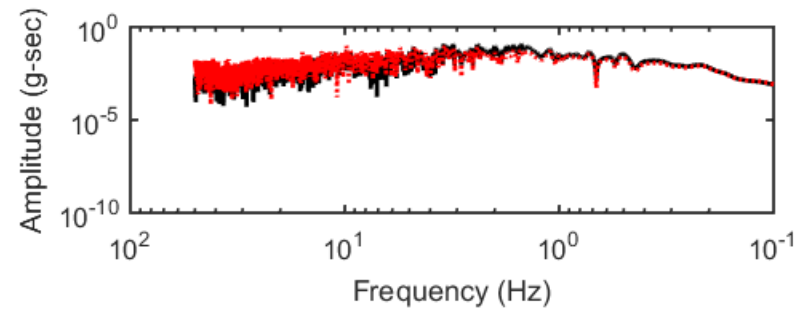
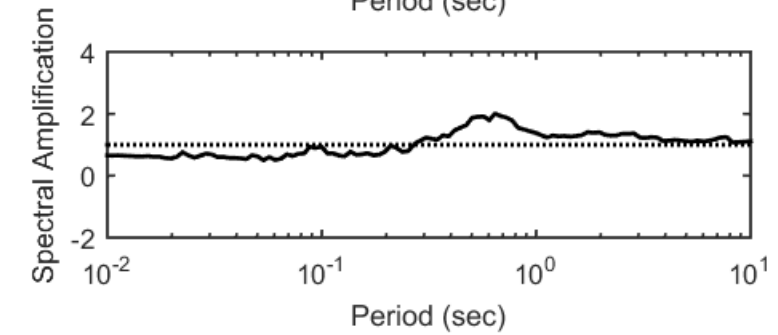
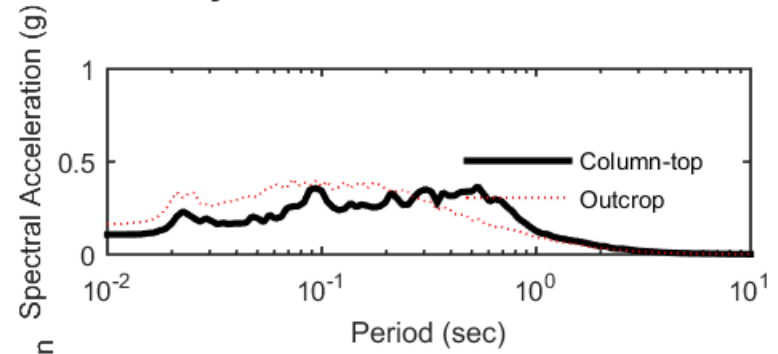
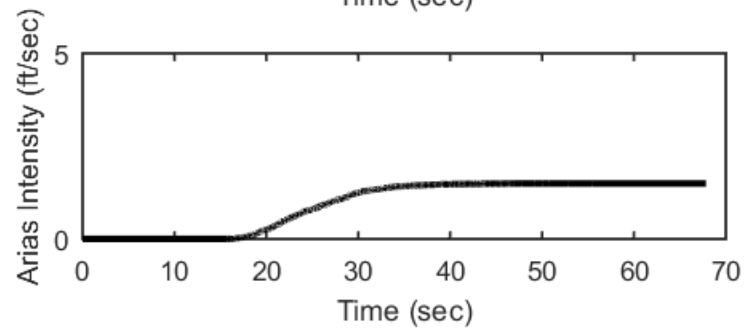
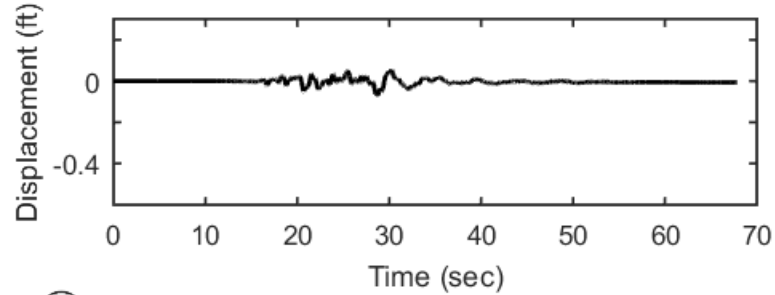
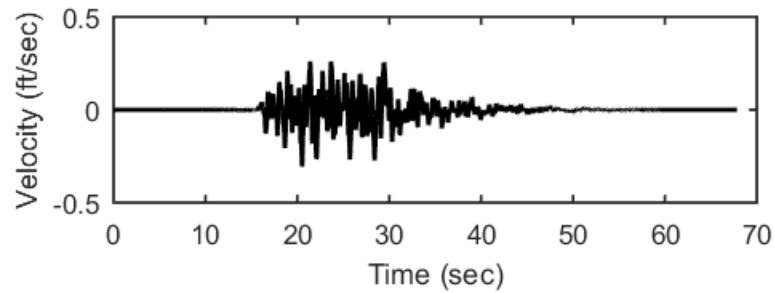
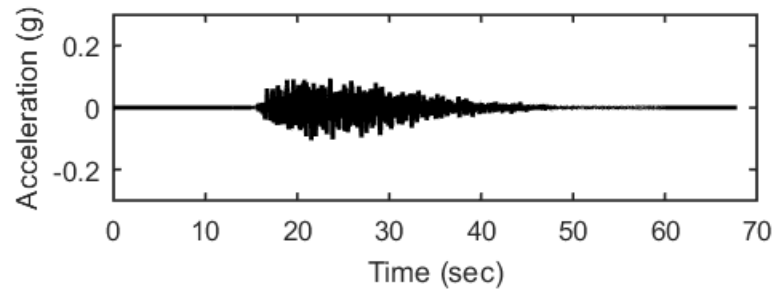
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



### Profile outputs for Motion: FEE5

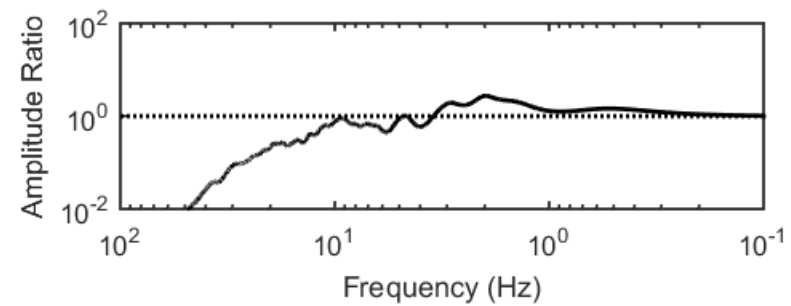
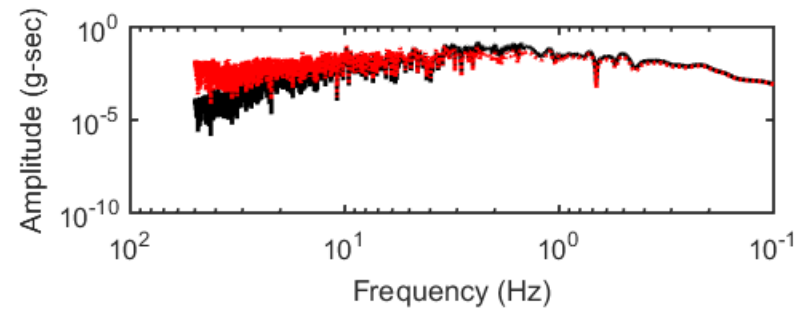
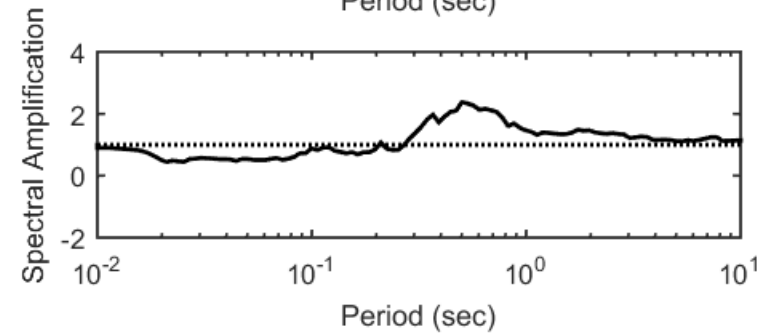
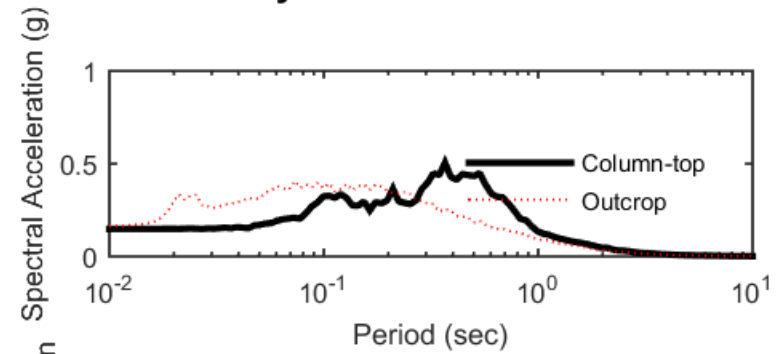
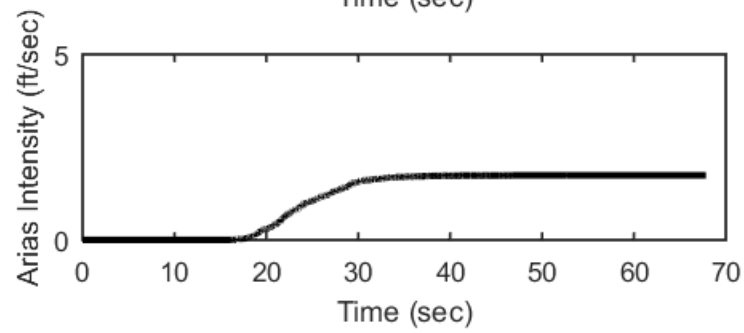
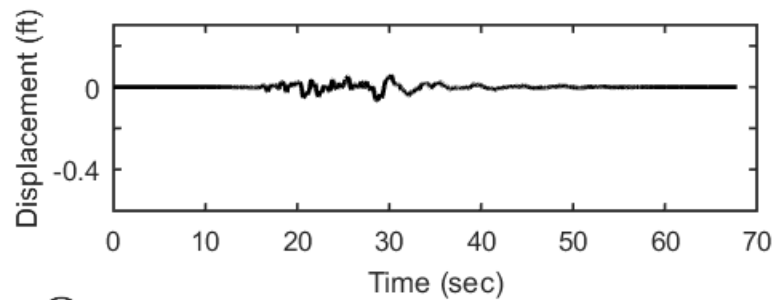
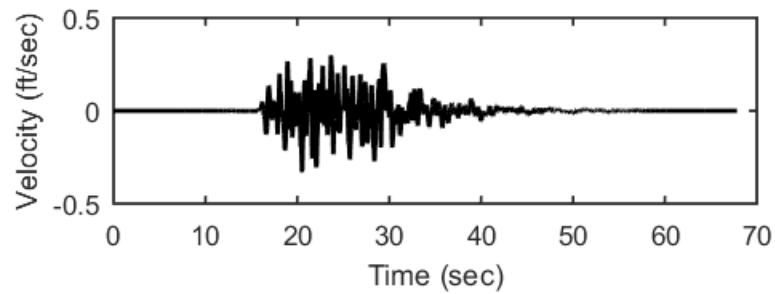
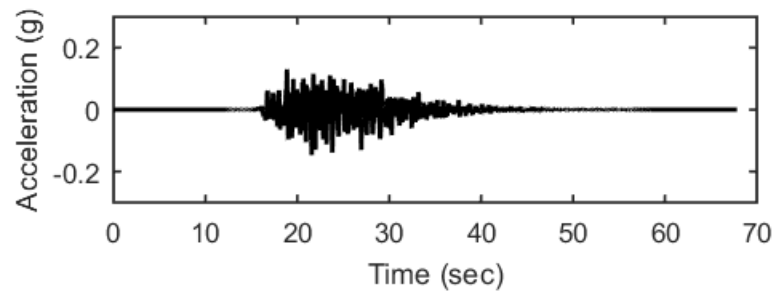


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6

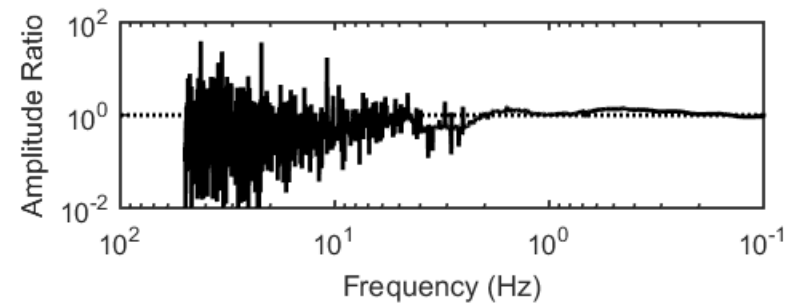
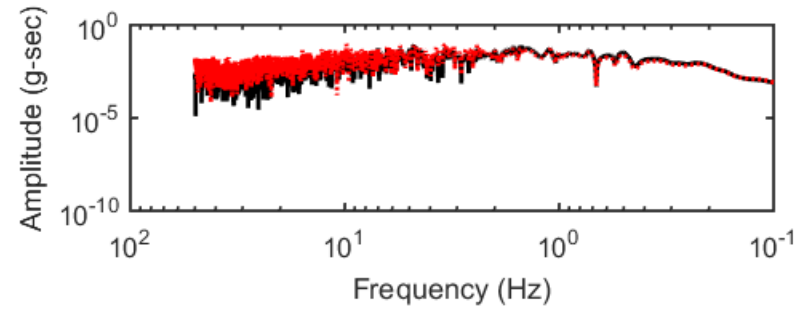
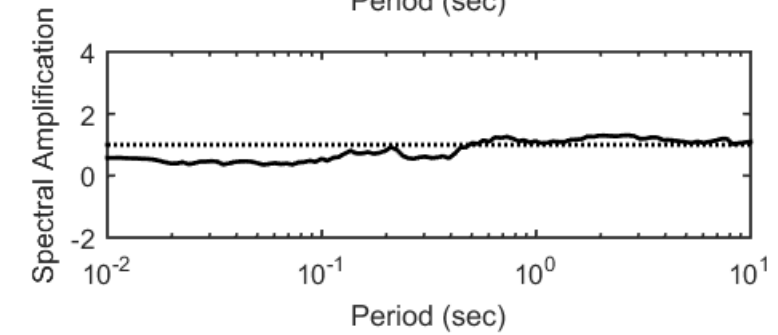
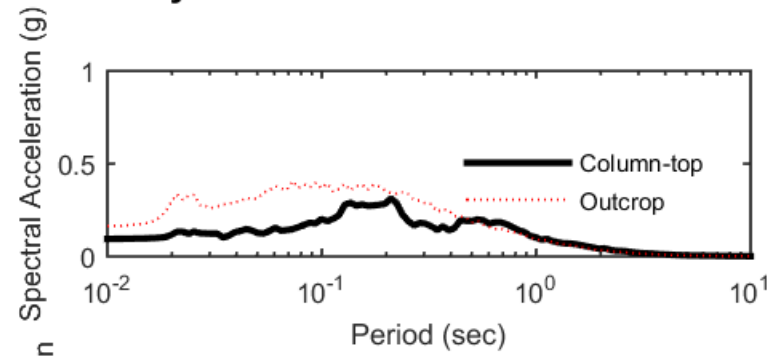
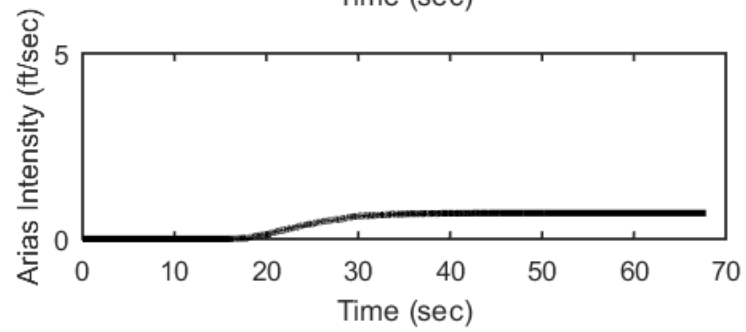
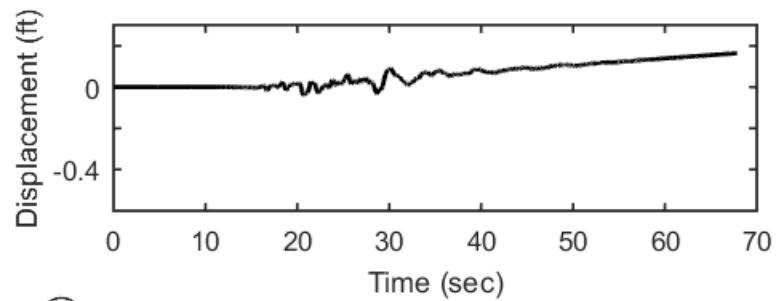
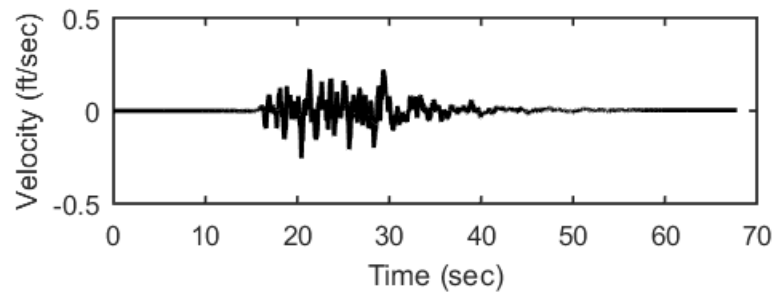
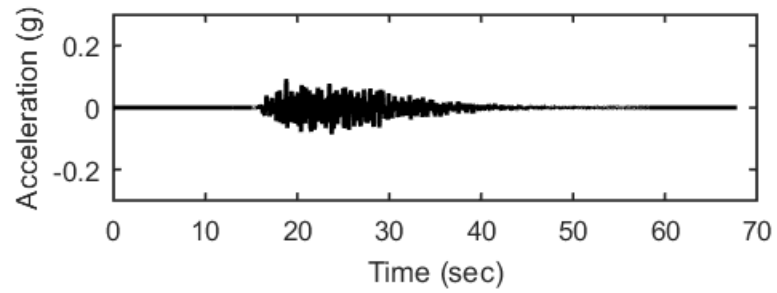




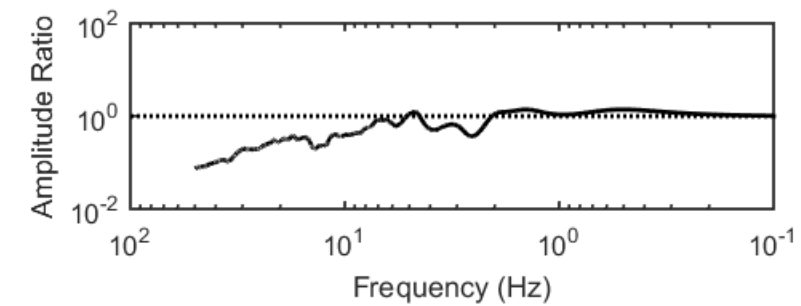
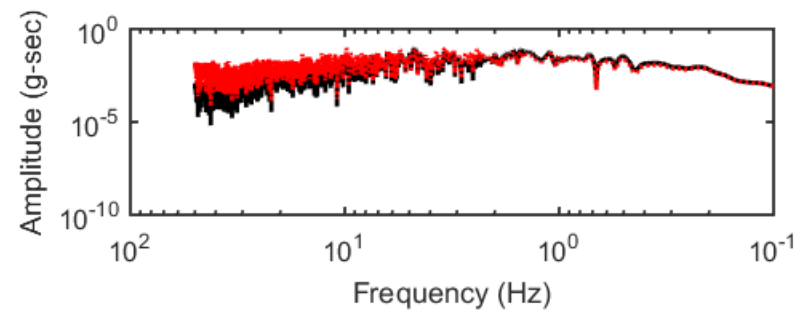
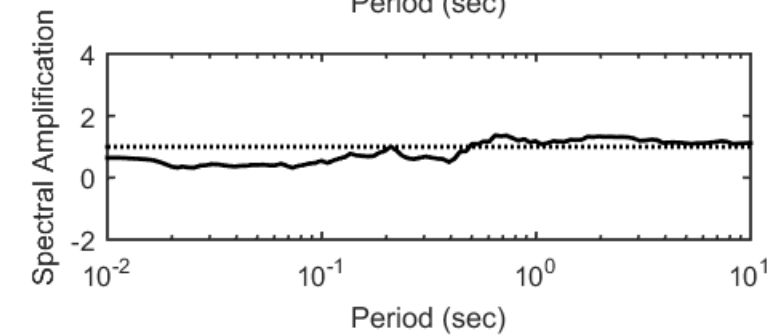
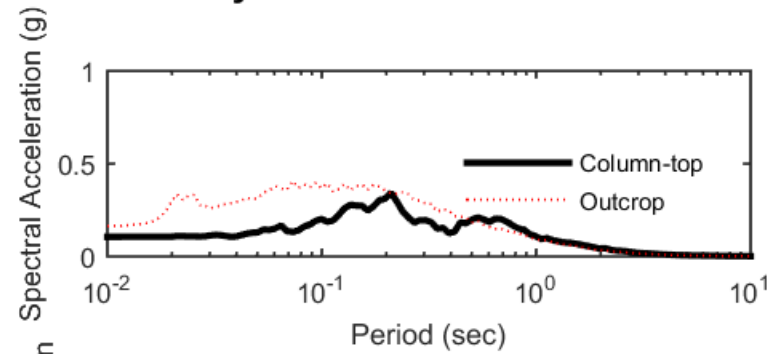
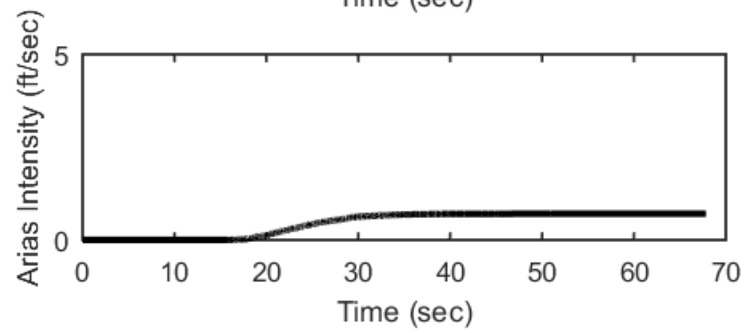
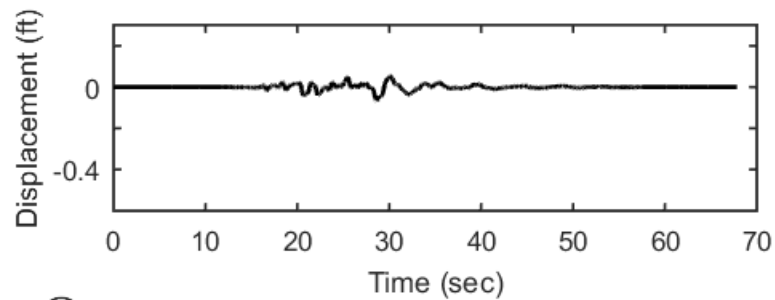
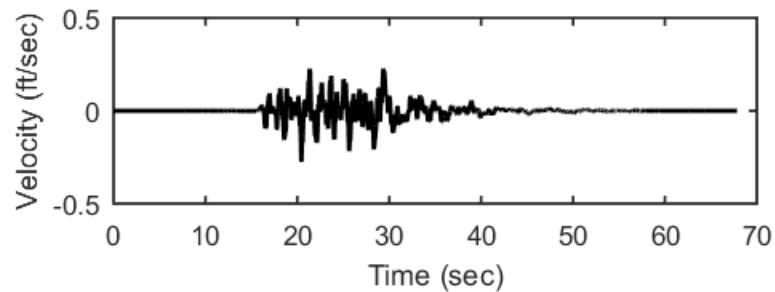
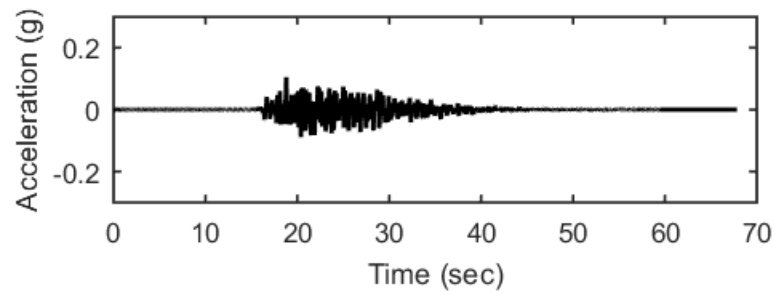
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



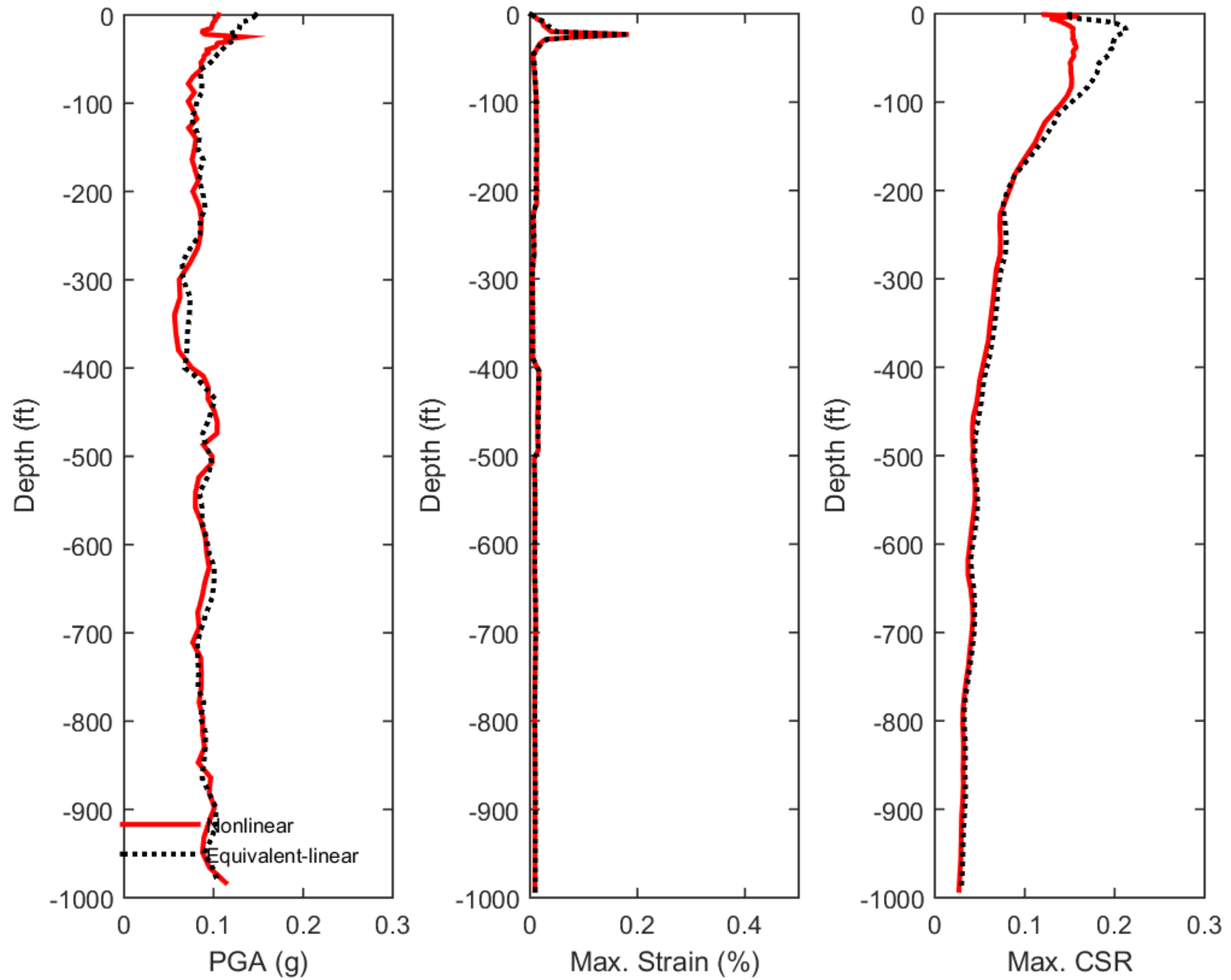
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



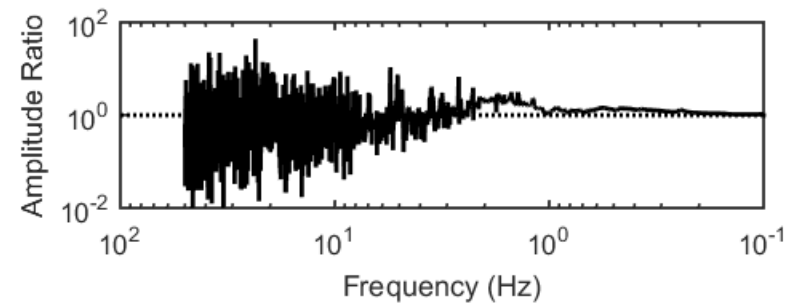
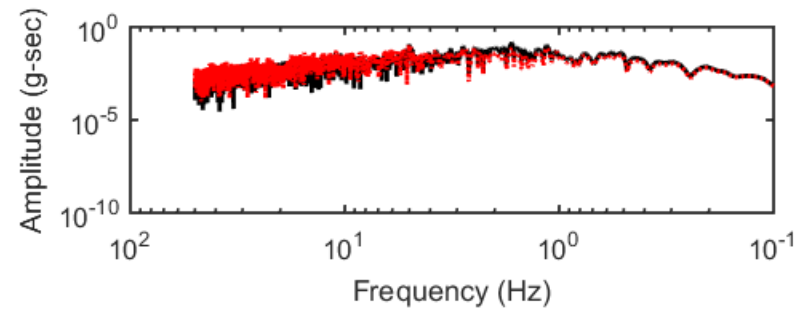
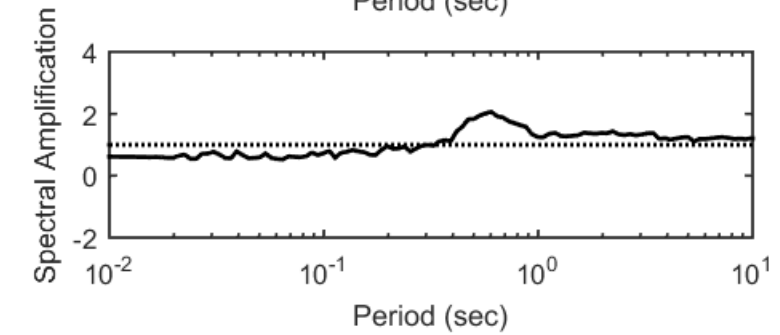
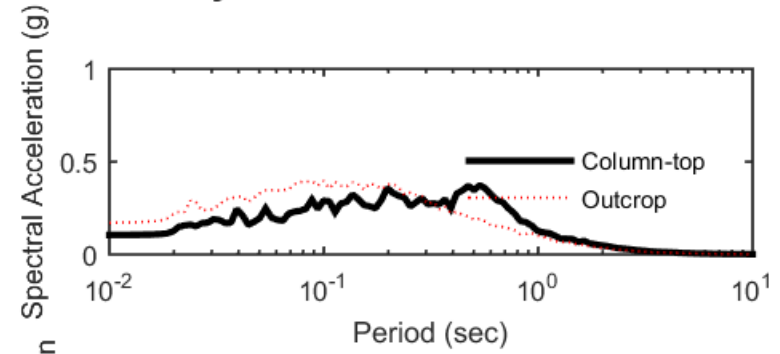
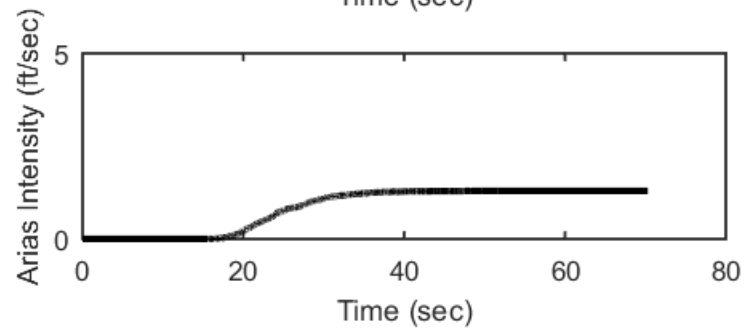
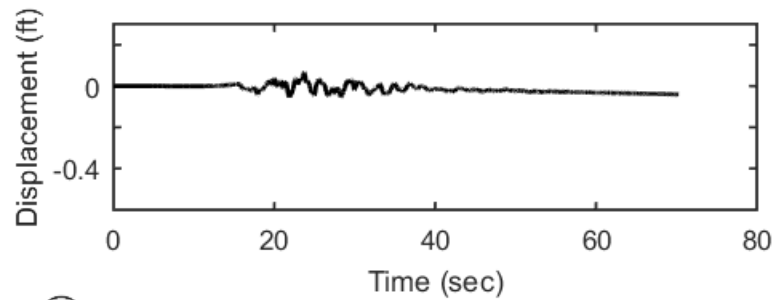
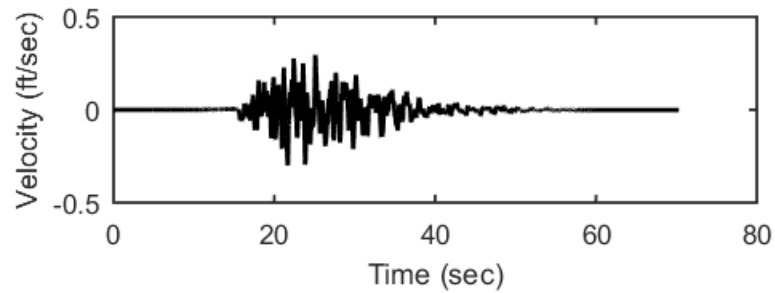
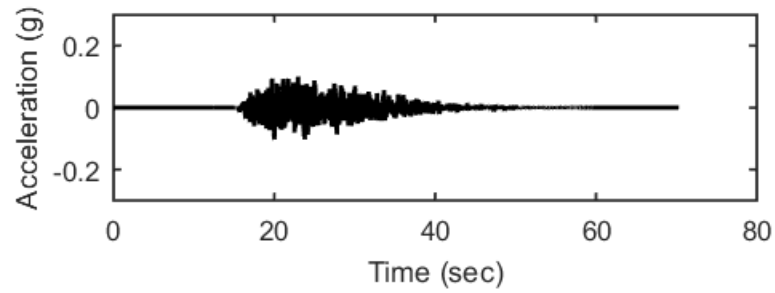
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



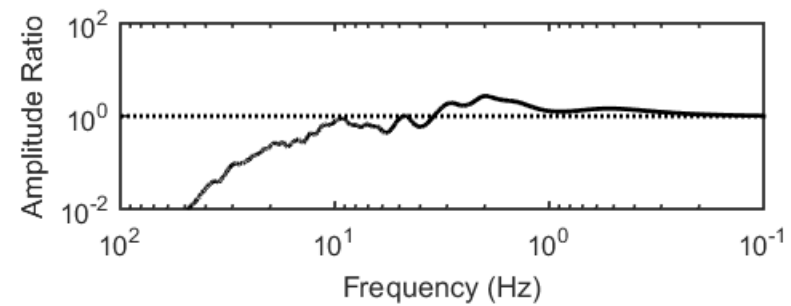
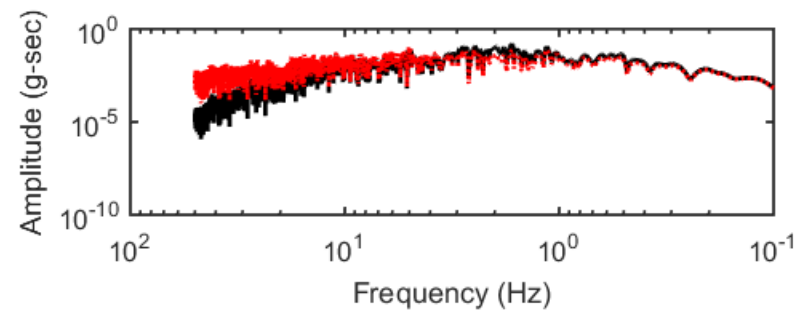
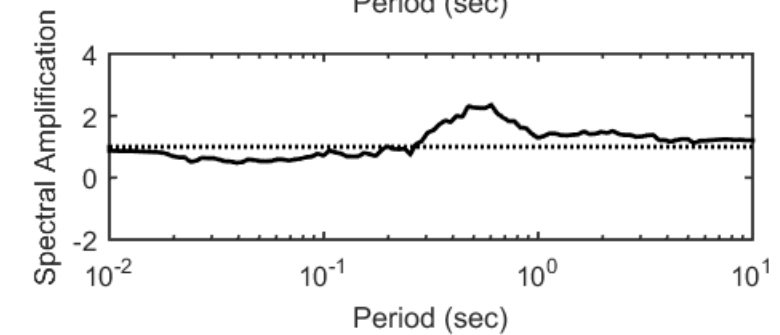
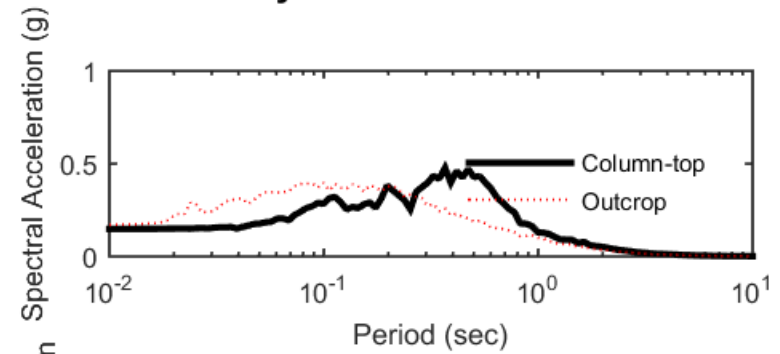
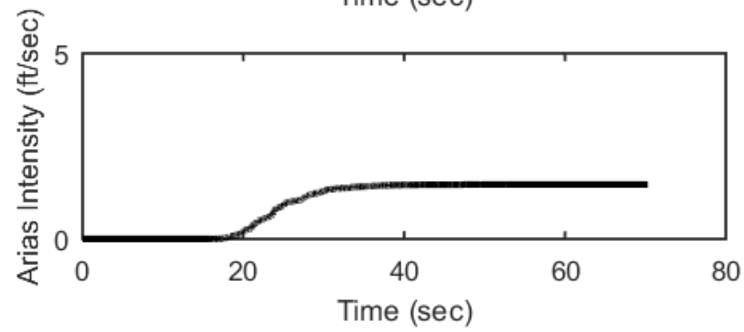
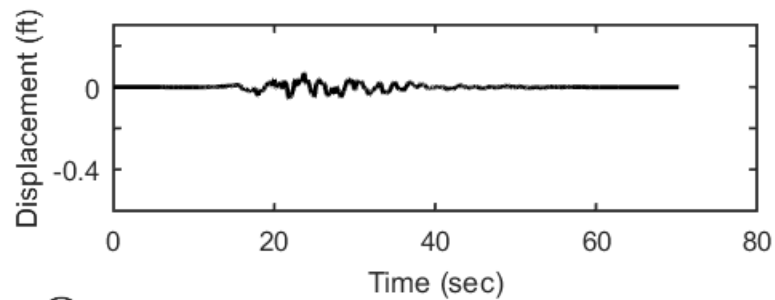
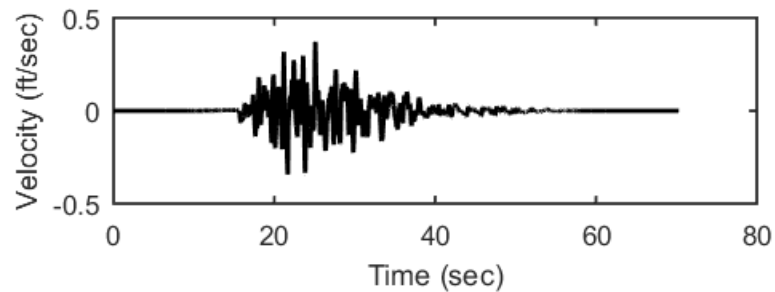
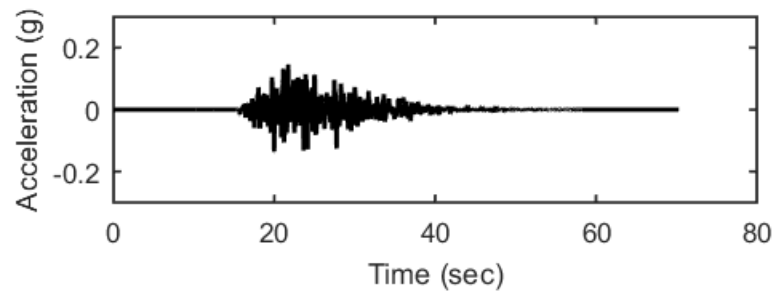
### Profile outputs for Motion: FEE6



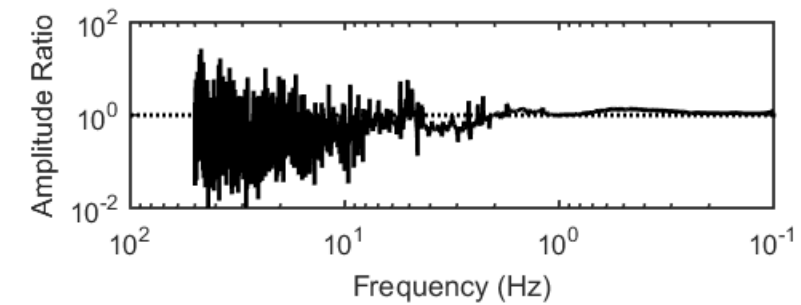
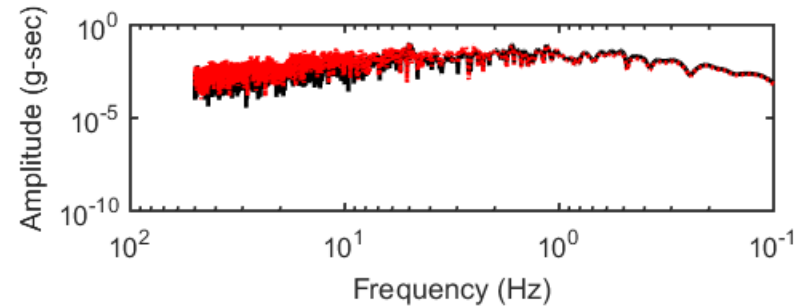
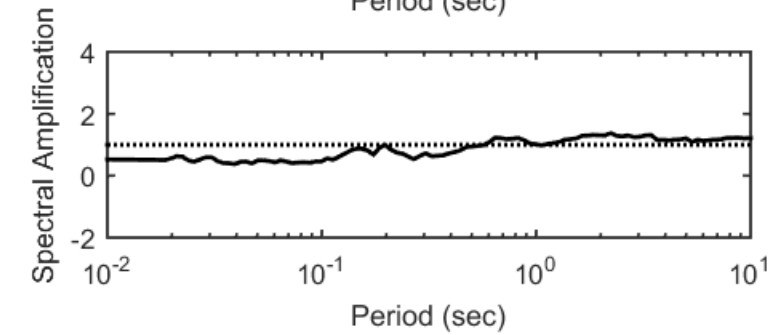
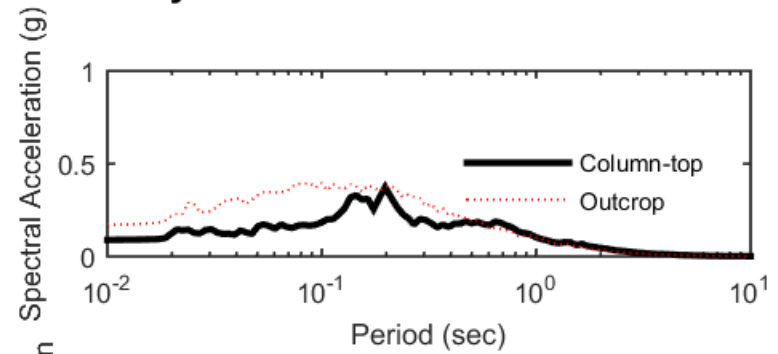
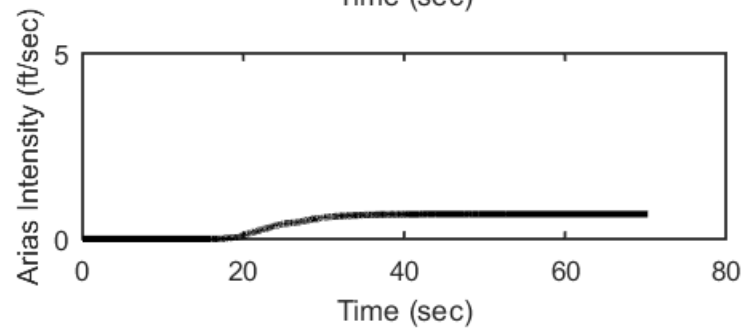
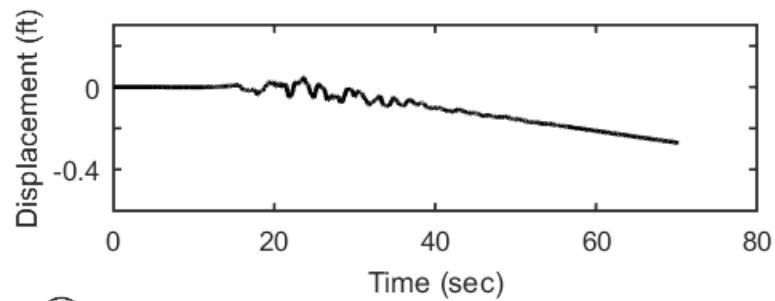
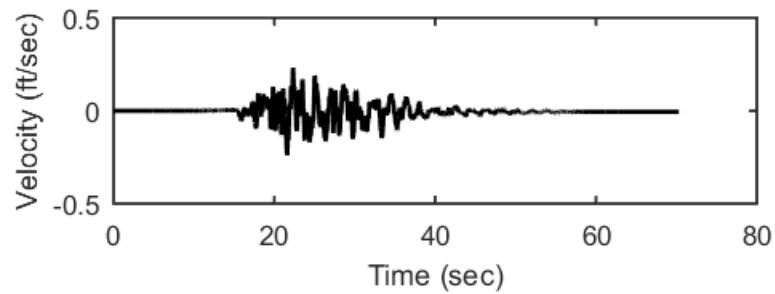
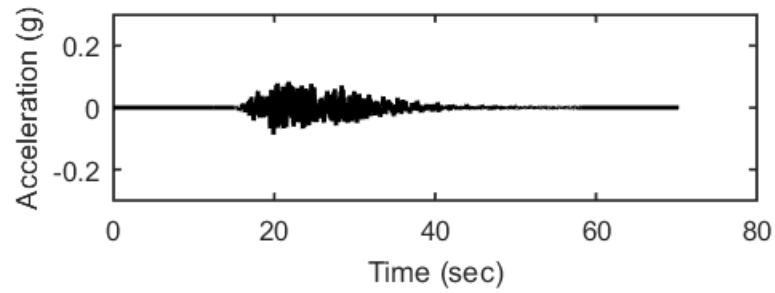
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



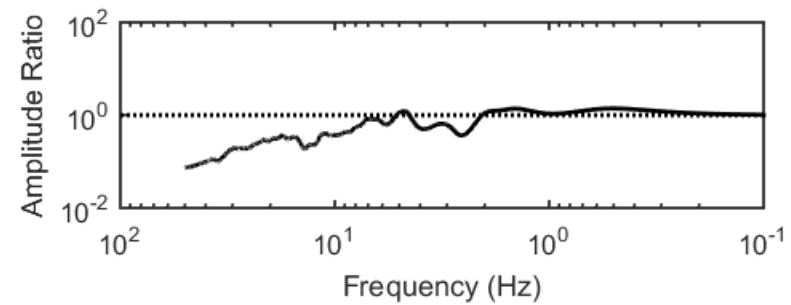
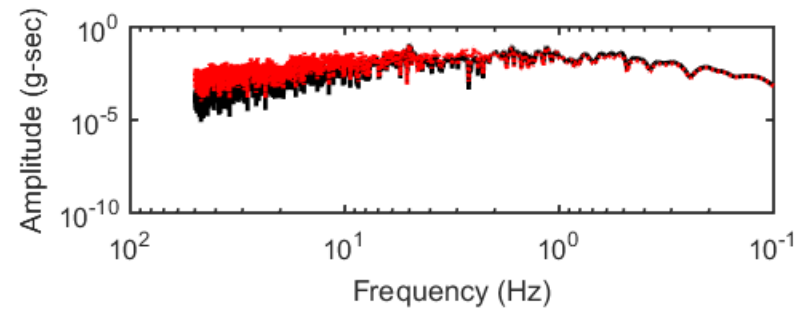
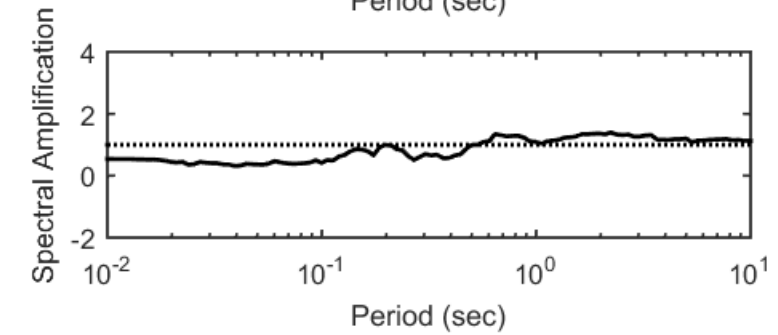
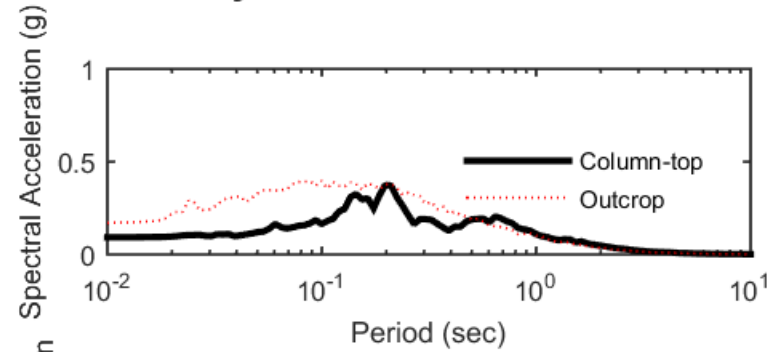
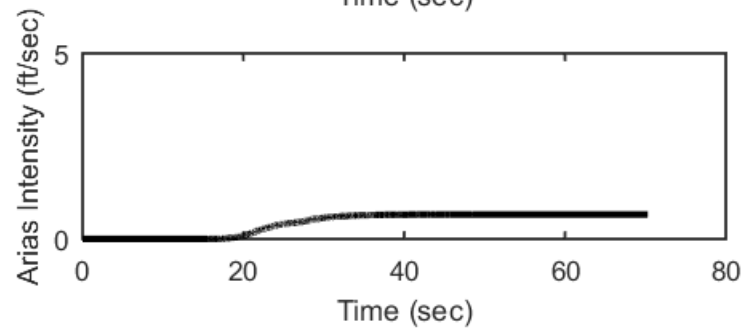
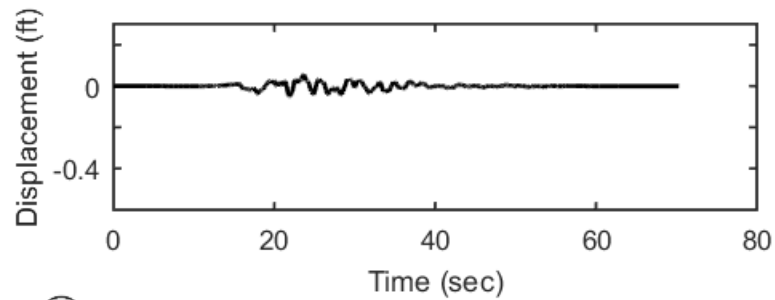
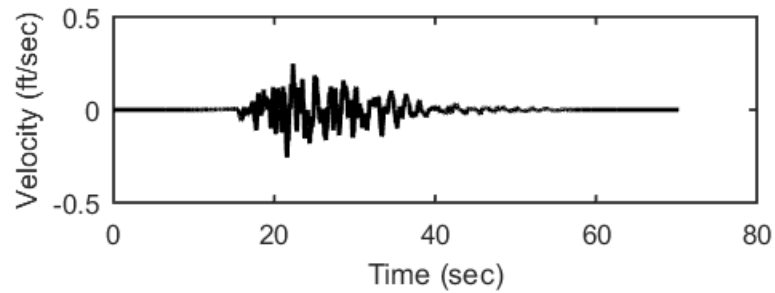
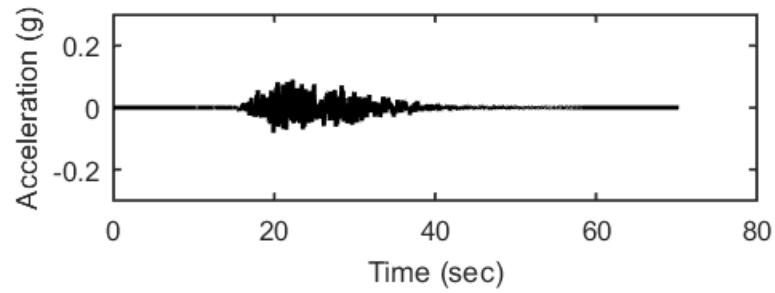
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7

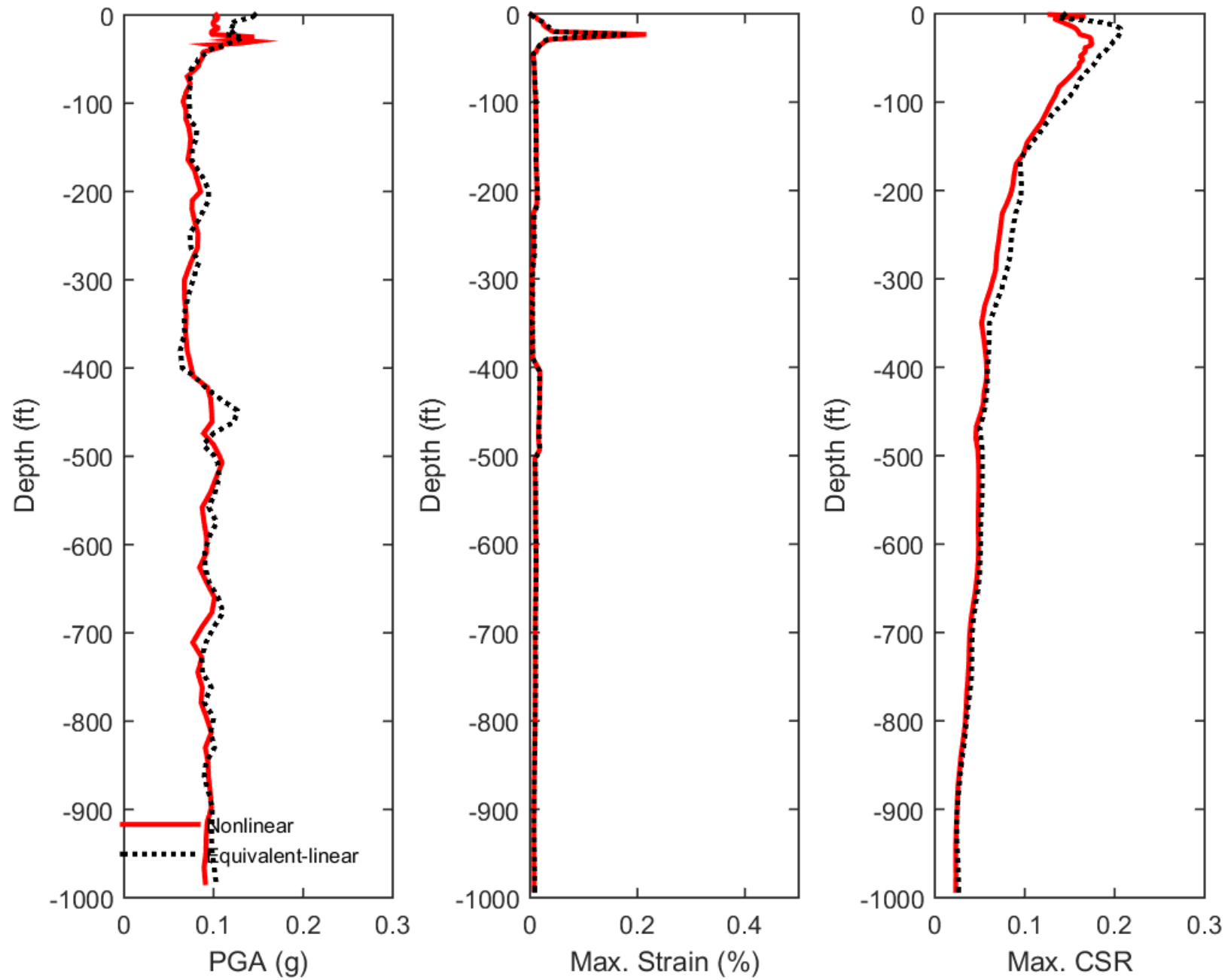


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7

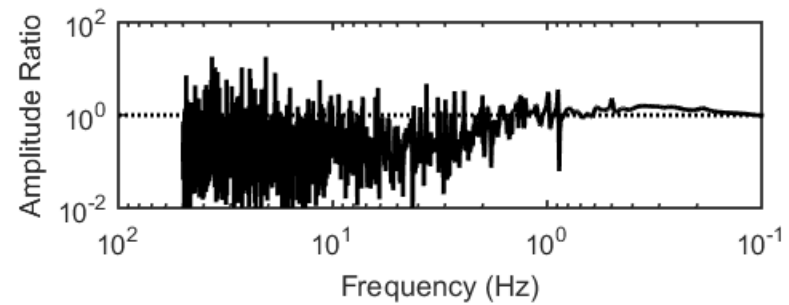
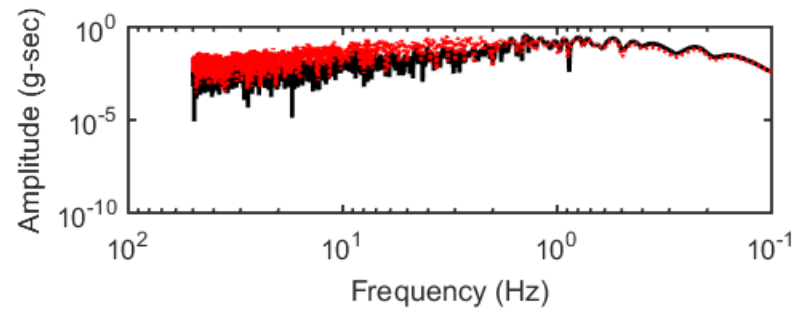
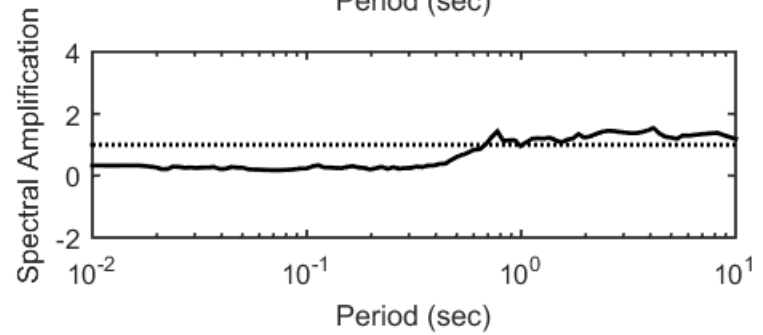
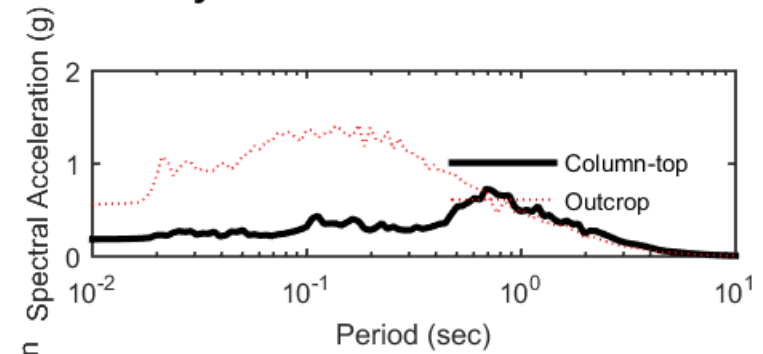
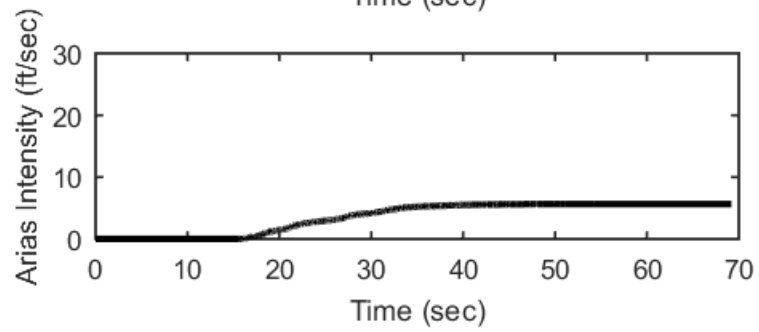
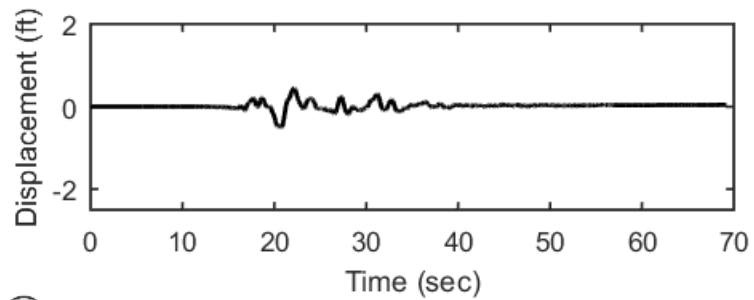
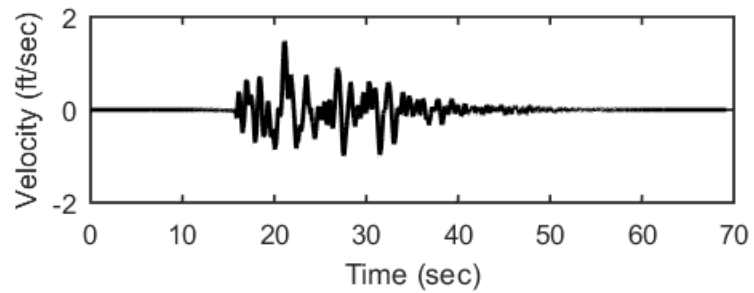
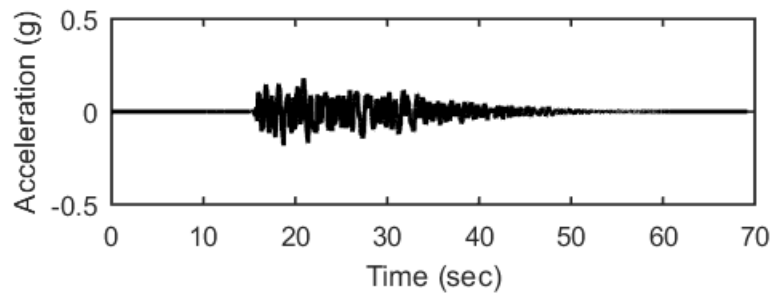




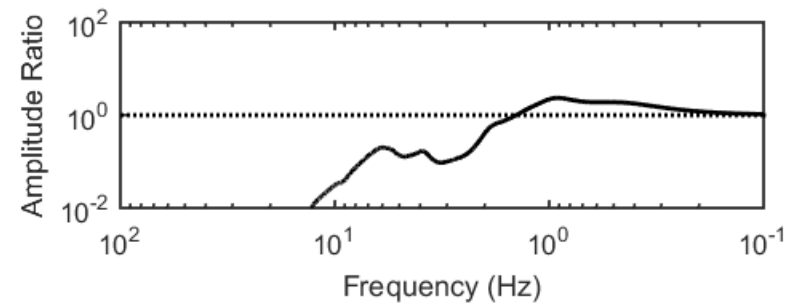
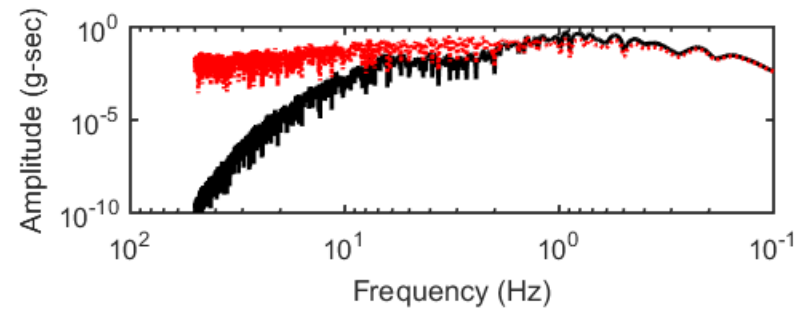
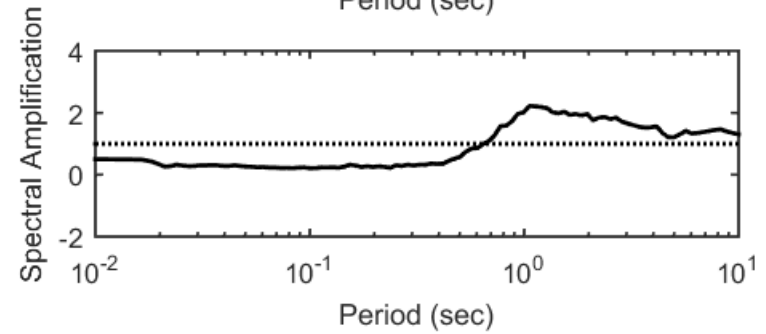
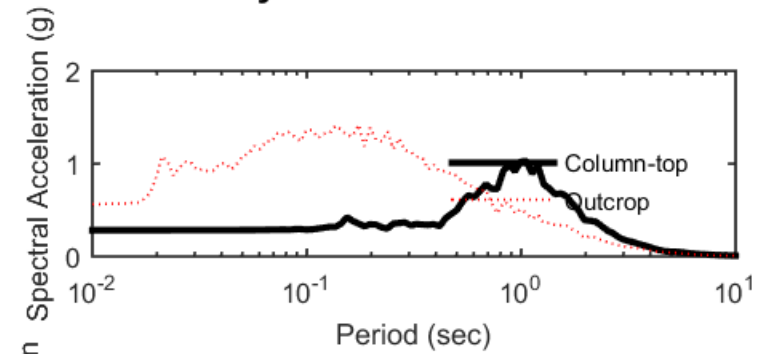
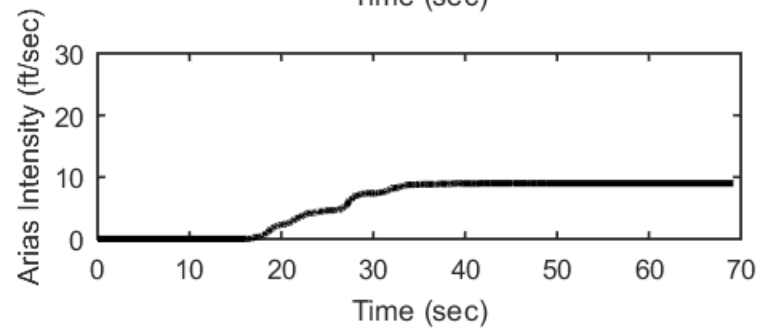
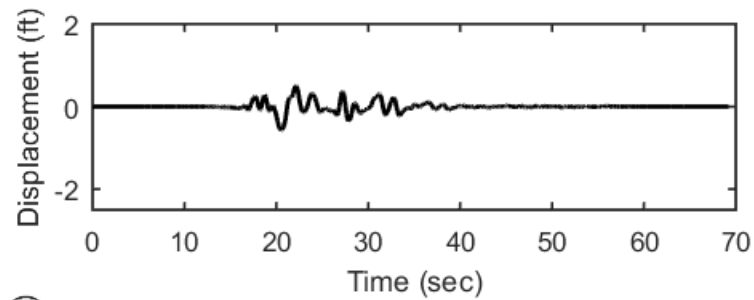
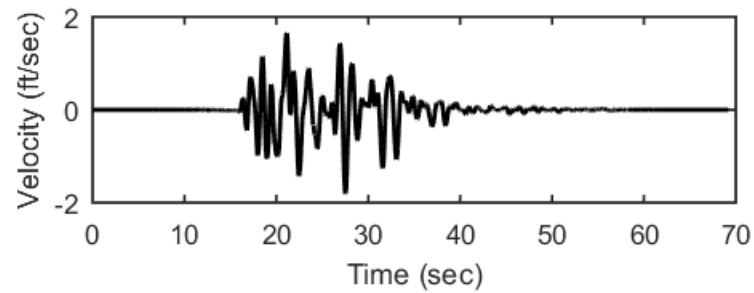
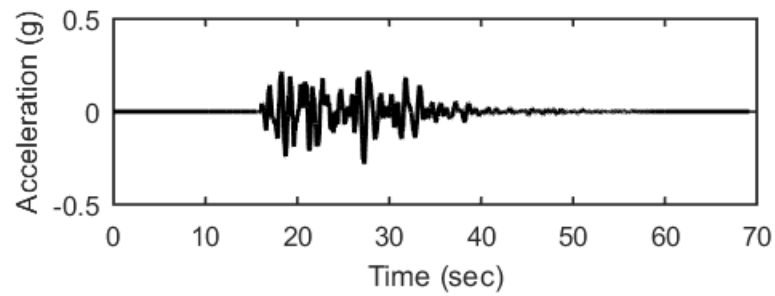
### Profile outputs for Motion: FEE7



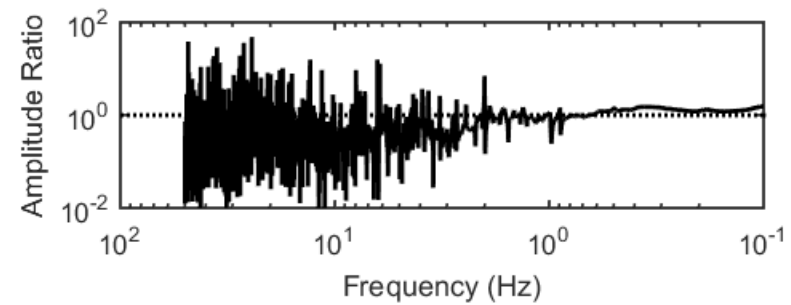
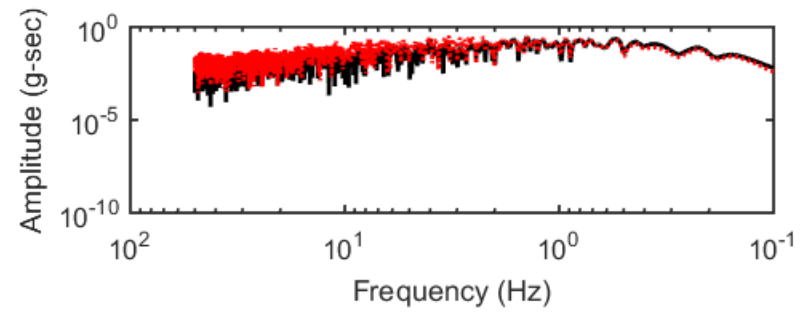
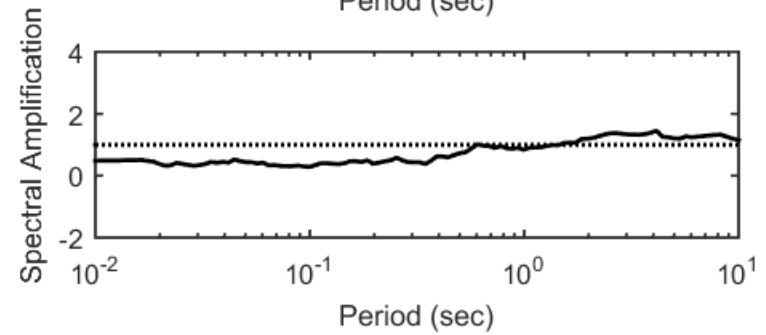
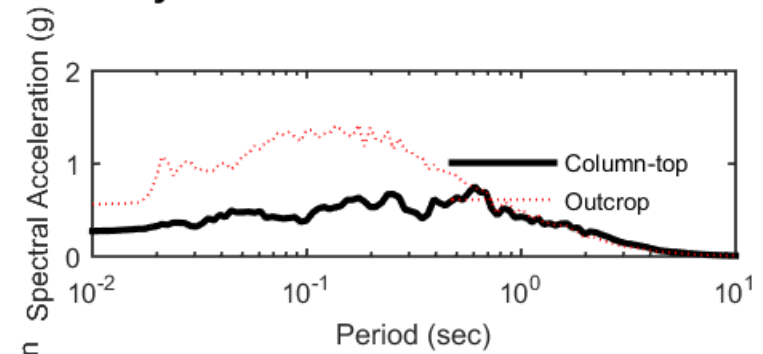
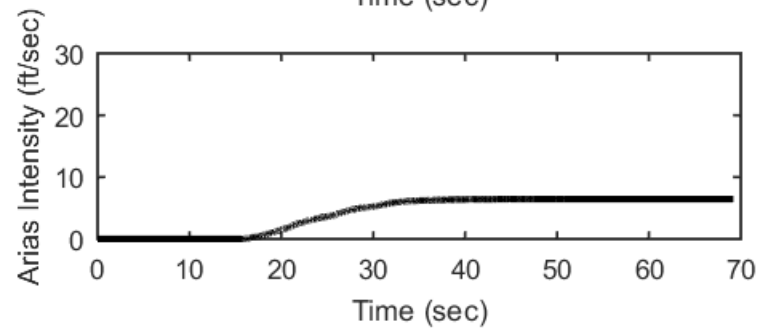
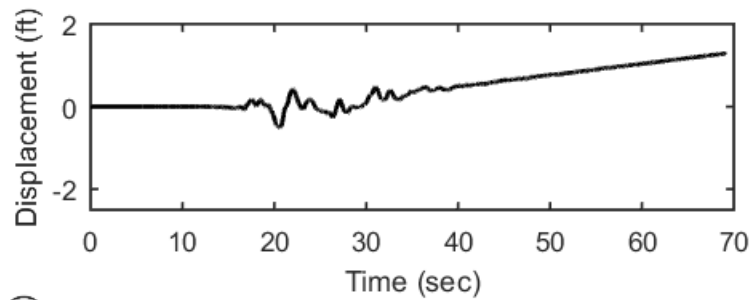
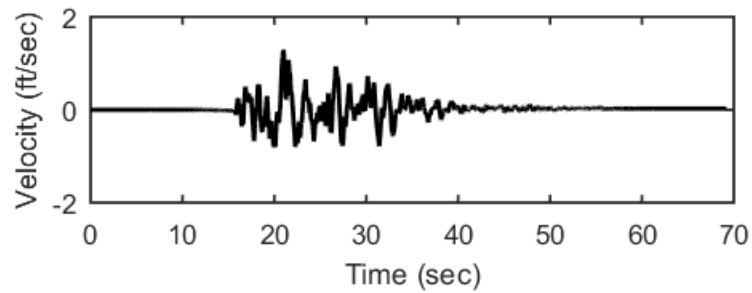
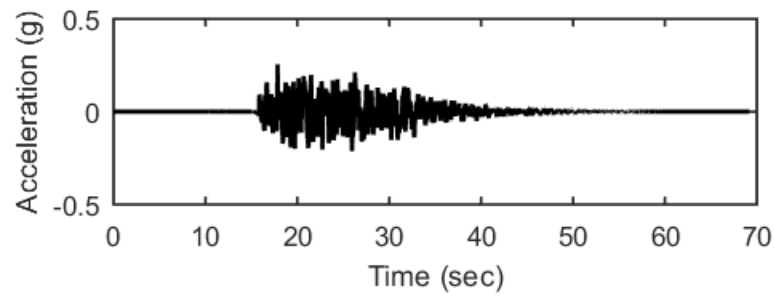
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



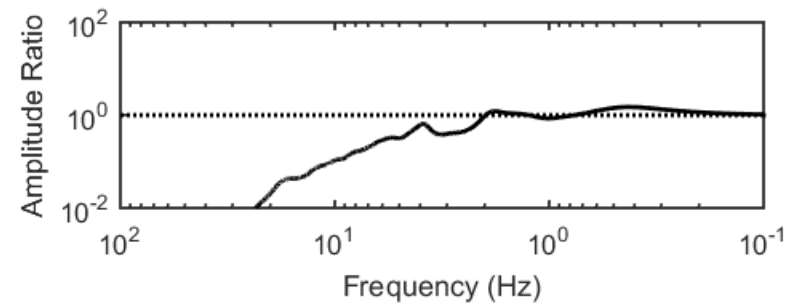
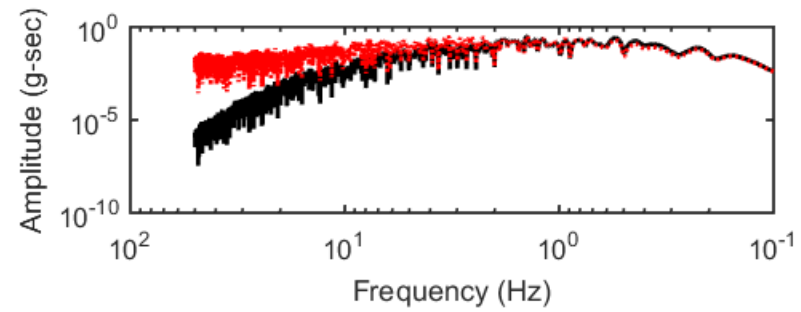
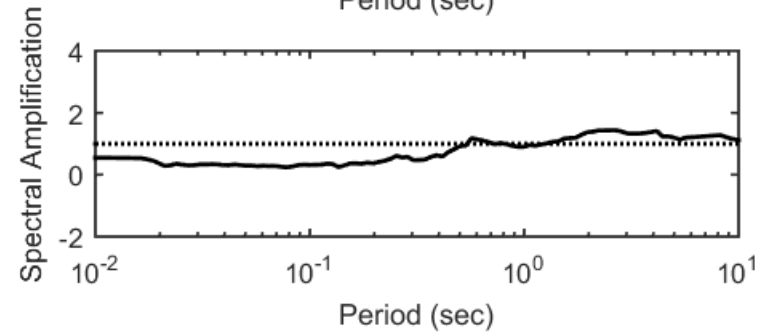
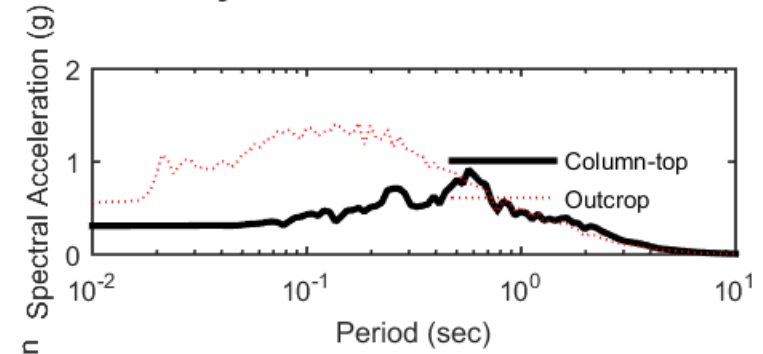
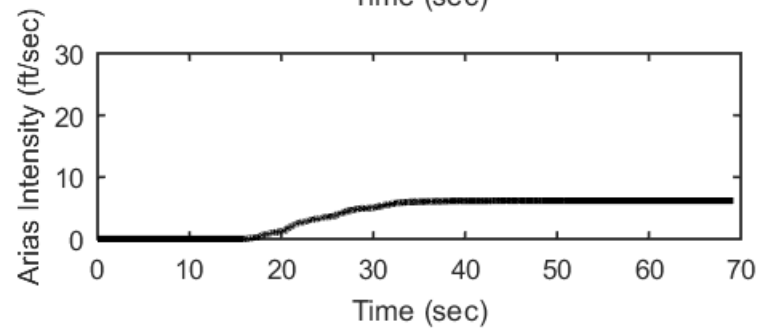
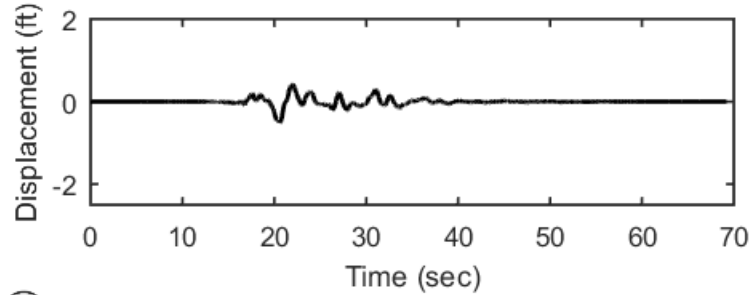
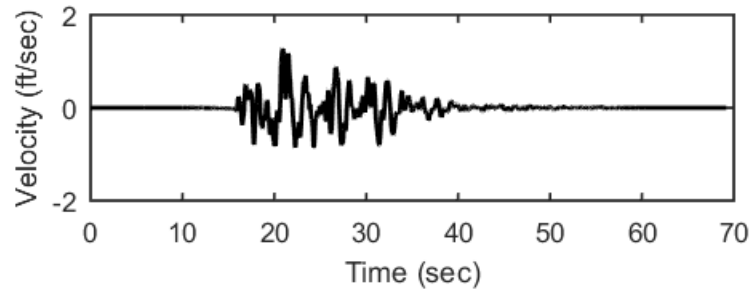
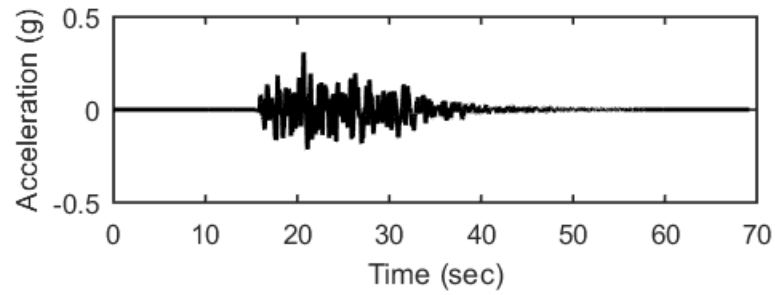
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



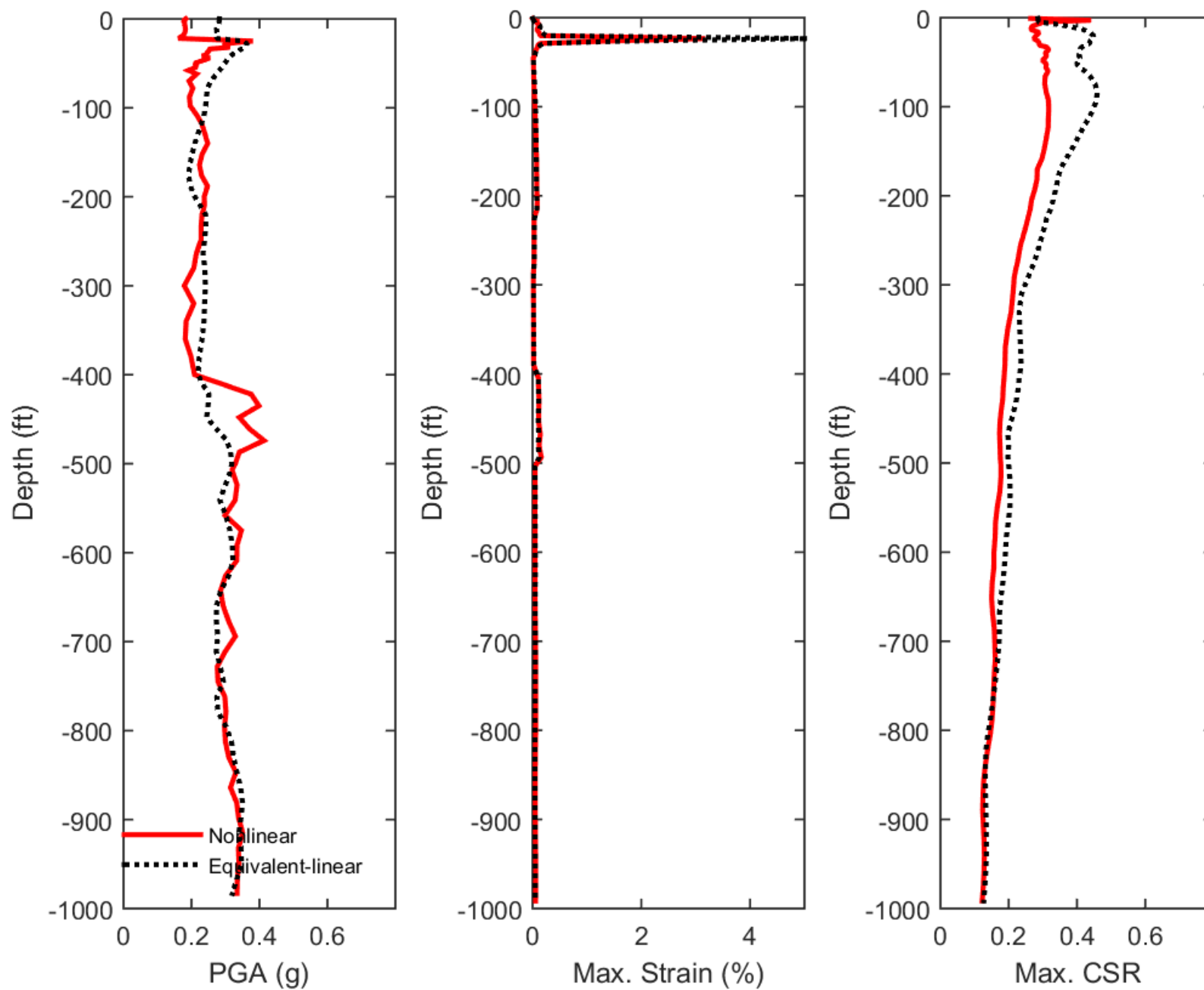
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



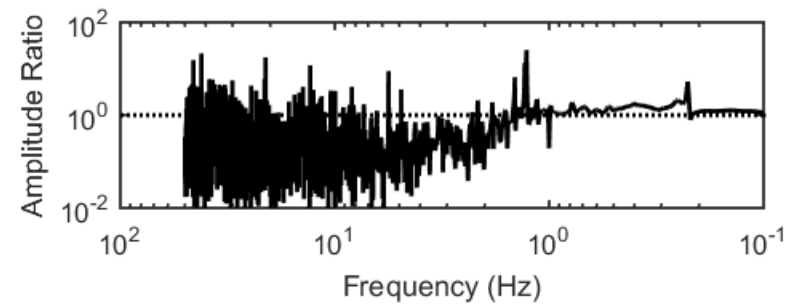
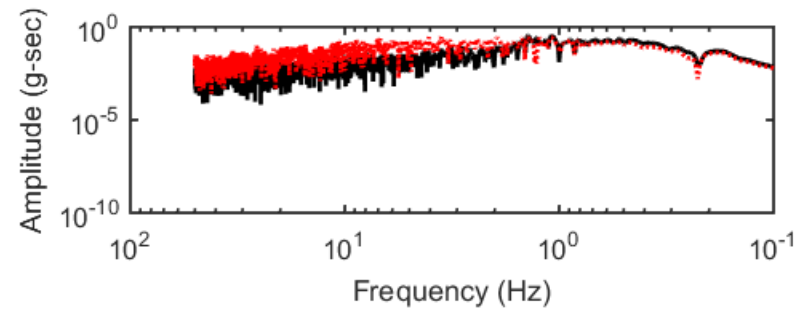
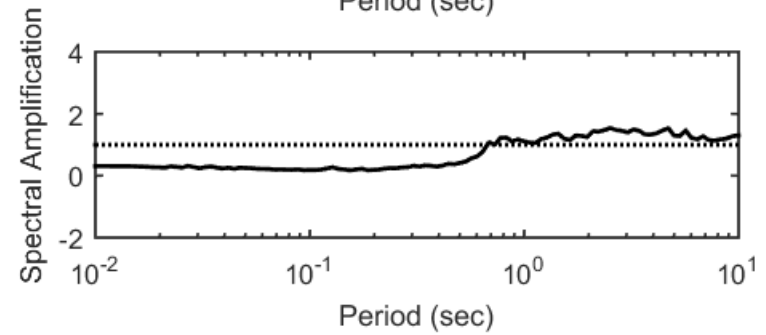
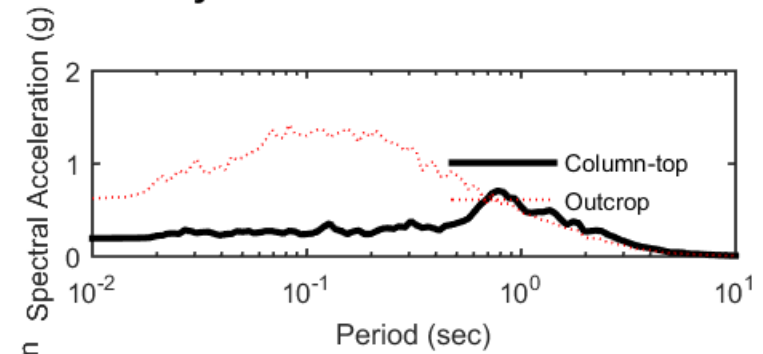
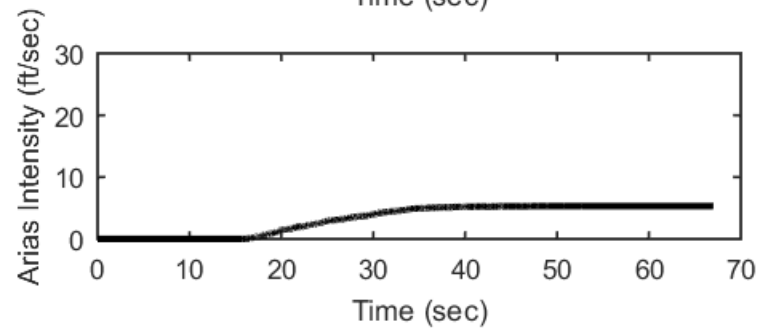
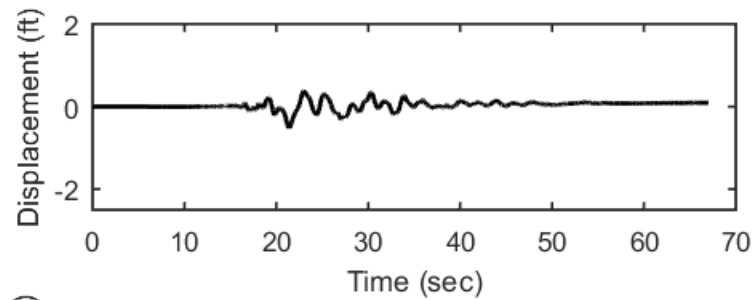
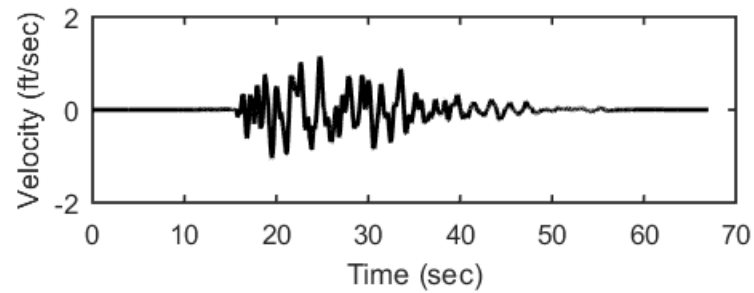
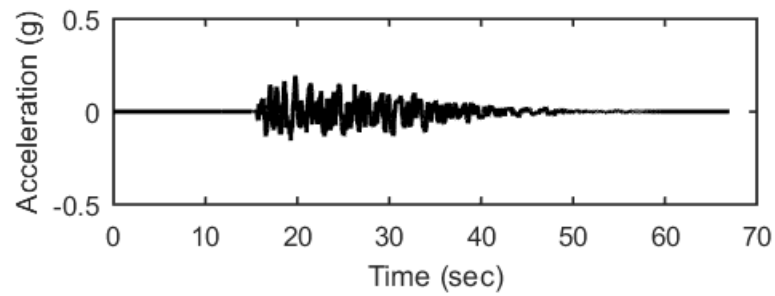
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



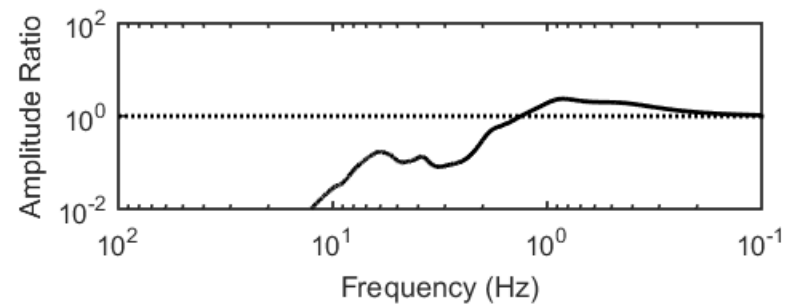
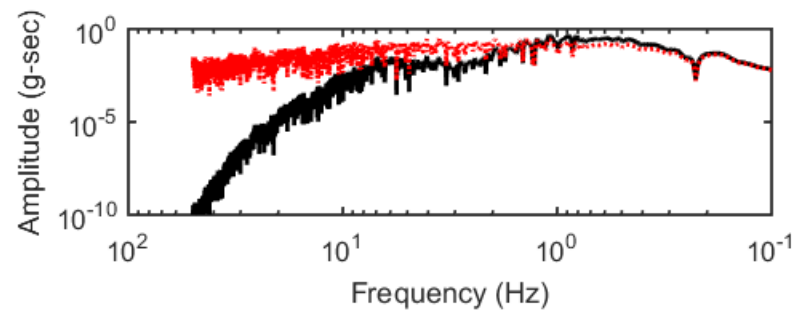
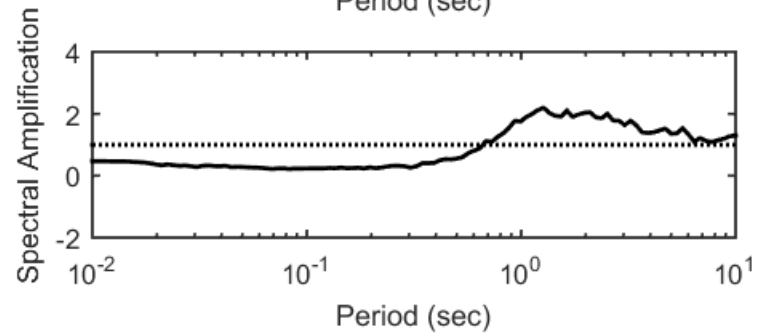
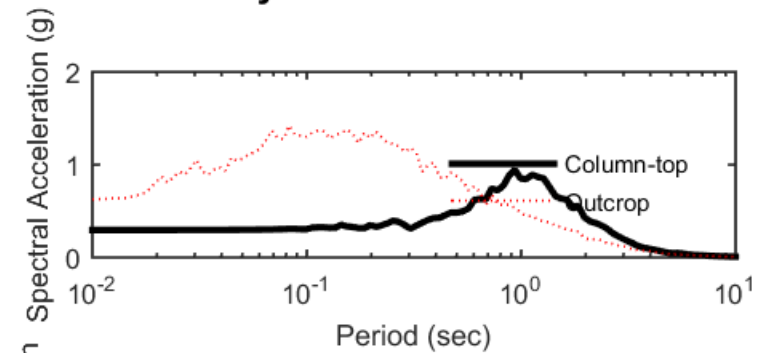
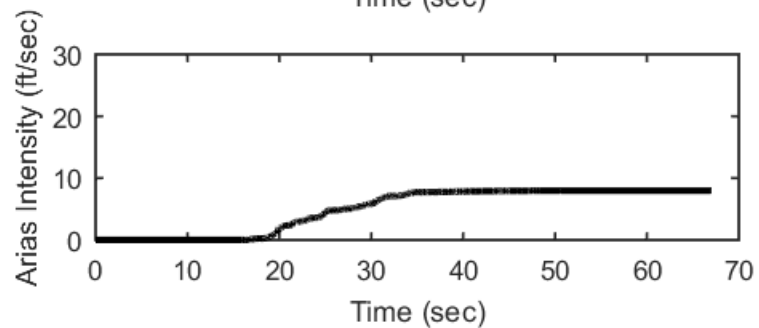
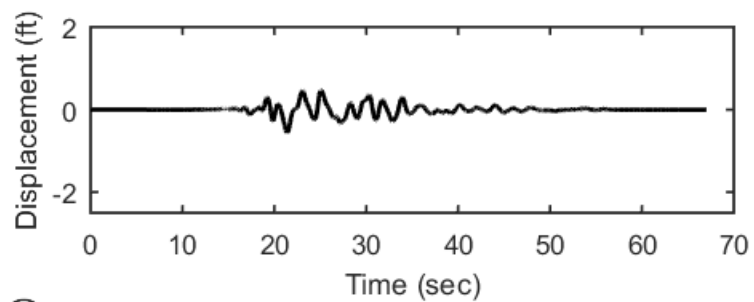
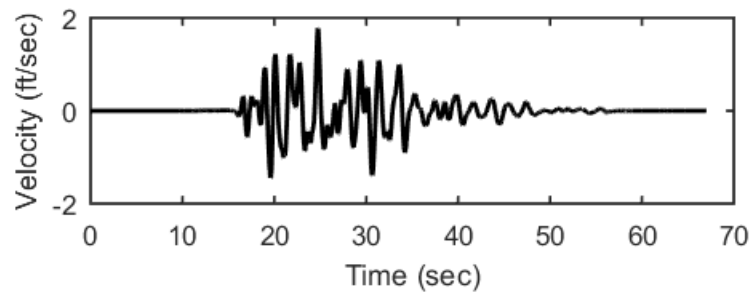
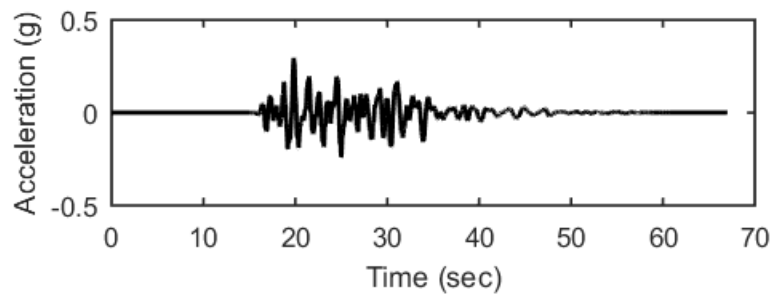
# Profile outputs for Motion: SEE1



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2

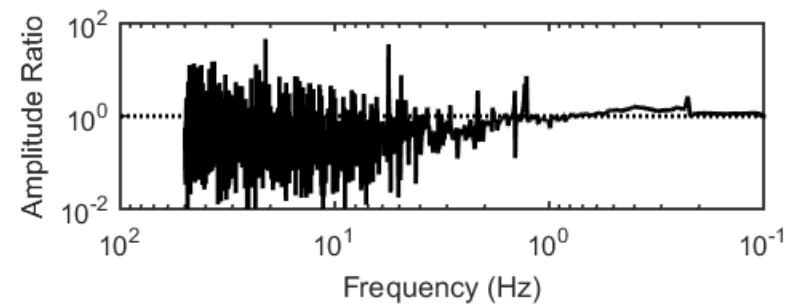
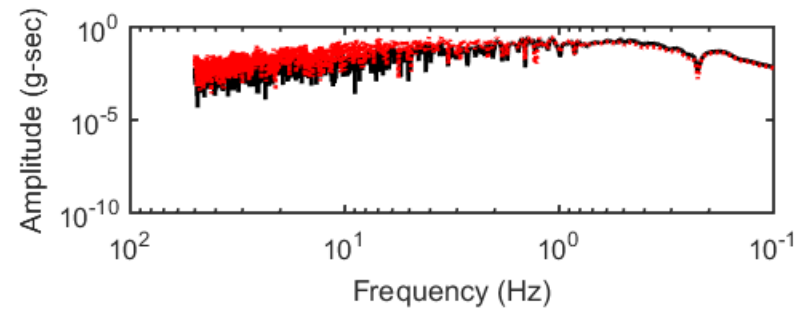
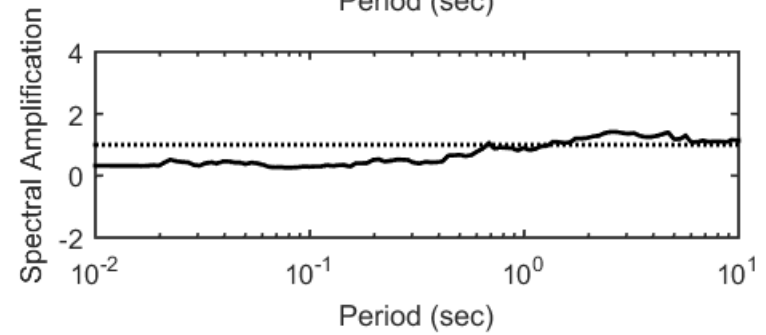
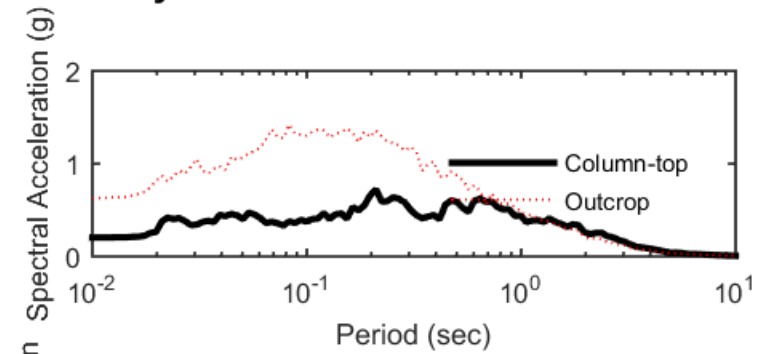
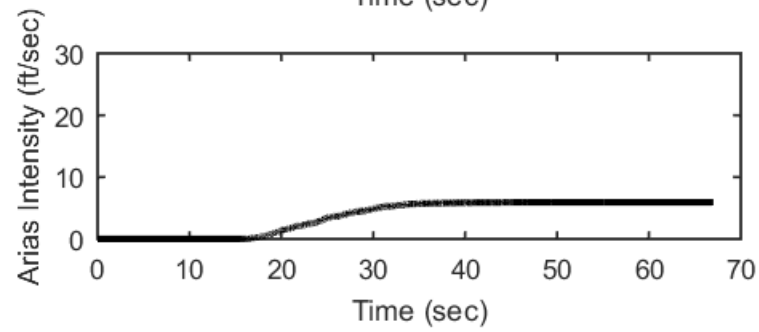
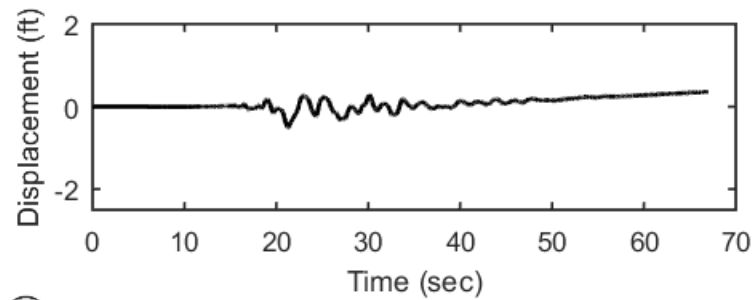
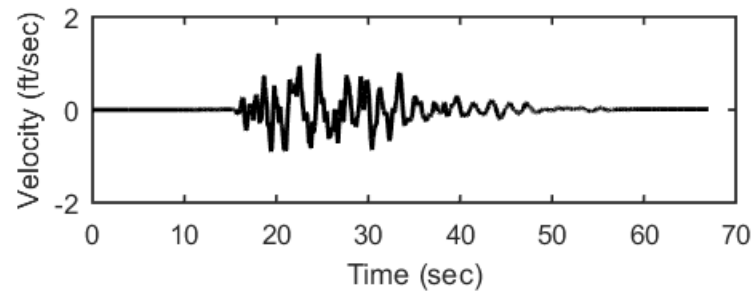
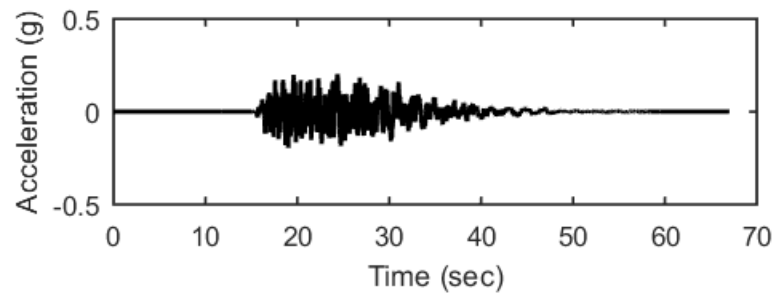


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2

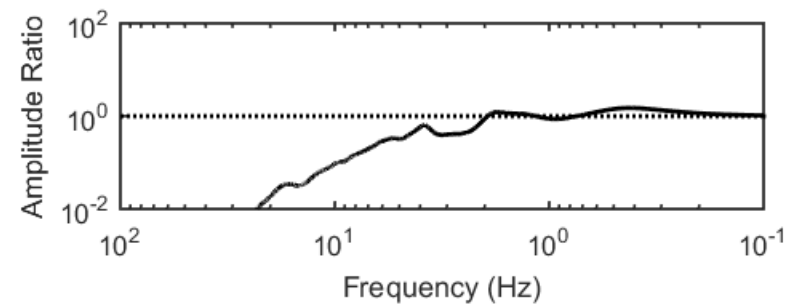
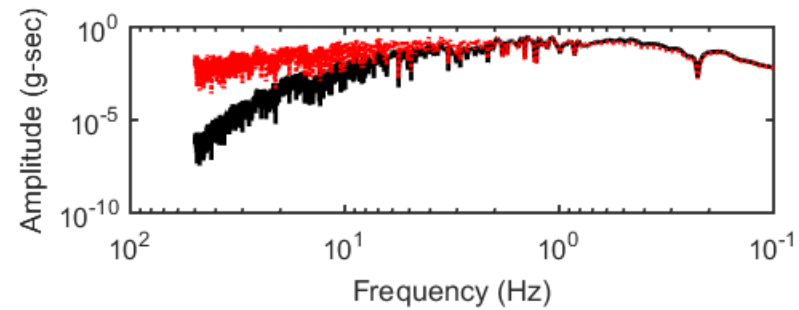
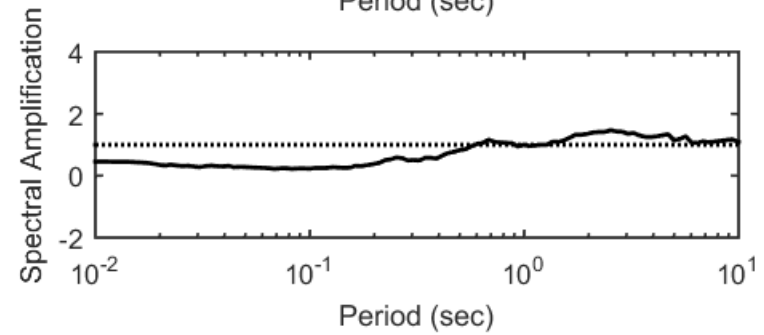
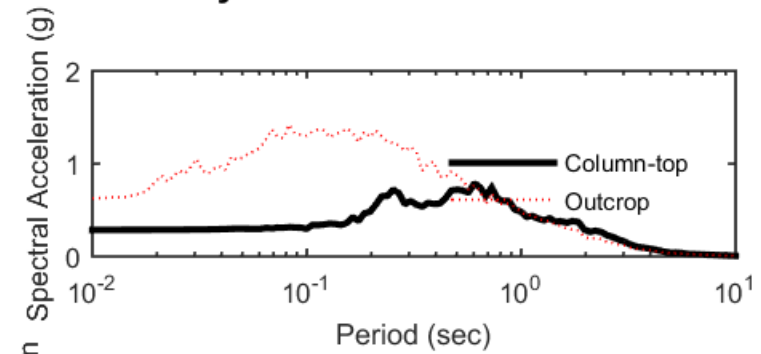
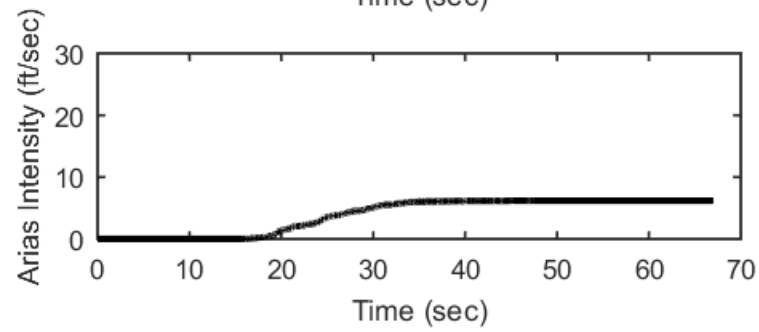
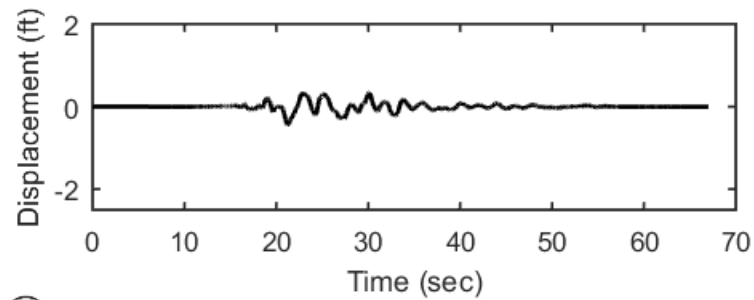
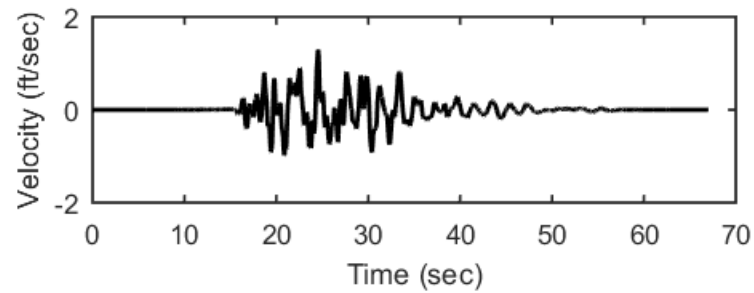
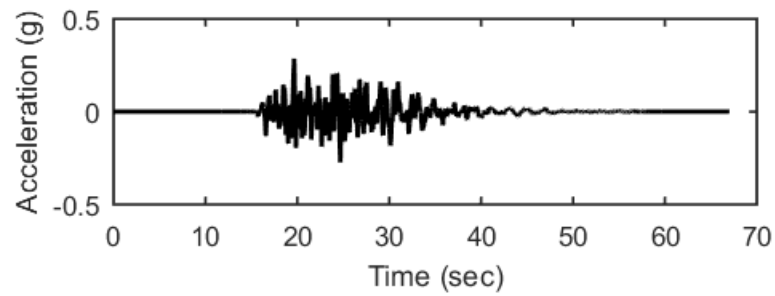




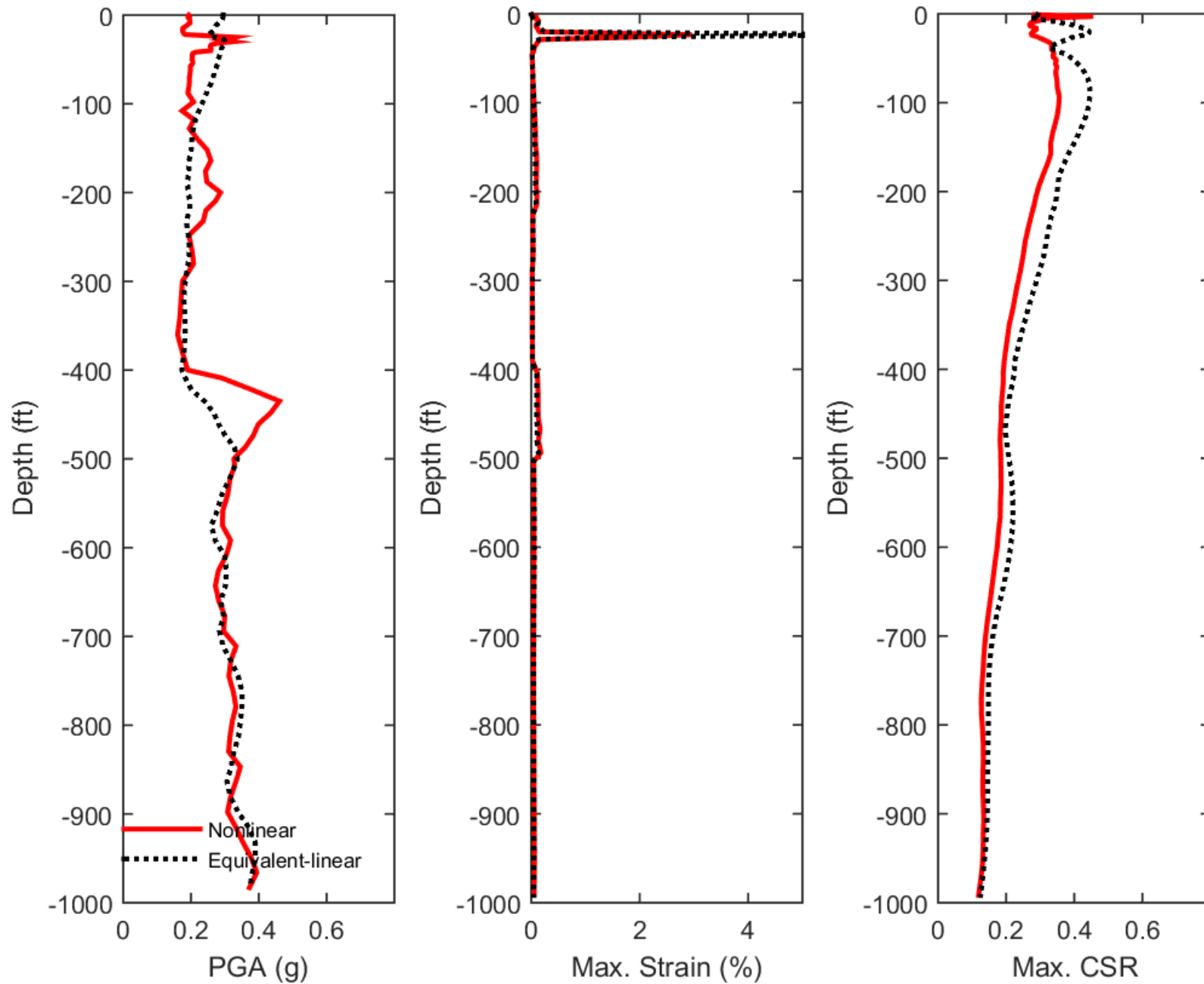
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



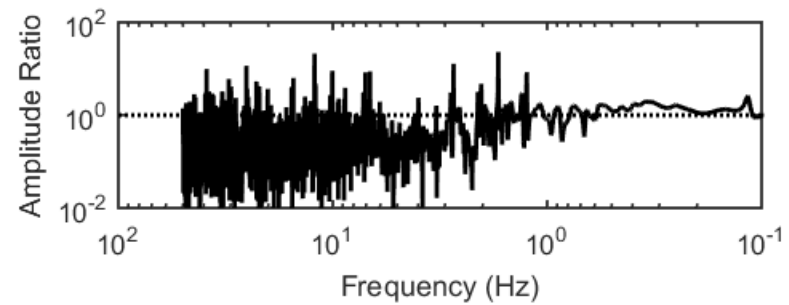
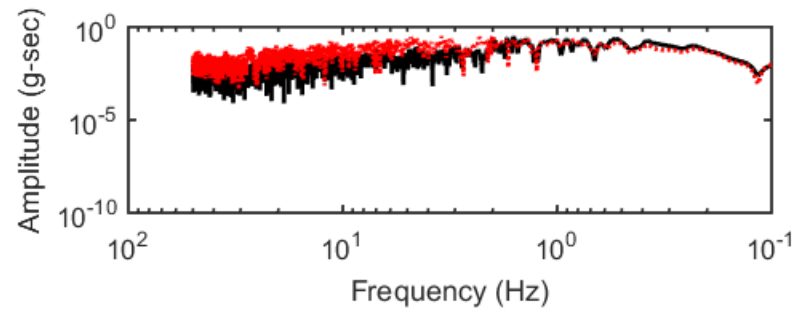
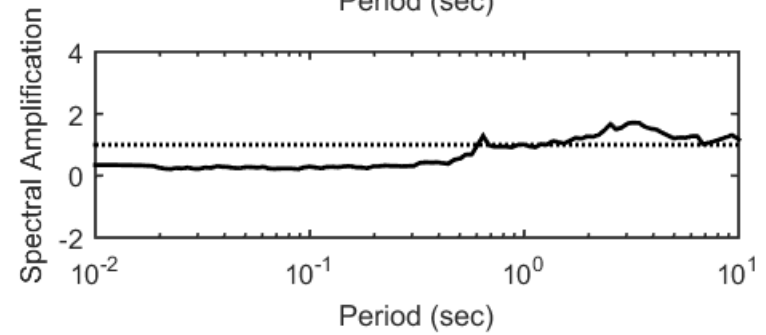
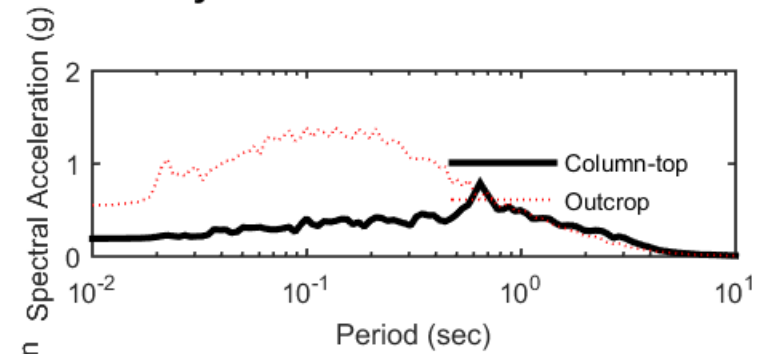
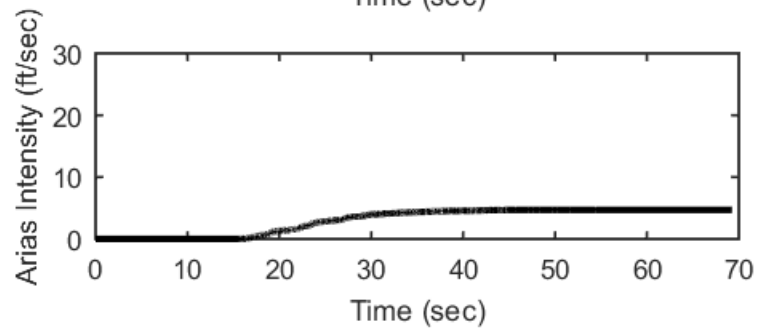
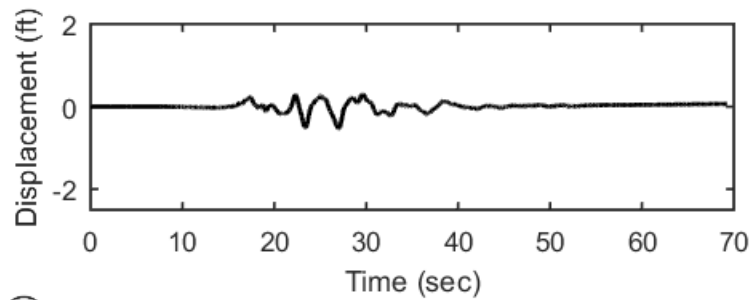
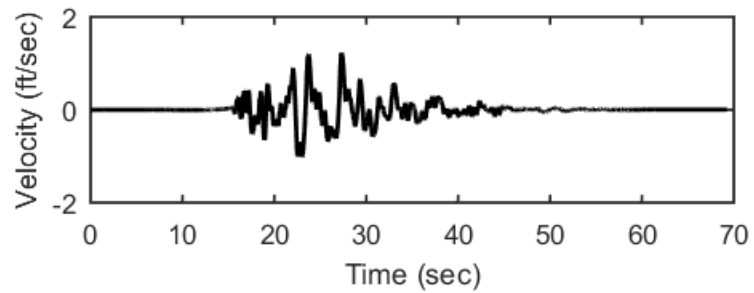
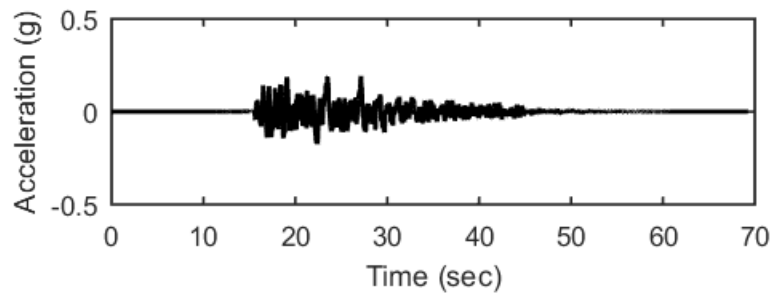
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



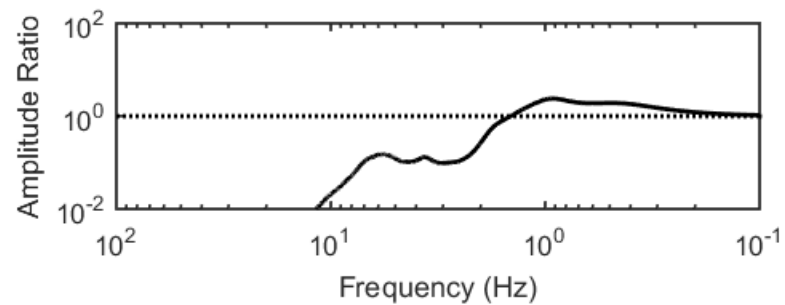
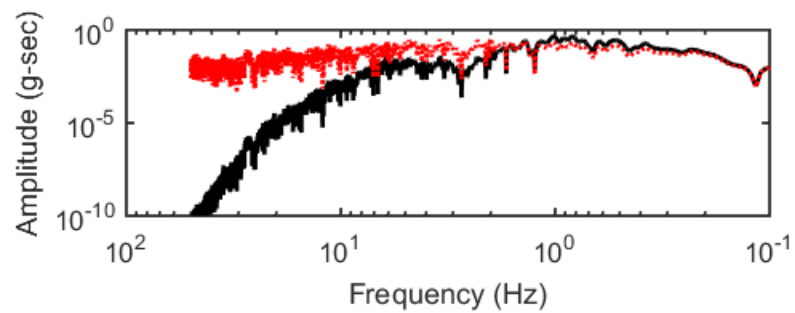
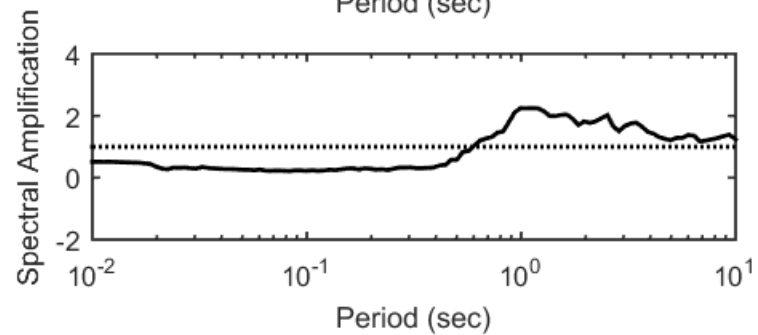
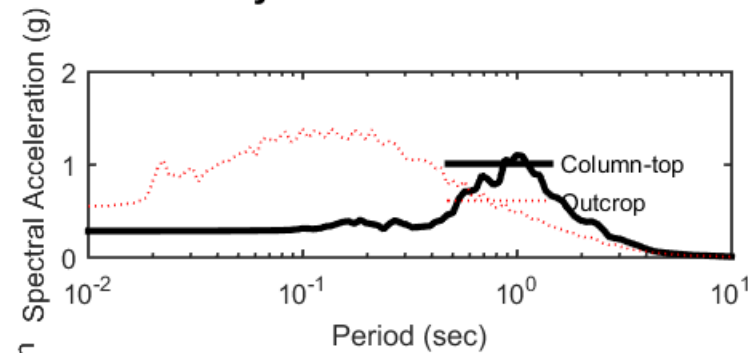
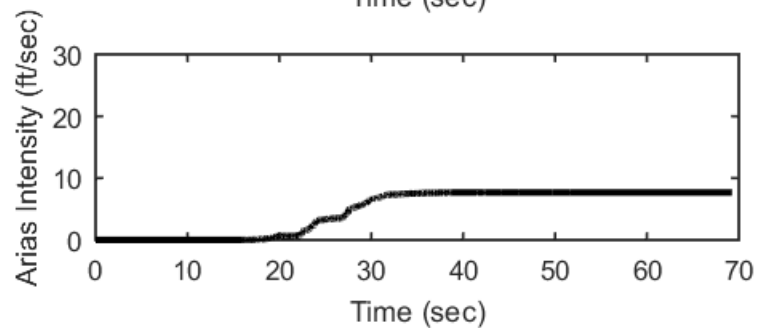
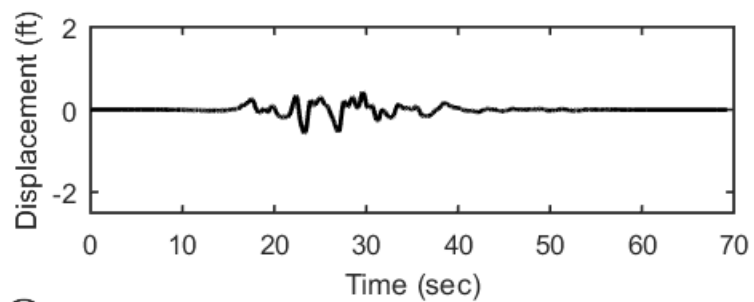
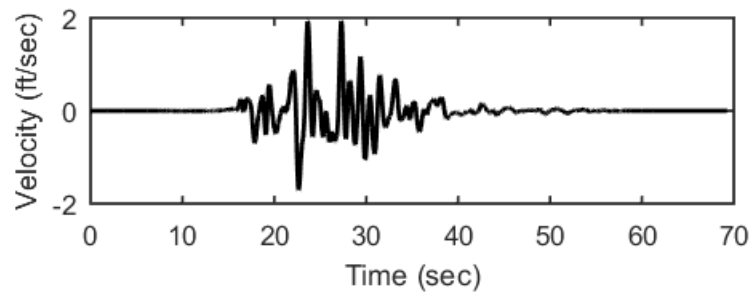
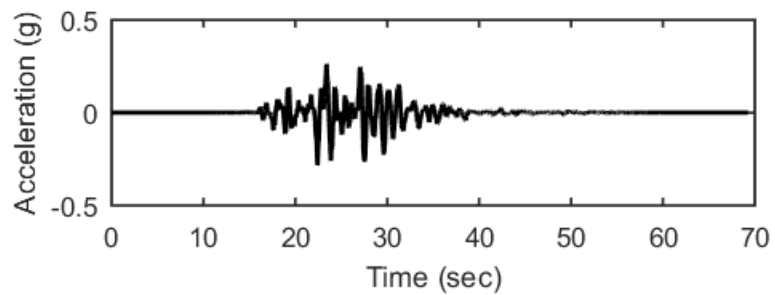
### Profile outputs for Motion: SEE2



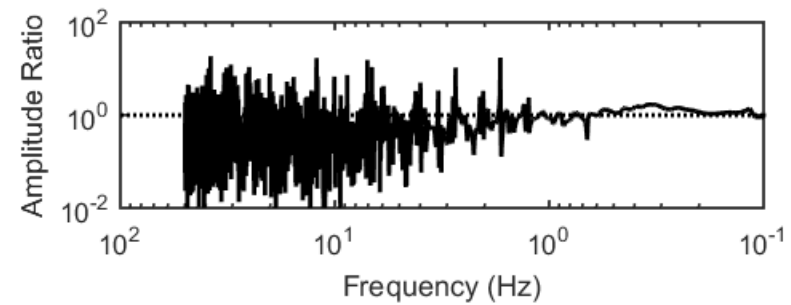
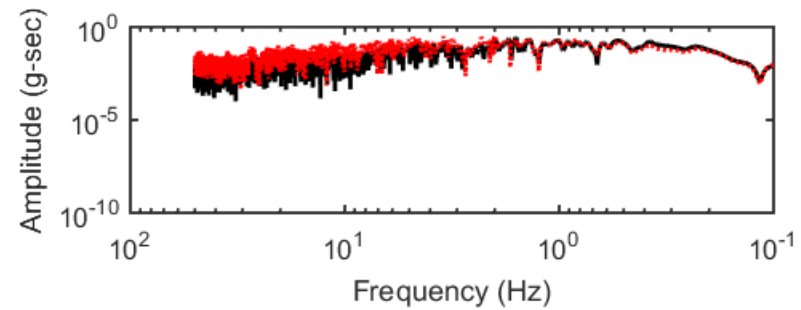
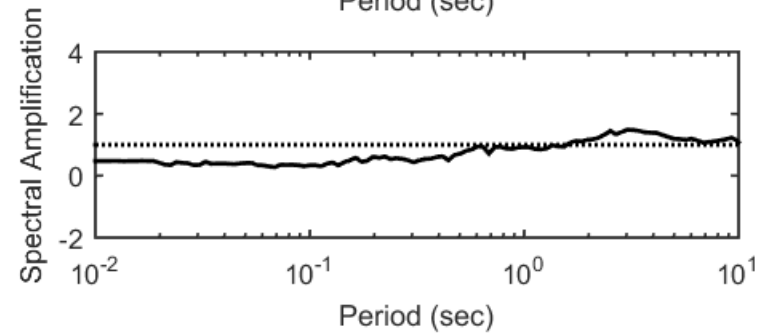
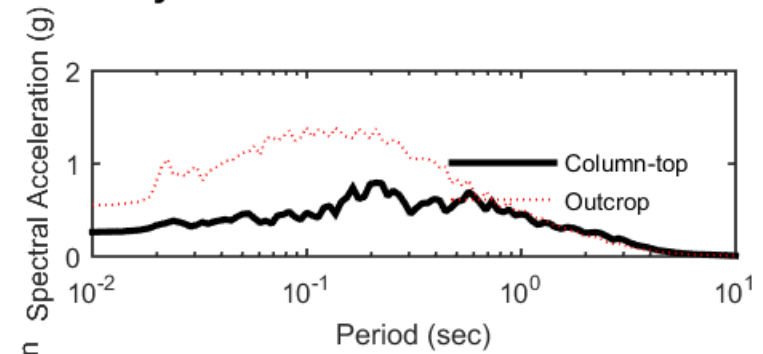
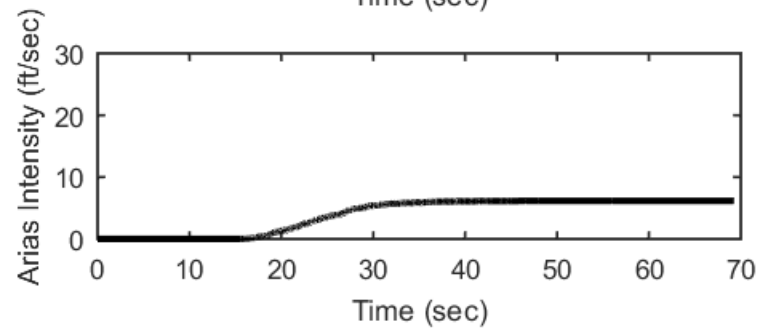
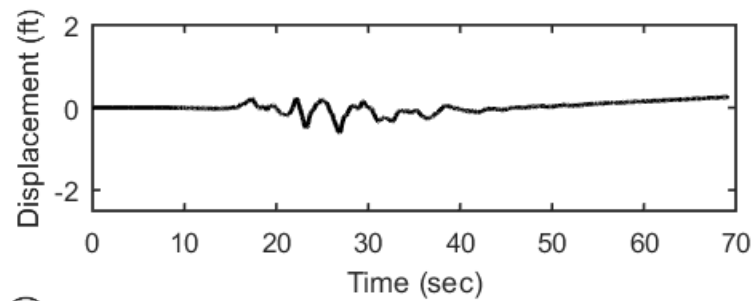
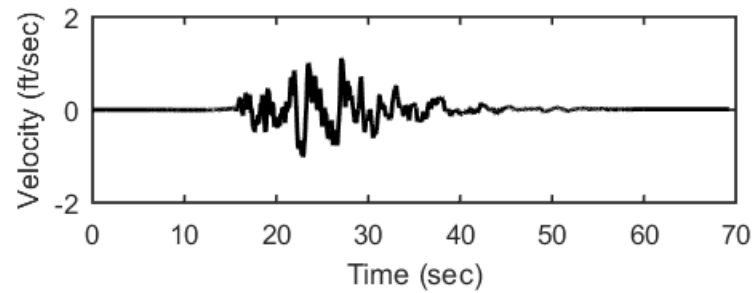
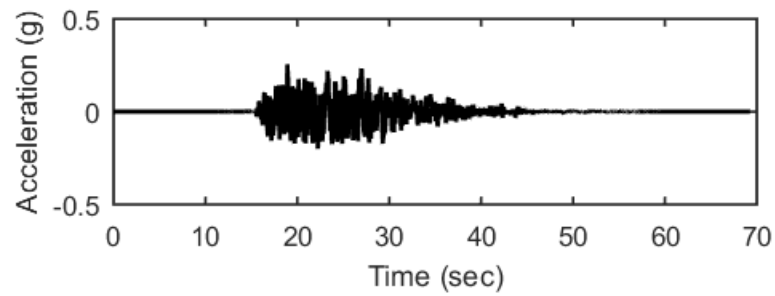
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



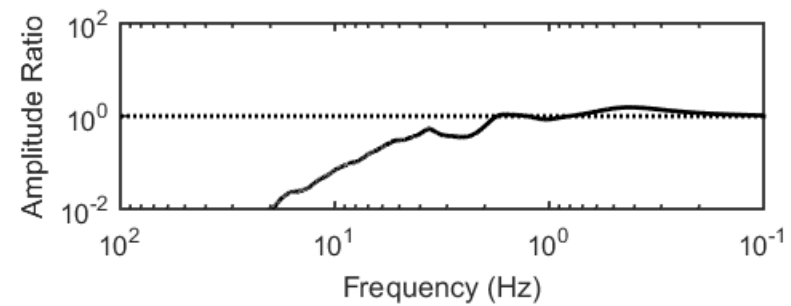
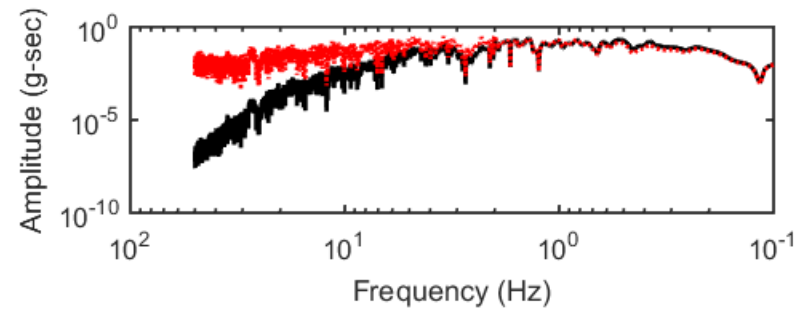
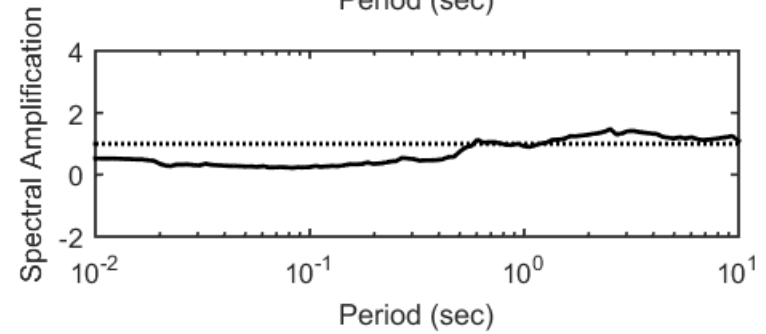
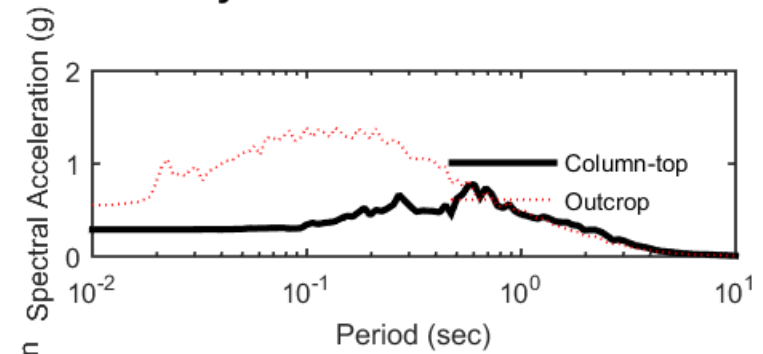
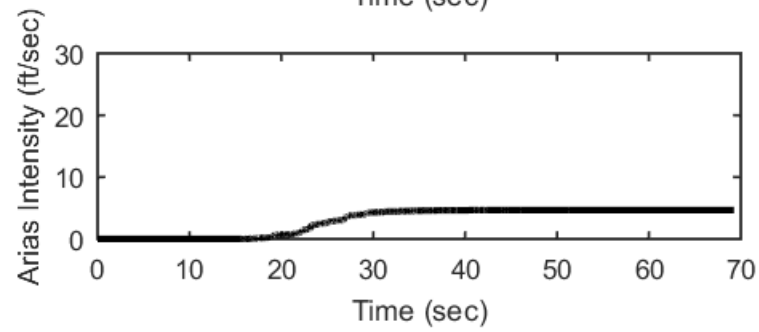
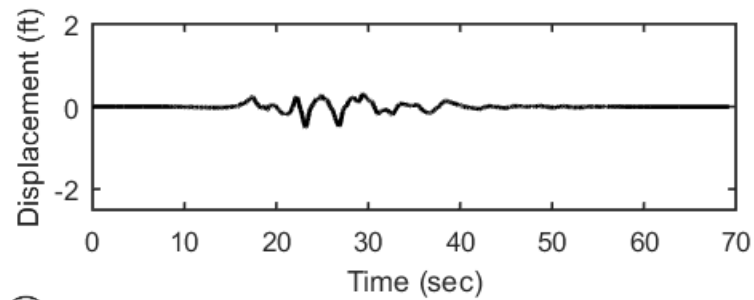
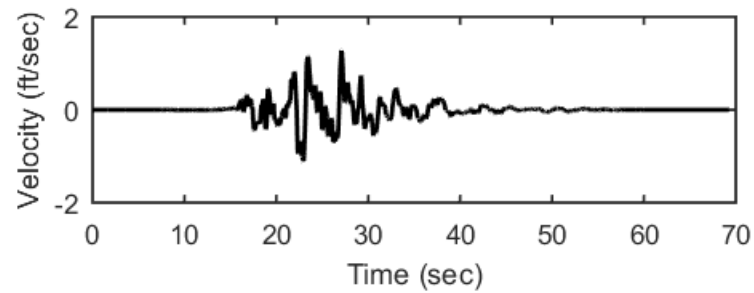
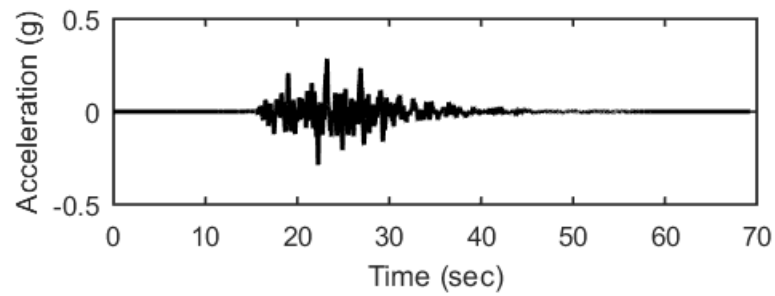
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



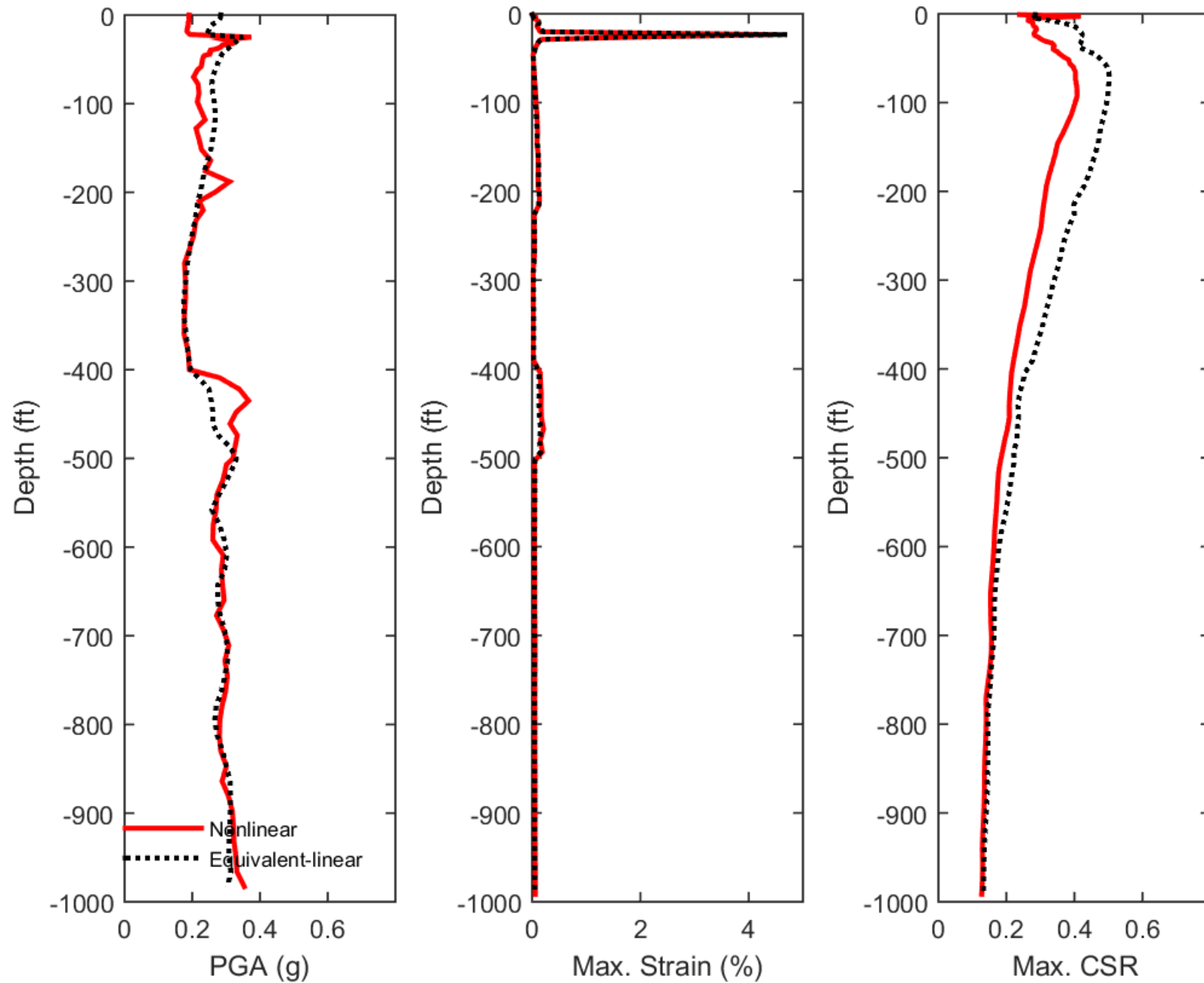
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3

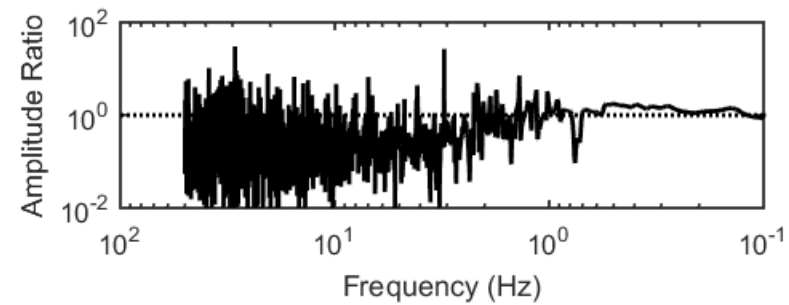
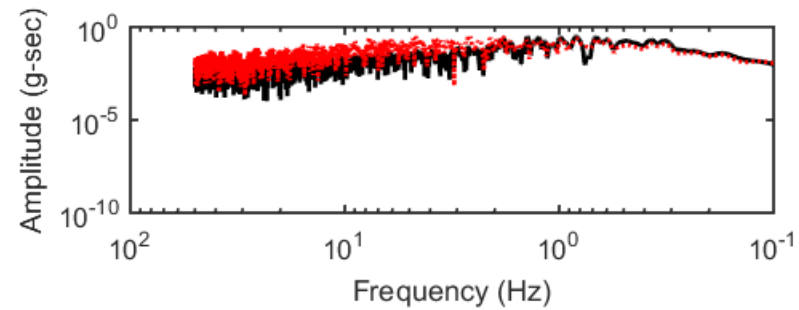
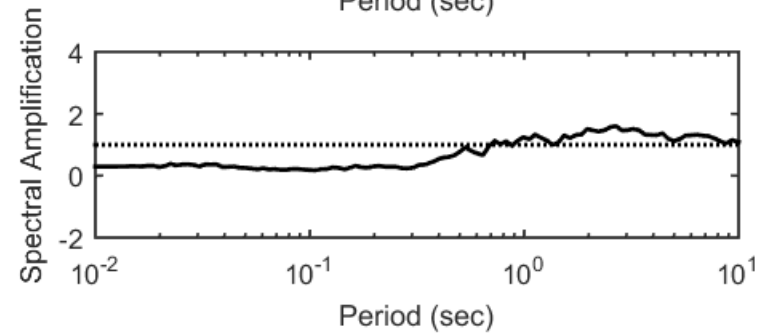
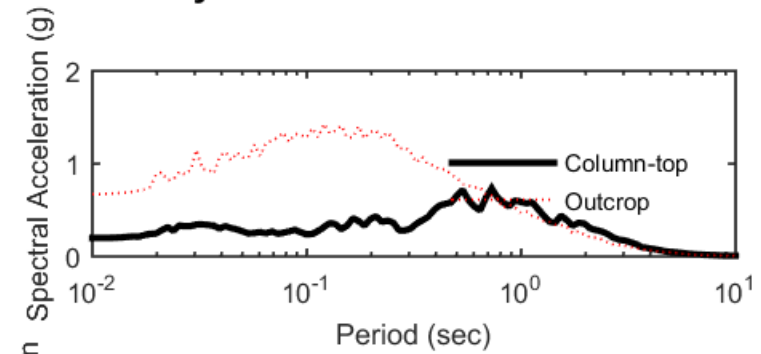
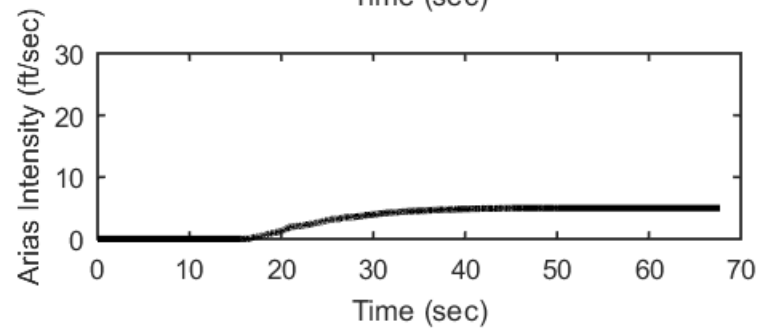
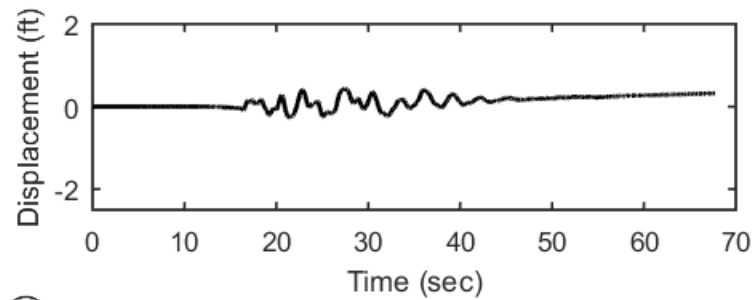
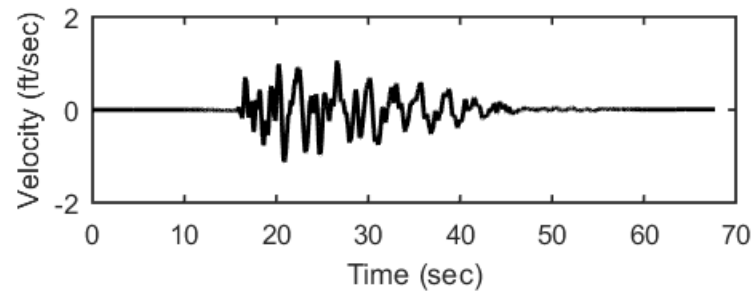
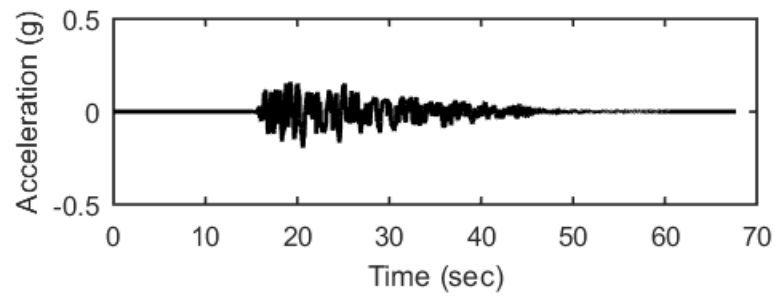


### Profile outputs for Motion: SEE3

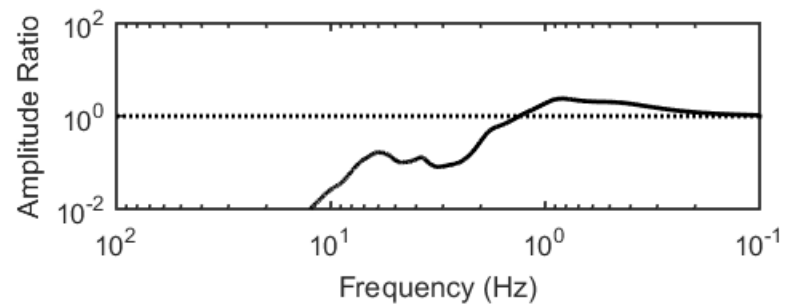
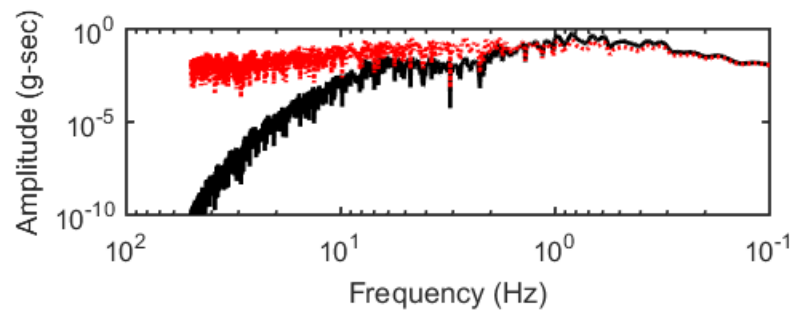
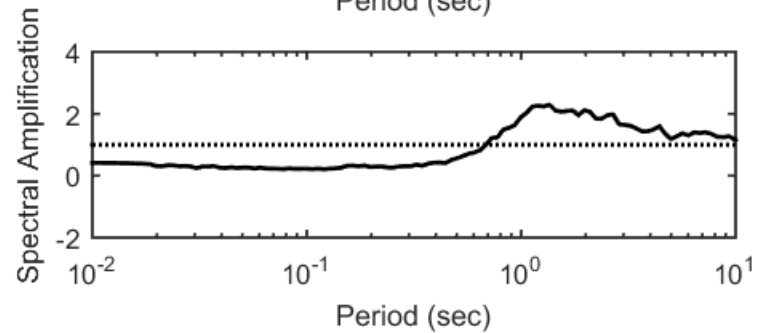
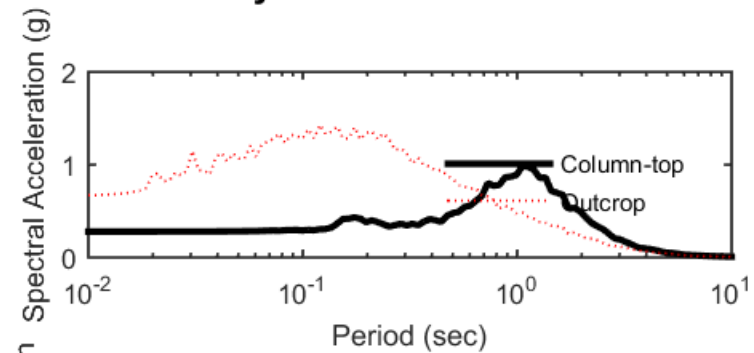
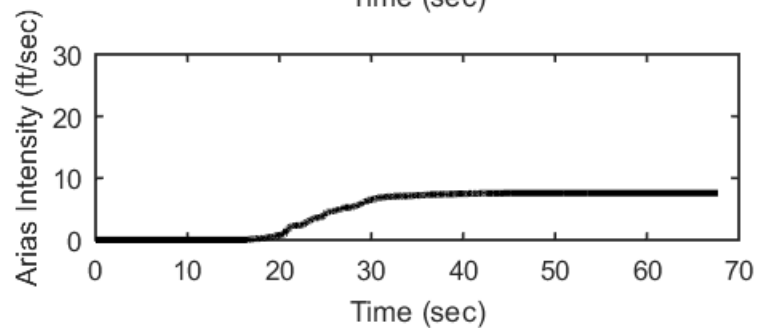
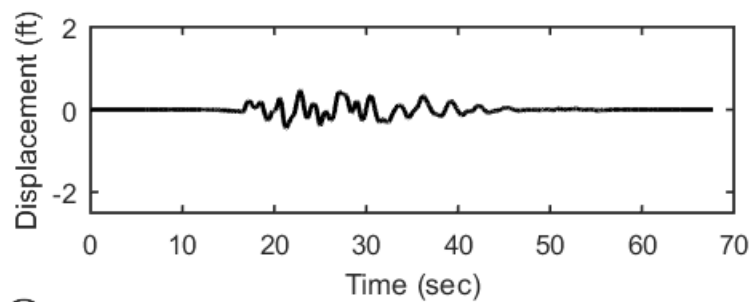
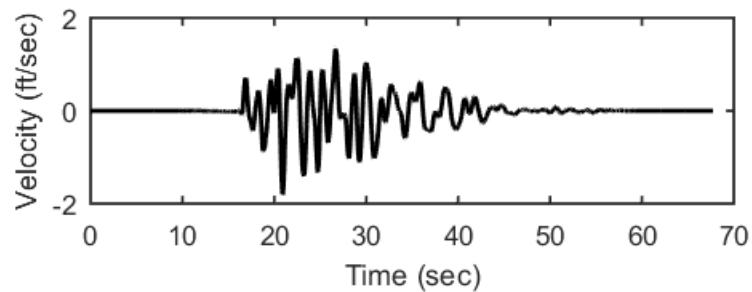
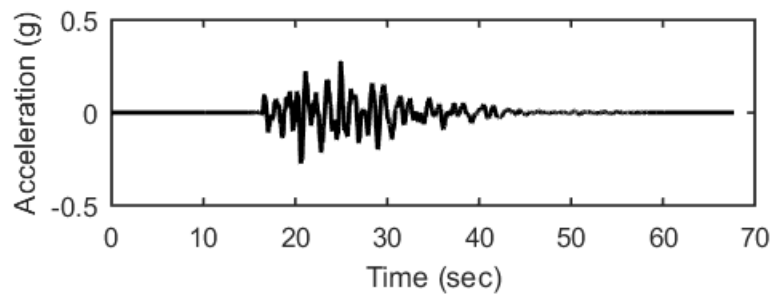




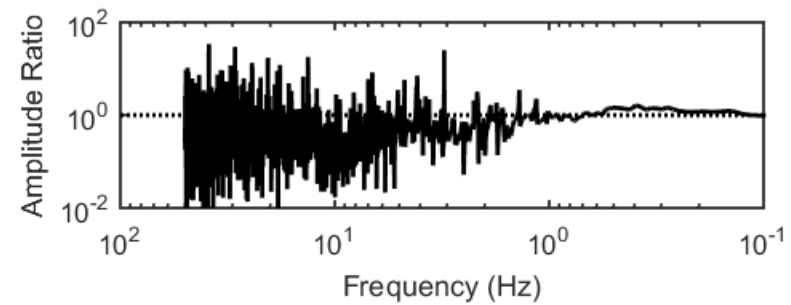
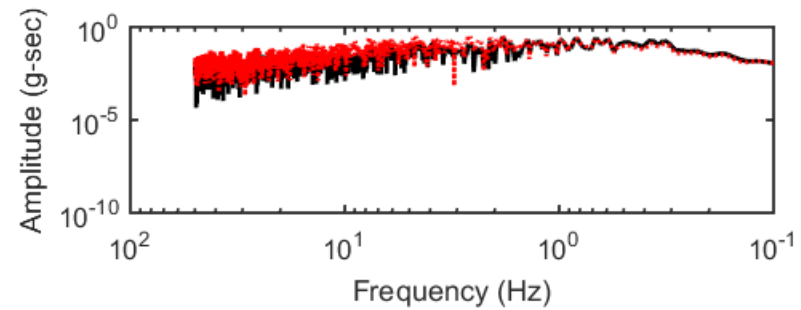
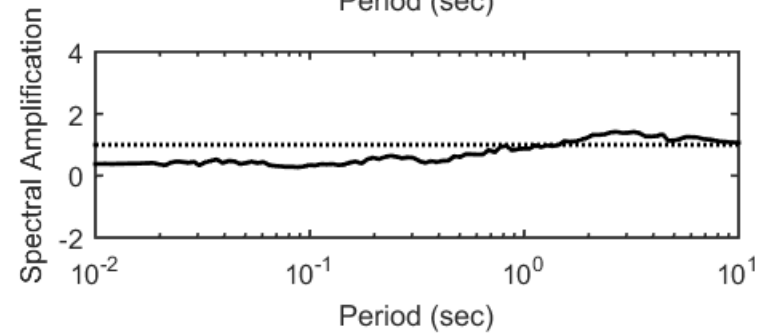
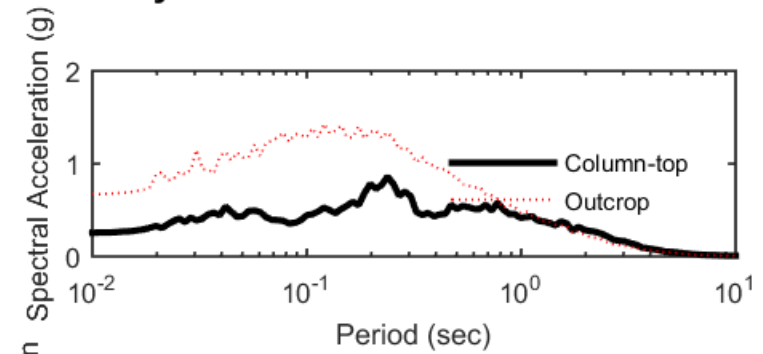
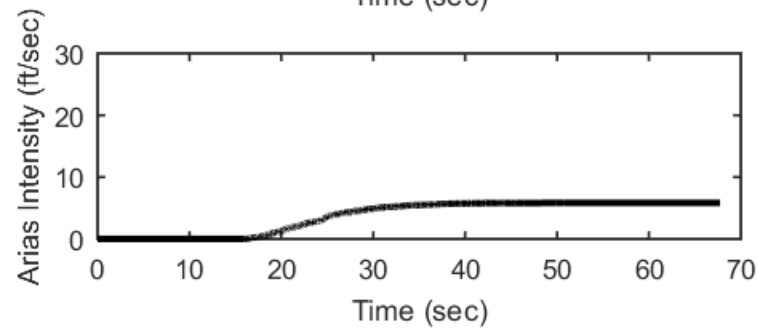
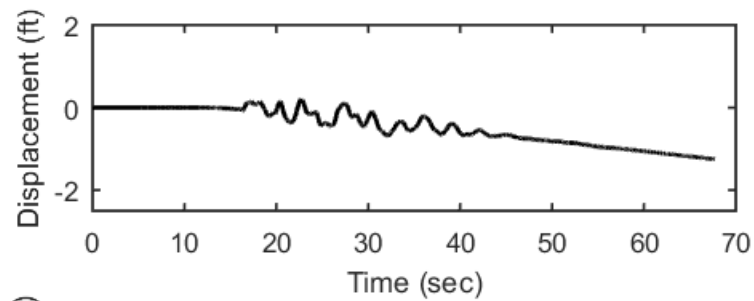
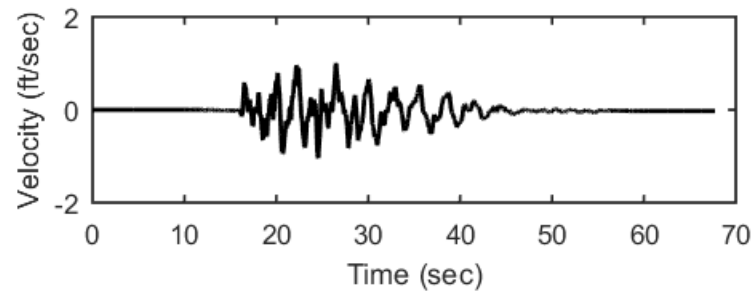
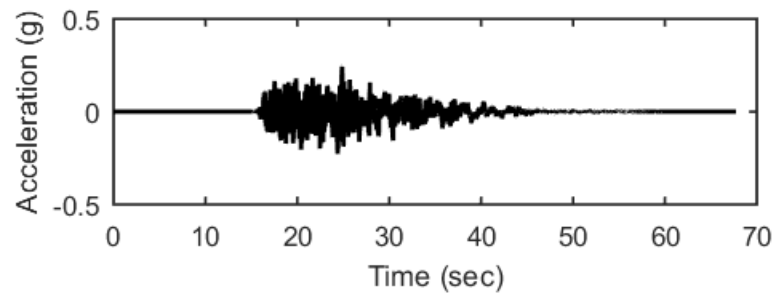
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



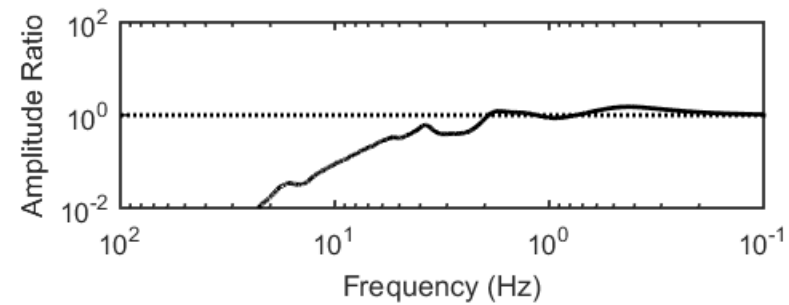
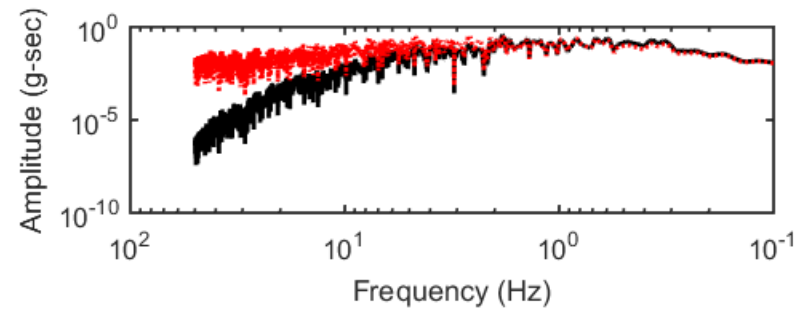
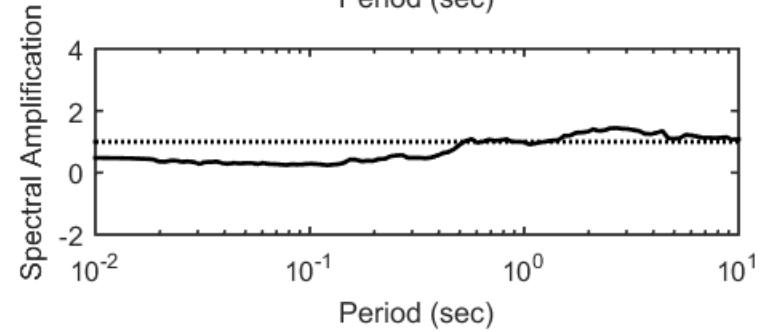
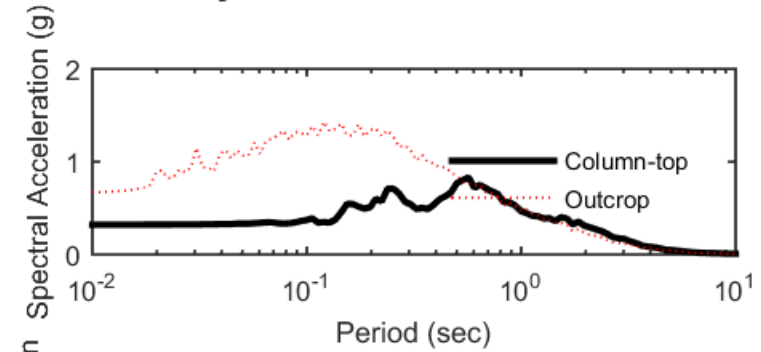
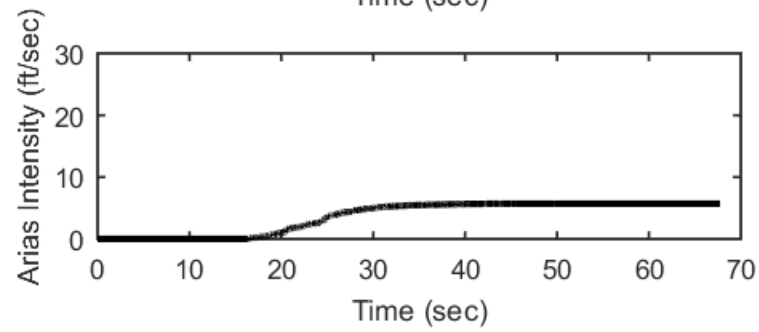
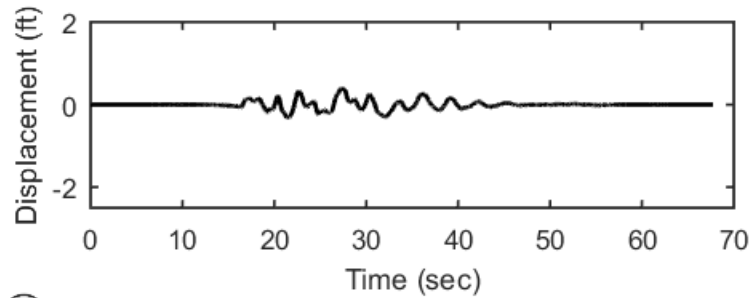
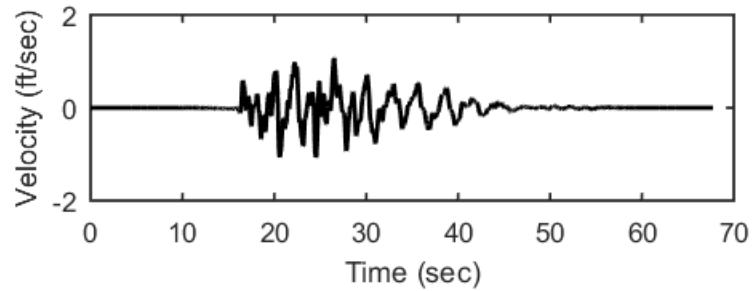
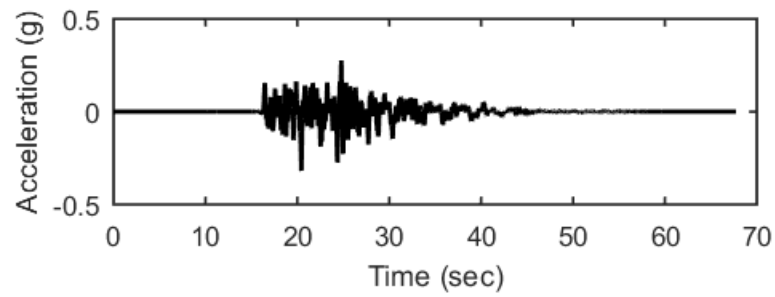
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



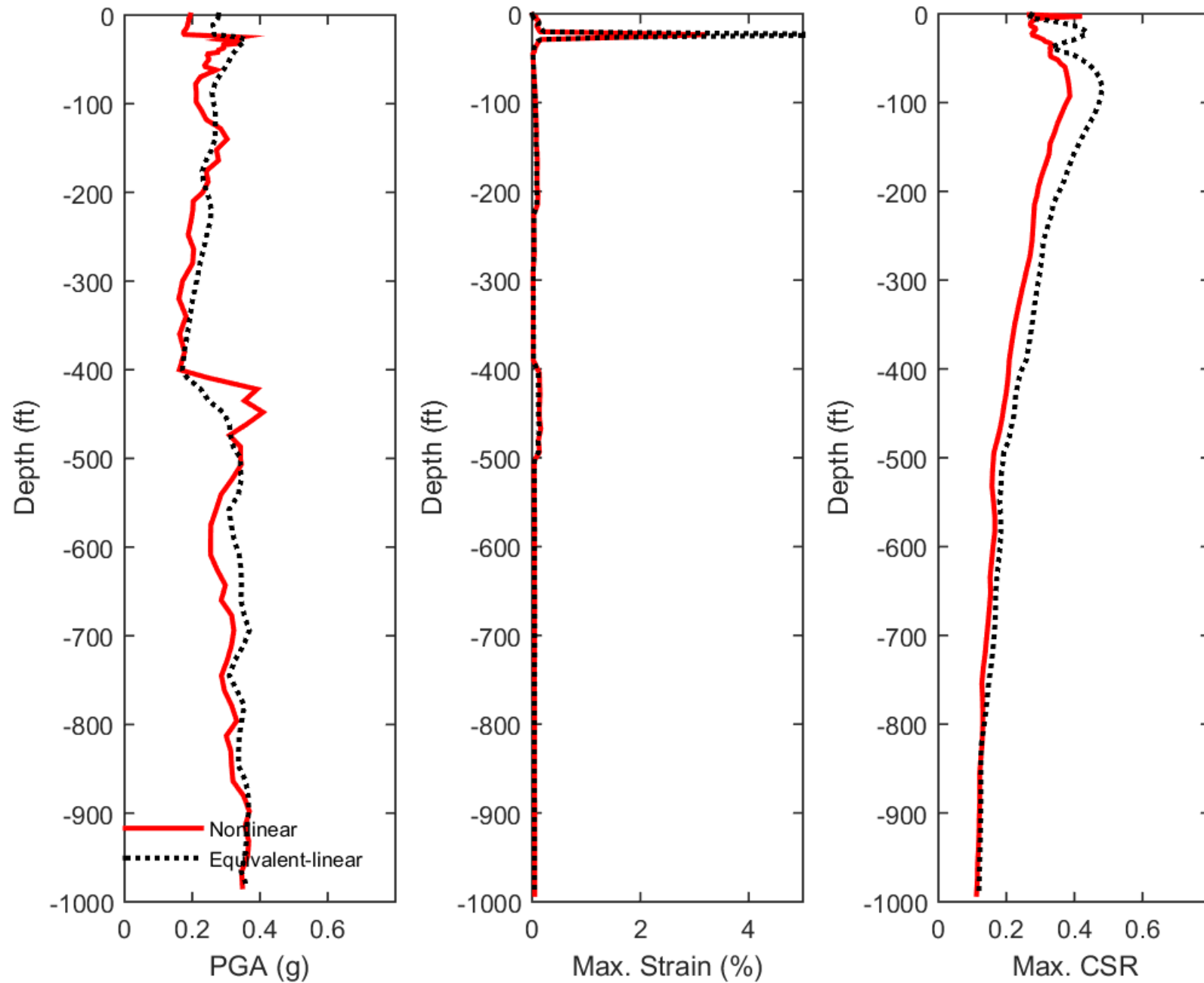
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



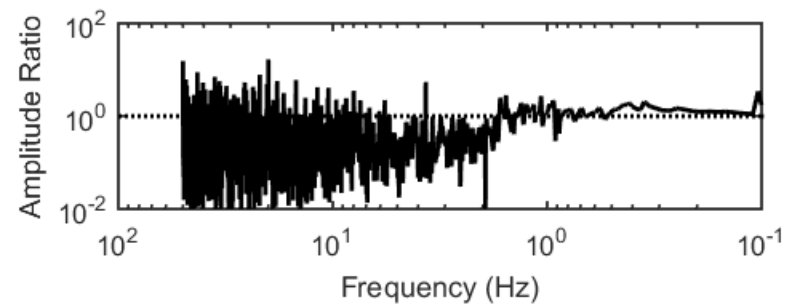
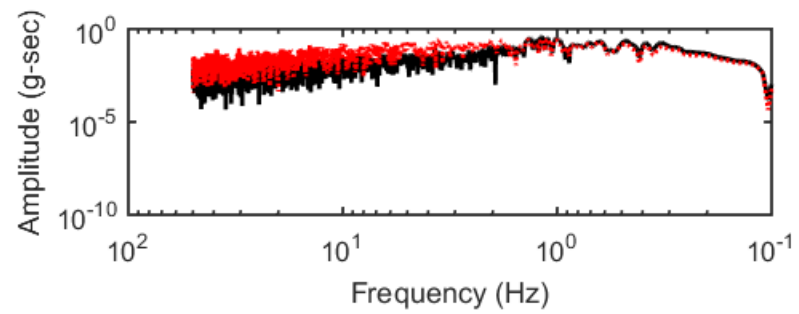
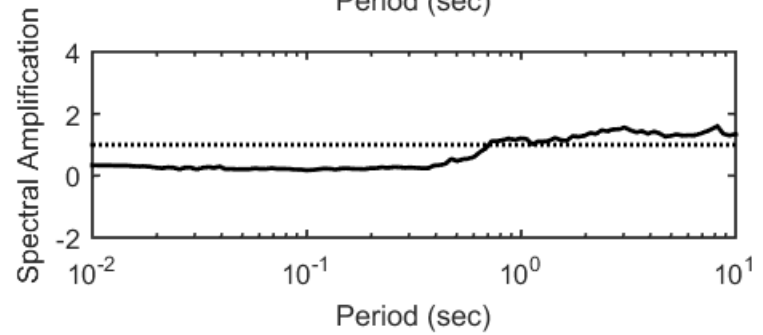
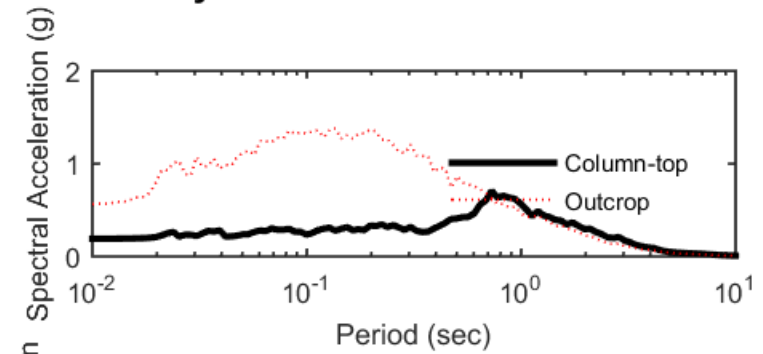
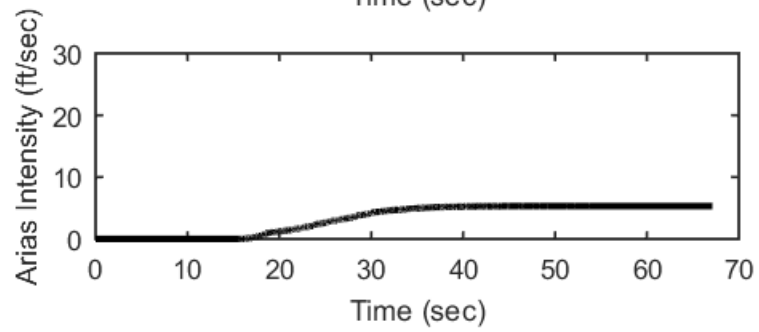
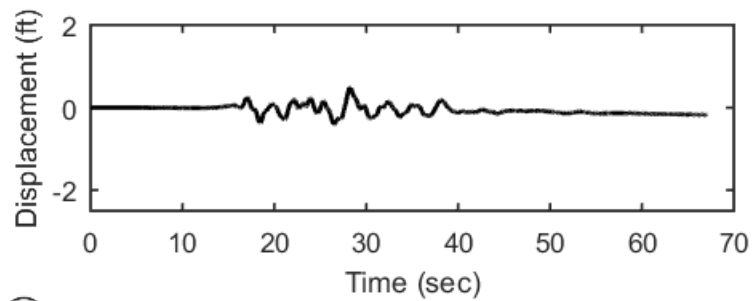
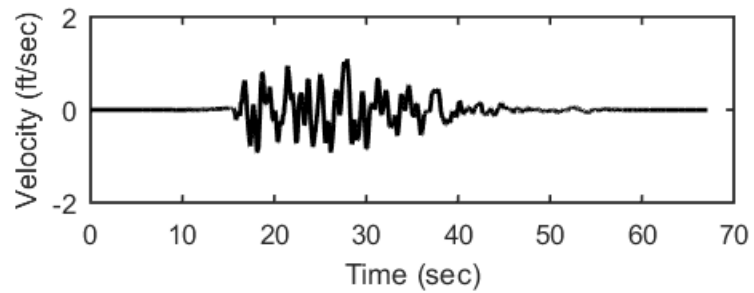
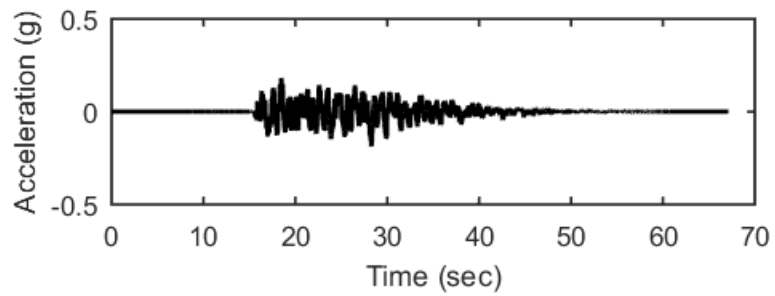
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



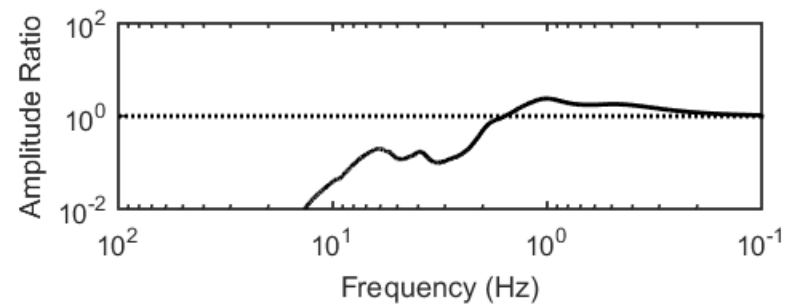
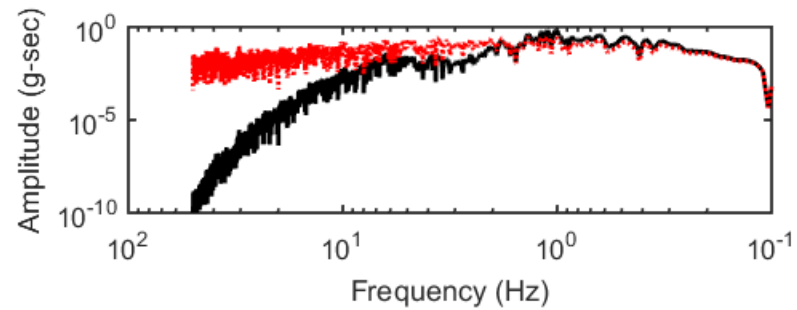
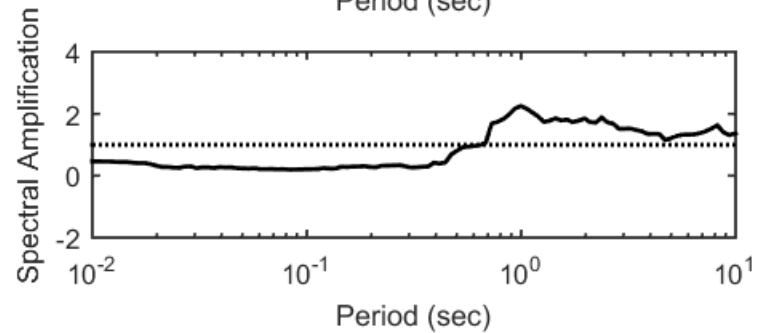
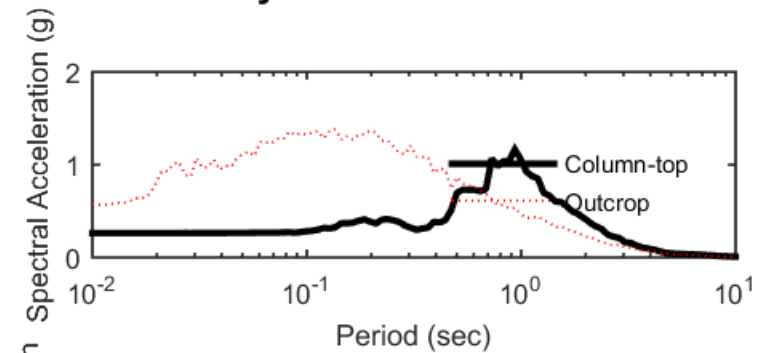
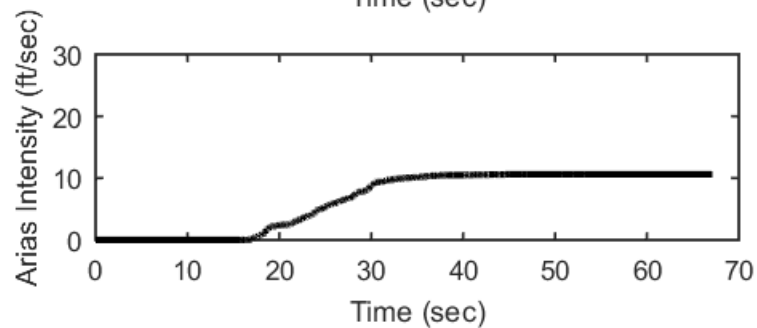
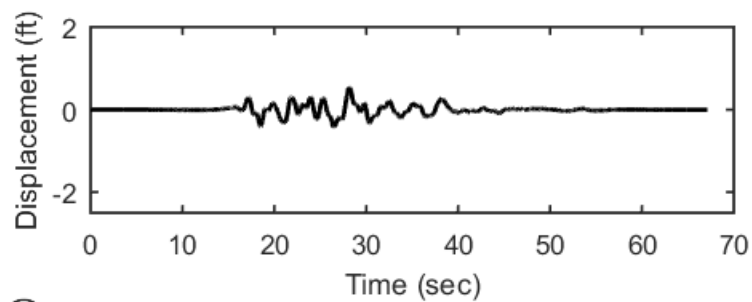
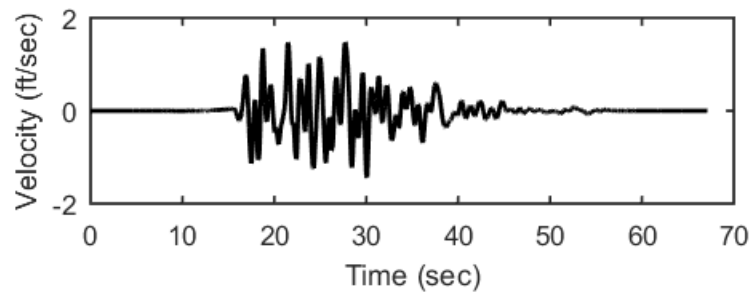
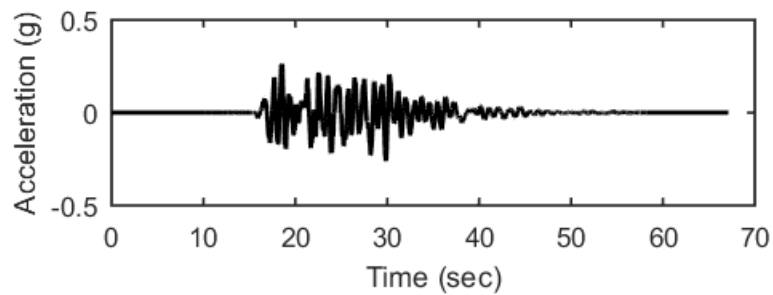
### Profile outputs for Motion: SEE4



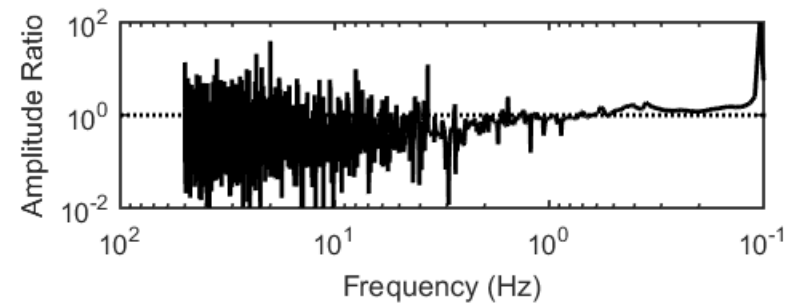
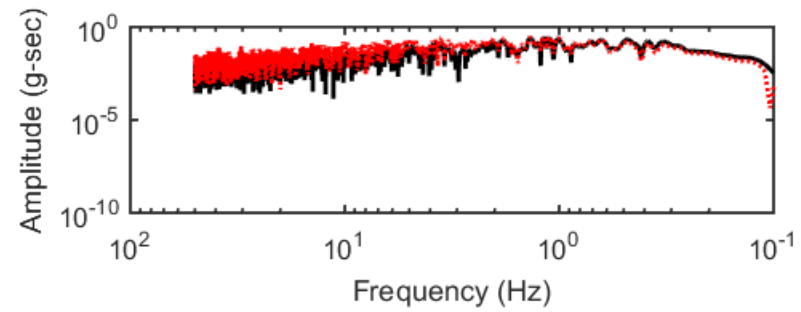
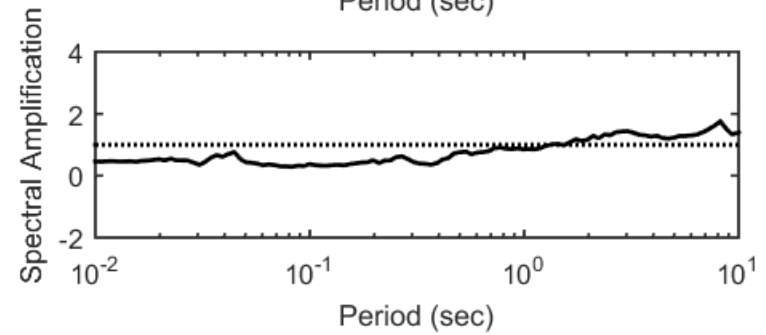
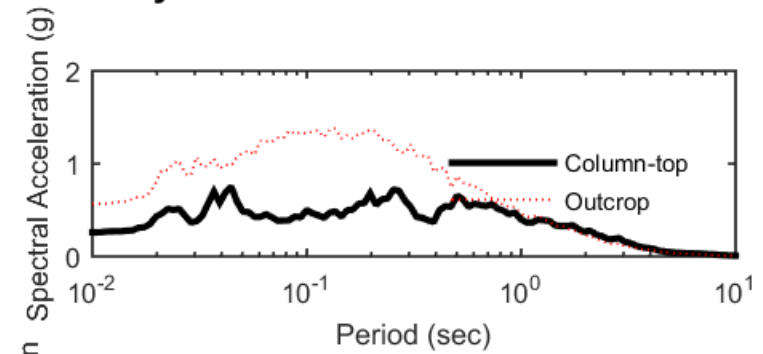
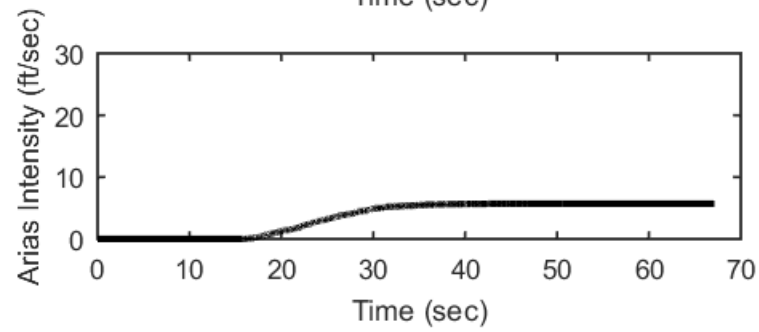
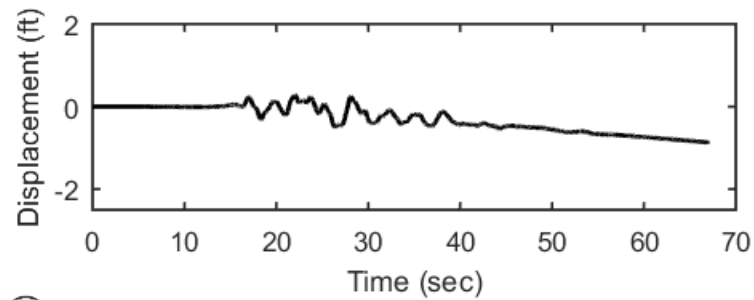
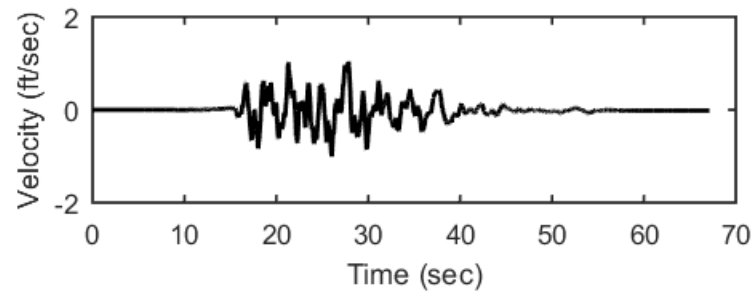
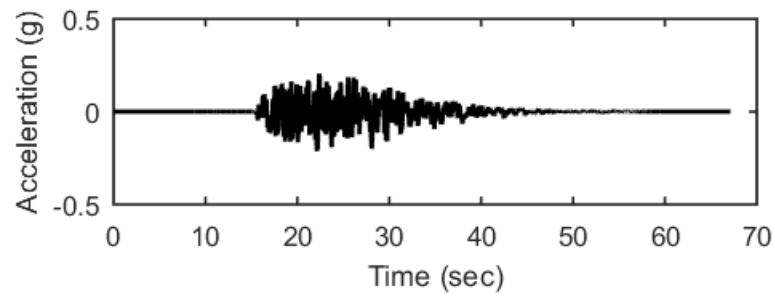
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5

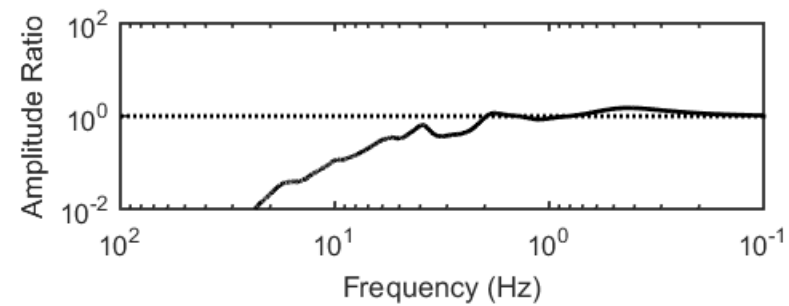
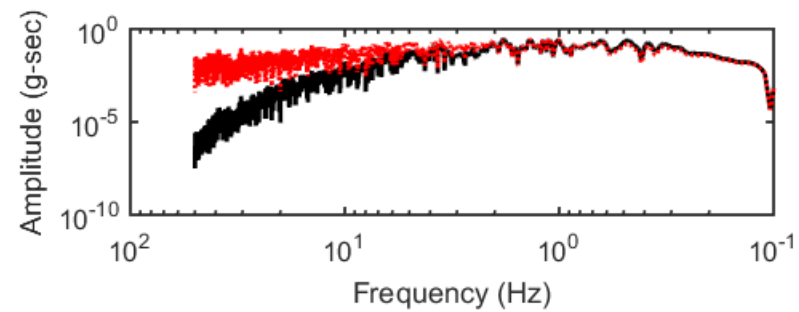
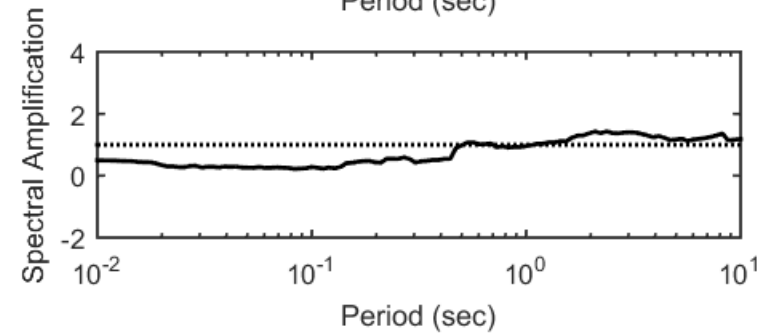
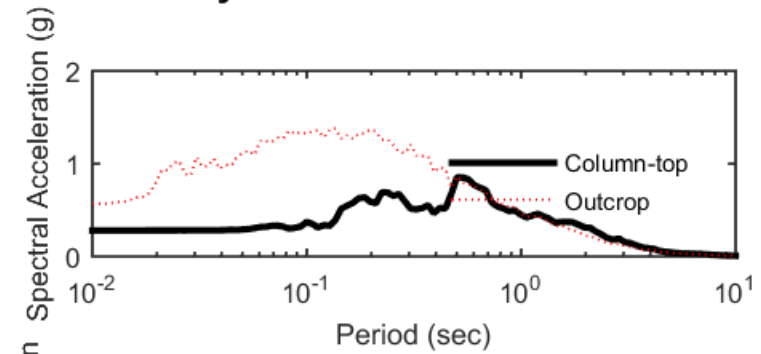
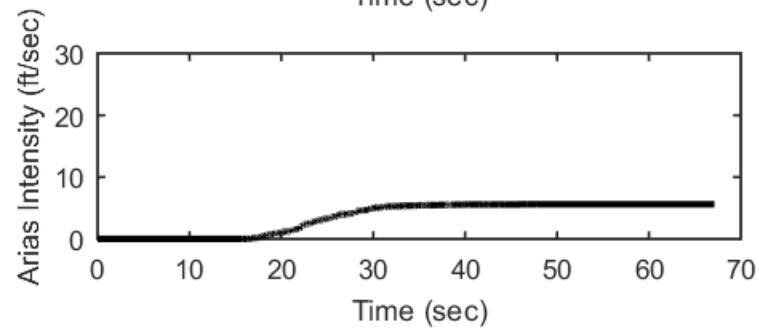
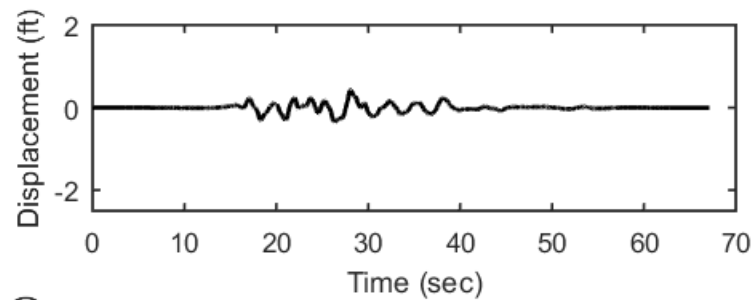
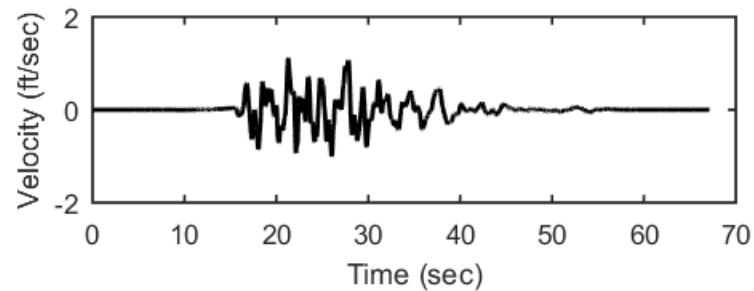
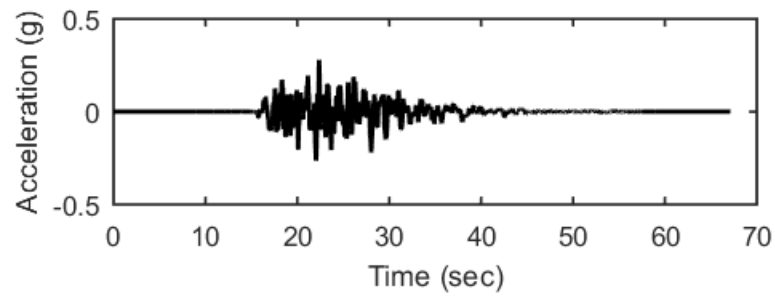


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5

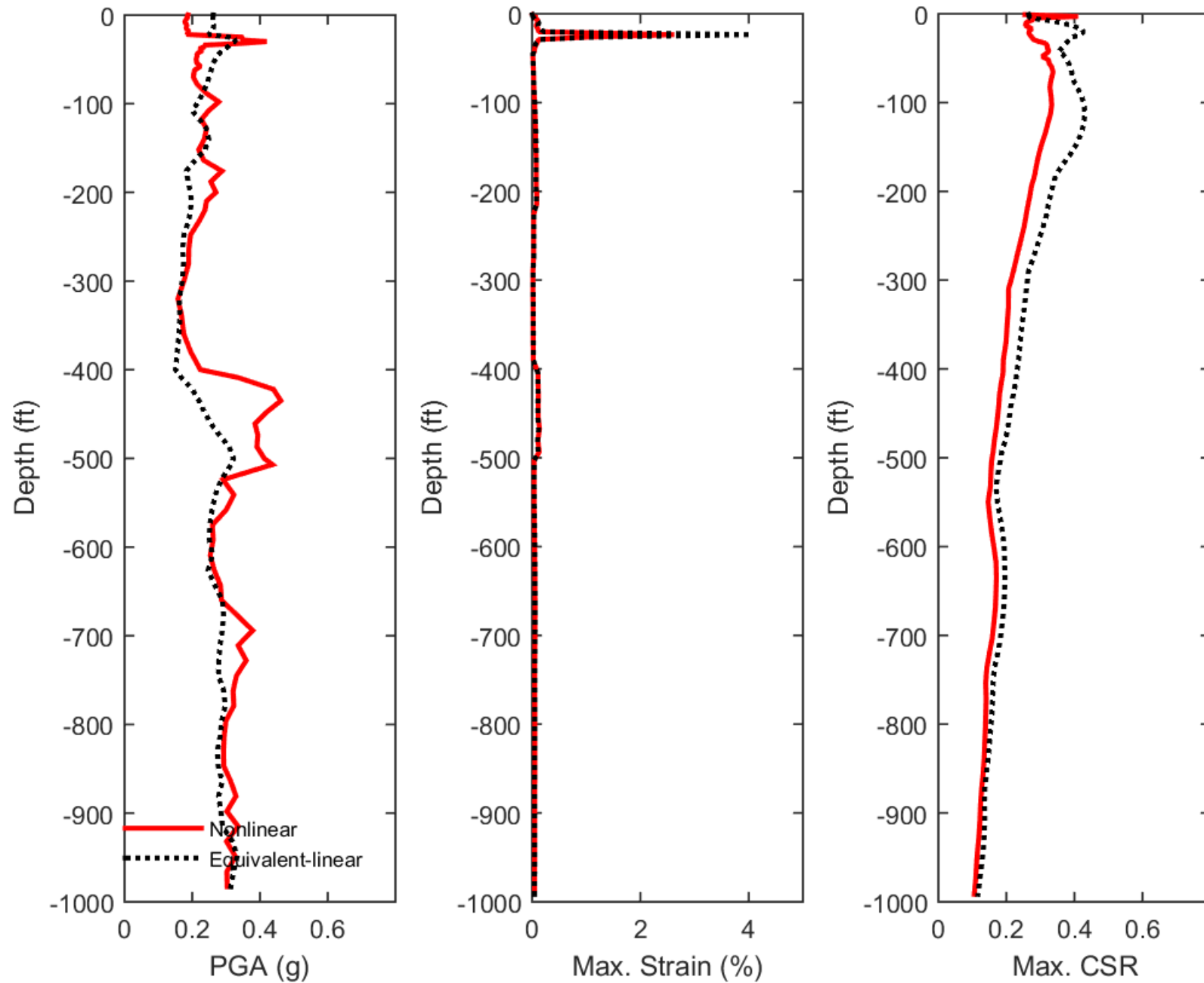




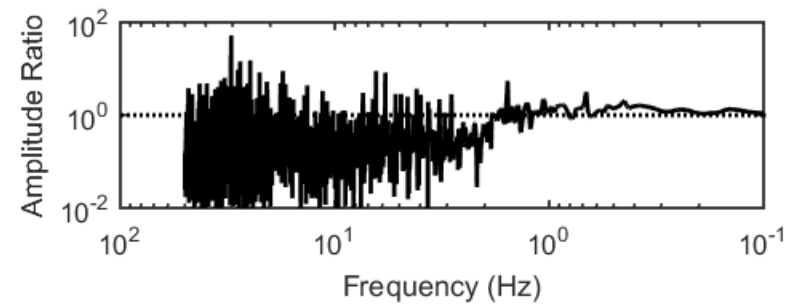
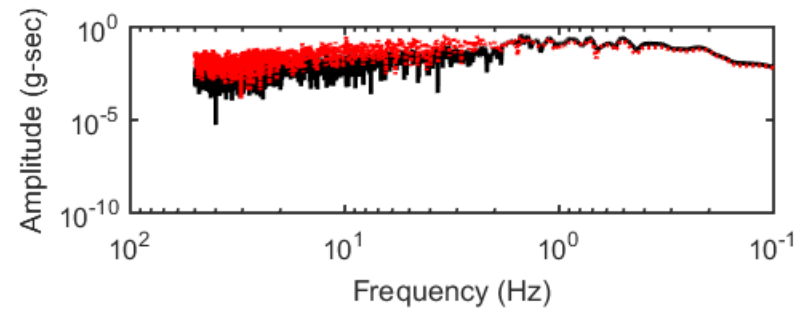
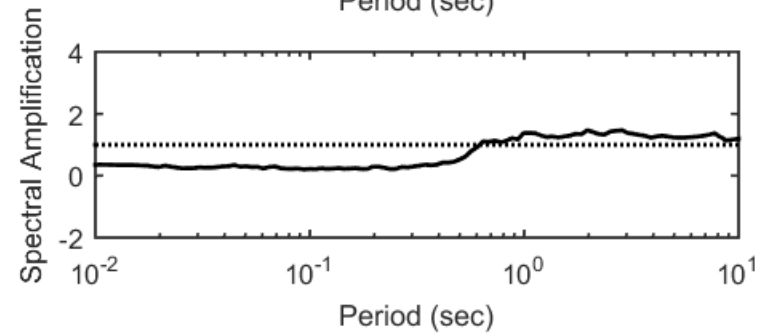
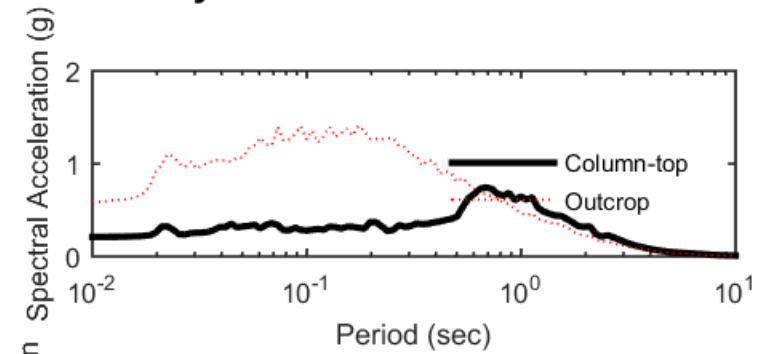
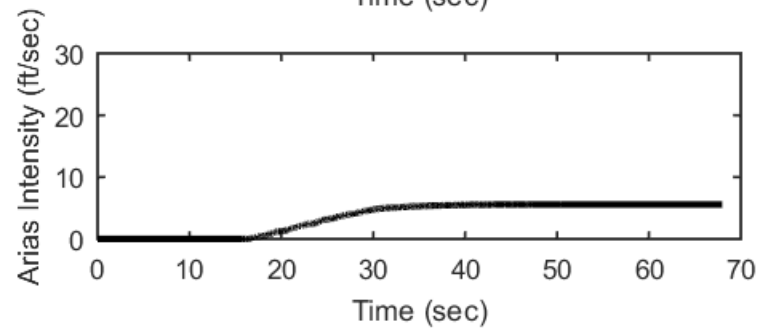
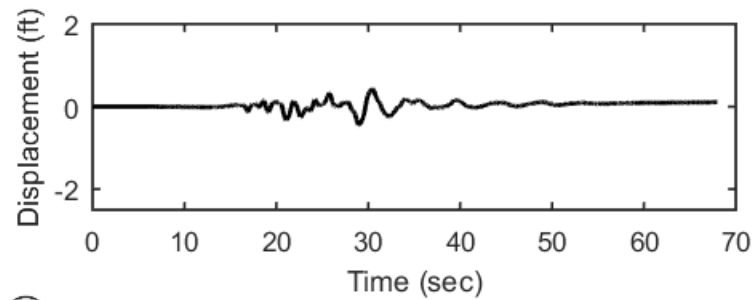
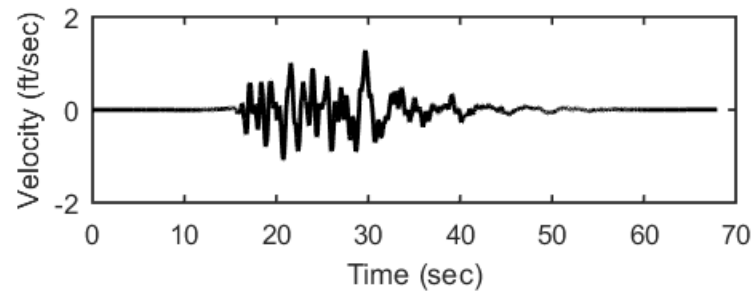
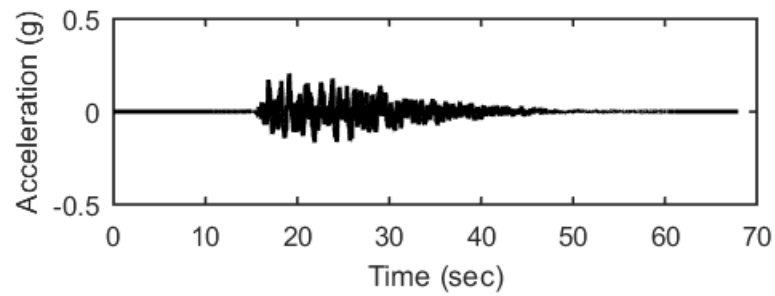
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



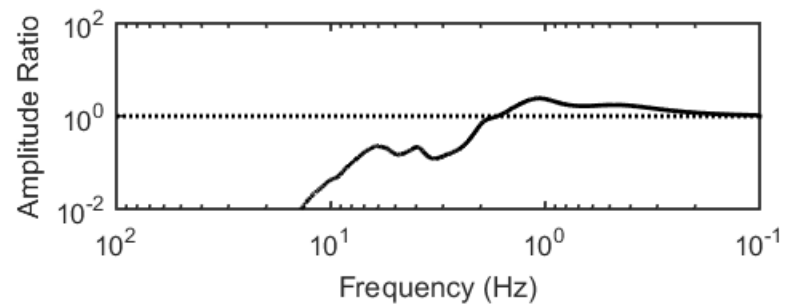
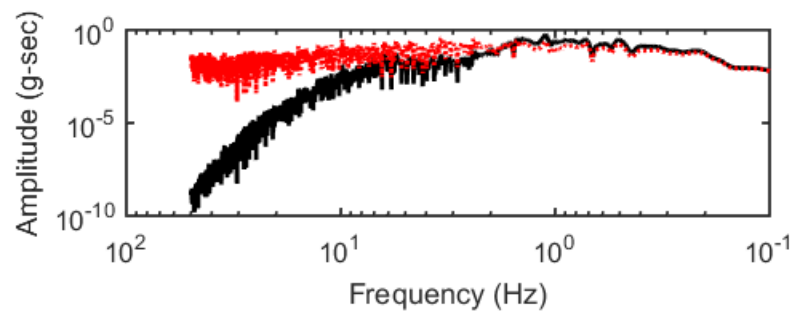
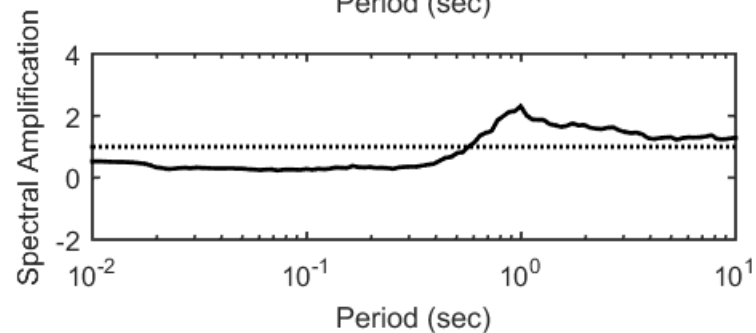
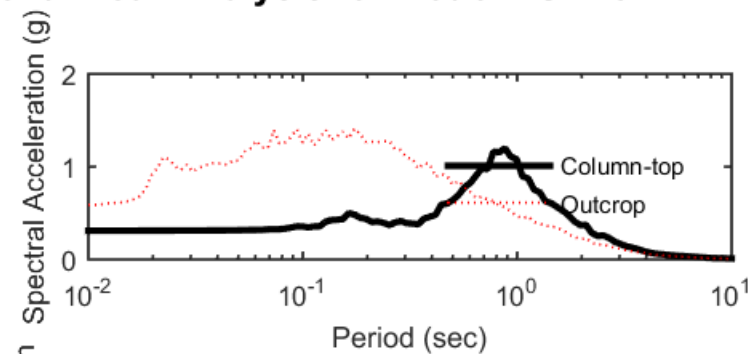
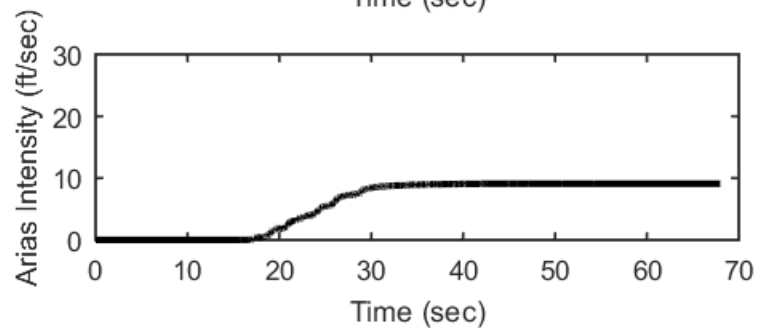
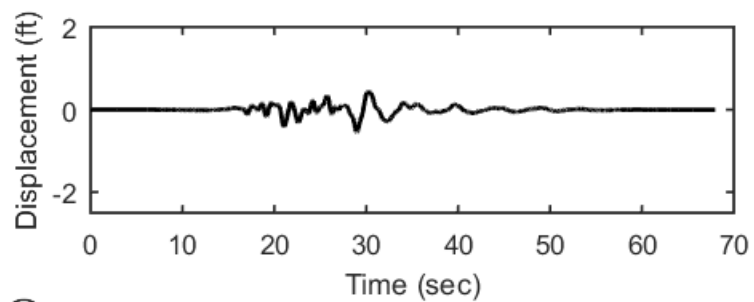
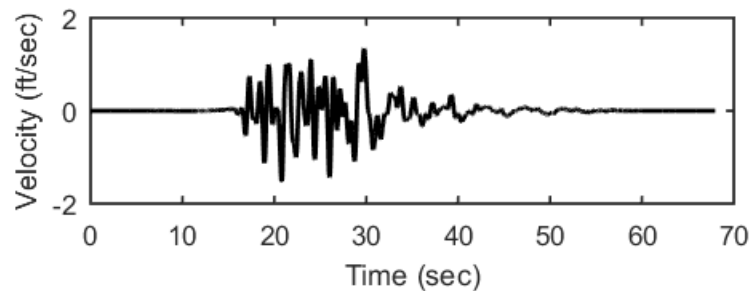
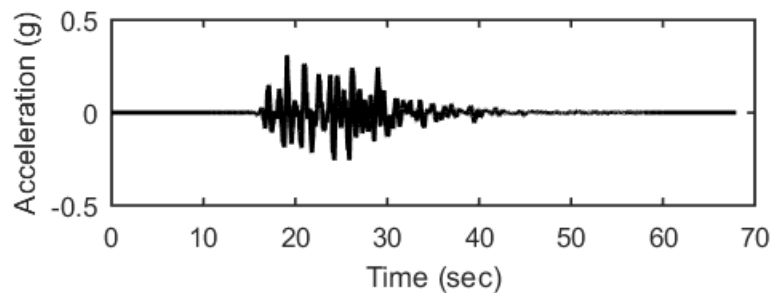
### Profile outputs for Motion: SEE5



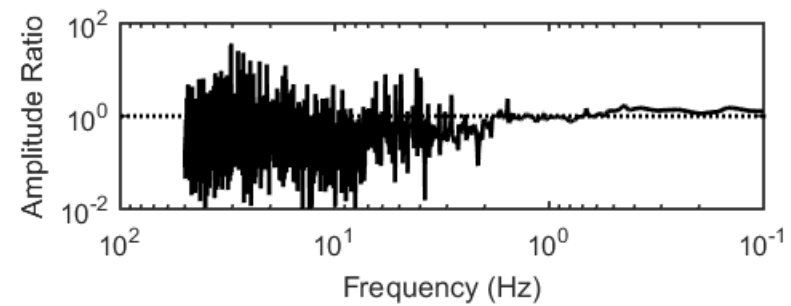
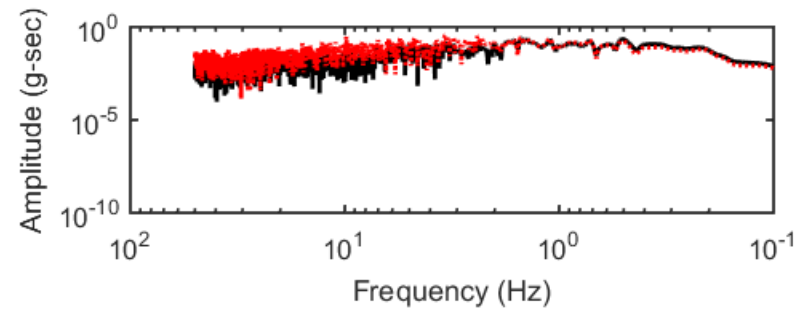
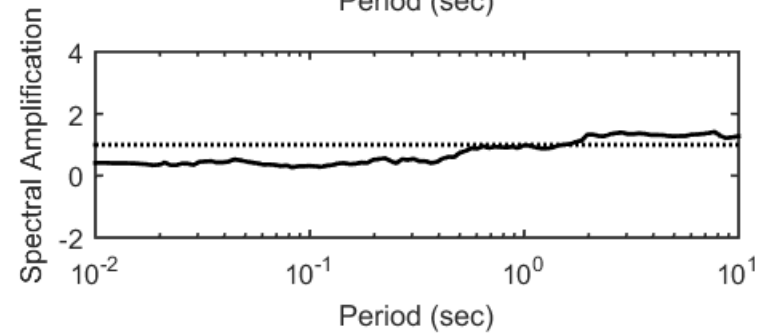
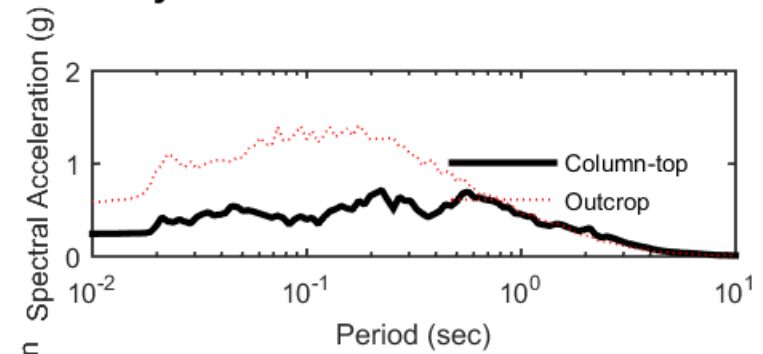
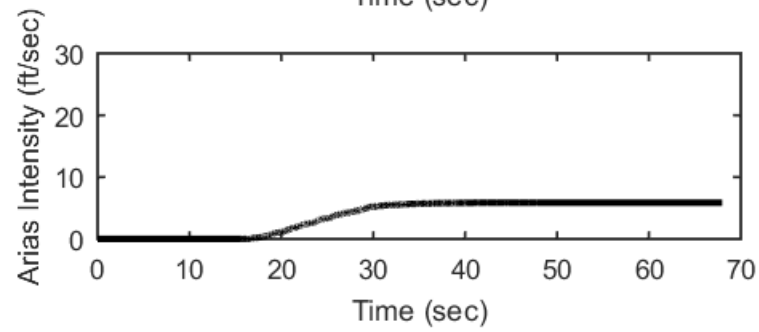
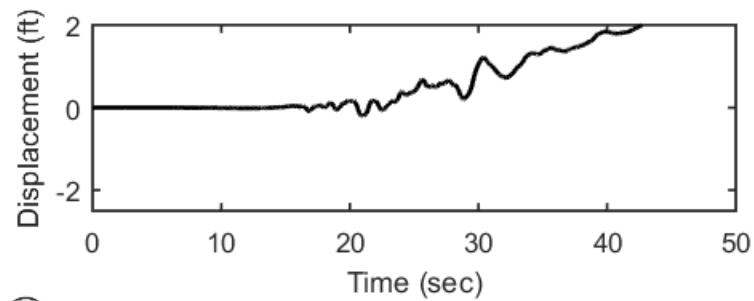
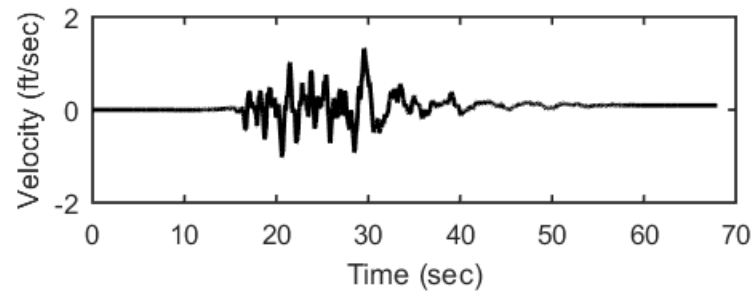
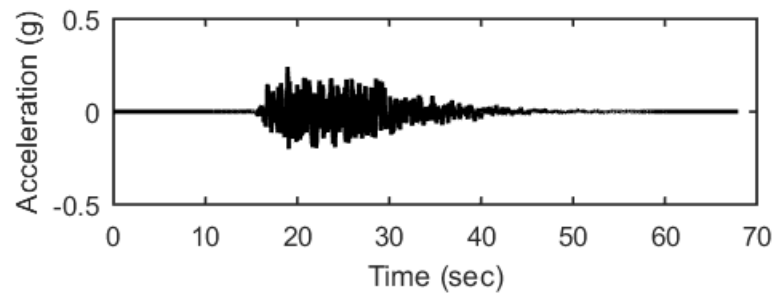
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



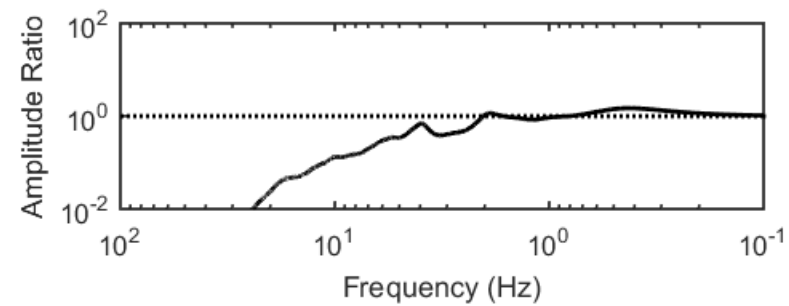
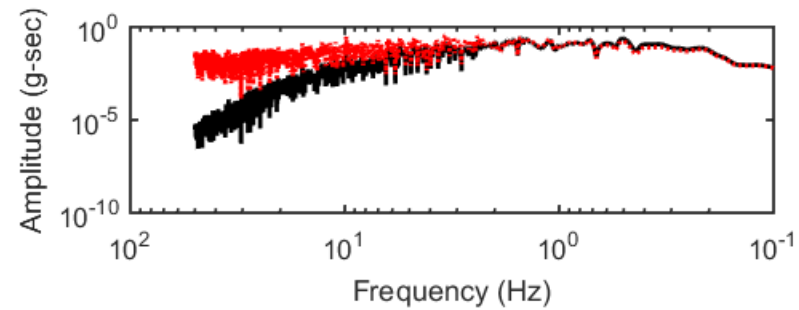
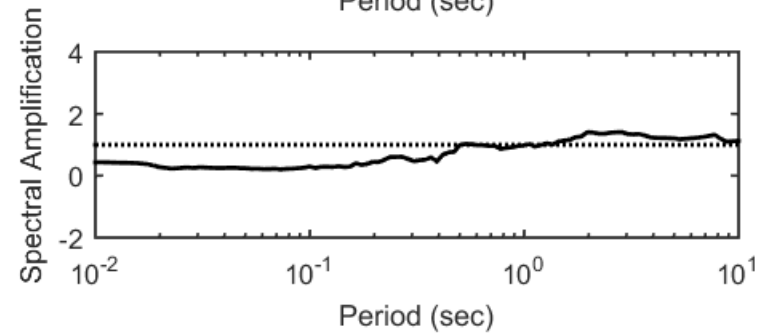
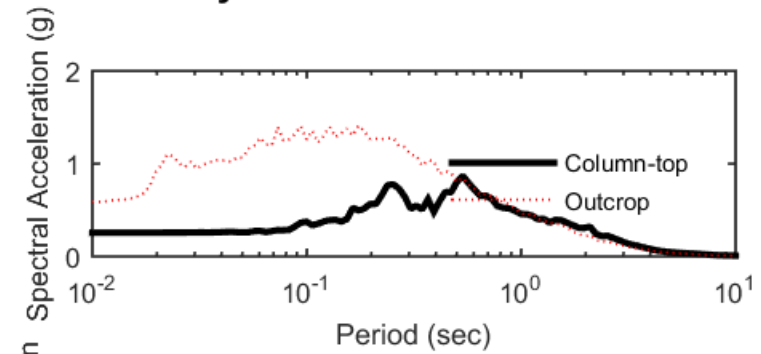
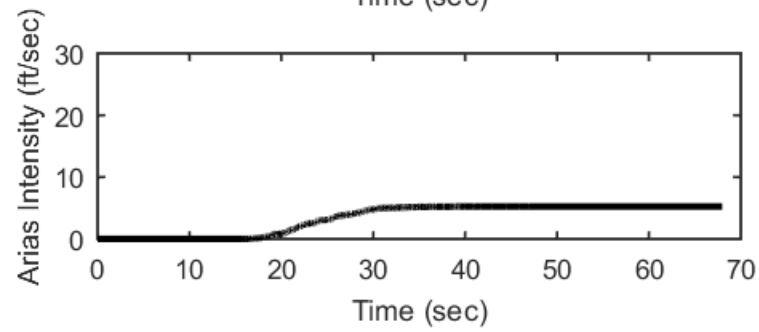
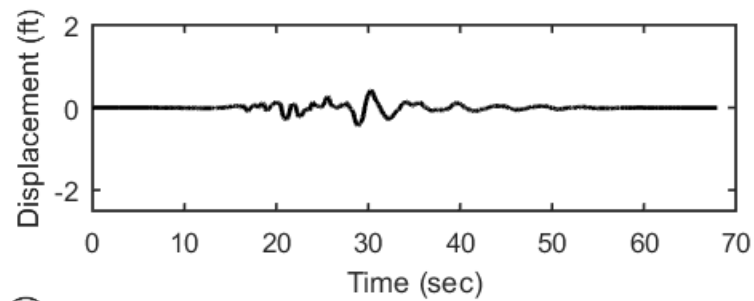
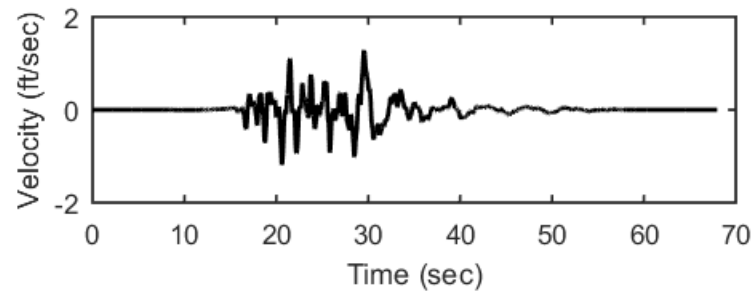
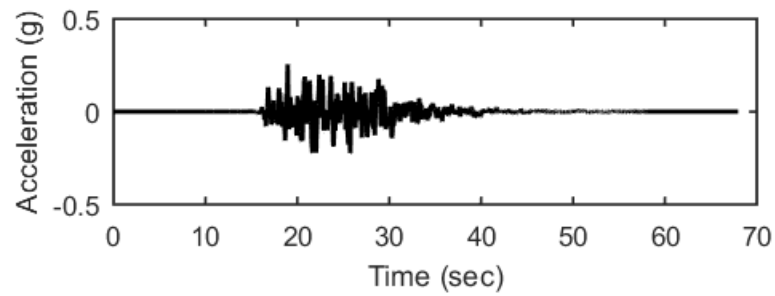
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



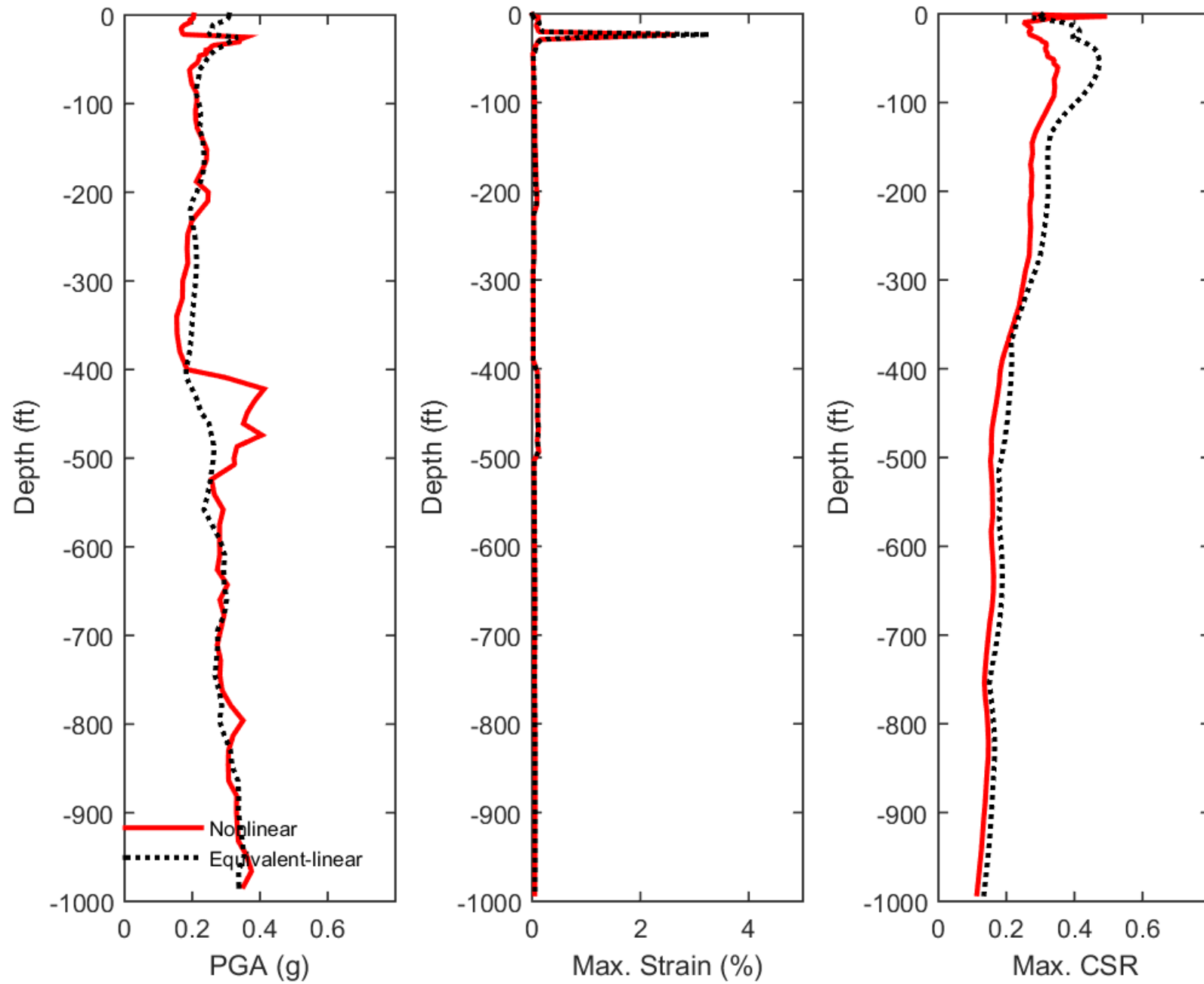
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



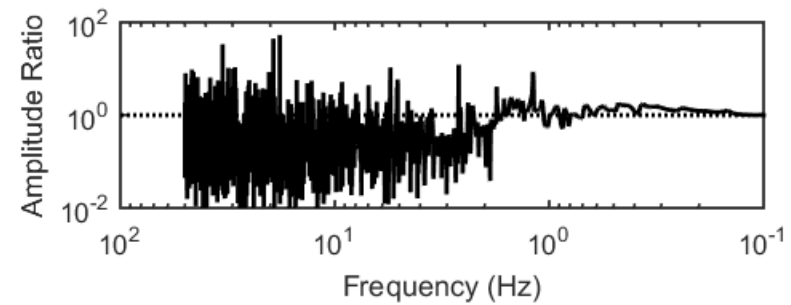
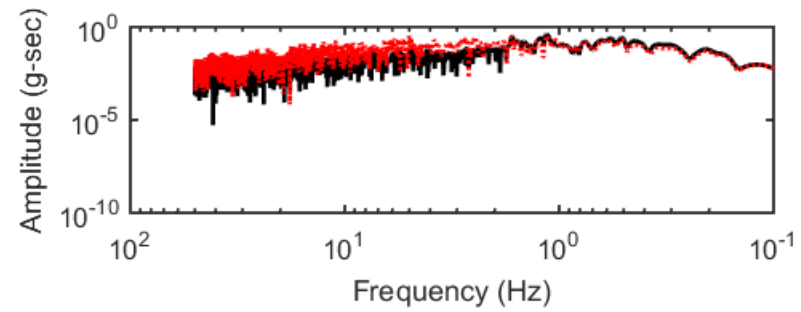
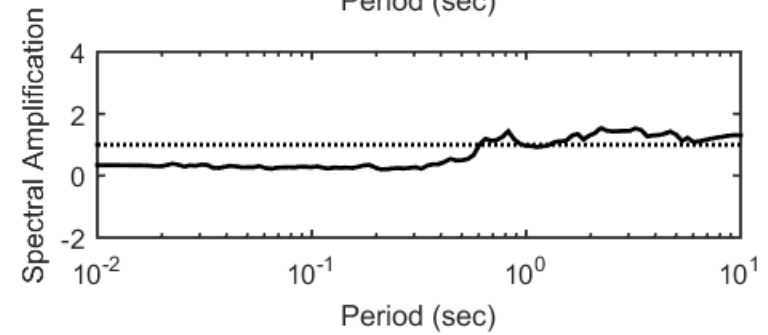
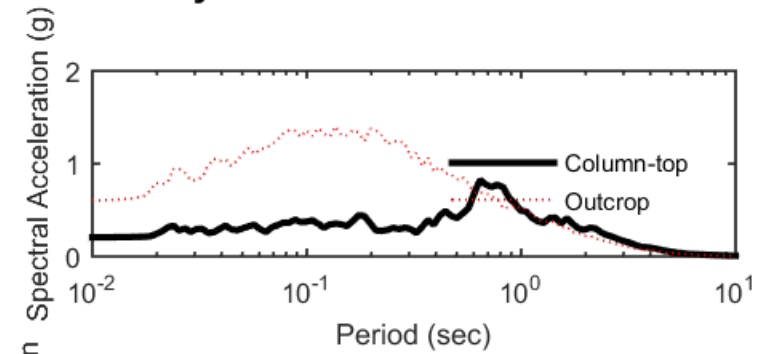
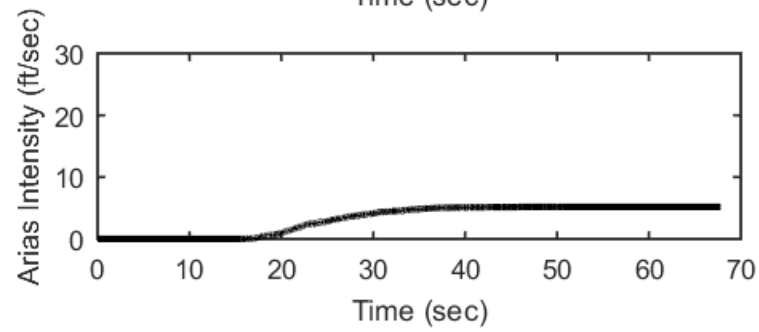
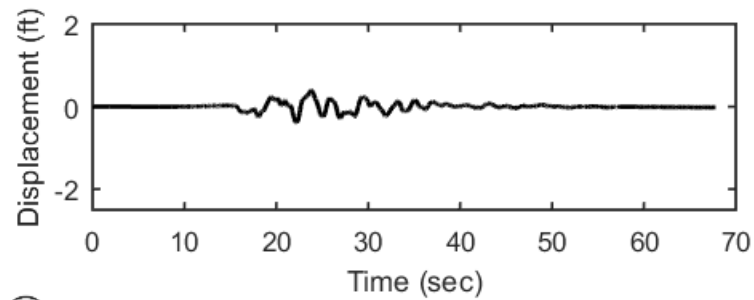
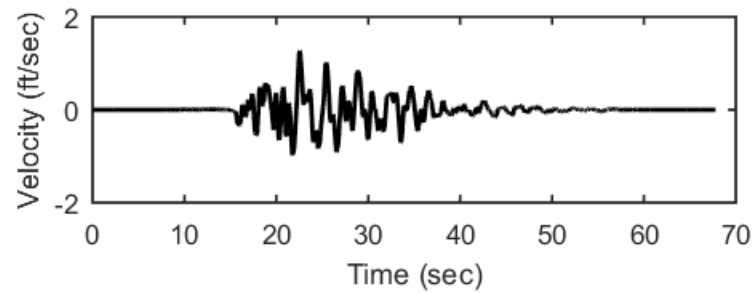
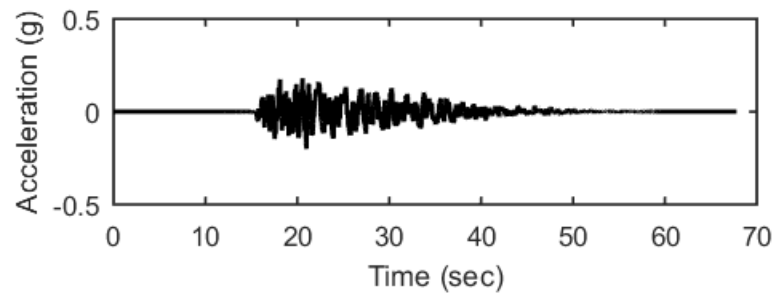
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



### Profile outputs for Motion: SEE6

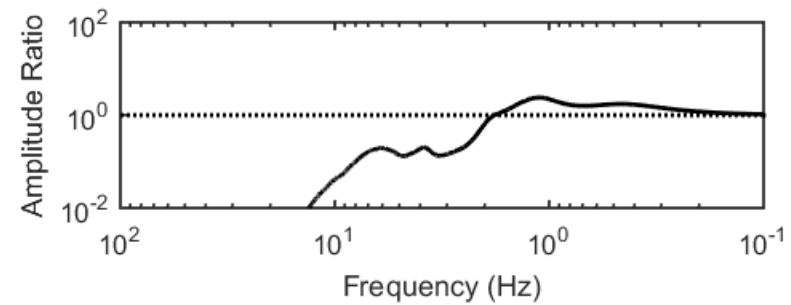
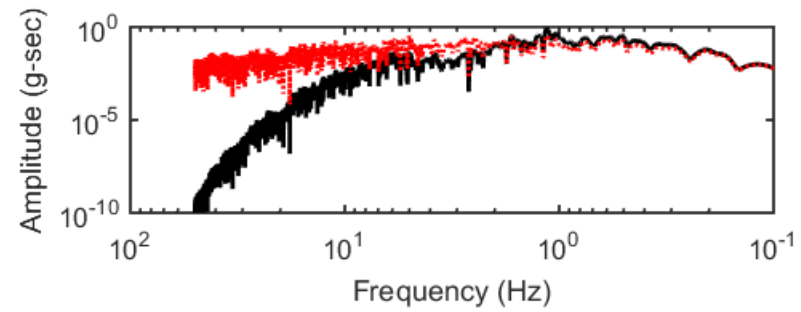
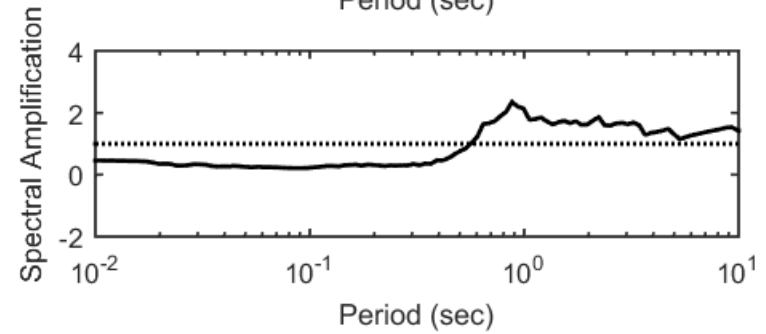
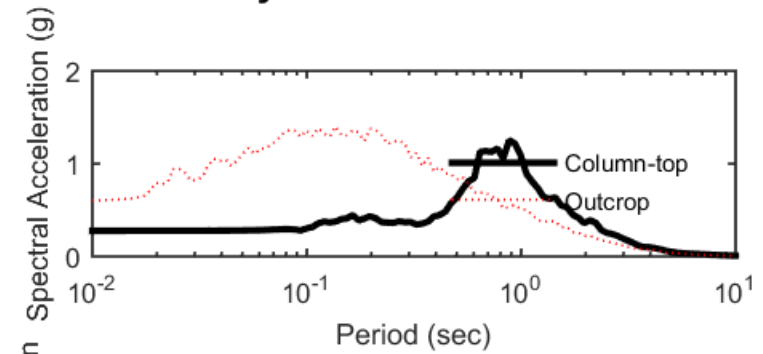
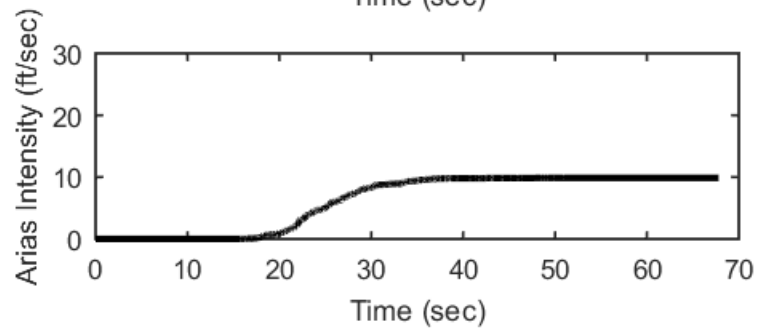
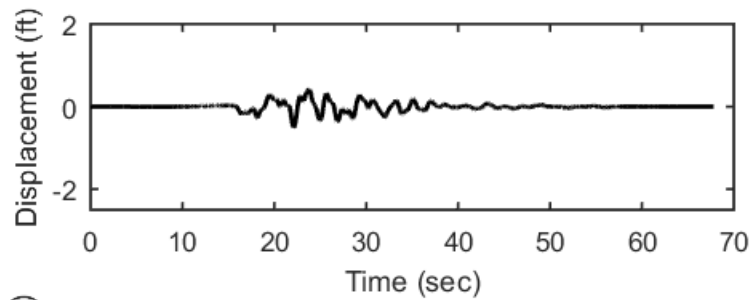
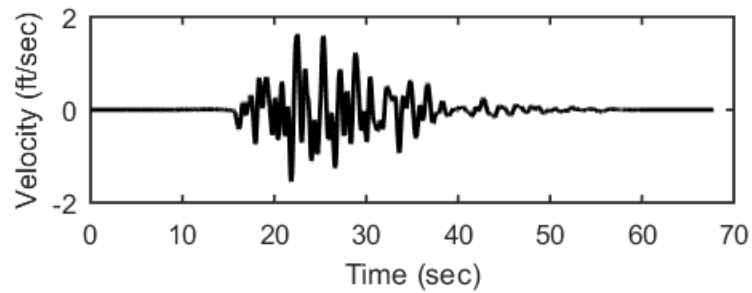
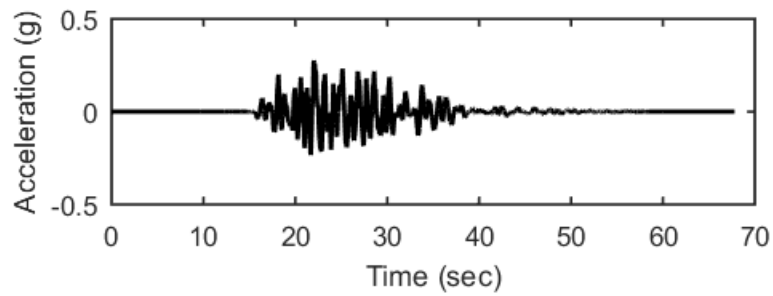


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7

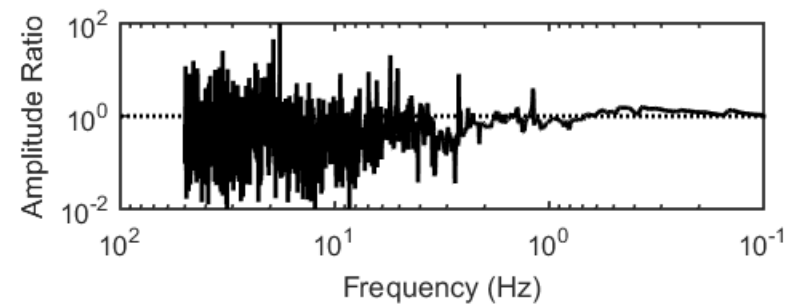
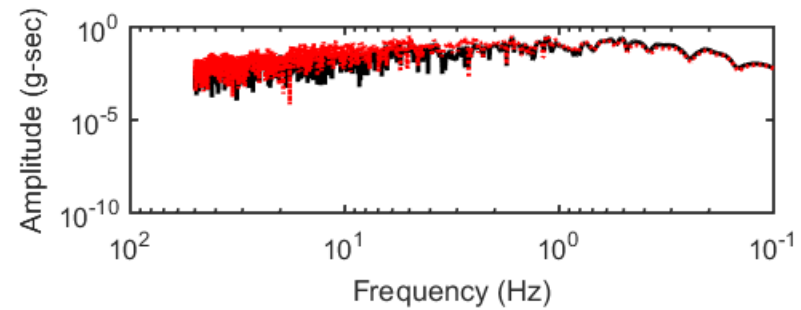
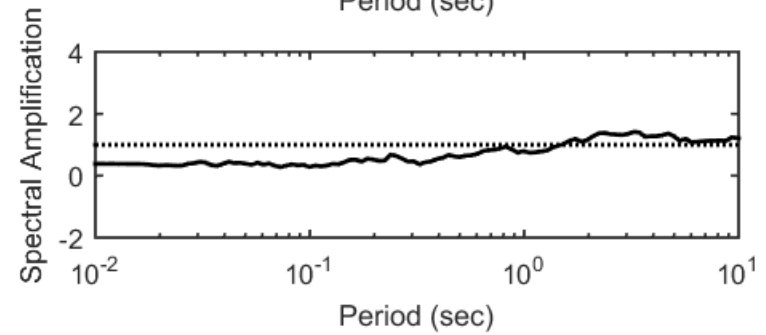
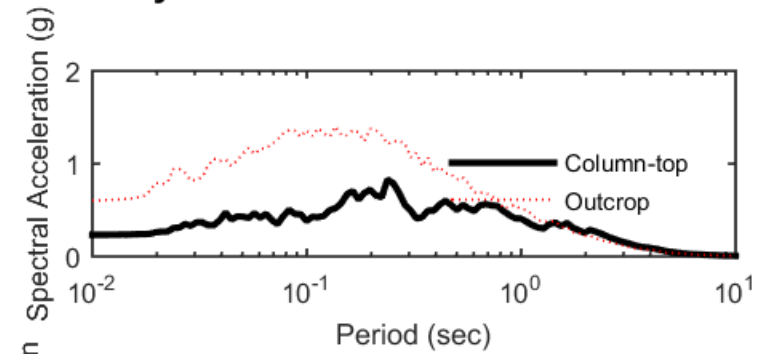
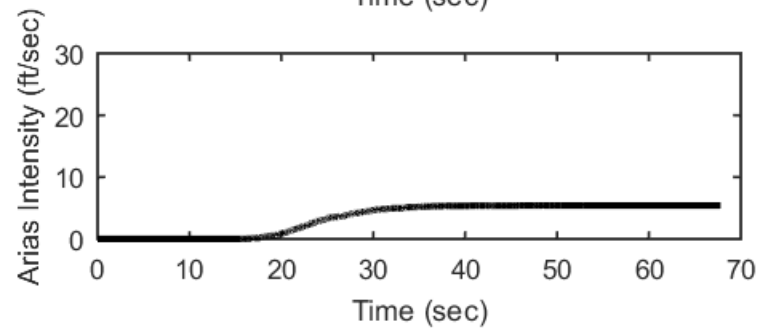
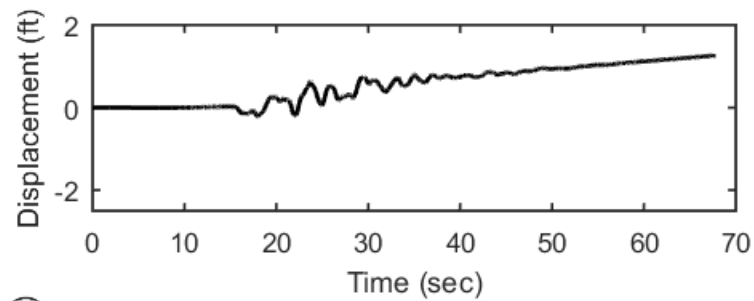
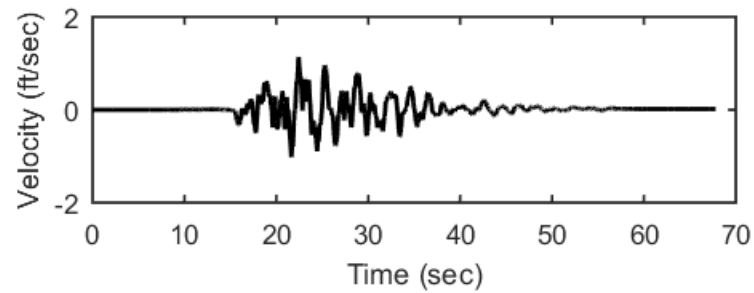
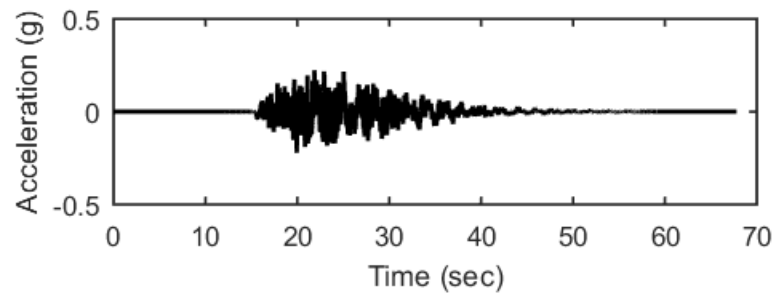




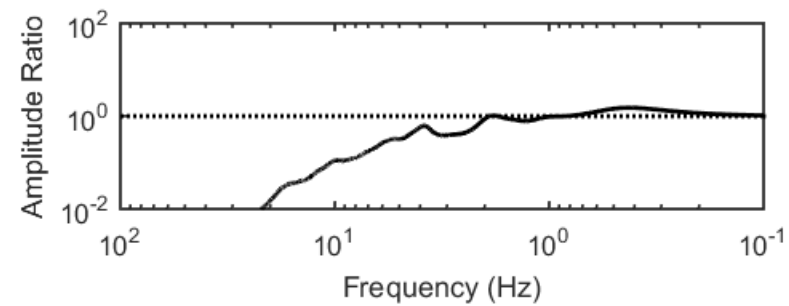
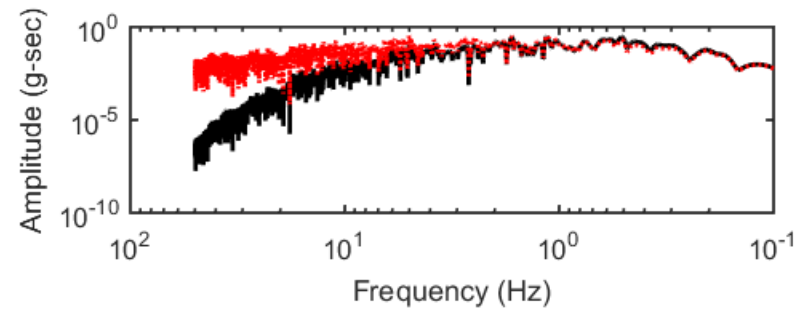
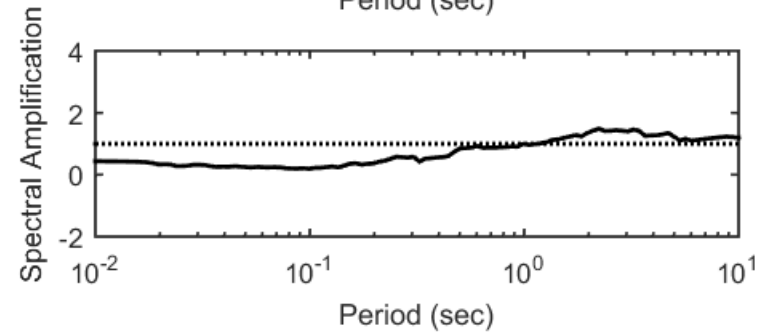
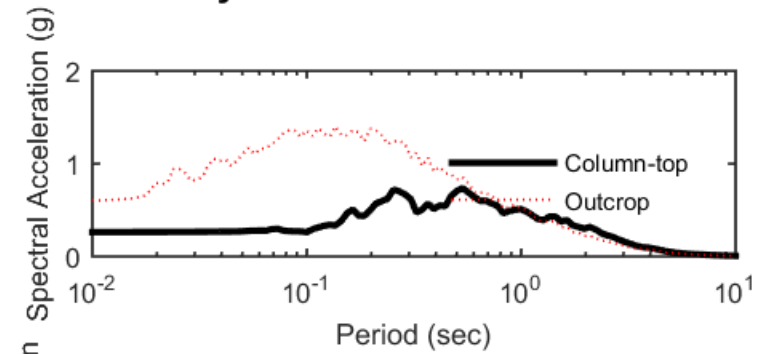
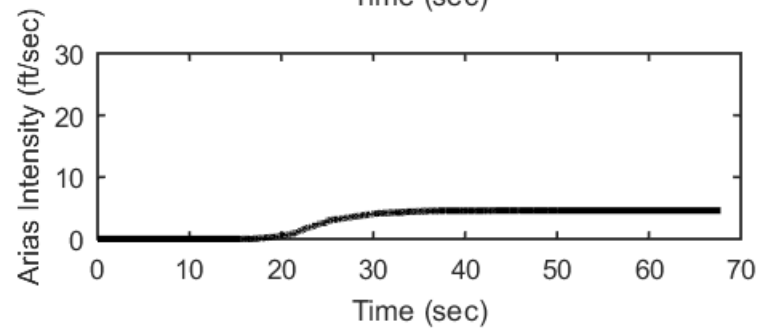
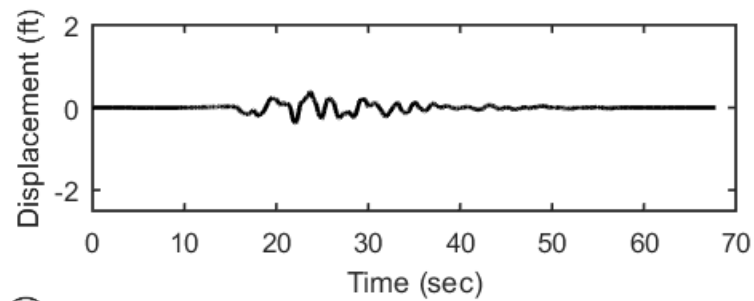
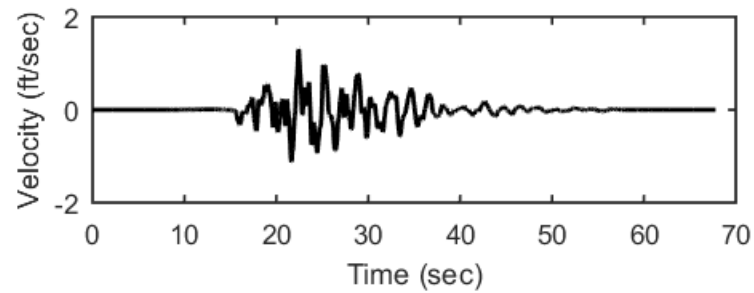
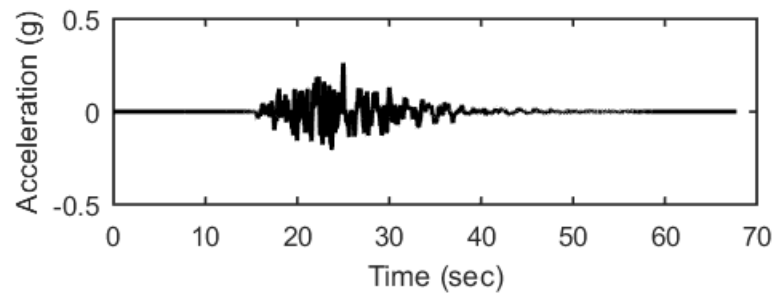
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



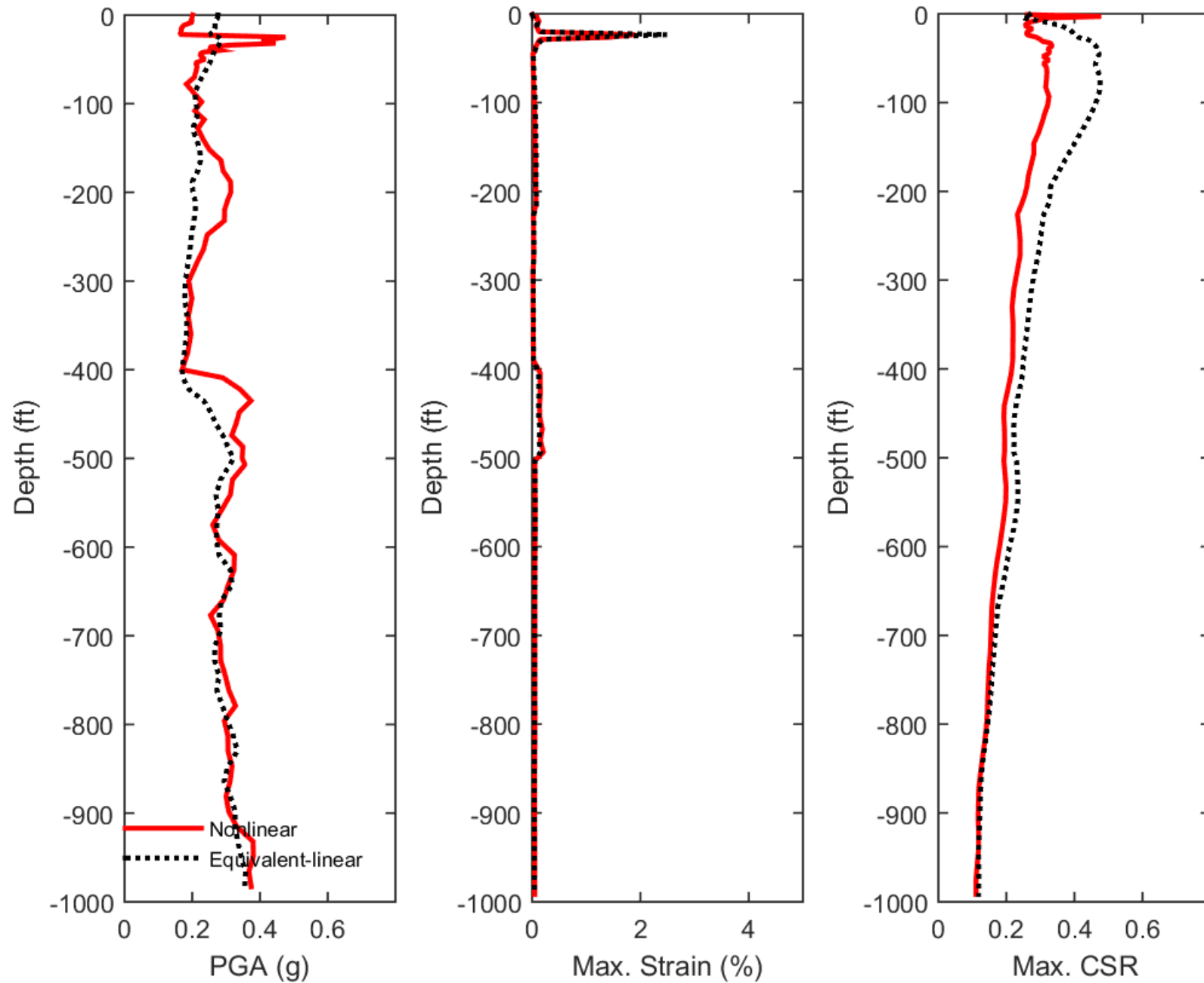
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



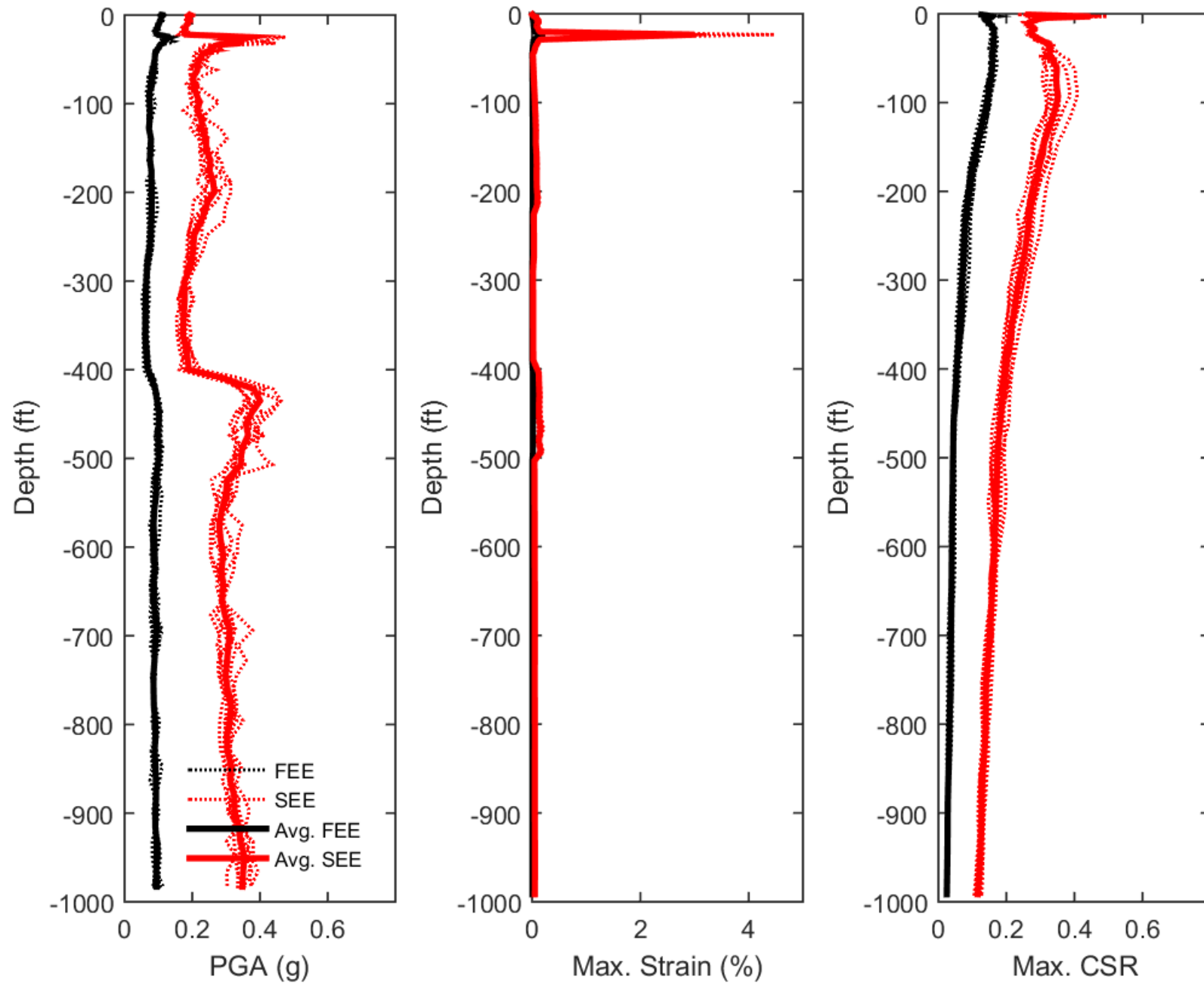
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



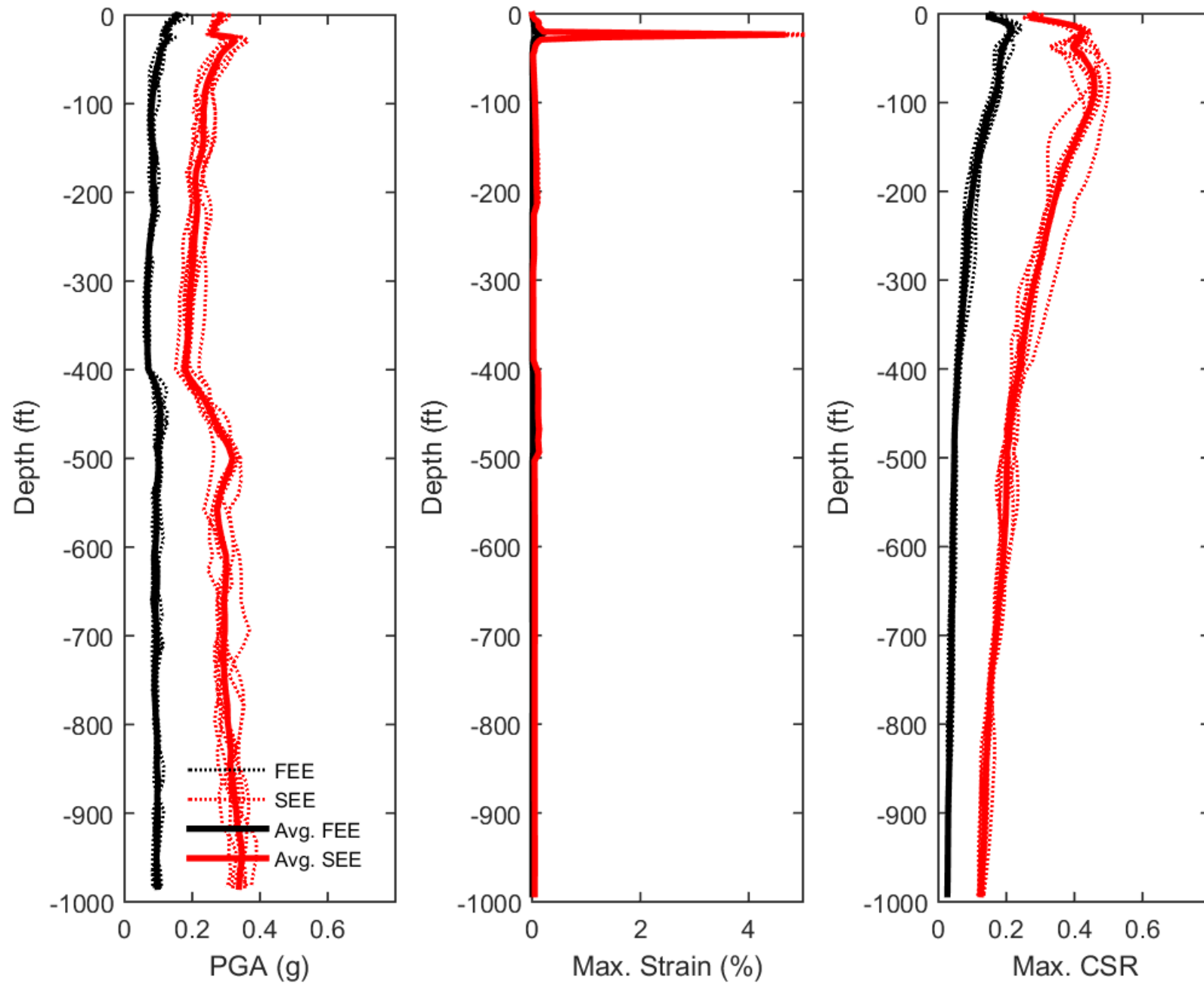
### Profile outputs for Motion: SEE7



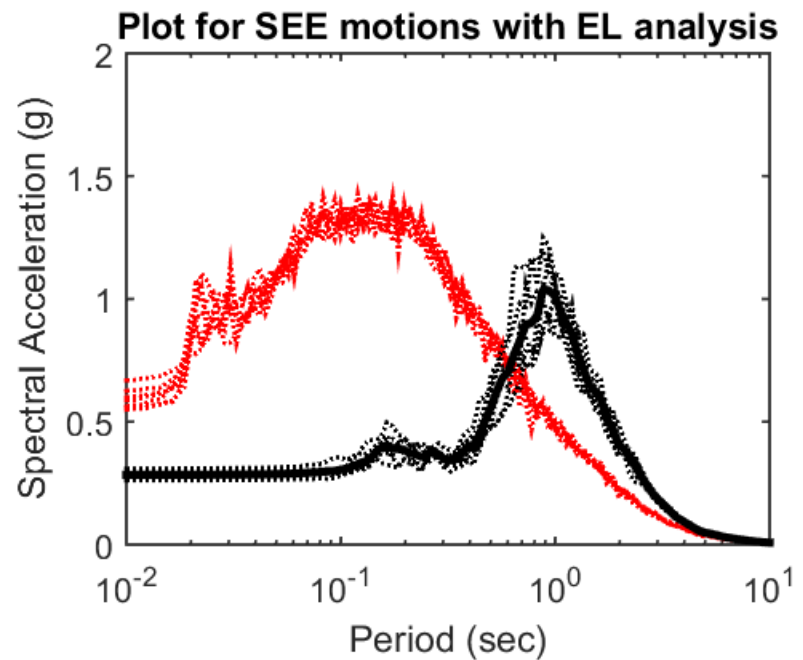
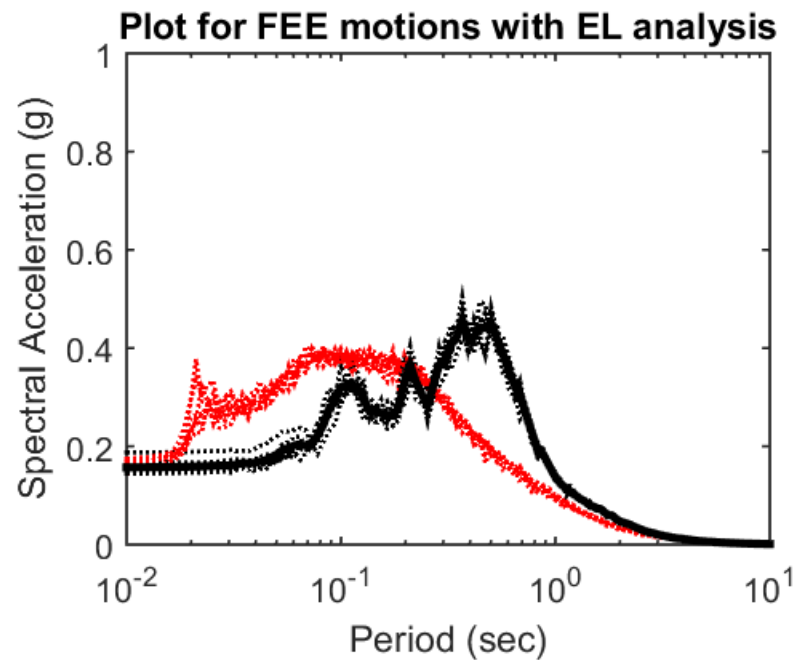
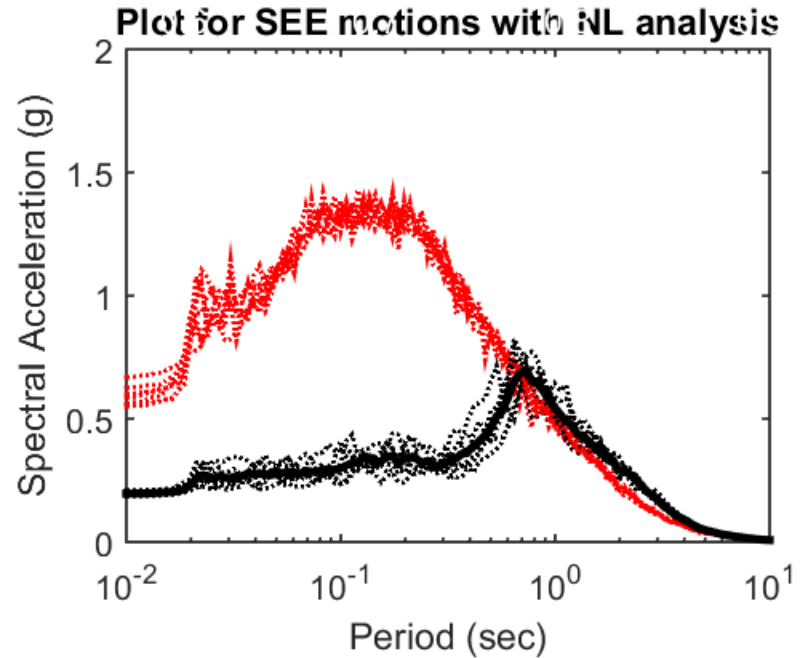
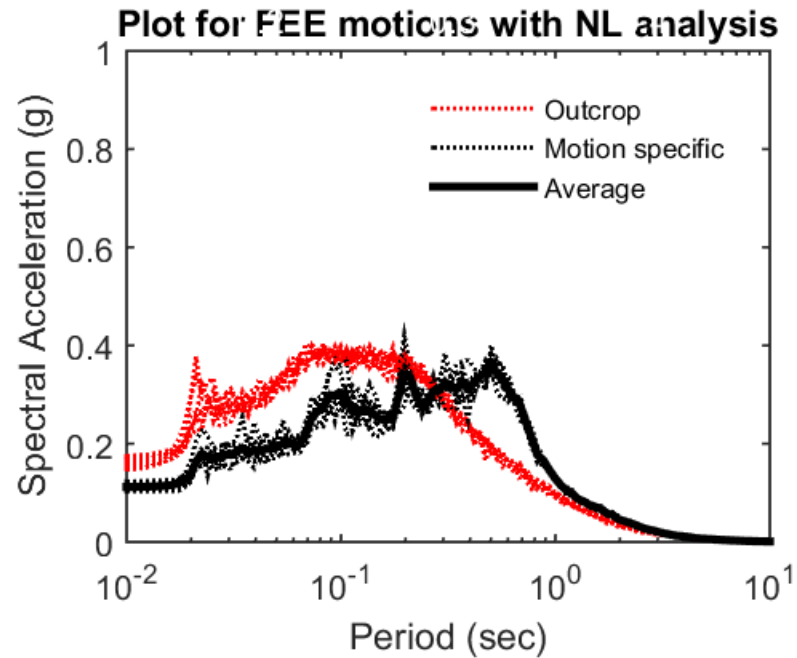
## Summary of the profile outputs for Nonlinear analysis



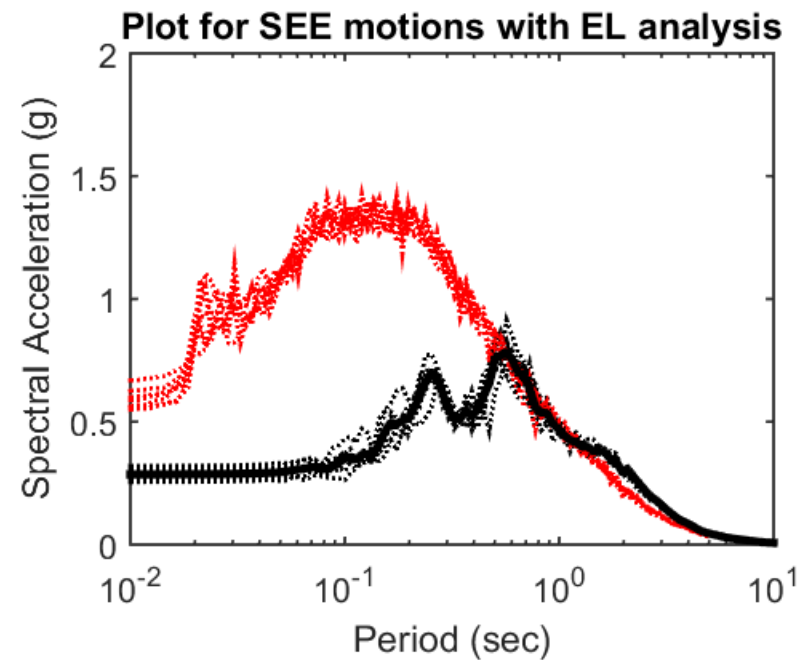
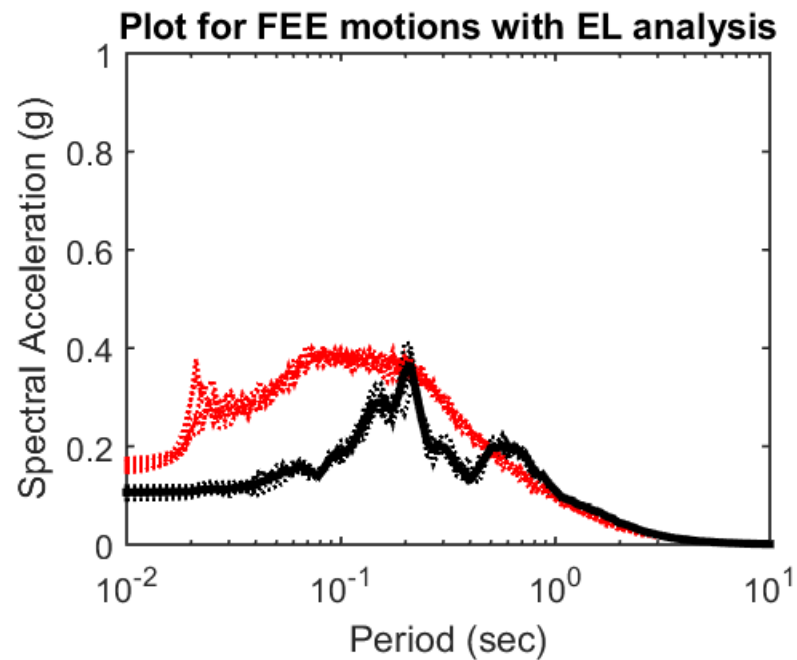
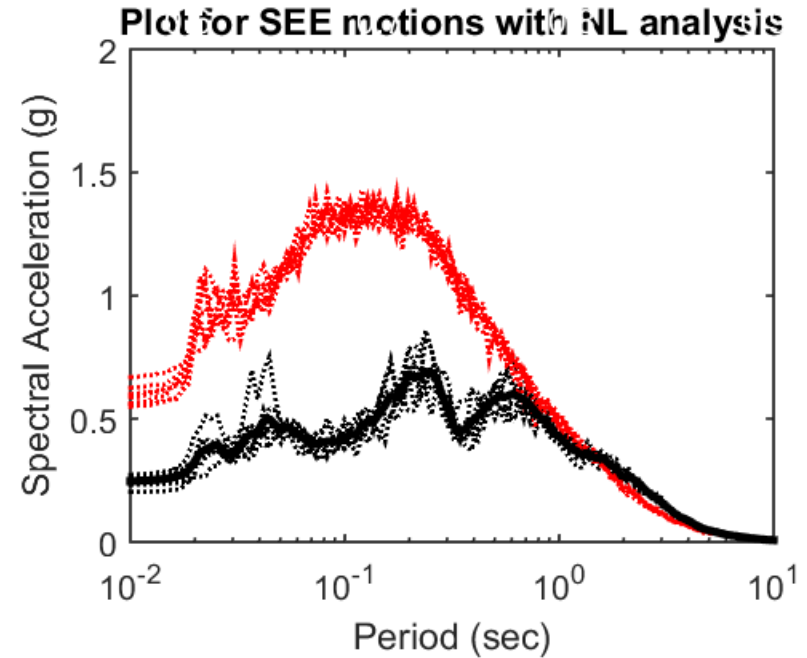
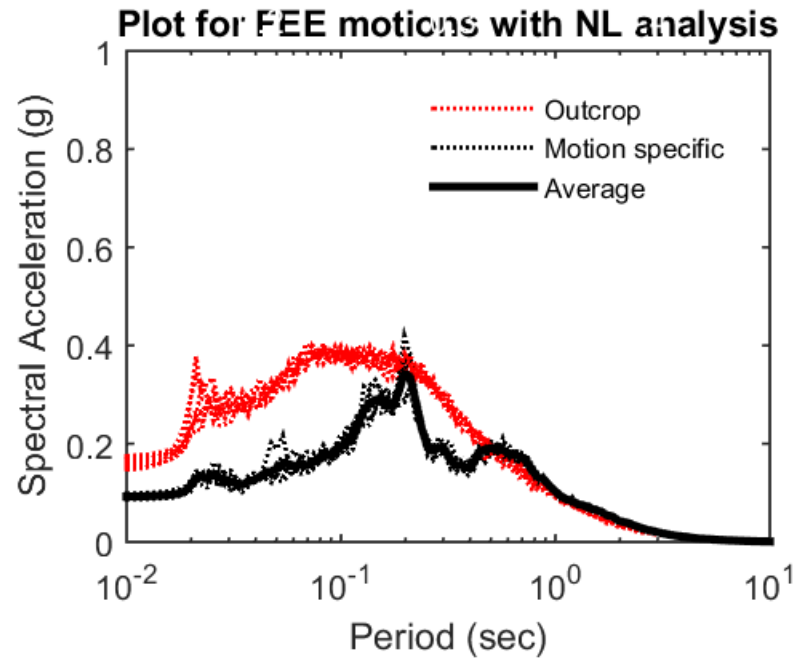
## Summary of the profile outputs for Equivalent-linear analysis



## Summary plots: RSA at ground surface

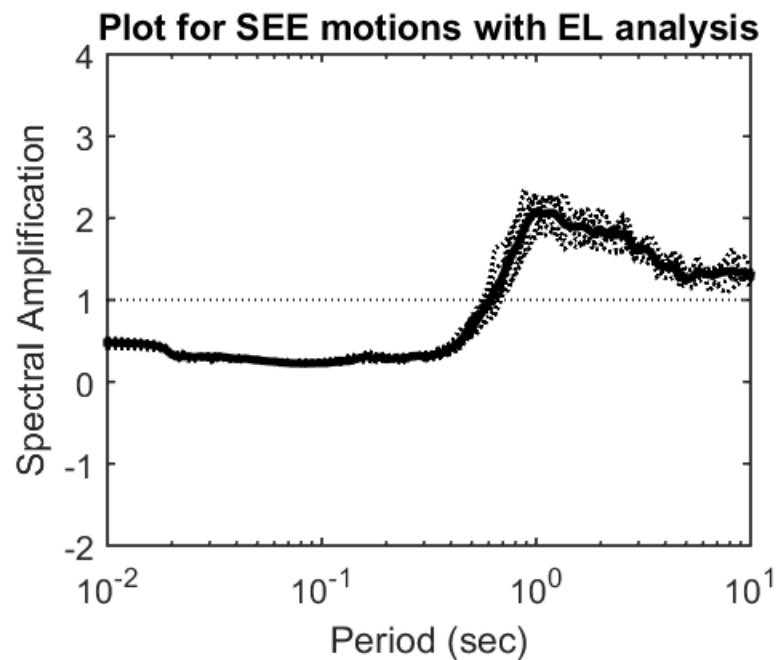
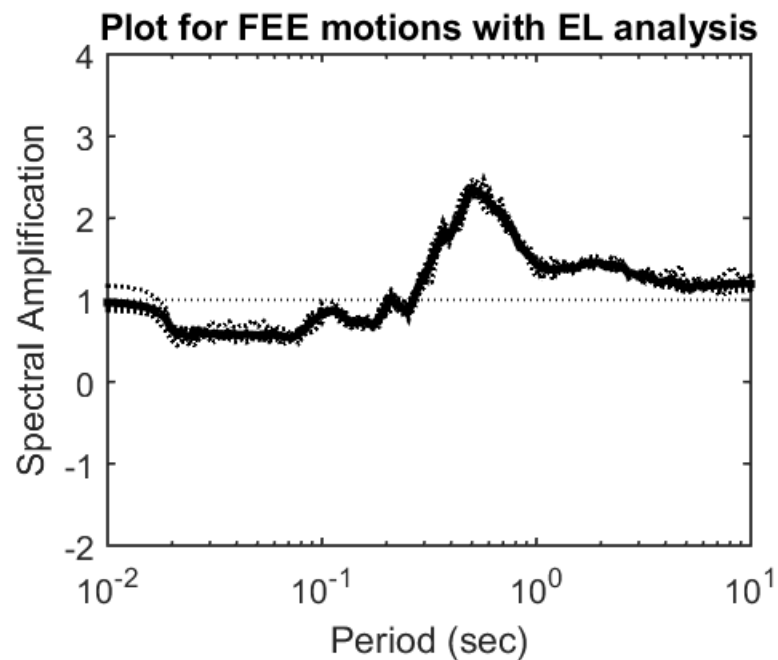
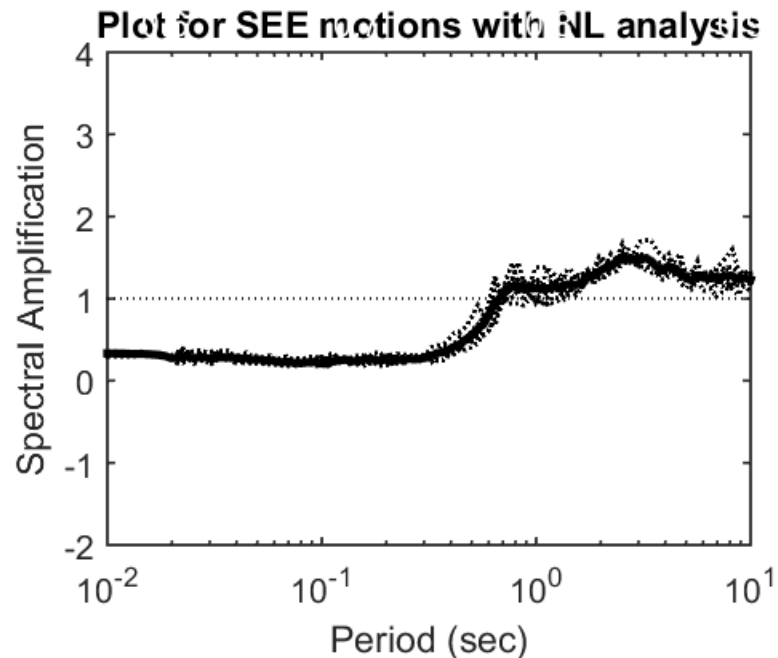
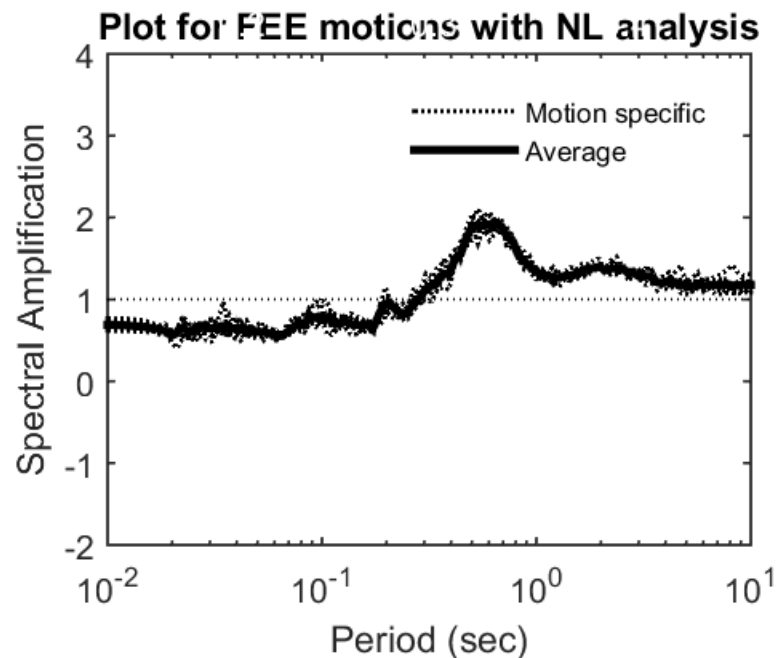


## Summary plots: RSA at top of Marl

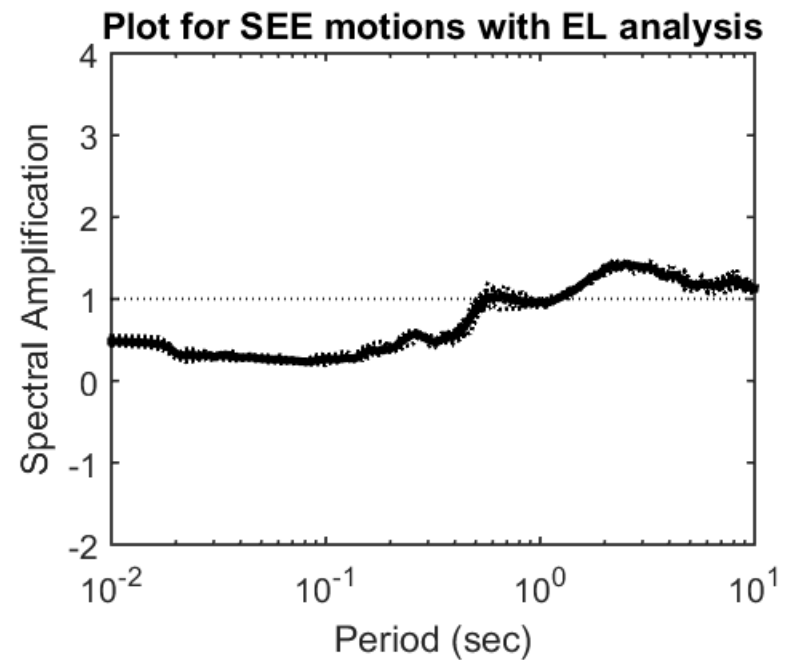
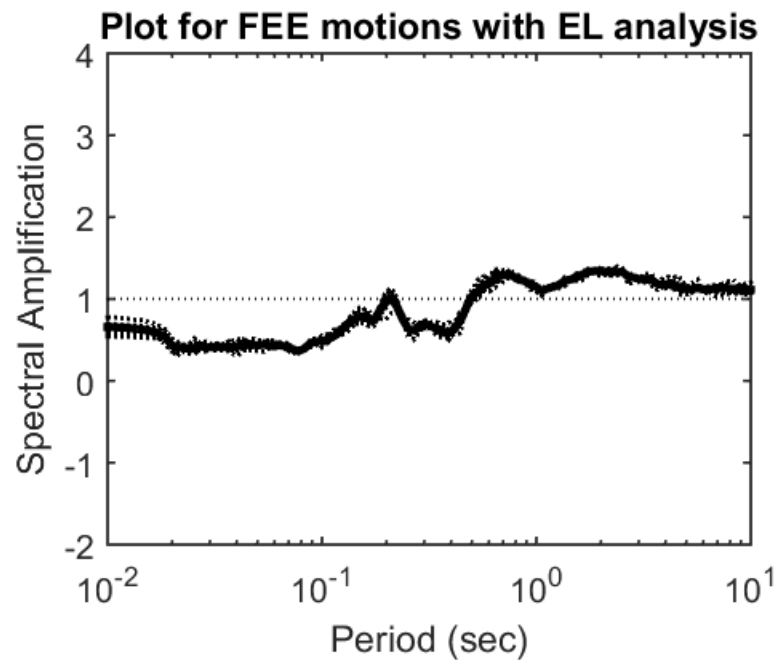
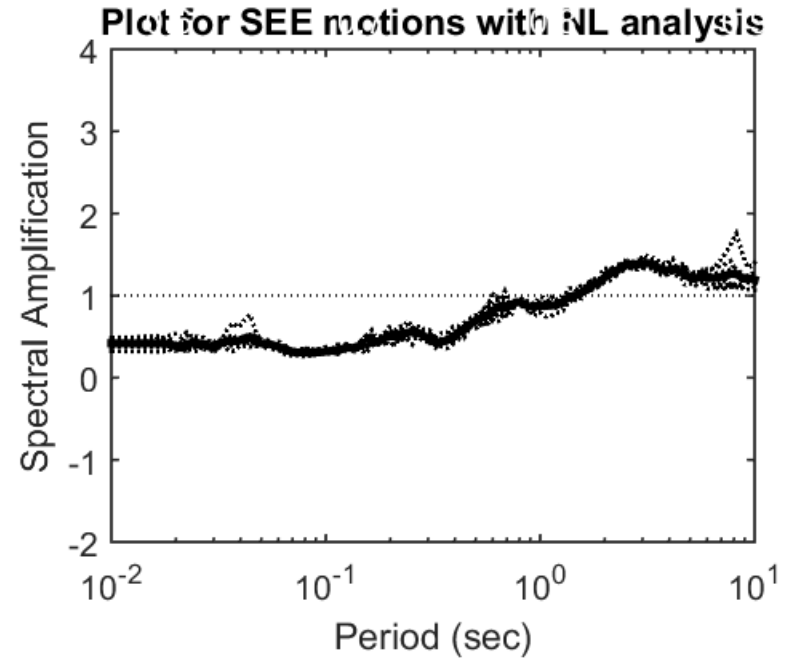
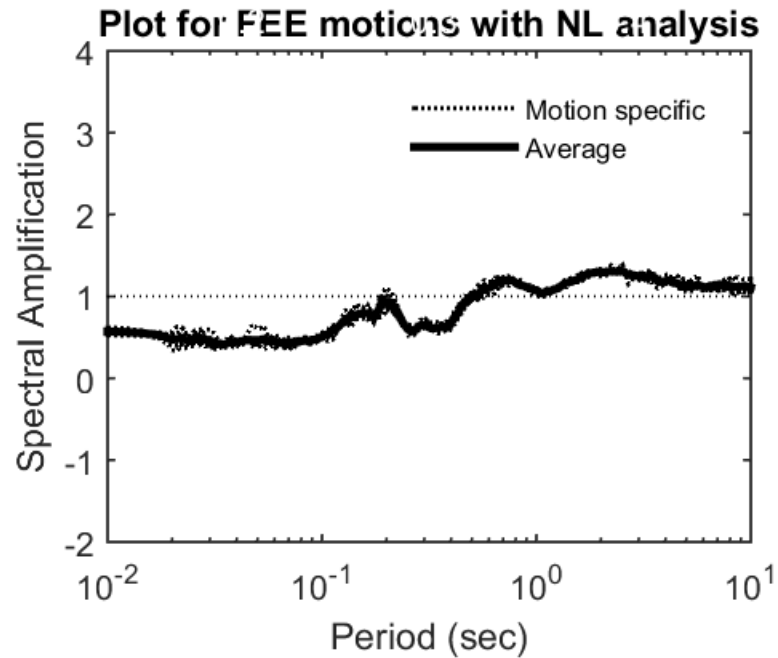




## Summary plots: Spectral amplification at ground surface

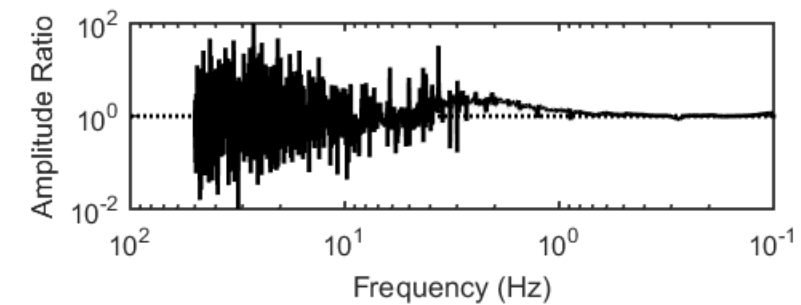
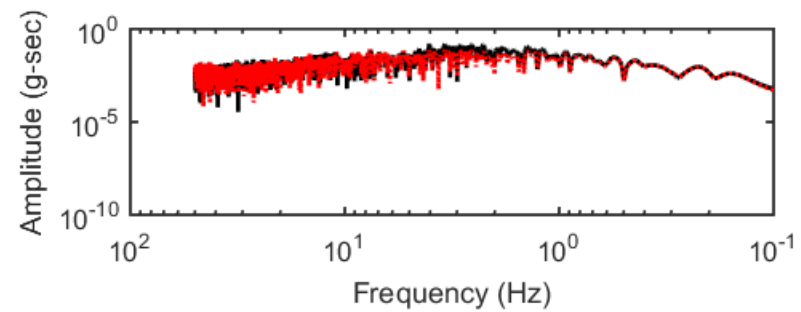
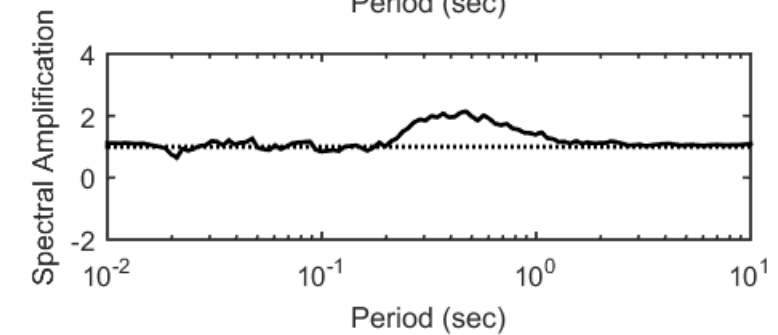
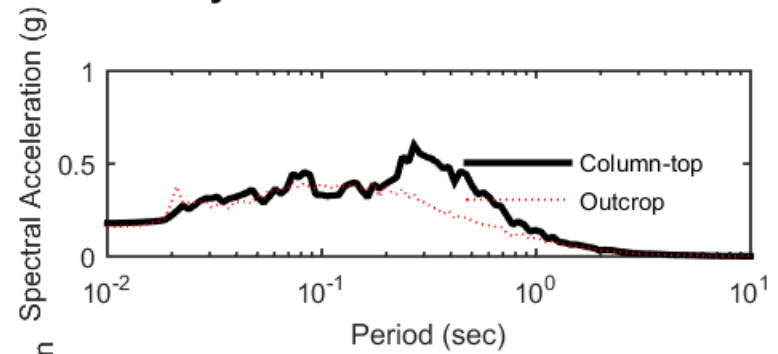
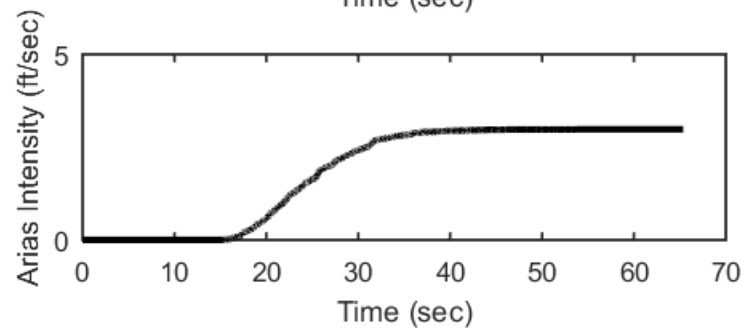
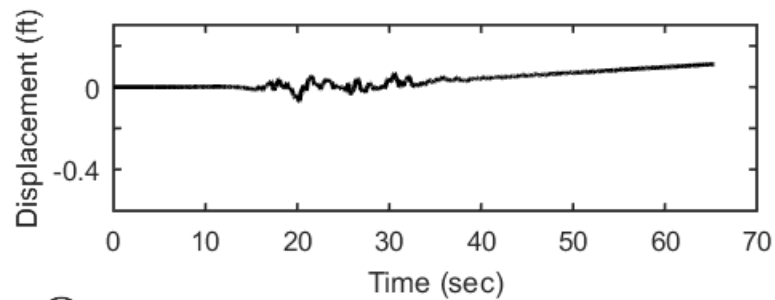
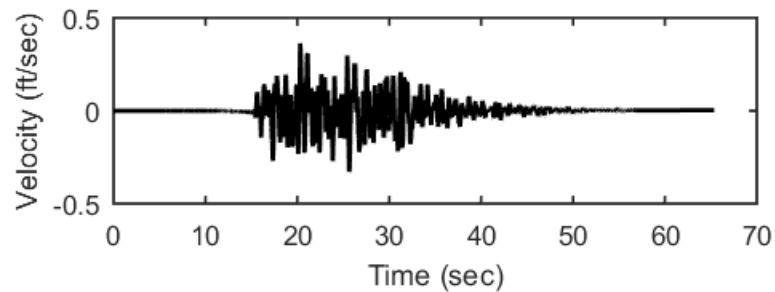
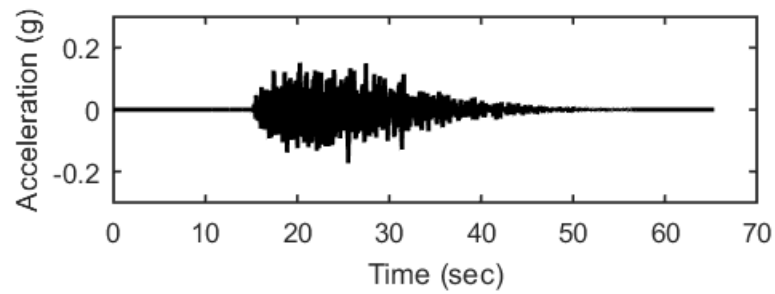


## Summary plots: Spectral amplification at top of Marl

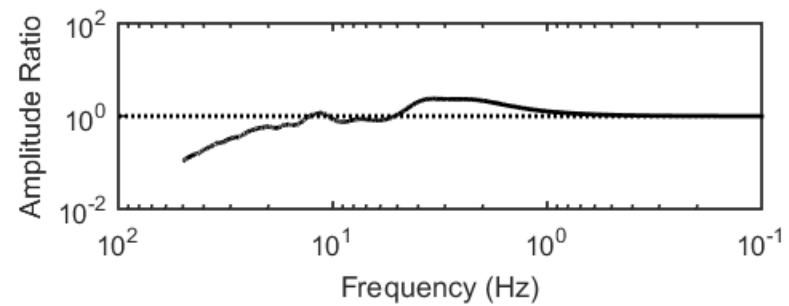
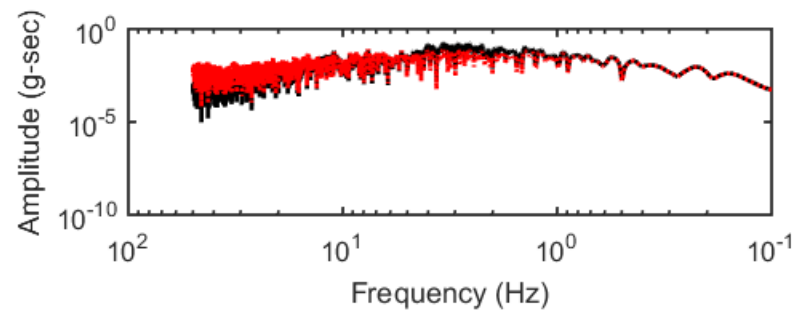
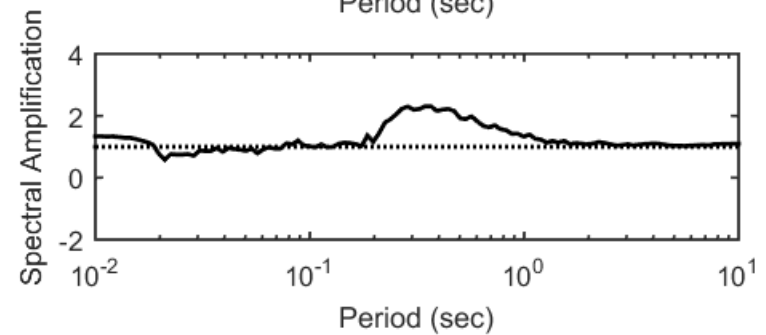
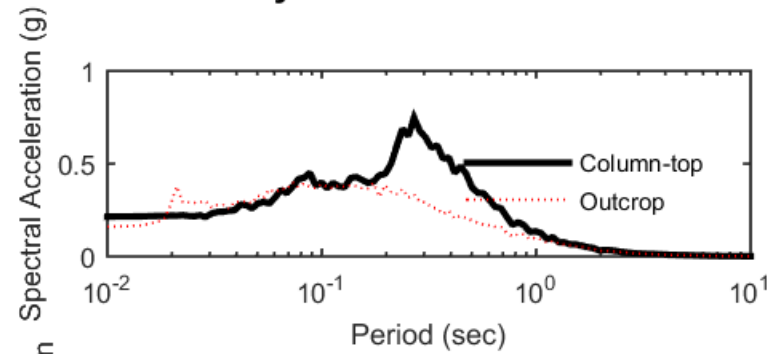
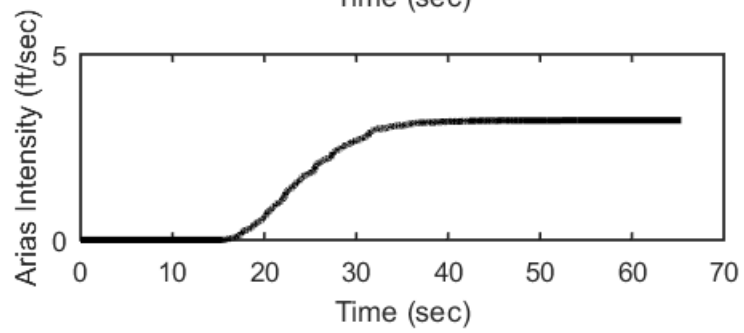
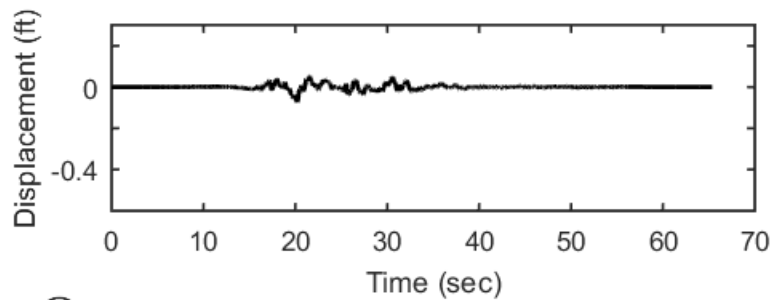
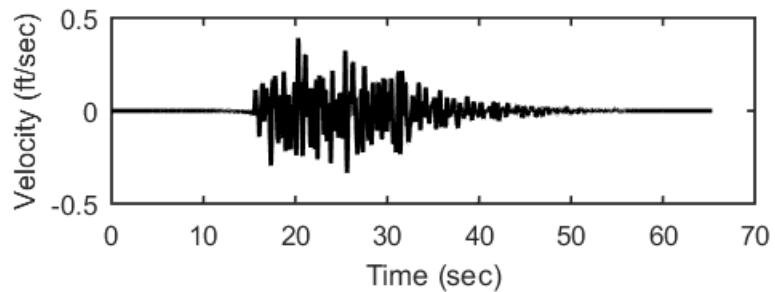
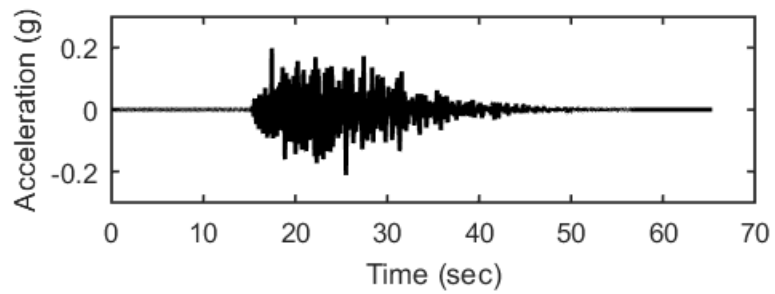


## **BASE MODEL AND HIGH SHEAR WAVE**

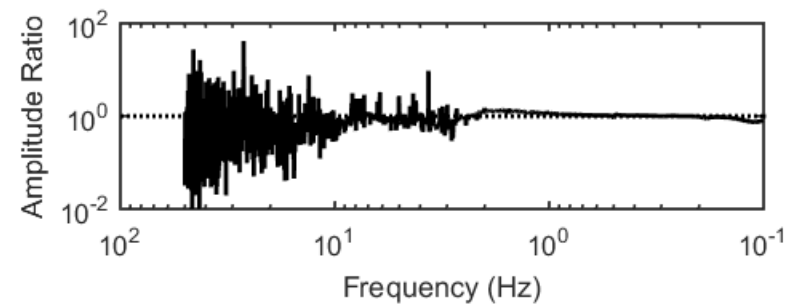
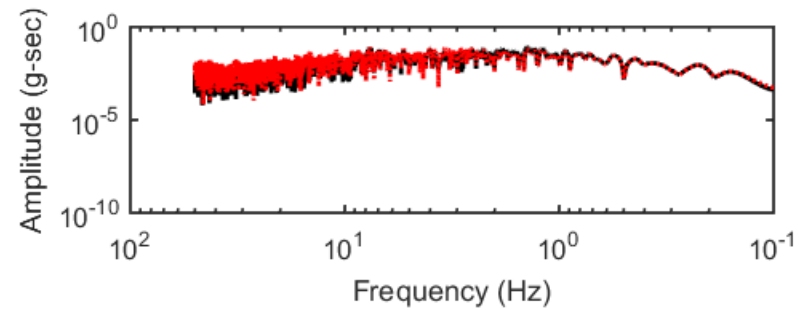
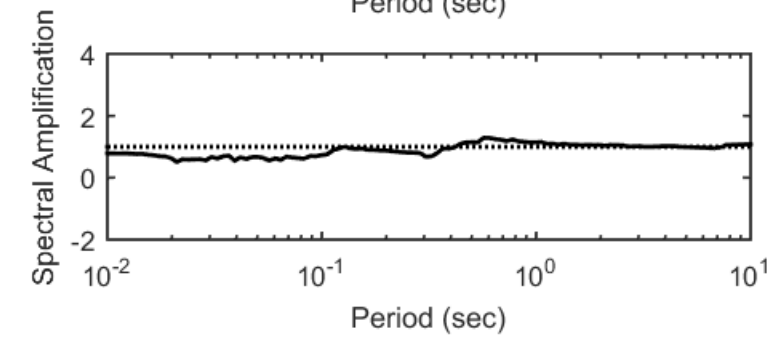
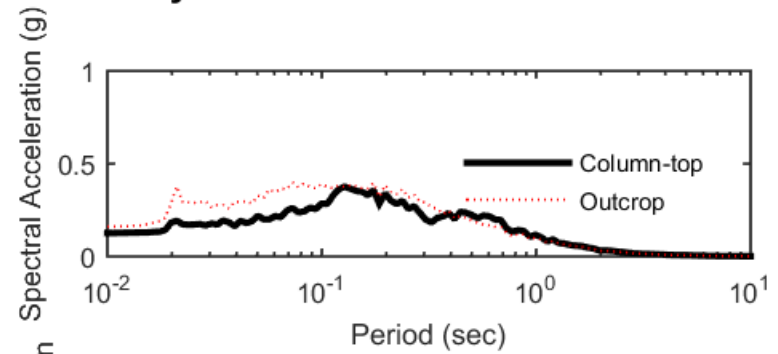
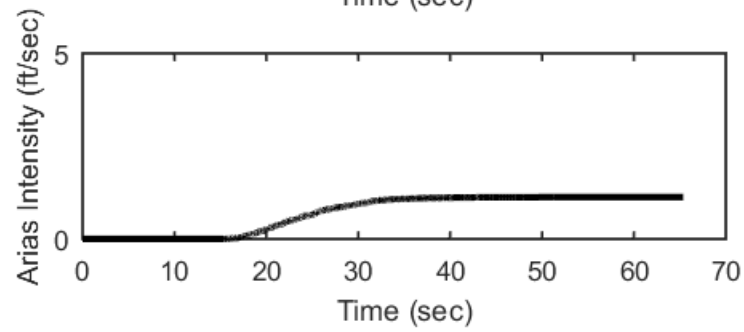
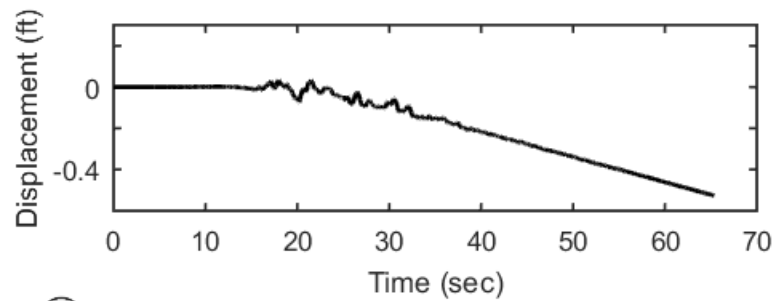
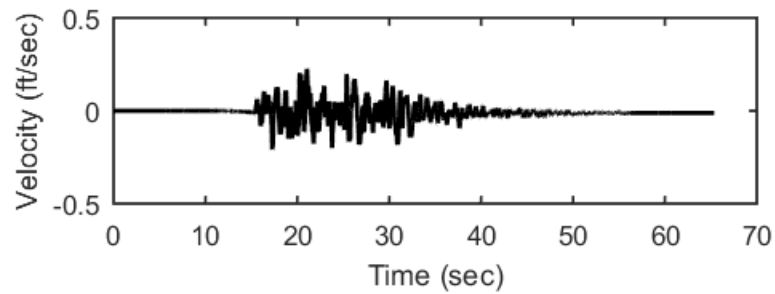
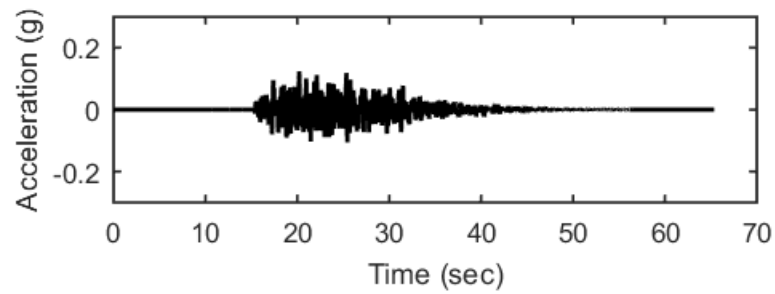
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



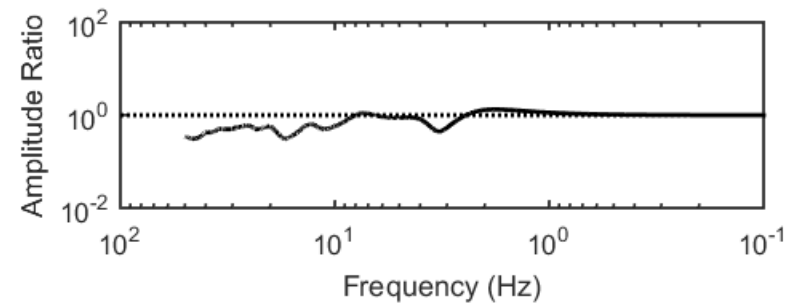
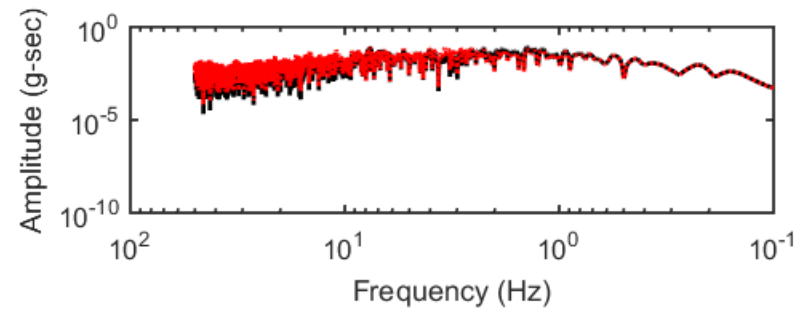
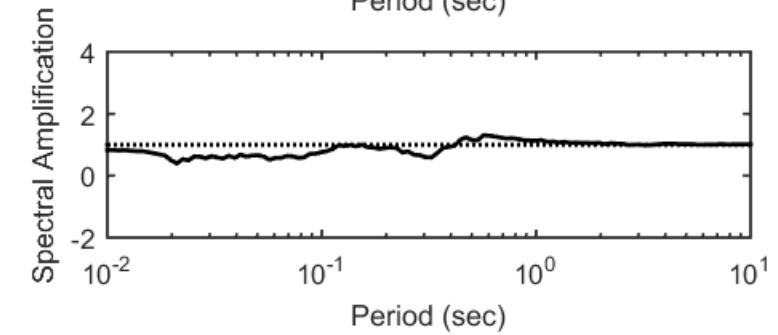
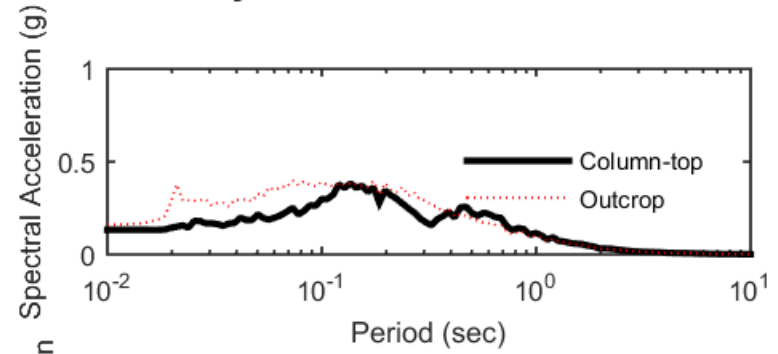
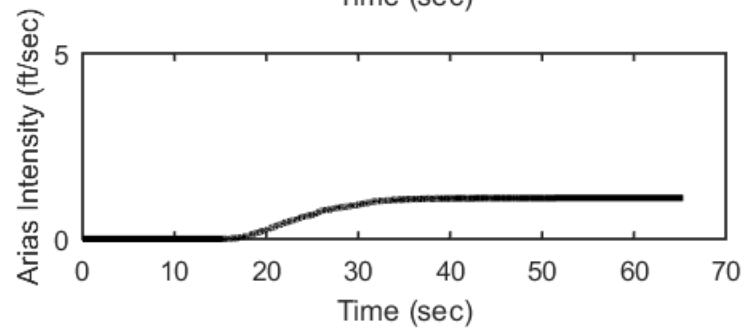
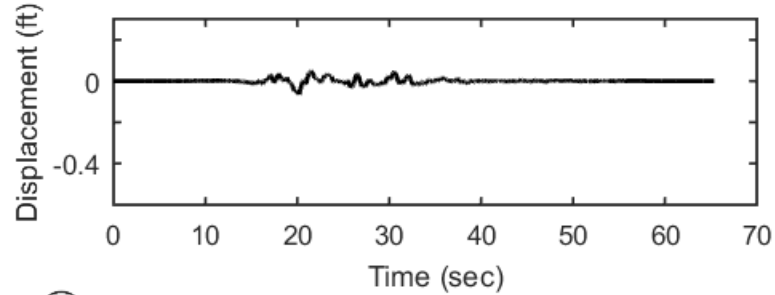
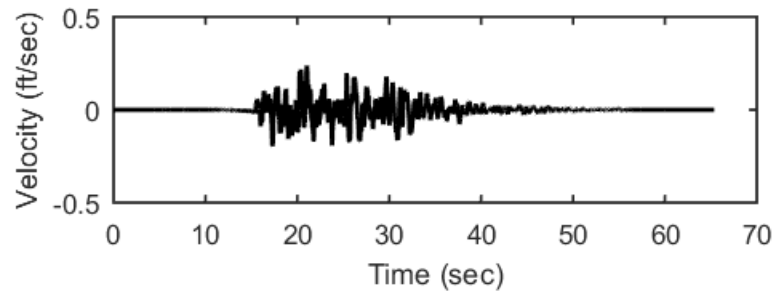
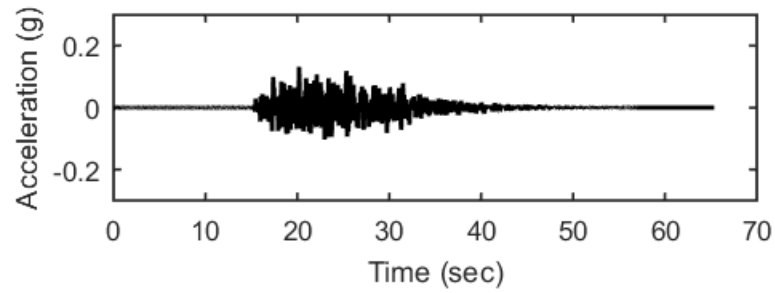
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



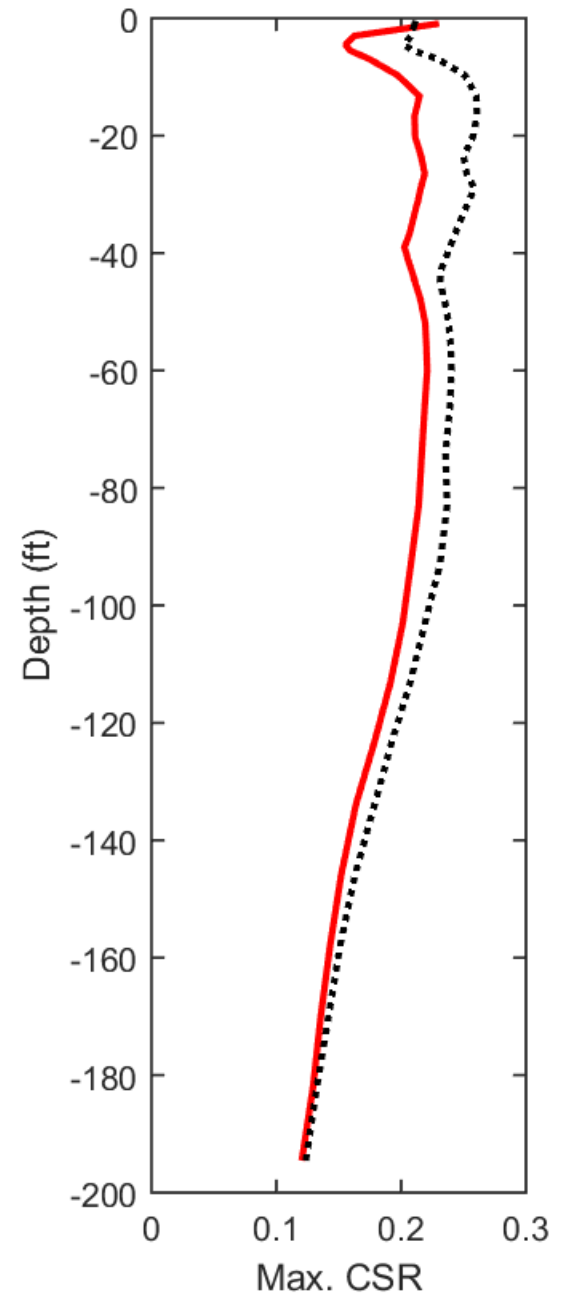
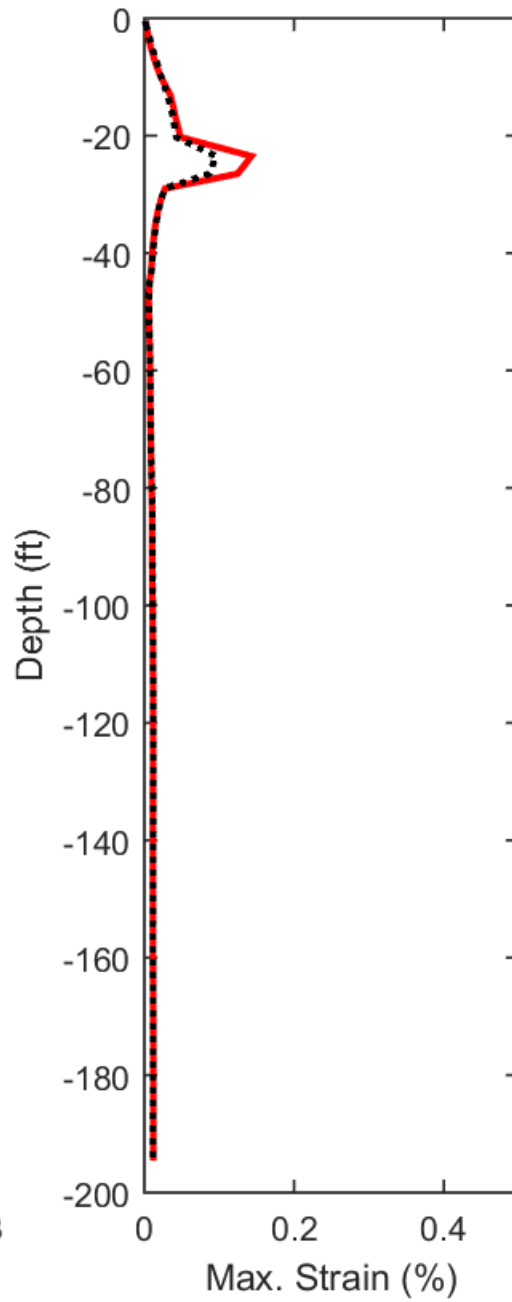
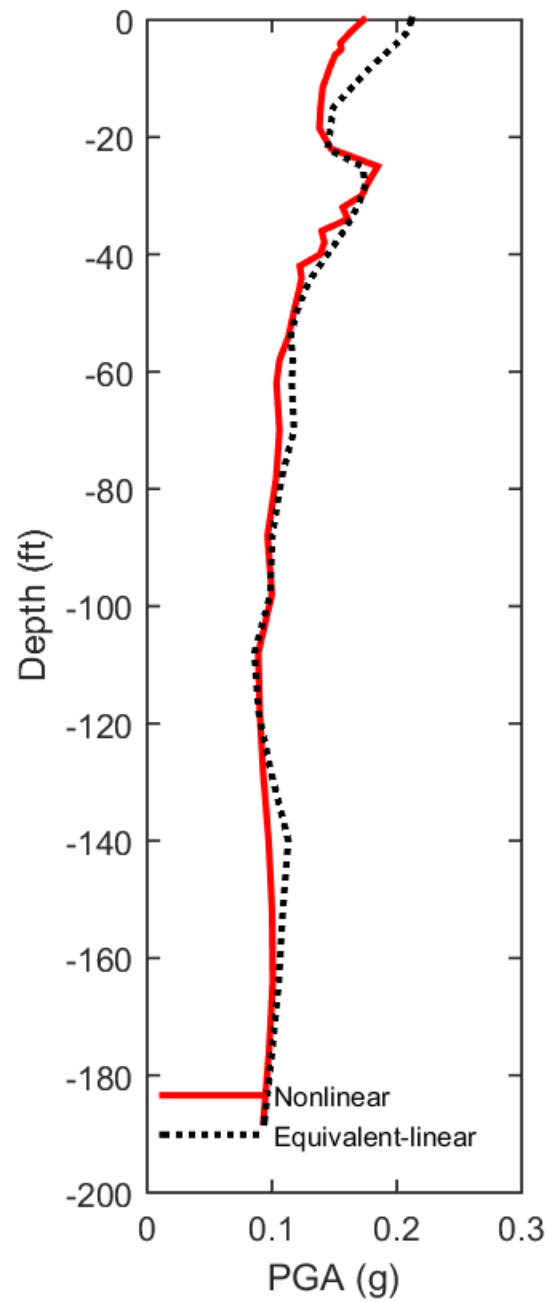
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1

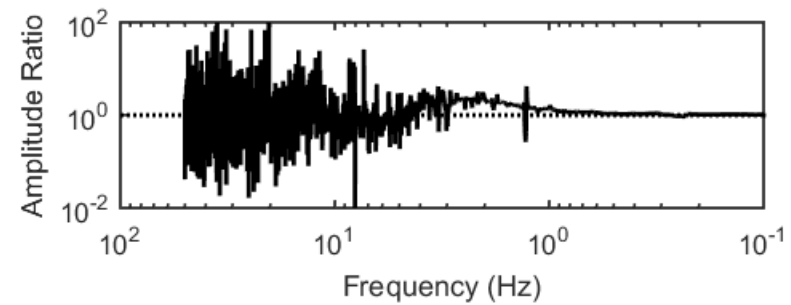
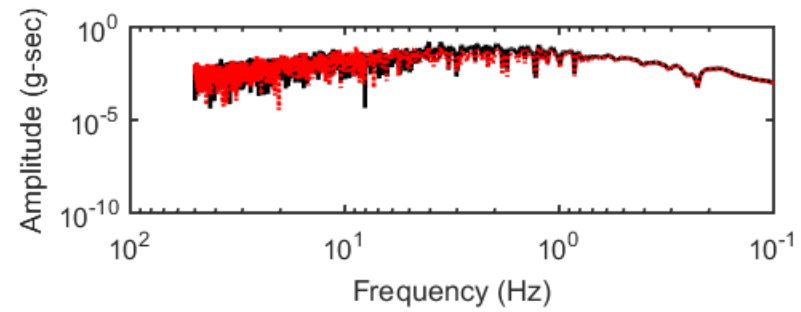
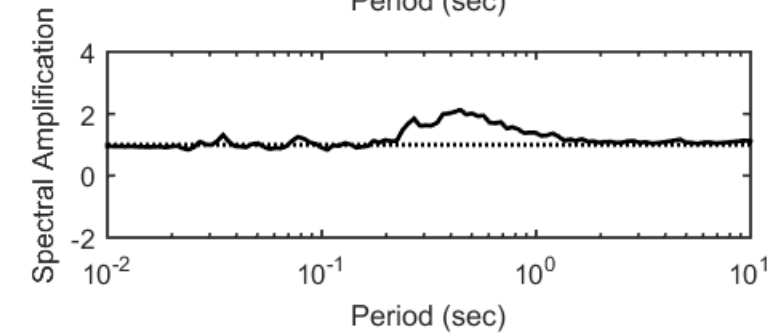
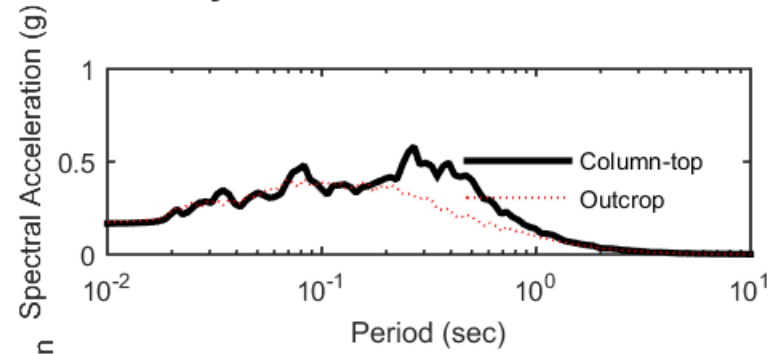
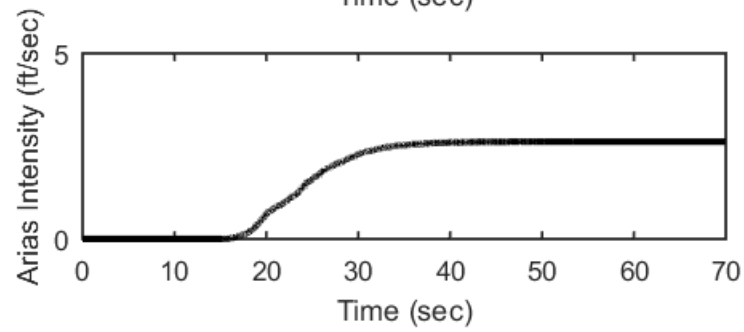
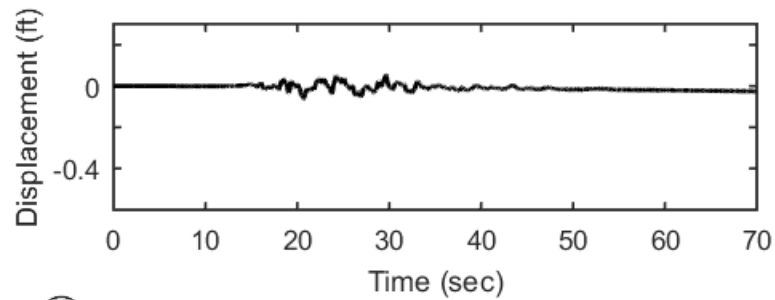
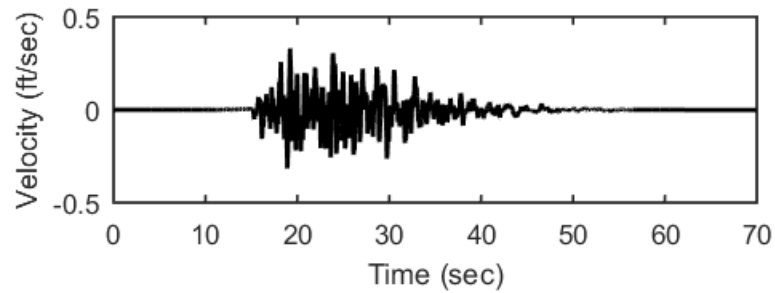
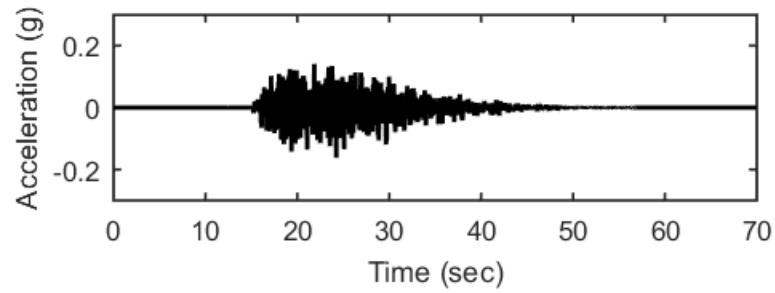


### Profile outputs for Motion: FEE1

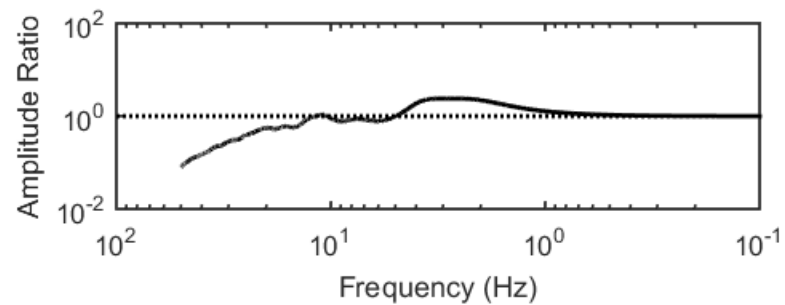
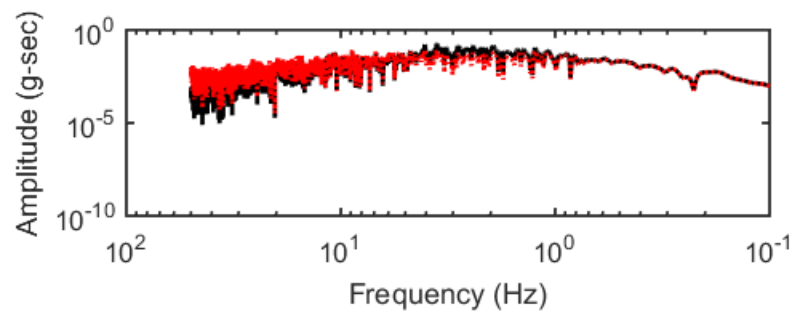
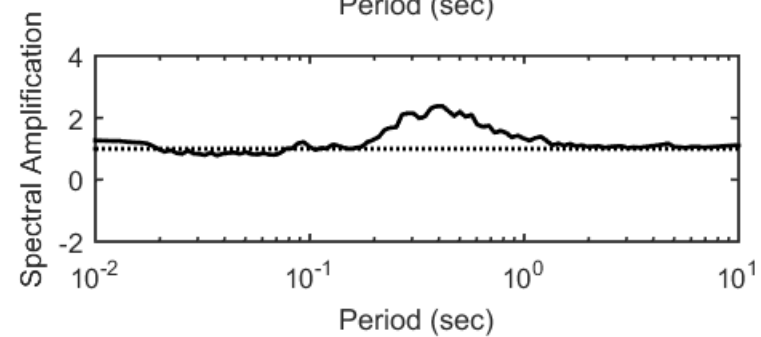
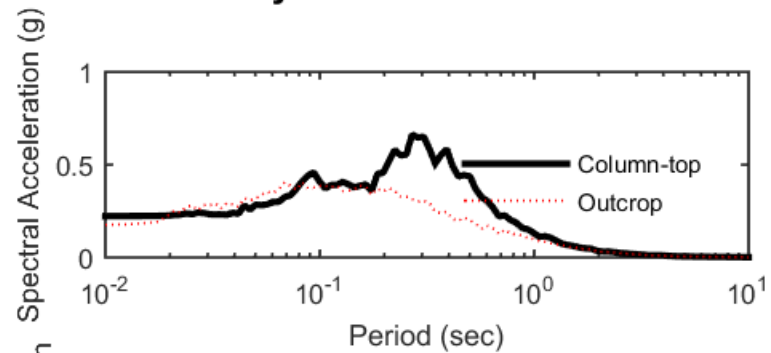
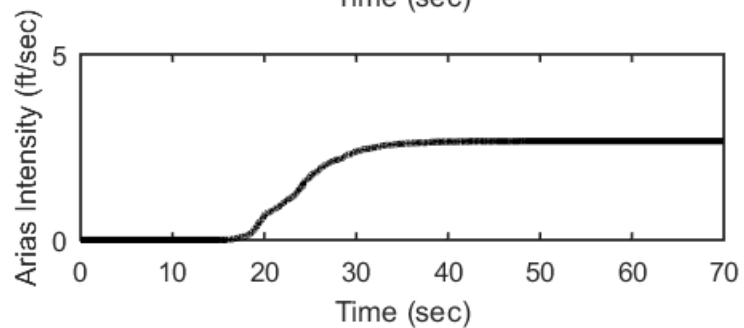
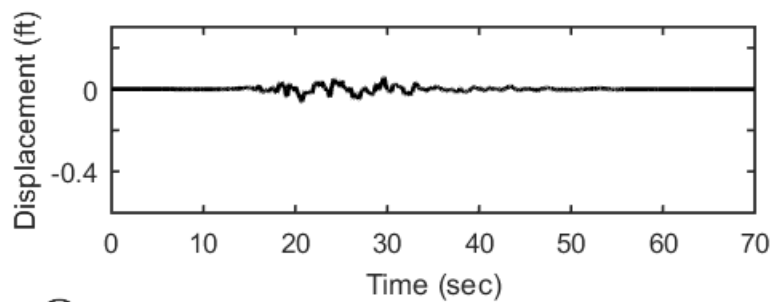
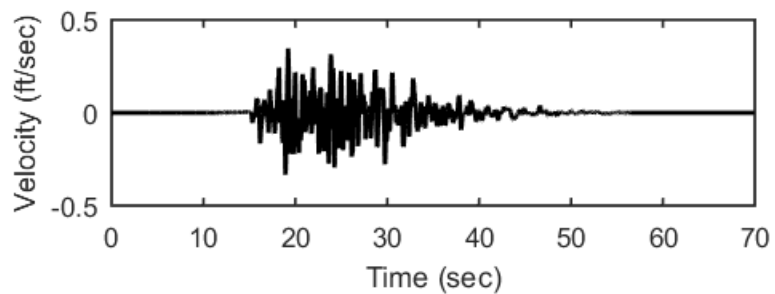
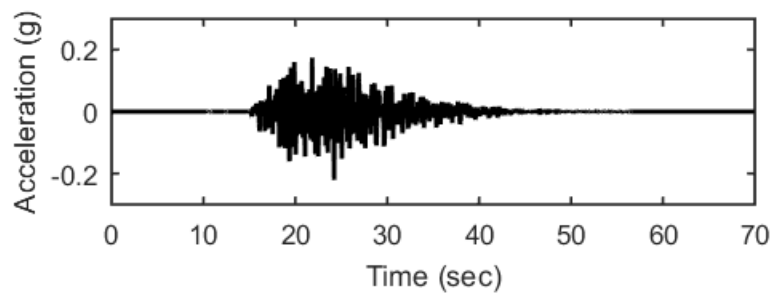




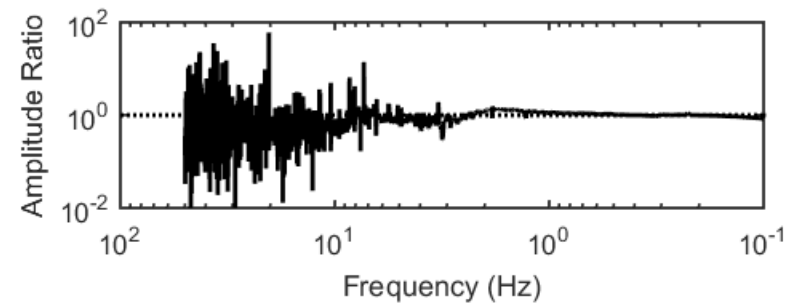
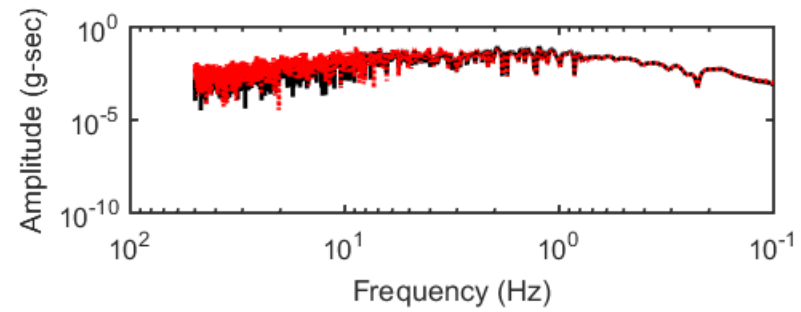
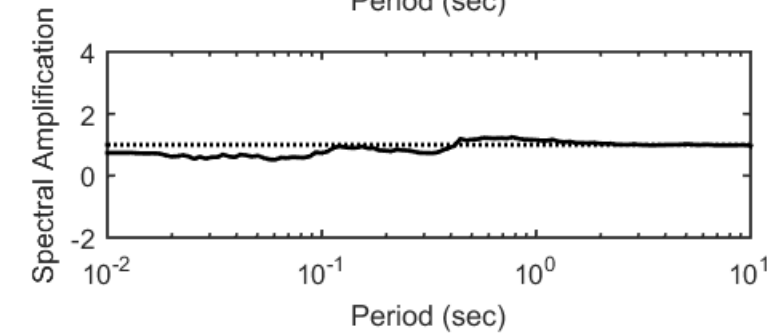
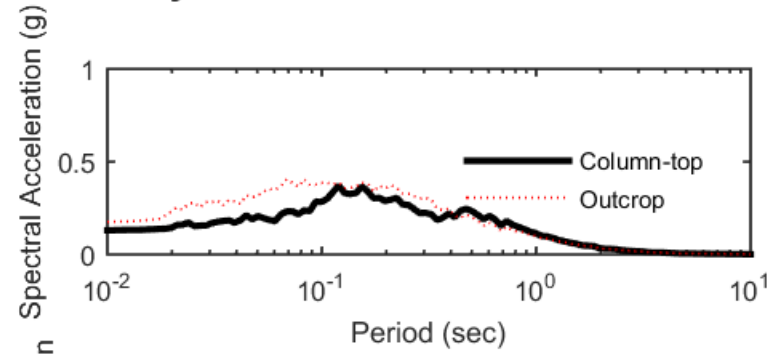
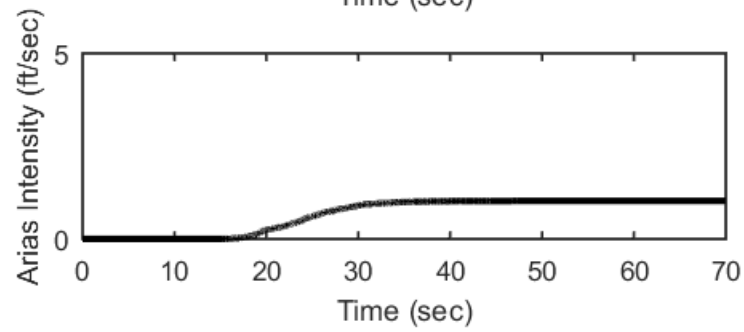
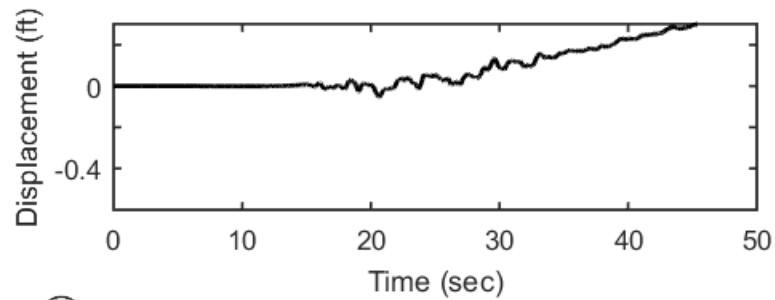
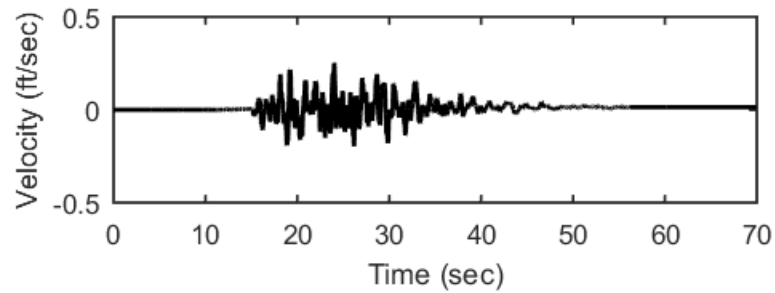
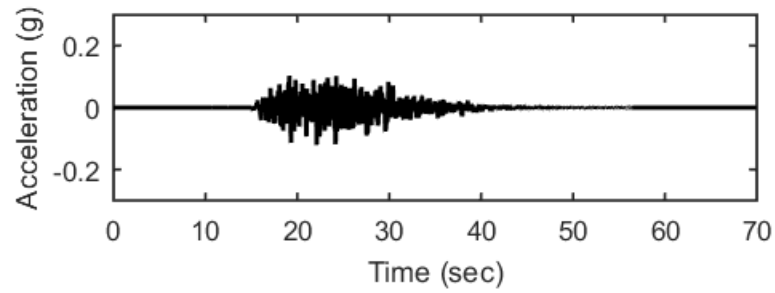
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



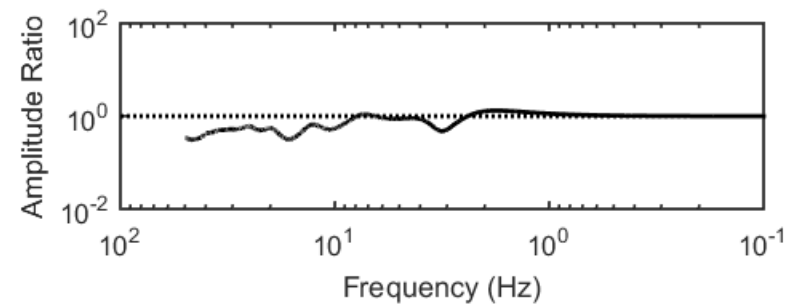
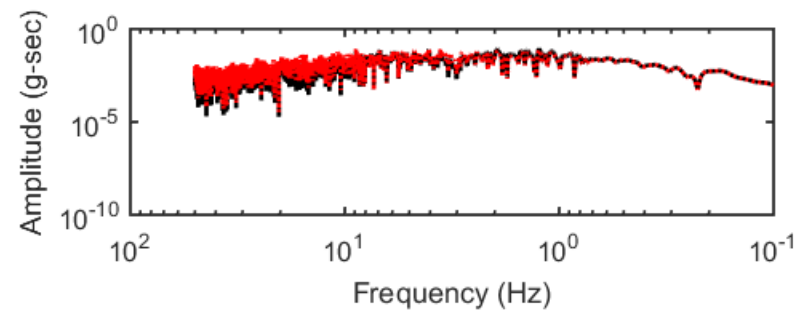
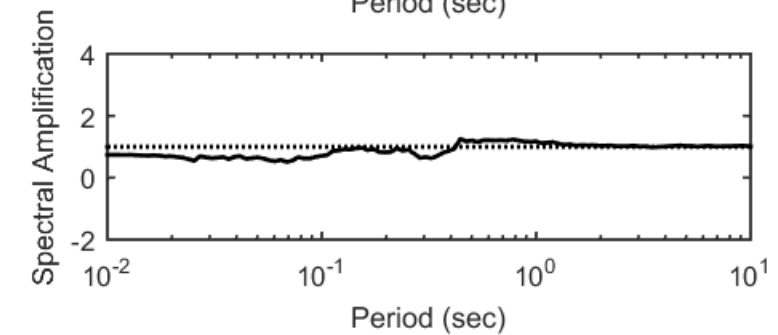
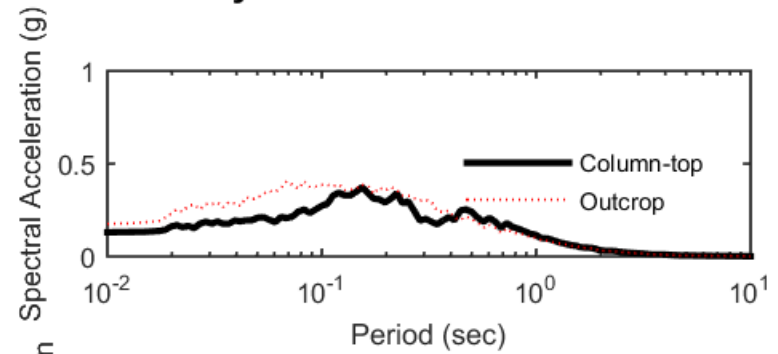
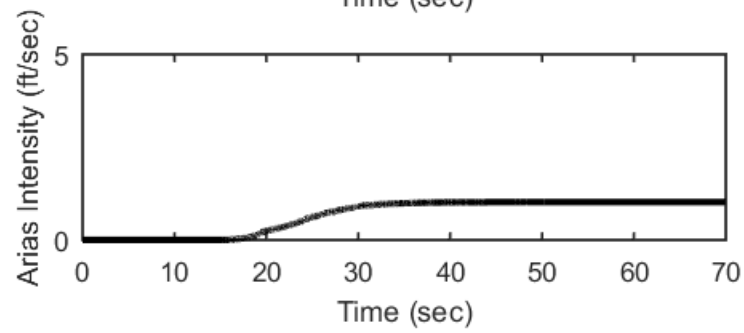
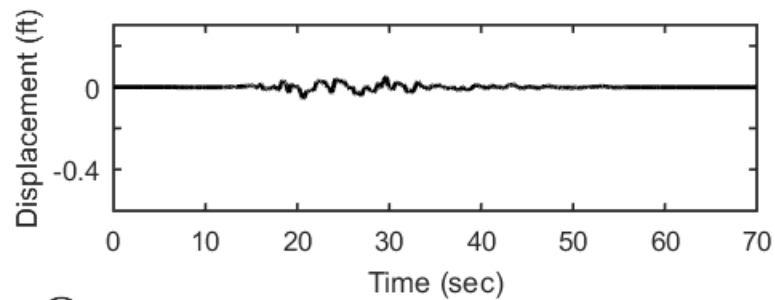
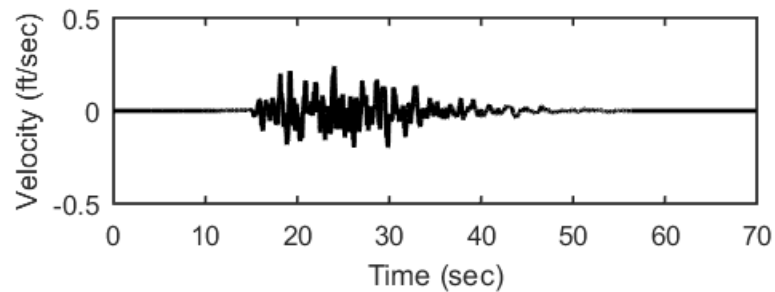
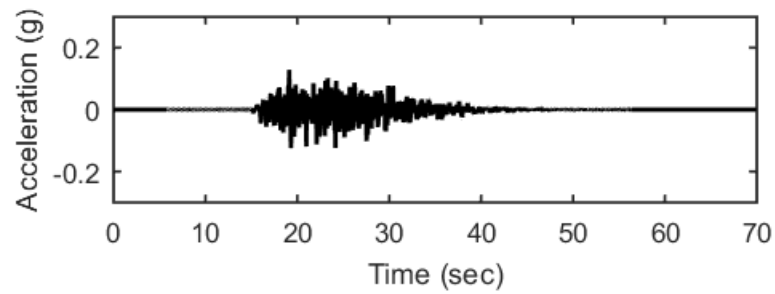
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



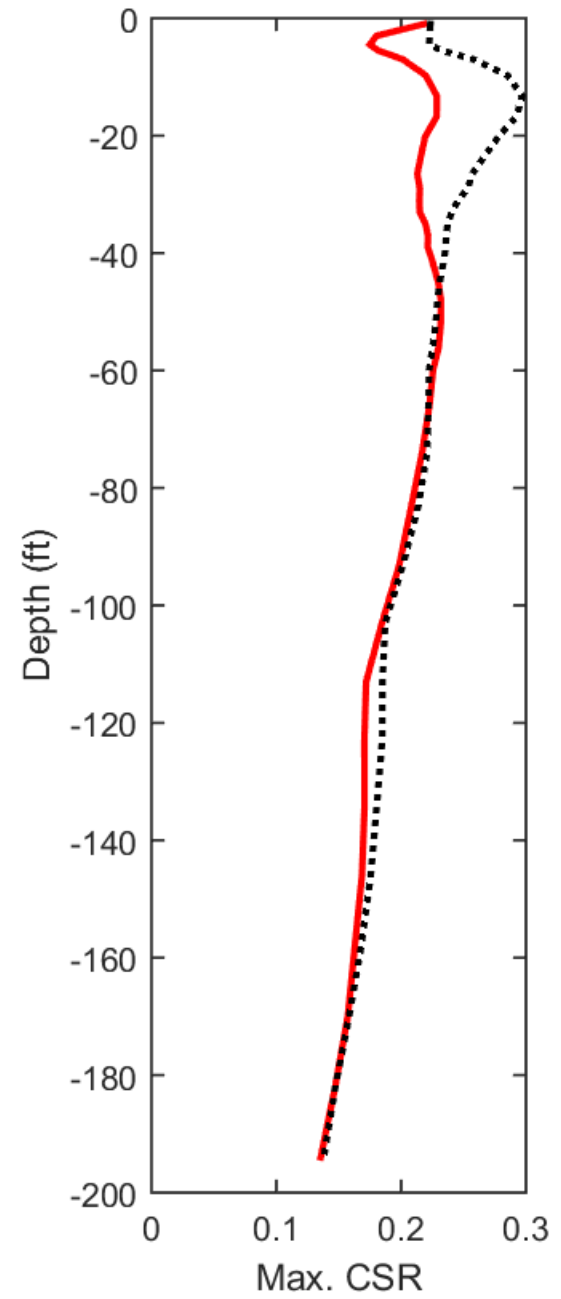
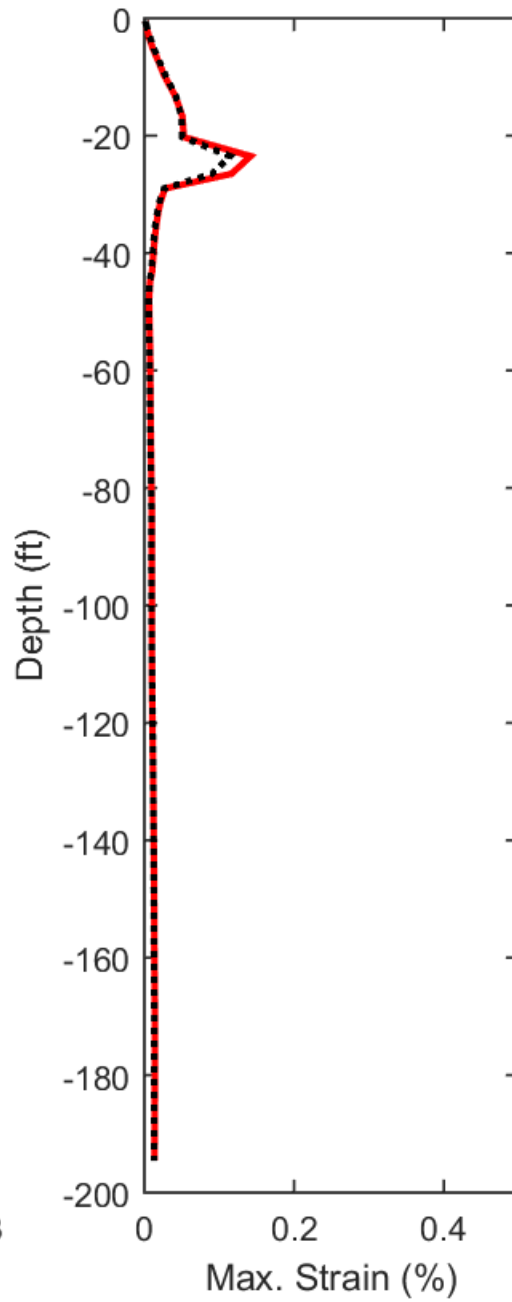
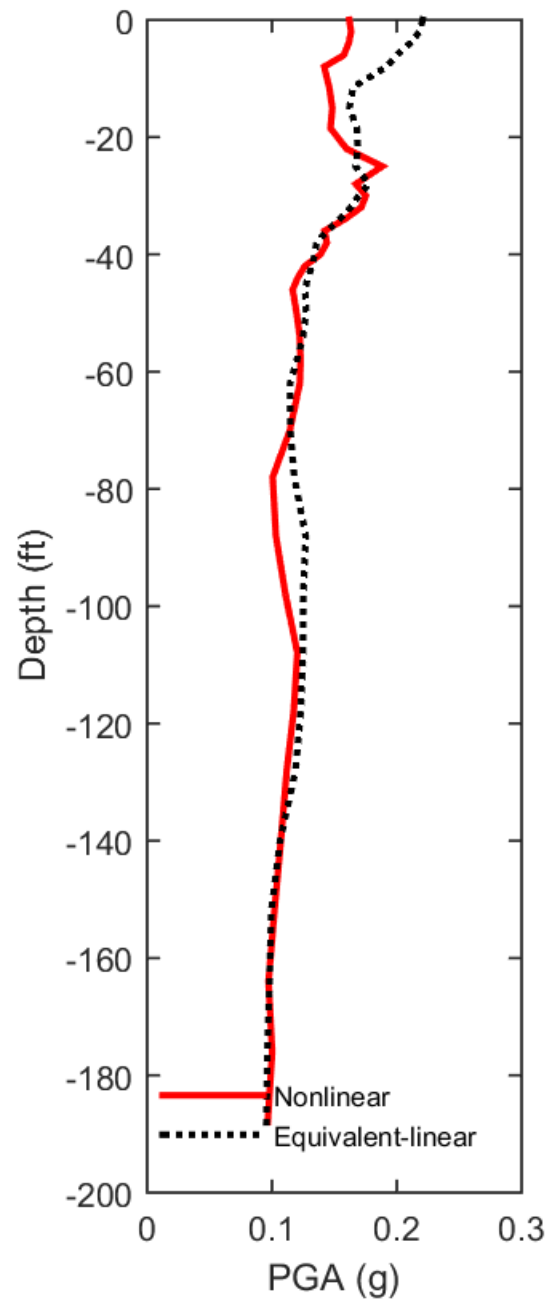
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



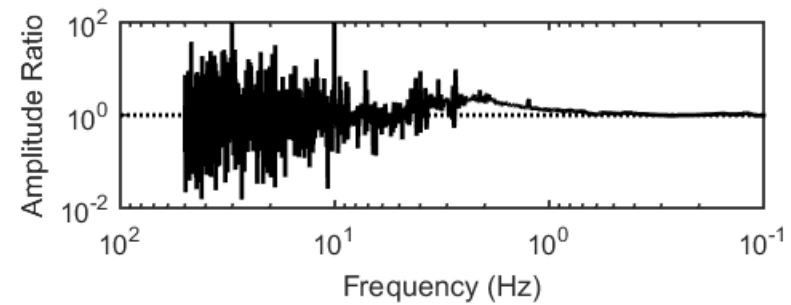
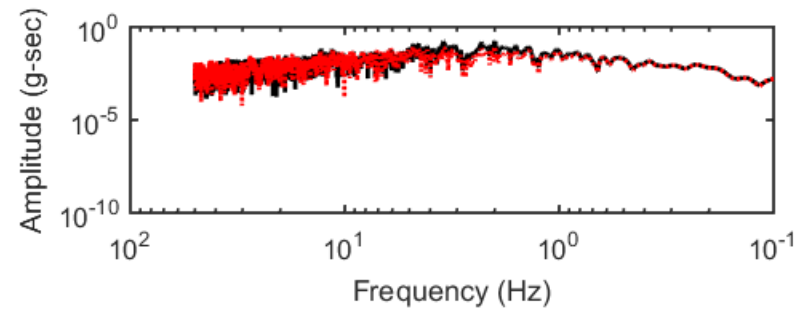
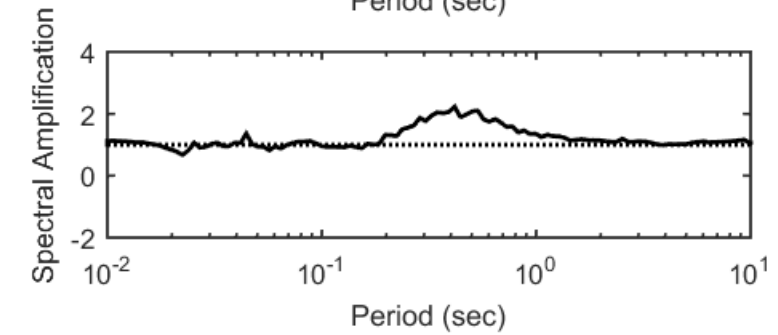
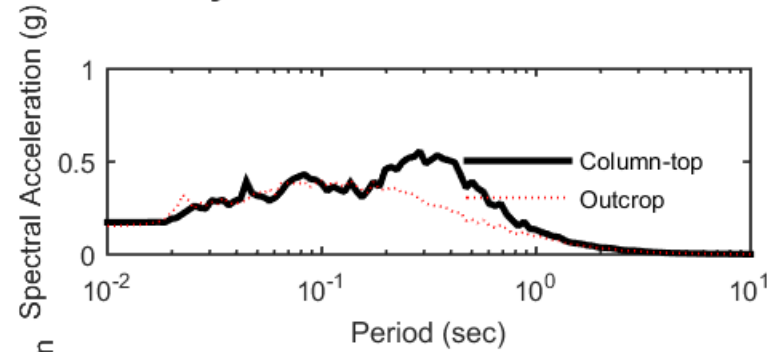
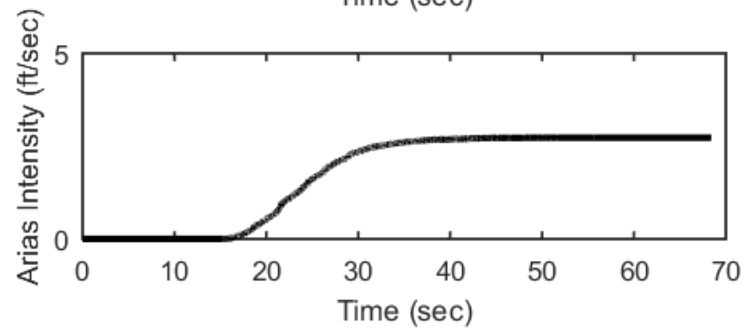
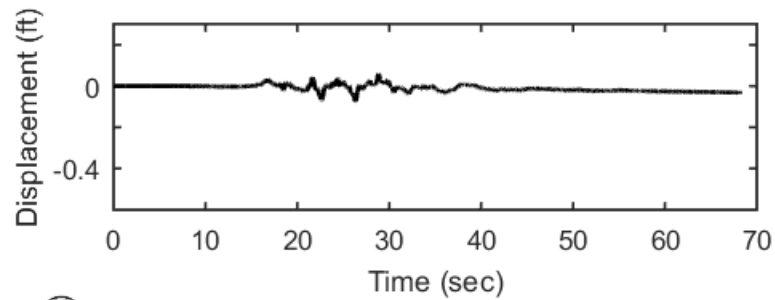
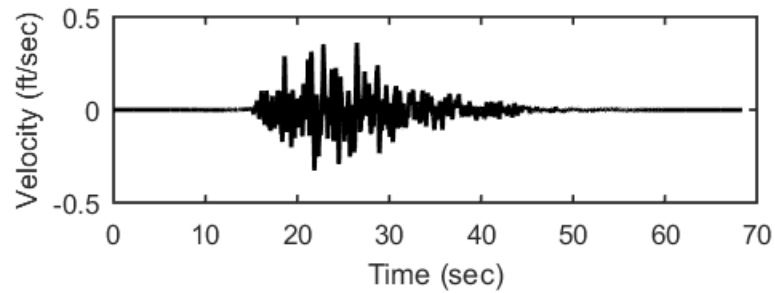
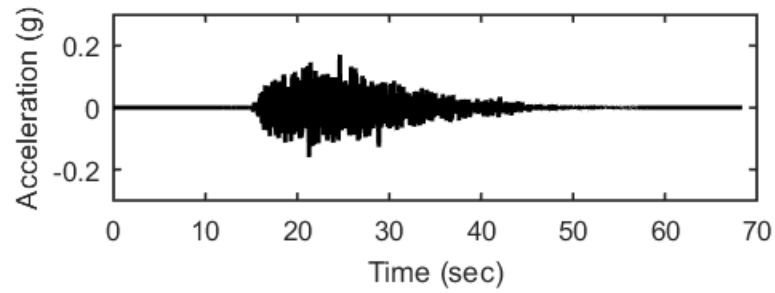
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



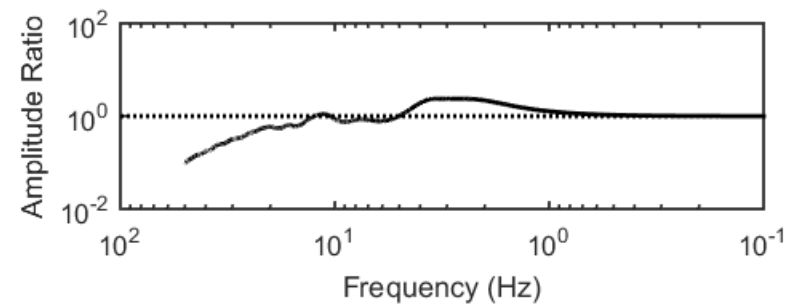
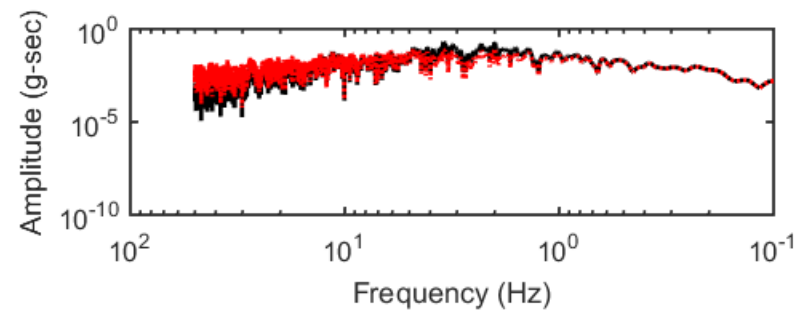
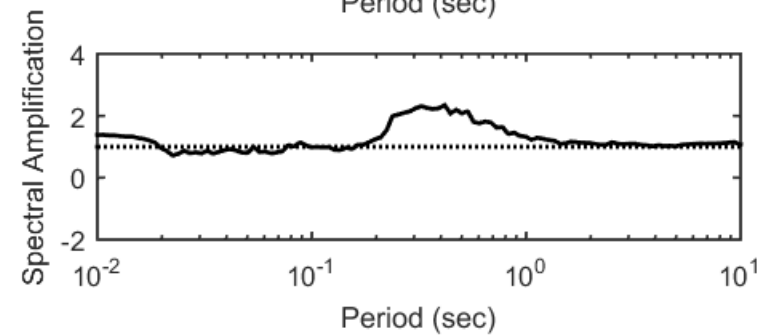
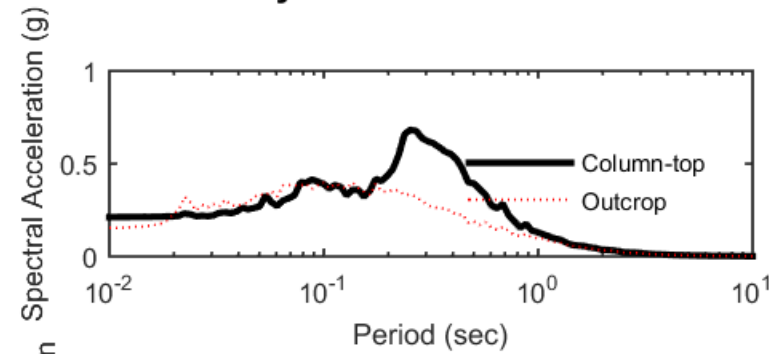
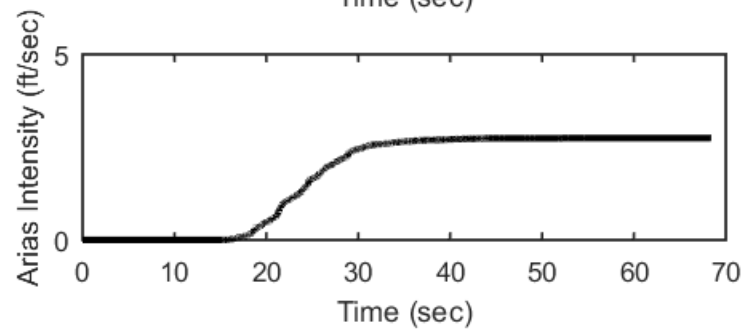
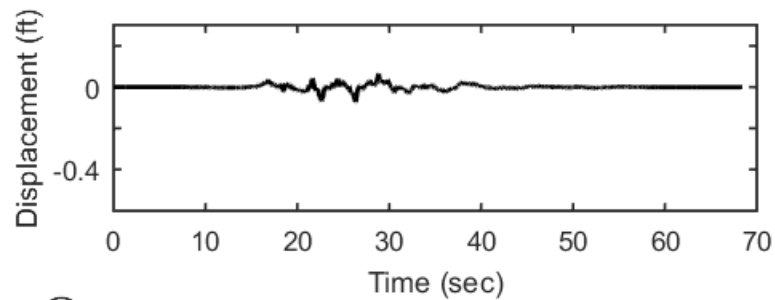
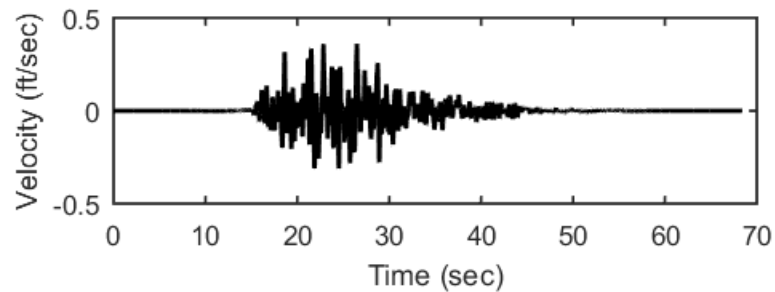
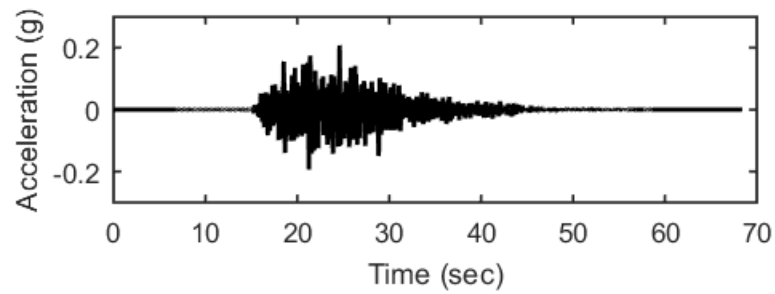
### Profile outputs for Motion: FEE2



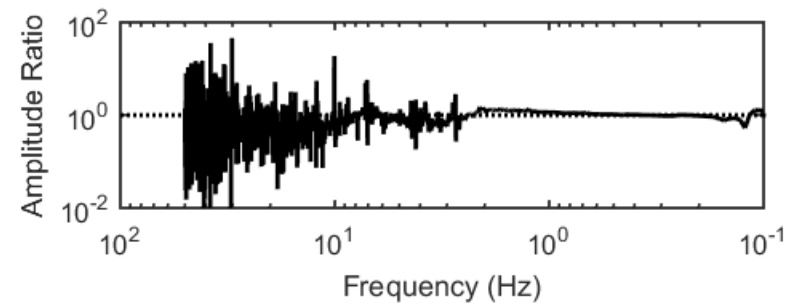
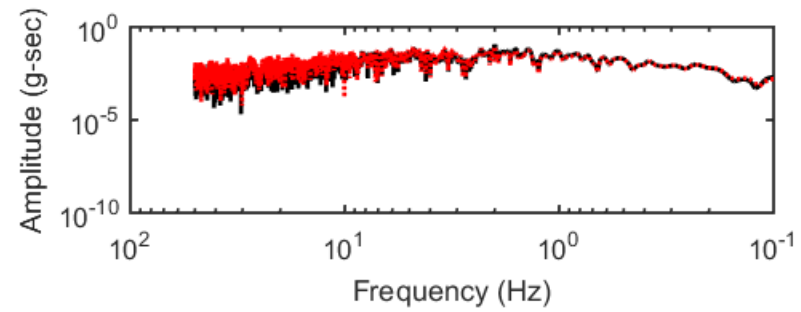
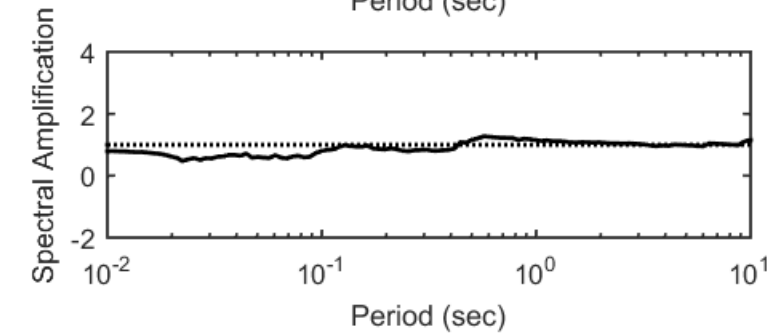
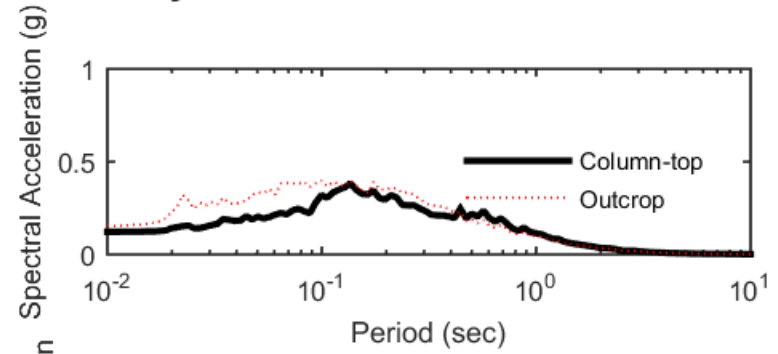
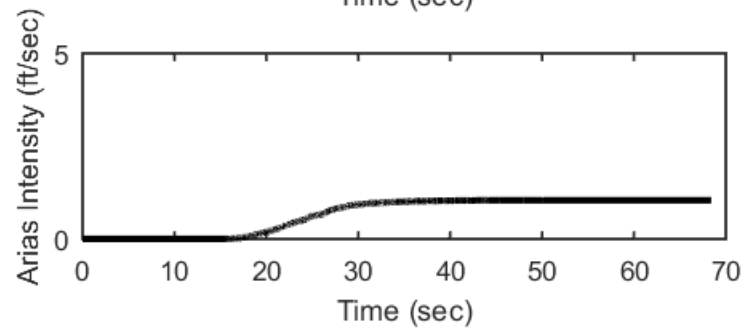
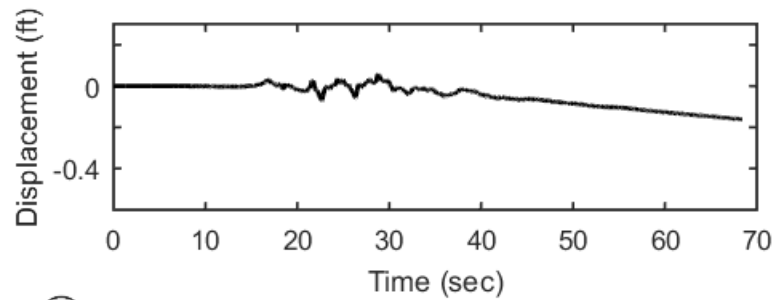
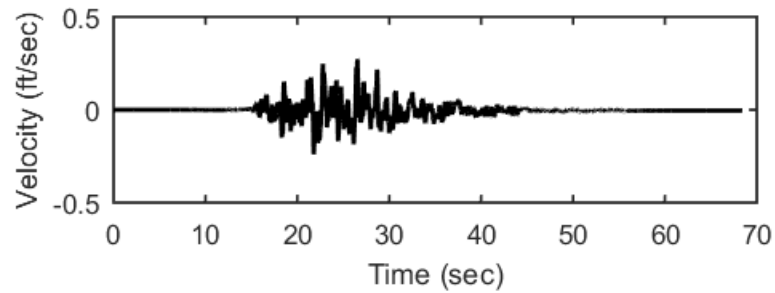
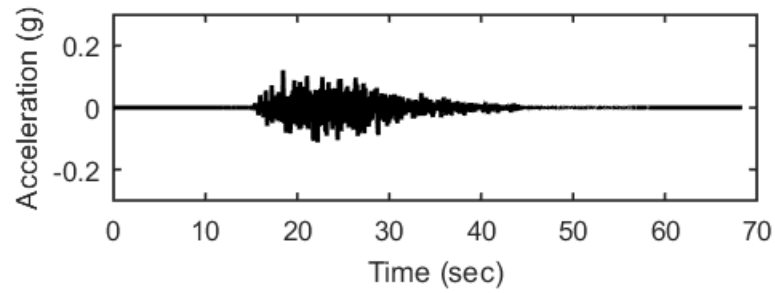
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3

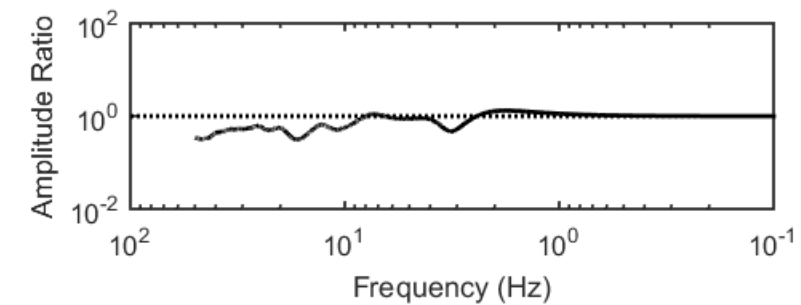
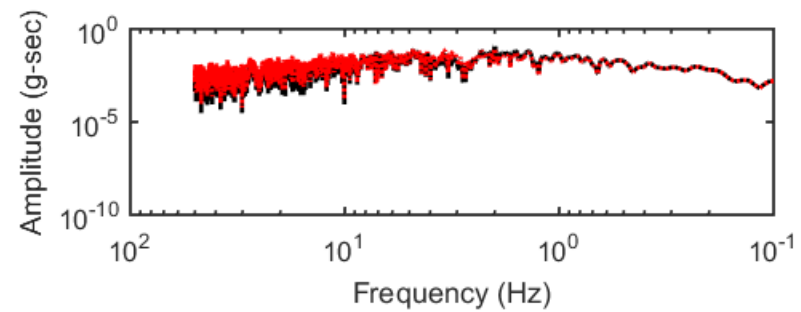
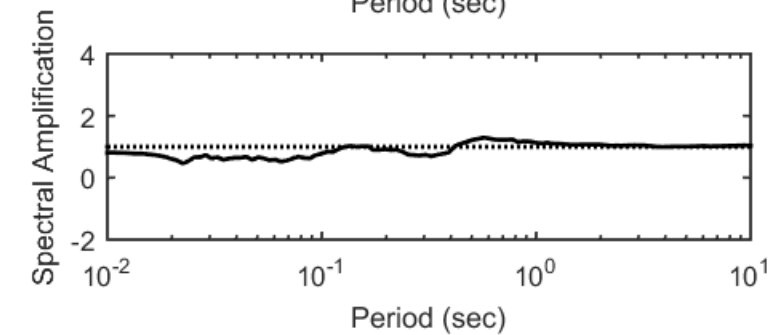
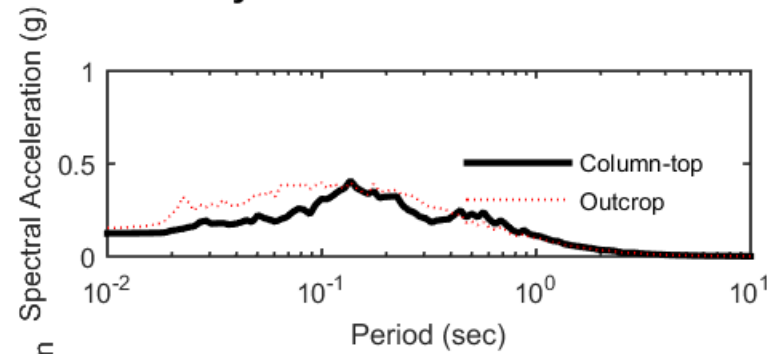
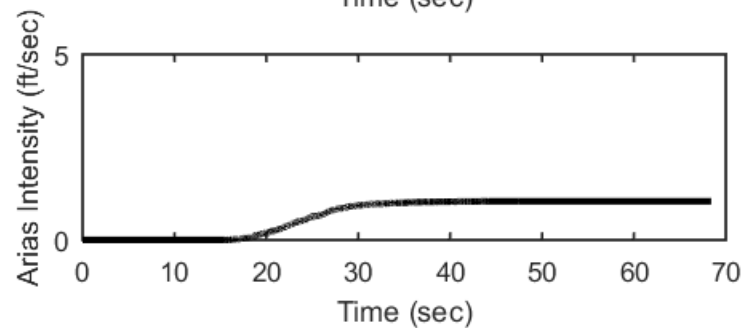
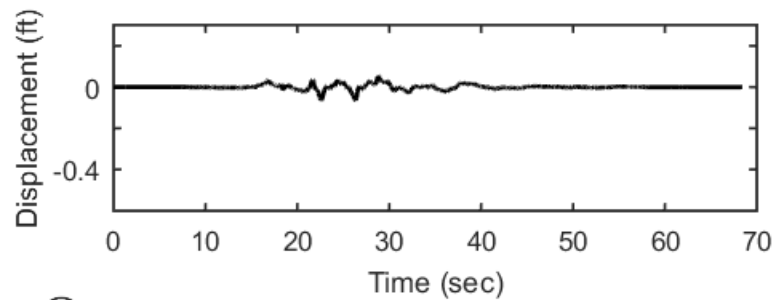
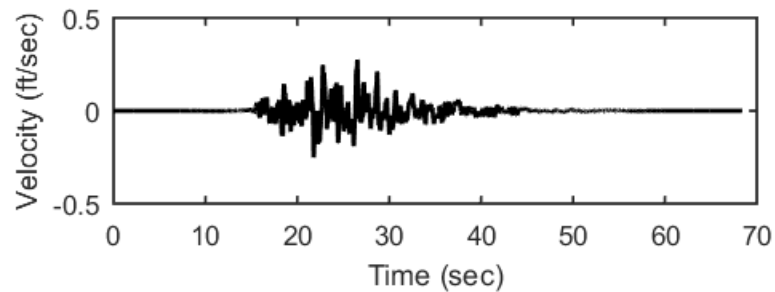
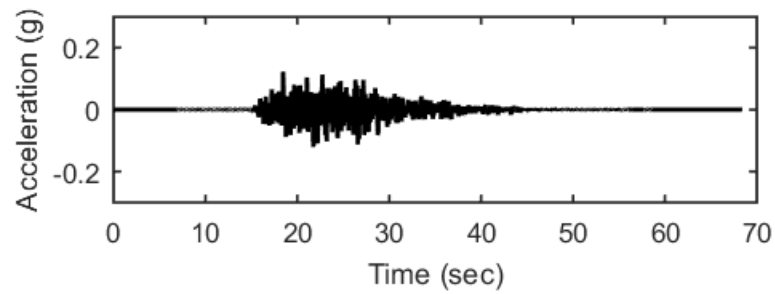


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3

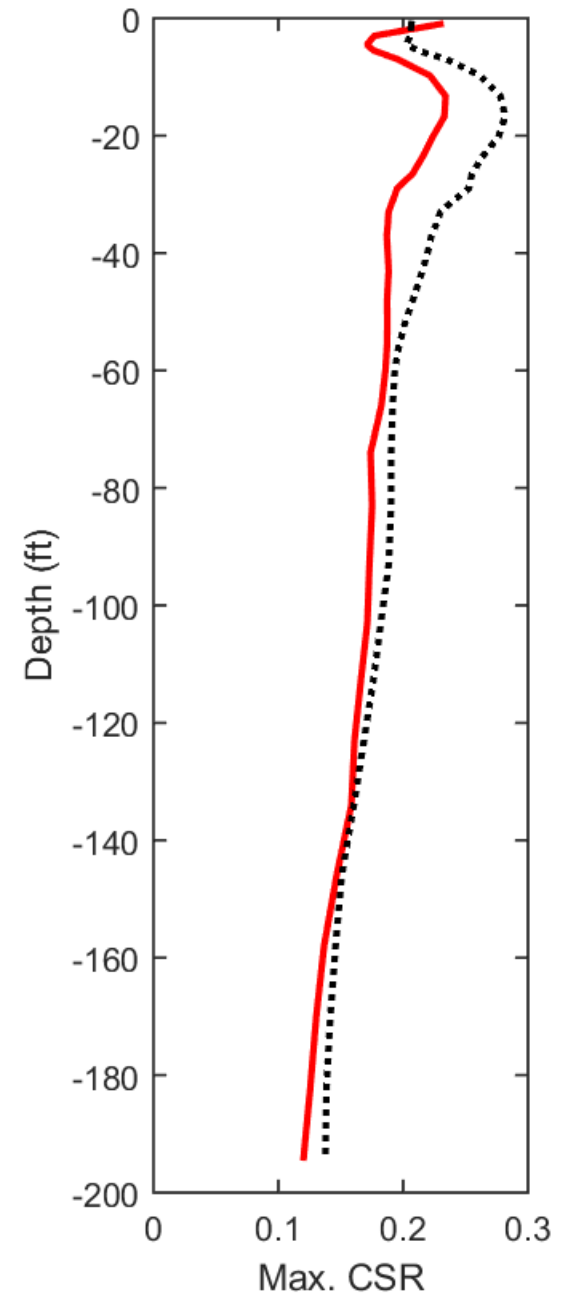
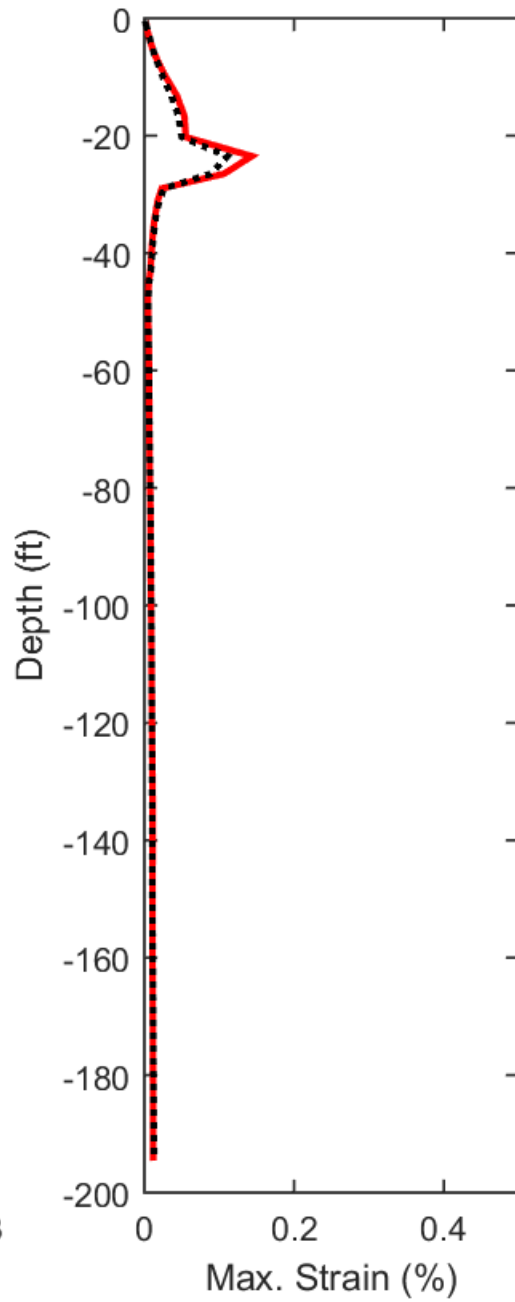
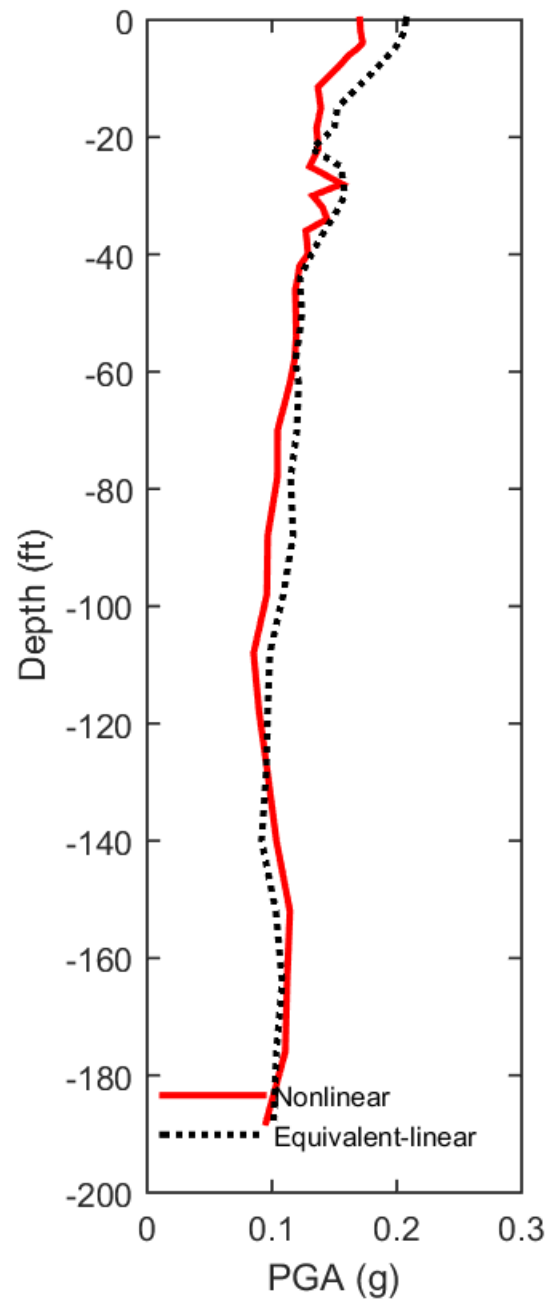




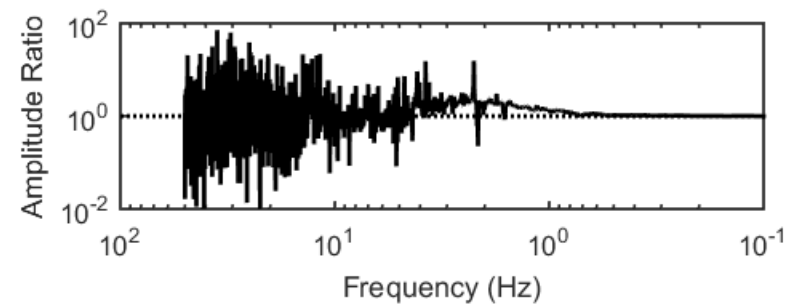
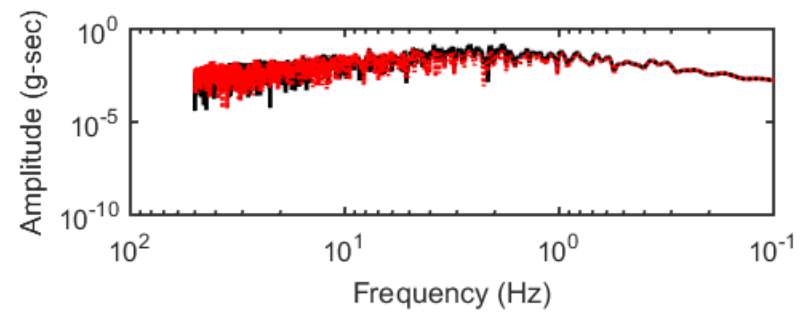
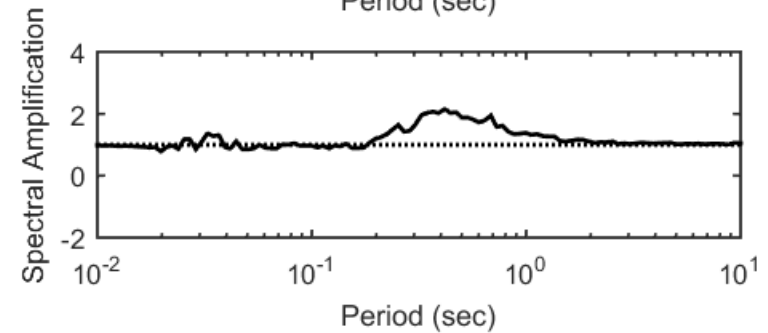
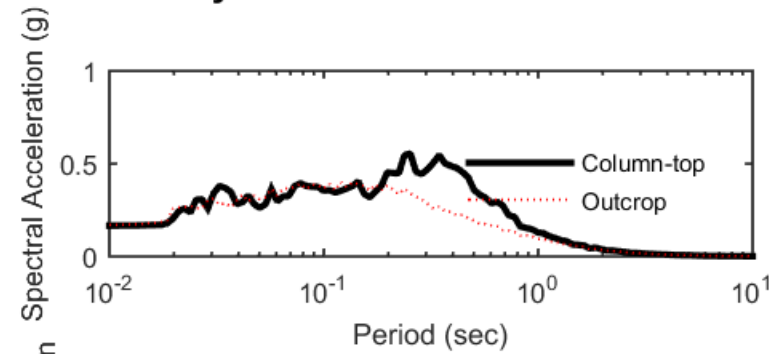
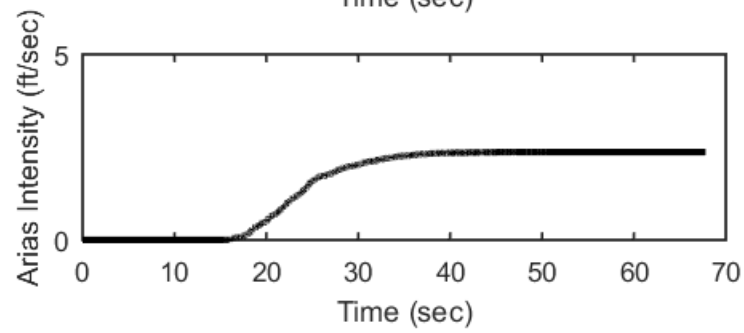
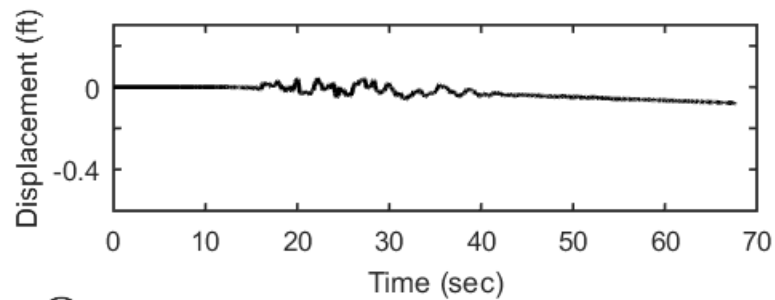
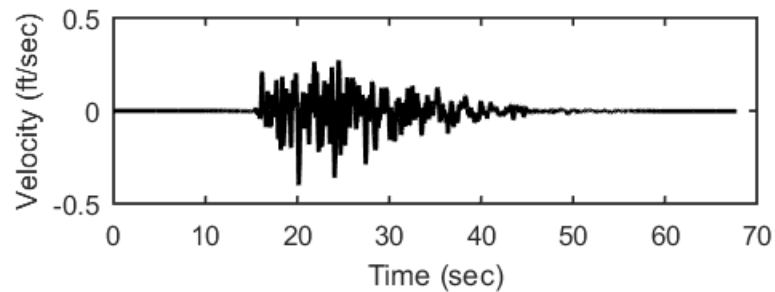
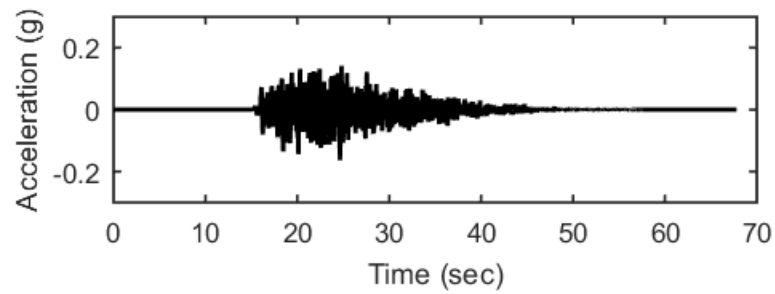
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



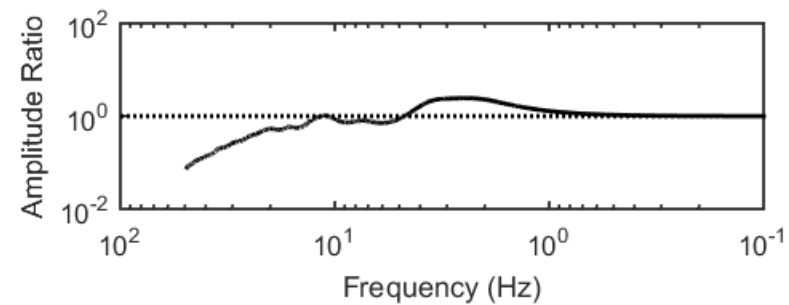
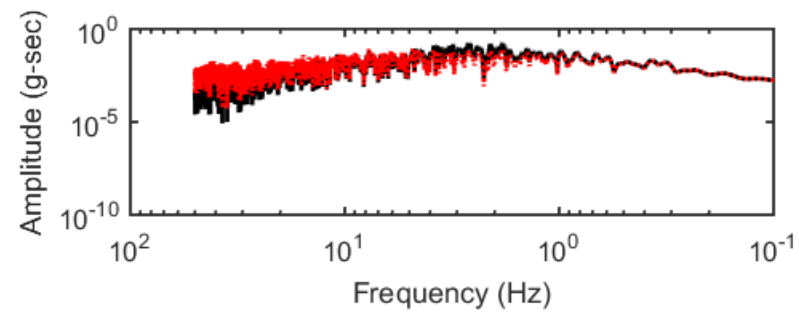
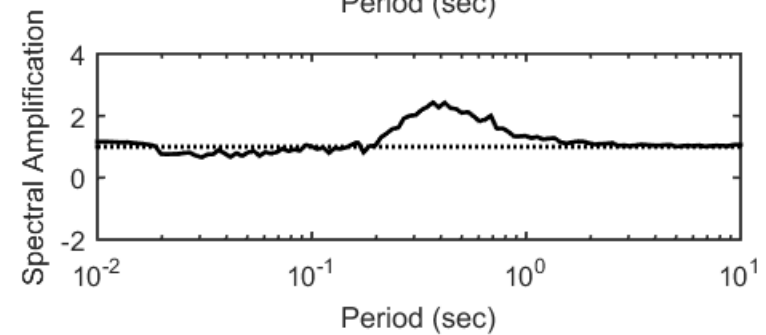
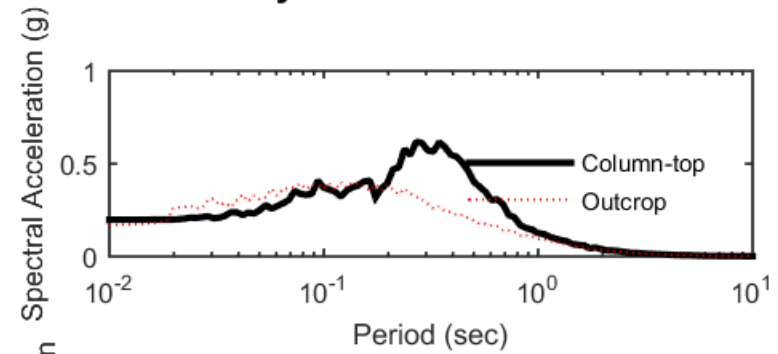
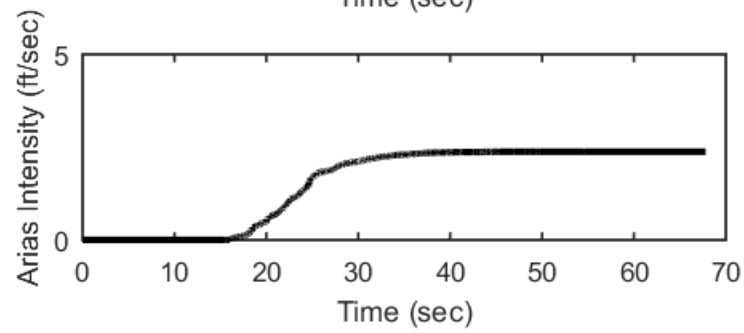
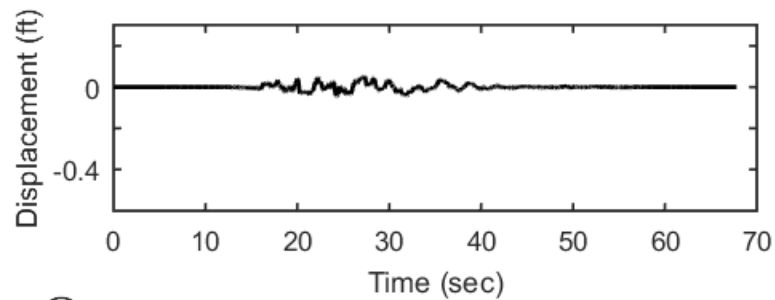
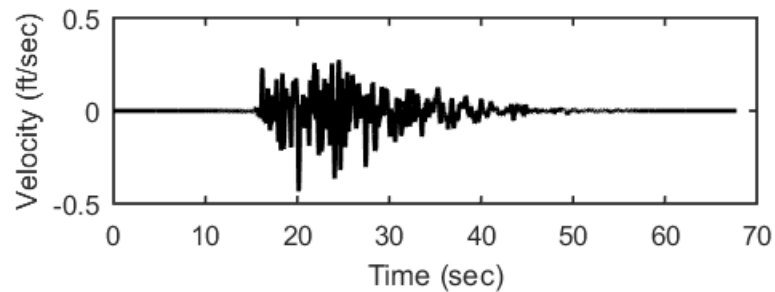
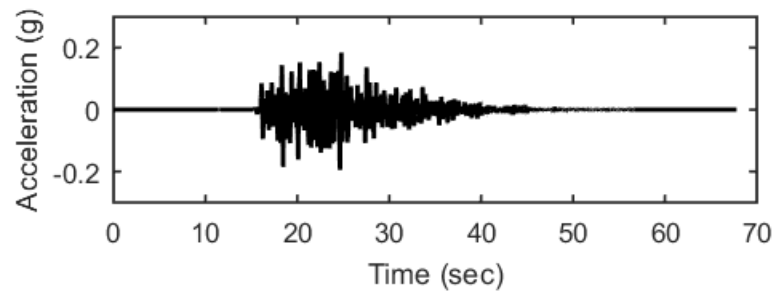
### Profile outputs for Motion: FEE3



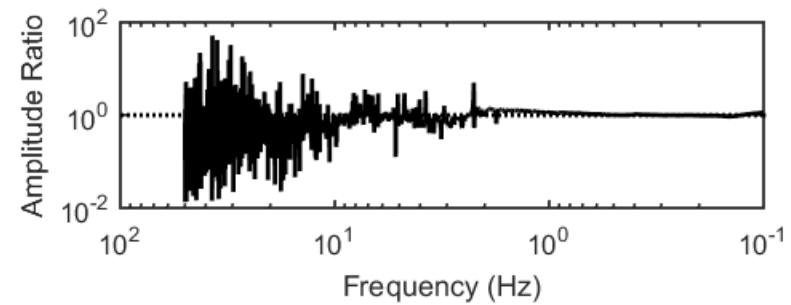
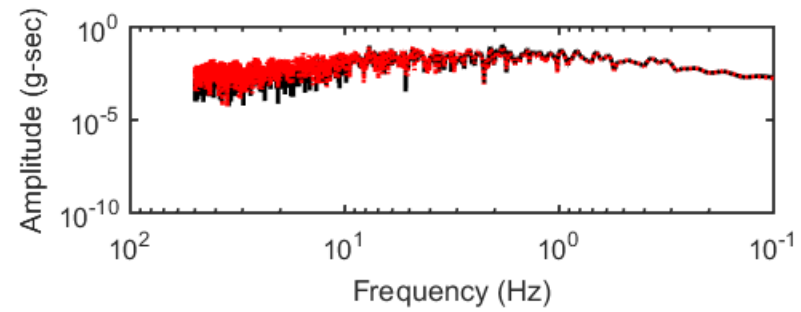
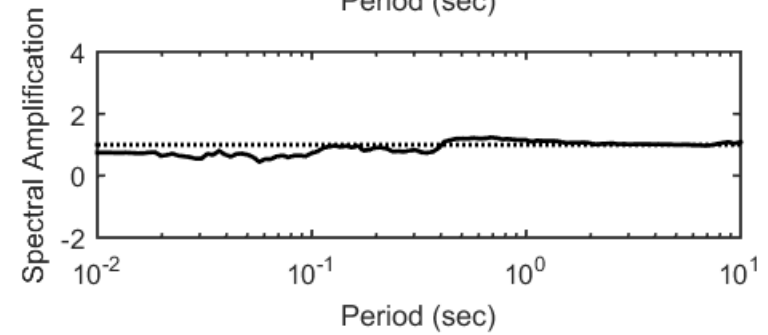
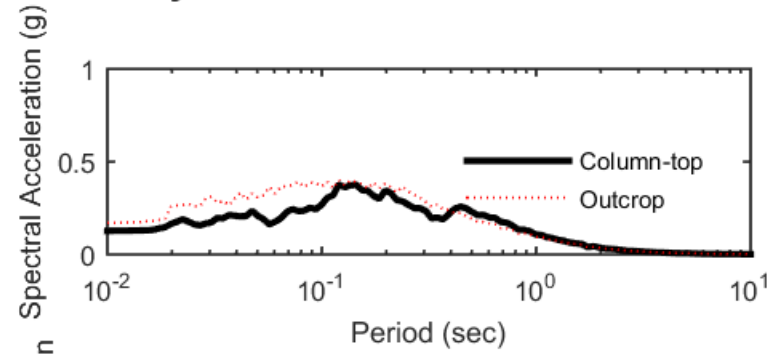
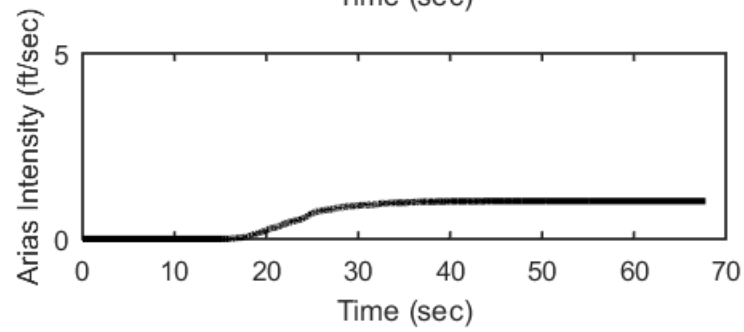
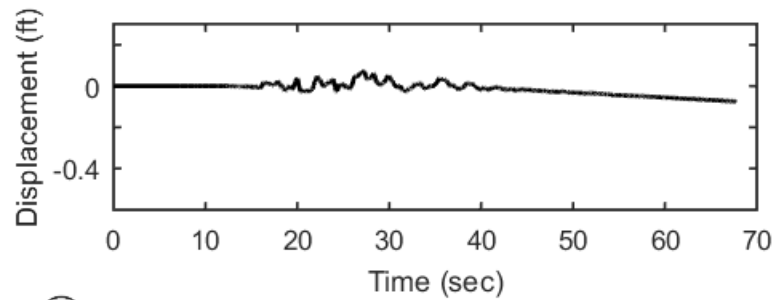
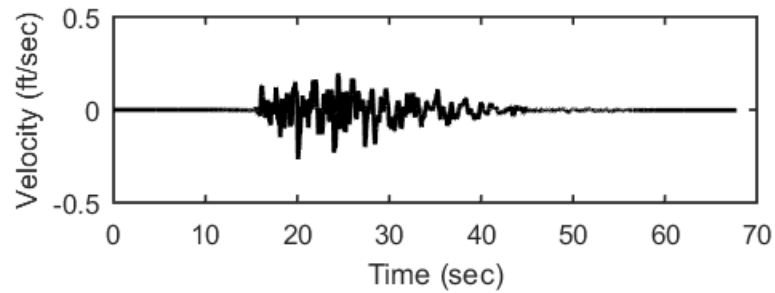
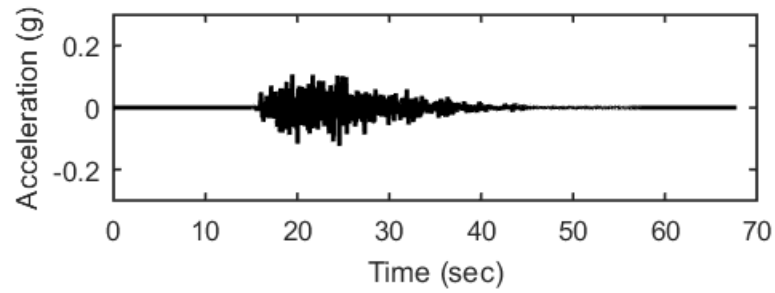
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



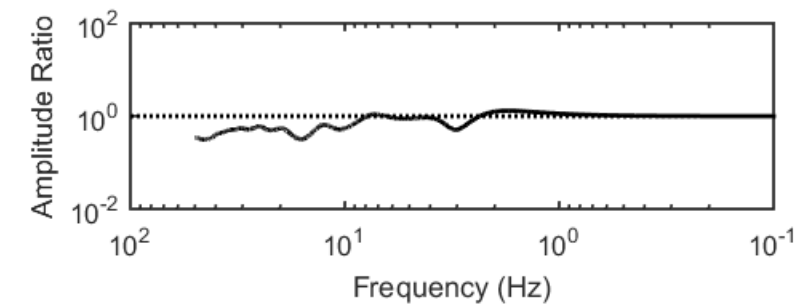
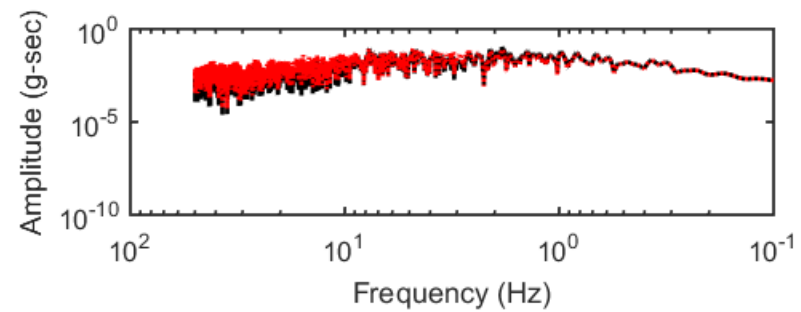
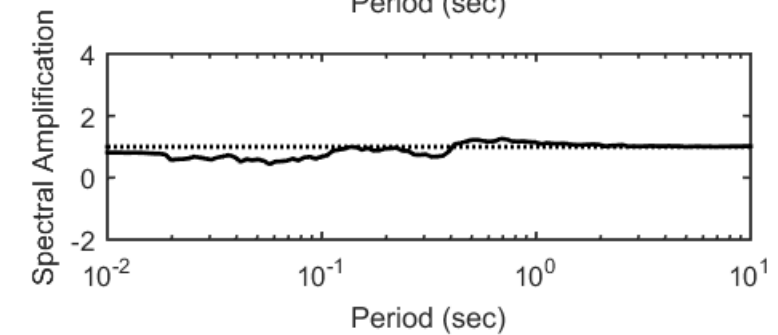
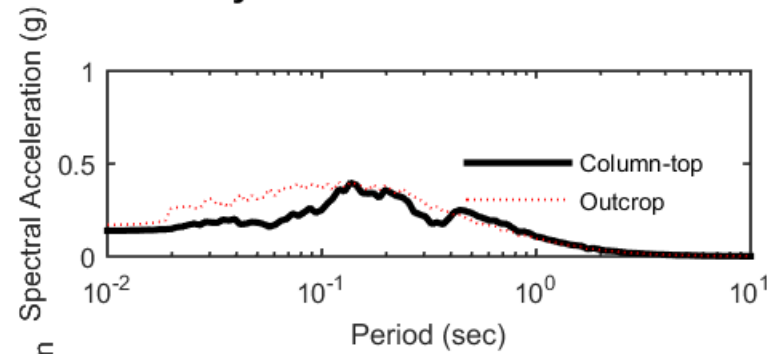
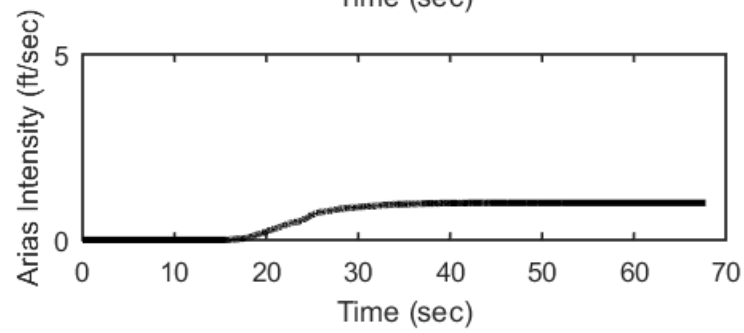
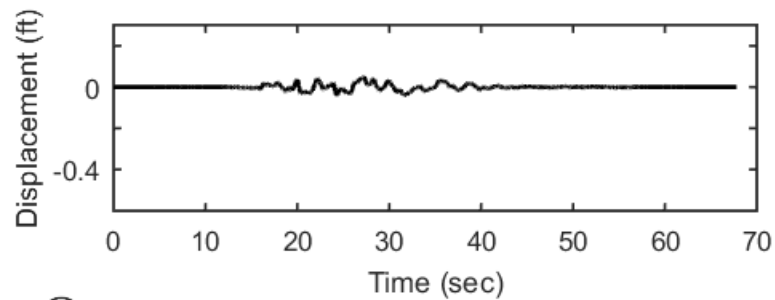
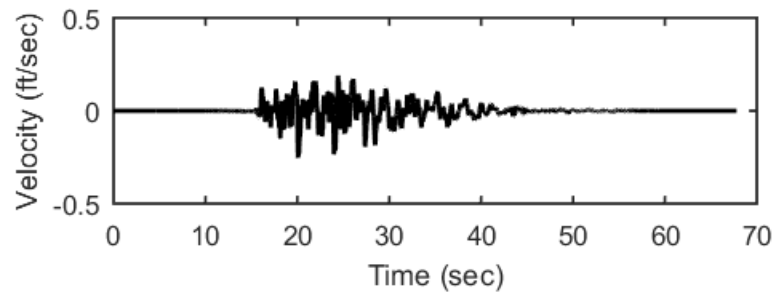
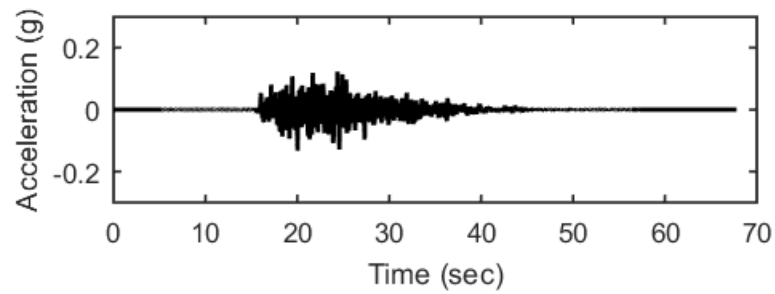
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



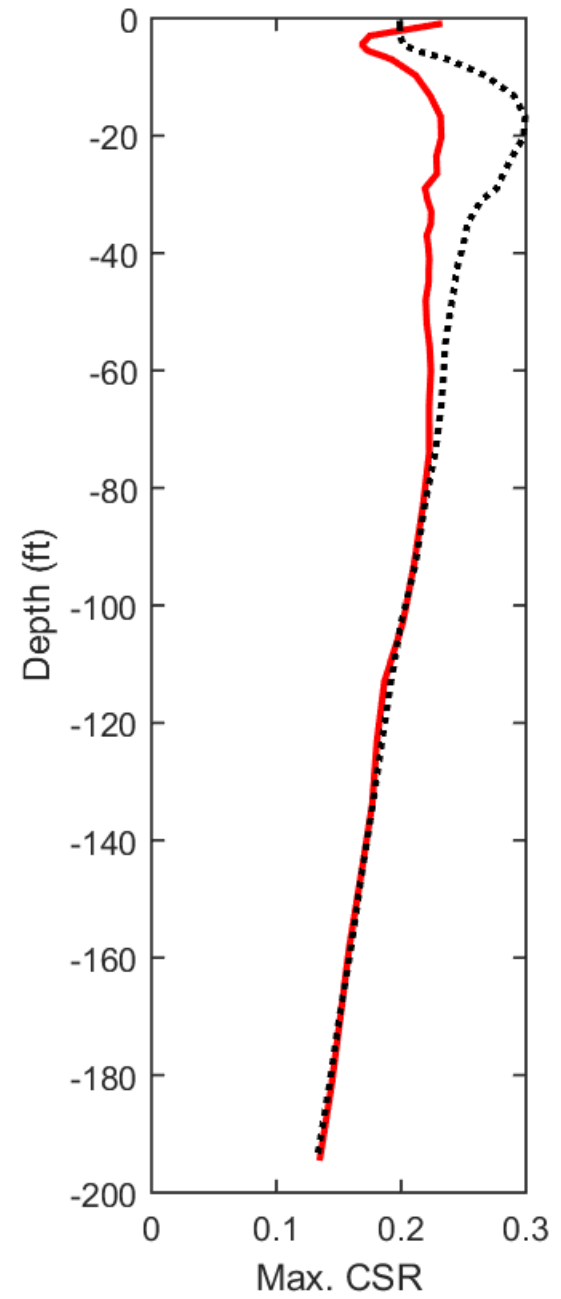
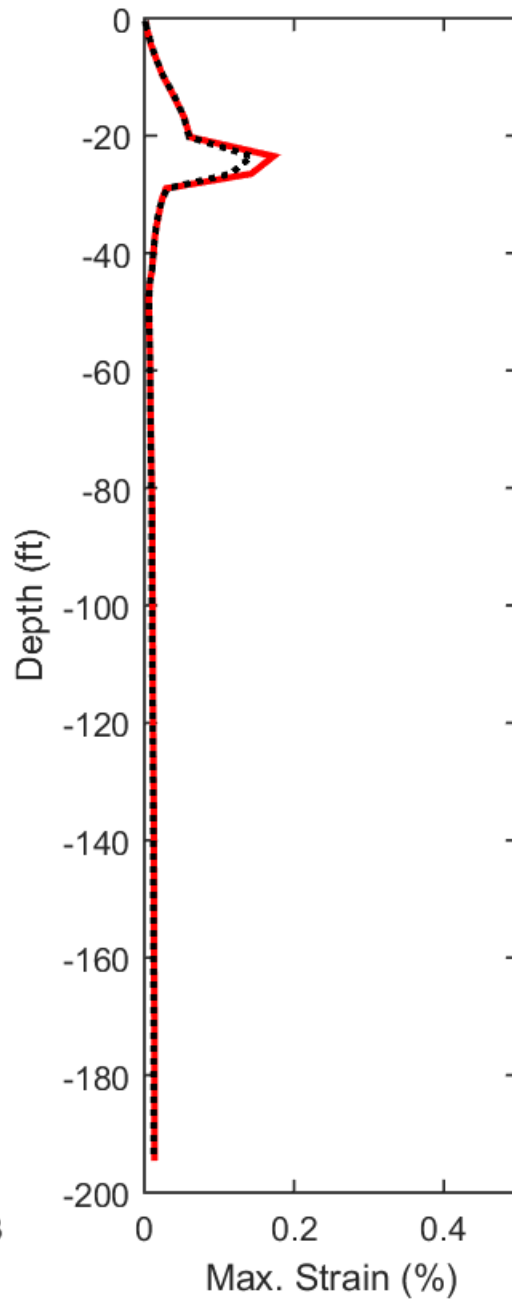
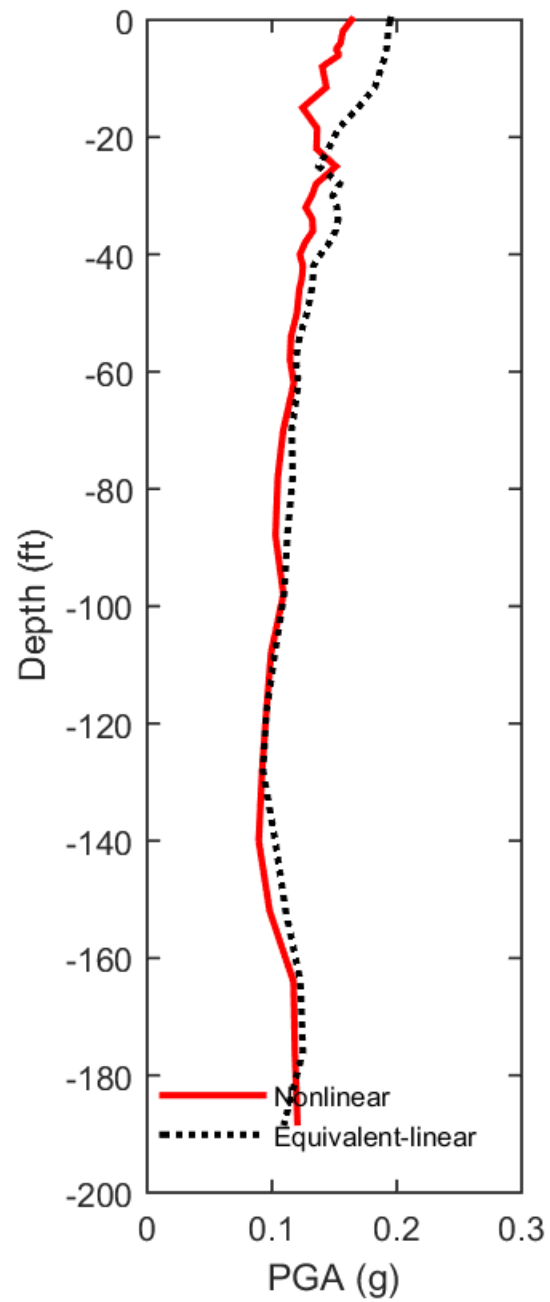
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



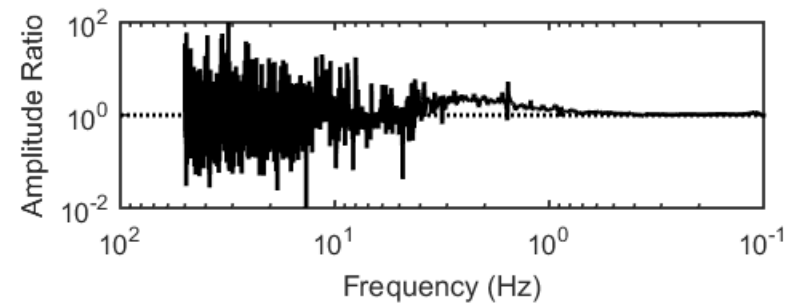
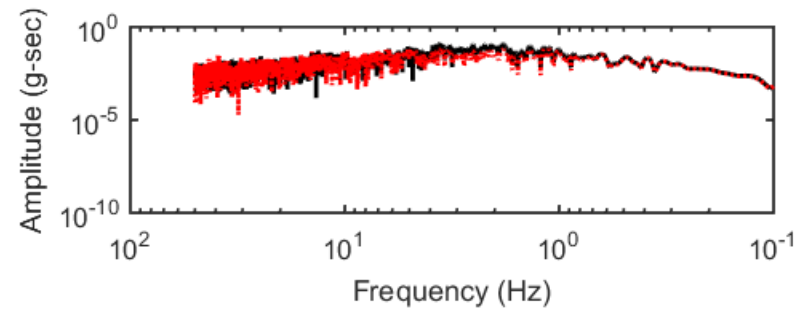
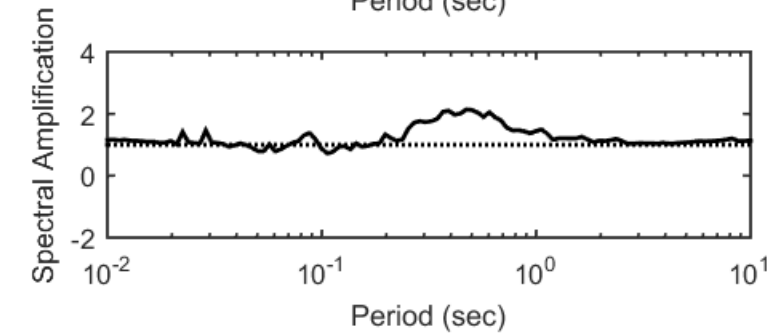
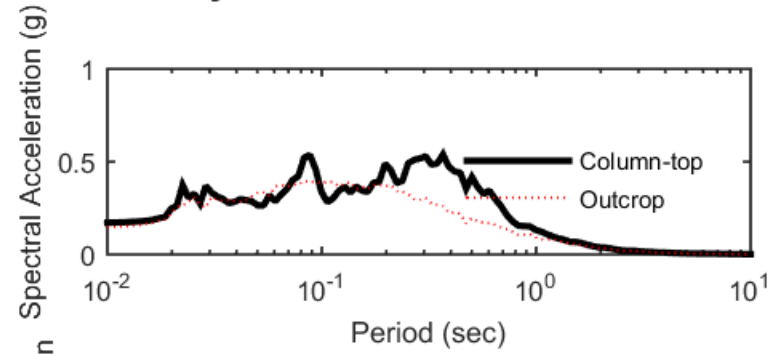
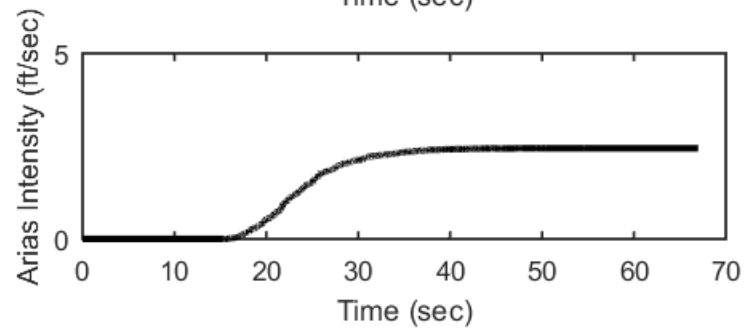
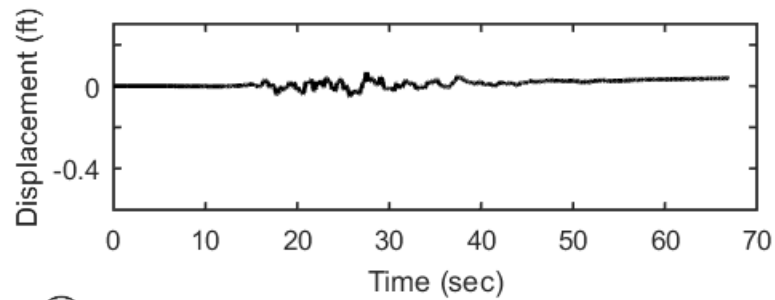
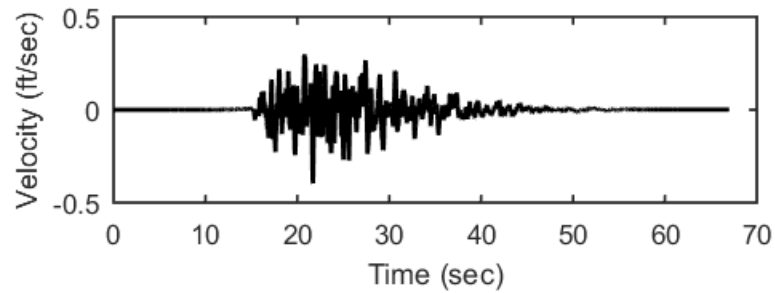
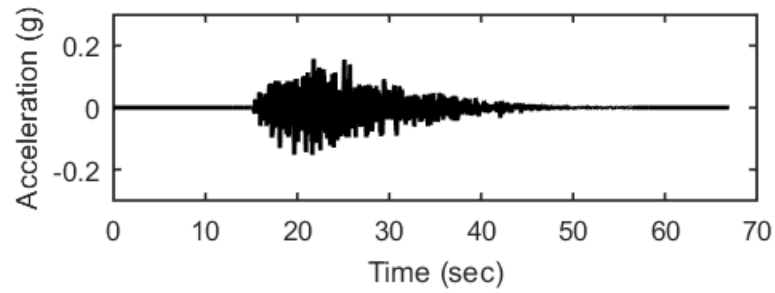
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



### Profile outputs for Motion: FEE4

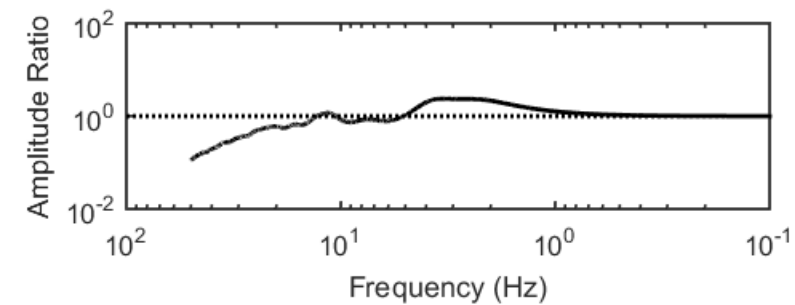
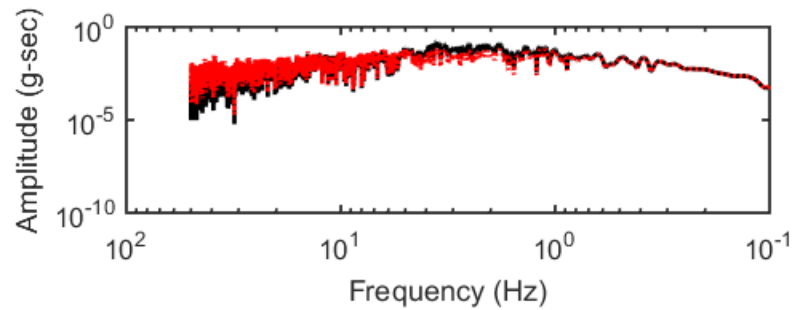
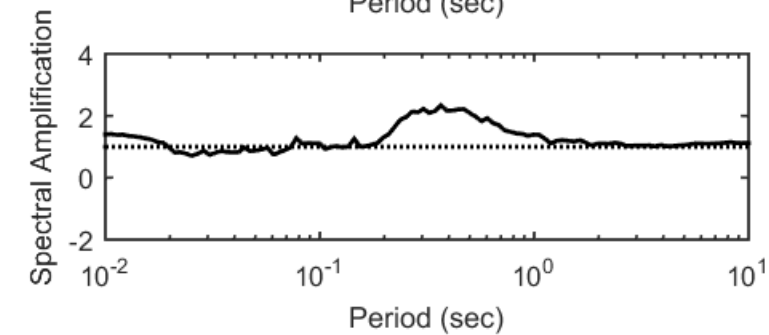
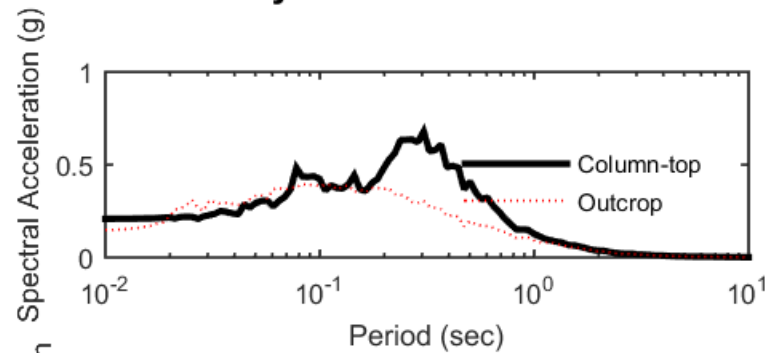
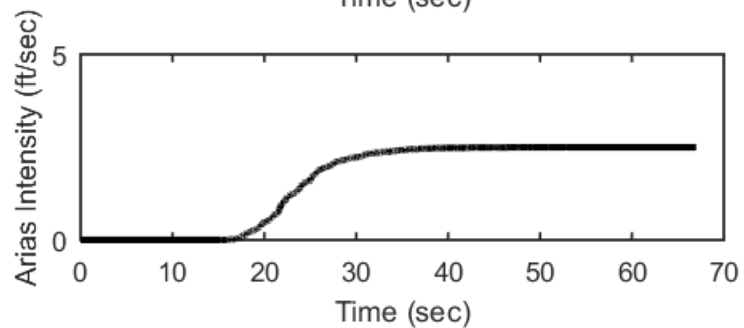
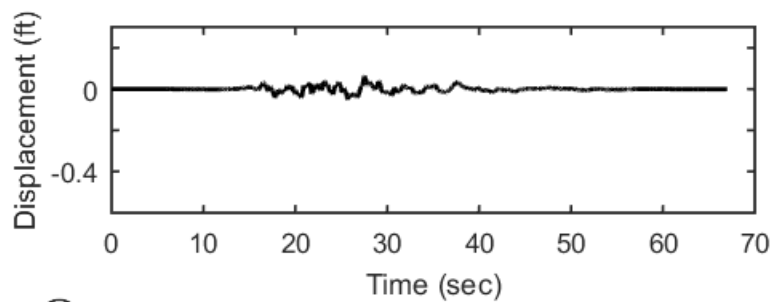
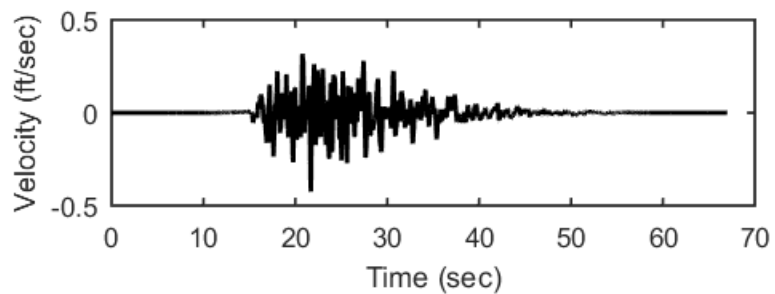
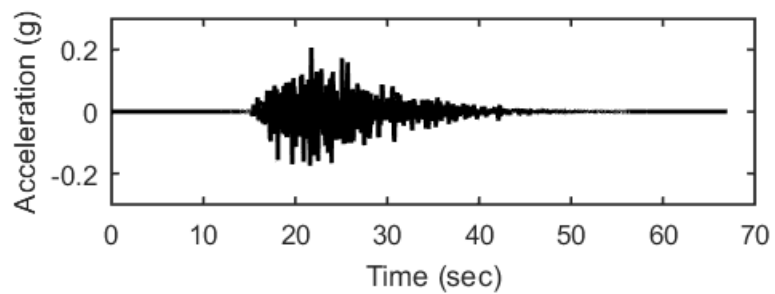


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5

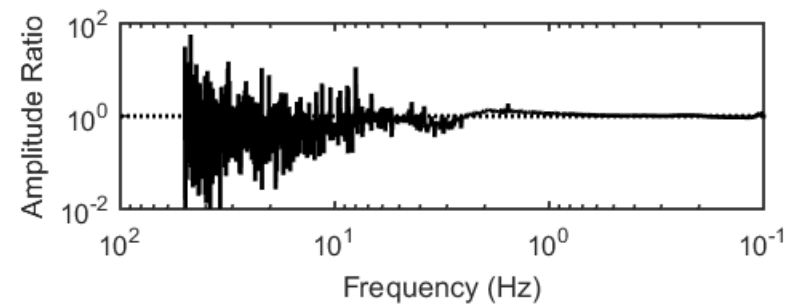
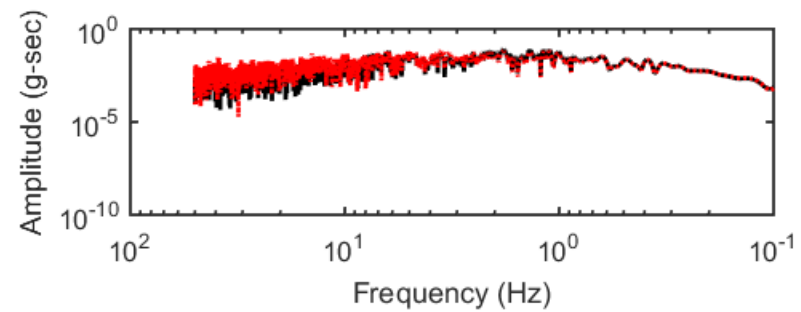
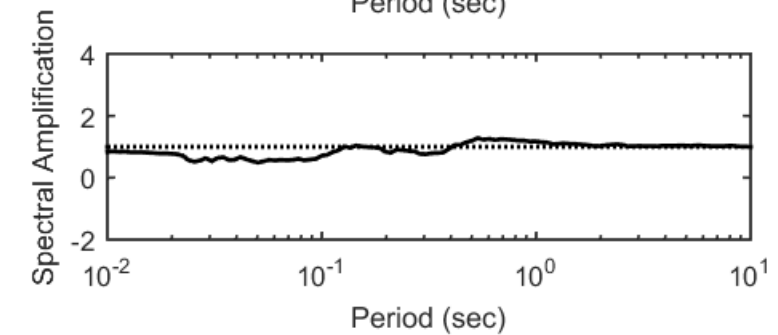
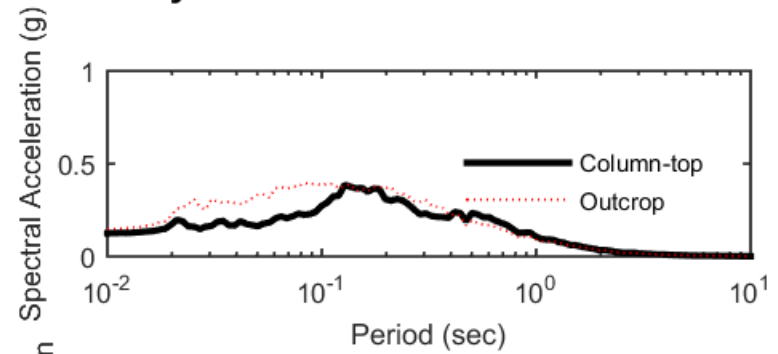
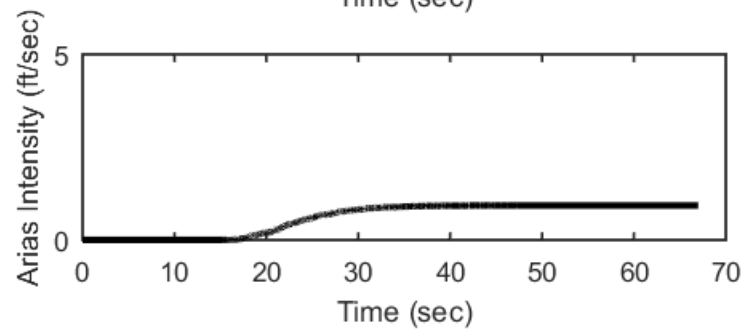
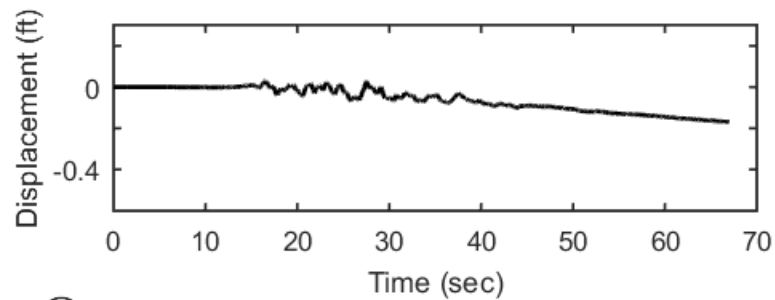
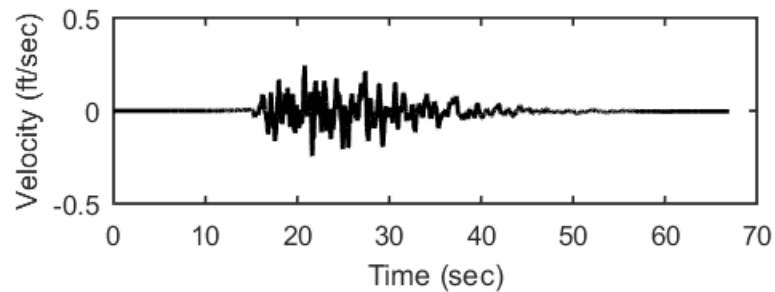
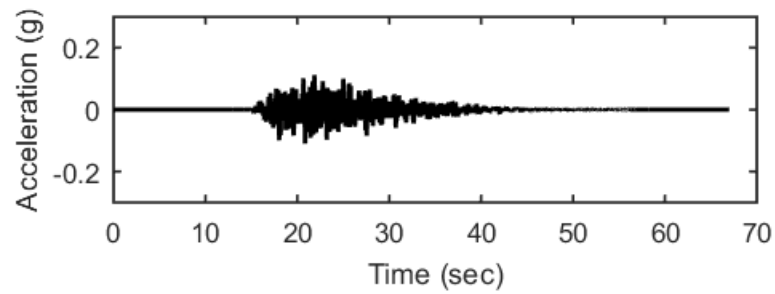




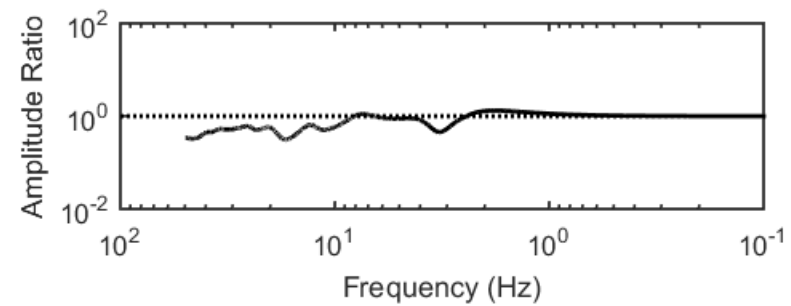
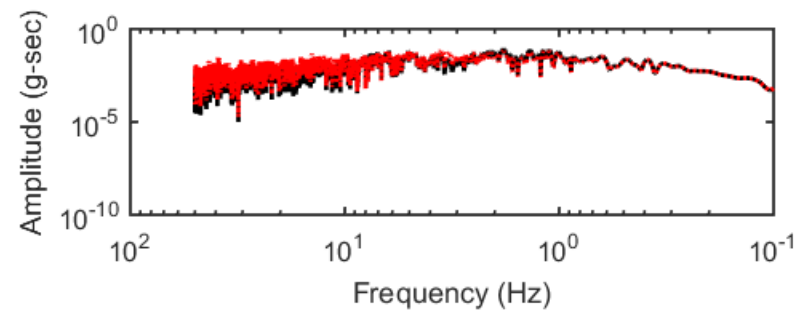
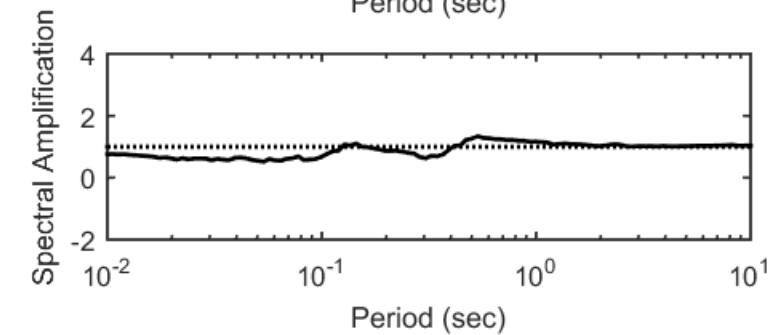
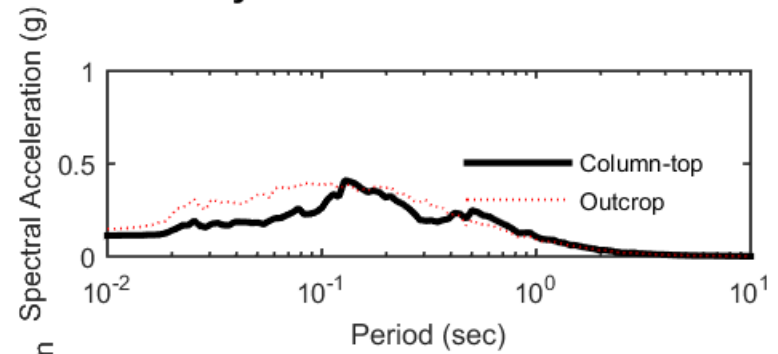
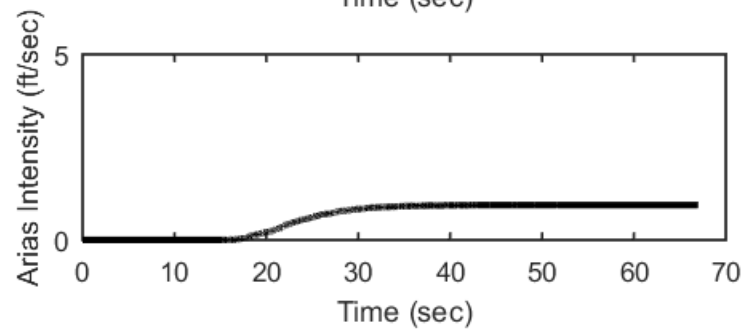
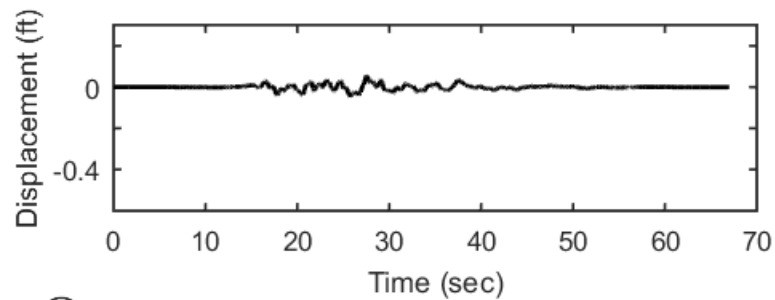
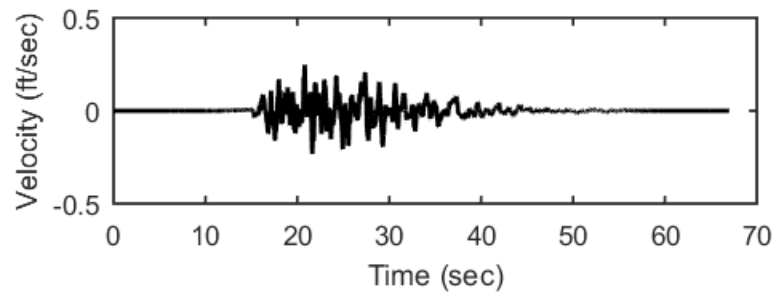
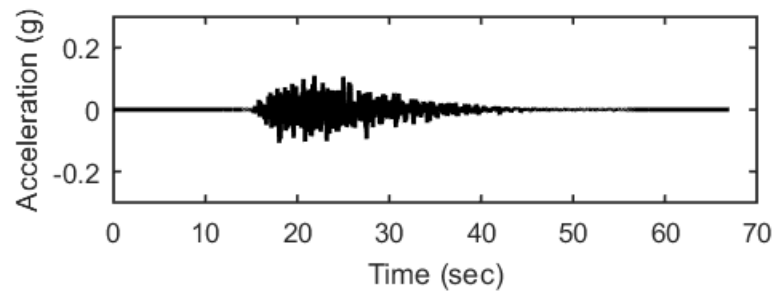
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



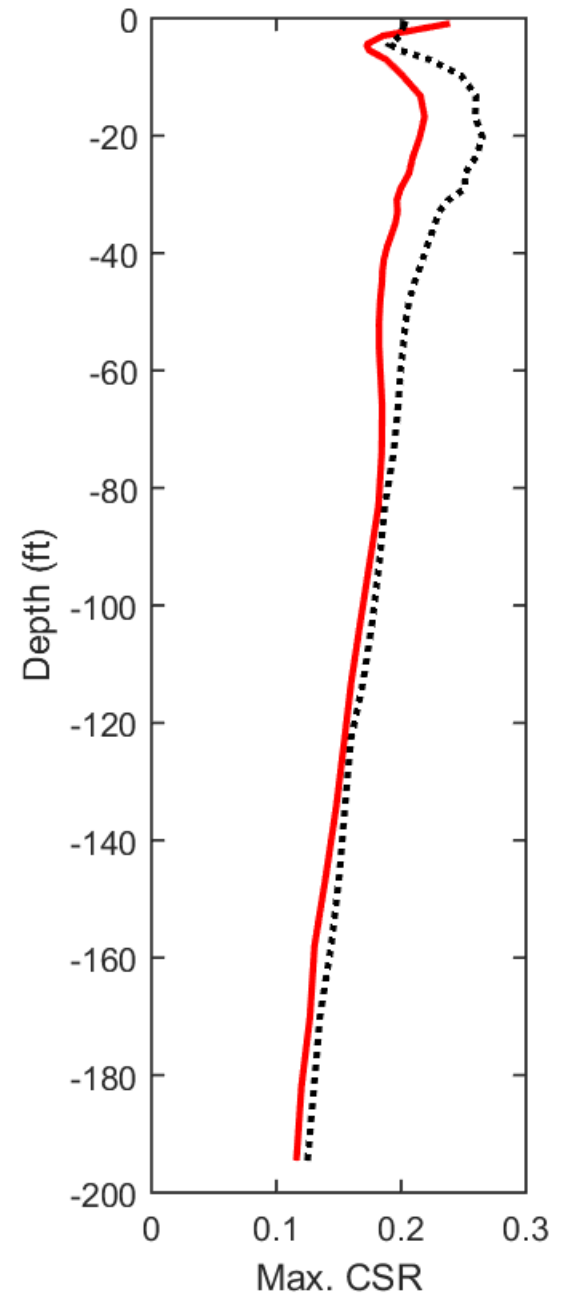
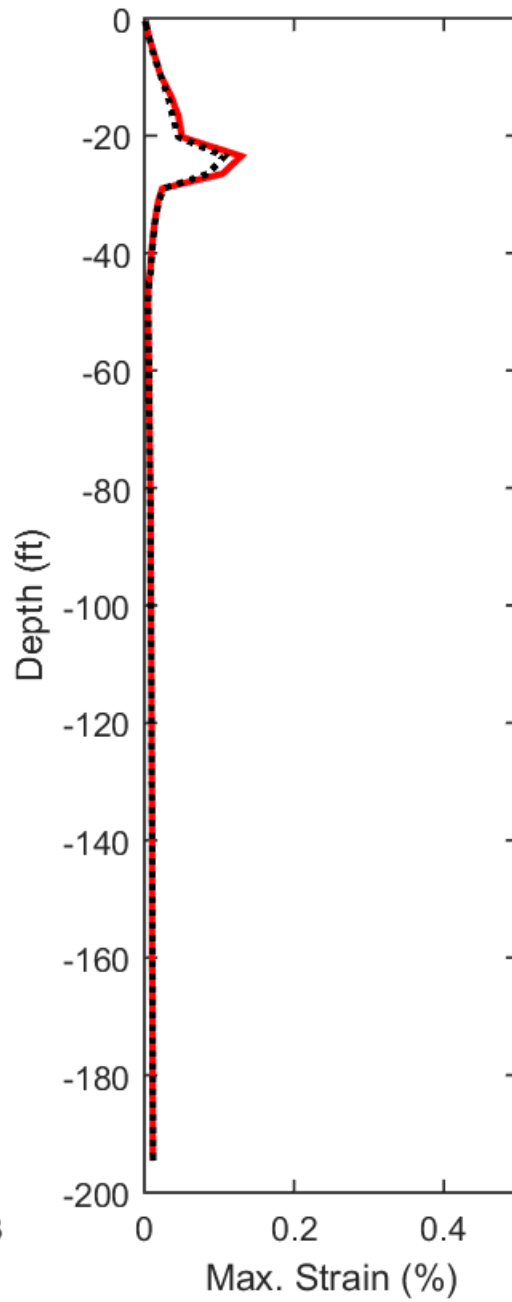
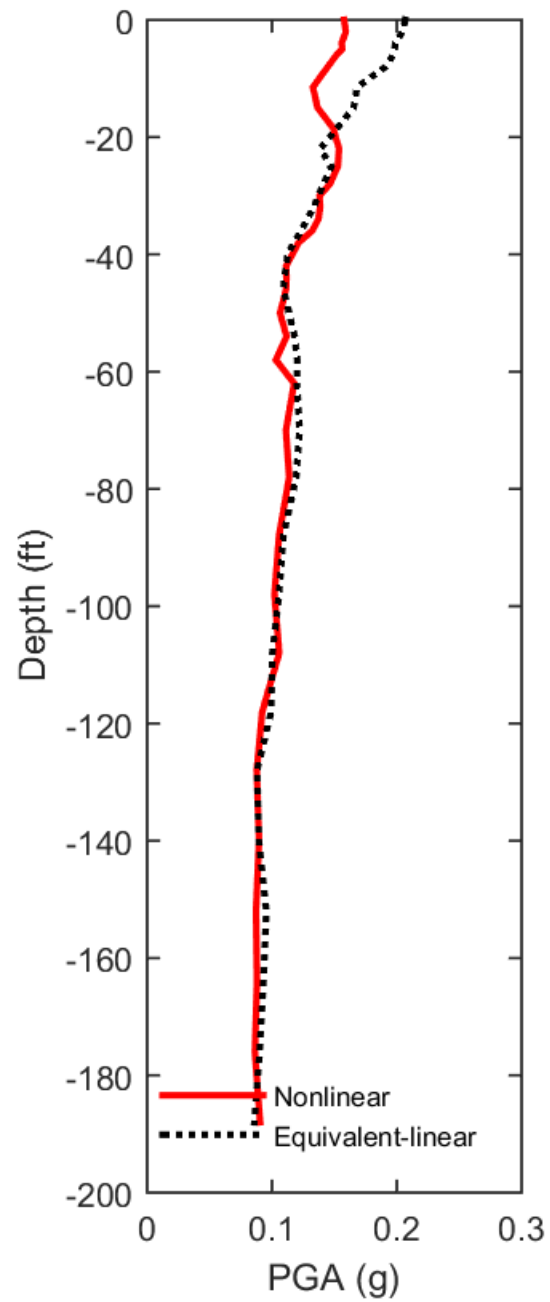
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



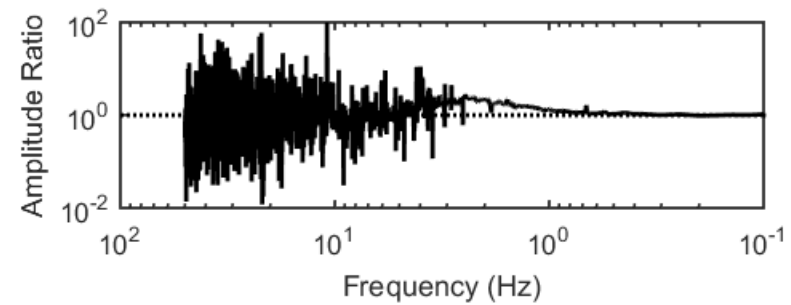
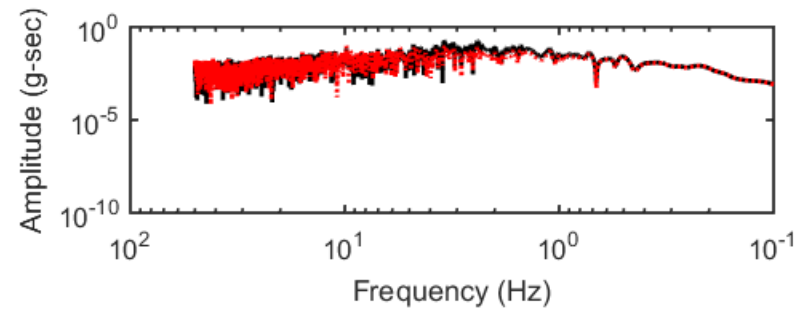
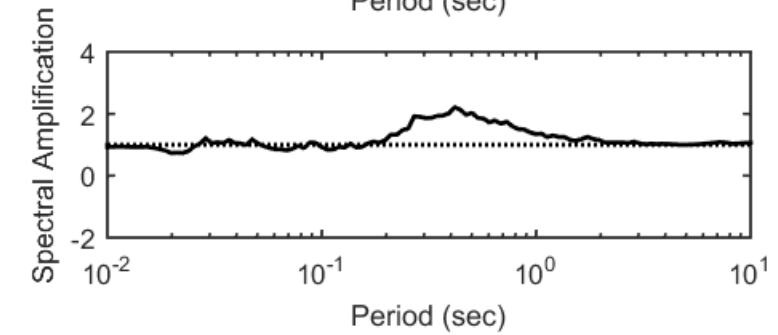
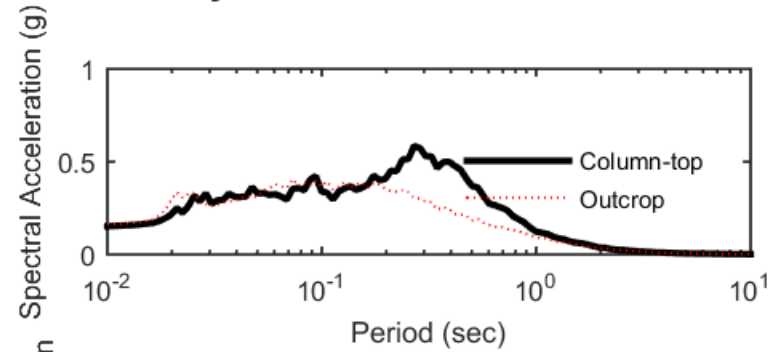
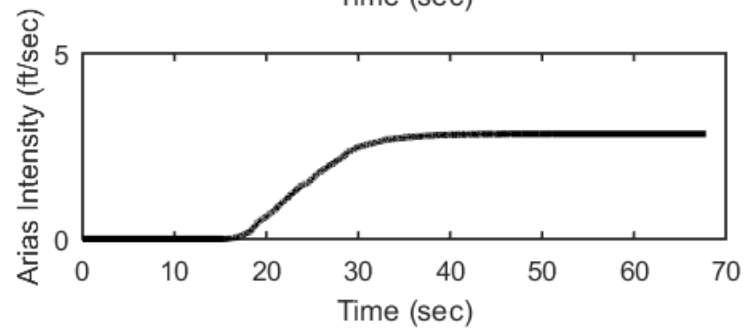
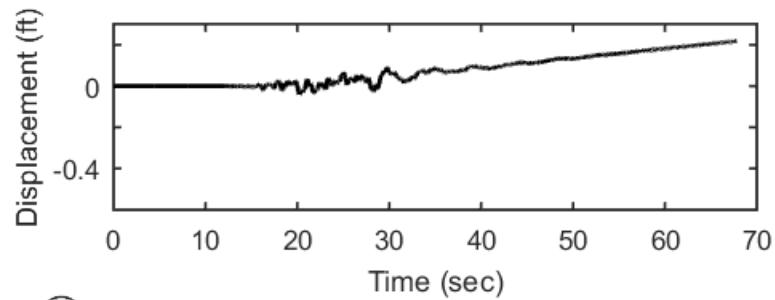
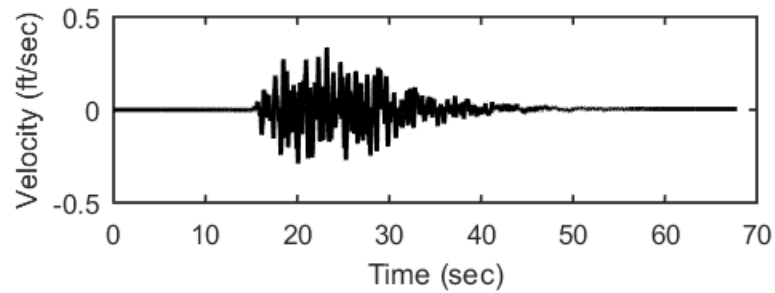
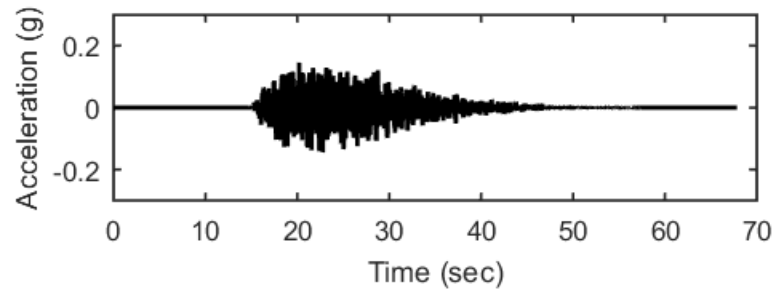
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



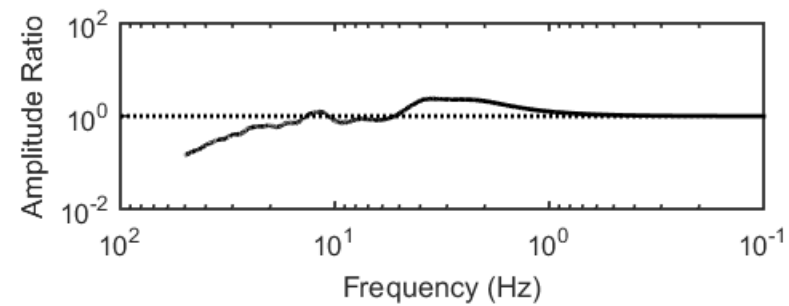
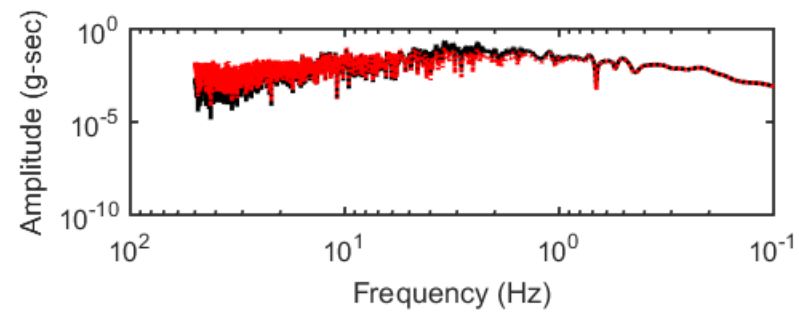
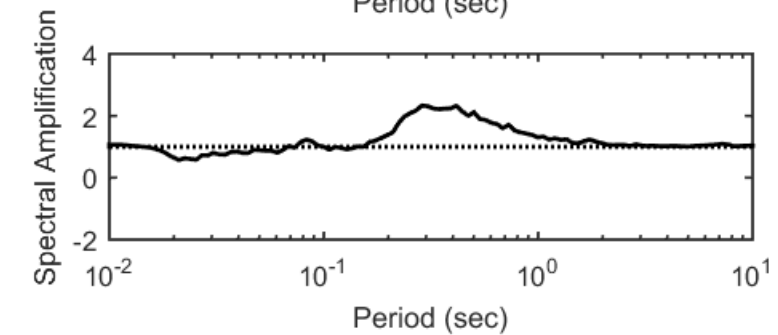
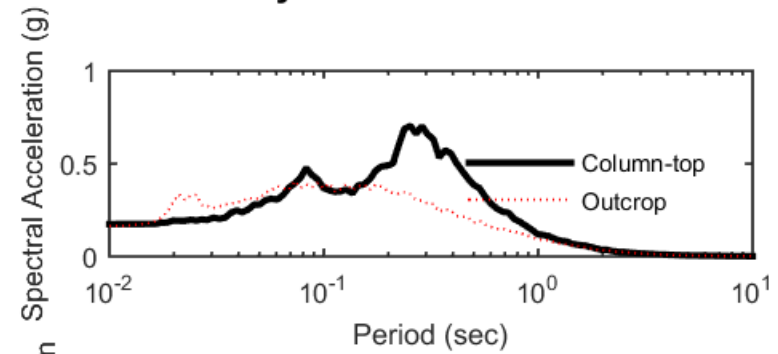
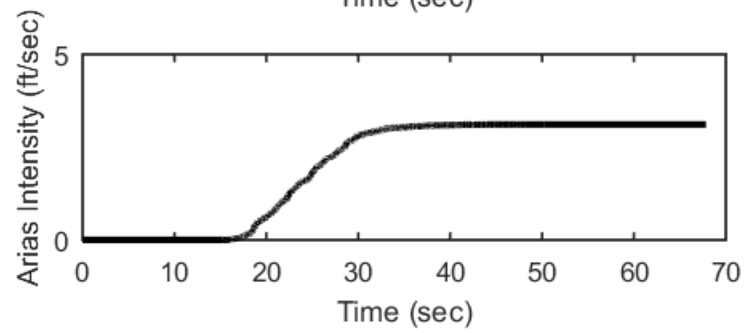
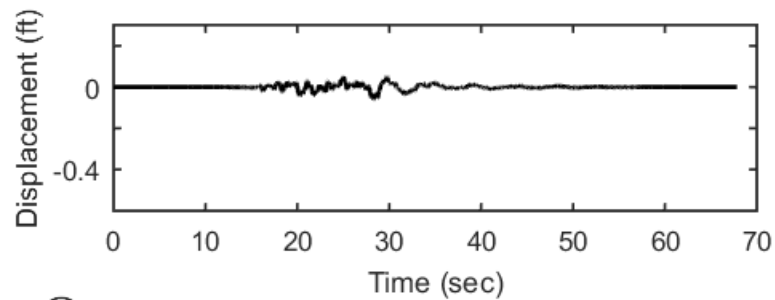
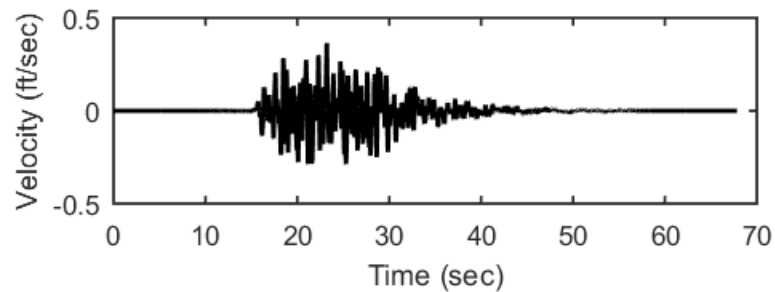
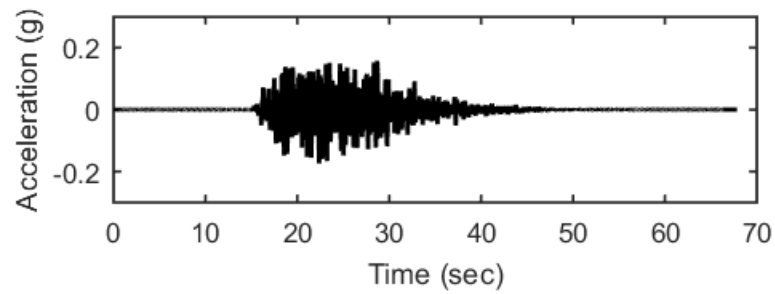
### Profile outputs for Motion: FEE5



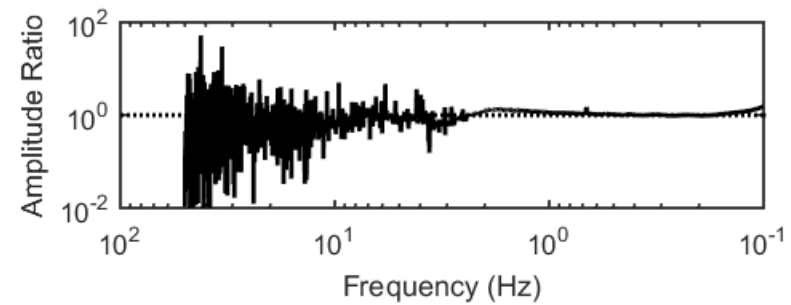
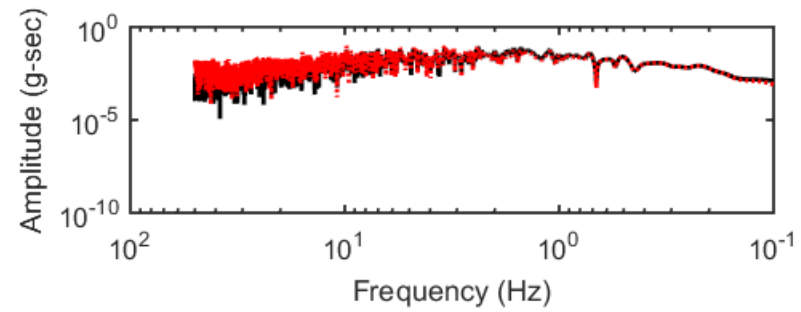
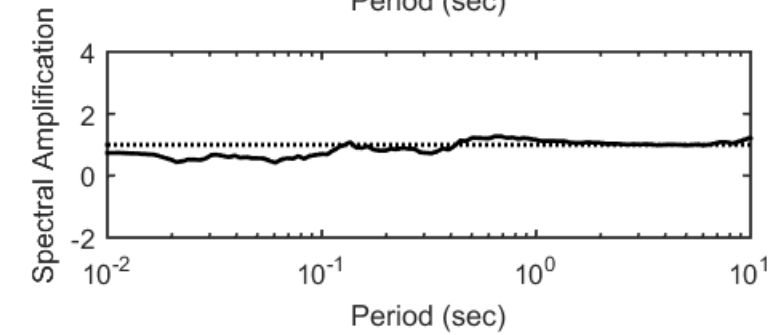
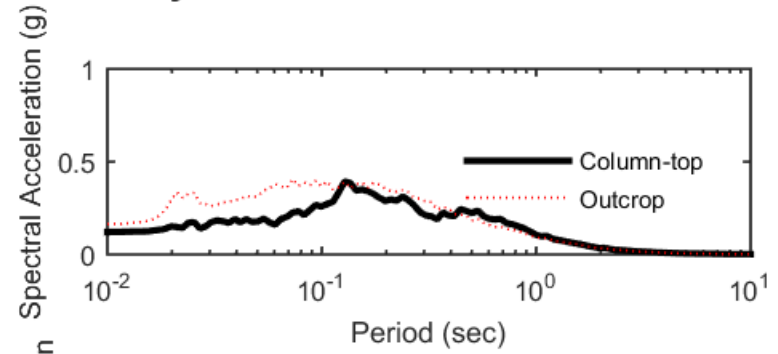
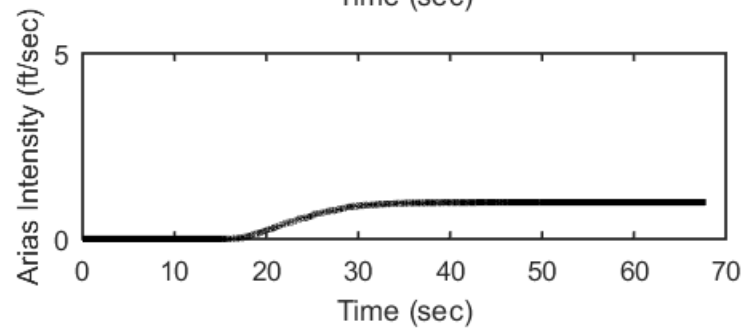
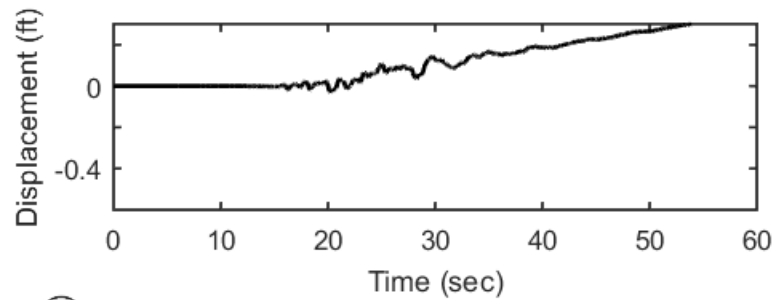
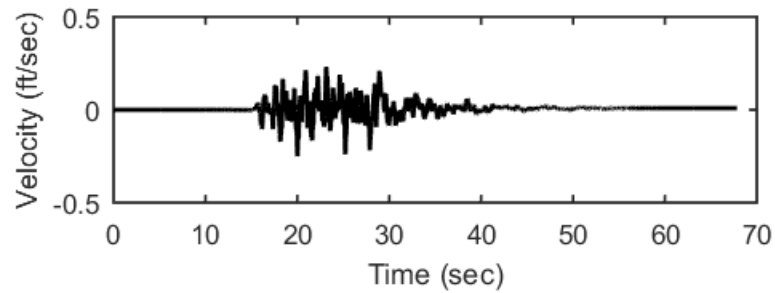
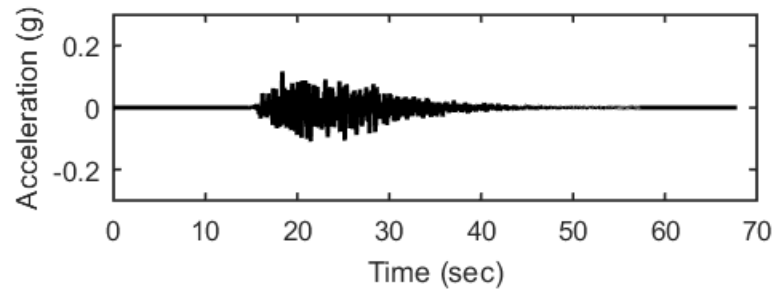
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



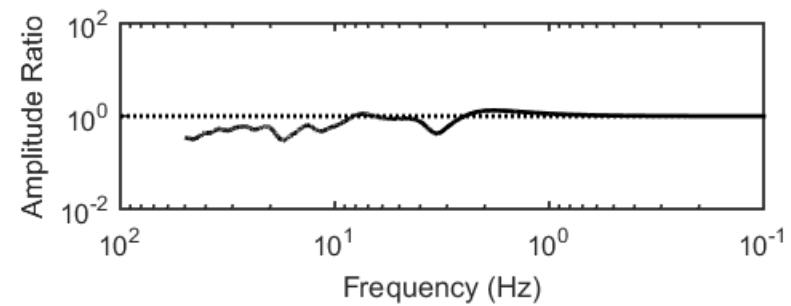
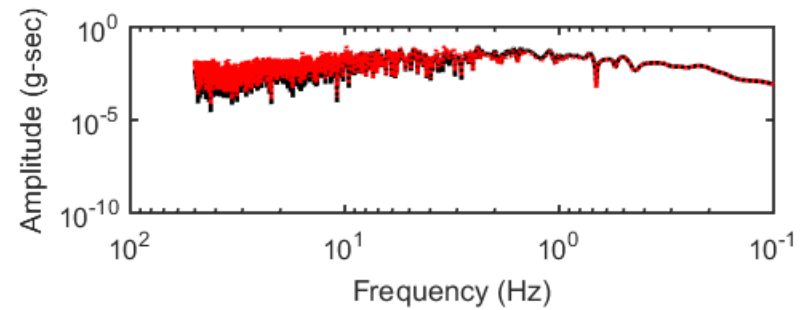
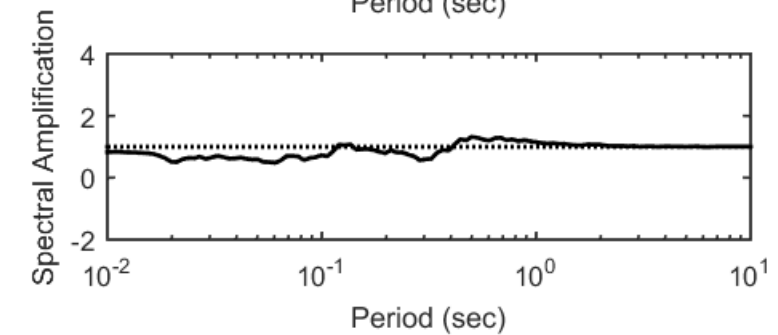
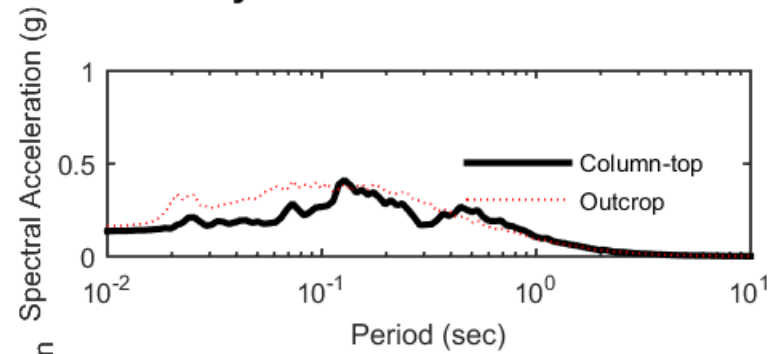
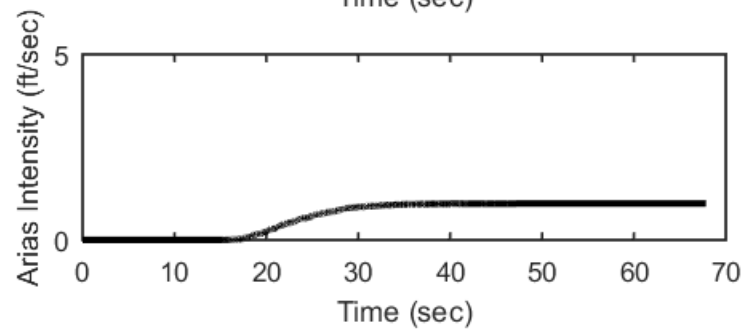
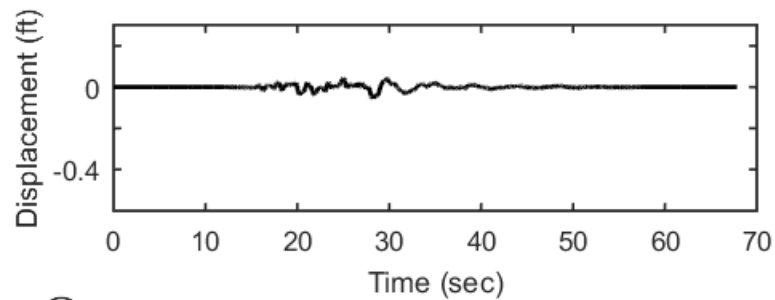
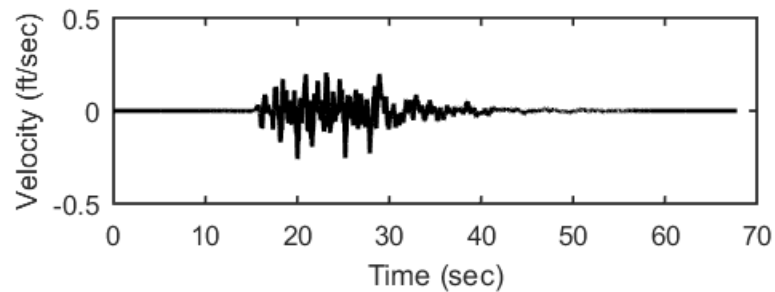
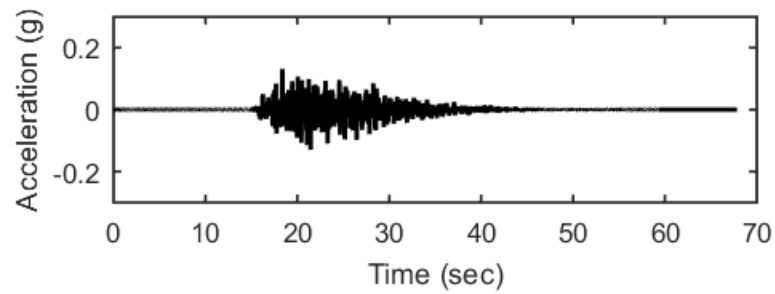
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6

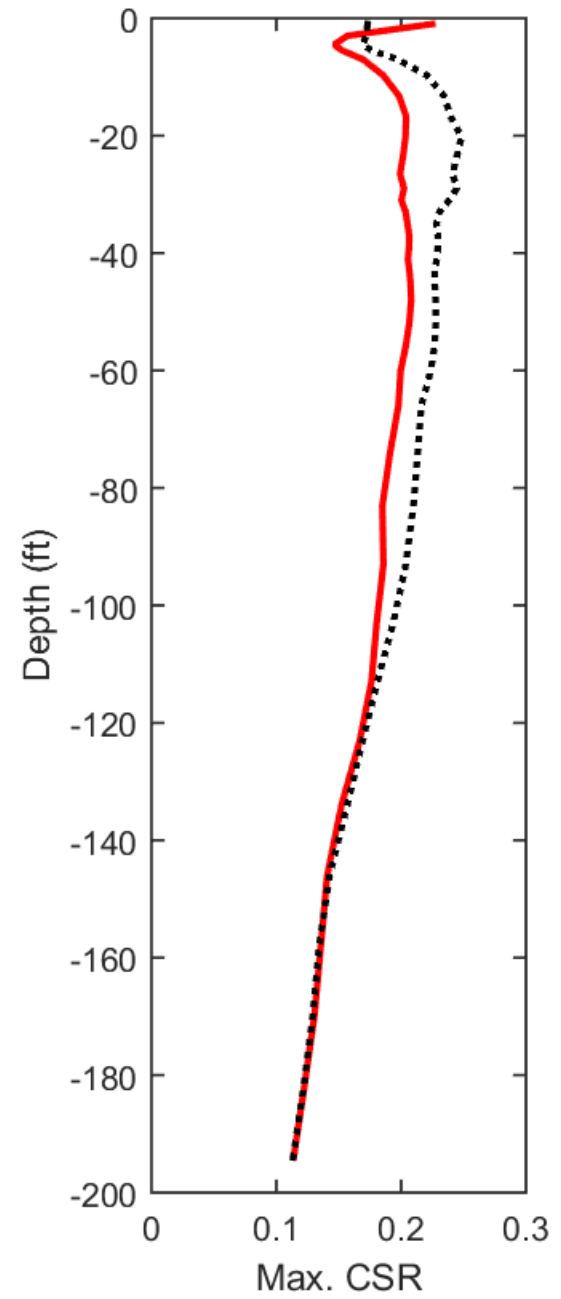
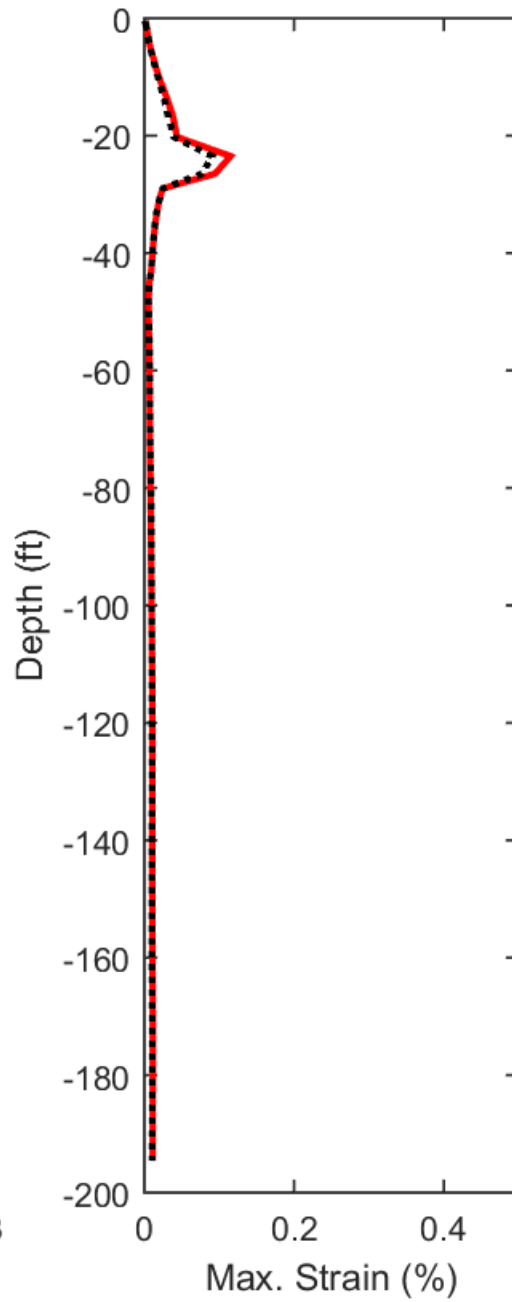
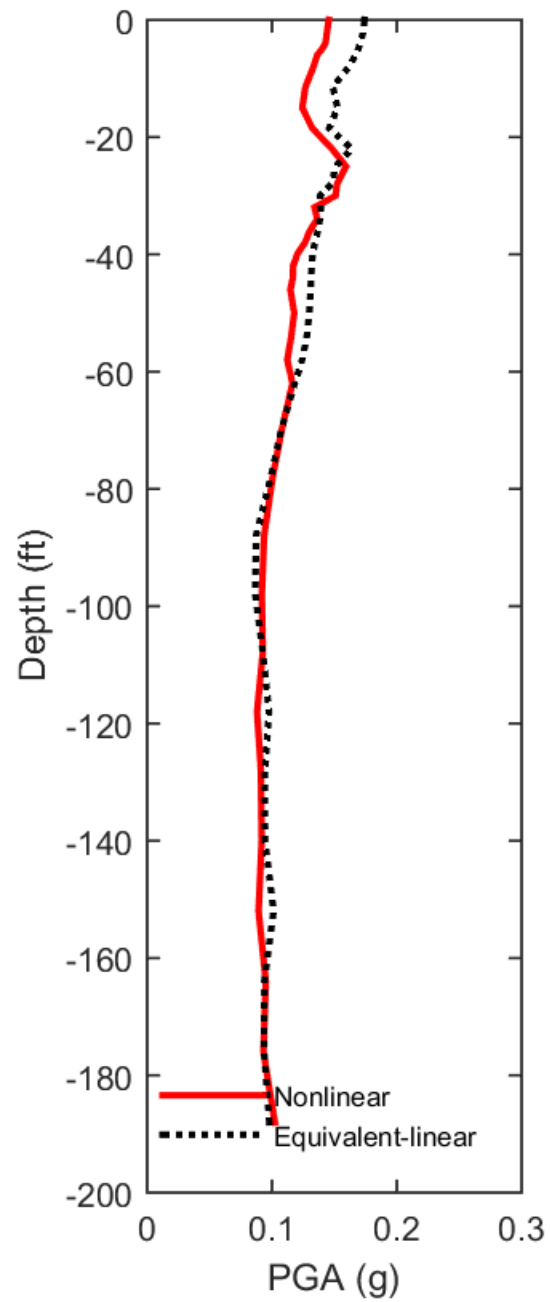


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6

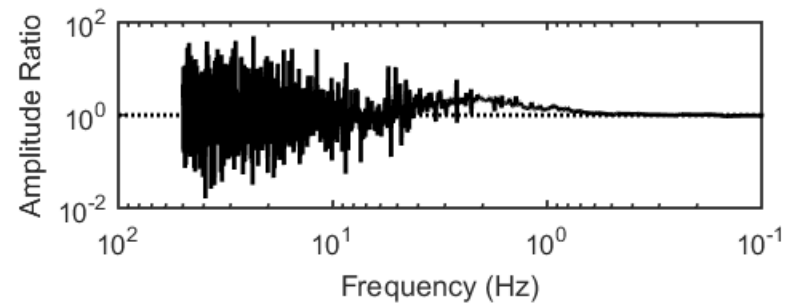
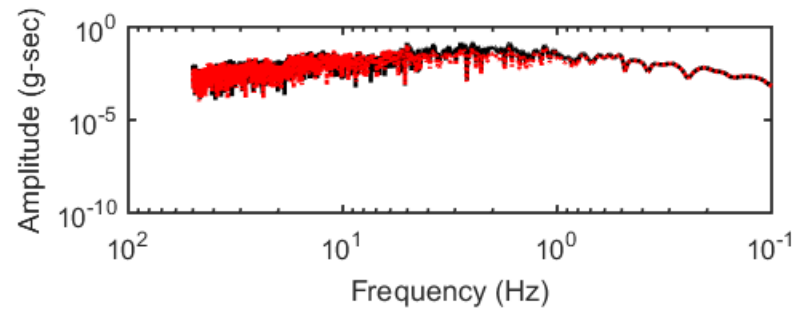
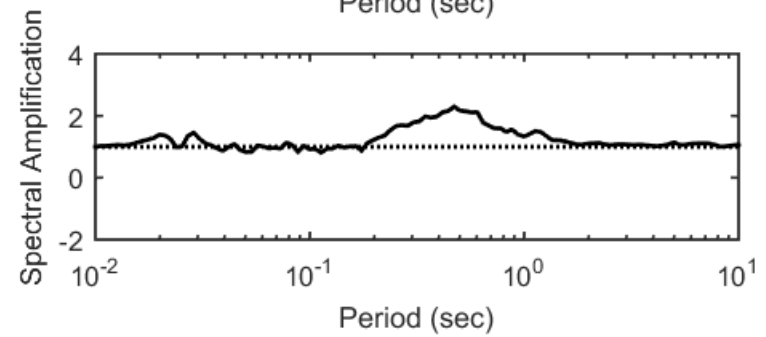
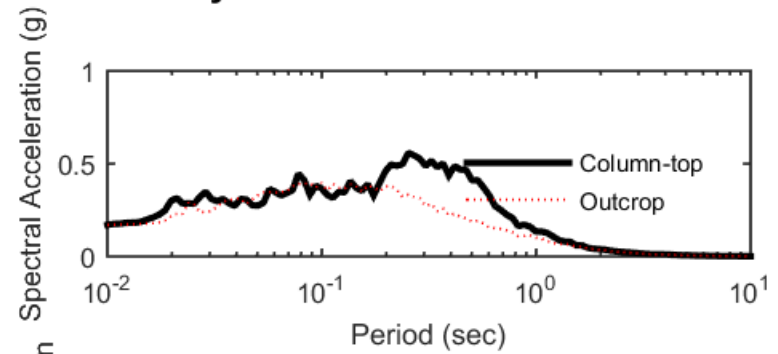
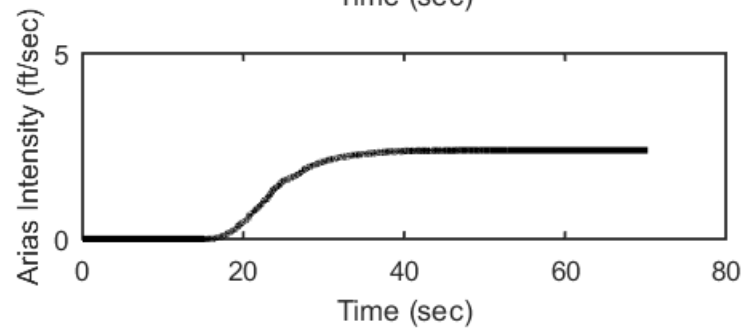
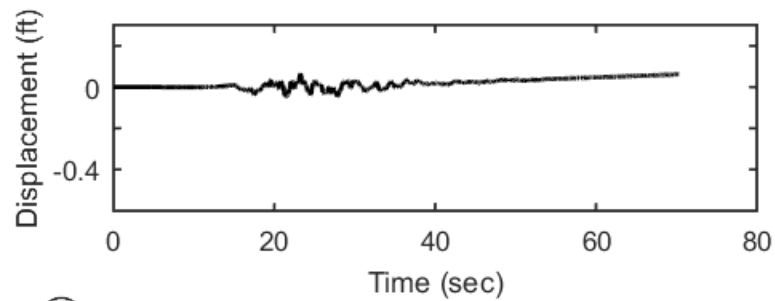
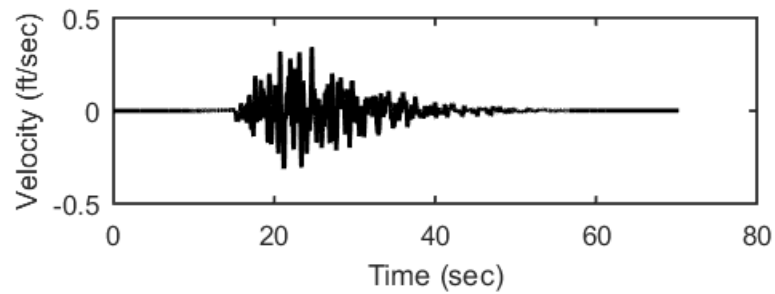
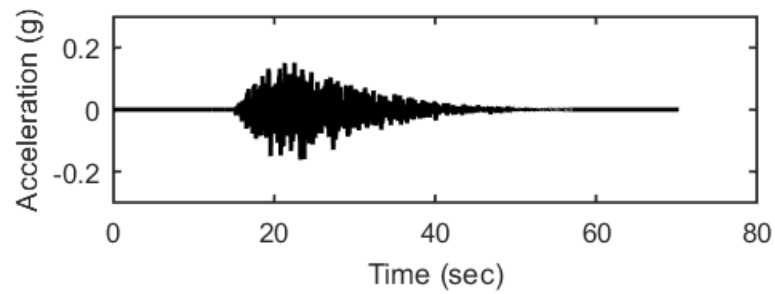




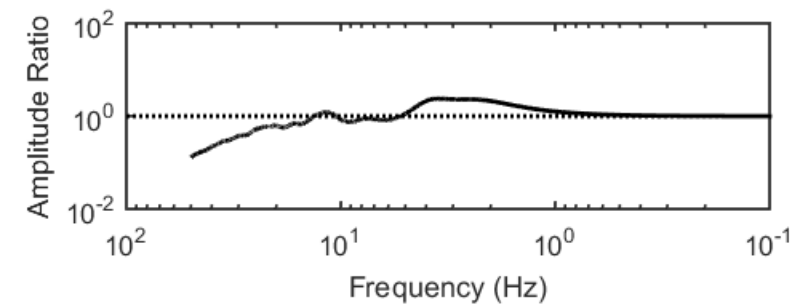
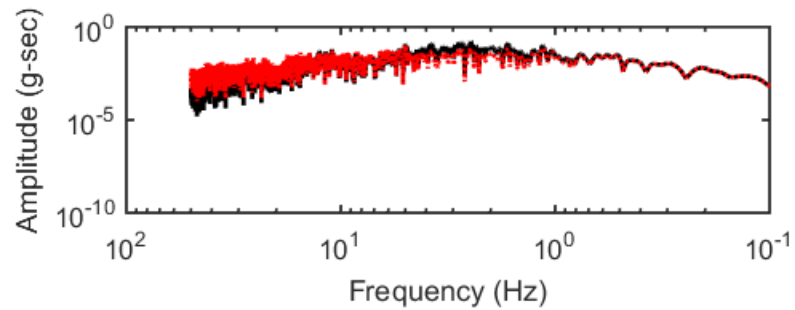
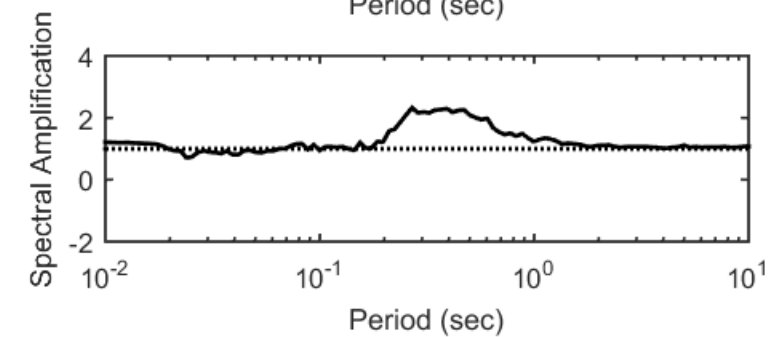
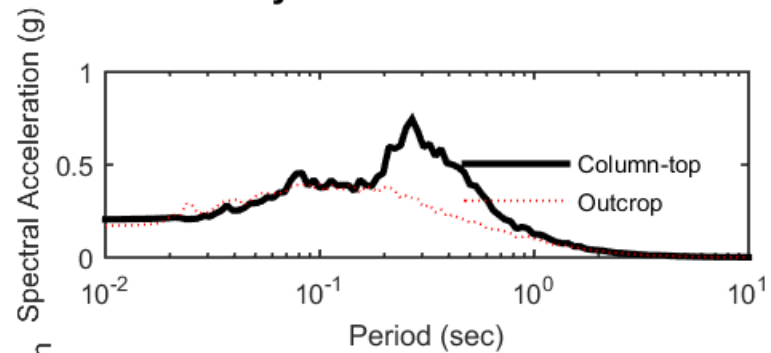
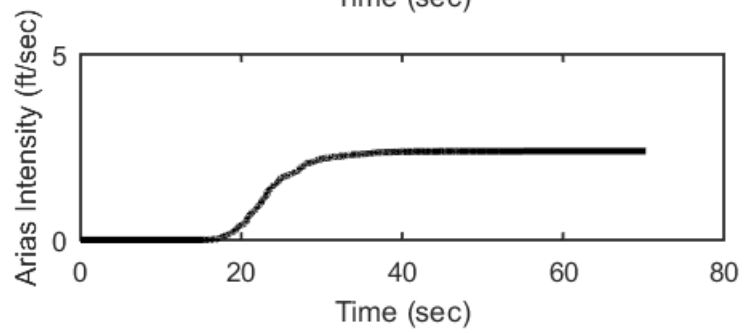
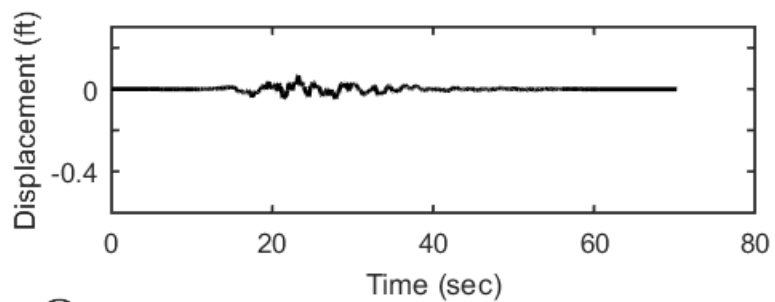
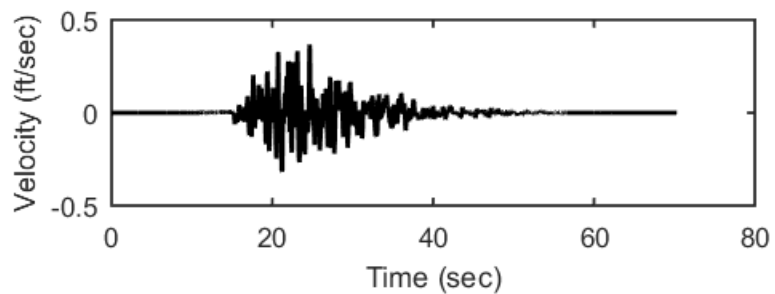
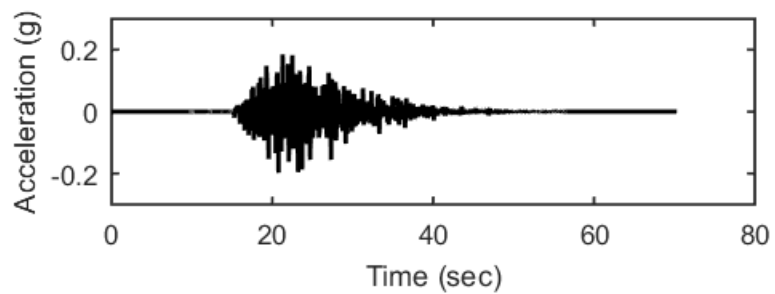
### Profile outputs for Motion: FEE6



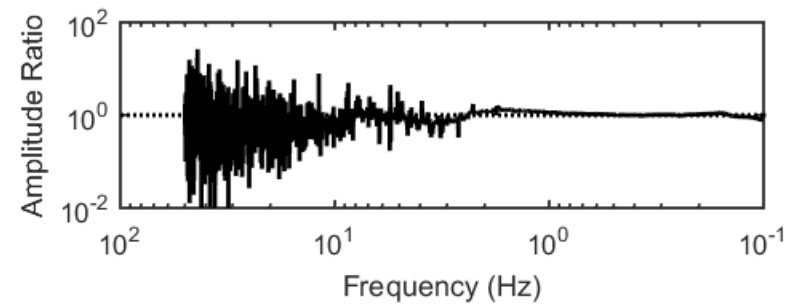
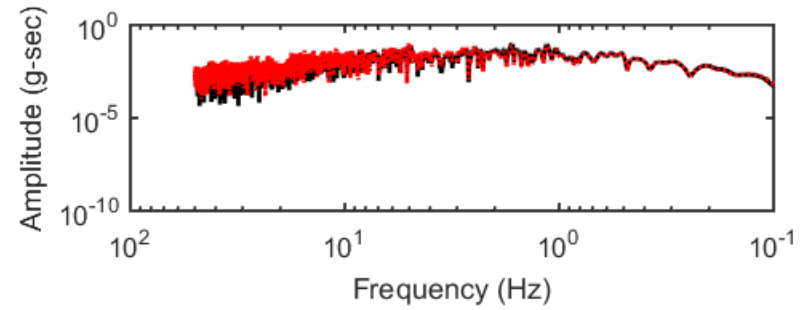
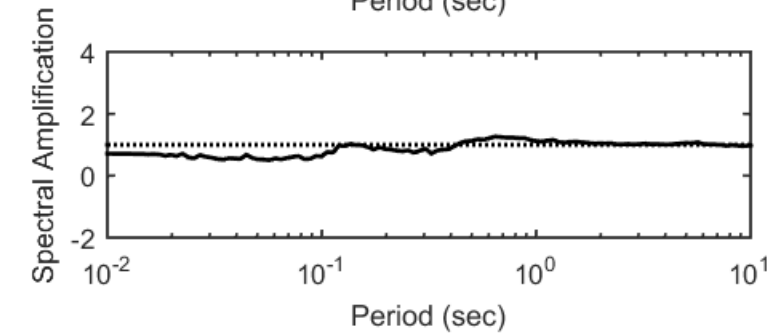
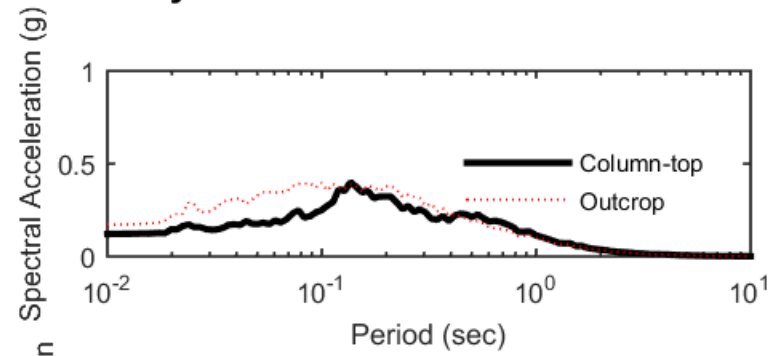
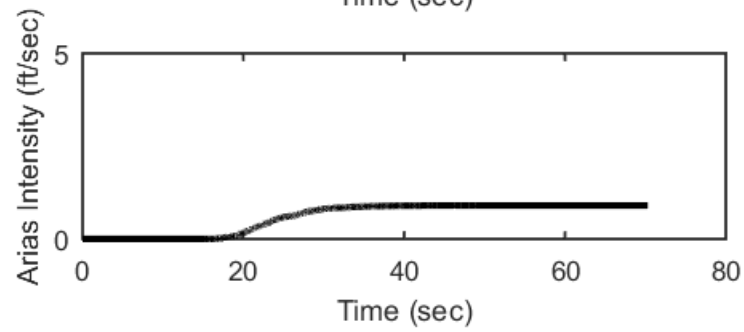
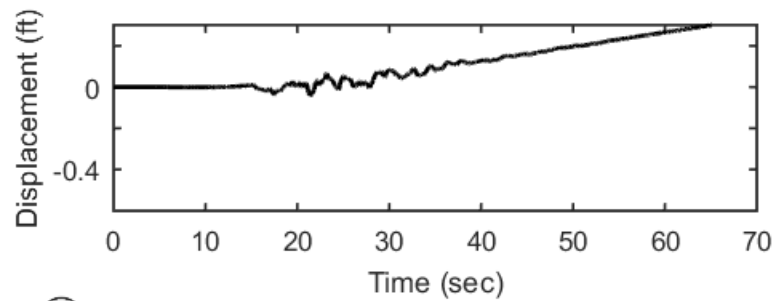
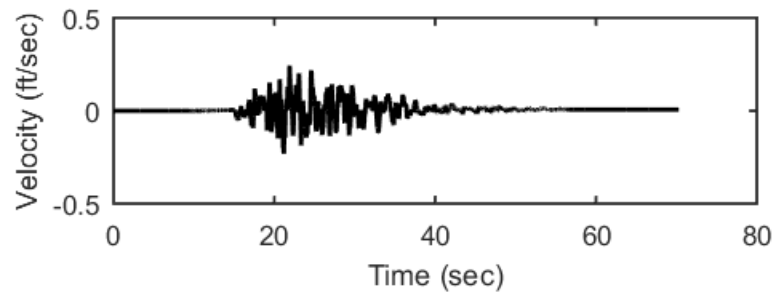
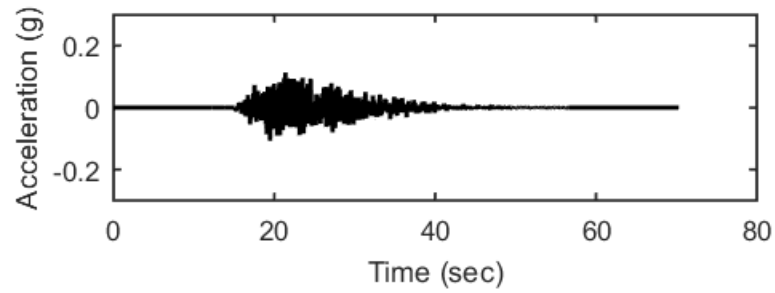
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



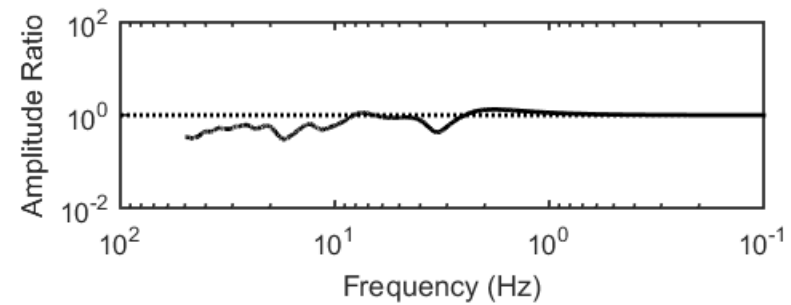
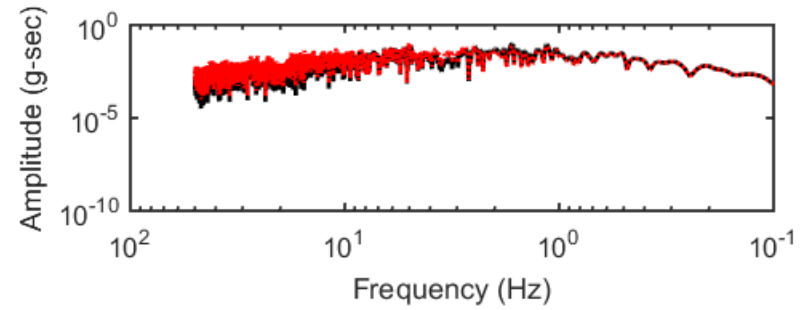
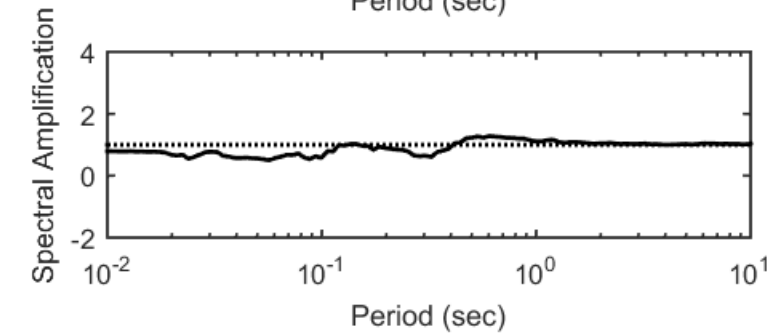
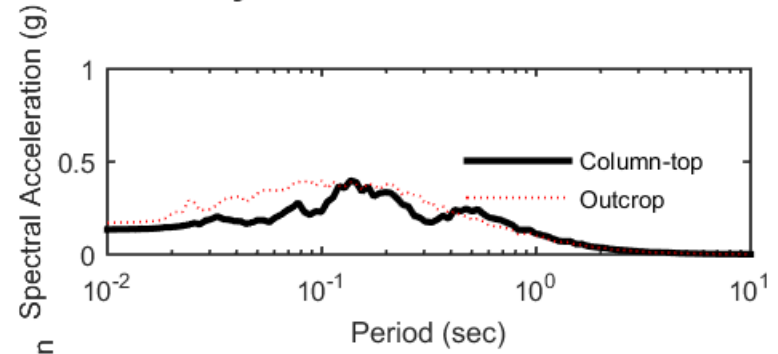
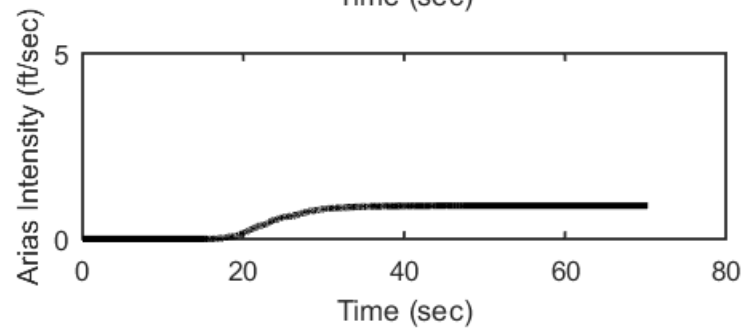
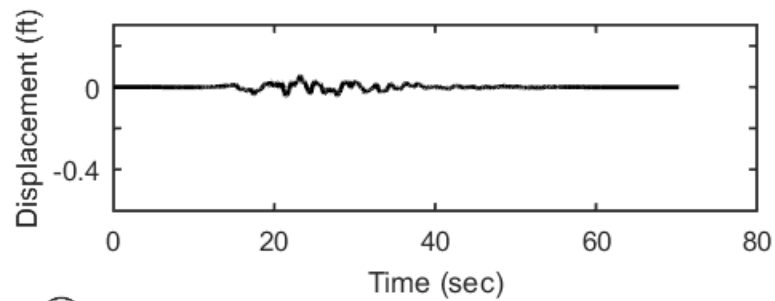
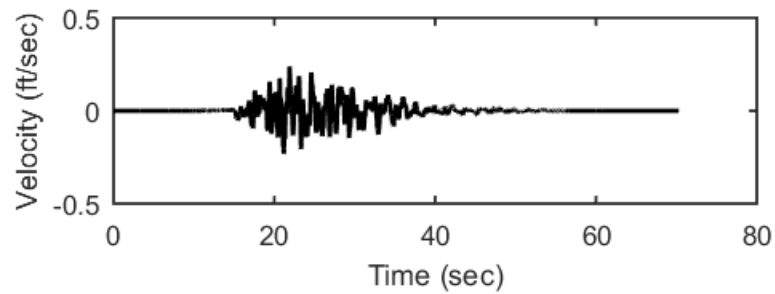
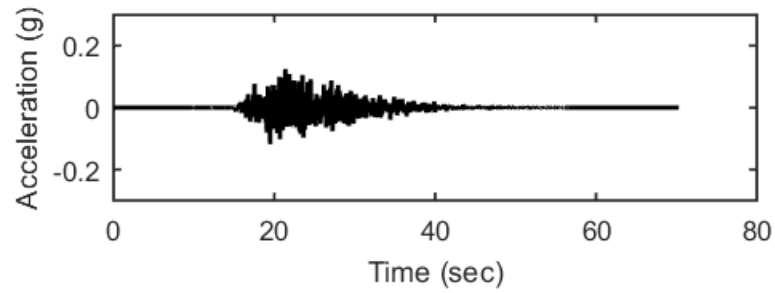
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



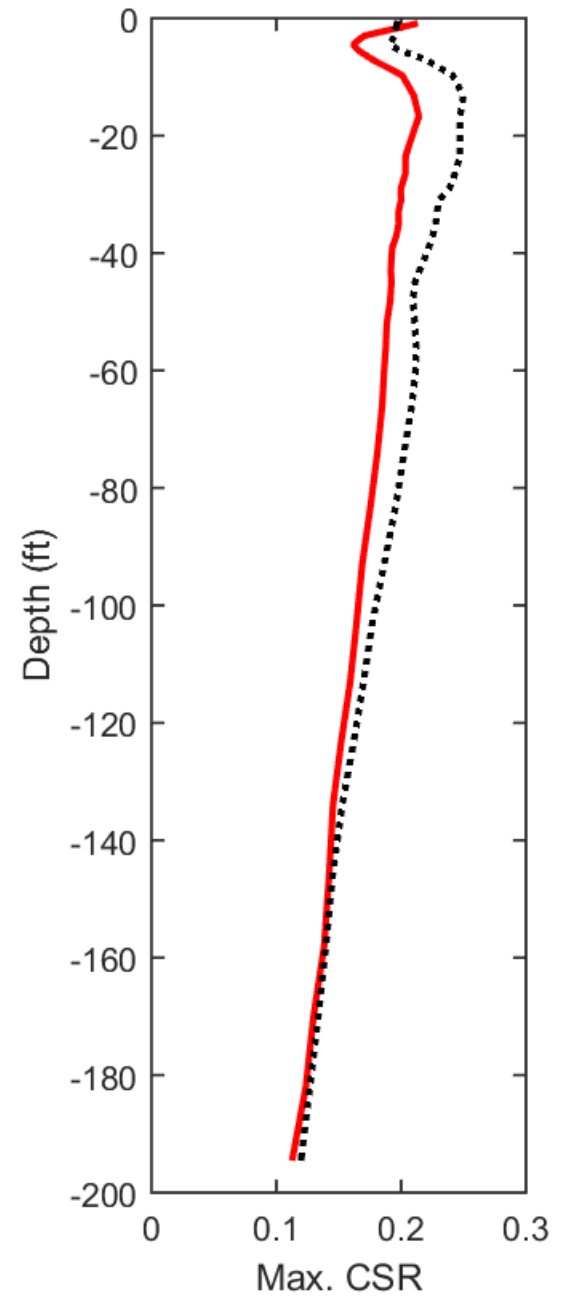
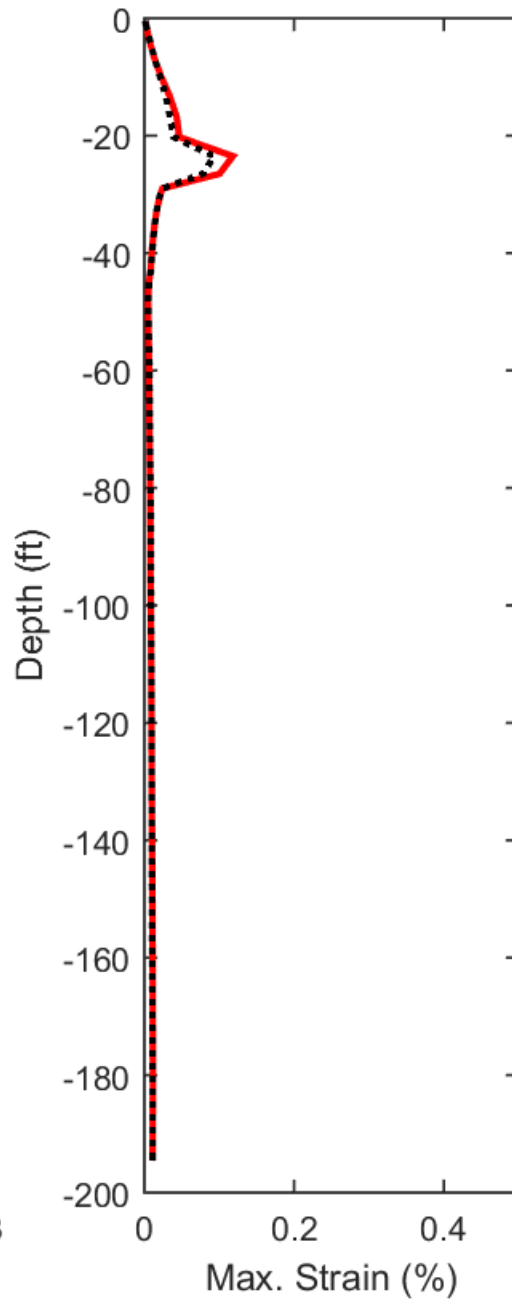
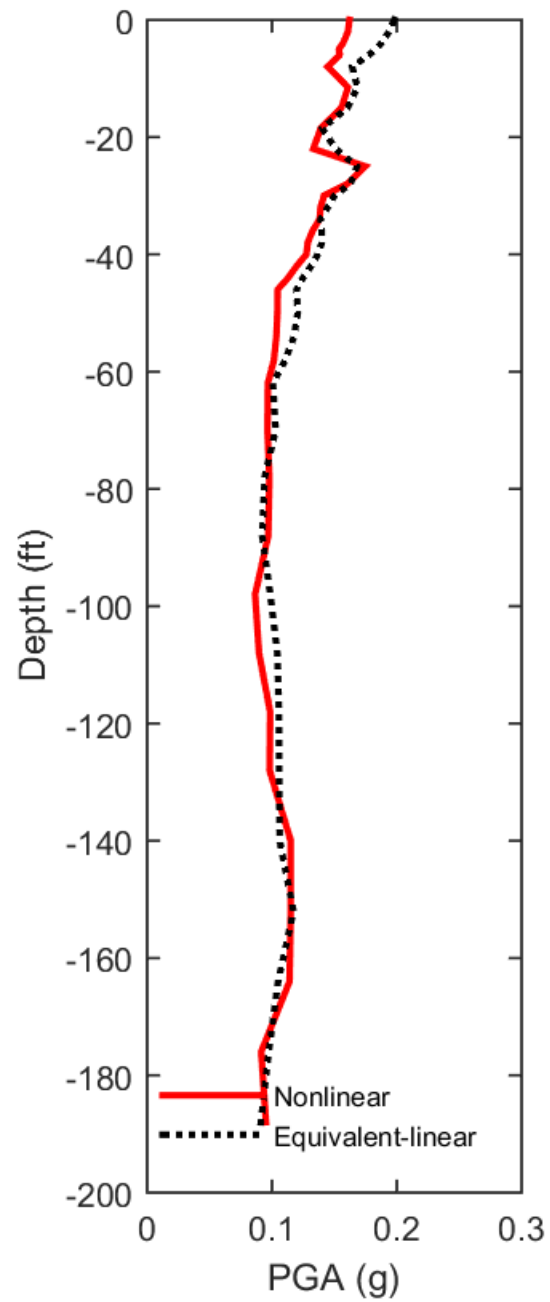
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



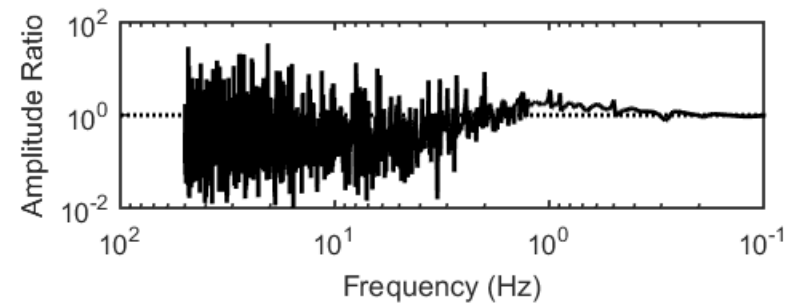
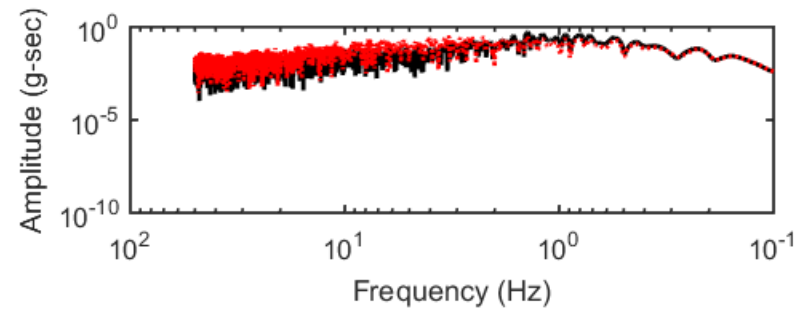
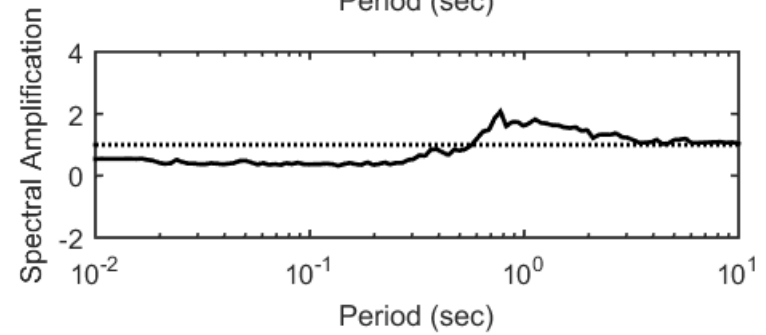
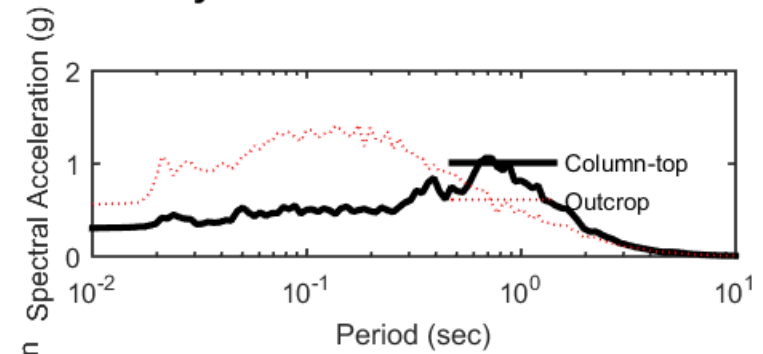
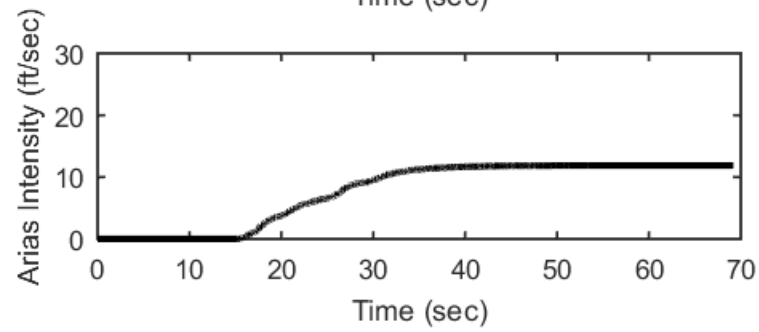
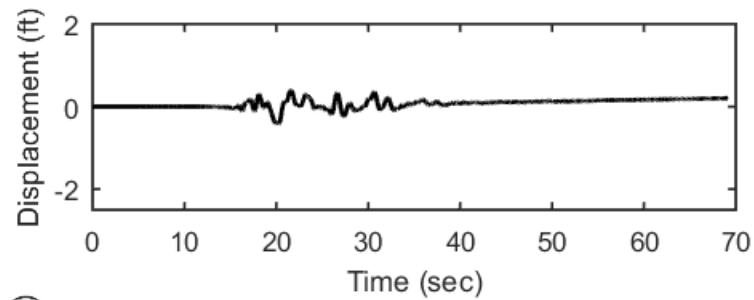
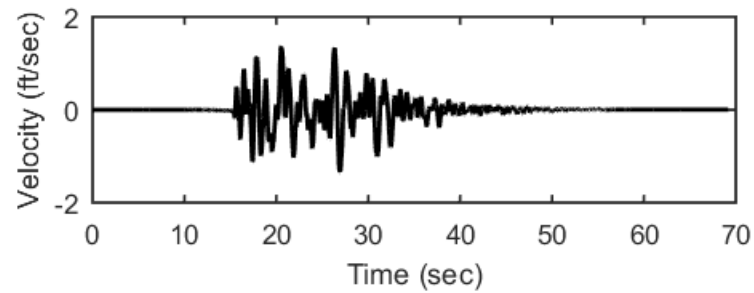
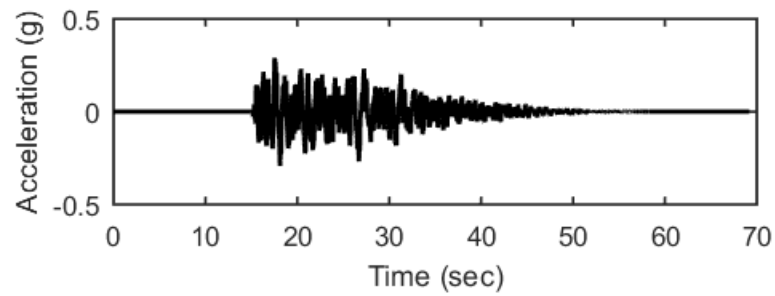
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



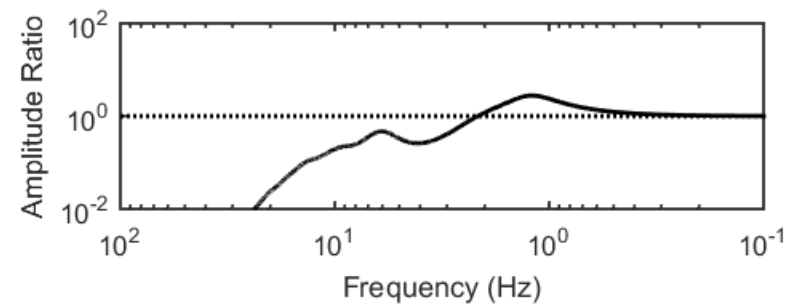
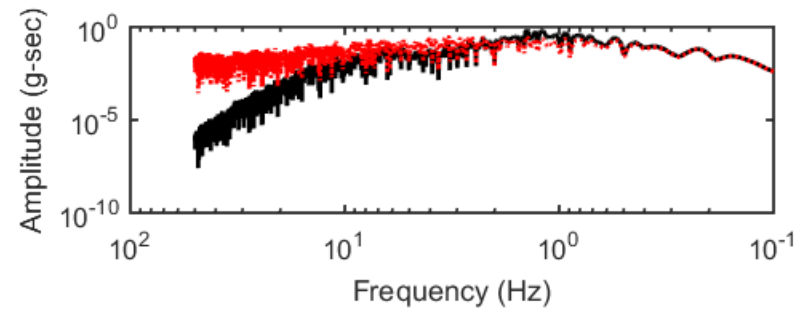
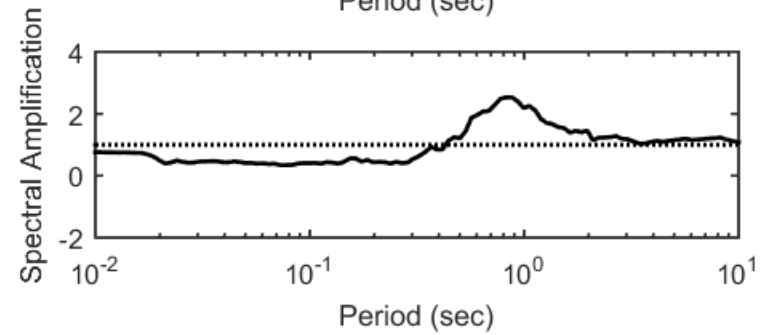
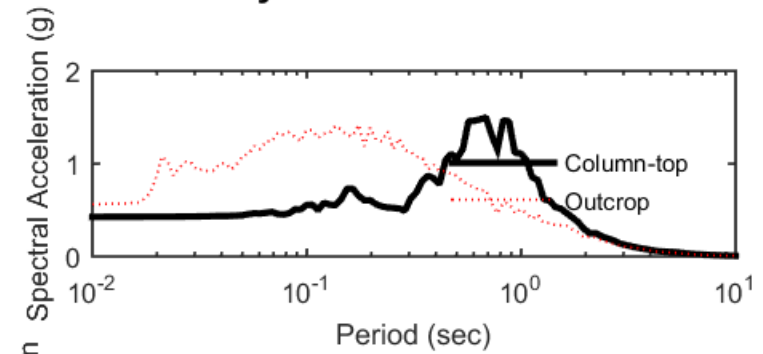
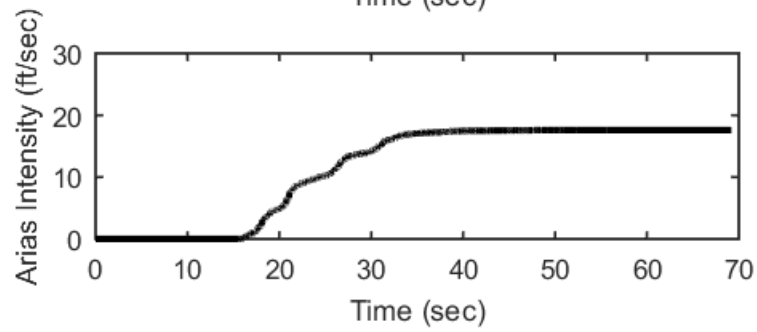
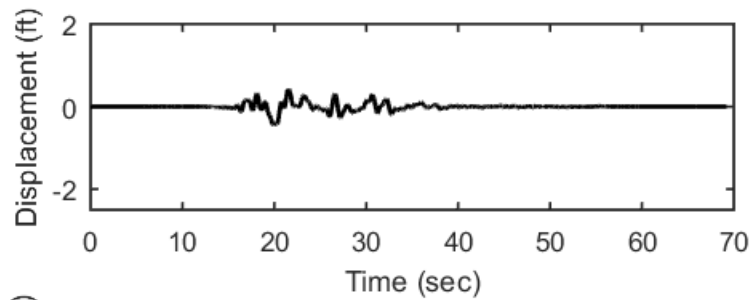
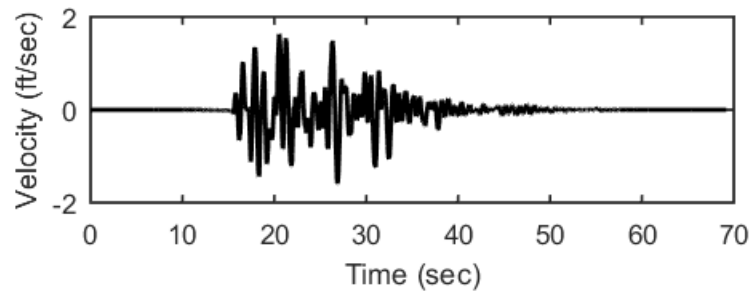
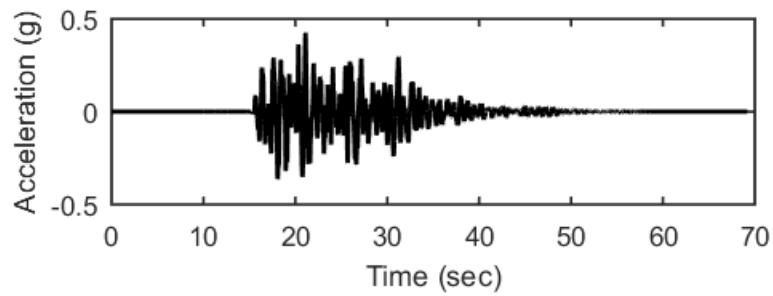
### Profile outputs for Motion: FEE7



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1

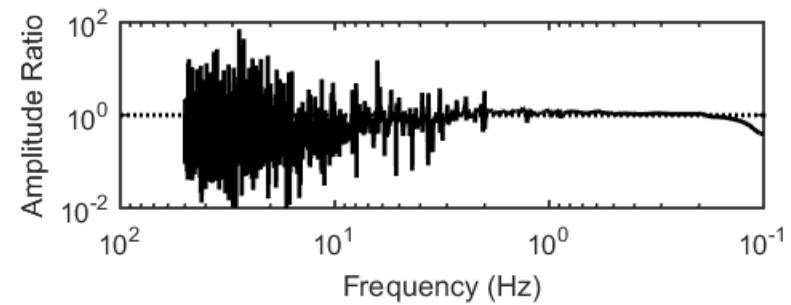
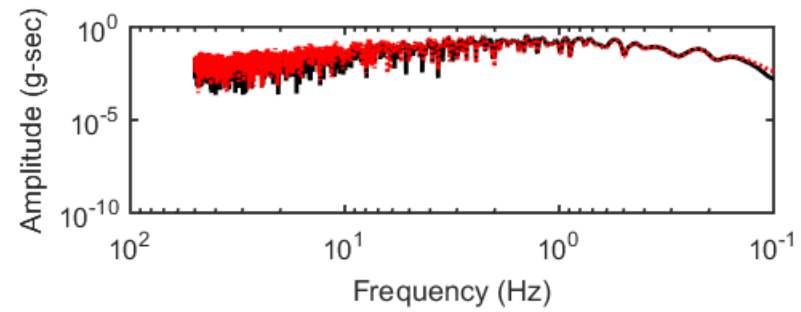
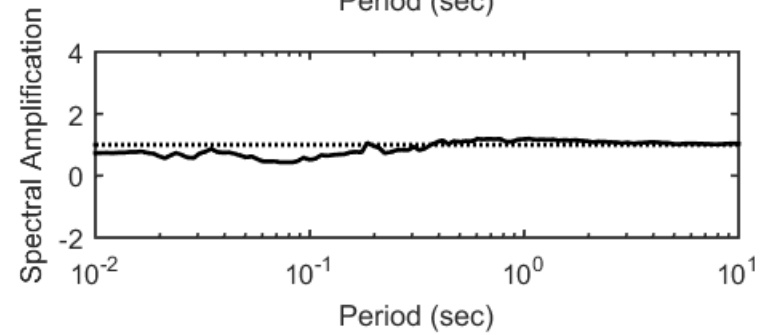
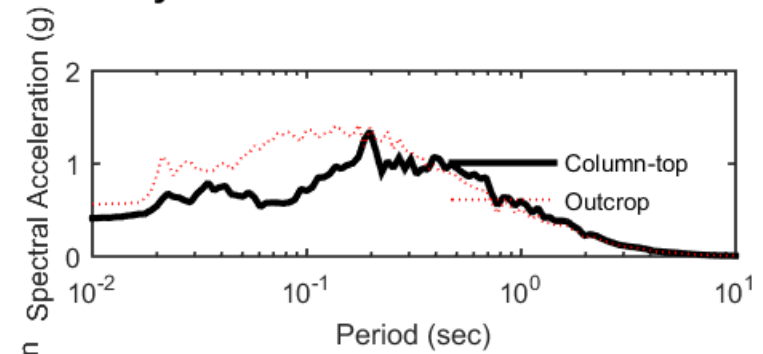
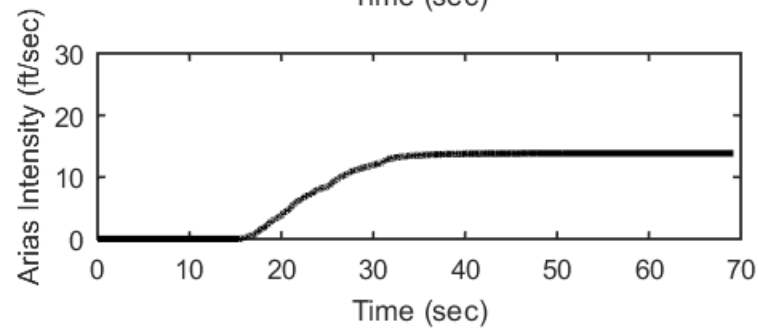
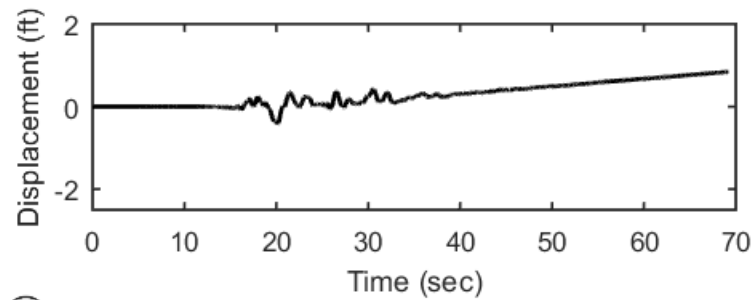
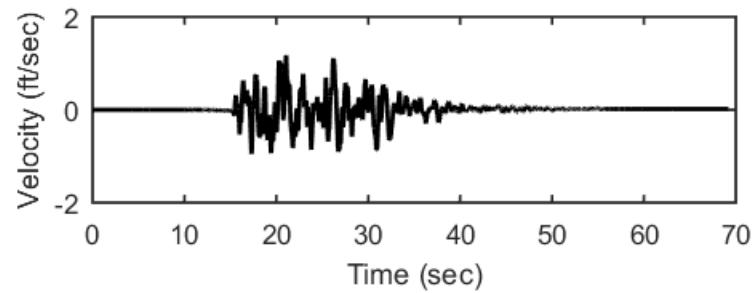
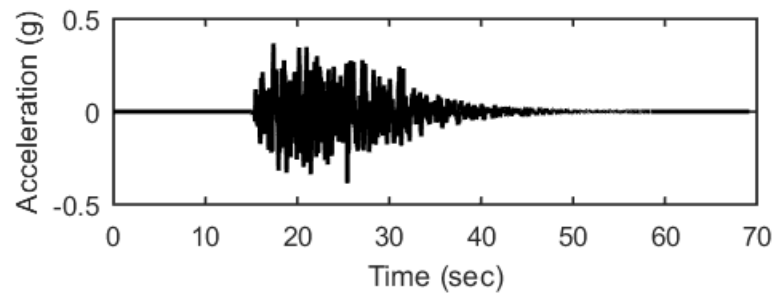


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1

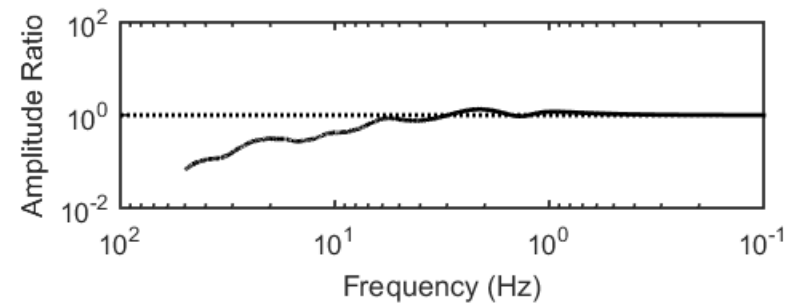
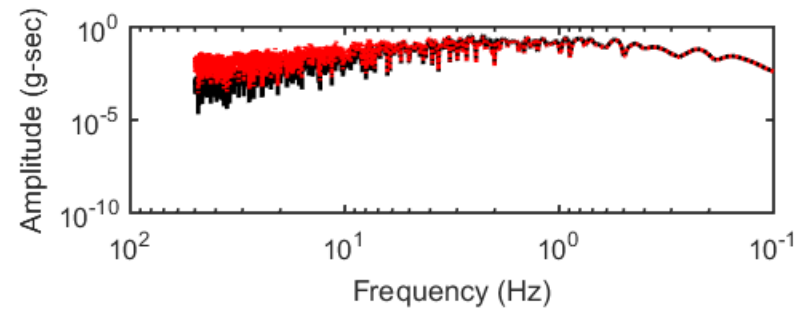
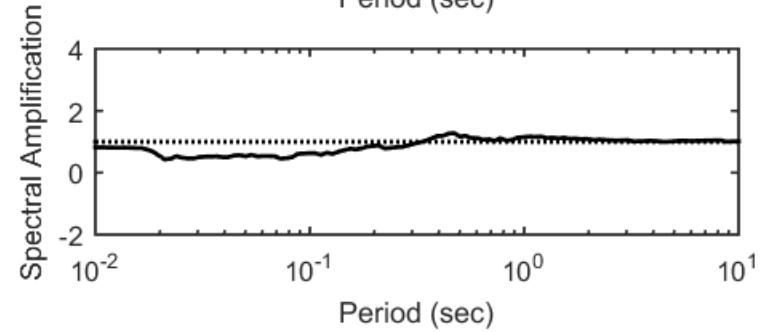
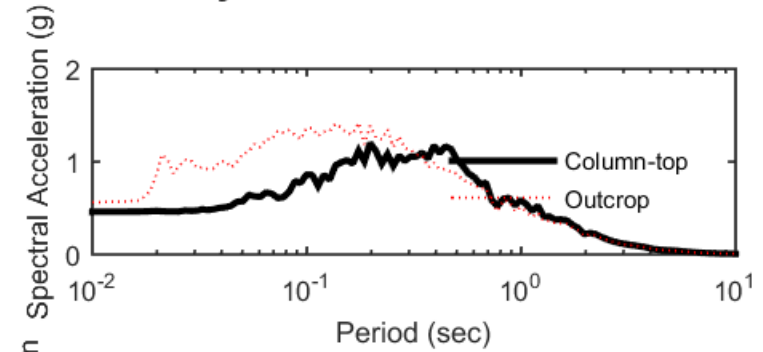
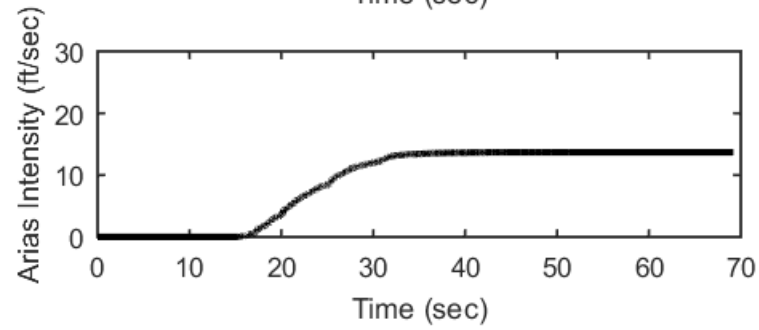
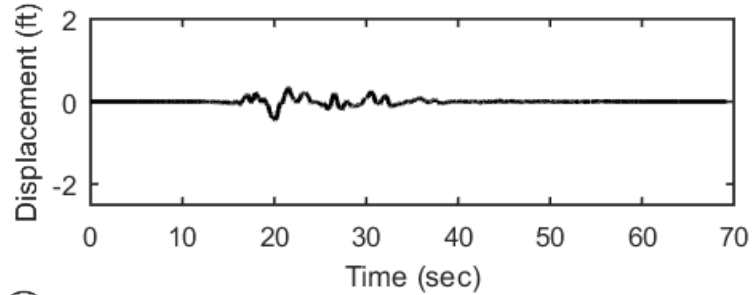
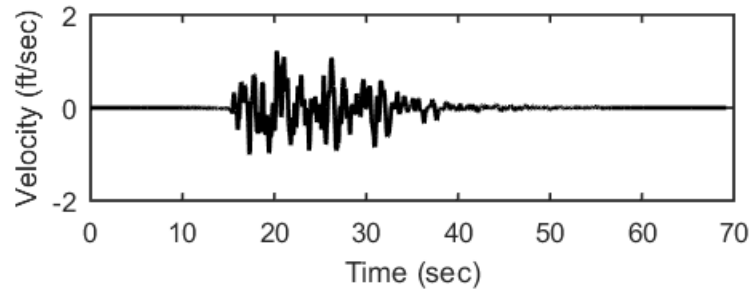
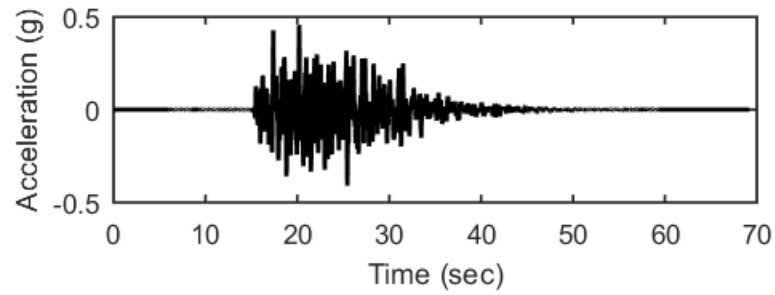




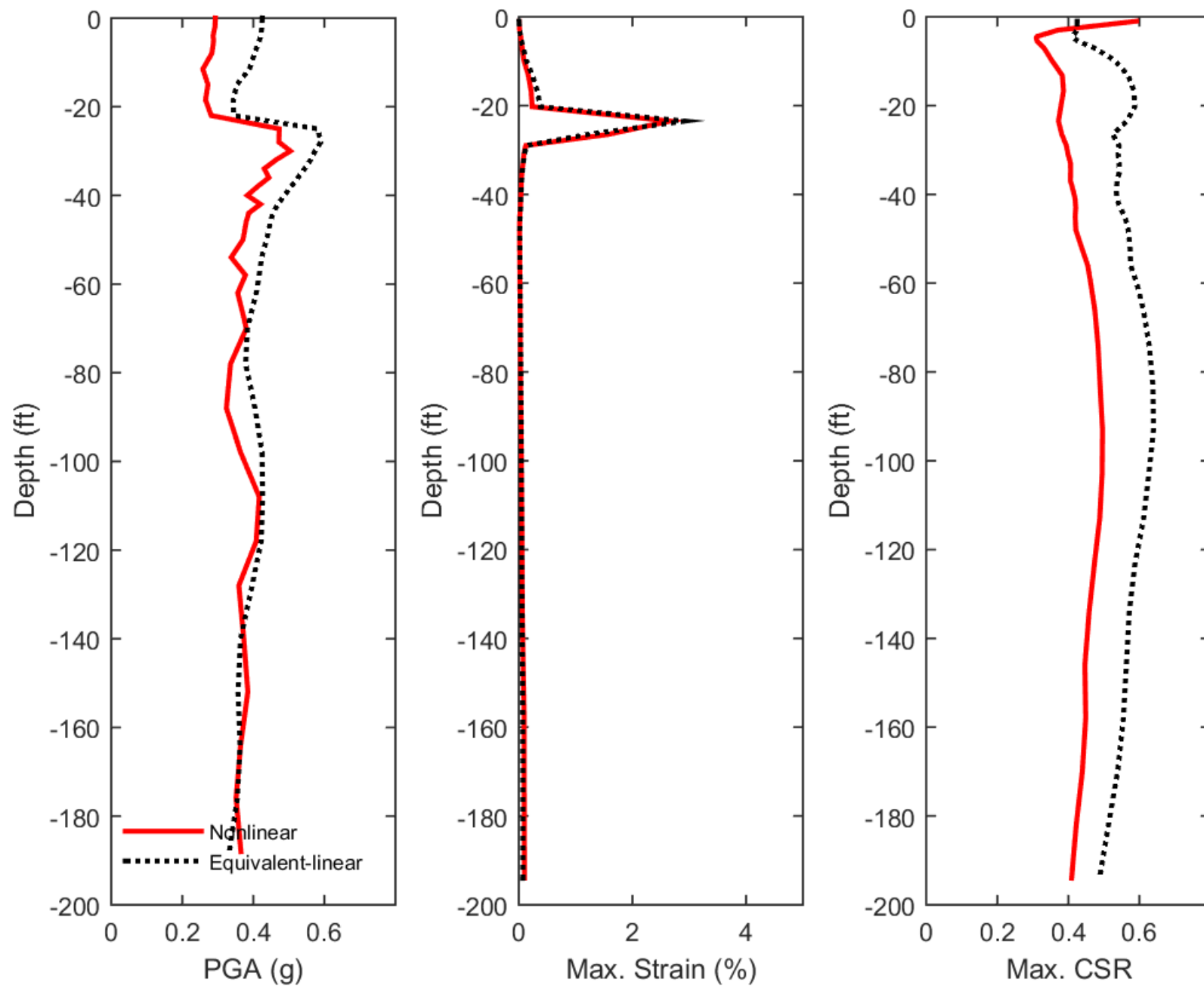
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



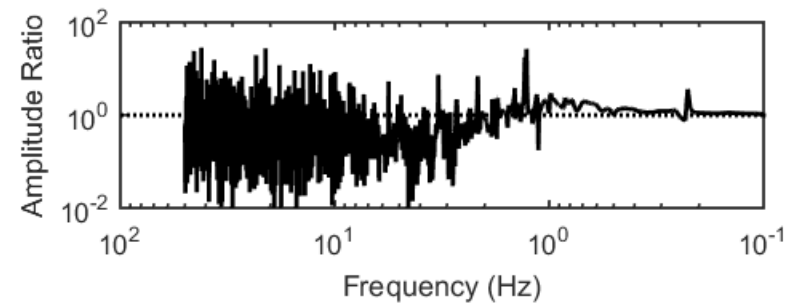
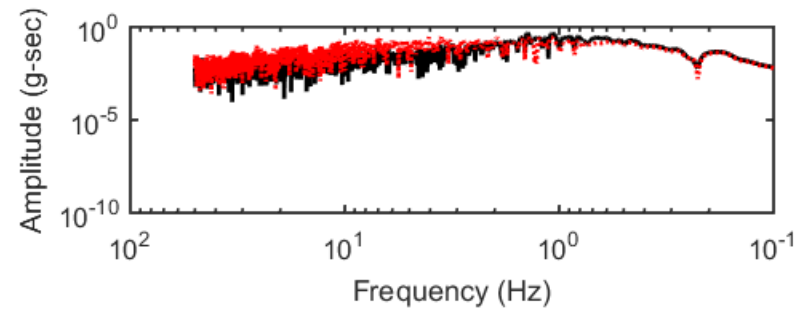
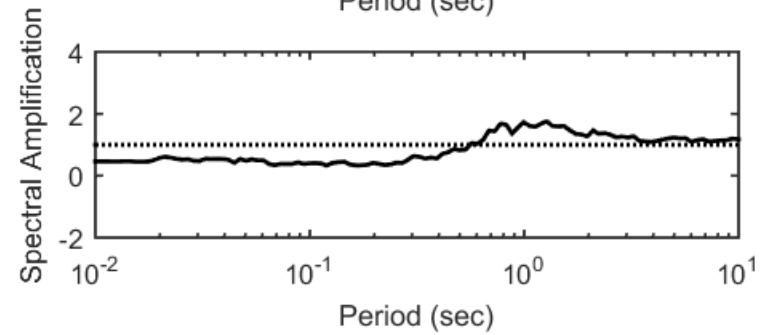
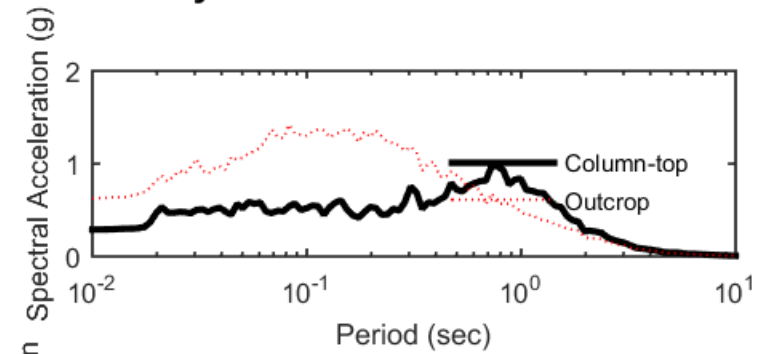
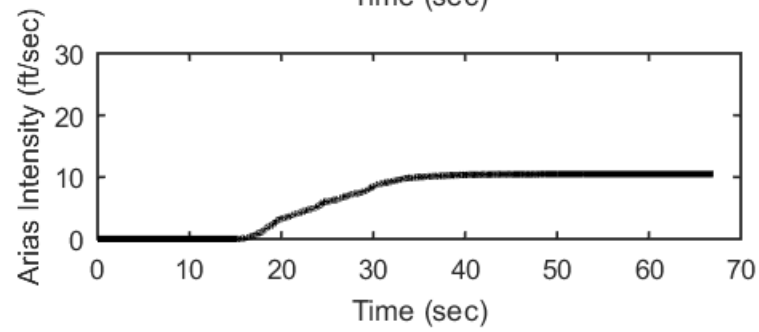
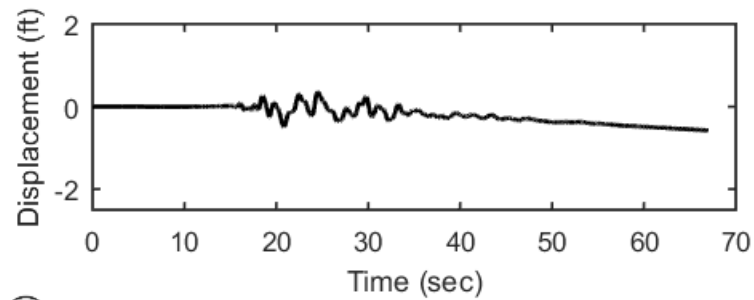
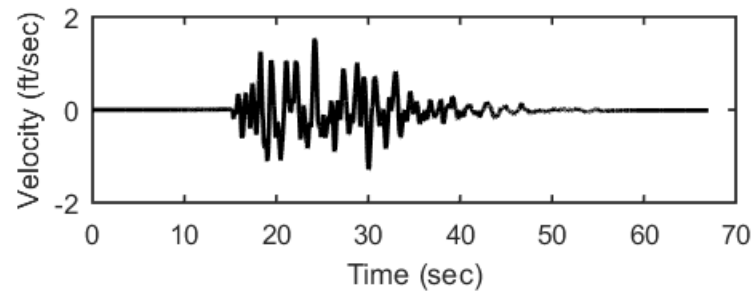
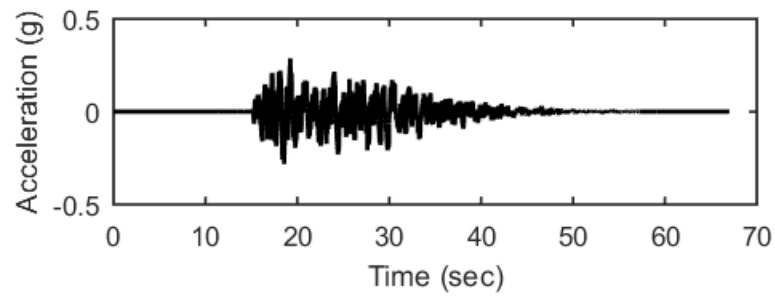
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



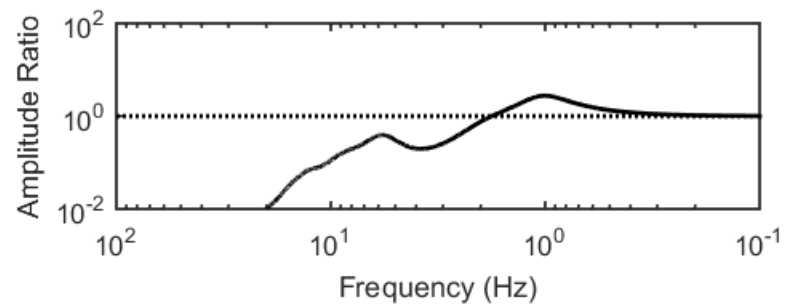
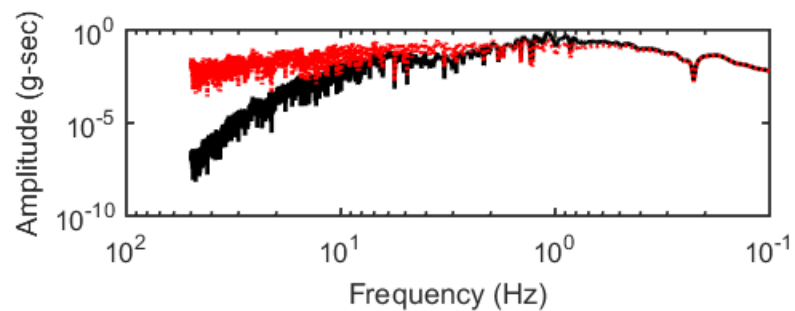
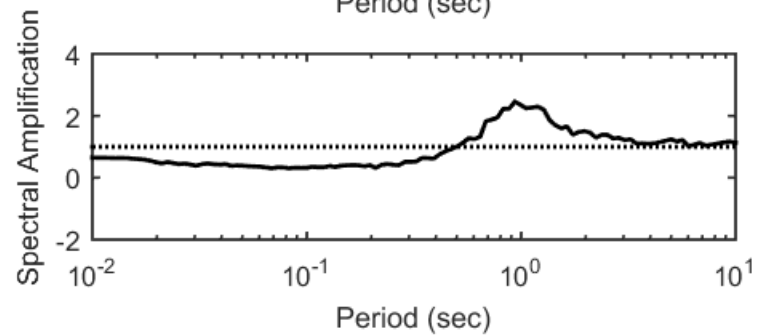
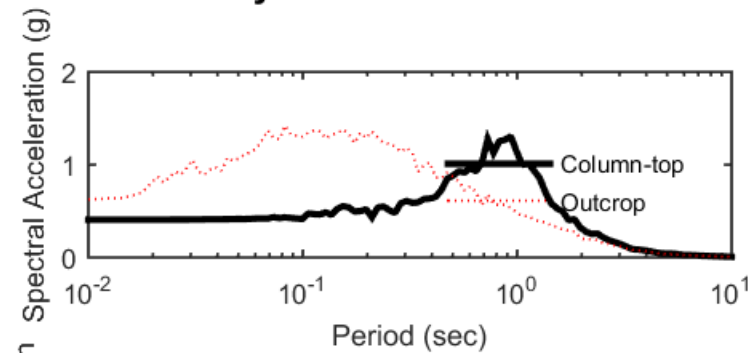
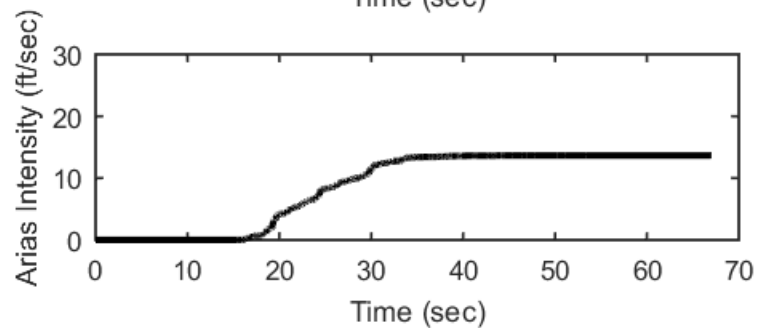
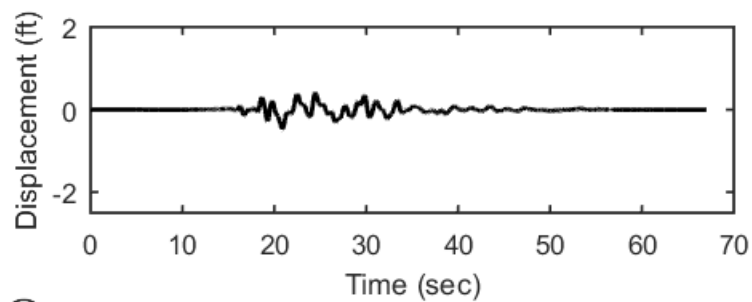
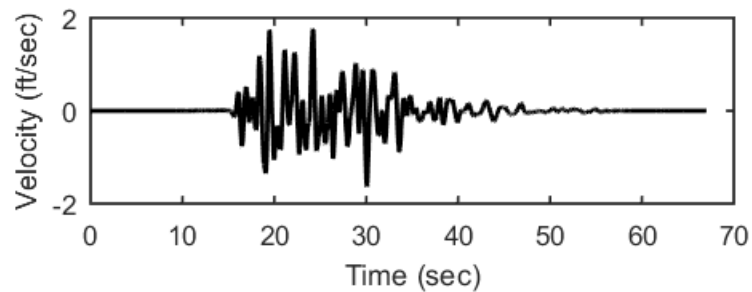
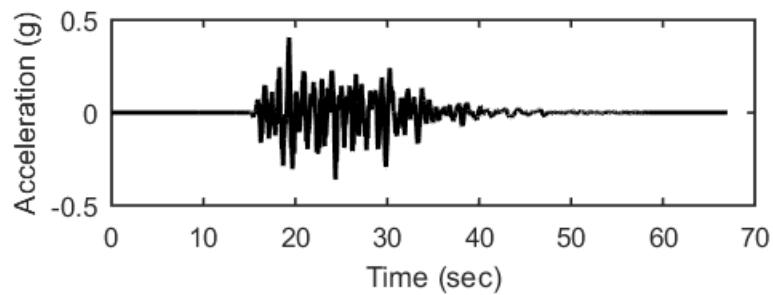
### Profile outputs for Motion: SEE1



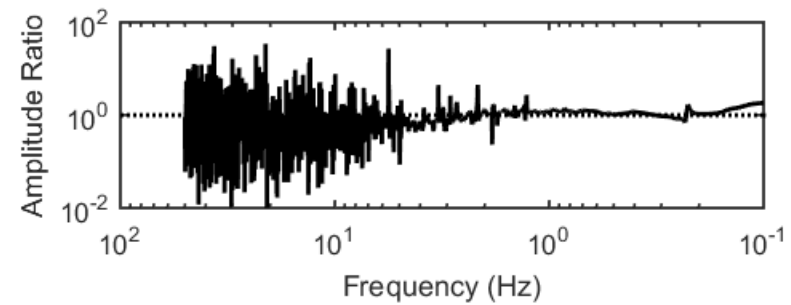
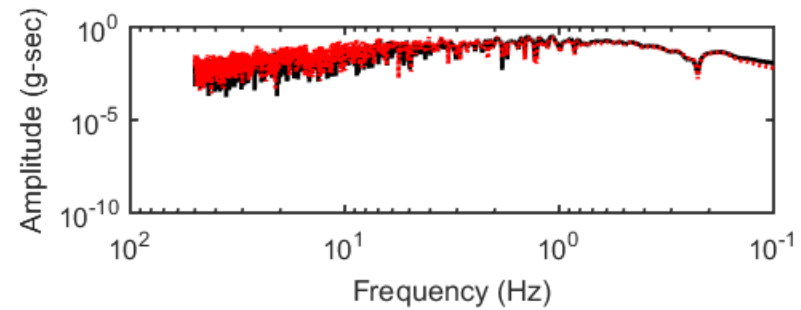
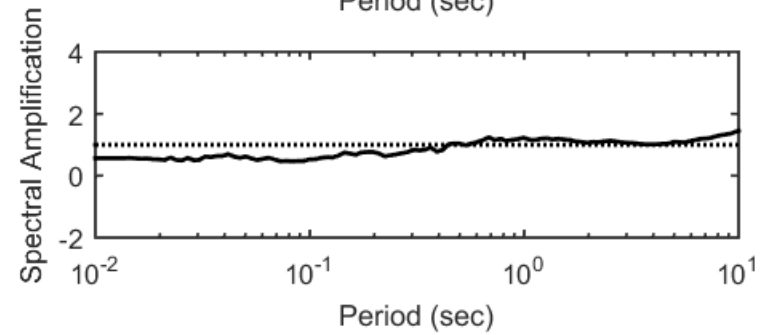
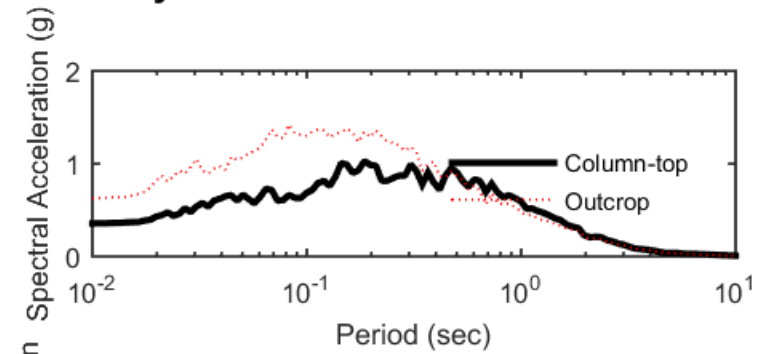
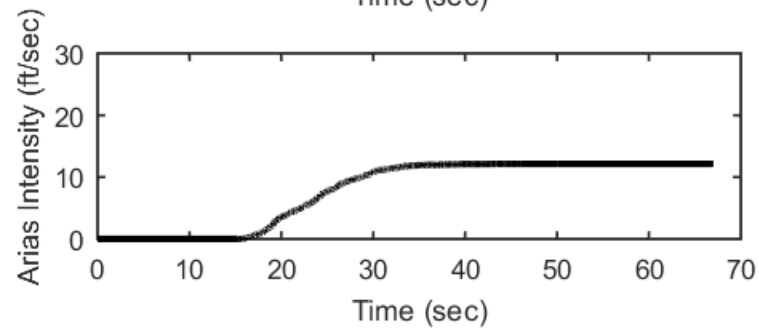
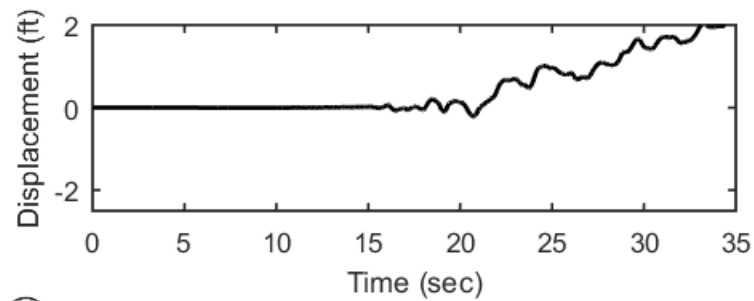
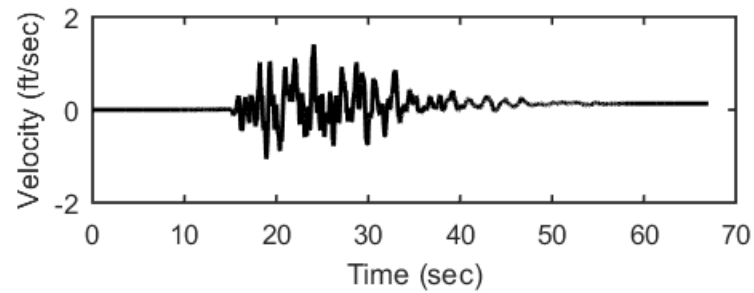
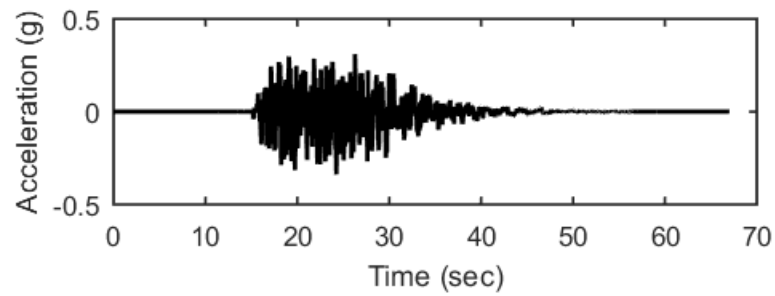
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



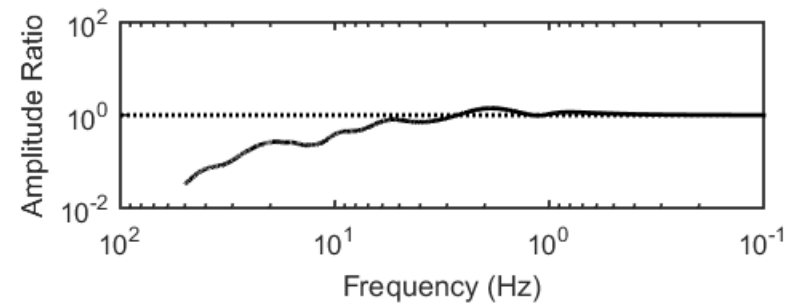
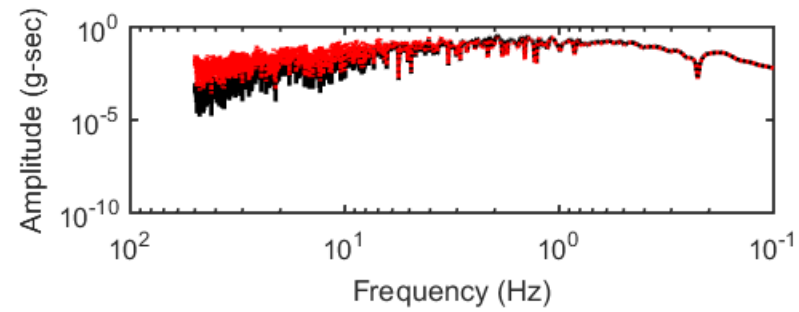
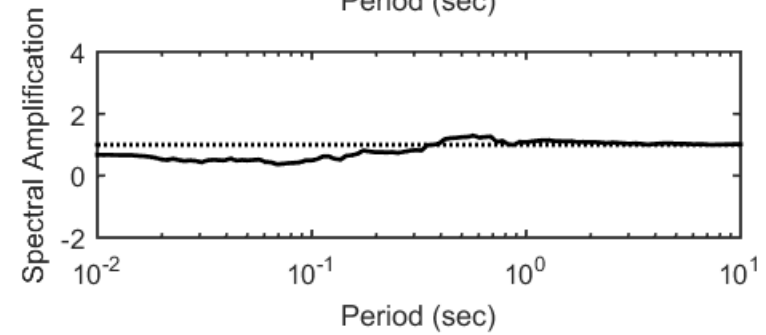
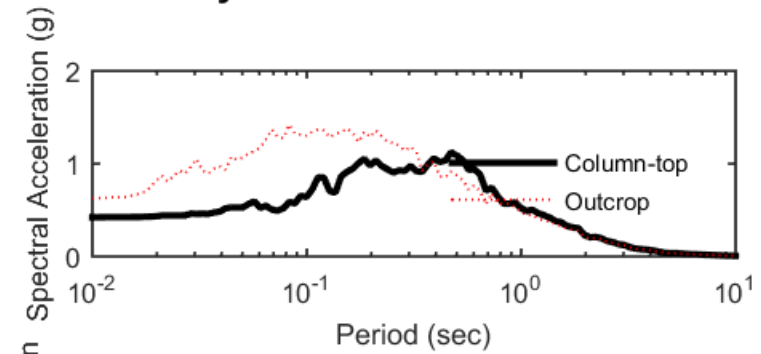
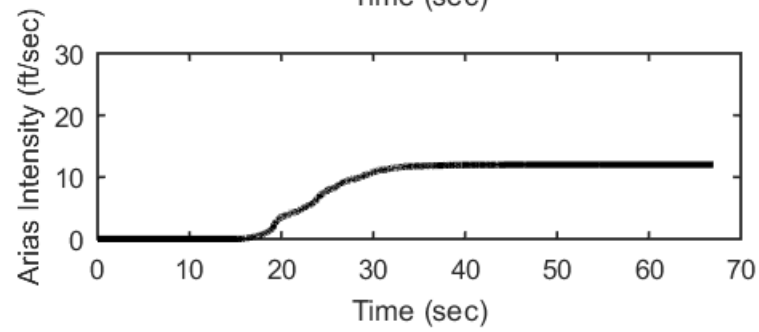
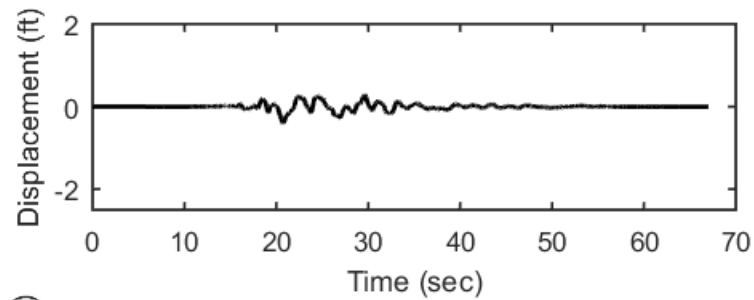
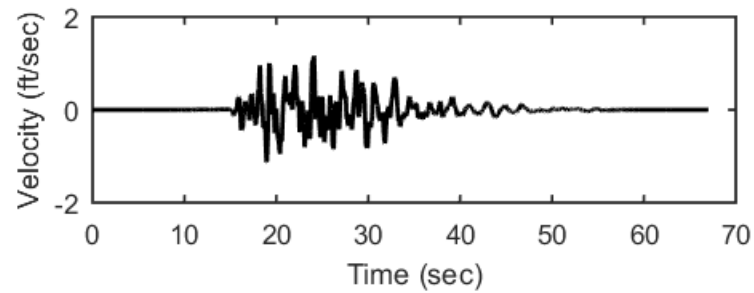
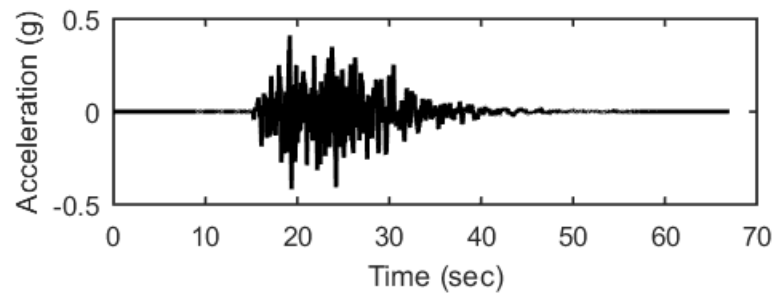
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



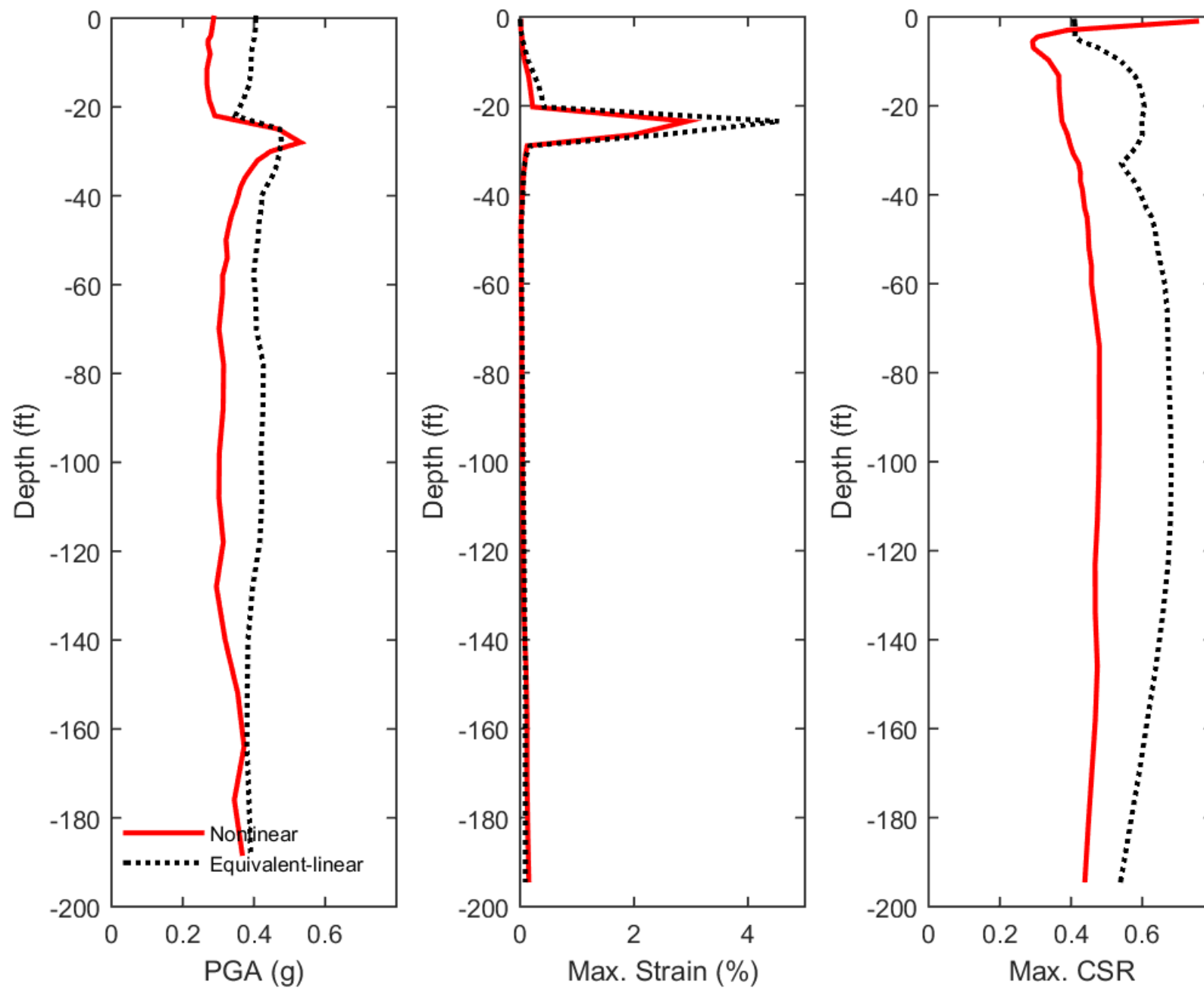
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2

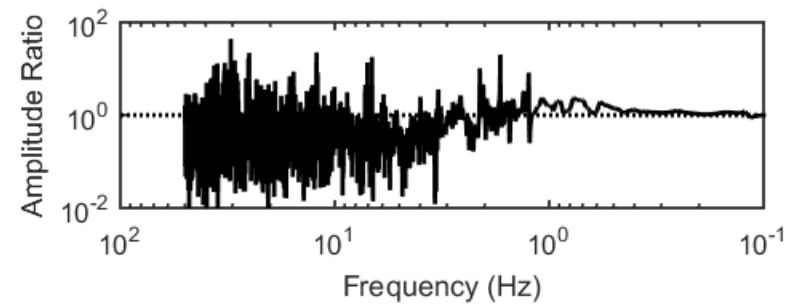
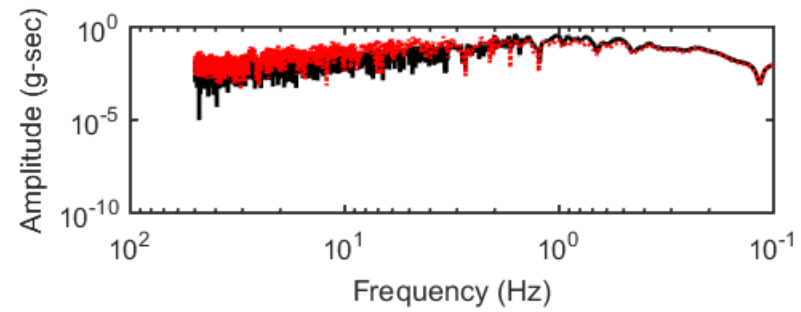
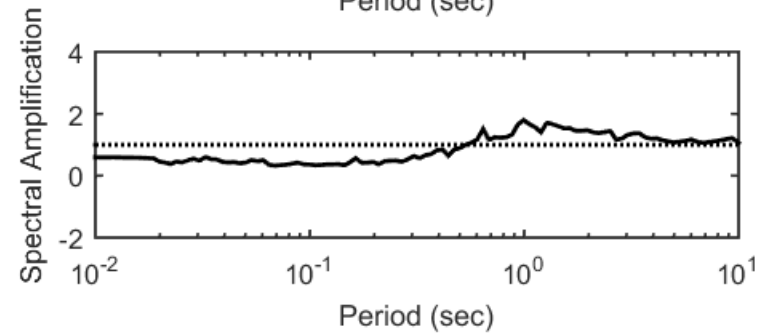
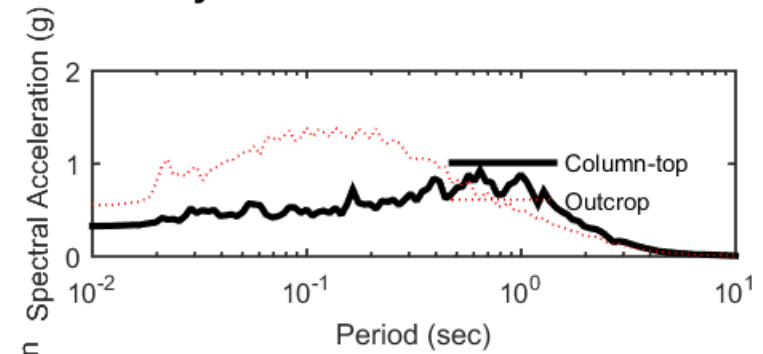
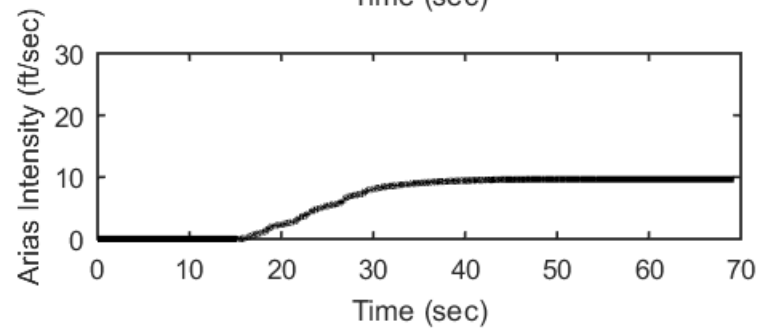
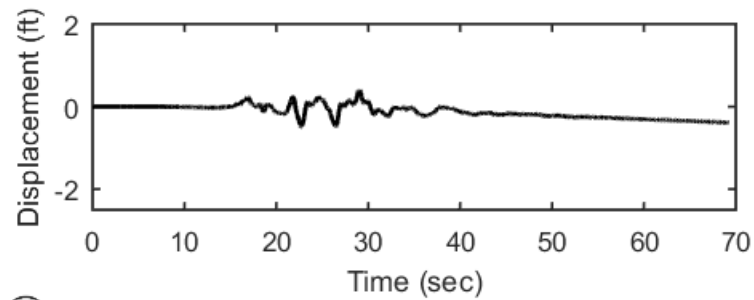
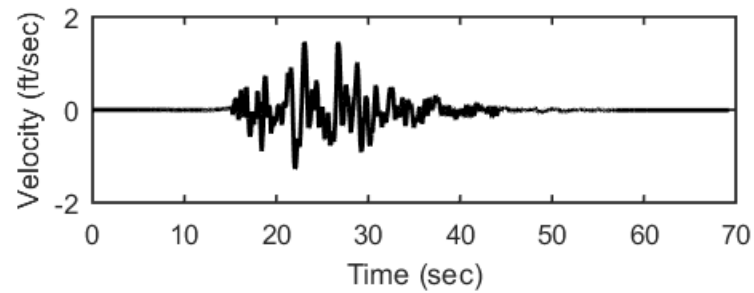
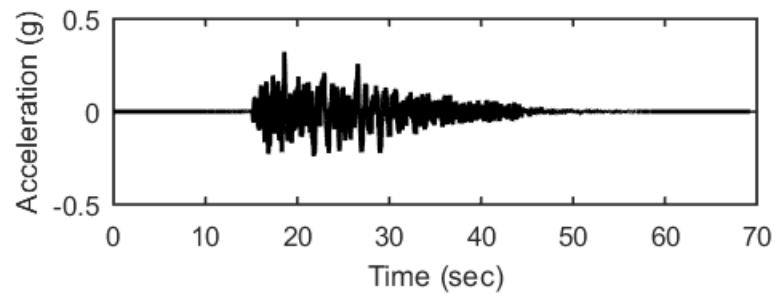


### Profile outputs for Motion: SEE2

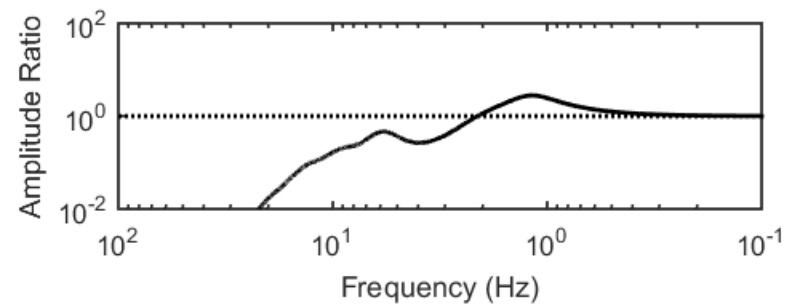
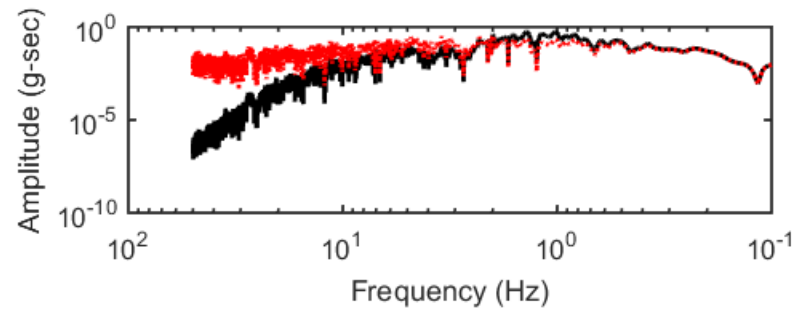
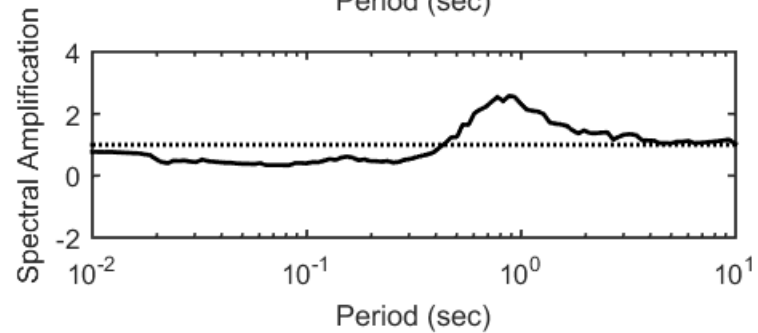
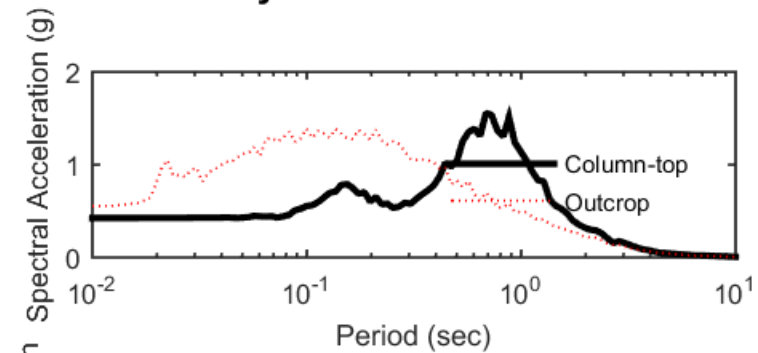
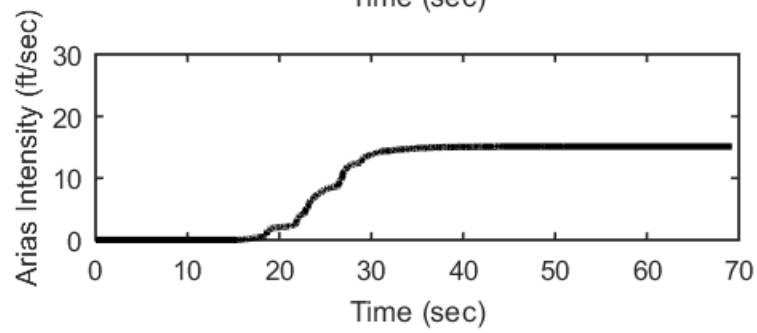
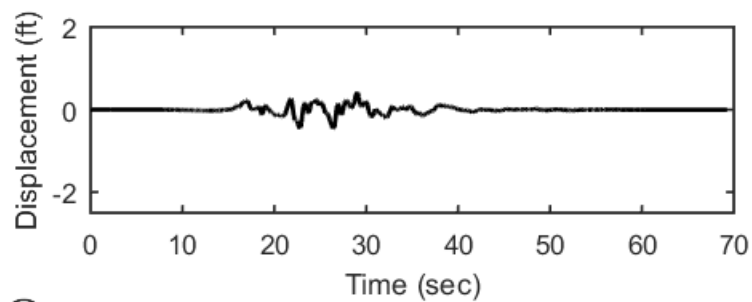
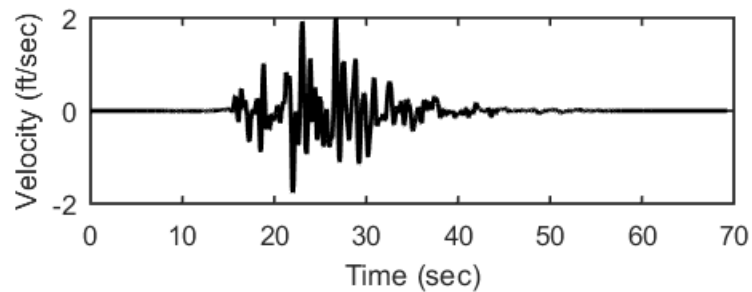
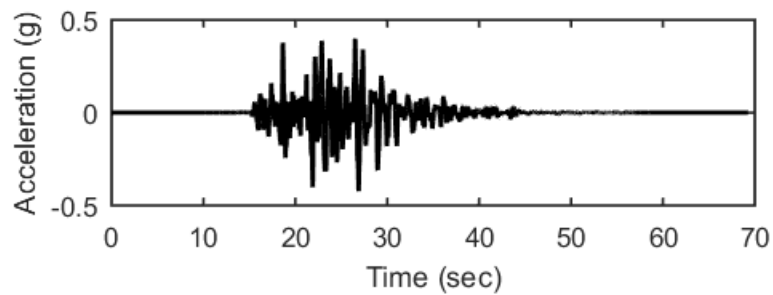




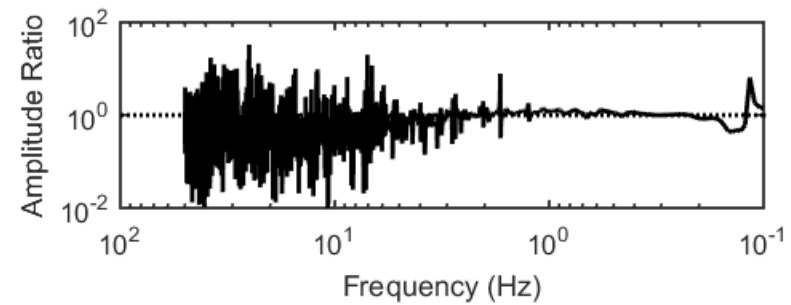
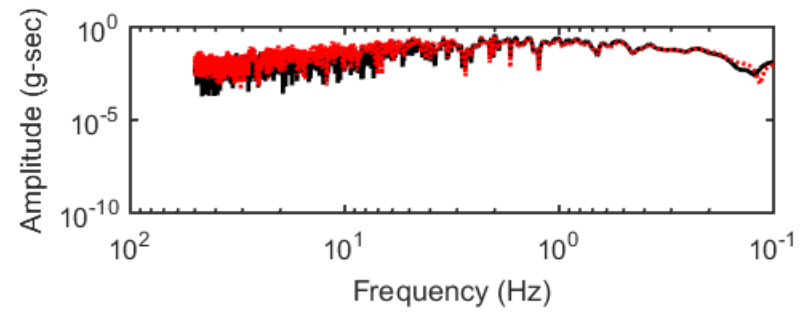
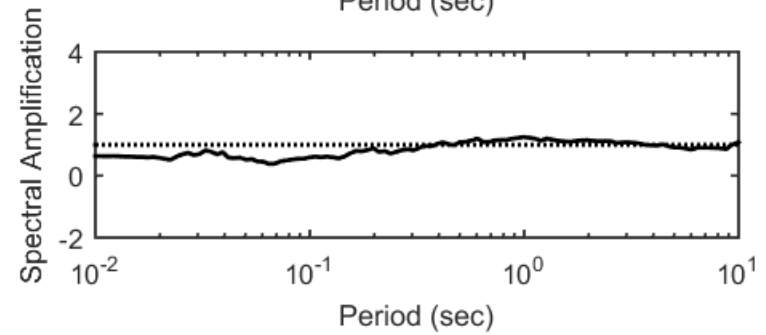
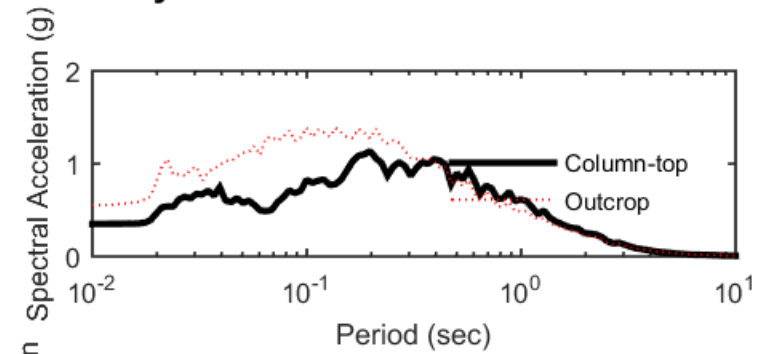
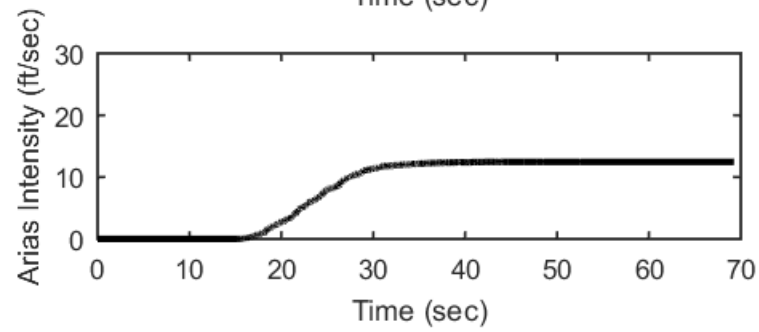
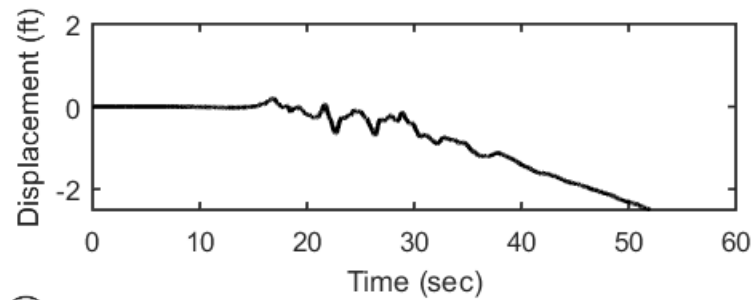
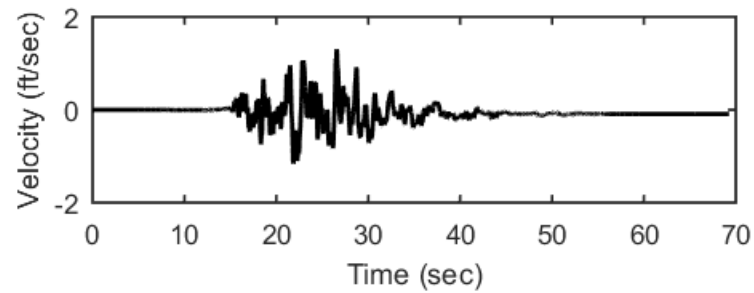
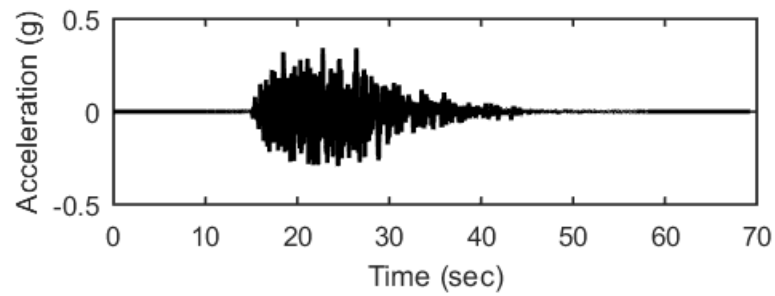
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



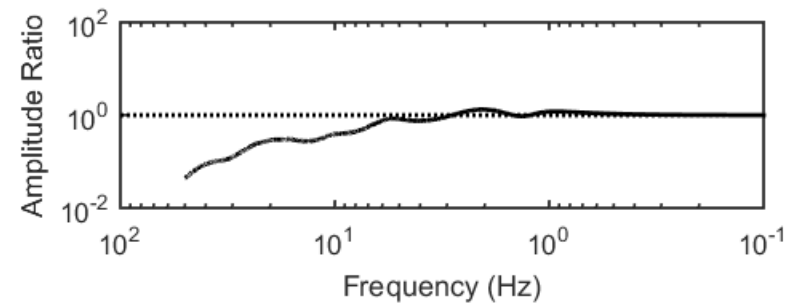
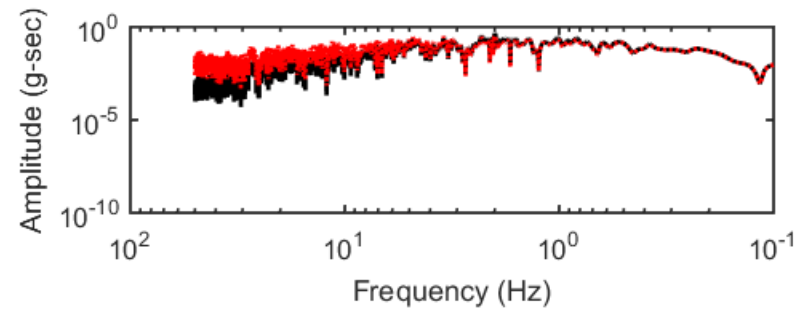
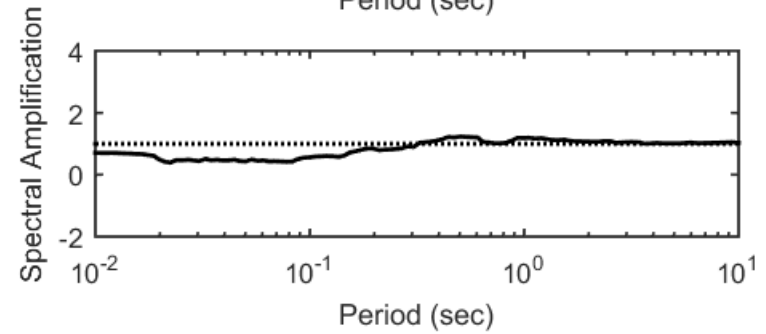
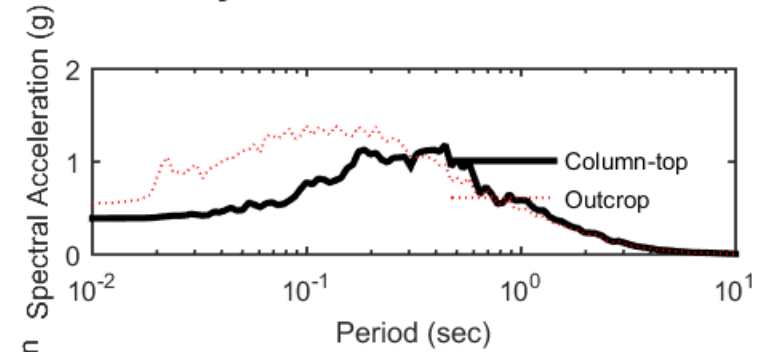
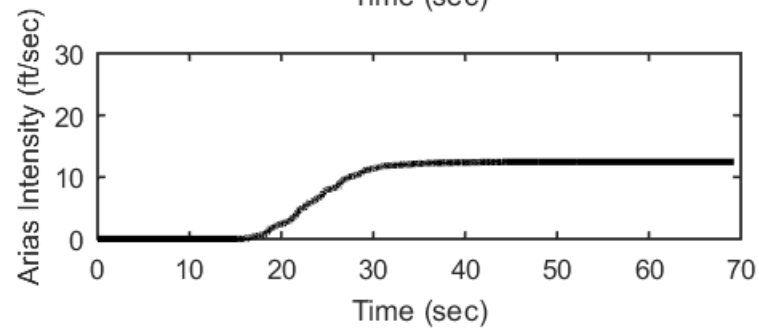
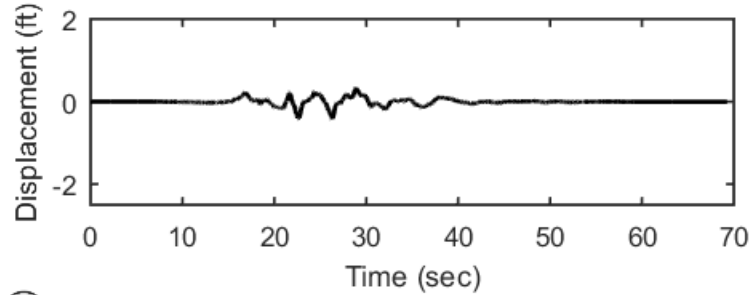
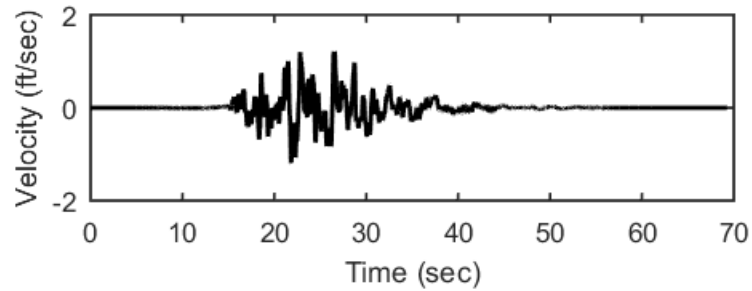
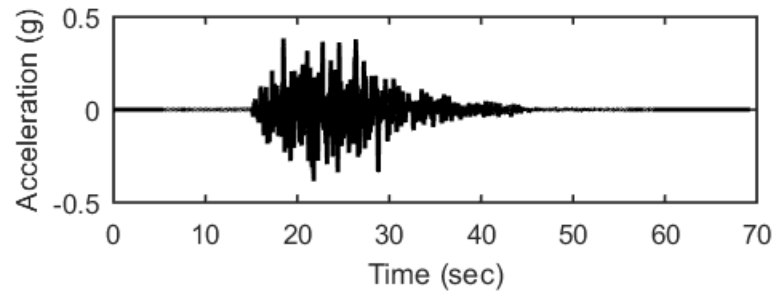
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



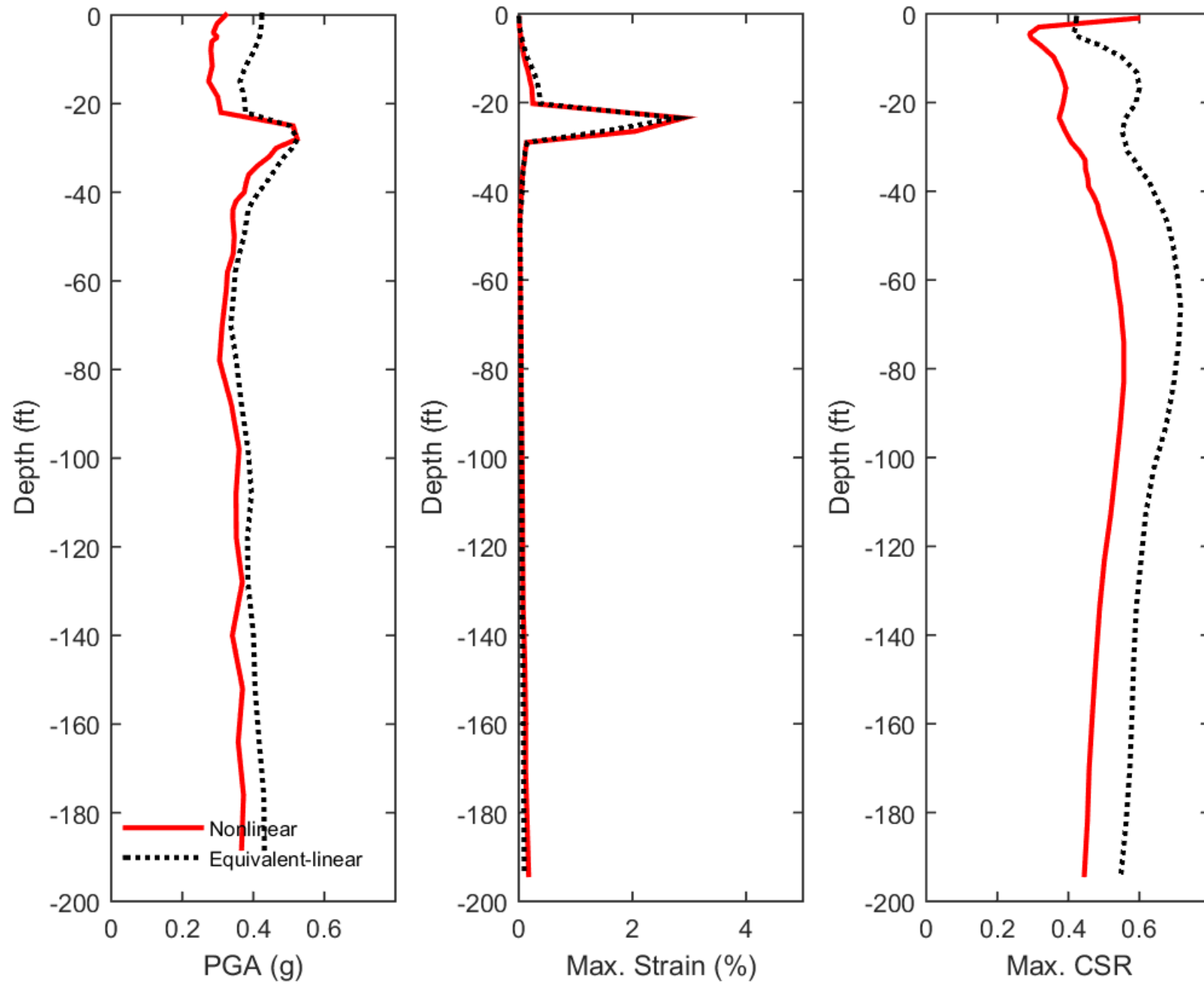
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



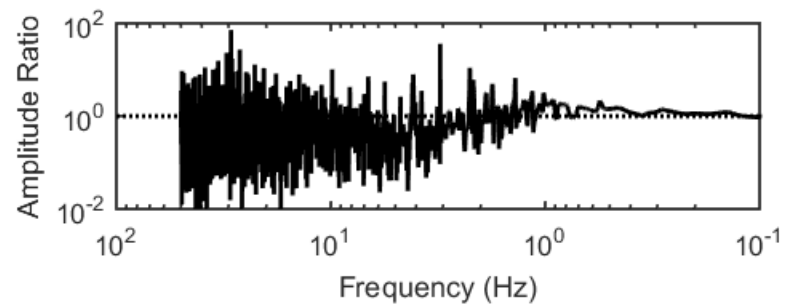
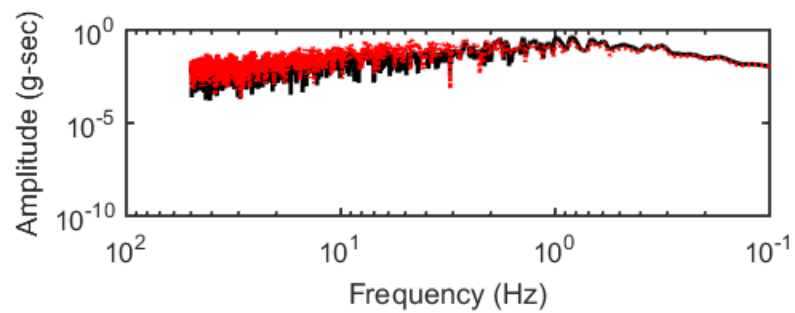
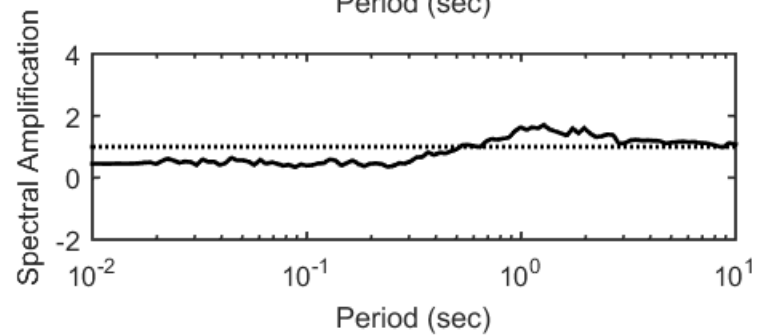
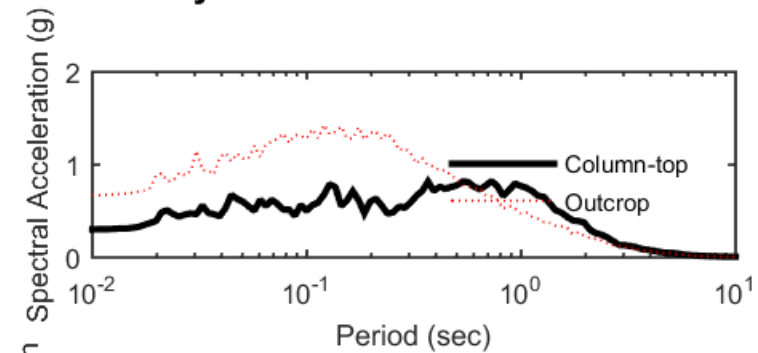
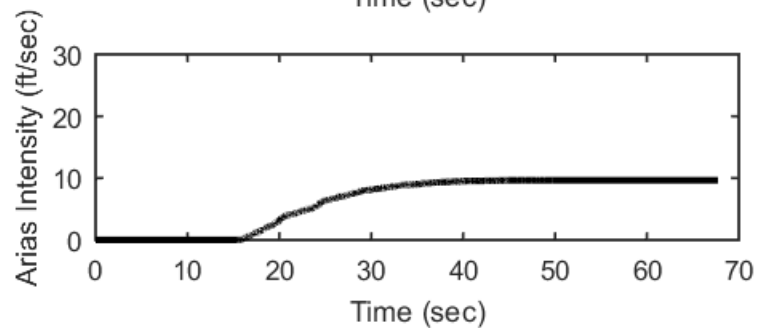
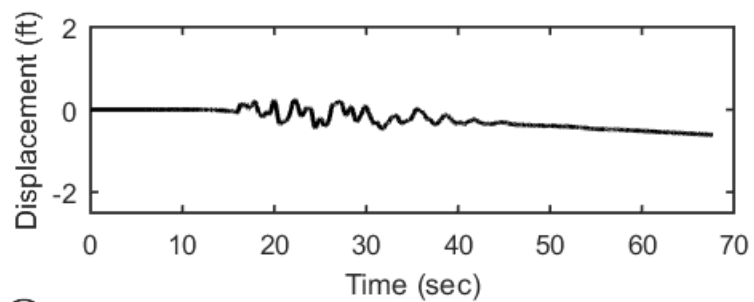
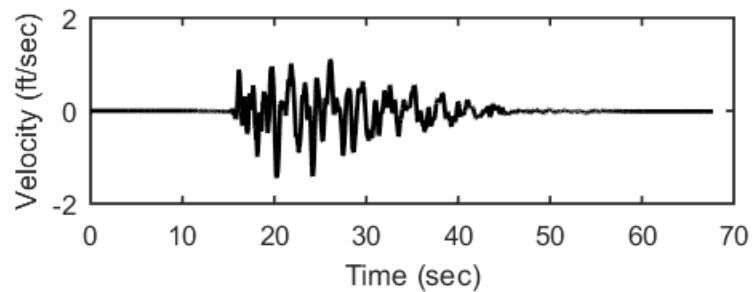
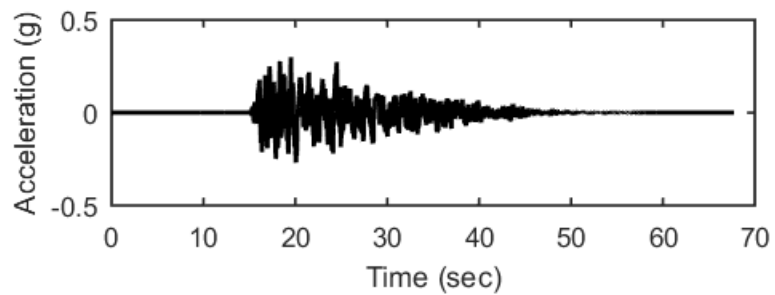
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



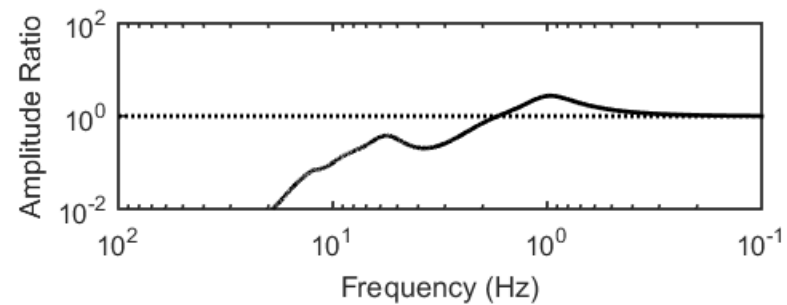
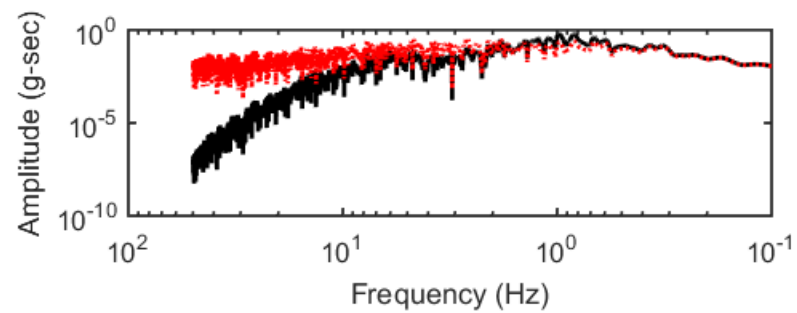
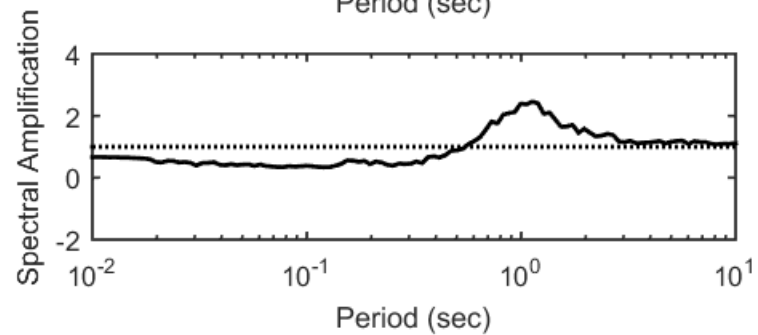
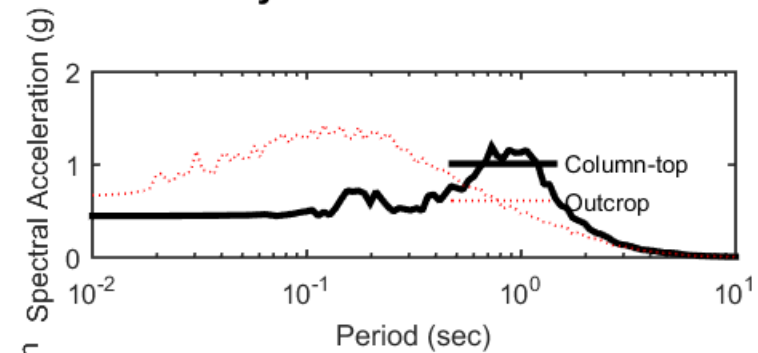
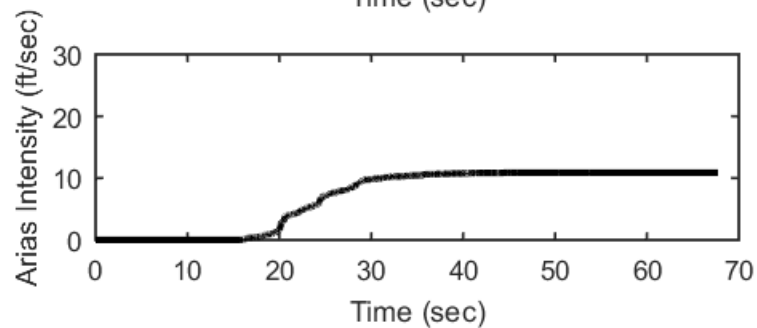
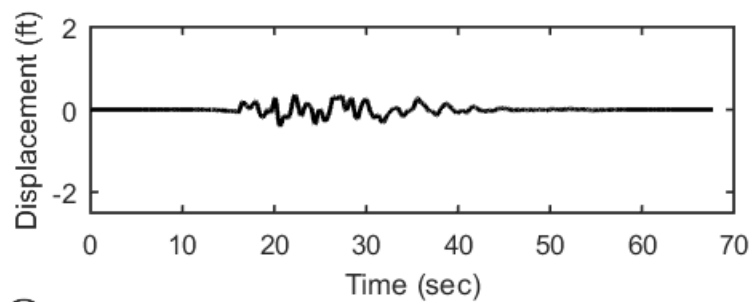
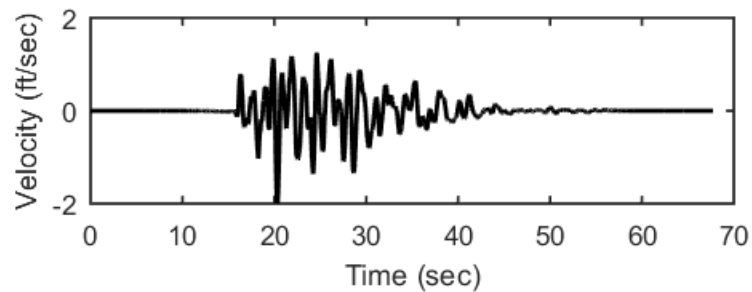
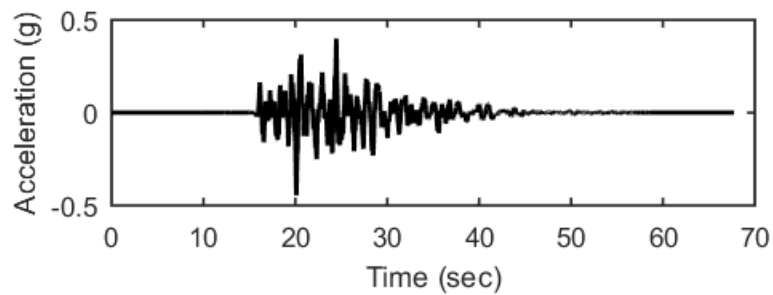
### Profile outputs for Motion: SEE3



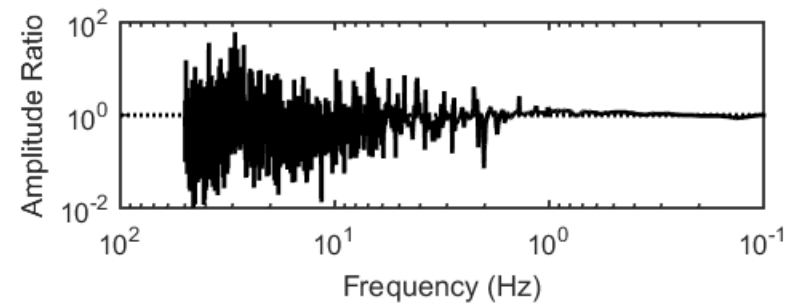
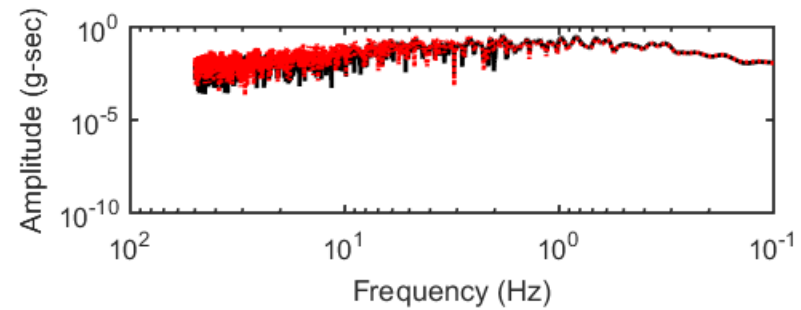
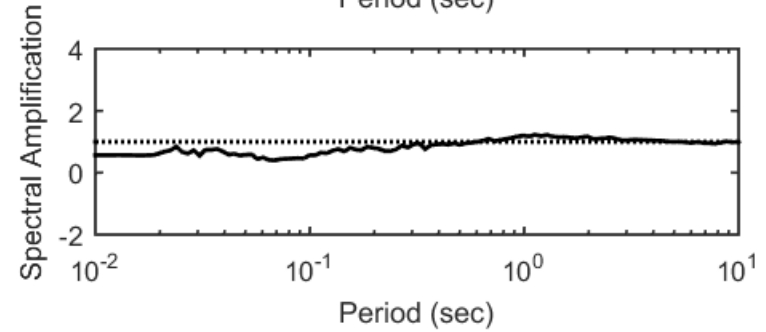
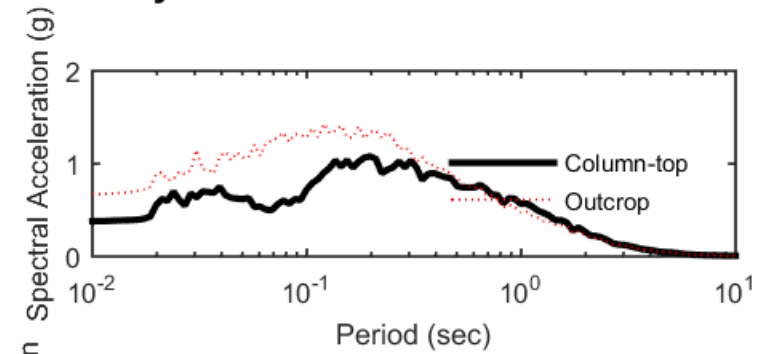
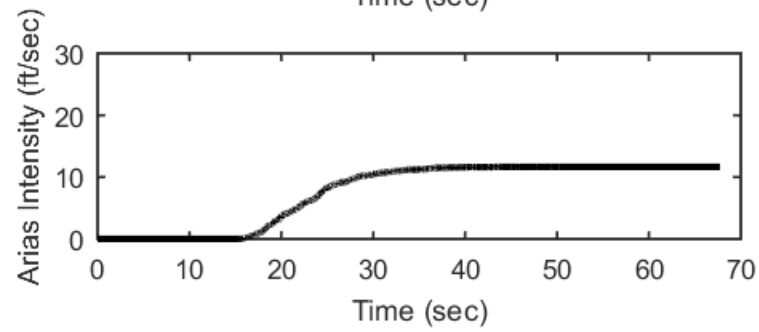
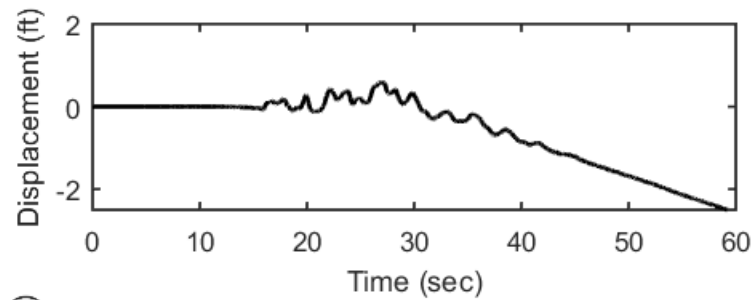
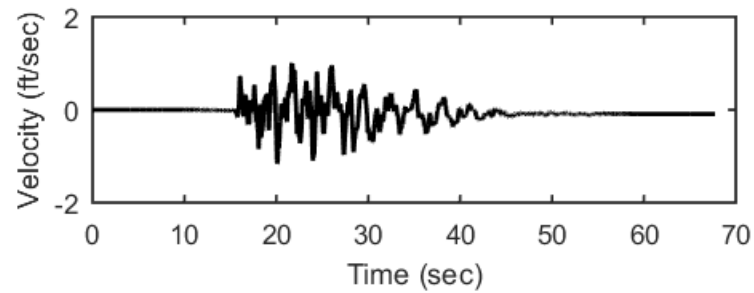
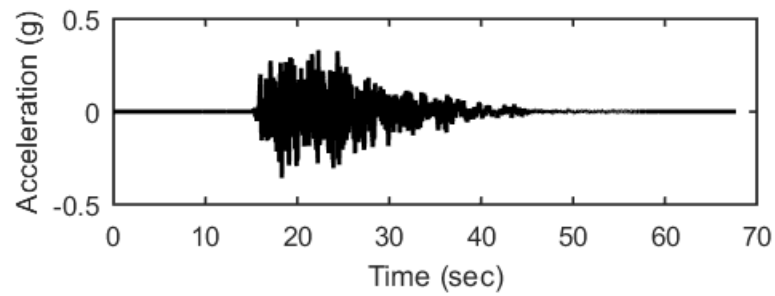
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4

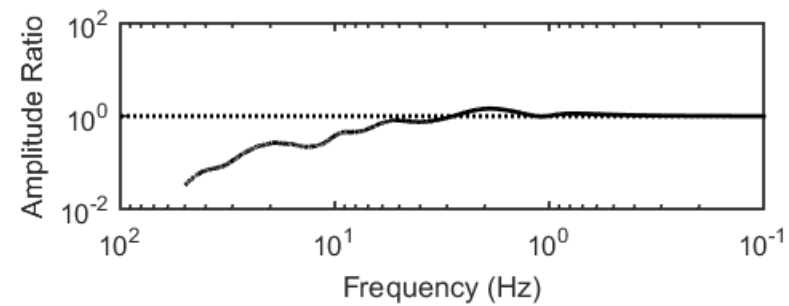
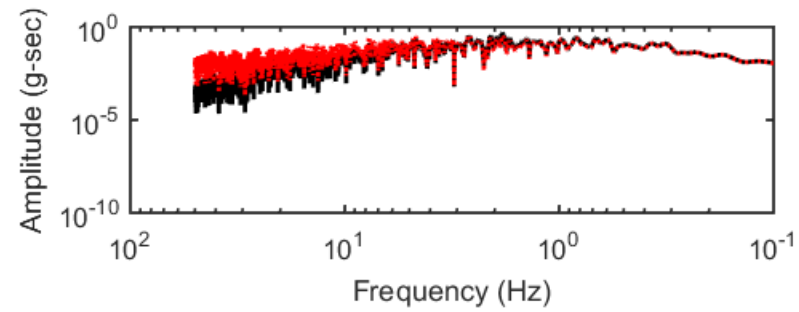
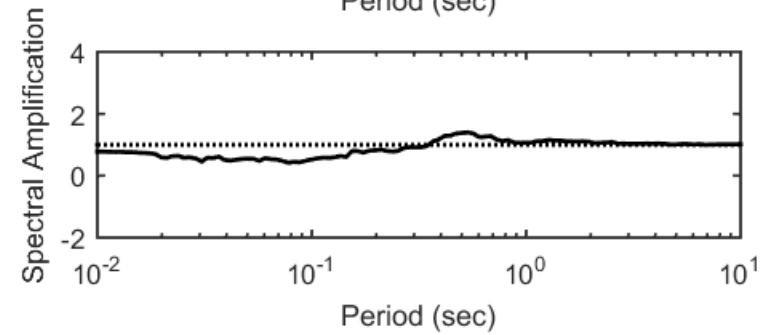
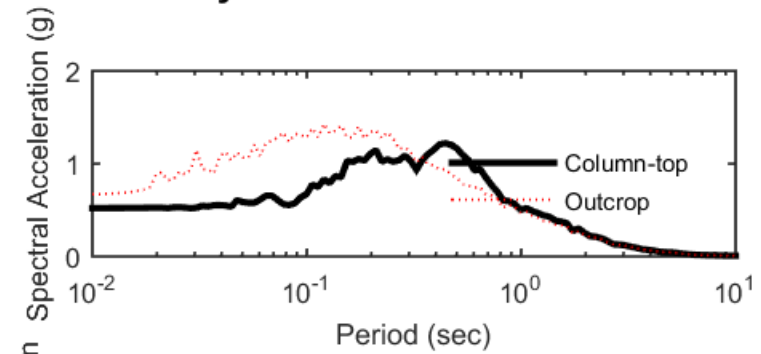
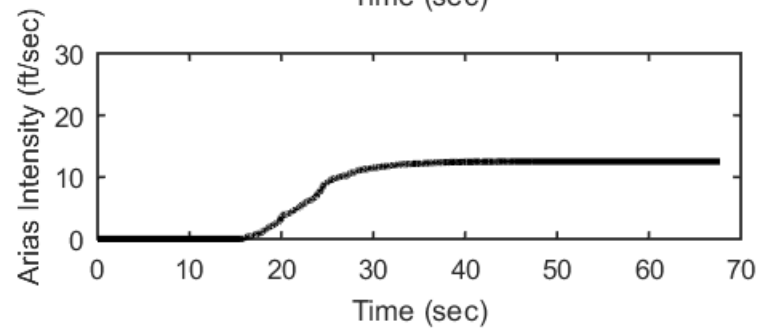
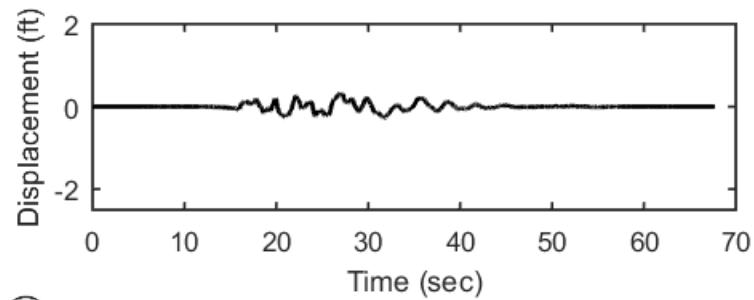
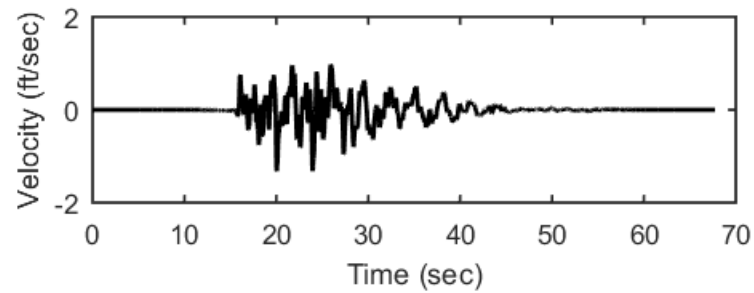
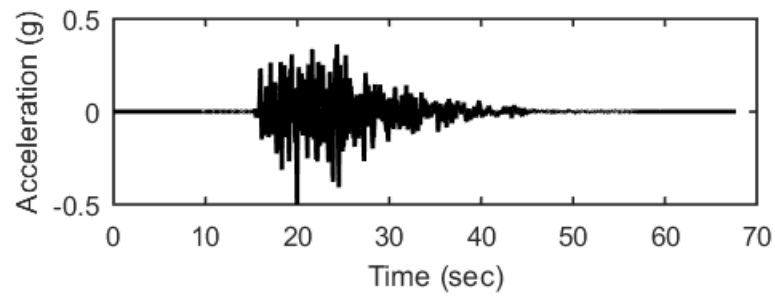


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4

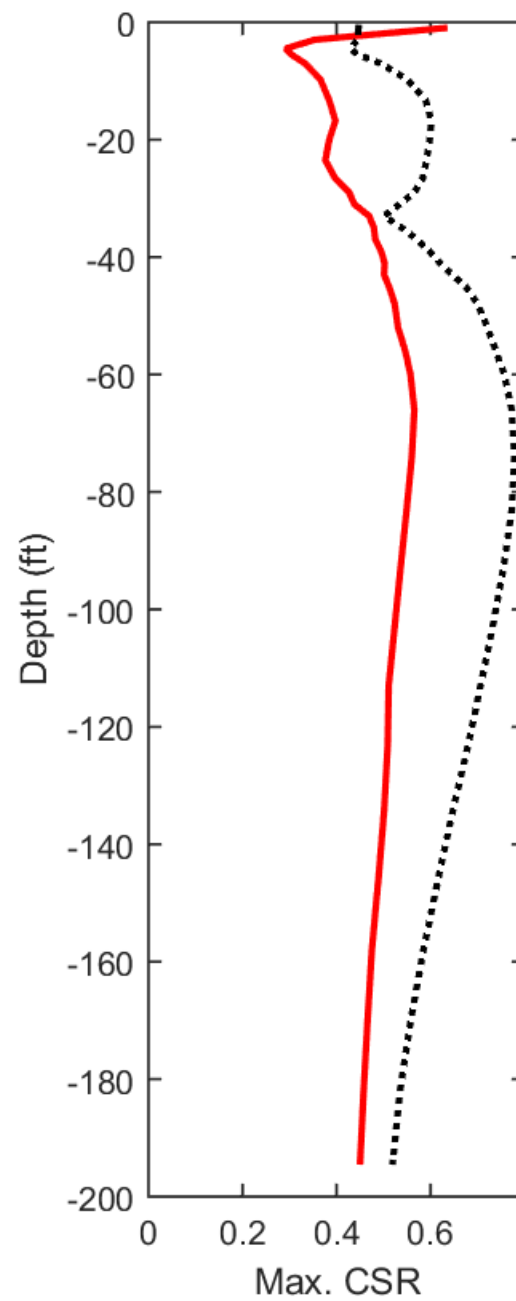
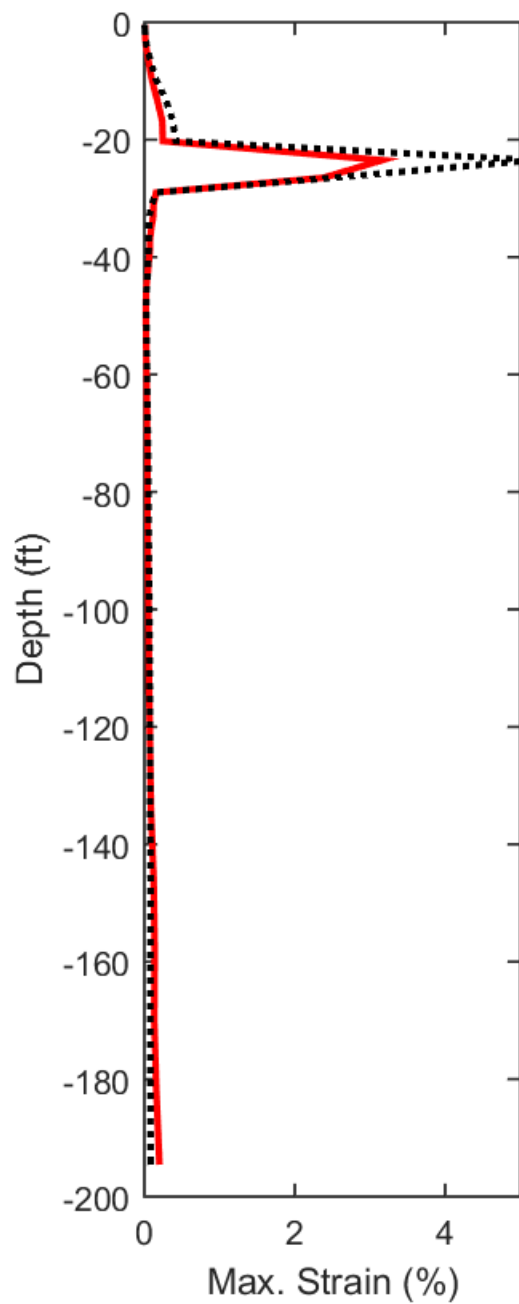
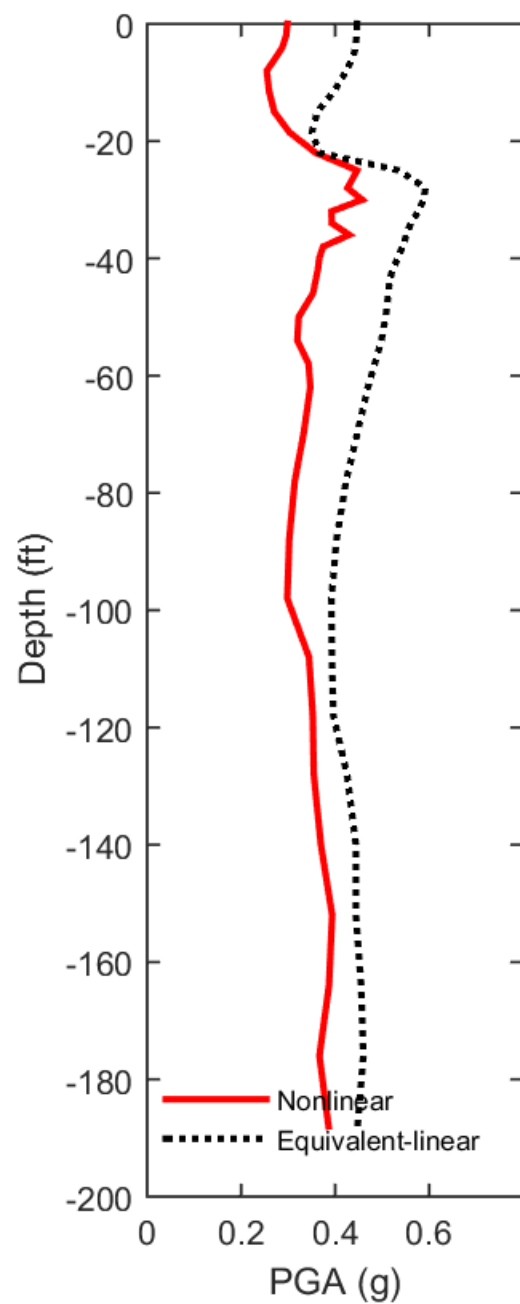




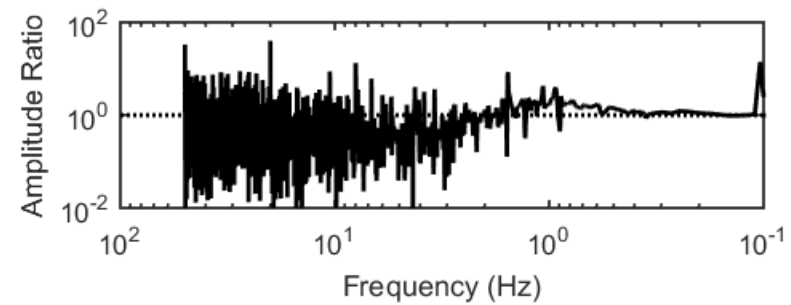
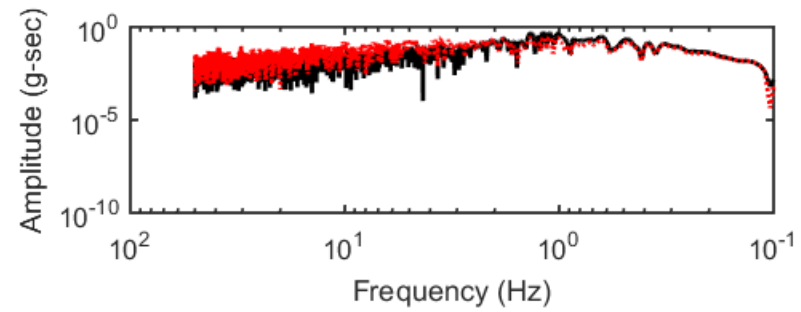
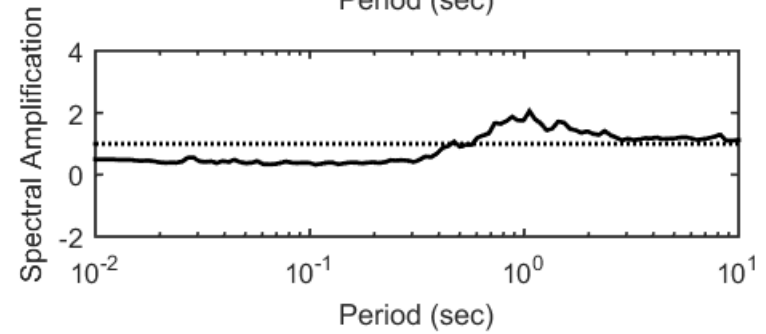
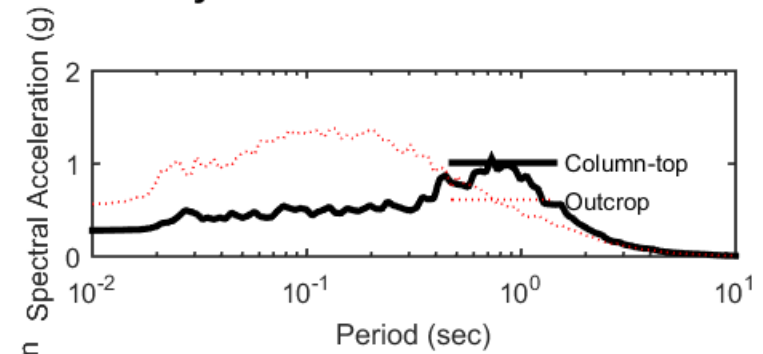
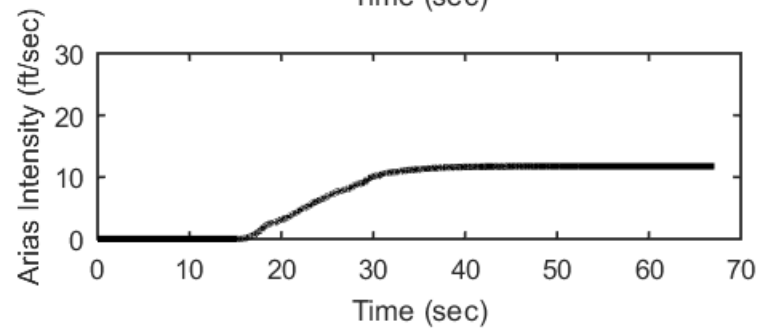
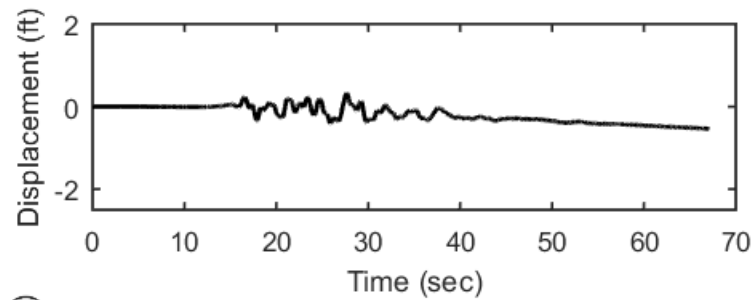
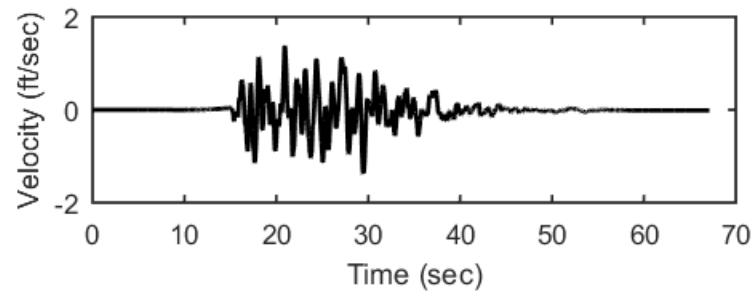
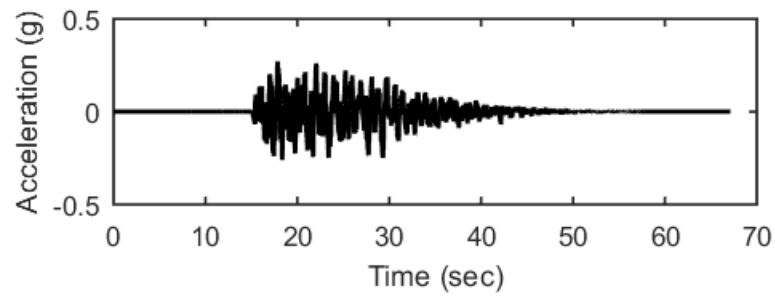
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



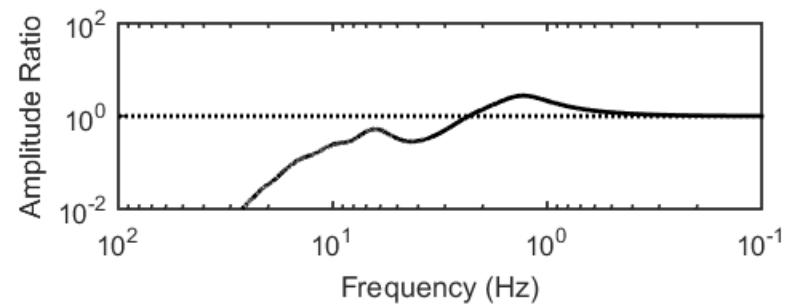
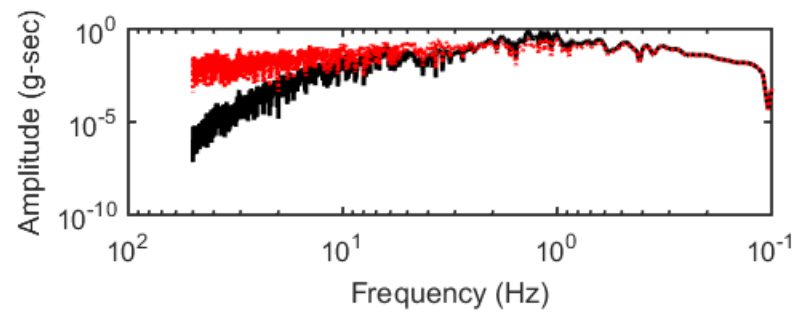
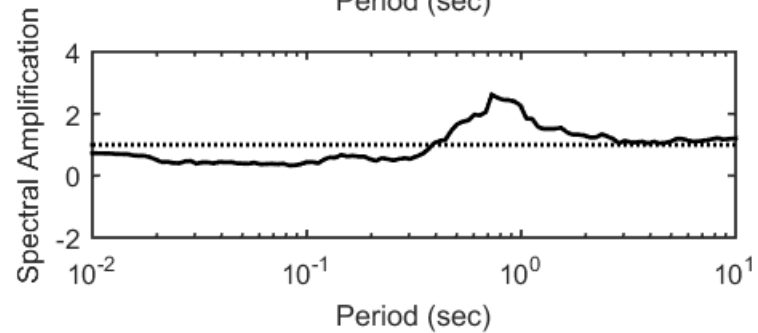
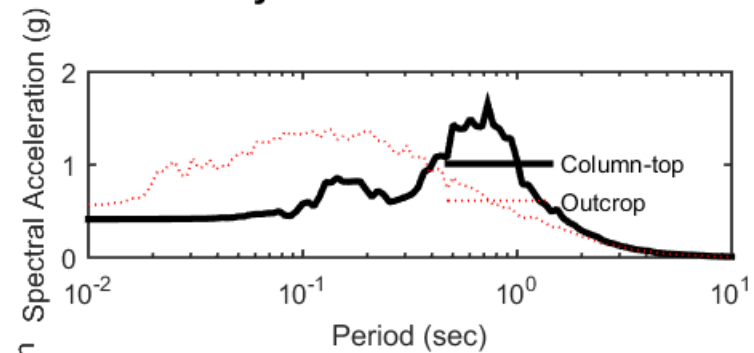
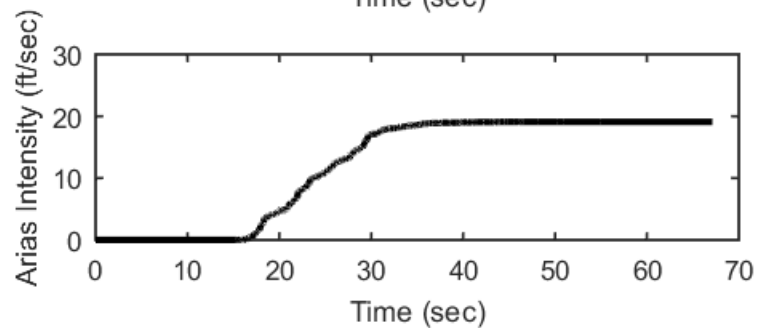
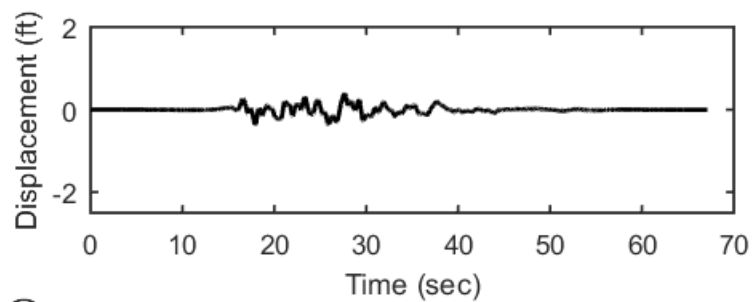
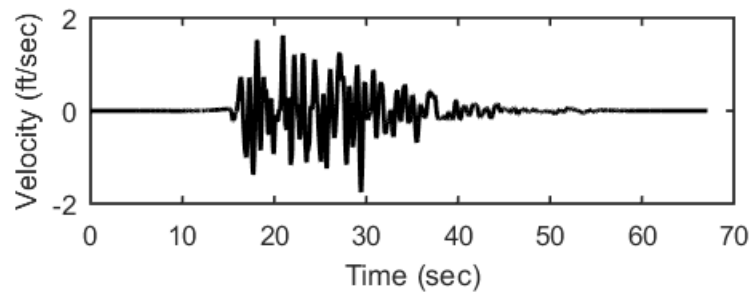
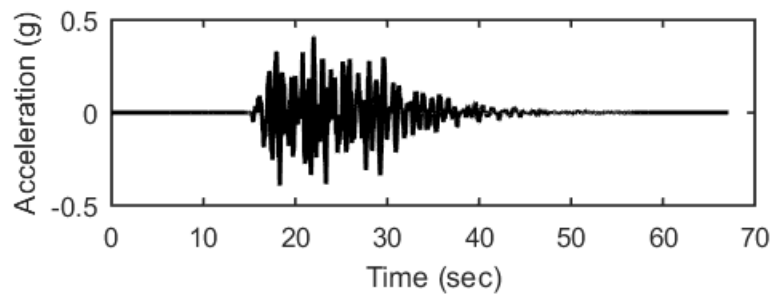
### Profile outputs for Motion: SEE4



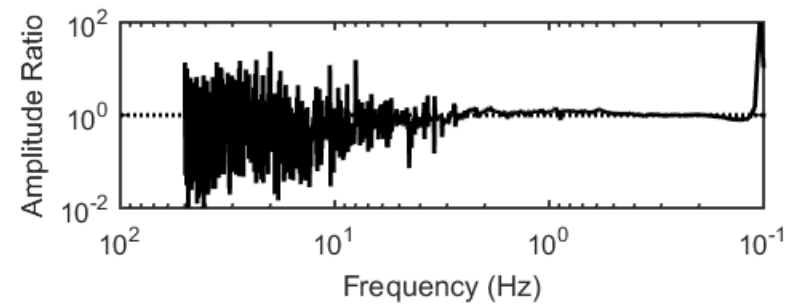
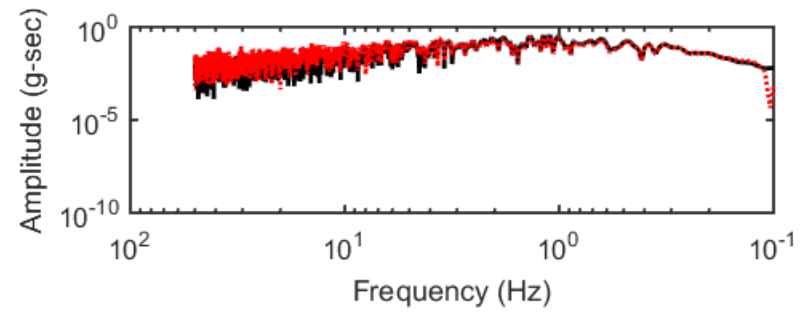
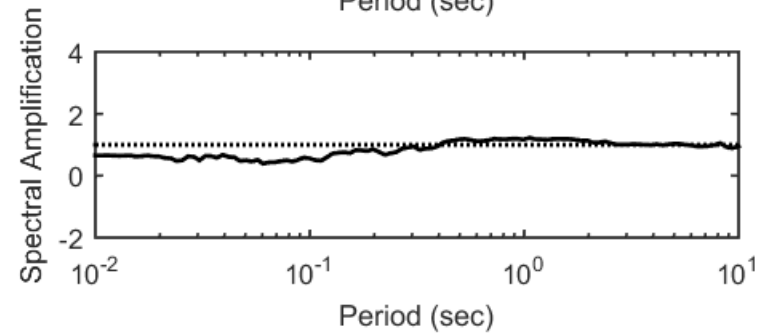
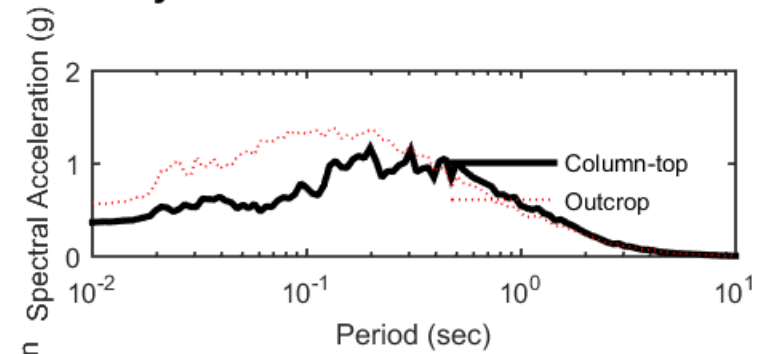
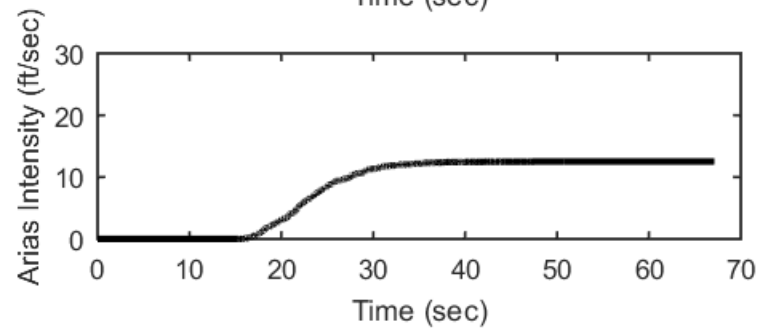
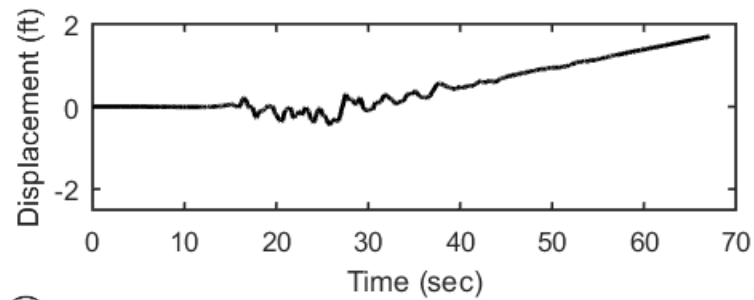
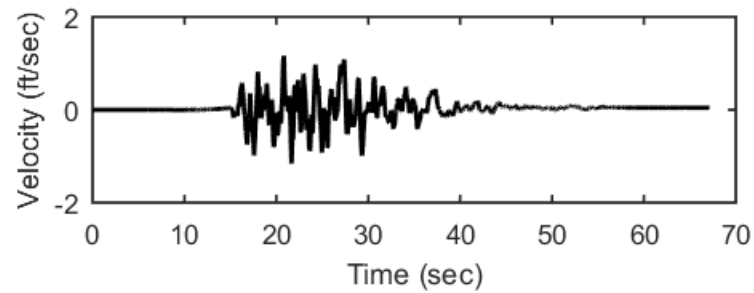
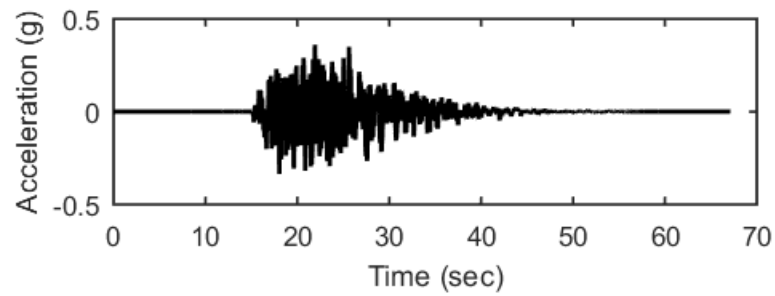
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



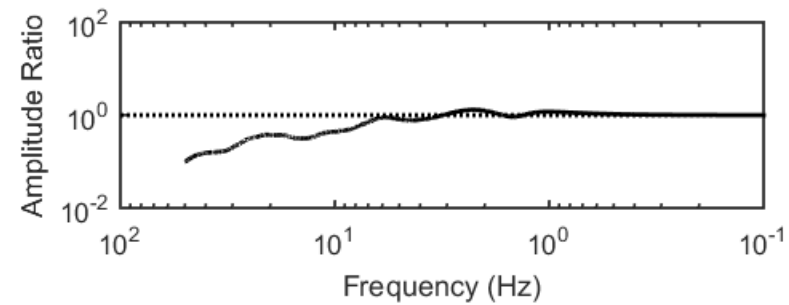
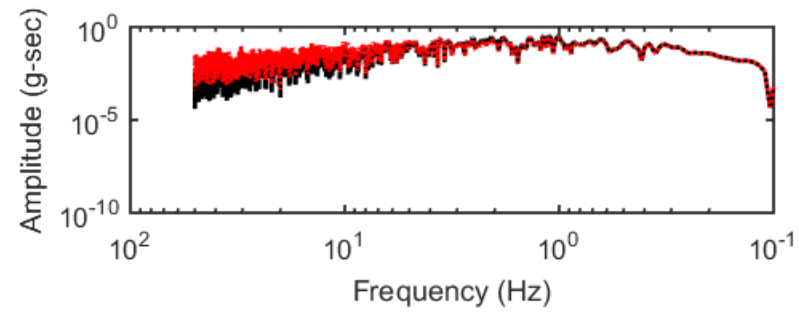
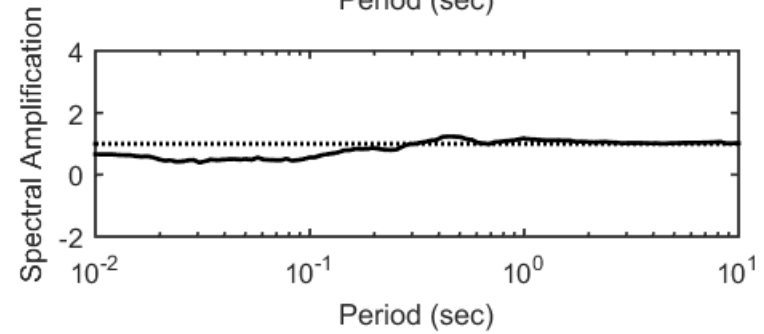
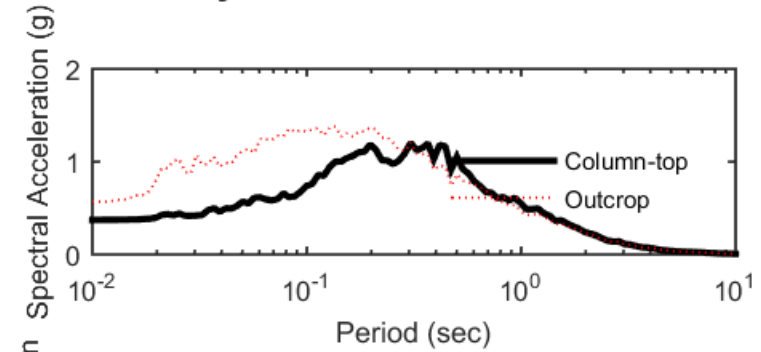
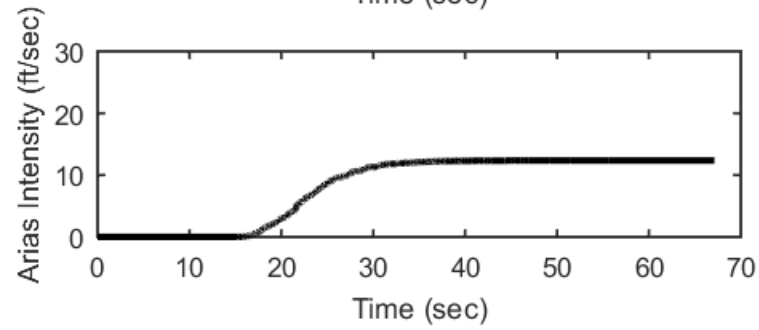
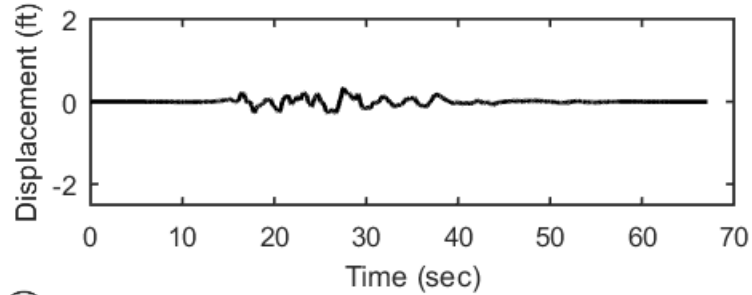
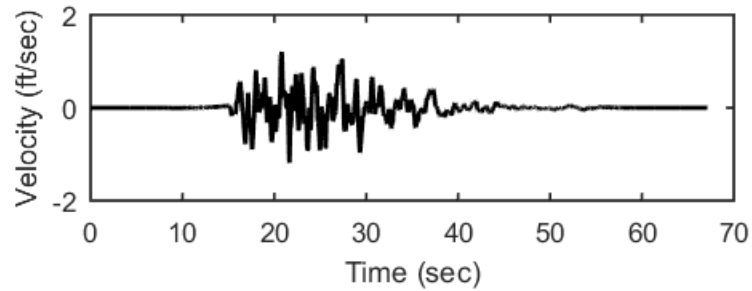
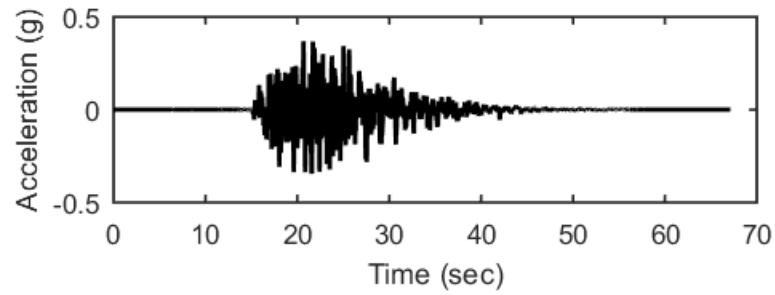
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



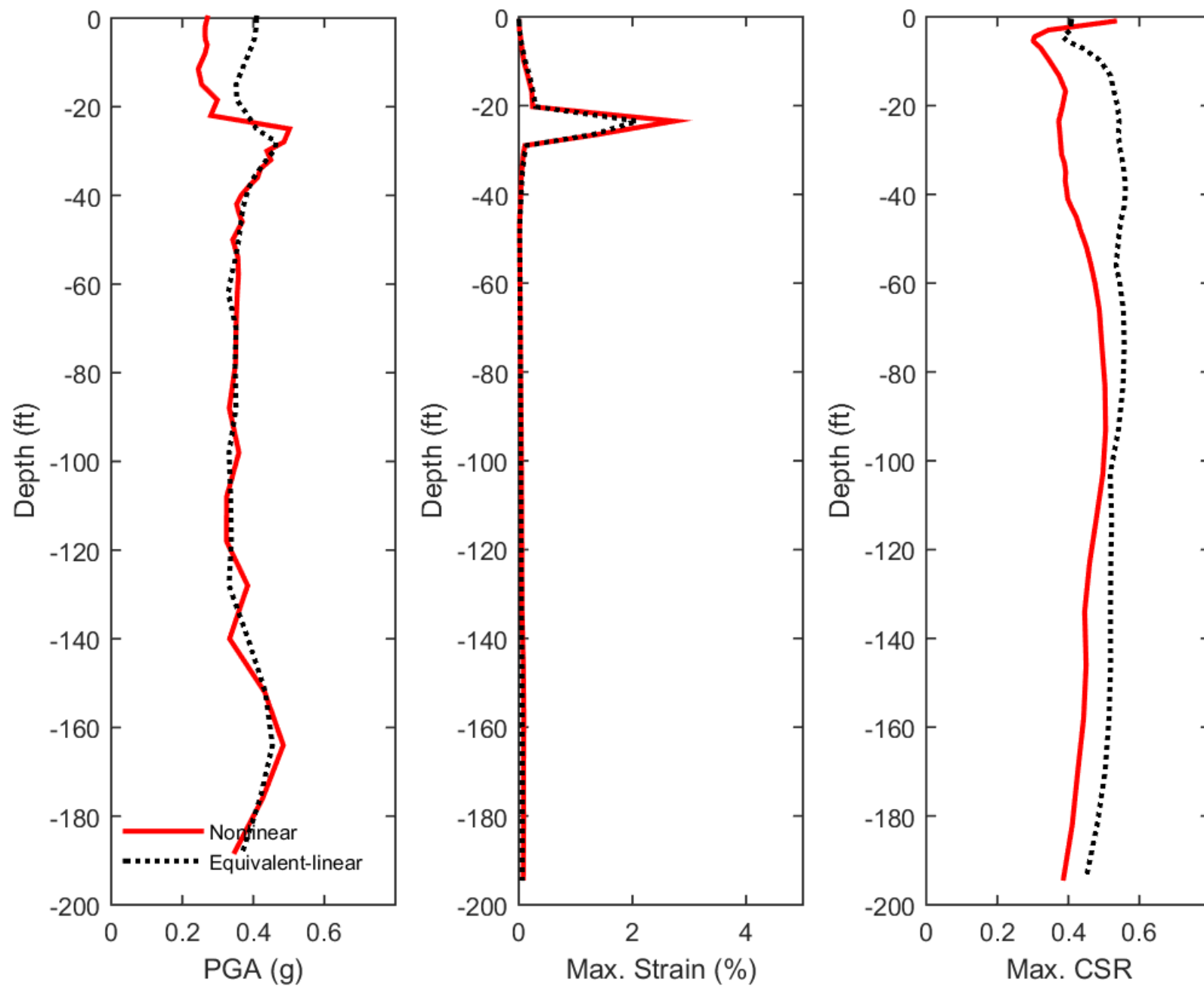
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



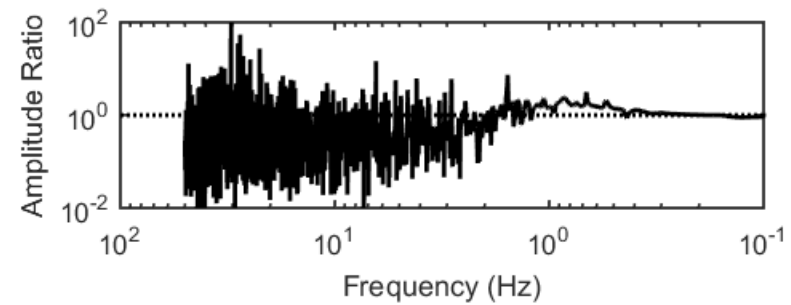
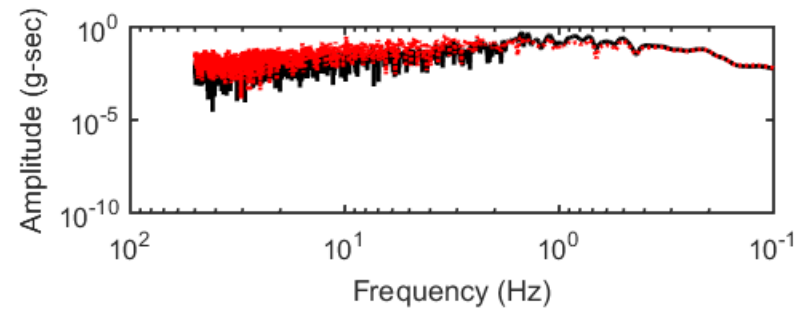
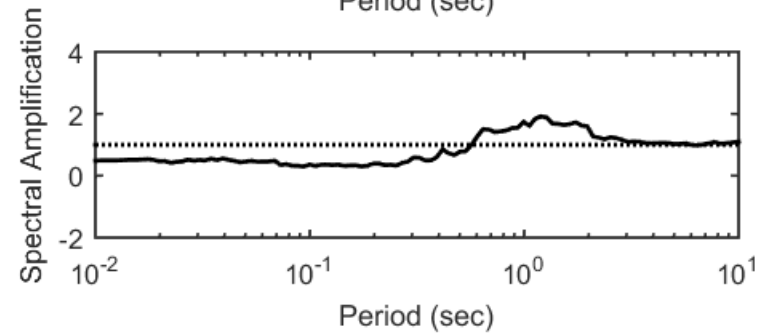
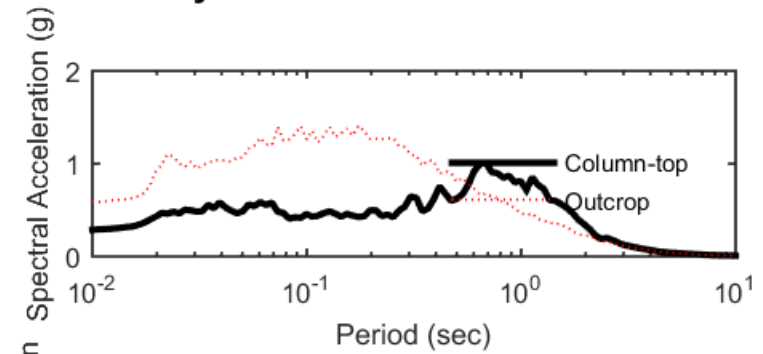
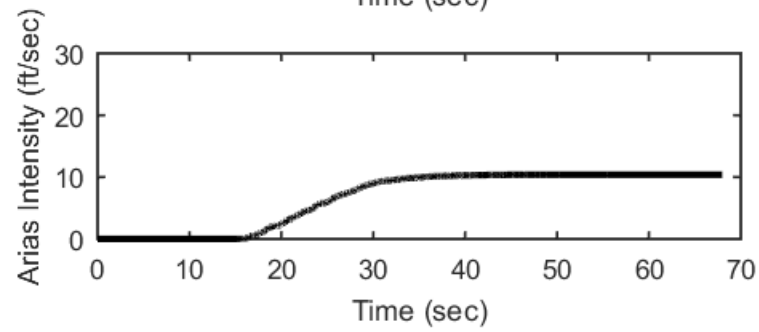
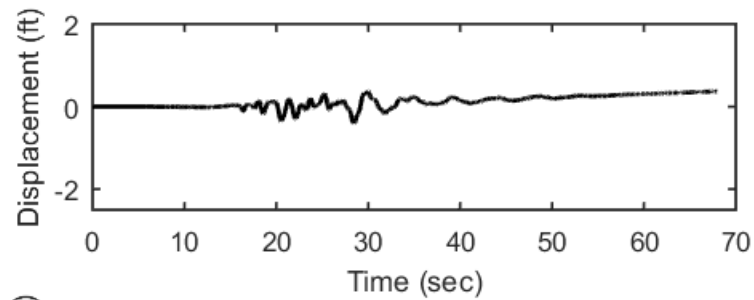
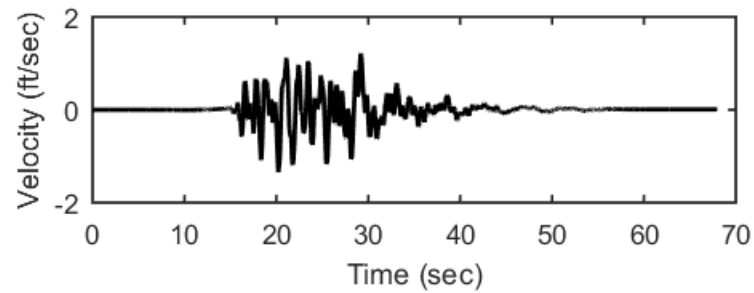
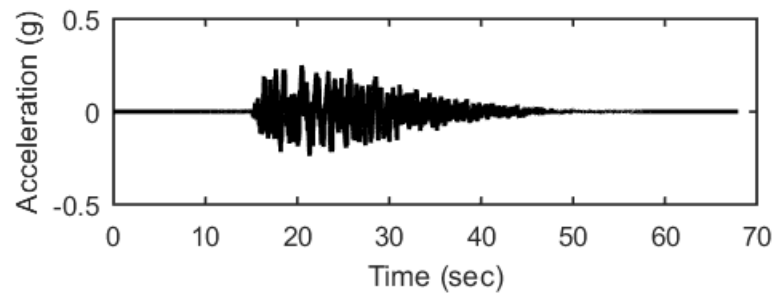
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



### Profile outputs for Motion: SEE5

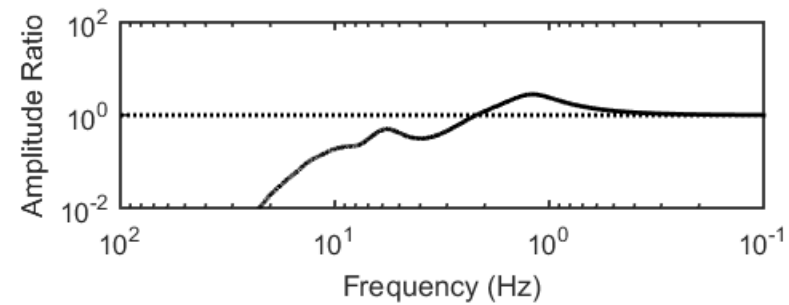
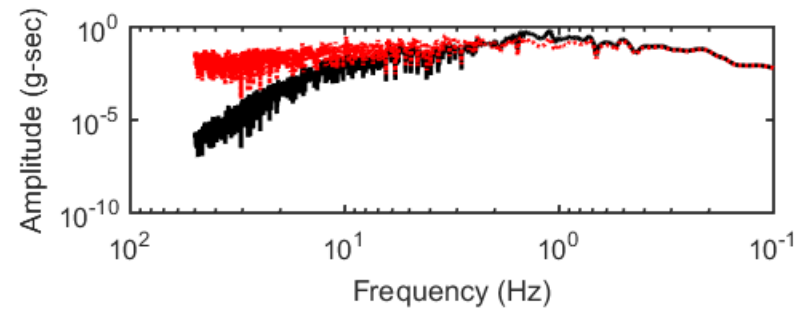
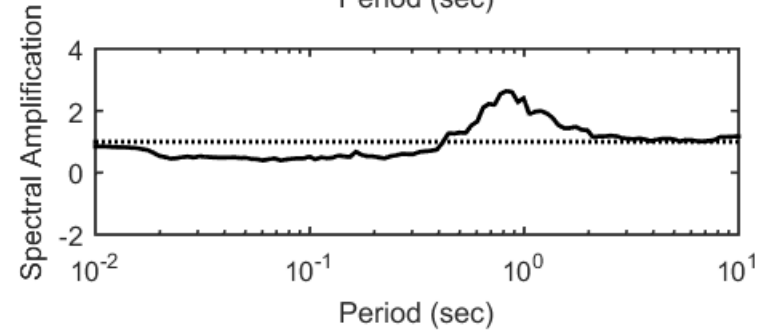
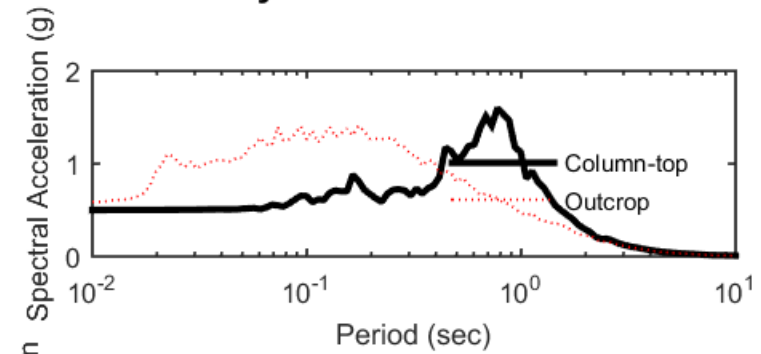
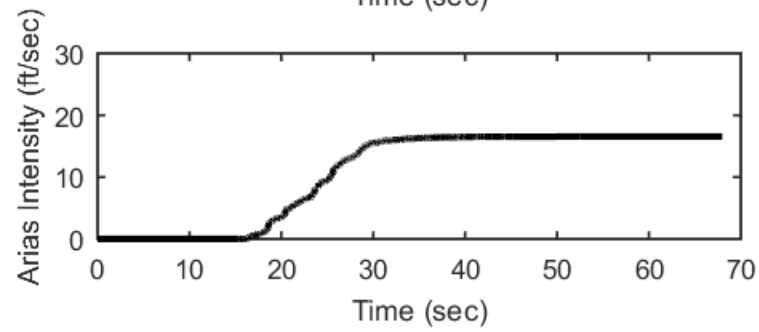
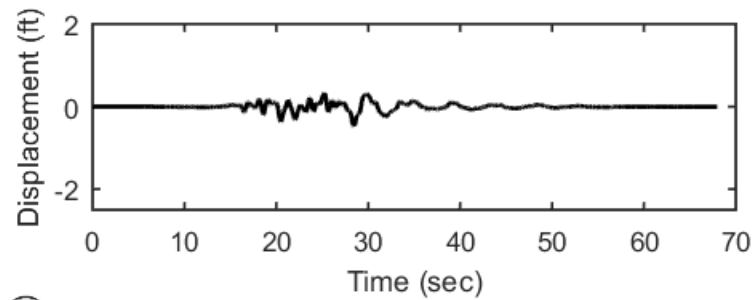
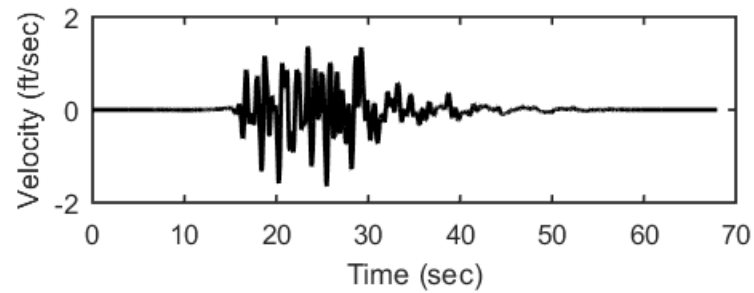
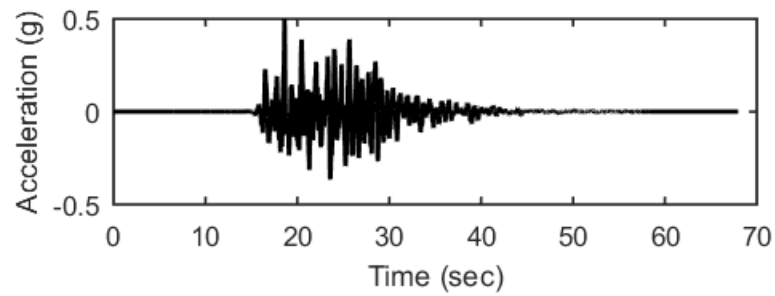


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6

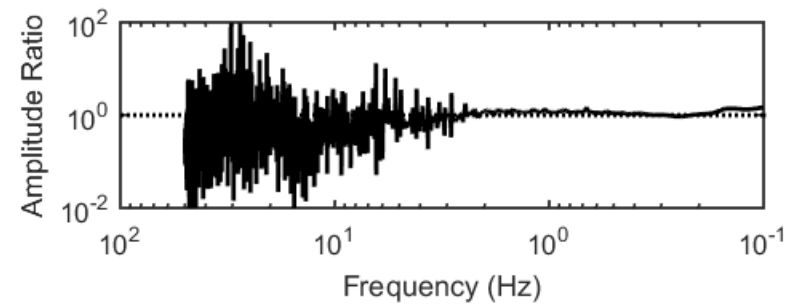
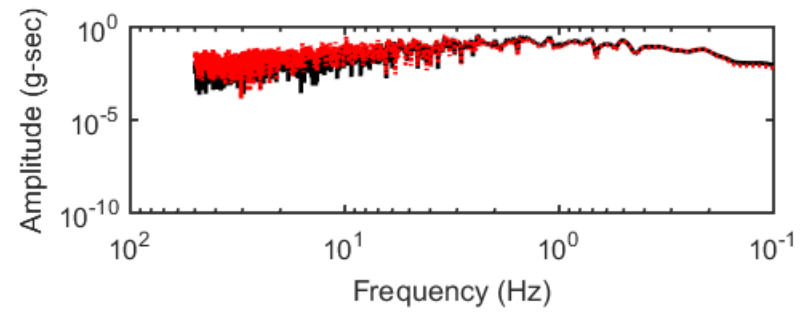
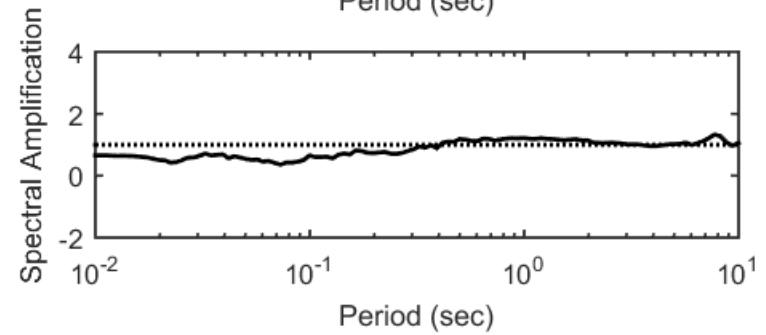
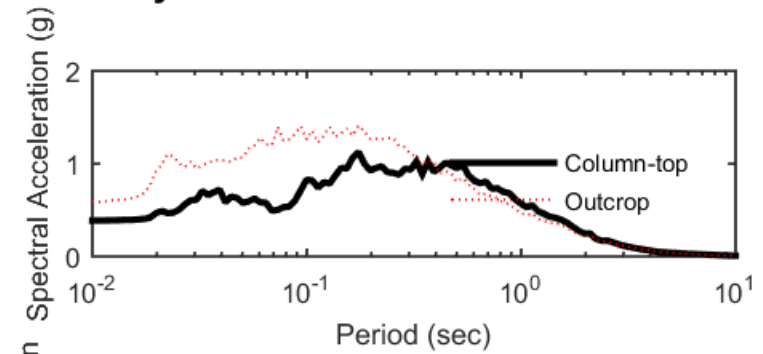
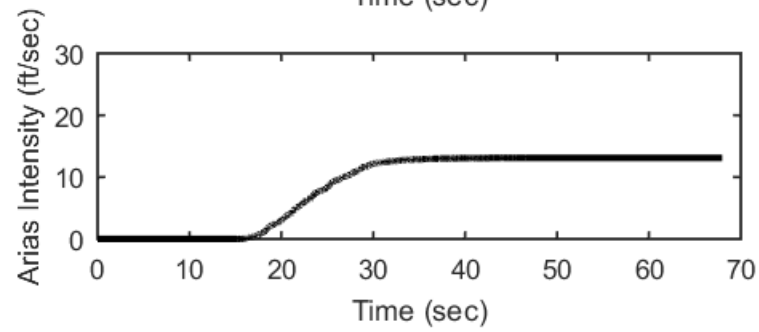
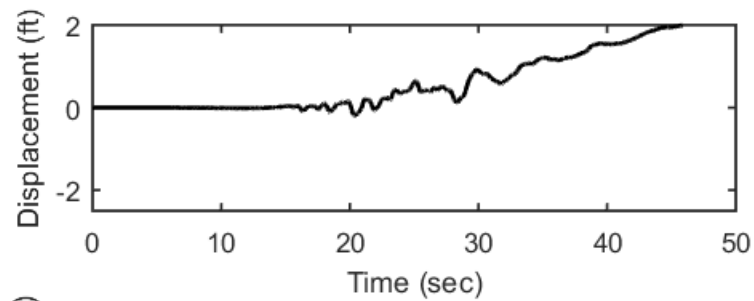
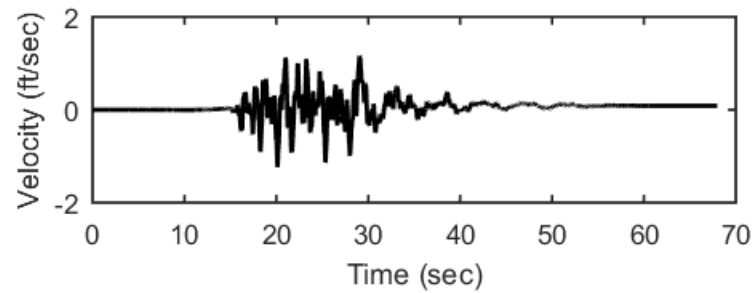
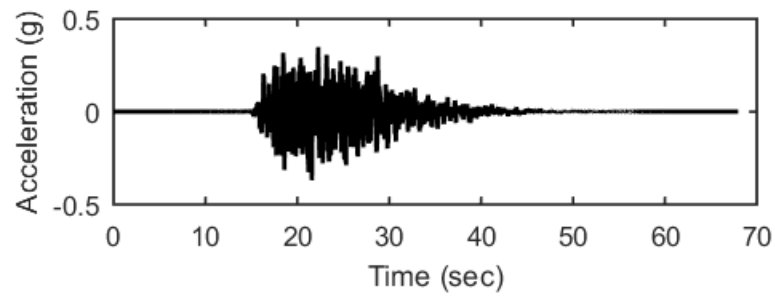




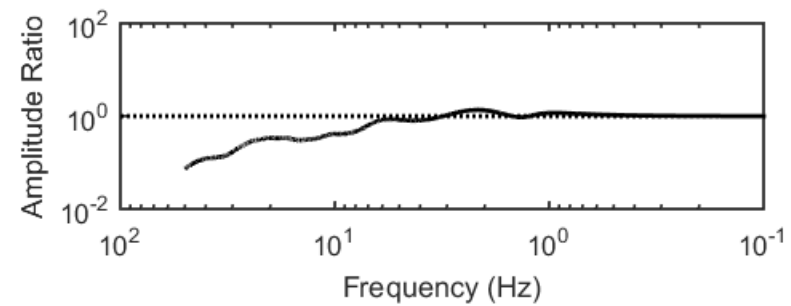
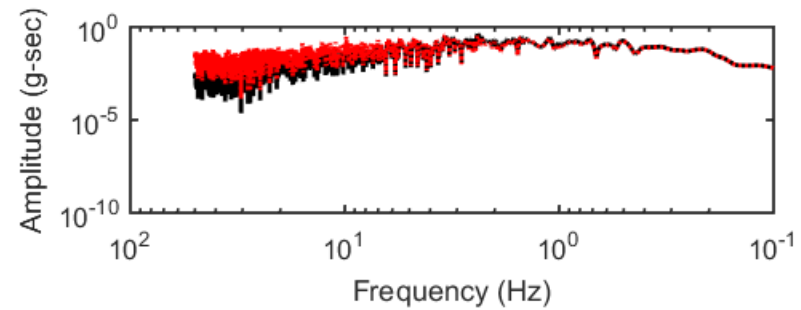
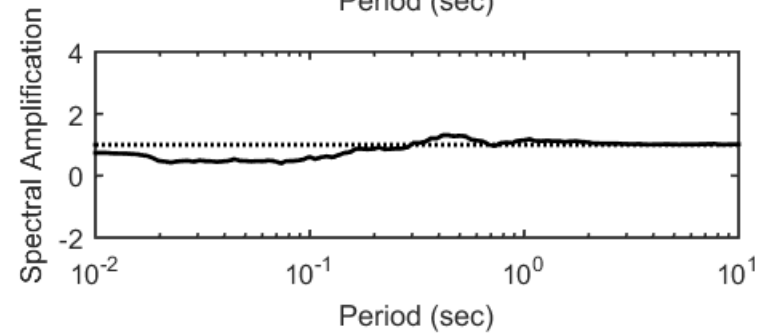
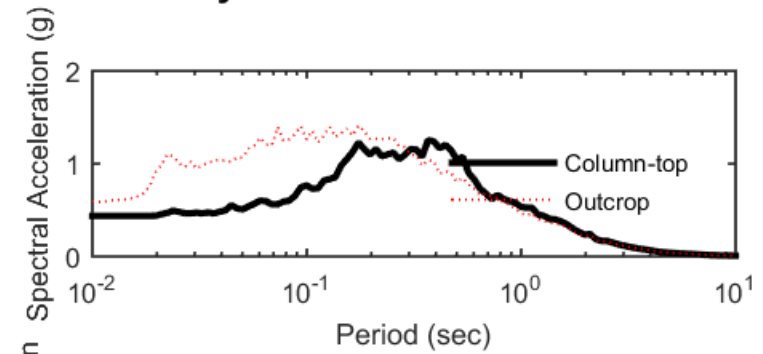
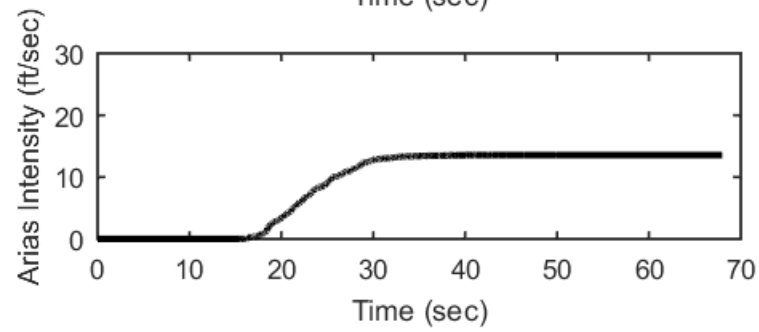
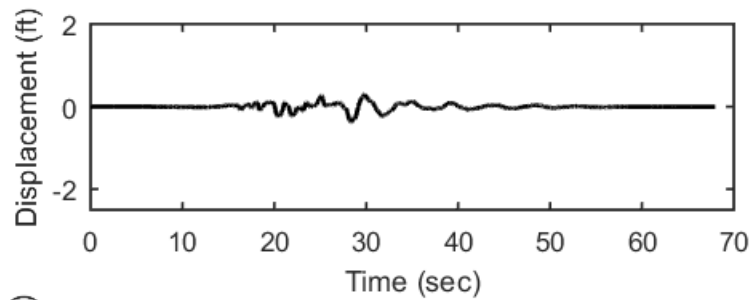
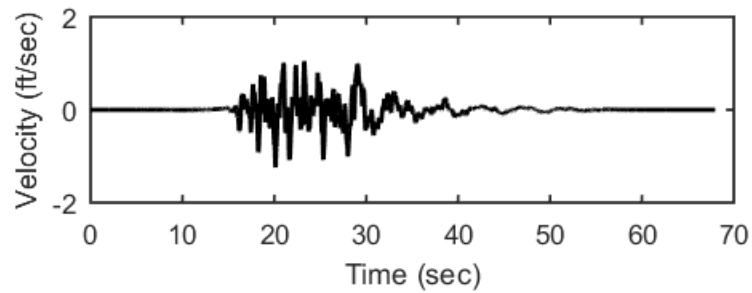
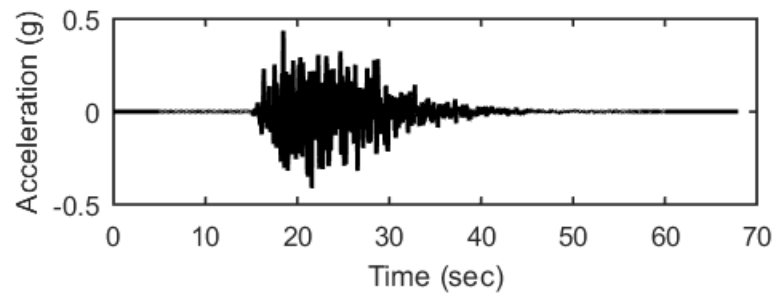
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



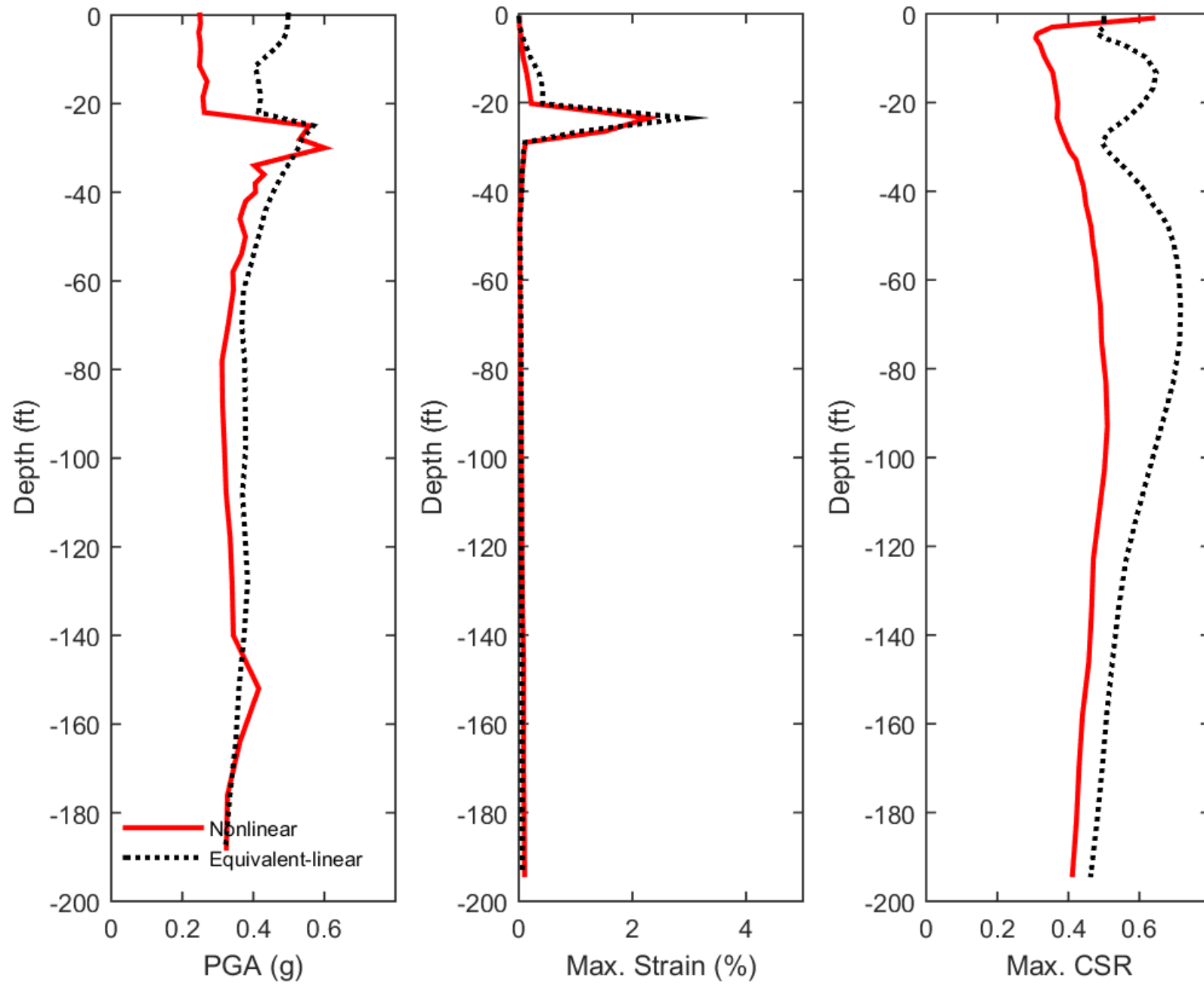
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



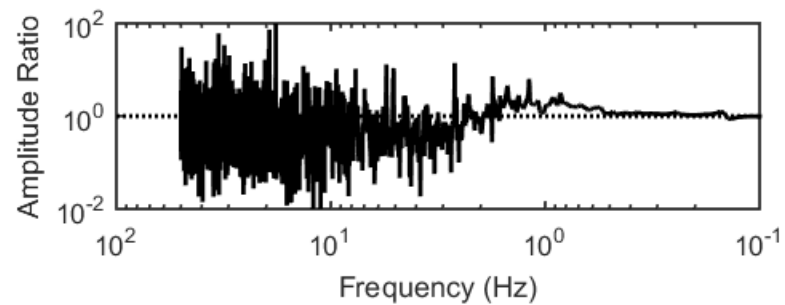
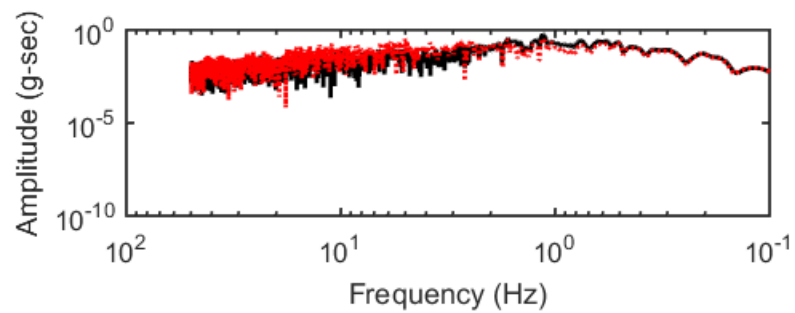
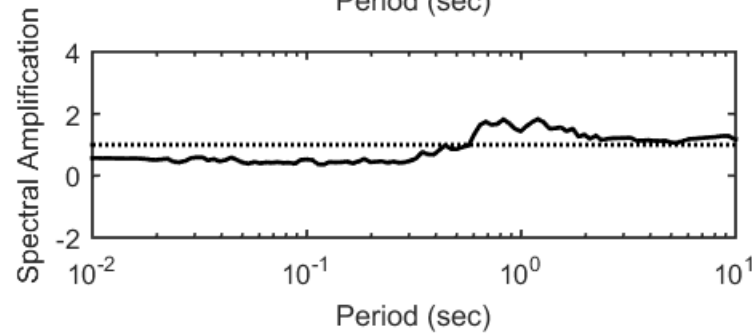
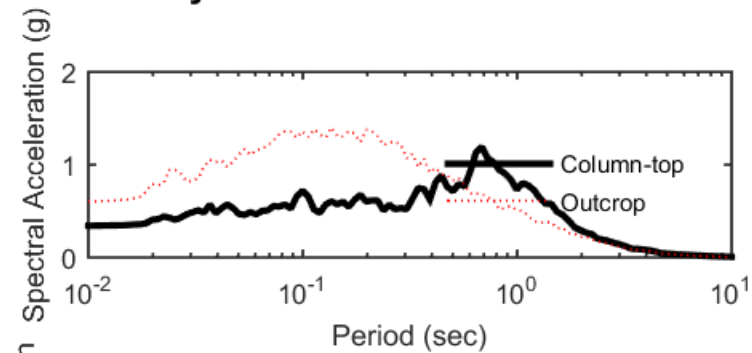
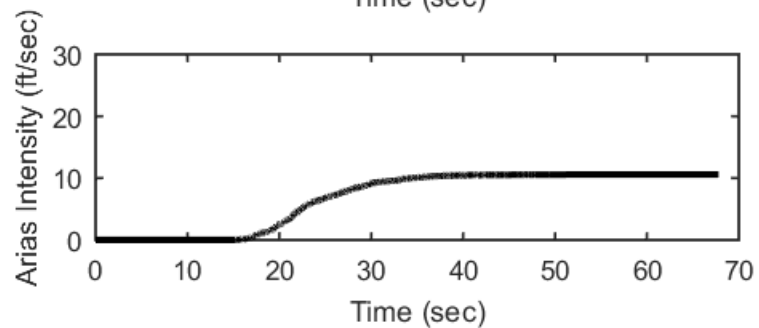
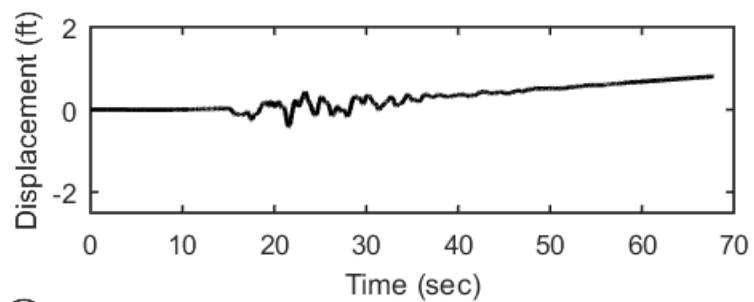
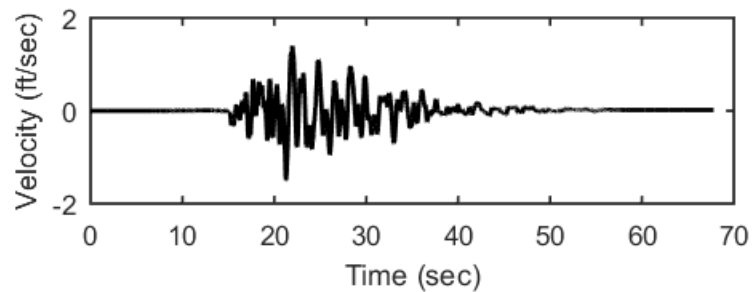
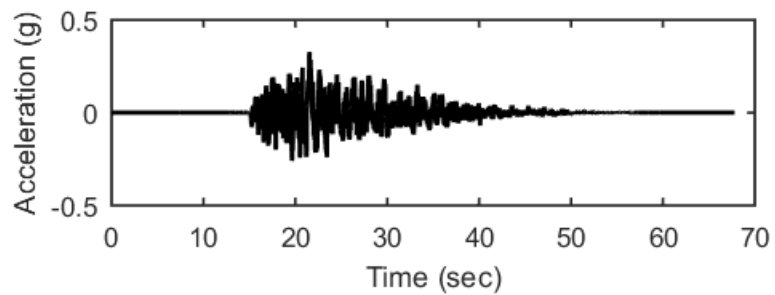
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



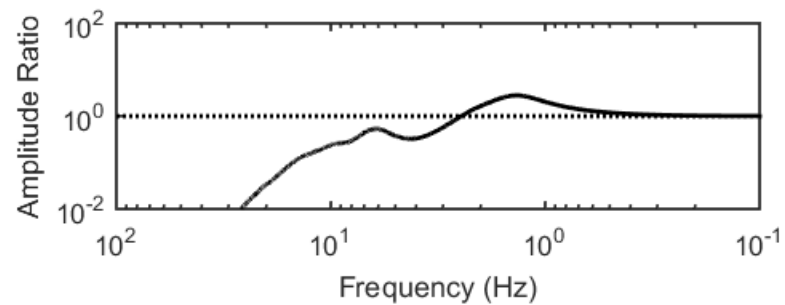
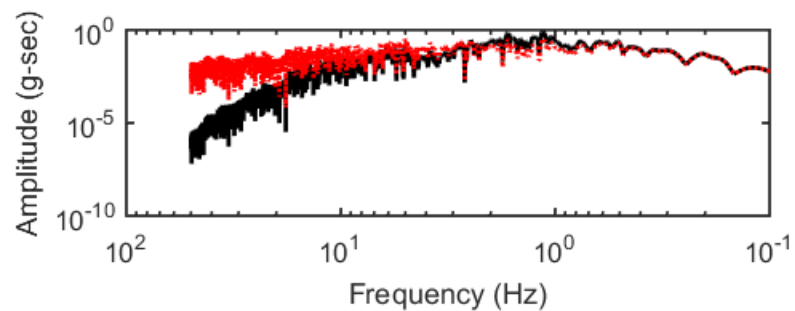
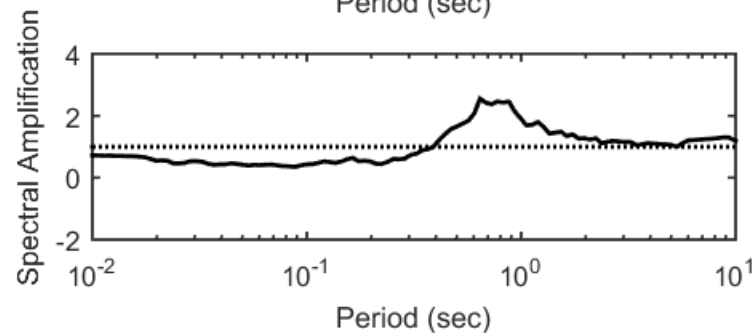
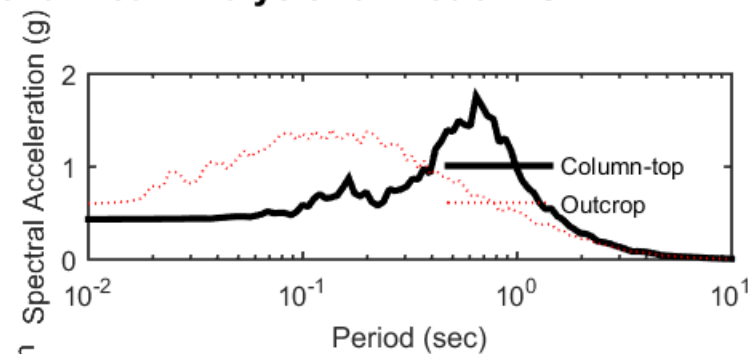
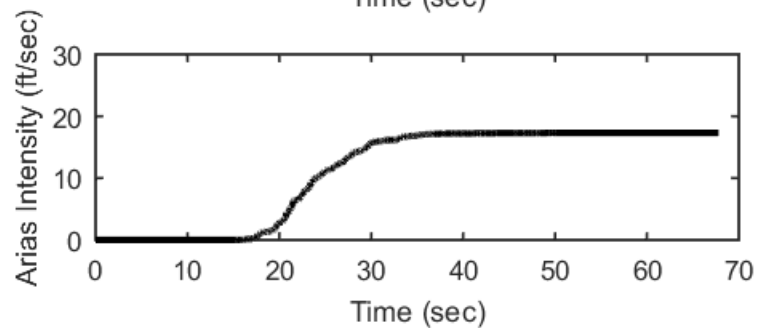
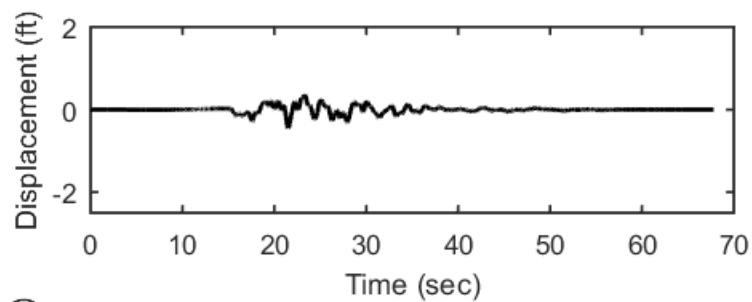
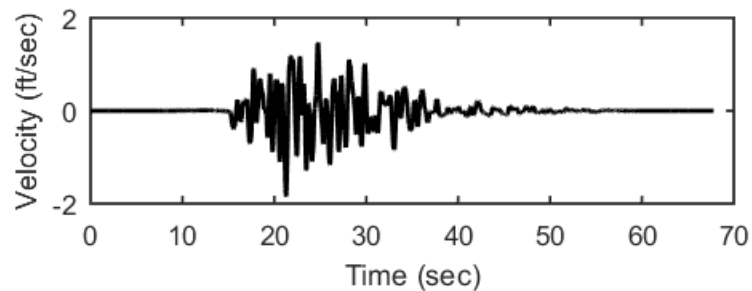
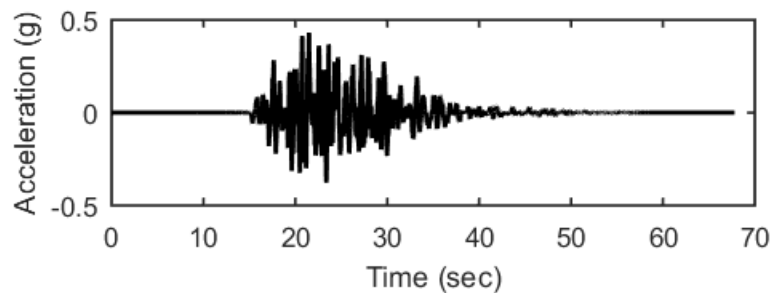
### Profile outputs for Motion: SEE6



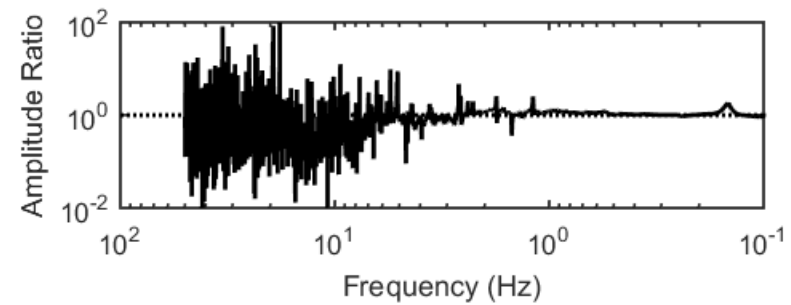
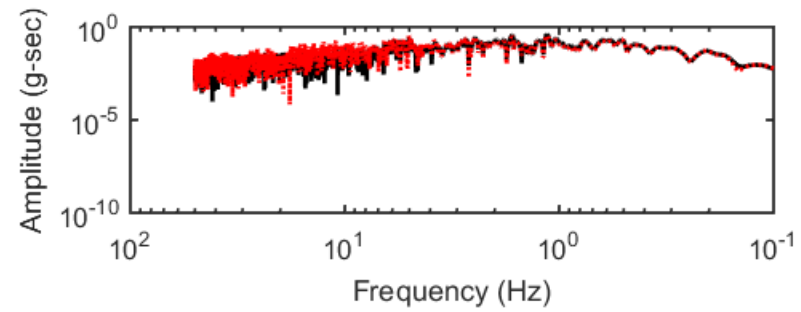
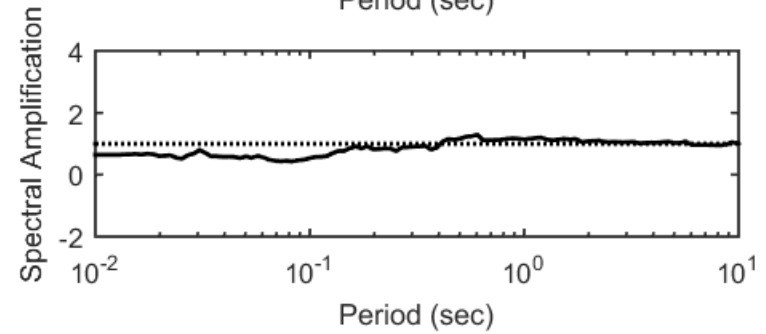
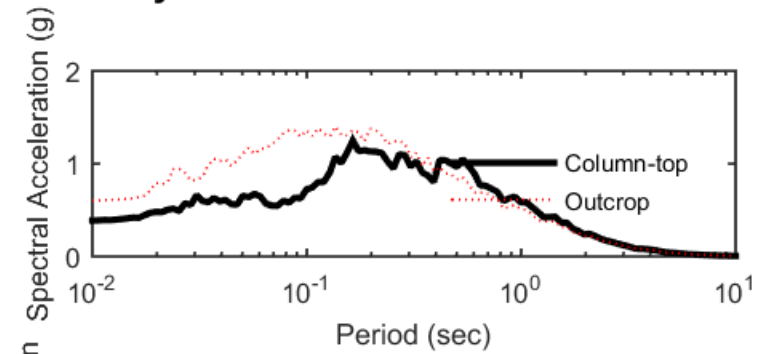
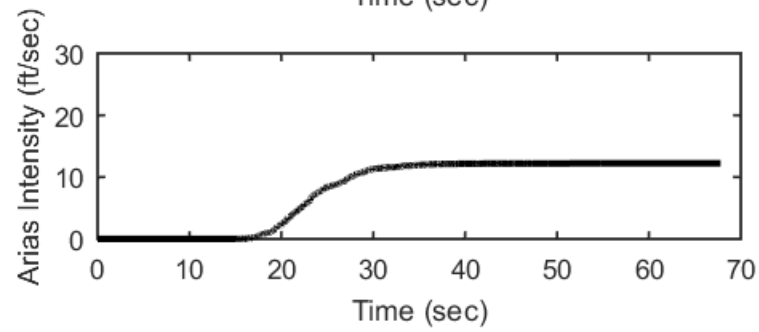
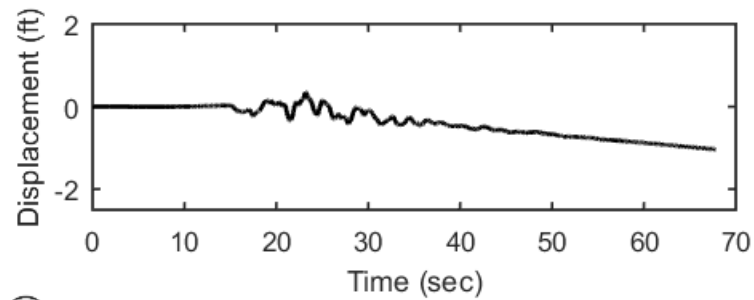
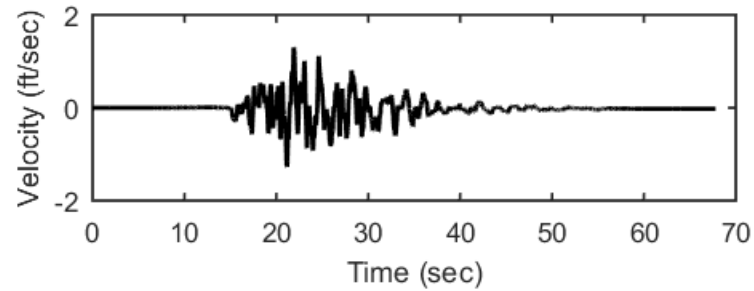
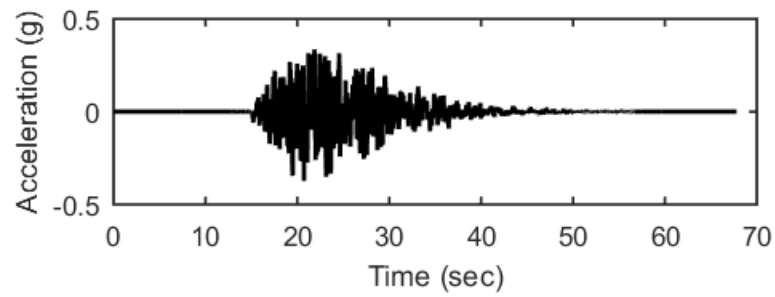
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



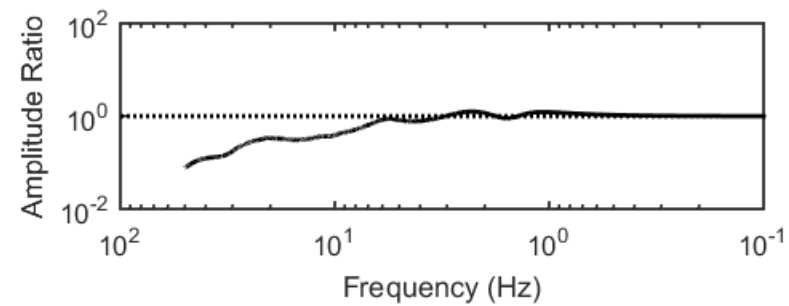
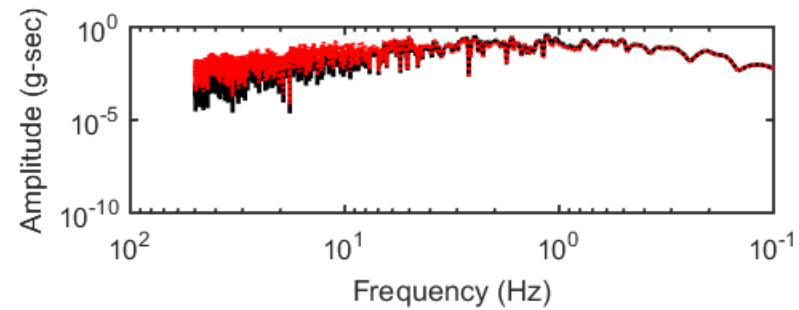
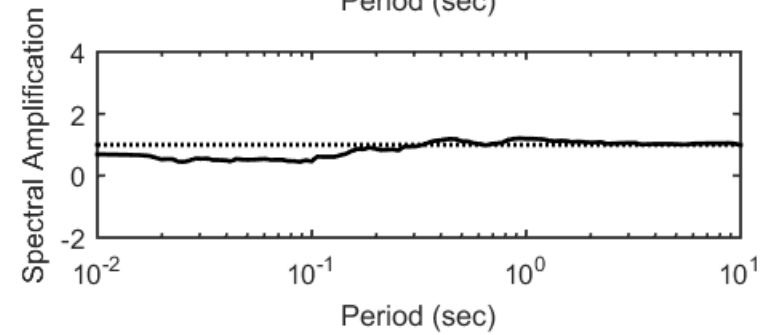
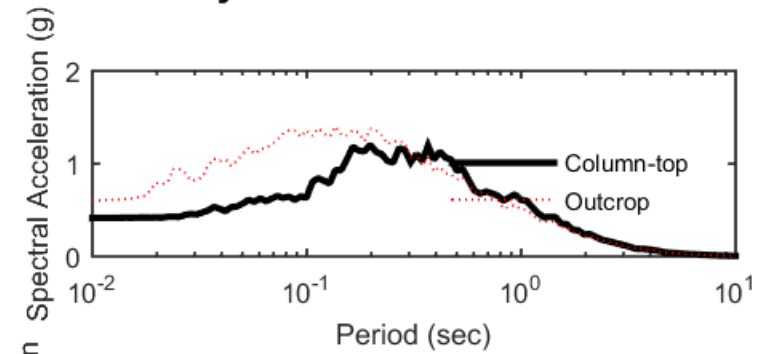
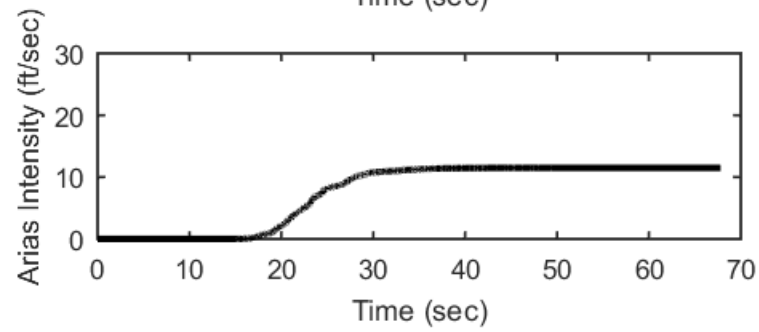
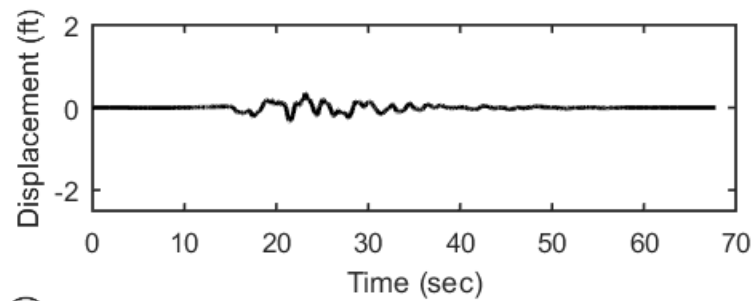
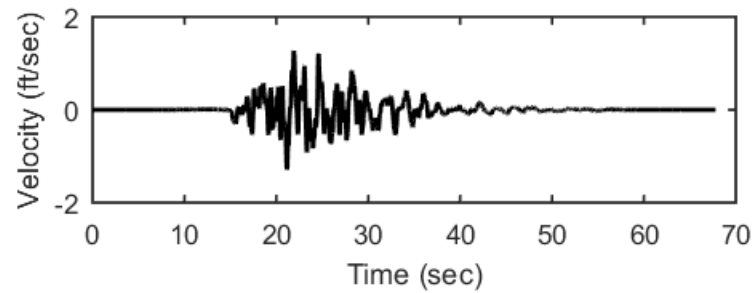
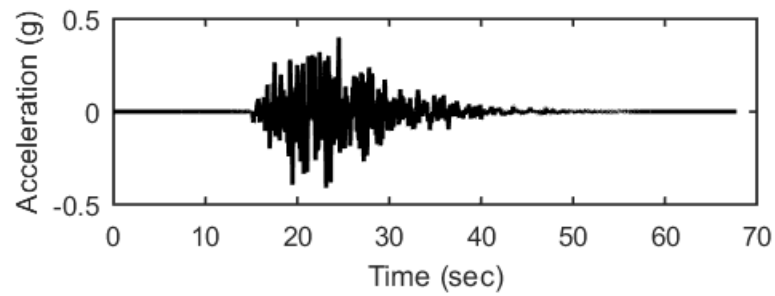
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7

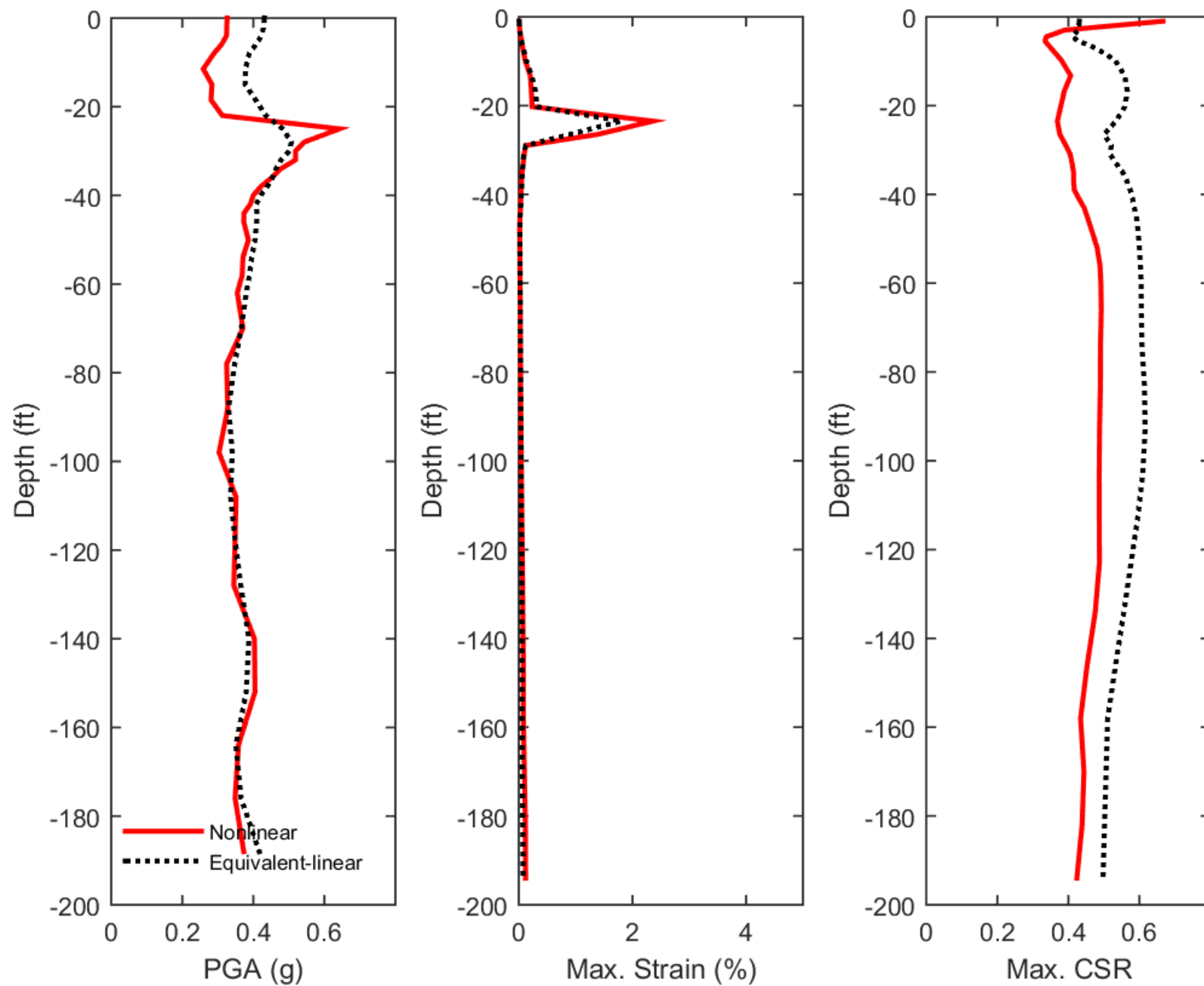


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7

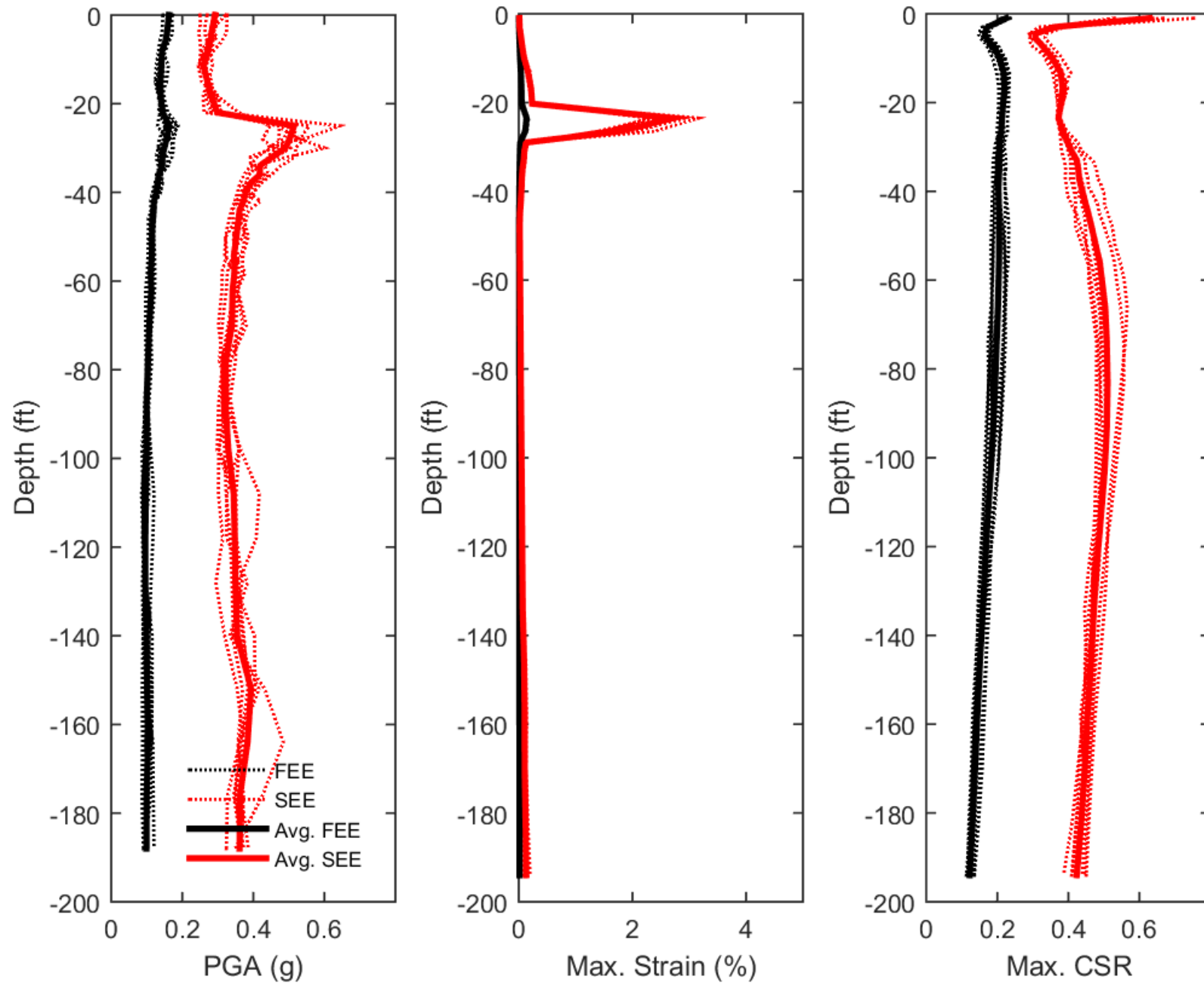




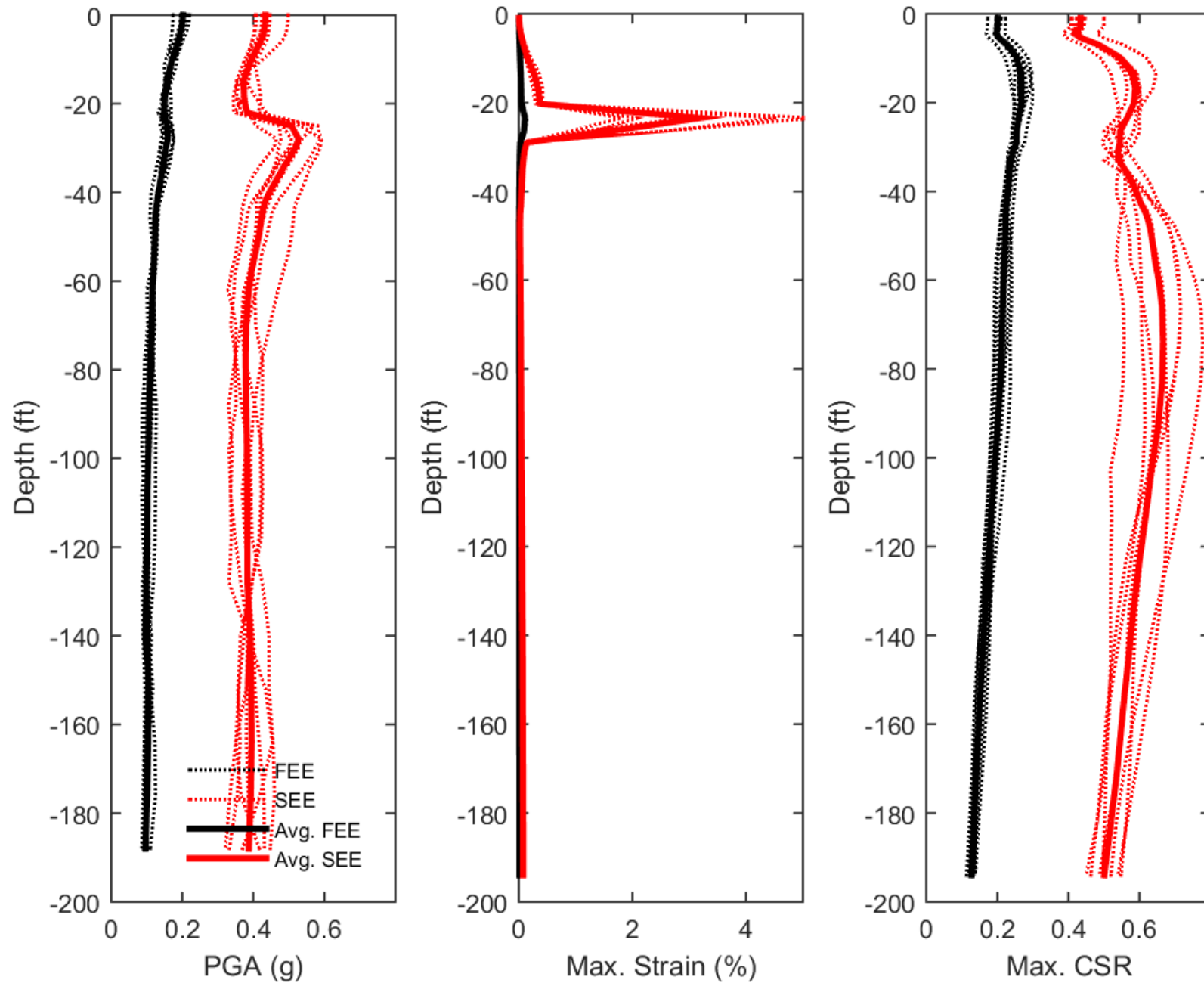
### Profile outputs for Motion: SEE7



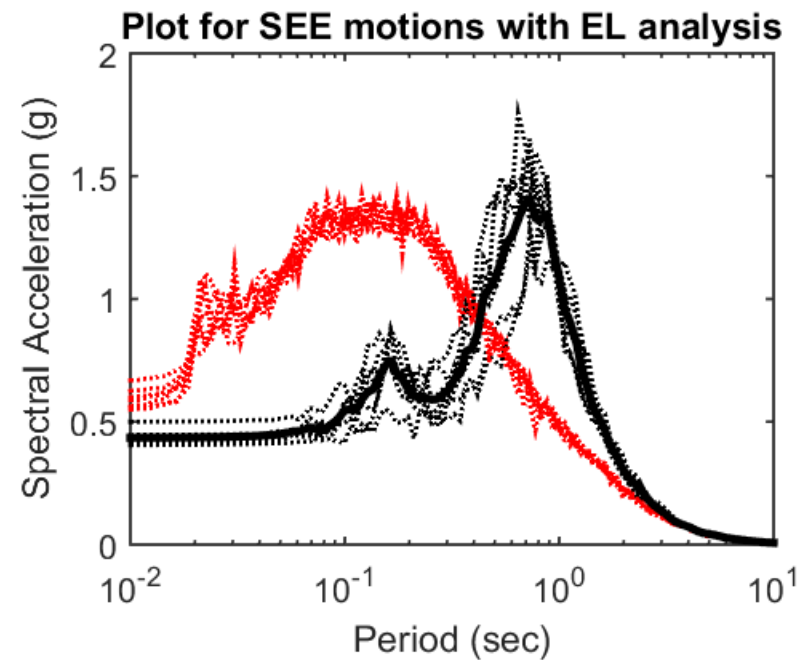
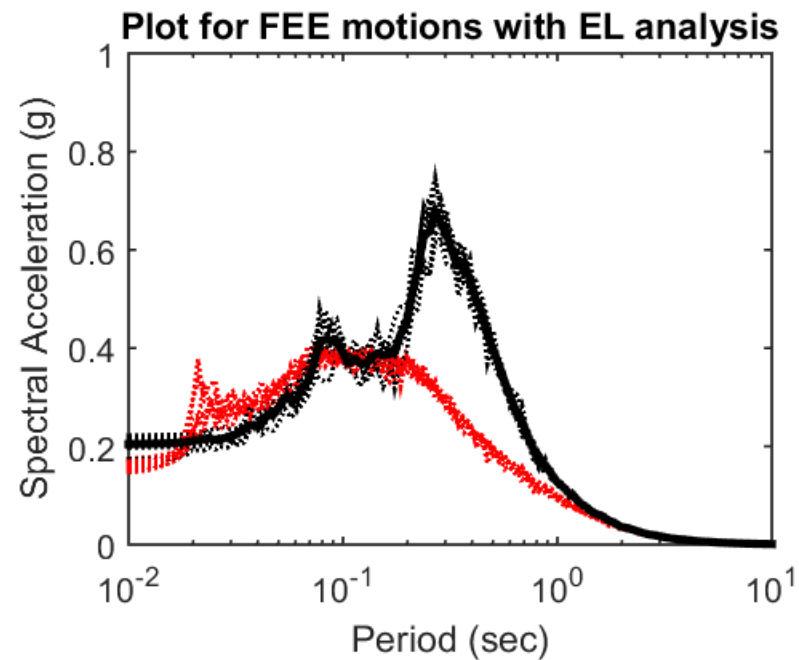
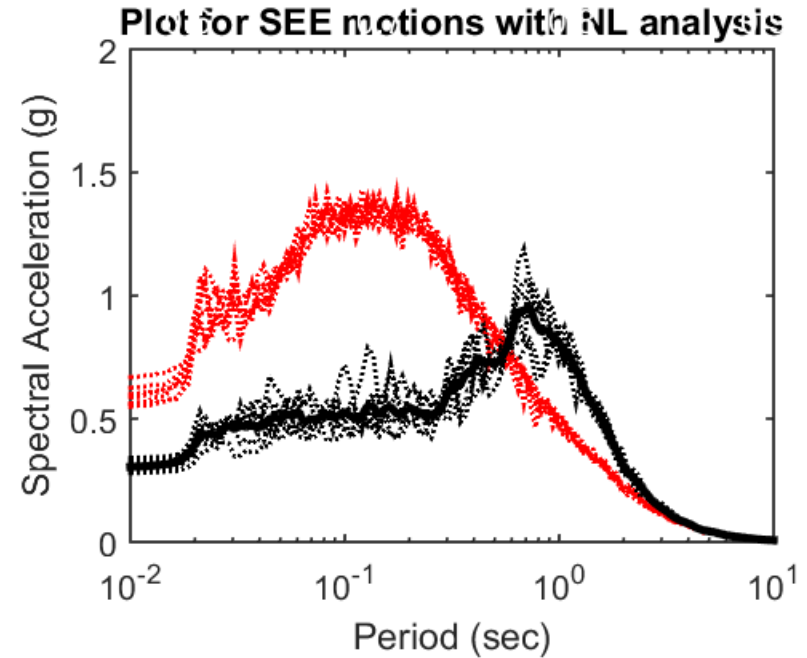
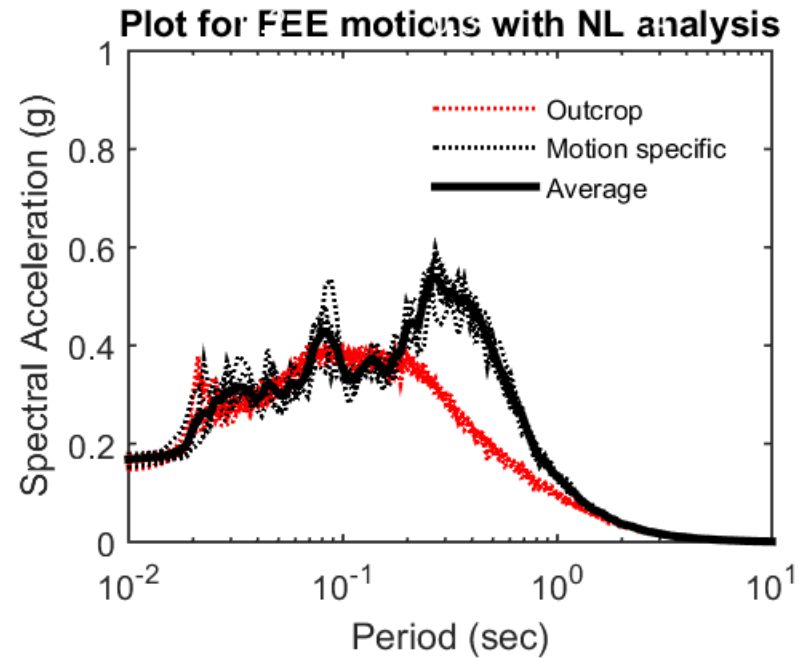
## Summary of the profile outputs for Nonlinear analysis



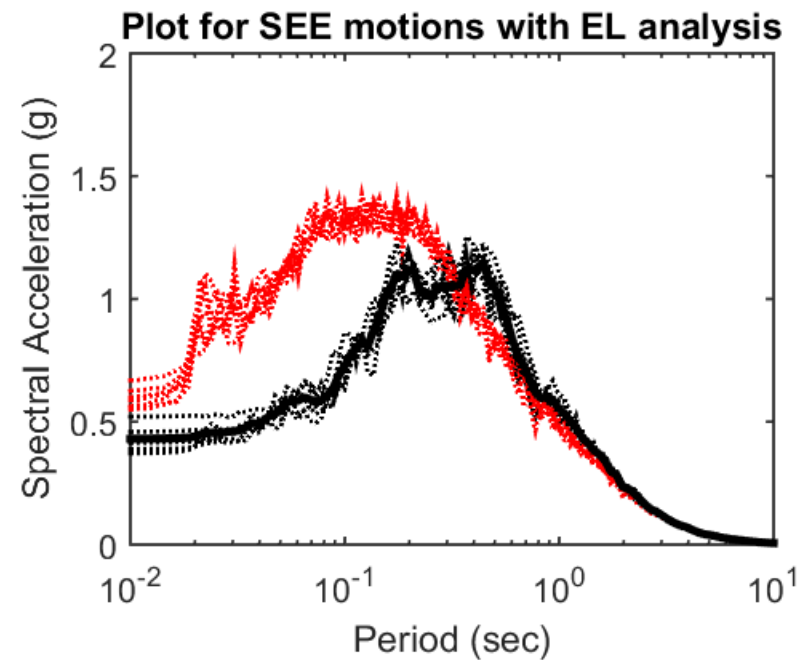
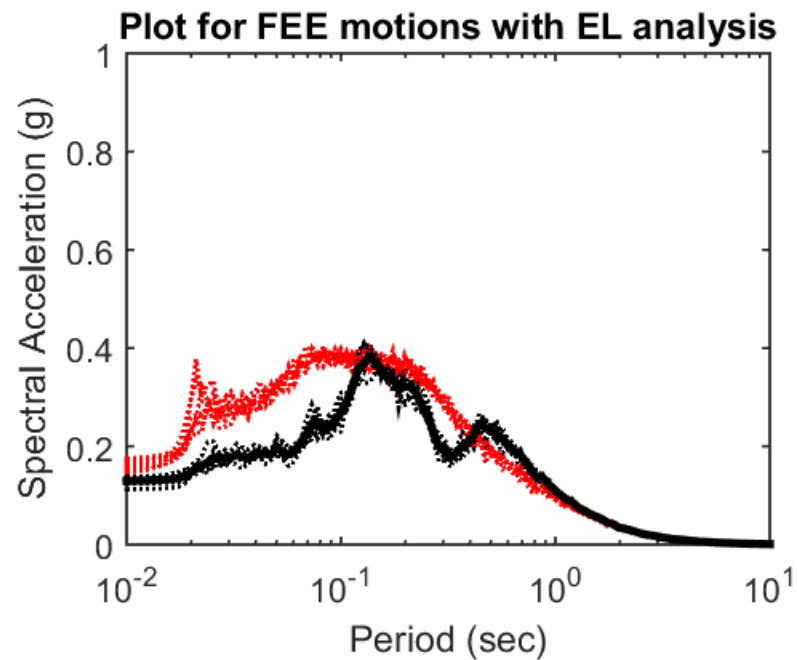
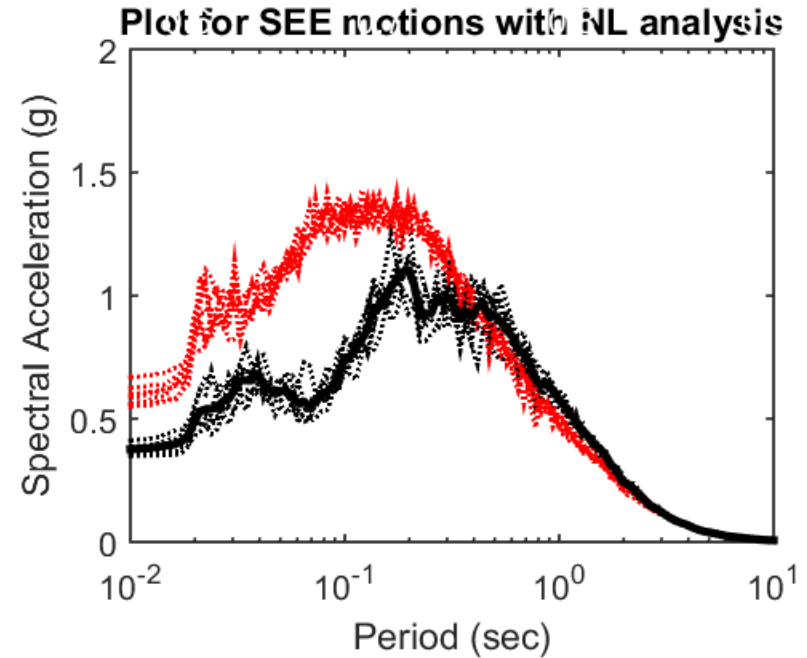
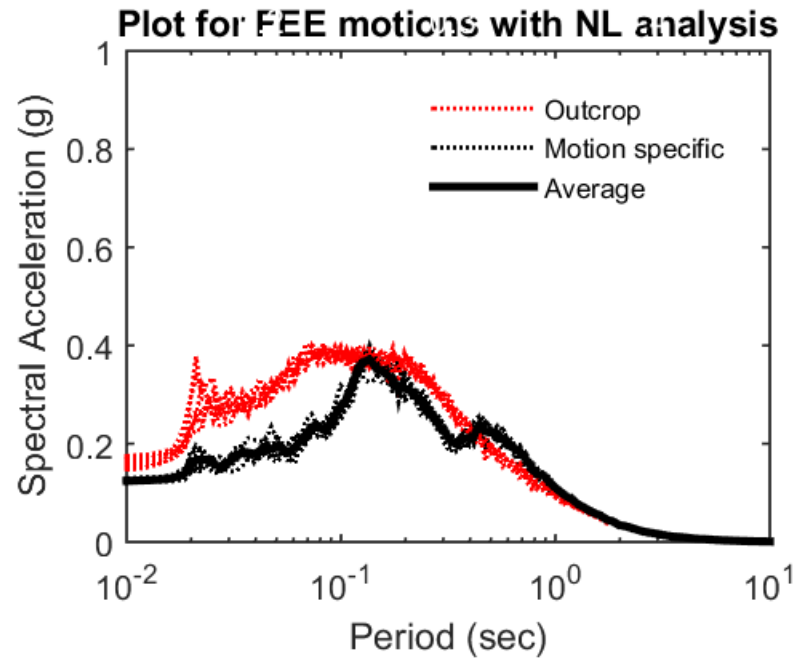
## Summary of the profile outputs for Equivalent-linear analysis



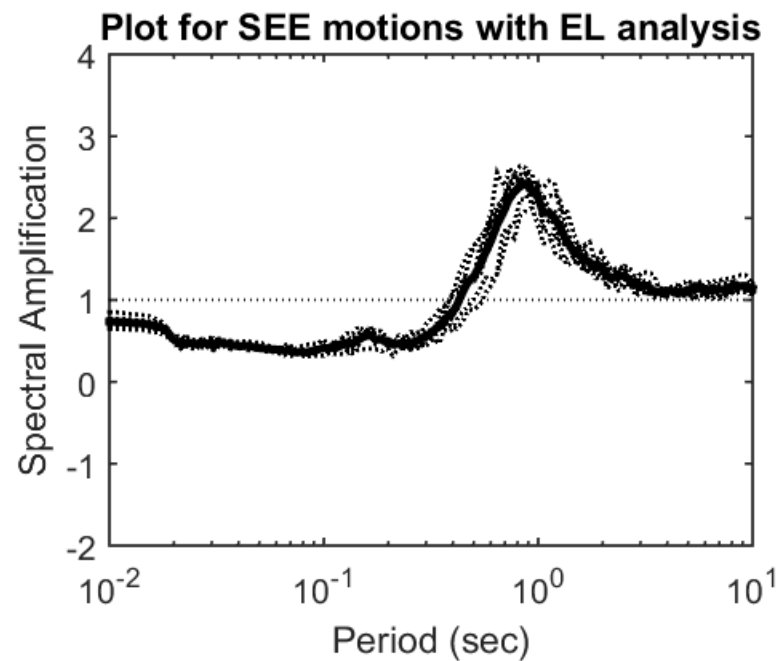
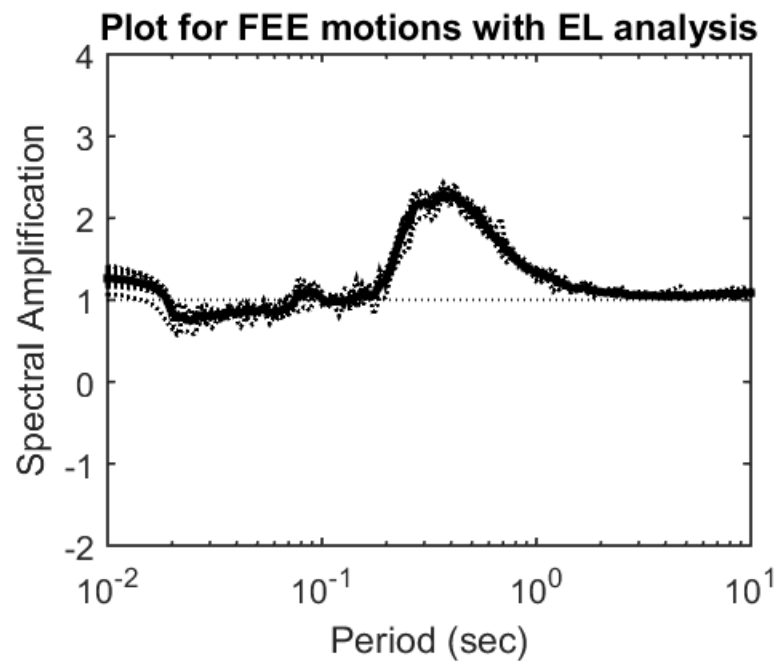
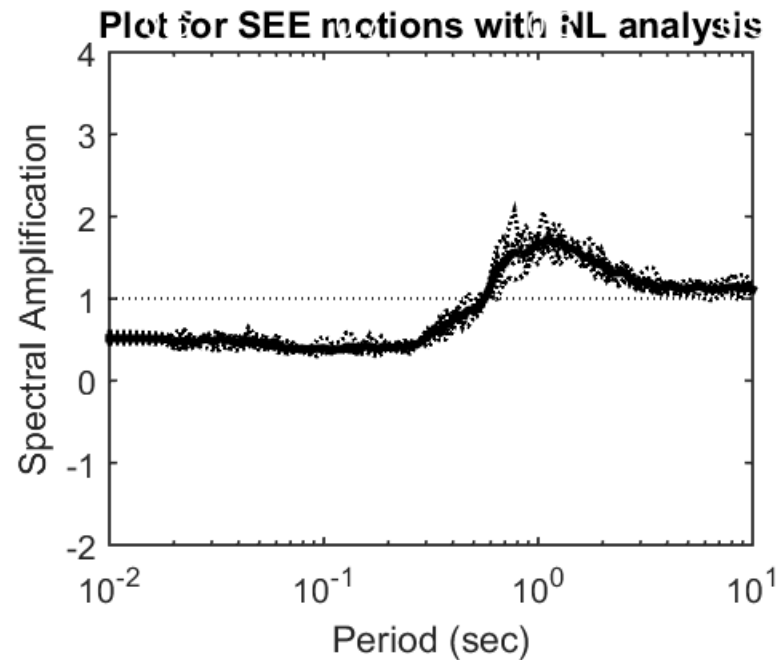
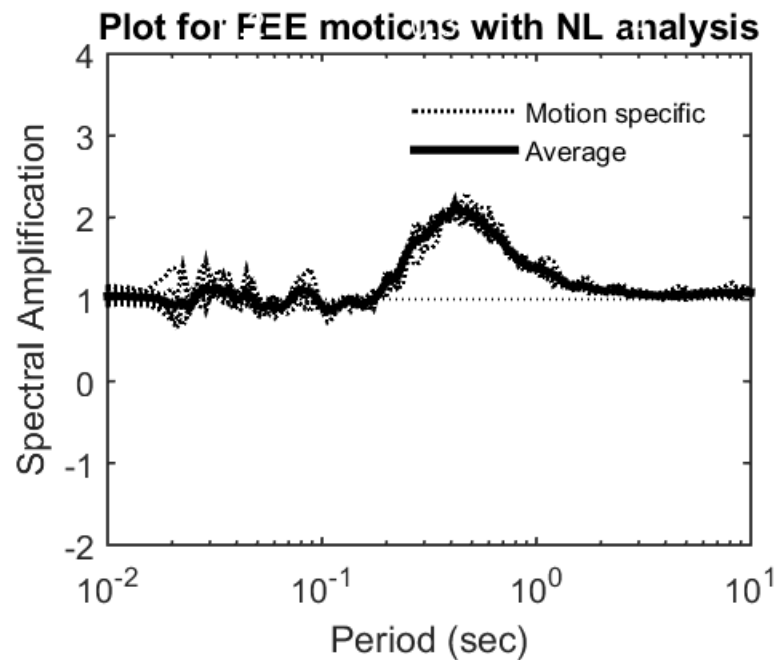
## Summary plots: RSA at ground surface



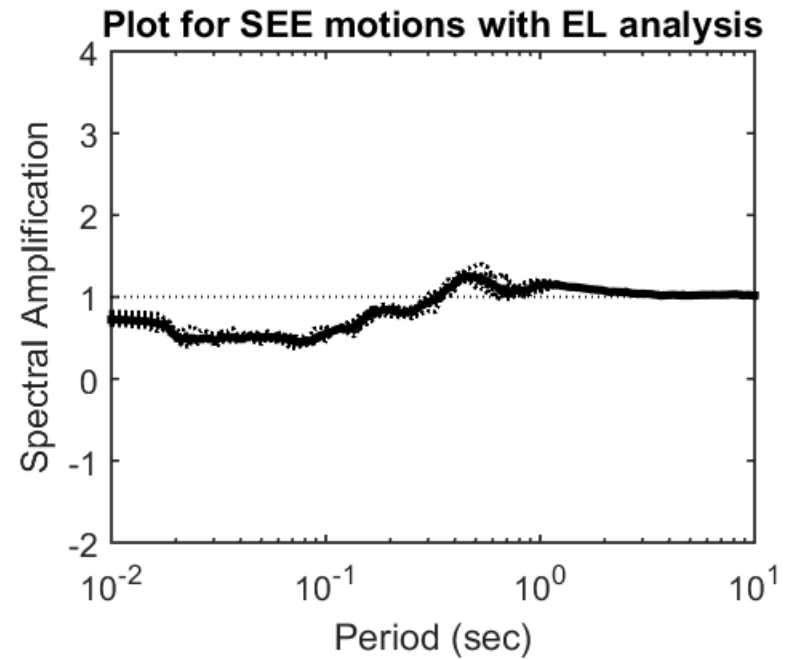
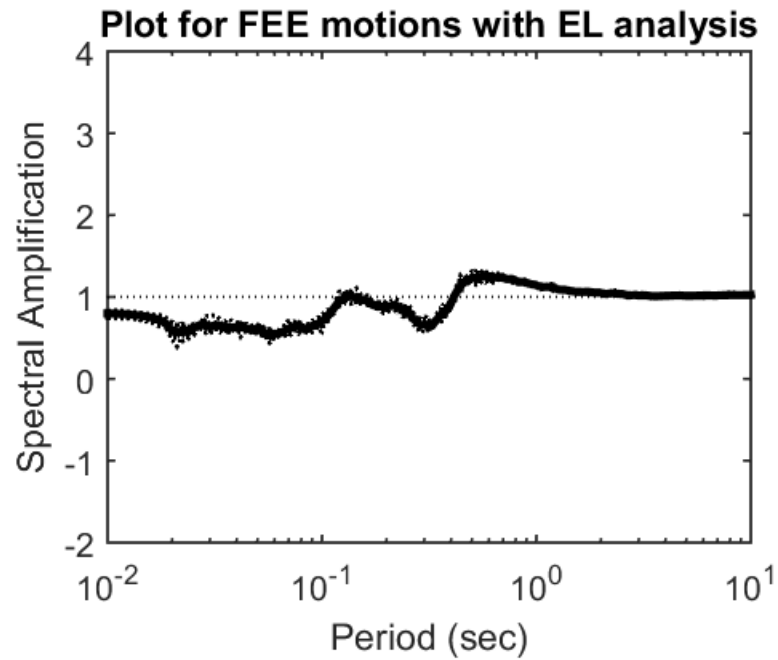
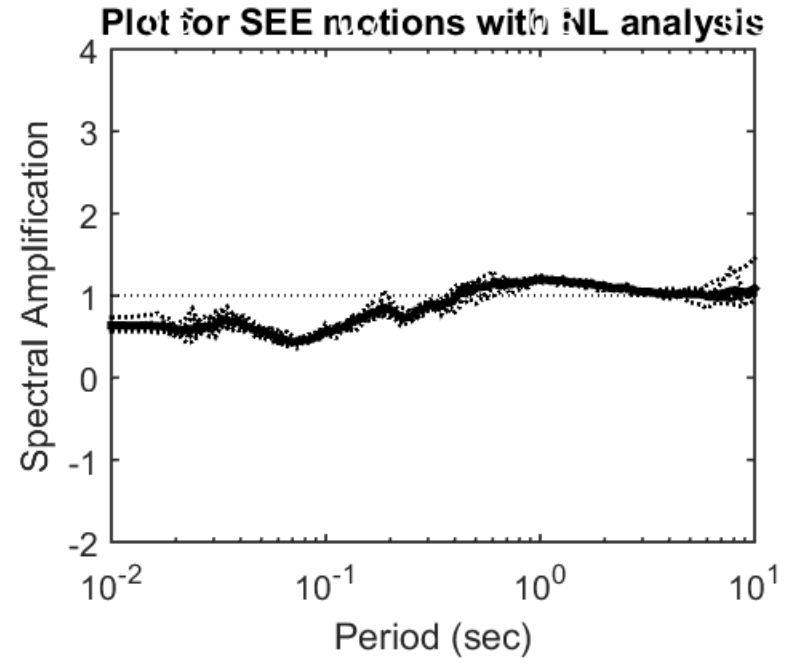
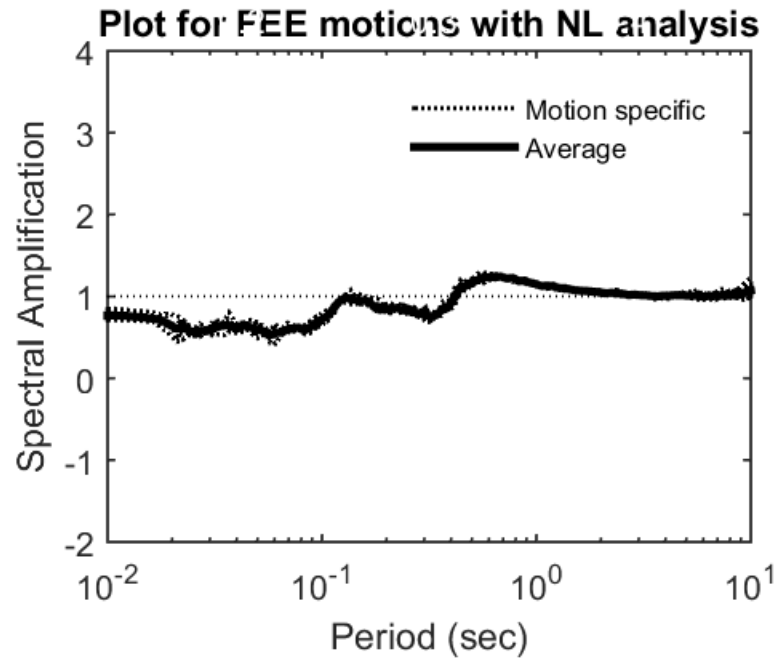
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



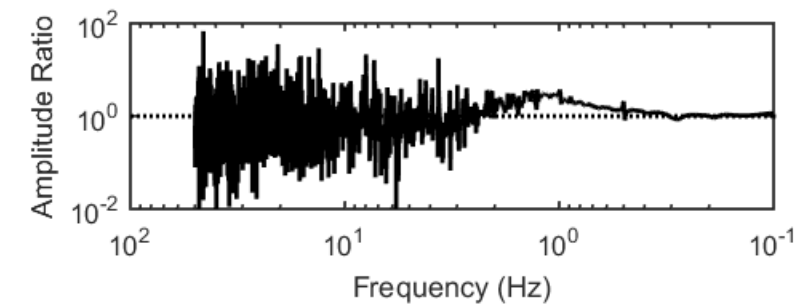
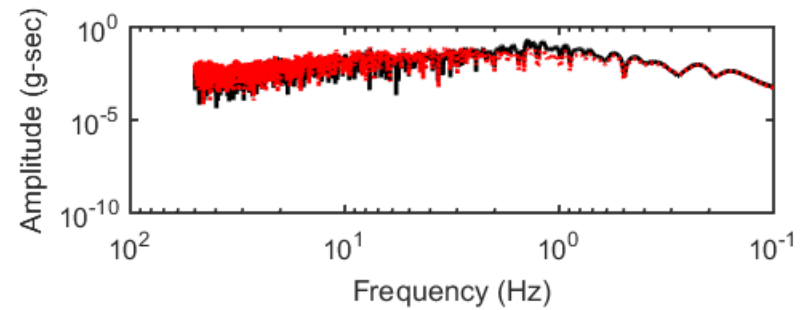
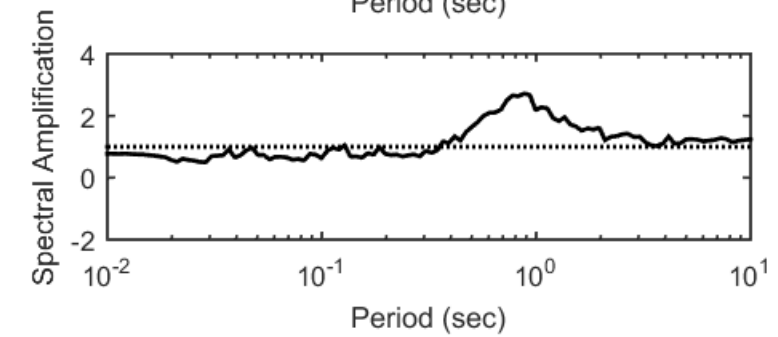
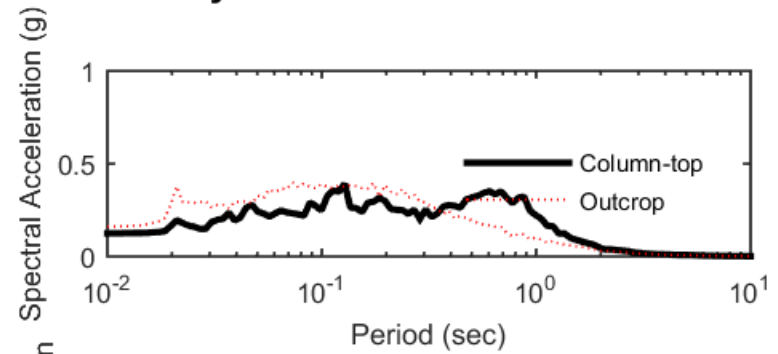
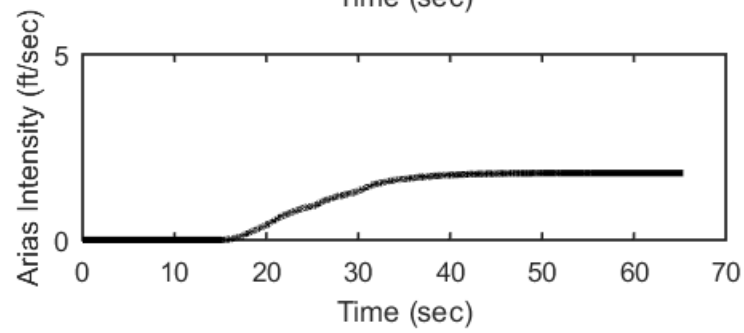
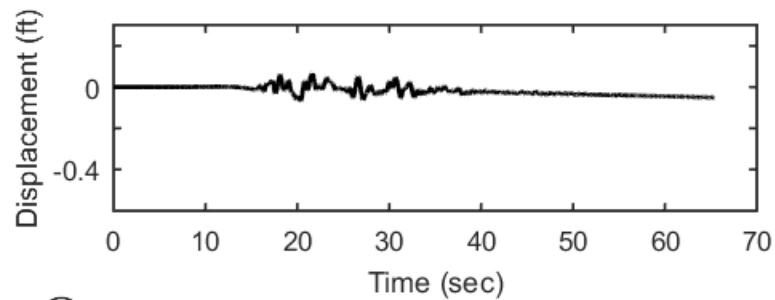
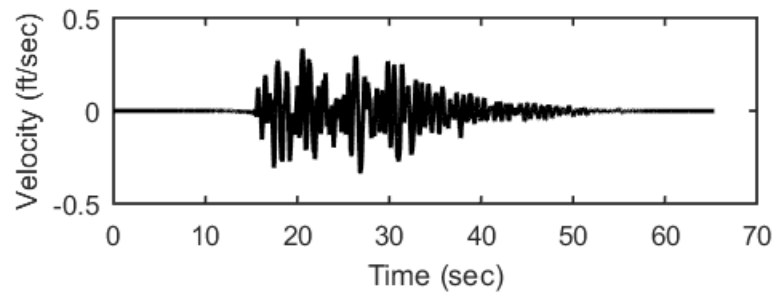
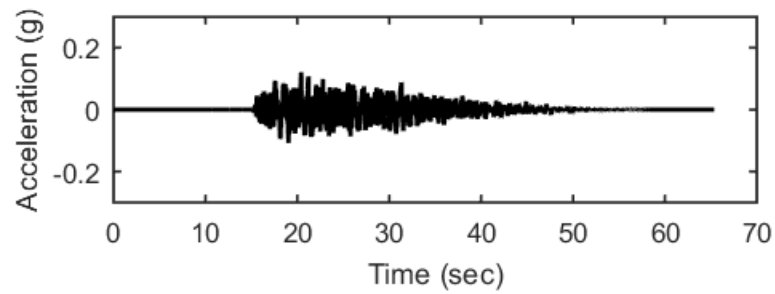
## Summary plots: Spectral amplification at top of Marl



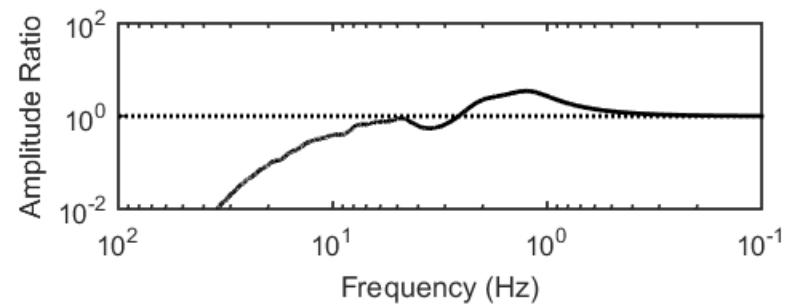
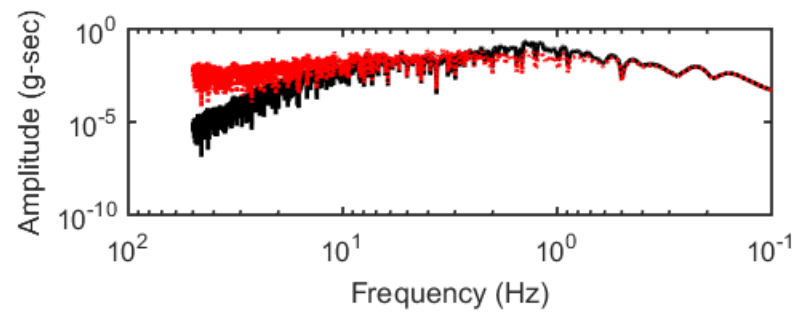
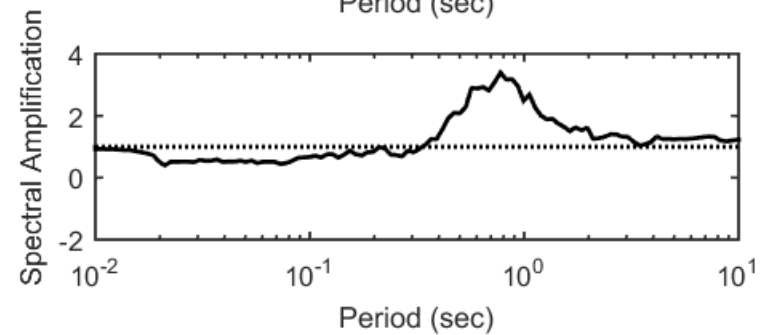
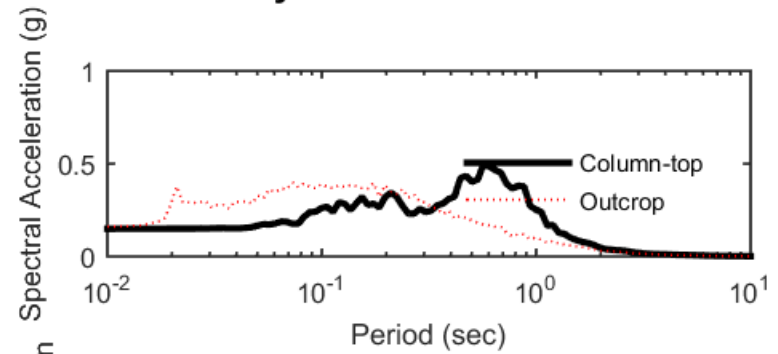
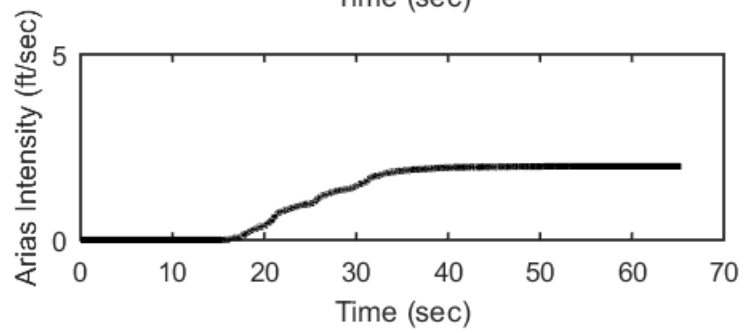
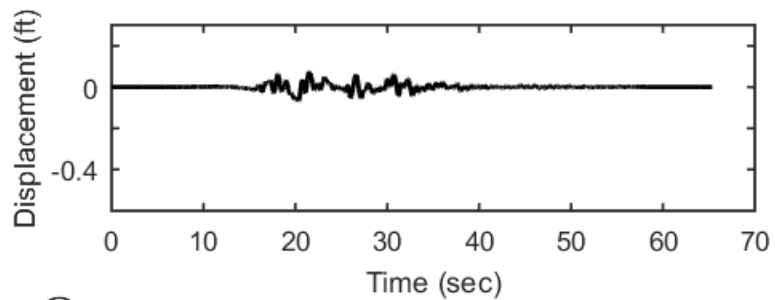
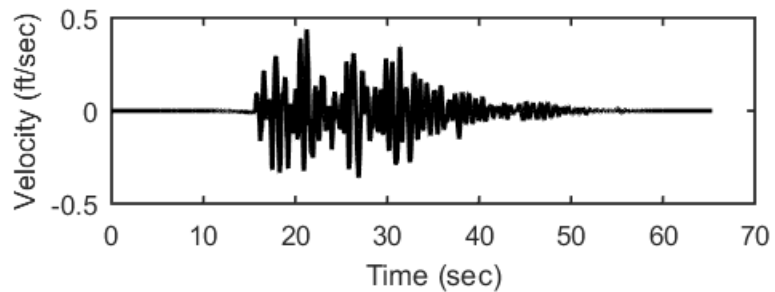
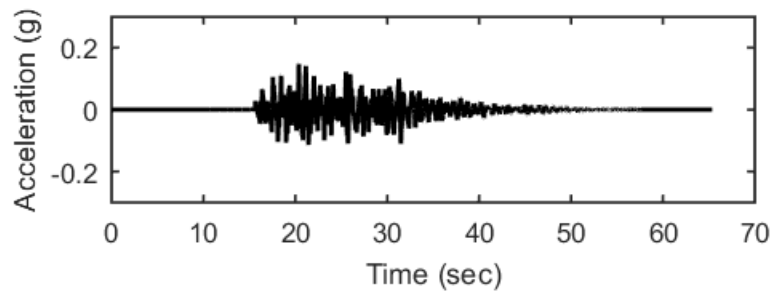
## **BASE MODEL AND LOW SHEAR WAVE**



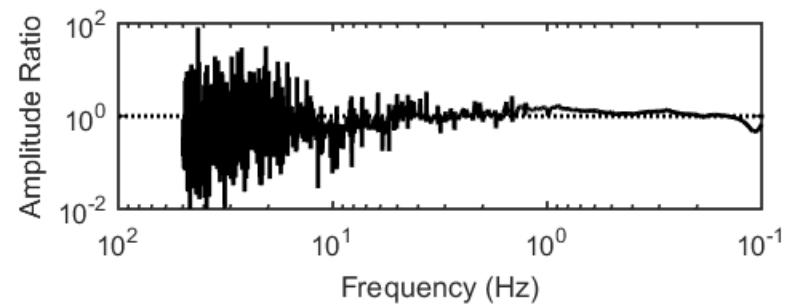
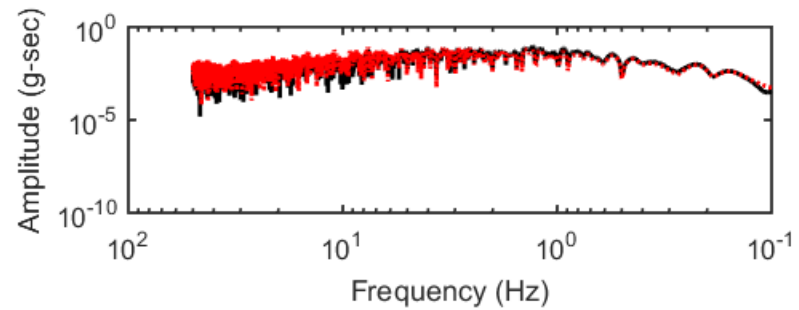
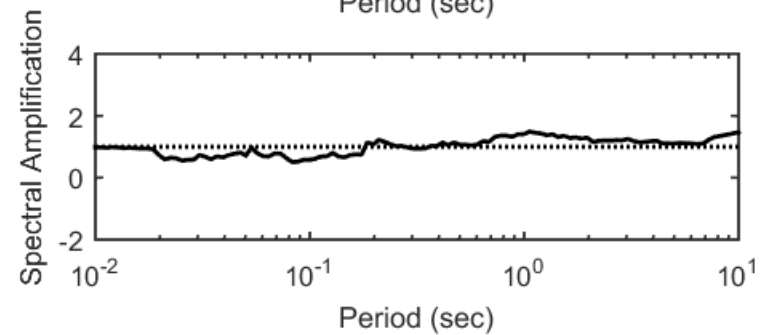
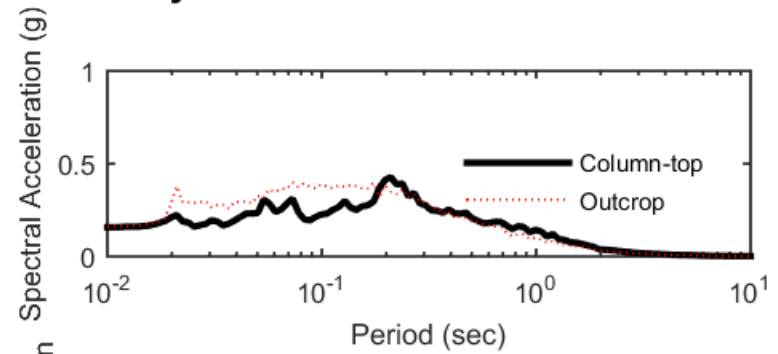
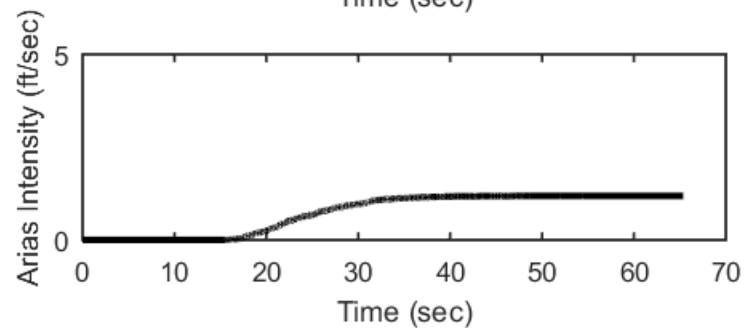
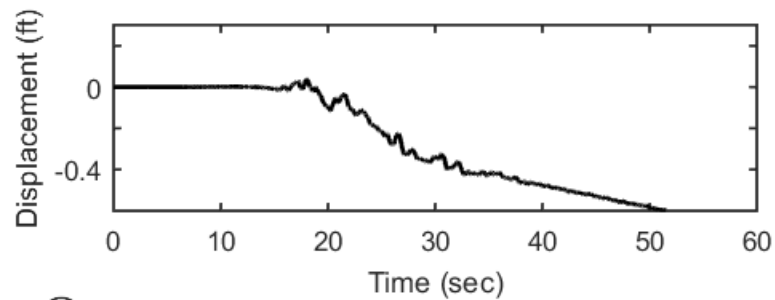
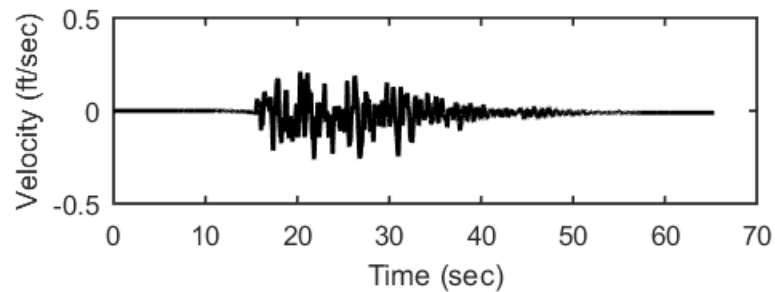
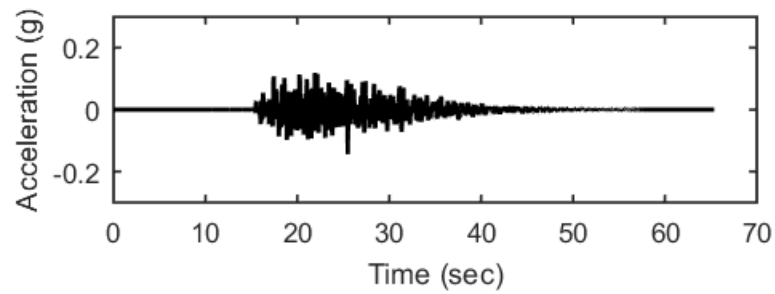
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



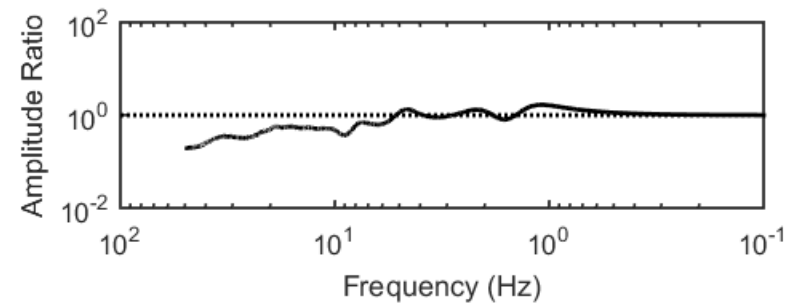
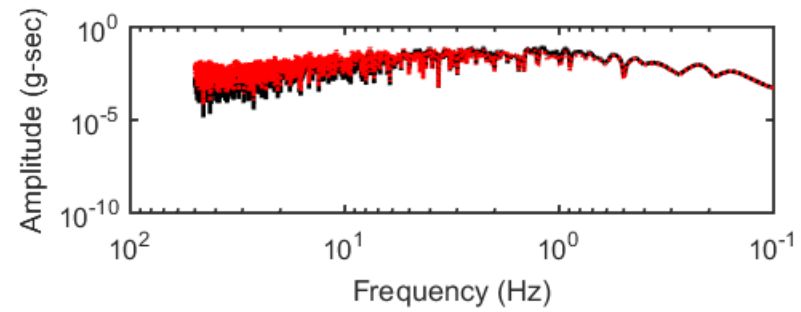
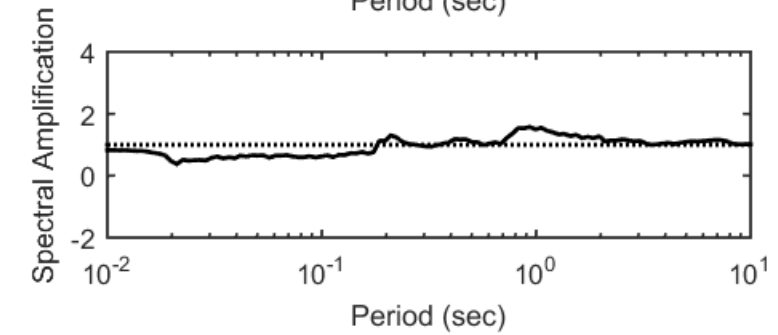
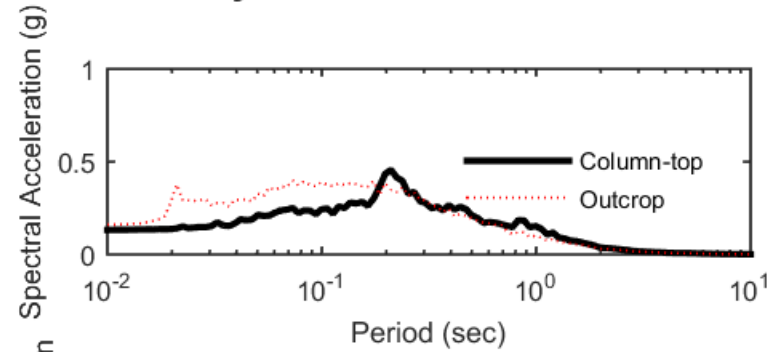
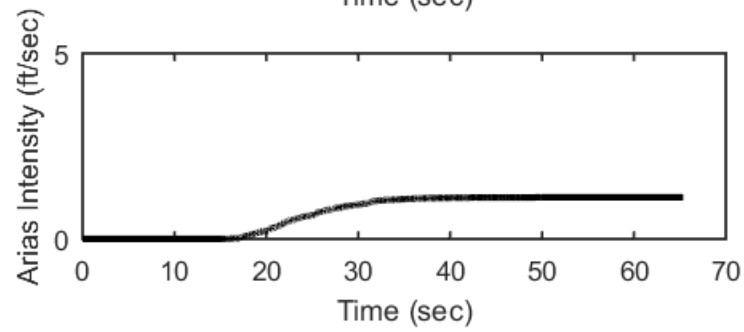
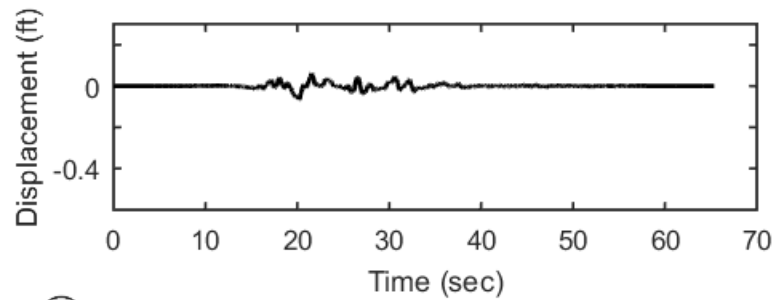
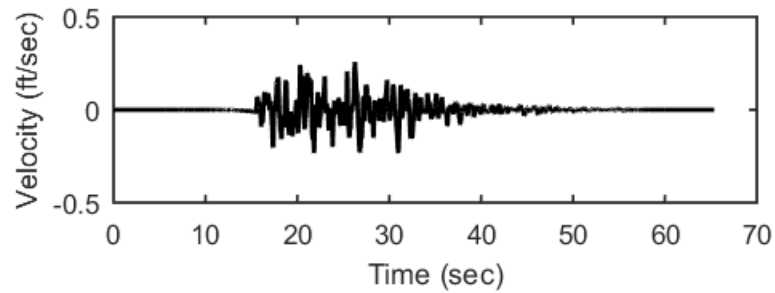
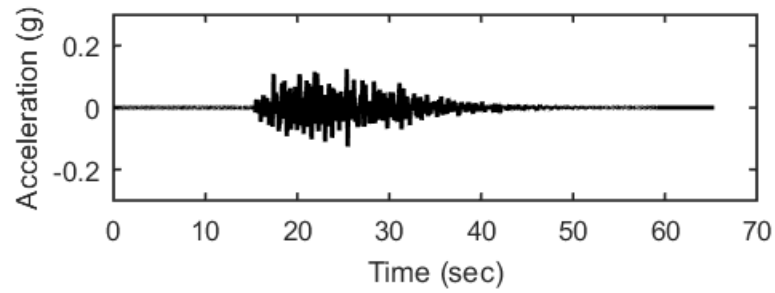
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



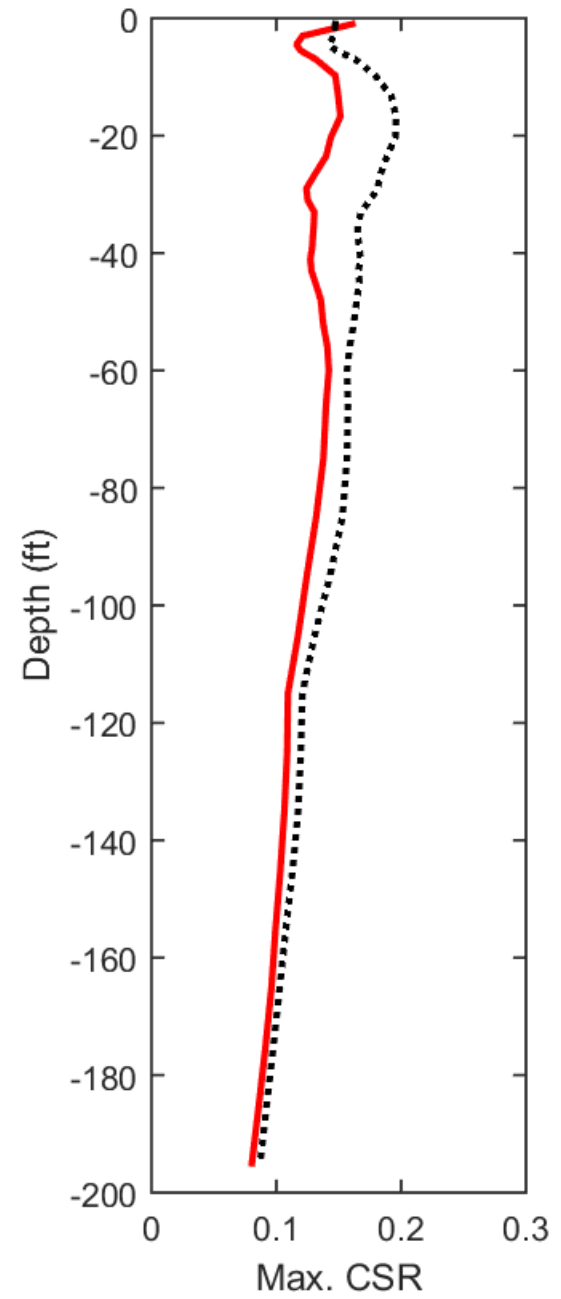
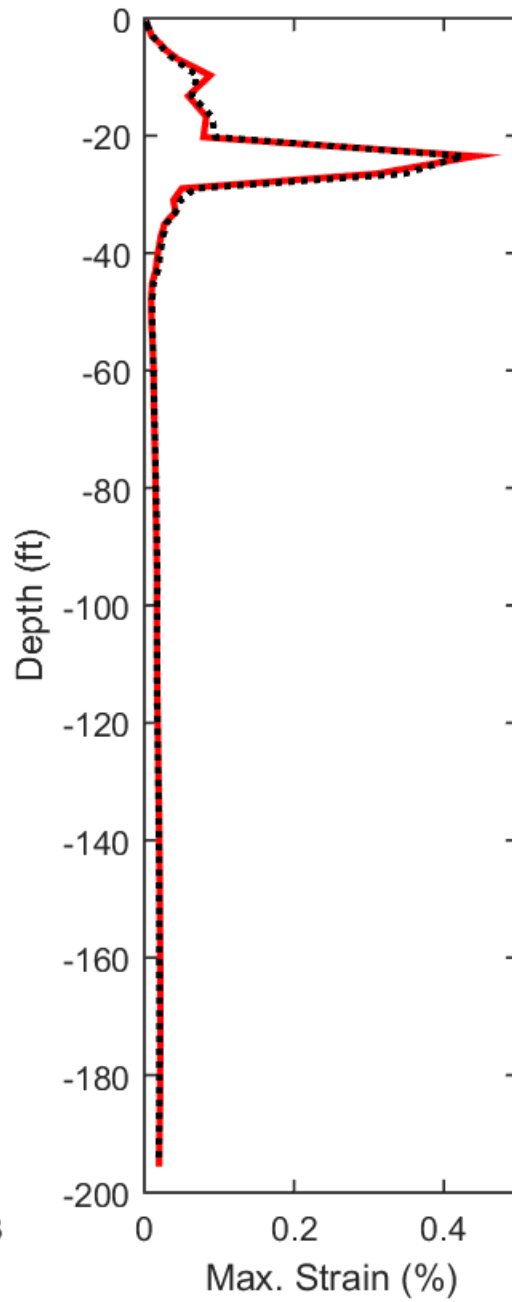
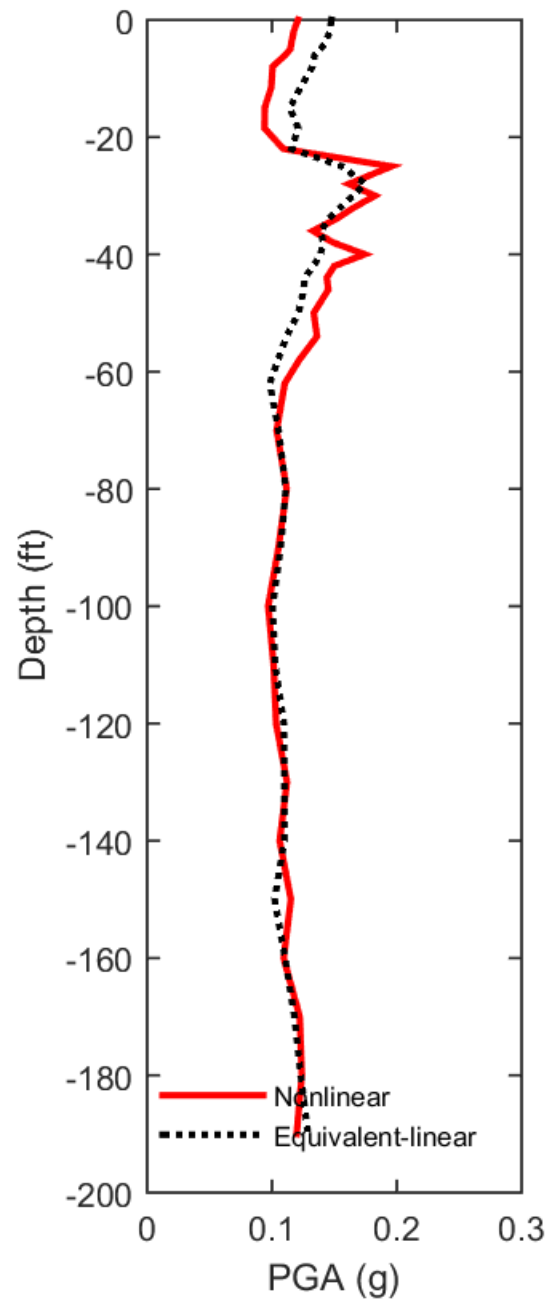
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



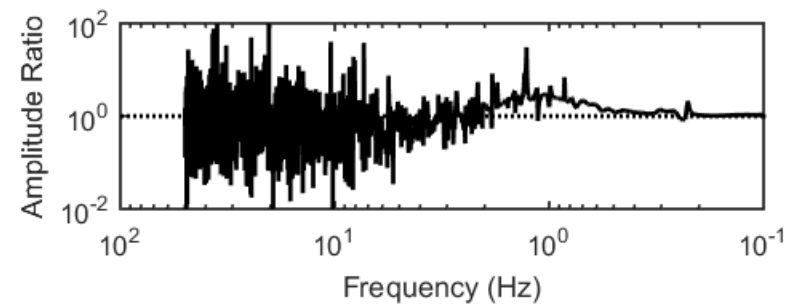
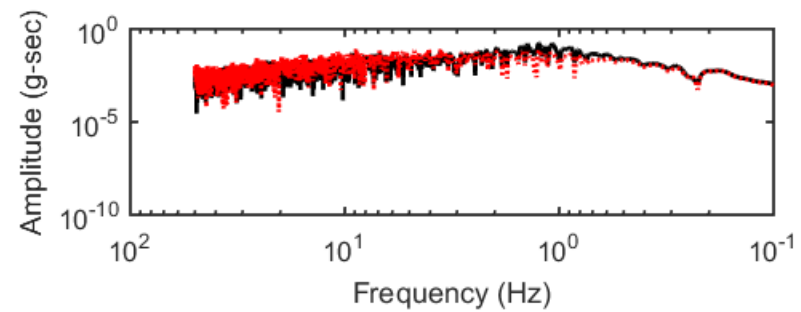
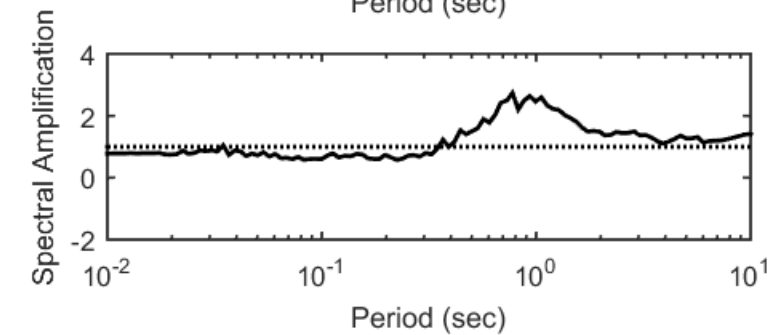
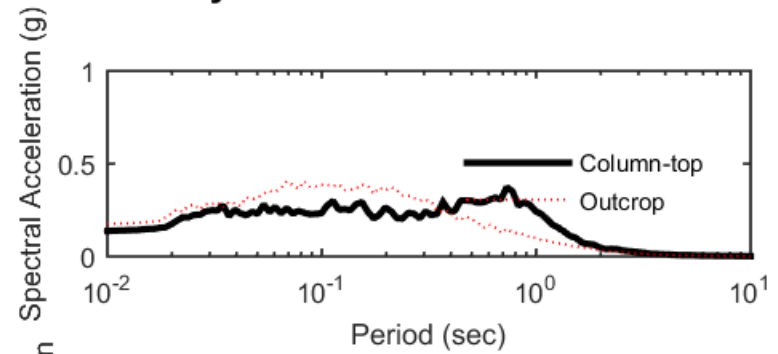
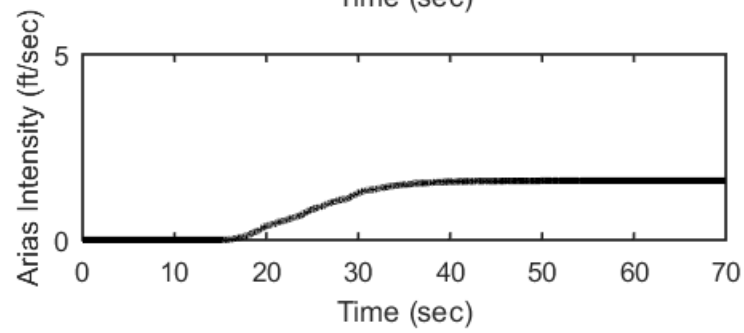
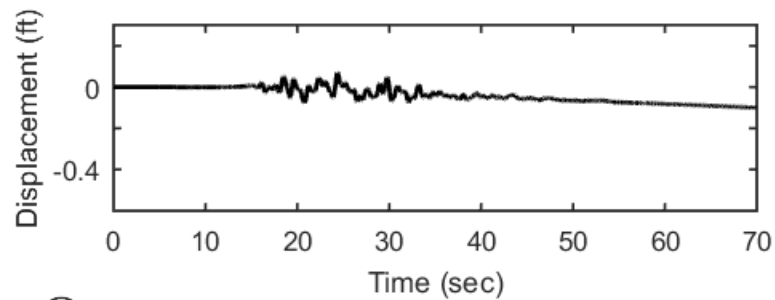
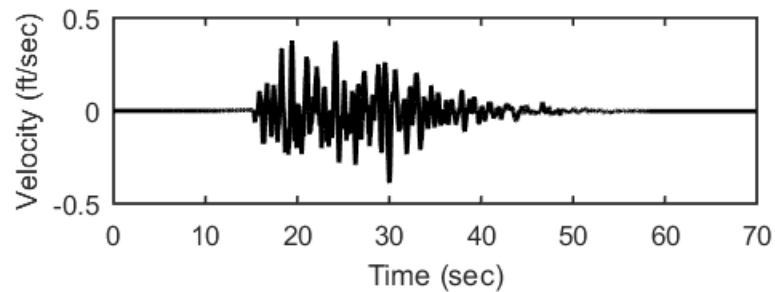
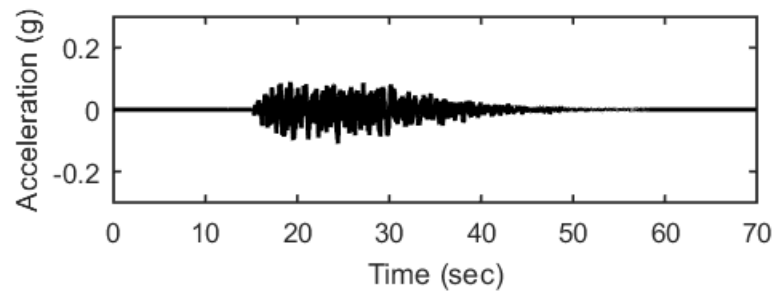
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



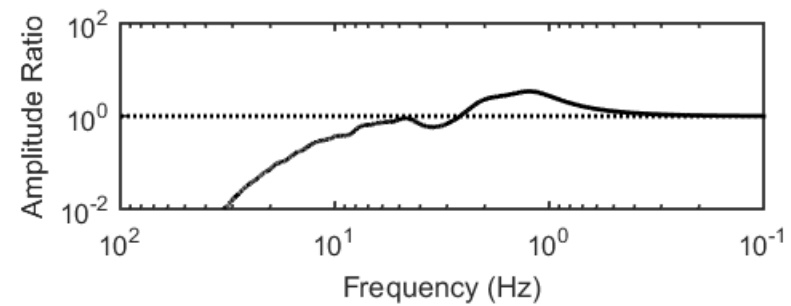
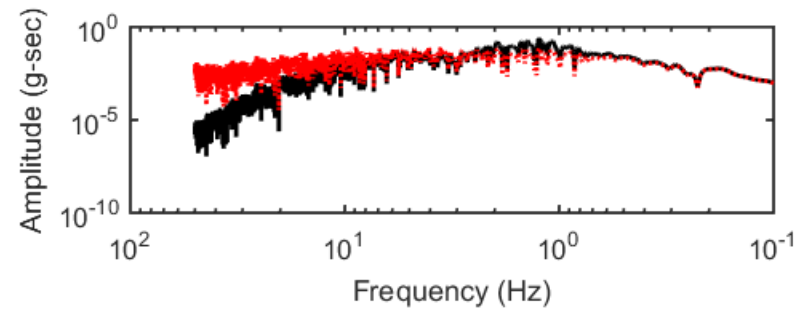
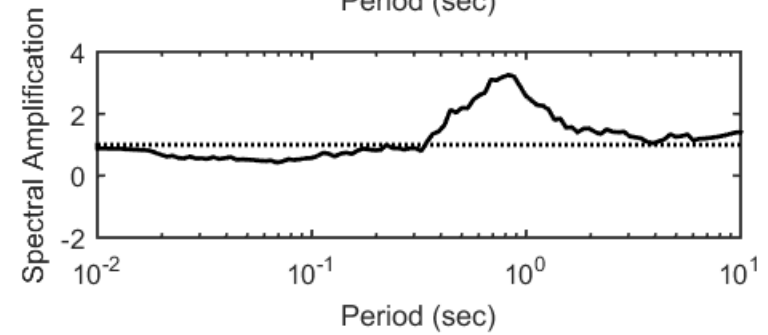
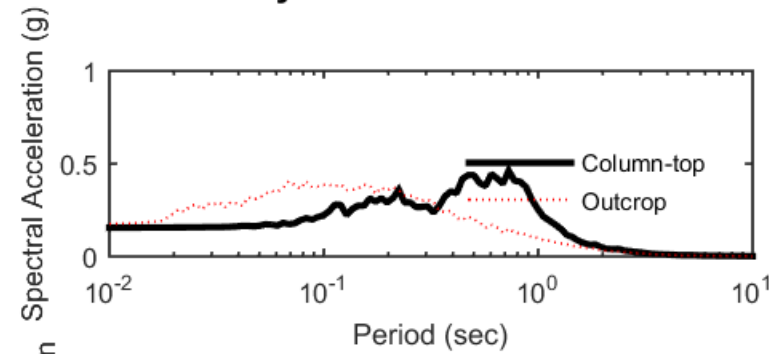
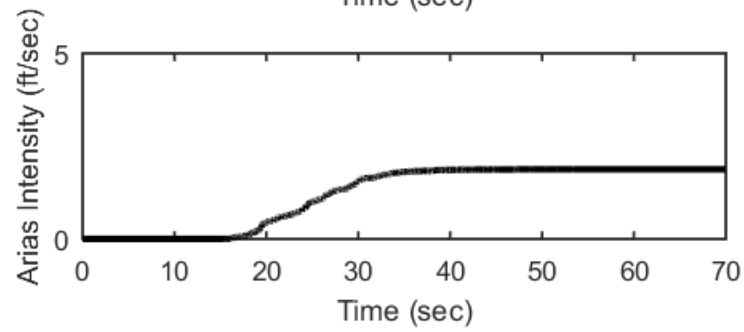
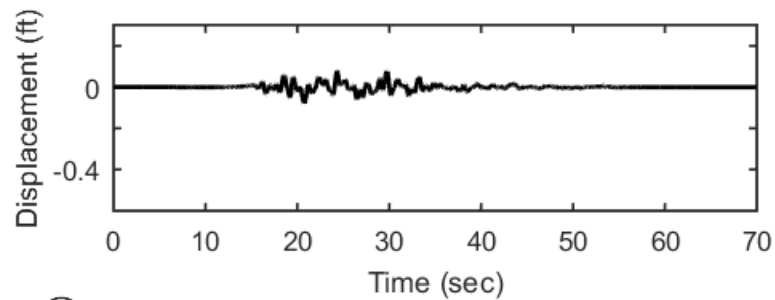
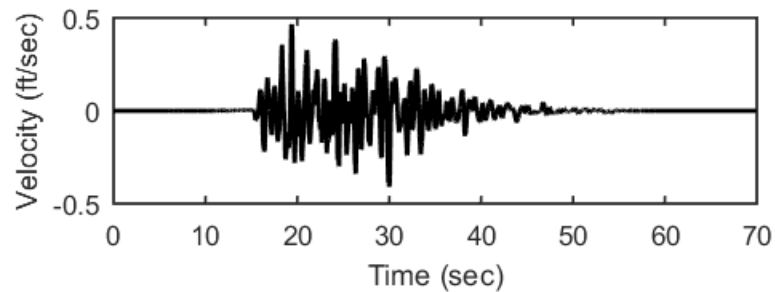
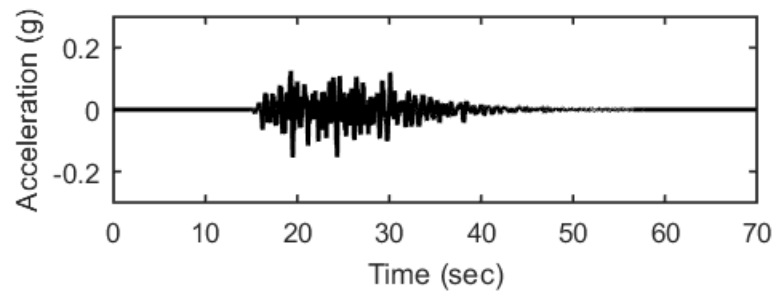
### Profile outputs for Motion: FEE1



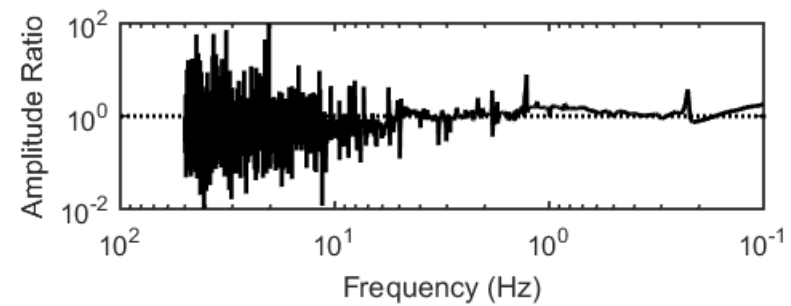
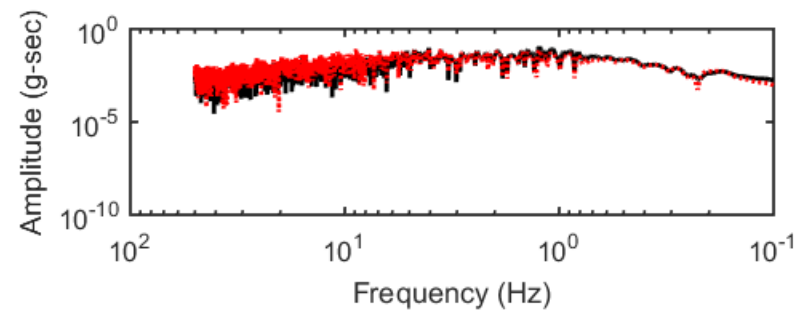
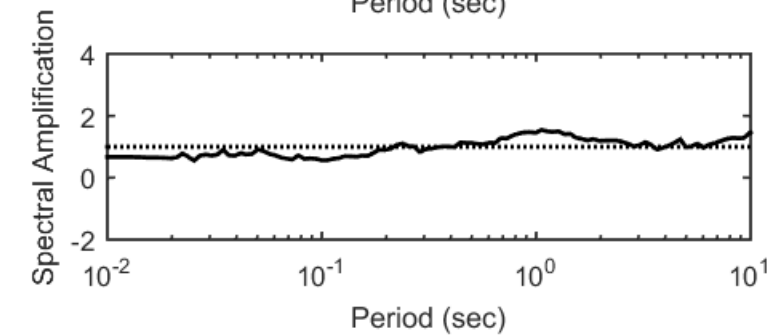
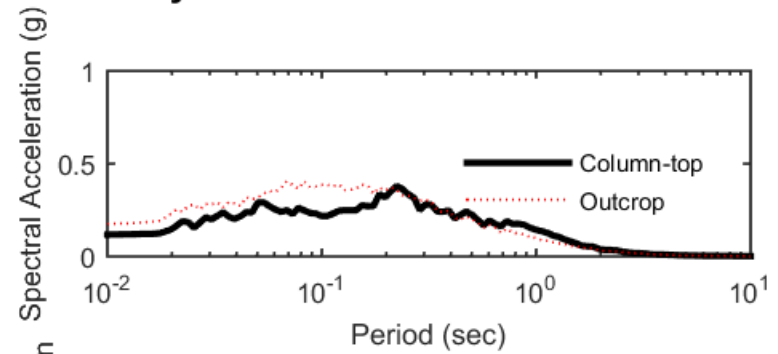
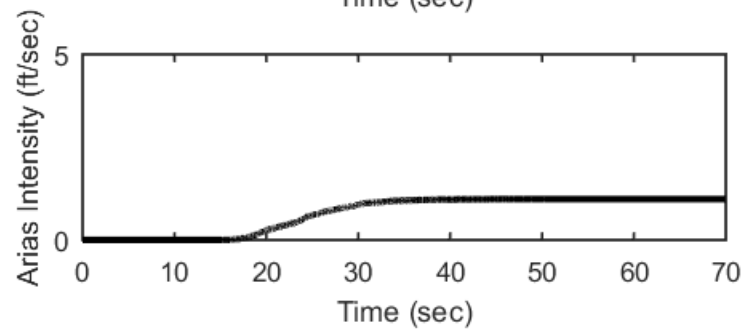
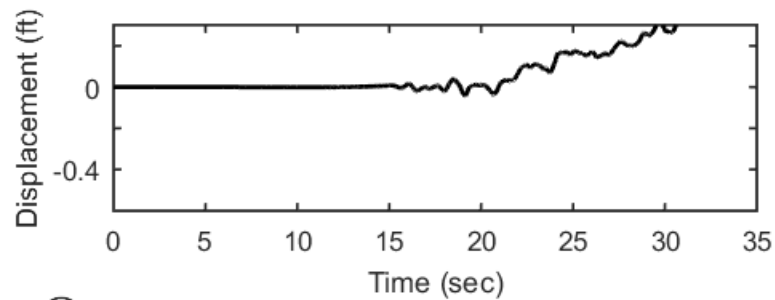
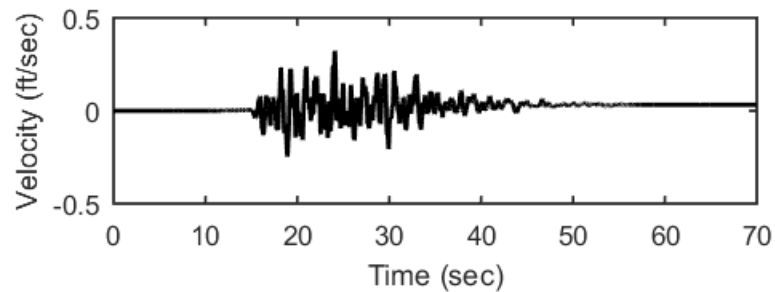
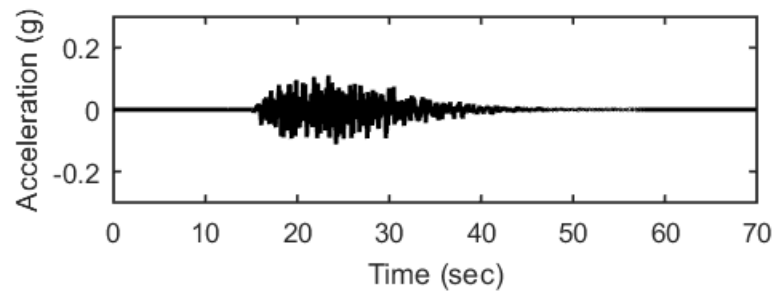
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2

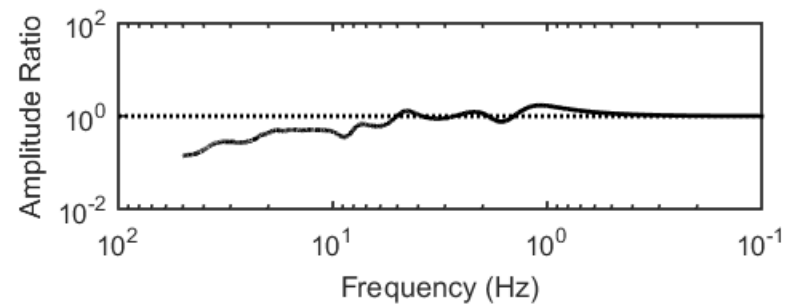
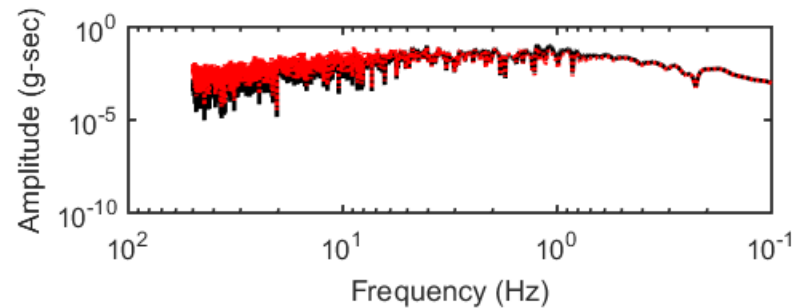
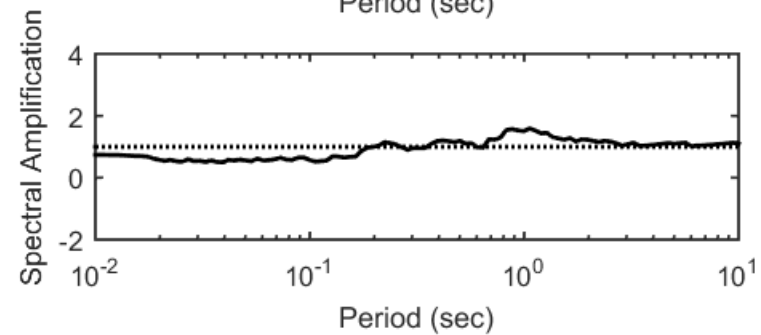
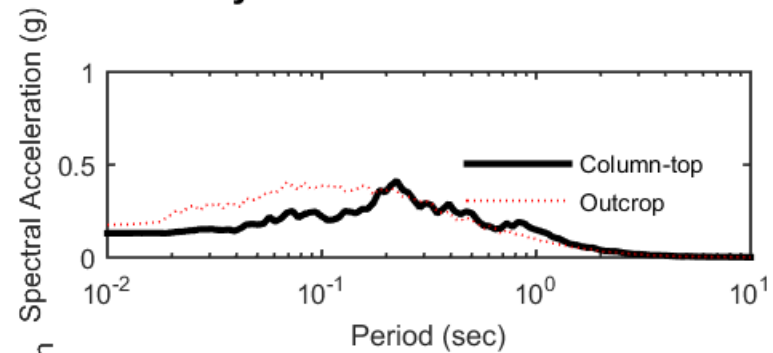
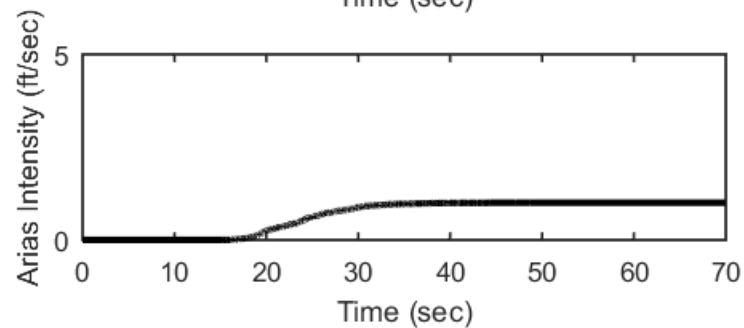
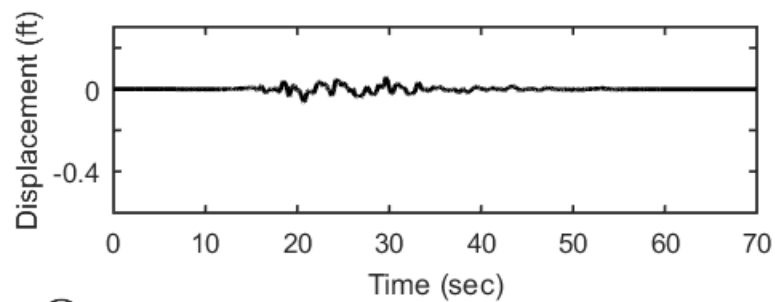
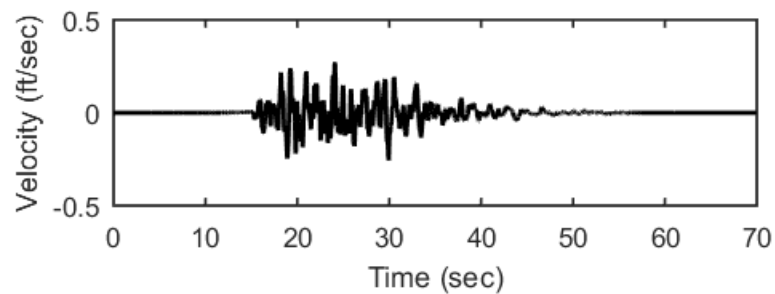
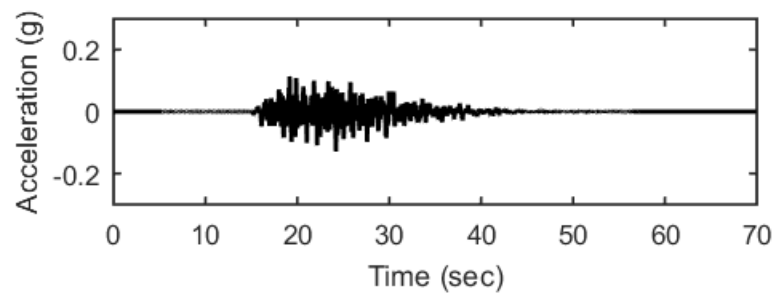


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2

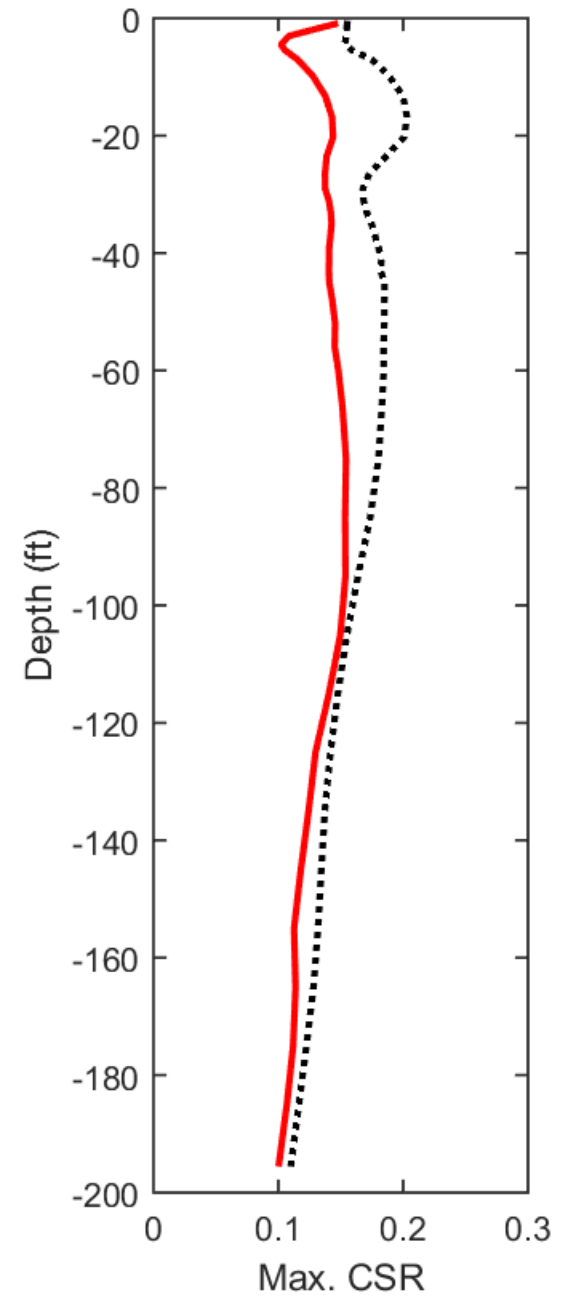
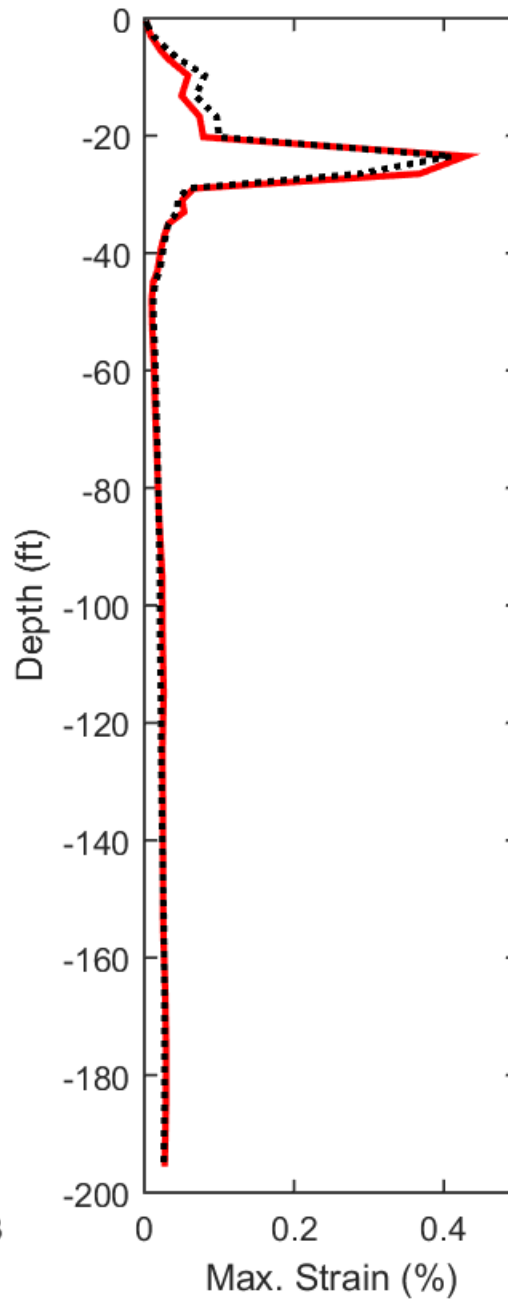
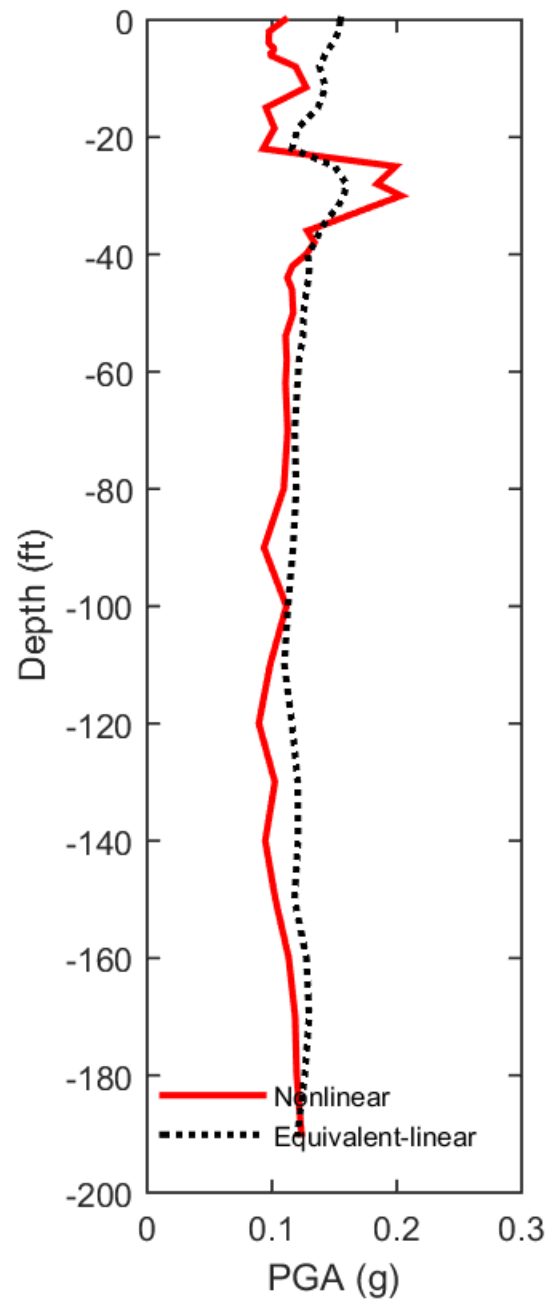




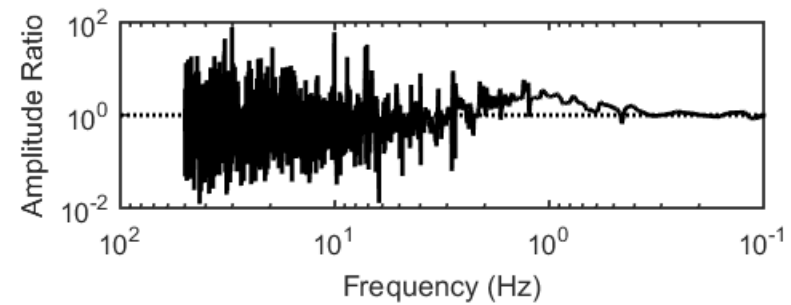
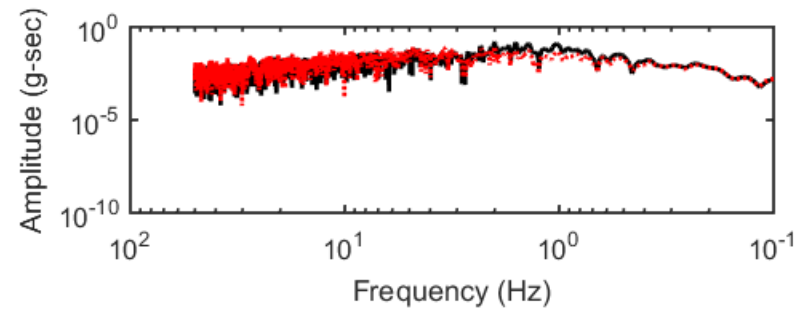
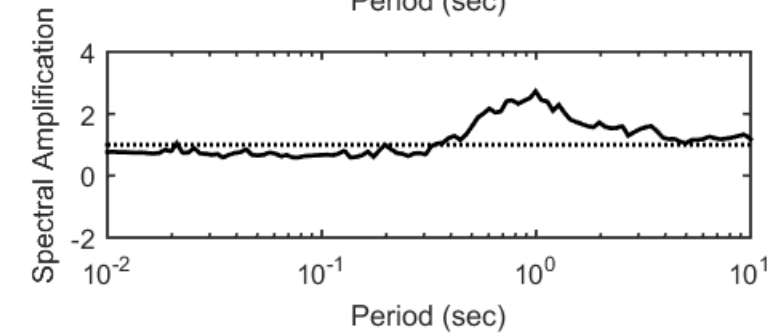
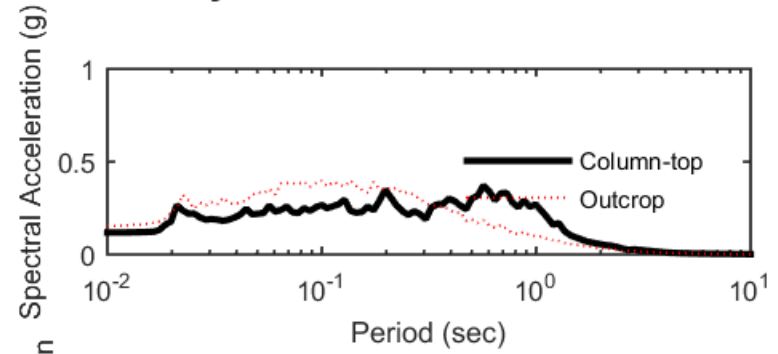
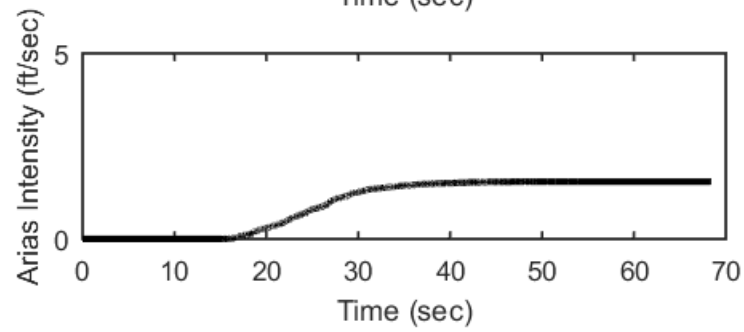
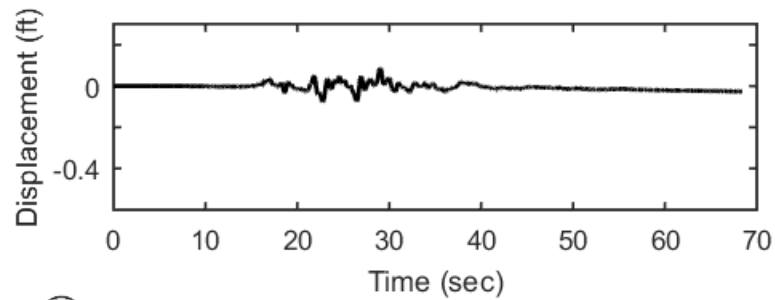
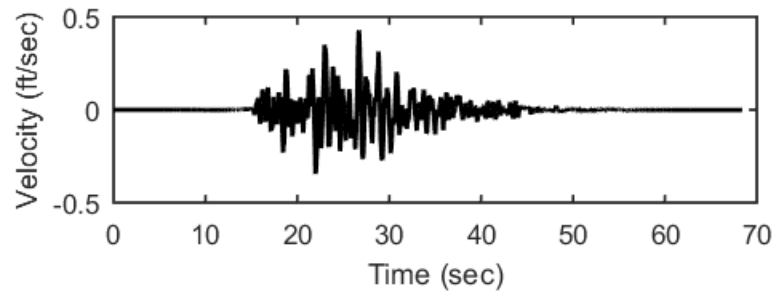
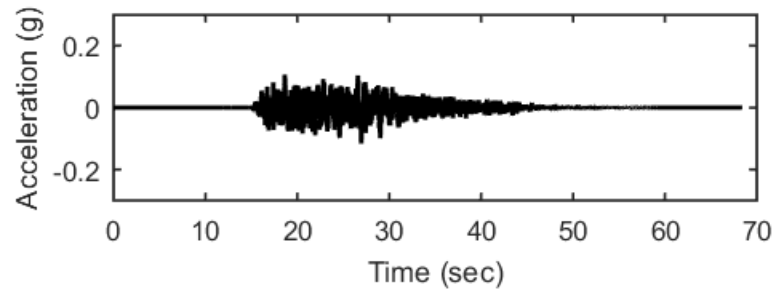
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



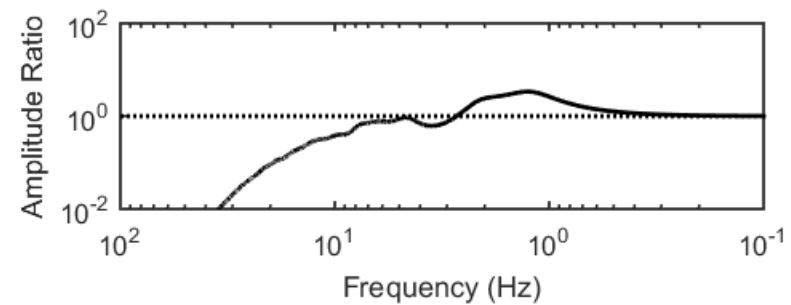
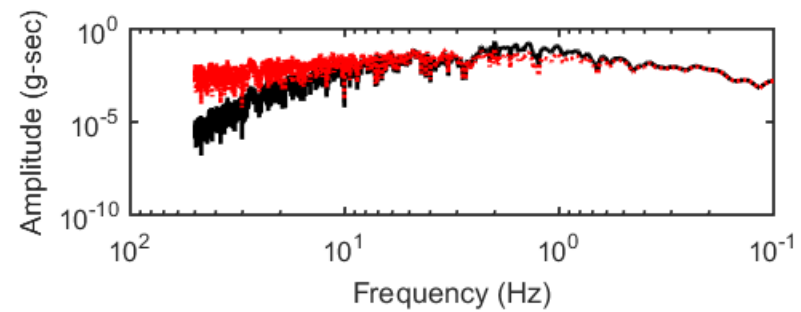
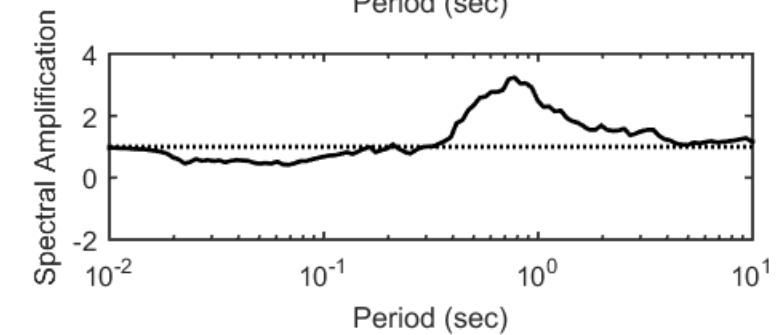
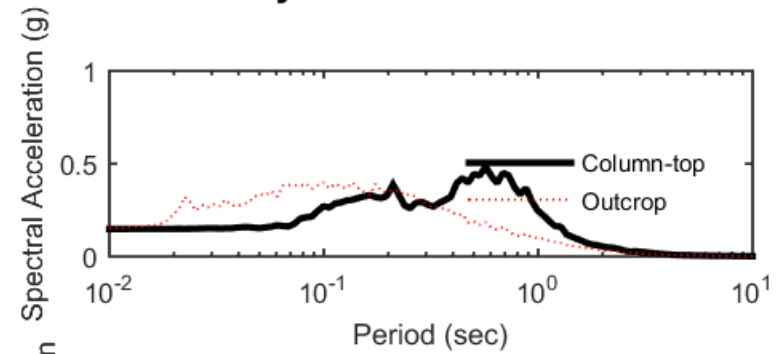
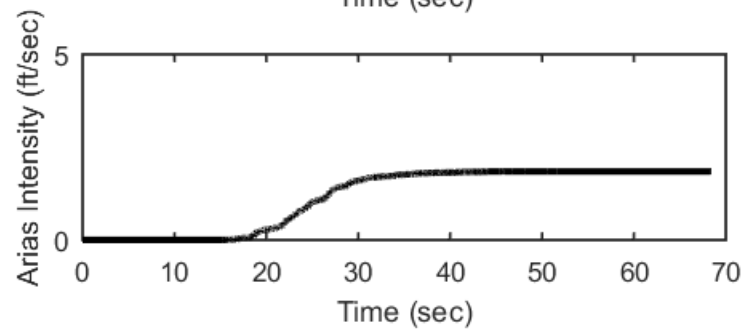
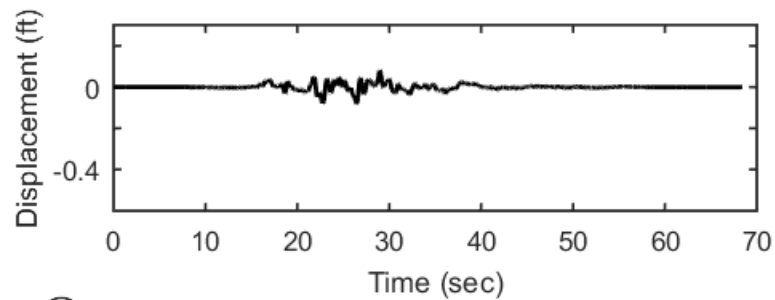
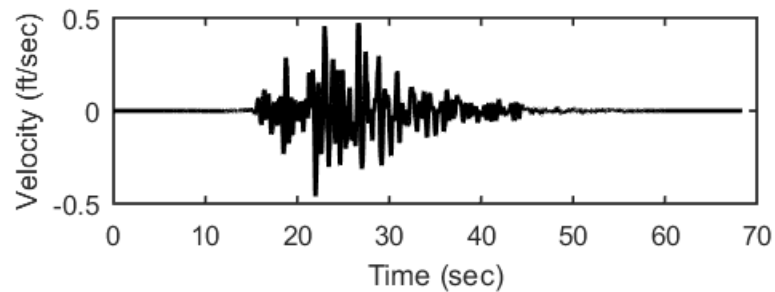
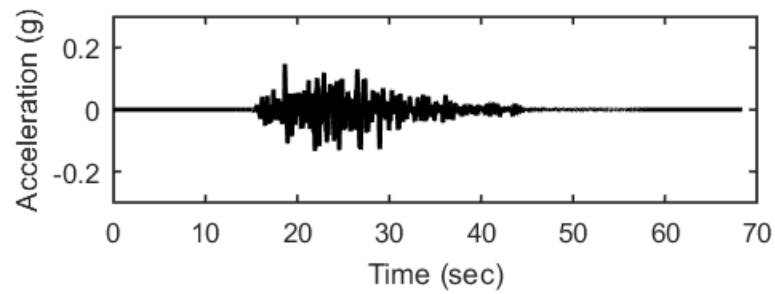
### Profile outputs for Motion: FEE2



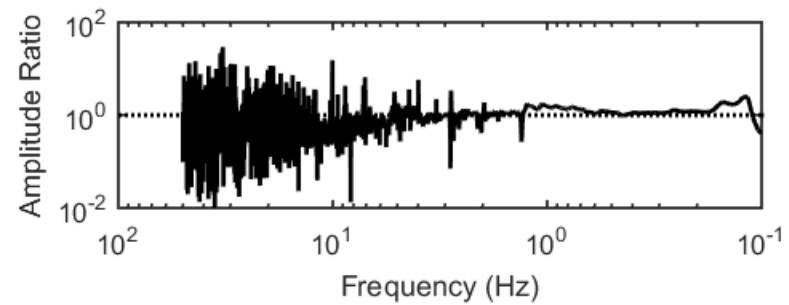
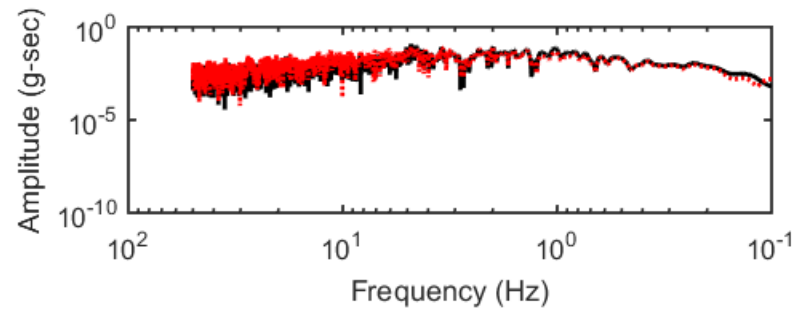
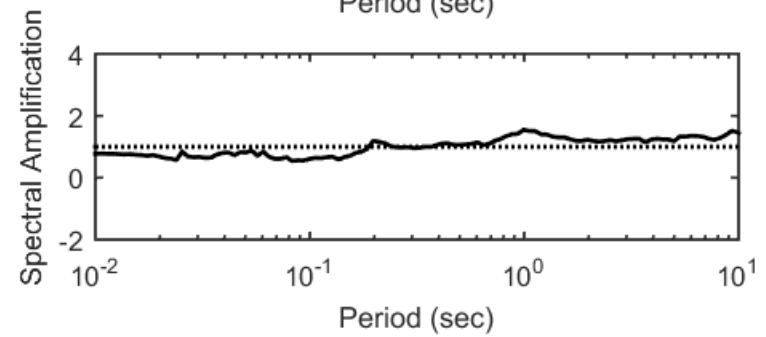
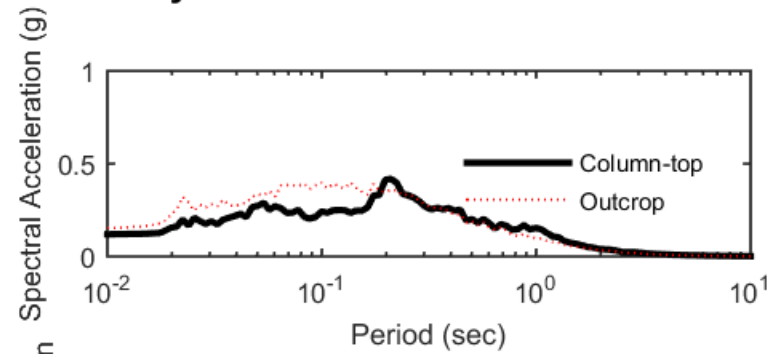
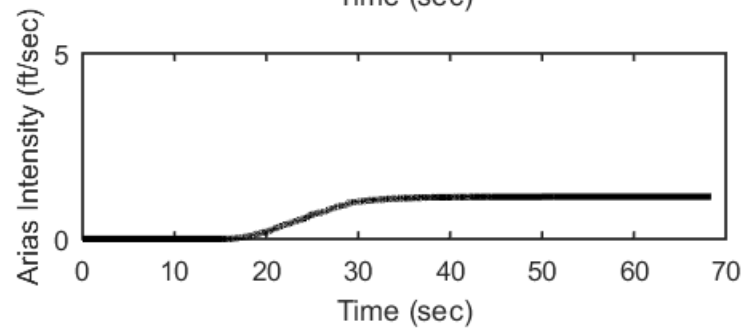
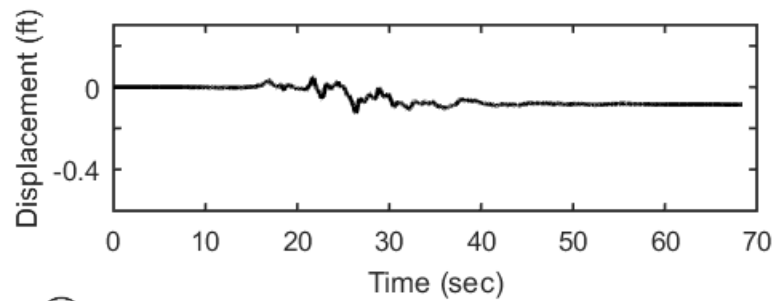
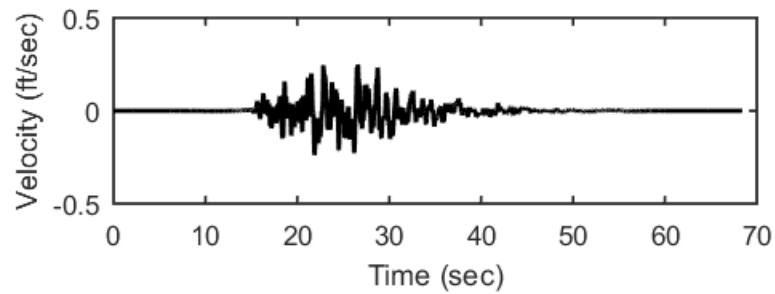
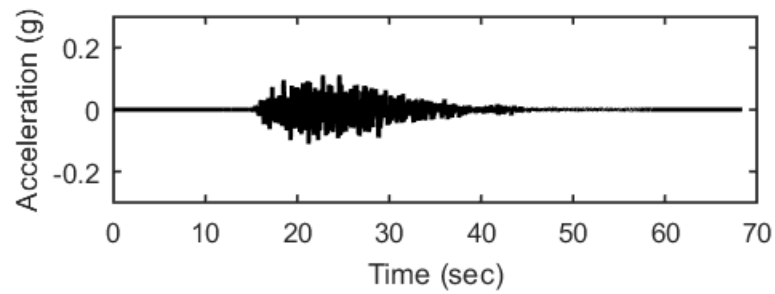
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



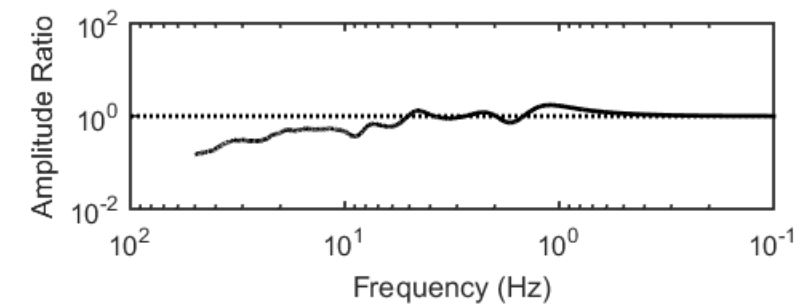
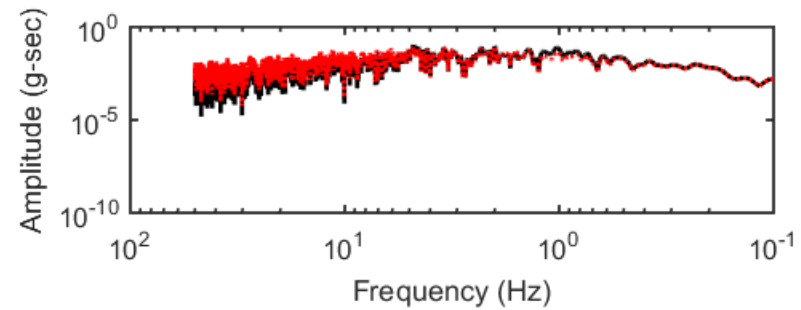
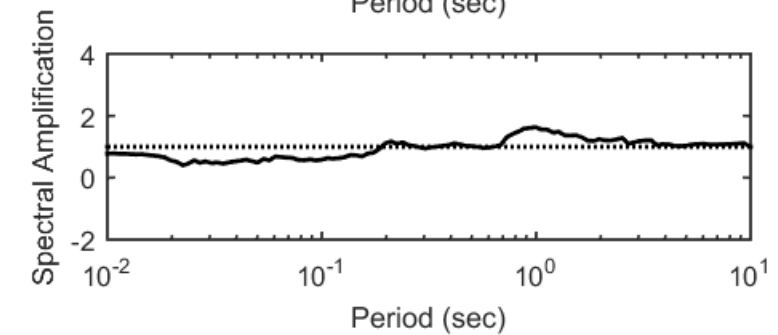
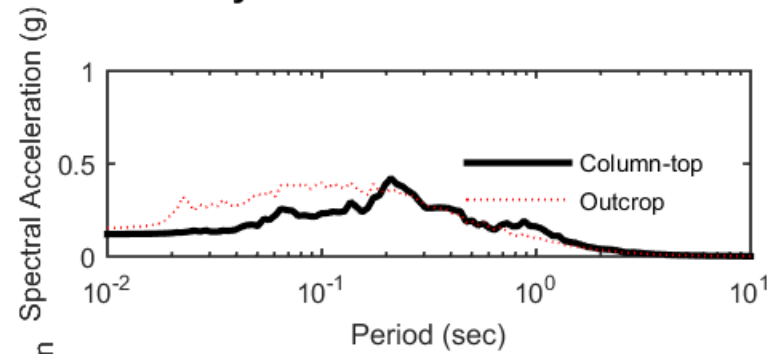
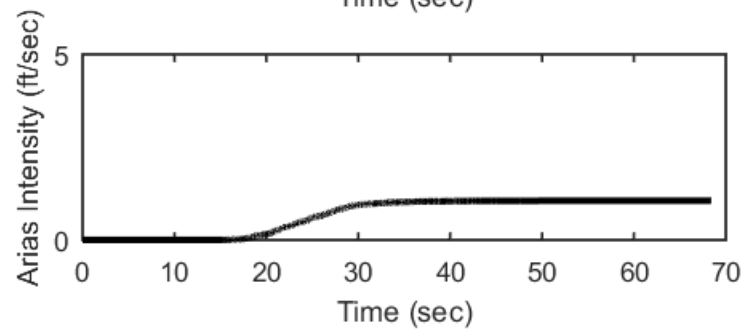
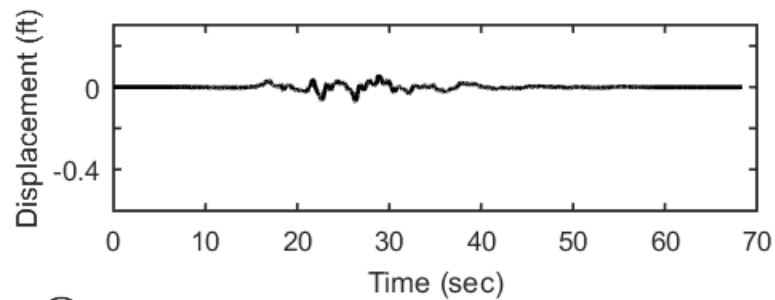
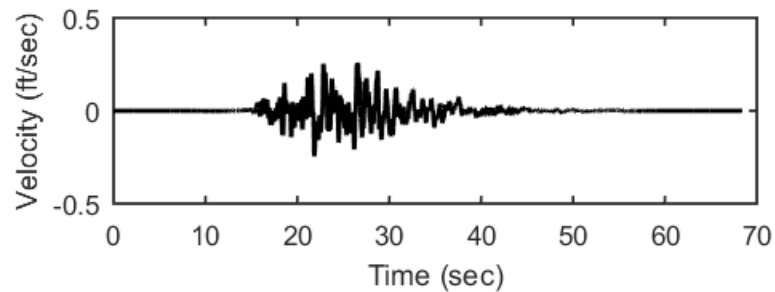
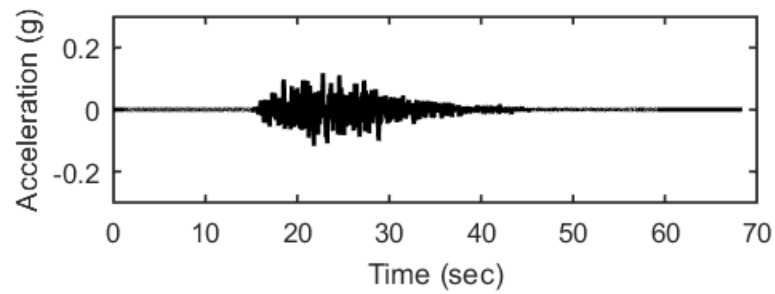
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



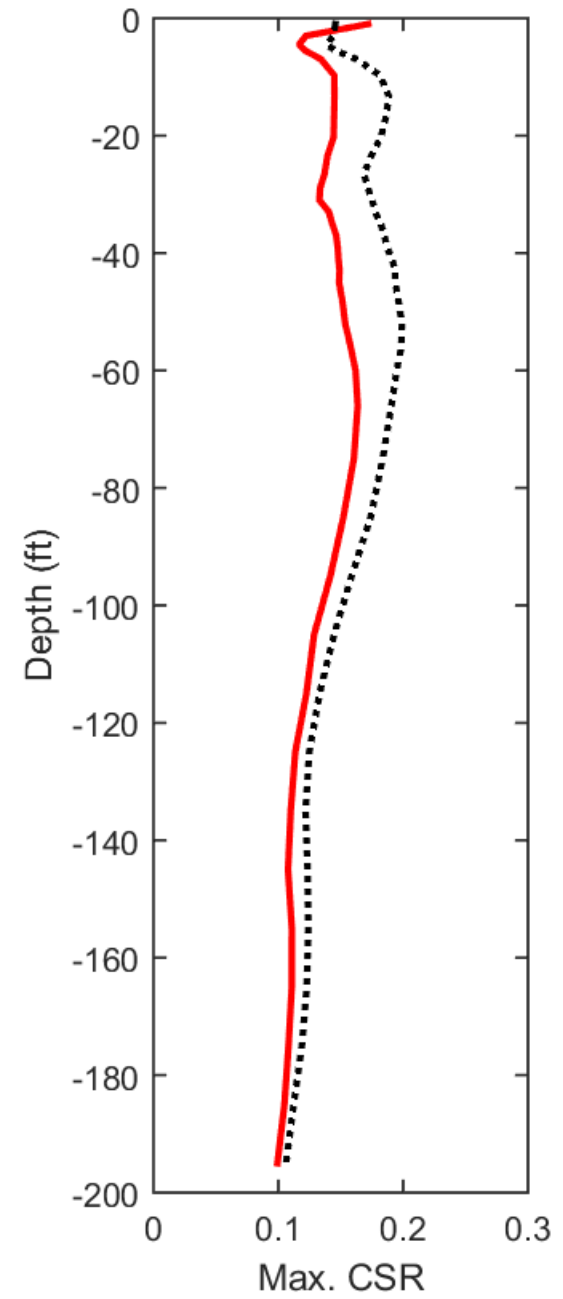
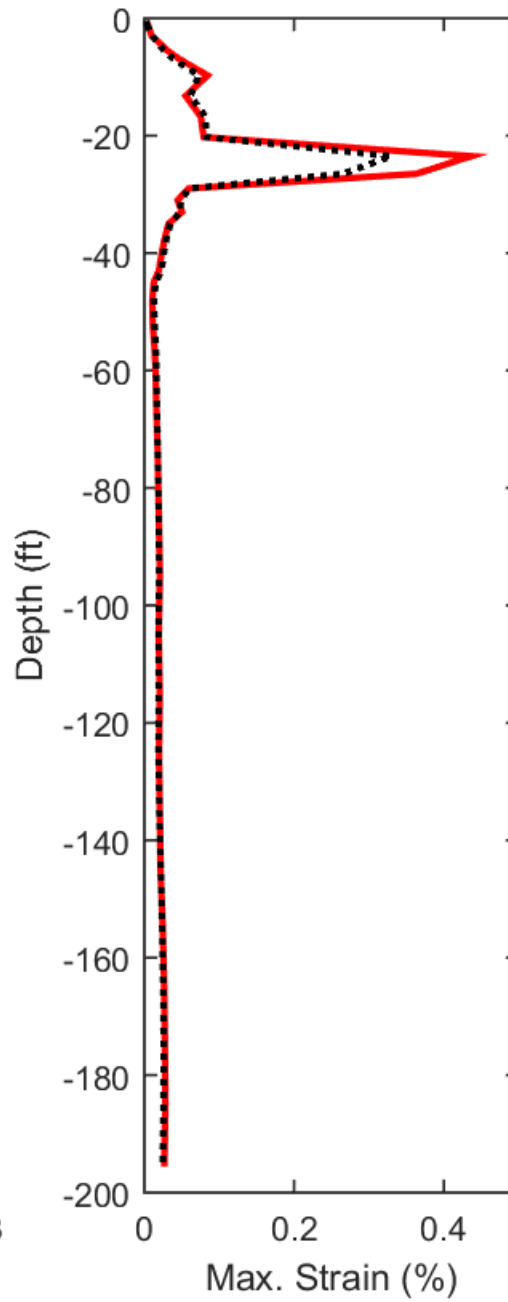
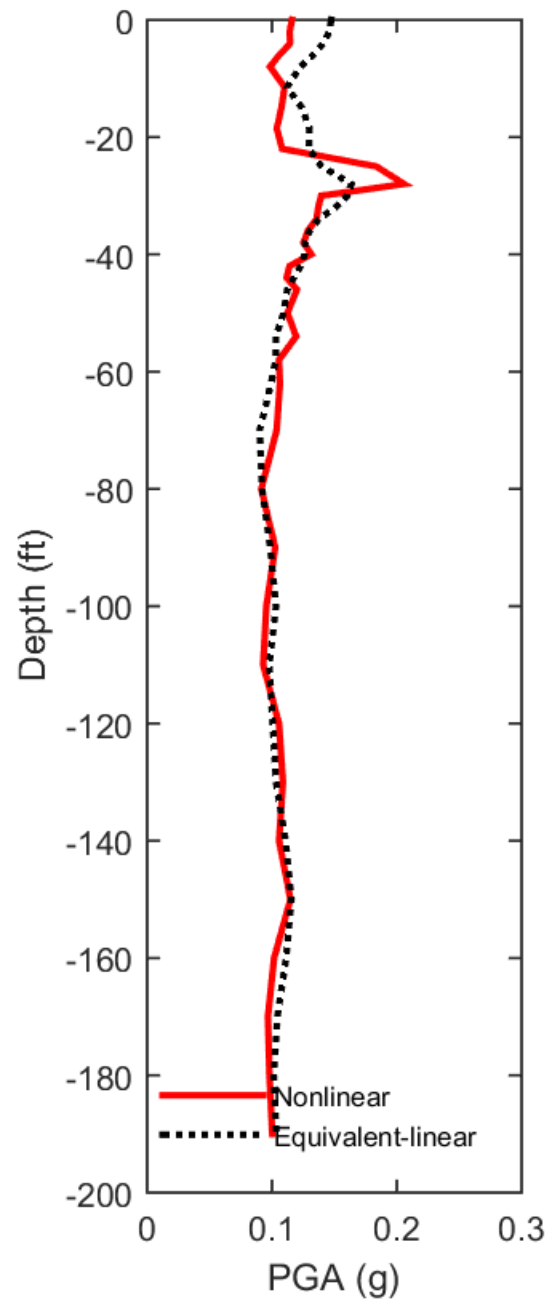
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



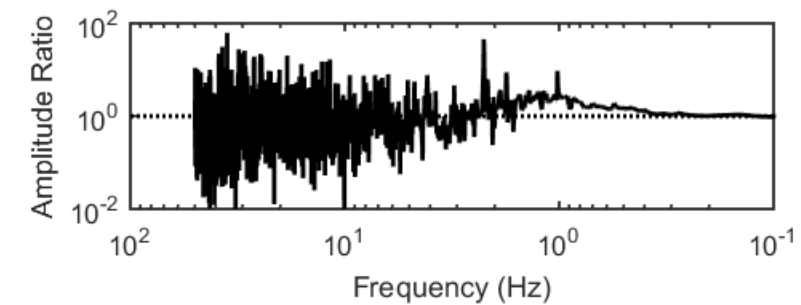
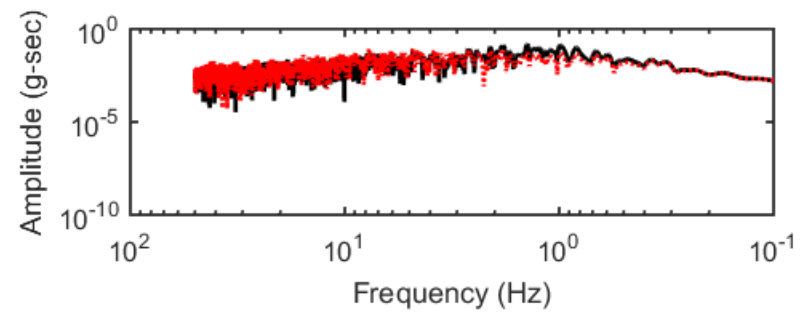
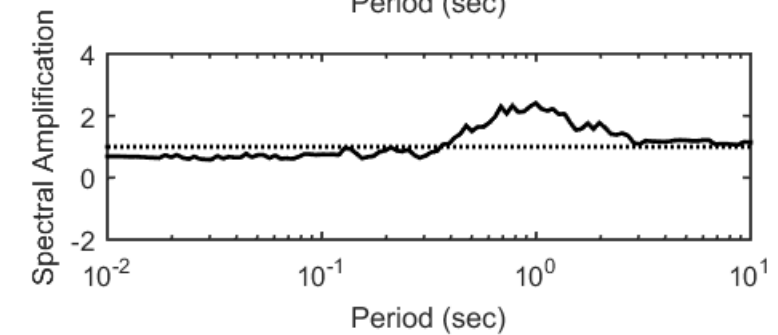
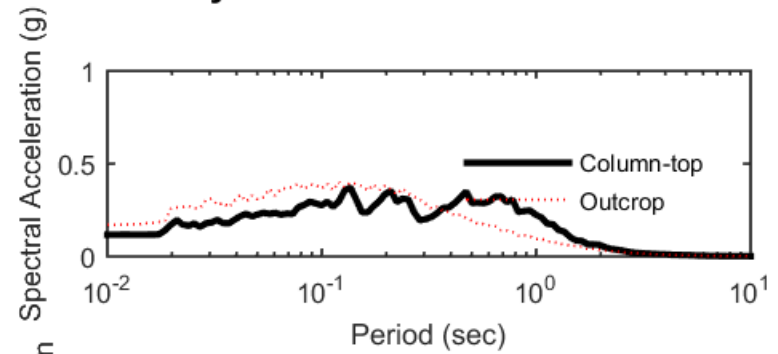
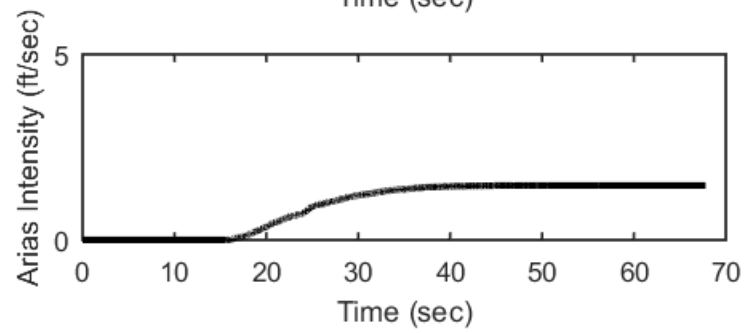
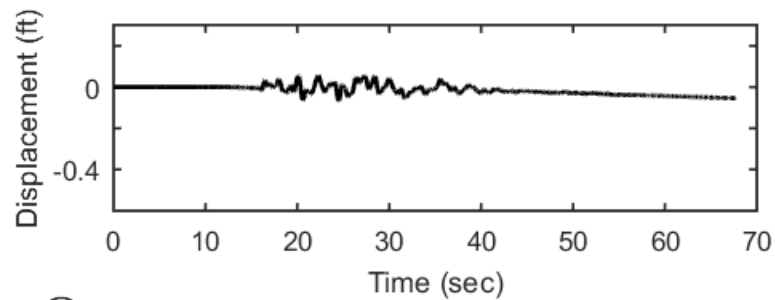
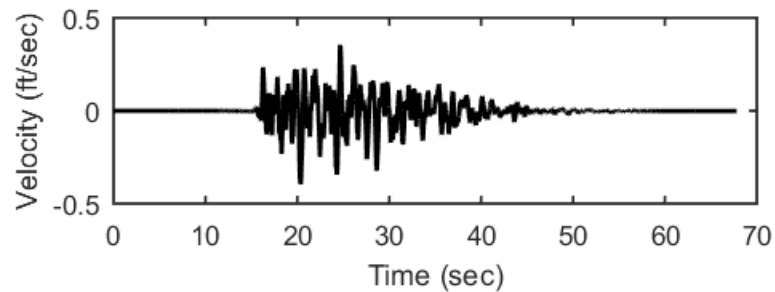
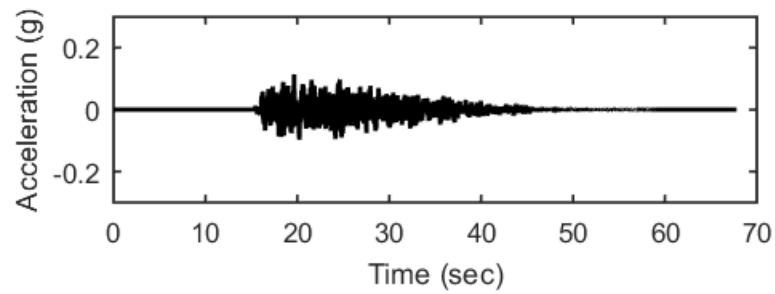
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



### Profile outputs for Motion: FEE3

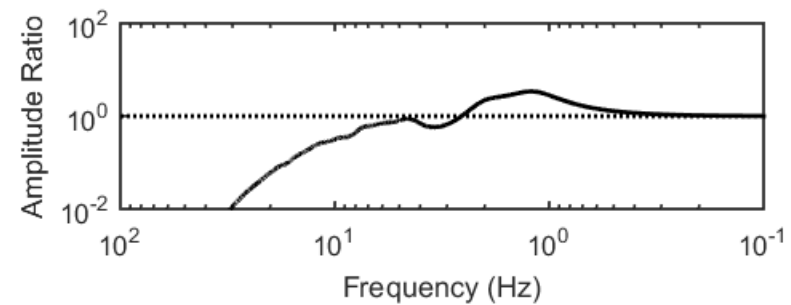
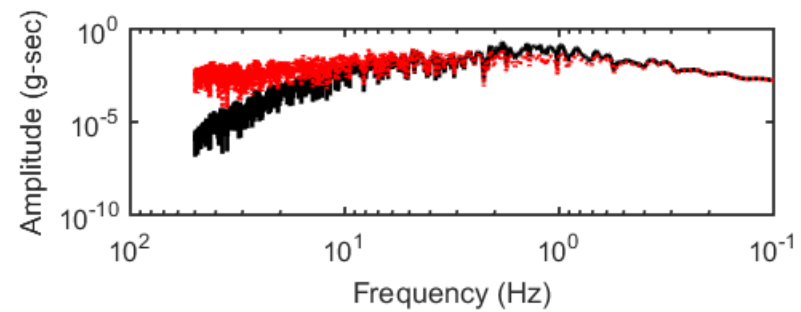
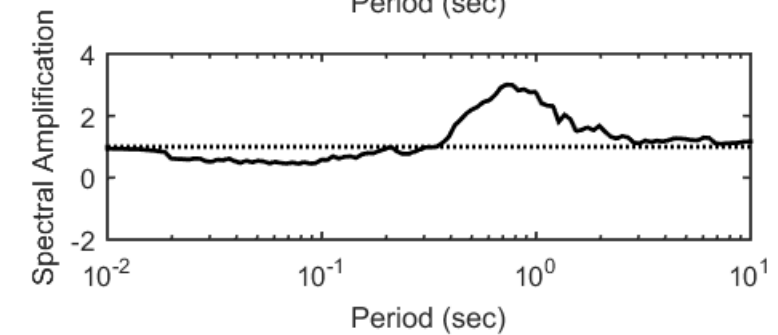
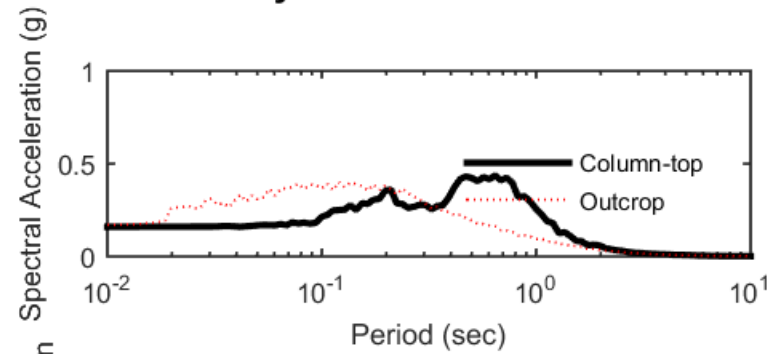
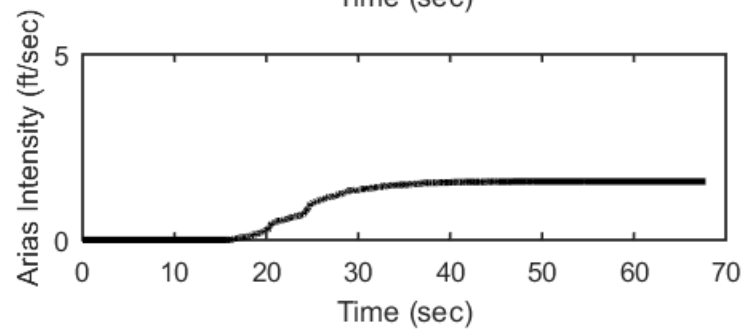
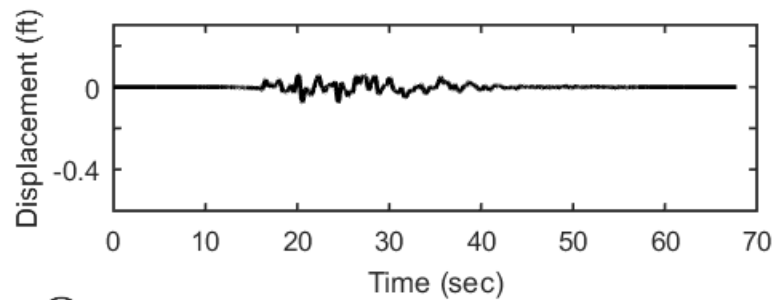
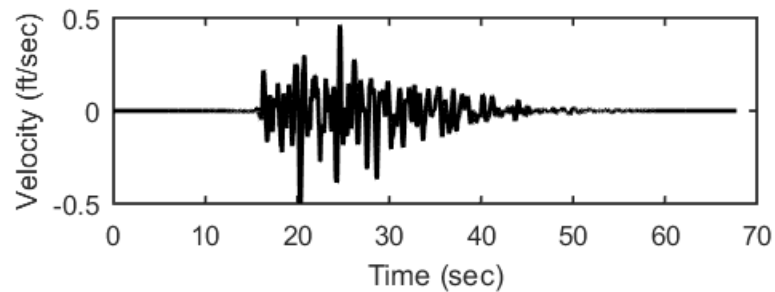
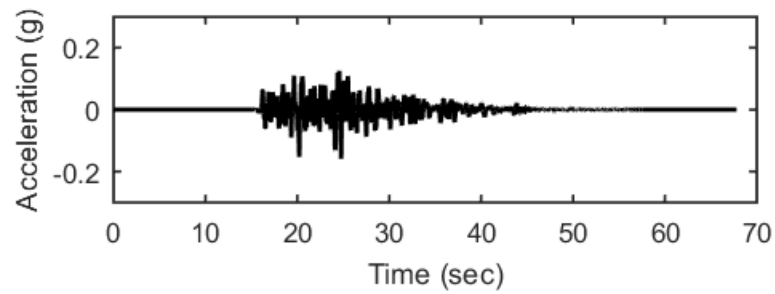


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4

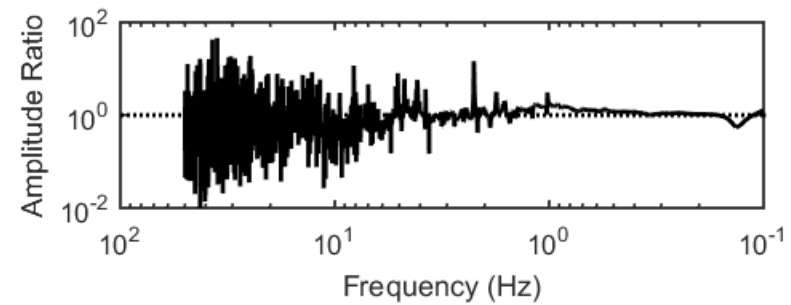
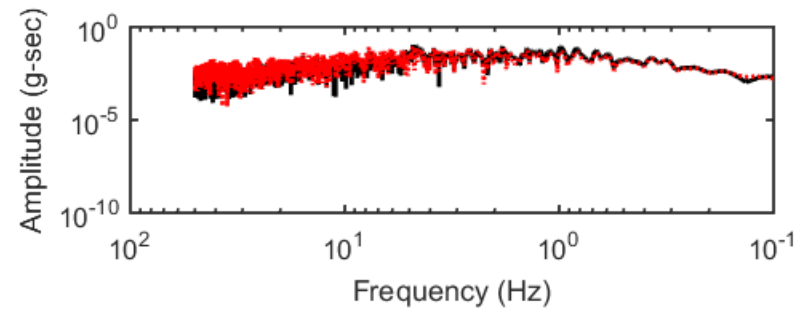
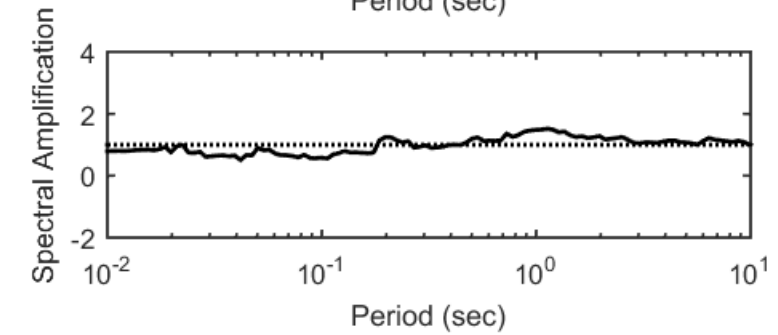
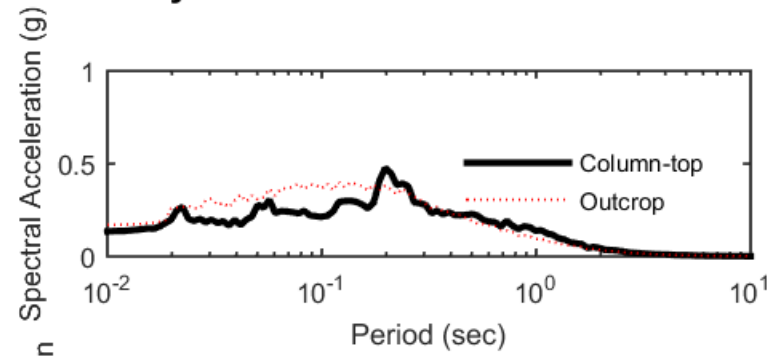
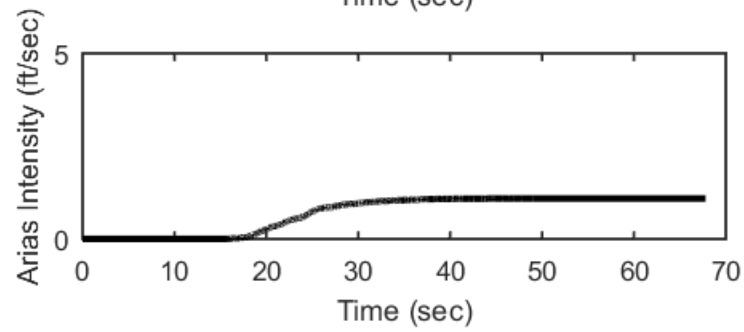
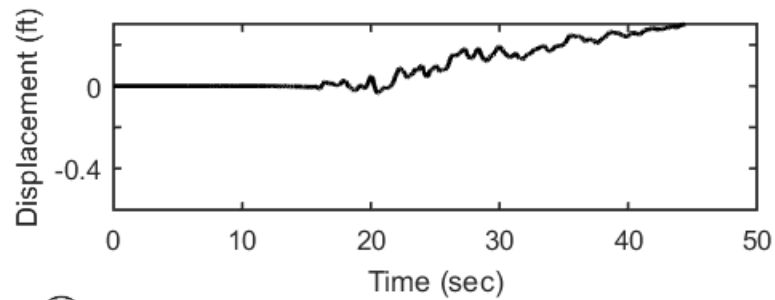
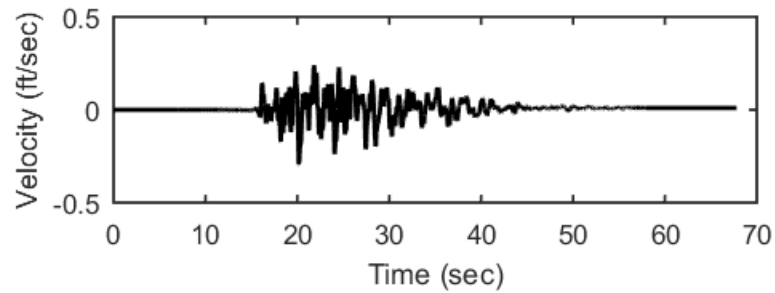
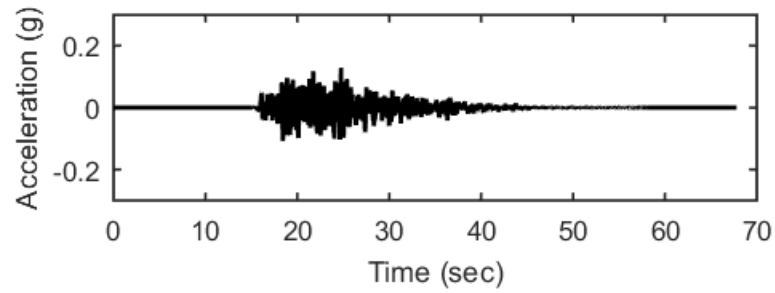




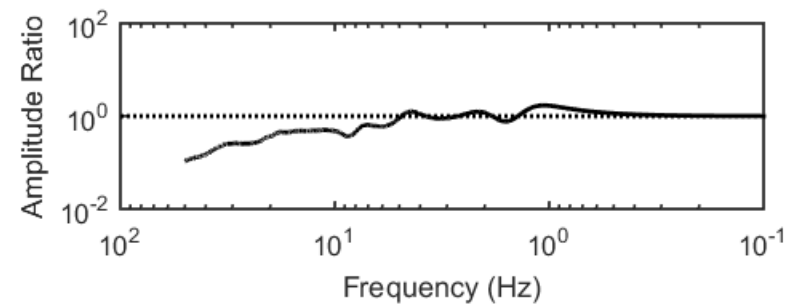
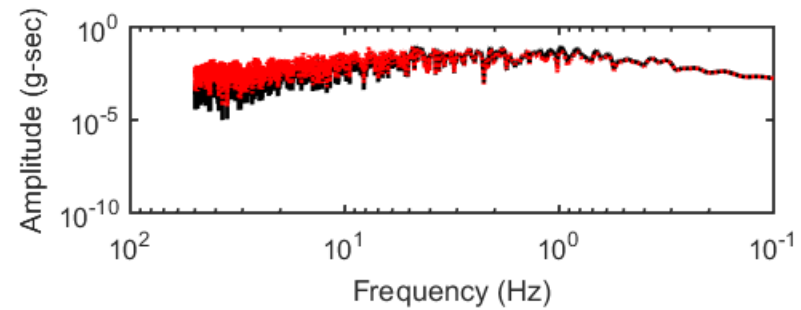
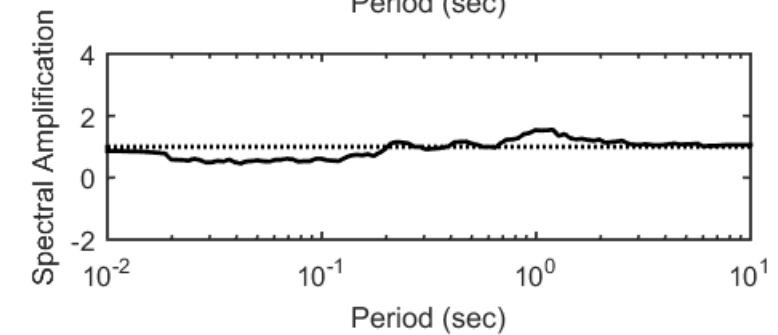
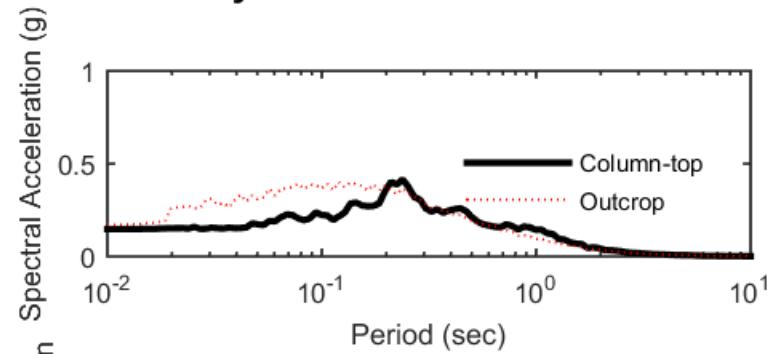
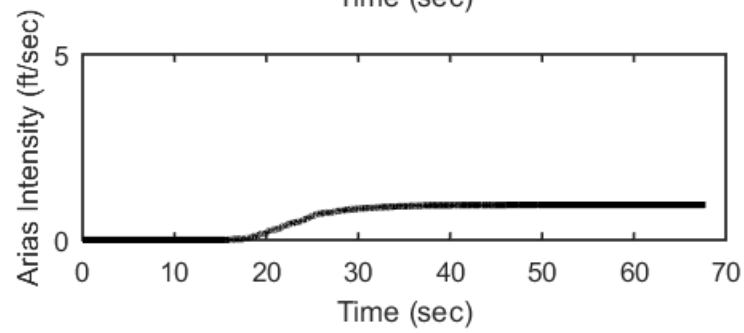
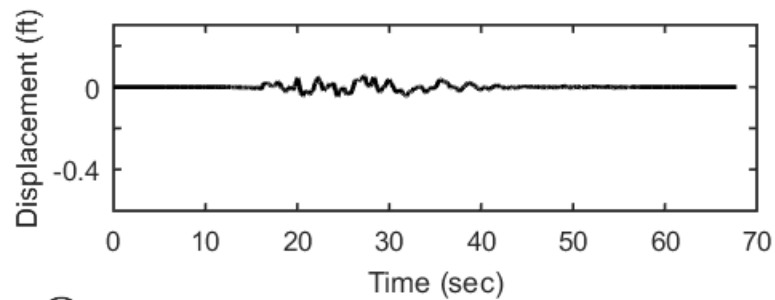
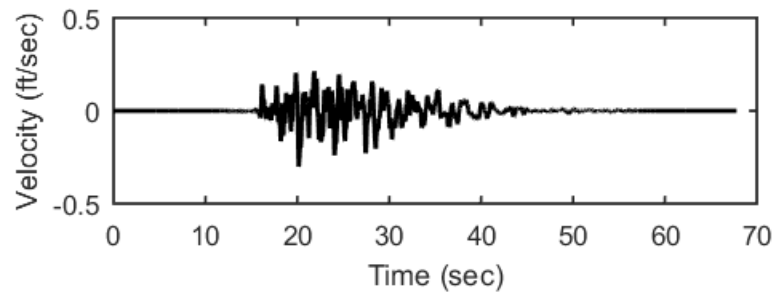
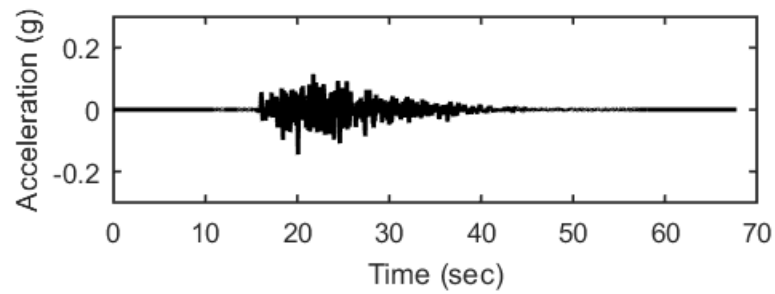
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



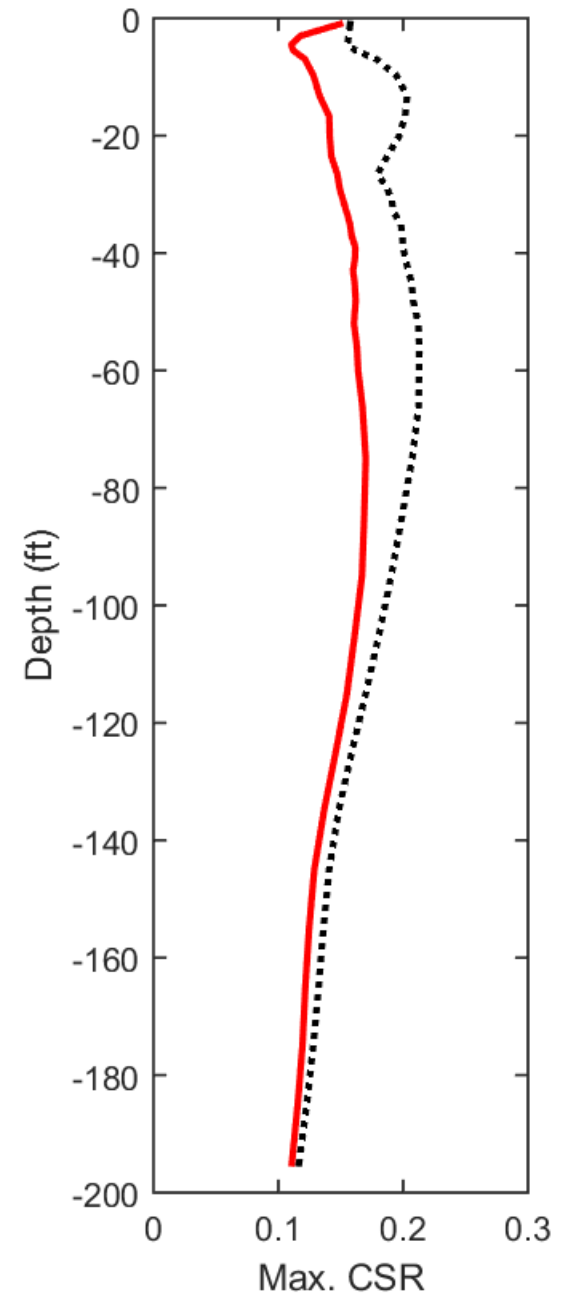
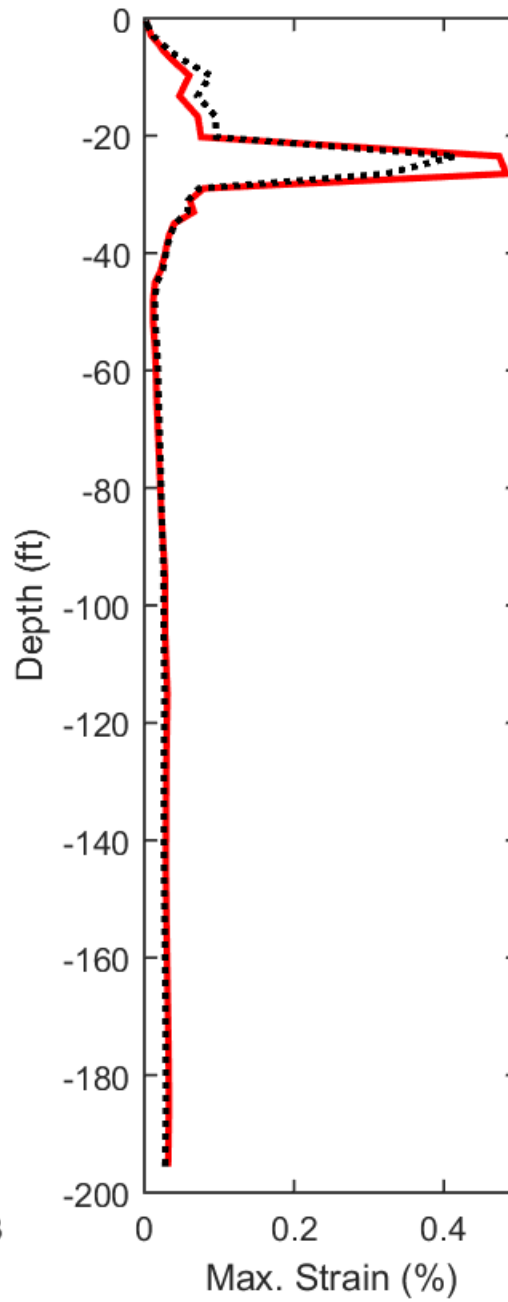
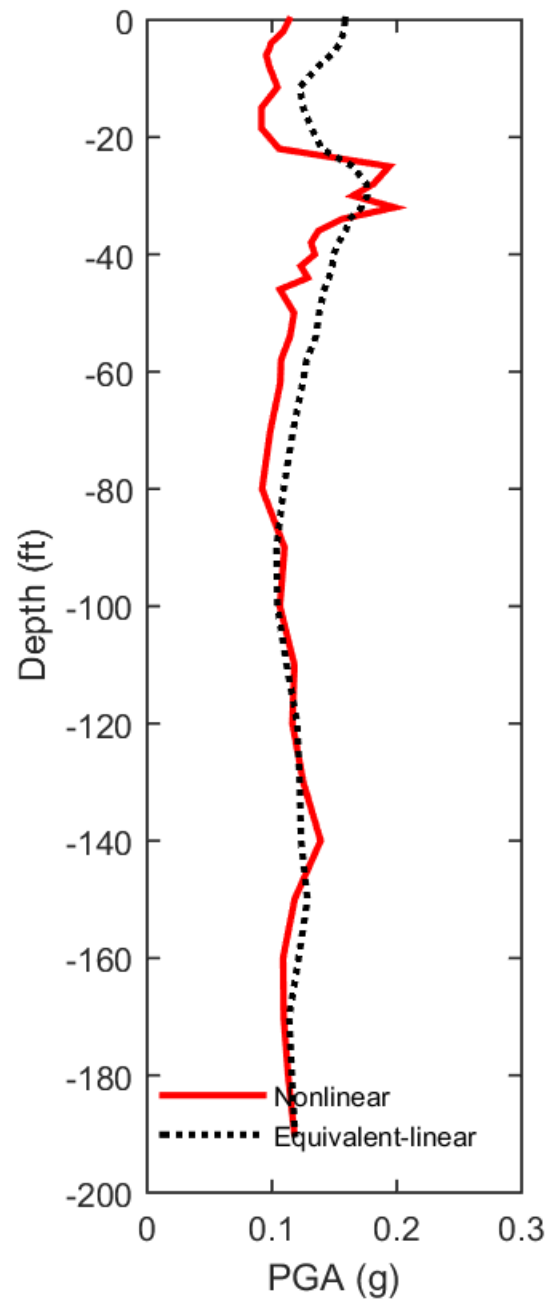
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



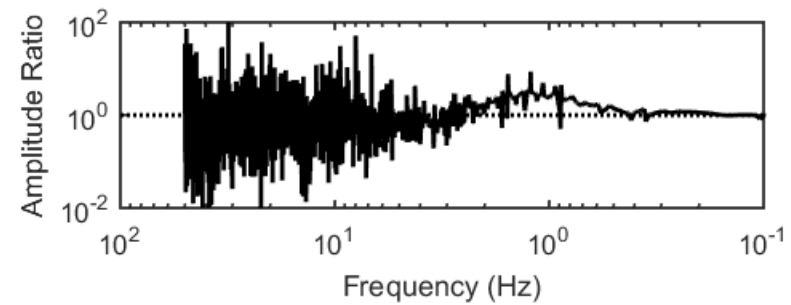
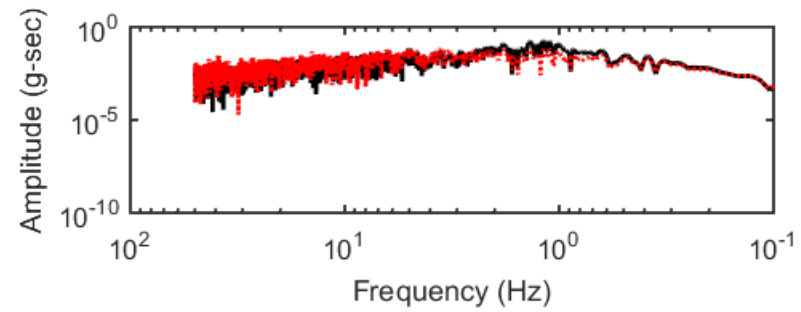
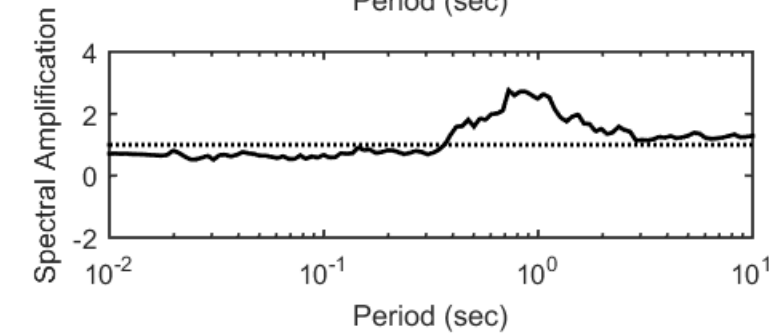
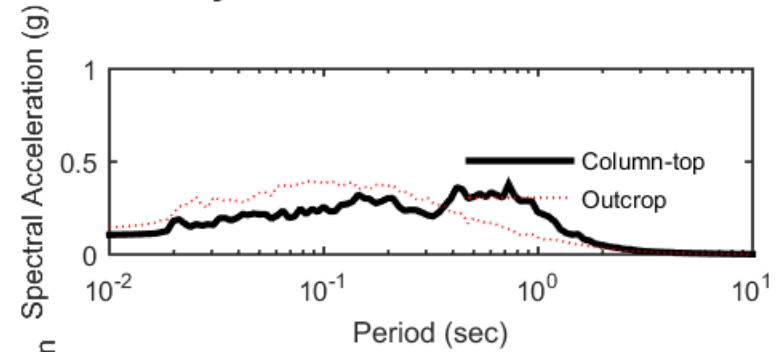
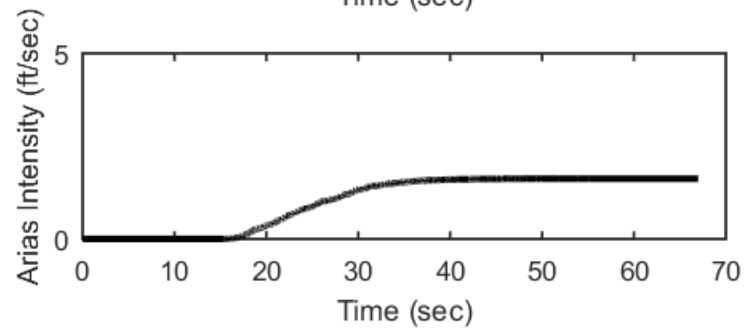
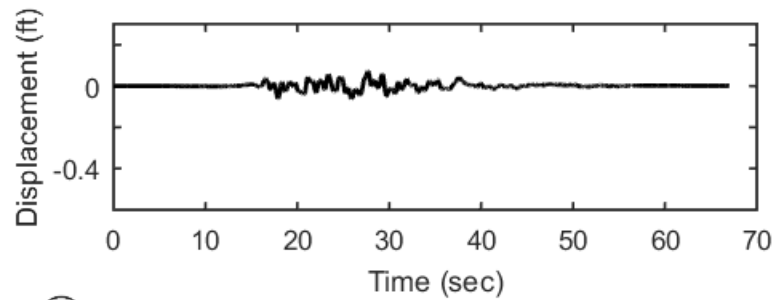
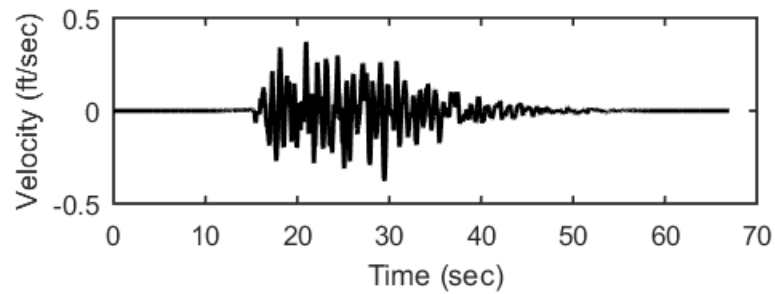
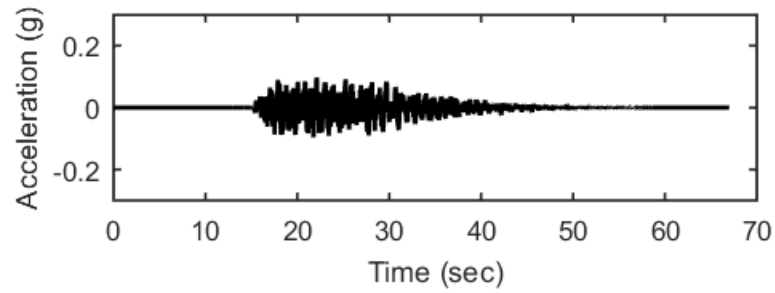
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



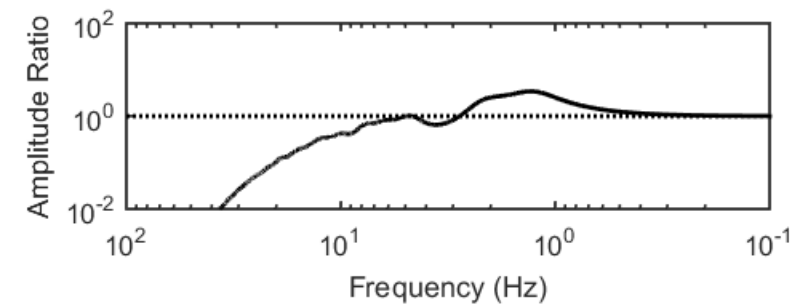
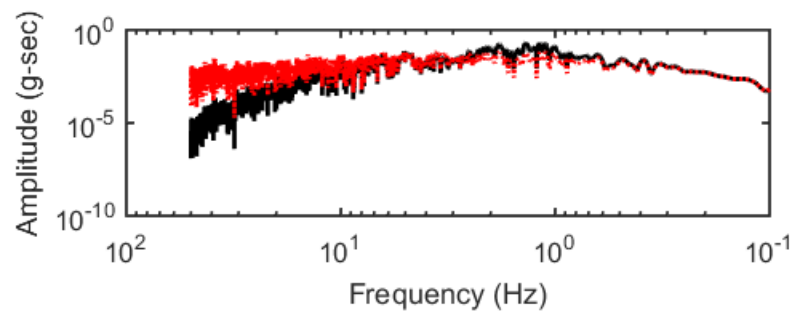
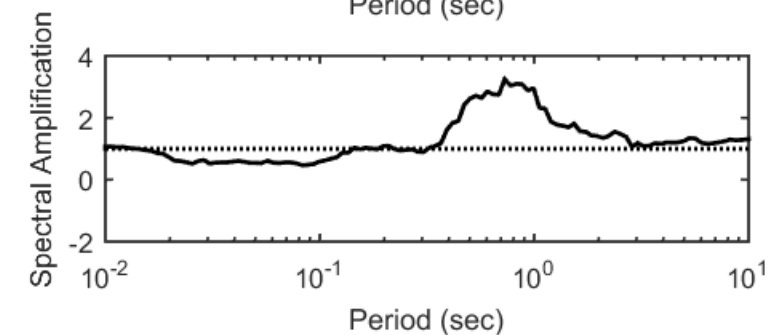
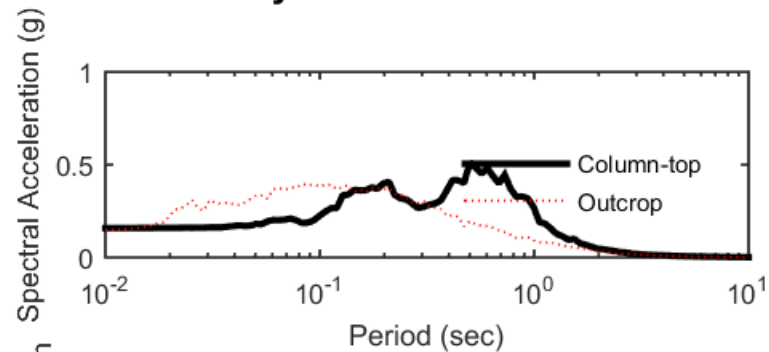
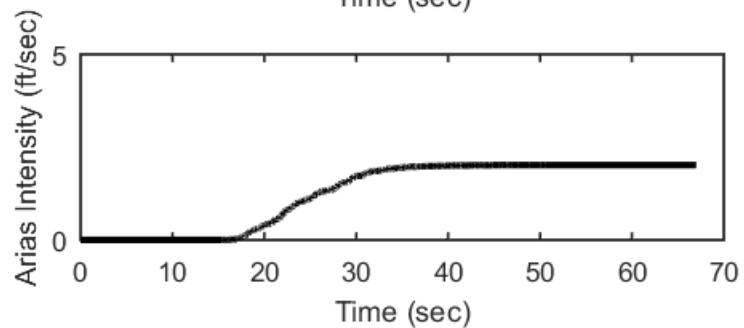
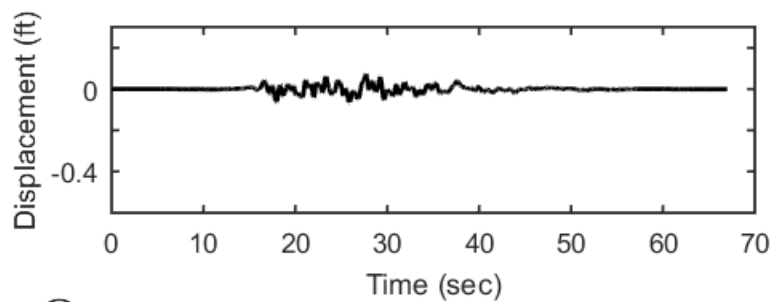
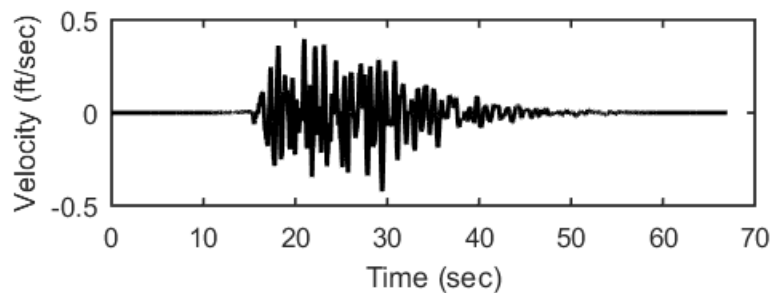
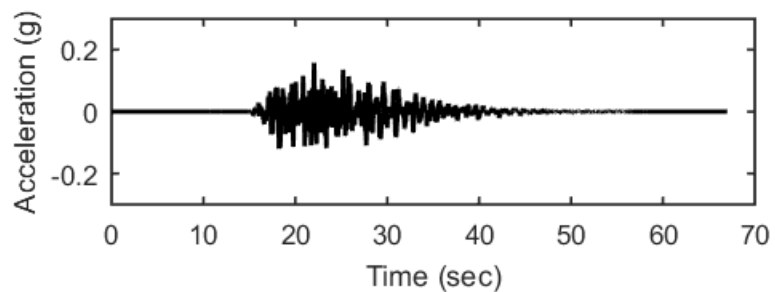
### Profile outputs for Motion: FEE4



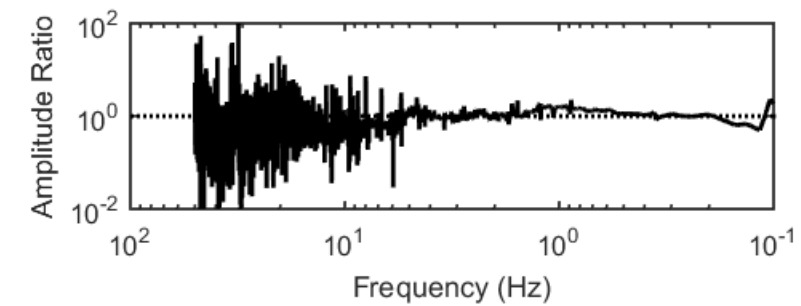
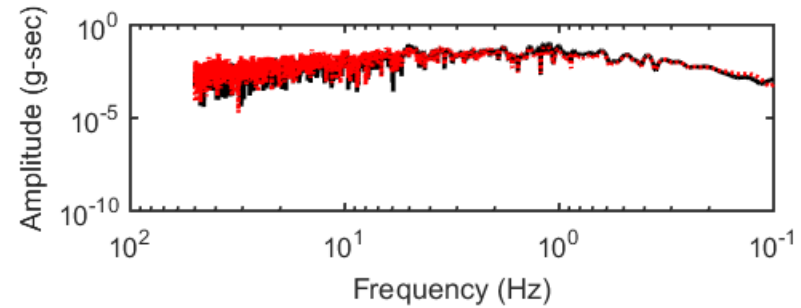
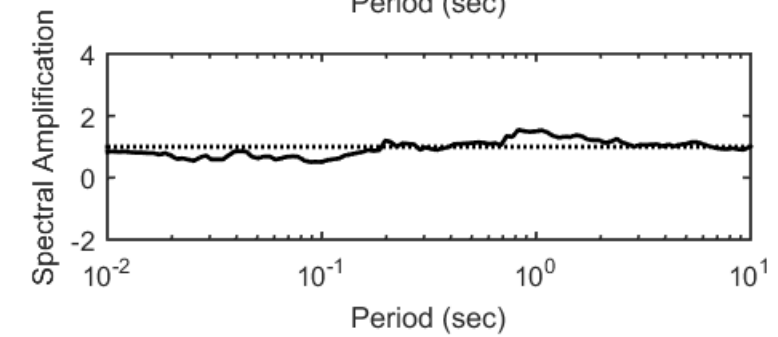
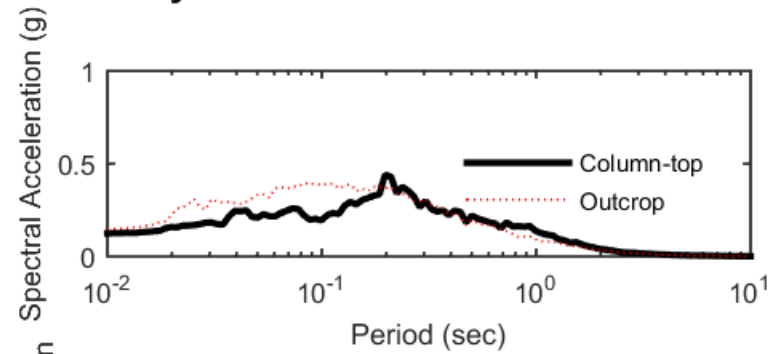
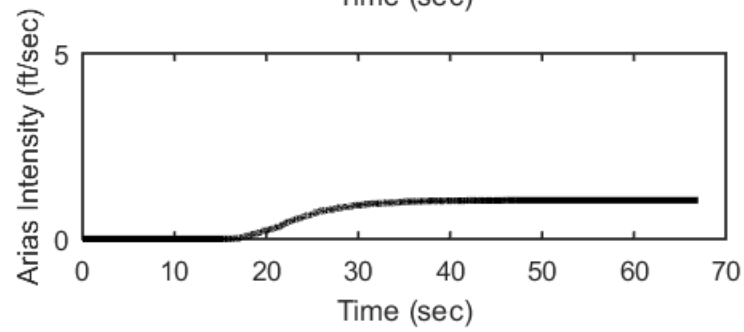
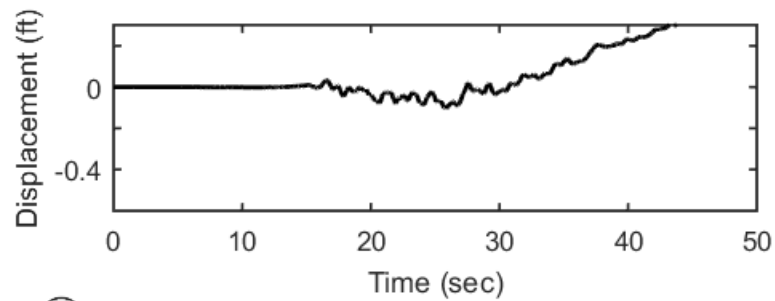
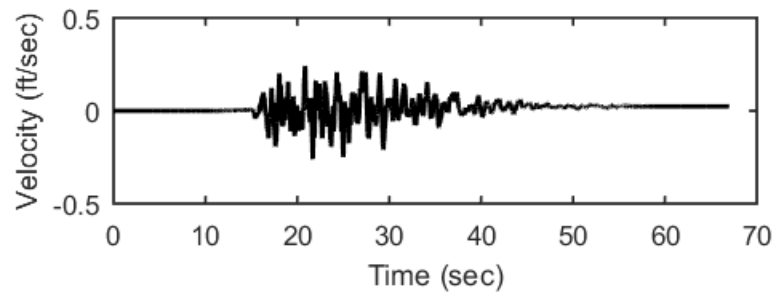
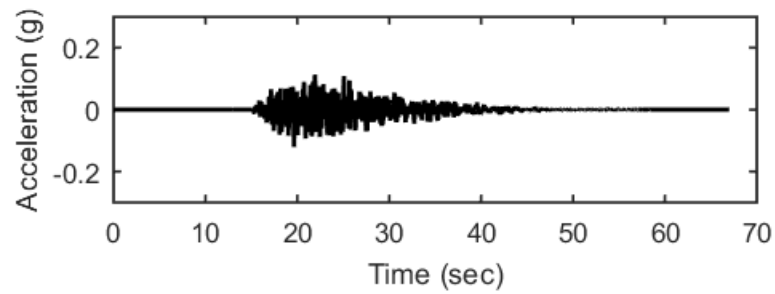
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



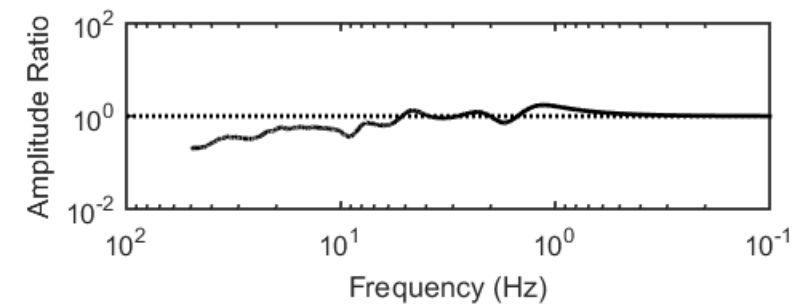
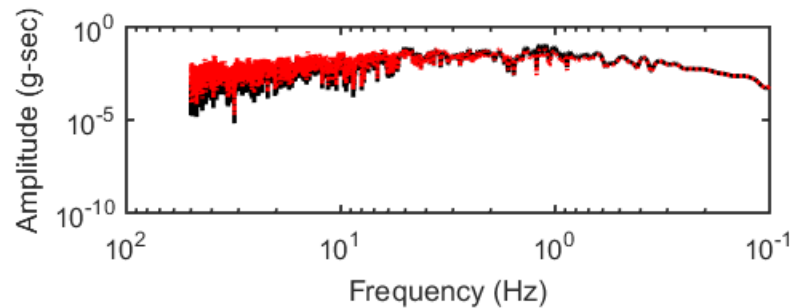
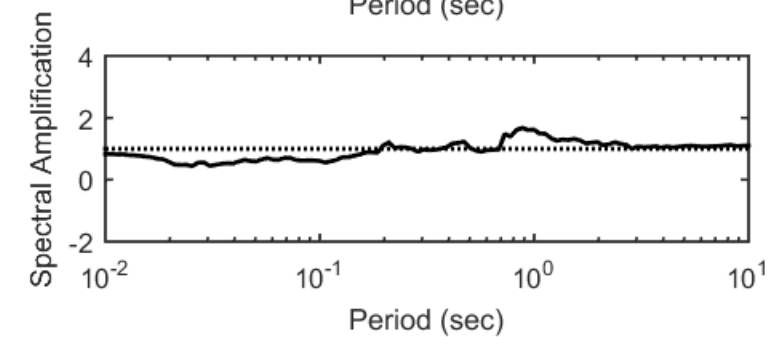
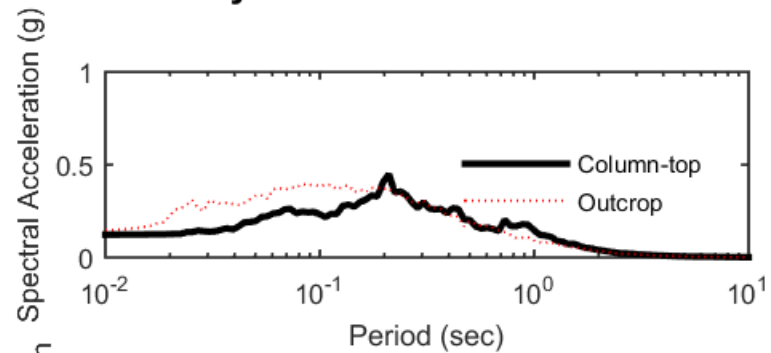
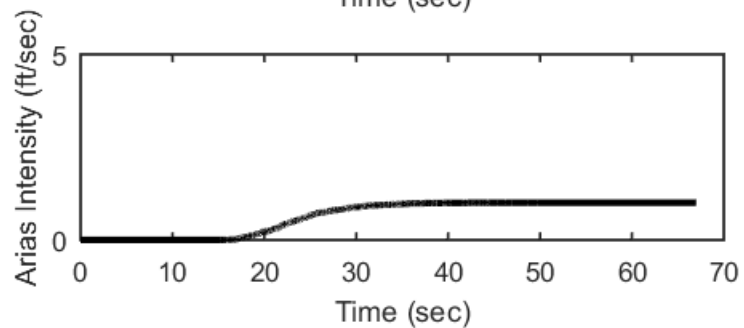
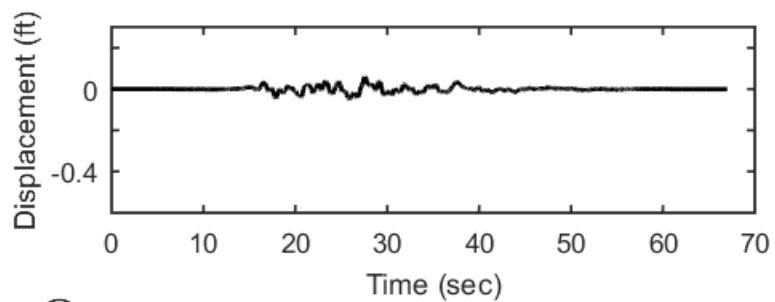
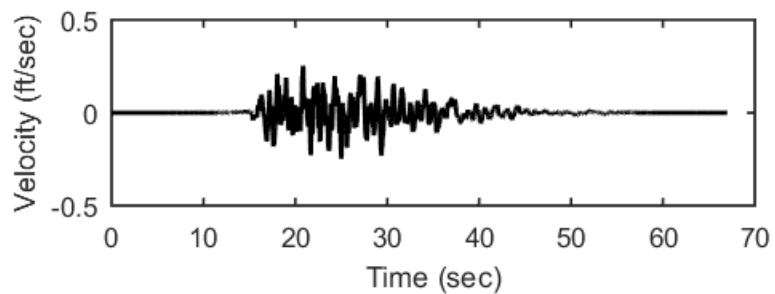
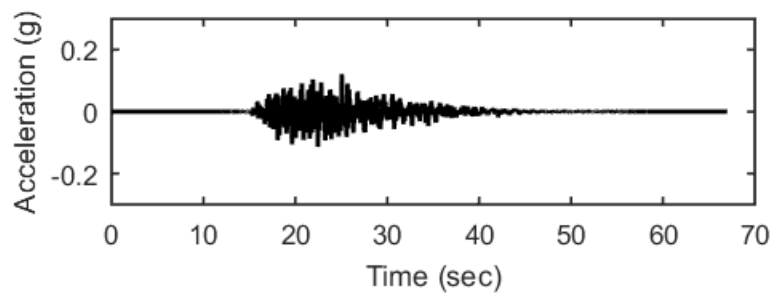
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5

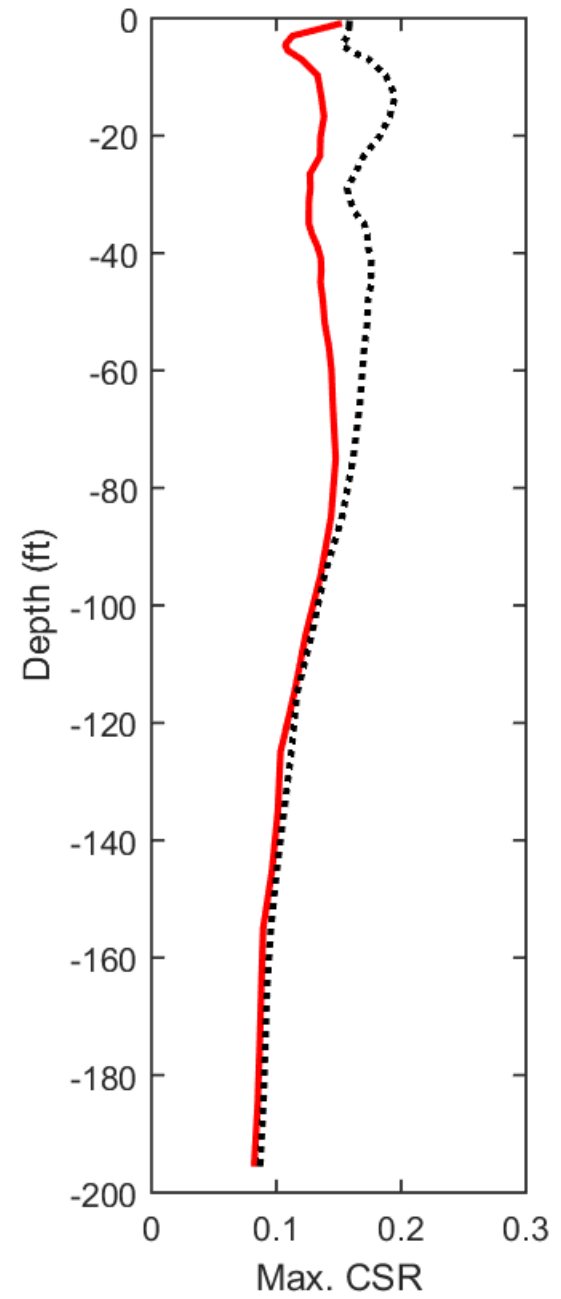
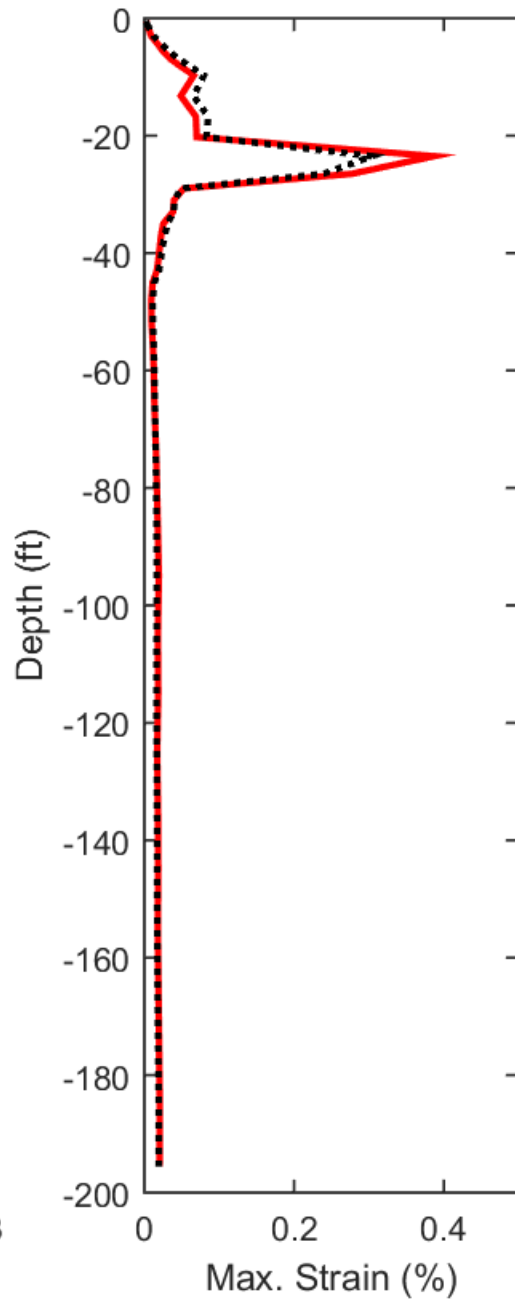
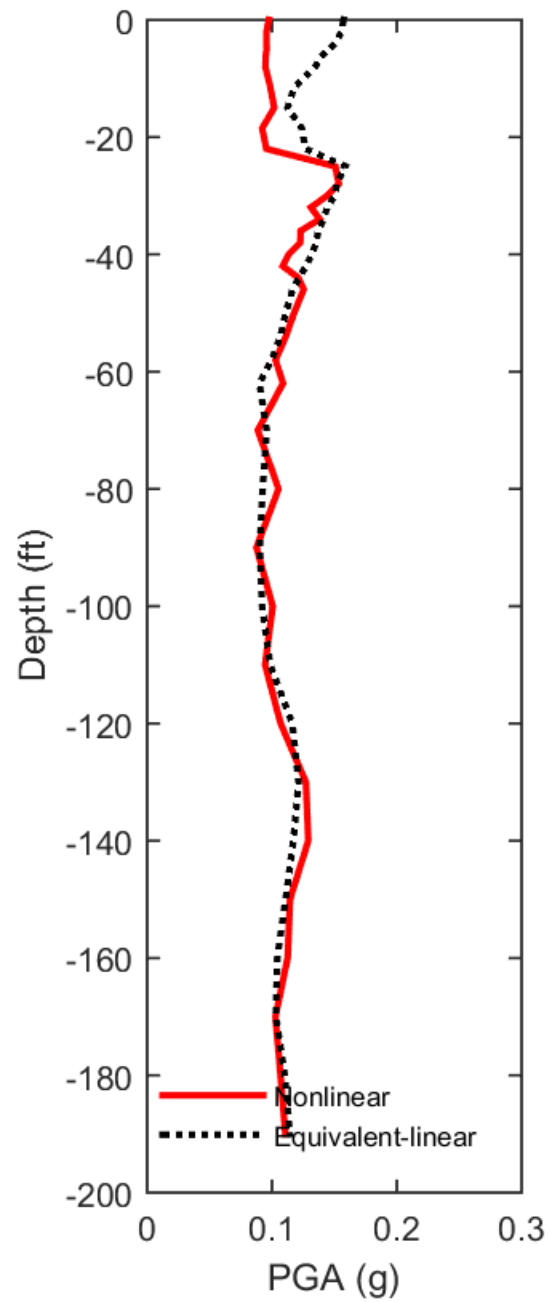


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5

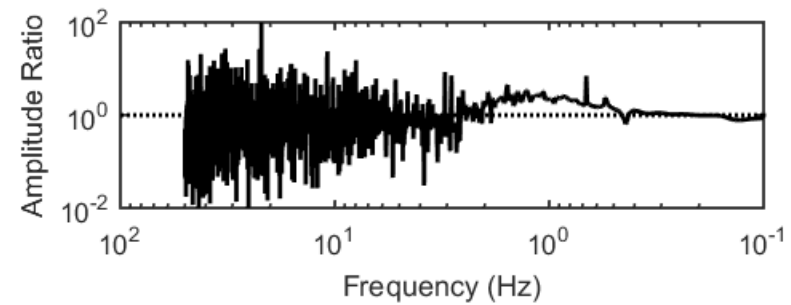
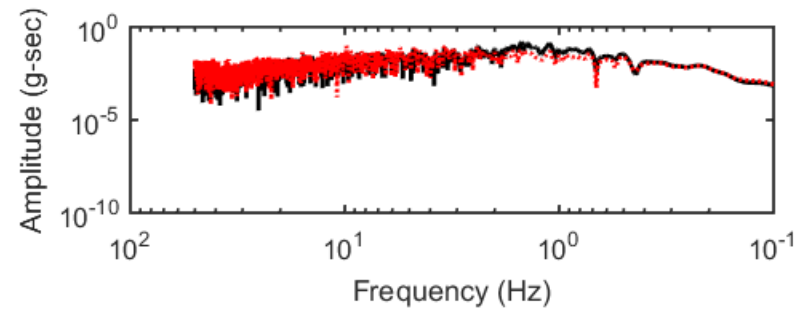
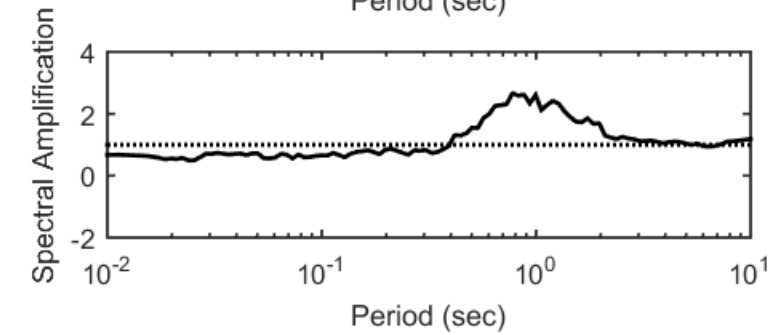
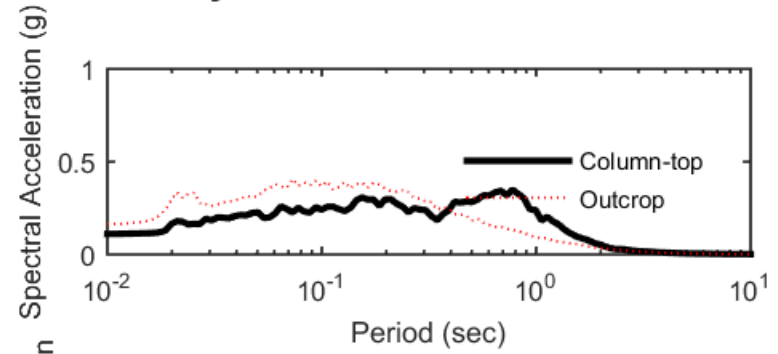
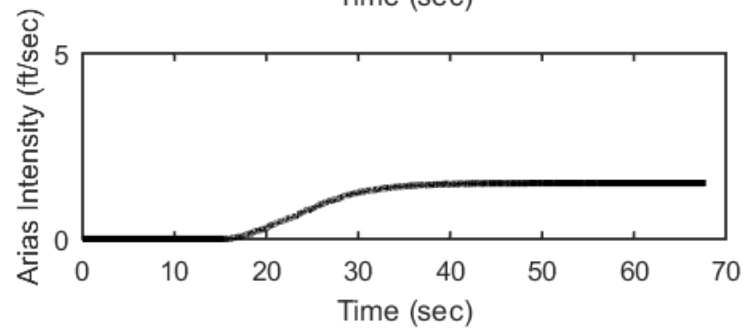
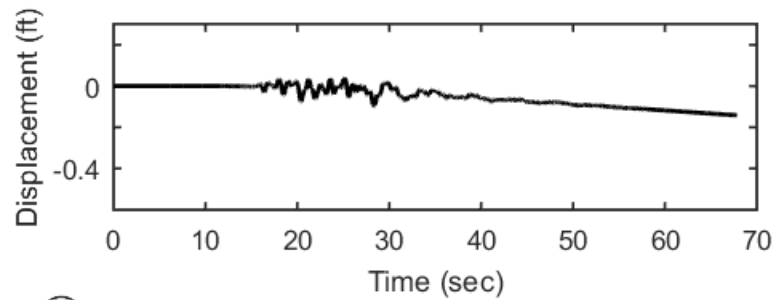
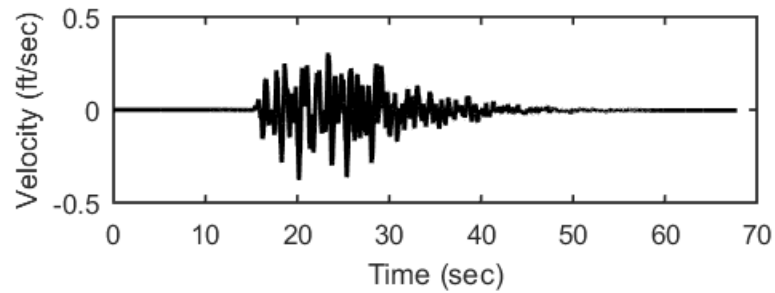
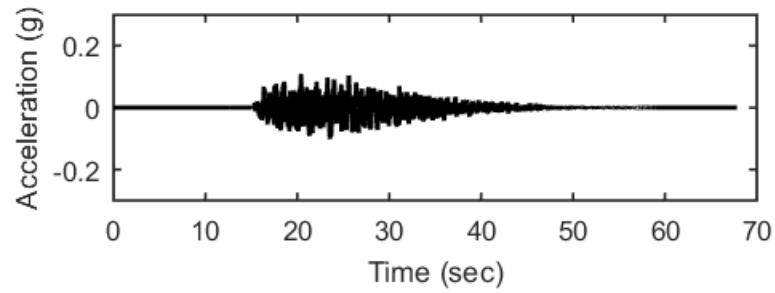




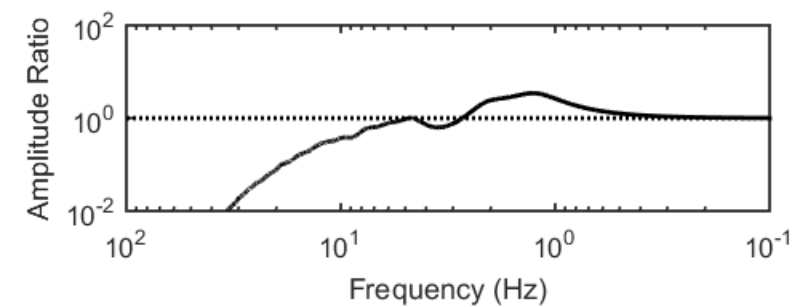
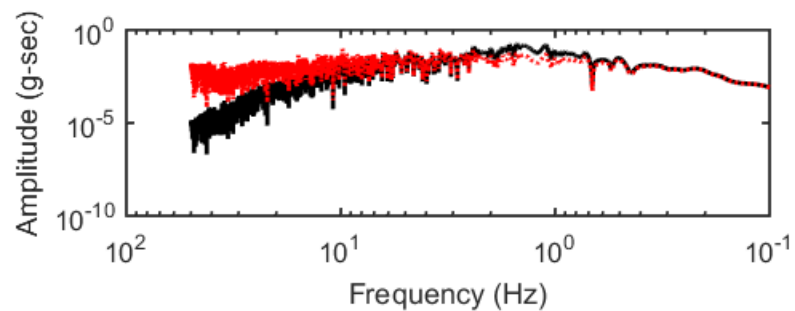
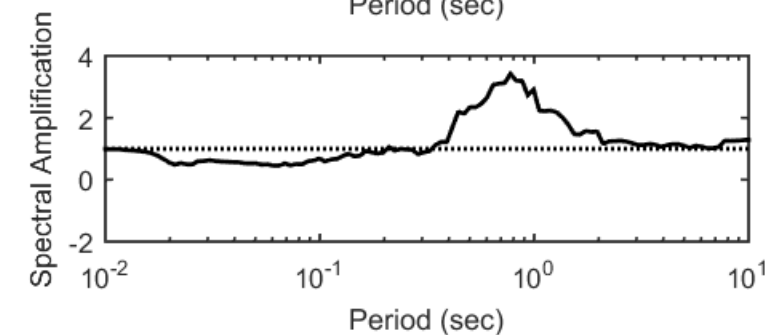
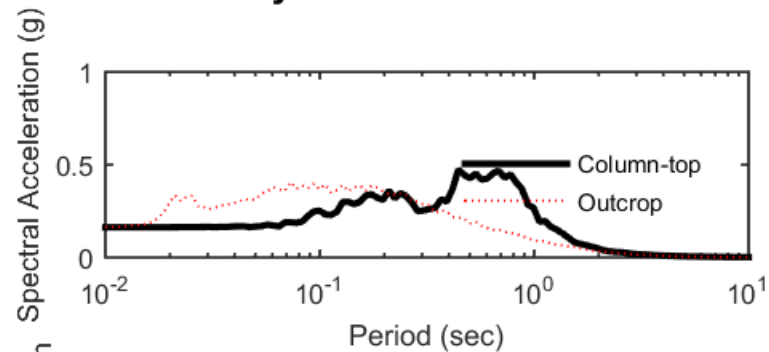
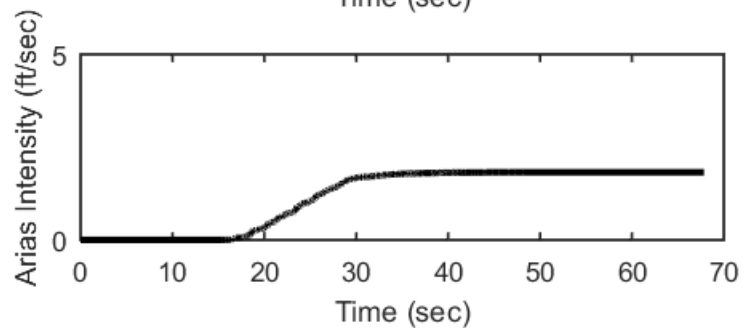
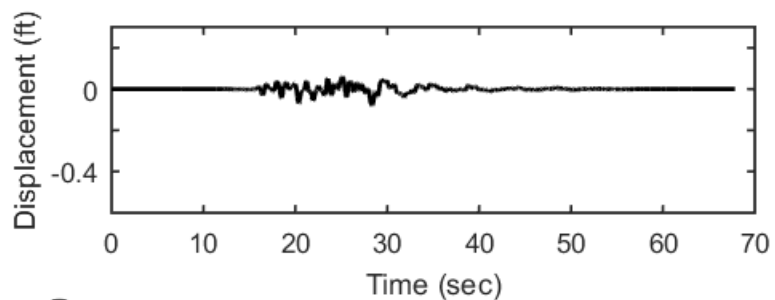
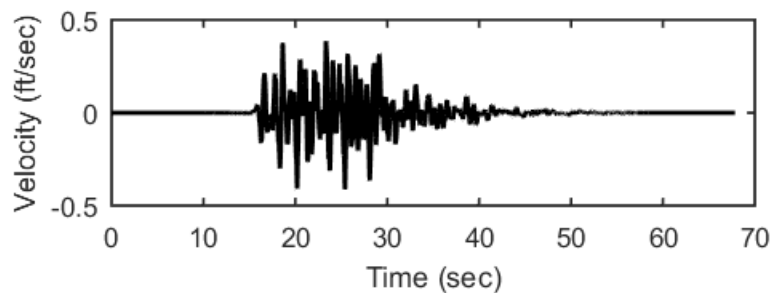
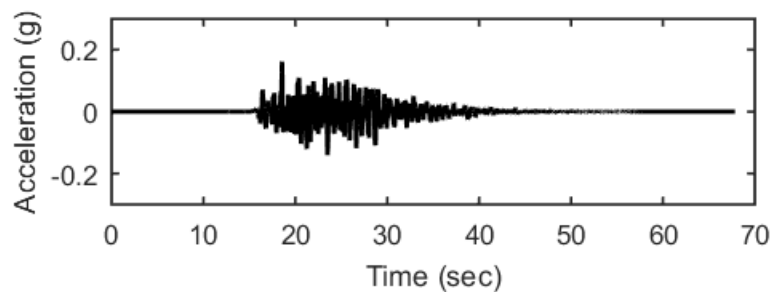
### Profile outputs for Motion: FEE5



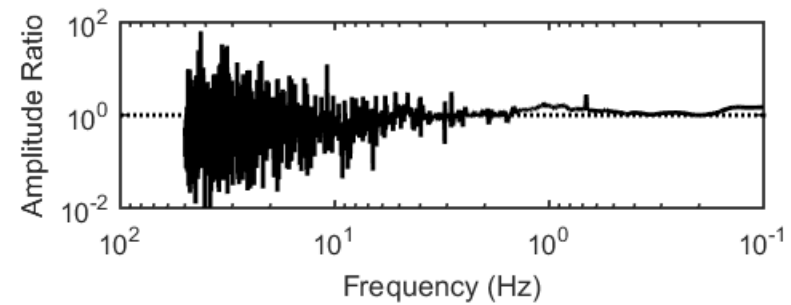
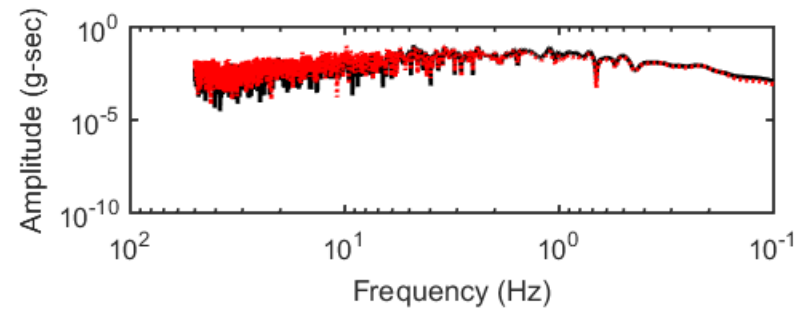
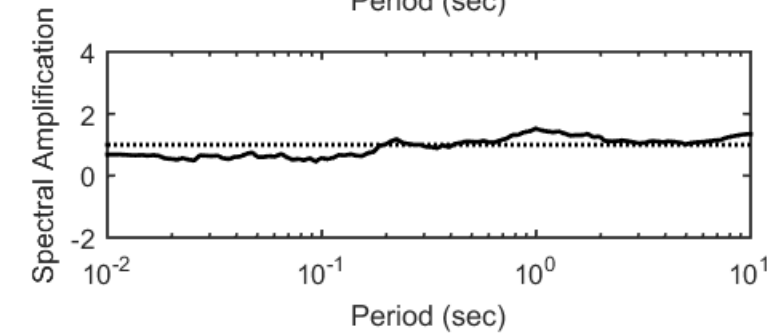
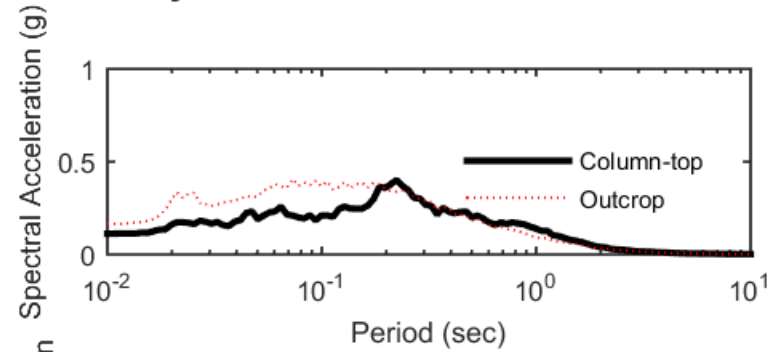
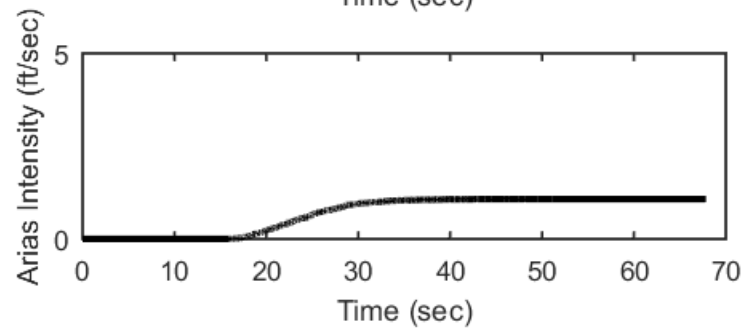
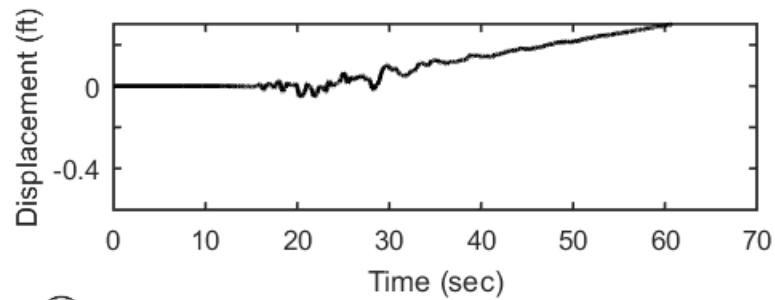
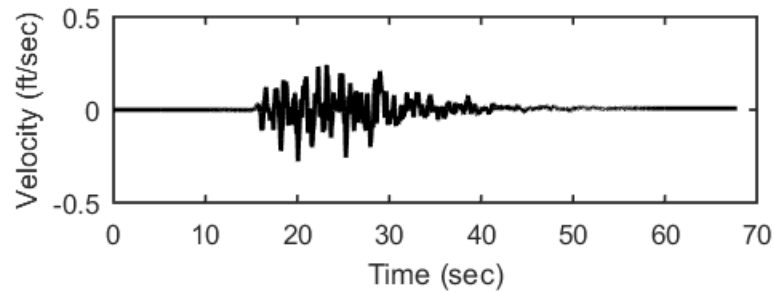
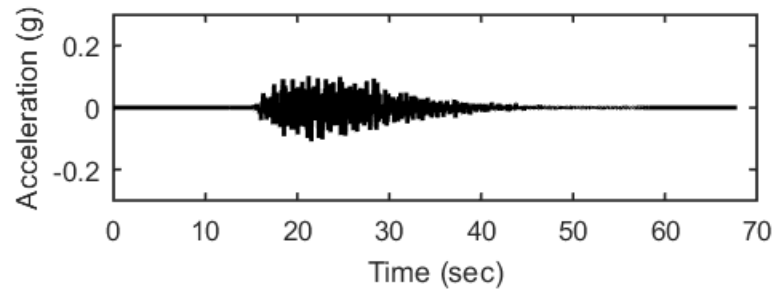
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



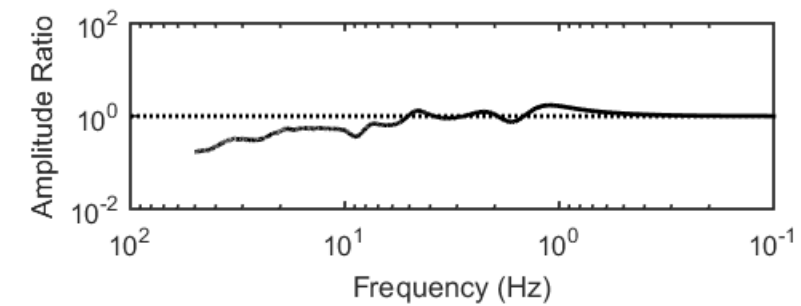
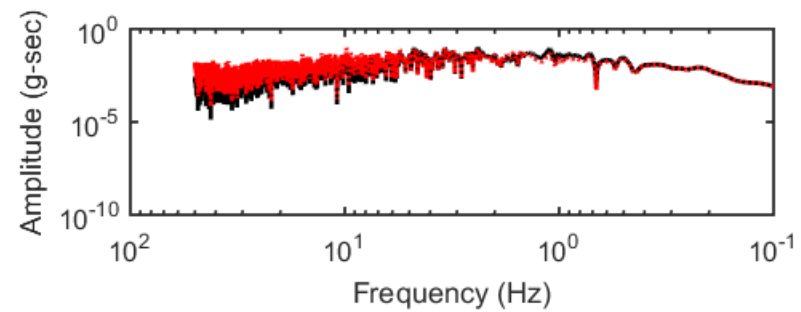
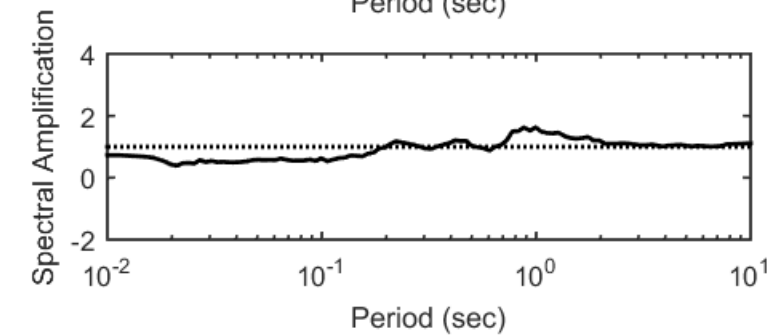
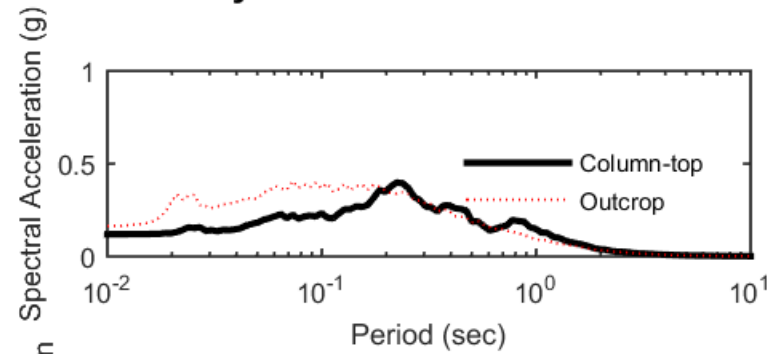
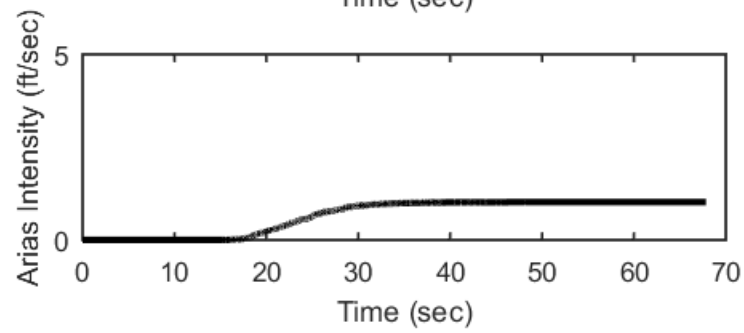
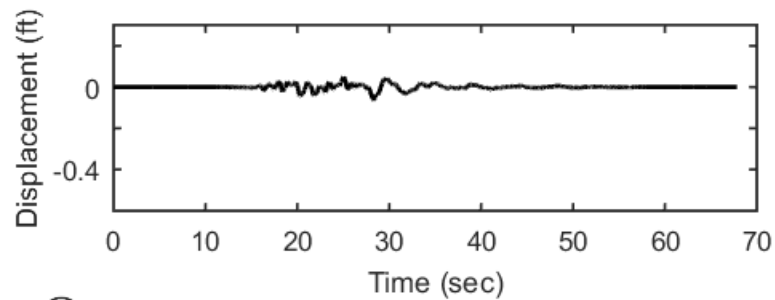
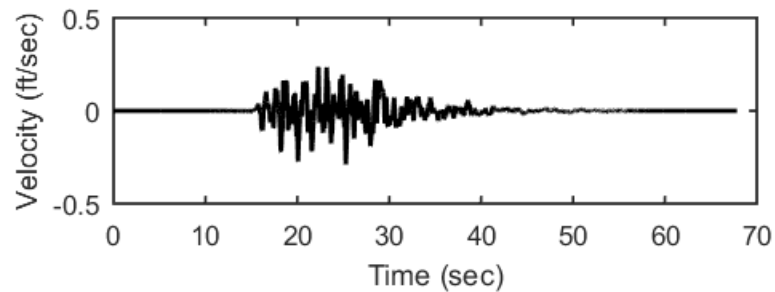
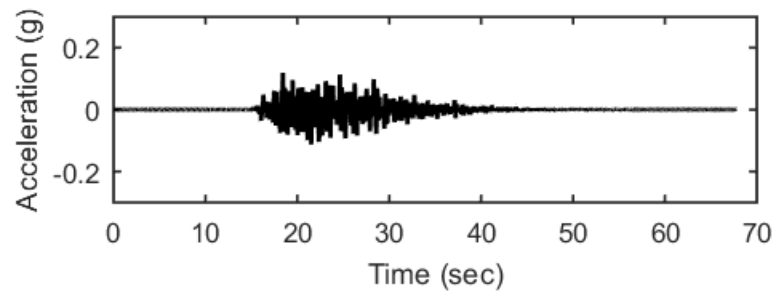
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



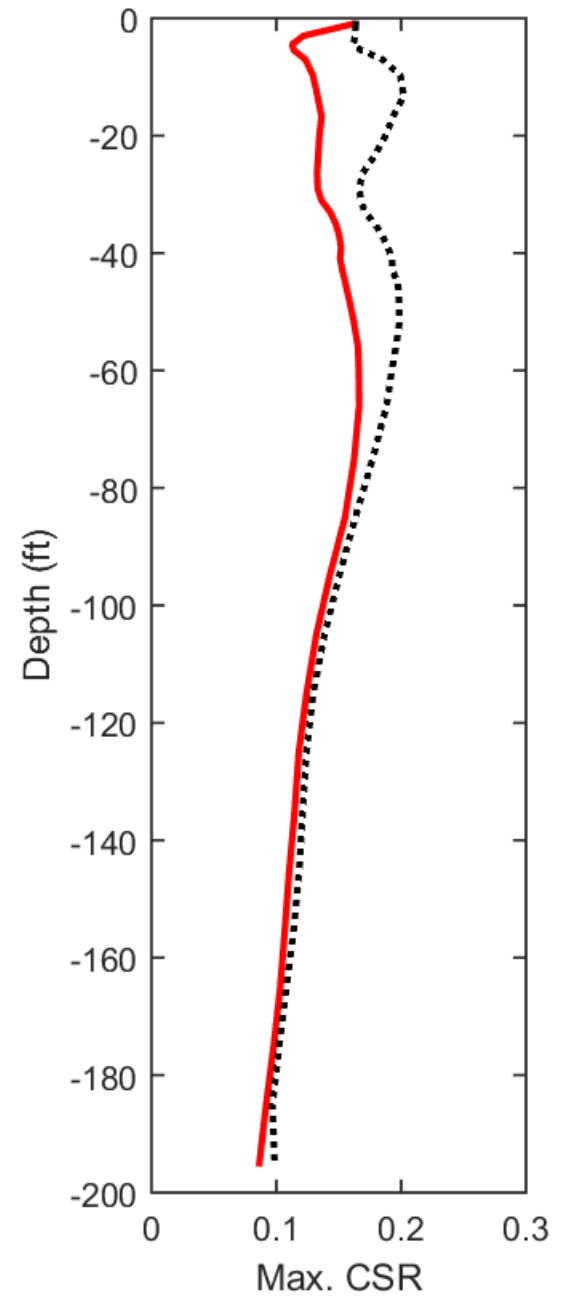
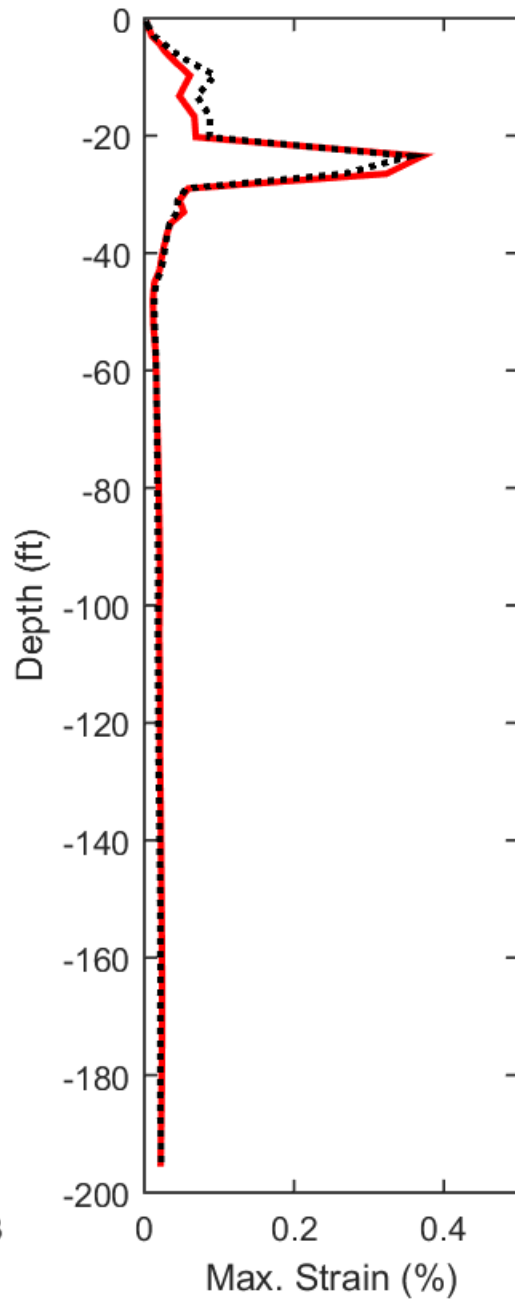
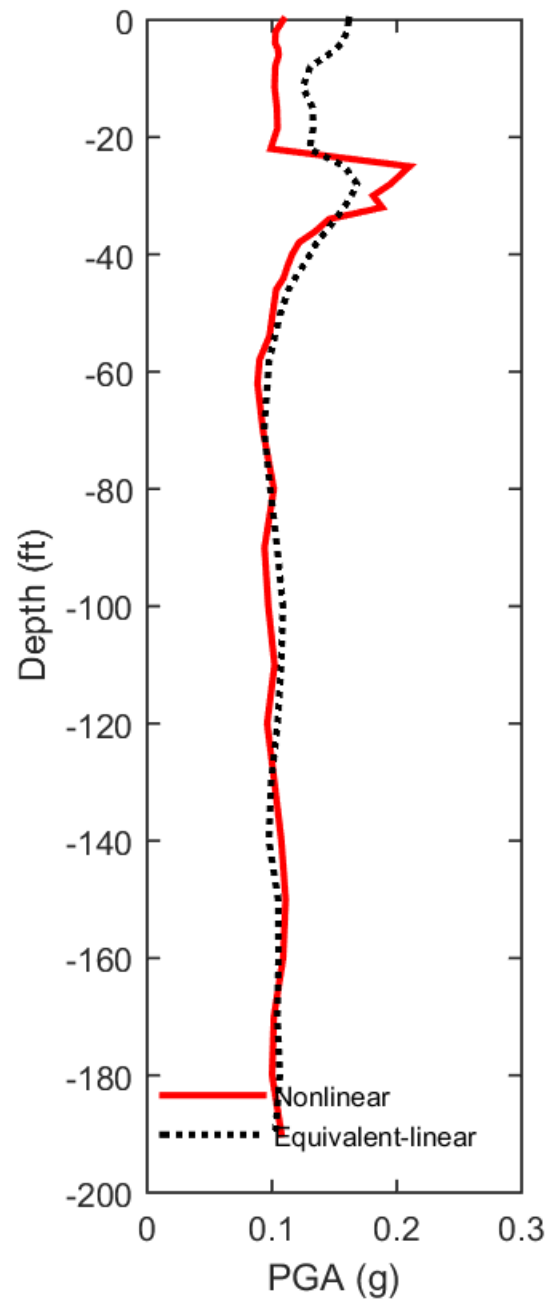
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



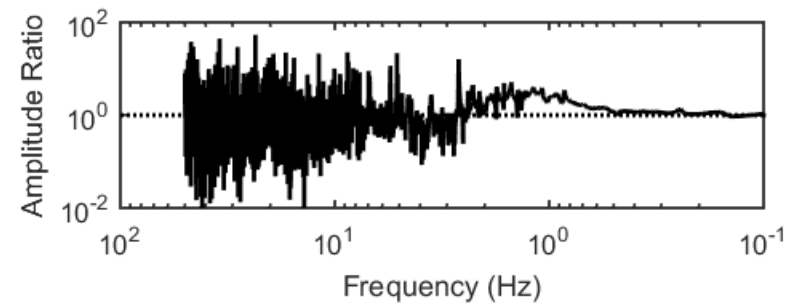
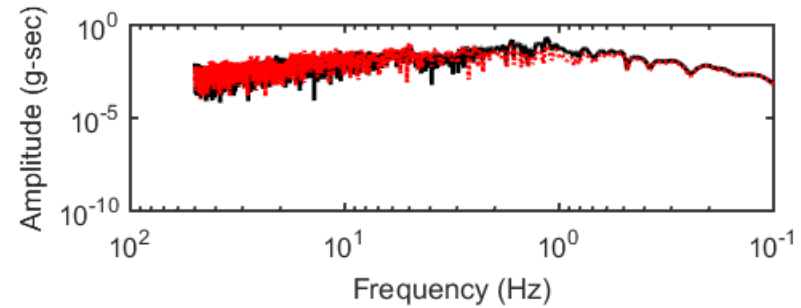
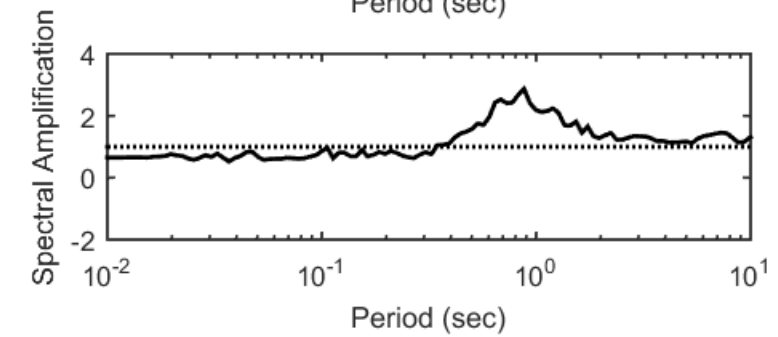
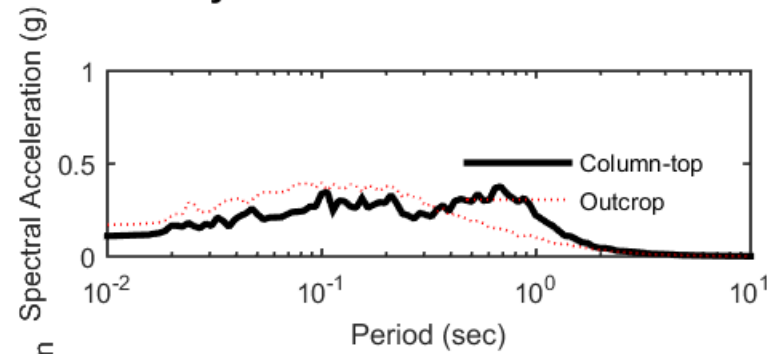
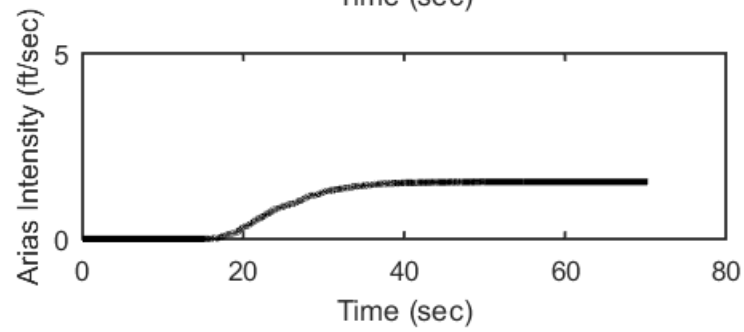
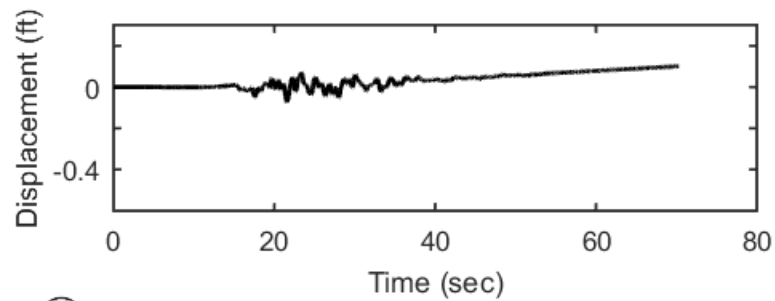
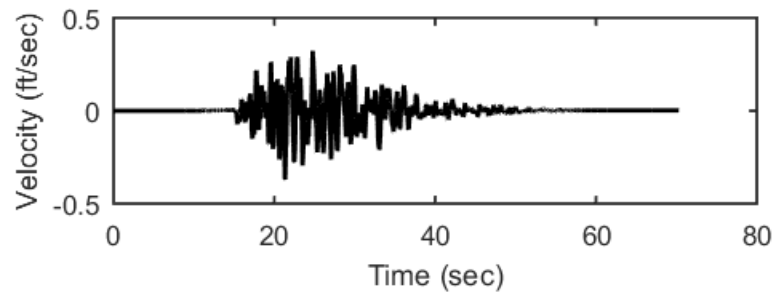
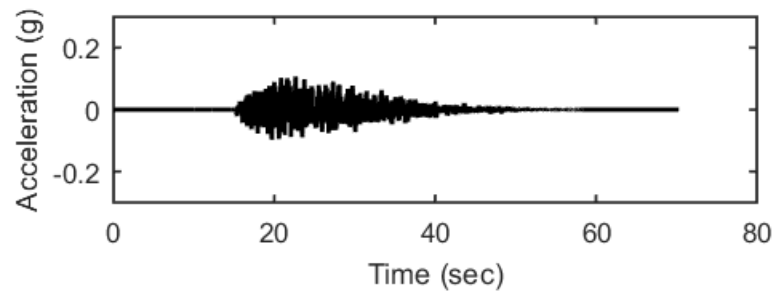
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



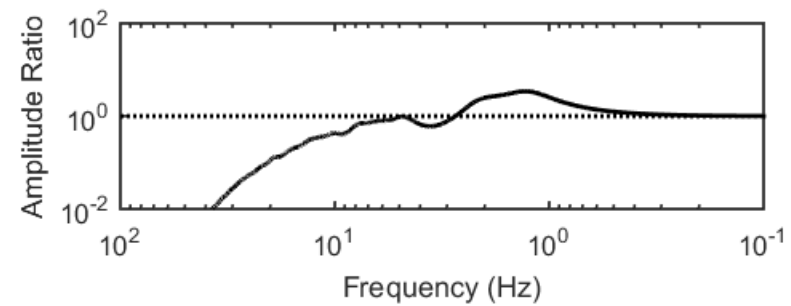
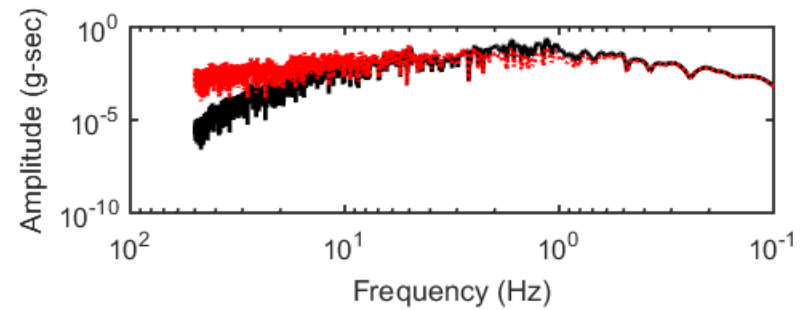
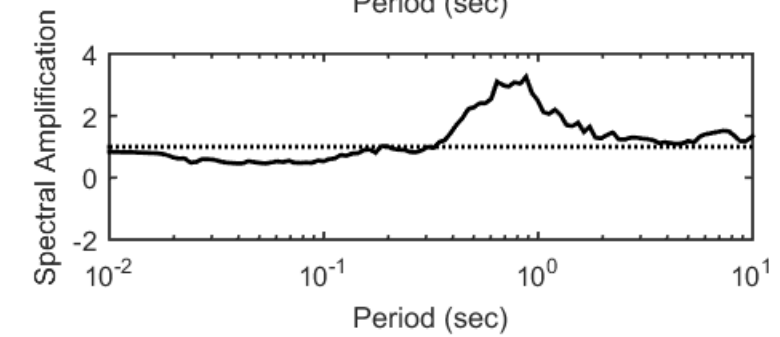
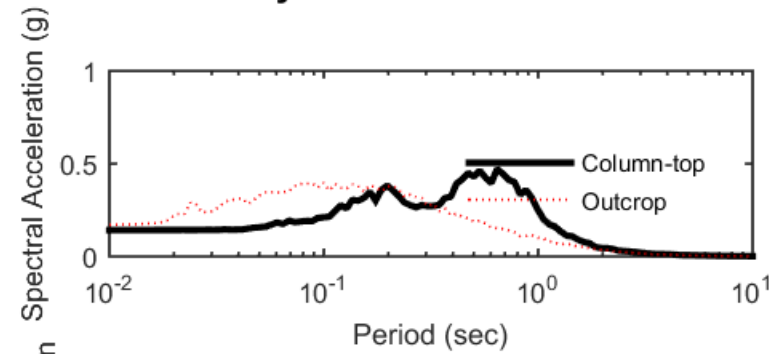
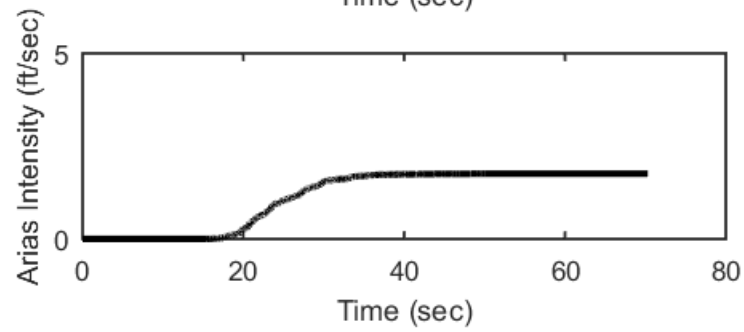
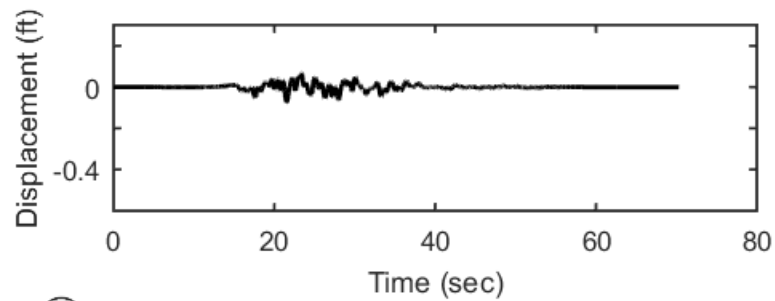
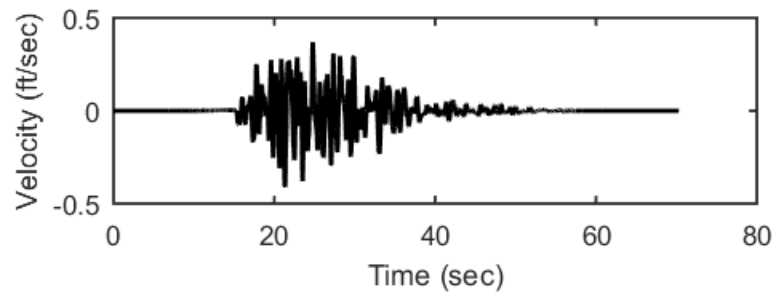
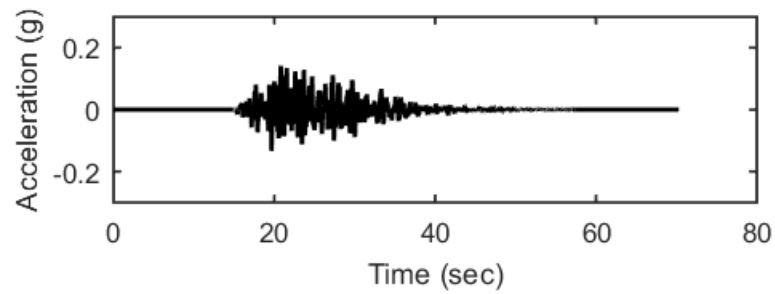
### Profile outputs for Motion: FEE6



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7

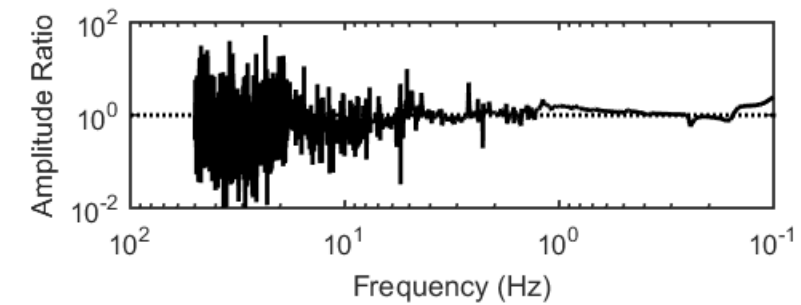
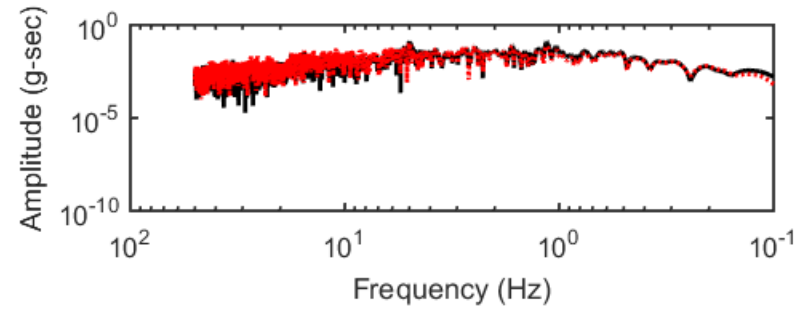
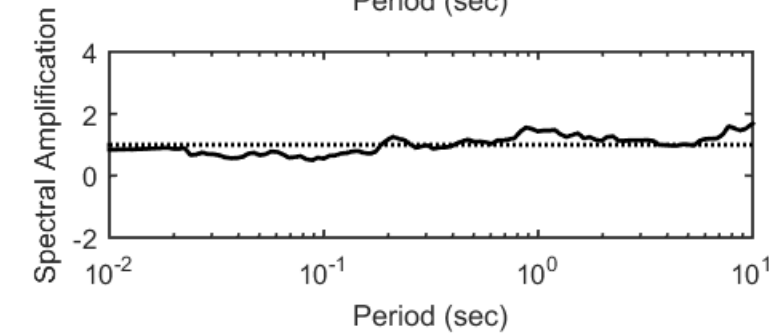
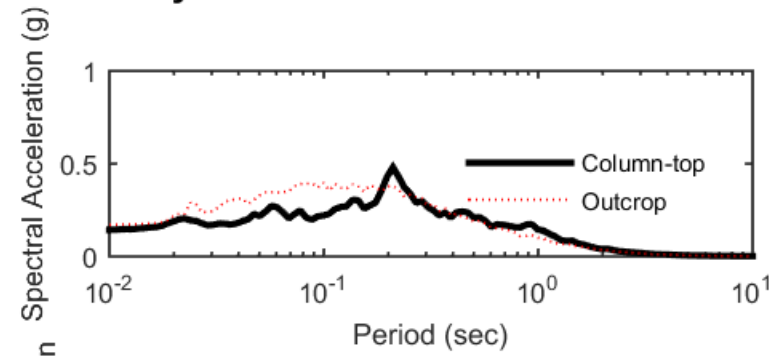
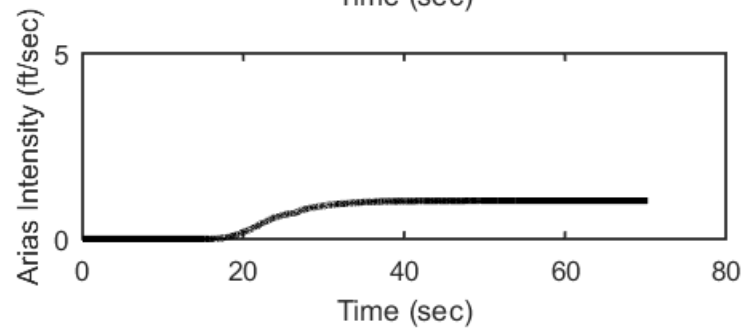
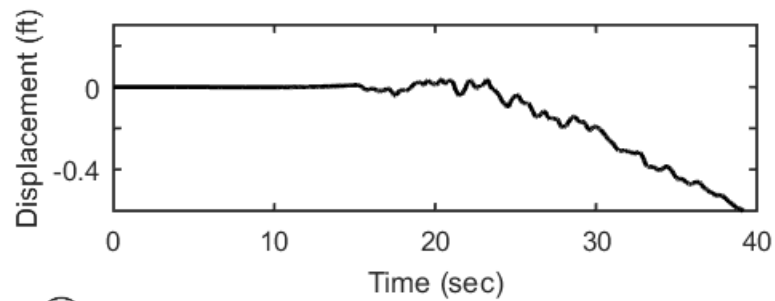
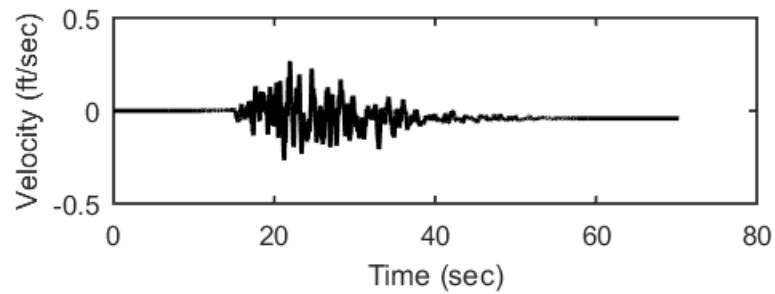
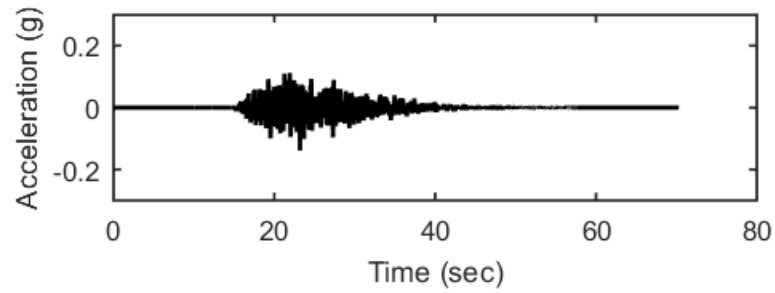


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7

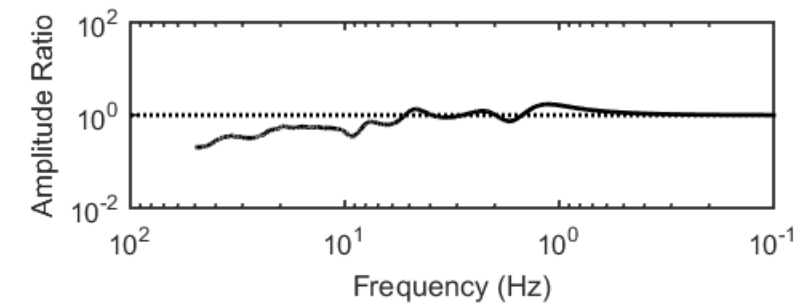
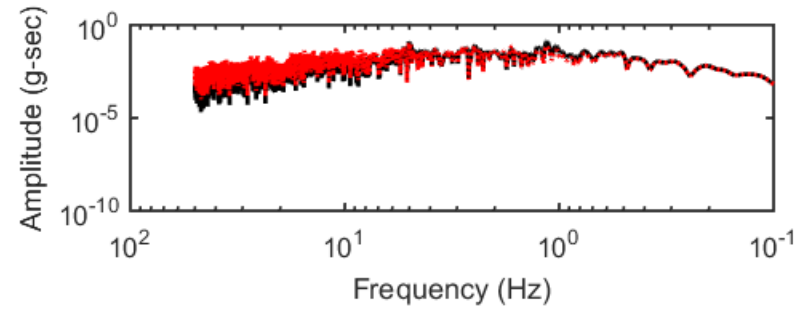
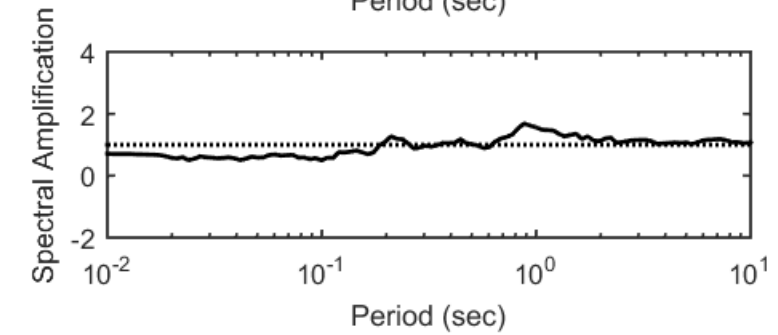
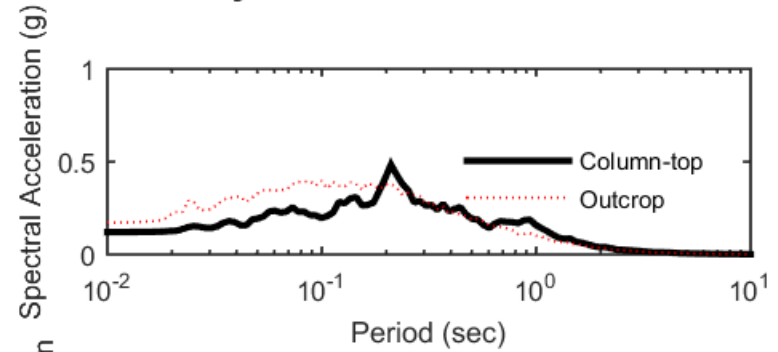
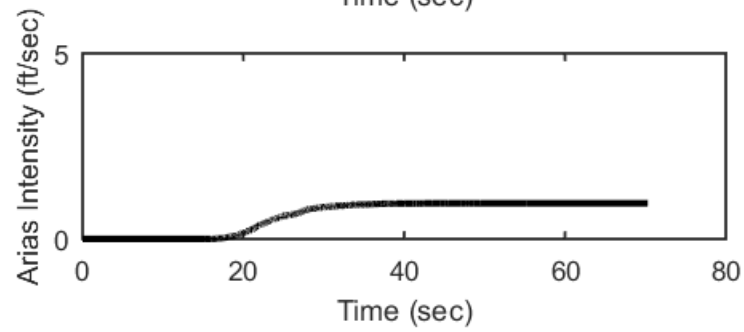
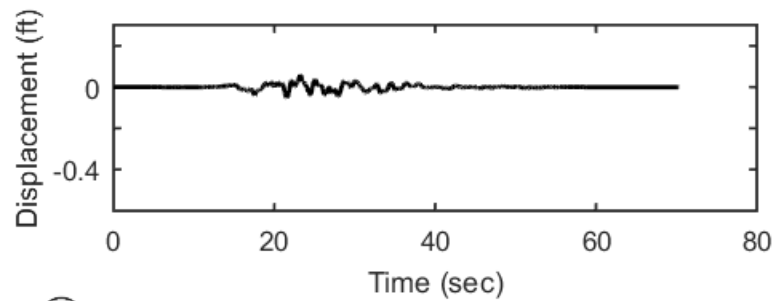
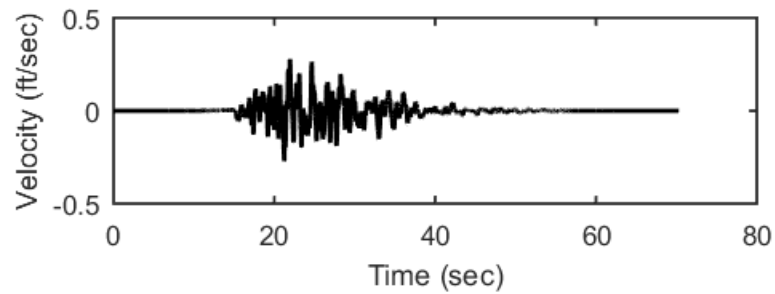
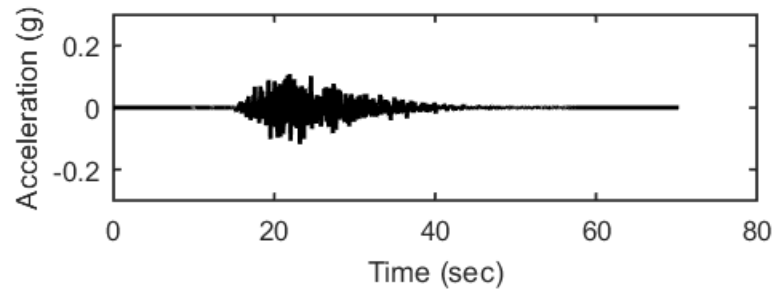




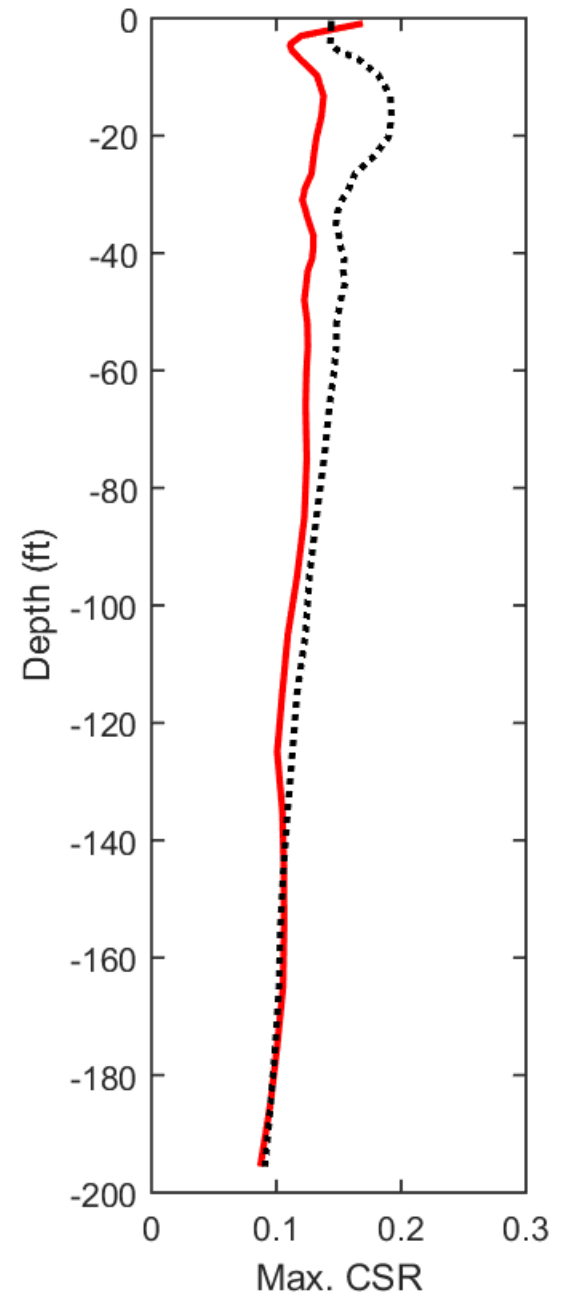
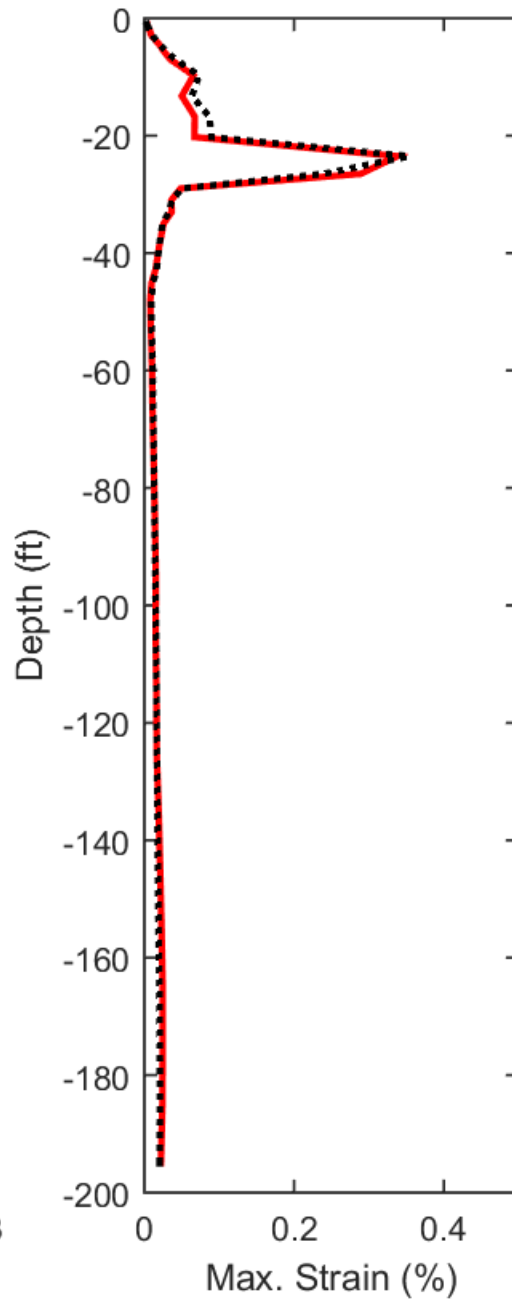
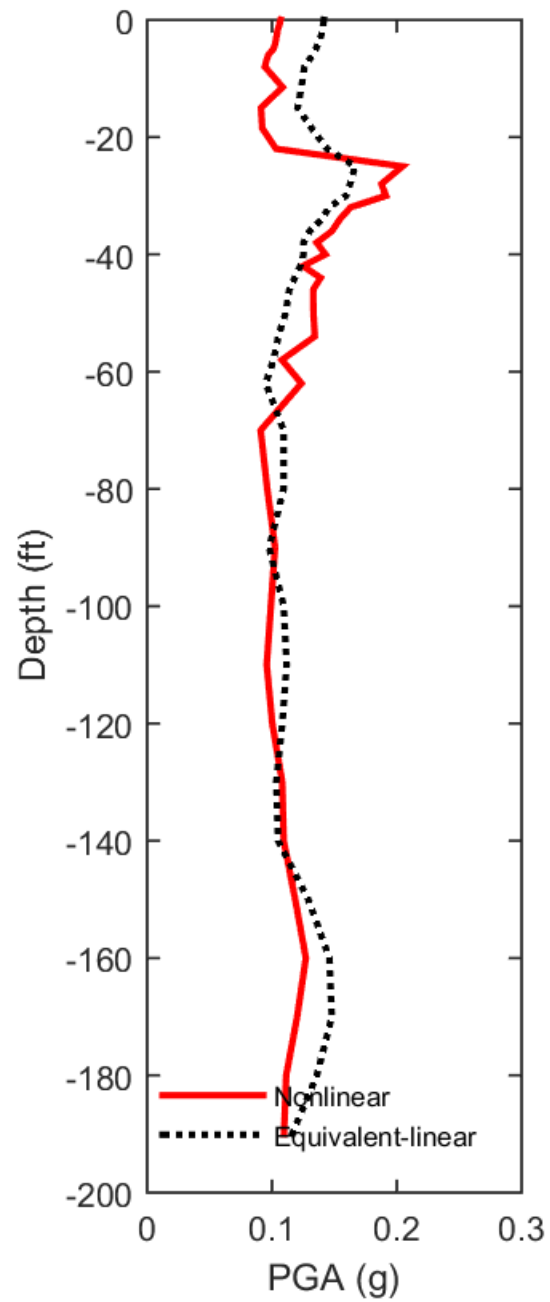
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



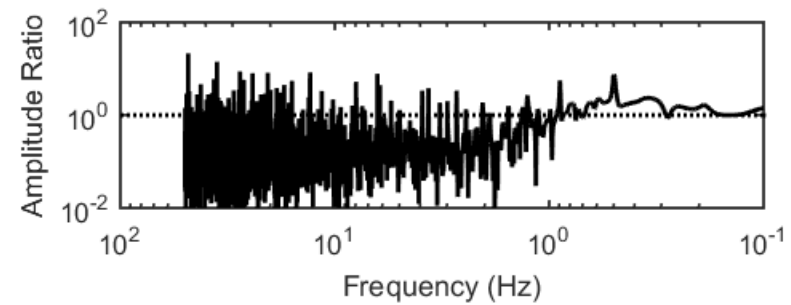
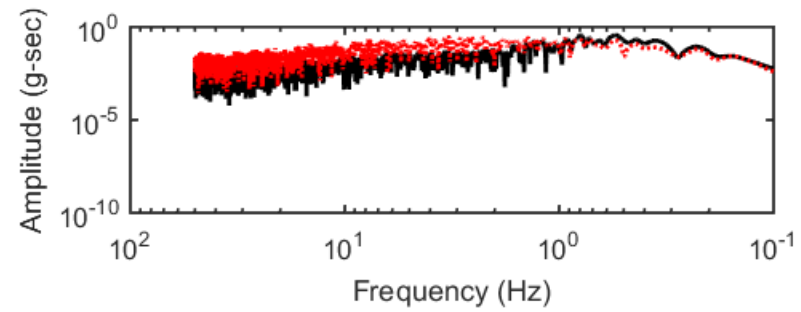
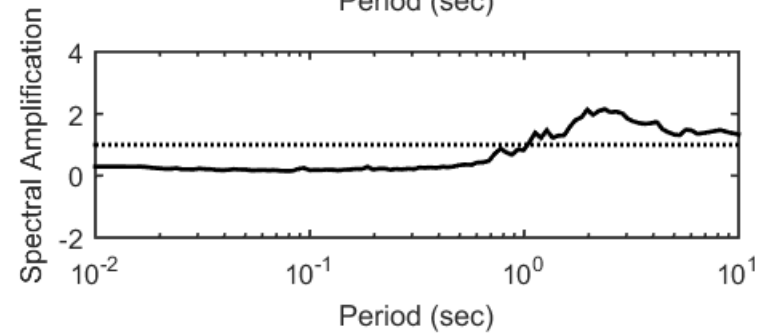
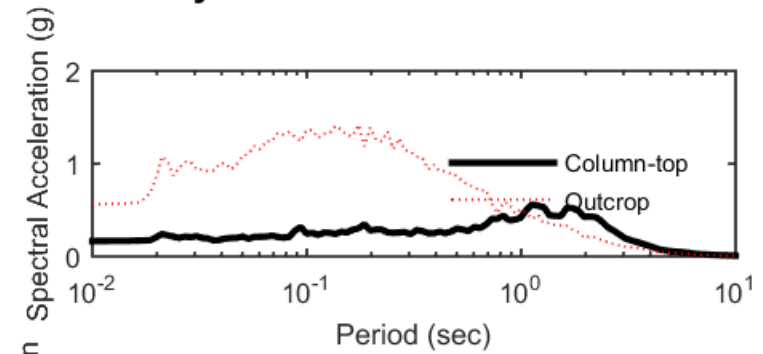
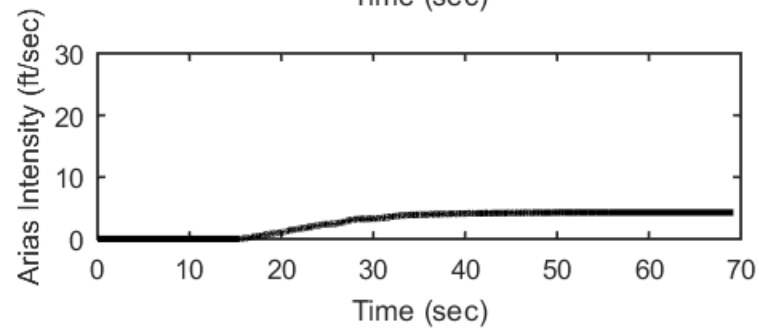
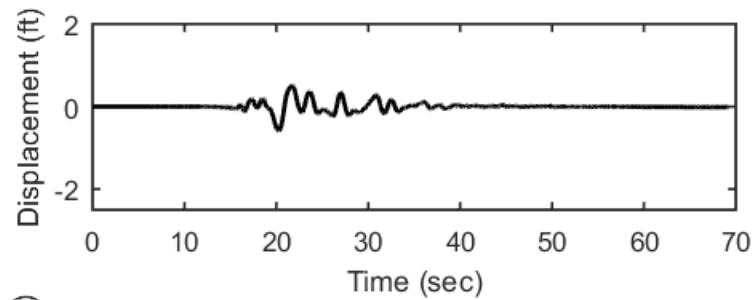
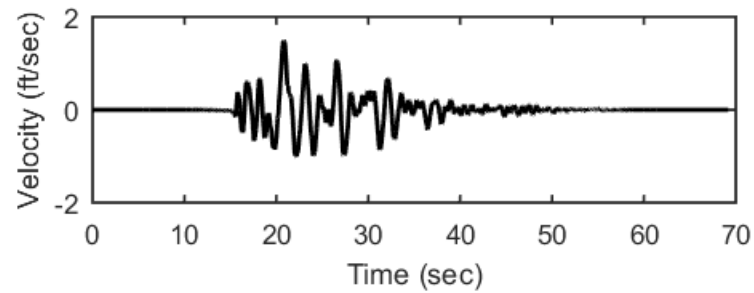
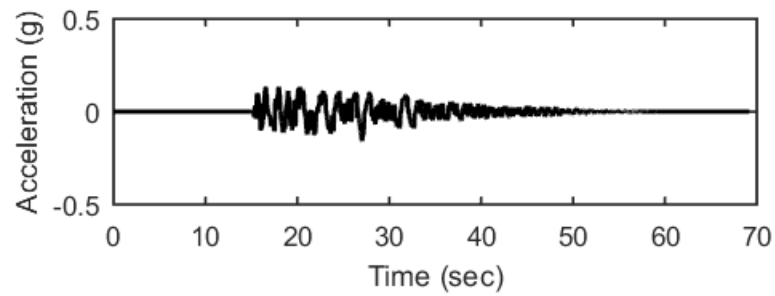
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



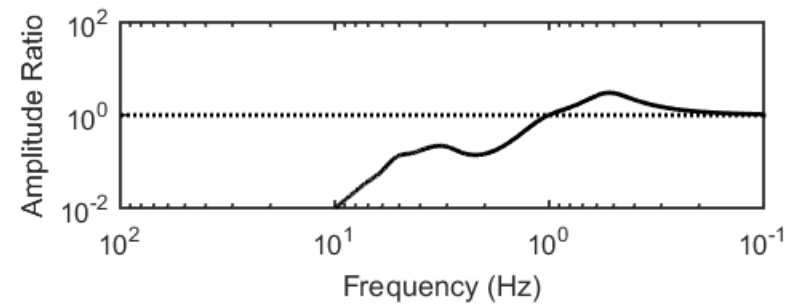
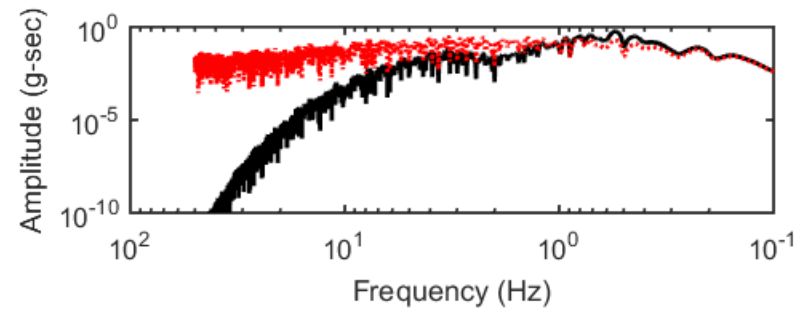
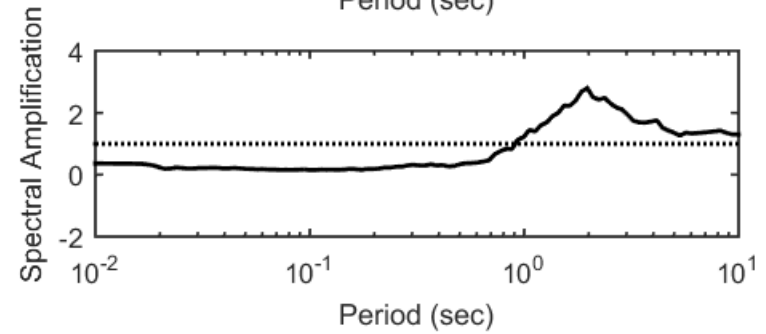
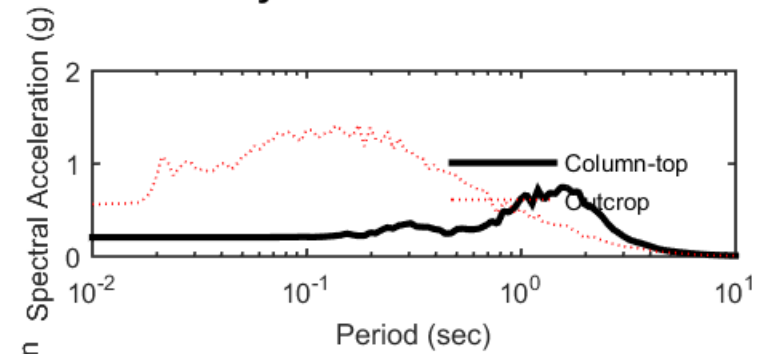
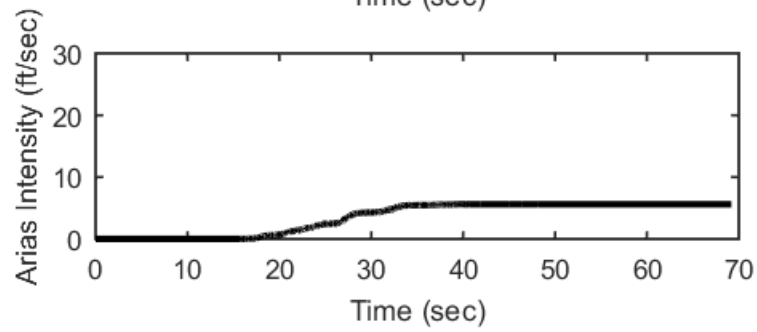
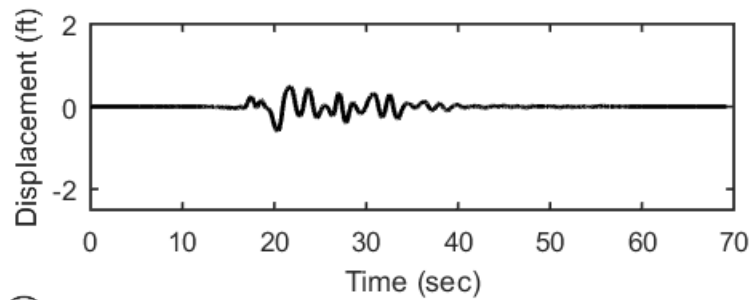
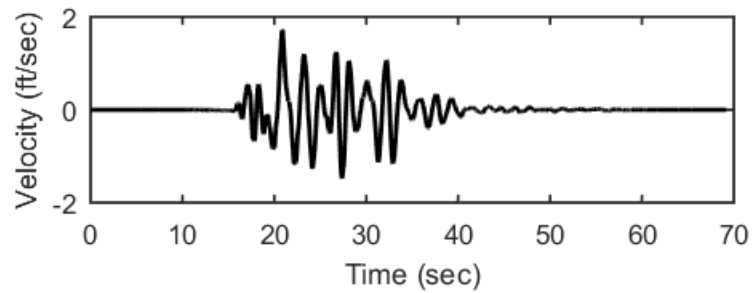
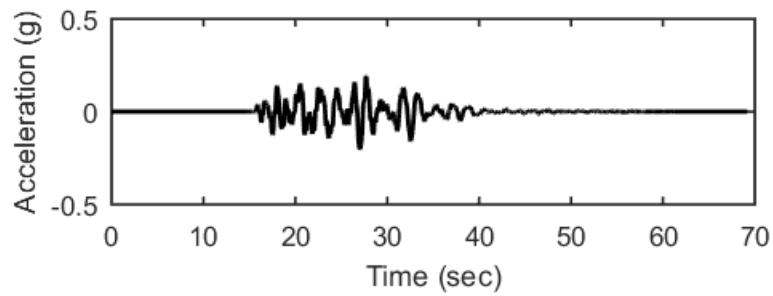
# Profile outputs for Motion: FEE7



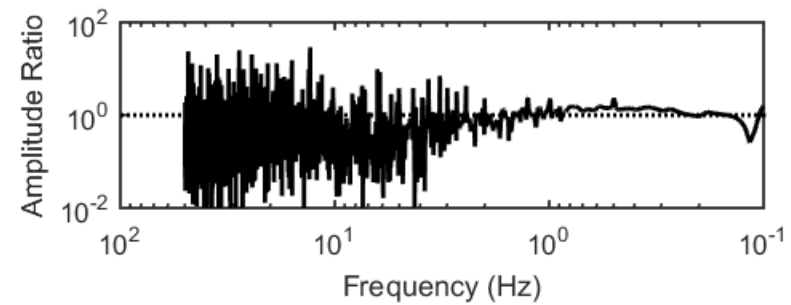
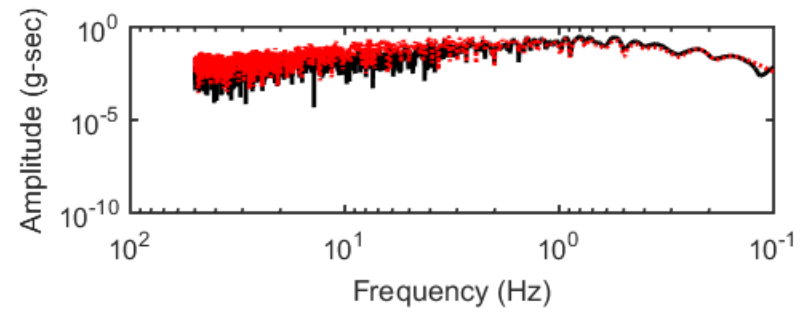
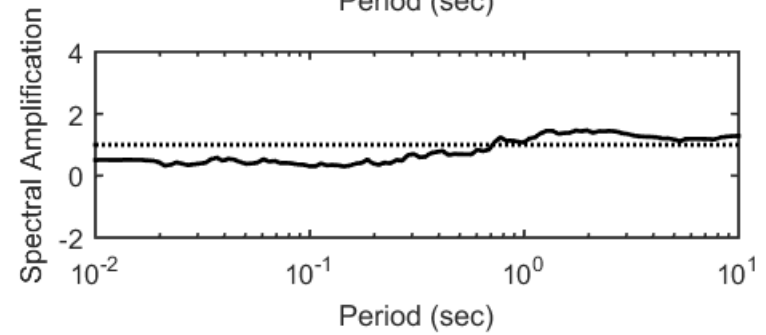
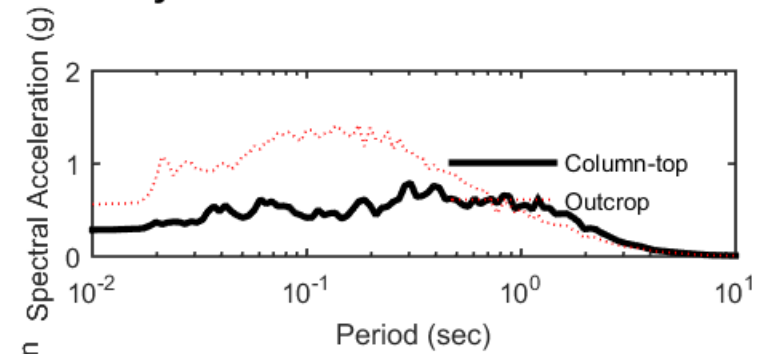
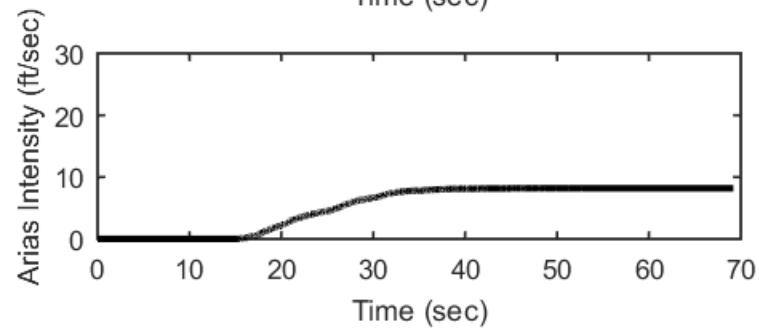
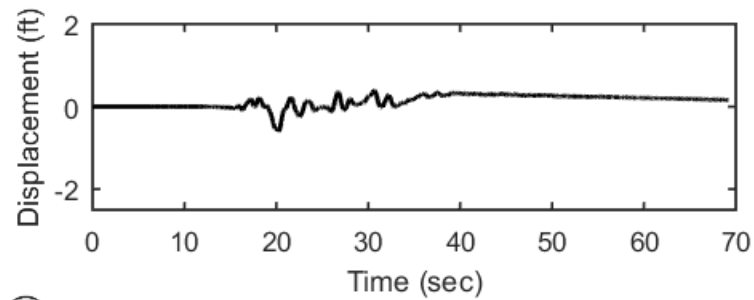
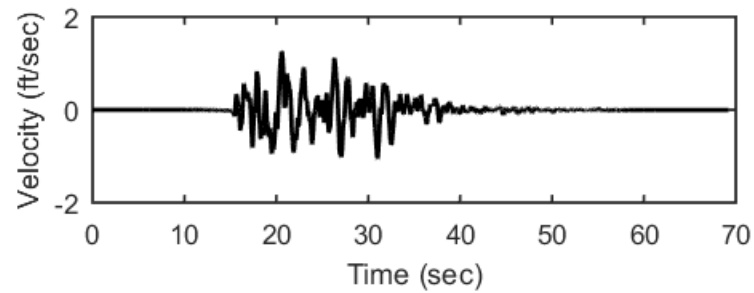
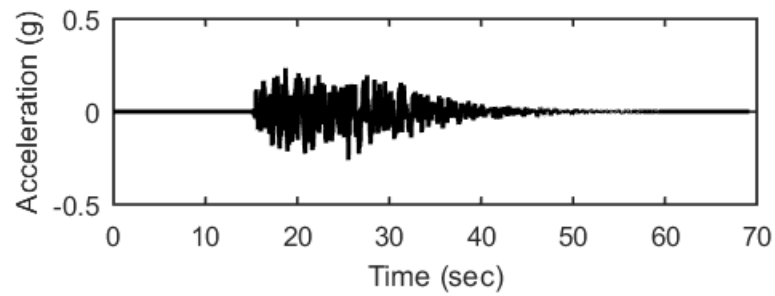
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



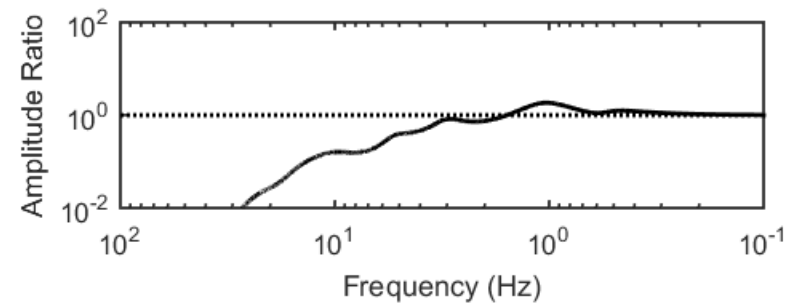
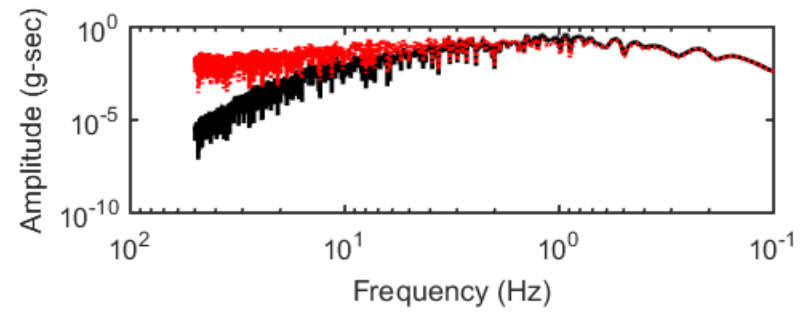
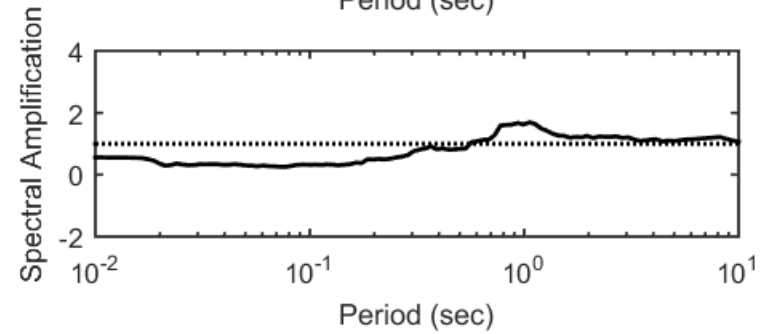
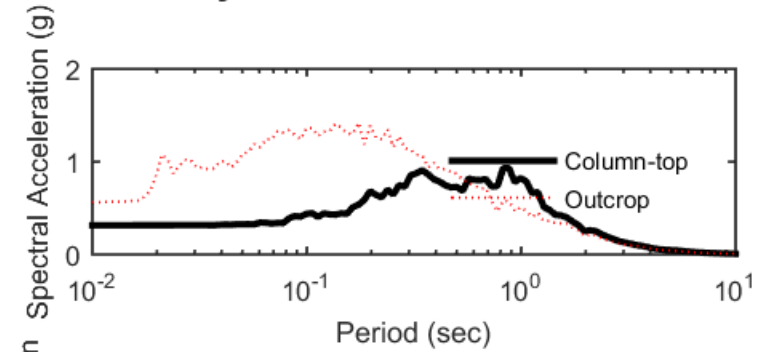
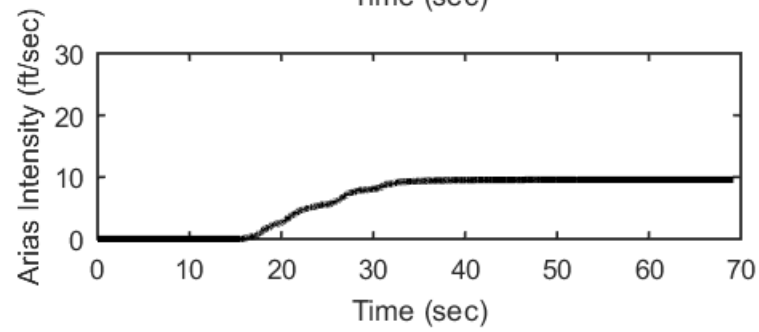
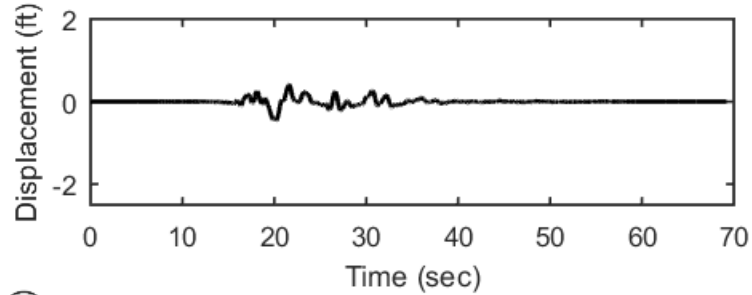
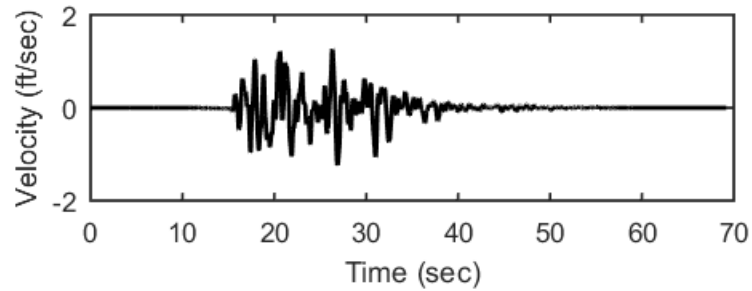
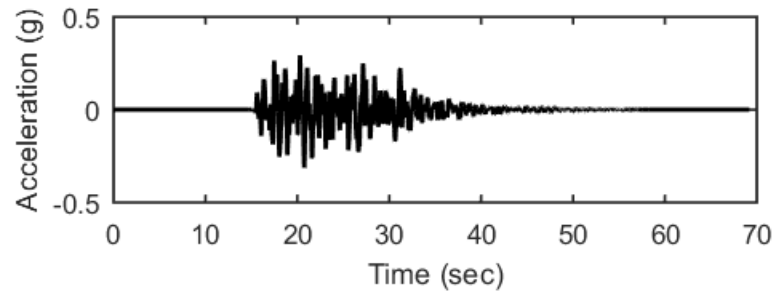
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



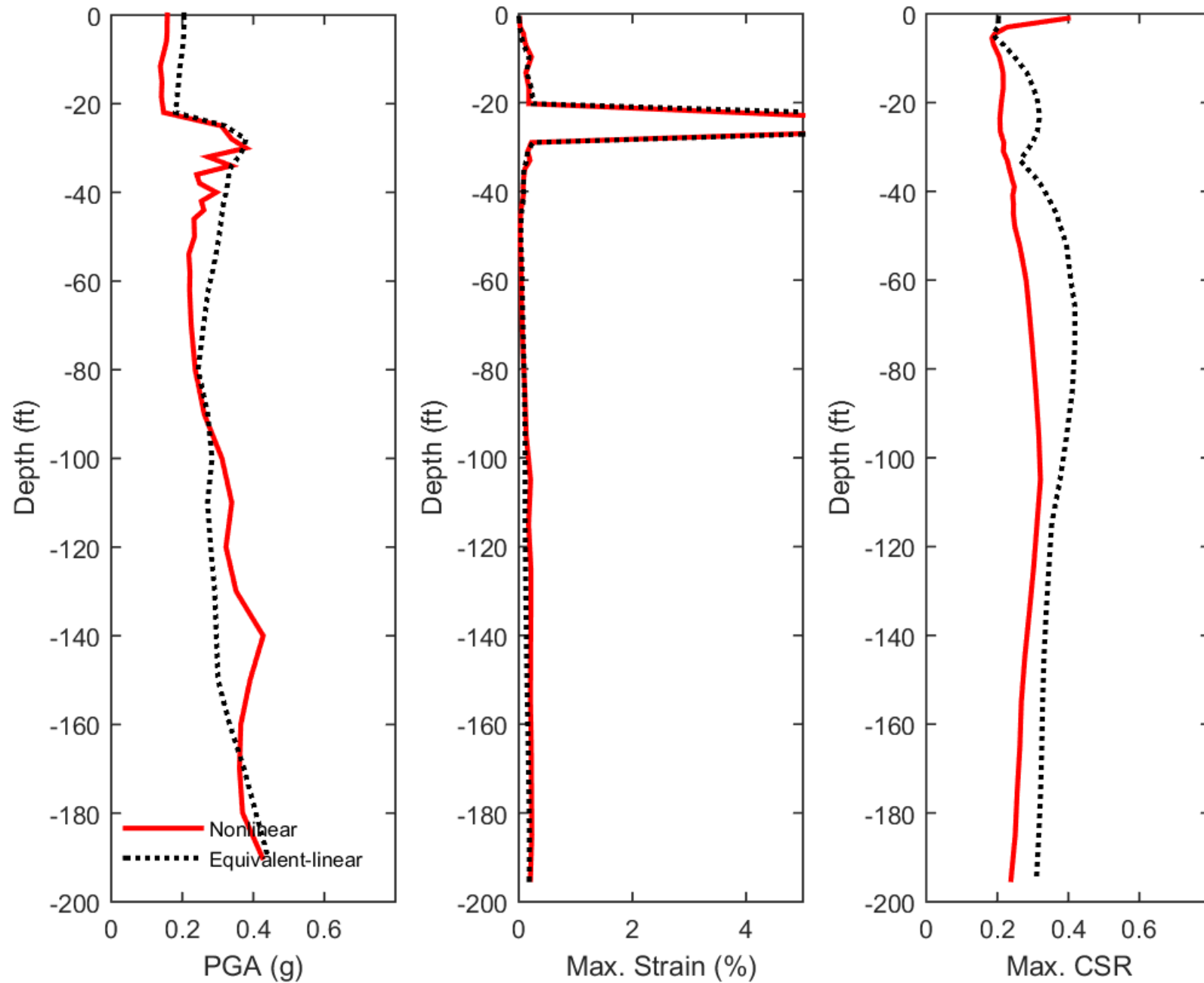
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1

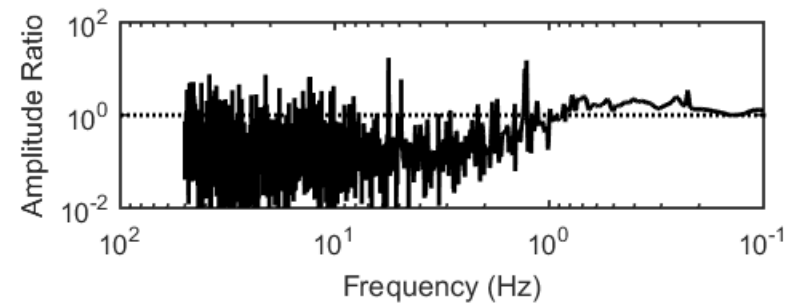
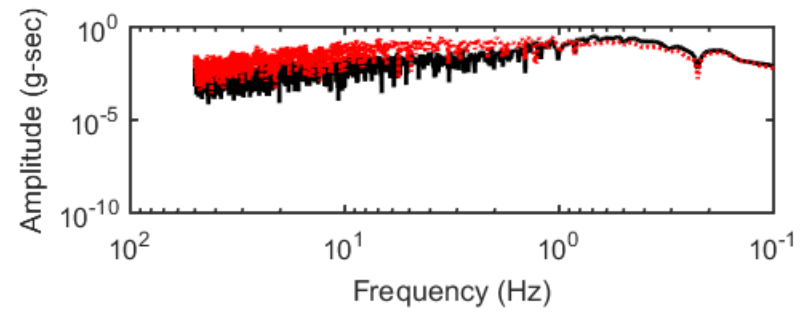
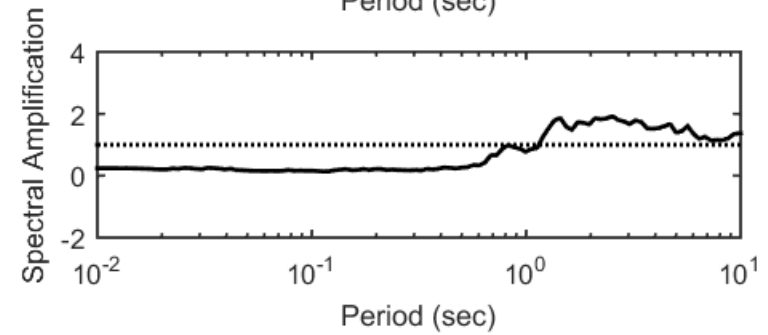
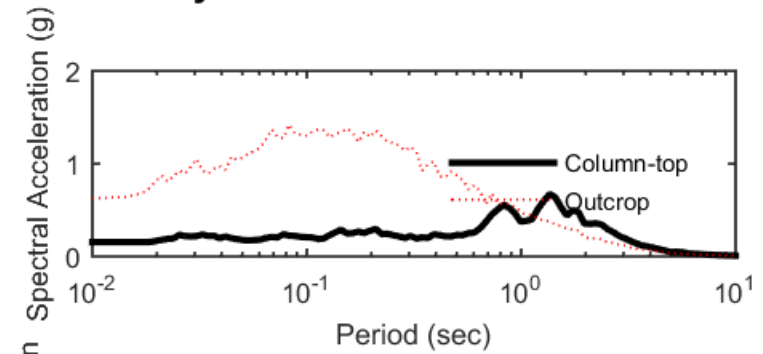
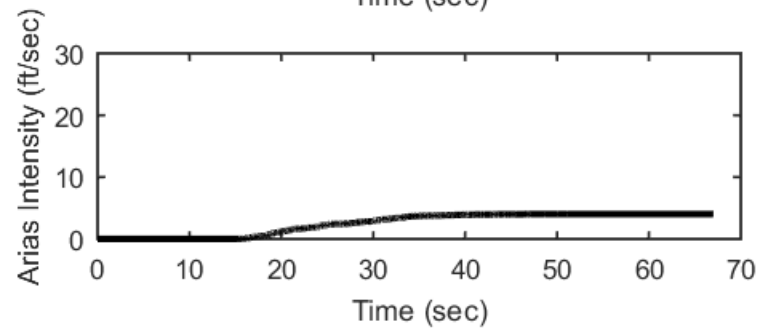
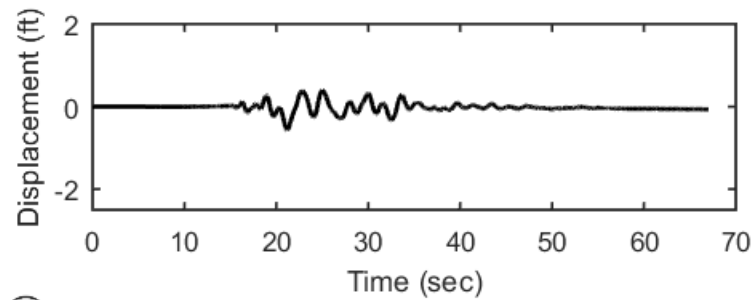
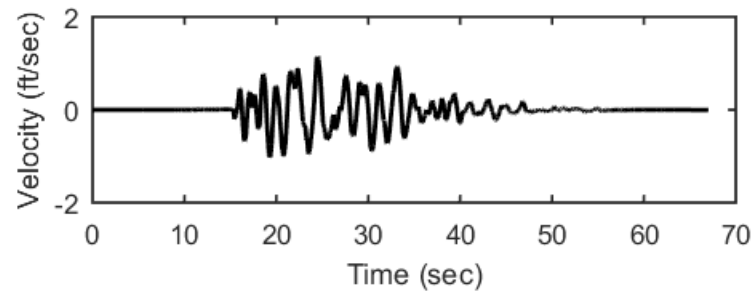
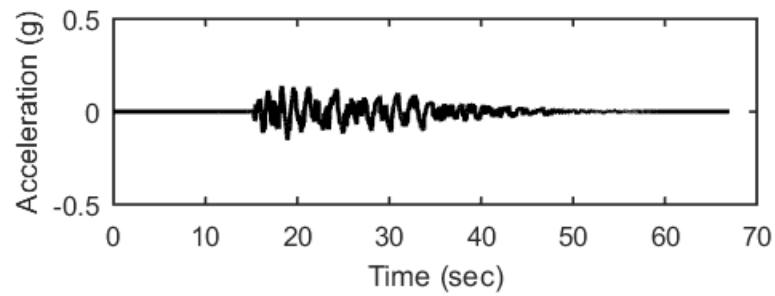


### Profile outputs for Motion: SEE1

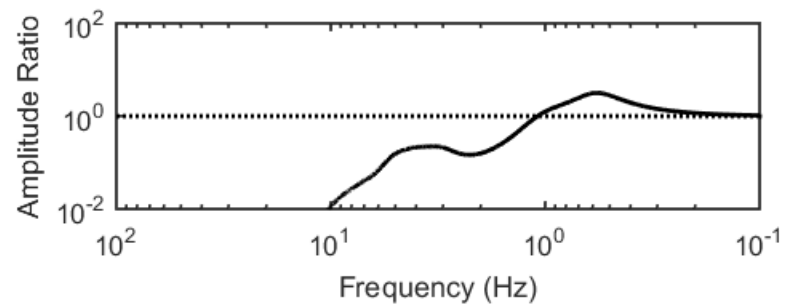
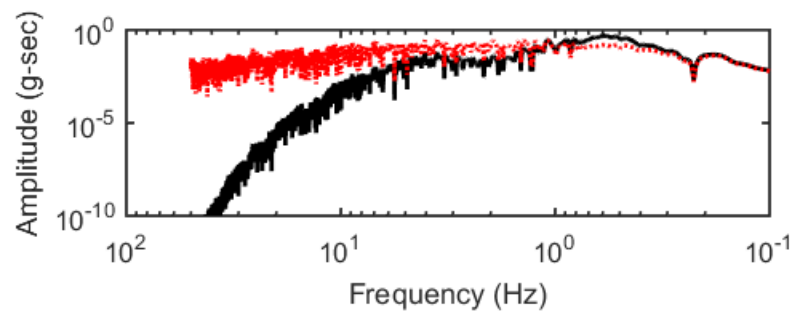
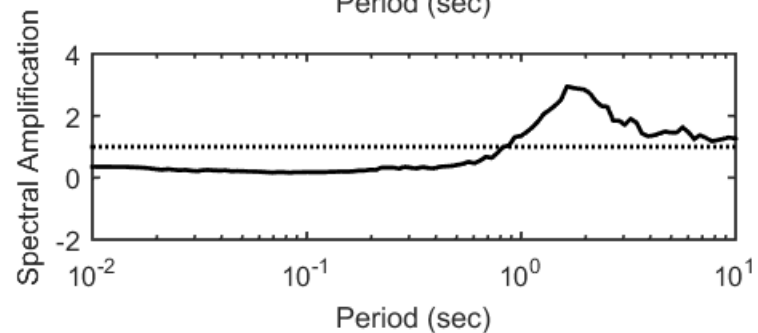
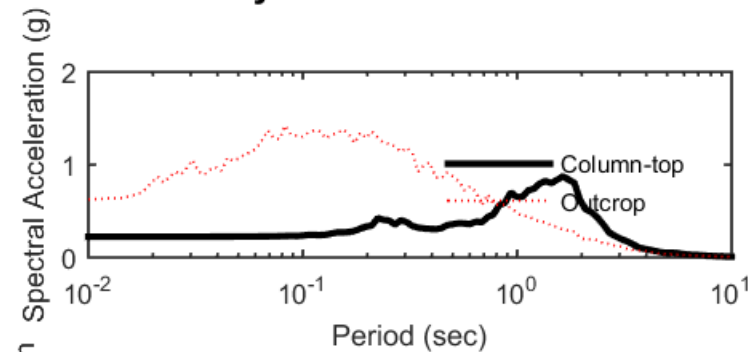
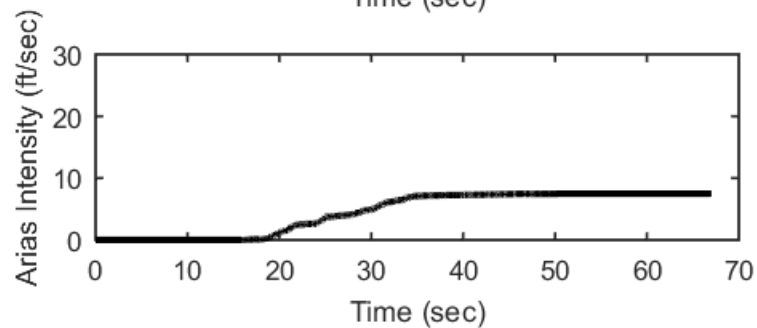
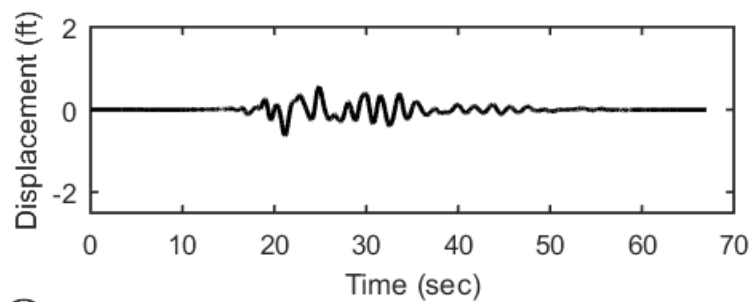
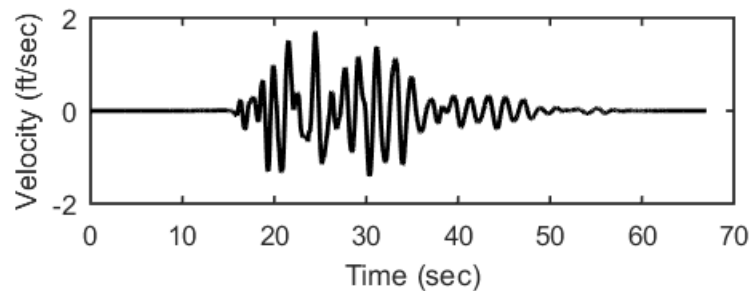
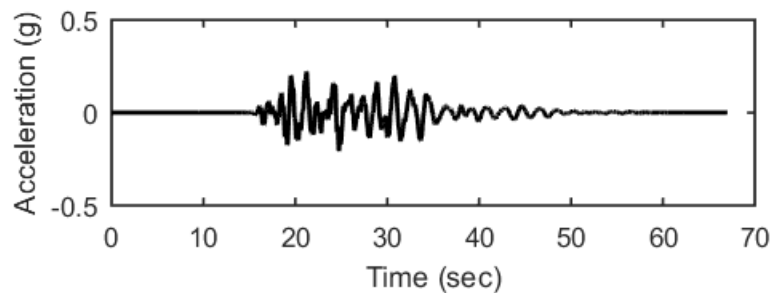




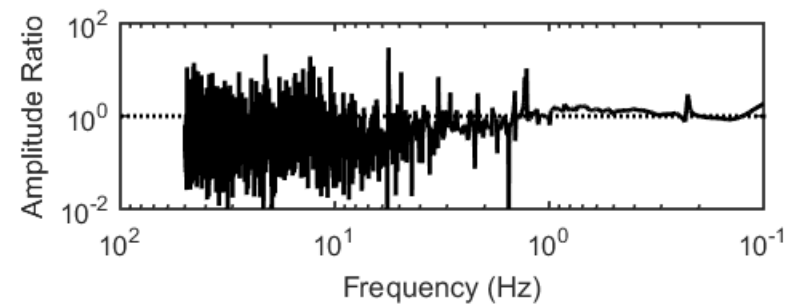
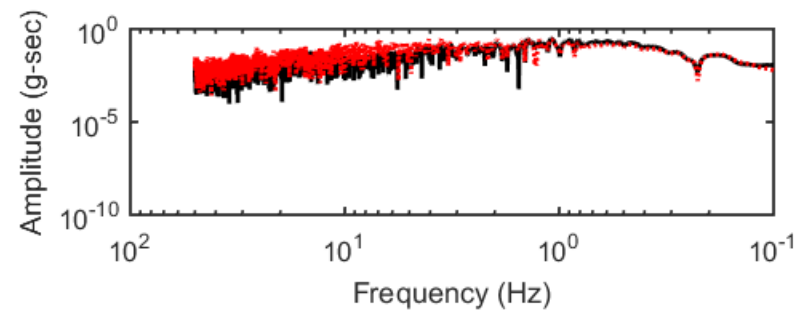
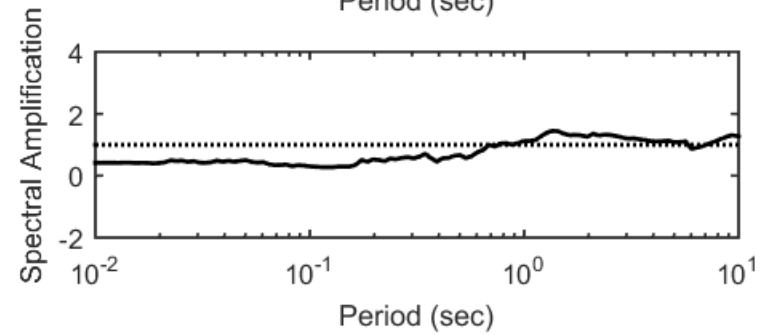
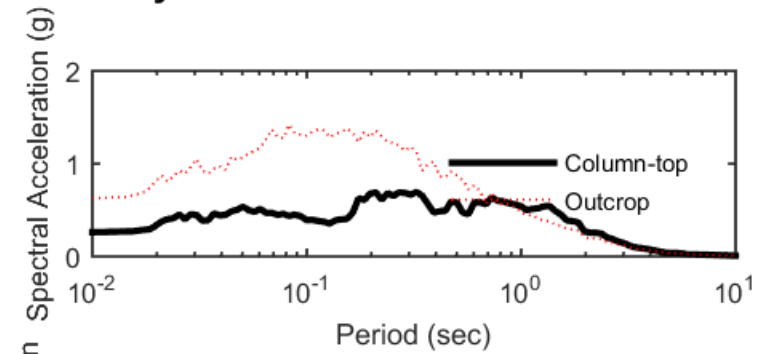
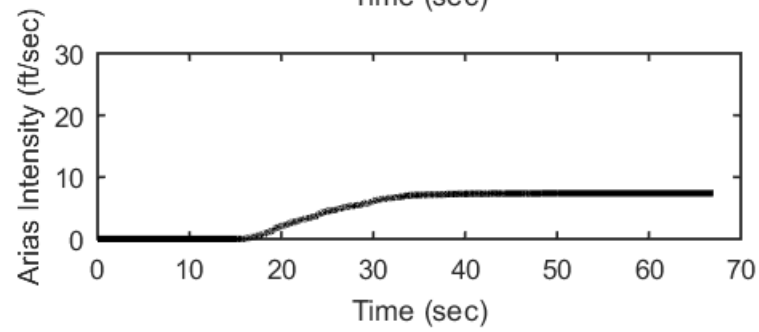
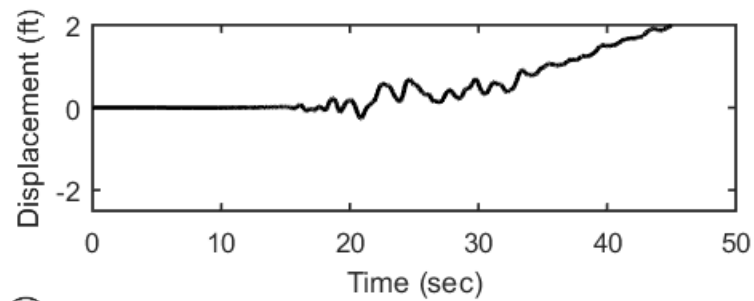
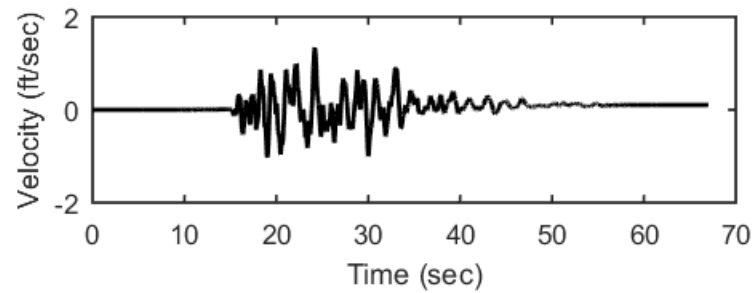
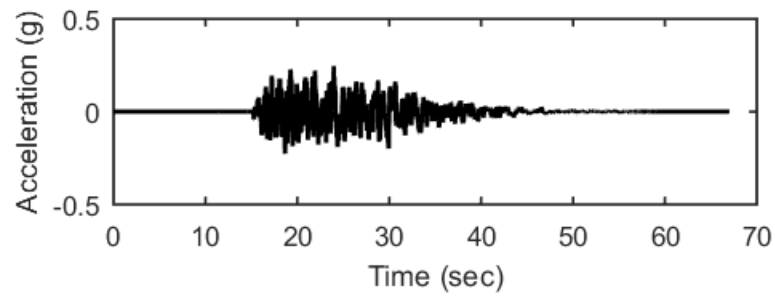
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



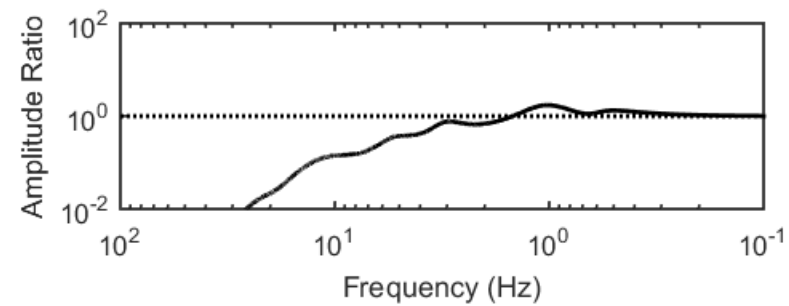
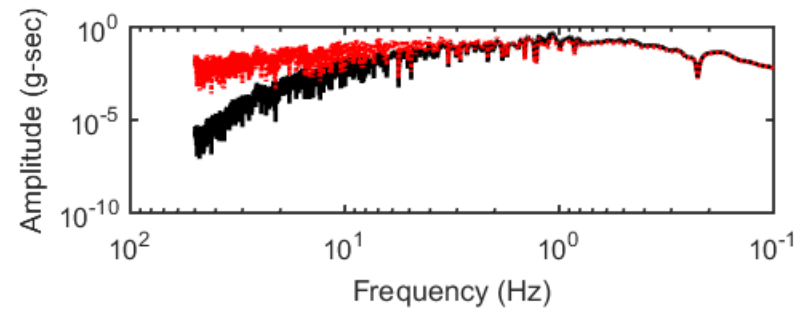
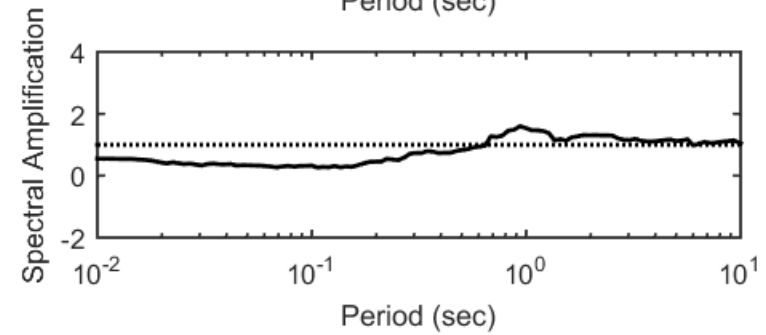
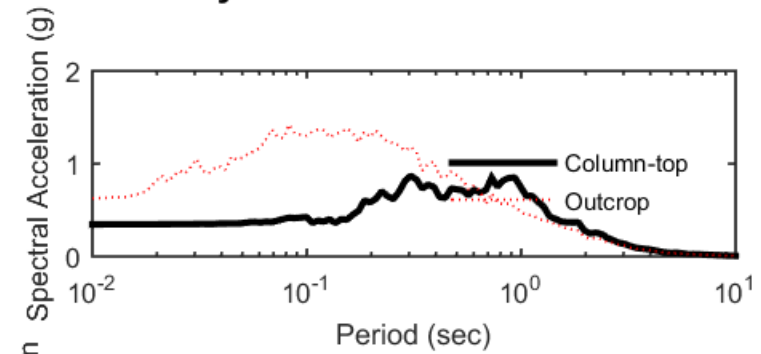
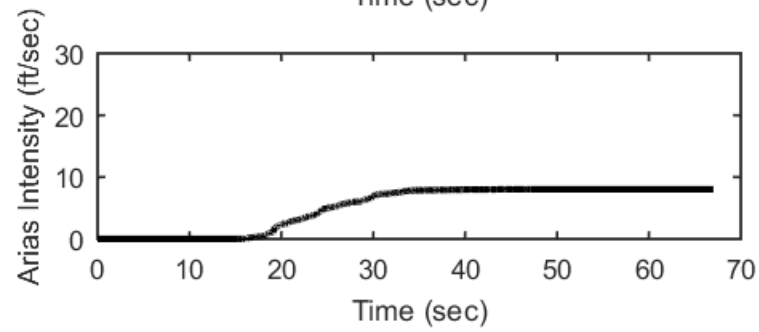
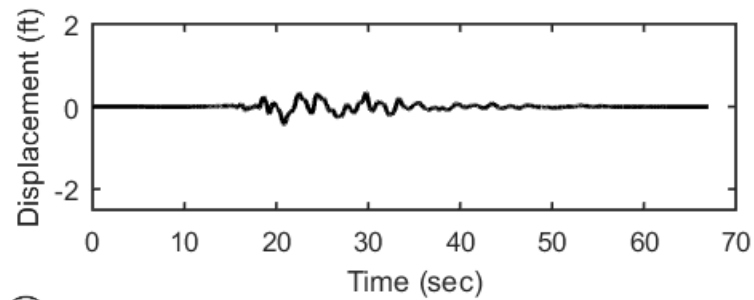
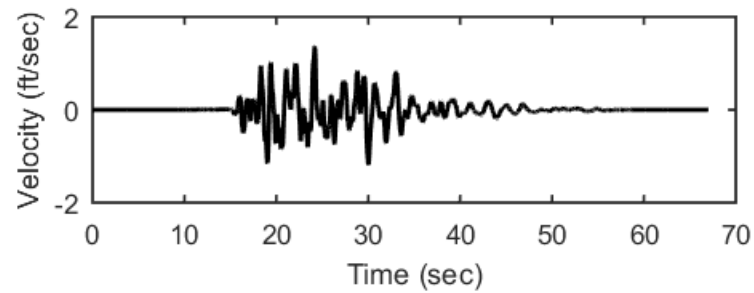
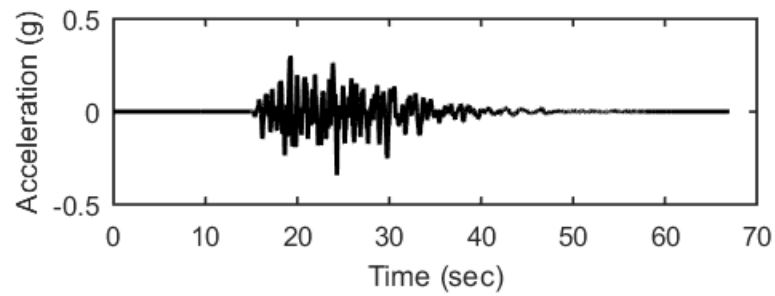
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



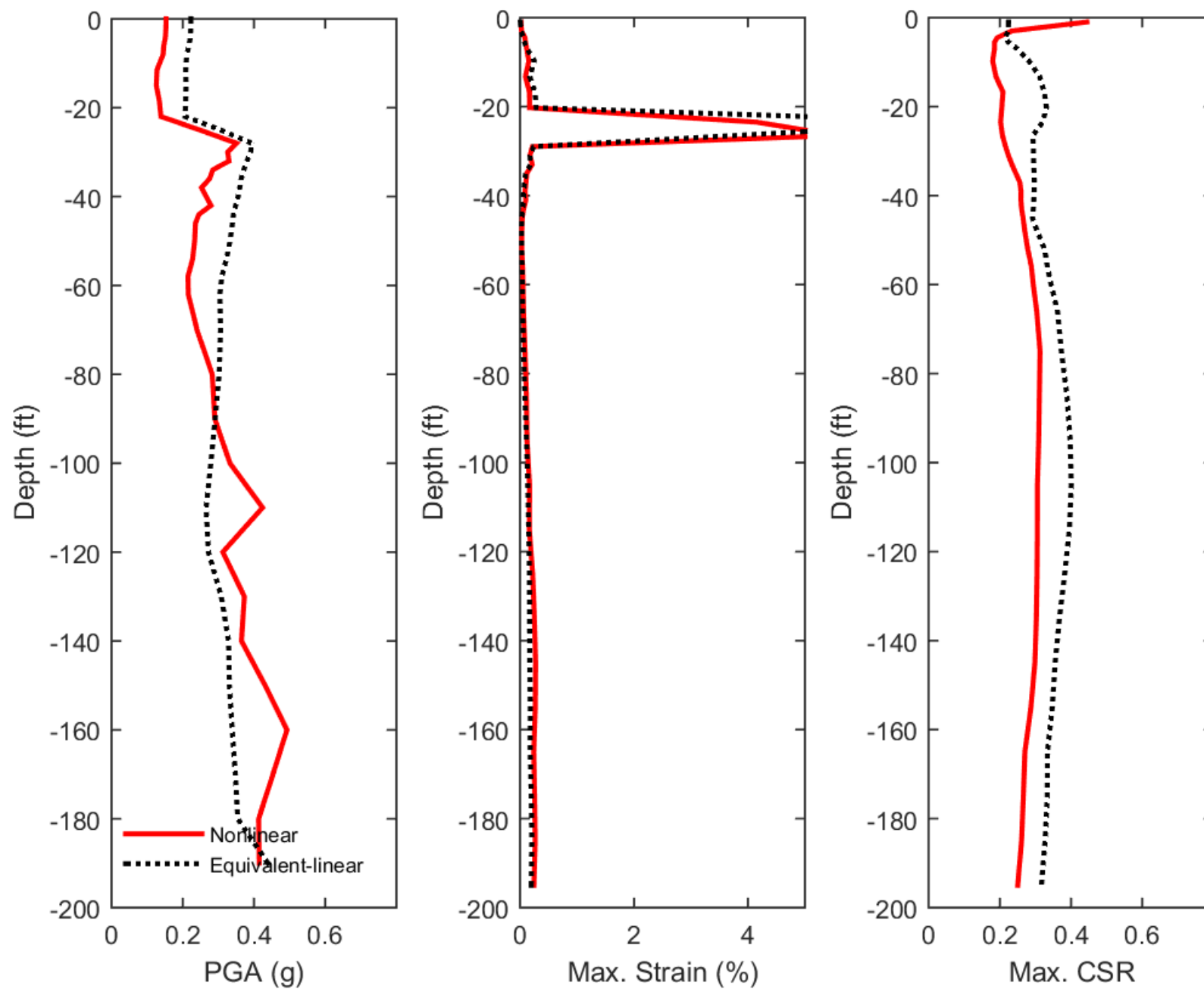
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



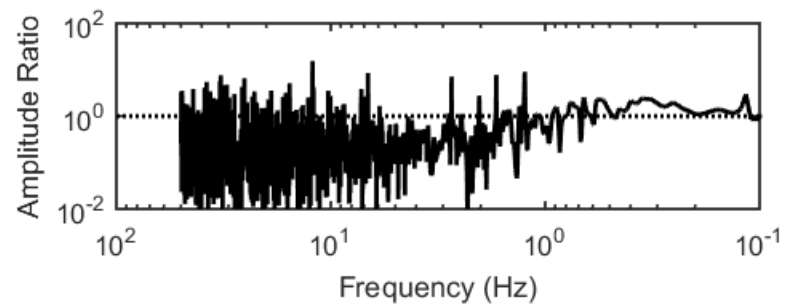
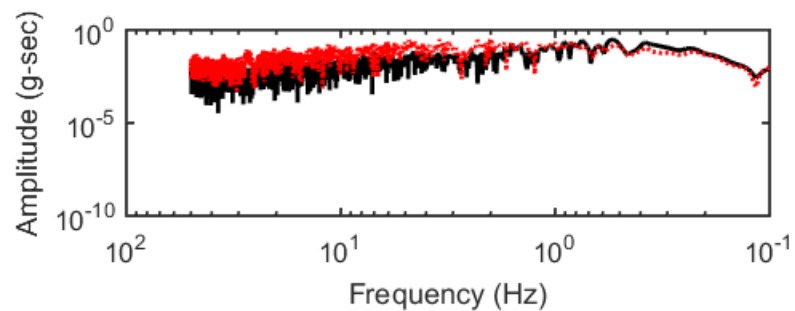
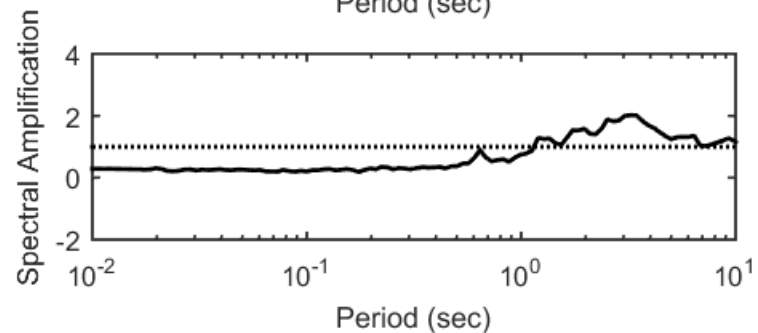
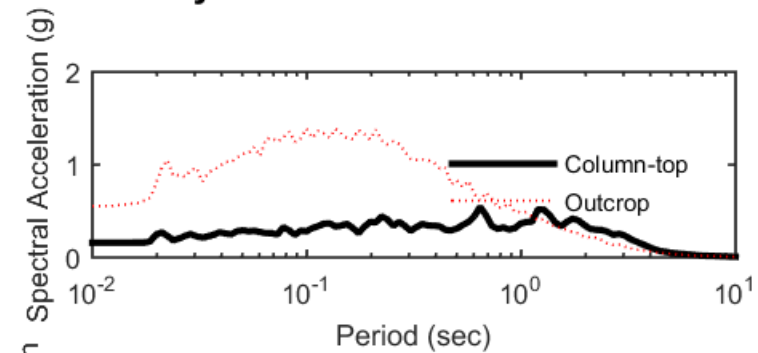
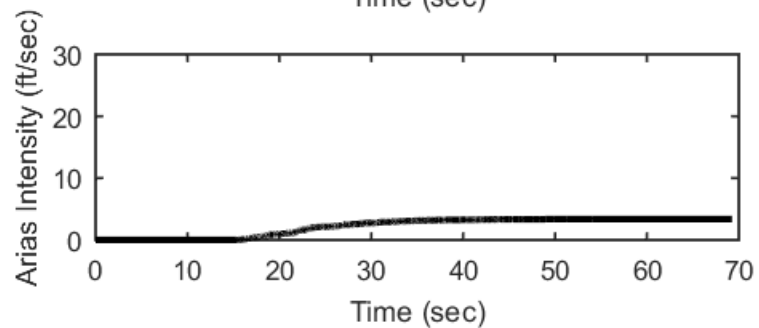
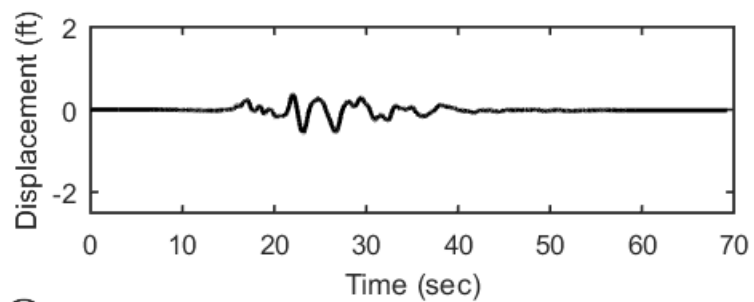
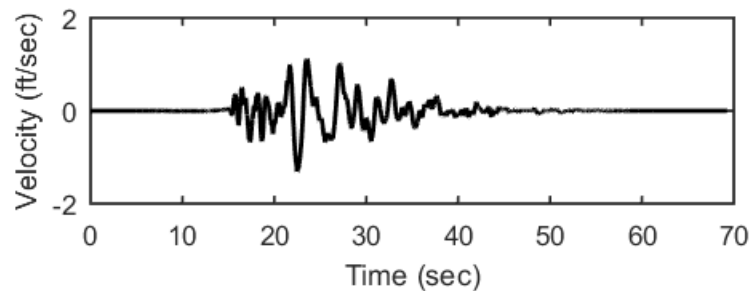
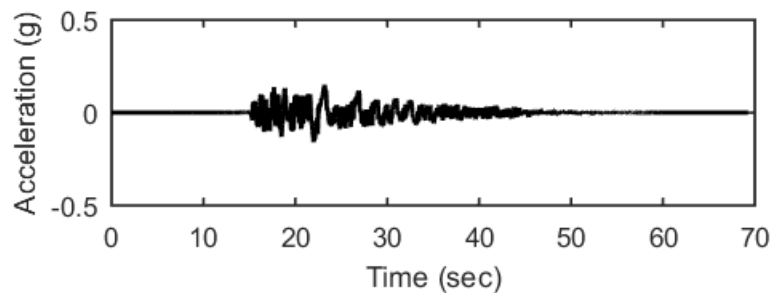
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



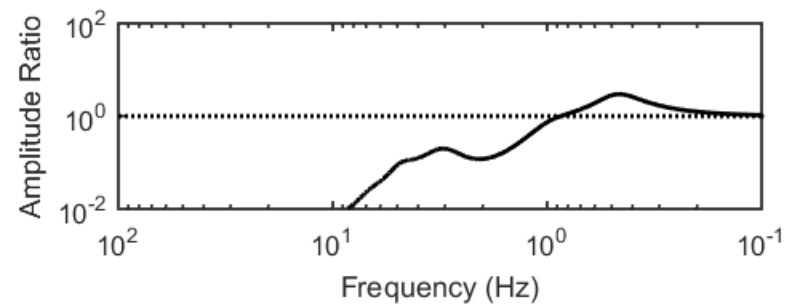
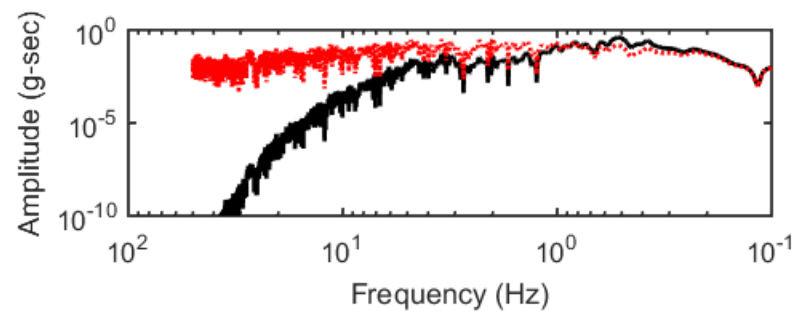
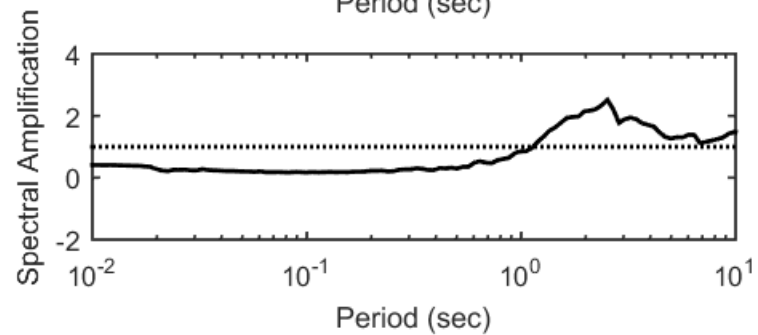
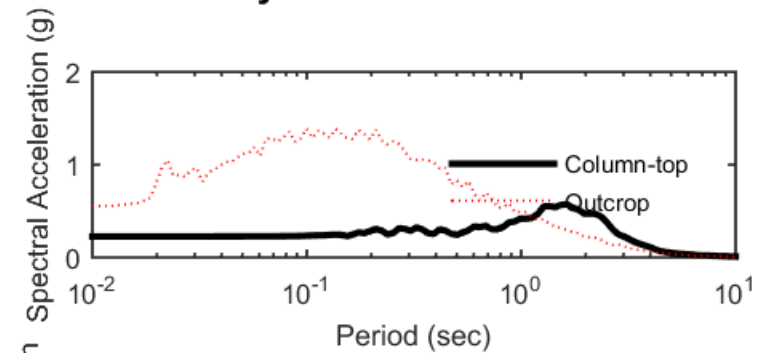
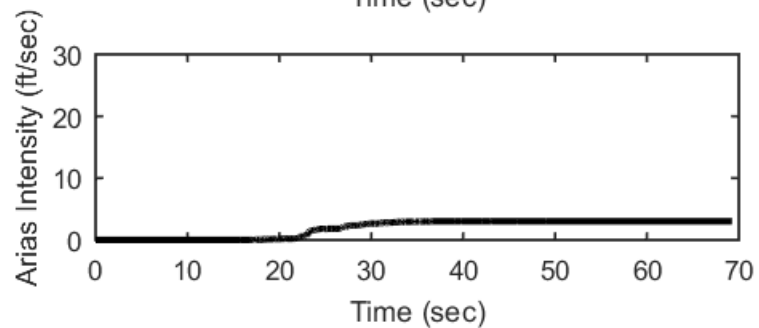
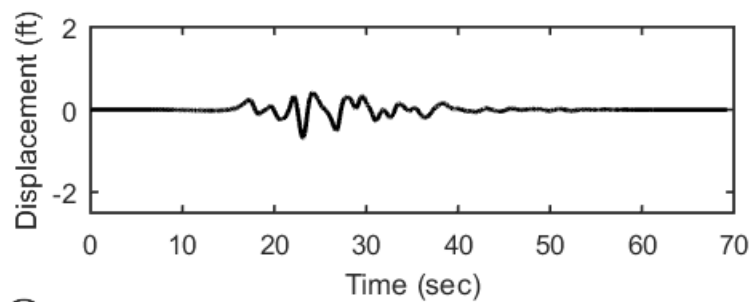
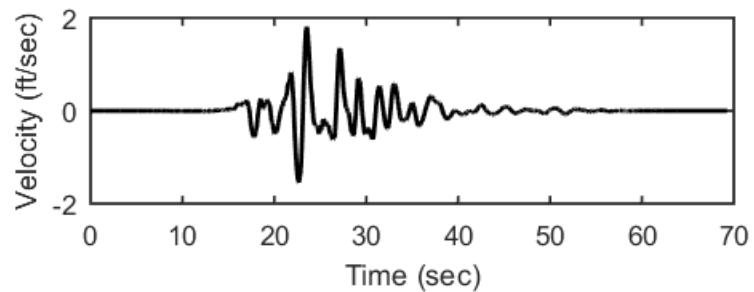
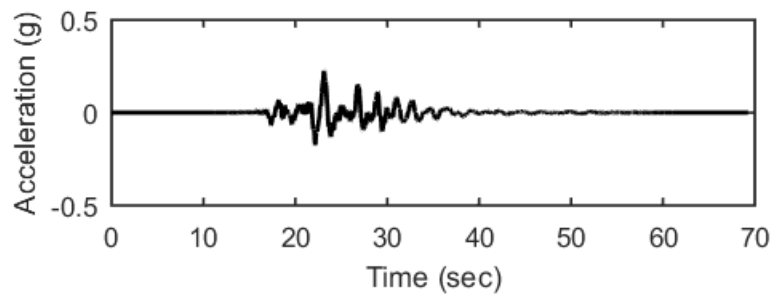
### Profile outputs for Motion: SEE2



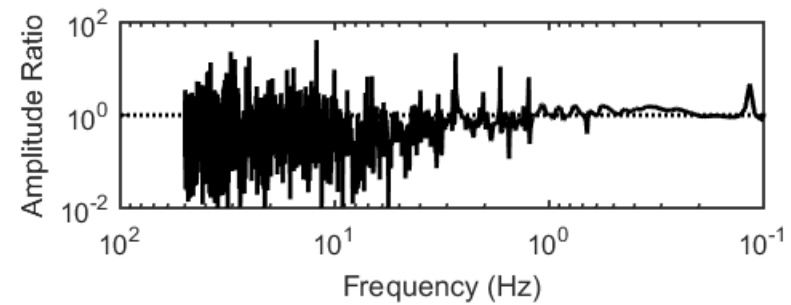
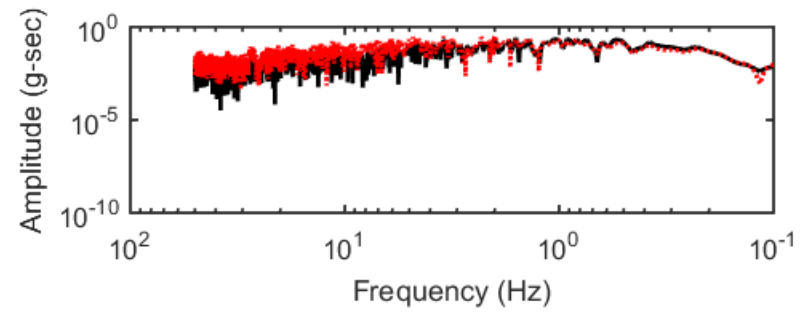
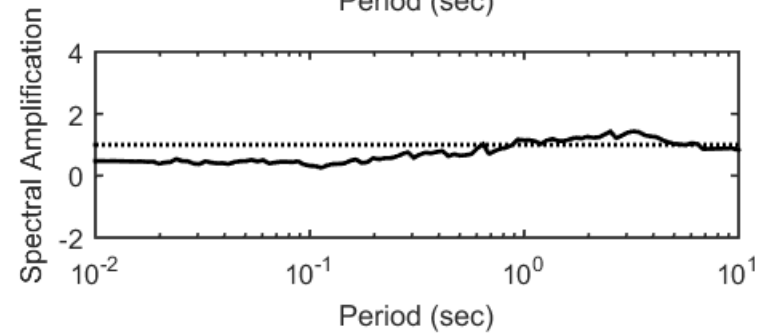
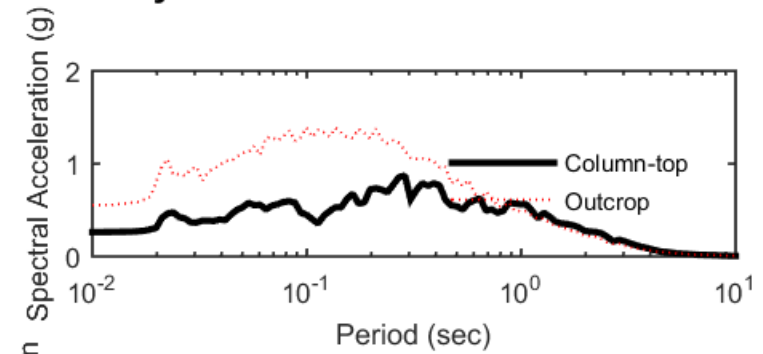
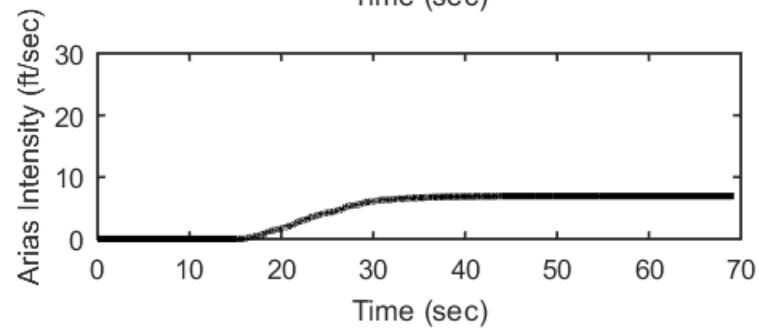
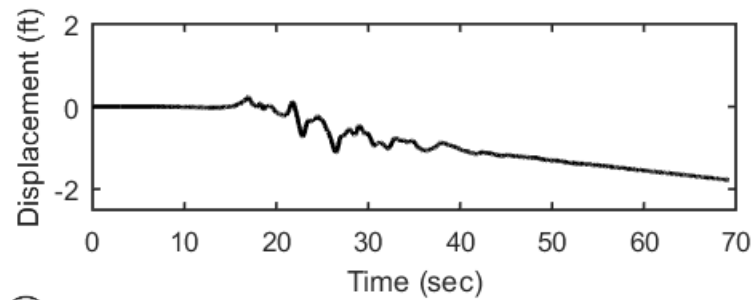
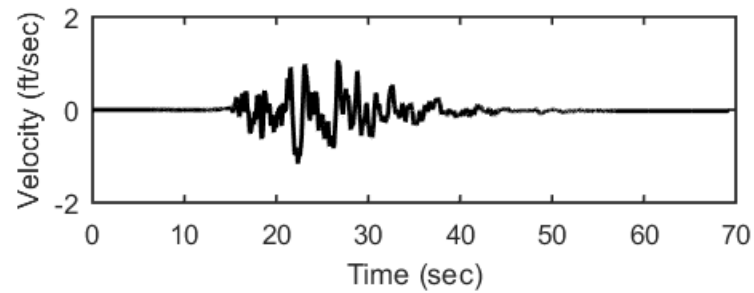
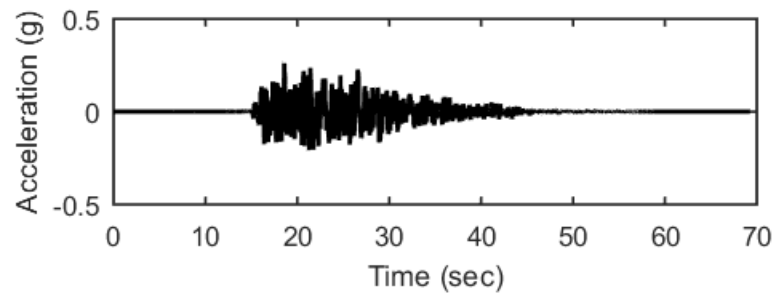
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3

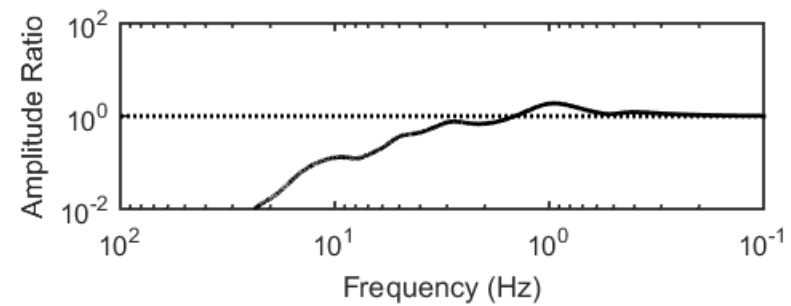
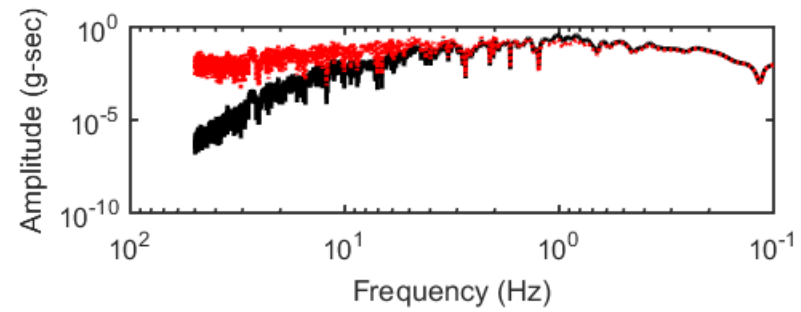
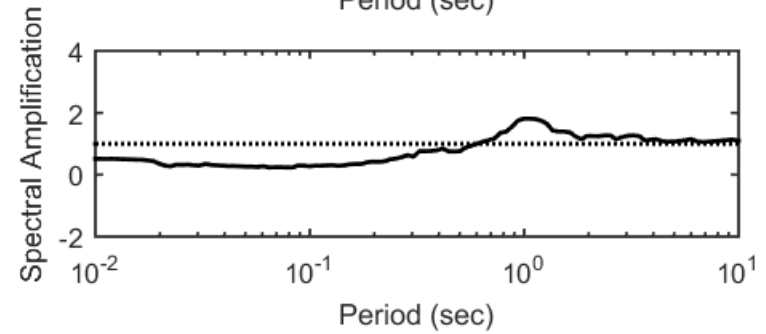
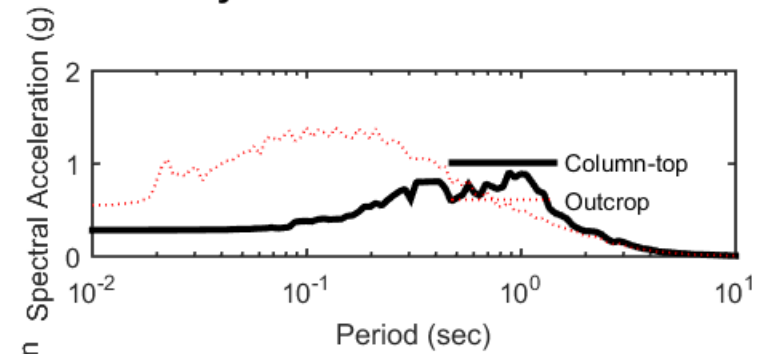
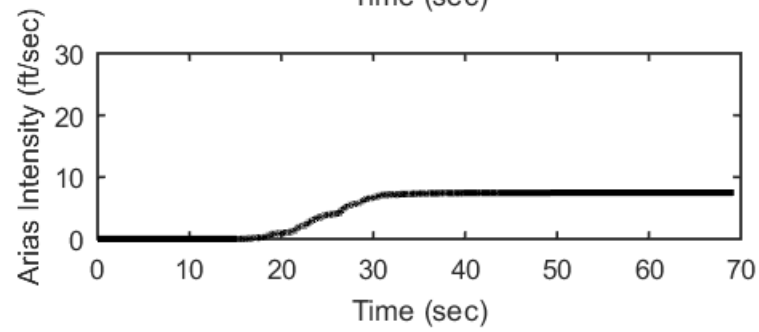
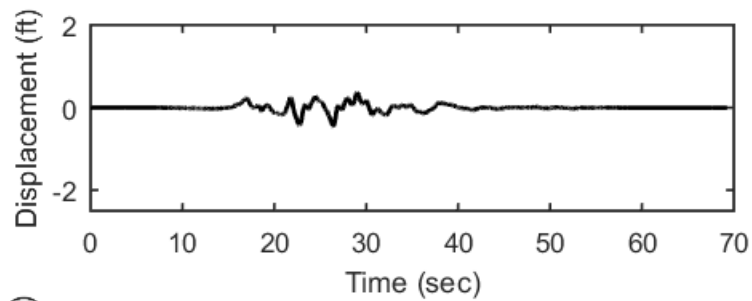
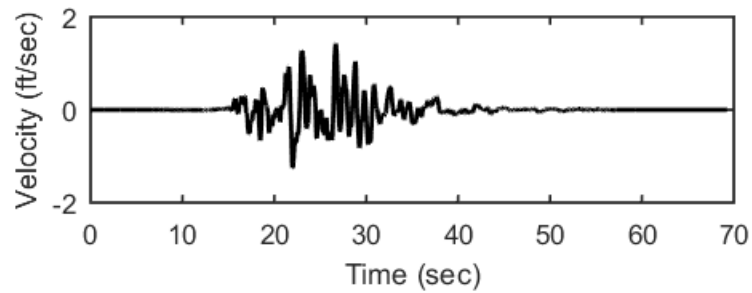
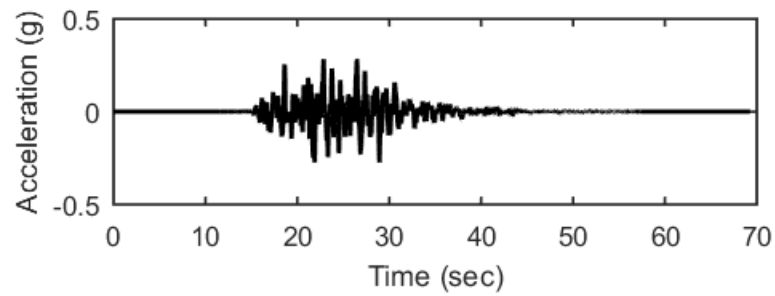


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3

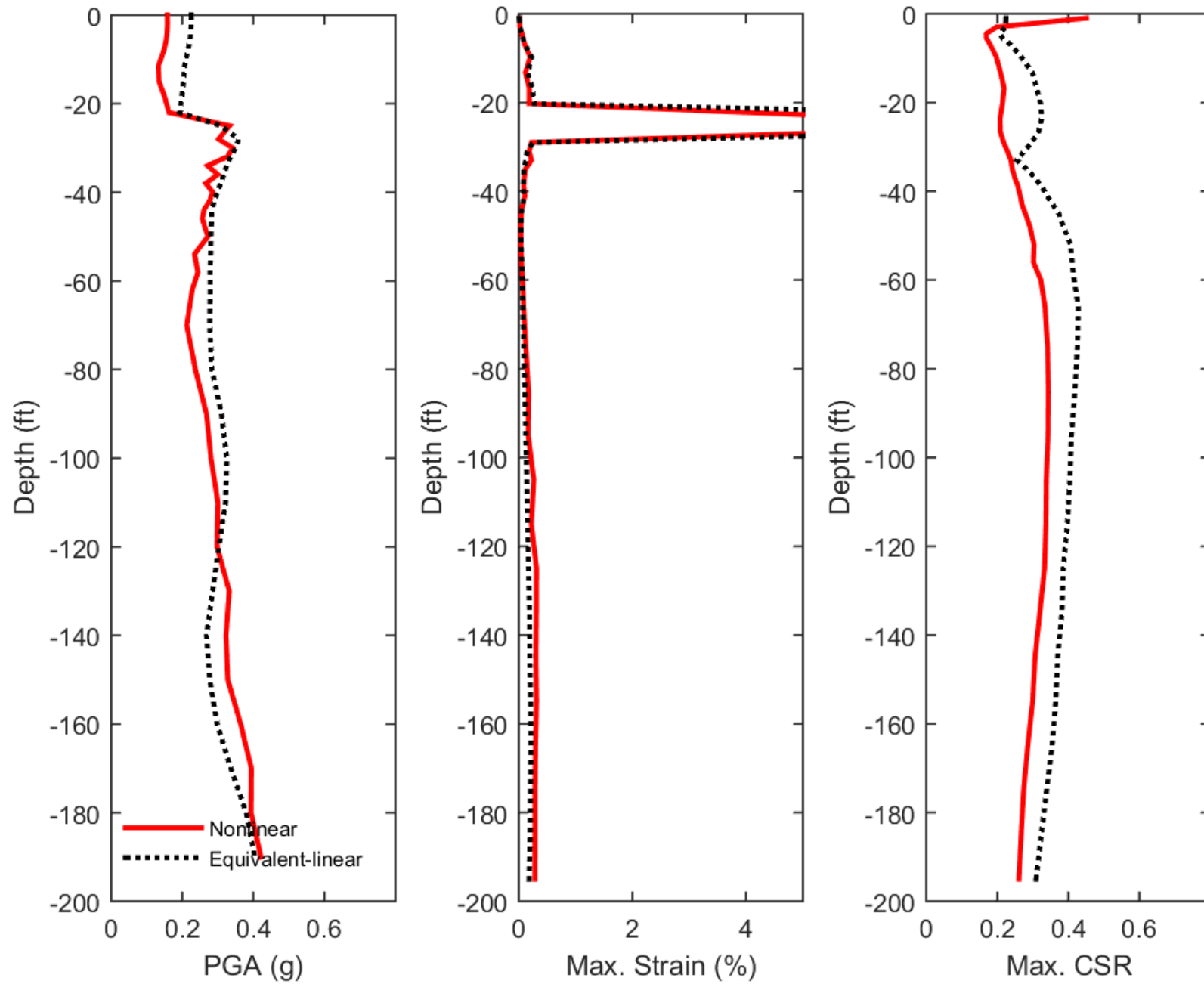




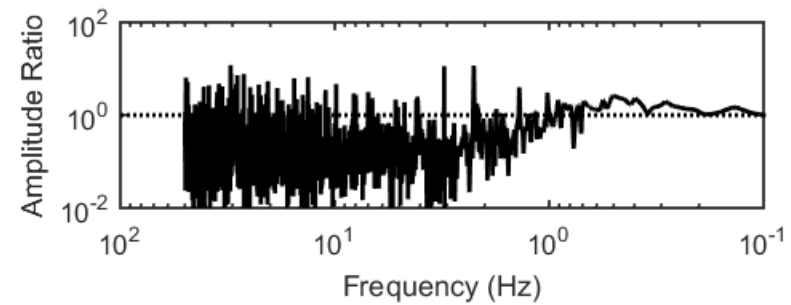
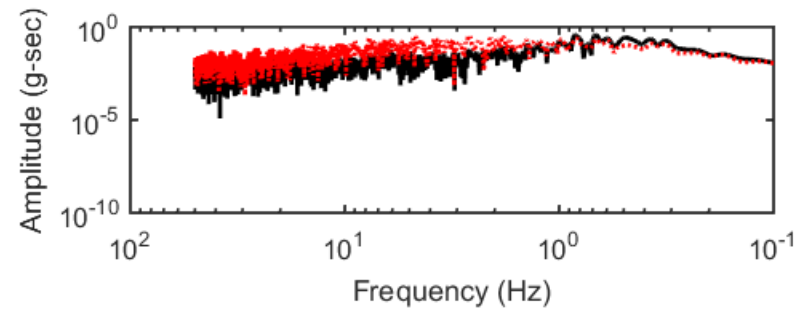
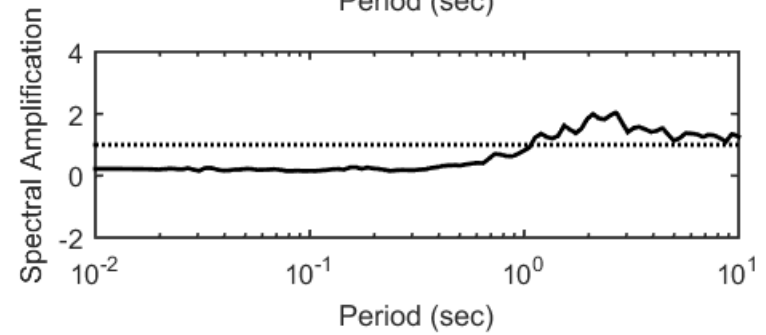
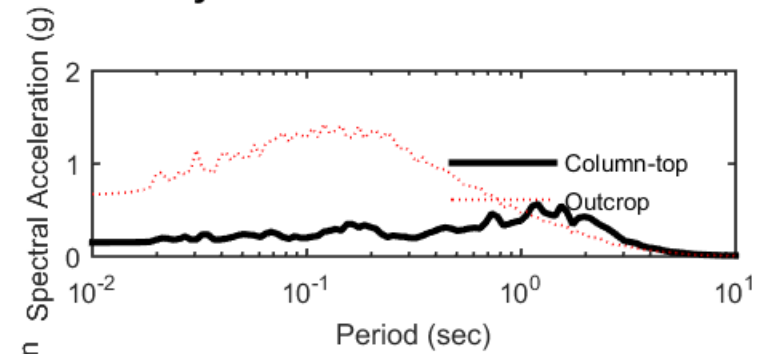
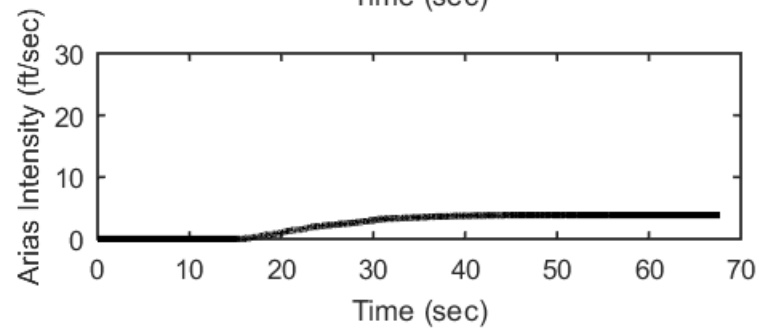
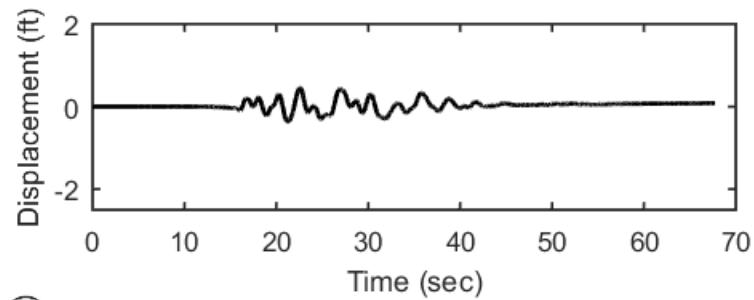
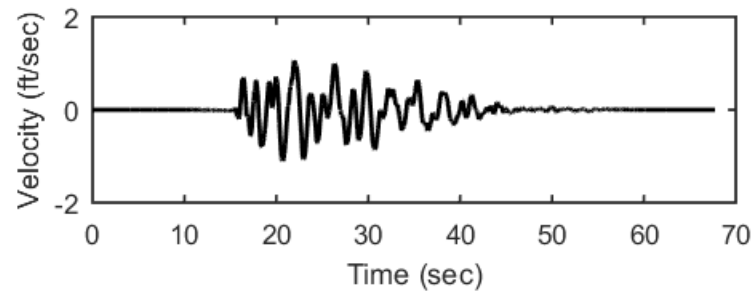
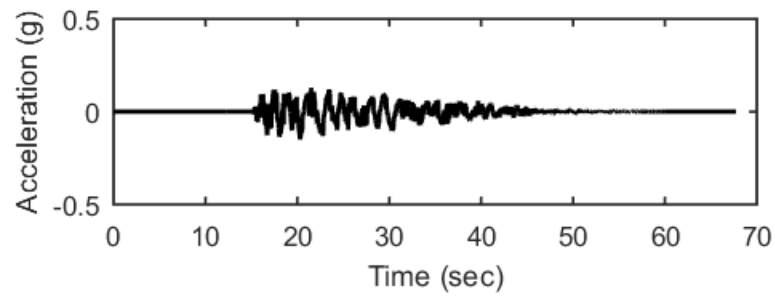
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



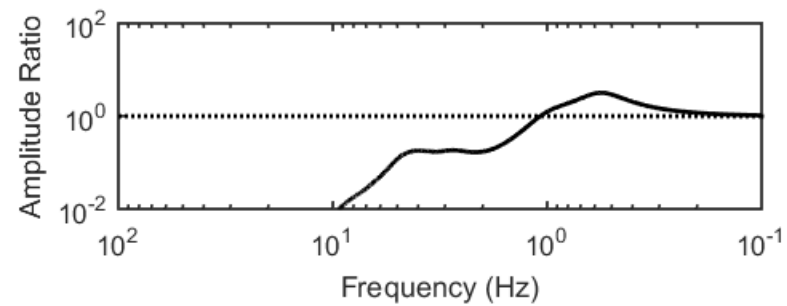
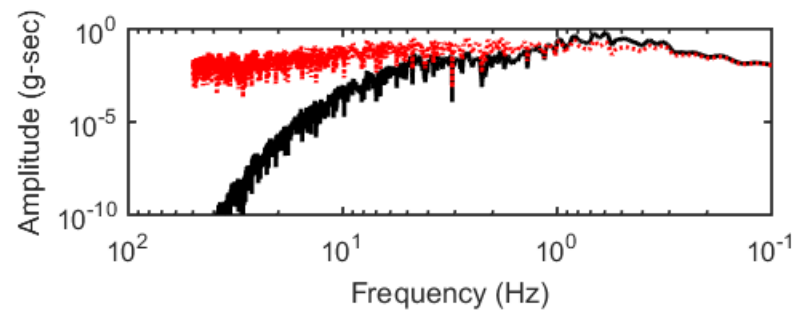
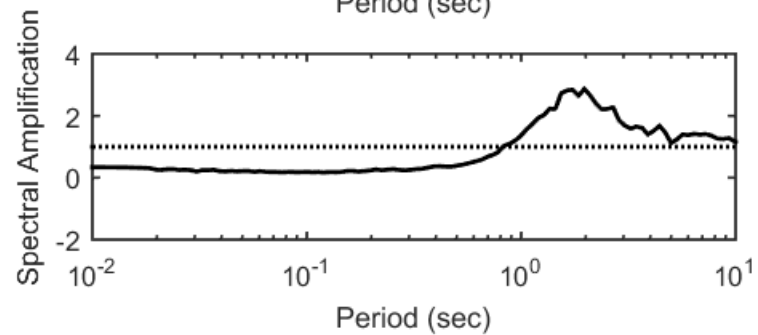
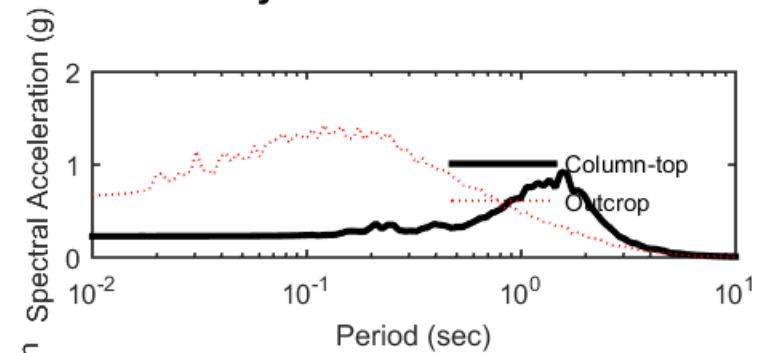
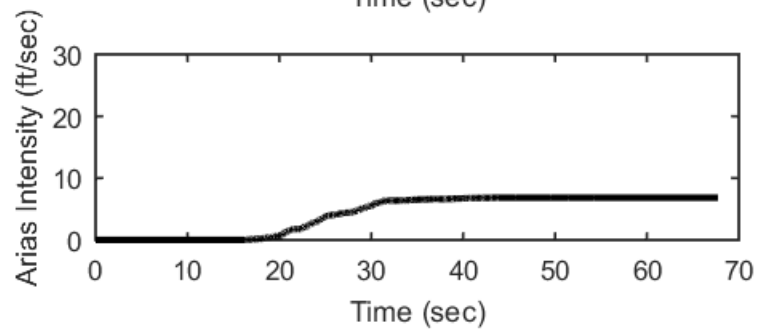
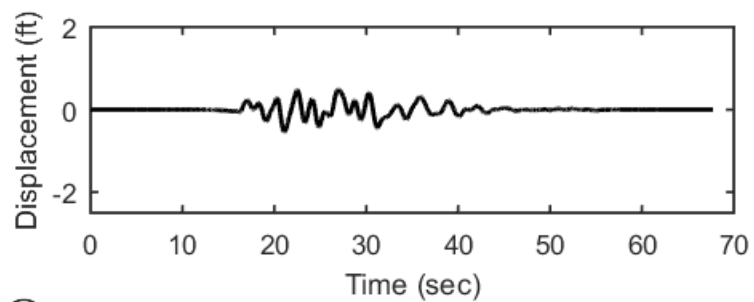
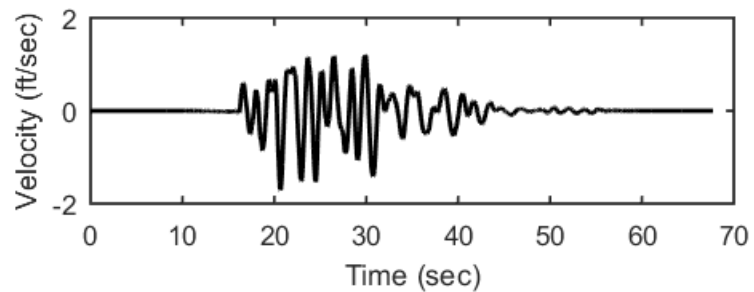
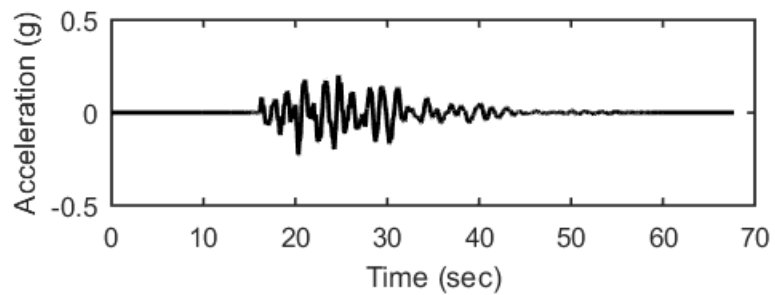
### Profile outputs for Motion: SEE3



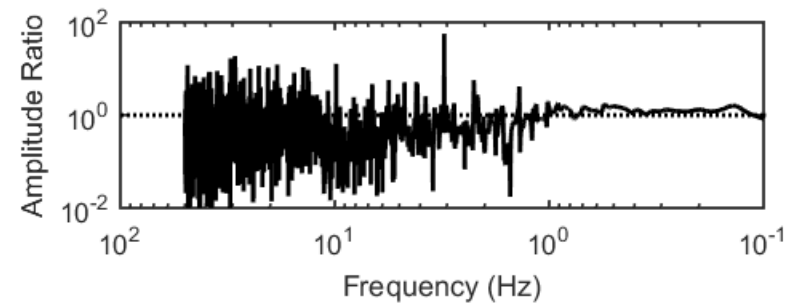
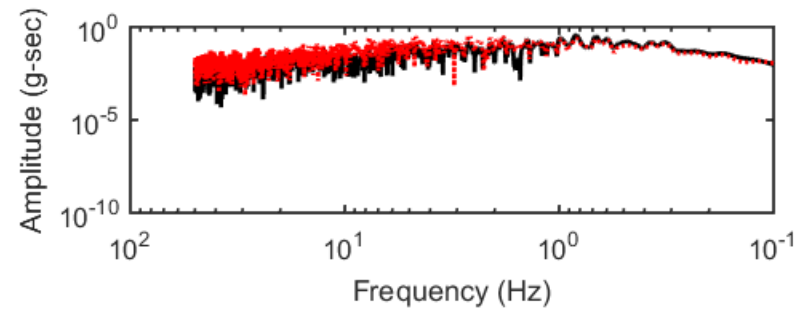
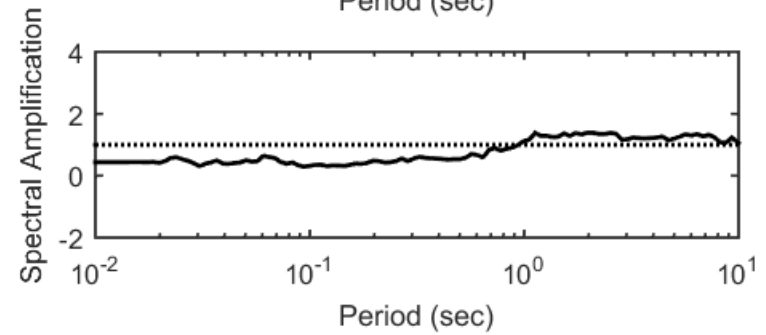
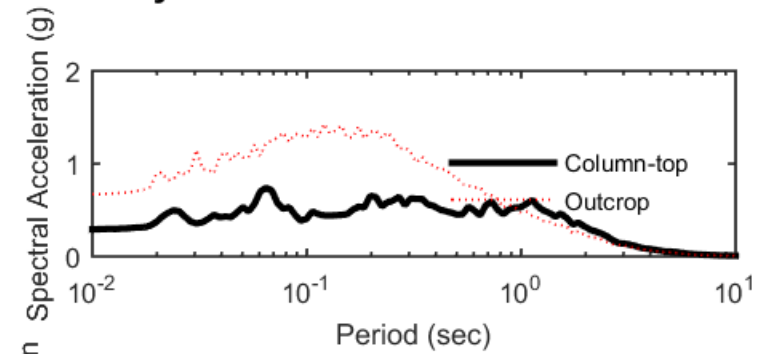
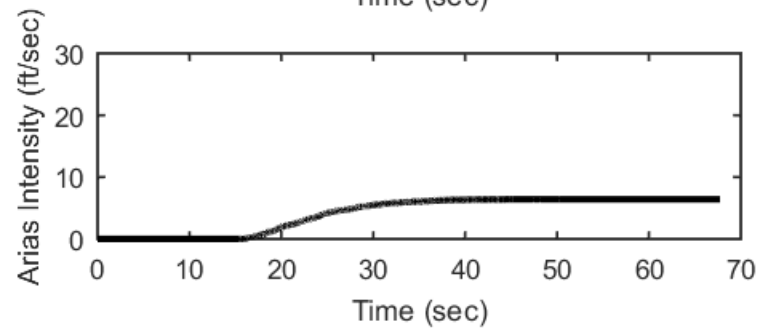
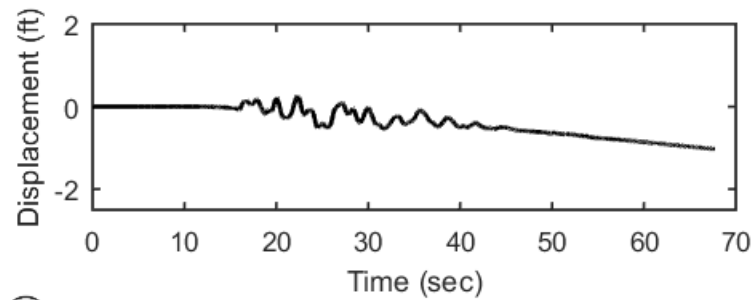
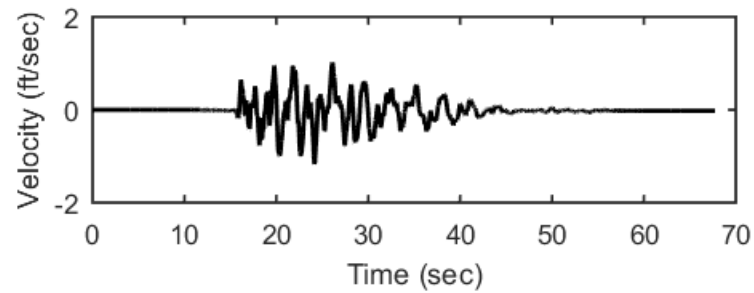
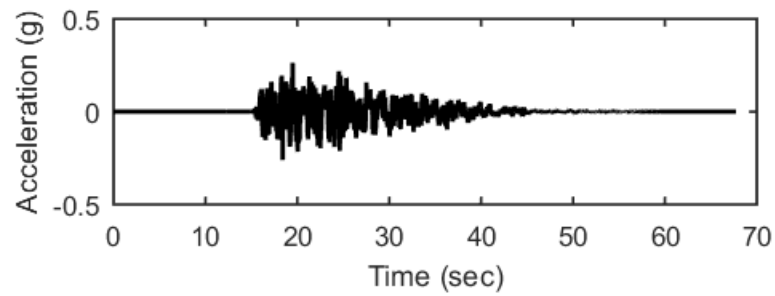
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



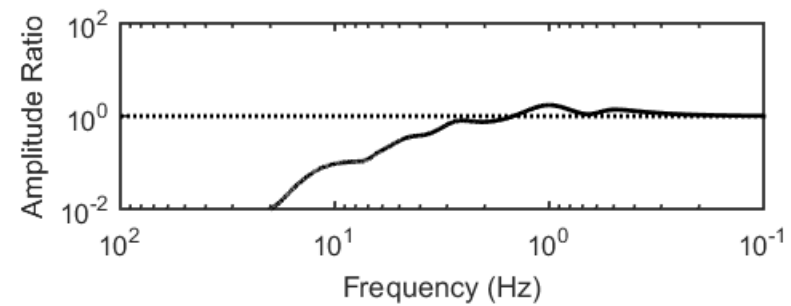
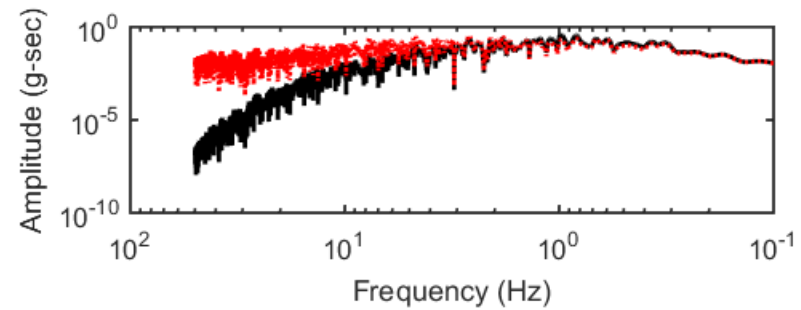
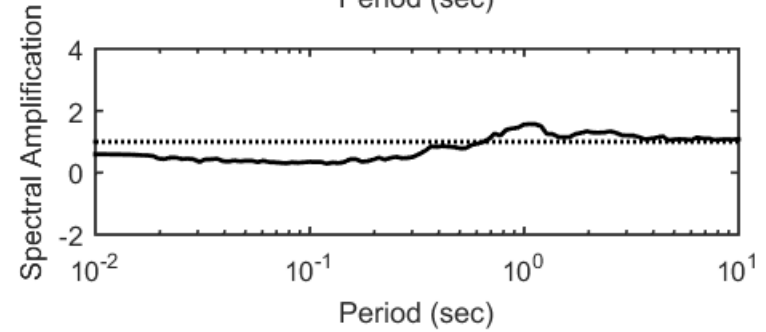
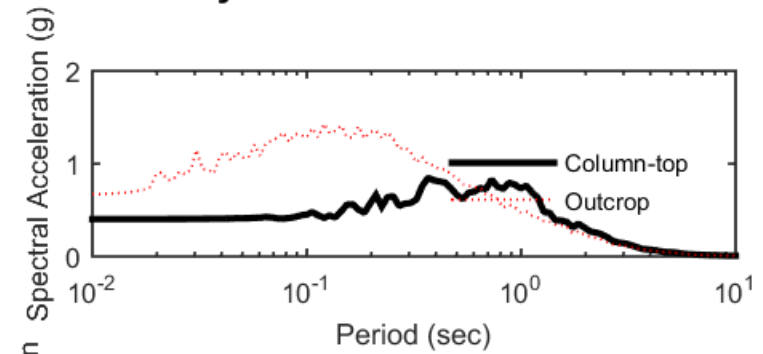
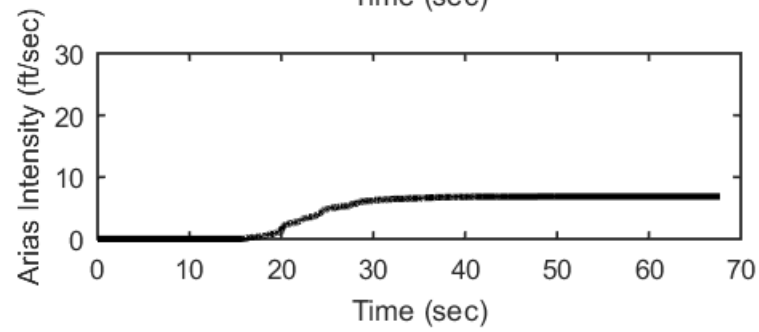
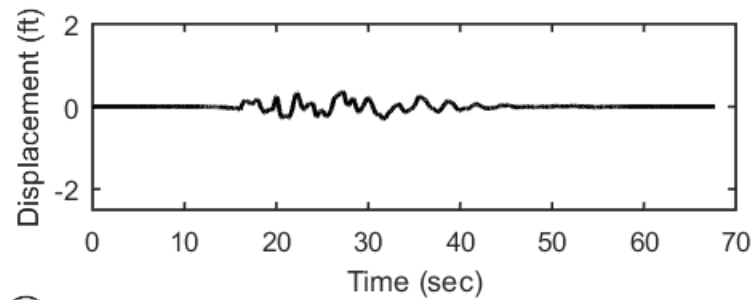
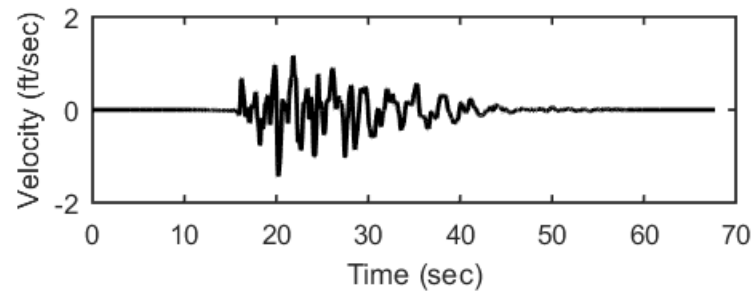
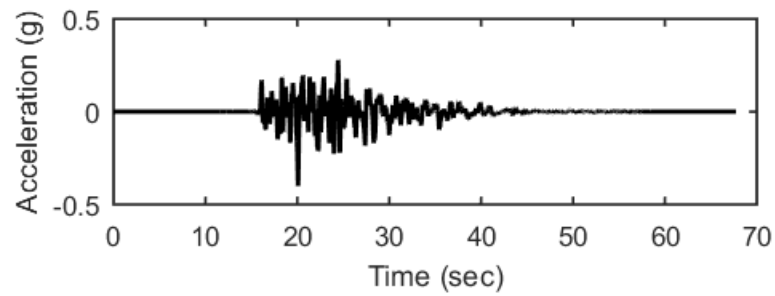
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



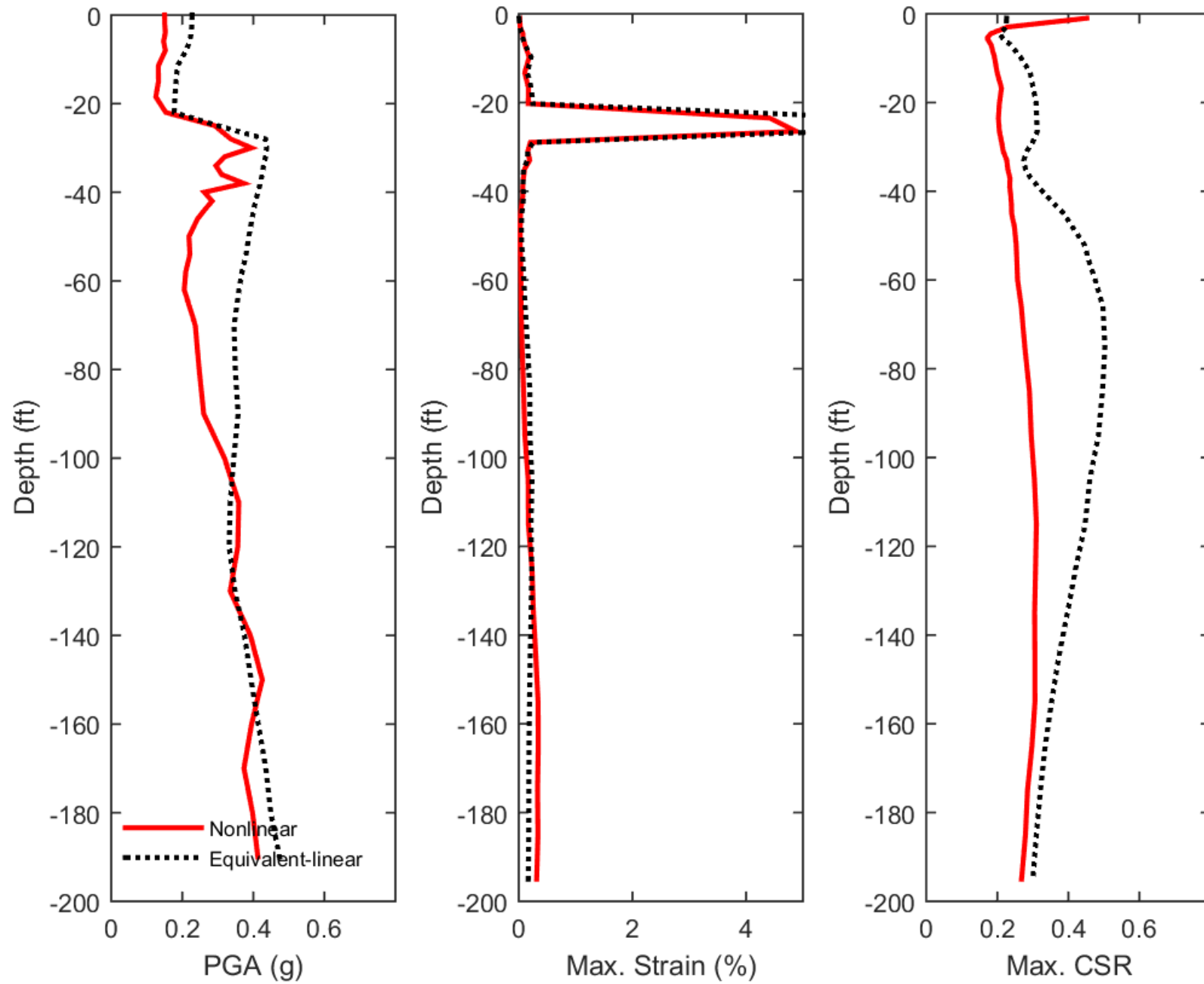
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



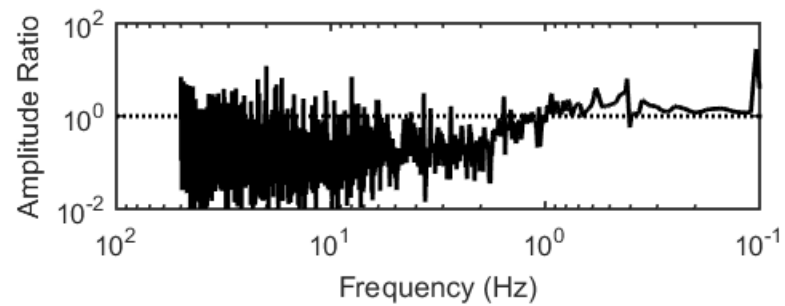
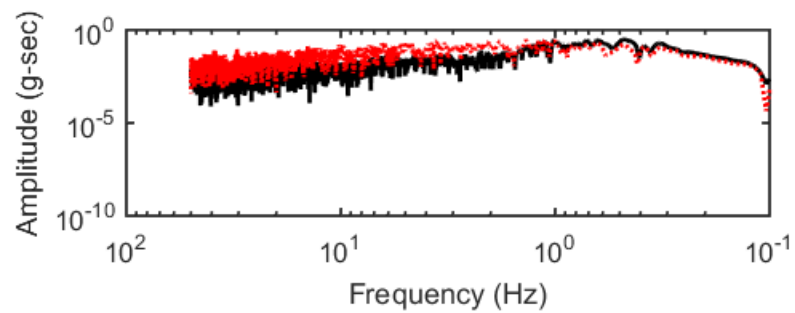
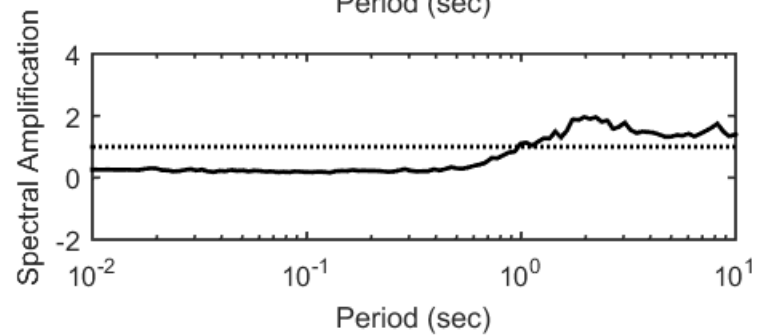
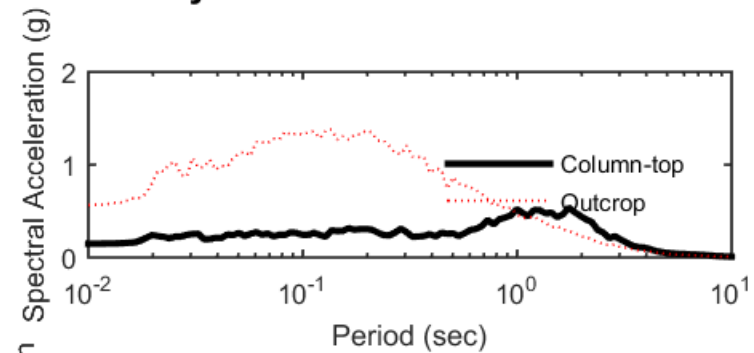
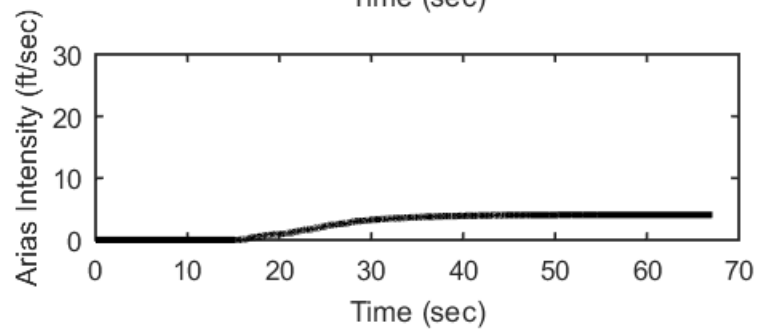
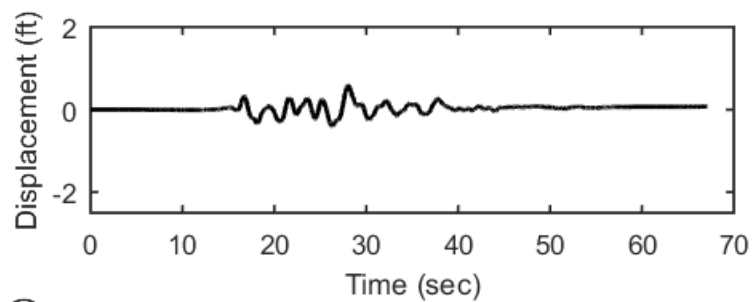
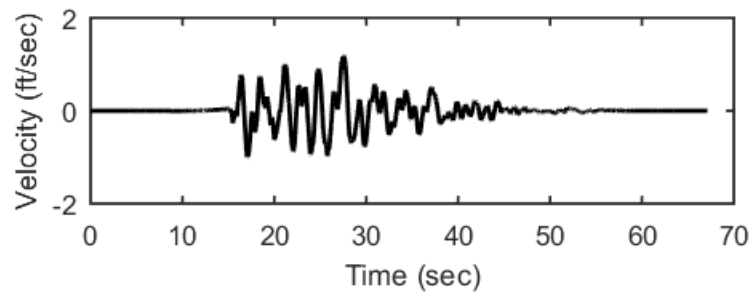
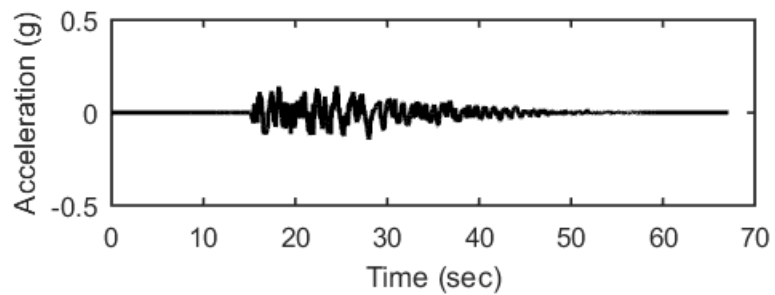
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



### Profile outputs for Motion: SEE4

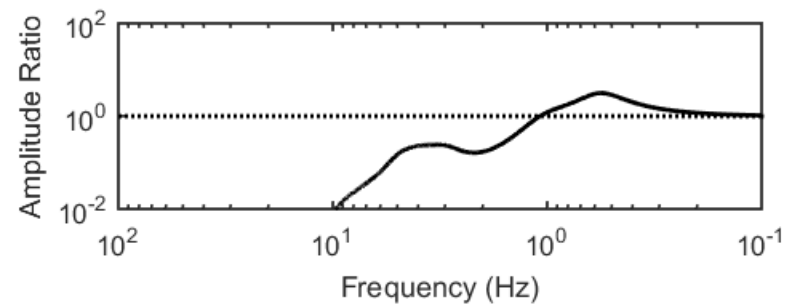
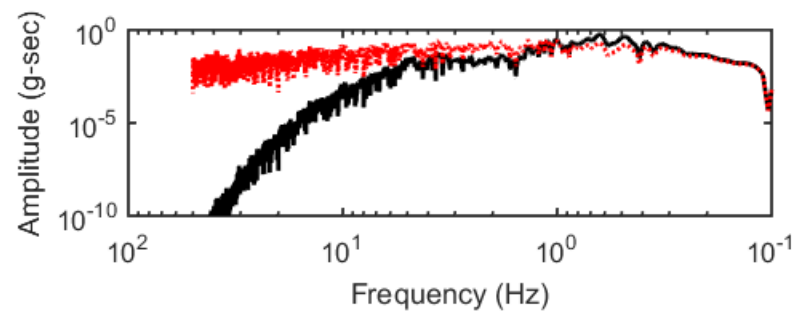
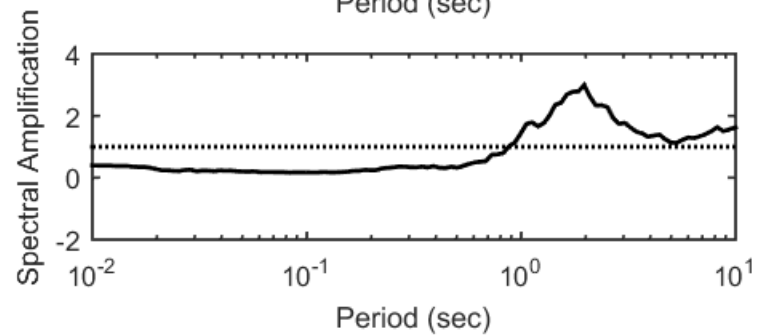
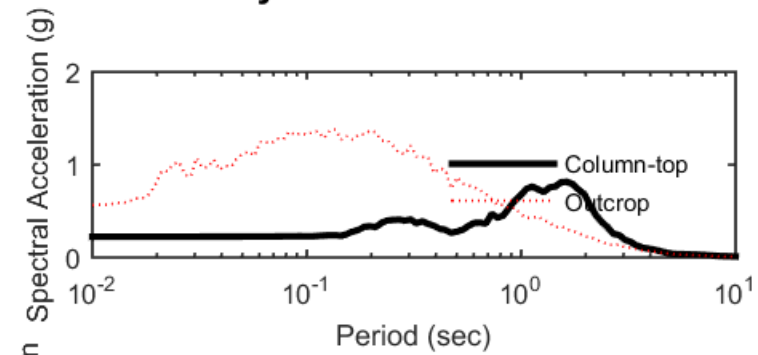
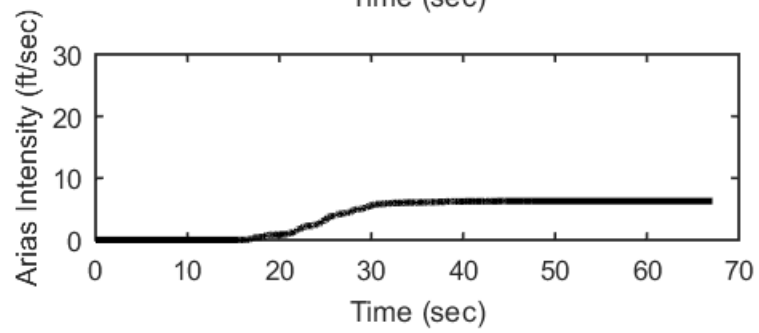
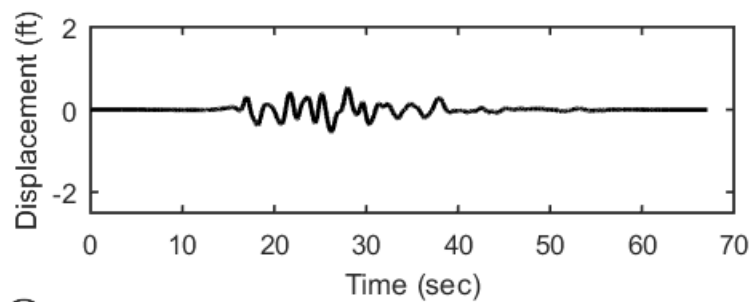
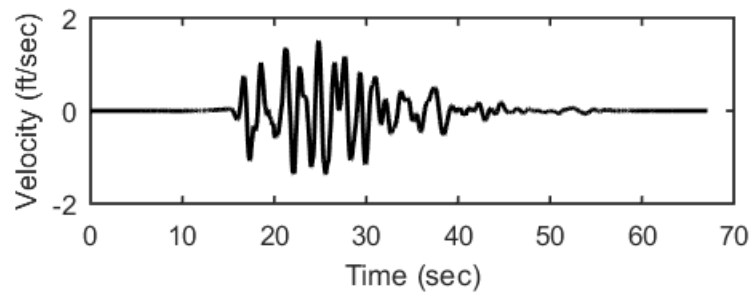
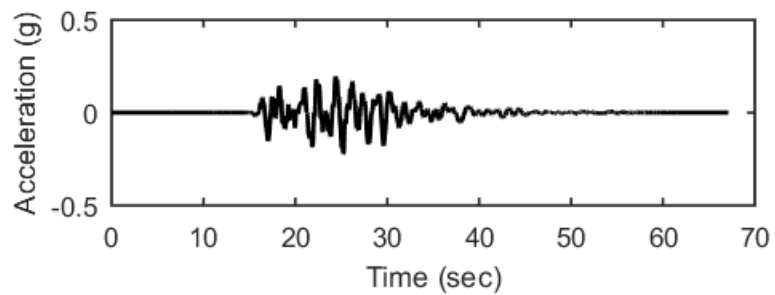


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5

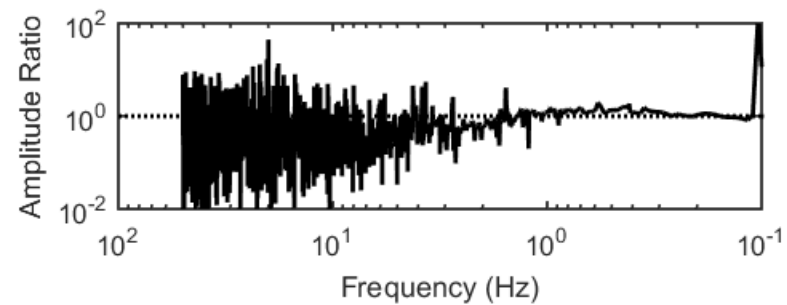
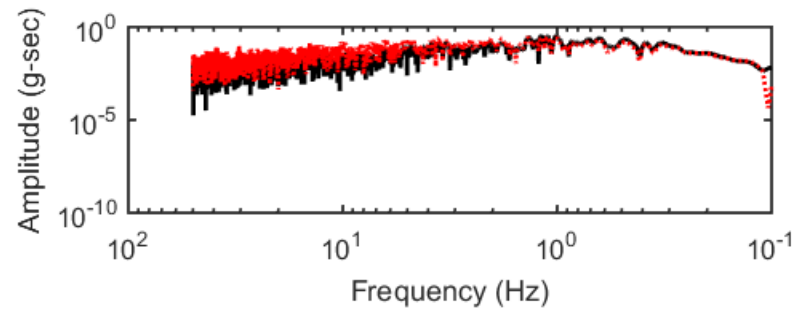
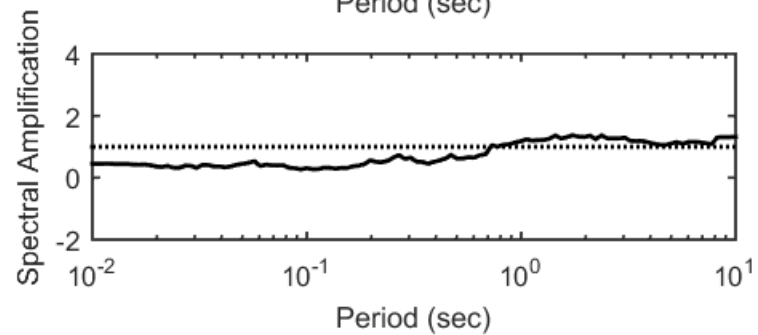
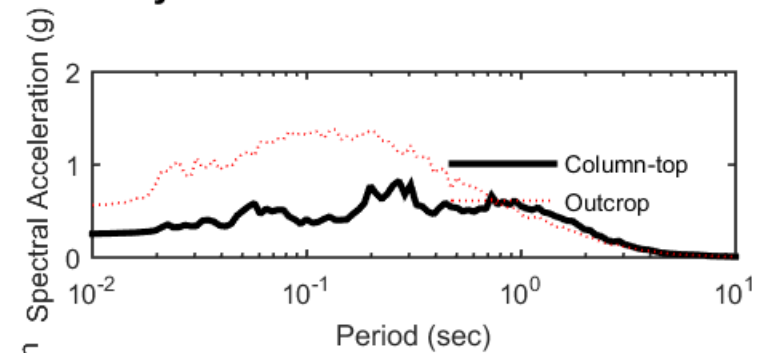
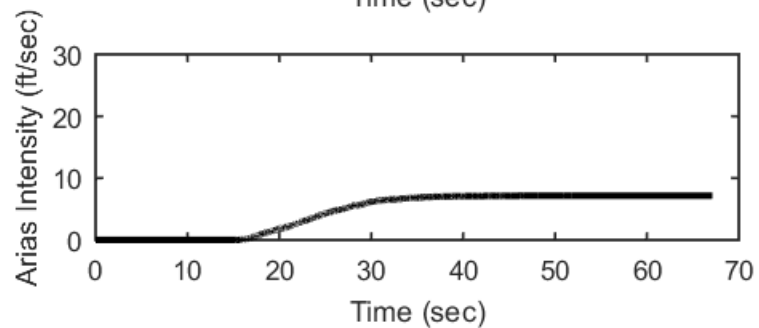
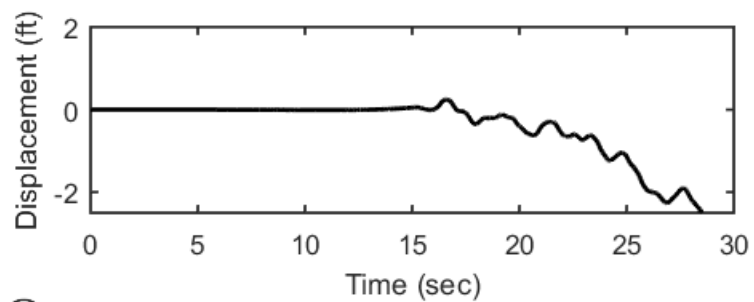
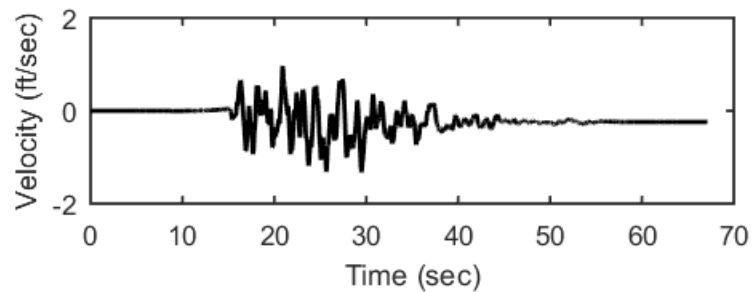
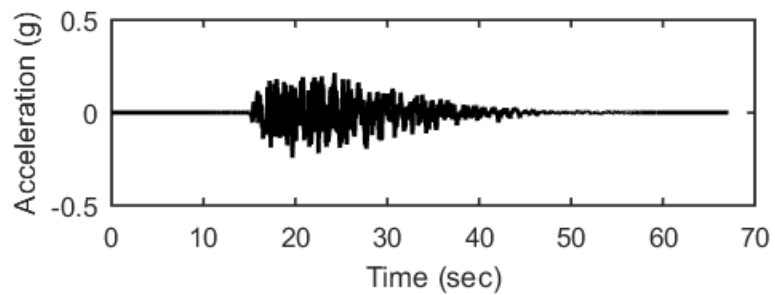




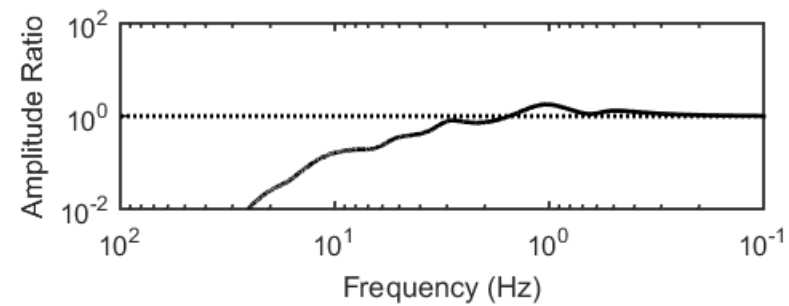
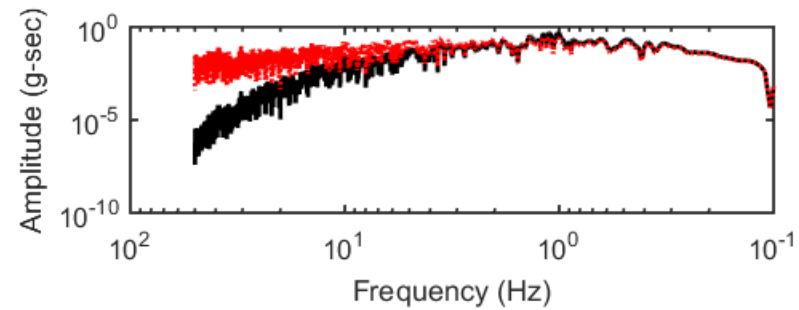
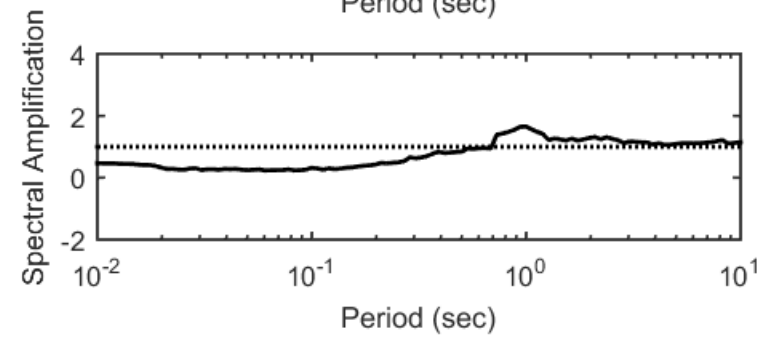
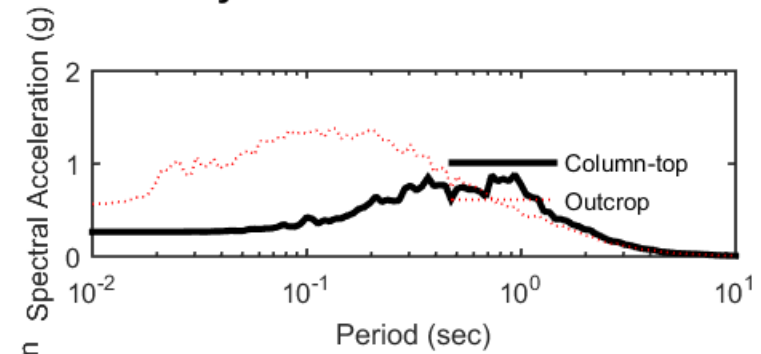
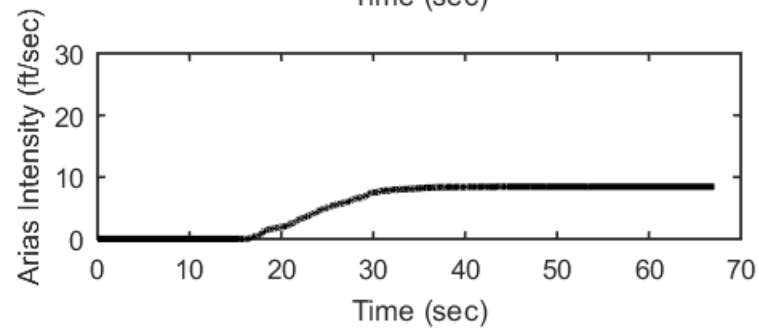
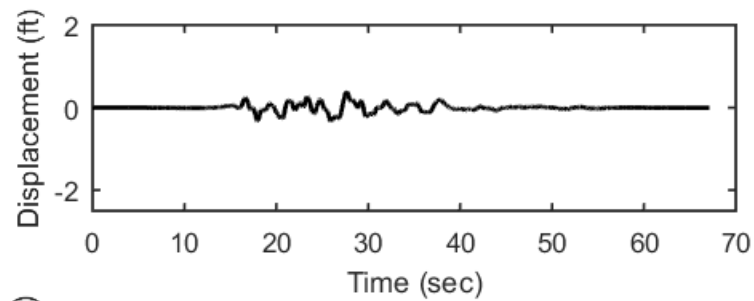
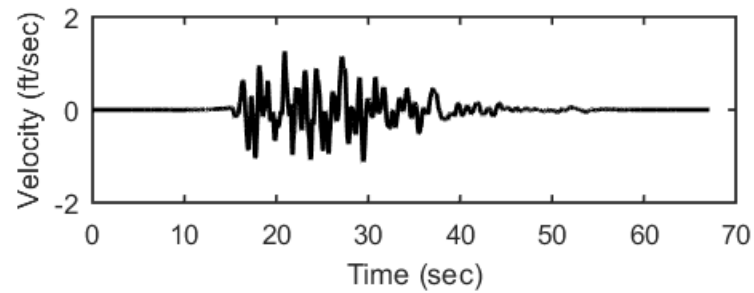
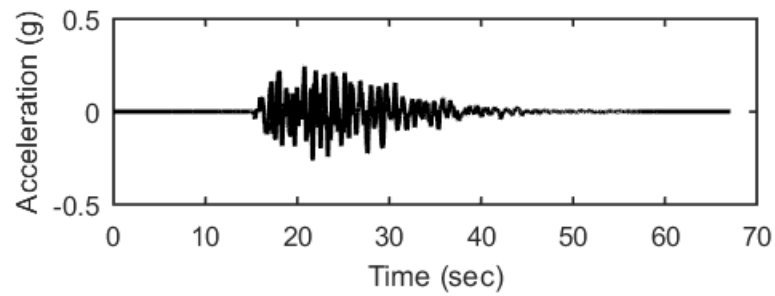
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



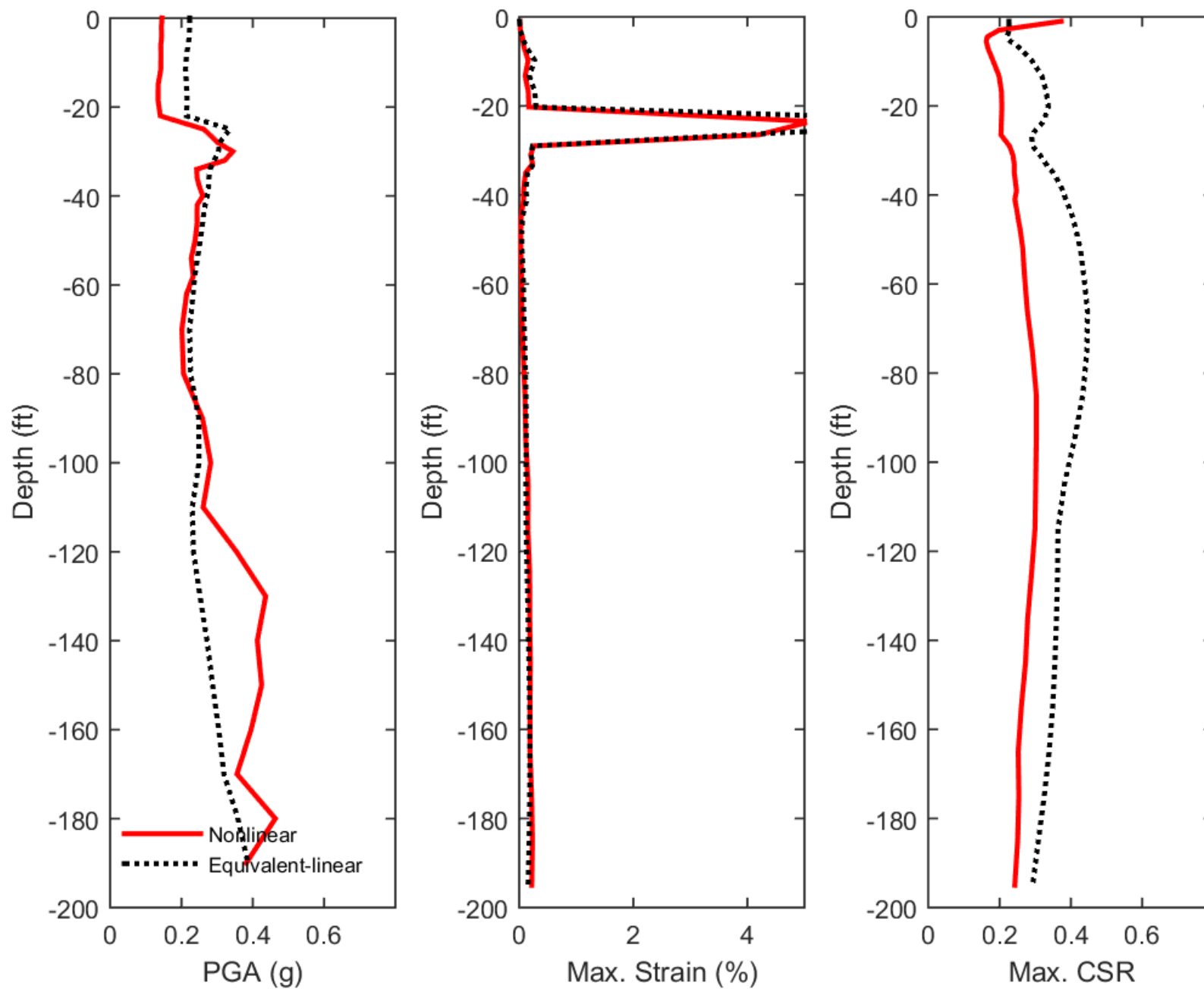
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



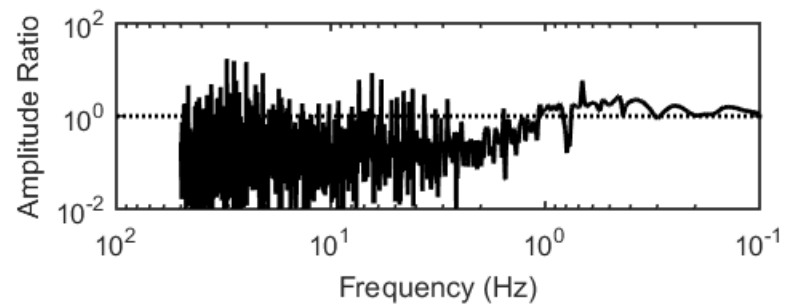
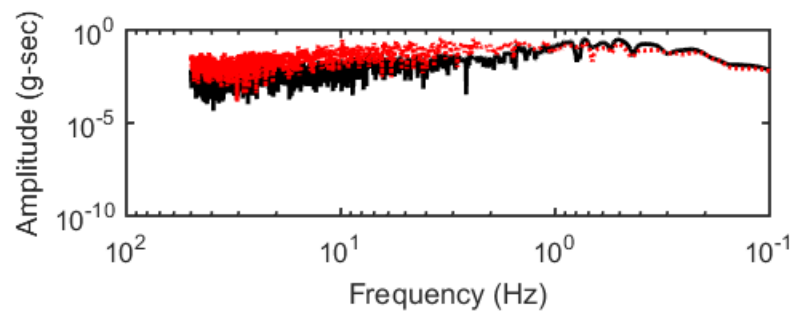
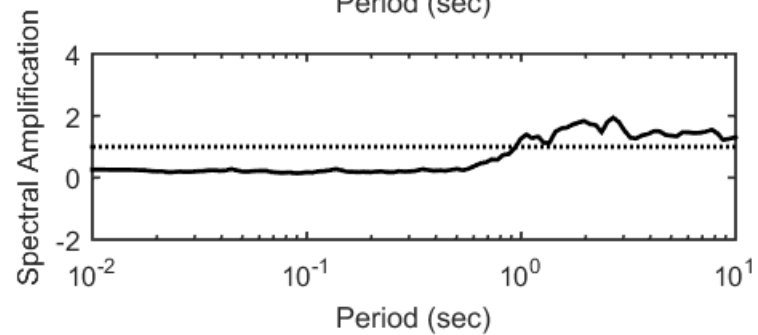
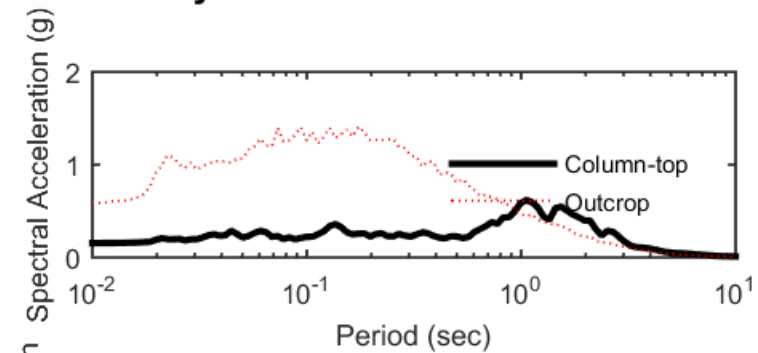
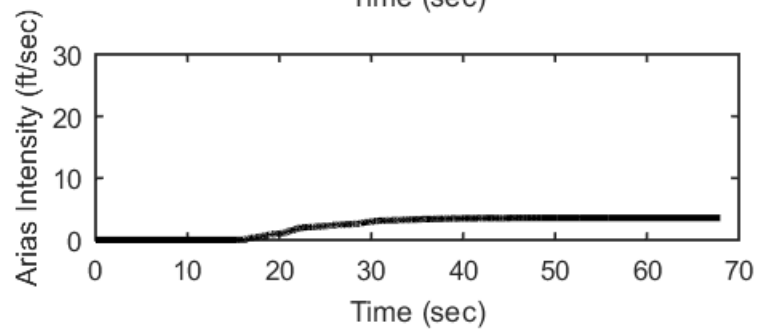
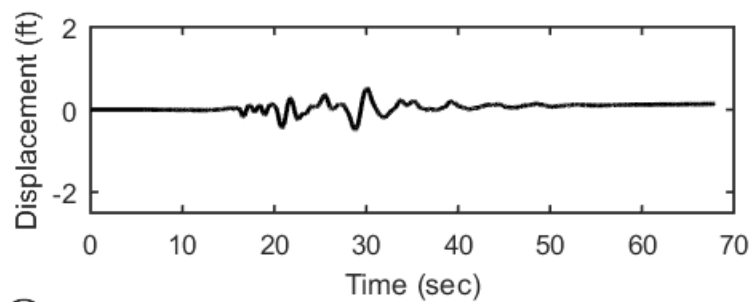
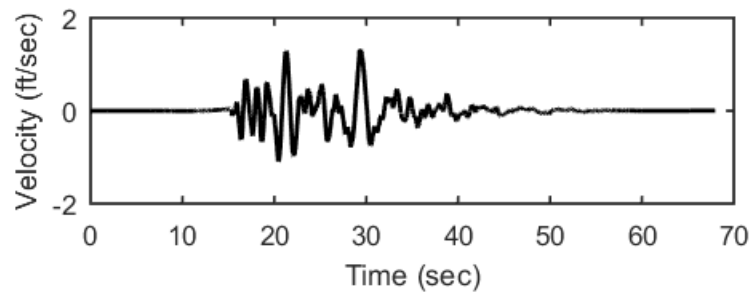
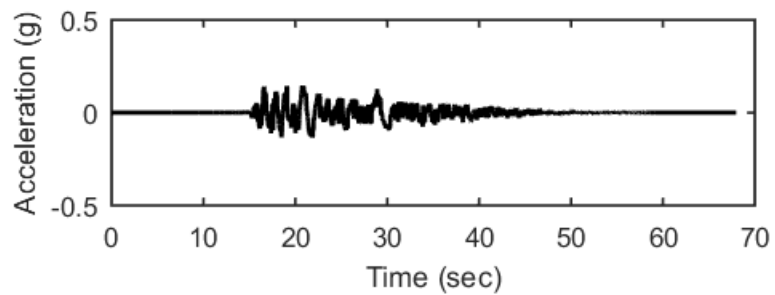
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



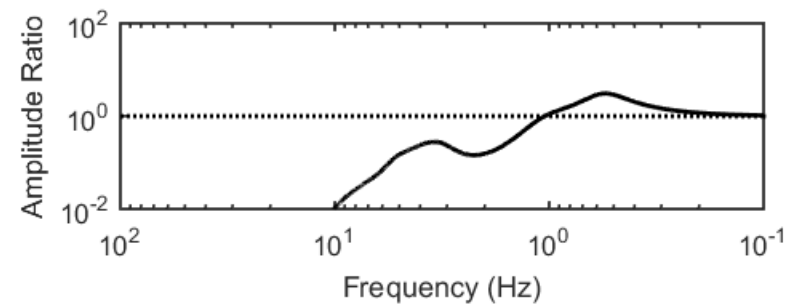
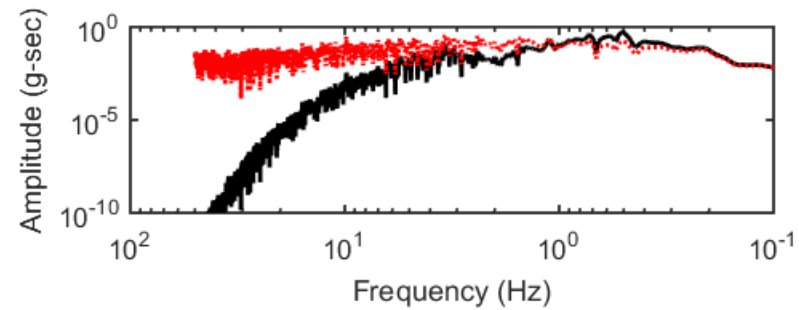
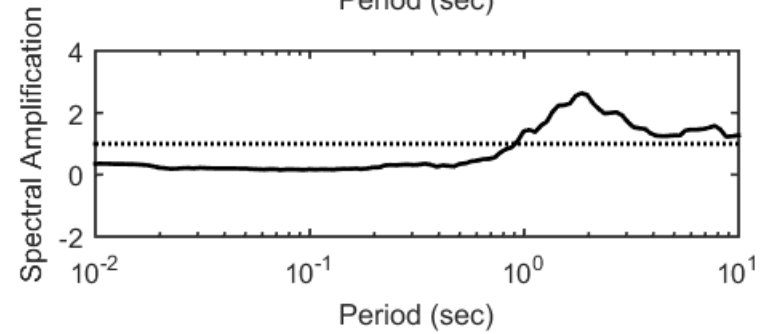
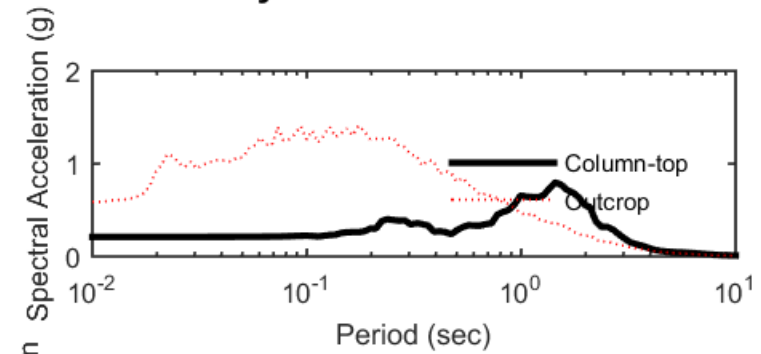
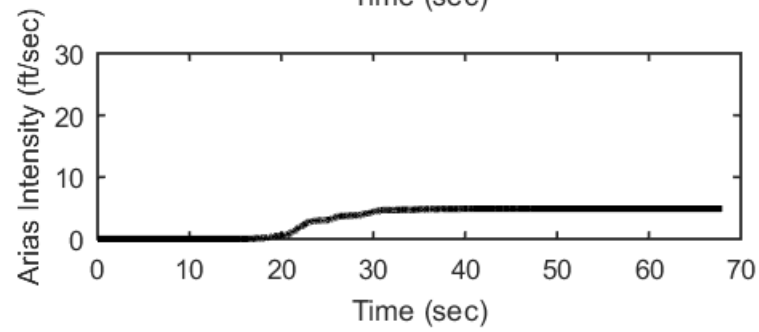
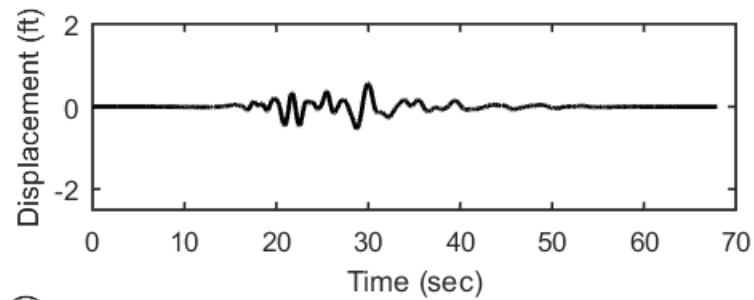
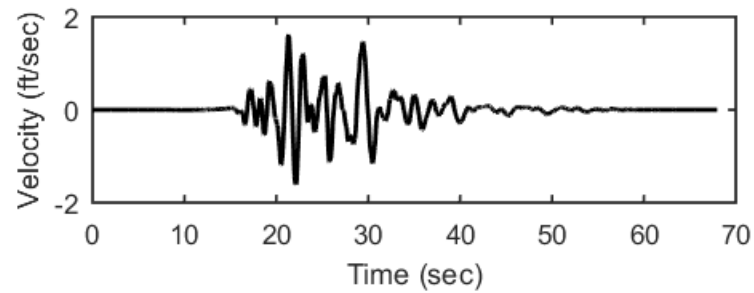
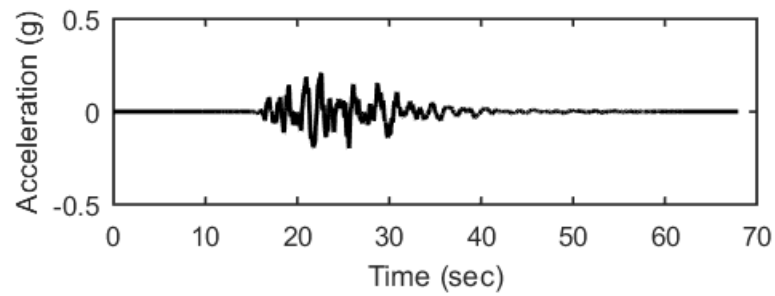
### Profile outputs for Motion: SEE5



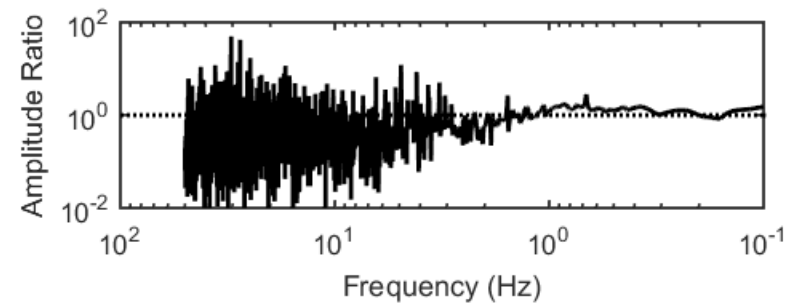
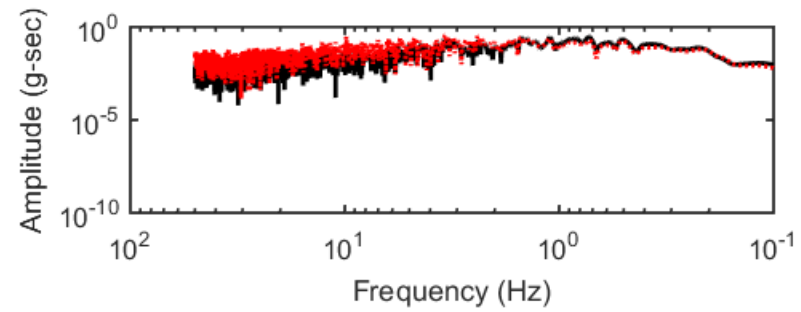
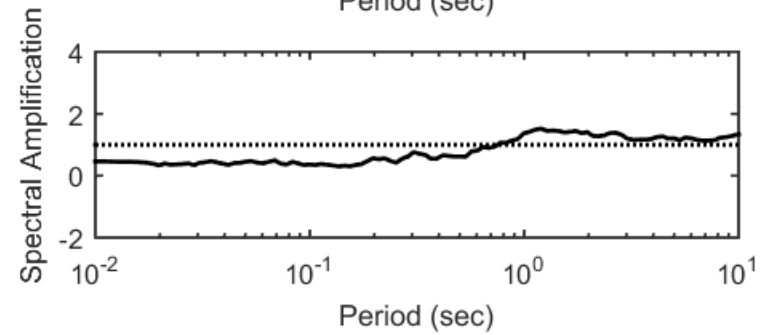
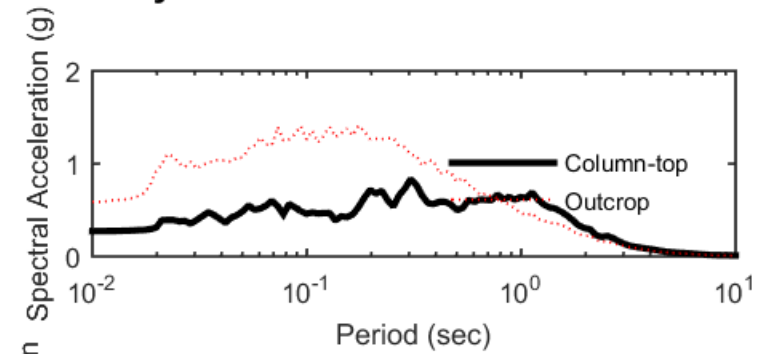
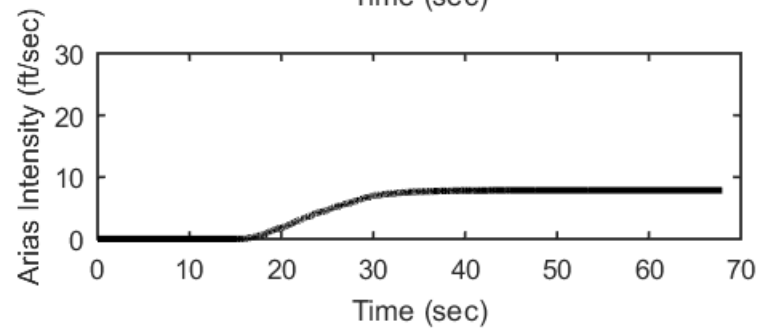
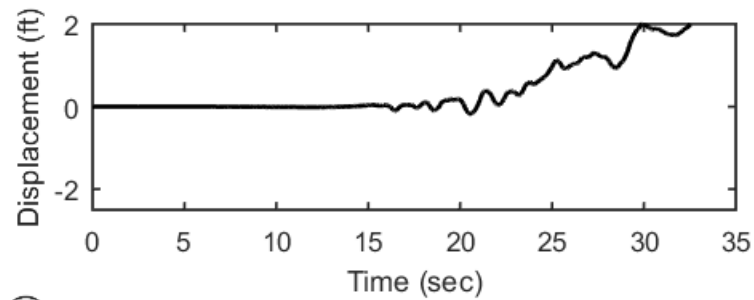
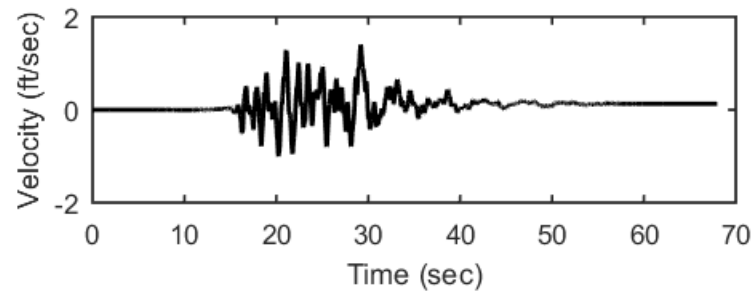
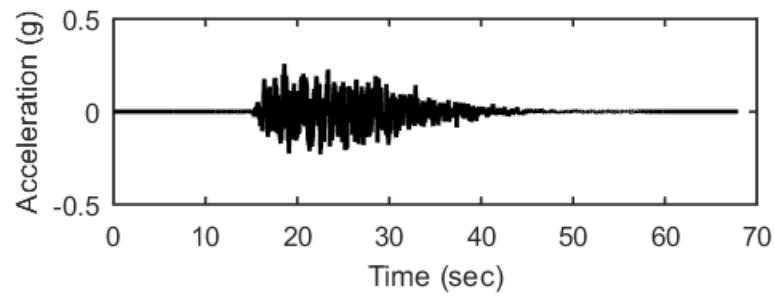
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



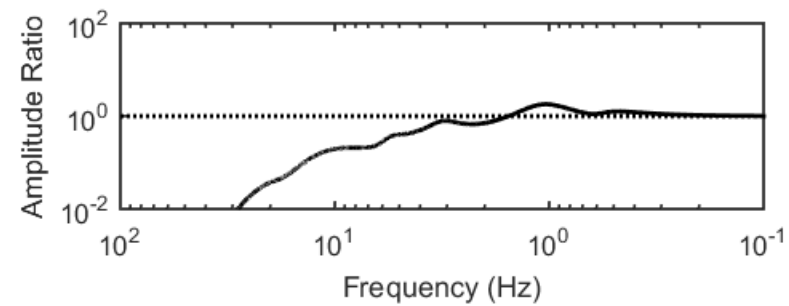
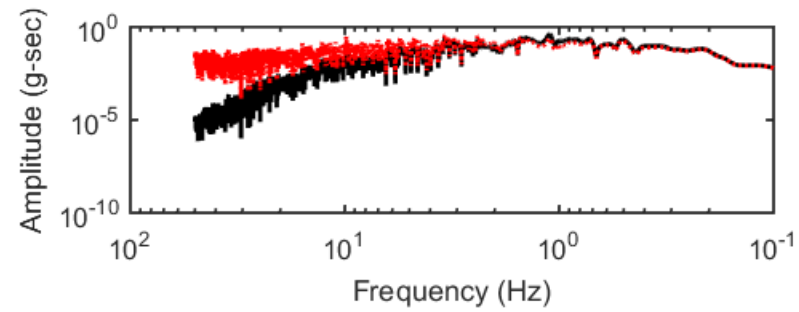
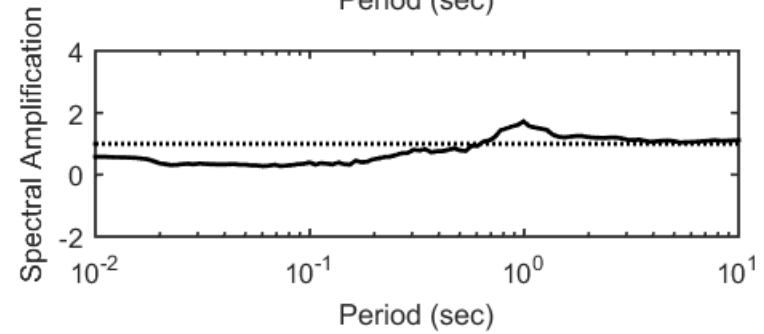
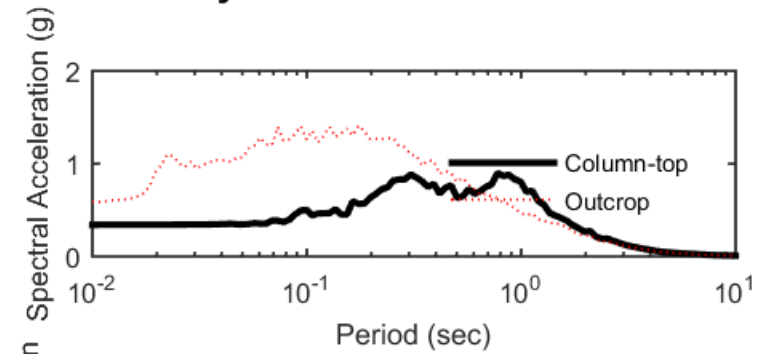
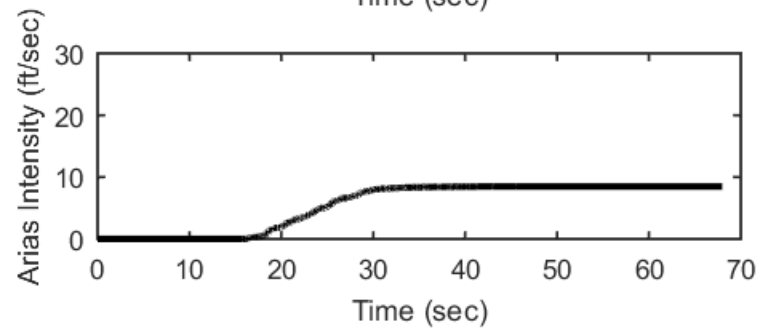
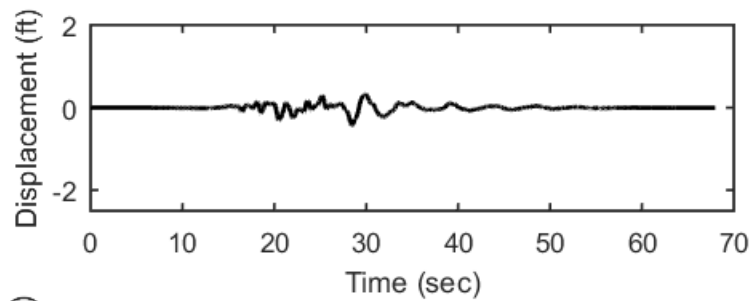
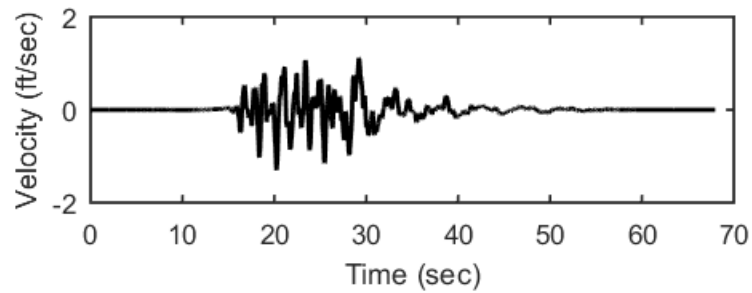
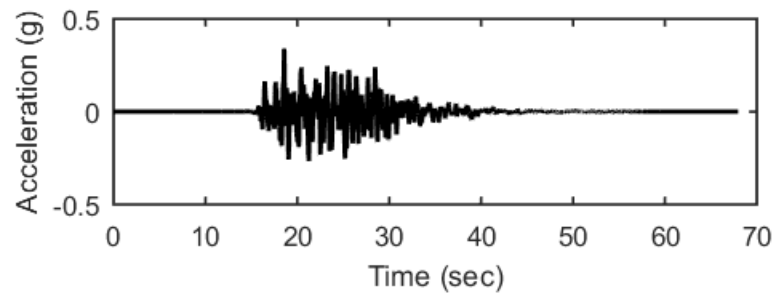
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6

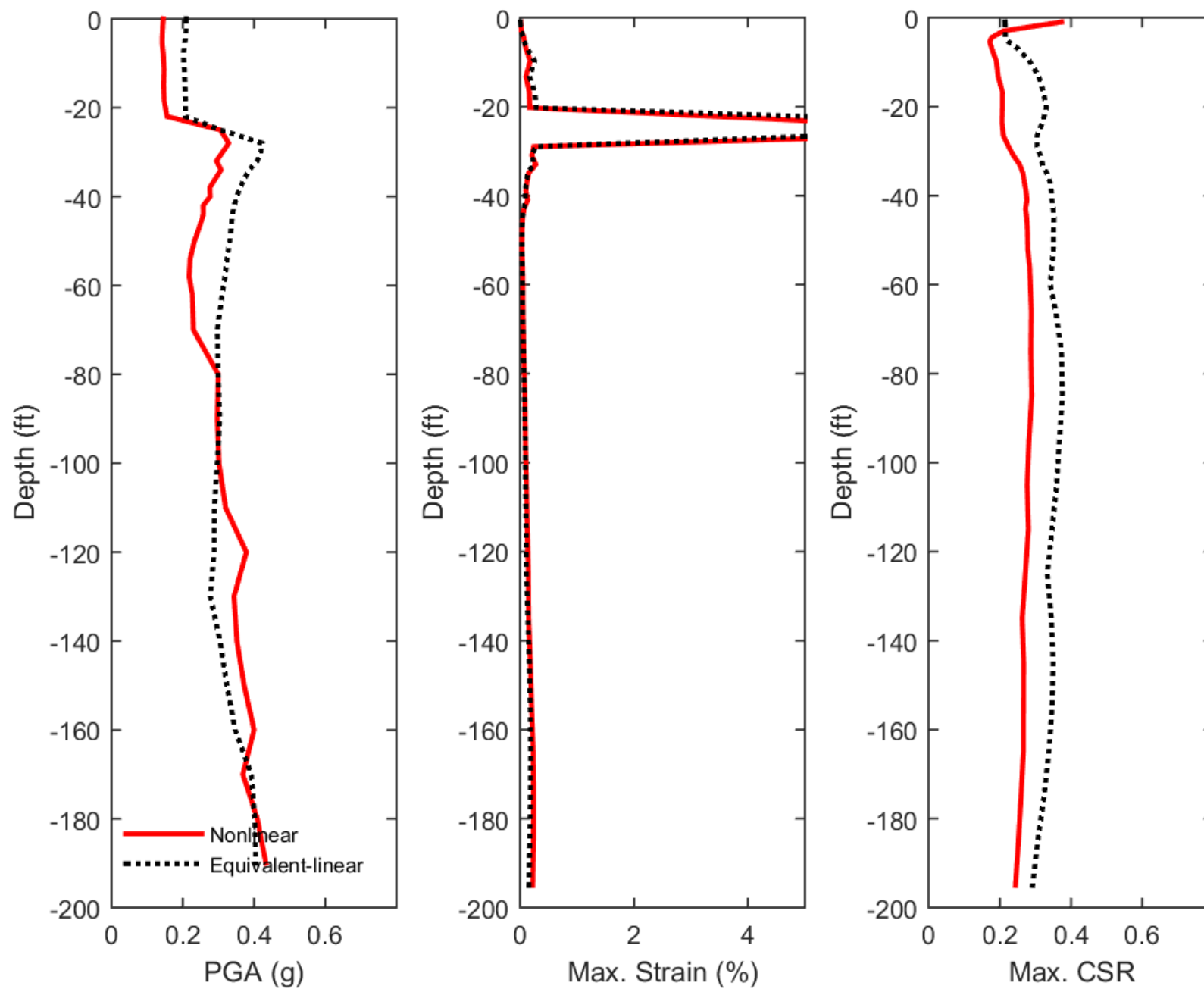


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6

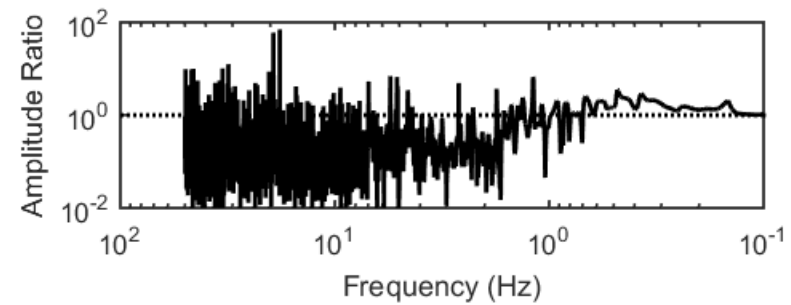
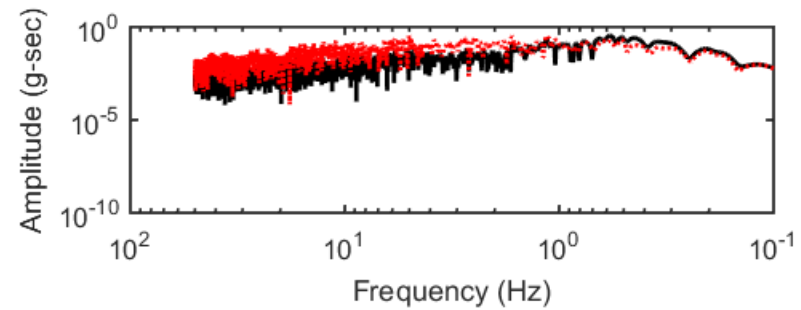
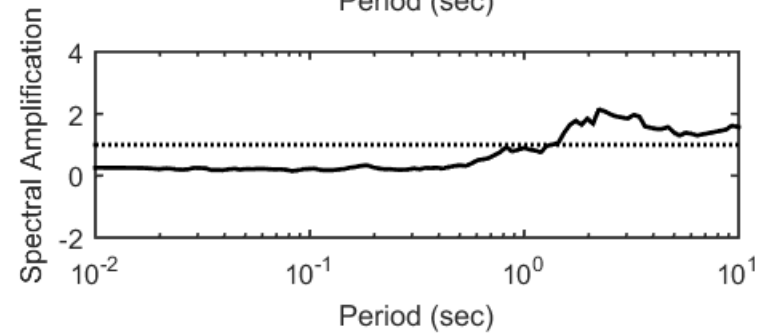
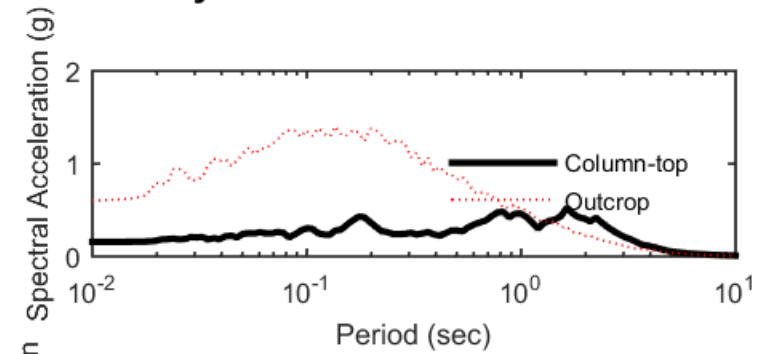
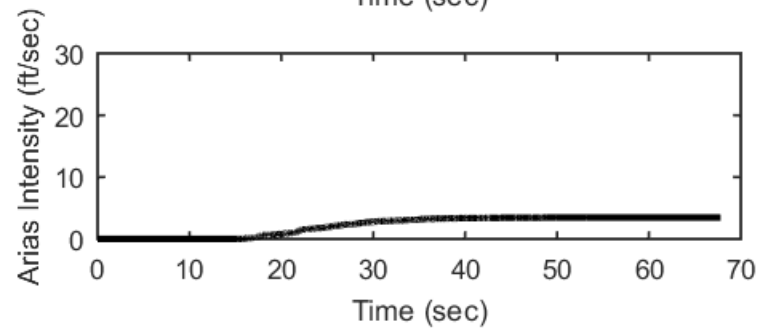
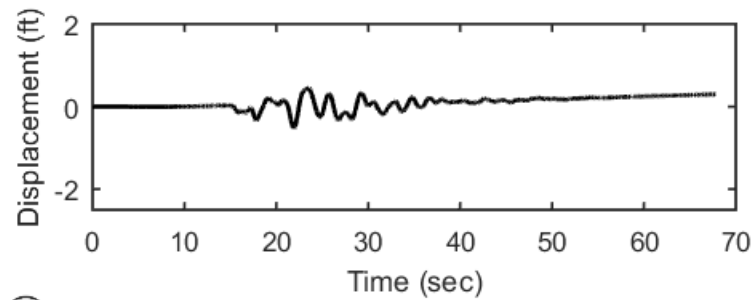
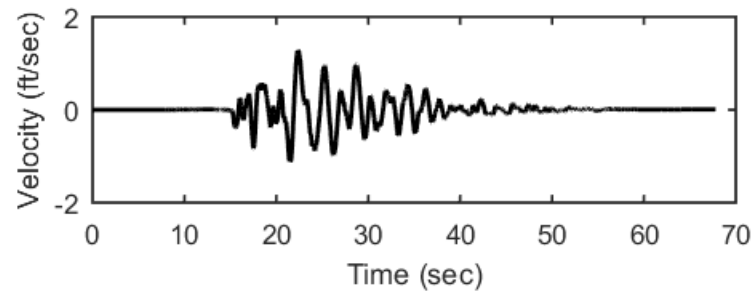
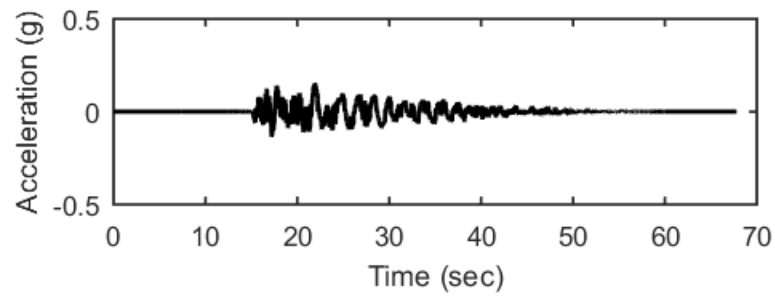




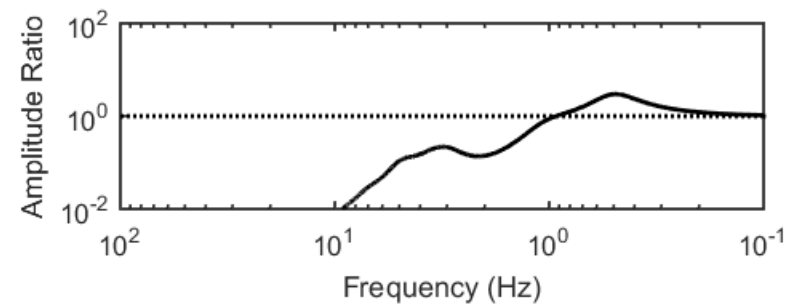
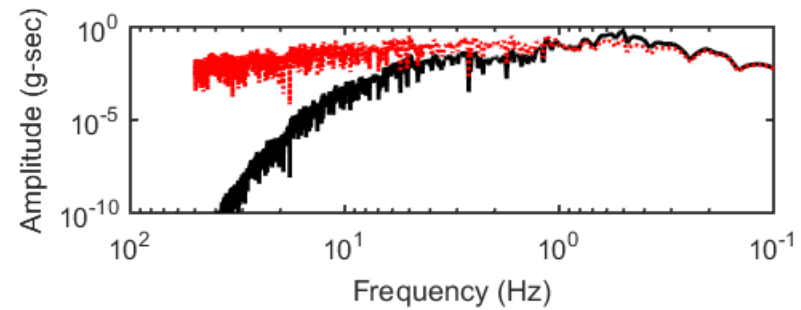
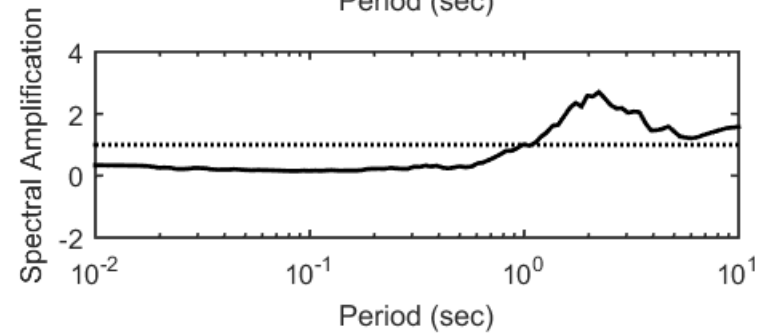
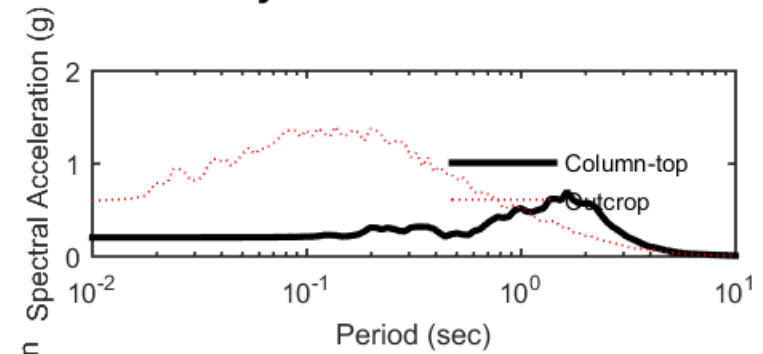
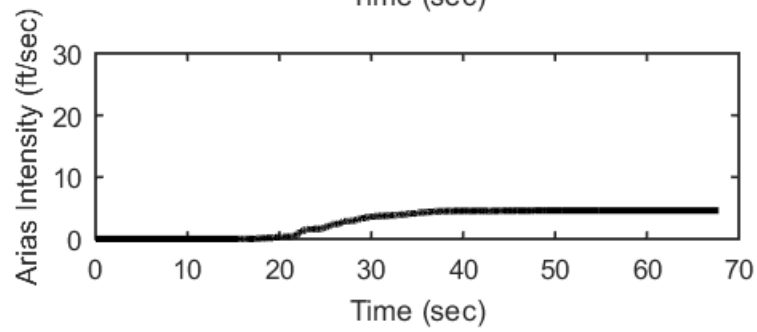
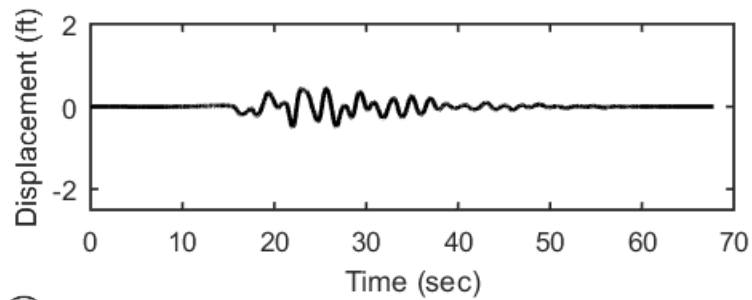
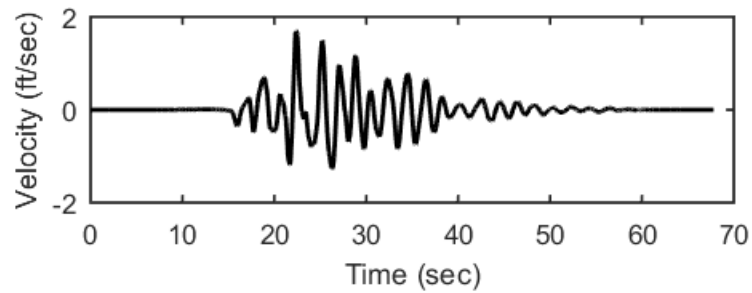
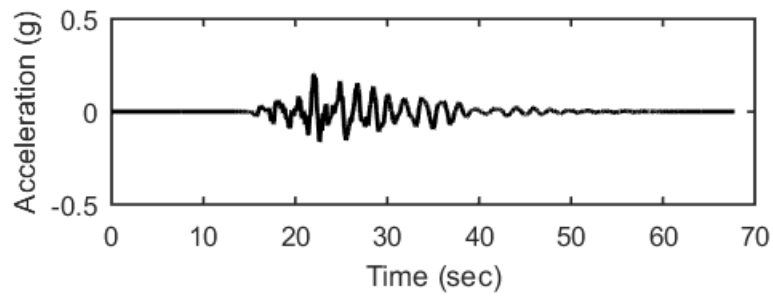
### Profile outputs for Motion: SEE6



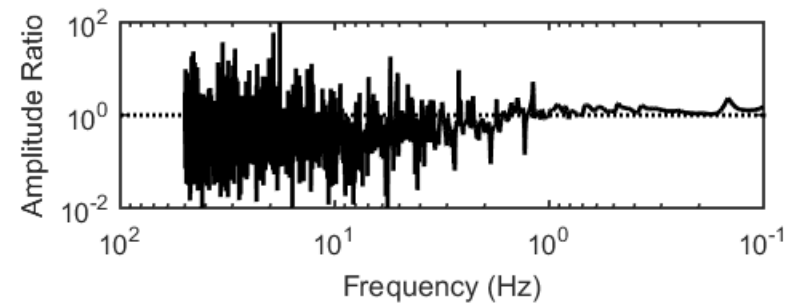
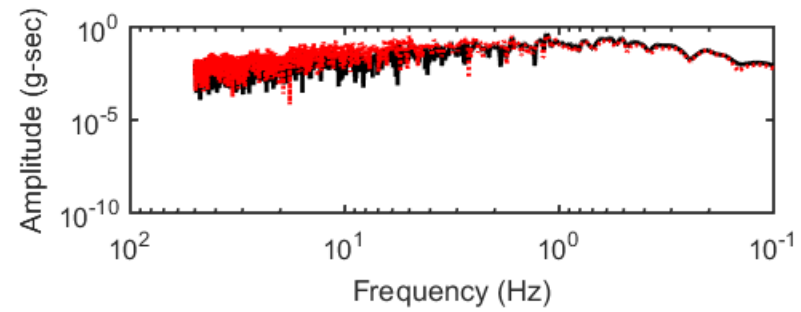
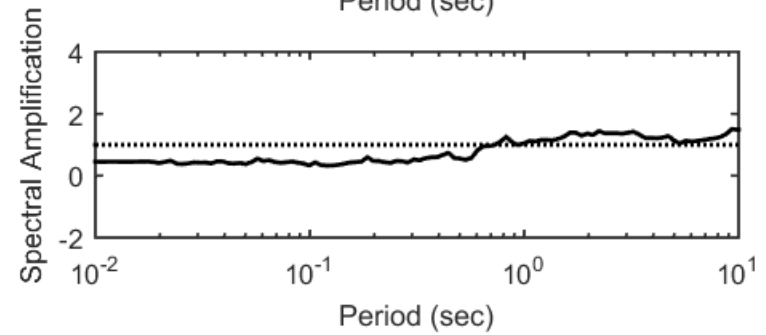
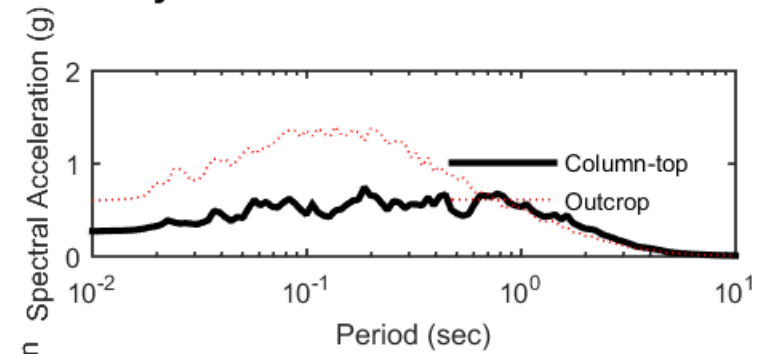
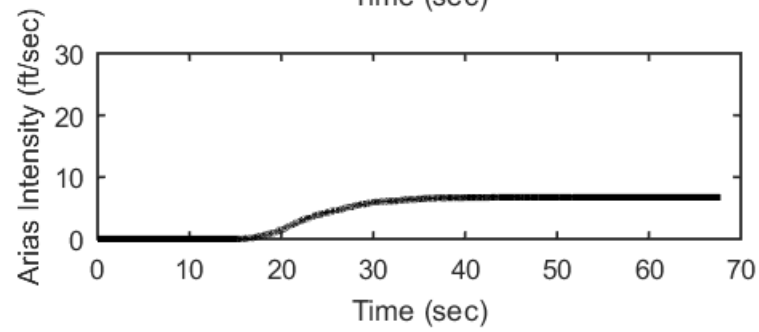
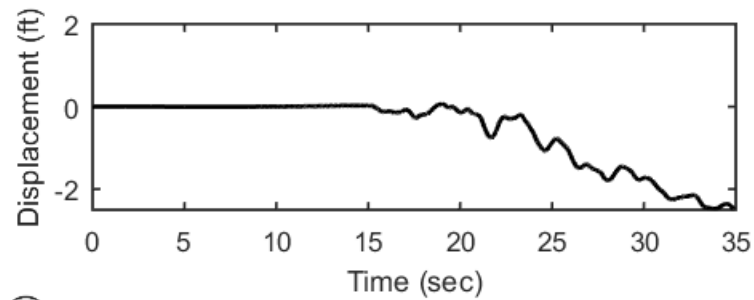
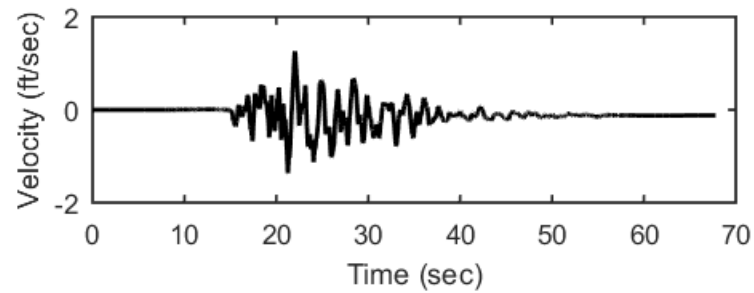
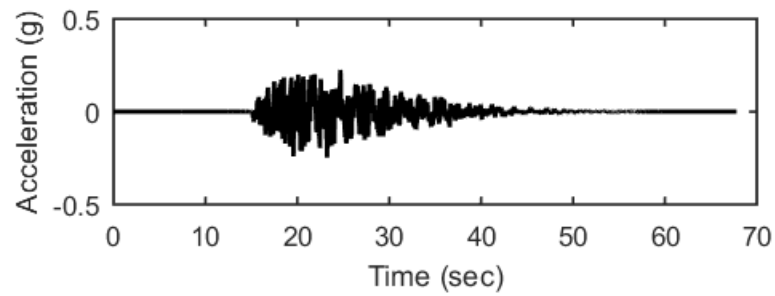
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



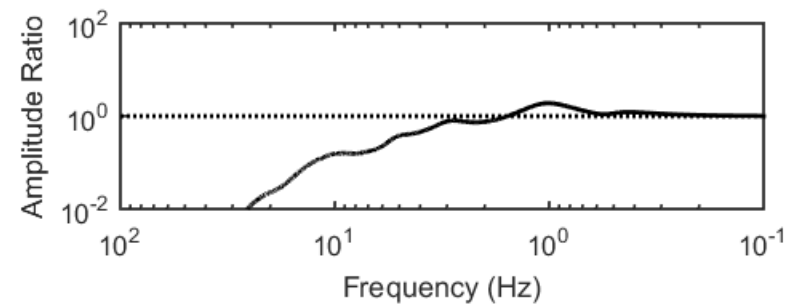
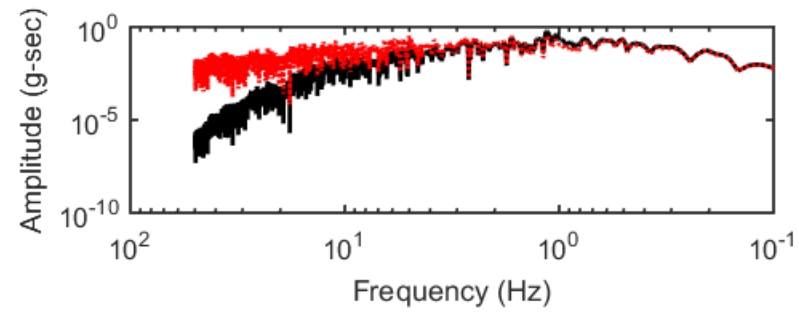
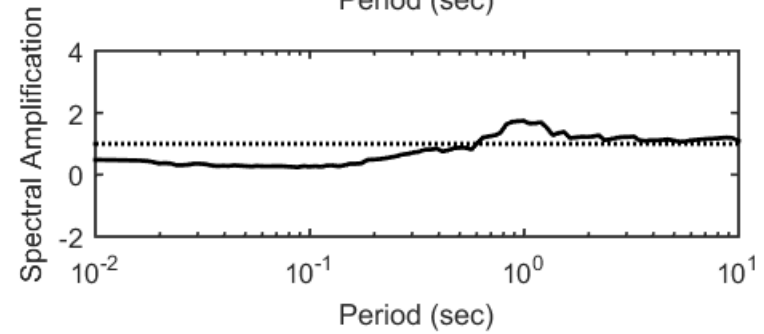
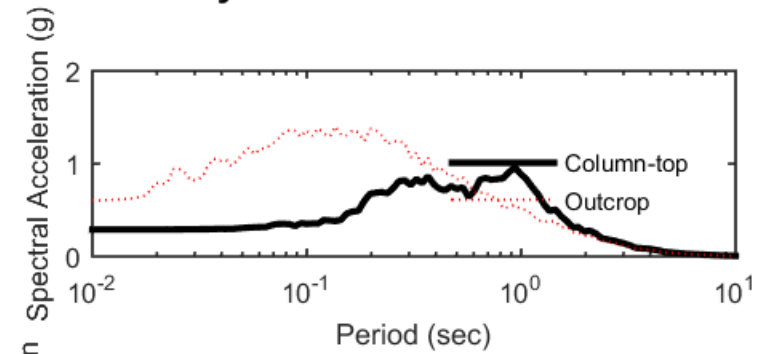
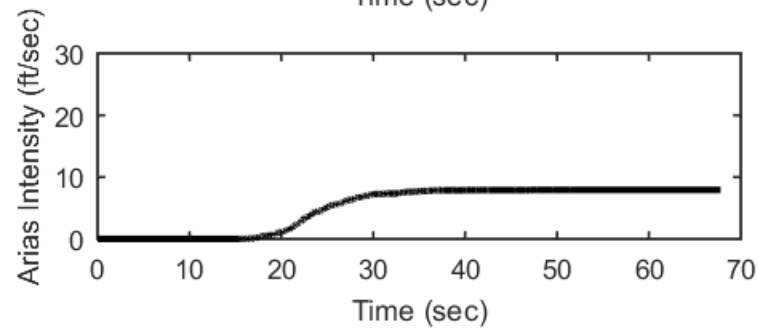
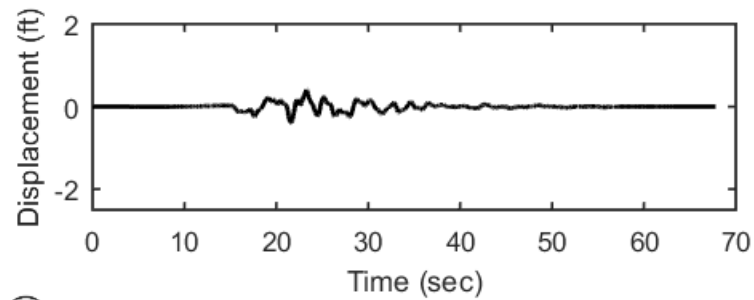
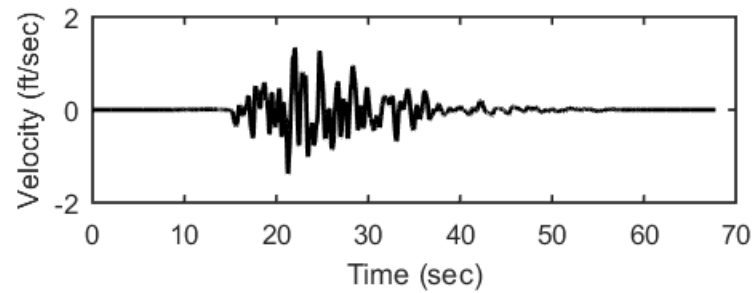
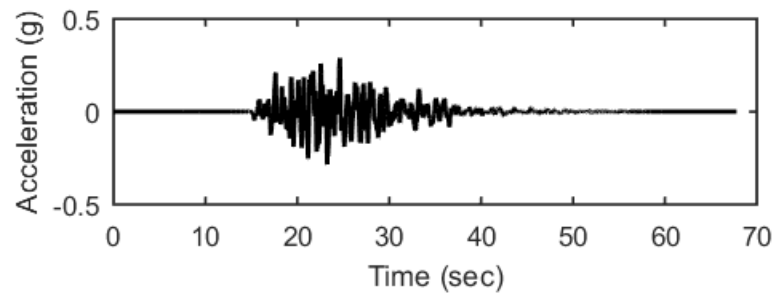
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



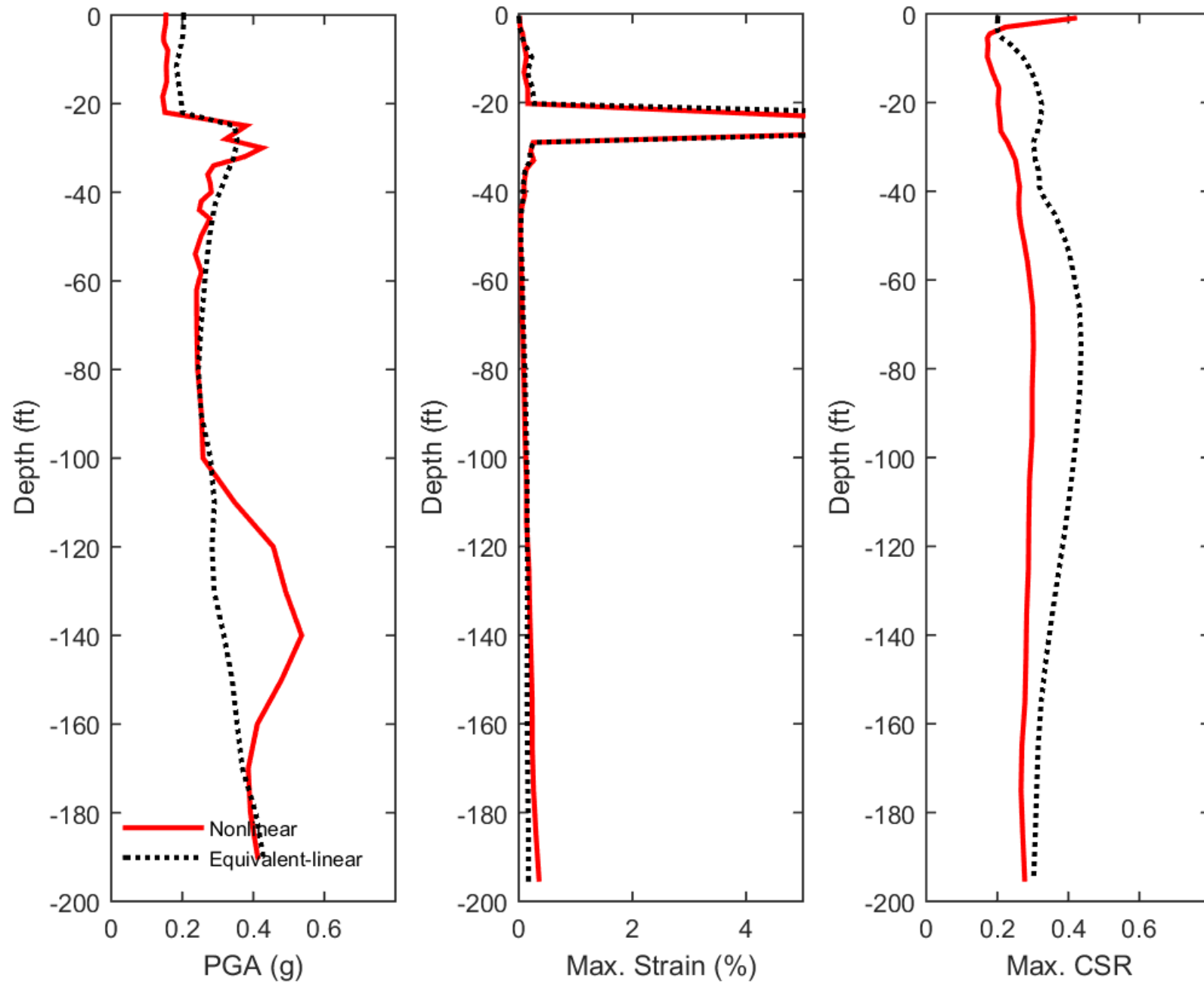
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



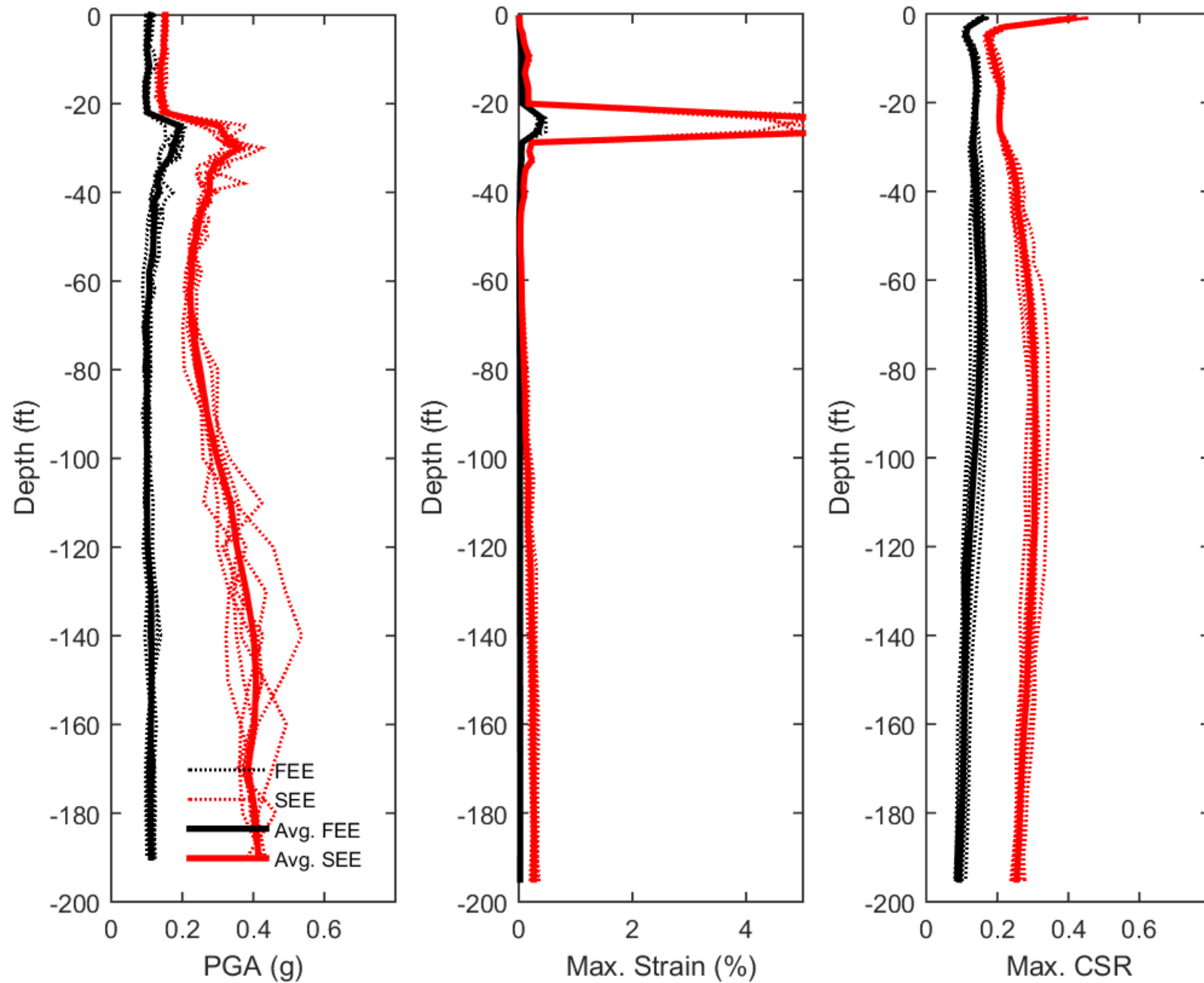
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



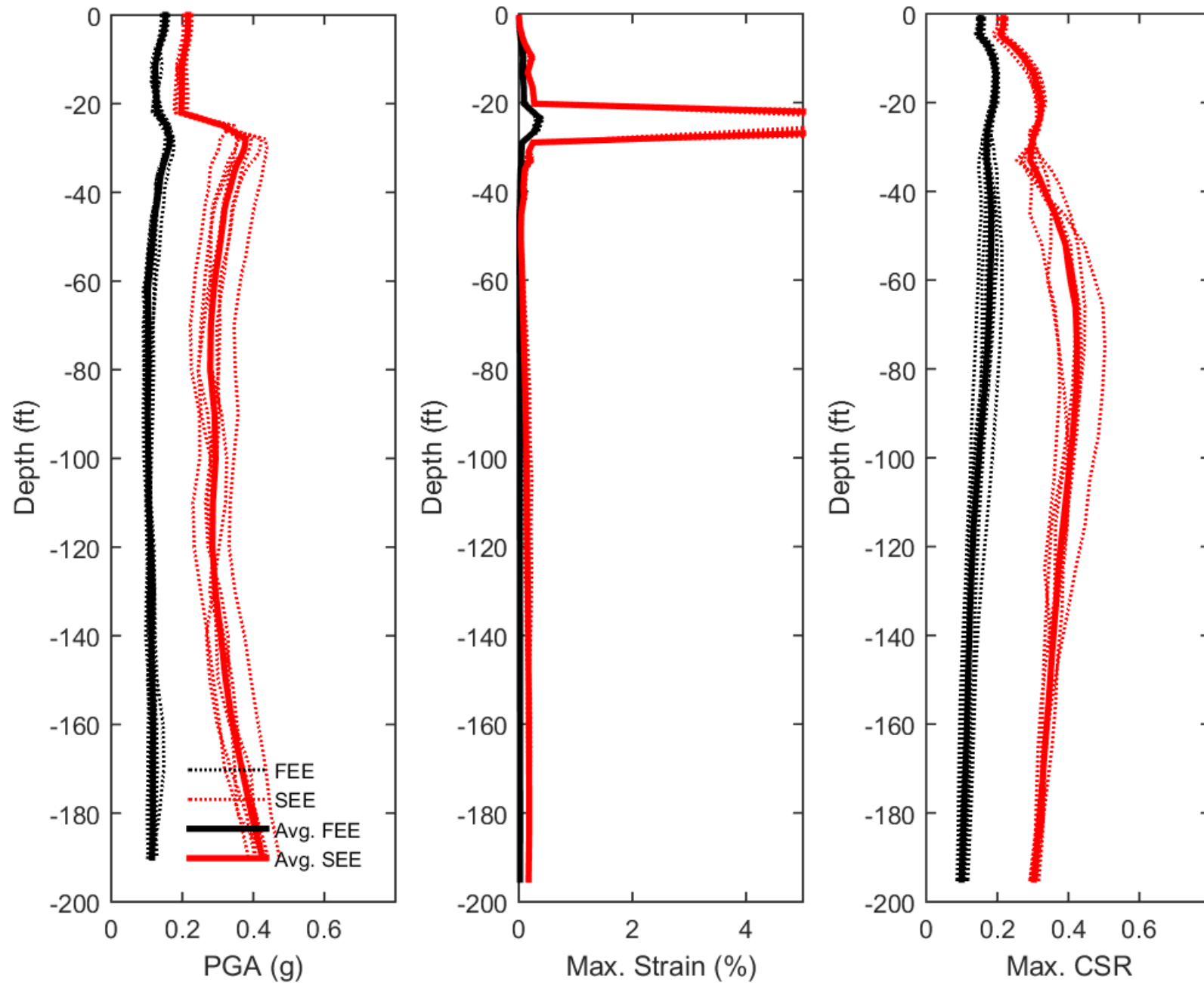
### Profile outputs for Motion: SEE7



### Summary of the profile outputs for Nonlinear analysis

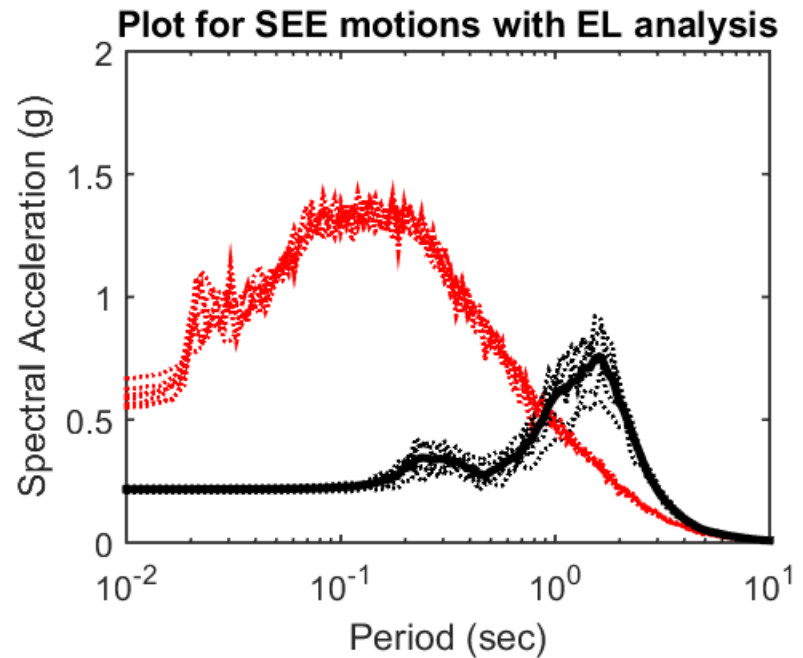
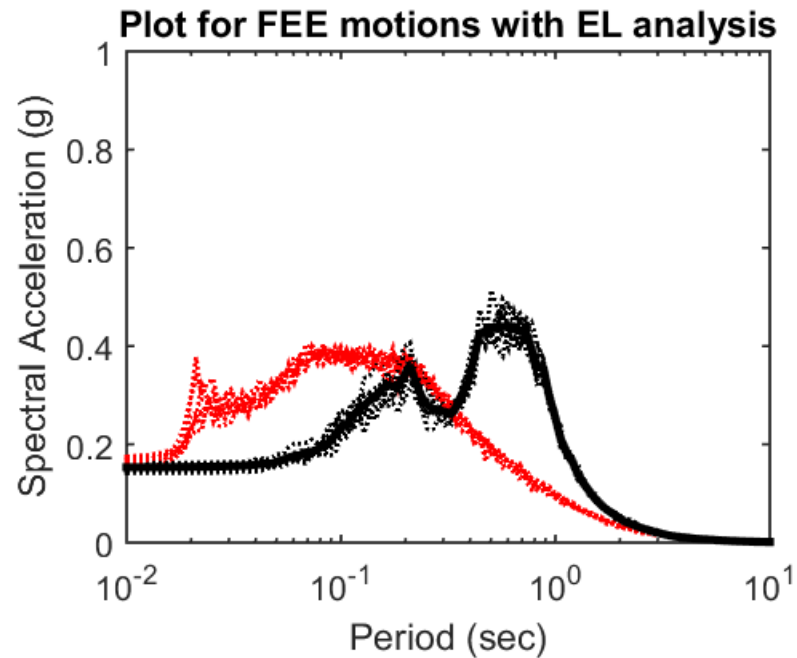
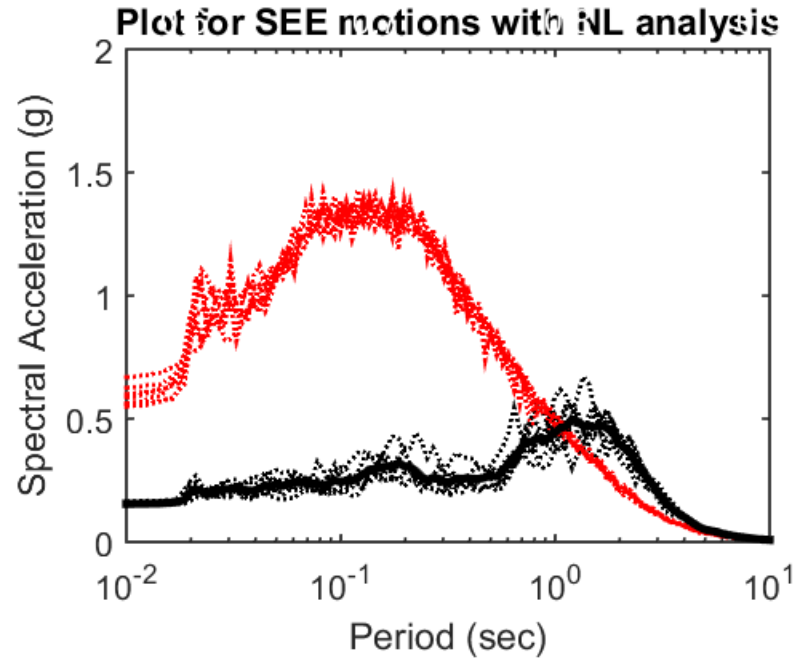
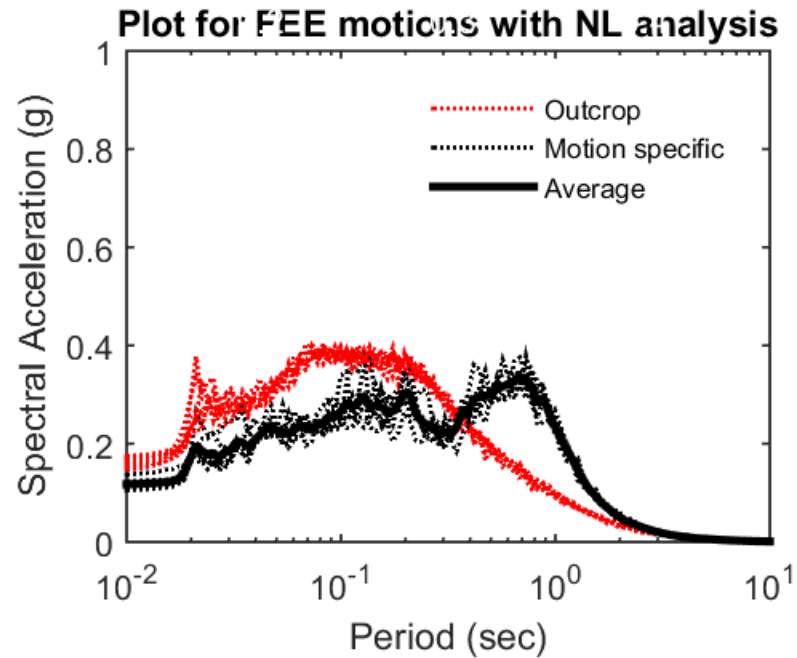


### Summary of the profile outputs for Equivalent-linear analysis

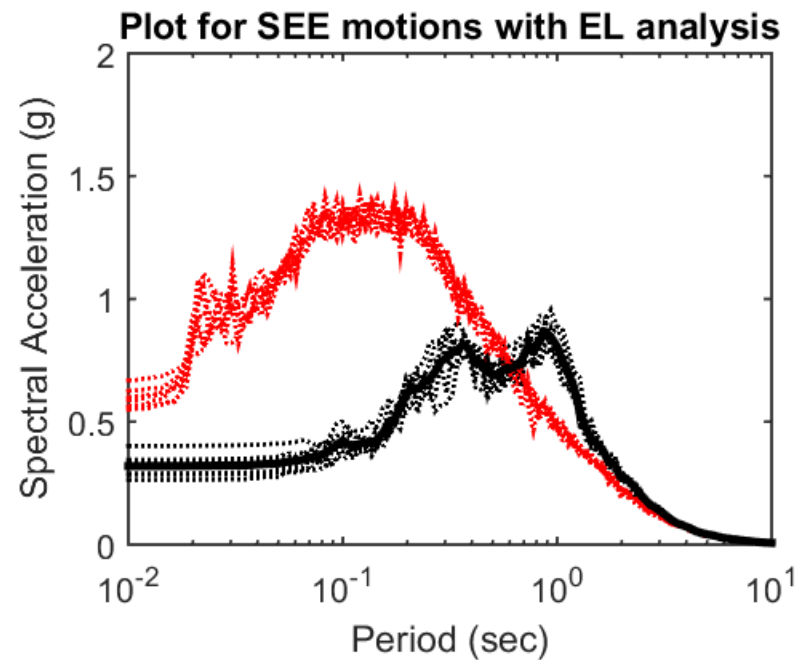
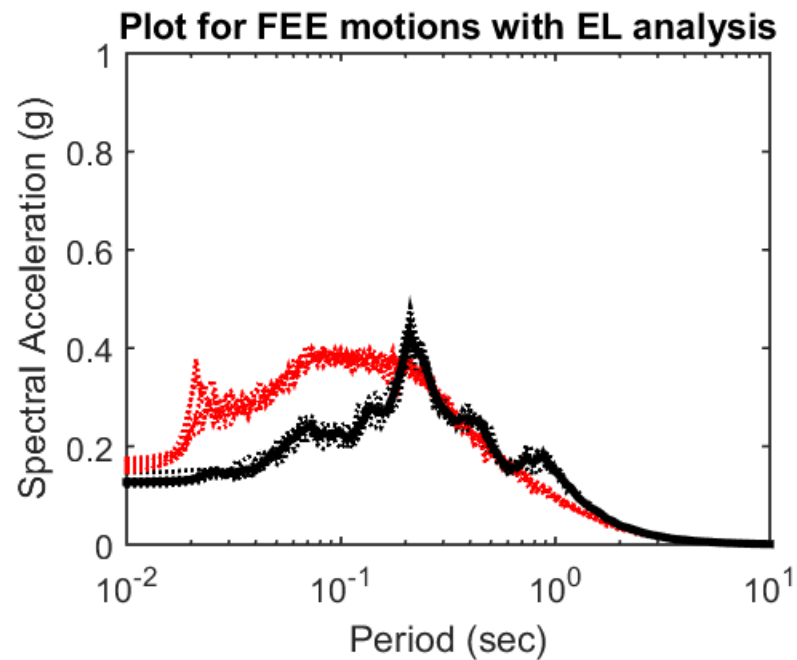
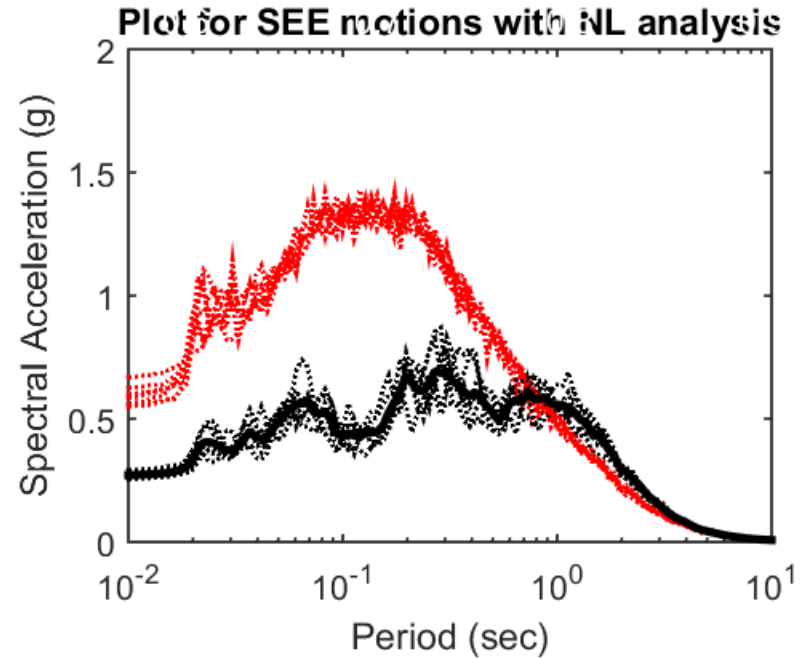
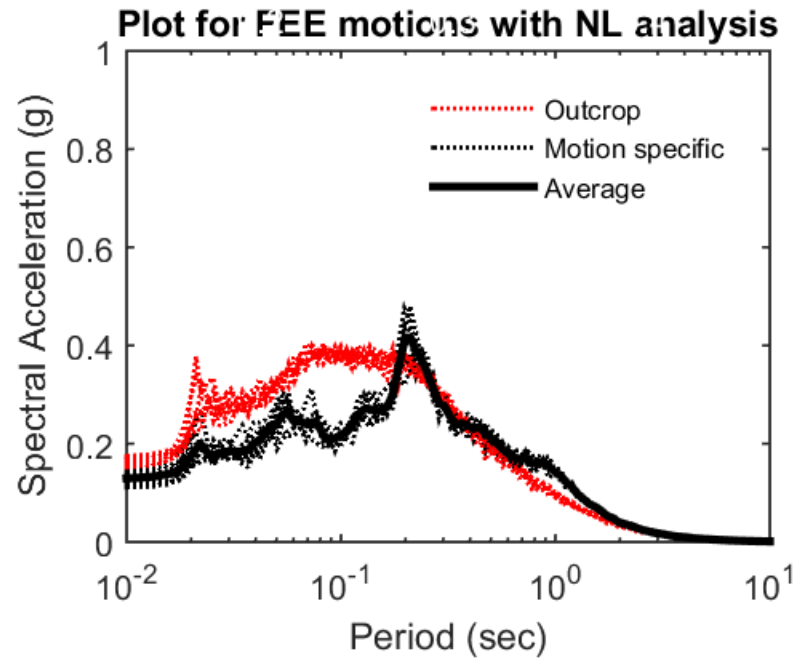




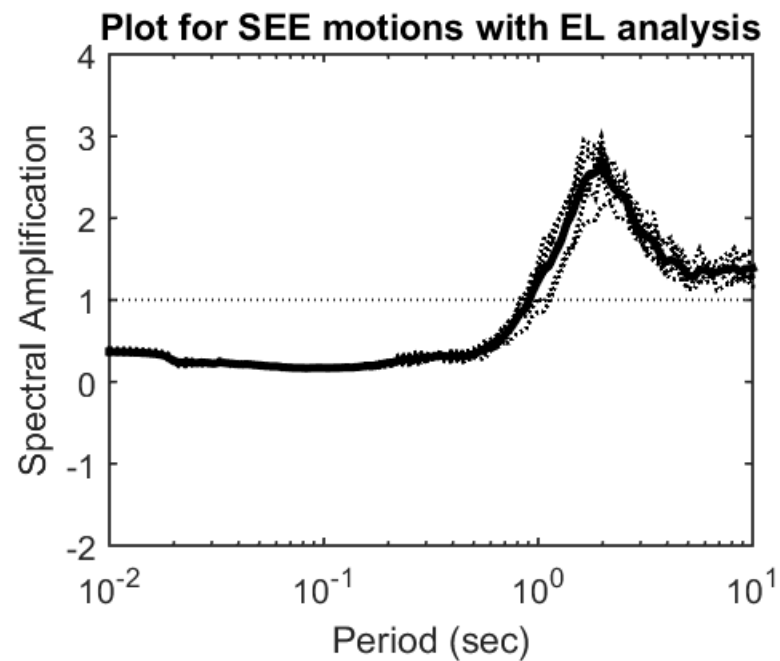
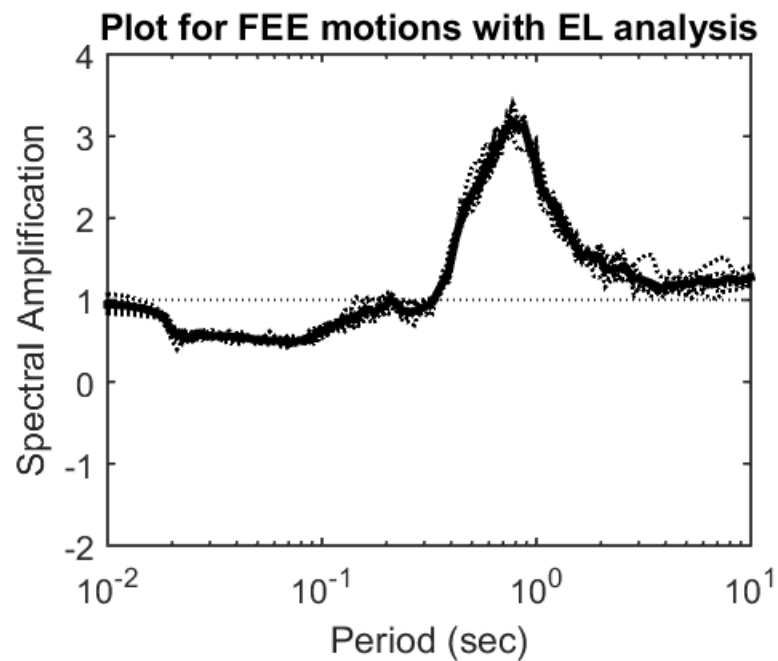
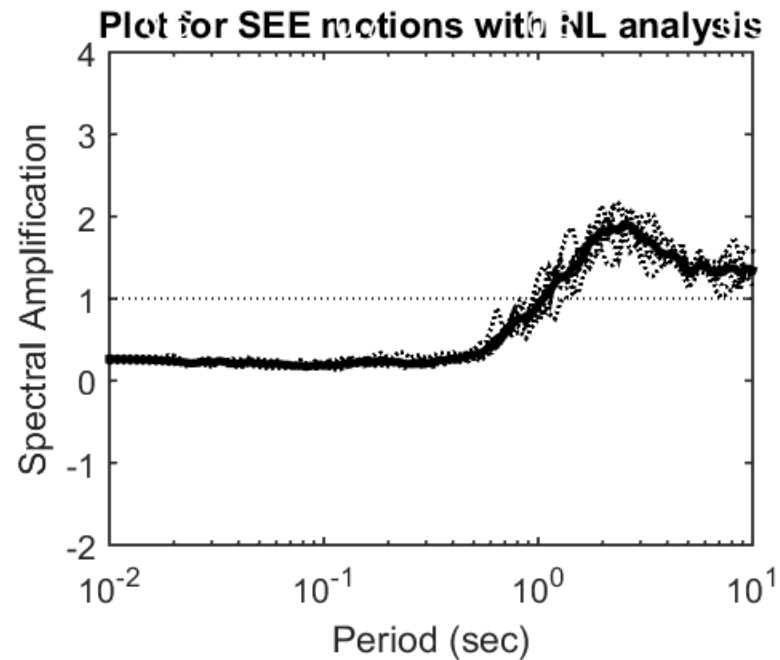
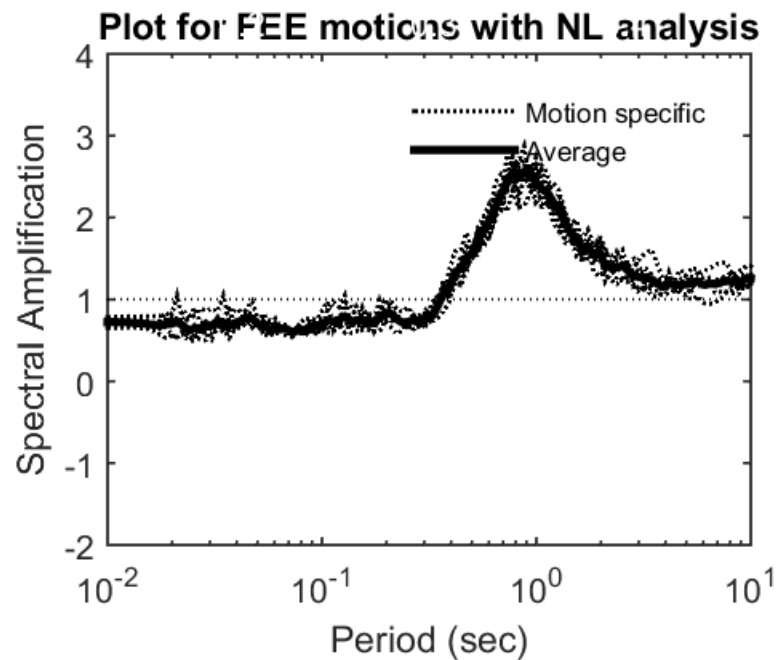
## Summary plots: RSA at ground surface



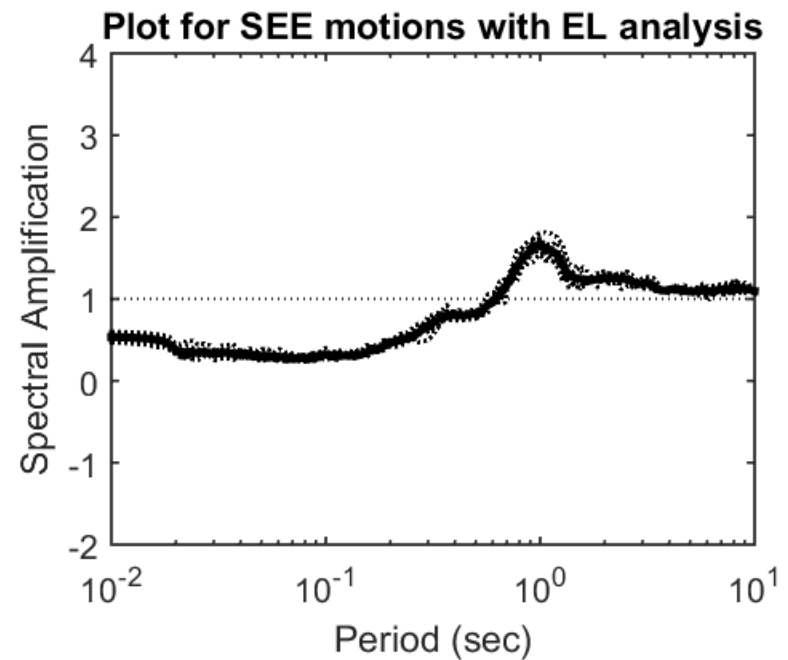
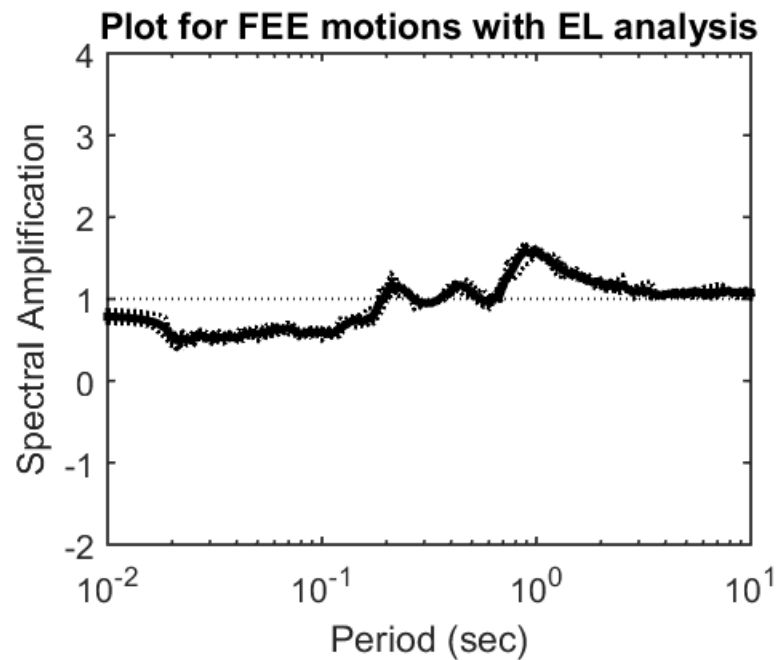
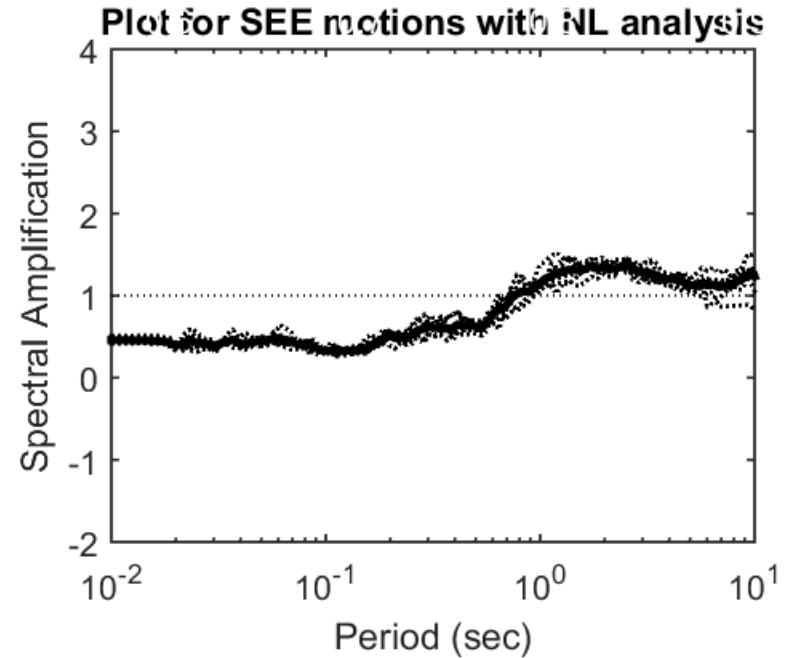
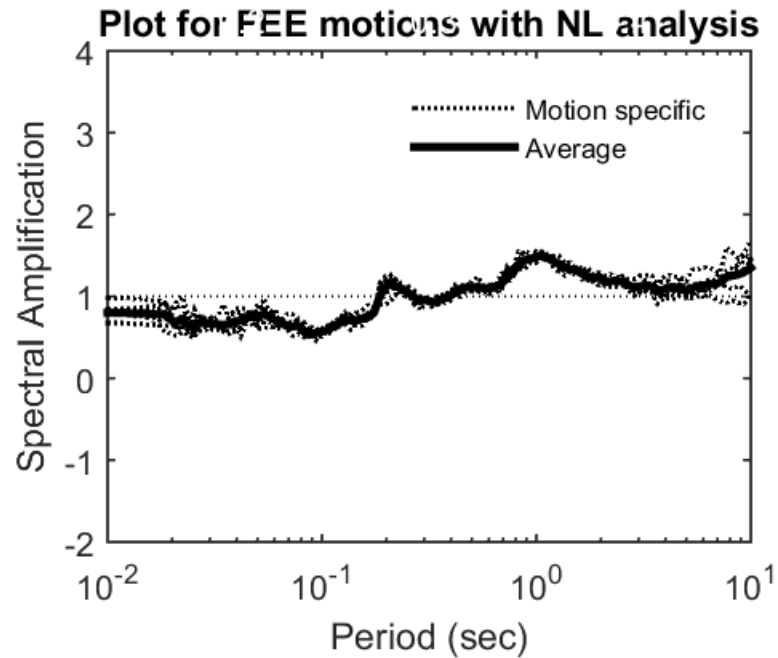
### Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

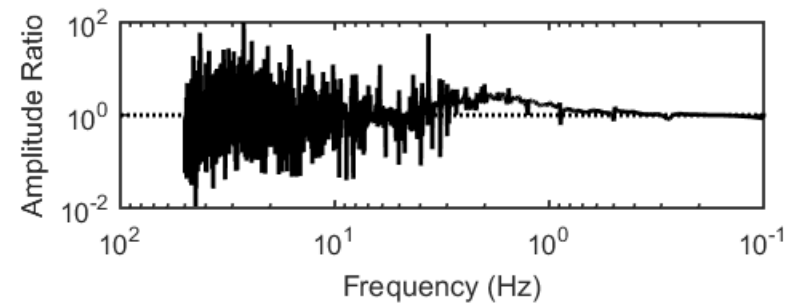
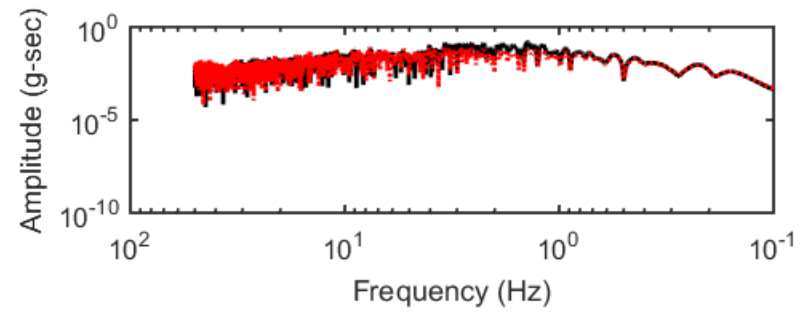
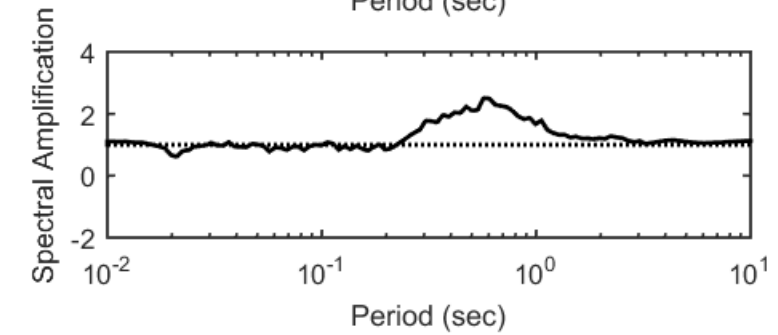
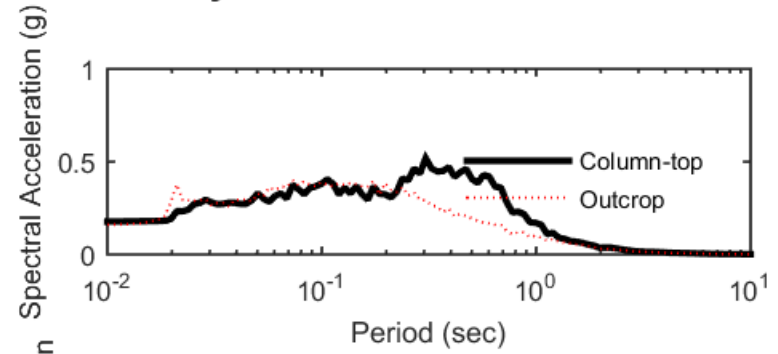
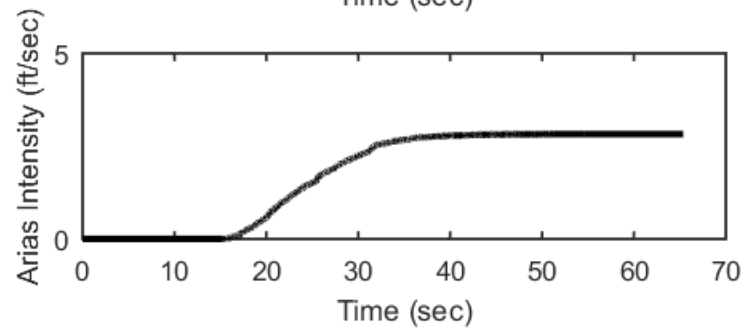
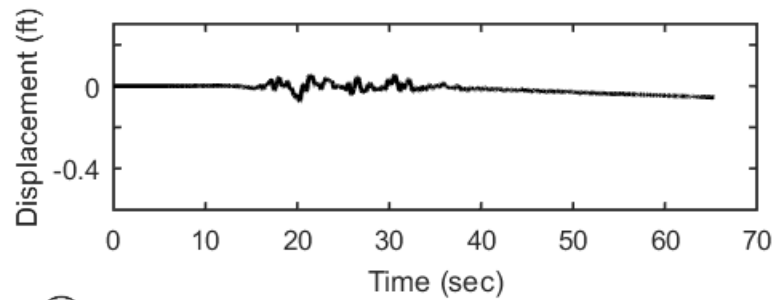
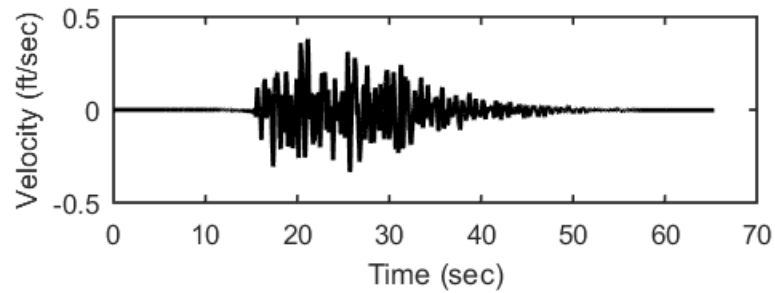
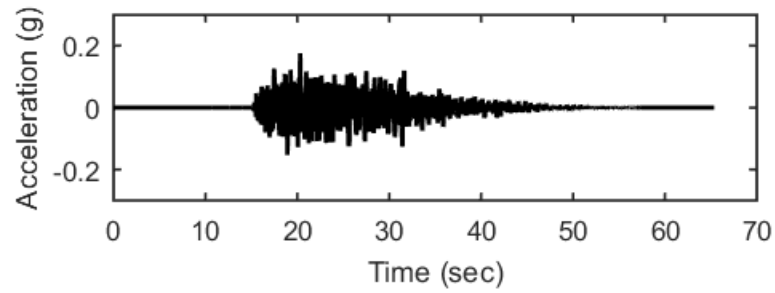


## Summary plots: Spectral amplification at top of Marl

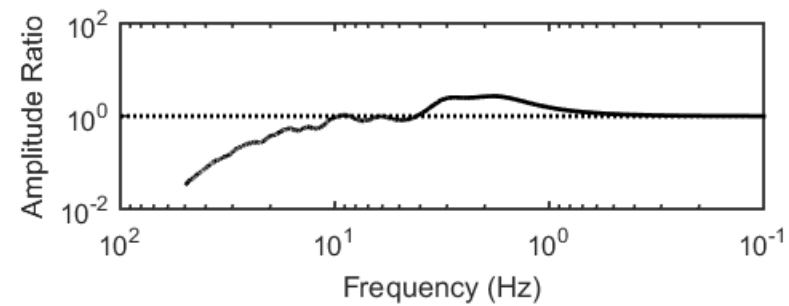
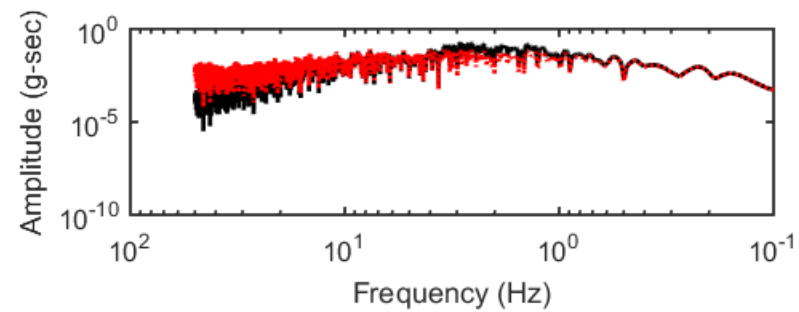
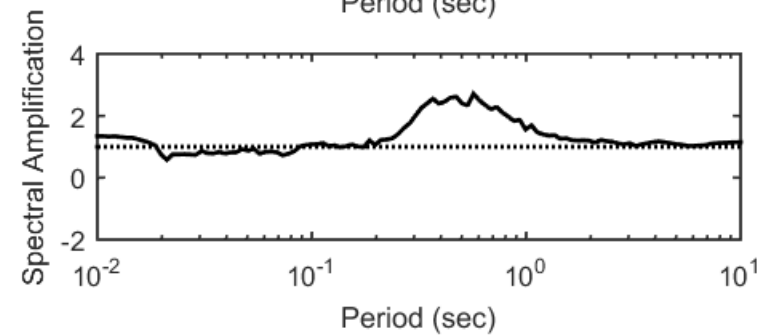
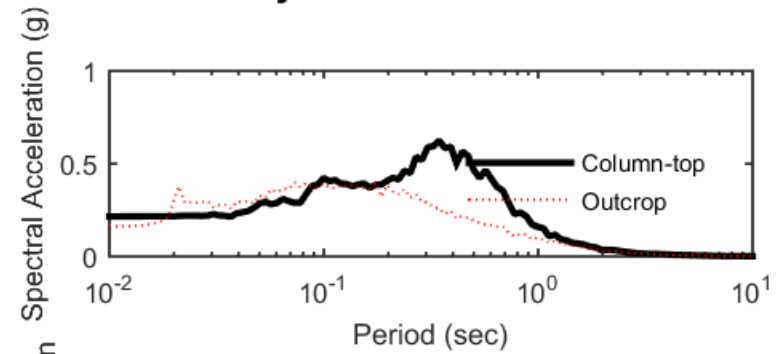
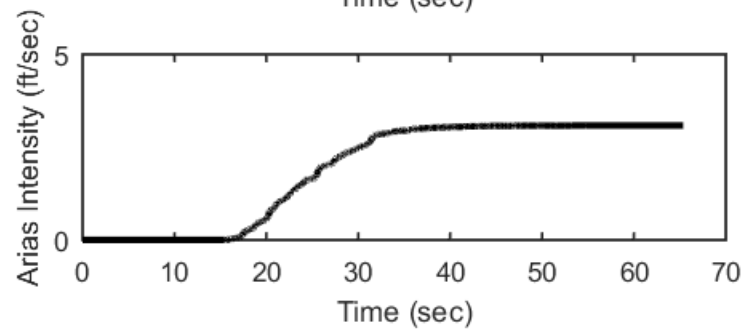
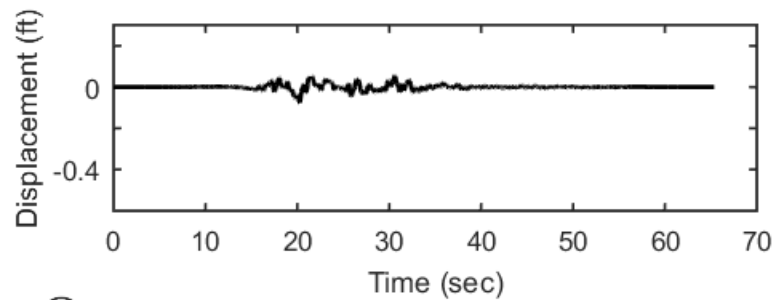
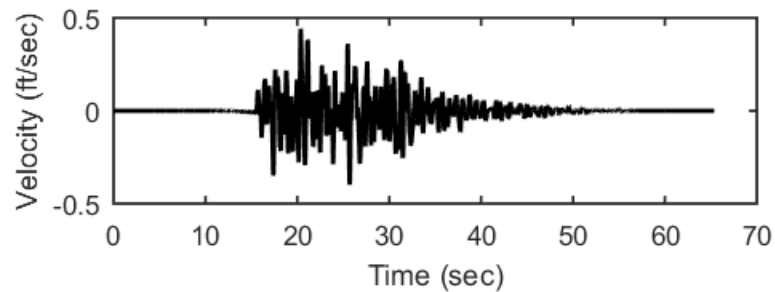
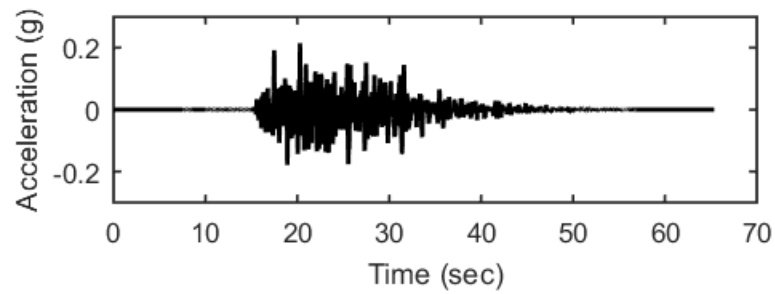


# **BASE MODEL AND HIGH PLASTICITY INDEX**

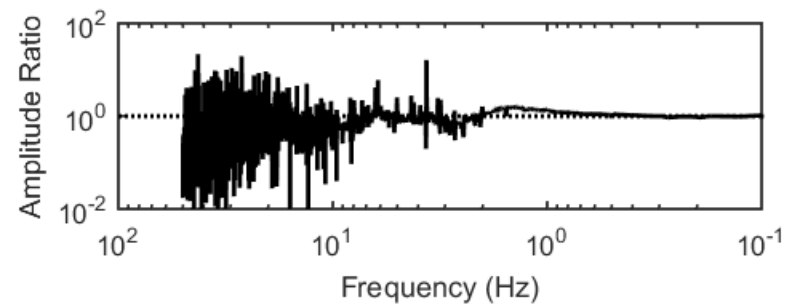
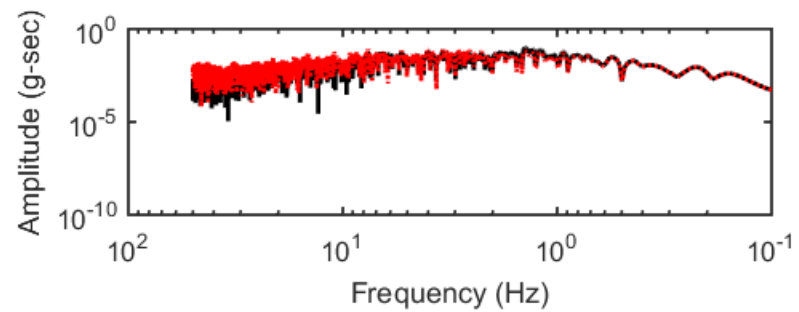
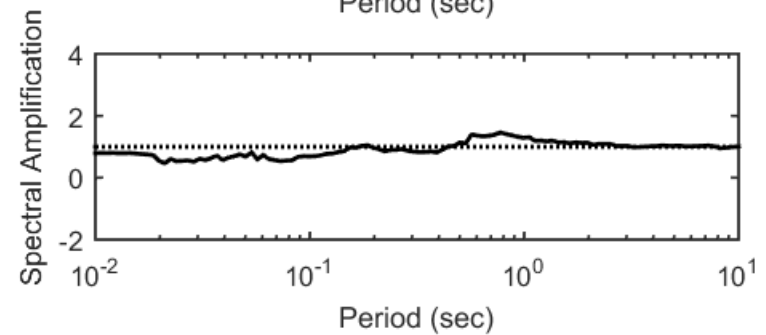
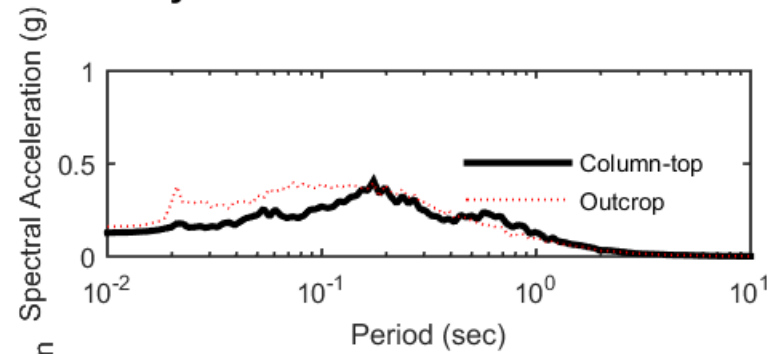
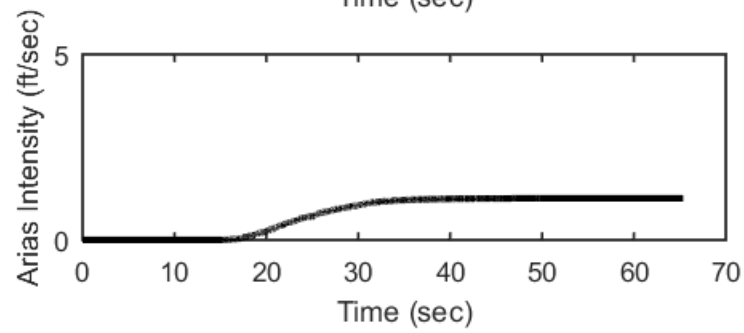
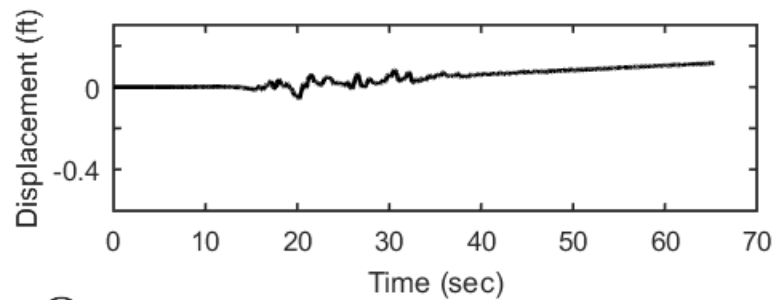
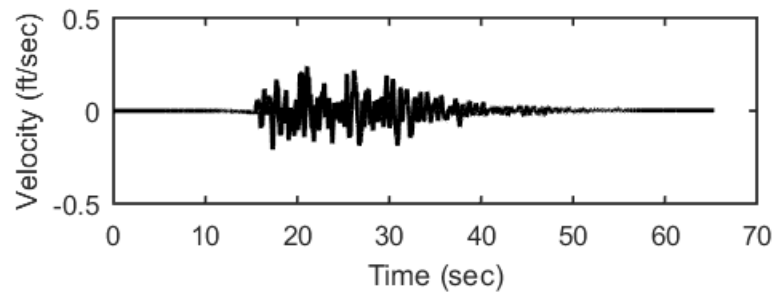
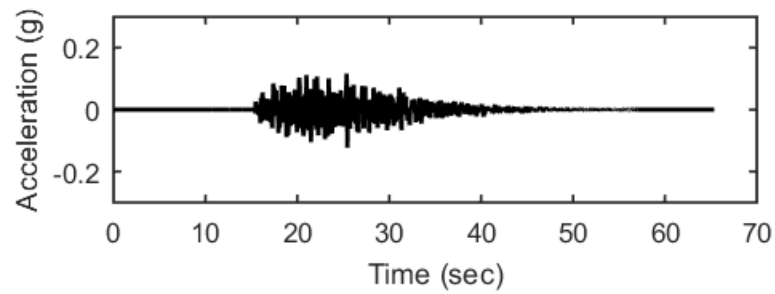
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1

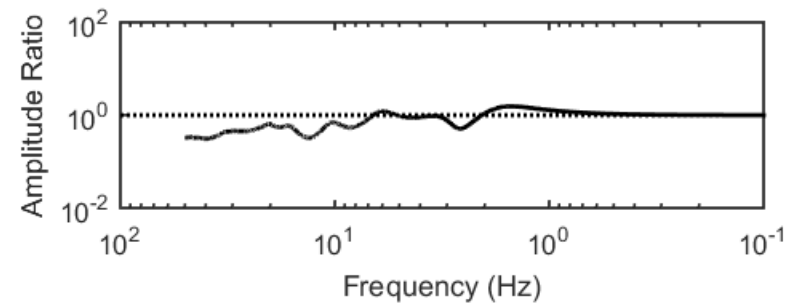
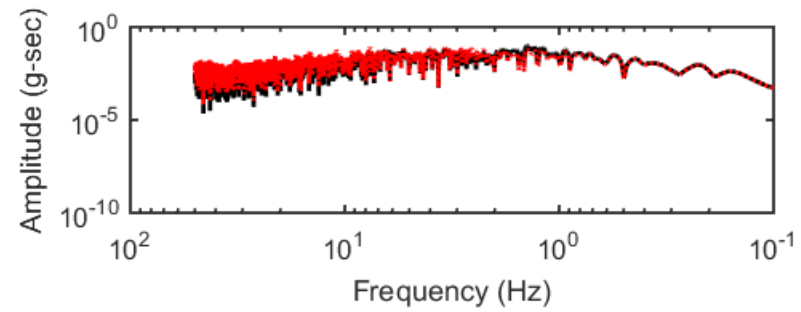
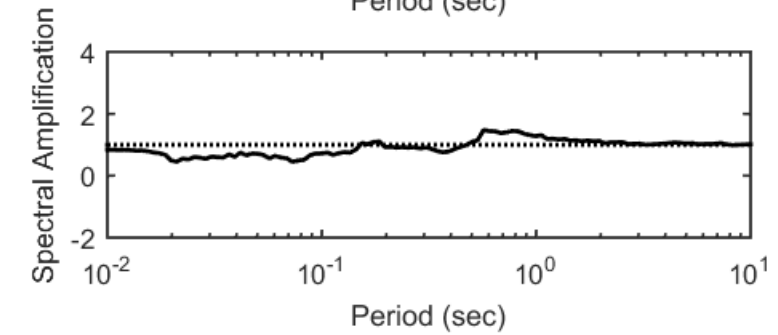
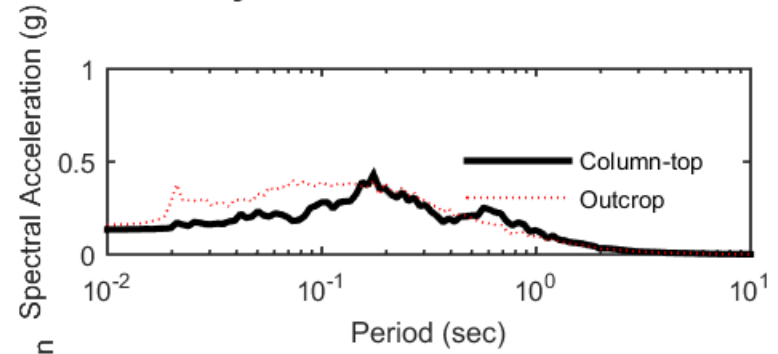
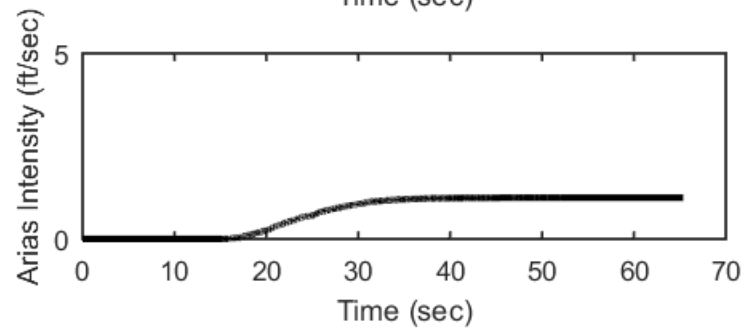
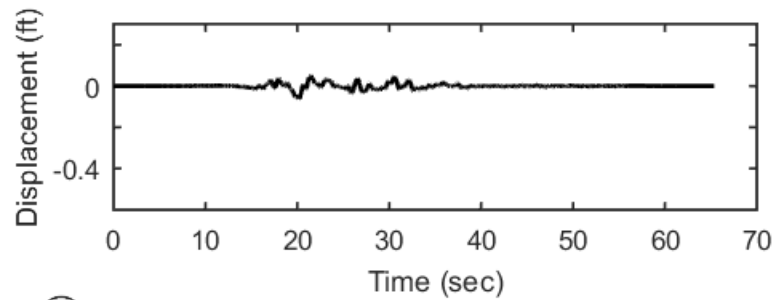
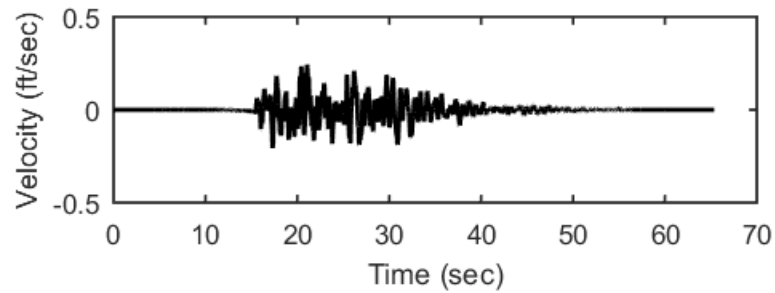
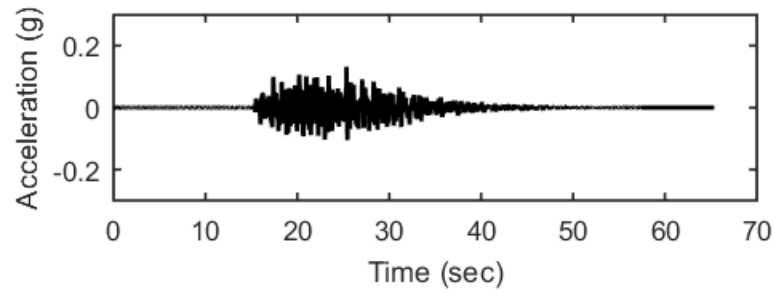


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1

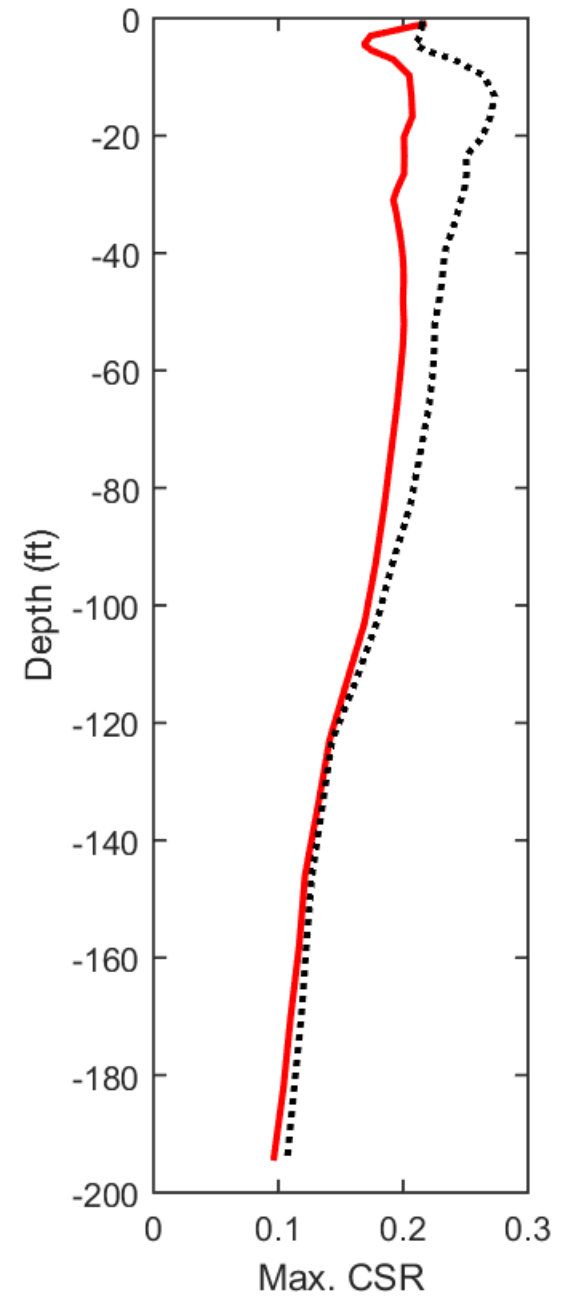
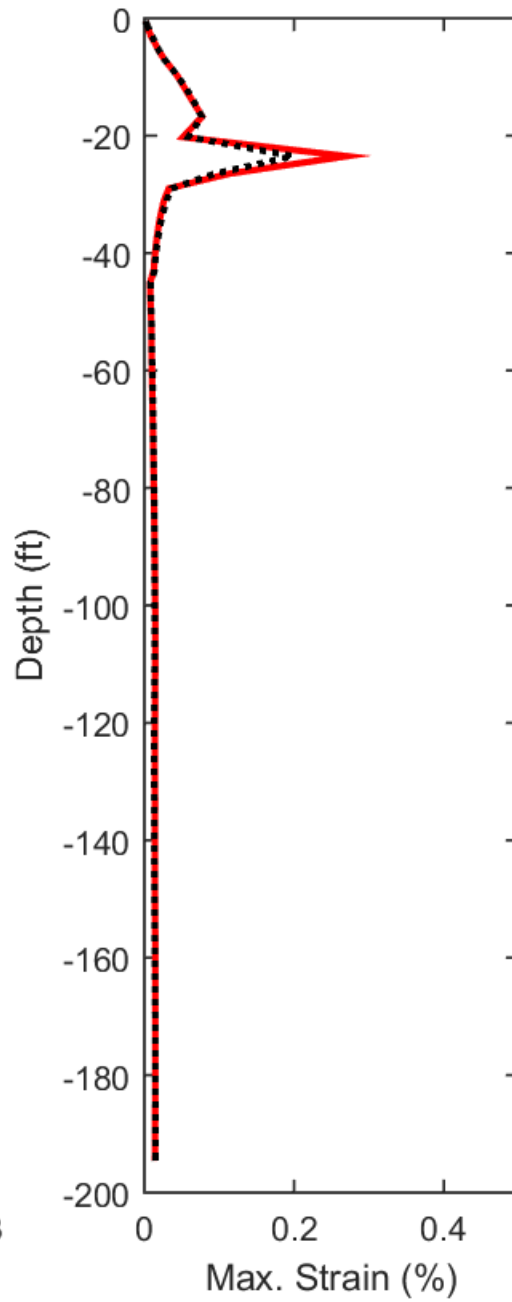
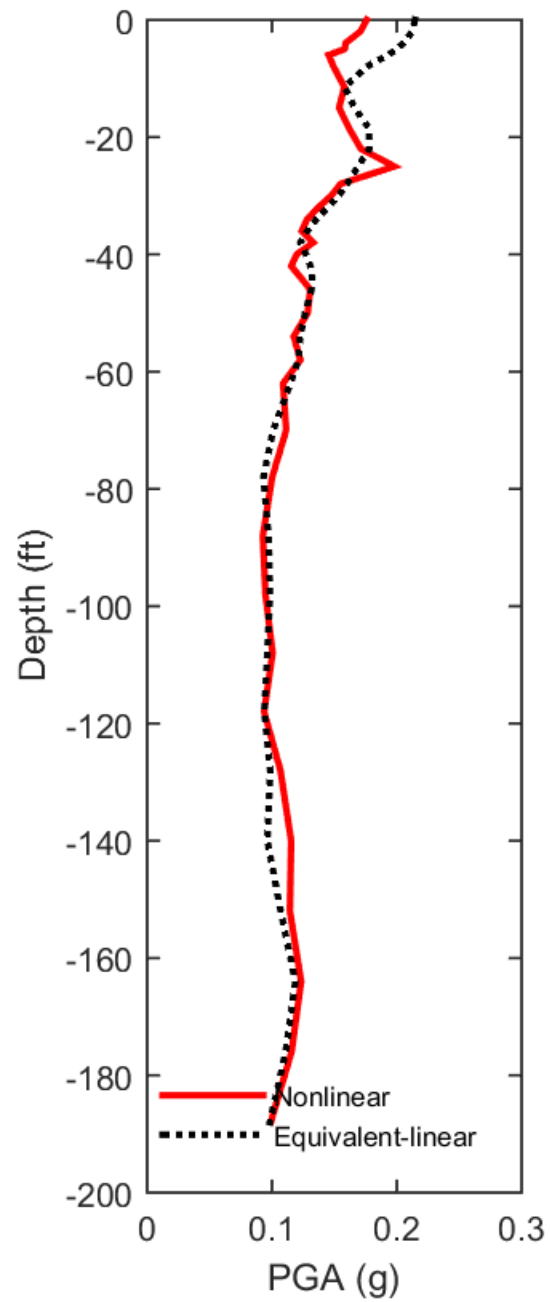




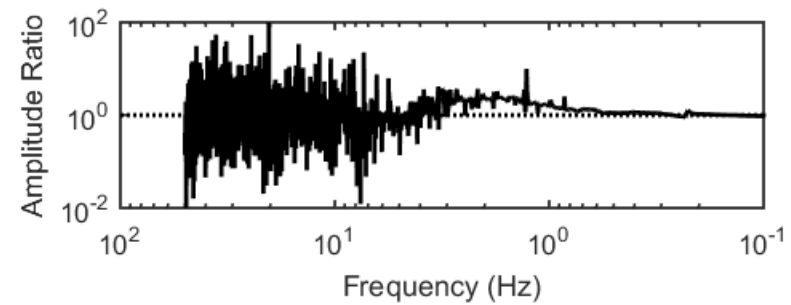
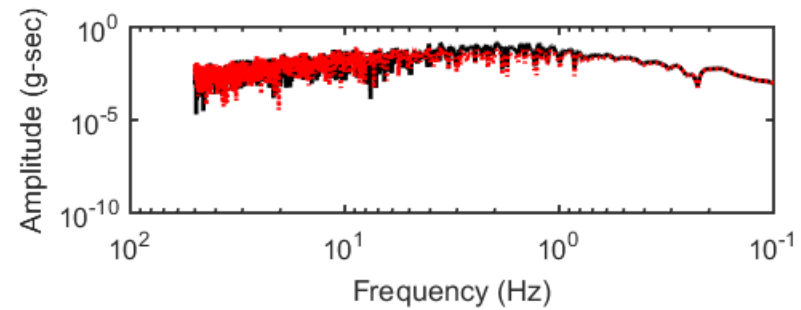
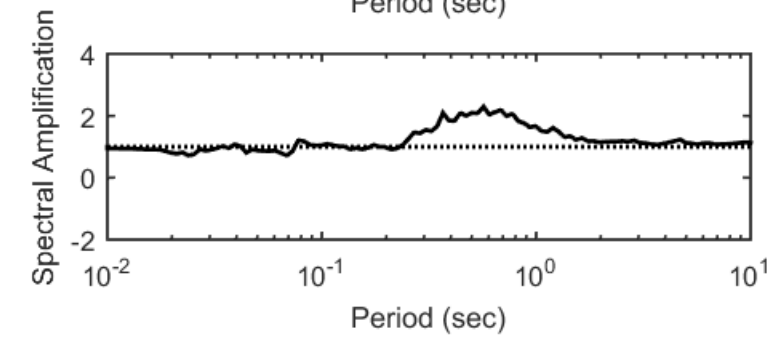
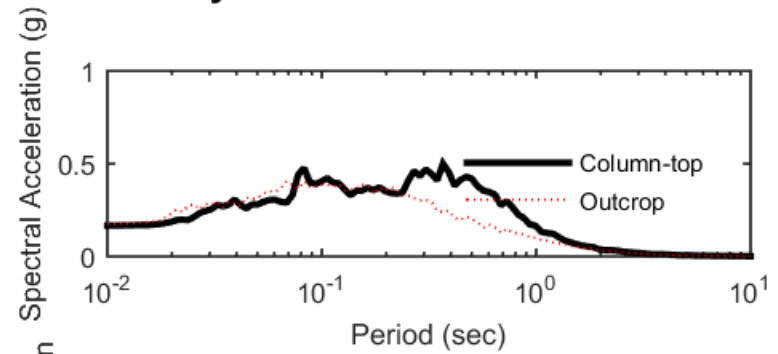
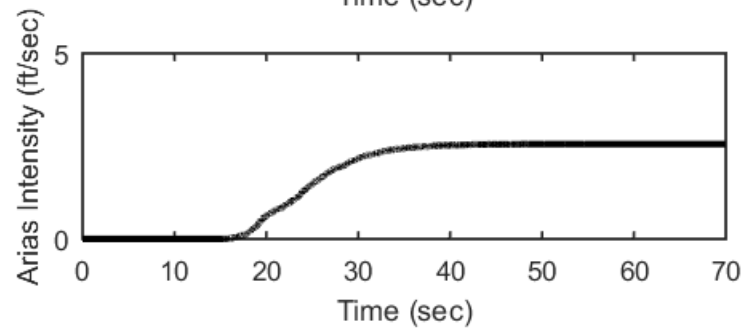
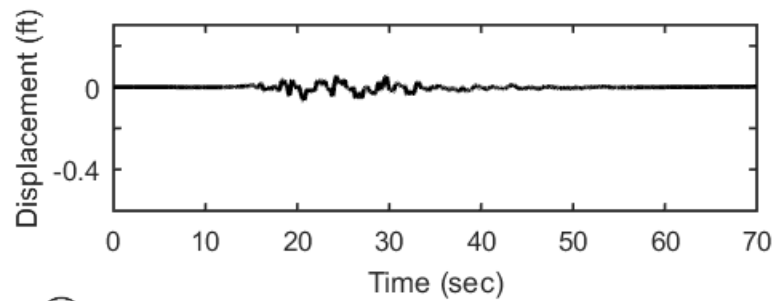
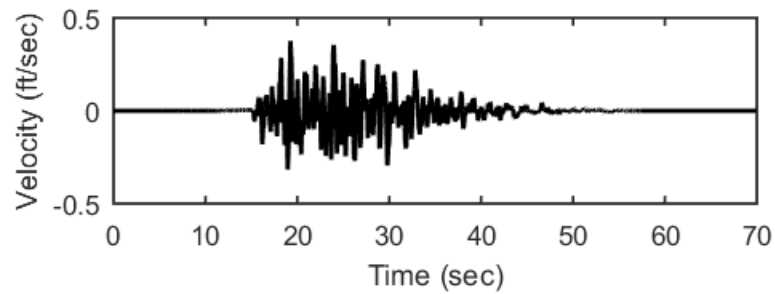
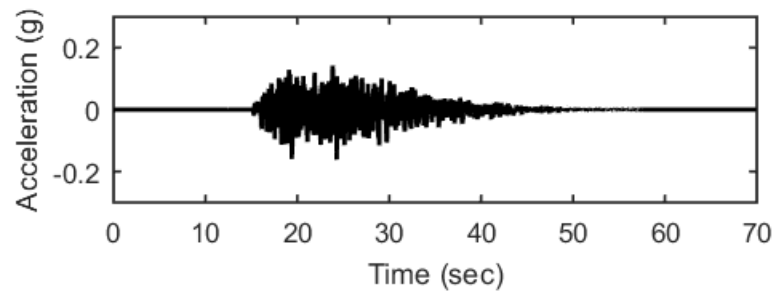
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



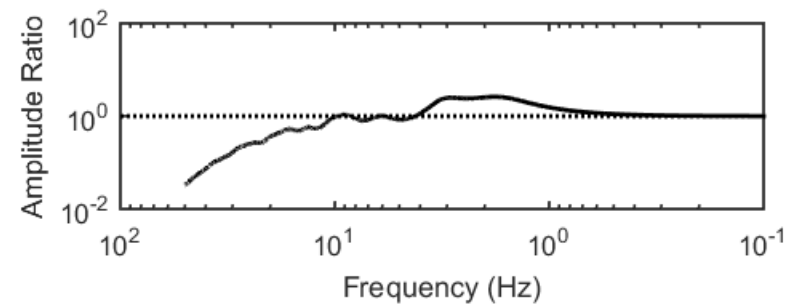
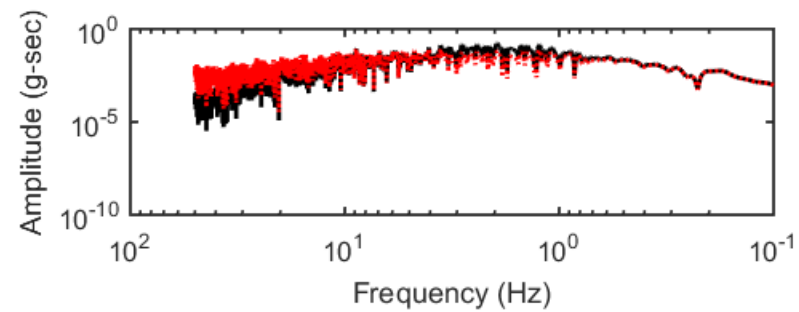
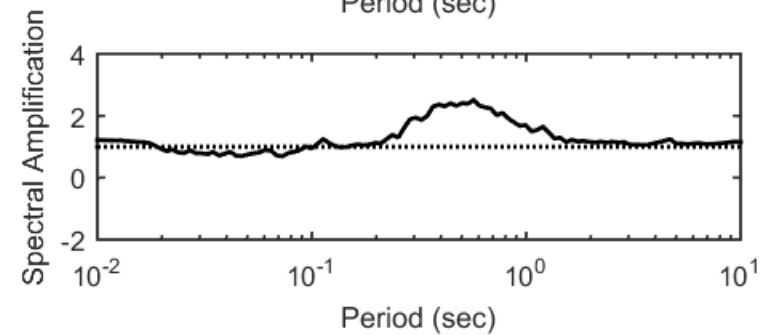
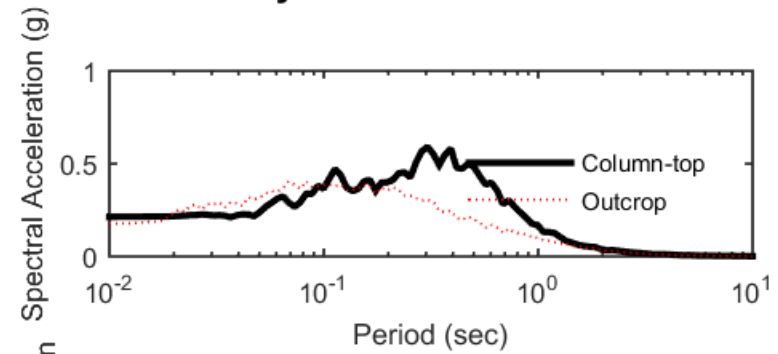
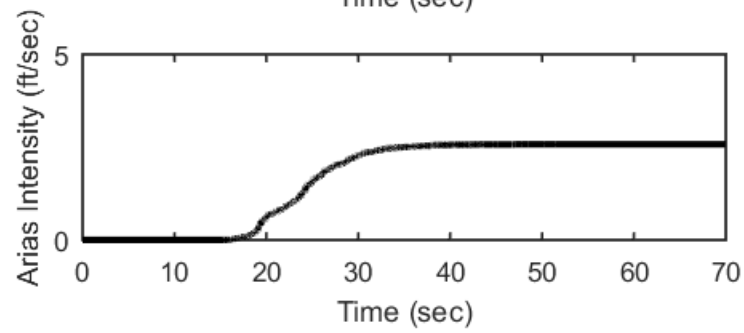
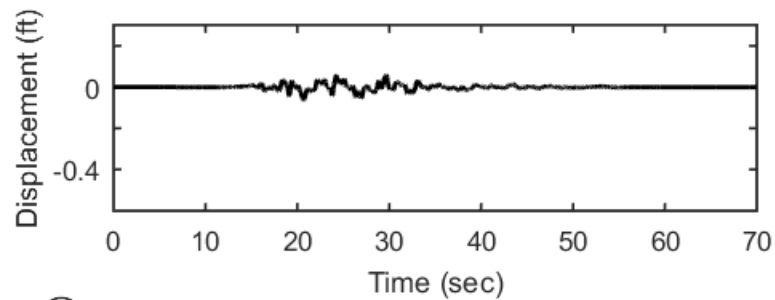
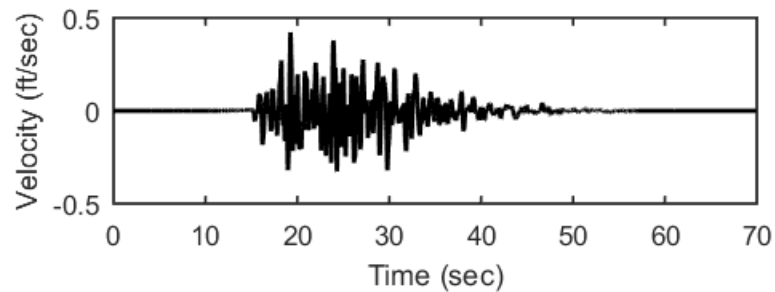
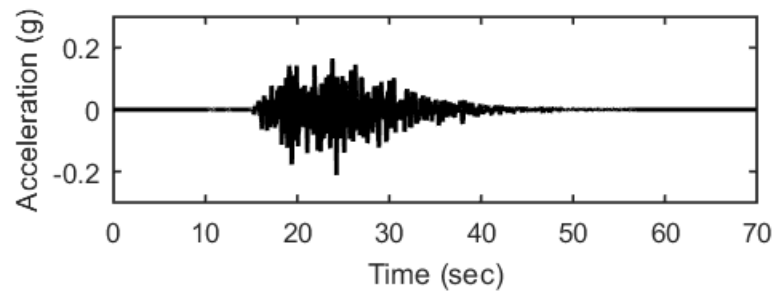
### Profile outputs for Motion: FEE1



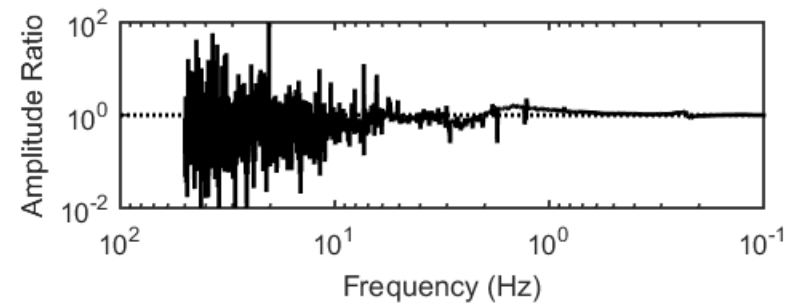
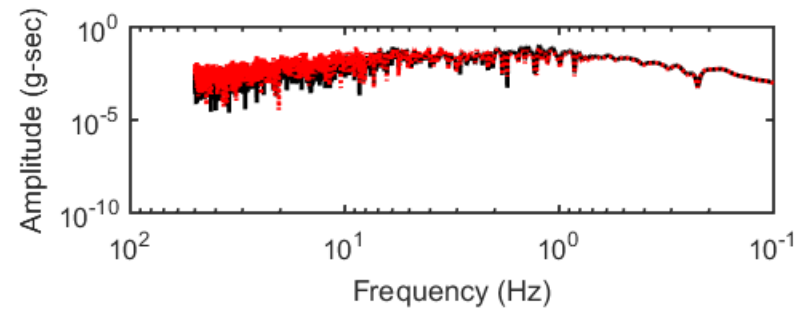
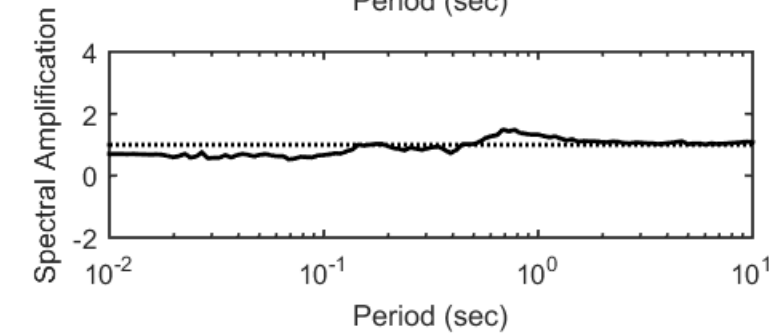
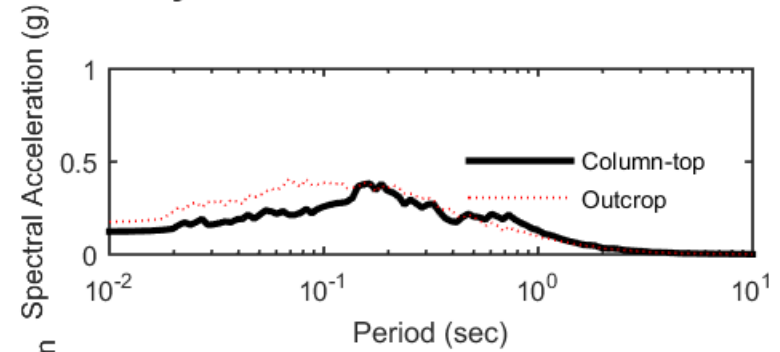
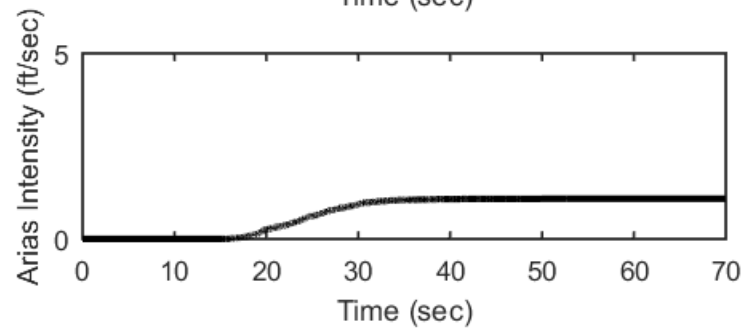
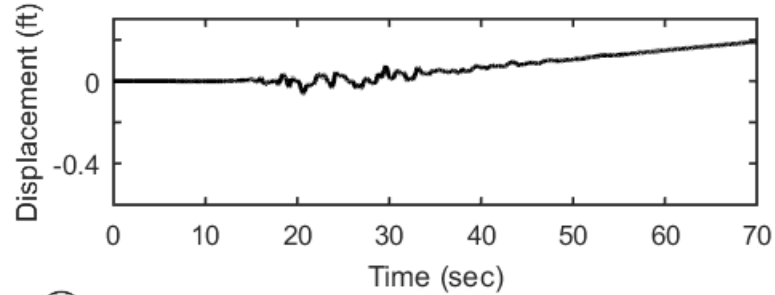
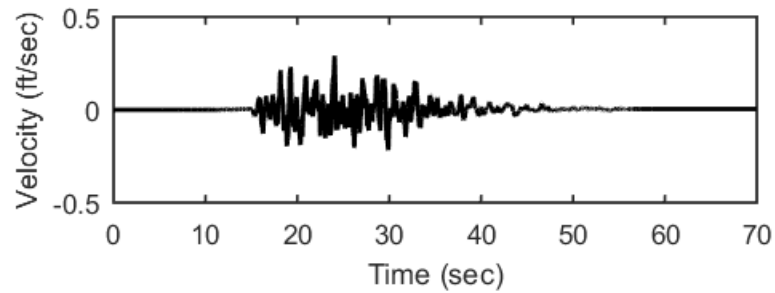
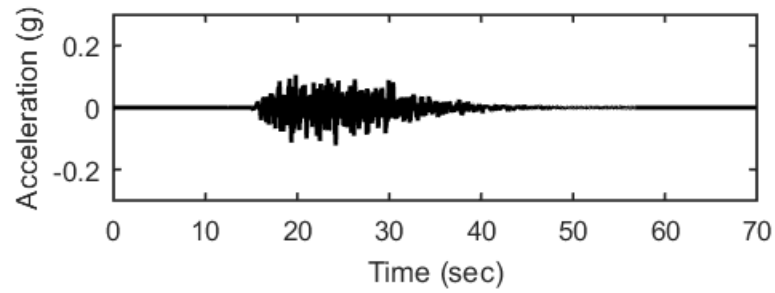
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



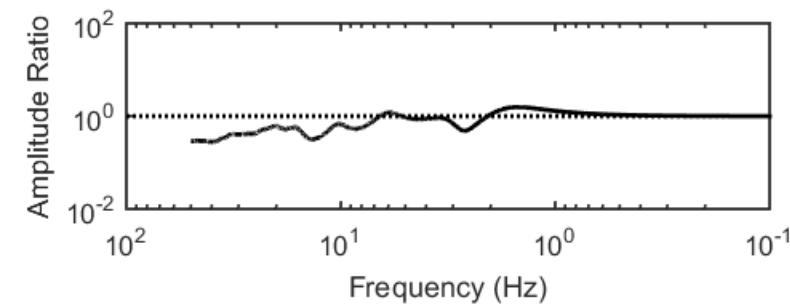
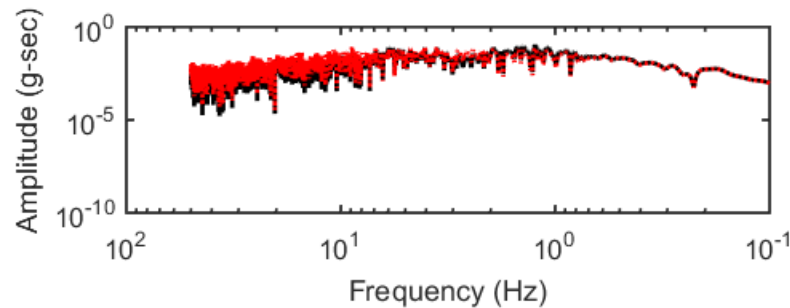
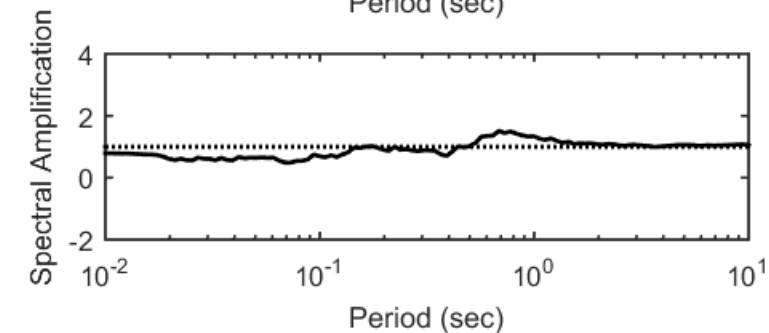
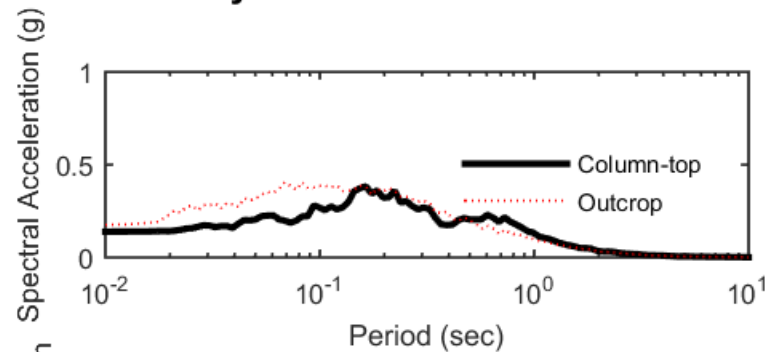
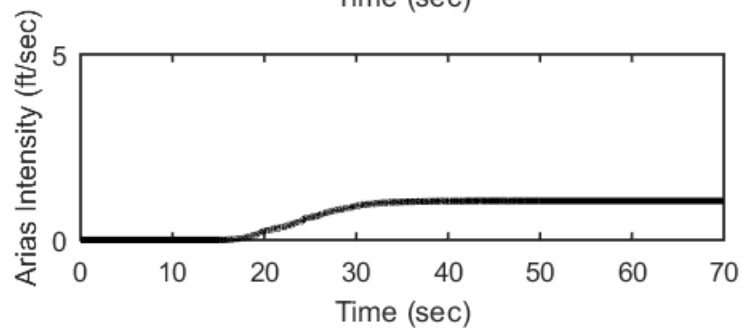
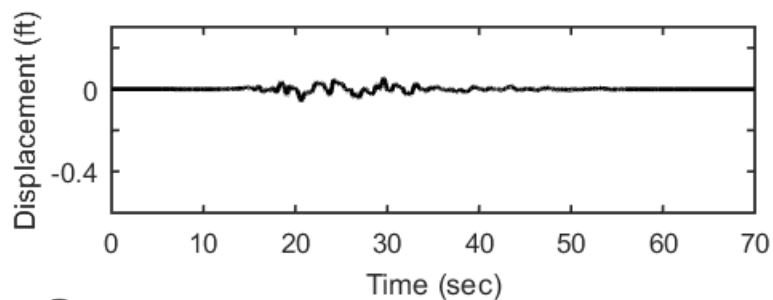
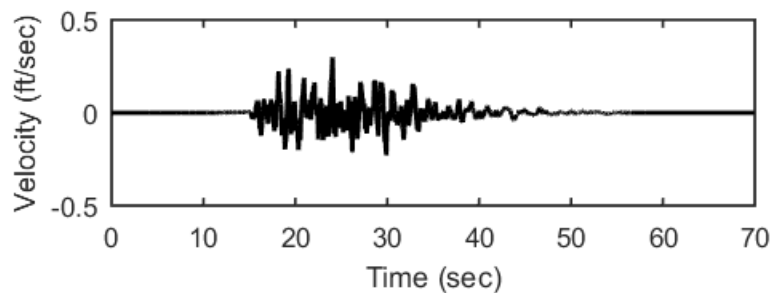
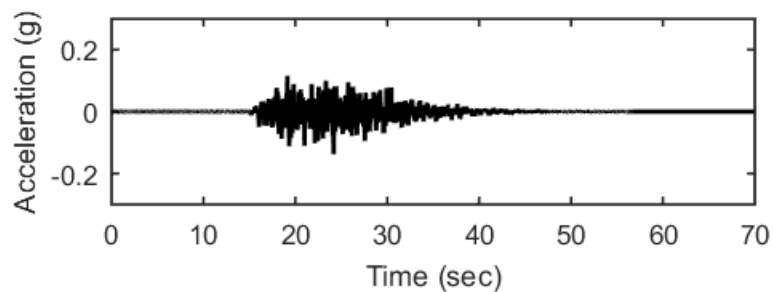
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



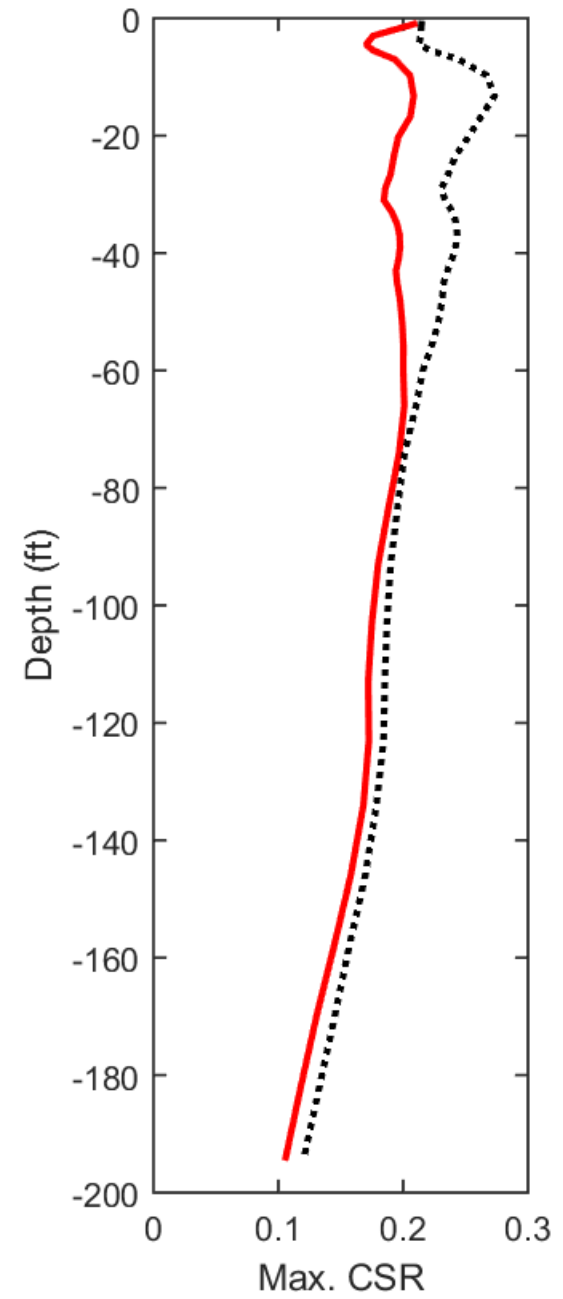
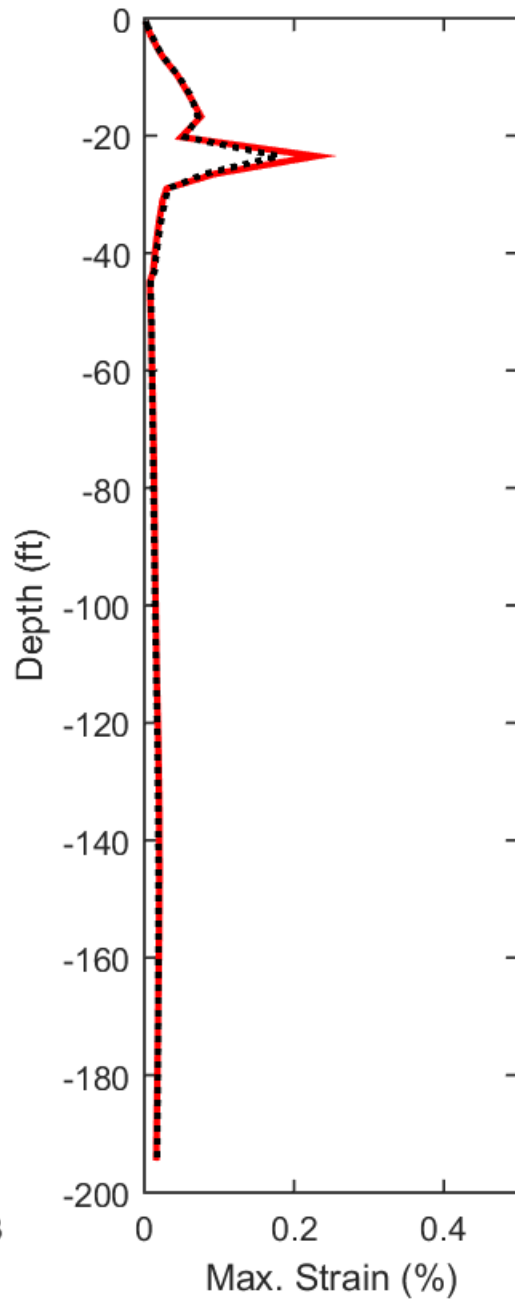
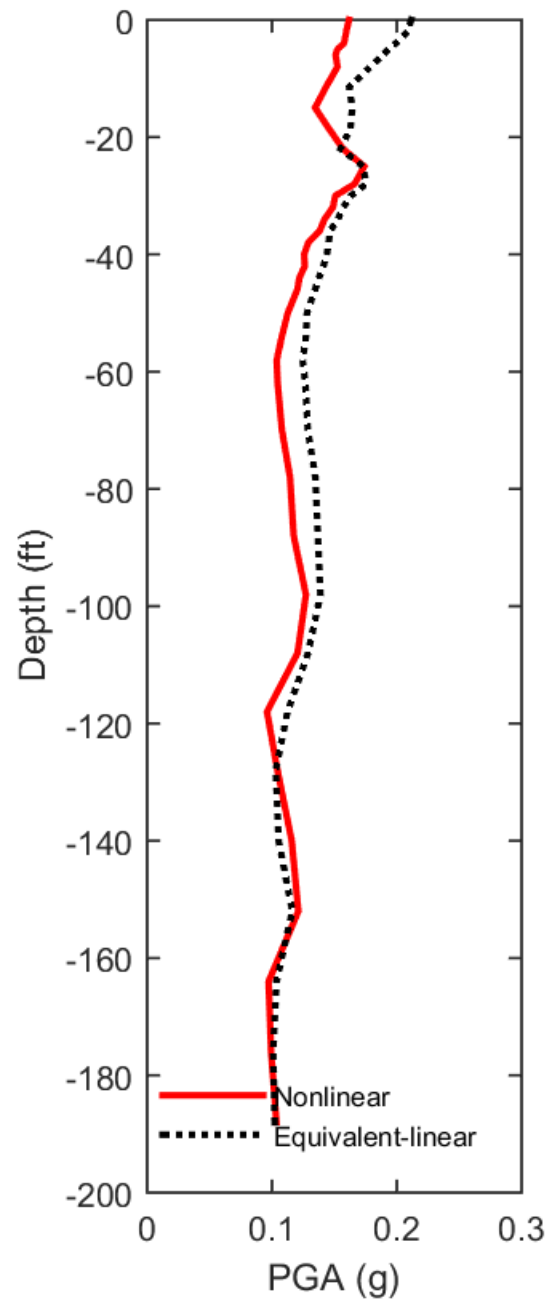
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



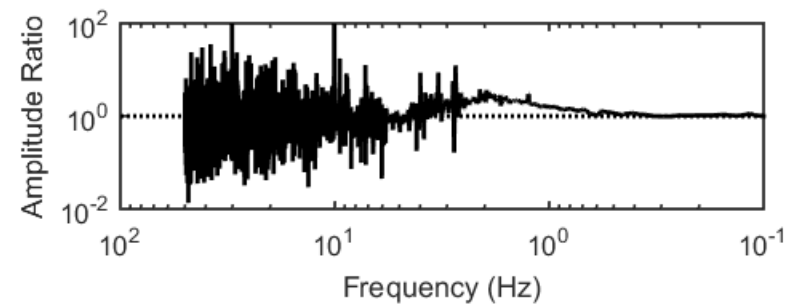
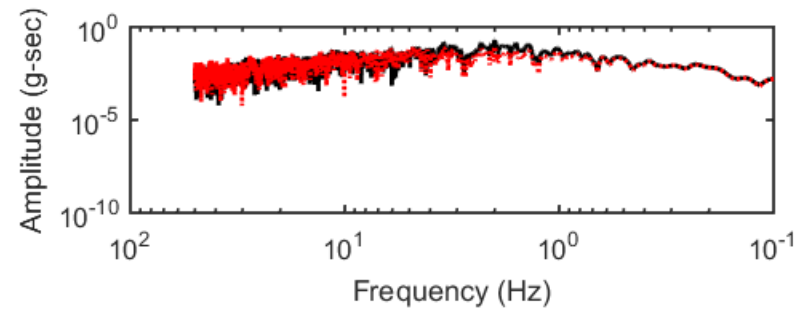
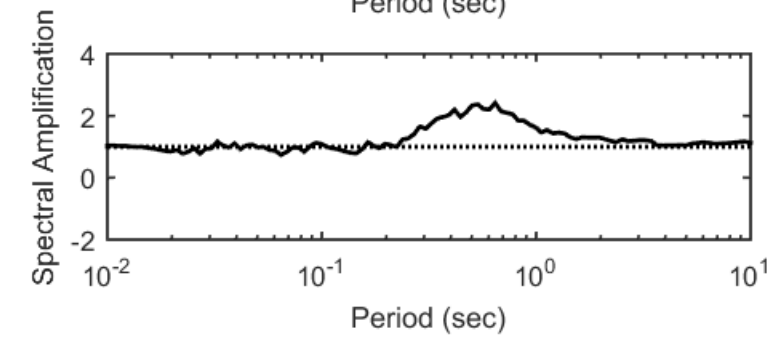
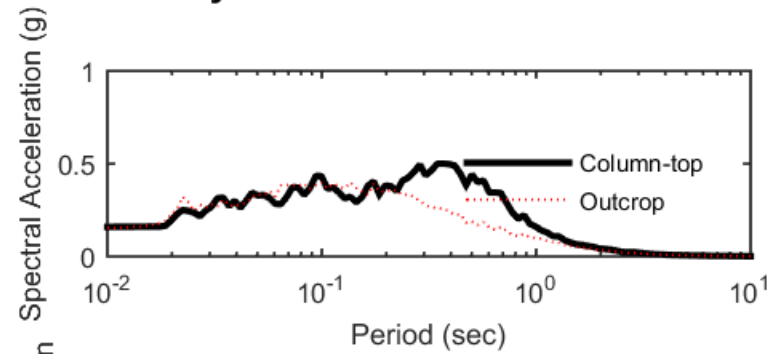
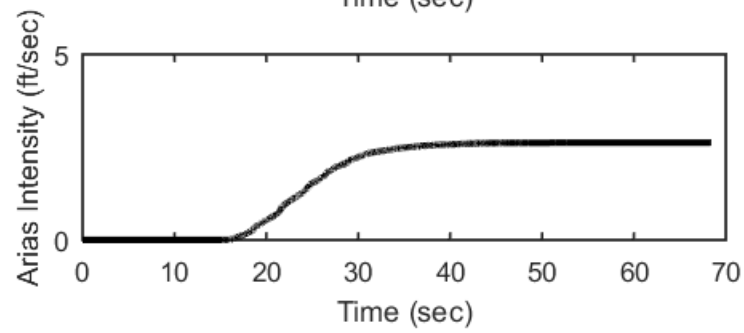
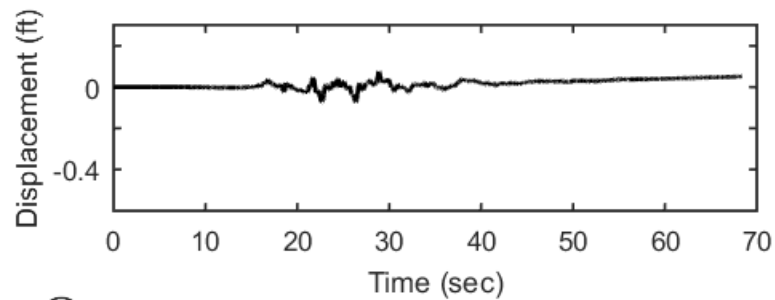
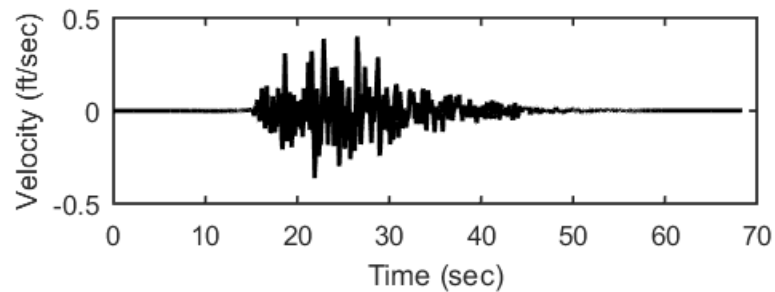
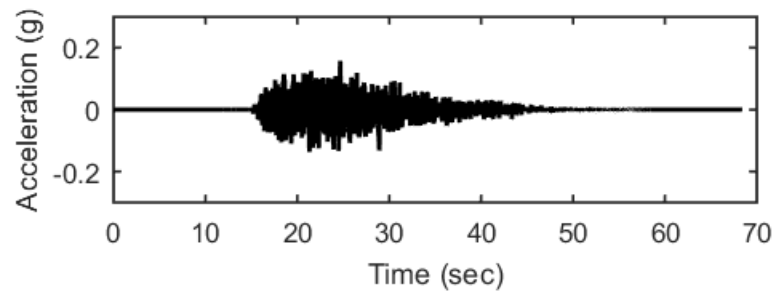
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



### Profile outputs for Motion: FEE2

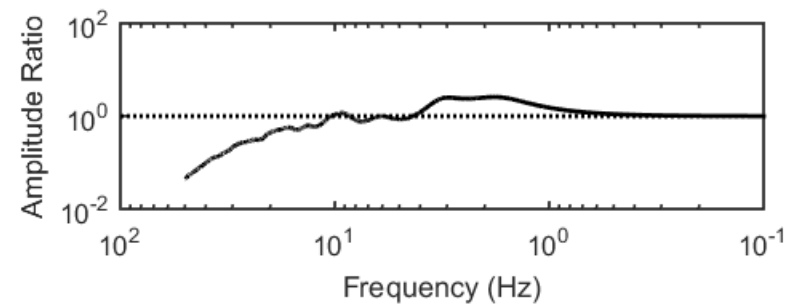
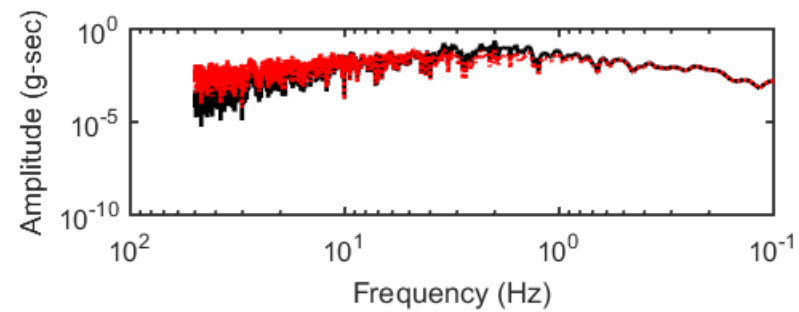
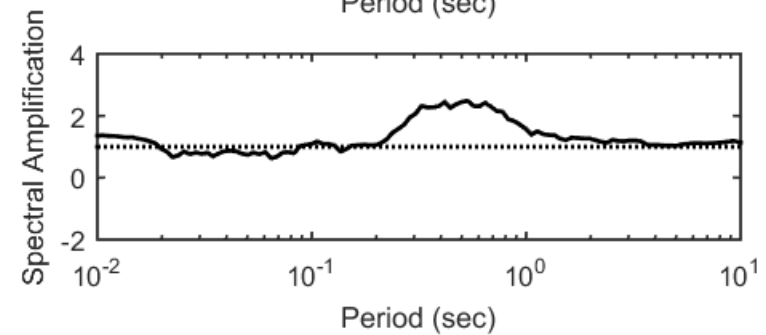
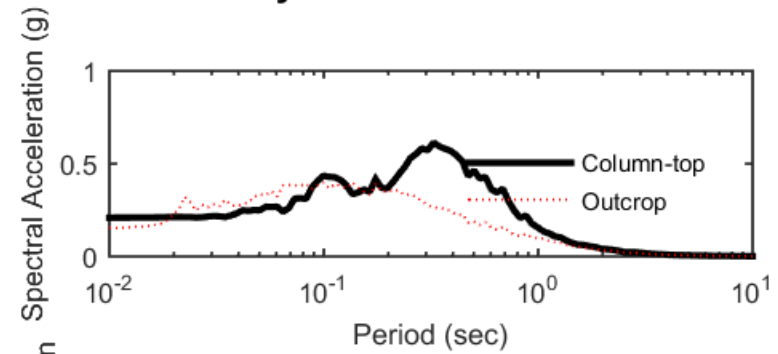
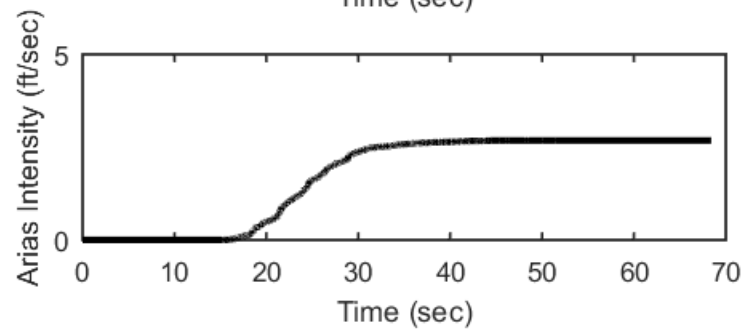
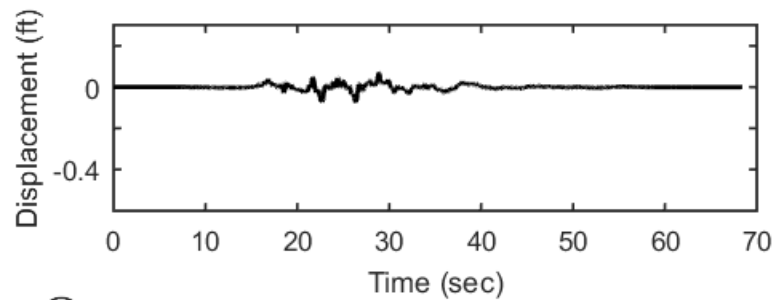
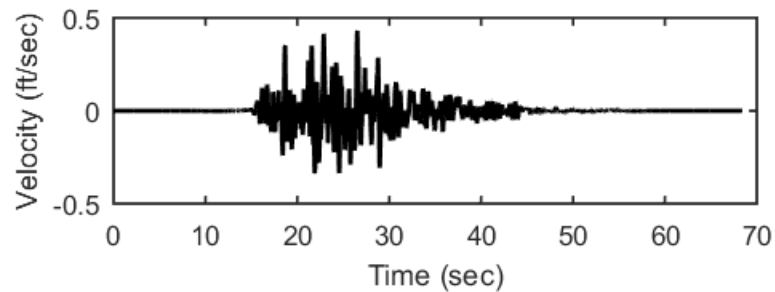
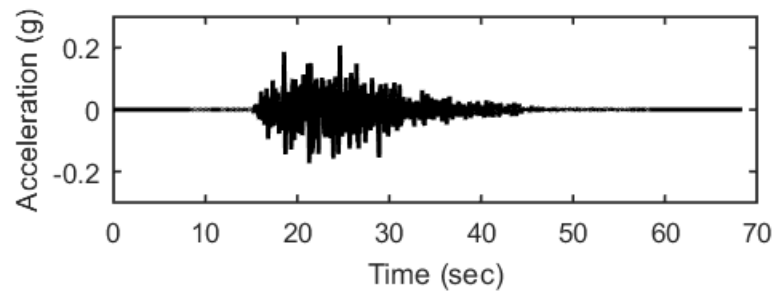


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3

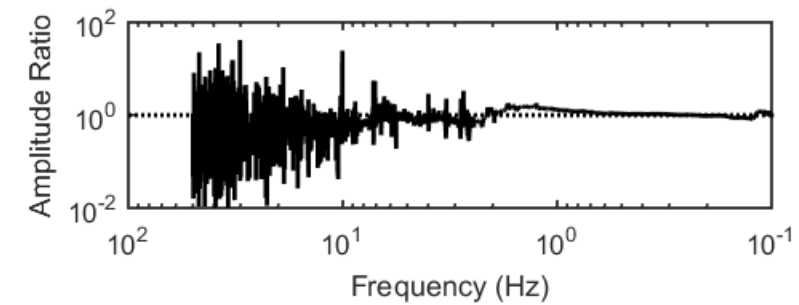
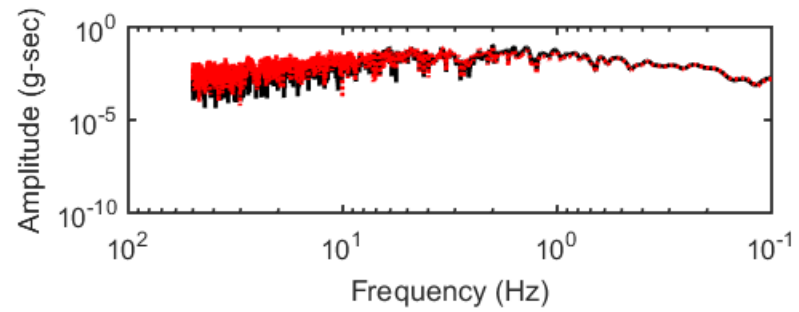
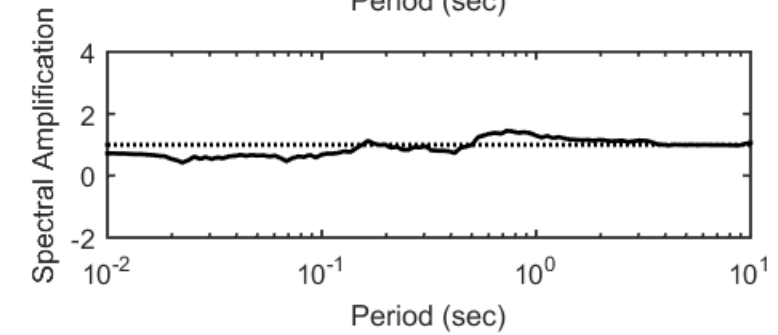
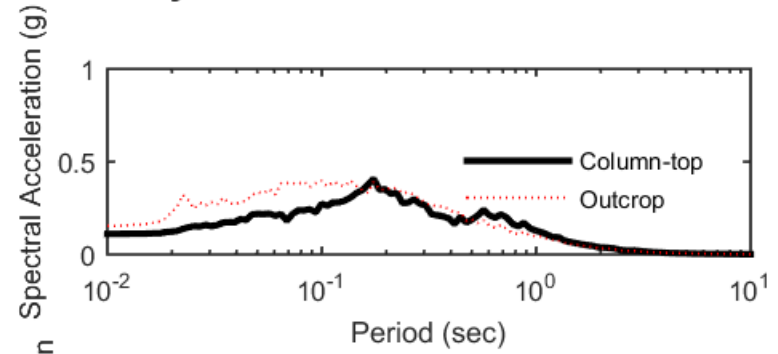
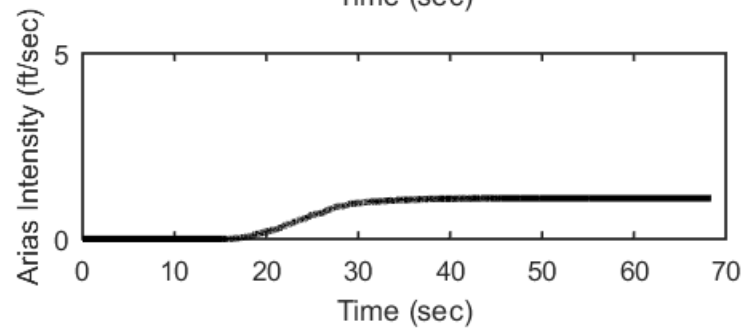
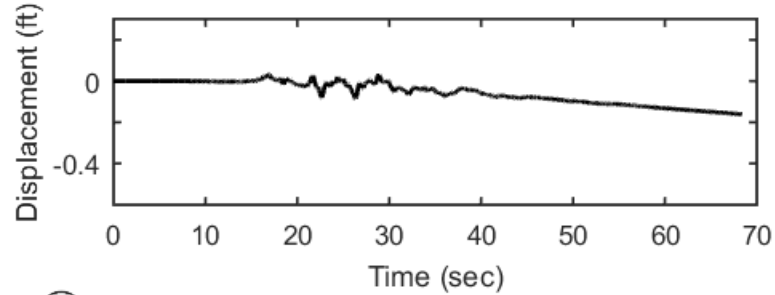
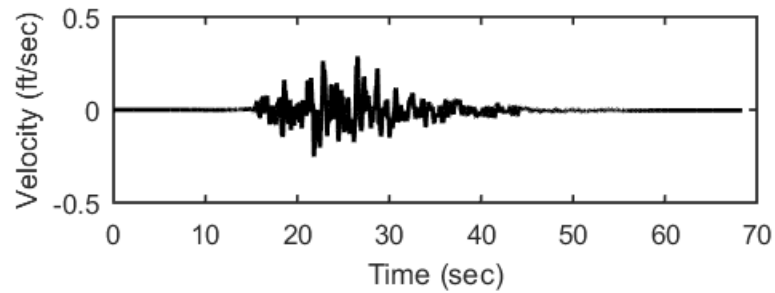
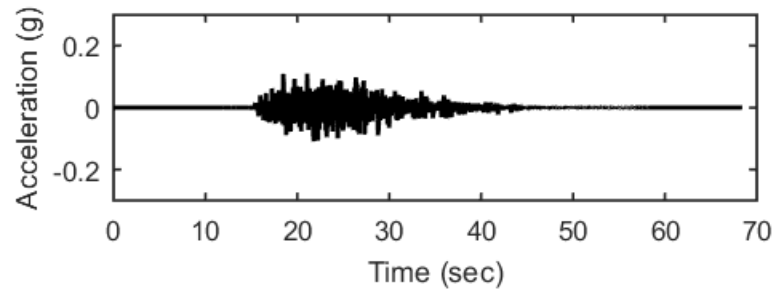




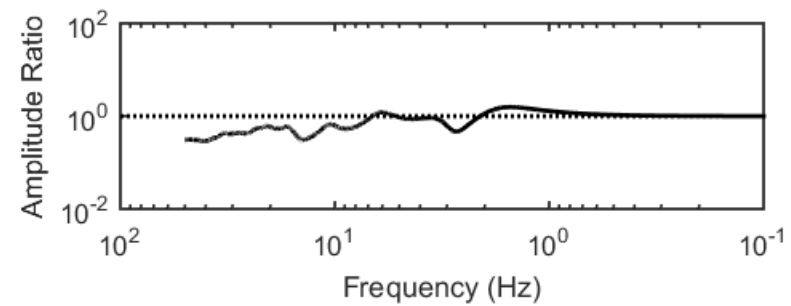
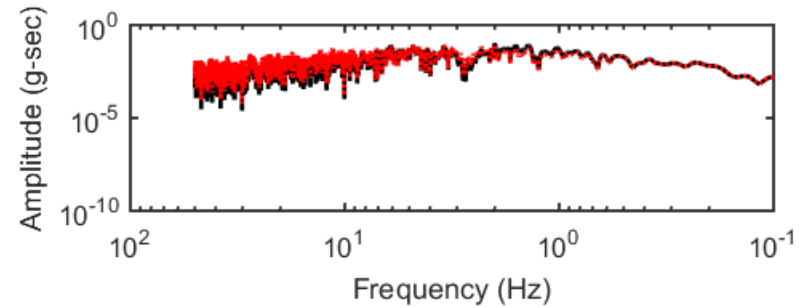
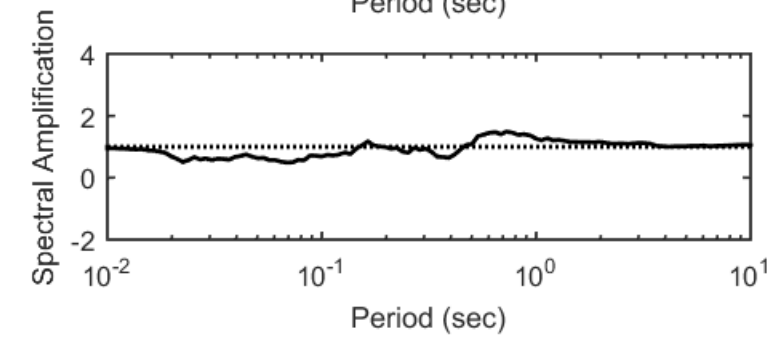
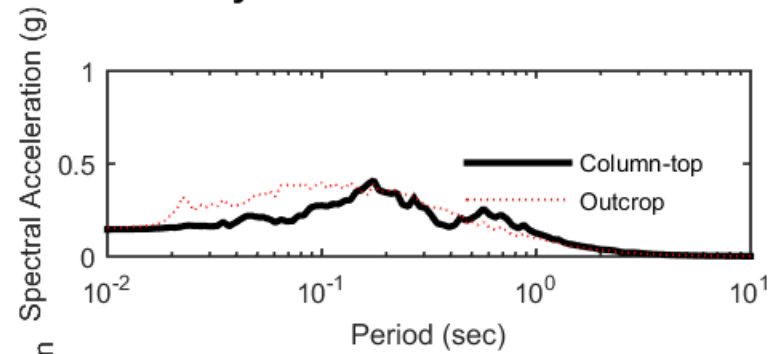
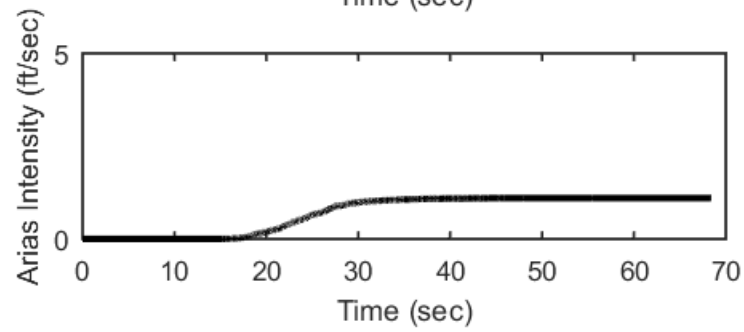
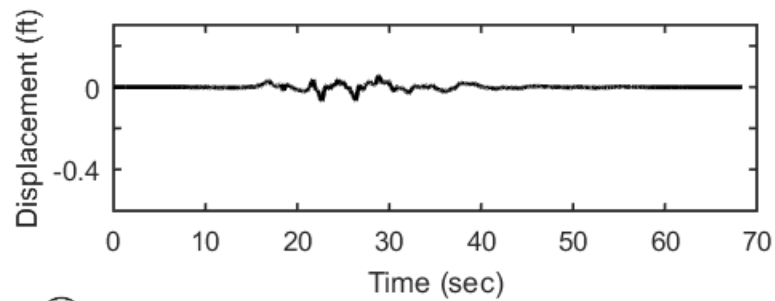
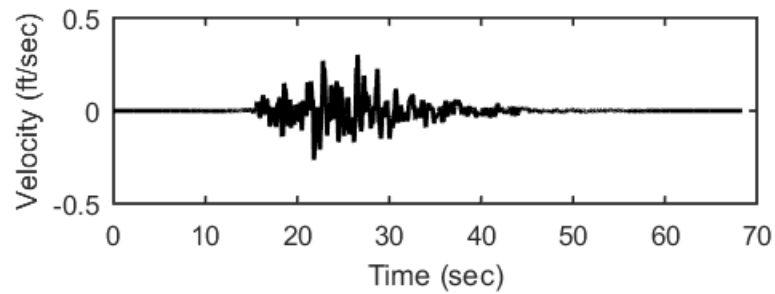
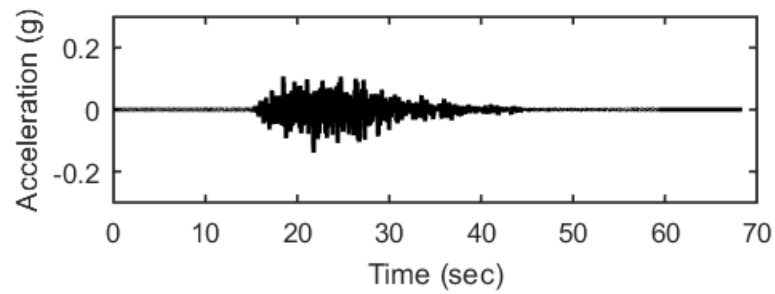
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



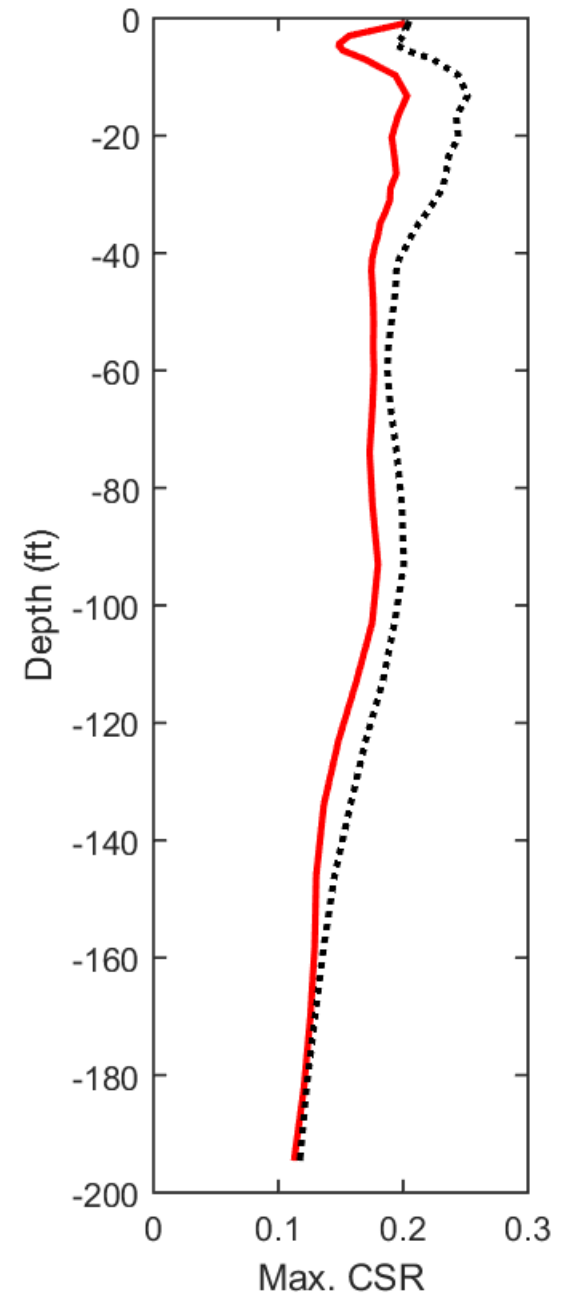
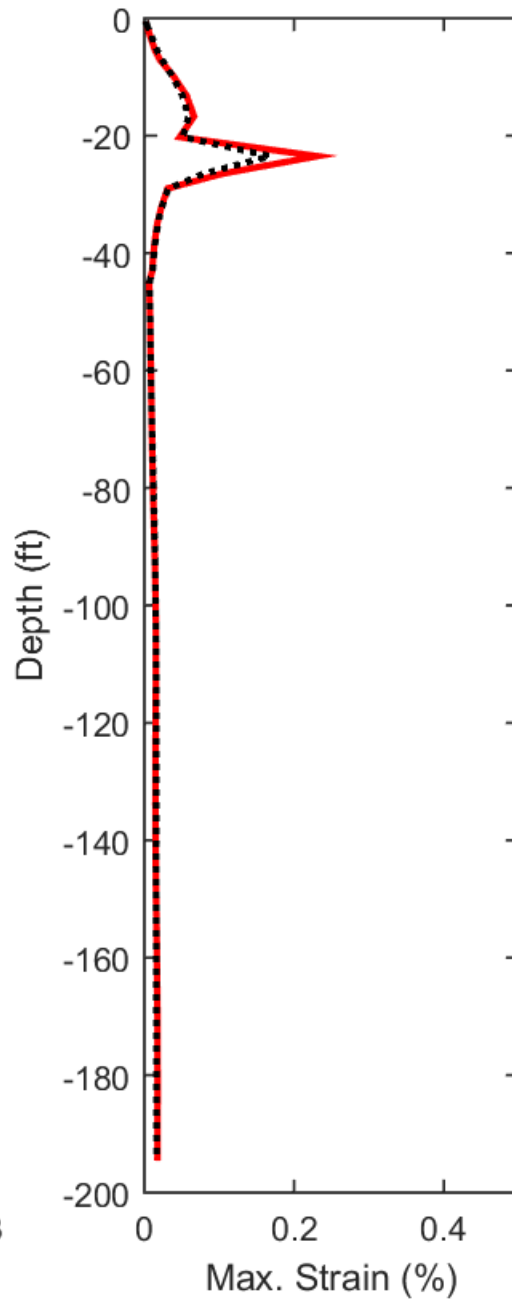
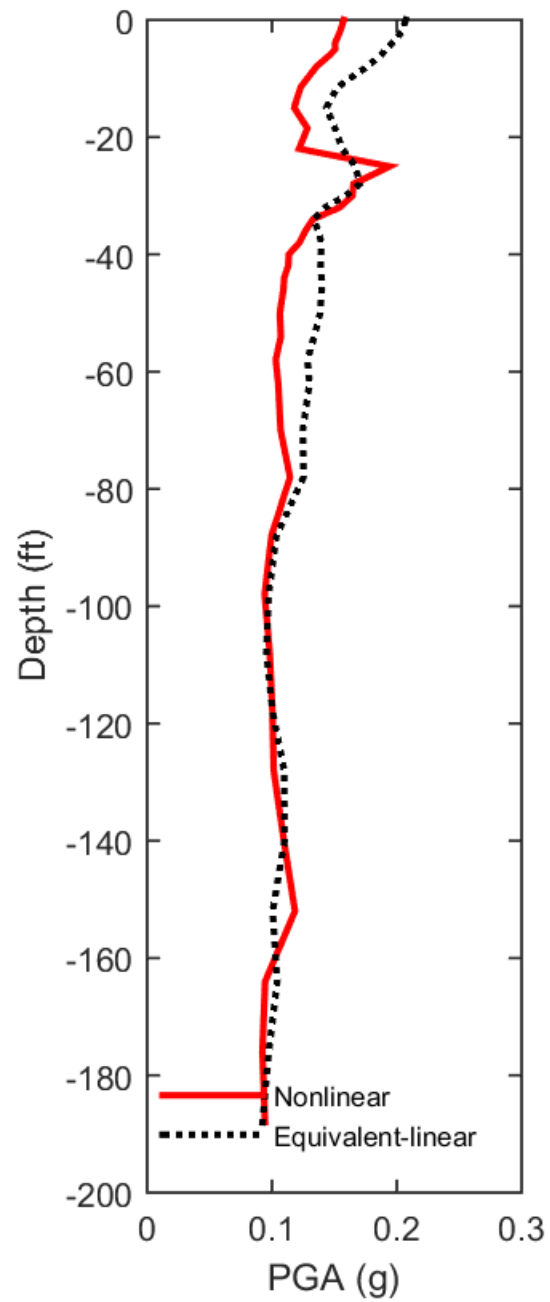
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



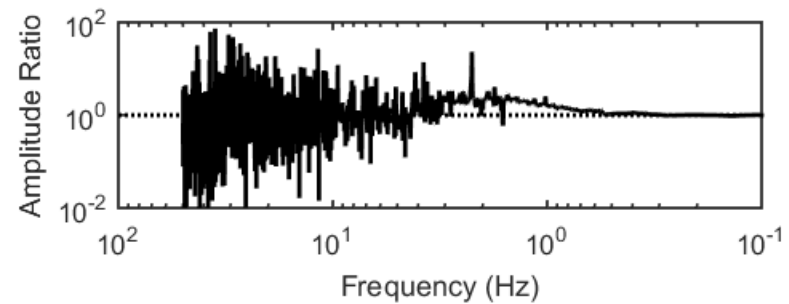
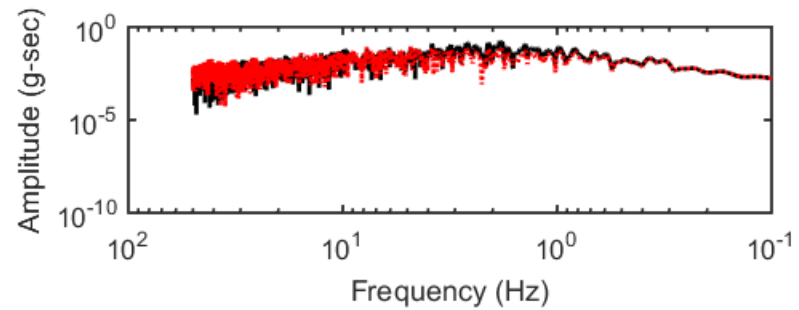
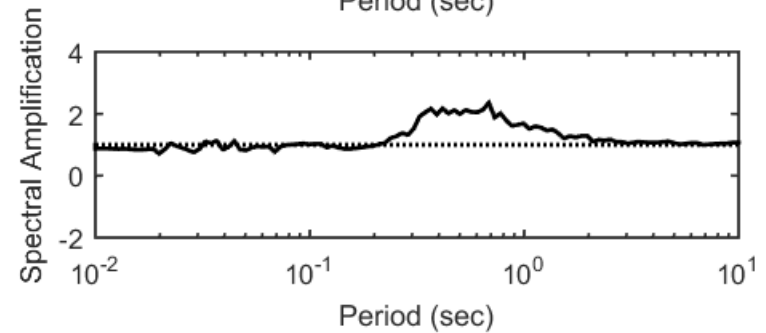
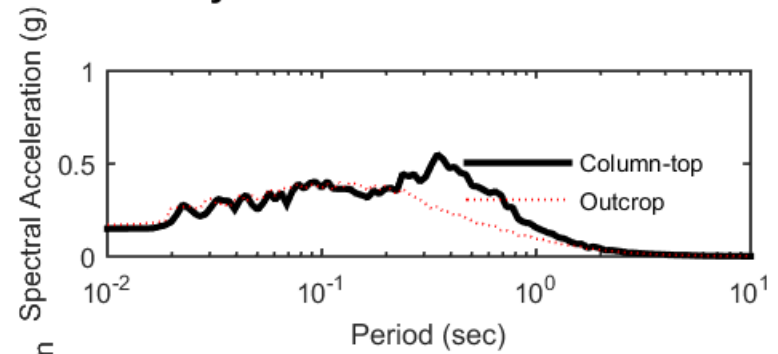
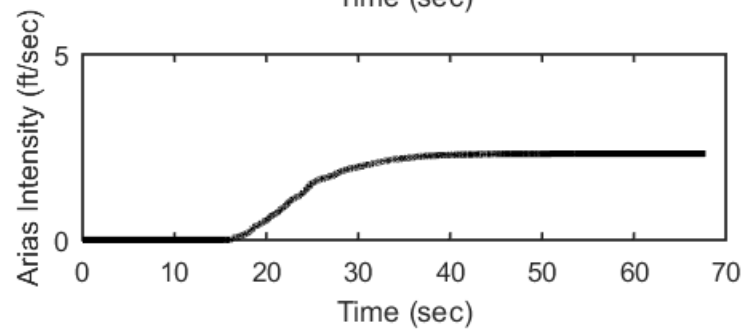
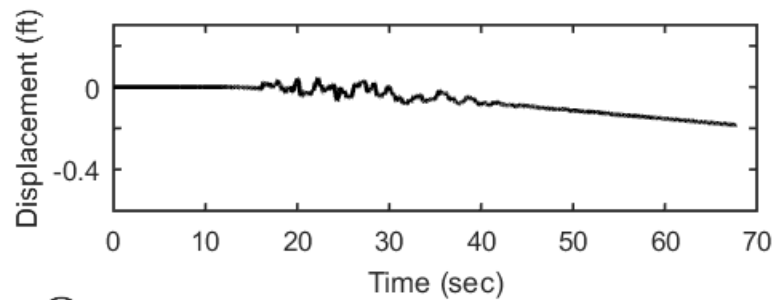
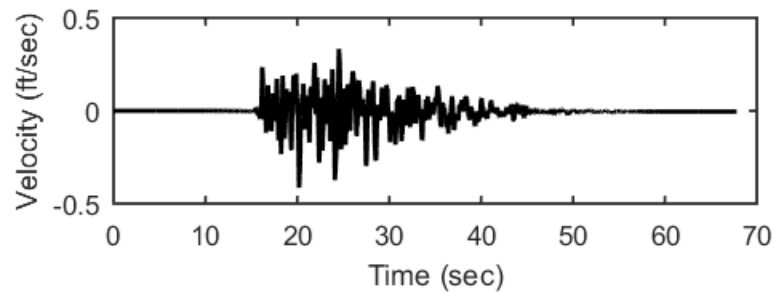
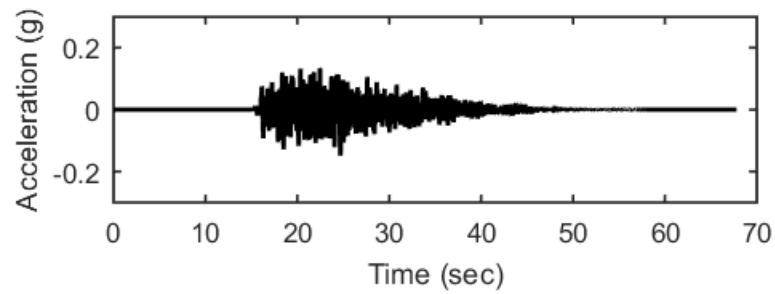
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



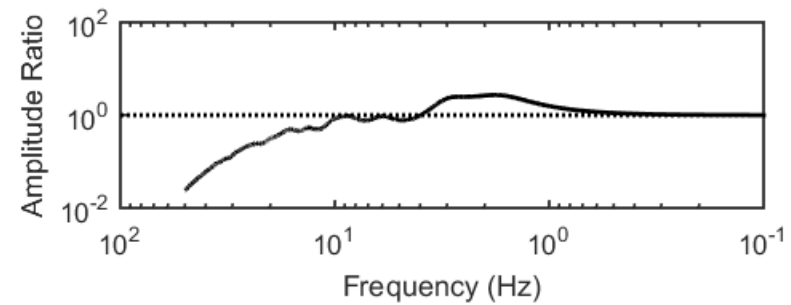
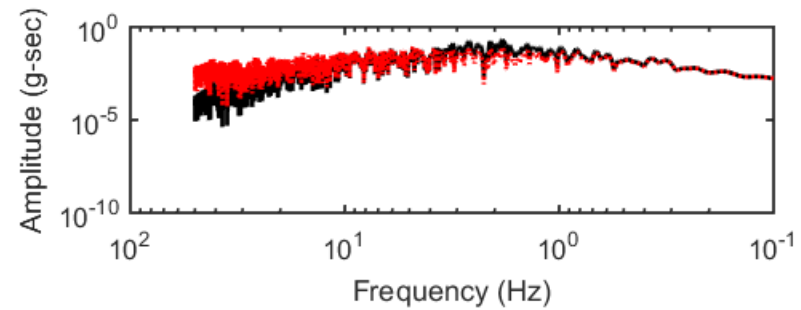
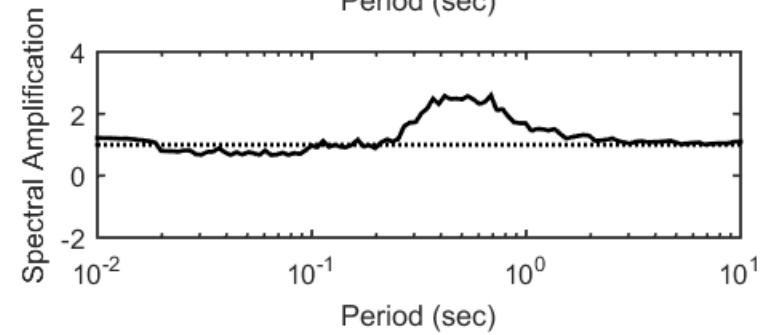
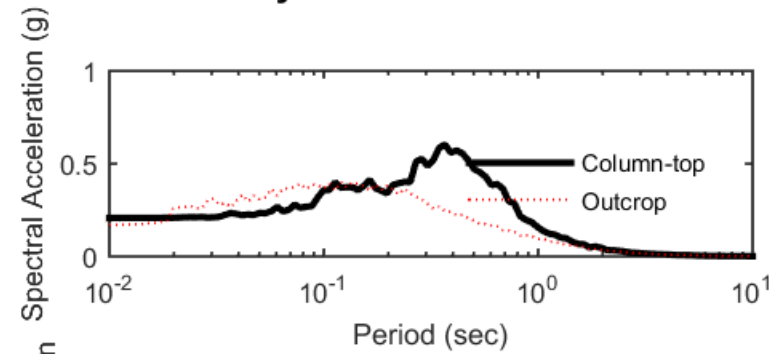
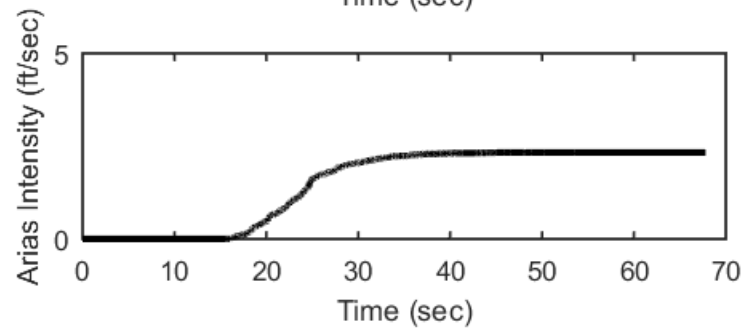
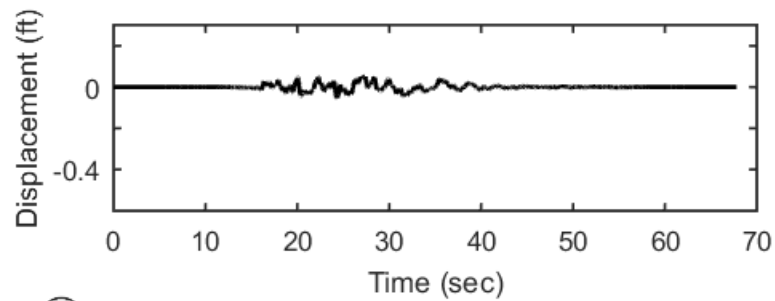
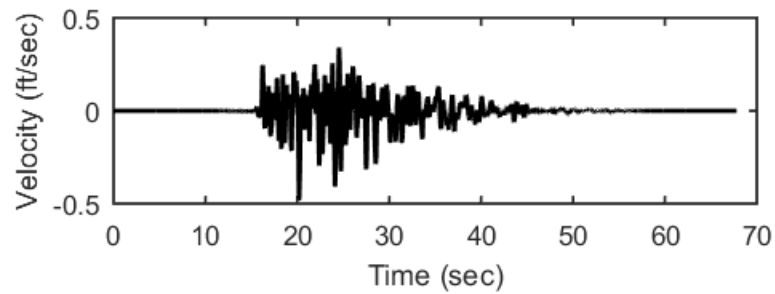
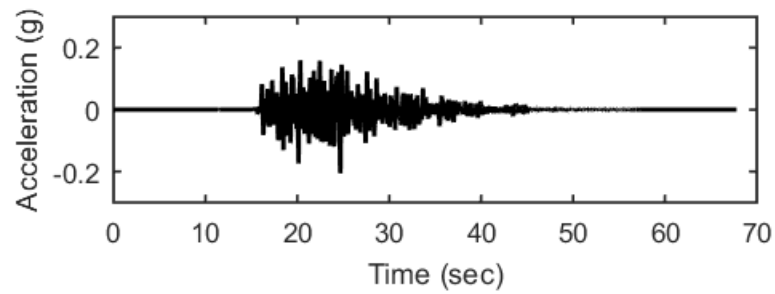
### Profile outputs for Motion: FEE3



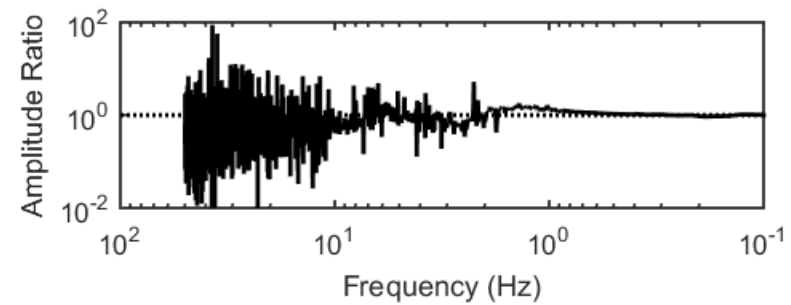
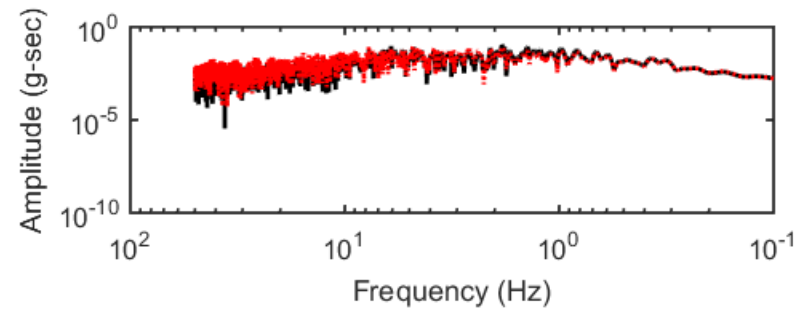
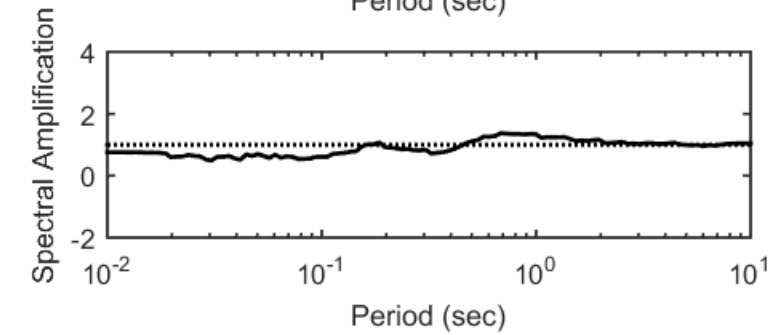
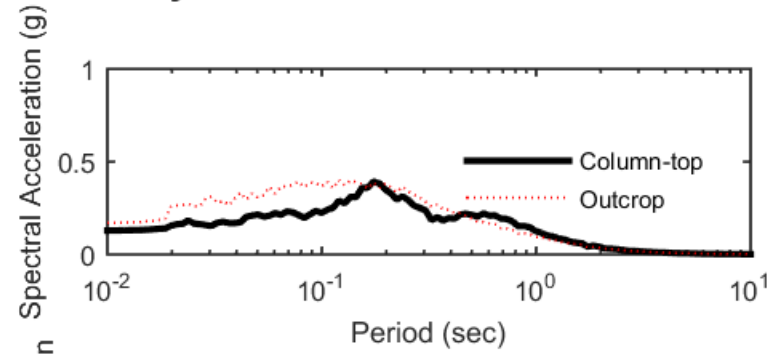
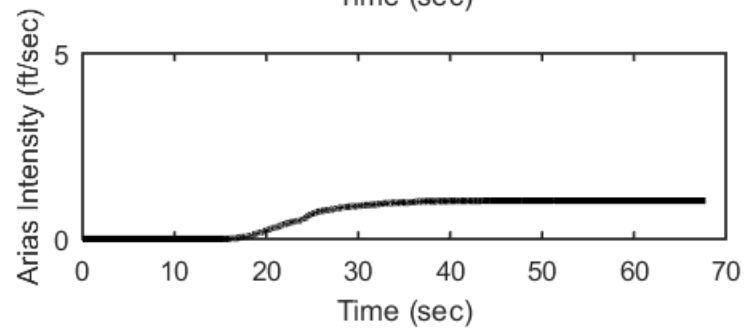
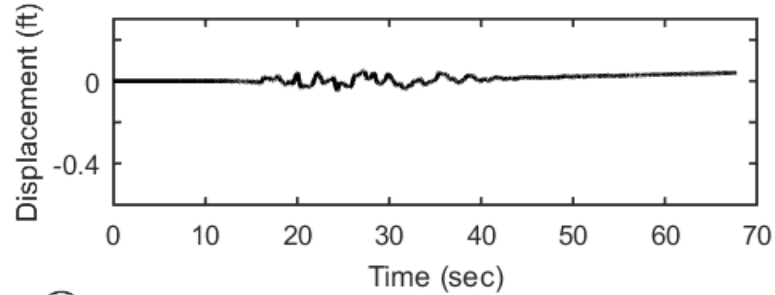
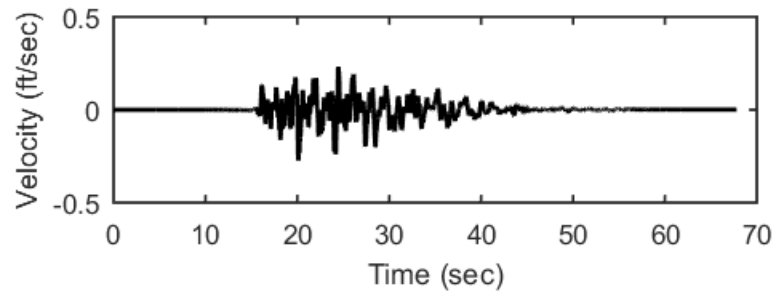
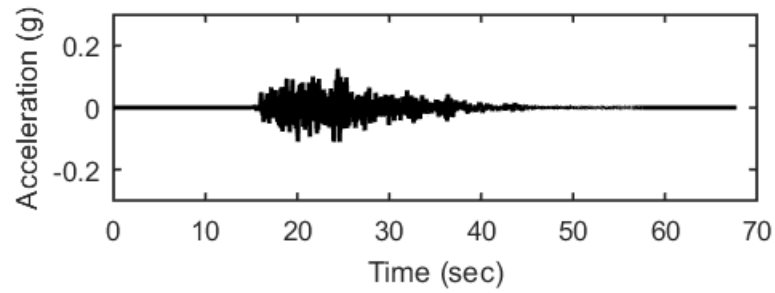
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



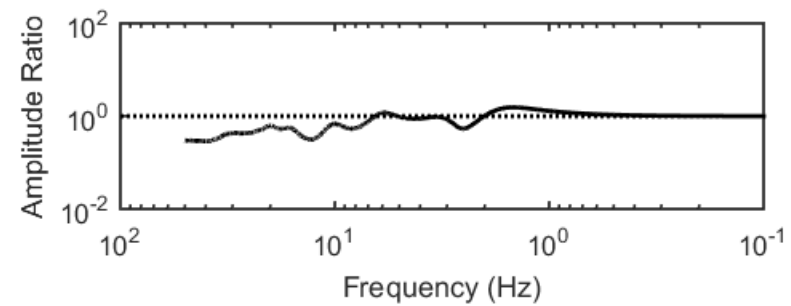
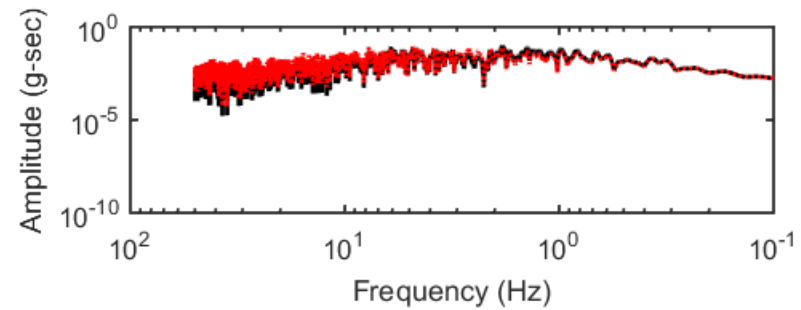
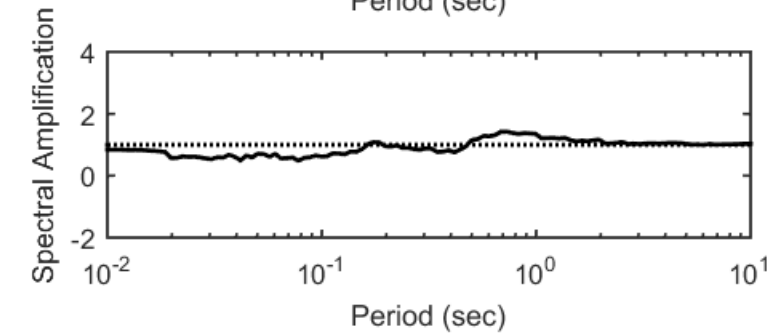
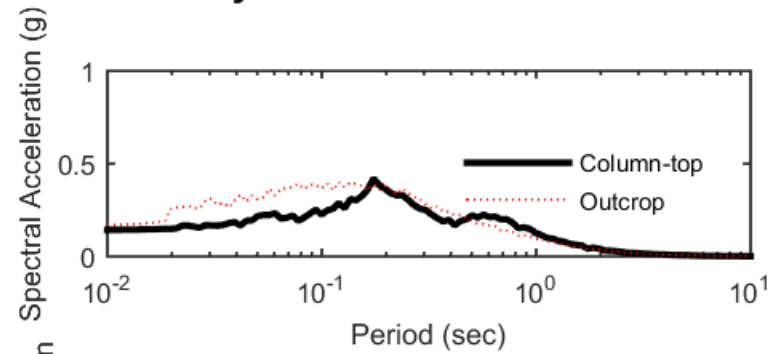
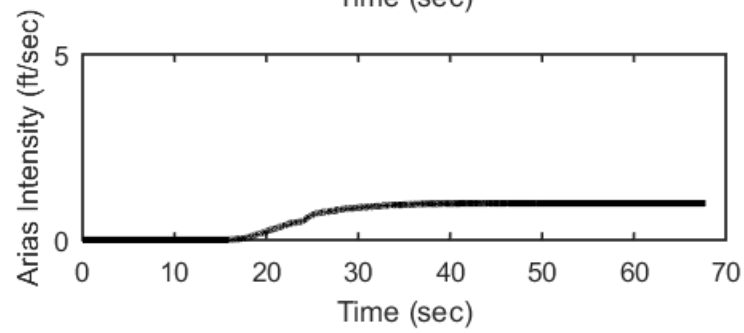
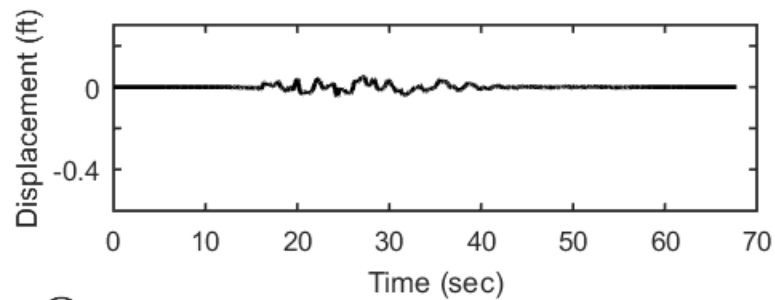
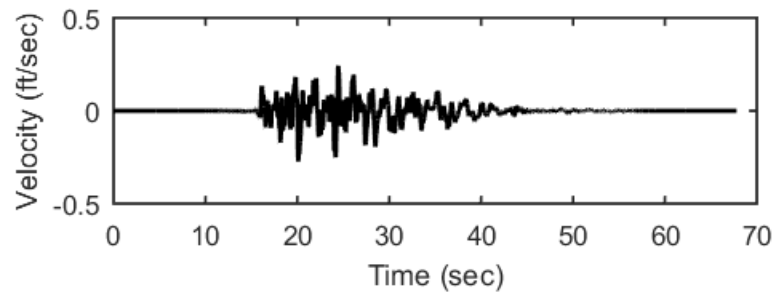
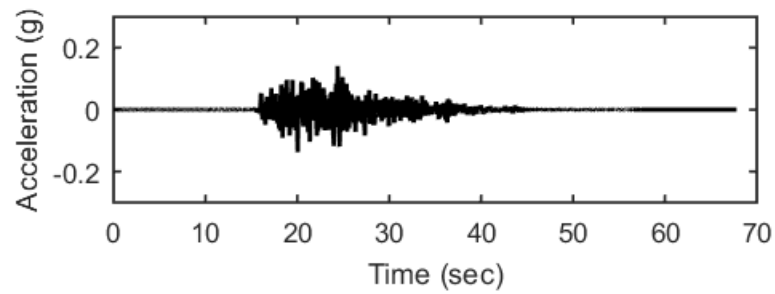
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4

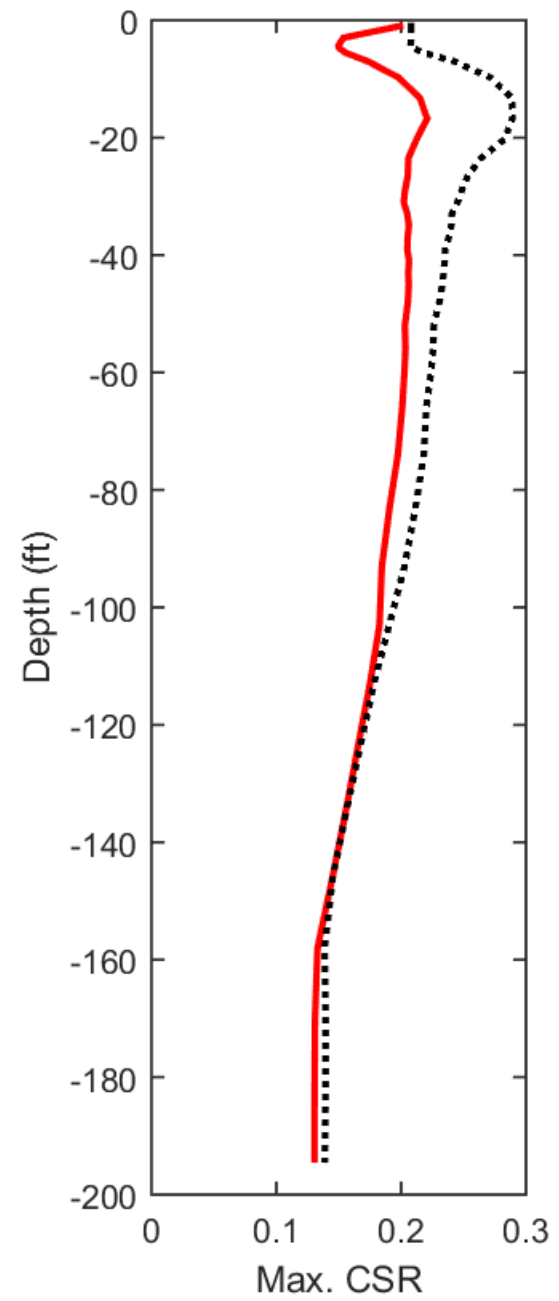
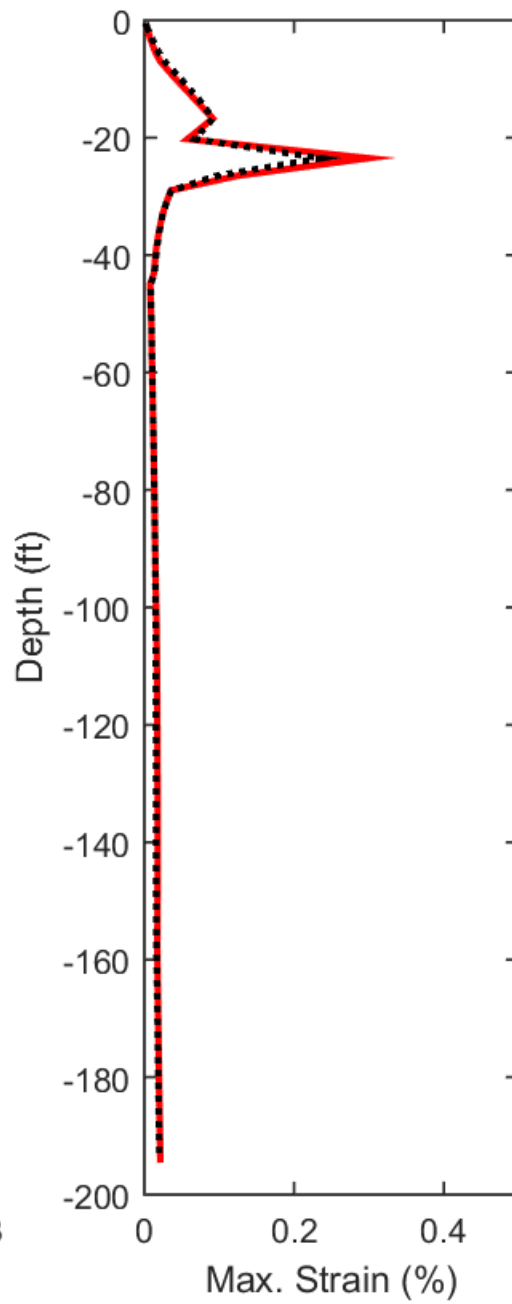
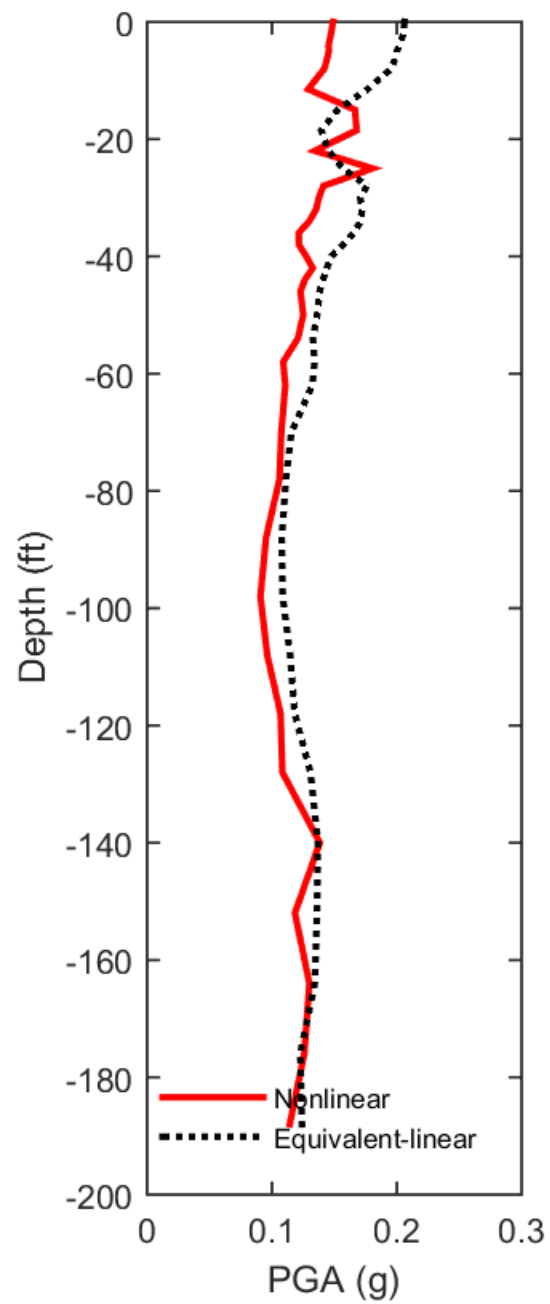


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4

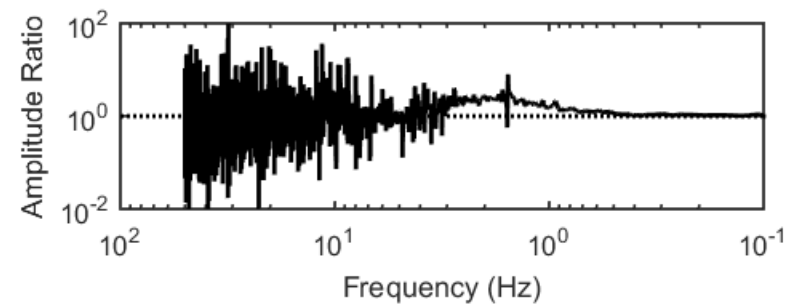
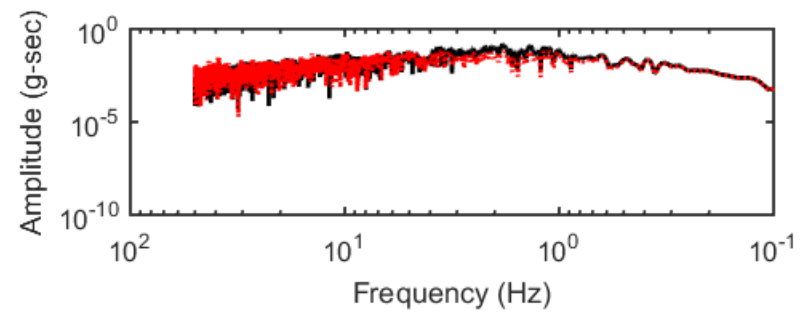
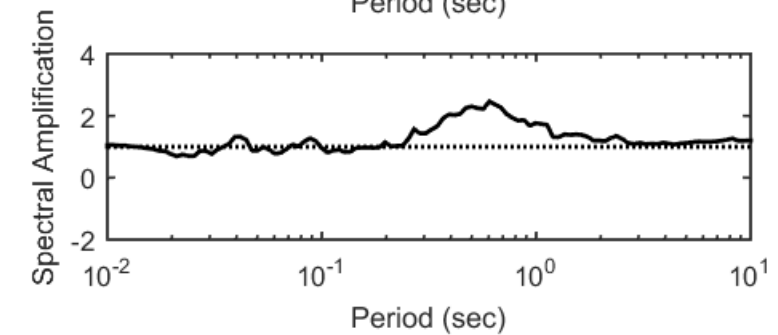
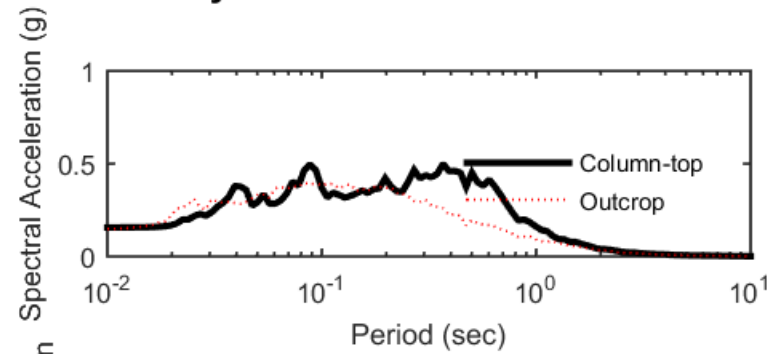
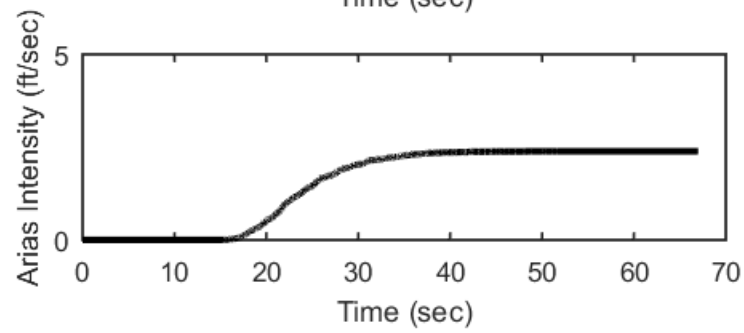
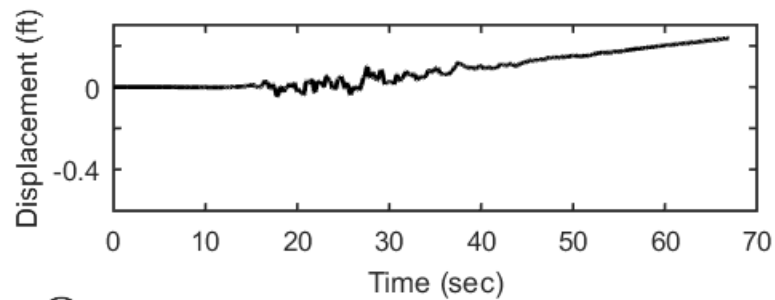
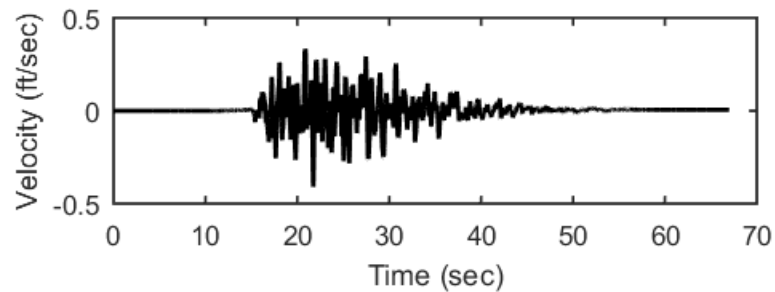
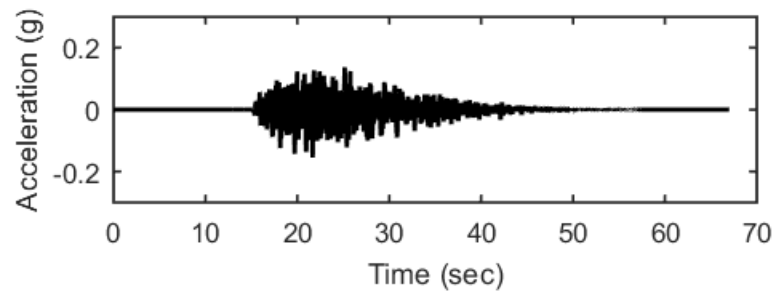




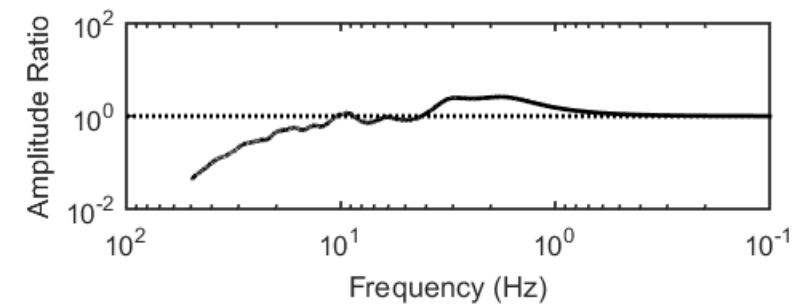
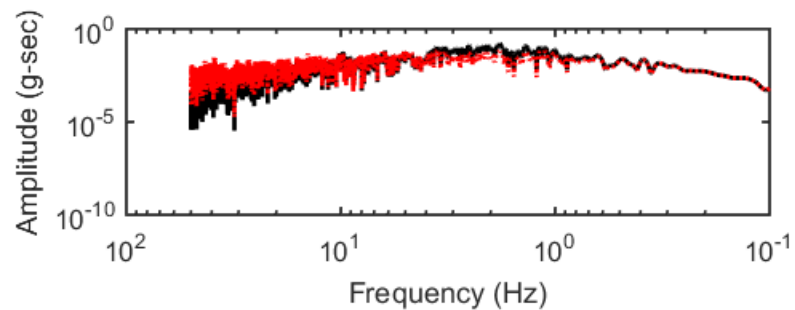
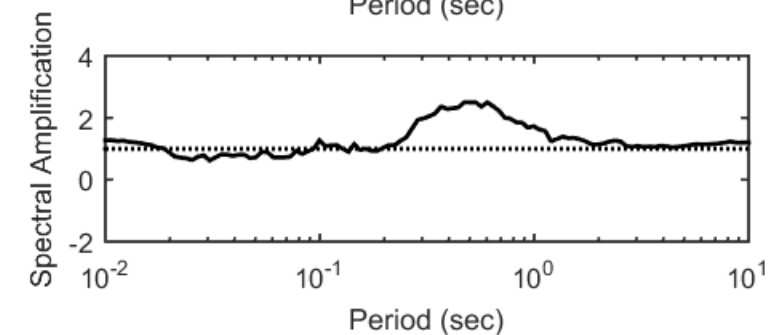
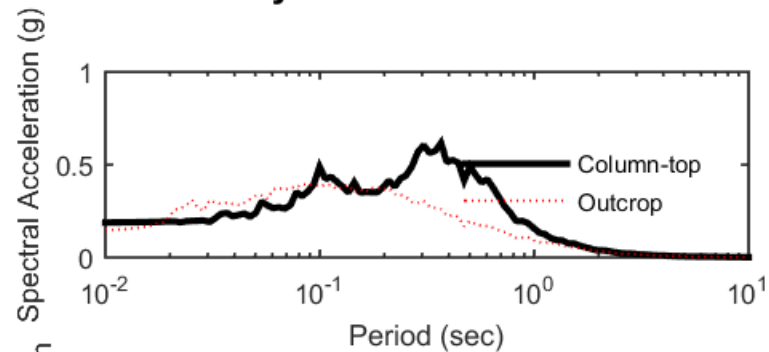
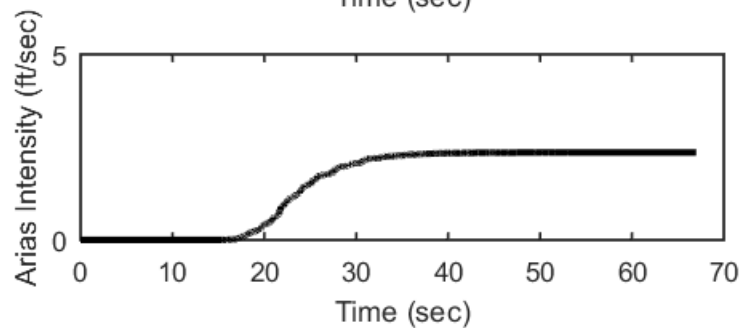
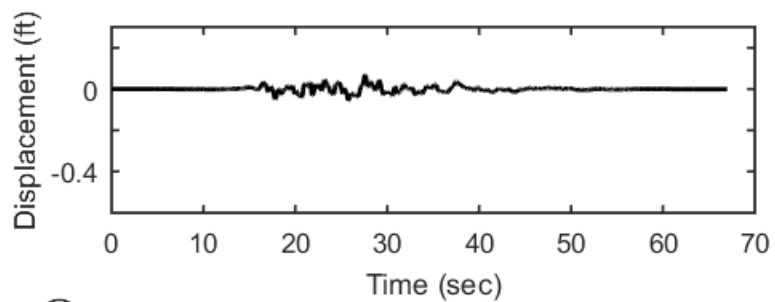
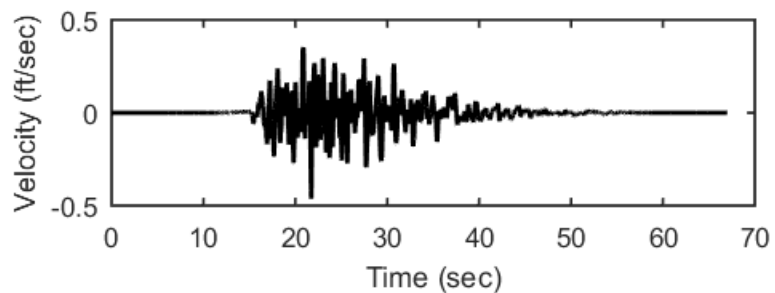
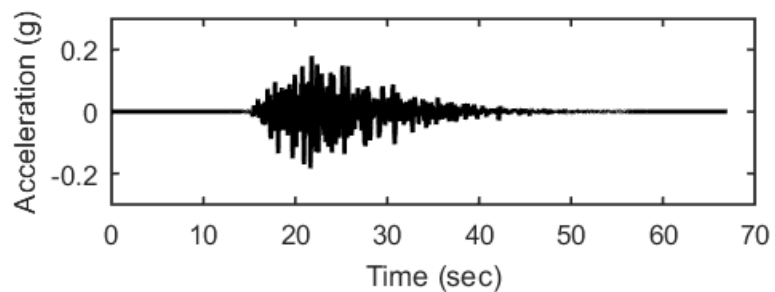
### Profile outputs for Motion: FEE4



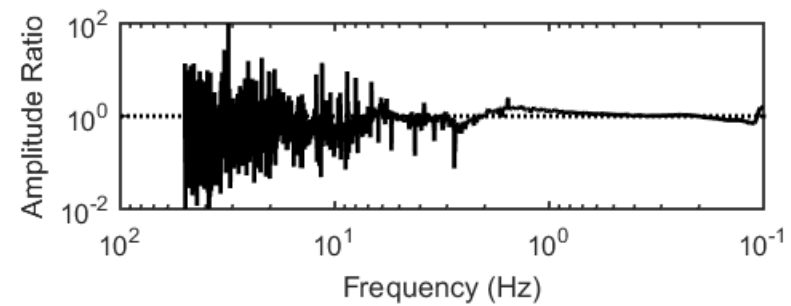
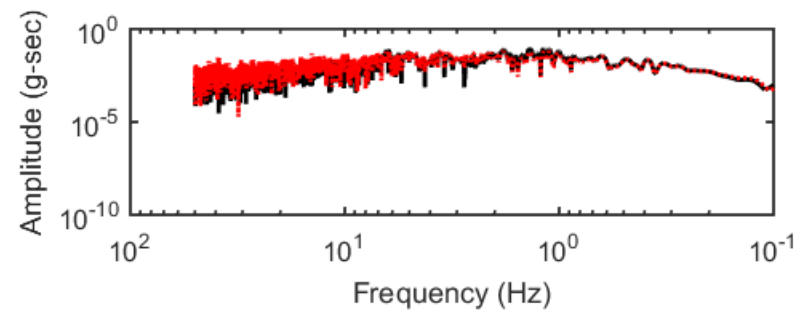
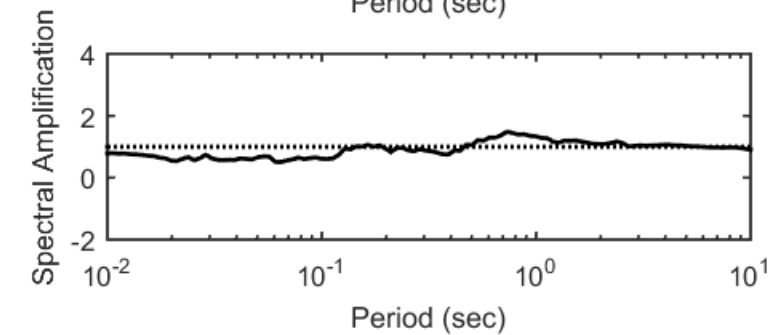
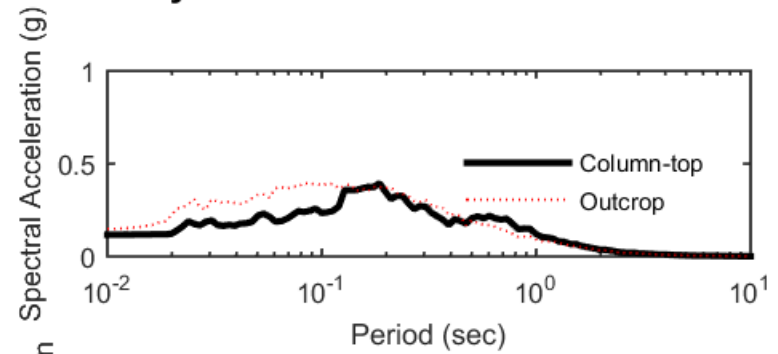
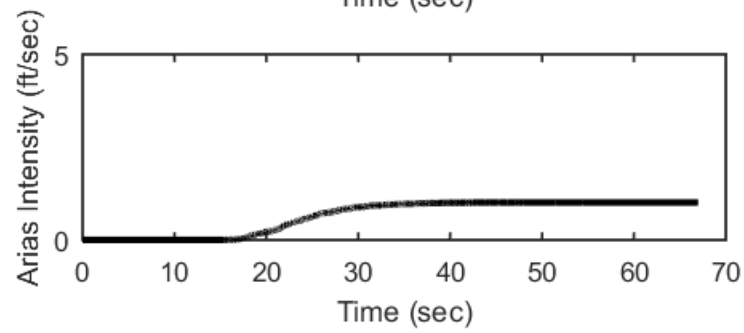
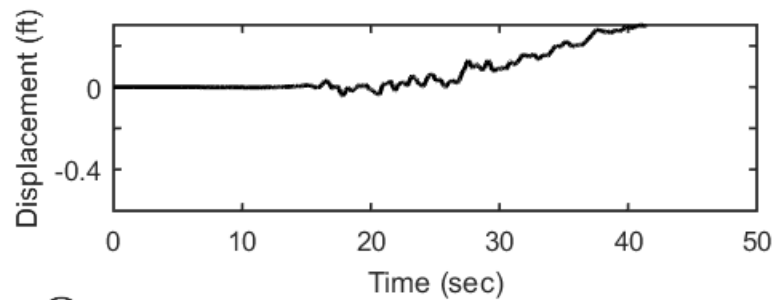
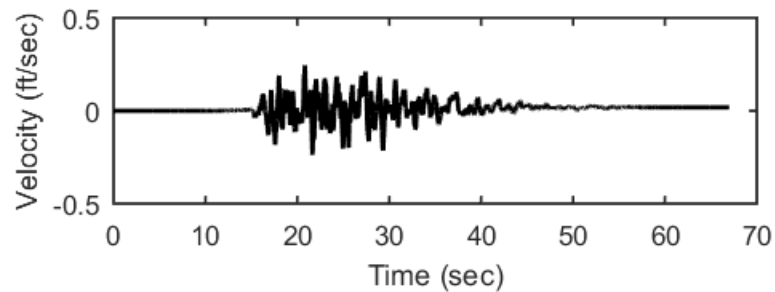
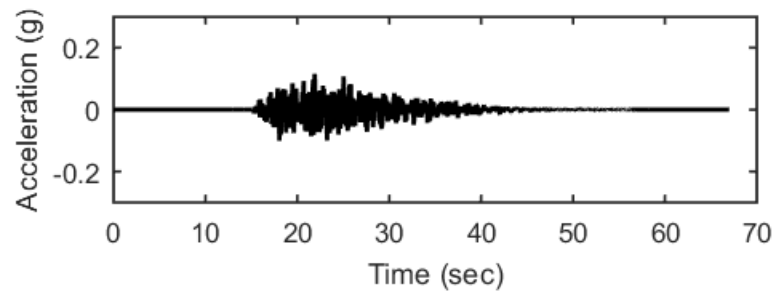
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



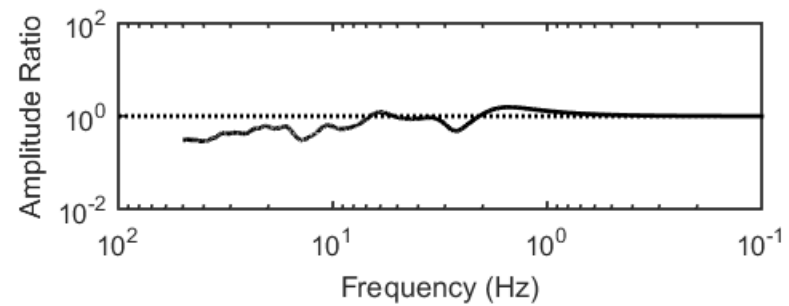
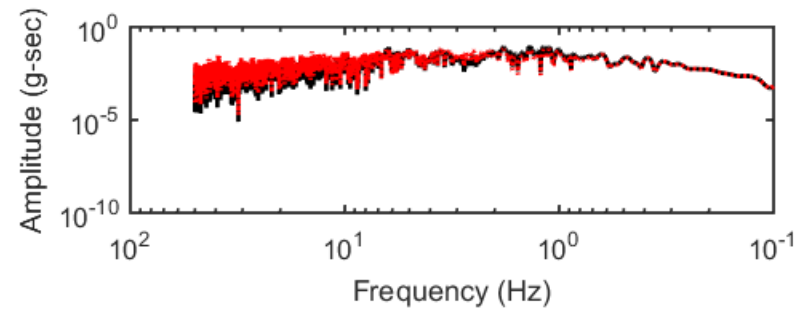
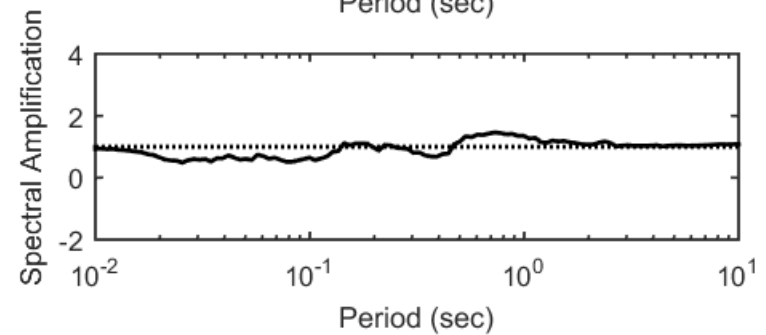
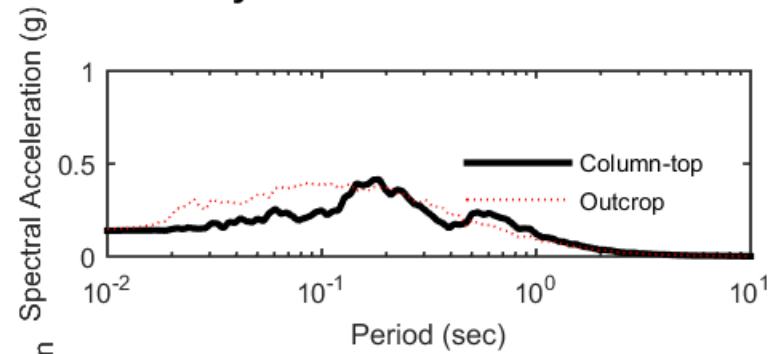
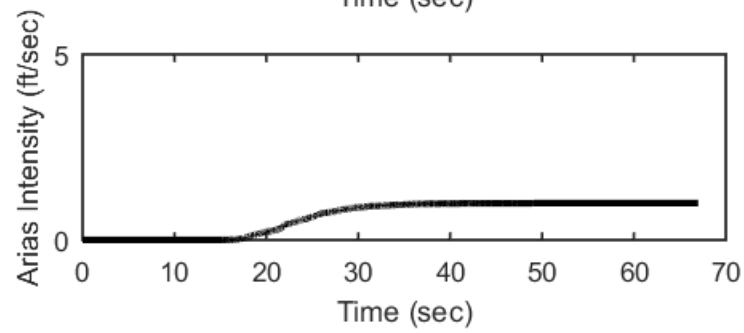
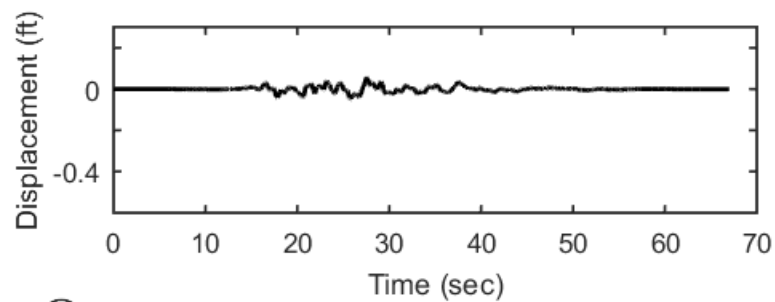
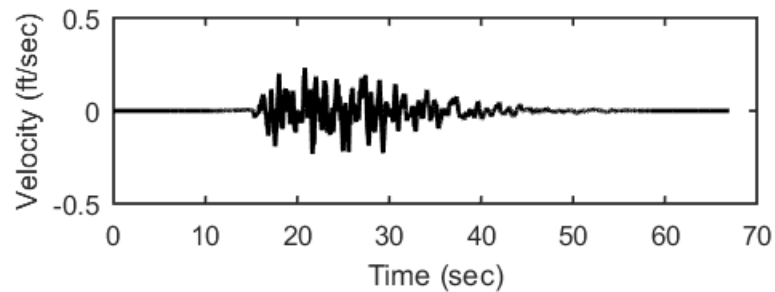
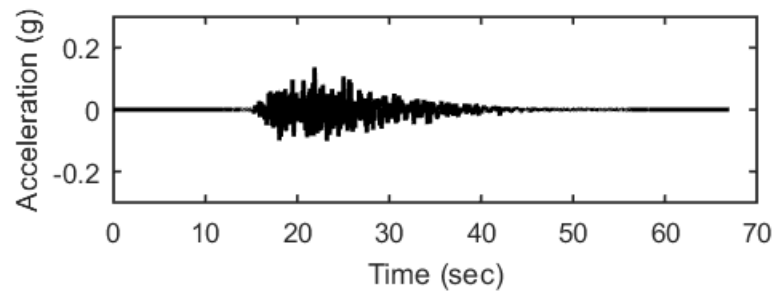
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



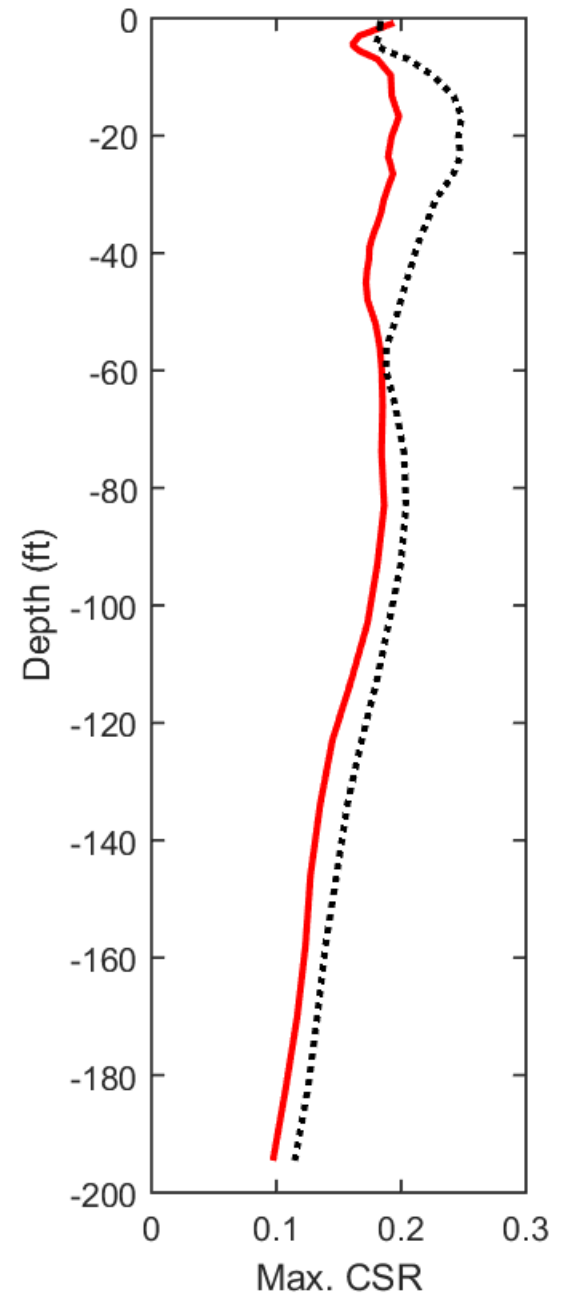
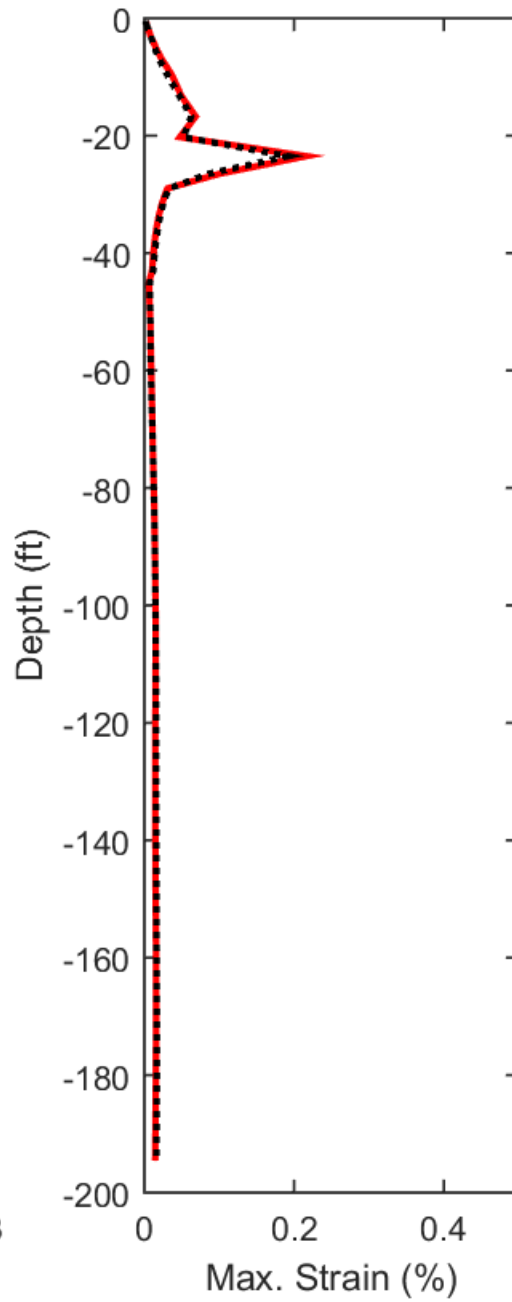
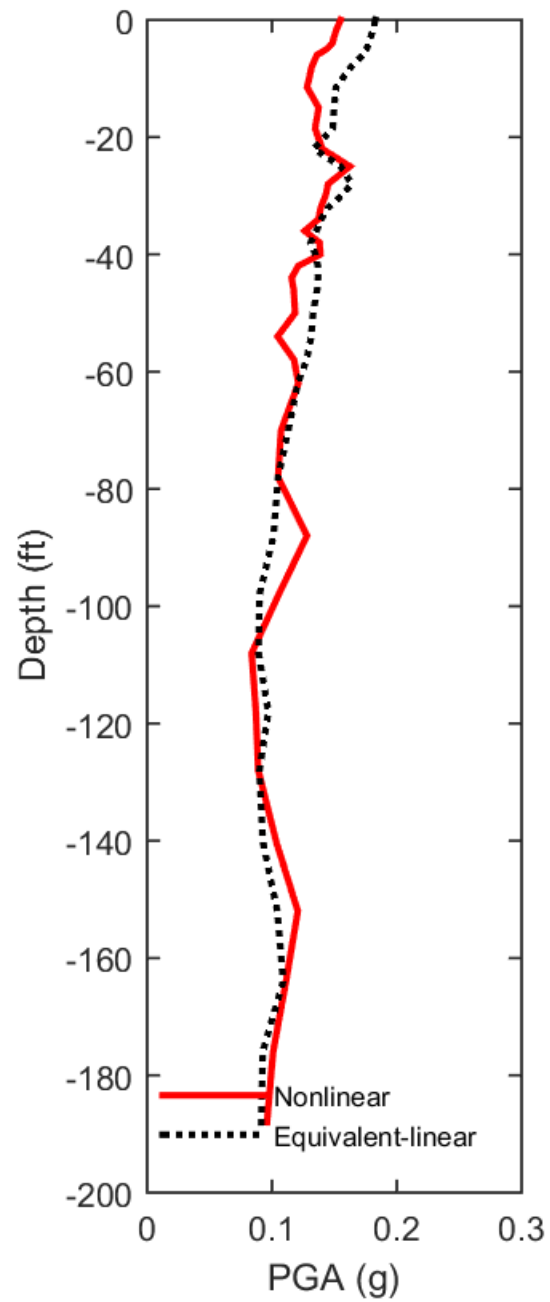
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



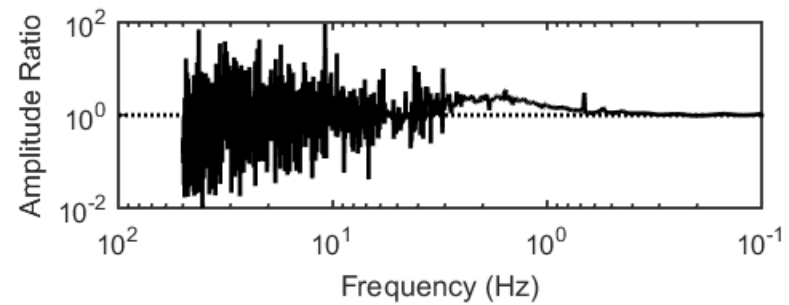
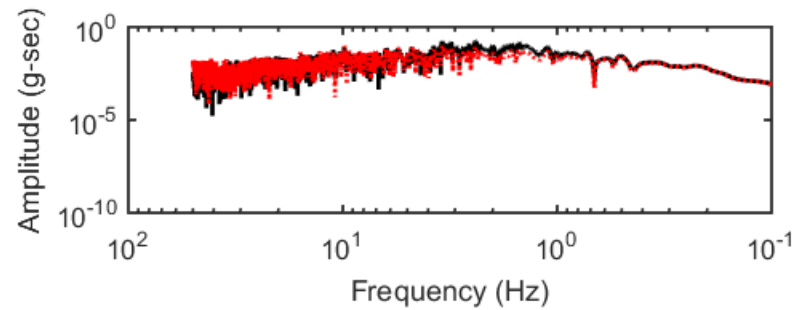
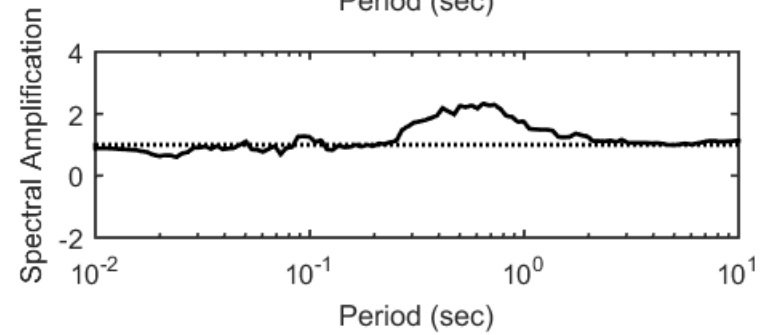
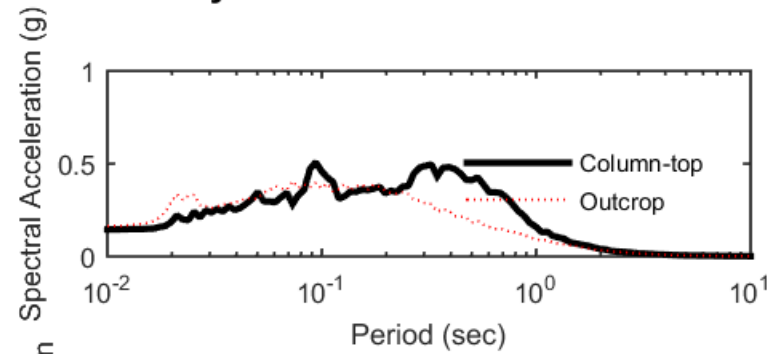
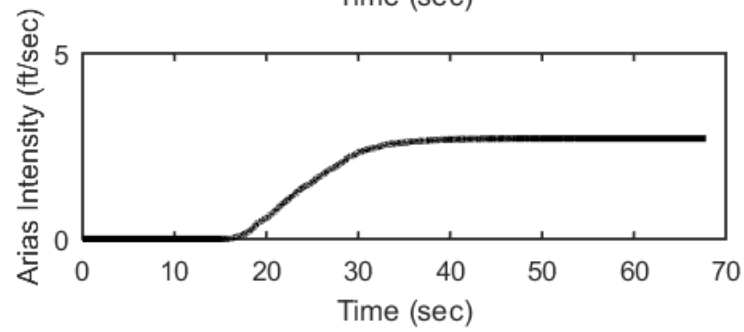
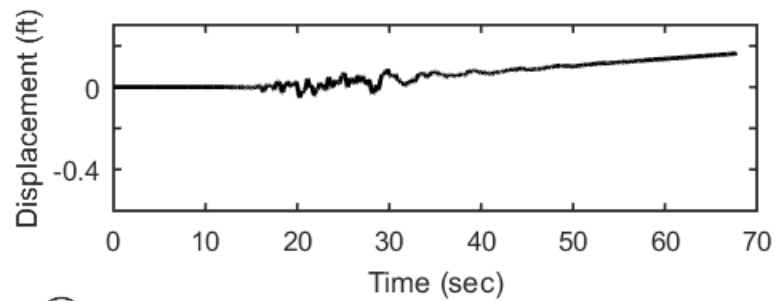
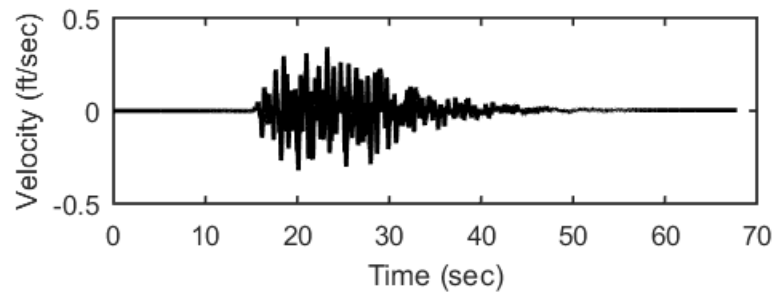
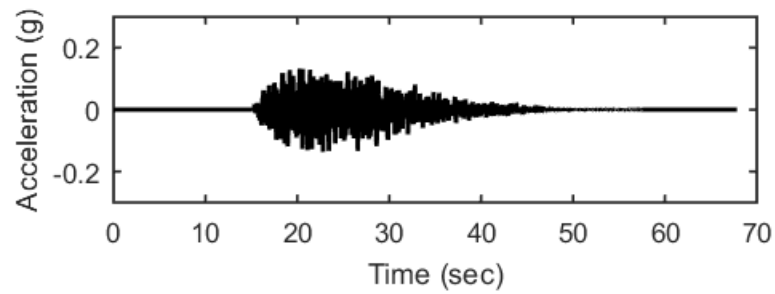
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



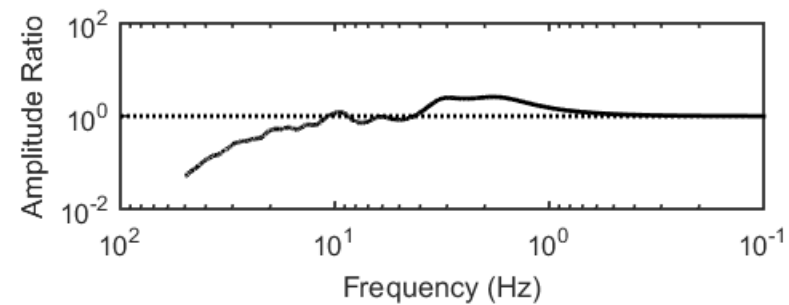
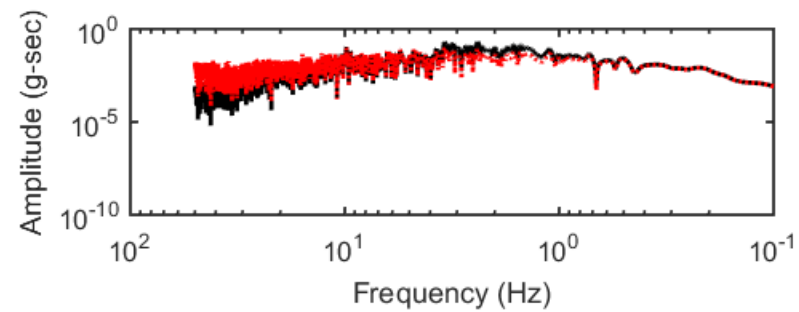
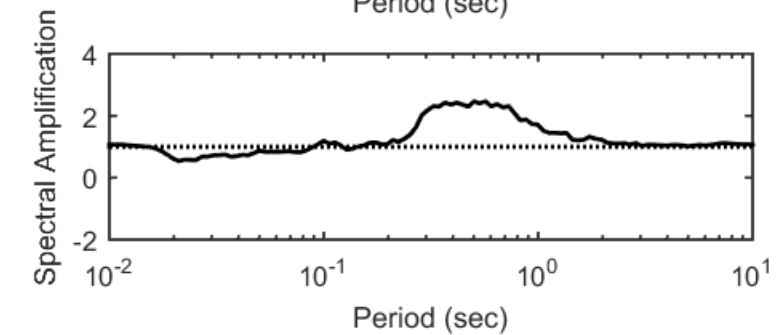
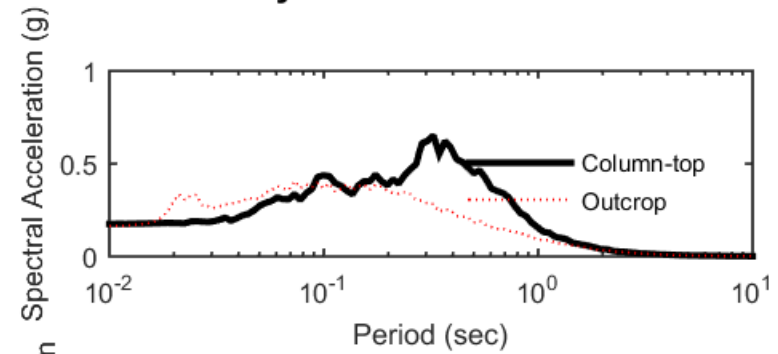
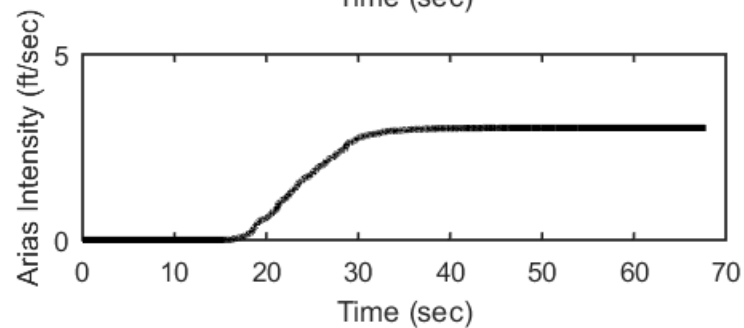
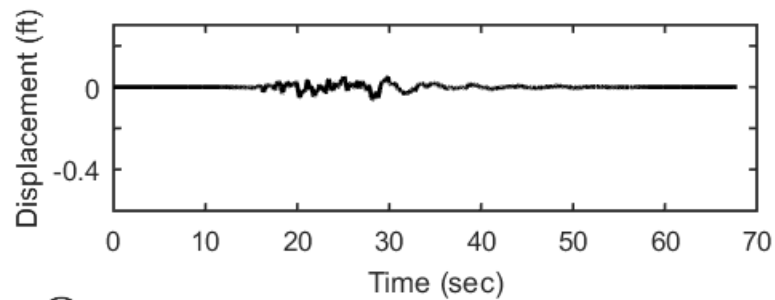
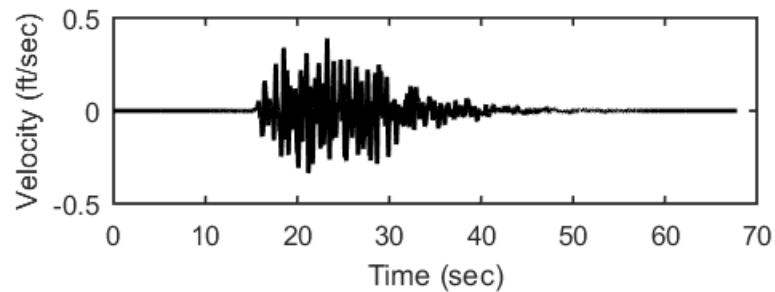
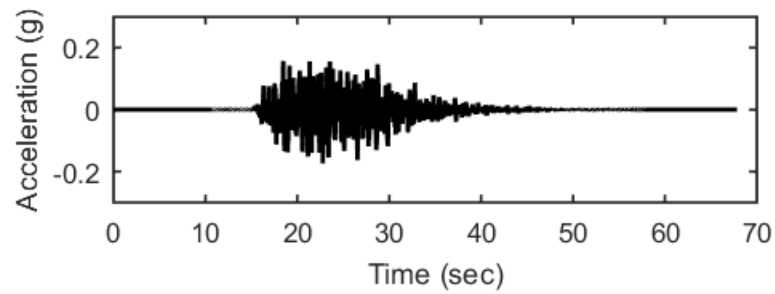
### Profile outputs for Motion: FEE5



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6

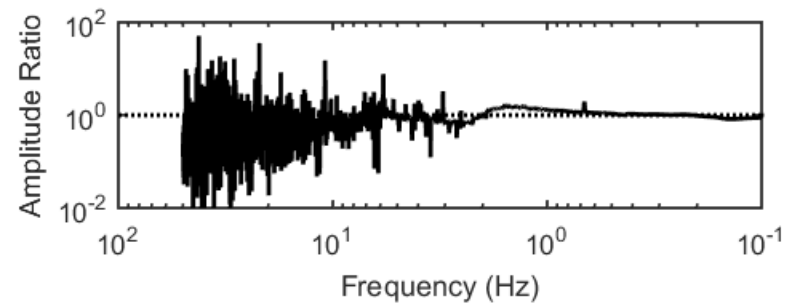
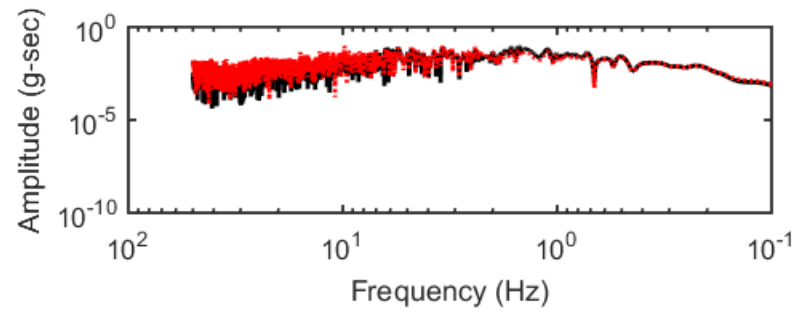
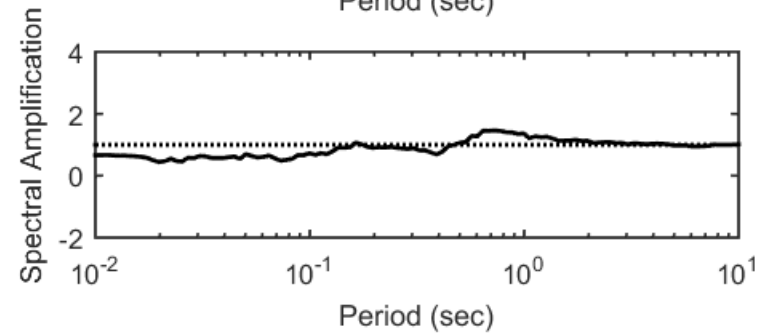
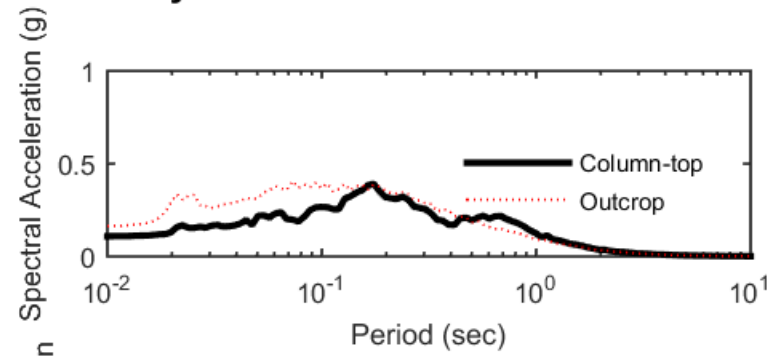
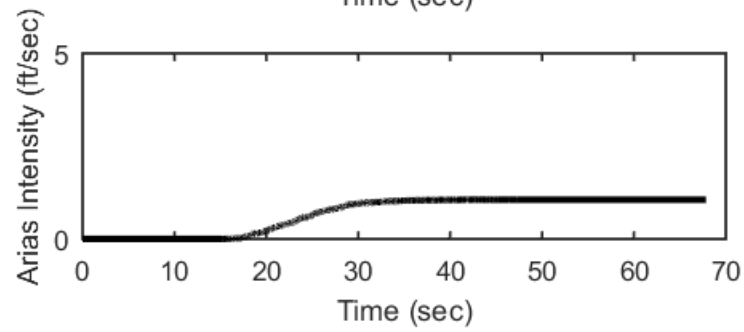
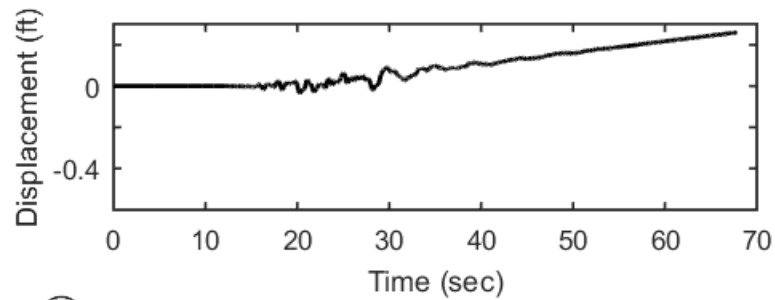
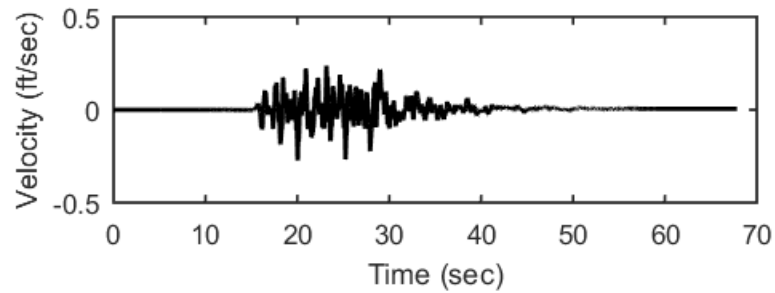
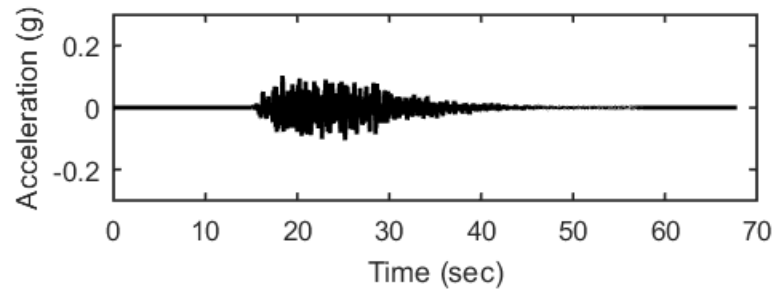


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6

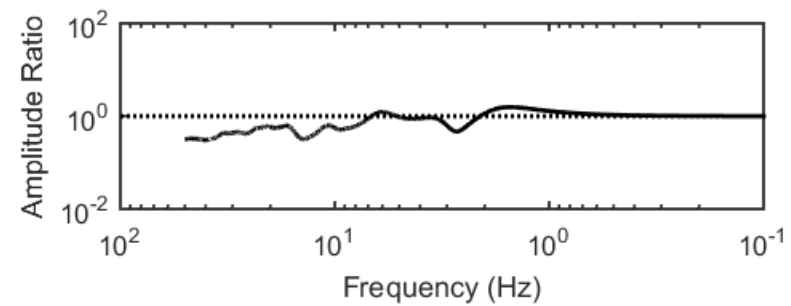
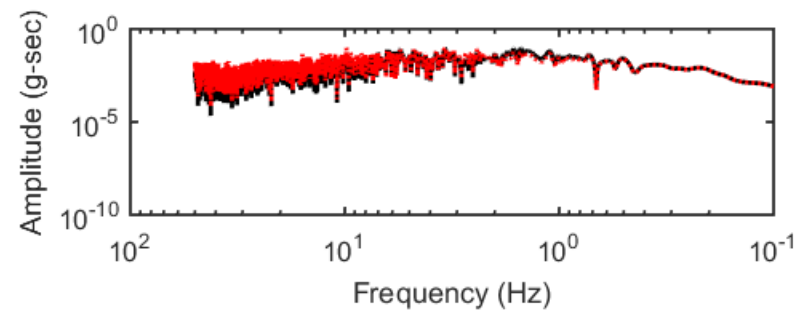
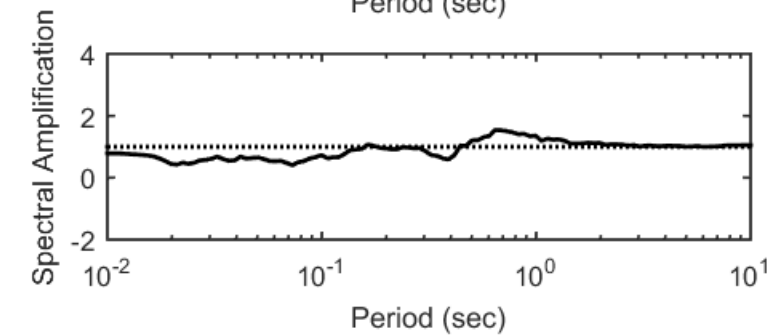
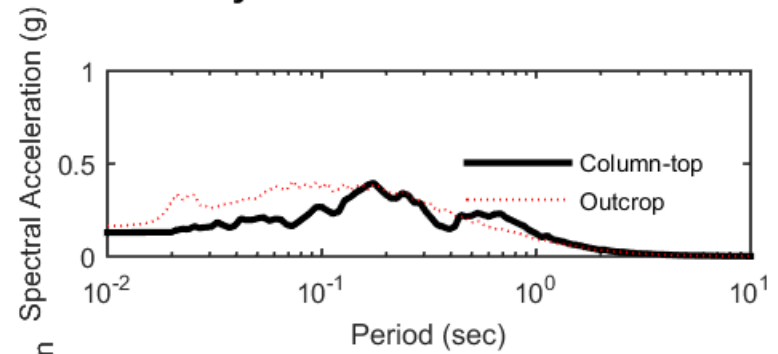
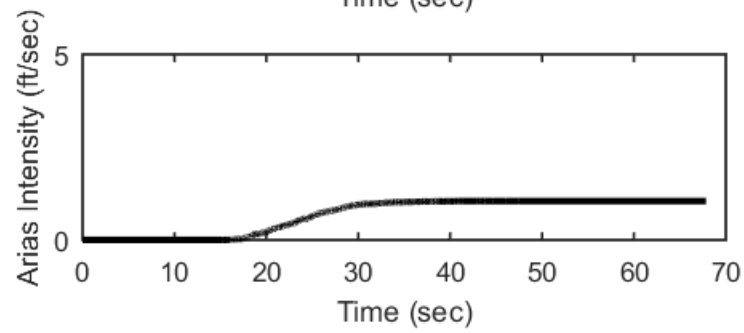
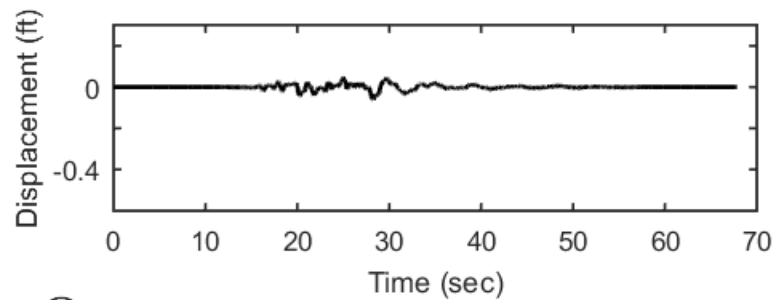
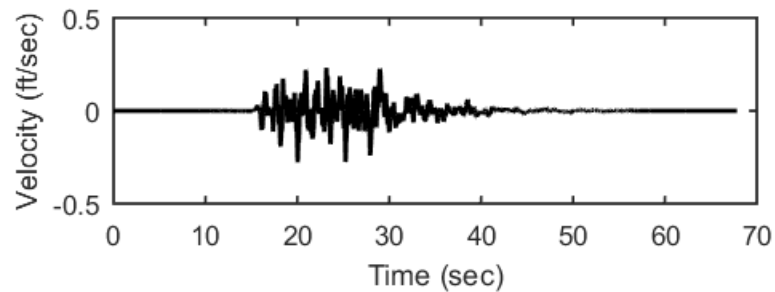
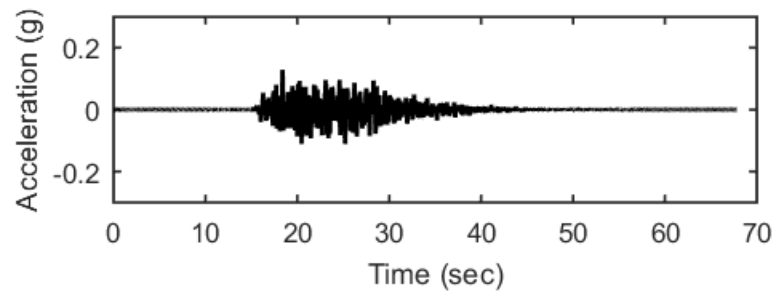




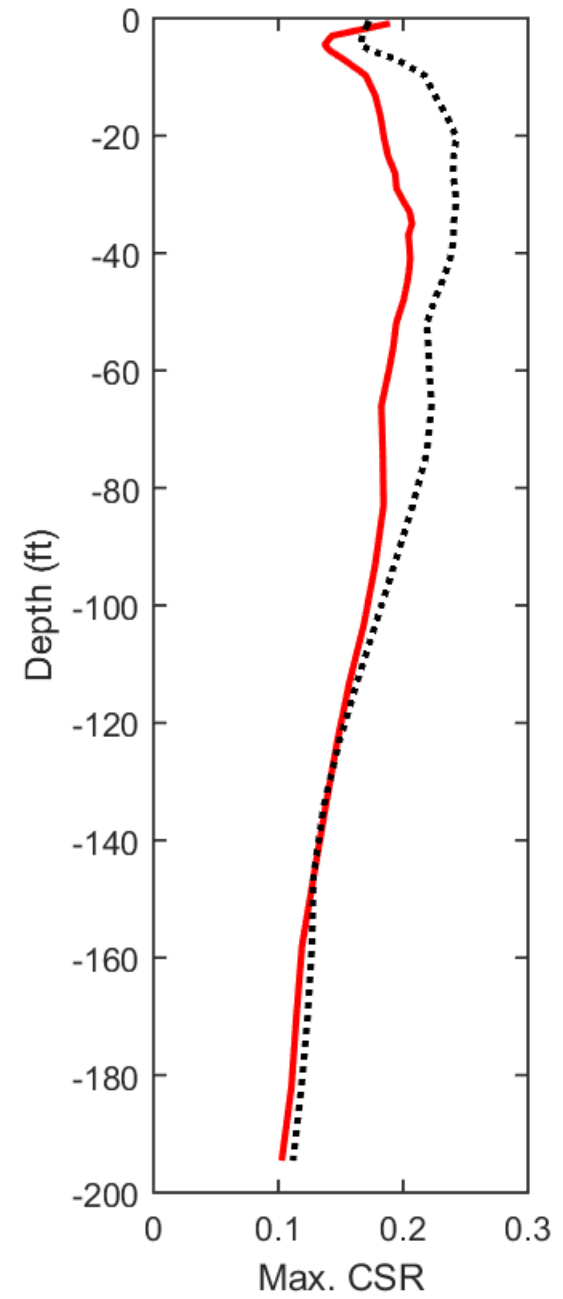
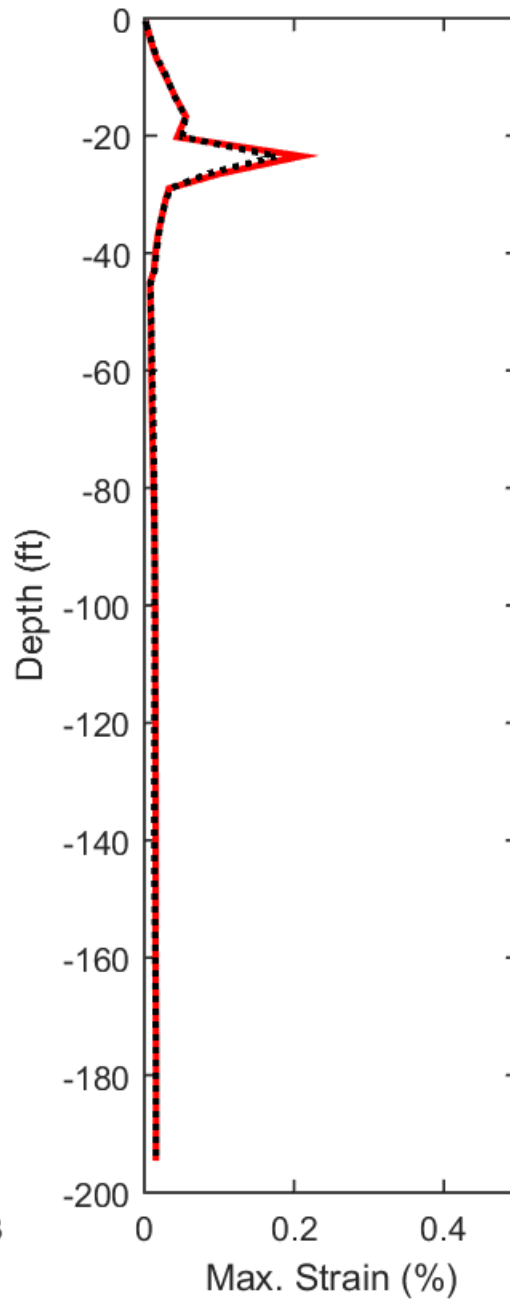
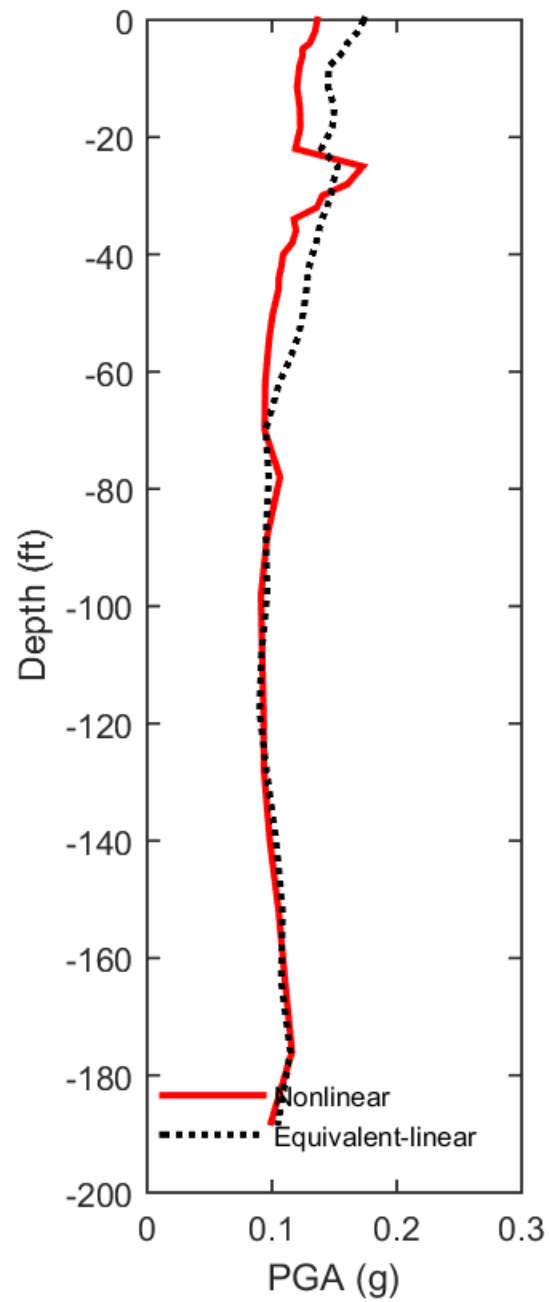
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



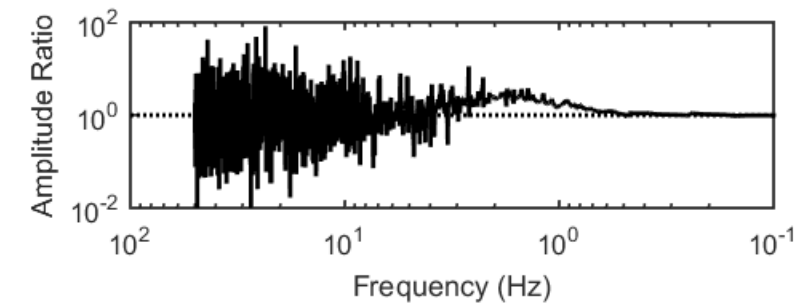
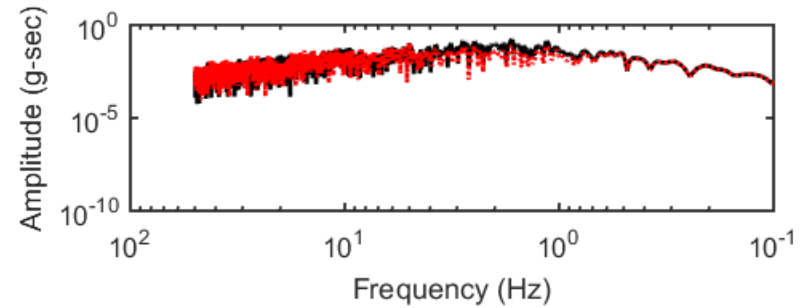
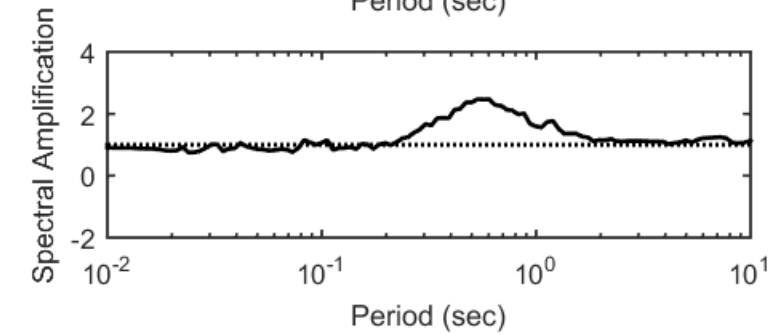
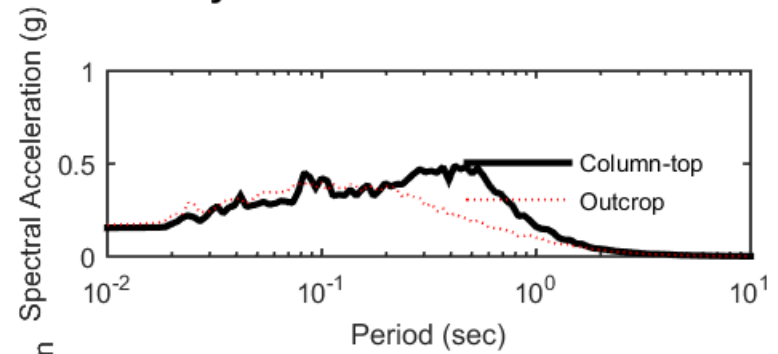
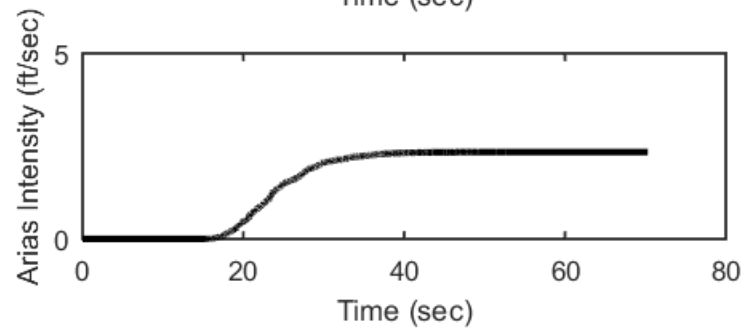
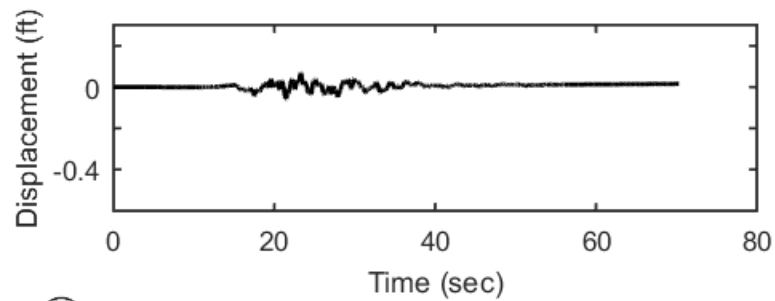
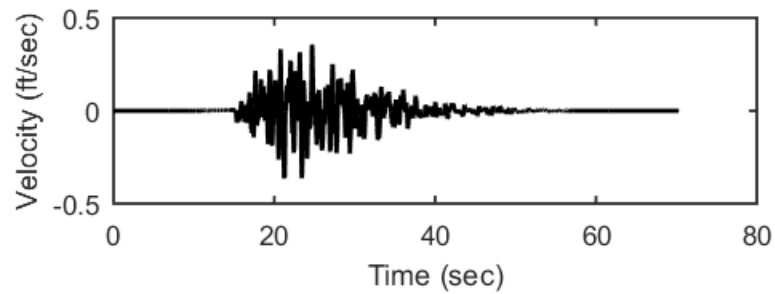
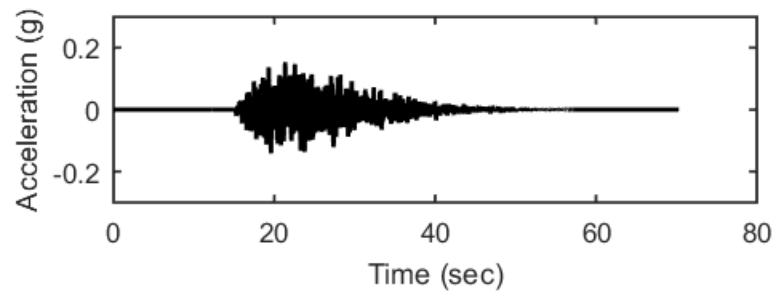
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



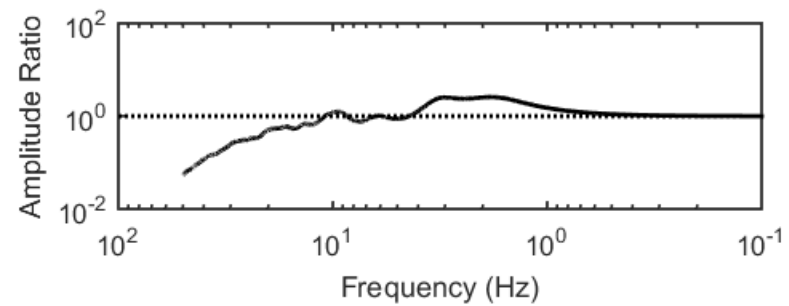
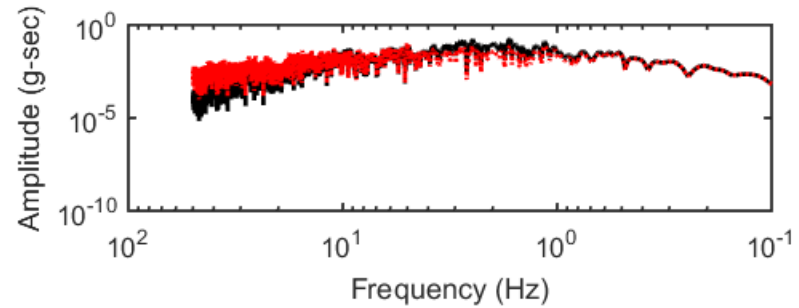
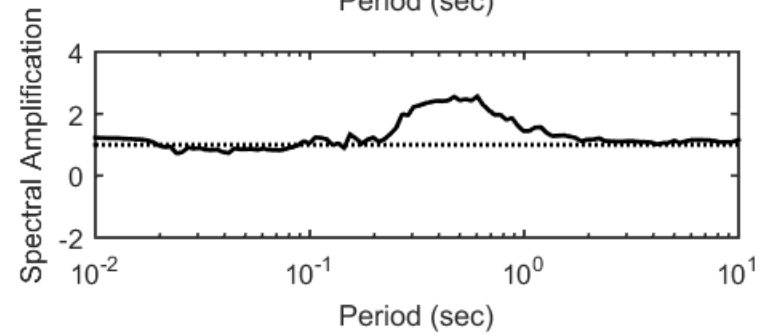
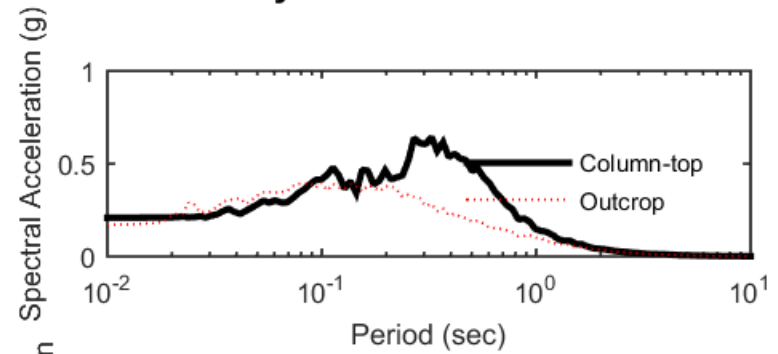
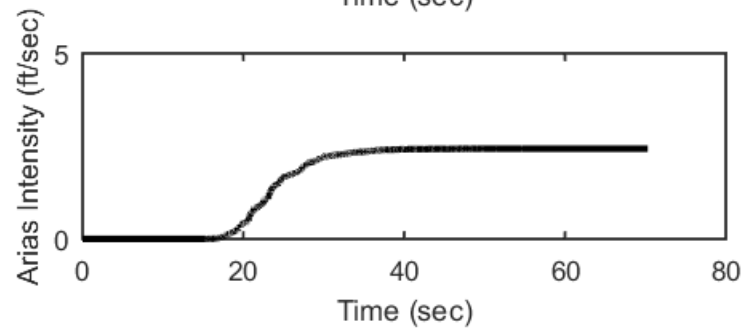
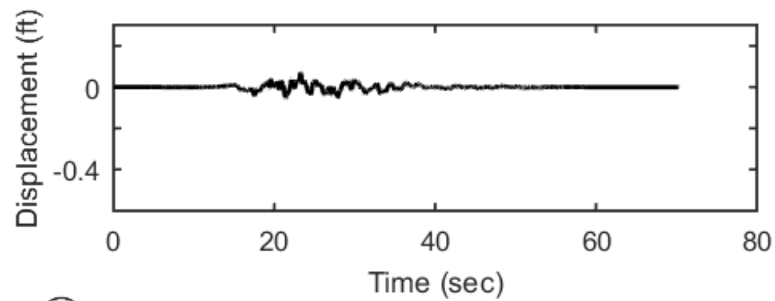
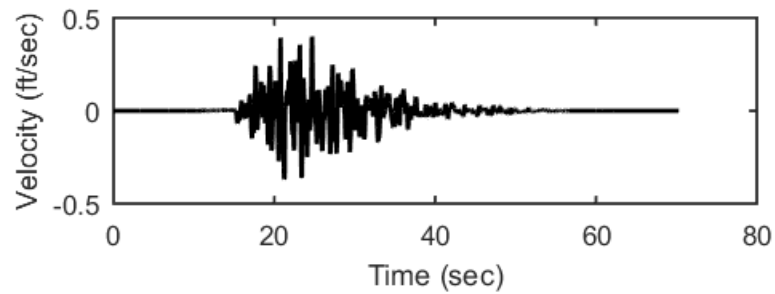
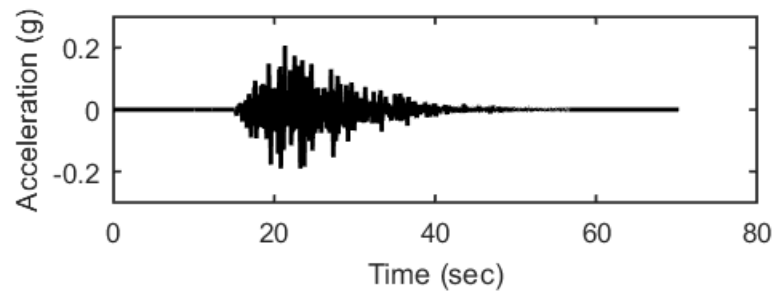
### Profile outputs for Motion: FEE6



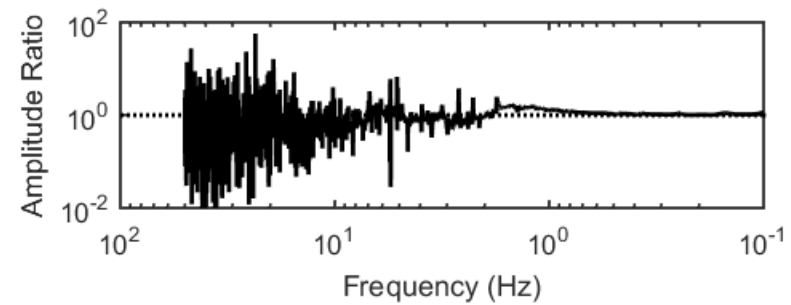
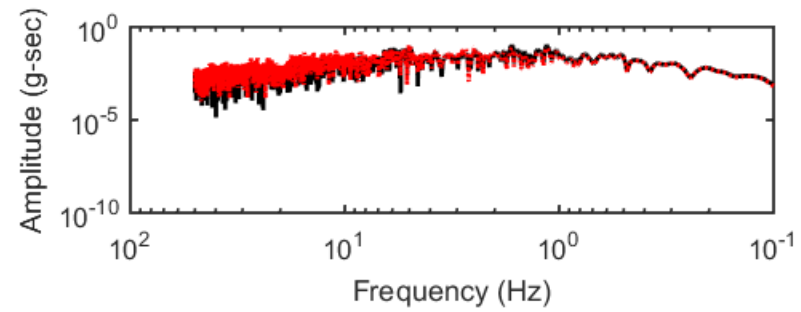
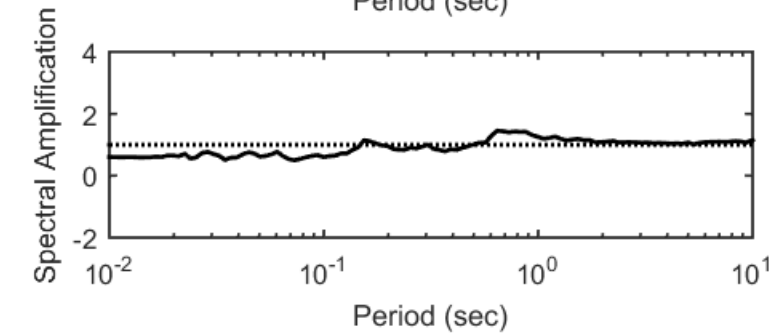
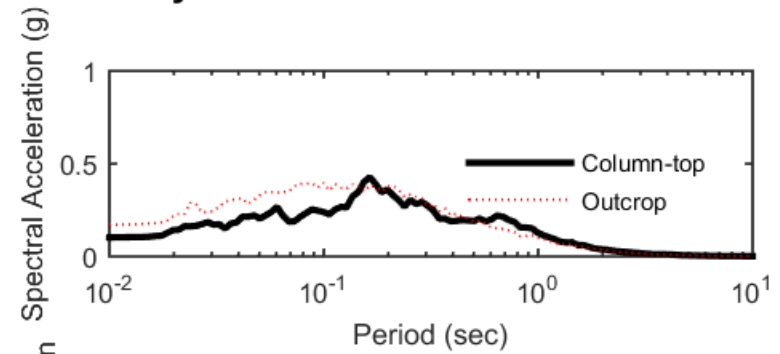
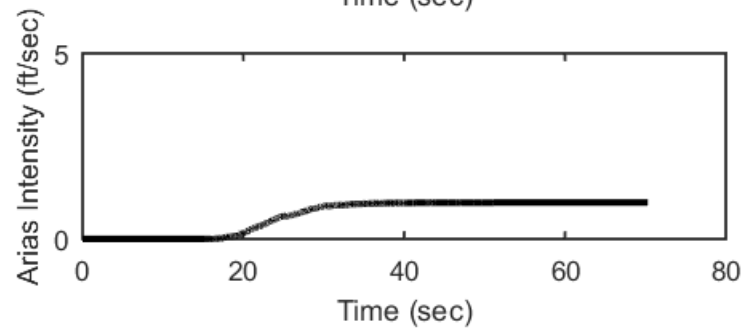
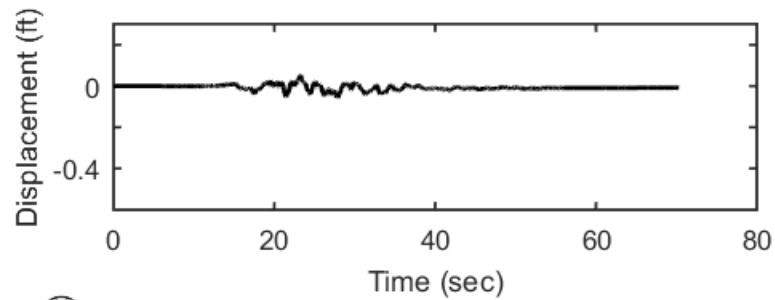
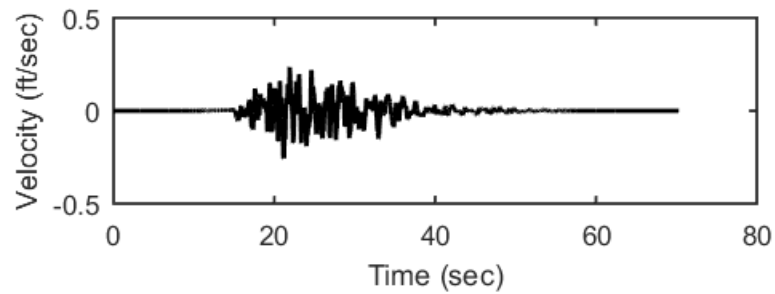
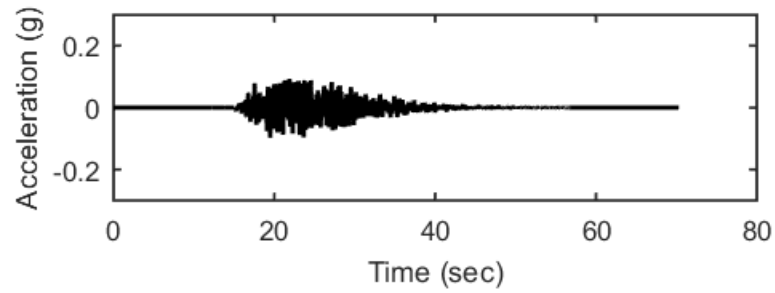
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



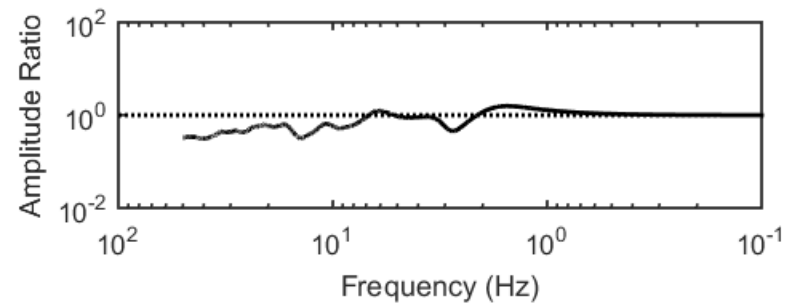
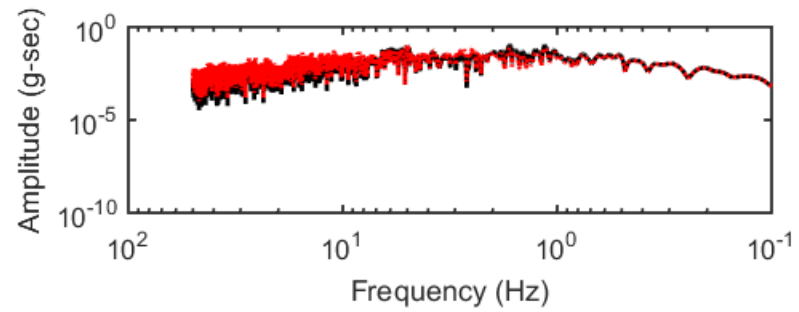
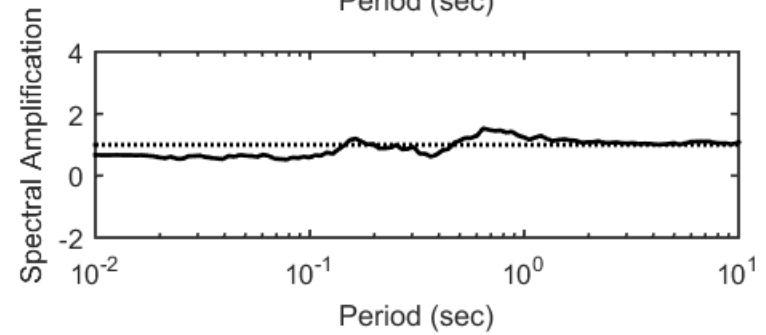
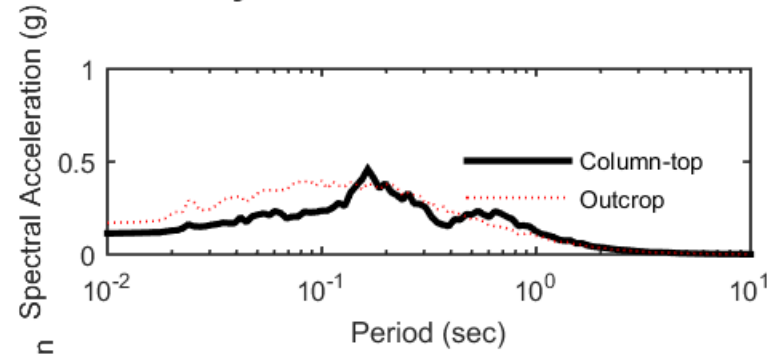
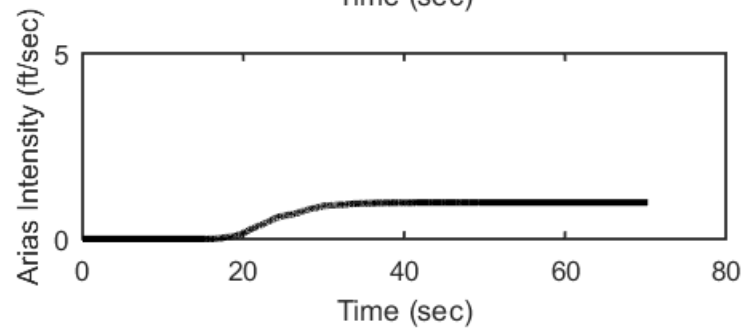
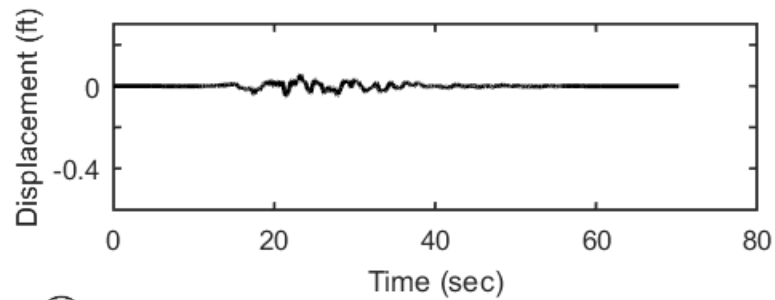
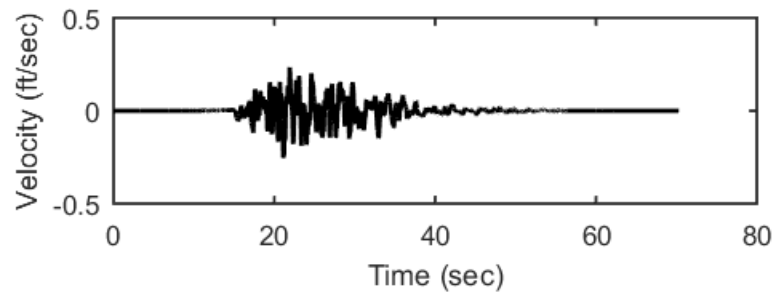
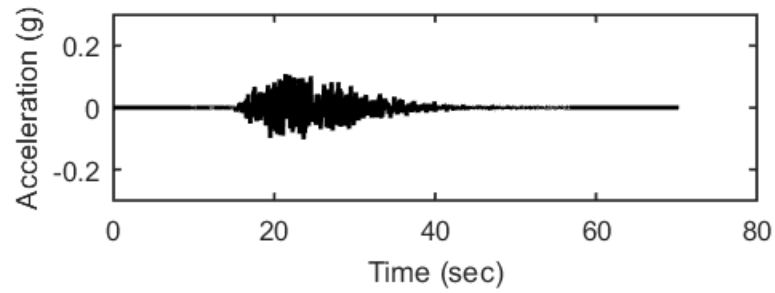
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



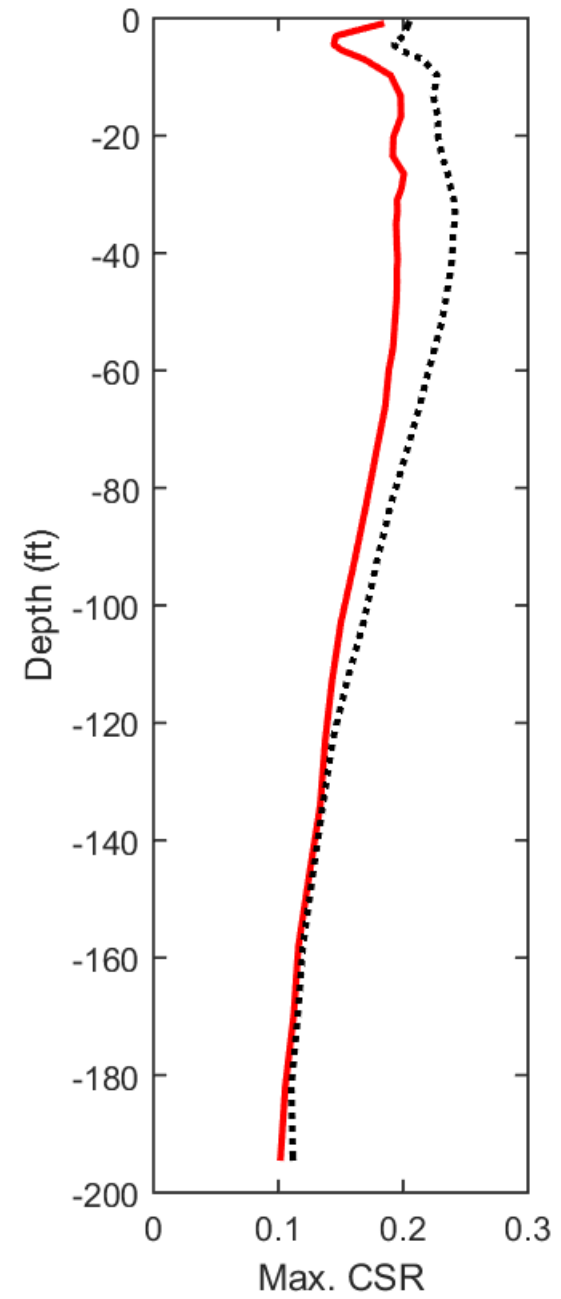
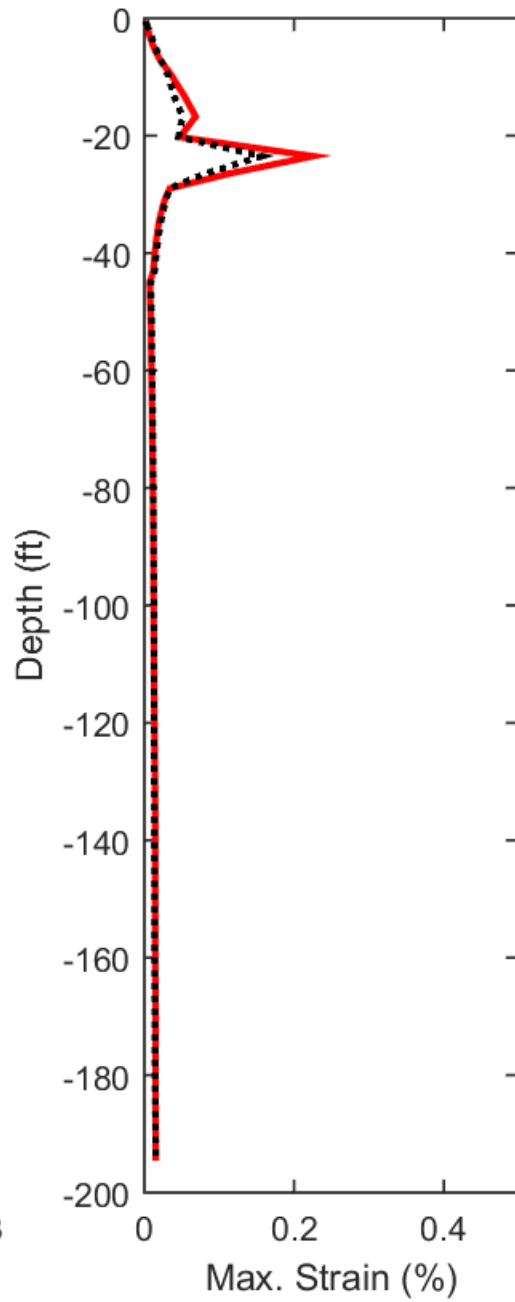
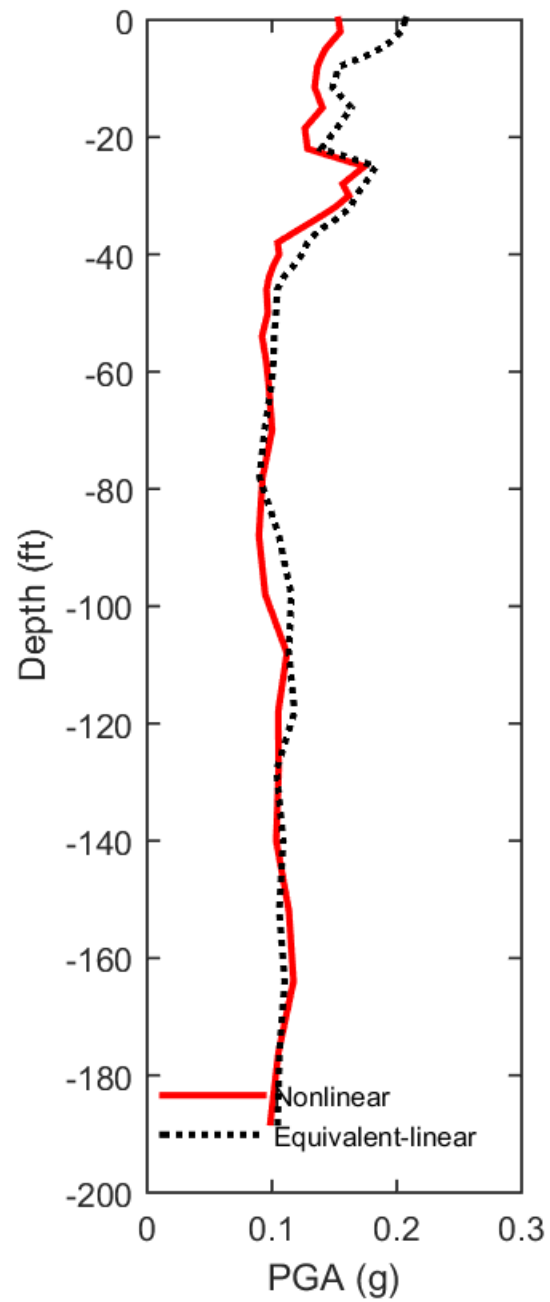
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7

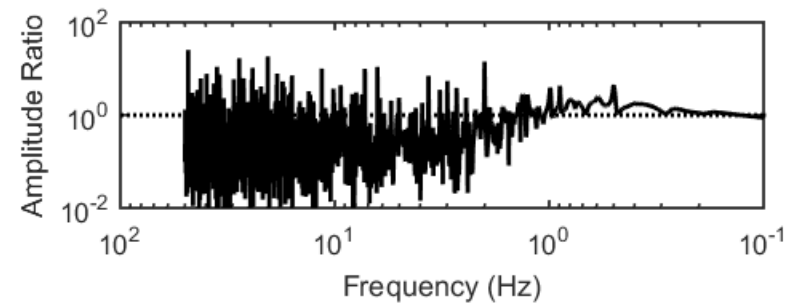
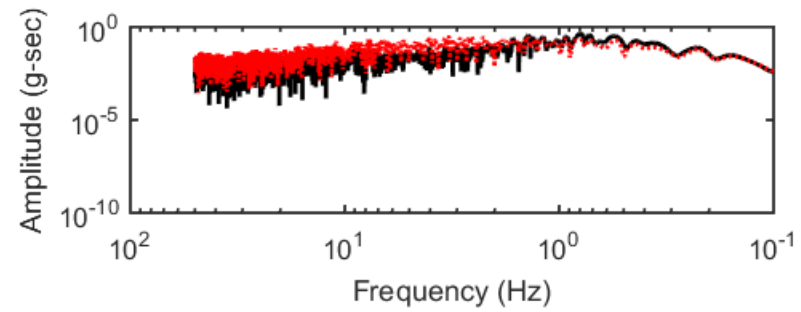
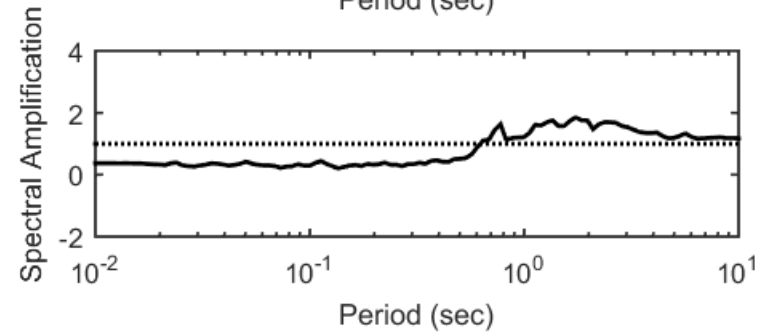
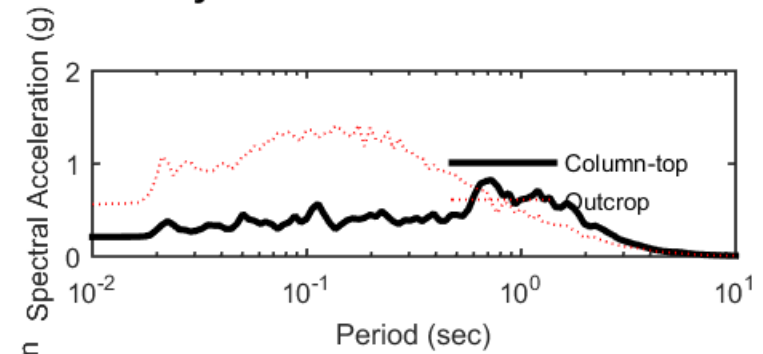
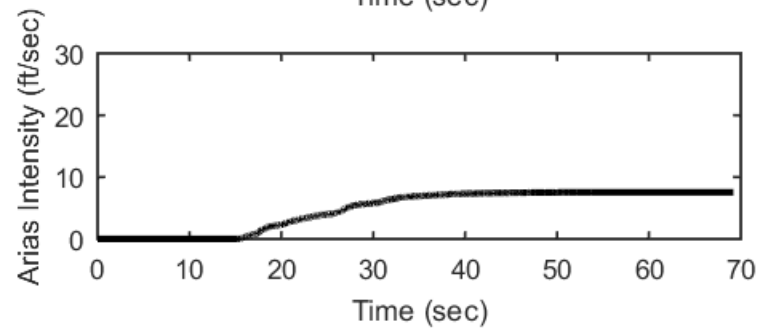
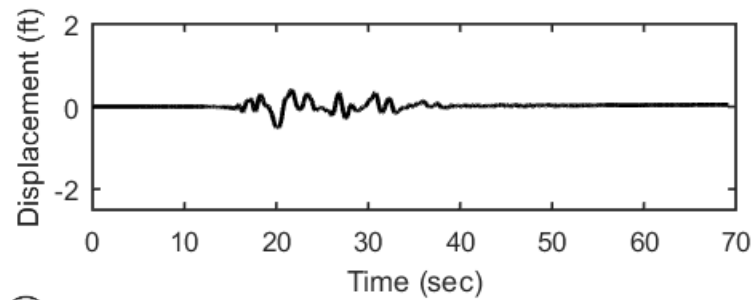
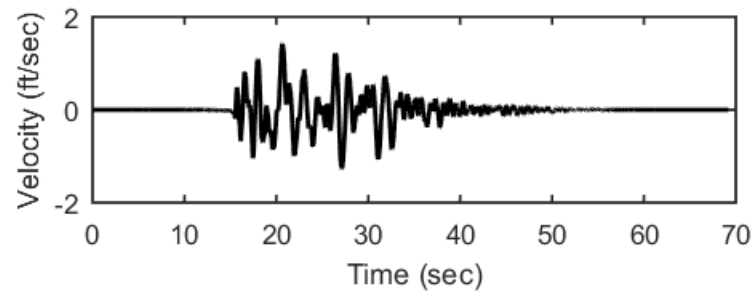
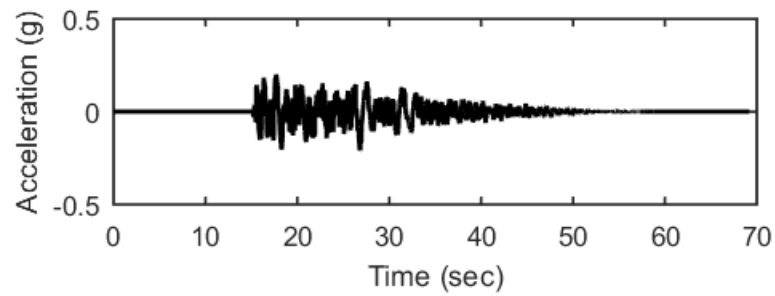


### Profile outputs for Motion: FEE7

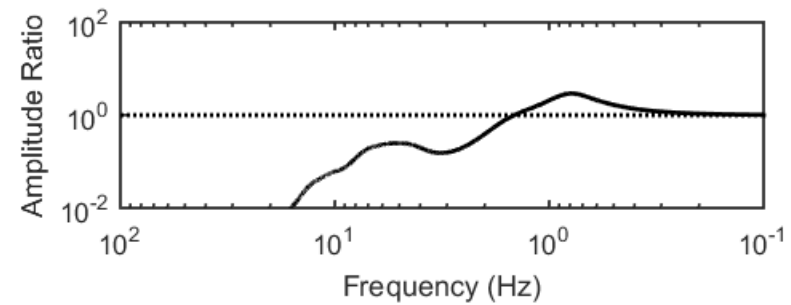
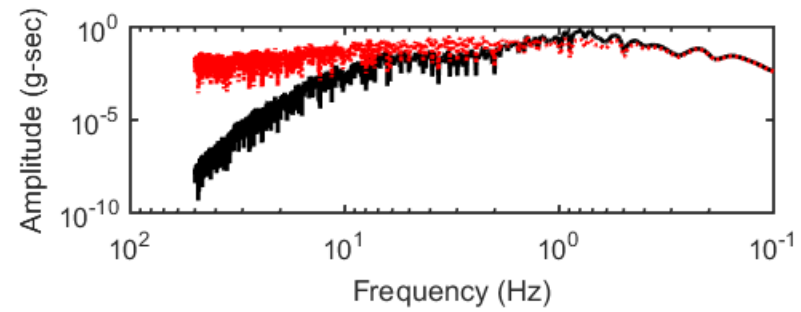
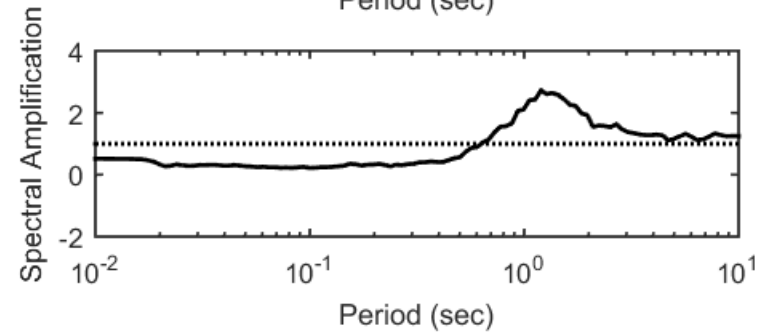
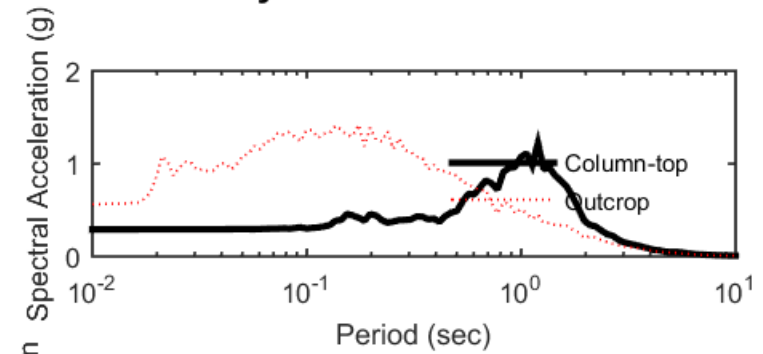
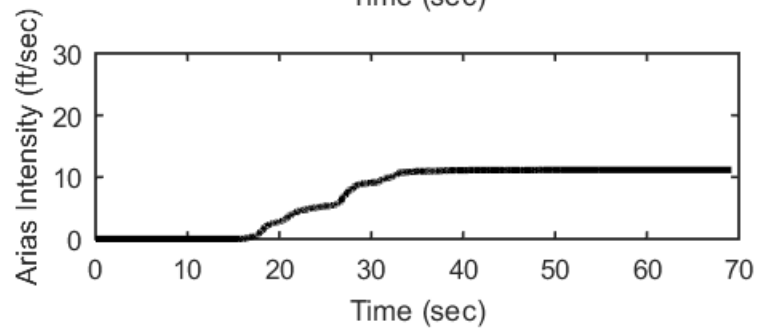
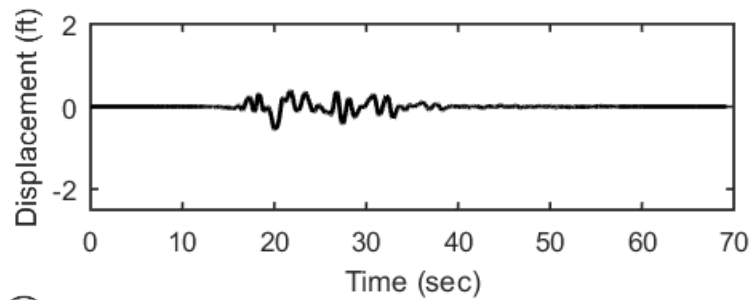
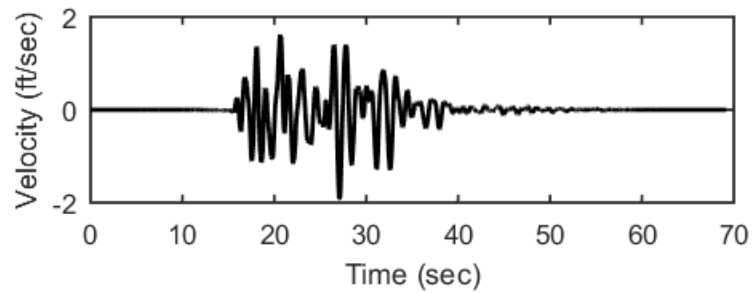
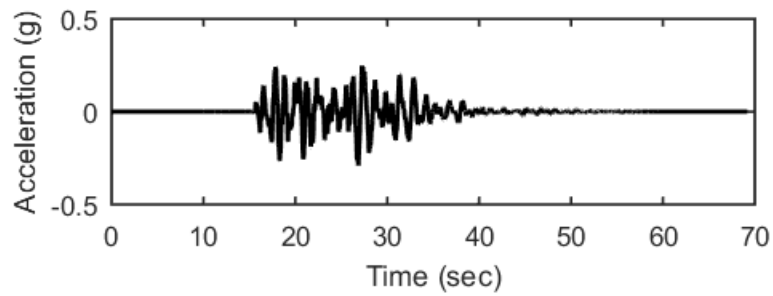




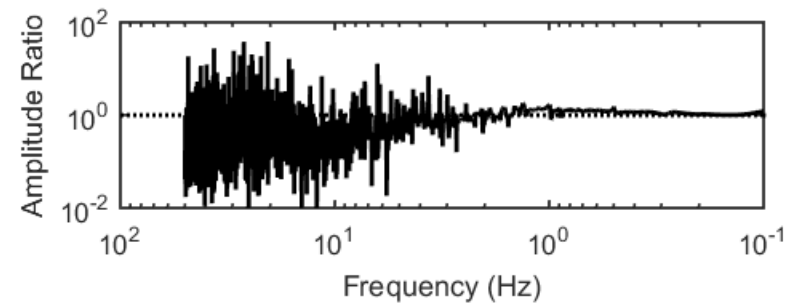
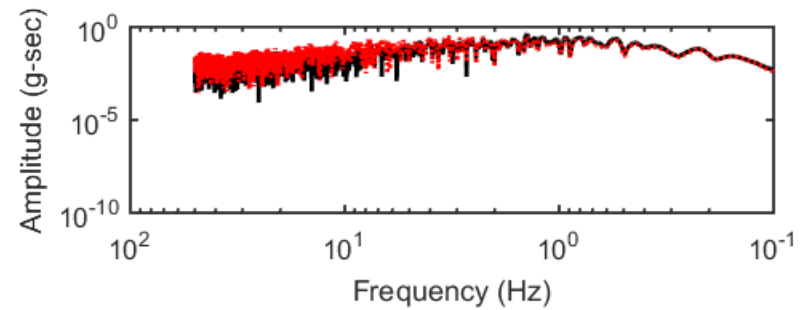
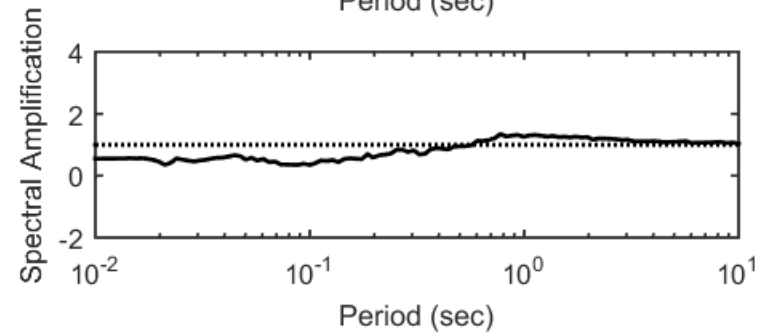
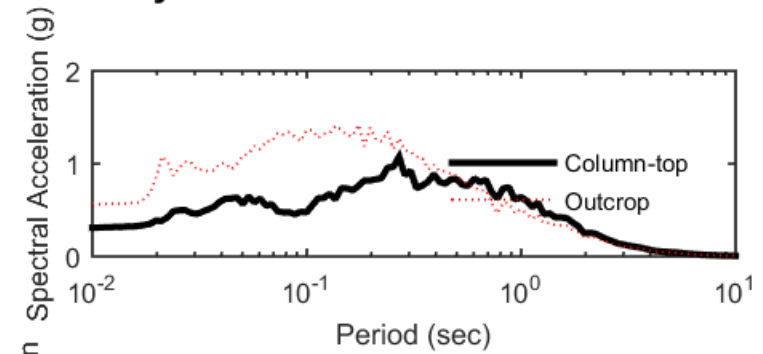
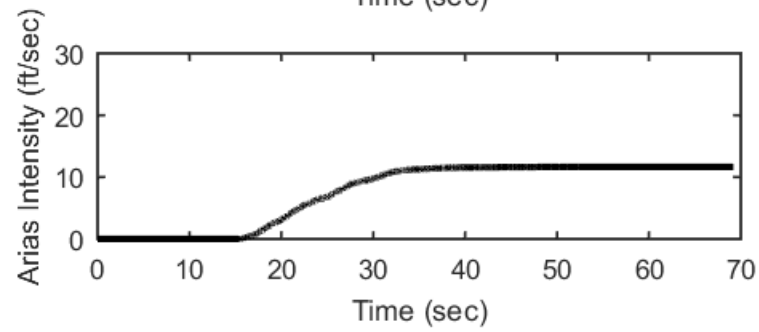
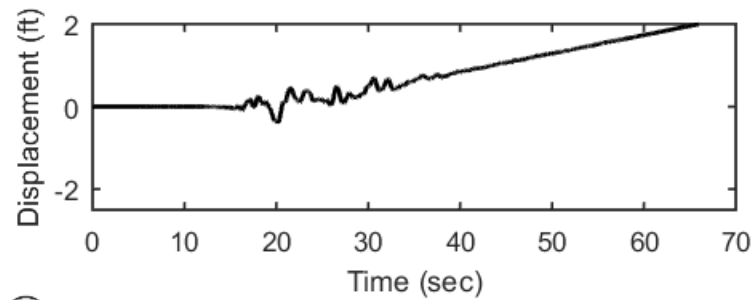
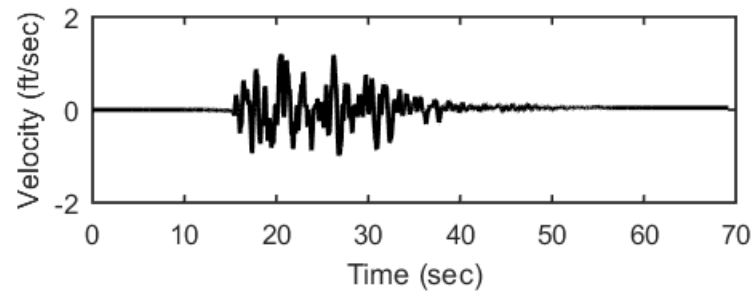
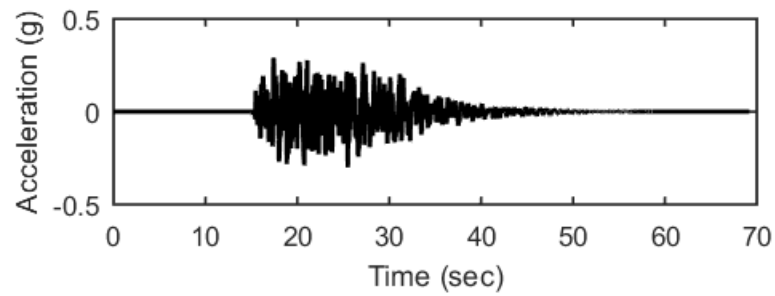
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



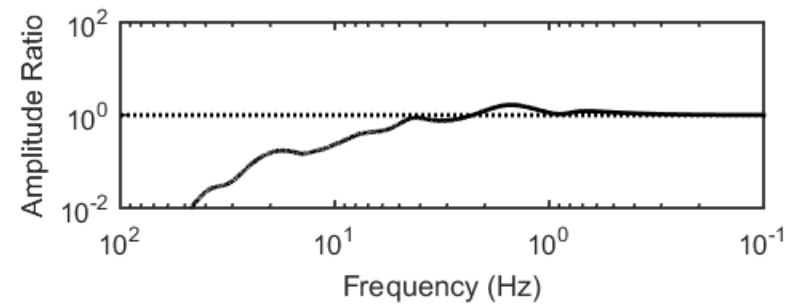
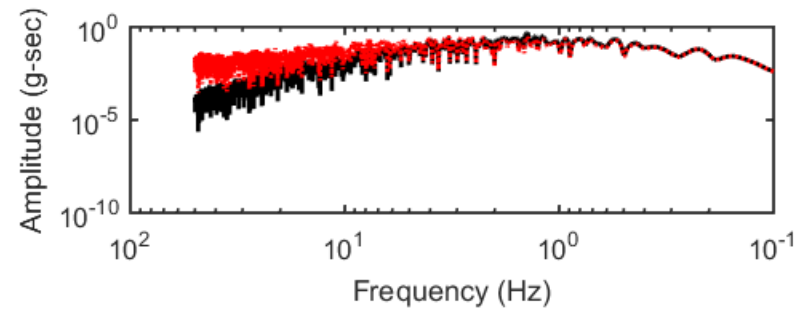
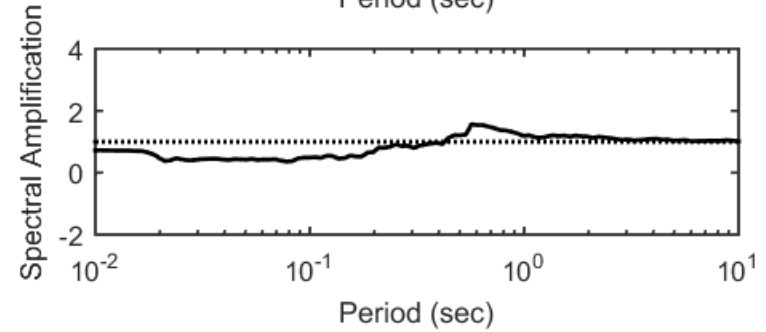
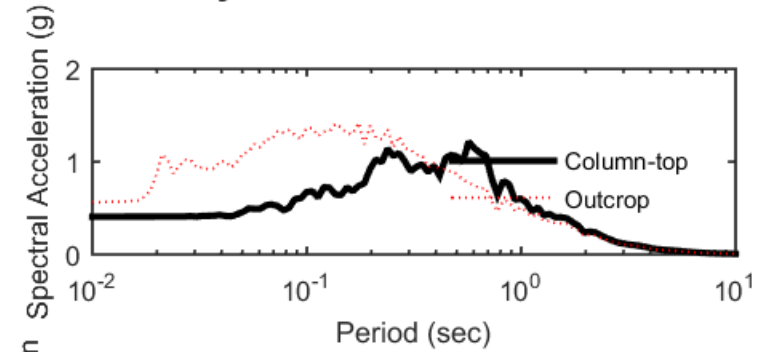
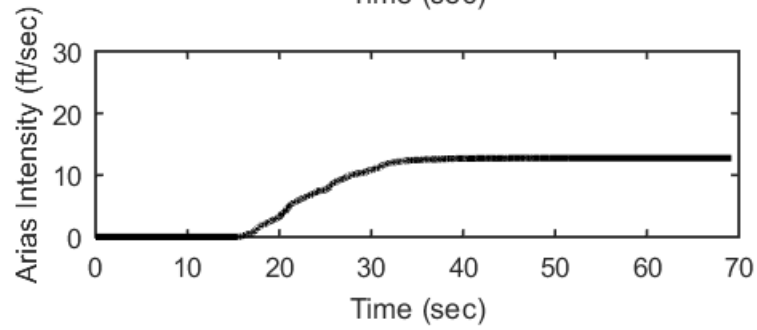
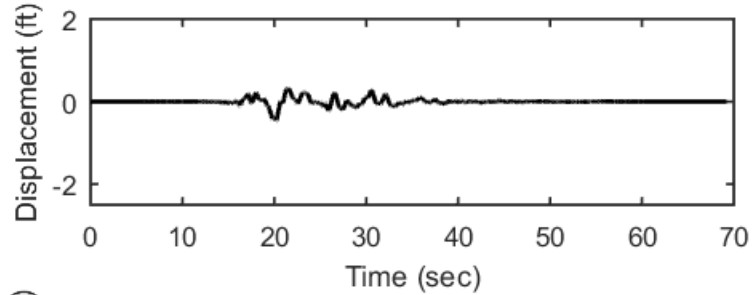
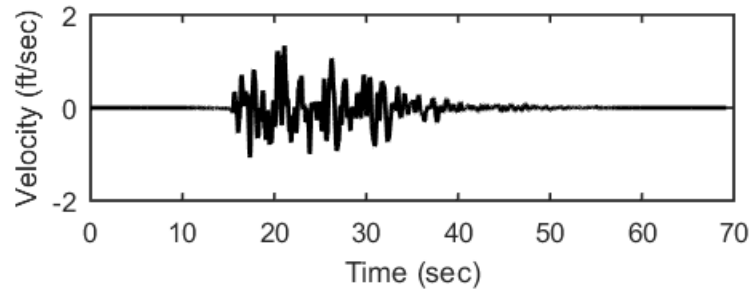
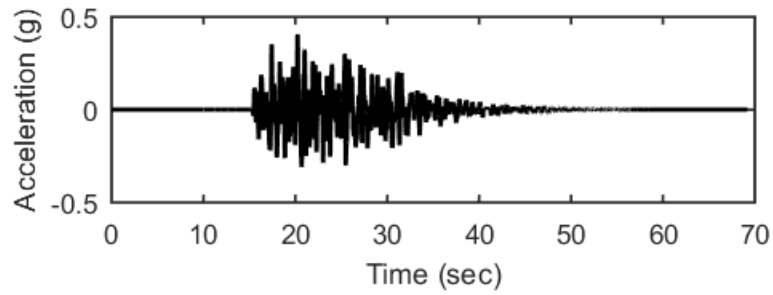
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



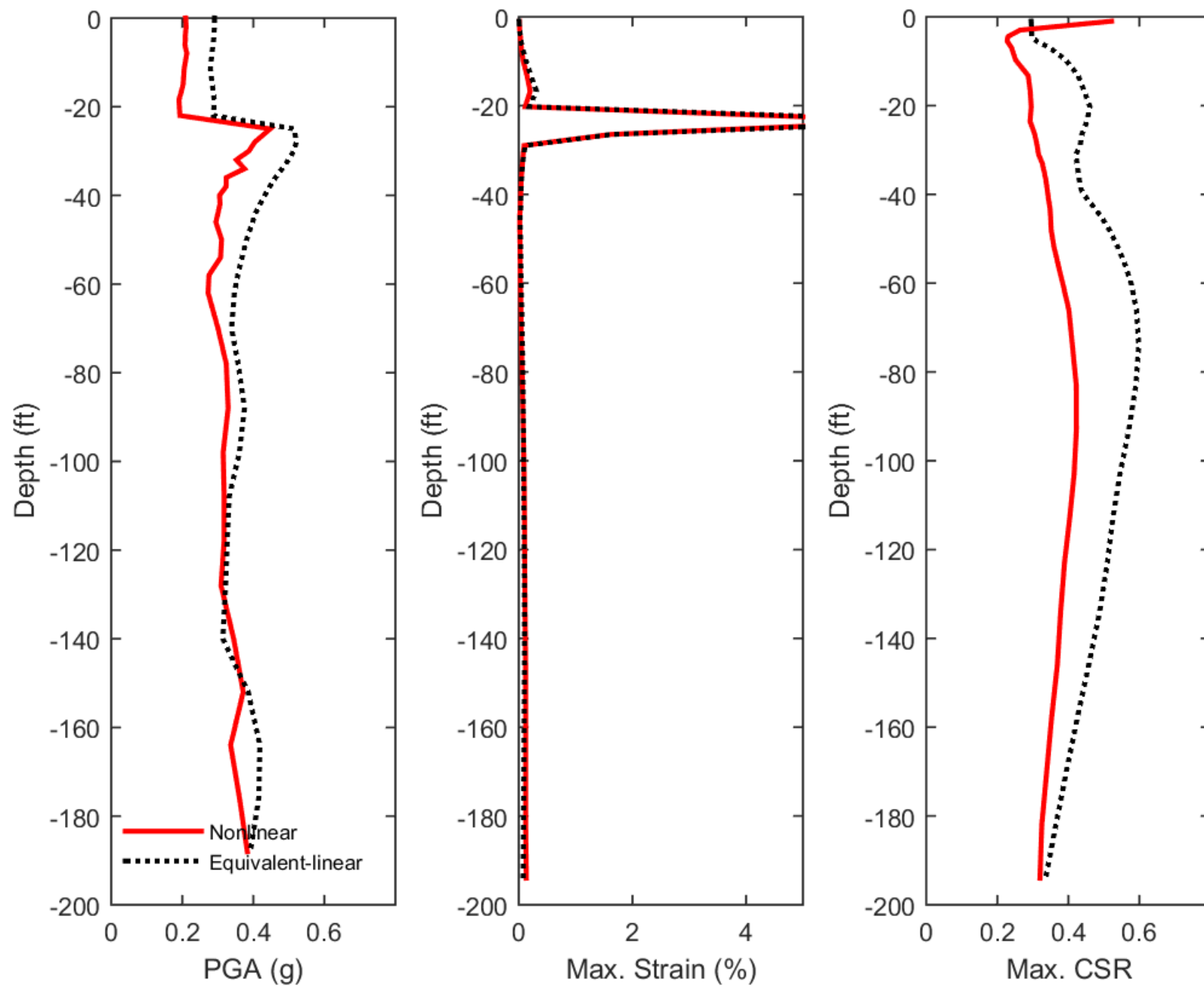
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



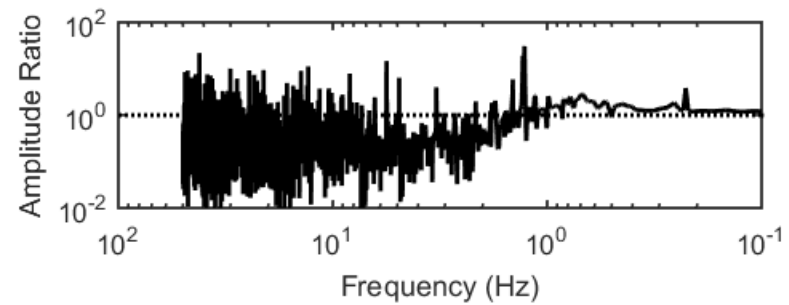
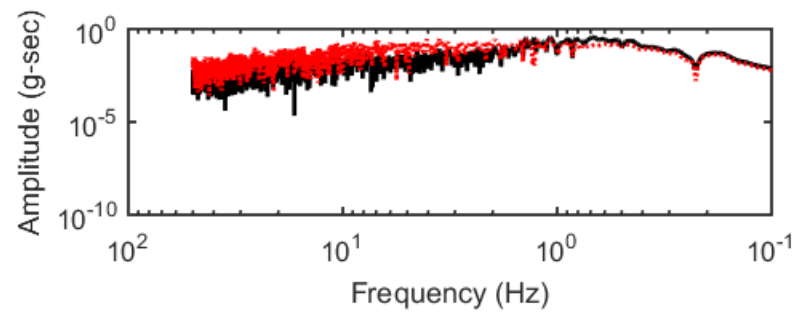
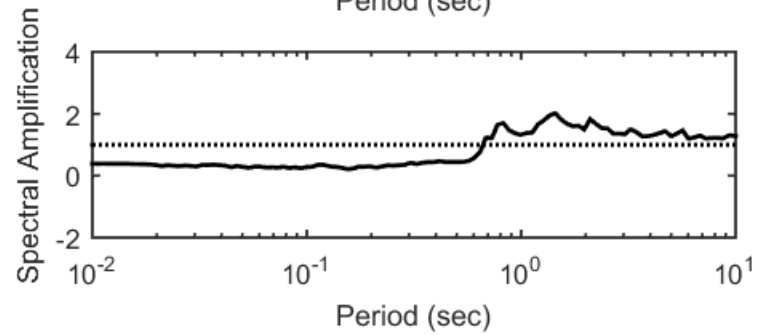
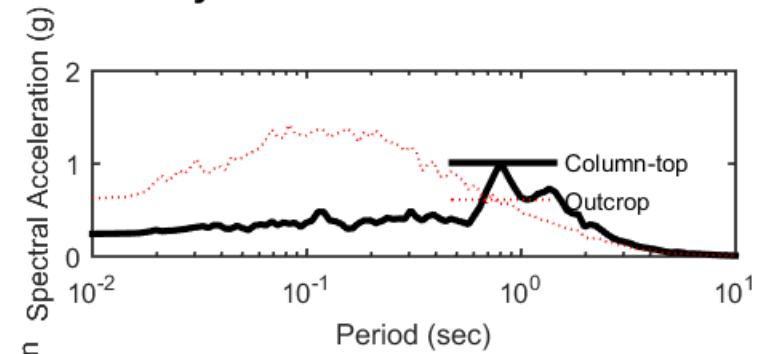
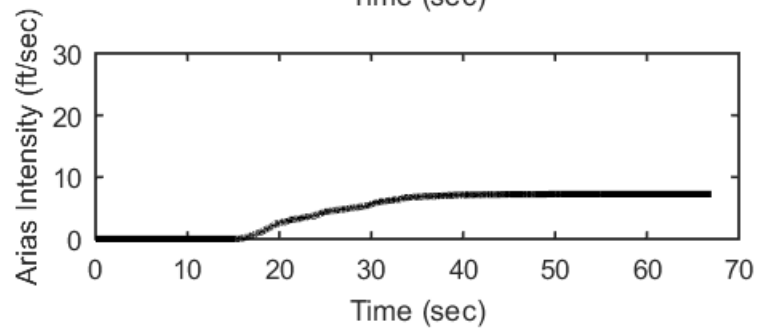
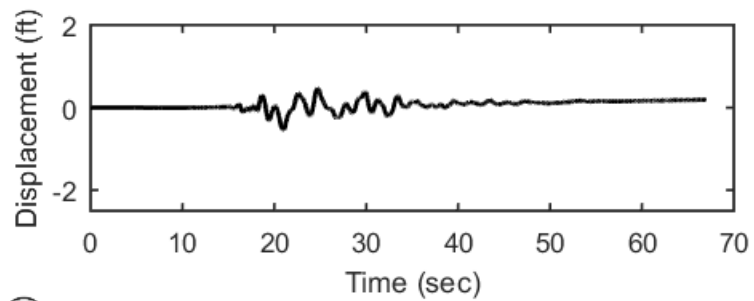
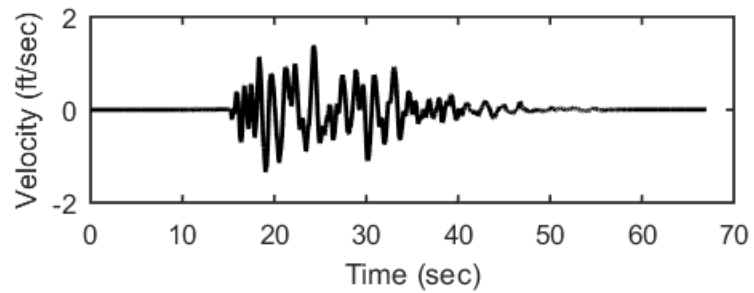
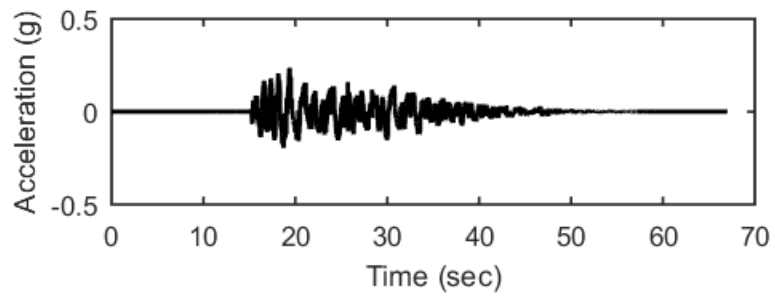
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



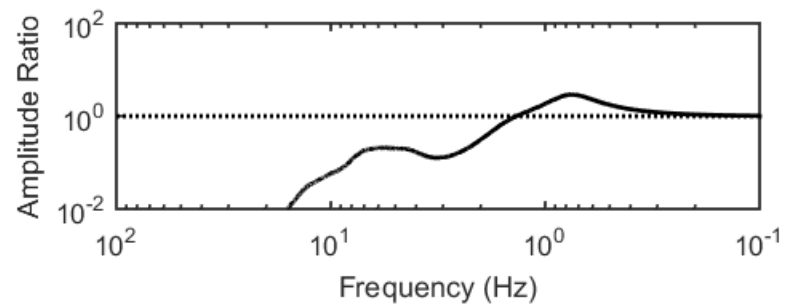
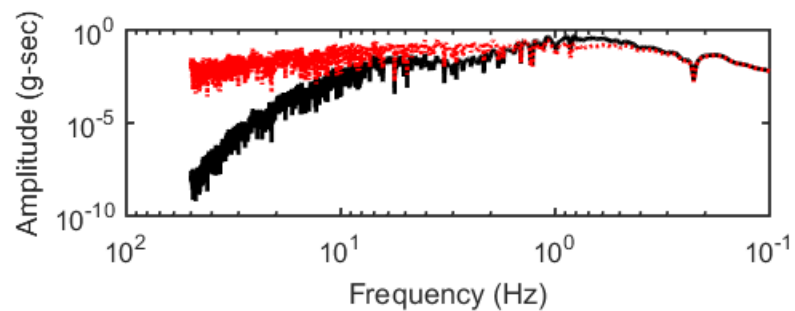
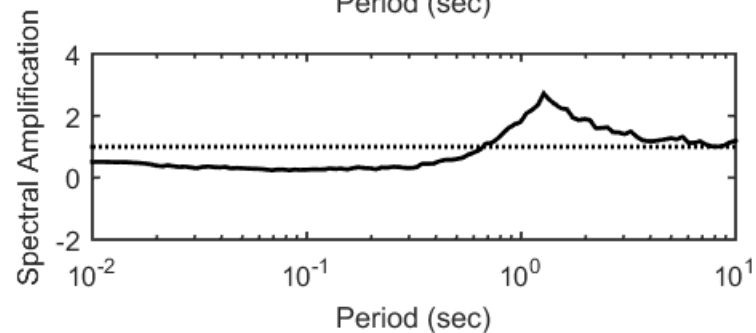
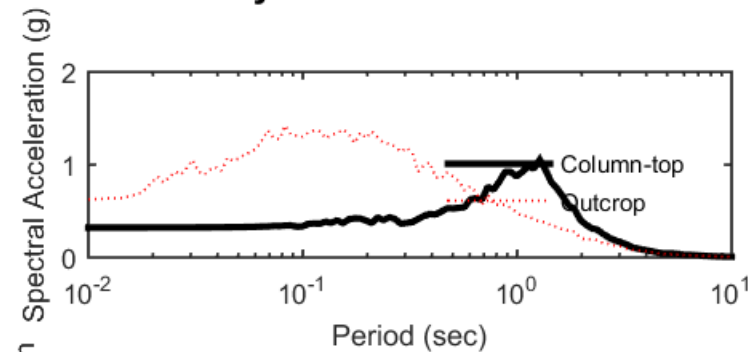
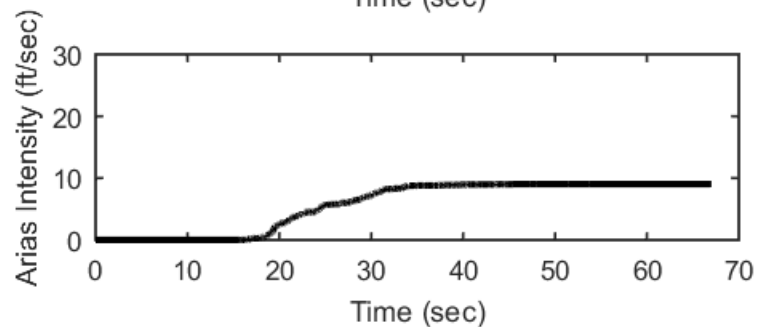
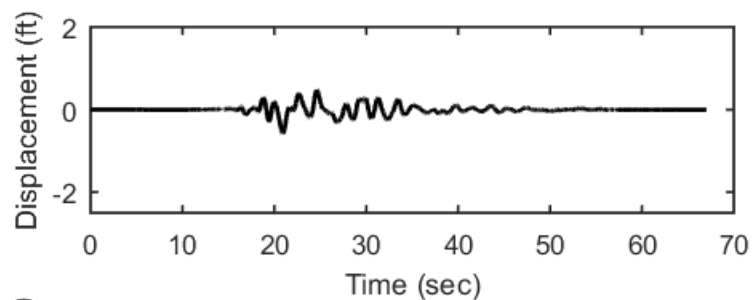
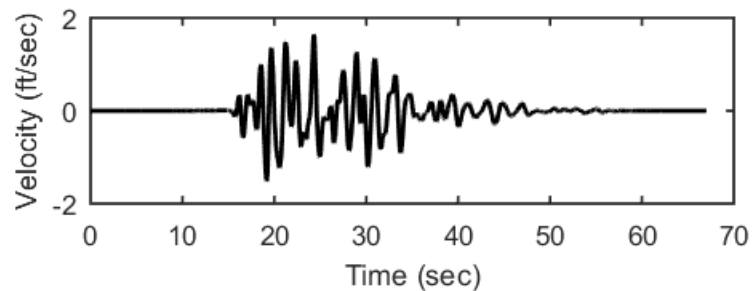
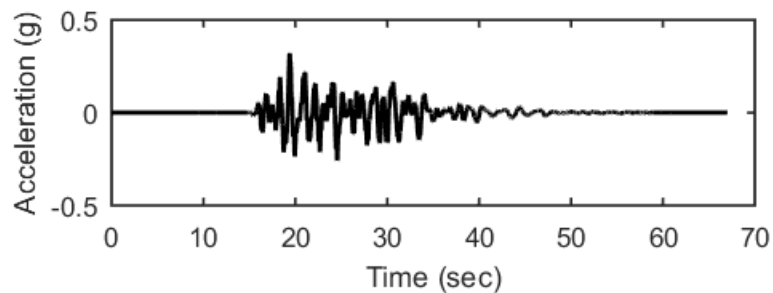
### Profile outputs for Motion: SEE1



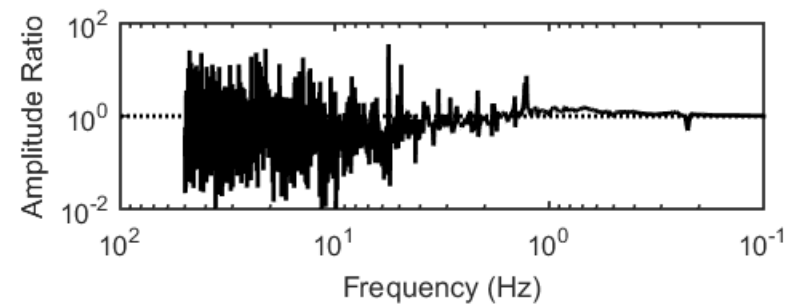
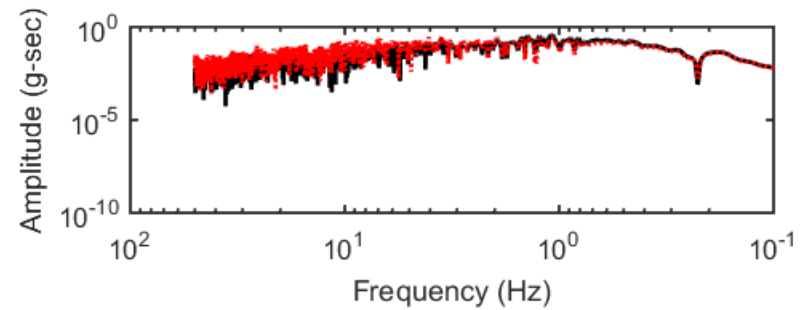
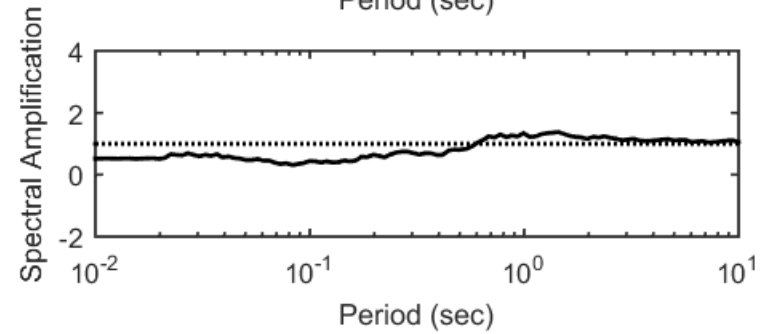
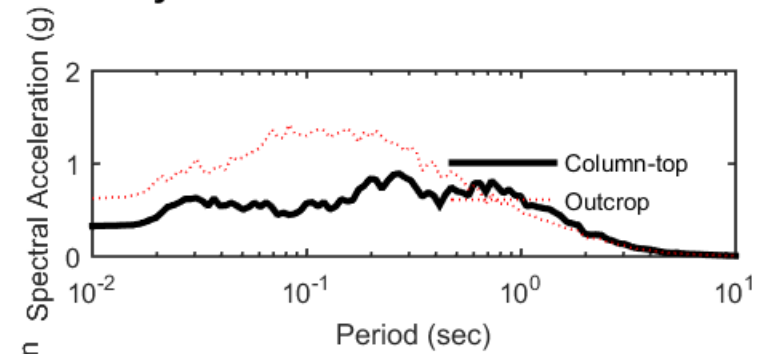
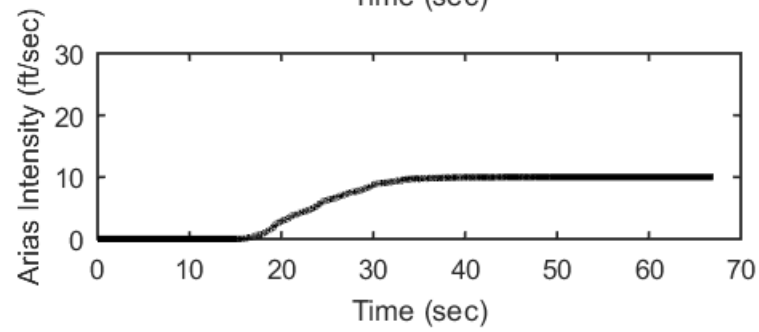
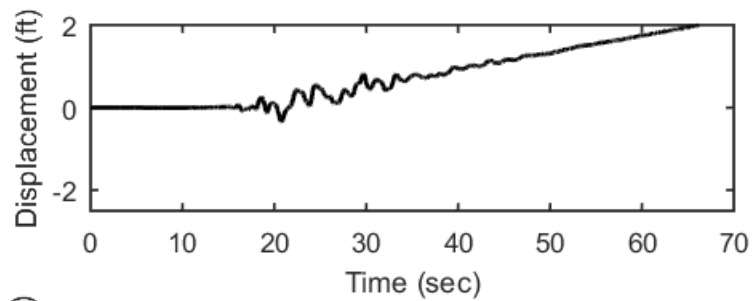
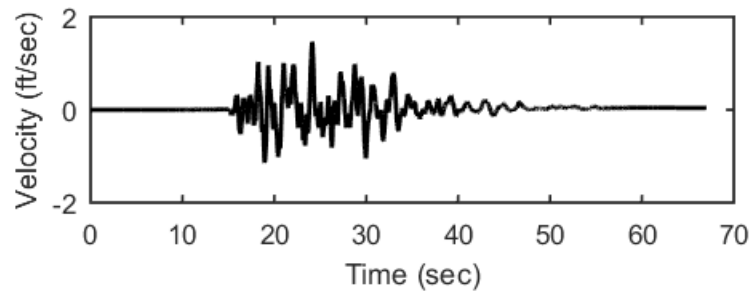
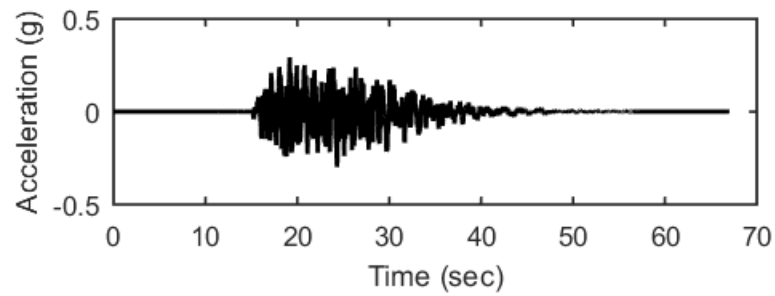
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2

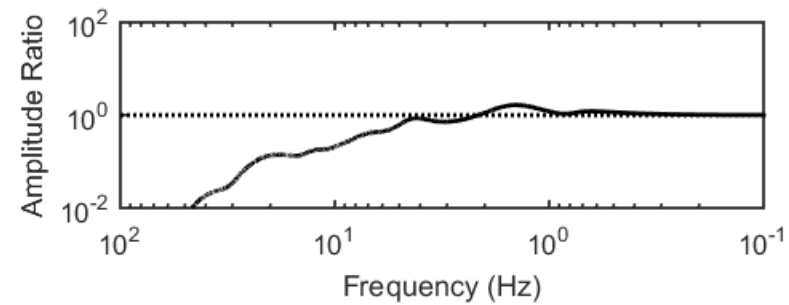
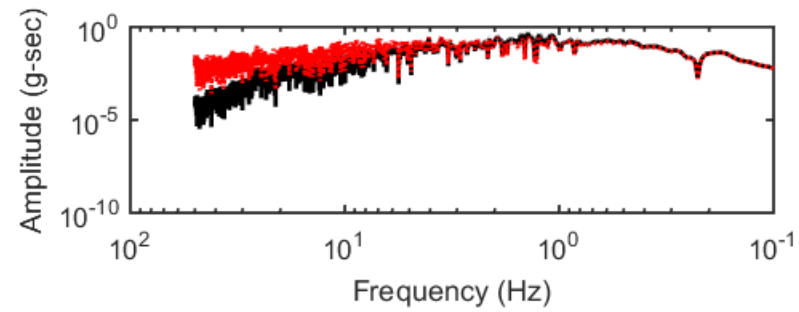
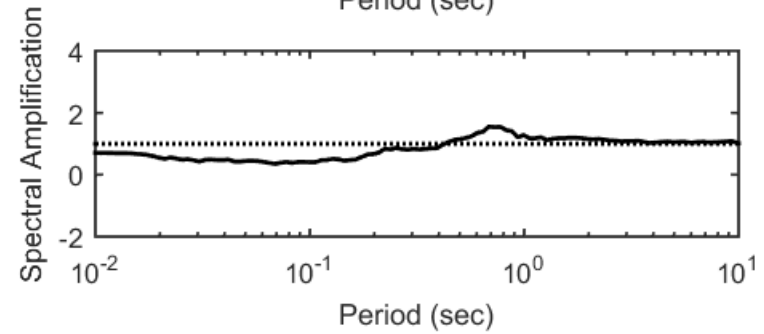
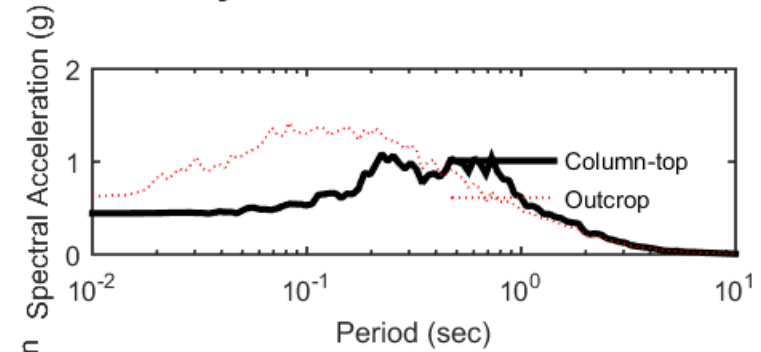
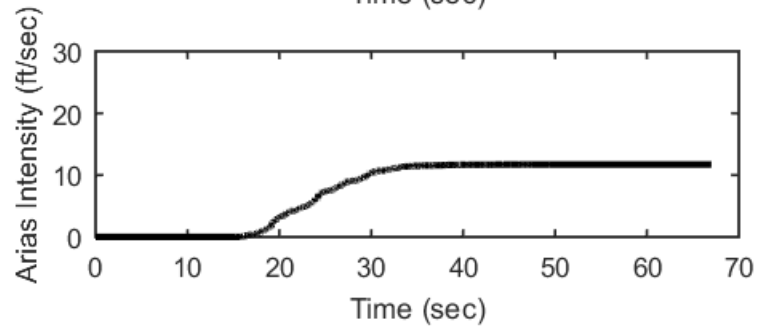
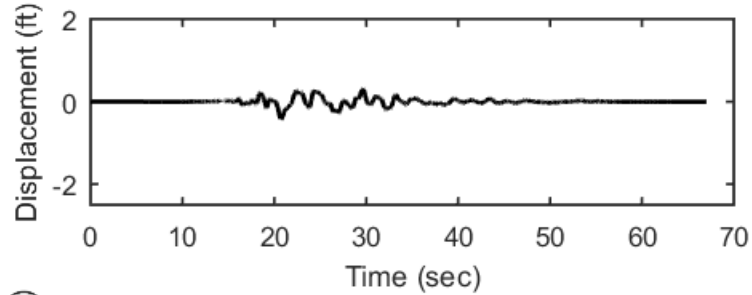
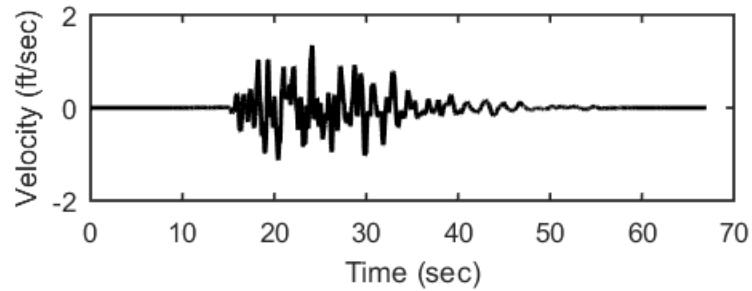
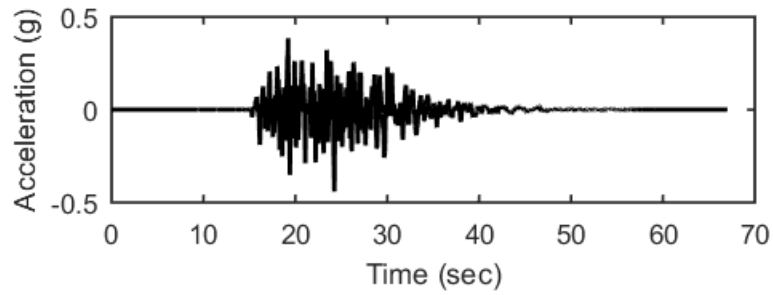


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2

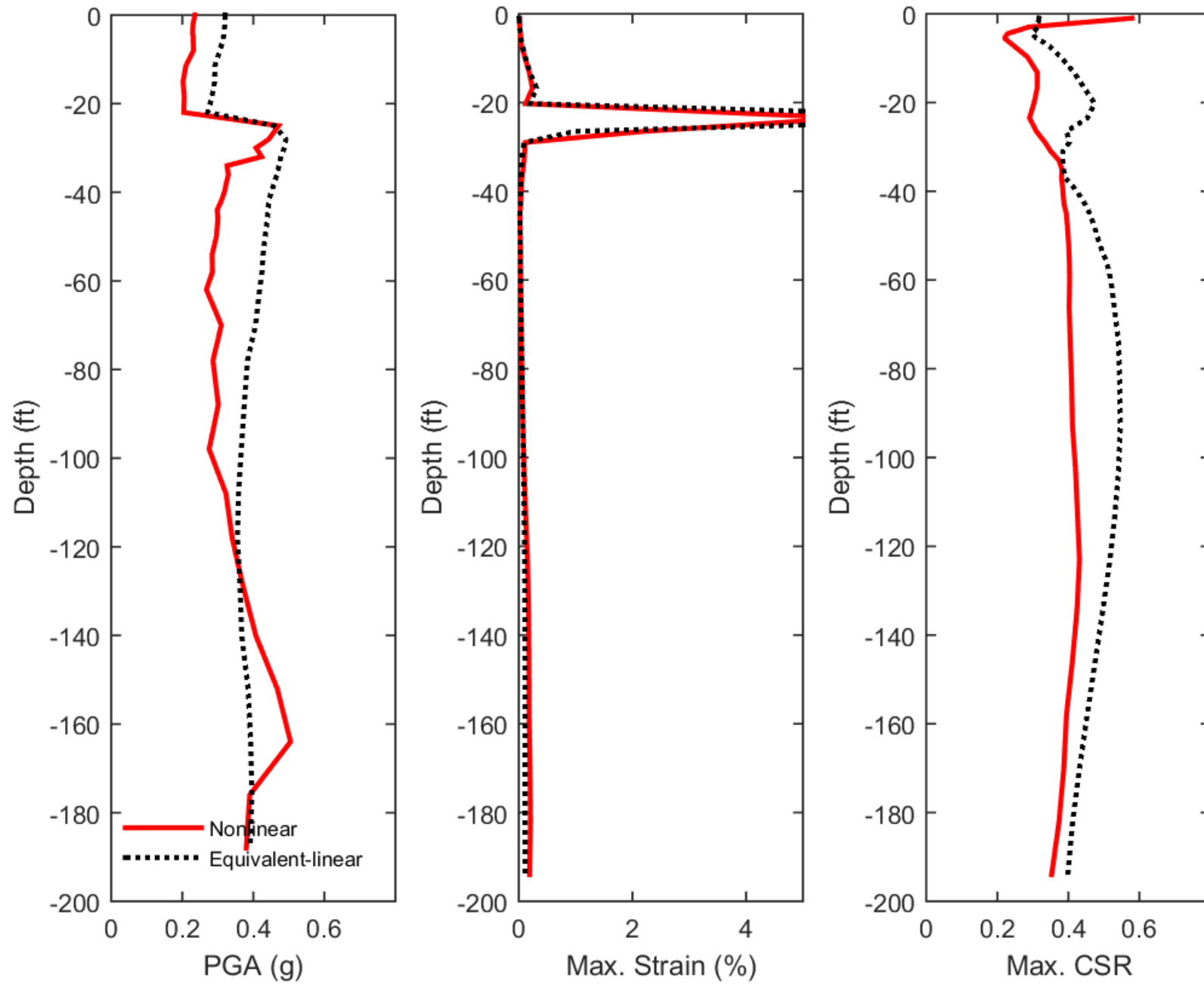




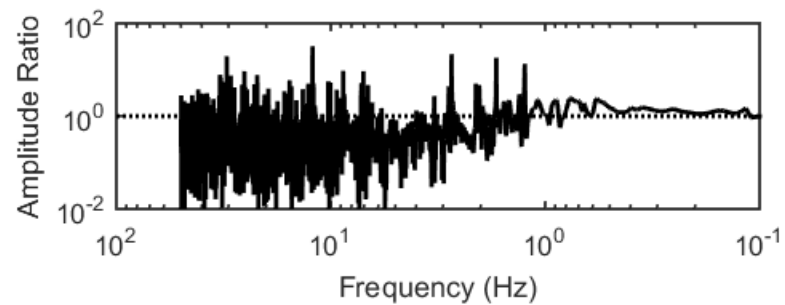
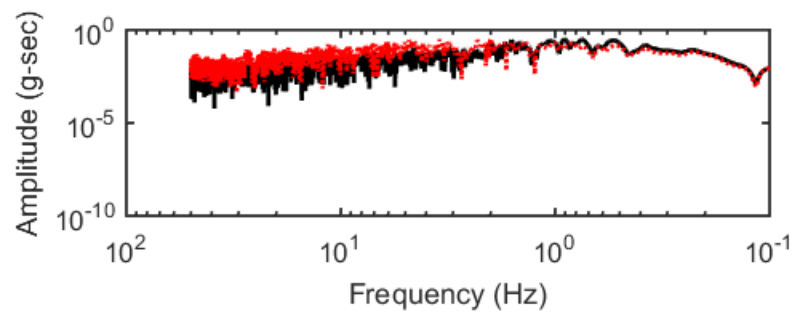
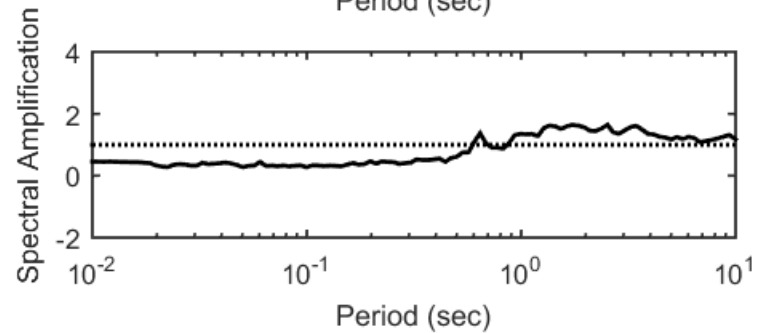
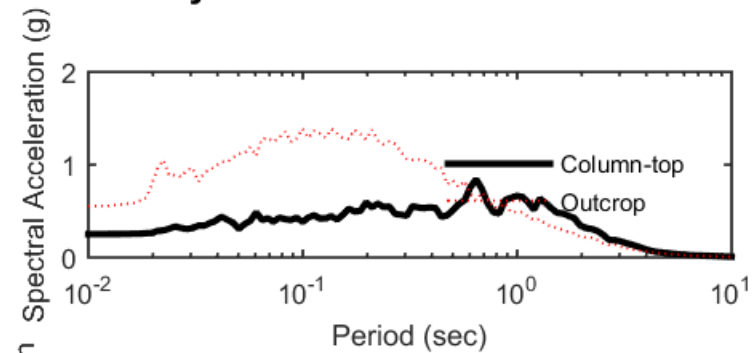
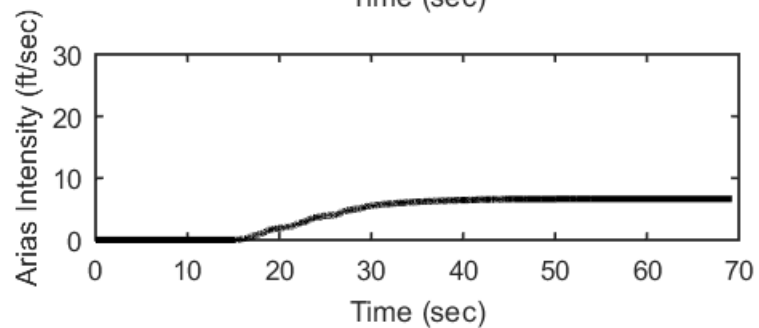
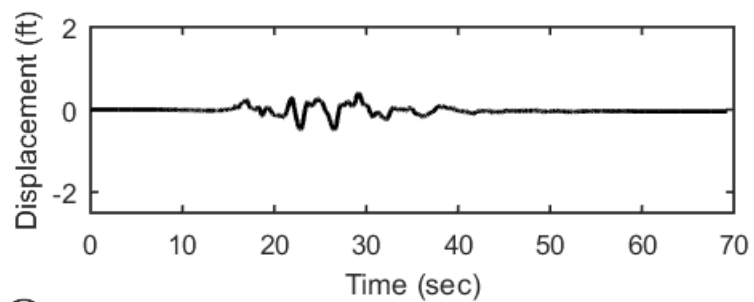
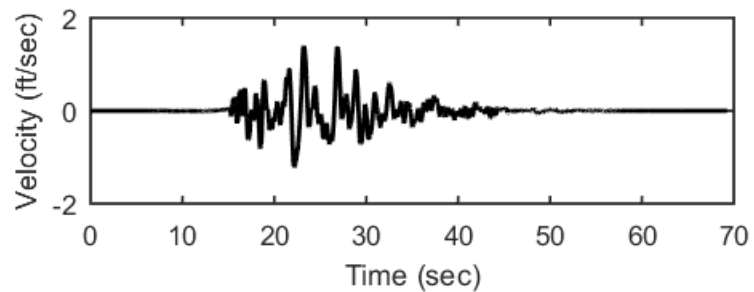
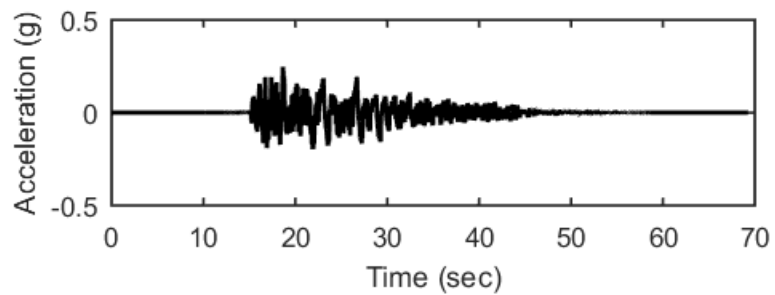
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



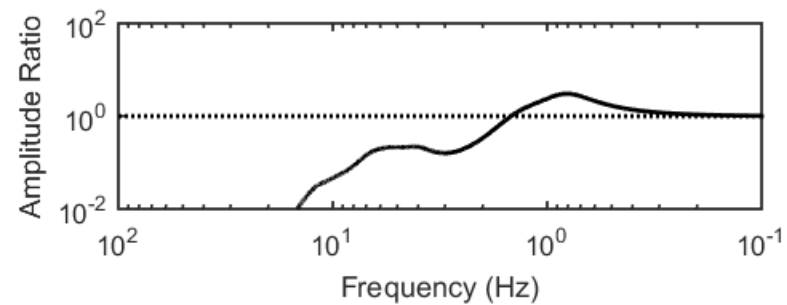
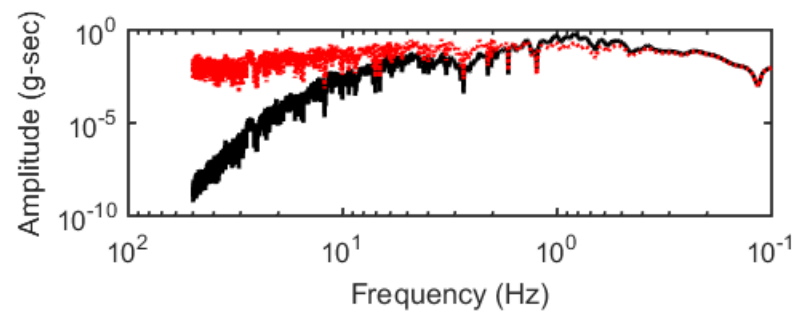
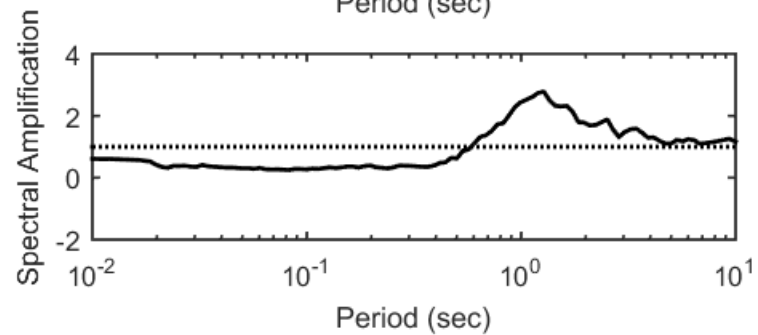
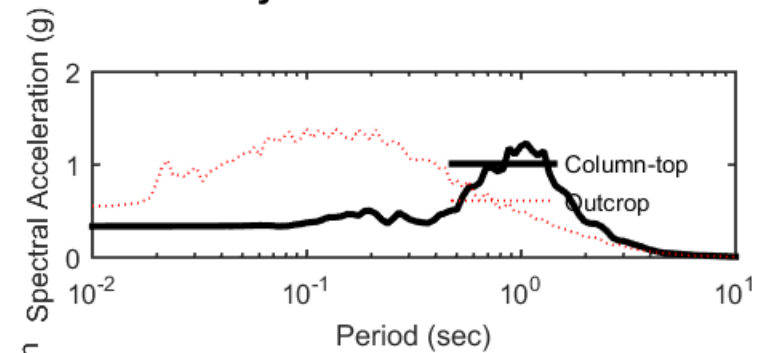
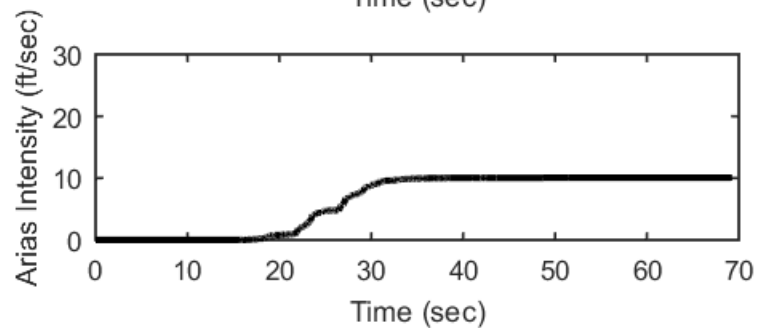
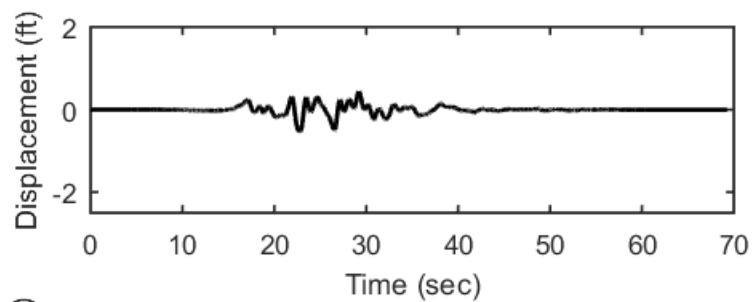
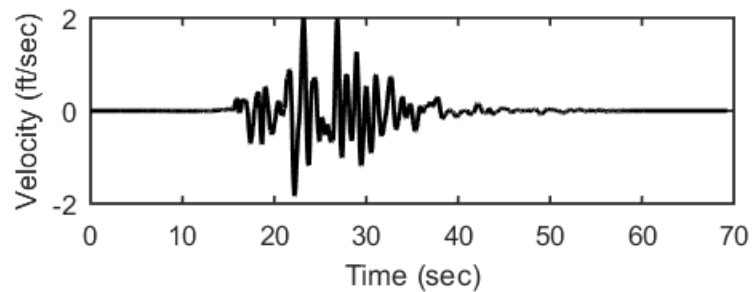
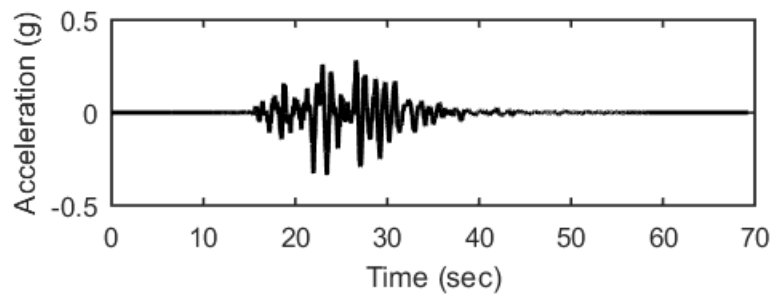
### Profile outputs for Motion: SEE2



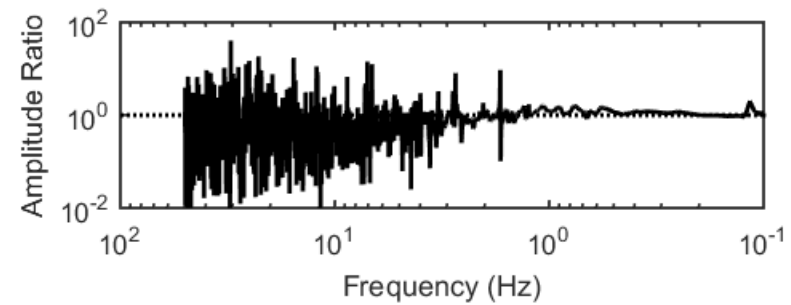
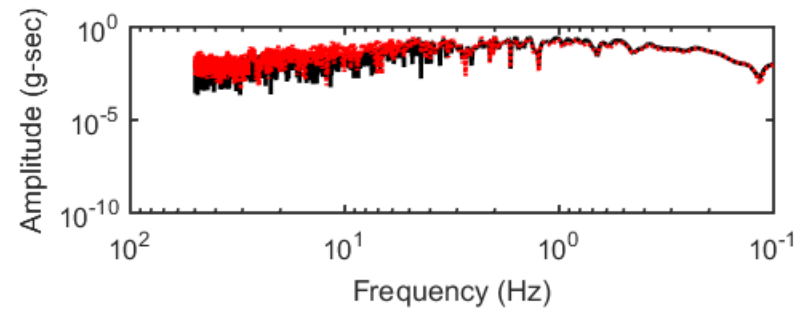
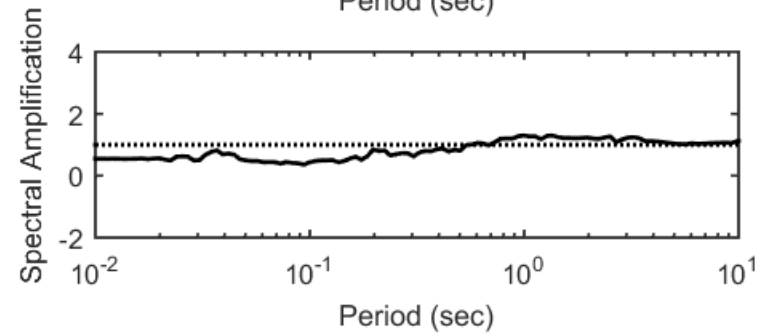
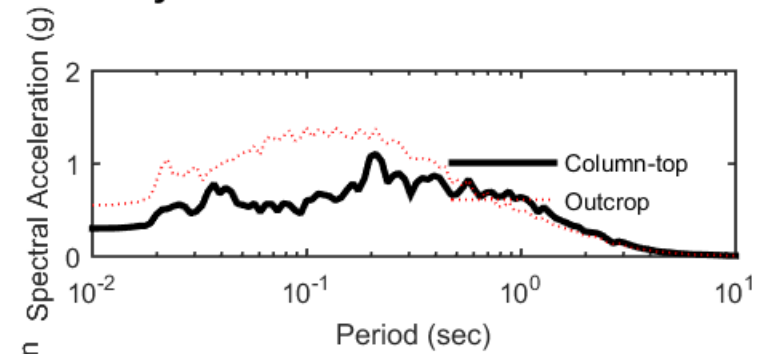
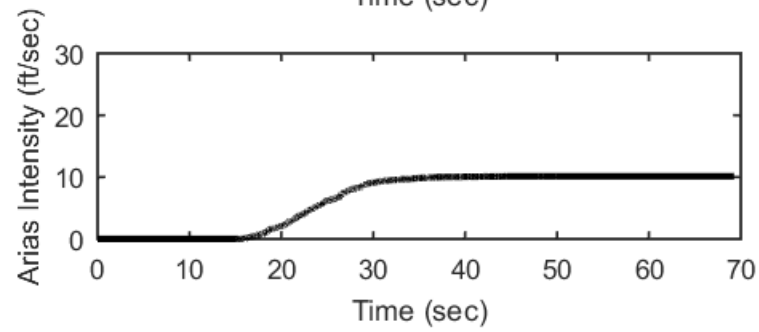
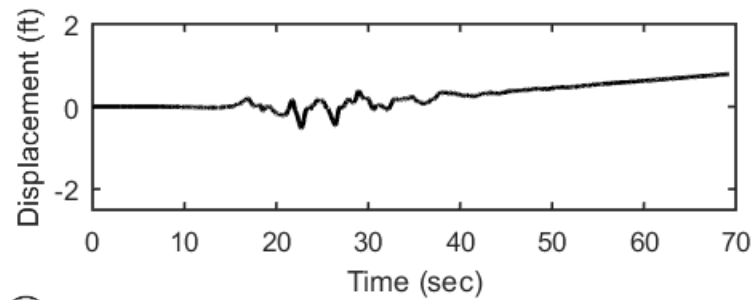
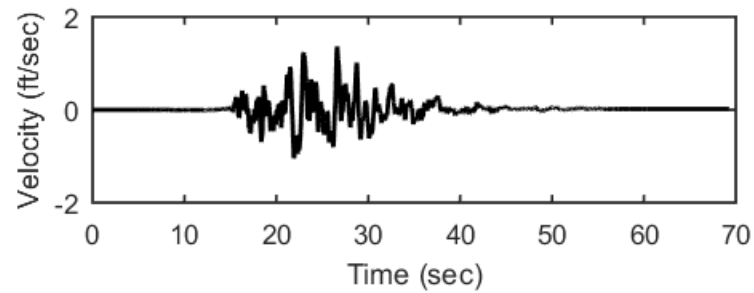
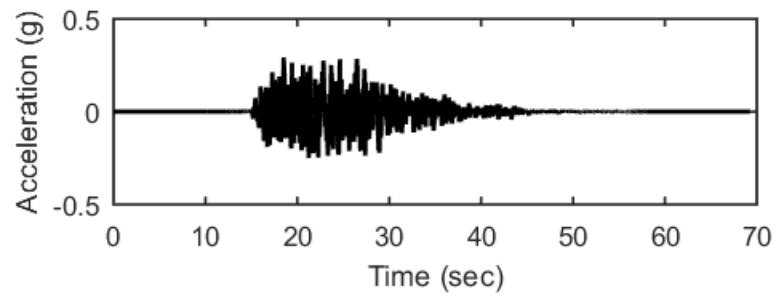
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



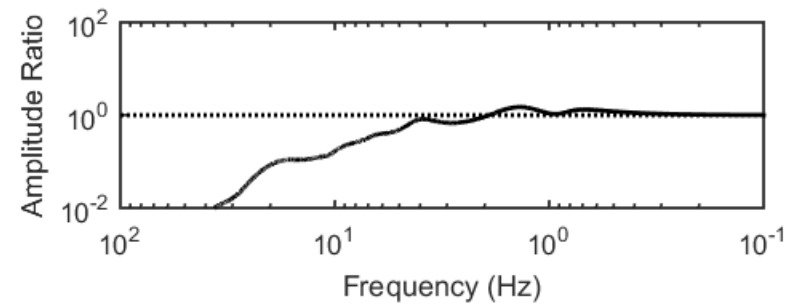
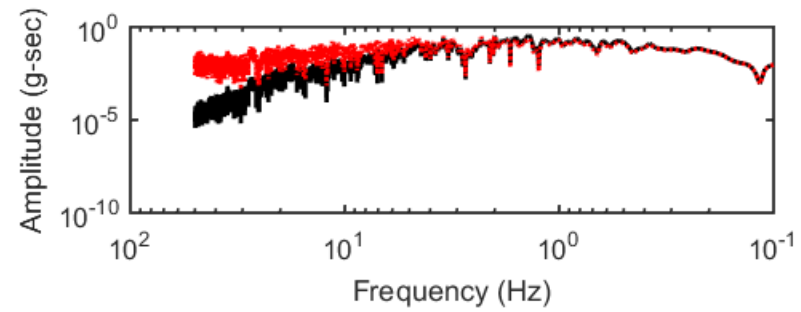
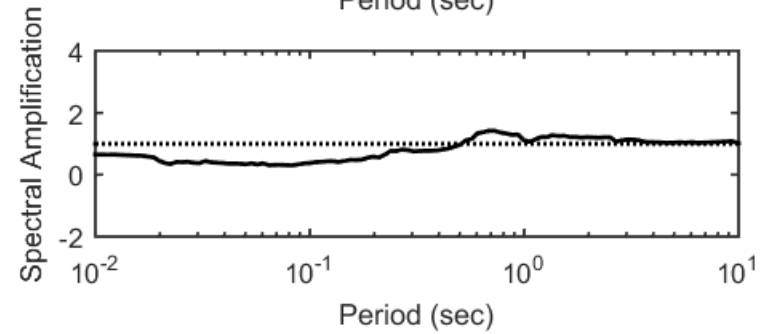
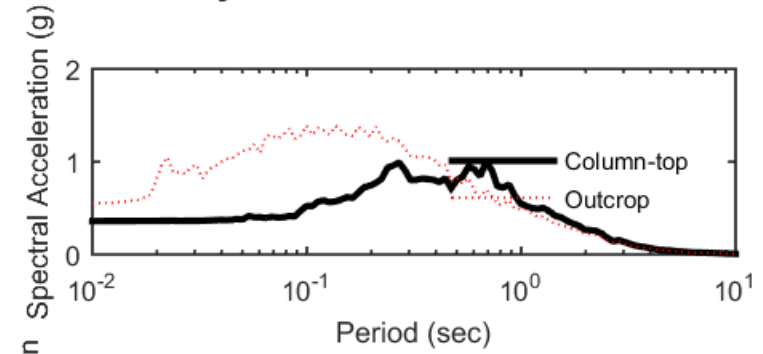
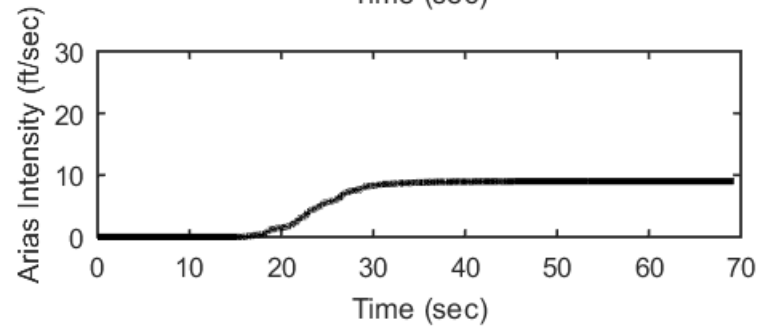
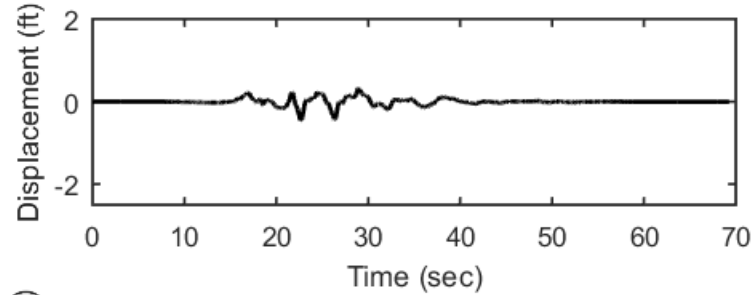
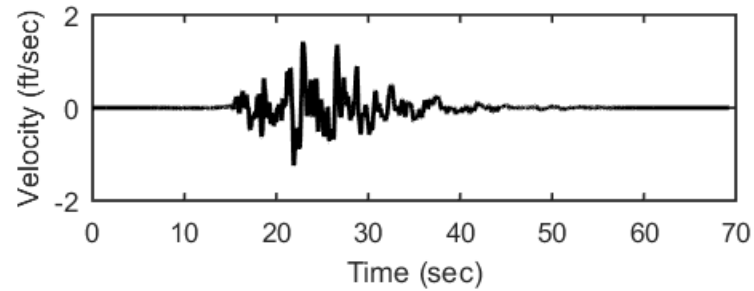
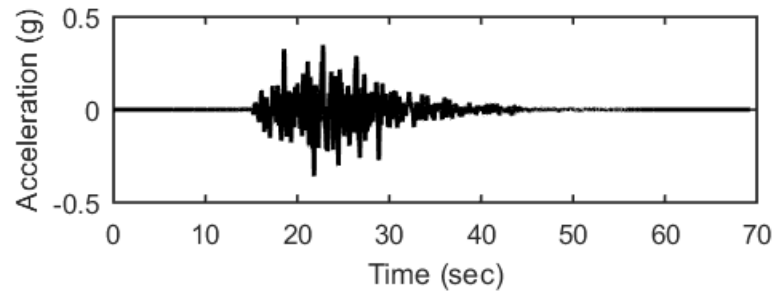
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



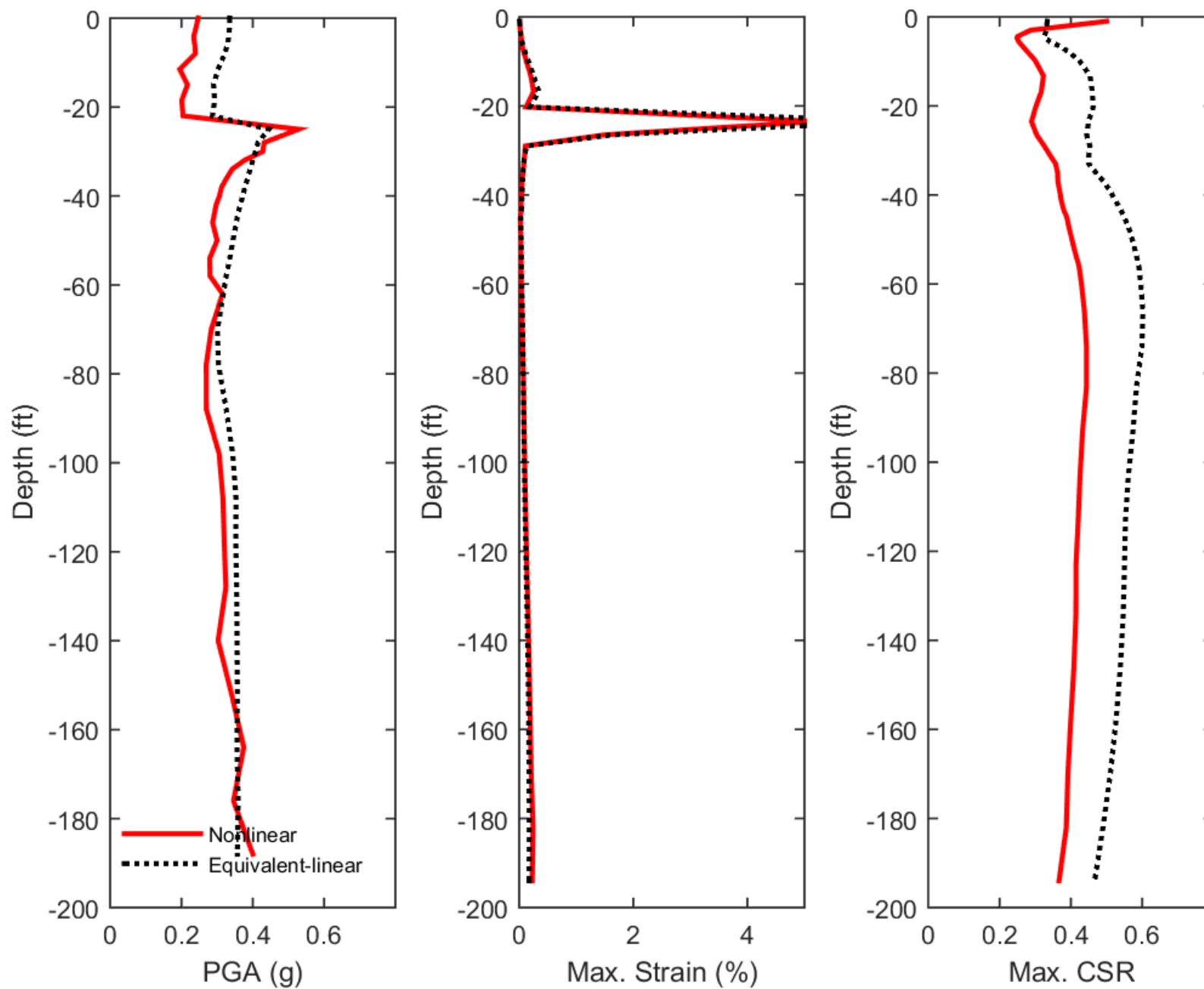
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



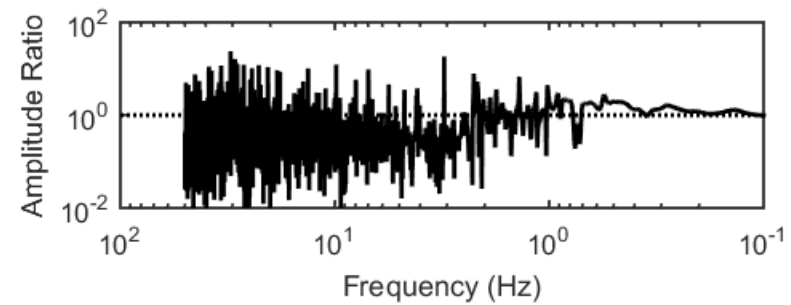
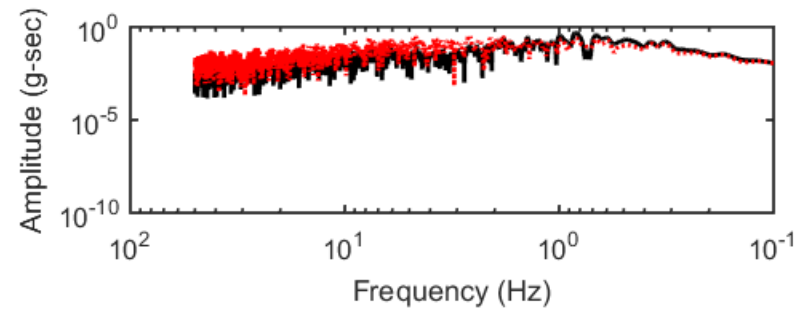
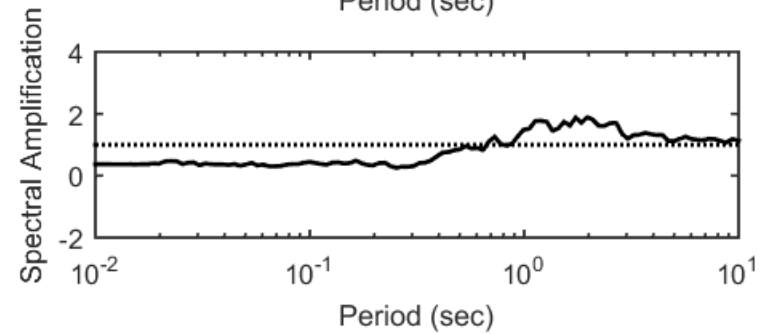
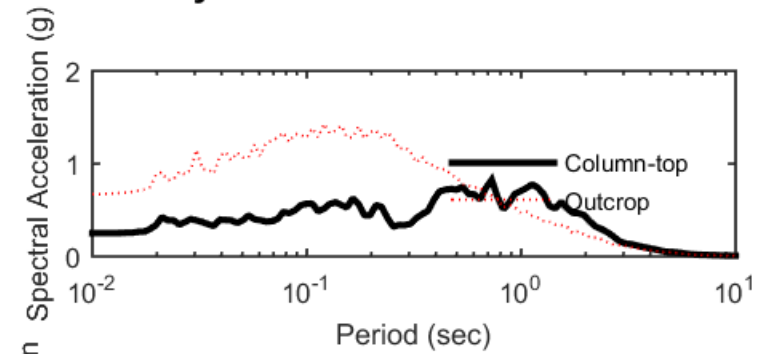
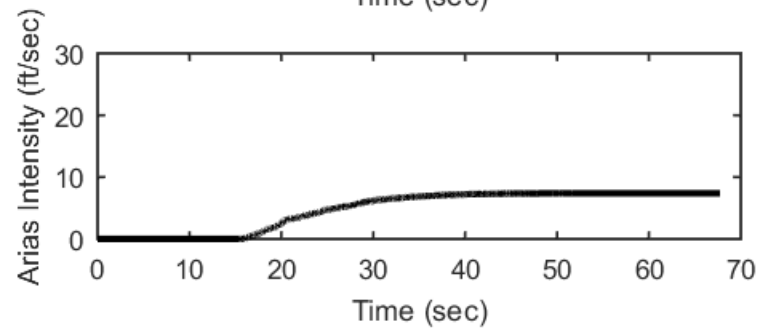
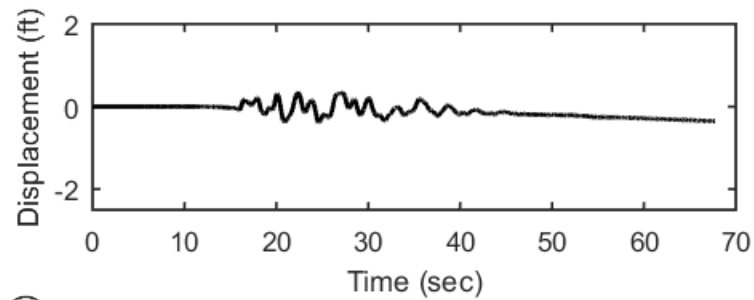
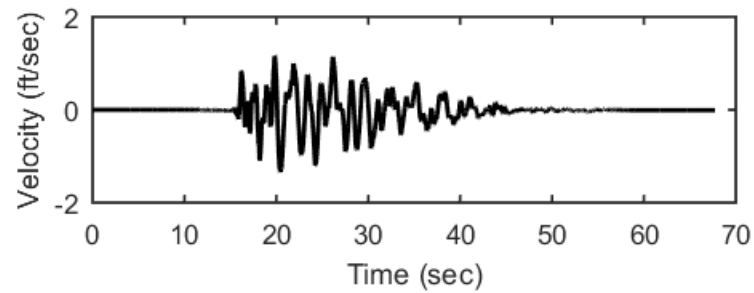
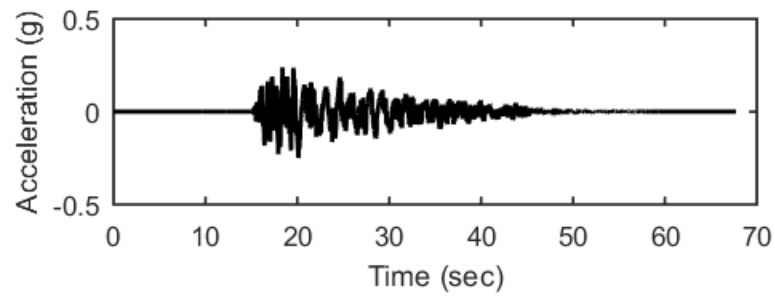
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



### Profile outputs for Motion: SEE3

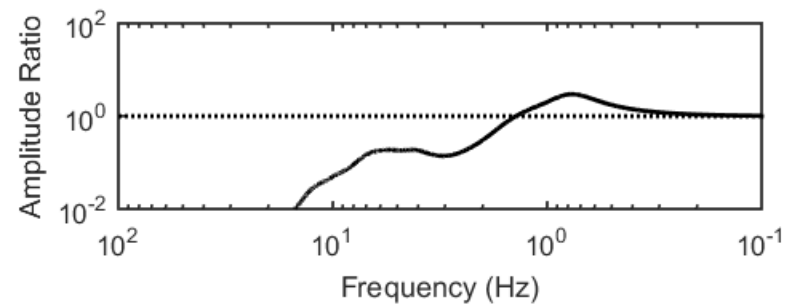
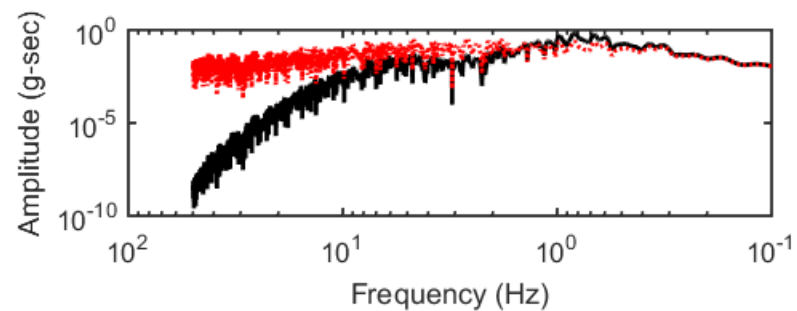
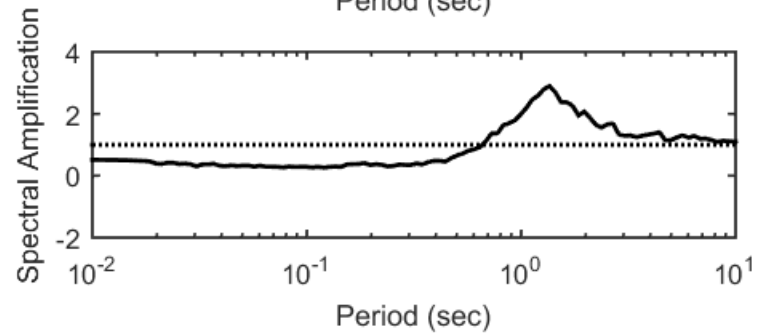
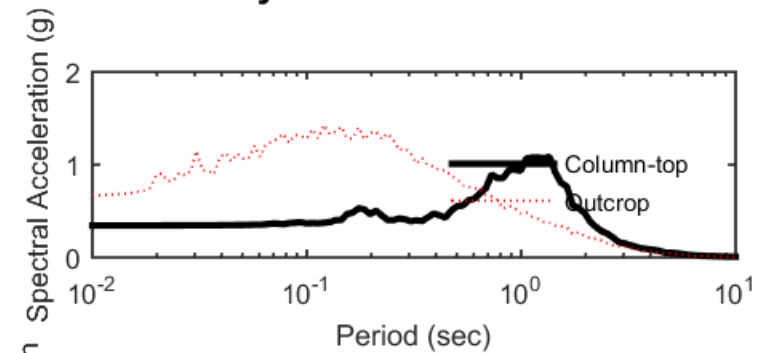
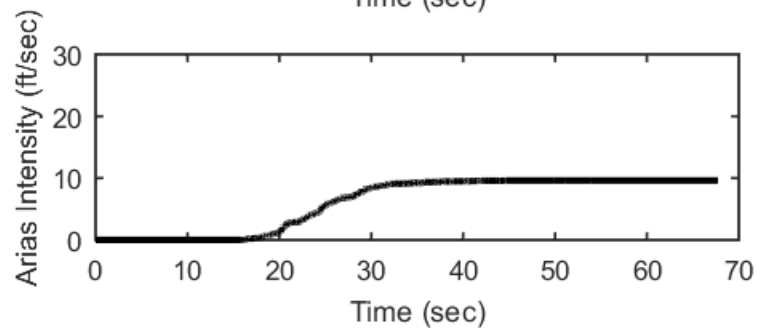
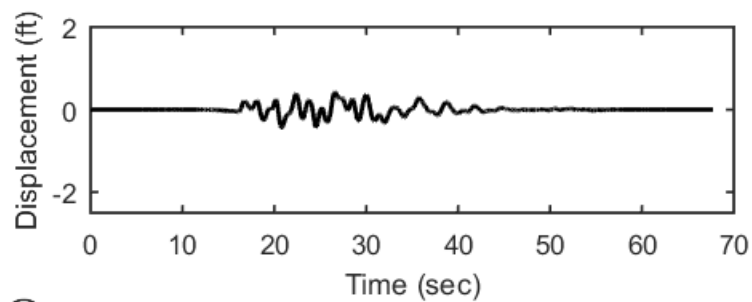
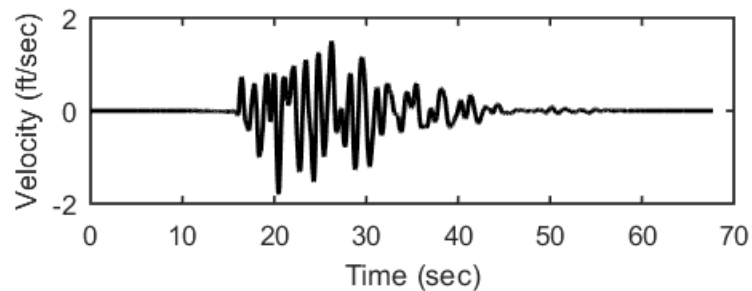
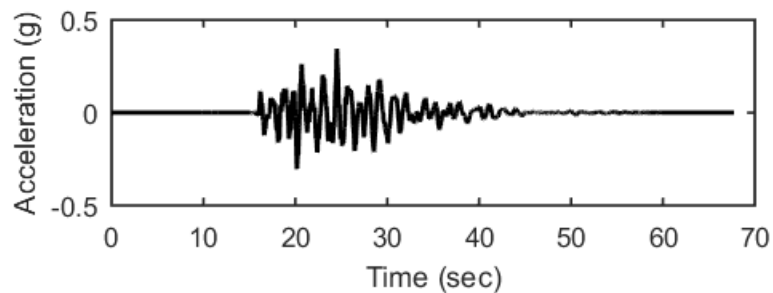


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4

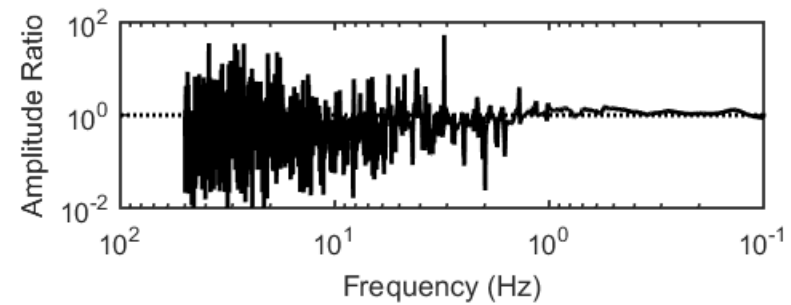
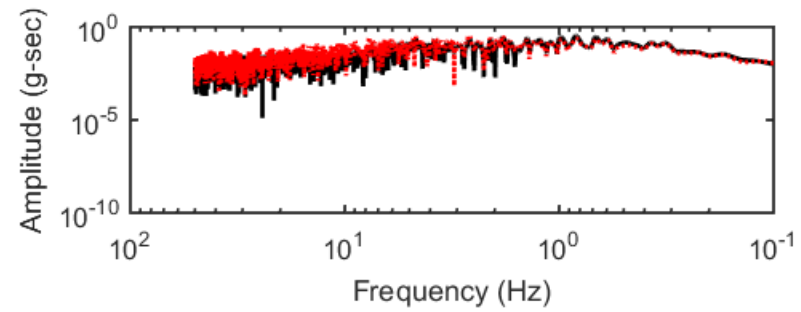
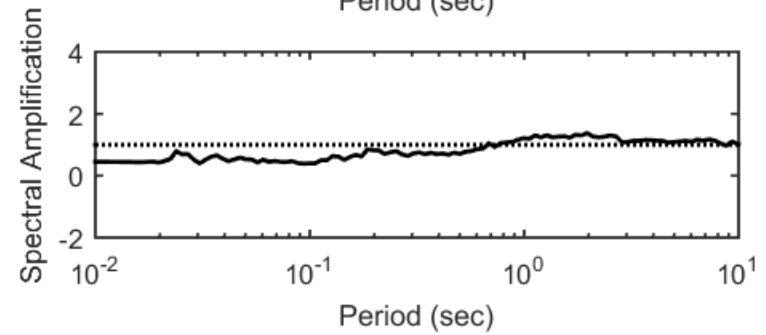
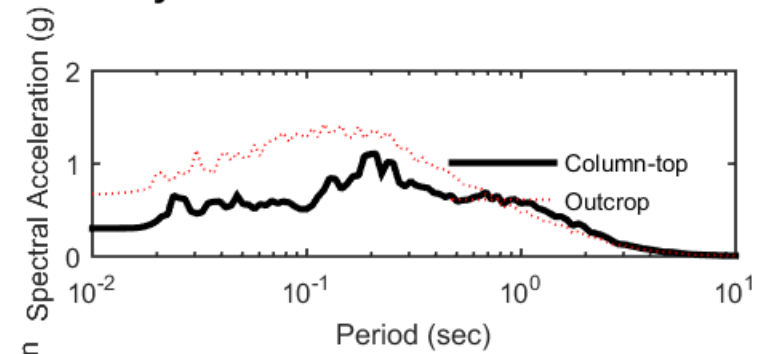
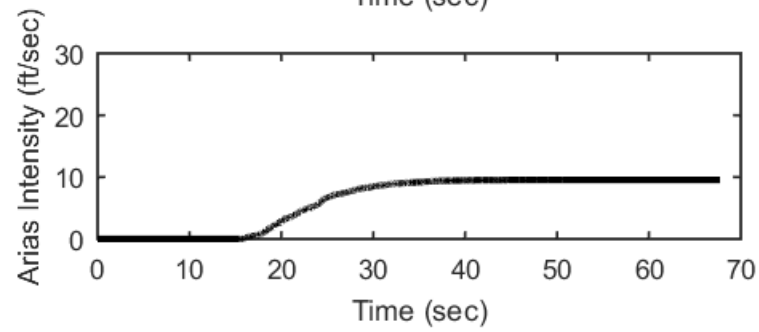
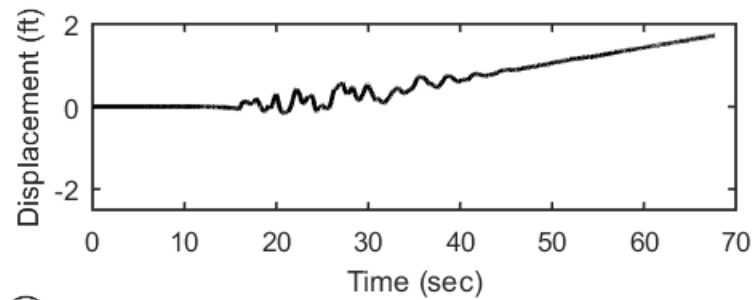
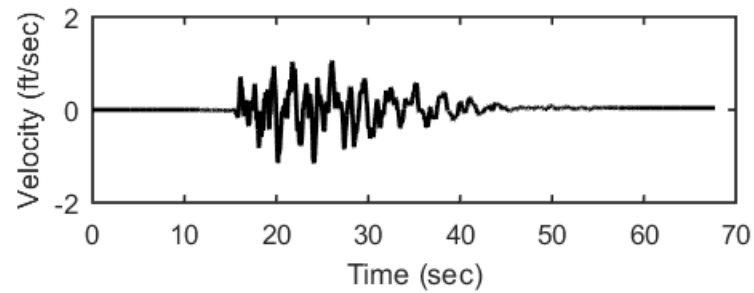
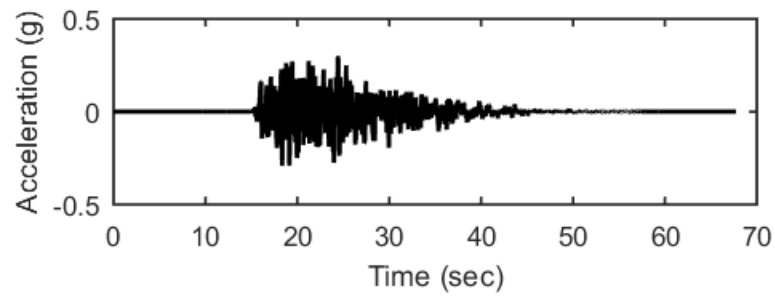




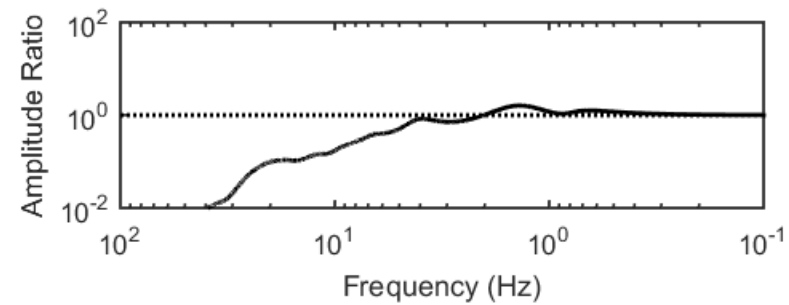
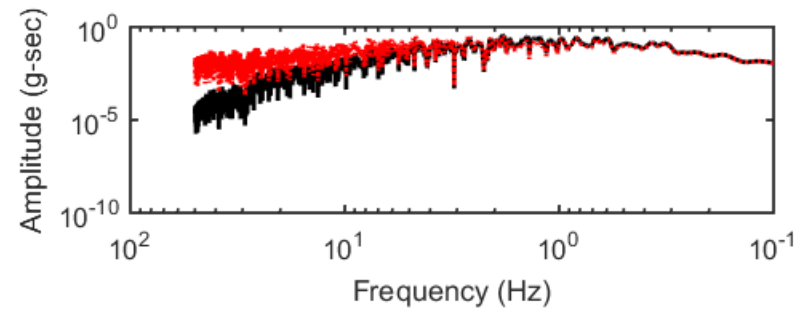
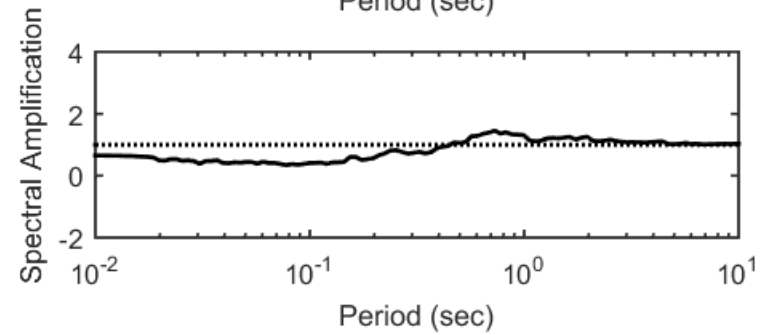
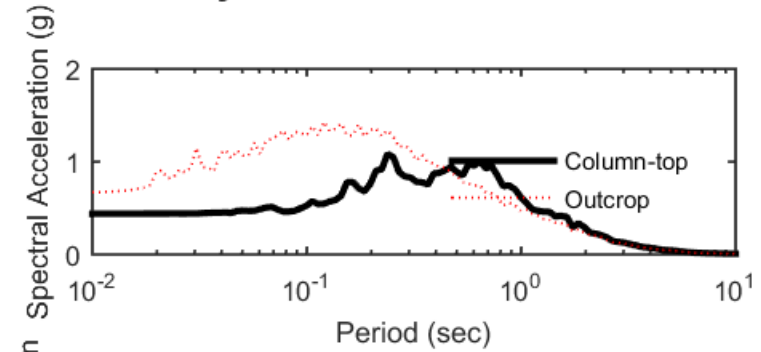
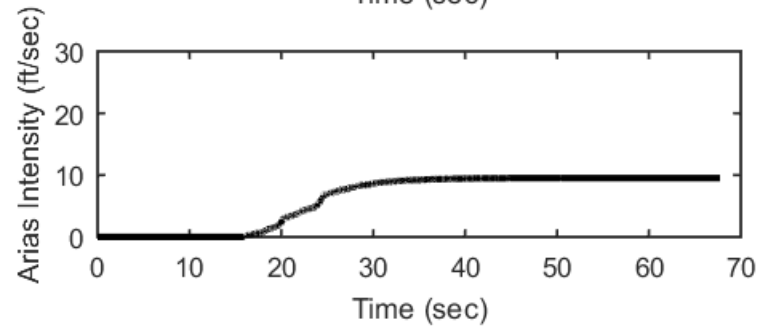
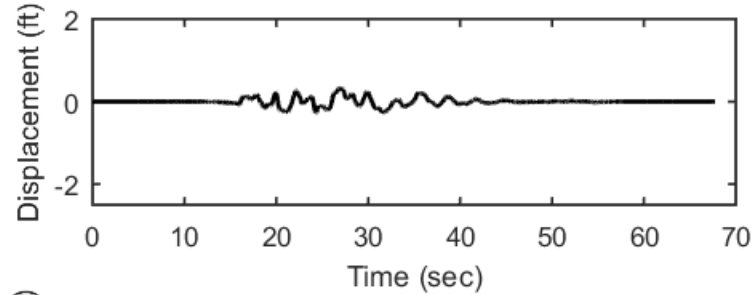
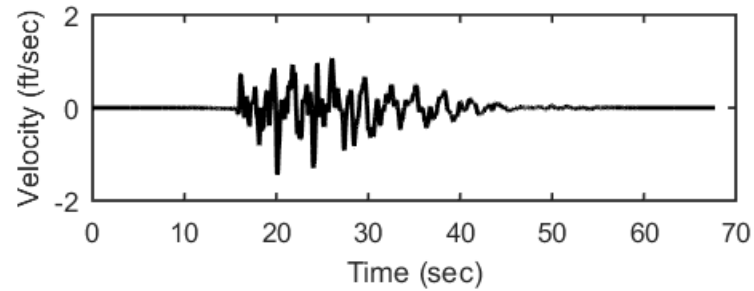
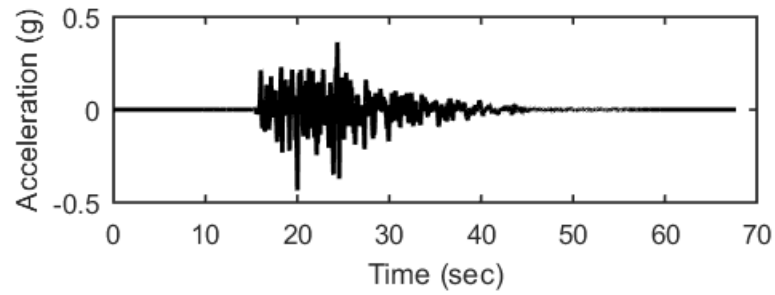
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



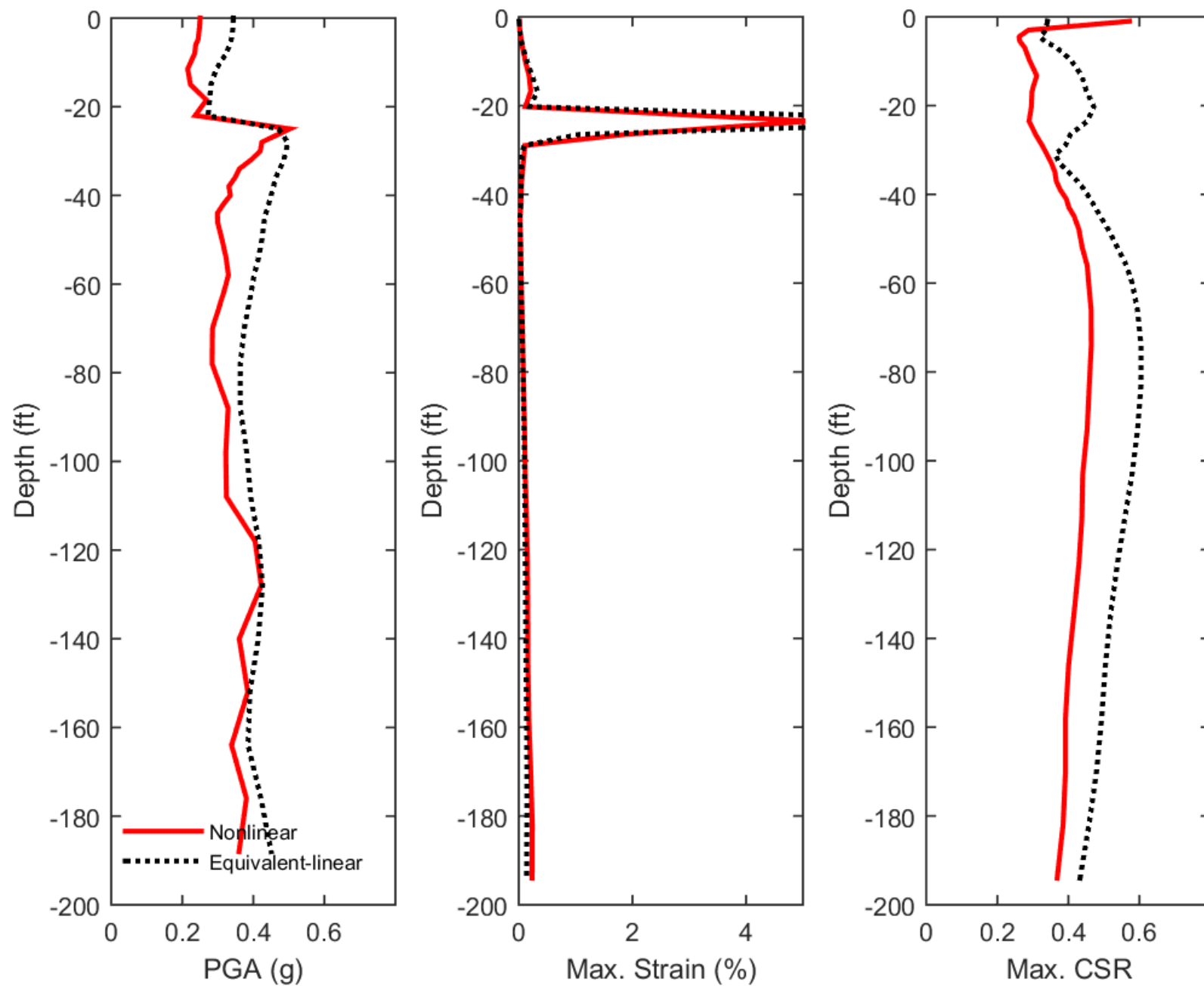
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



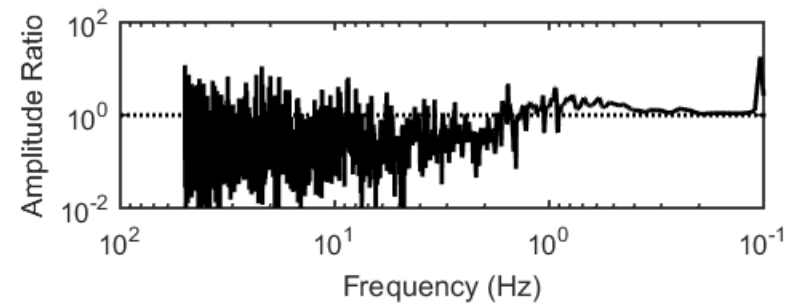
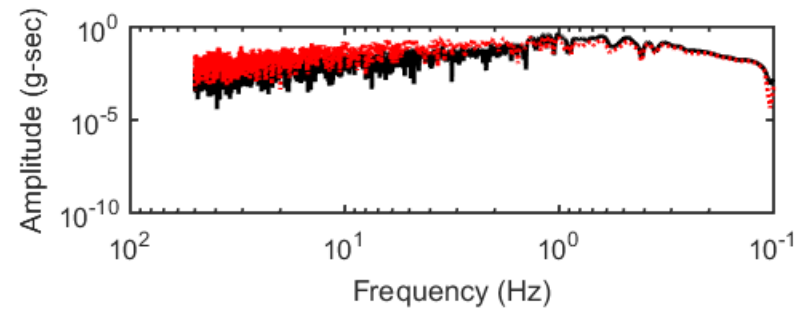
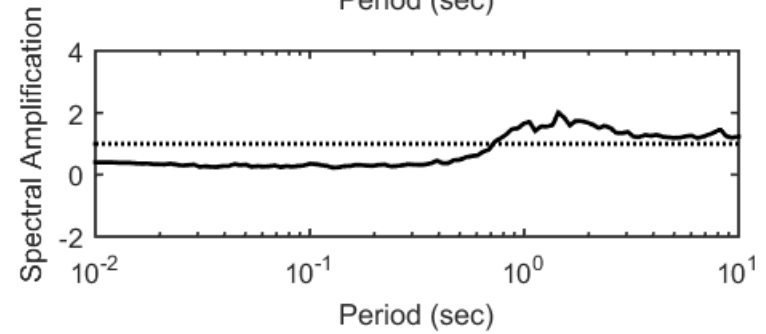
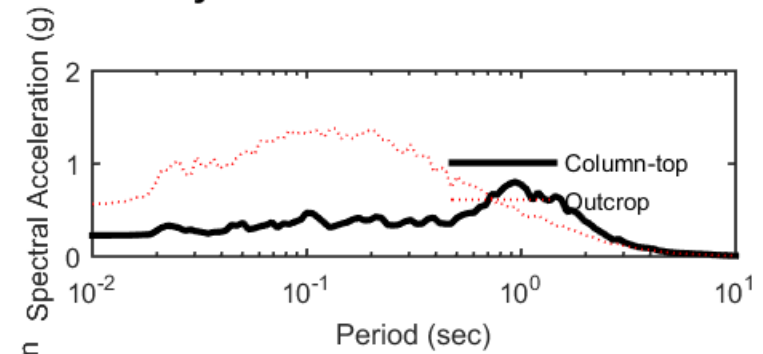
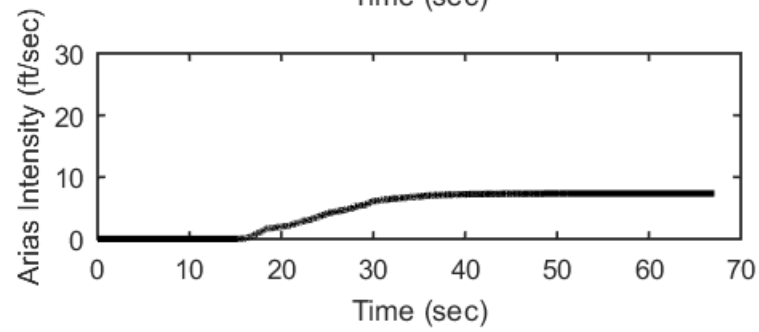
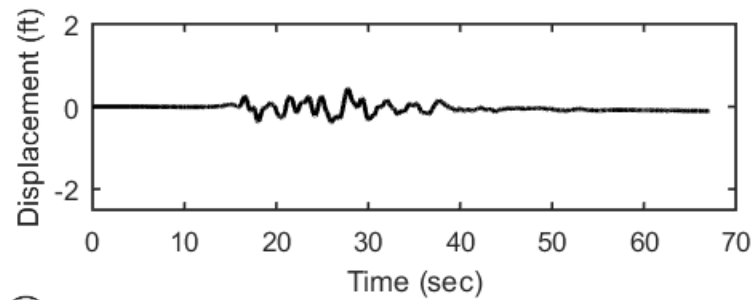
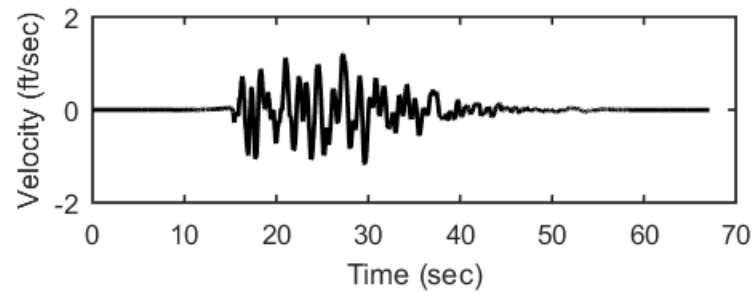
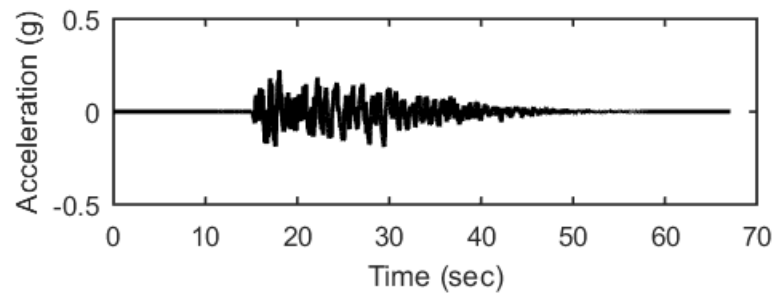
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



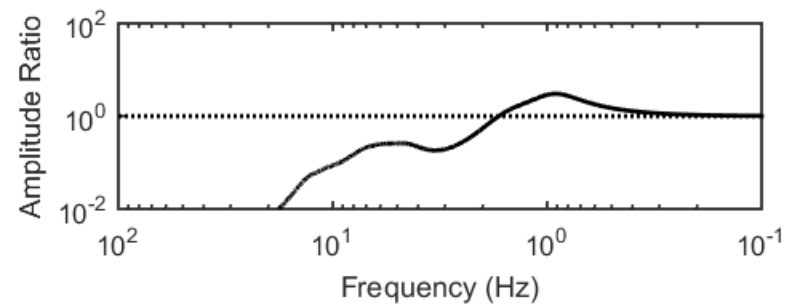
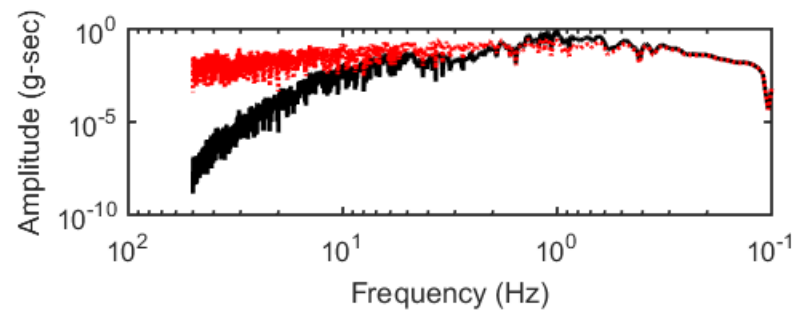
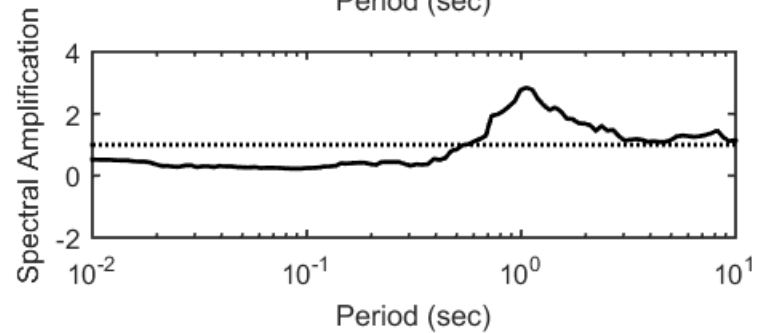
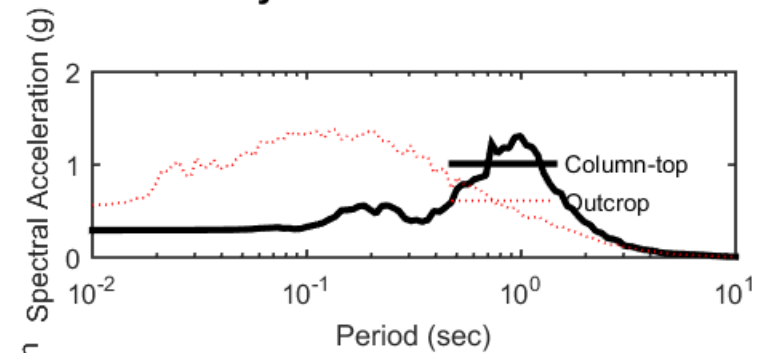
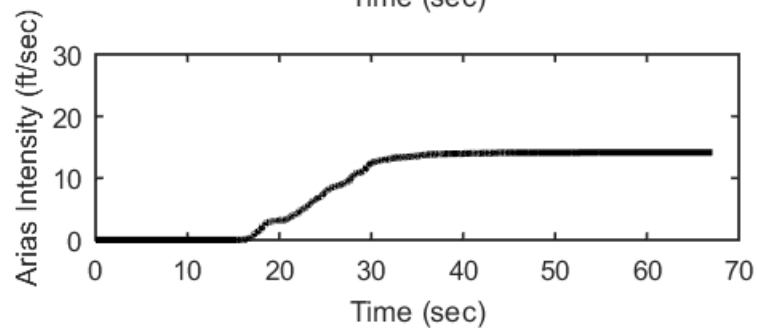
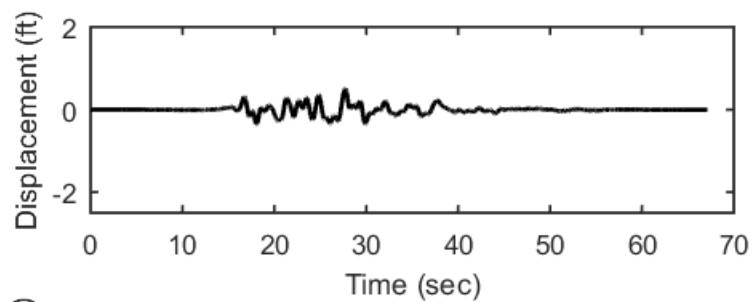
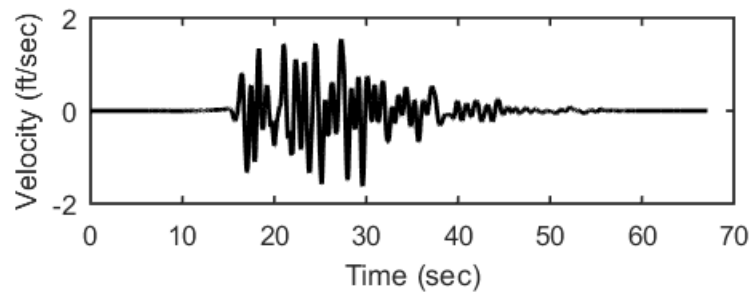
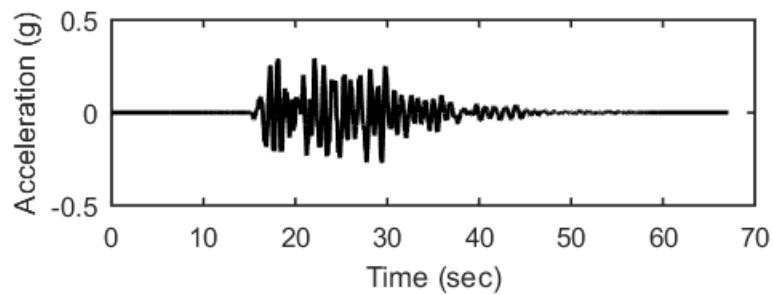
### Profile outputs for Motion: SEE4



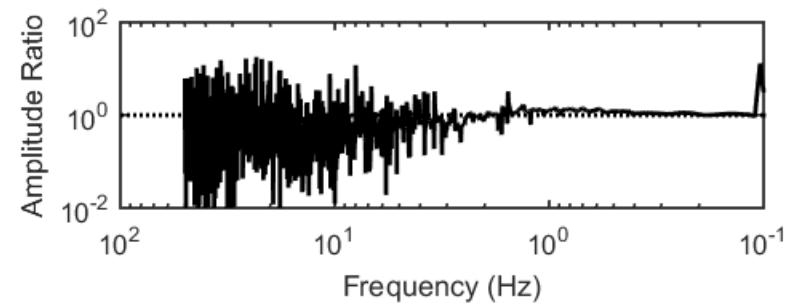
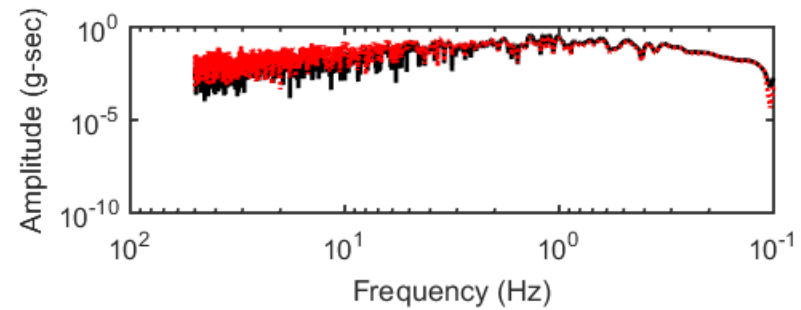
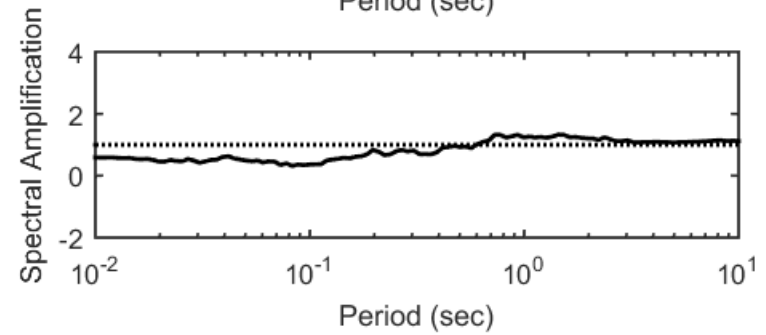
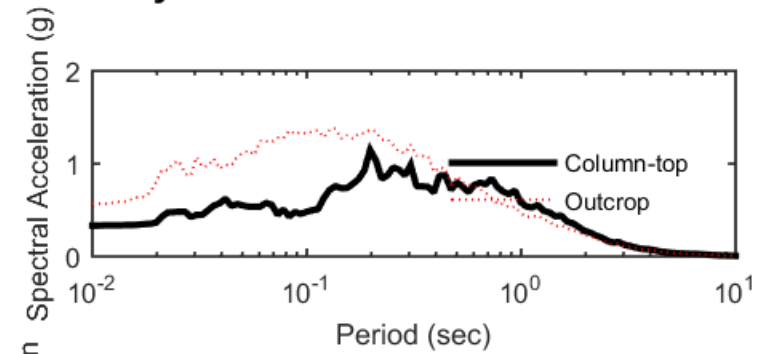
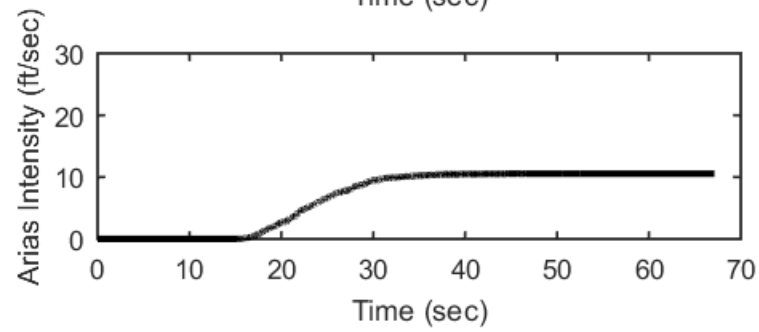
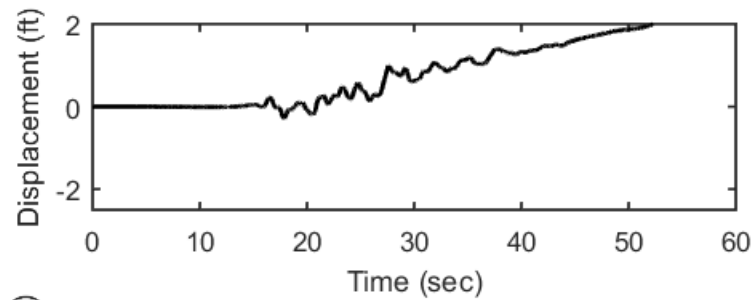
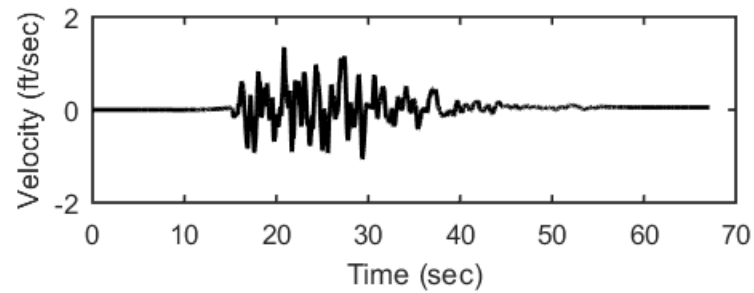
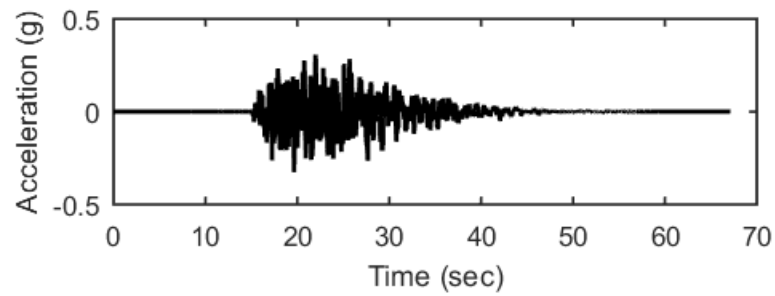
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



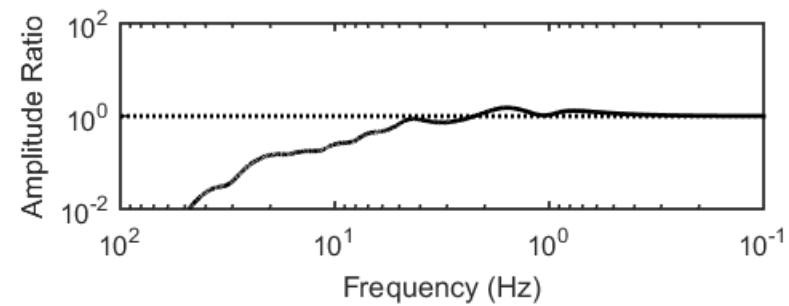
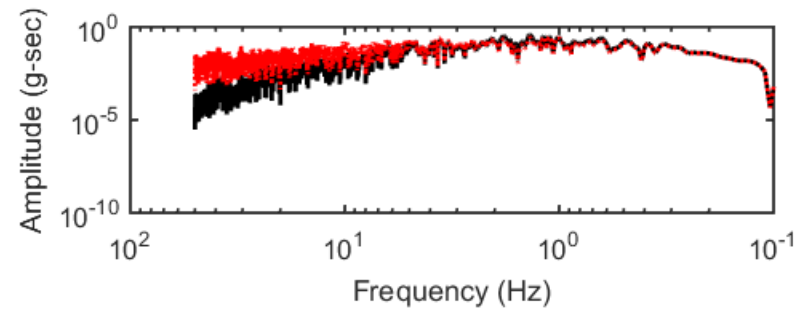
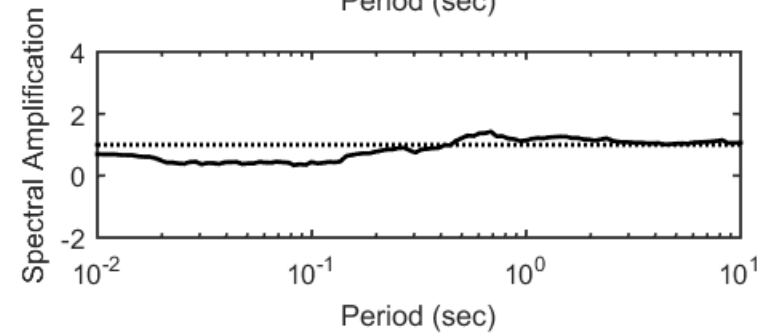
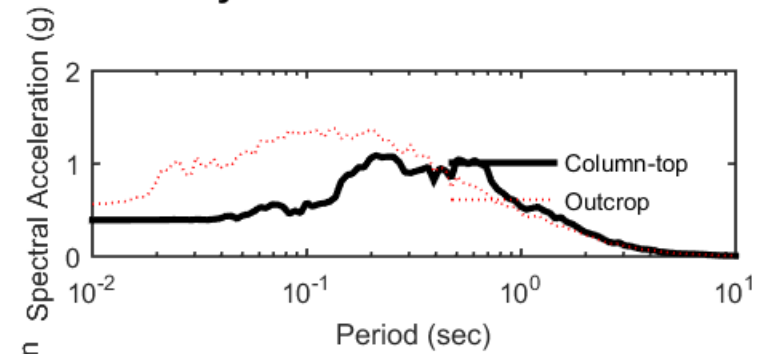
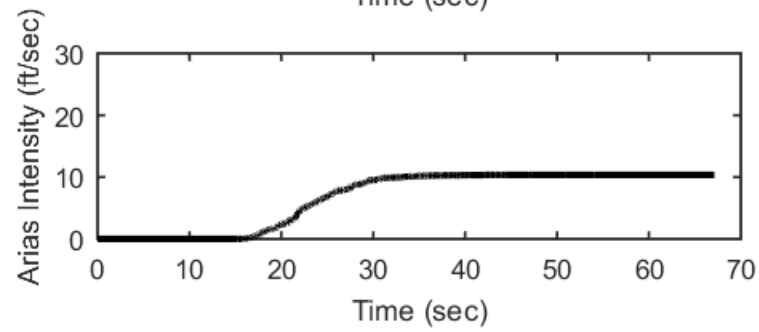
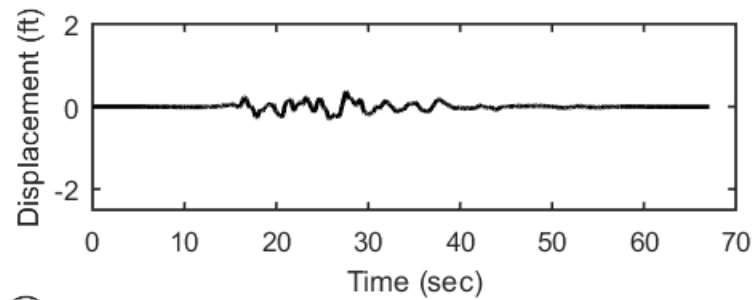
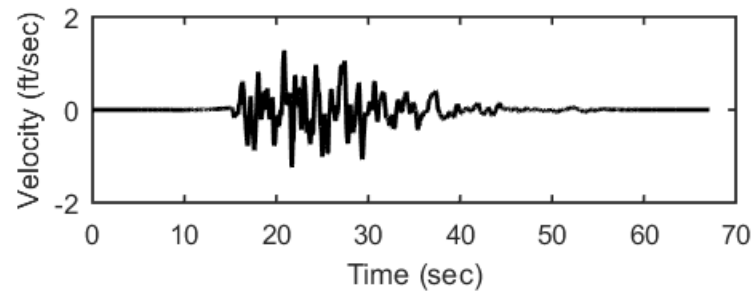
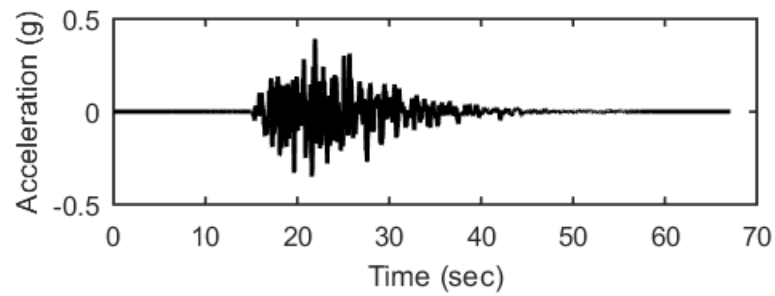
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5

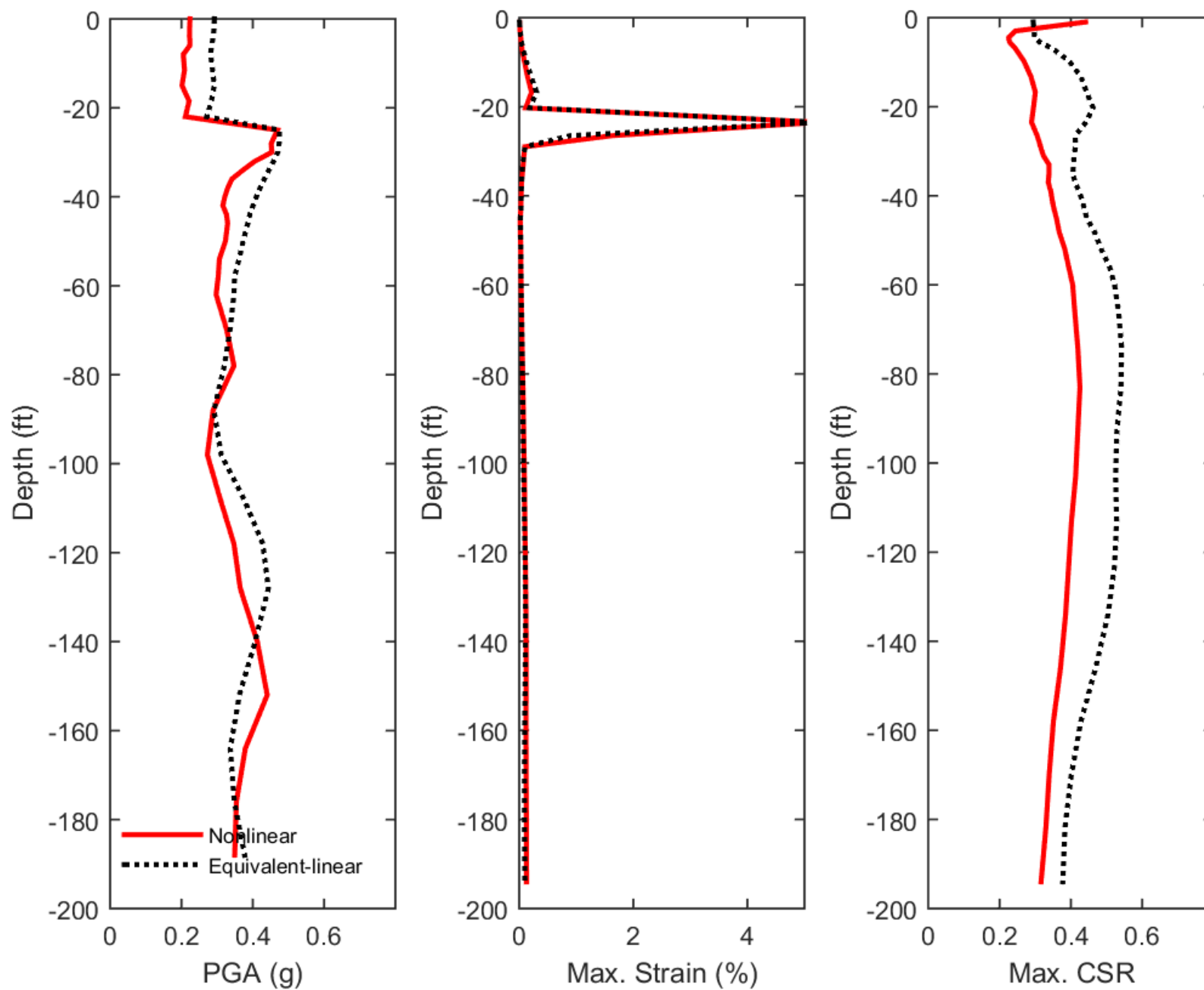


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5

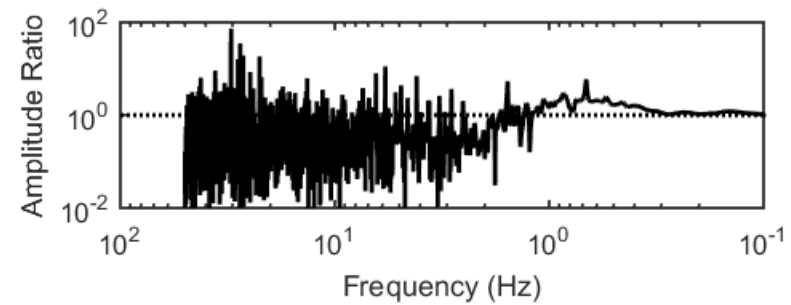
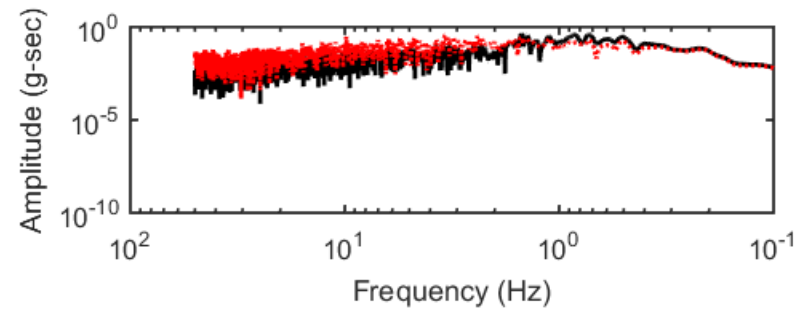
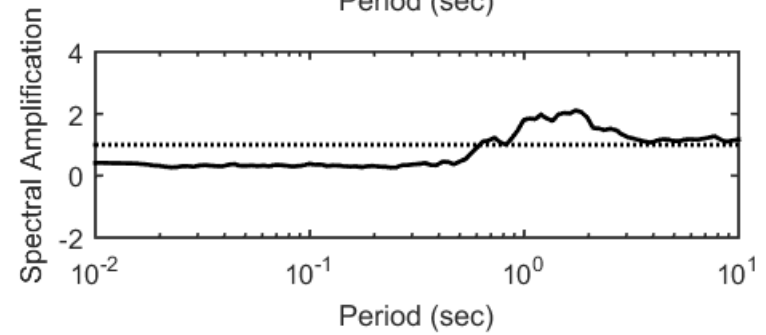
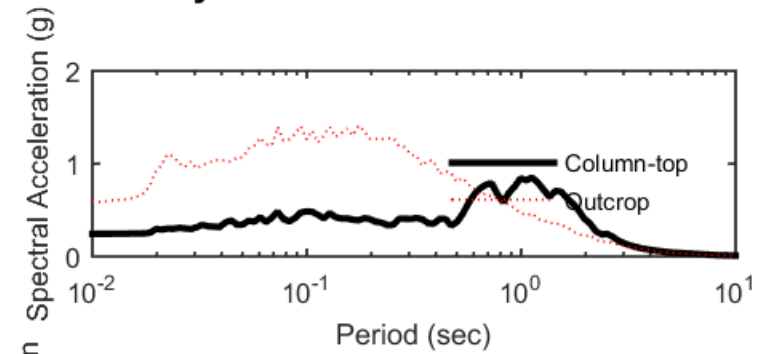
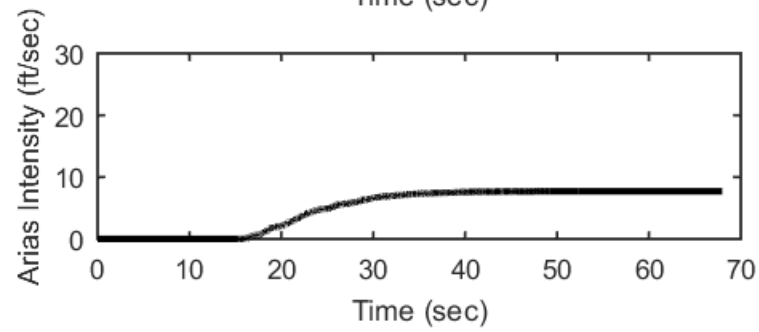
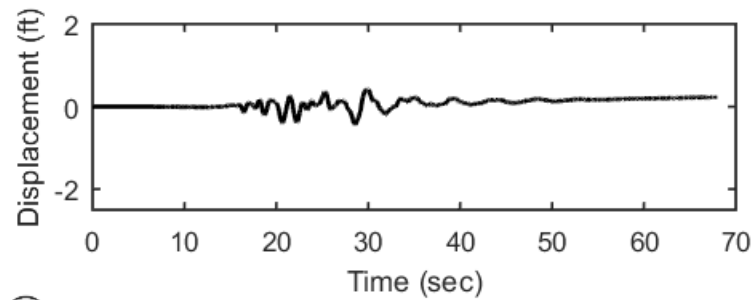
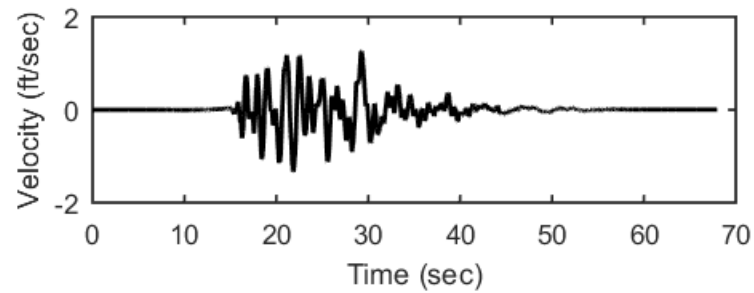
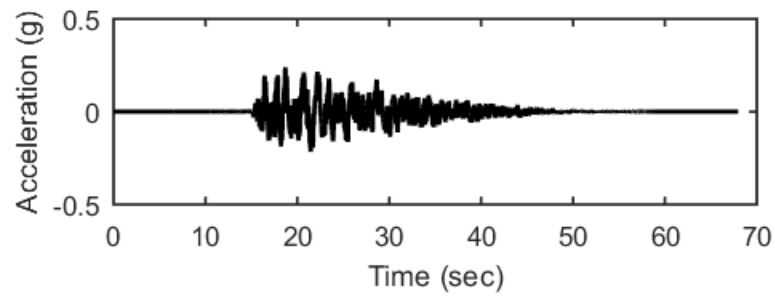




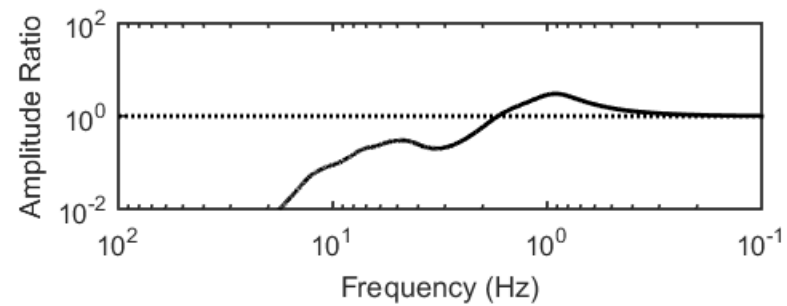
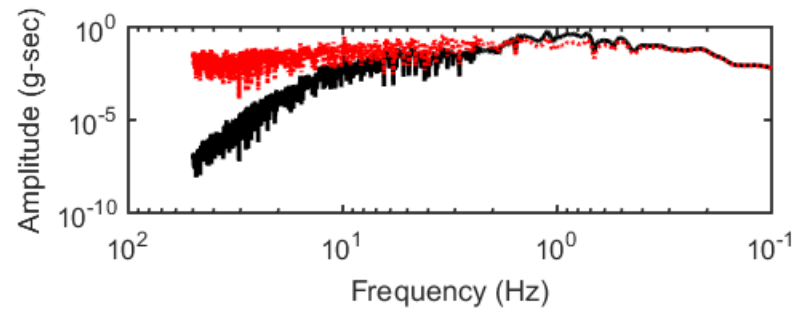
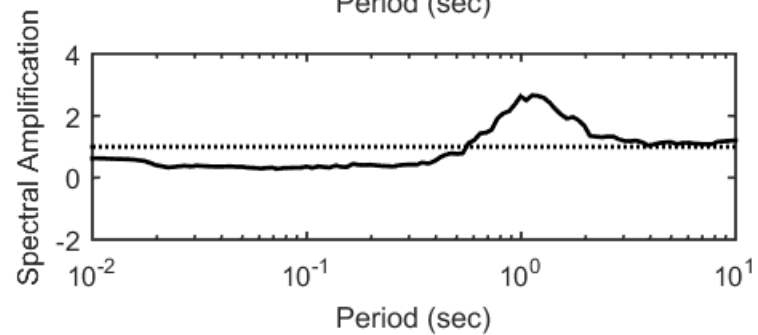
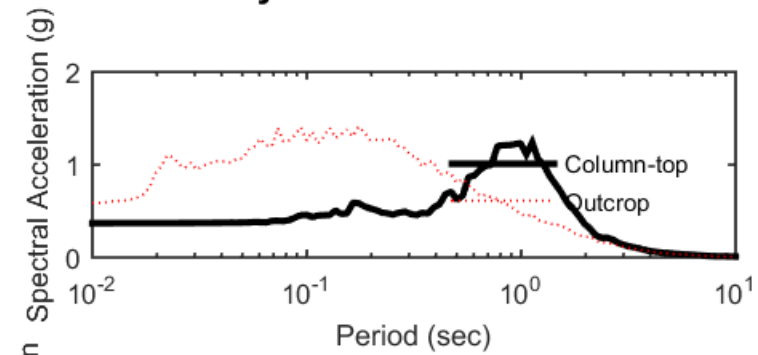
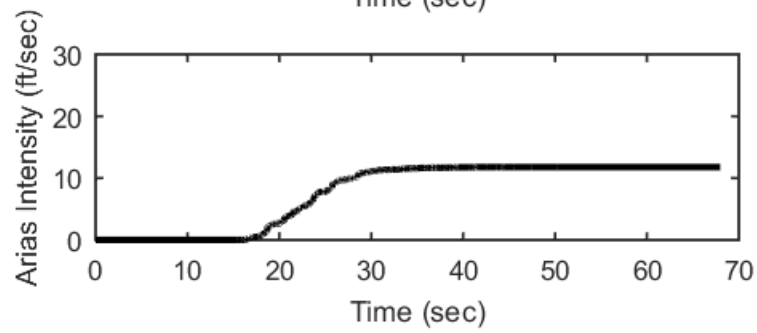
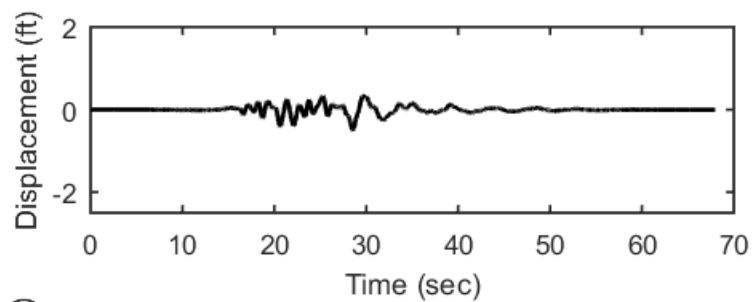
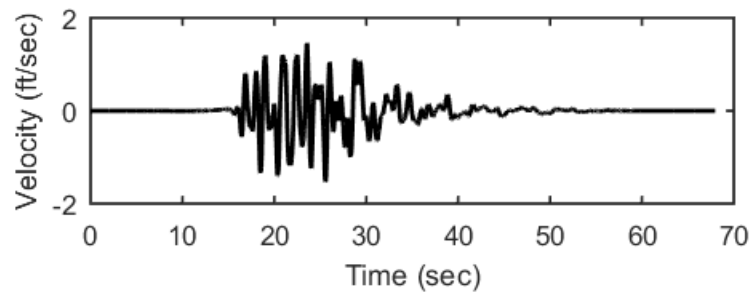
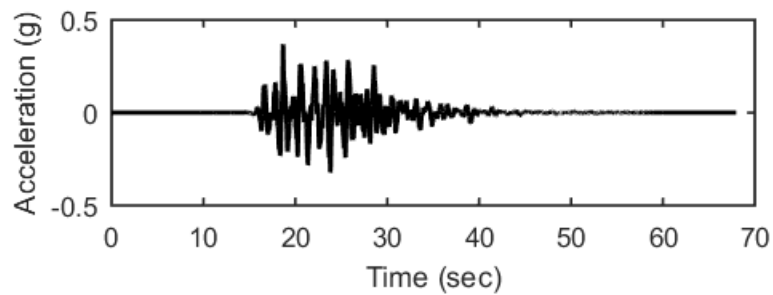
### Profile outputs for Motion: SEE5



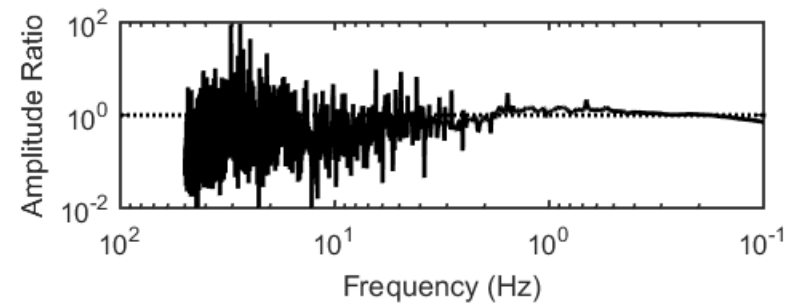
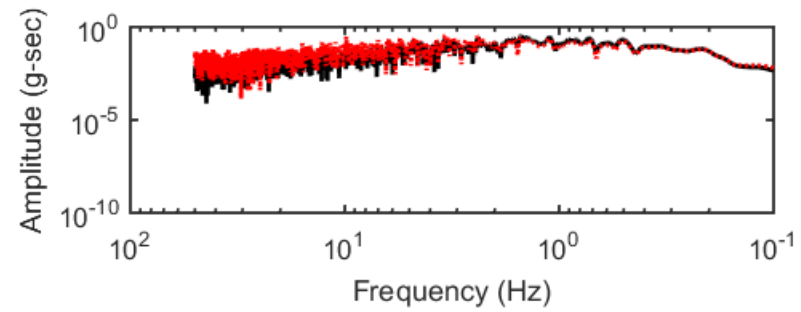
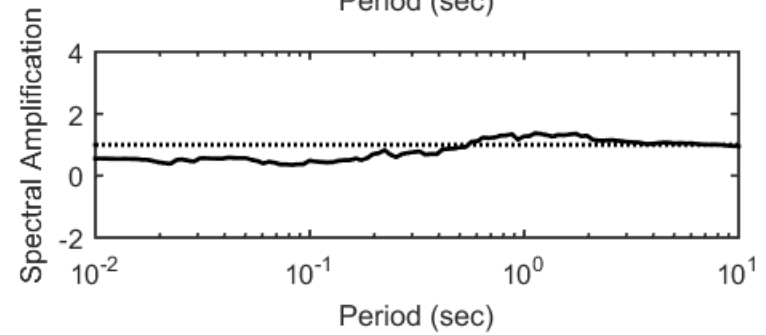
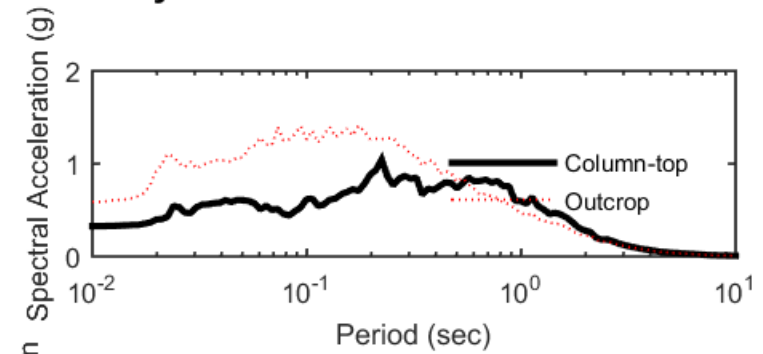
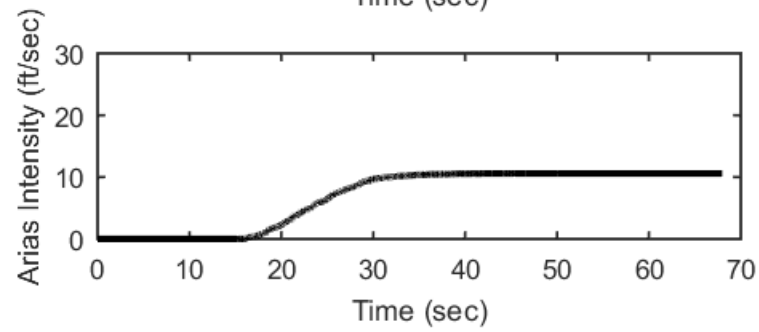
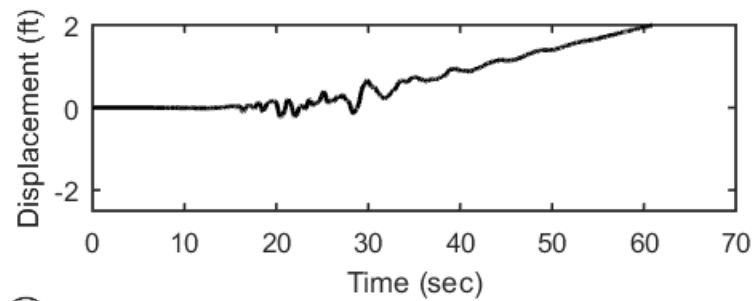
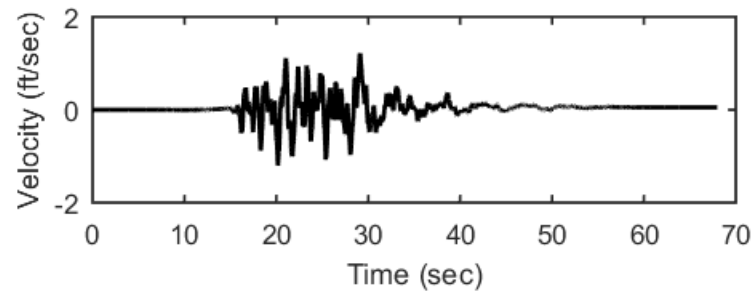
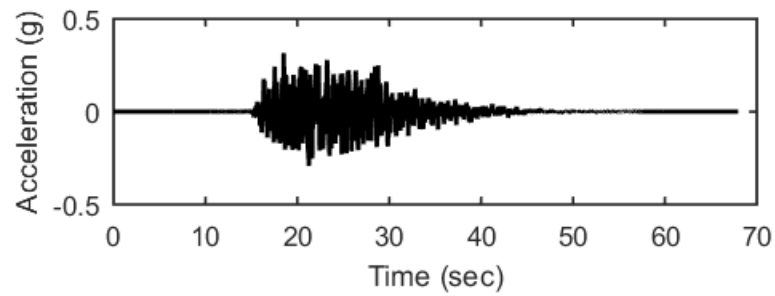
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



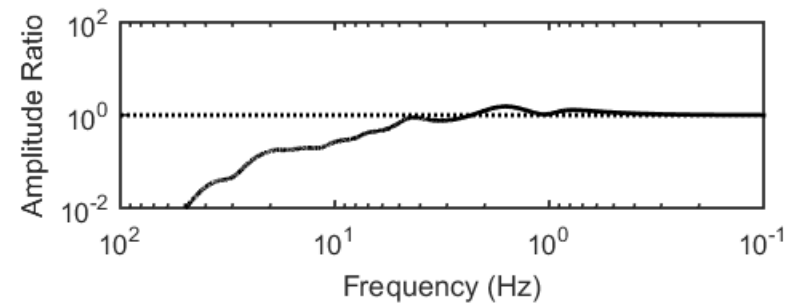
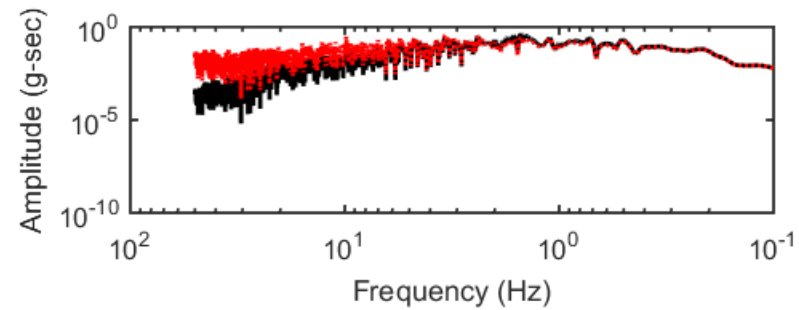
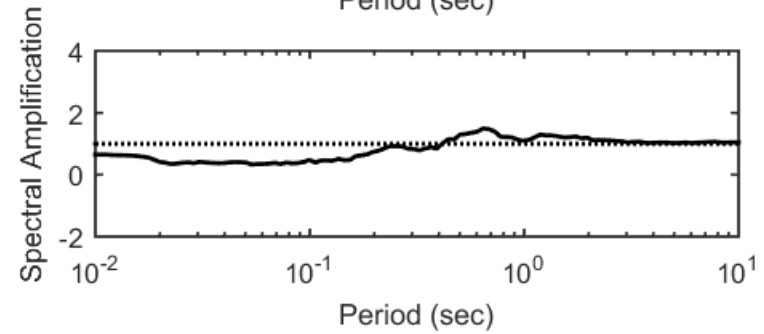
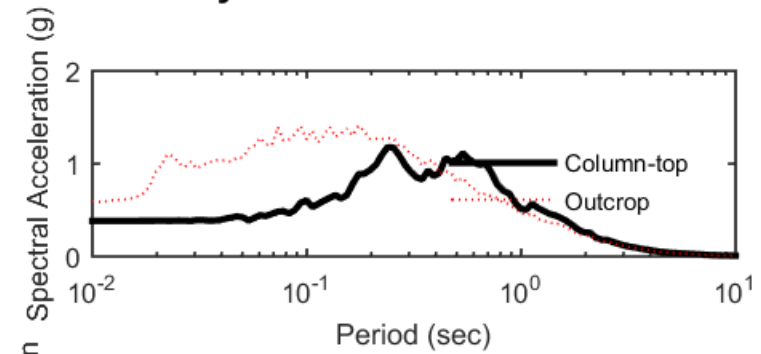
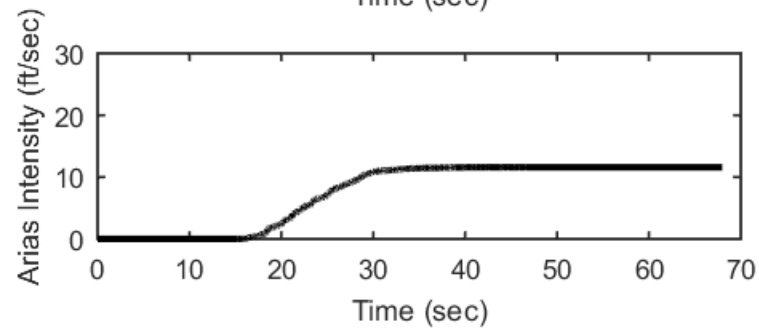
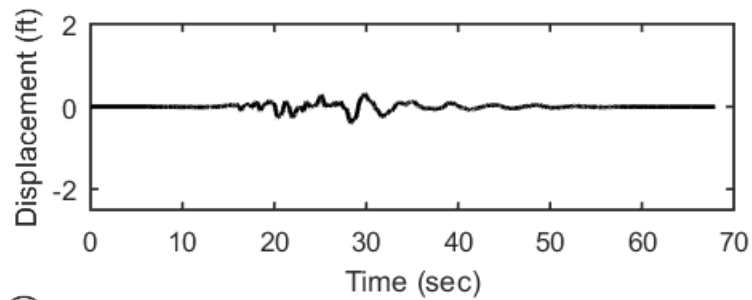
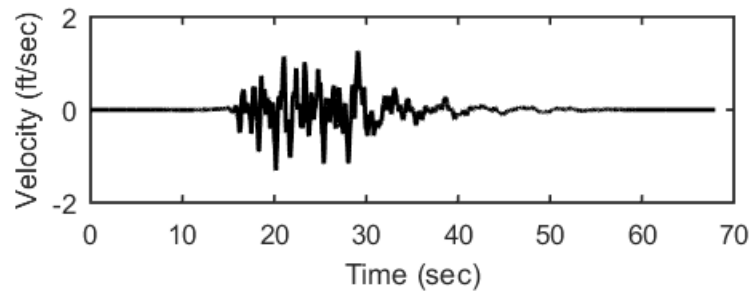
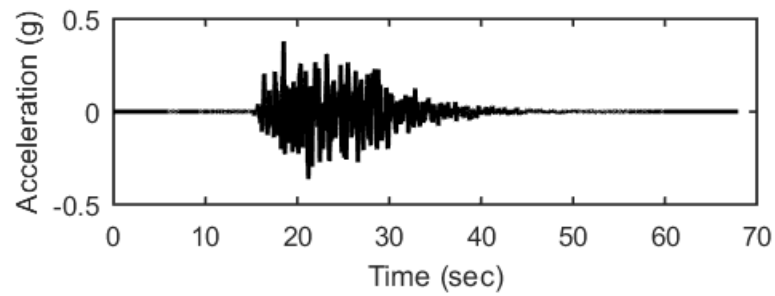
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



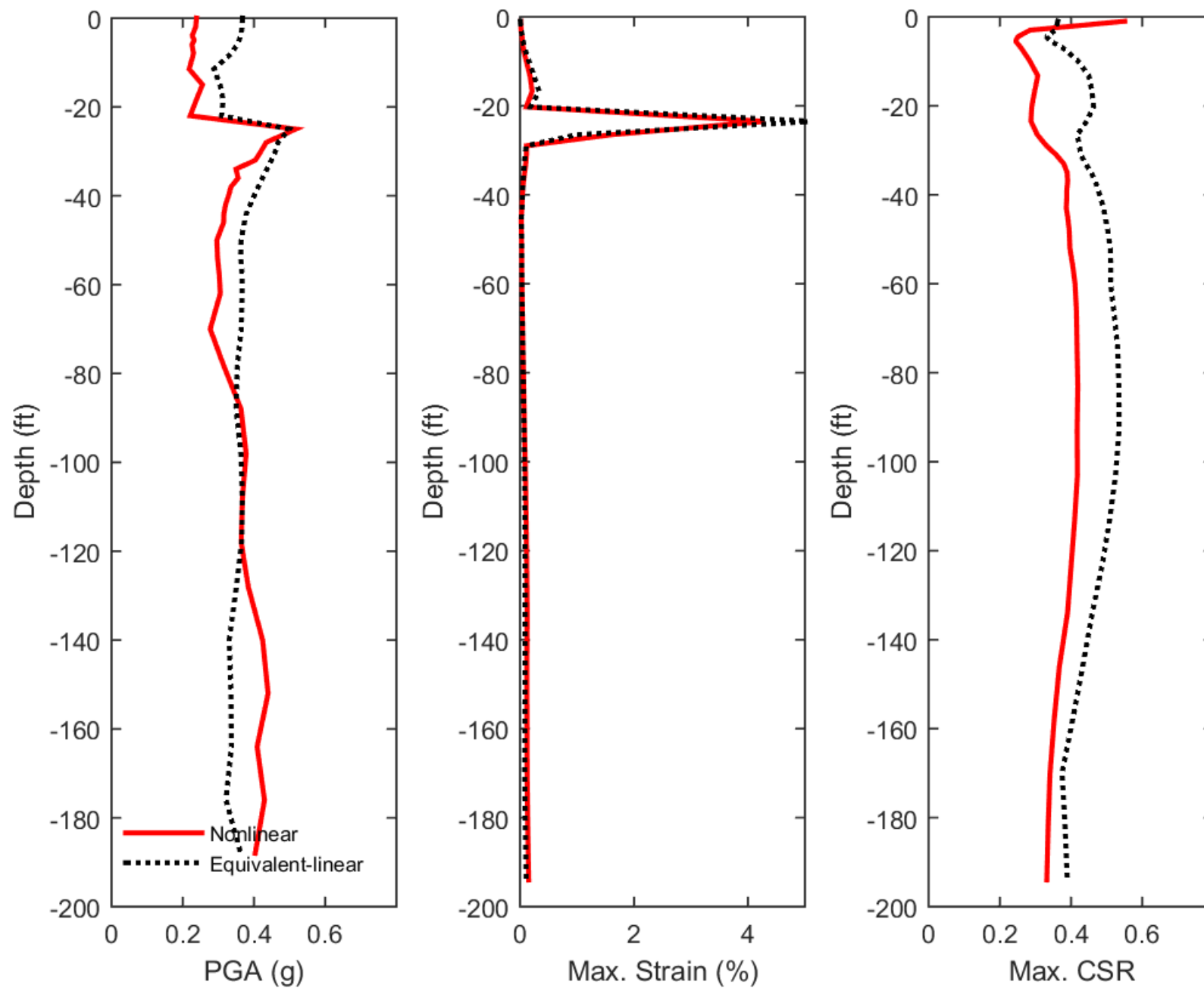
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



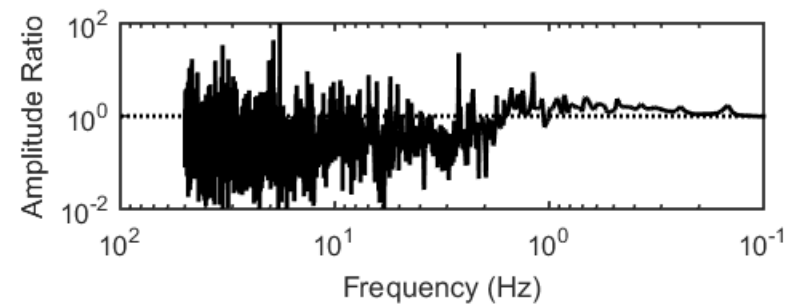
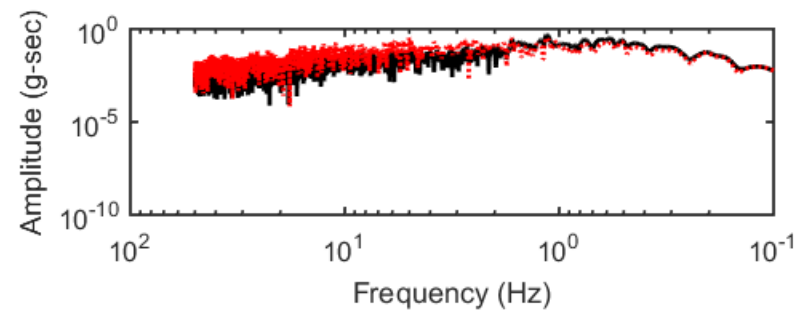
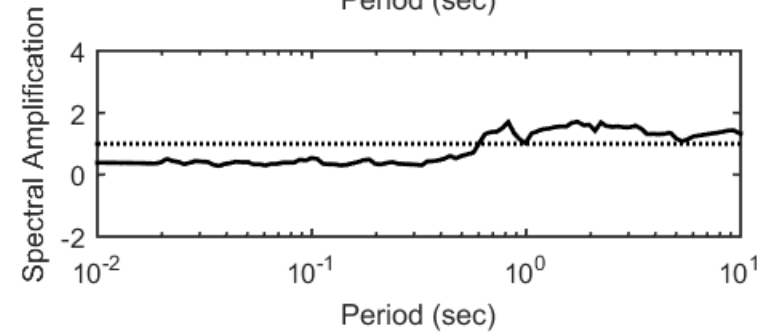
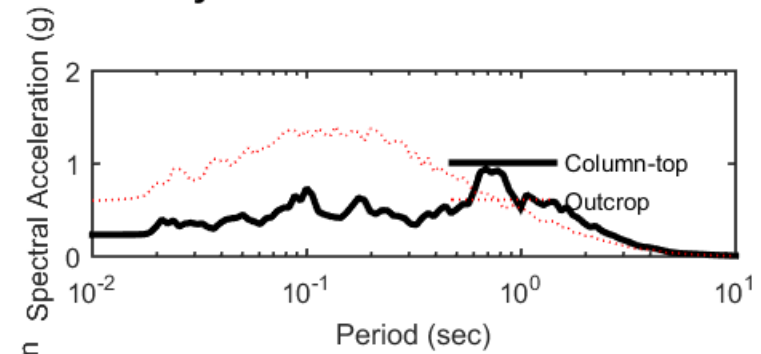
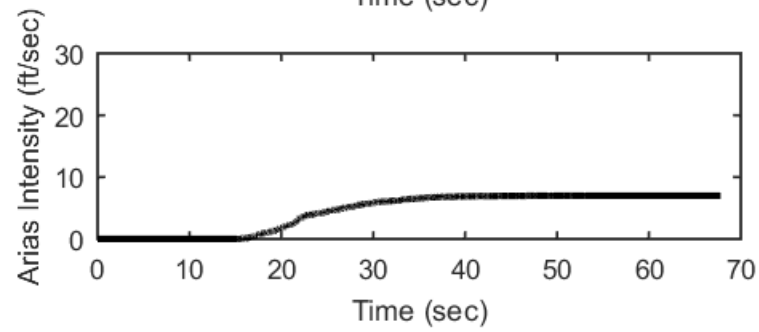
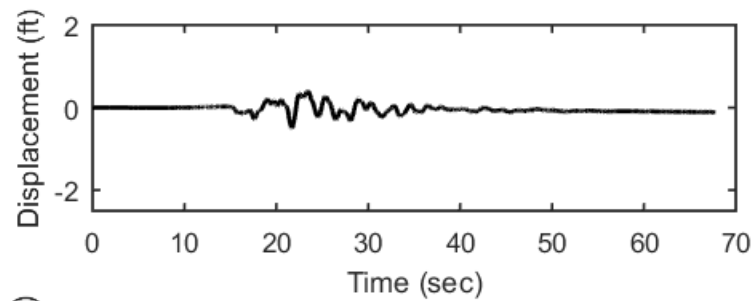
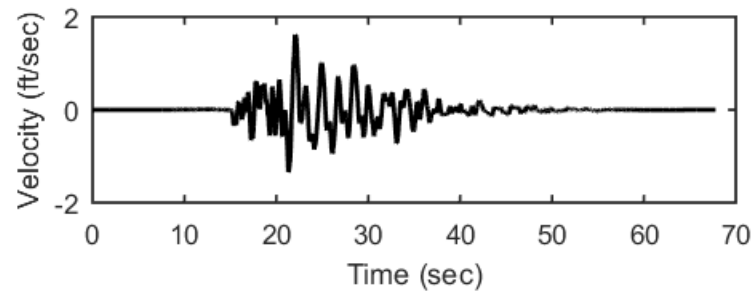
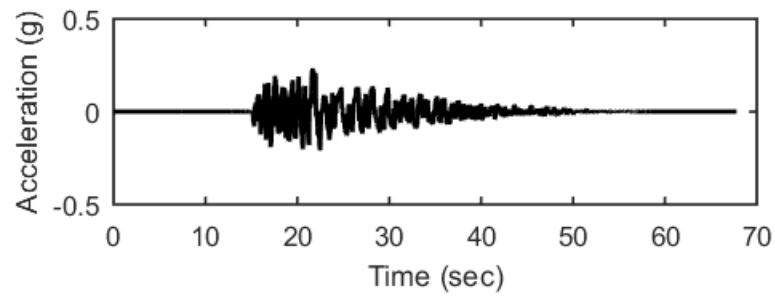
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



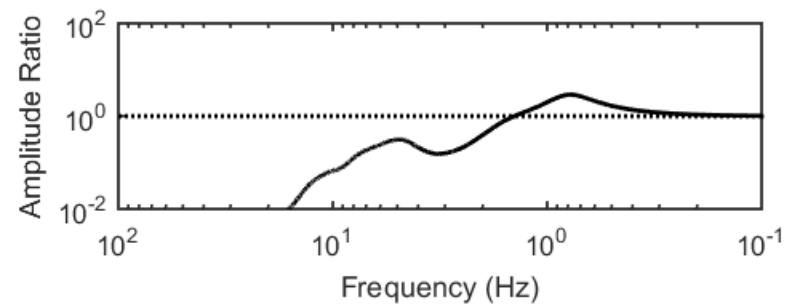
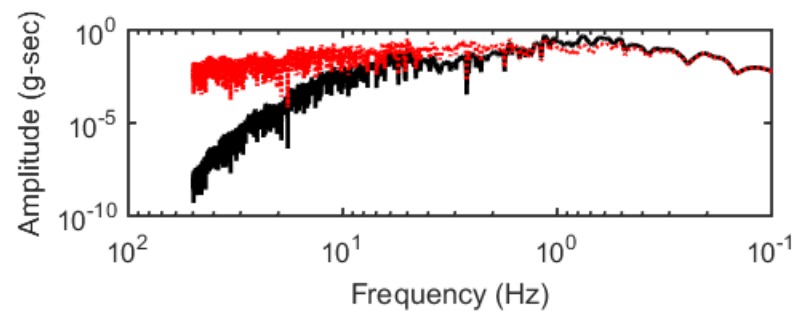
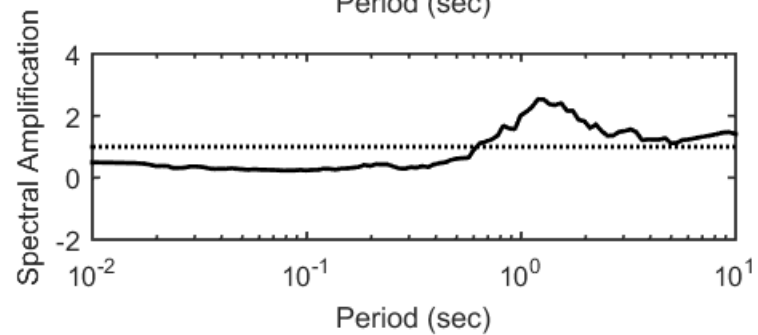
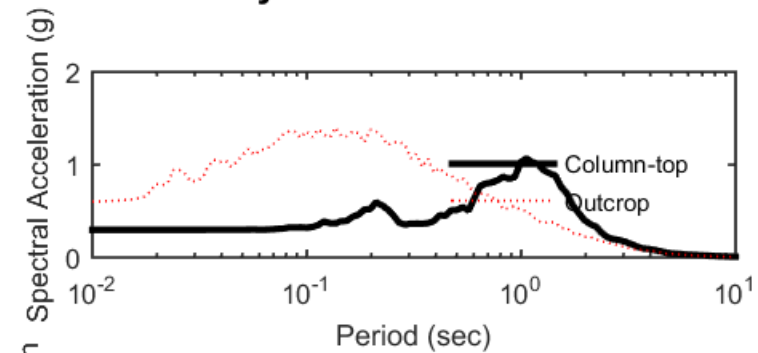
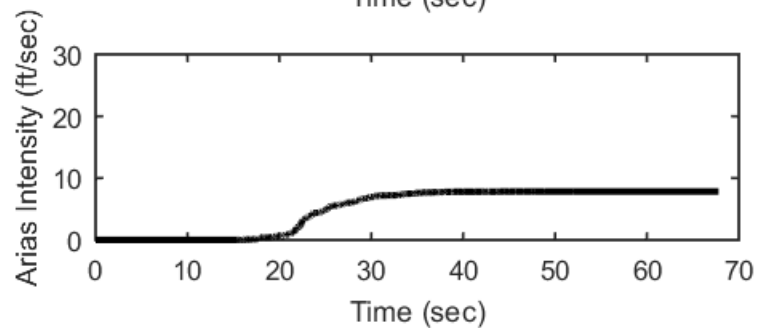
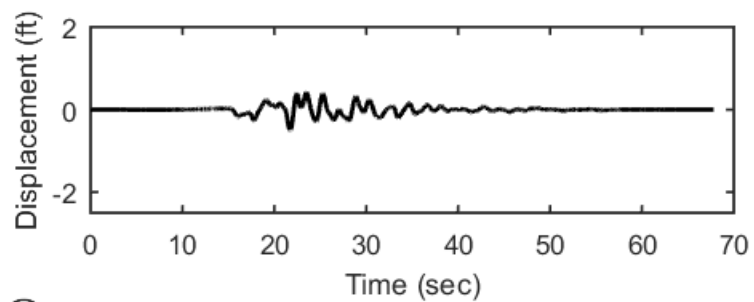
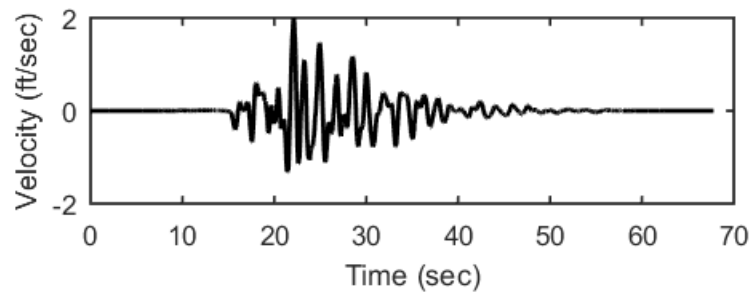
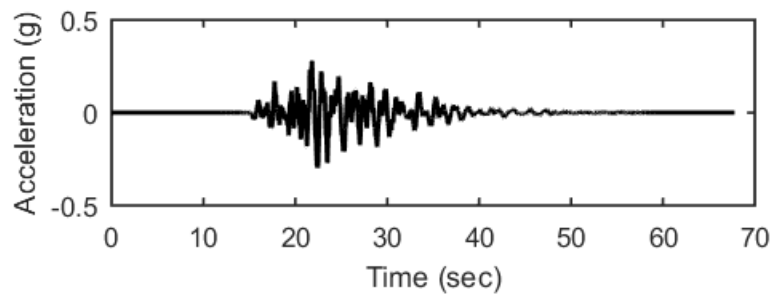
### Profile outputs for Motion: SEE6



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7

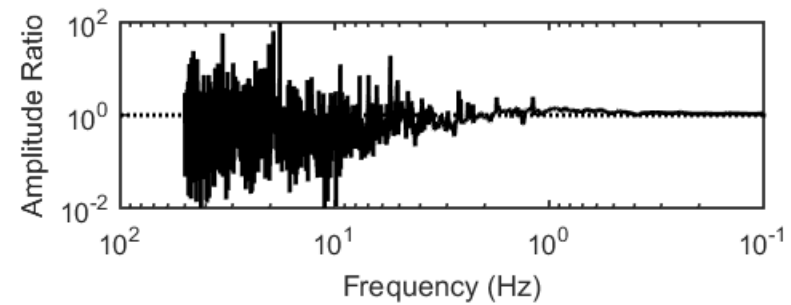
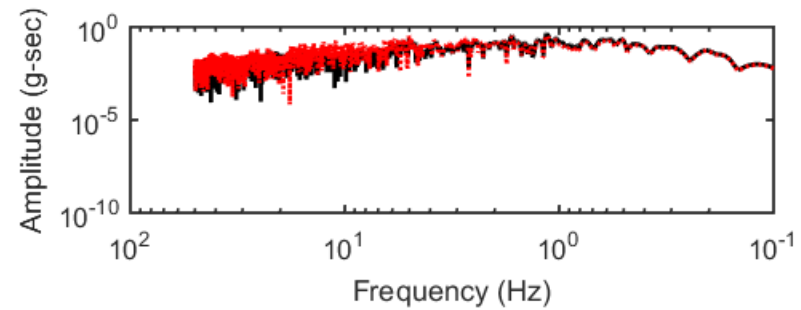
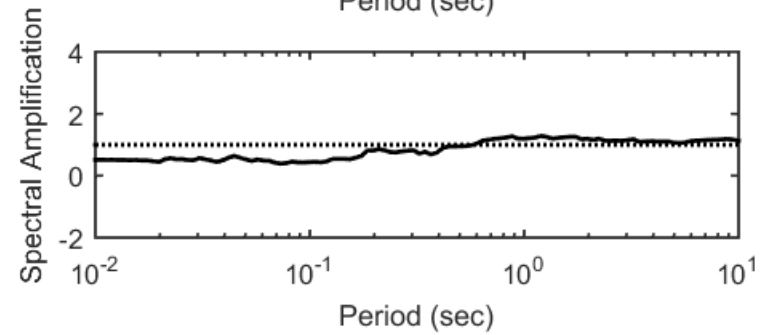
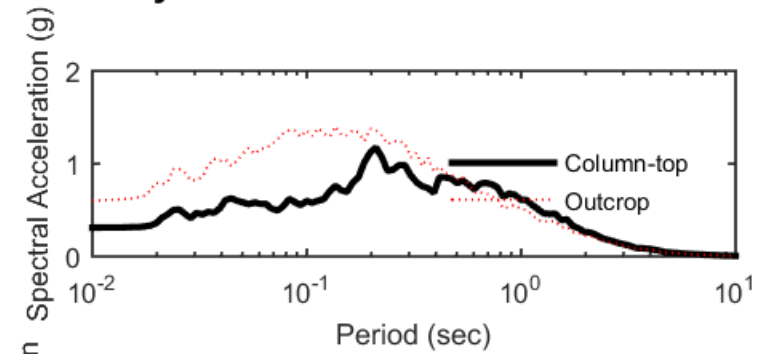
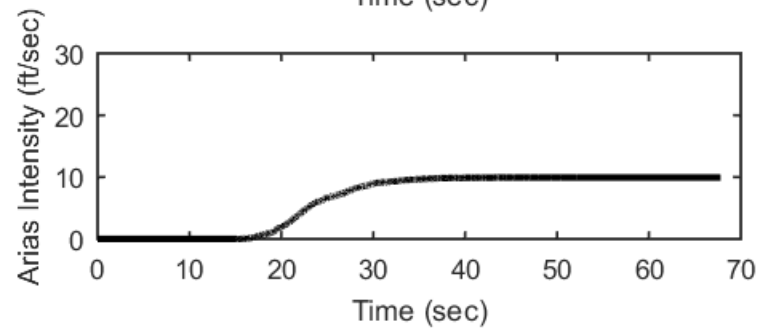
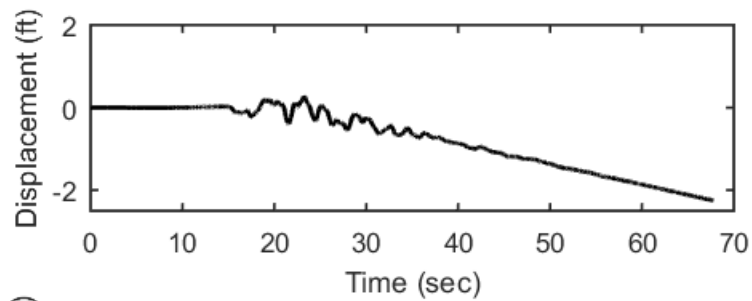
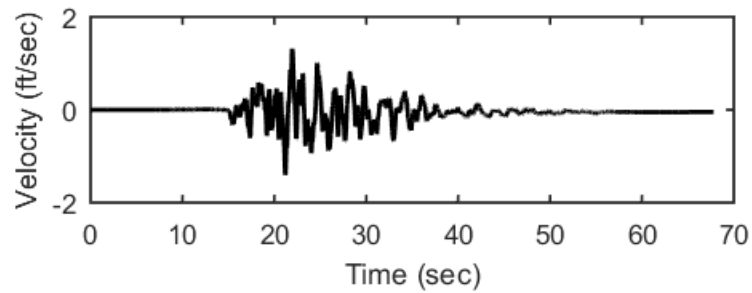
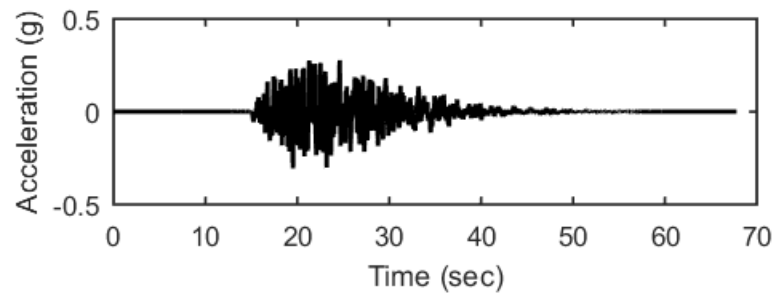


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7

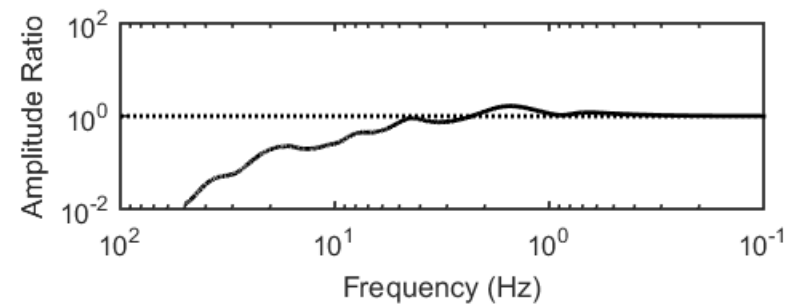
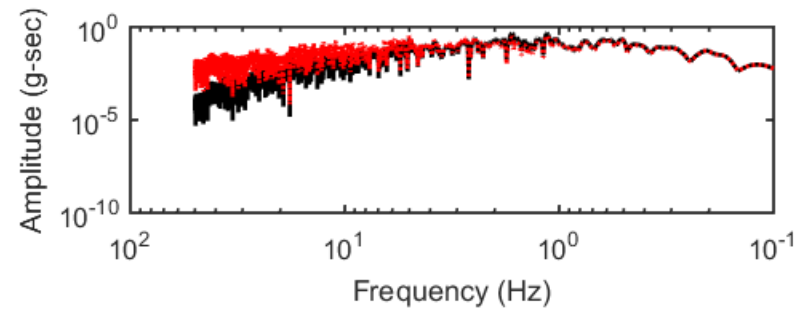
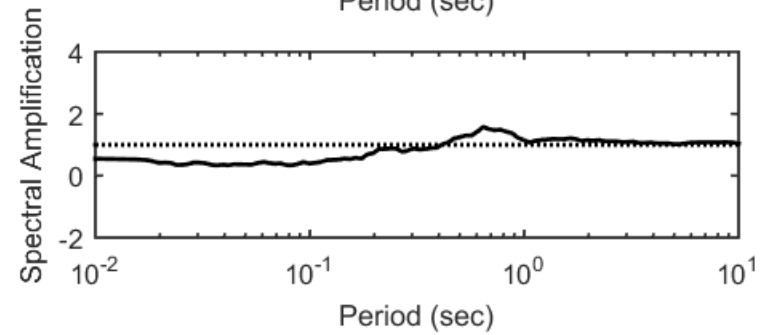
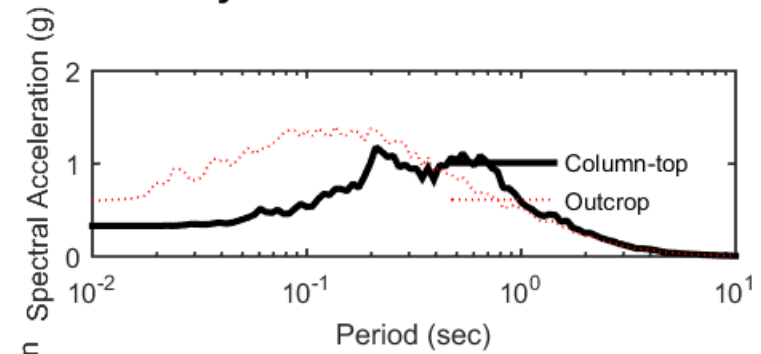
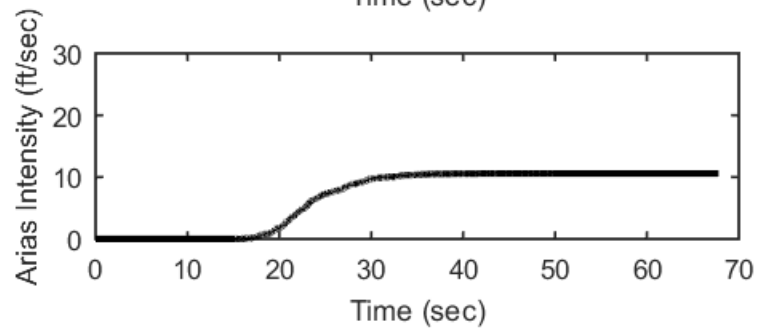
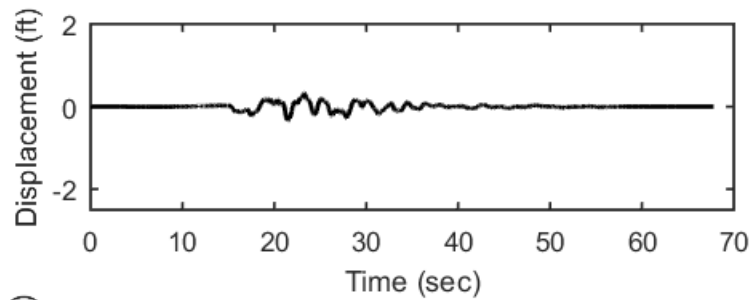
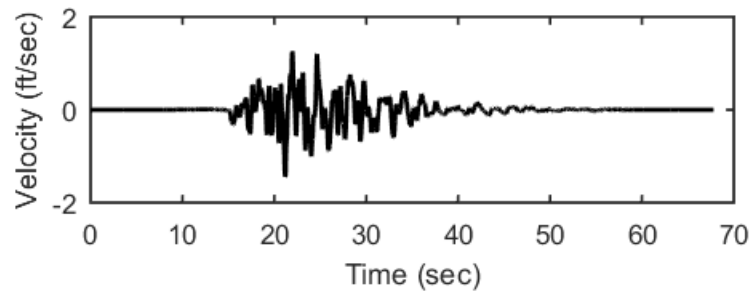
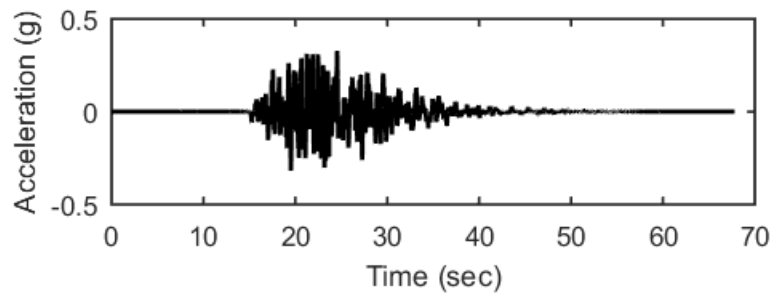




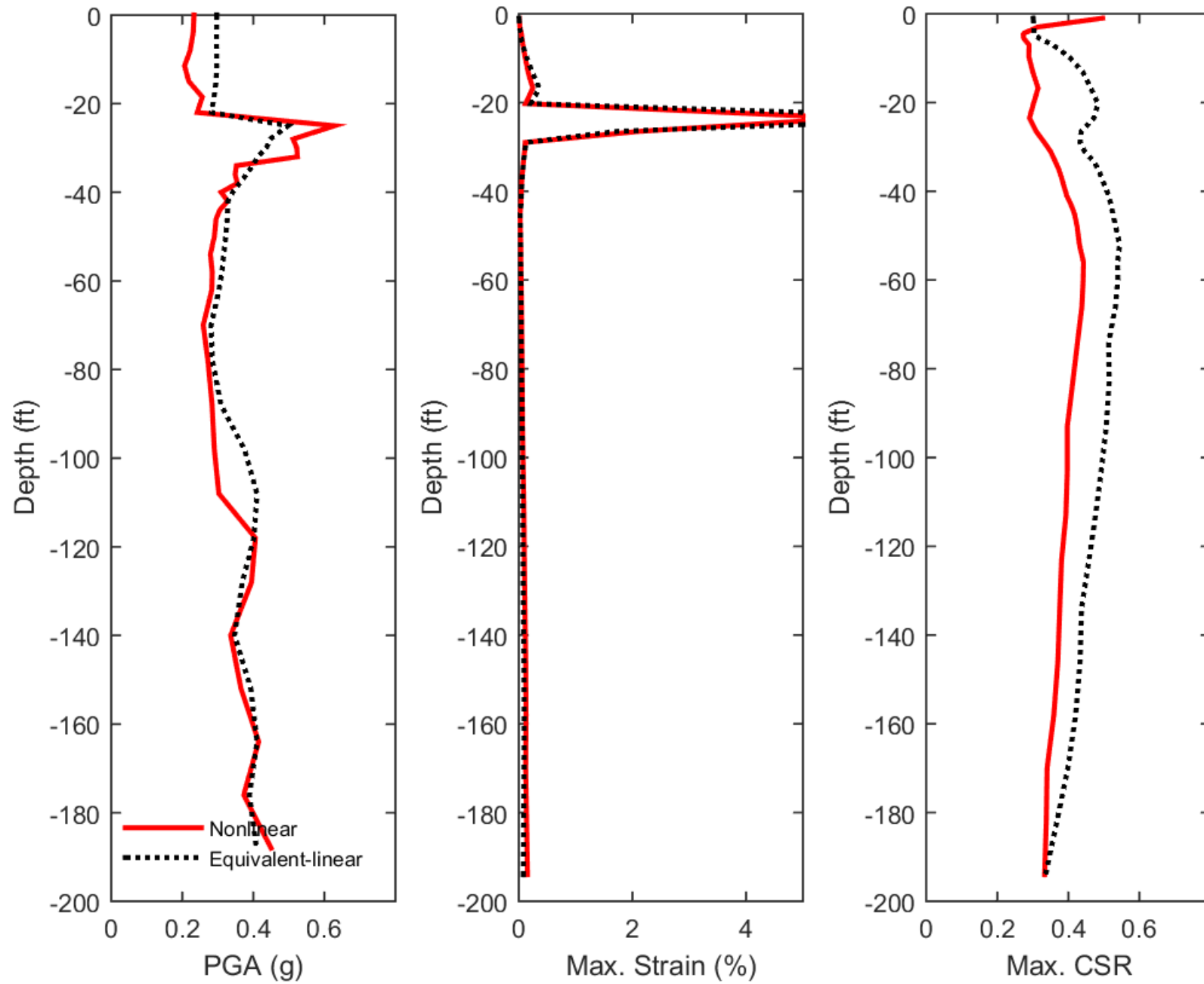
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



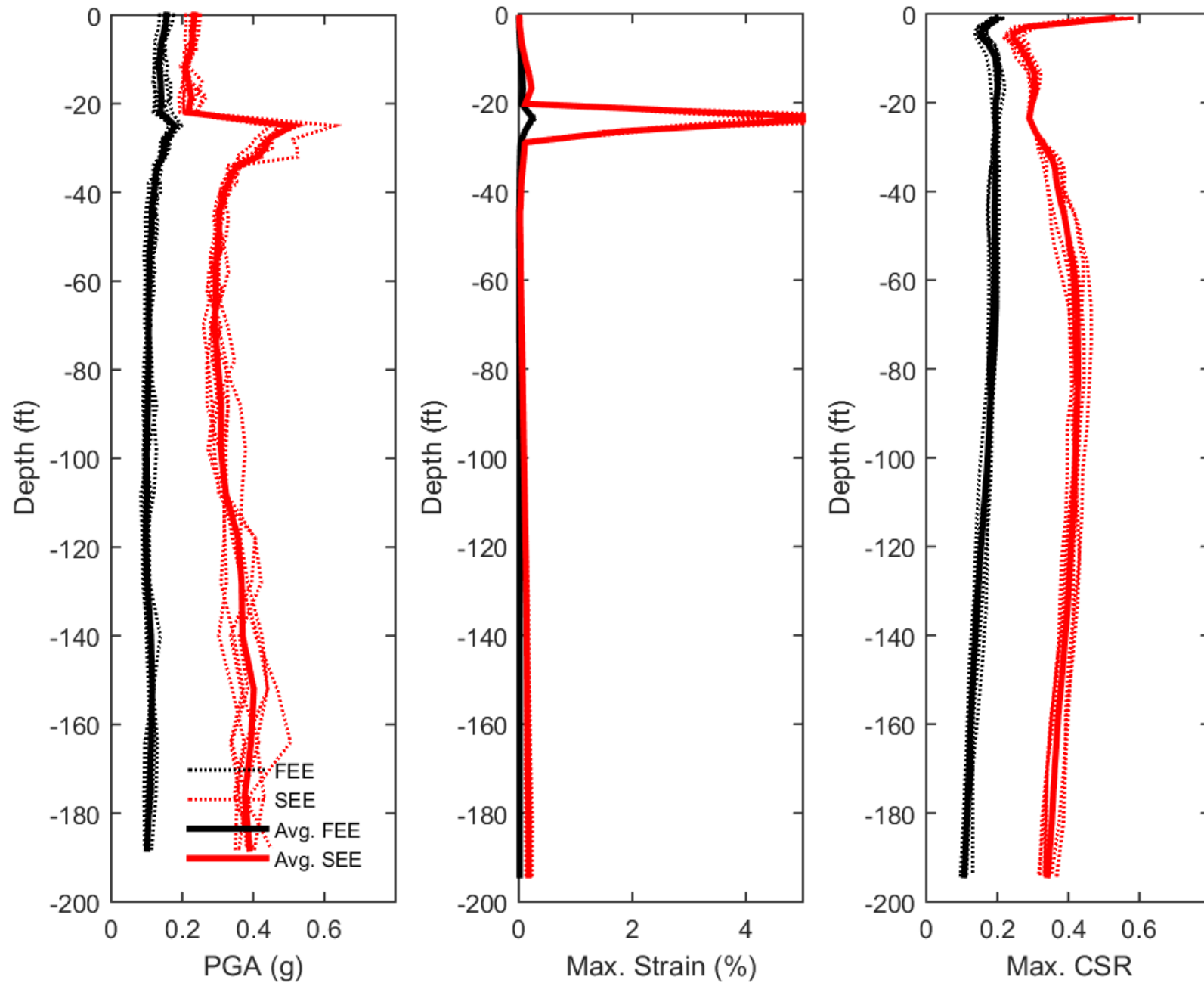
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



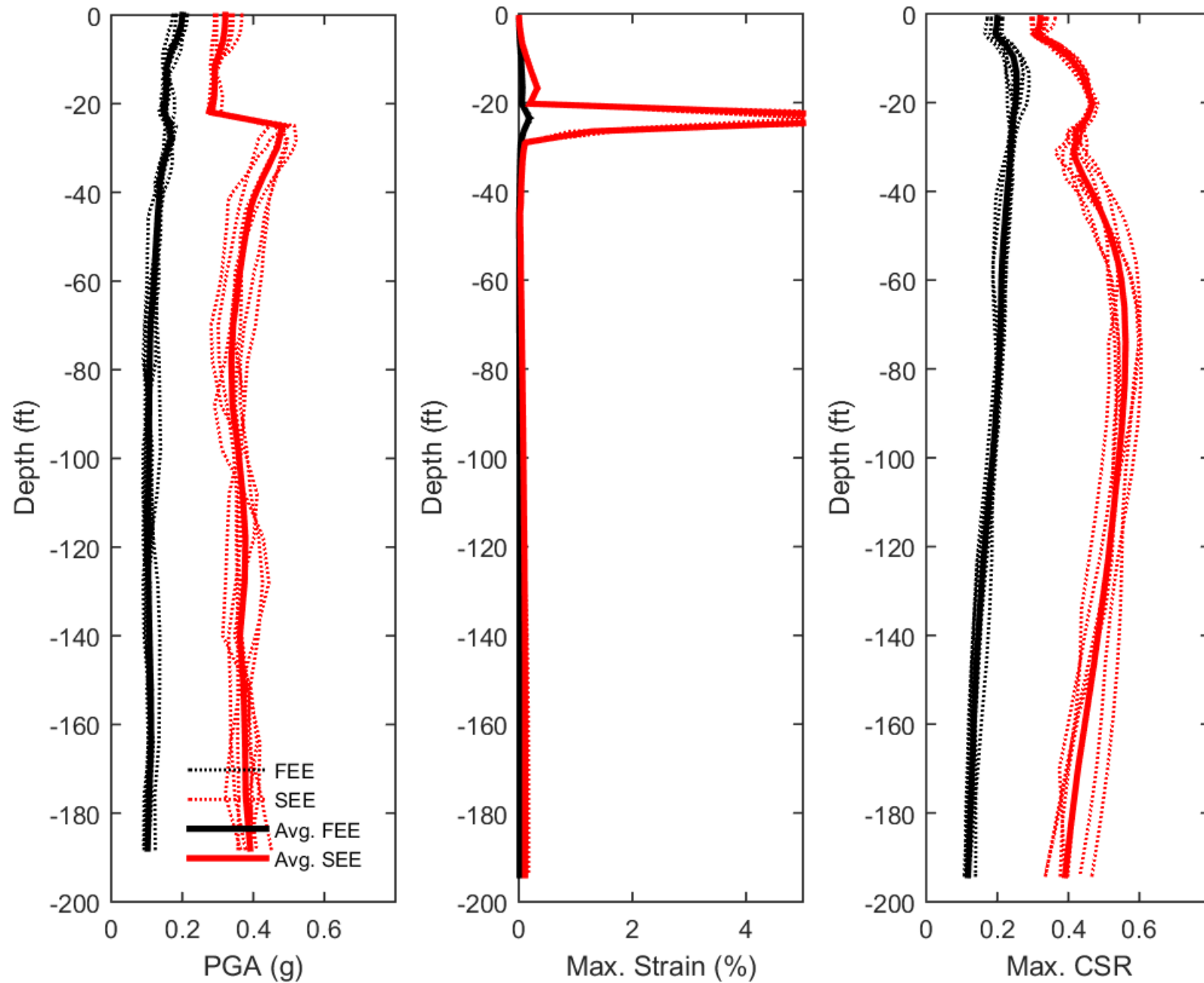
### Profile outputs for Motion: SEE7



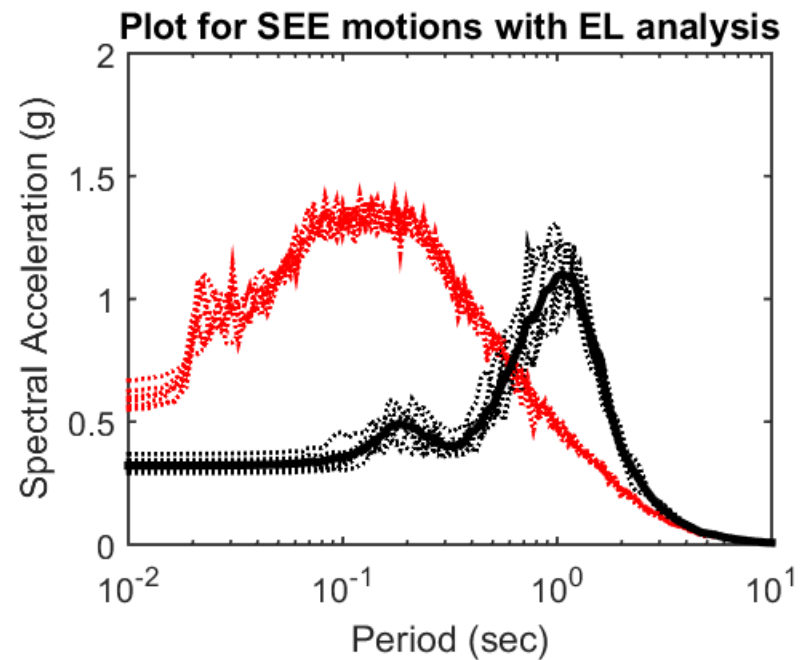
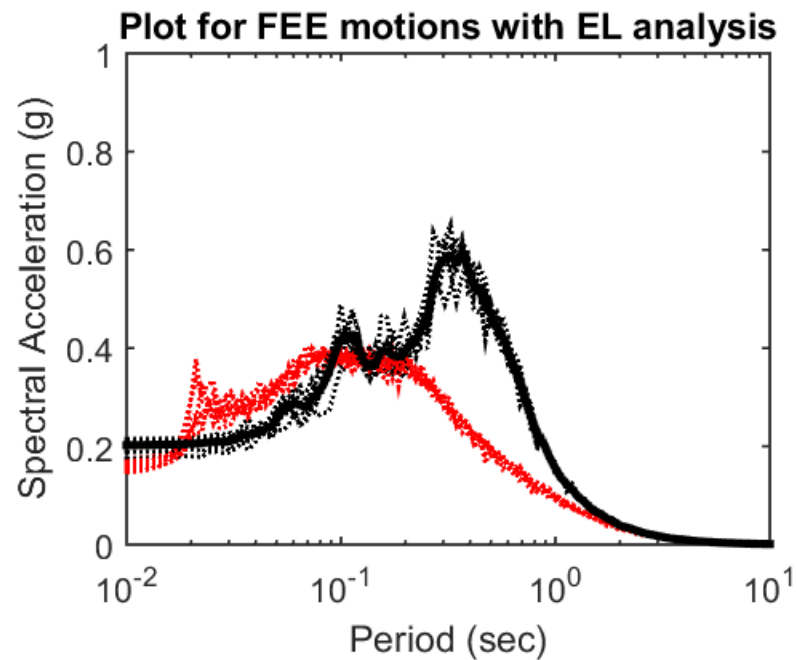
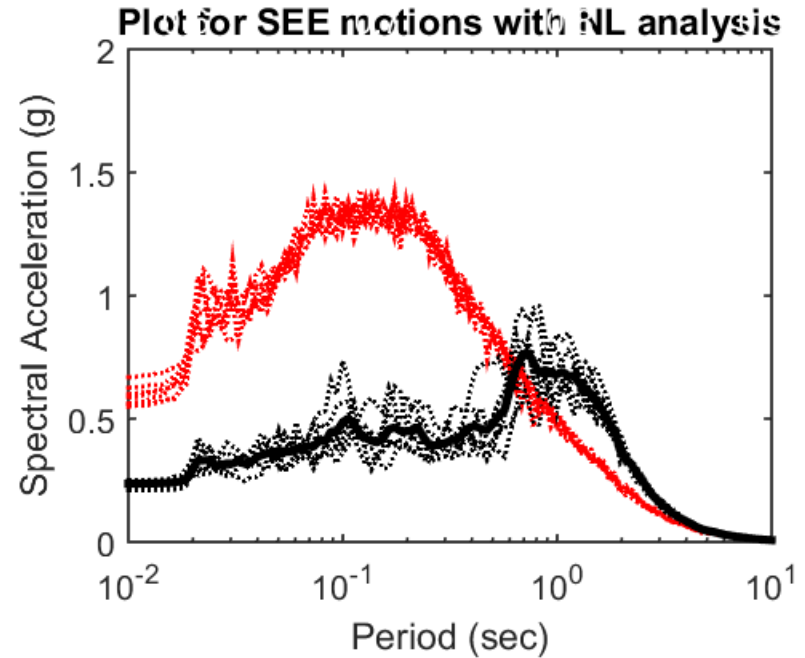
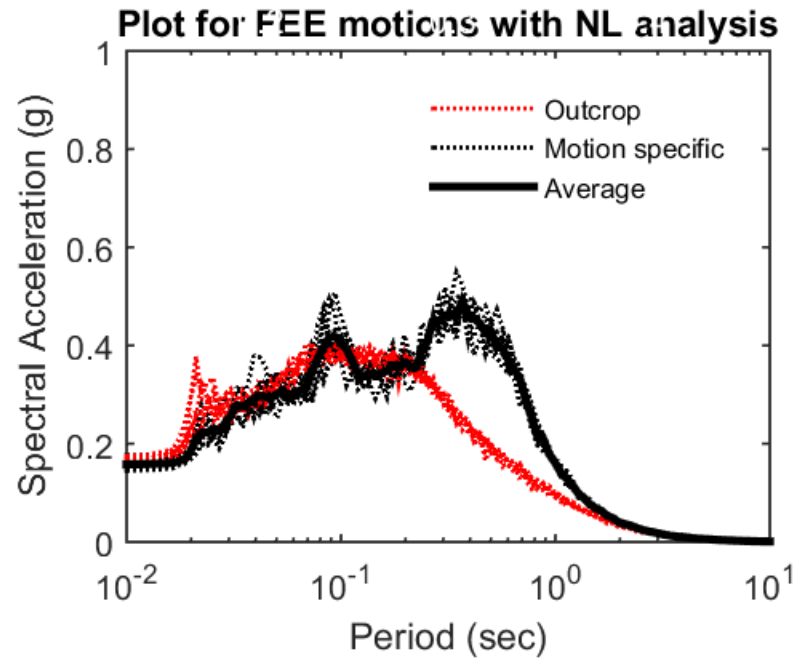
### Summary of the profile outputs for Nonlinear analysis



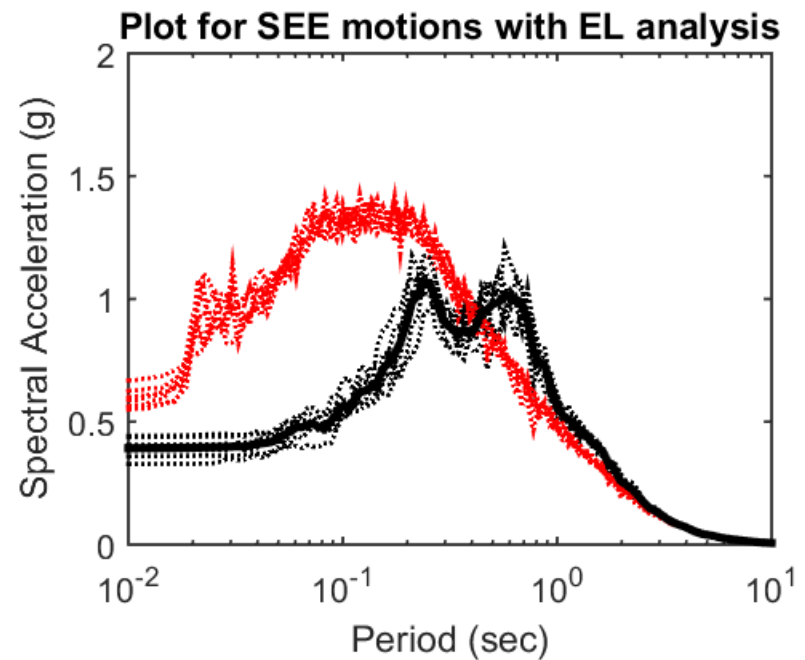
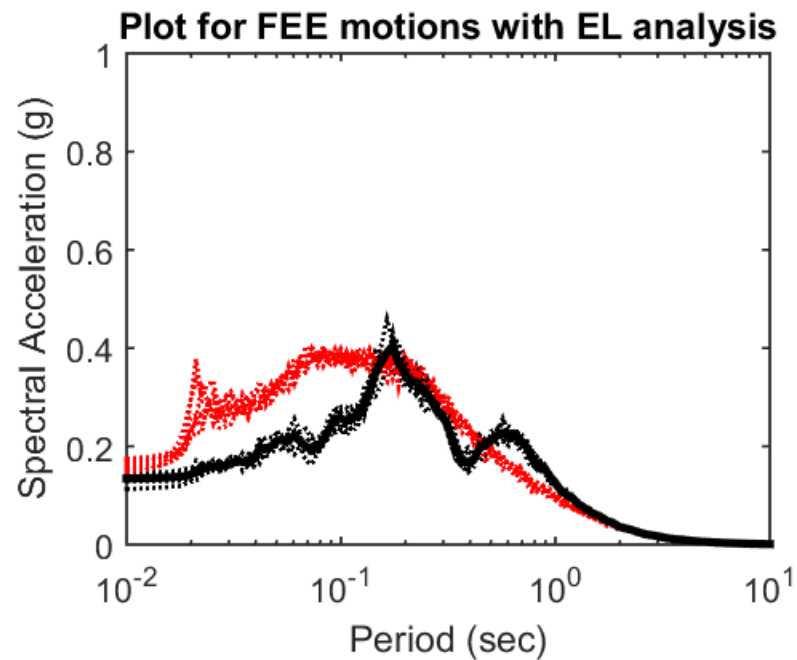
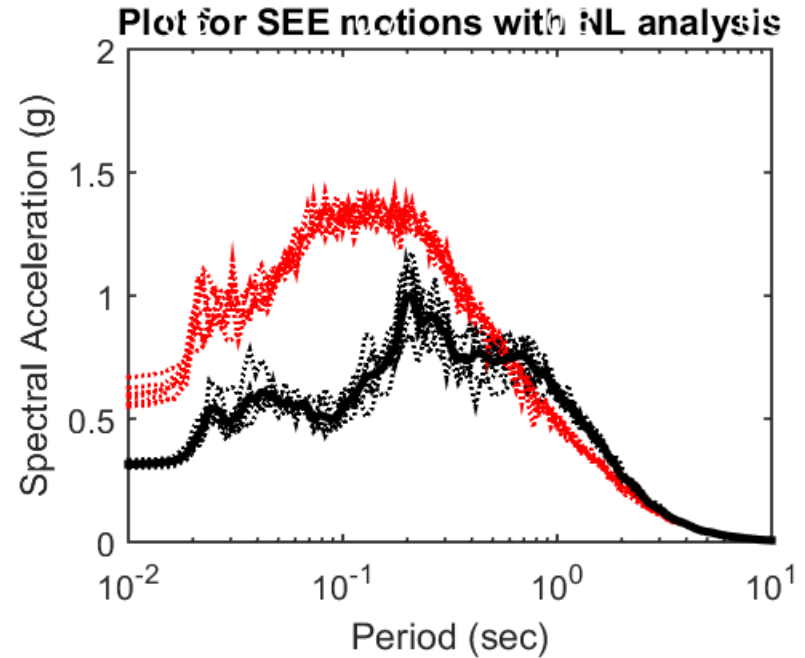
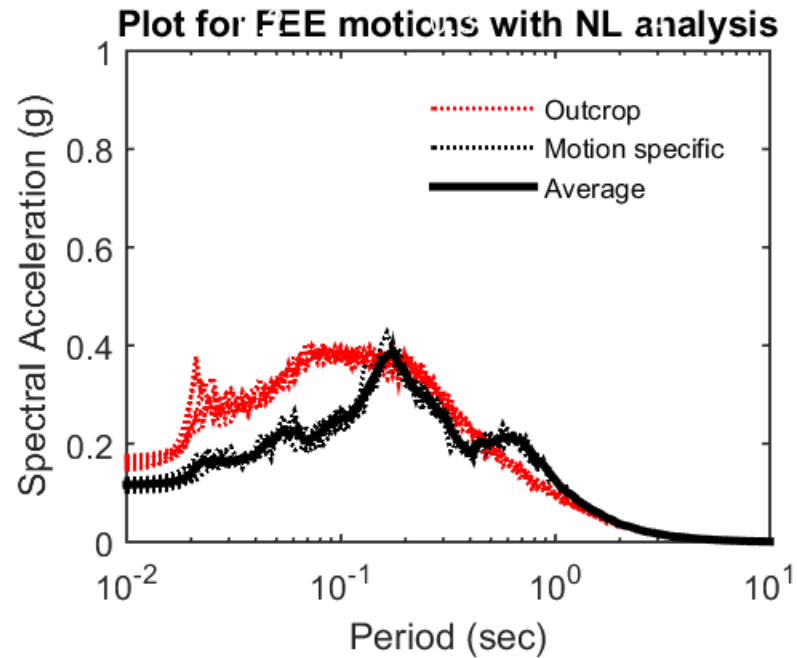
### Summary of the profile outputs for Equivalent-linear analysis



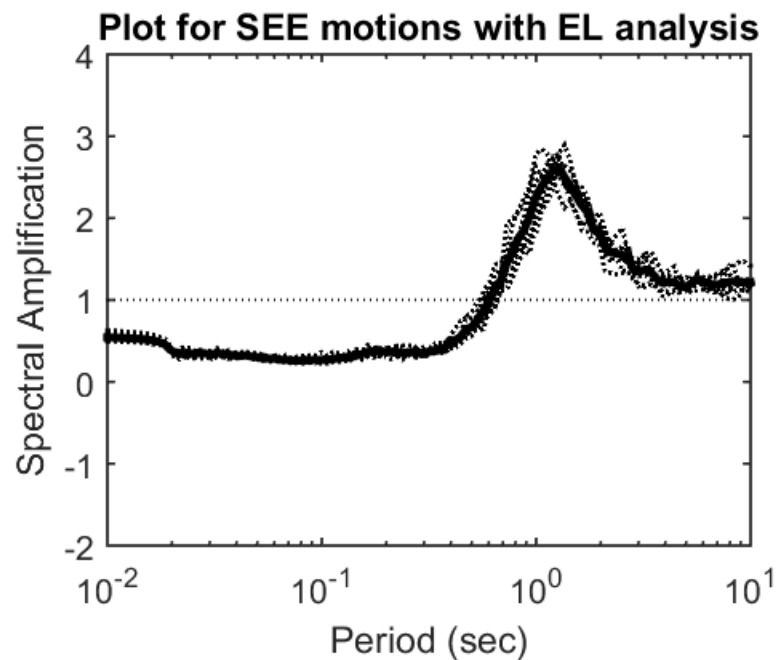
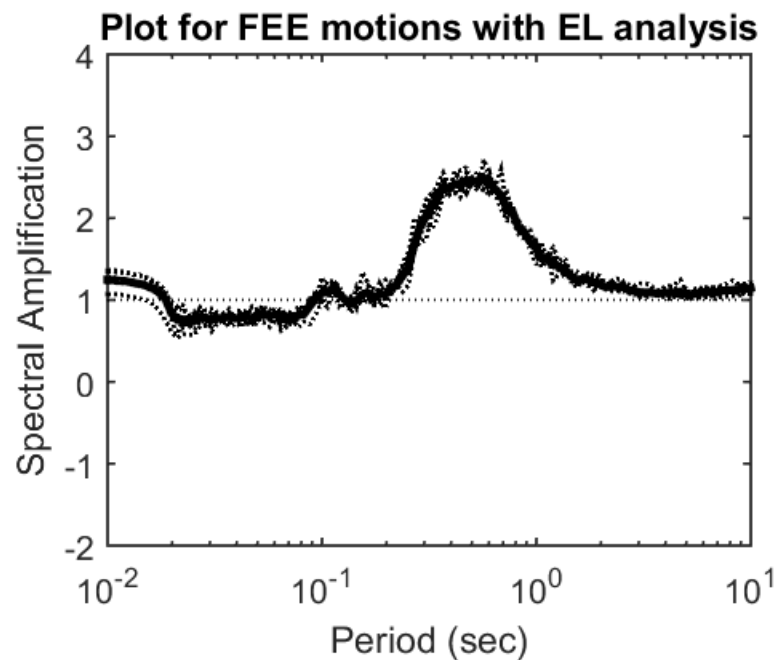
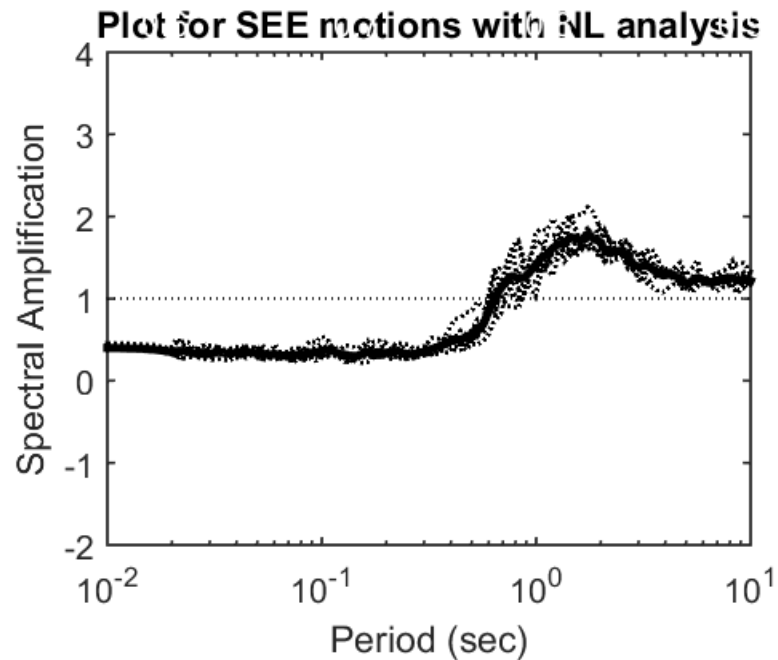
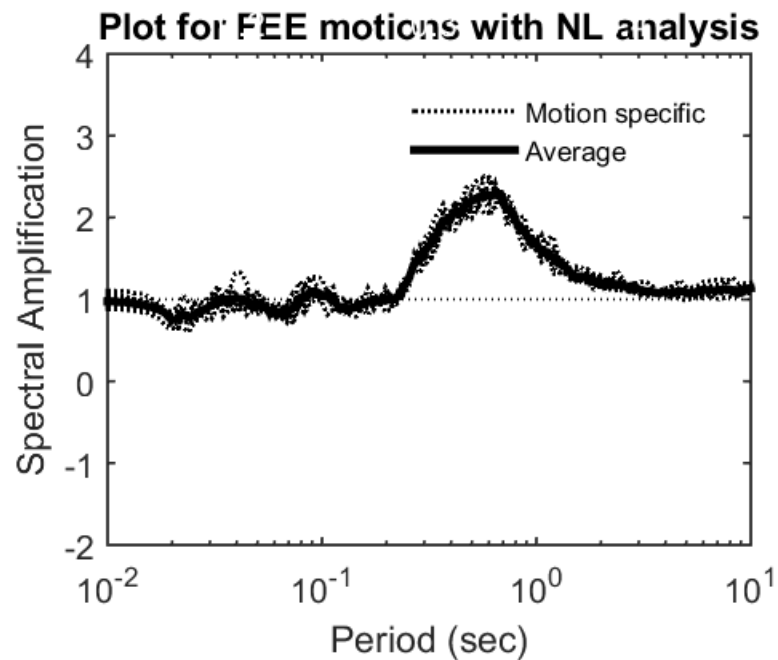
## Summary plots: RSA at ground surface



## Summary plots: RSA at top of Marl

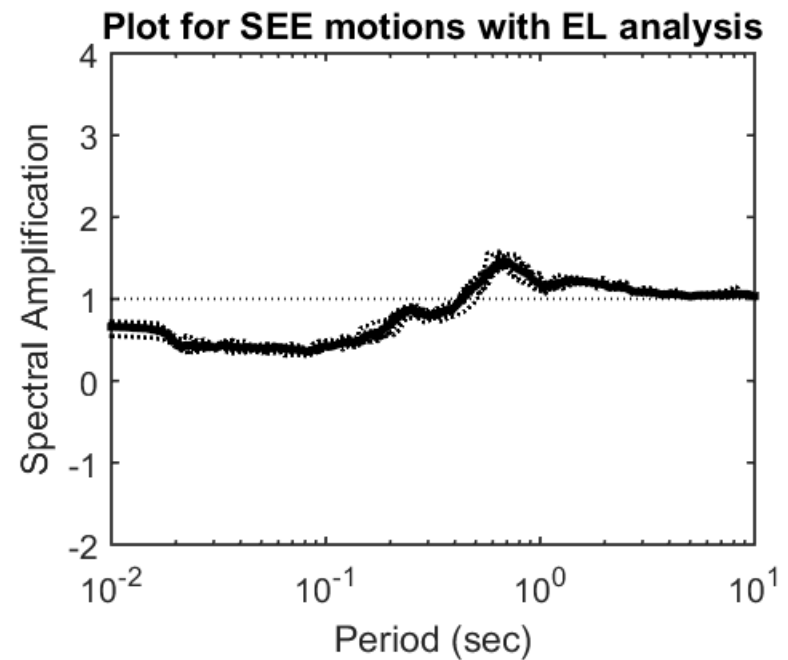
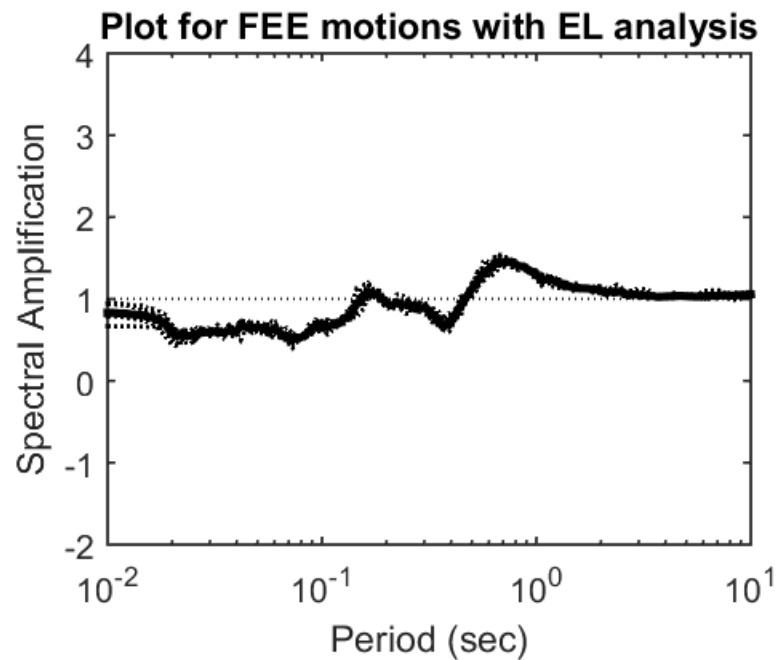
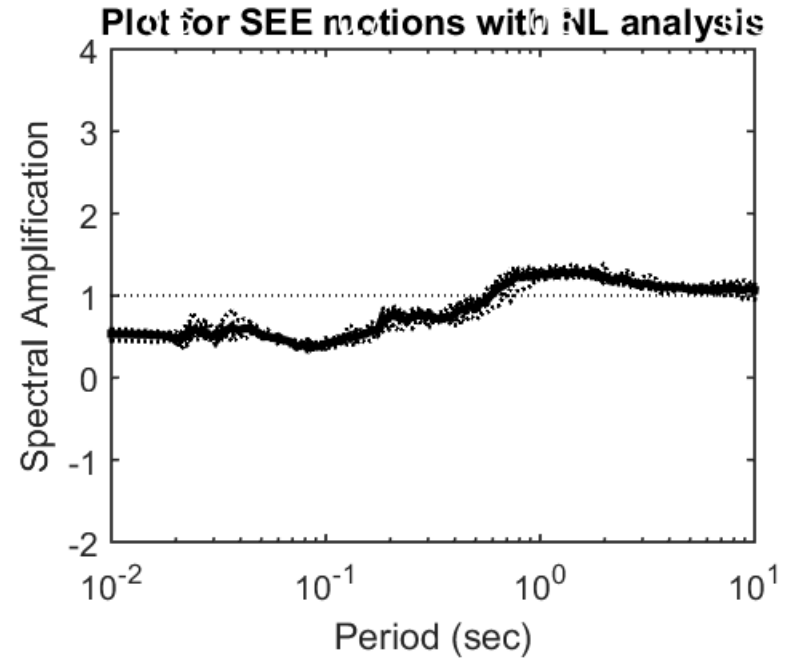
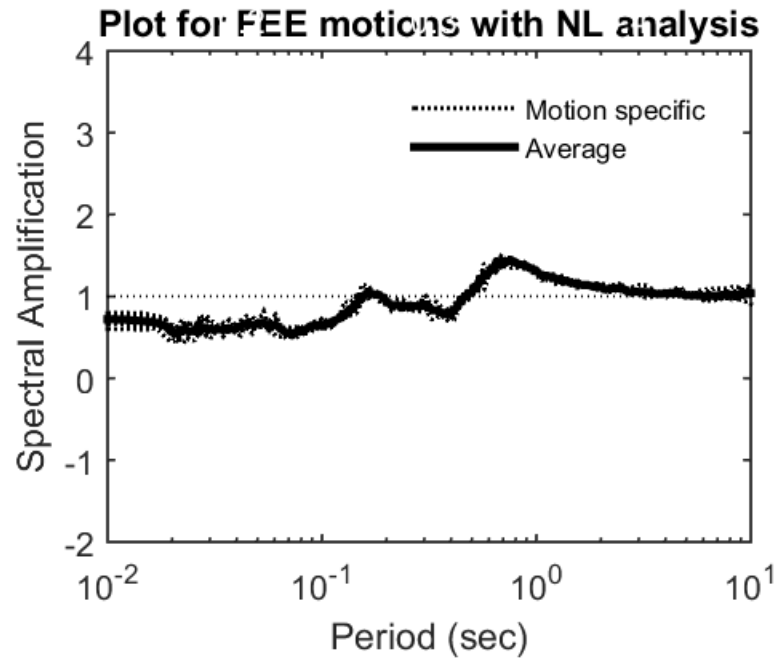


## Summary plots: Spectral amplification at ground surface



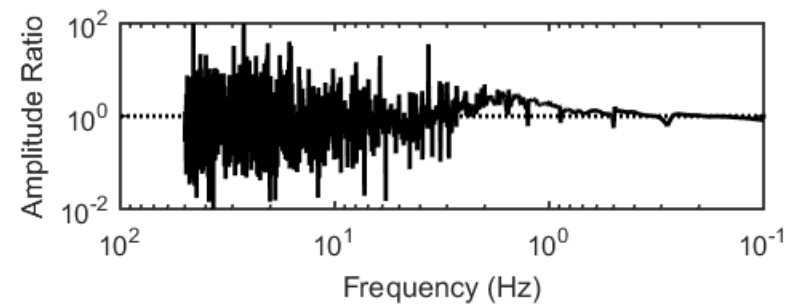
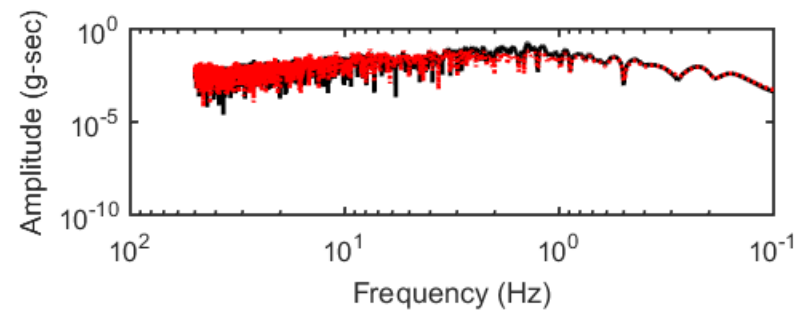
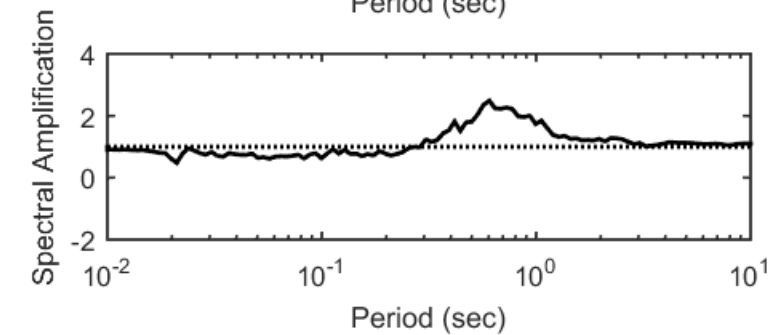
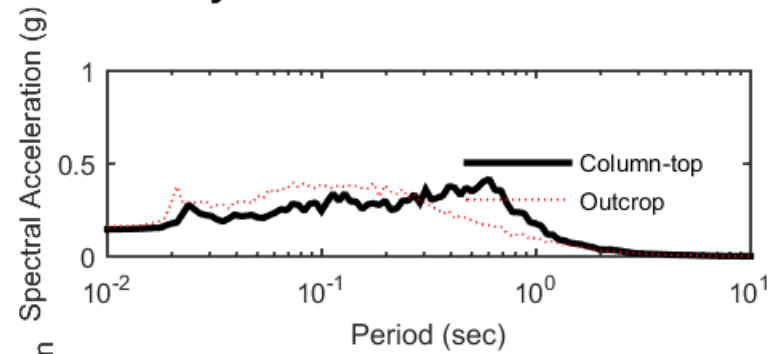
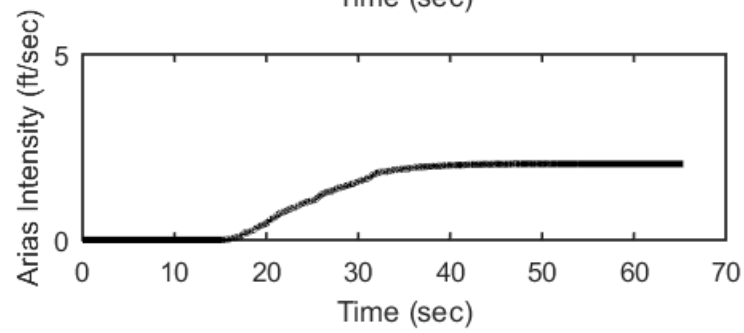
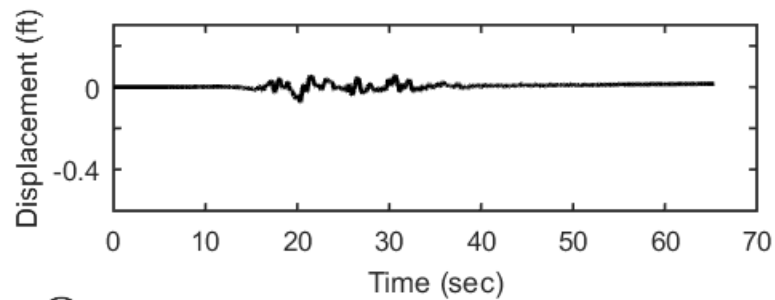
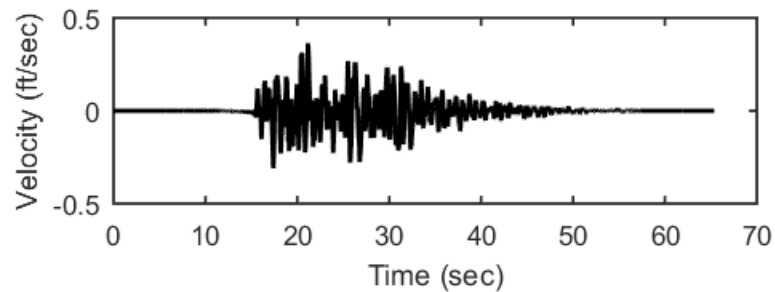
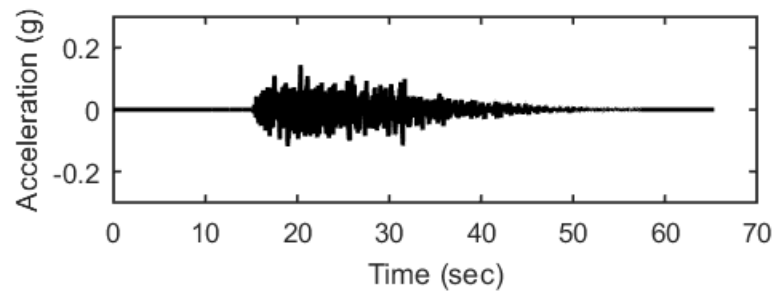


## Summary plots: Spectral amplification at top of Marl

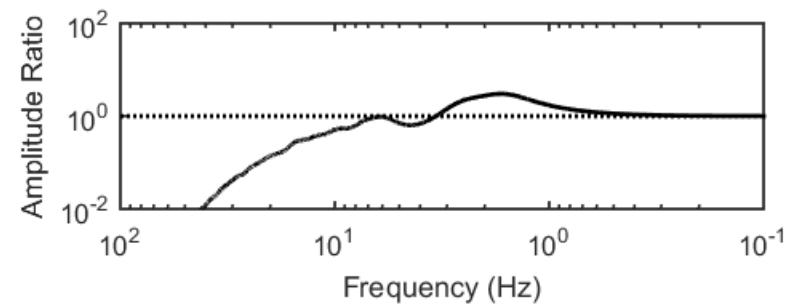
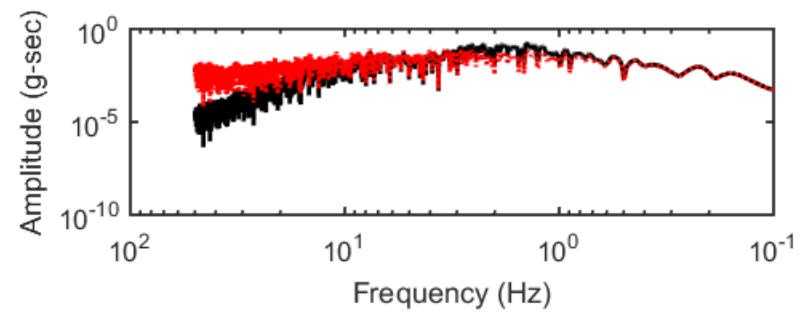
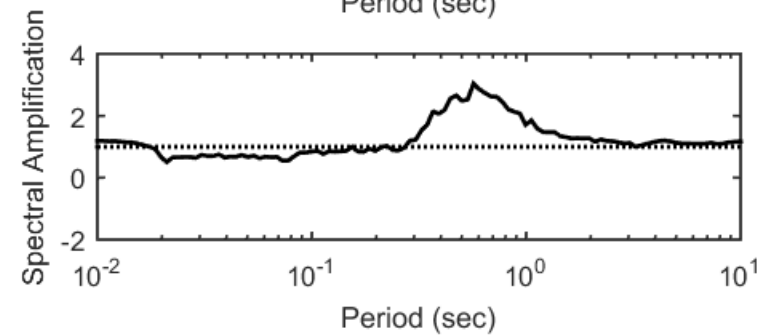
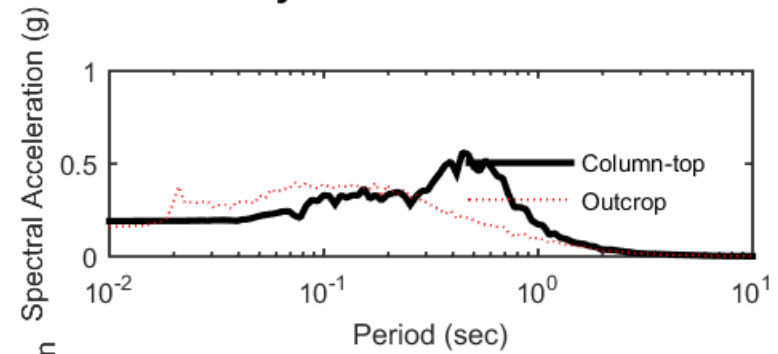
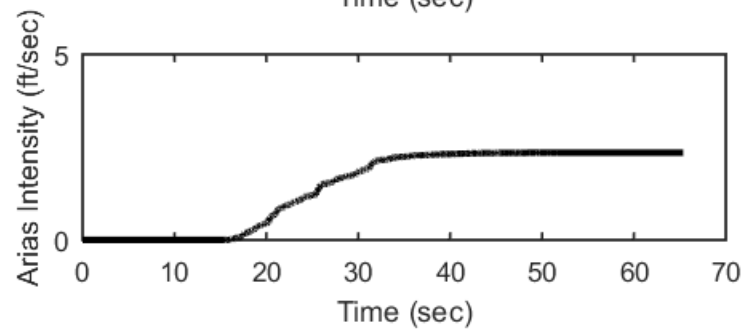
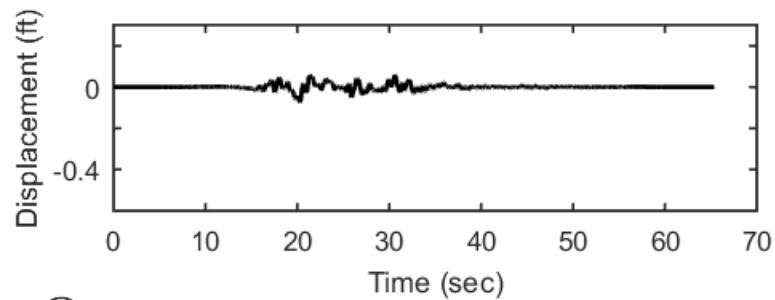
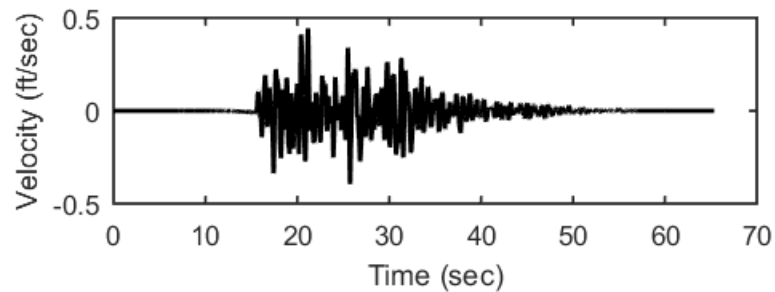
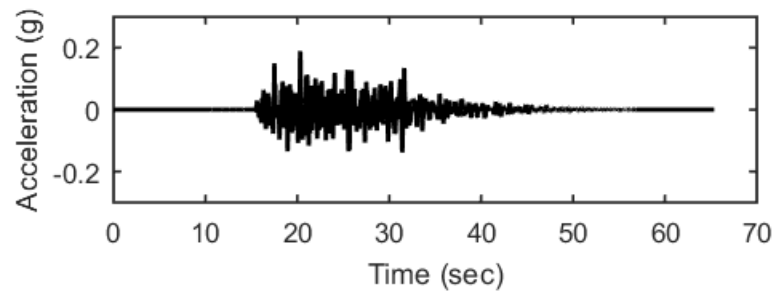


# **BASE MODEL AND LOW PLASTICITY INDEX**

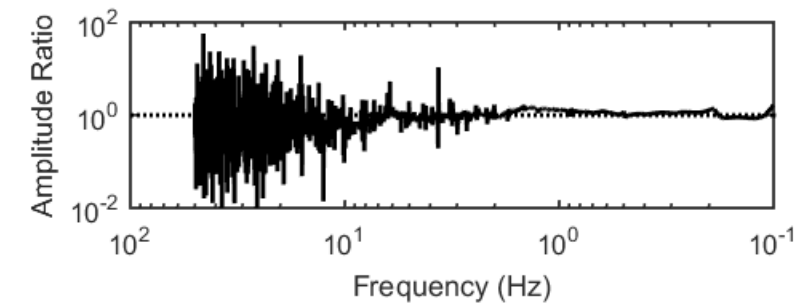
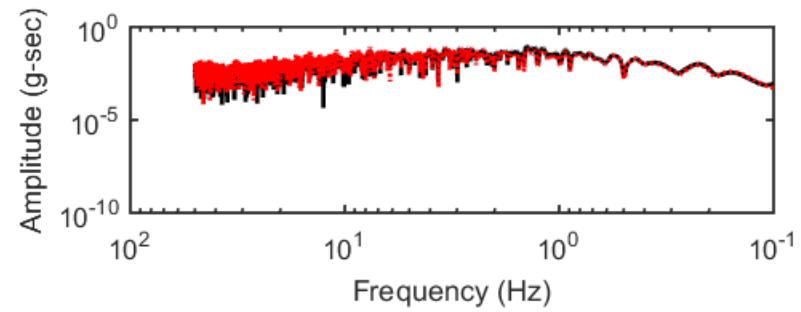
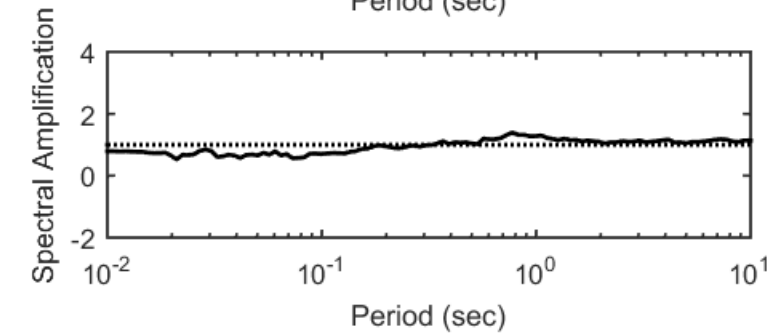
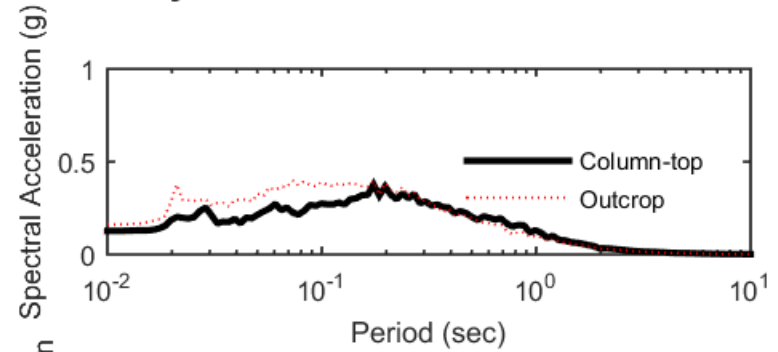
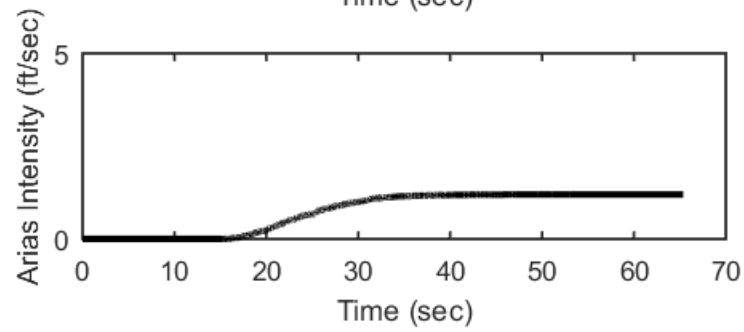
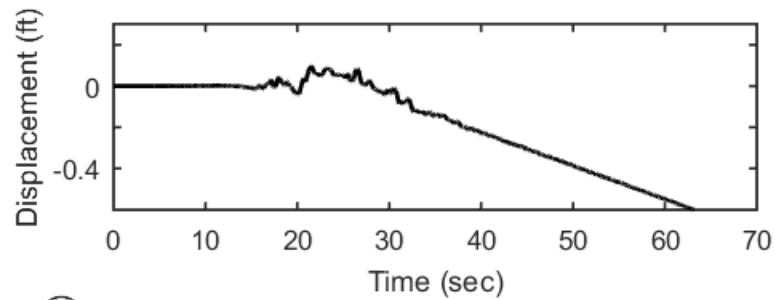
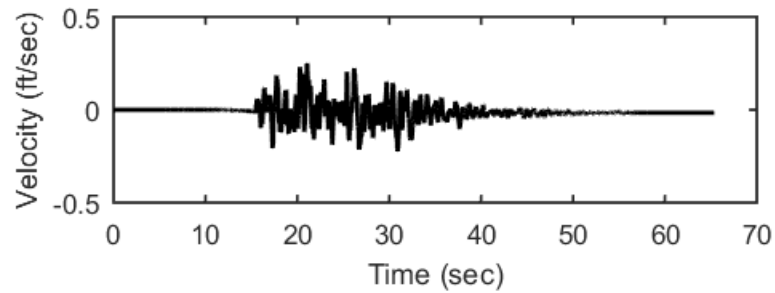
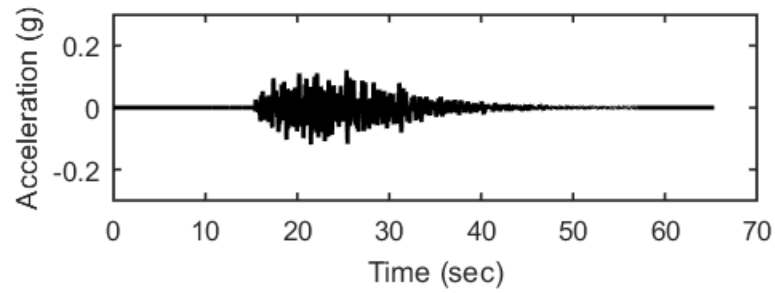
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



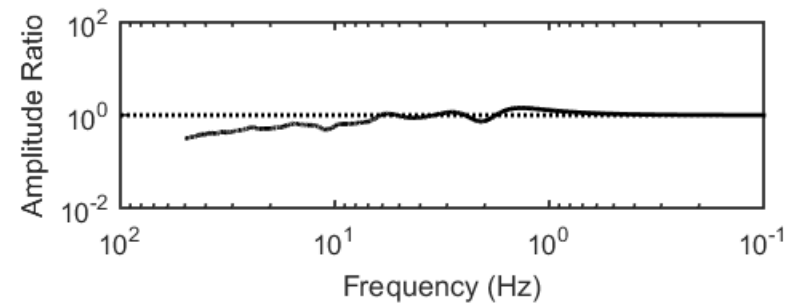
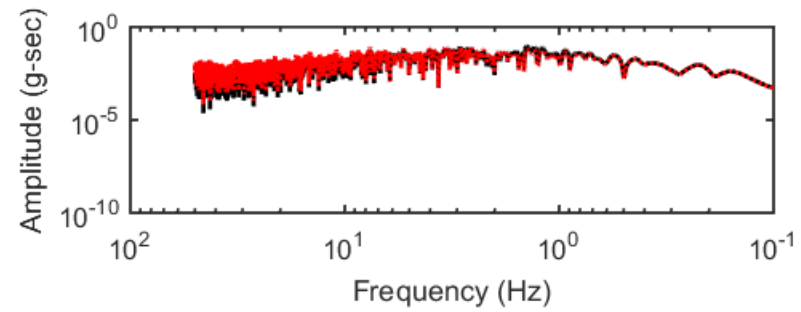
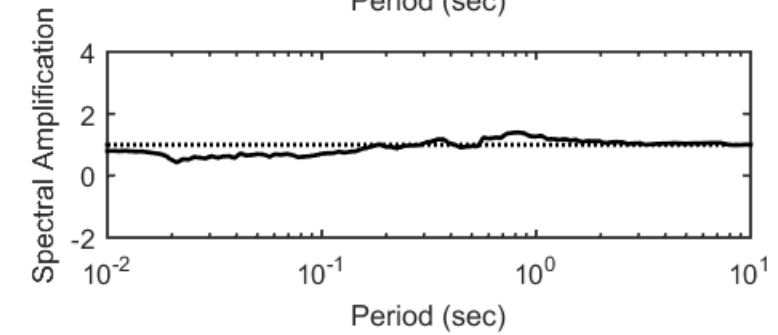
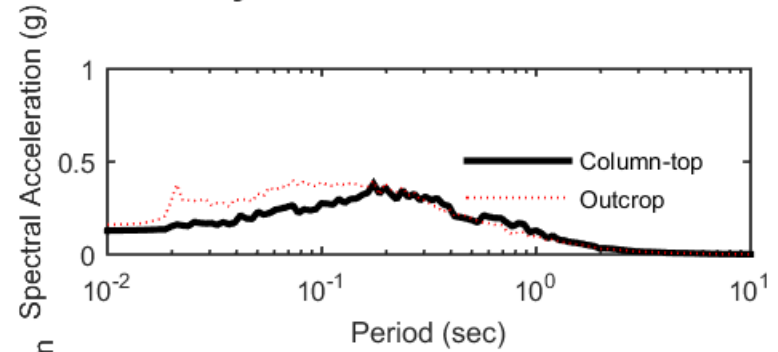
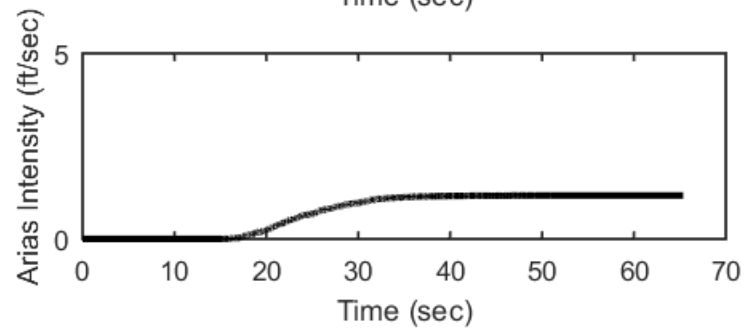
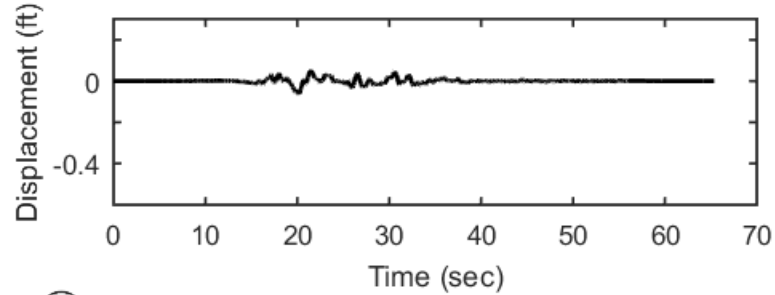
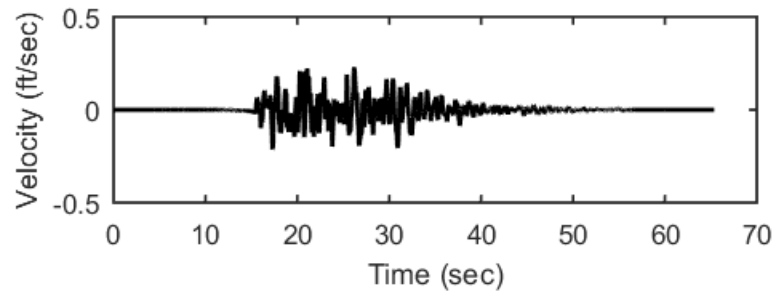
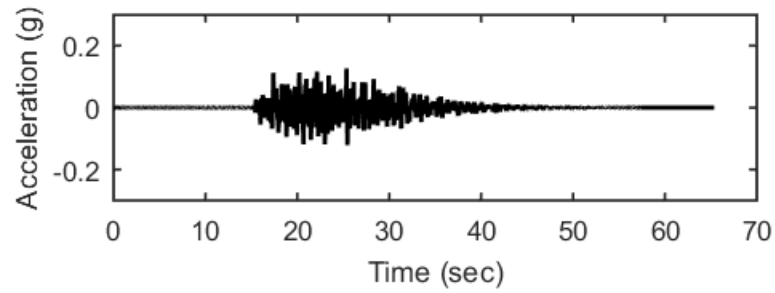
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



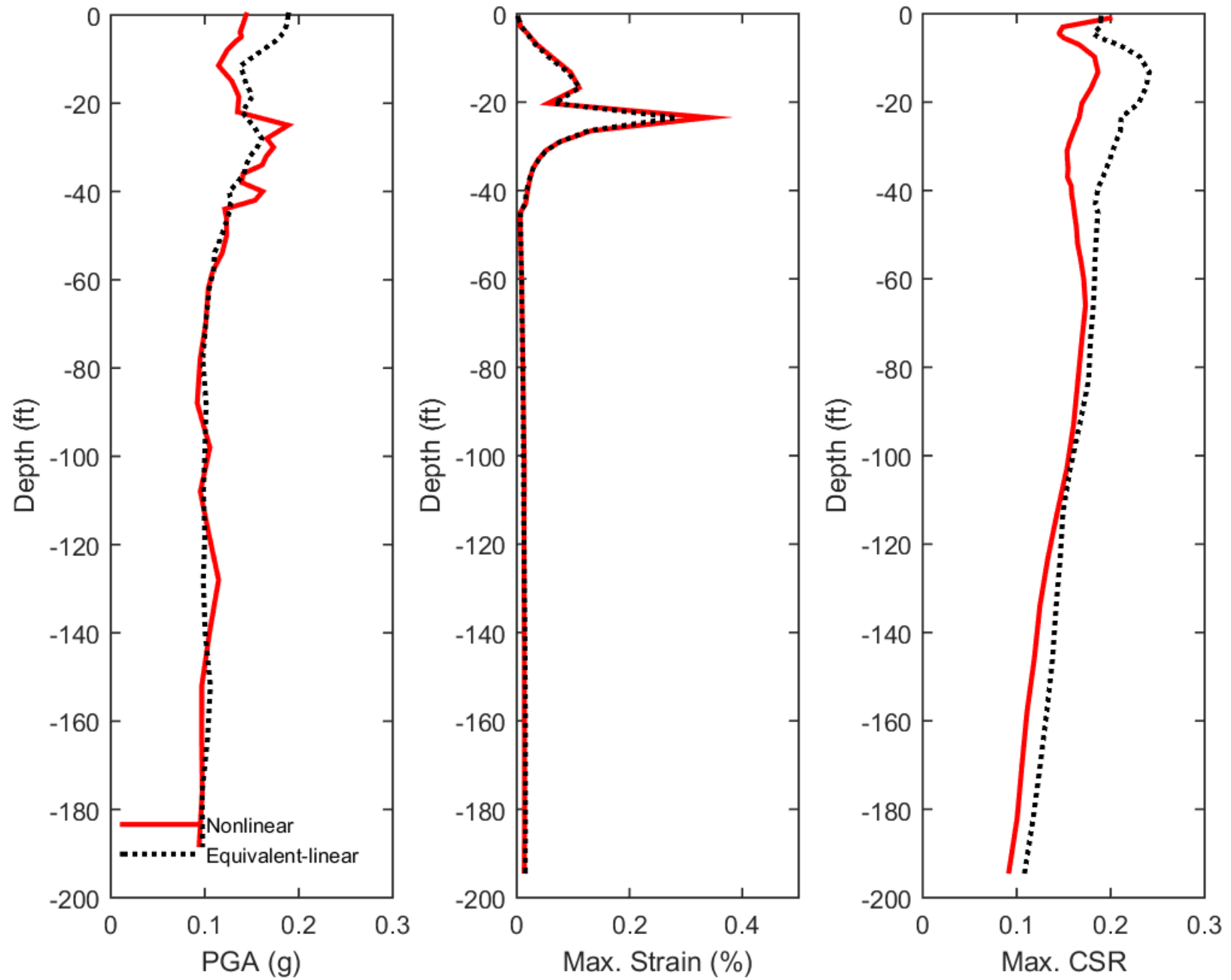
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



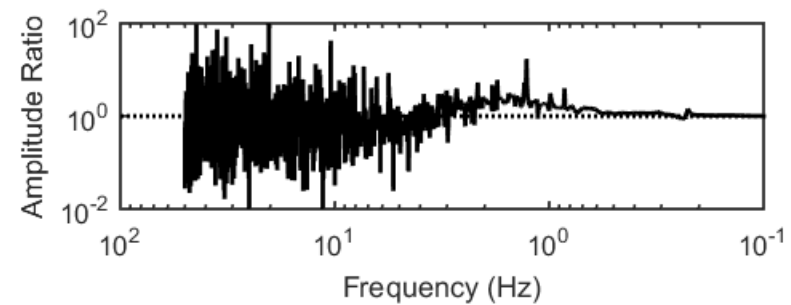
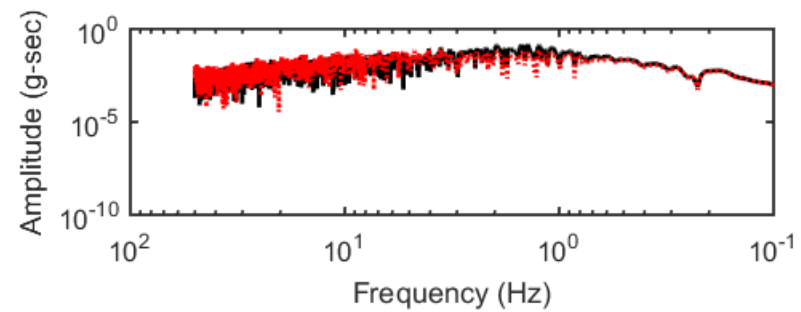
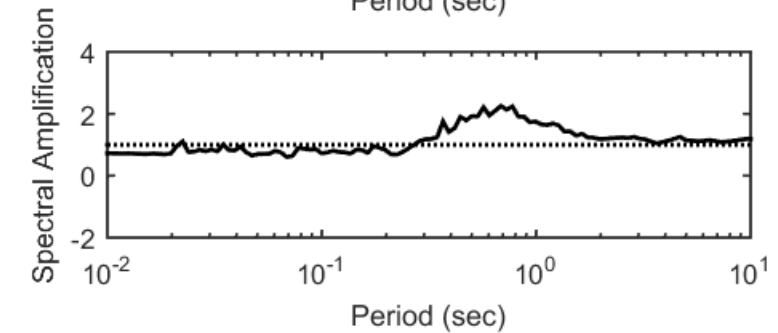
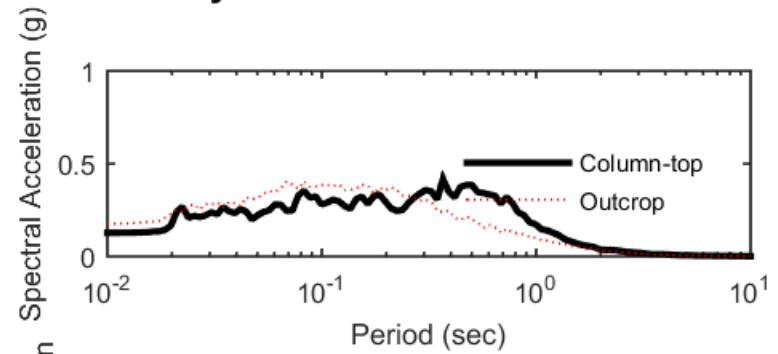
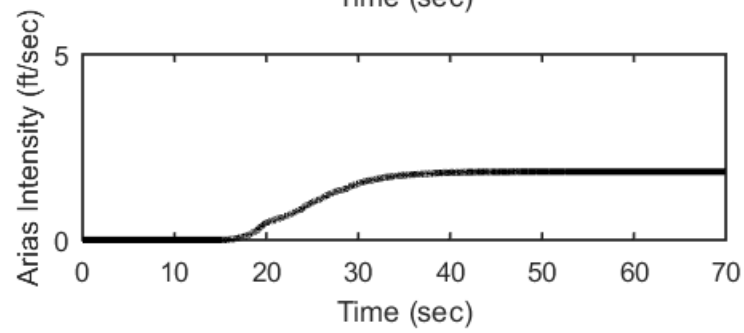
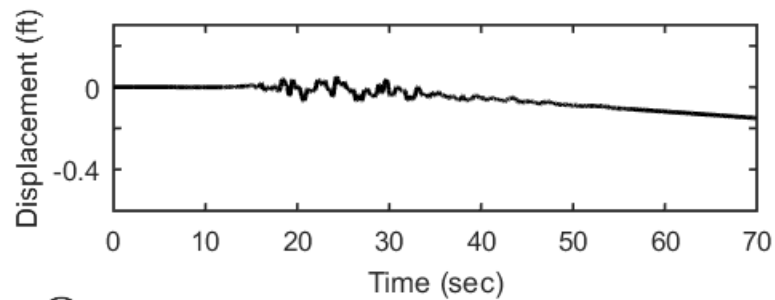
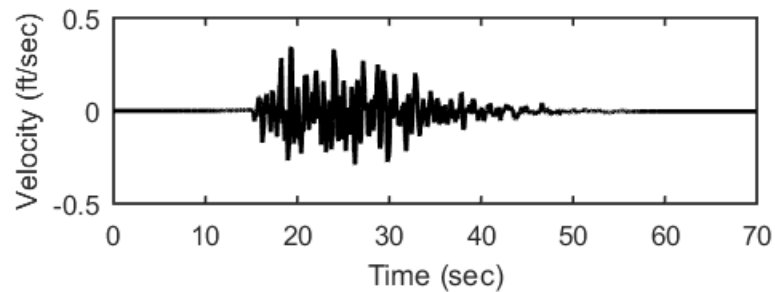
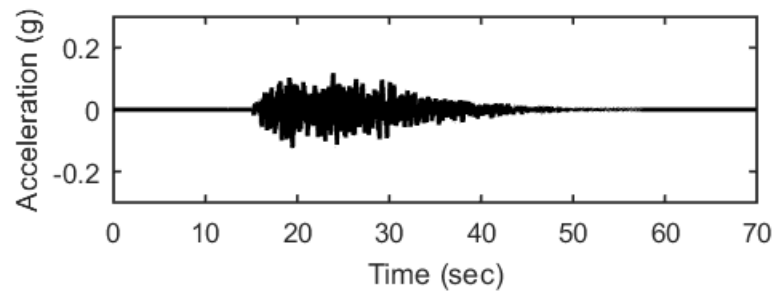
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



### Profile outputs for Motion: FEE1

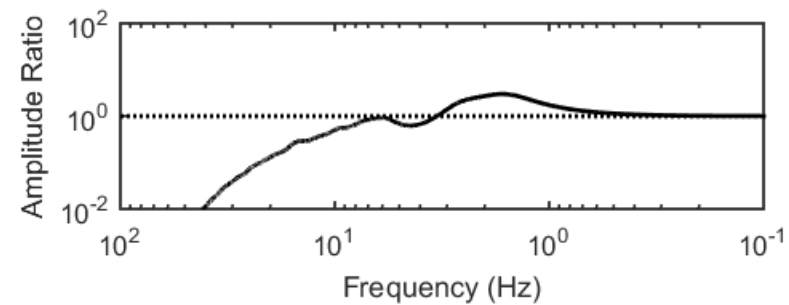
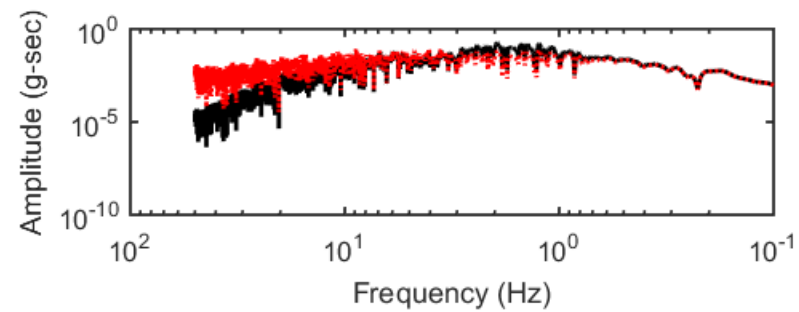
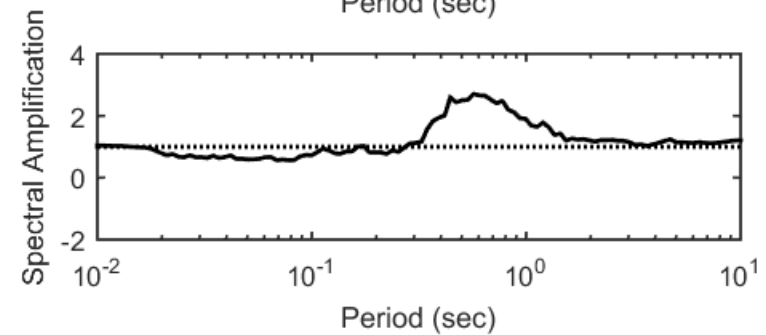
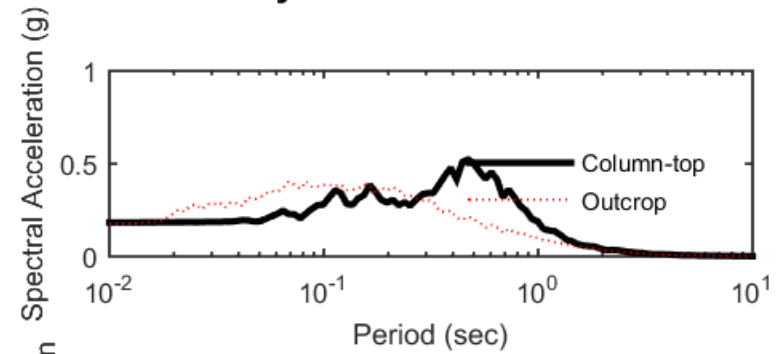
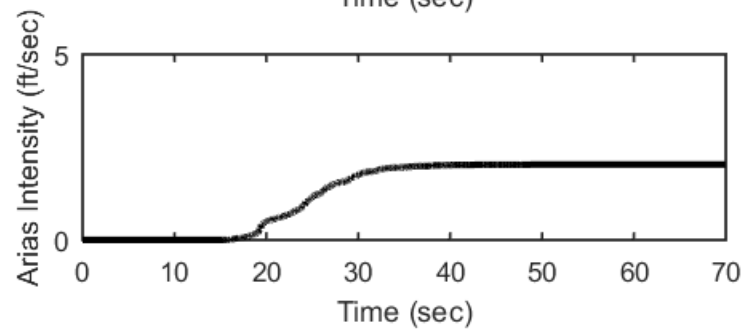
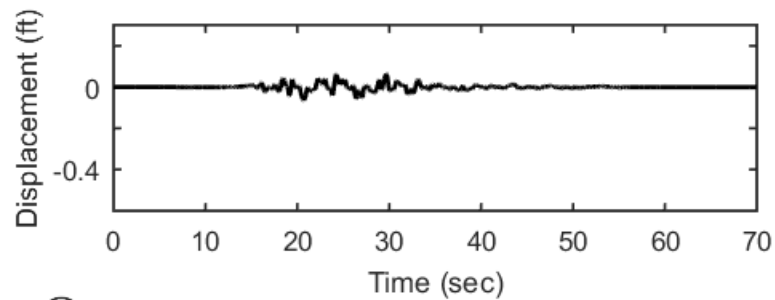
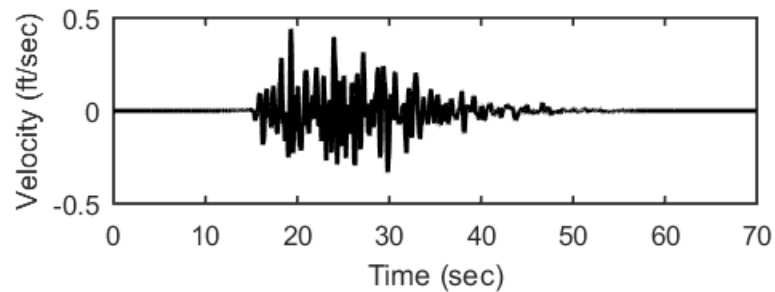
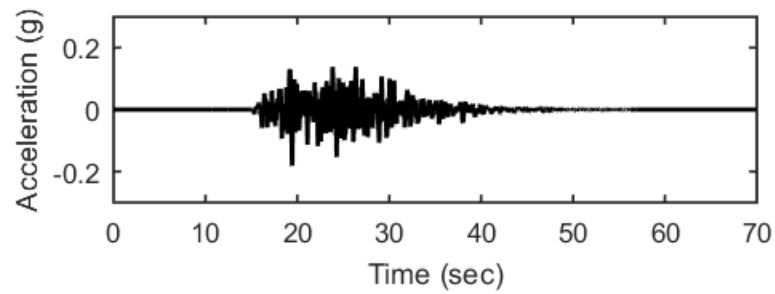


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2

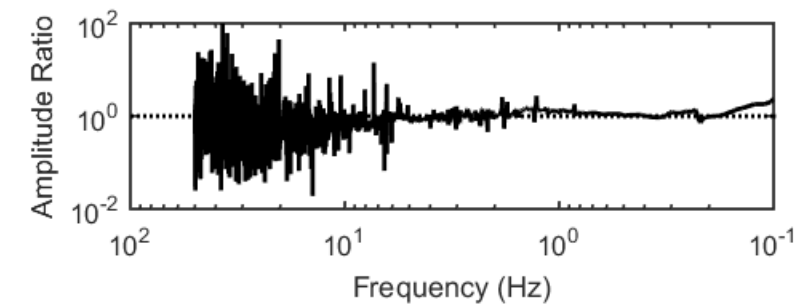
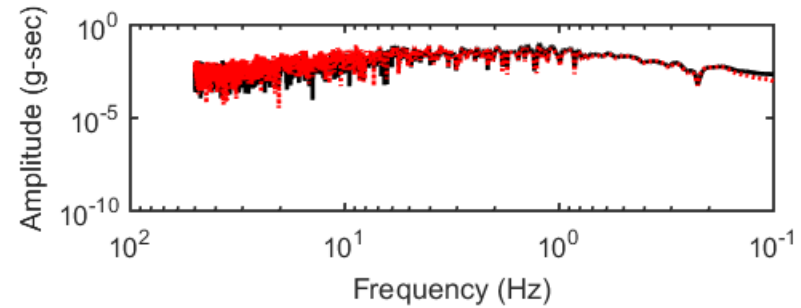
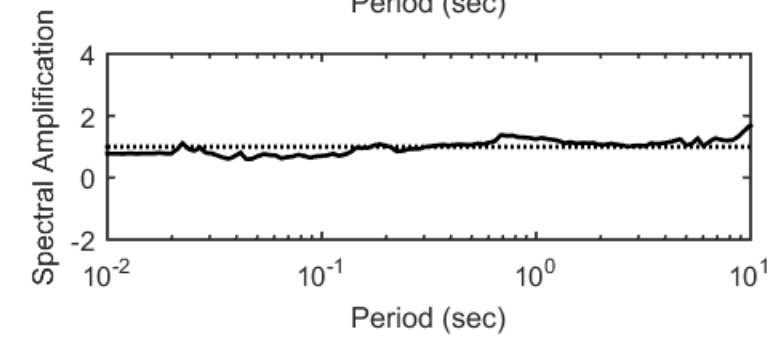
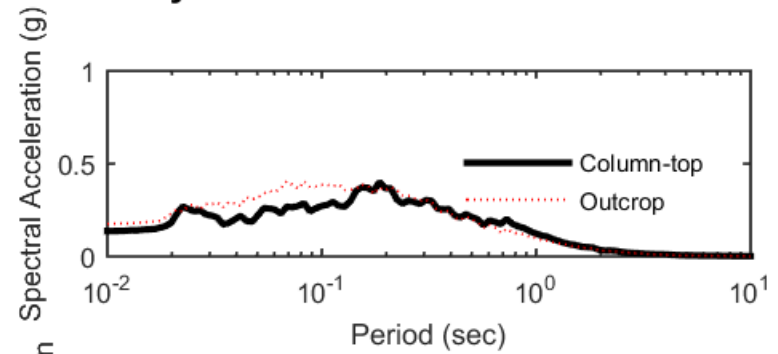
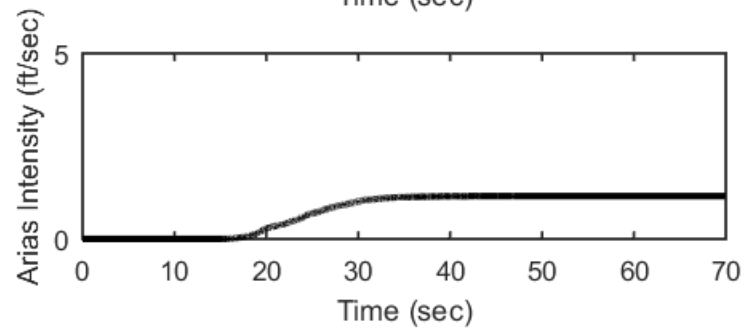
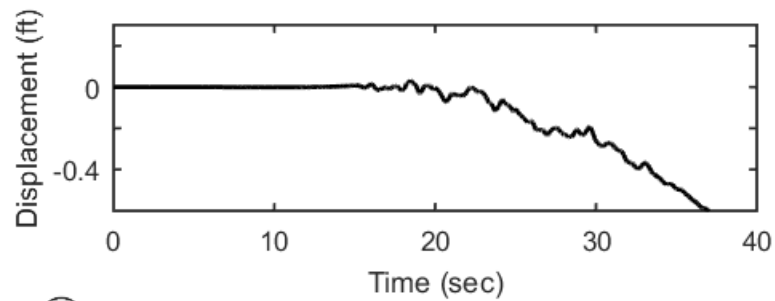
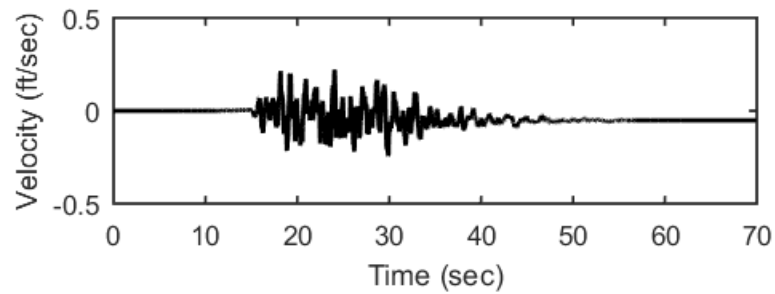
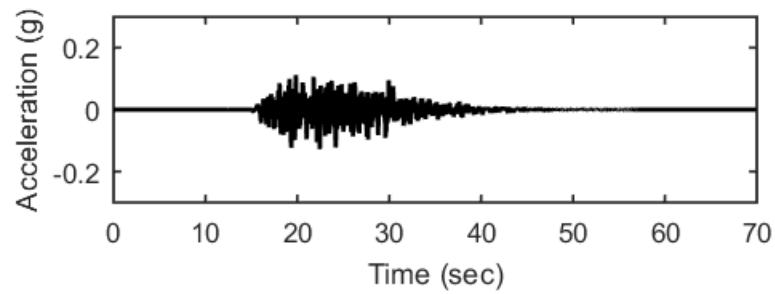




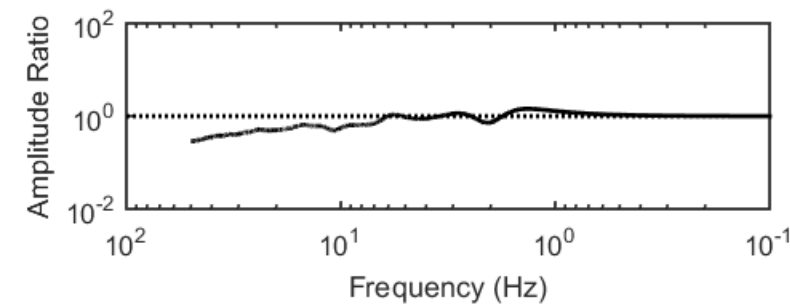
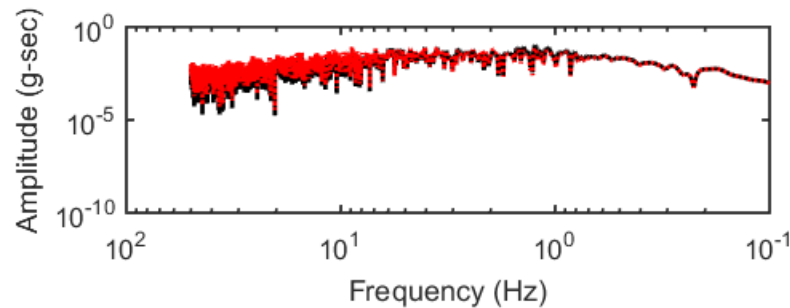
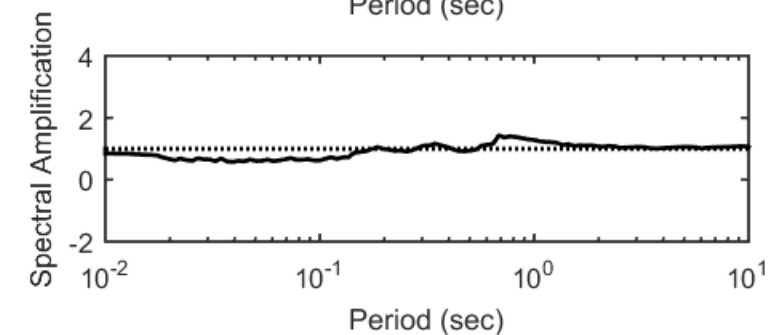
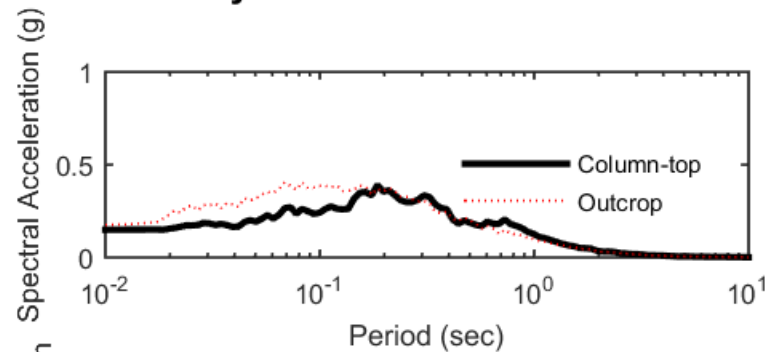
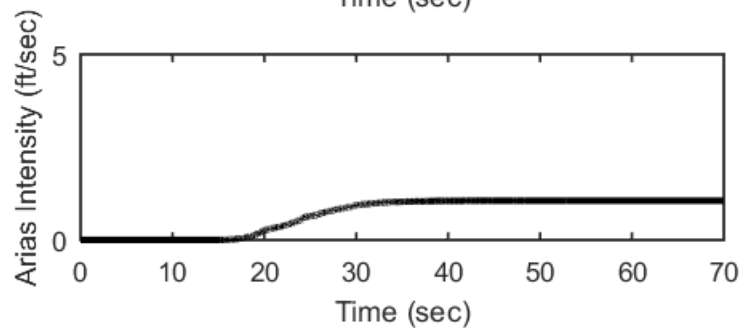
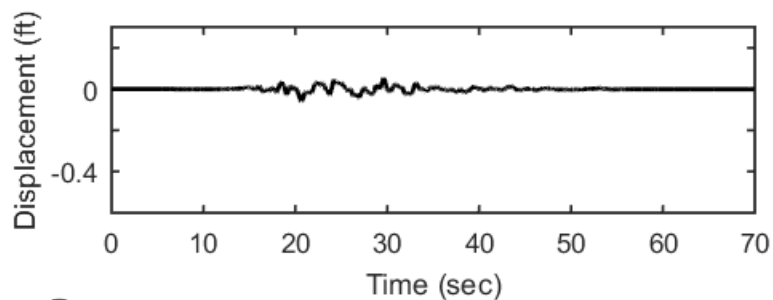
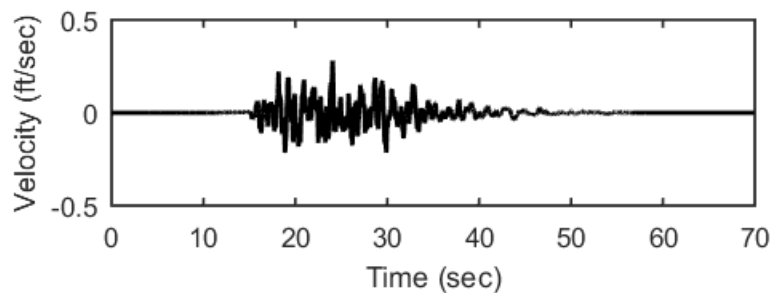
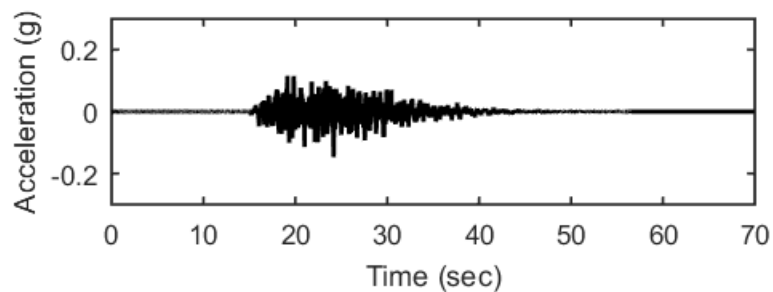
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



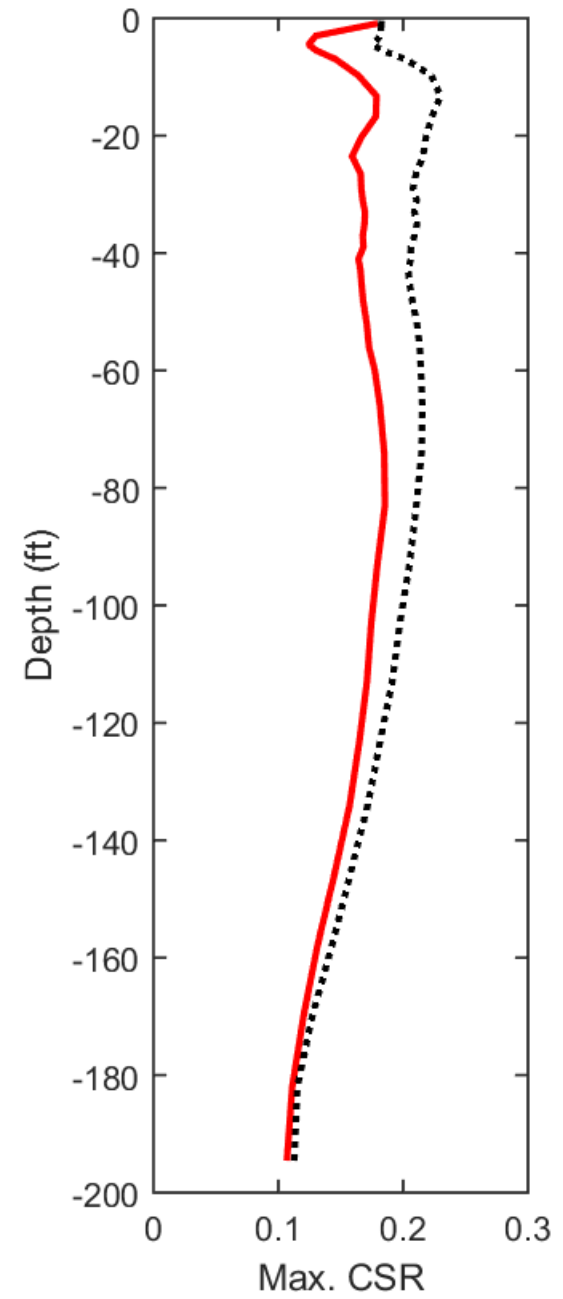
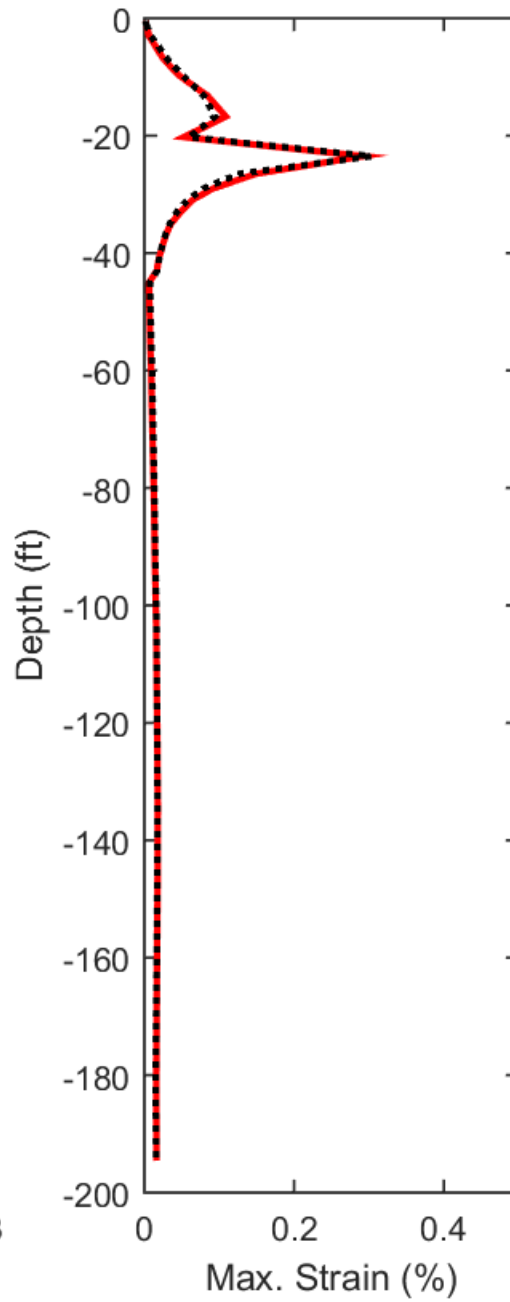
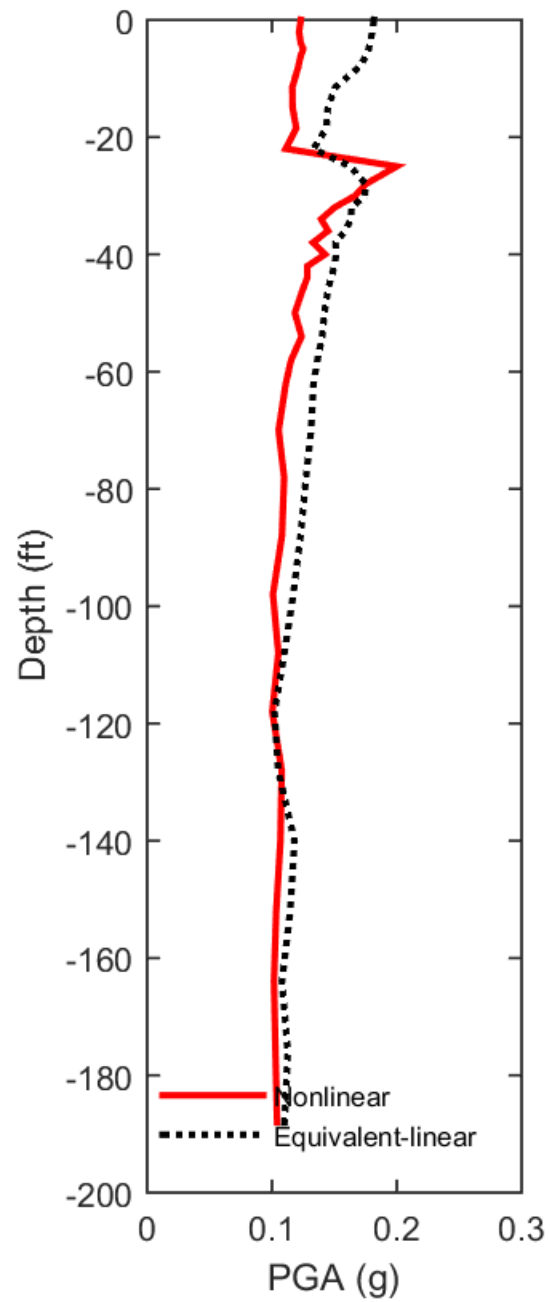
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



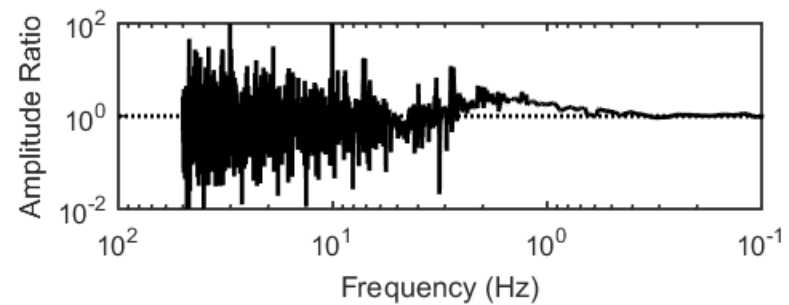
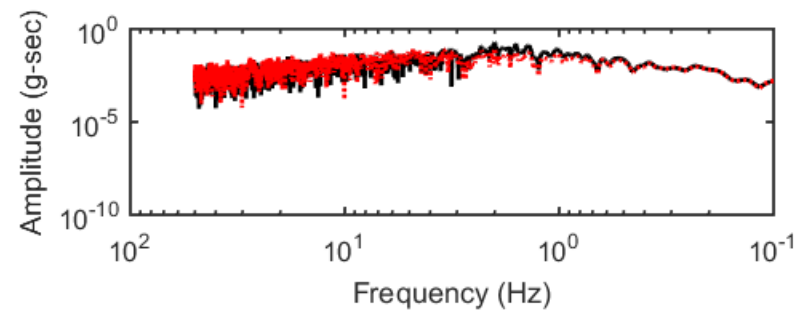
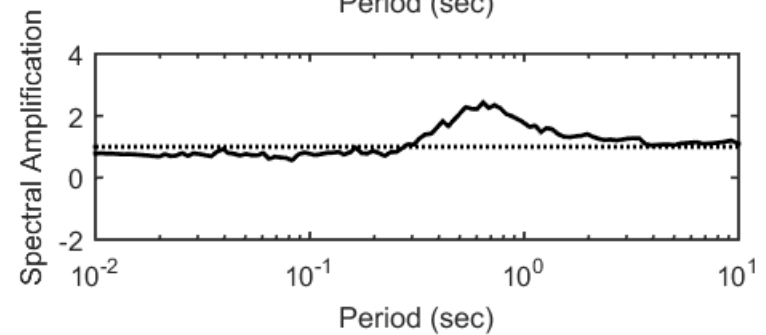
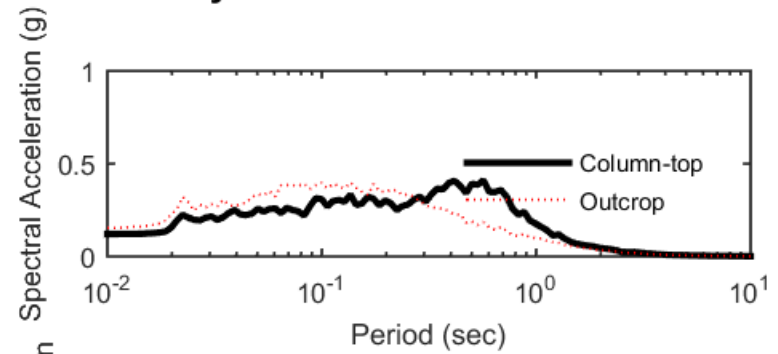
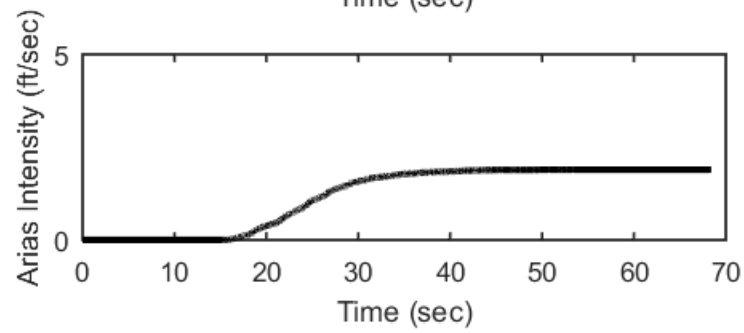
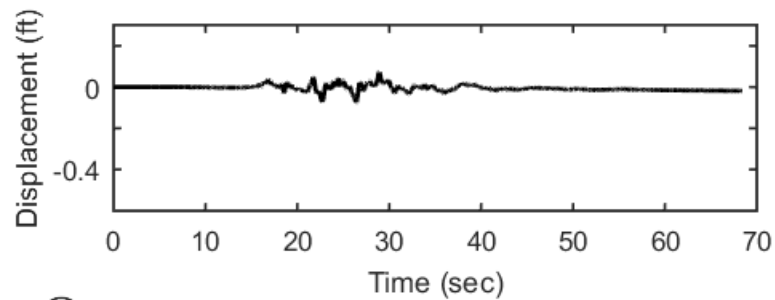
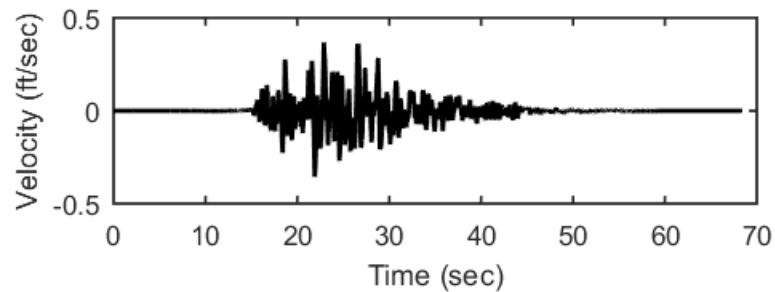
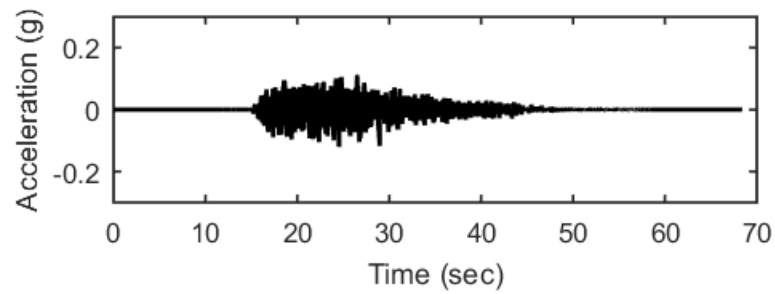
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



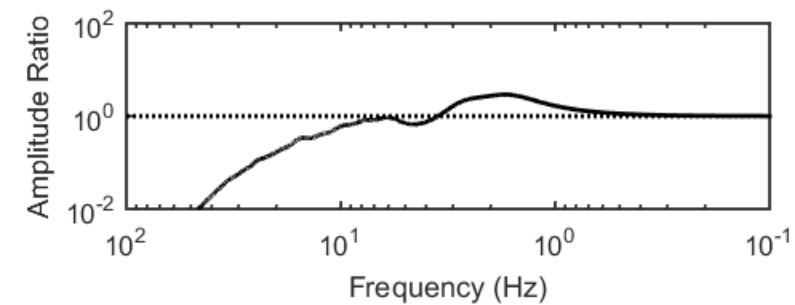
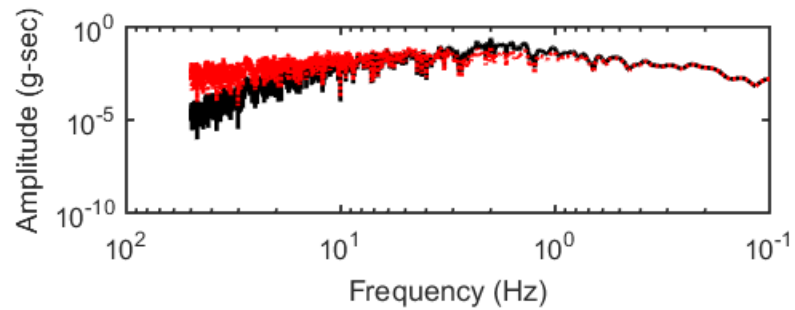
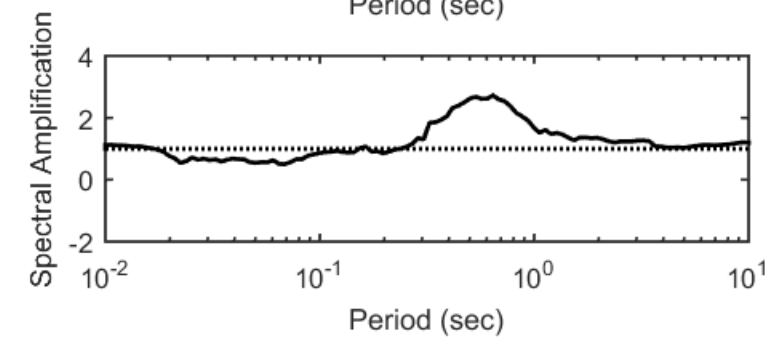
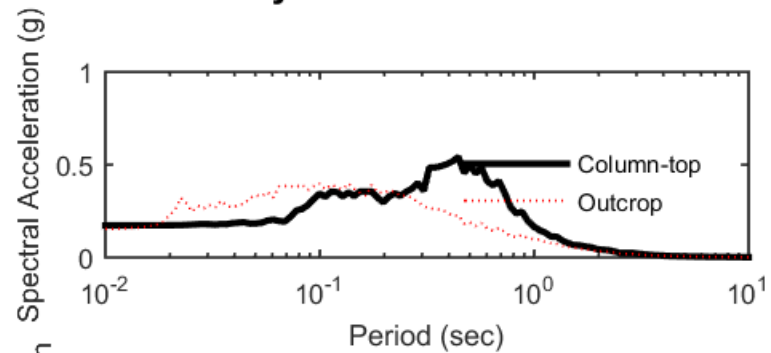
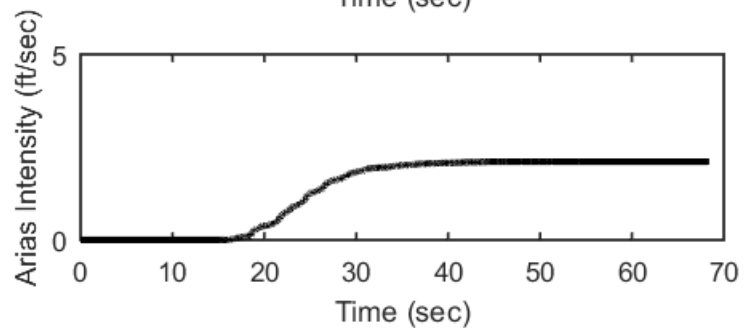
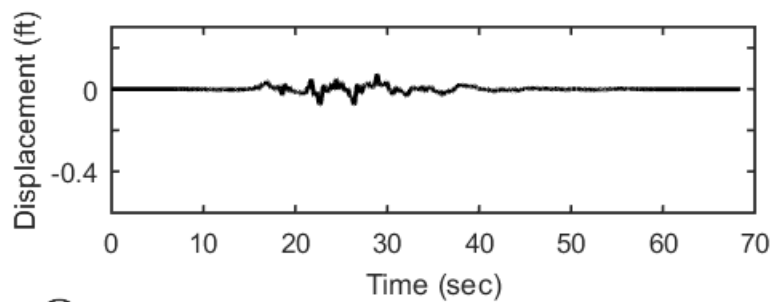
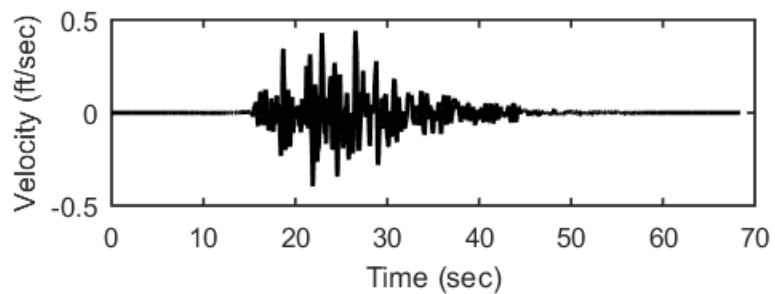
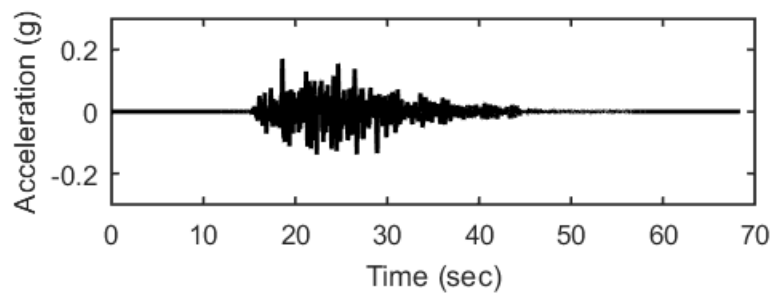
### Profile outputs for Motion: FEE2



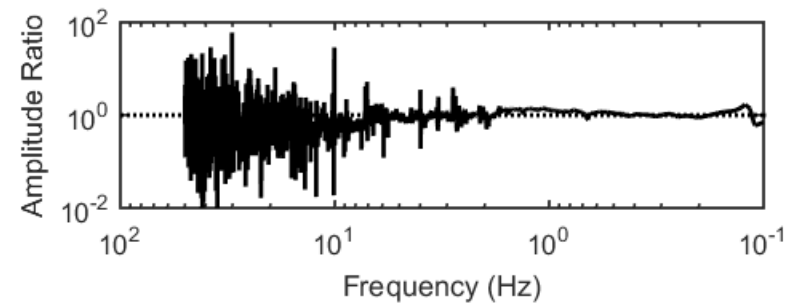
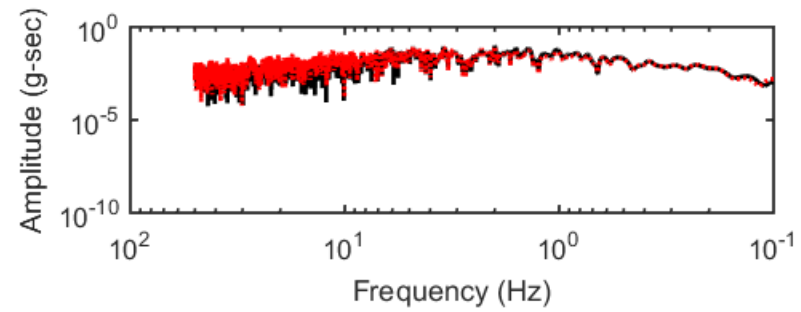
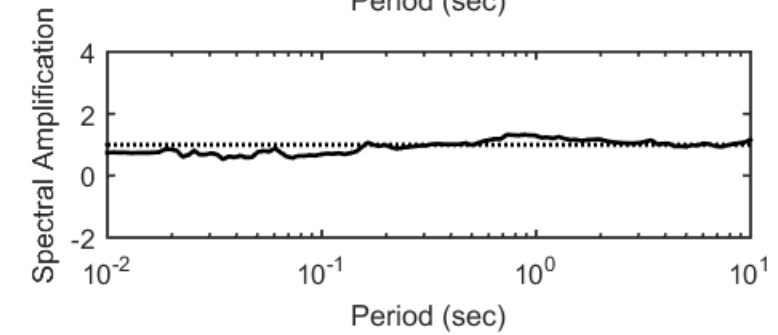
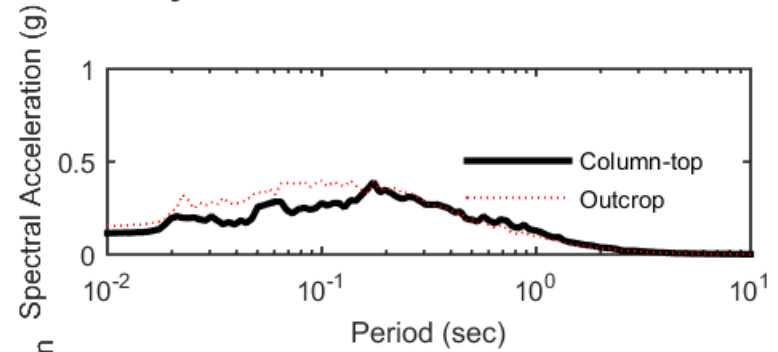
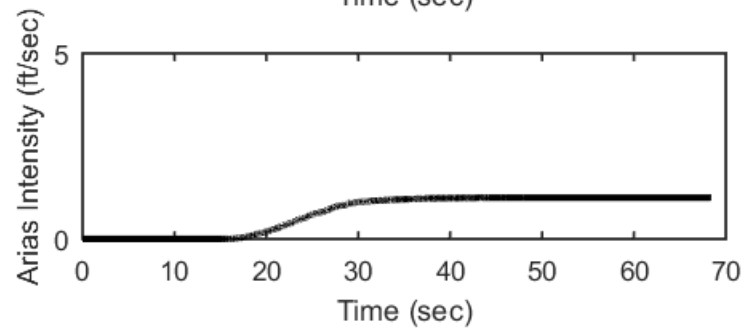
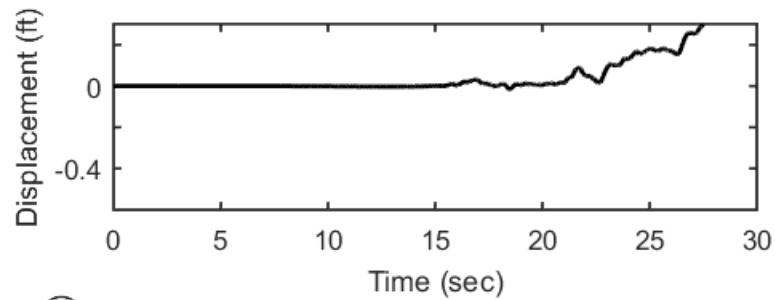
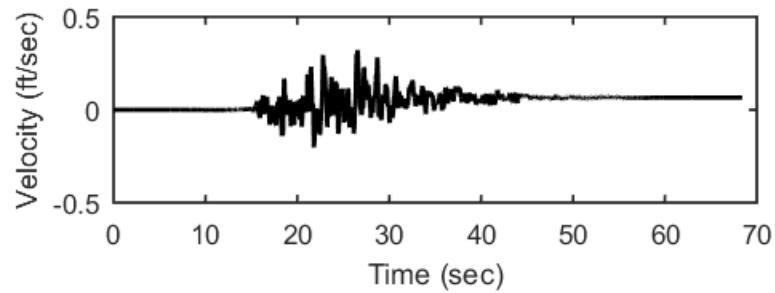
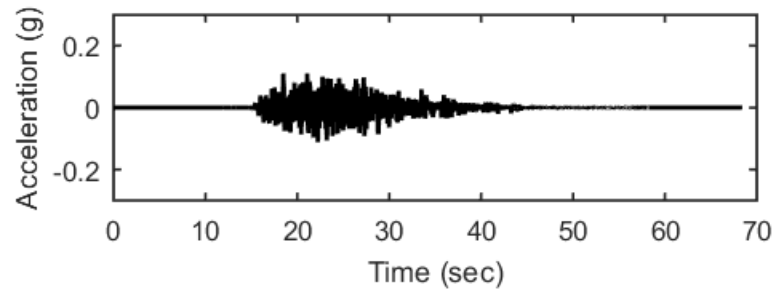
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



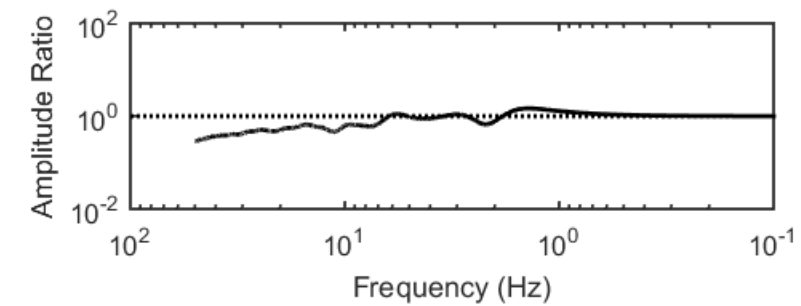
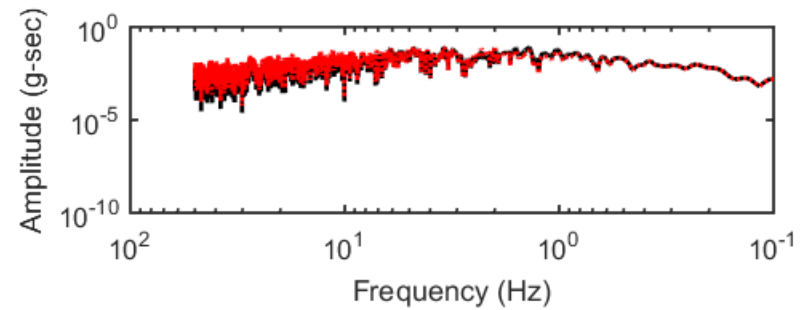
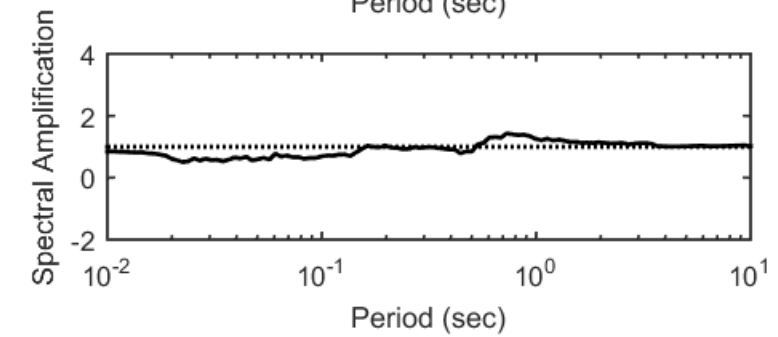
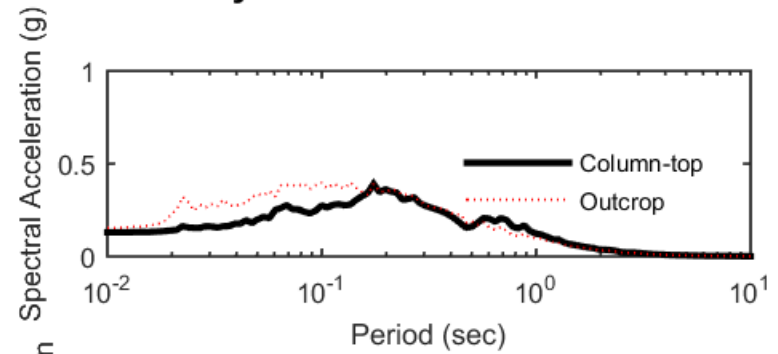
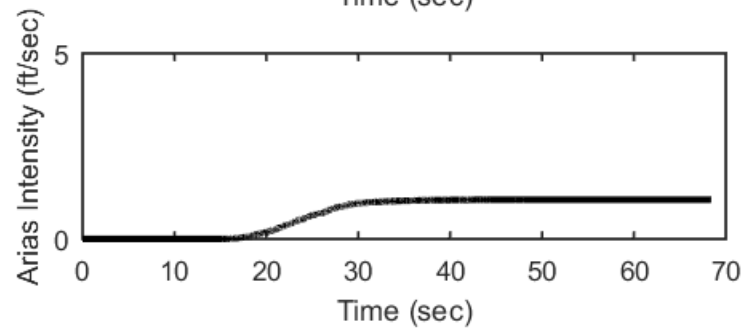
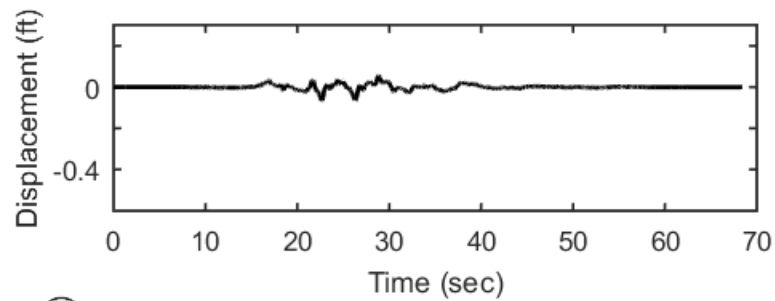
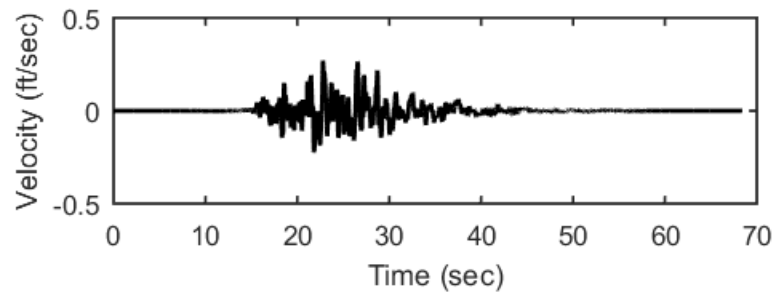
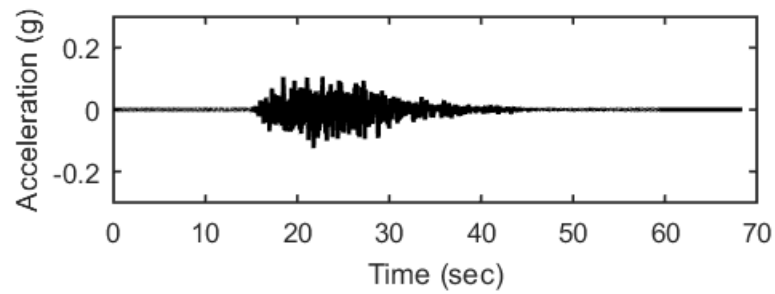
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3

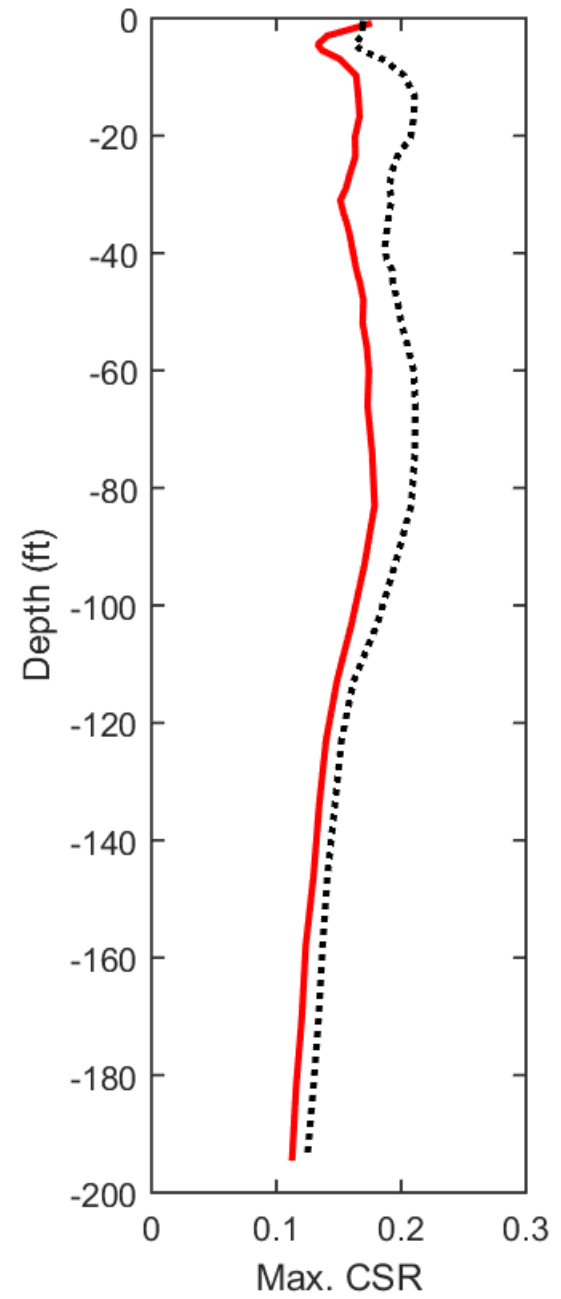
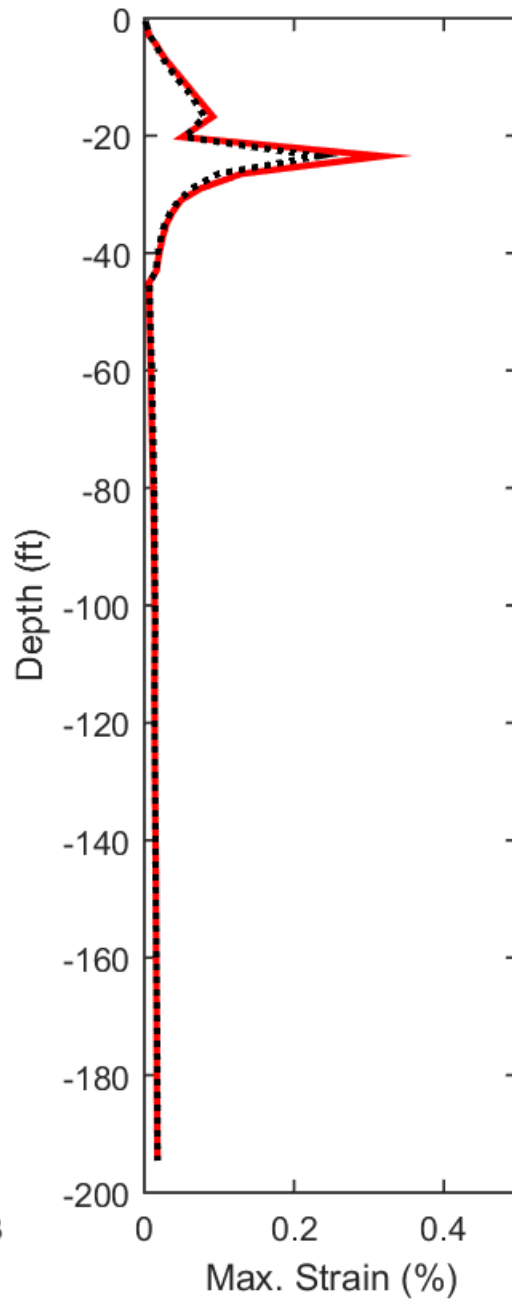
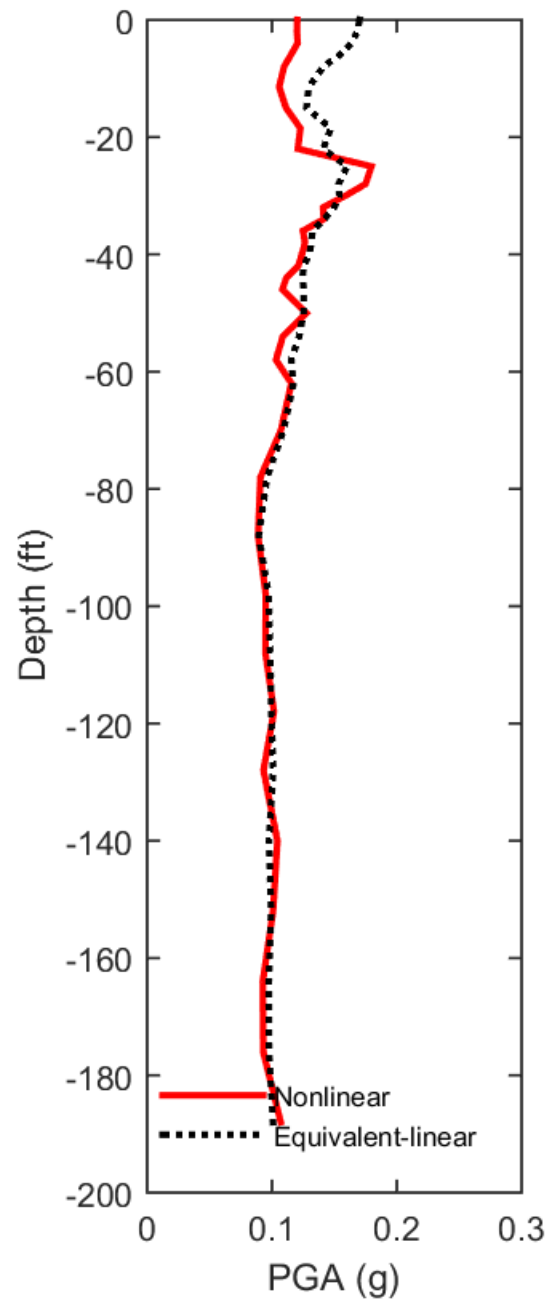


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3

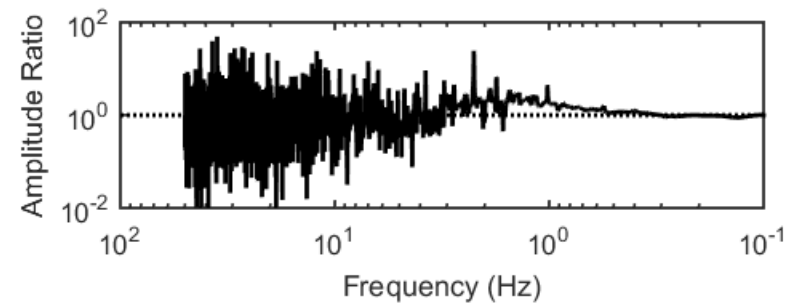
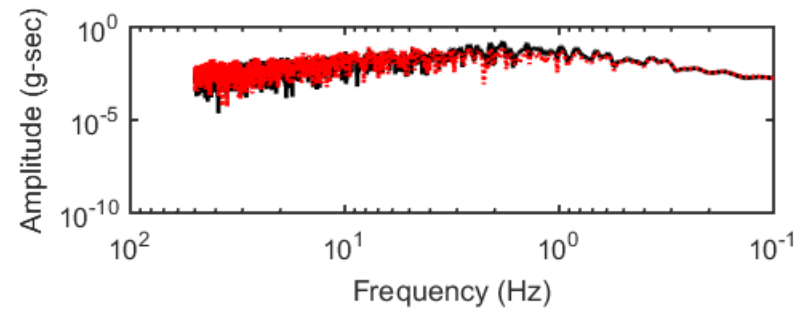
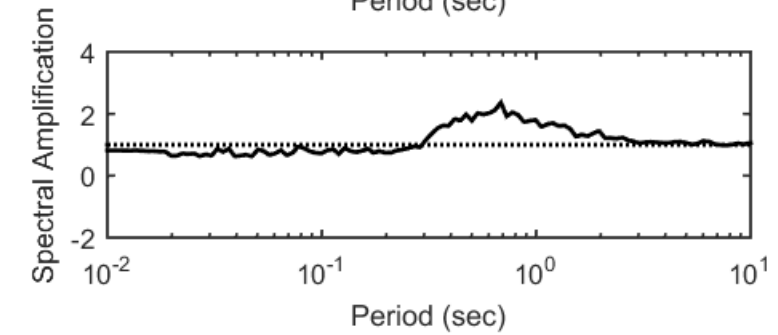
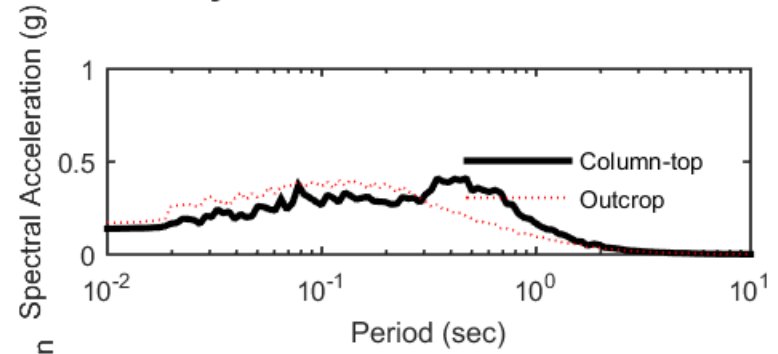
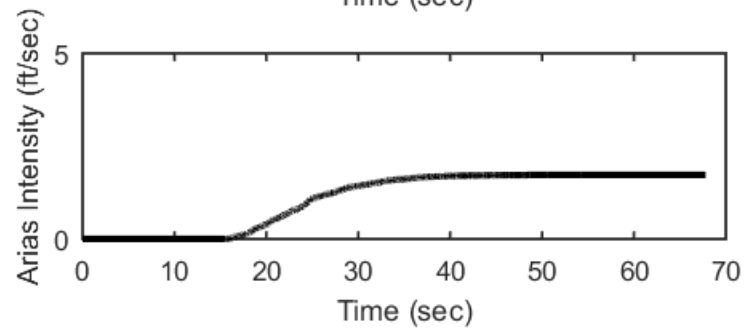
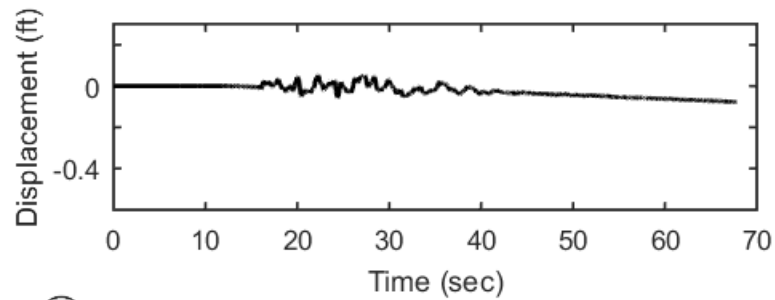
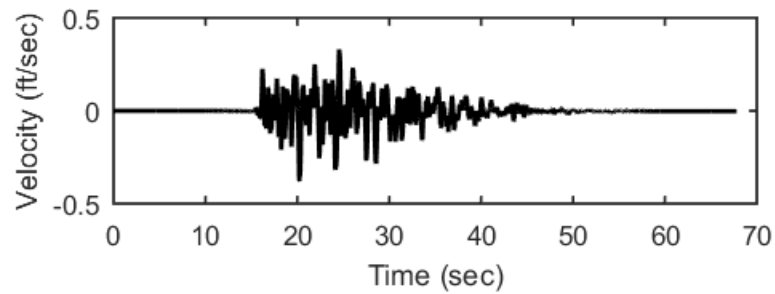
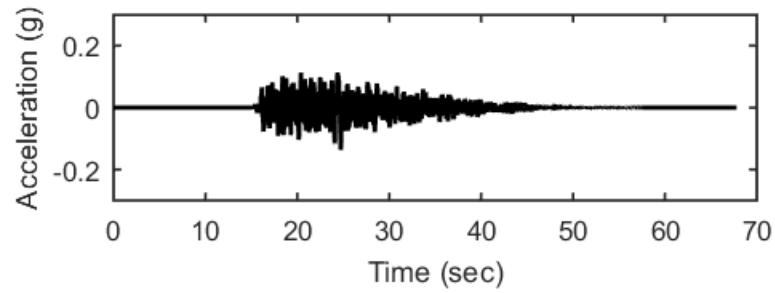




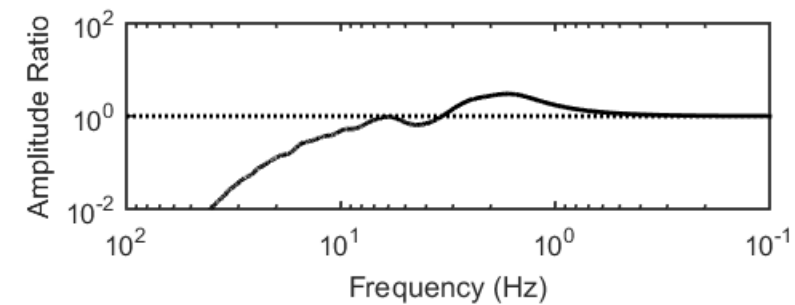
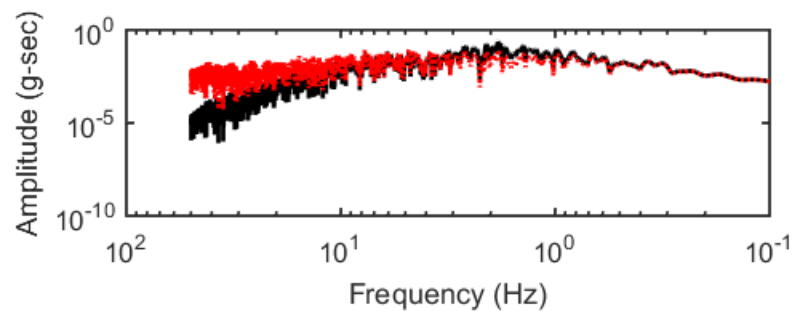
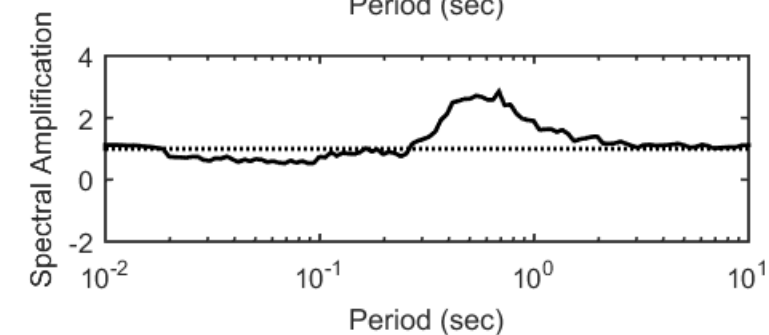
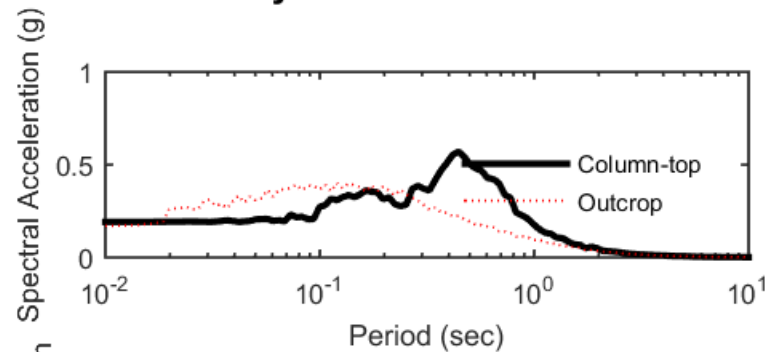
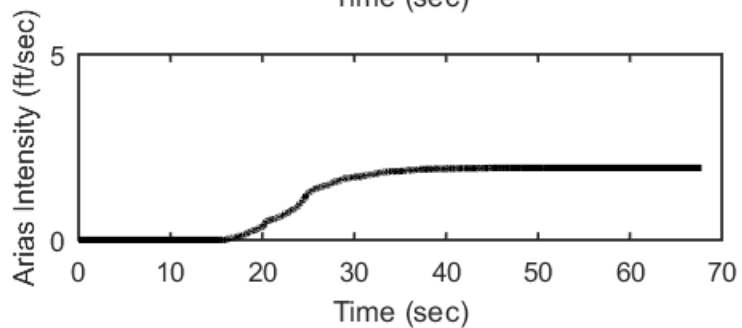
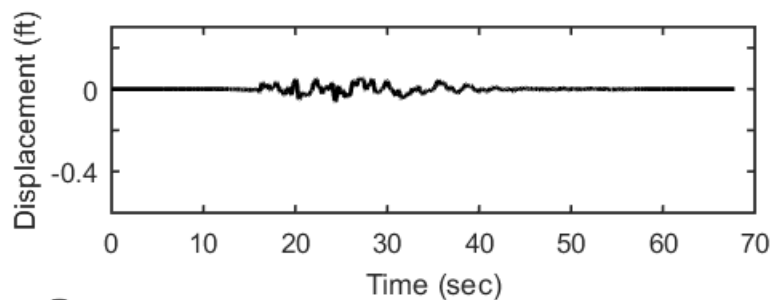
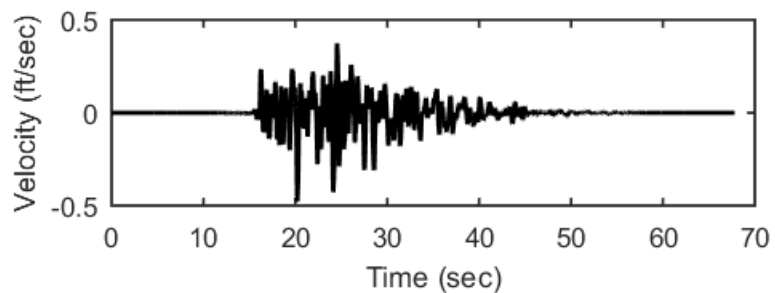
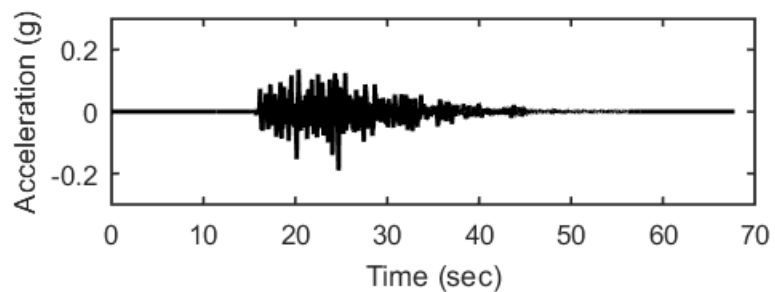
### Profile outputs for Motion: FEE3



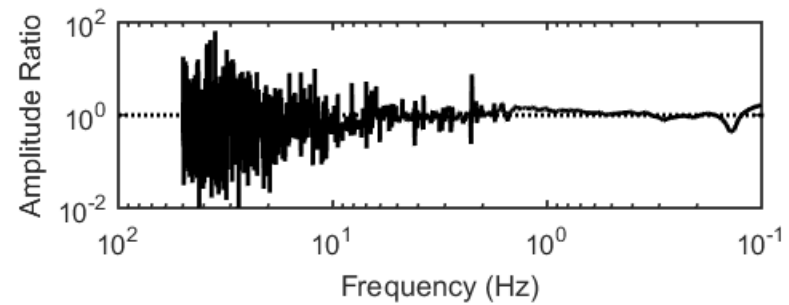
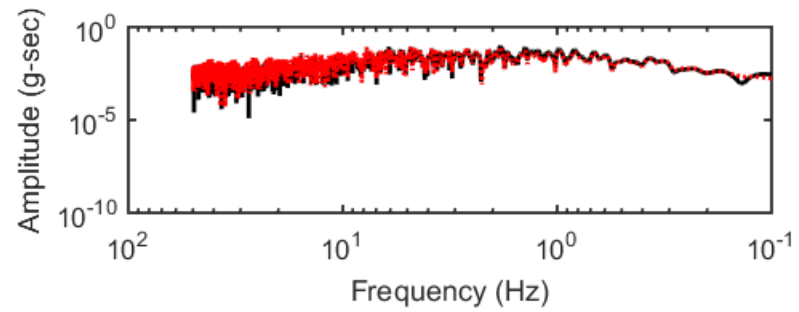
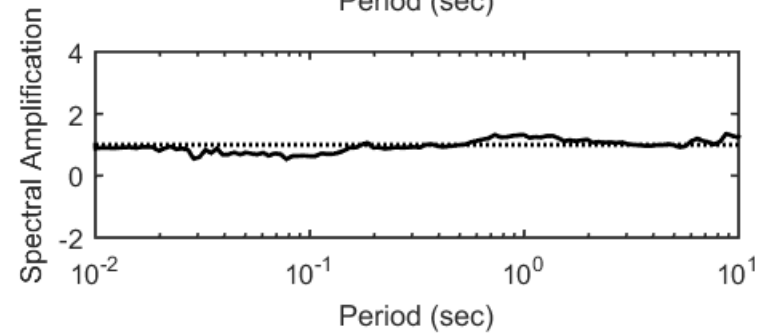
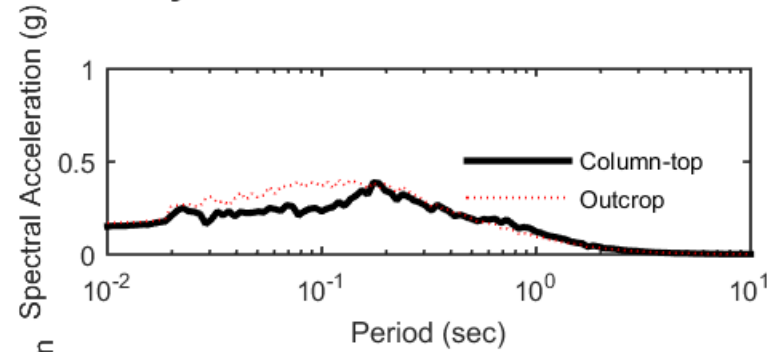
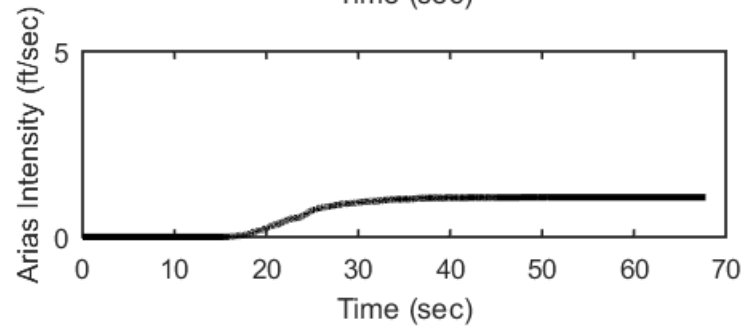
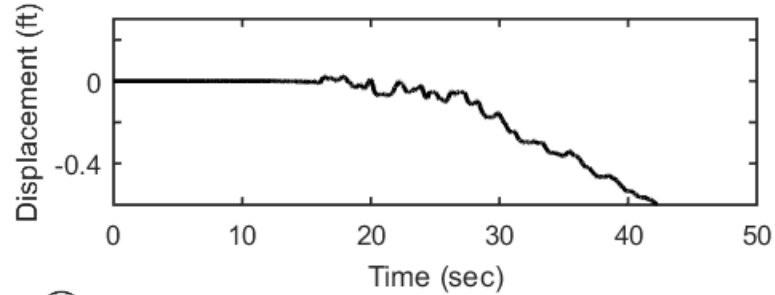
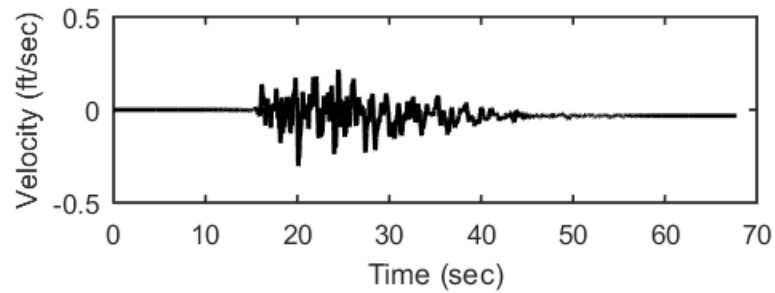
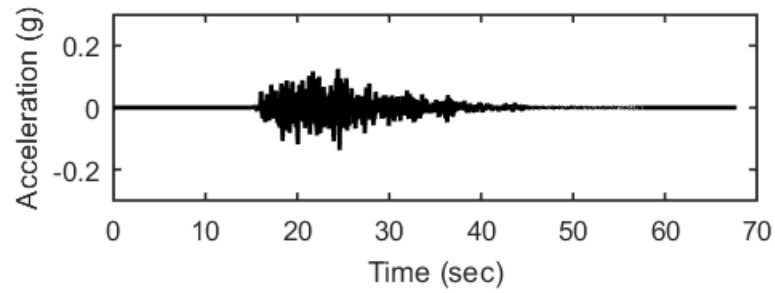
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



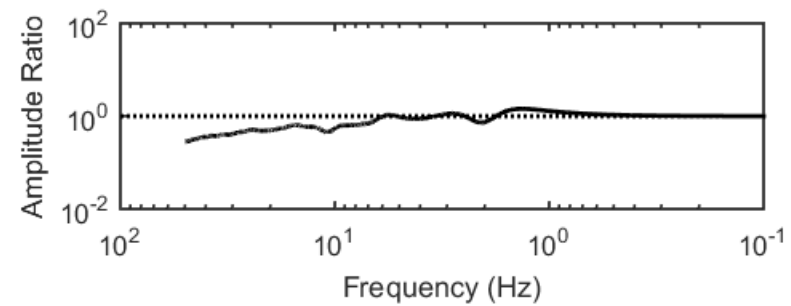
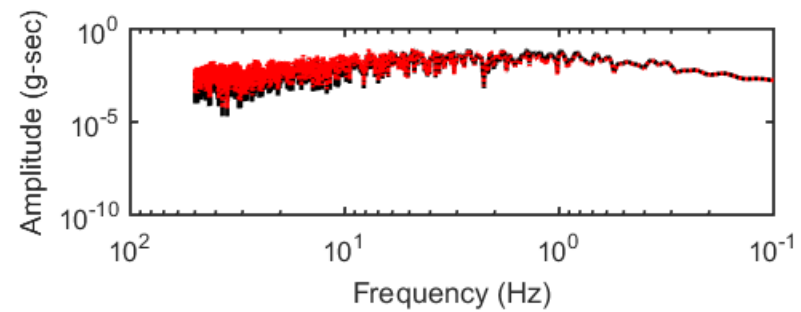
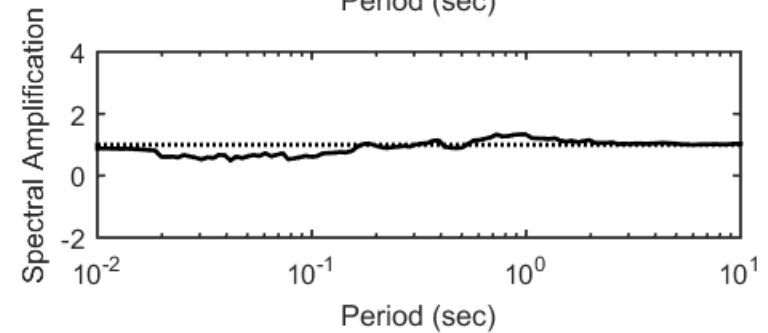
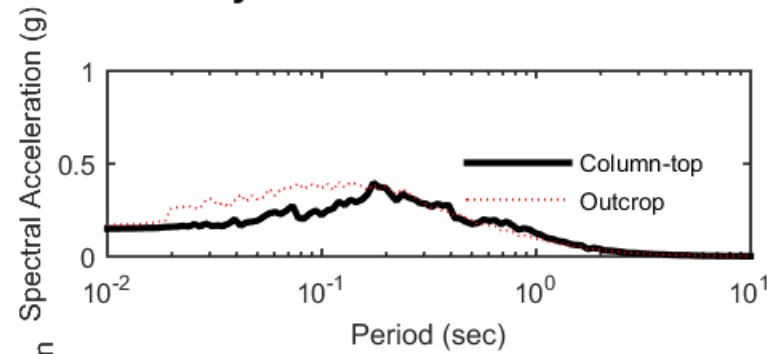
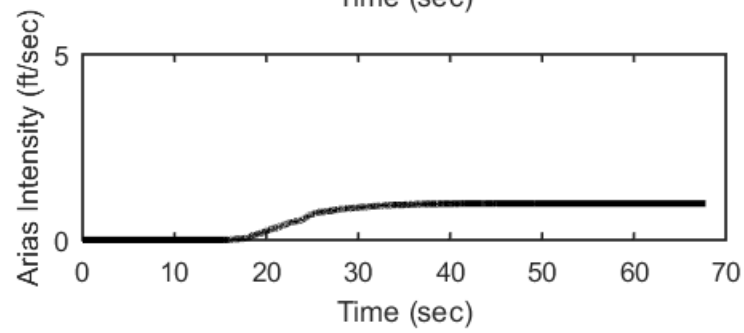
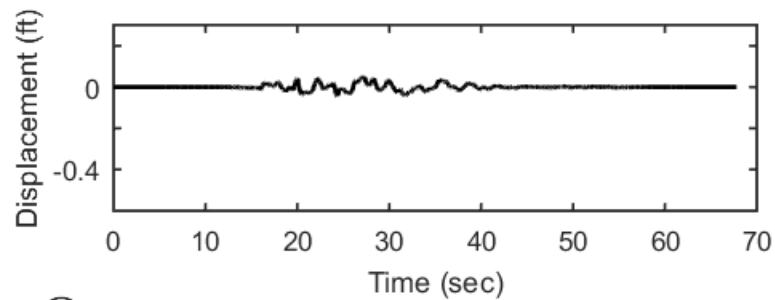
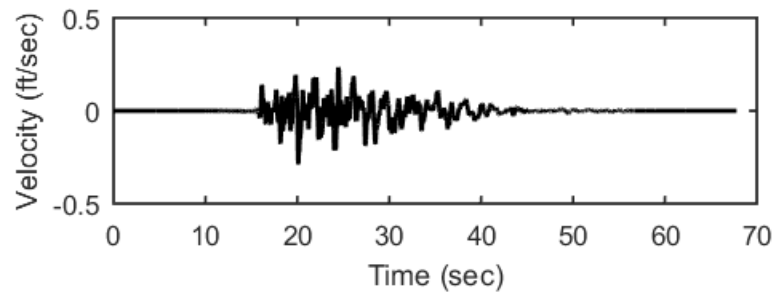
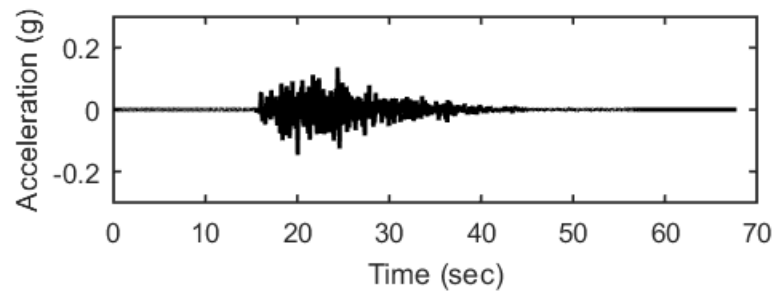
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



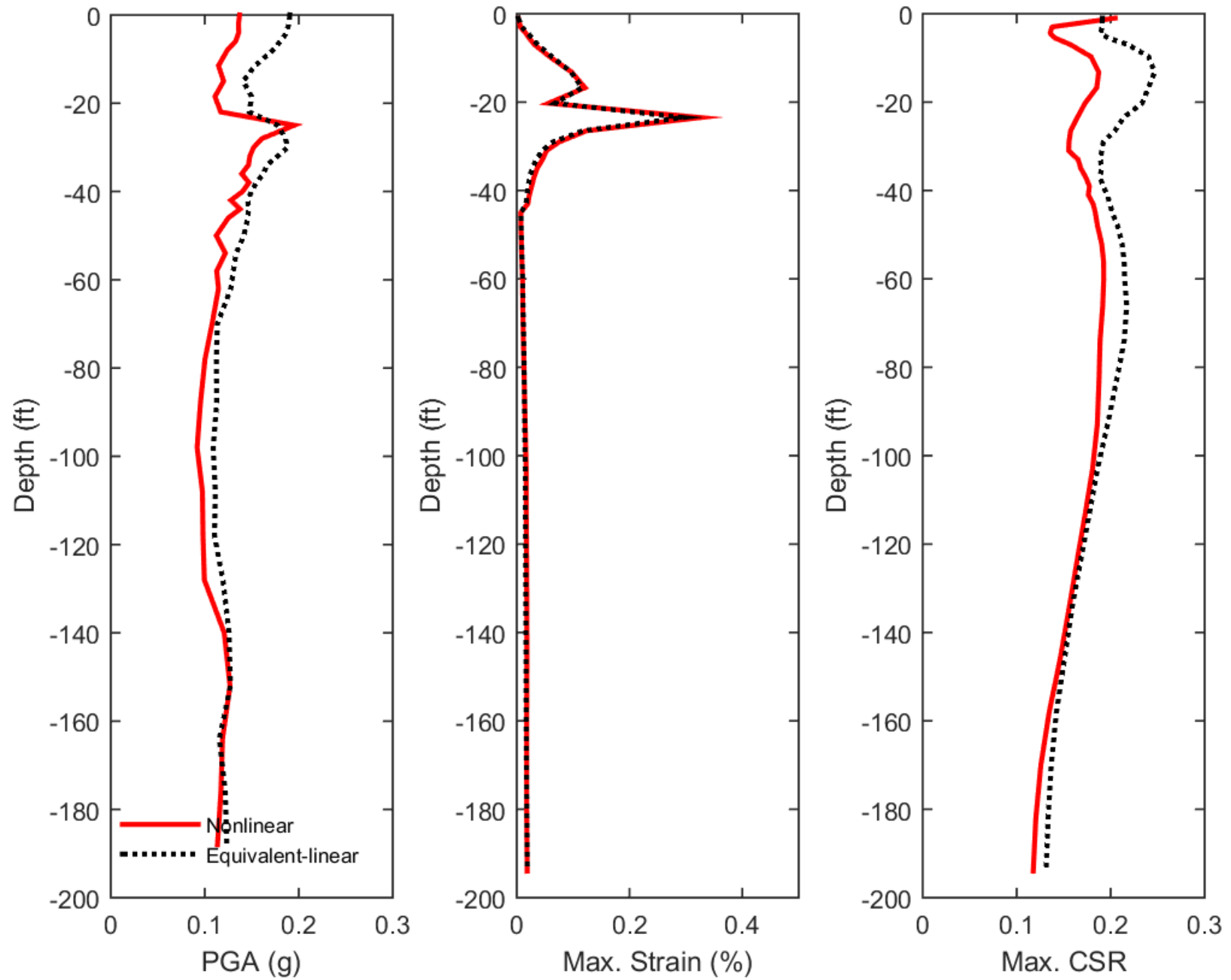
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



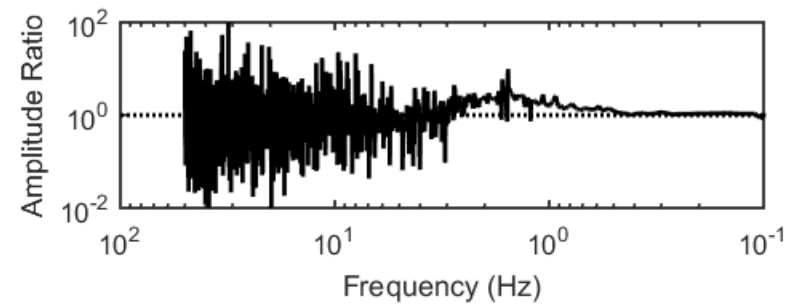
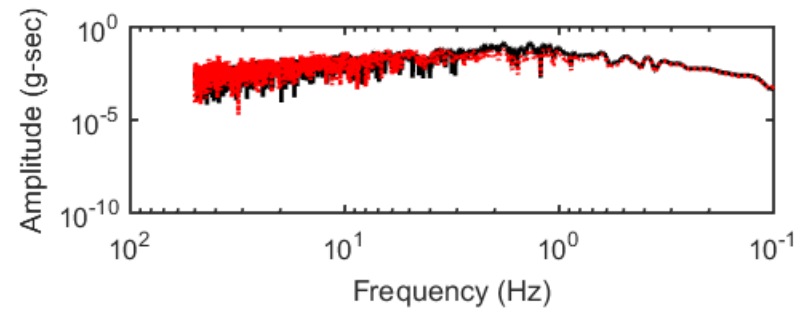
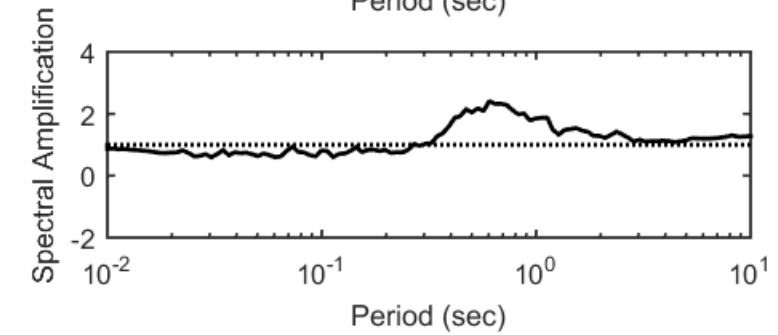
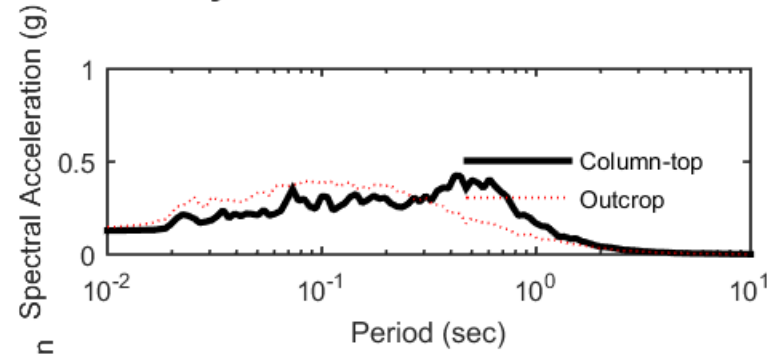
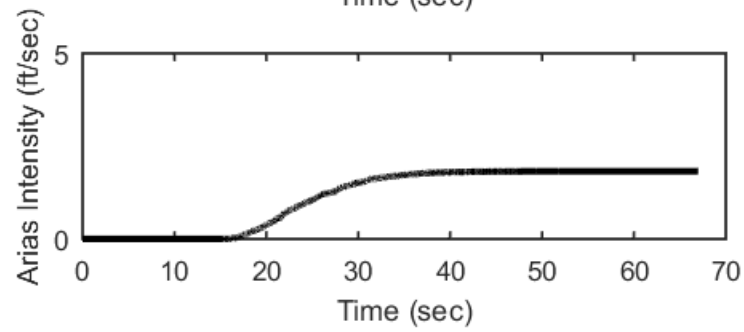
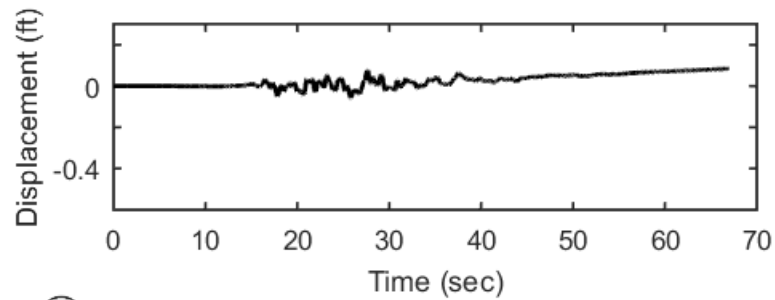
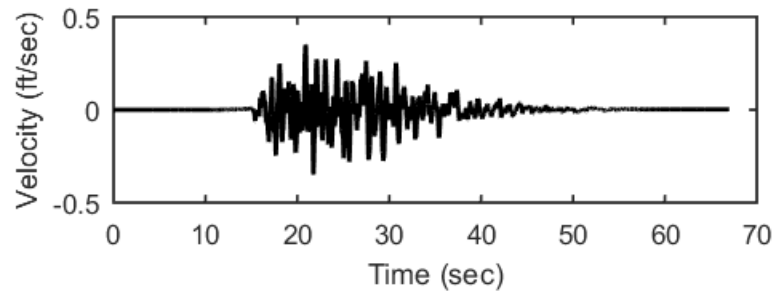
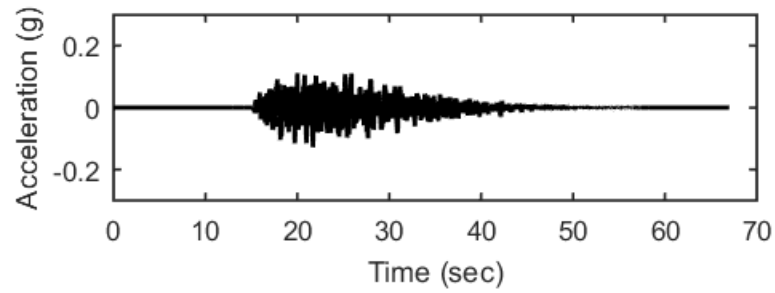
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



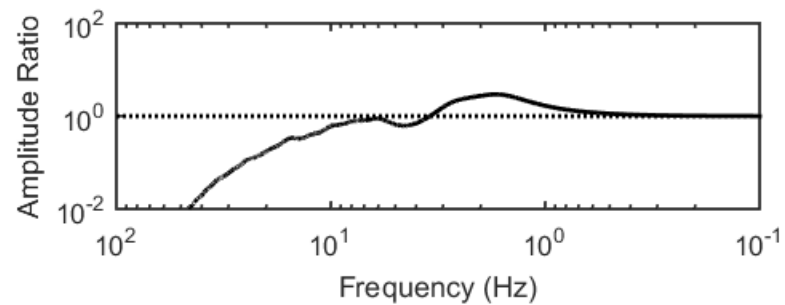
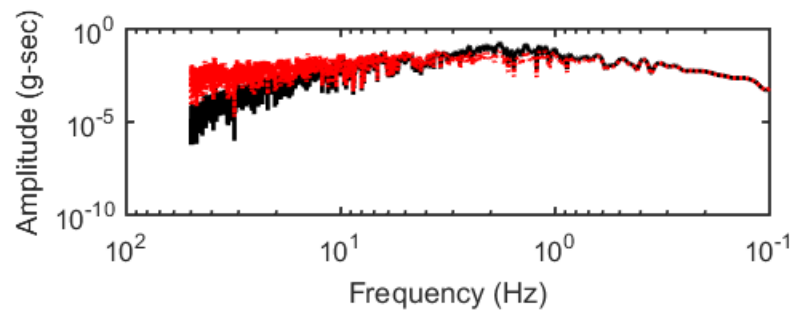
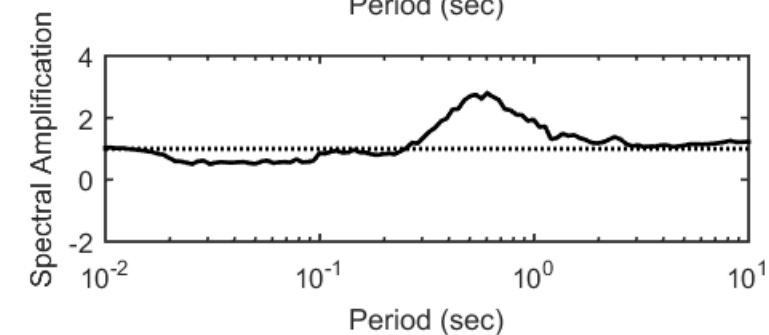
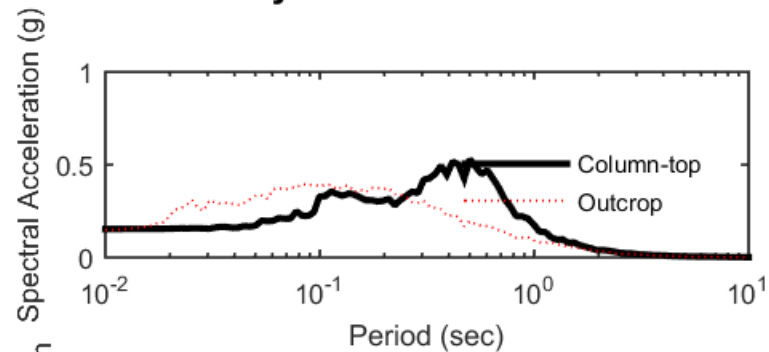
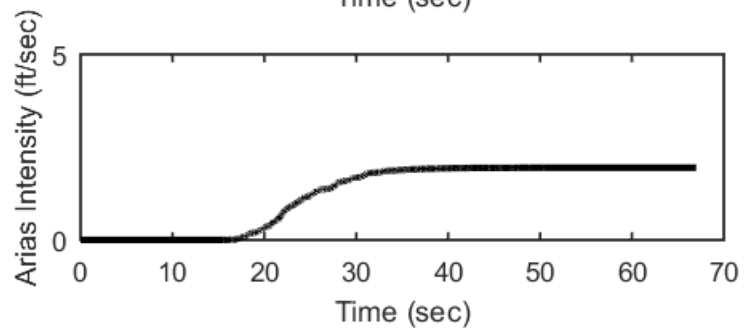
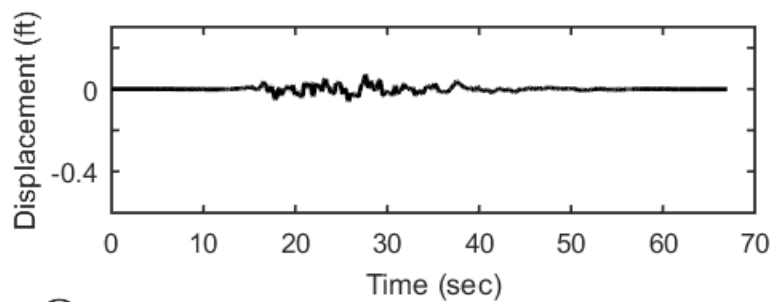
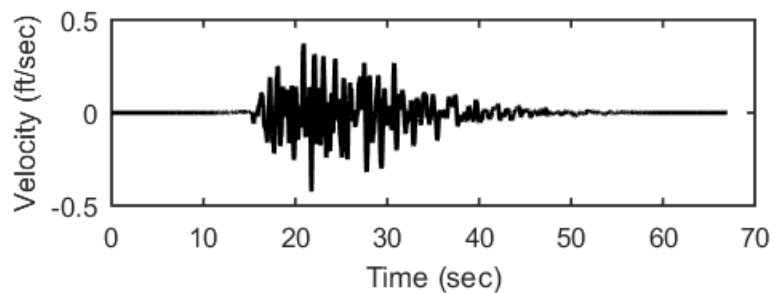
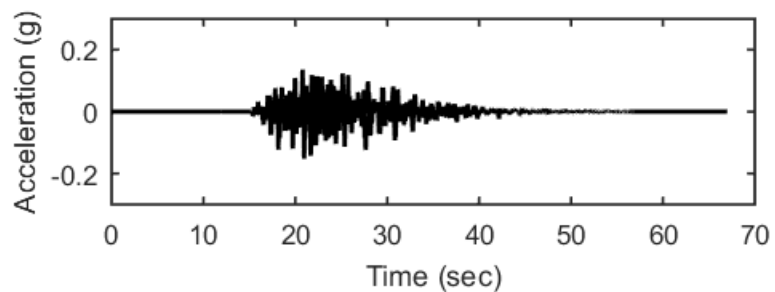
### Profile outputs for Motion: FEE4



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5

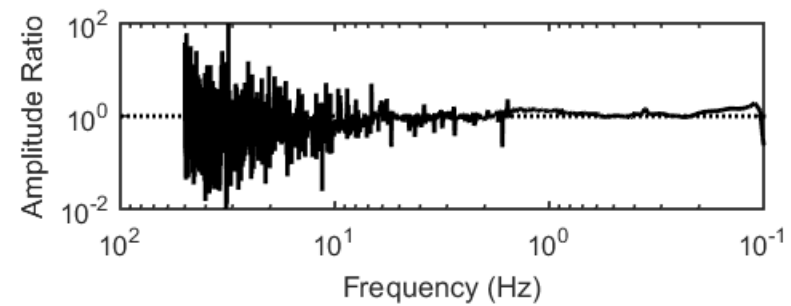
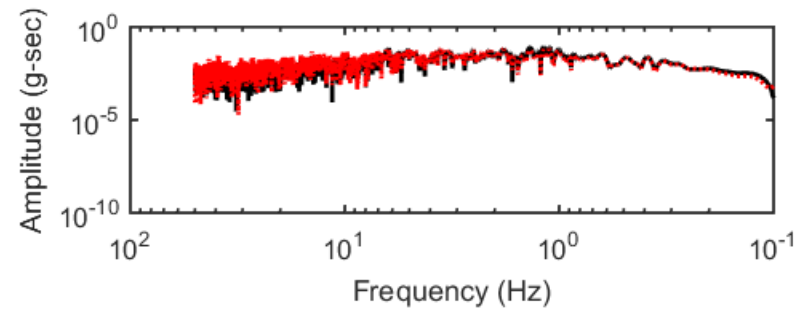
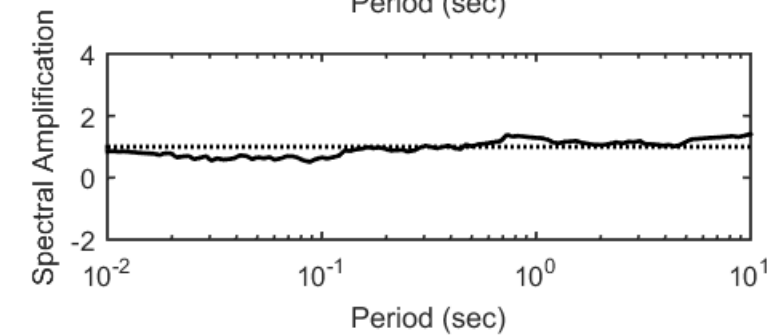
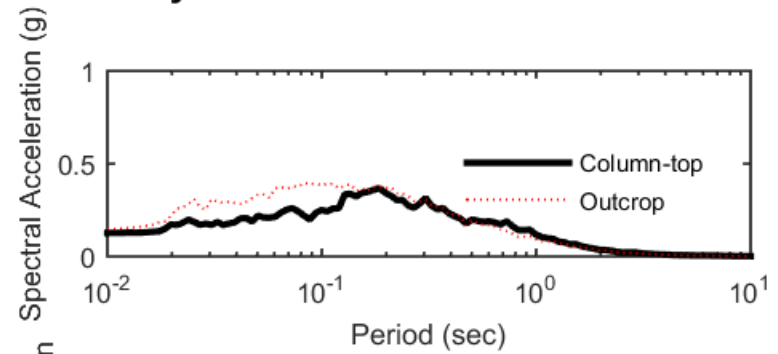
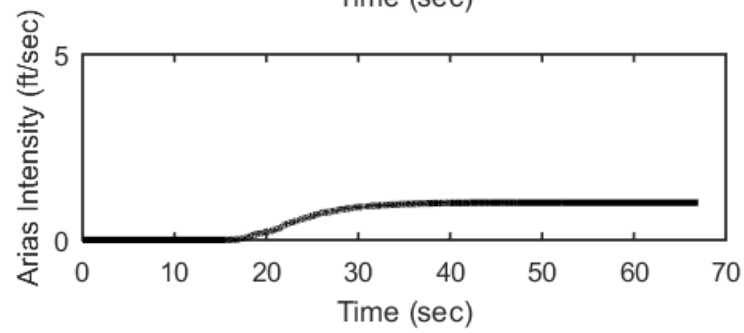
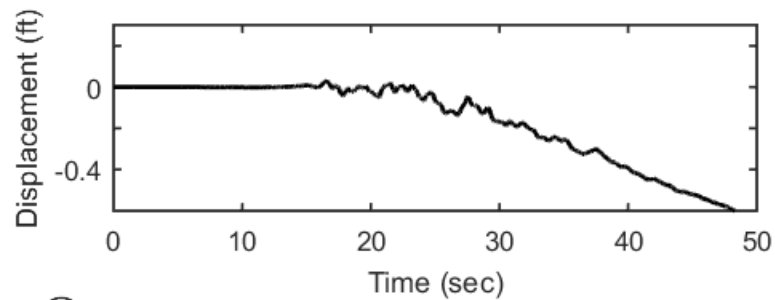
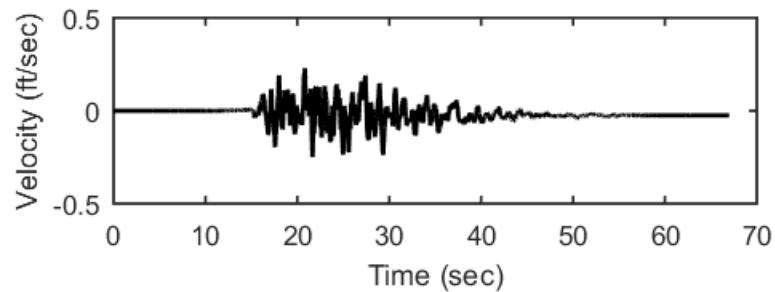
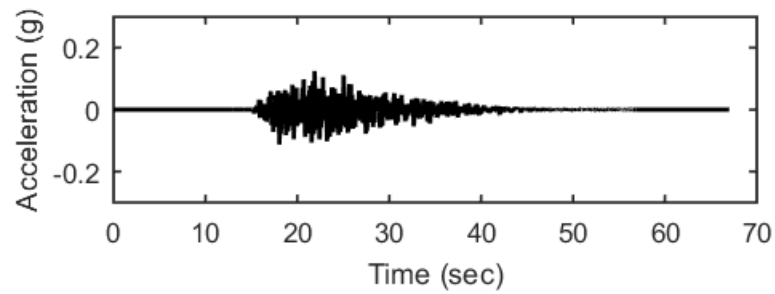


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5

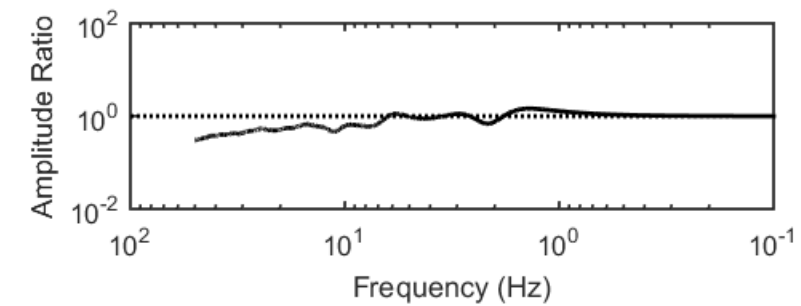
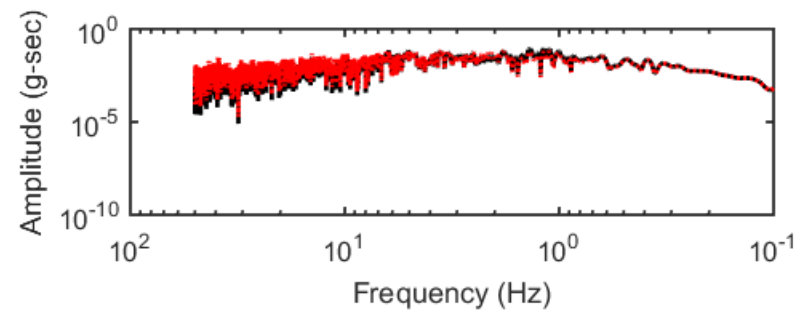
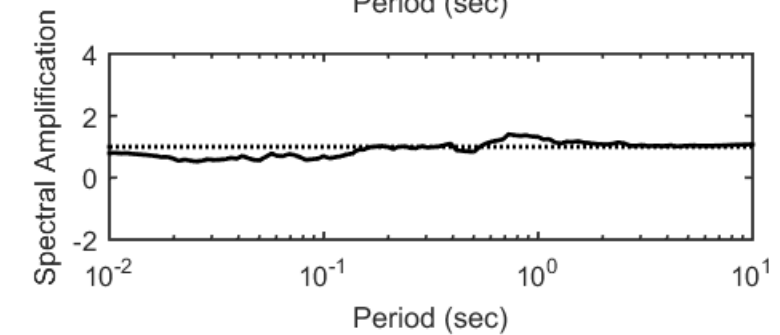
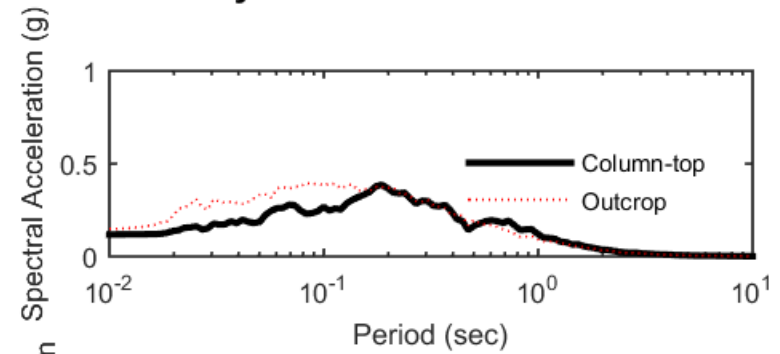
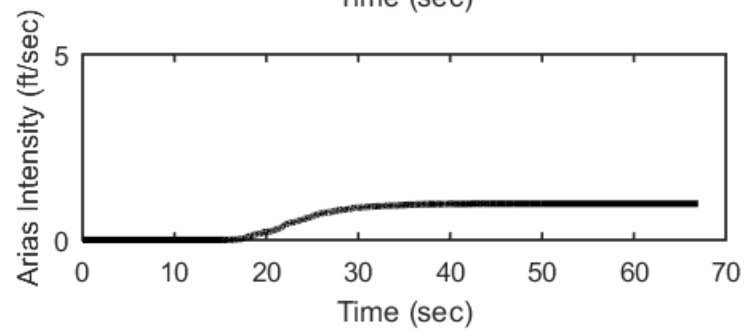
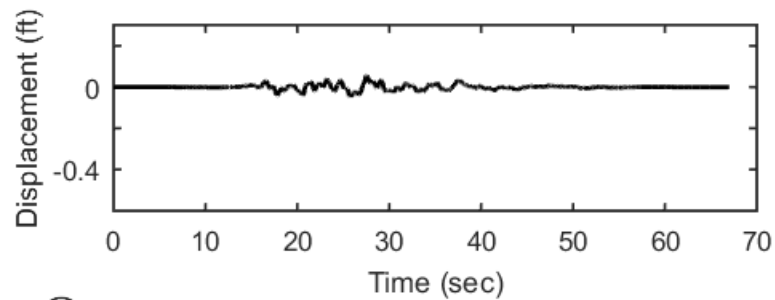
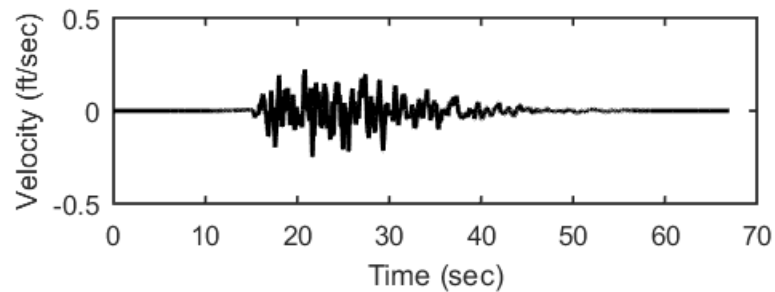
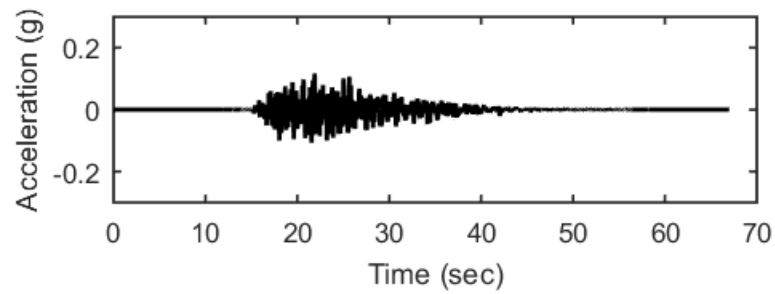




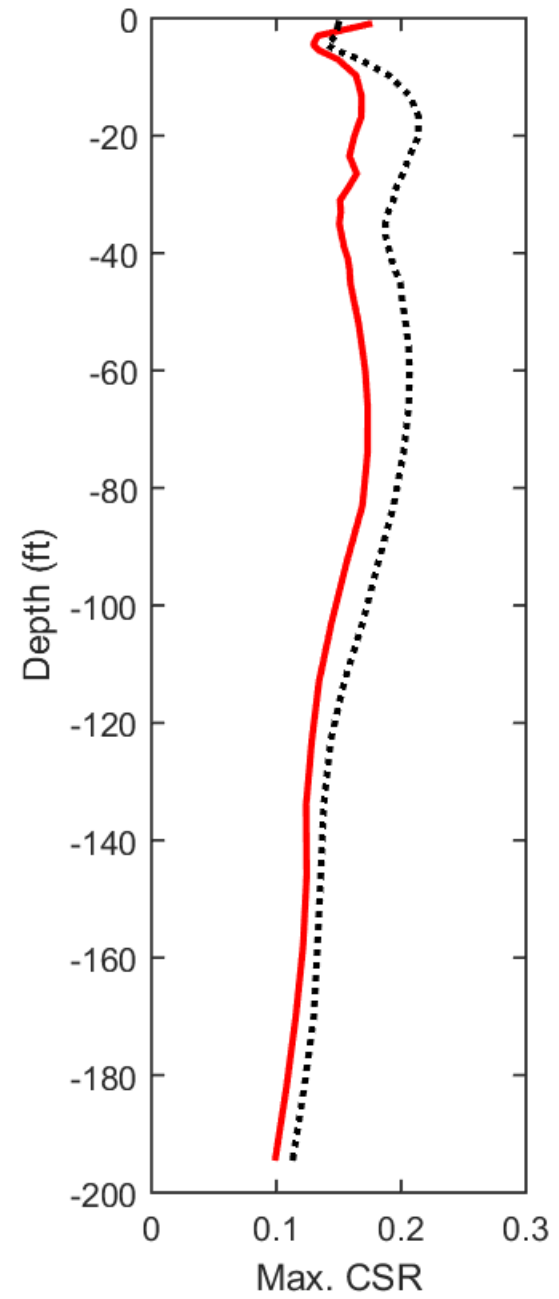
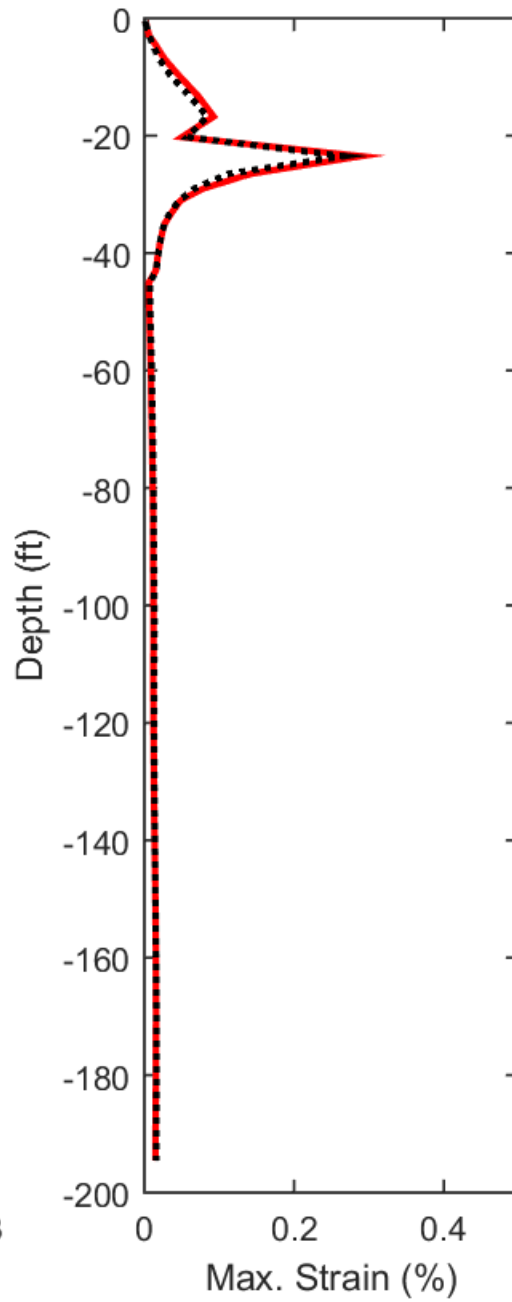
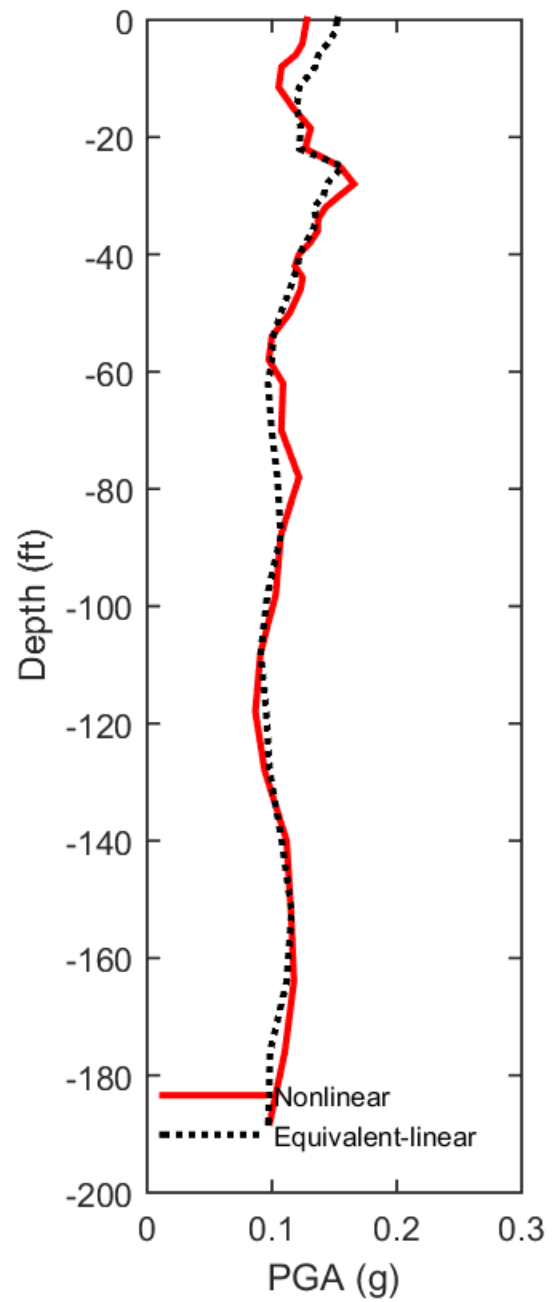
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



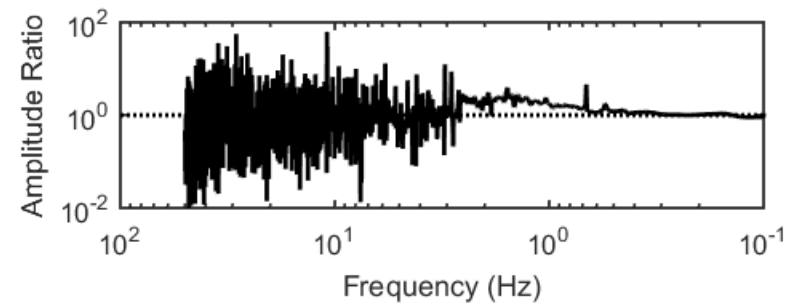
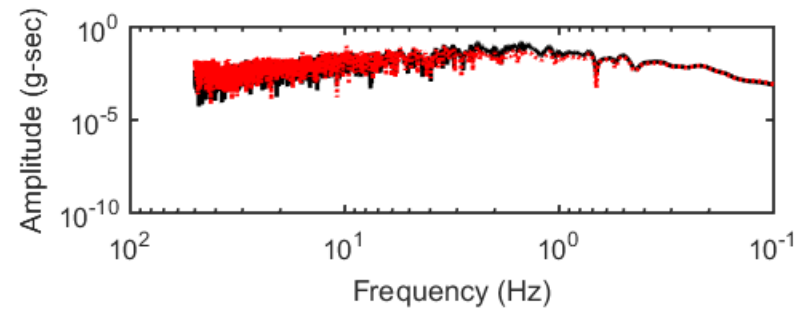
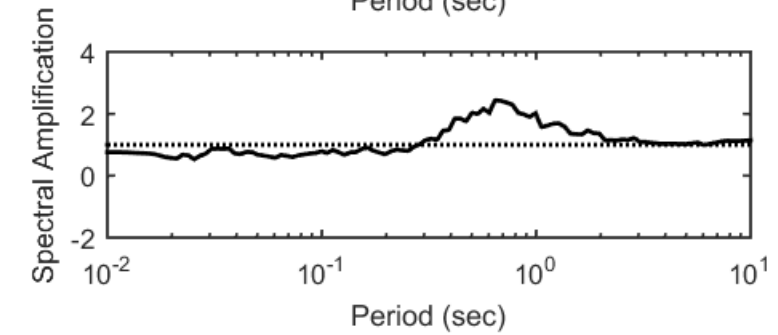
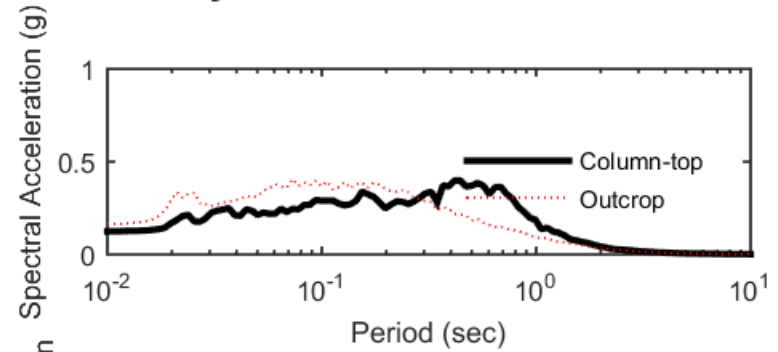
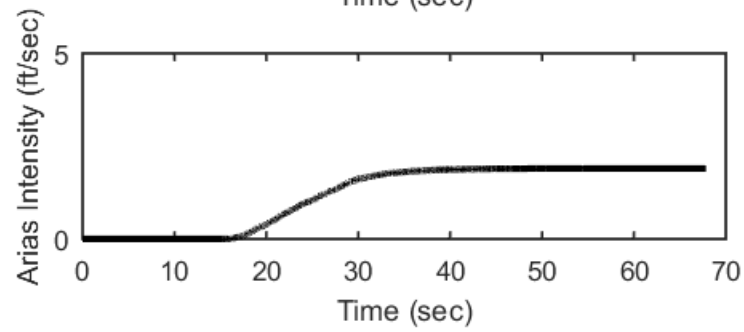
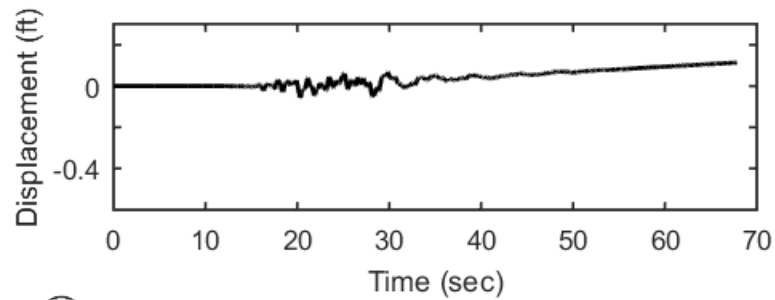
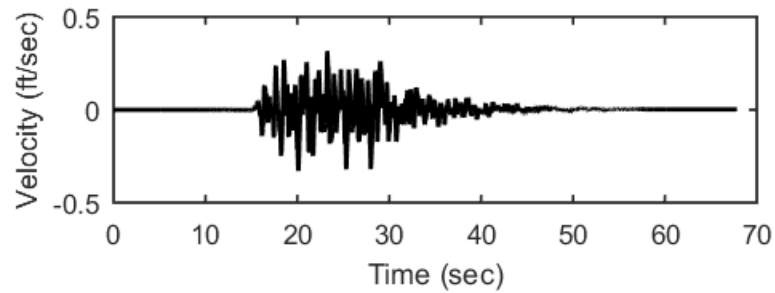
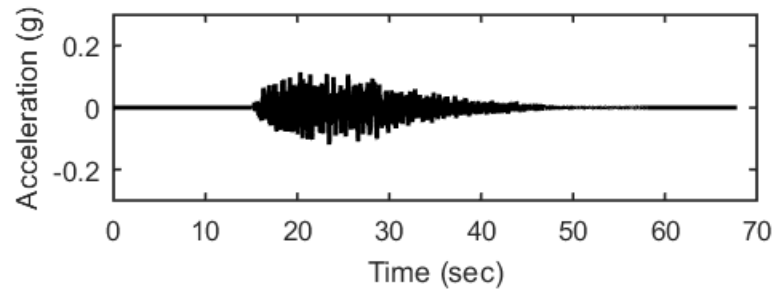
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



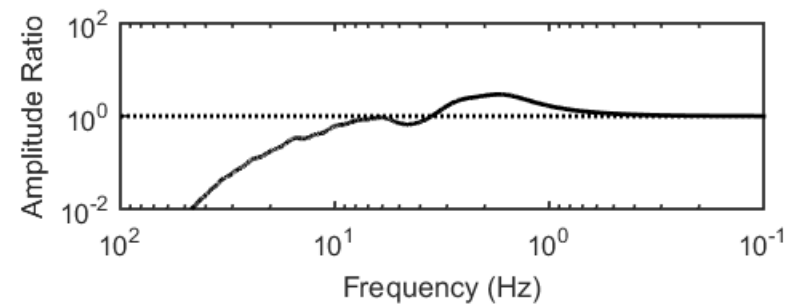
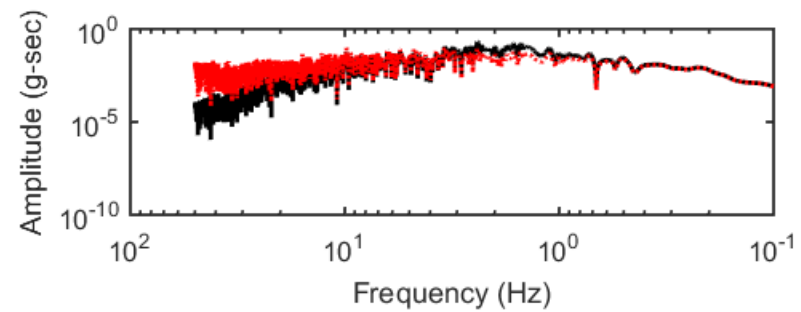
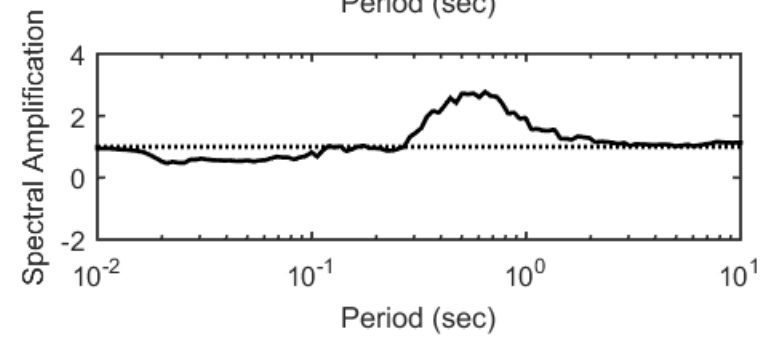
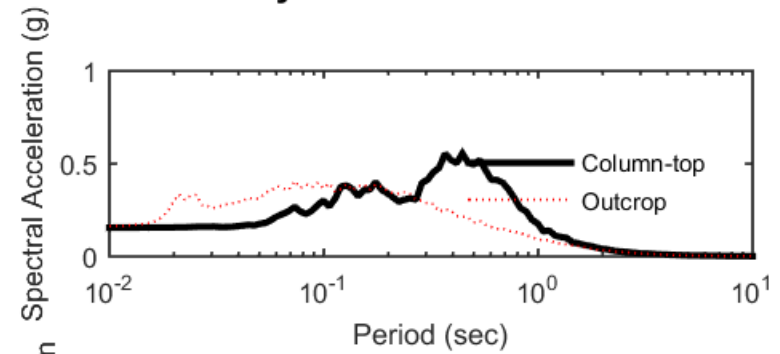
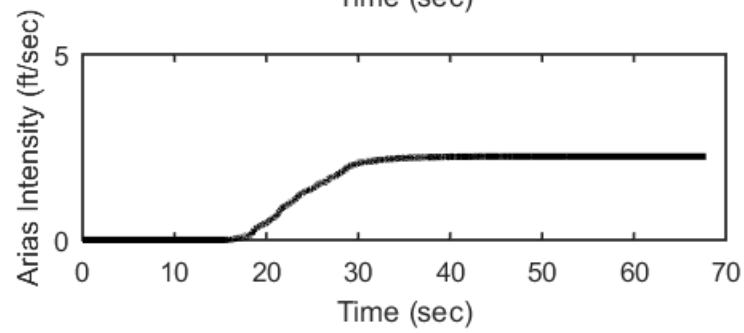
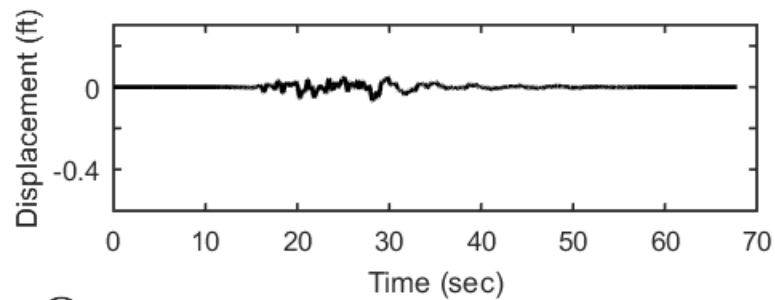
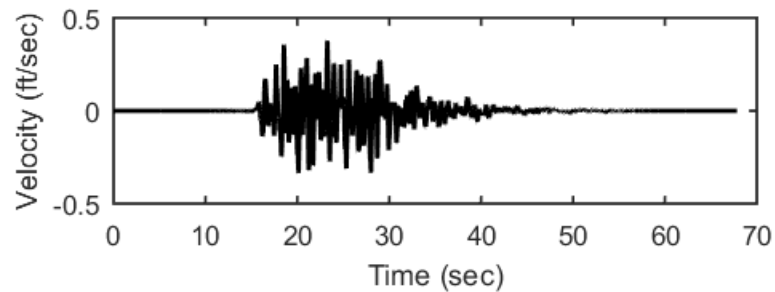
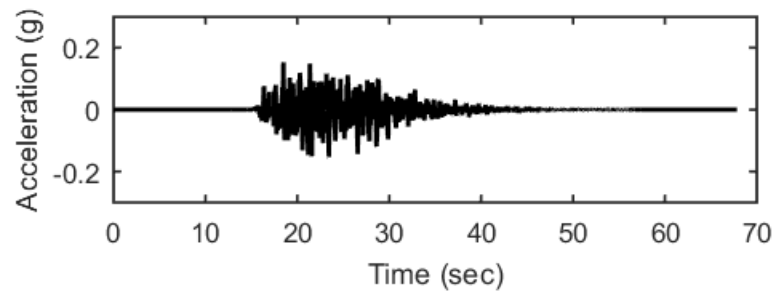
### Profile outputs for Motion: FEE5



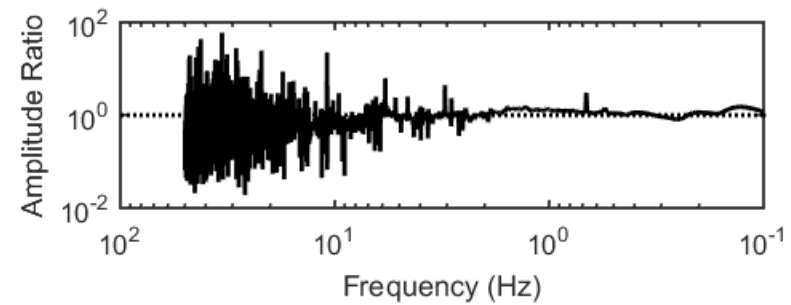
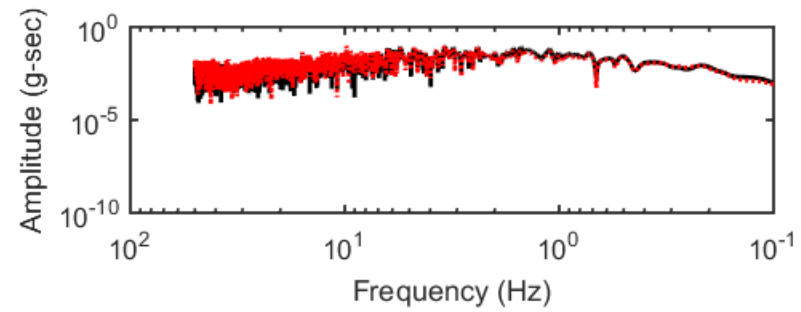
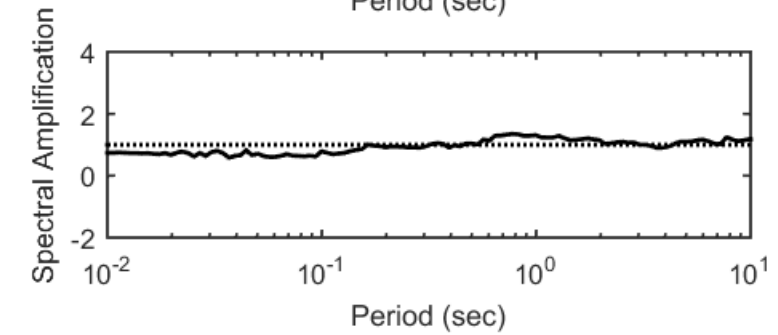
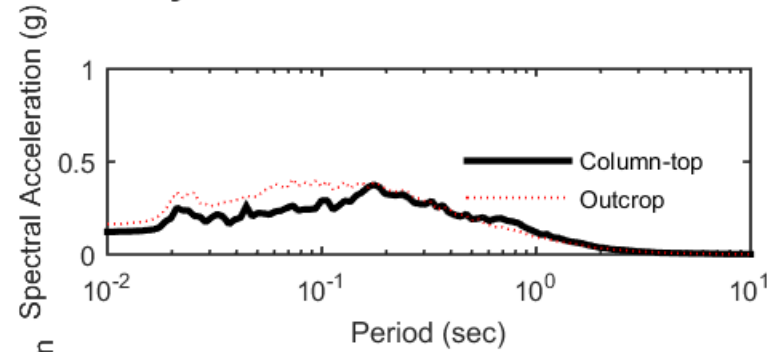
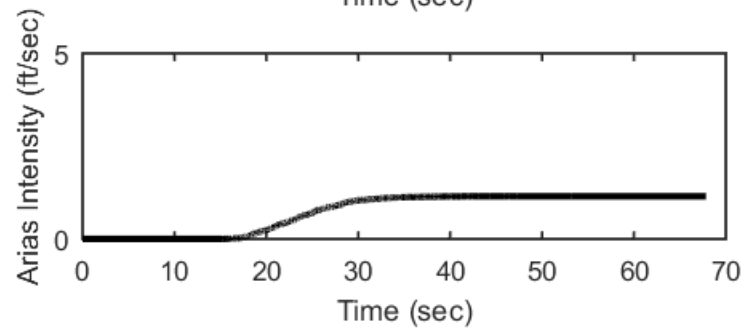
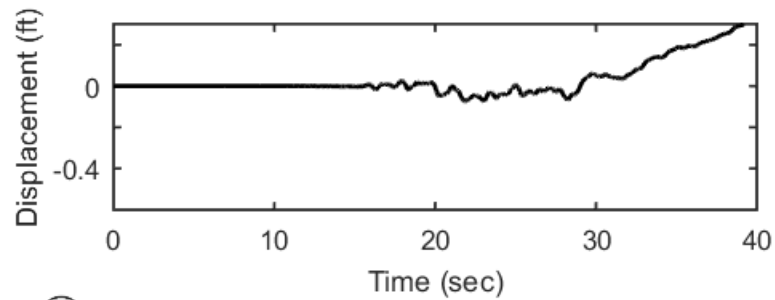
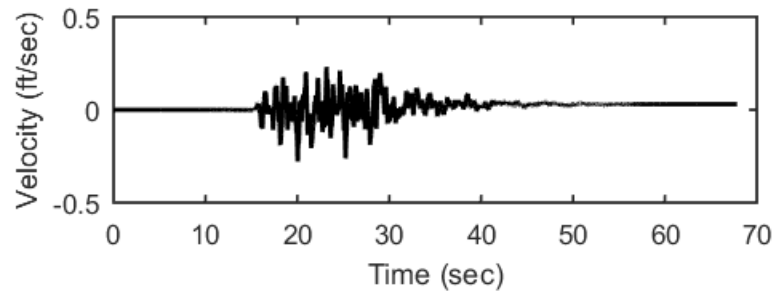
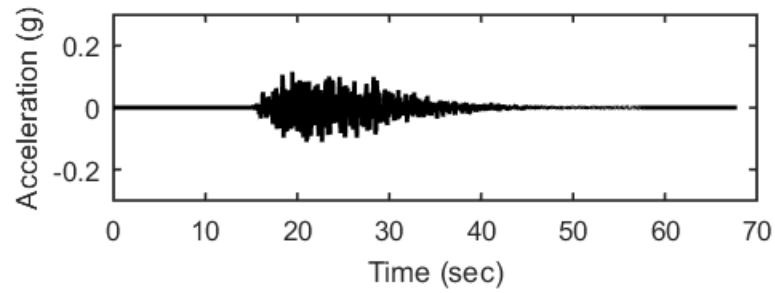
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



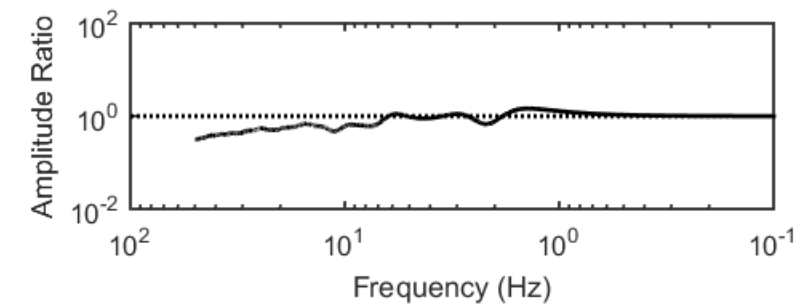
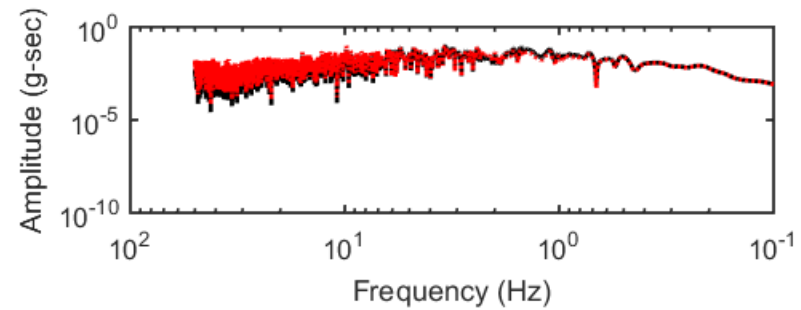
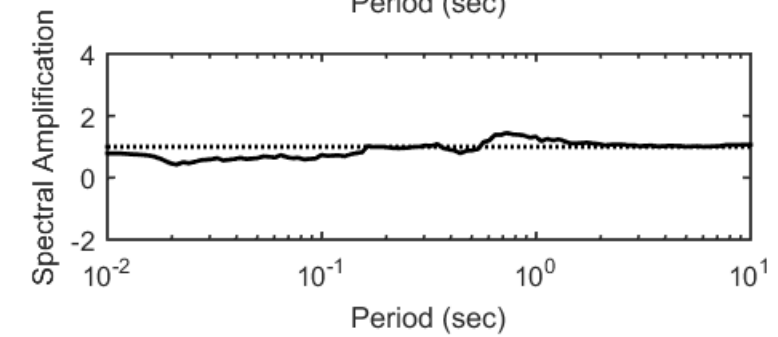
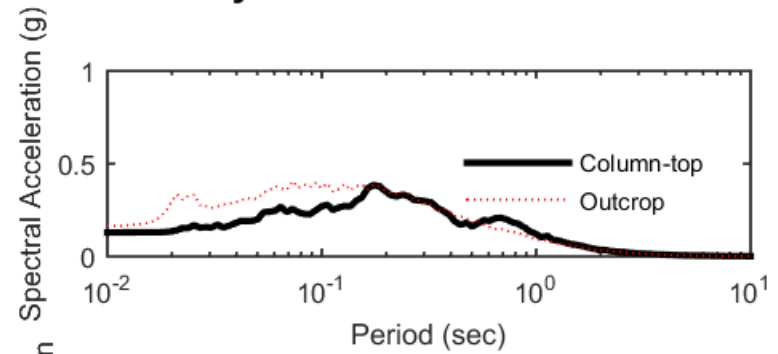
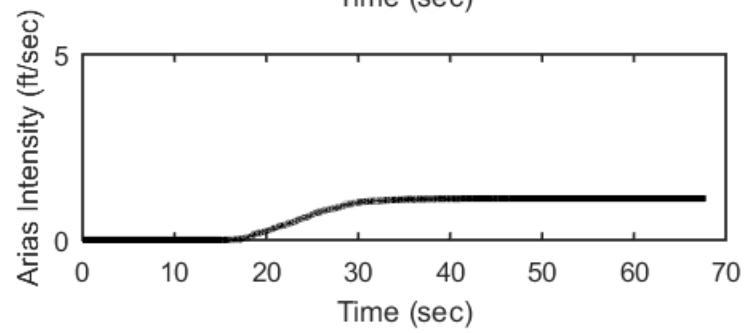
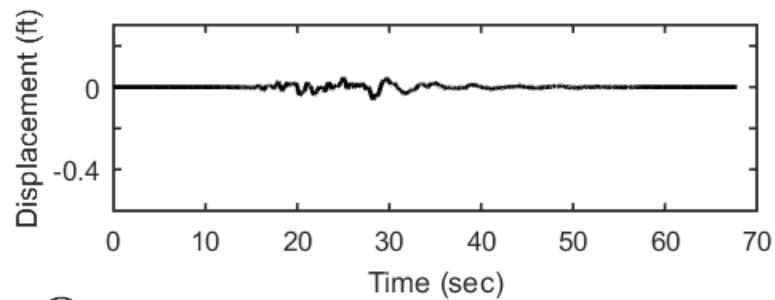
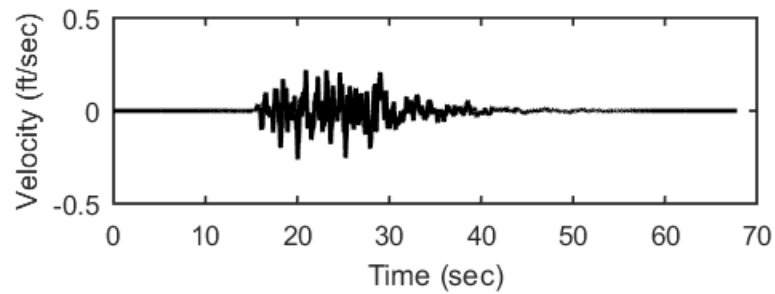
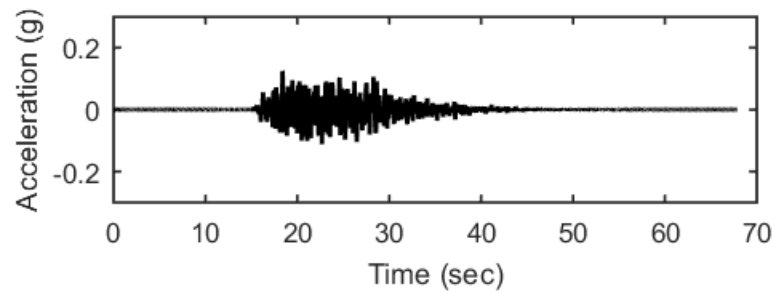
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



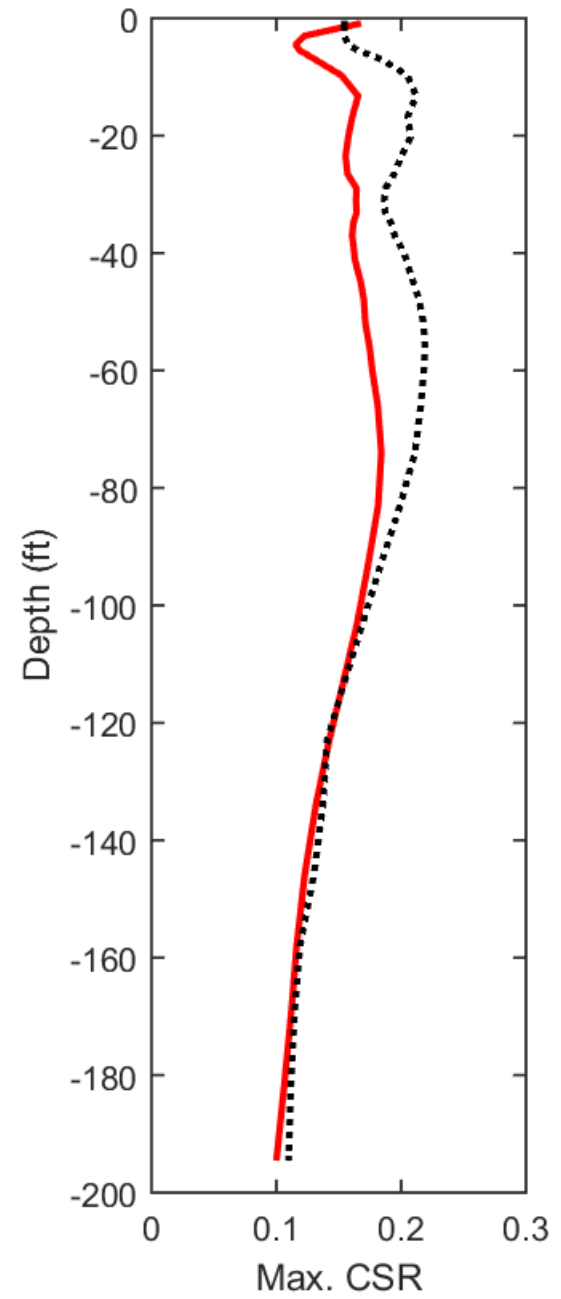
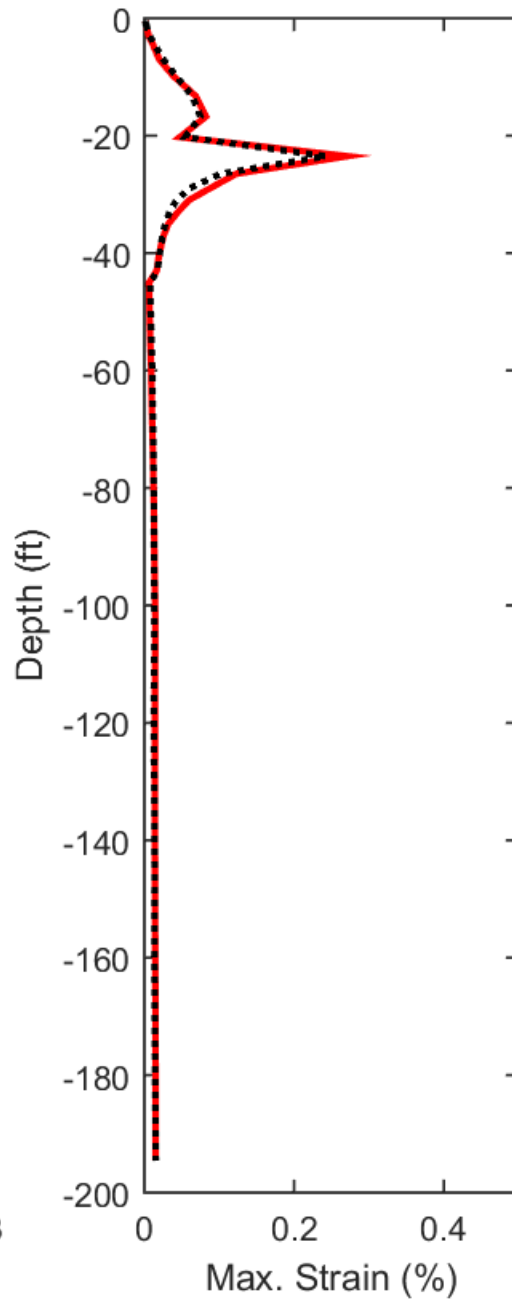
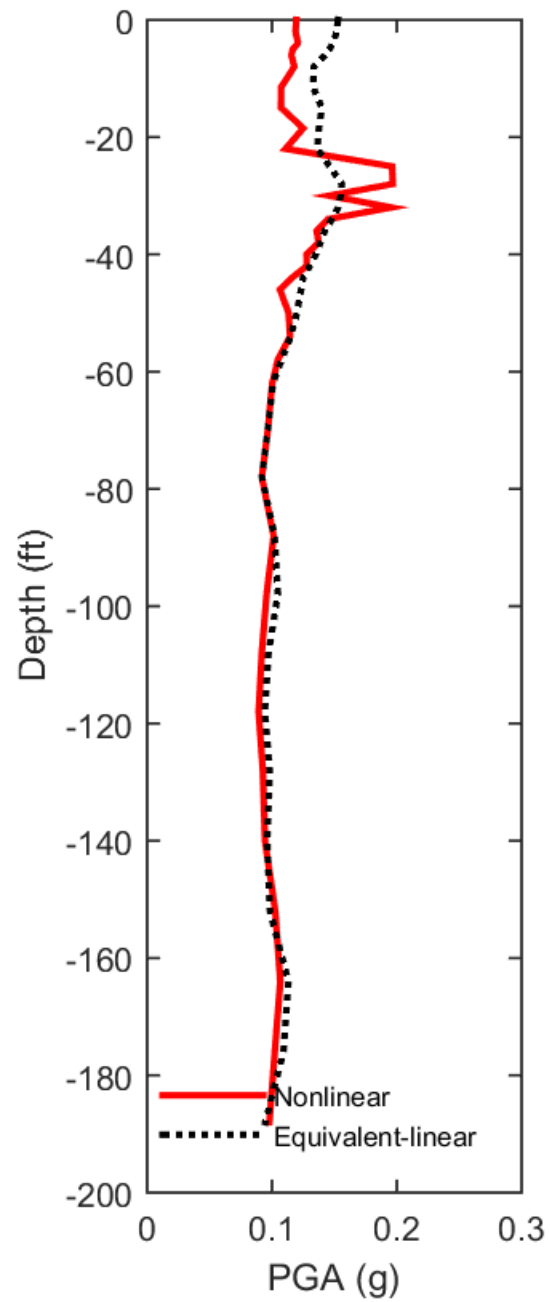
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6

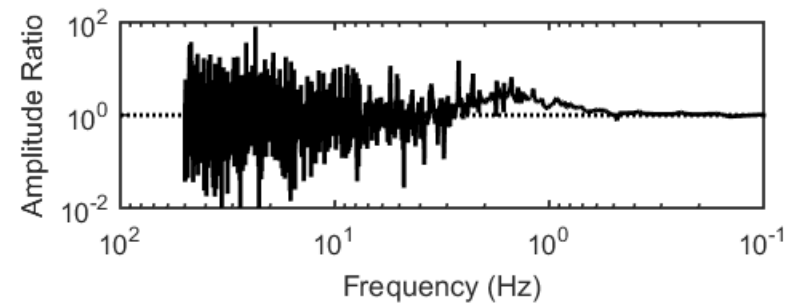
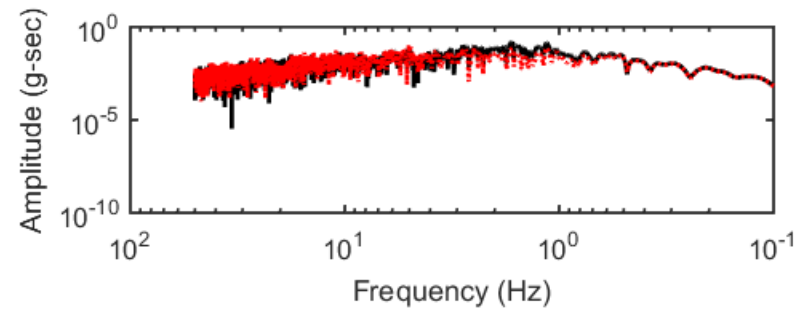
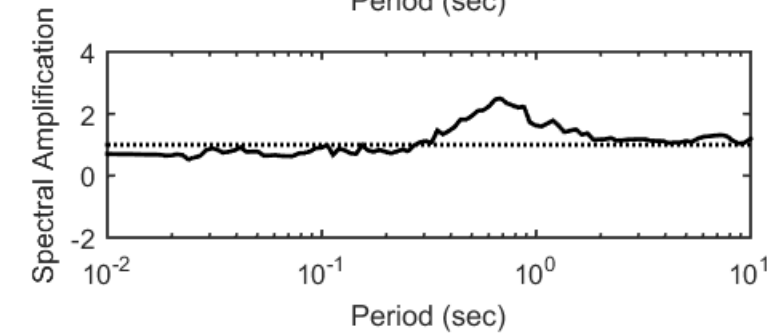
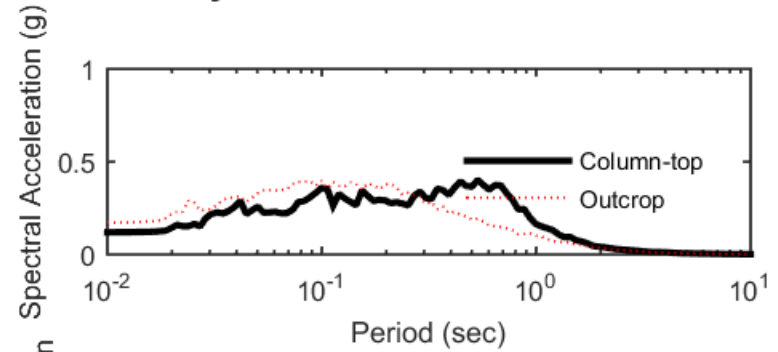
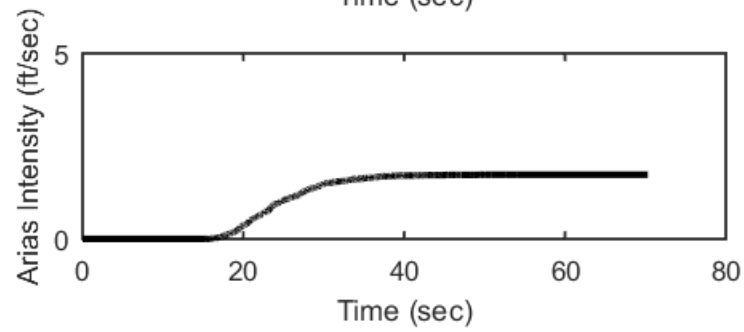
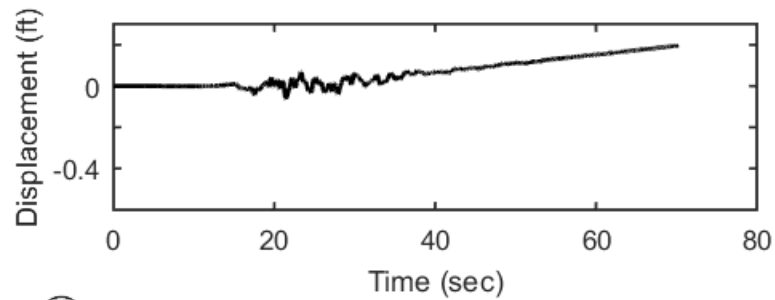
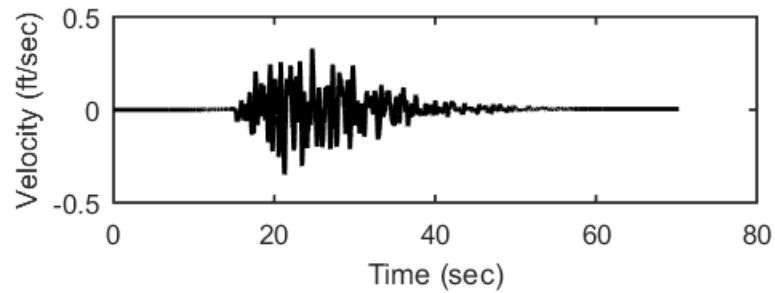
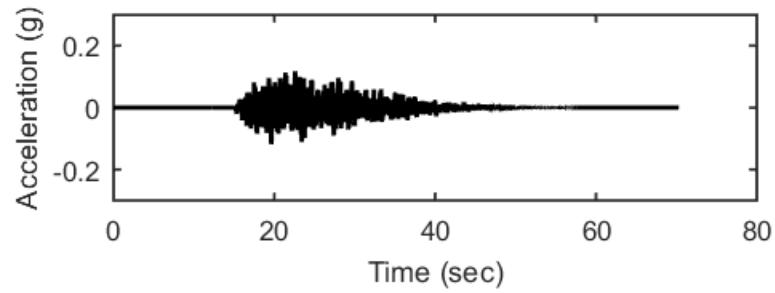


### Profile outputs for Motion: FEE6

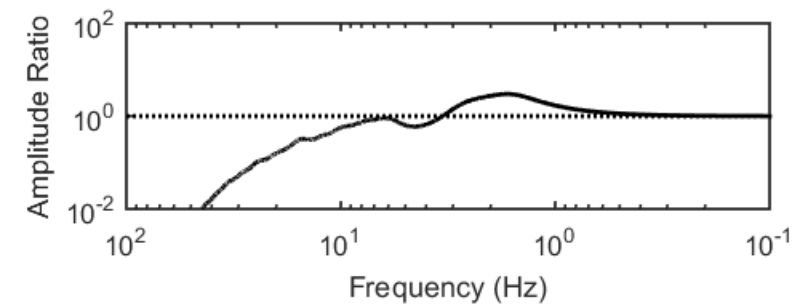
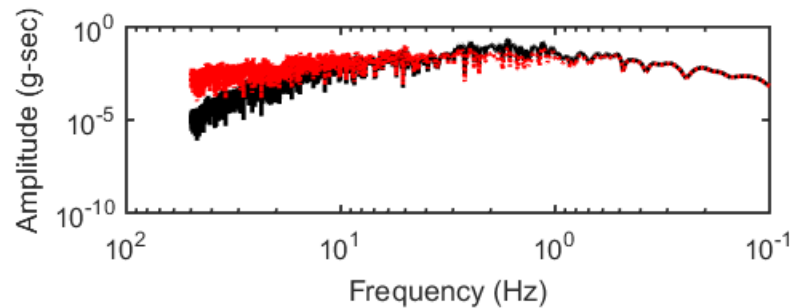
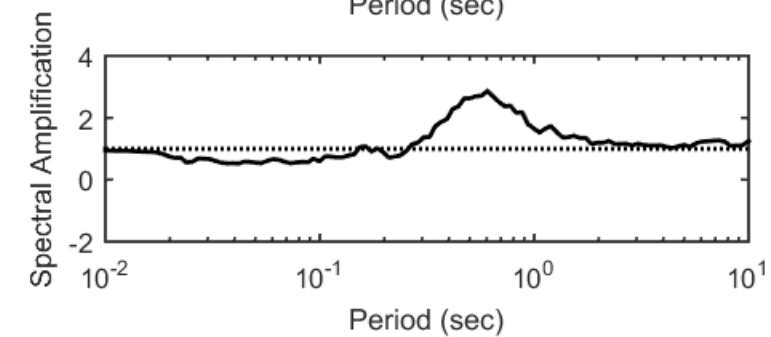
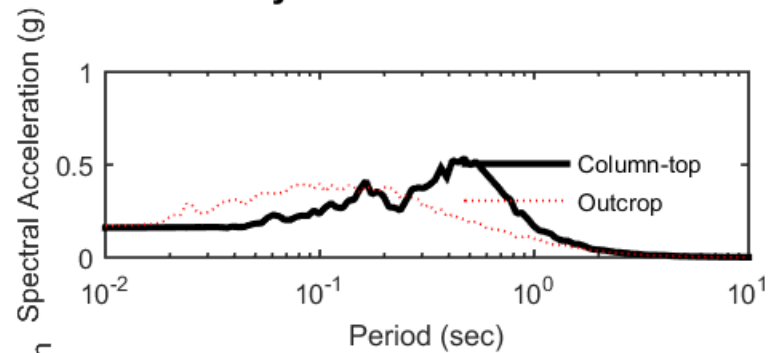
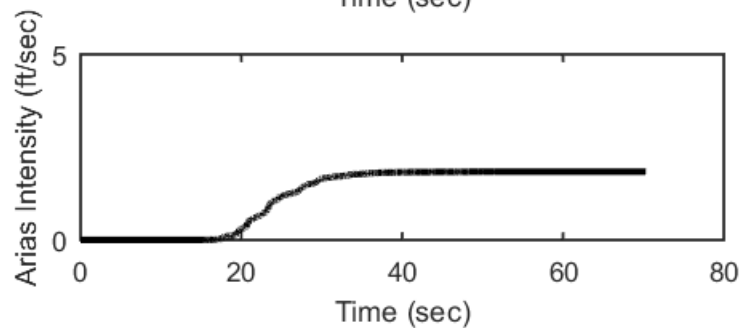
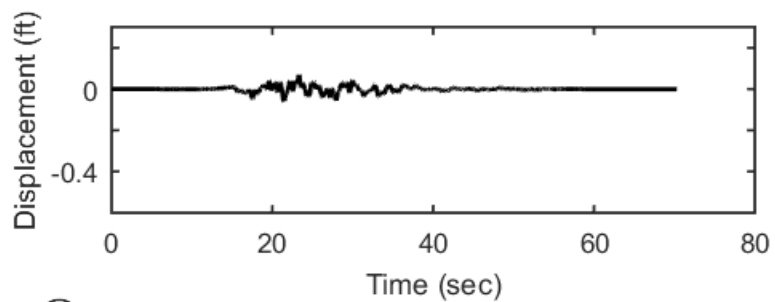
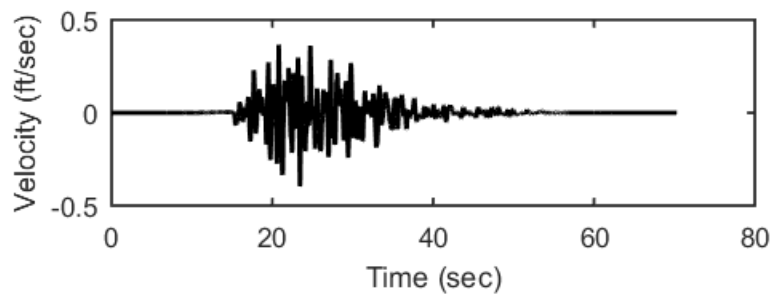
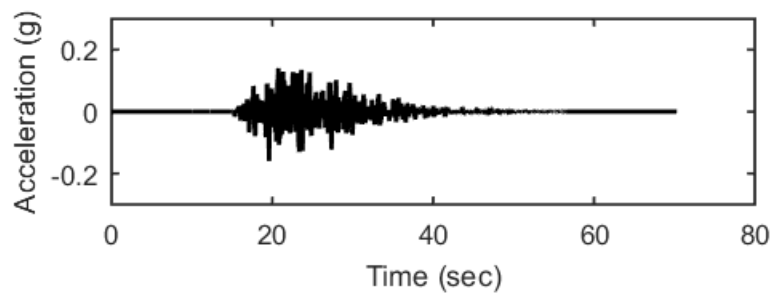




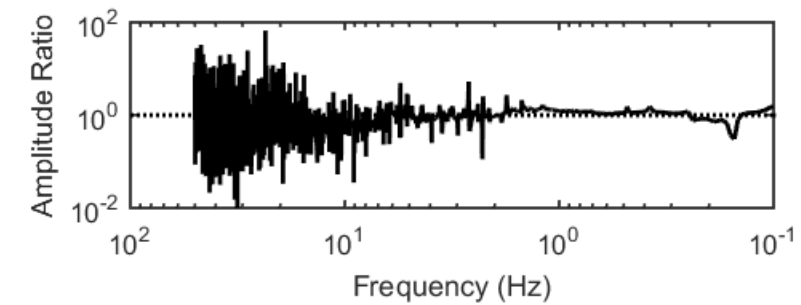
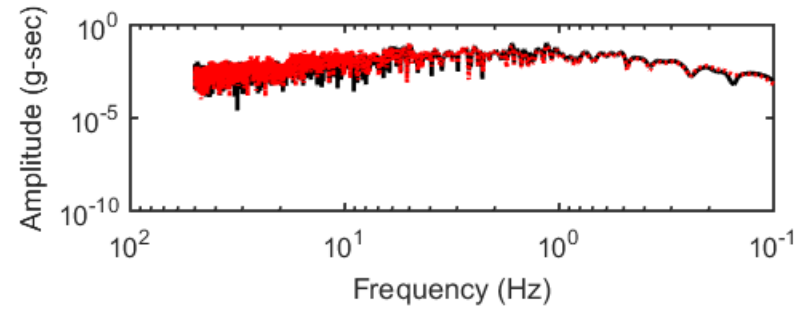
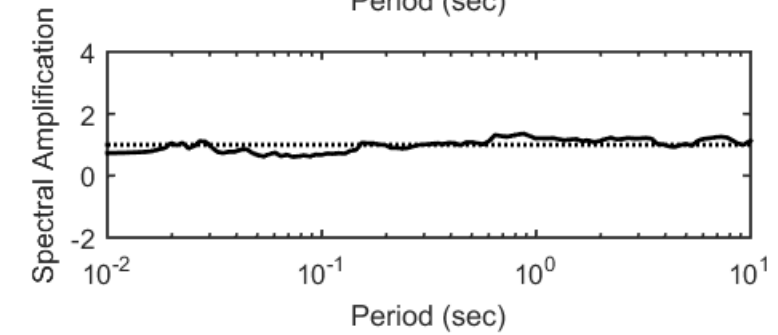
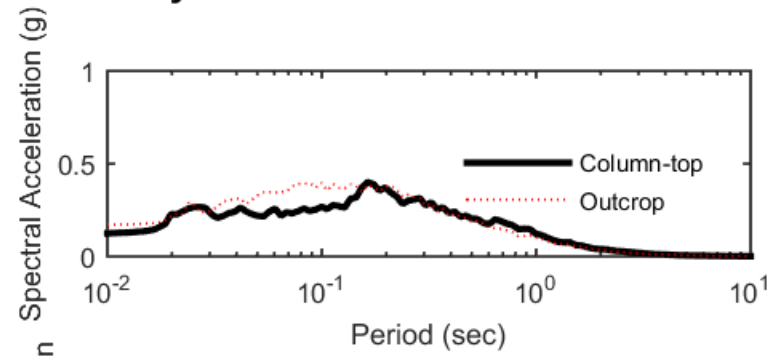
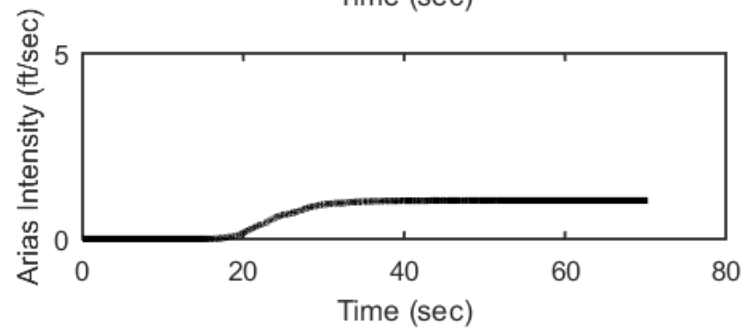
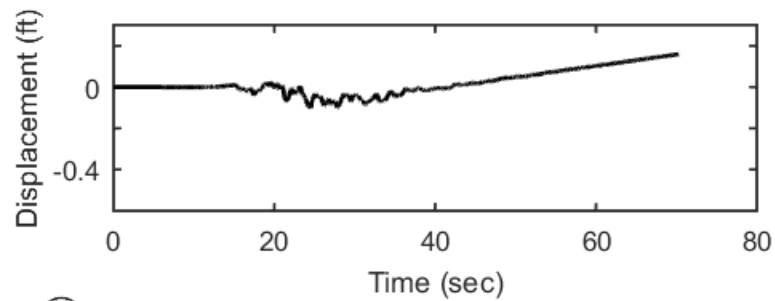
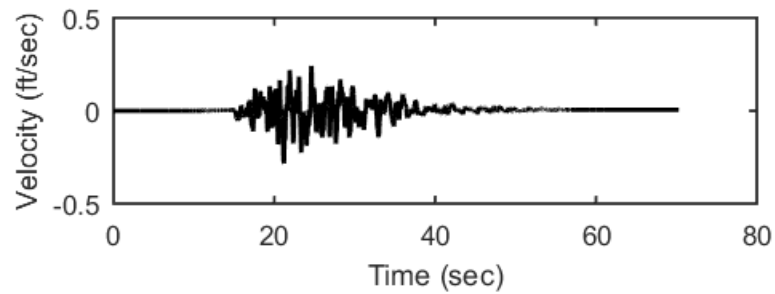
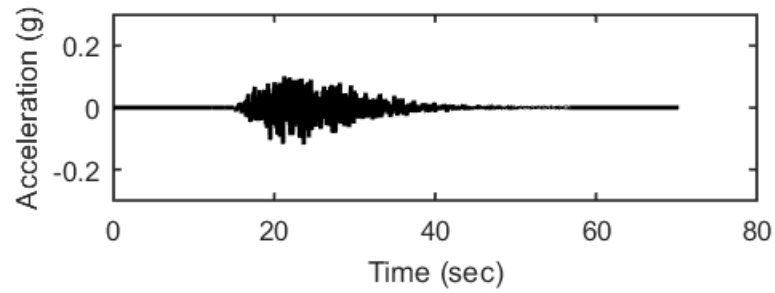
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



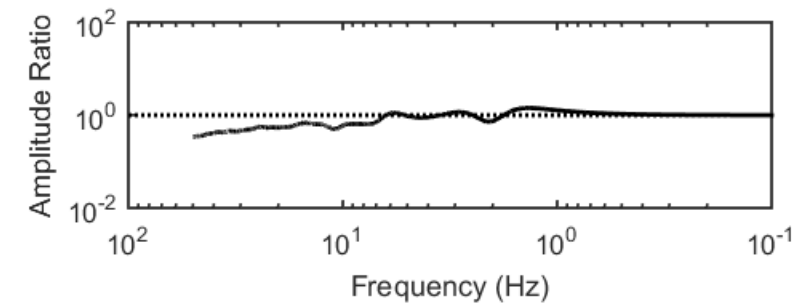
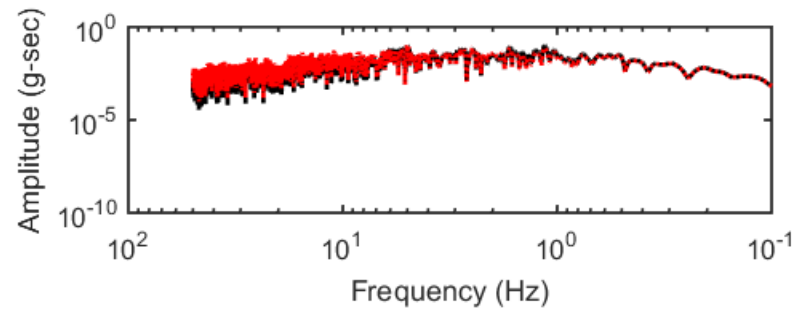
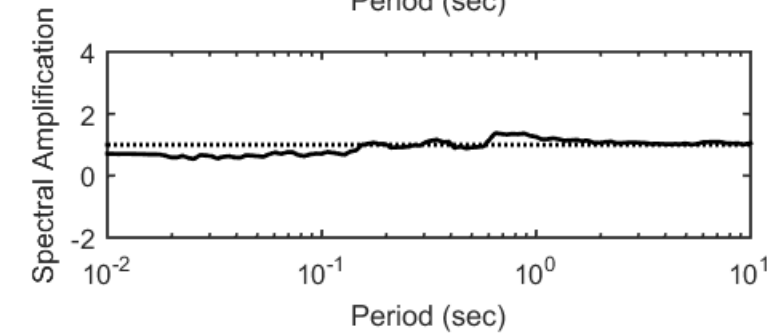
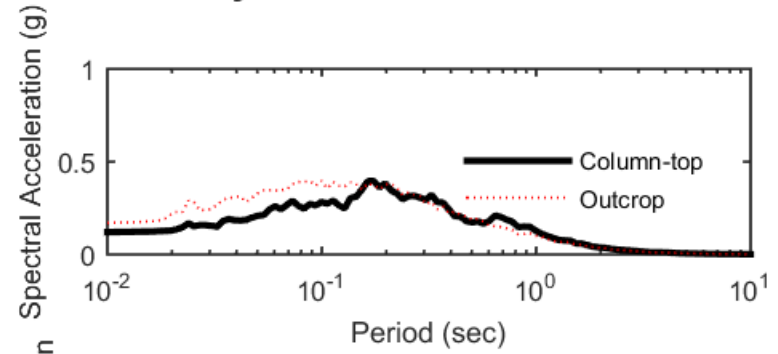
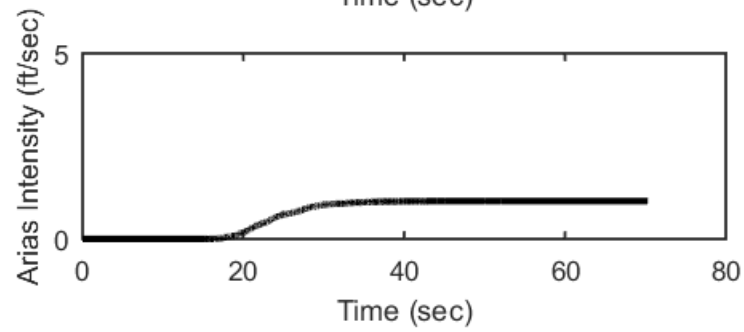
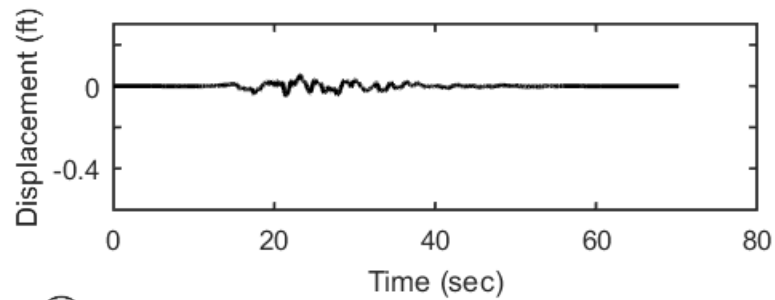
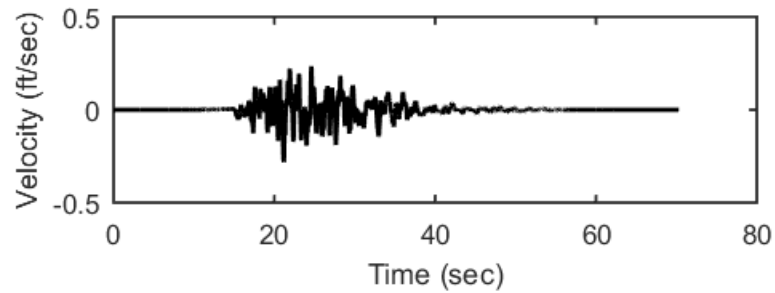
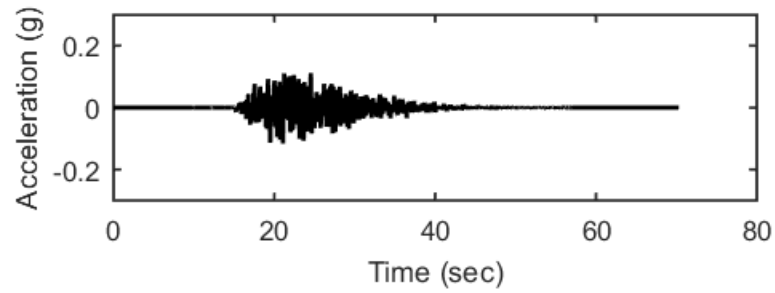
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



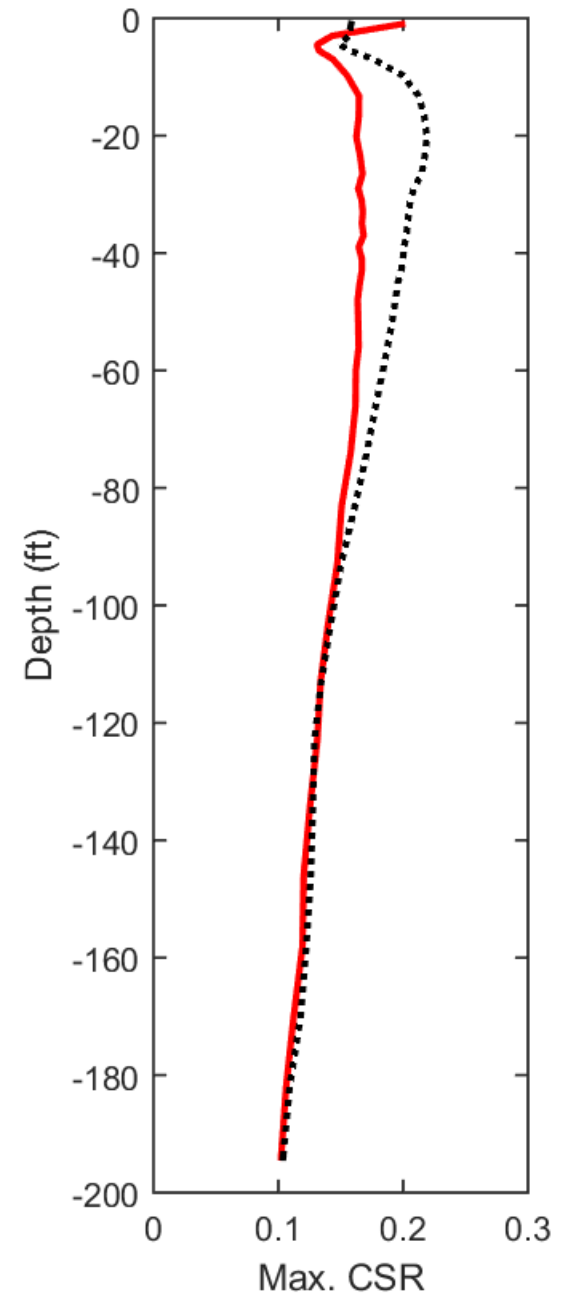
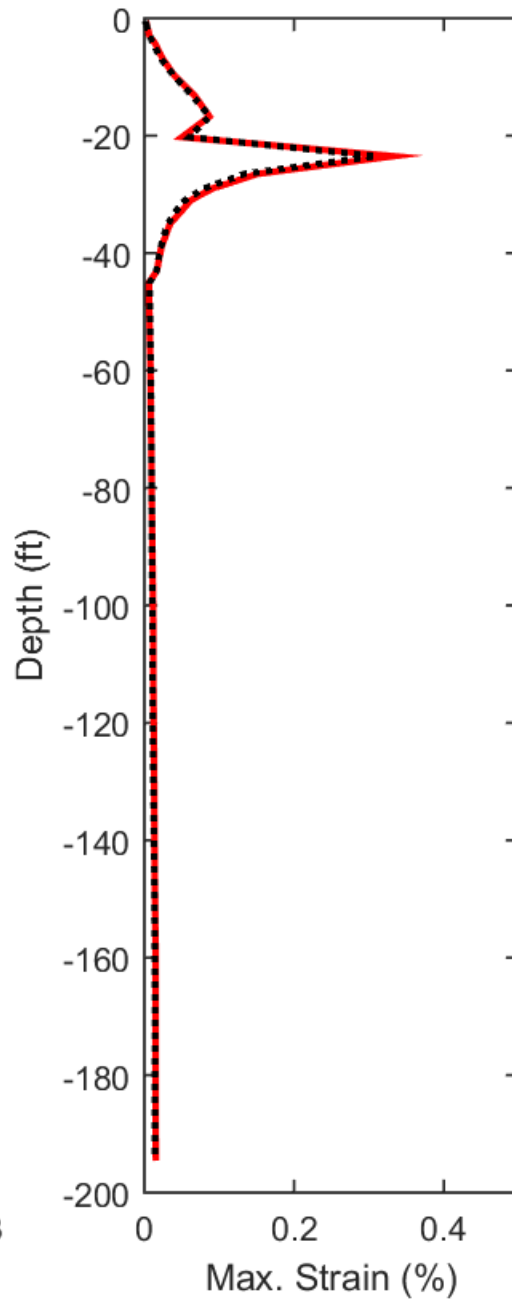
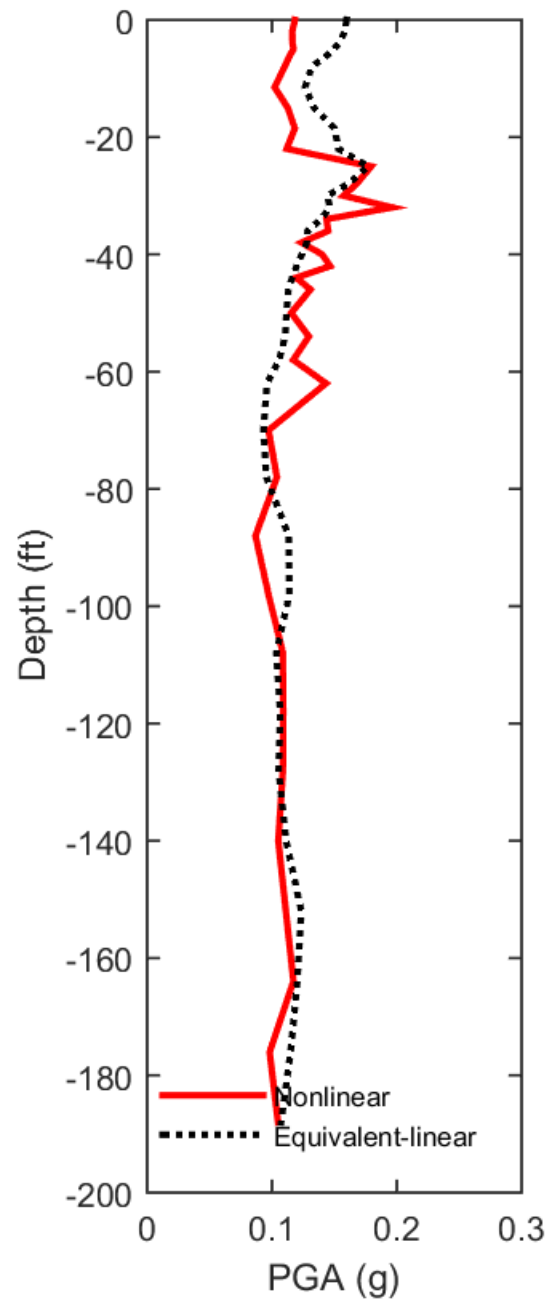
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



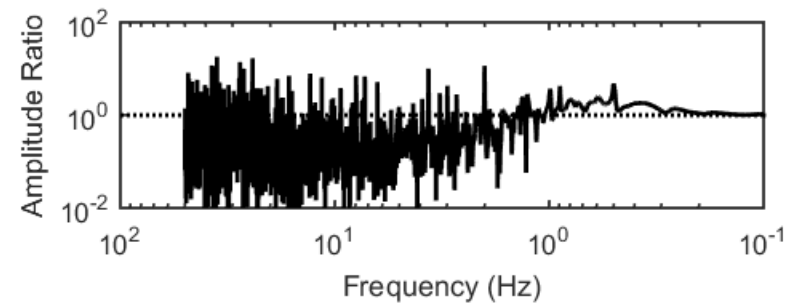
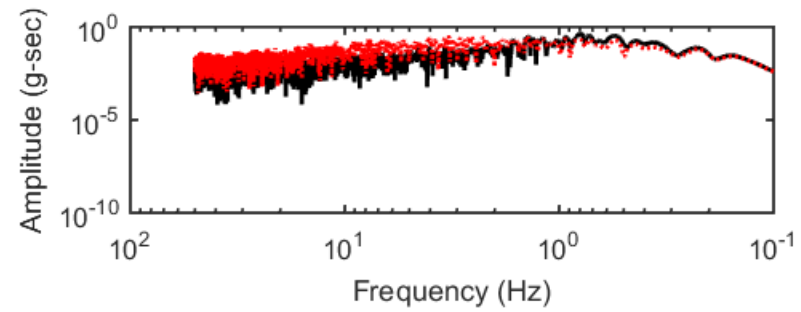
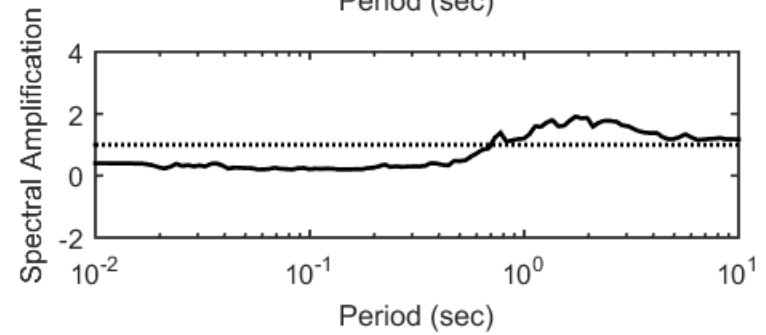
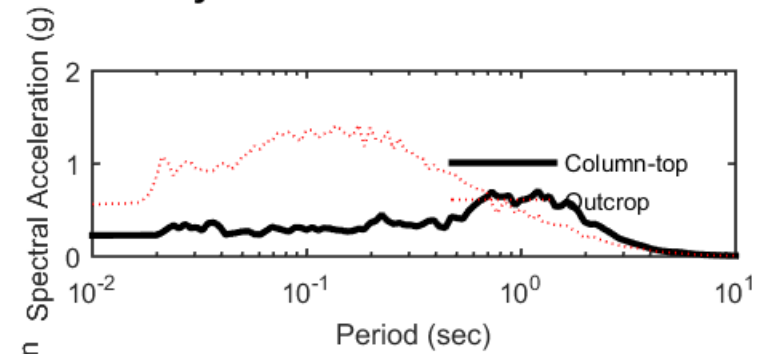
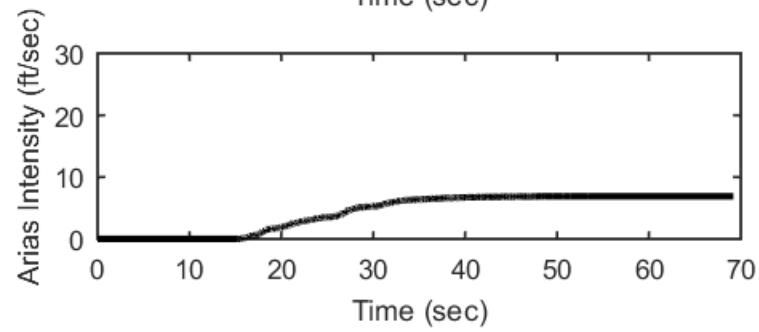
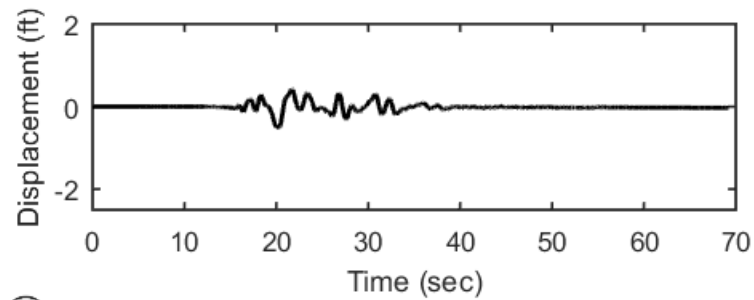
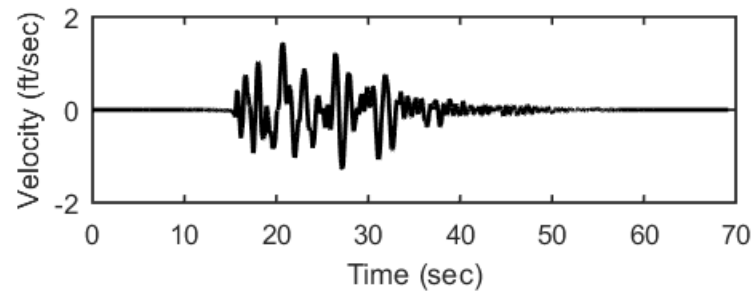
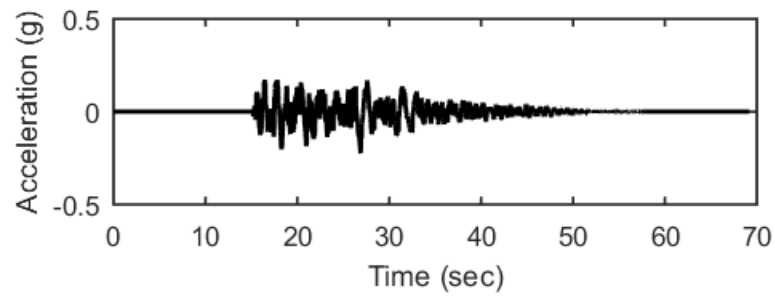
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



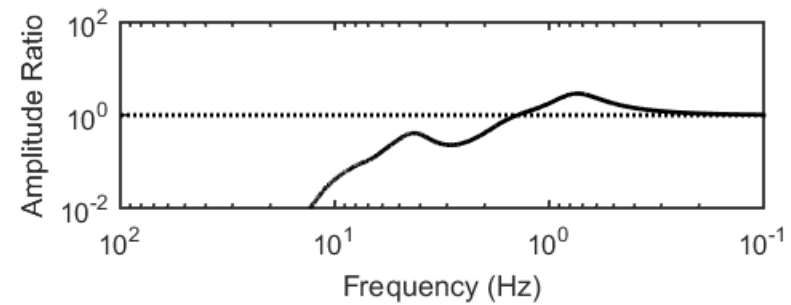
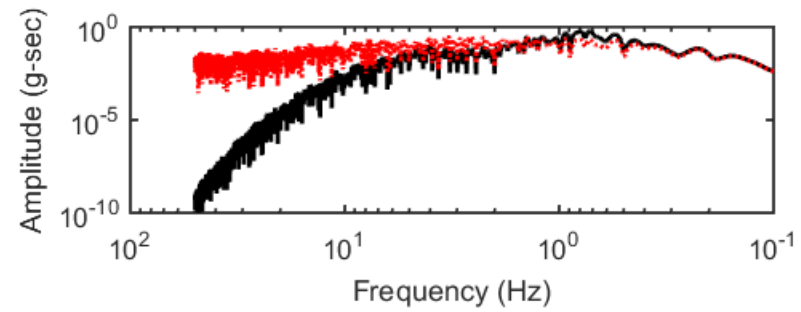
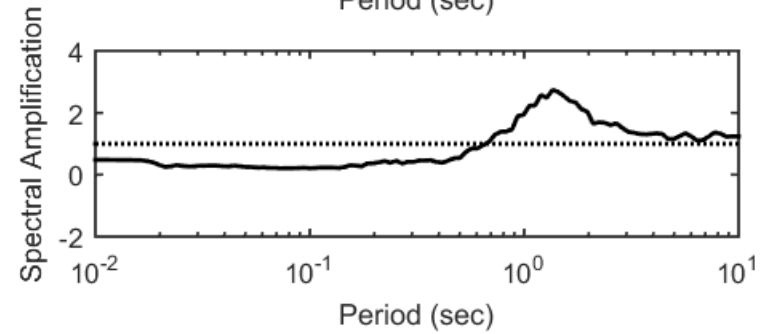
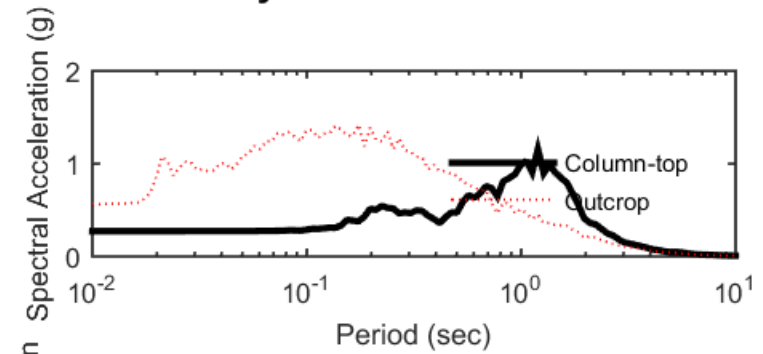
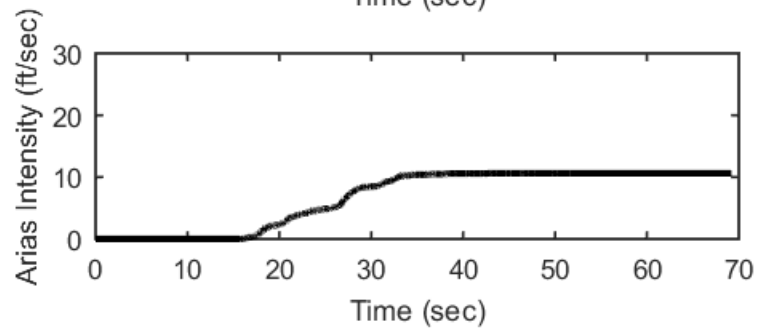
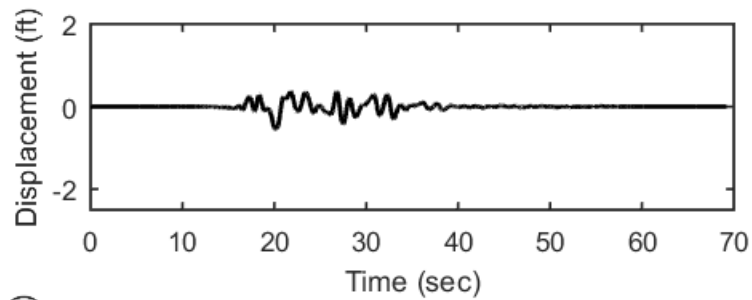
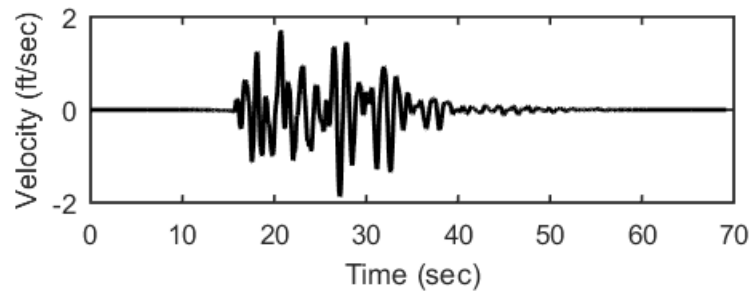
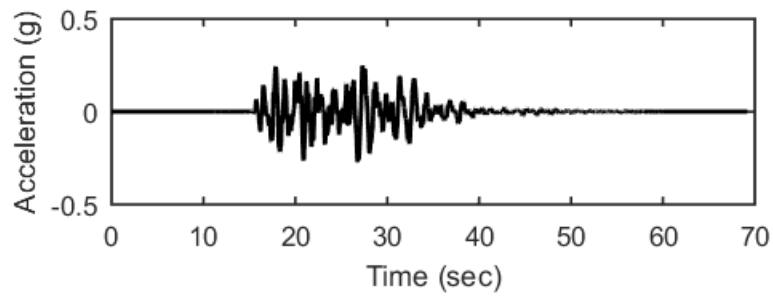
### Profile outputs for Motion: FEE7



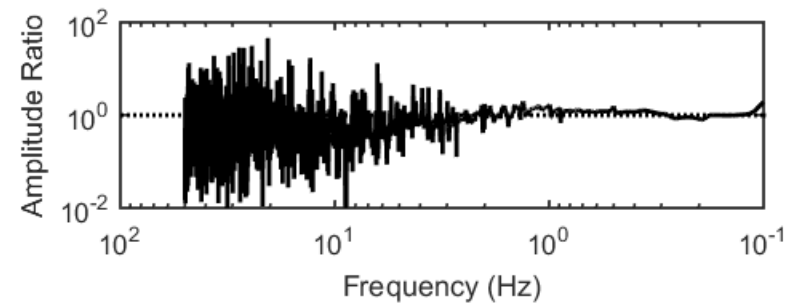
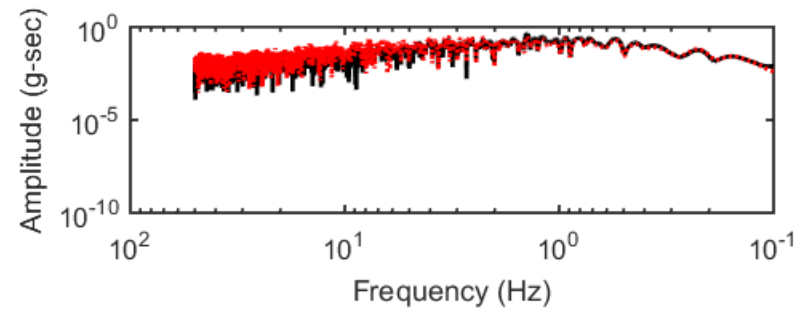
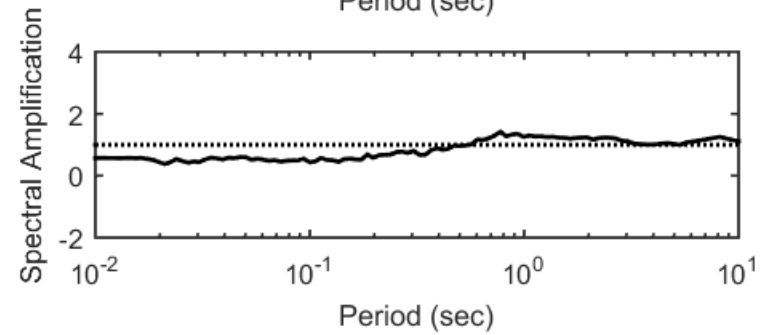
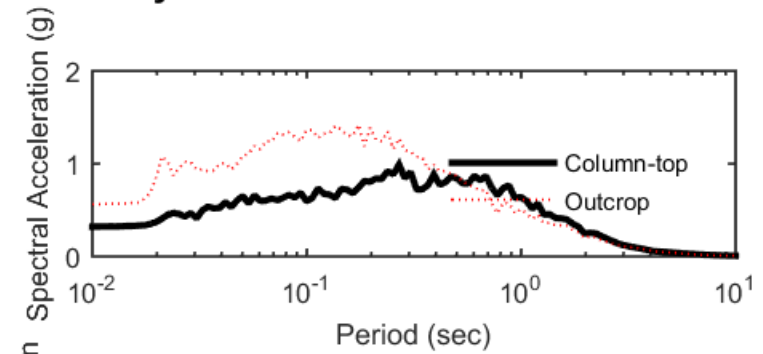
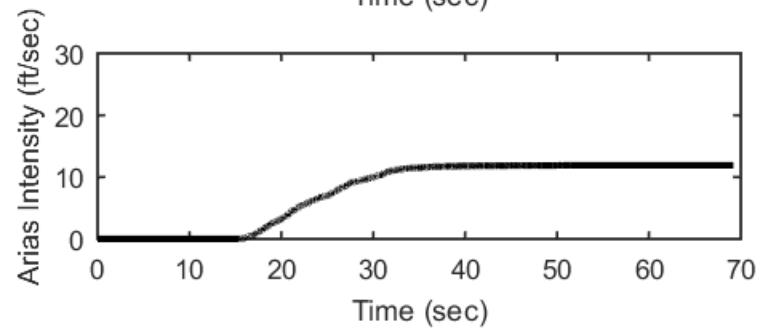
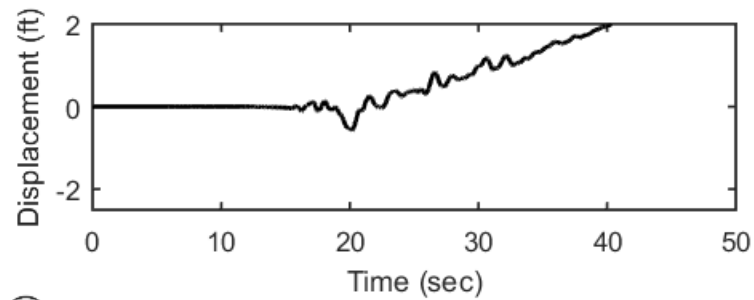
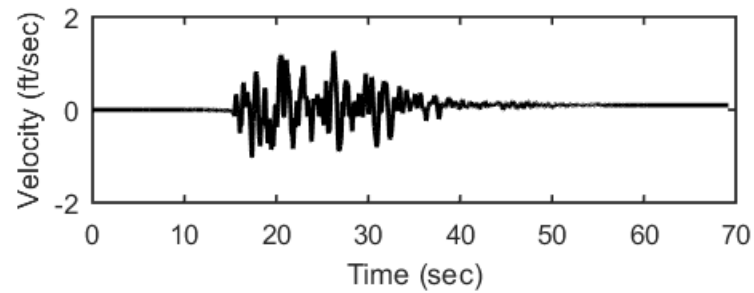
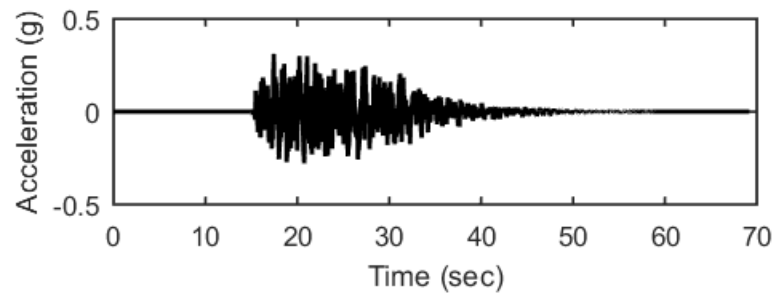
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1

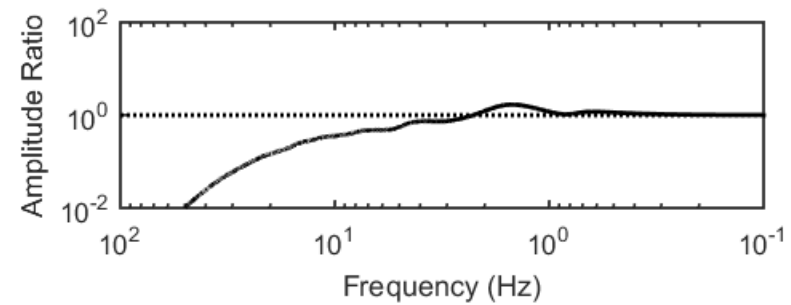
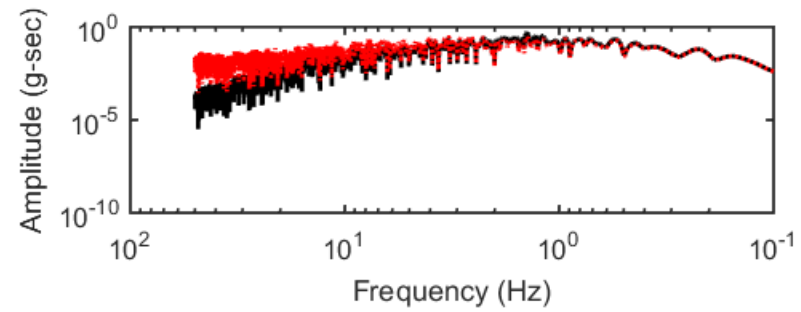
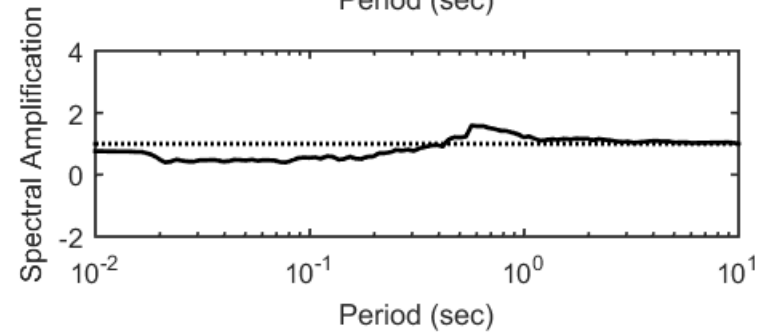
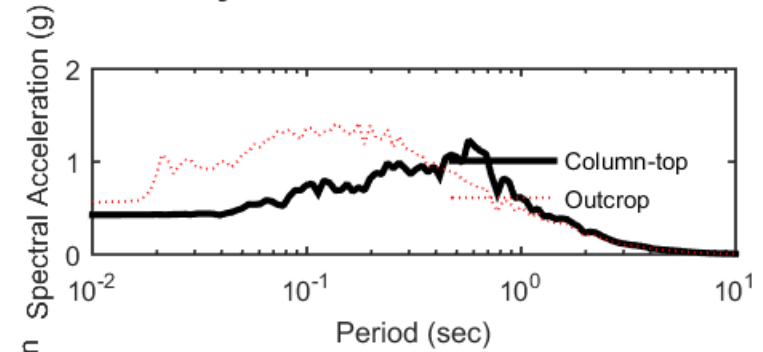
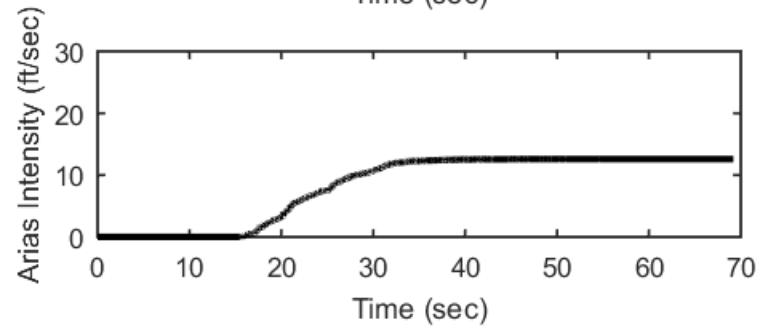
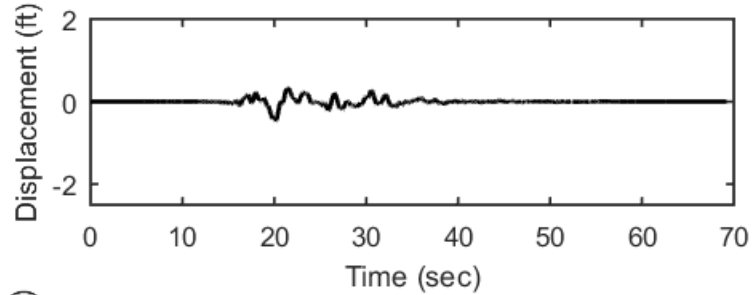
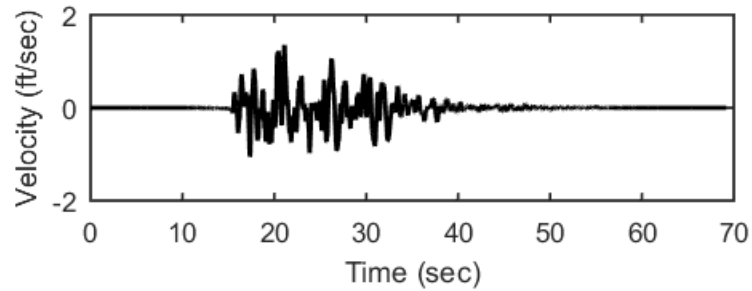
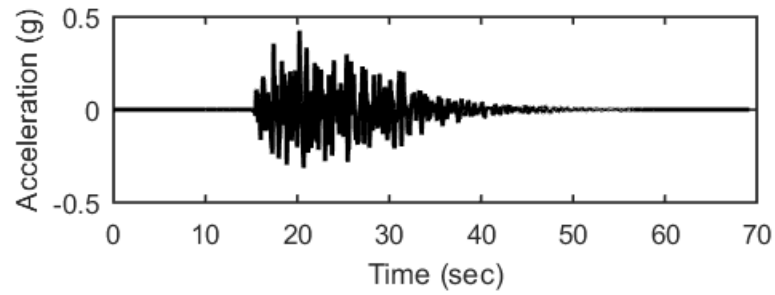


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1

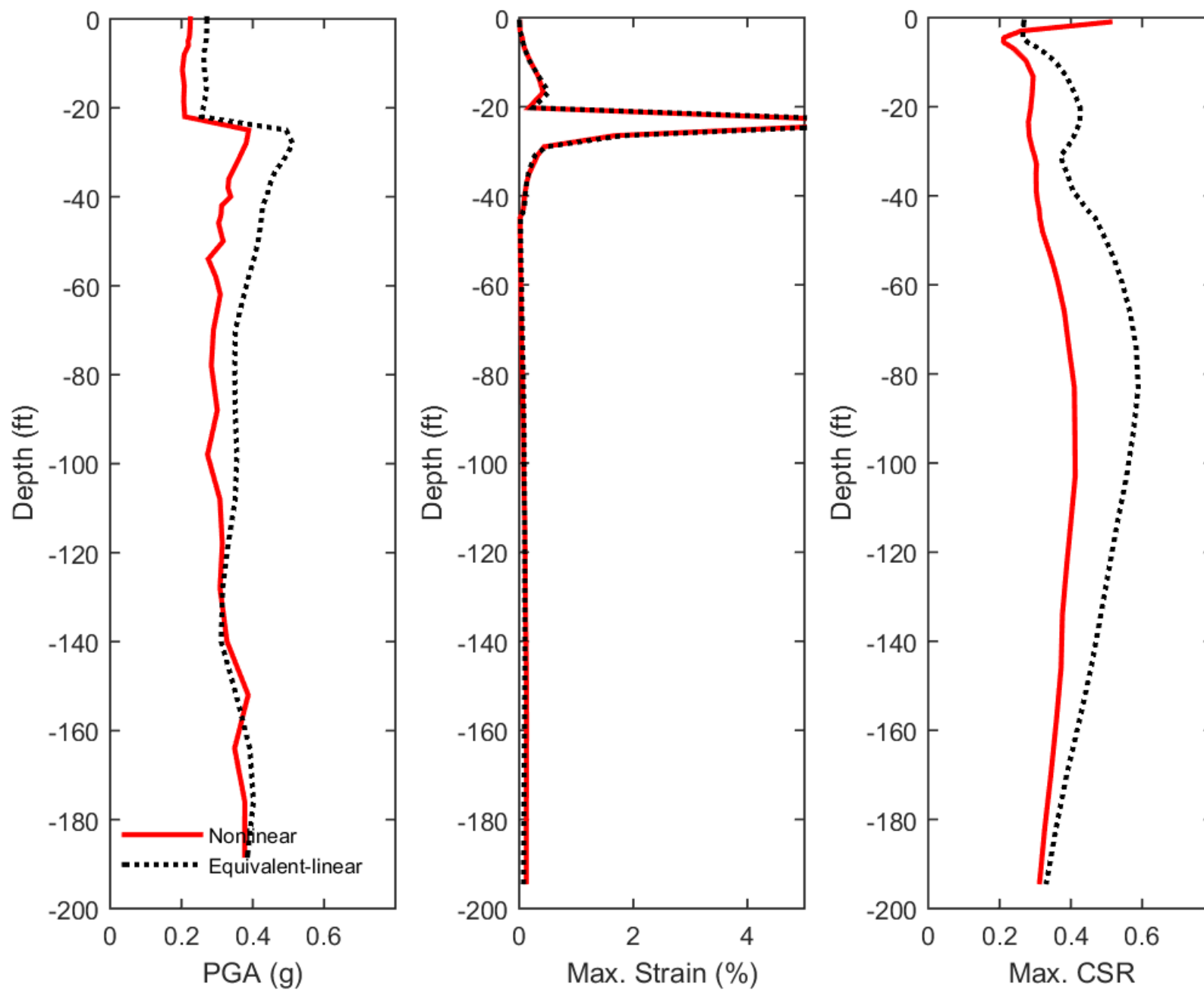




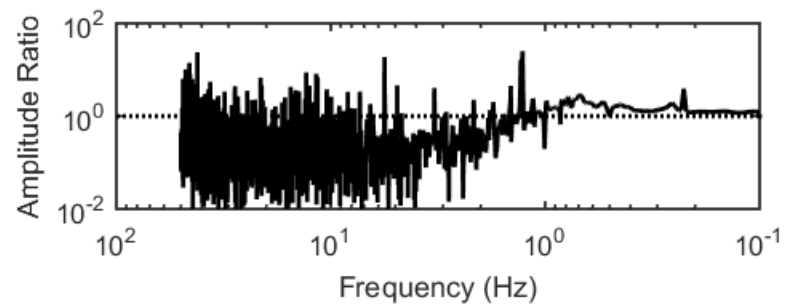
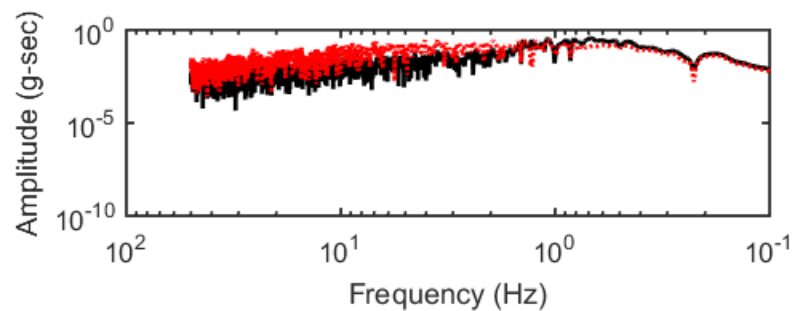
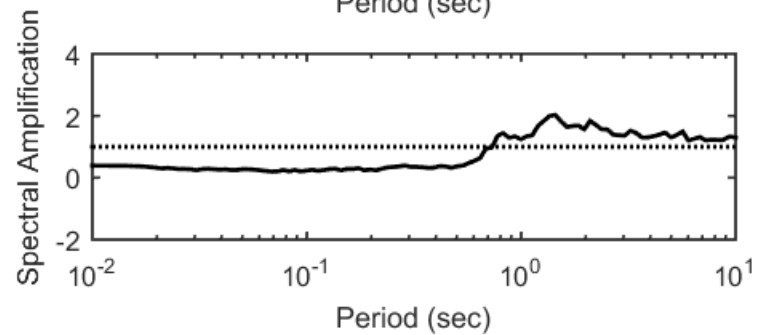
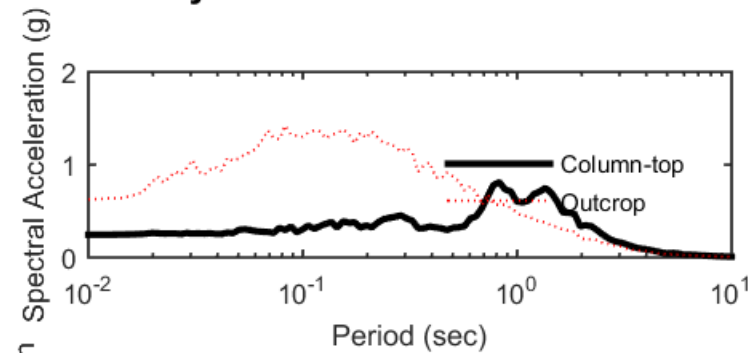
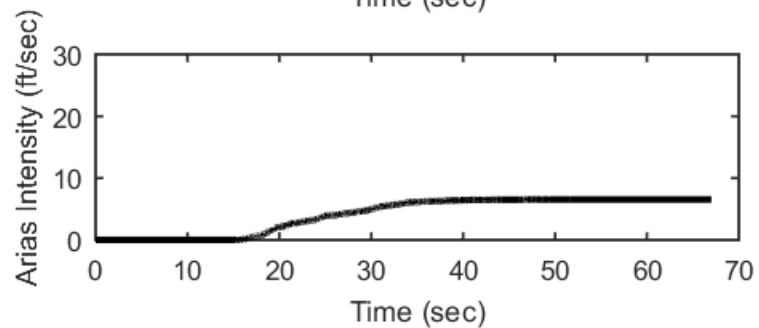
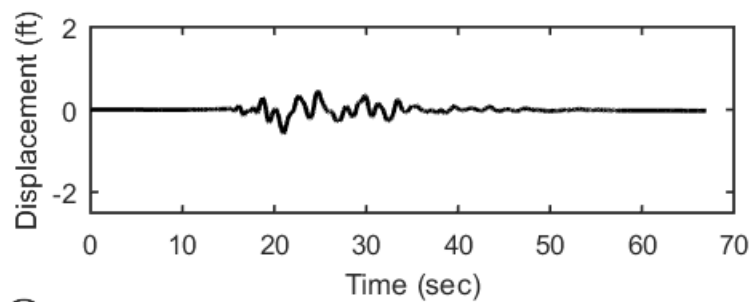
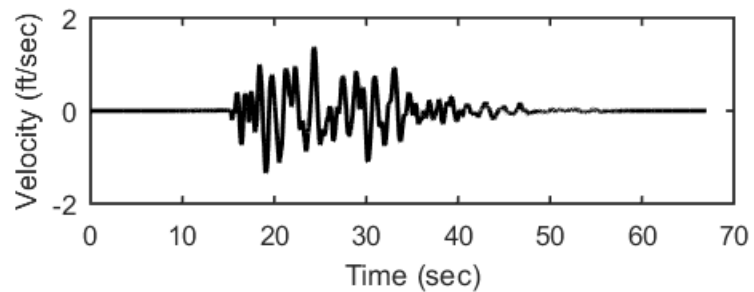
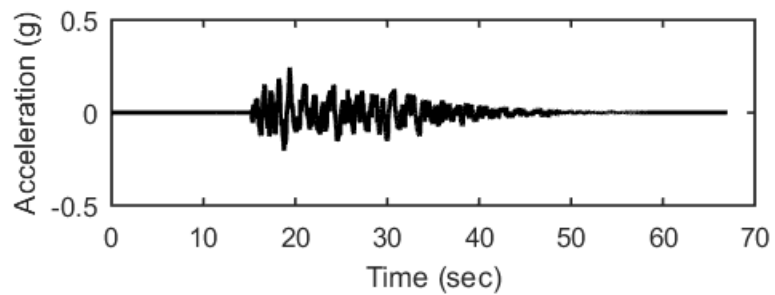
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



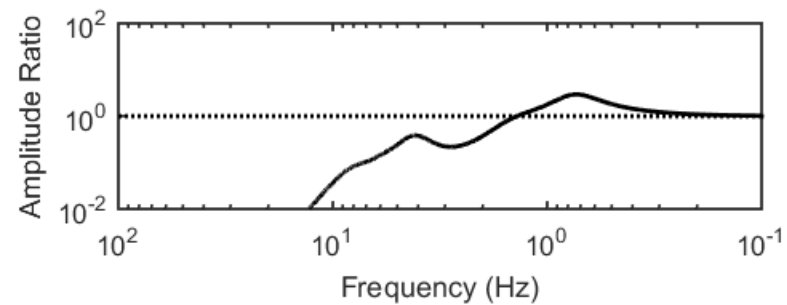
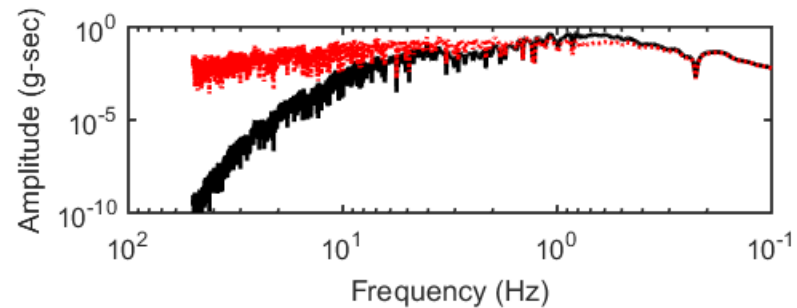
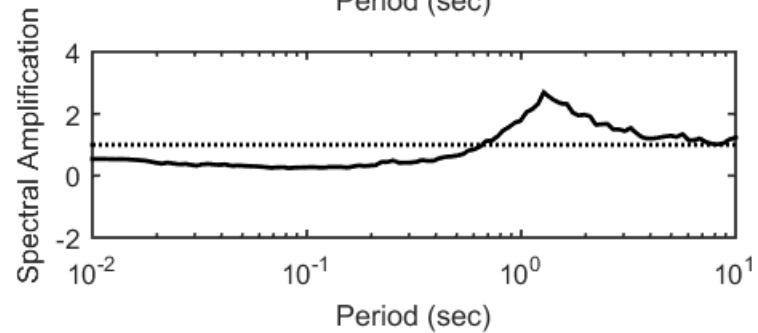
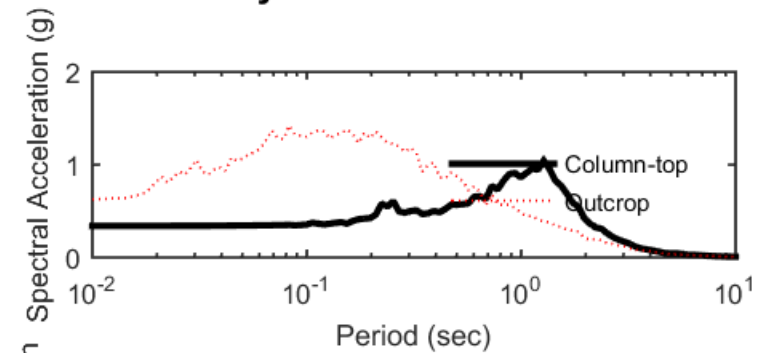
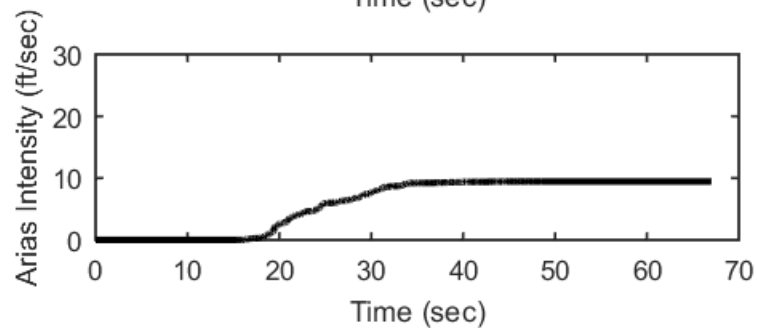
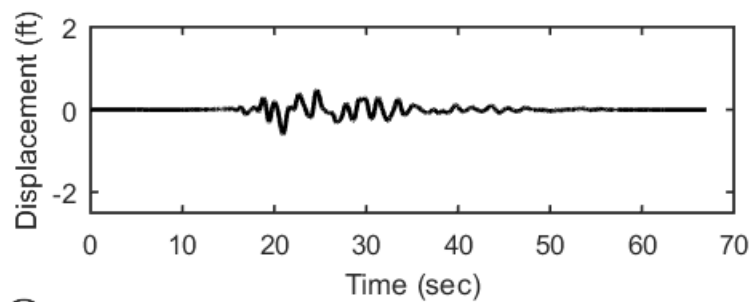
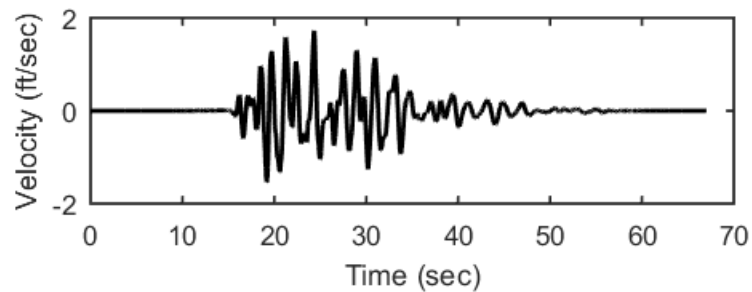
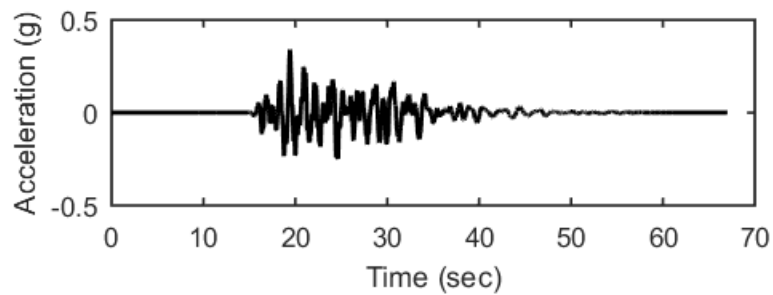
### Profile outputs for Motion: SEE1



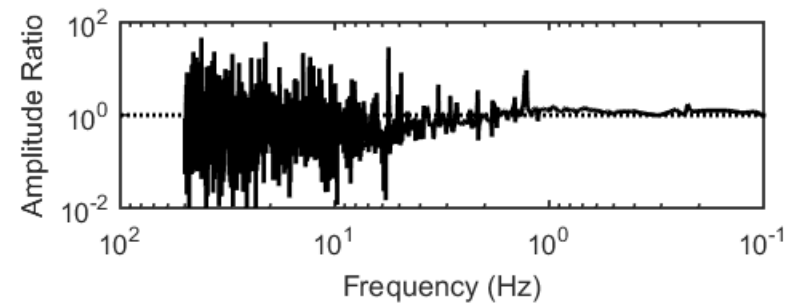
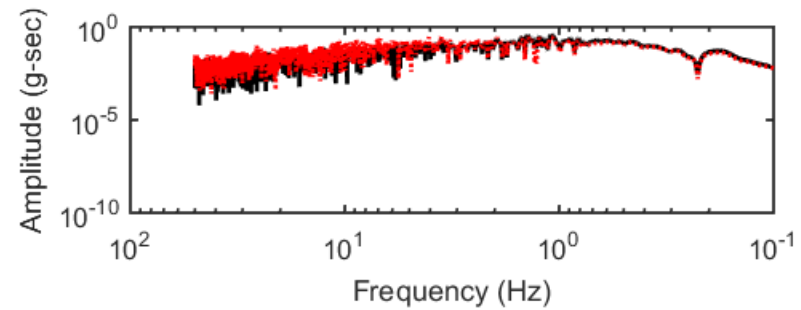
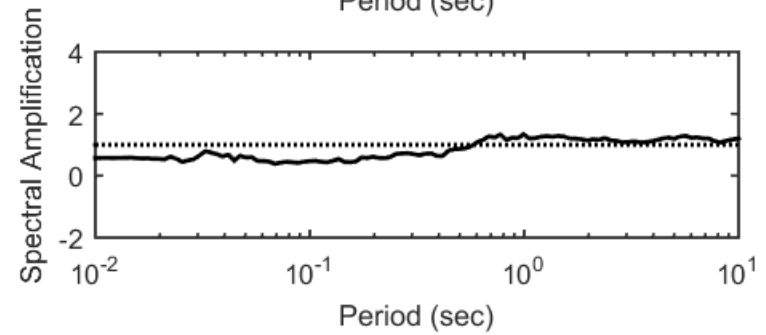
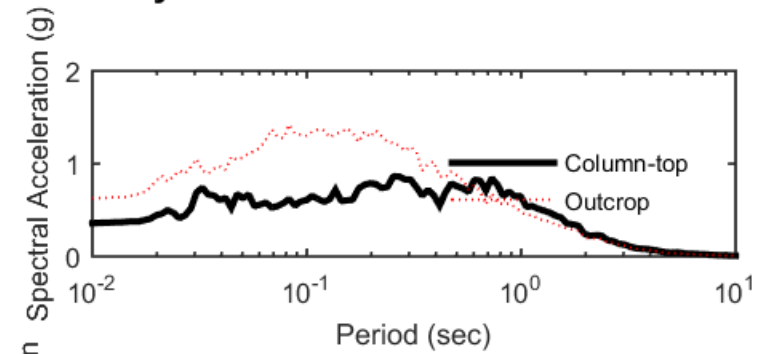
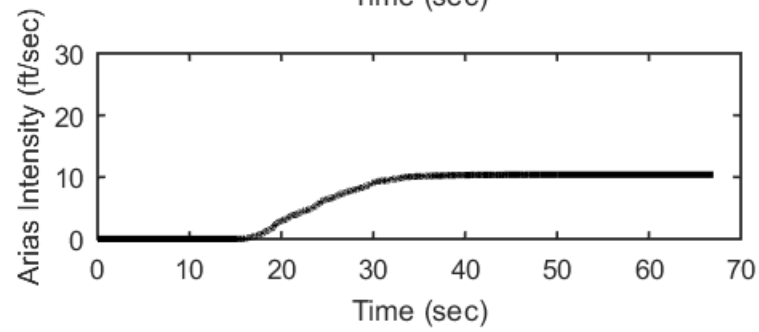
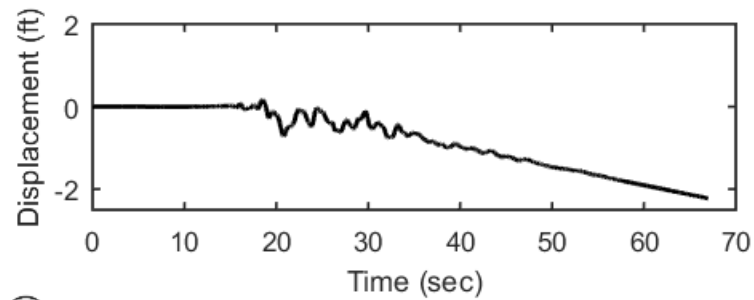
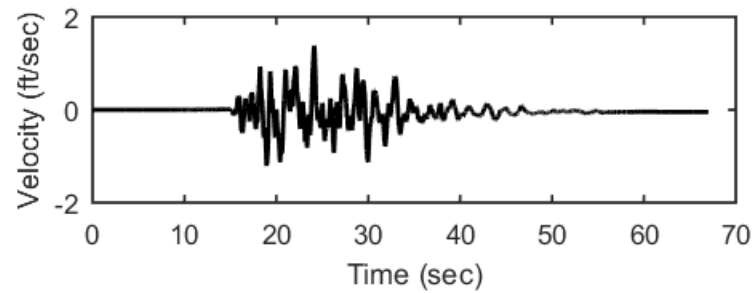
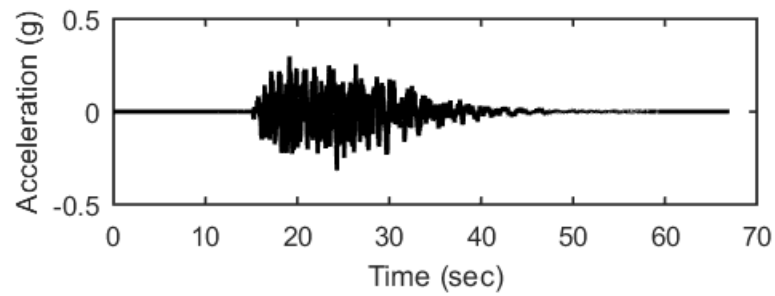
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



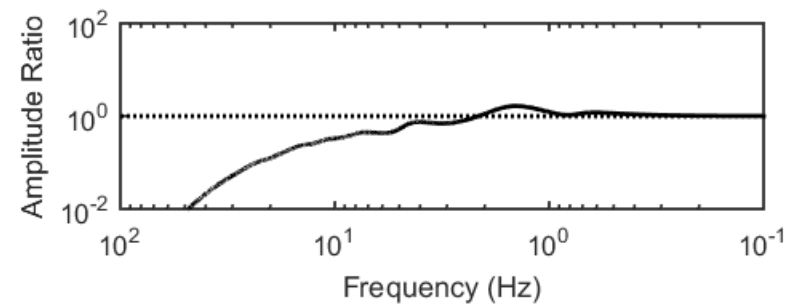
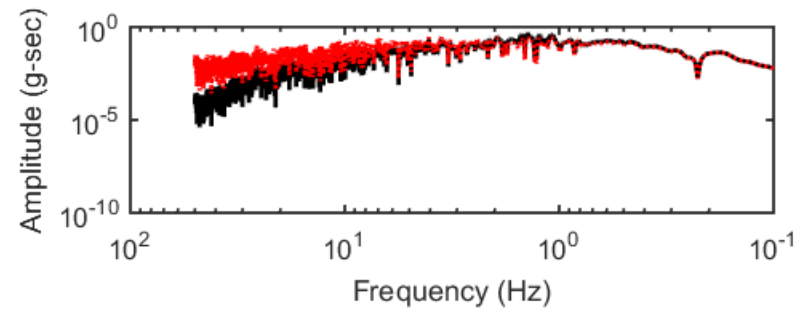
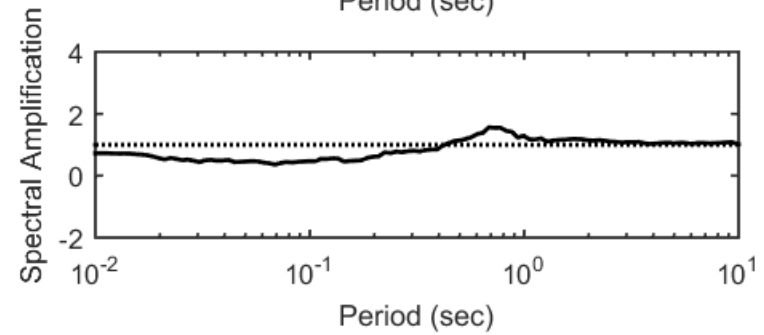
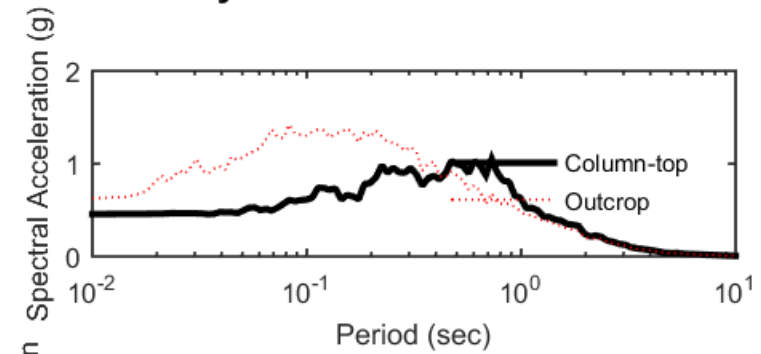
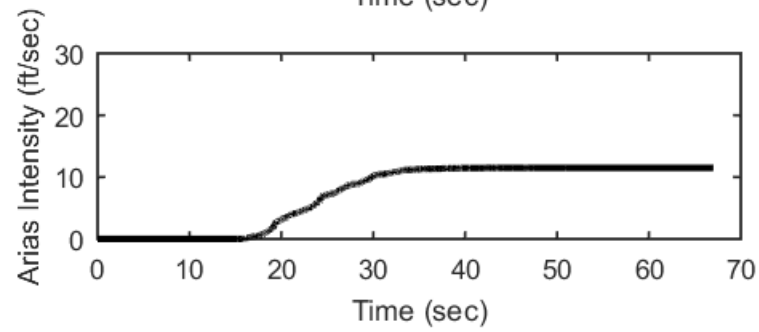
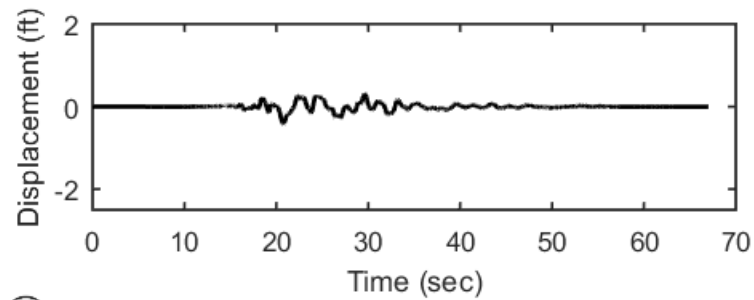
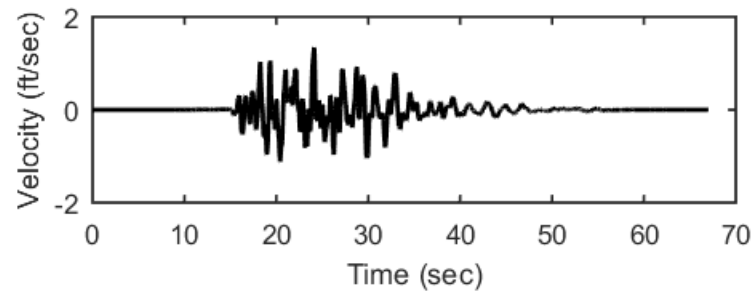
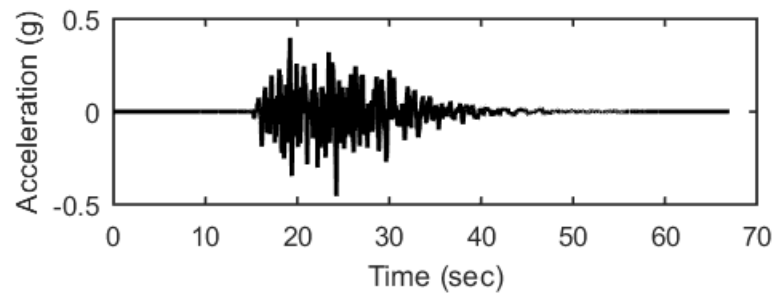
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



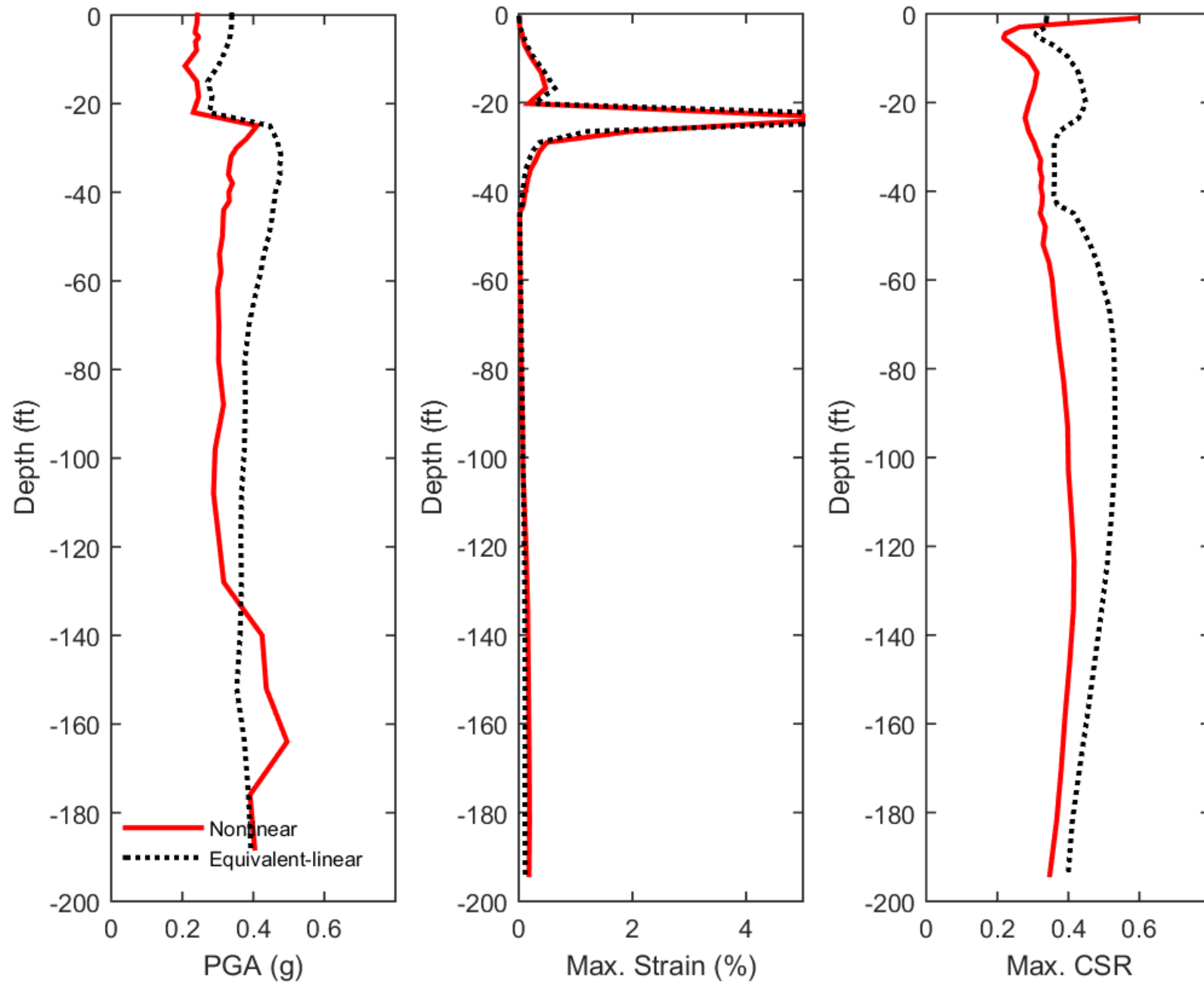
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



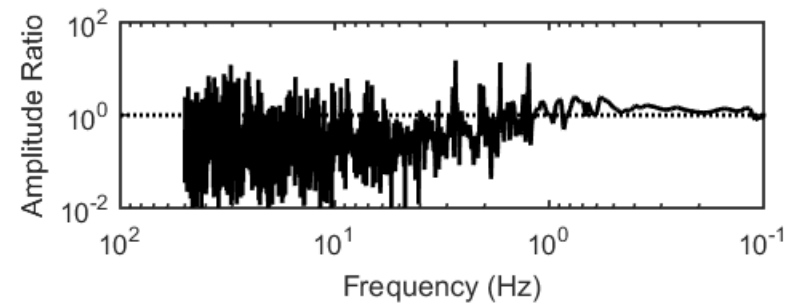
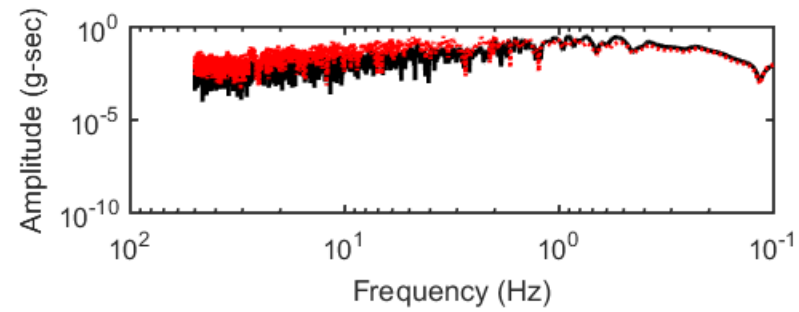
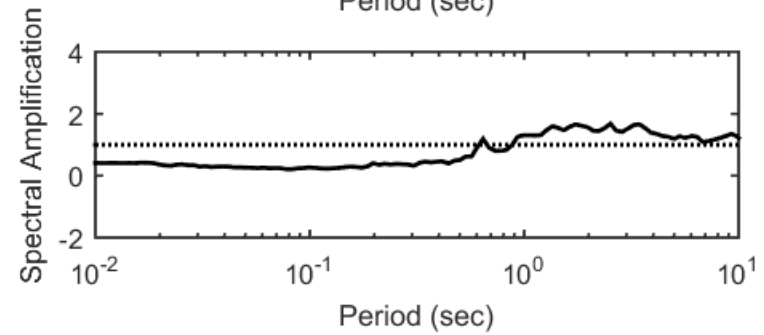
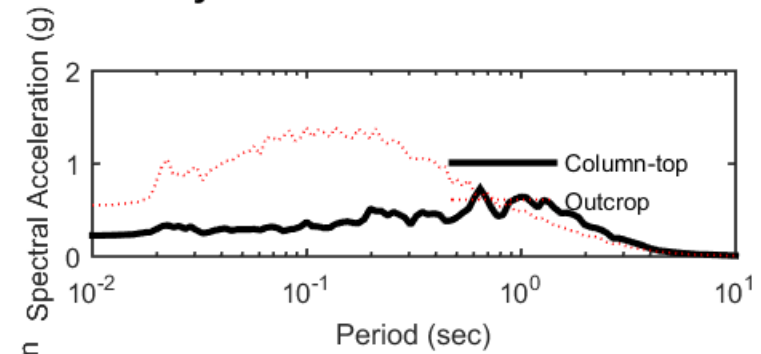
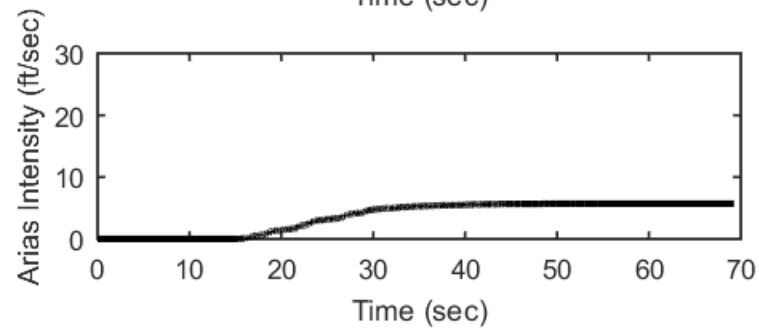
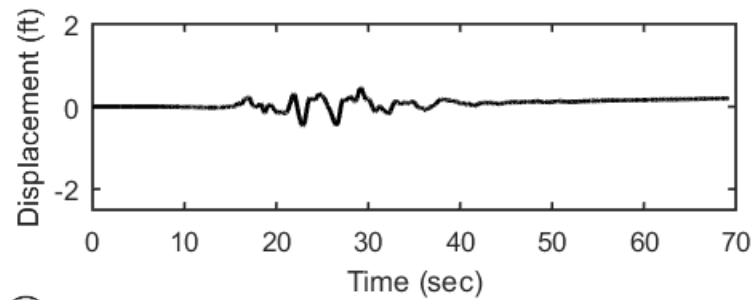
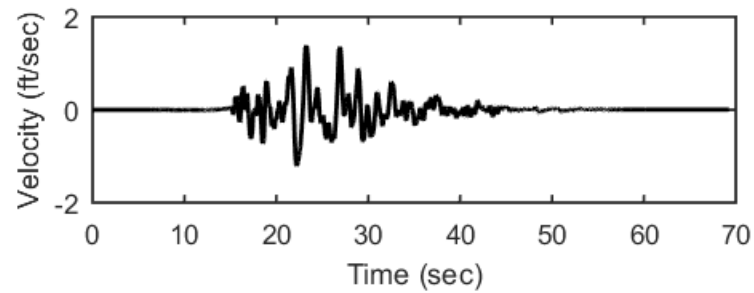
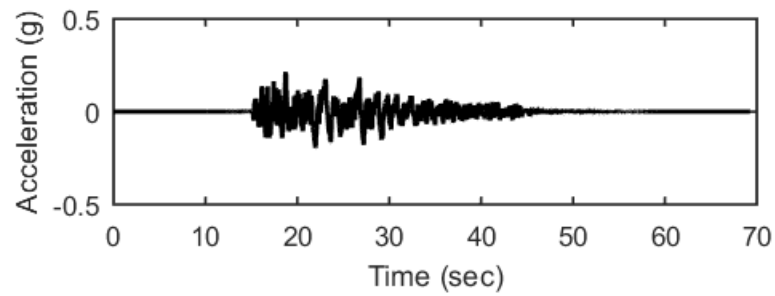
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



### Profile outputs for Motion: SEE2

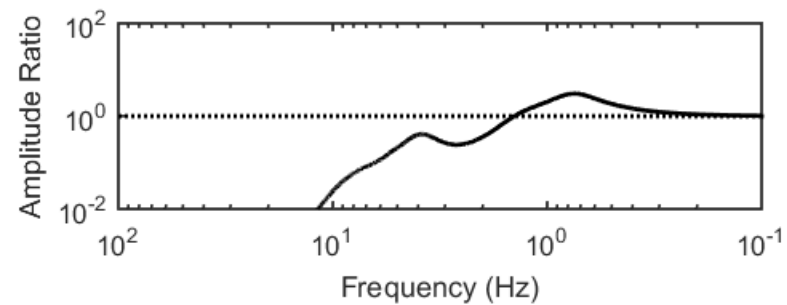
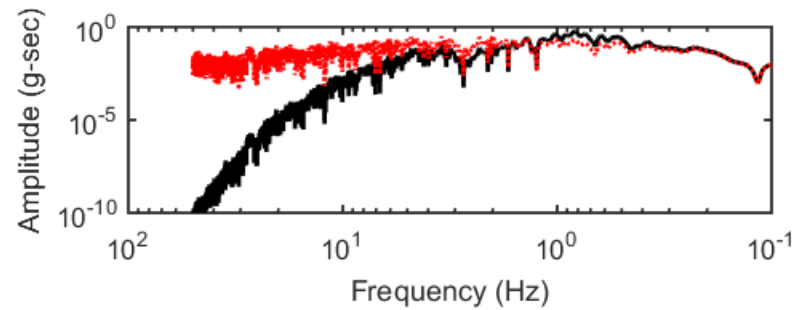
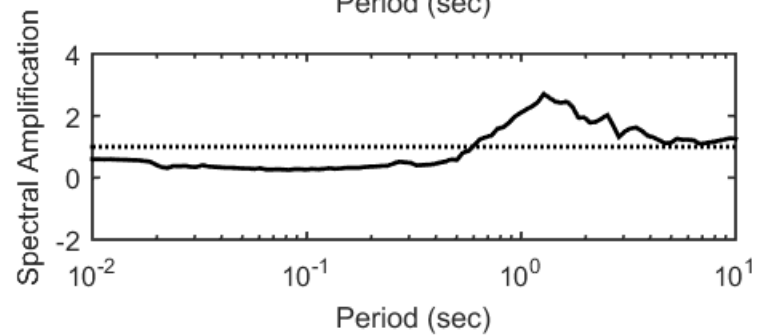
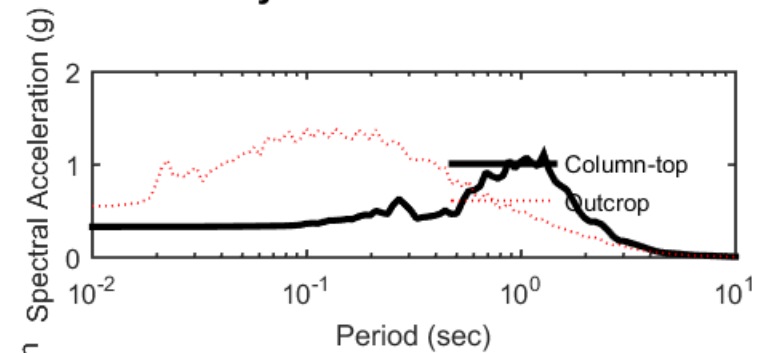
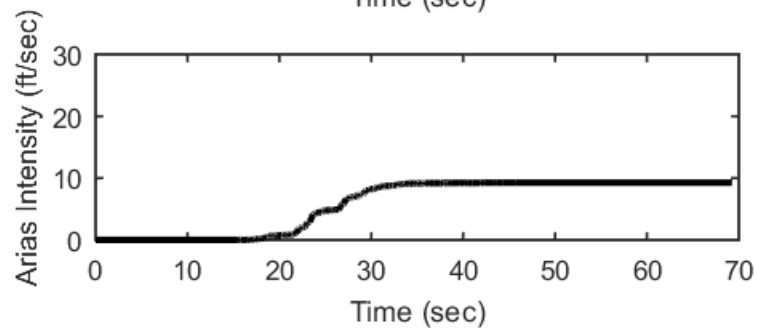
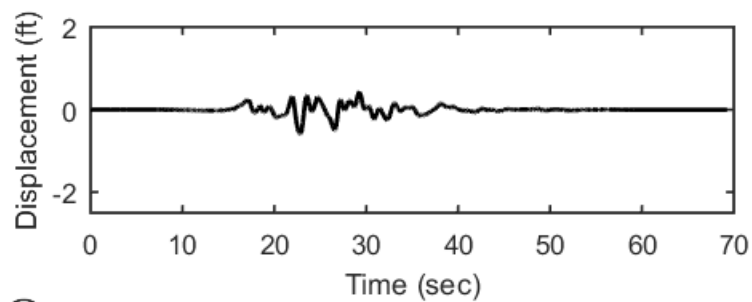
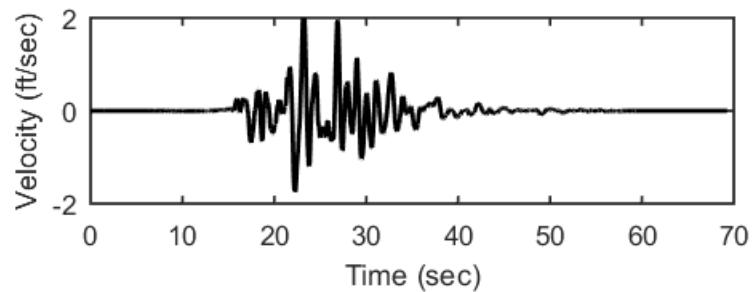
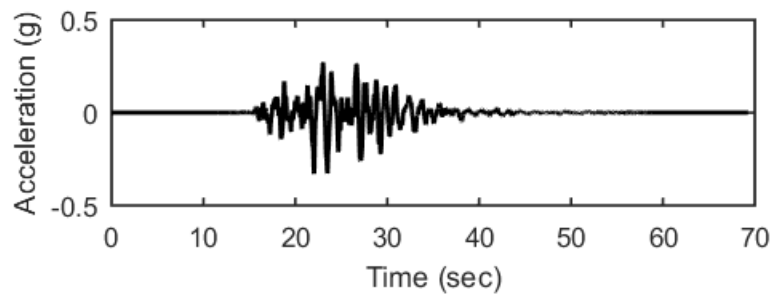


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3

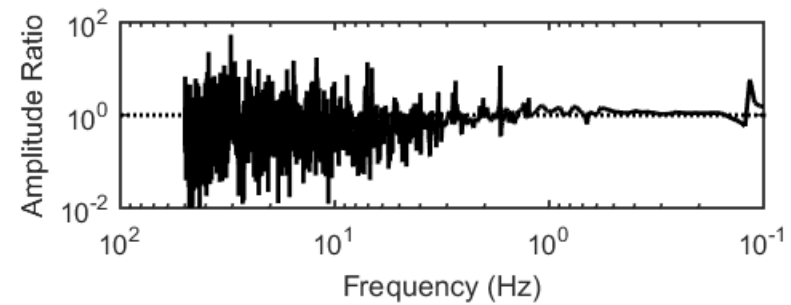
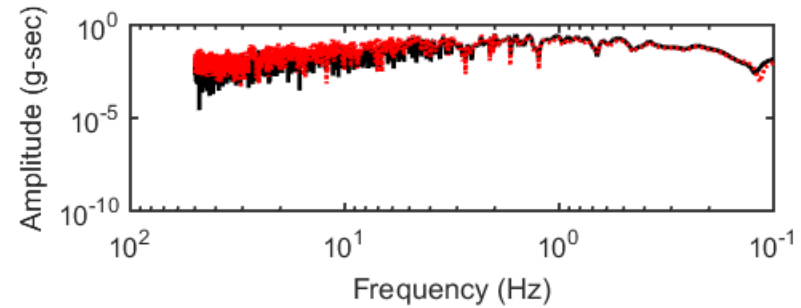
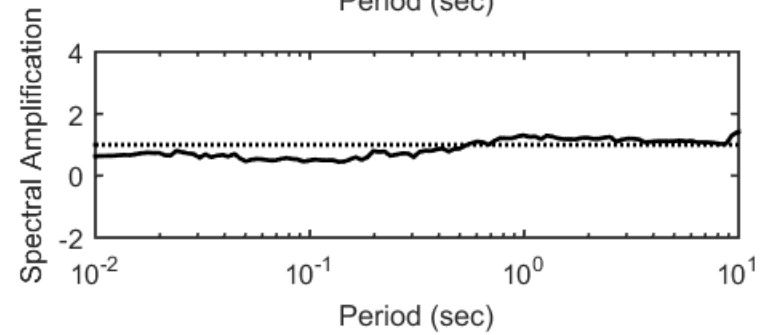
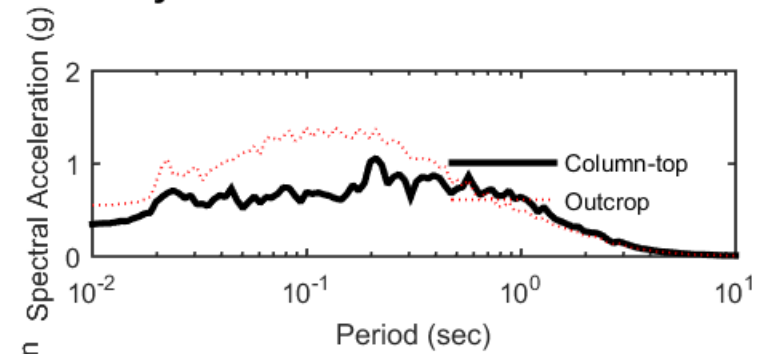
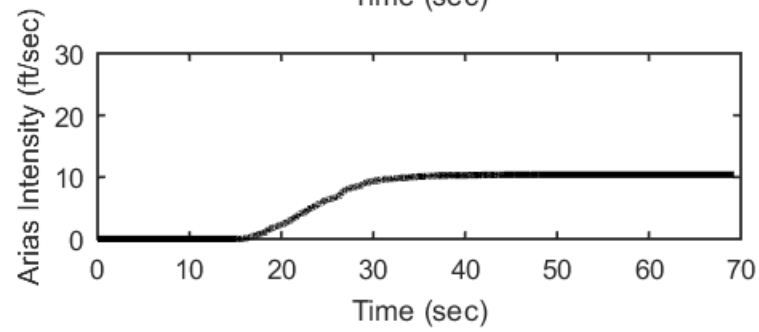
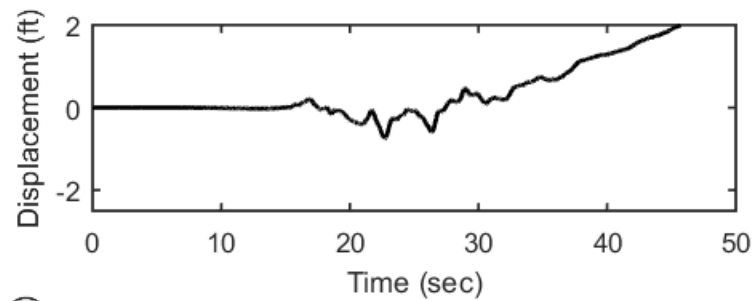
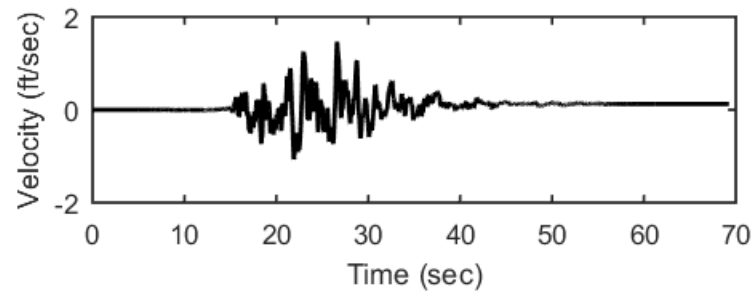
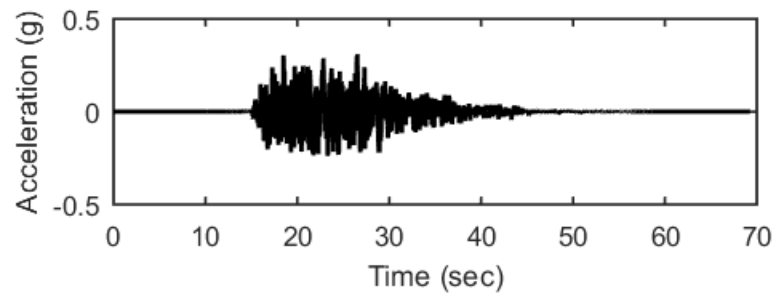




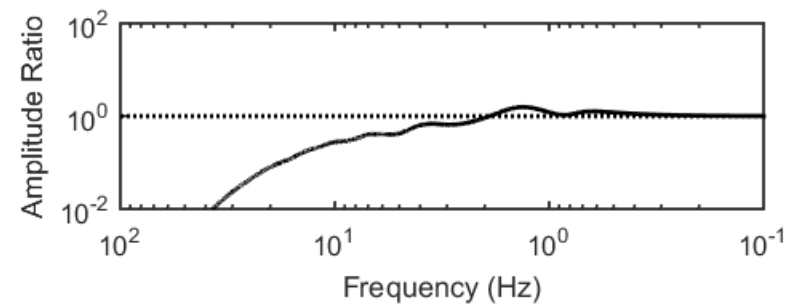
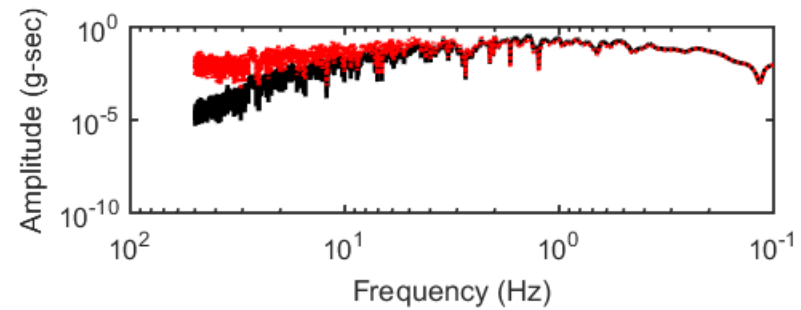
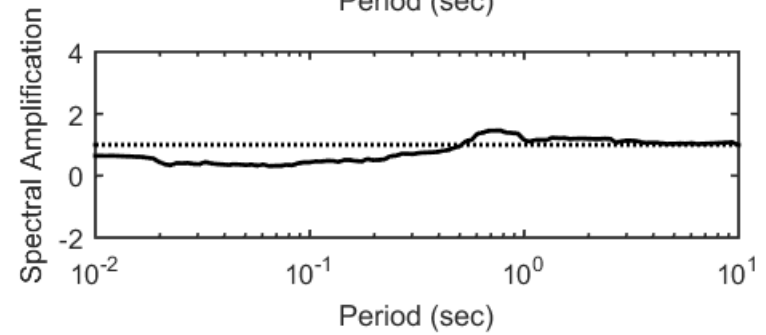
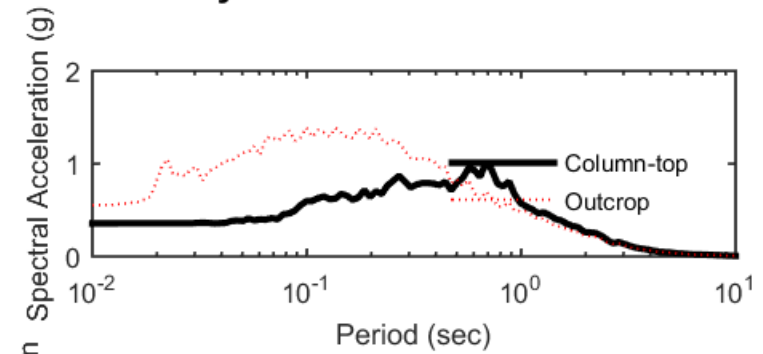
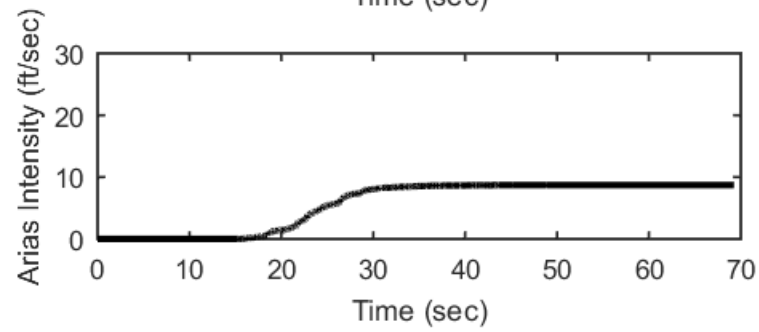
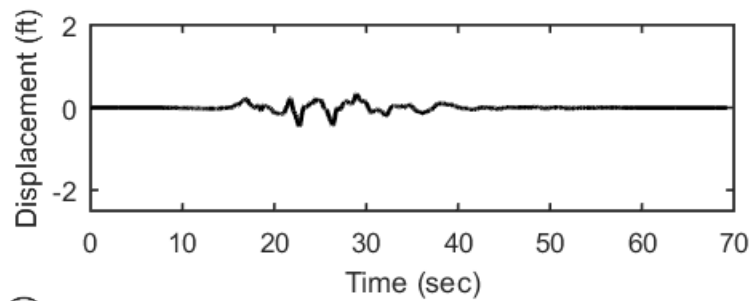
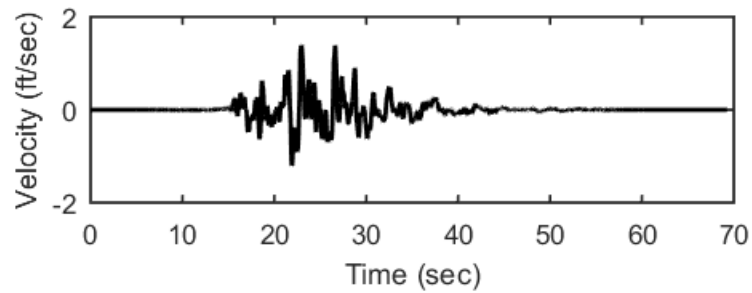
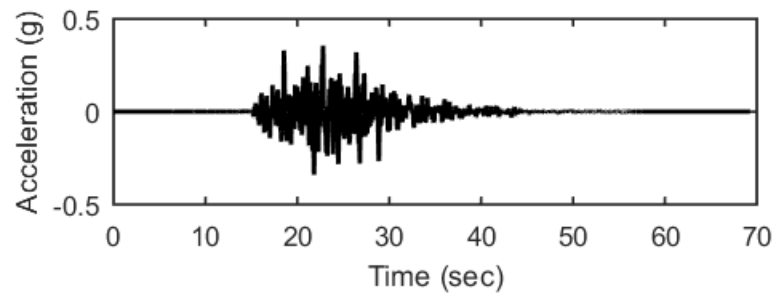
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



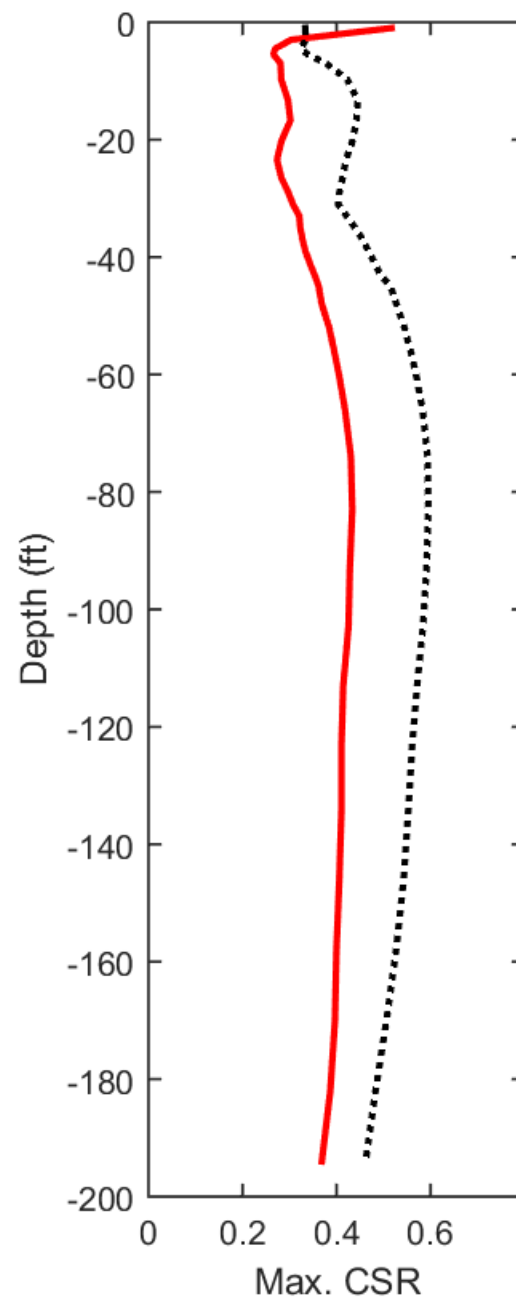
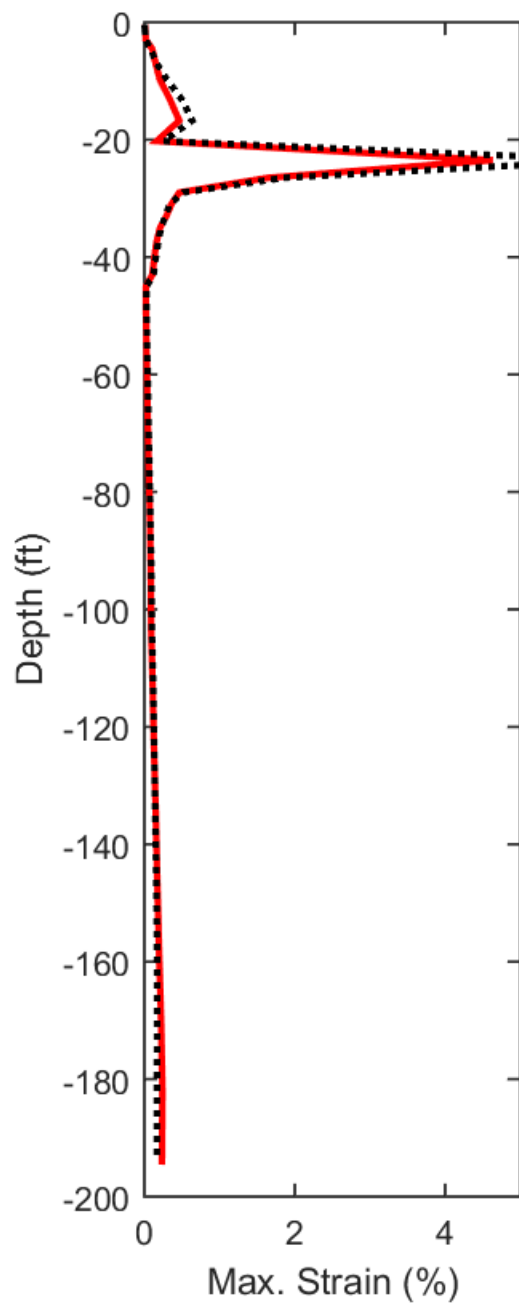
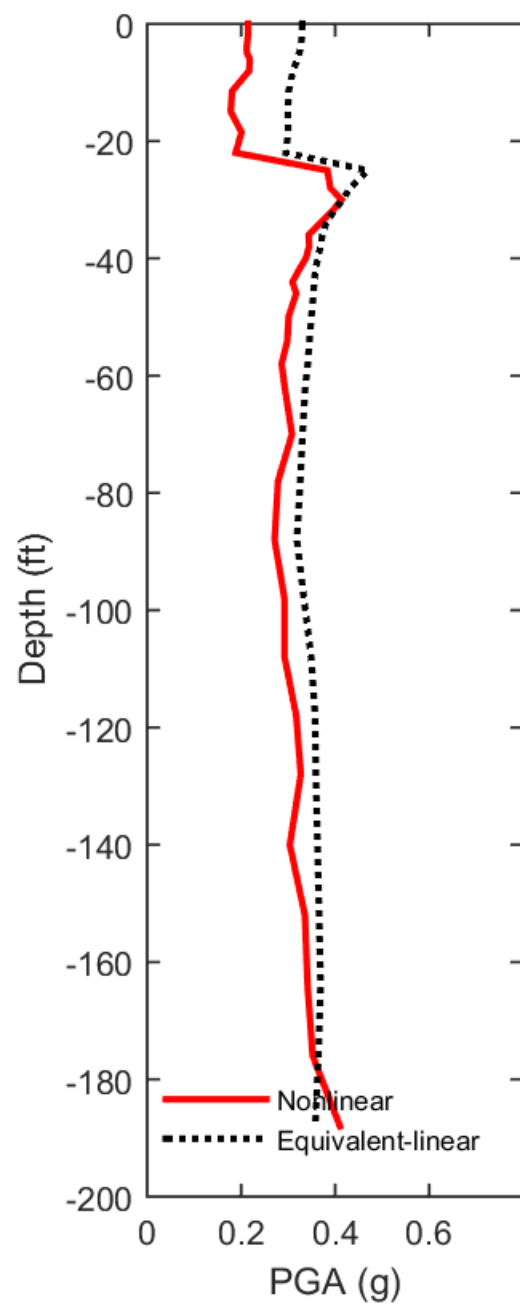
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



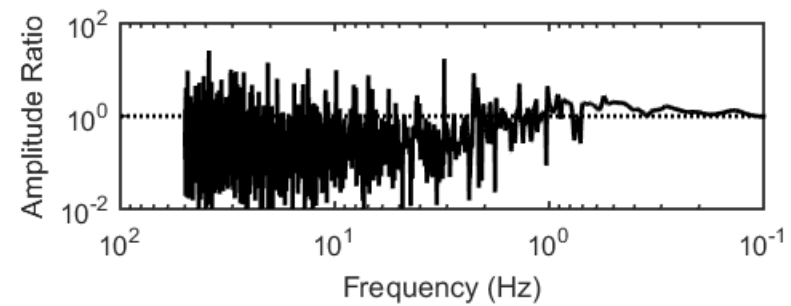
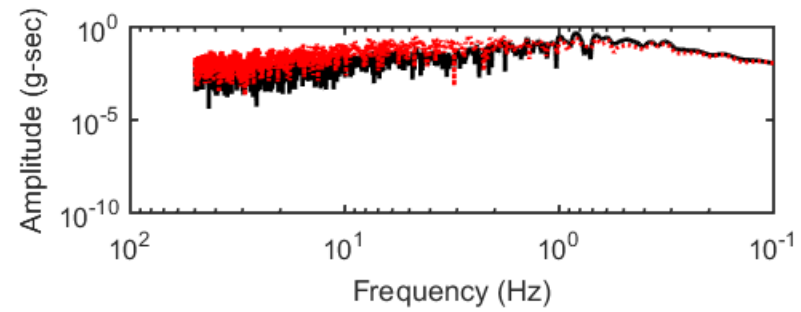
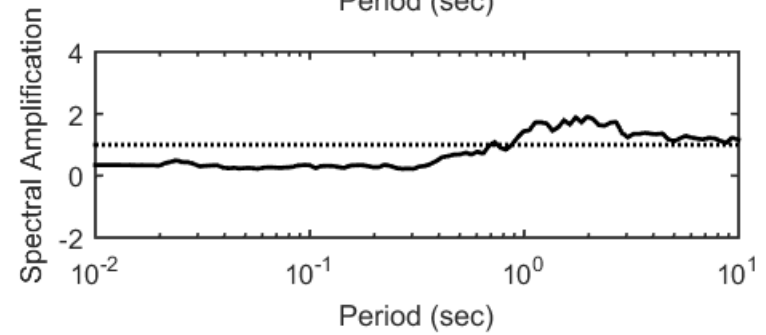
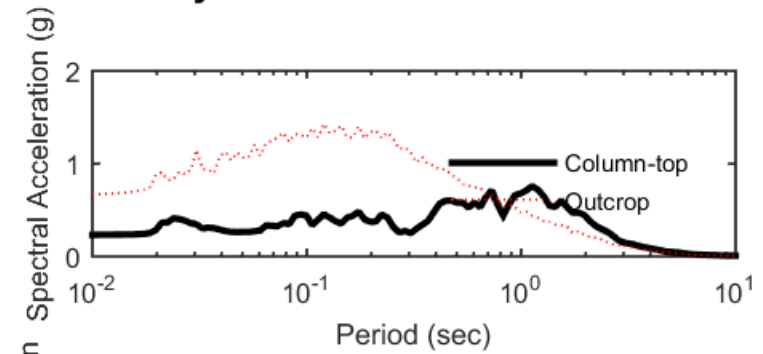
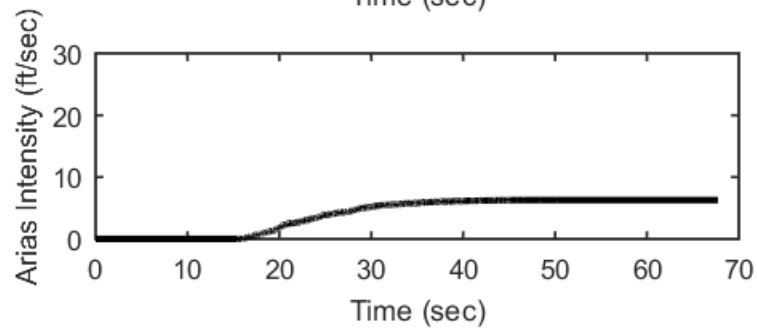
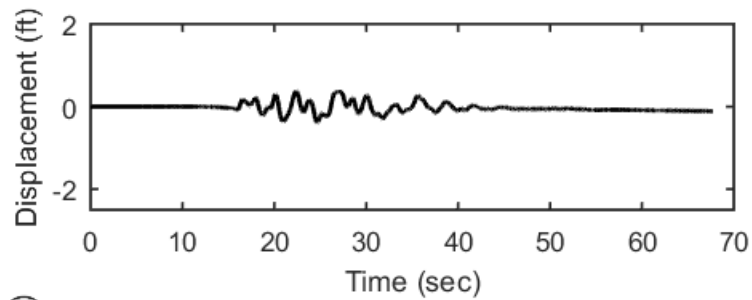
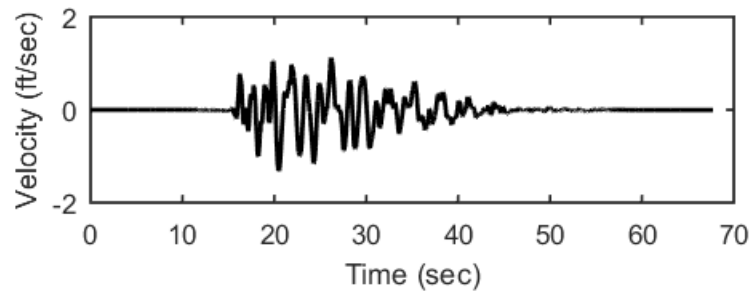
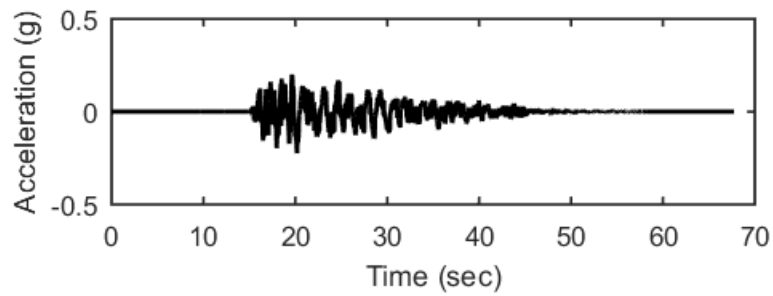
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



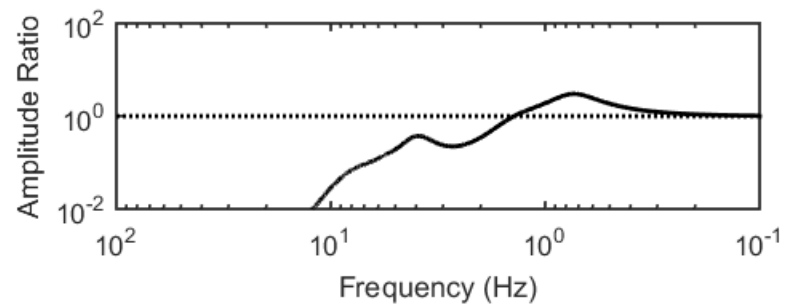
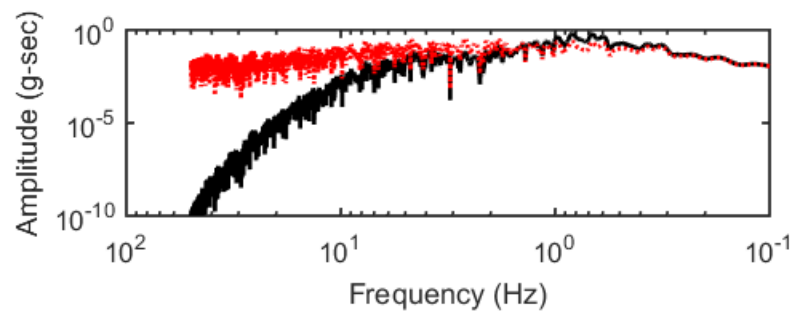
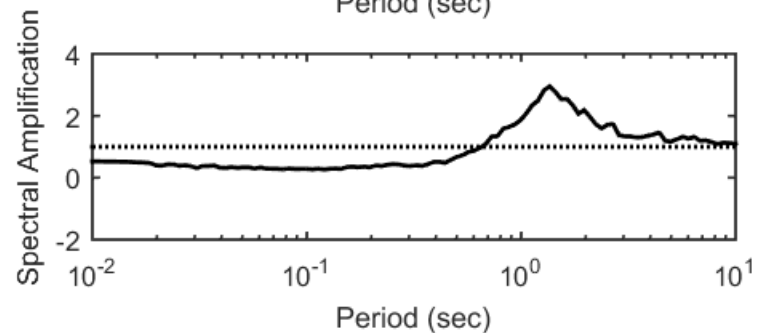
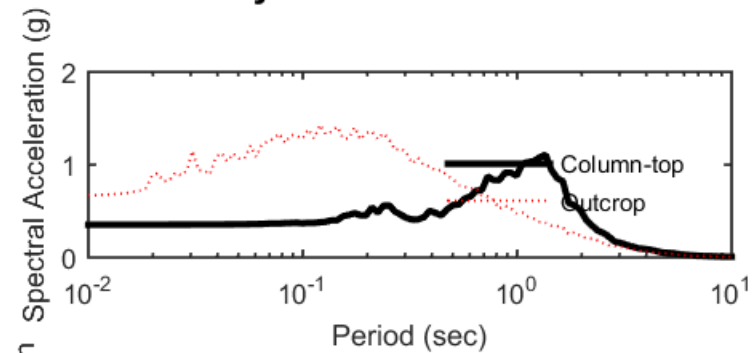
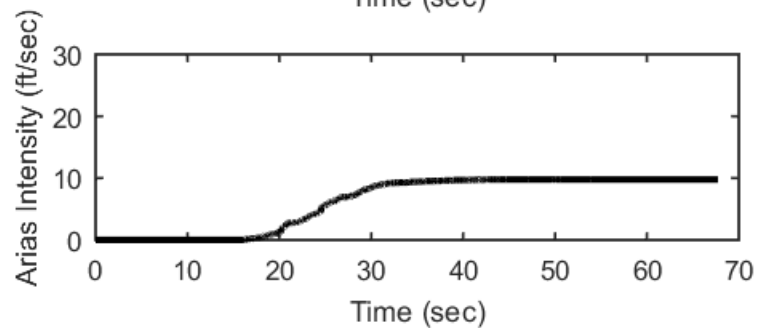
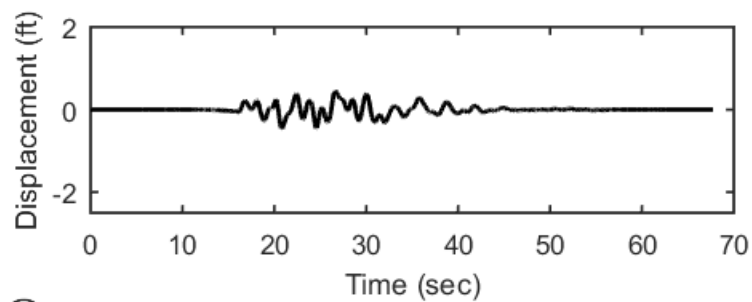
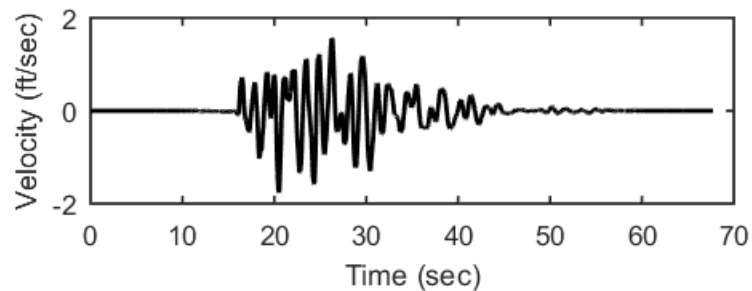
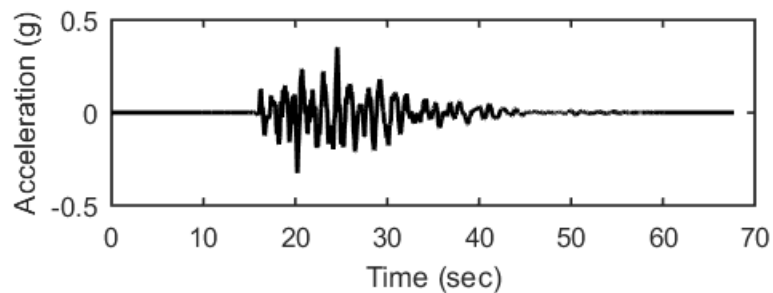
### Profile outputs for Motion: SEE3



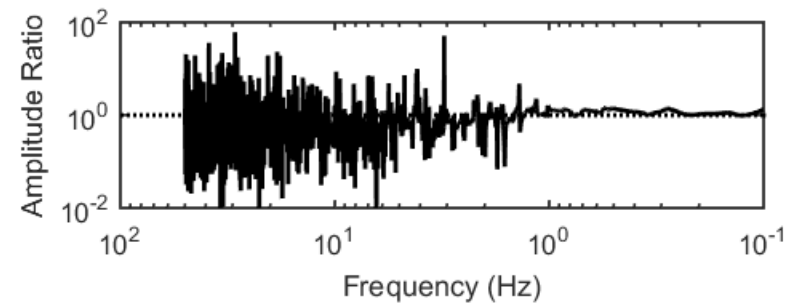
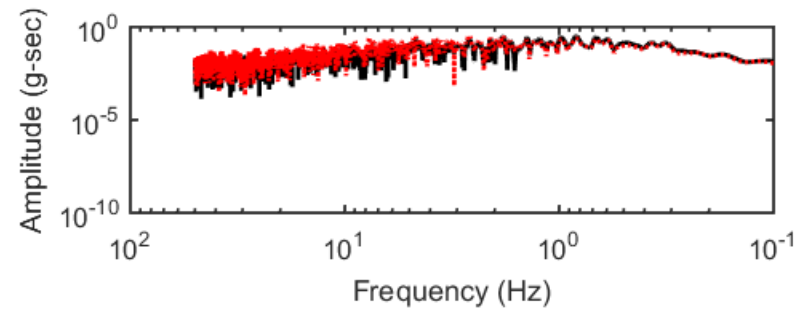
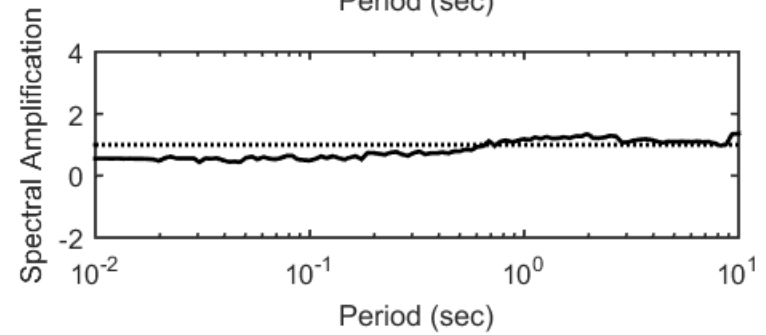
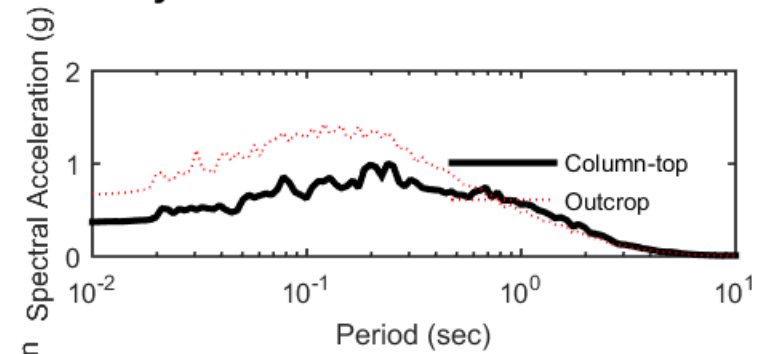
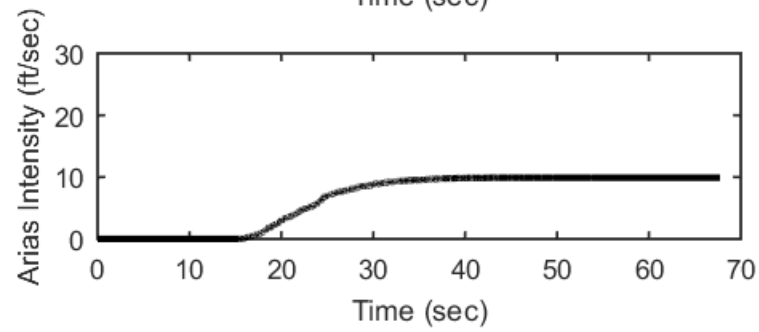
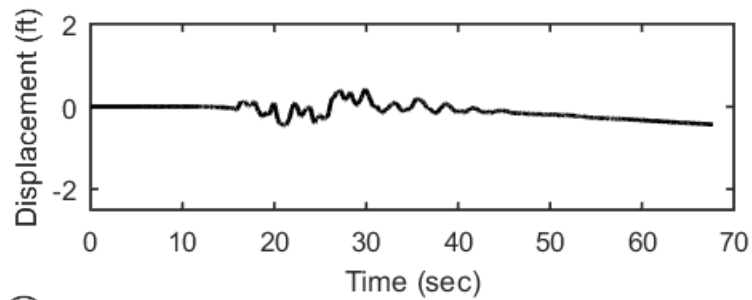
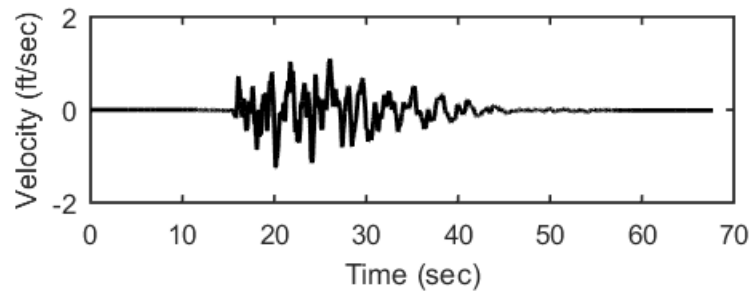
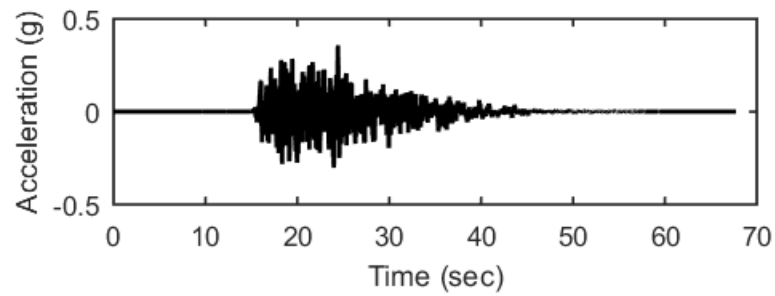
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



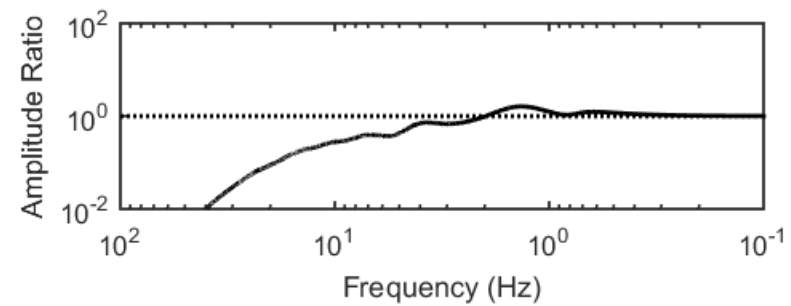
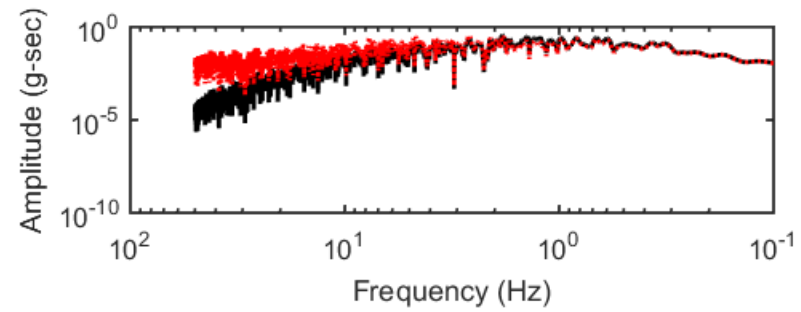
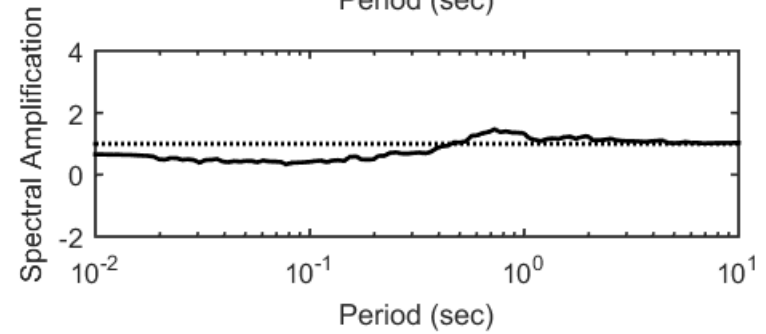
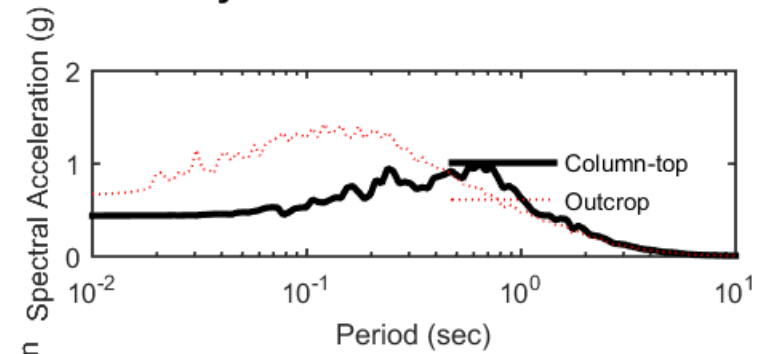
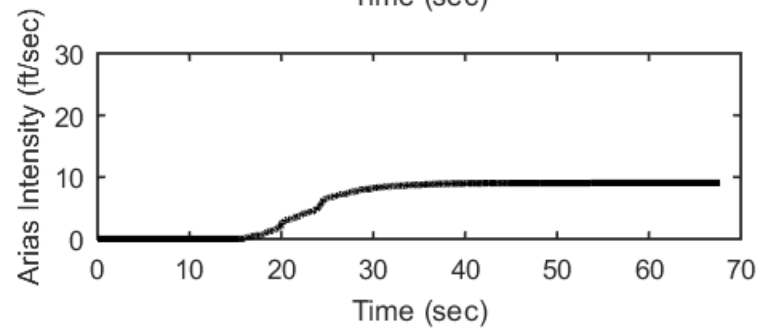
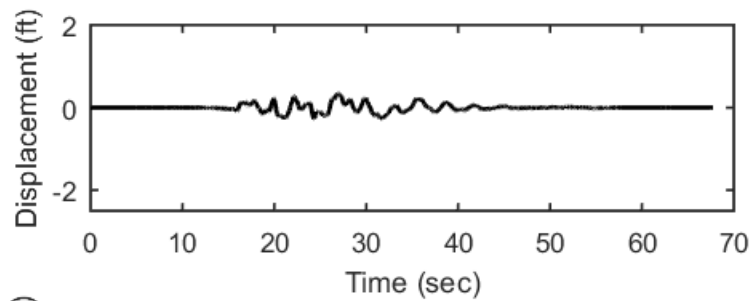
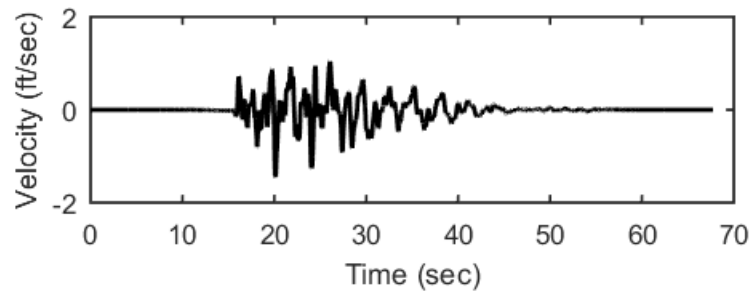
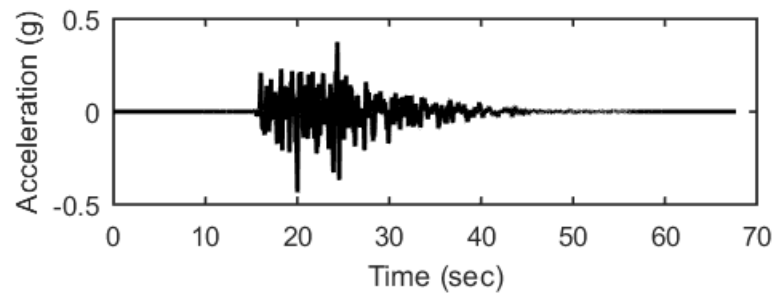
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4

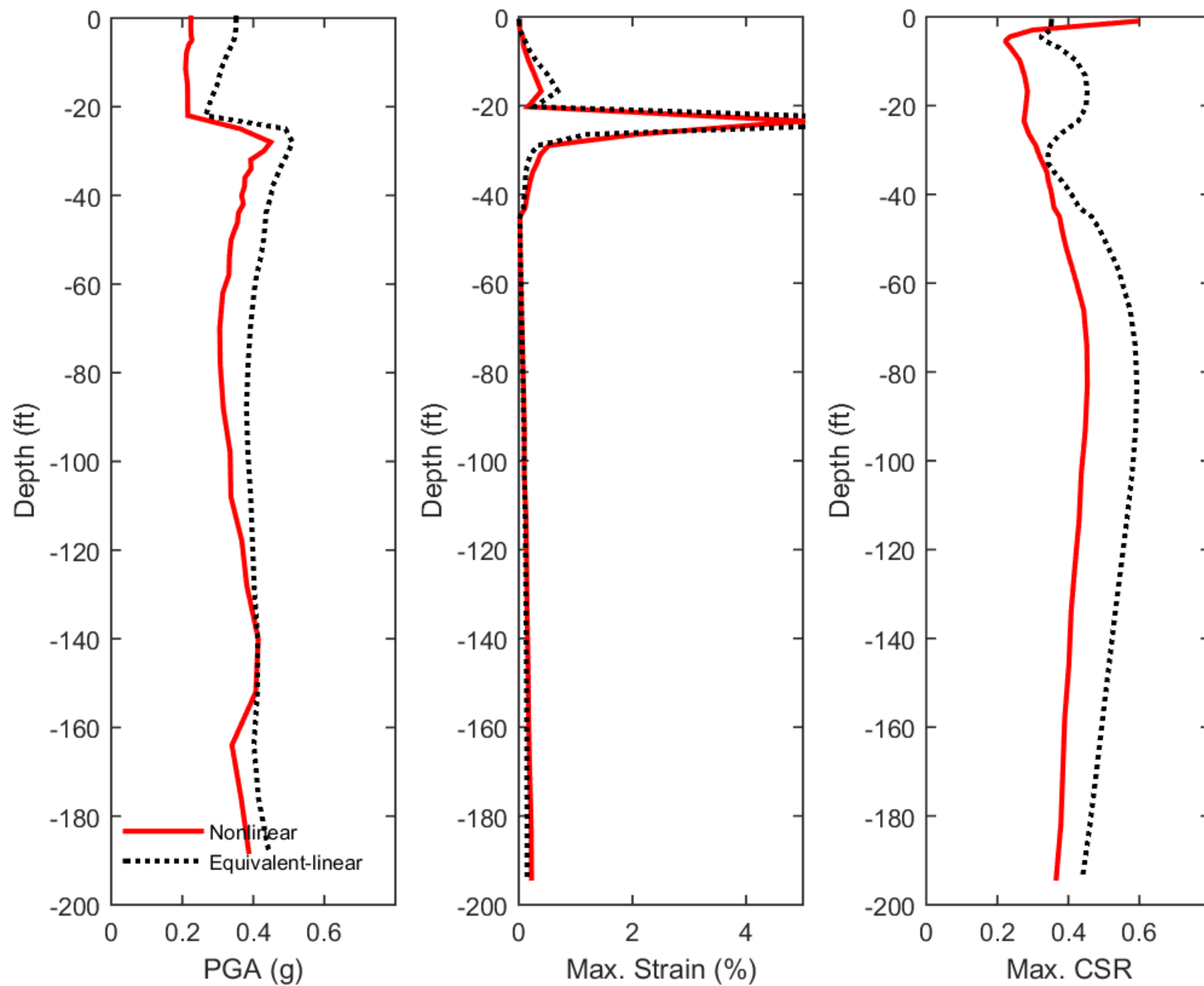


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4

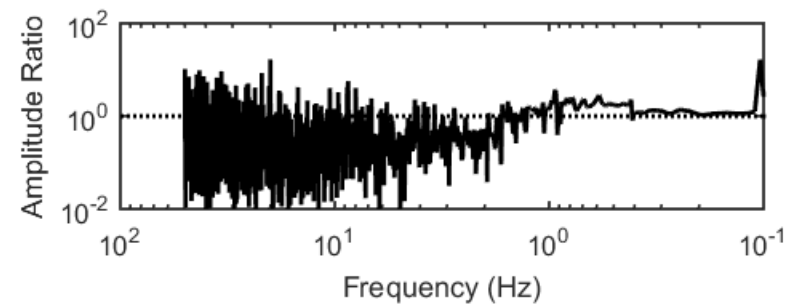
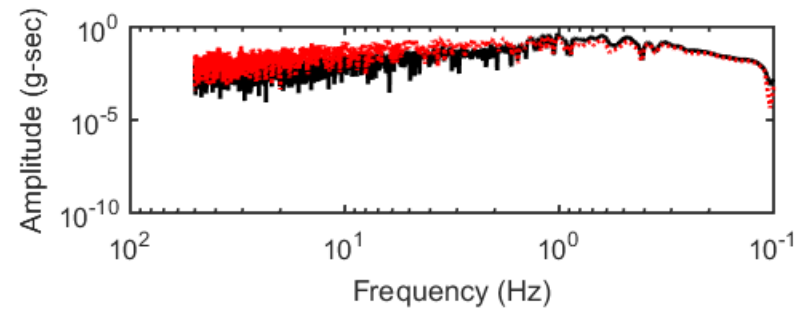
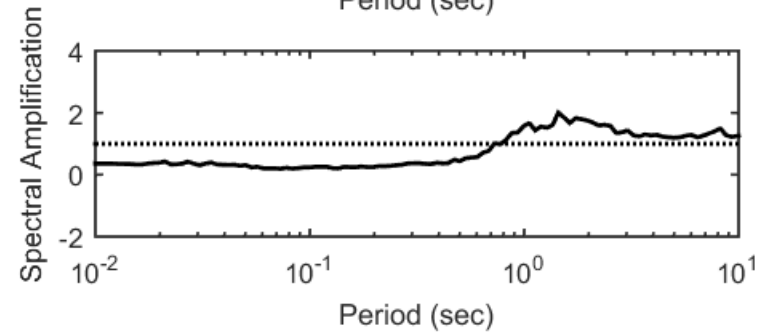
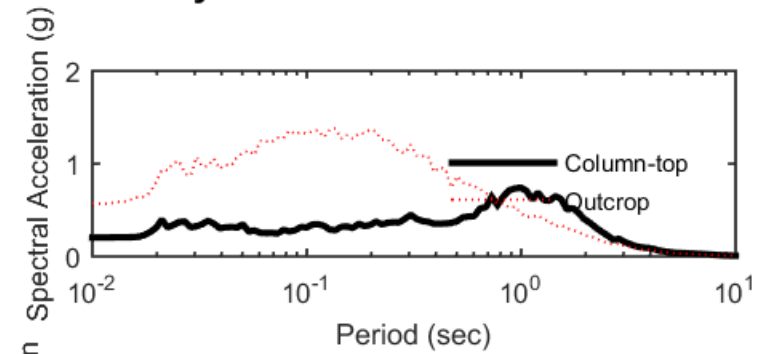
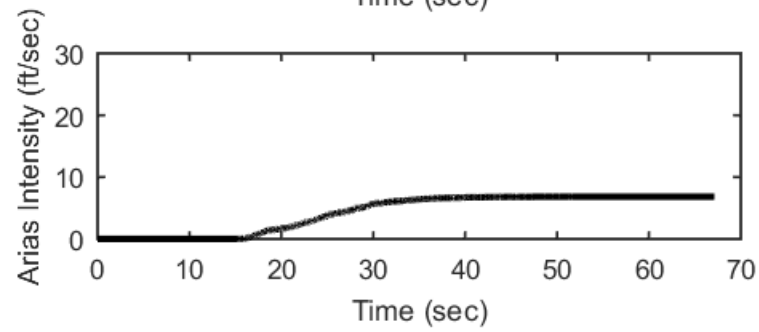
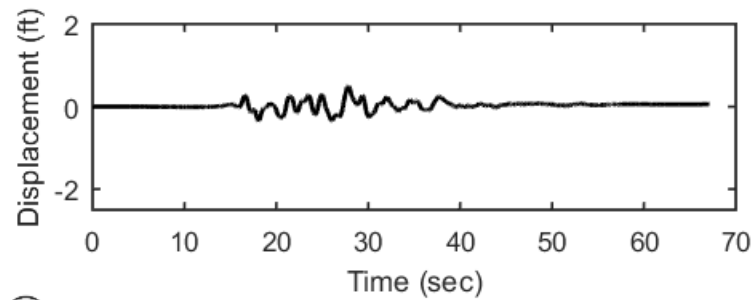
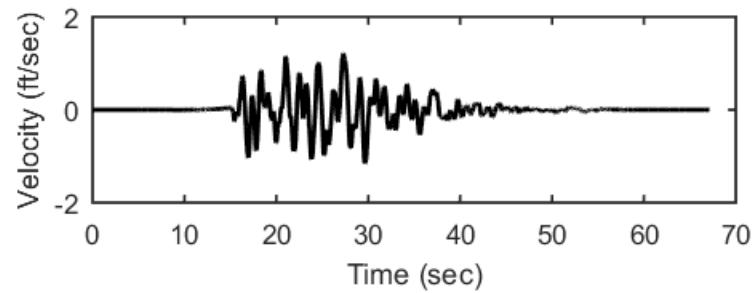
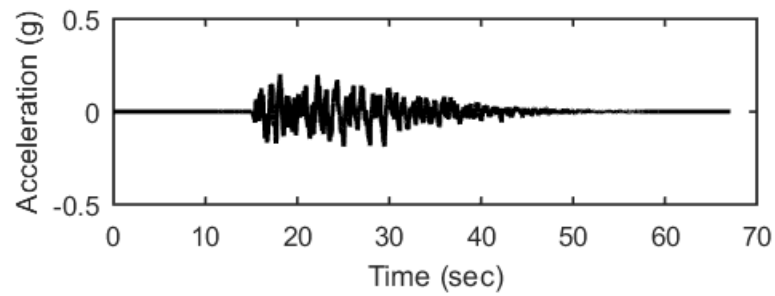




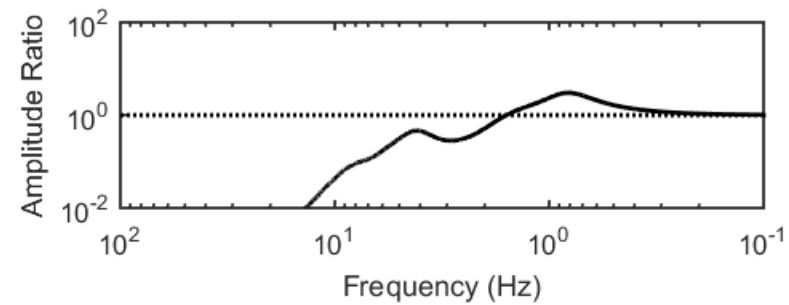
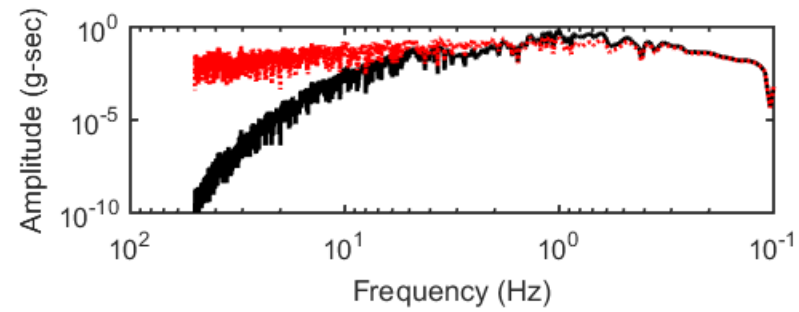
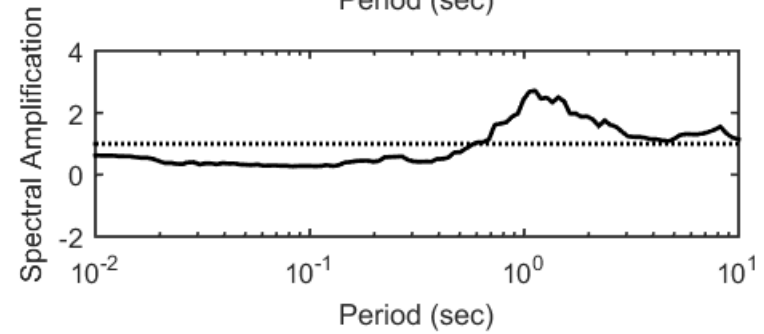
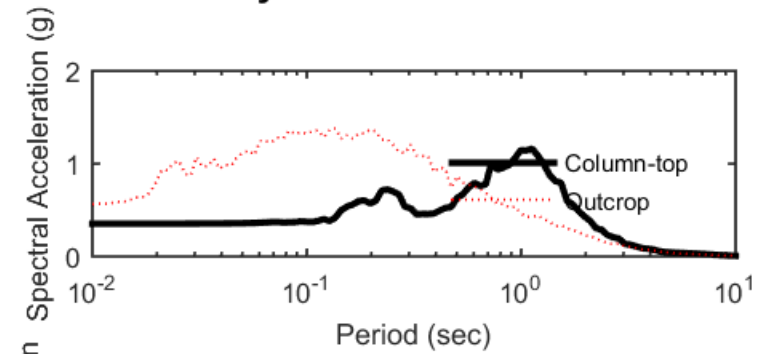
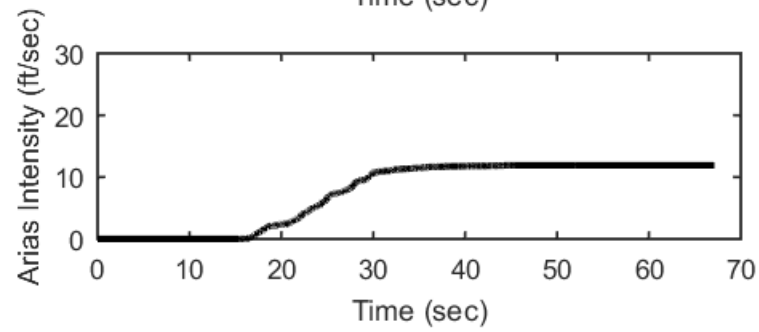
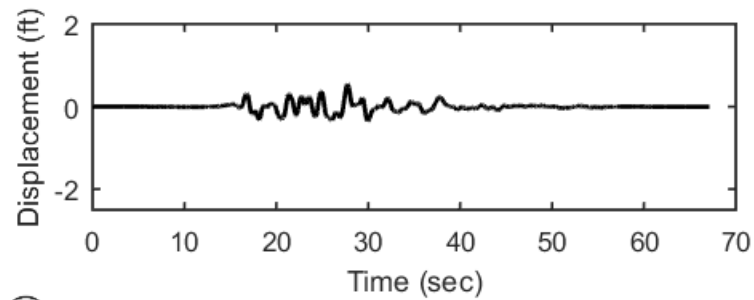
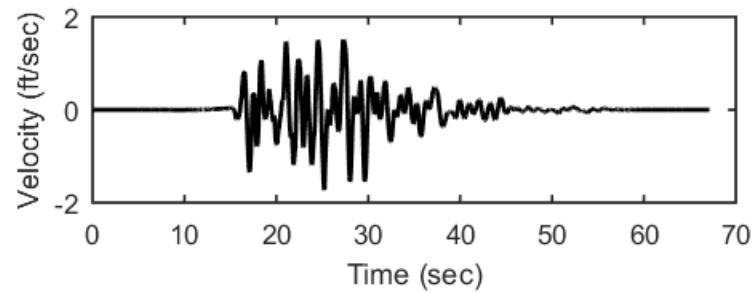
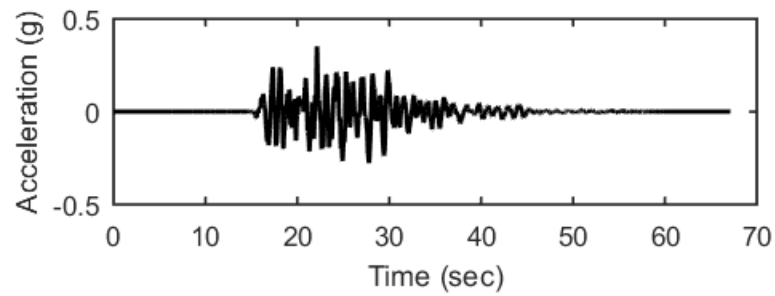
### Profile outputs for Motion: SEE4



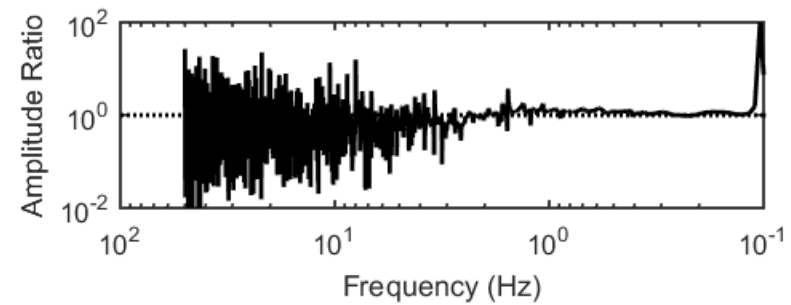
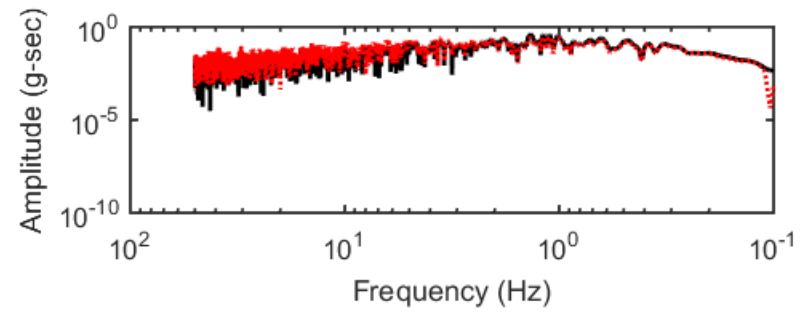
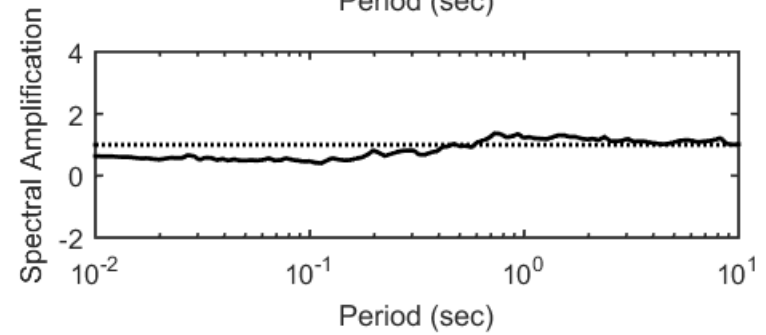
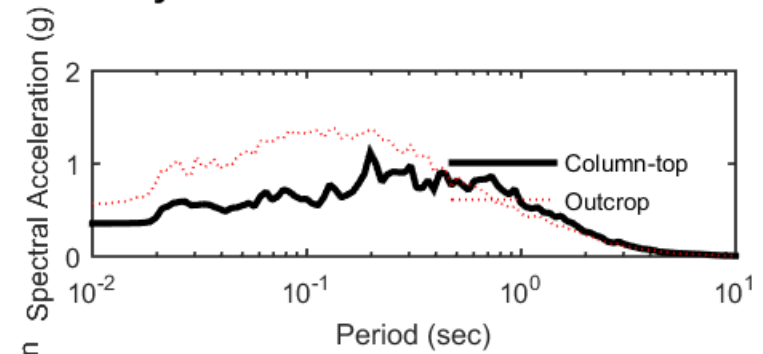
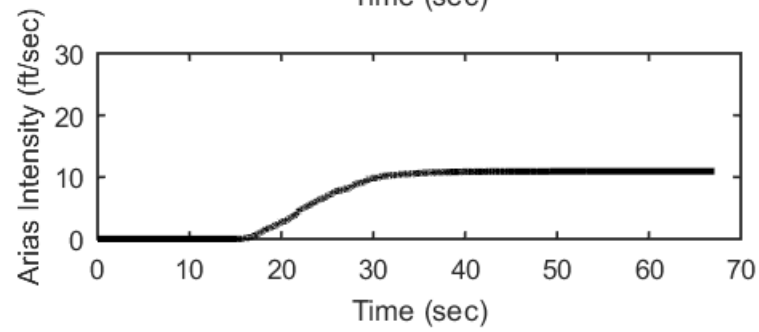
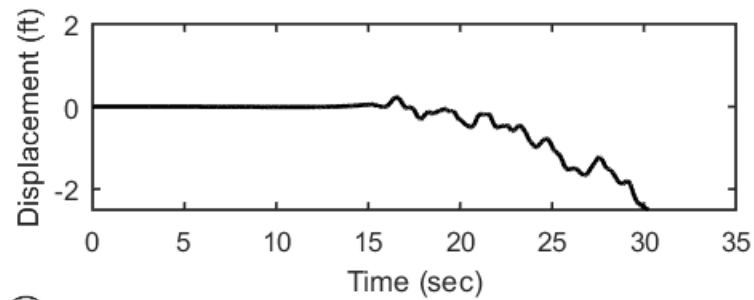
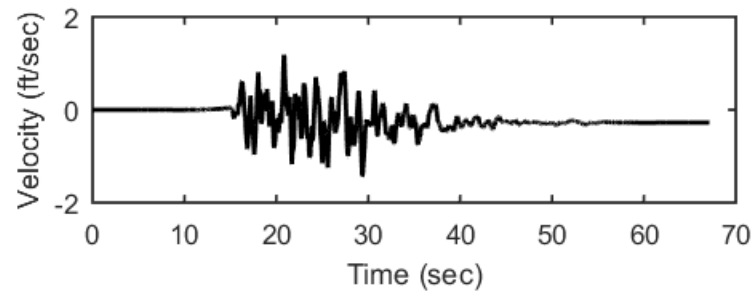
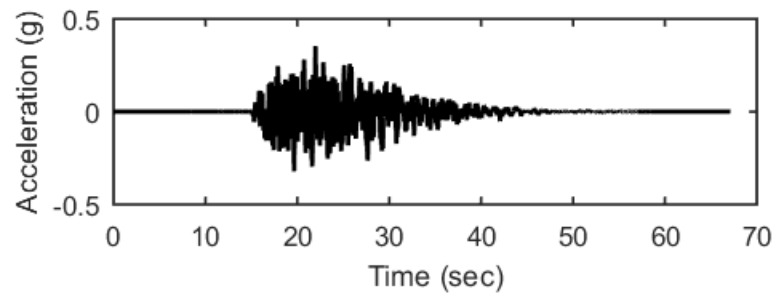
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



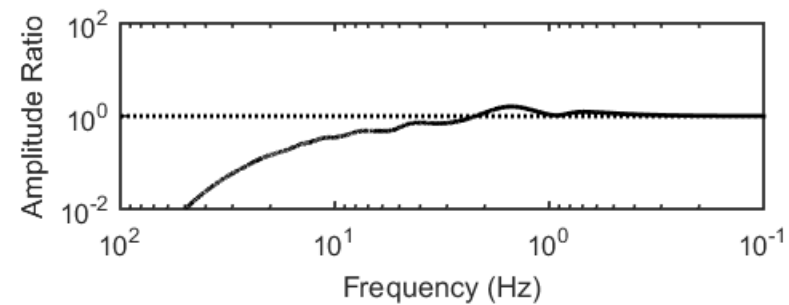
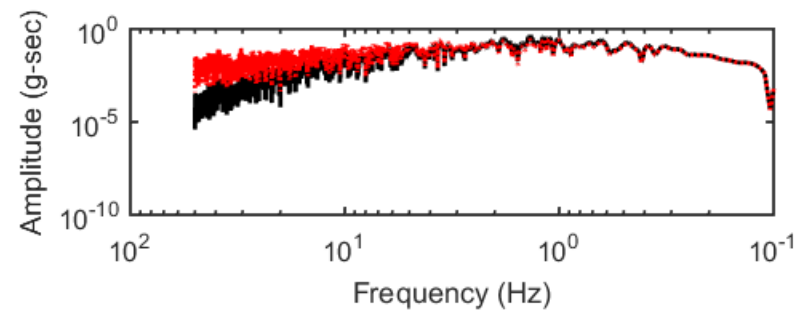
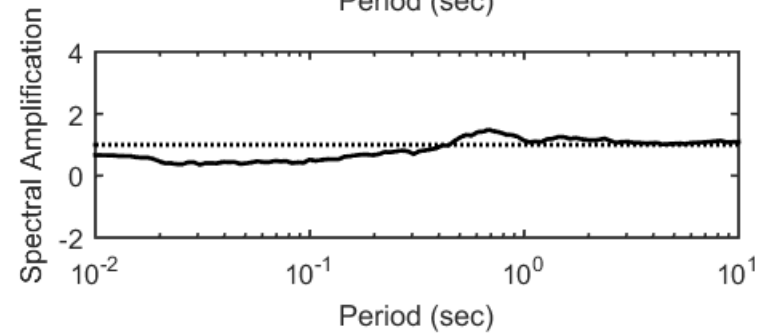
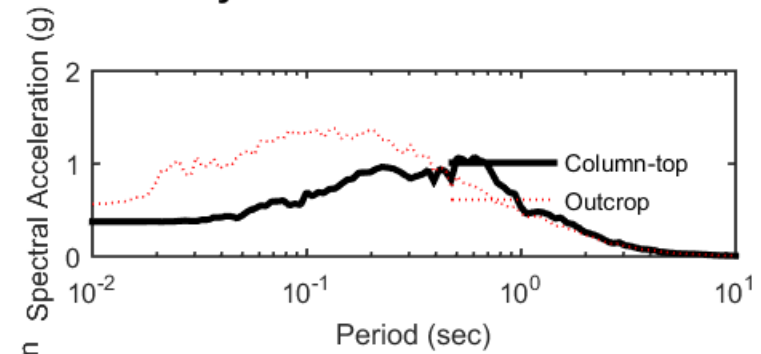
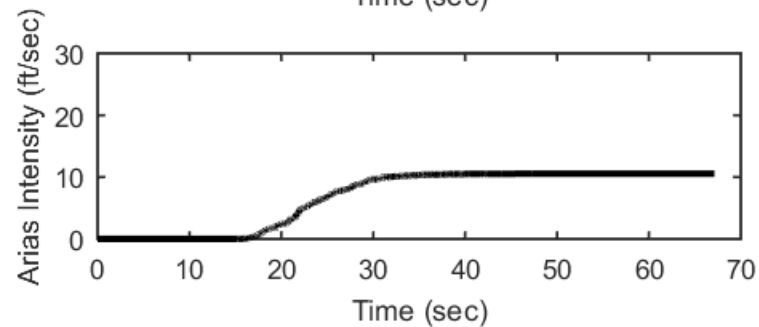
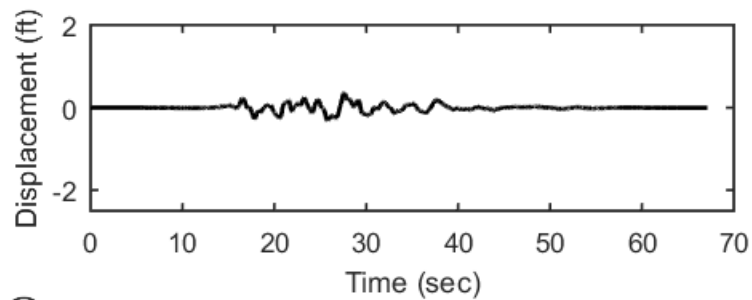
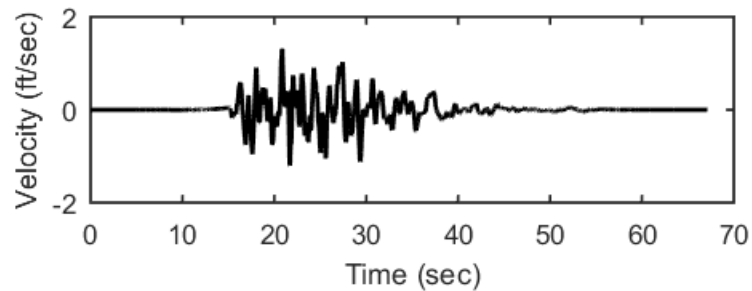
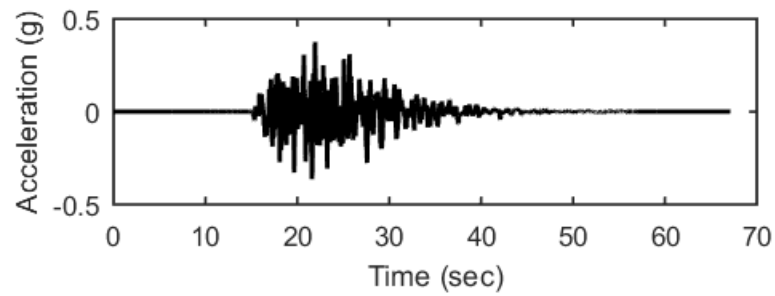
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



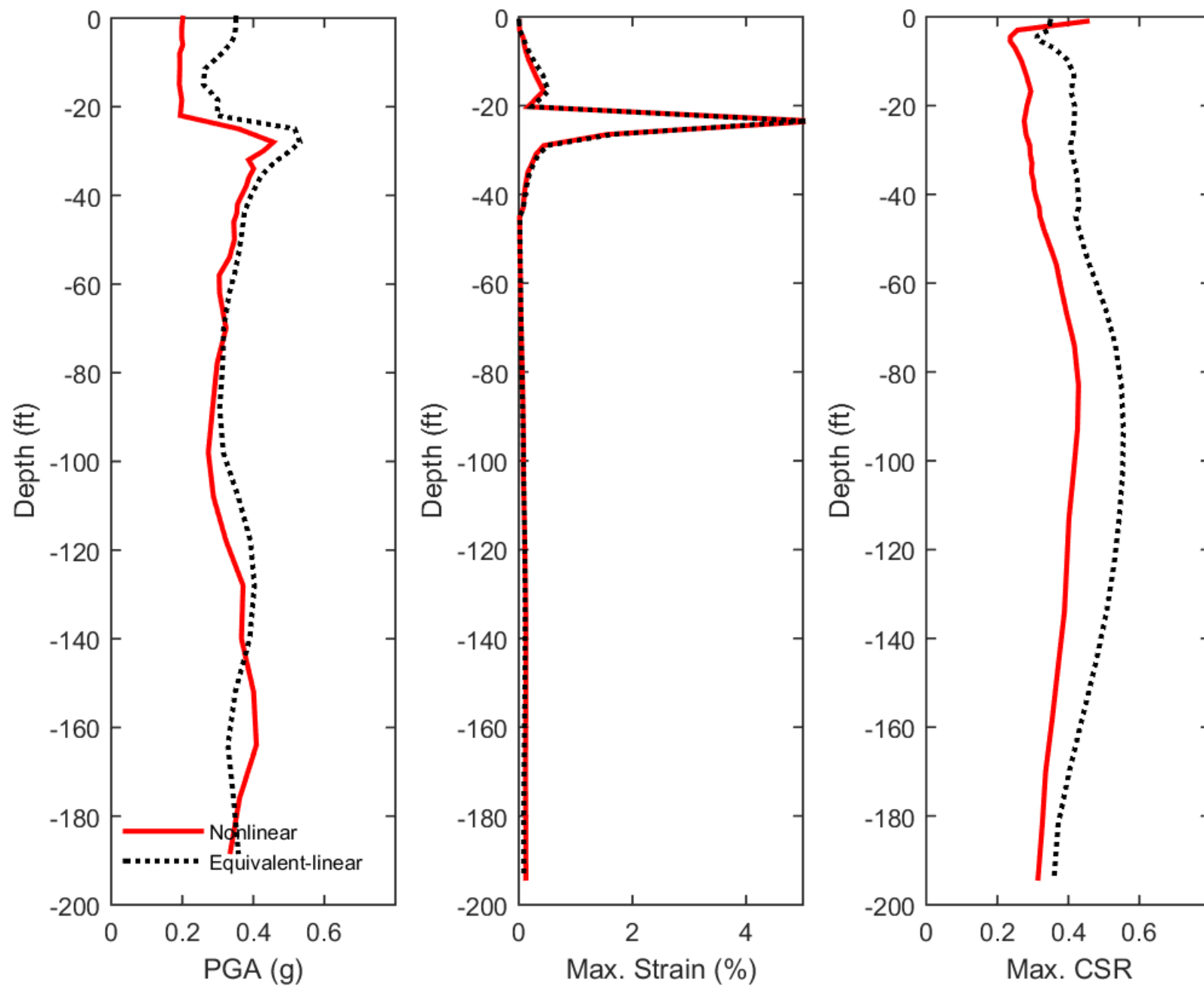
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



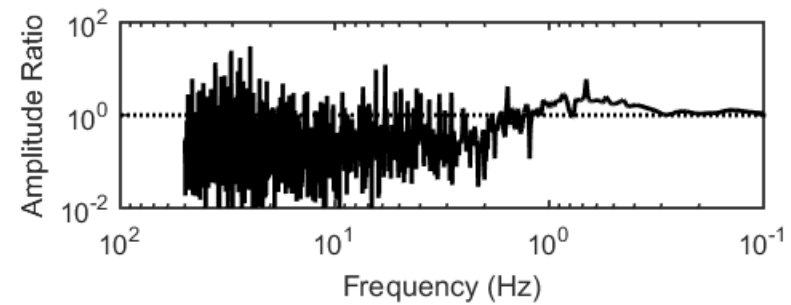
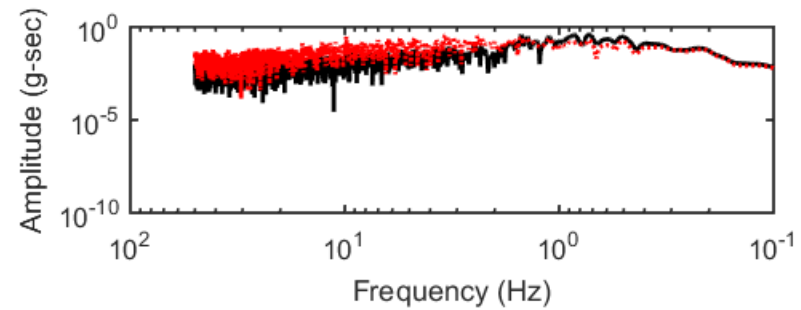
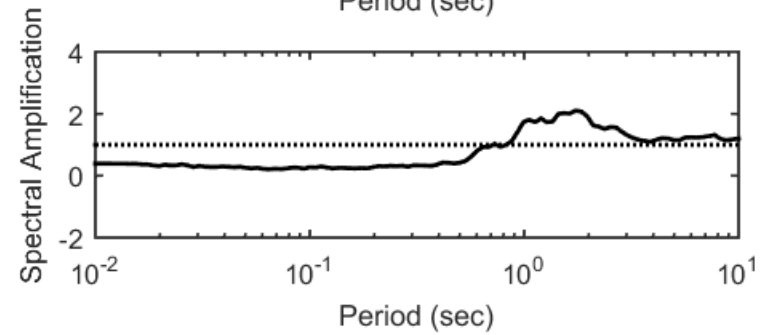
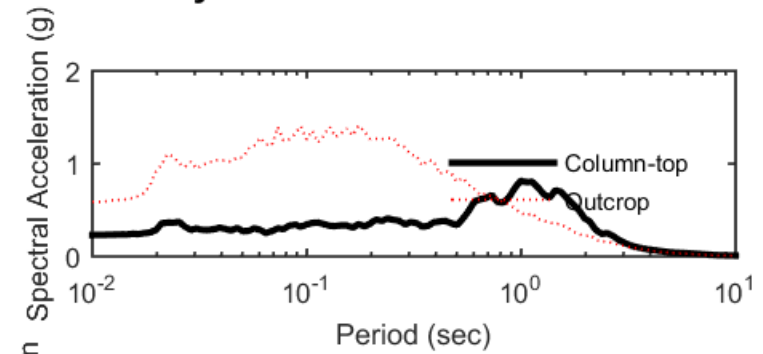
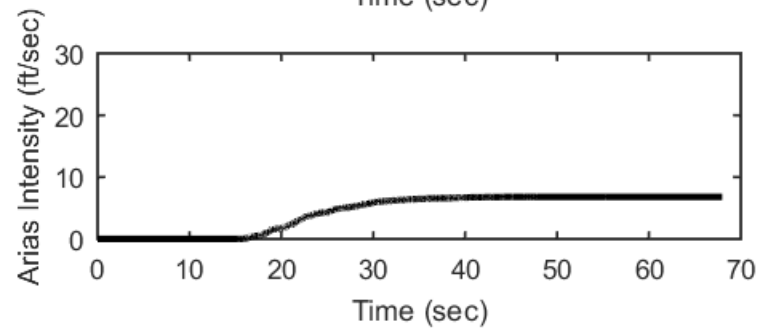
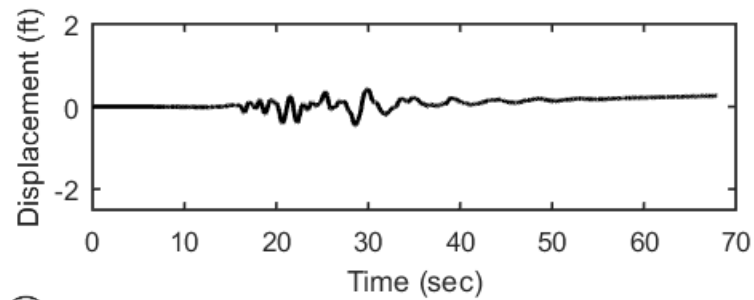
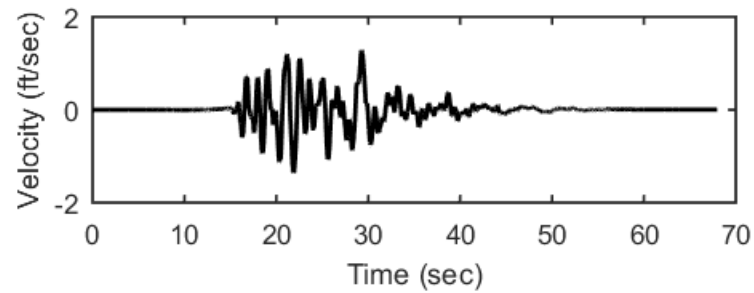
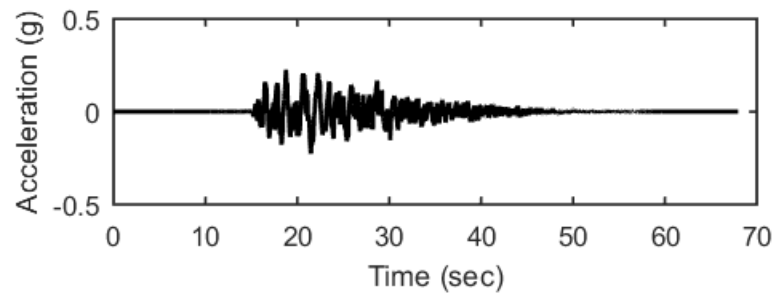
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



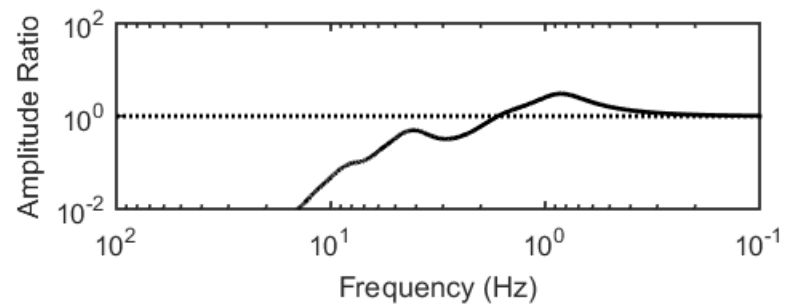
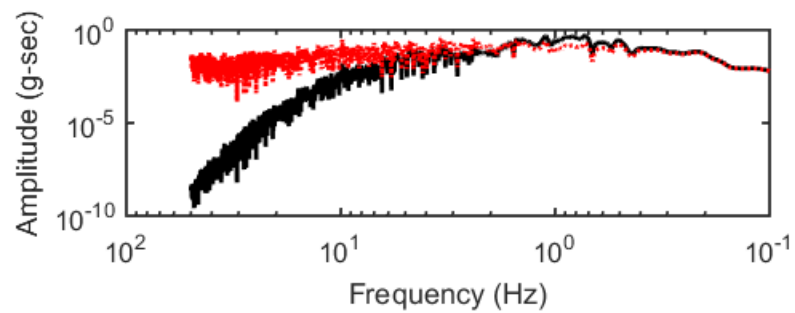
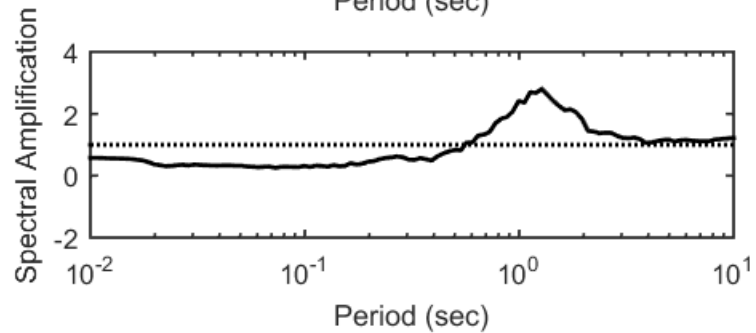
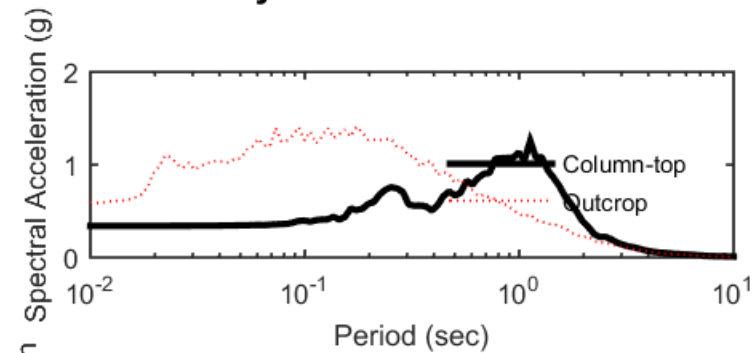
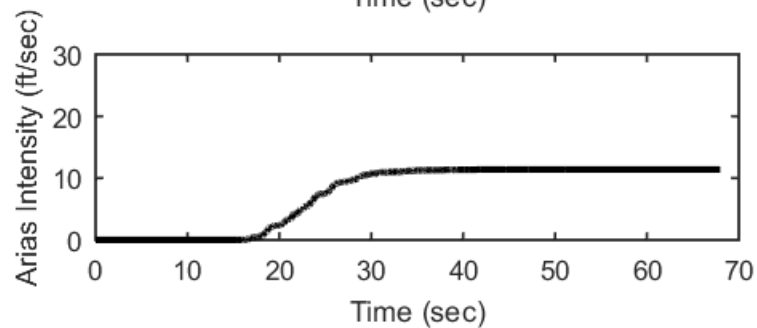
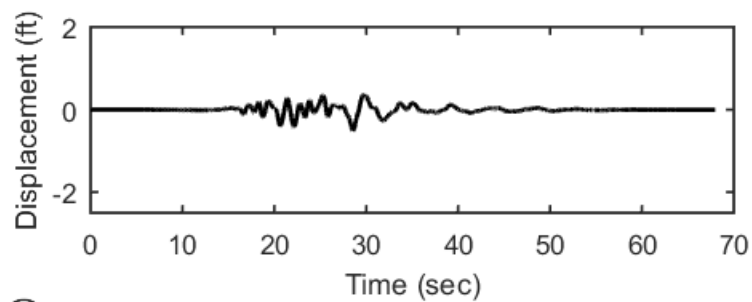
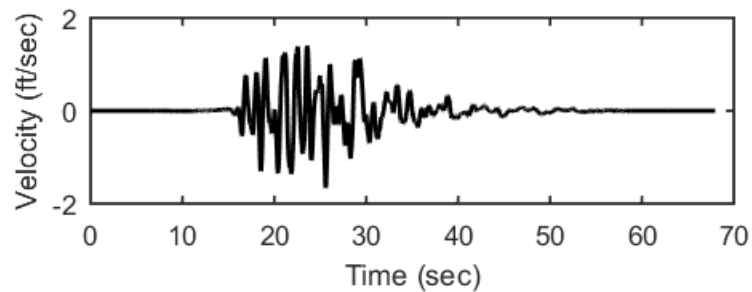
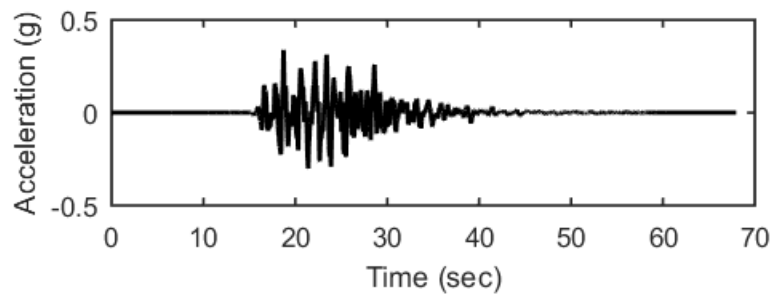
### Profile outputs for Motion: SEE5



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6

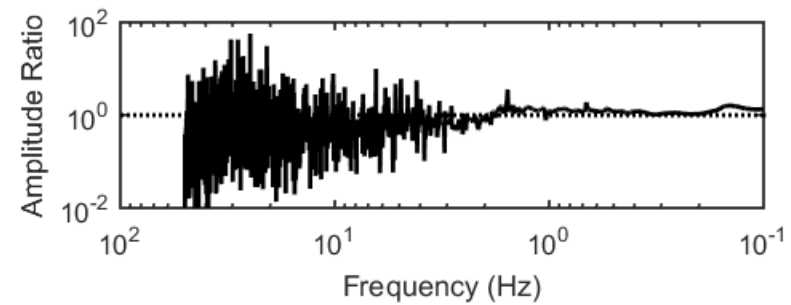
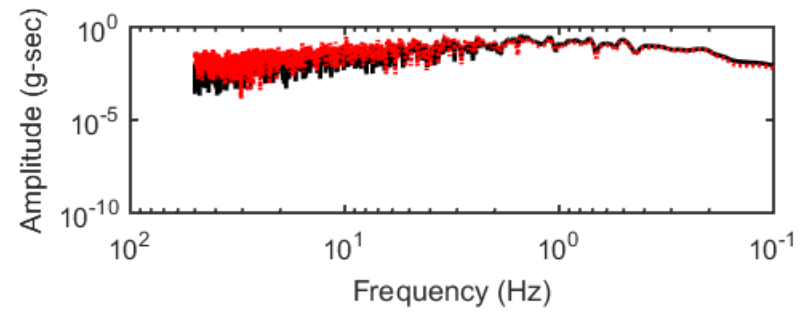
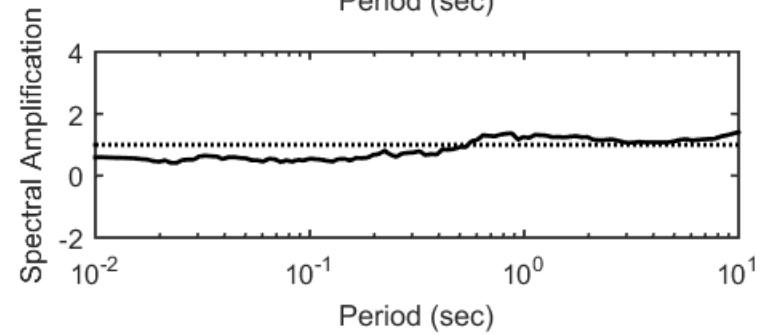
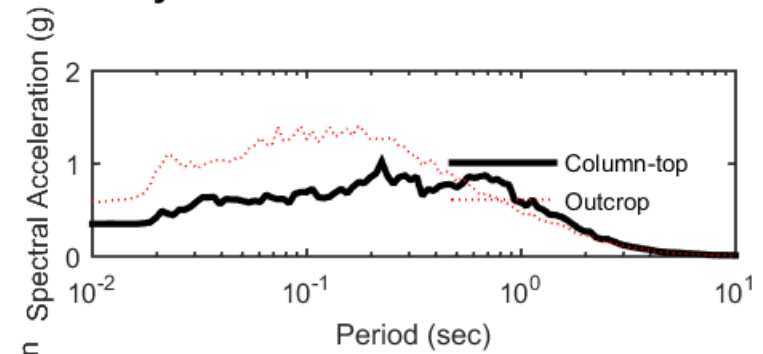
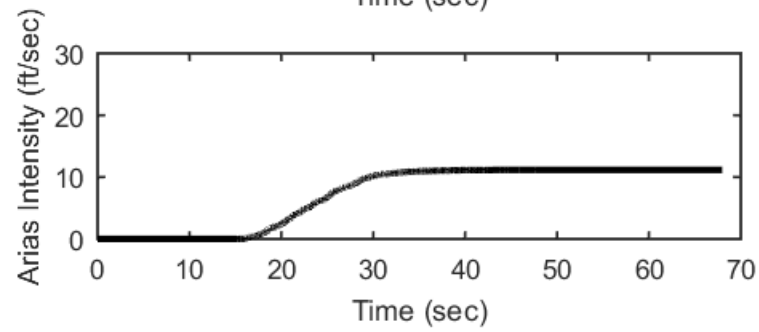
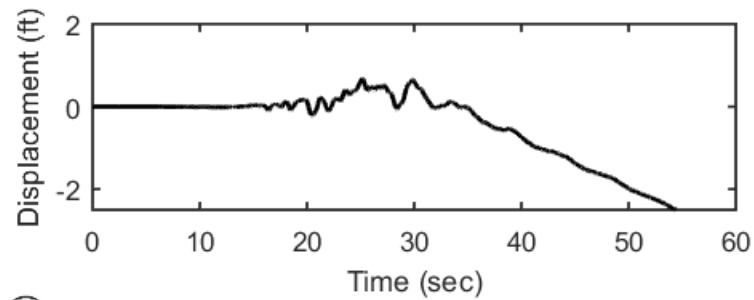
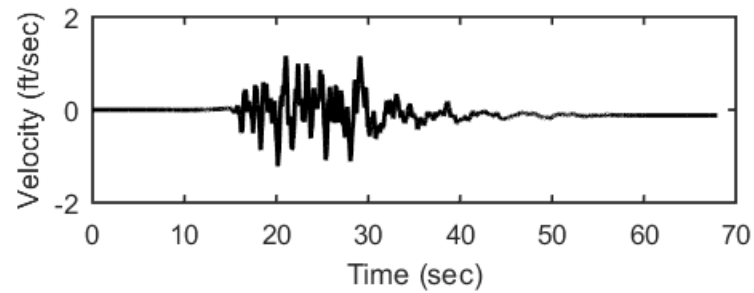
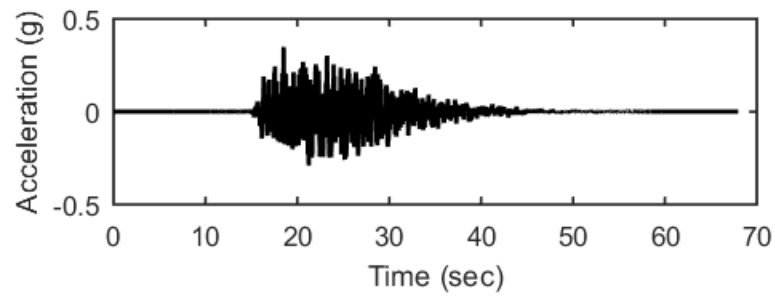


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6

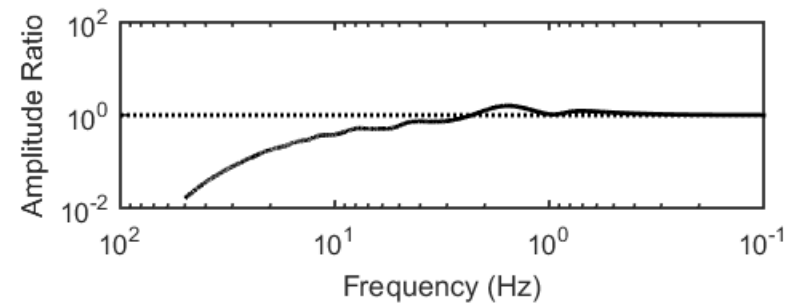
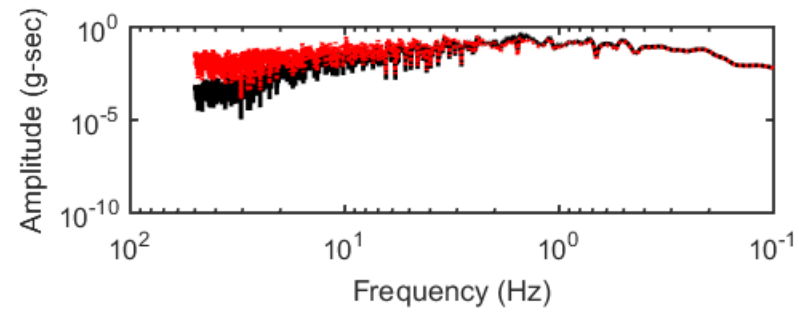
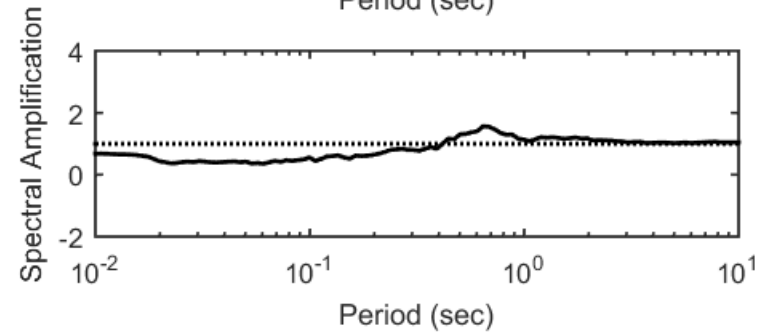
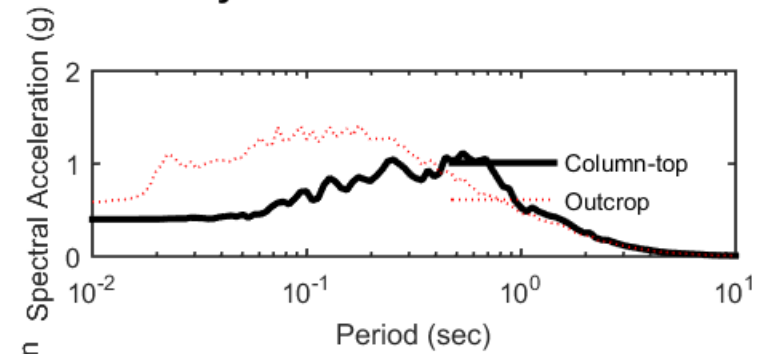
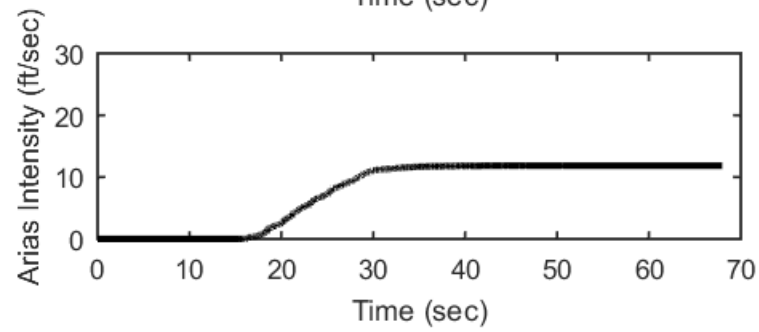
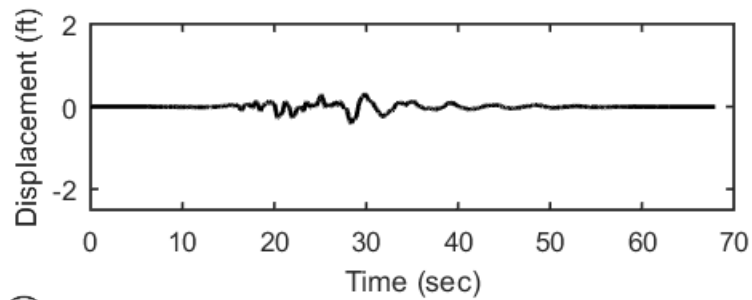
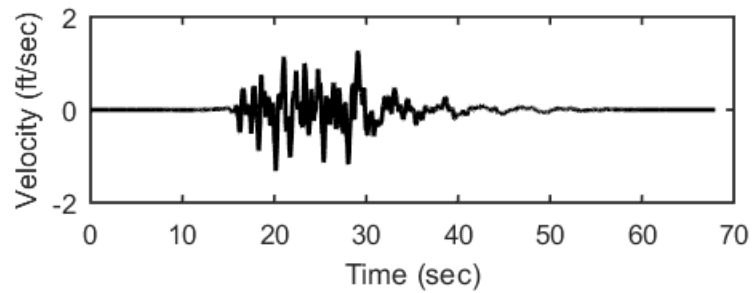
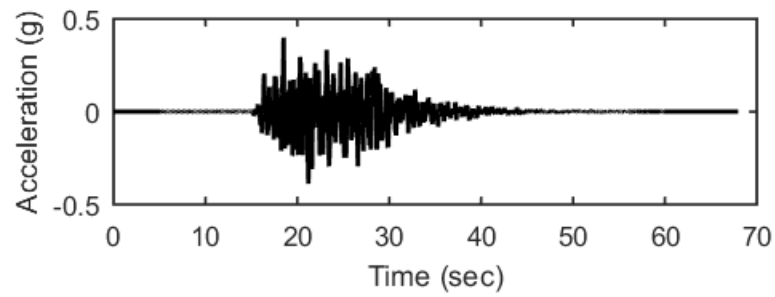




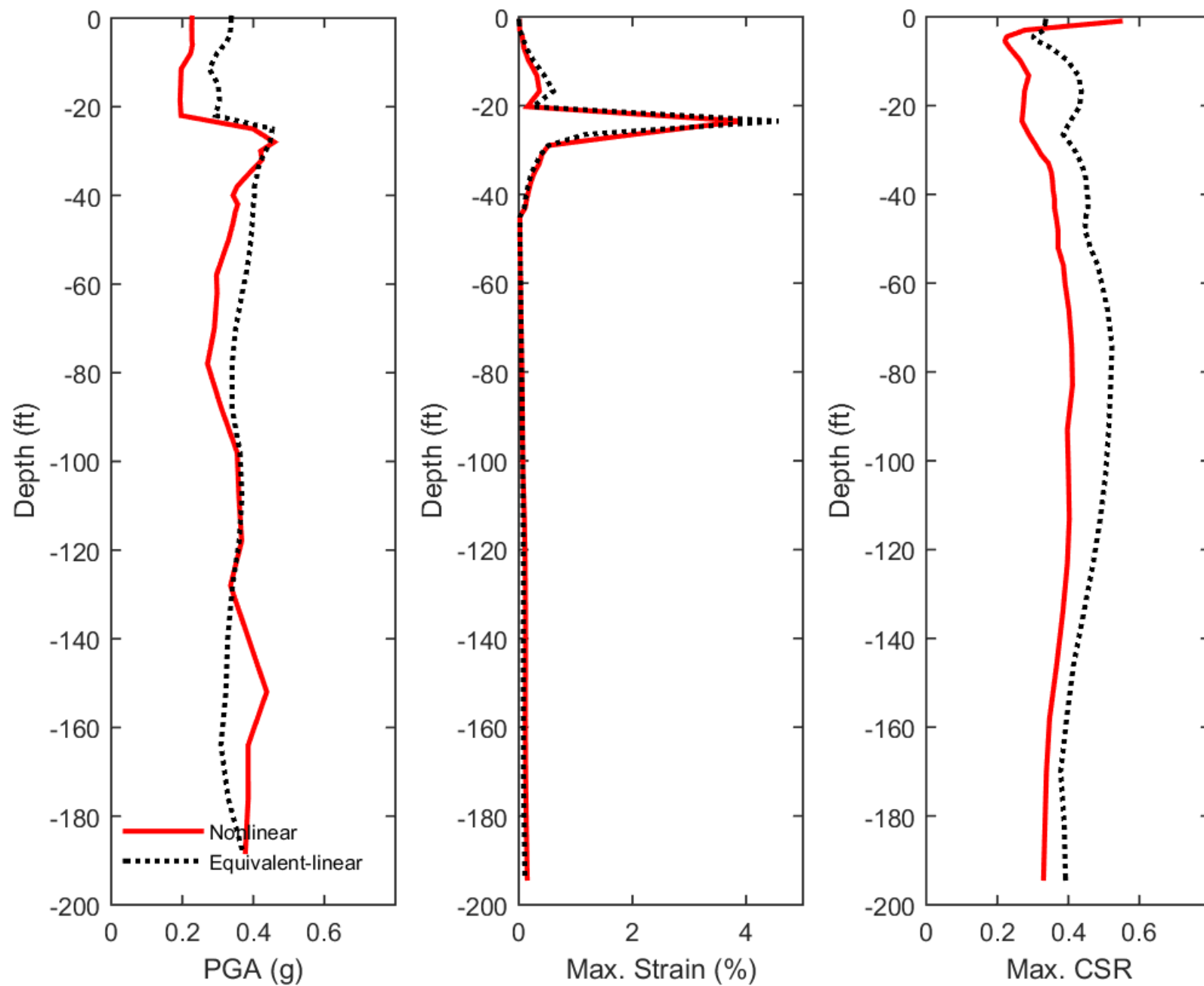
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



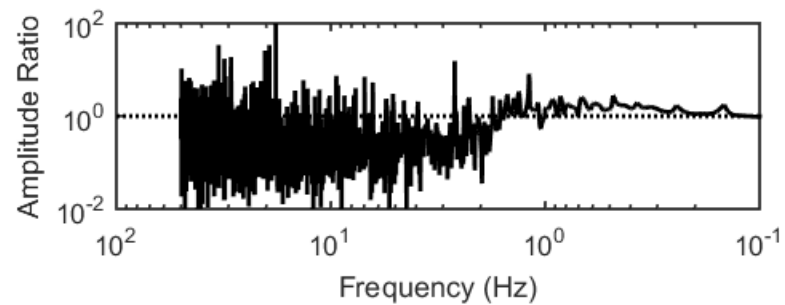
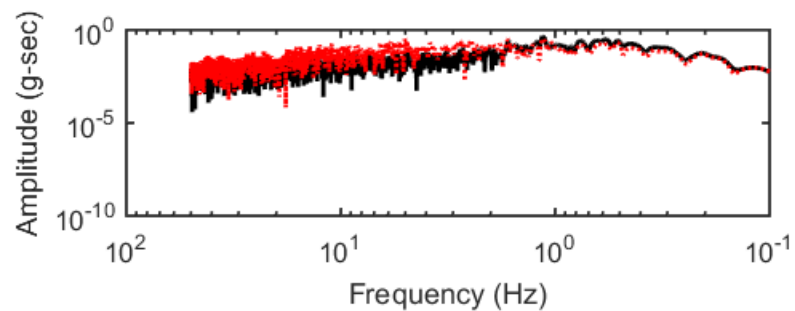
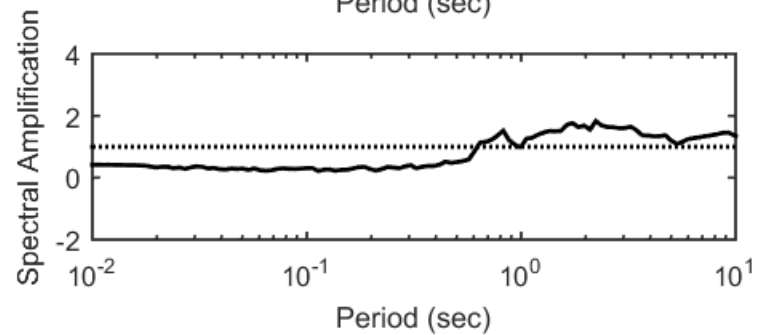
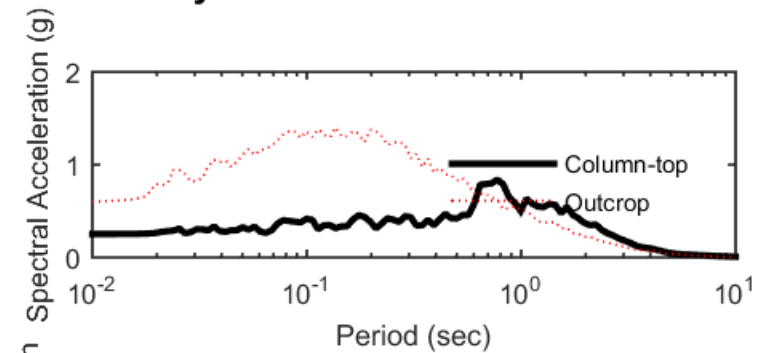
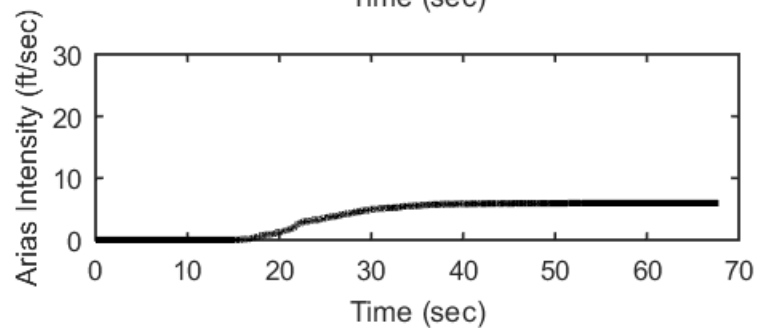
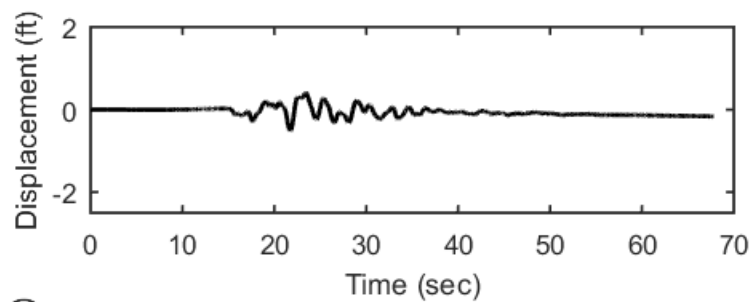
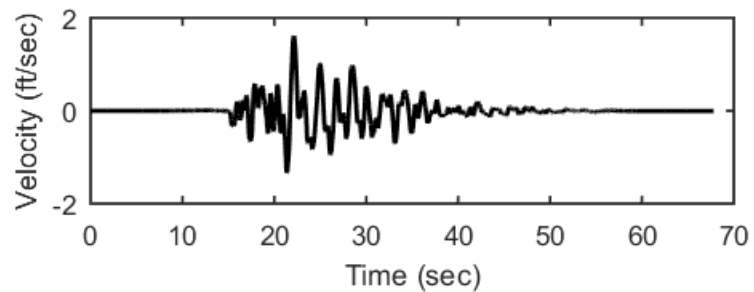
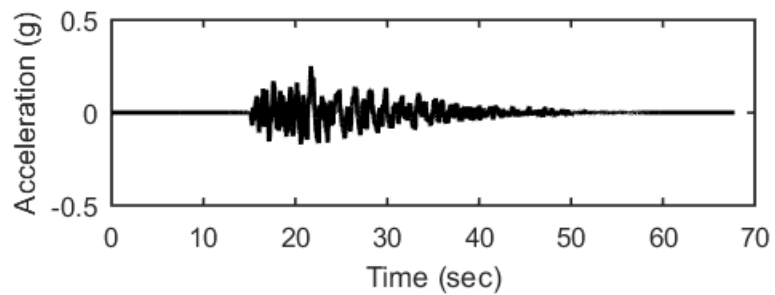
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



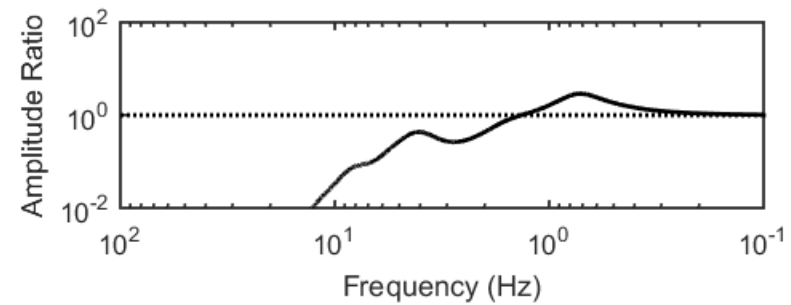
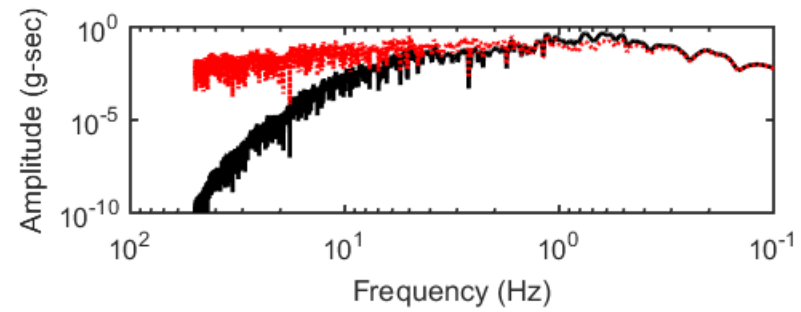
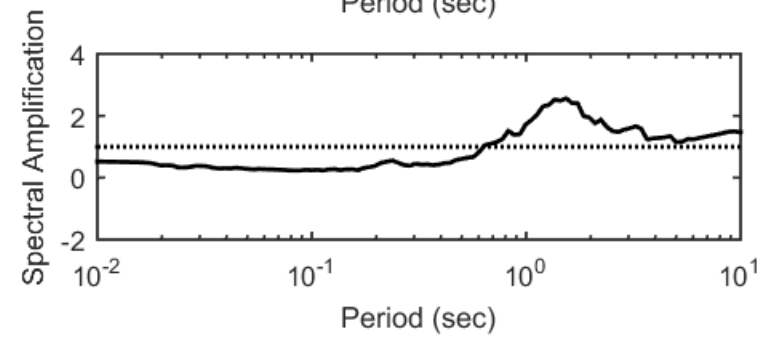
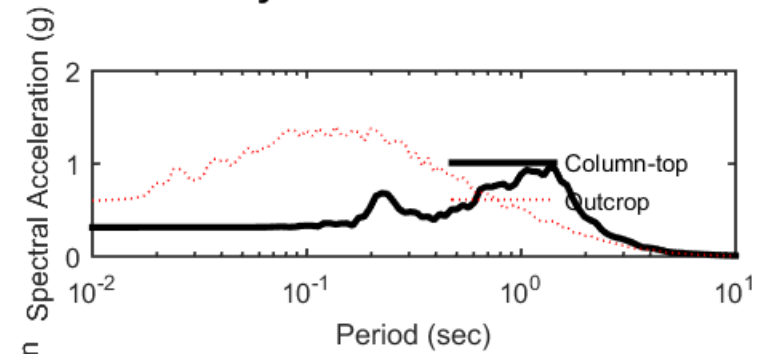
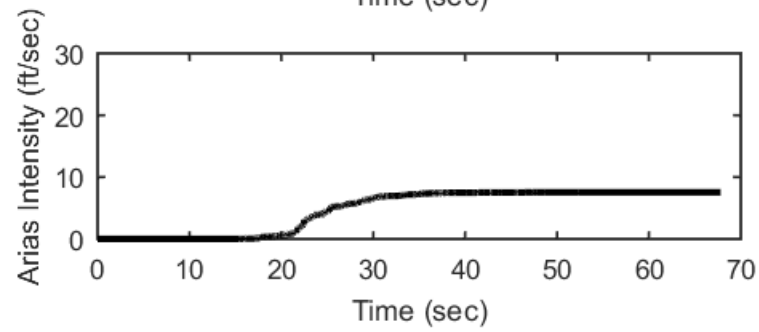
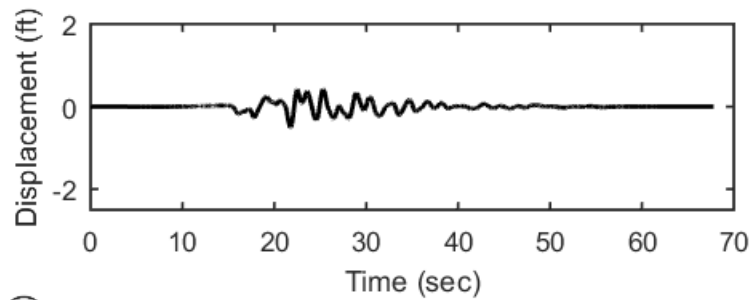
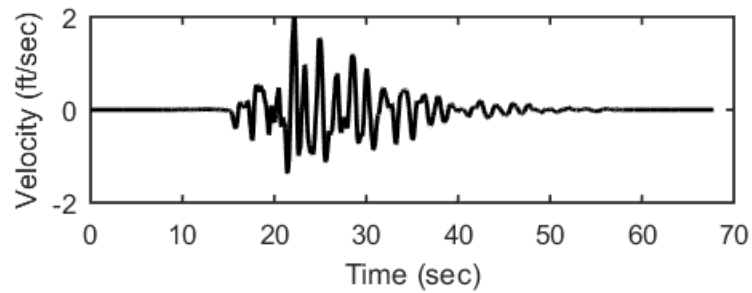
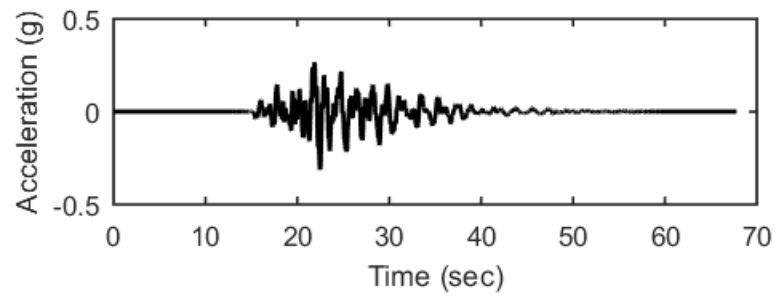
### Profile outputs for Motion: SEE6



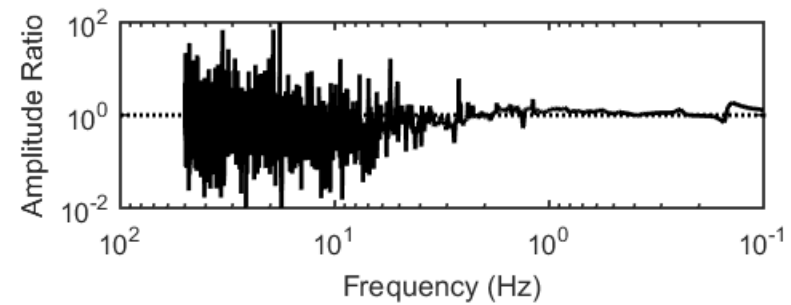
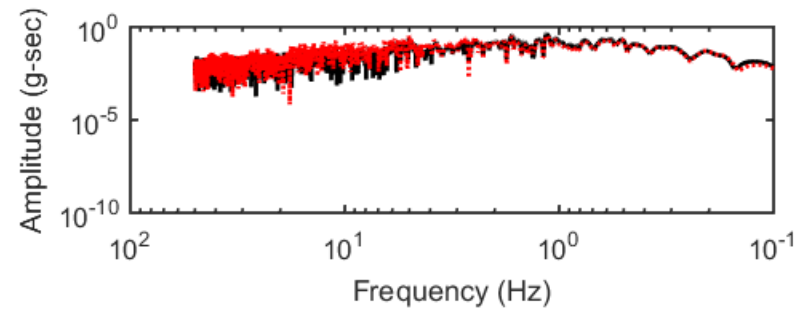
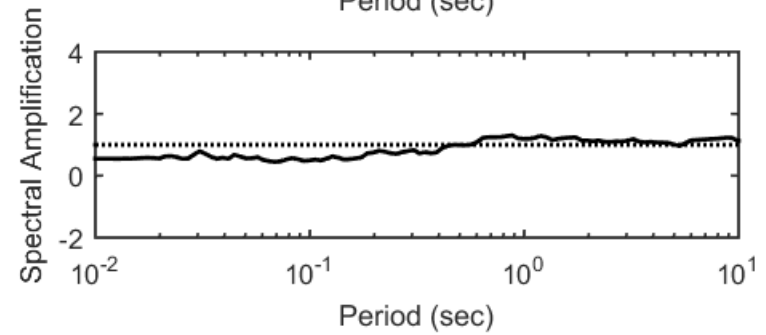
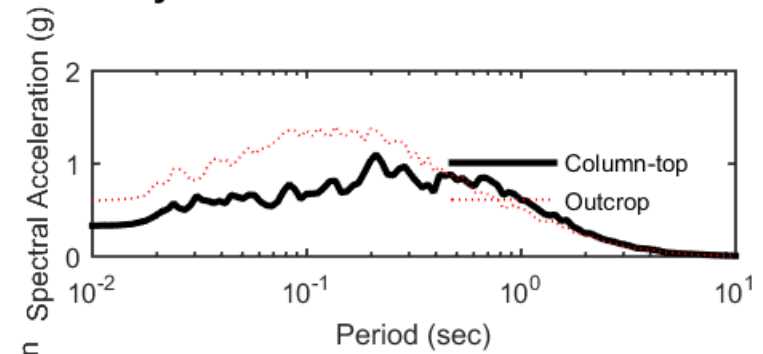
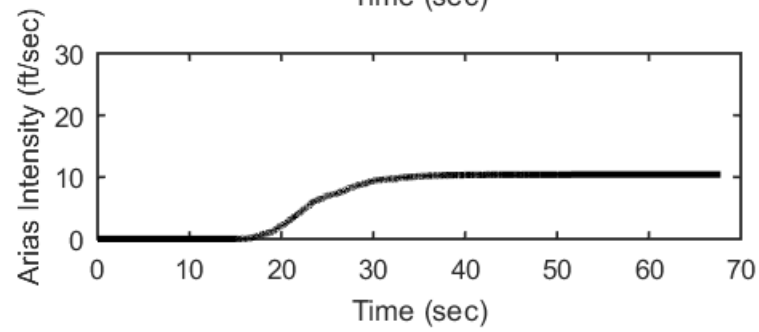
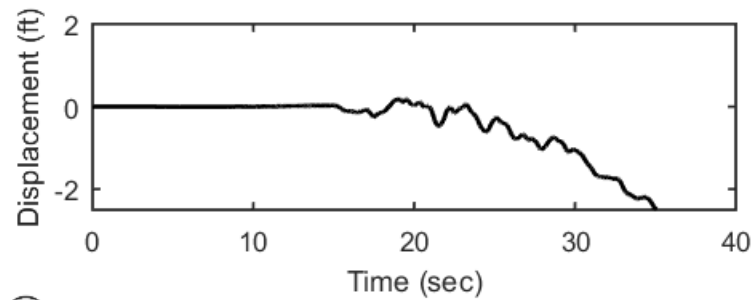
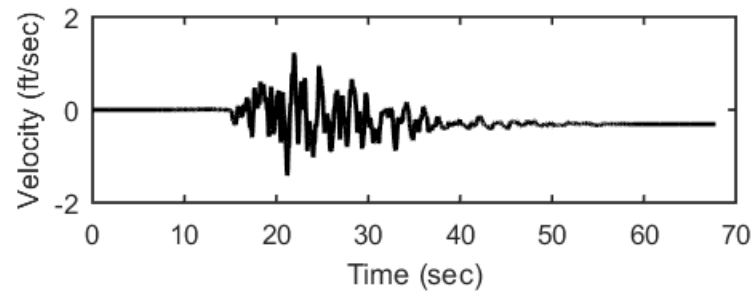
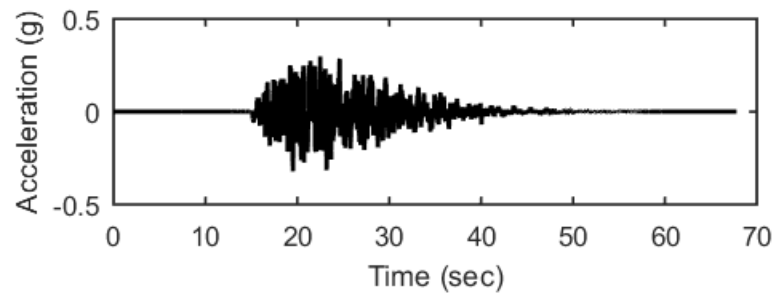
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



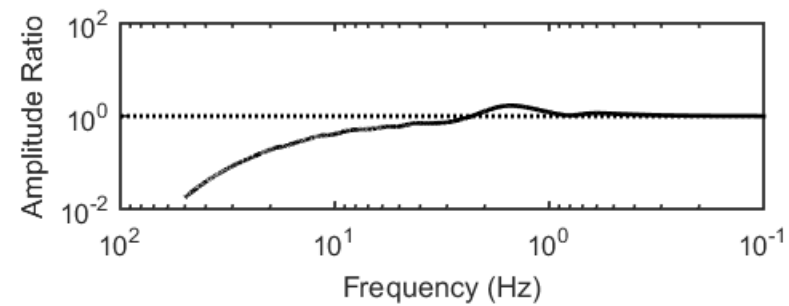
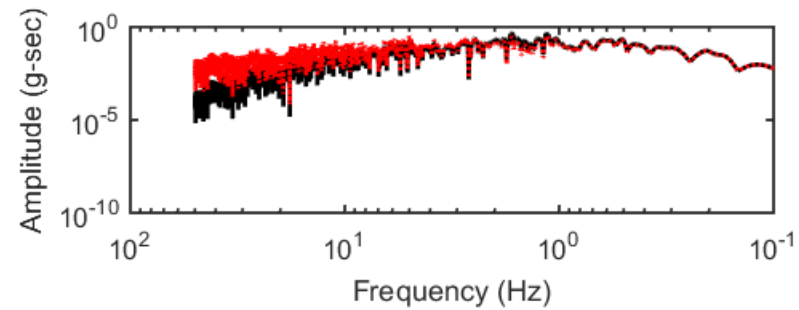
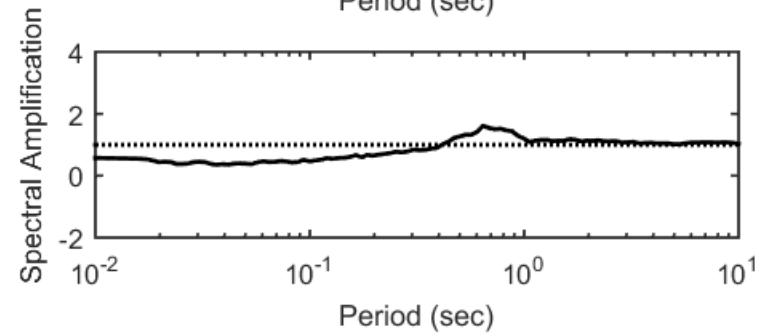
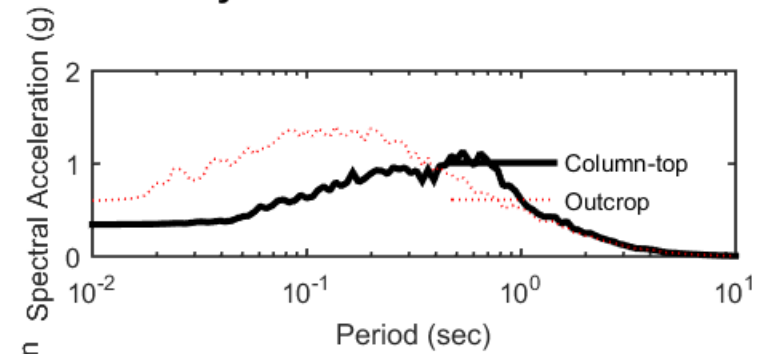
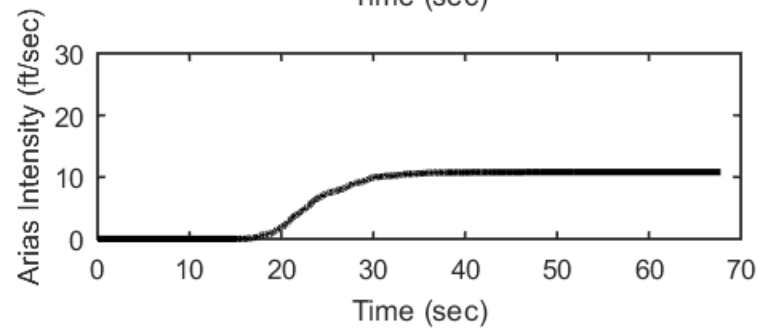
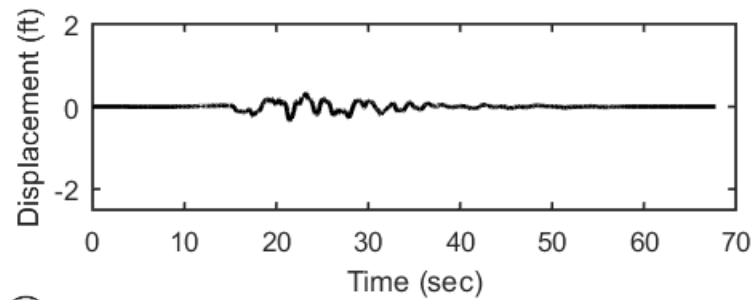
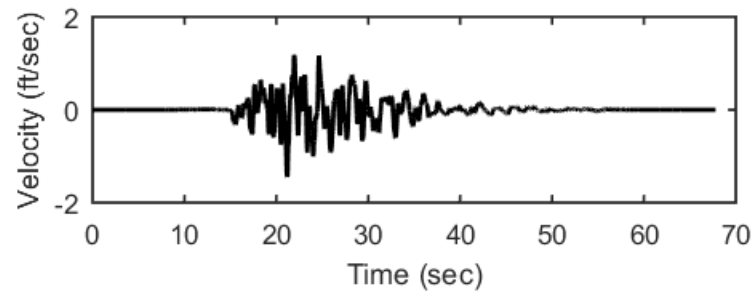
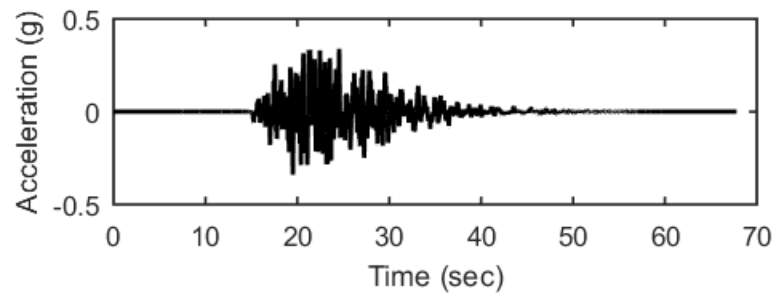
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



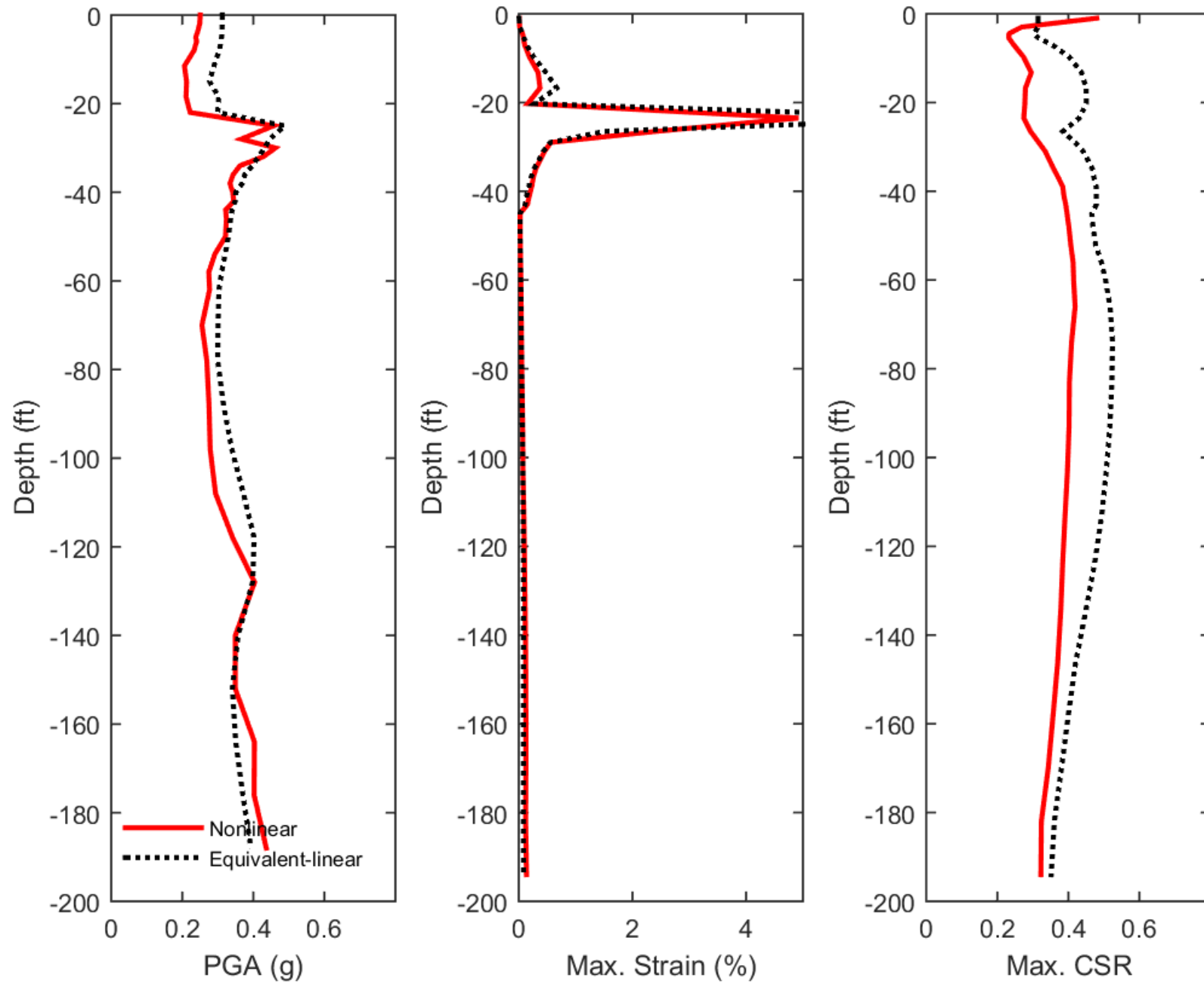
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7

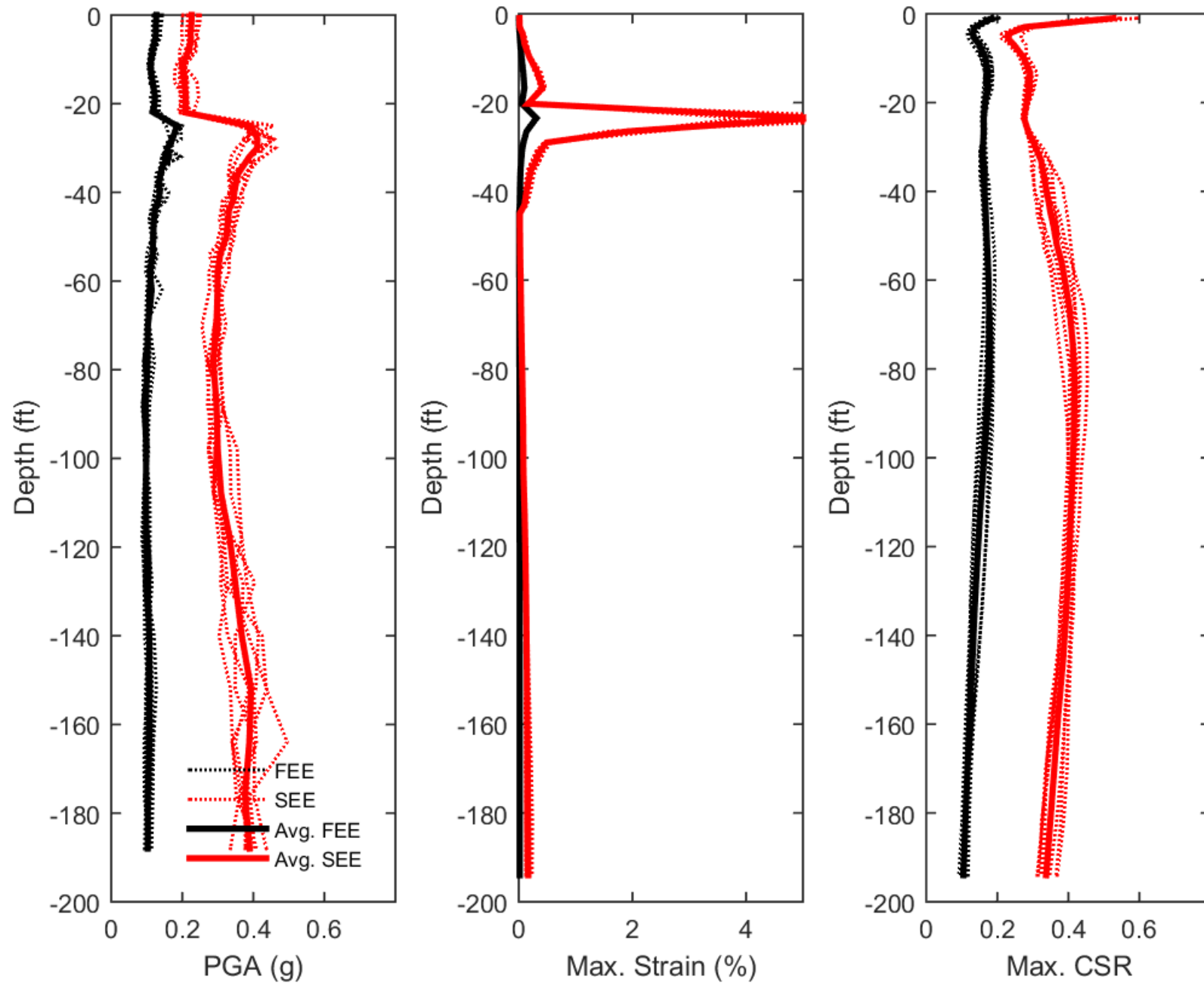


### Profile outputs for Motion: SEE7

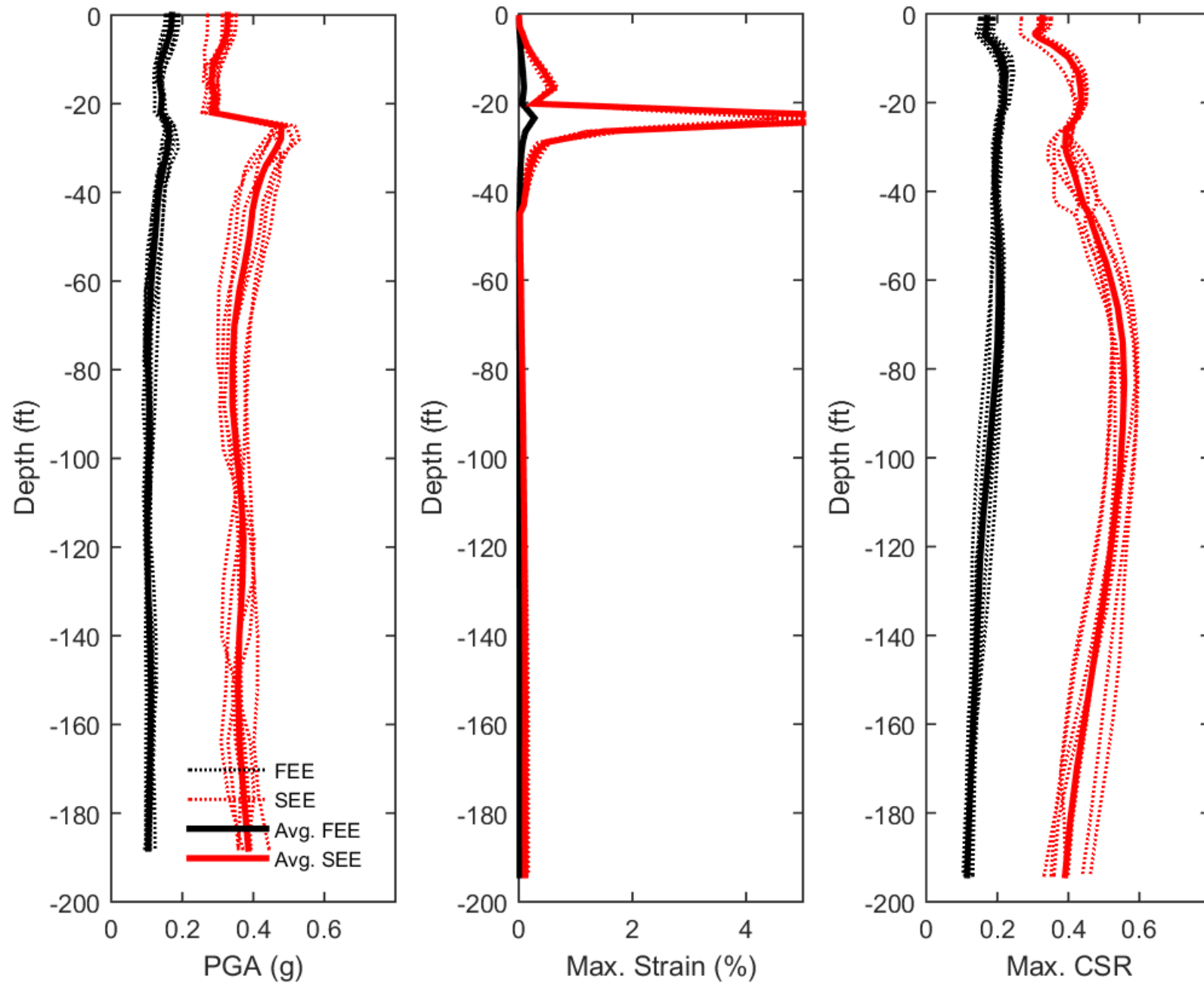




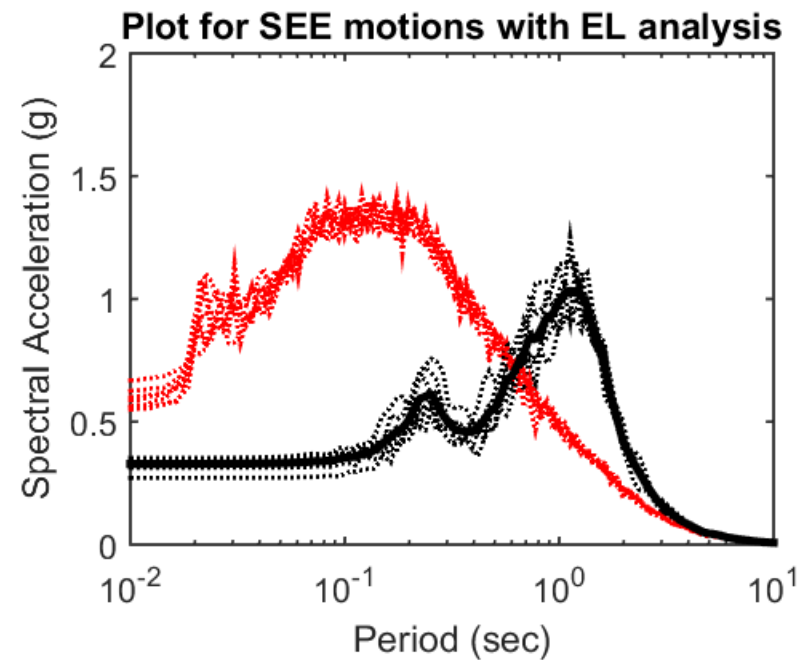
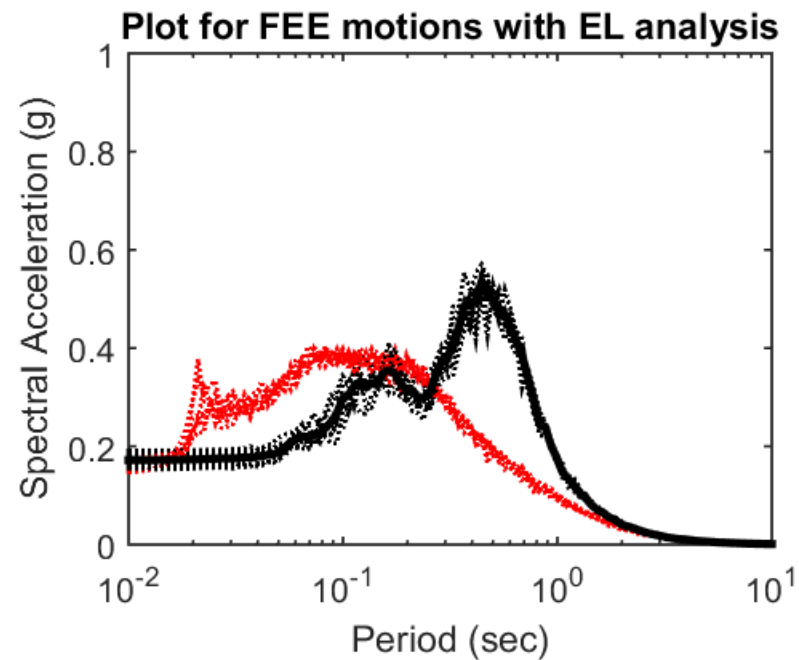
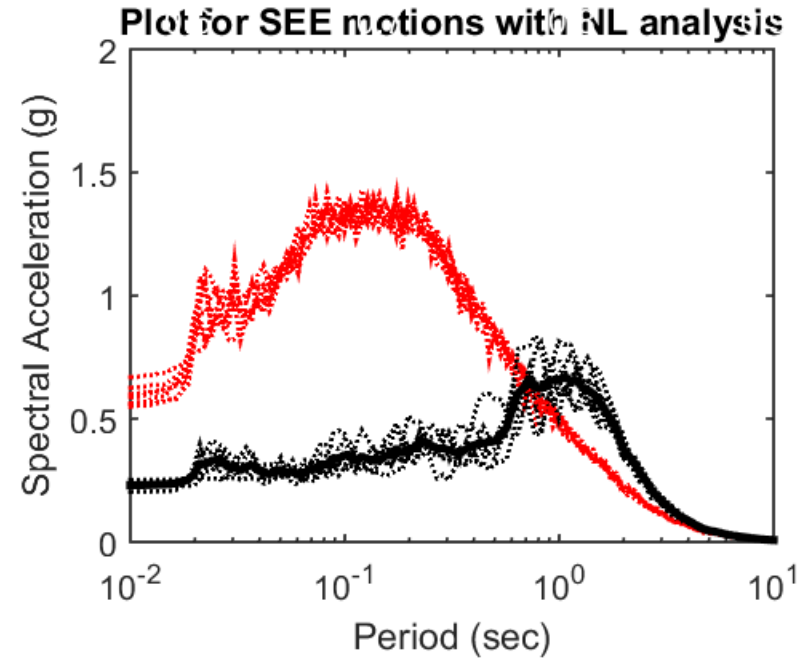
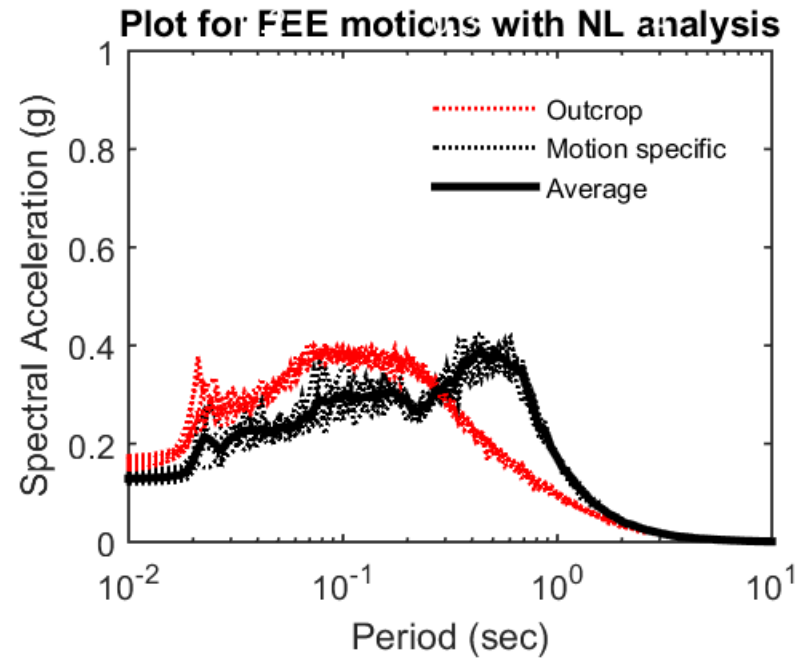
## Summary of the profile outputs for Nonlinear analysis



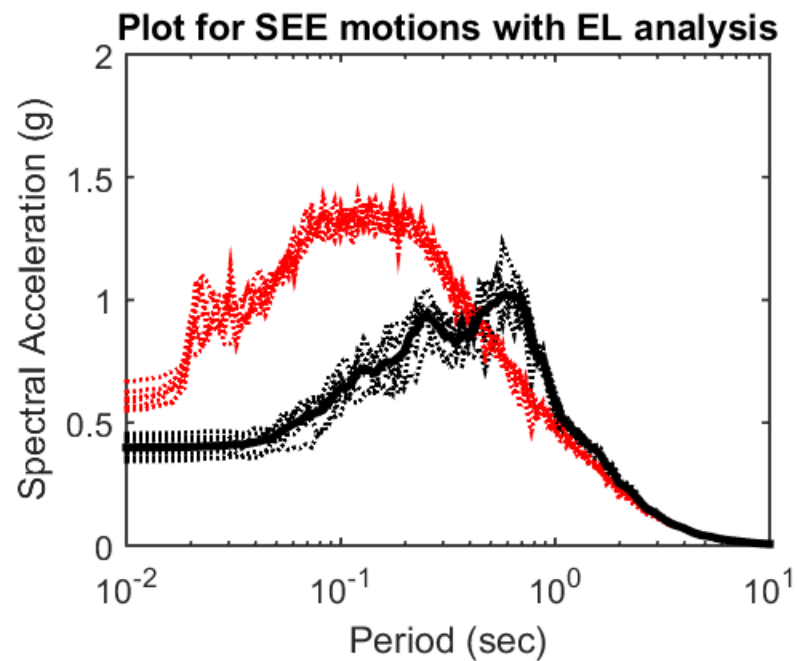
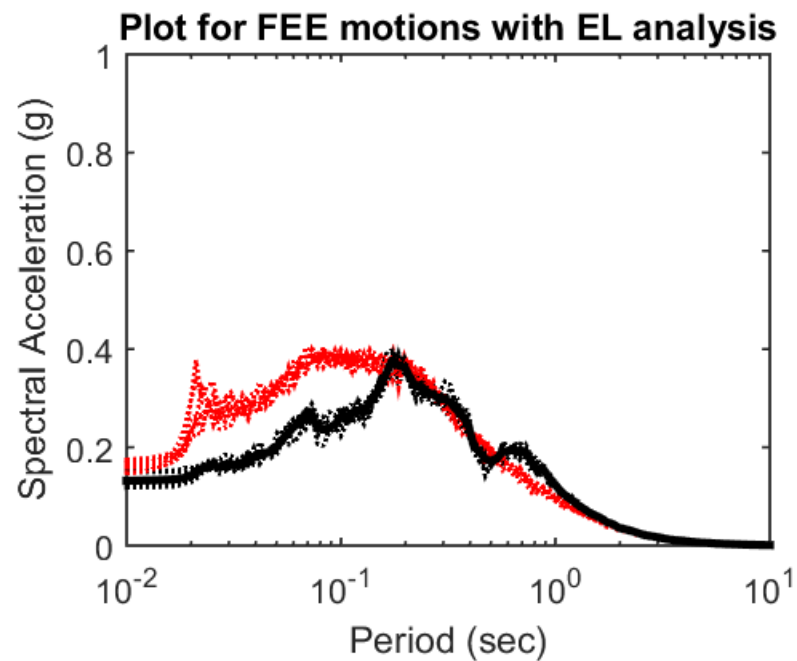
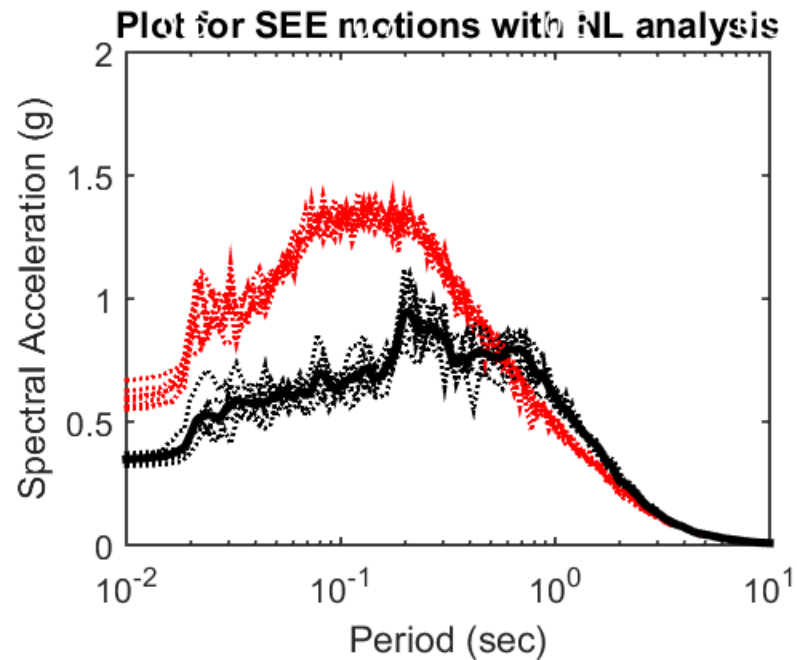
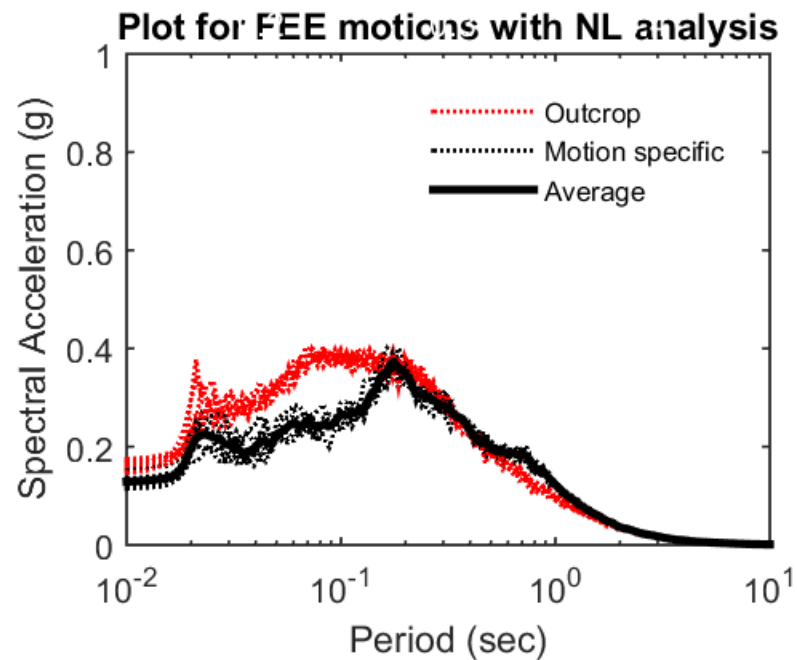
### Summary of the profile outputs for Equivalent-linear analysis



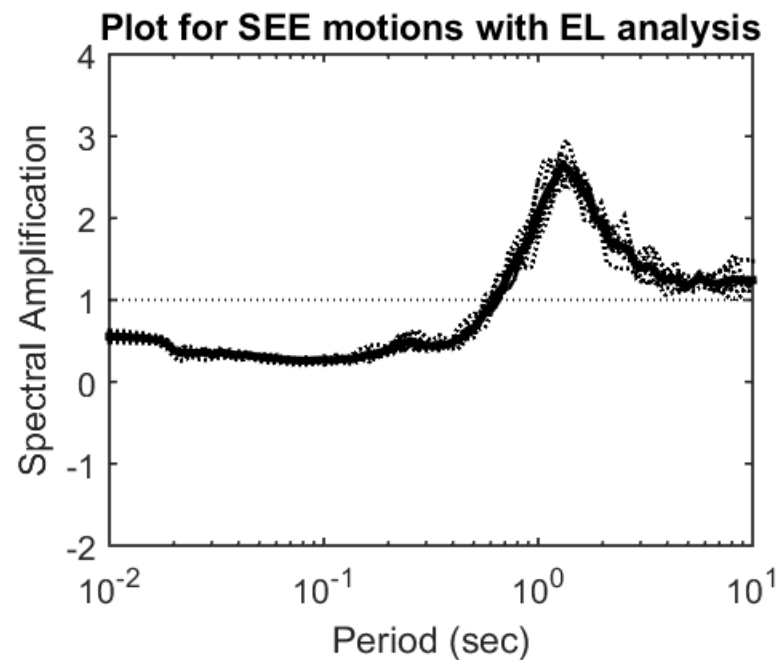
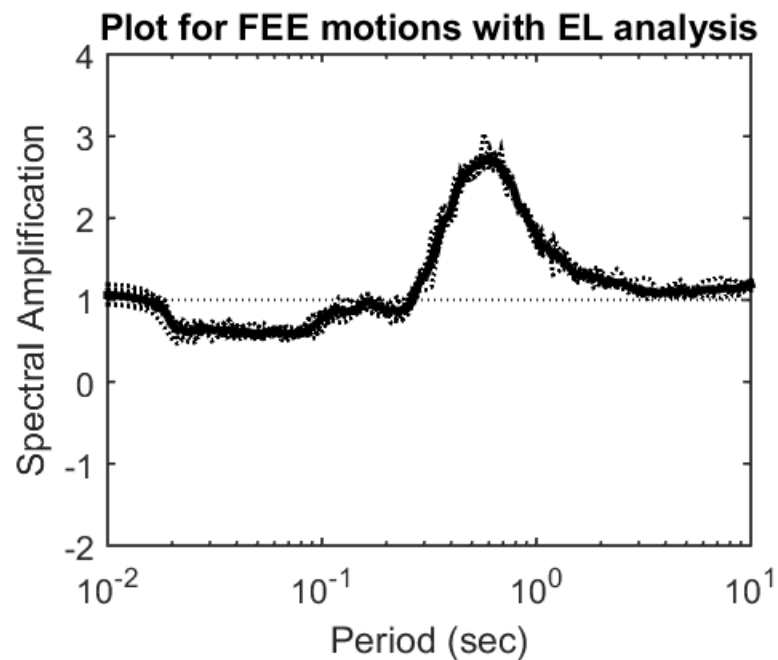
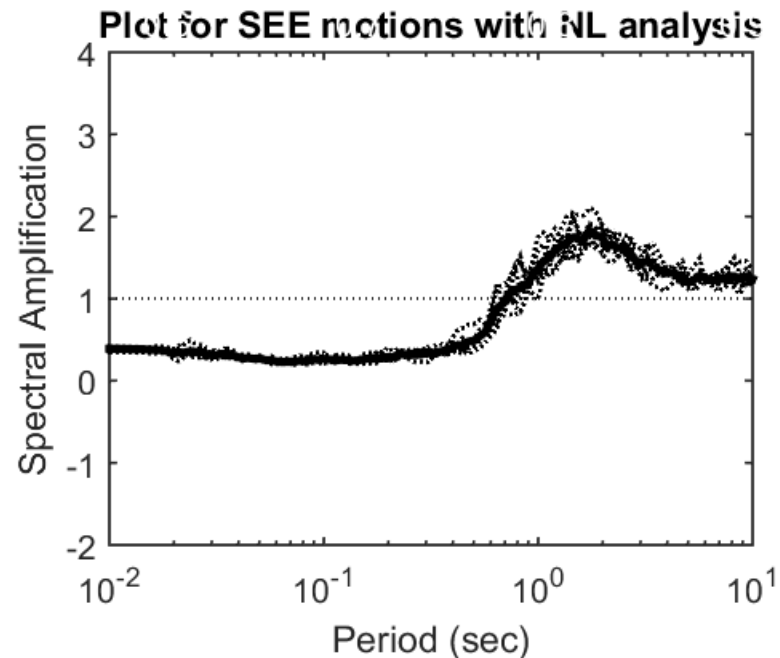
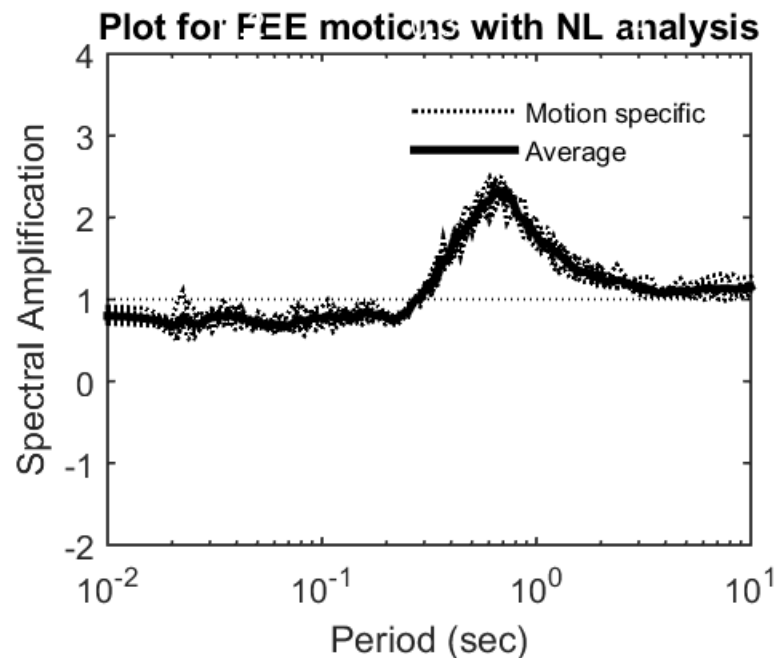
## Summary plots: RSA at ground surface



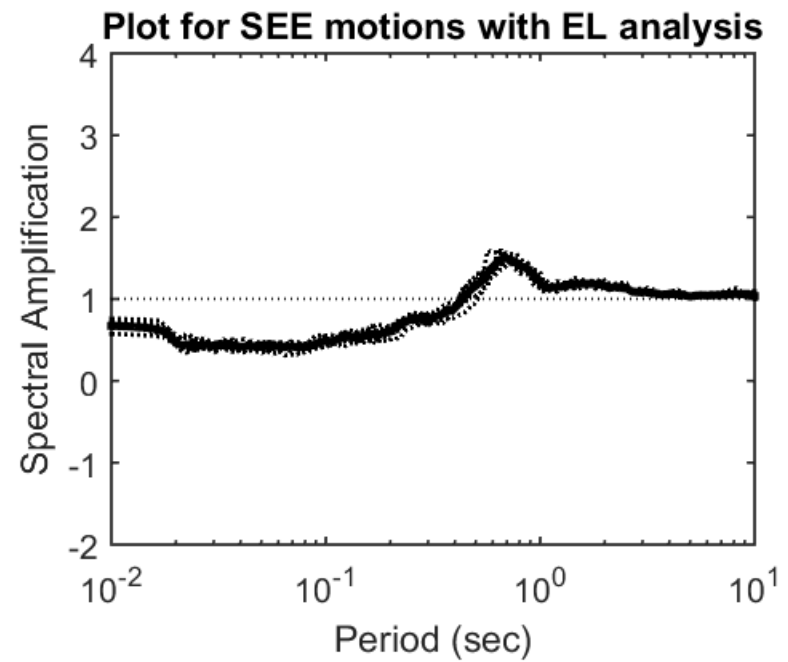
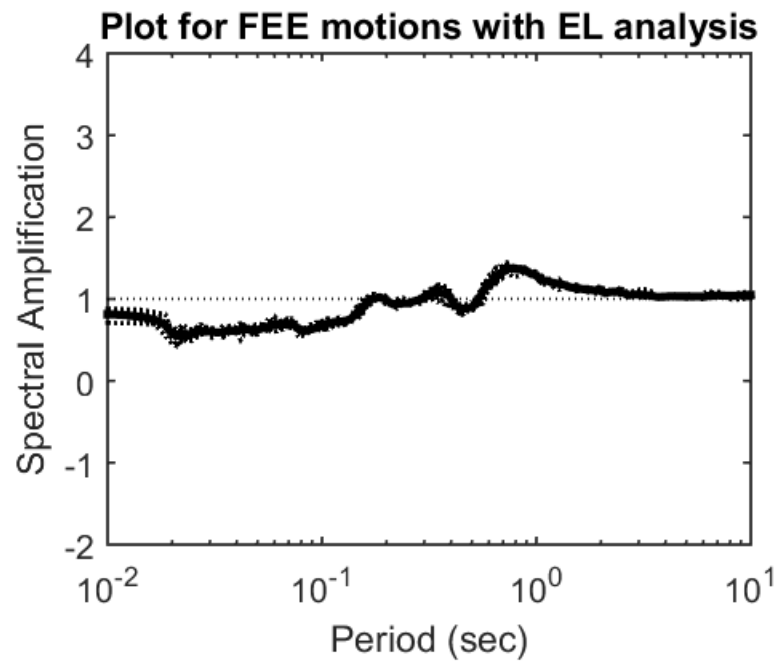
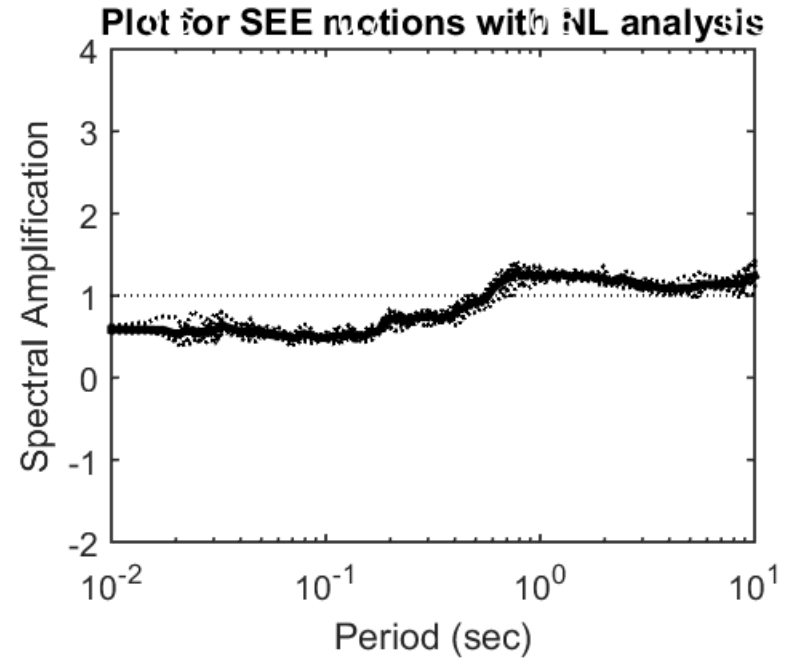
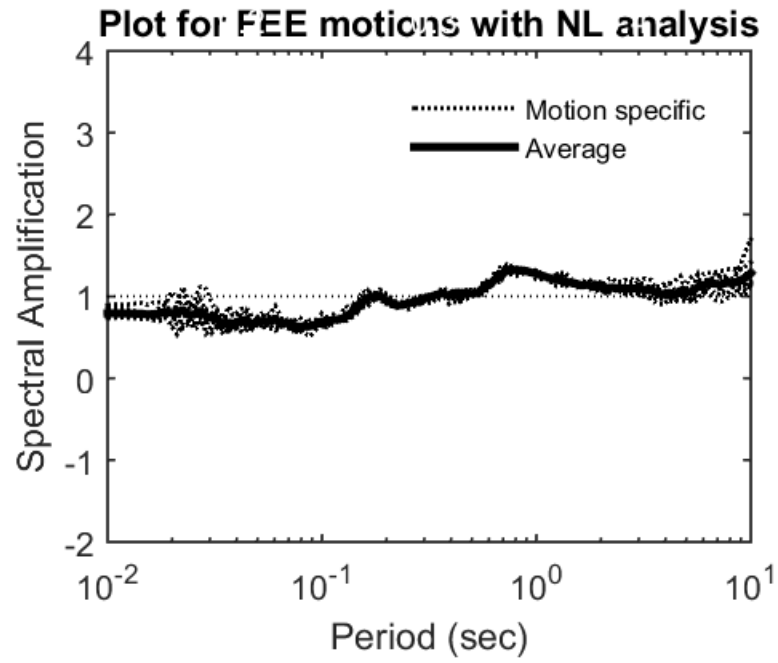
### Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



## Summary plots: Spectral amplification at top of Marl

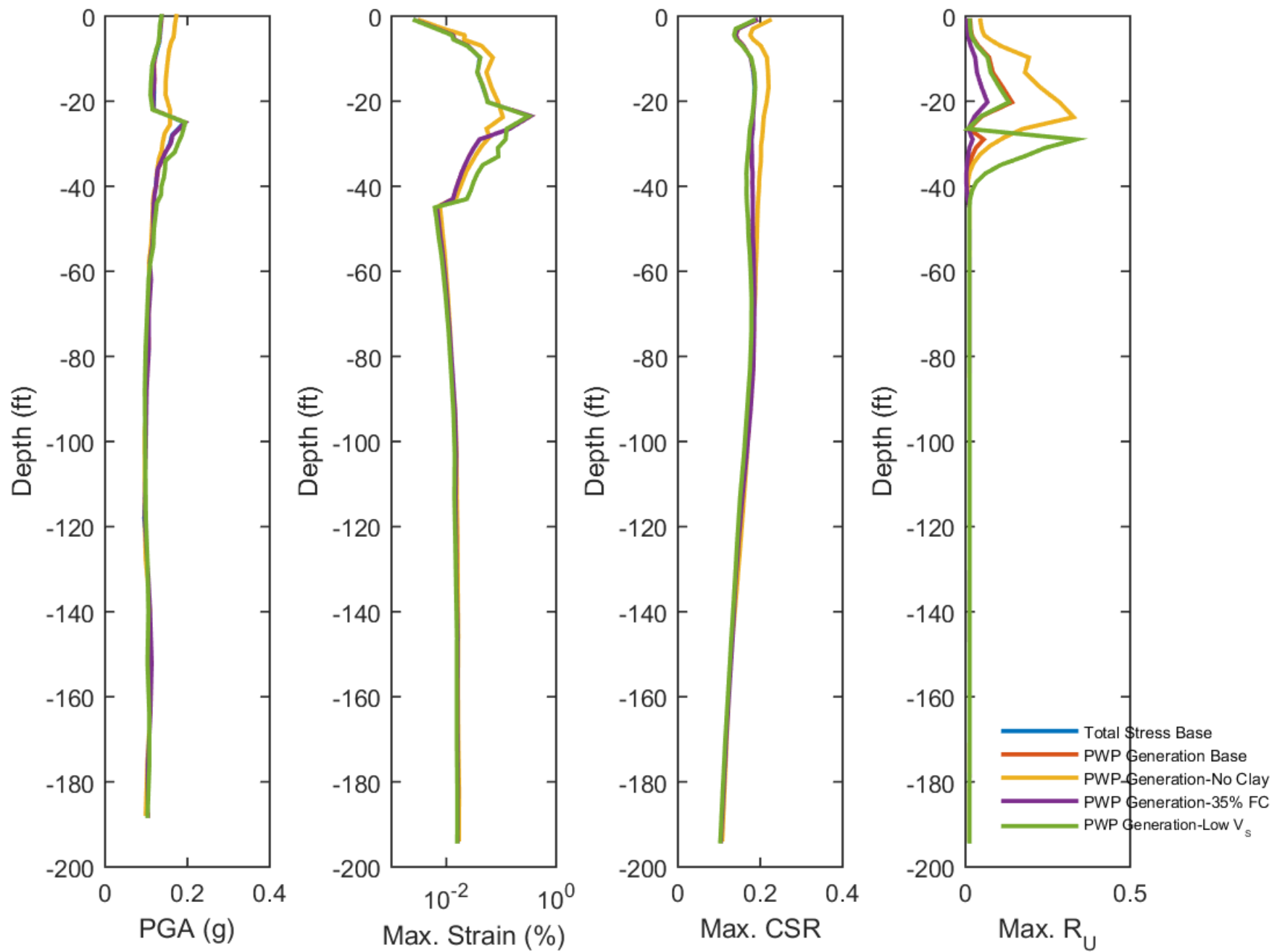


## **Appendix V – Main Line with Porewater Pressure Generation Output**

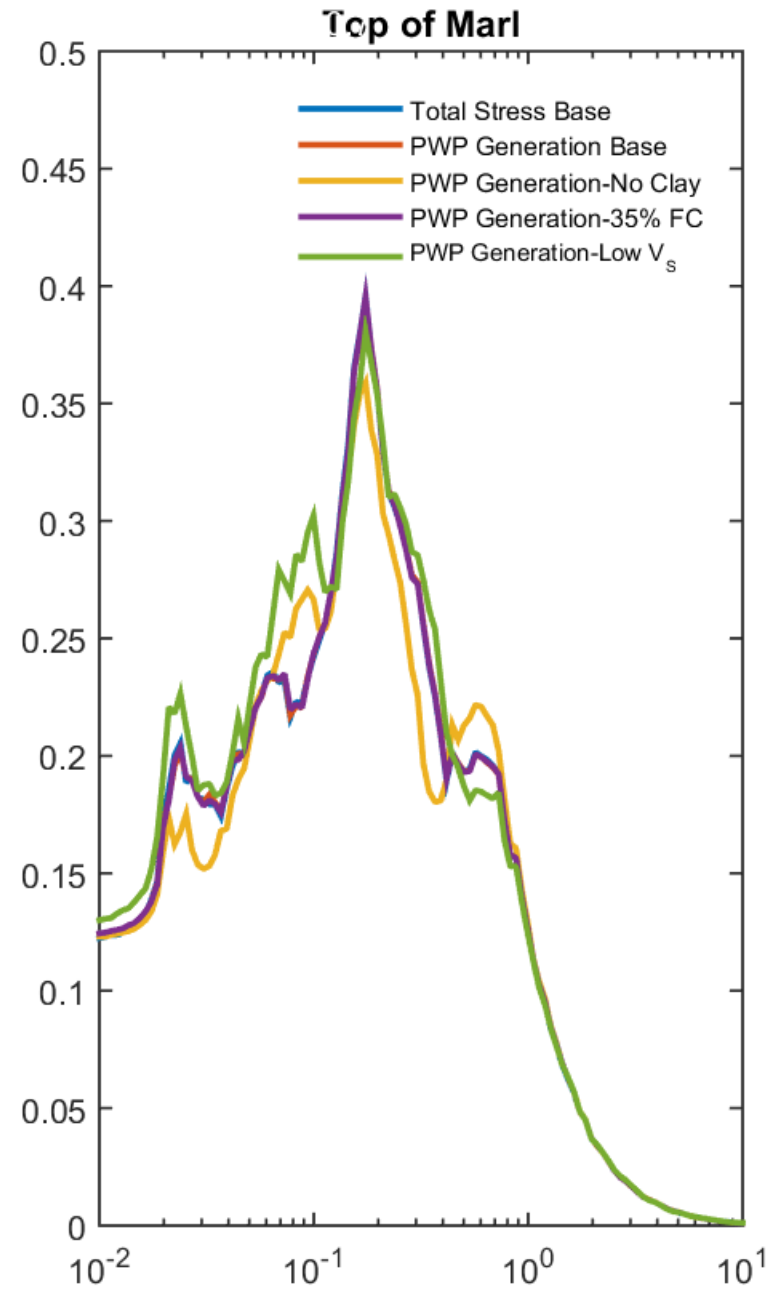
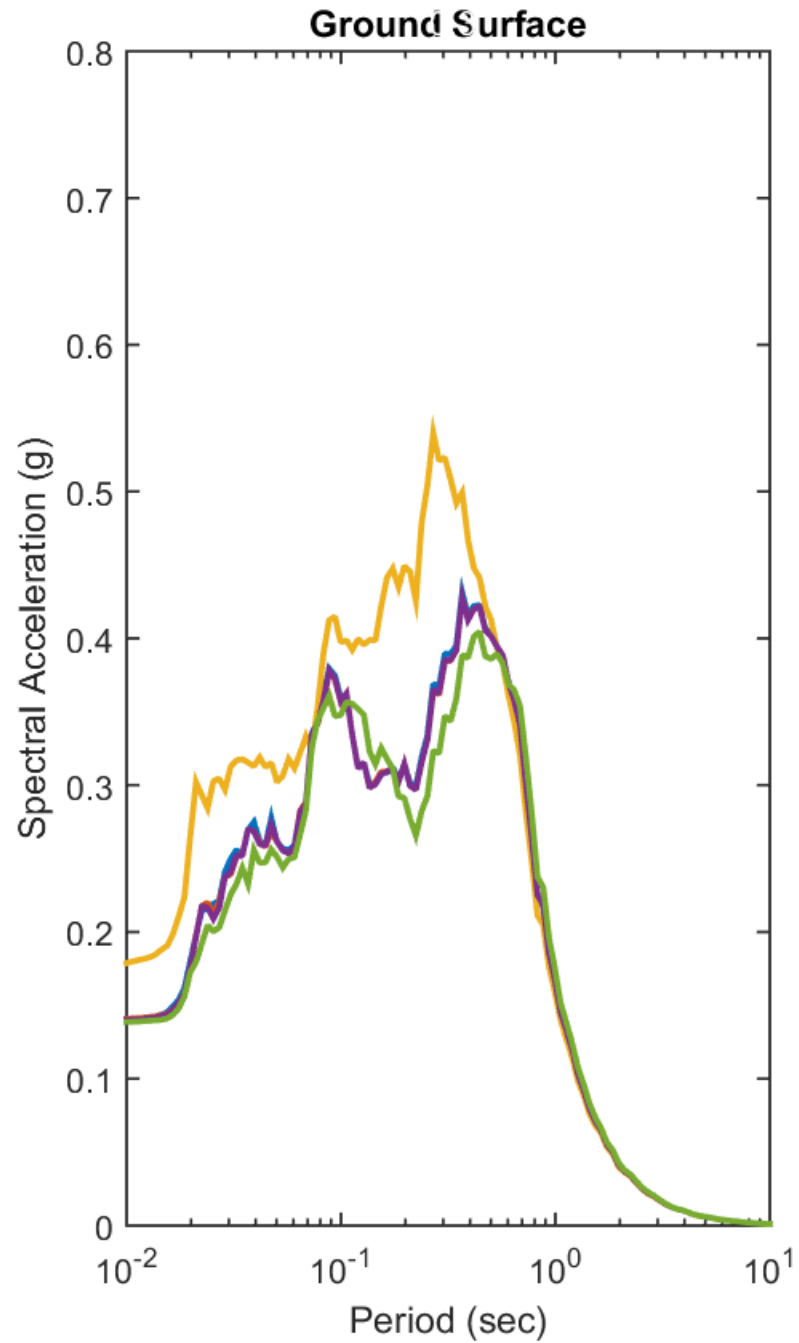
## **FEE SUMMARY PLOTS**



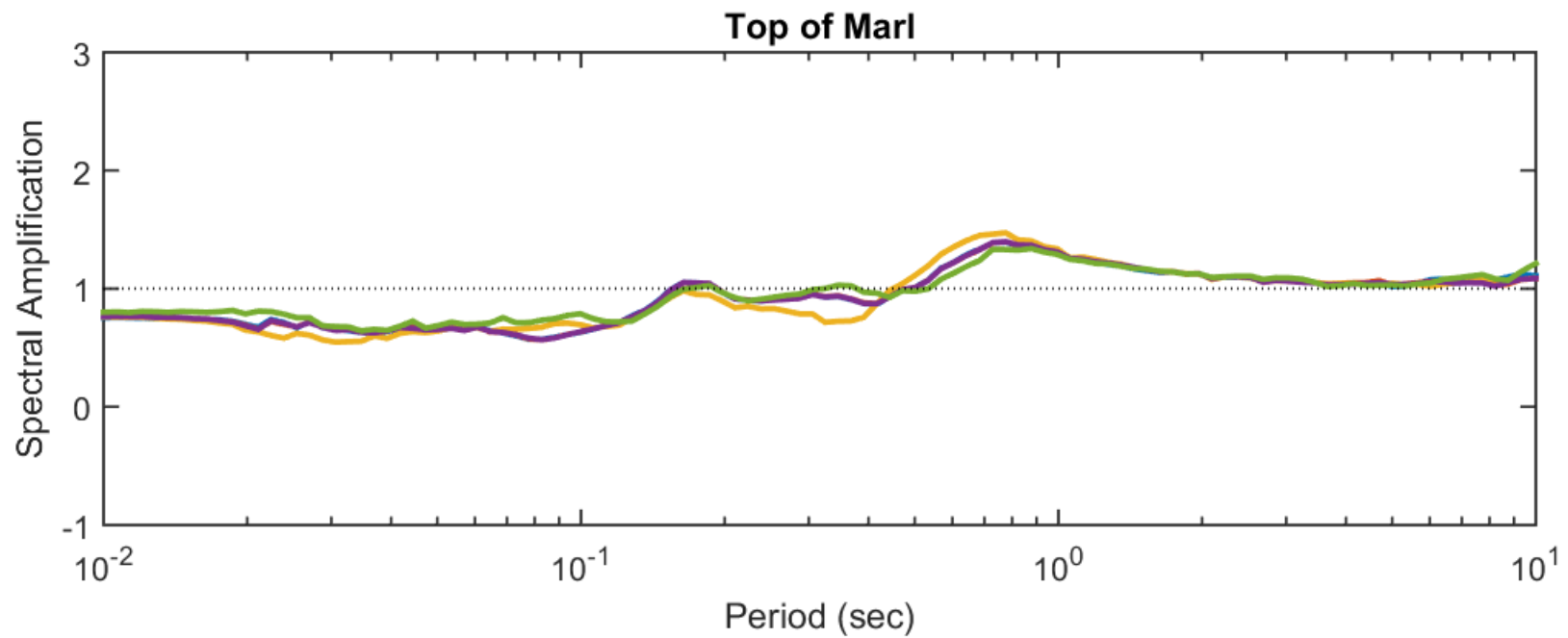
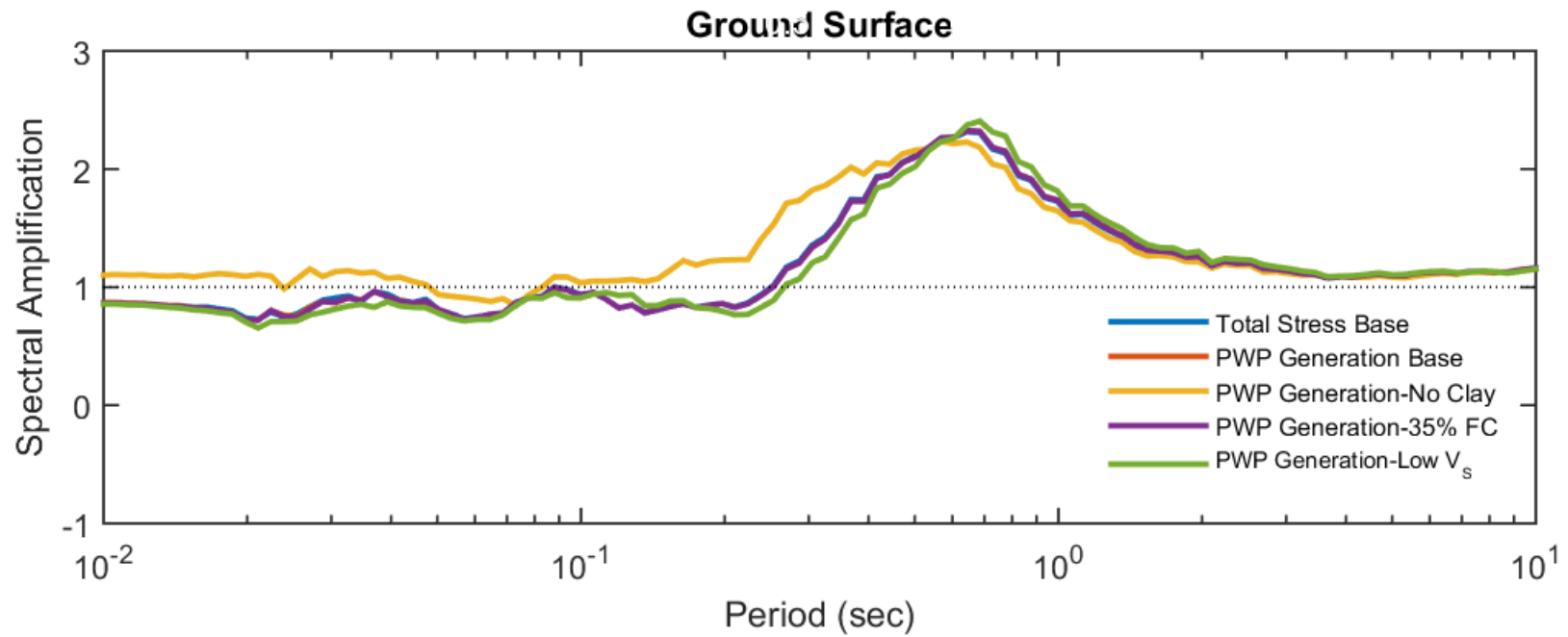
## Nonlinear Analysis for All Scenarios for Main Line



## Response Spectra for All Scenarios for Main Line

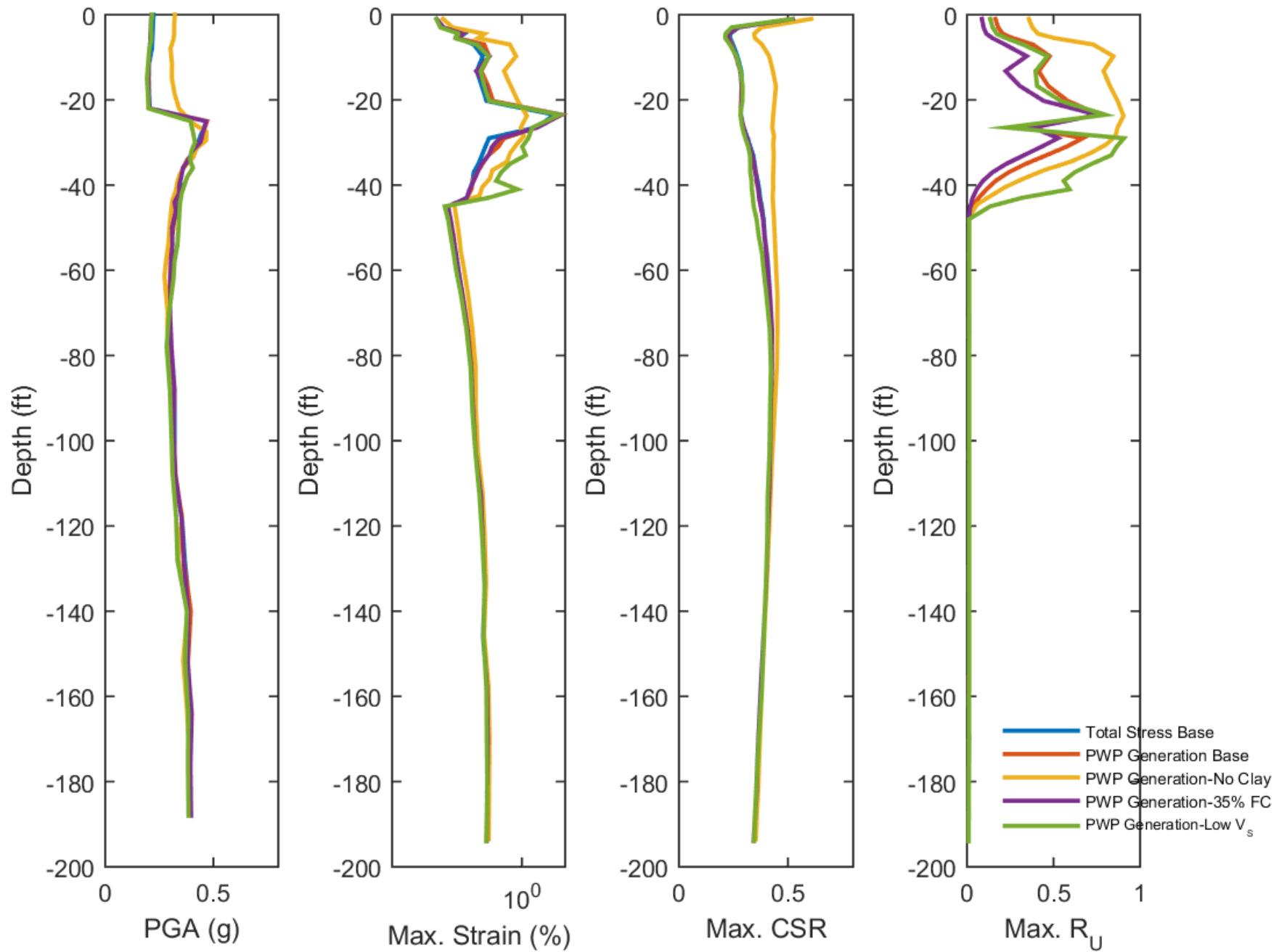


## Spectral Amplifications for All Scenarios for Main Line

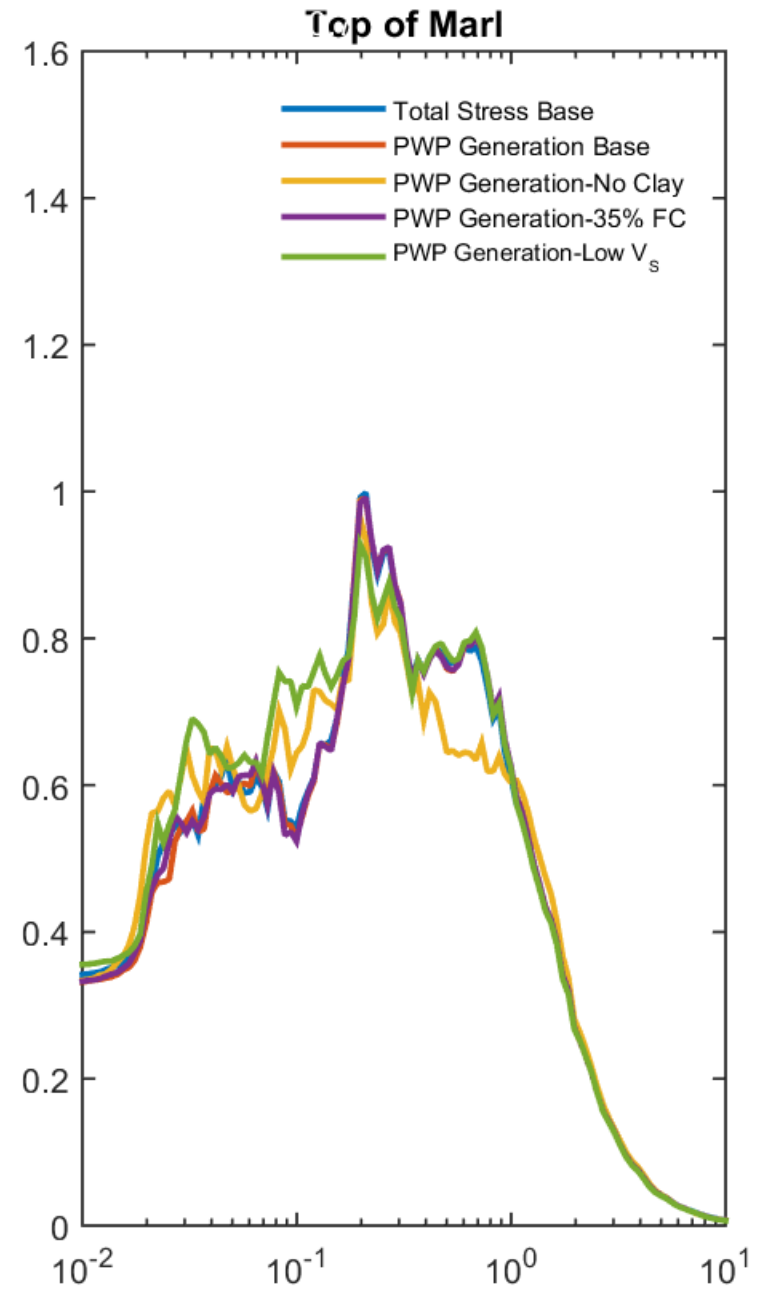
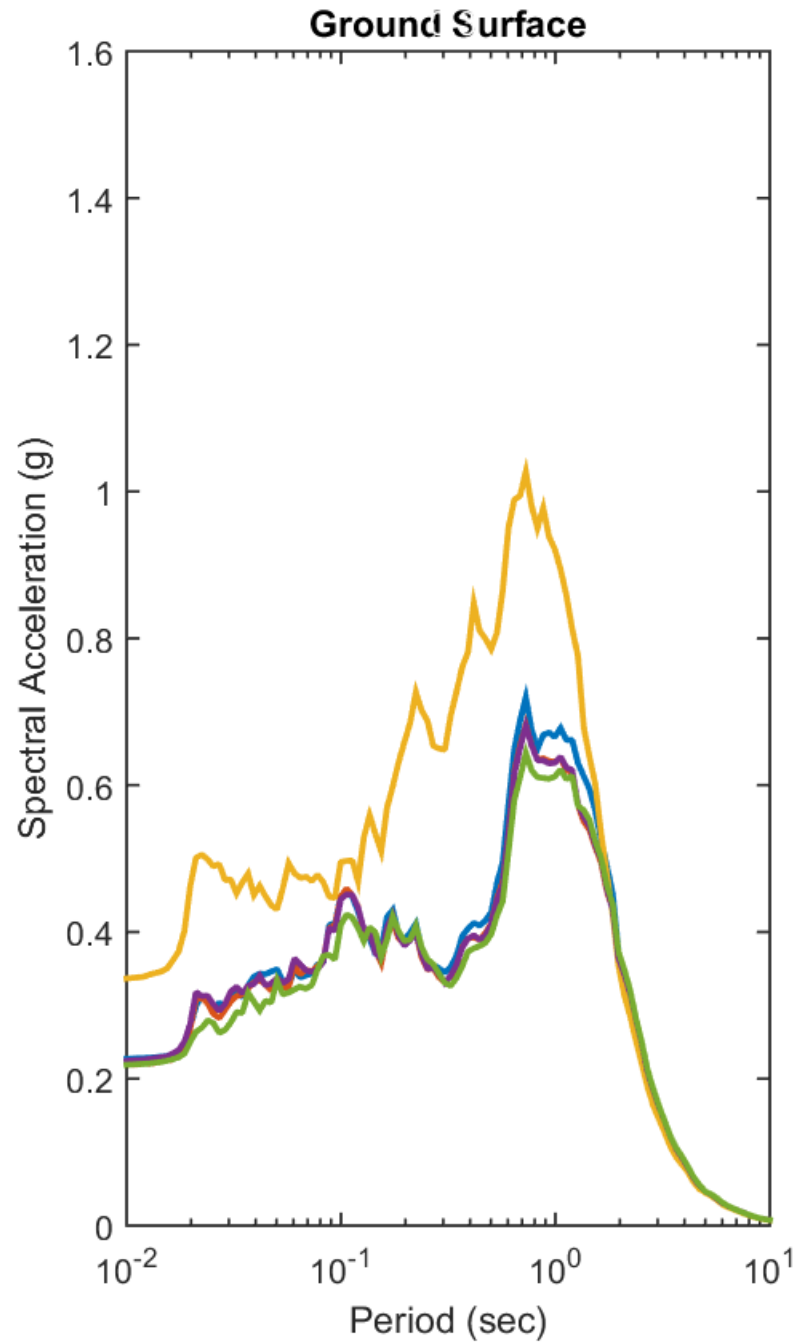


**SEE SUMMARY PLOTS**

## Nonlinear Analysis for All Scenarios for Main Line

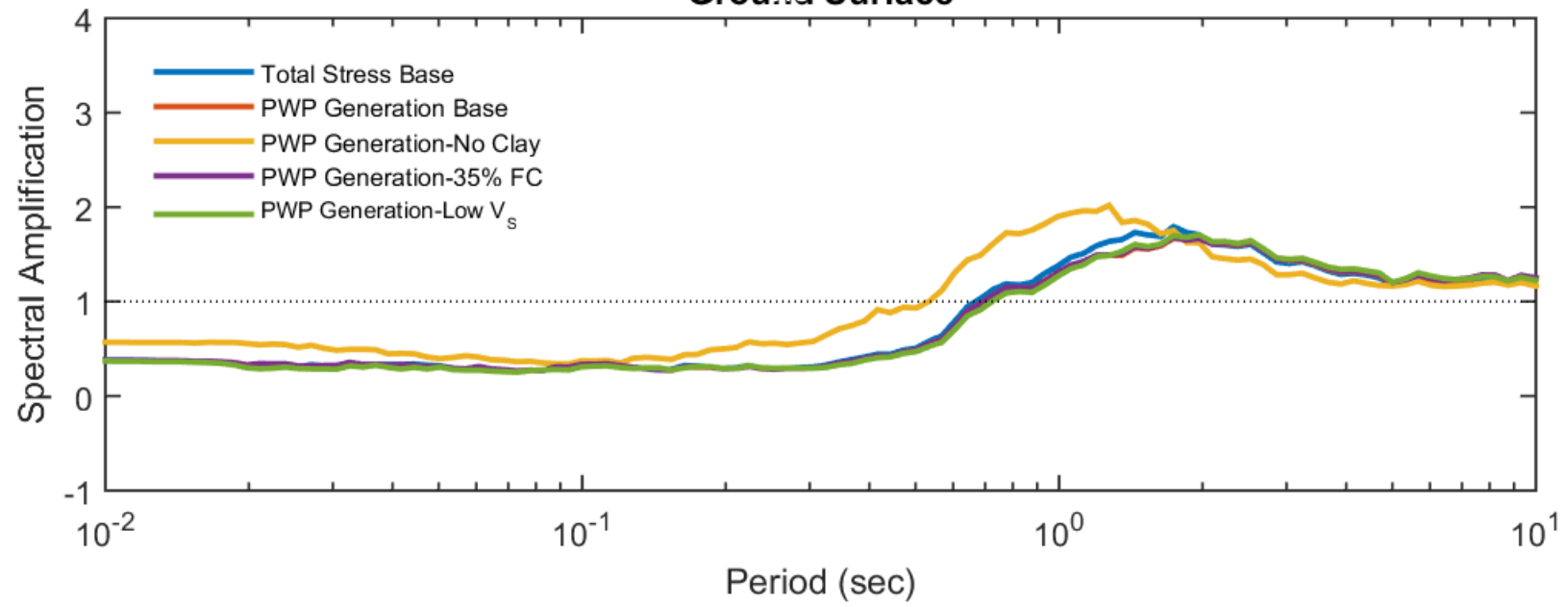


## Response Spectra for All Scenarios for Main Line

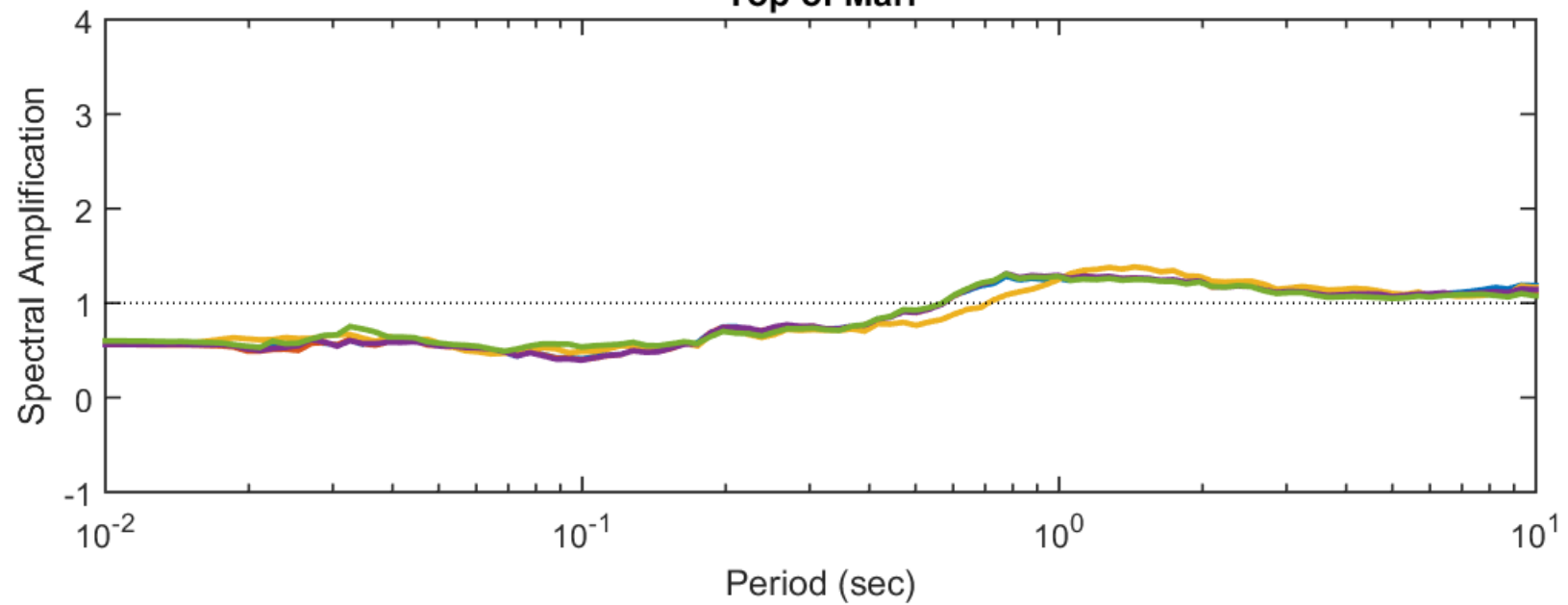


## Spectral Amplifications for All Scenarios for Main Line

### Ground Surface



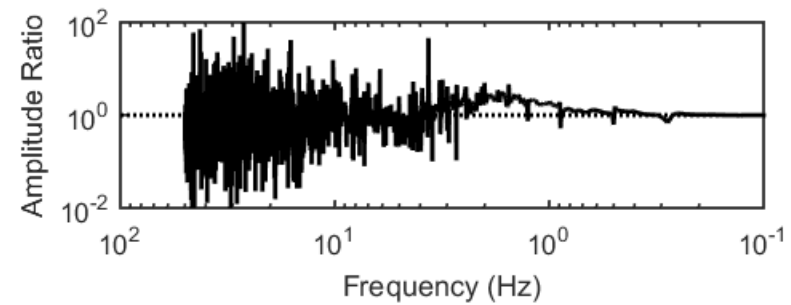
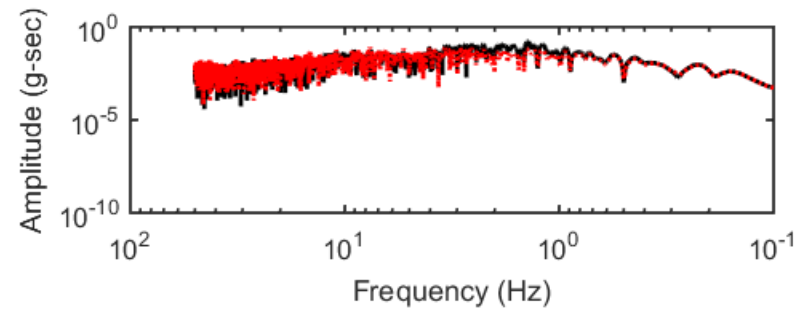
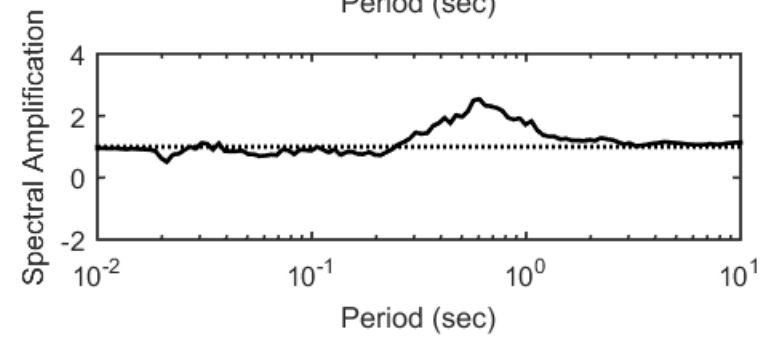
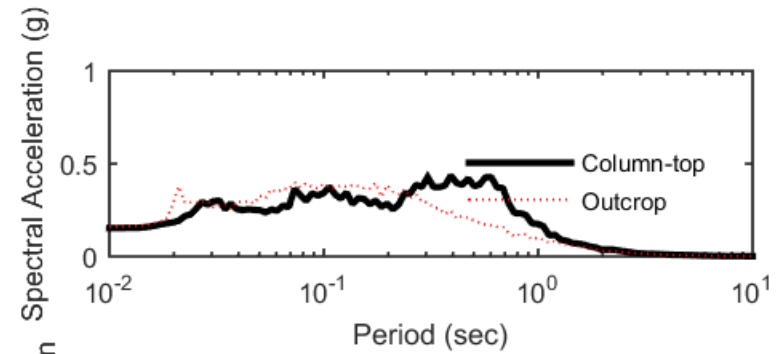
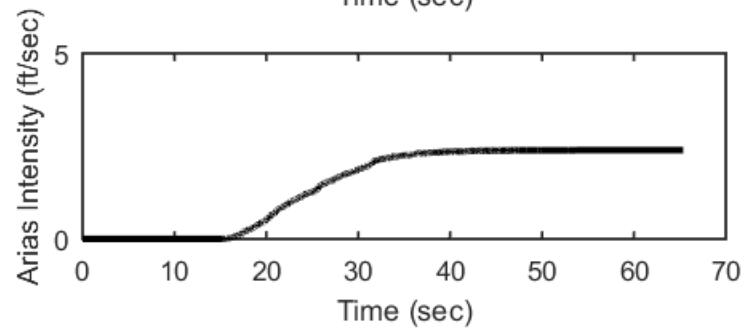
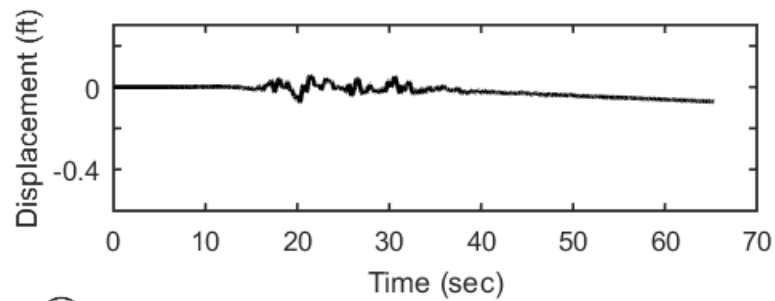
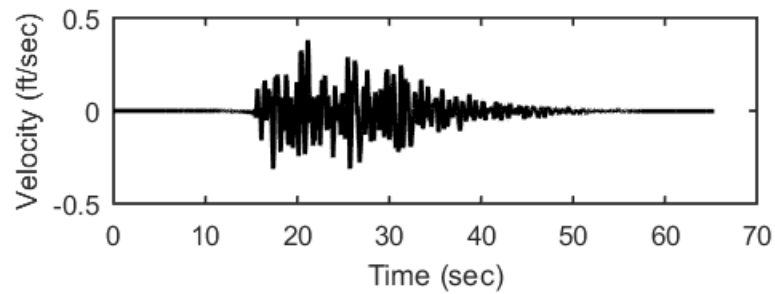
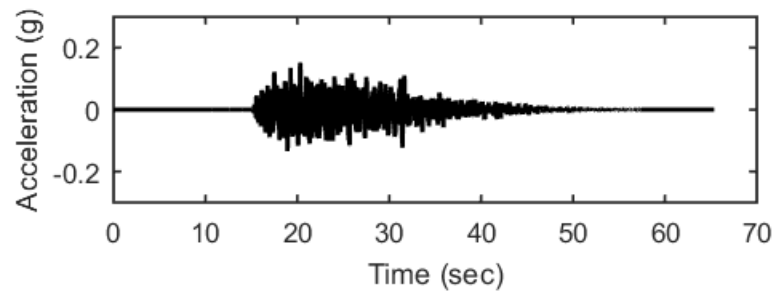
### Top of Marl



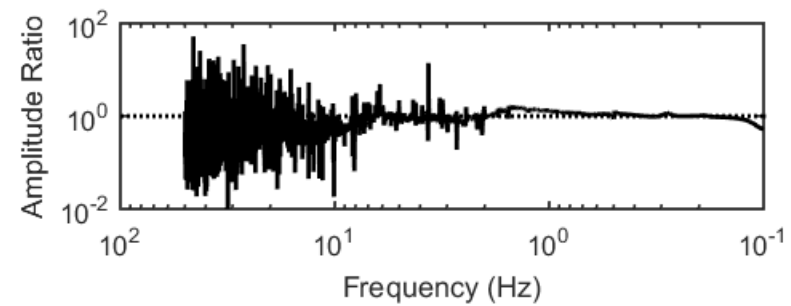
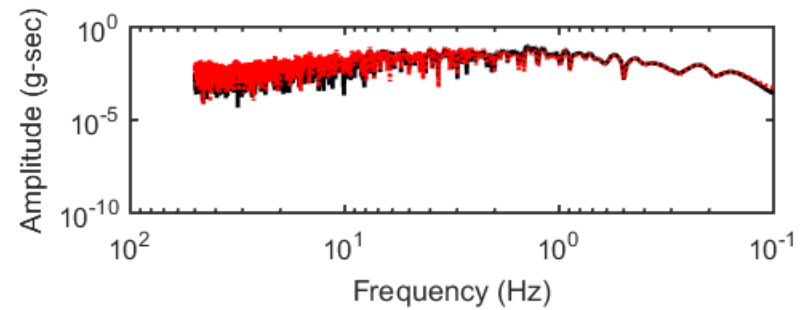
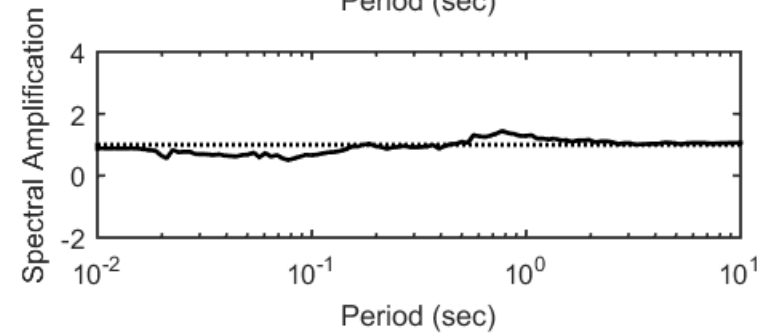
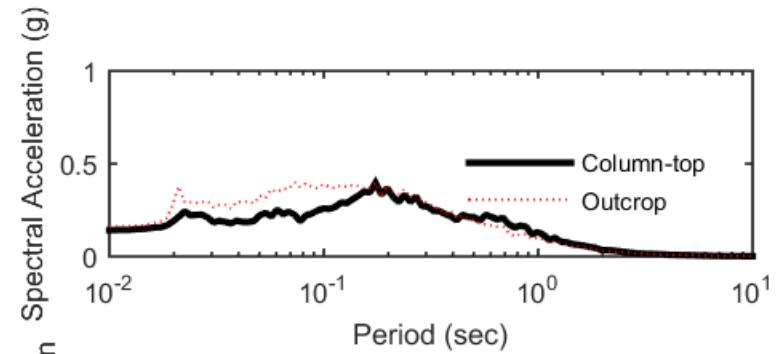
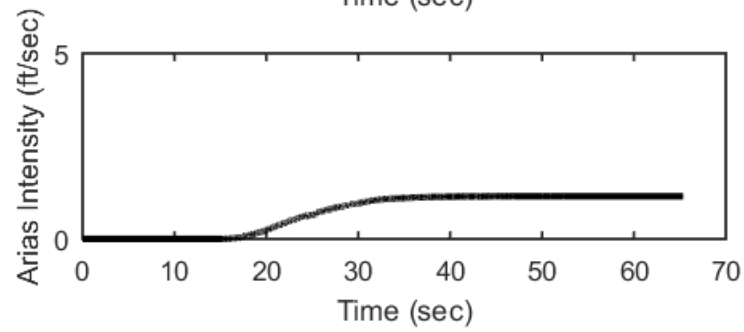
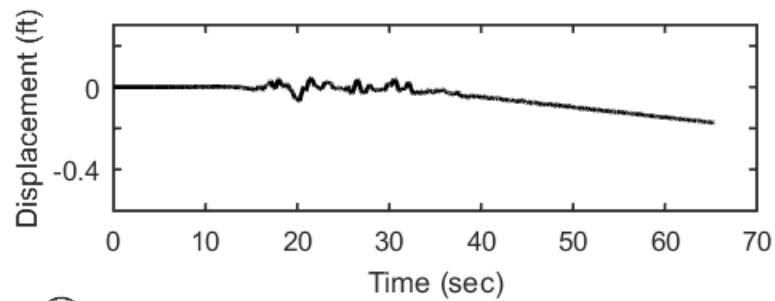
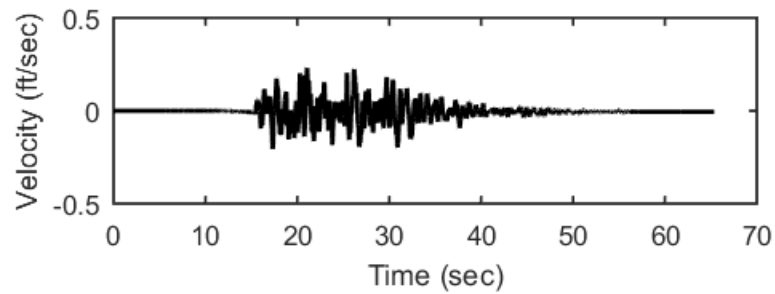
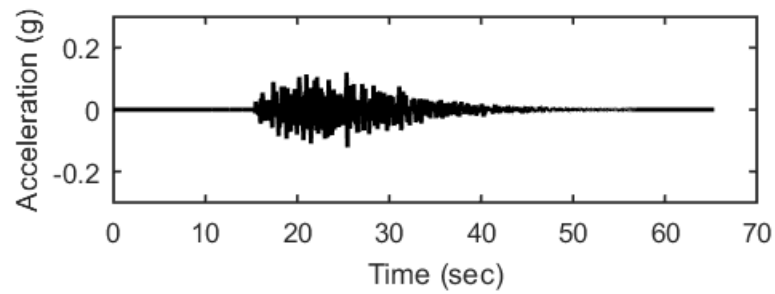
**TOTAL STRESS**  
**200 FT BASE MODEL**



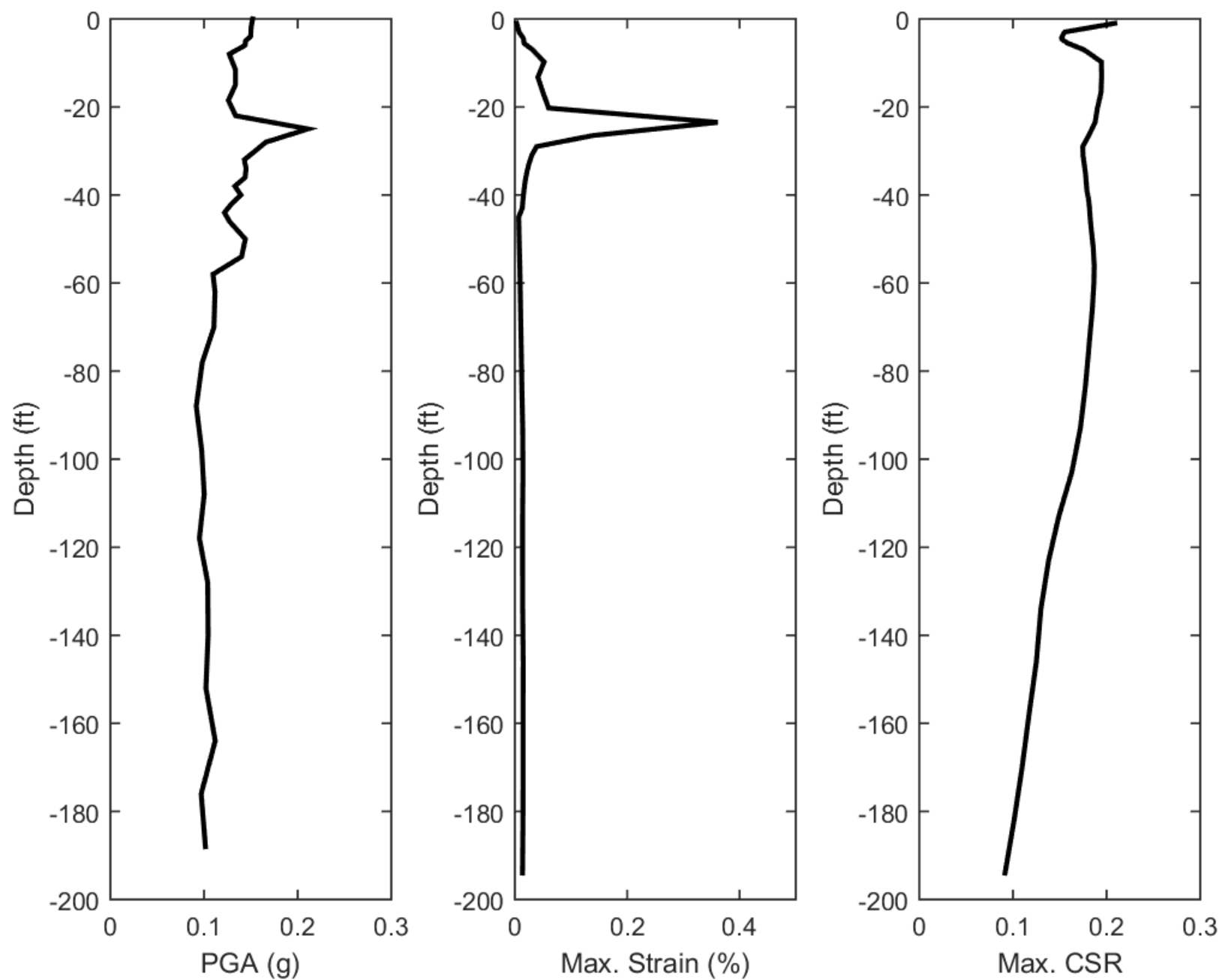
## Outputs at Ground Surface for: Total Stress Base with FEE1



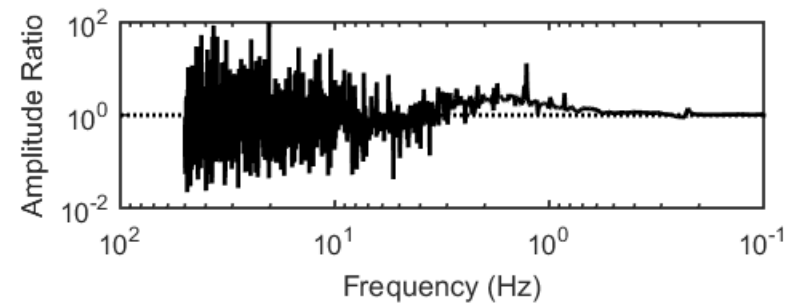
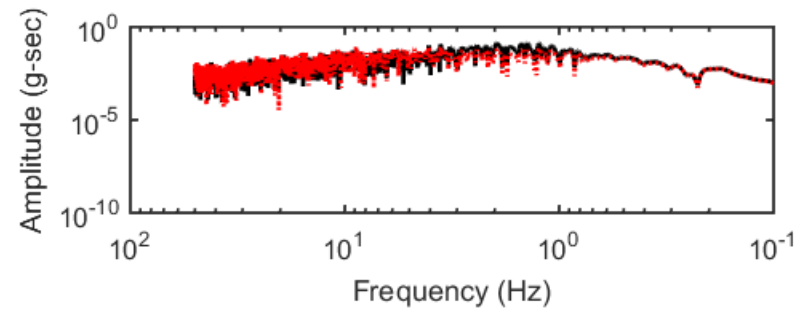
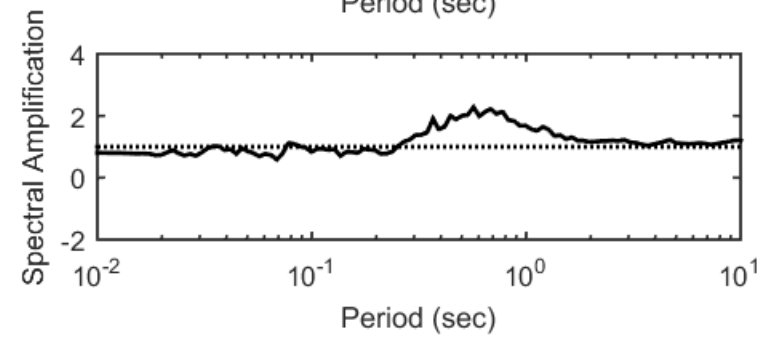
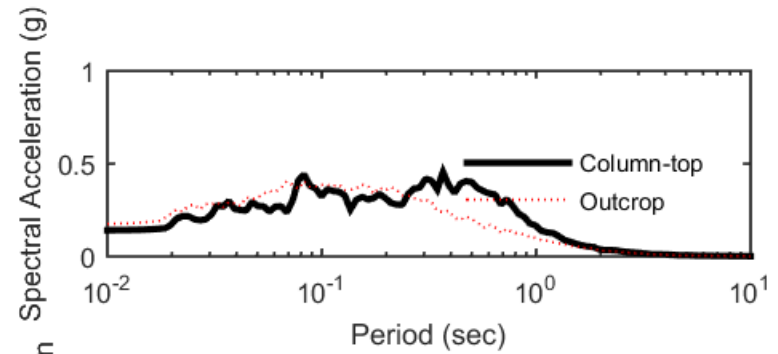
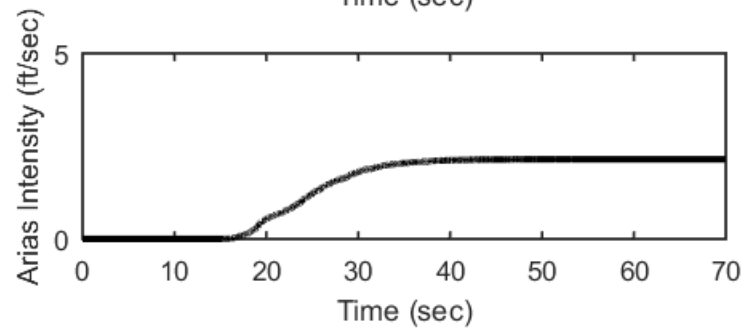
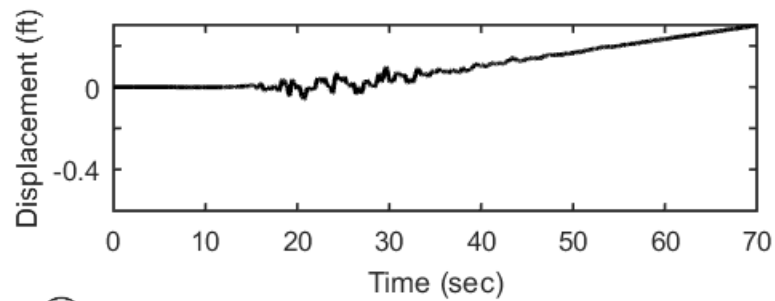
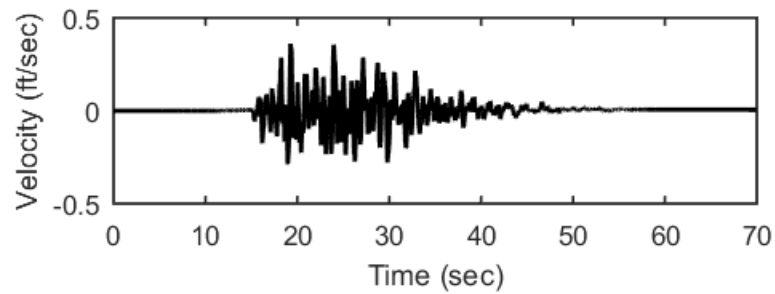
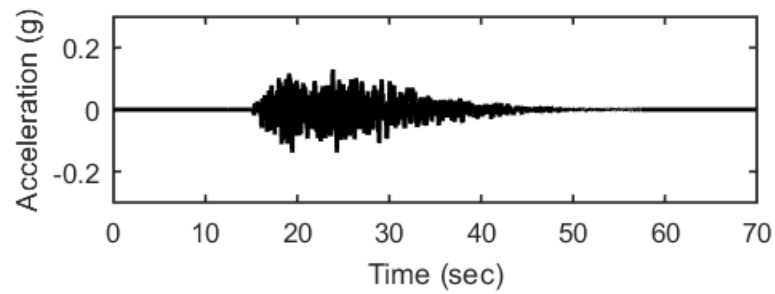
## Outputs at Top of Marl for: Total Stress Base with FEE1



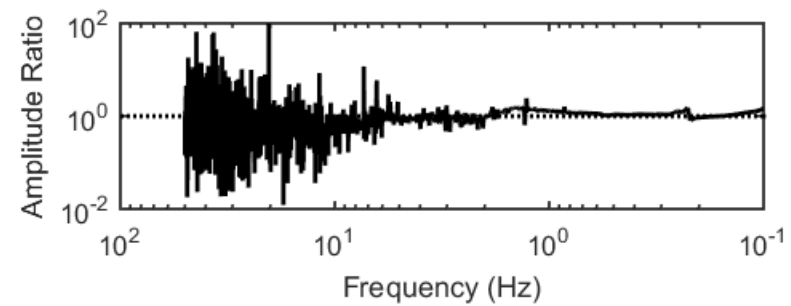
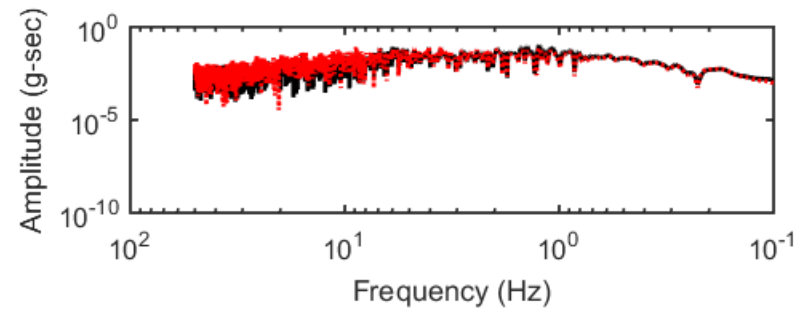
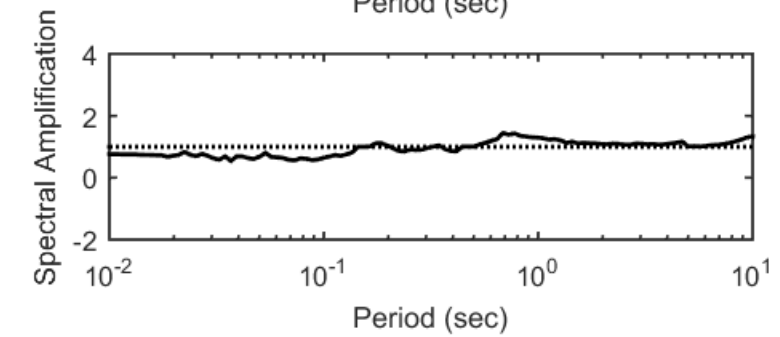
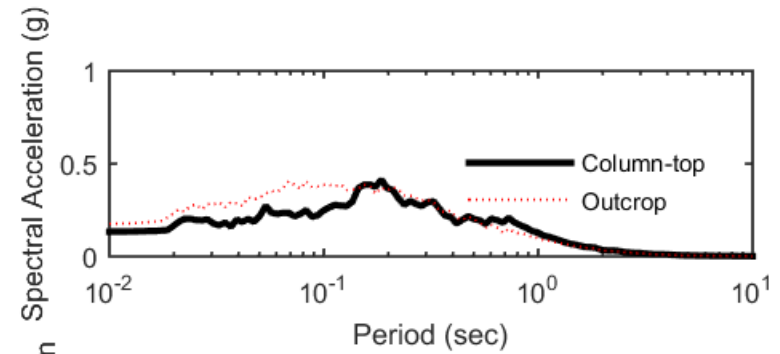
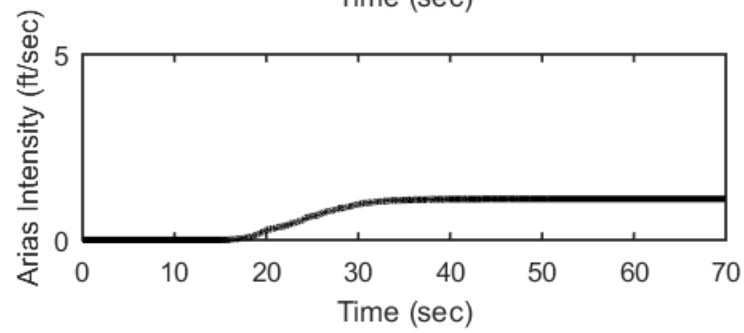
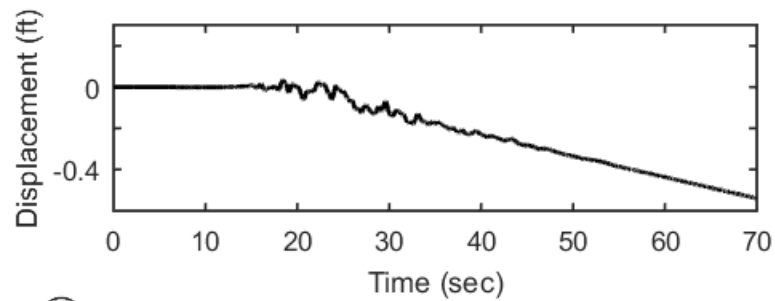
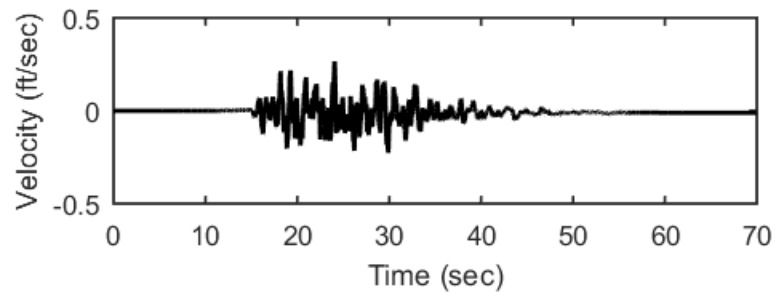
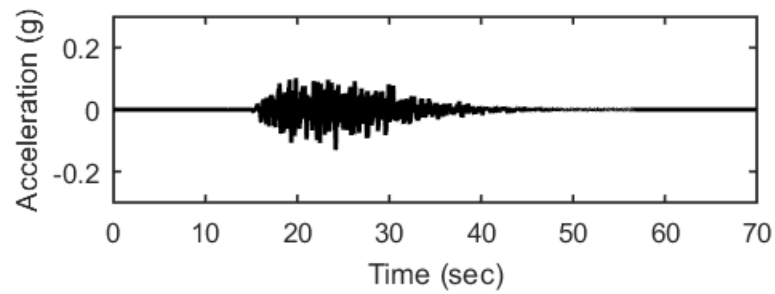
### Profile outputs for: Total Stress Base with FEE1



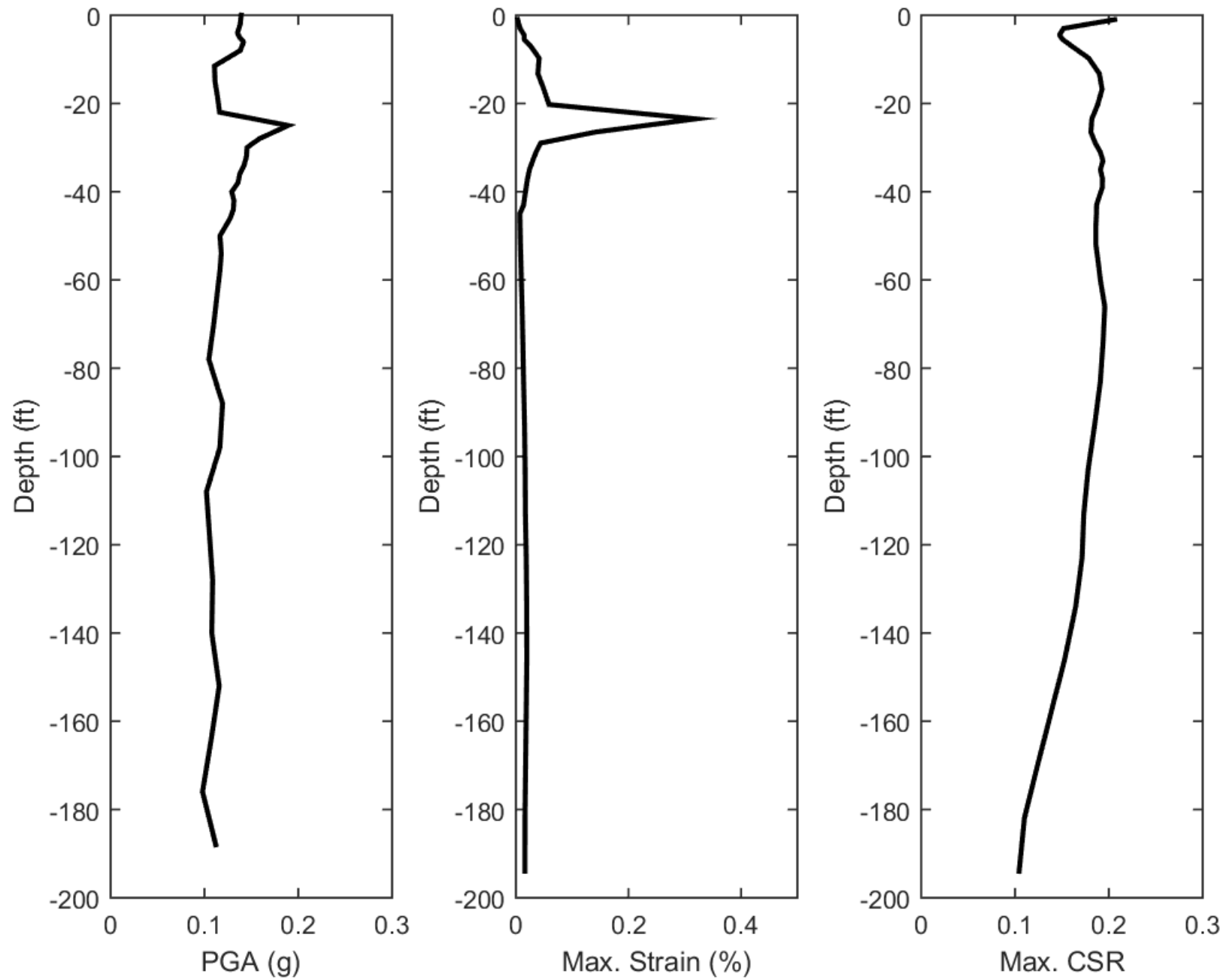
## Outputs at Ground Surface for: Total Stress Base with FEE2



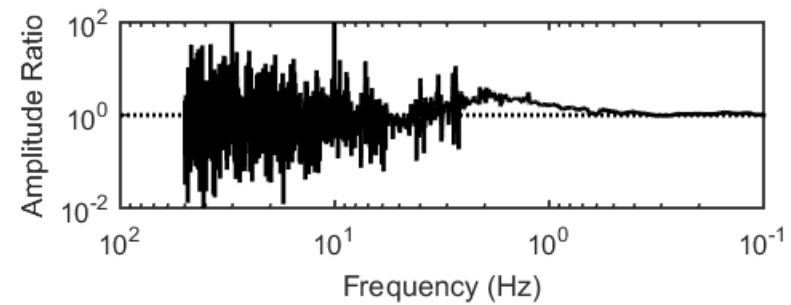
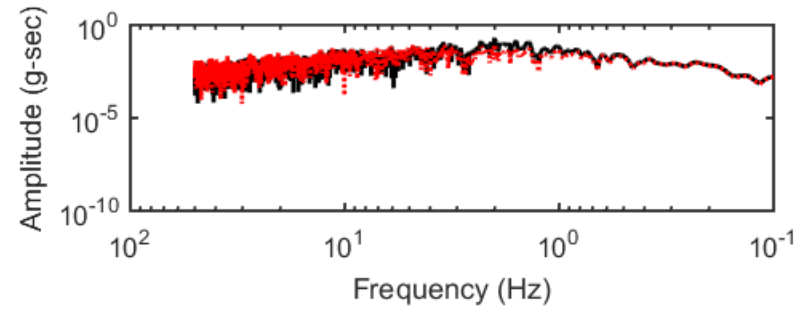
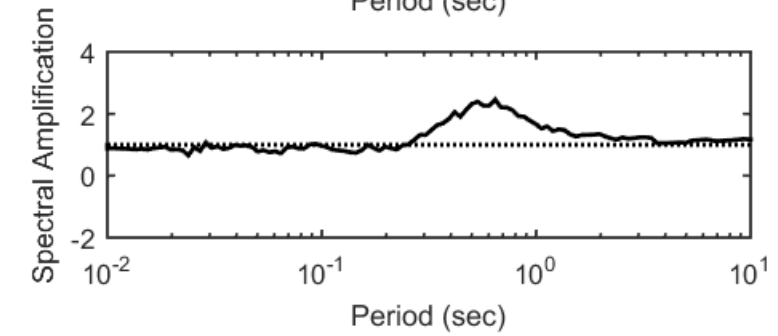
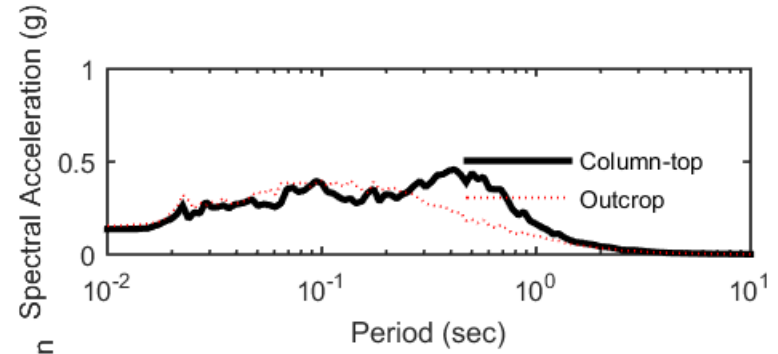
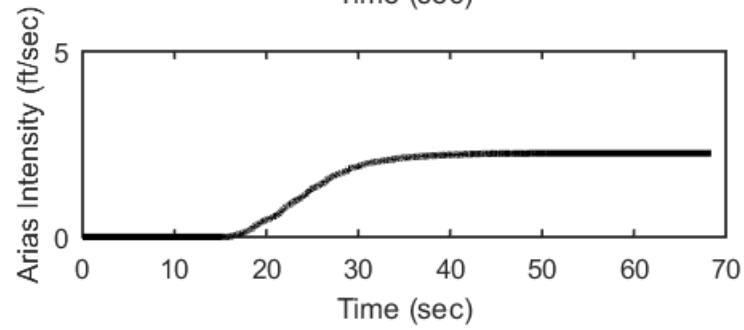
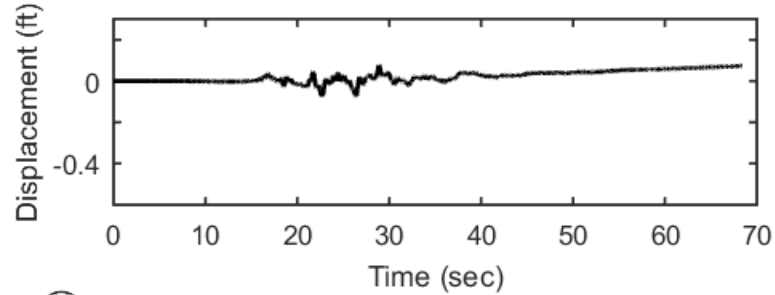
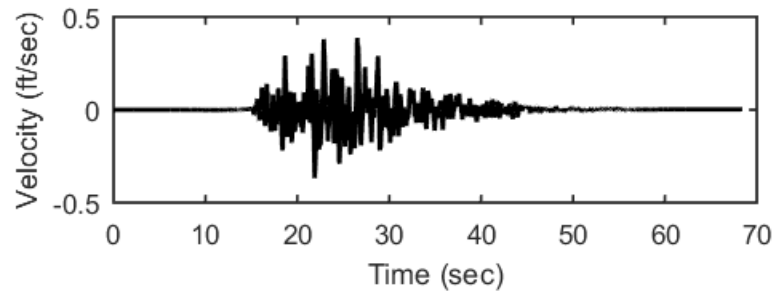
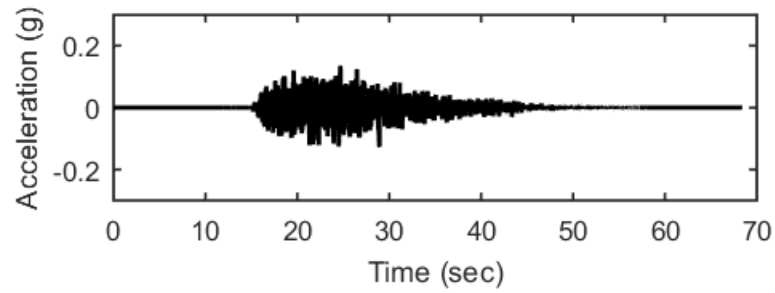
## Outputs at Top of Marl for: Total Stress Base with FEE2



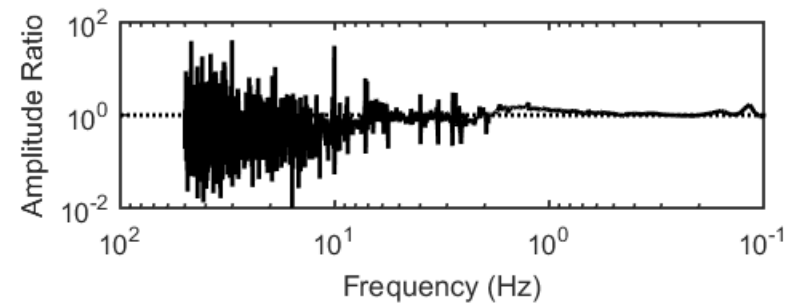
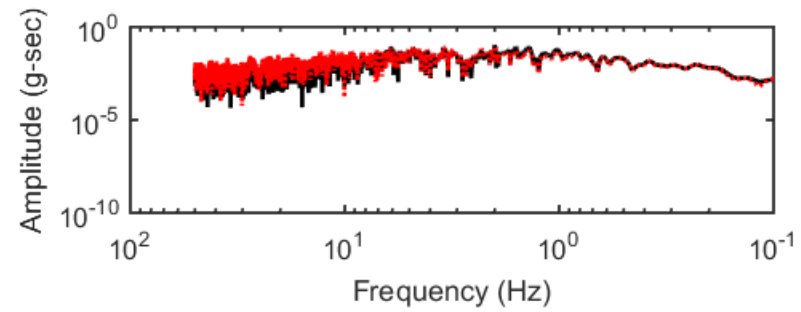
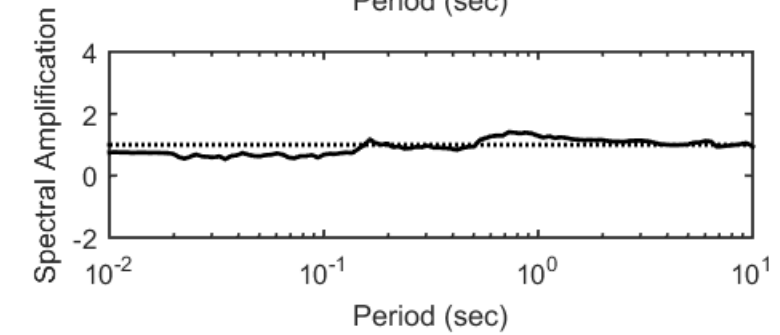
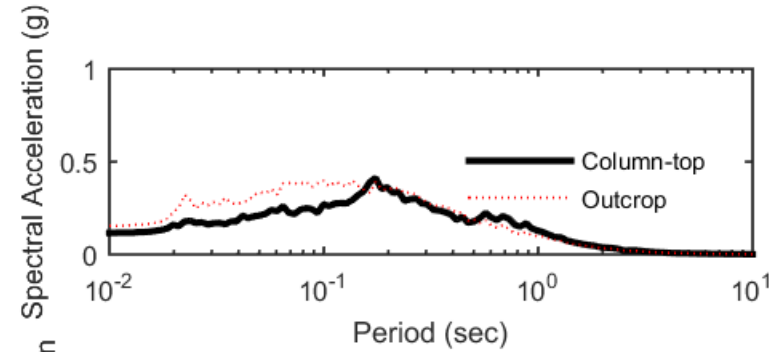
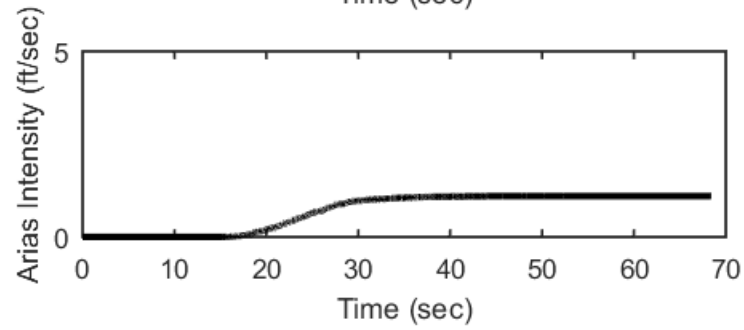
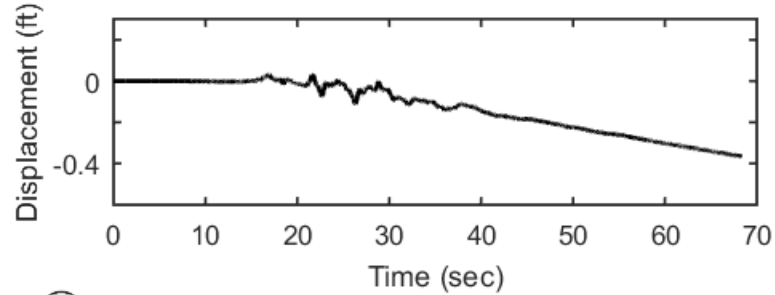
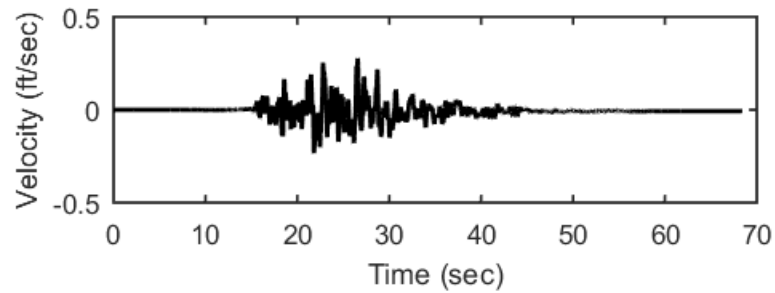
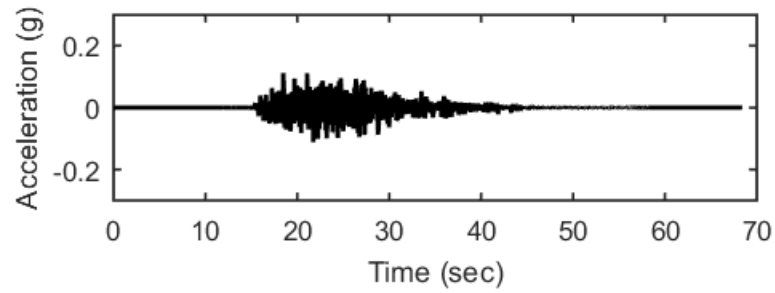
### Profile outputs for: Total Stress Base with FEE2



## Outputs at Ground Surface for: Total Stress Base with FEE3

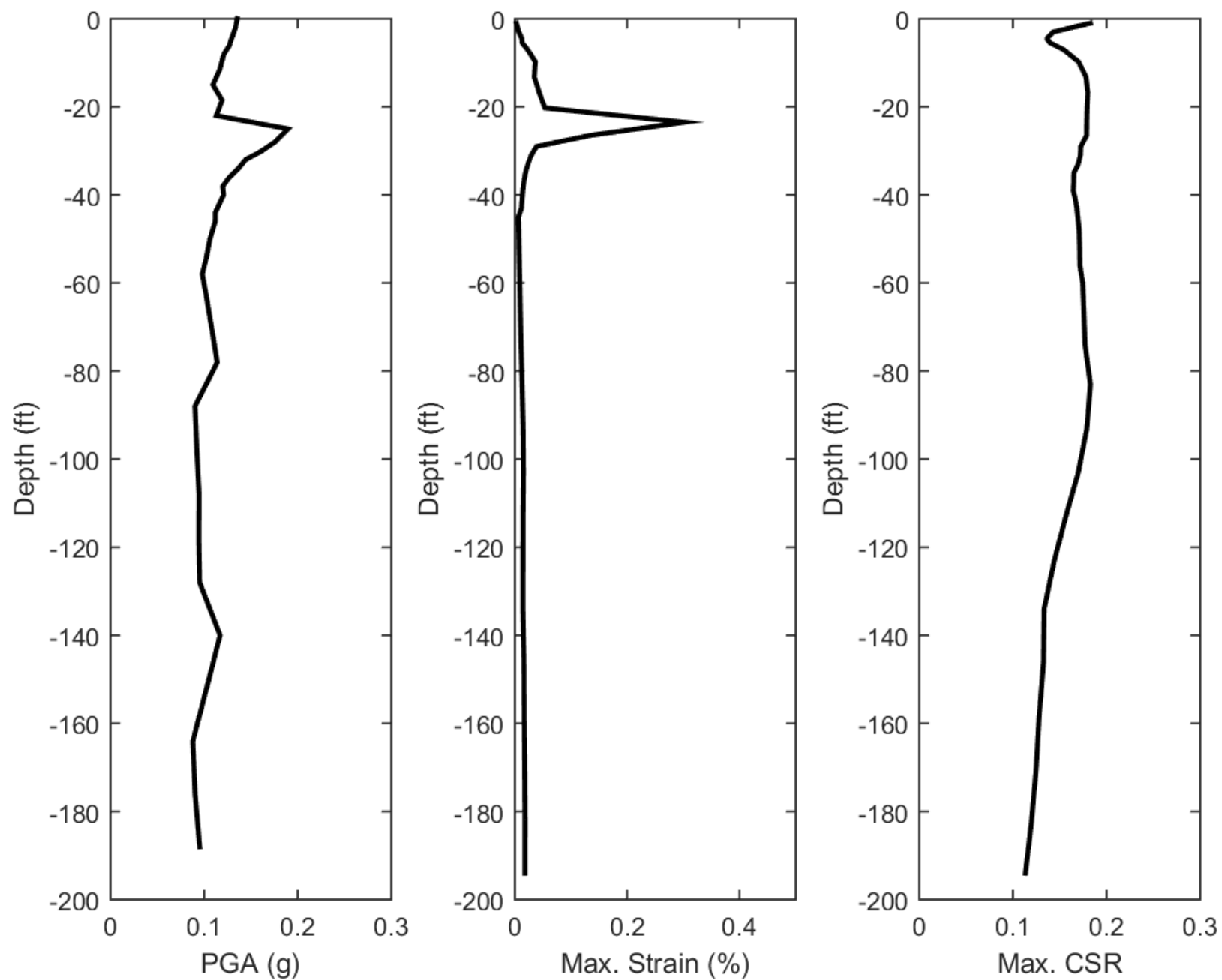


## Outputs at Top of Marl for: Total Stress Base with FEE3

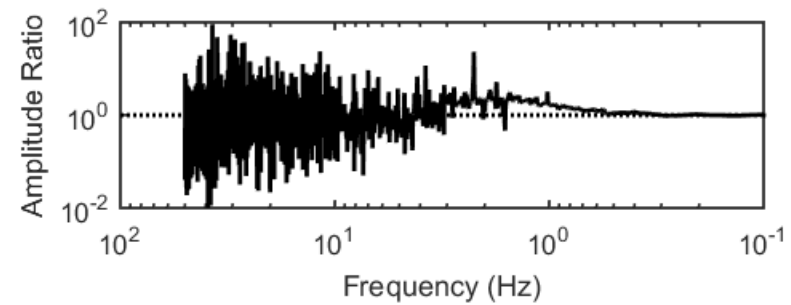
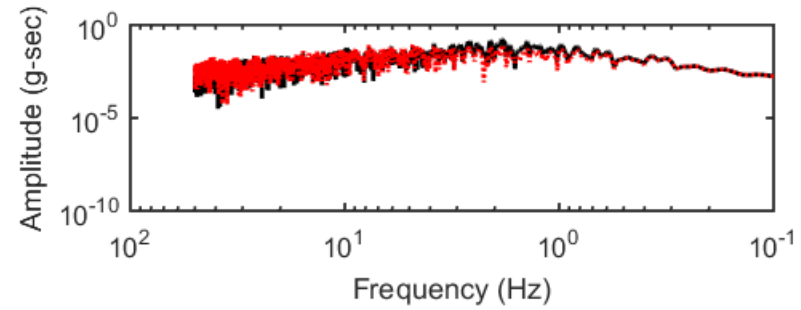
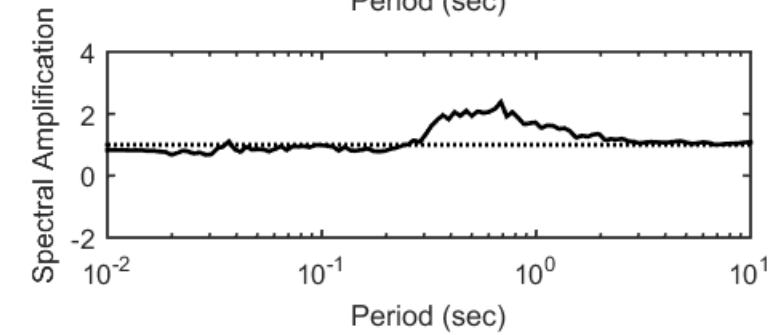
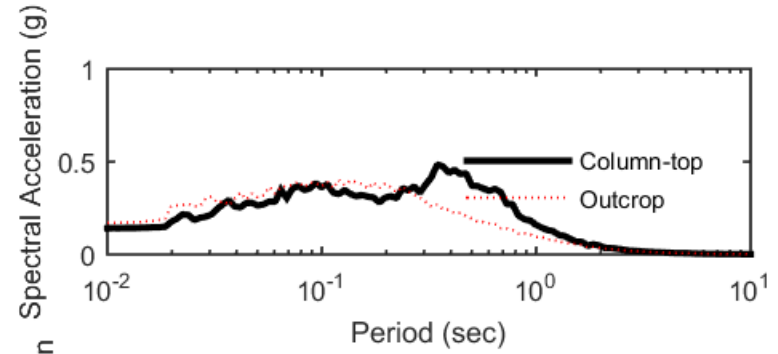
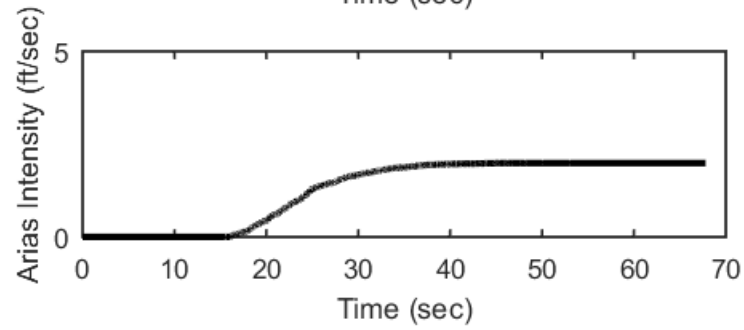
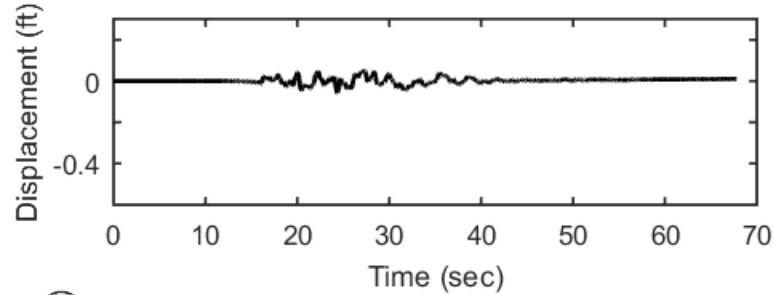
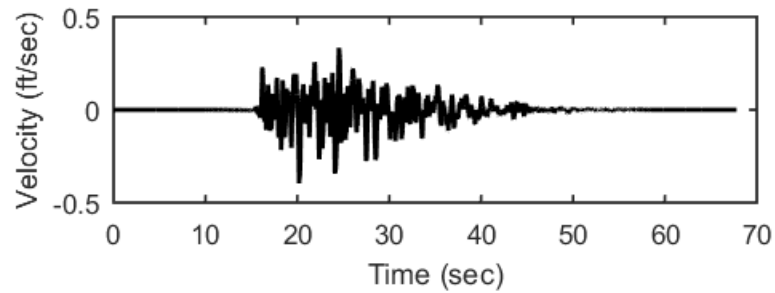
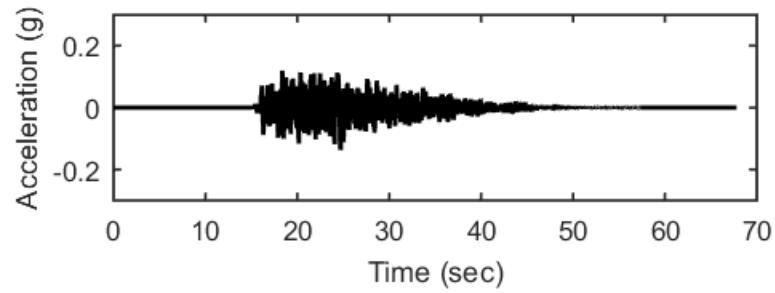




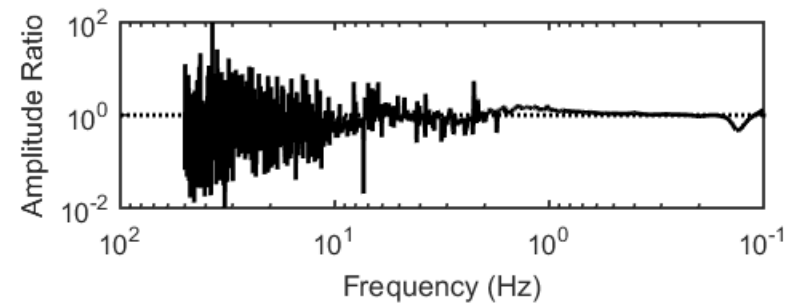
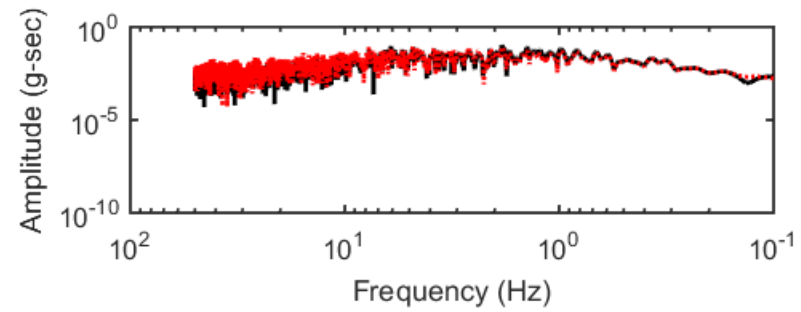
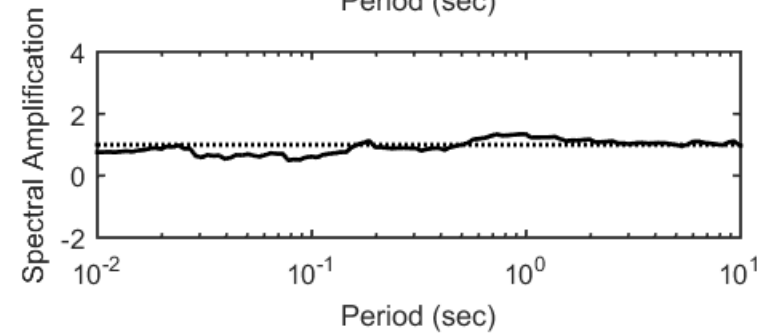
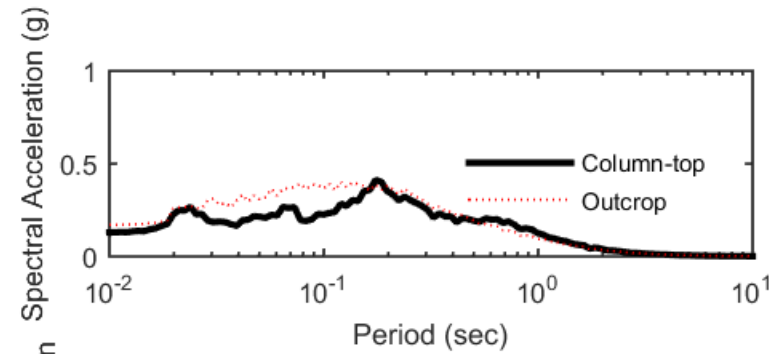
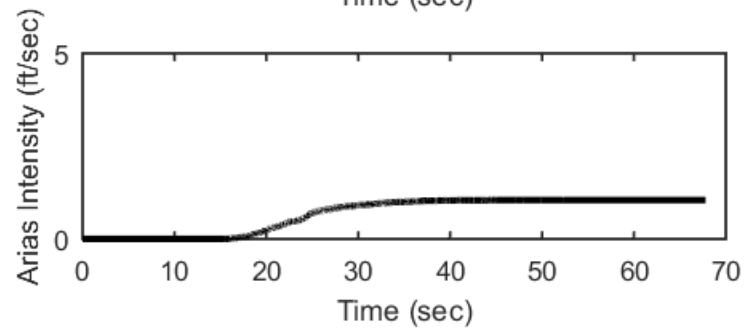
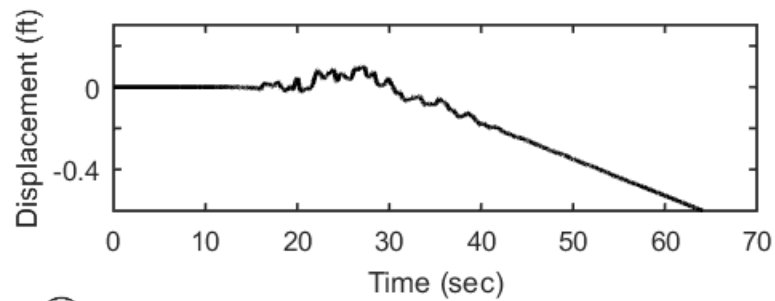
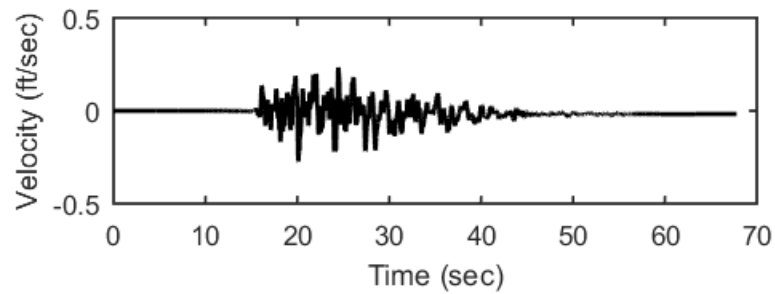
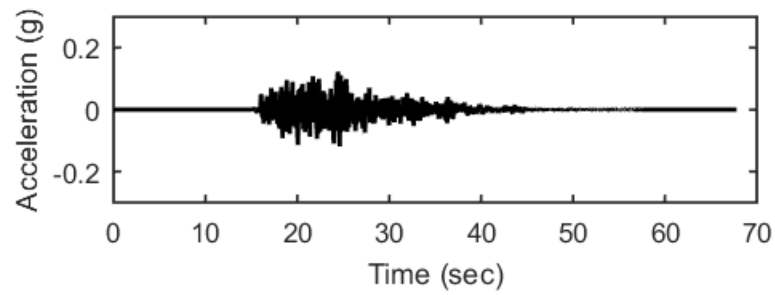
### Profile outputs for: Total Stress Base with FEE3



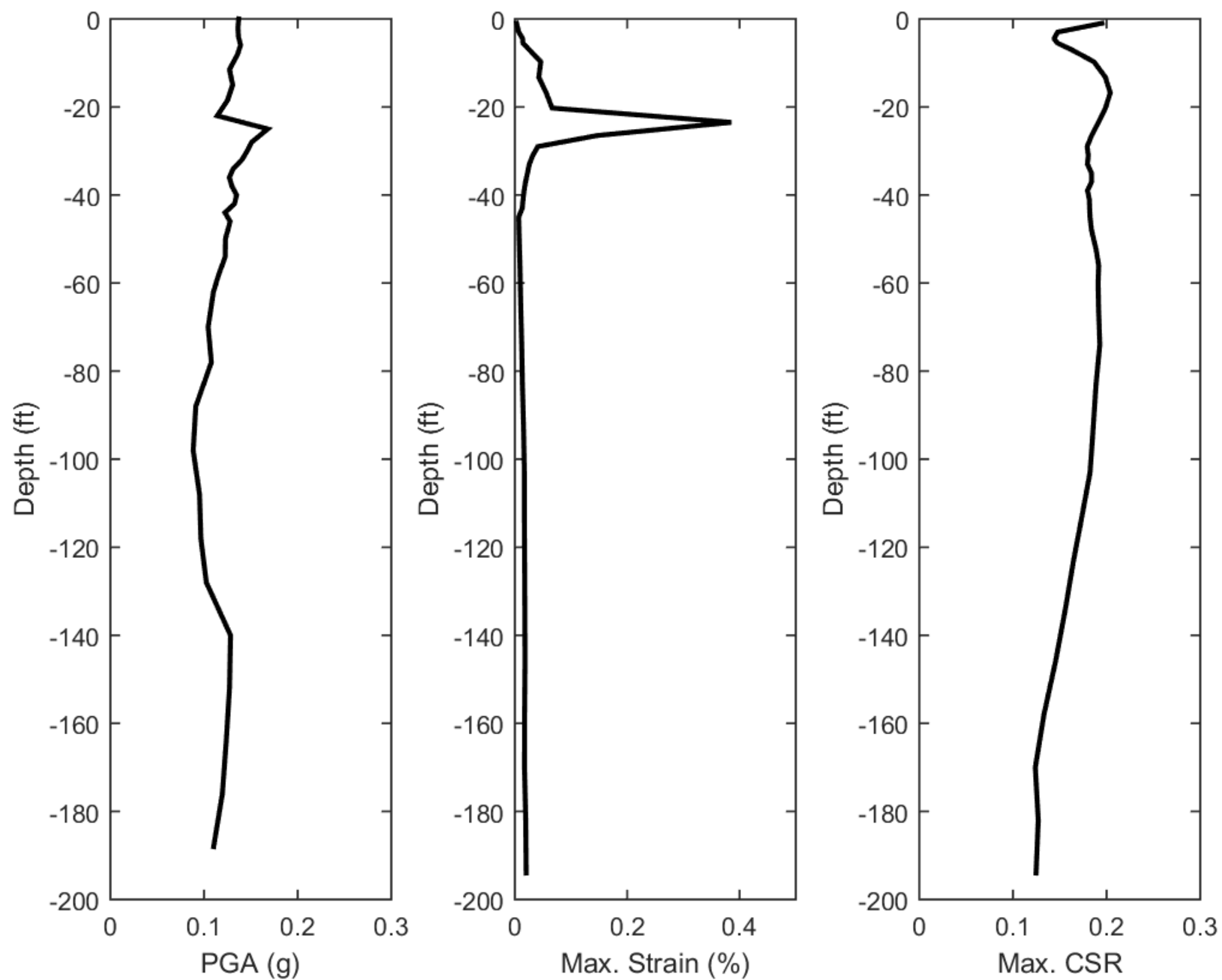
## Outputs at Ground Surface for: Total Stress Base with FEE4



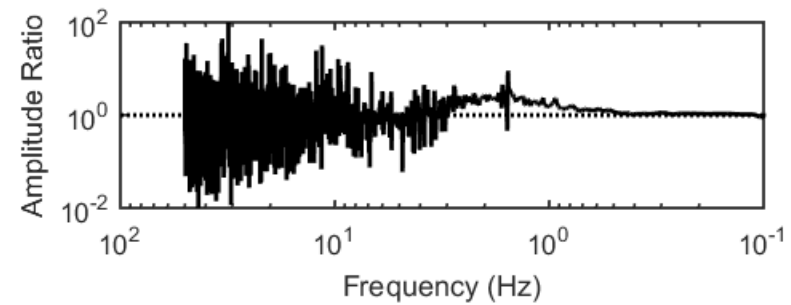
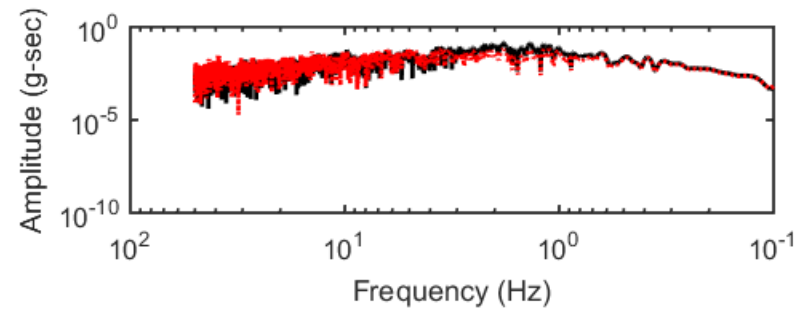
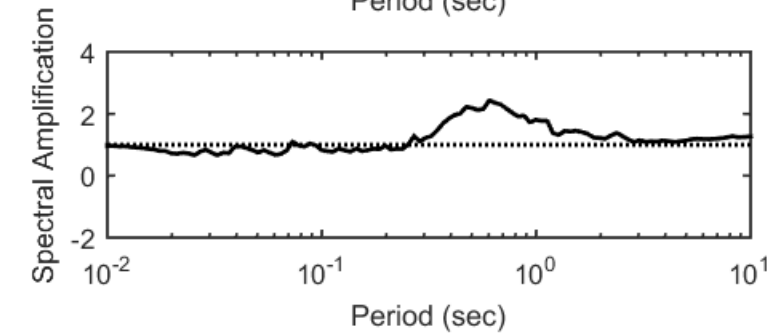
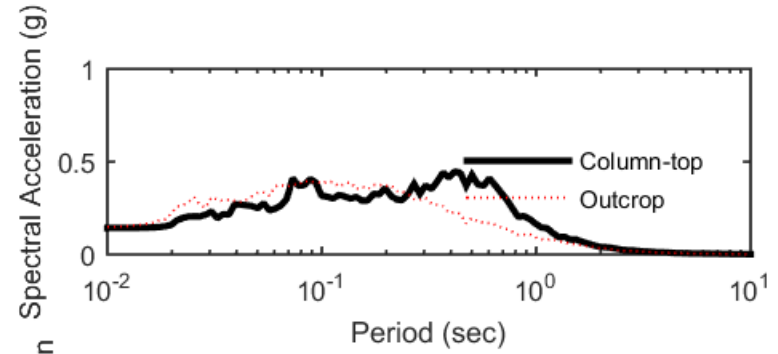
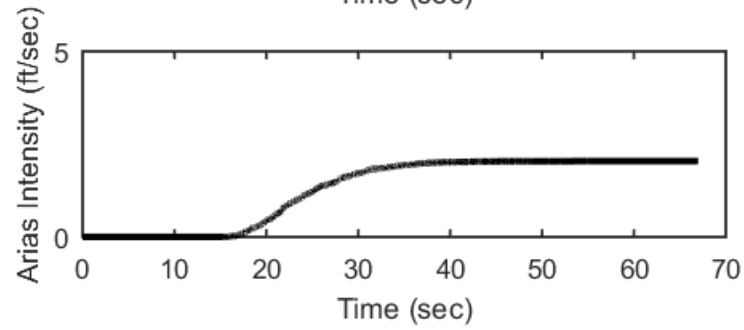
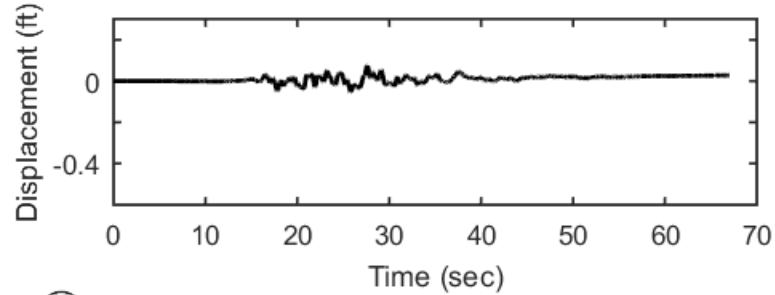
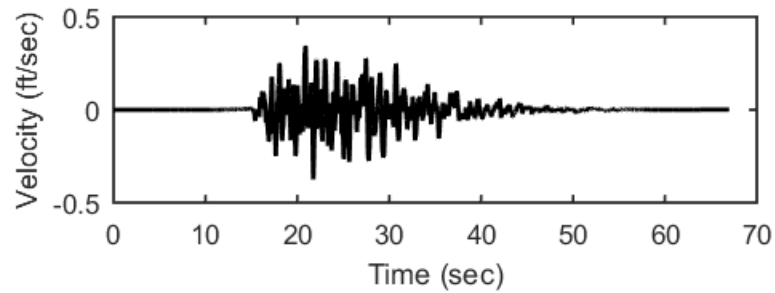
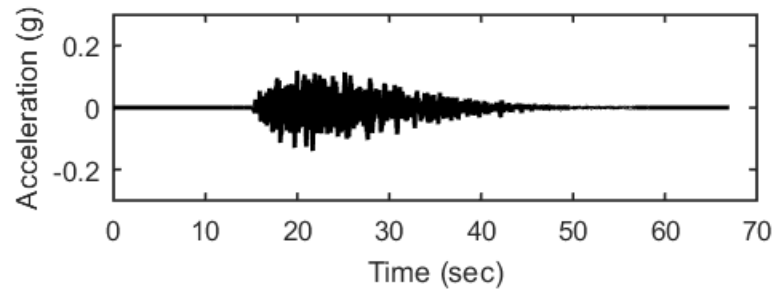
## Outputs at Top of Marl for: Total Stress Base with FEE4



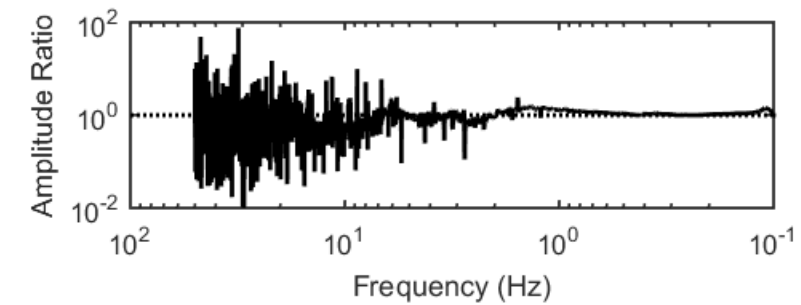
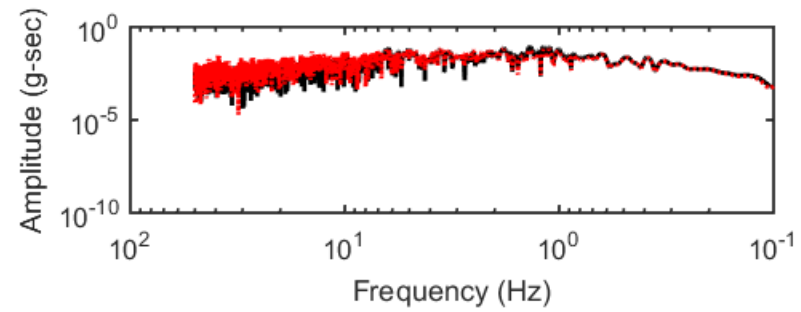
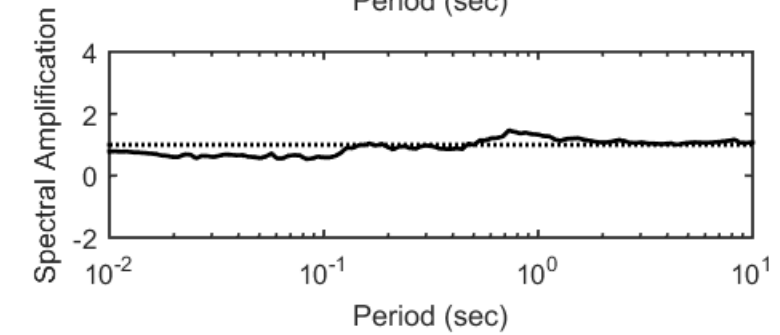
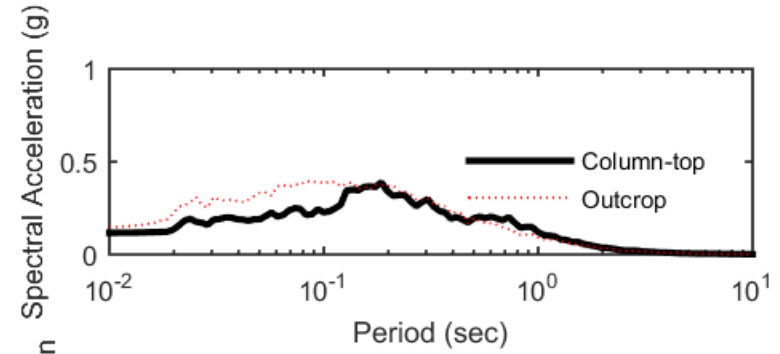
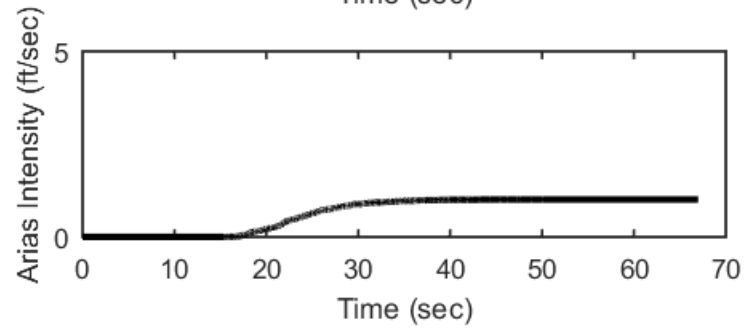
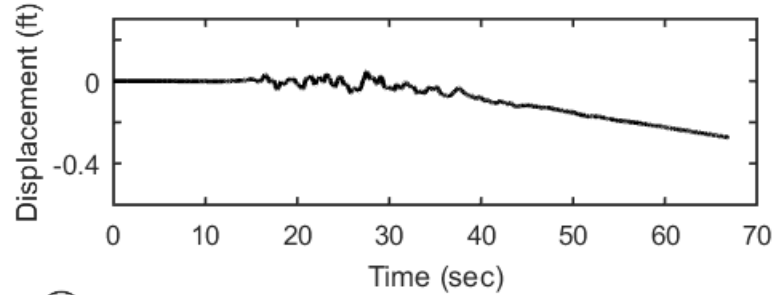
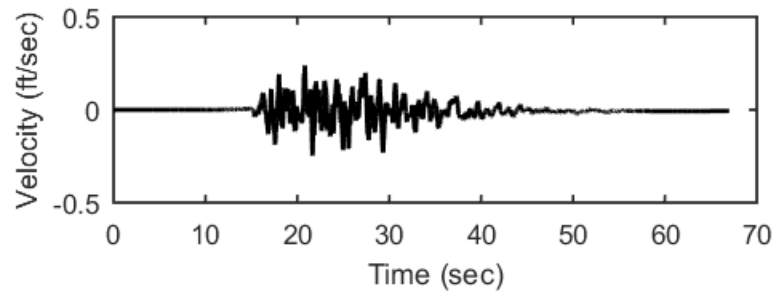
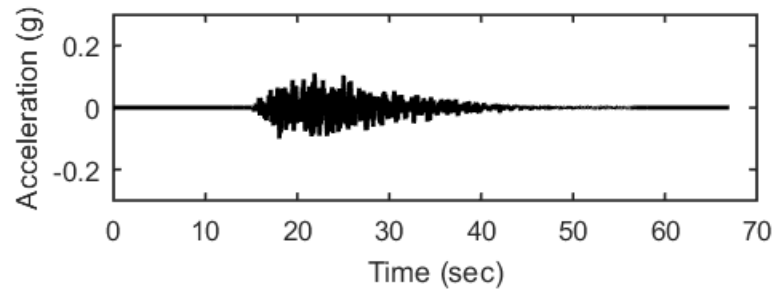
### Profile outputs for: Total Stress Base with FEE4



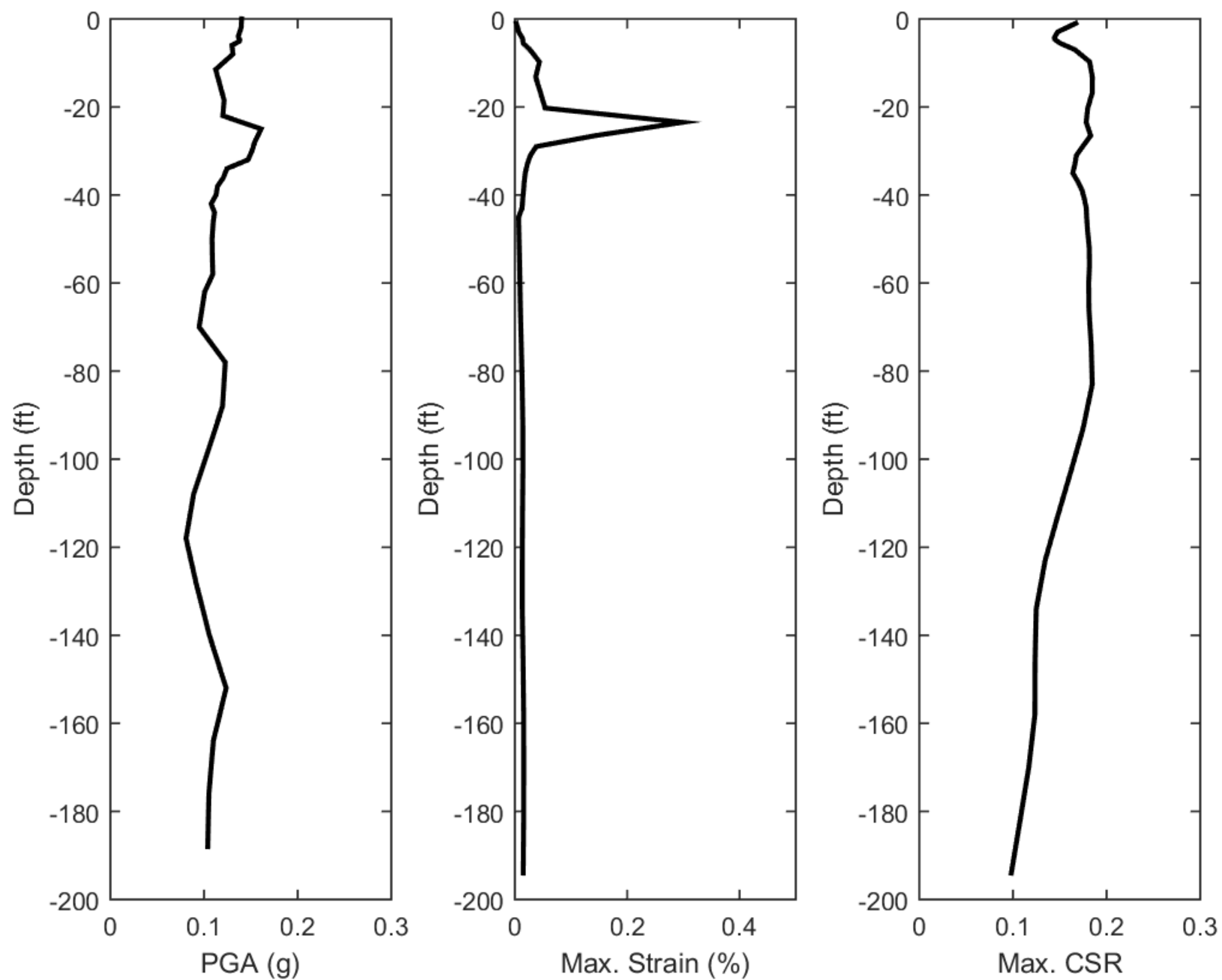
## Outputs at Ground Surface for: Total Stress Base with FEE5



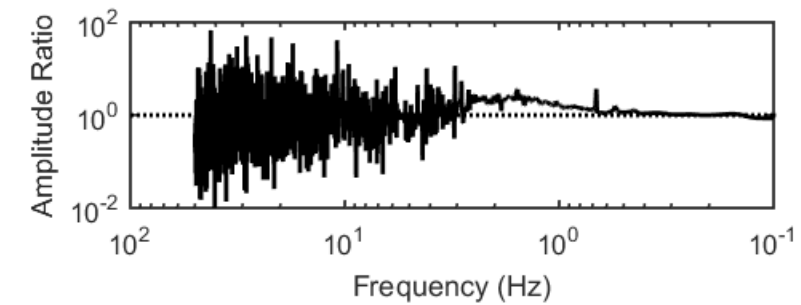
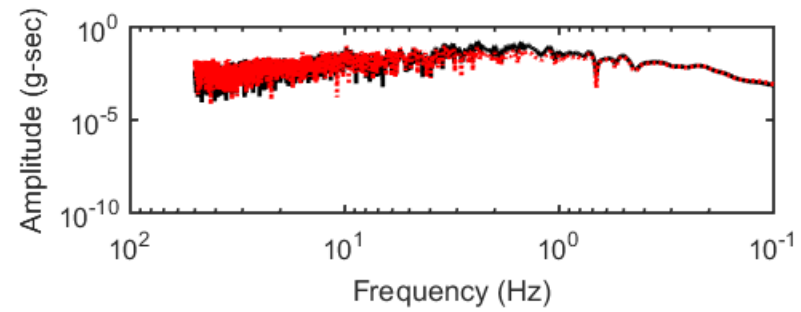
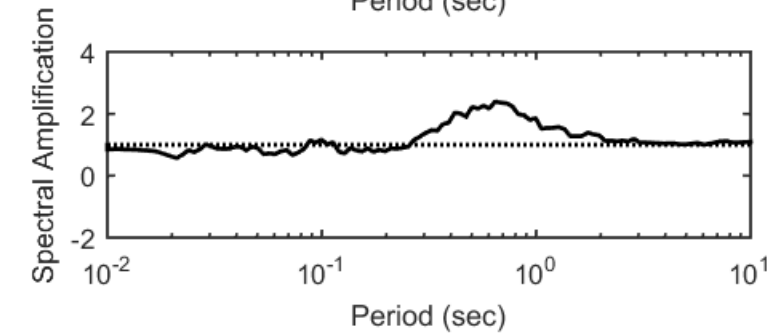
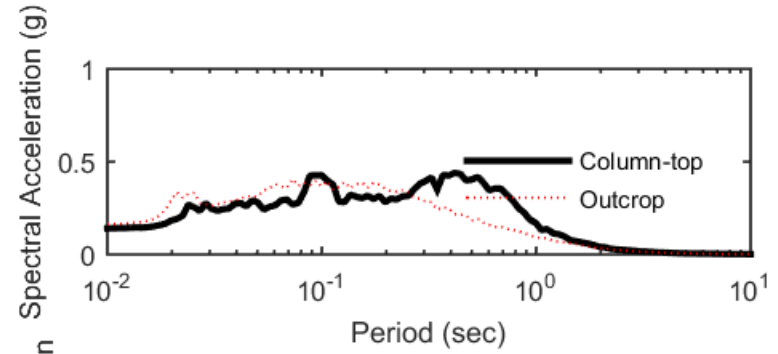
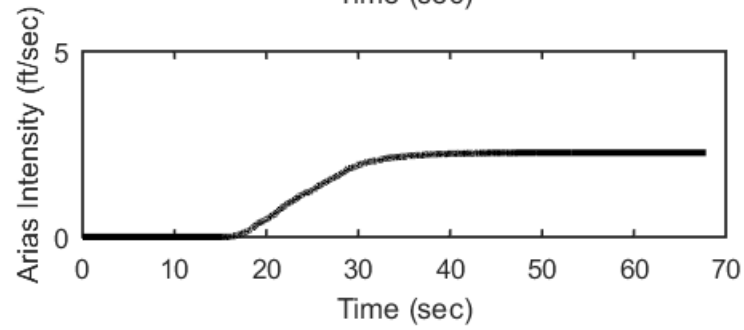
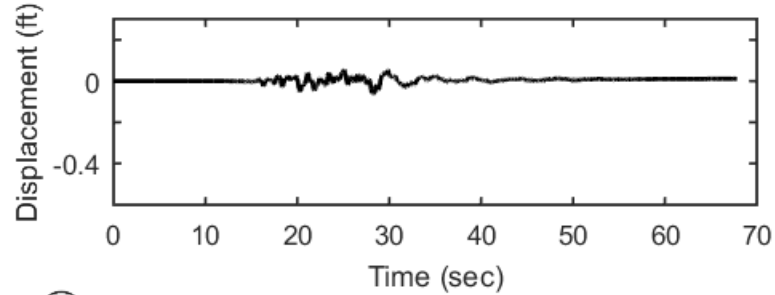
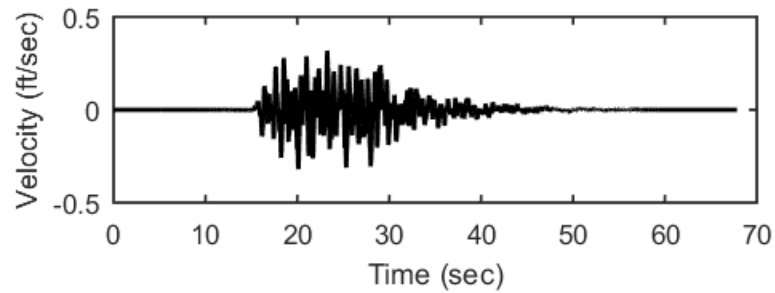
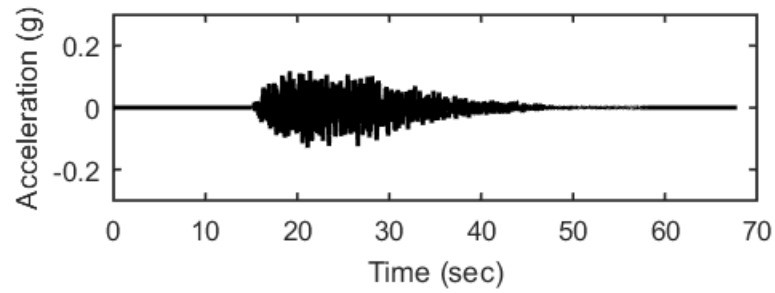
## Outputs at Top of Marl for: Total Stress Base with FEE5



### Profile outputs for: Total Stress Base with FEE5

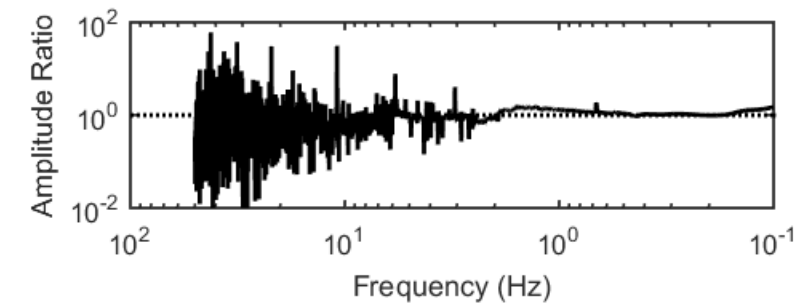
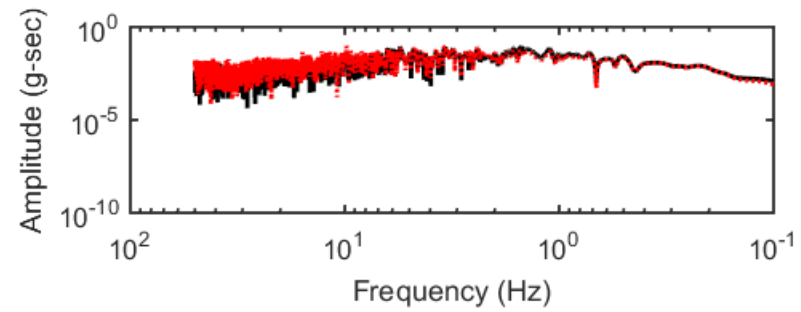
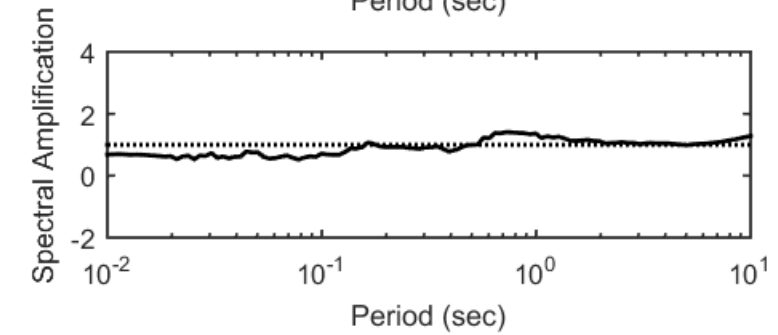
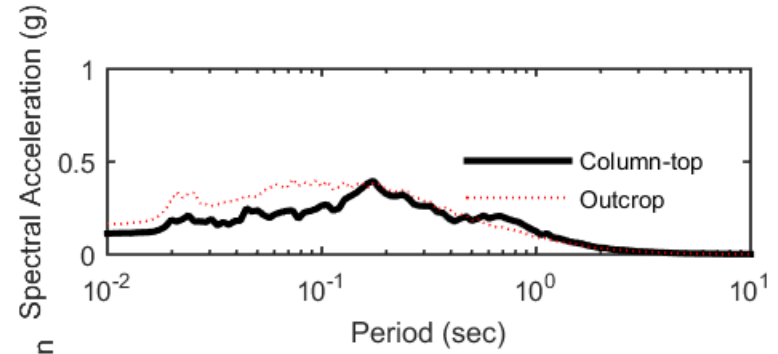
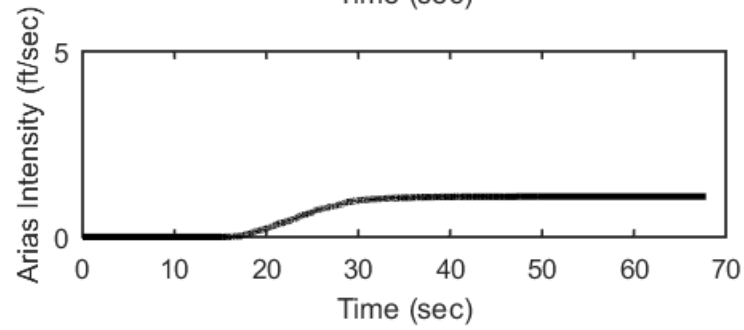
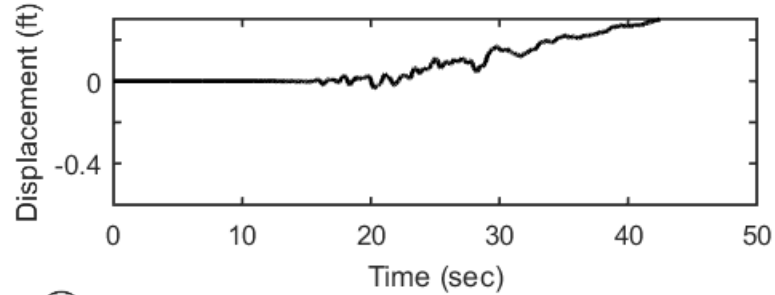
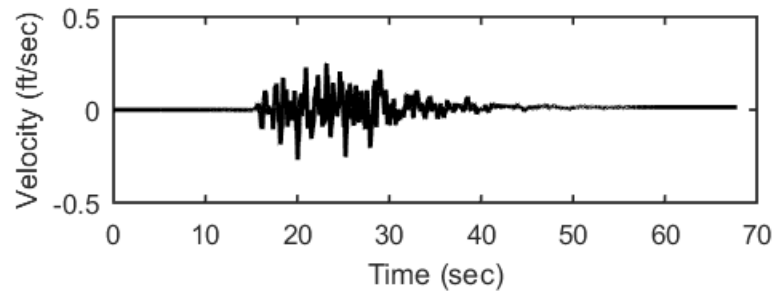
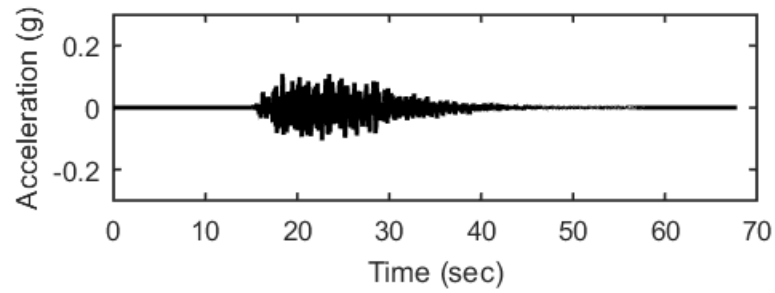


## Outputs at Ground Surface for: Total Stress Base with FEE6

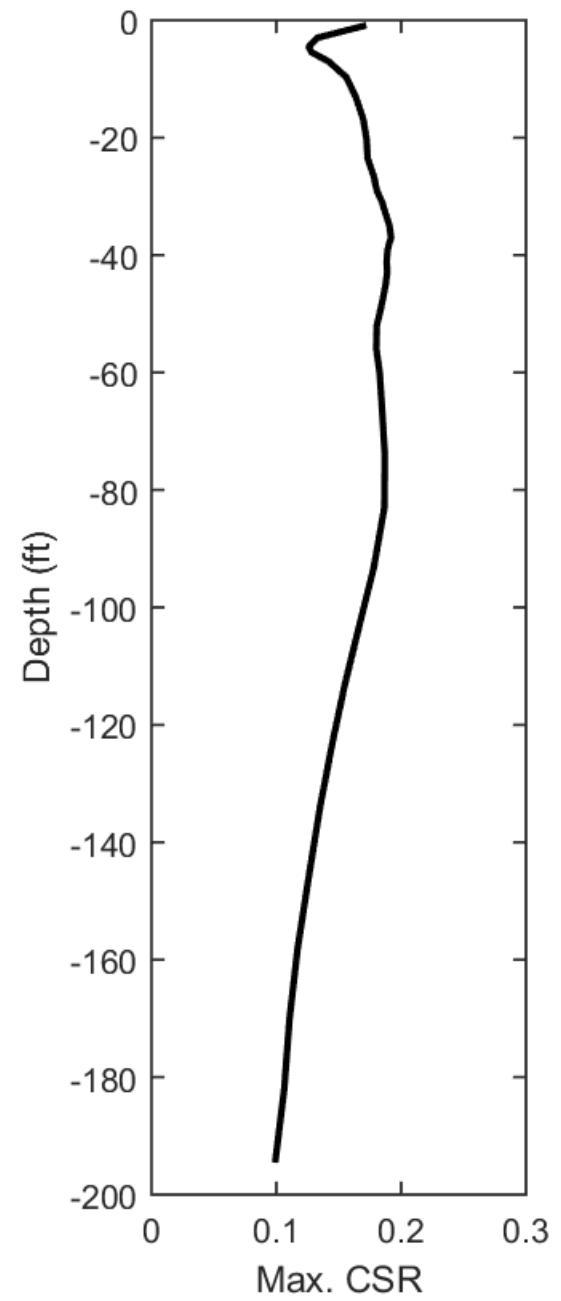
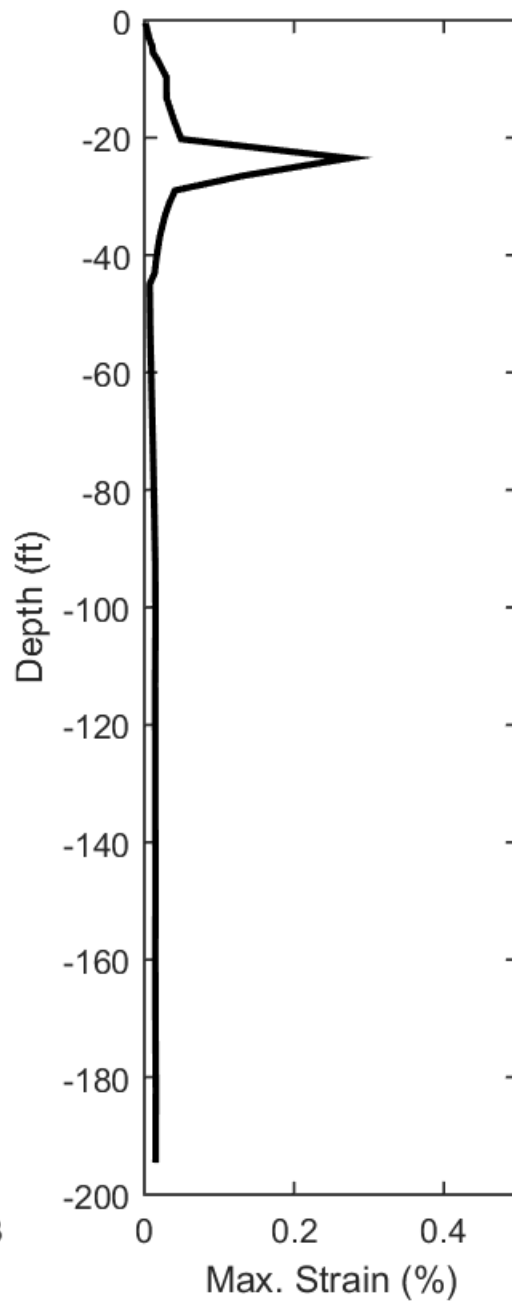
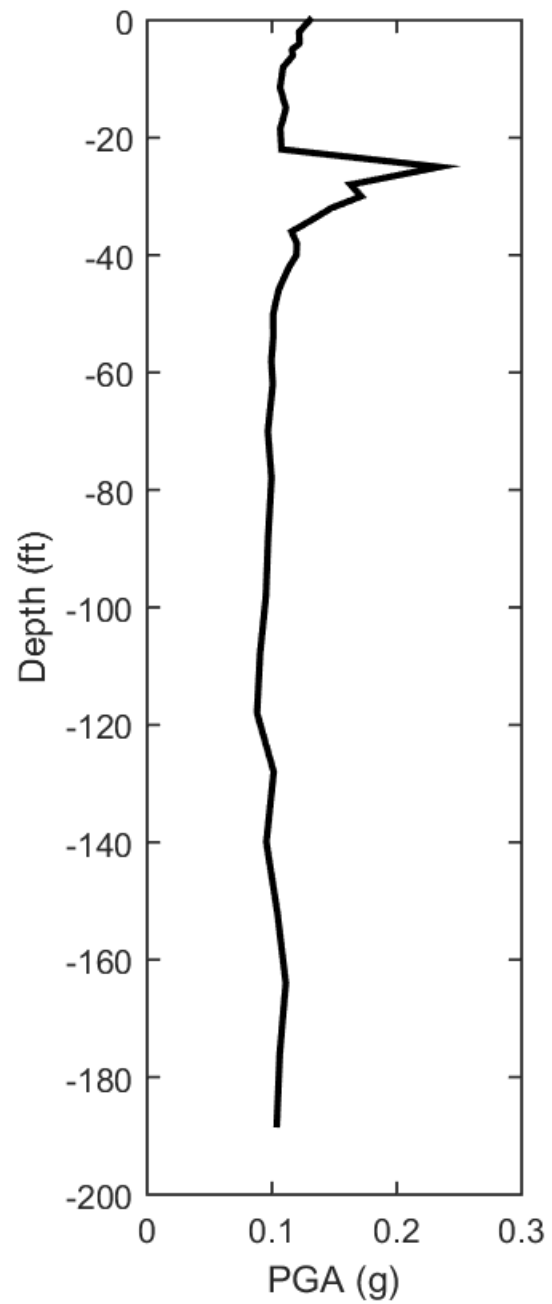




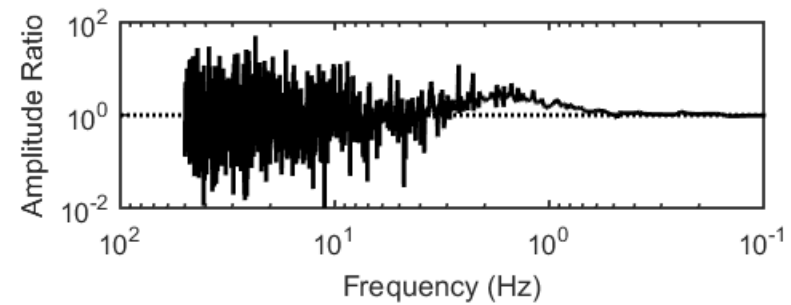
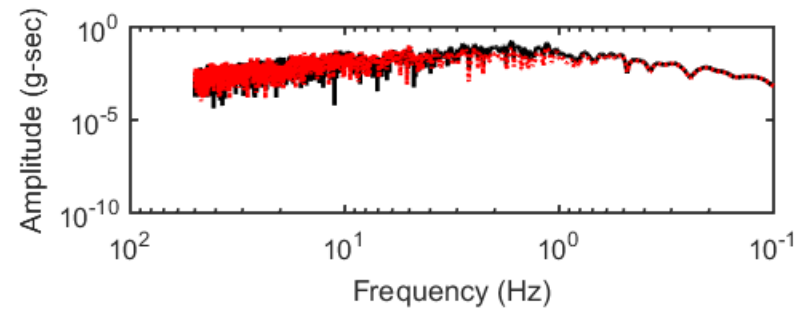
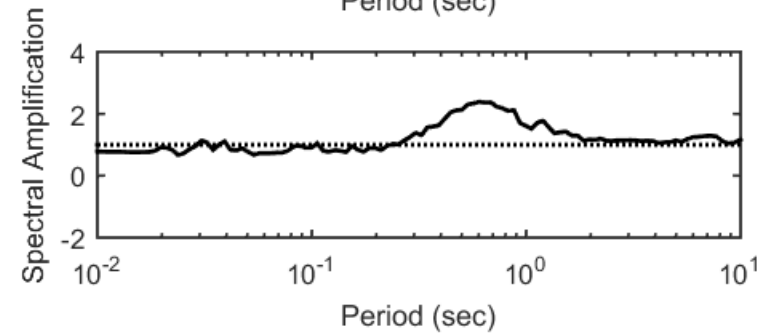
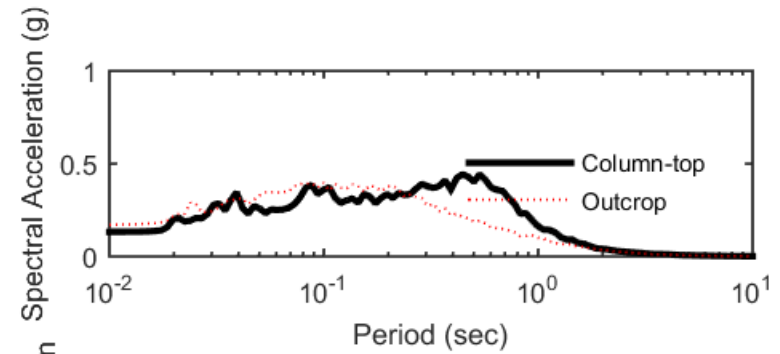
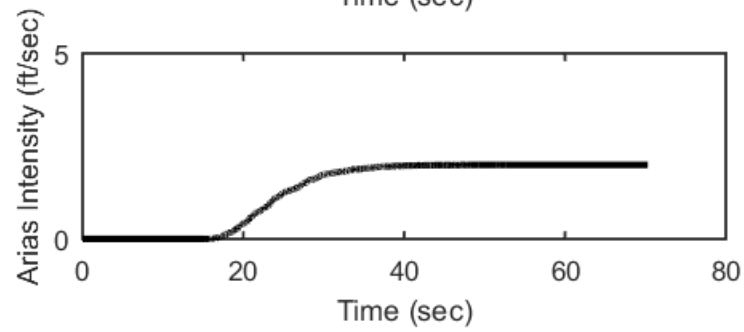
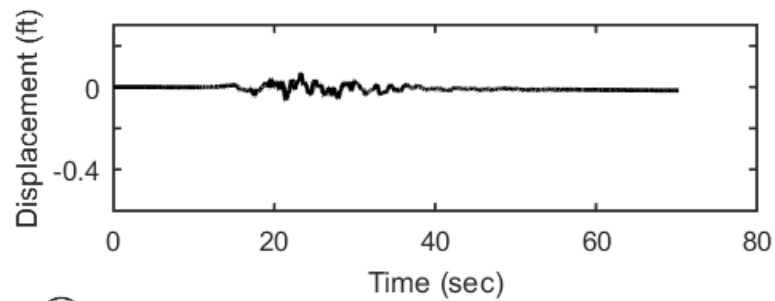
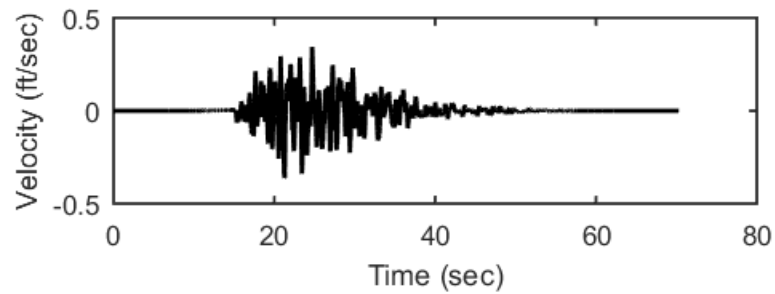
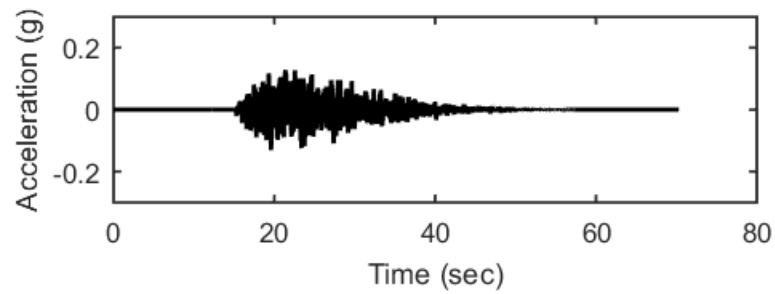
## Outputs at Top of Marl for: Total Stress Base with FEE6



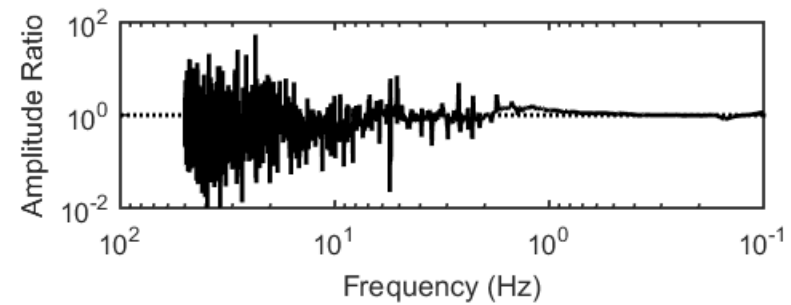
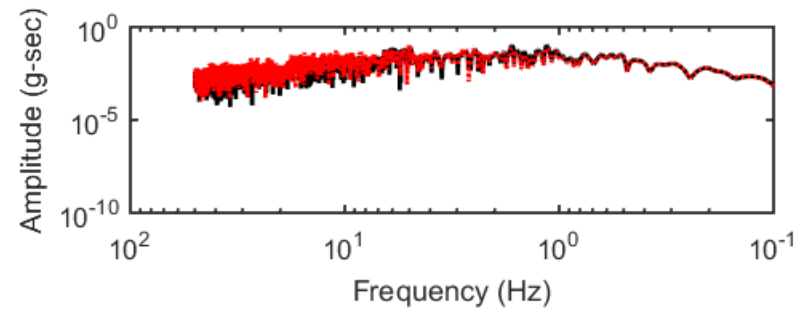
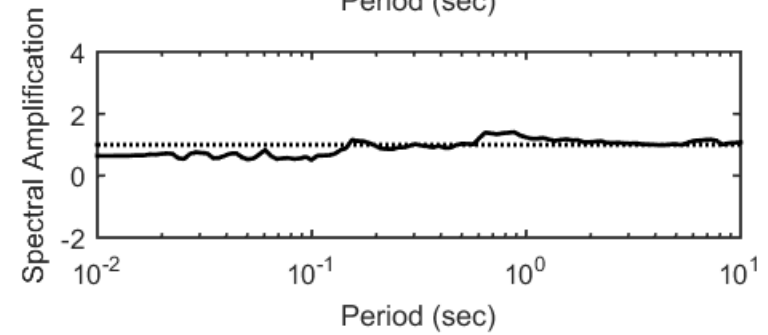
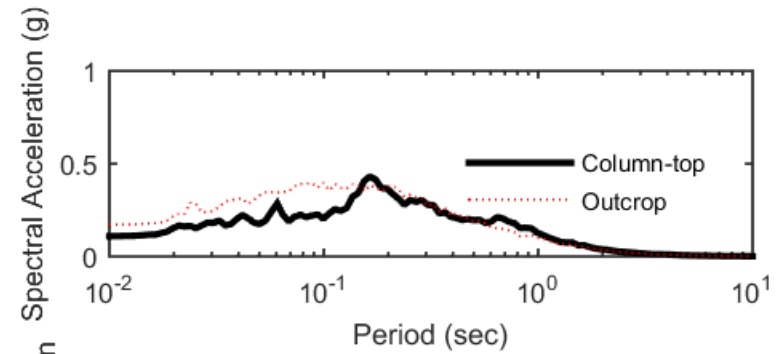
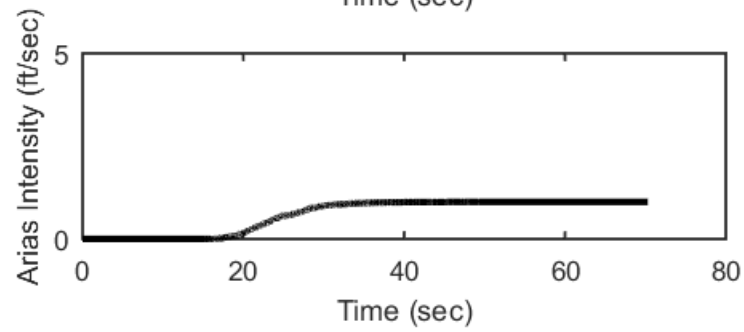
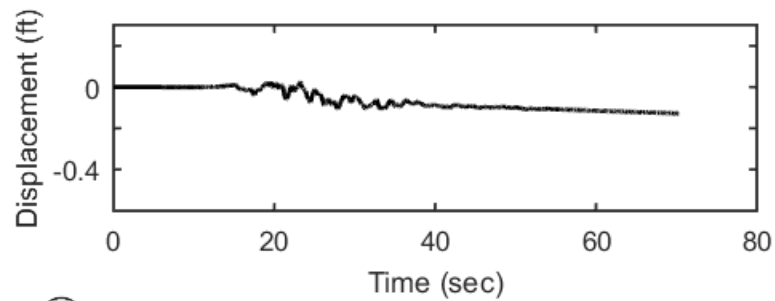
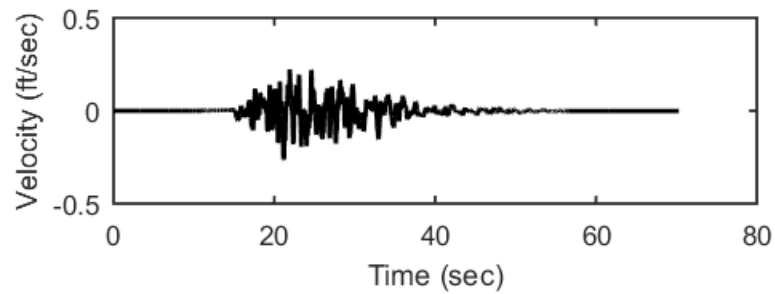
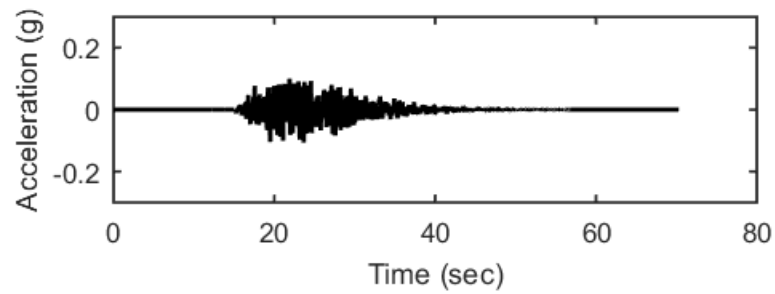
### Profile outputs for: Total Stress Base with FEE6



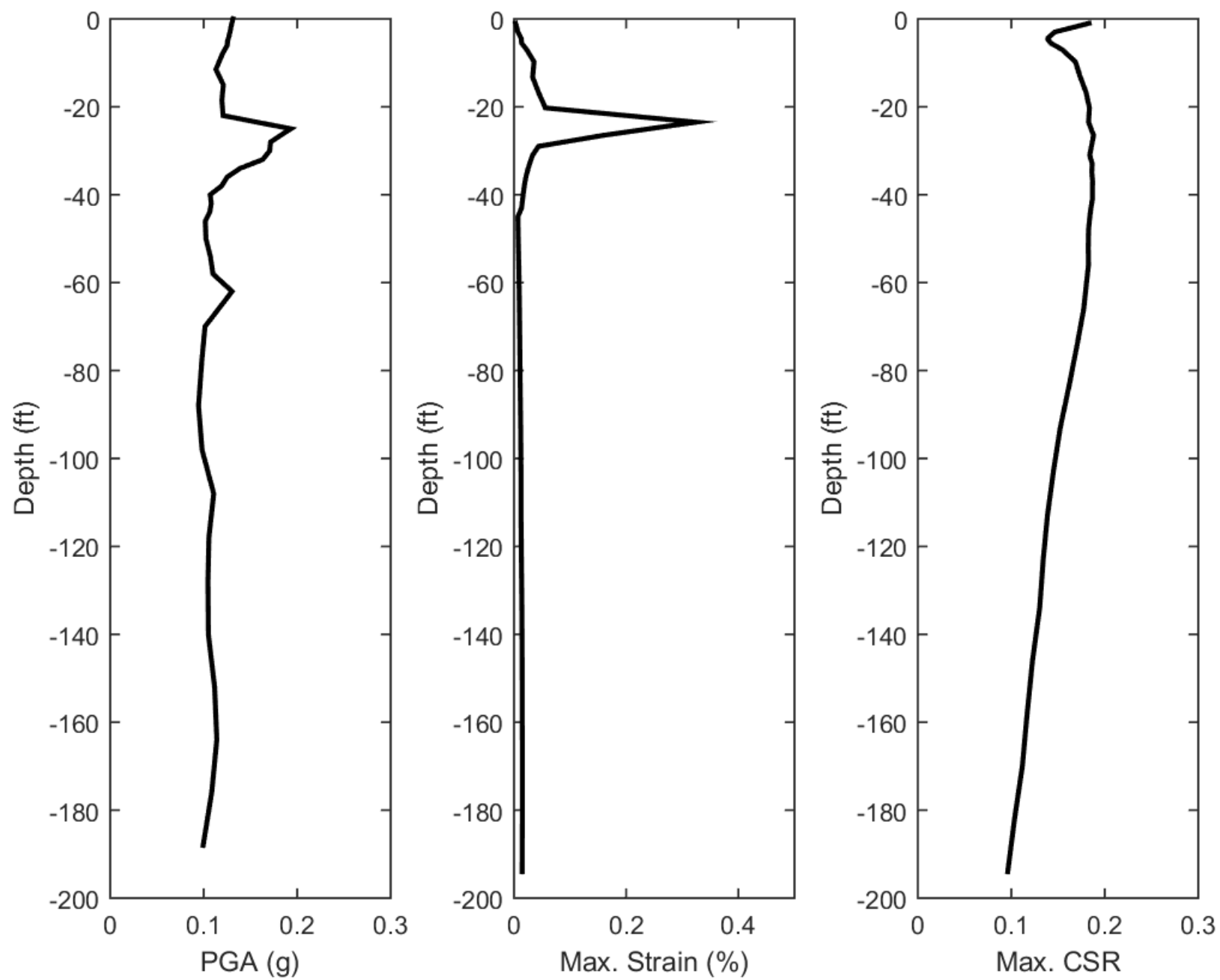
## Outputs at Ground Surface for: Total Stress Base with FEE7



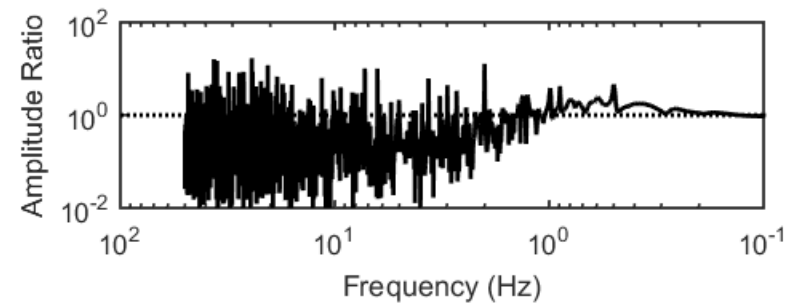
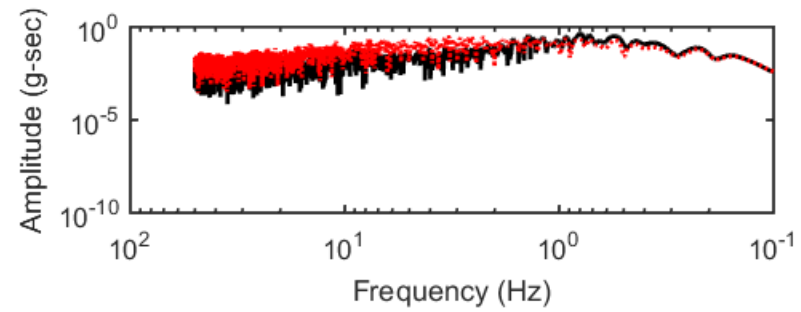
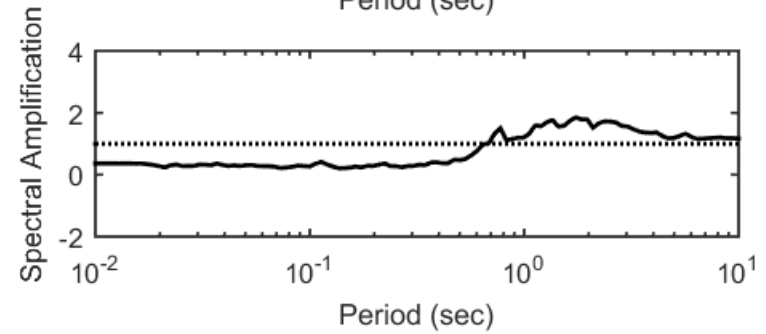
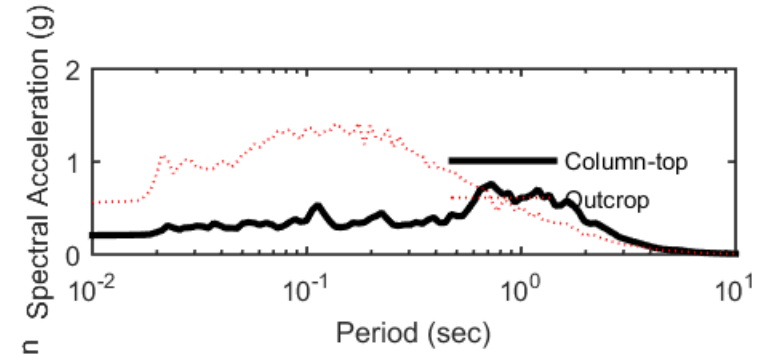
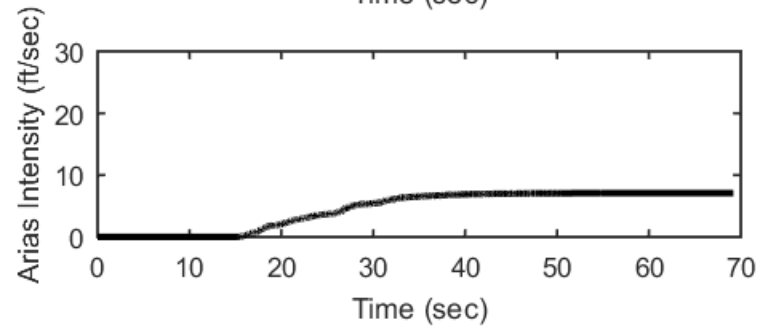
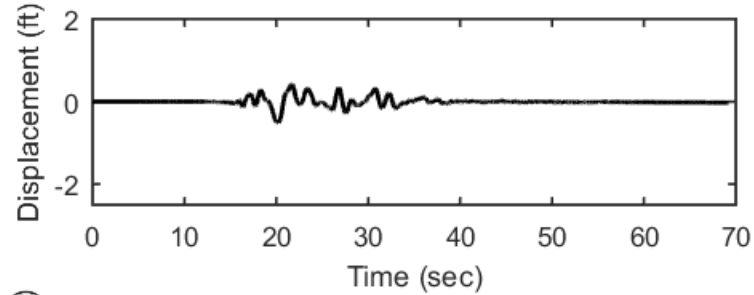
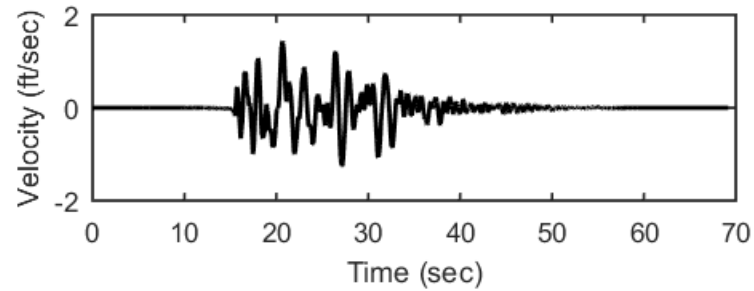
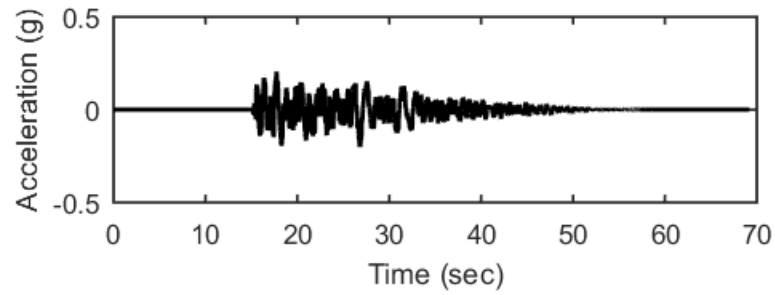
## Outputs at Top of Marl for: Total Stress Base with FEE7



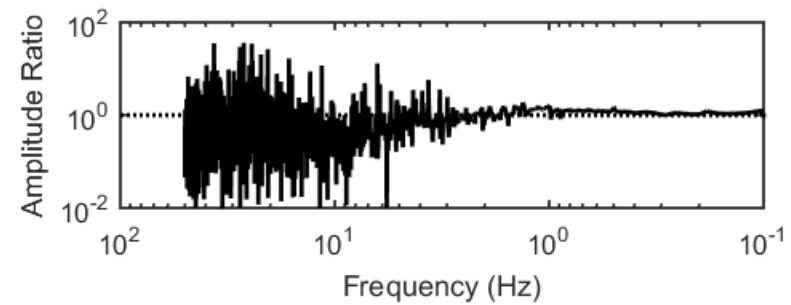
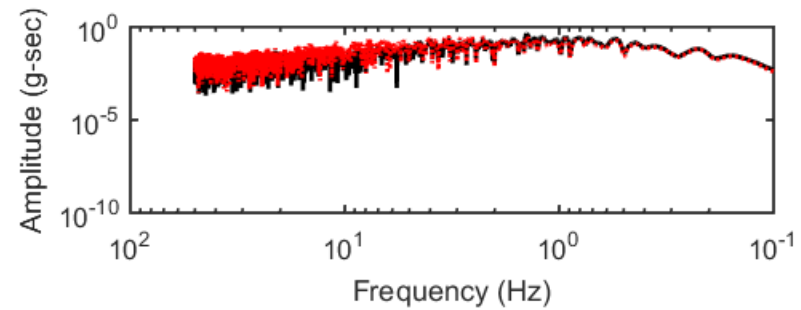
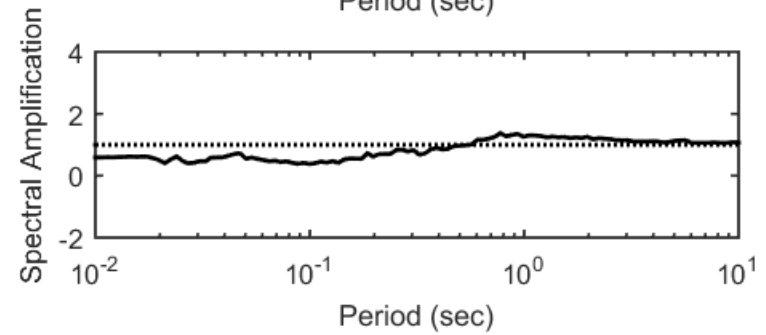
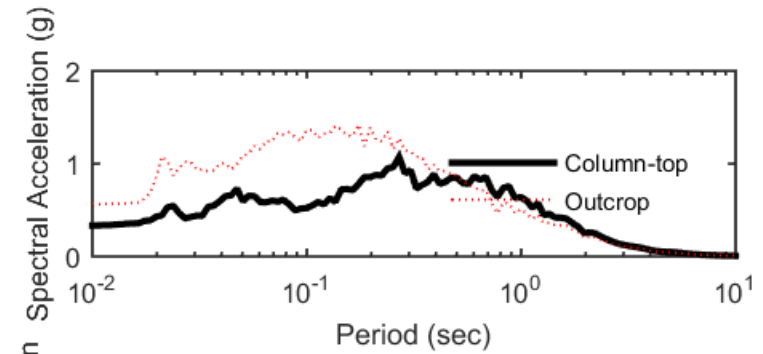
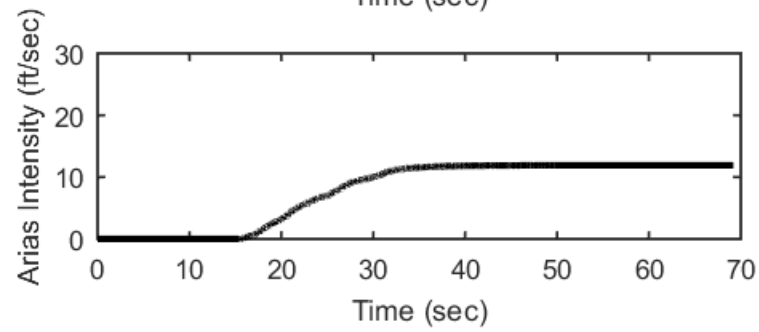
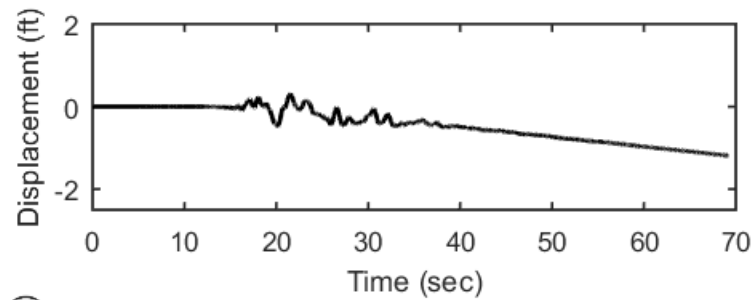
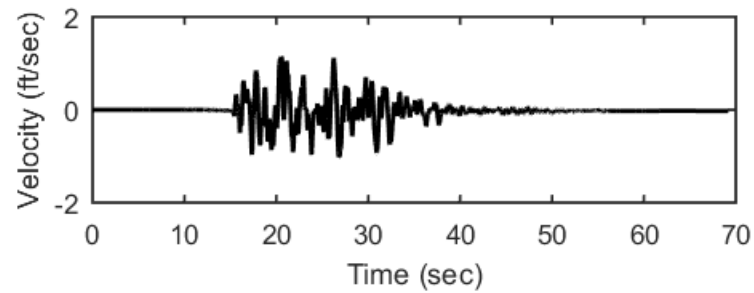
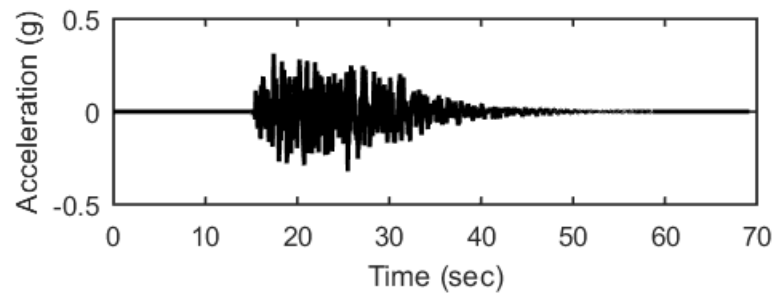
### Profile outputs for: Total Stress Base with FEE7



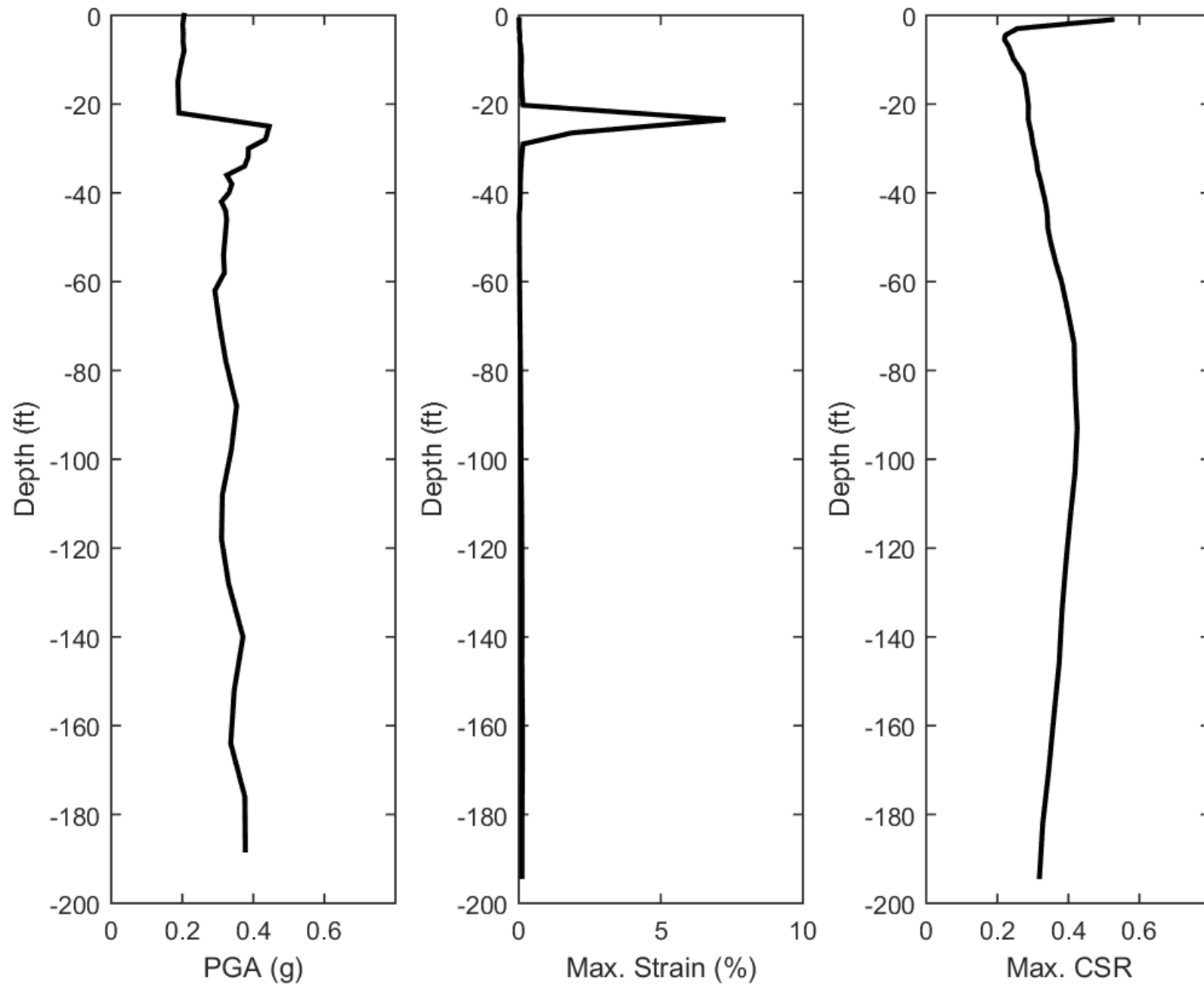
## Outputs at Ground Surface for: Total Stress Base with SEE1



## Outputs at Top of Marl for: Total Stress Base with SEE1

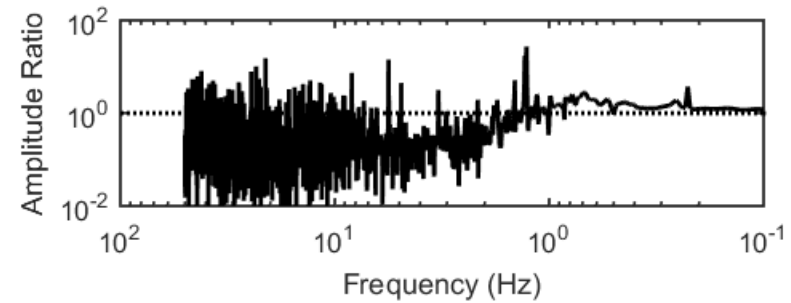
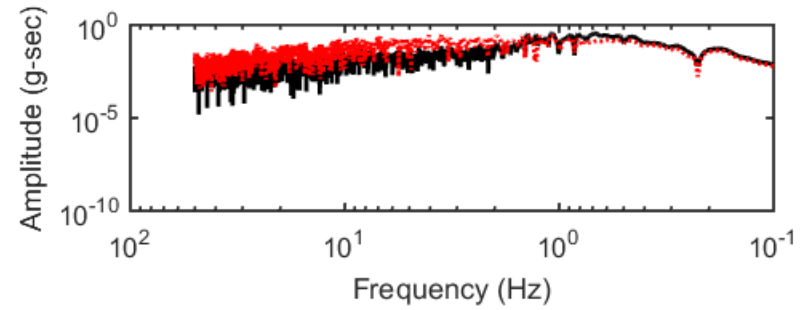
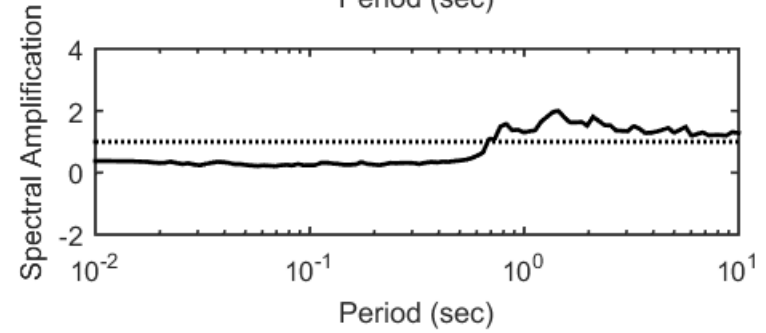
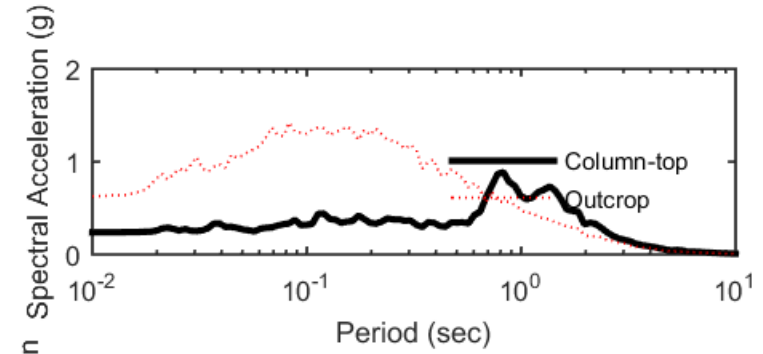
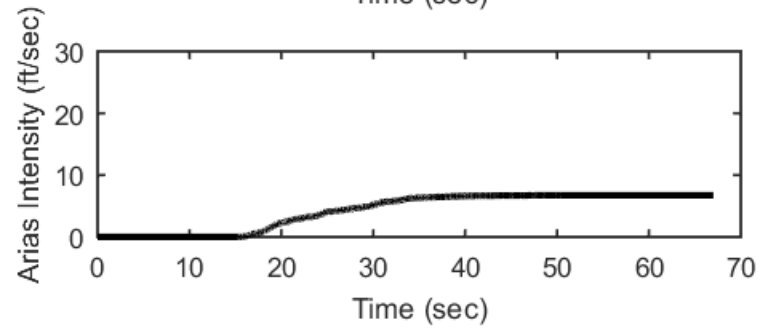
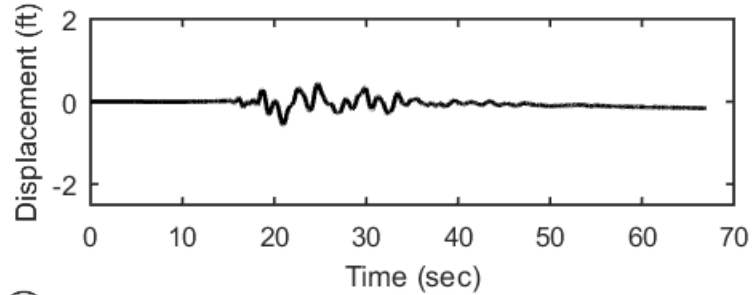
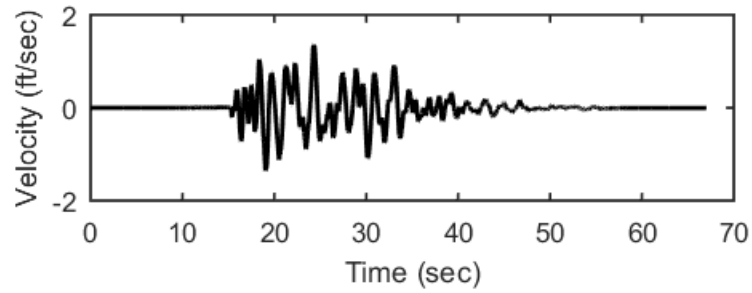
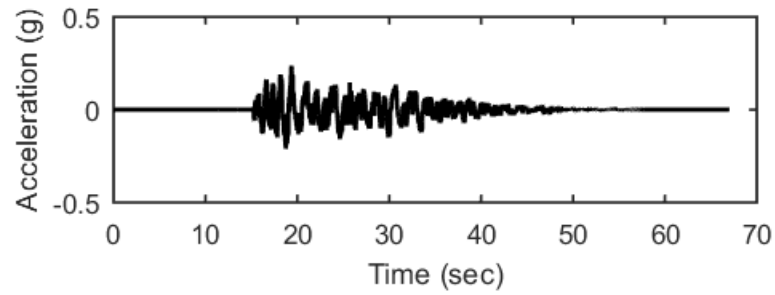


### Profile outputs for: Total Stress Base with SEE1

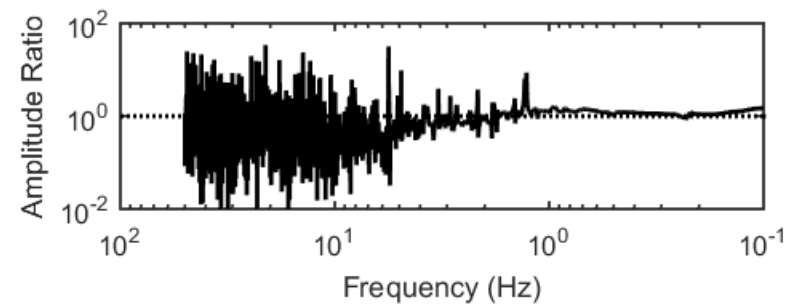
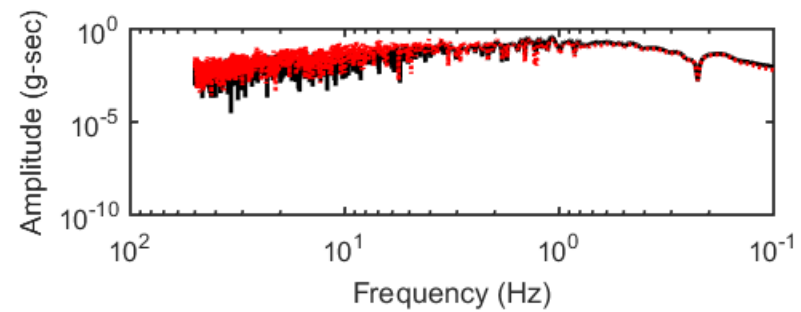
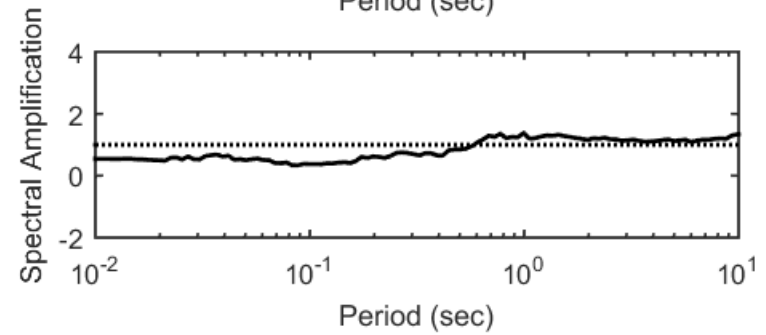
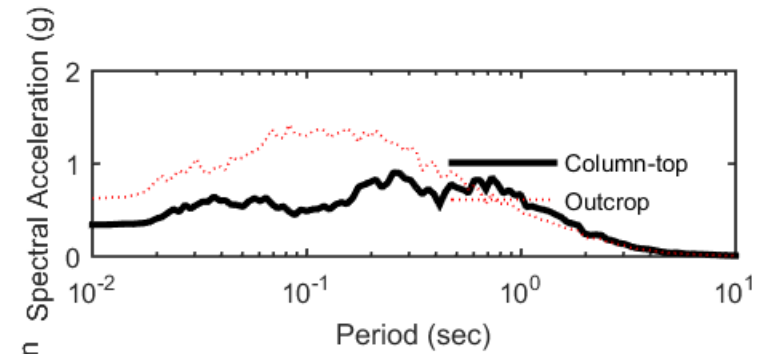
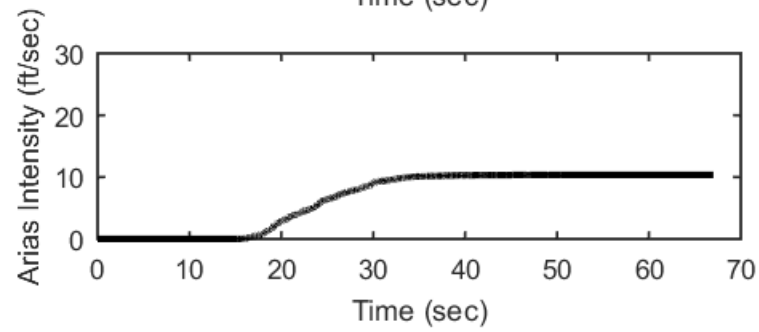
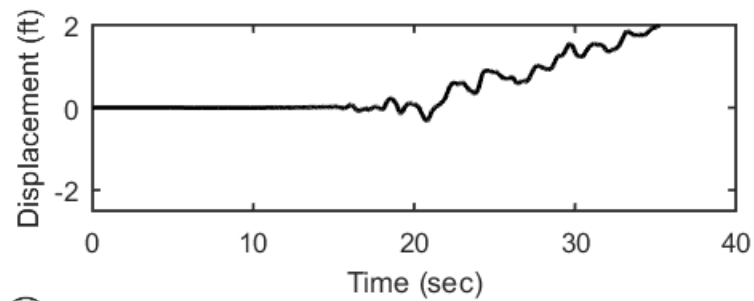
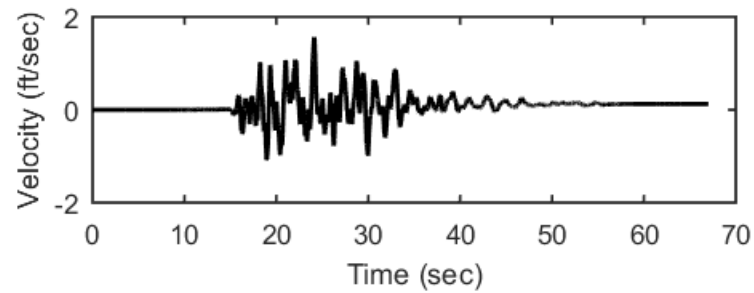
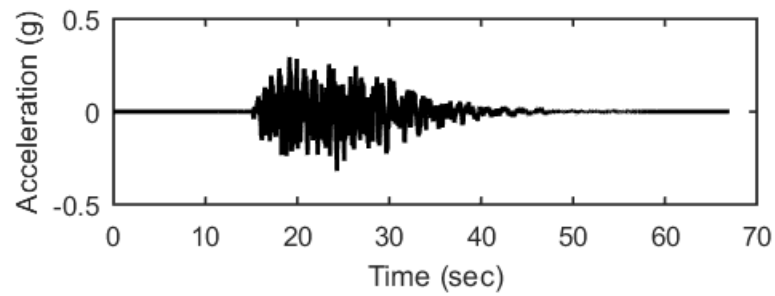




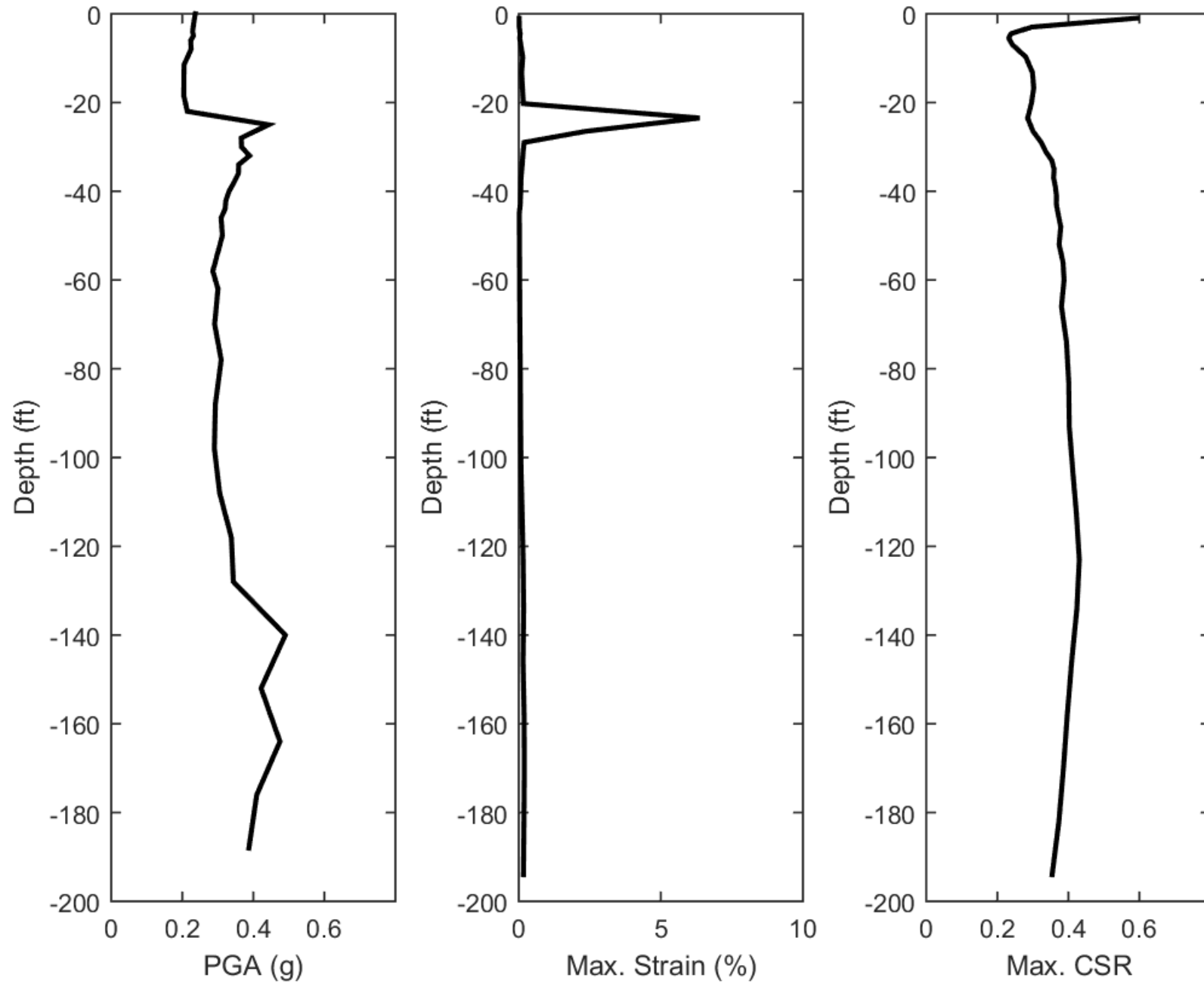
## Outputs at Ground Surface for: Total Stress Base with SEE2



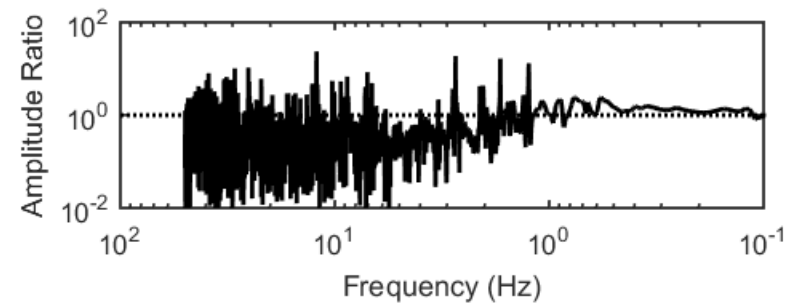
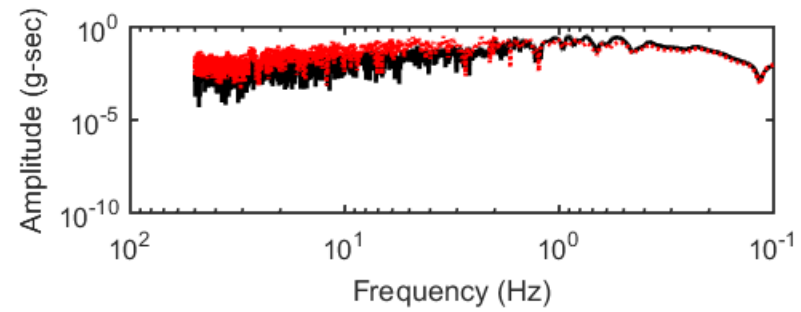
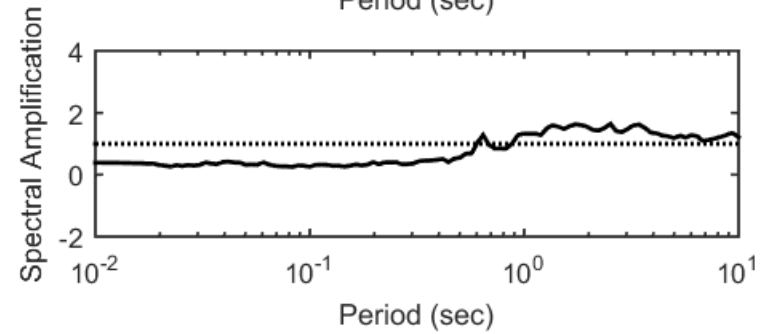
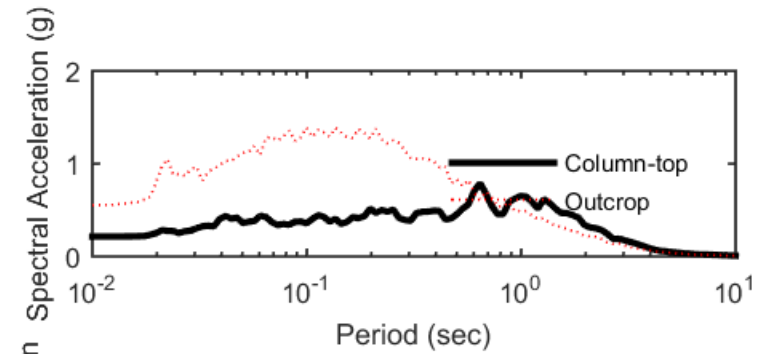
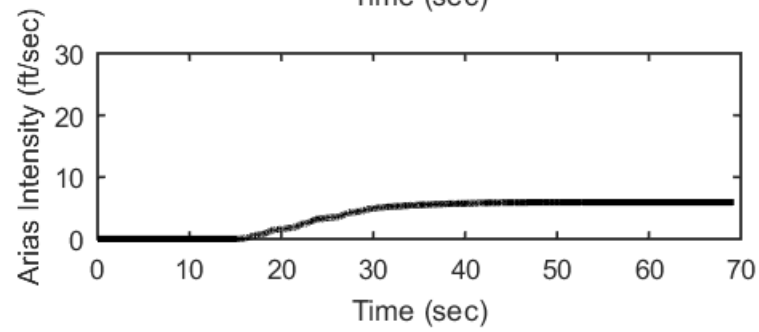
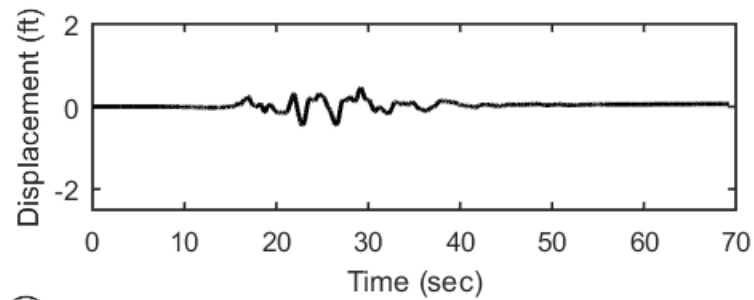
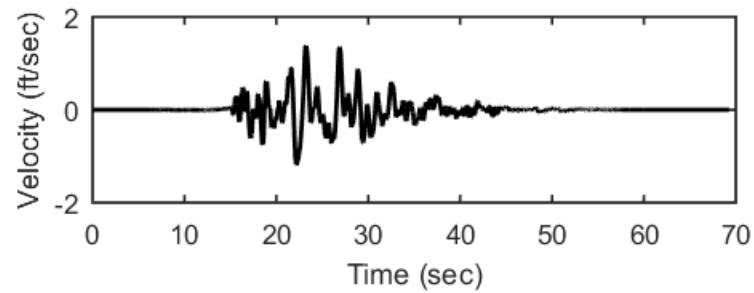
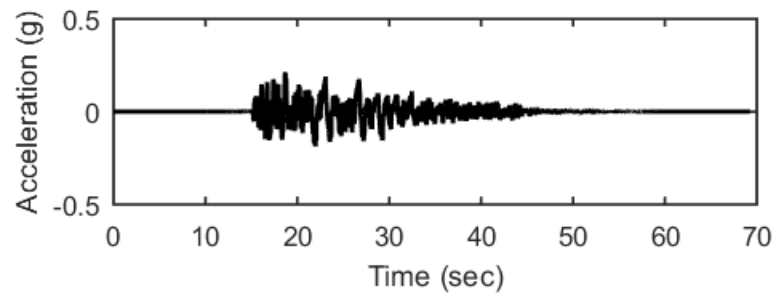
## Outputs at Top of Marl for: Total Stress Base with SEE2



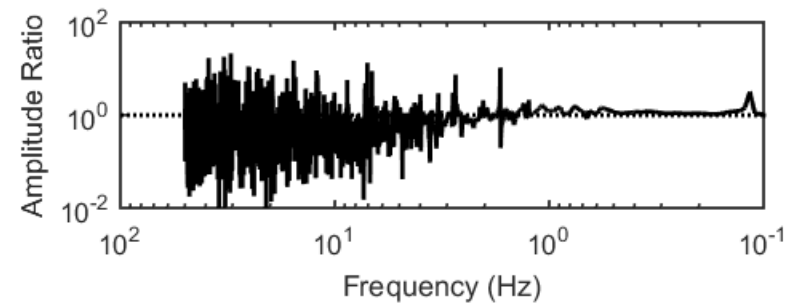
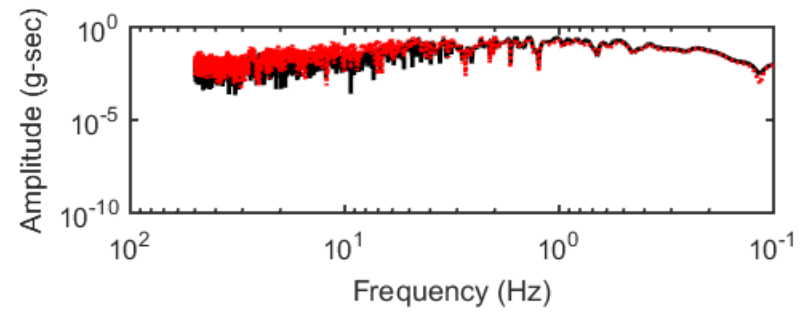
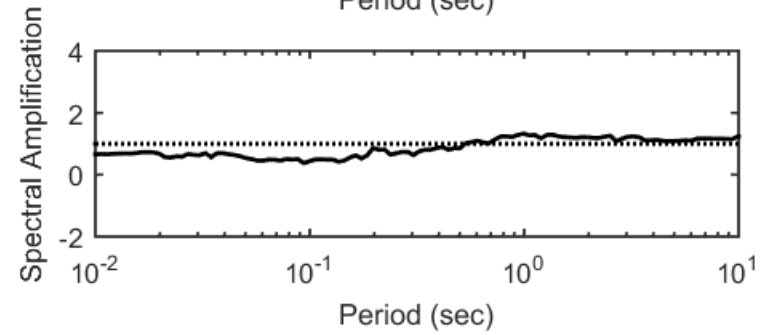
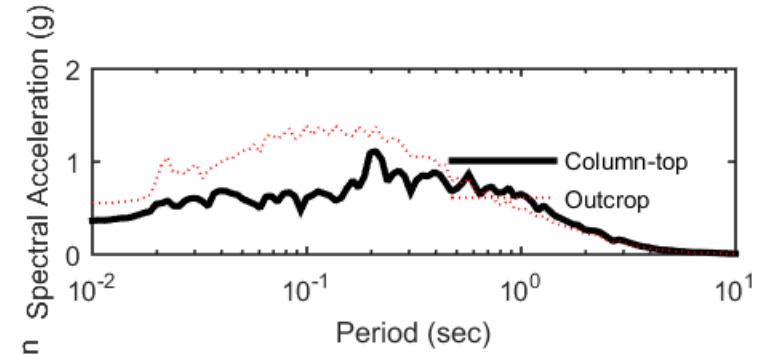
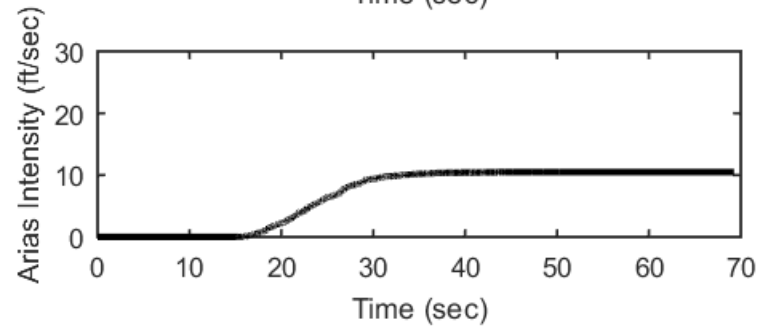
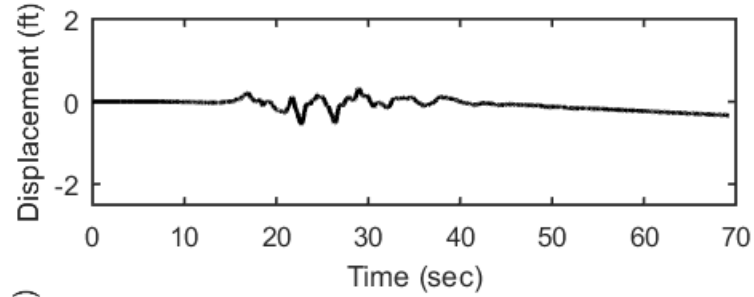
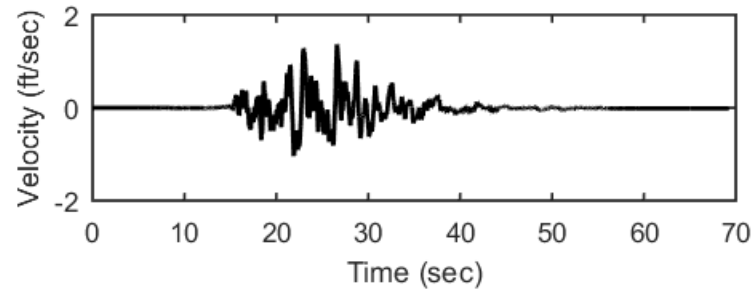
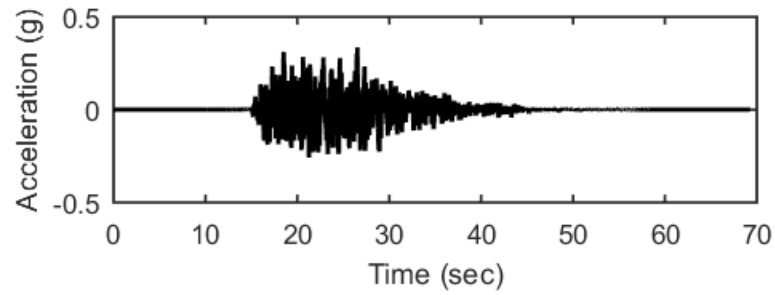
### Profile outputs for: Total Stress Base with SEE2



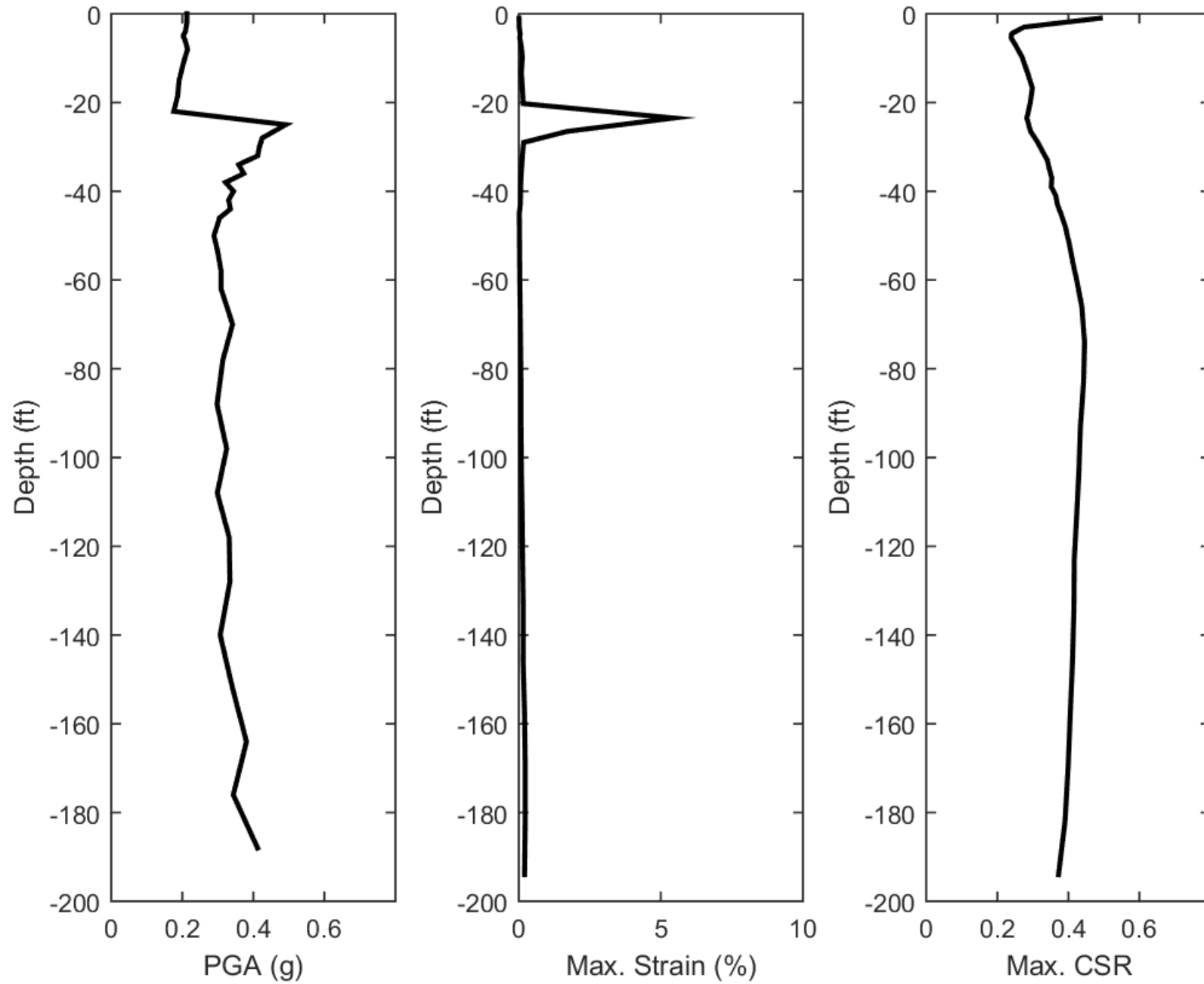
## Outputs at Ground Surface for: Total Stress Base with SEE3



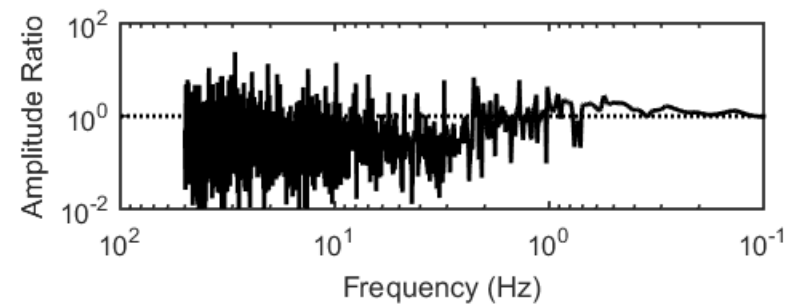
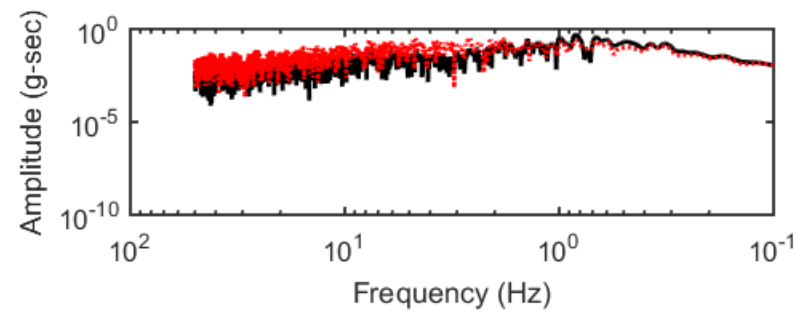
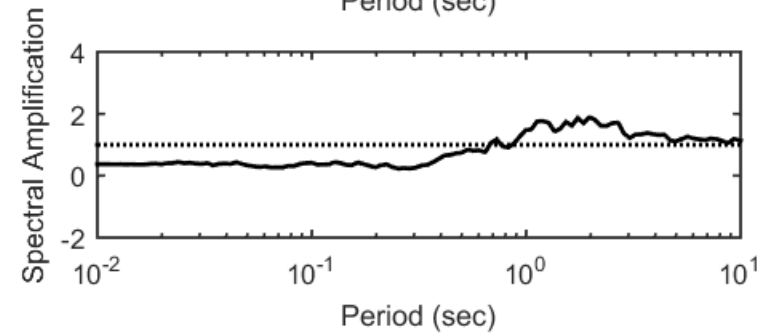
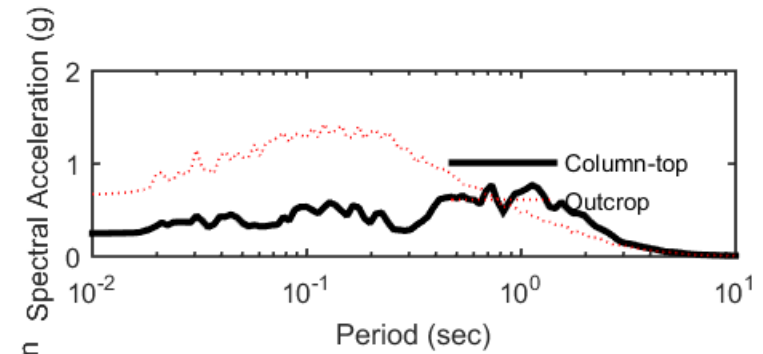
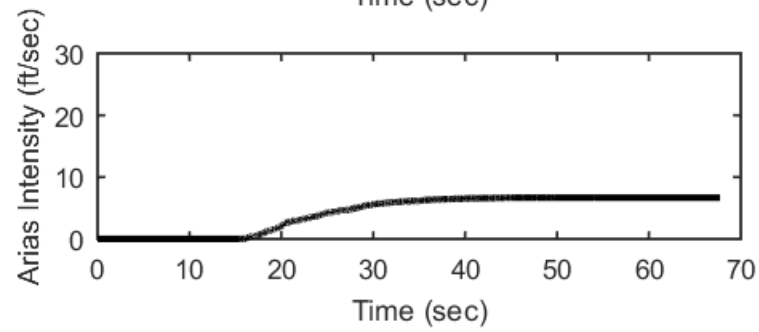
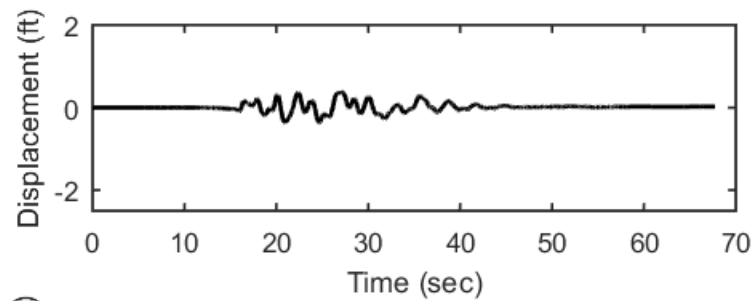
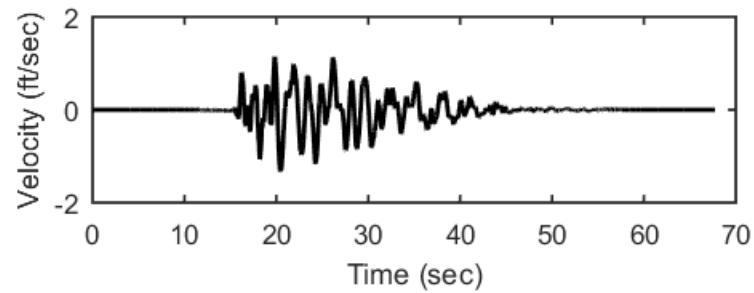
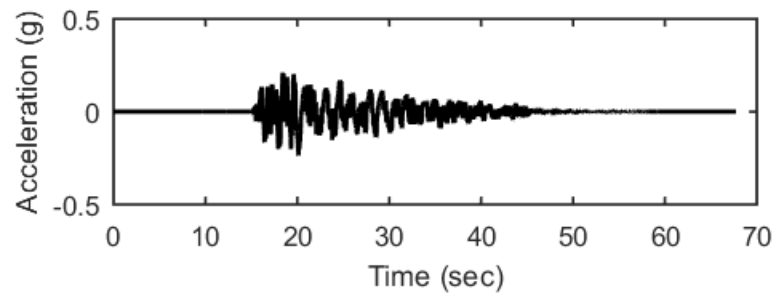
## Outputs at Top of Marl for: Total Stress Base with SEE3



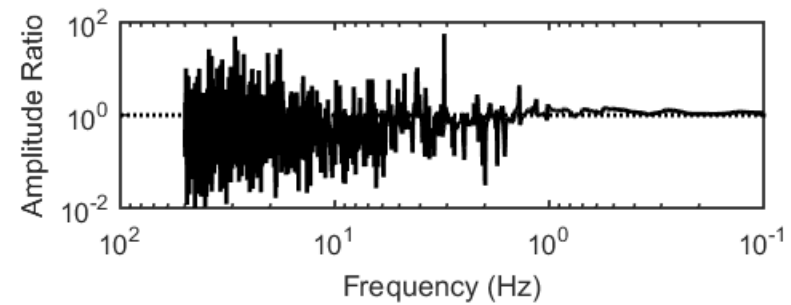
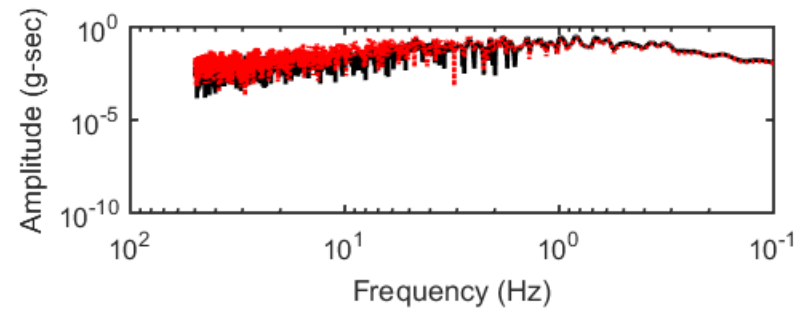
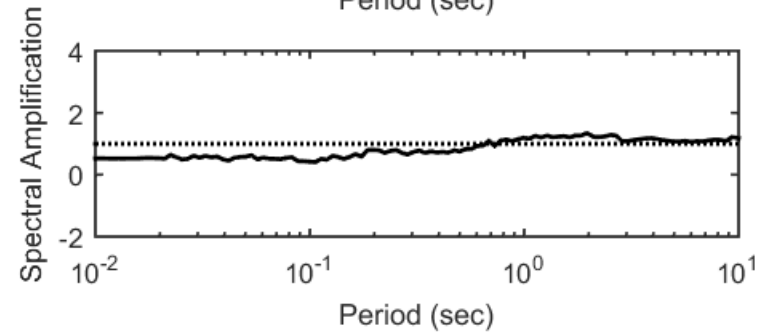
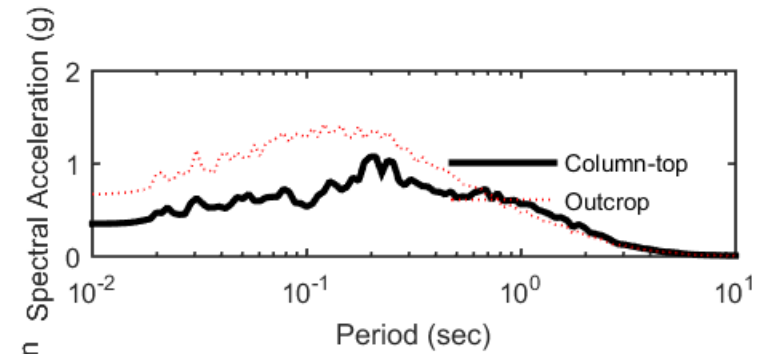
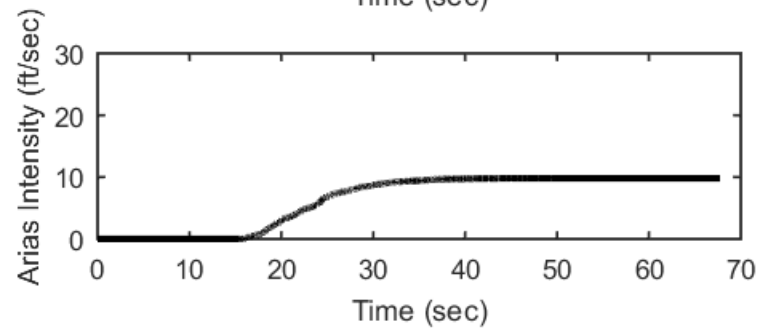
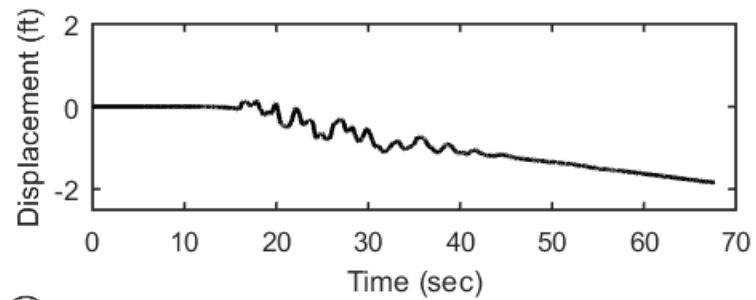
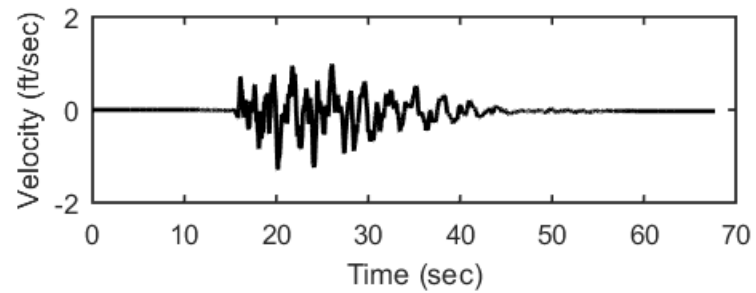
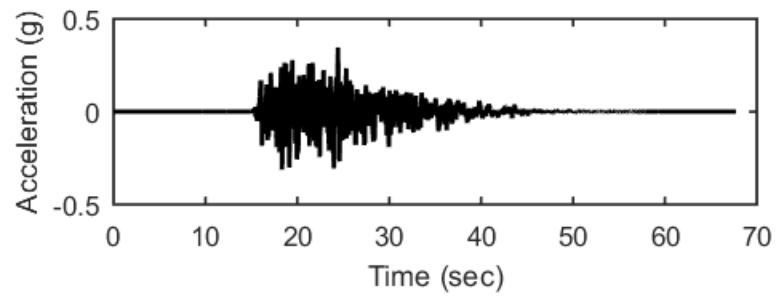
### Profile outputs for: Total Stress Base with SEE3



## Outputs at Ground Surface for: Total Stress Base with SEE4

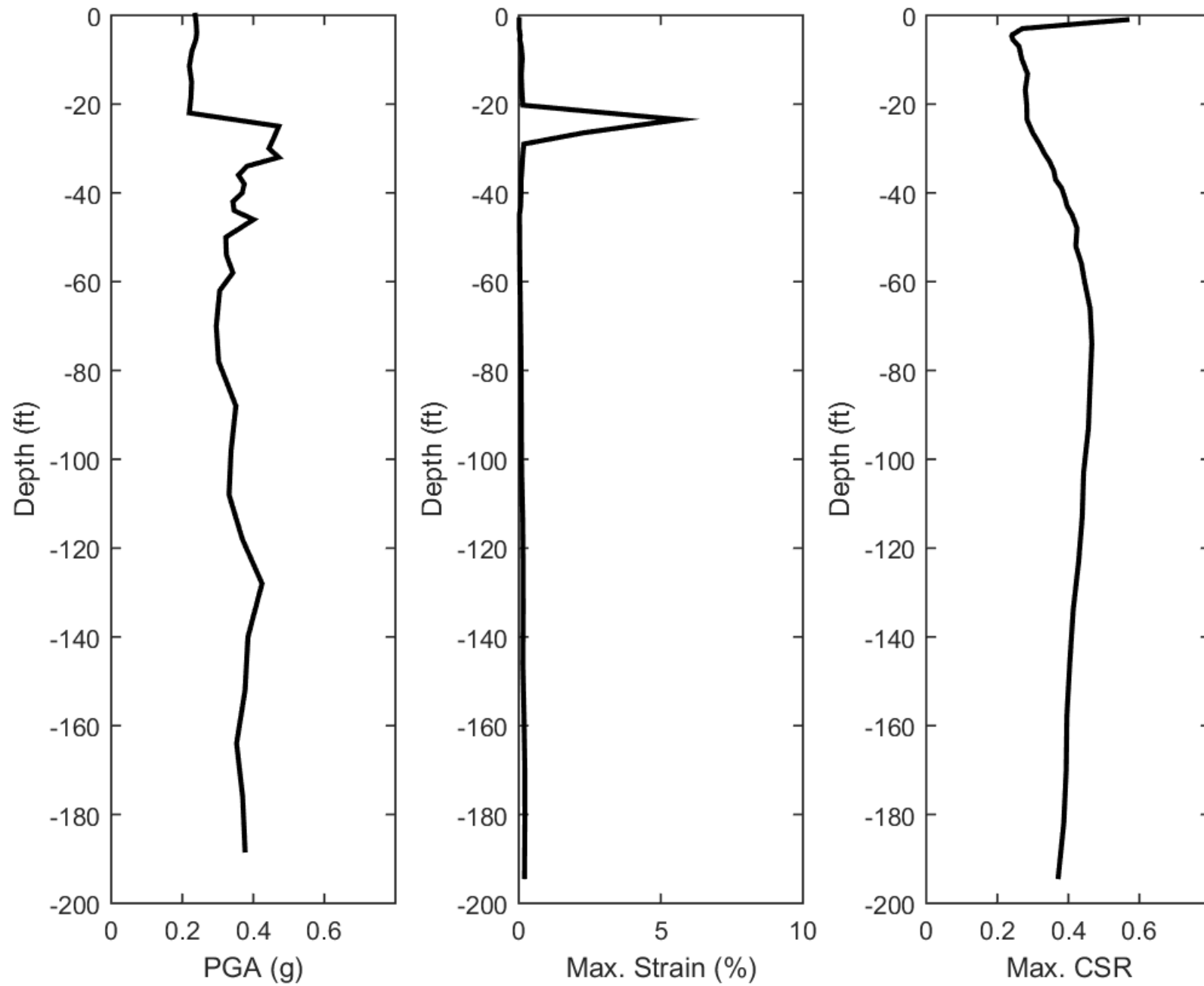


## Outputs at Top of Marl for: Total Stress Base with SEE4

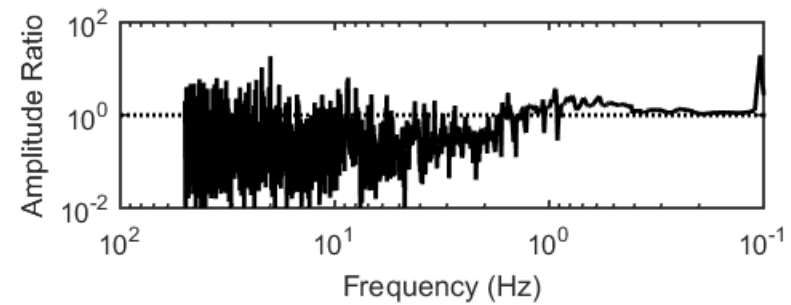
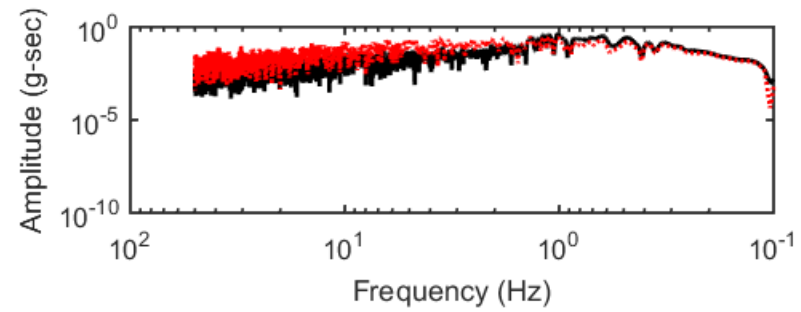
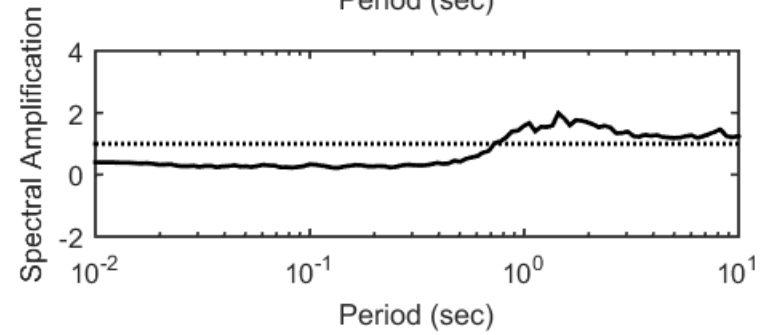
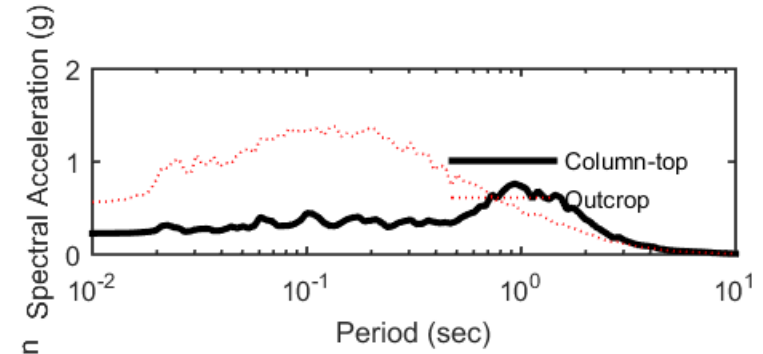
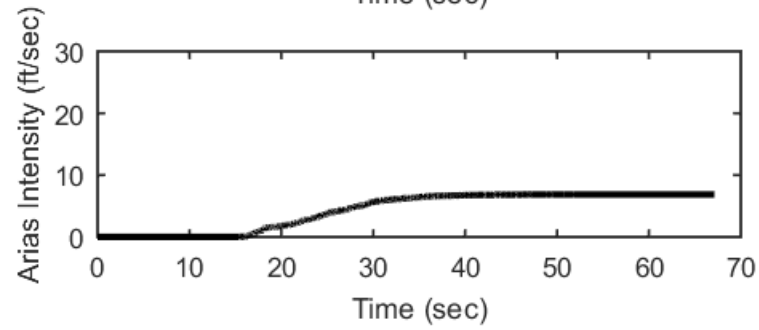
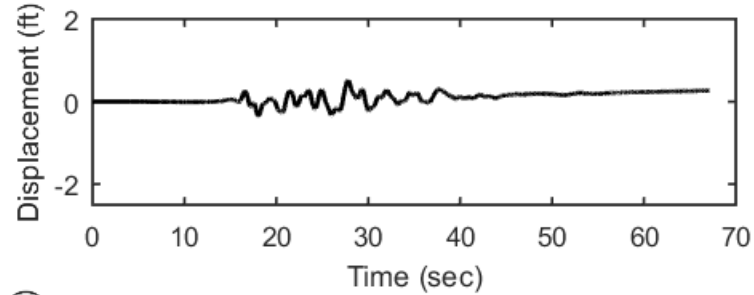
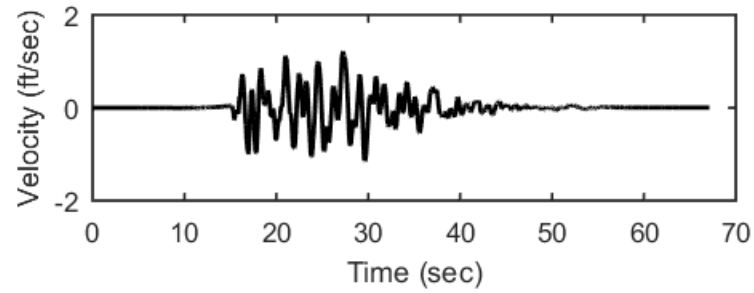
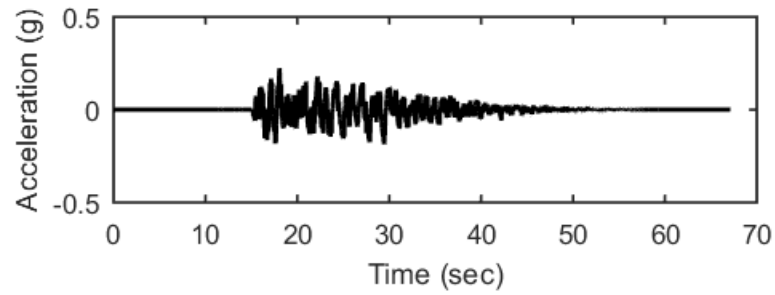




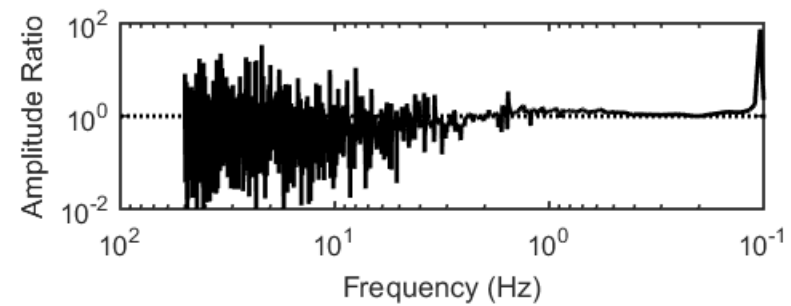
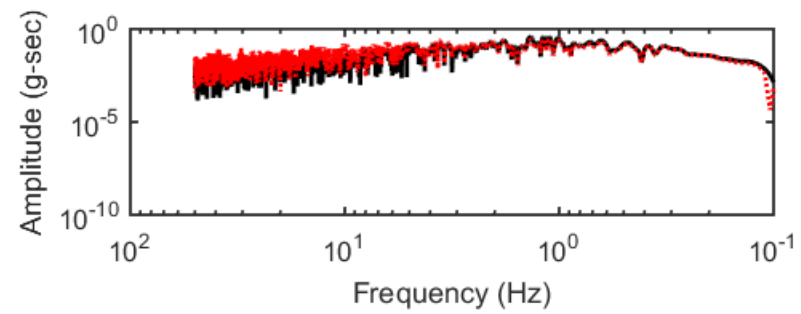
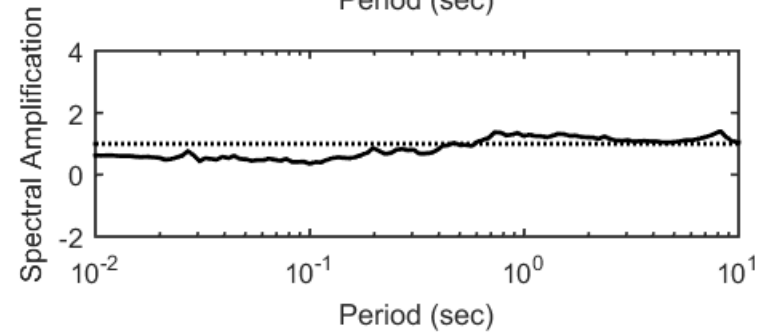
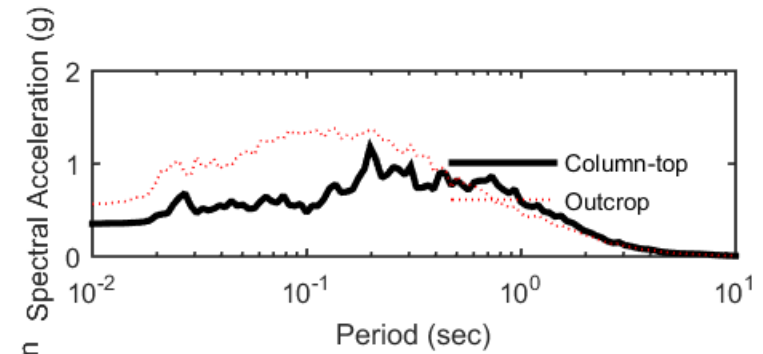
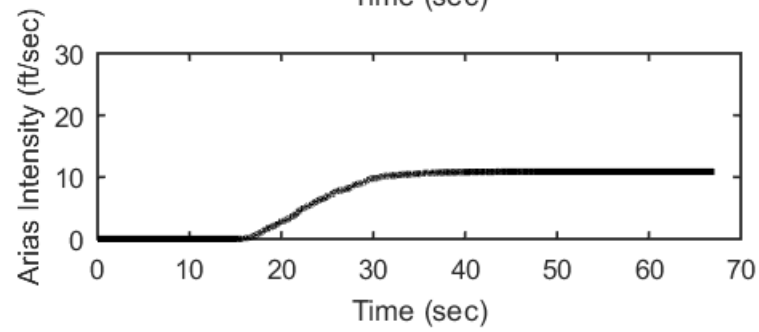
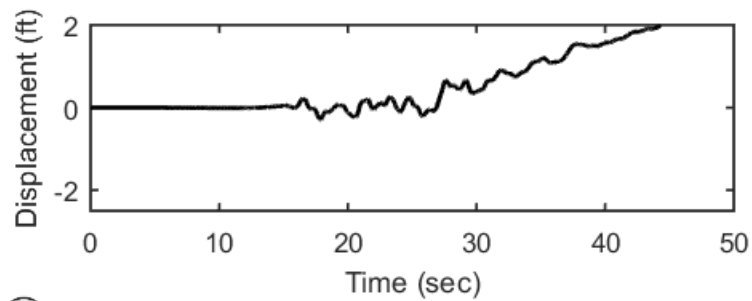
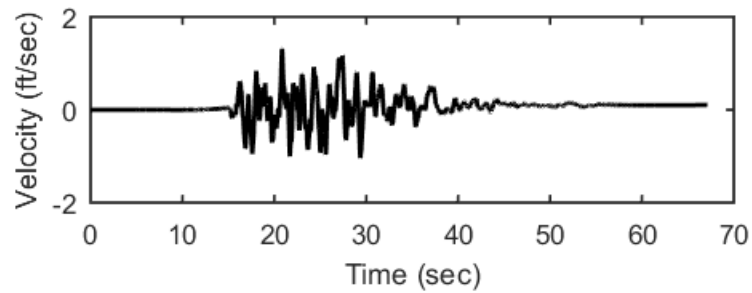
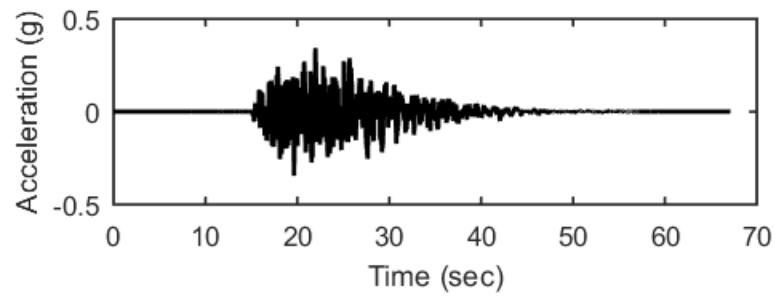
### Profile outputs for: Total Stress Base with SEE4



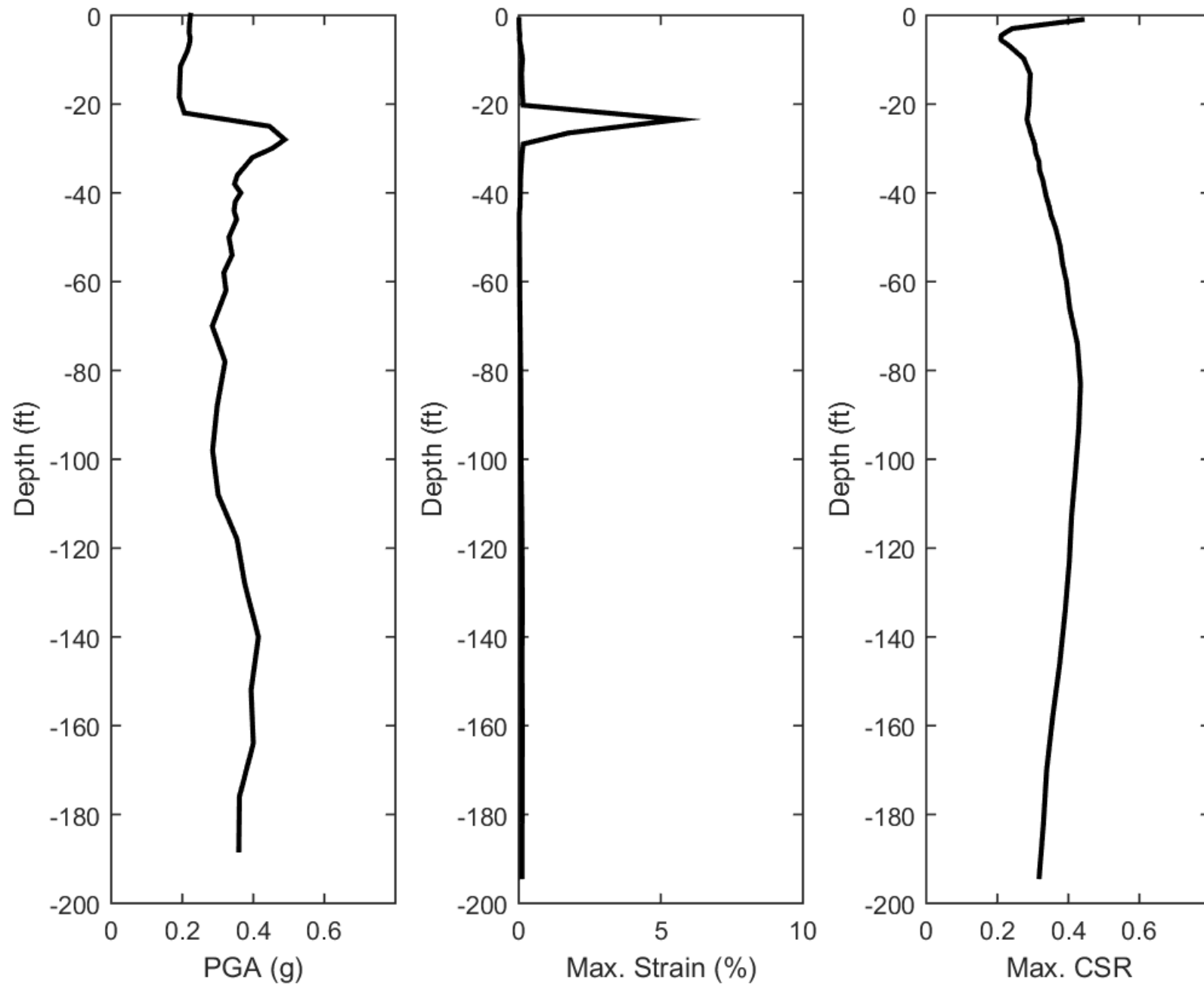
## Outputs at Ground Surface for: Total Stress Base with SEE5



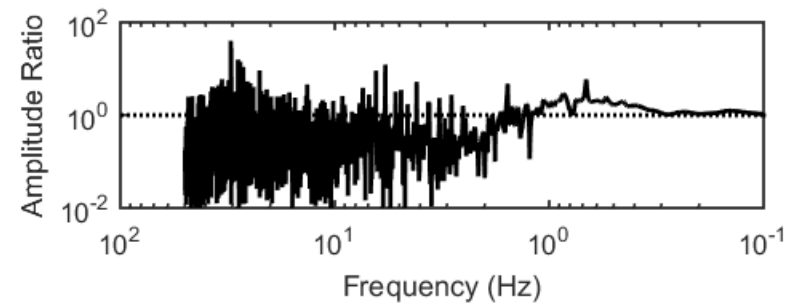
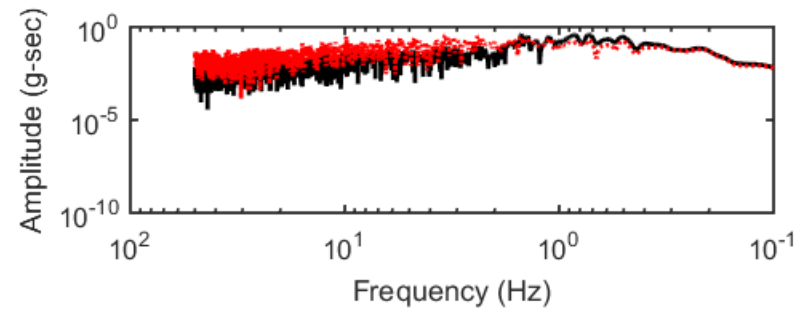
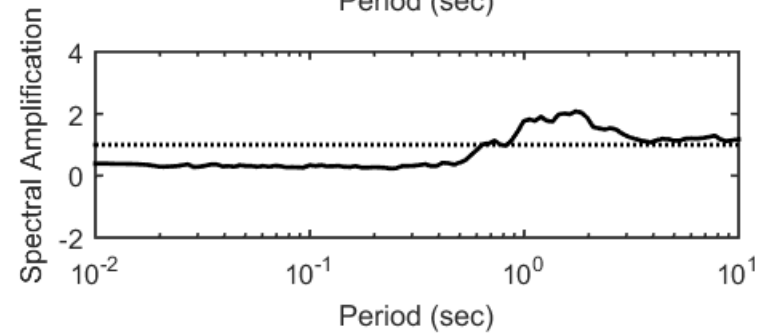
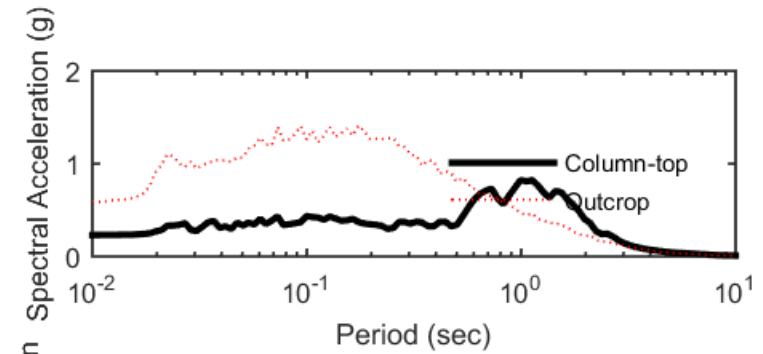
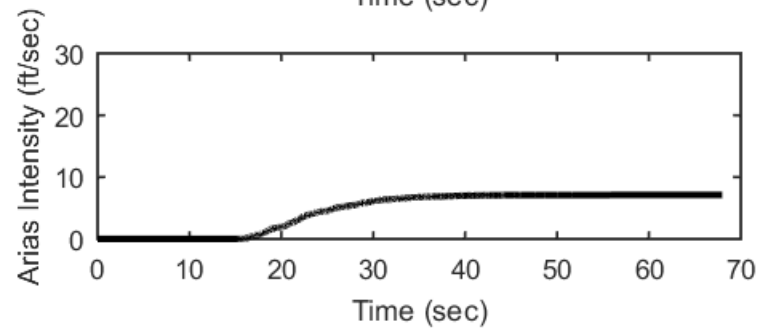
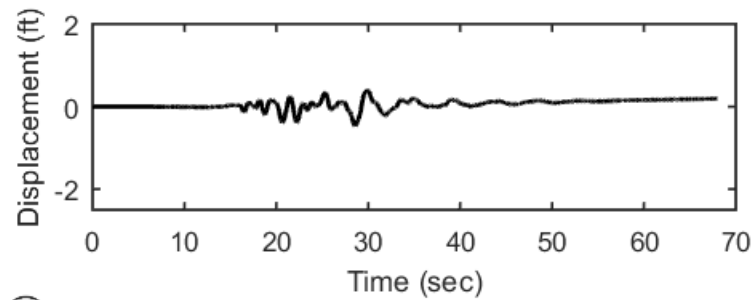
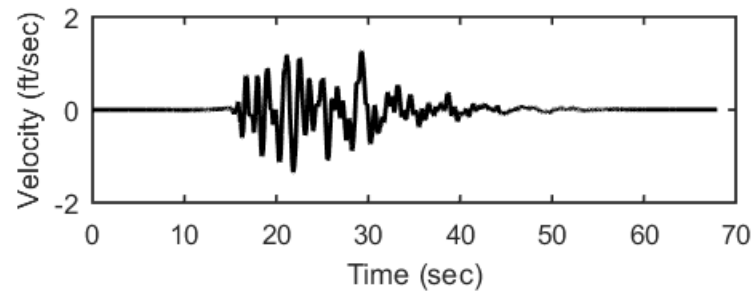
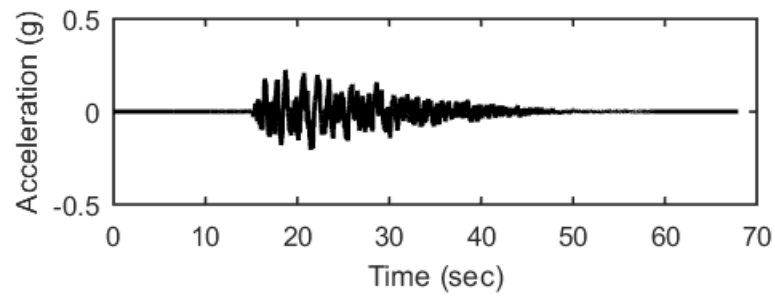
## Outputs at Top of Marl for: Total Stress Base with SEE5



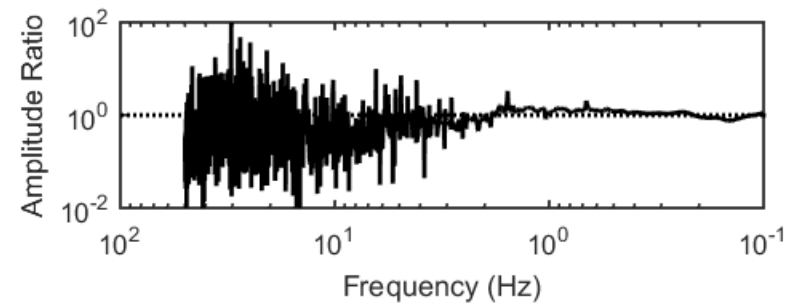
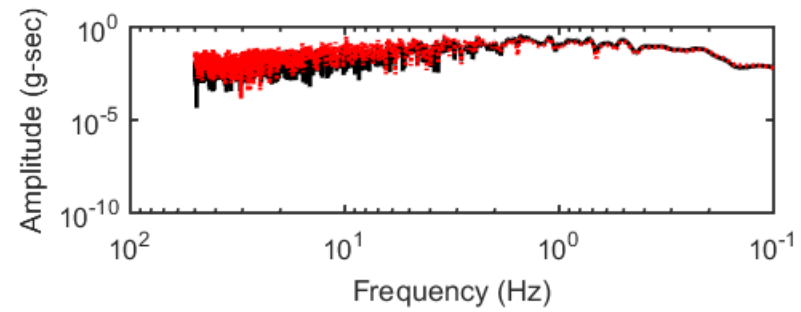
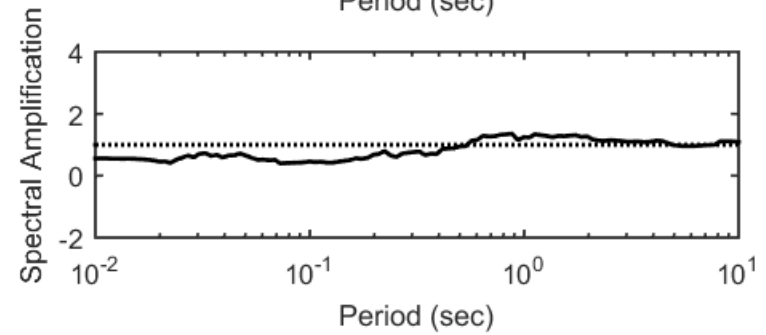
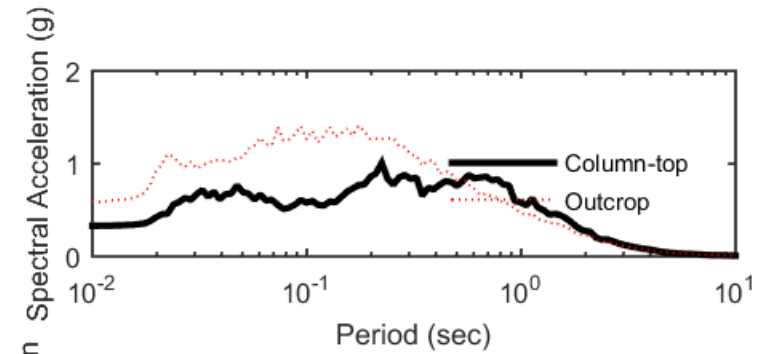
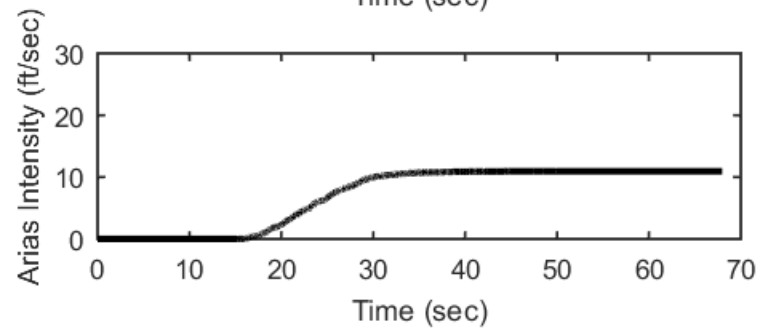
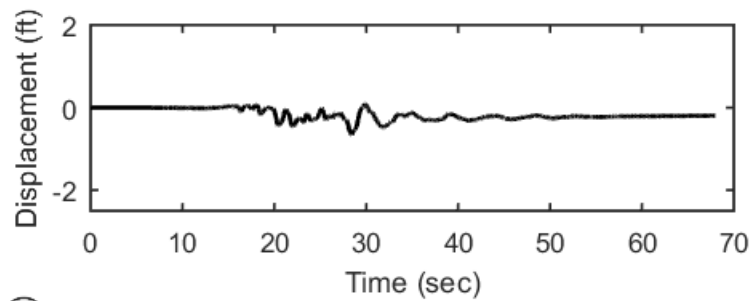
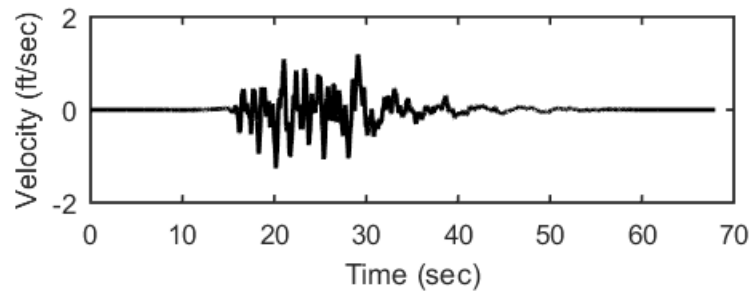
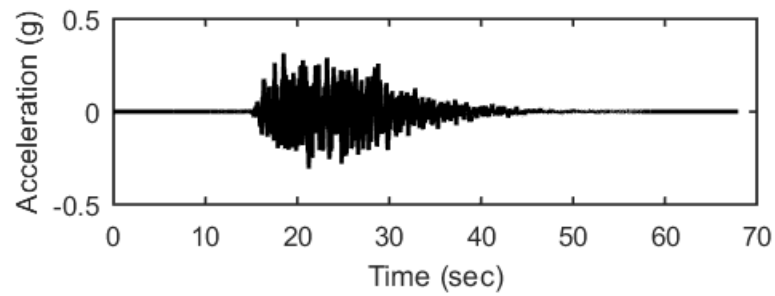
### Profile outputs for: Total Stress Base with SEE5



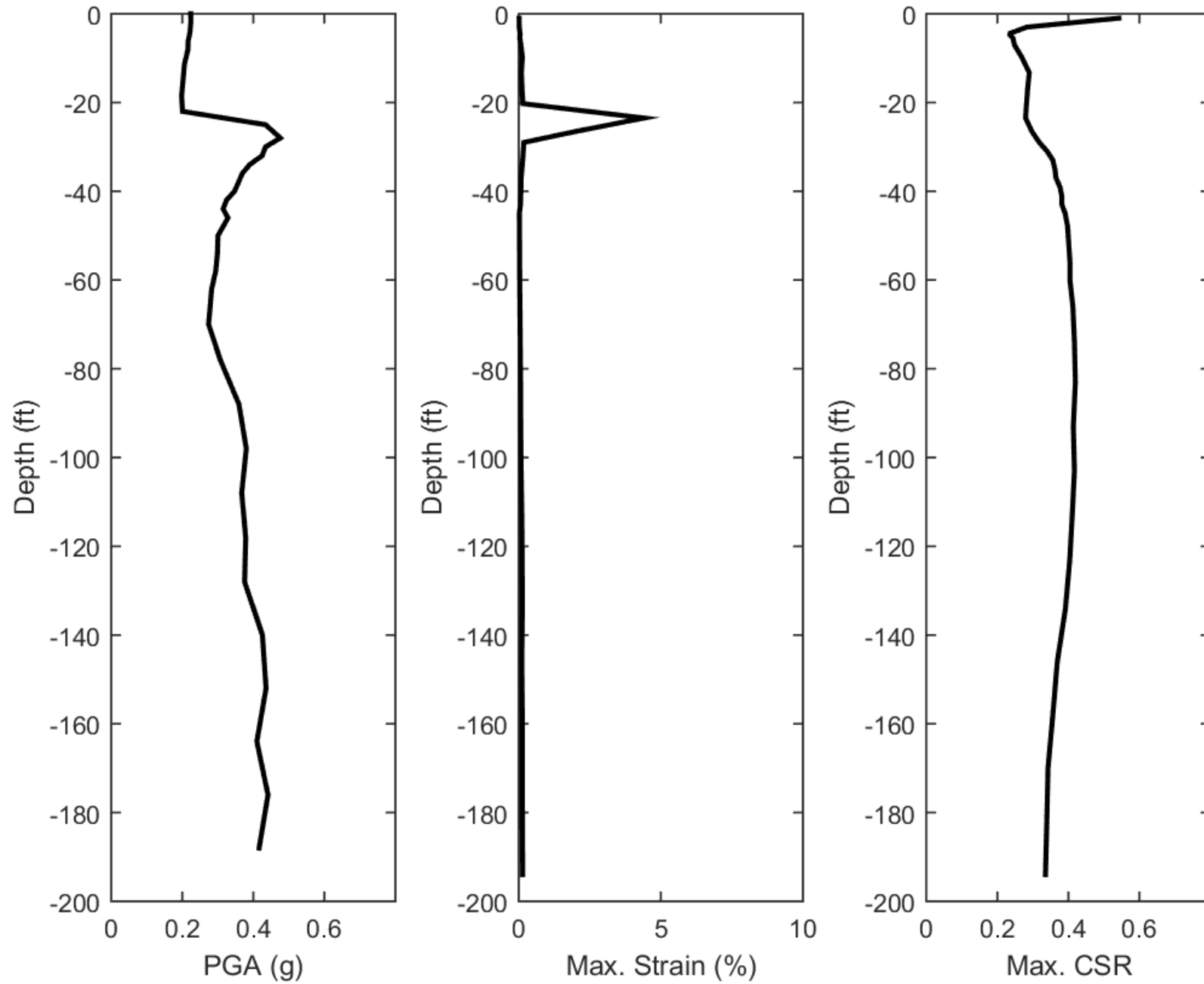
## Outputs at Ground Surface for: Total Stress Base with SEE6



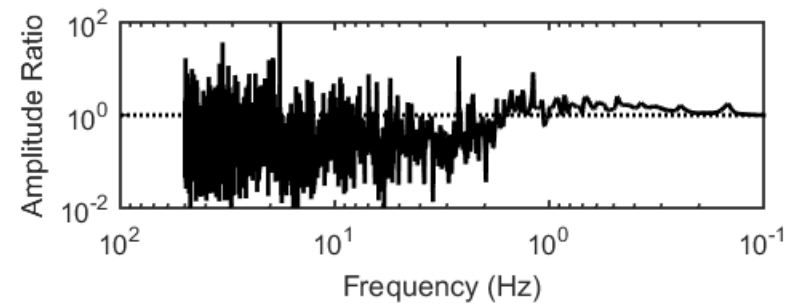
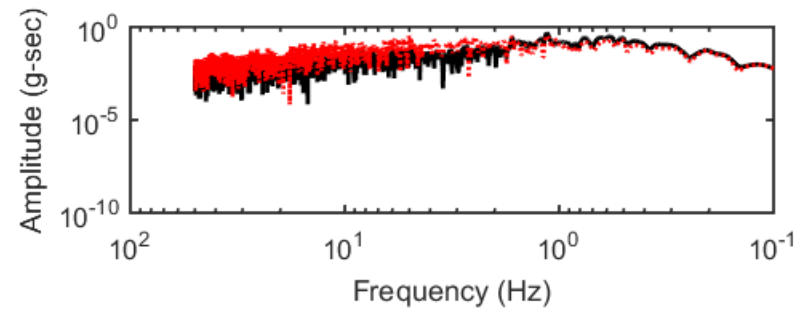
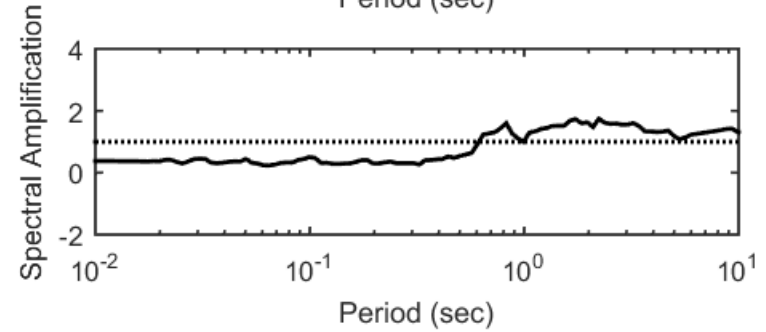
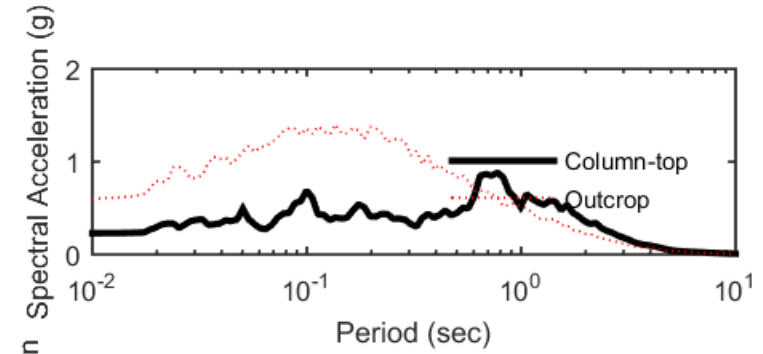
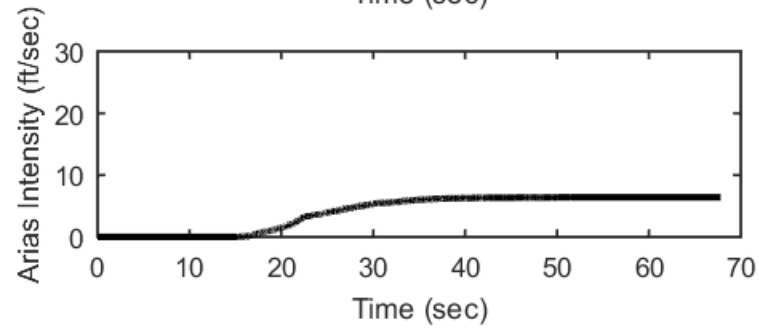
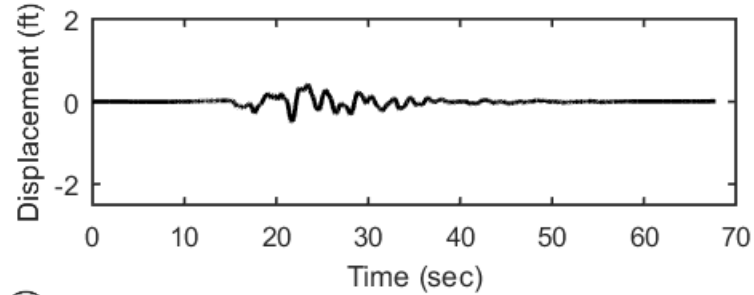
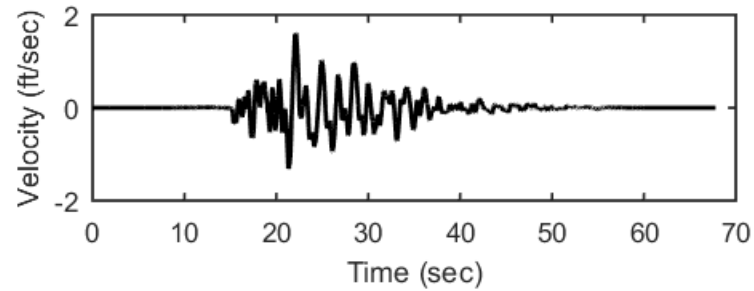
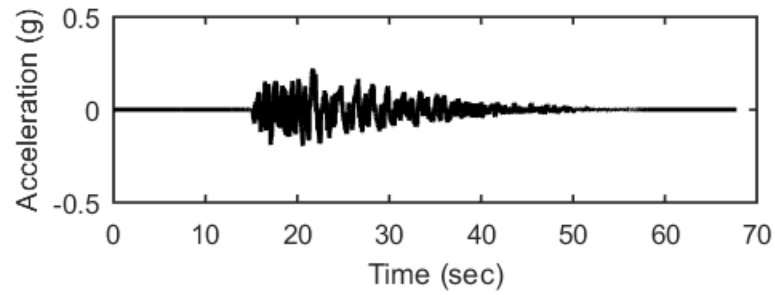
## Outputs at Top of Marl for: Total Stress Base with SEE6



# Profile outputs for: Total Stress Base with SEE6

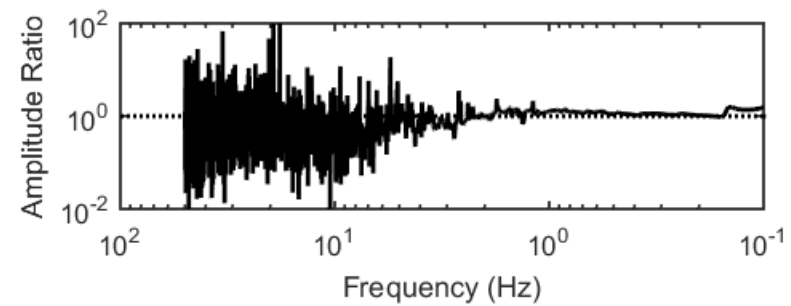
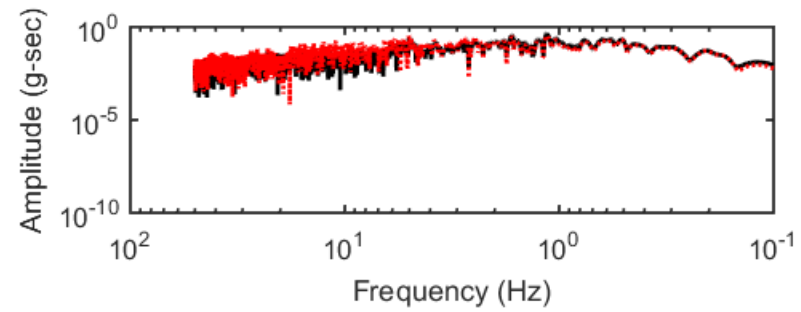
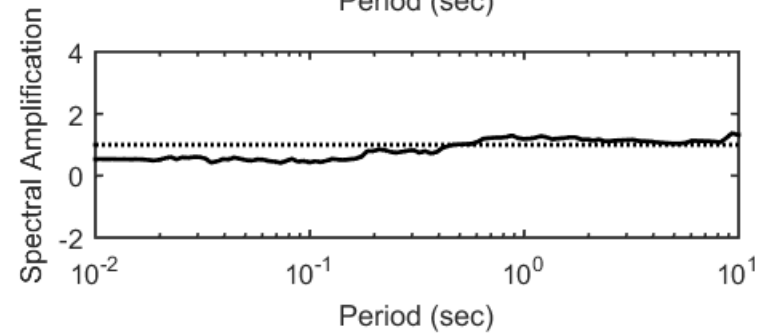
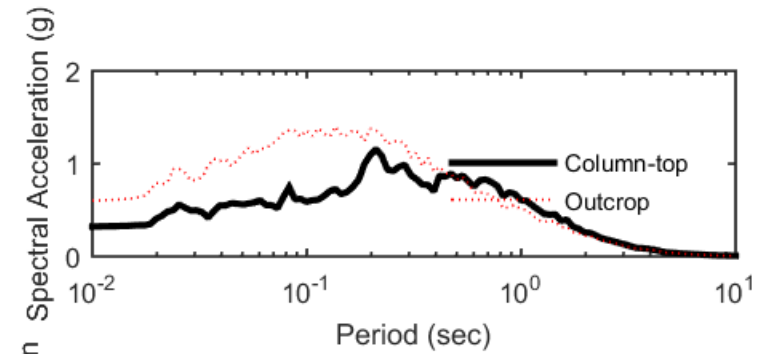
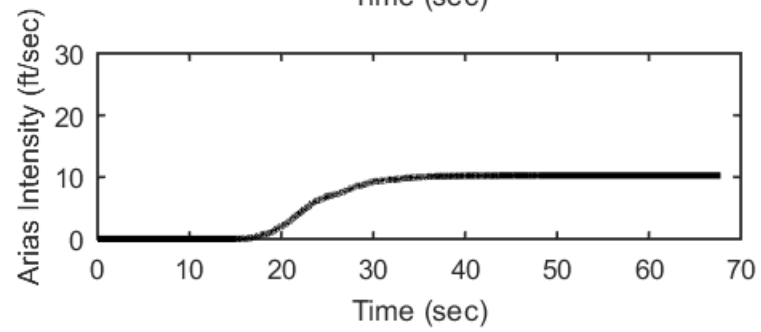
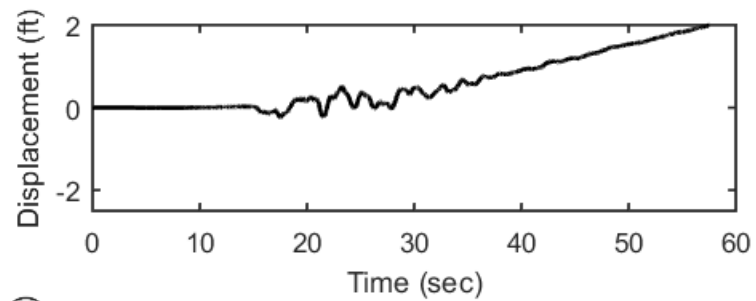
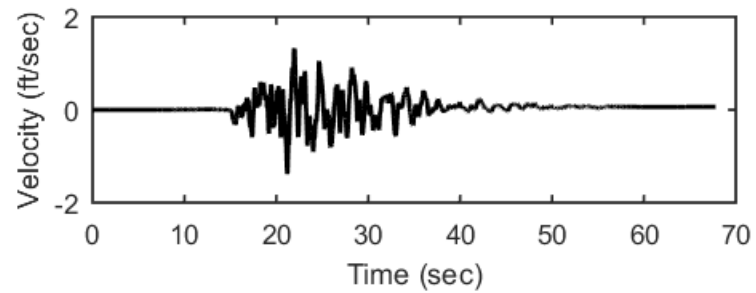
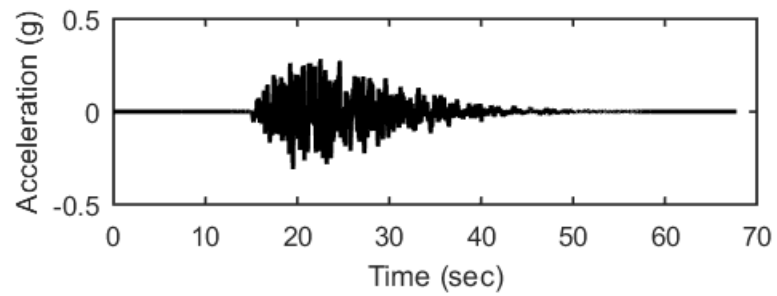


## Outputs at Ground Surface for: Total Stress Base with SEE7

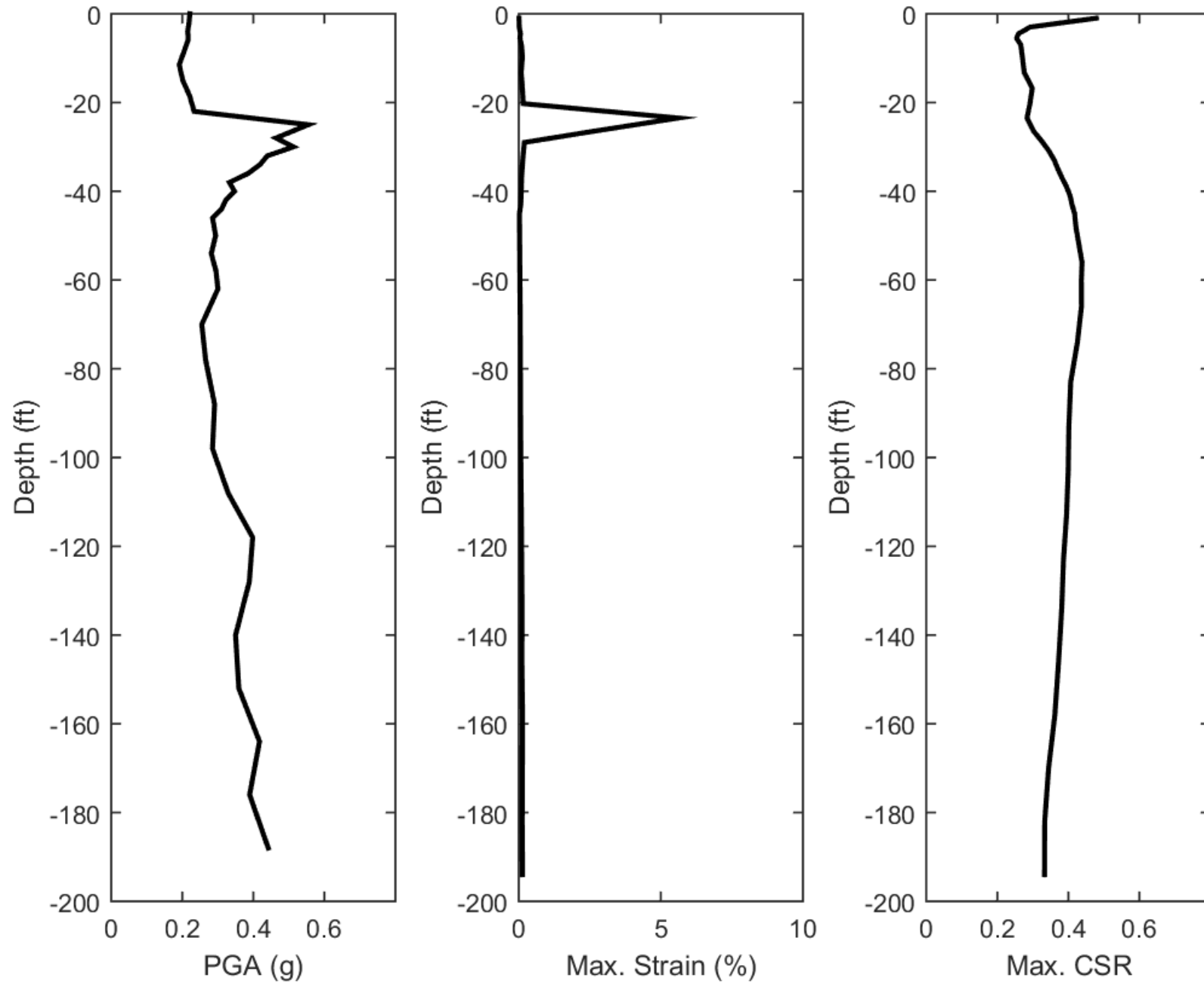




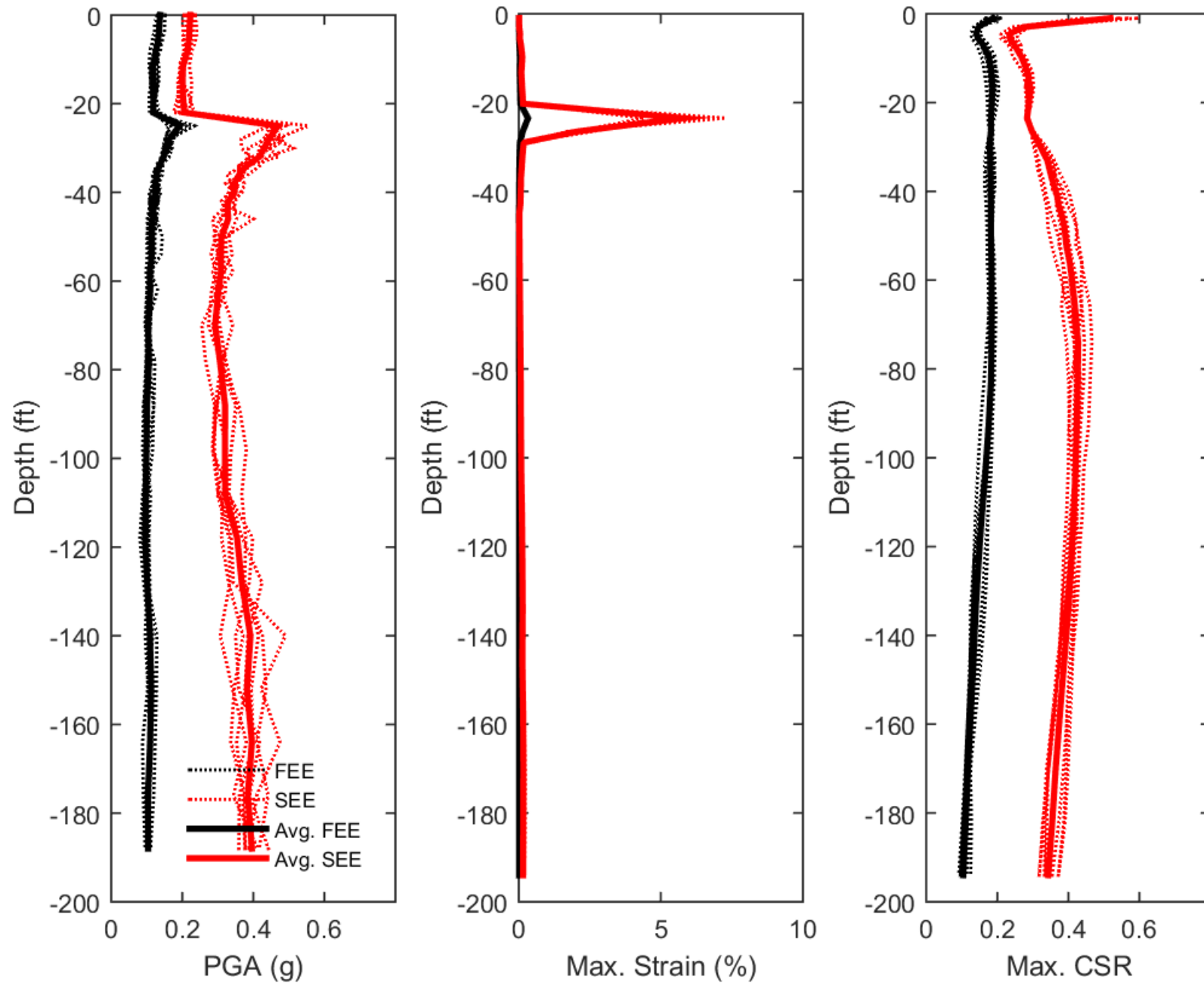
## Outputs at Top of Marl for: Total Stress Base with SEE7



### Profile outputs for: Total Stress Base with SEE7

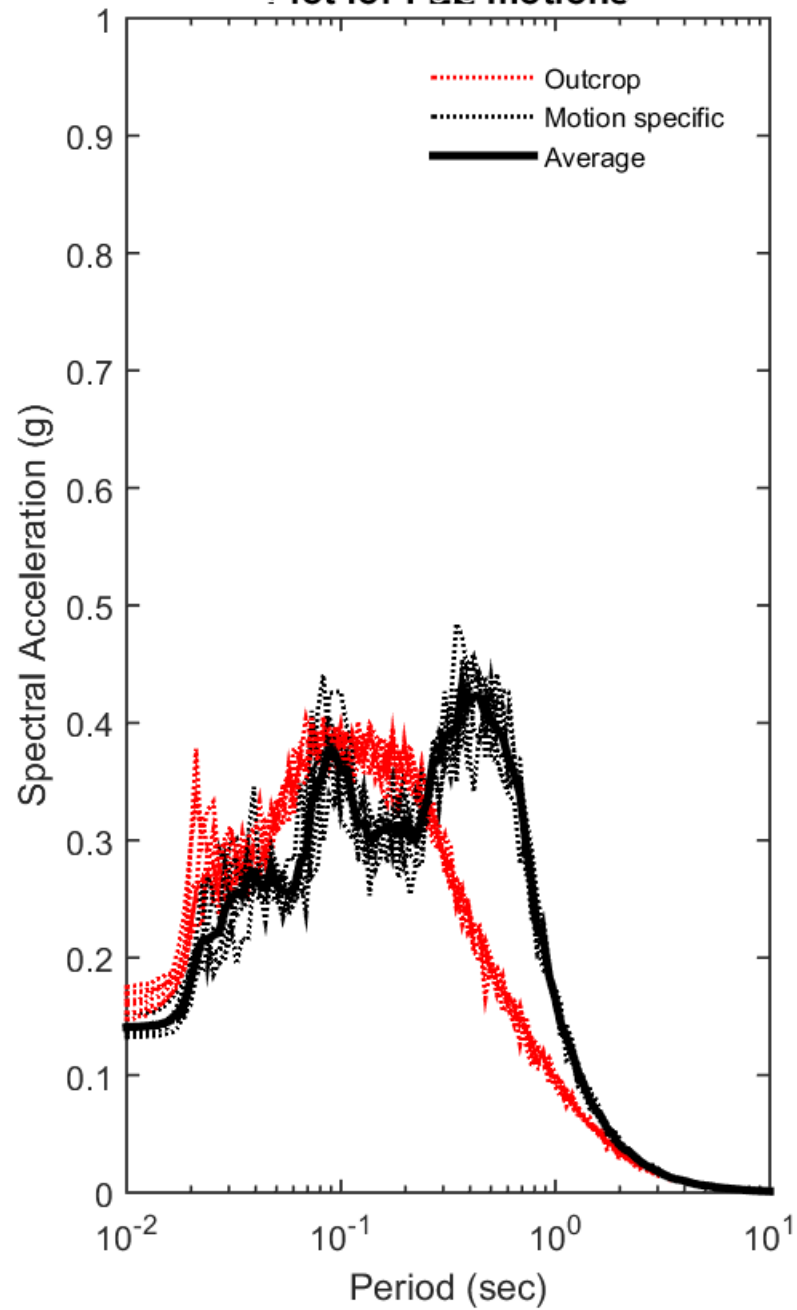


### Summary of profile outputs for: Total Stress Base

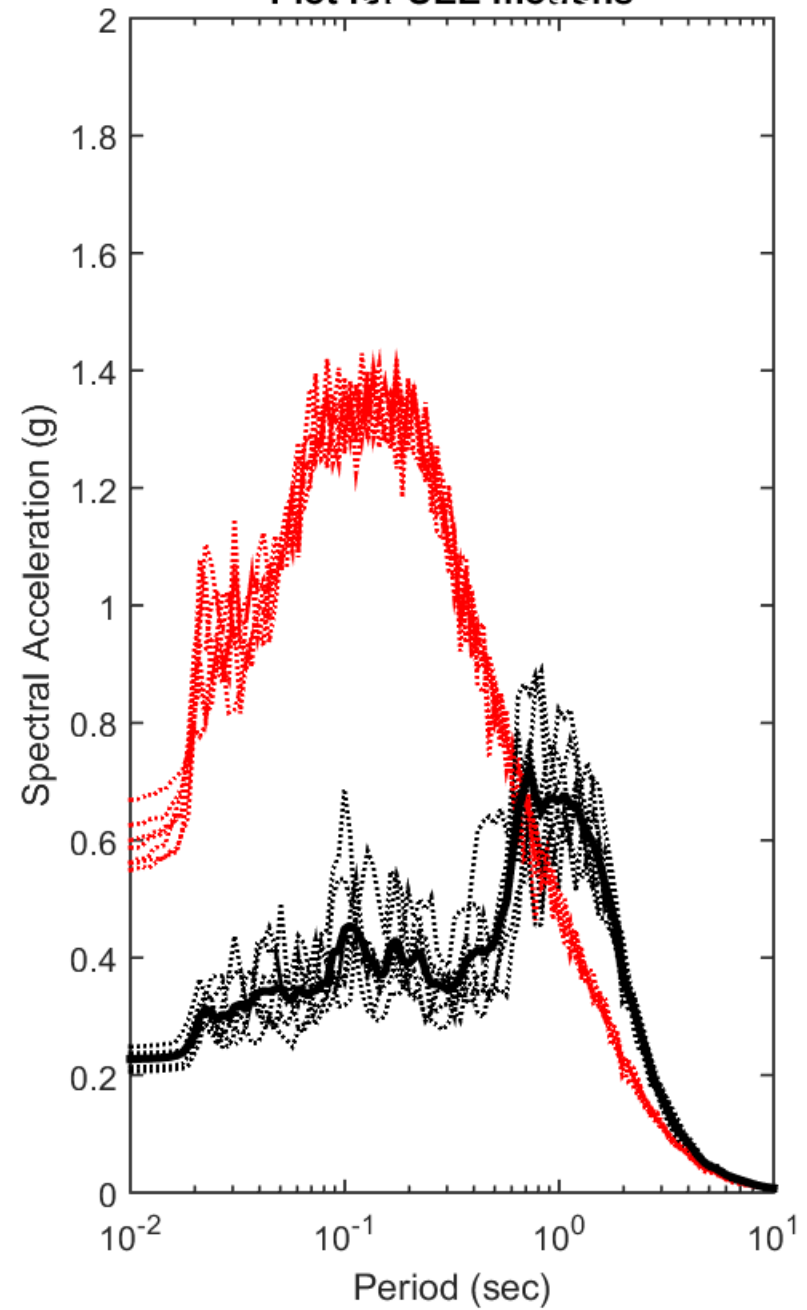


## Summary plots of RSA at ground surface for: Total Stress Base

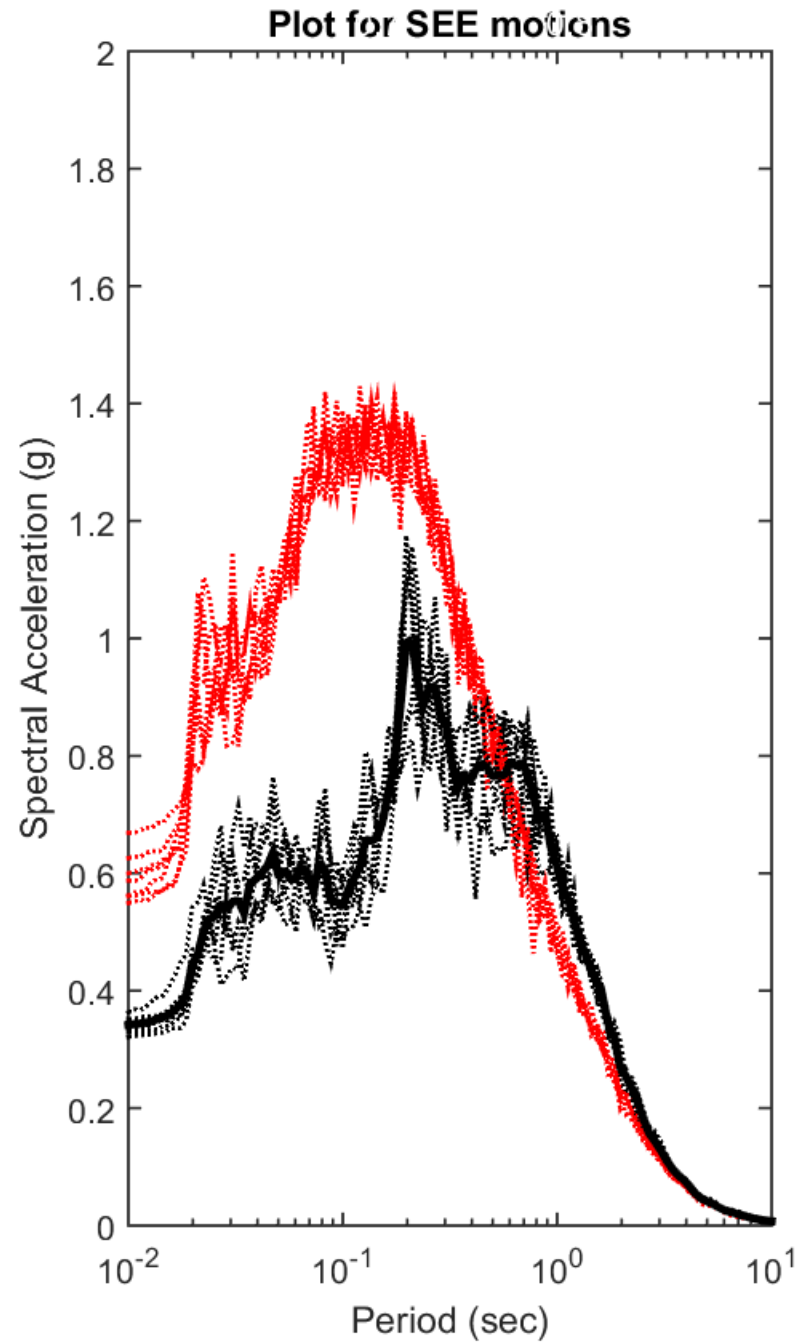
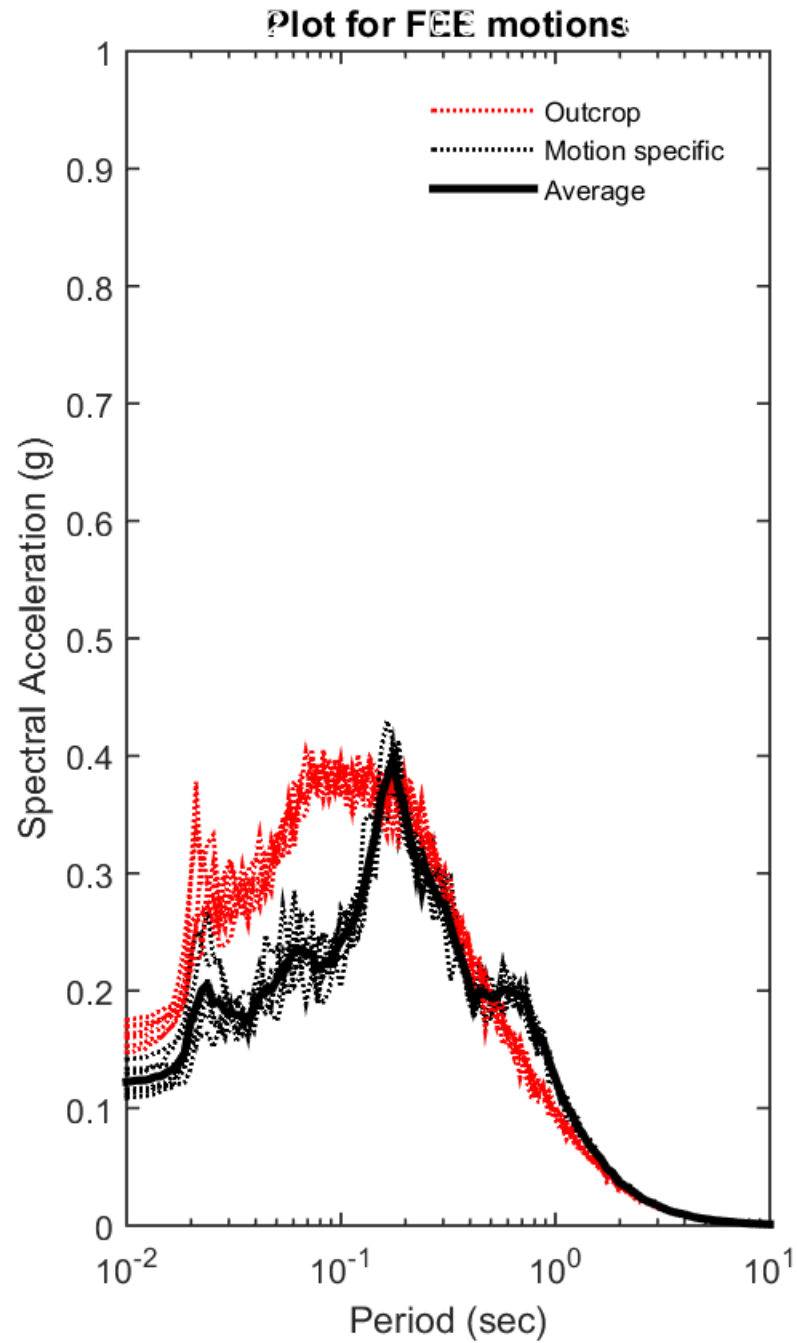
Plot for FEE motions:



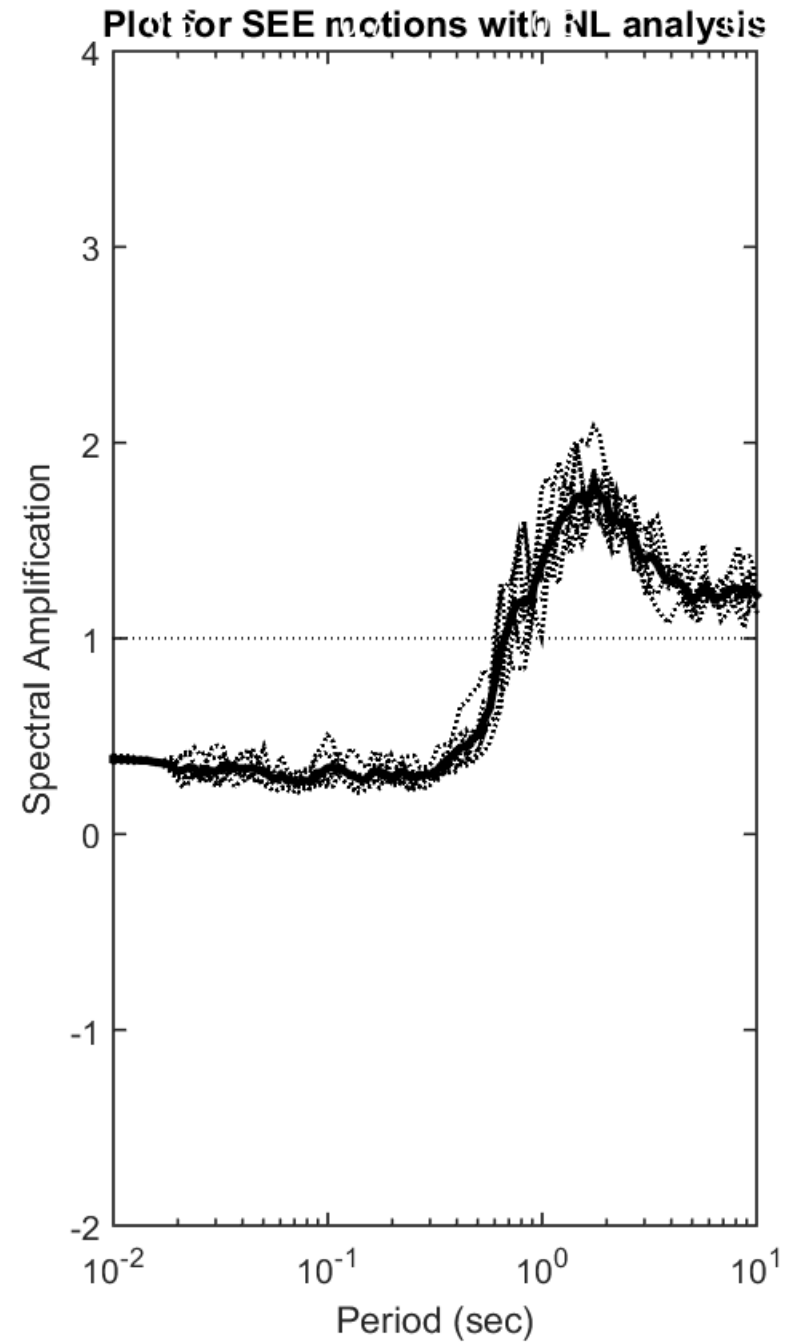
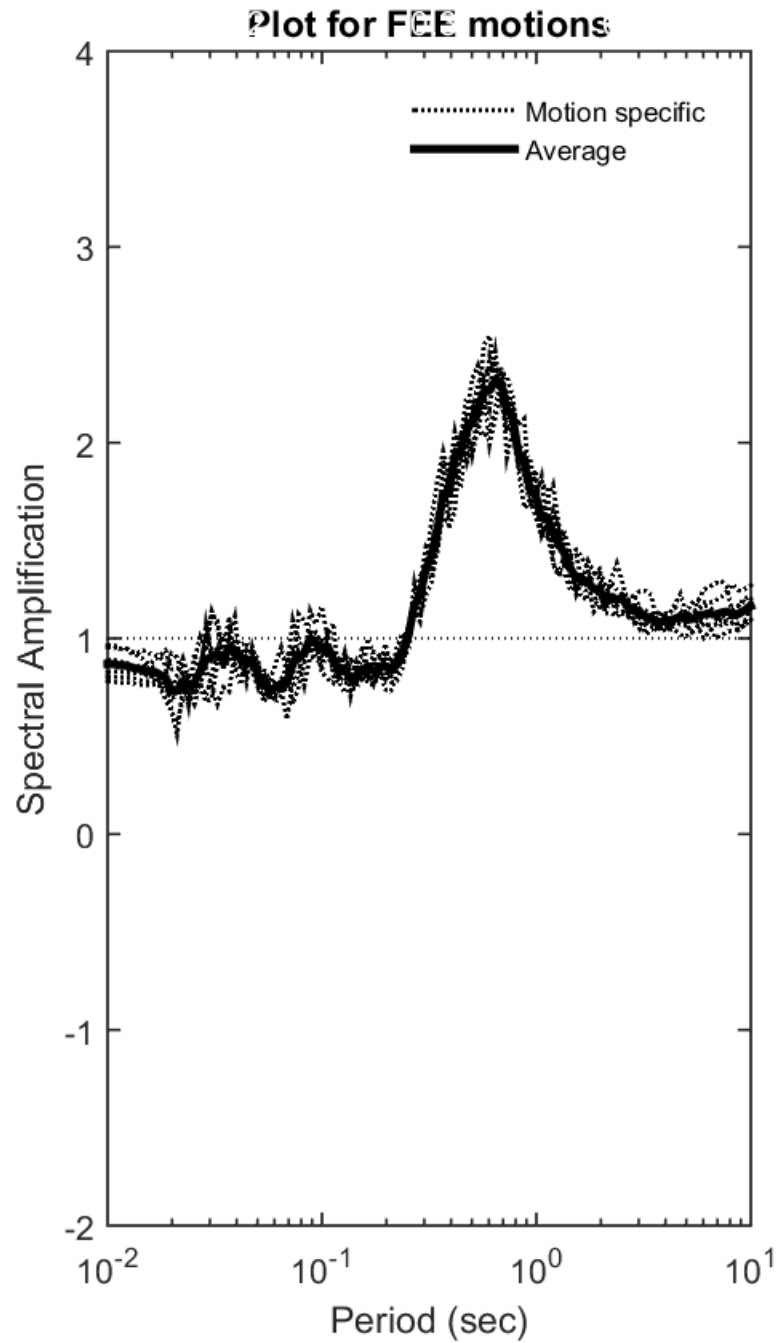
Plot for SEE motions:



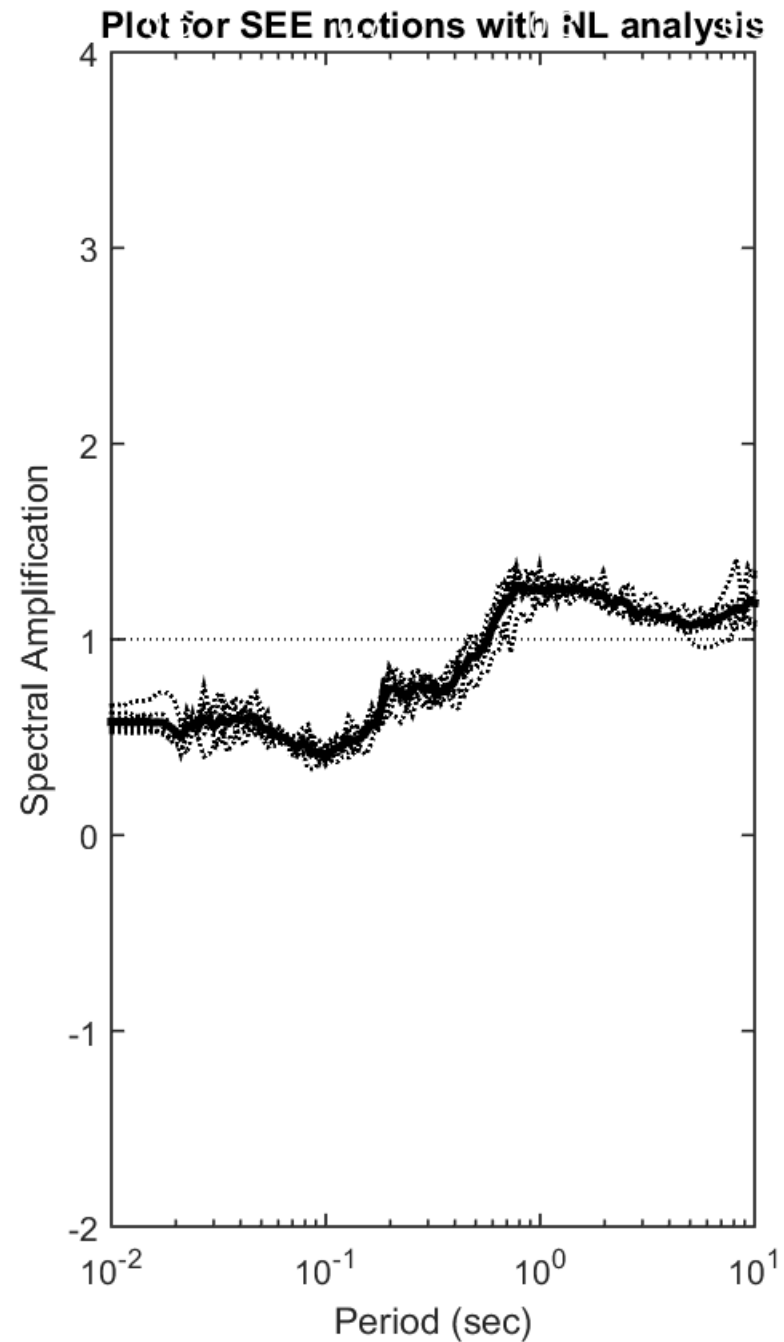
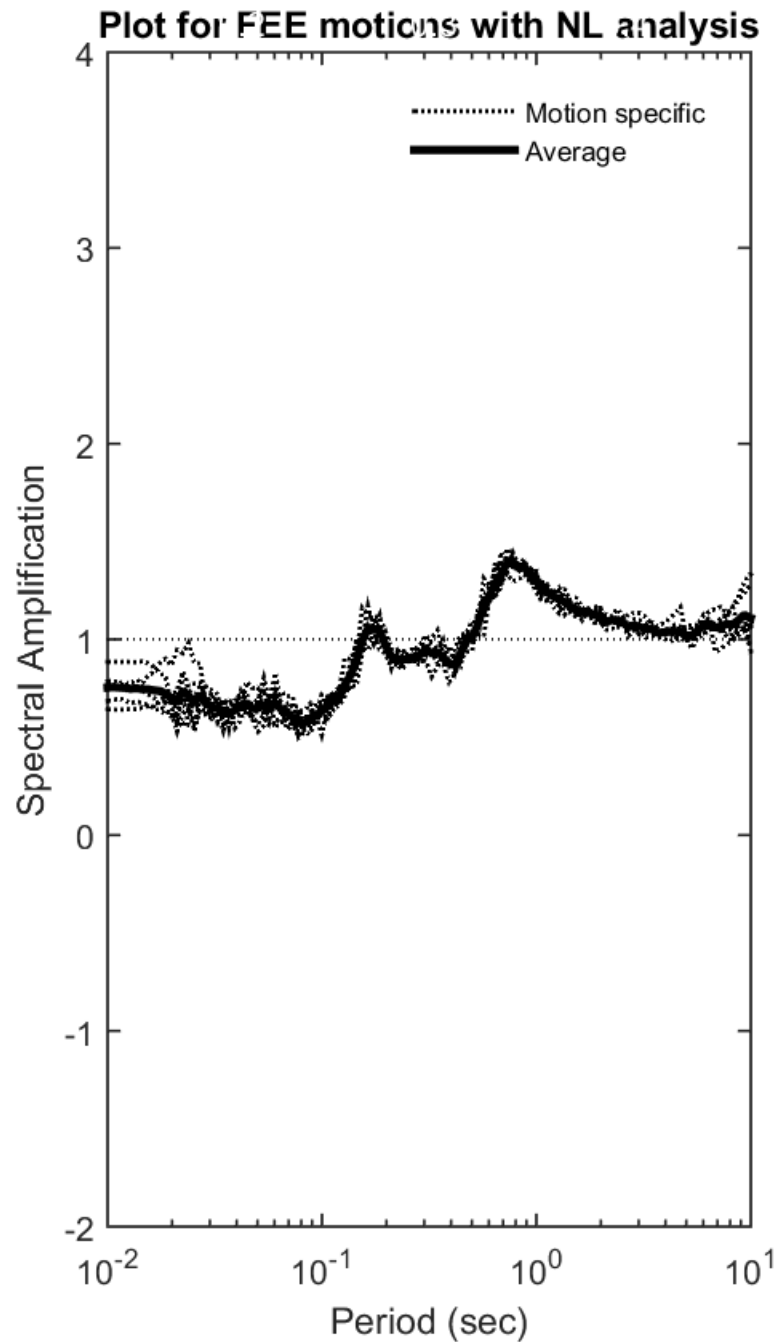
## Summary plots of RSA at top of Marl for: Total Stress Base



## Summary plots of Spectral amplifications at ground surface for: Total Stress Base



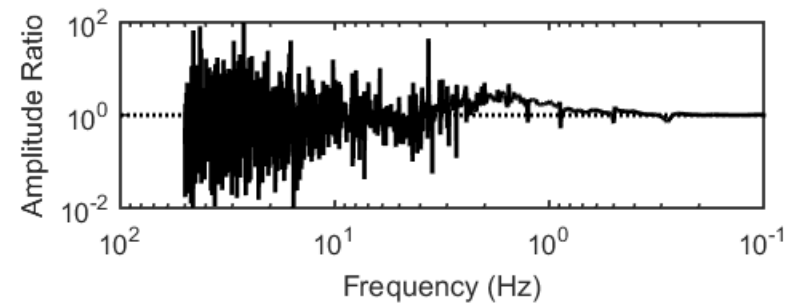
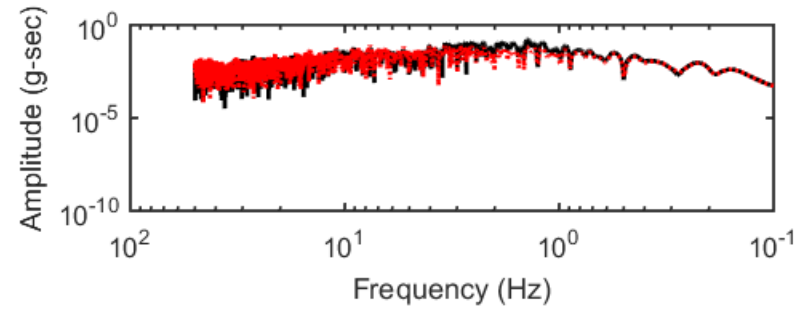
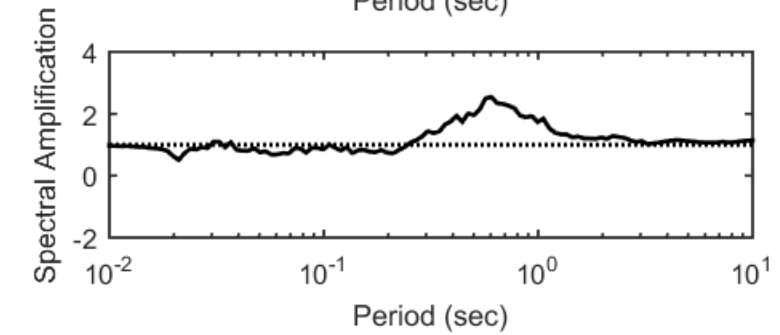
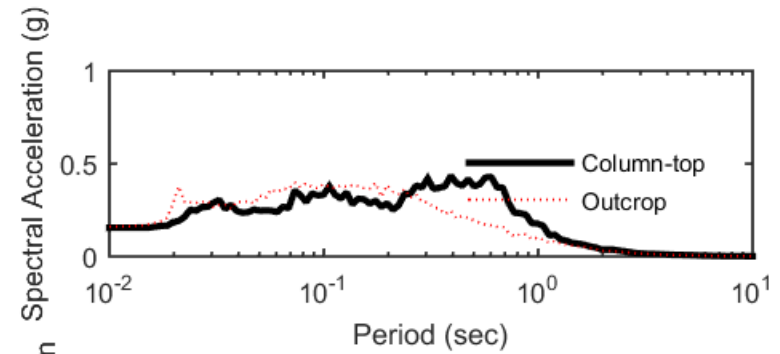
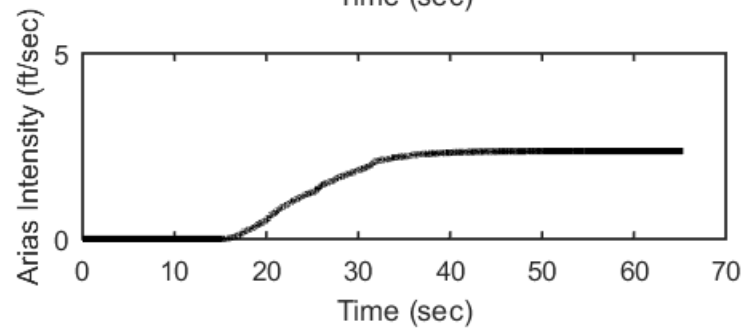
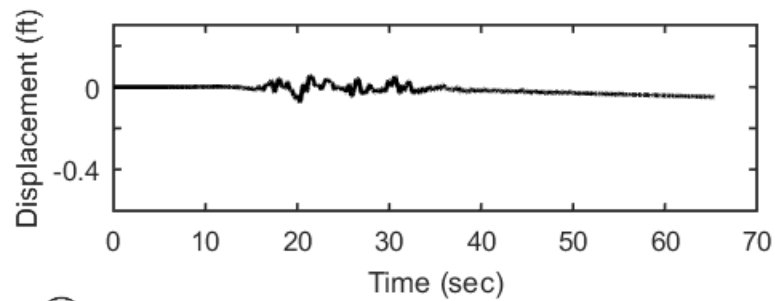
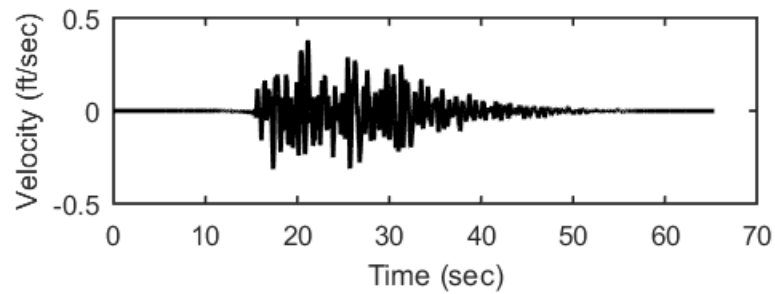
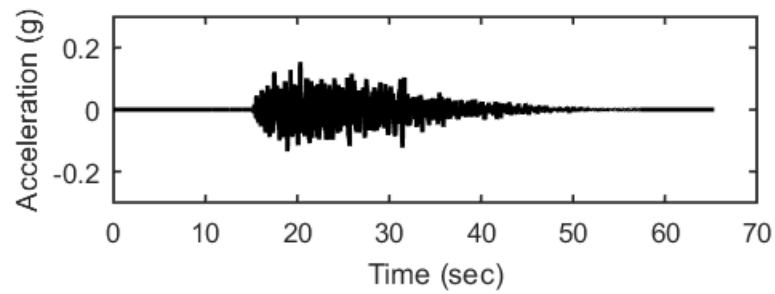
## Summary plots of Spectral amplifications at top of Marl for: Total Stress Base



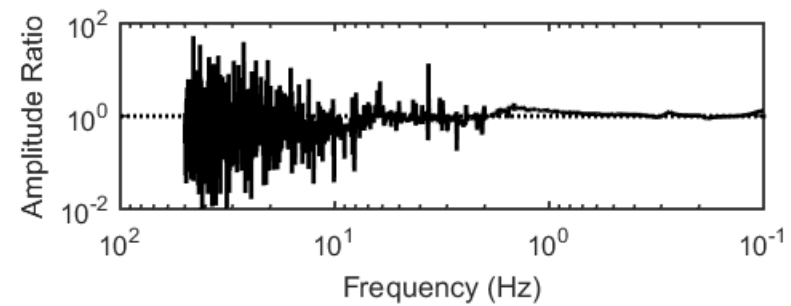
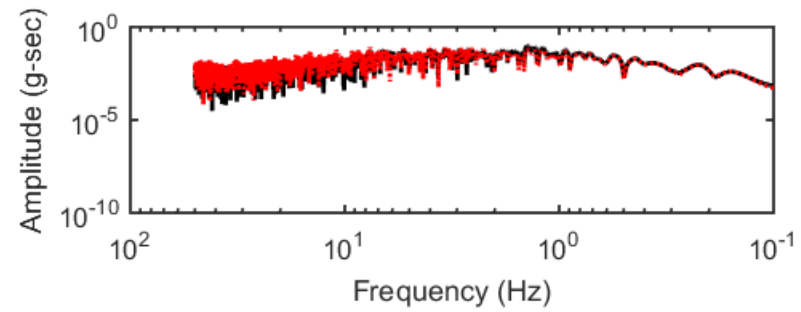
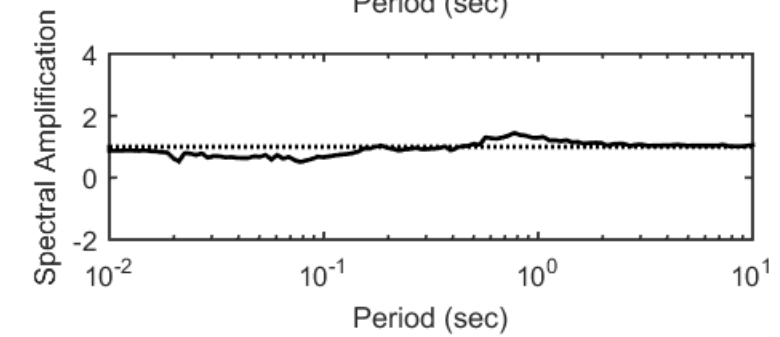
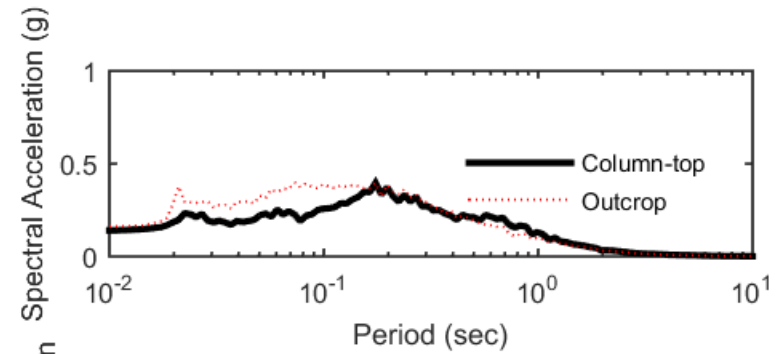
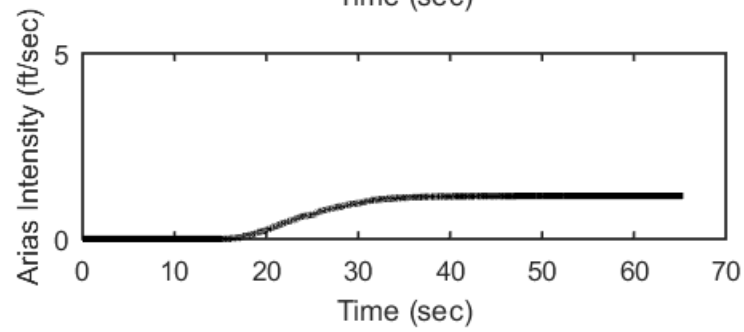
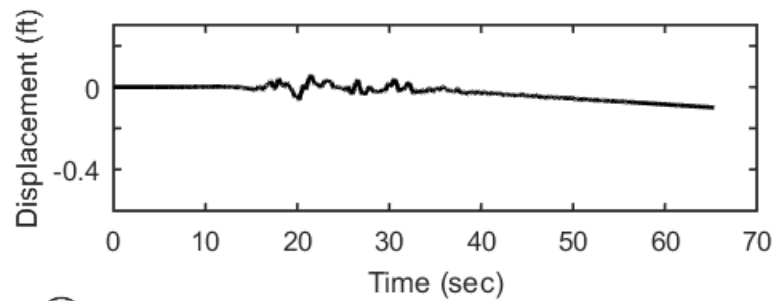
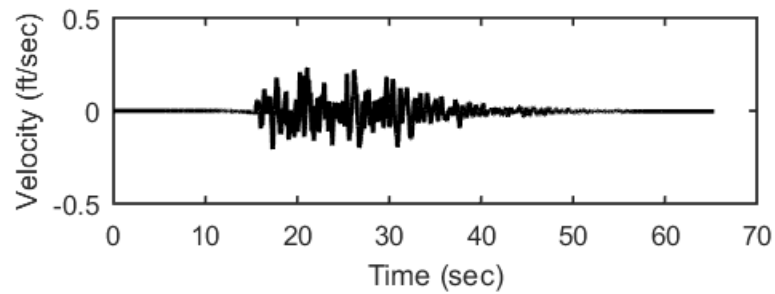
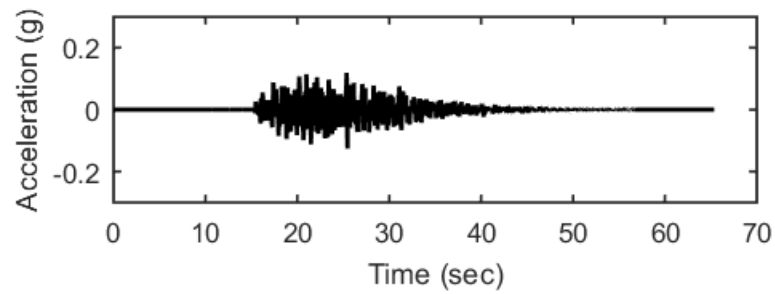
**PWP GENERATION  
200 FT BASE MODEL**



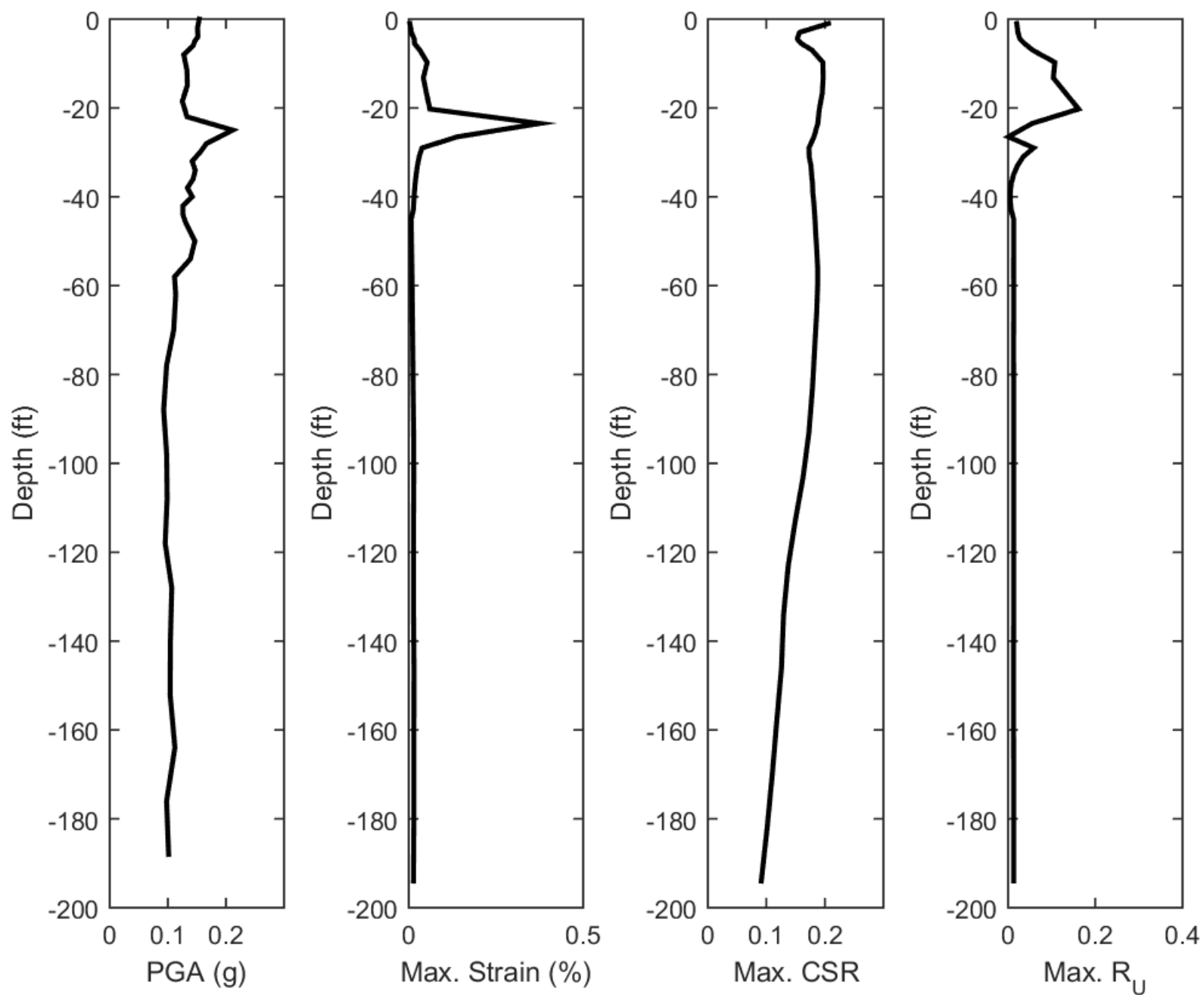
## Outputs at Ground Surface for: PWP Generation Base with FEE1



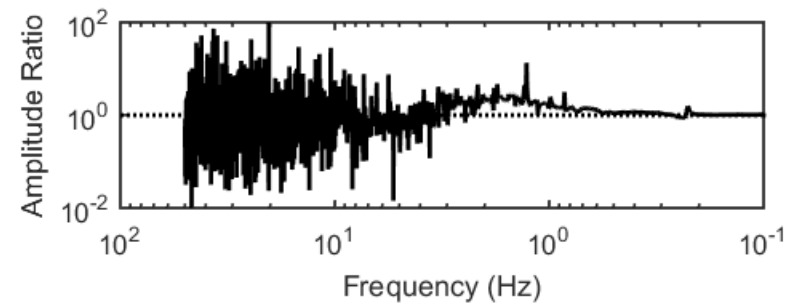
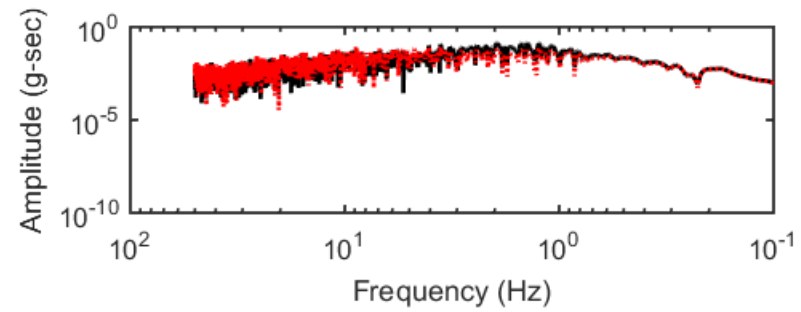
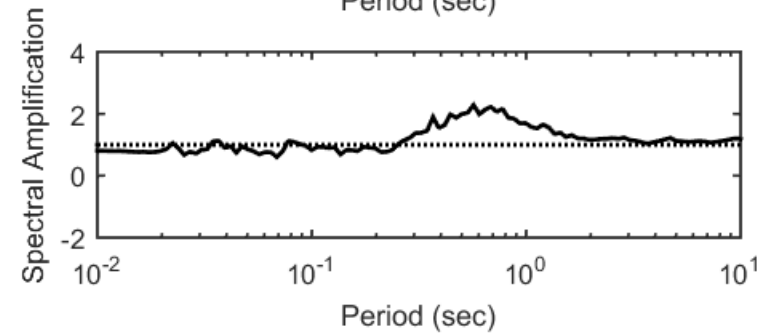
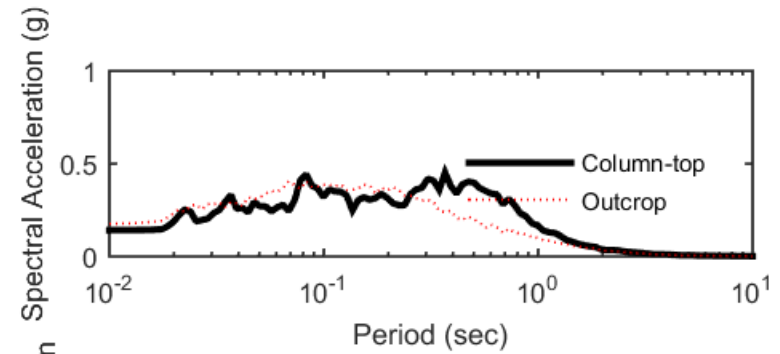
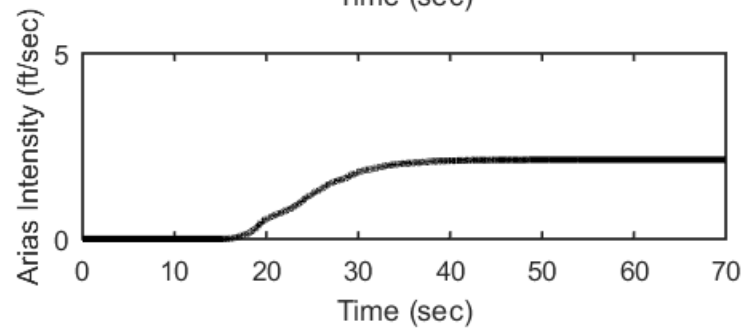
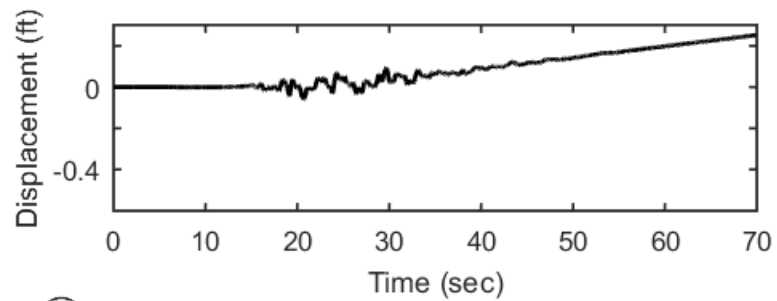
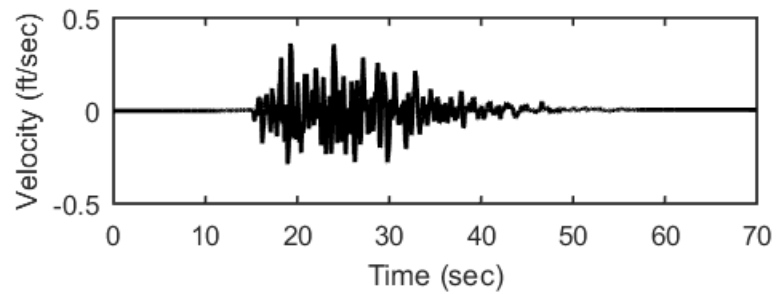
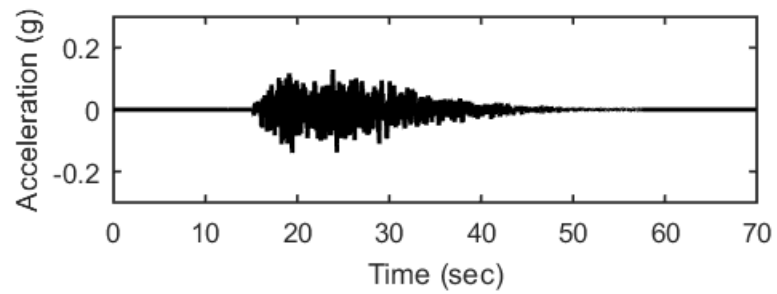
## Outputs at Top of Marl for: PWP Generation Base with FEE1



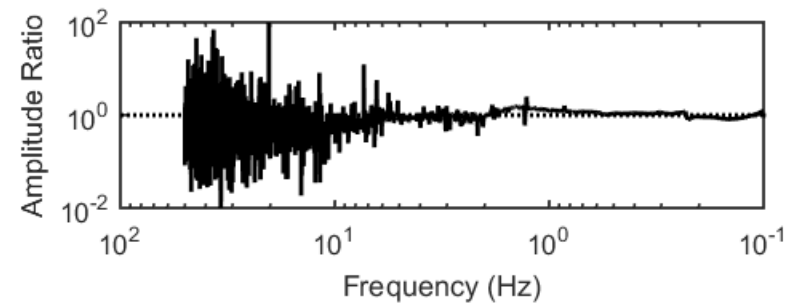
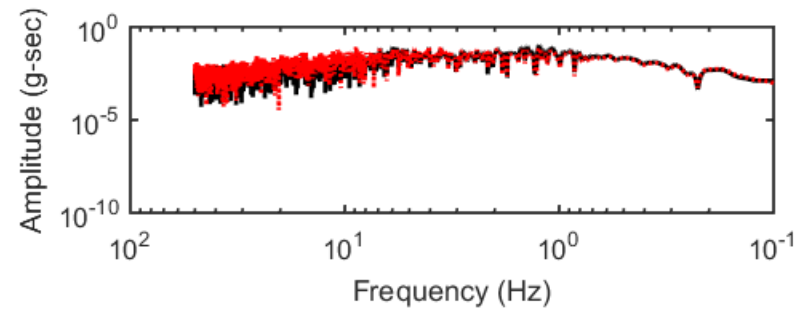
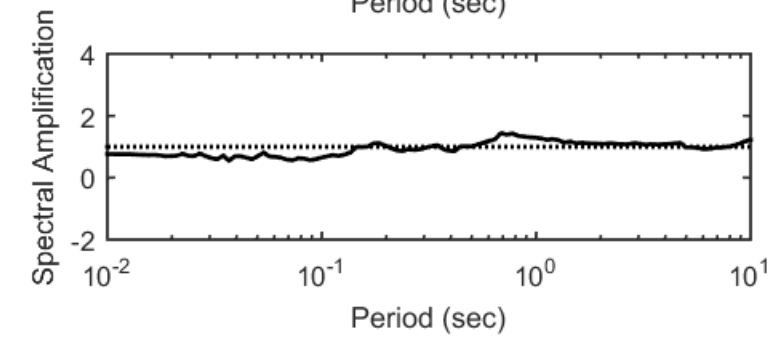
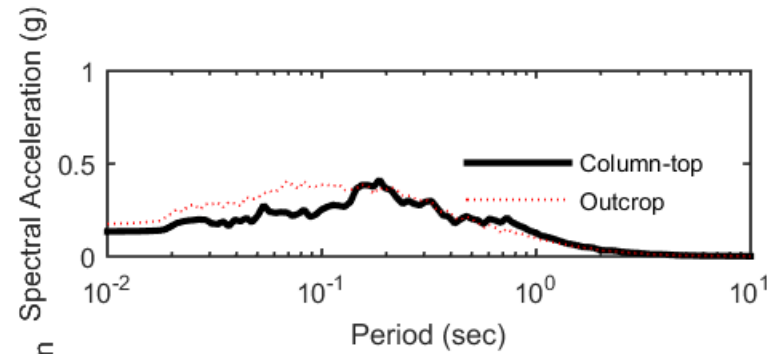
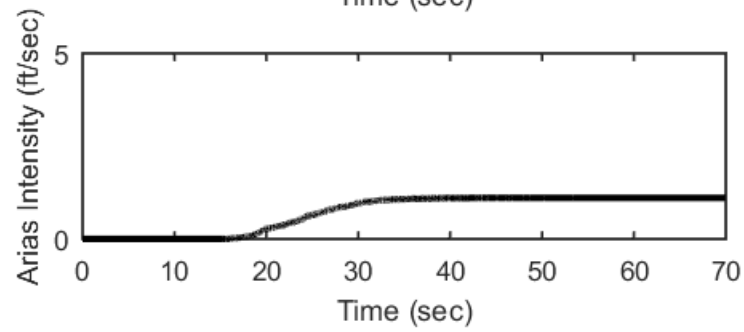
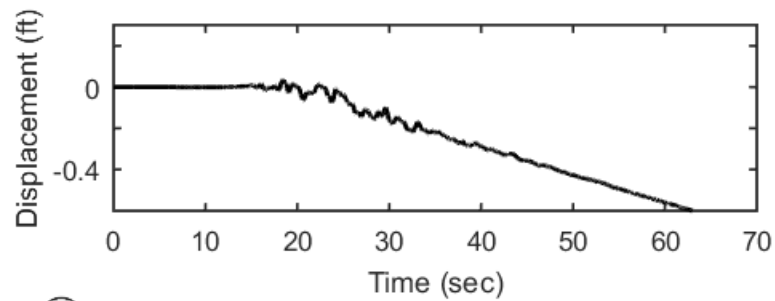
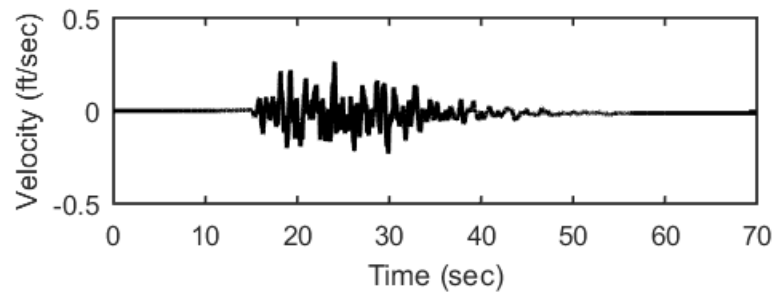
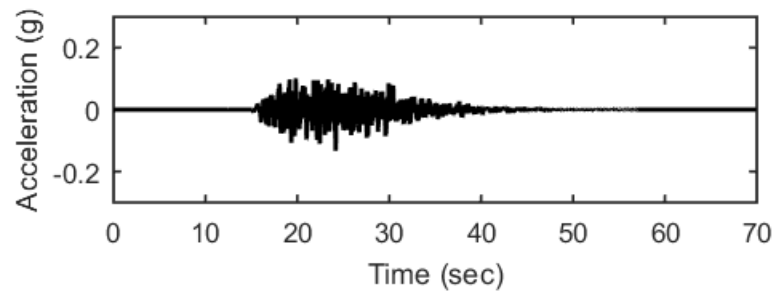
### Profile outputs for: PWP Generation Base with FEE1



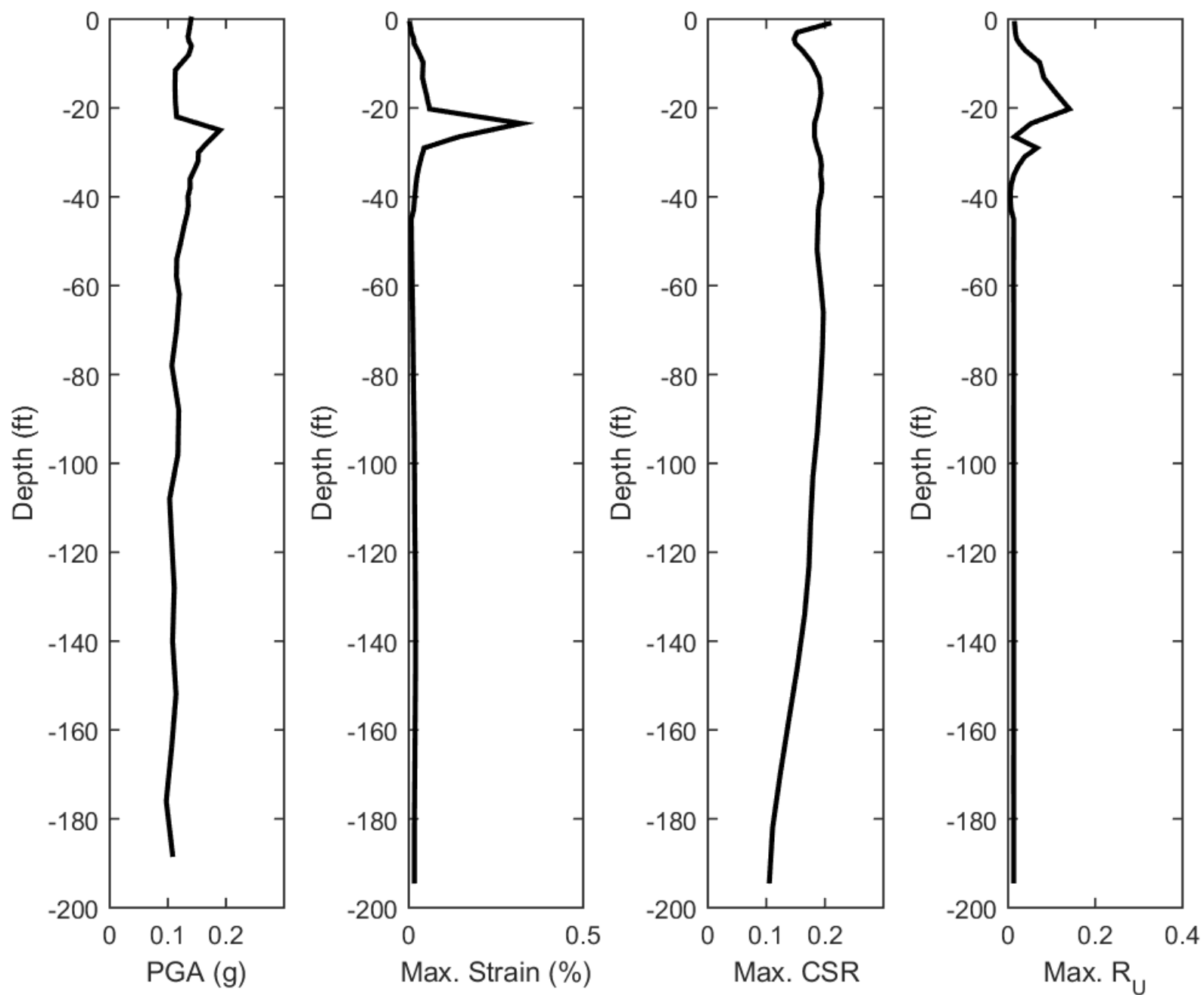
## Outputs at Ground Surface for: PWP Generation Base with FEE2



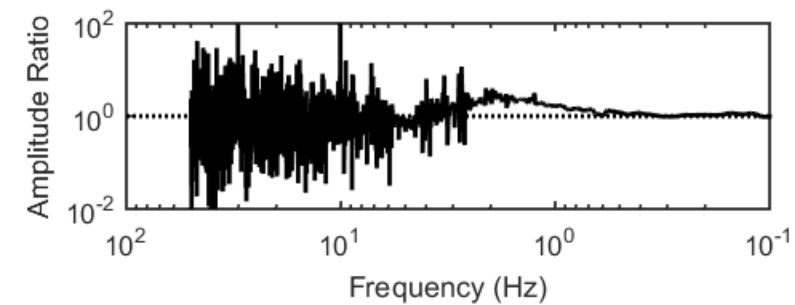
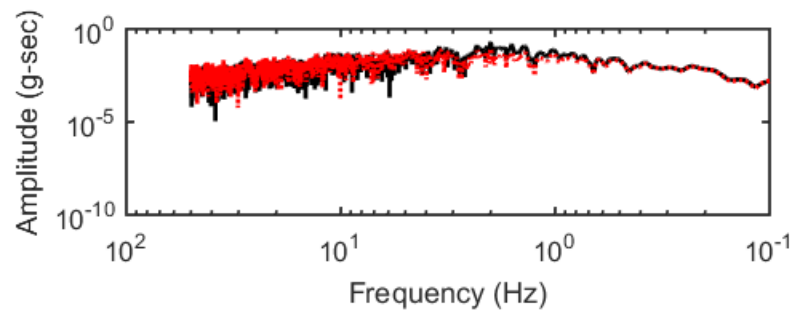
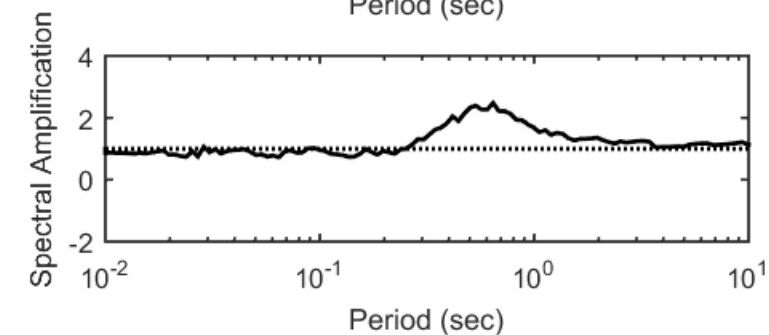
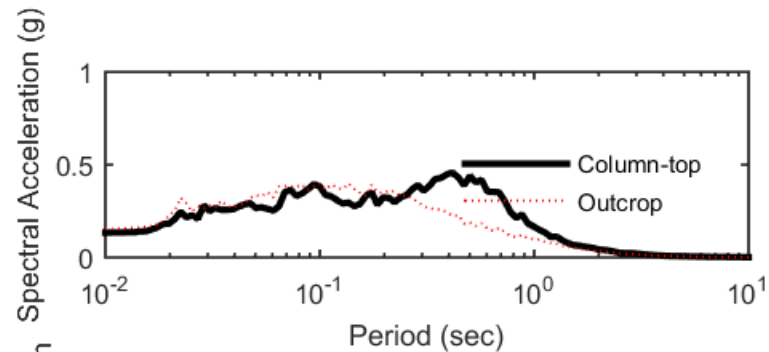
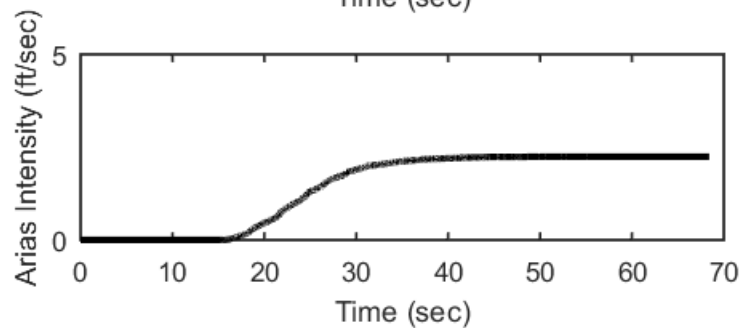
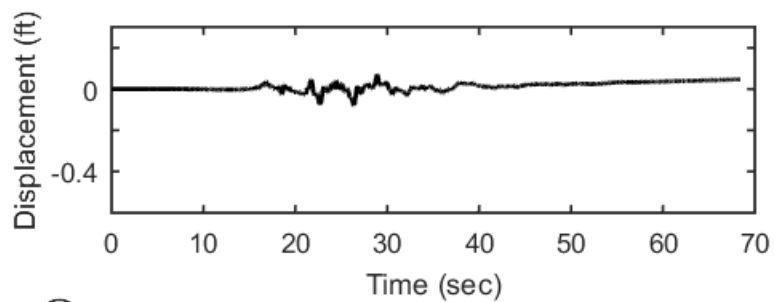
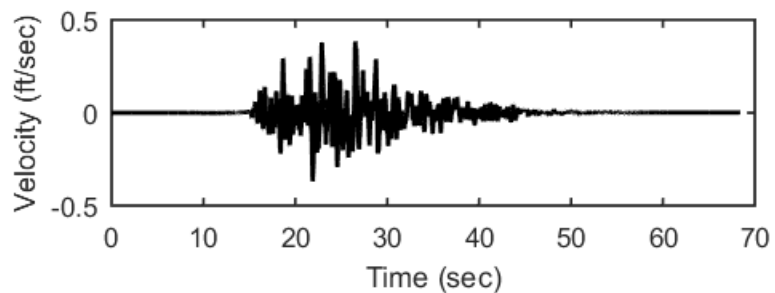
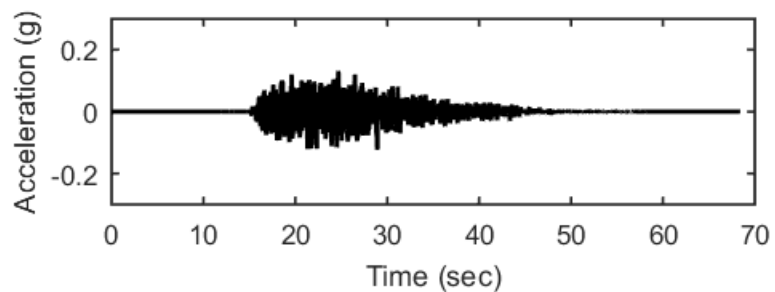
## Outputs at Top of Marl for: PWP Generation Base with FEE2



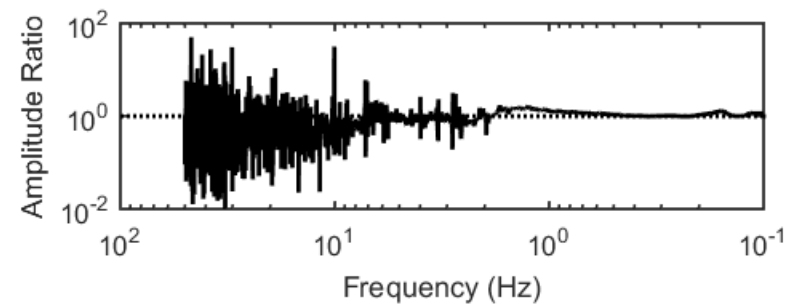
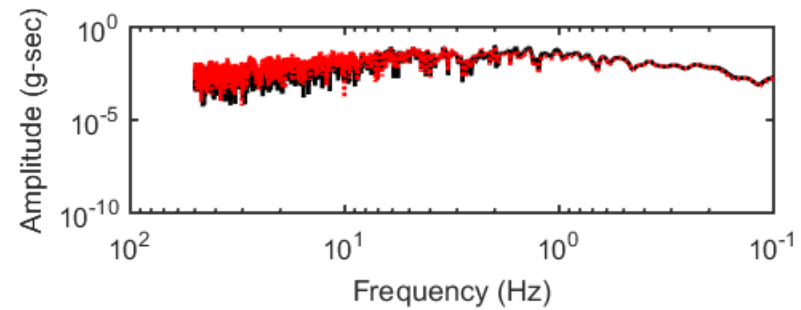
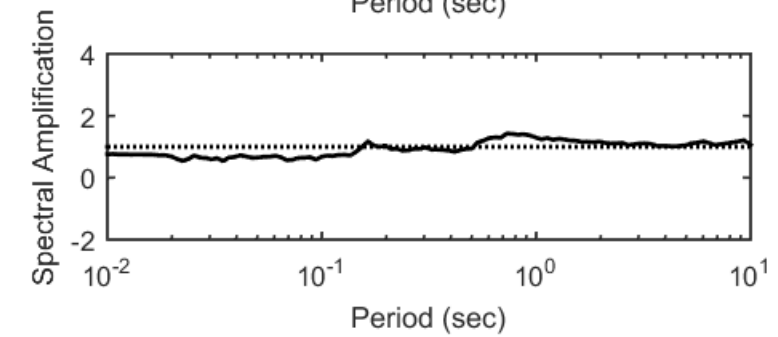
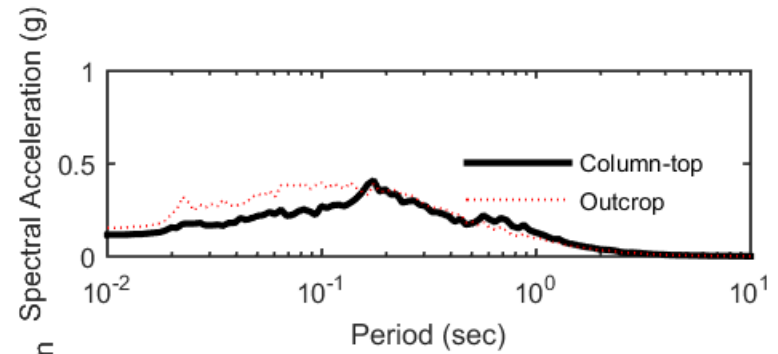
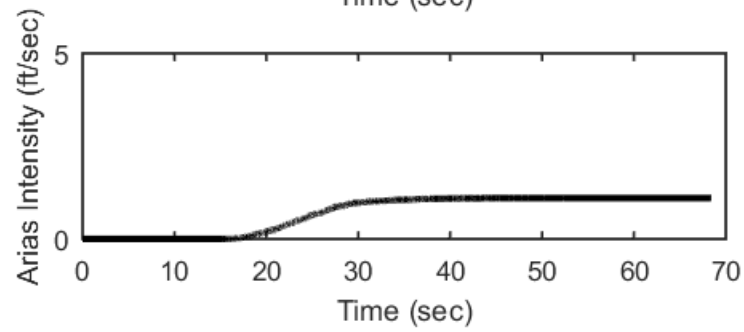
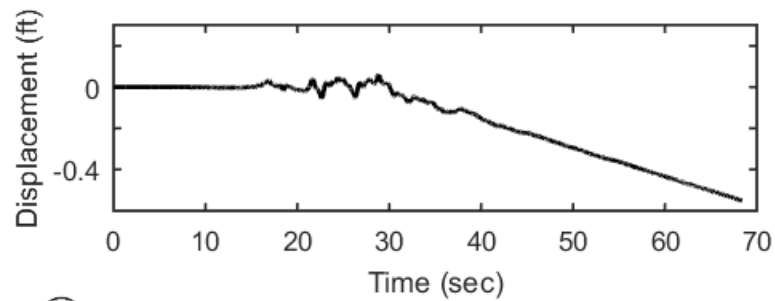
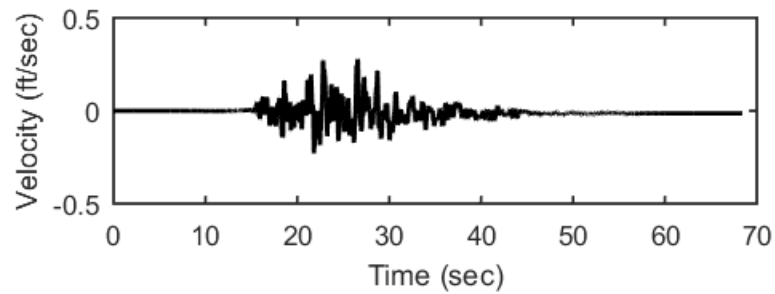
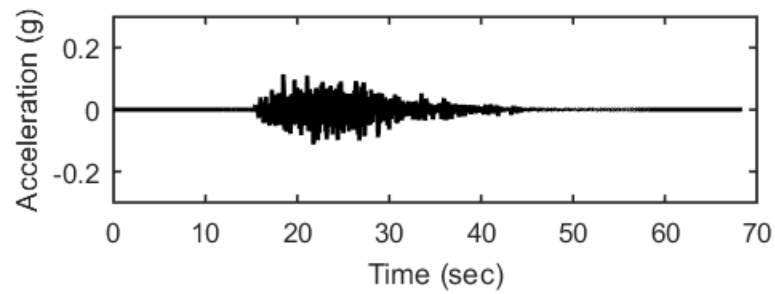
### Profile outputs for: PWP Generation Base with FEE2



## Outputs at Ground Surface for: PWP Generation Base with FEE3

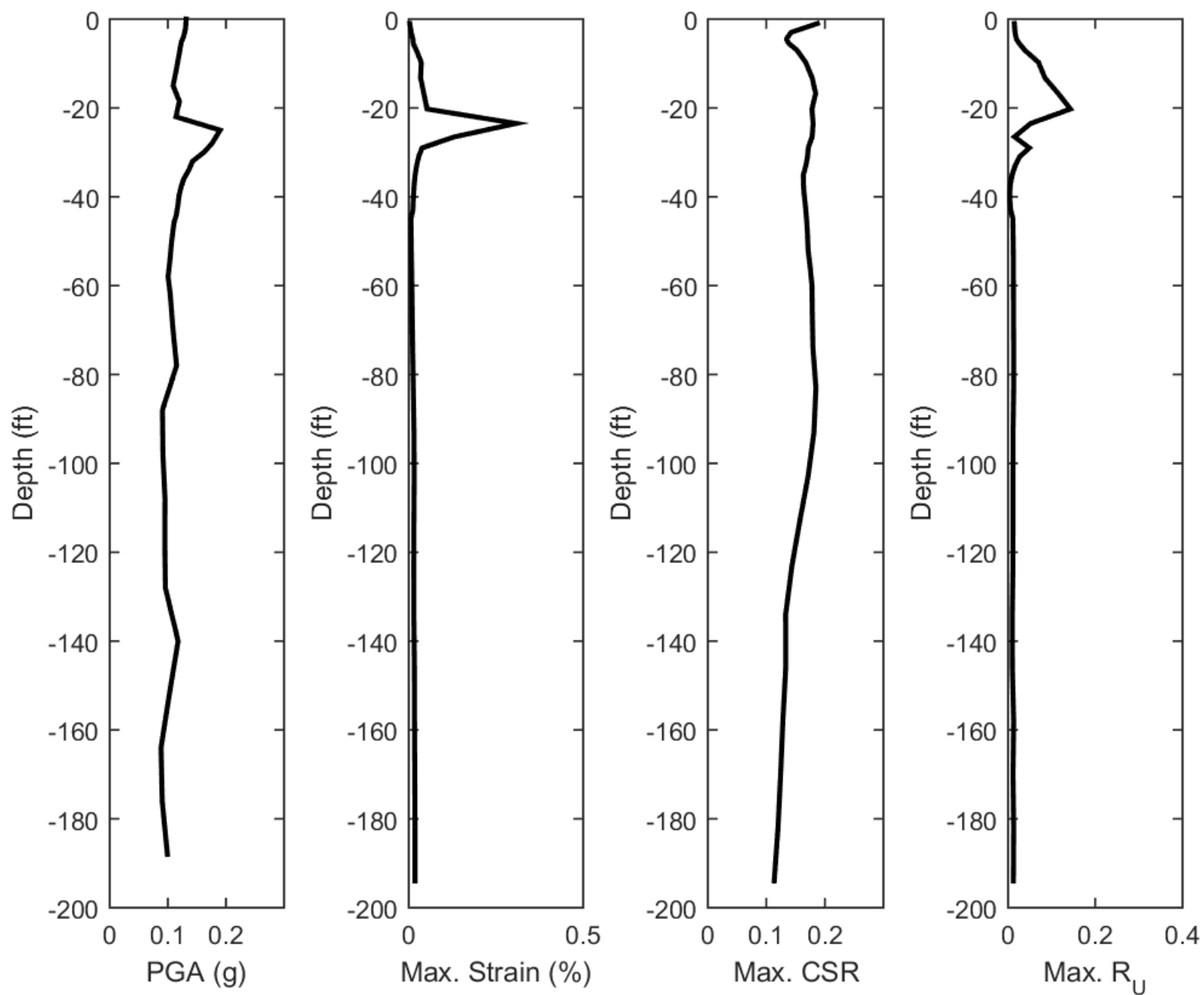


## Outputs at Top of Marl for: PWP Generation Base with FEE3

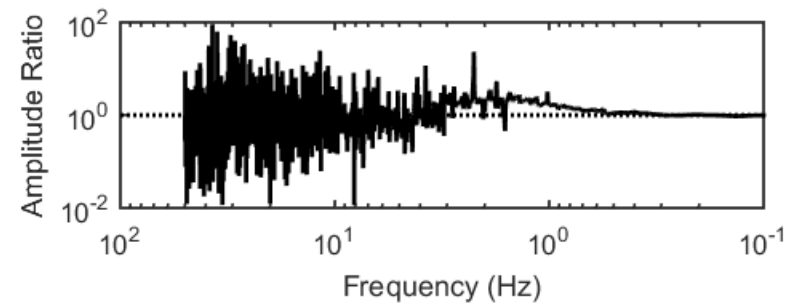
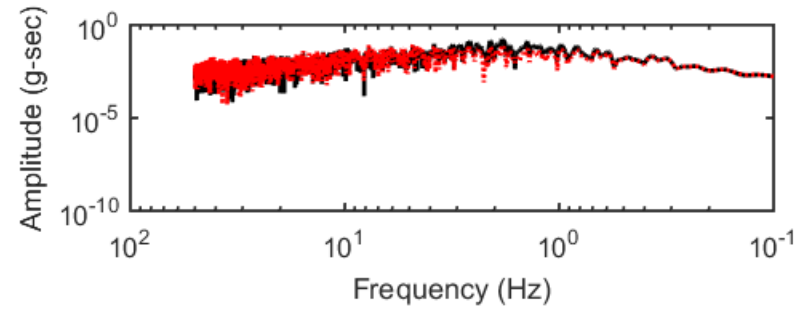
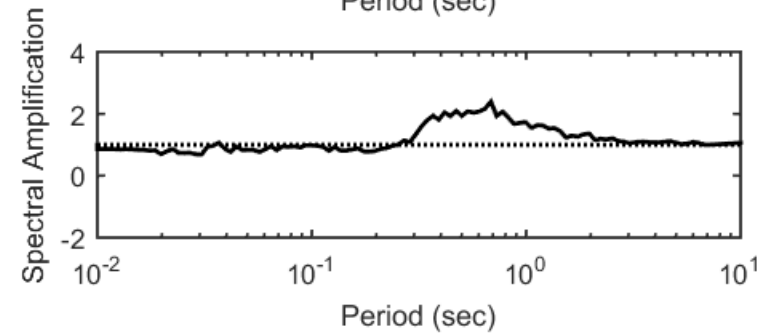
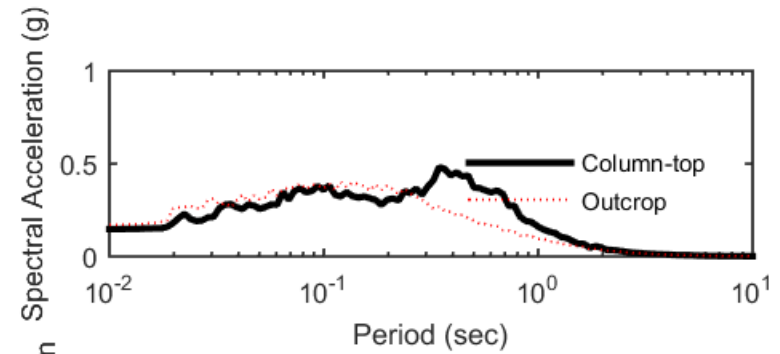
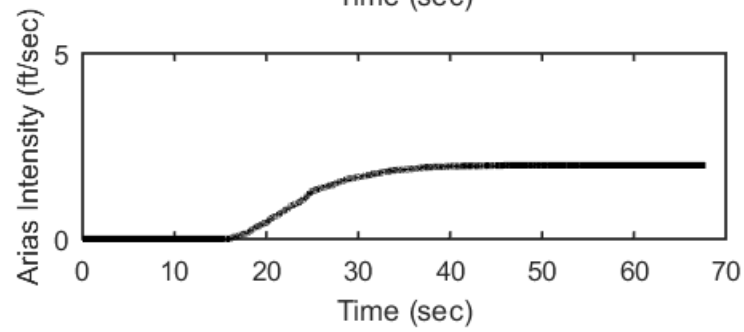
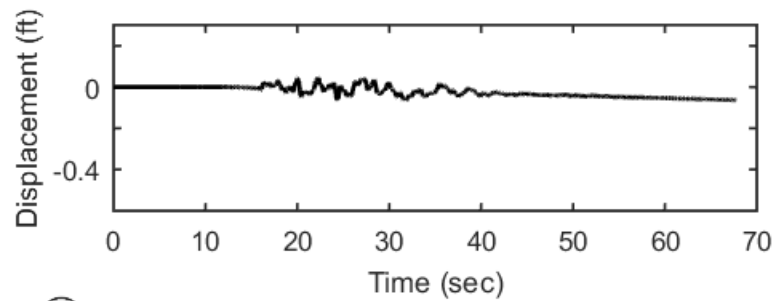
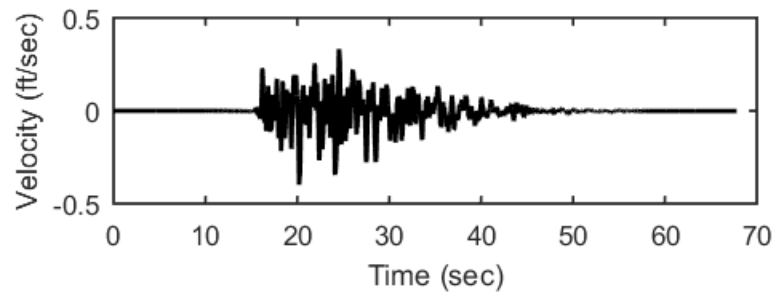
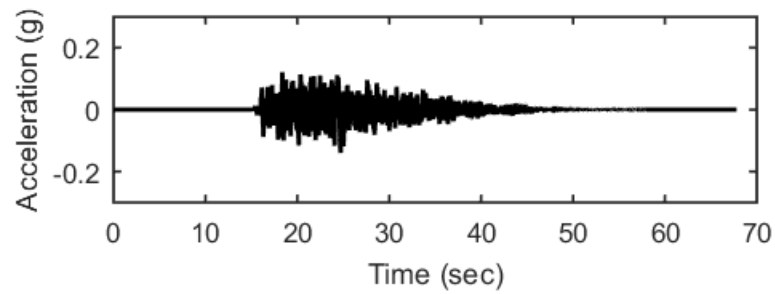




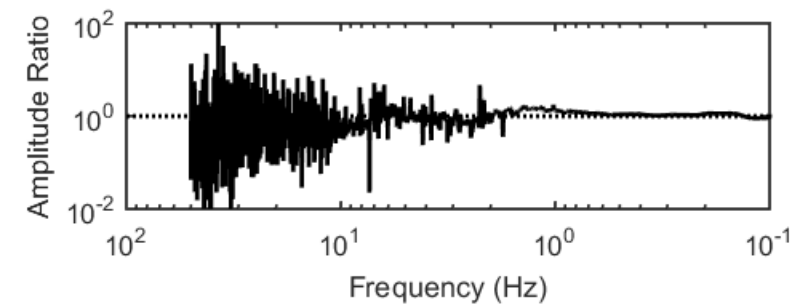
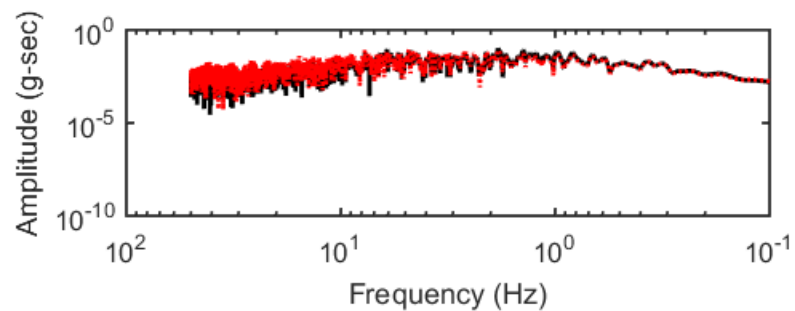
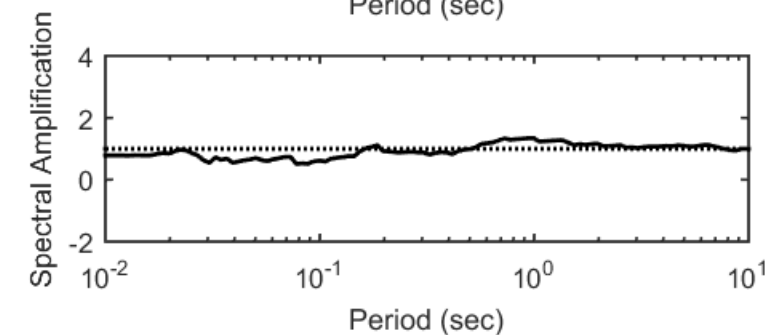
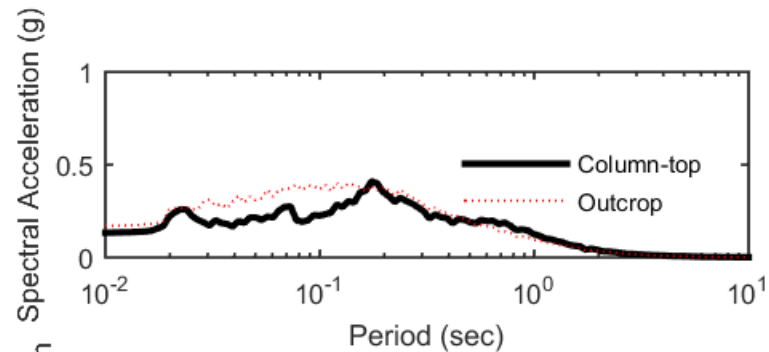
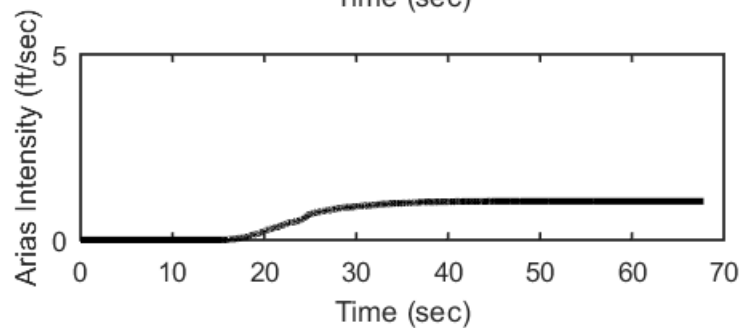
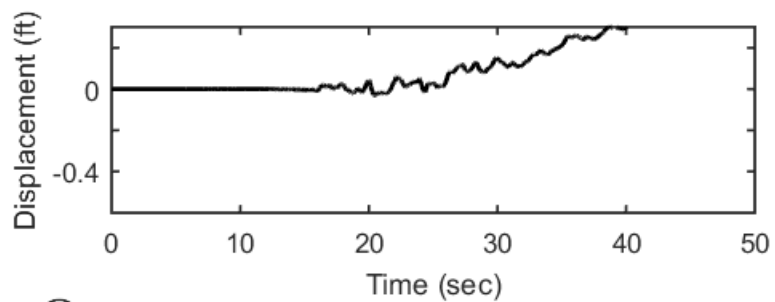
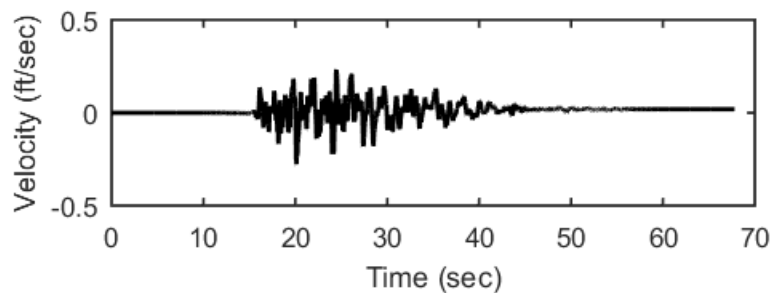
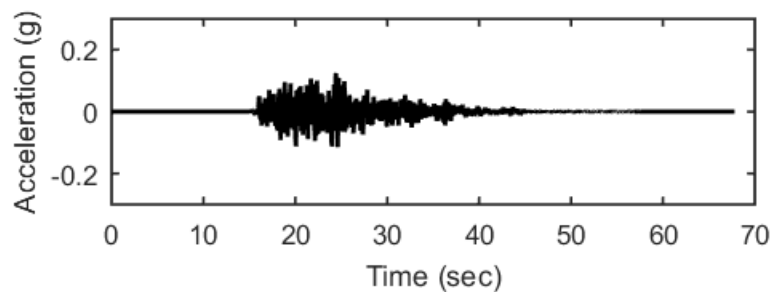
### Profile outputs for: PWP Generation Base with FEE3



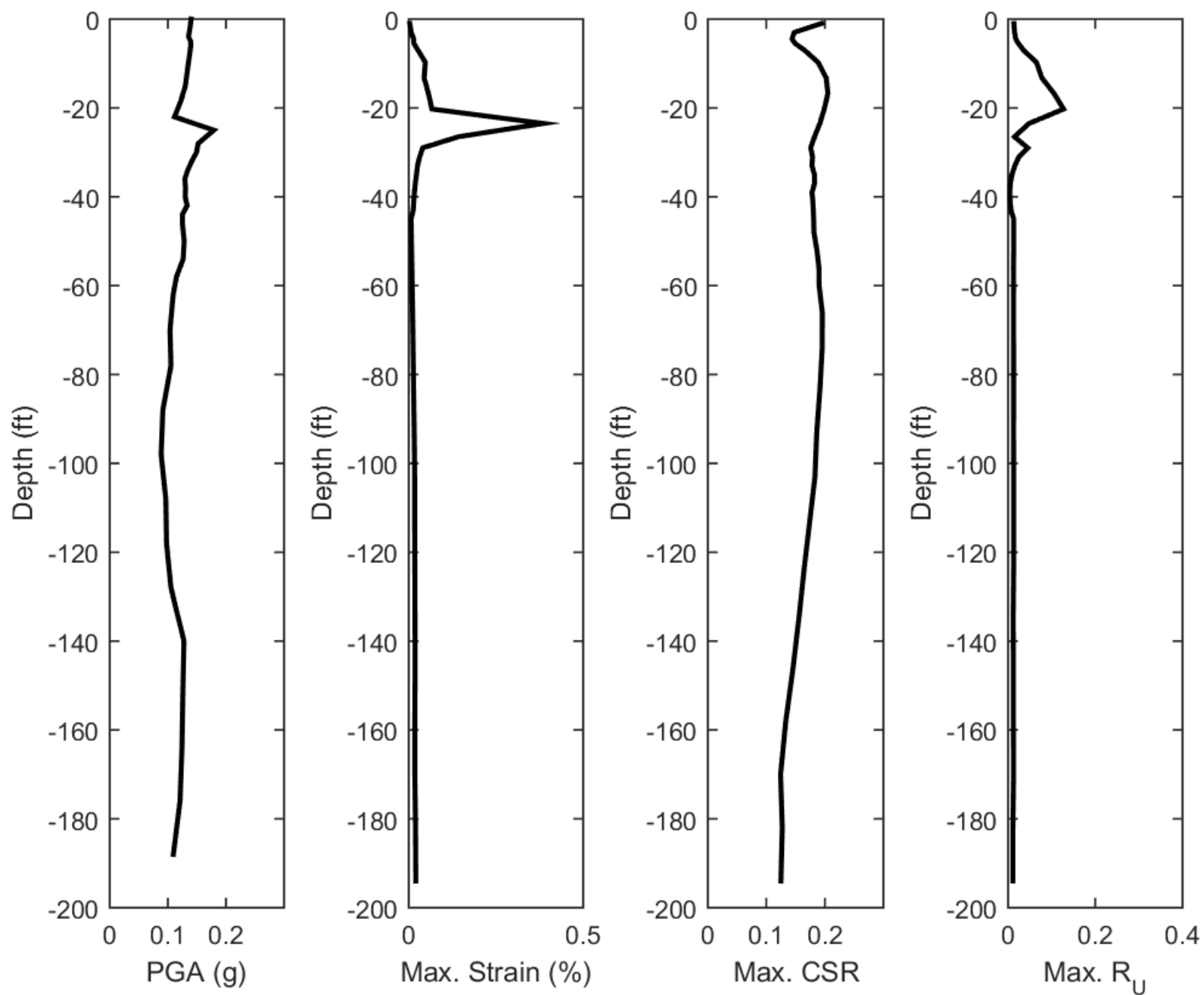
## Outputs at Ground Surface for: PWP Generation Base with FEE4



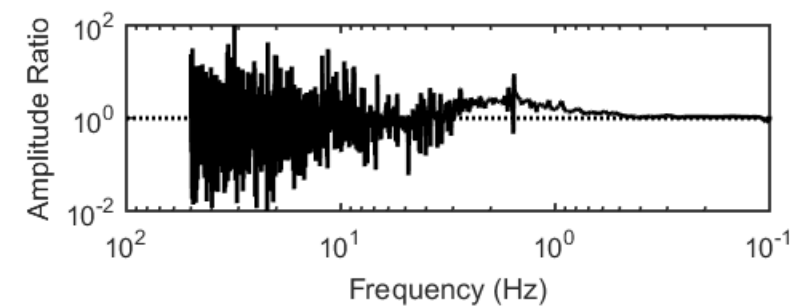
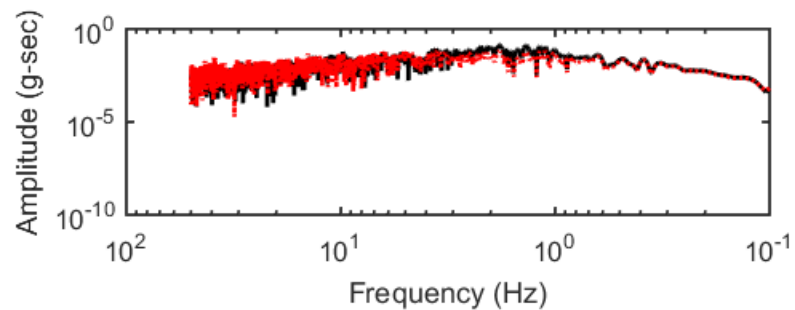
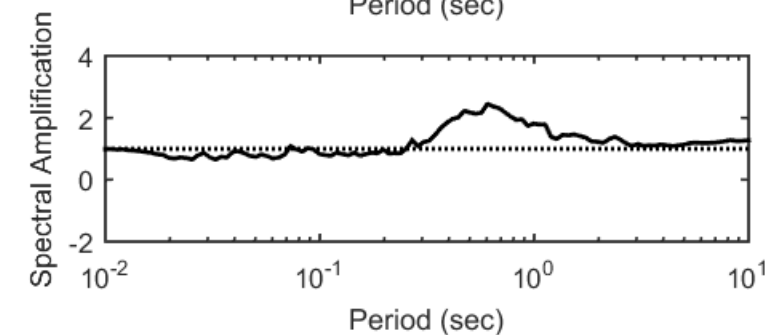
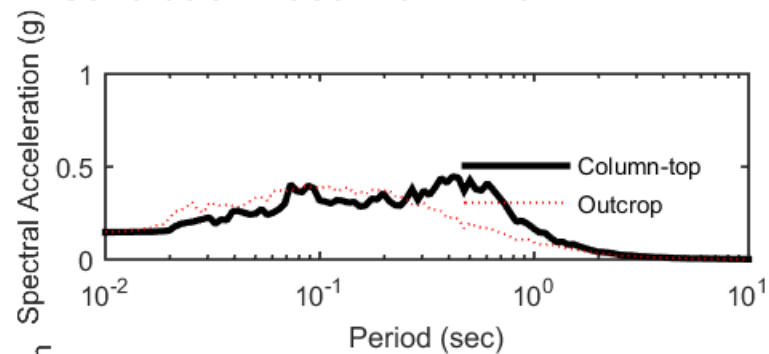
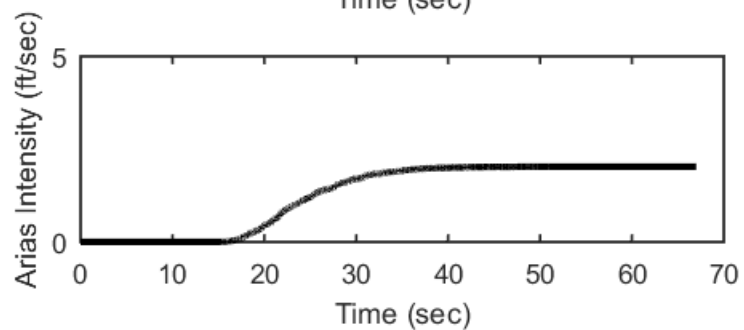
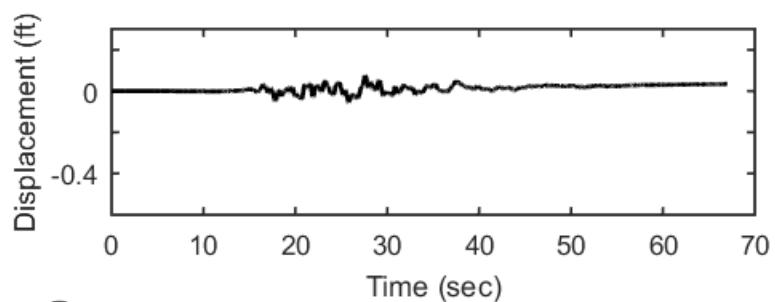
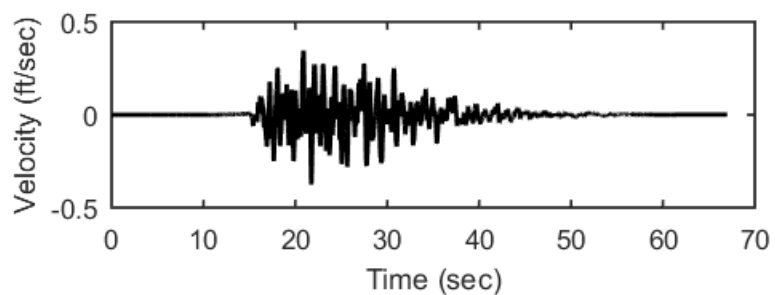
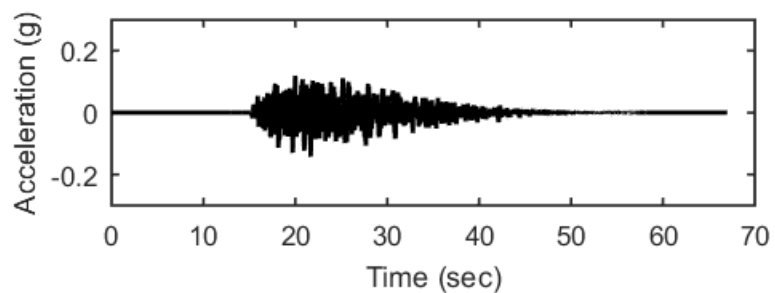
## Outputs at Top of Marl for: PWP Generation Base with FEE4



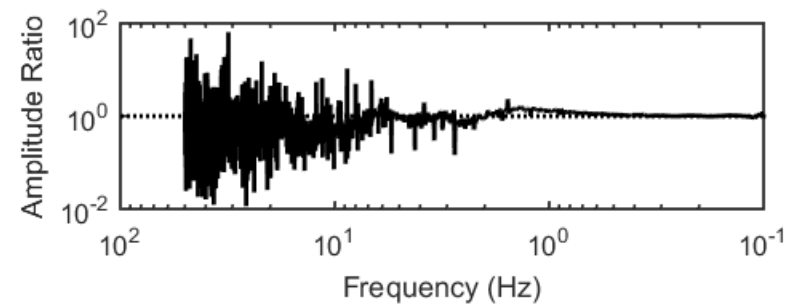
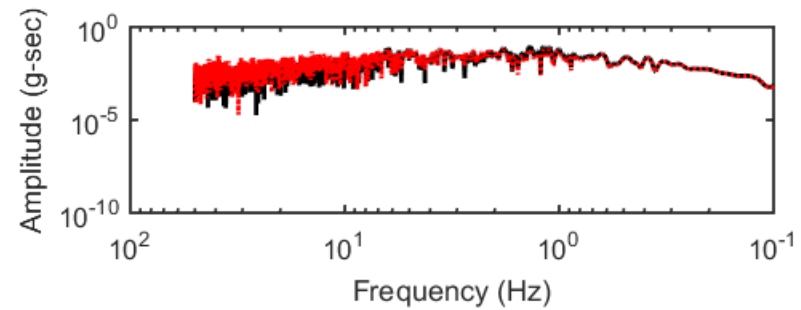
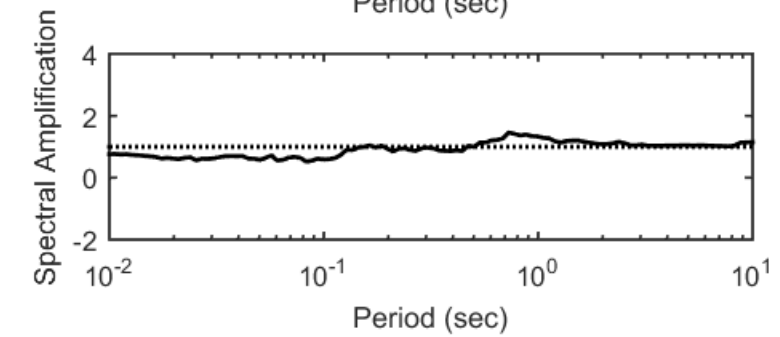
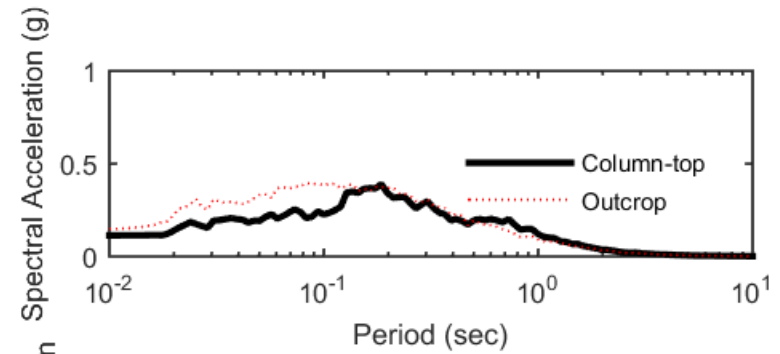
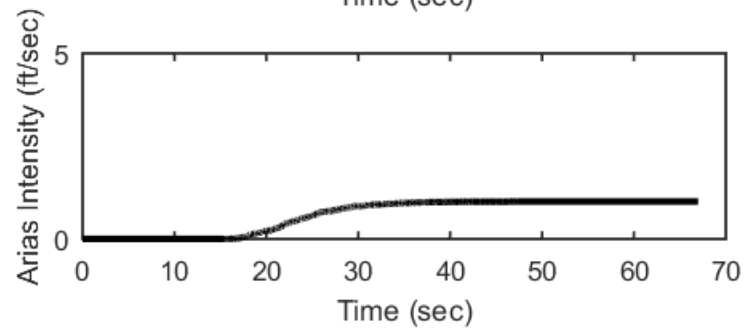
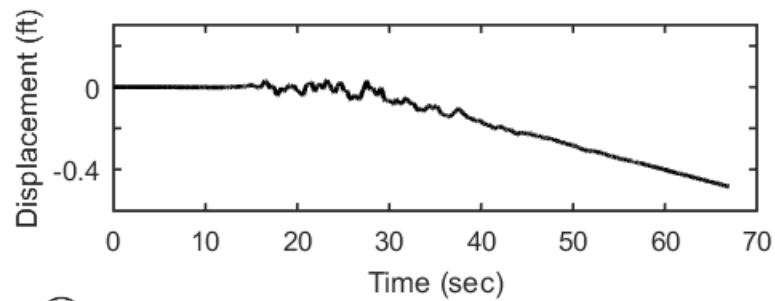
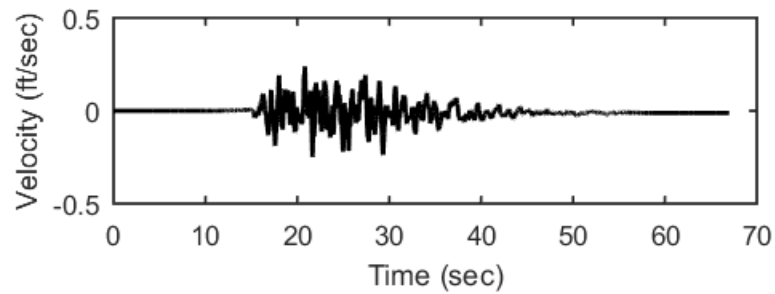
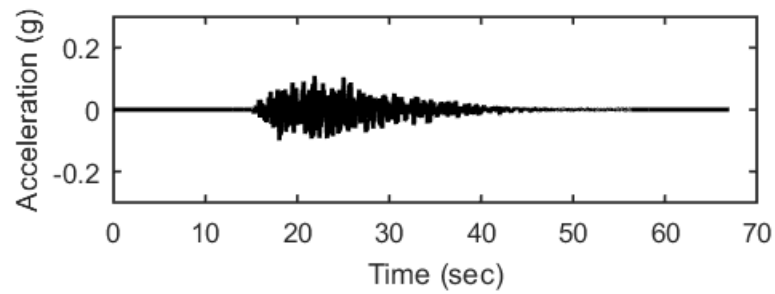
### Profile outputs for: PWP Generation Base with FEE4



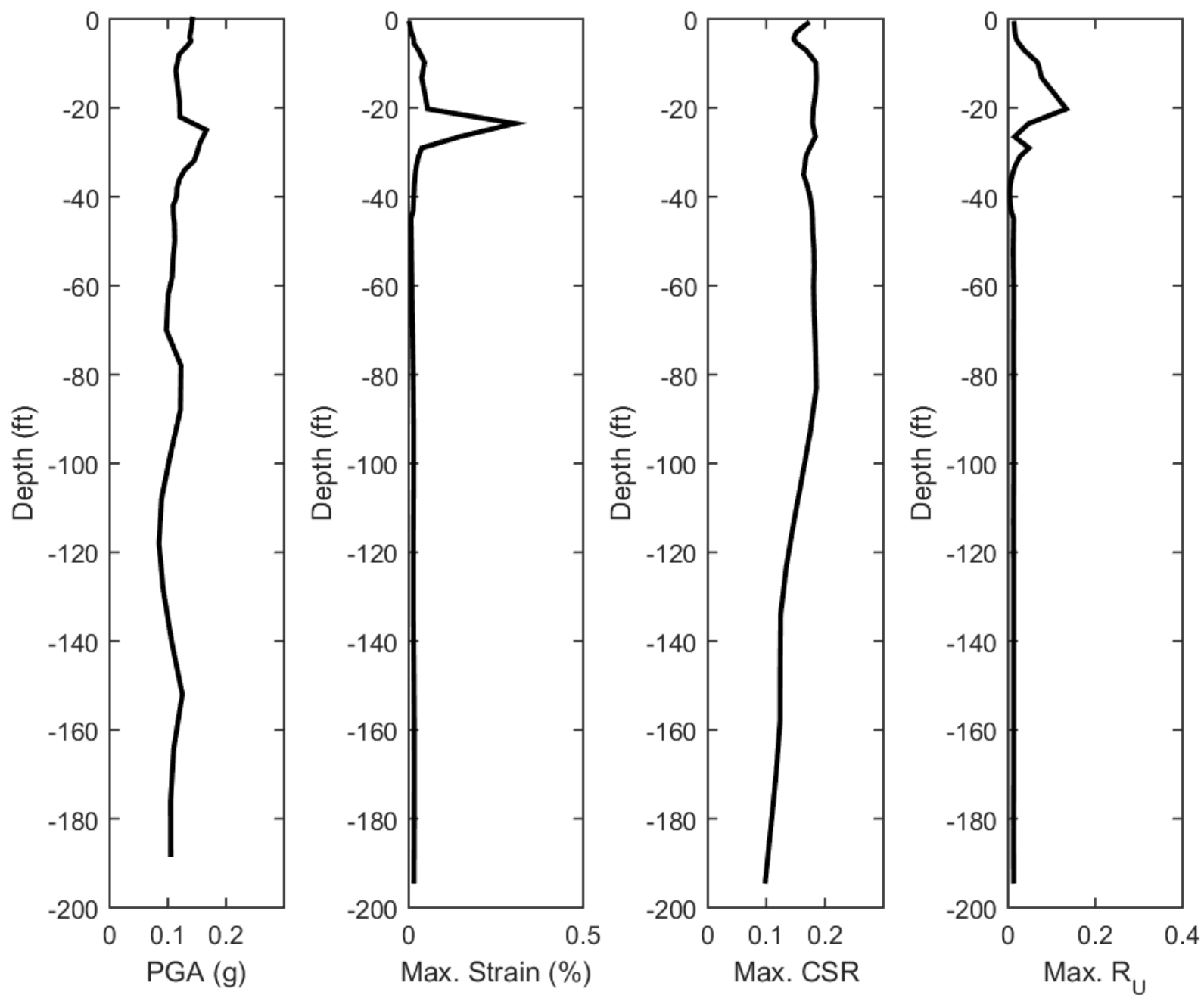
## Outputs at Ground Surface for: PWP Generation Base with FEE5



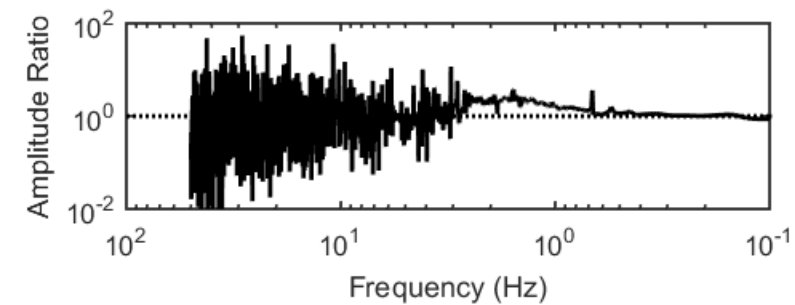
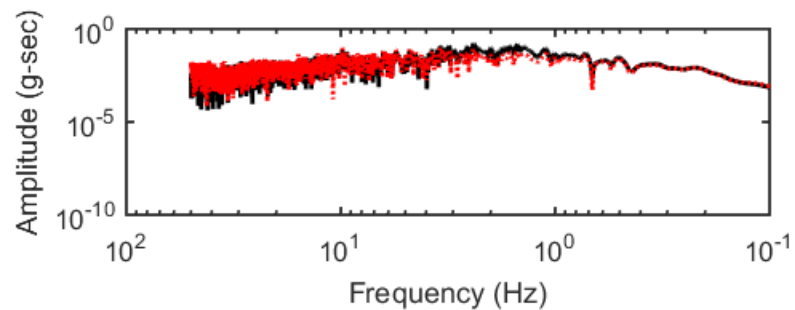
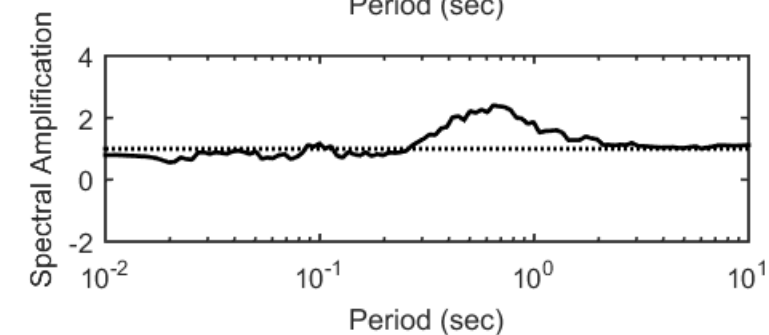
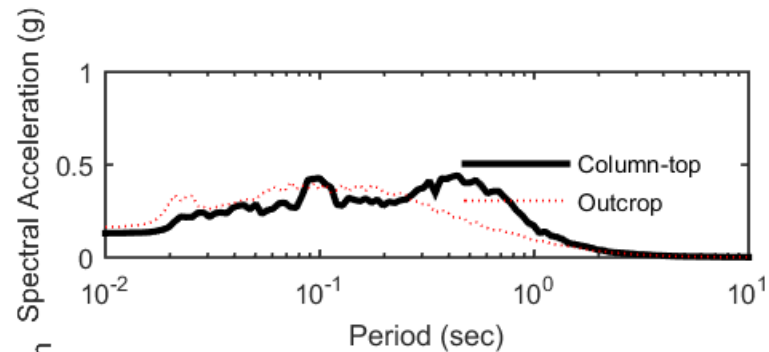
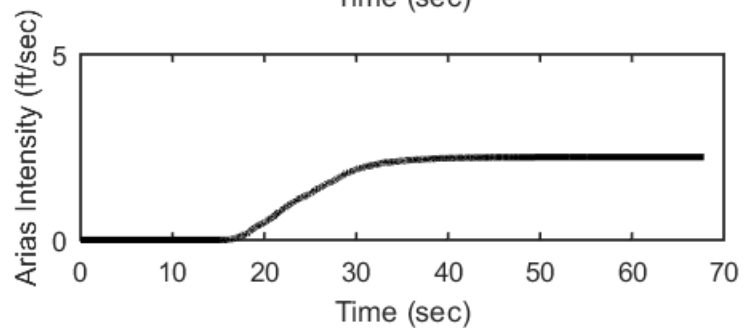
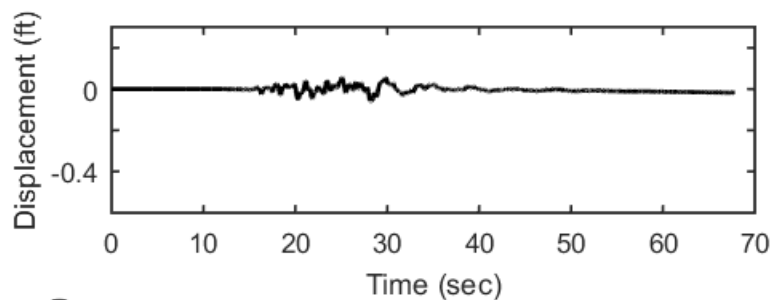
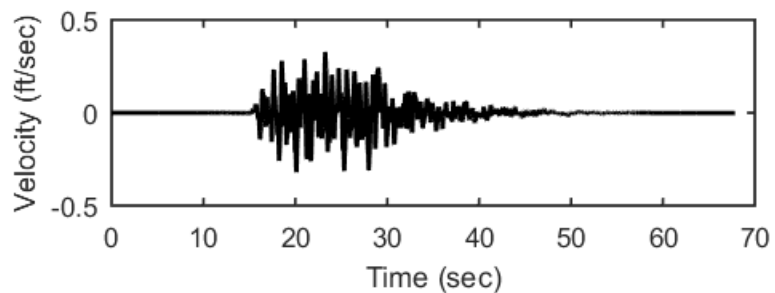
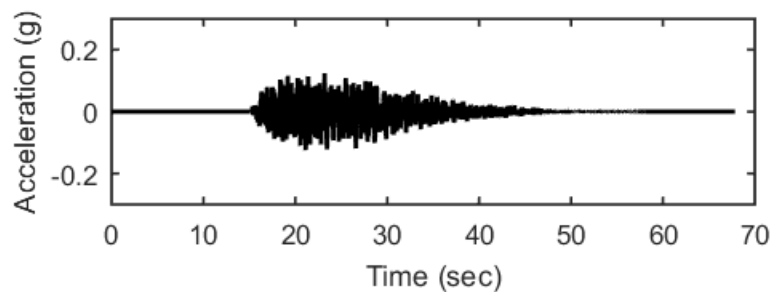
## Outputs at Top of Marl for: PWP Generation Base with FEE5



### Profile outputs for: PWP Generation Base with FEE5

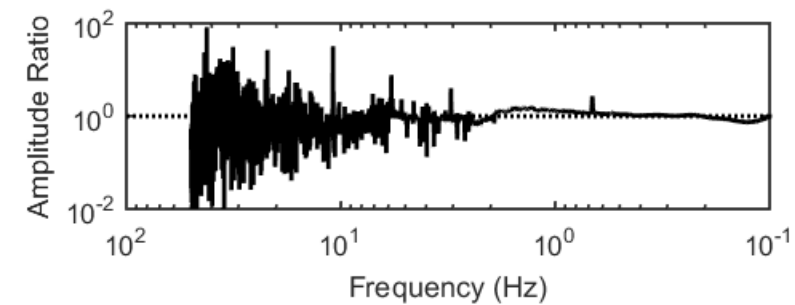
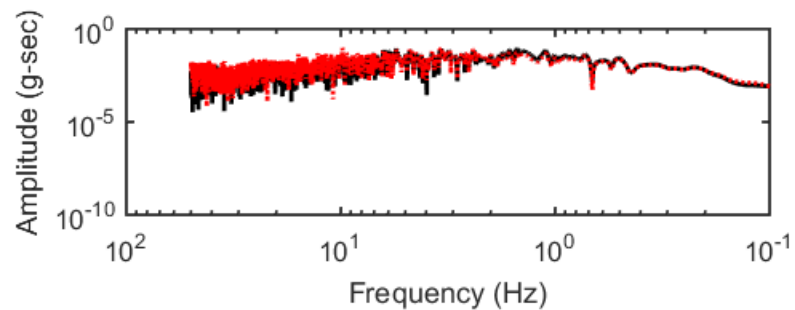
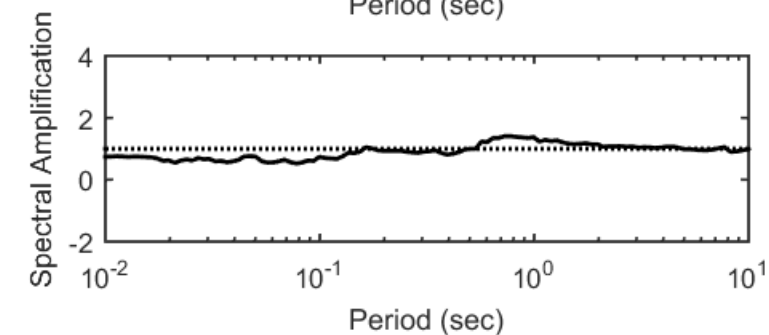
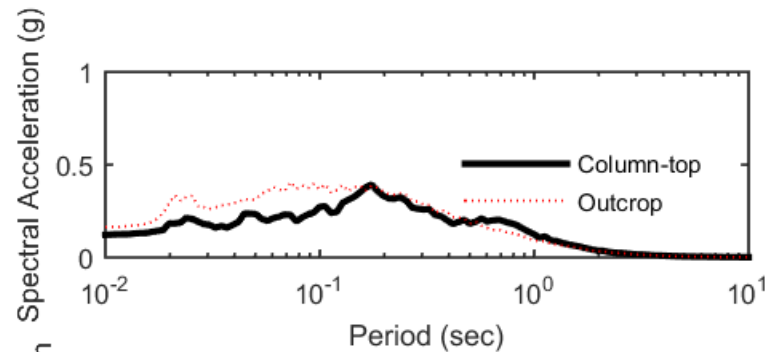
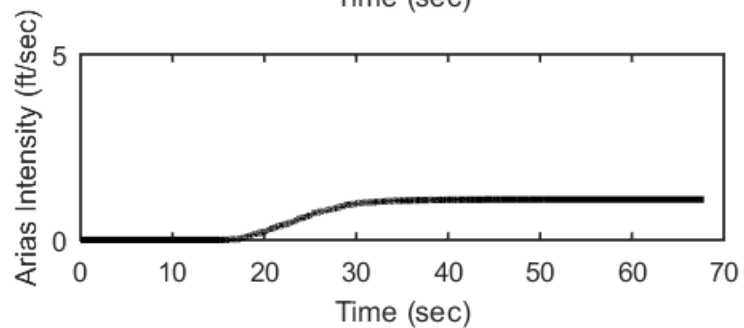
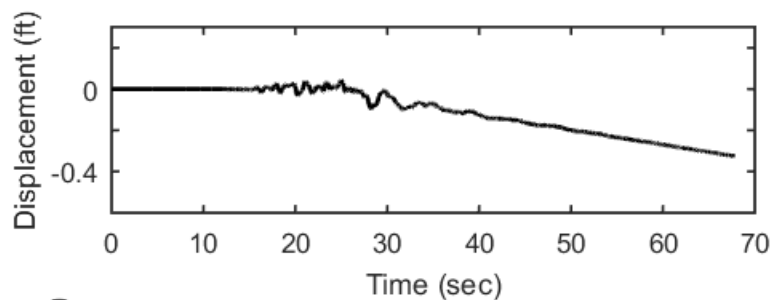
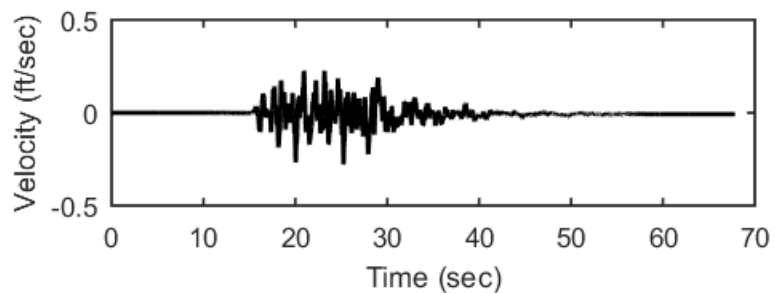
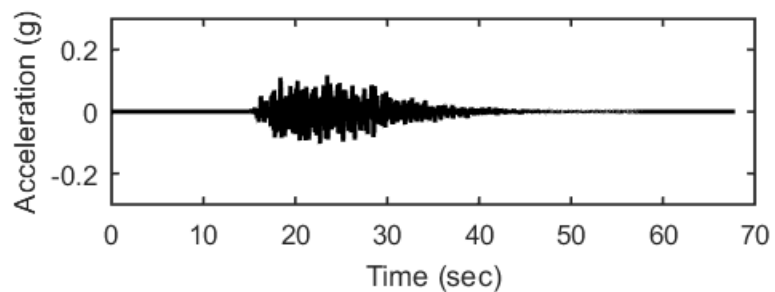


## Outputs at Ground Surface for: PWP Generation Base with FEE6

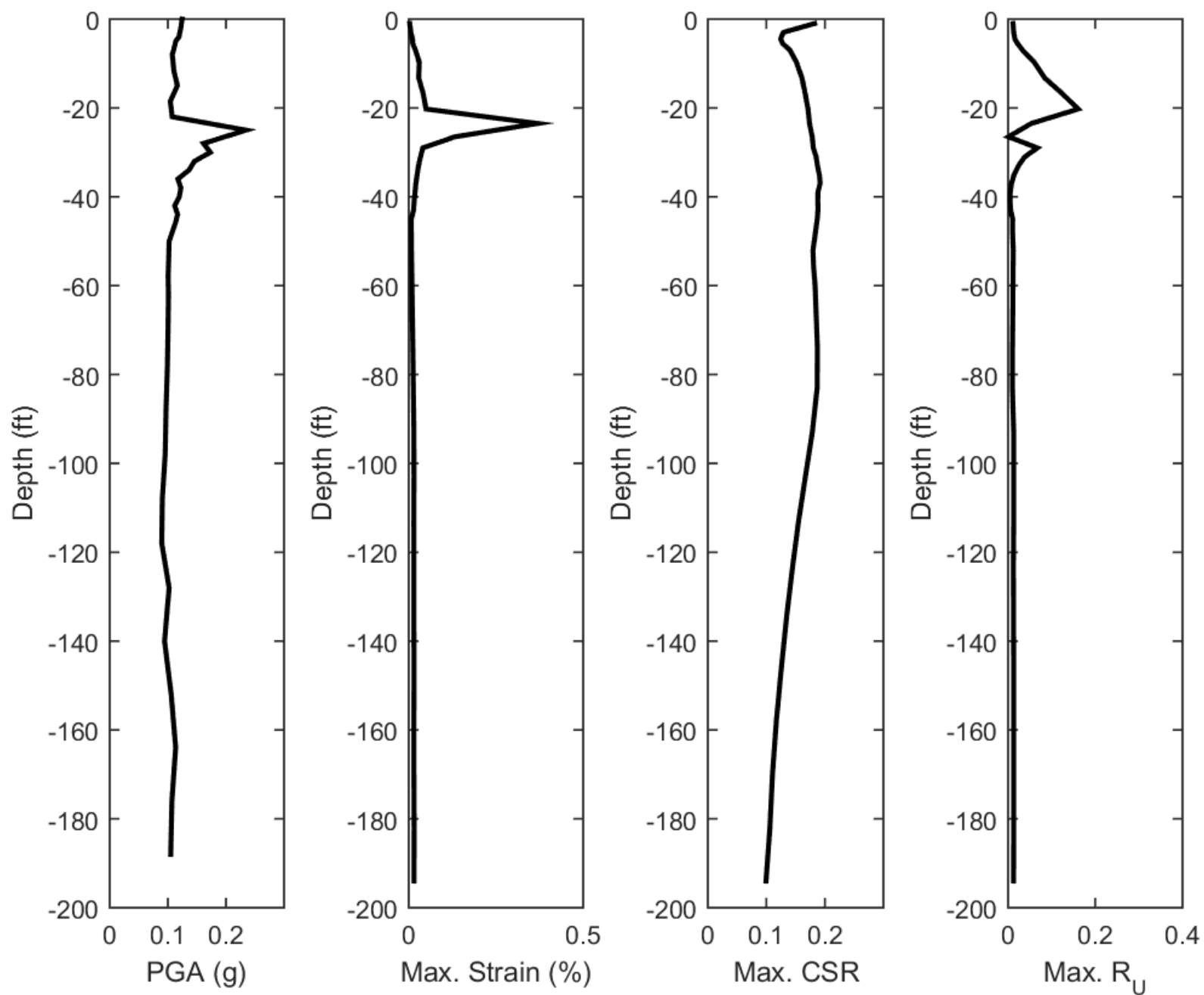




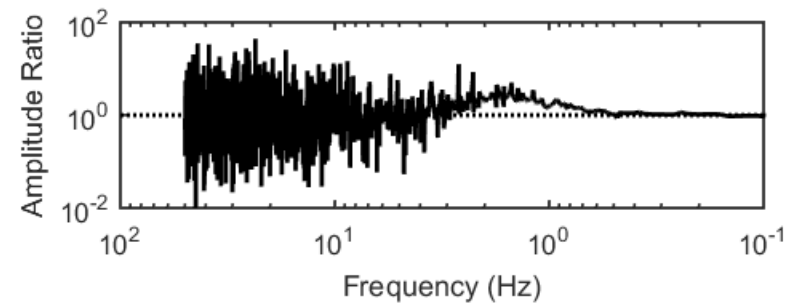
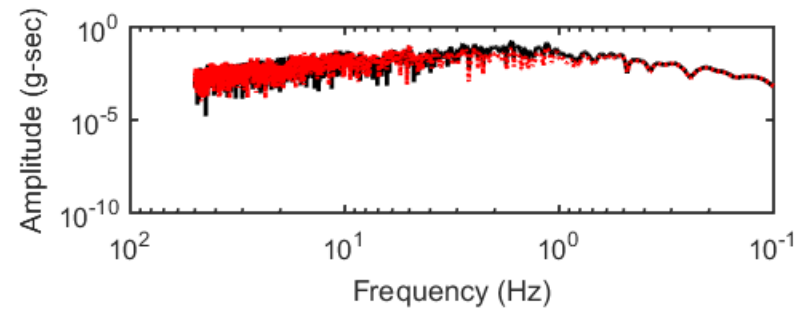
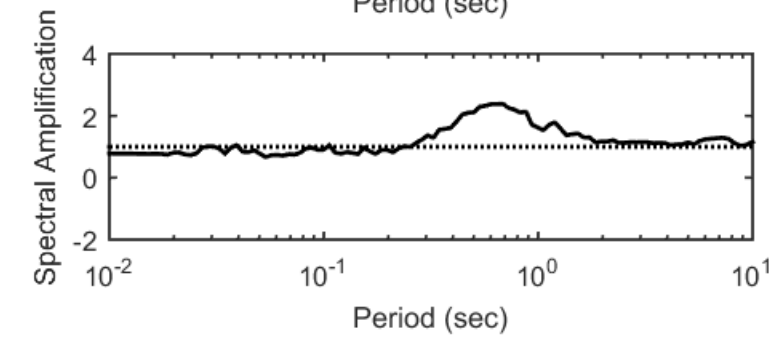
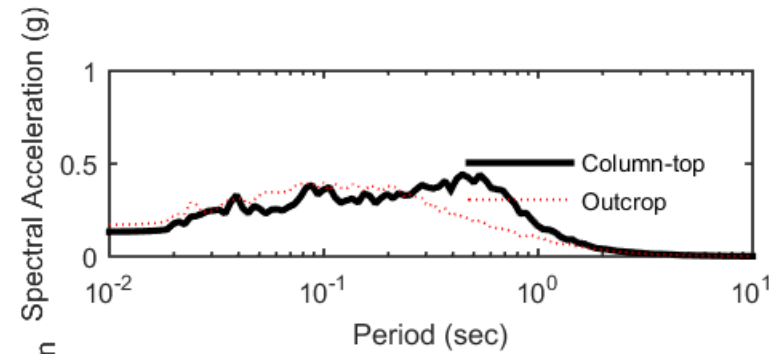
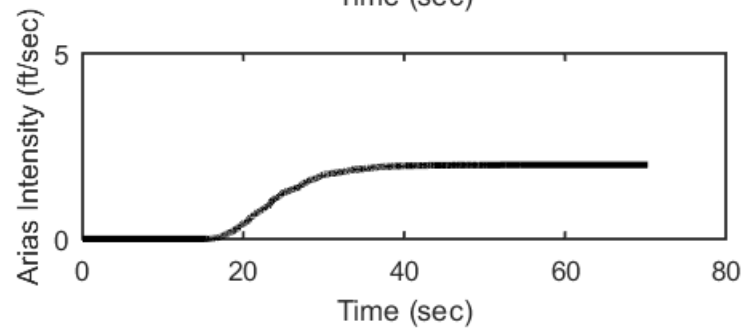
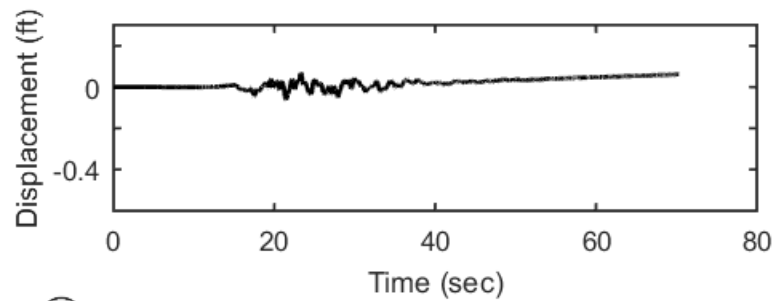
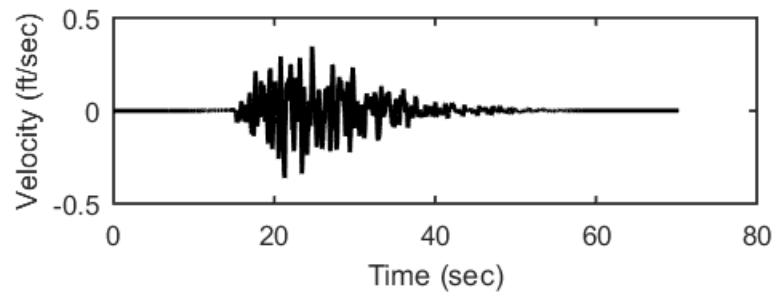
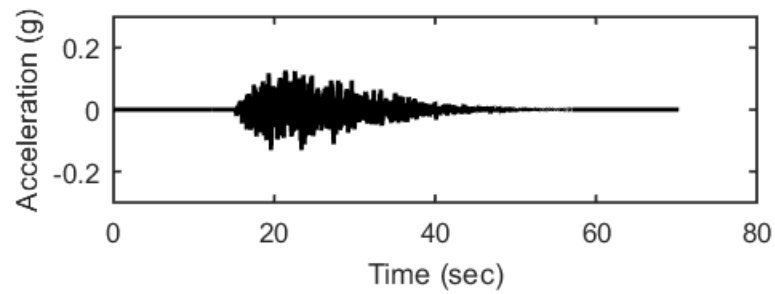
## Outputs at Top of Marl for: PWP Generation Base with FEE6



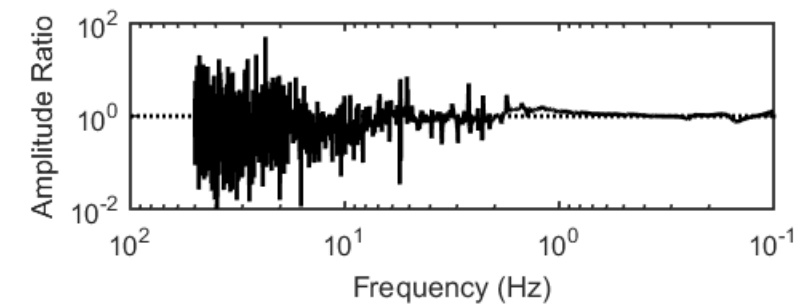
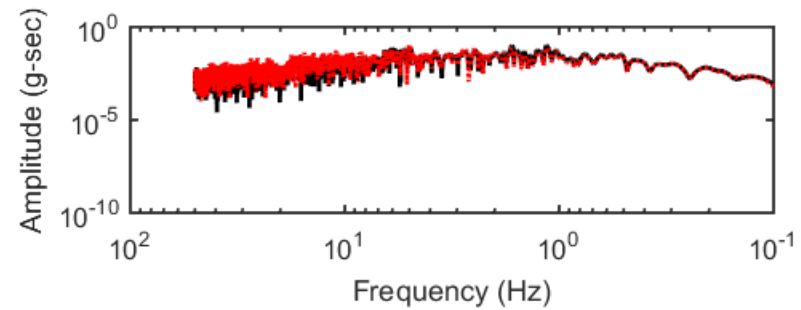
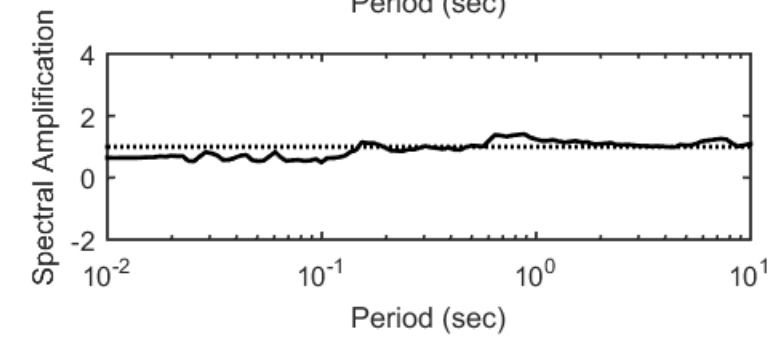
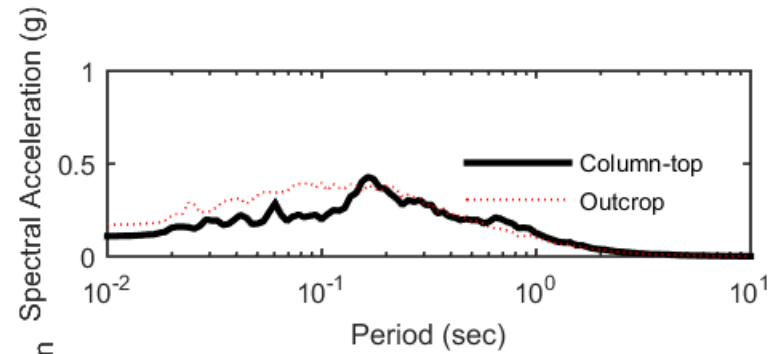
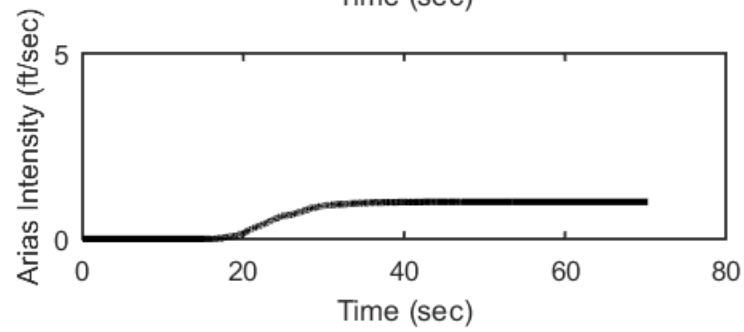
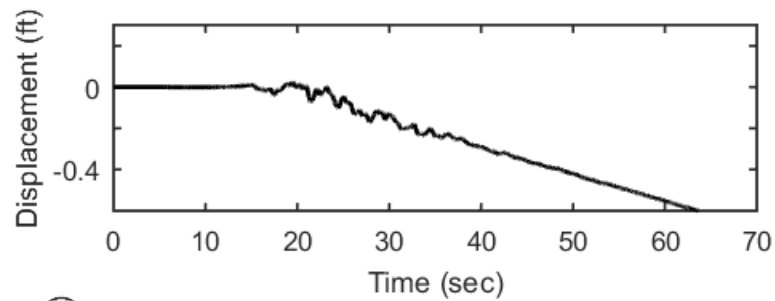
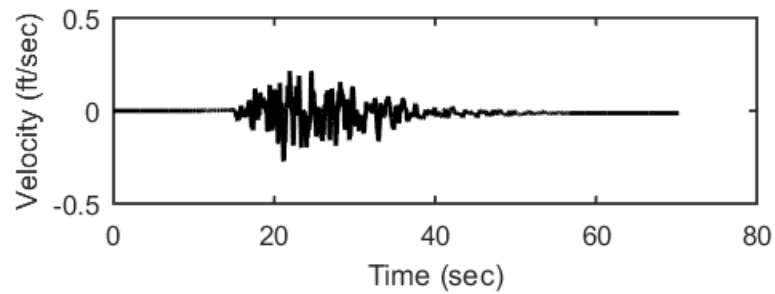
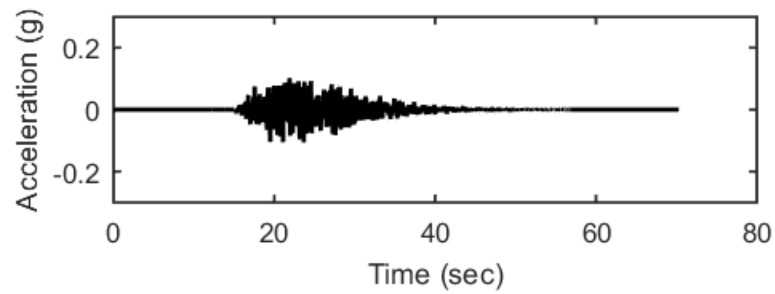
### Profile outputs for: PWP Generation Base with FEE6



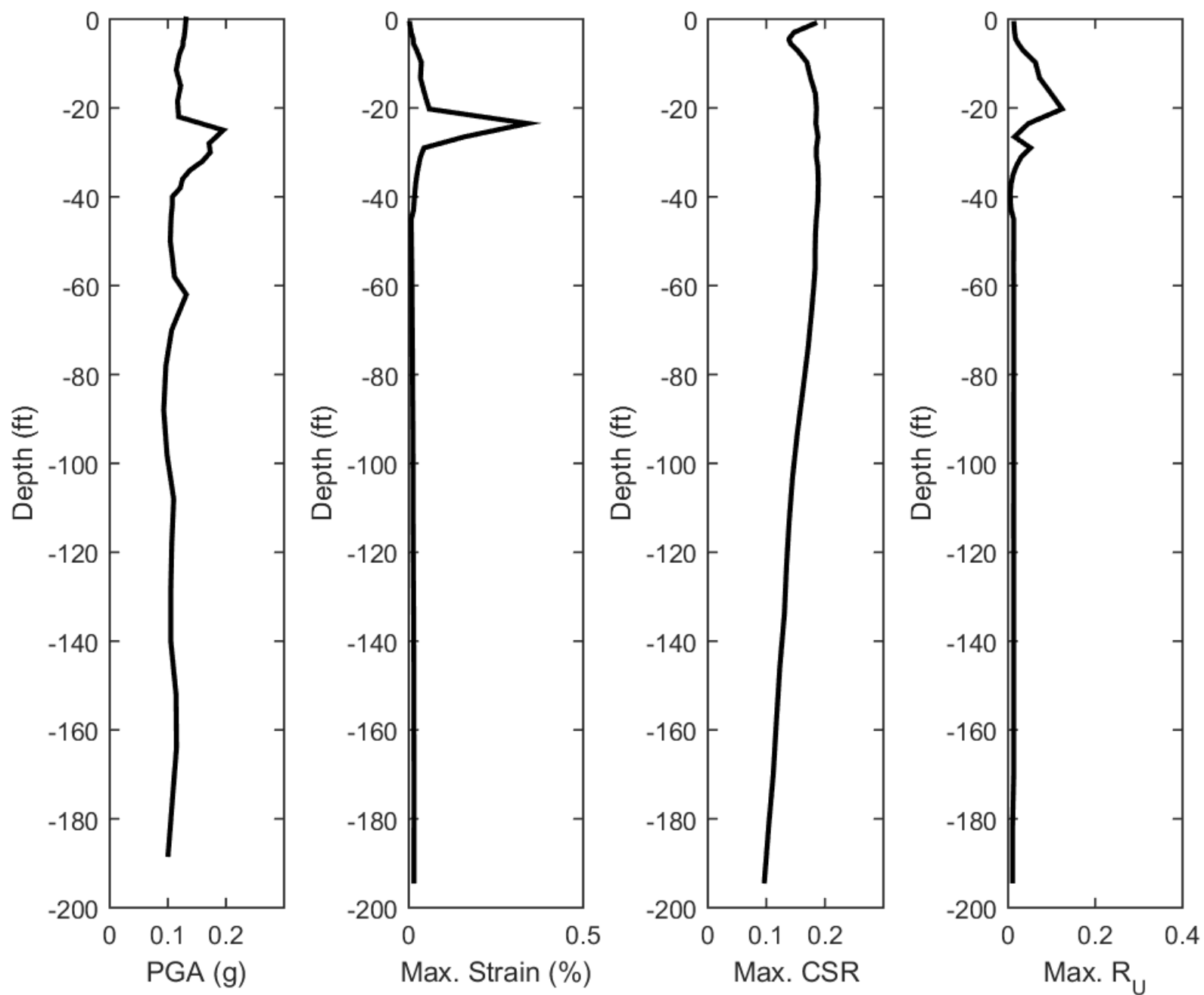
## Outputs at Ground Surface for: PWP Generation Base with FEE7



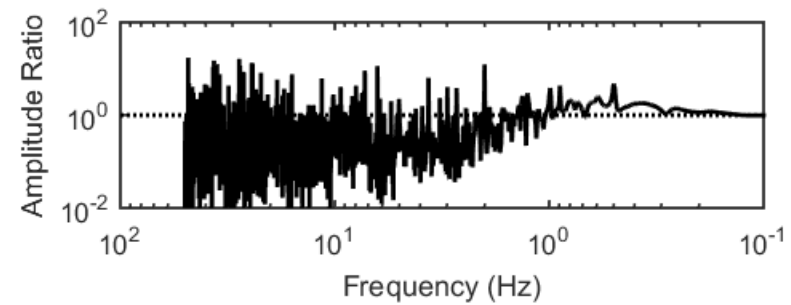
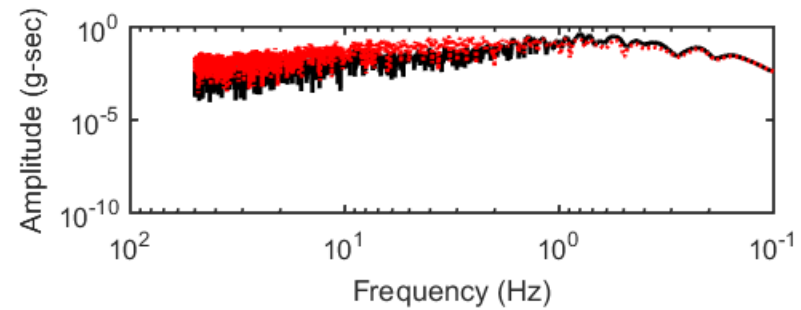
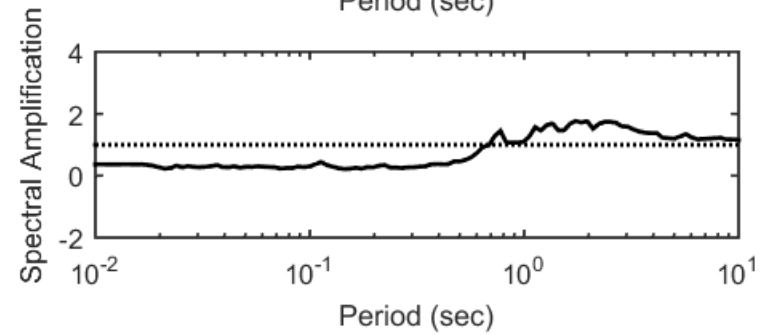
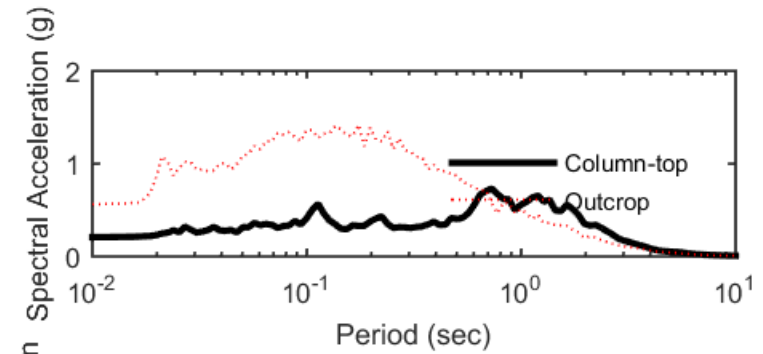
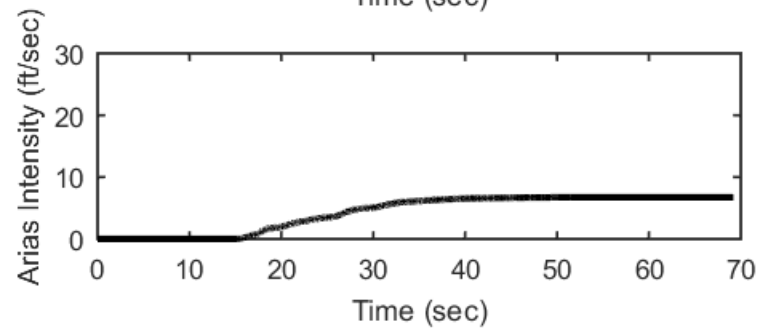
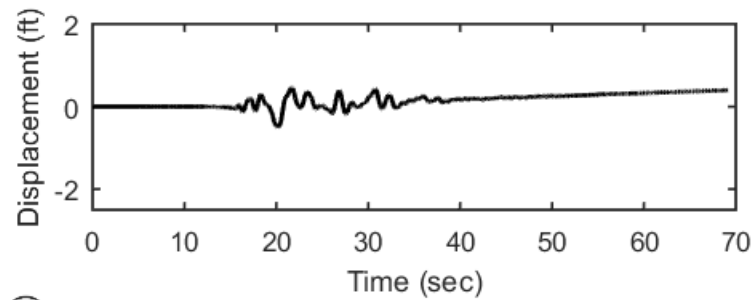
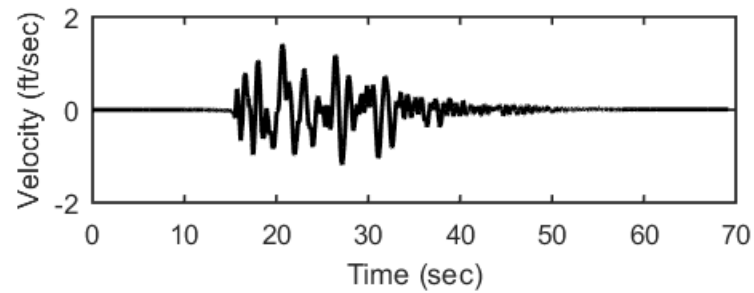
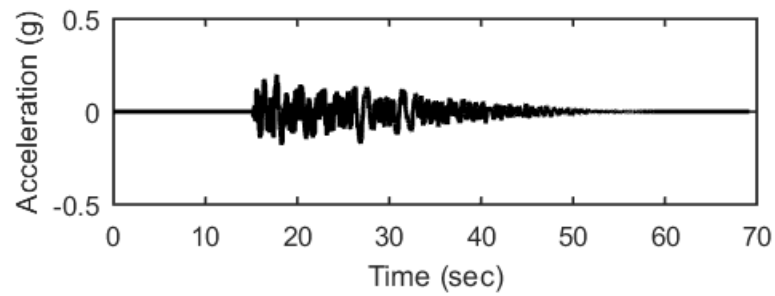
## Outputs at Top of Marl for: PWP Generation Base with FEE7



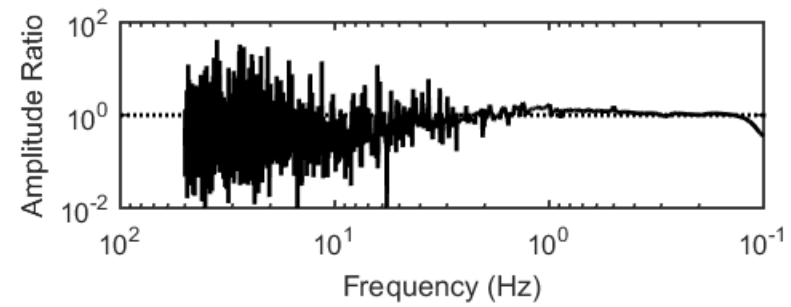
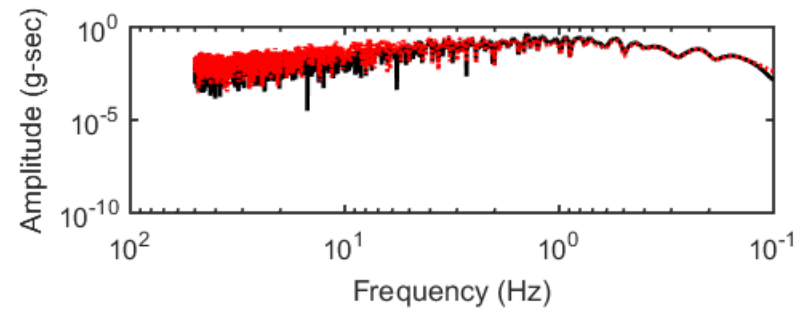
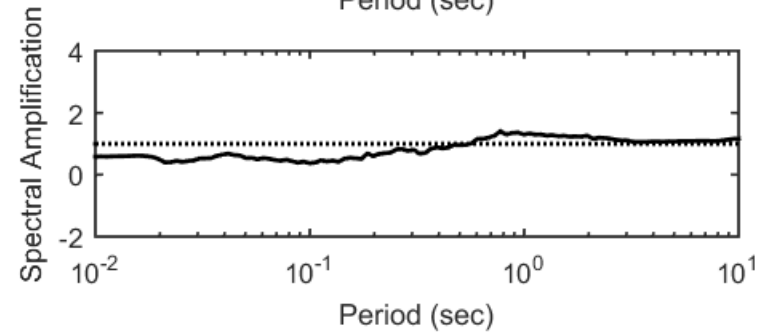
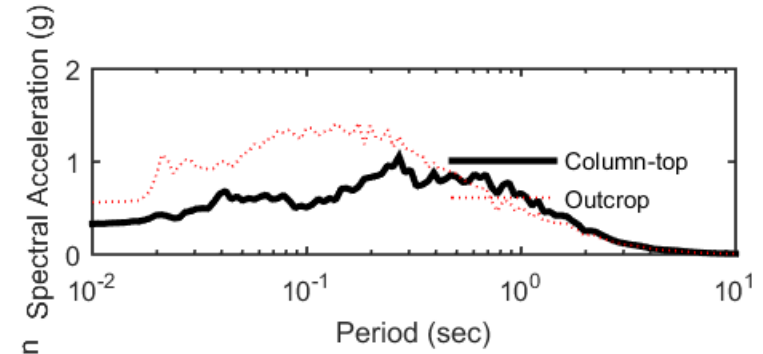
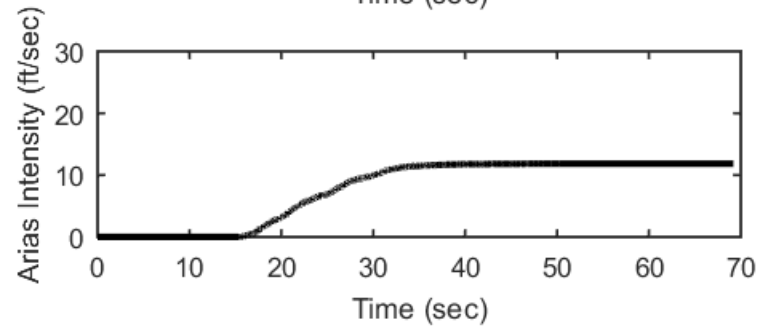
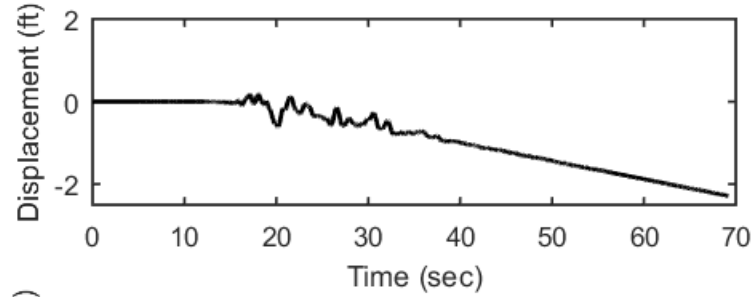
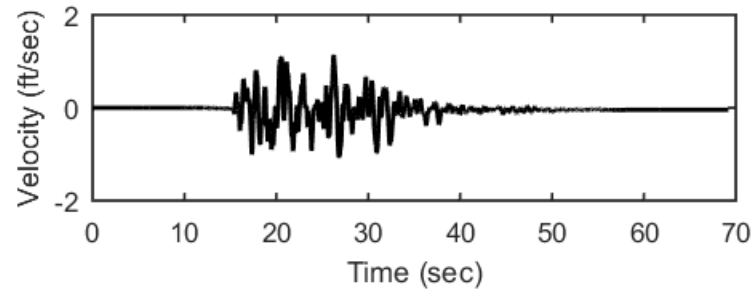
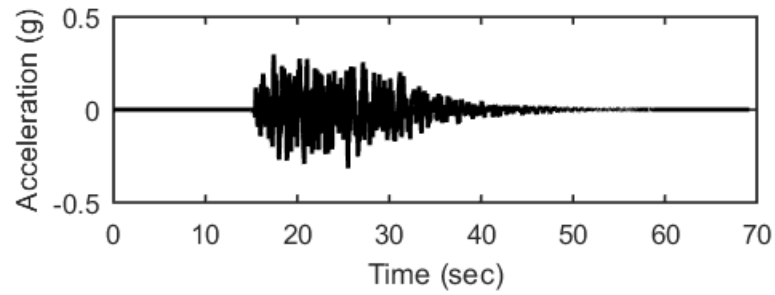
### Profile outputs for: PWP Generation Base with FEE7



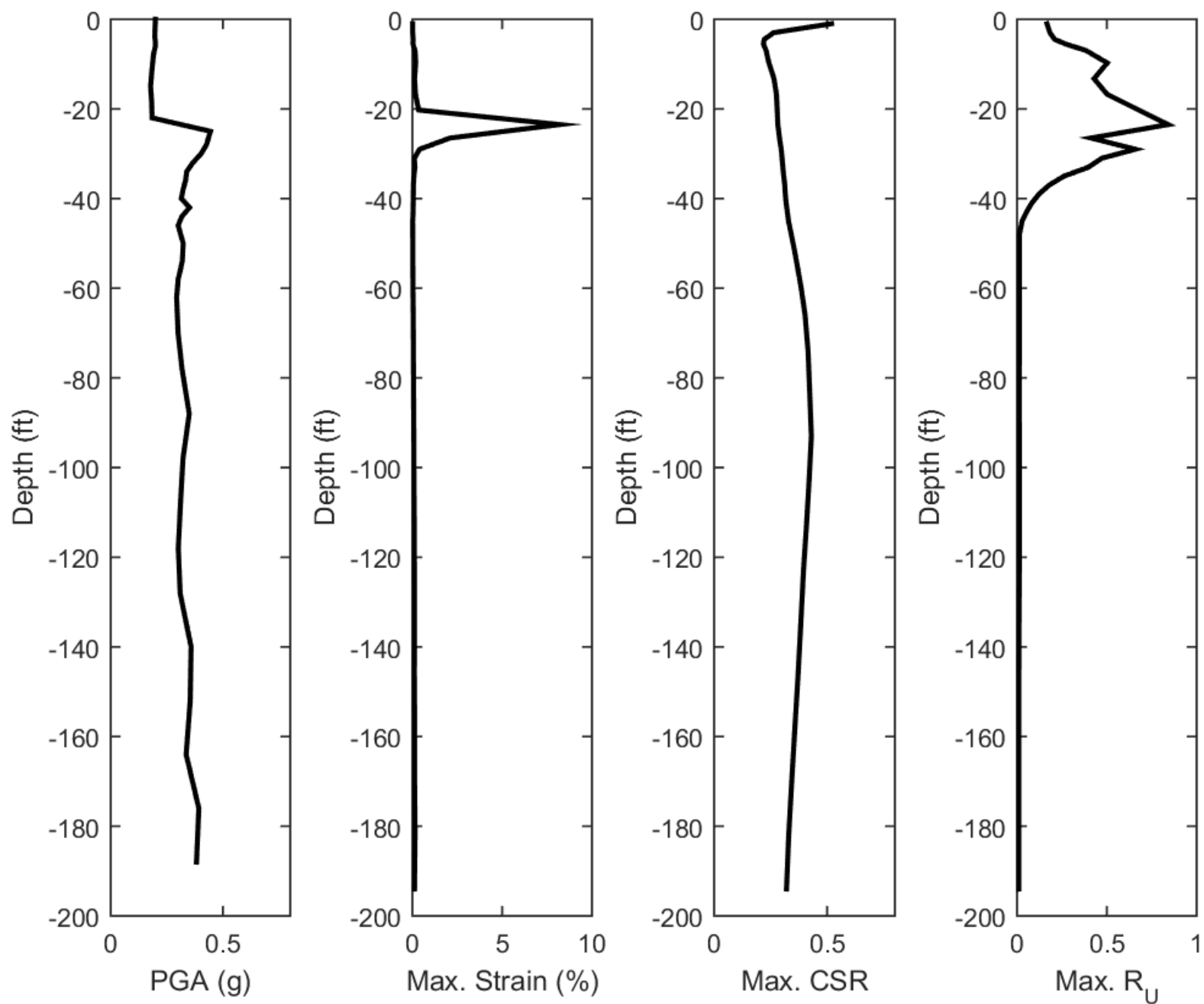
## Outputs at Ground Surface for: PWP Generation Base with SEE1



## Outputs at Top of Marl for: PWP Generation Base with SEE1

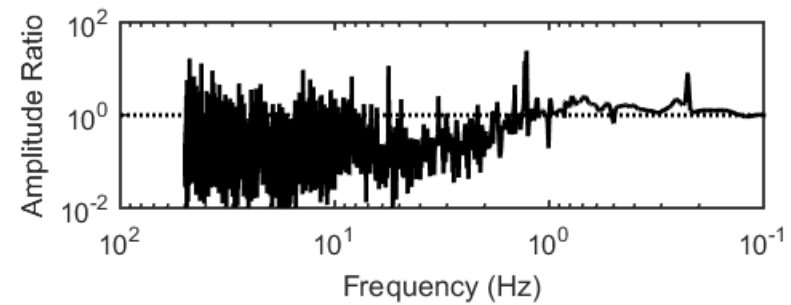
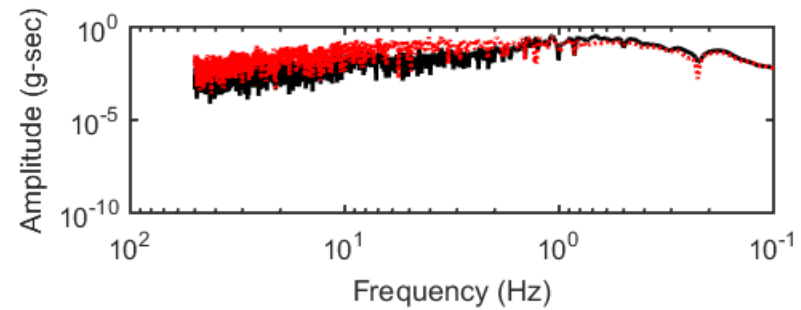
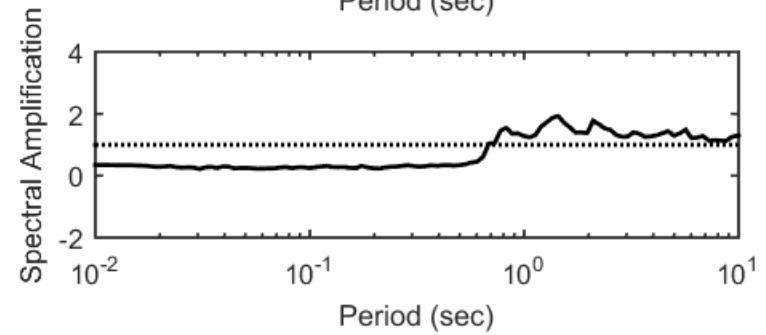
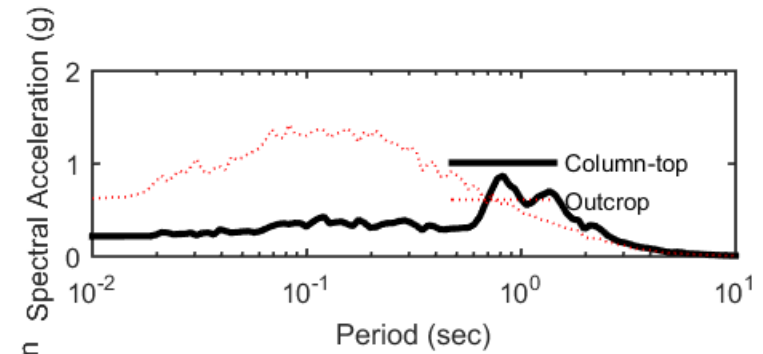
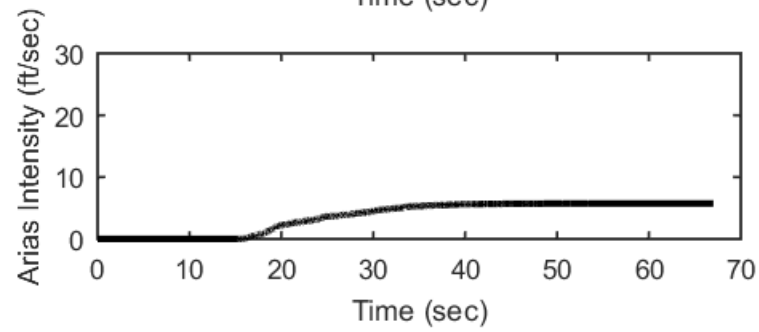
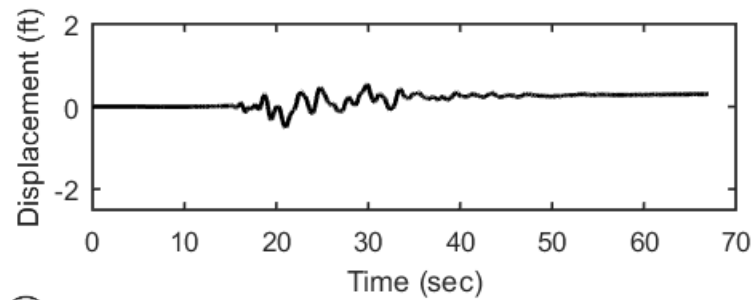
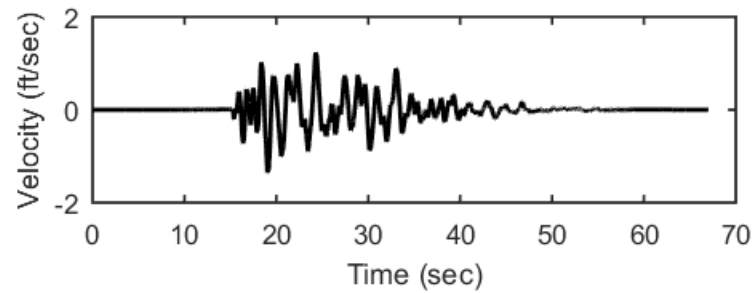
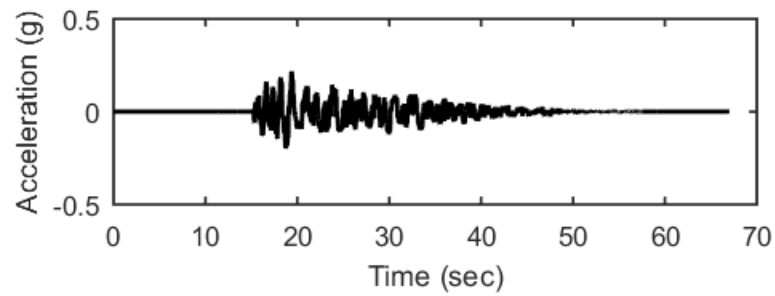


### Profile outputs for: PWP Generation Base with SEE1

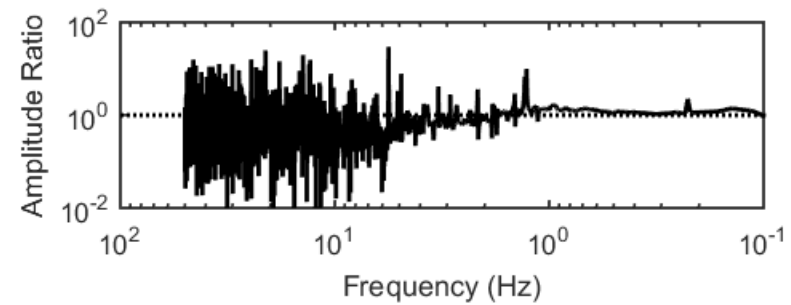
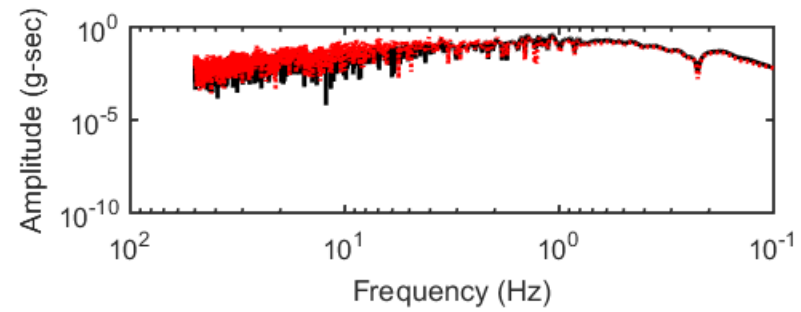
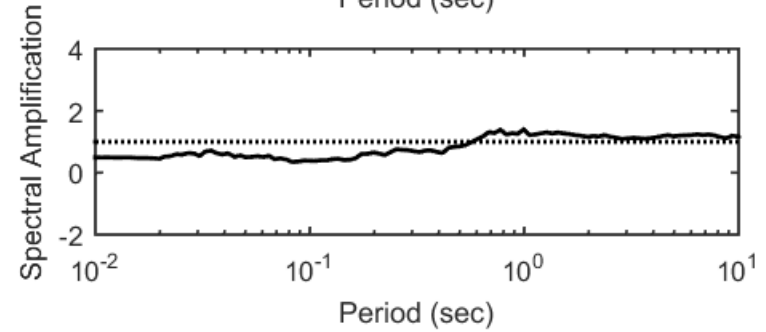
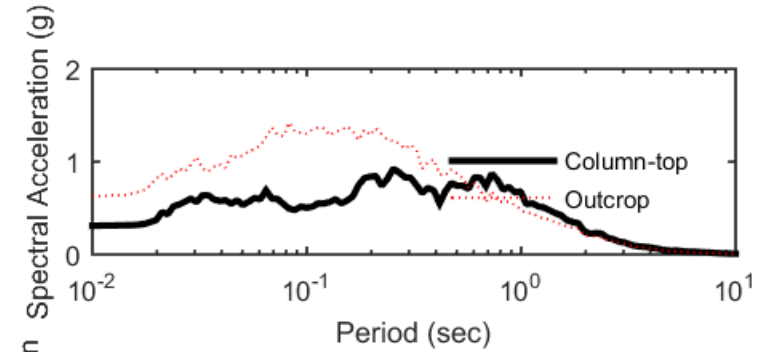
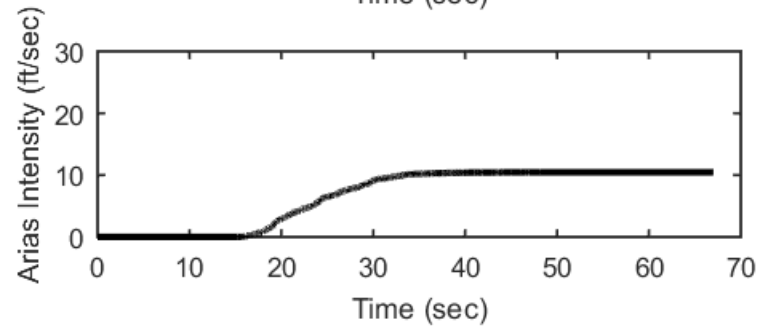
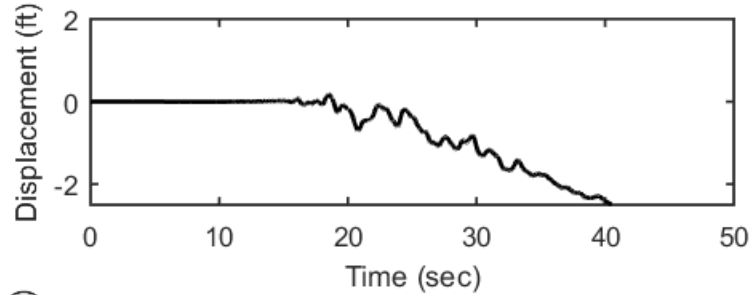
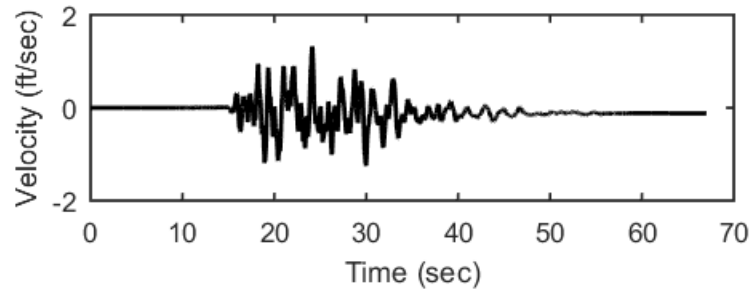
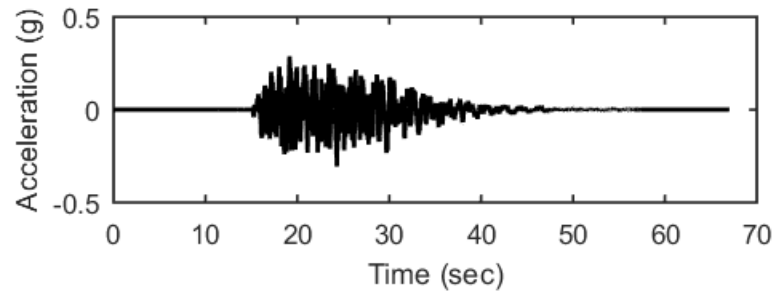




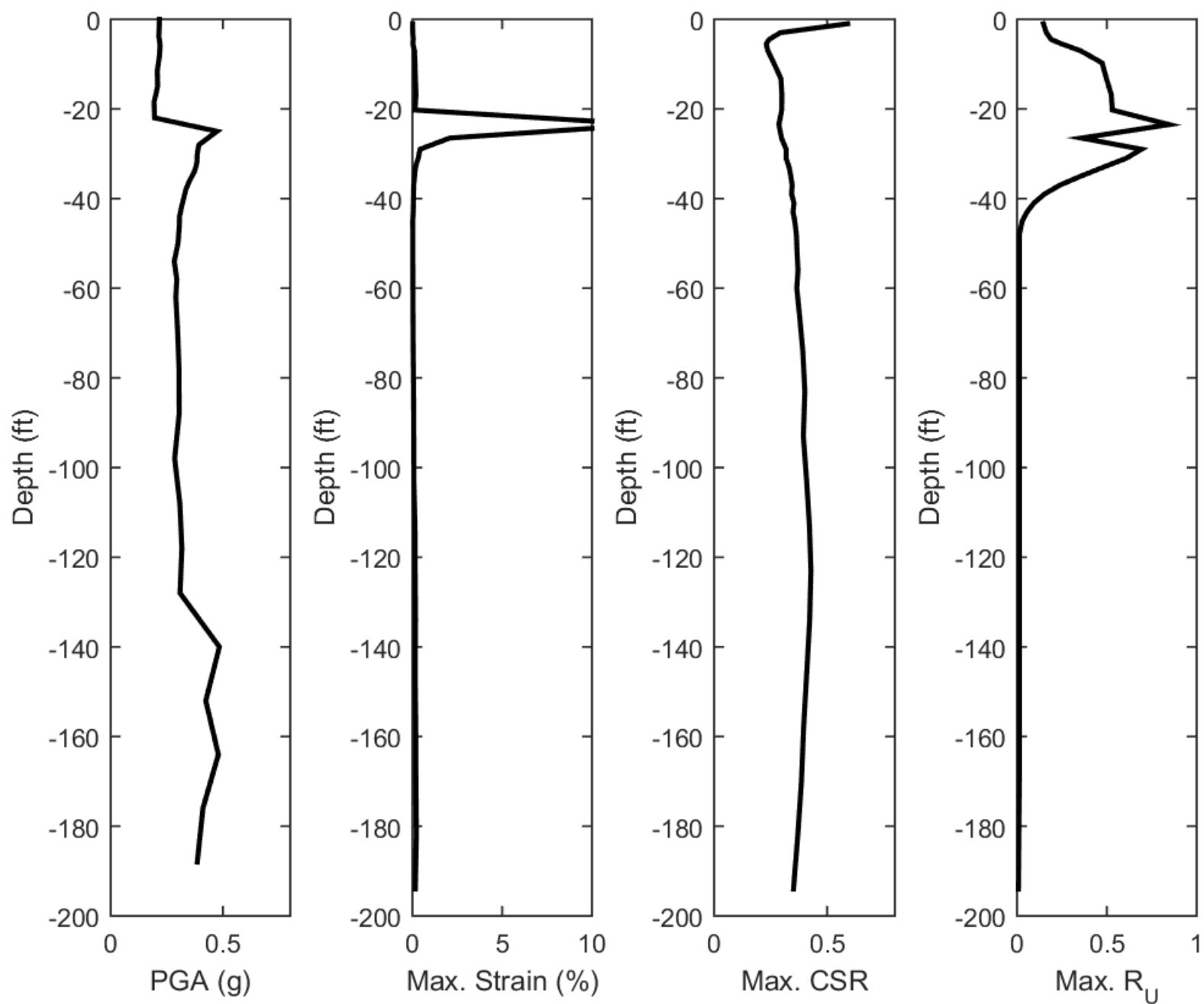
## Outputs at Ground Surface for: PWP Generation Base with SEE2



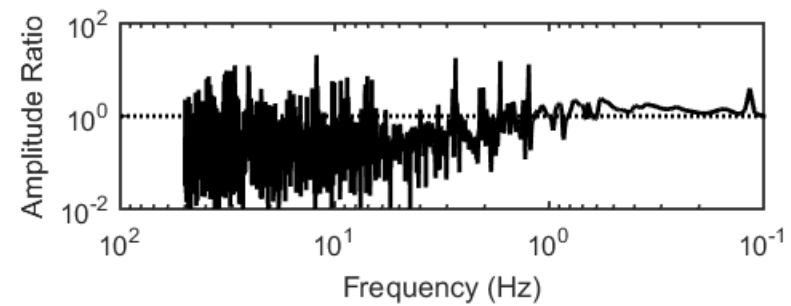
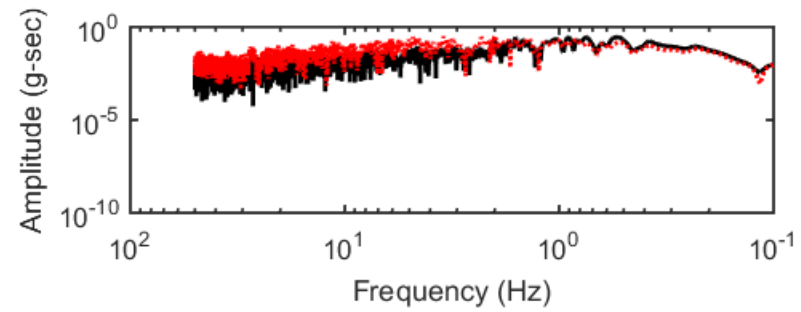
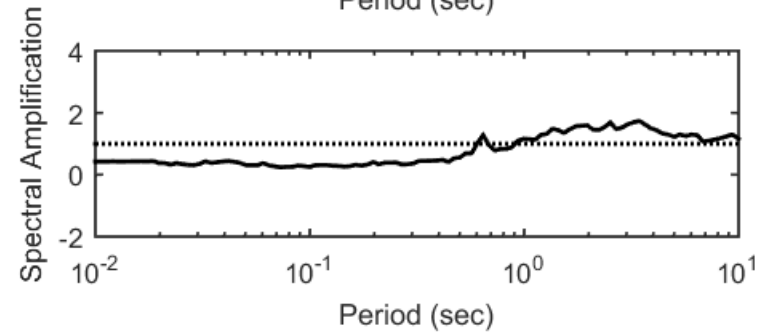
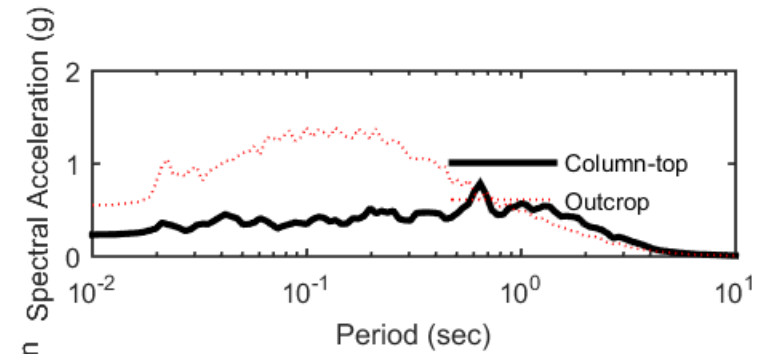
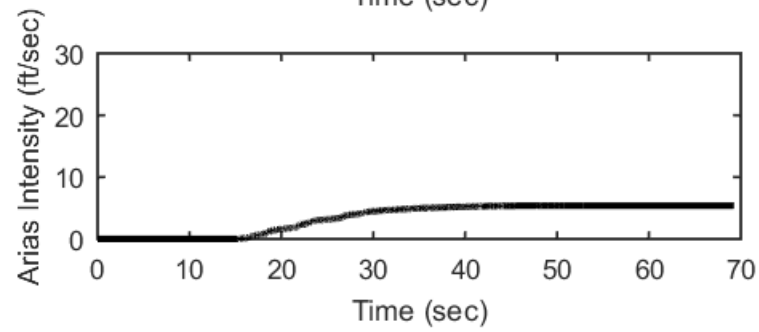
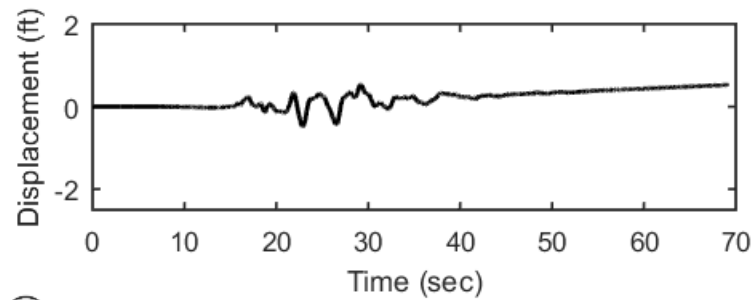
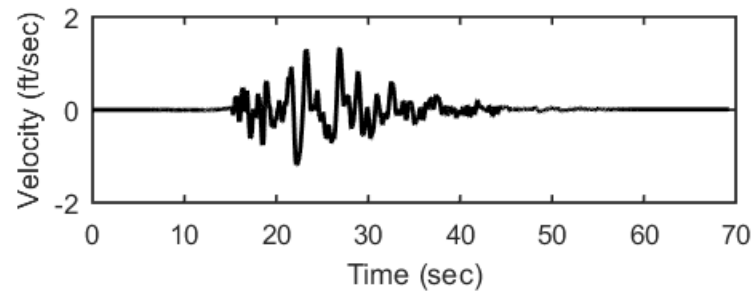
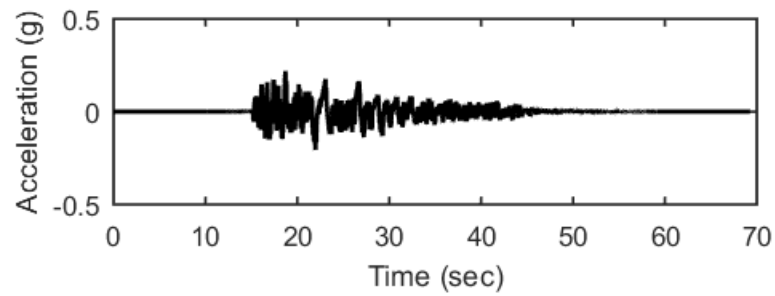
## Outputs at Top of Marl for: PWP Generation Base with SEE2



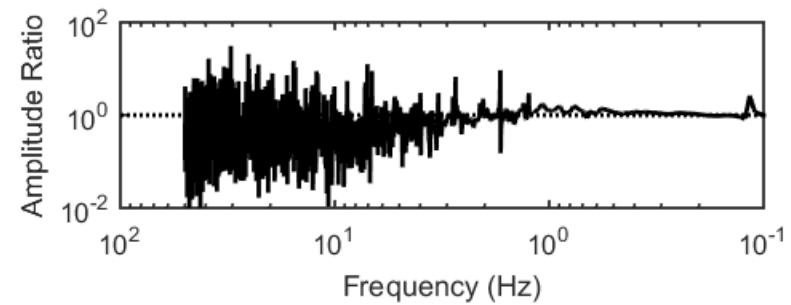
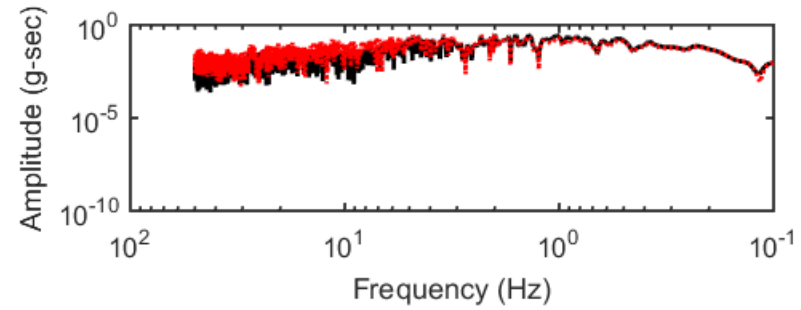
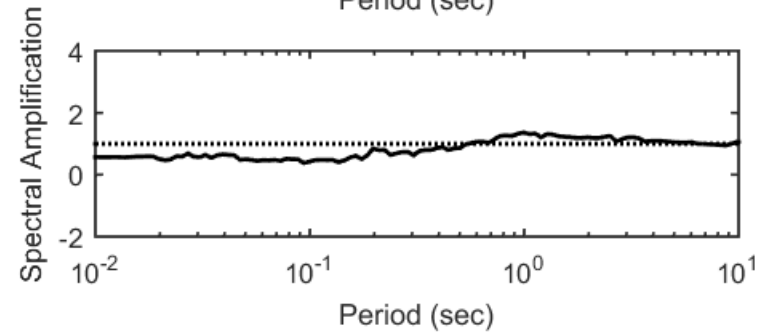
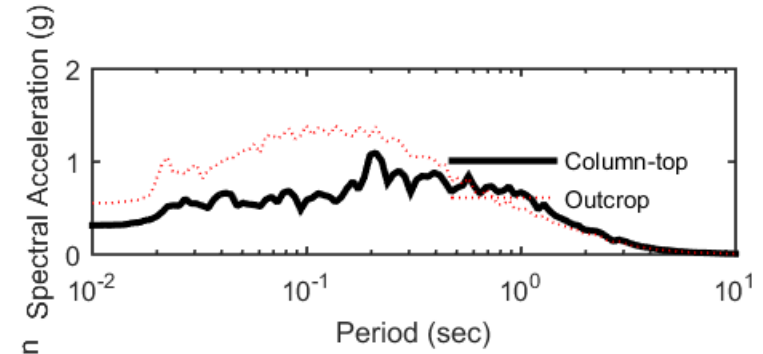
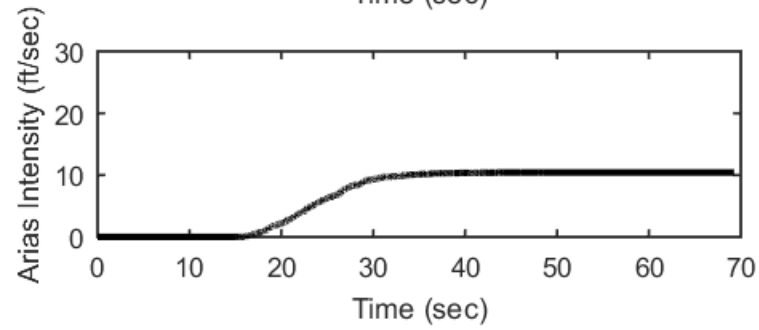
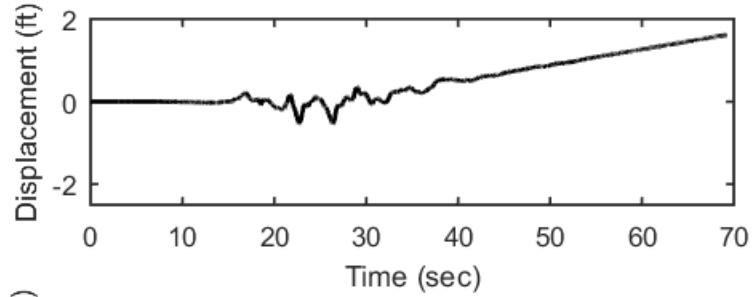
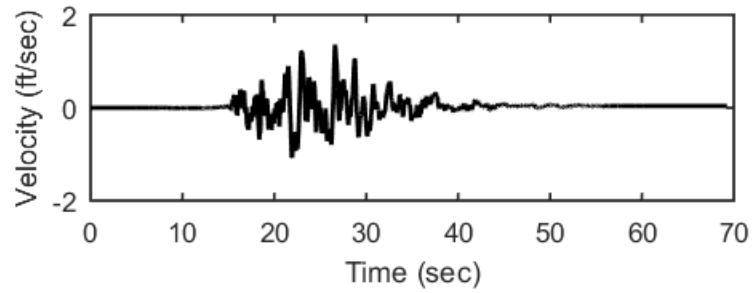
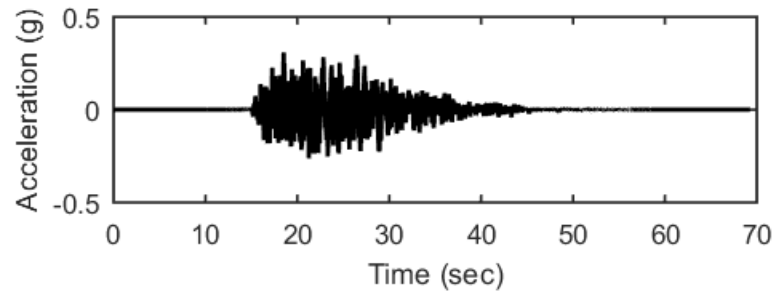
### Profile outputs for: PWP Generation Base with SEE2



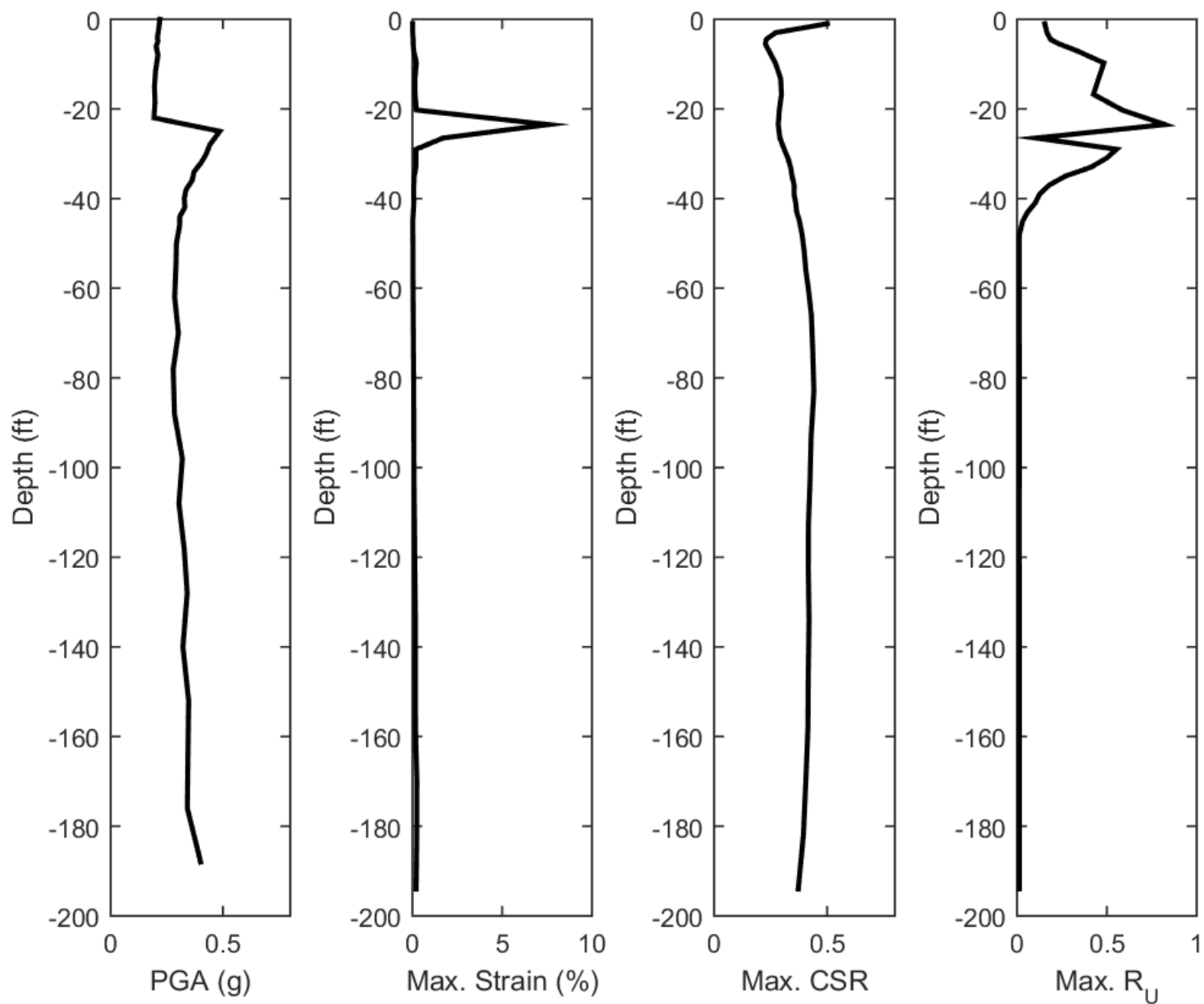
## Outputs at Ground Surface for: PWP Generation Base with SEE3



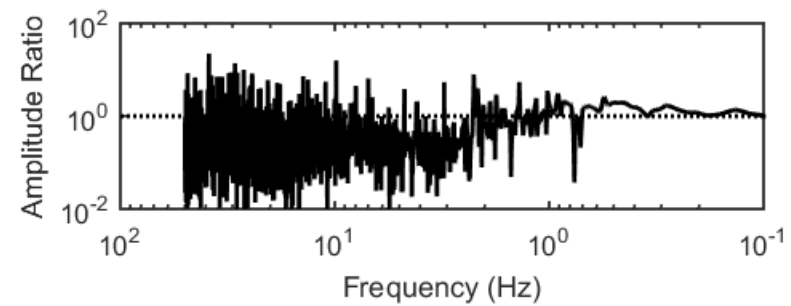
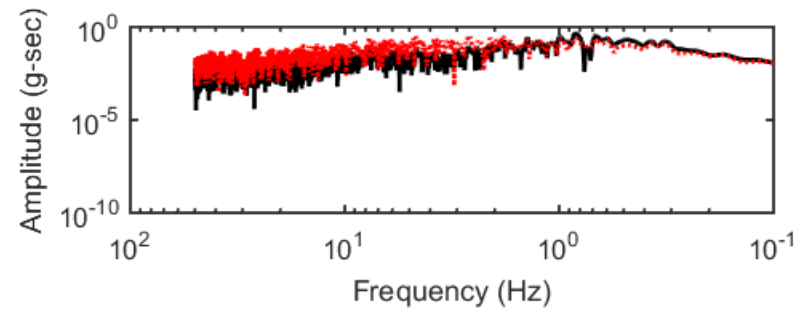
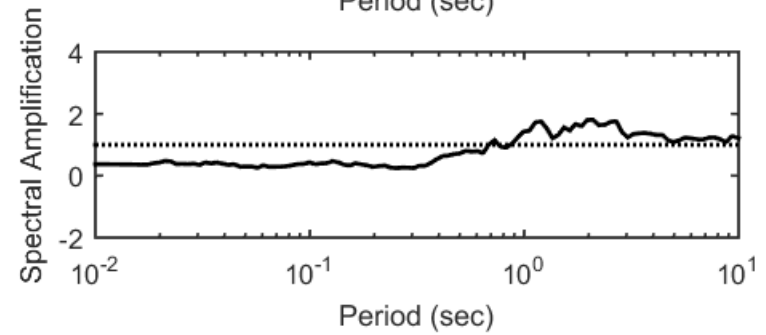
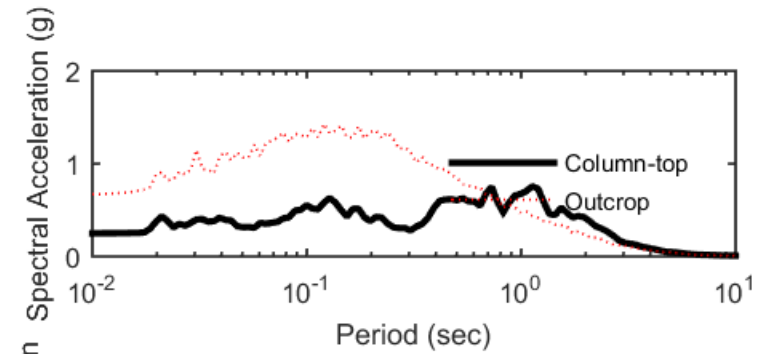
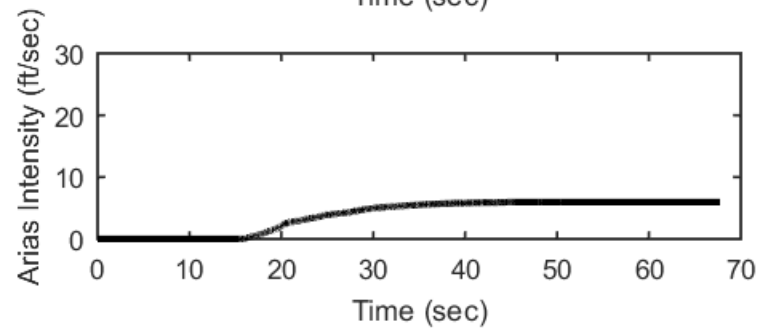
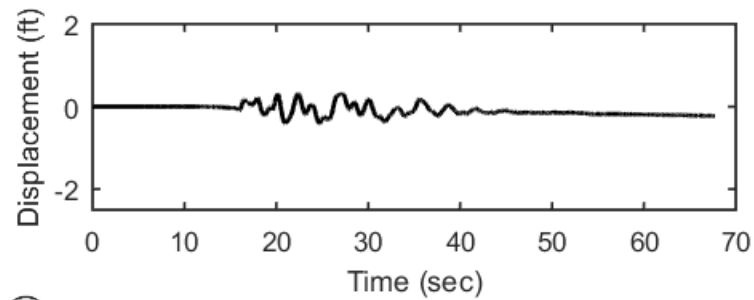
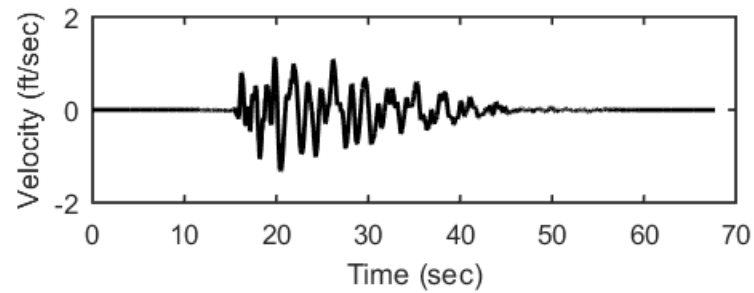
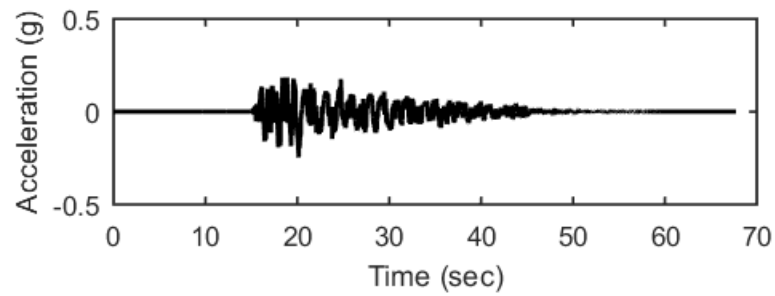
## Outputs at Top of Marl for: PWP Generation Base with SEE3



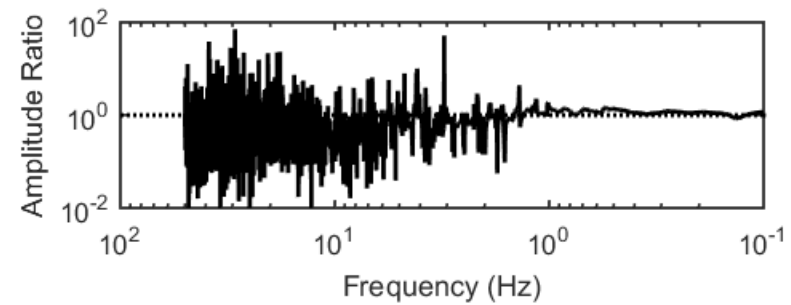
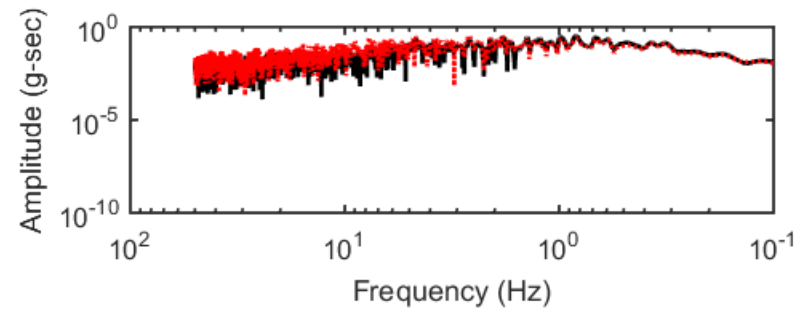
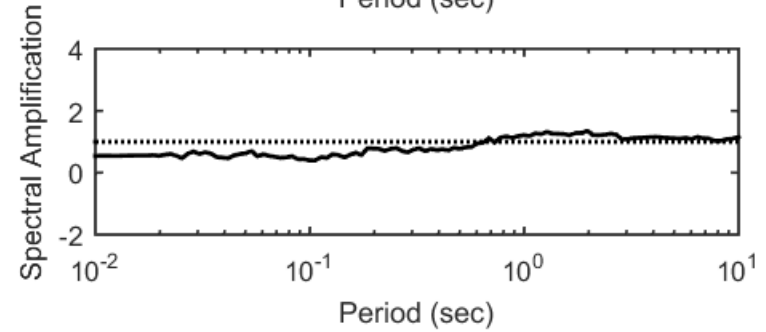
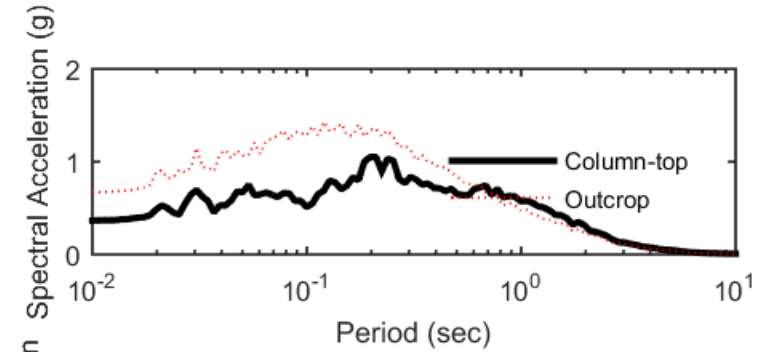
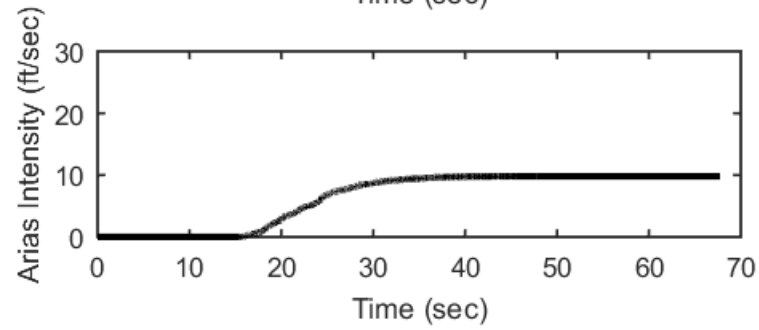
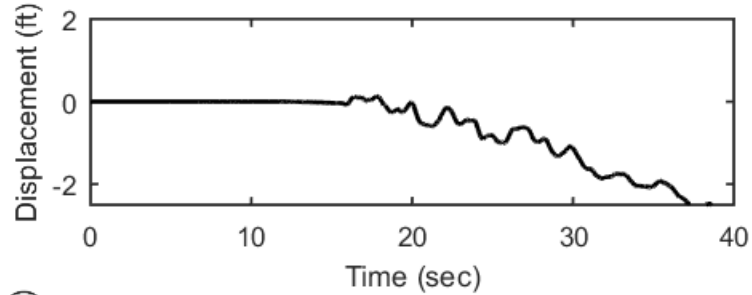
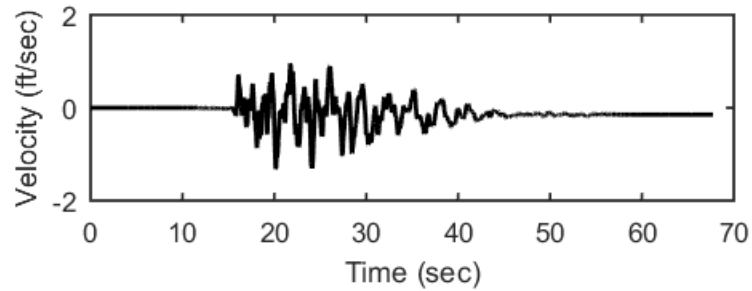
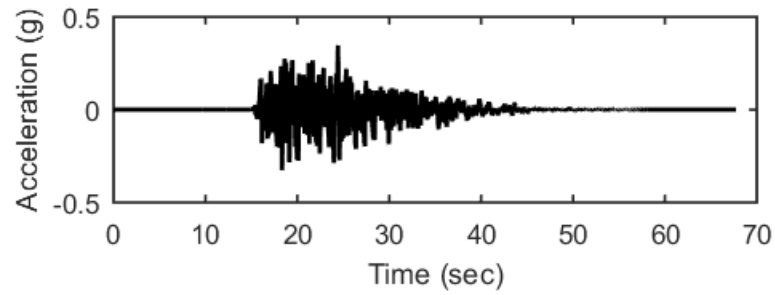
### Profile outputs for: PWP Generation Base with SEE3



## Outputs at Ground Surface for: PWP Generation Base with SEE4

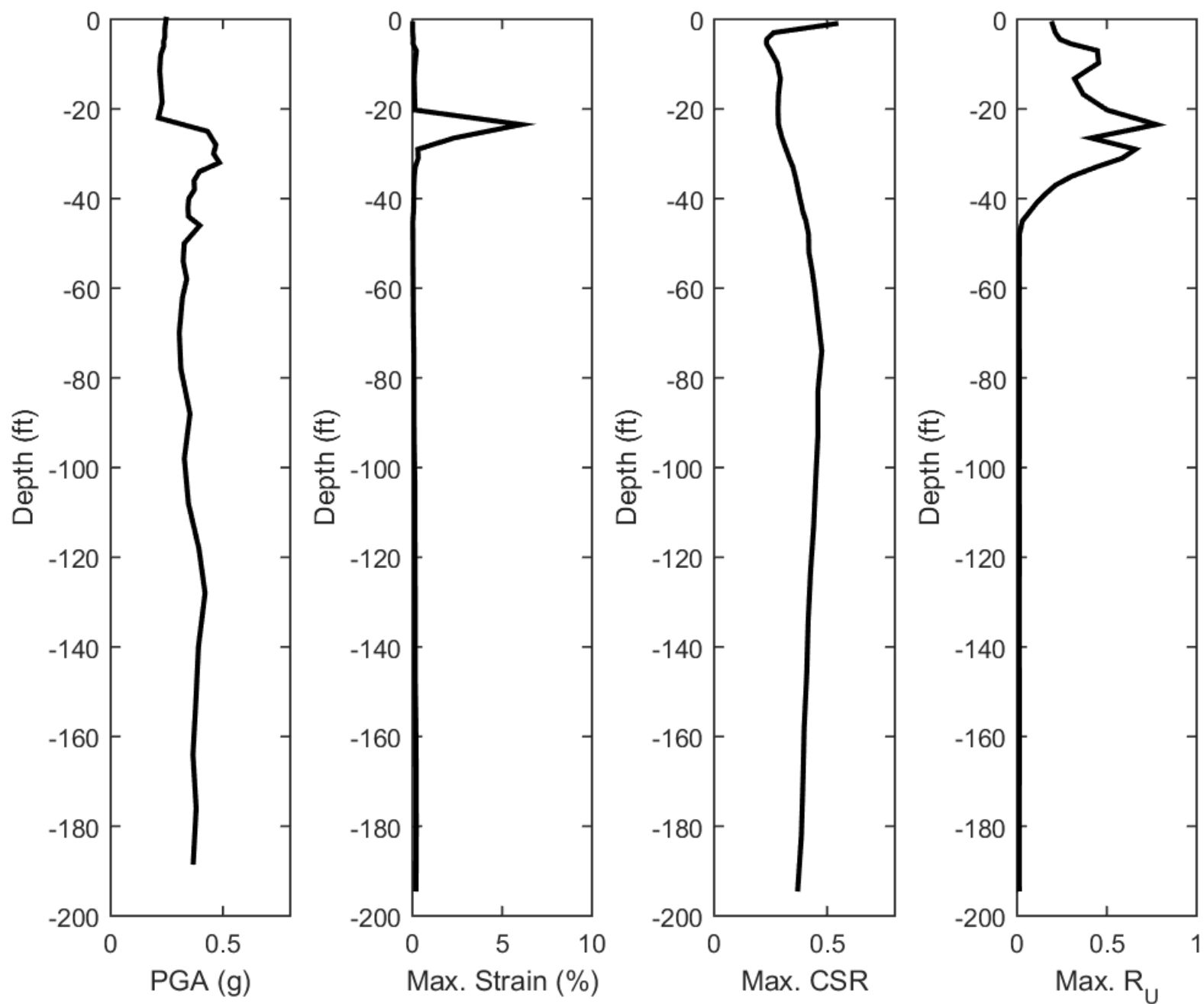


## Outputs at Top of Marl for: PWP Generation Base with SEE4

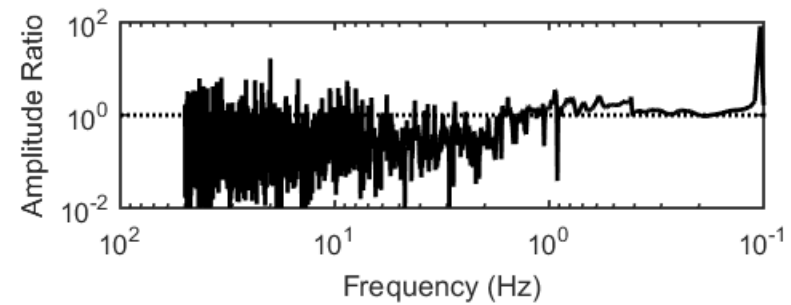
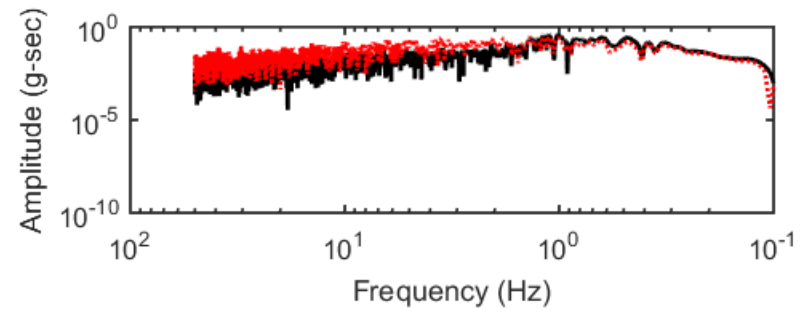
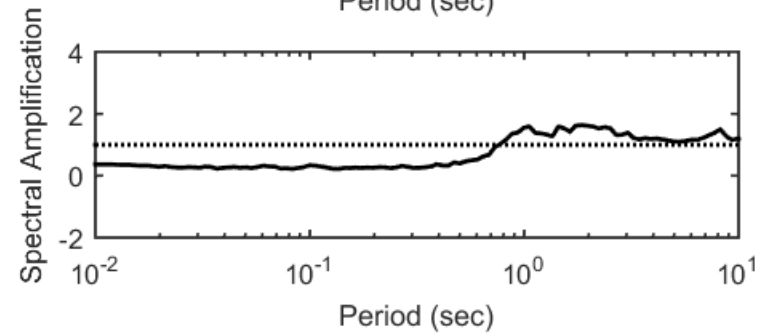
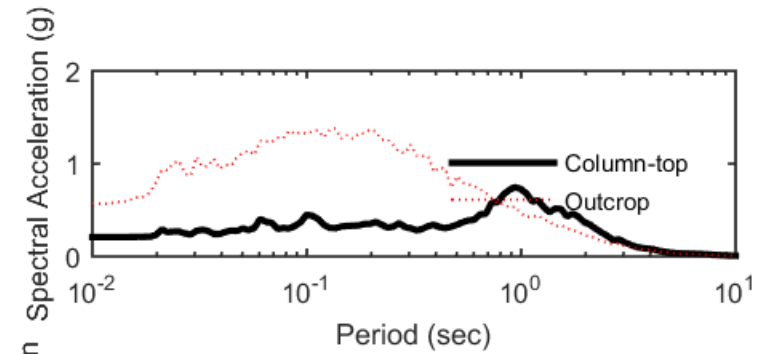
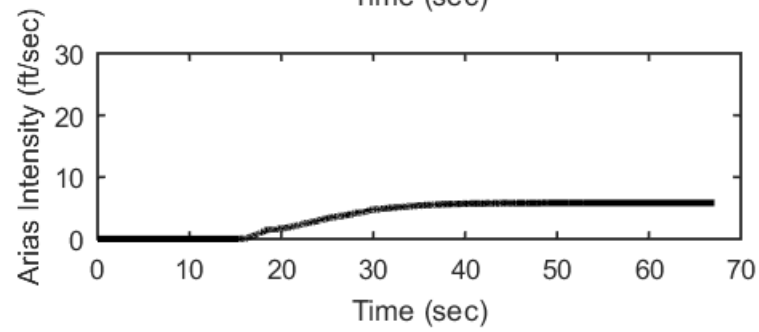
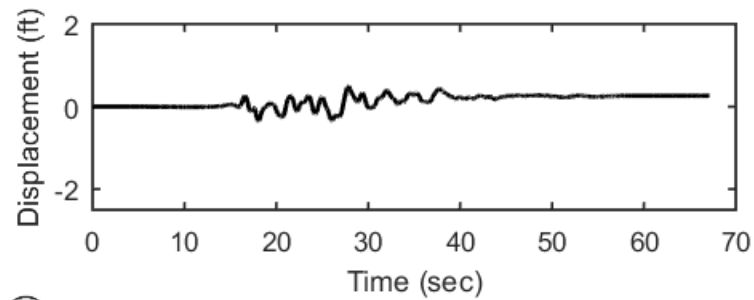
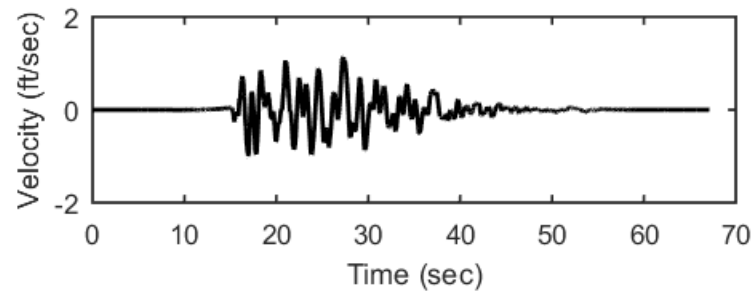
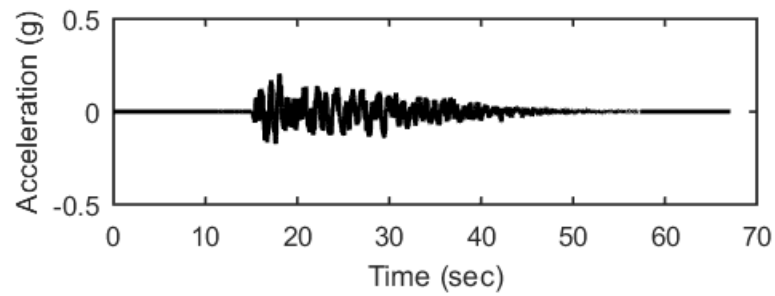




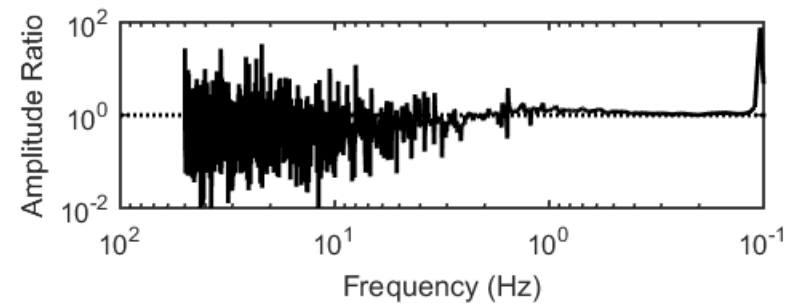
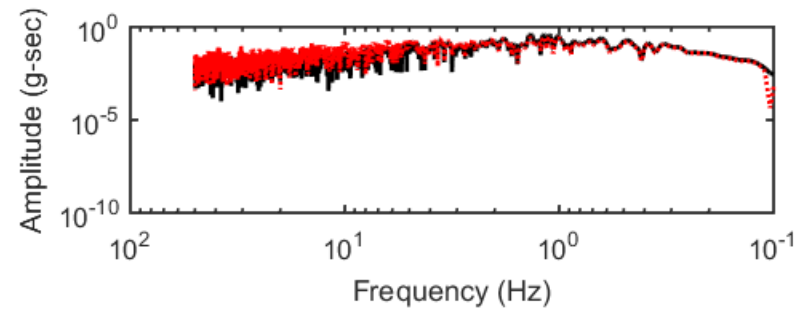
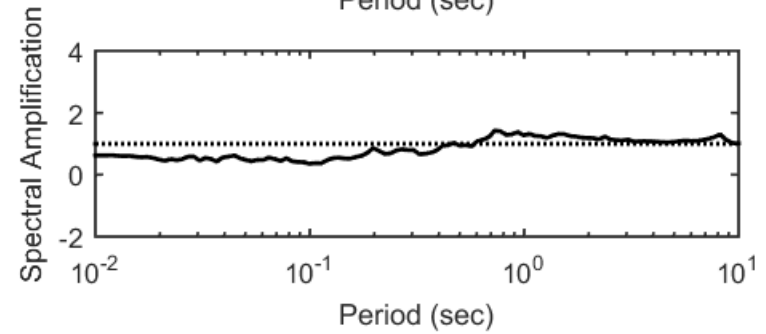
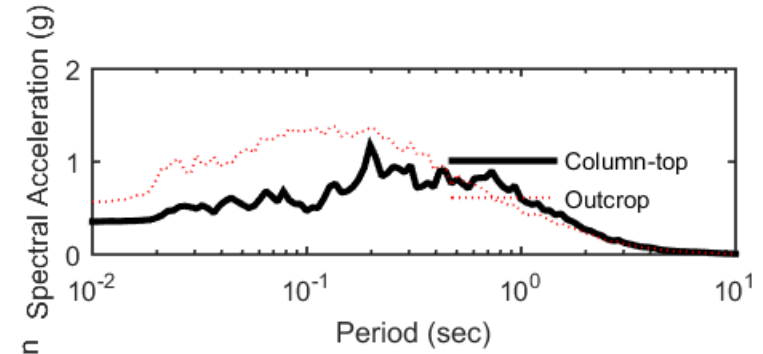
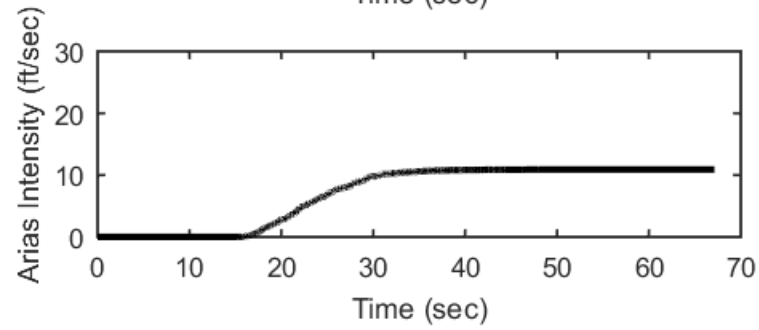
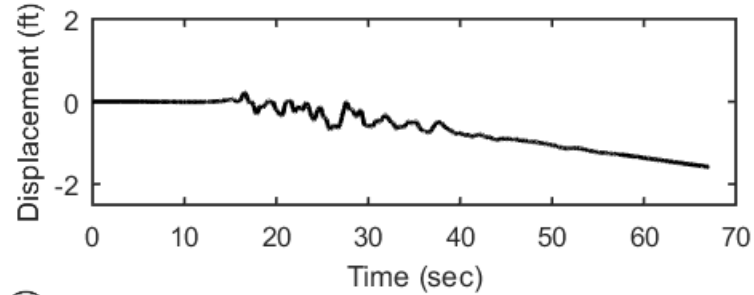
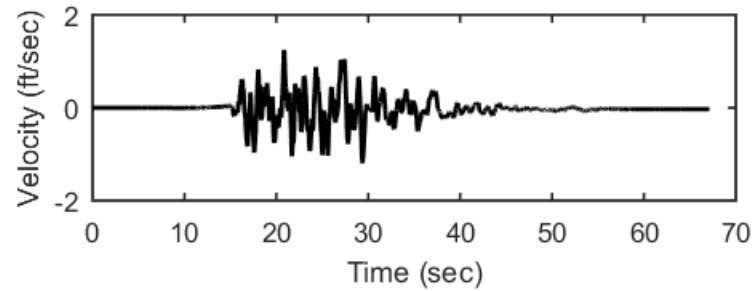
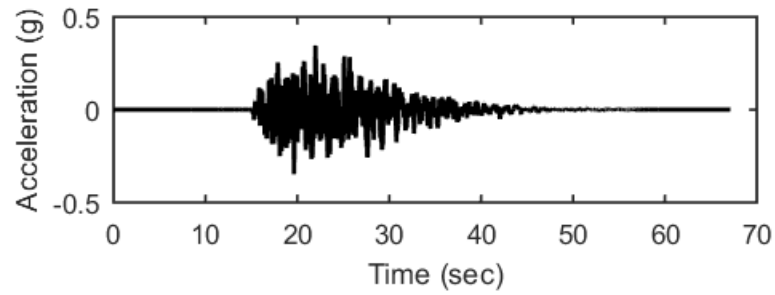
### Profile outputs for: PWP Generation Base with SEE4



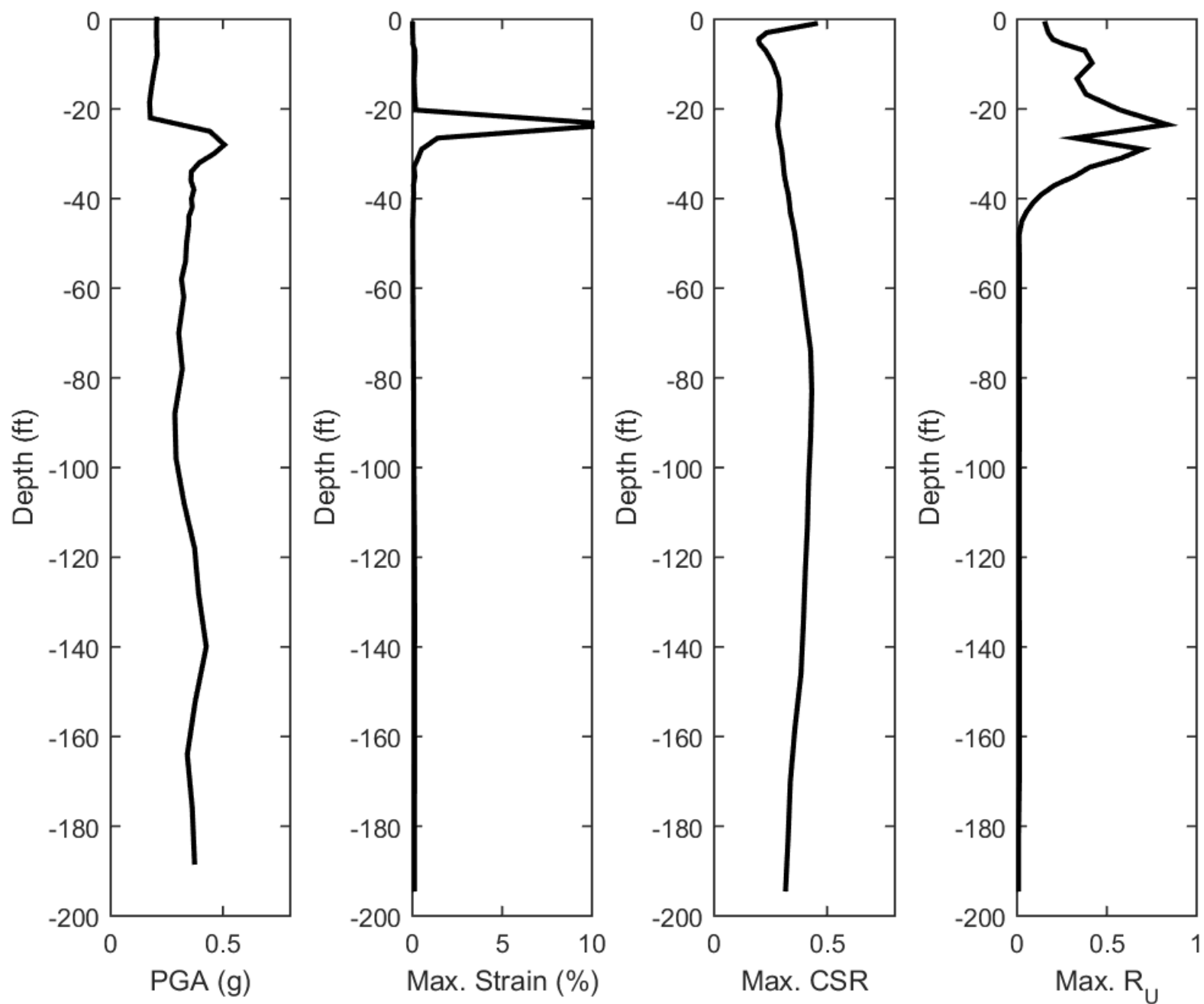
## Outputs at Ground Surface for: PWP Generation Base with SEE5



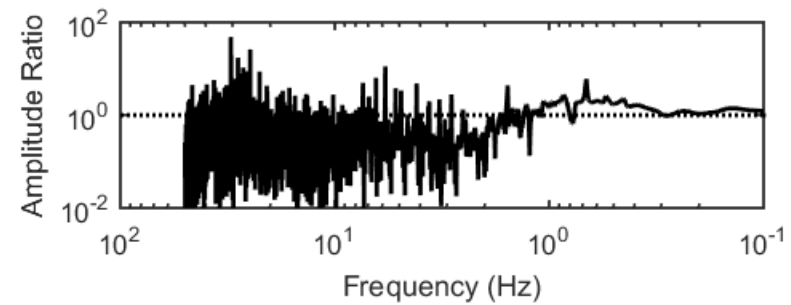
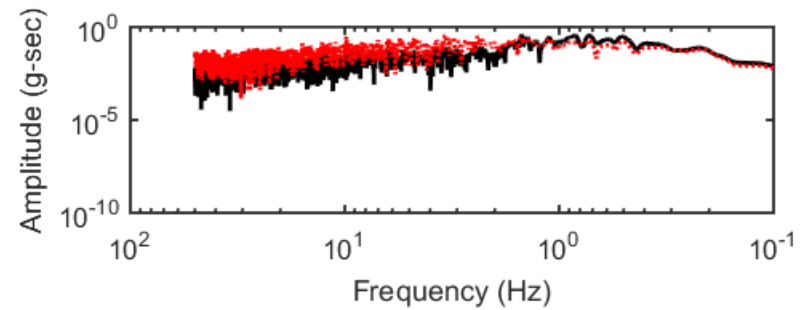
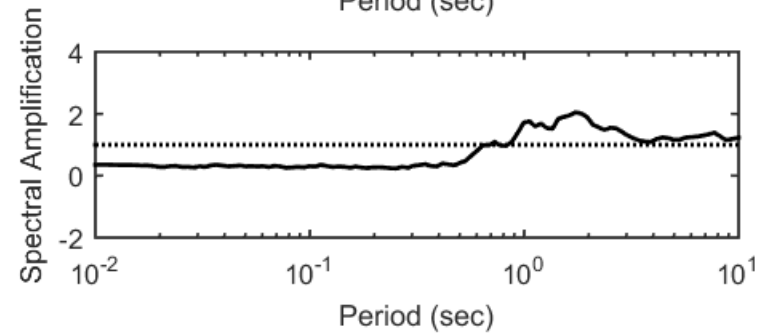
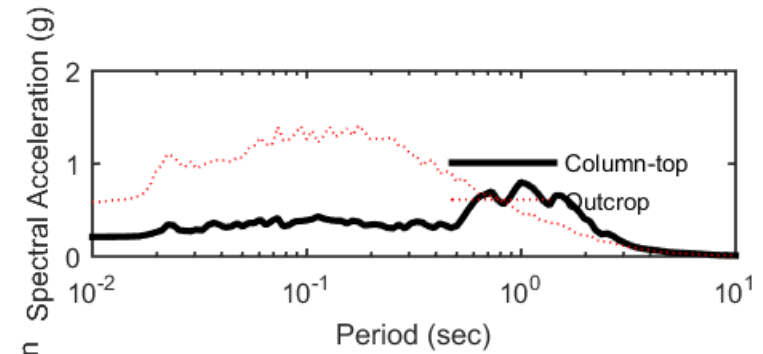
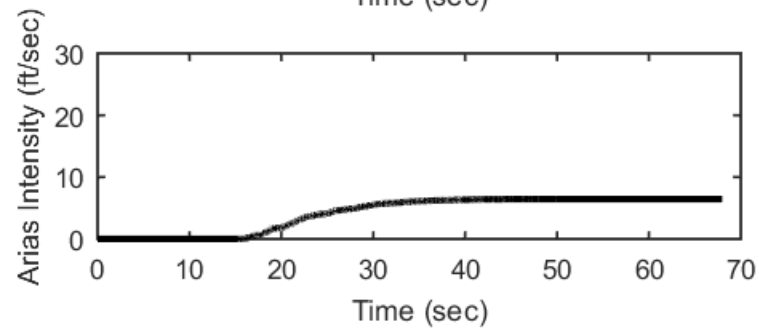
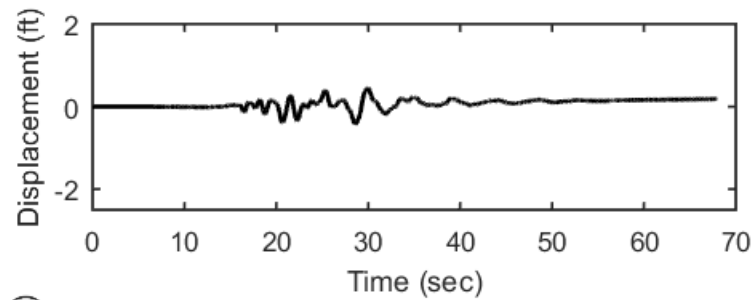
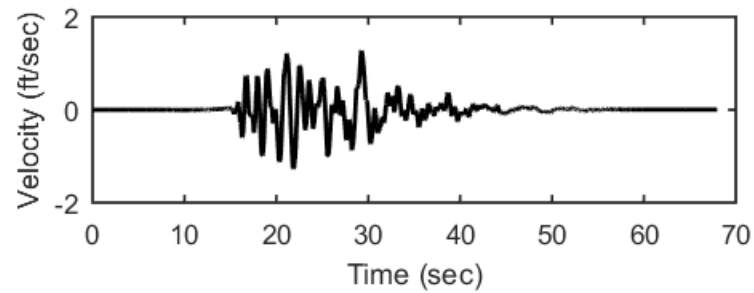
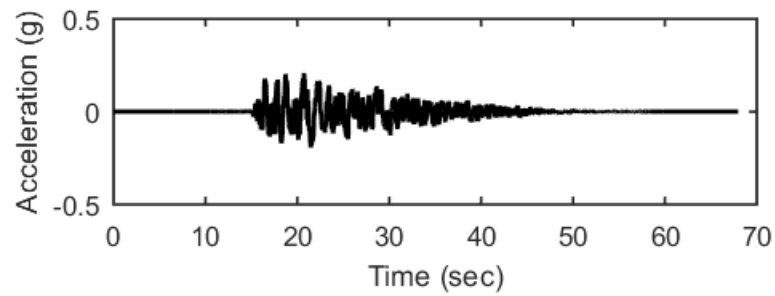
## Outputs at Top of Marl for: PWP Generation Base with SEE5



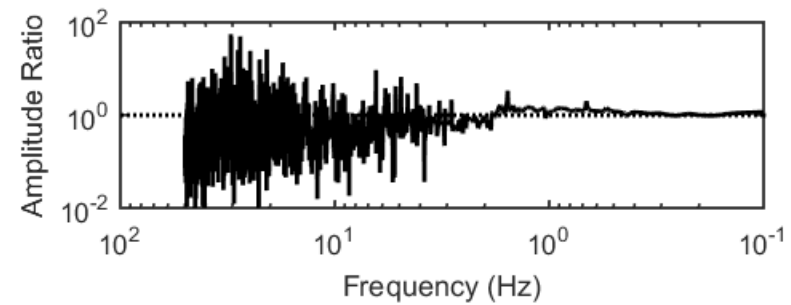
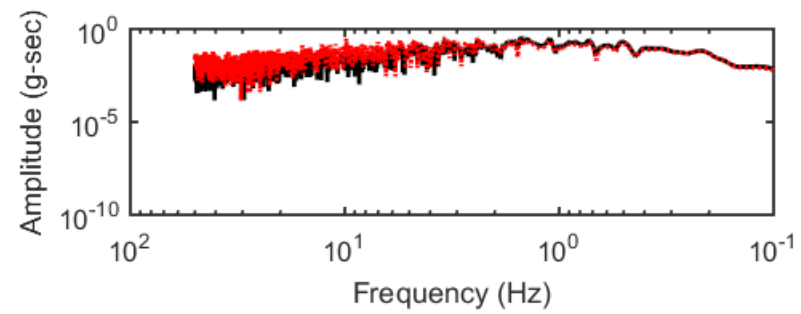
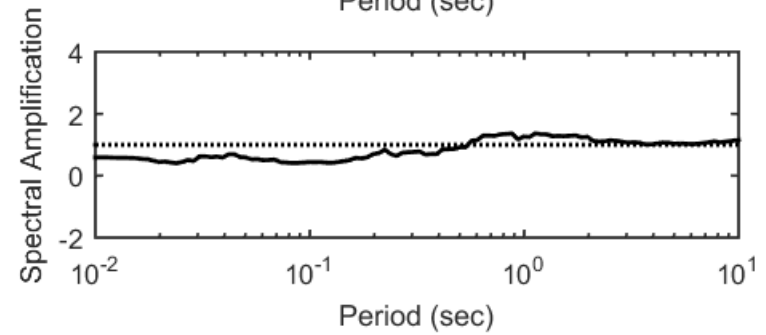
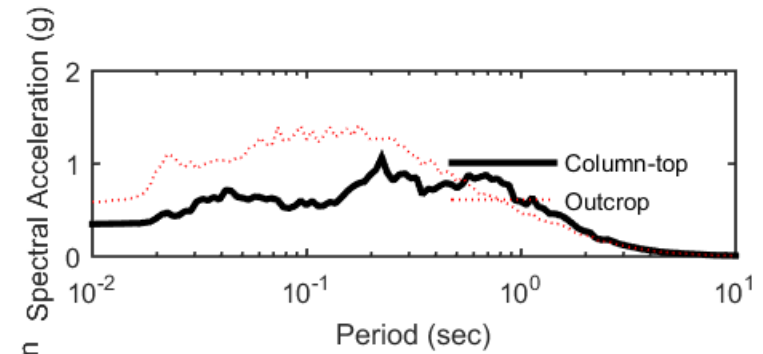
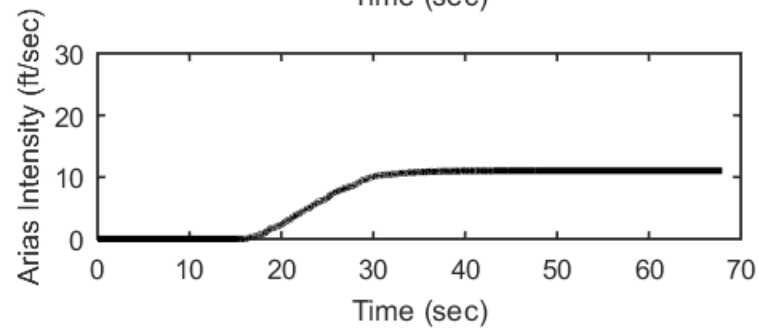
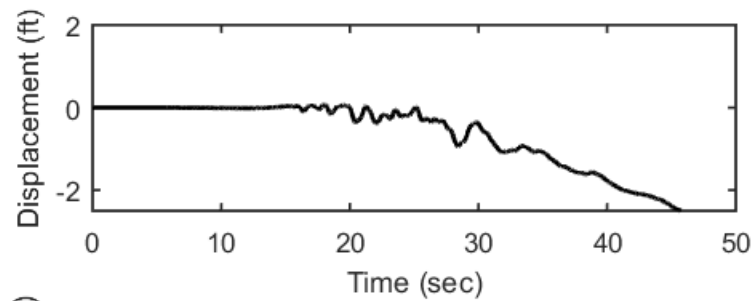
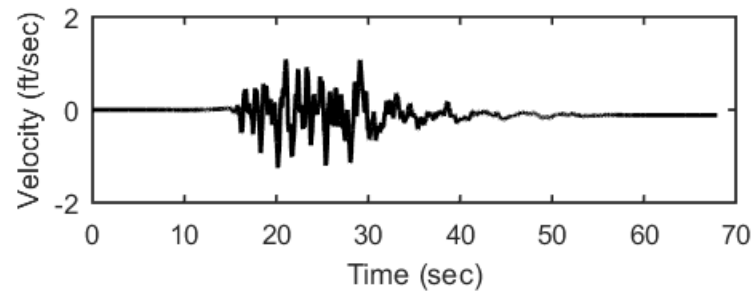
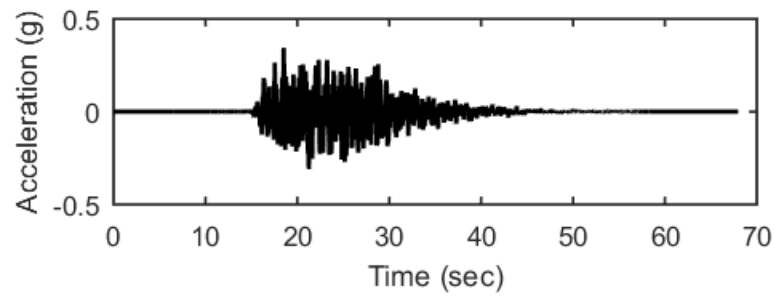
### Profile outputs for: PWP Generation Base with SEE5



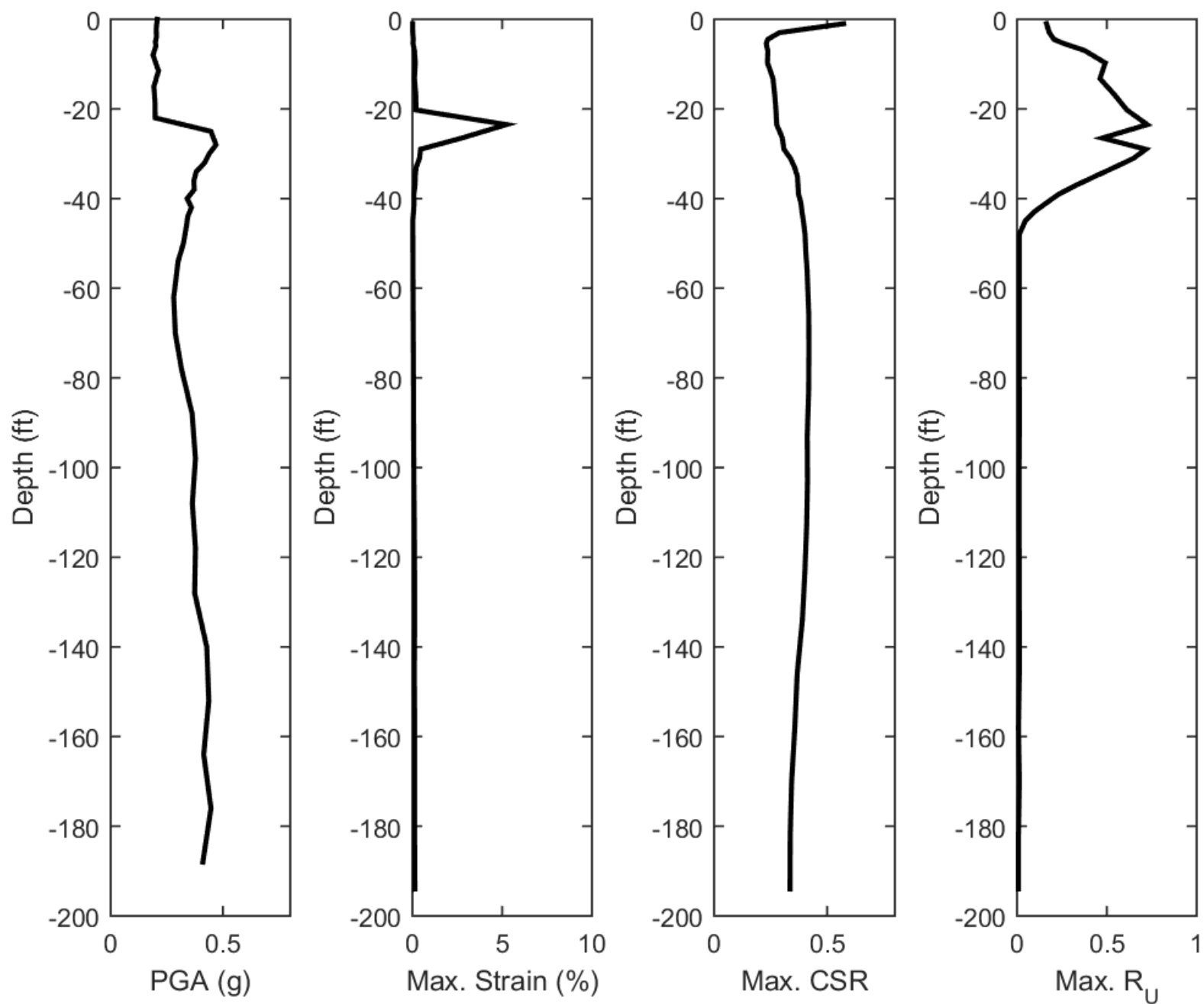
## Outputs at Ground Surface for: PWP Generation Base with SEE6



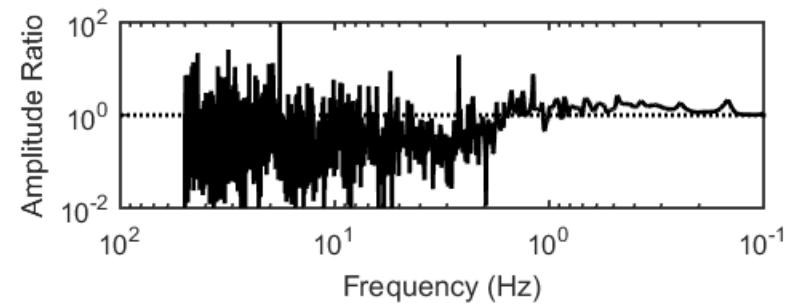
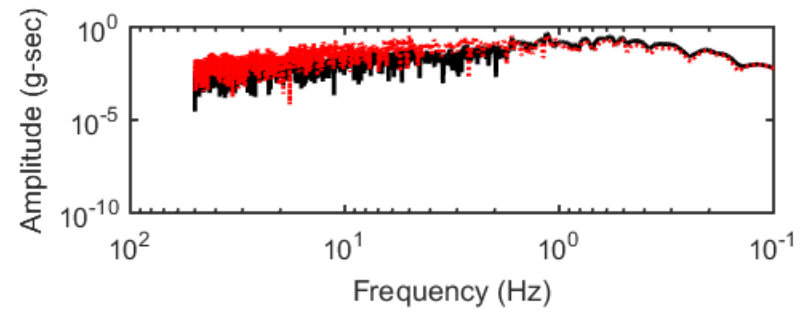
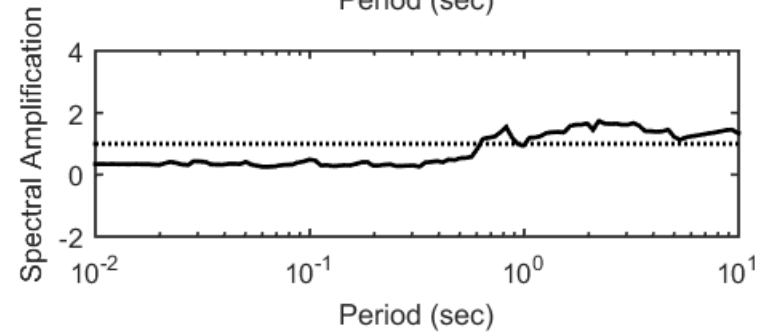
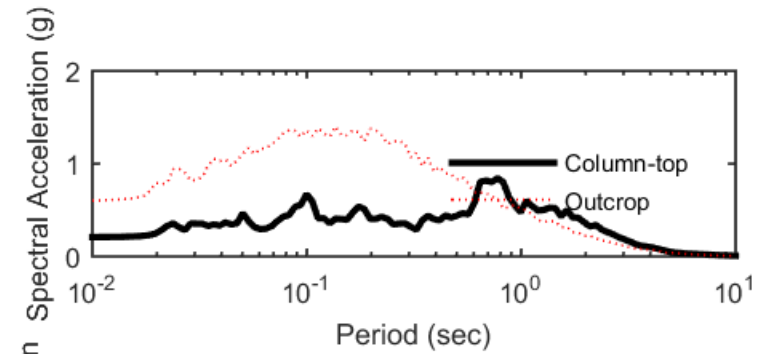
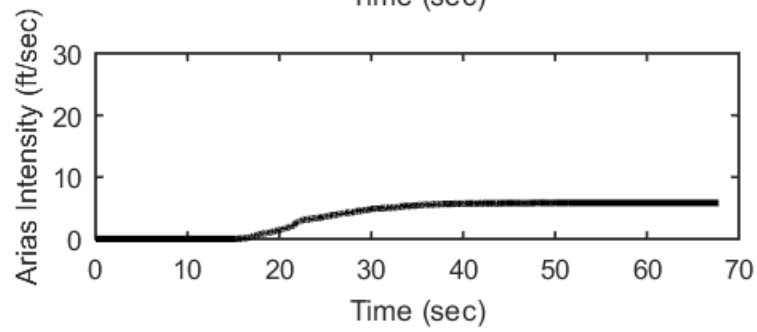
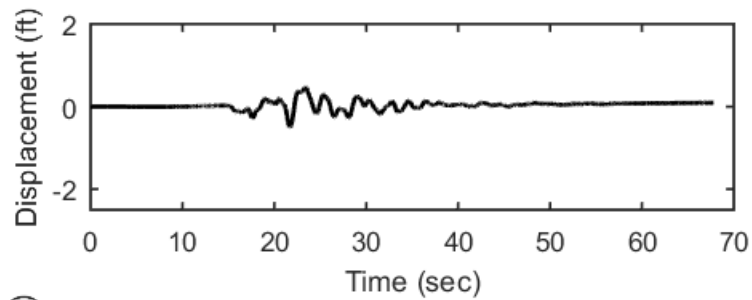
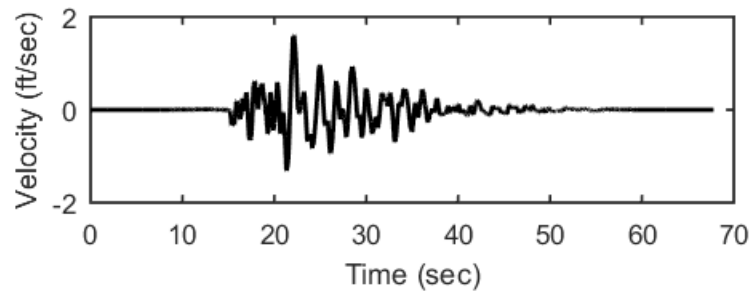
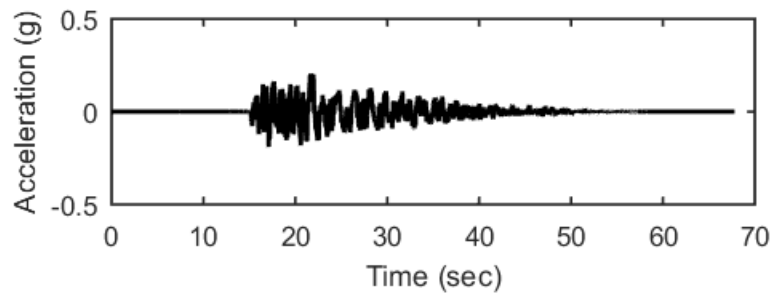
## Outputs at Top of Marl for: PWP Generation Base with SEE6



### Profile outputs for: PWP Generation Base with SEE6

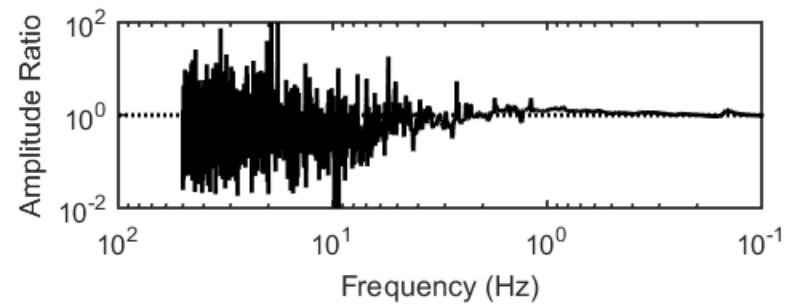
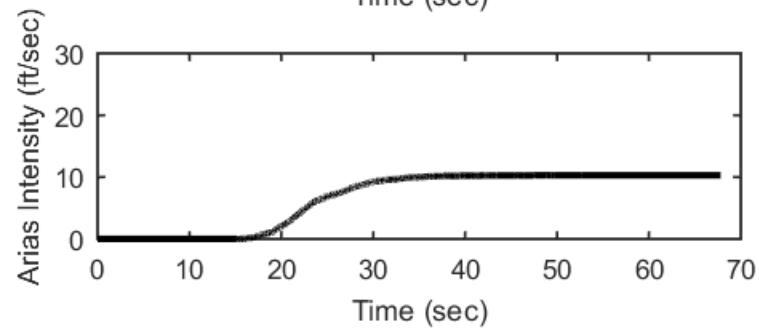
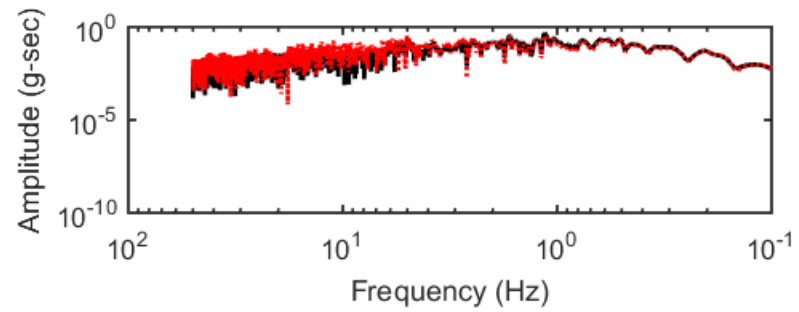
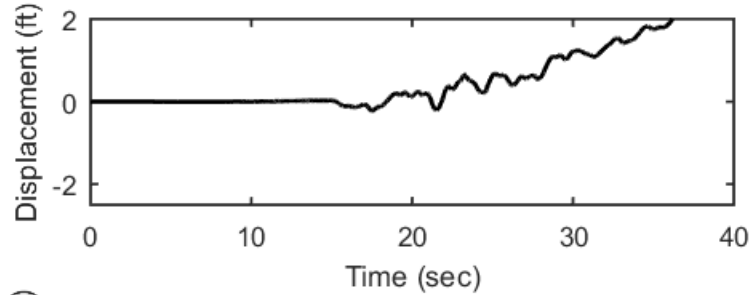
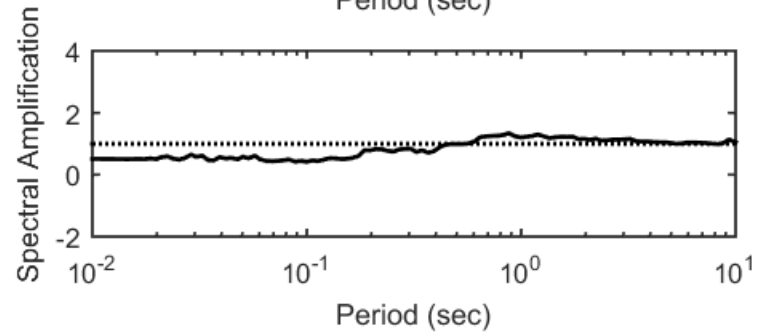
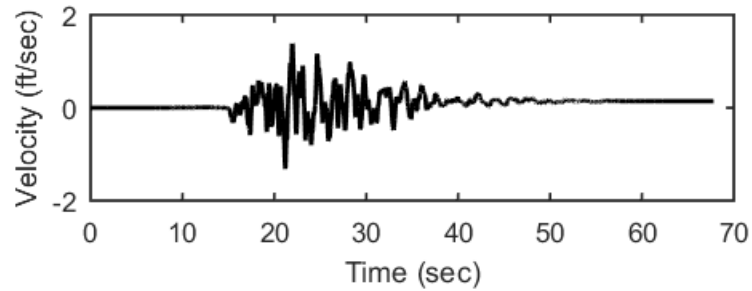
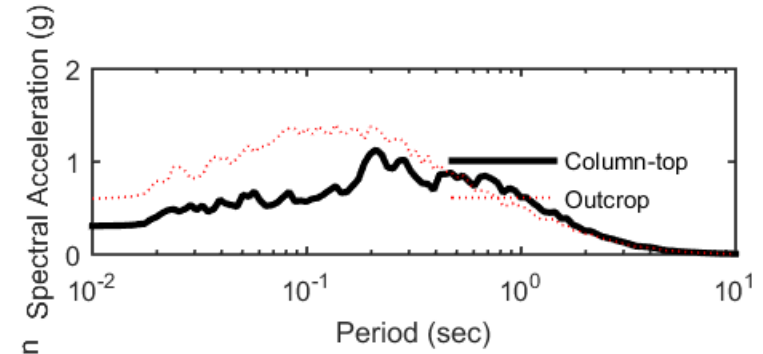
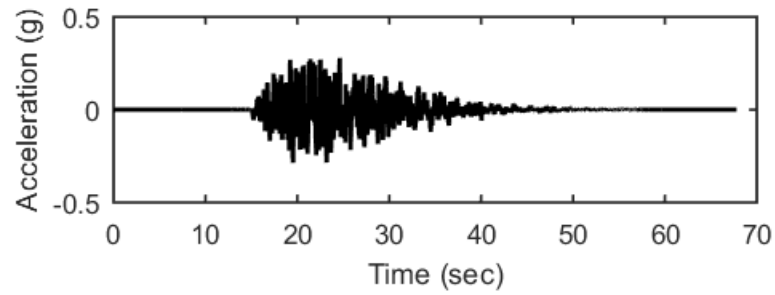


## Outputs at Ground Surface for: PWP Generation Base with SEE7

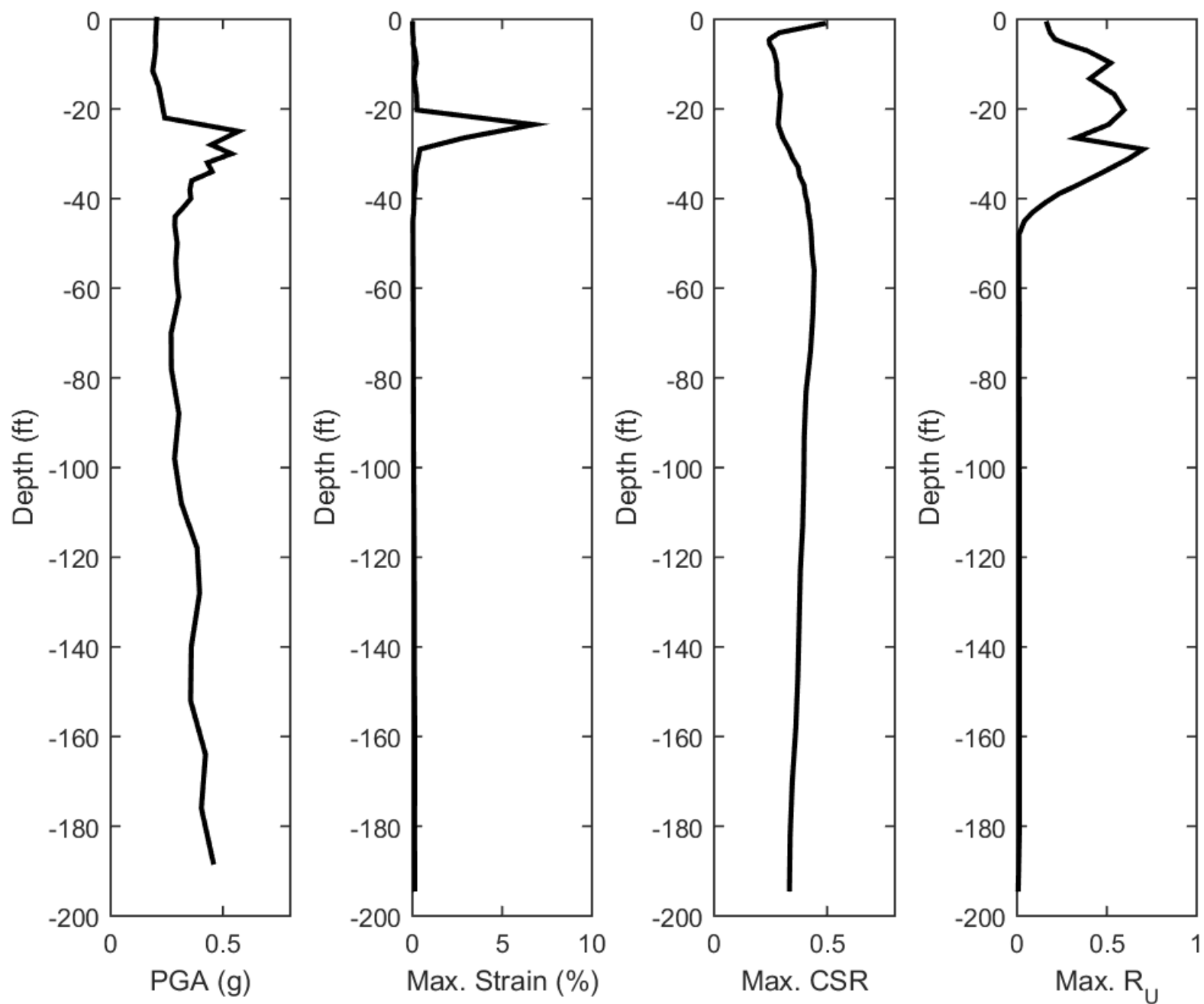




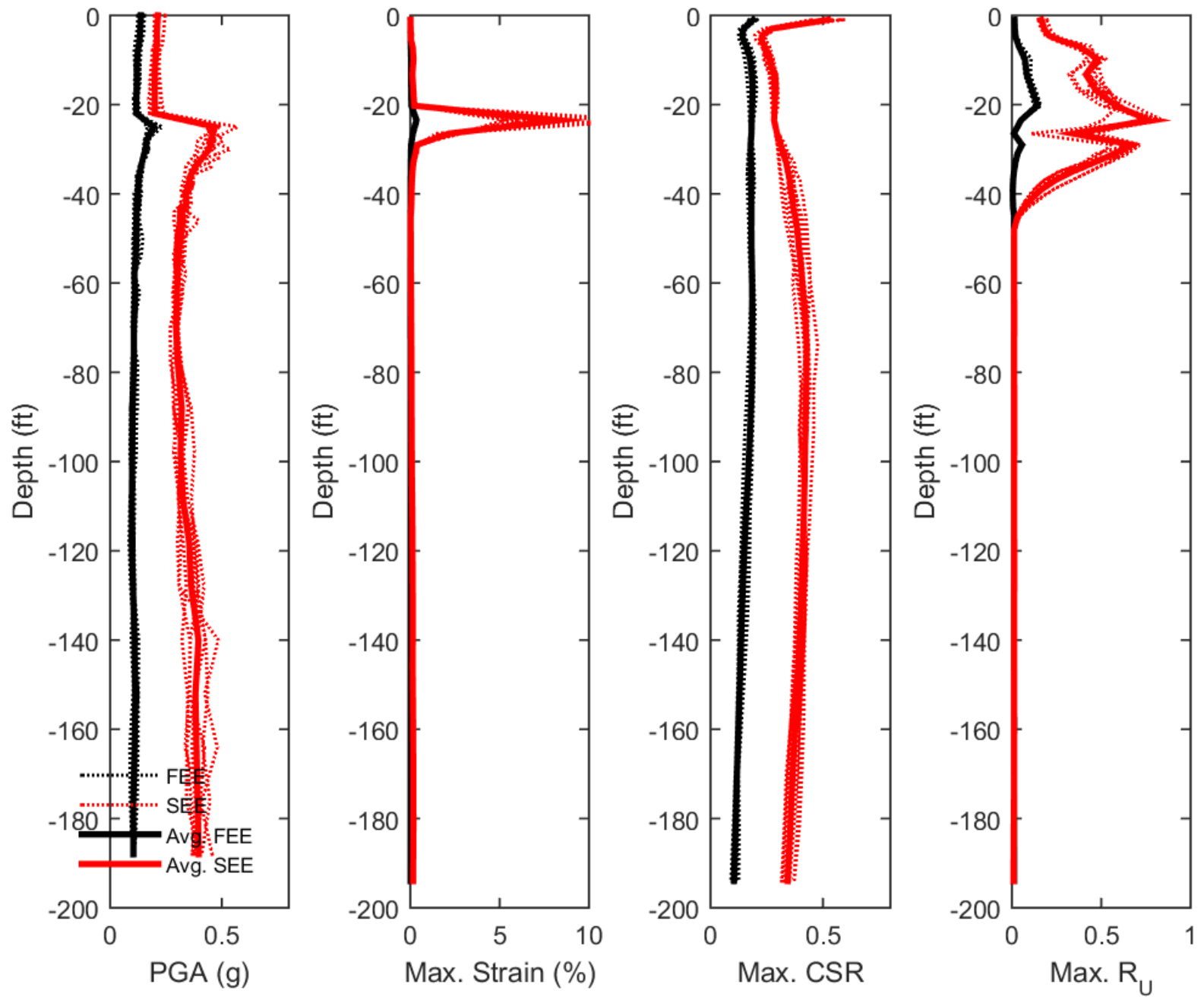
## Outputs at Top of Marl for: PWP Generation Base with SEE7



### Profile outputs for: PWP Generation Base with SEE7

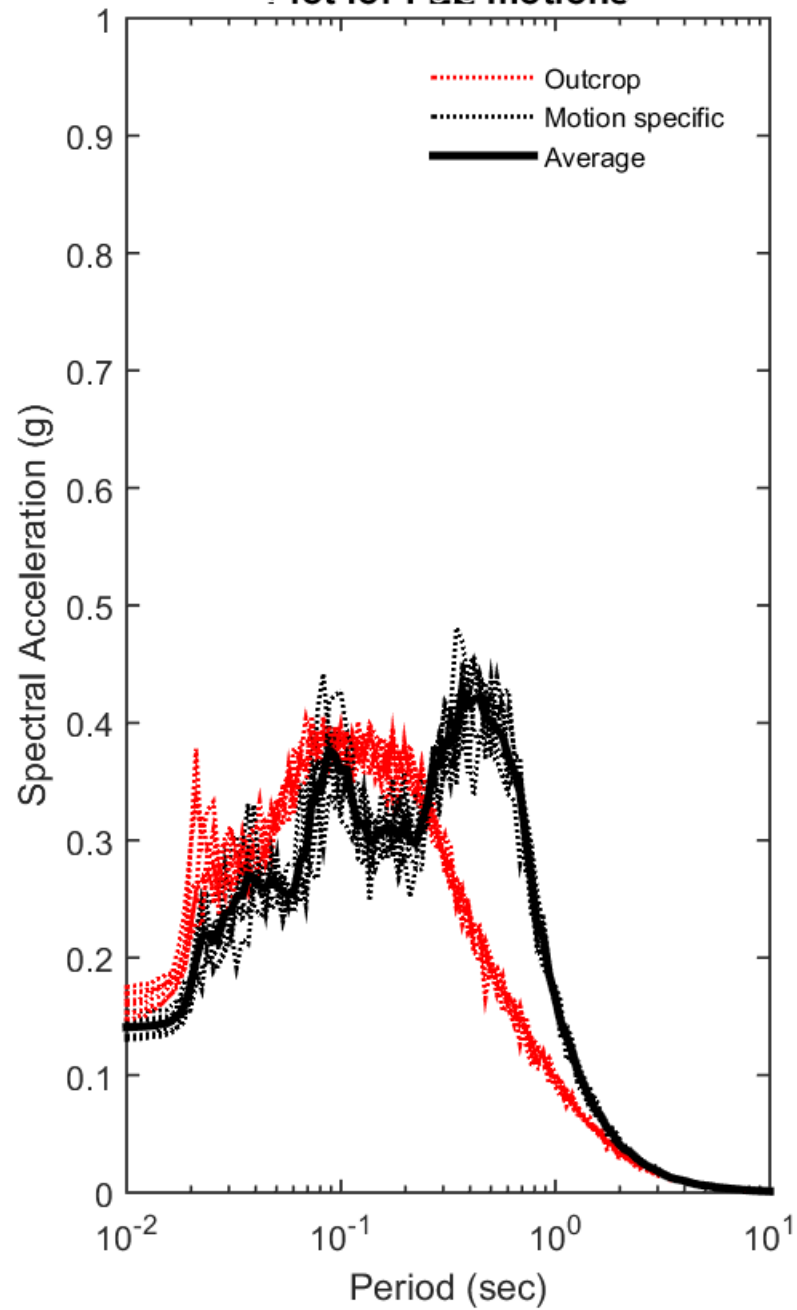


## Summary of profile outputs for: PWP Generation Base

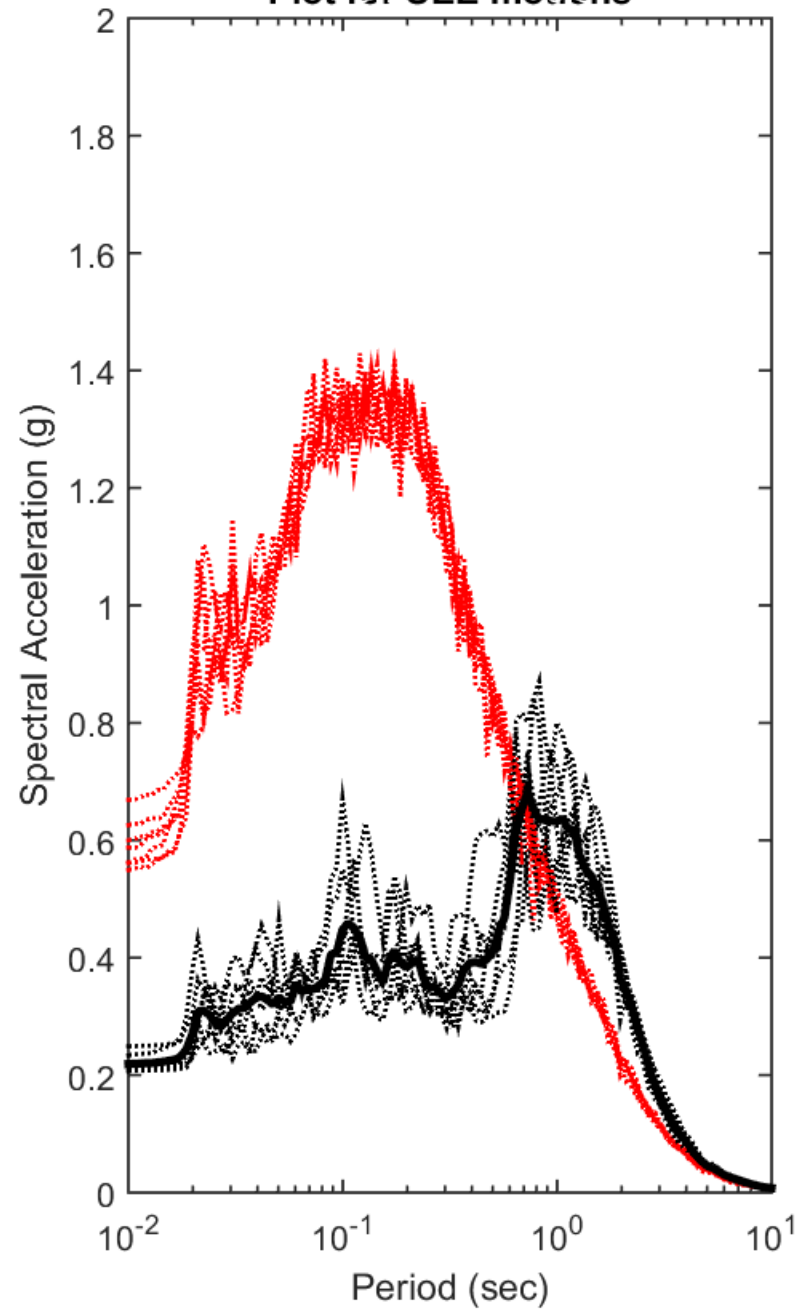


## Summary plots of RSA at ground surface for: PWP Generation Base

Plot for FEE motions:

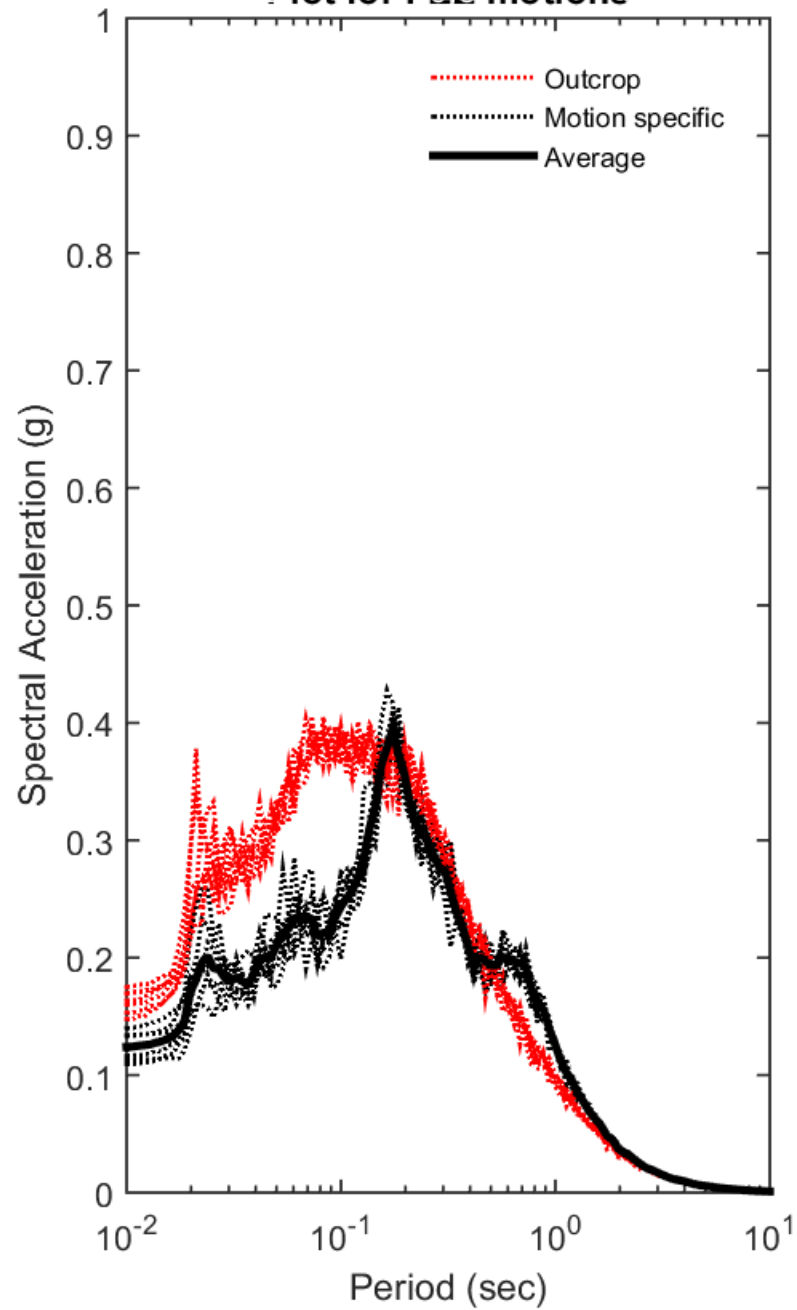


Plot for SEE motions:

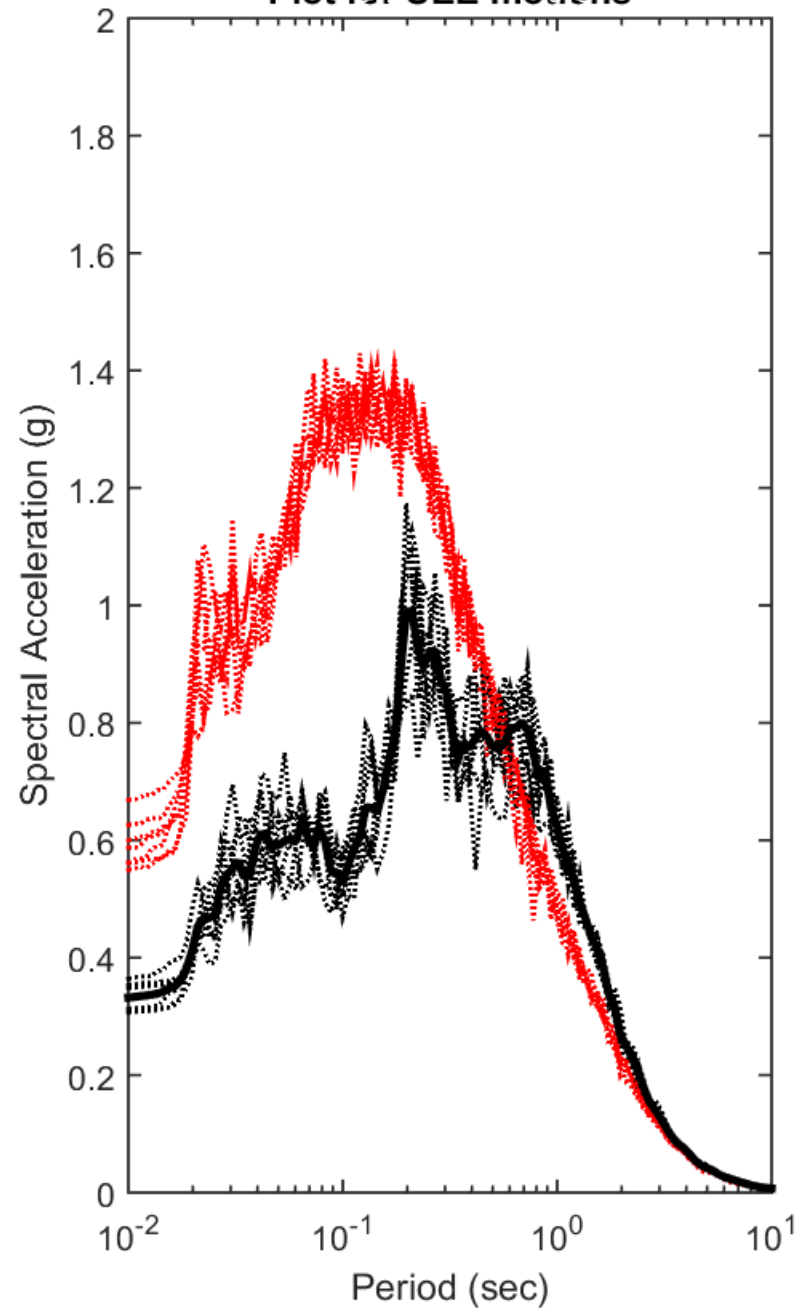


## Summary plots of RSA at top of Marl for: PWP Generation Base

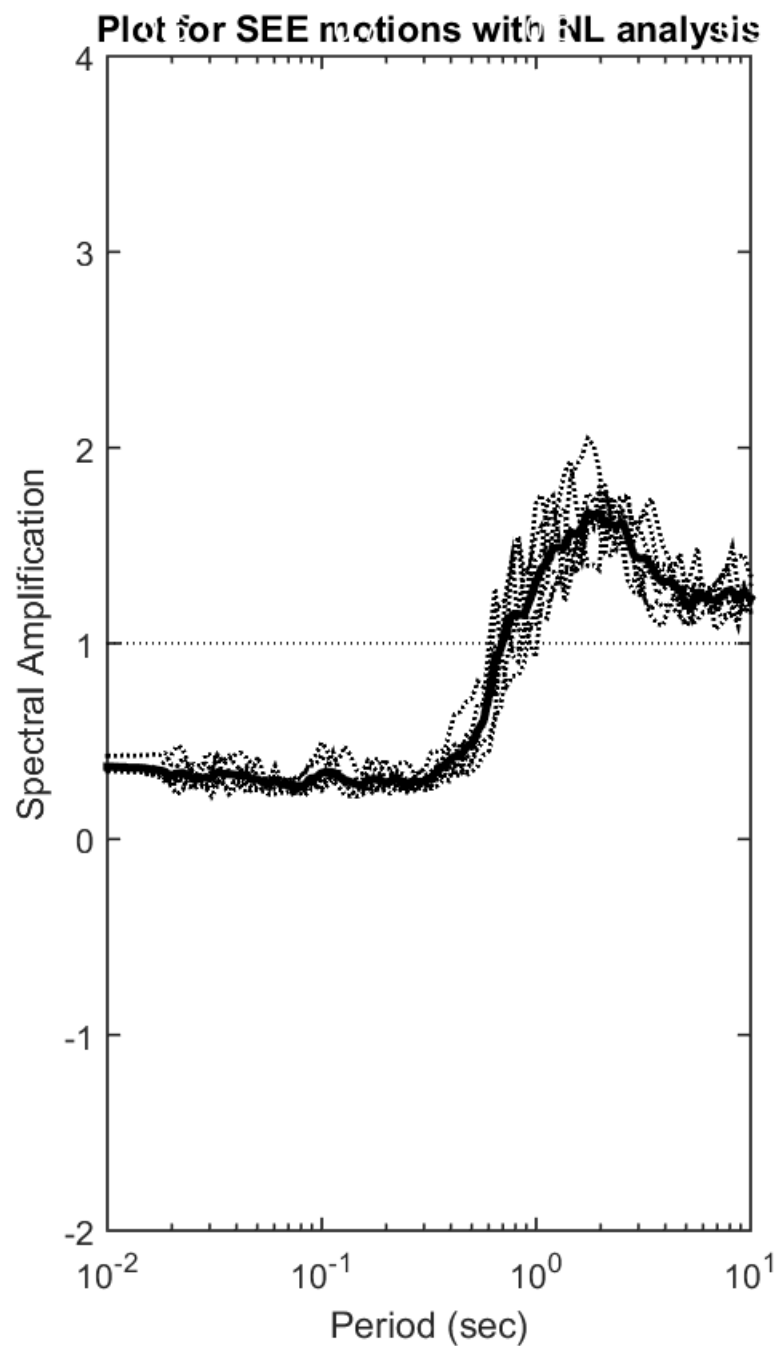
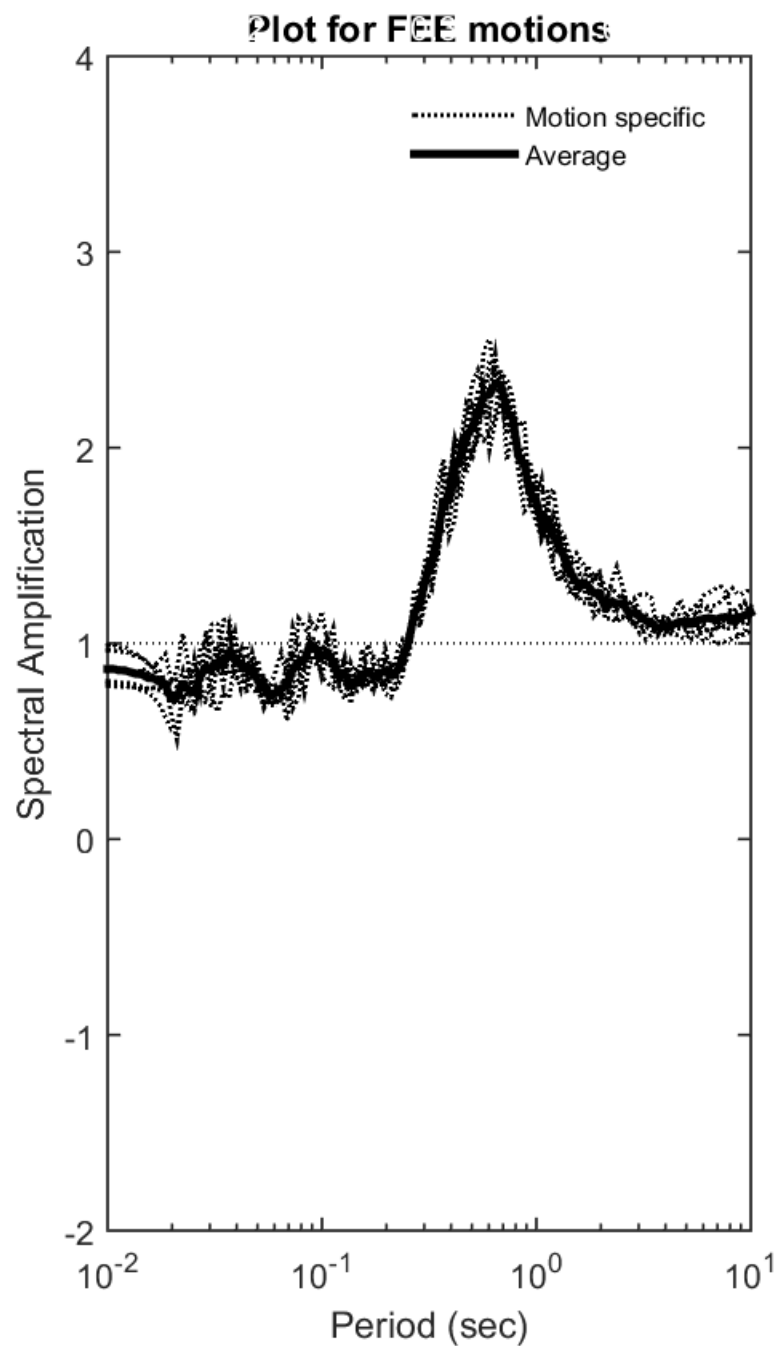
Plot for FEE motions:



Plot for SEE motions:

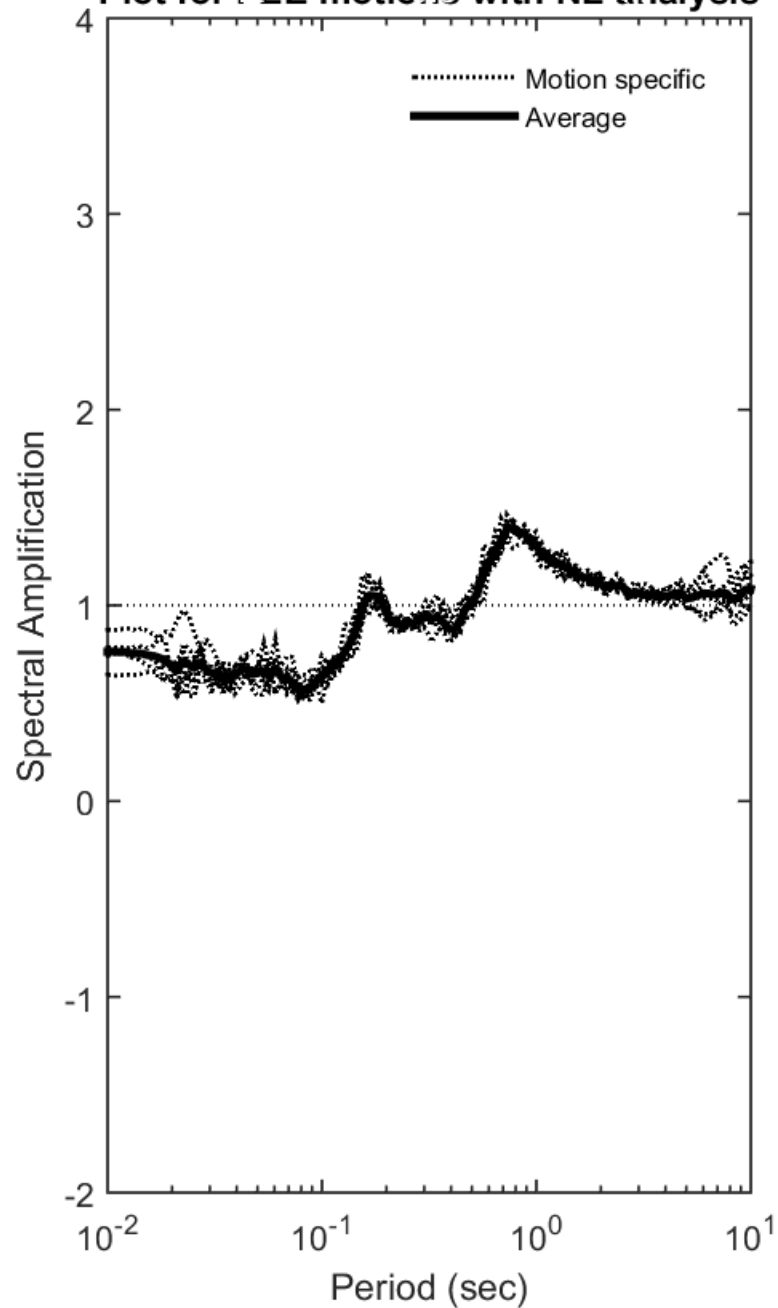


## Summary plots of Spectral amplifications at ground surface for: PWP Generation Base

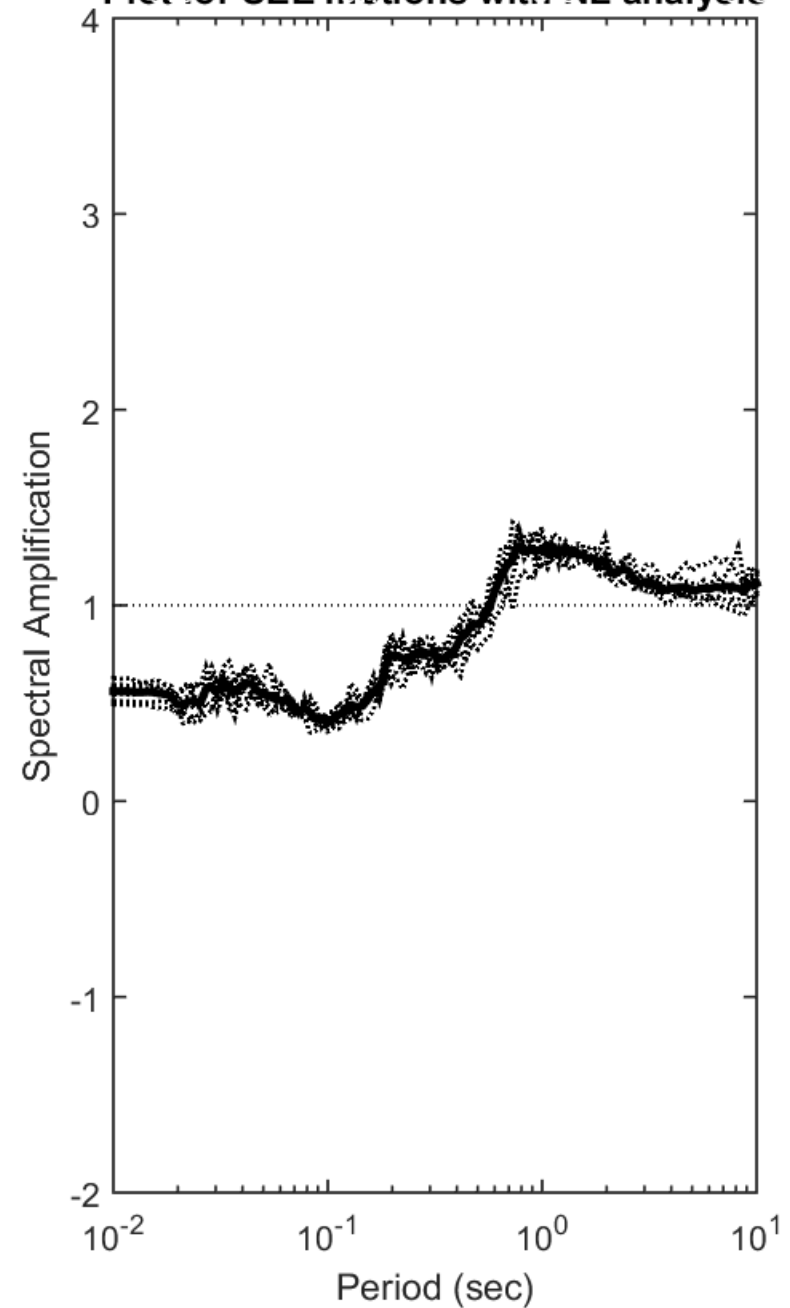


## Summary plots of Spectral amplifications at top of Marl for: PWP Generation Base

### Plot for FEE motions with NL analysis



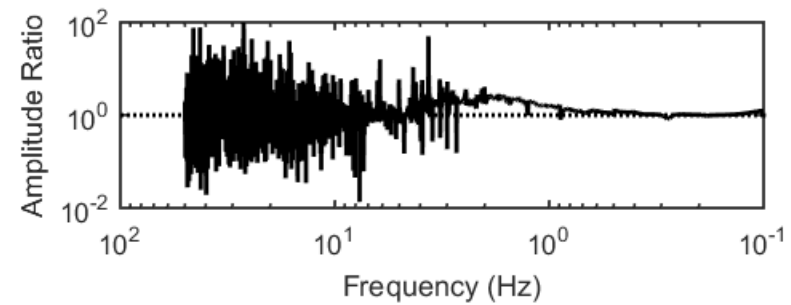
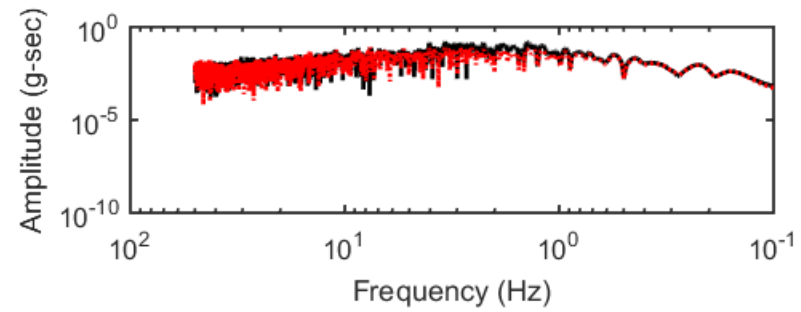
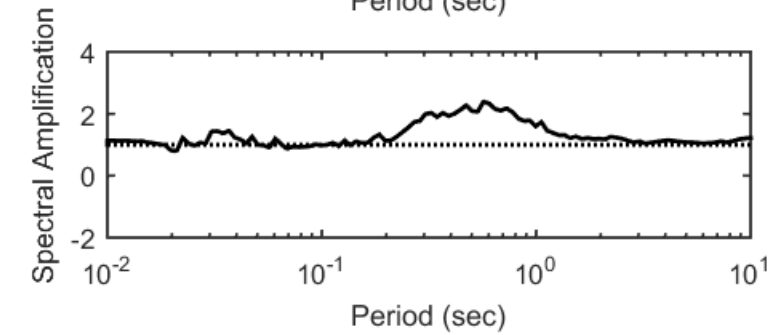
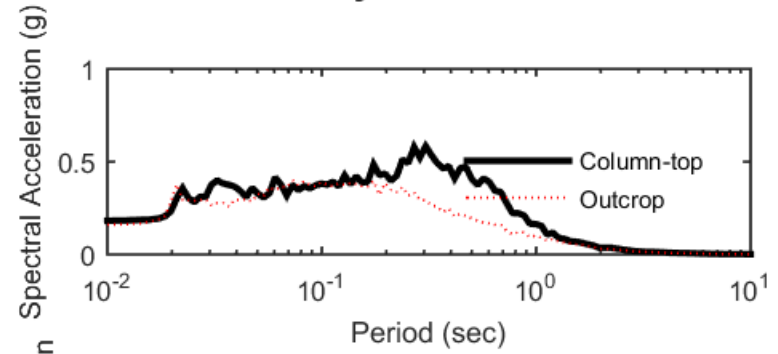
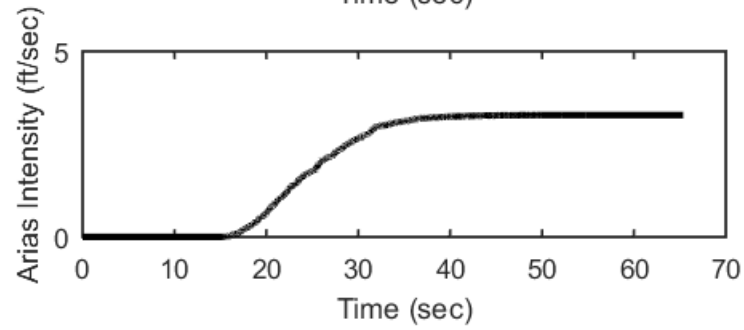
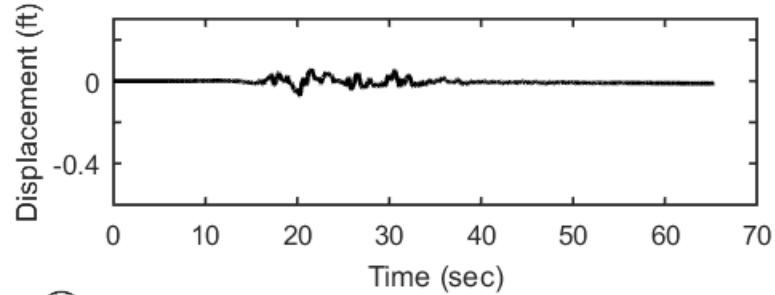
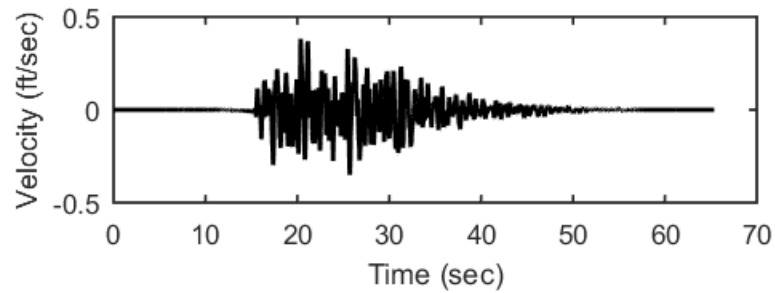
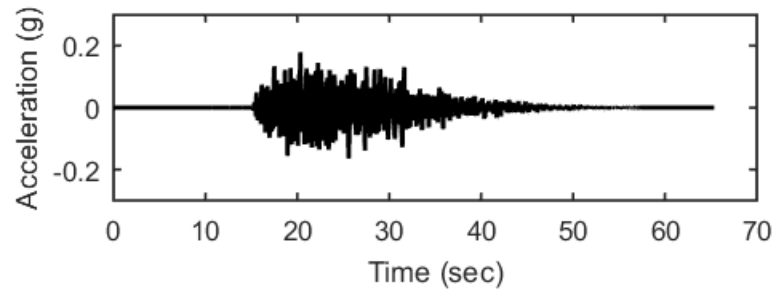
### Plot for SEE motions with NL analysis



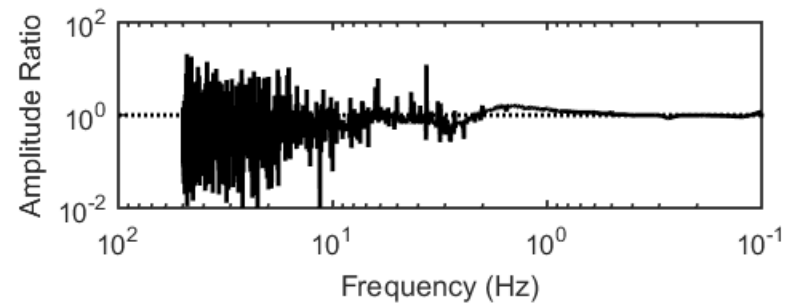
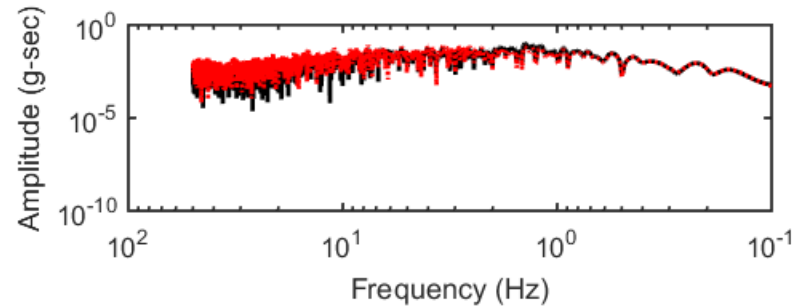
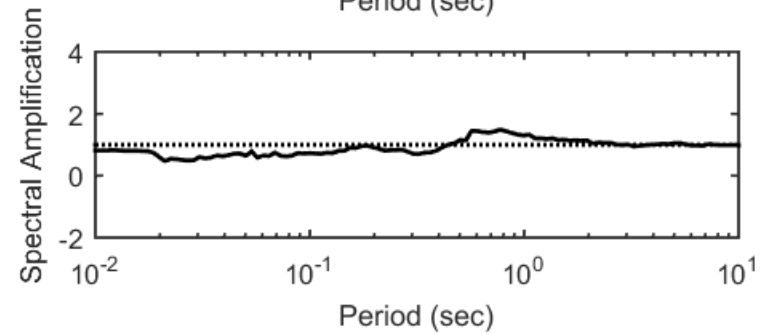
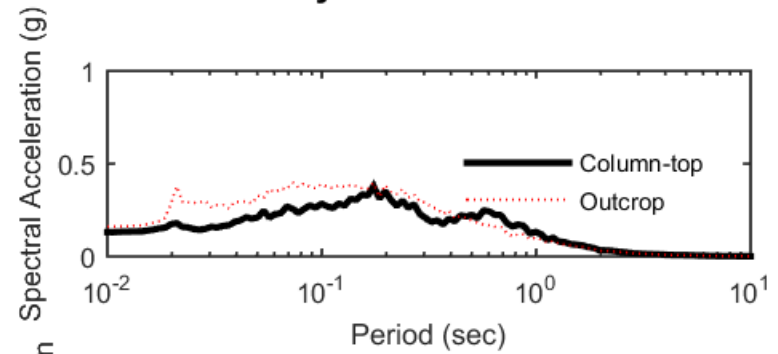
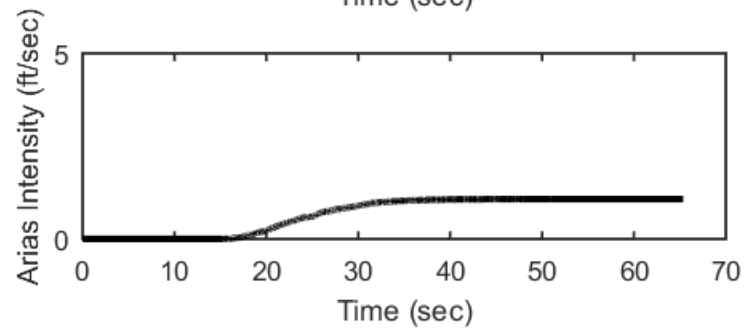
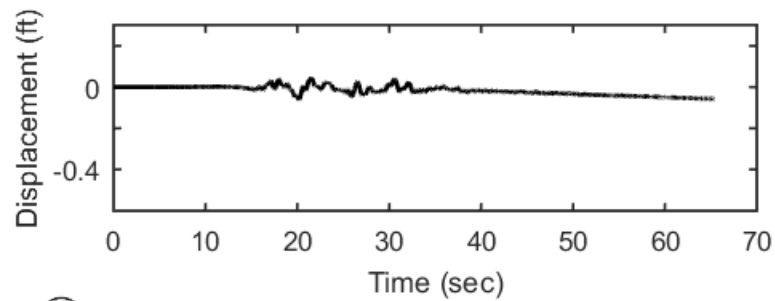
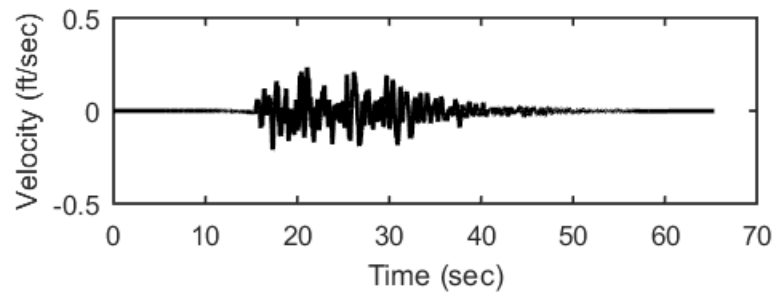
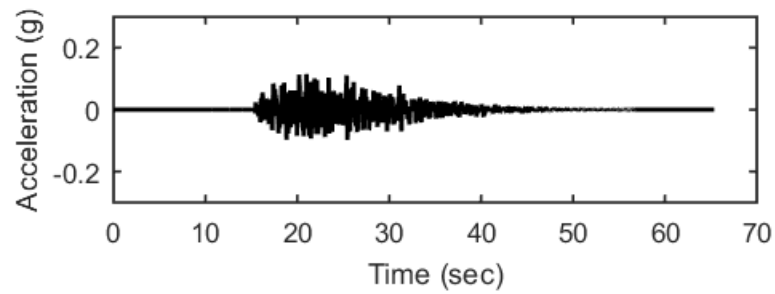
**PWP GENERATION**  
**200 FT – NO CLAY MODEL**



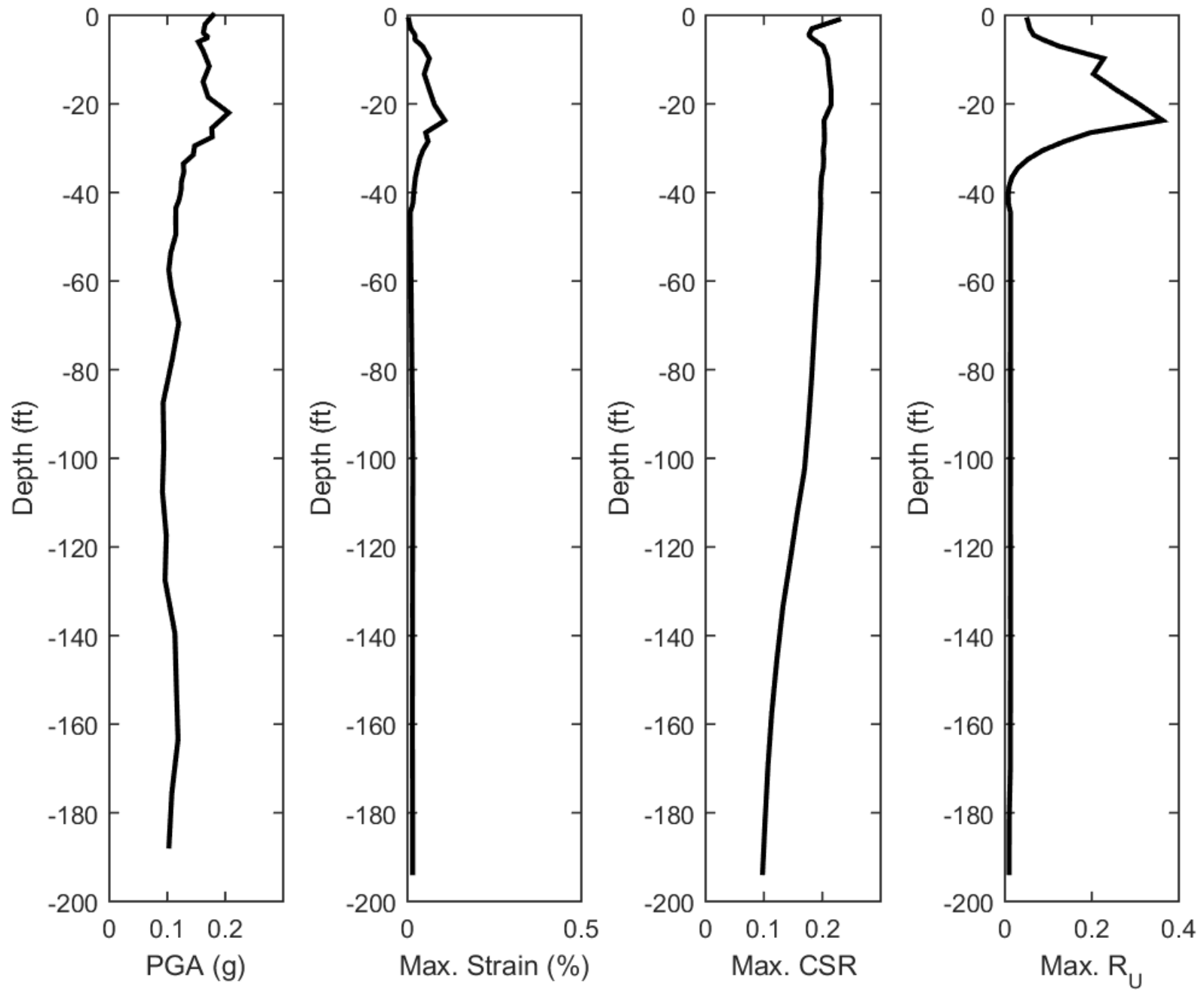
## Outputs at Ground Surface for: PWP Generation-No Clay with FEE1



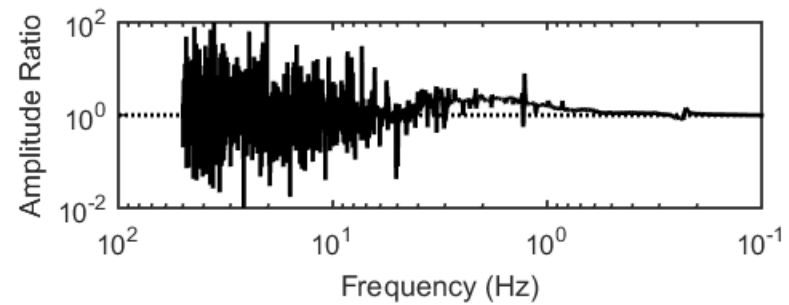
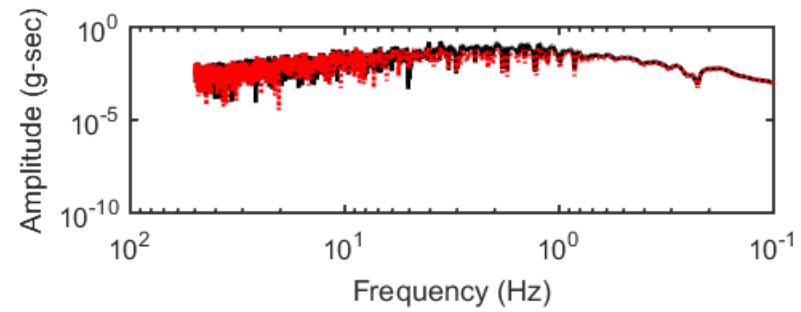
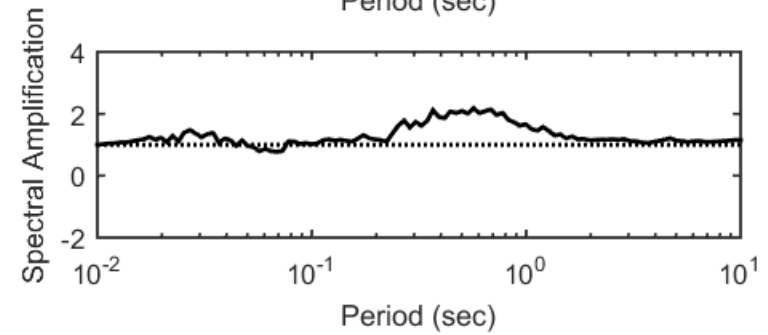
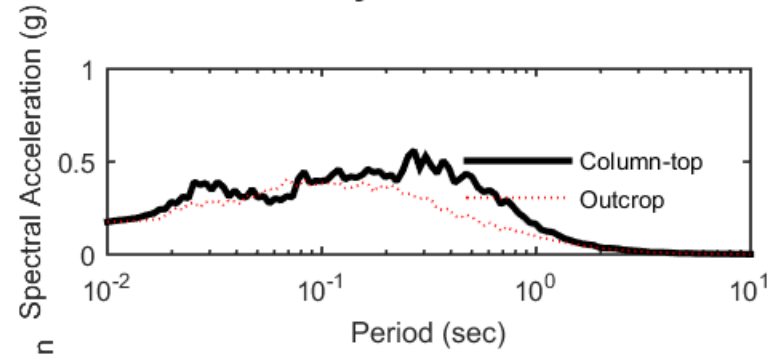
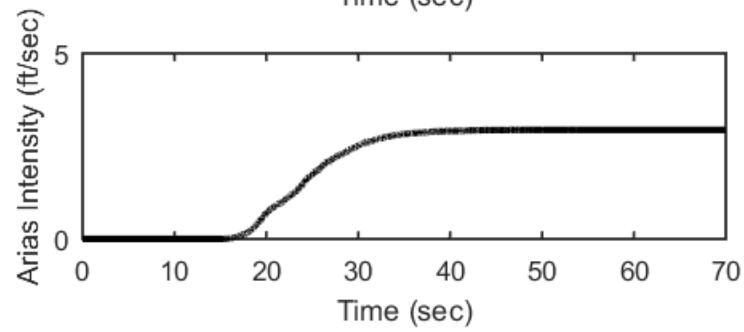
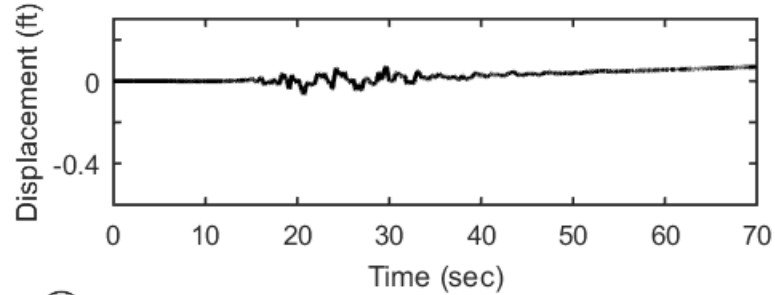
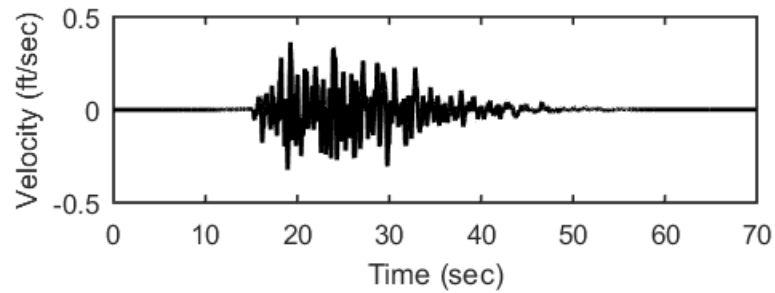
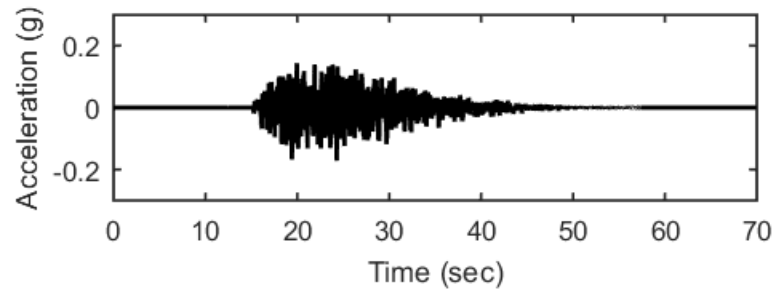
## Outputs at Top of Marl for: PWP Generation-No Clay with FEE1



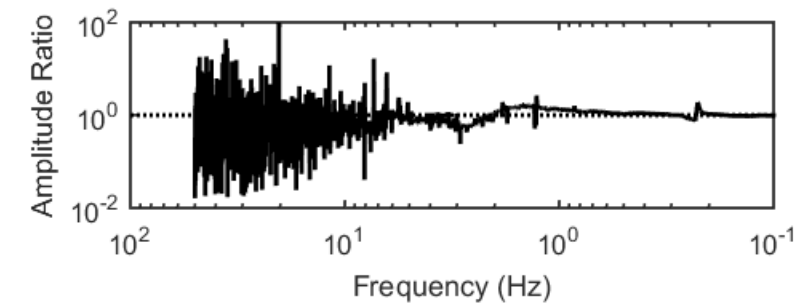
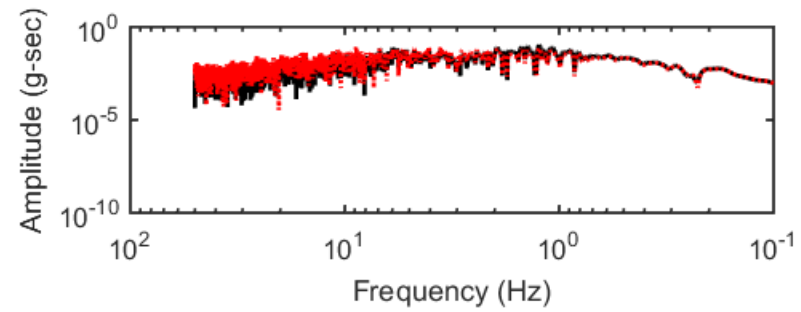
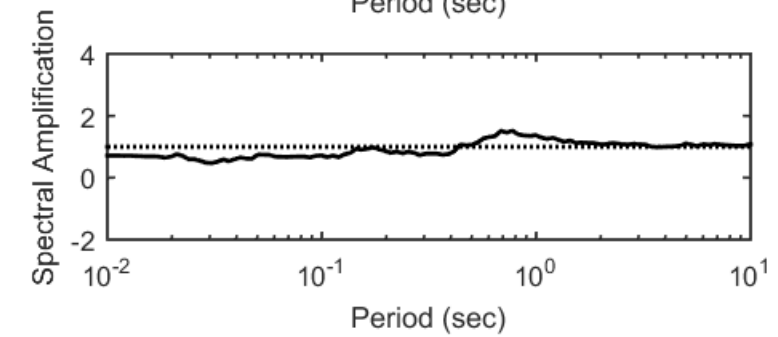
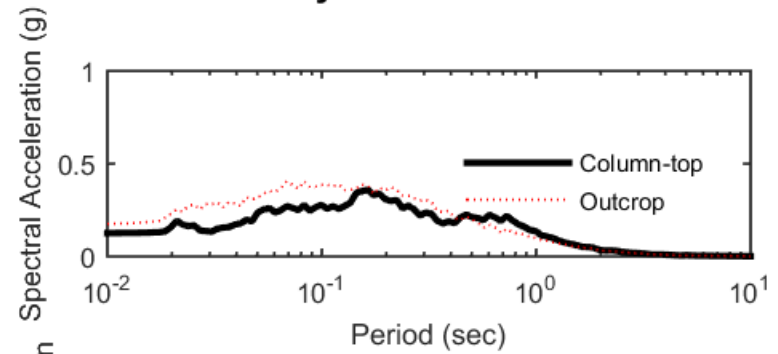
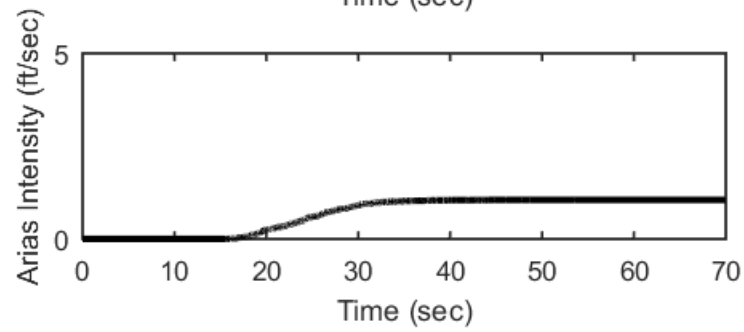
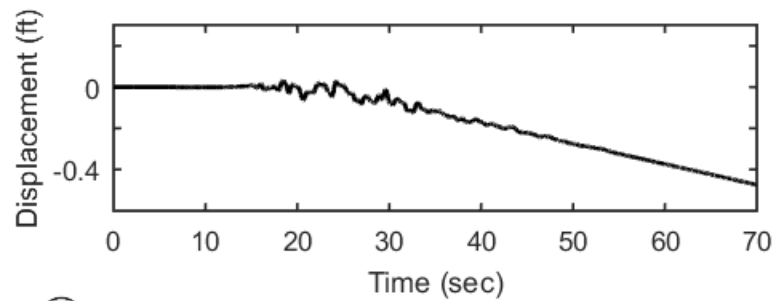
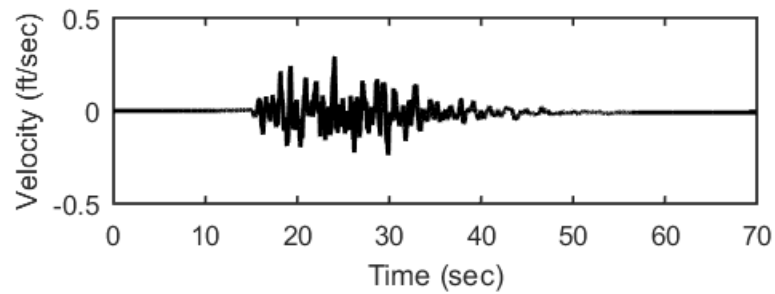
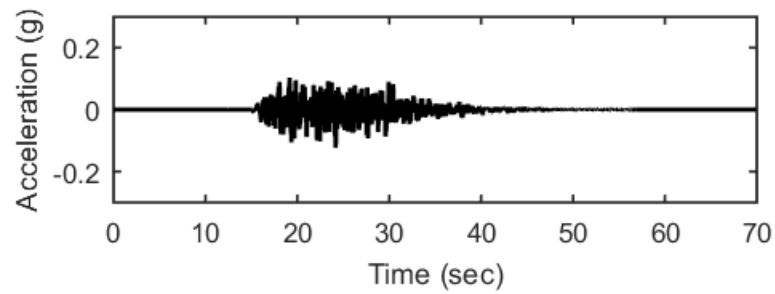
# Profile outputs for: PWP Generation-No Clay with FEE1



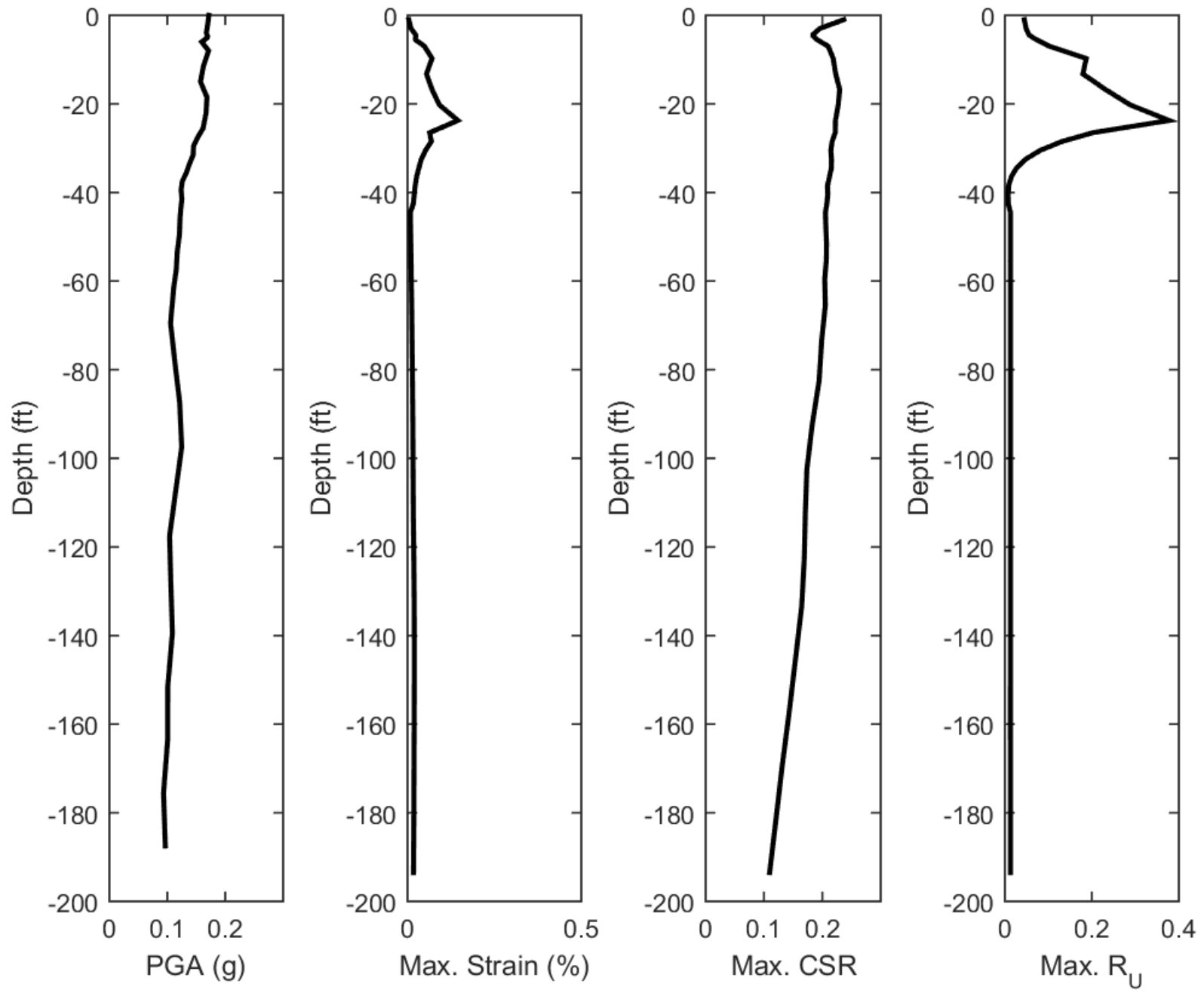
## Outputs at Ground Surface for: PWP Generation-No Clay with FEE2



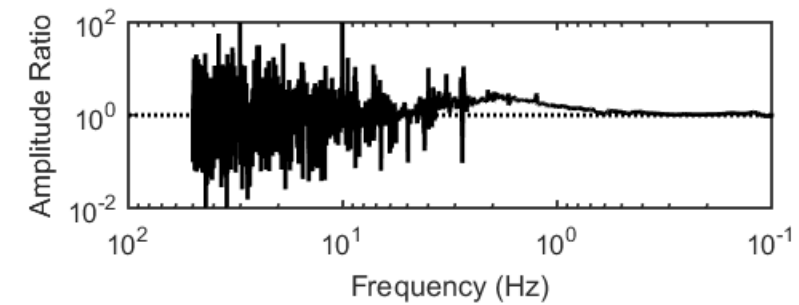
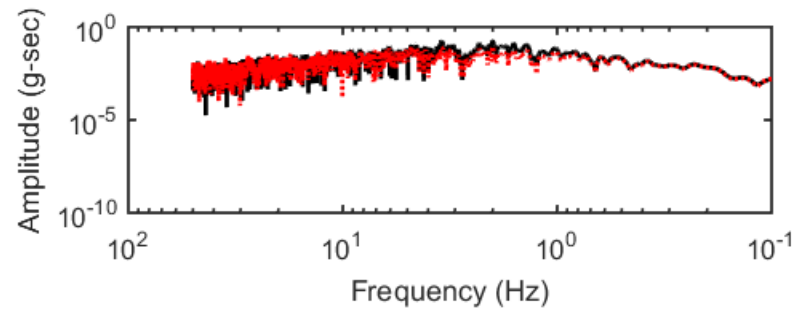
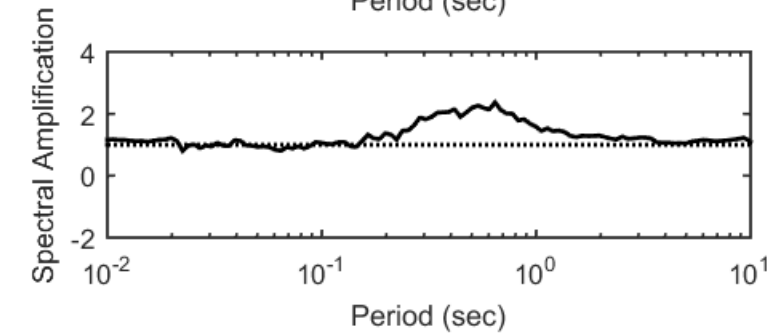
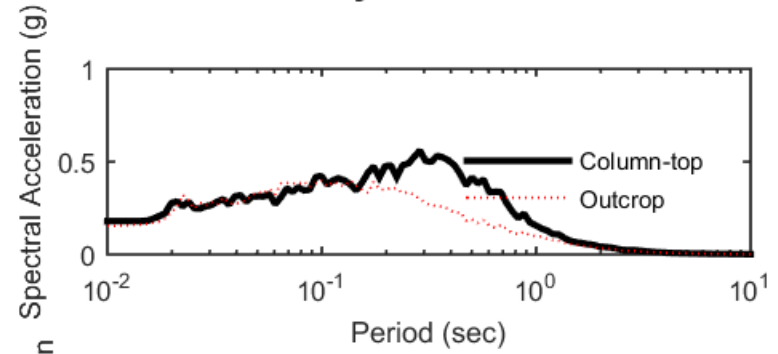
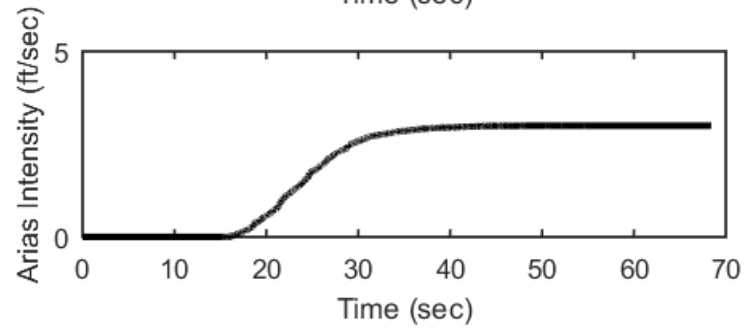
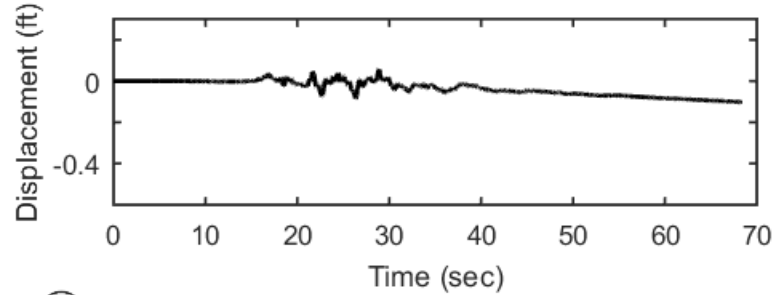
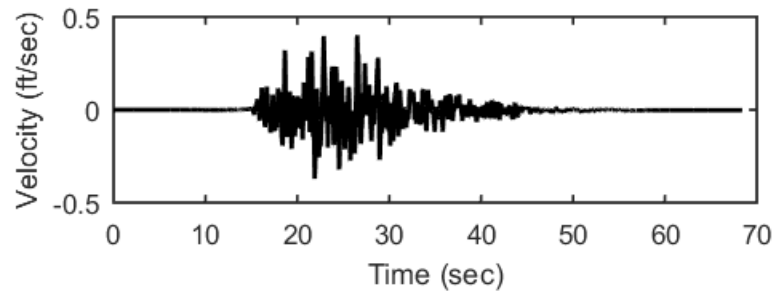
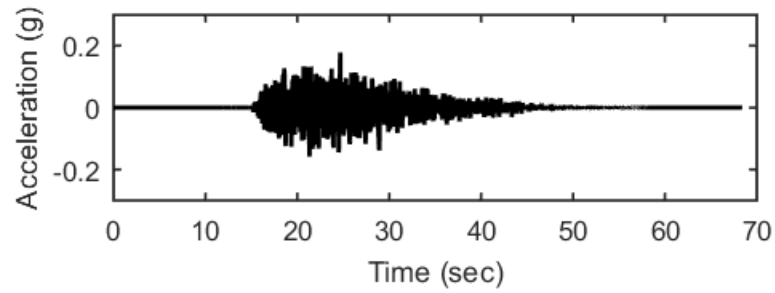
## Outputs at Top of Marl for: PWP Generation-No Clay with FEE2



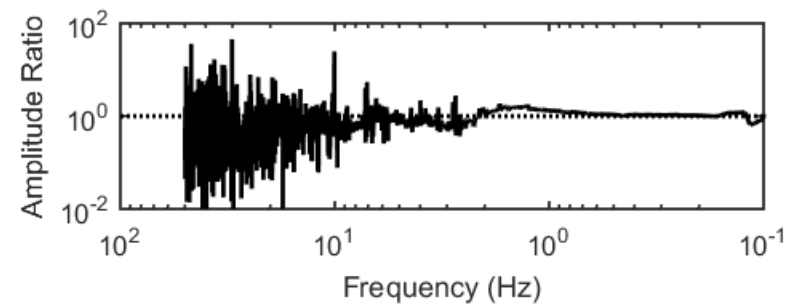
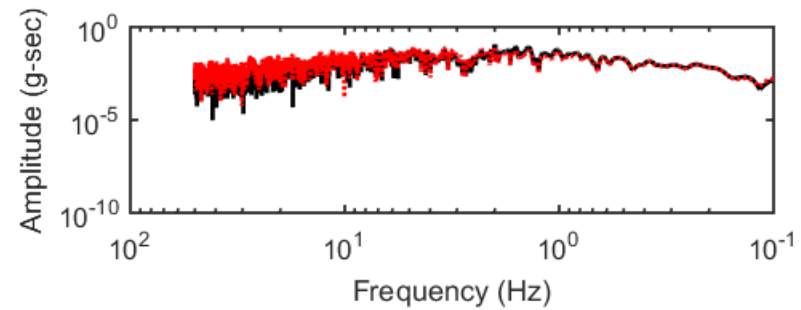
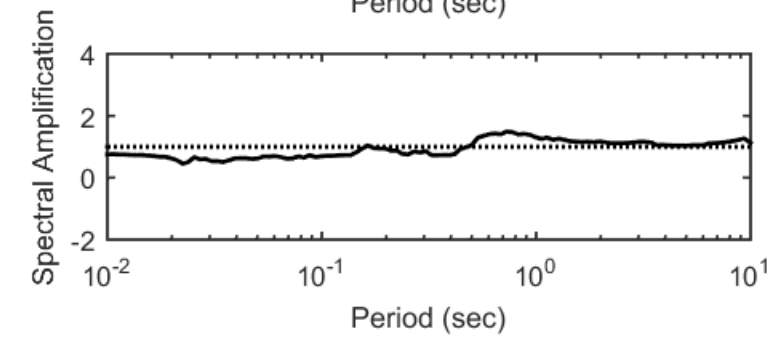
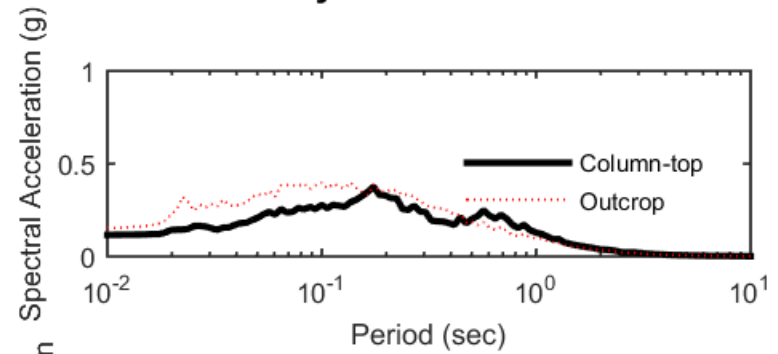
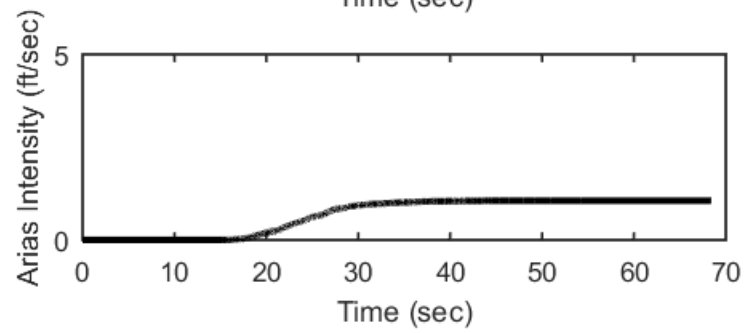
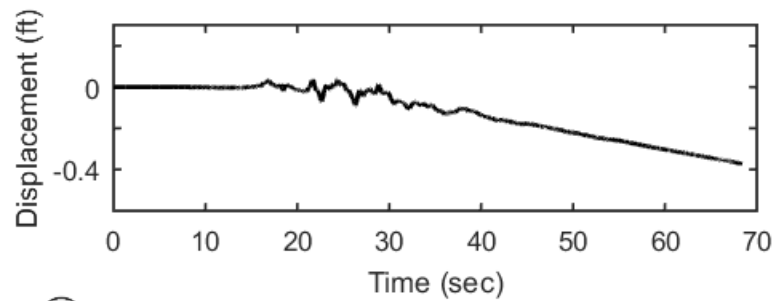
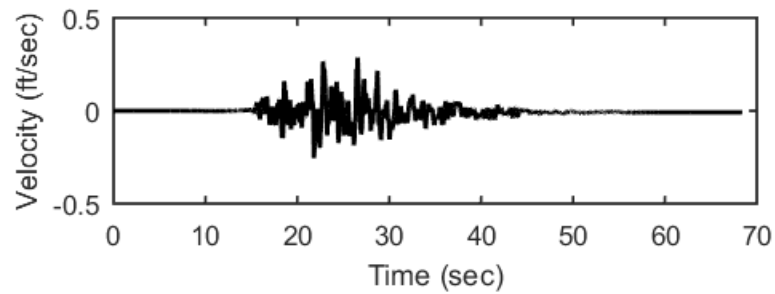
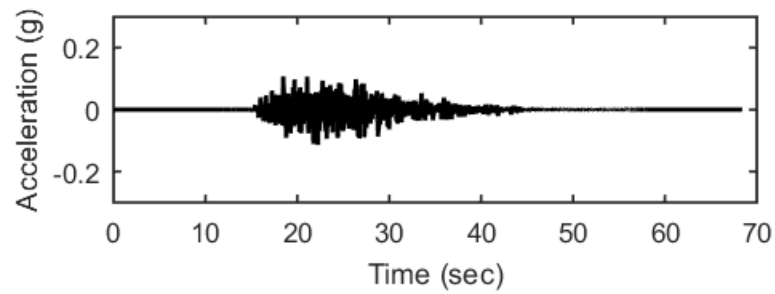
# Profile outputs for: PWP Generation-No Clay with FEE2



## Outputs at Ground Surface for: PWP Generation-No Clay with FEE3

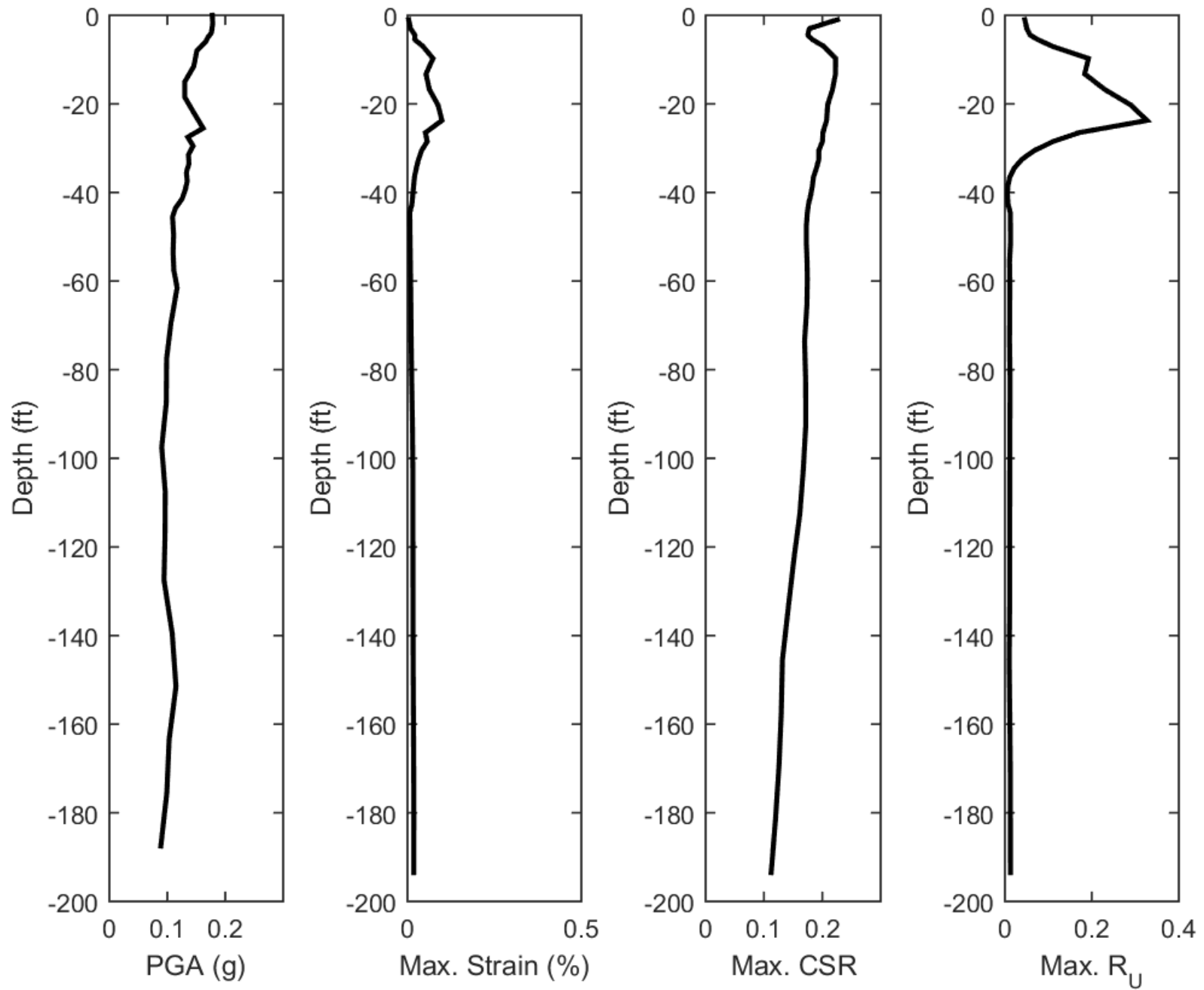


## Outputs at Top of Marl for: PWP Generation-No Clay with FEE3

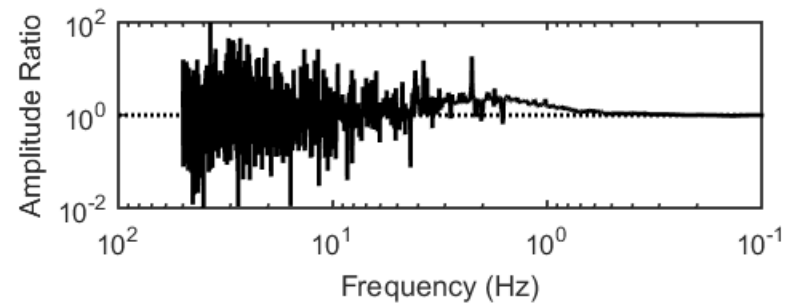
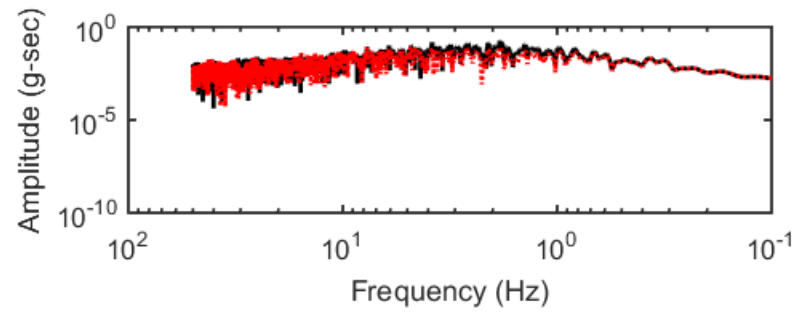
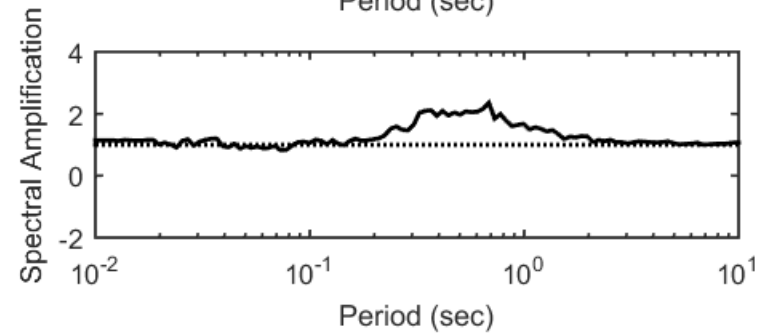
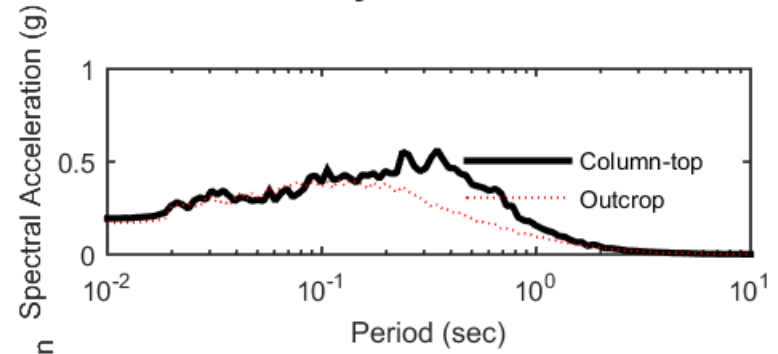
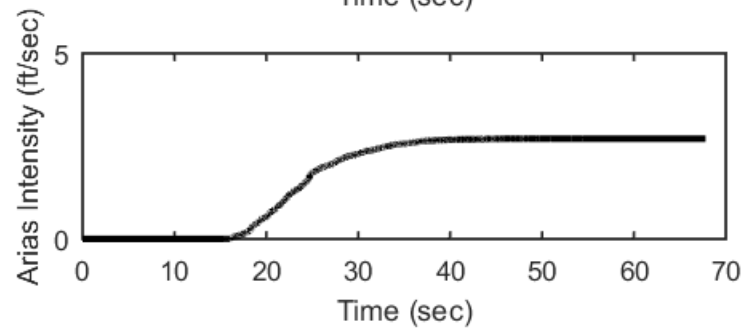
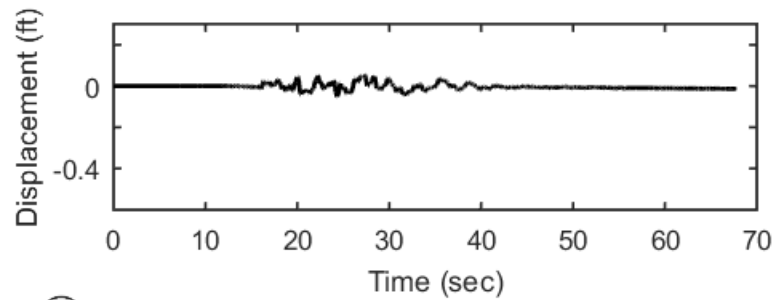
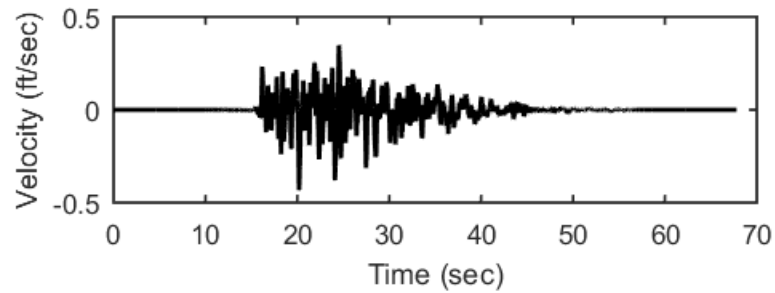
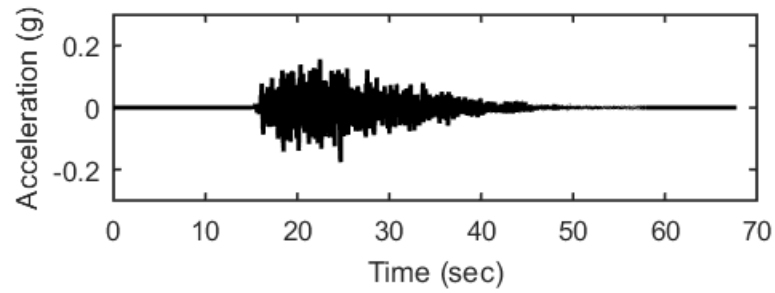




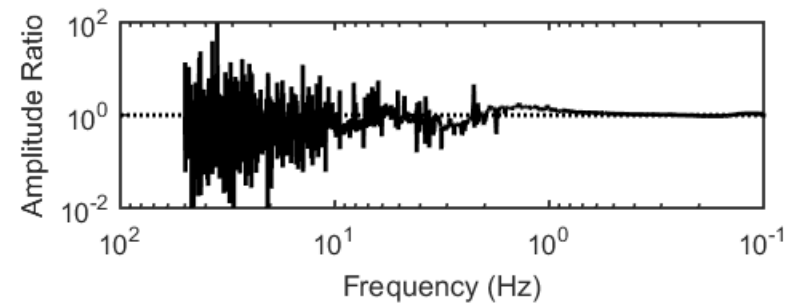
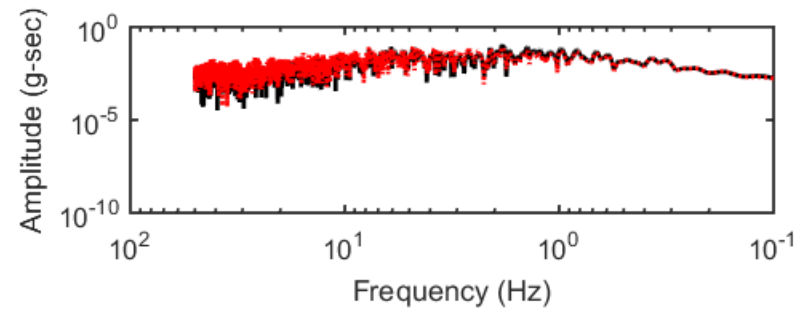
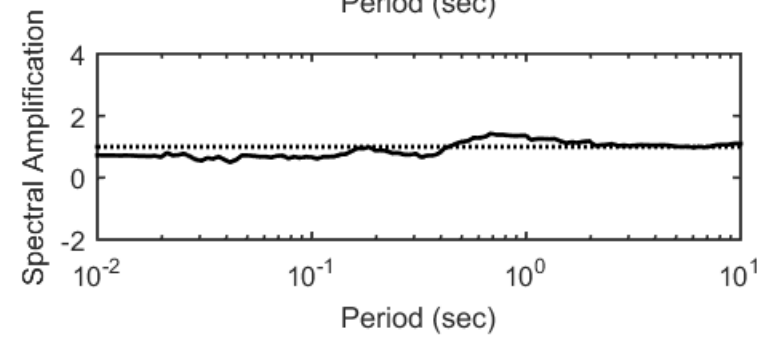
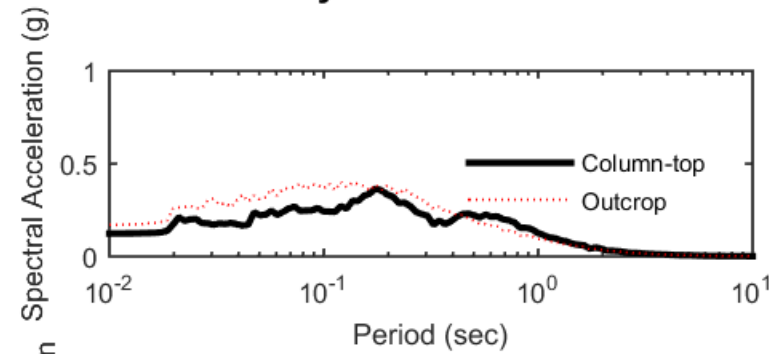
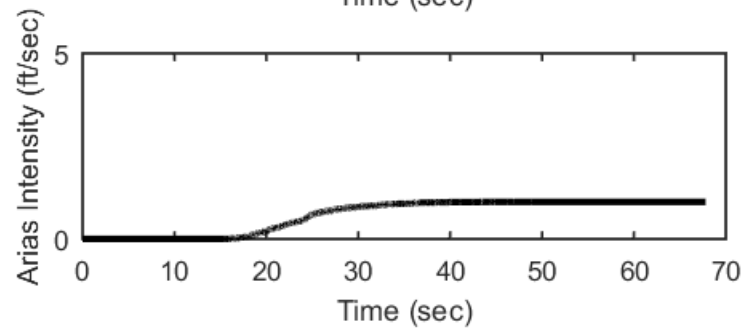
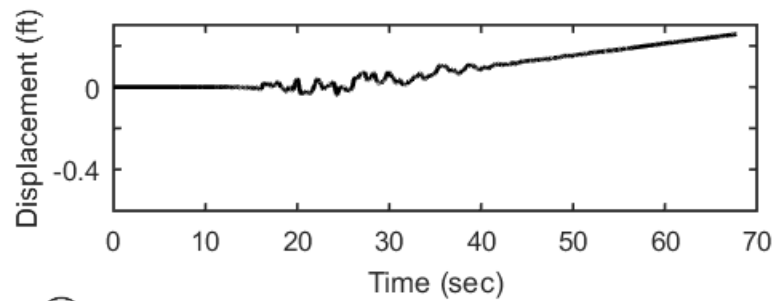
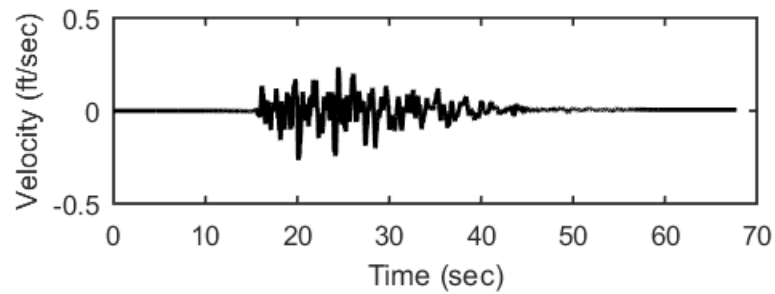
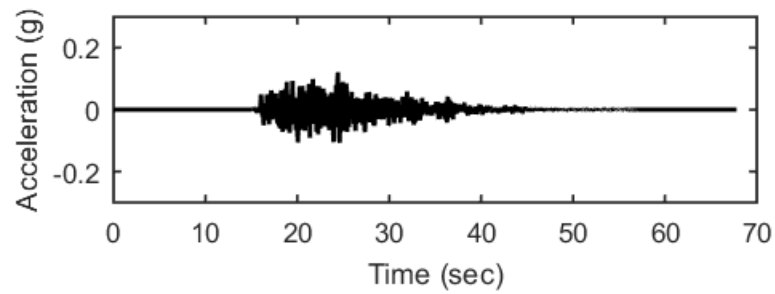
### Profile outputs for: PWP Generation-No Clay with FEE3



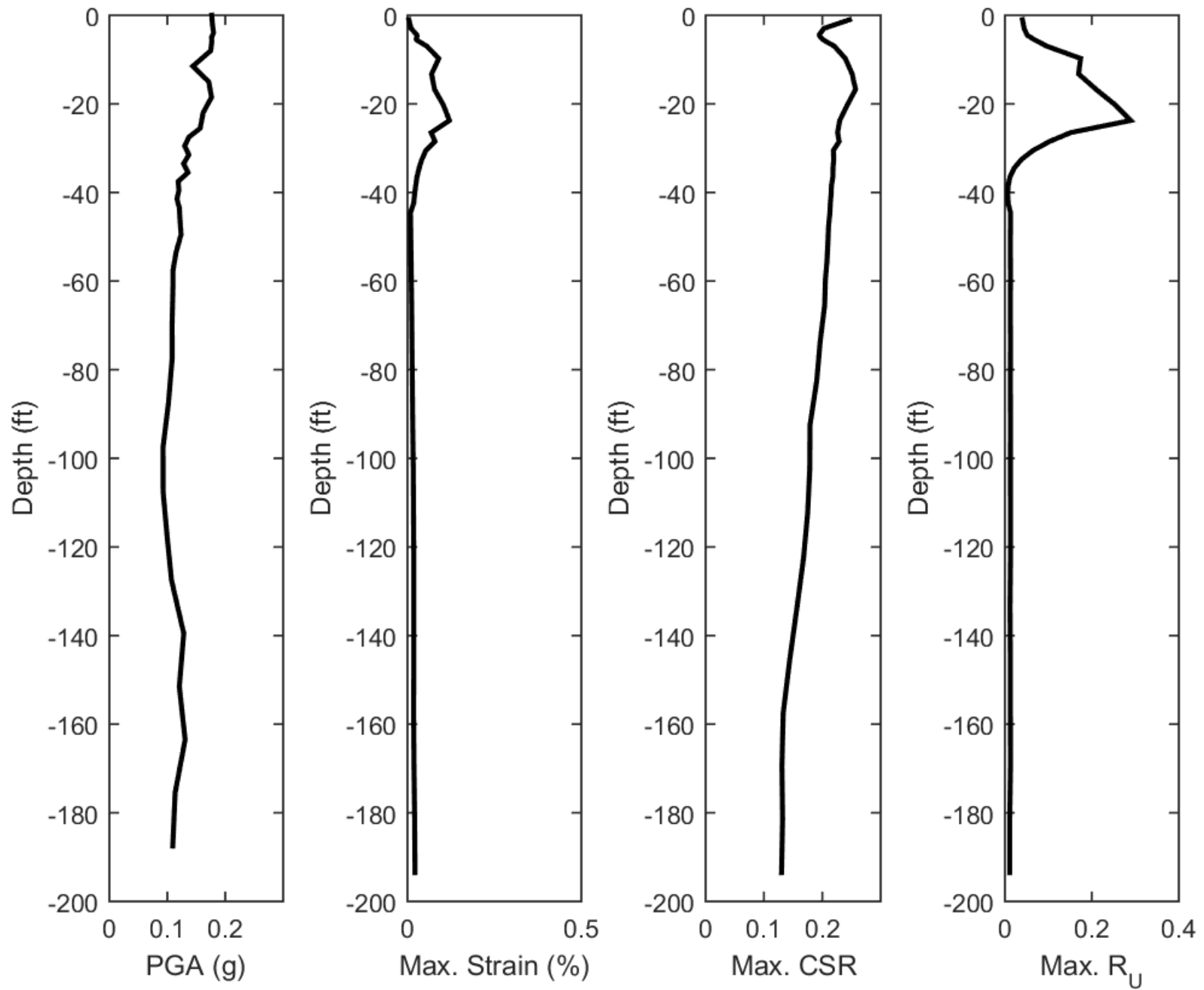
## Outputs at Ground Surface for: PWP Generation-No Clay with FEE4



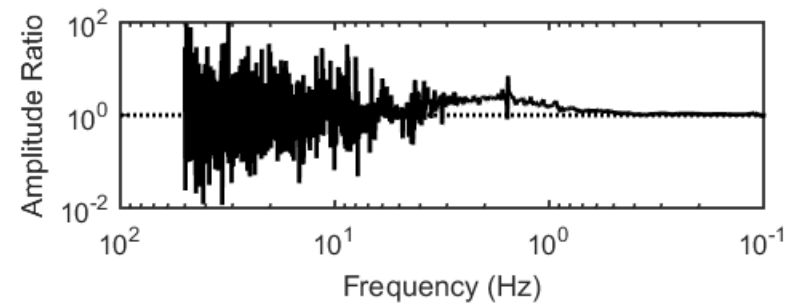
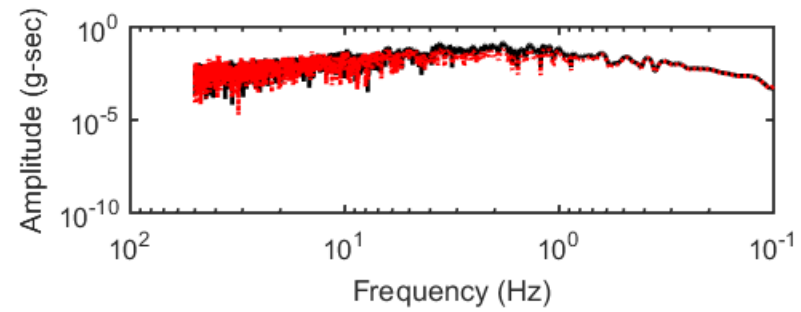
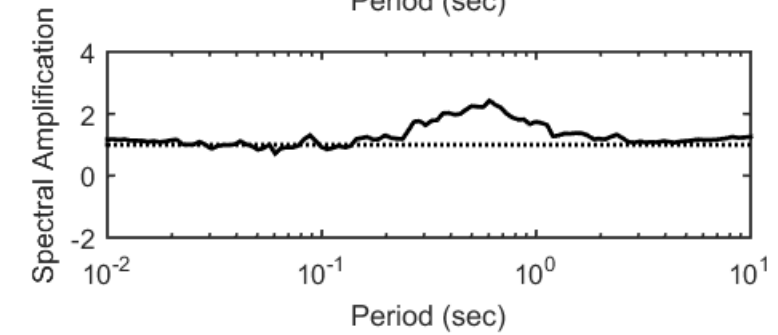
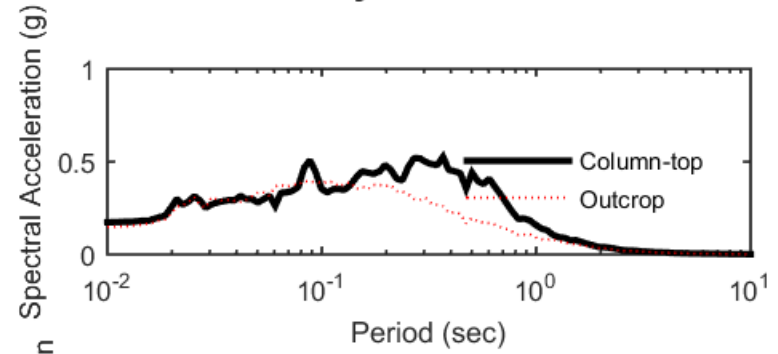
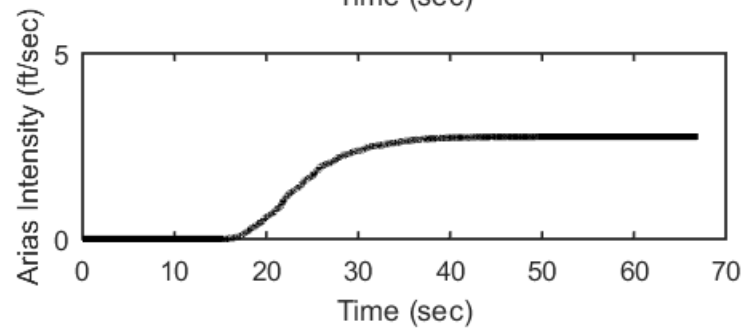
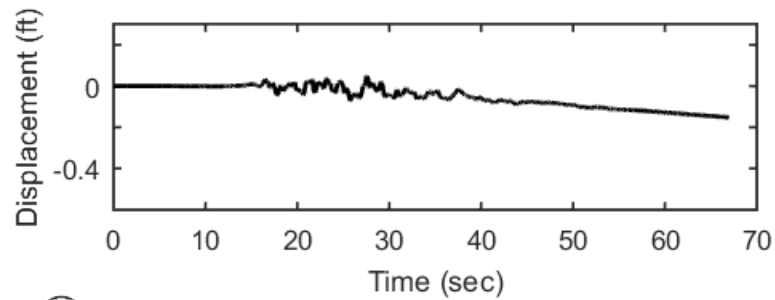
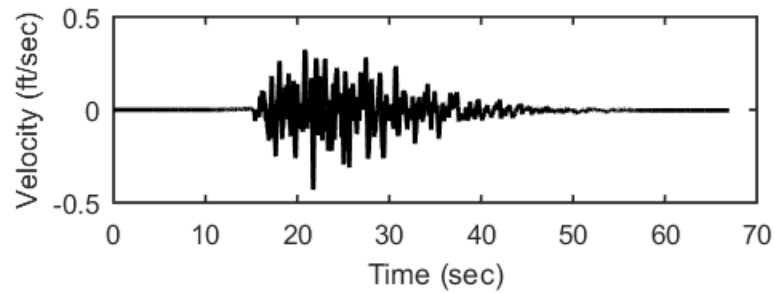
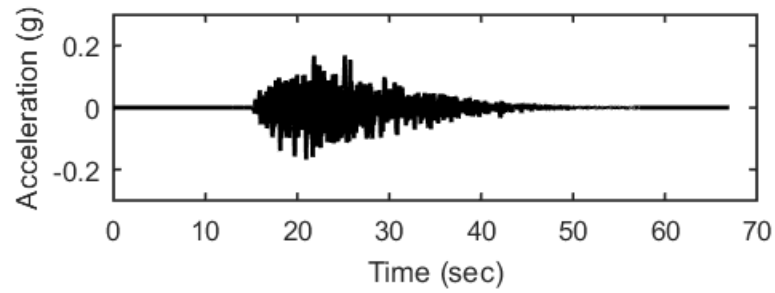
## Outputs at Top of Marl for: PWP Generation-No Clay with FEE4



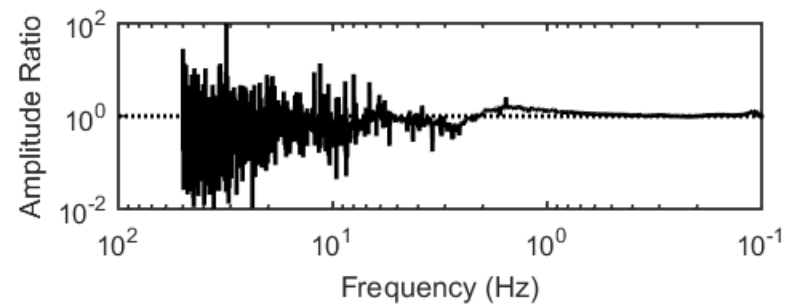
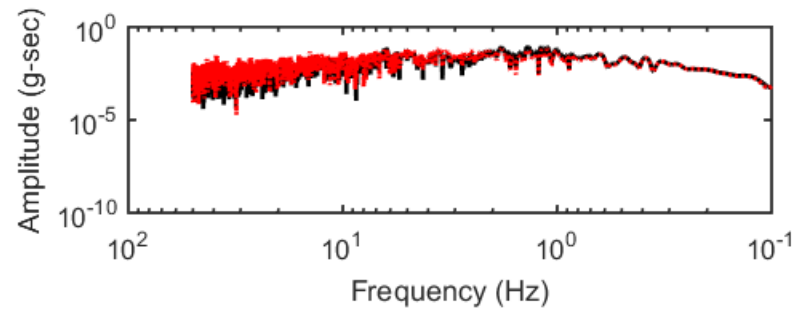
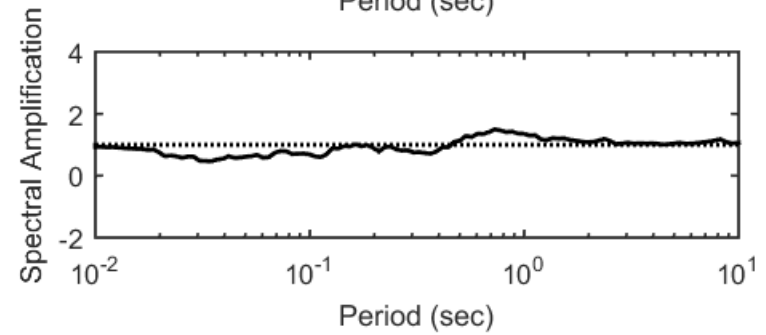
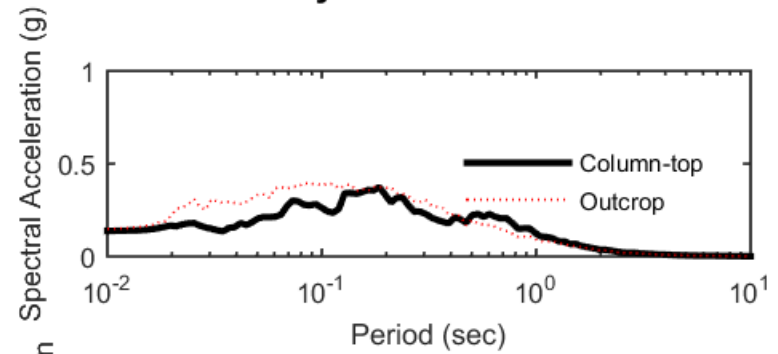
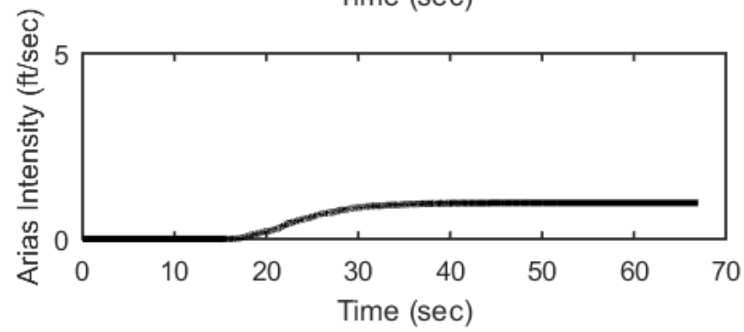
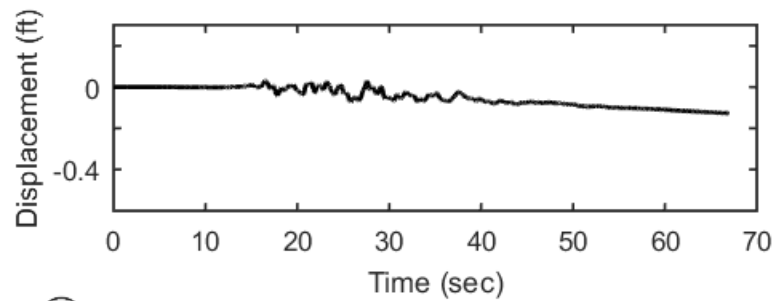
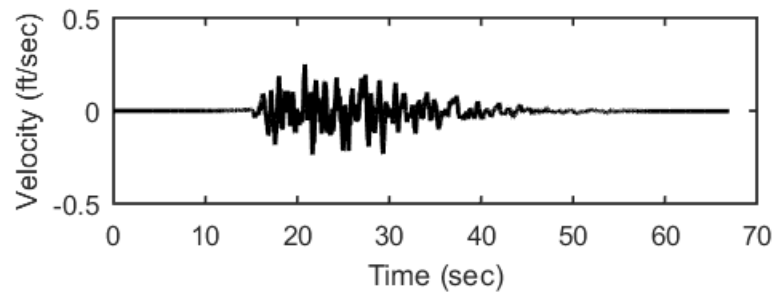
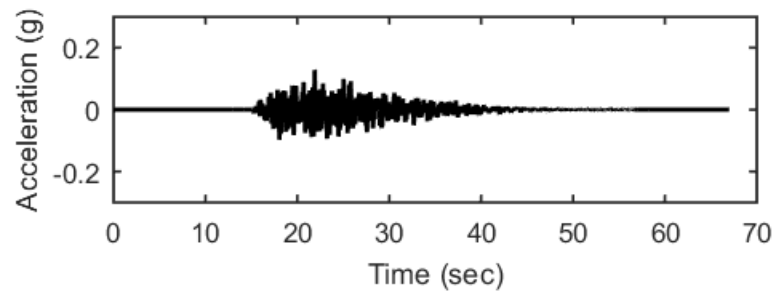
# Profile outputs for: PWP Generation-No Clay with FEE4



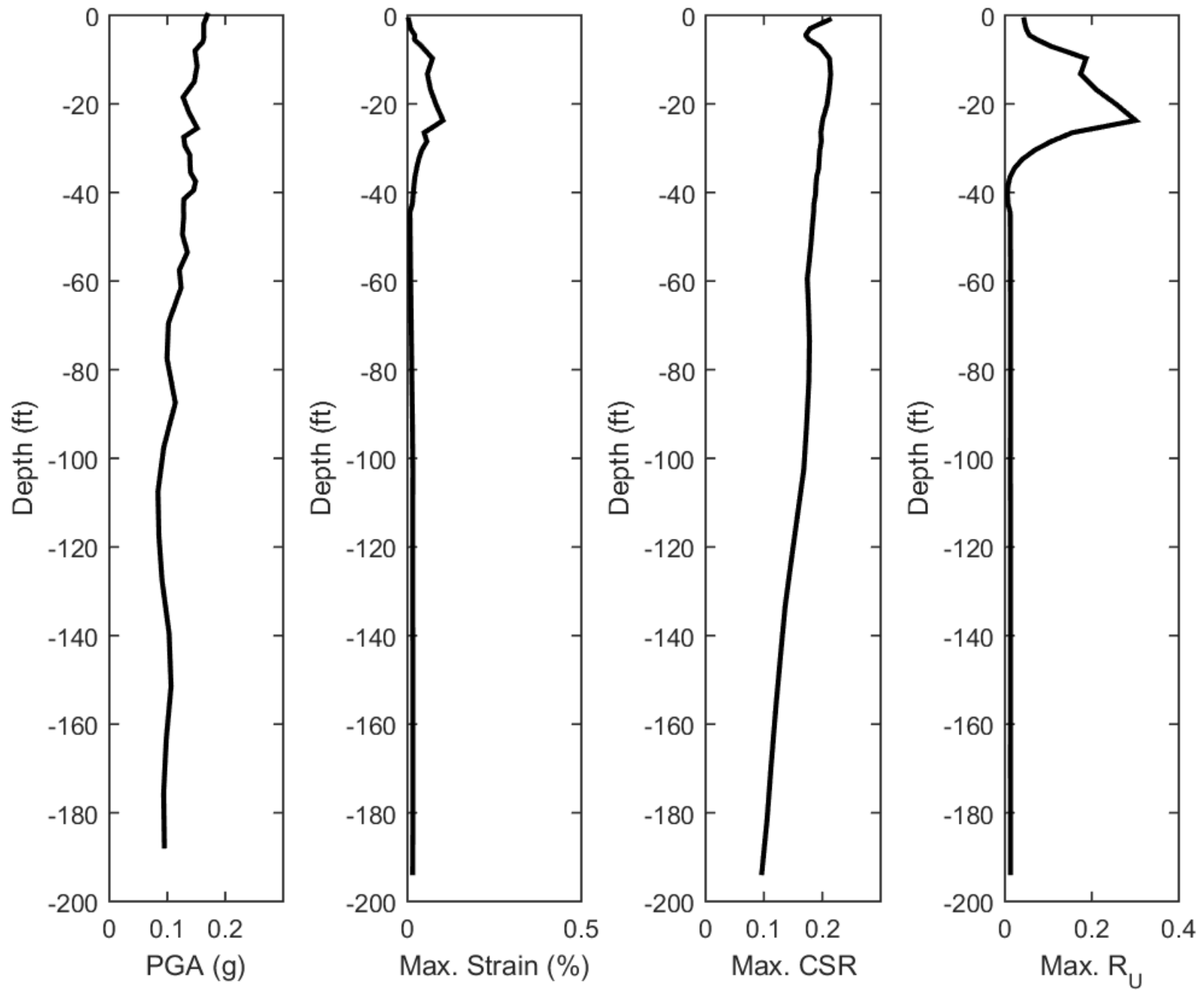
## Outputs at Ground Surface for: PWP Generation-No Clay with FEE5



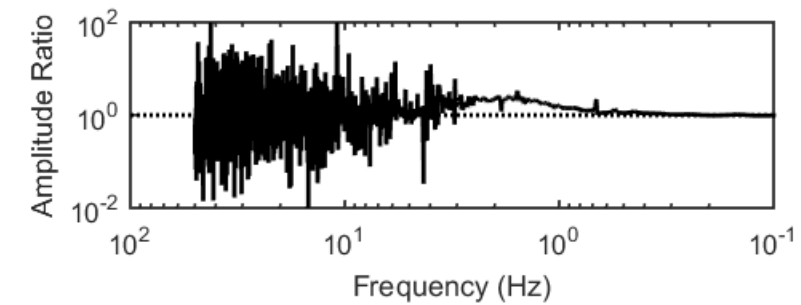
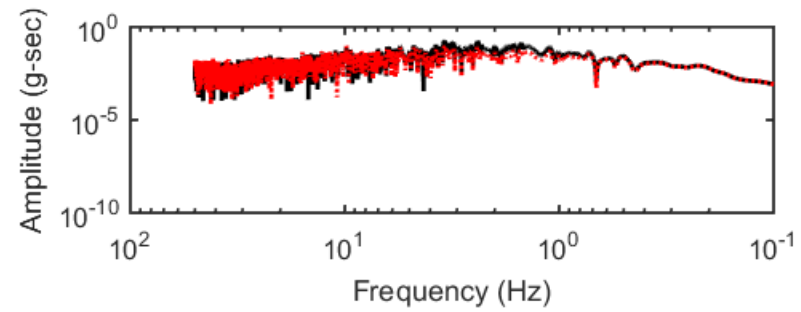
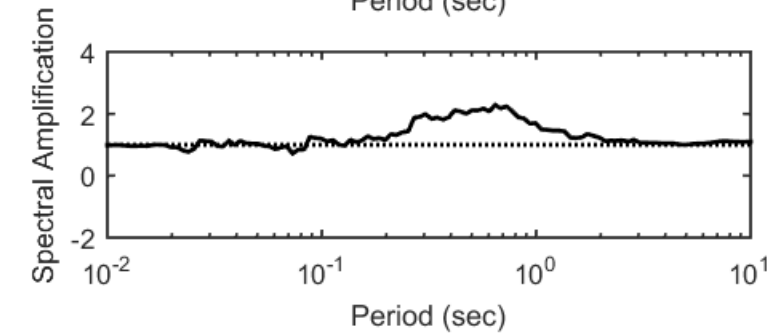
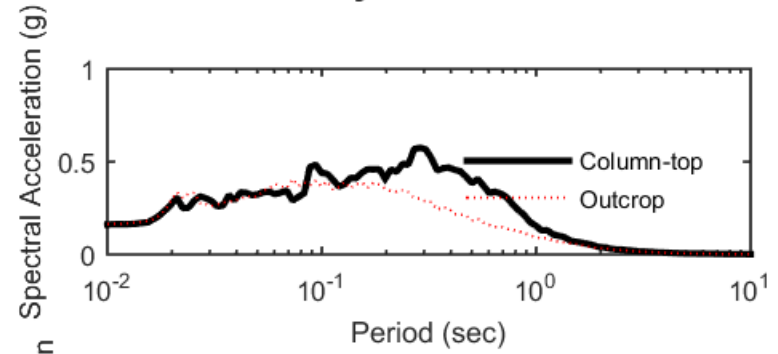
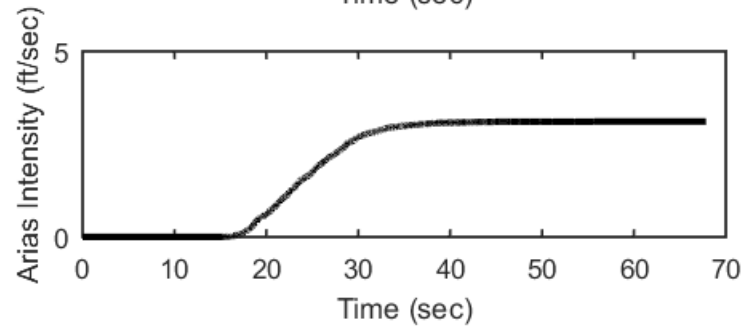
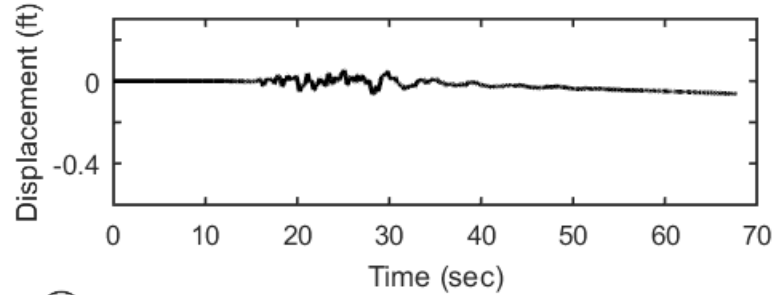
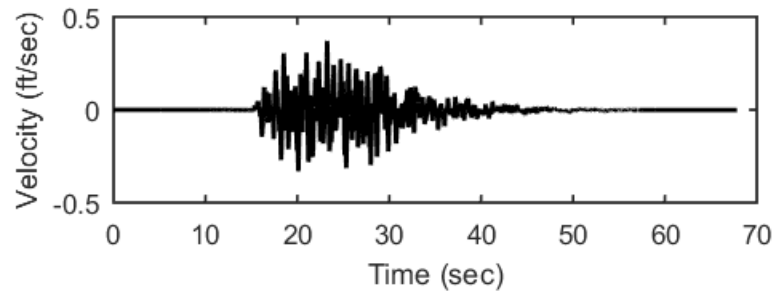
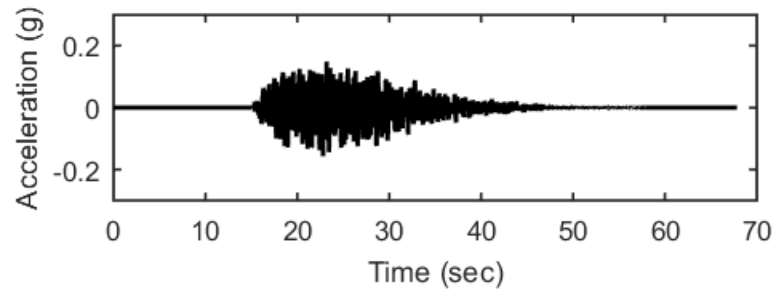
## Outputs at Top of Marl for: PWP Generation-No Clay with FEE5



# Profile outputs for: PWP Generation-No Clay with FEE5

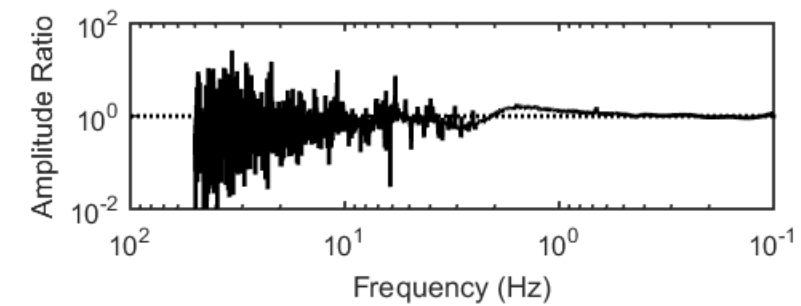
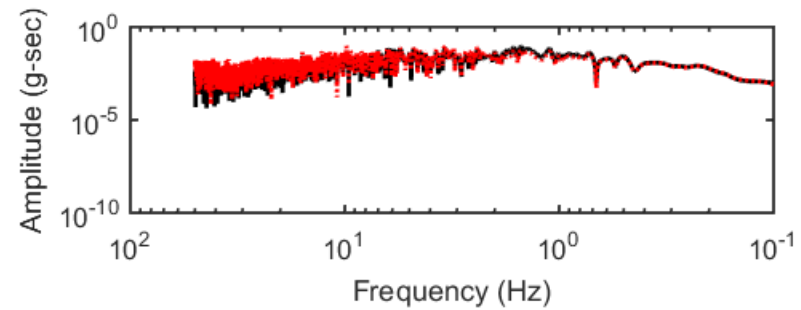
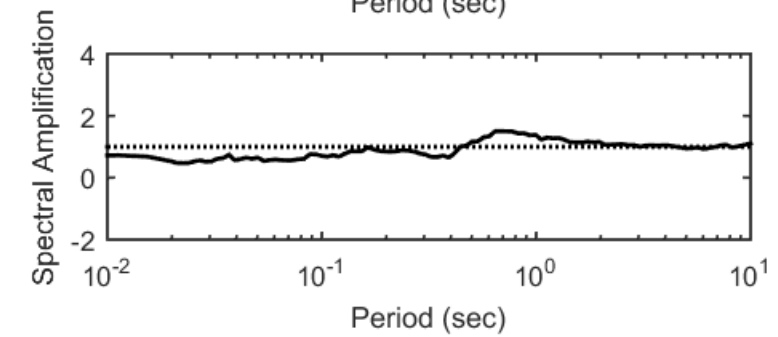
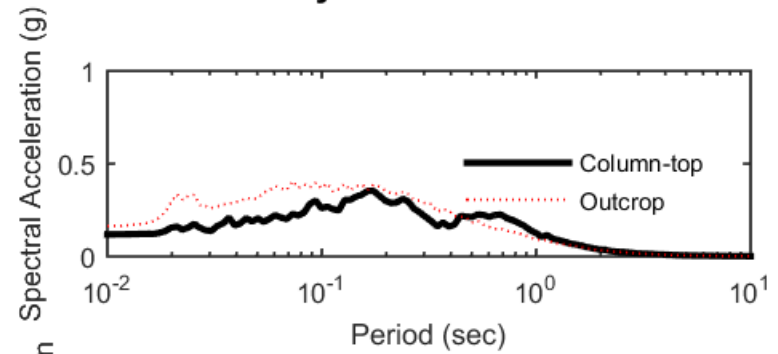
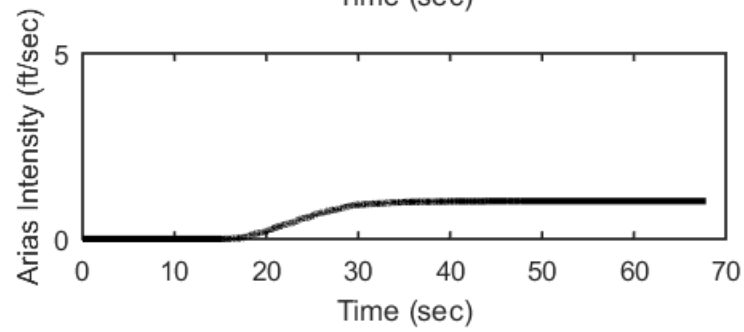
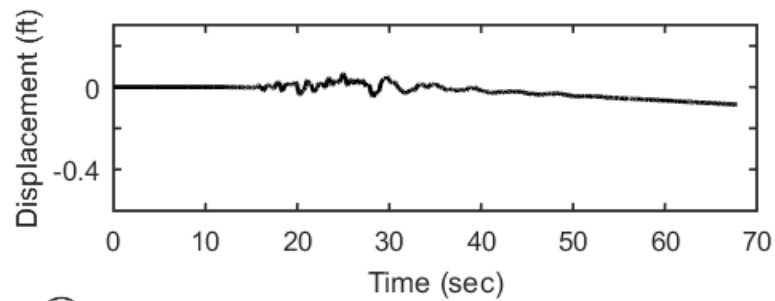
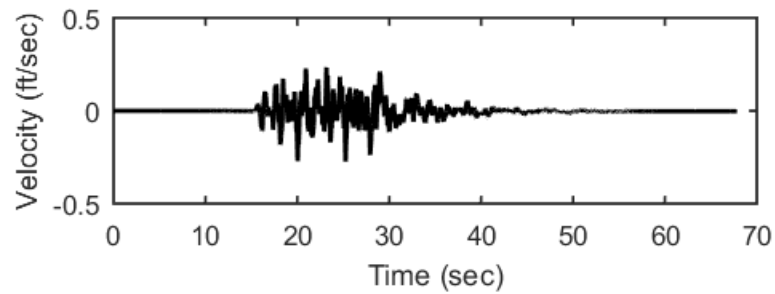
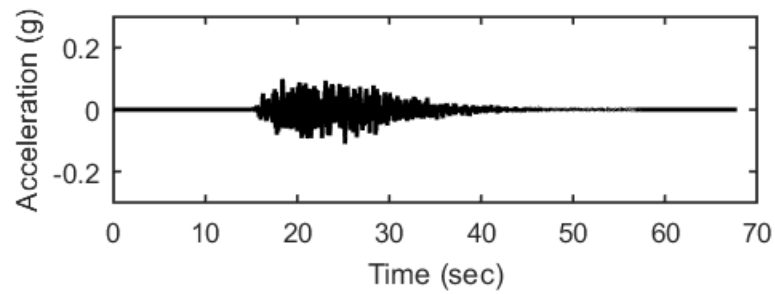


## Outputs at Ground Surface for: PWP Generation-No Clay with FEE6

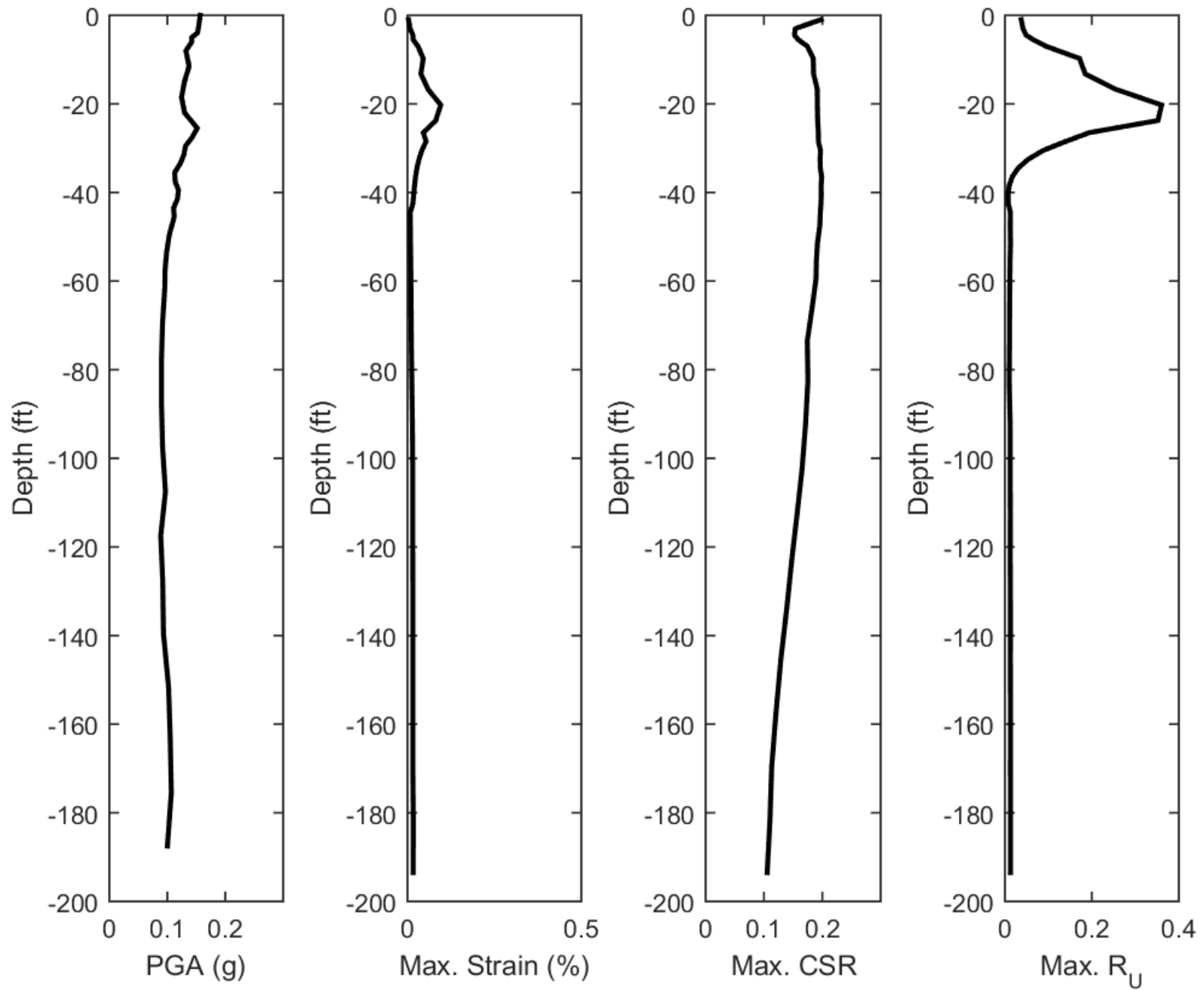




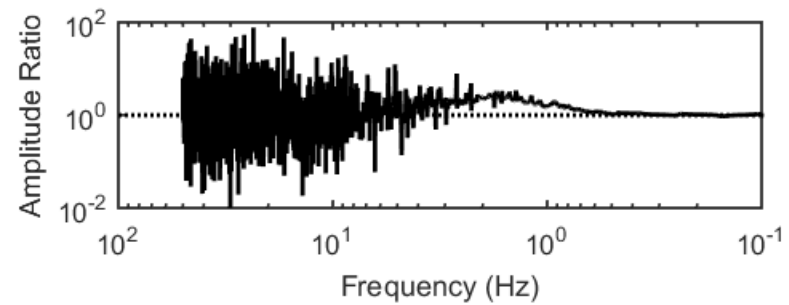
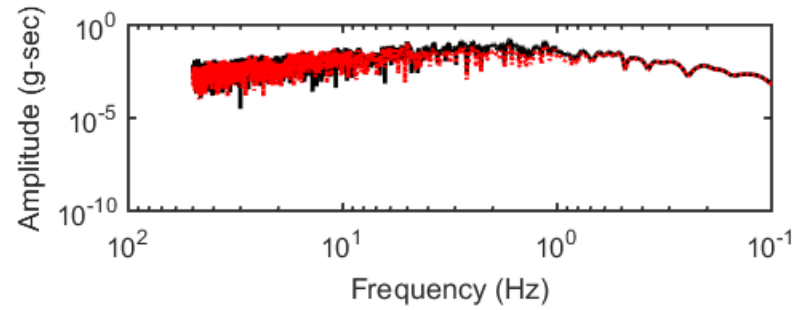
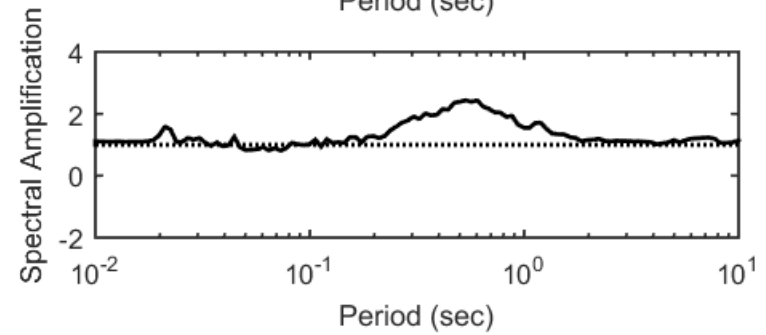
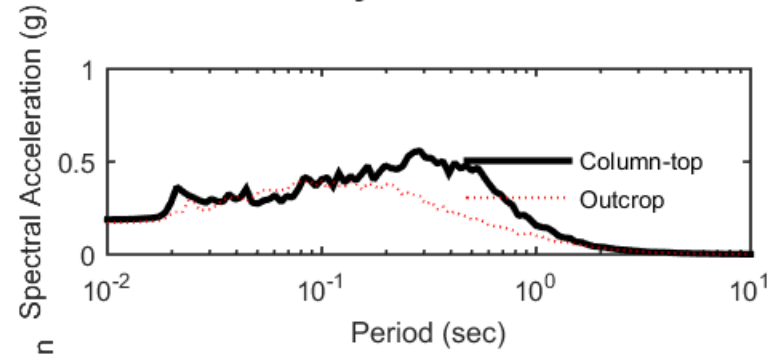
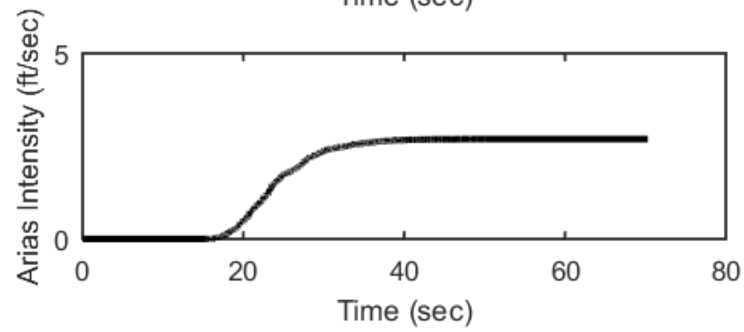
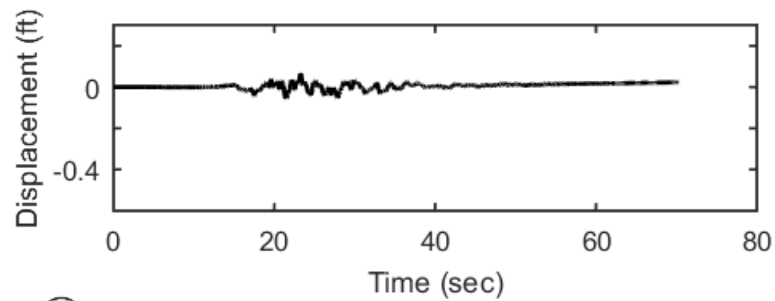
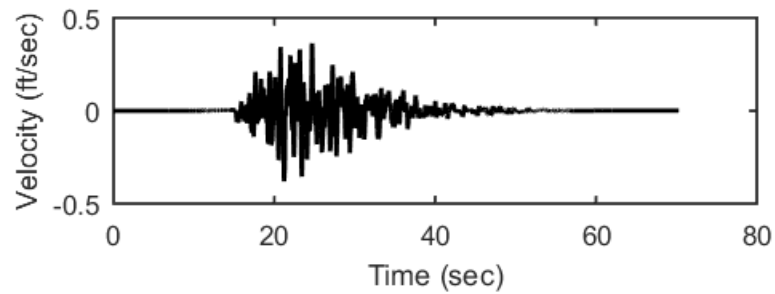
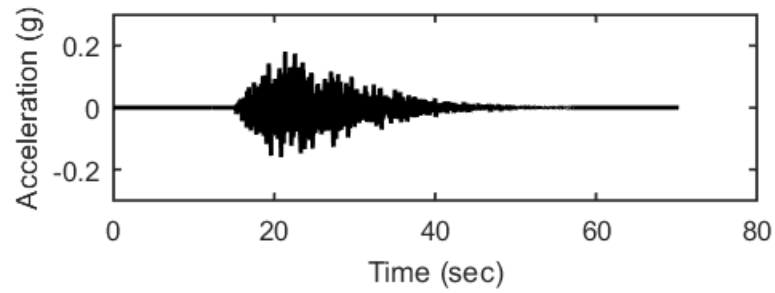
## Outputs at Top of Marl for: PWP Generation-No Clay with FEE6



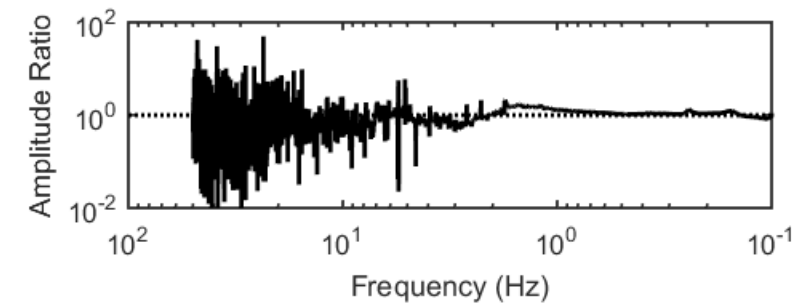
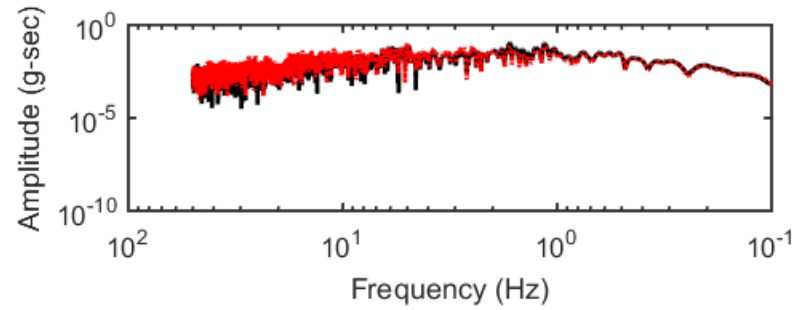
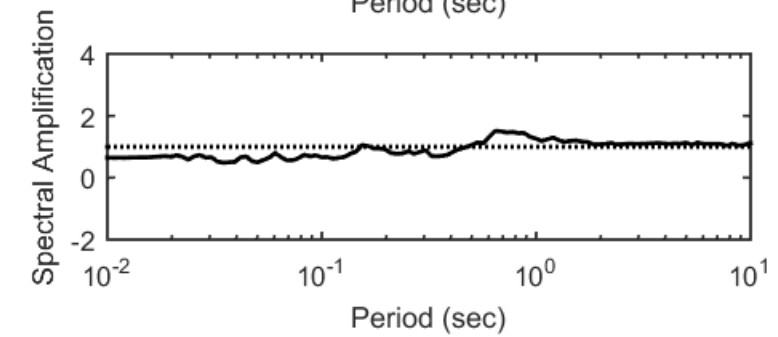
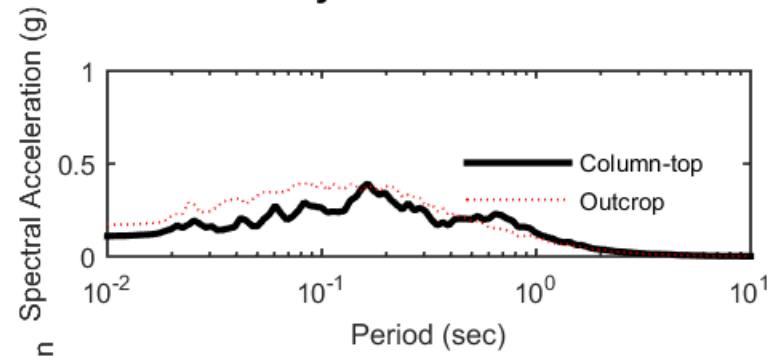
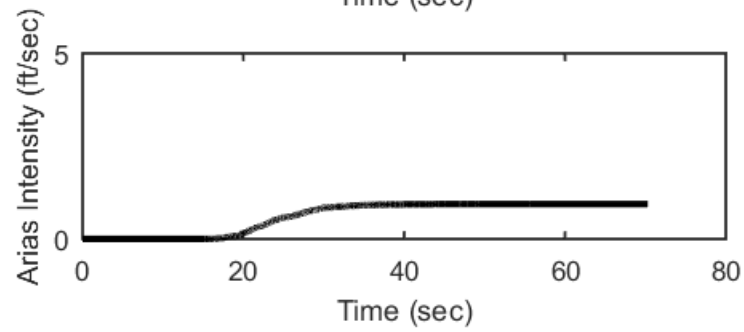
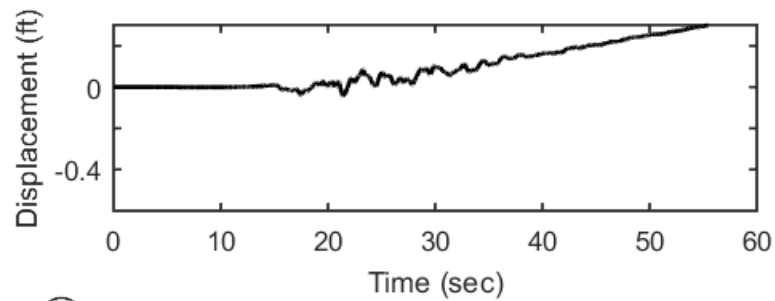
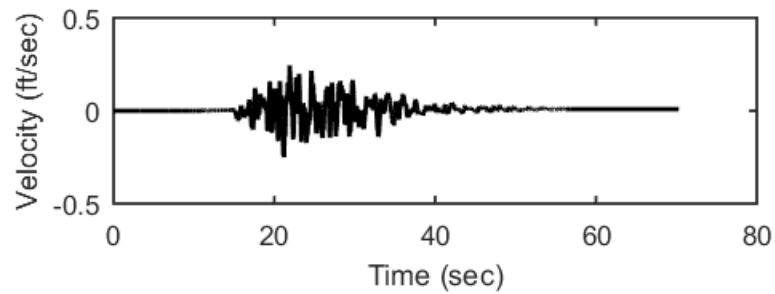
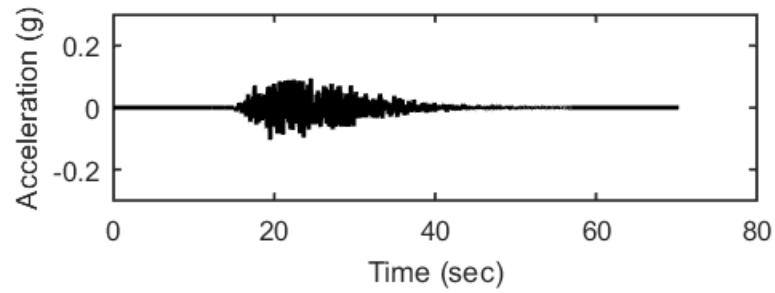
# Profile outputs for: PWP Generation-No Clay with FEE6



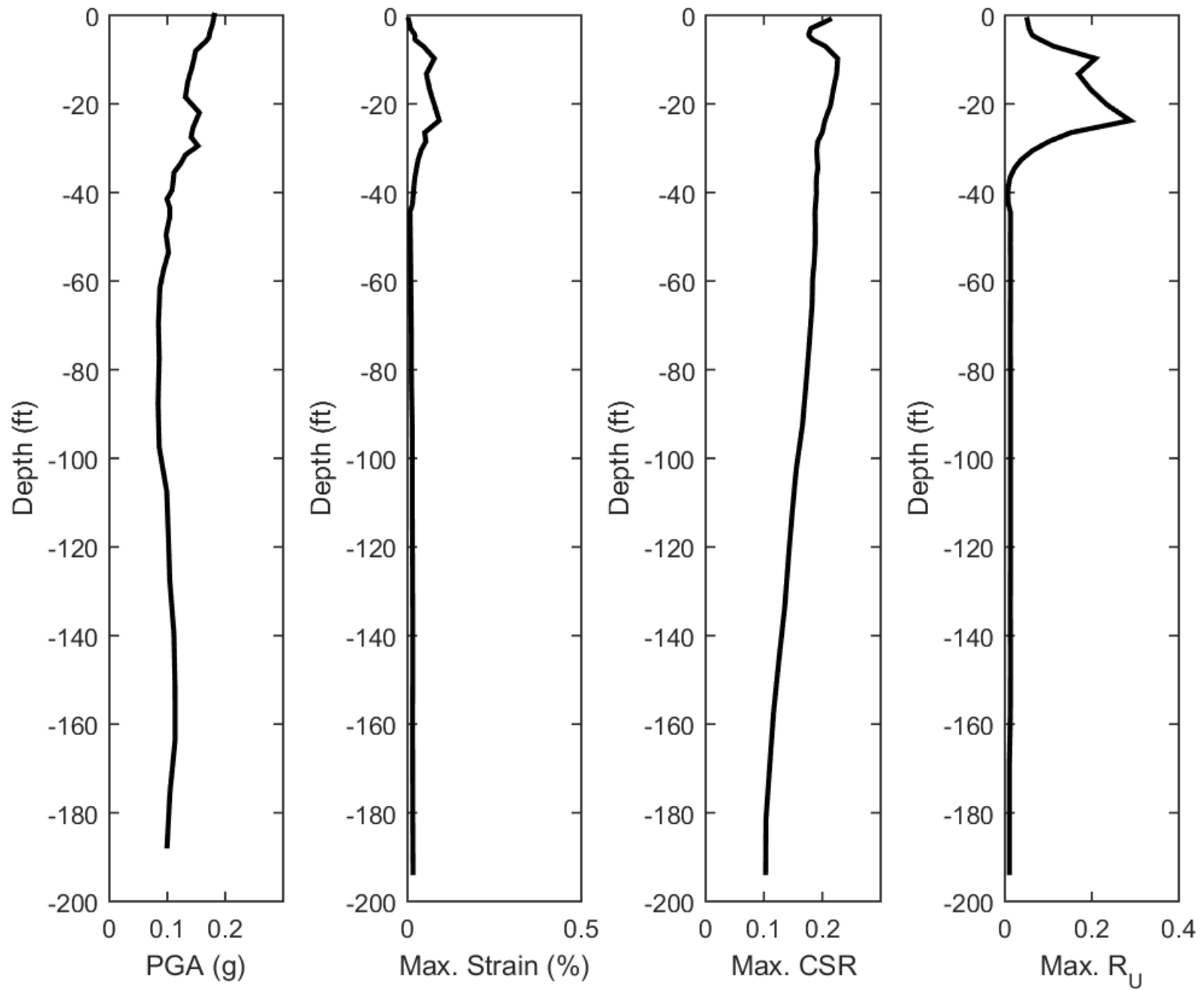
## Outputs at Ground Surface for: PWP Generation-No Clay with FEE7



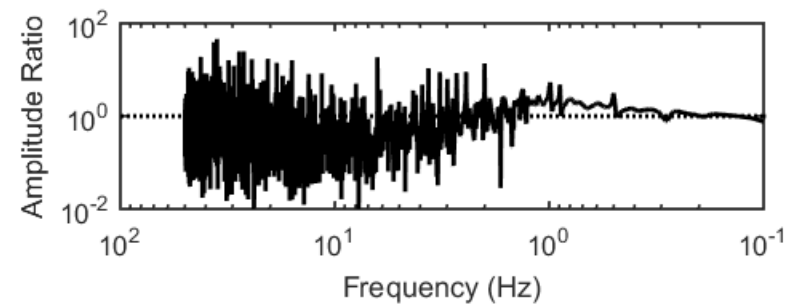
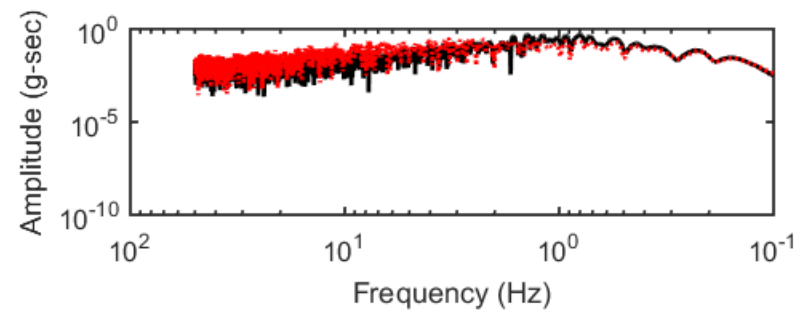
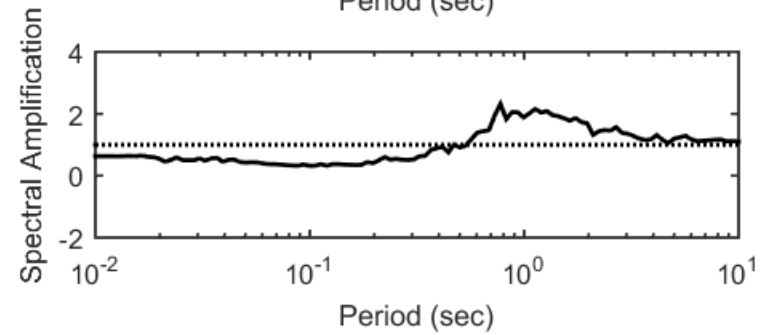
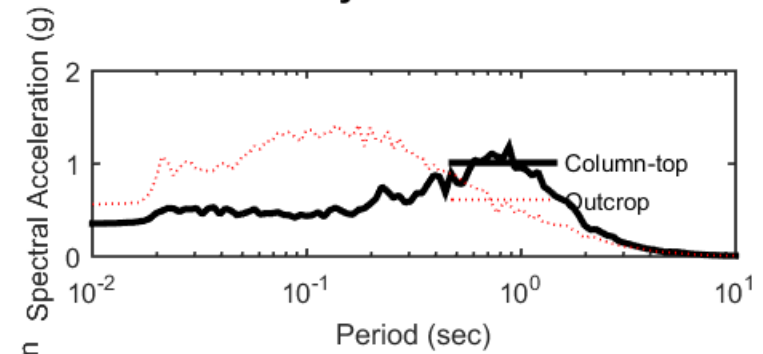
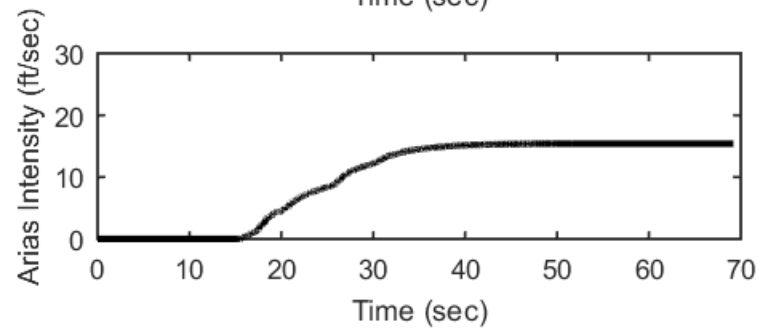
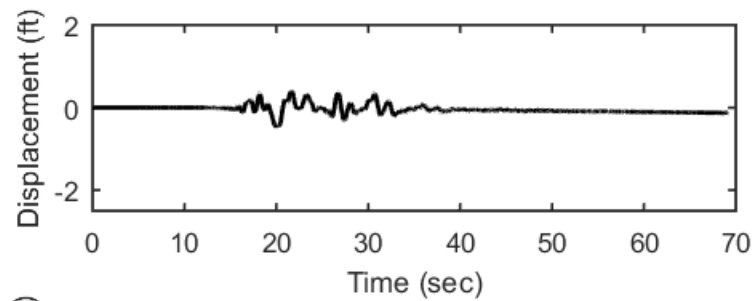
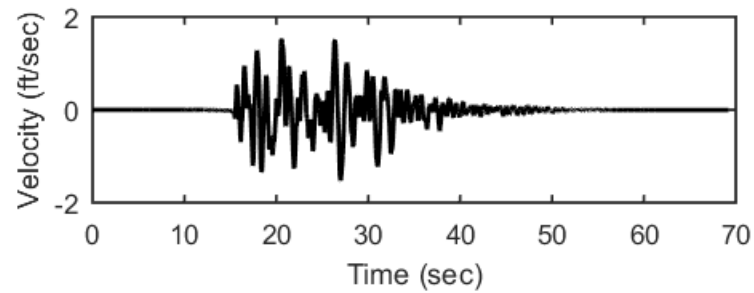
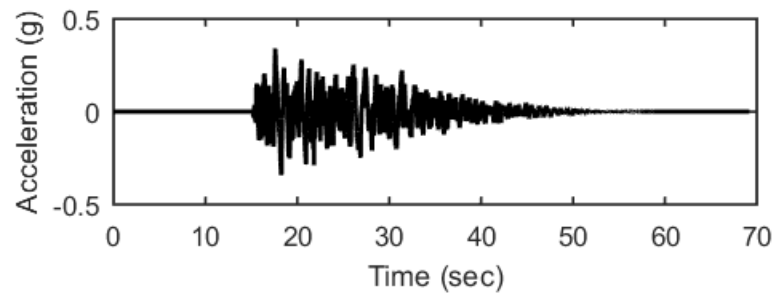
## Outputs at Top of Marl for: PWP Generation-No Clay with FEE7



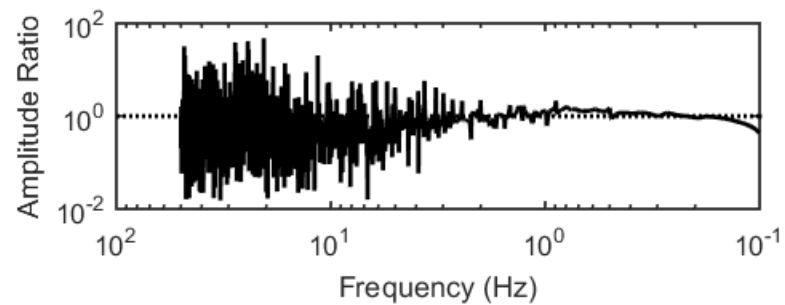
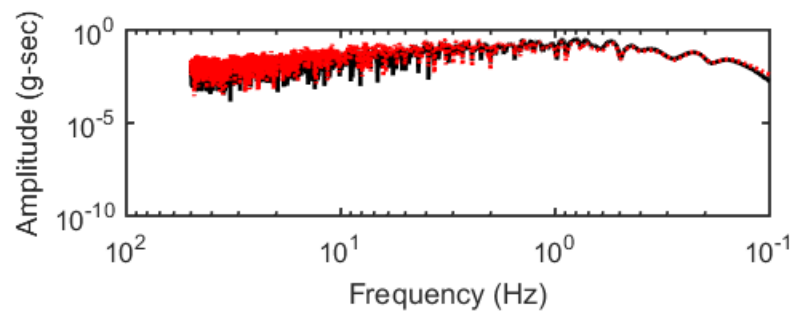
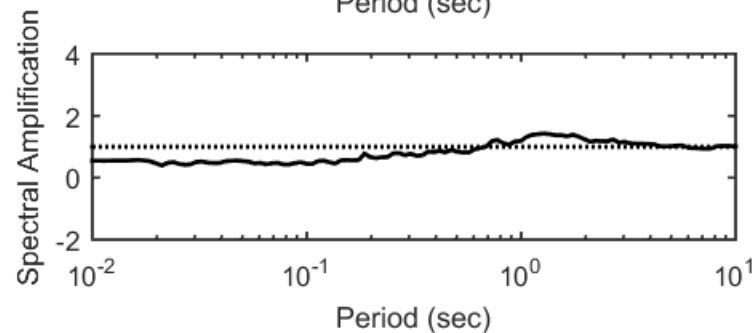
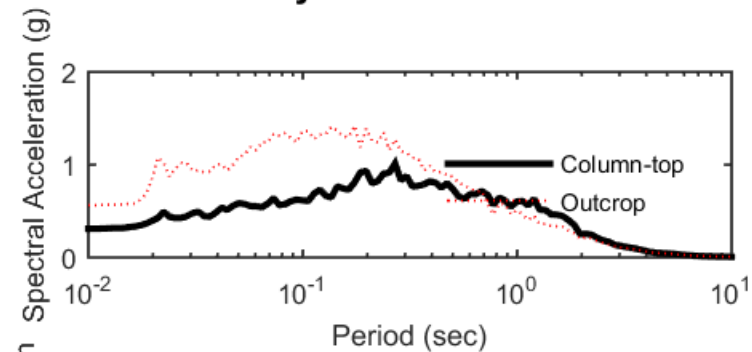
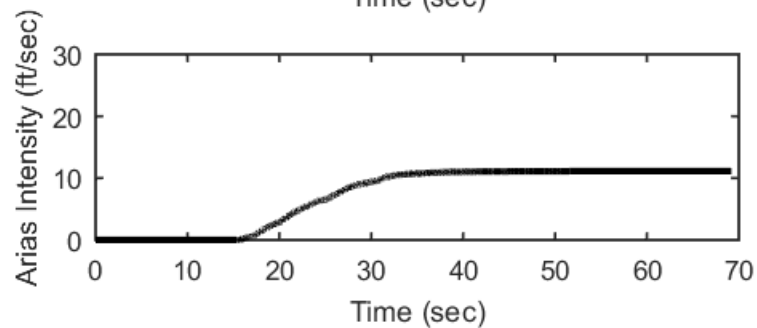
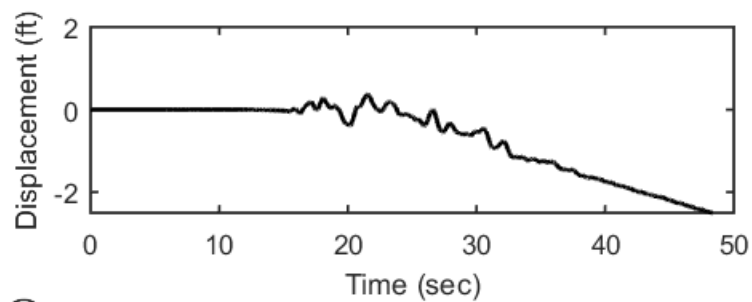
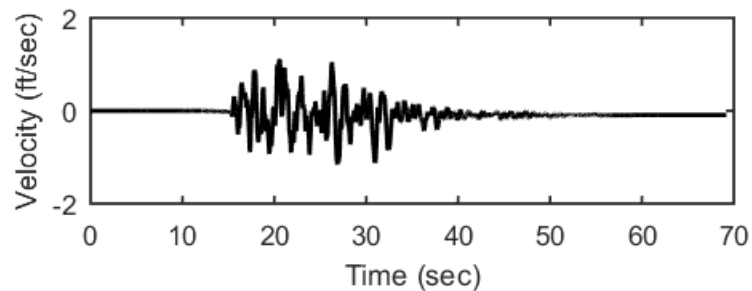
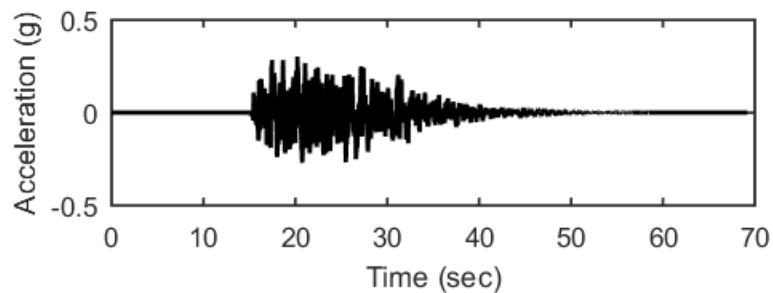
# Profile outputs for: PWP Generation-No Clay with FEE7



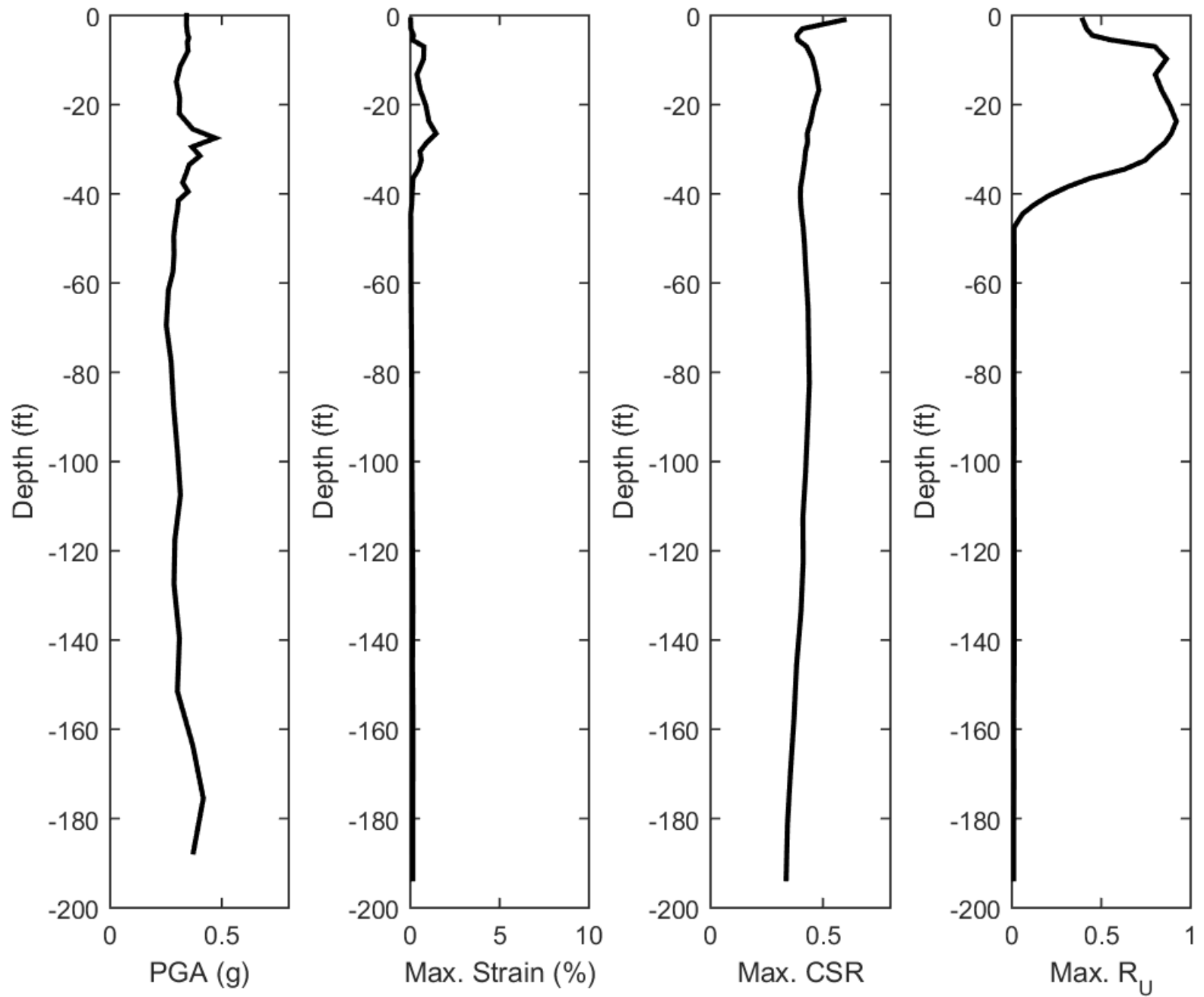
## Outputs at Ground Surface for: PWP Generation-No Clay with SEE1



## Outputs at Top of Marl for: PWP Generation-No Clay with SEE1

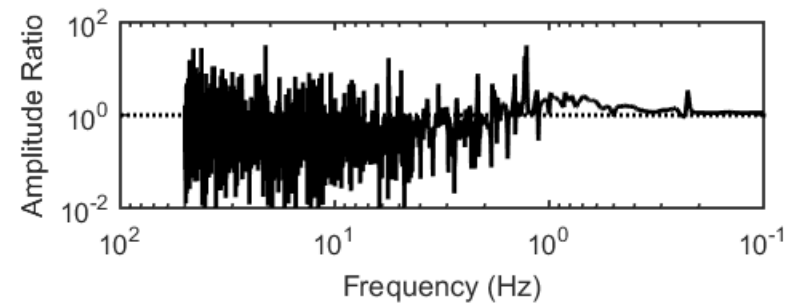
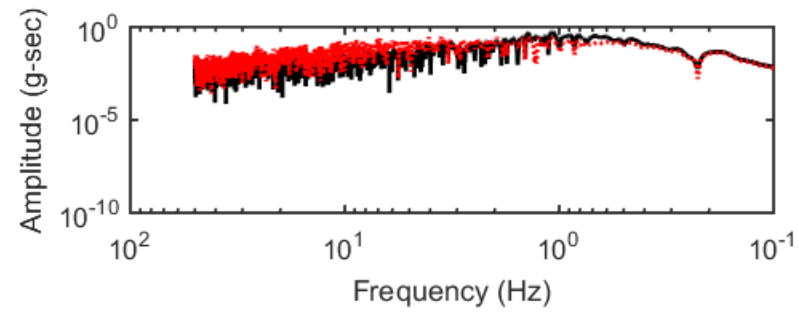
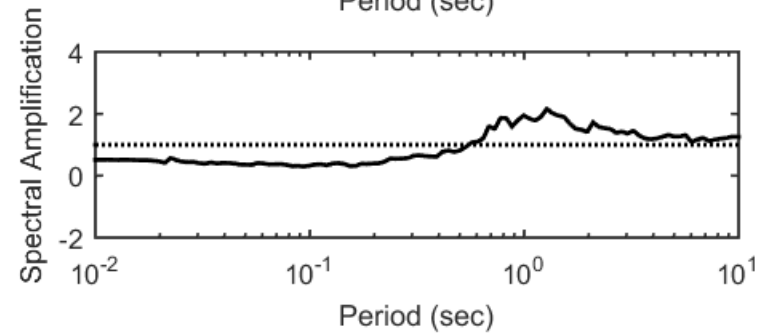
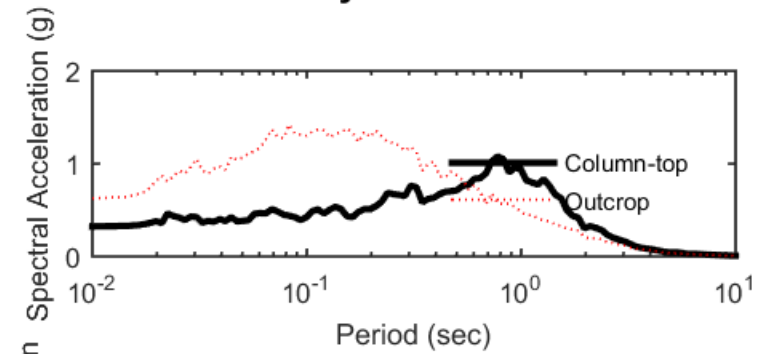
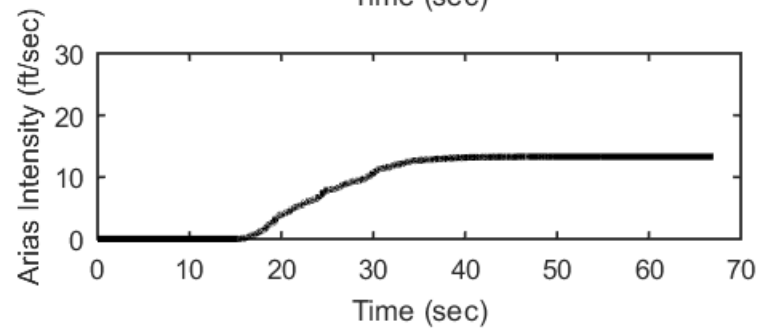
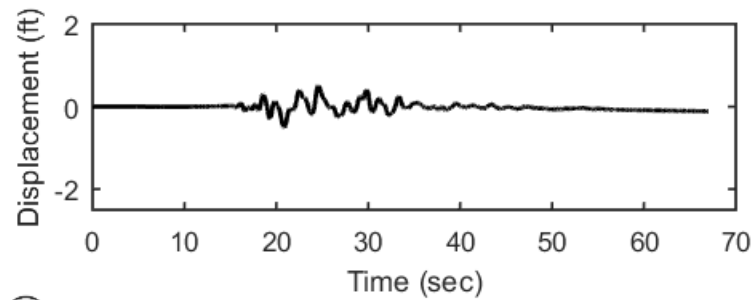
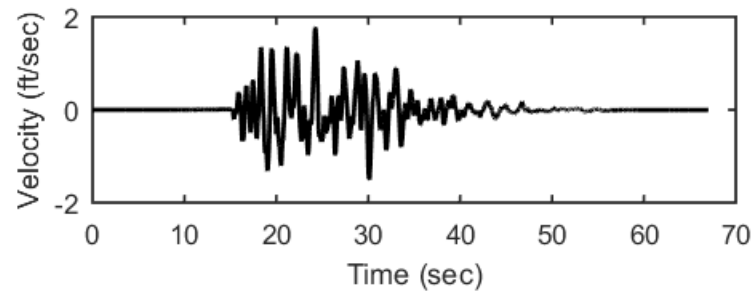
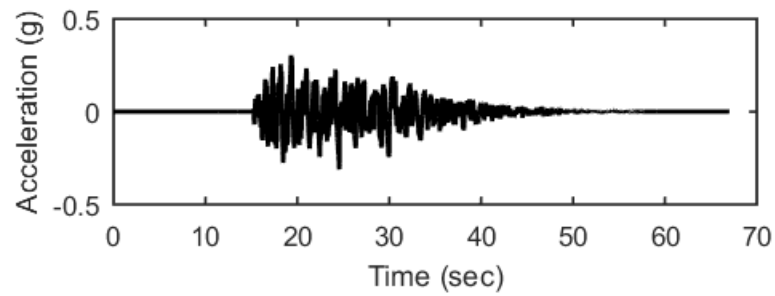


### Profile outputs for: PWP Generation-No Clay with SEE1

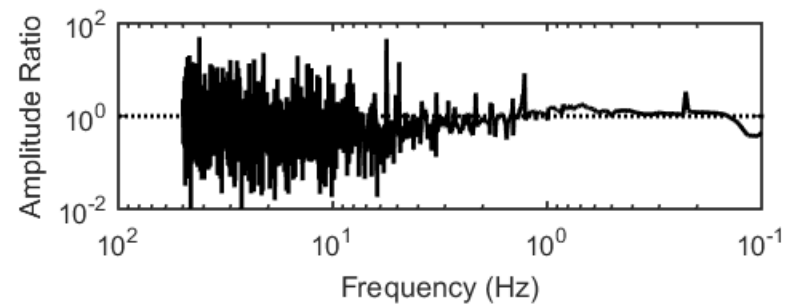
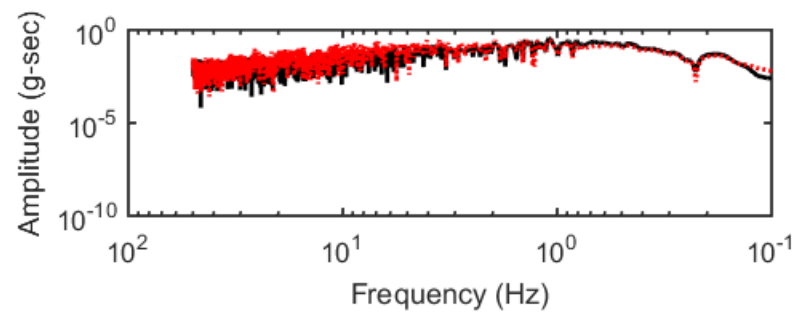
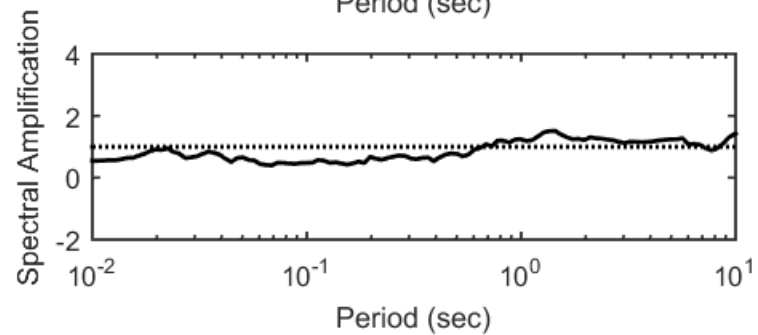
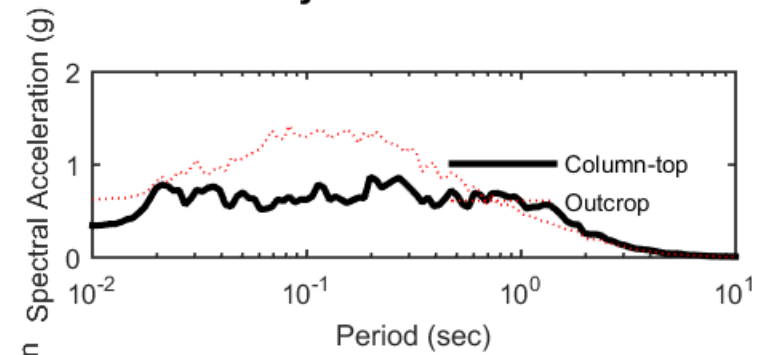
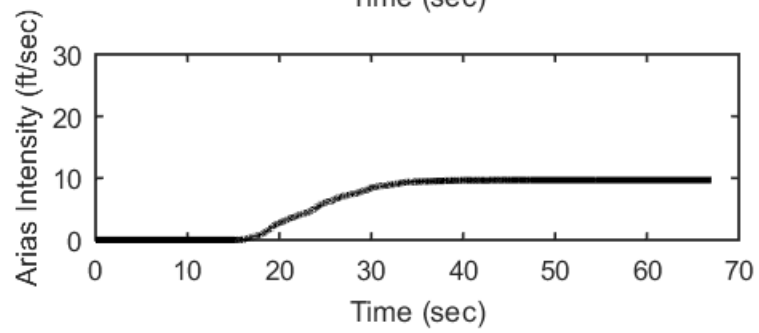
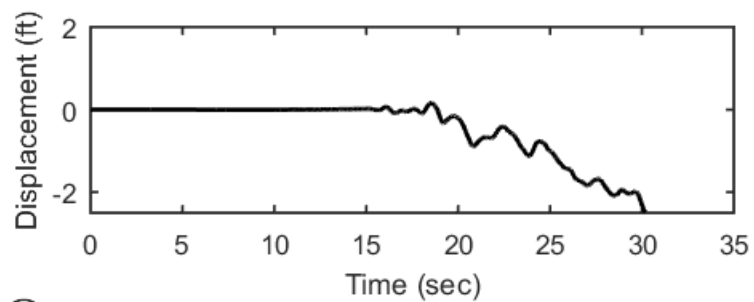
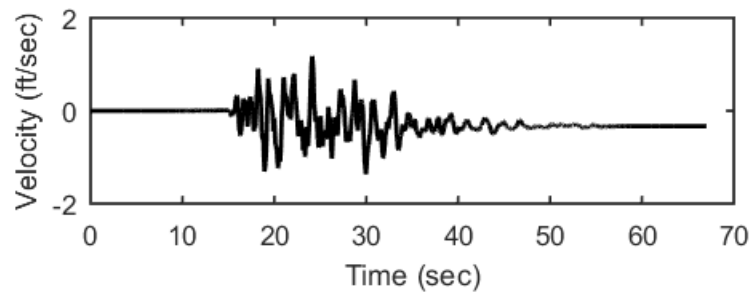
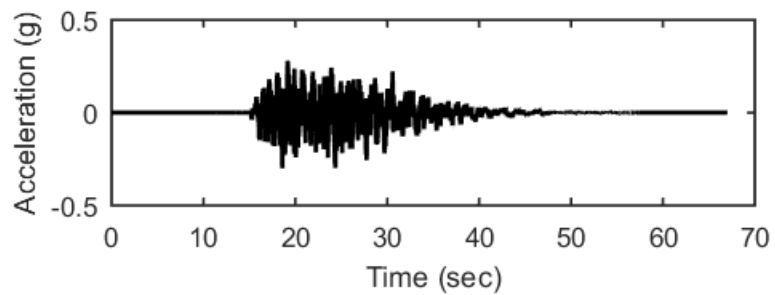




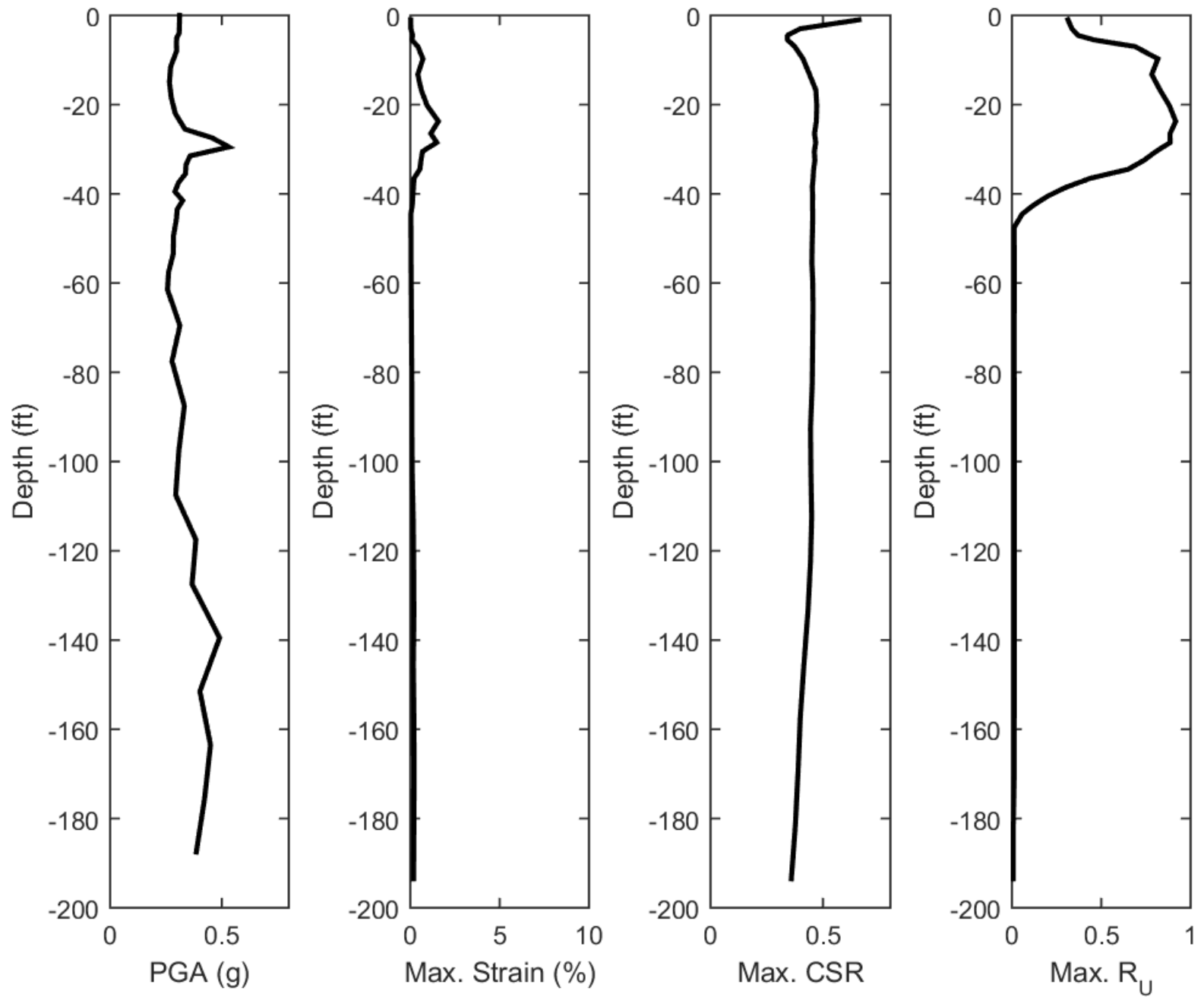
## Outputs at Ground Surface for: PWP Generation-No Clay with SEE2



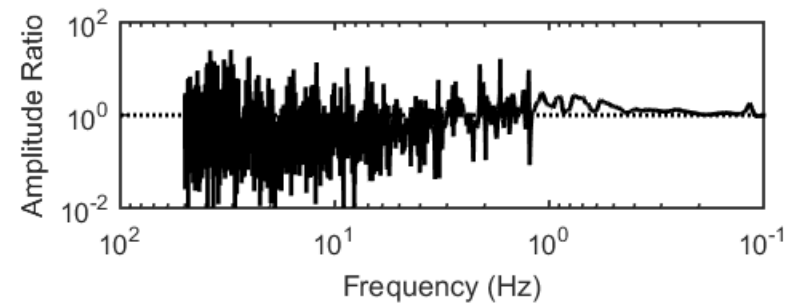
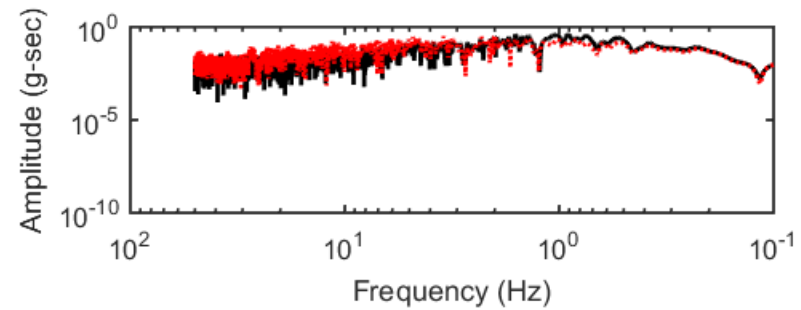
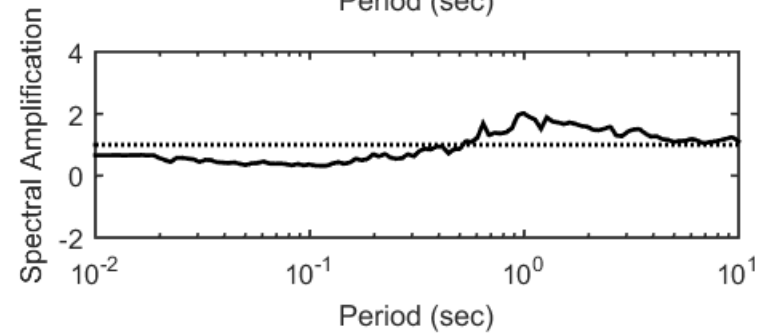
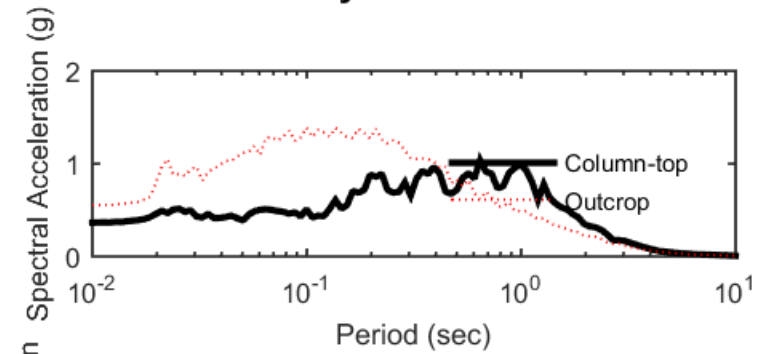
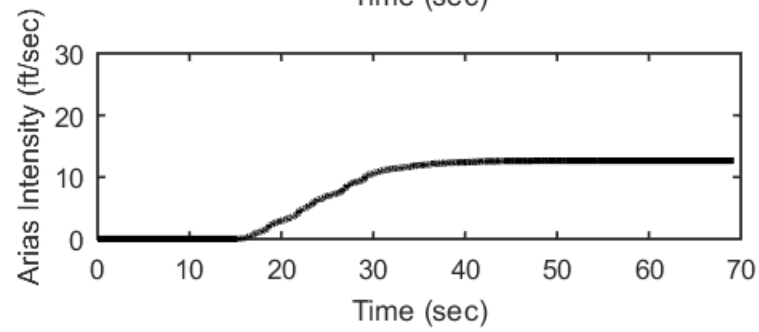
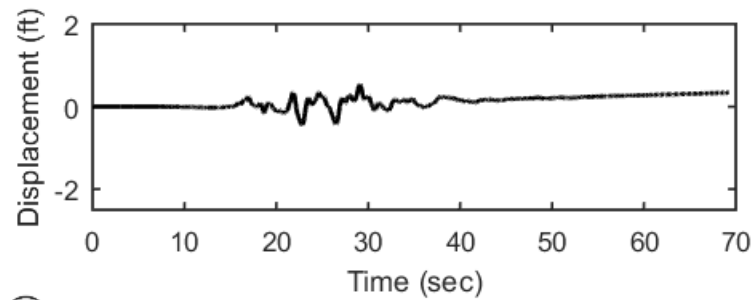
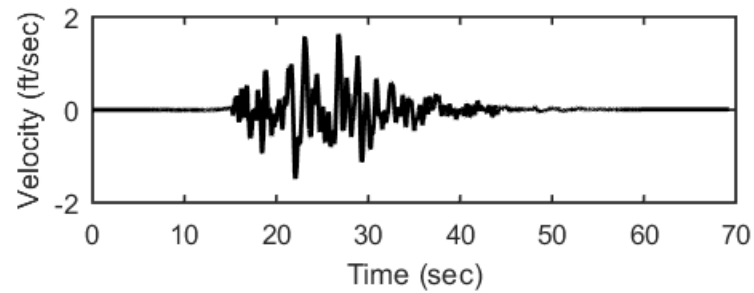
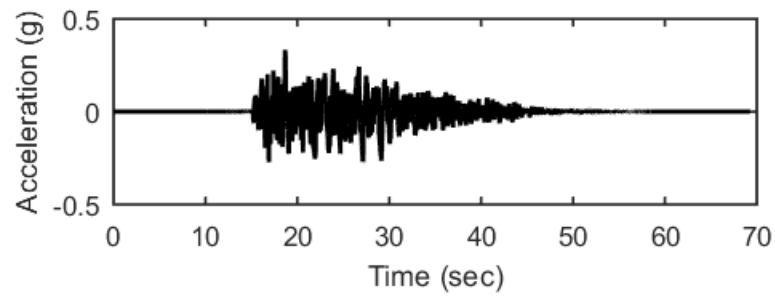
## Outputs at Top of Marl for: PWP Generation-No Clay with SEE2



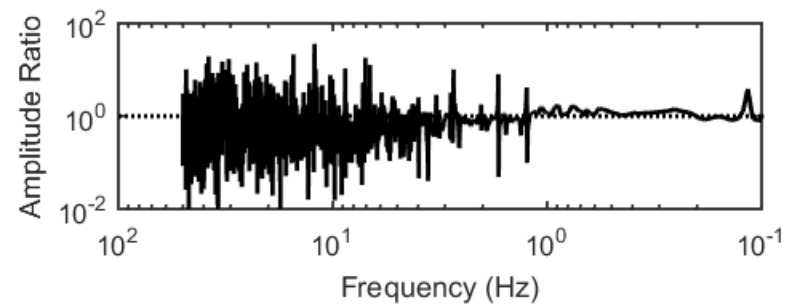
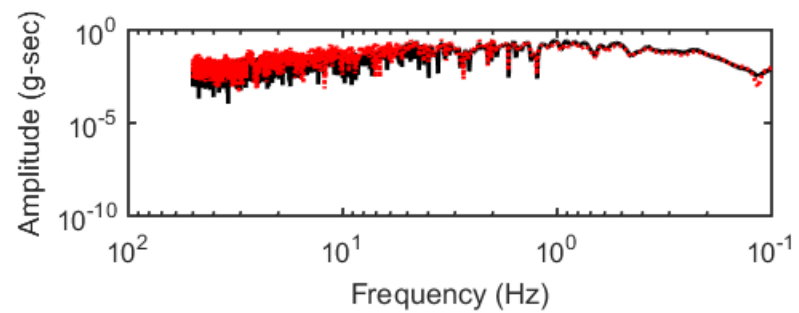
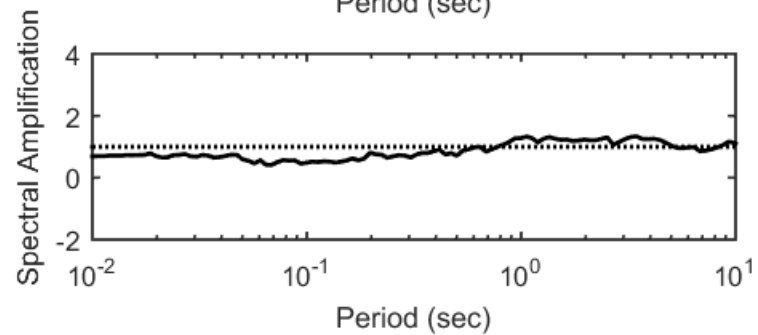
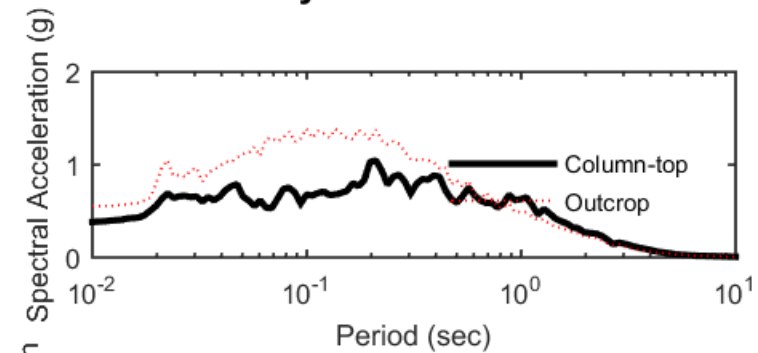
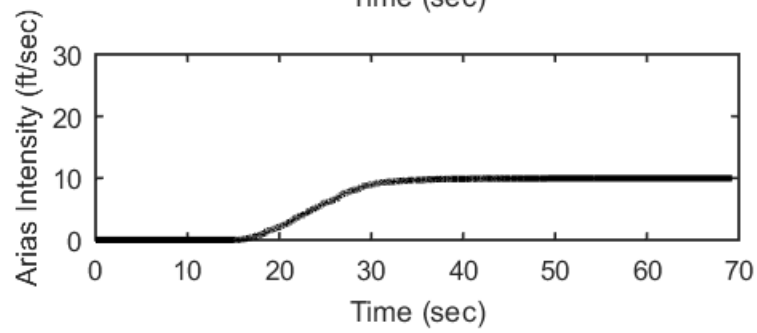
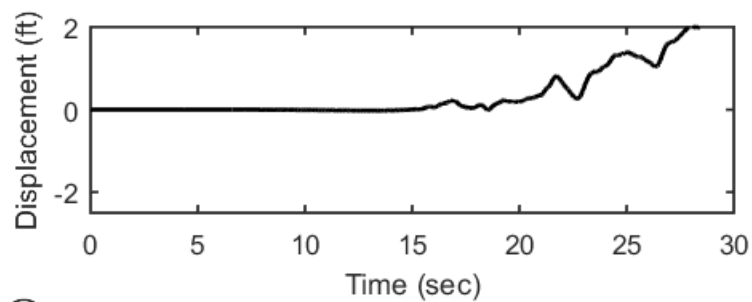
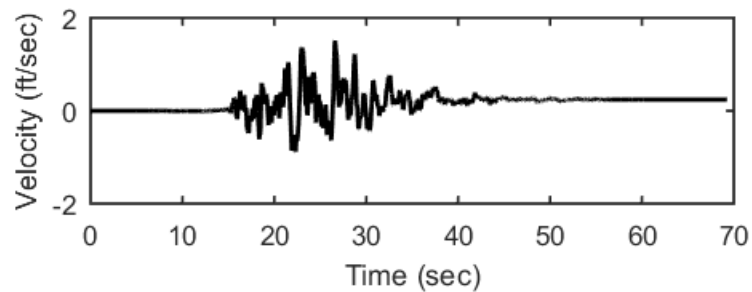
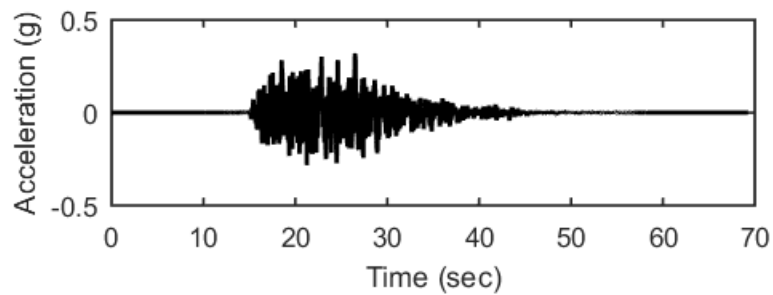
# Profile outputs for: PWP Generation-No Clay with SEE2



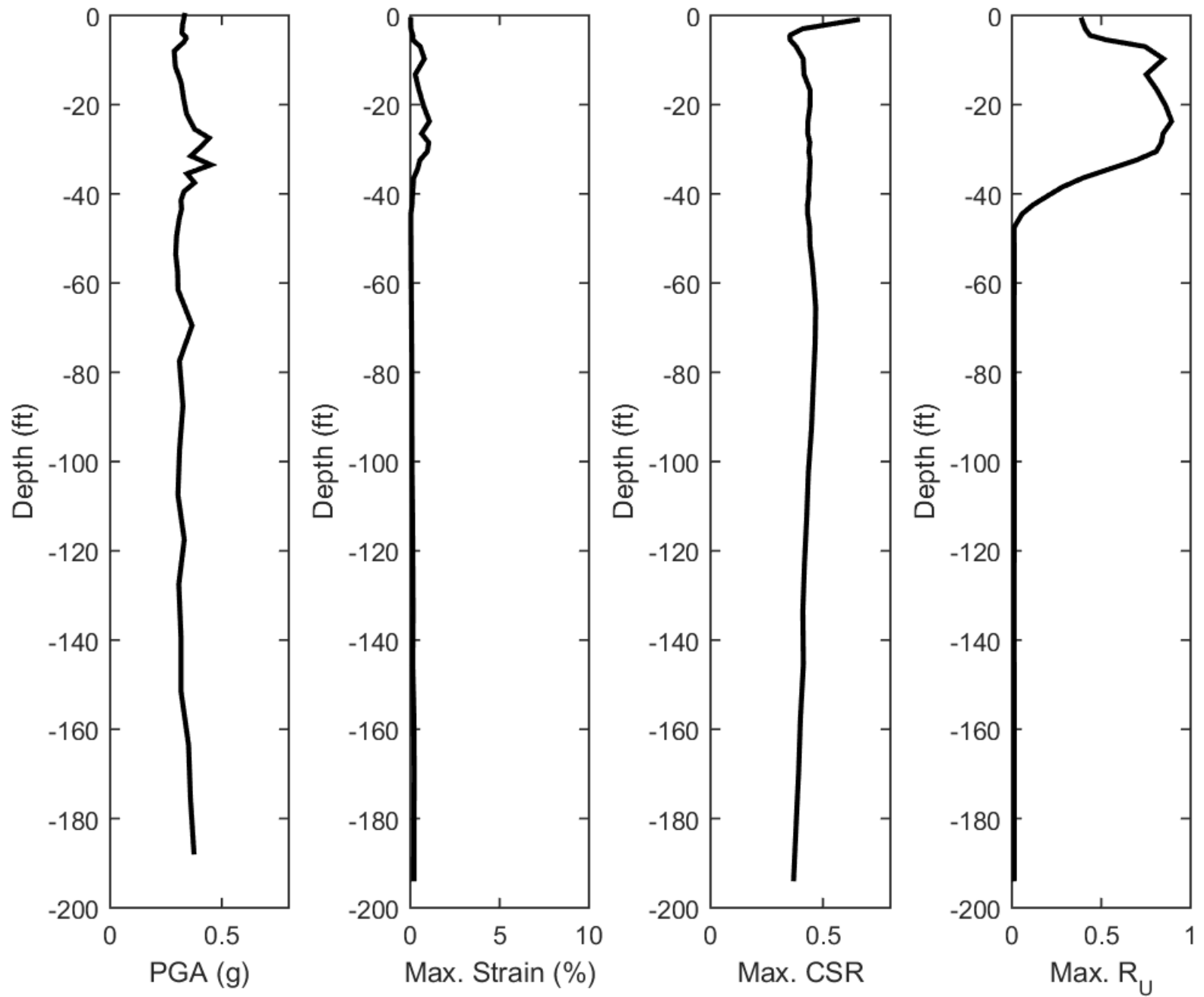
## Outputs at Ground Surface for: PWP Generation-No Clay with SEE3



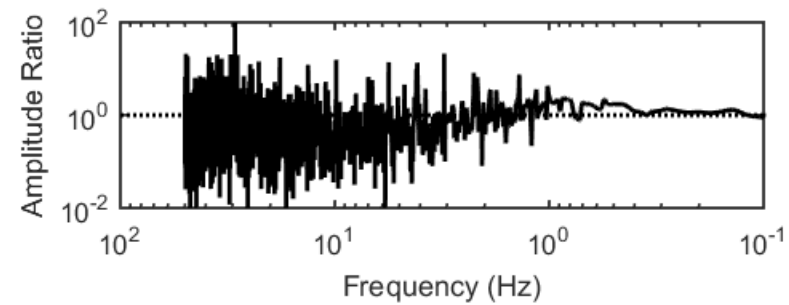
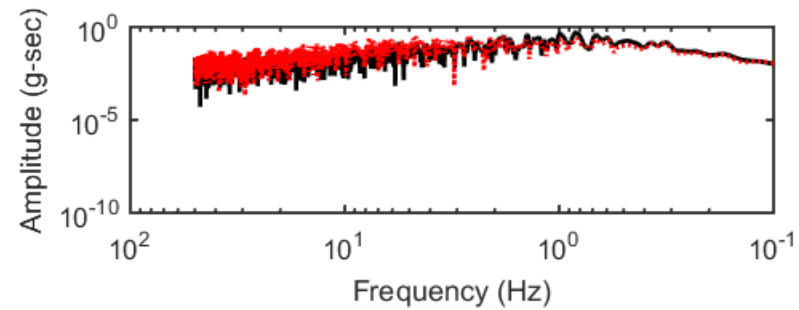
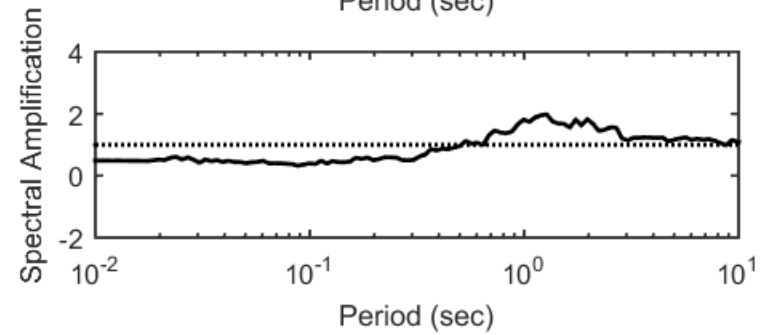
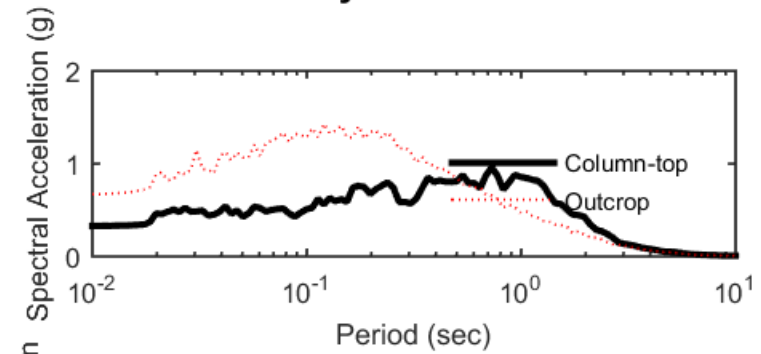
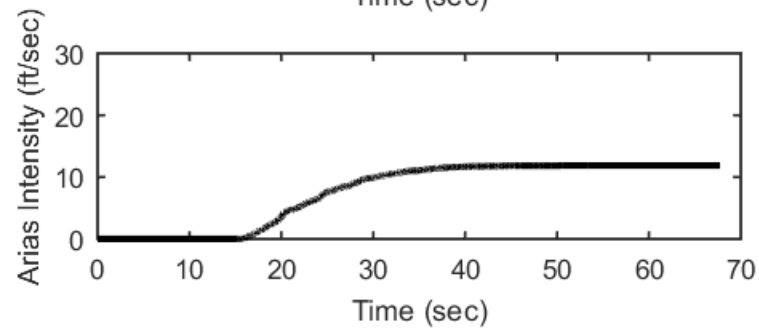
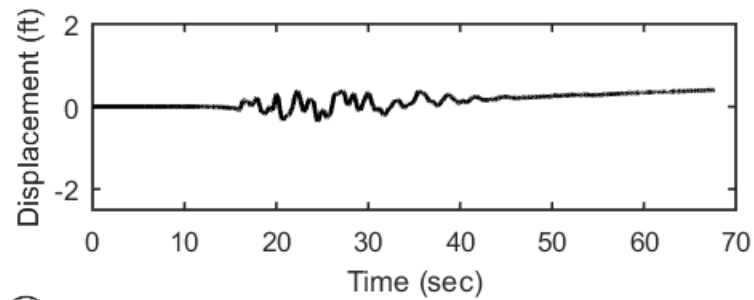
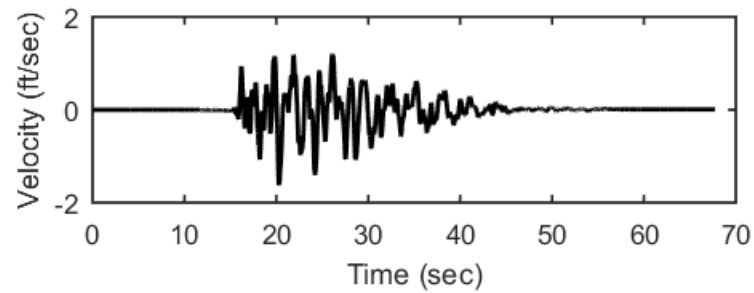
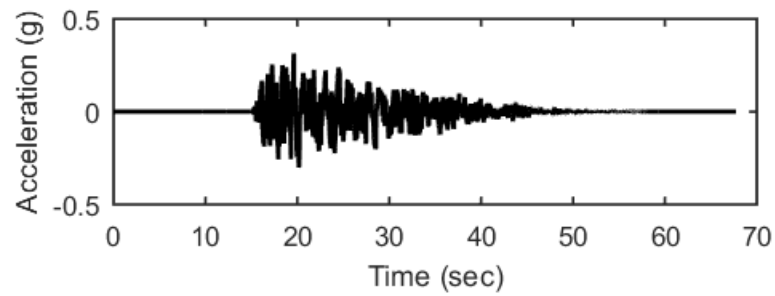
## Outputs at Top of Marl for: PWP Generation-No Clay with SEE3



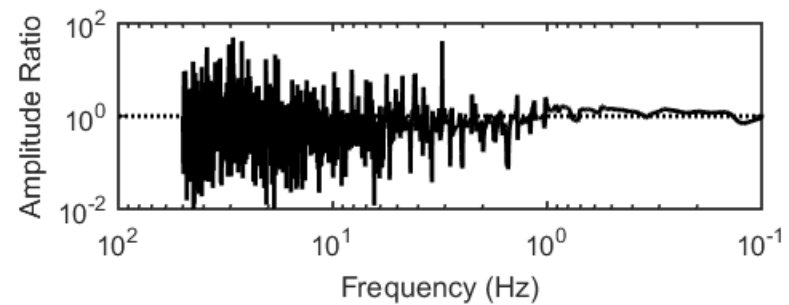
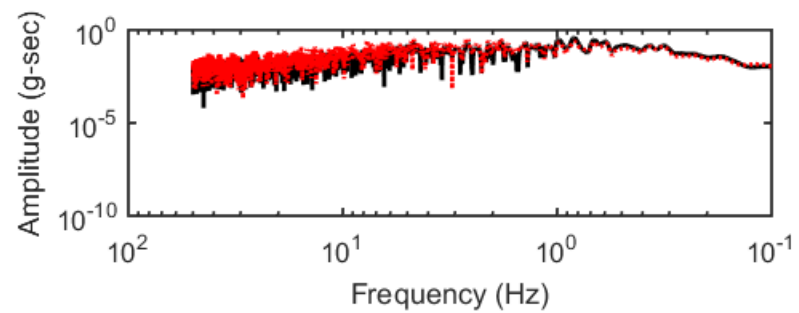
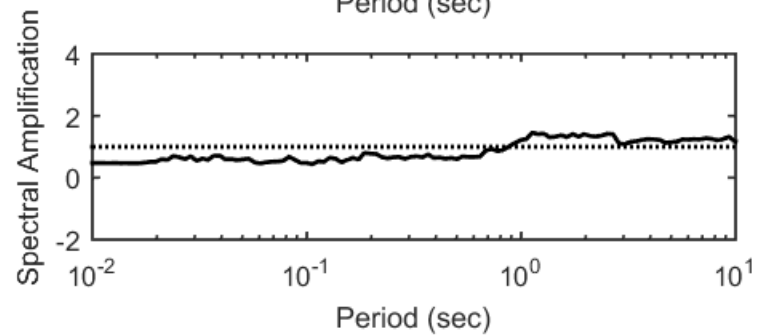
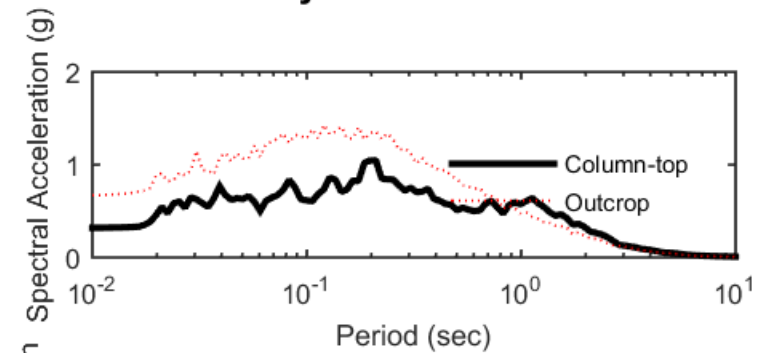
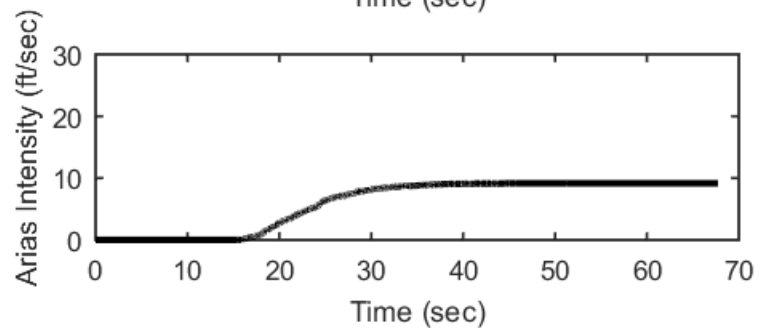
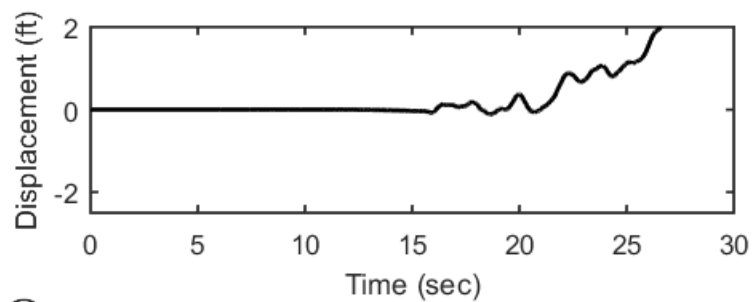
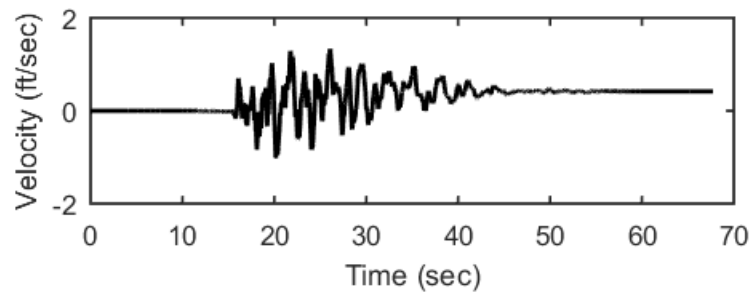
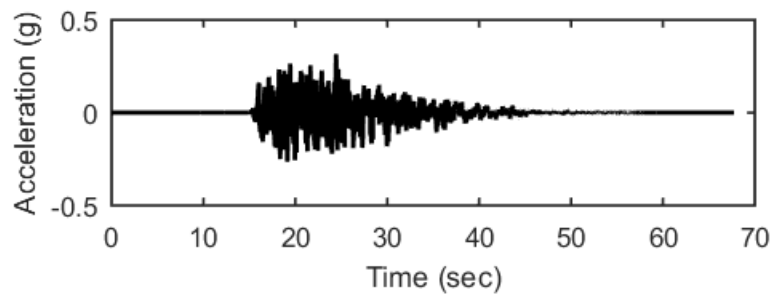
# Profile outputs for: PWP Generation-No Clay with SEE3



## Outputs at Ground Surface for: PWP Generation-No Clay with SEE4

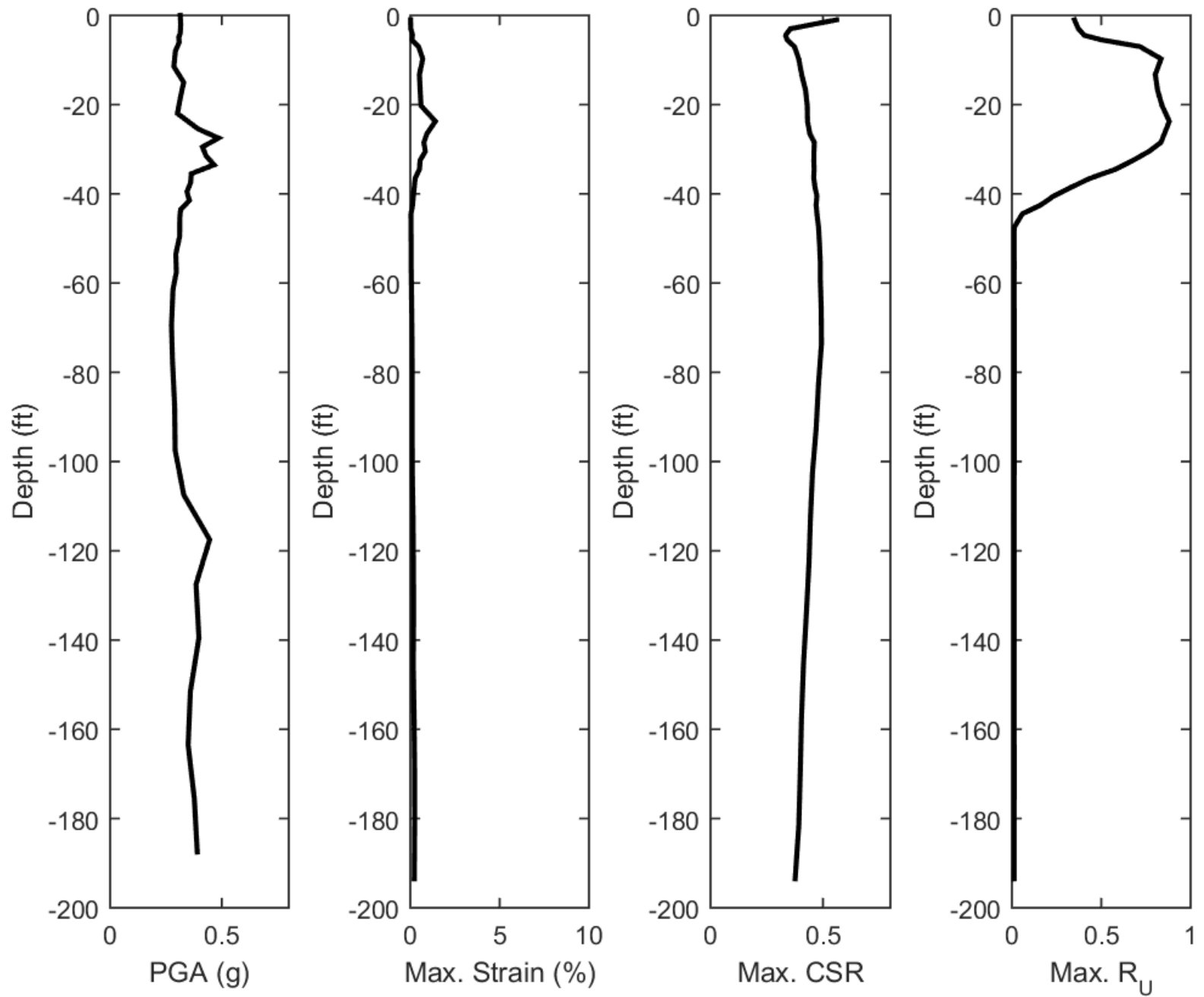


## Outputs at Top of Marl for: PWP Generation-No Clay with SEE4

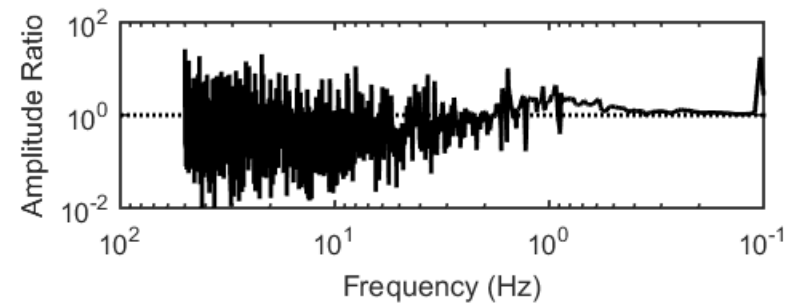
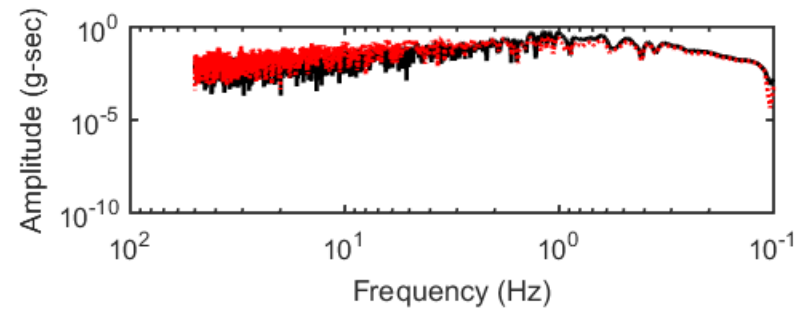
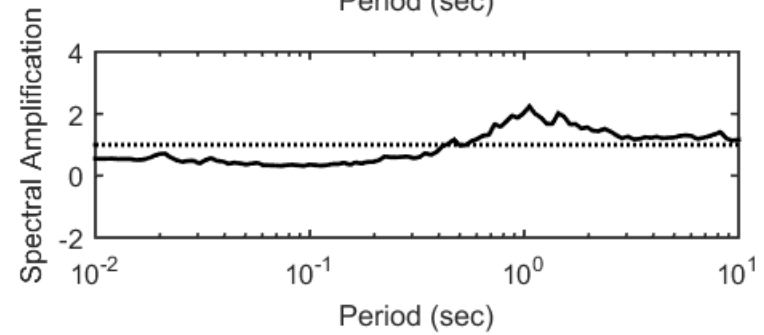
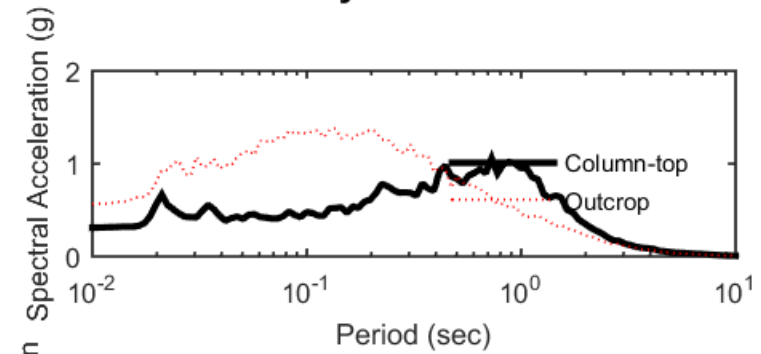
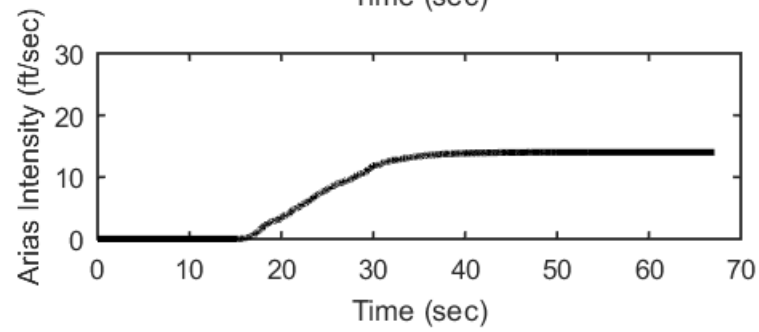
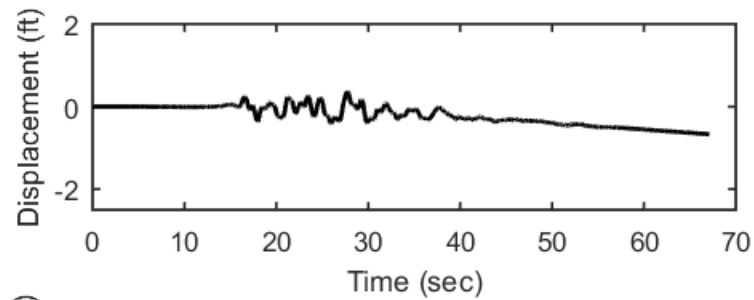
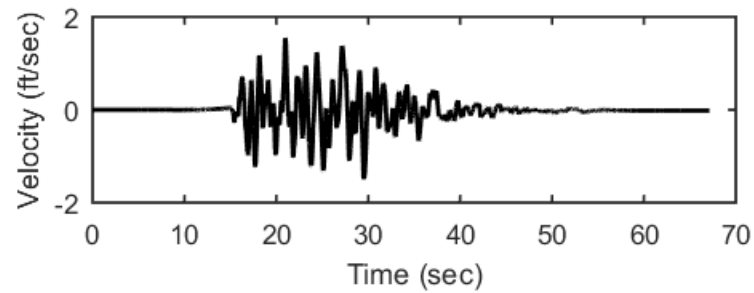
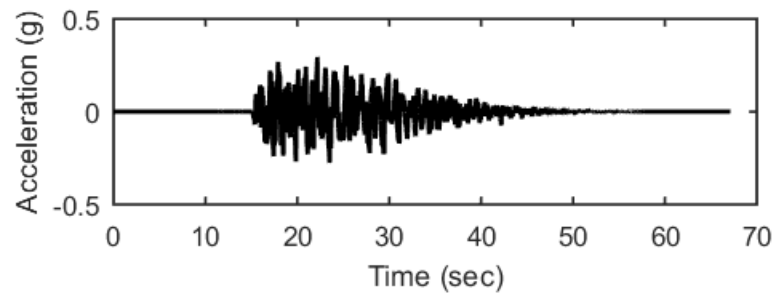




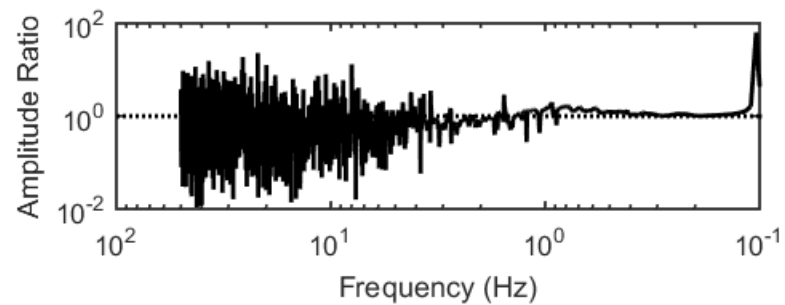
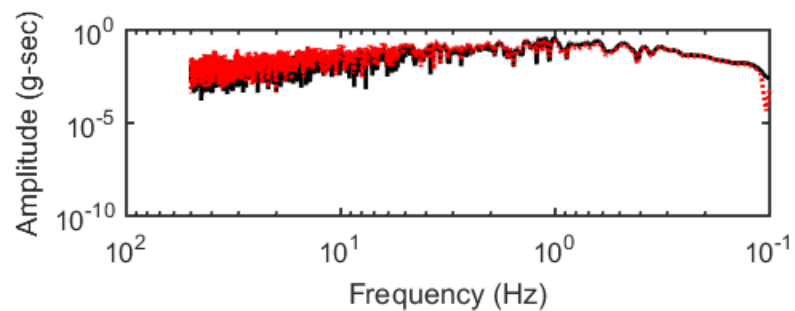
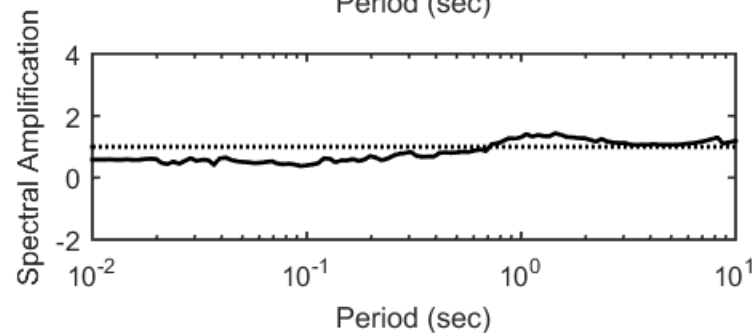
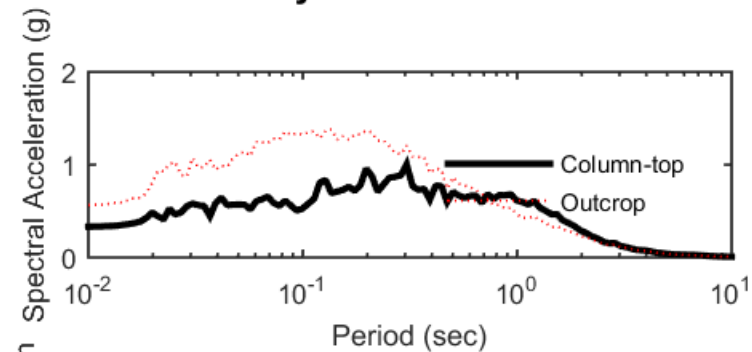
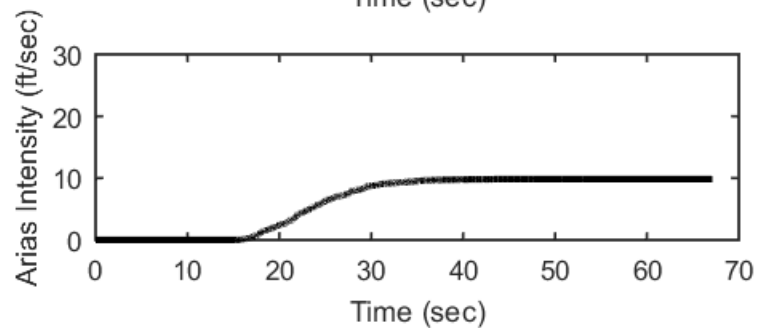
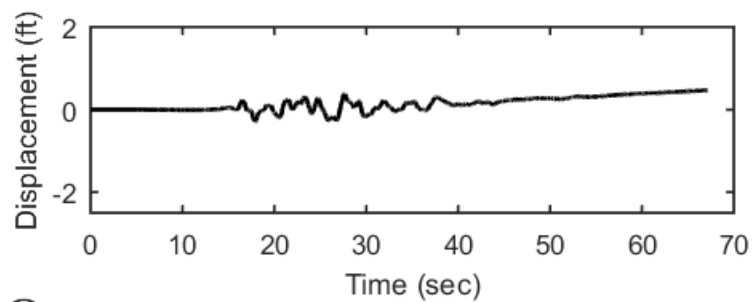
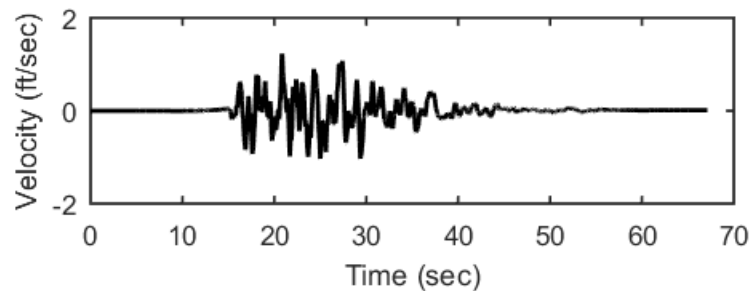
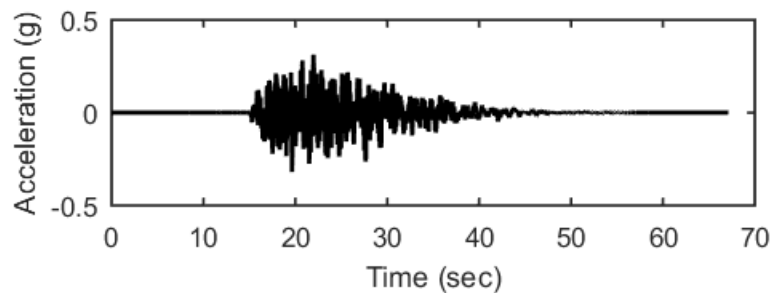
# Profile outputs for: PWP Generation-No Clay with SEE4



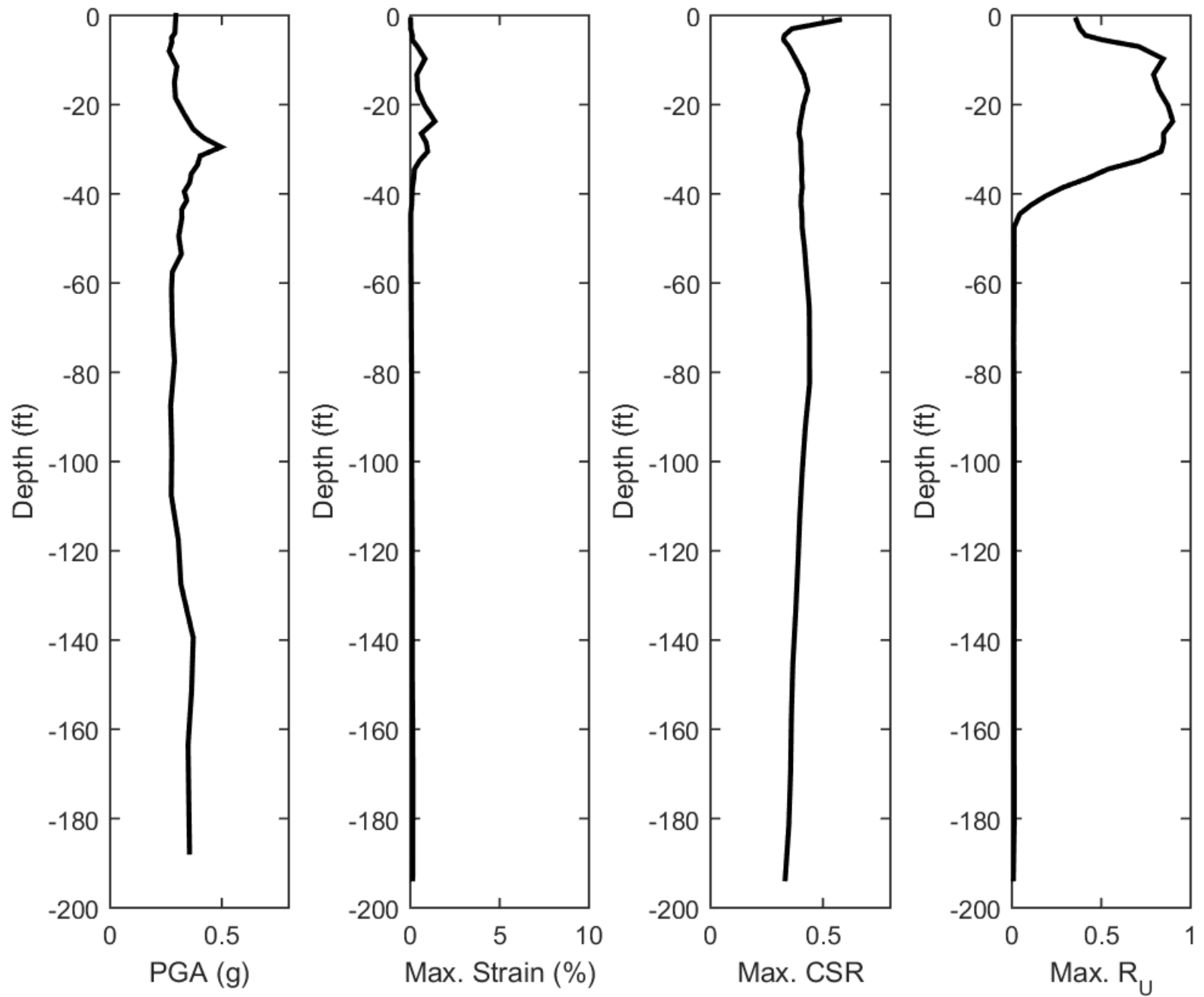
## Outputs at Ground Surface for: PWP Generation-No Clay with SEE5



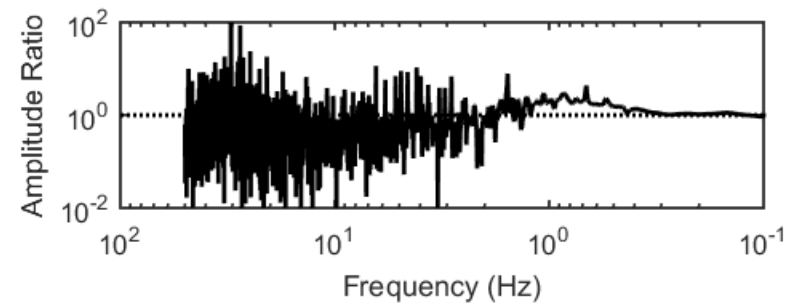
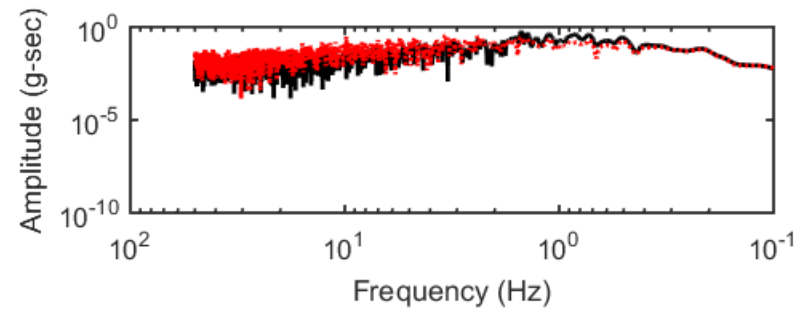
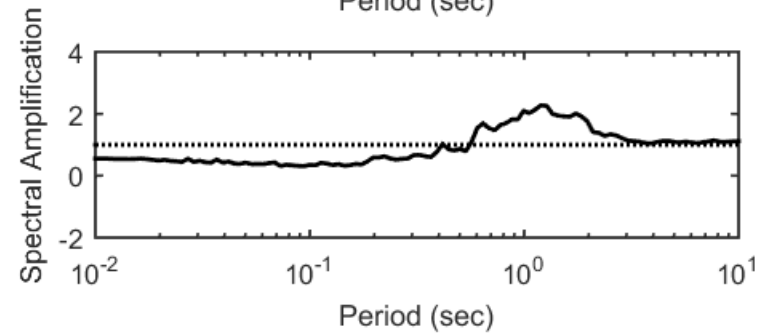
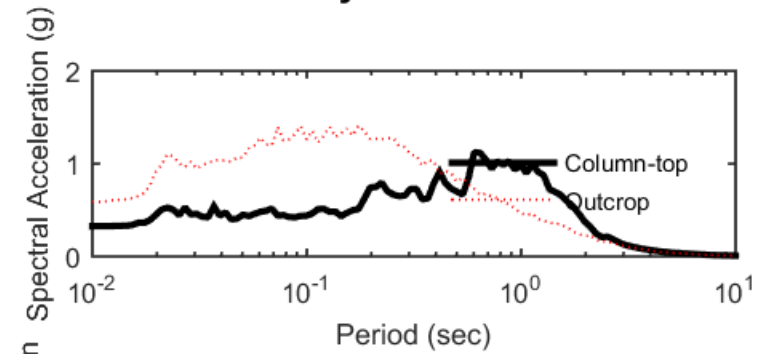
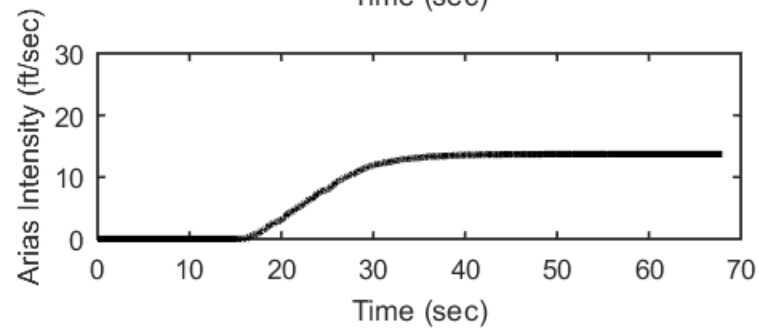
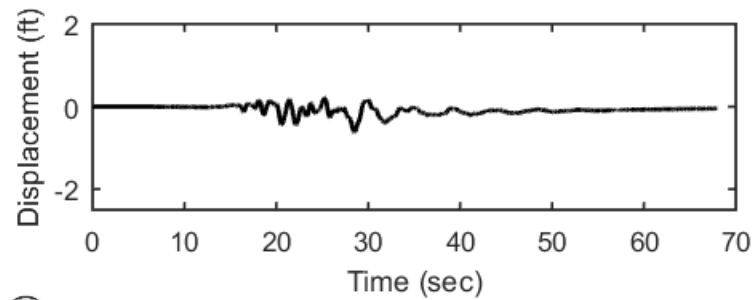
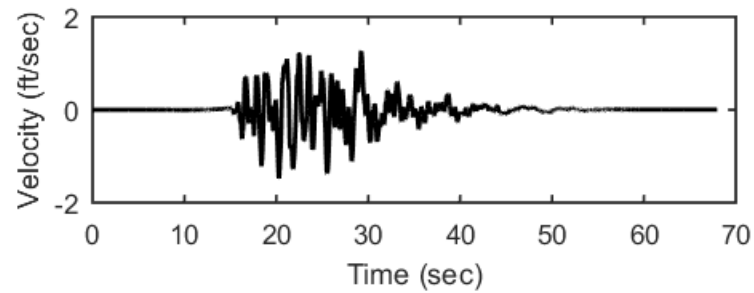
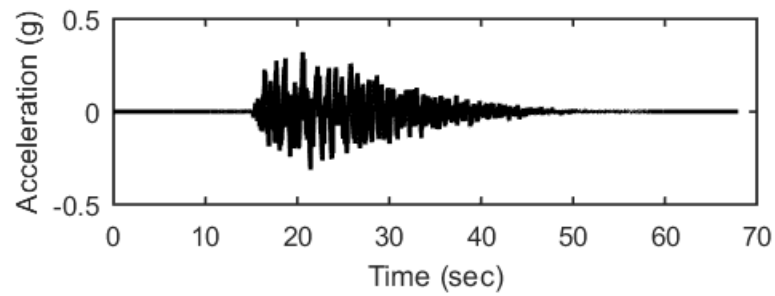
## Outputs at Top of Marl for: PWP Generation-No Clay with SEE5



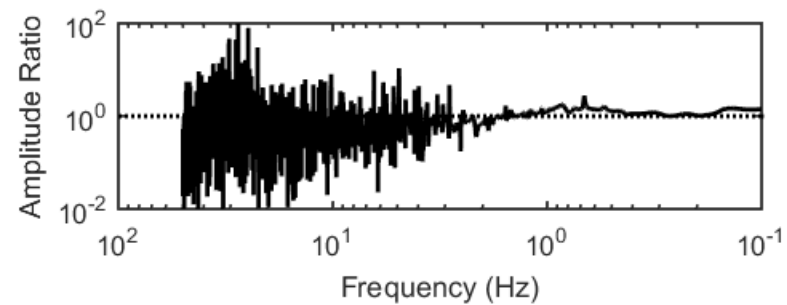
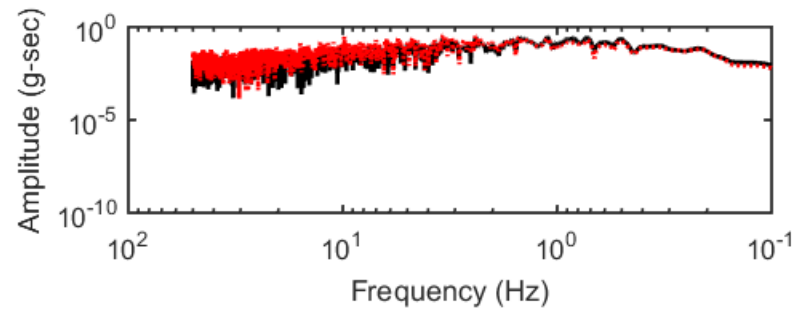
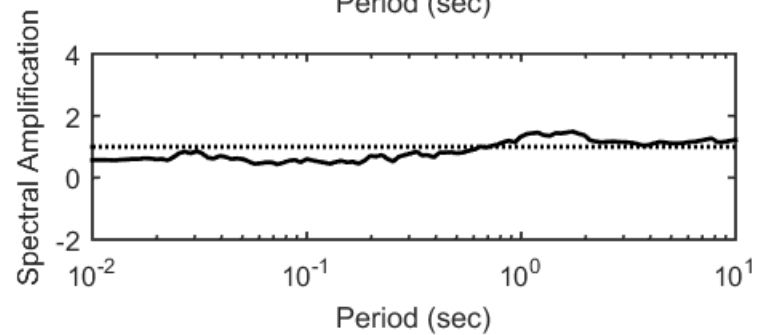
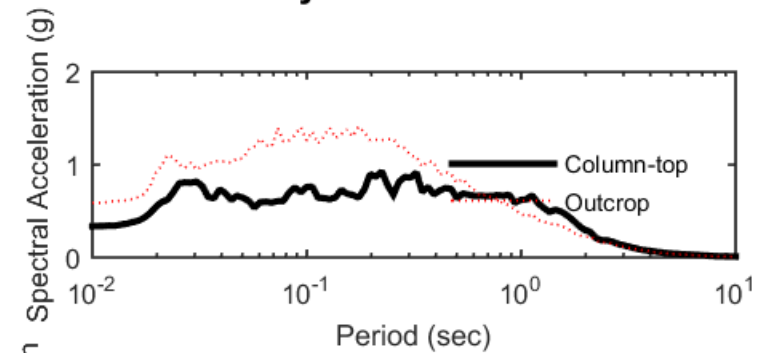
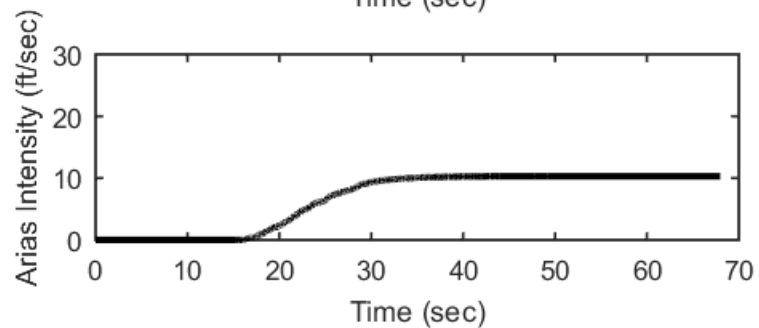
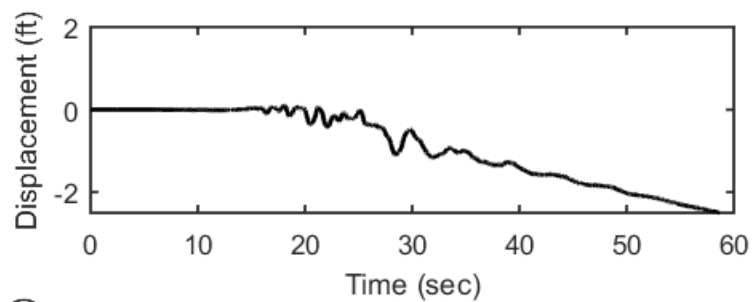
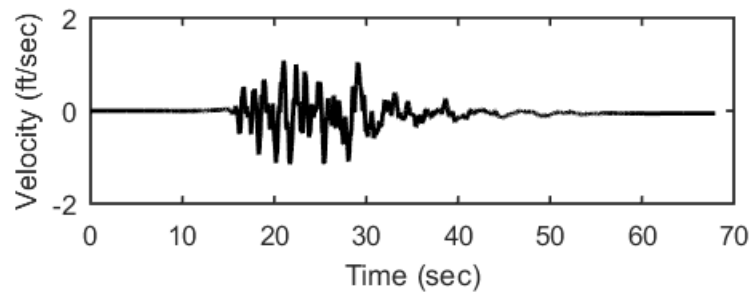
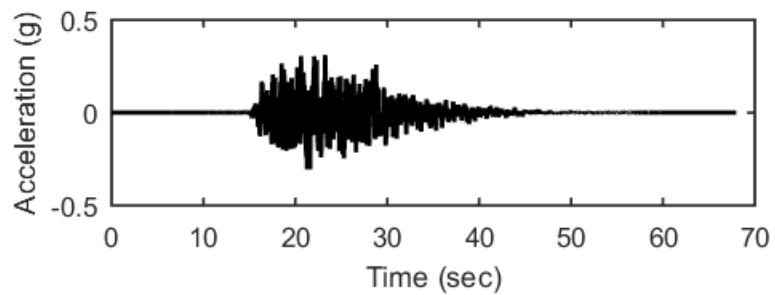
# Profile outputs for: PWP Generation-No Clay with SEE5



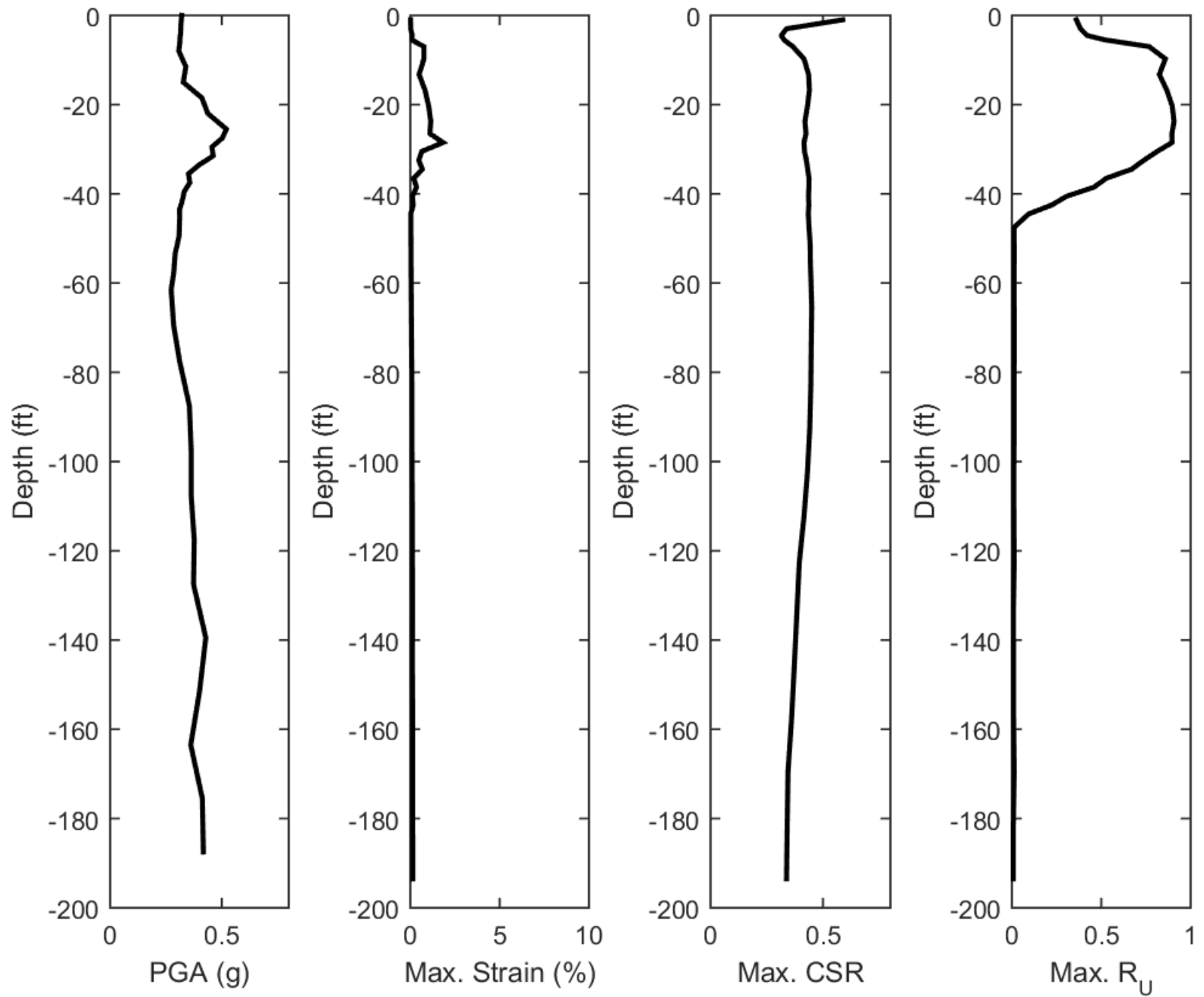
## Outputs at Ground Surface for: PWP Generation-No Clay with SEE6



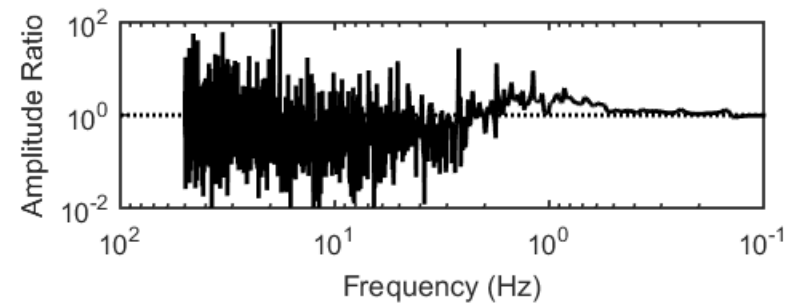
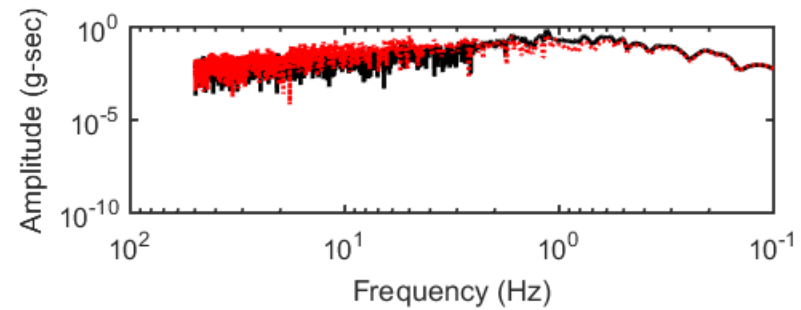
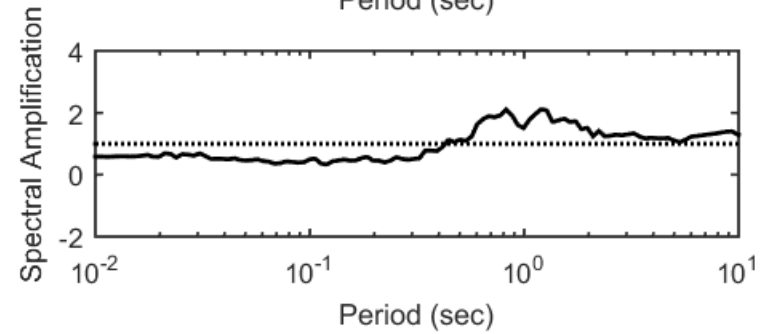
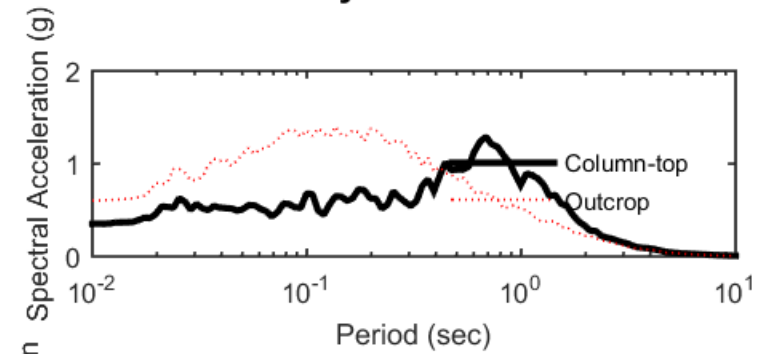
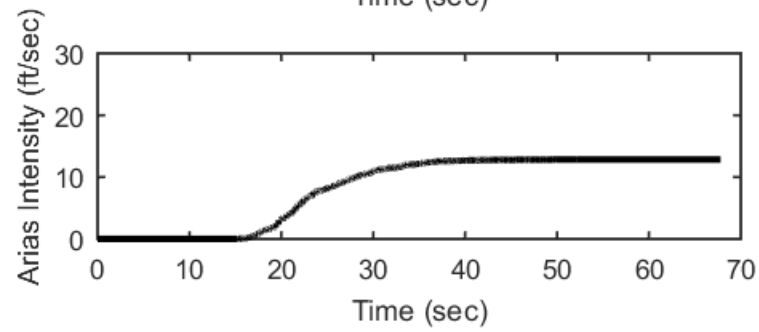
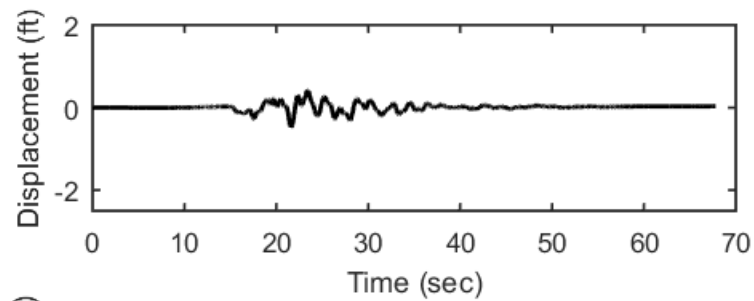
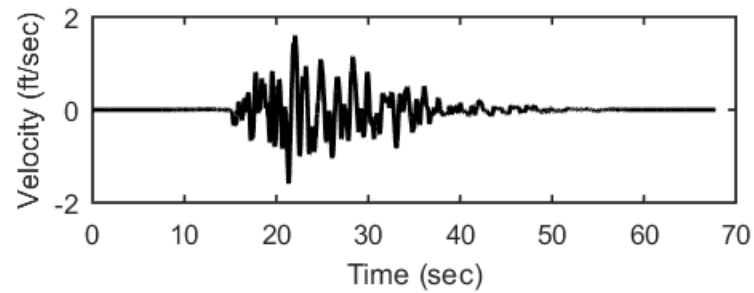
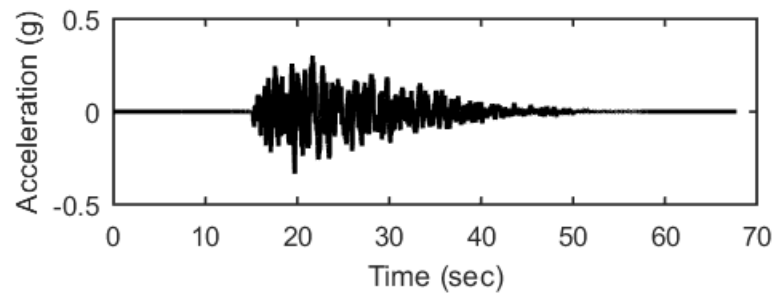
## Outputs at Top of Marl for: PWP Generation-No Clay with SEE6



# Profile outputs for: PWP Generation-No Clay with SEE6

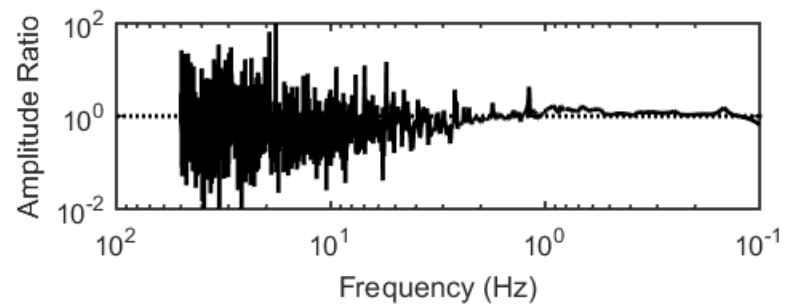
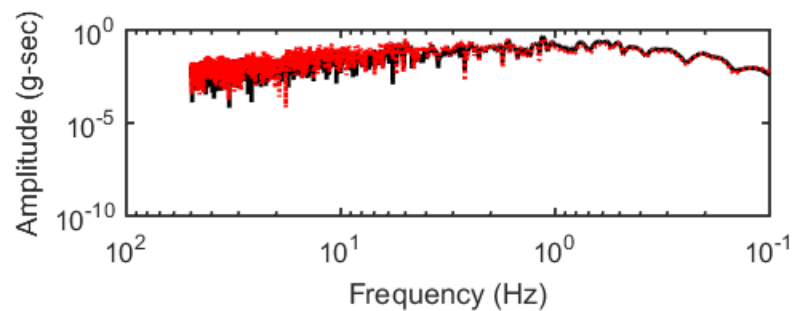
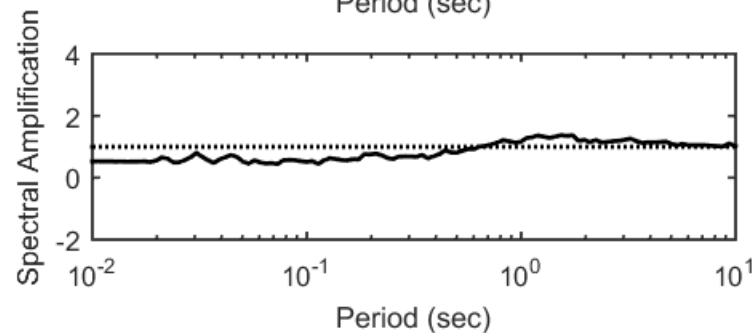
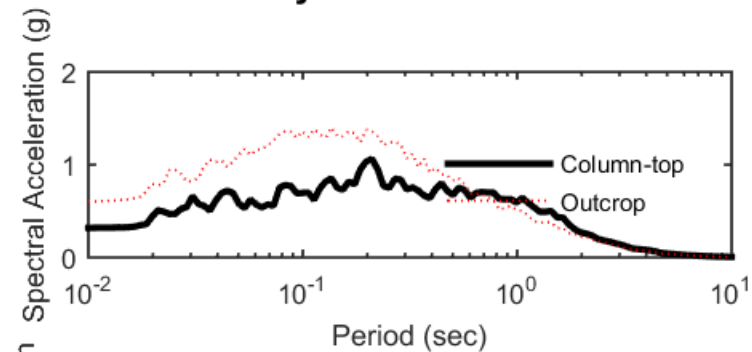
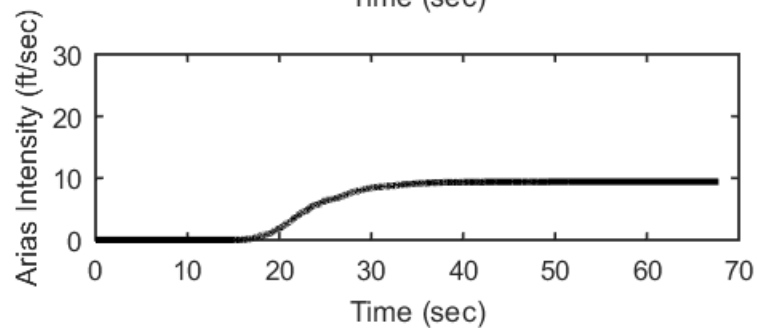
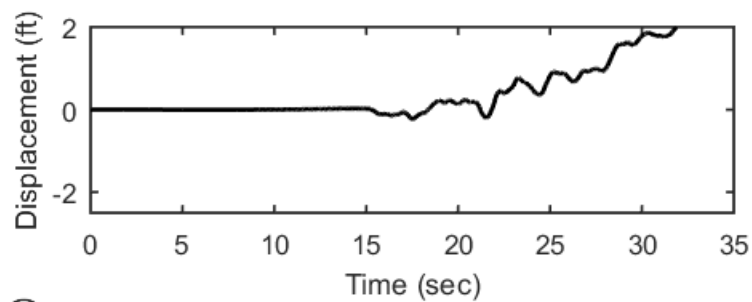
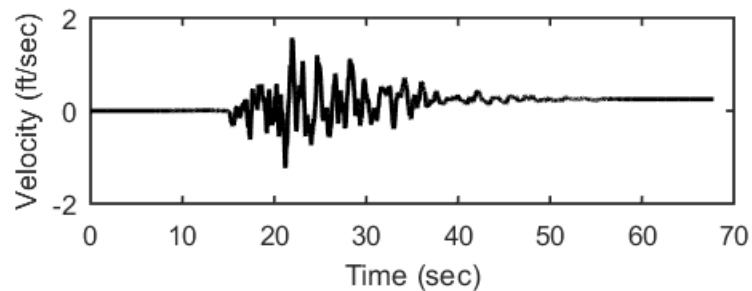
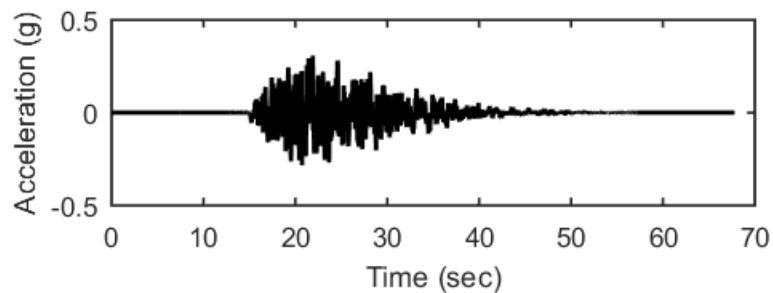


## Outputs at Ground Surface for: PWP Generation-No Clay with SEE7

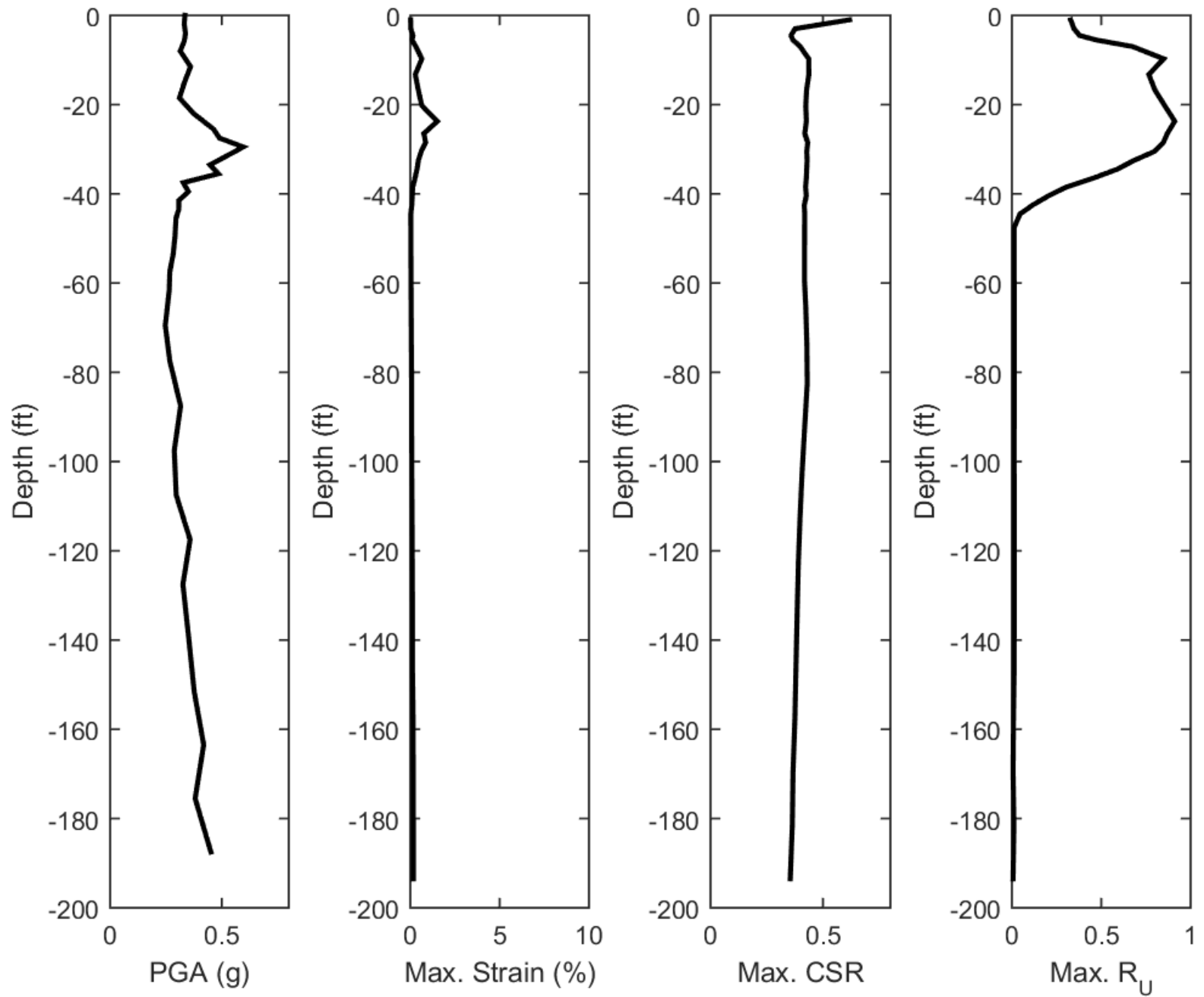




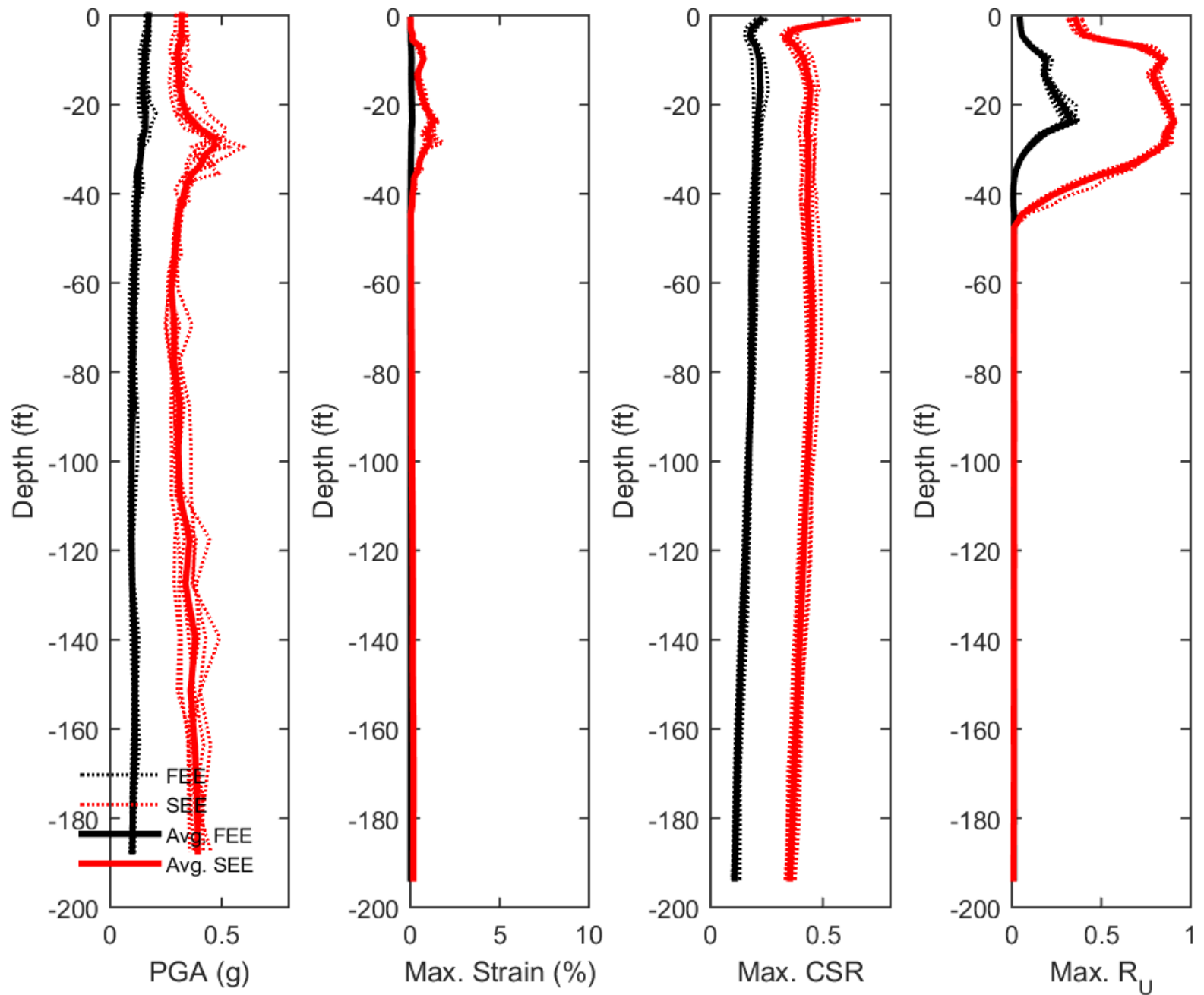
## Outputs at Top of Marl for: PWP Generation-No Clay with SEE7



# Profile outputs for: PWP Generation-No Clay with SEE7

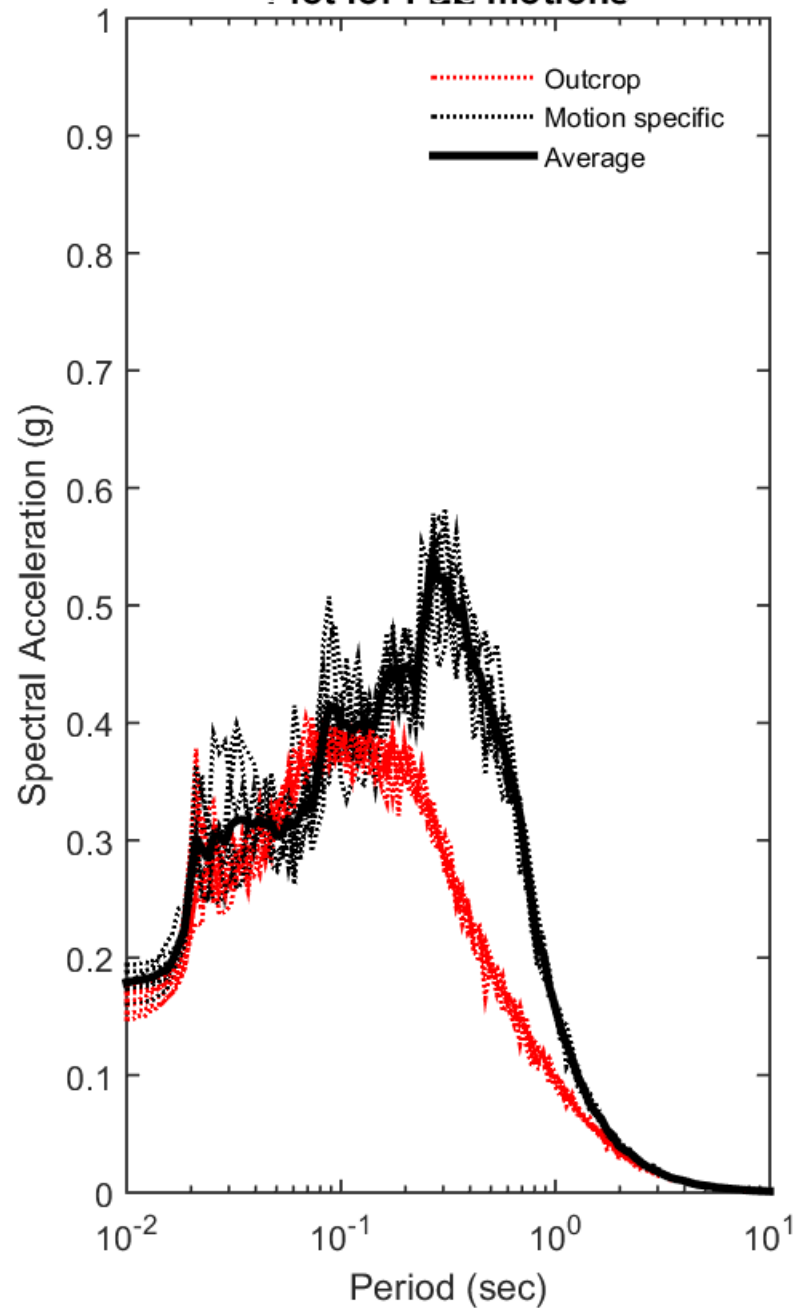


## Summary of profile outputs for: PWP Generation-No Clay

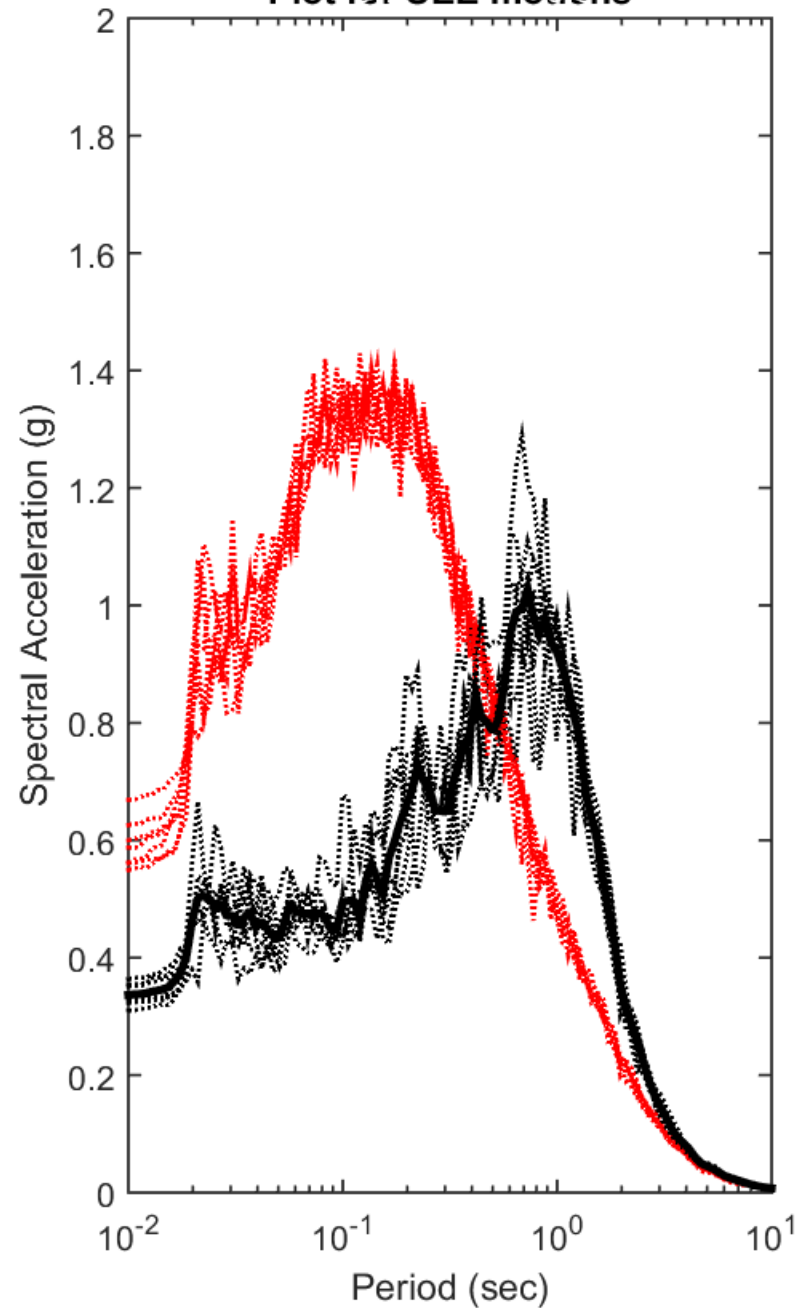


## Summary plots of RSA at ground surface for: PWP Generation-No Clay

Plot for FEE motions:

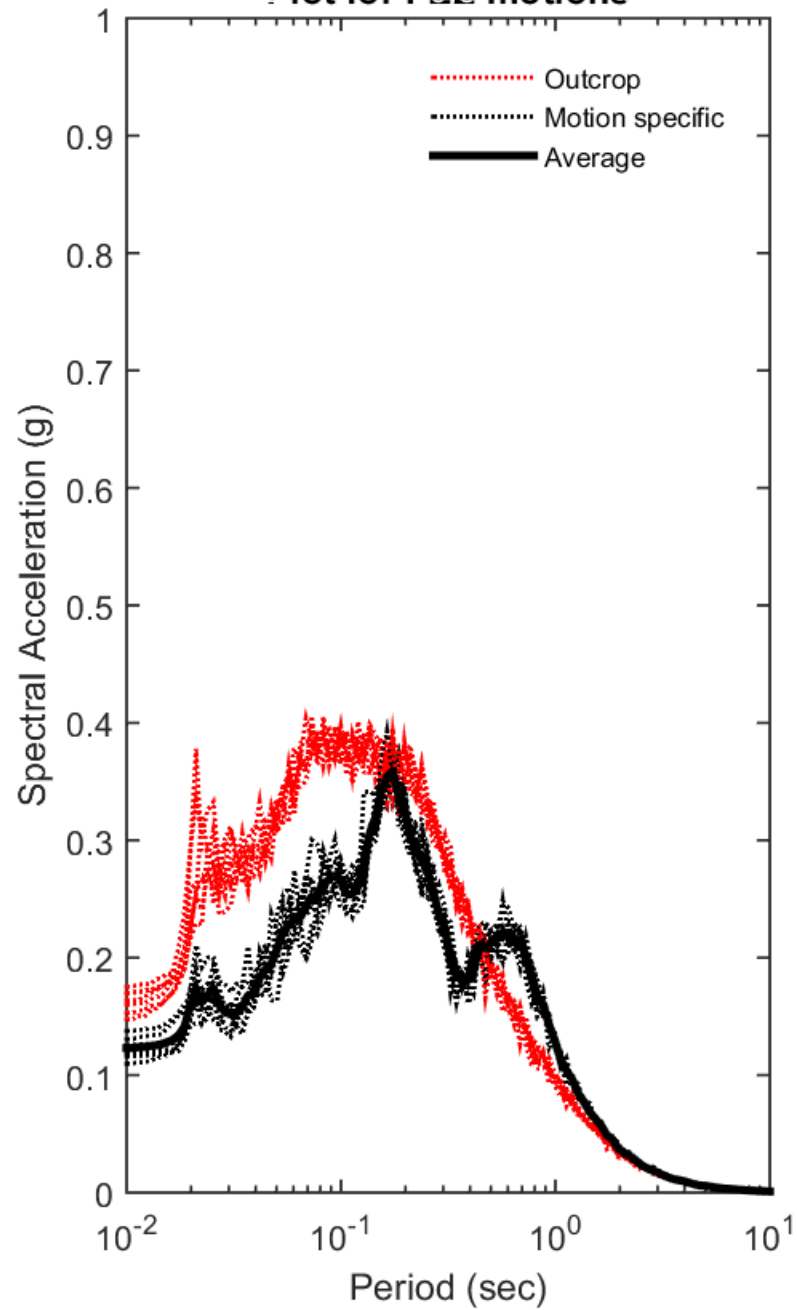


Plot for SEE motions:

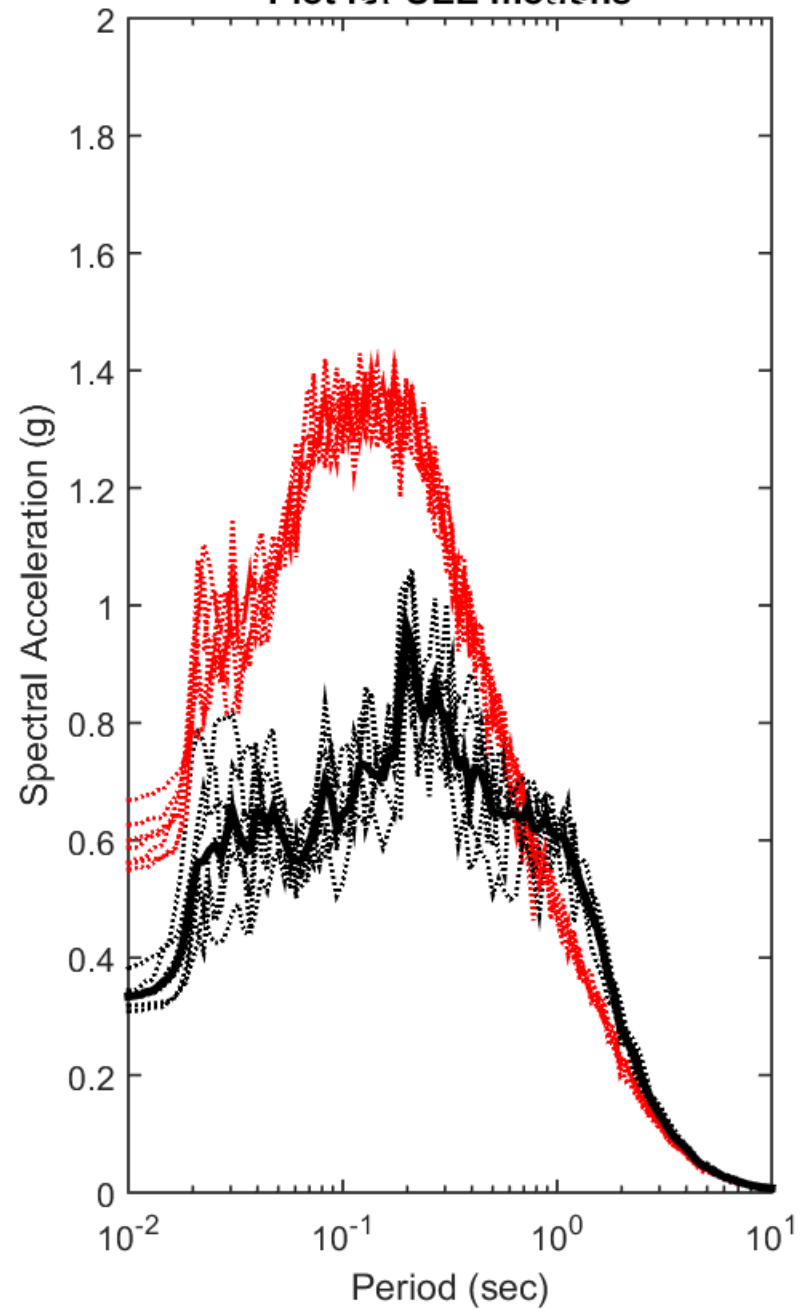


## Summary plots of RSA at top of Marl for: PWP Generation-No Clay

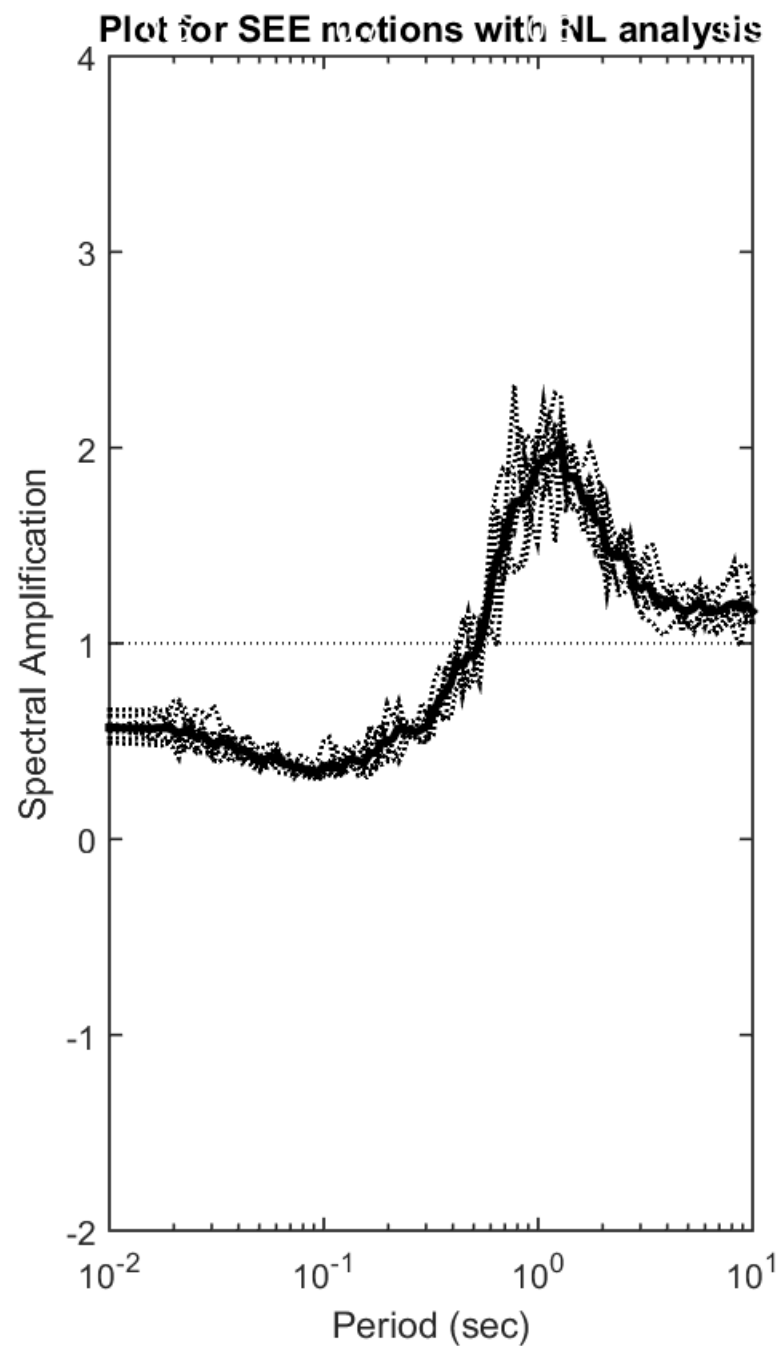
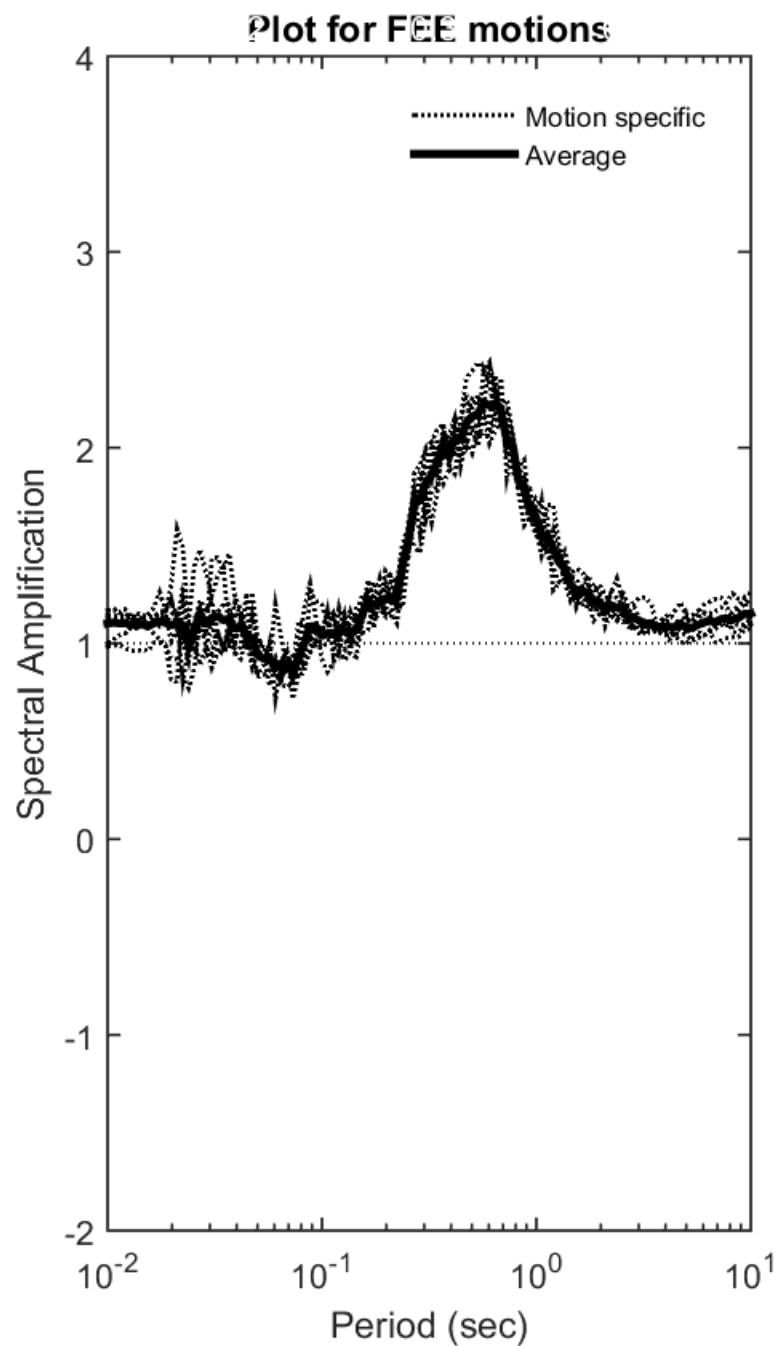
Plot for FEE motions:



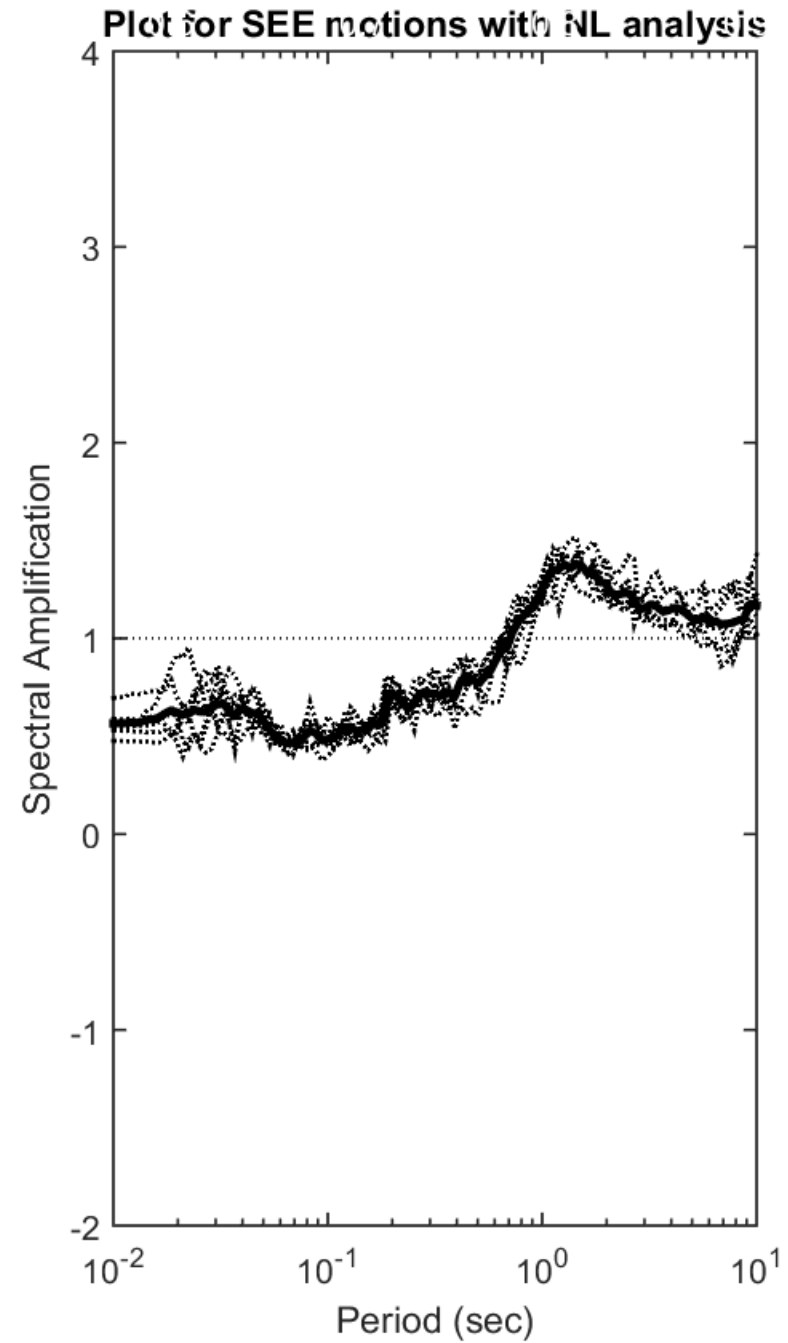
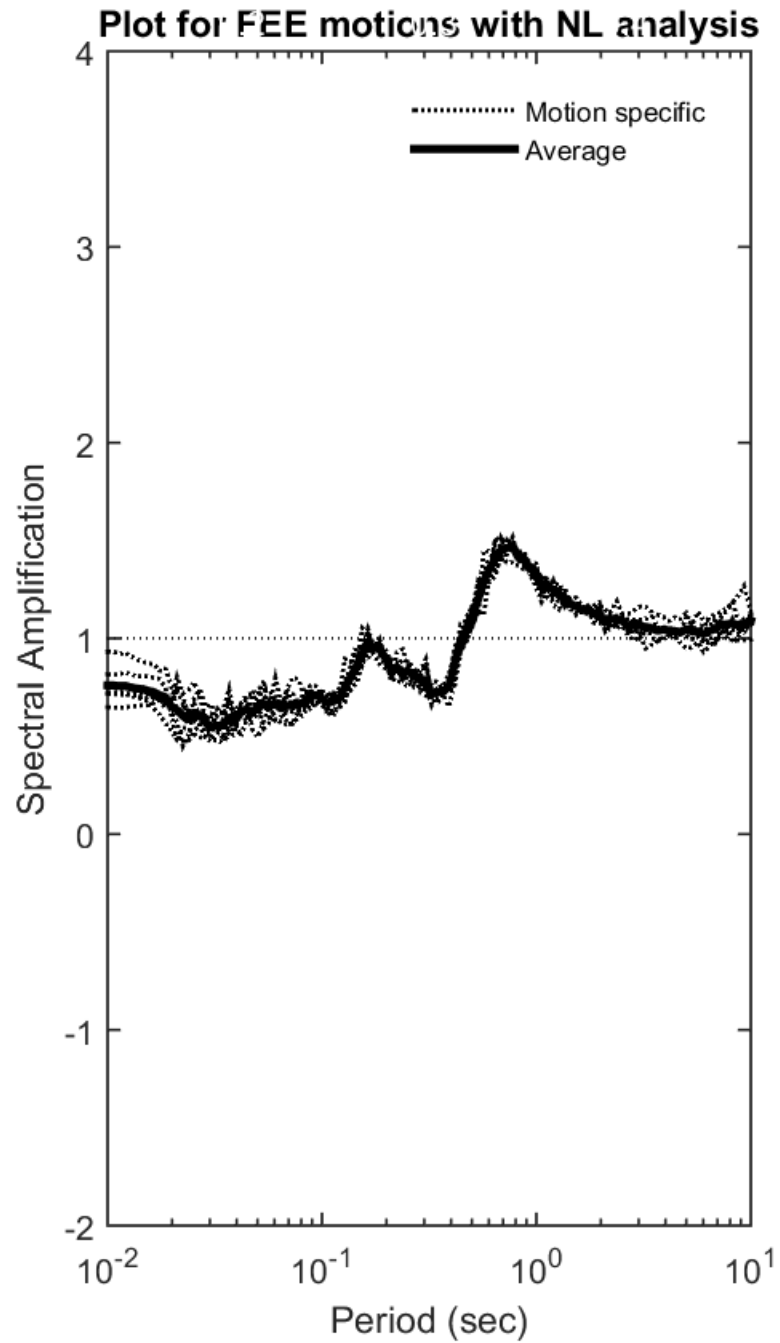
Plot for SEE motions:



## Summary plots of Spectral amplifications at ground surface for: PWP Generation-No Clay



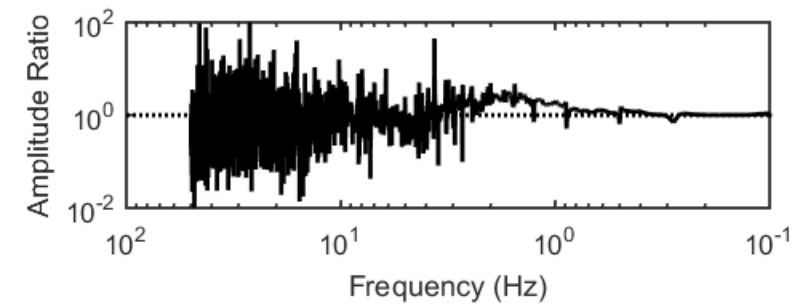
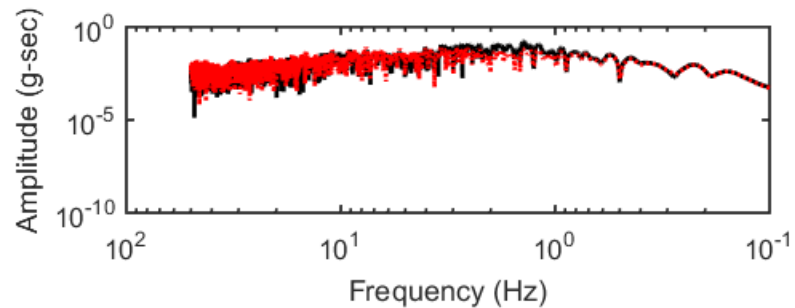
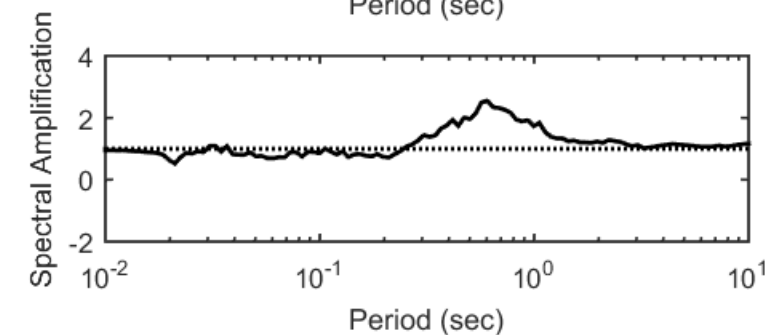
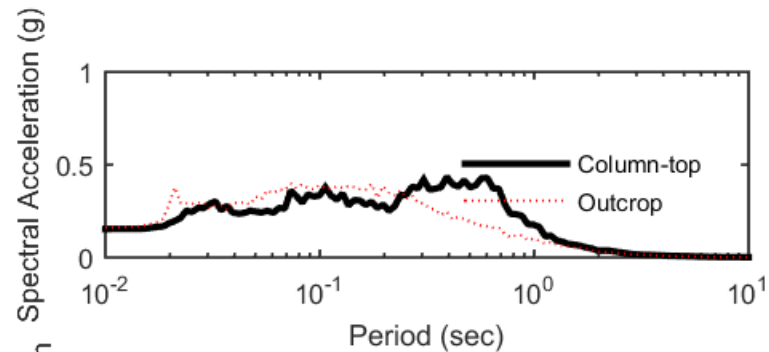
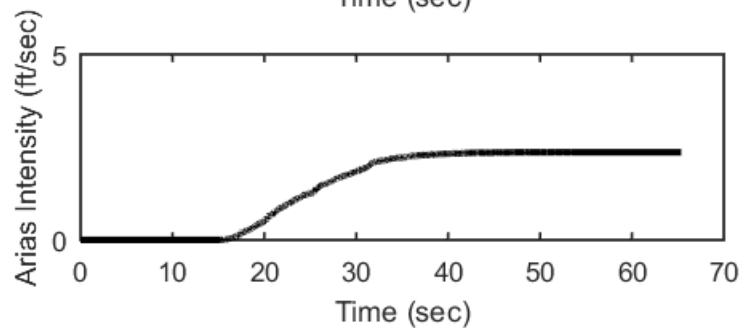
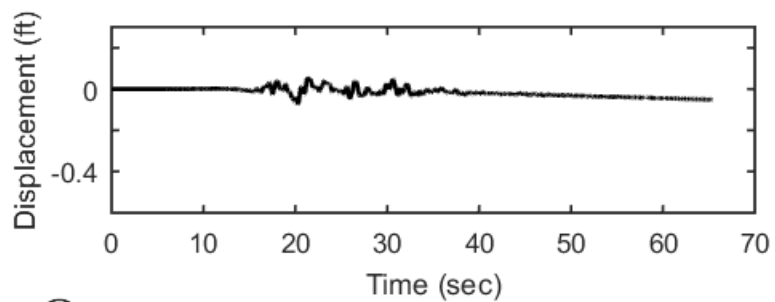
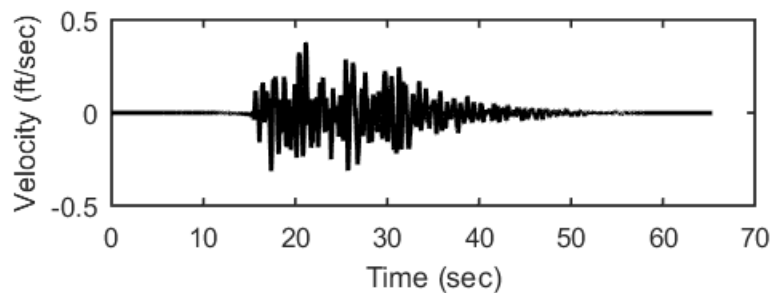
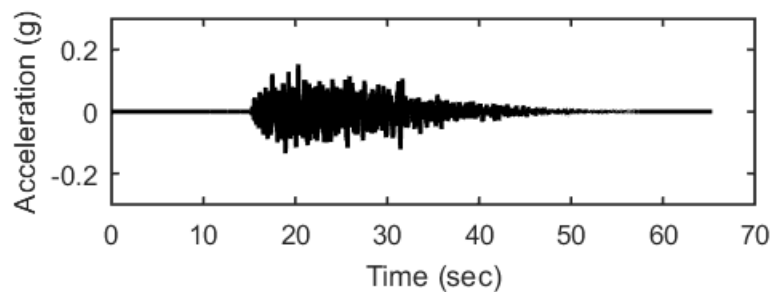
## Summary plots of Spectral amplifications at top of Marl for: PWP Generation-No Clay



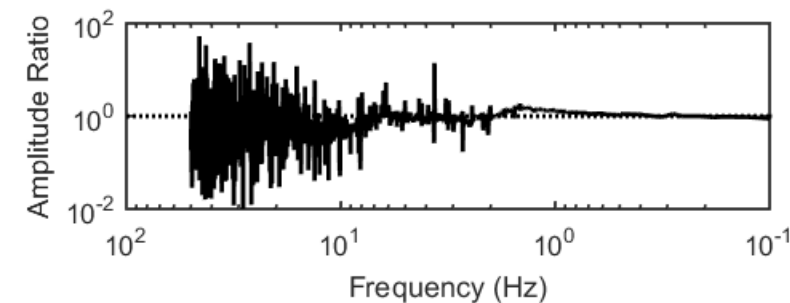
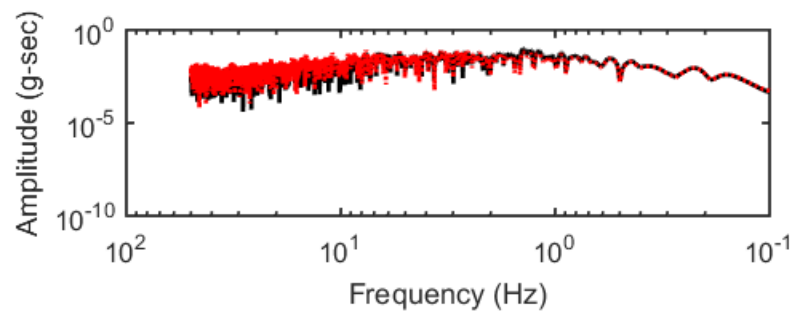
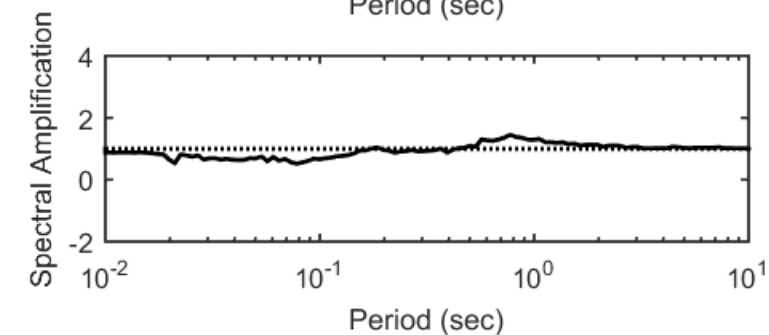
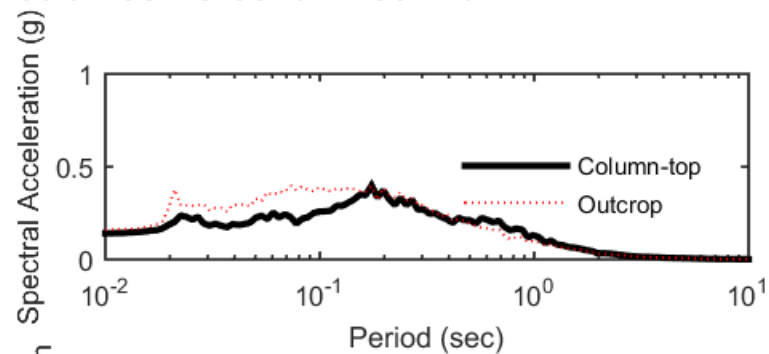
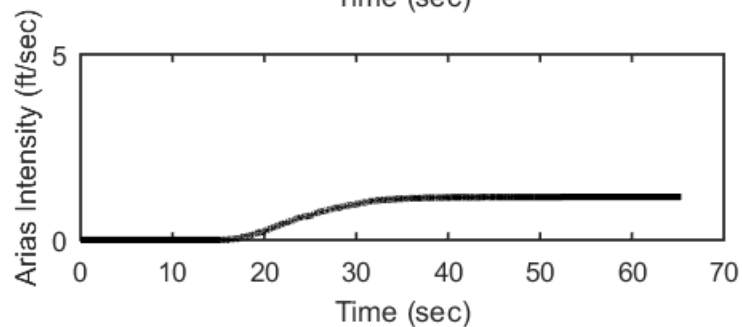
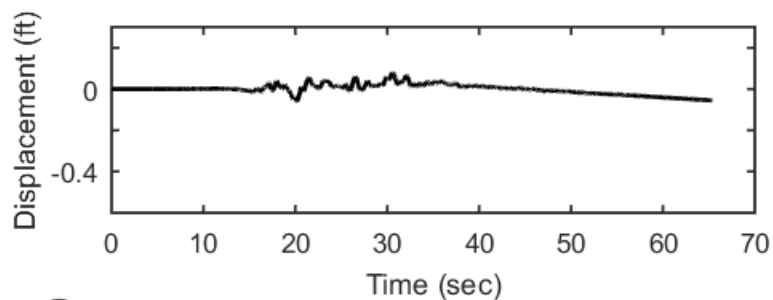
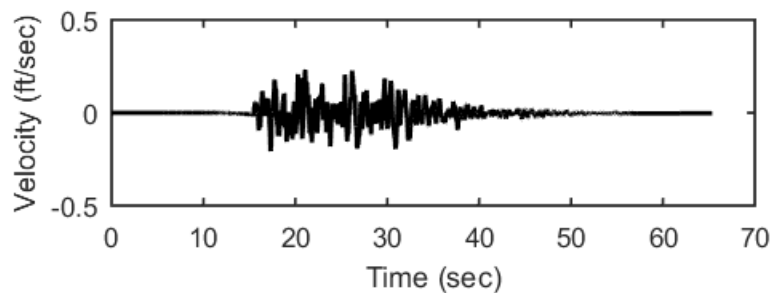
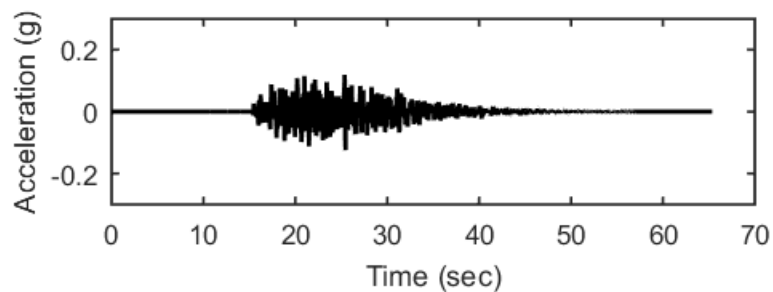
**PWP GENERATION**  
**200 FT – 35% FINES CONTENT MODEL**



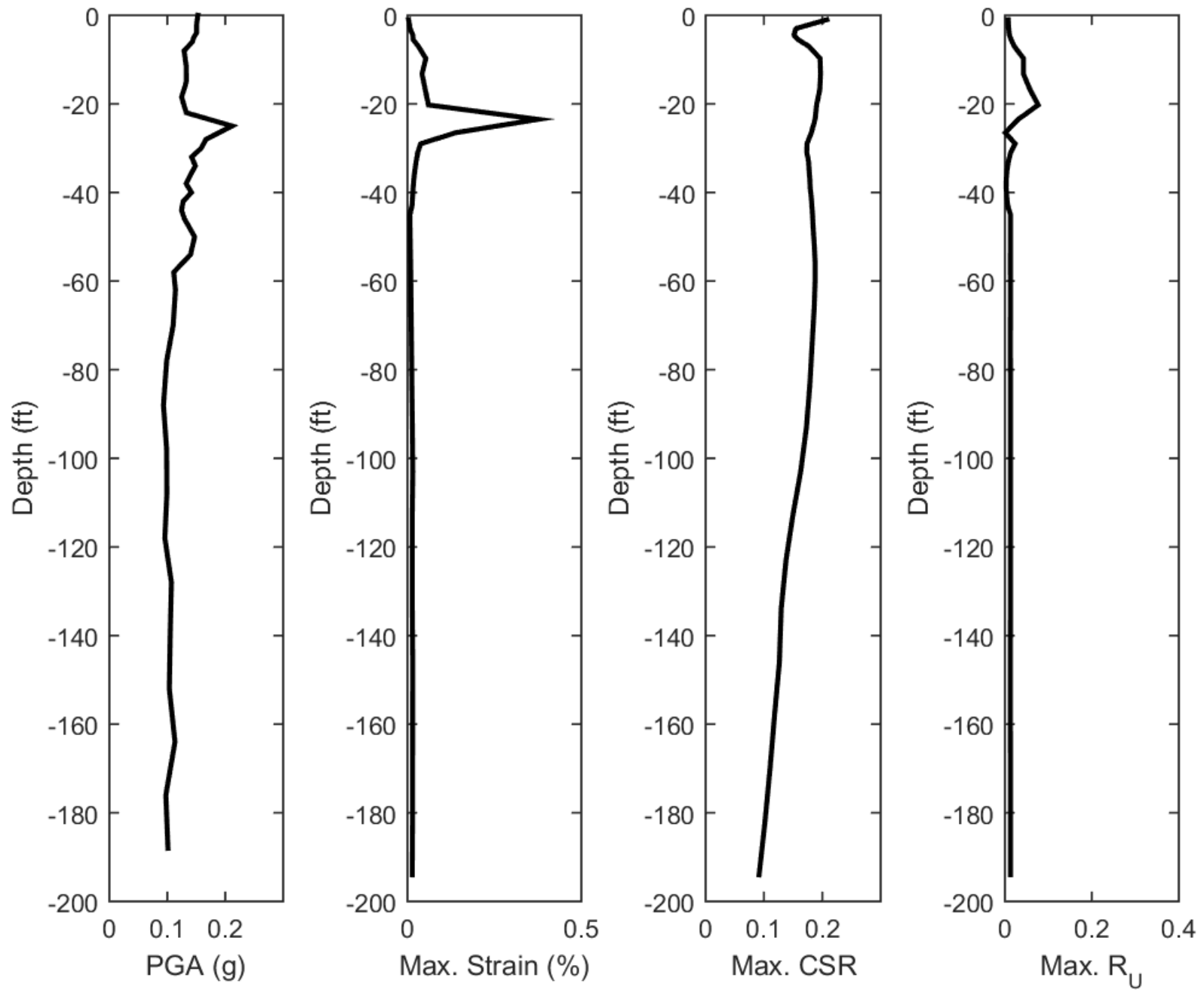
## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with FEE1



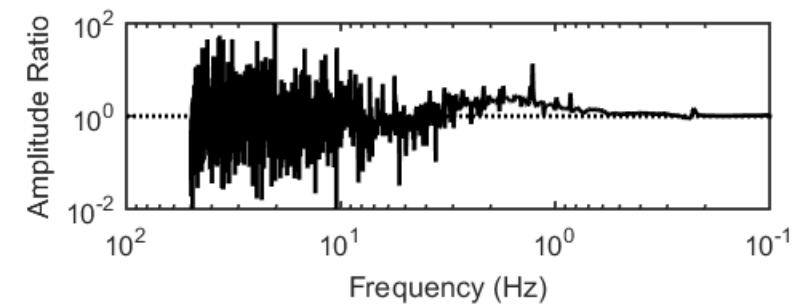
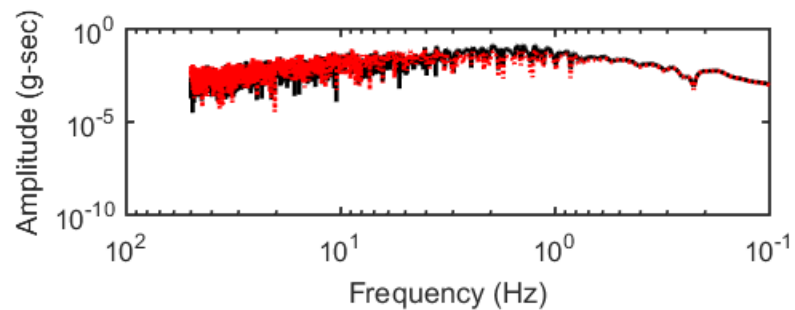
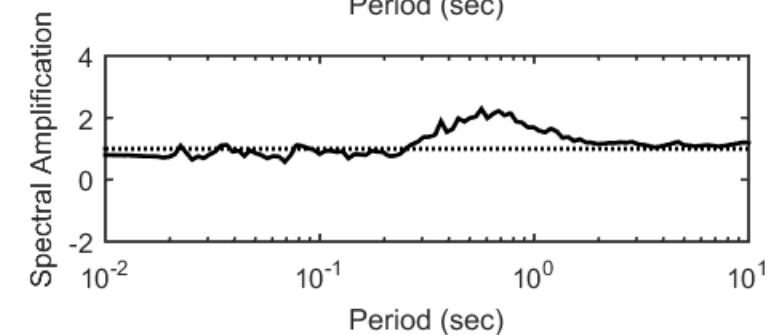
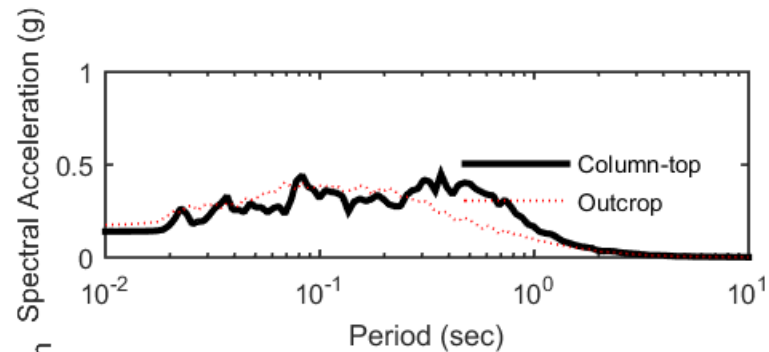
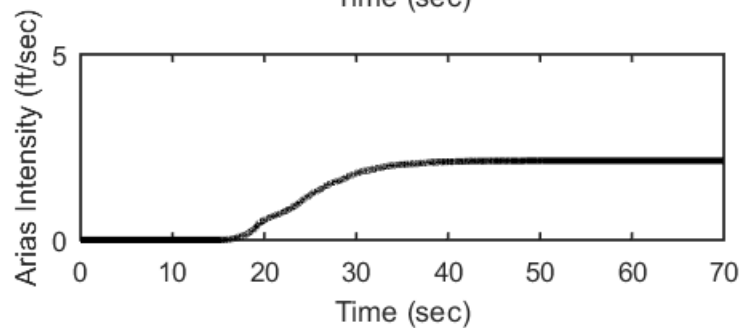
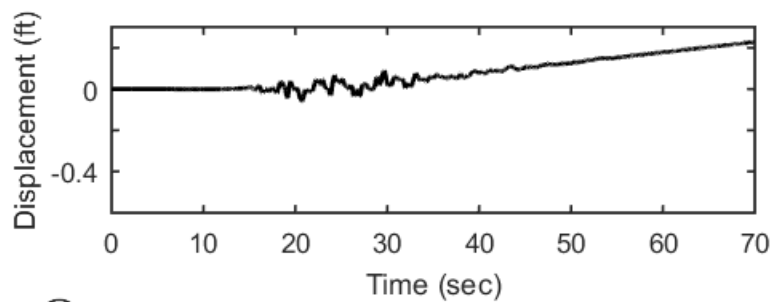
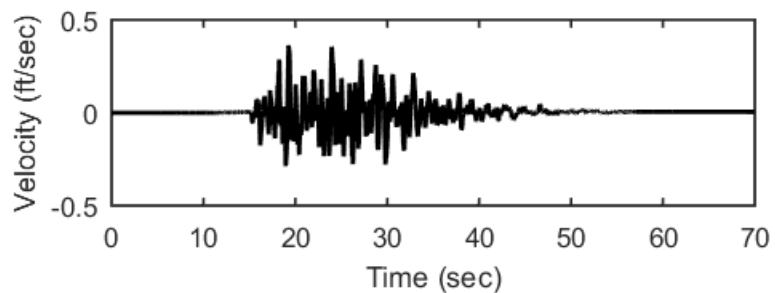
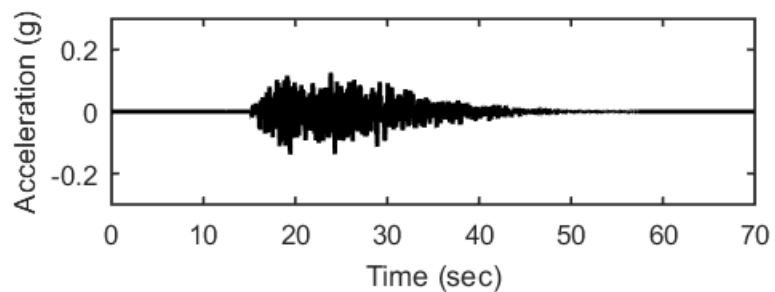
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with FEE1



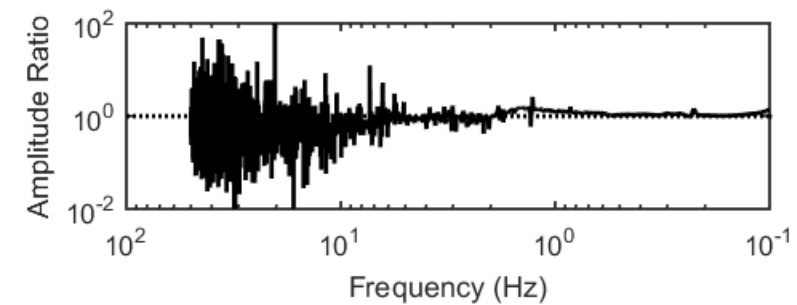
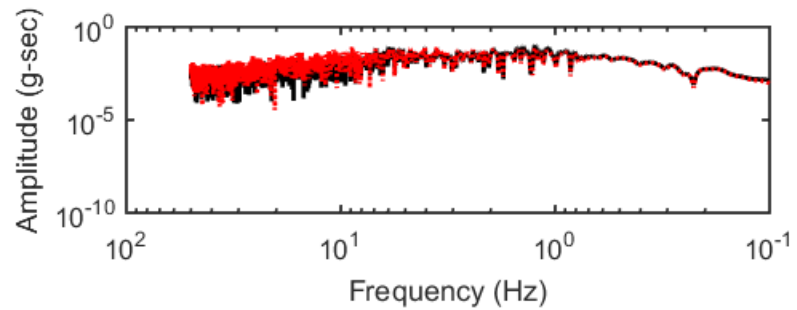
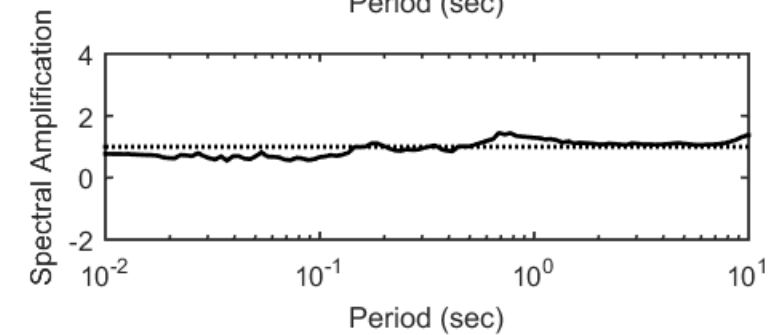
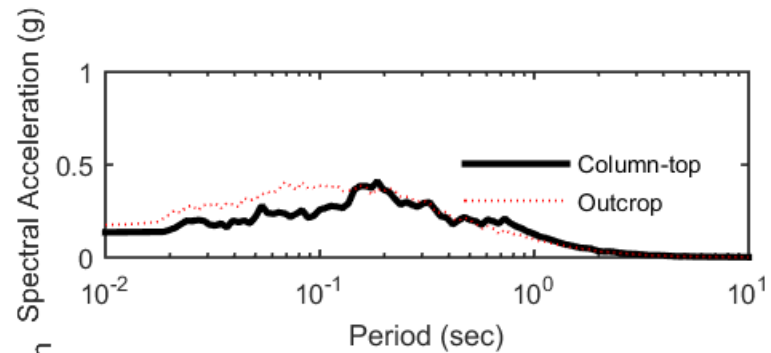
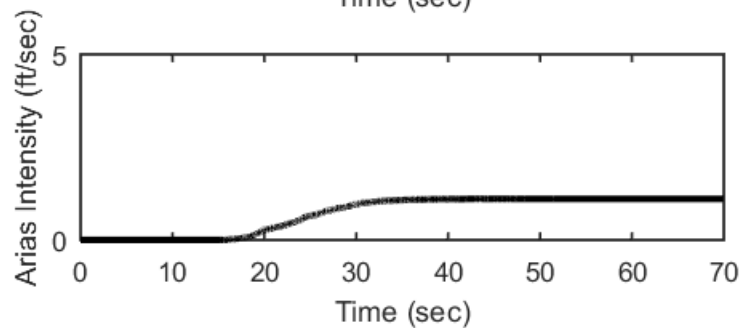
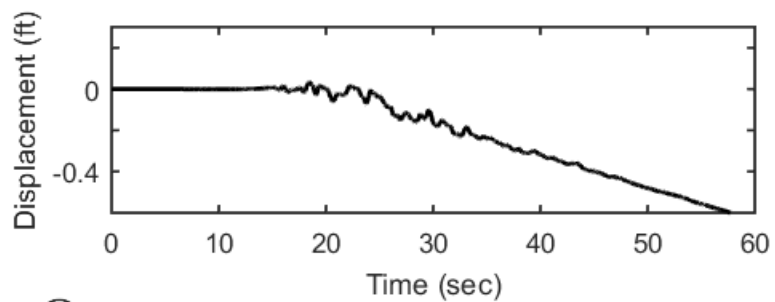
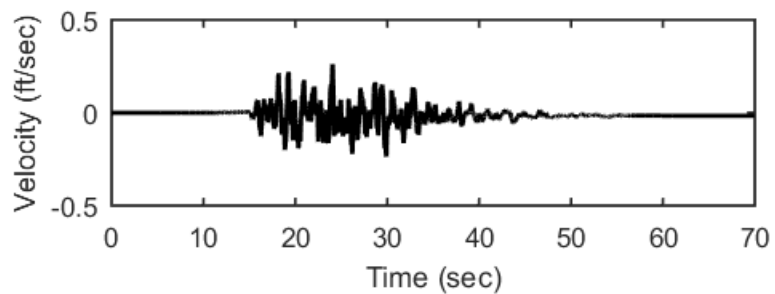
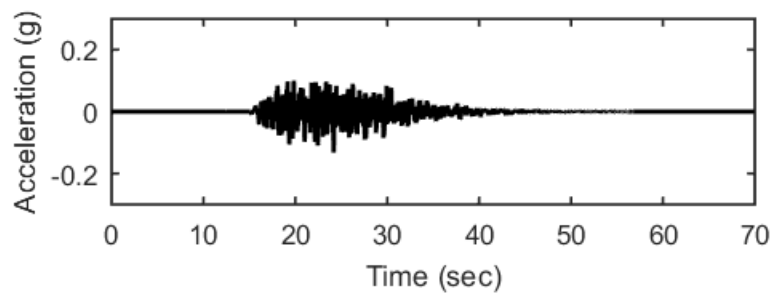
# Profile outputs for: PWP Generation-35 Percent Fines with FEE1



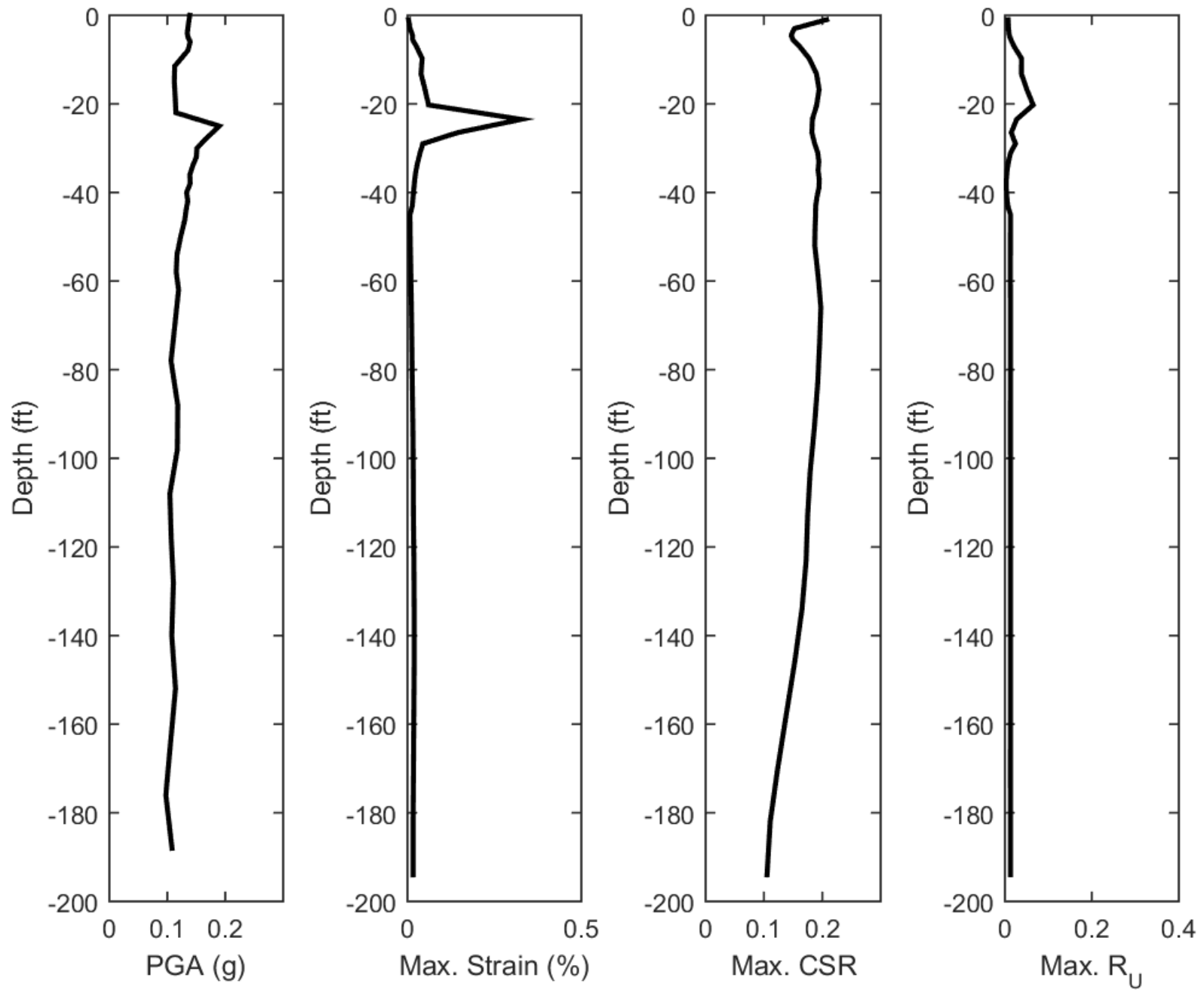
## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with FEE2



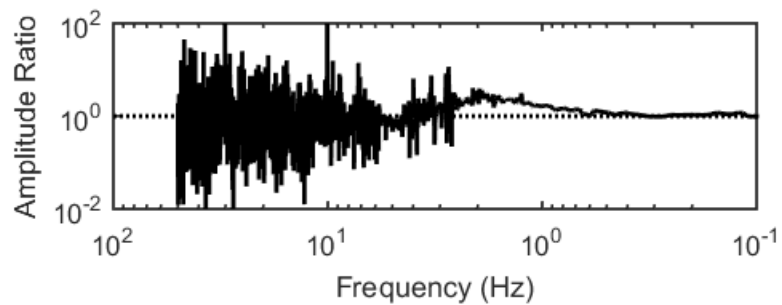
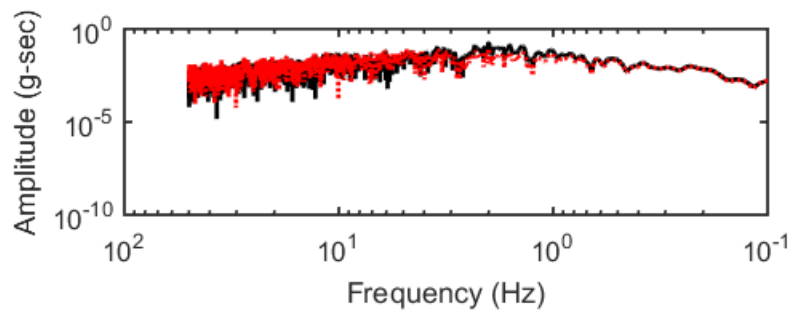
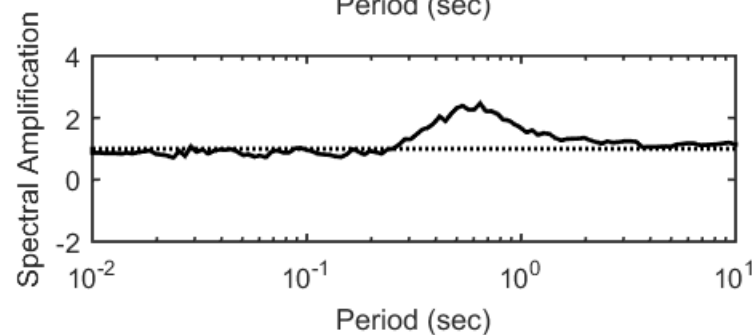
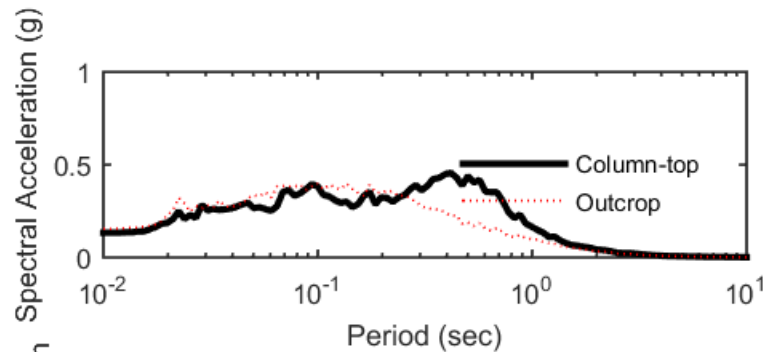
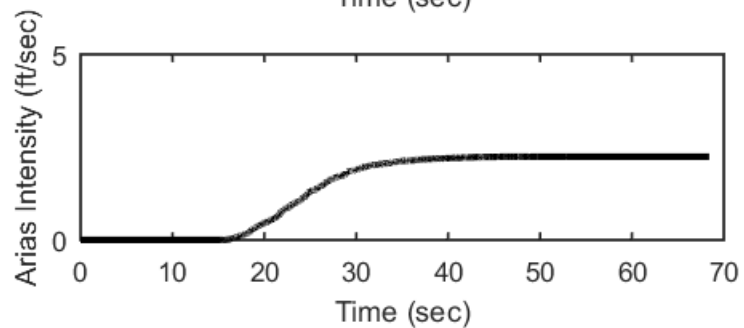
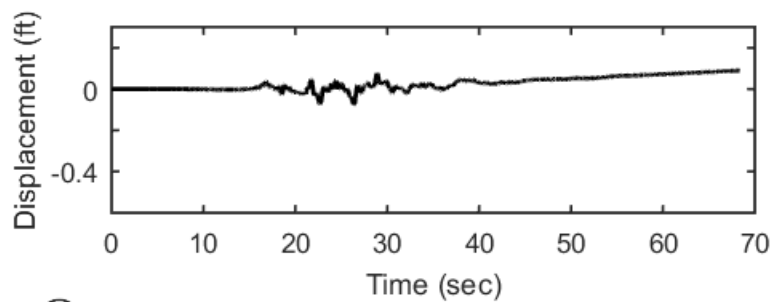
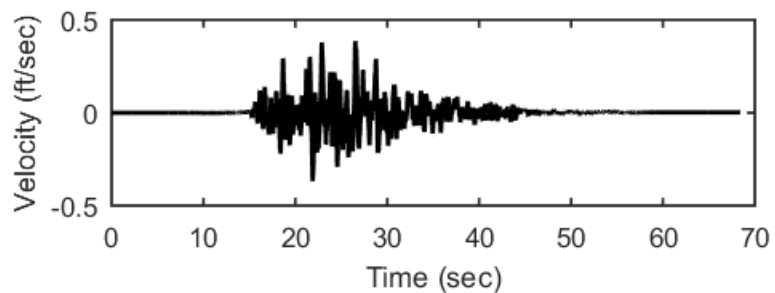
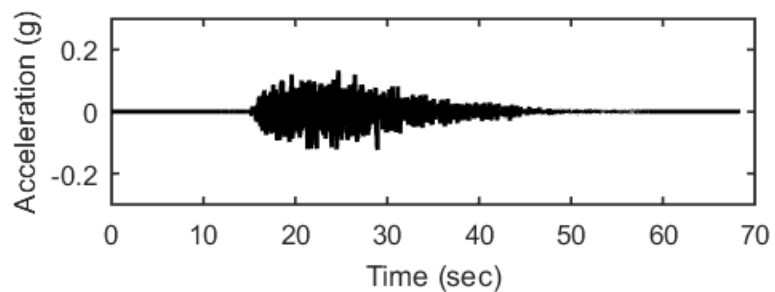
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with FEE2



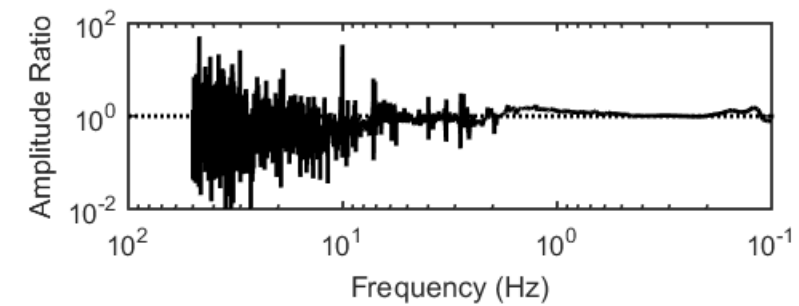
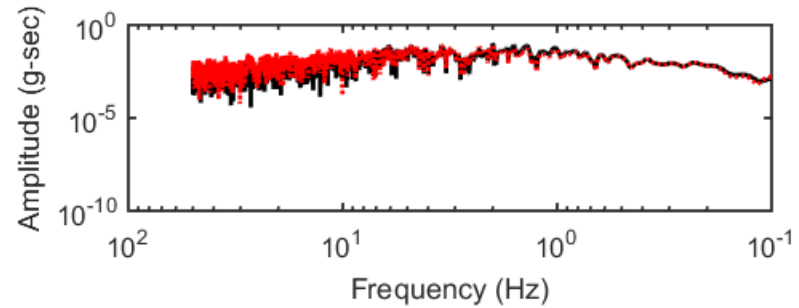
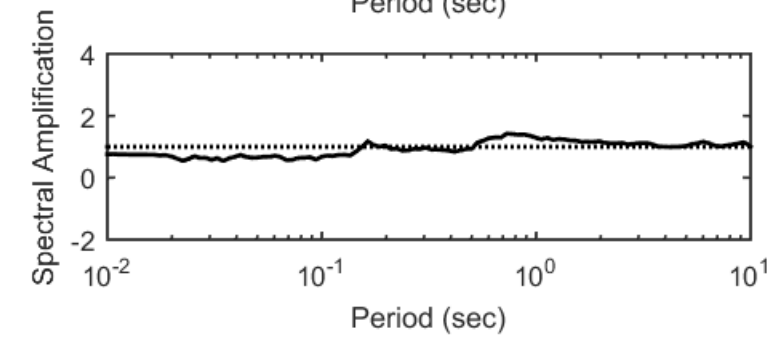
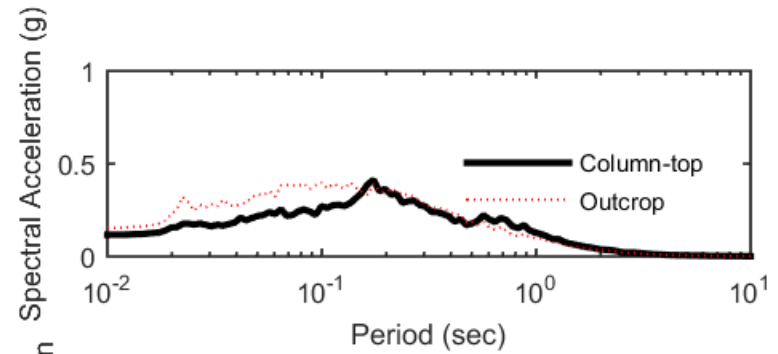
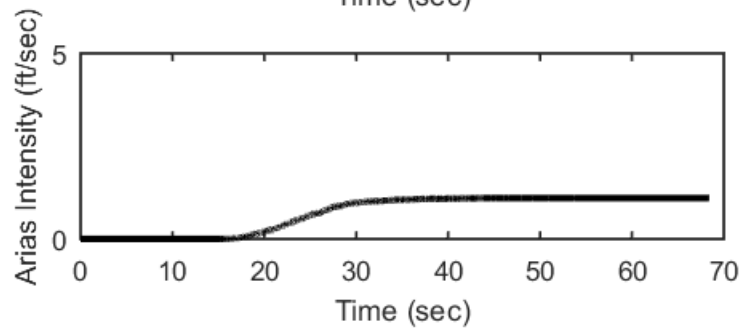
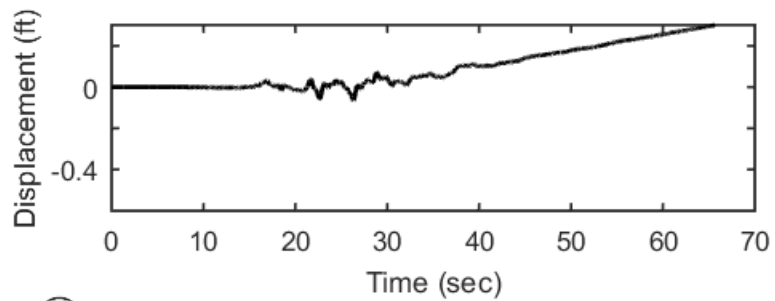
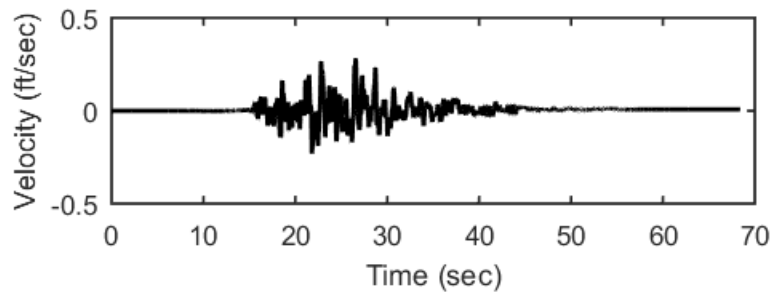
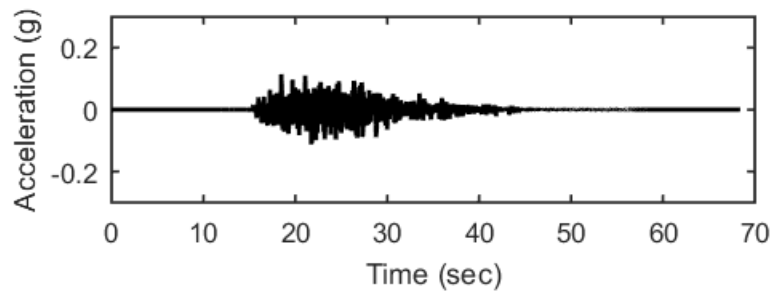
# Profile outputs for: PWP Generation-35 Percent Fines with FEE2



## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with FEE3

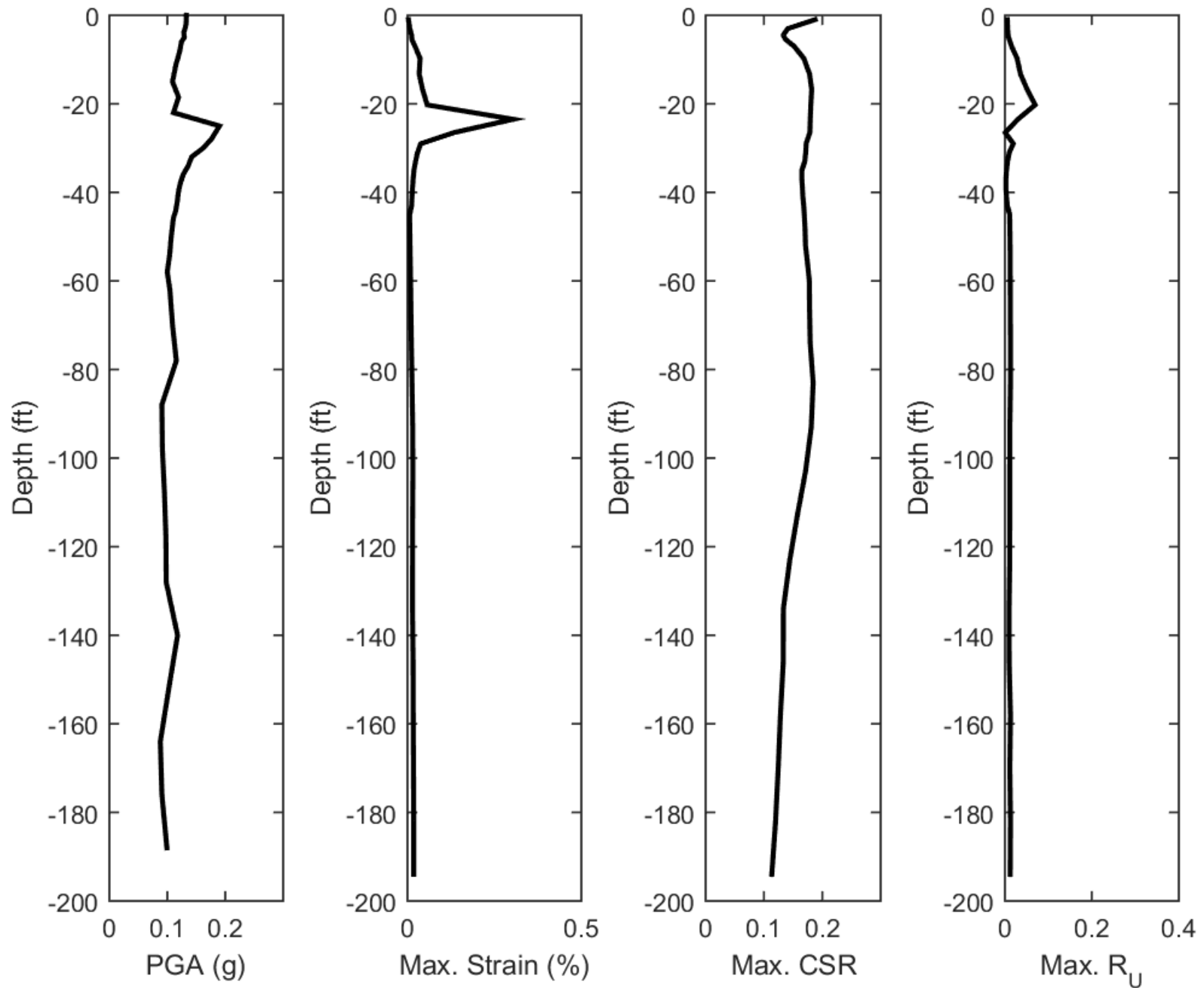


## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with FEE3

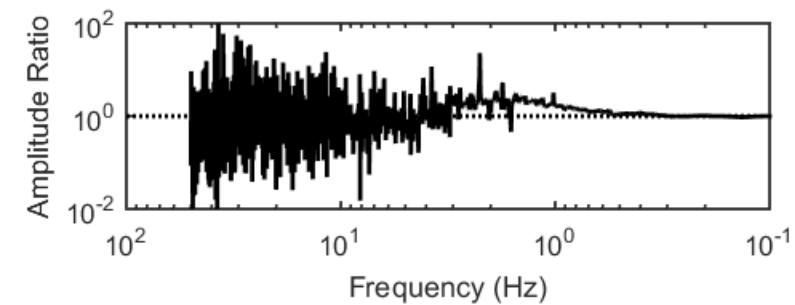
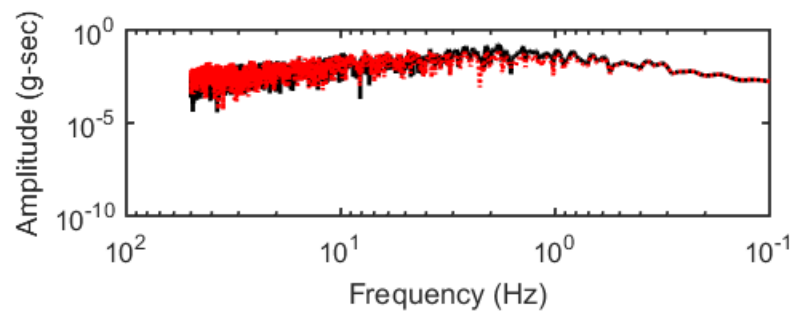
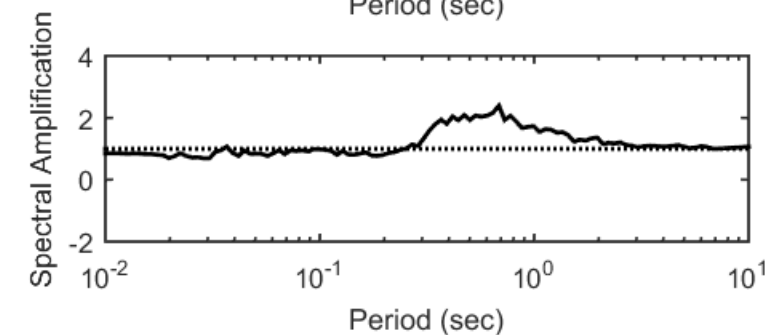
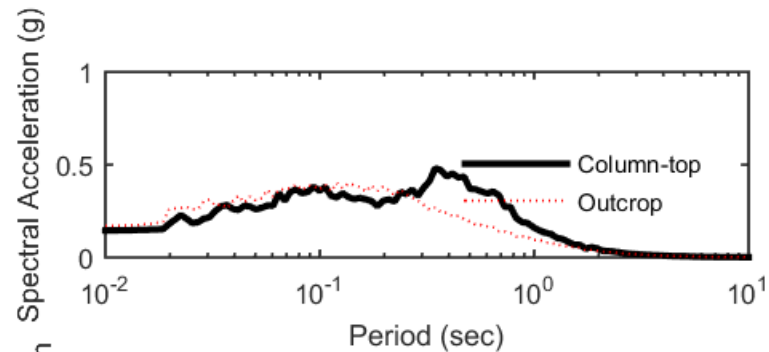
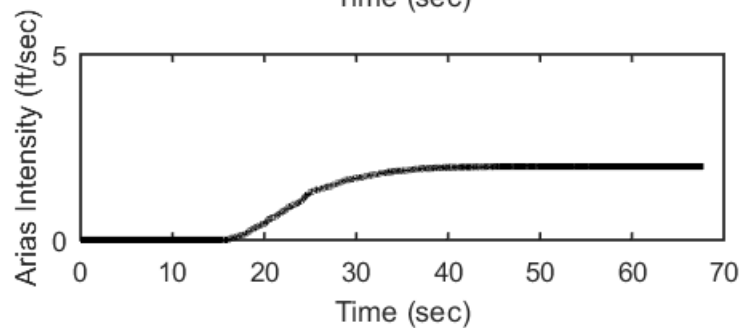
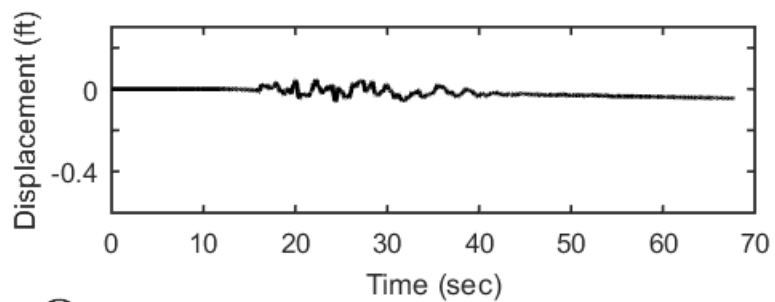
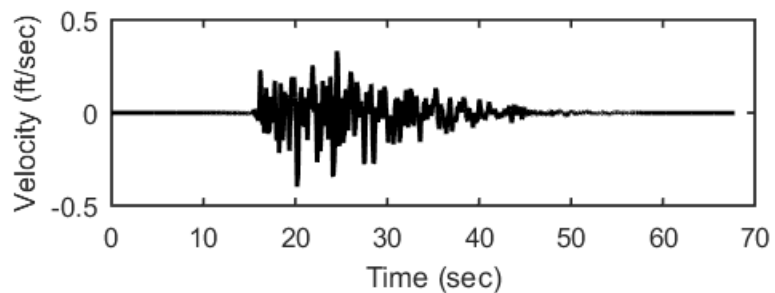
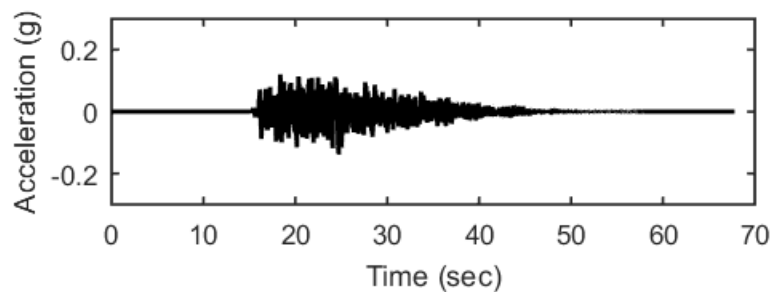




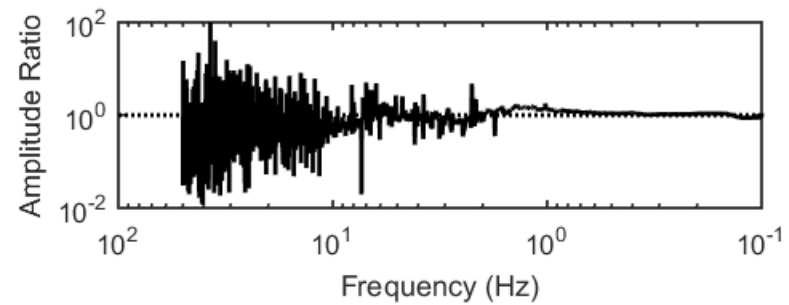
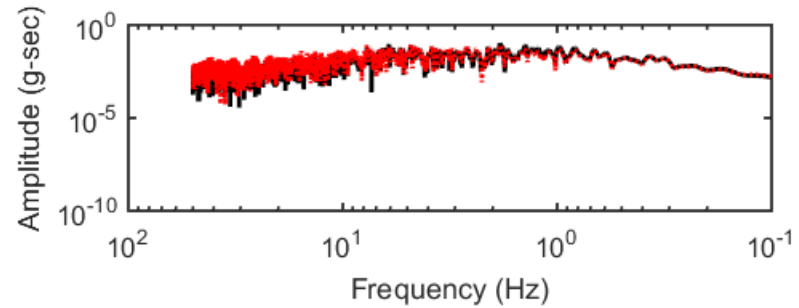
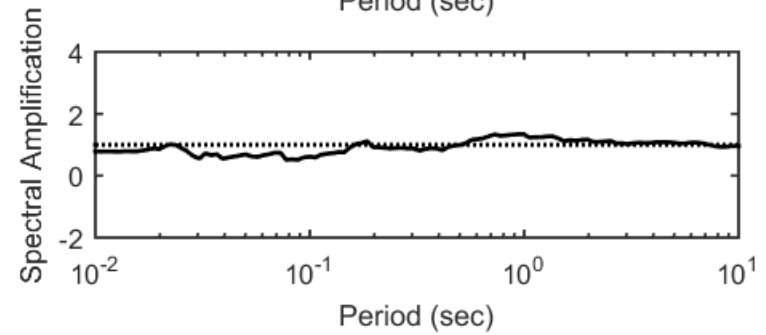
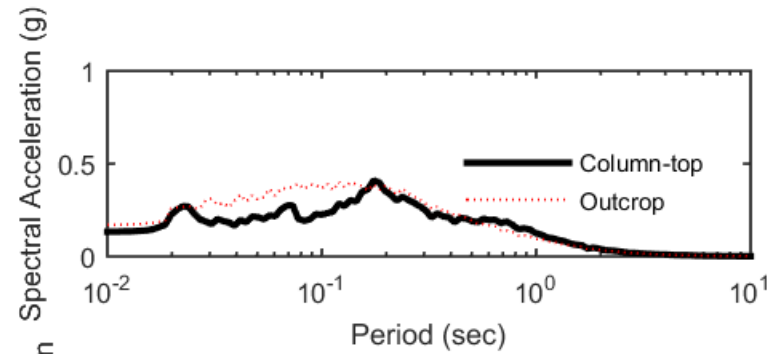
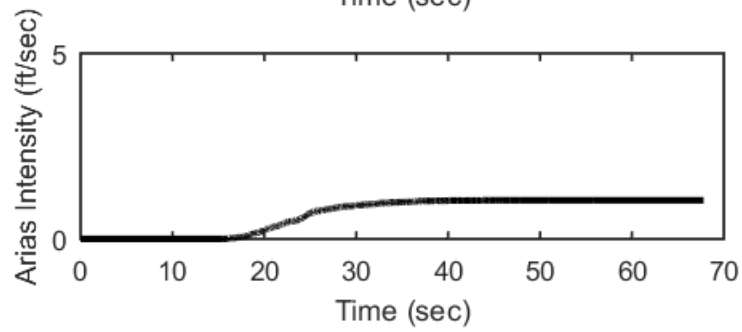
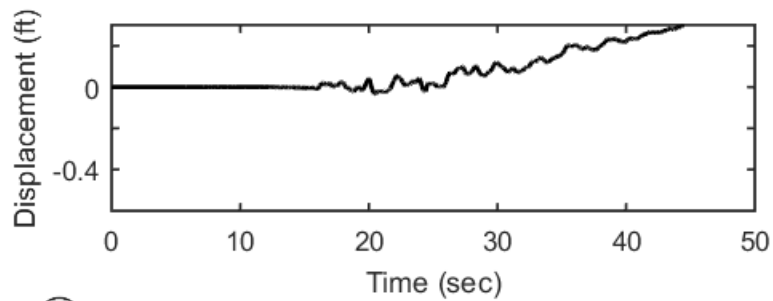
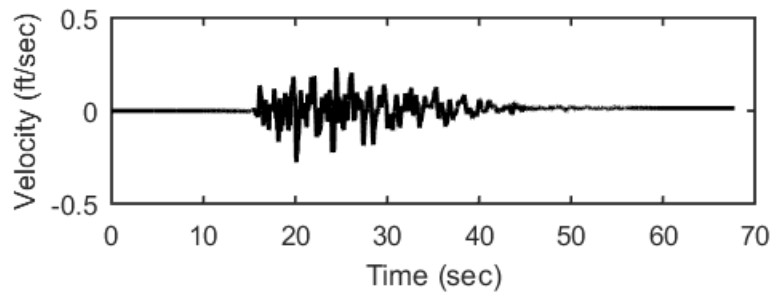
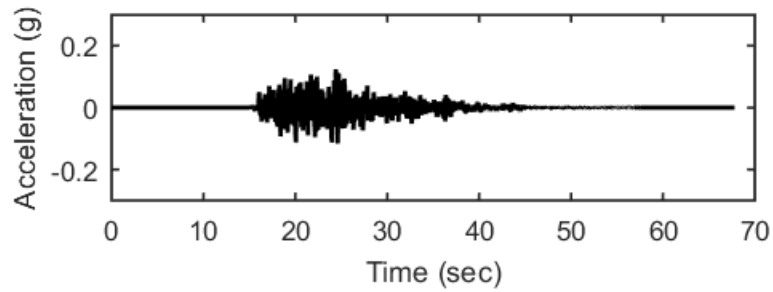
# Profile outputs for: PWP Generation-35 Percent Fines with FEE3



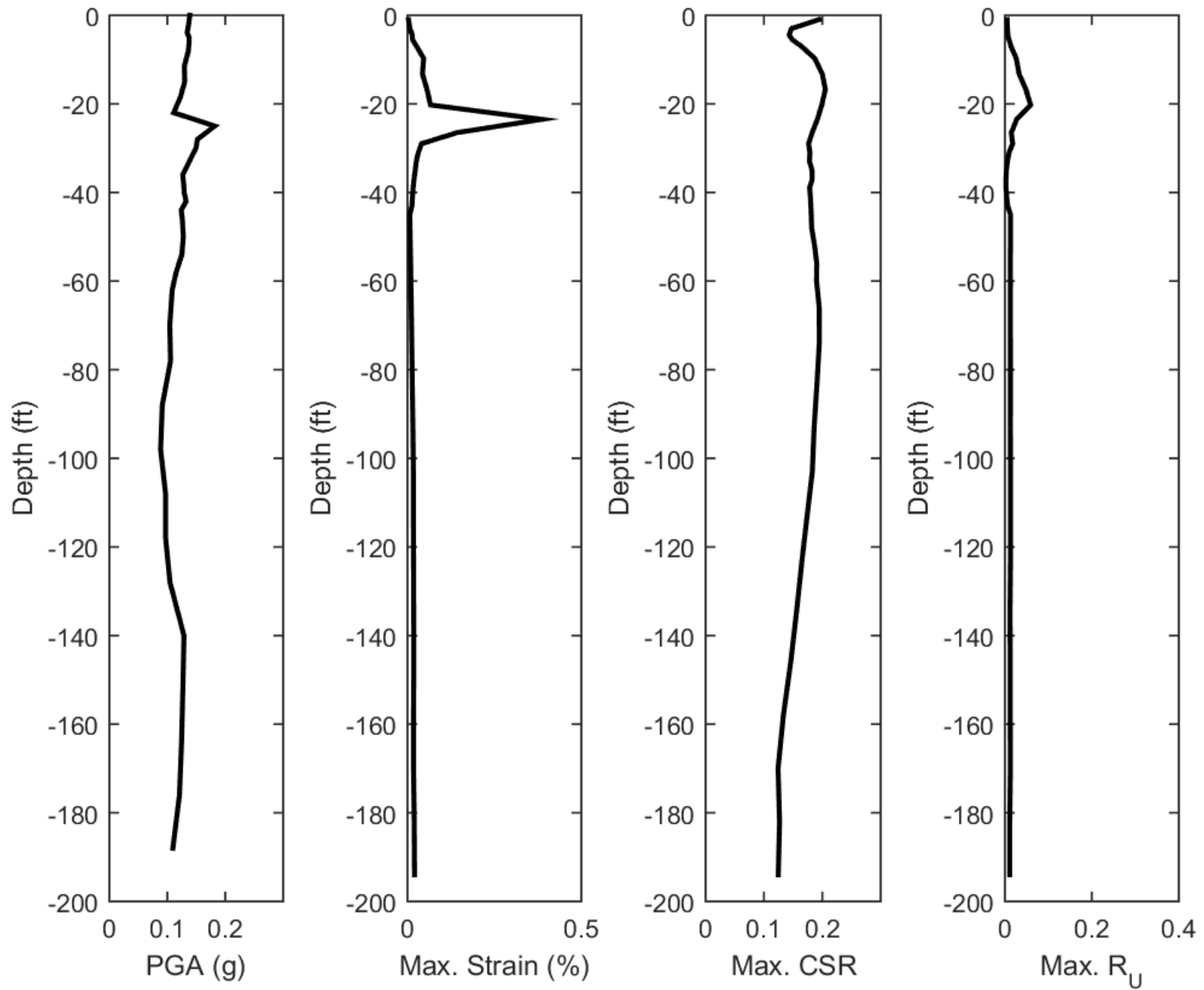
## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with FEE4



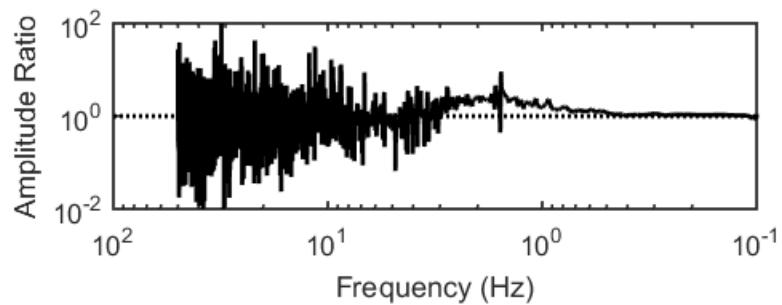
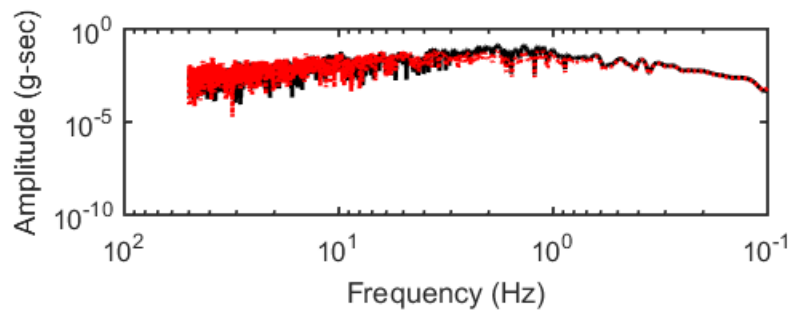
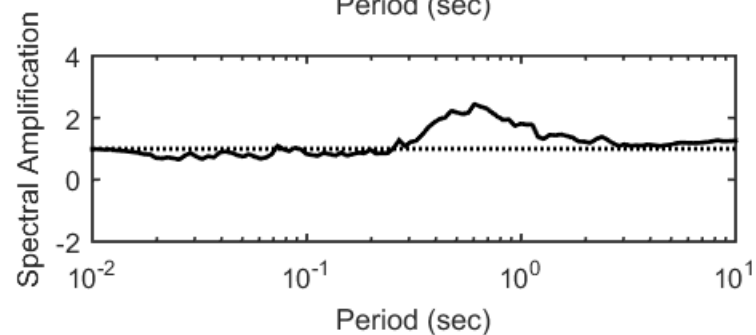
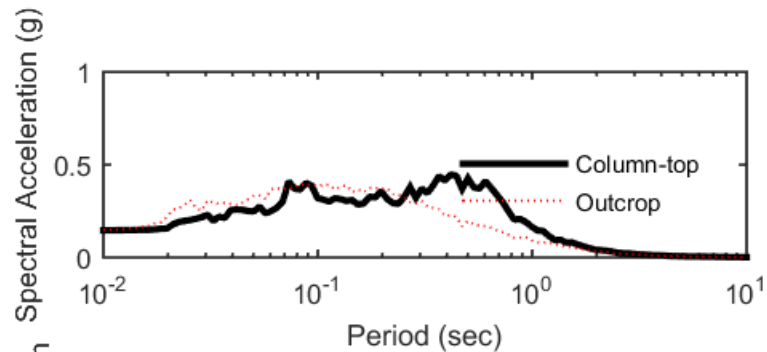
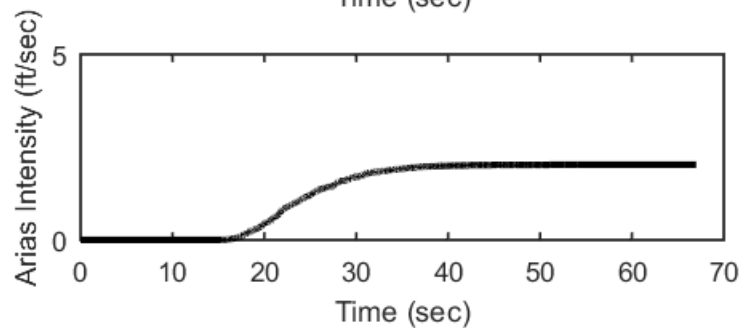
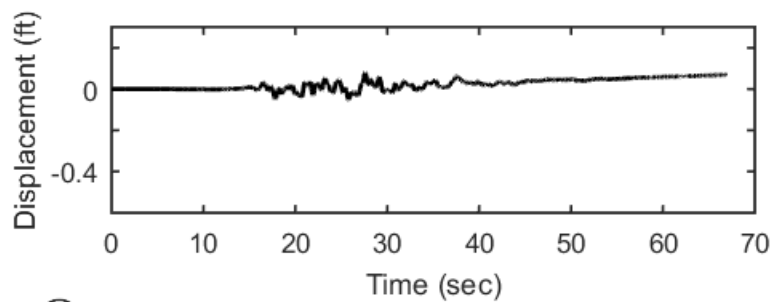
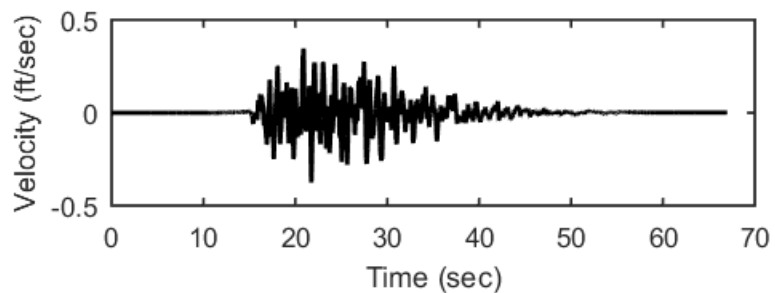
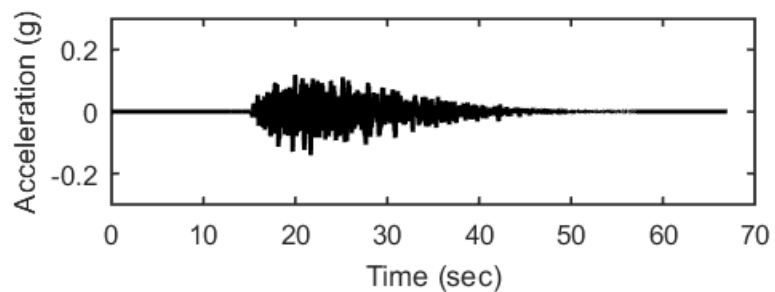
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with FEE4



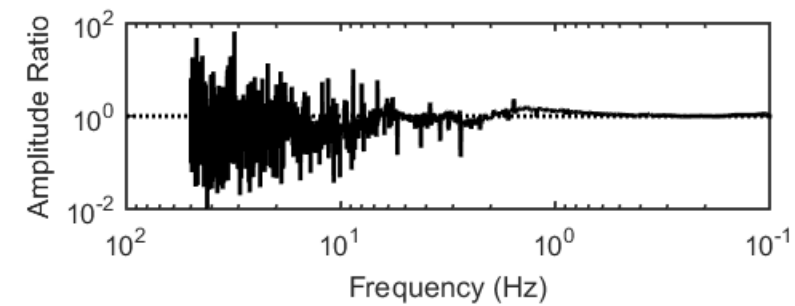
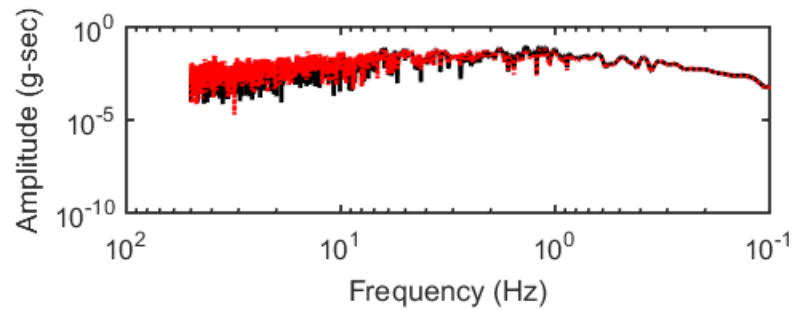
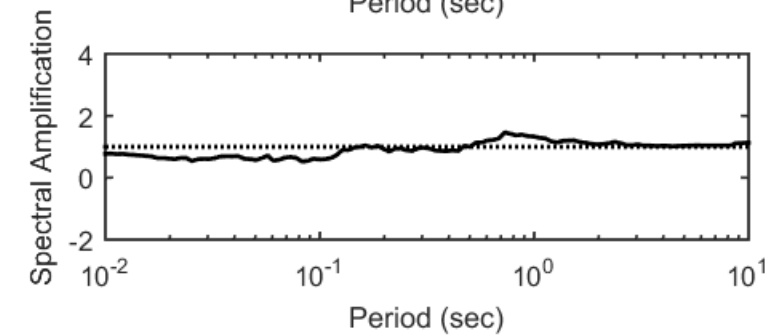
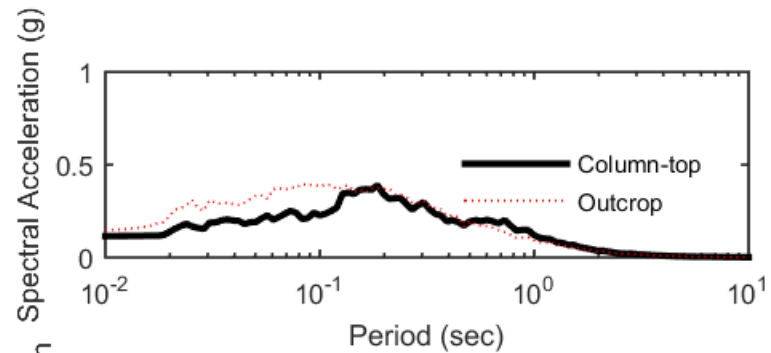
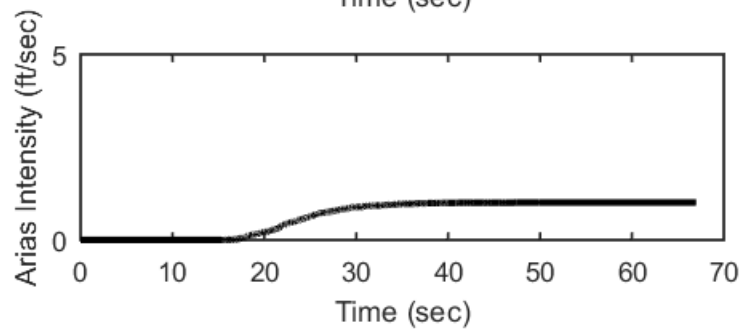
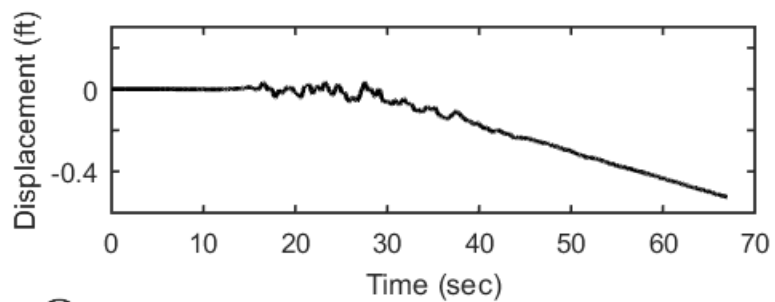
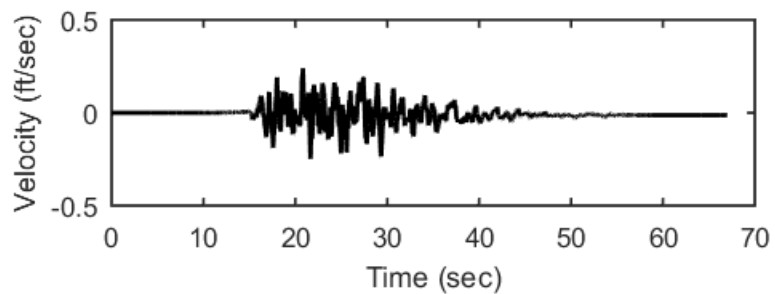
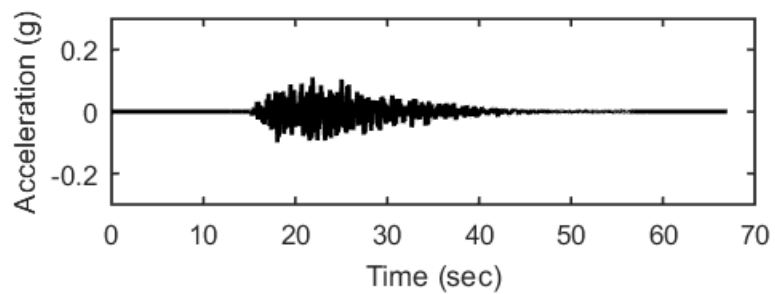
# Profile outputs for: PWP Generation-35 Percent Fines with FEE4



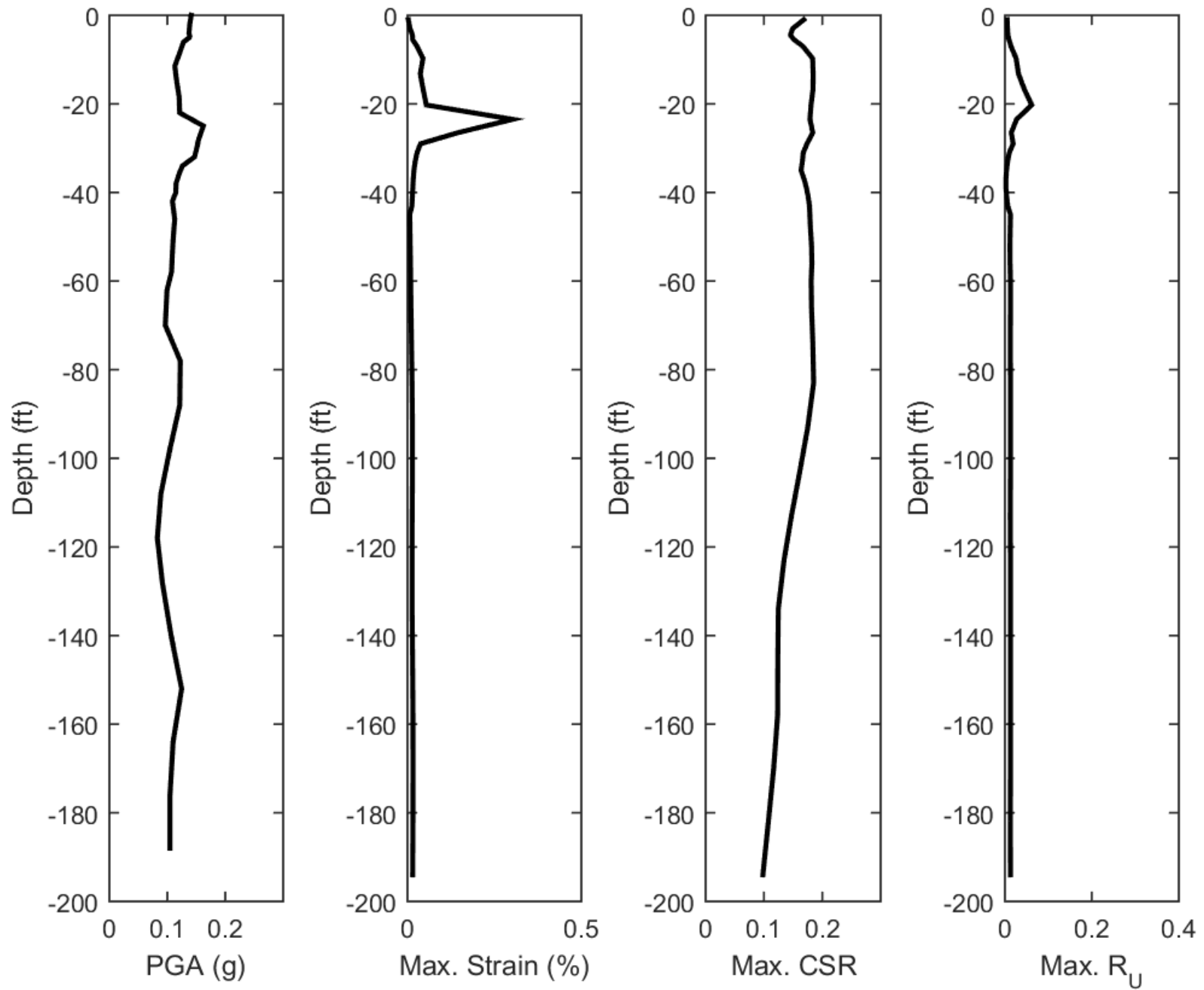
## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with FEE5



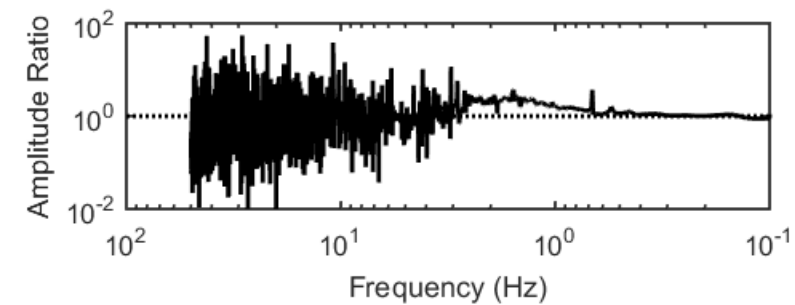
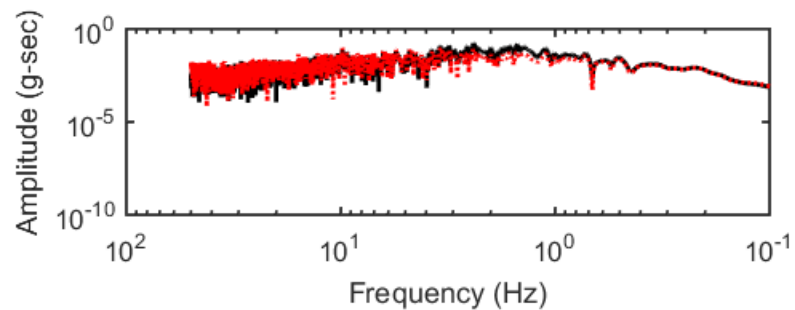
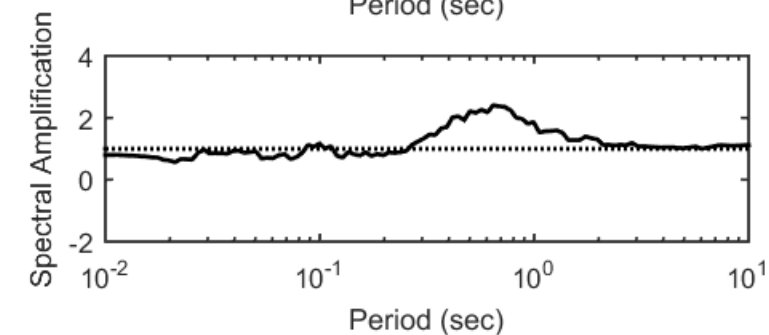
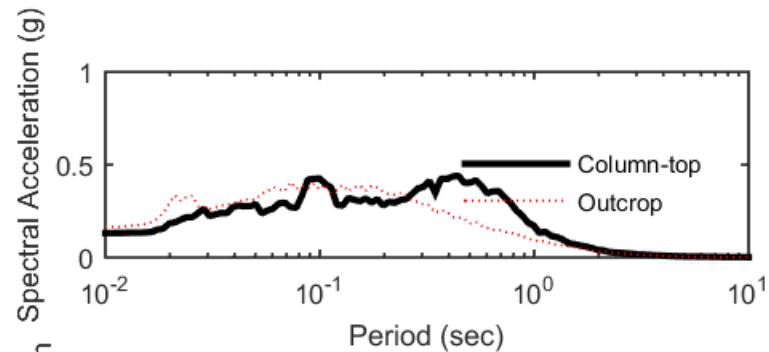
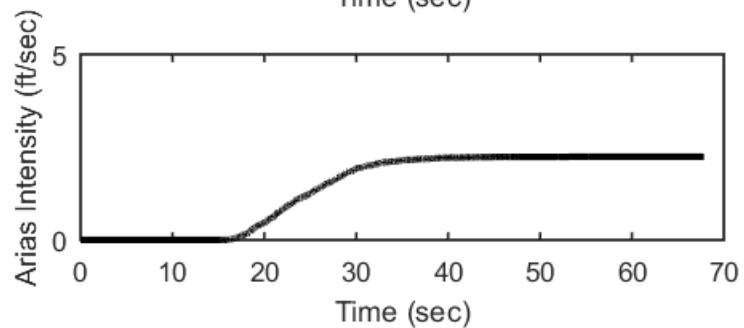
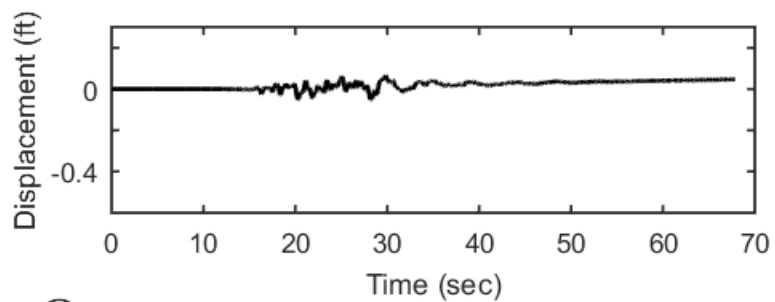
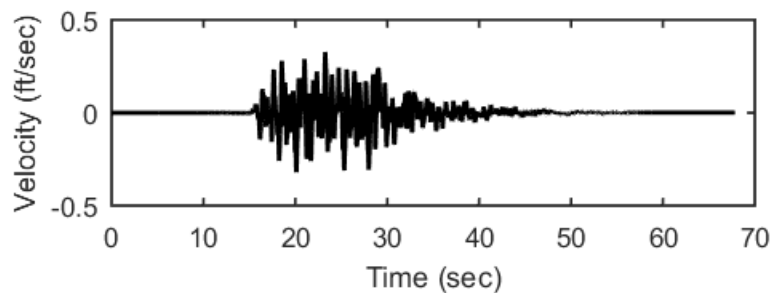
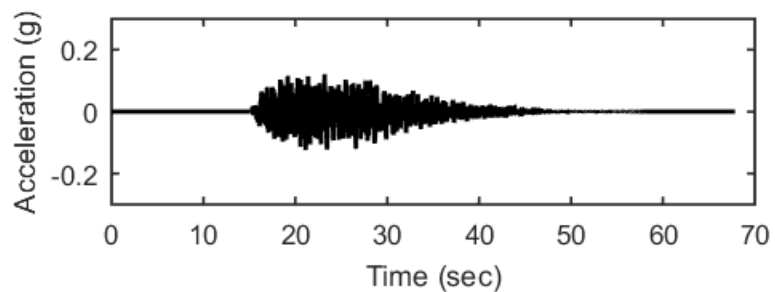
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with FEE5



# Profile outputs for: PWP Generation-35 Percent Fines with FEE5

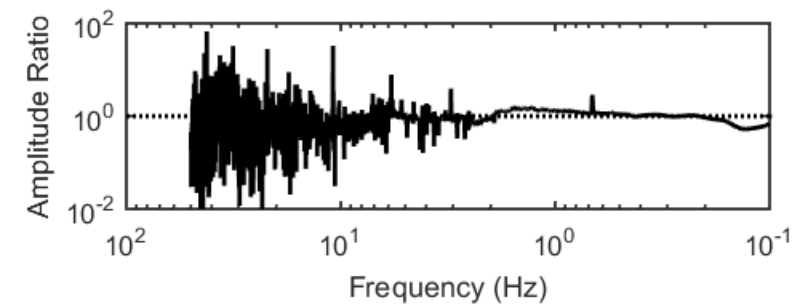
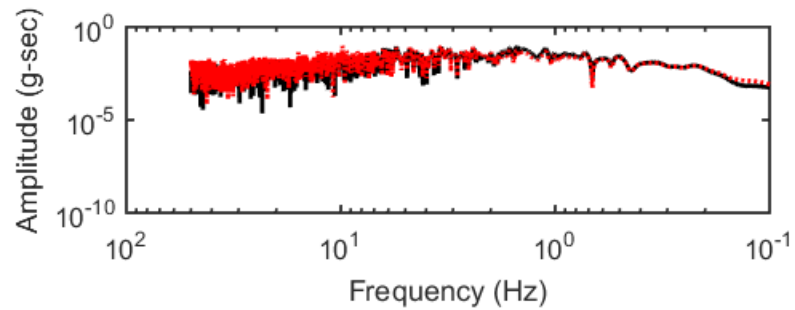
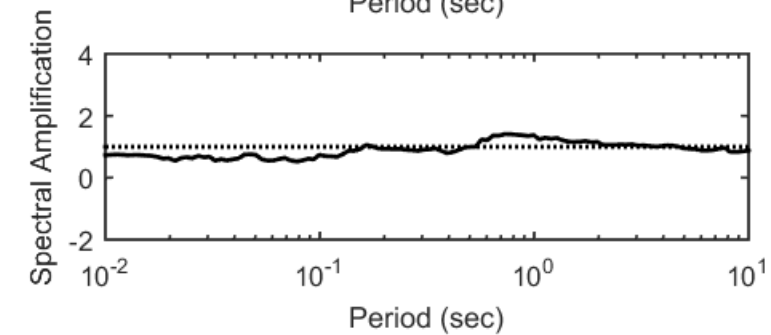
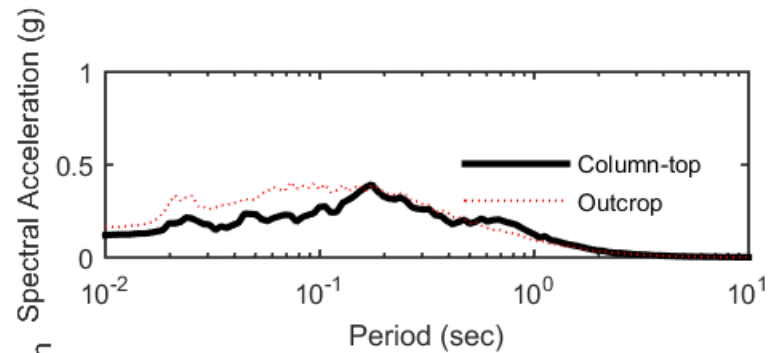
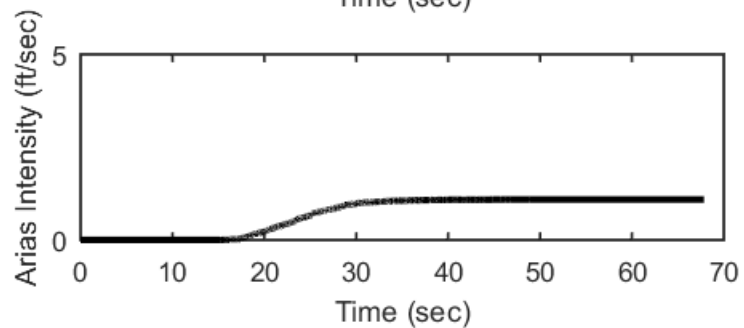
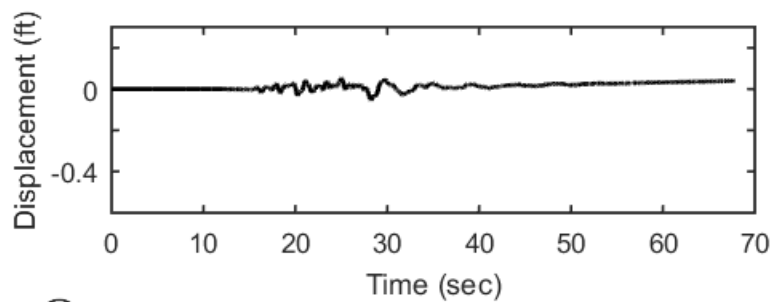
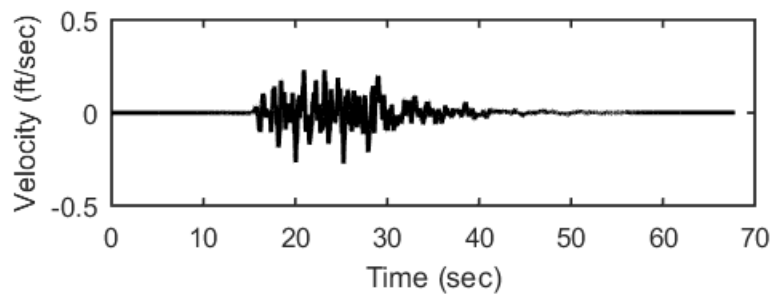
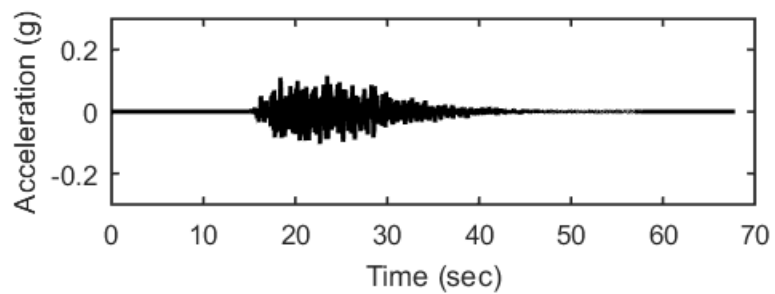


## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with FEE6

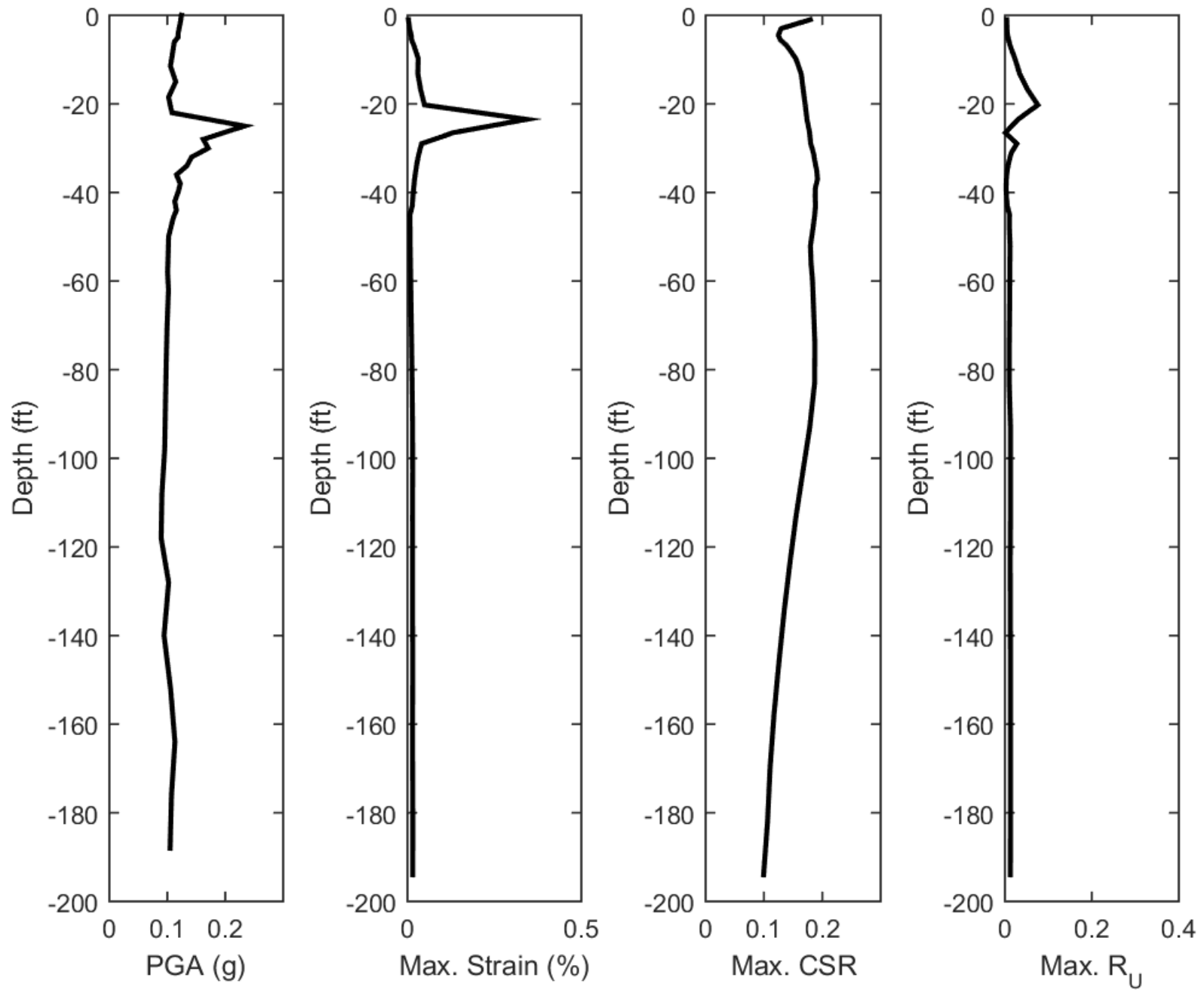




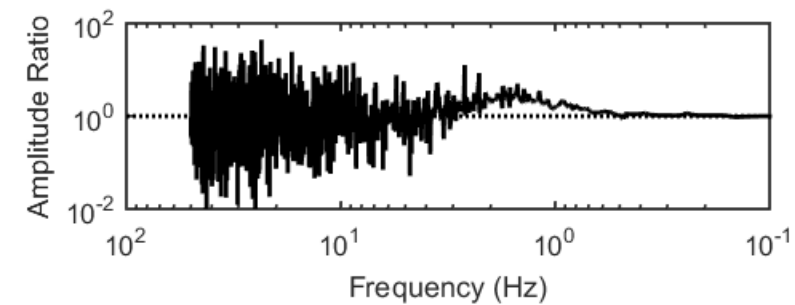
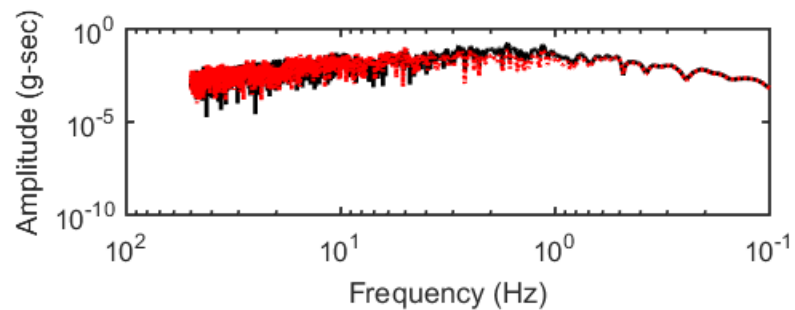
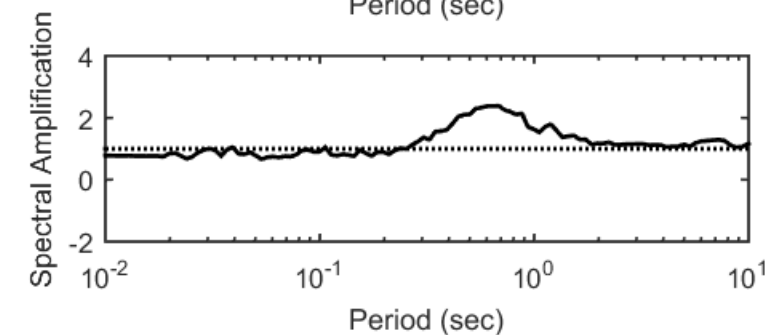
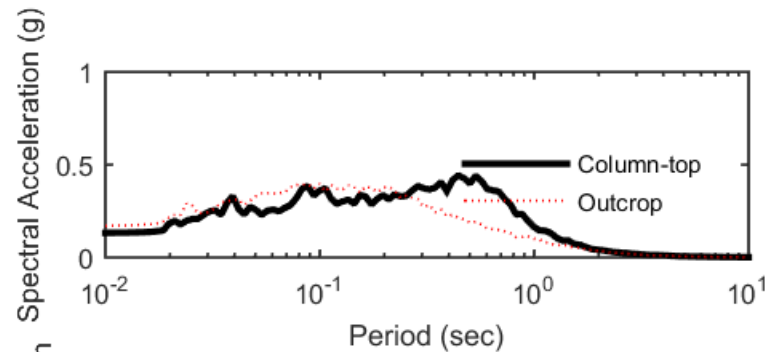
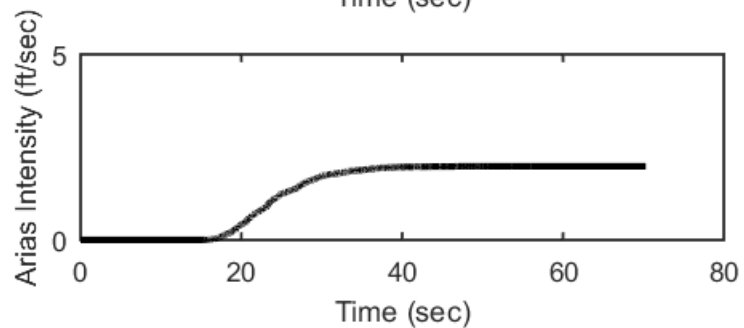
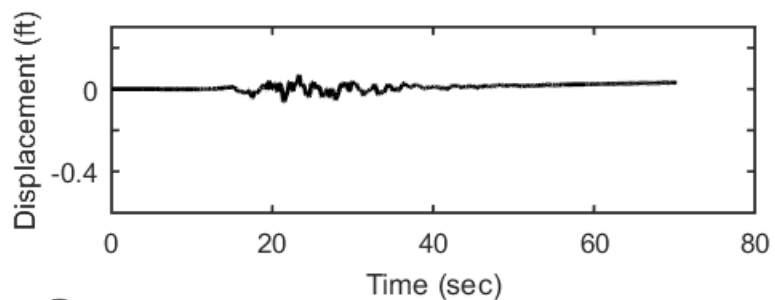
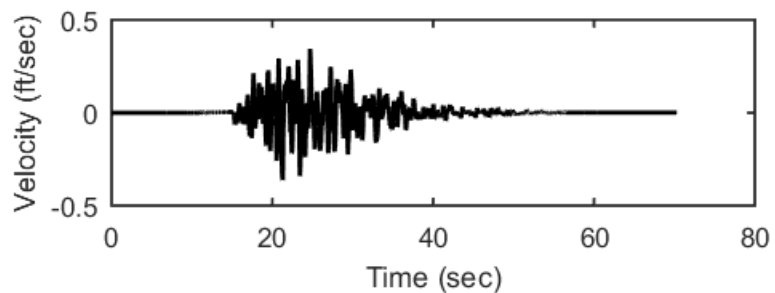
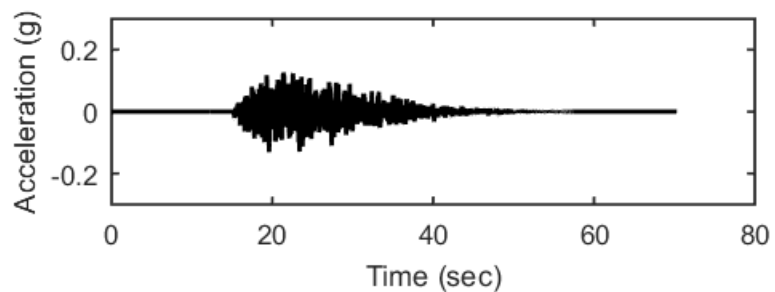
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with FEE6



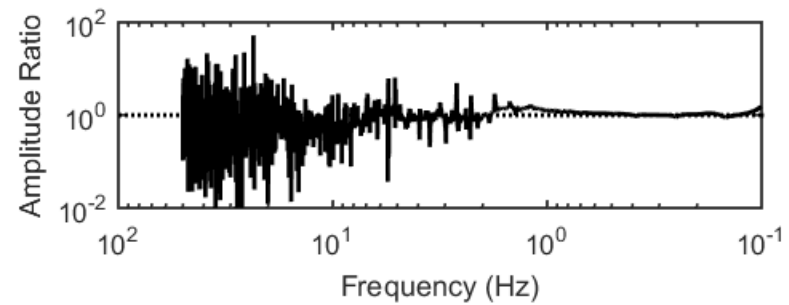
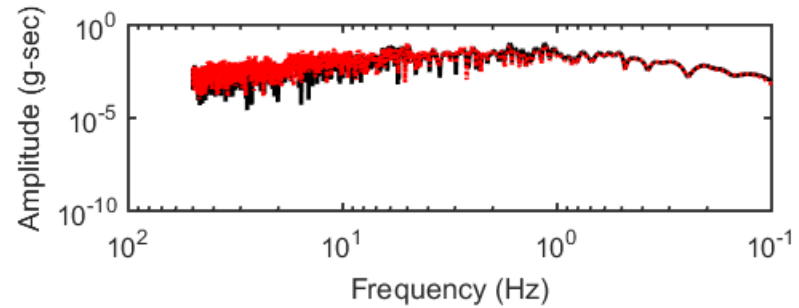
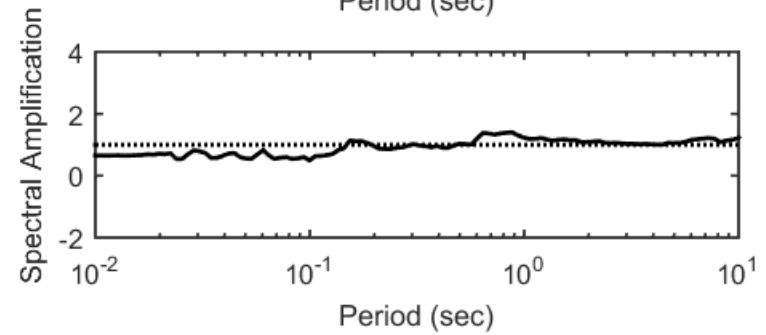
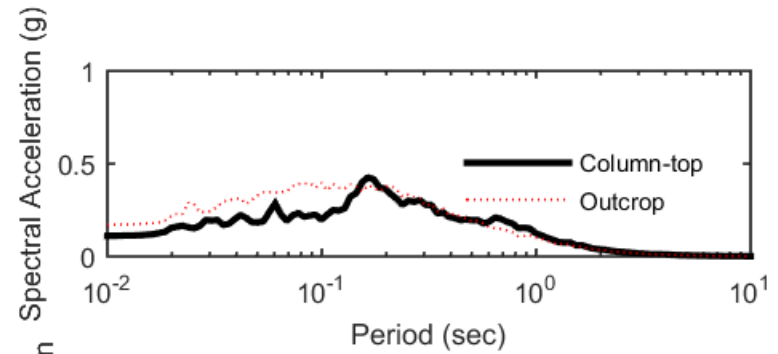
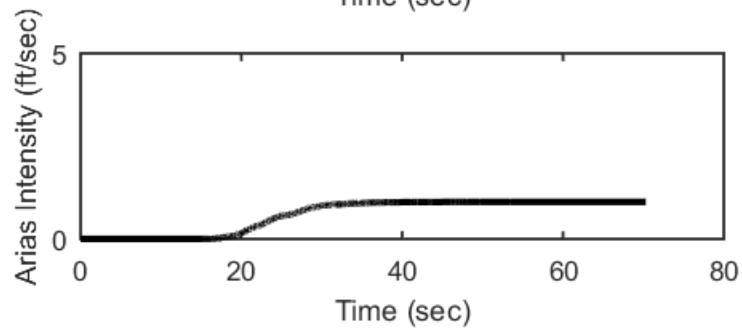
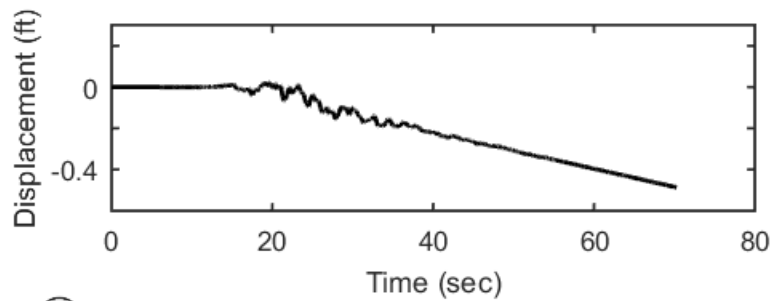
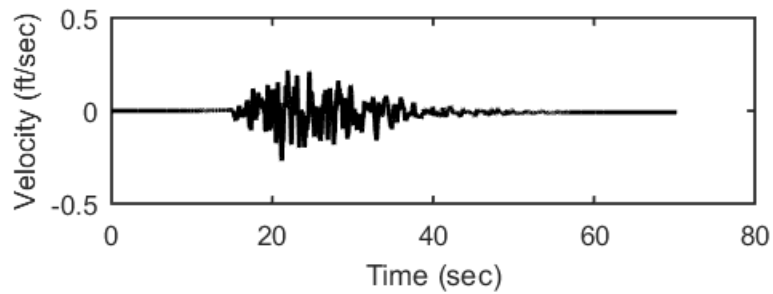
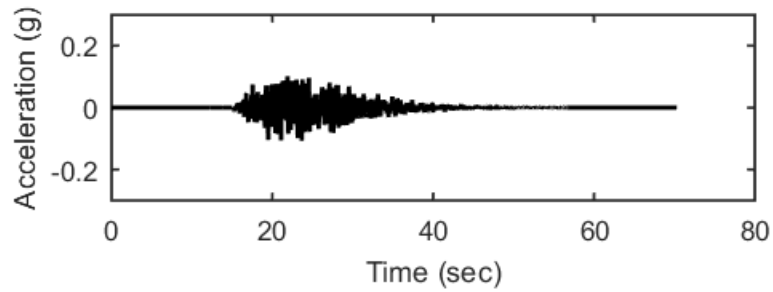
# Profile outputs for: PWP Generation-35 Percent Fines with FEE6



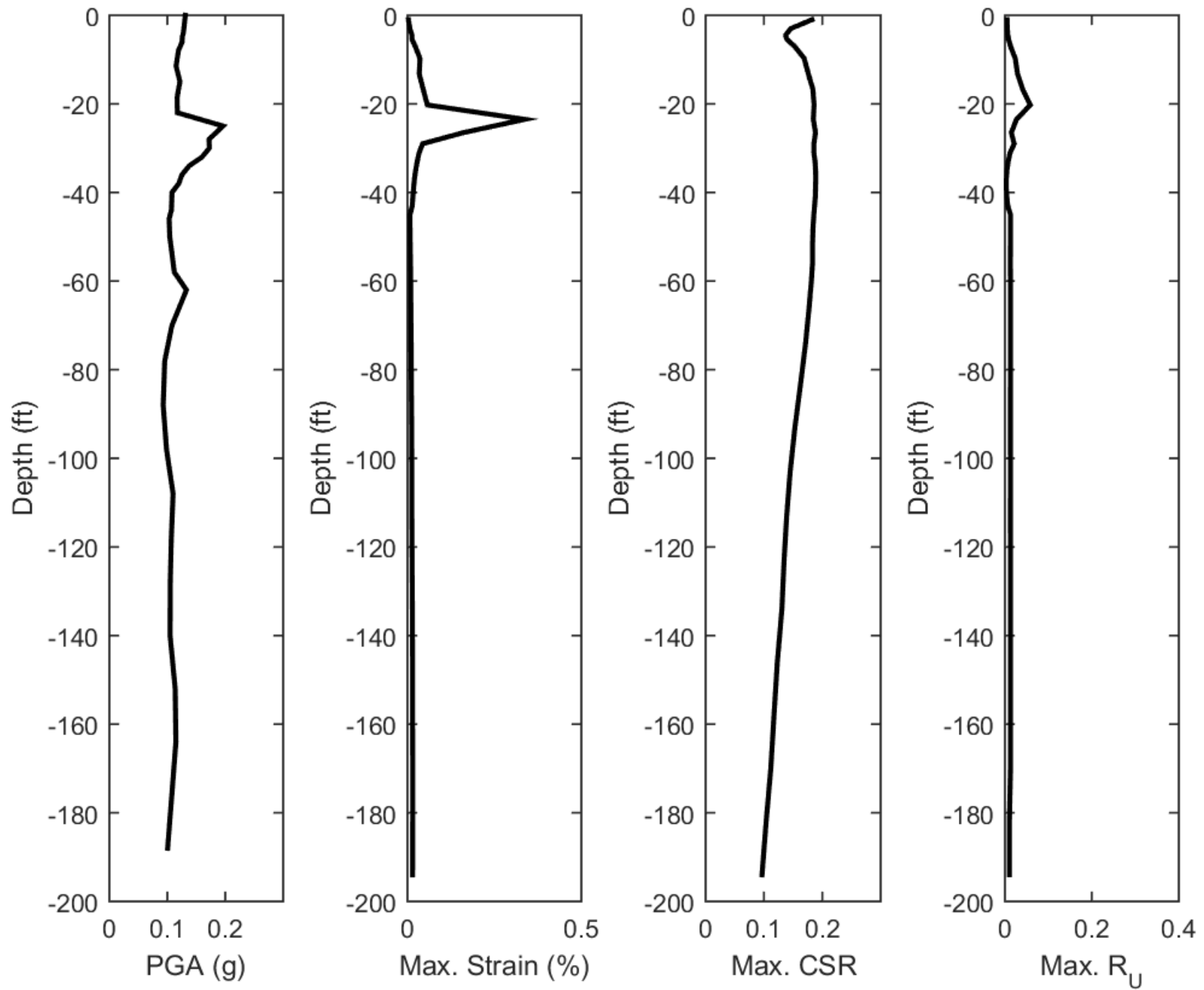
## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with FEE7



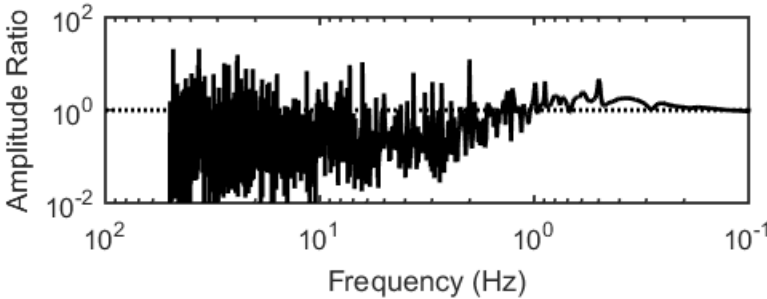
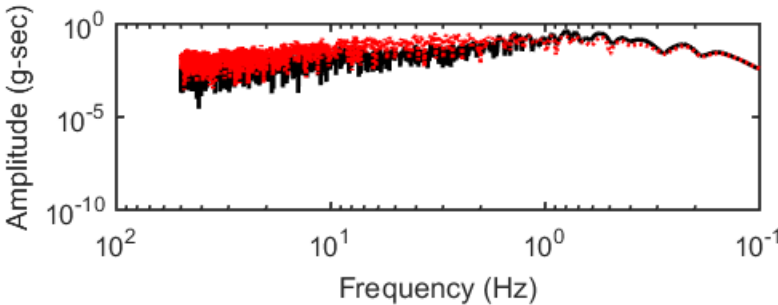
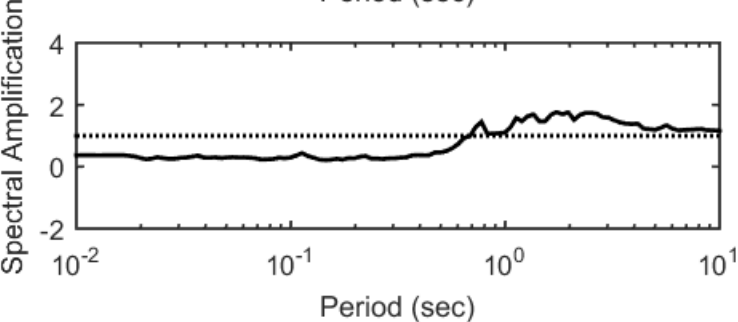
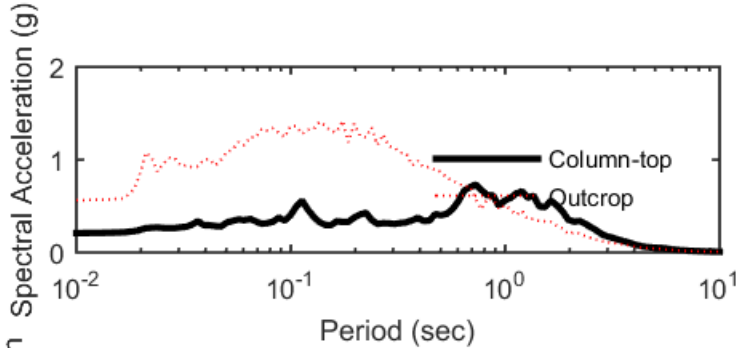
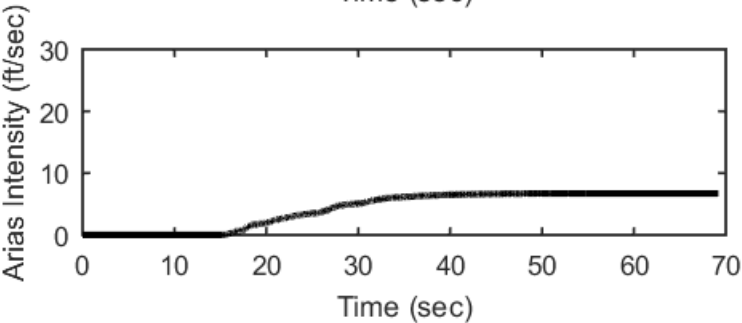
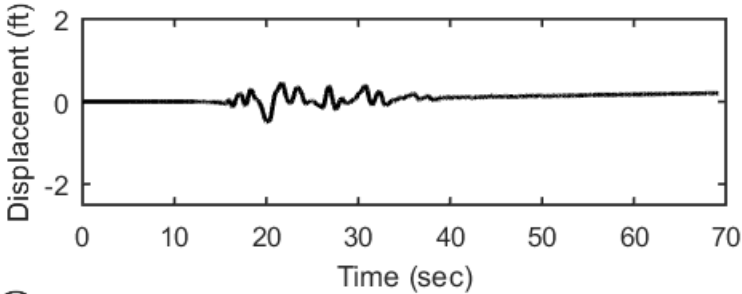
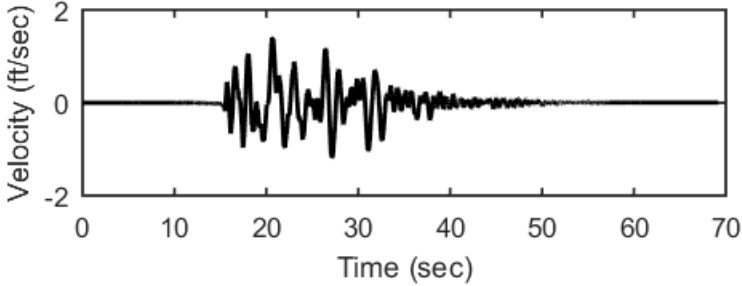
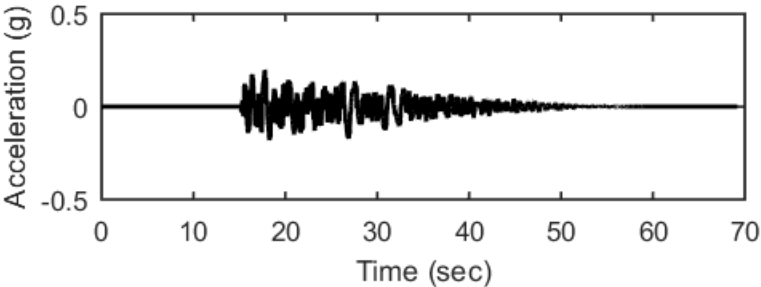
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with FEE7



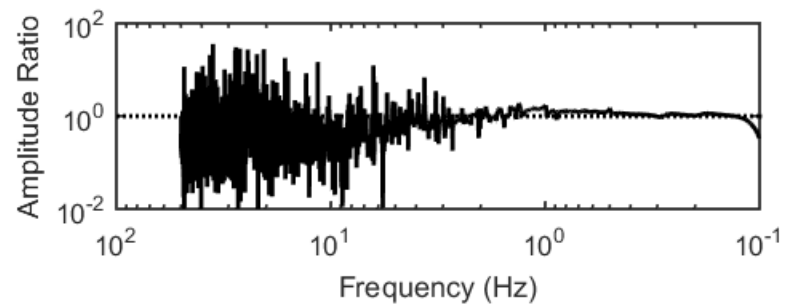
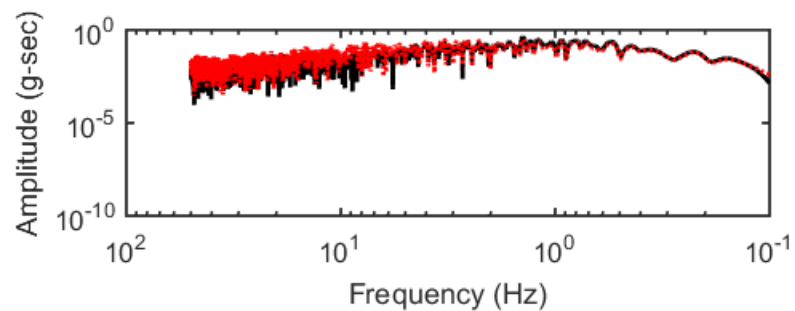
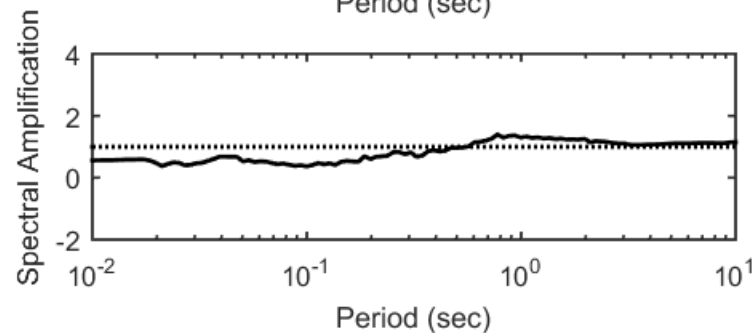
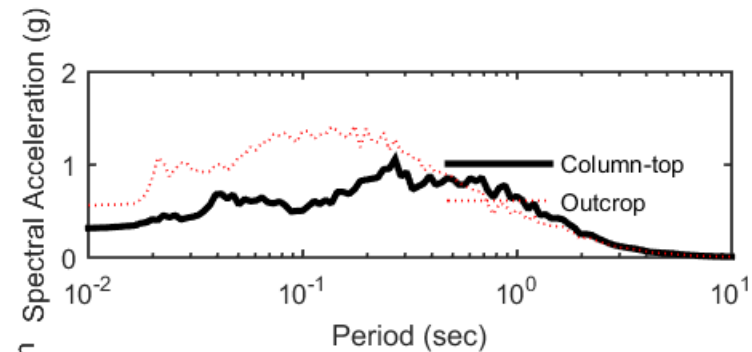
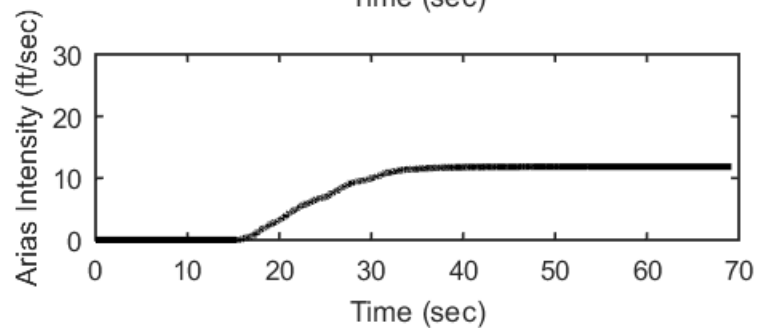
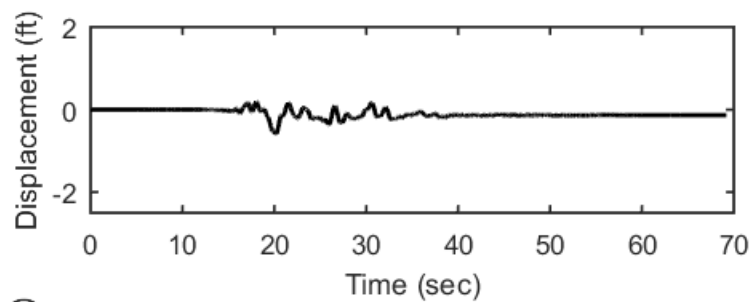
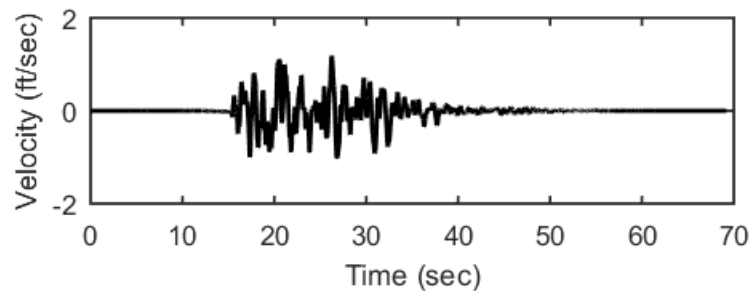
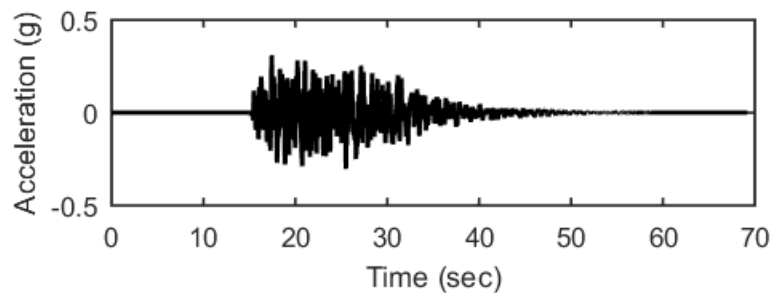
# Profile outputs for: PWP Generation-35 Percent Fines with FEE7



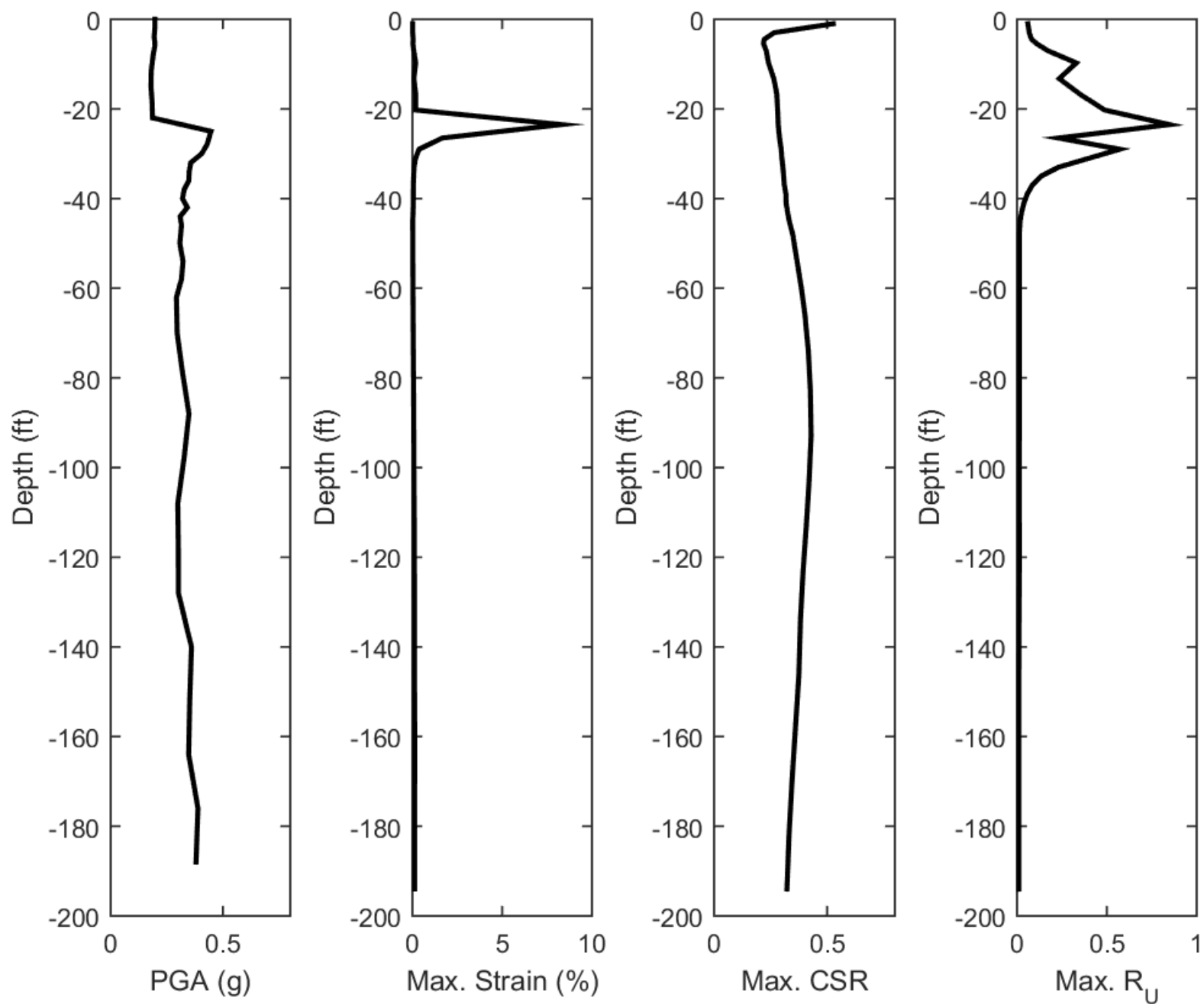
Outputs at Ground Surface for: PWP Generation-35 Percent Fines with SEE1



## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with SEE1

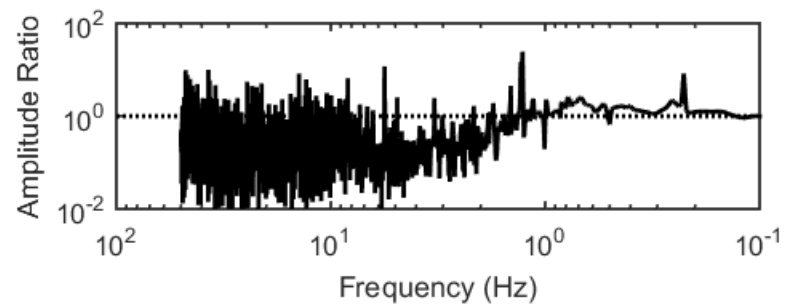
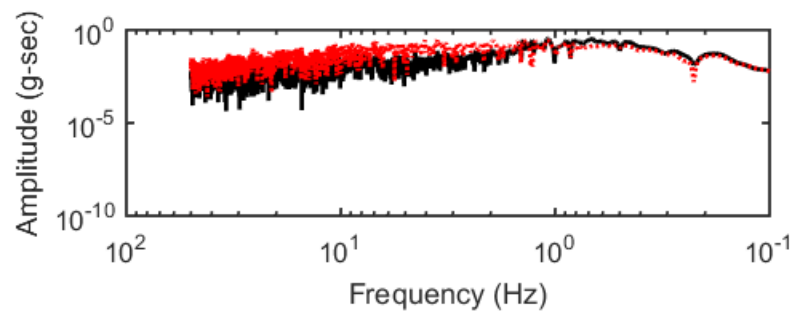
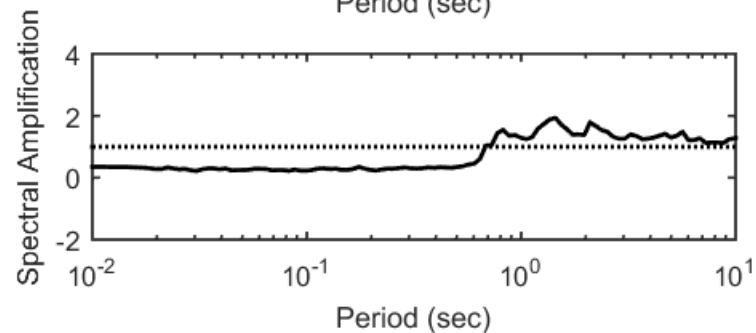
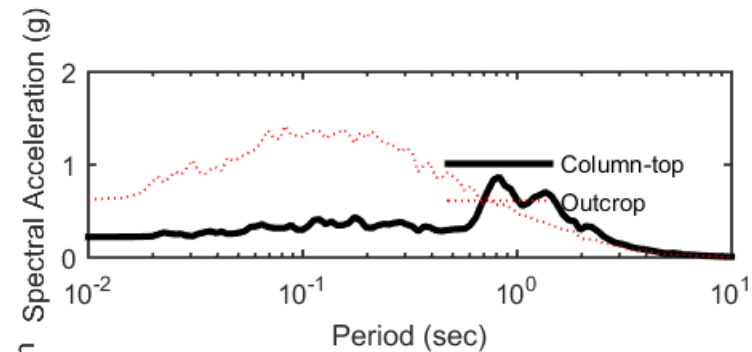
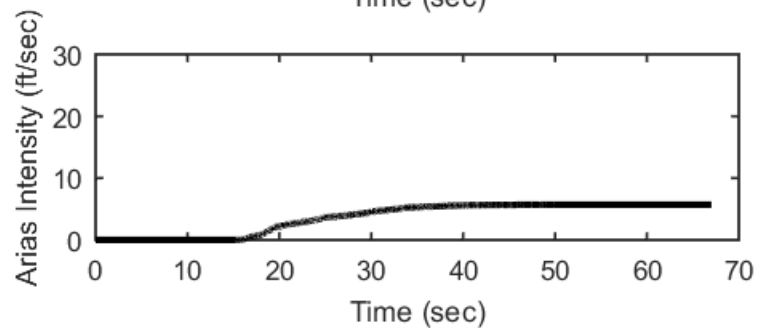
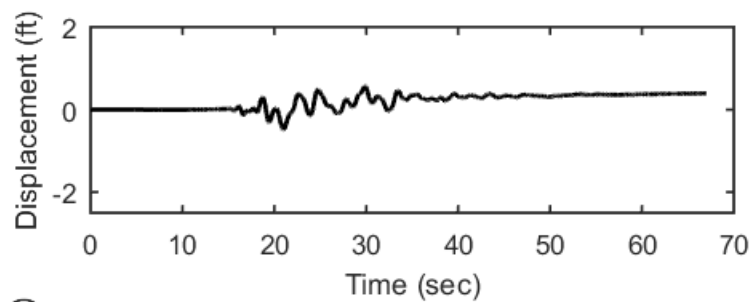
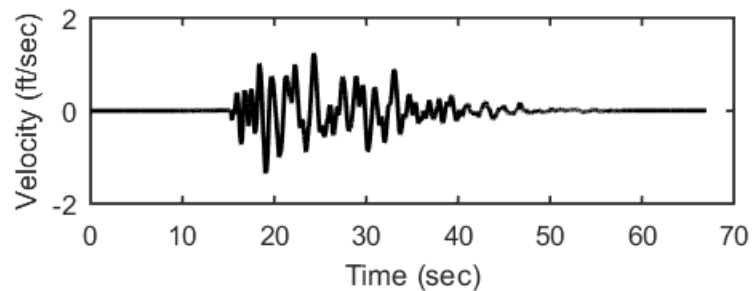
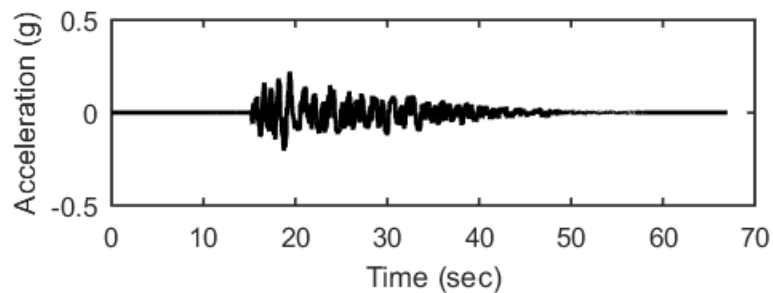


# Profile outputs for: PWP Generation-35 Percent Fines with SEE1

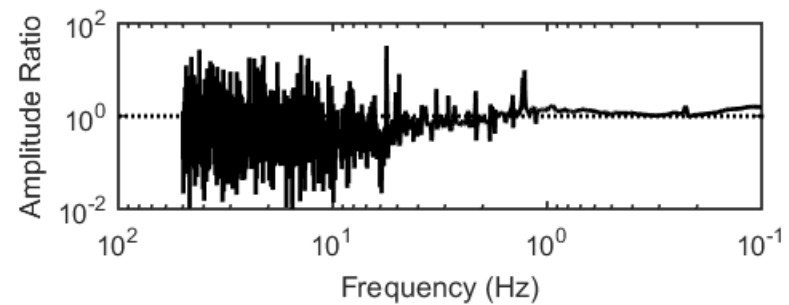
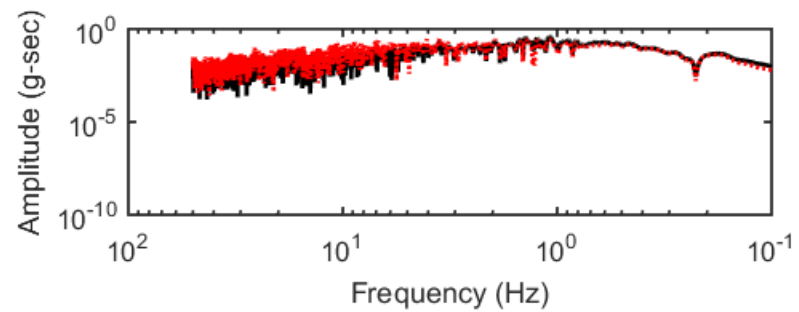
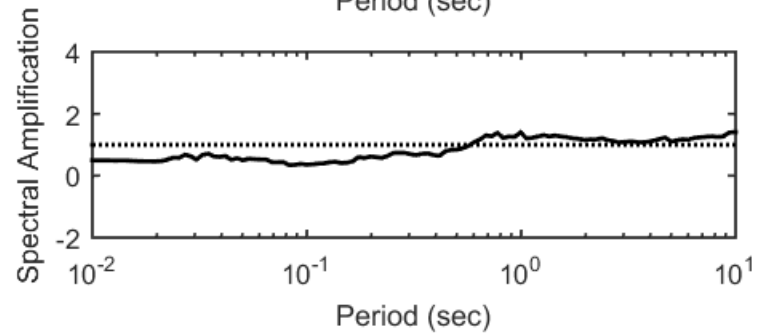
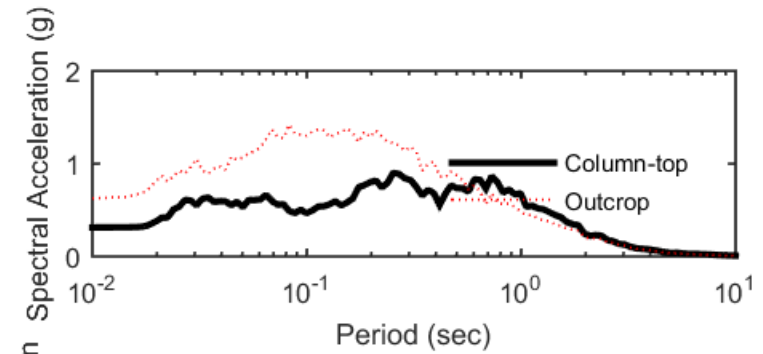
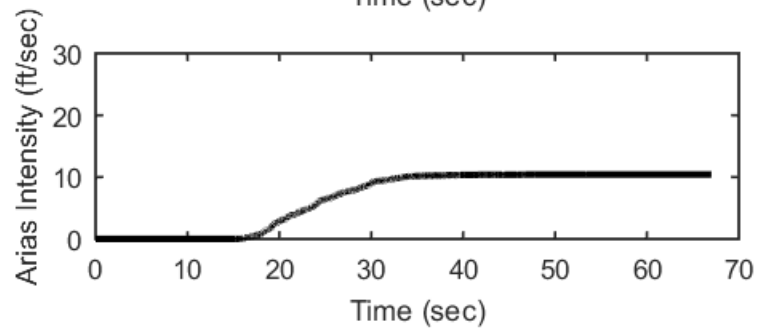
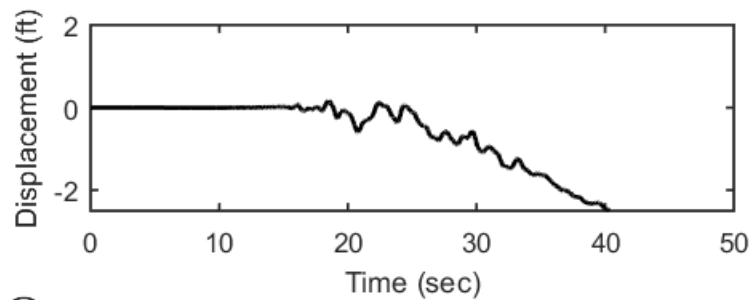
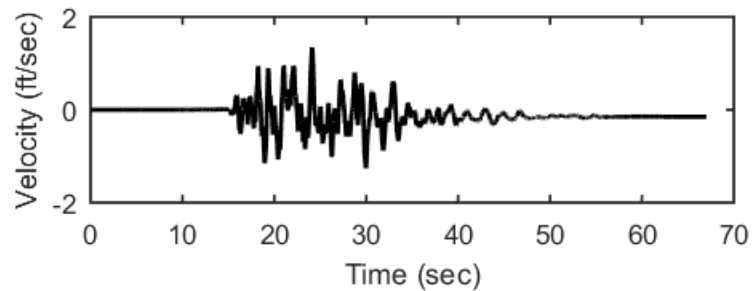
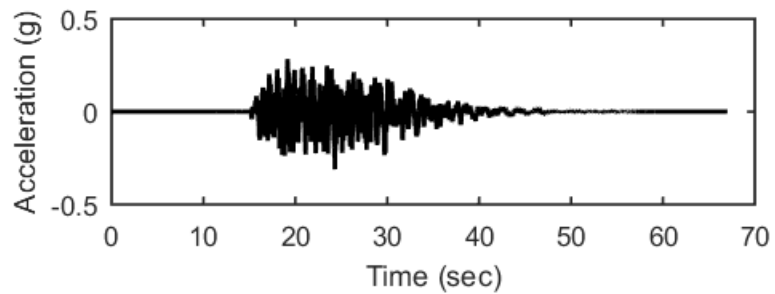




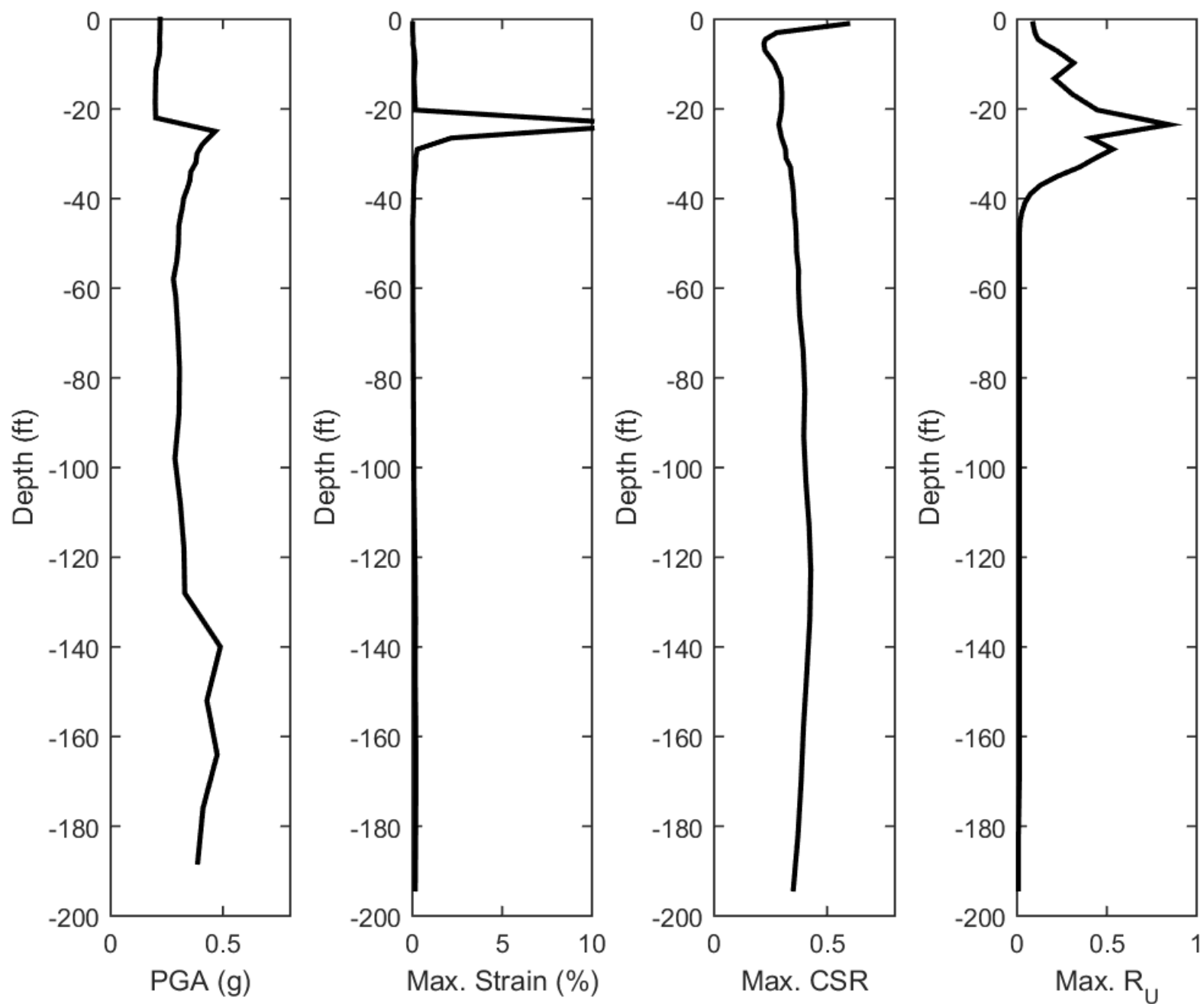
## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with SEE2



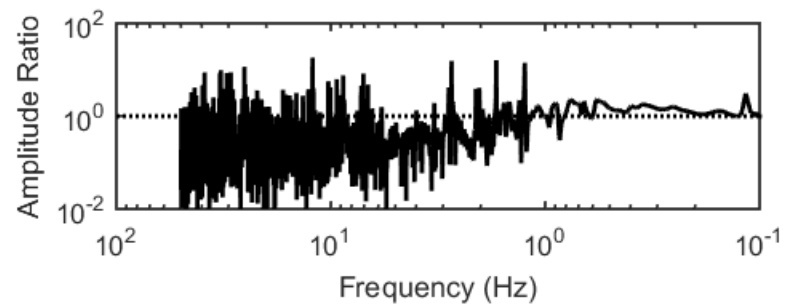
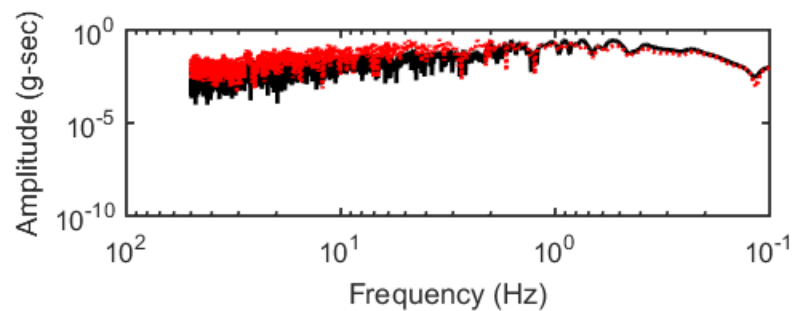
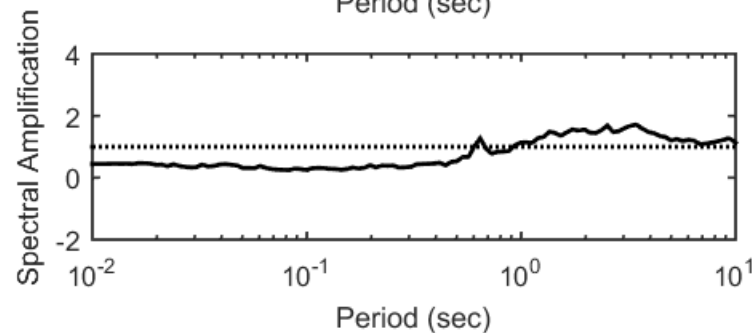
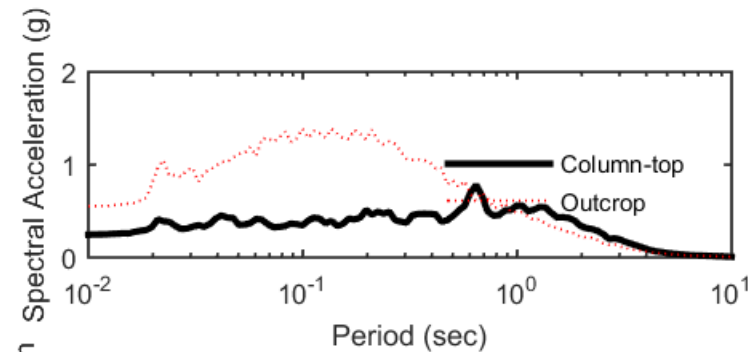
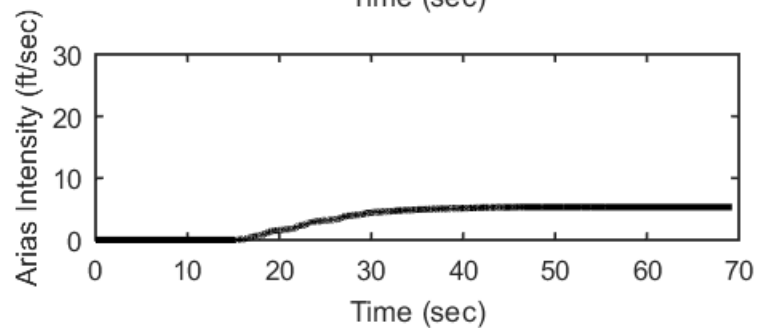
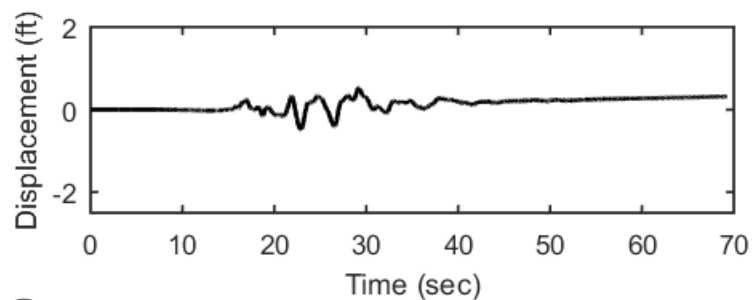
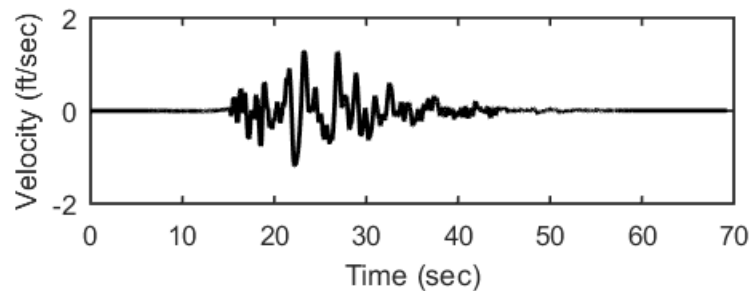
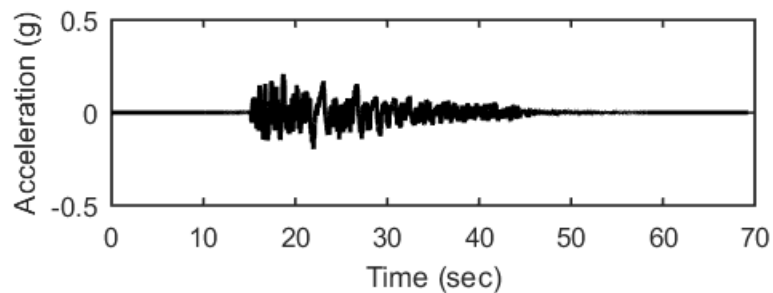
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with SEE2



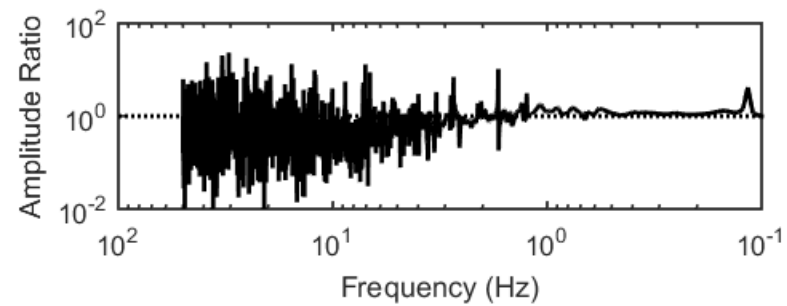
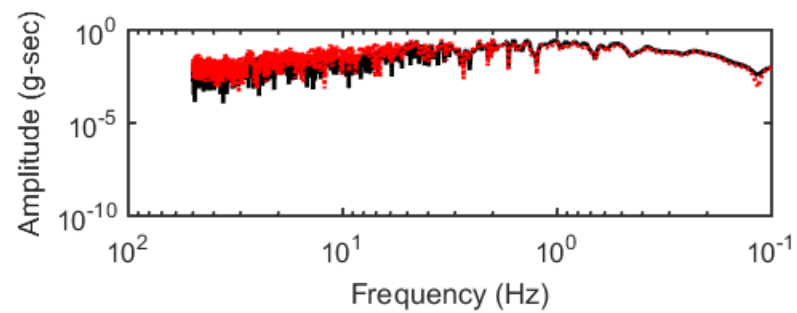
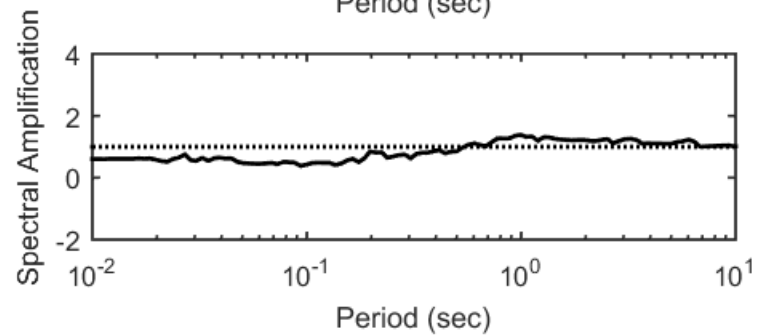
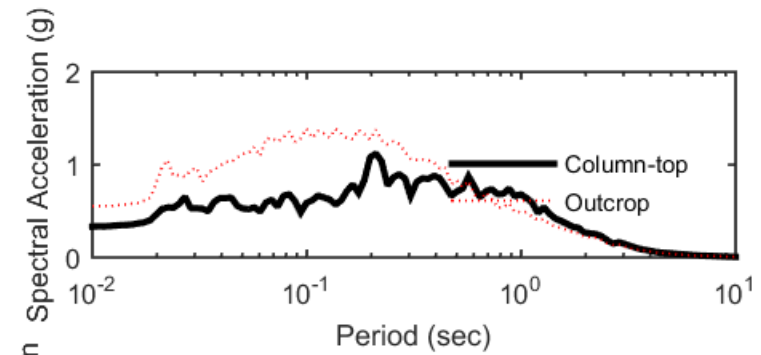
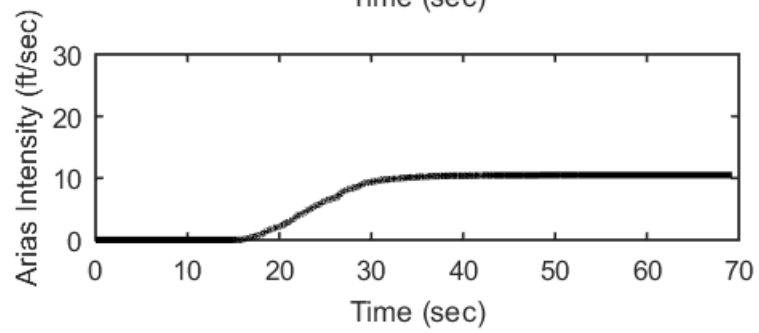
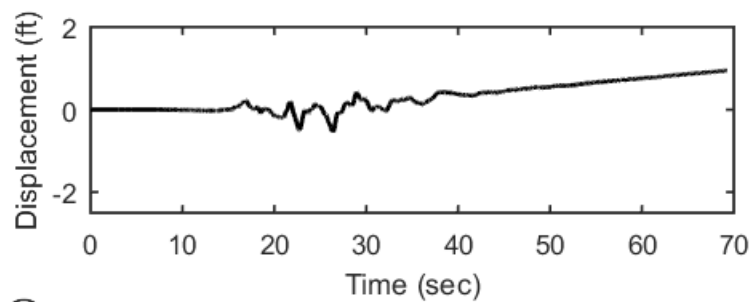
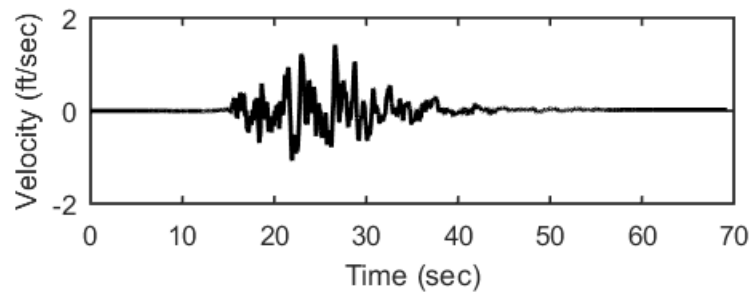
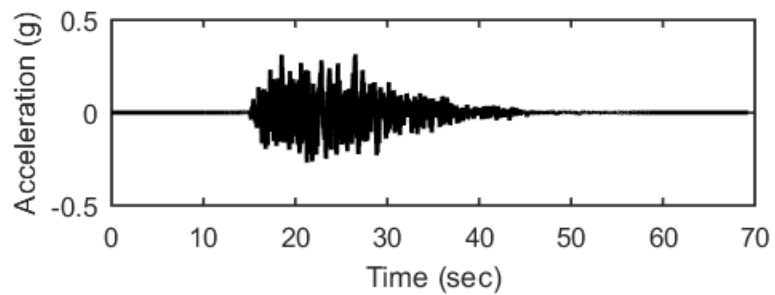
# Profile outputs for: PWP Generation-35 Percent Fines with SEE2



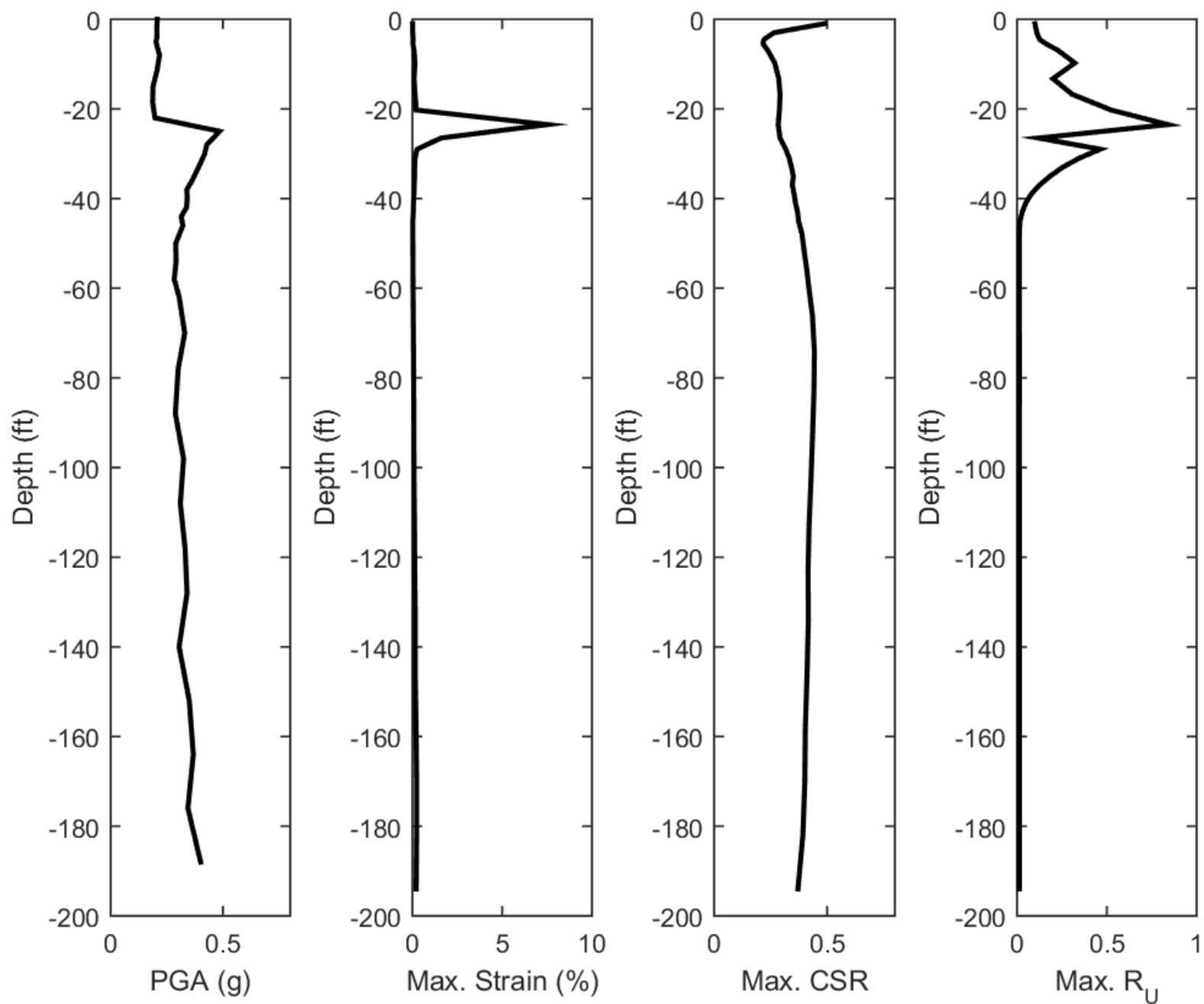
## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with SEE3



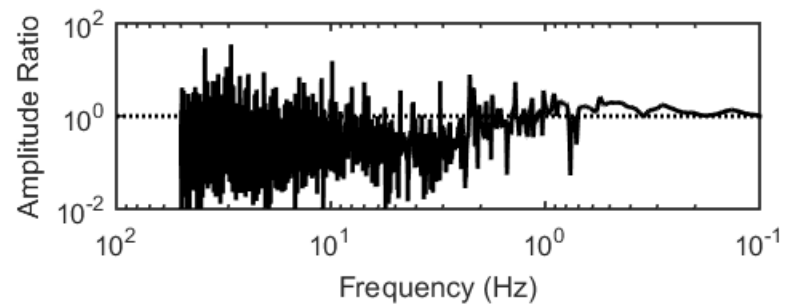
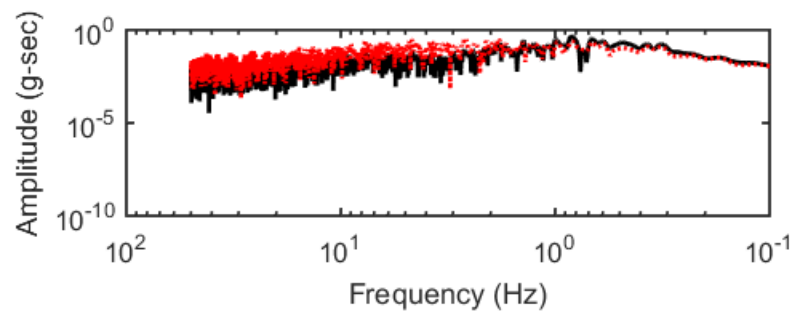
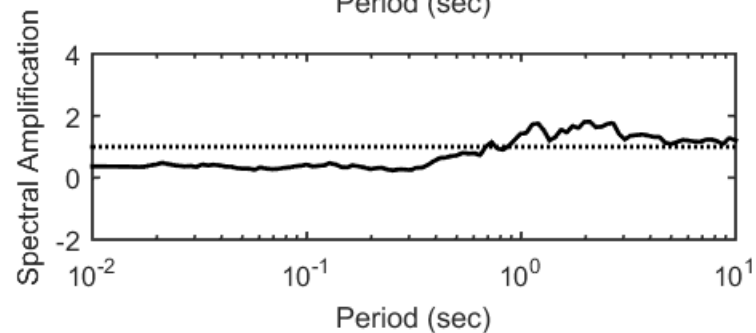
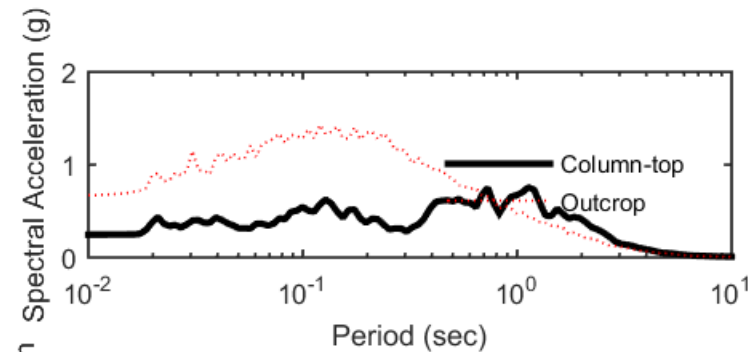
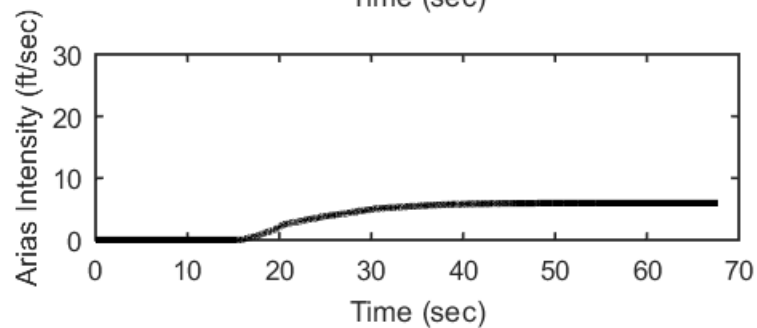
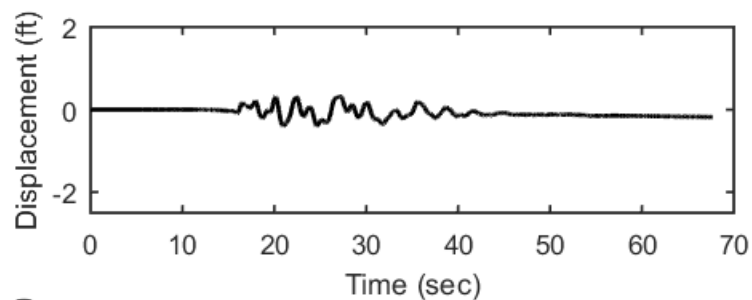
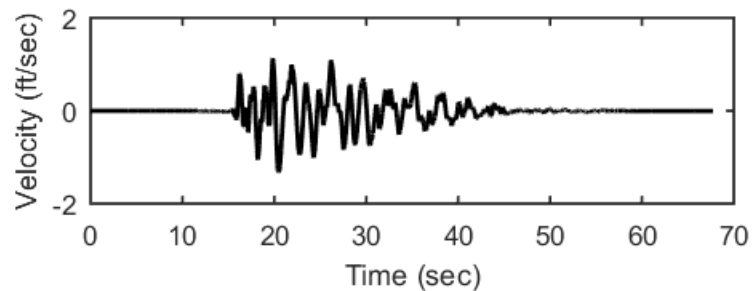
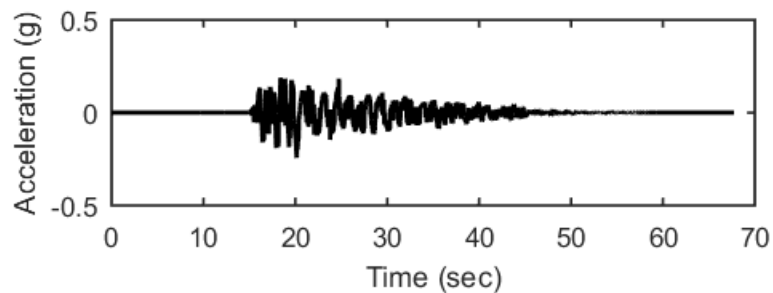
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with SEE3



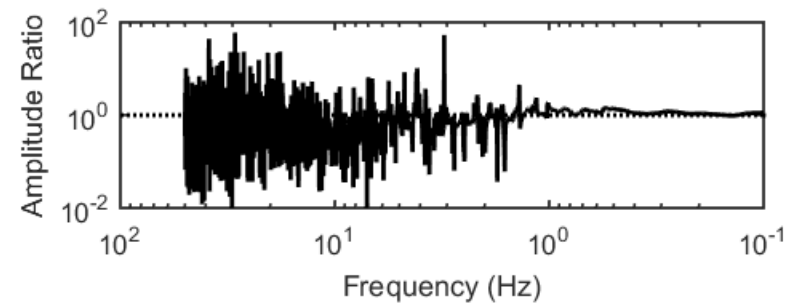
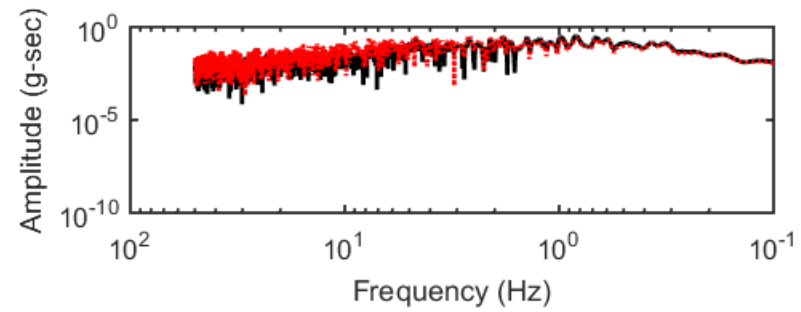
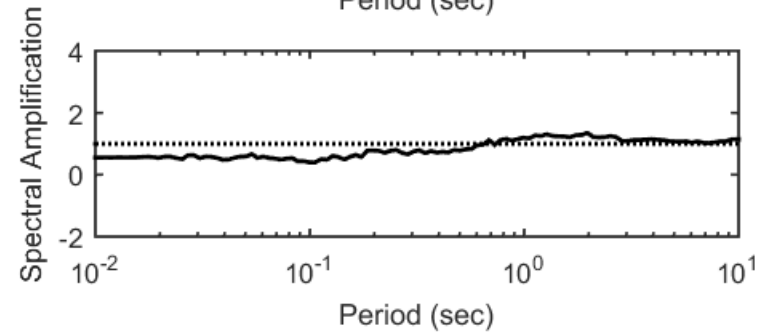
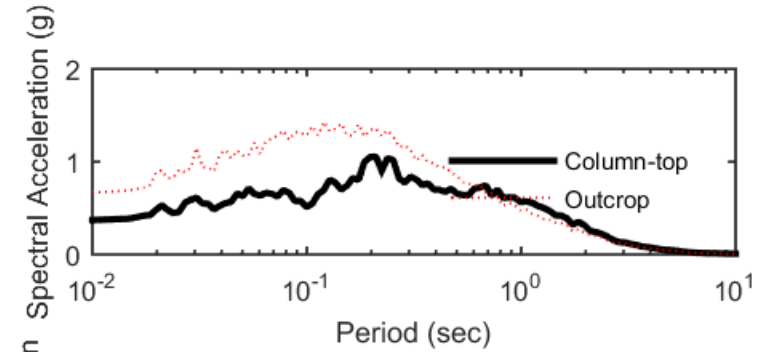
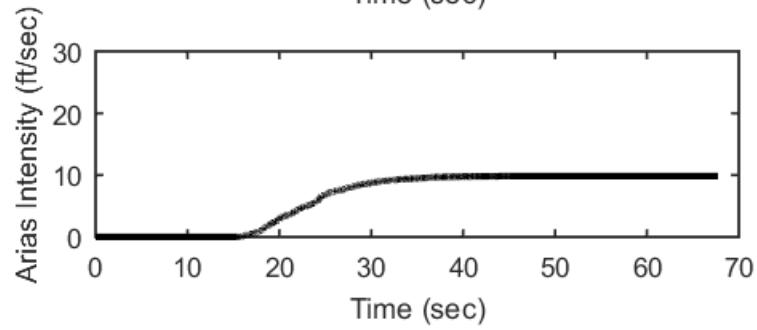
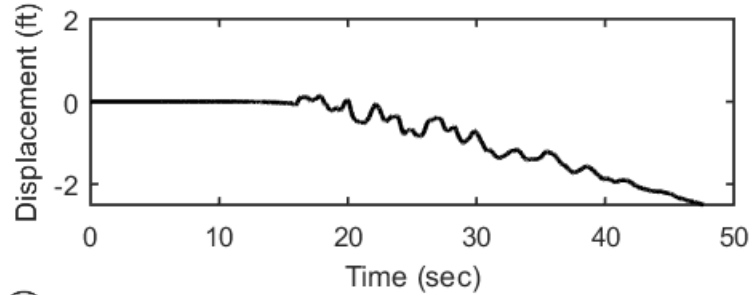
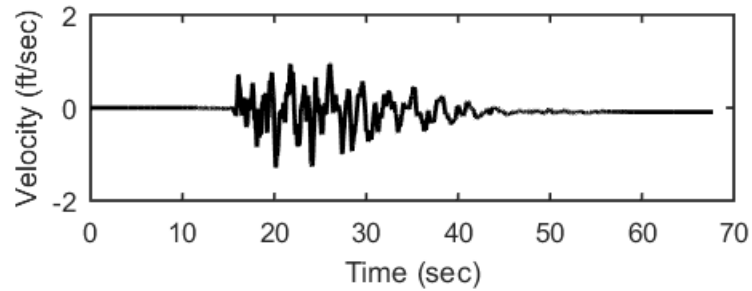
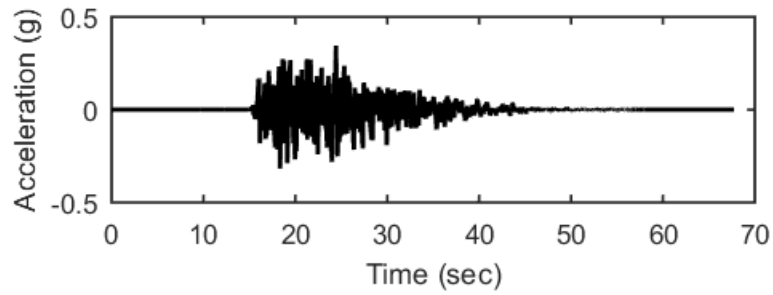
# Profile outputs for: PWP Generation-35 Percent Fines with SEE3



## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with SEE4

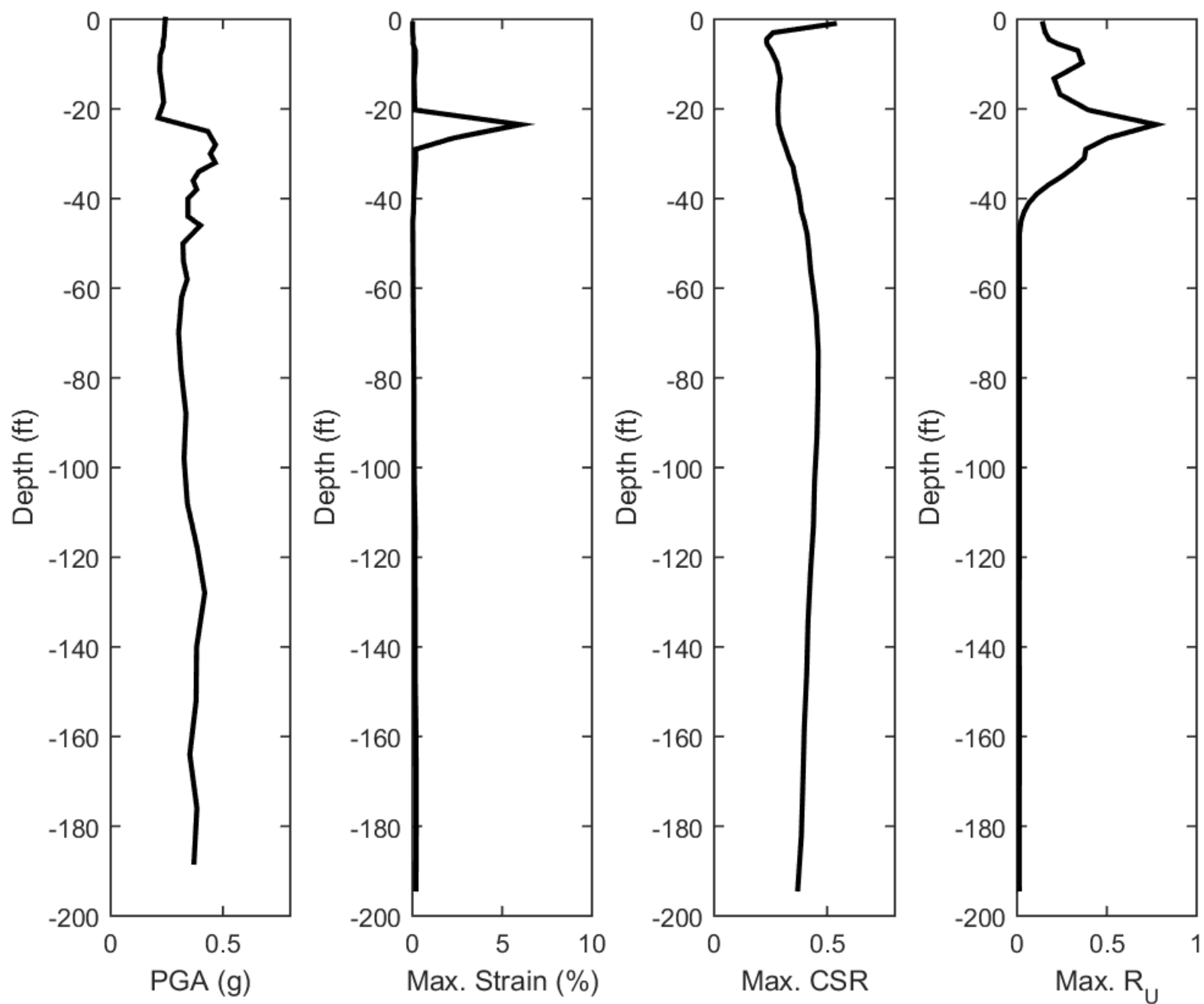


## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with SEE4

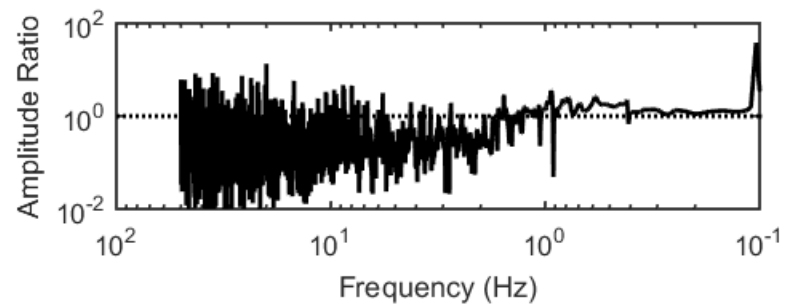
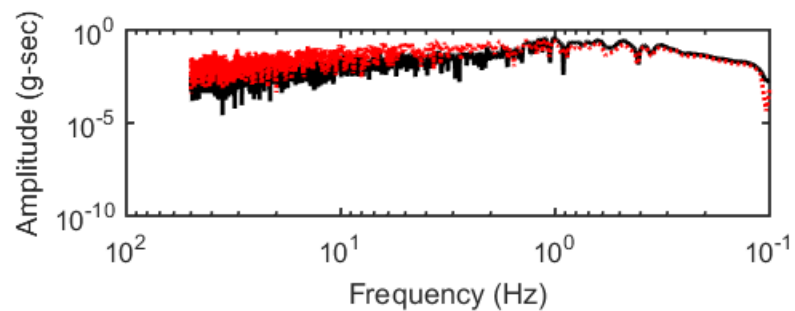
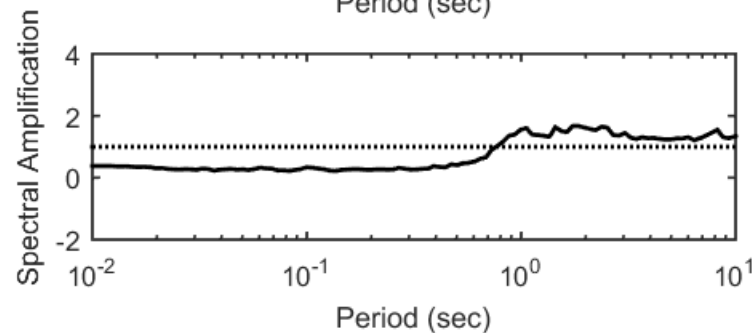
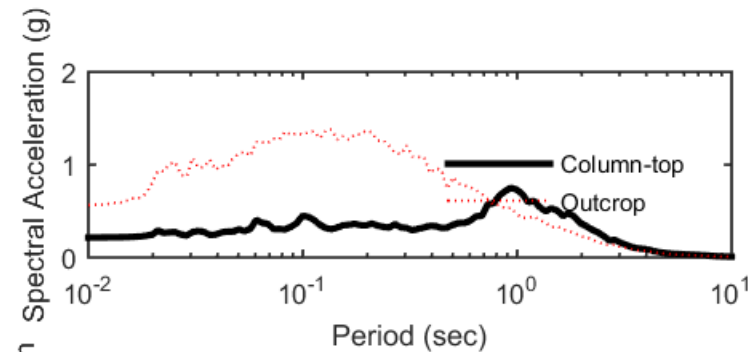
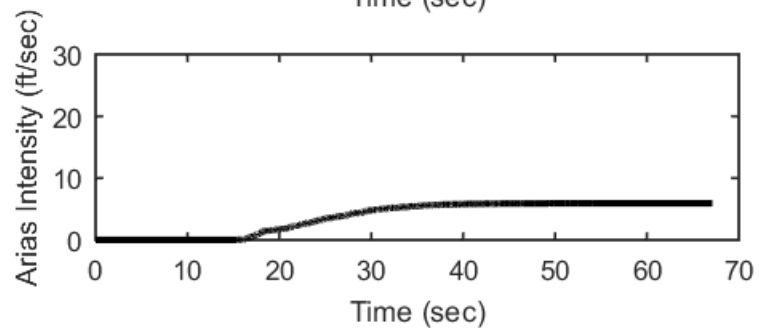
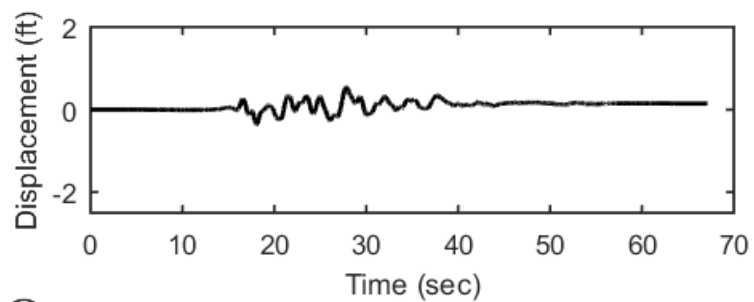
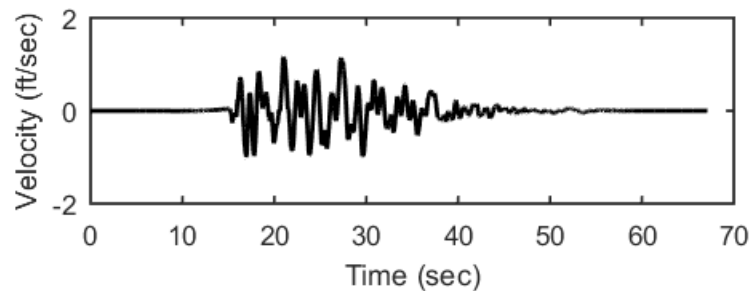
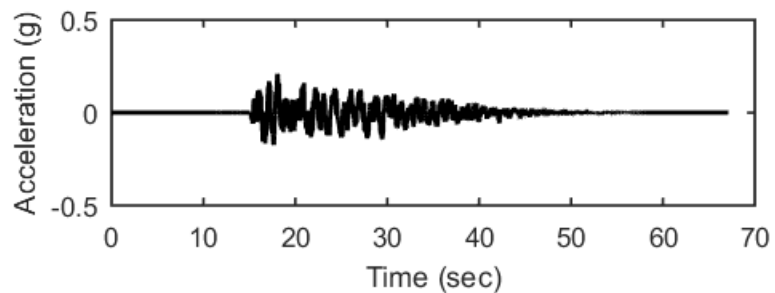




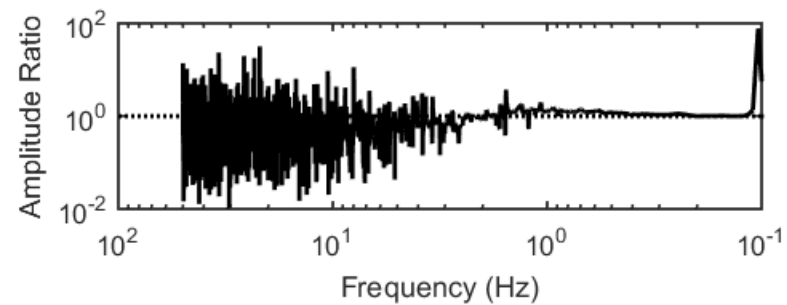
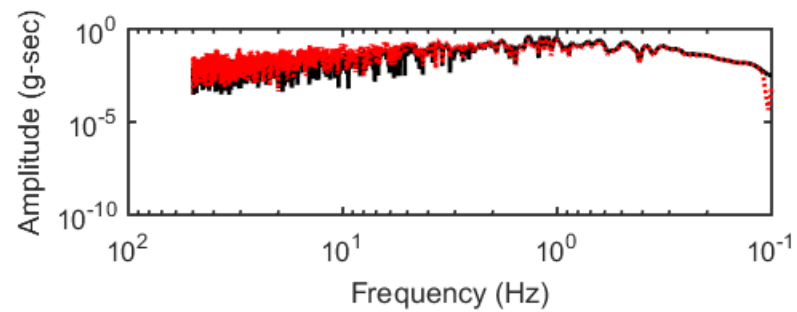
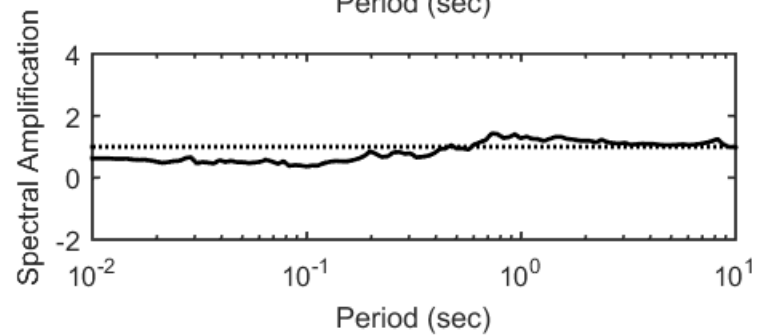
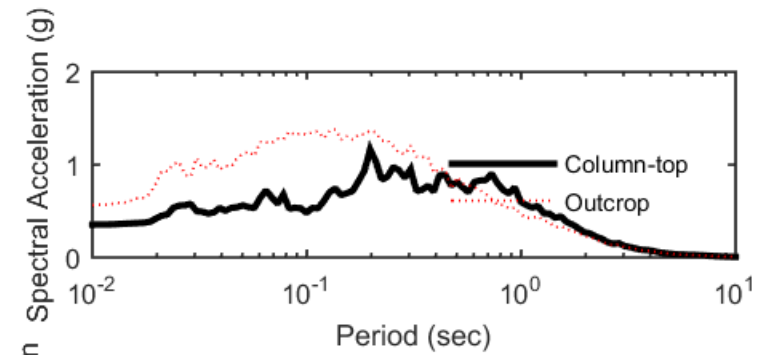
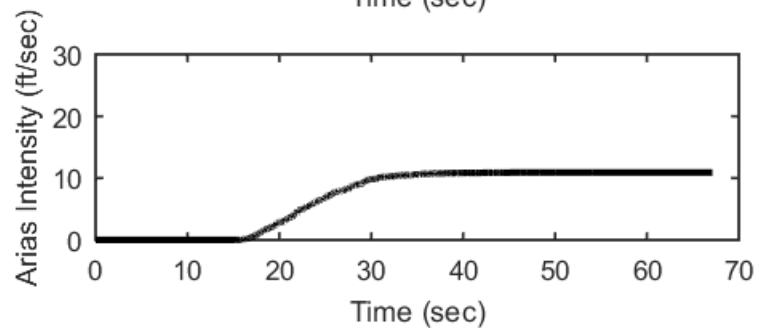
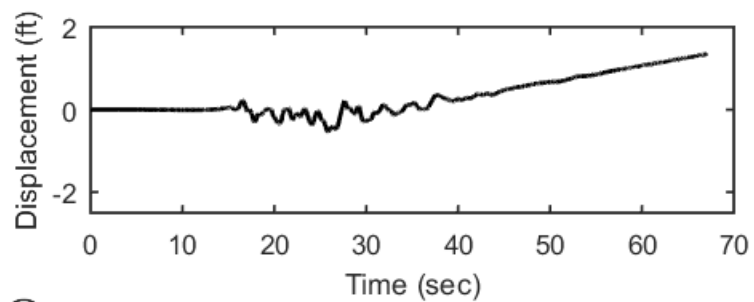
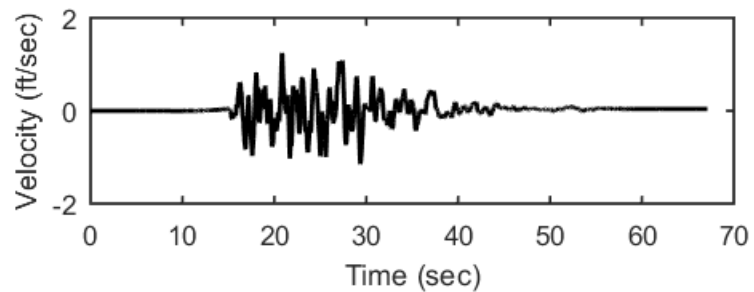
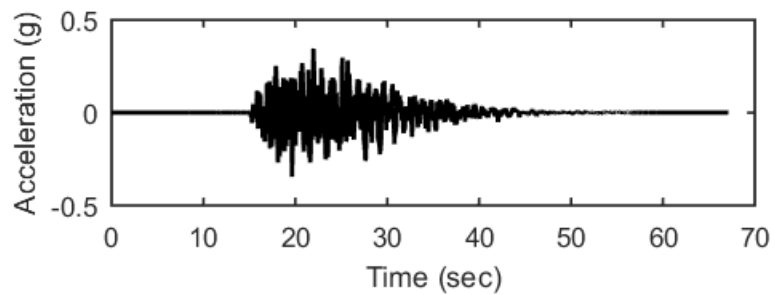
# Profile outputs for: PWP Generation-35 Percent Fines with SEE4



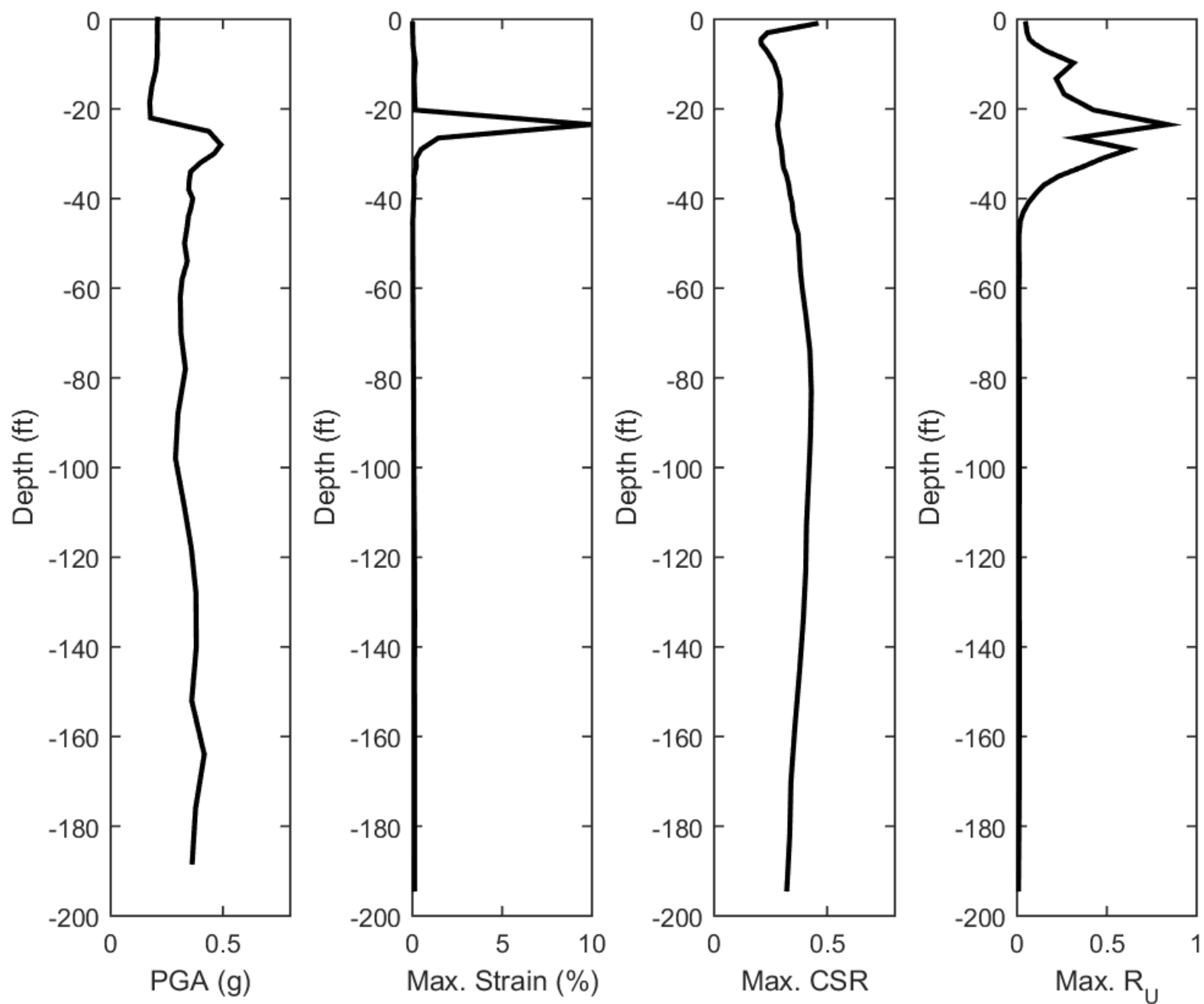
## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with SEE5



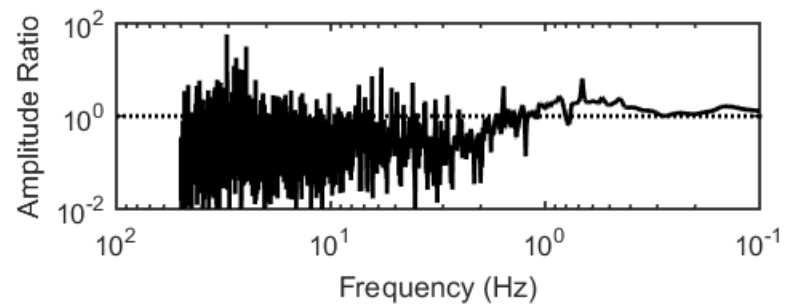
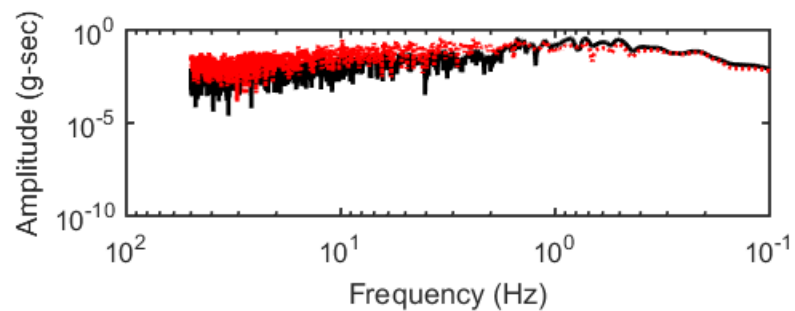
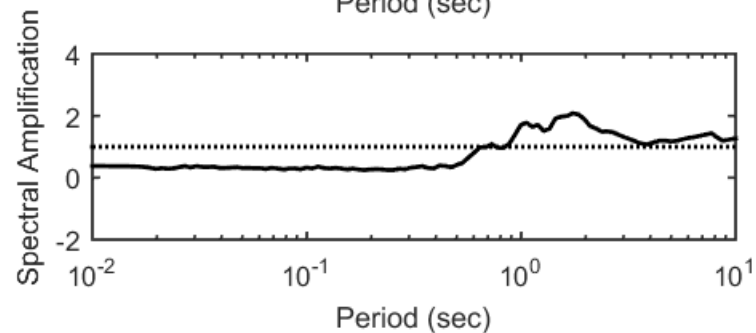
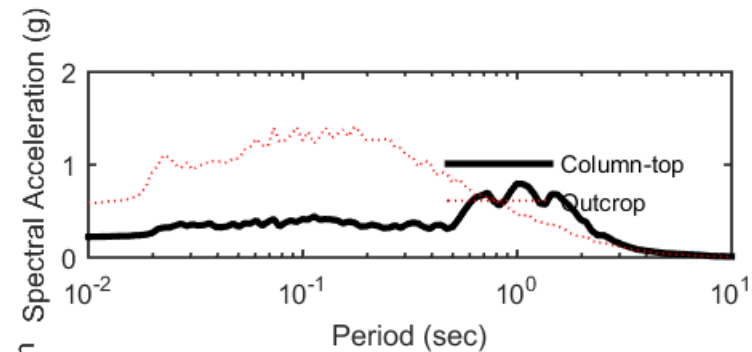
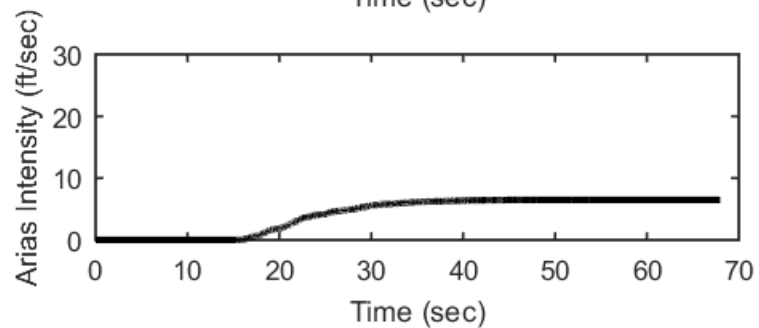
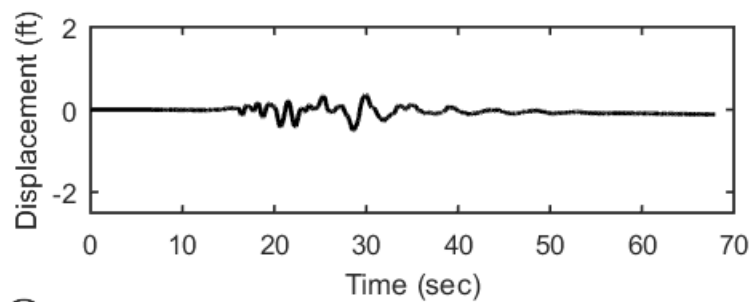
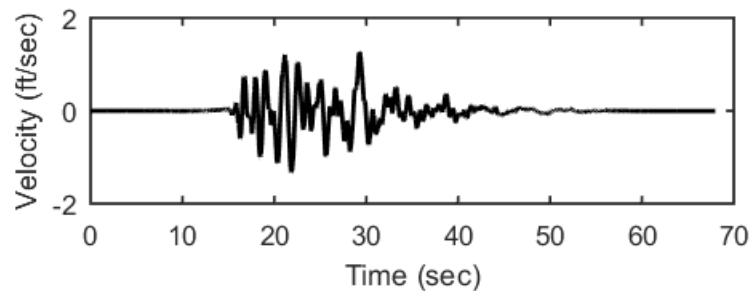
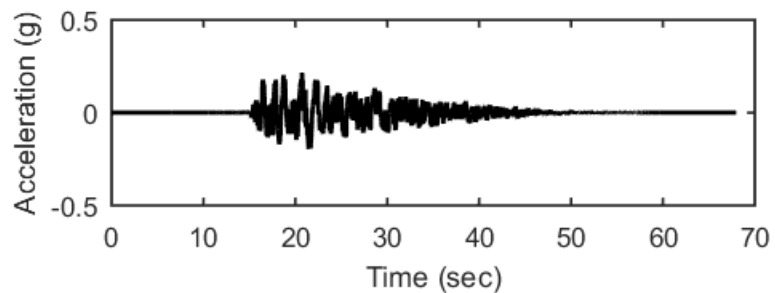
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with SEE5



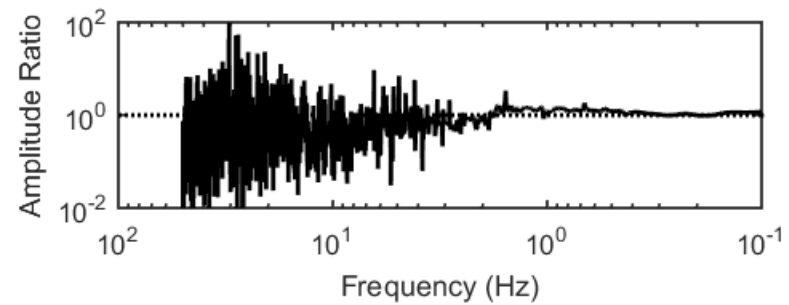
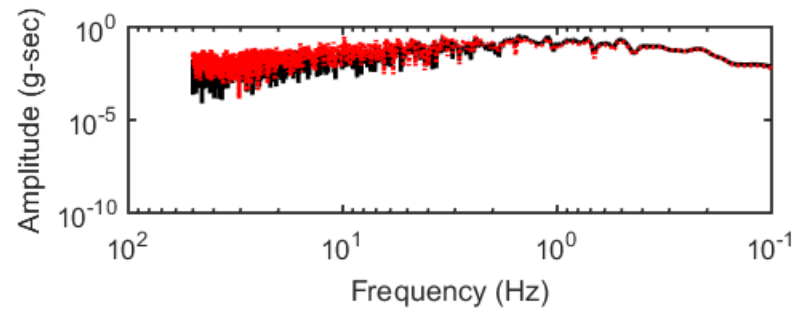
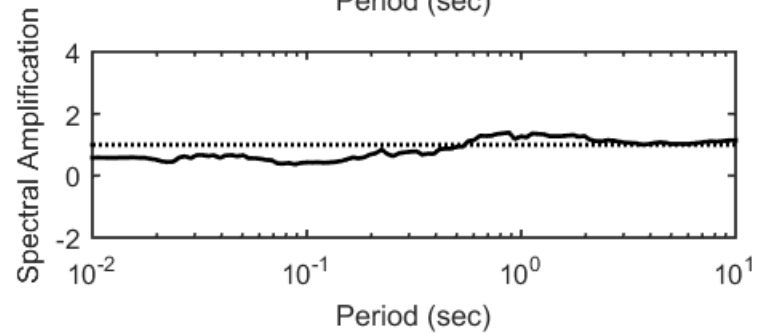
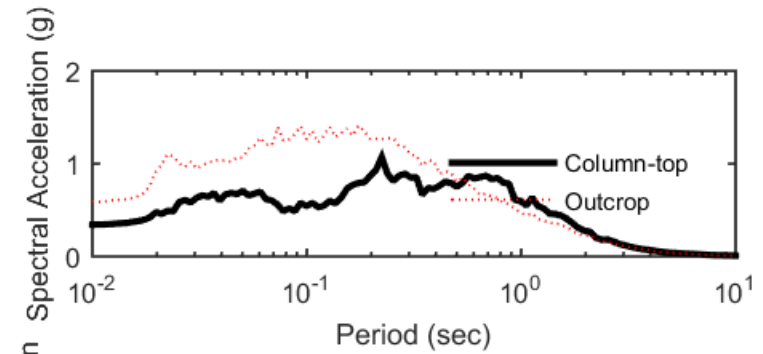
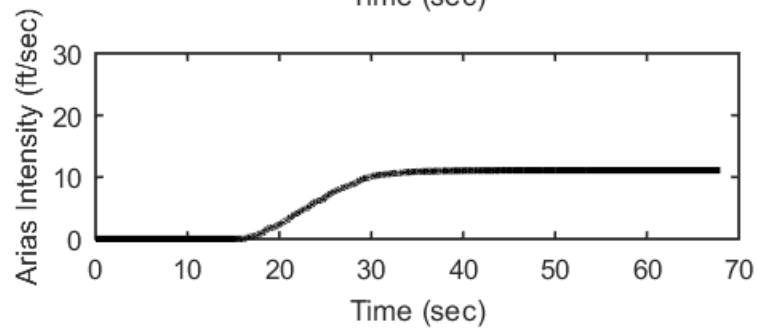
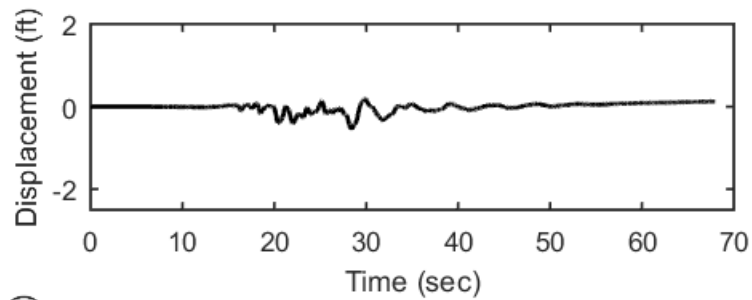
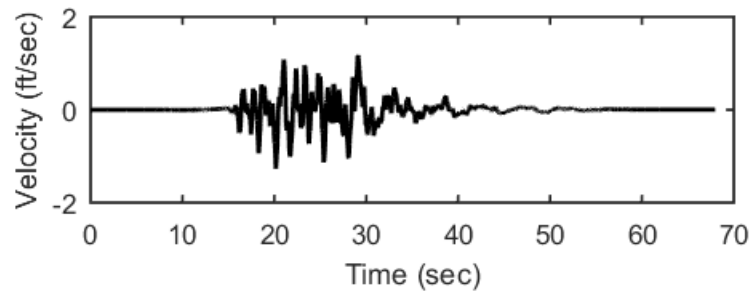
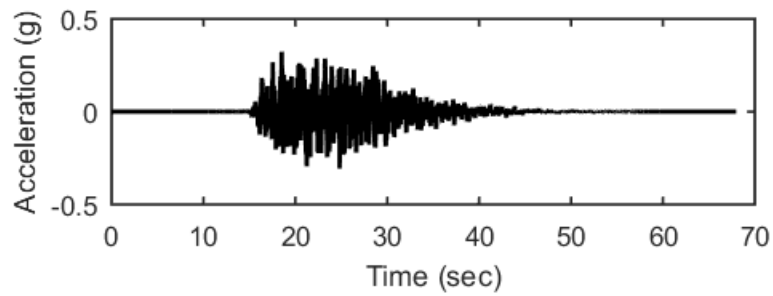
# Profile outputs for: PWP Generation-35 Percent Fines with SEE5



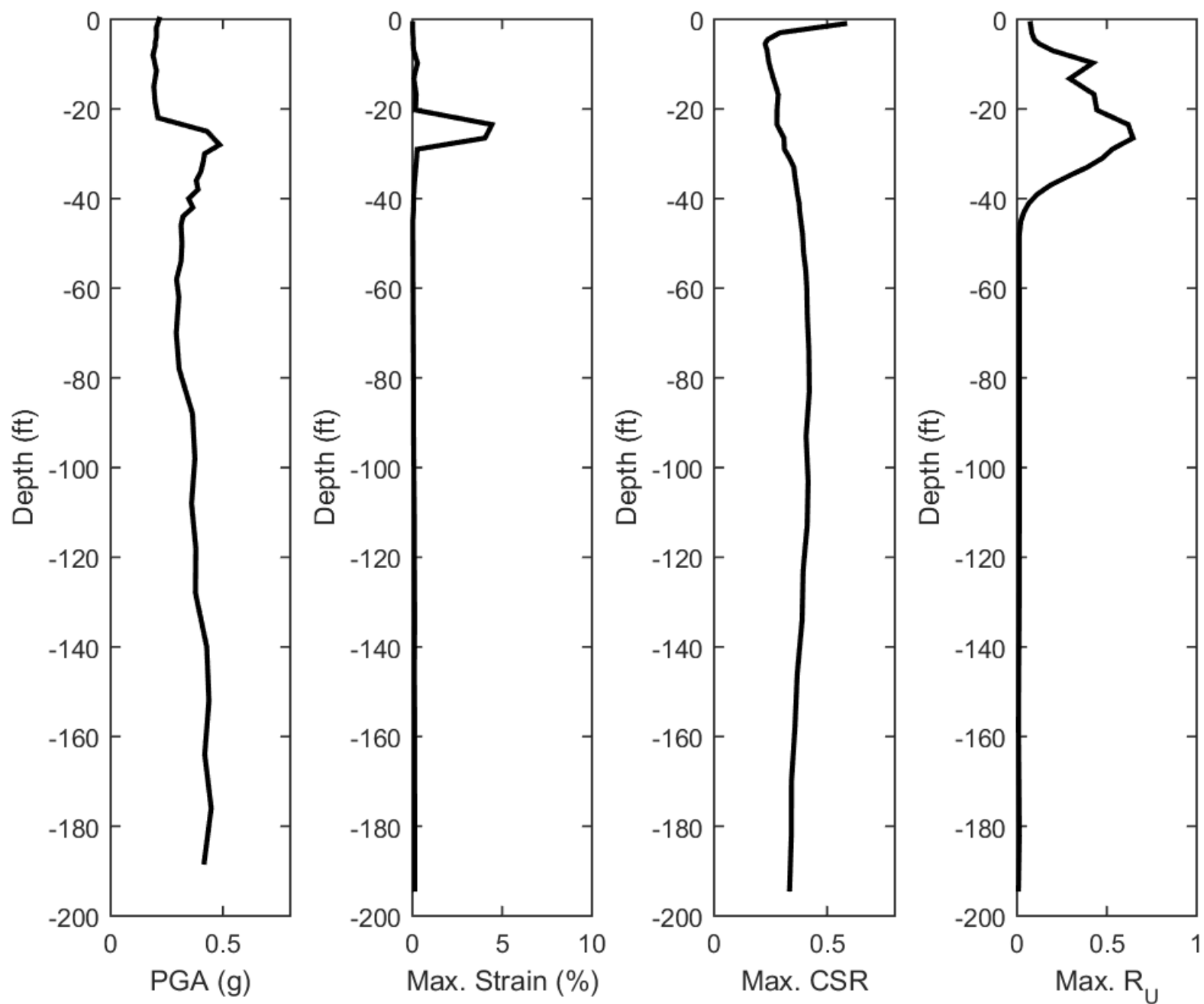
## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with SEE6



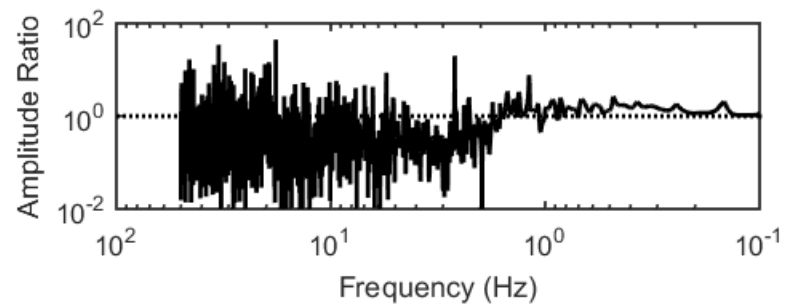
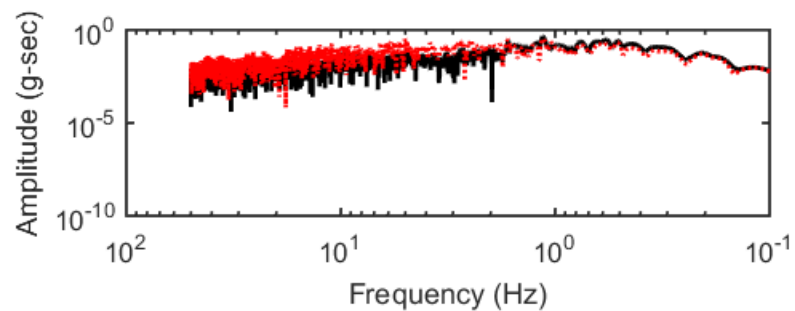
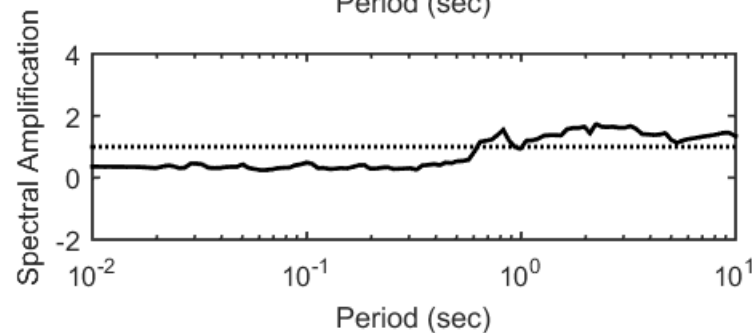
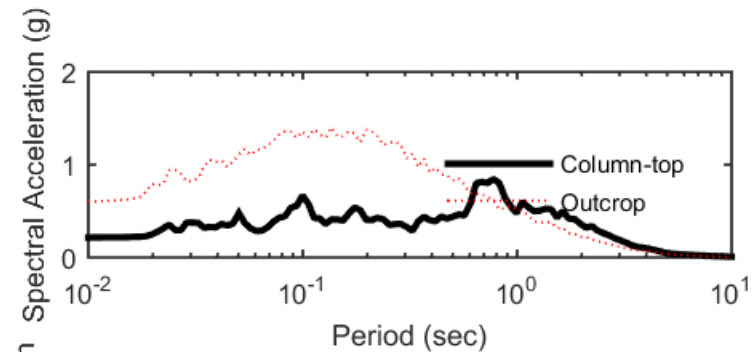
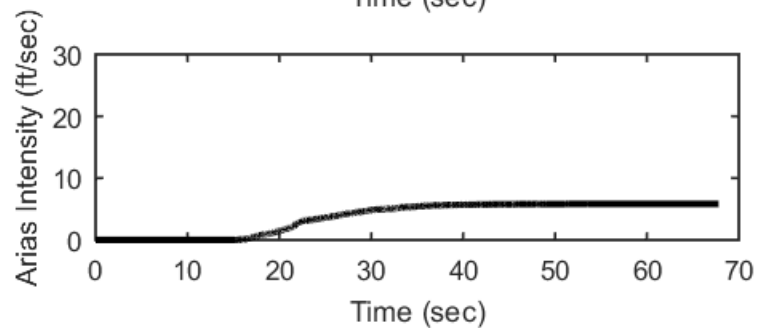
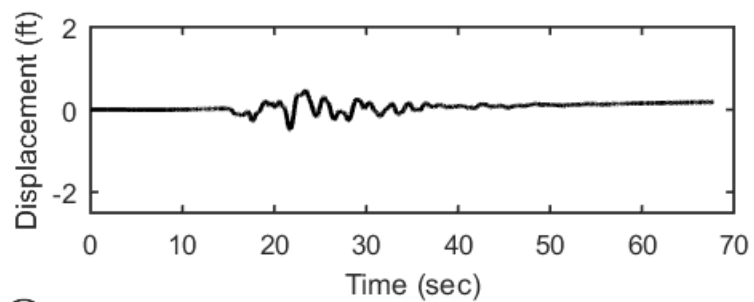
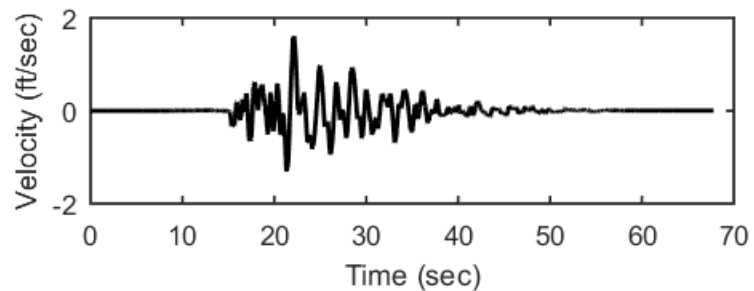
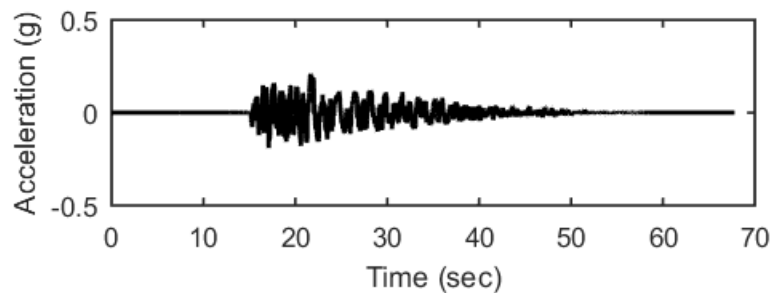
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with SEE6



# Profile outputs for: PWP Generation-35 Percent Fines with SEE6

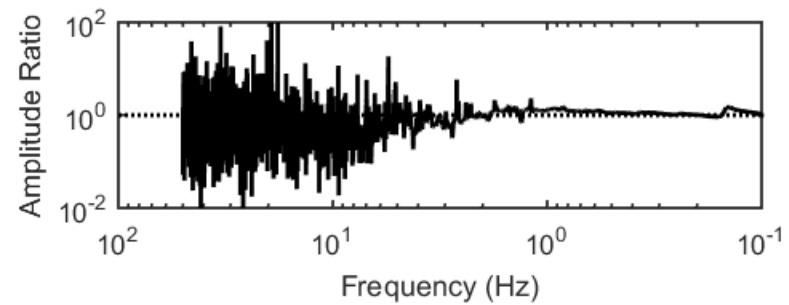
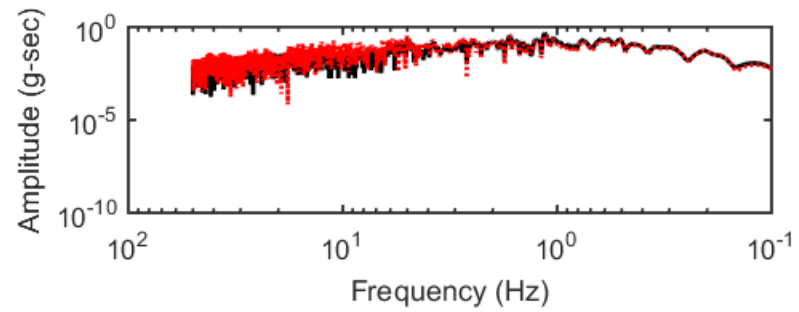
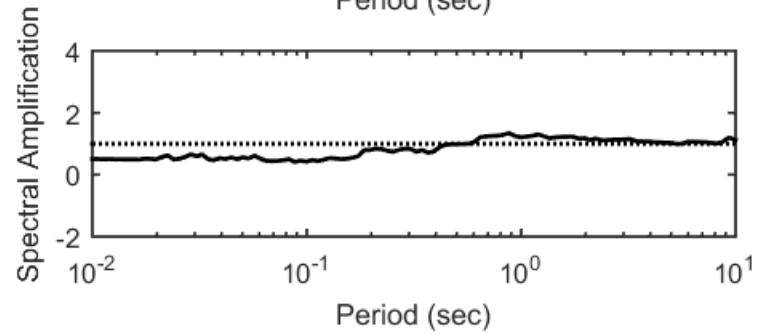
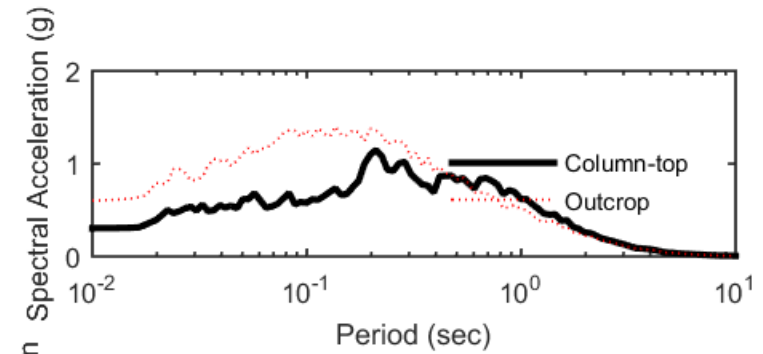
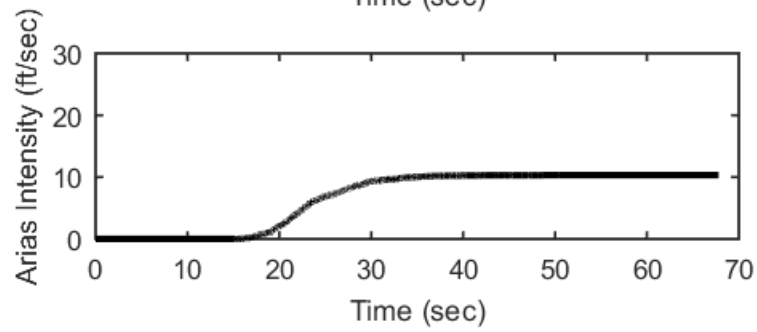
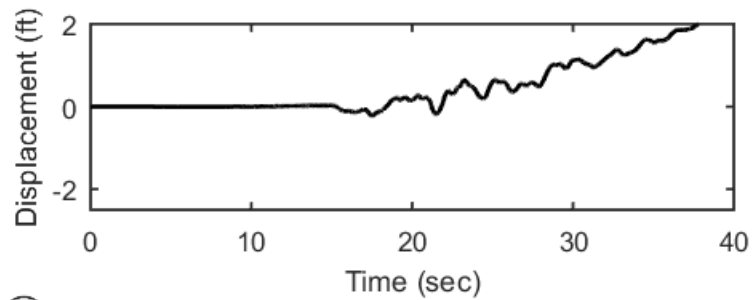
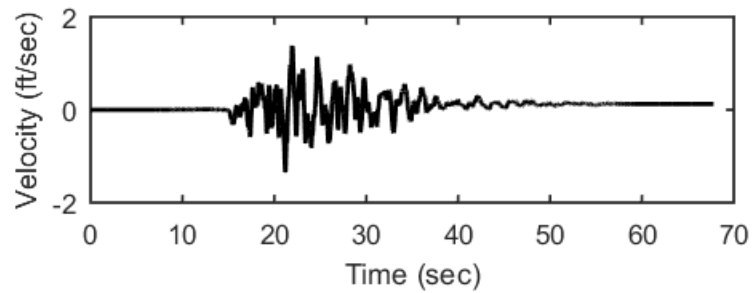
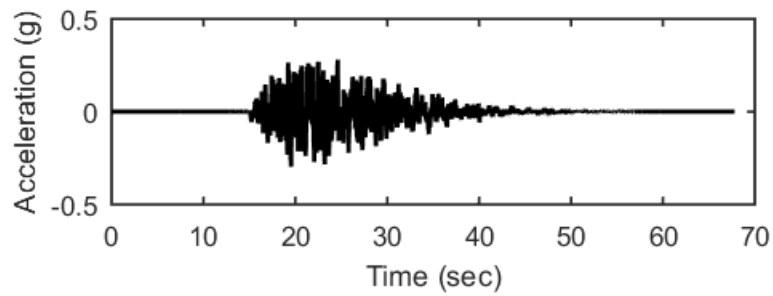


## Outputs at Ground Surface for: PWP Generation-35 Percent Fines with SEE7

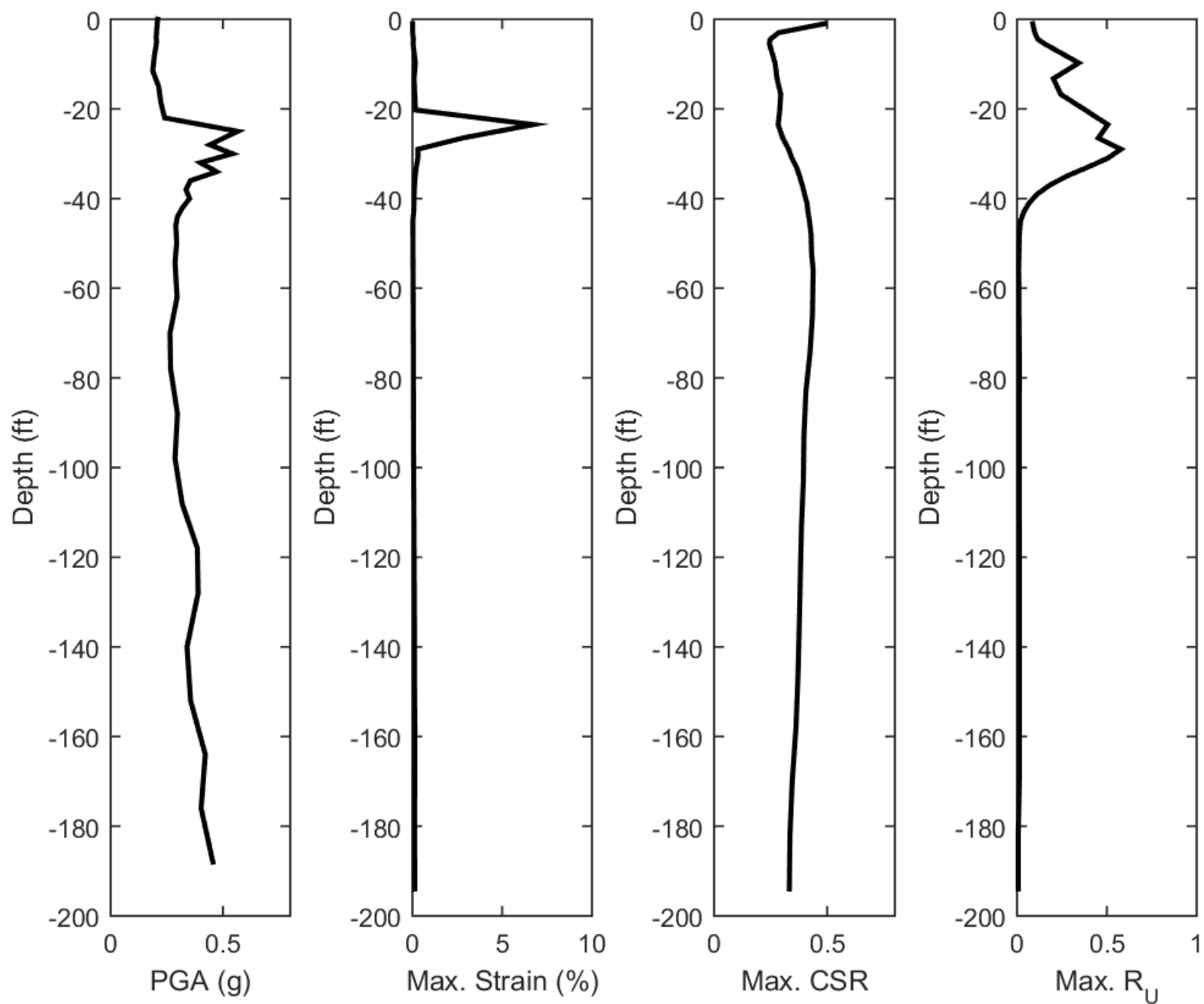




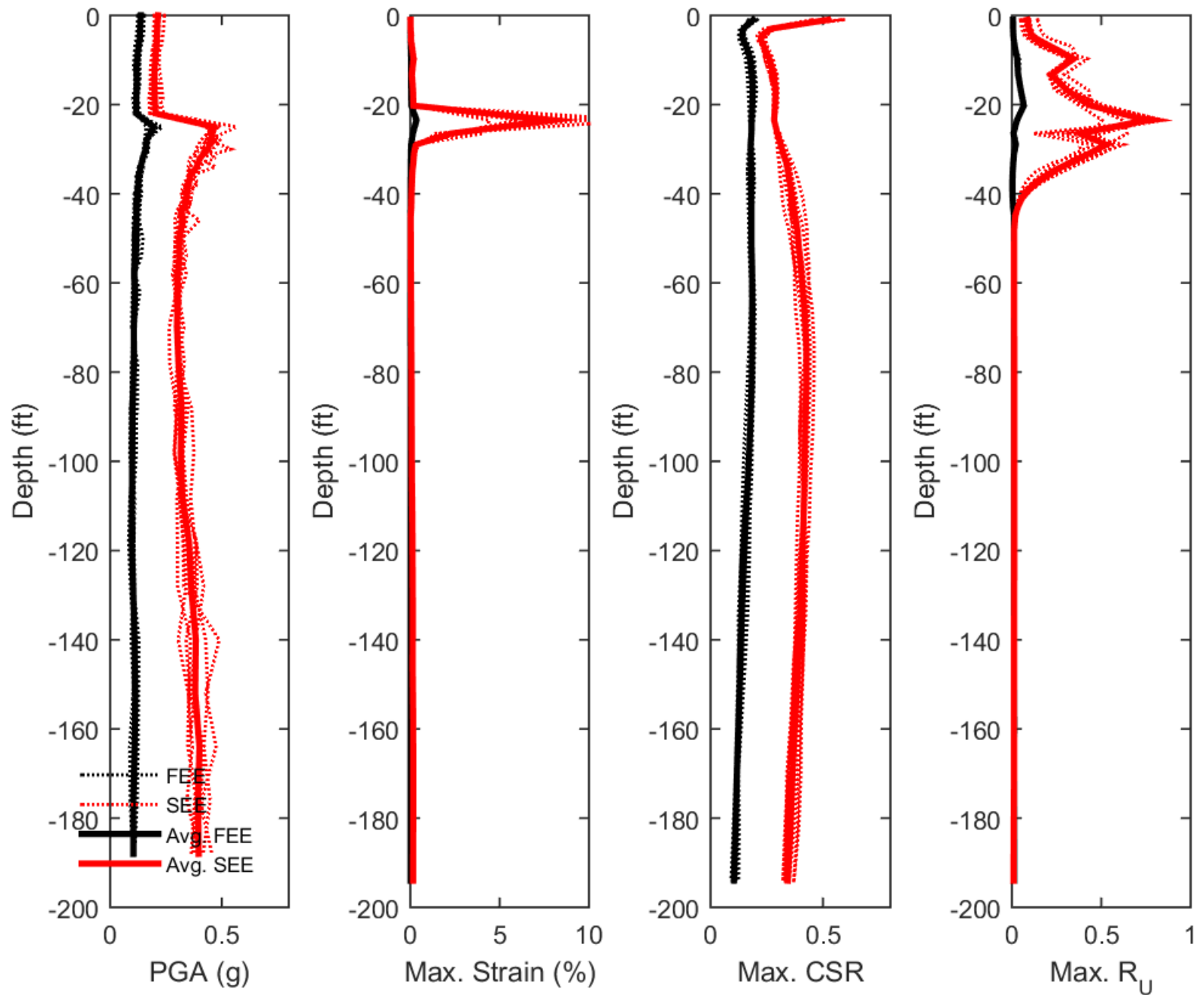
## Outputs at Top of Marl for: PWP Generation-35 Percent Fines with SEE7



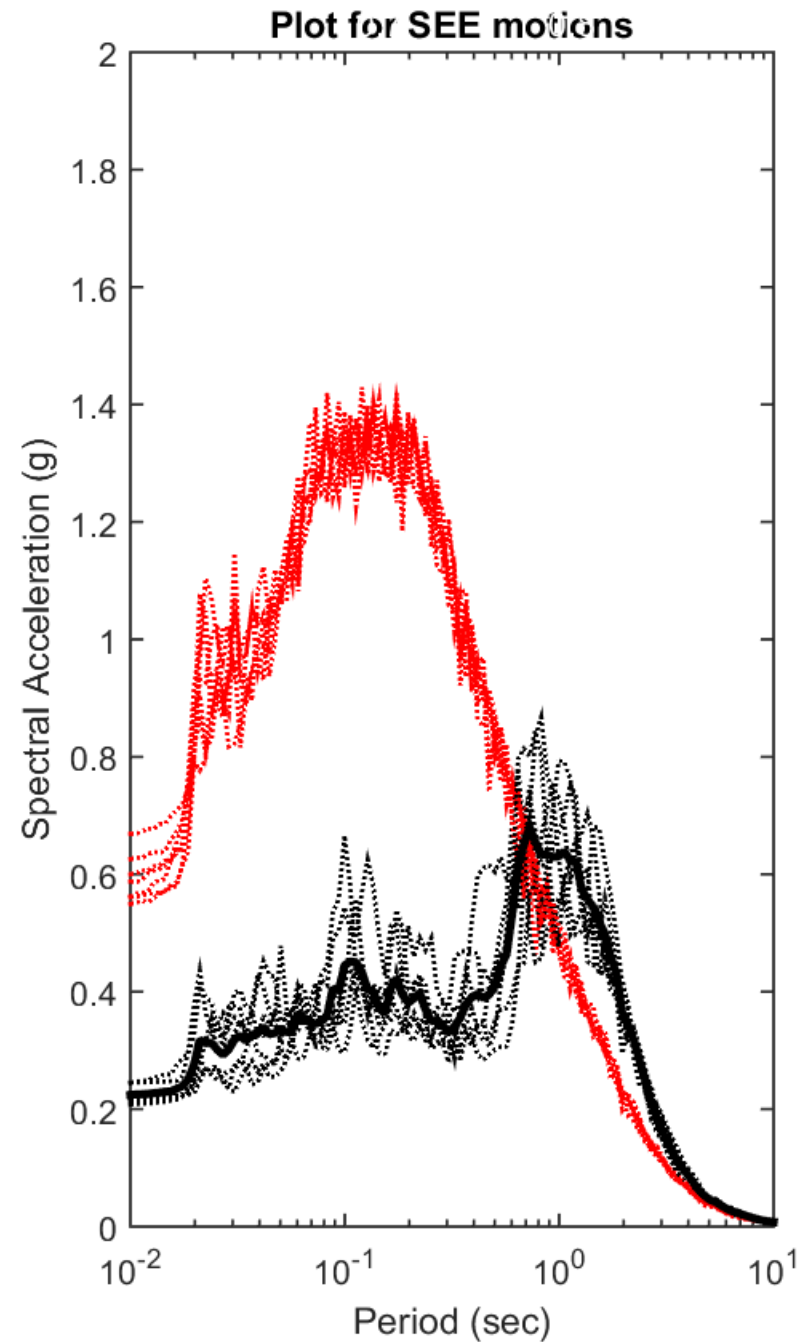
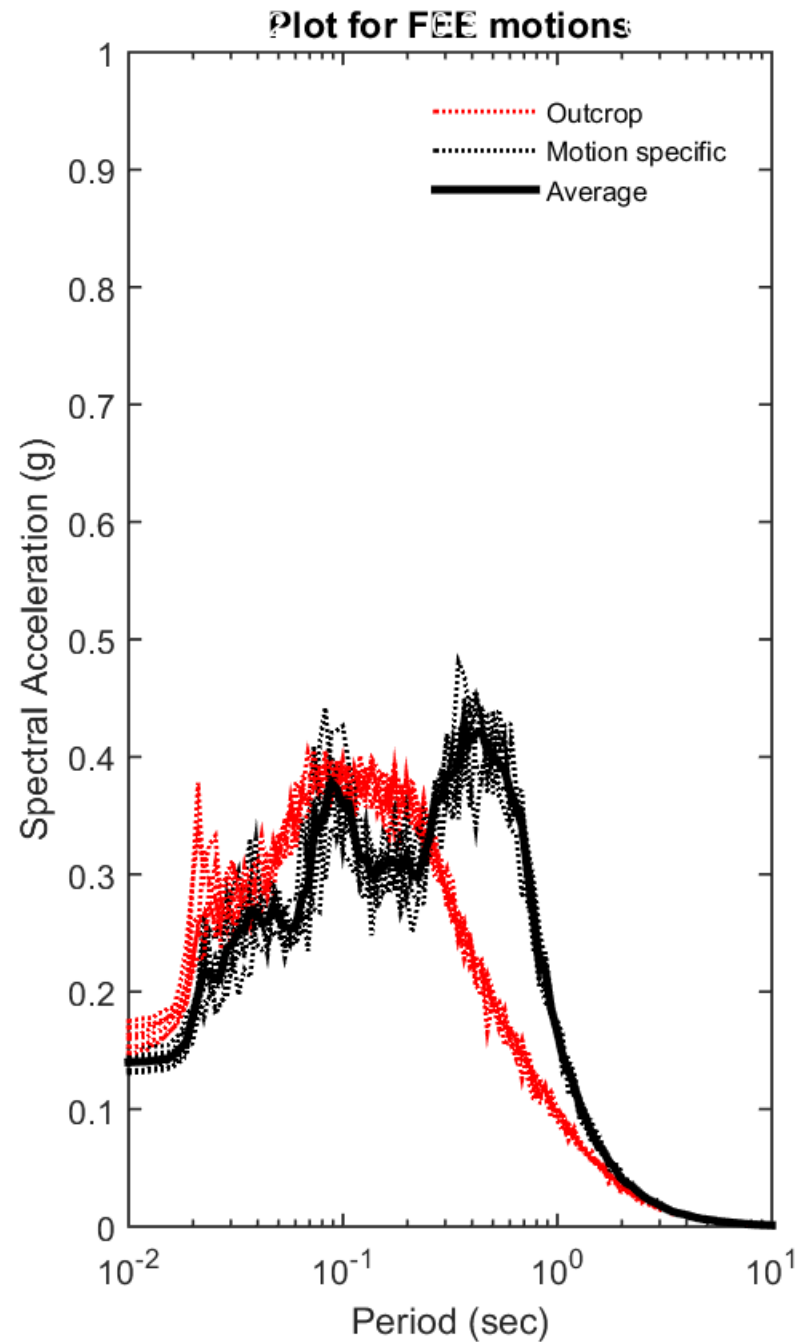
# Profile outputs for: PWP Generation-35 Percent Fines with SEE7



# Summary of profile outputs for: PWP Generation-35 Percent Fines

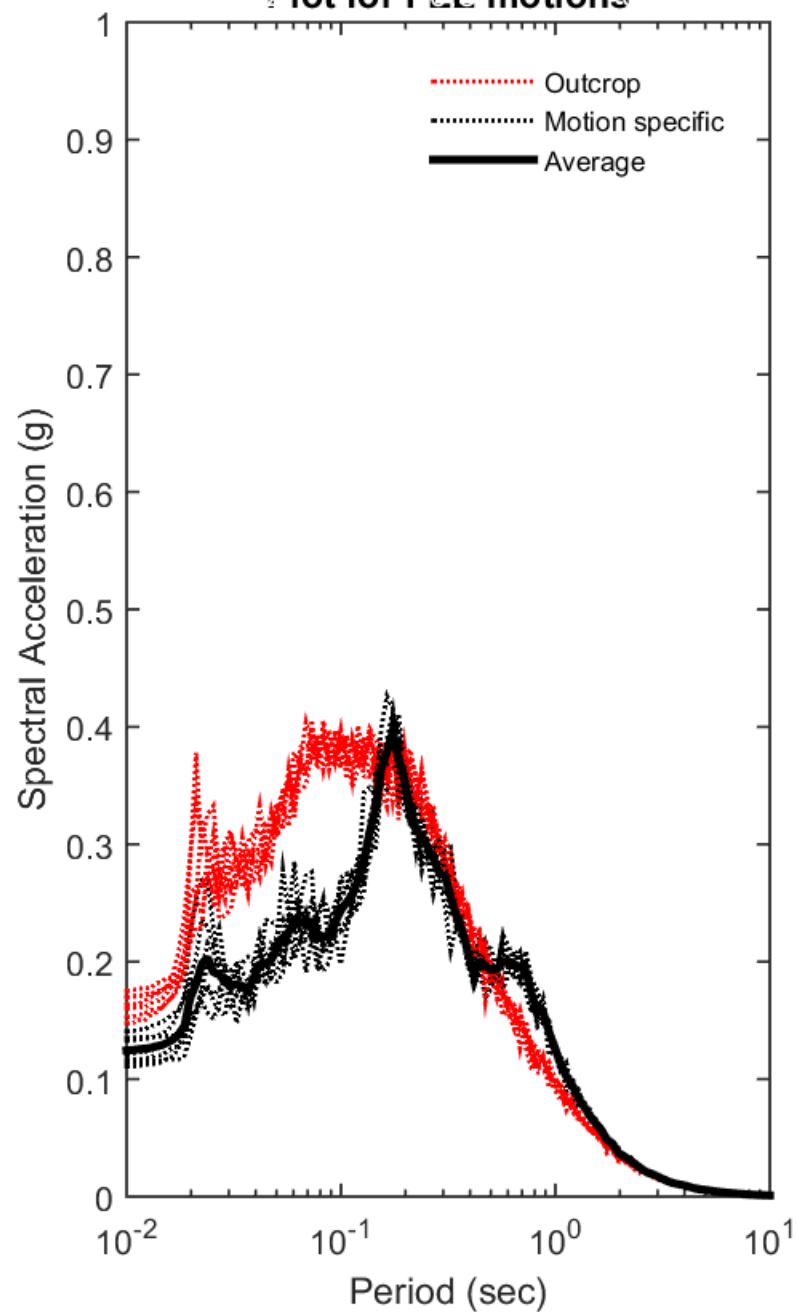


## Summary plots of RSA at ground surface for: PWP Generation-35 Percent Fines

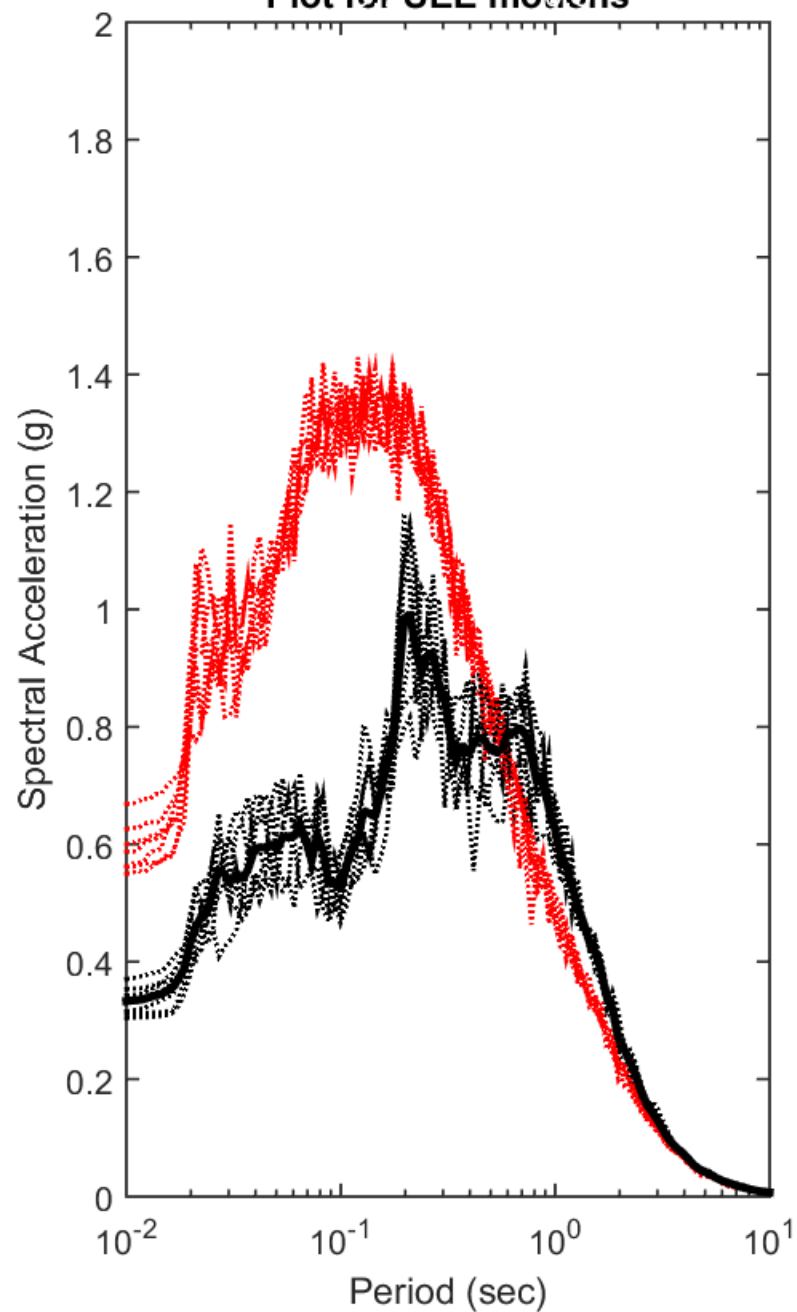


# Summary plots of RSA at top of Marl for: PWP Generation-35 Percent Fines

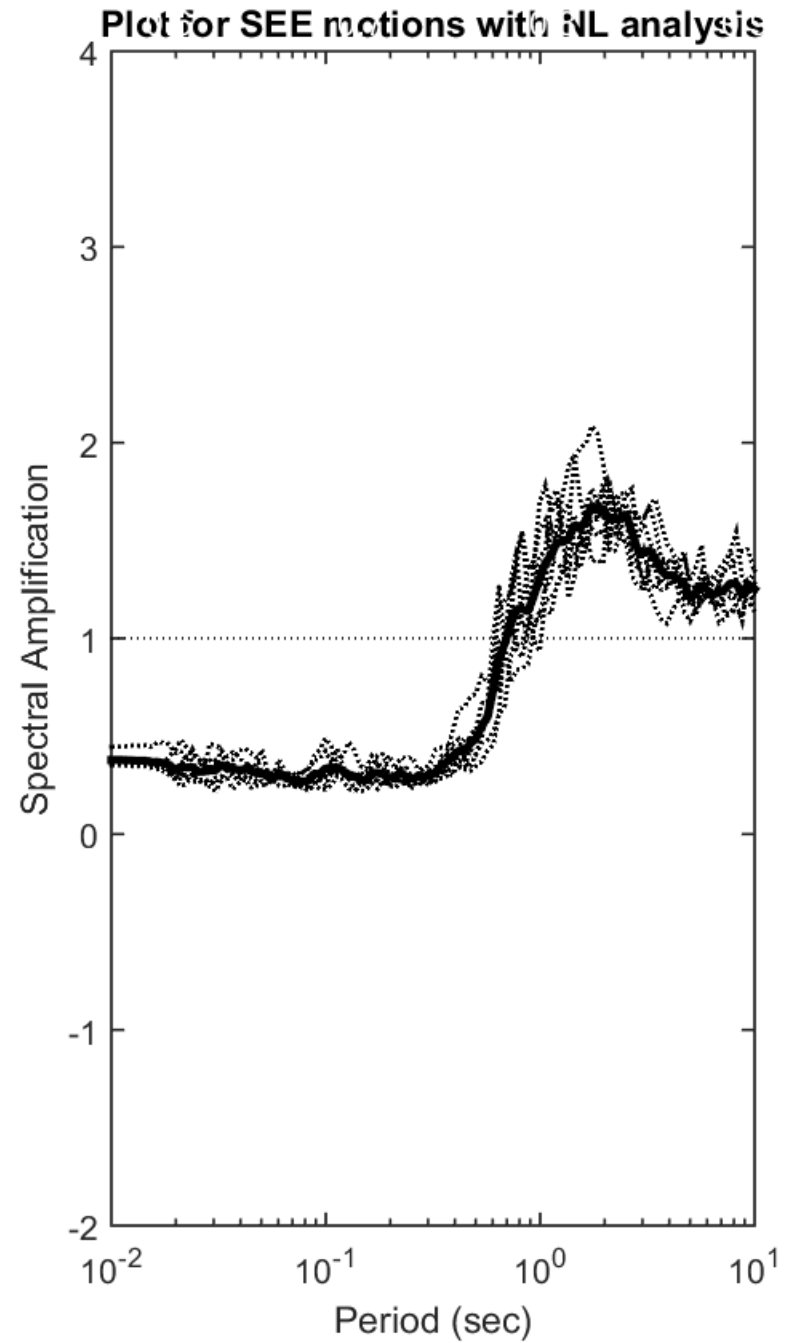
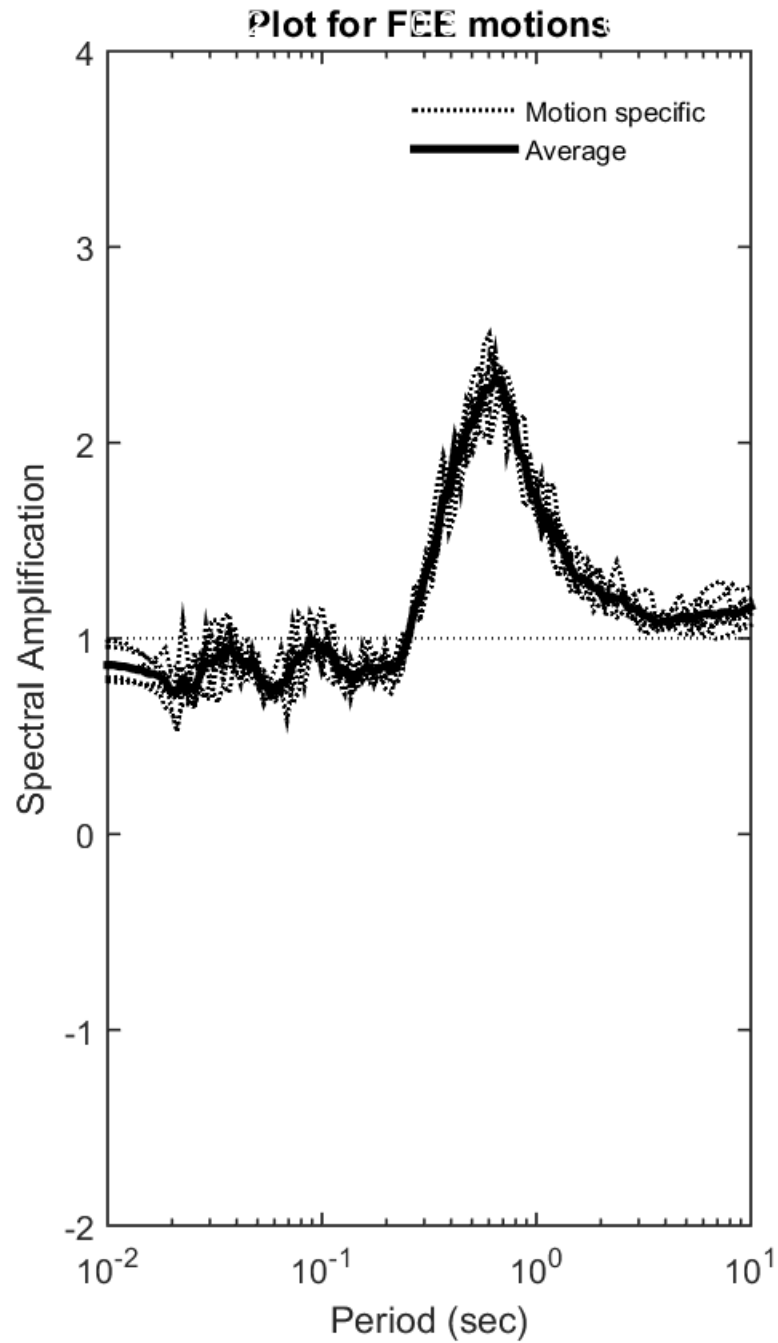
## Plot for FEE motions:



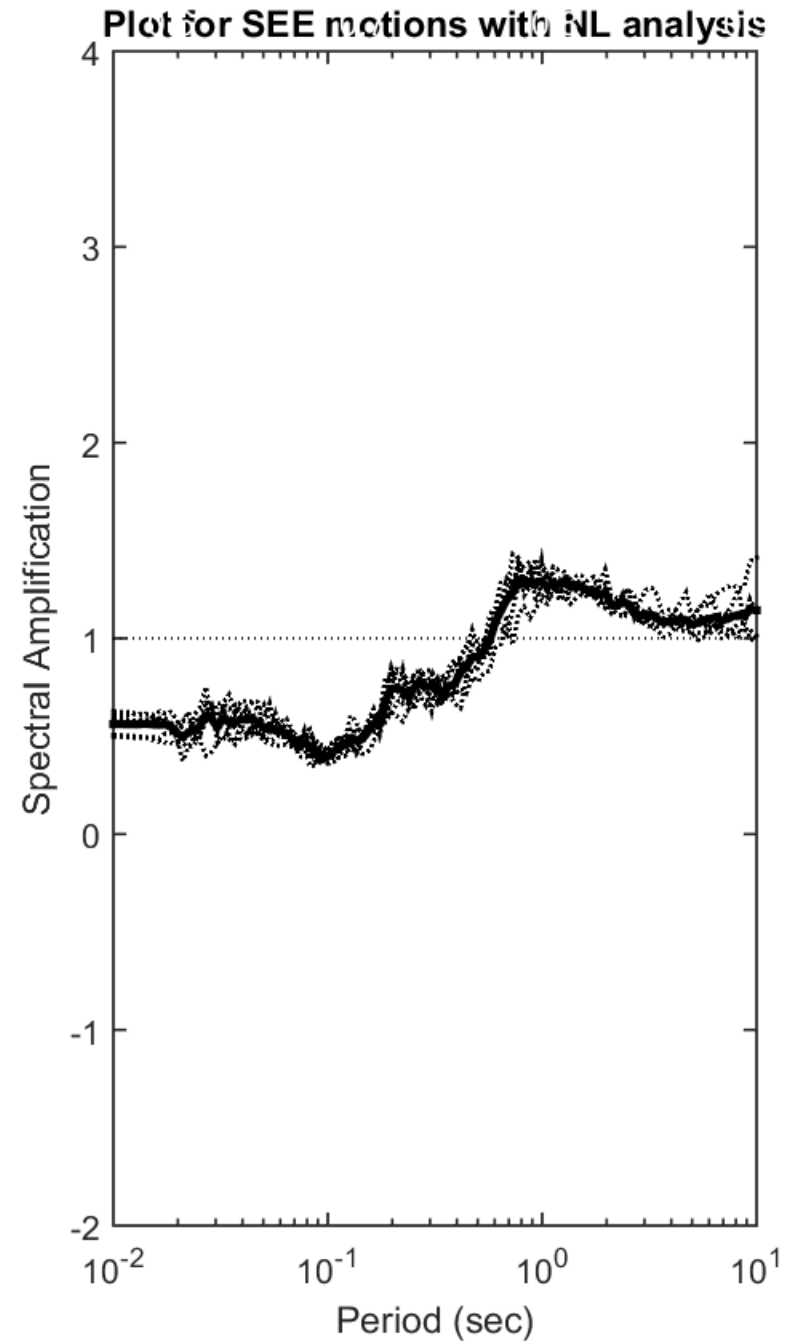
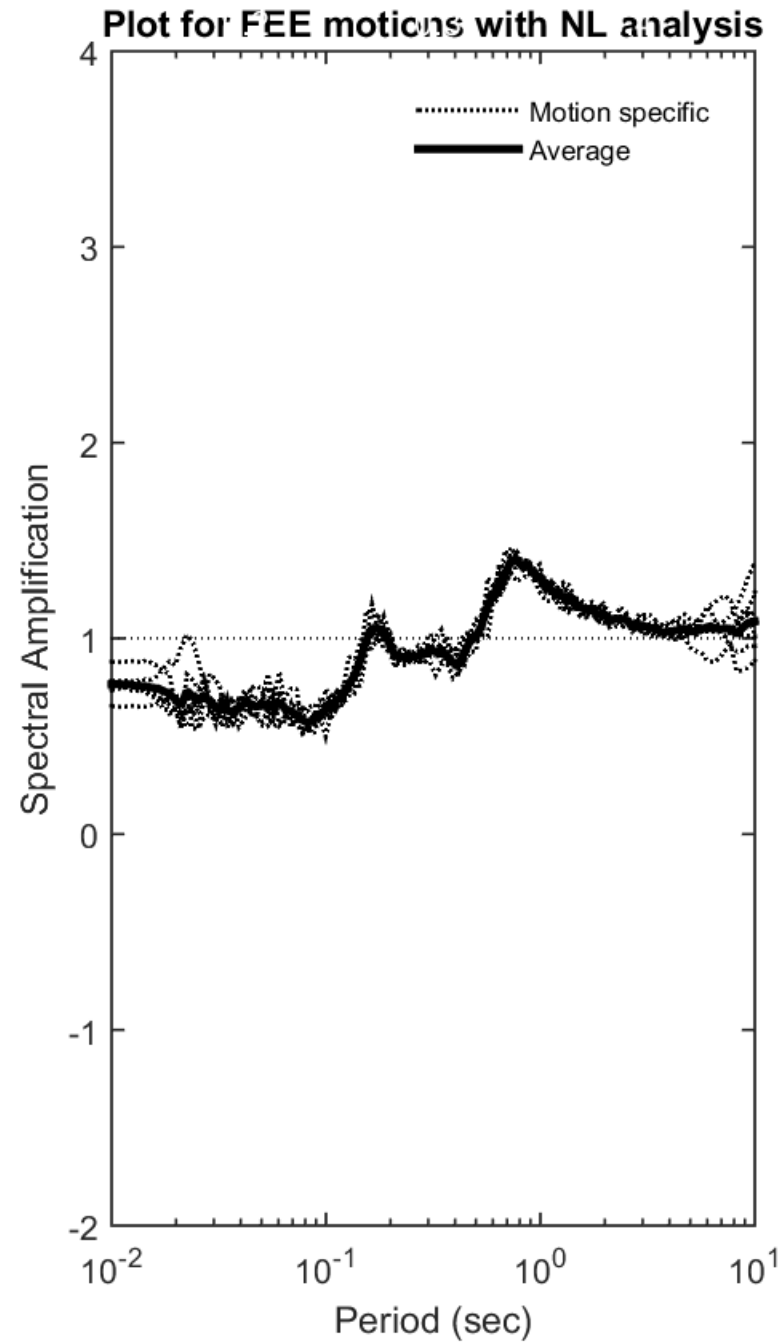
## Plot for SEE motions:



# Summary plots of Spectral amplifications at ground surface for: PWP Generation-35 Percent Fines



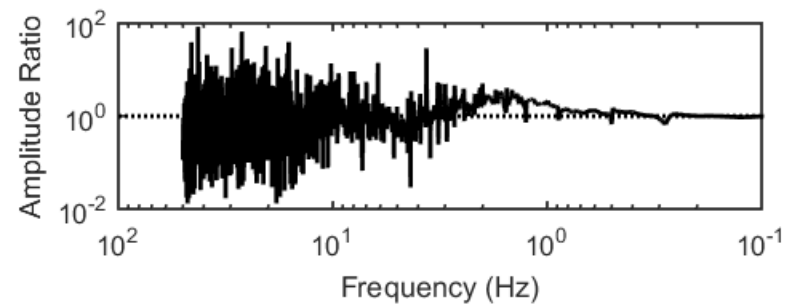
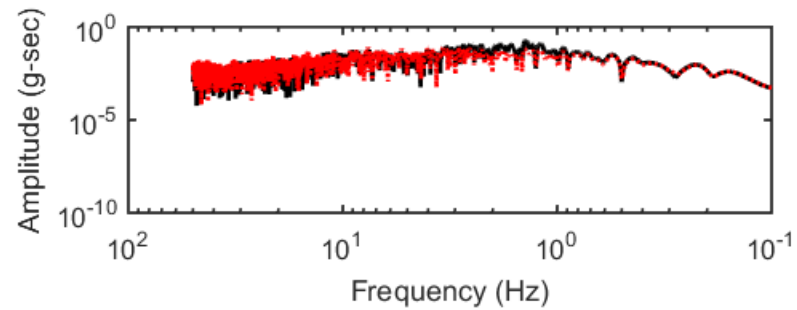
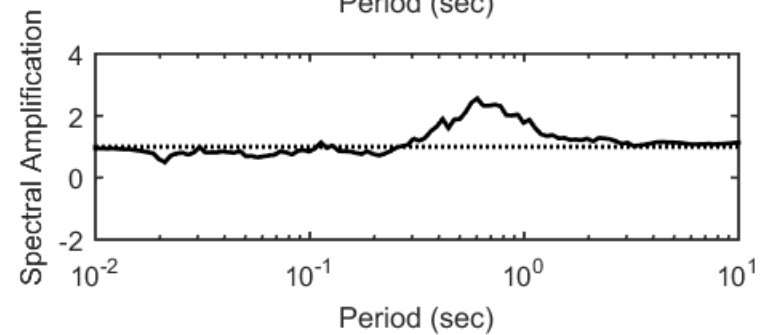
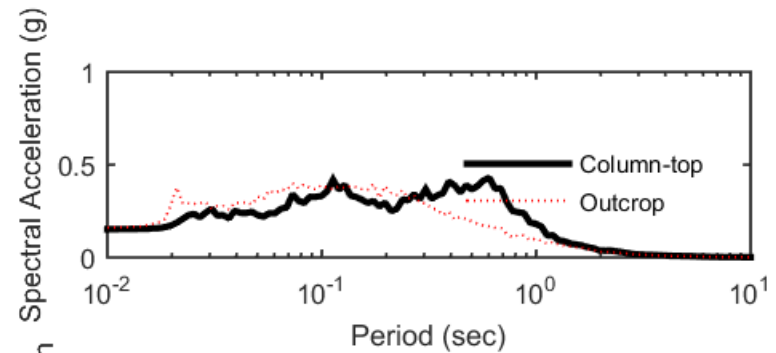
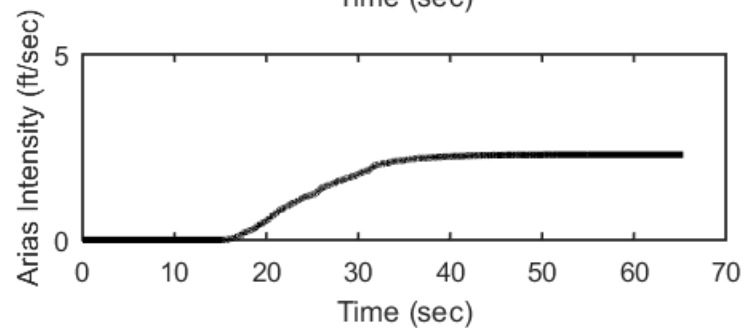
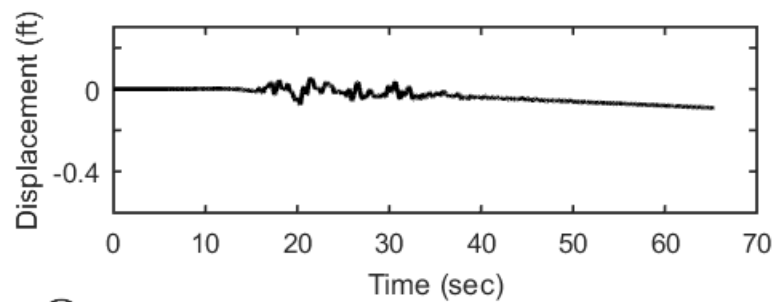
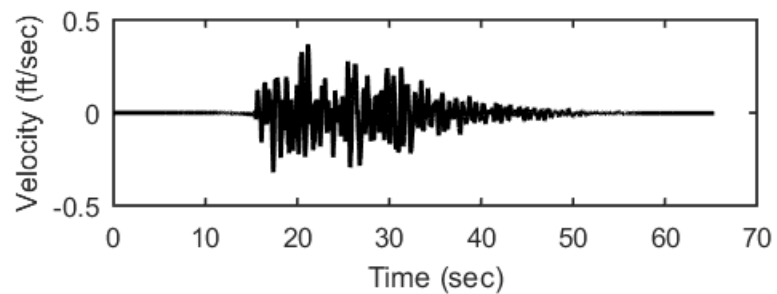
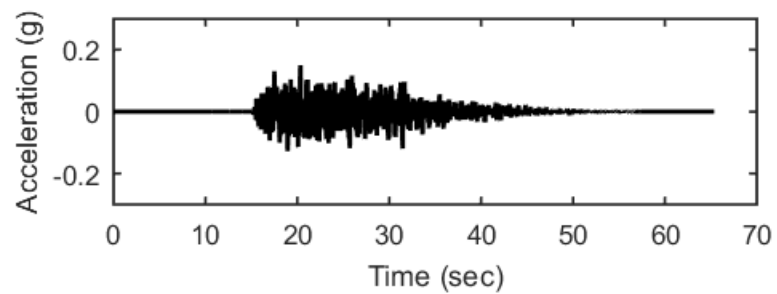
# Summary plots of Spectral amplifications at top of Marl for: PWP Generation-35 Percent Fines



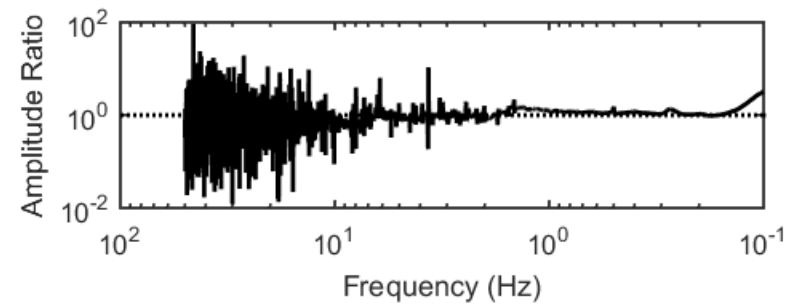
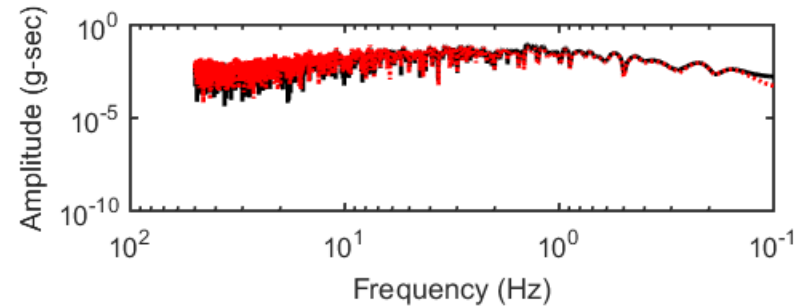
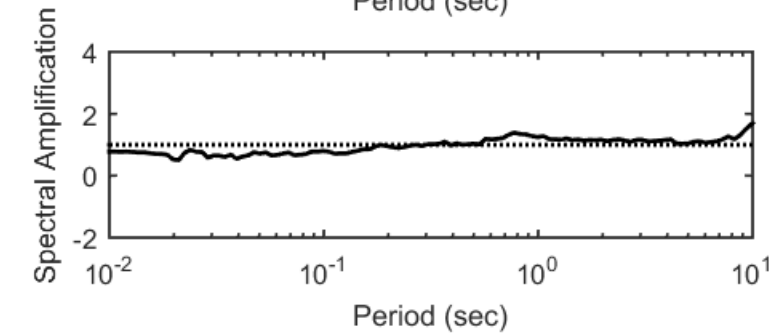
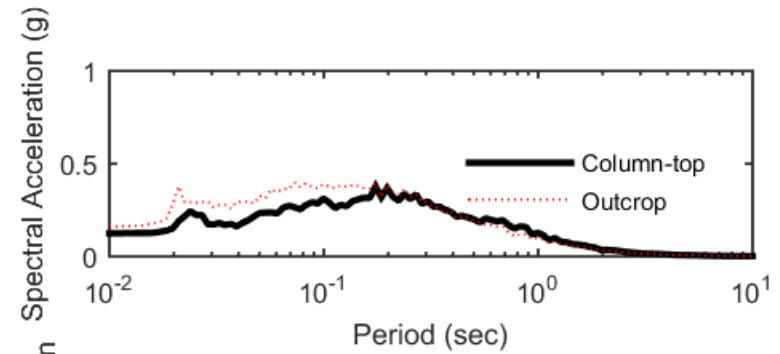
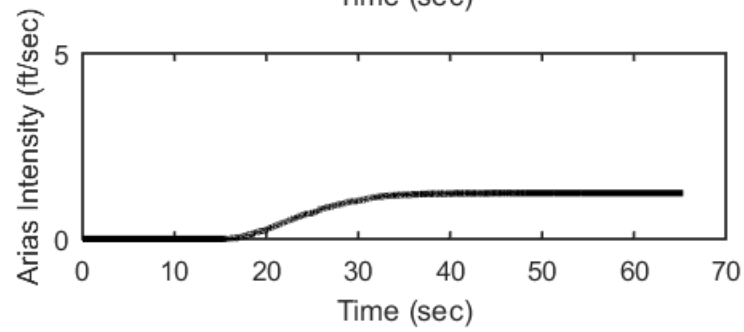
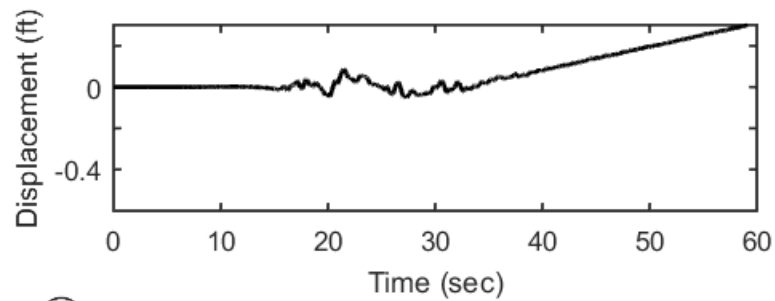
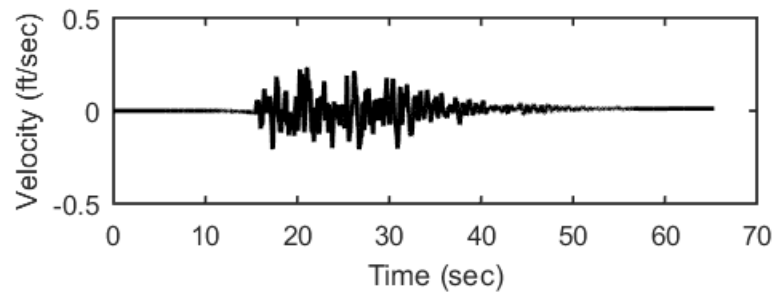
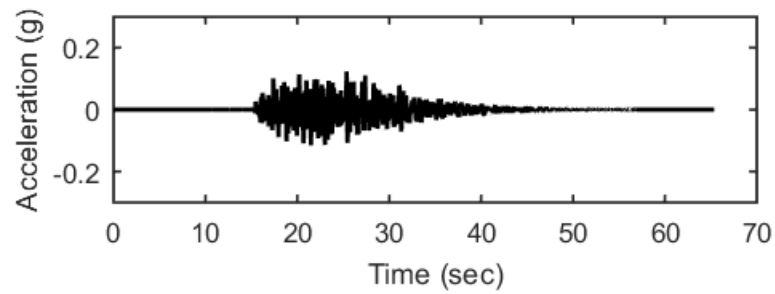
**PWP GENERATION**  
**200 FT – LOW SHEAR WAVE MODEL**



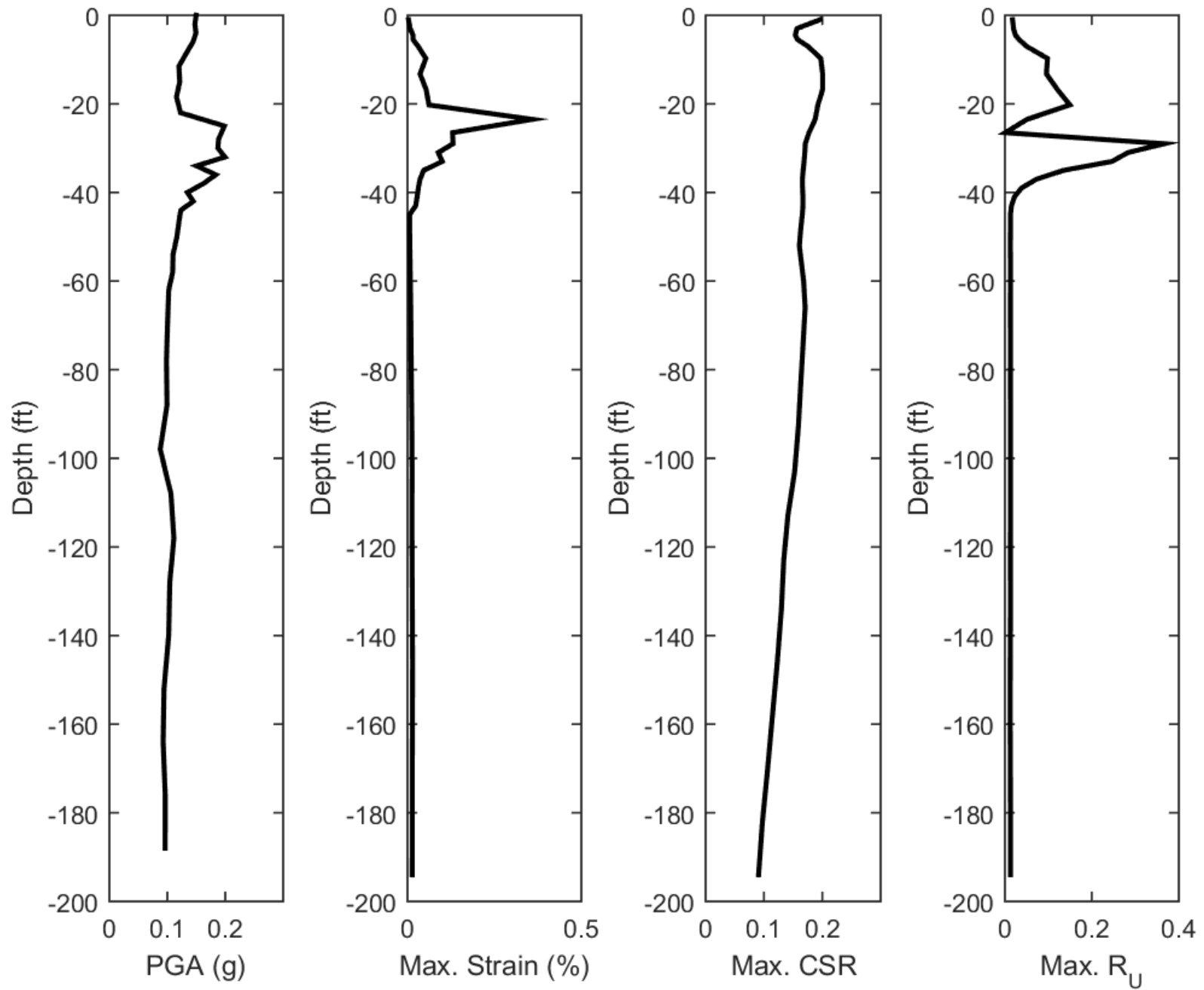
## Outputs at Ground Surface for: PWP Generation-Low Vs with FEE1



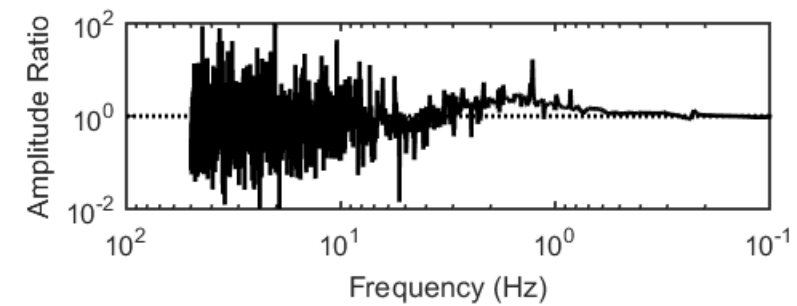
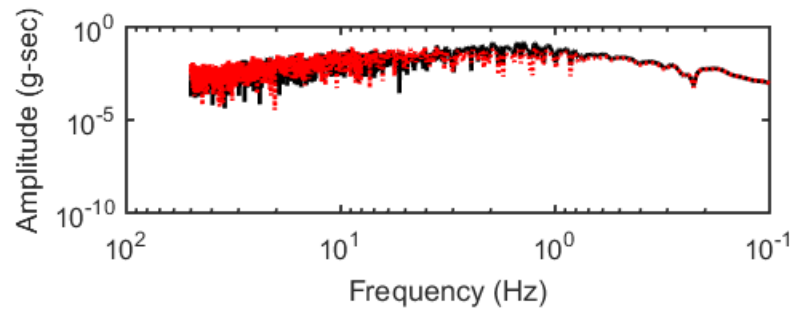
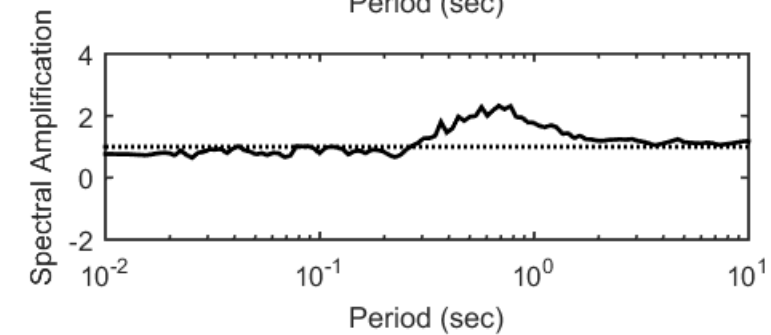
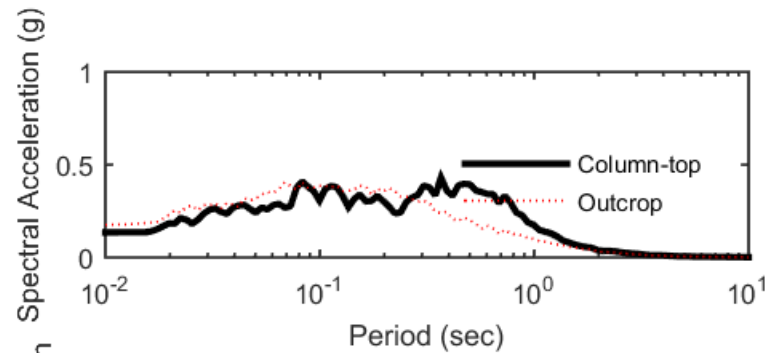
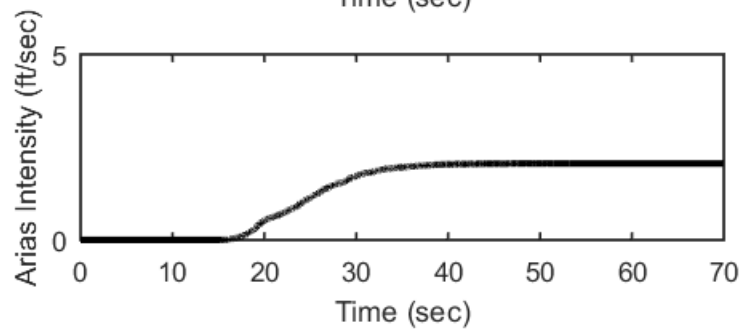
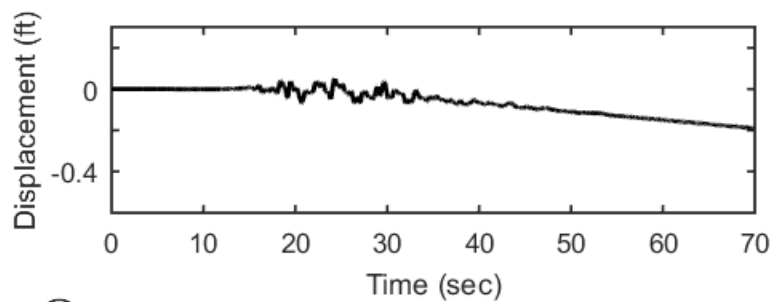
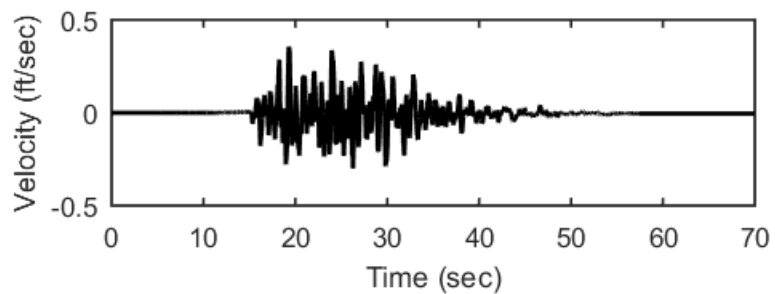
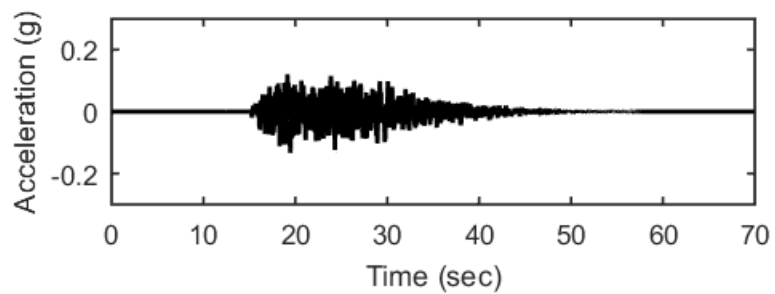
## Outputs at Top of Marl for: PWP Generation-Low Vs with FEE1



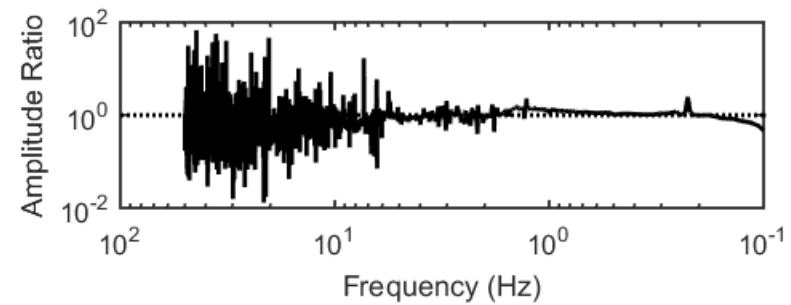
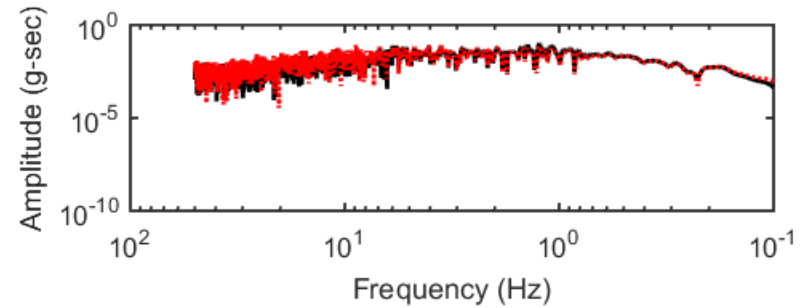
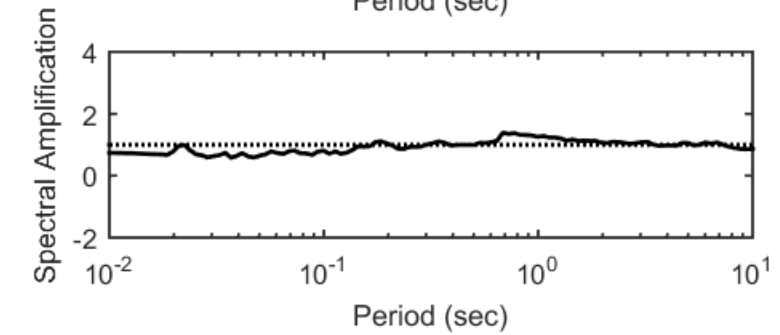
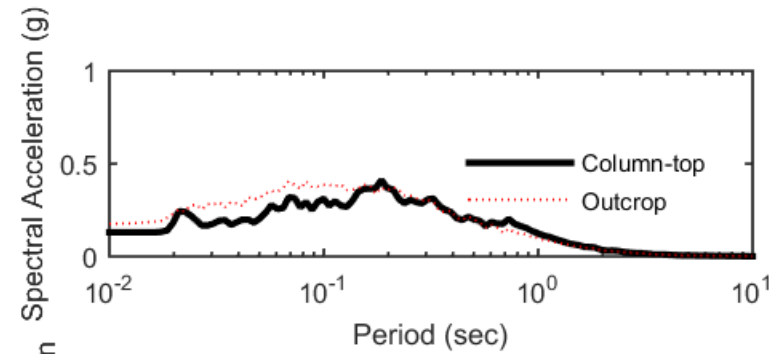
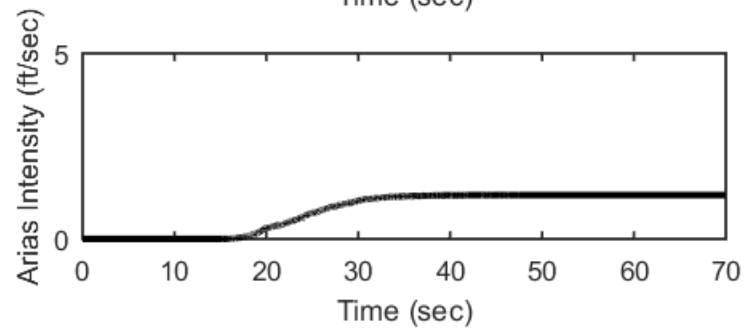
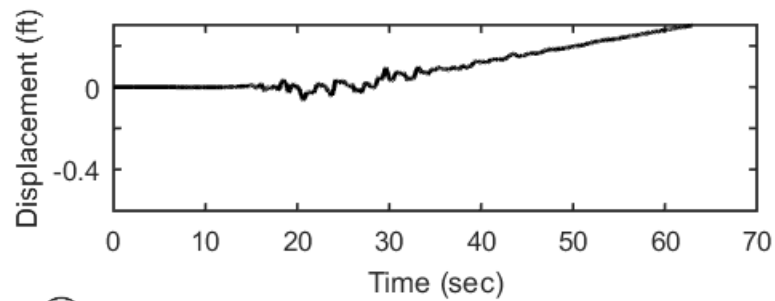
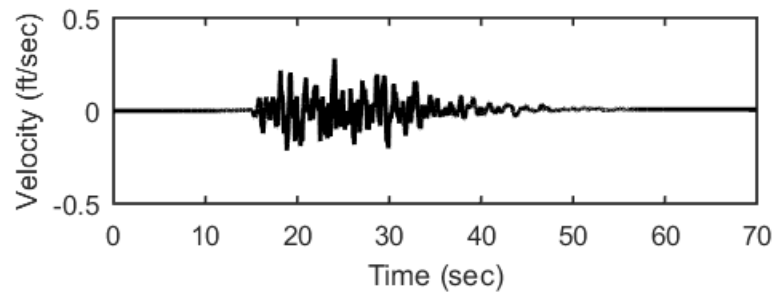
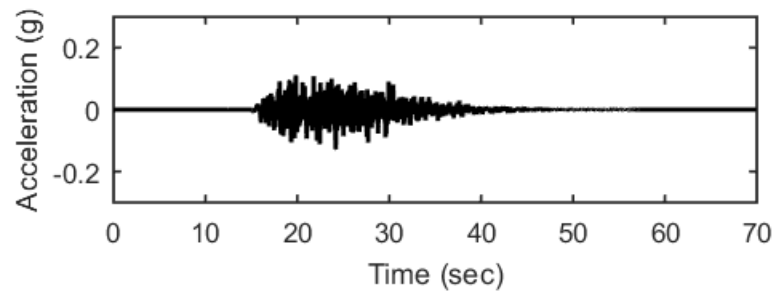
# Profile outputs for: PWP Generation-Low Vs with FEE1



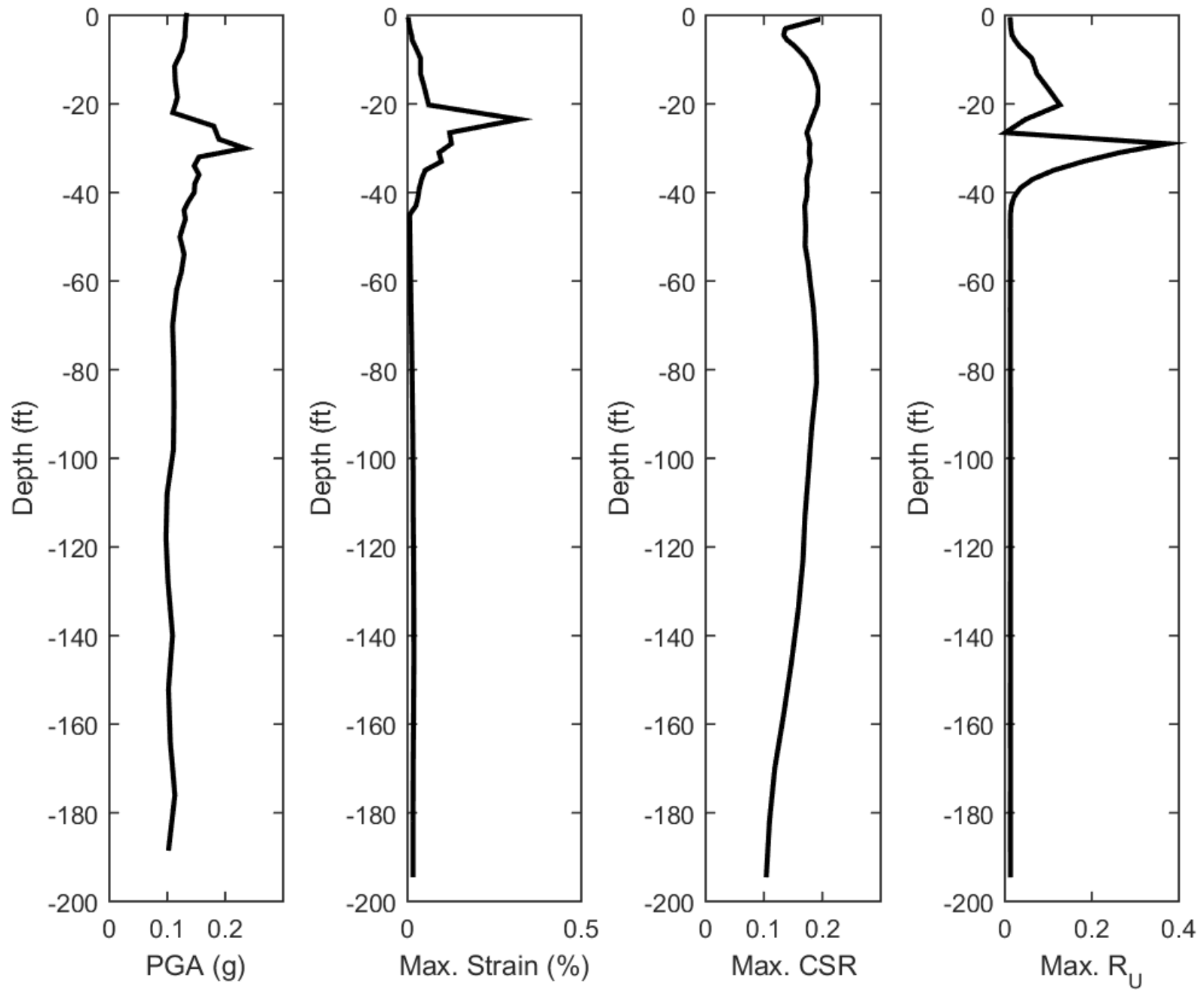
## Outputs at Ground Surface for: PWP Generation-Low Vs with FEE2



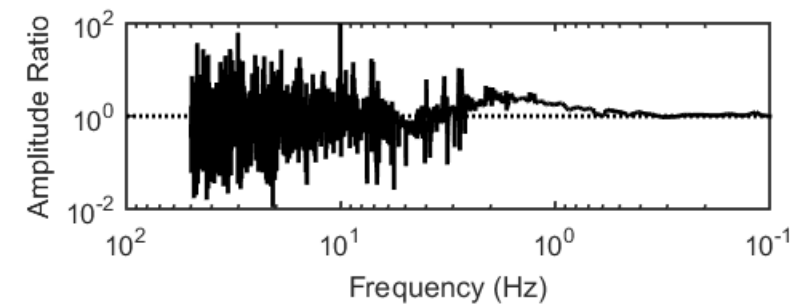
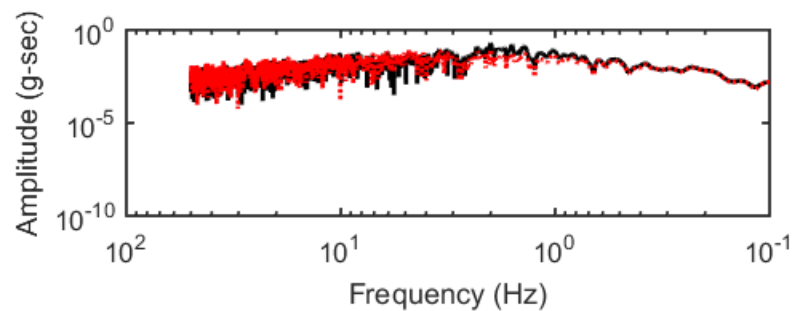
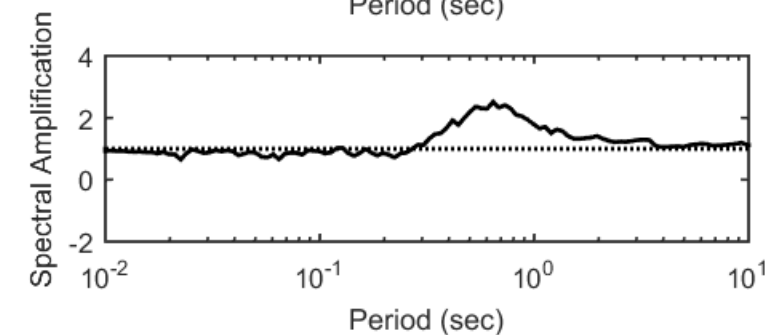
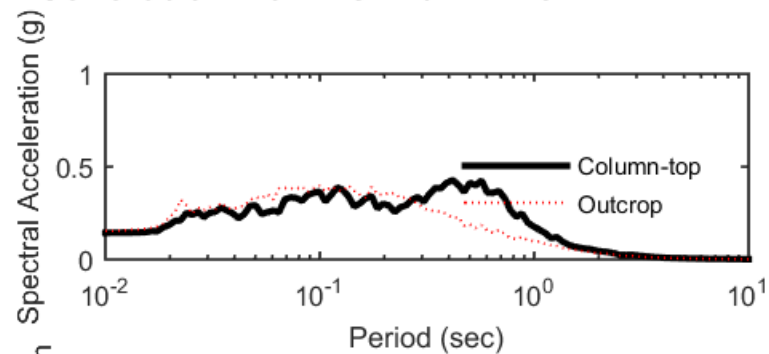
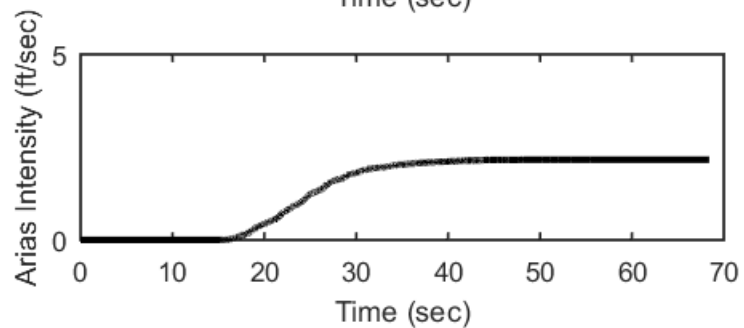
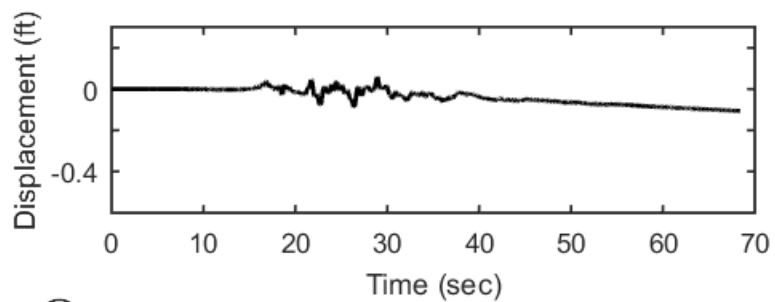
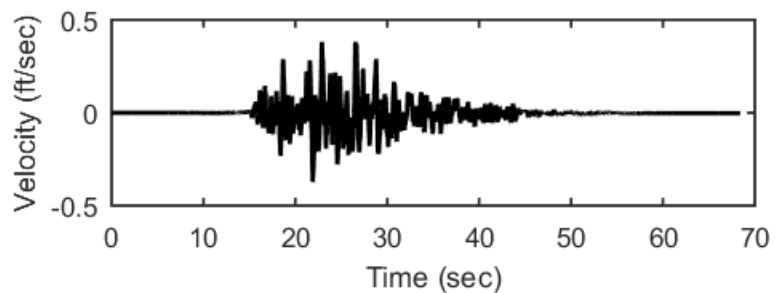
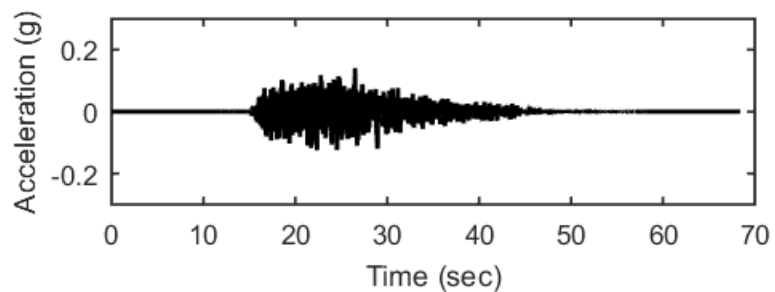
## Outputs at Top of Marl for: PWP Generation-Low Vs with FEE2



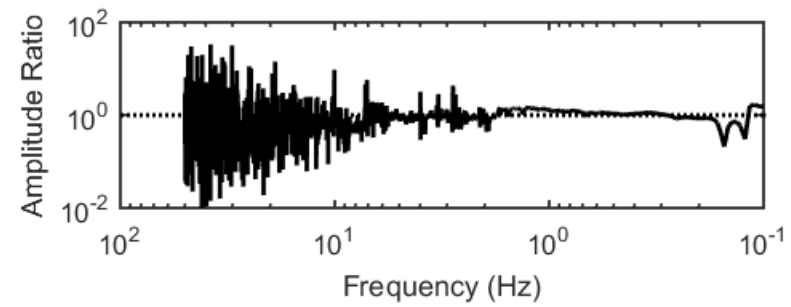
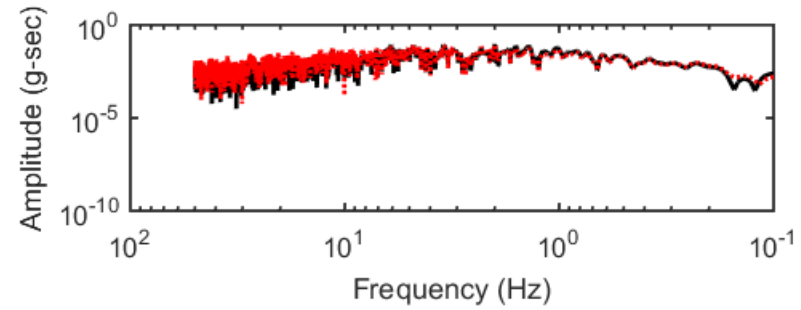
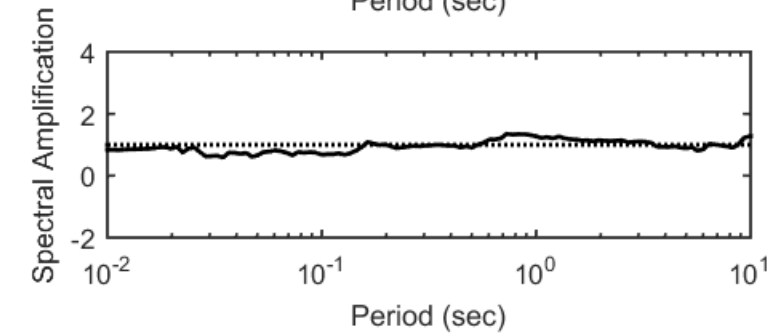
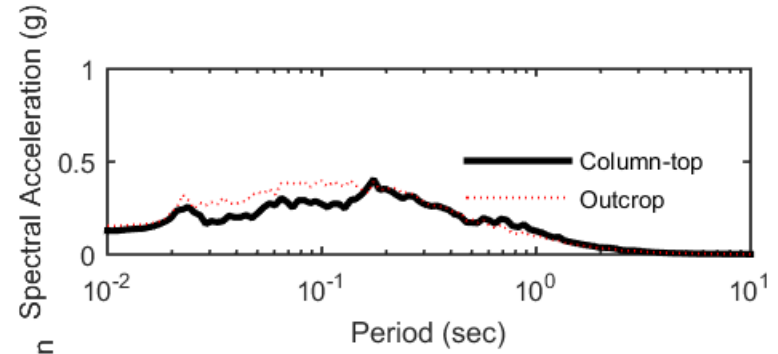
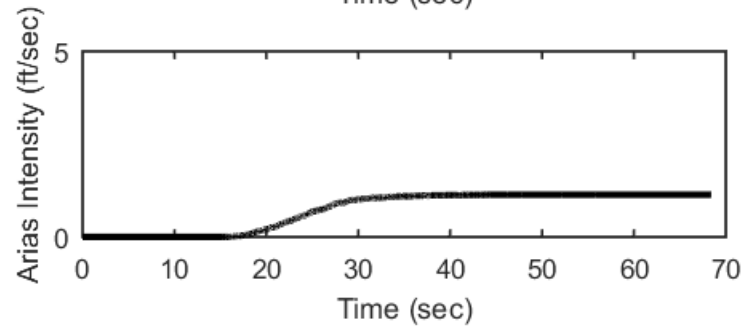
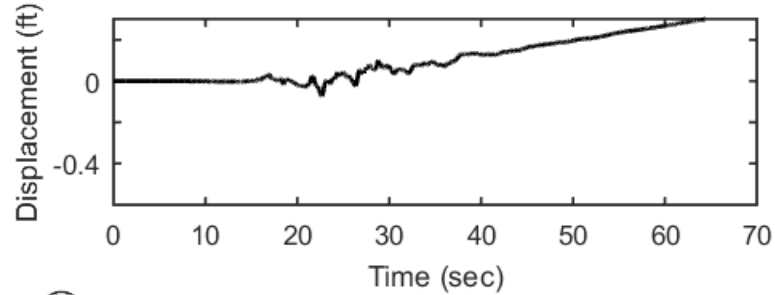
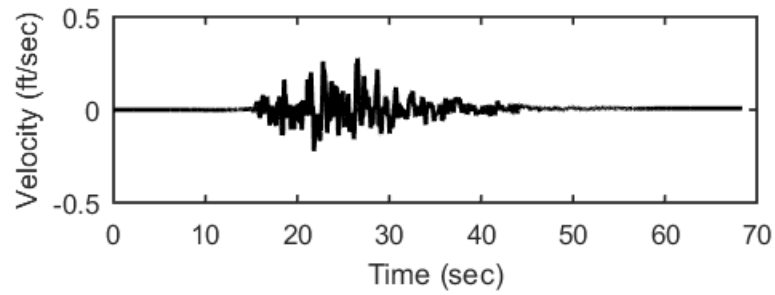
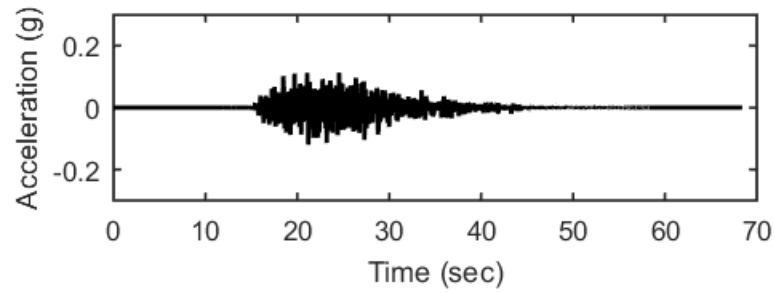
# Profile outputs for: PWP Generation-Low Vs with FEE2



## Outputs at Ground Surface for: PWP Generation-Low Vs with FEE3

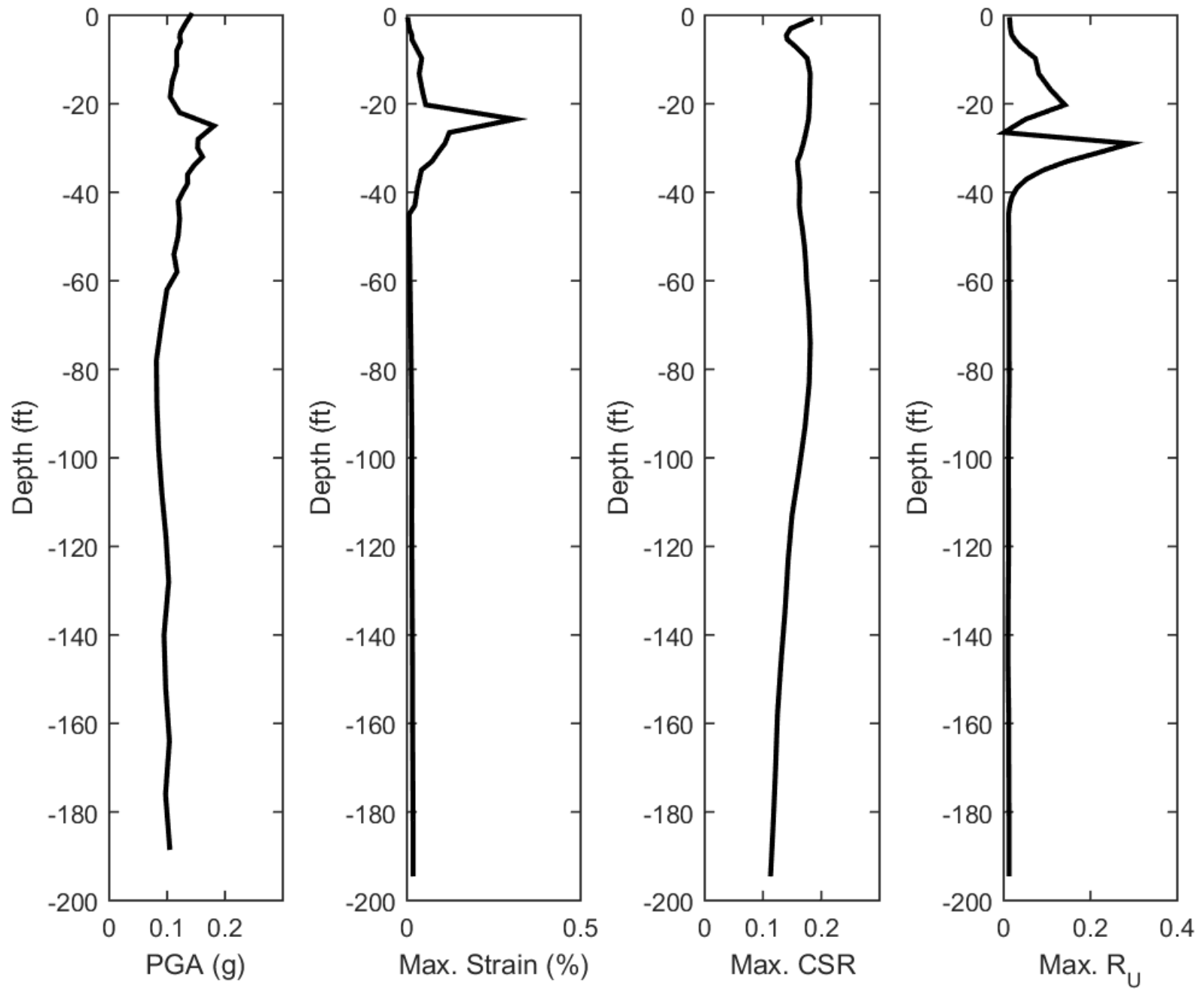


## Outputs at Top of Marl for: PWP Generation-Low Vs with FEE3

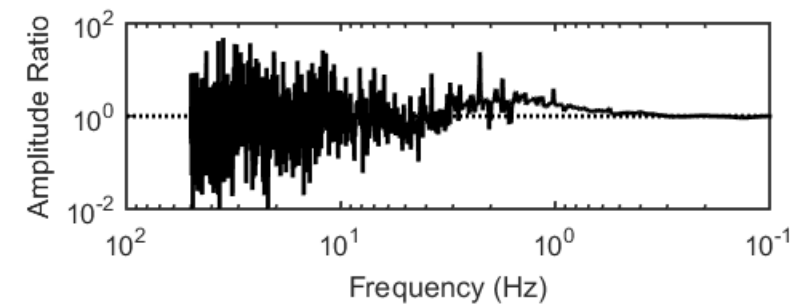
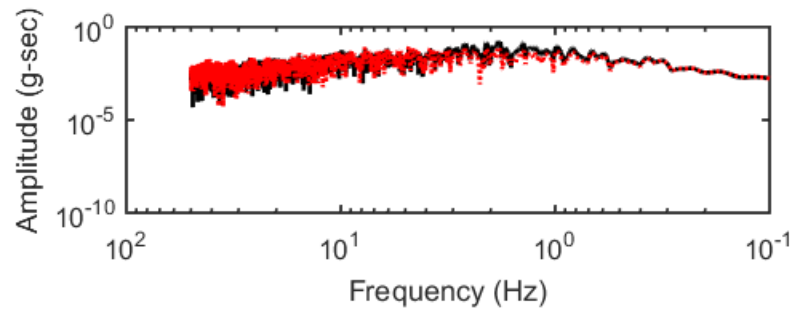
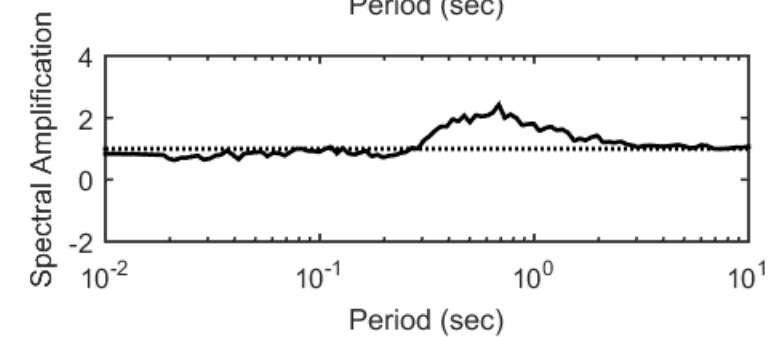
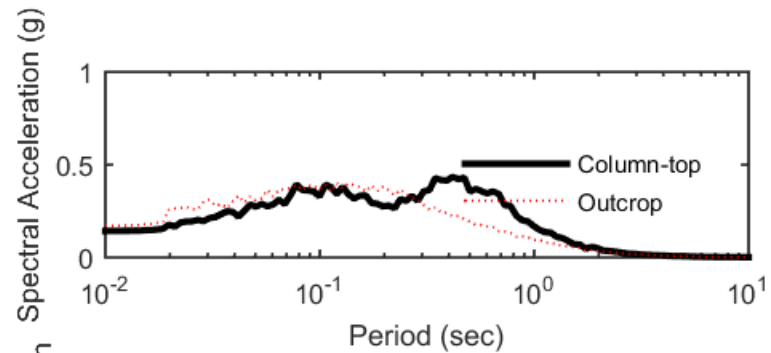
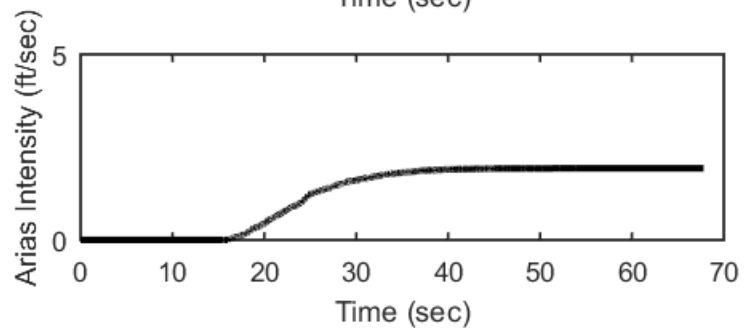
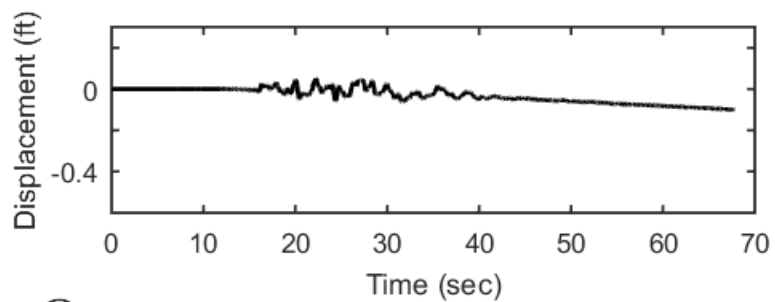
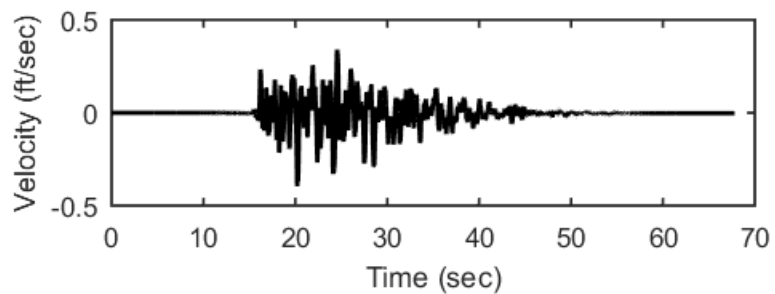
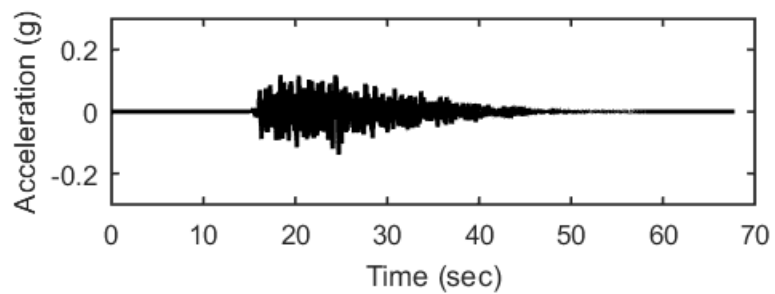




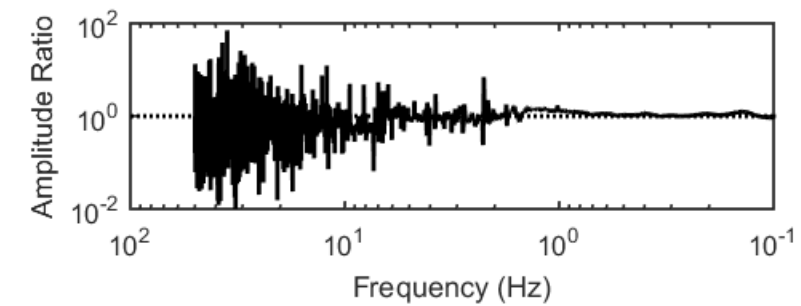
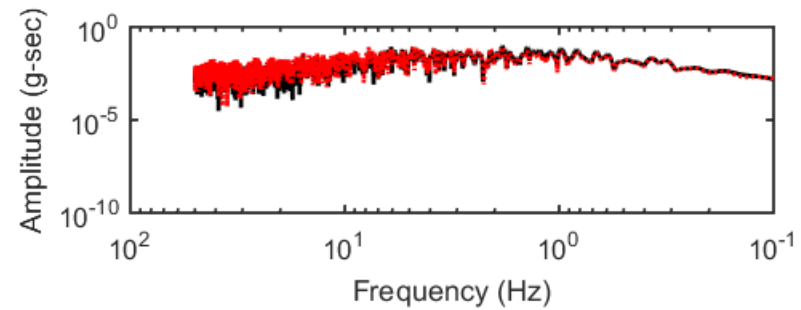
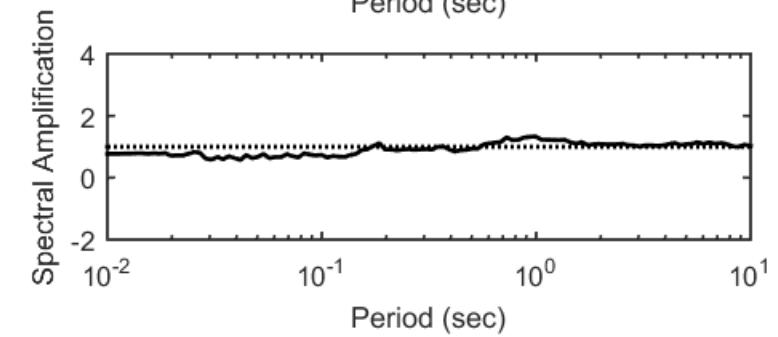
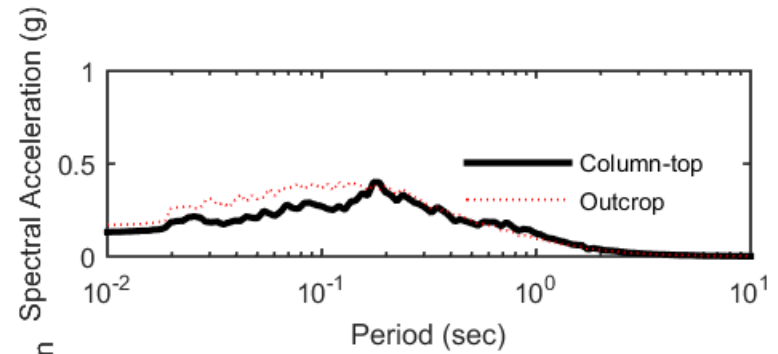
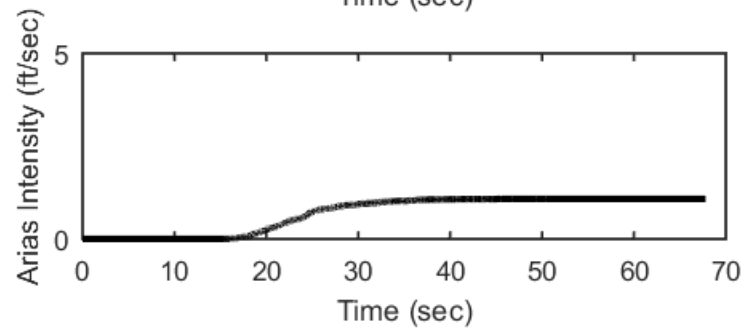
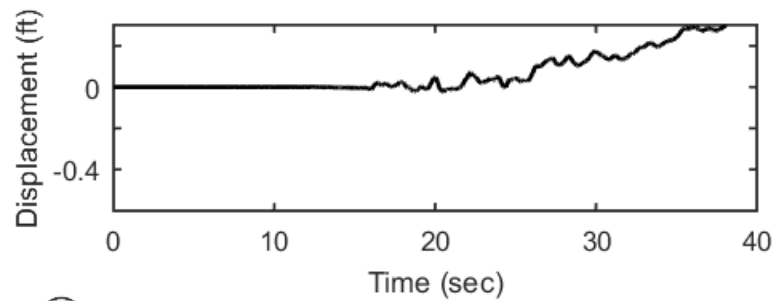
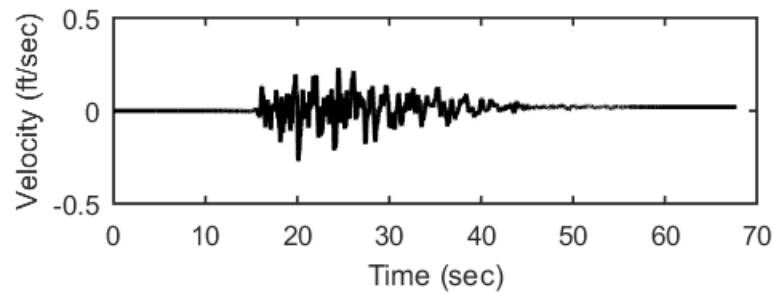
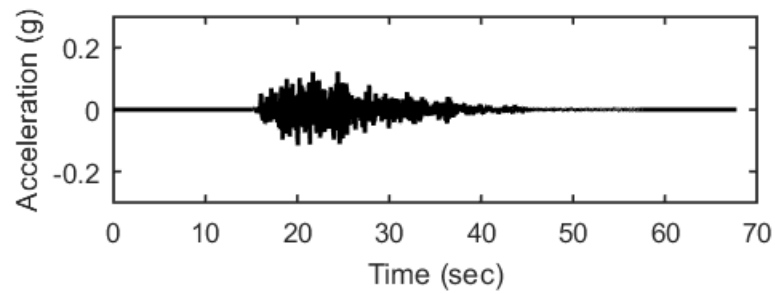
# Profile outputs for: PWP Generation-Low Vs with FEE3



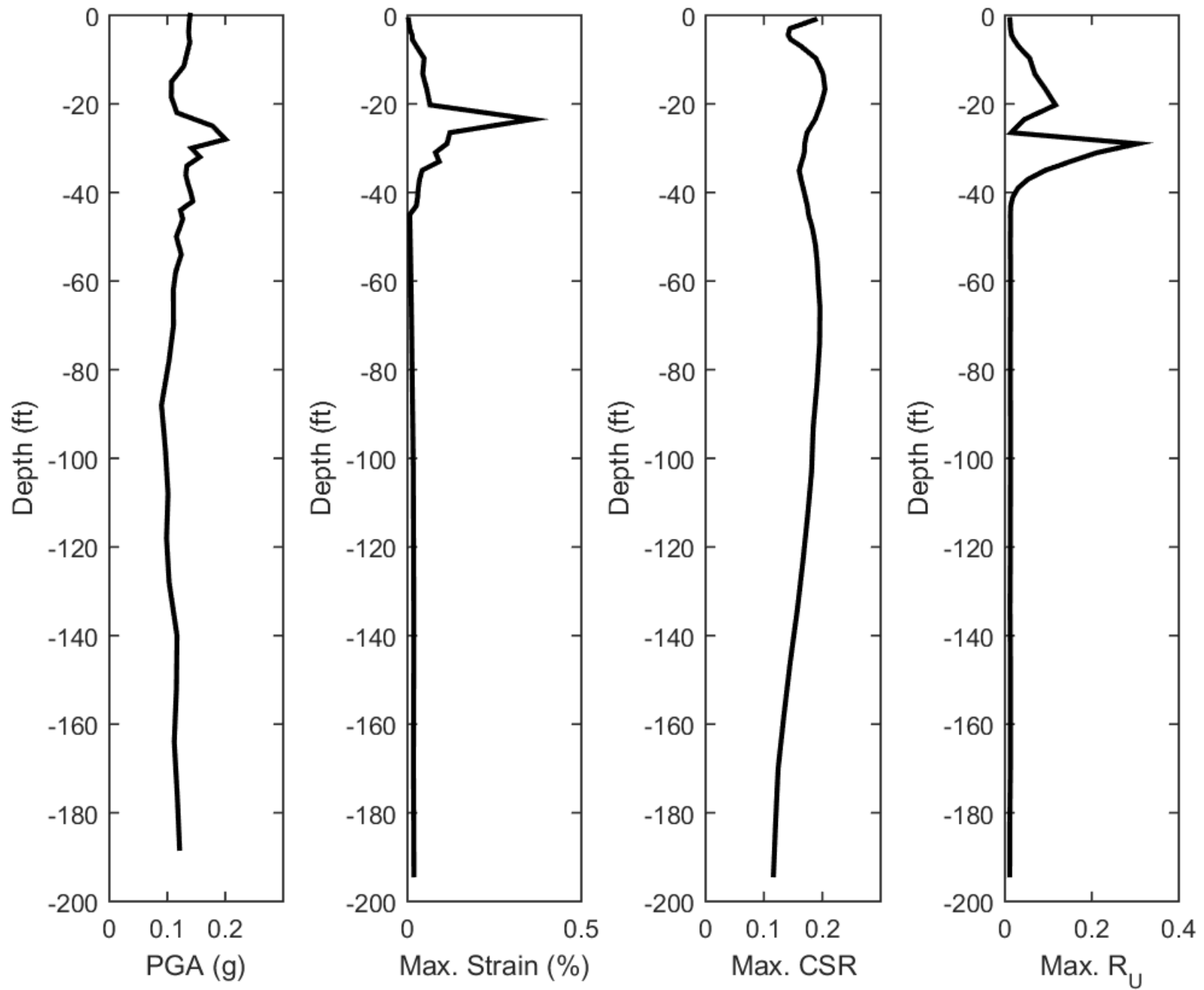
## Outputs at Ground Surface for: PWP Generation-Low Vs with FEE4



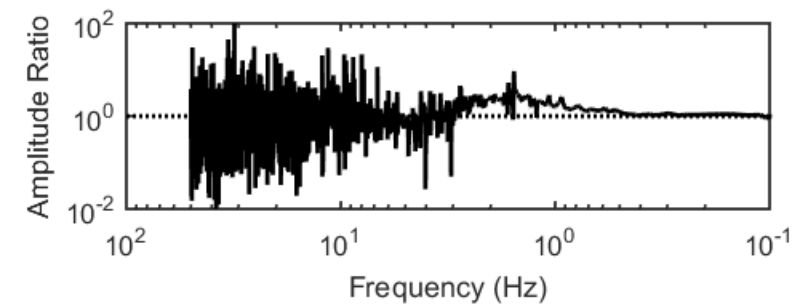
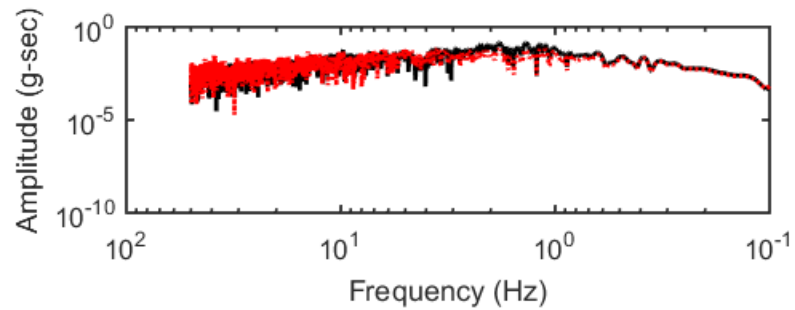
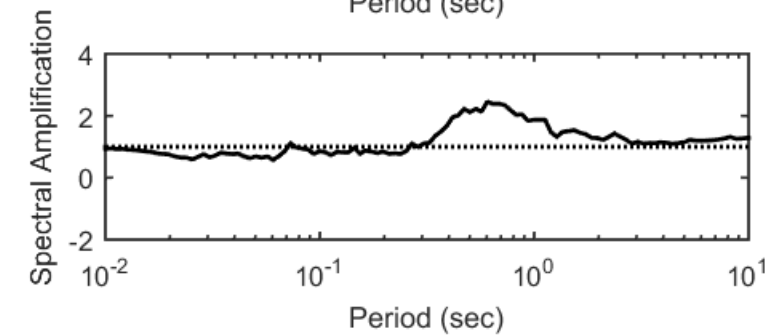
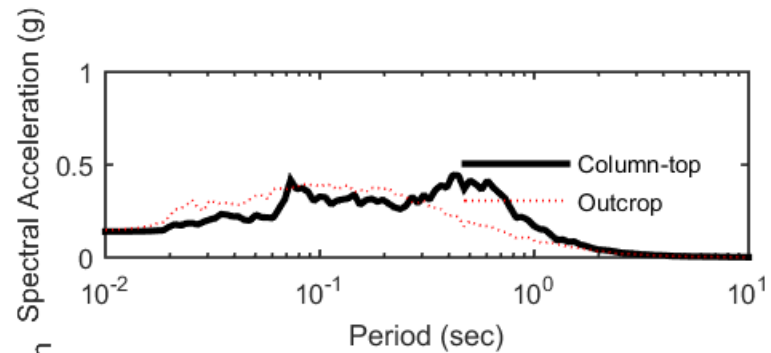
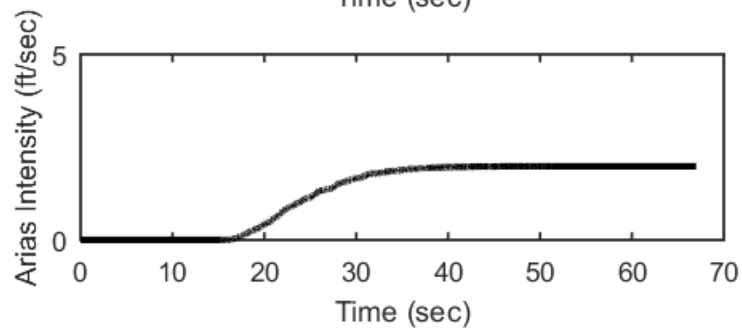
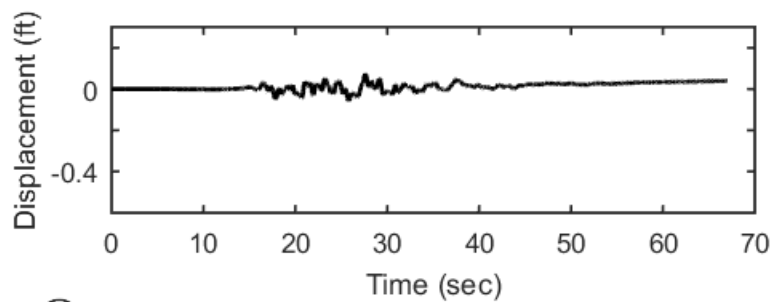
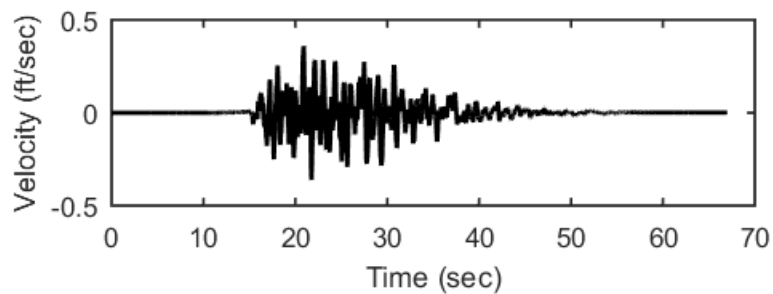
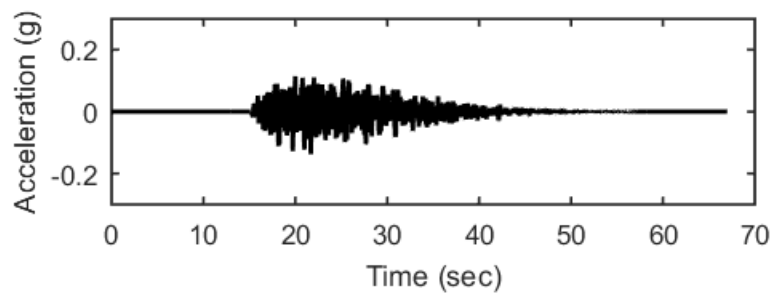
## Outputs at Top of Marl for: PWP Generation-Low Vs with FEE4



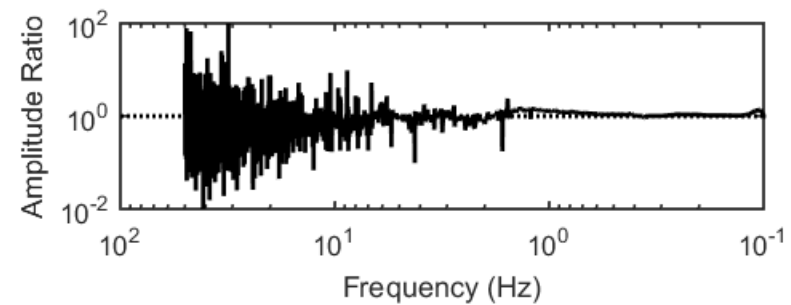
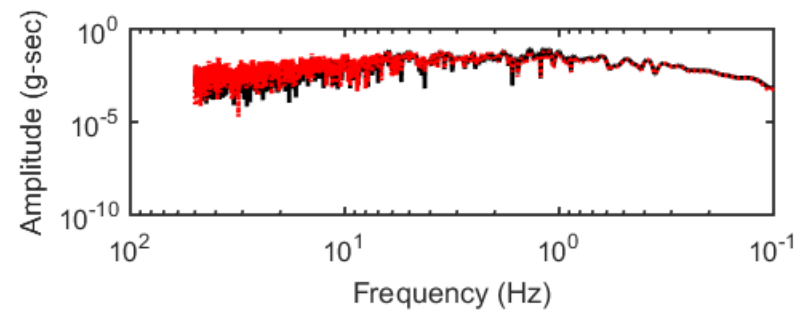
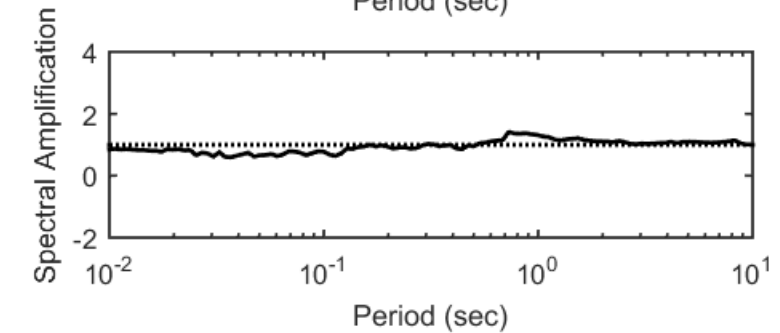
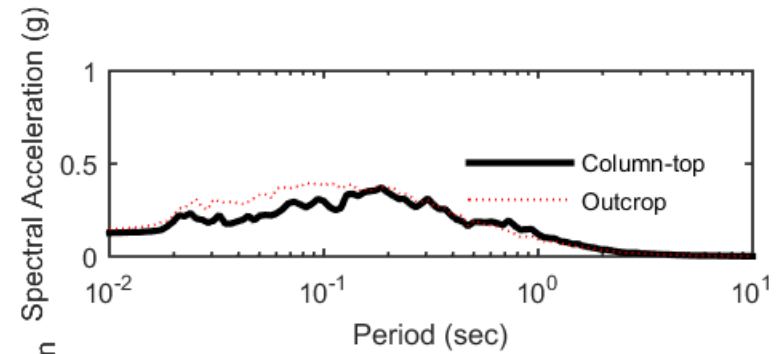
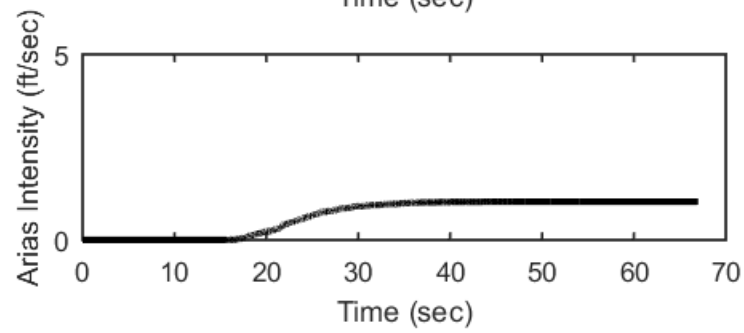
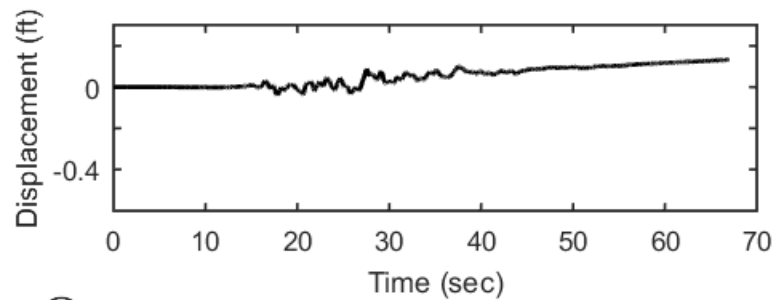
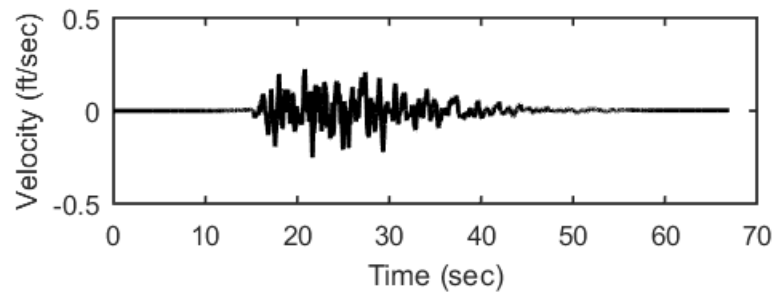
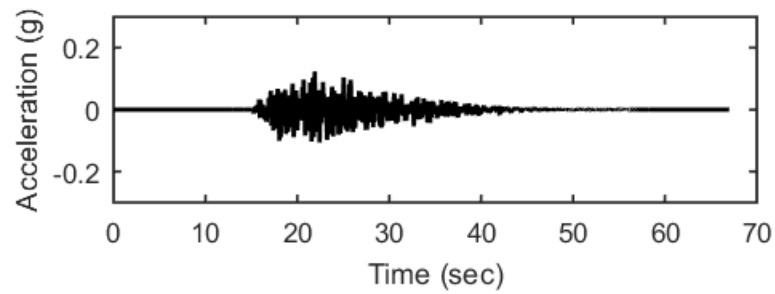
### Profile outputs for: PWP Generation-Low Vs with FEE4



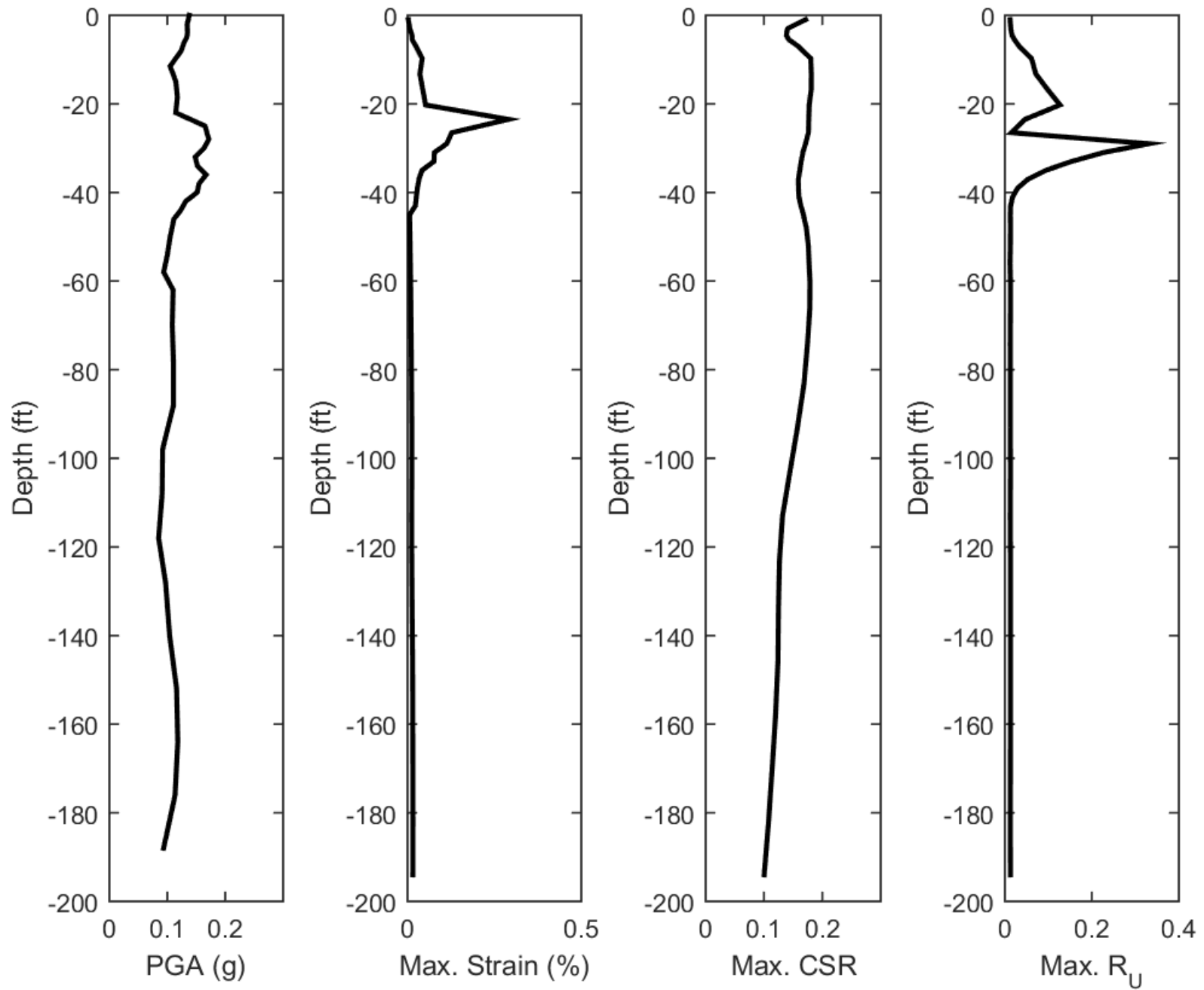
## Outputs at Ground Surface for: PWP Generation-Low Vs with FEE5



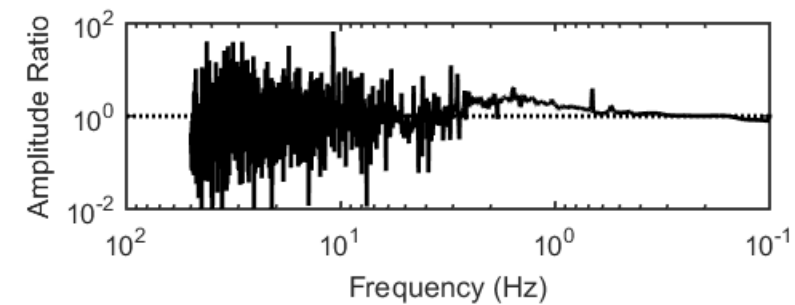
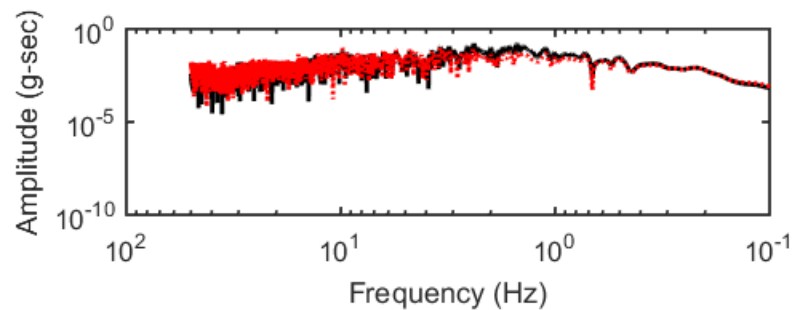
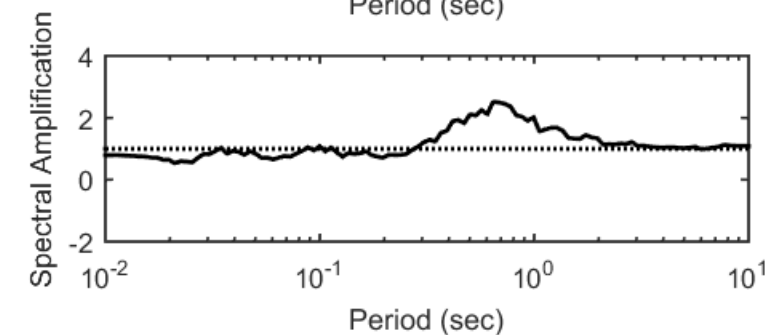
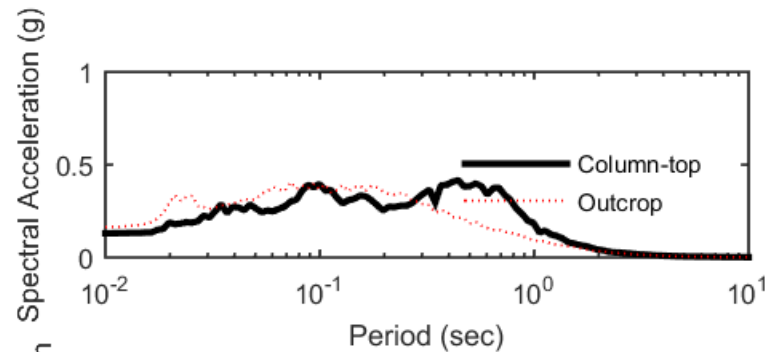
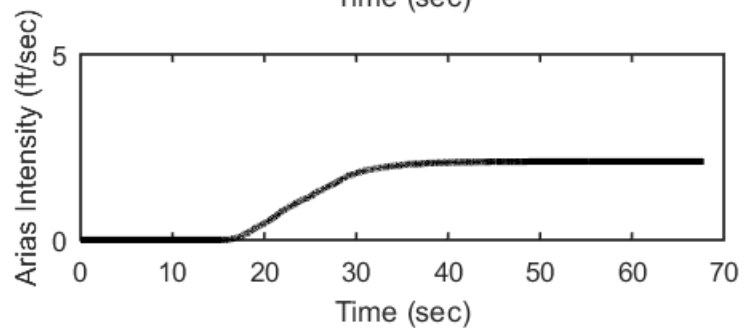
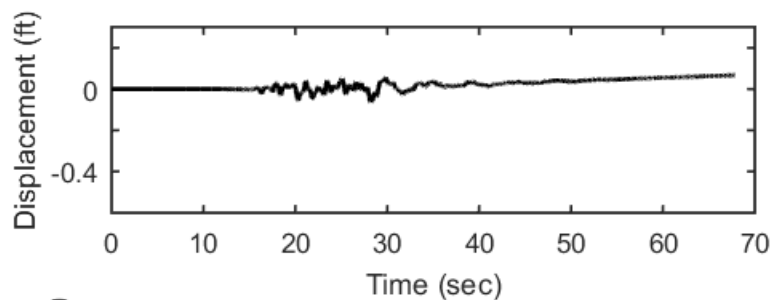
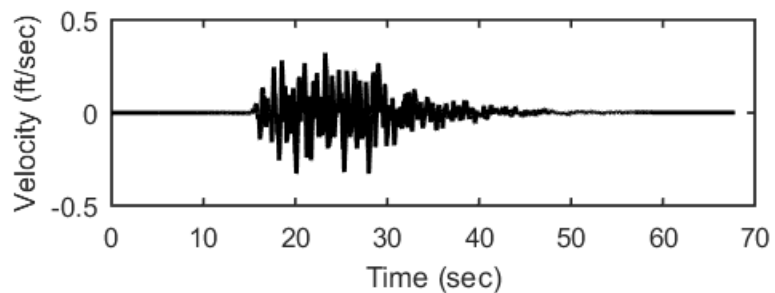
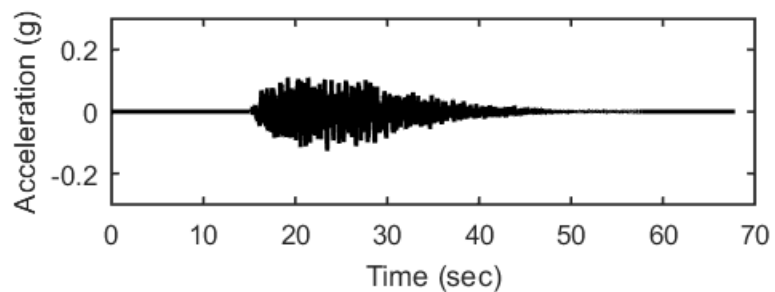
## Outputs at Top of Marl for: PWP Generation-Low Vs with FEE5



# Profile outputs for: PWP Generation-Low Vs with FEE5

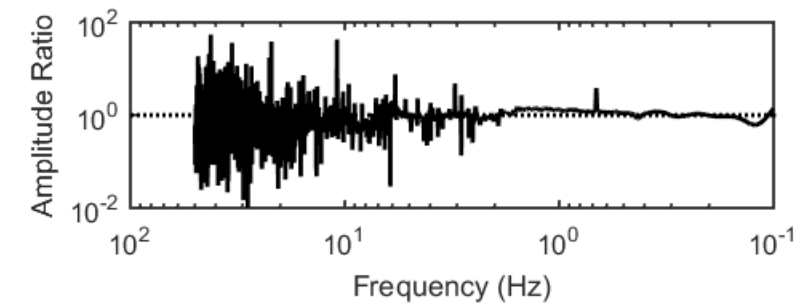
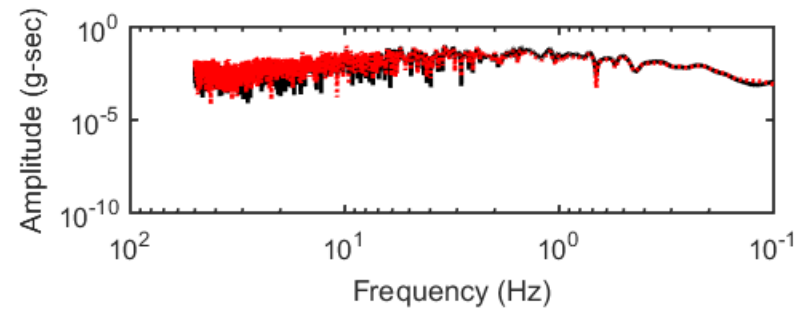
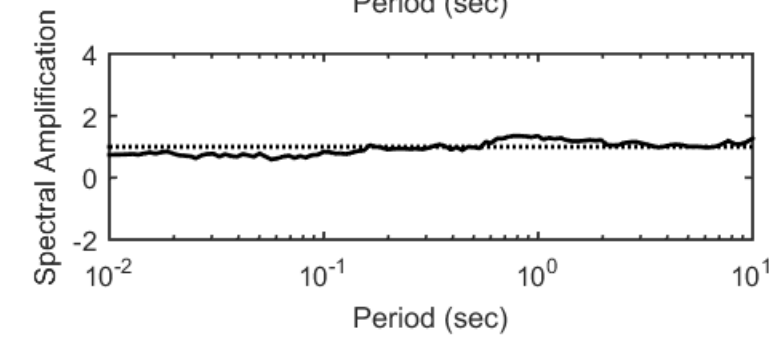
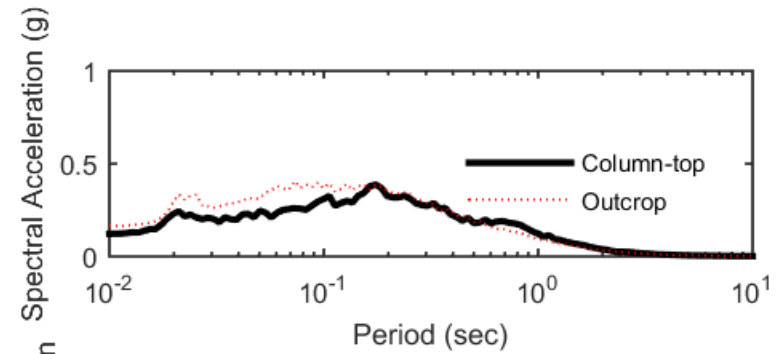
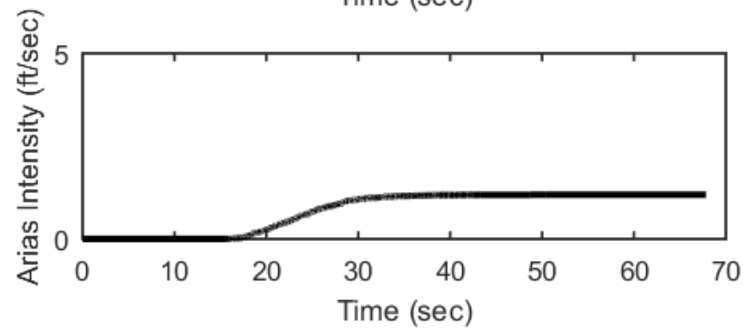
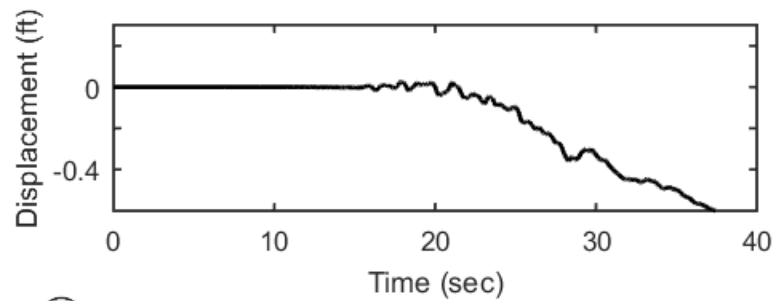
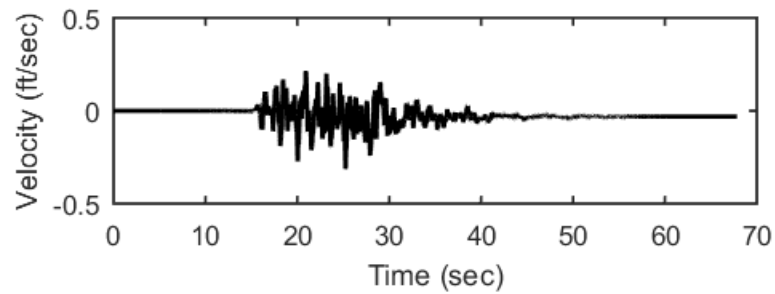
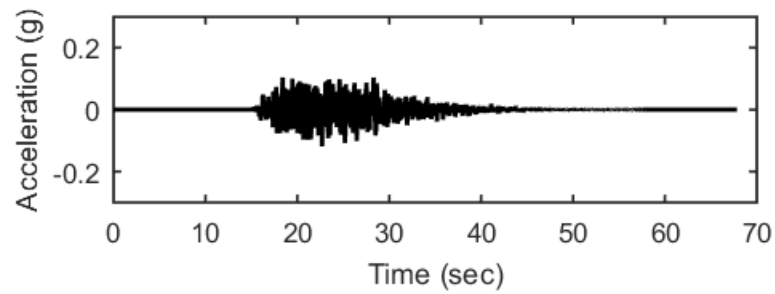


## Outputs at Ground Surface for: PWP Generation-Low Vs with FEE6

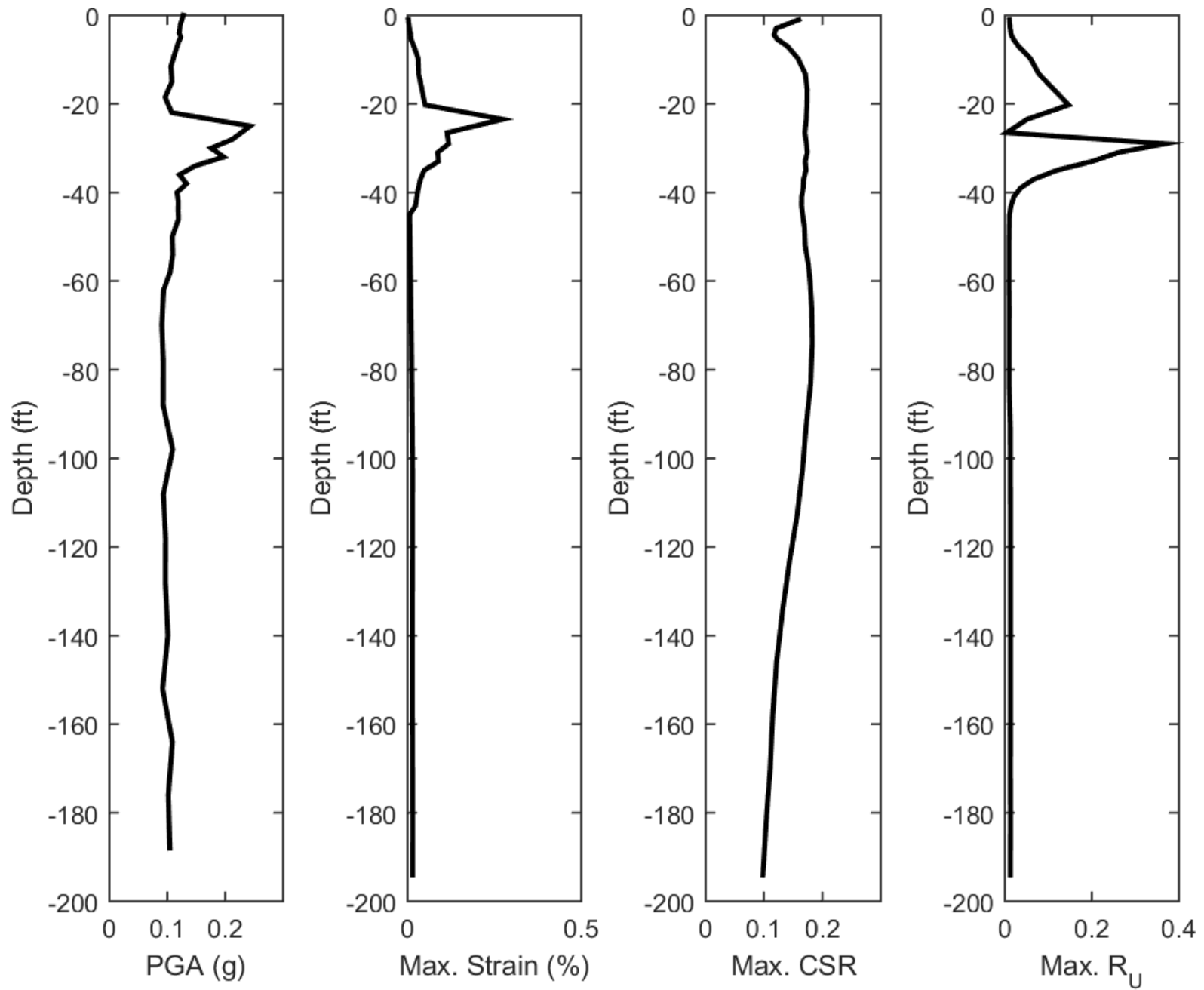




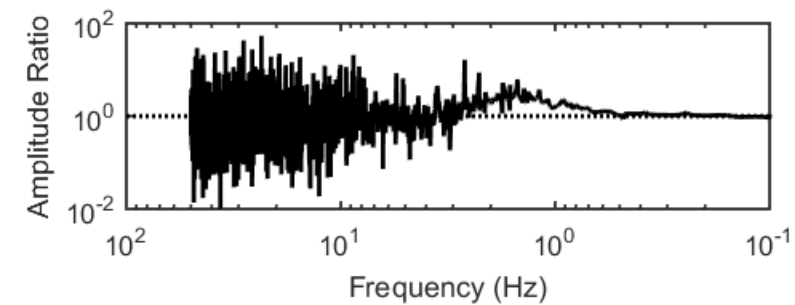
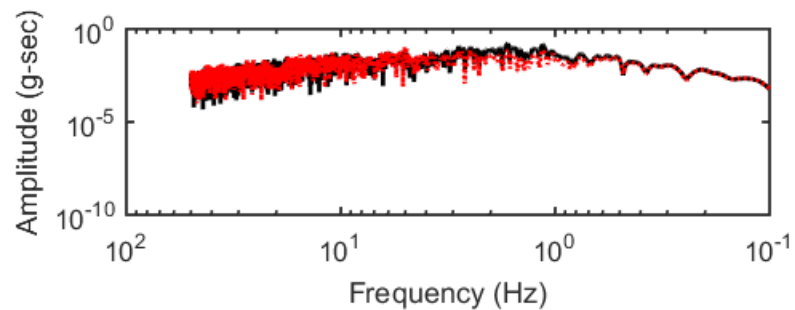
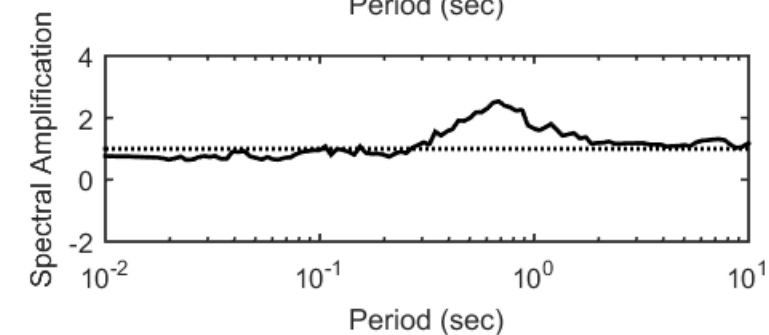
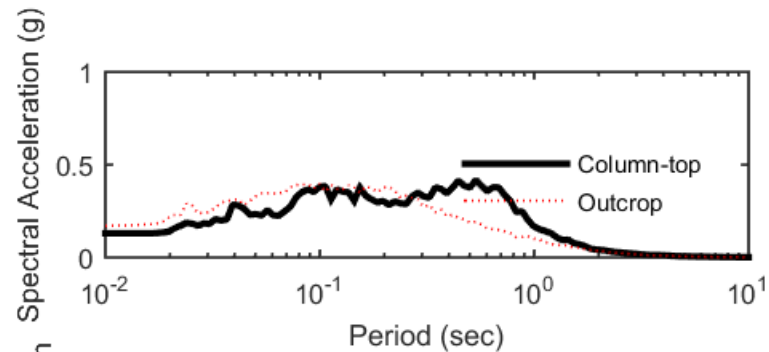
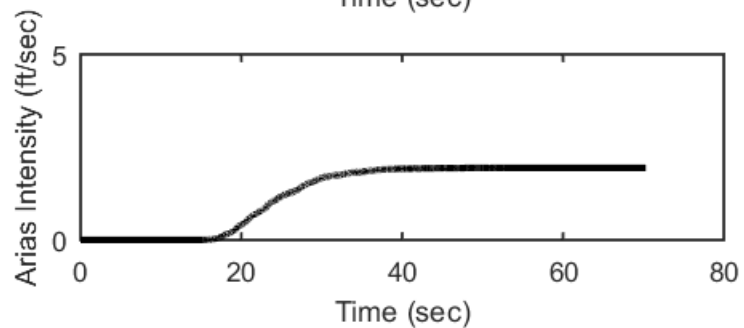
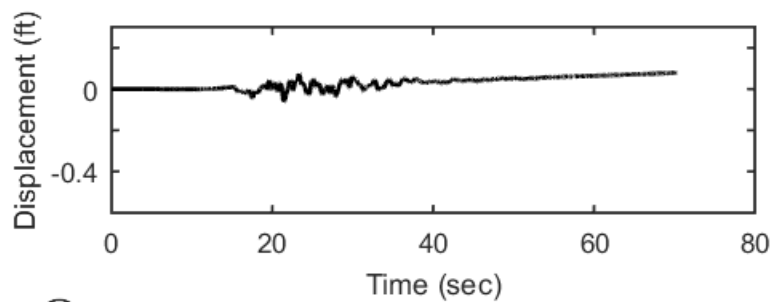
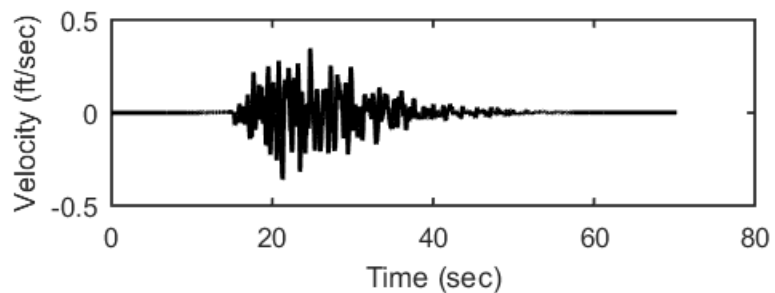
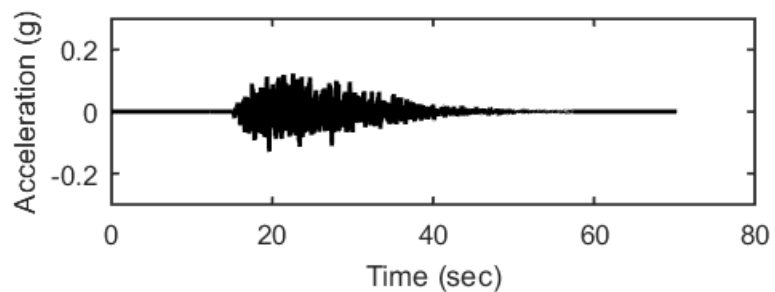
## Outputs at Top of Marl for: PWP Generation-Low Vs with FEE6



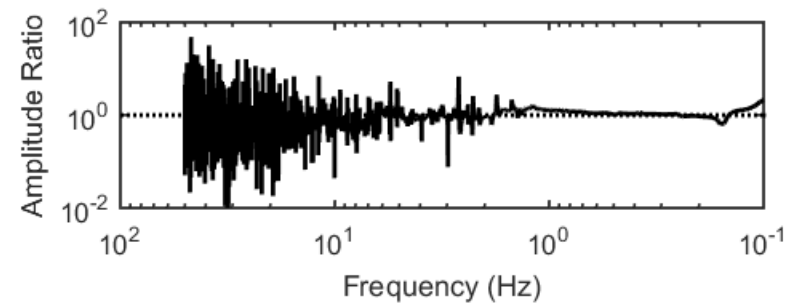
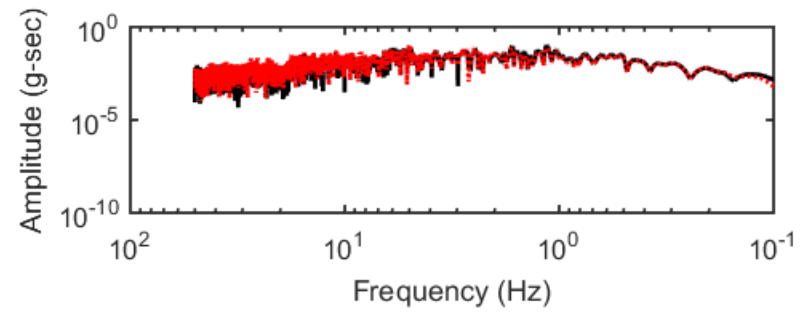
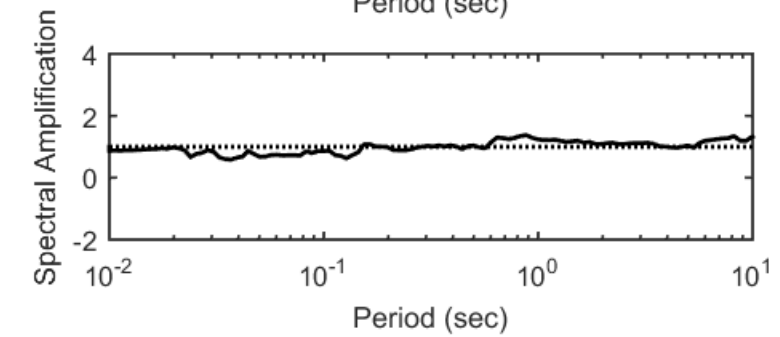
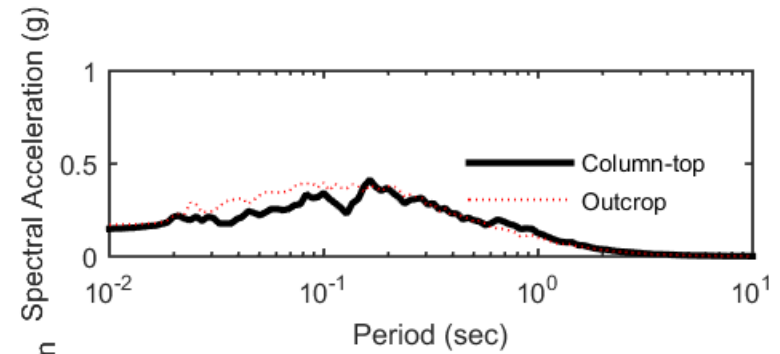
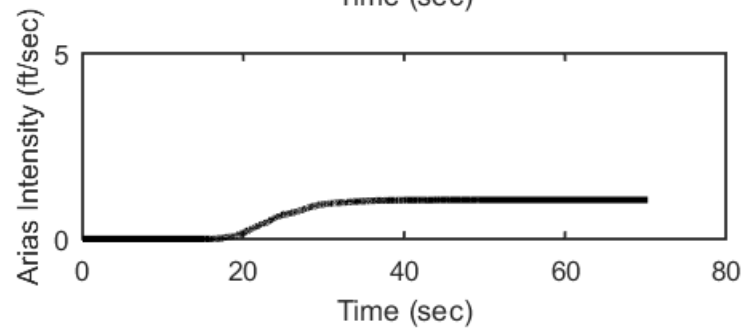
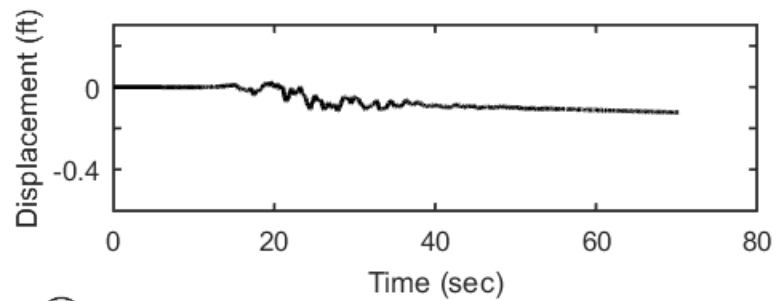
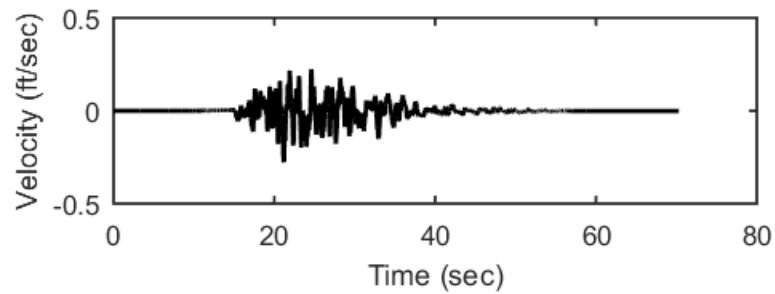
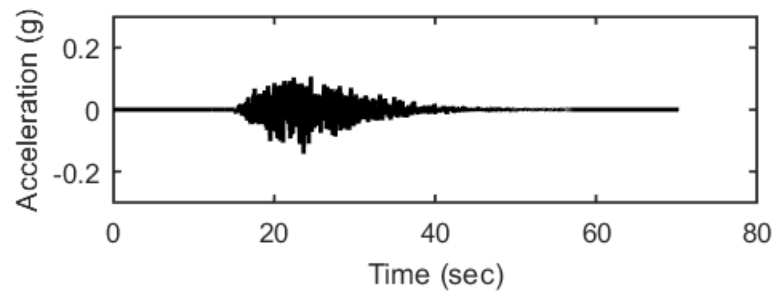
# Profile outputs for: PWP Generation-Low Vs with FEE6



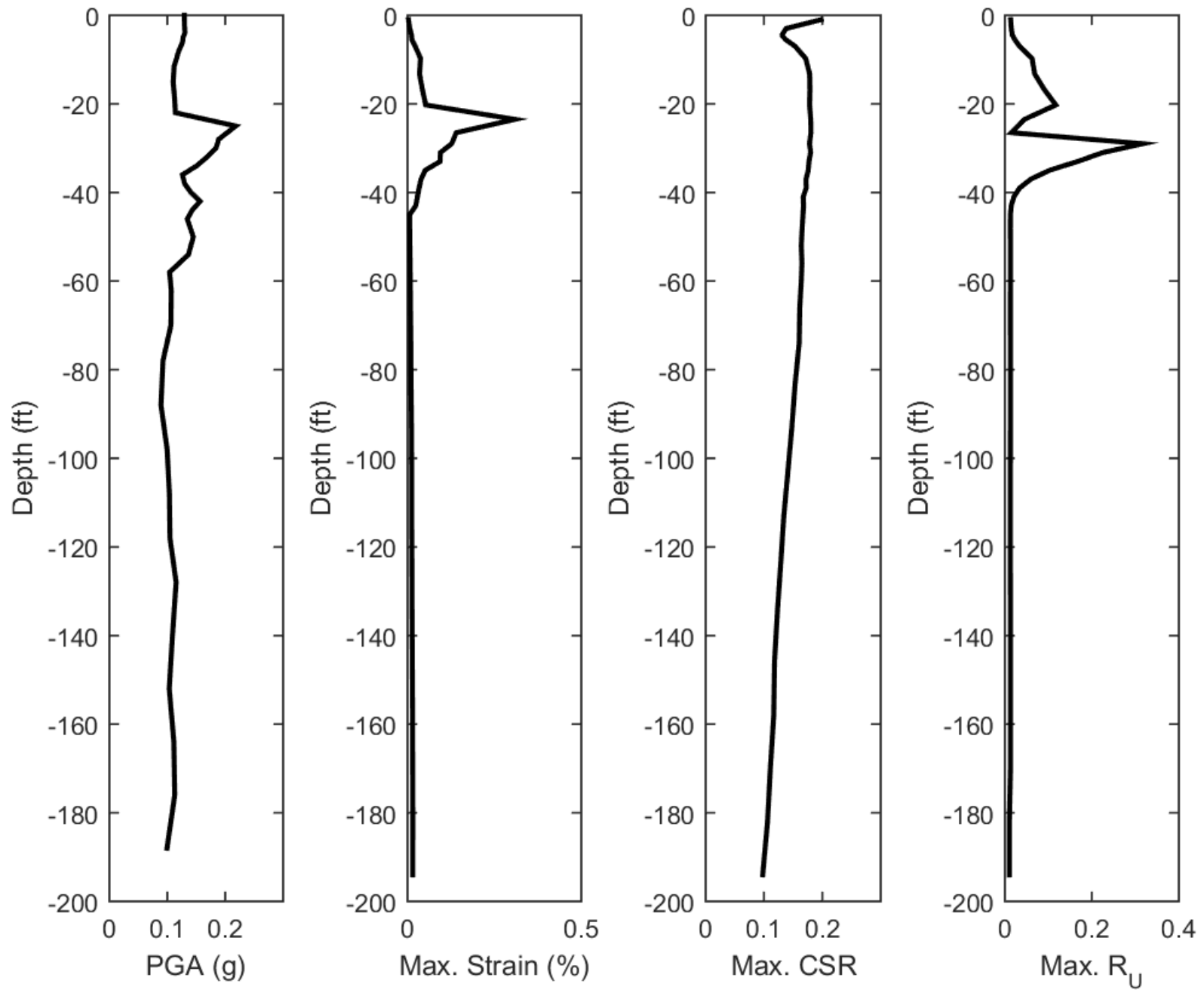
## Outputs at Ground Surface for: PWP Generation-Low Vs with FEE7



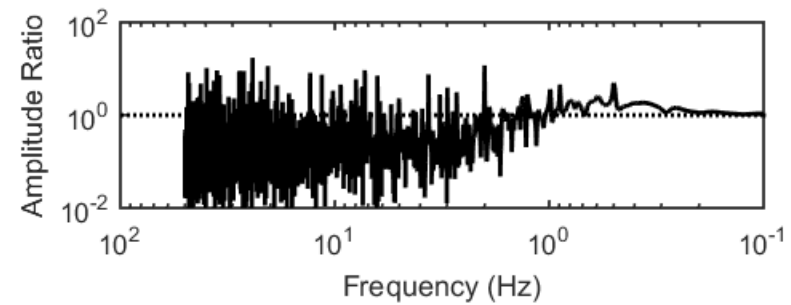
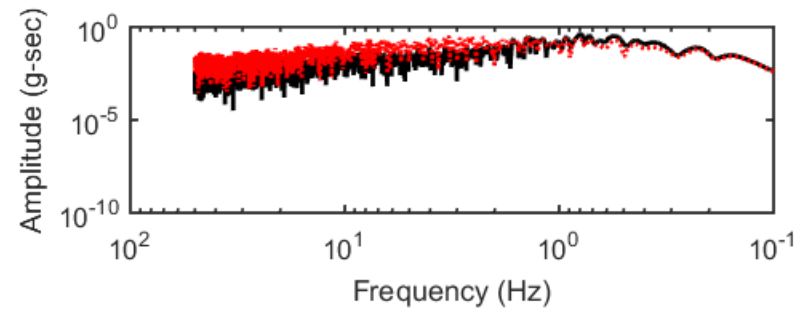
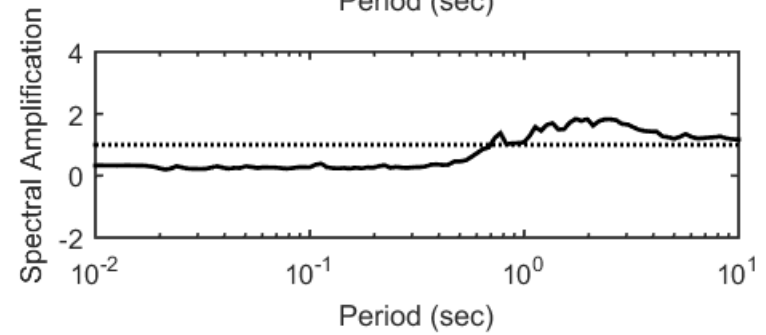
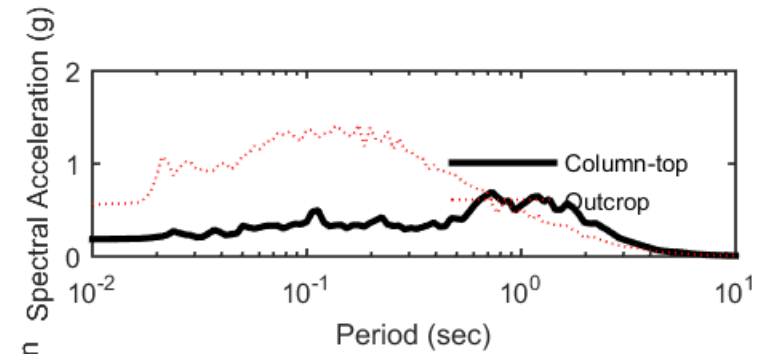
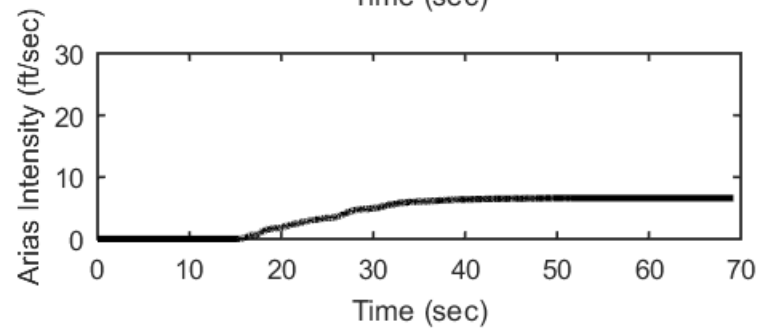
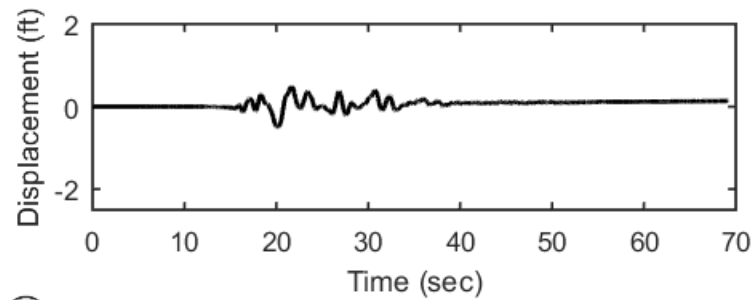
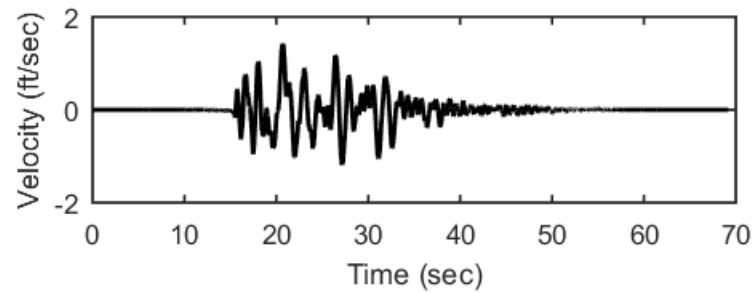
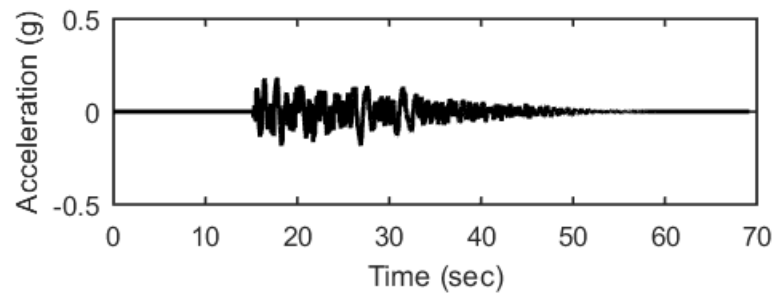
## Outputs at Top of Marl for: PWP Generation-Low Vs with FEE7



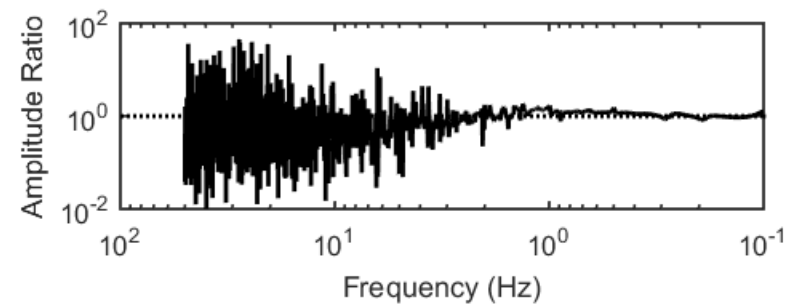
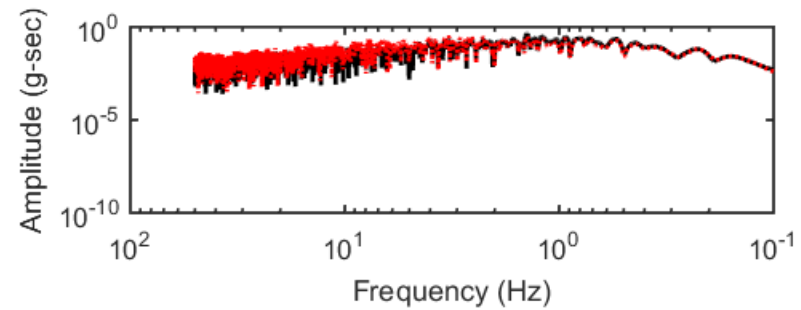
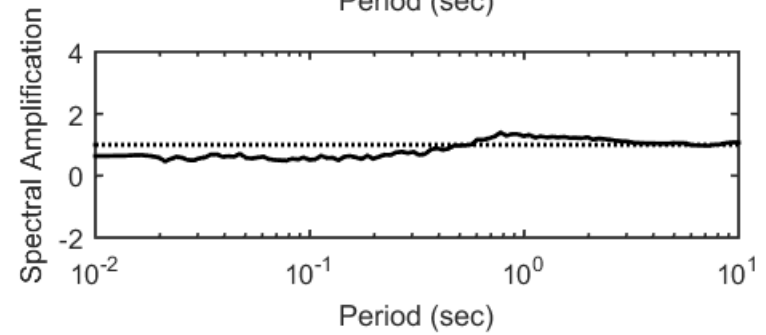
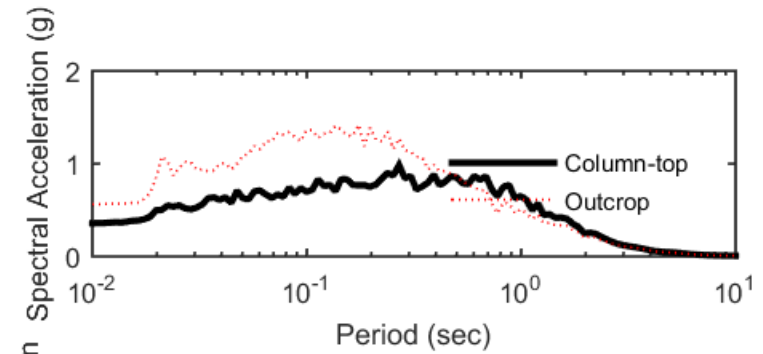
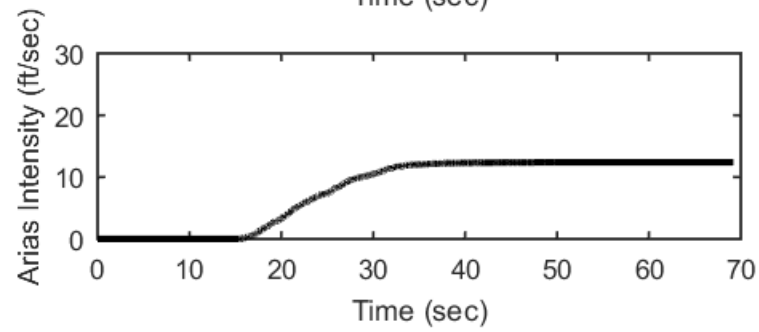
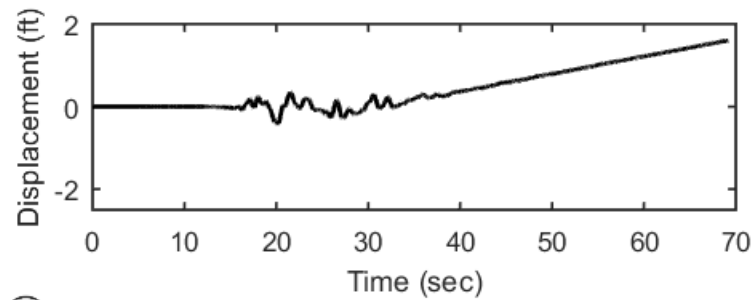
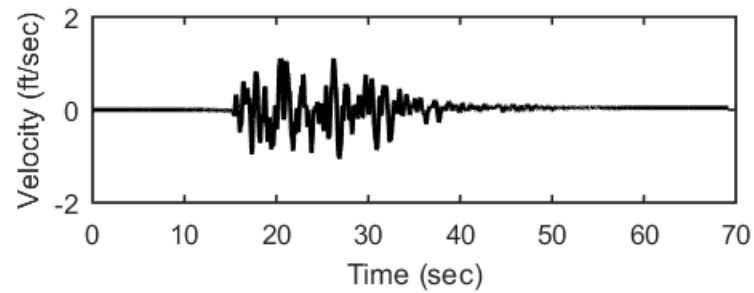
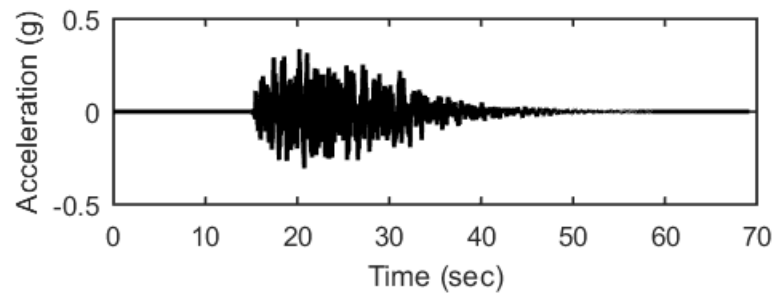
# Profile outputs for: PWP Generation-Low Vs with FEE7



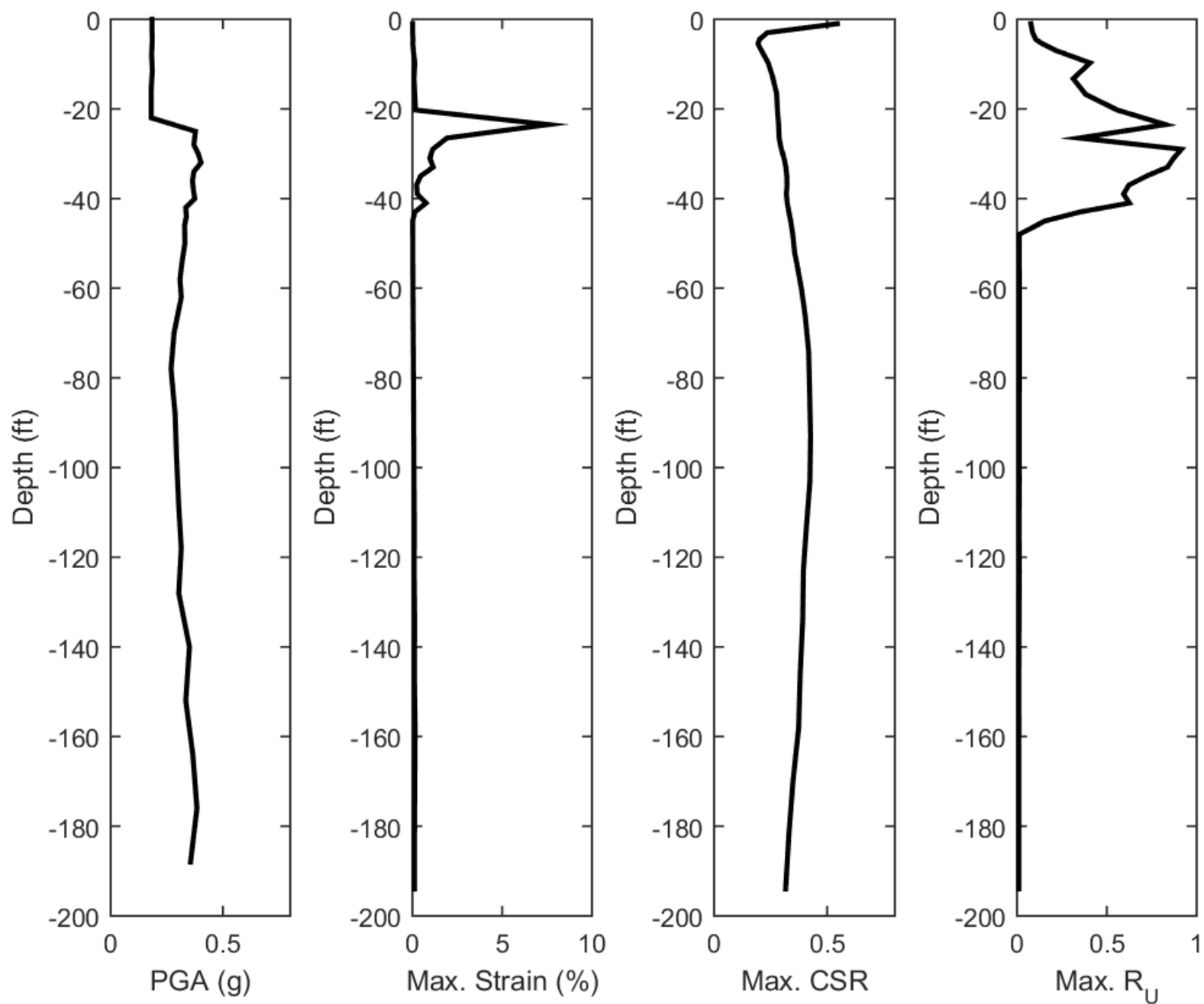
## Outputs at Ground Surface for: PWP Generation-Low Vs with SEE1



## Outputs at Top of Marl for: PWP Generation-Low Vs with SEE1

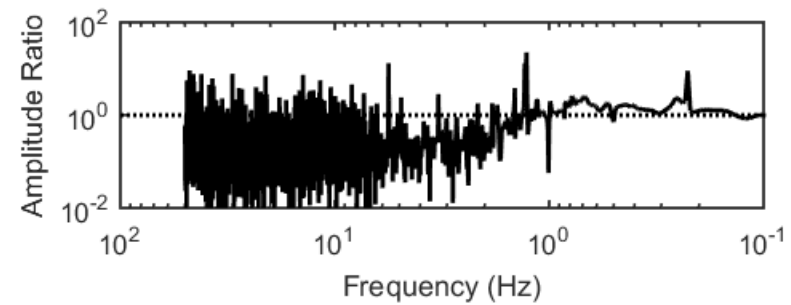
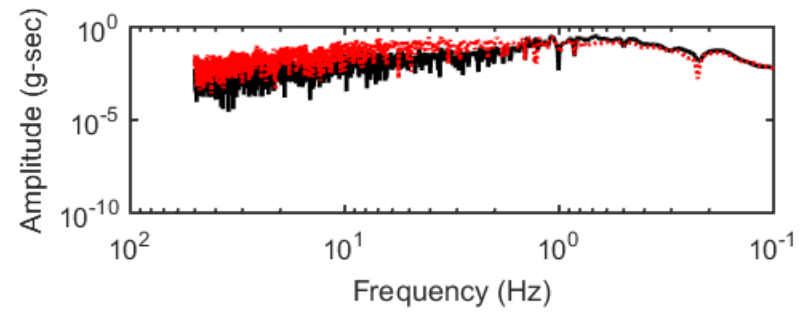
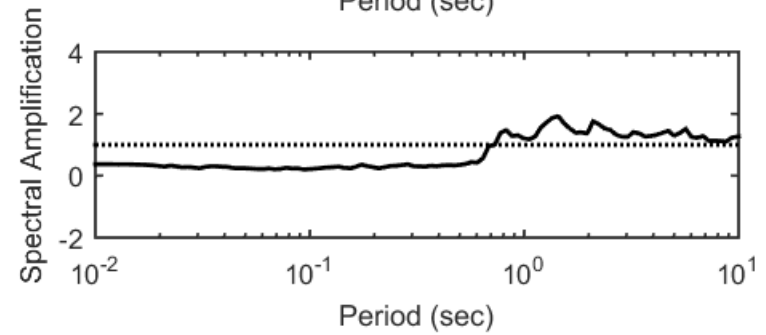
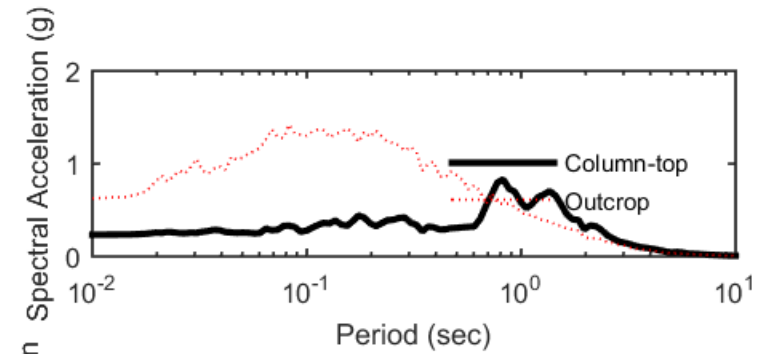
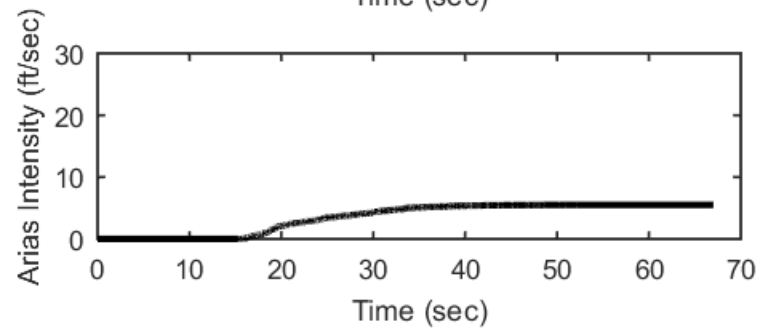
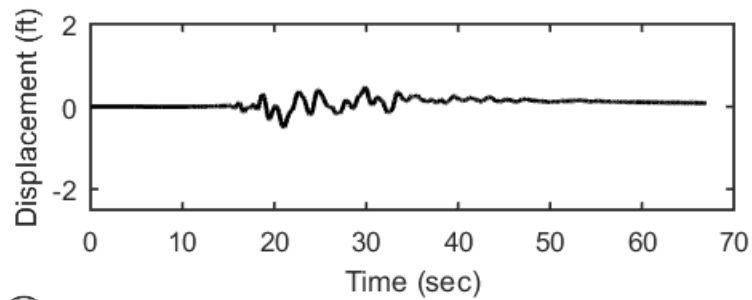
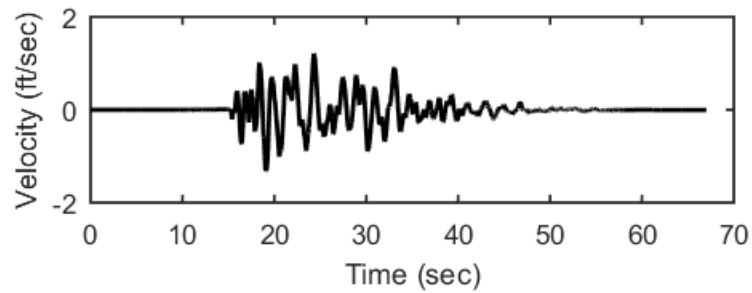
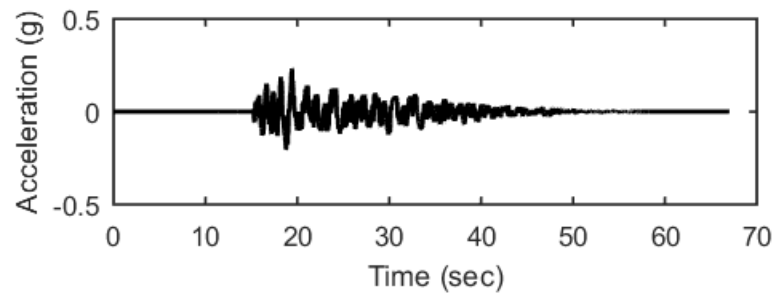


# Profile outputs for: PWP Generation-Low Vs with SEE1

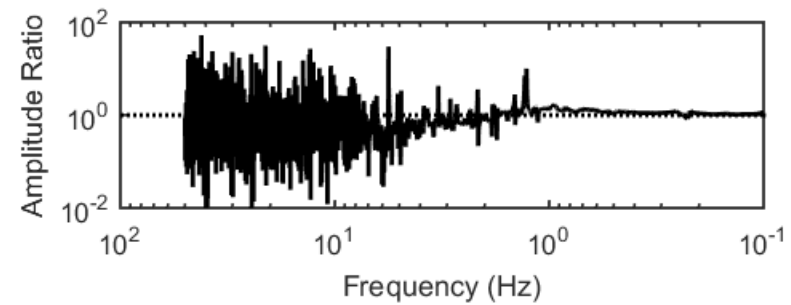
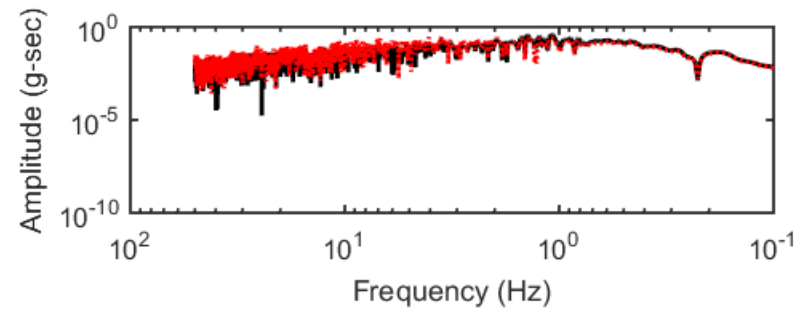
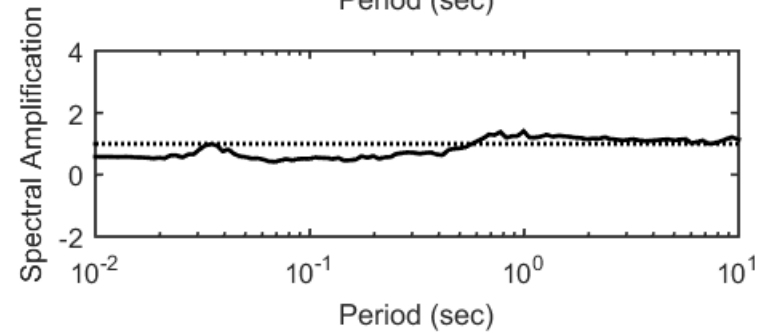
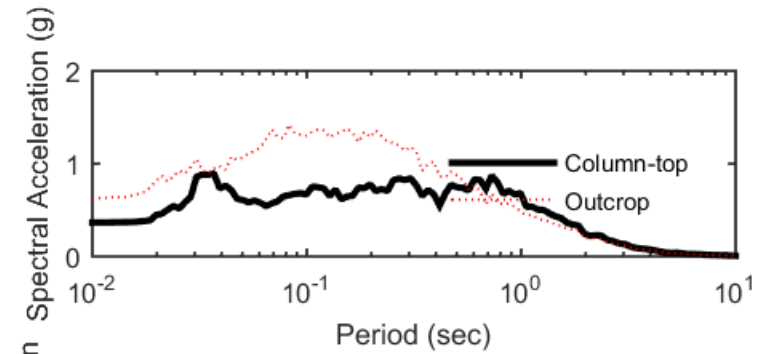
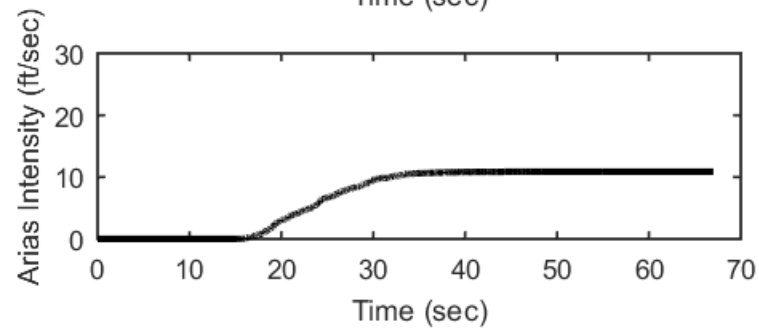
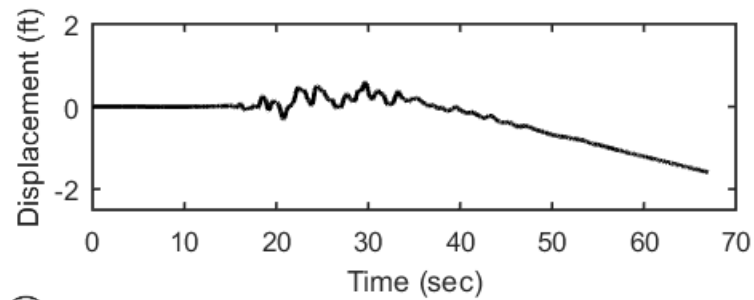
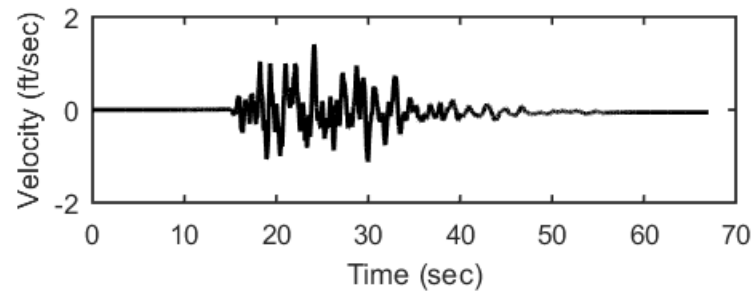
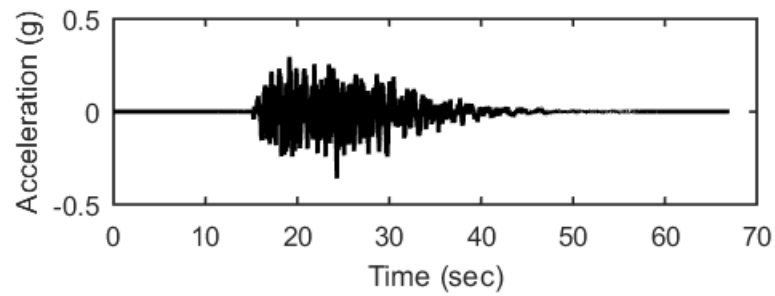




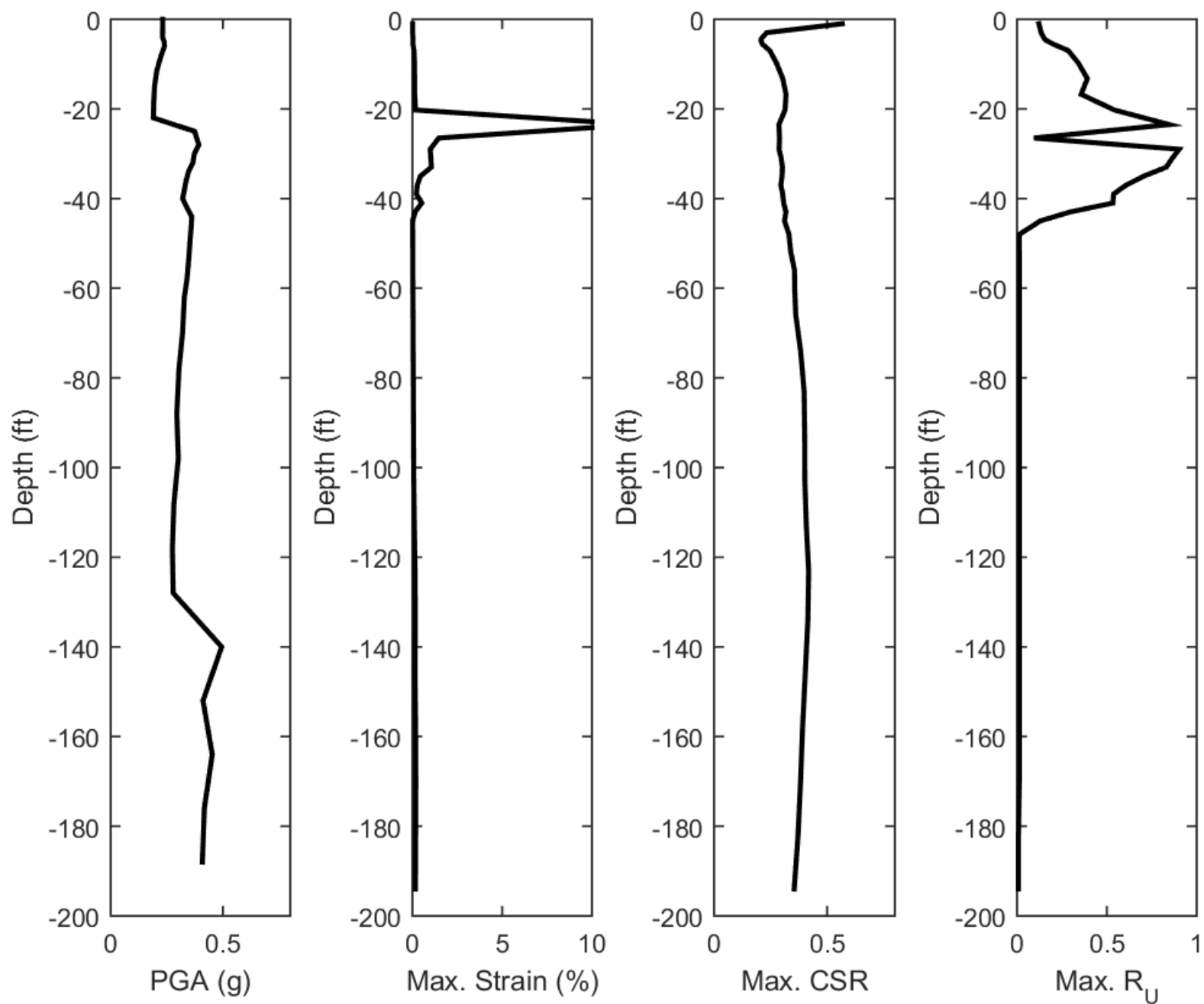
## Outputs at Ground Surface for: PWP Generation-Low Vs with SEE2



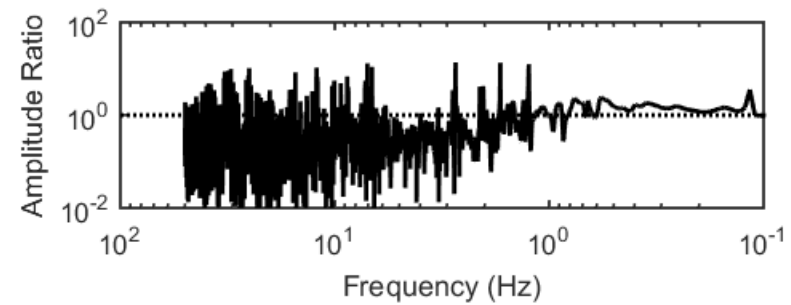
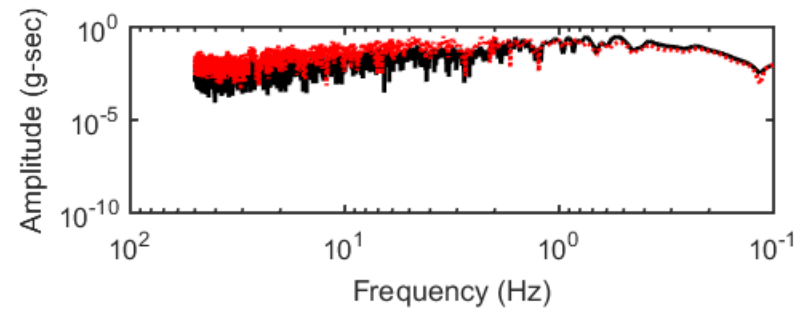
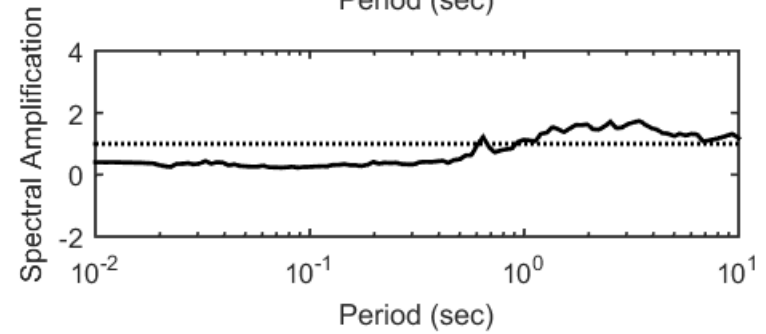
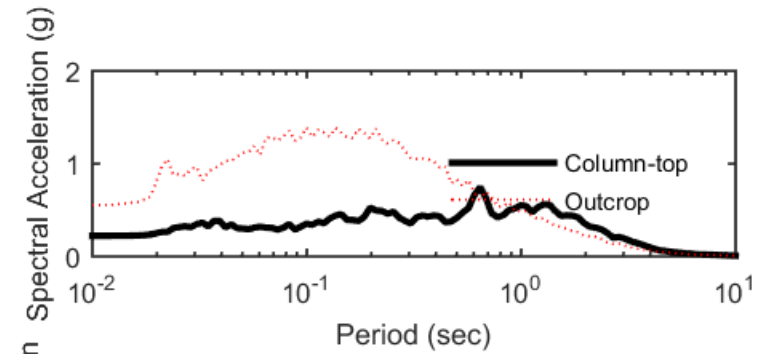
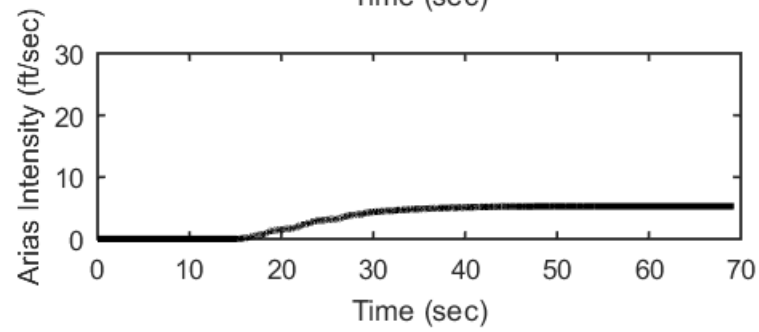
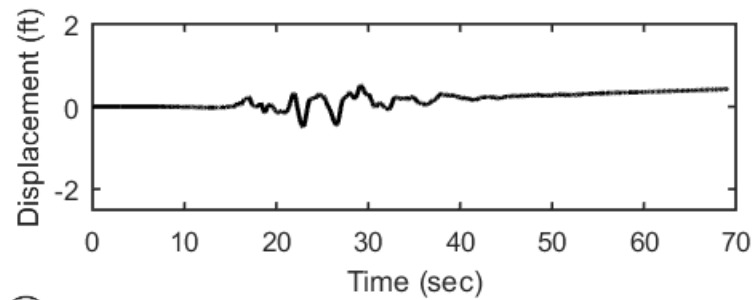
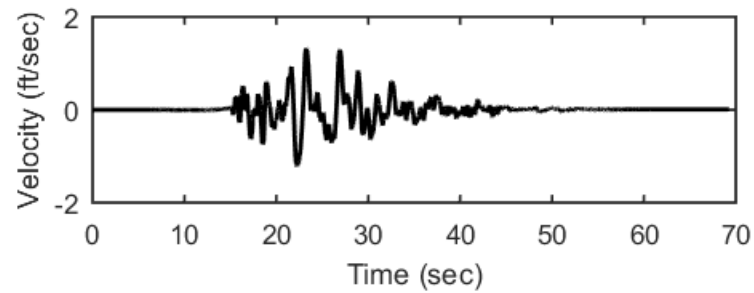
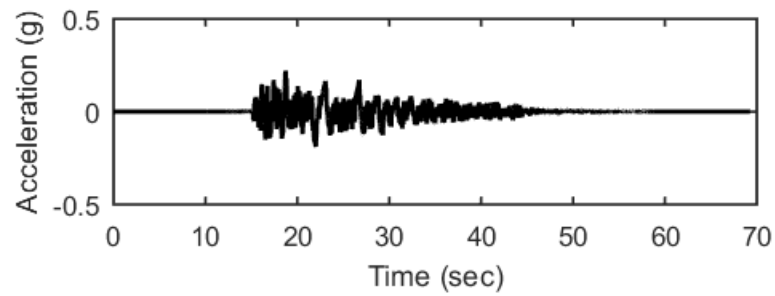
## Outputs at Top of Marl for: PWP Generation-Low Vs with SEE2



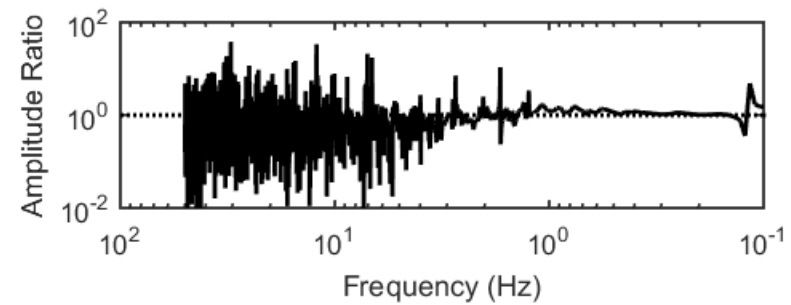
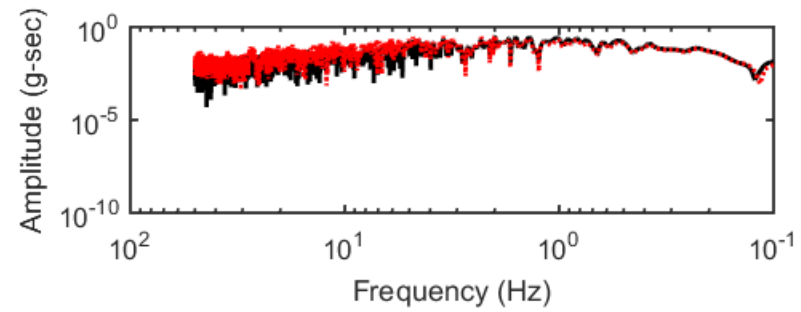
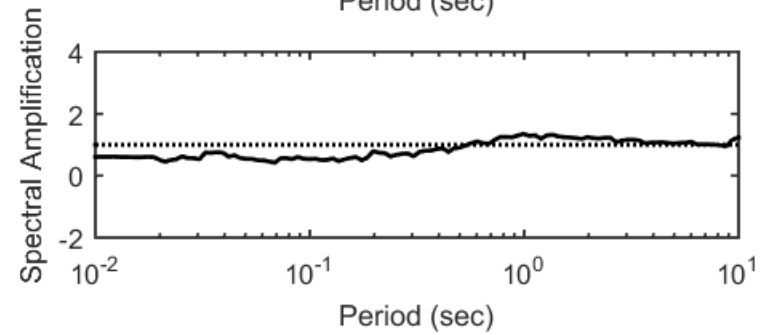
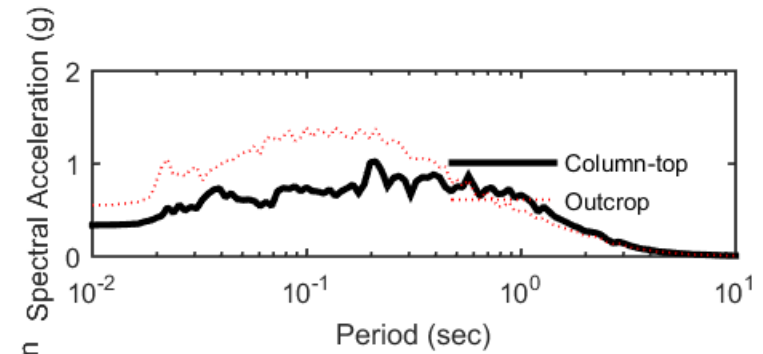
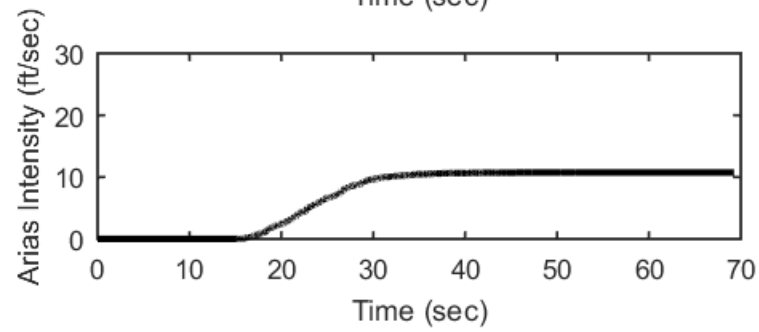
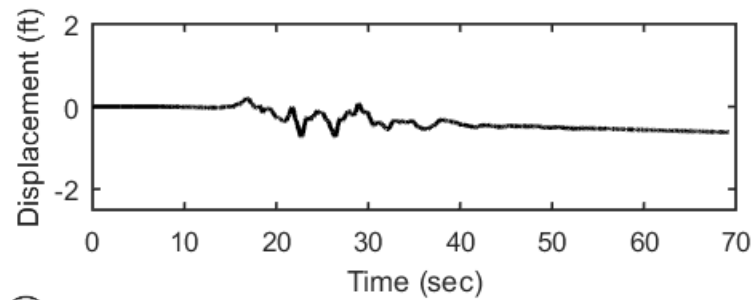
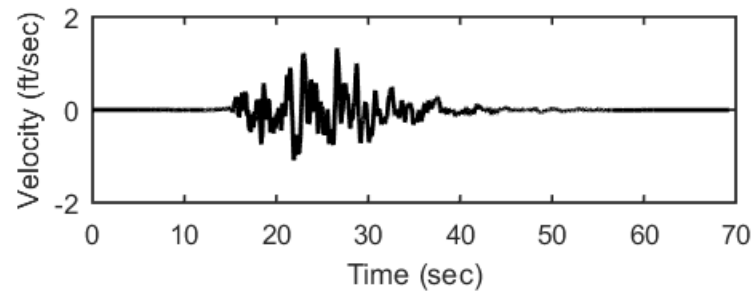
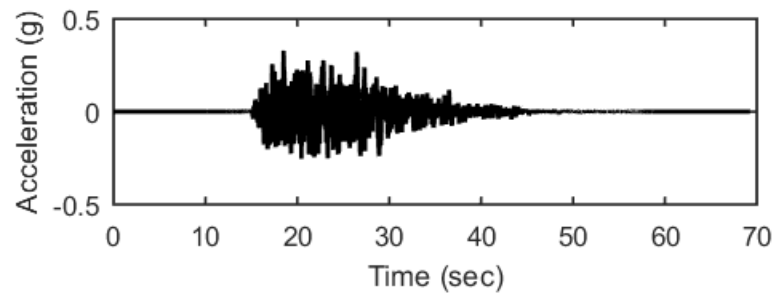
# Profile outputs for: PWP Generation-Low Vs with SEE2



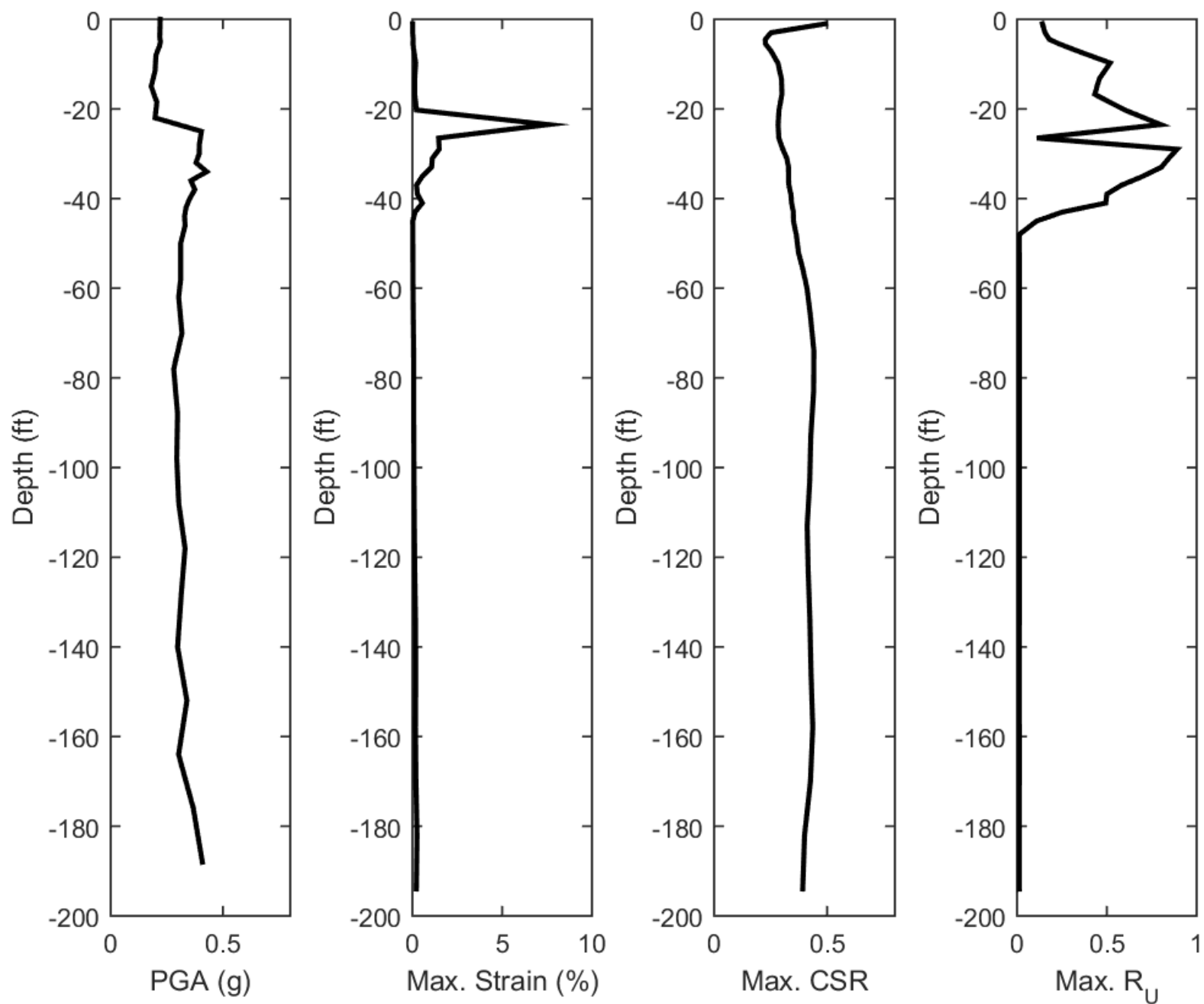
## Outputs at Ground Surface for: PWP Generation-Low Vs with SEE3



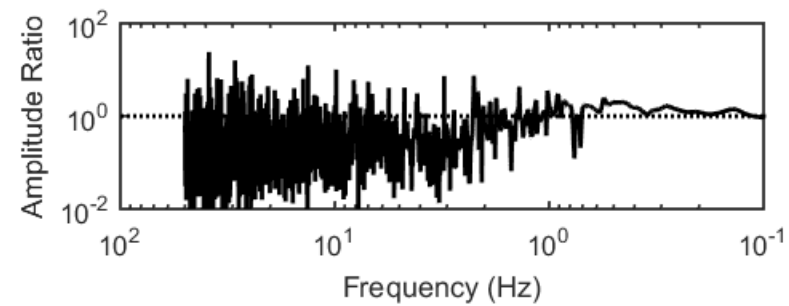
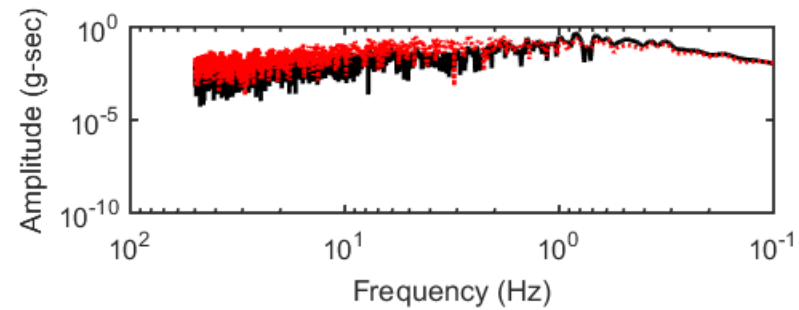
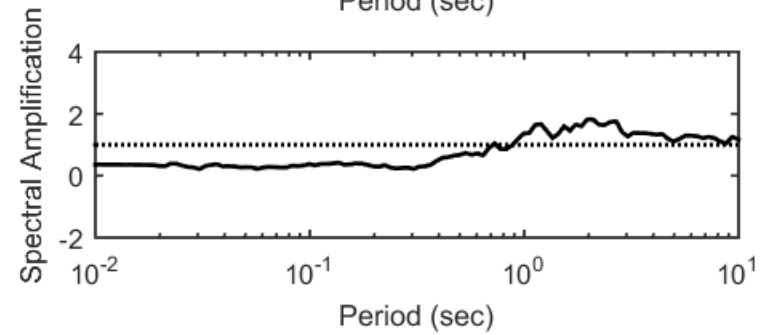
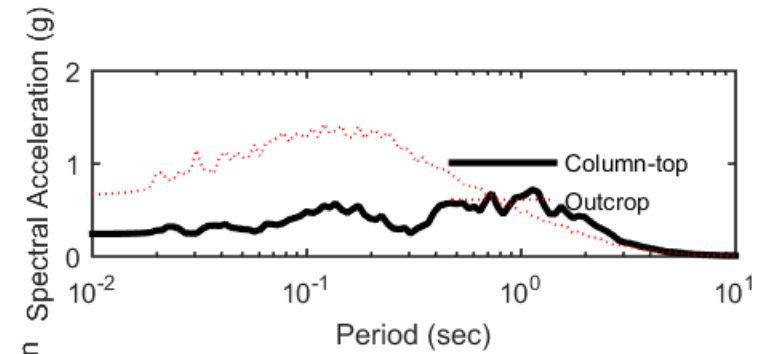
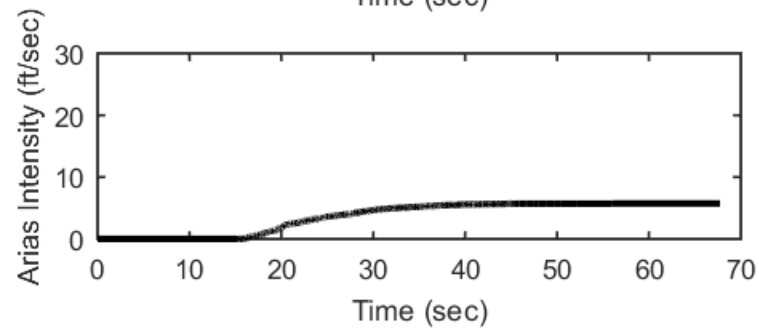
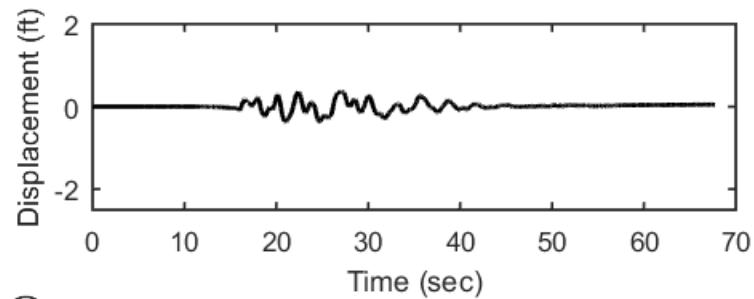
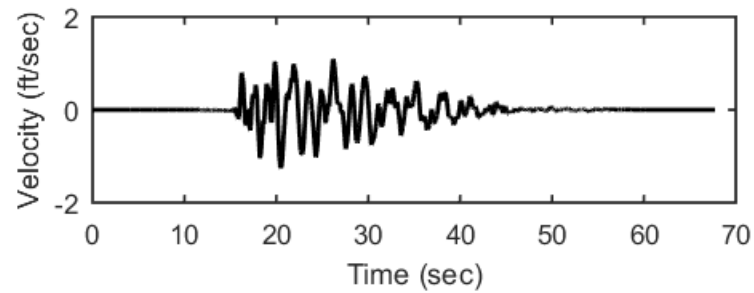
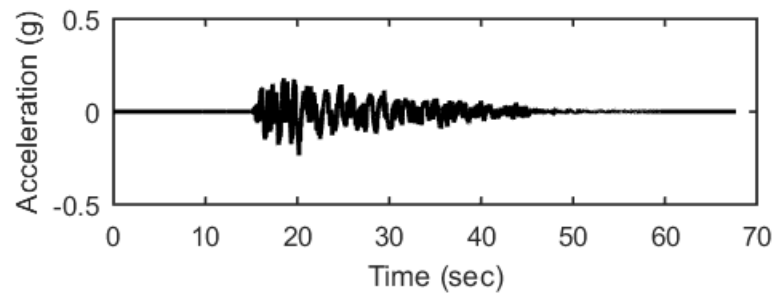
### Outputs at Top of Marl for: PWP Generation-Low Vs with SEE3



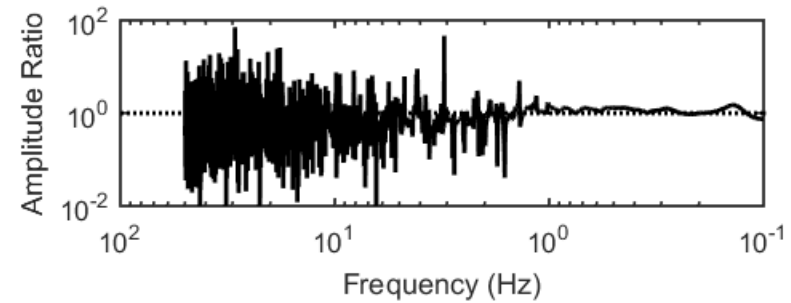
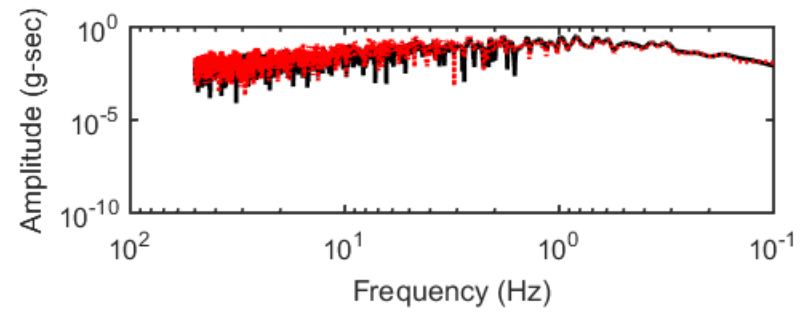
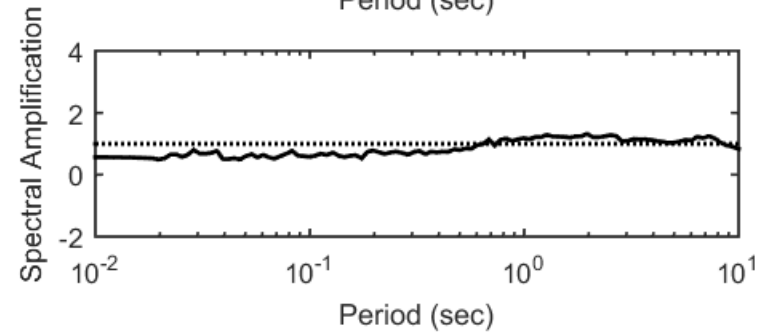
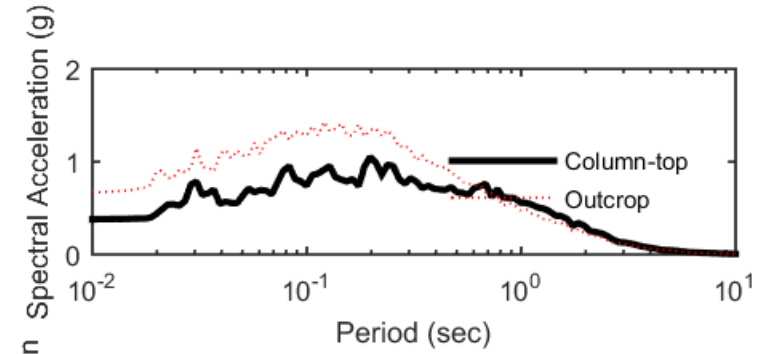
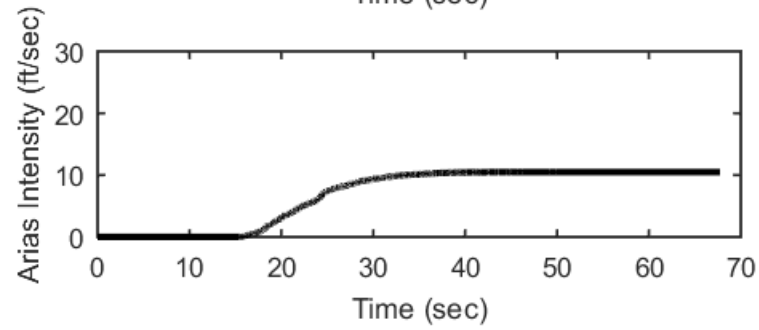
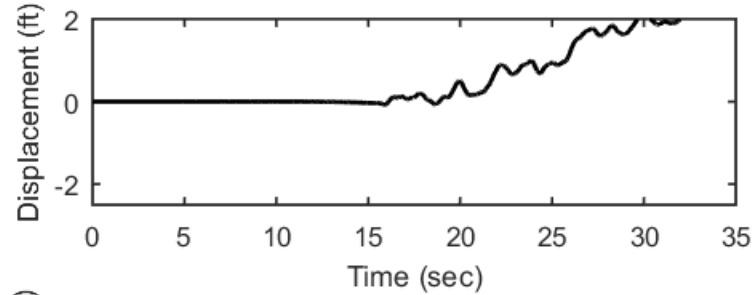
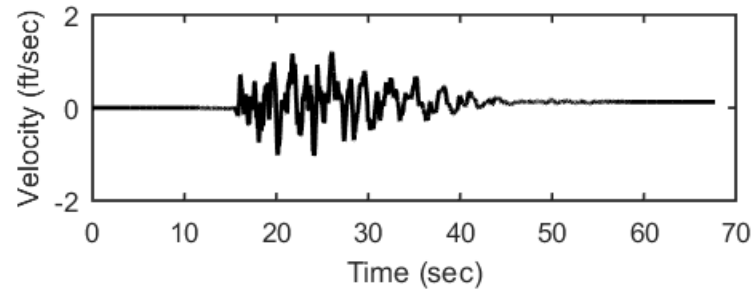
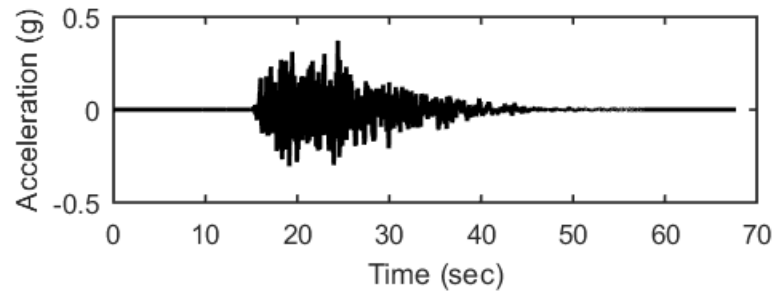
# Profile outputs for: PWP Generation-Low Vs with SEE3



## Outputs at Ground Surface for: PWP Generation-Low Vs with SEE4

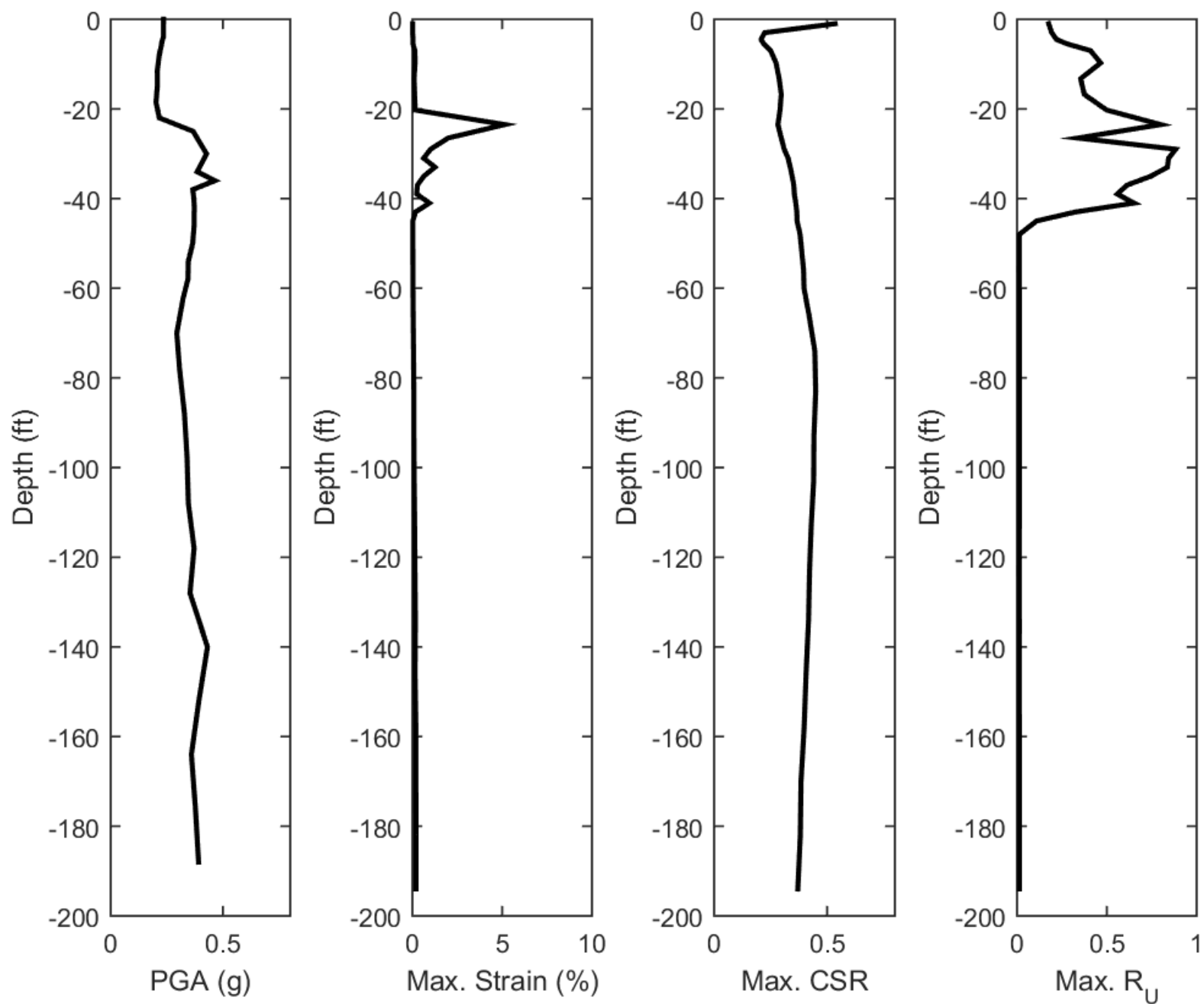


## Outputs at Top of Marl for: PWP Generation-Low Vs with SEE4

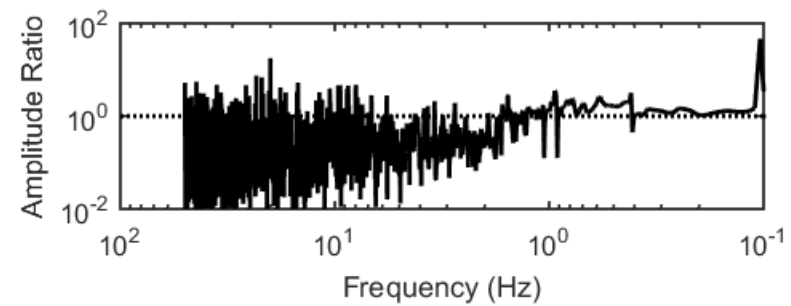
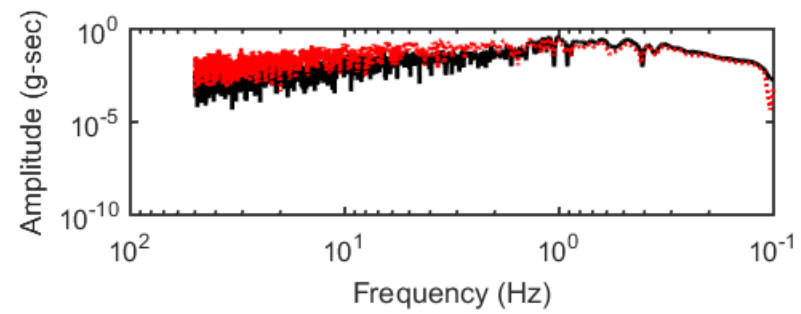
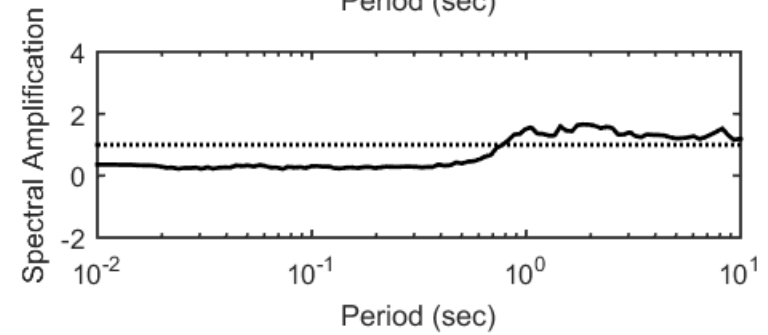
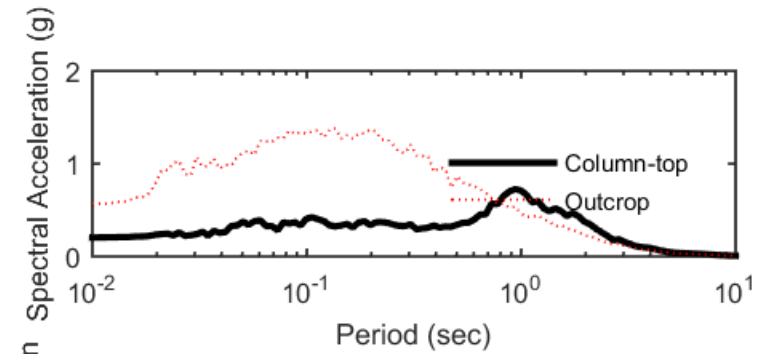
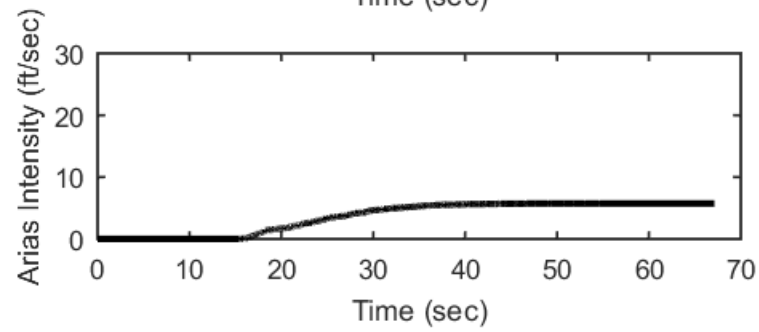
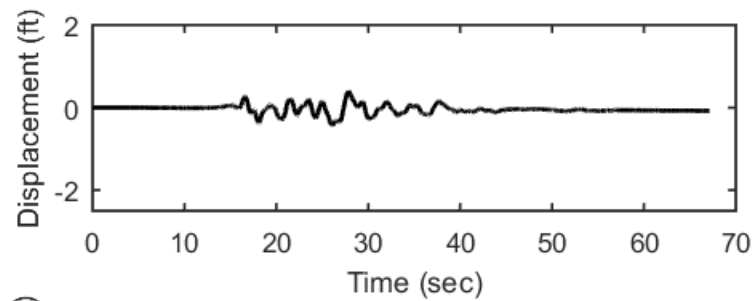
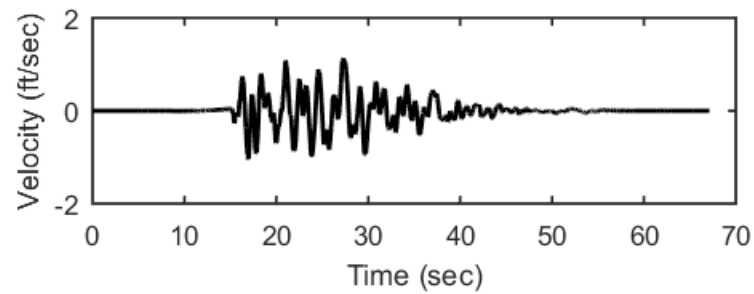
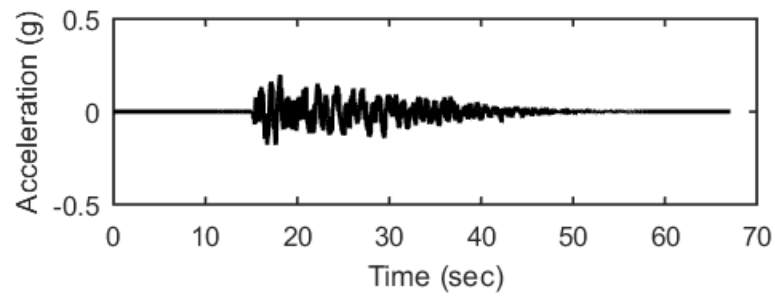




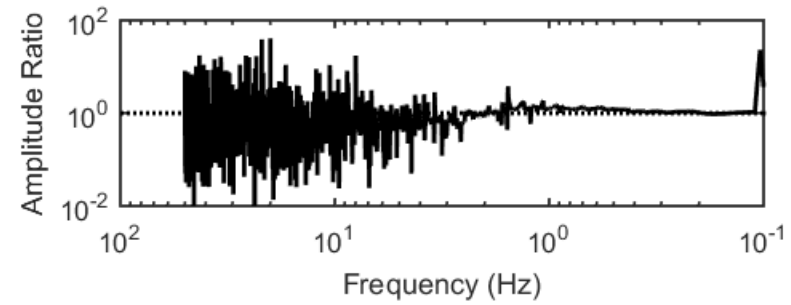
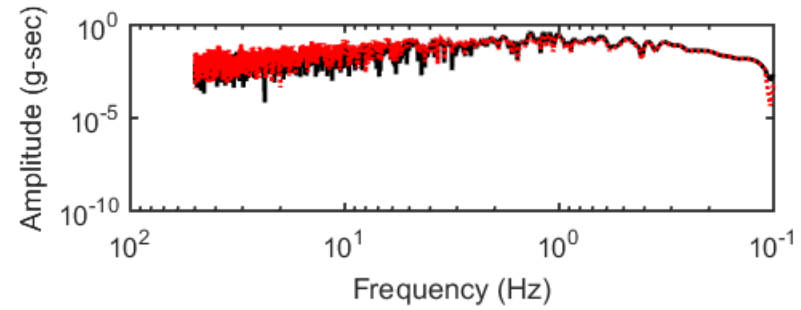
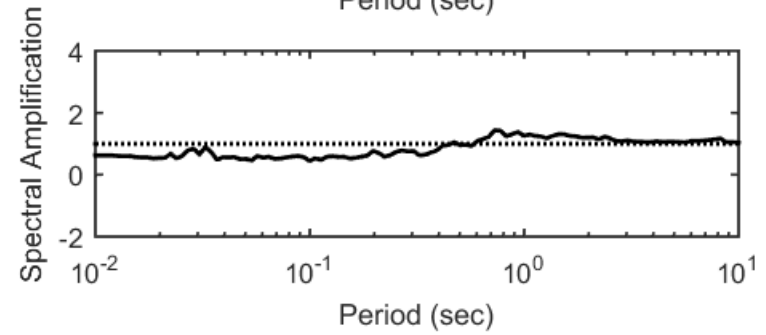
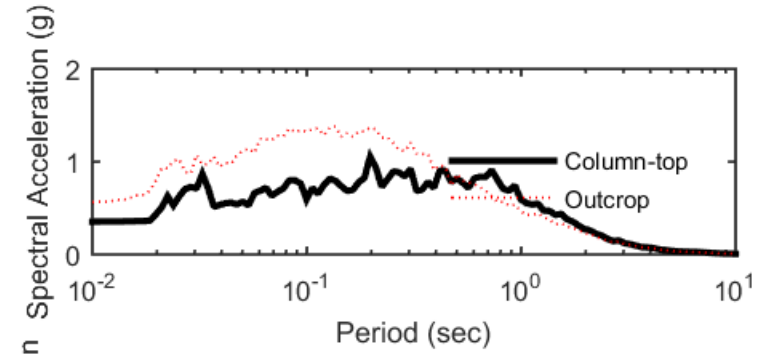
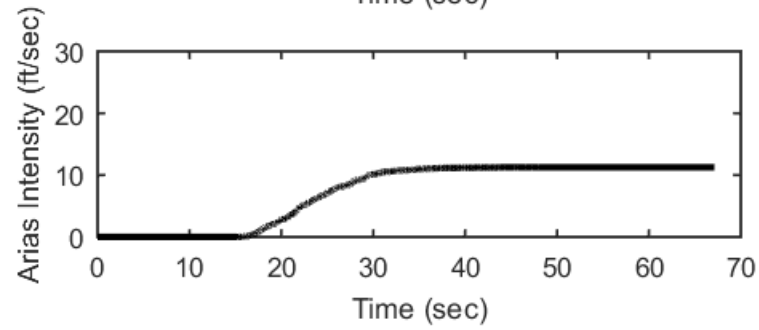
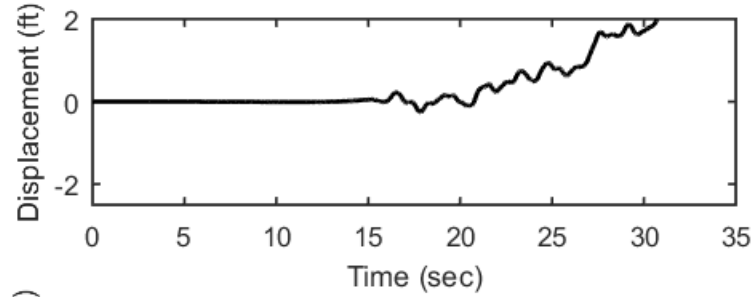
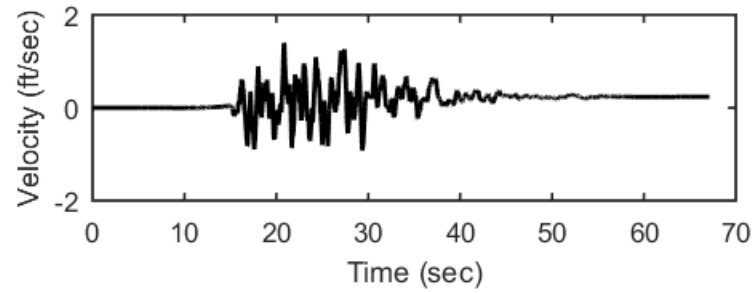
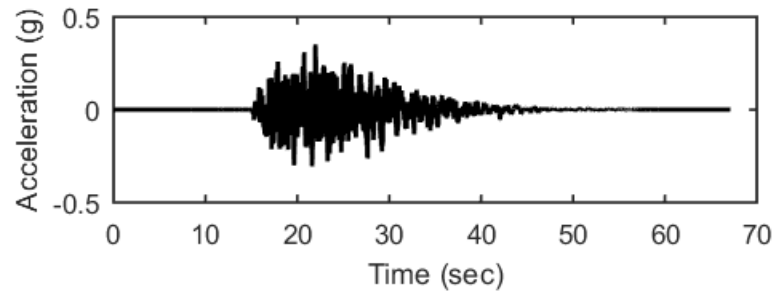
### Profile outputs for: PWP Generation-Low Vs with SEE4



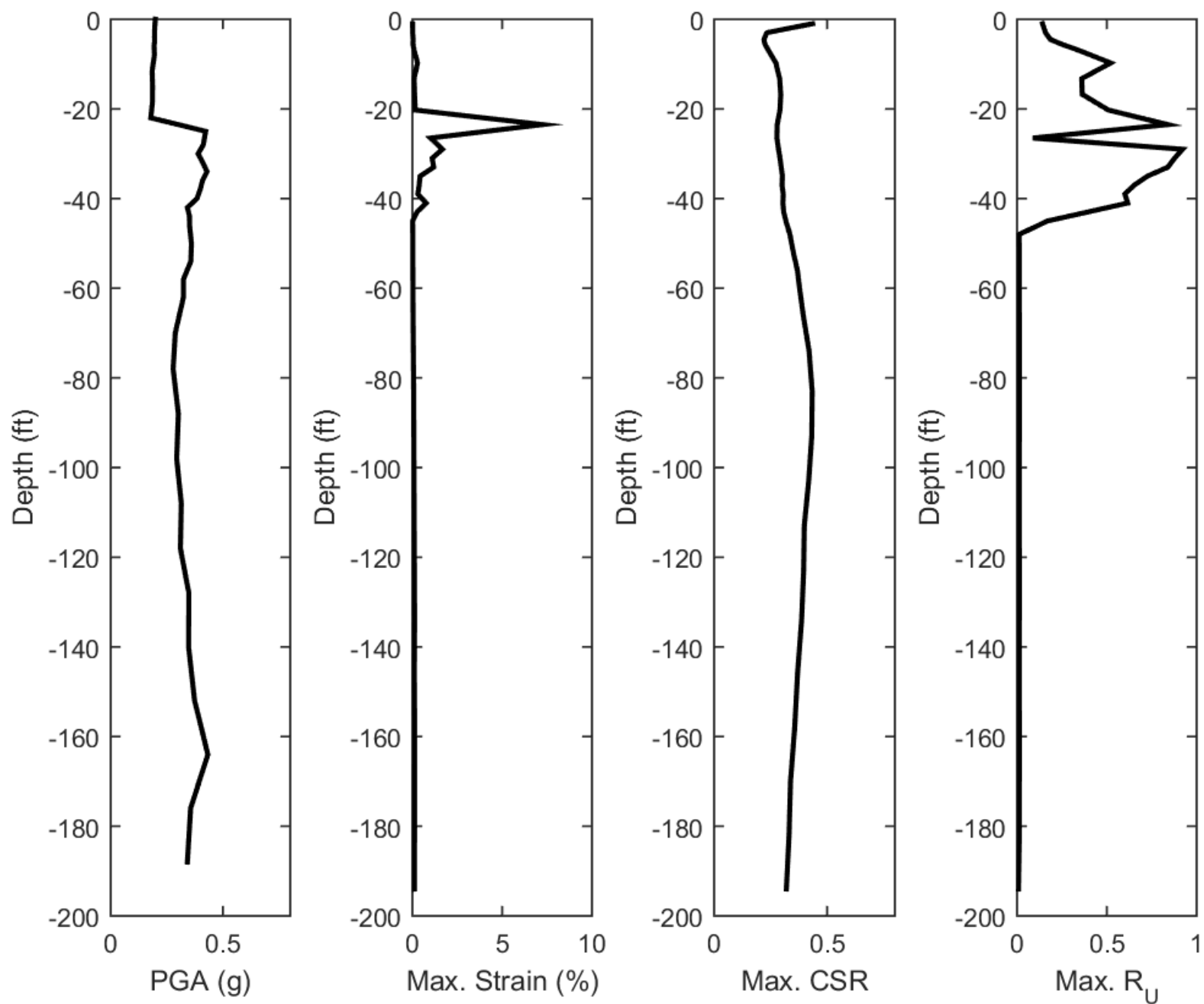
## Outputs at Ground Surface for: PWP Generation-Low Vs with SEE5



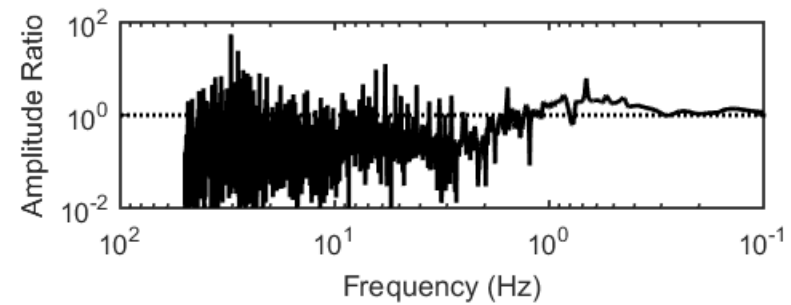
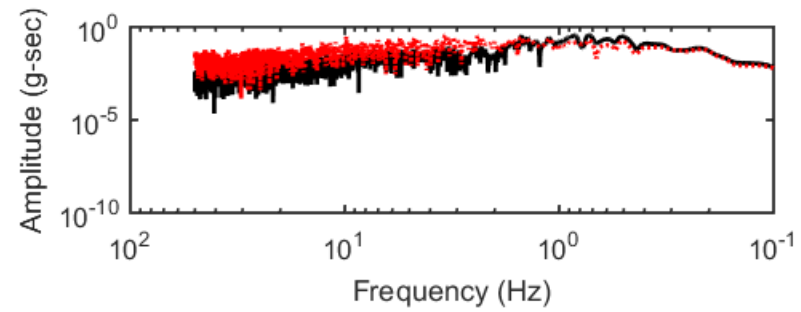
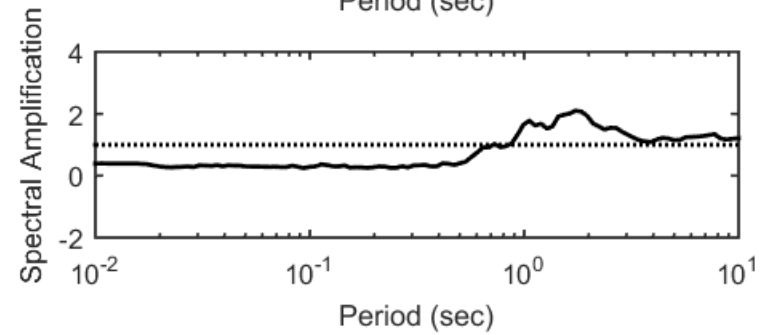
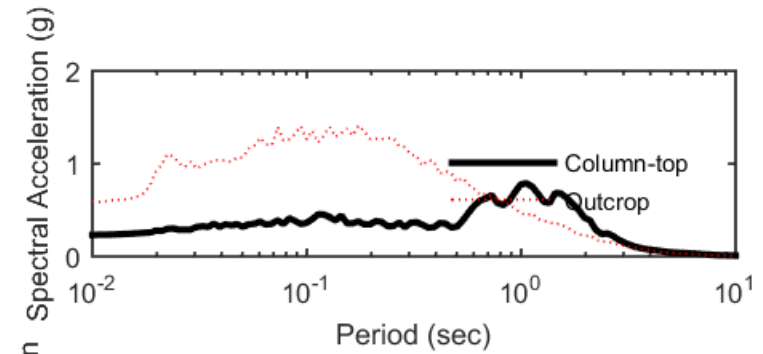
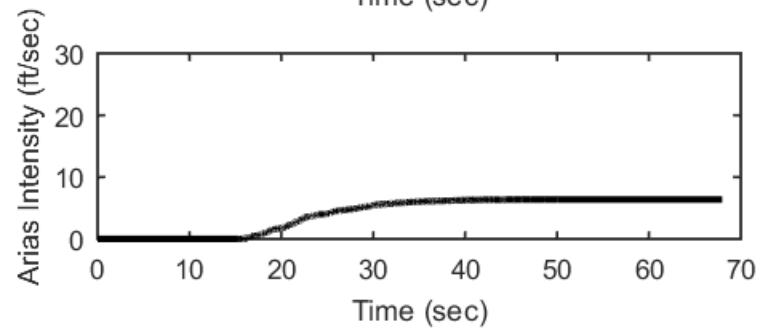
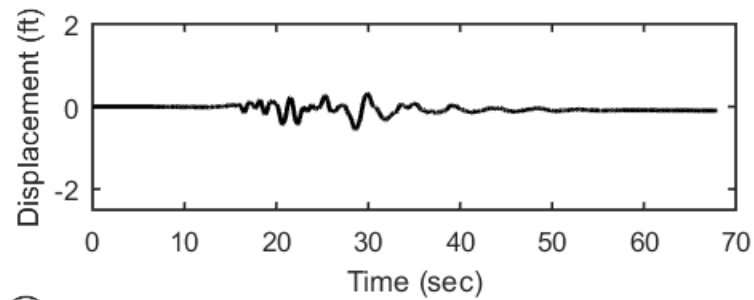
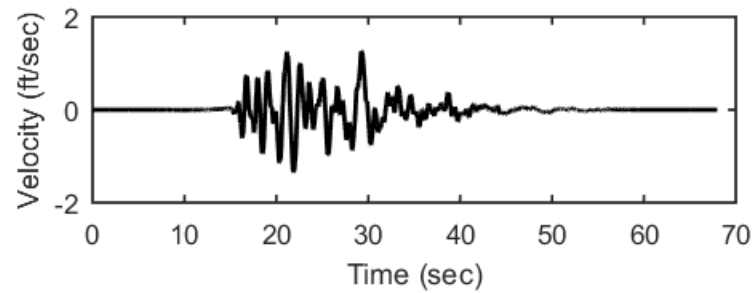
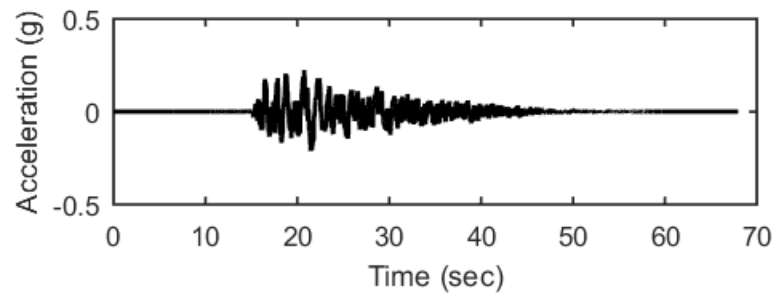
## Outputs at Top of Marl for: PWP Generation-Low Vs with SEE5



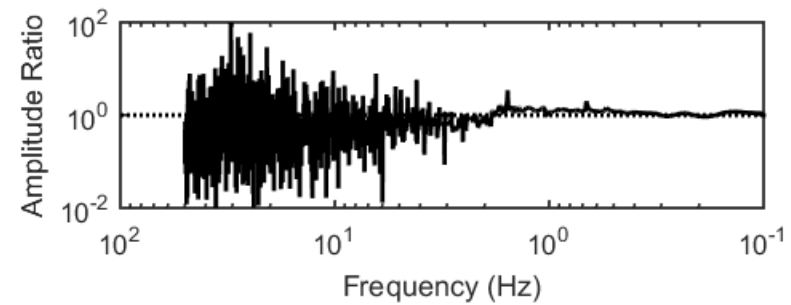
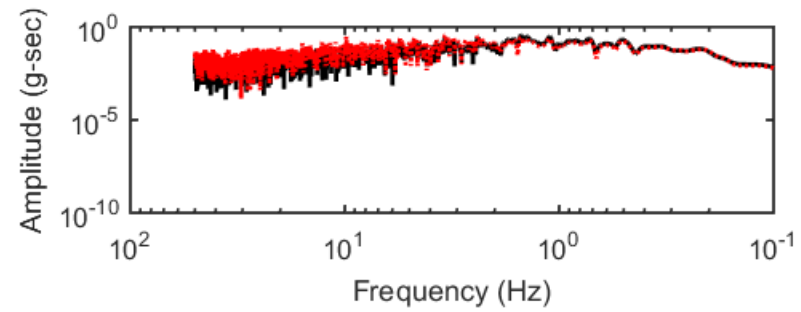
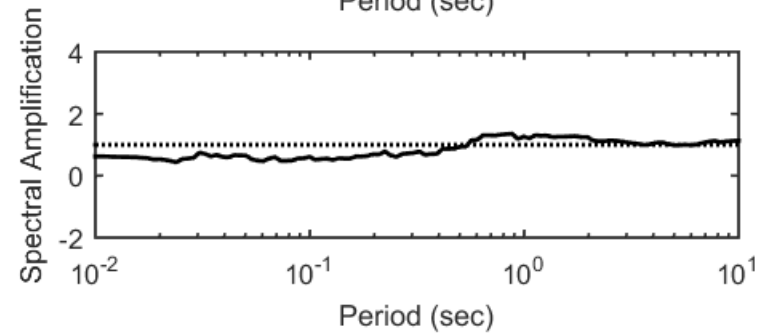
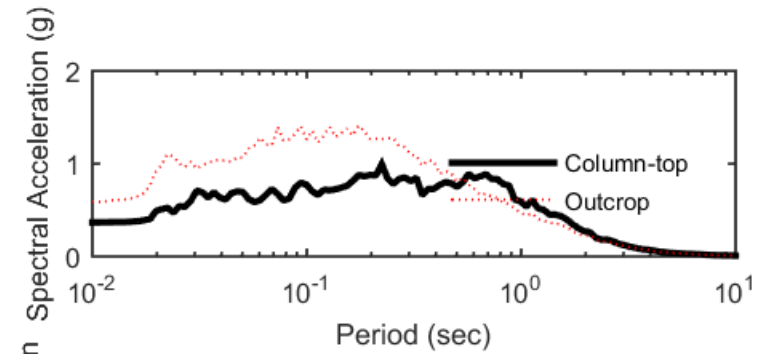
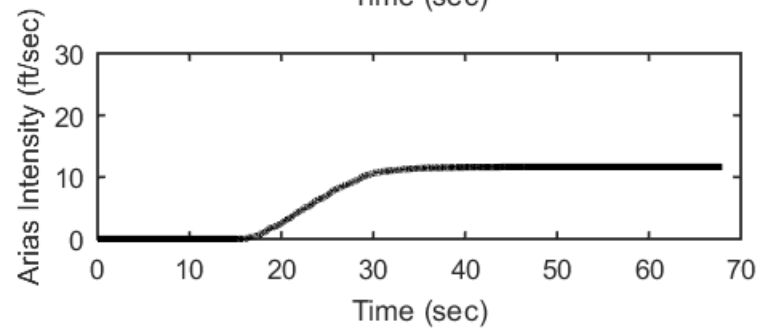
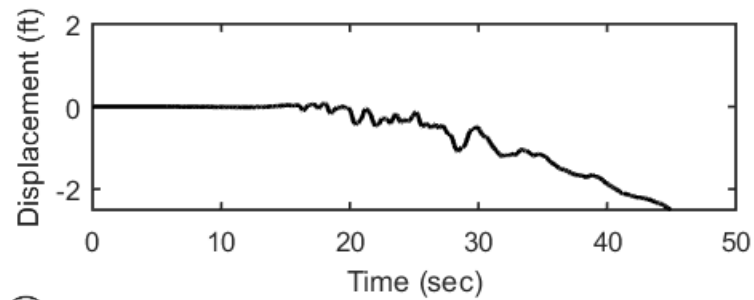
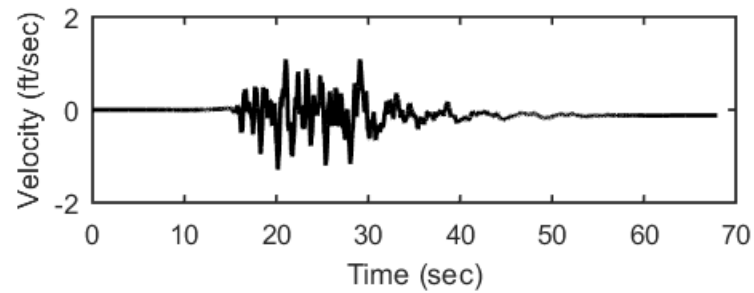
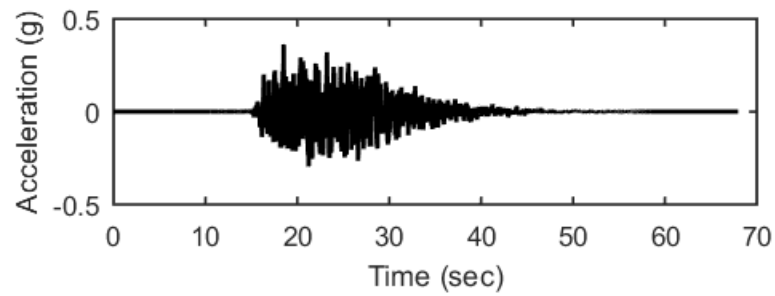
# Profile outputs for: PWP Generation-Low Vs with SEE5



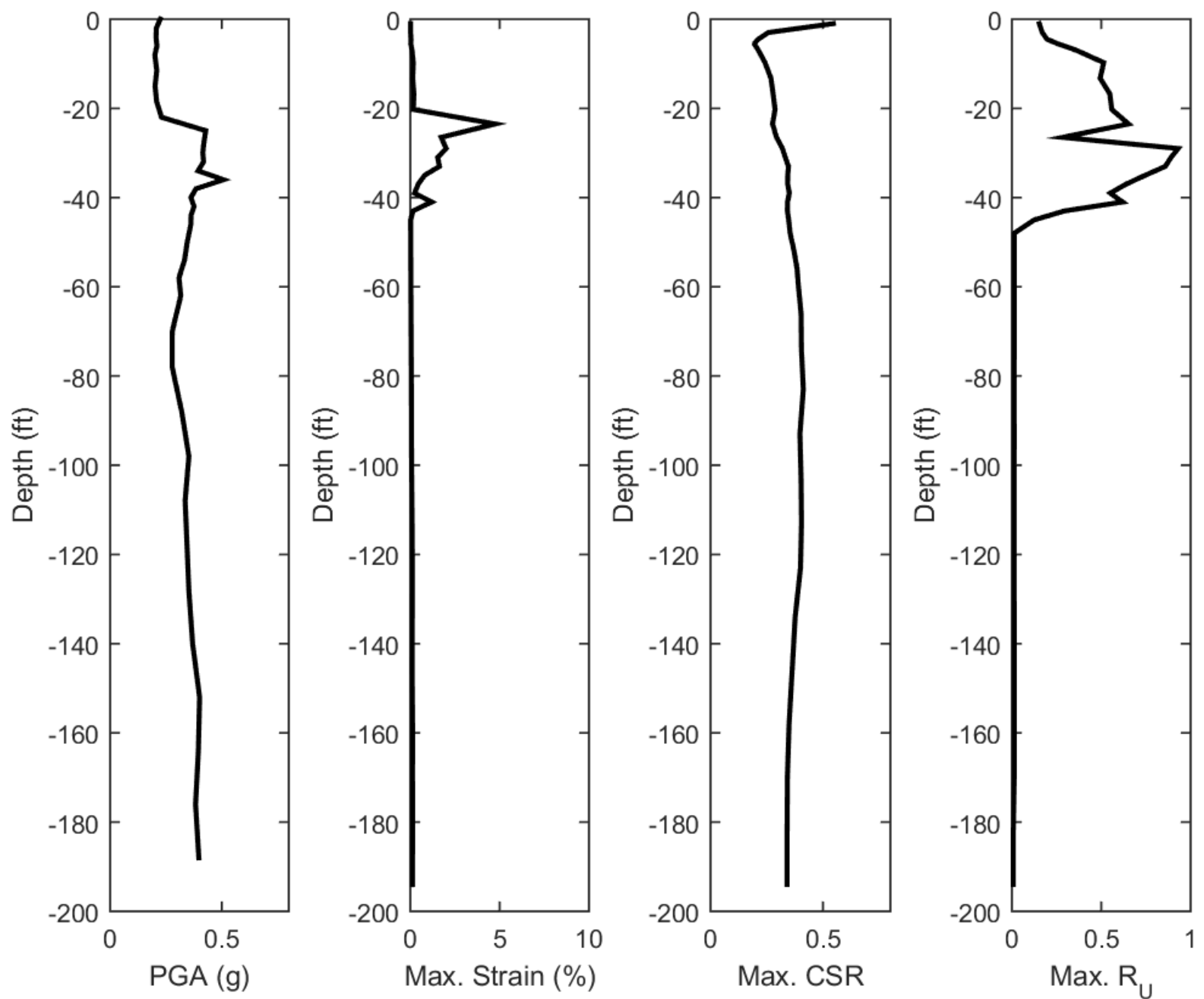
## Outputs at Ground Surface for: PWP Generation-Low Vs with SEE6



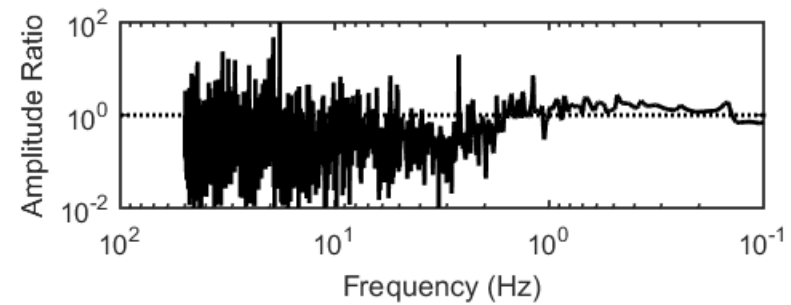
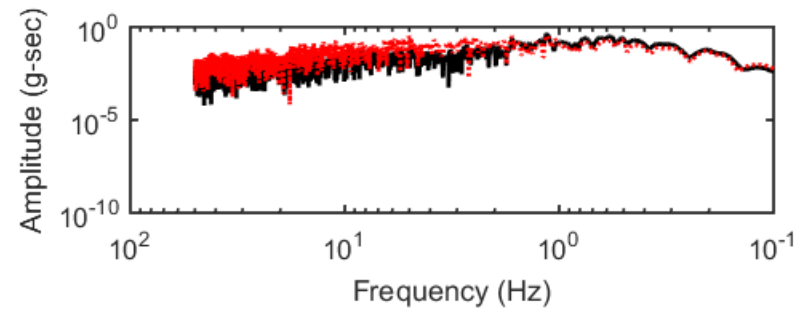
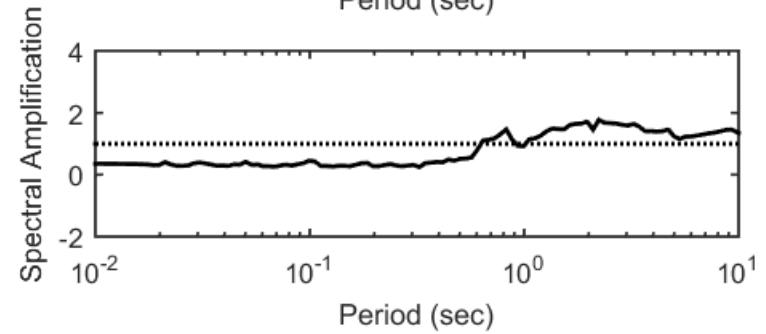
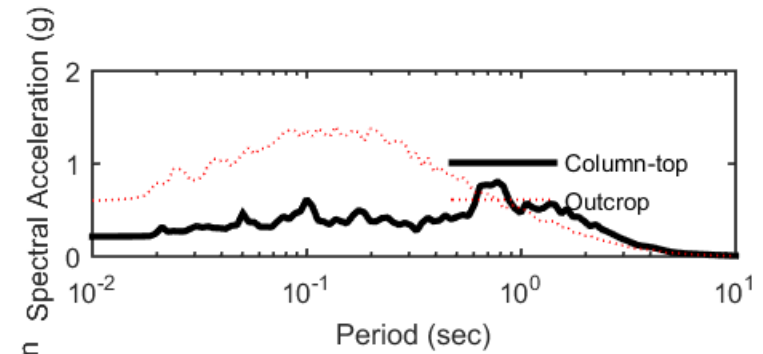
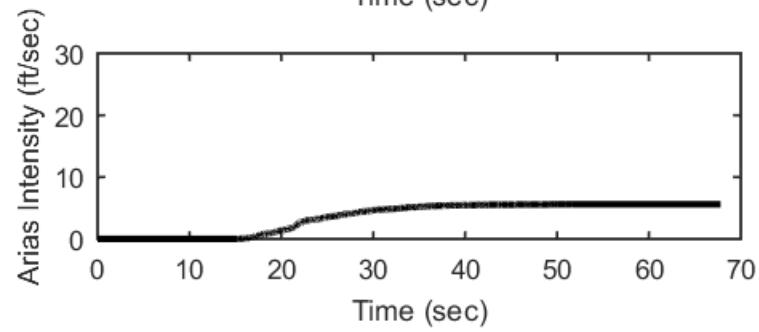
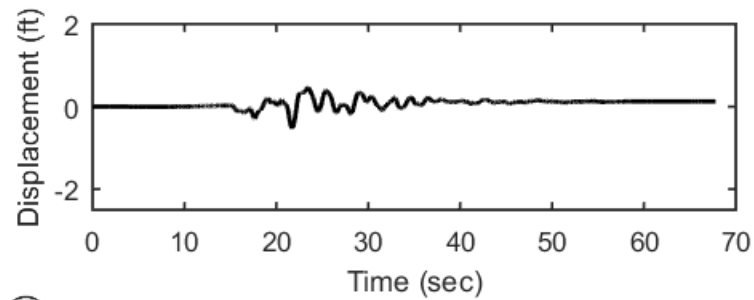
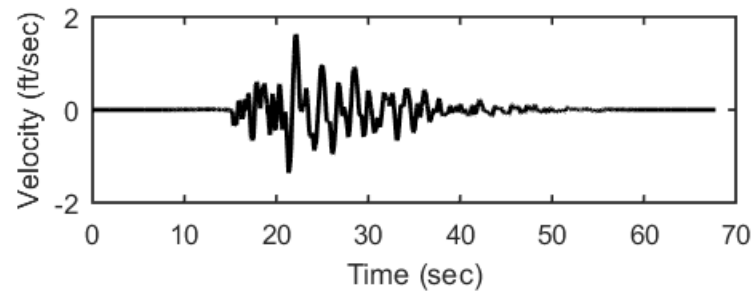
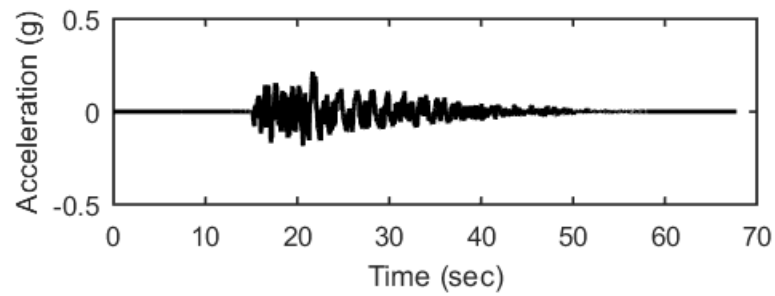
## Outputs at Top of Marl for: PWP Generation-Low Vs with SEE6



### Profile outputs for: PWP Generation-Low Vs with SEE6

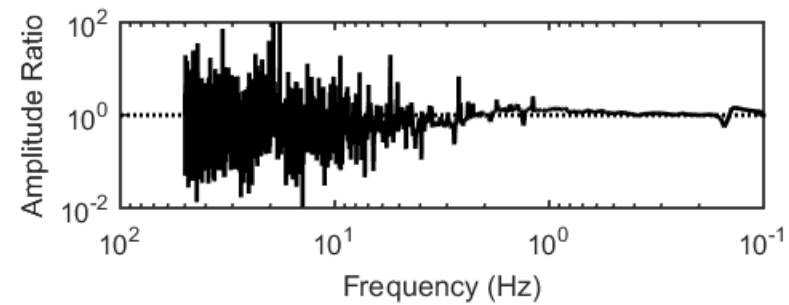
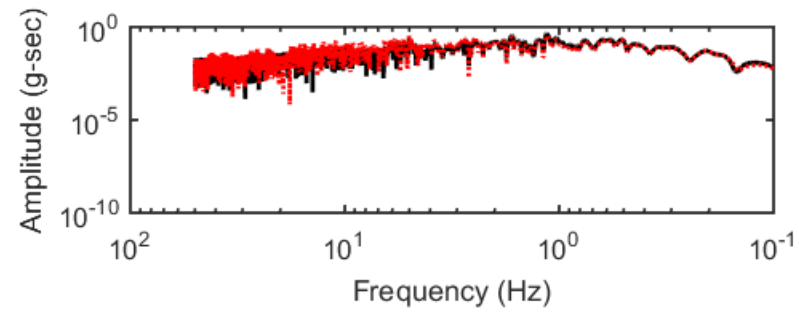
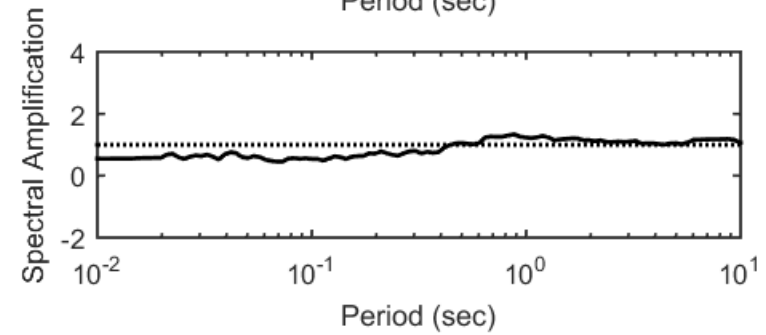
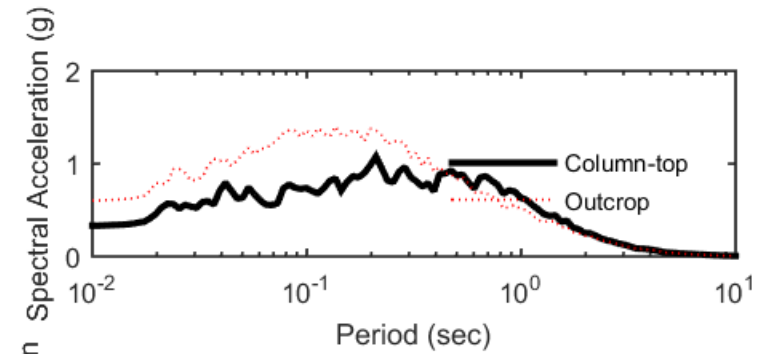
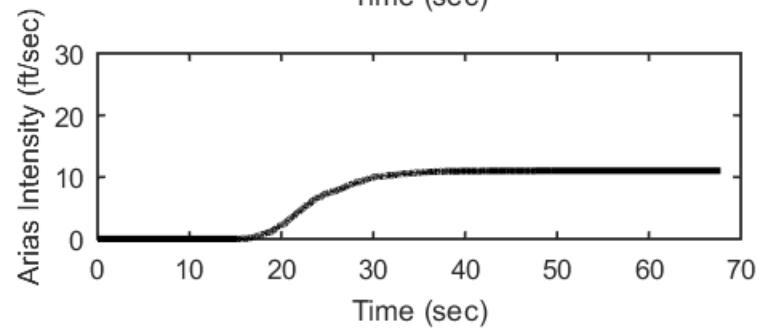
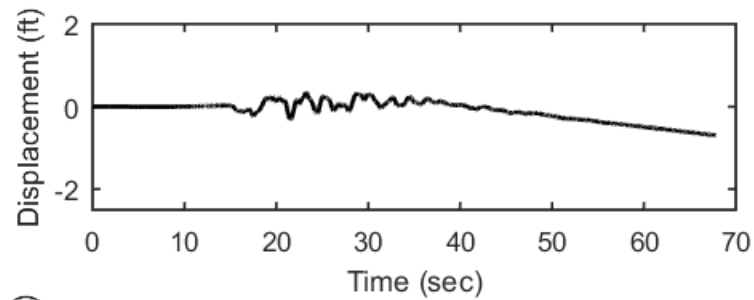
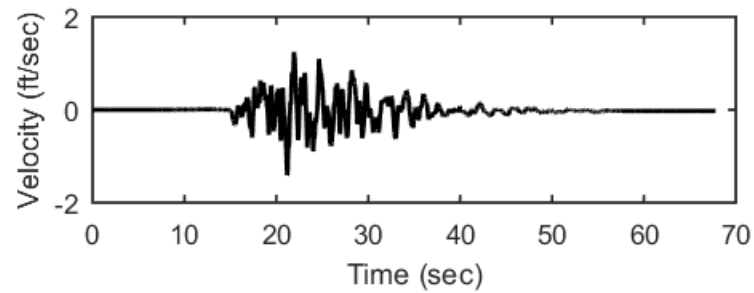
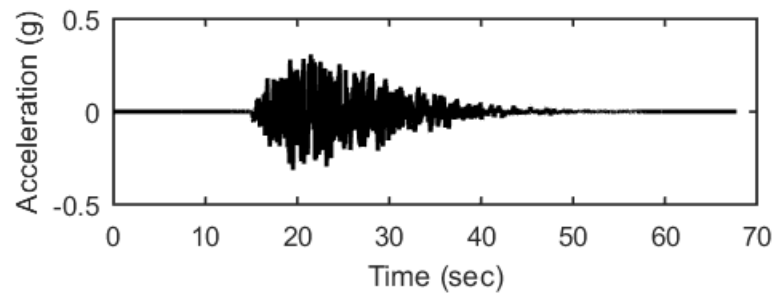


## Outputs at Ground Surface for: PWP Generation-Low Vs with SEE7

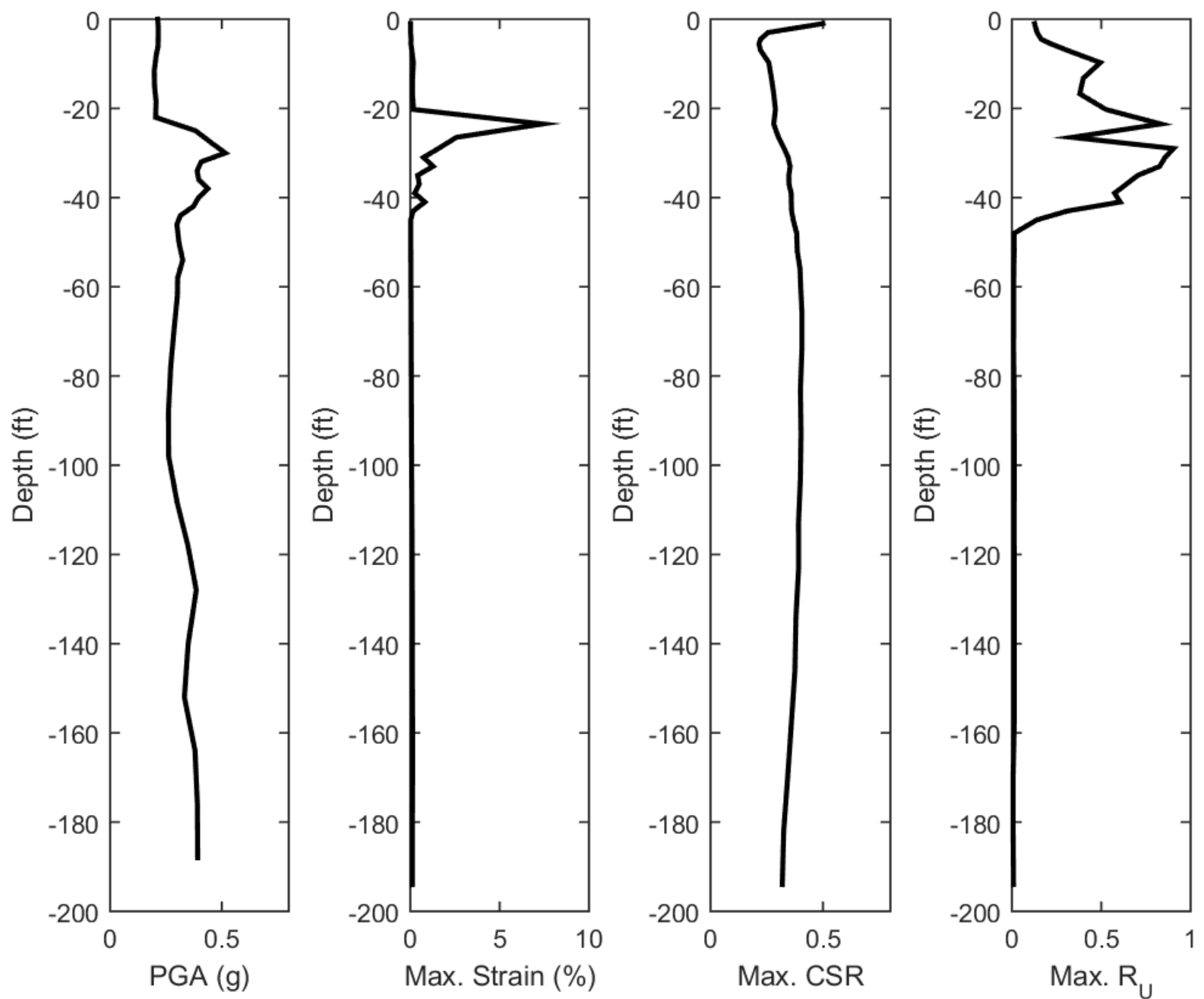




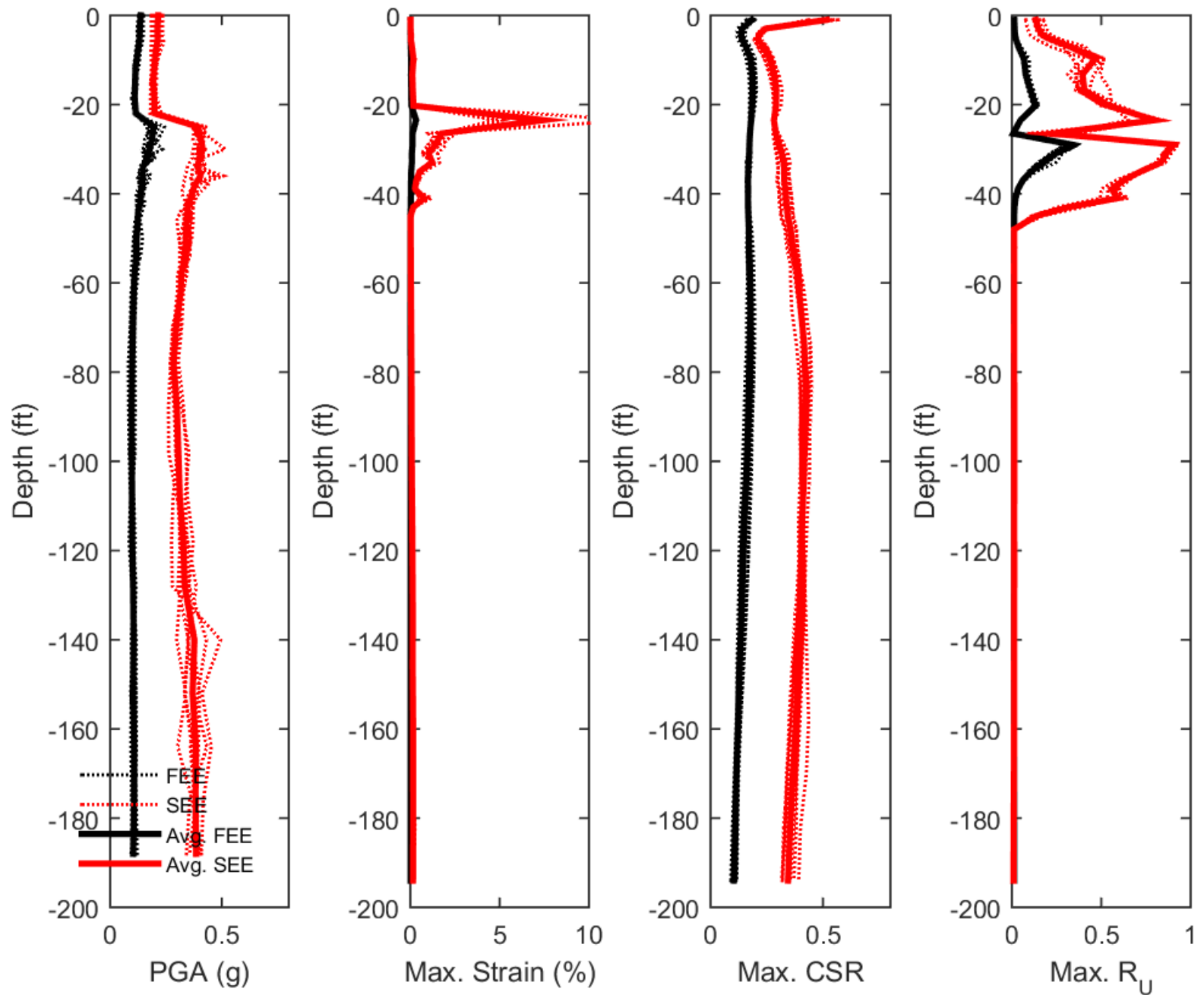
## Outputs at Top of Marl for: PWP Generation-Low Vs with SEE7



# Profile outputs for: PWP Generation-Low Vs with SEE7

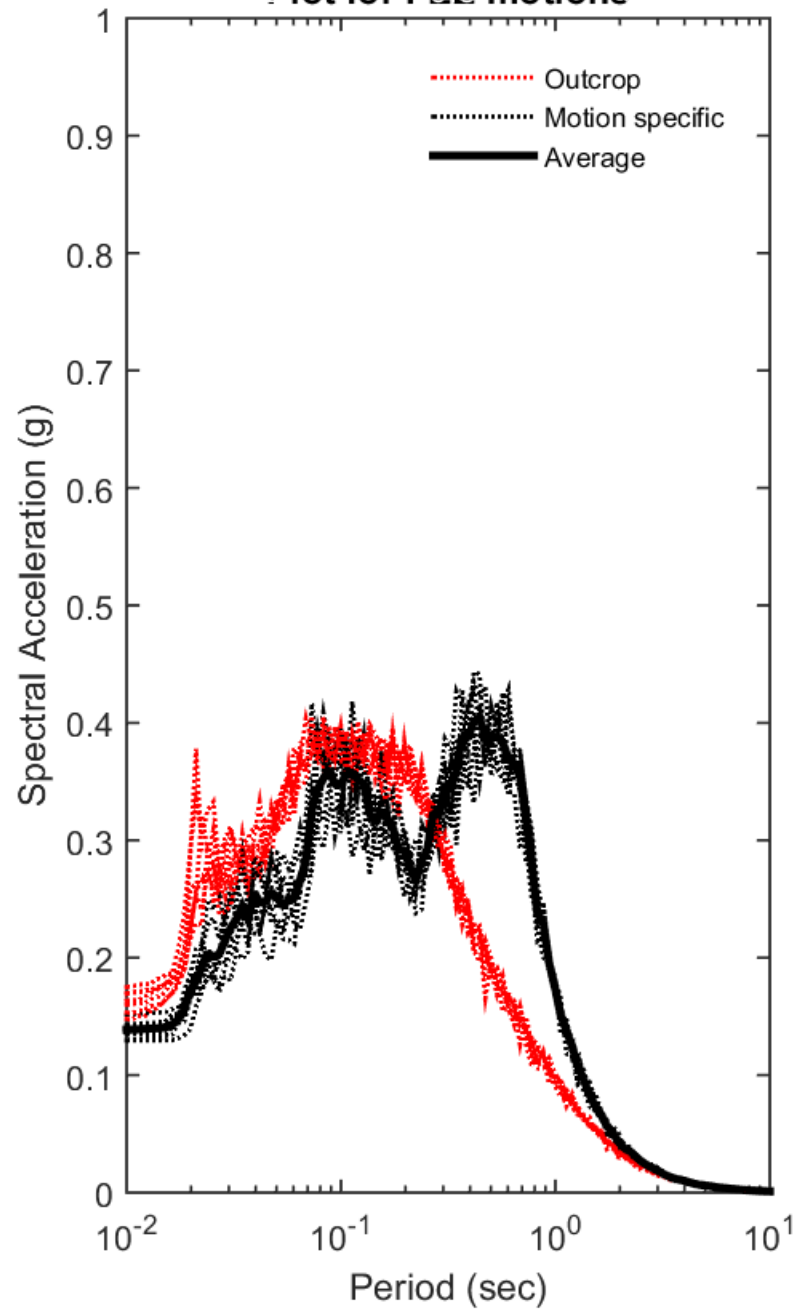


## Summary of profile outputs for: PWP Generation-Low Vs

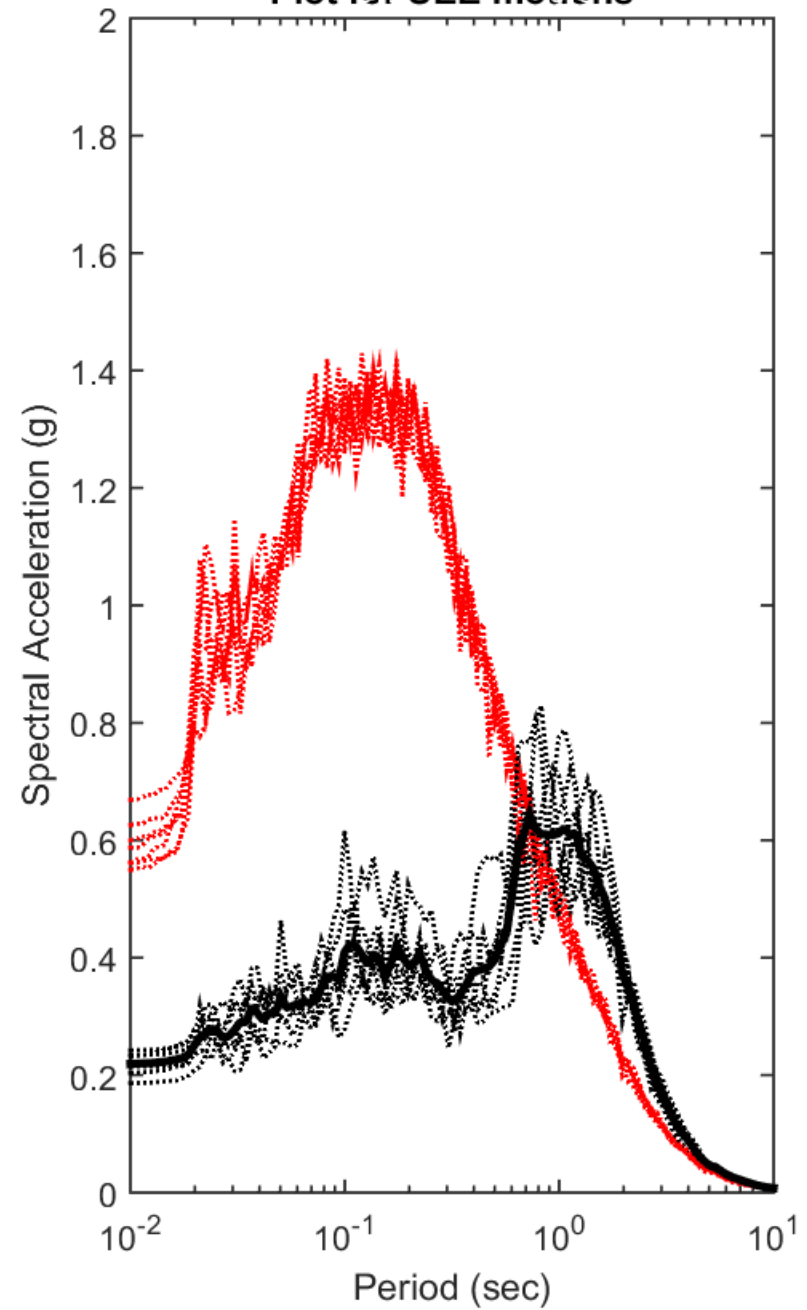


## Summary plots of RSA at ground surface for: PWP Generation-Low Vs

Plot for FEE motions:

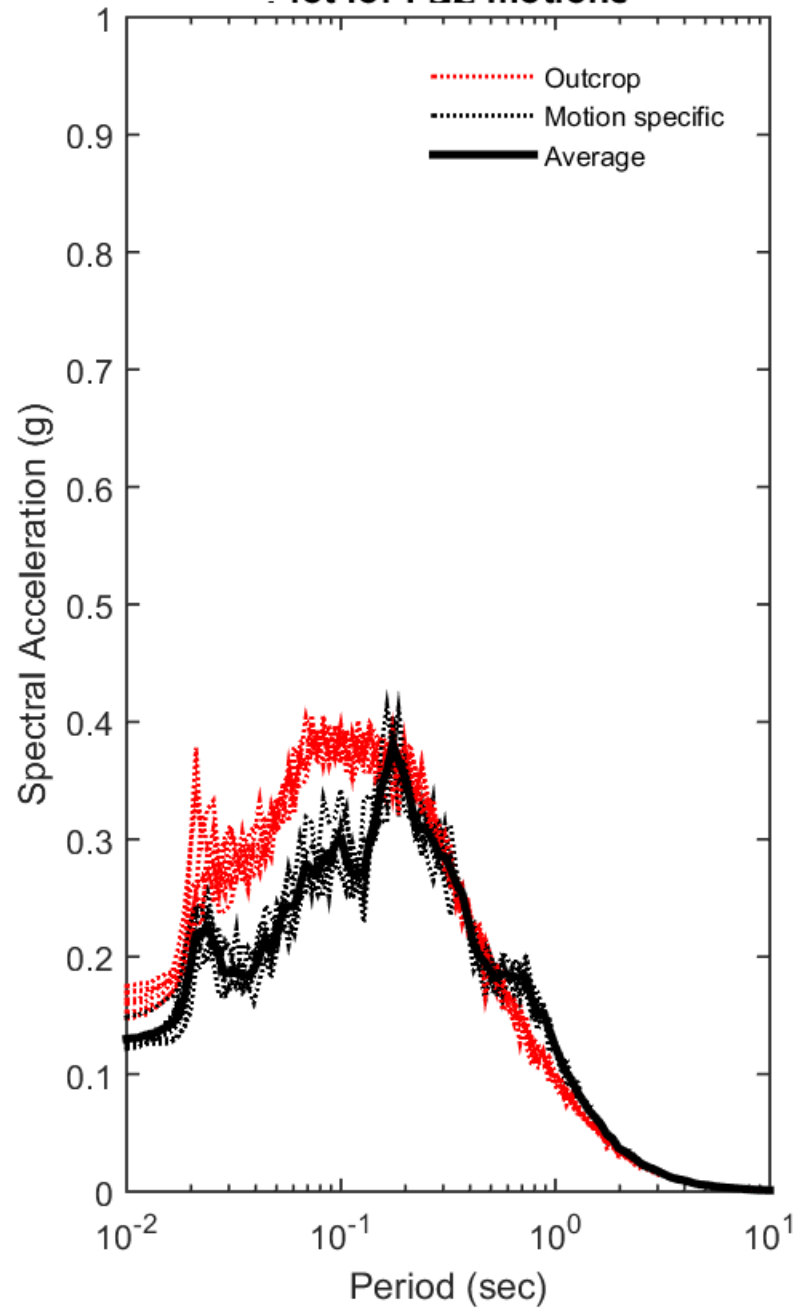


Plot for SEE motions:

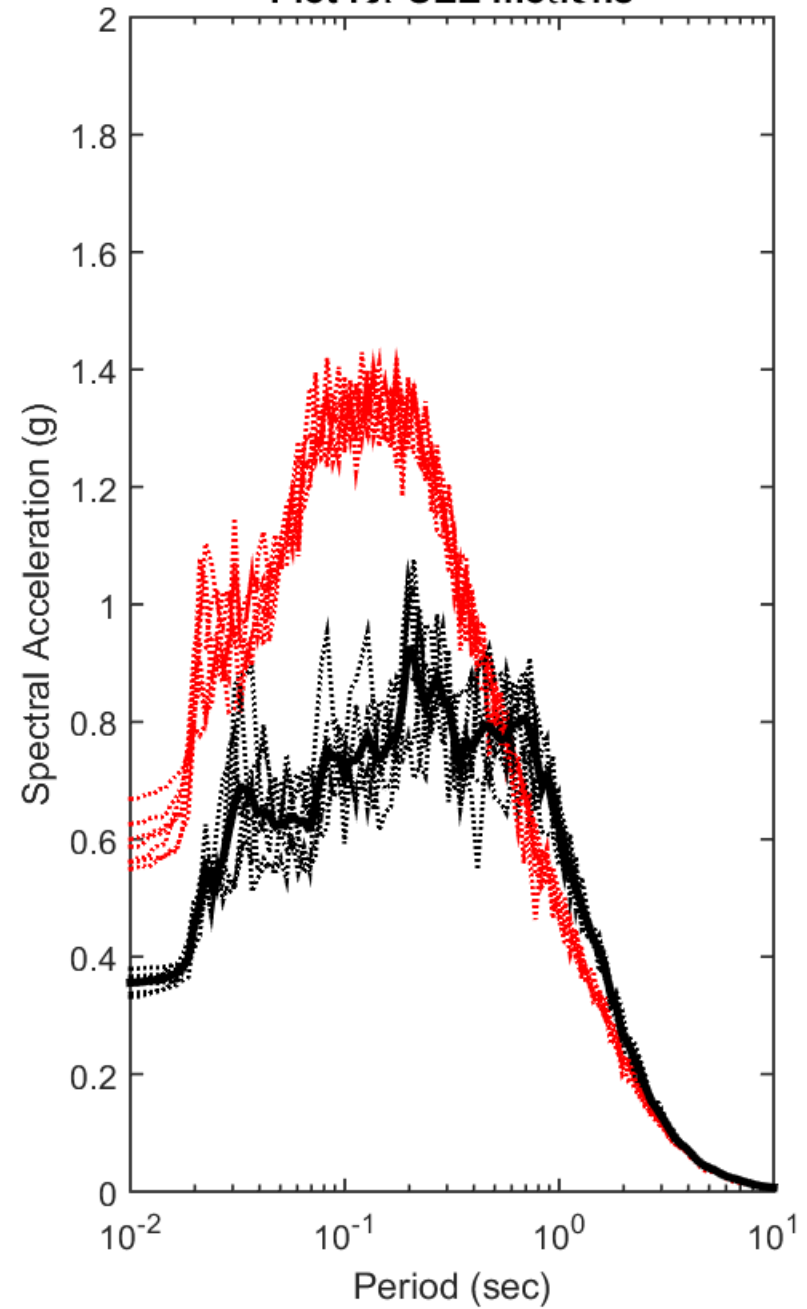


## Summary plots of RSA at top of Marl for: PWP Generation-Low Vs

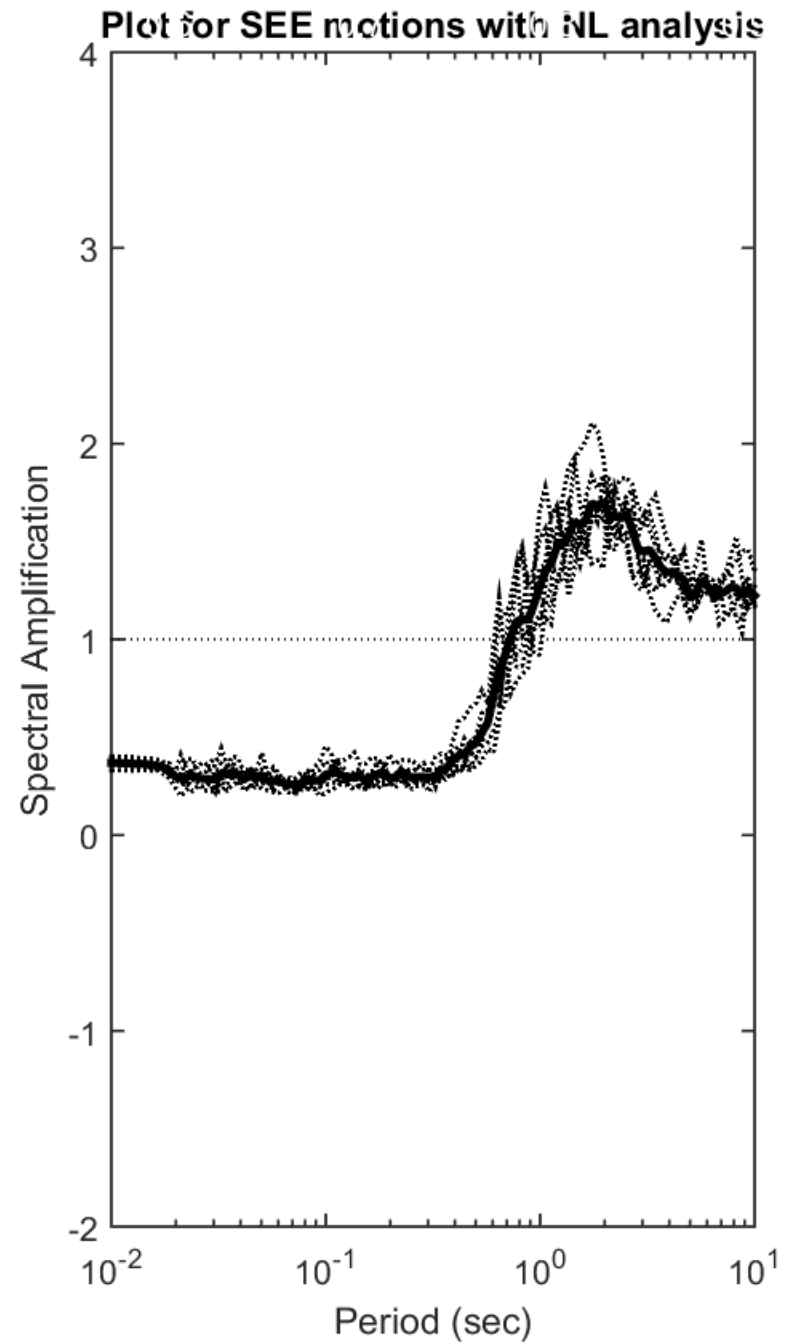
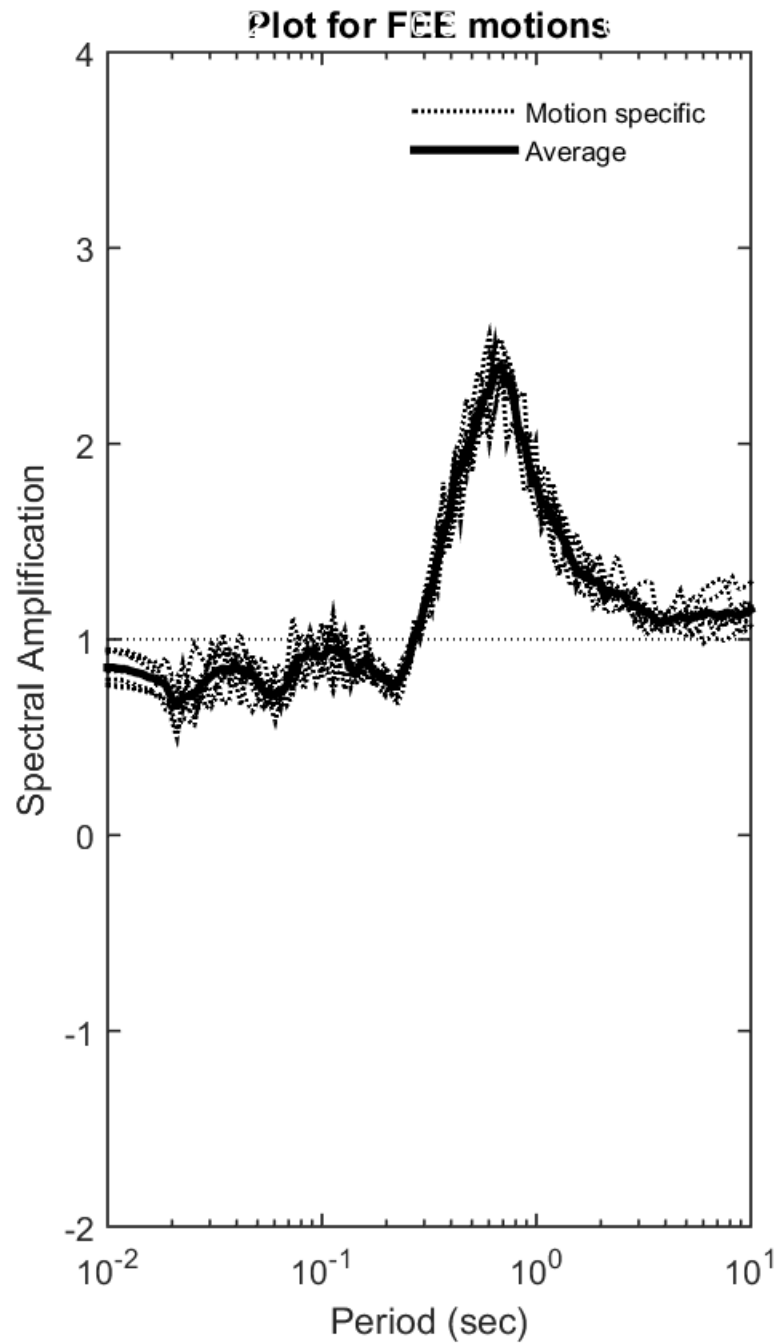
Plot for FEE motions:



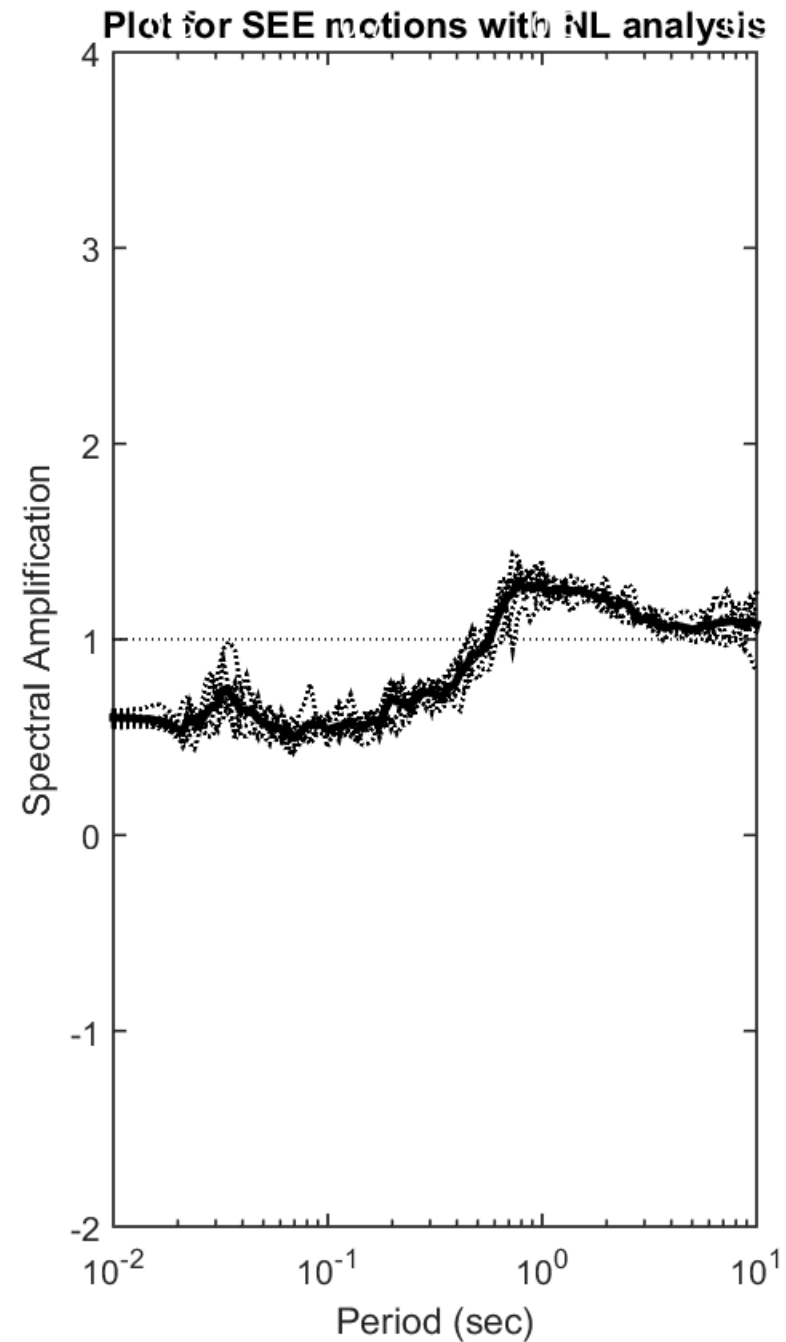
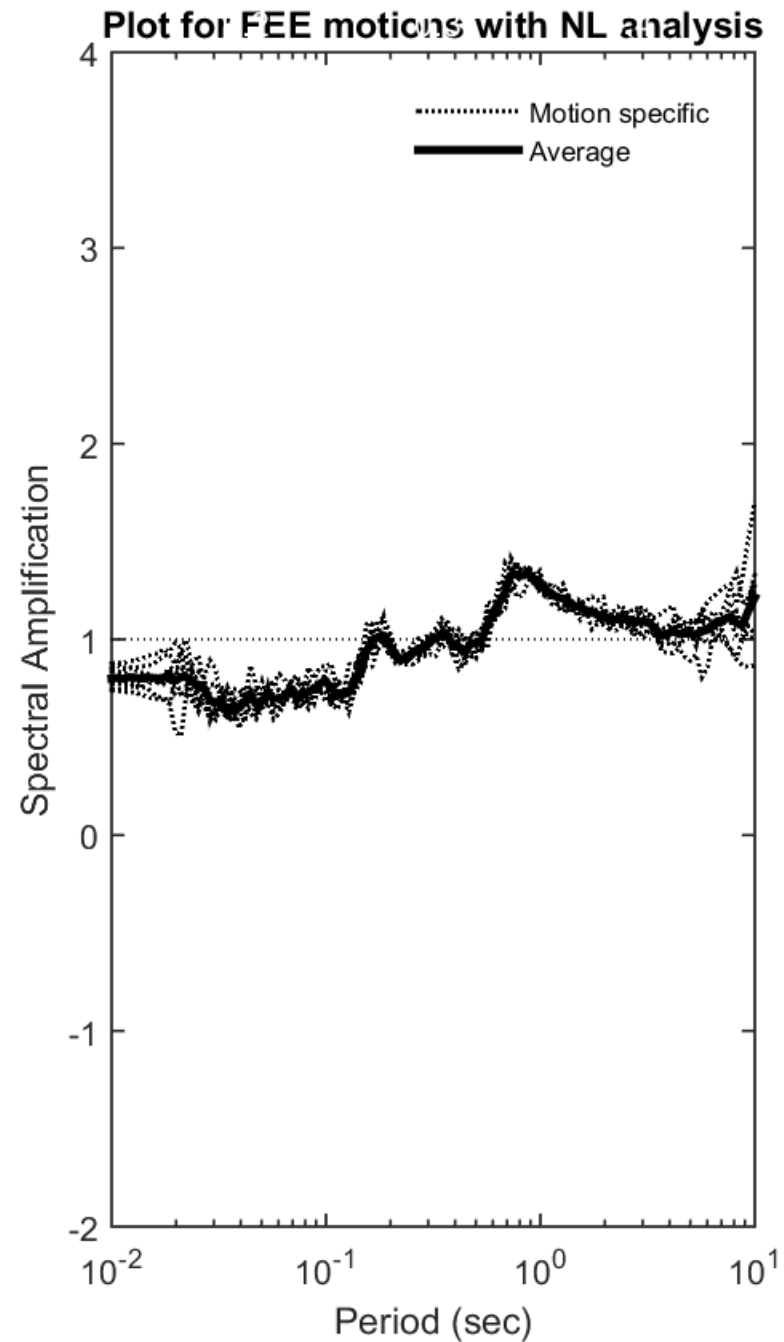
Plot for SEE motions:



## Summary plots of Spectral amplifications at ground surface for: PWP Generation-Low Vs



## Summary plots of Spectral amplifications at top of Marl for: PWP Generation-Low Vs

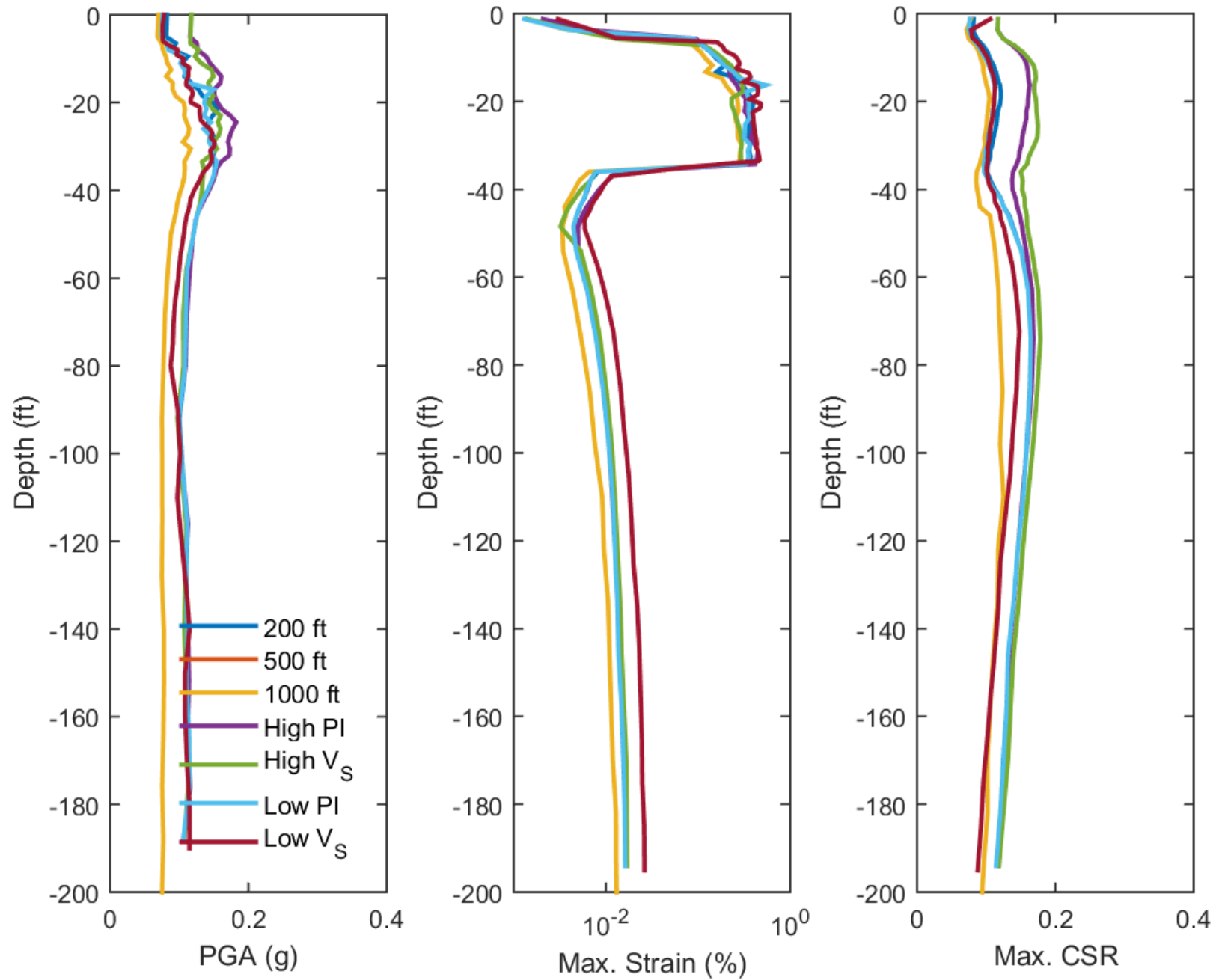


## **Appendix VI – Shipyard Creek Output**

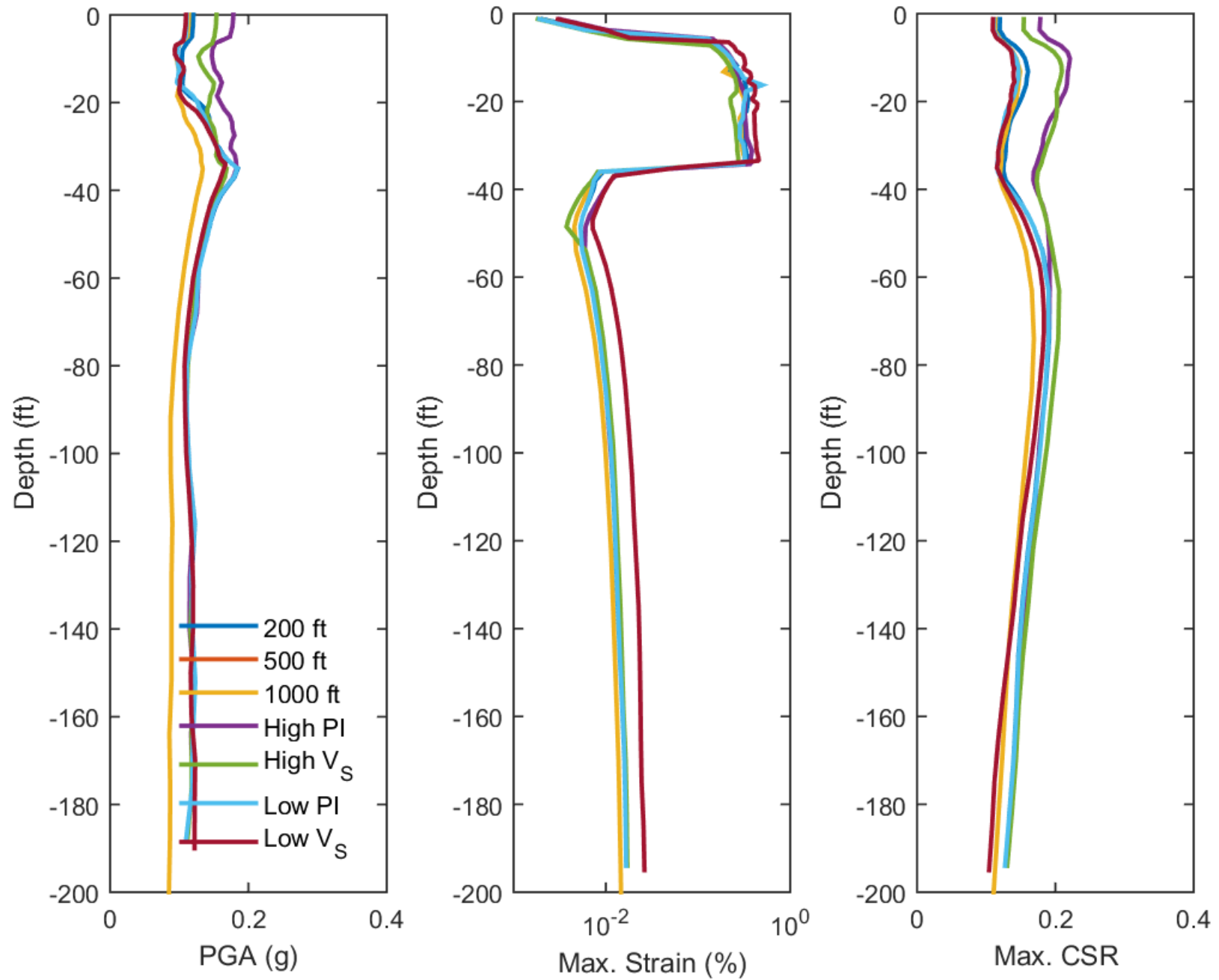


## **FEE SUMMARY PLOTS**

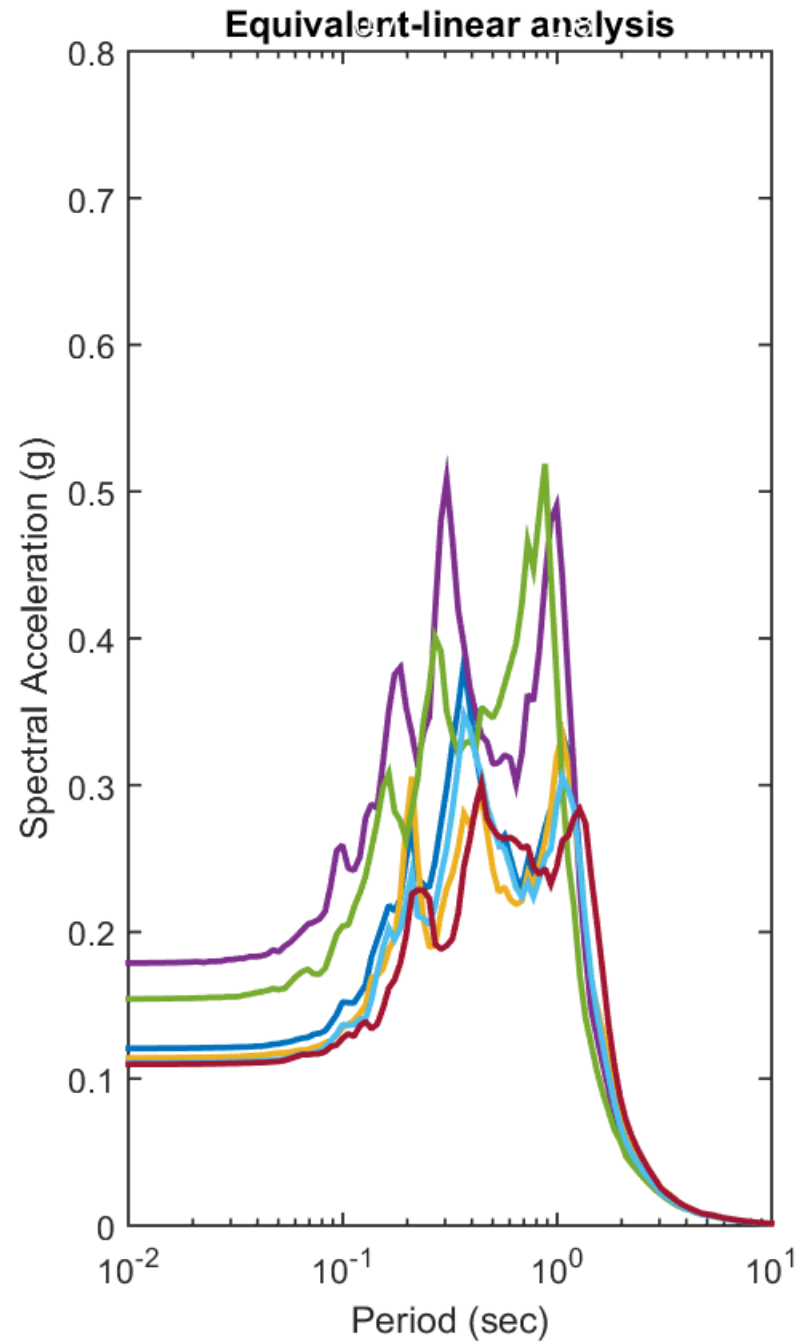
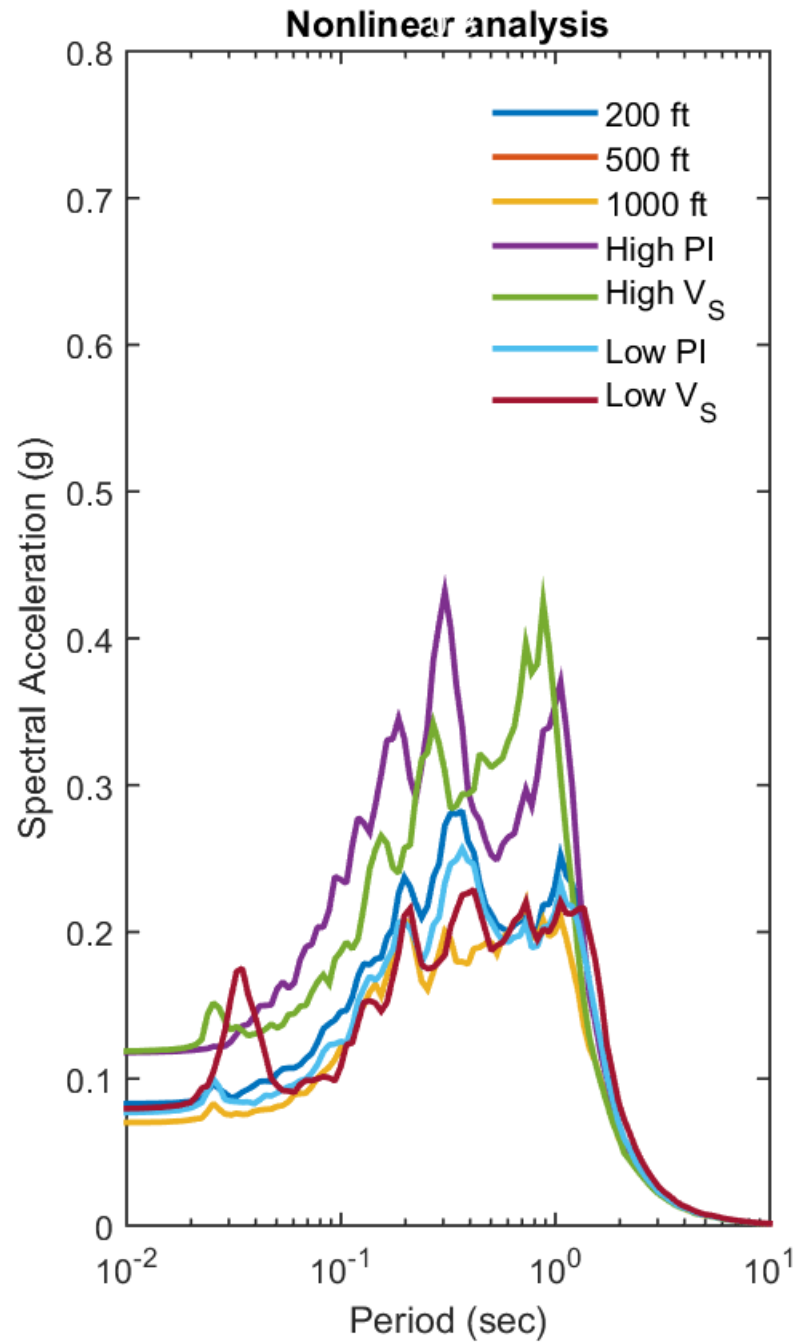
## Nonlinear Analysis for All Scenarios: Shipyard



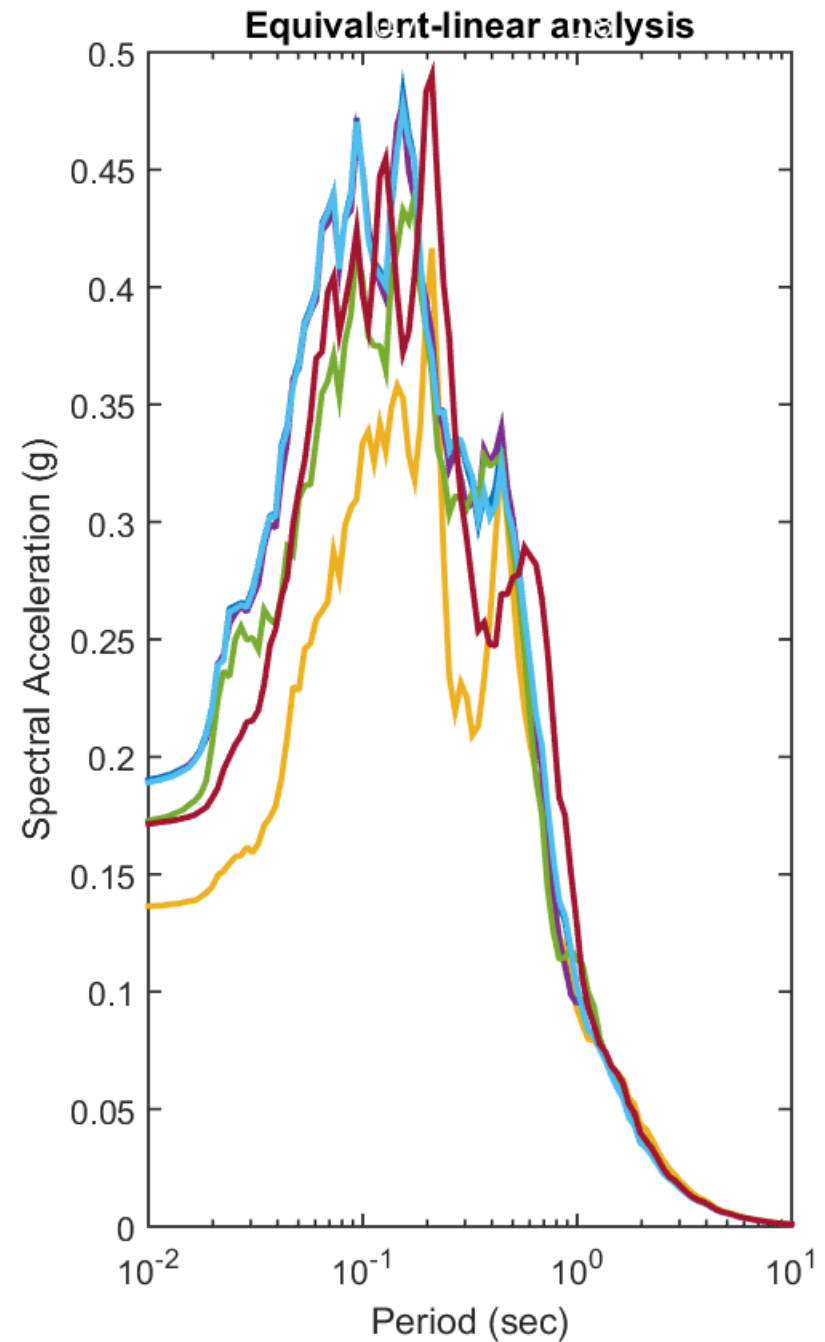
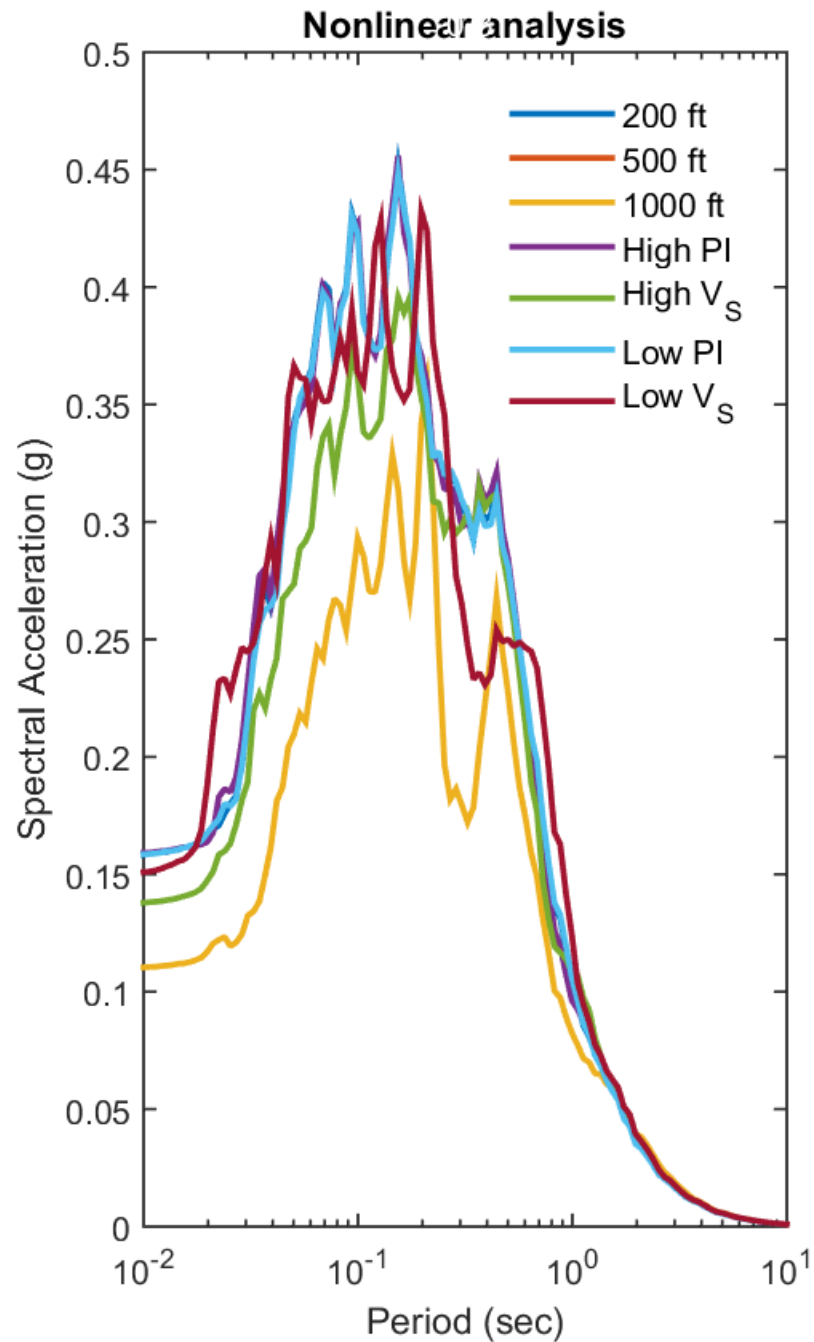
## Equivalent Linear Analysis for All Scenarios: Shipyard



## Ground Surface RS for All Scenarios: Shipyard

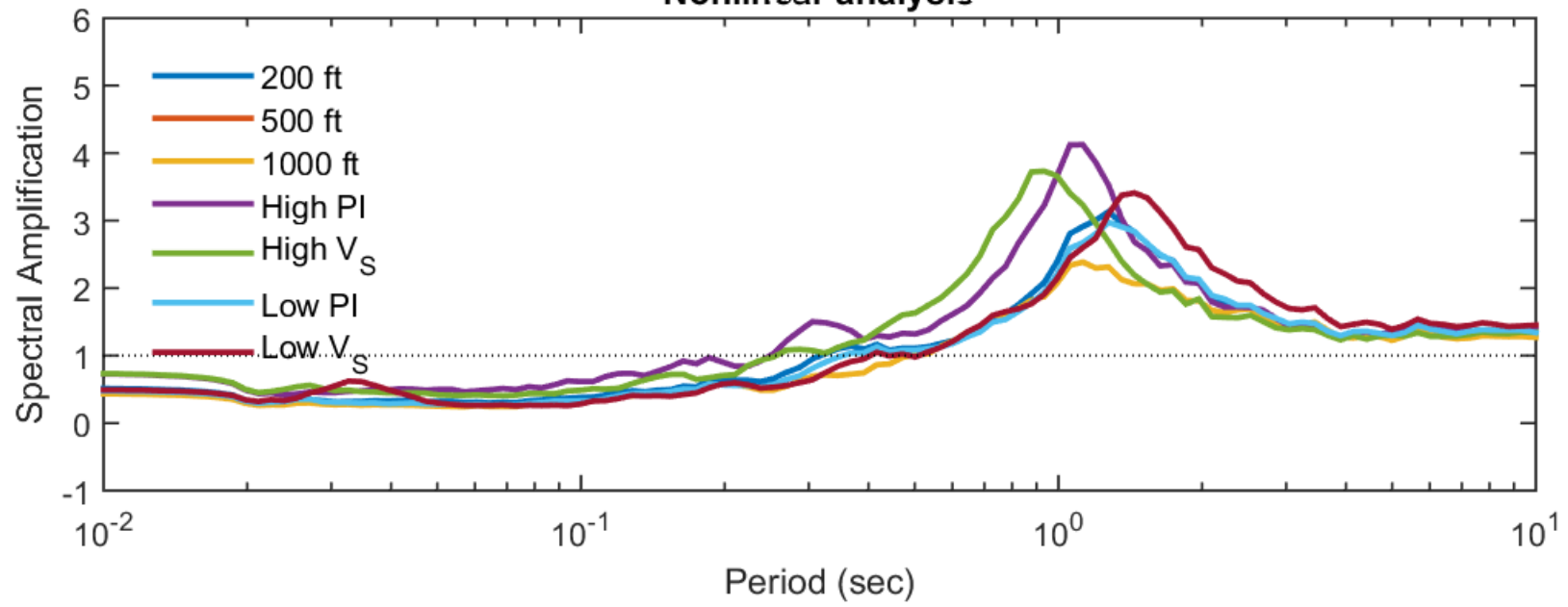


## Top of Marl RS for All Scenarios: Shipyard

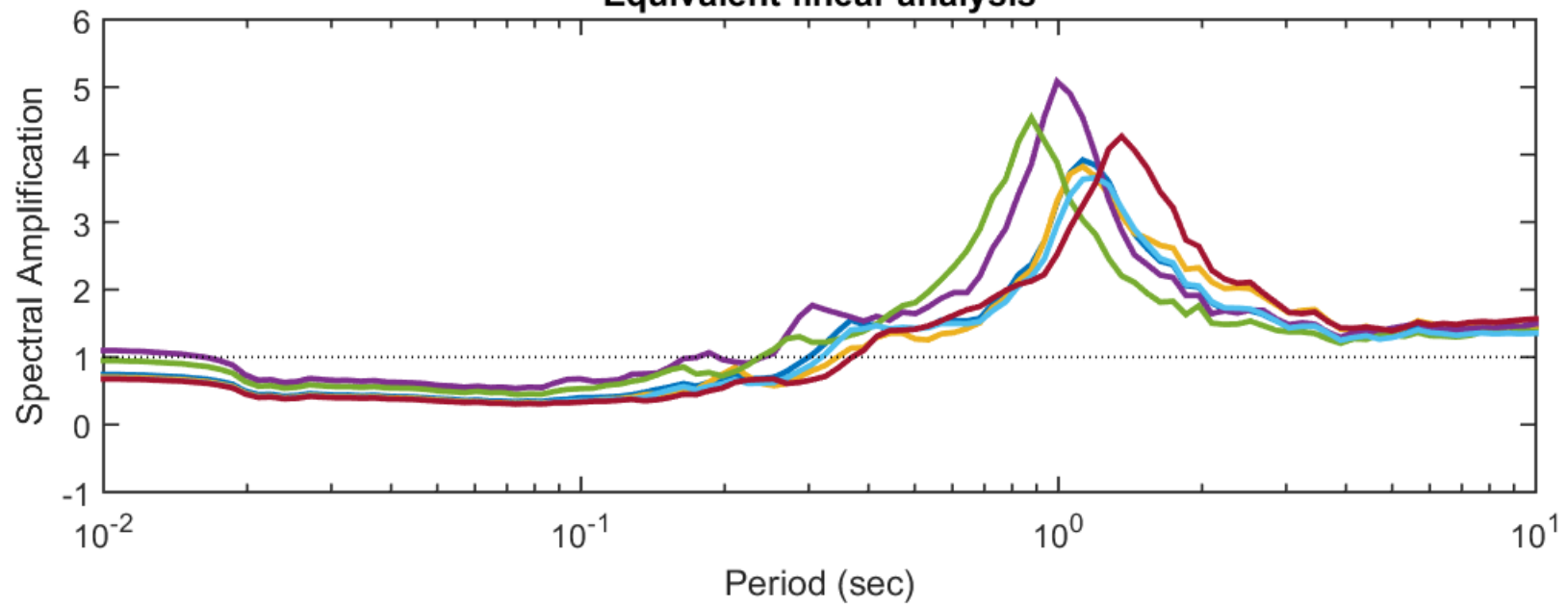


## Ground Surface Amplification for All Scenarios: Shipyard

### Nonlinear analysis

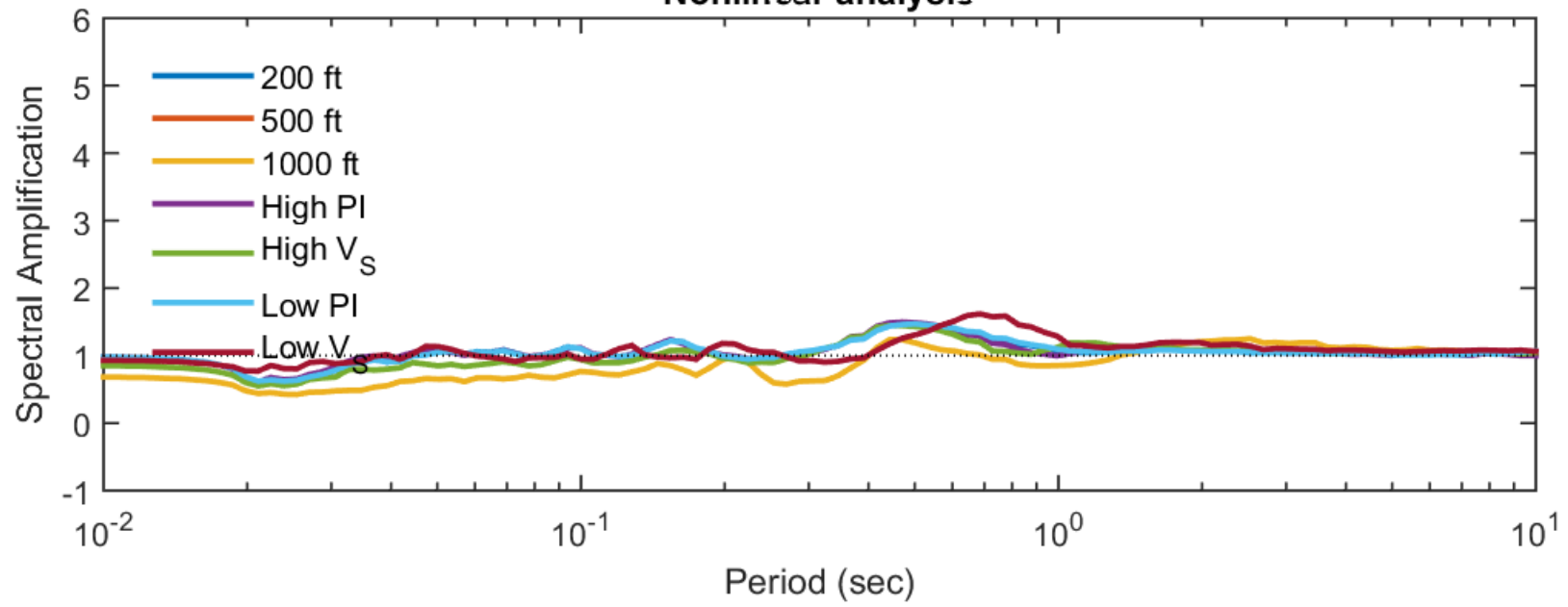


### Equivalent-linear analysis

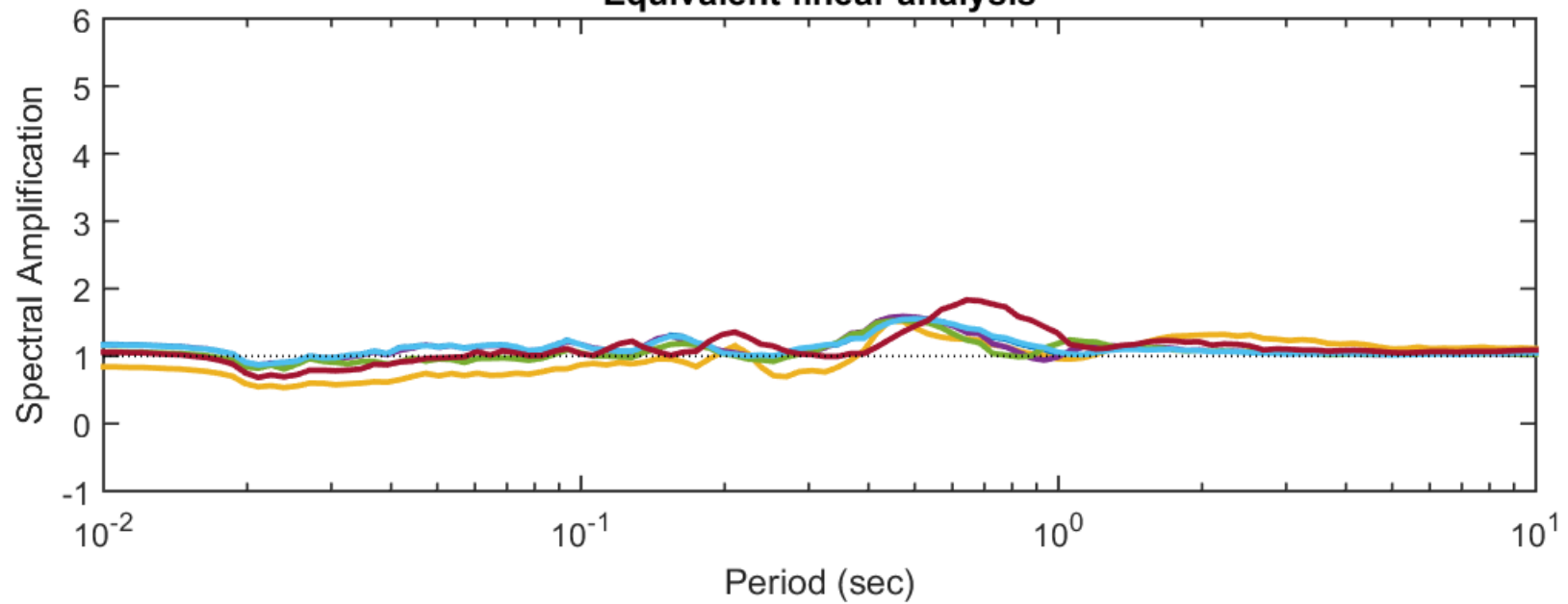


## Top of Marl Amplification for All Scenarios: Shipyard

### Nonlinear analysis



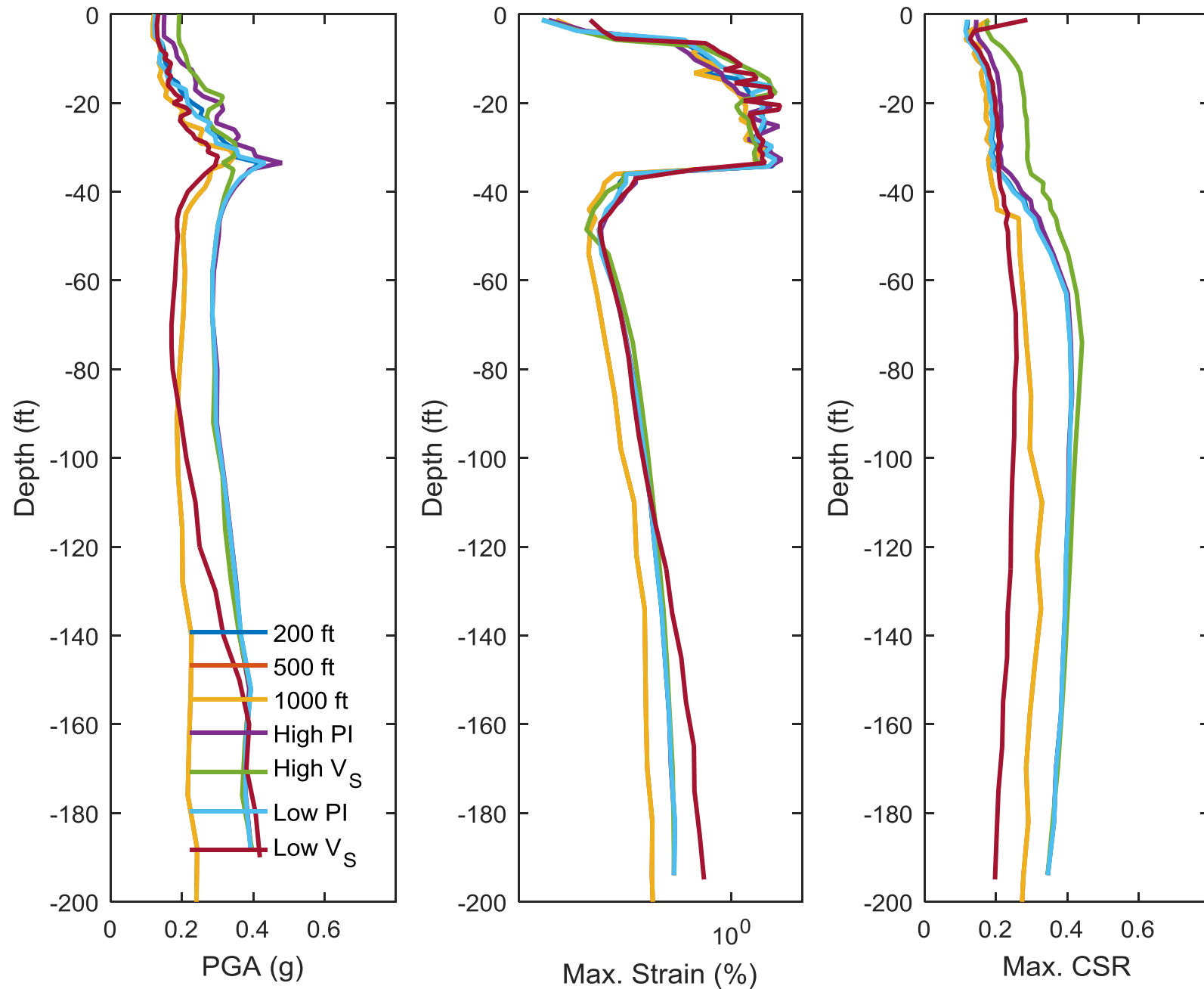
### Equivalent-linear analysis



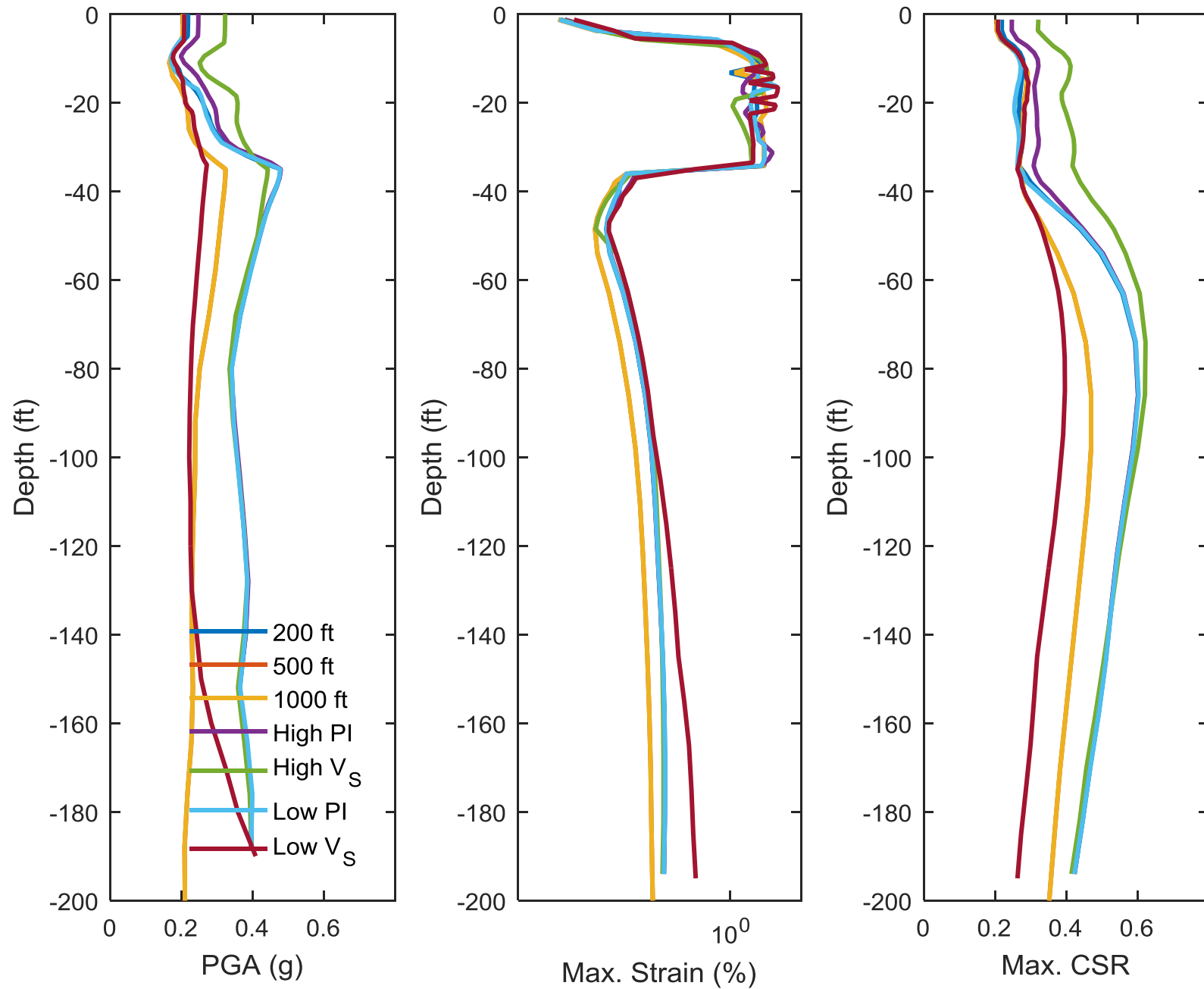
**SEE SUMMARY PLOTS**



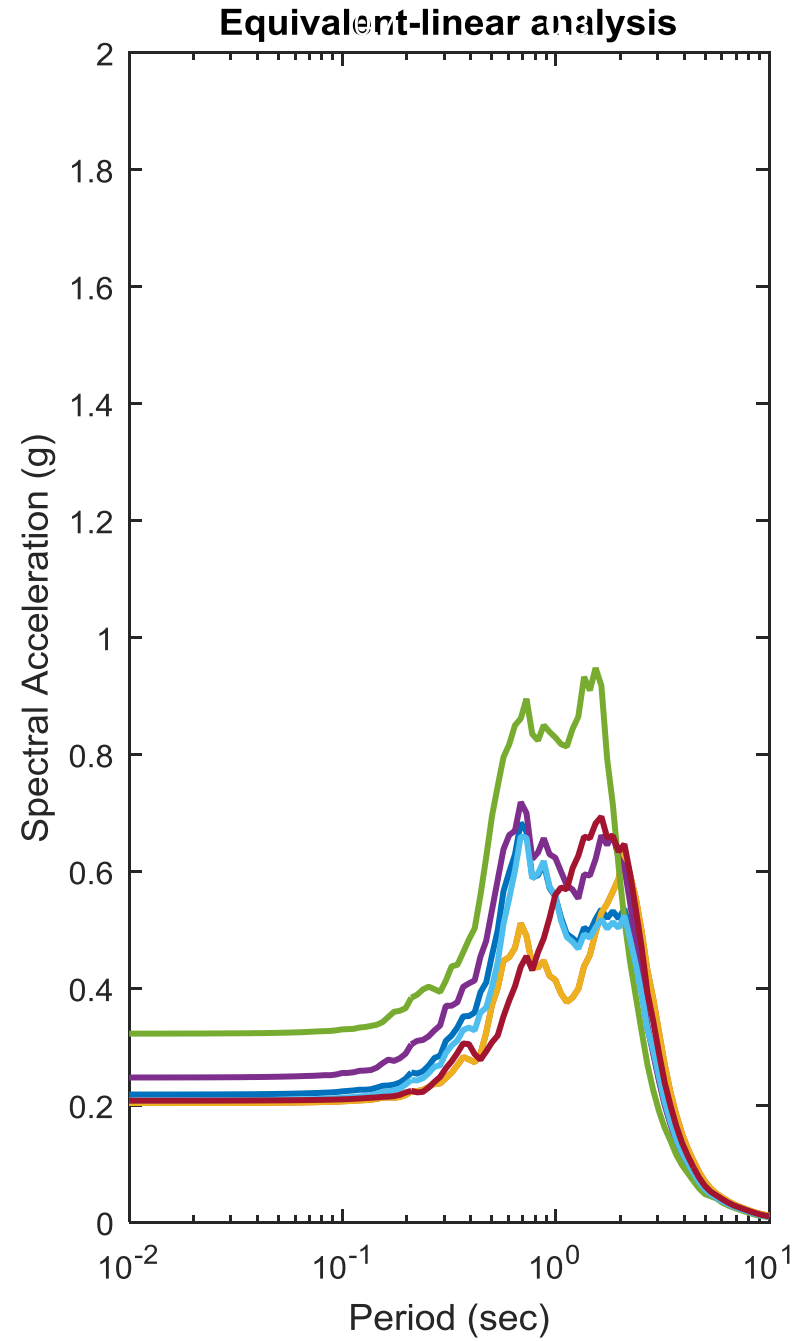
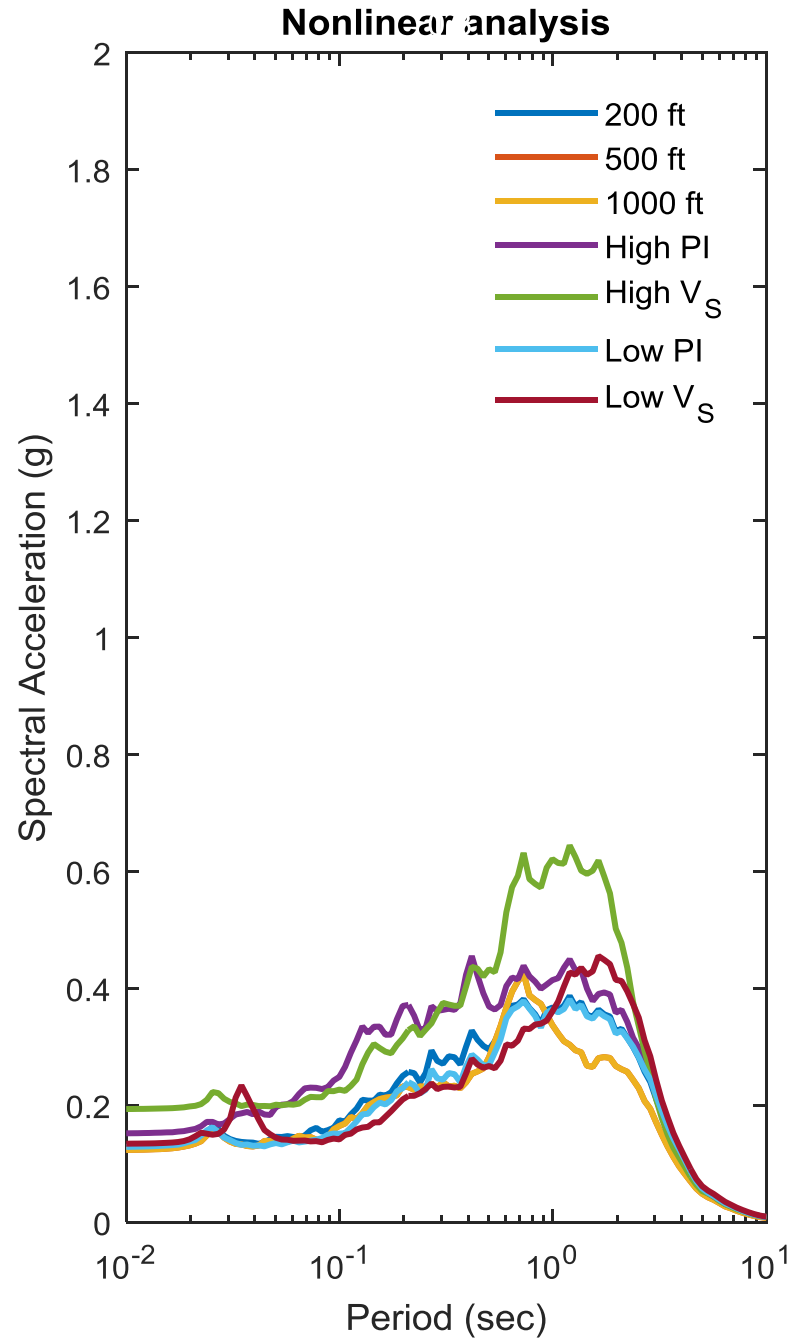
## Nonlinear Analysis for All Scenarios: Shipyard



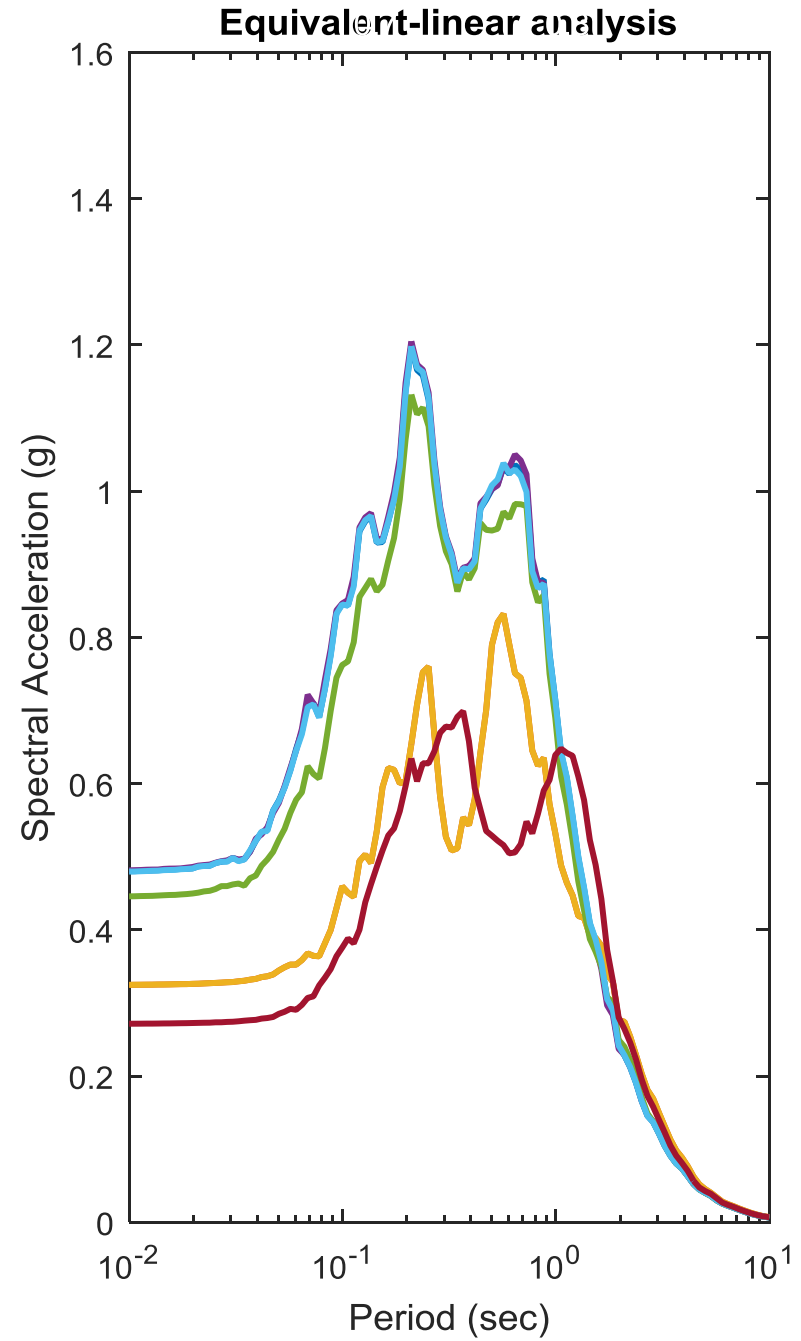
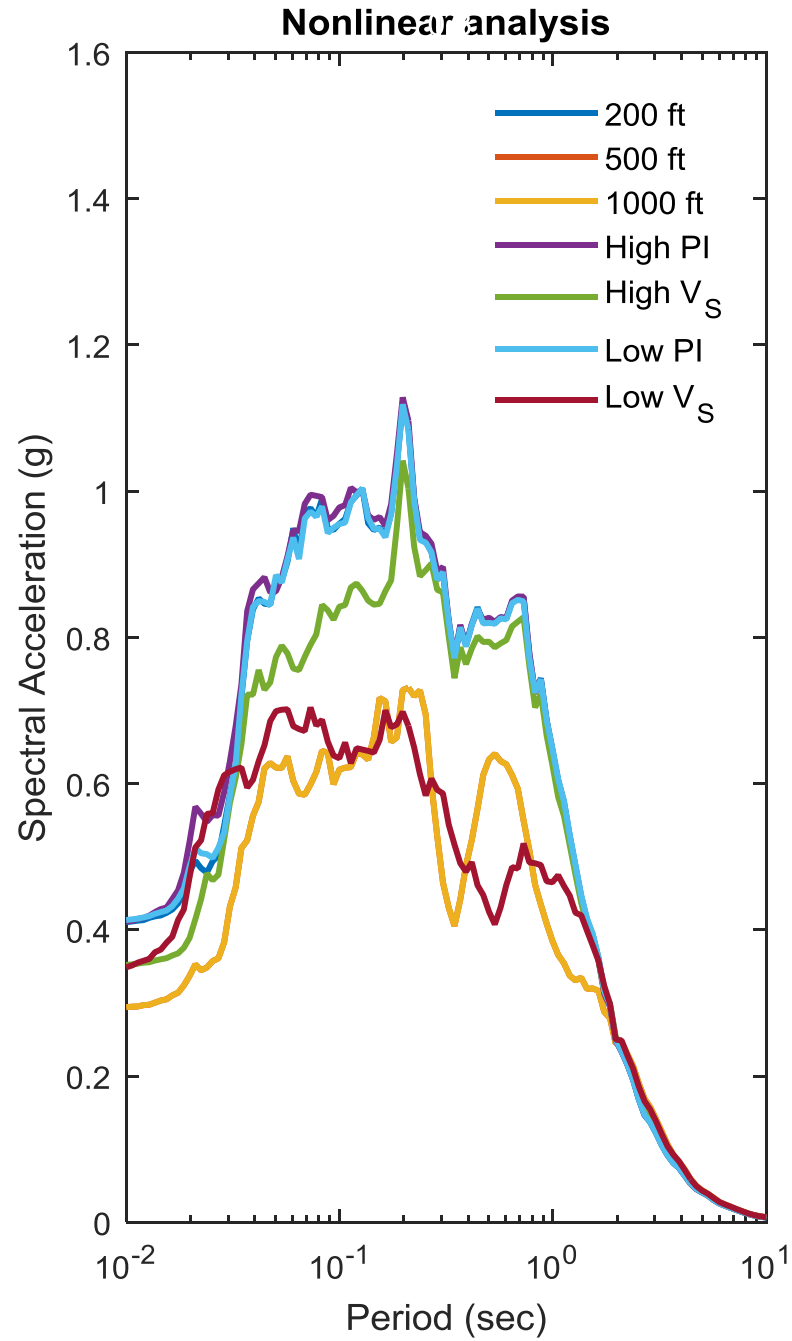
## Equivalent Linear Analysis for All Scenarios: Shipyard



## Ground Surface RS for All Scenarios: Shipyard

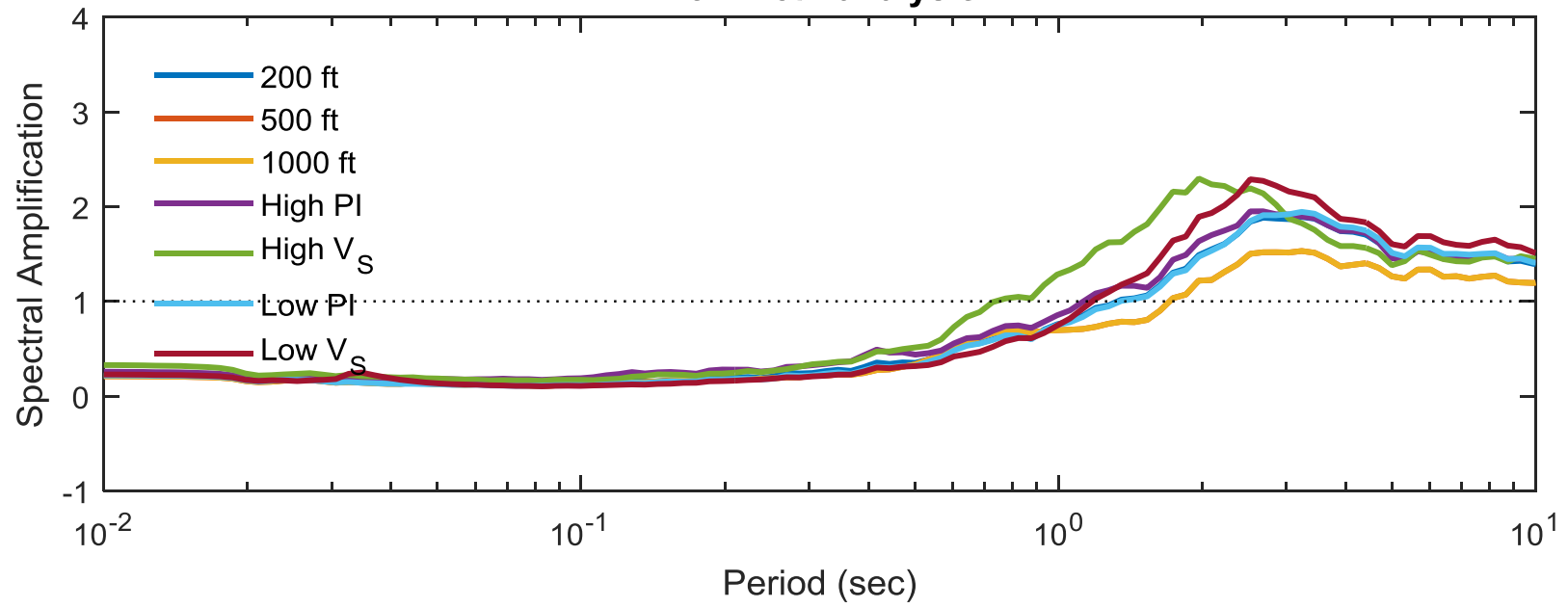


## Top of Marl RS for All Scenarios: Shipyard

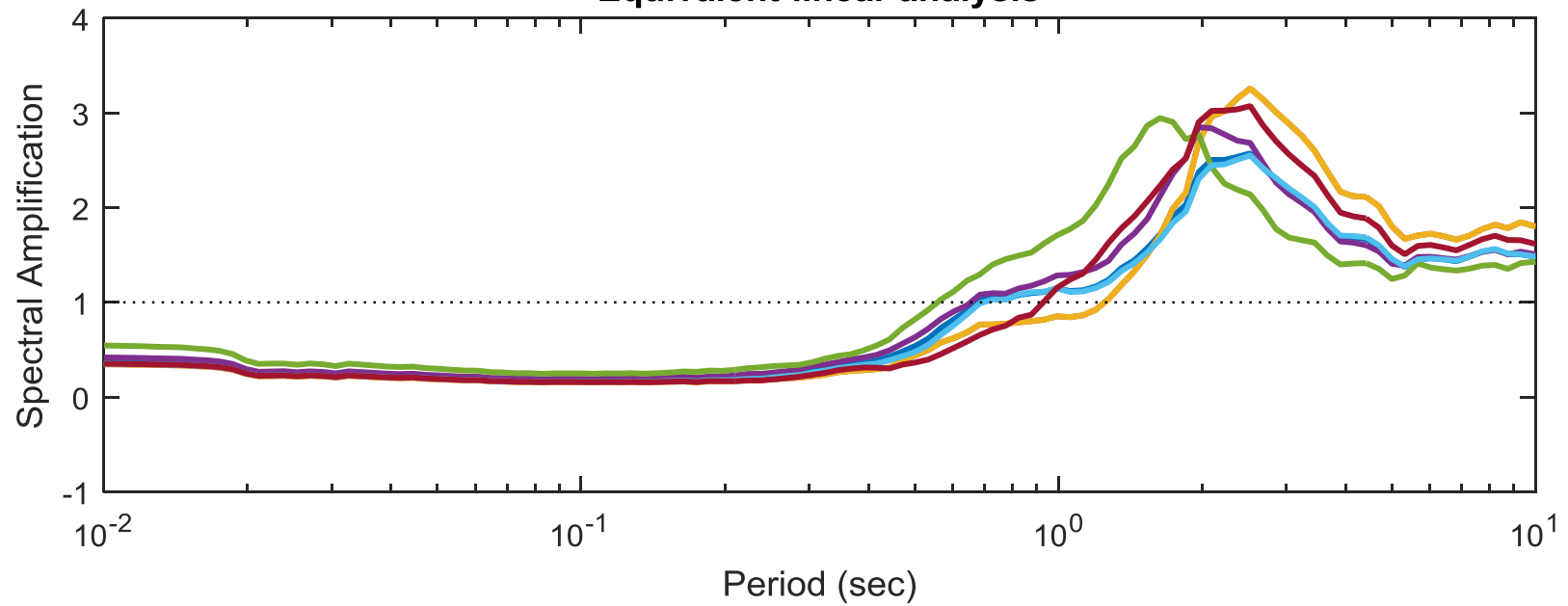


## Ground Surface Amplification for All Scenarios: Shipyard

### Nonlinear analysis

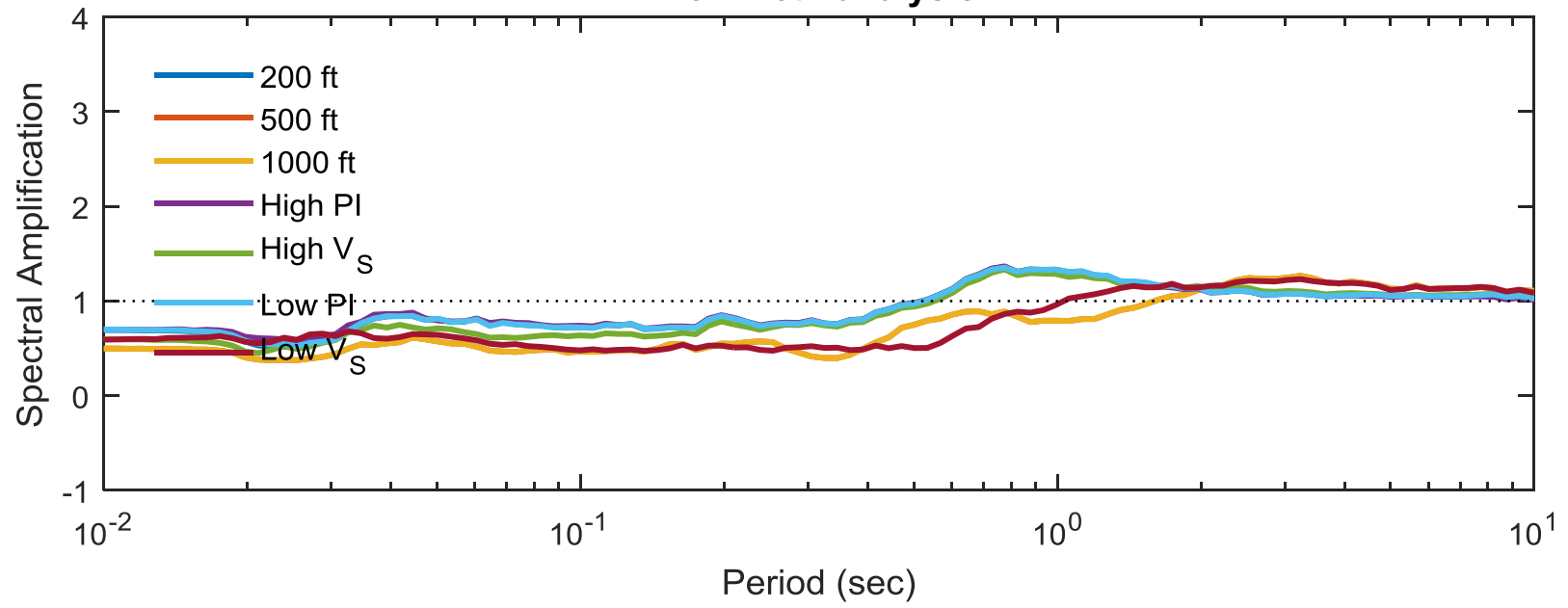


### Equivalent-linear analysis

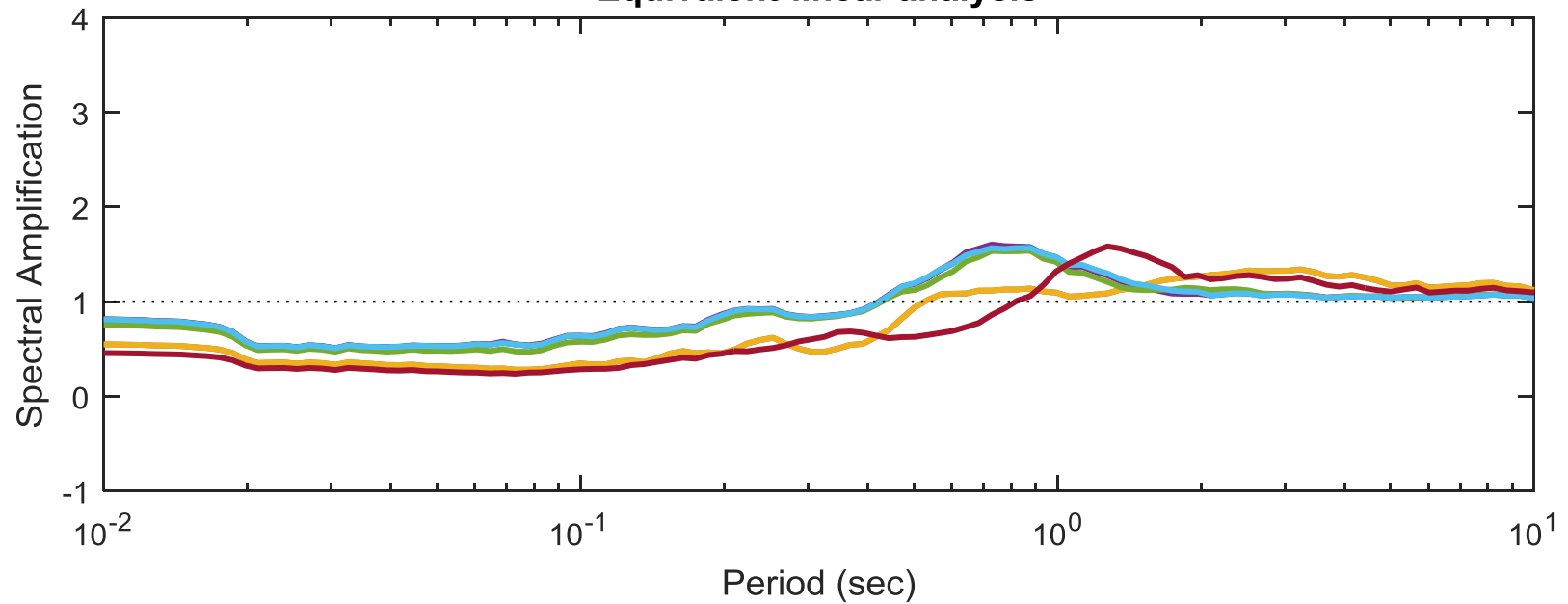


## Top of Marl Amplification for All Scenarios: Shipyard

### Nonlinear analysis

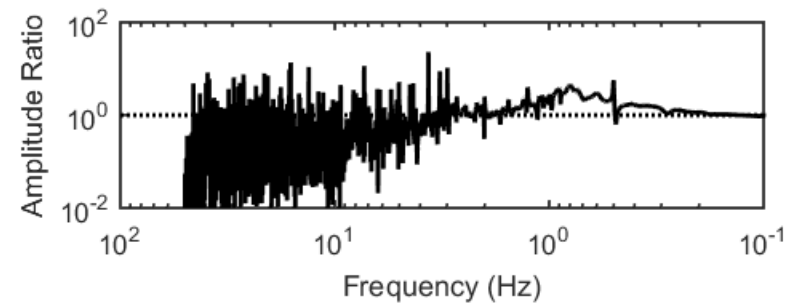
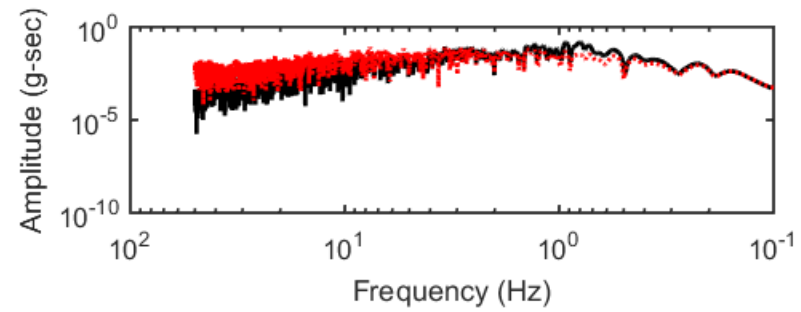
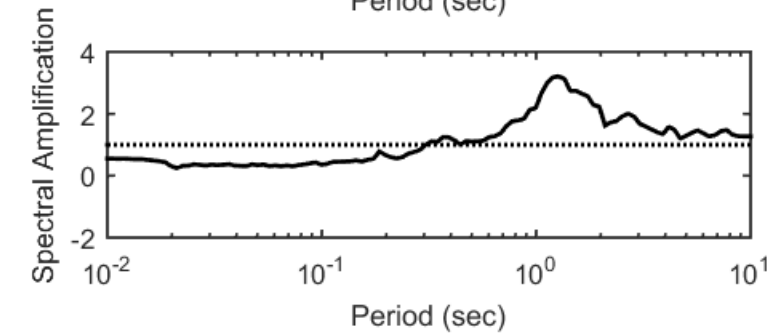
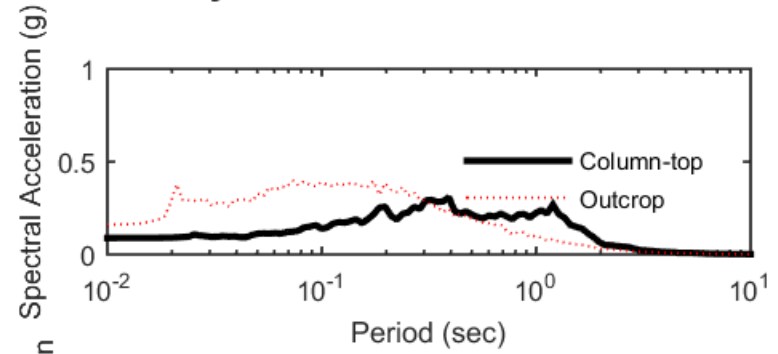
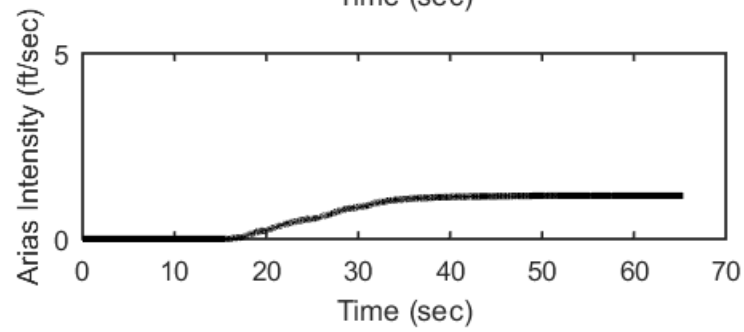
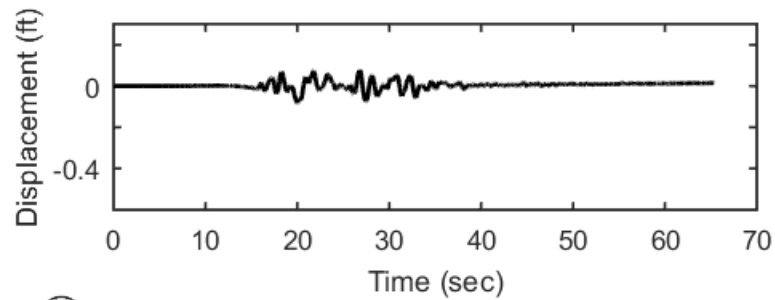
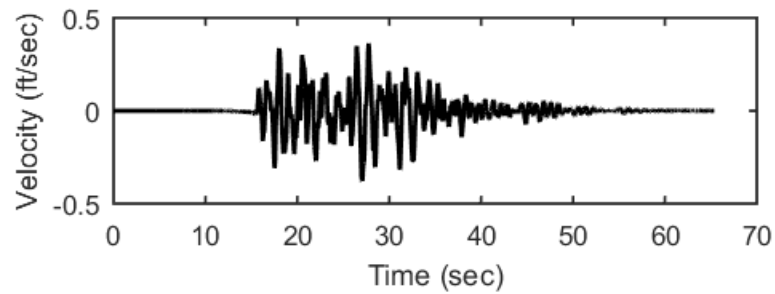
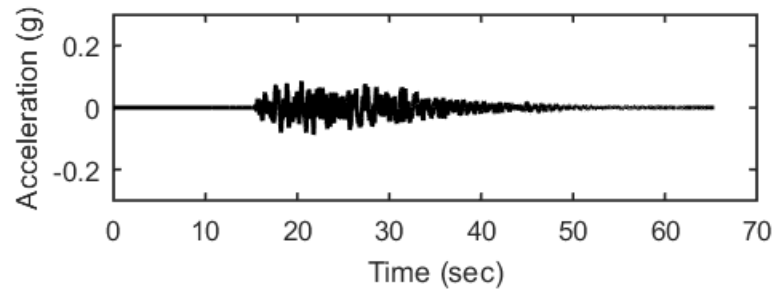


### Equivalent-linear analysis



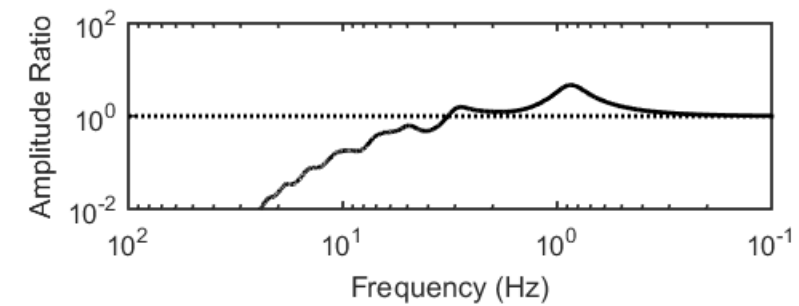
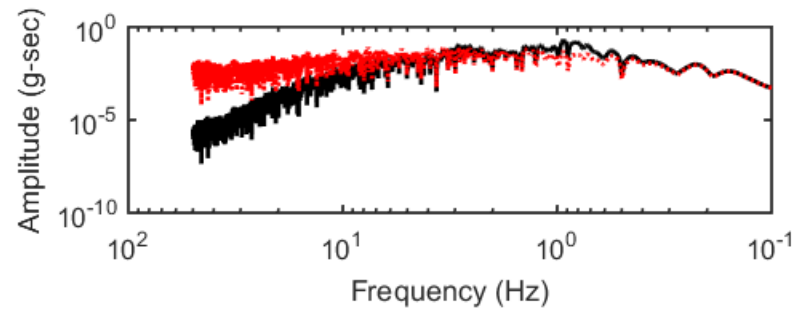
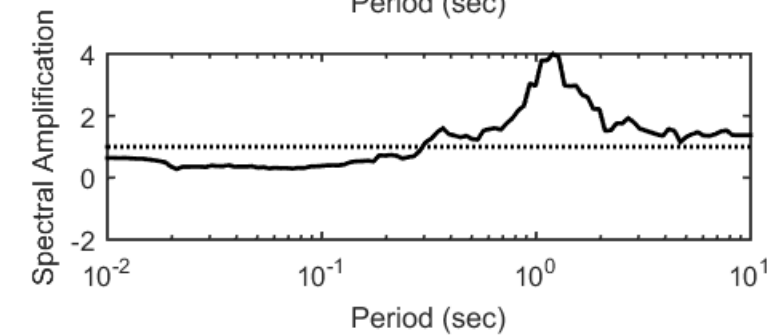
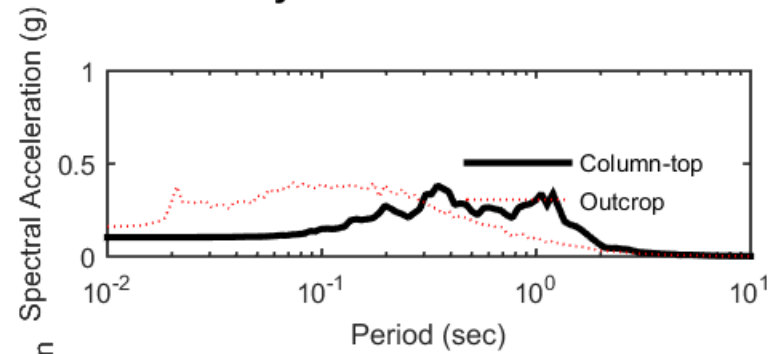
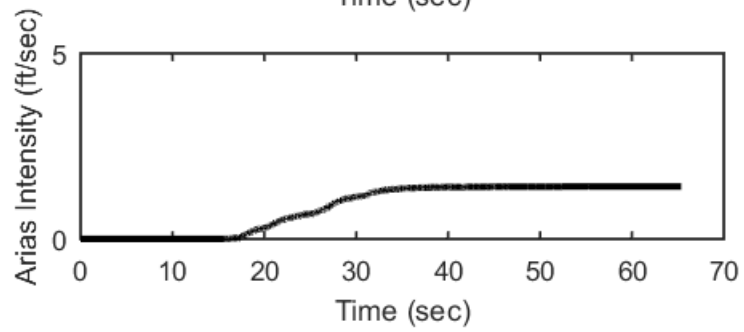
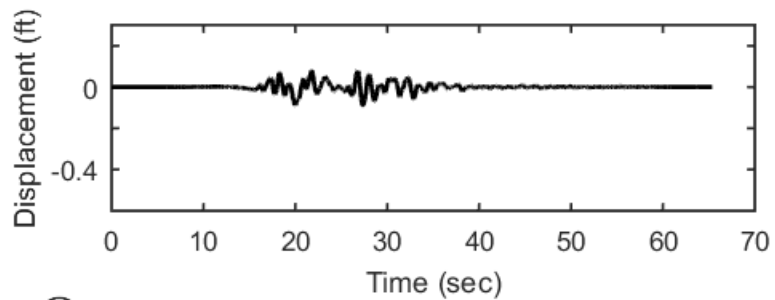
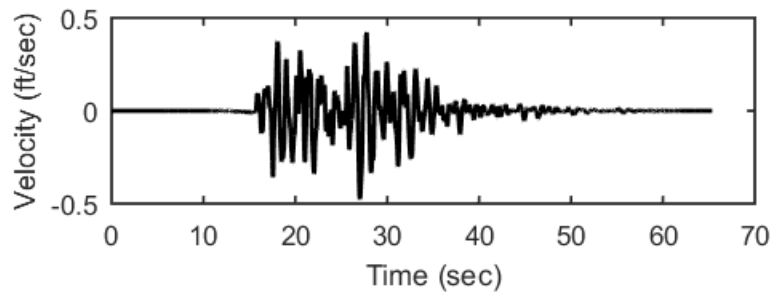
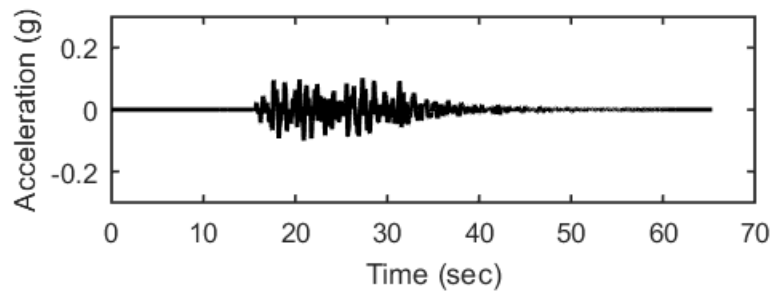
## **200 FT BASE MODEL**

## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1

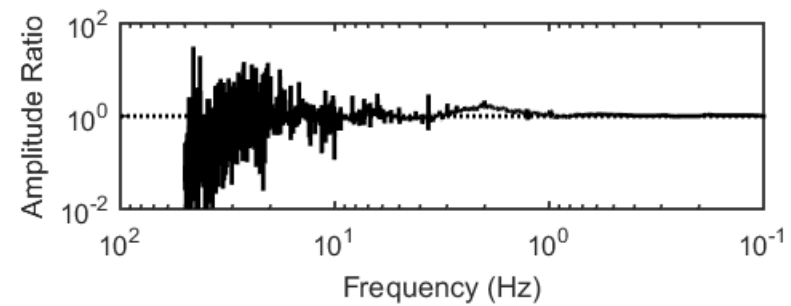
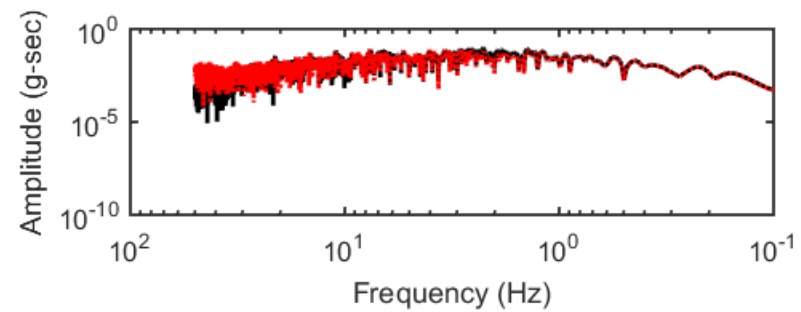
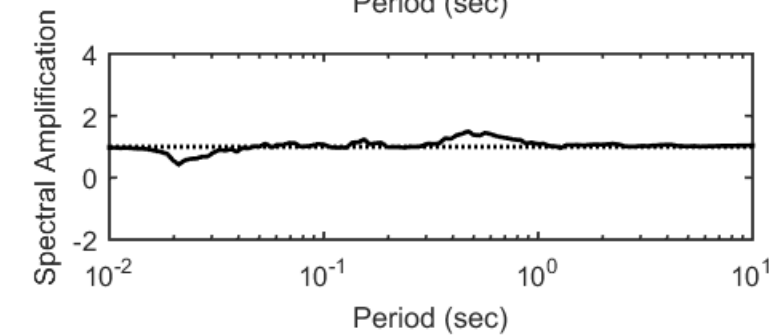
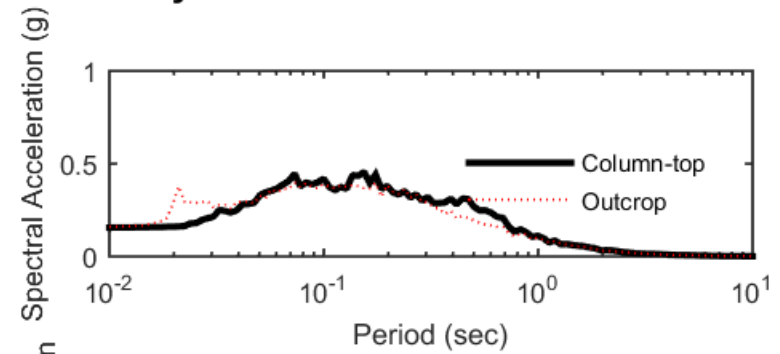
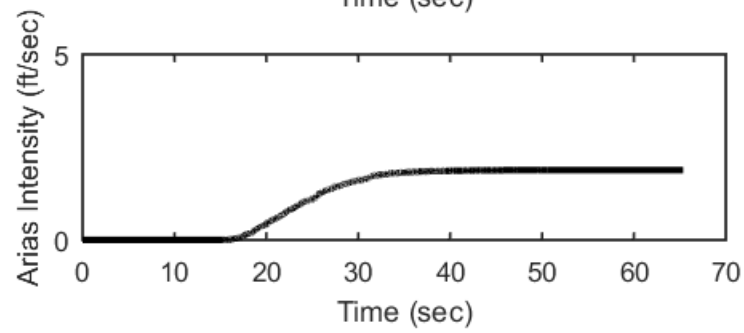
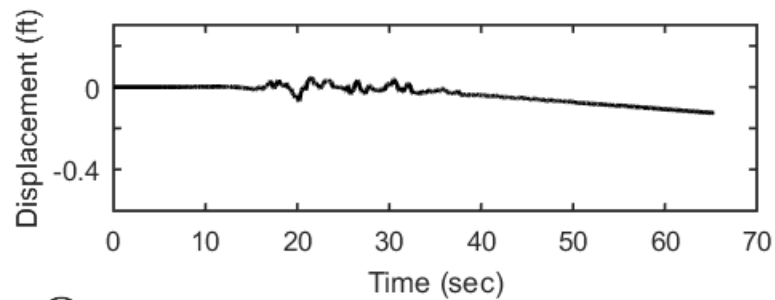
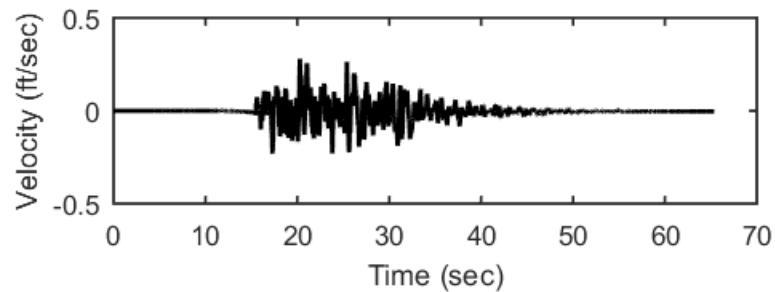
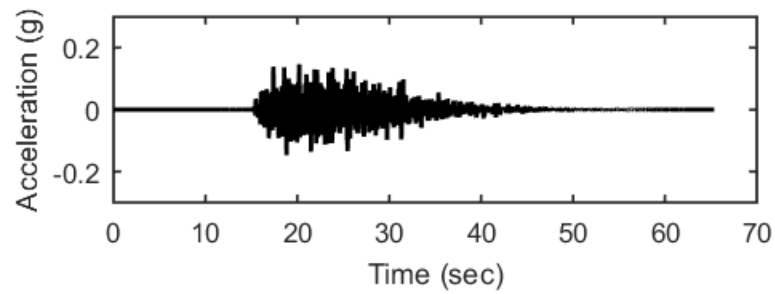




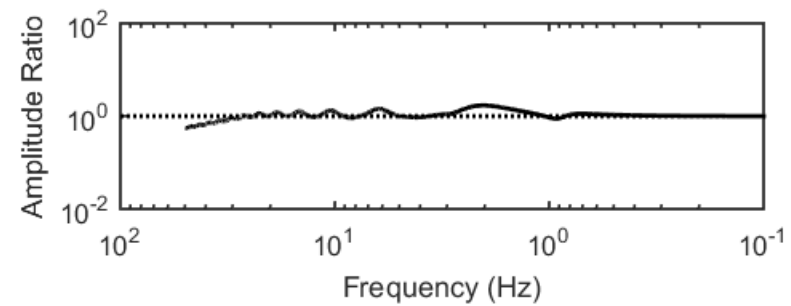
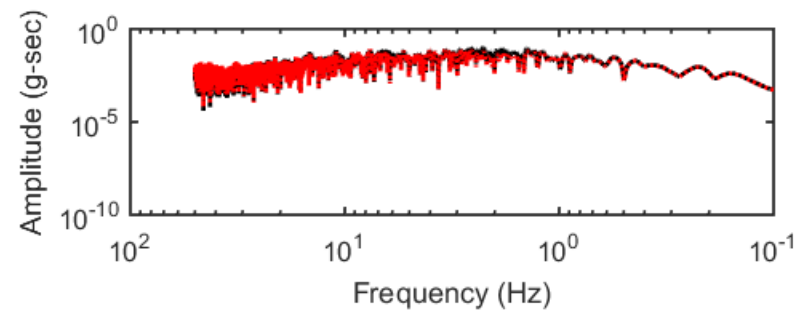
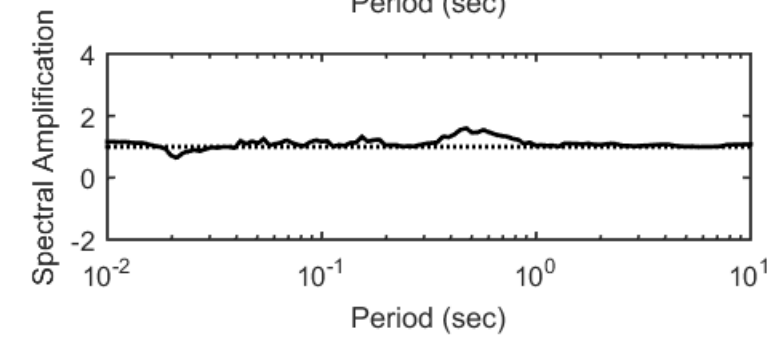
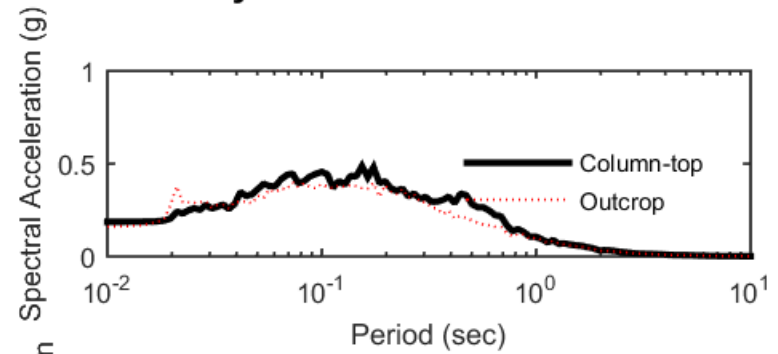
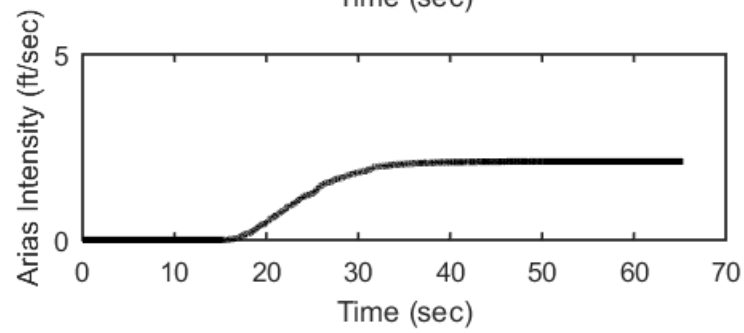
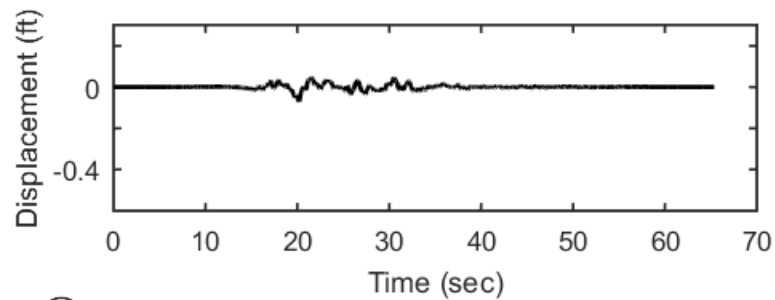
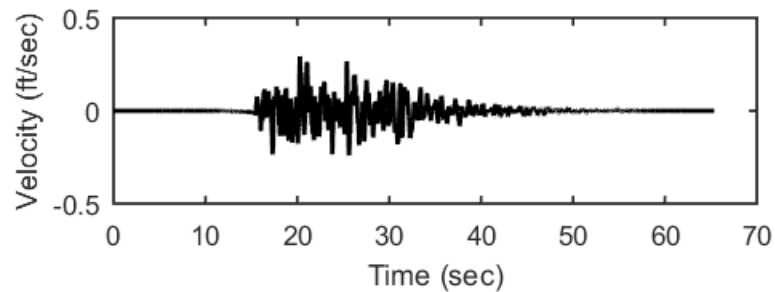
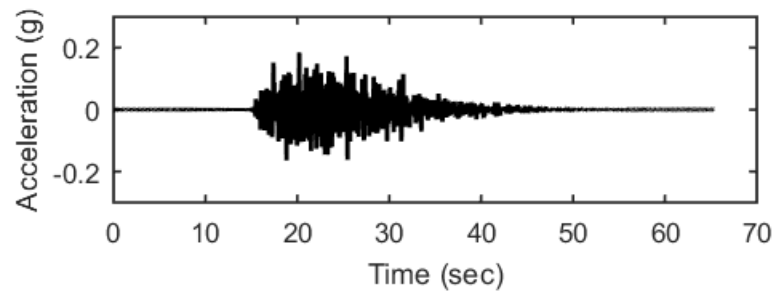
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



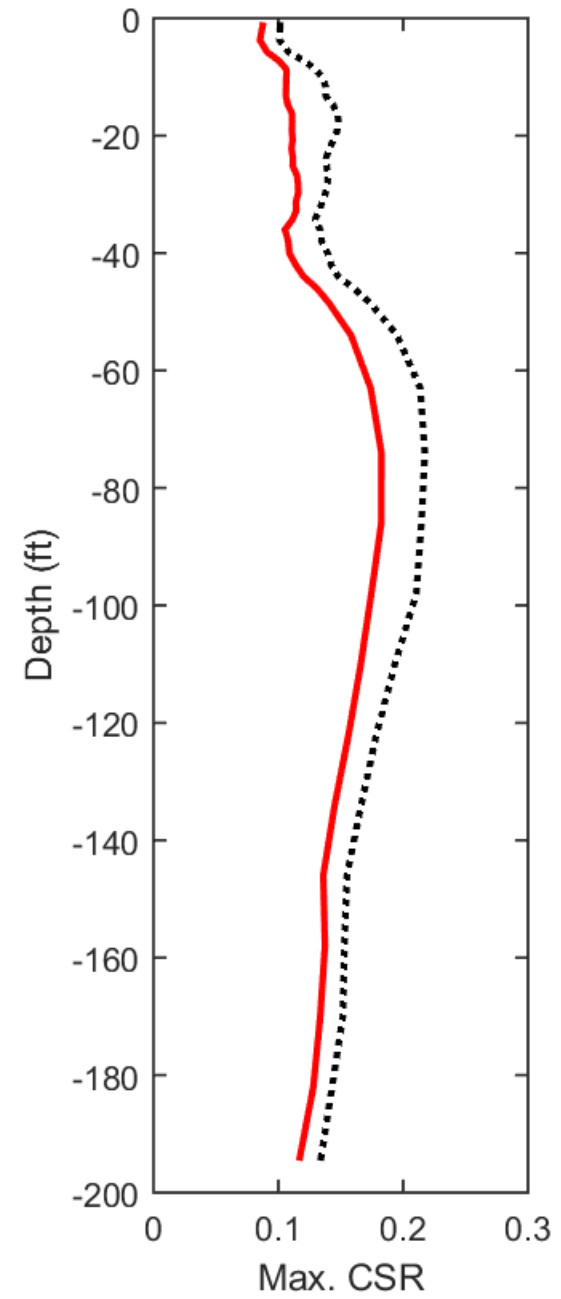
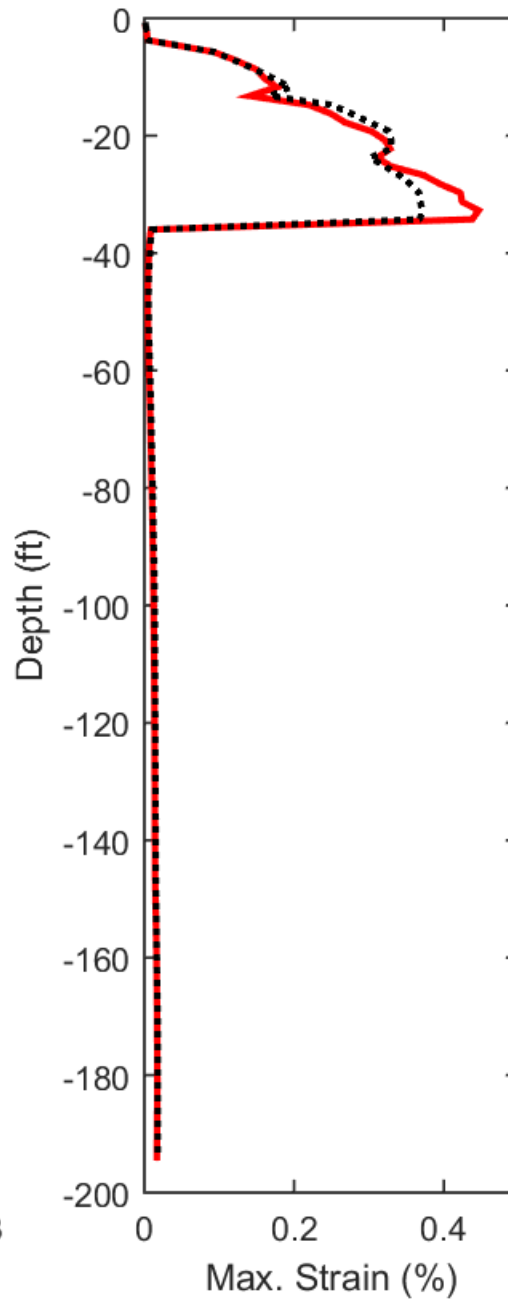
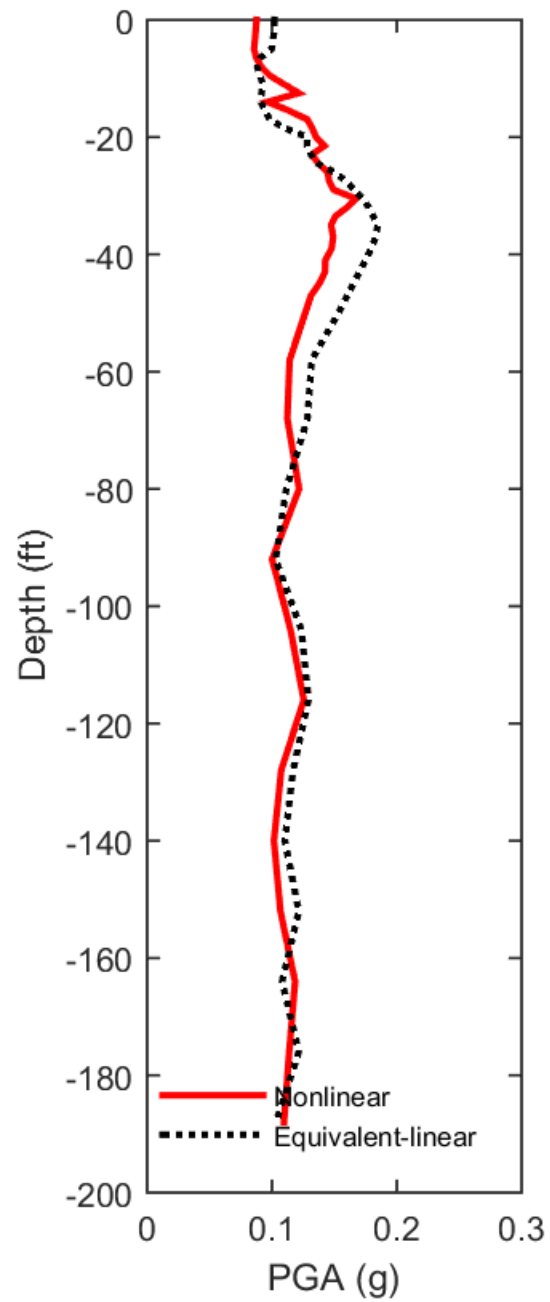
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



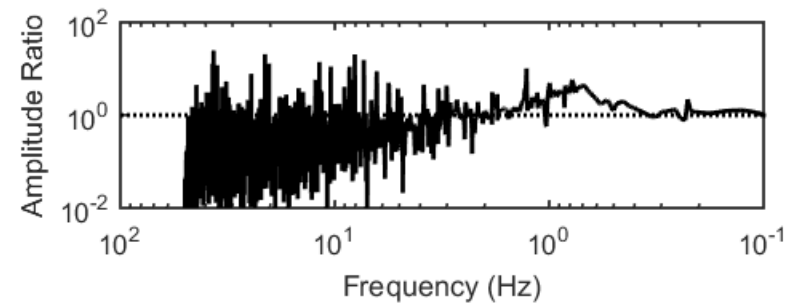
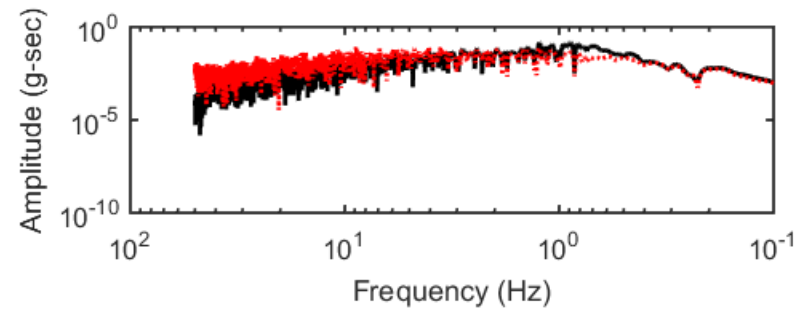
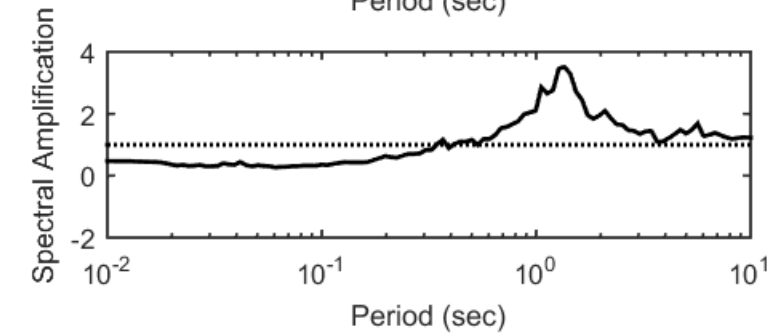
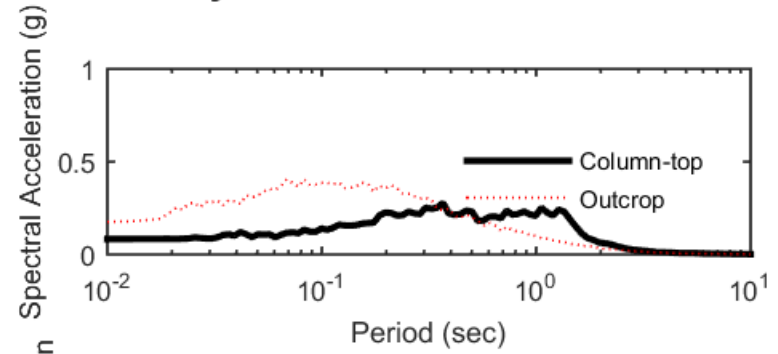
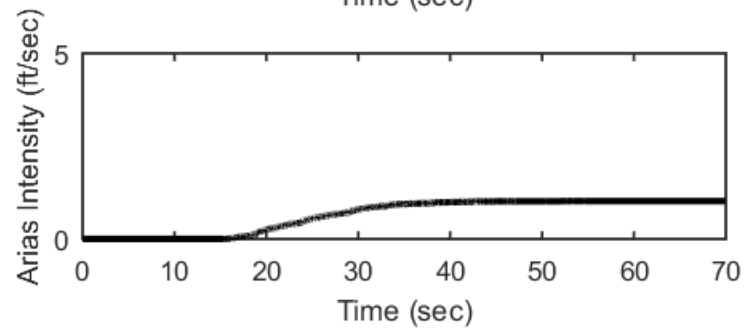
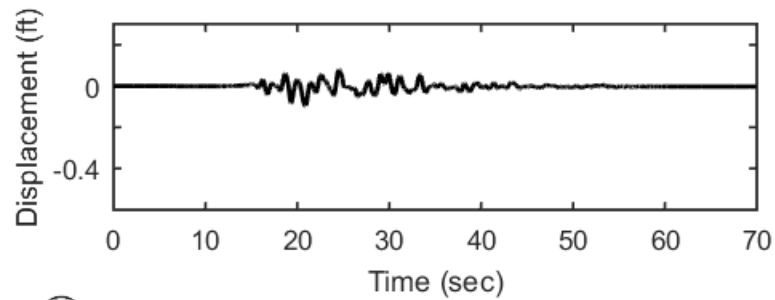
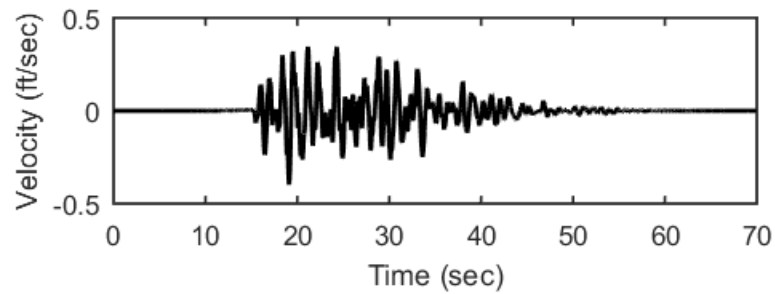
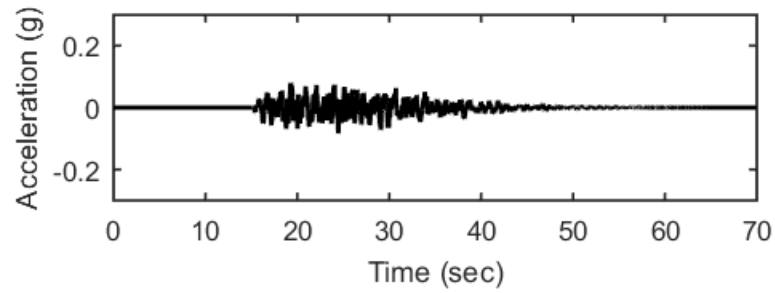
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



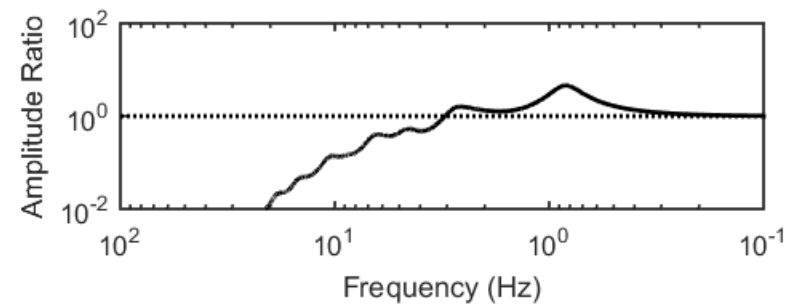
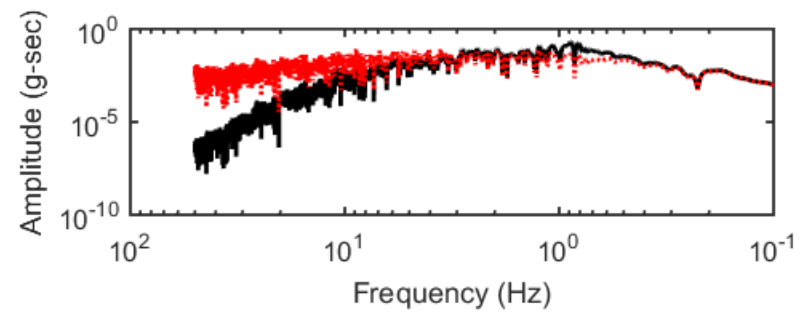
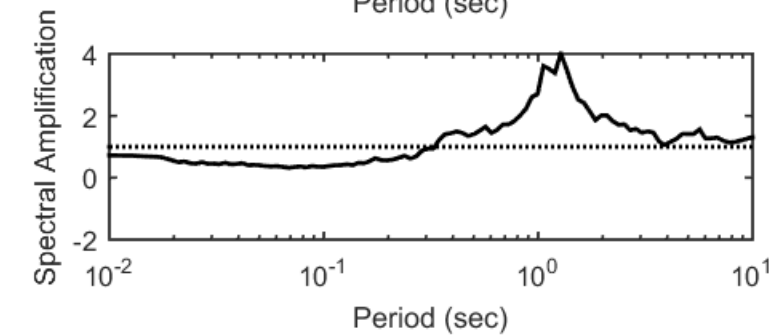
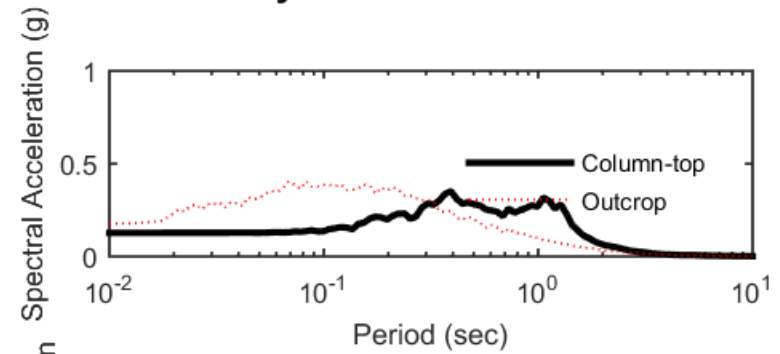
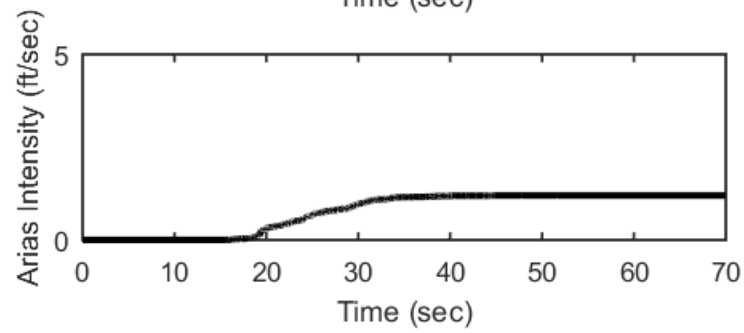
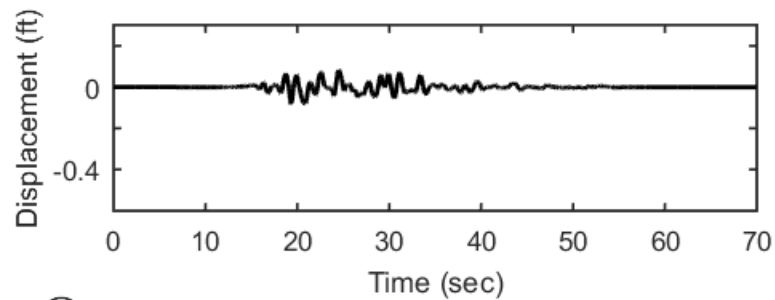
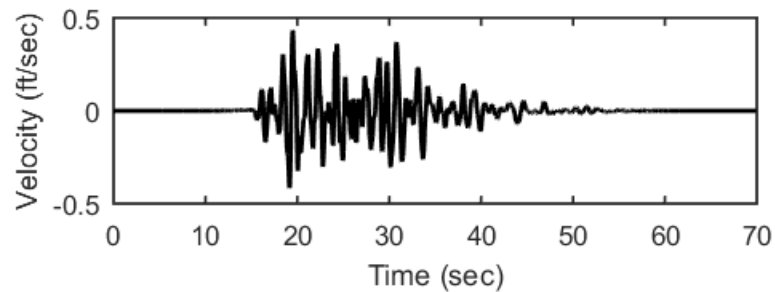
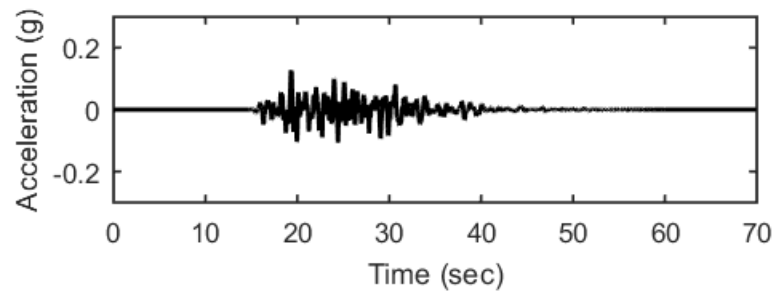
### Profile outputs for Motion: FEE1



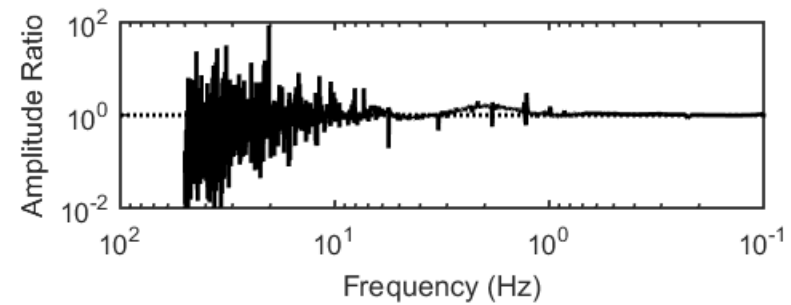
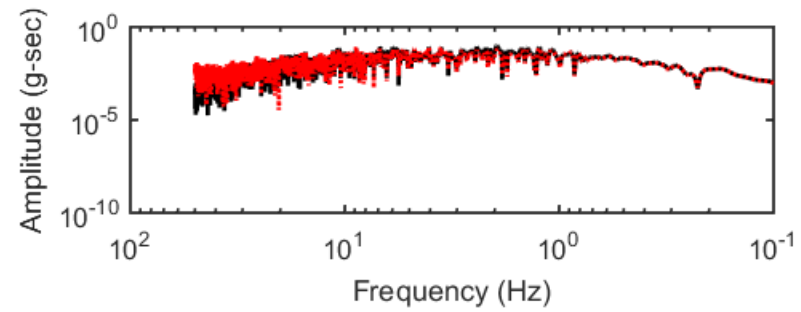
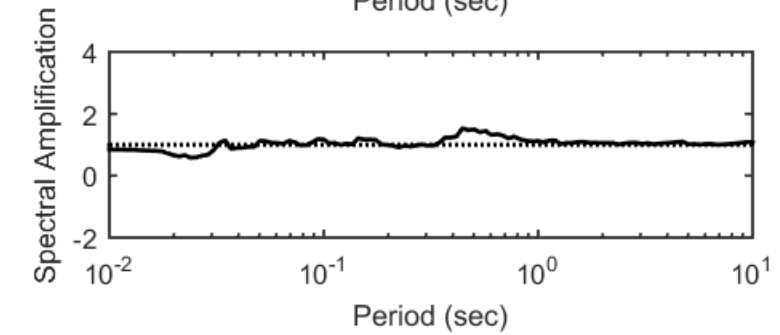
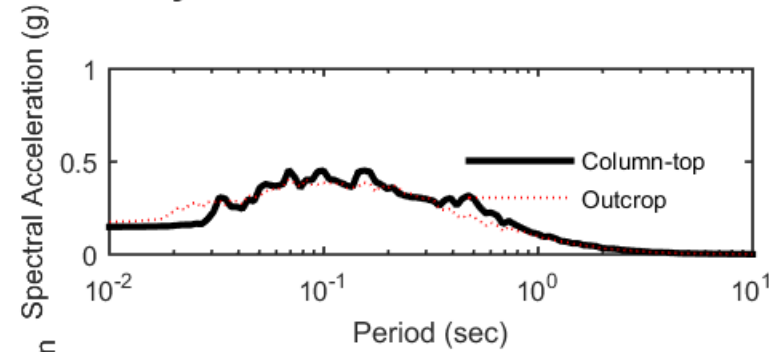
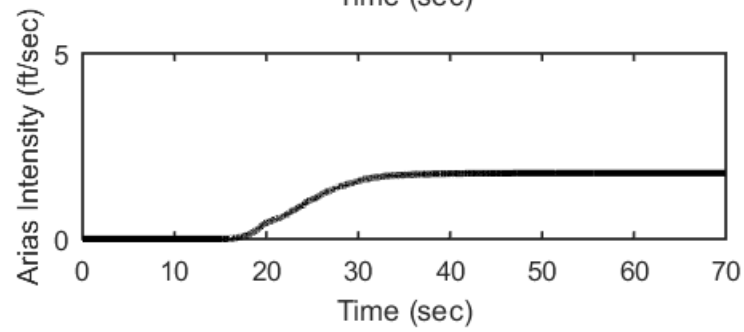
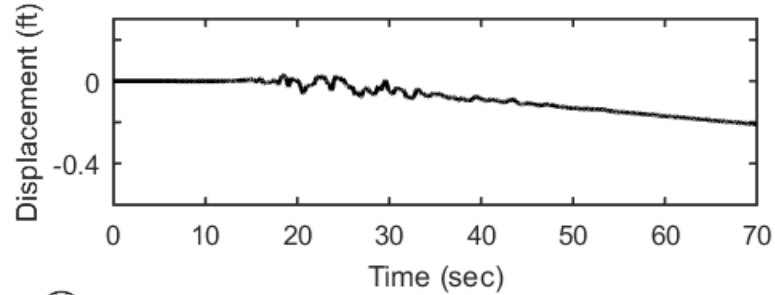
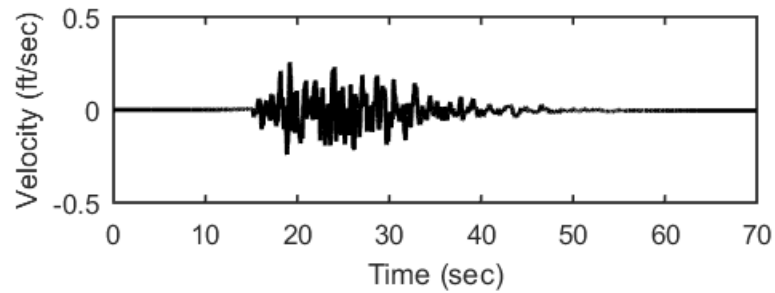
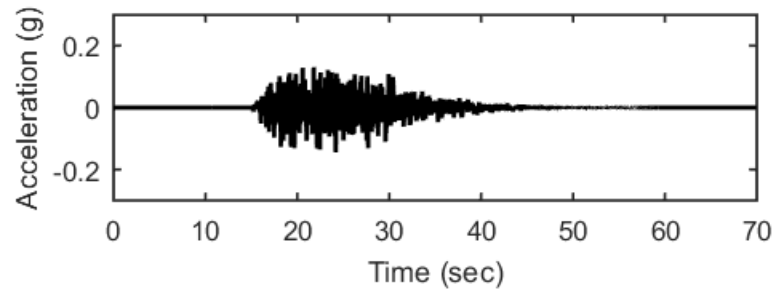
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



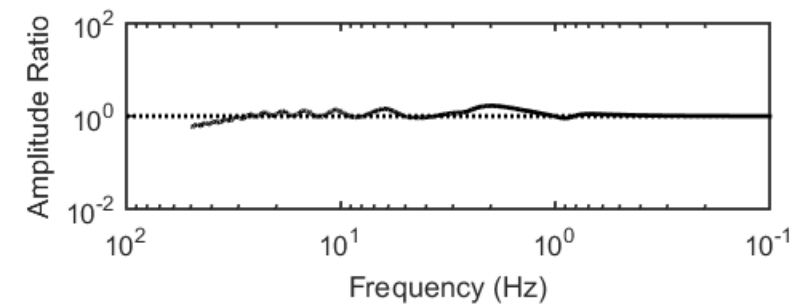
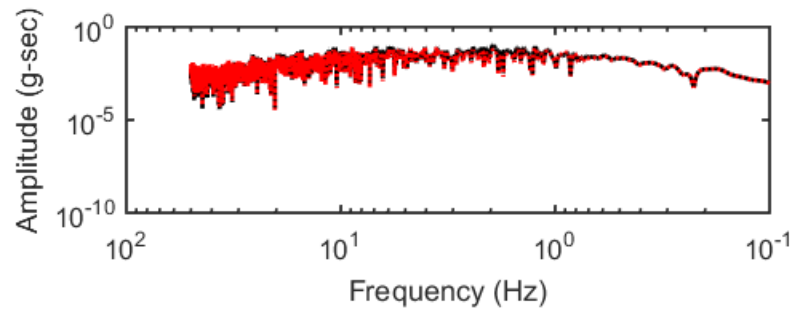
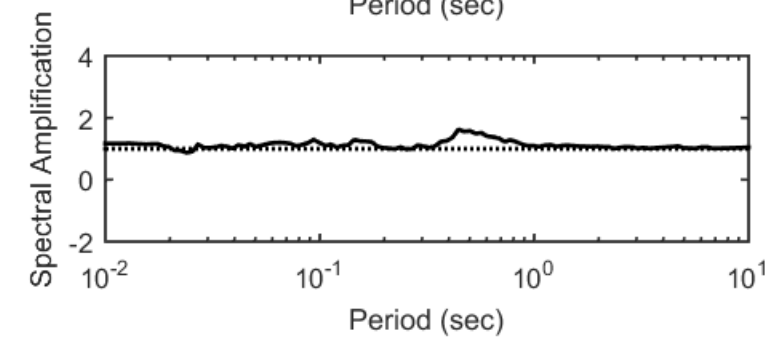
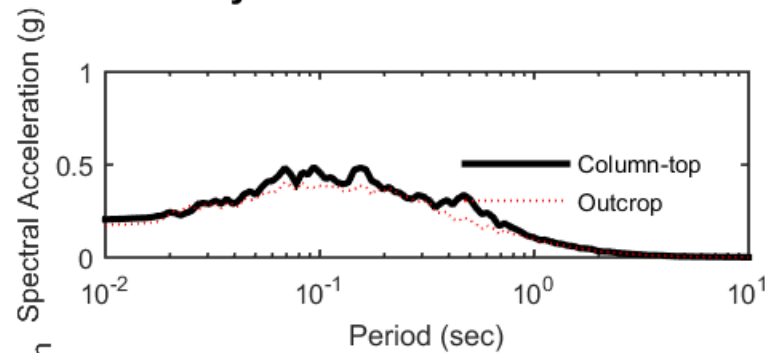
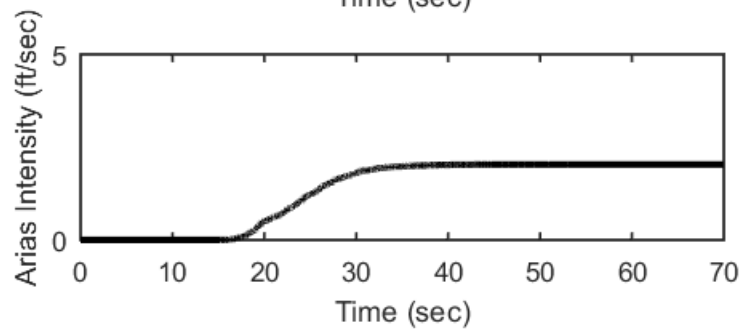
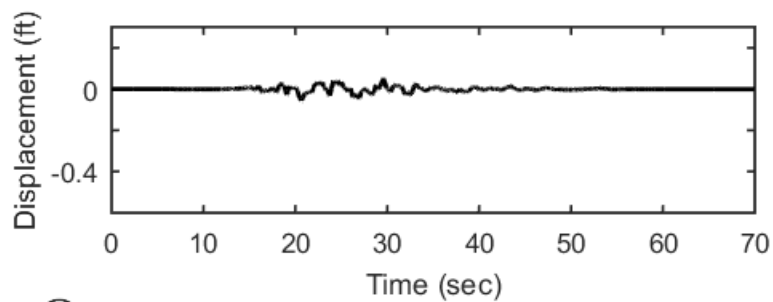
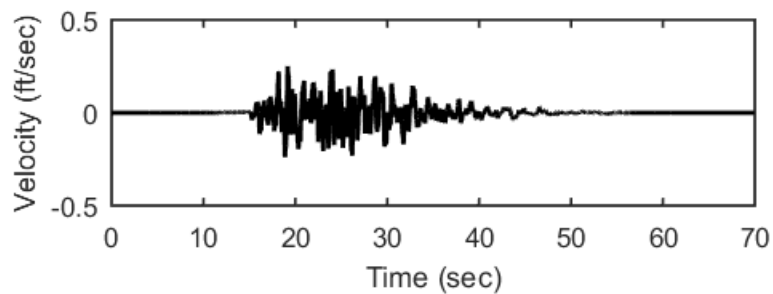
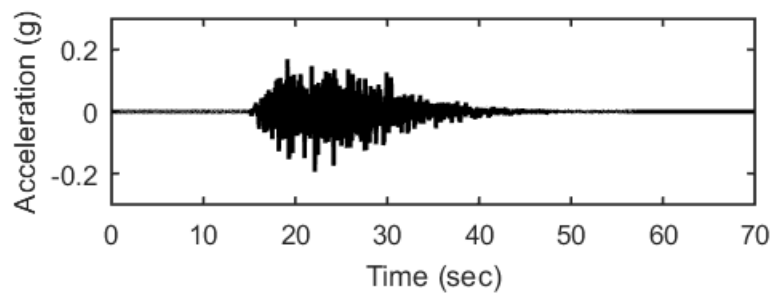
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2

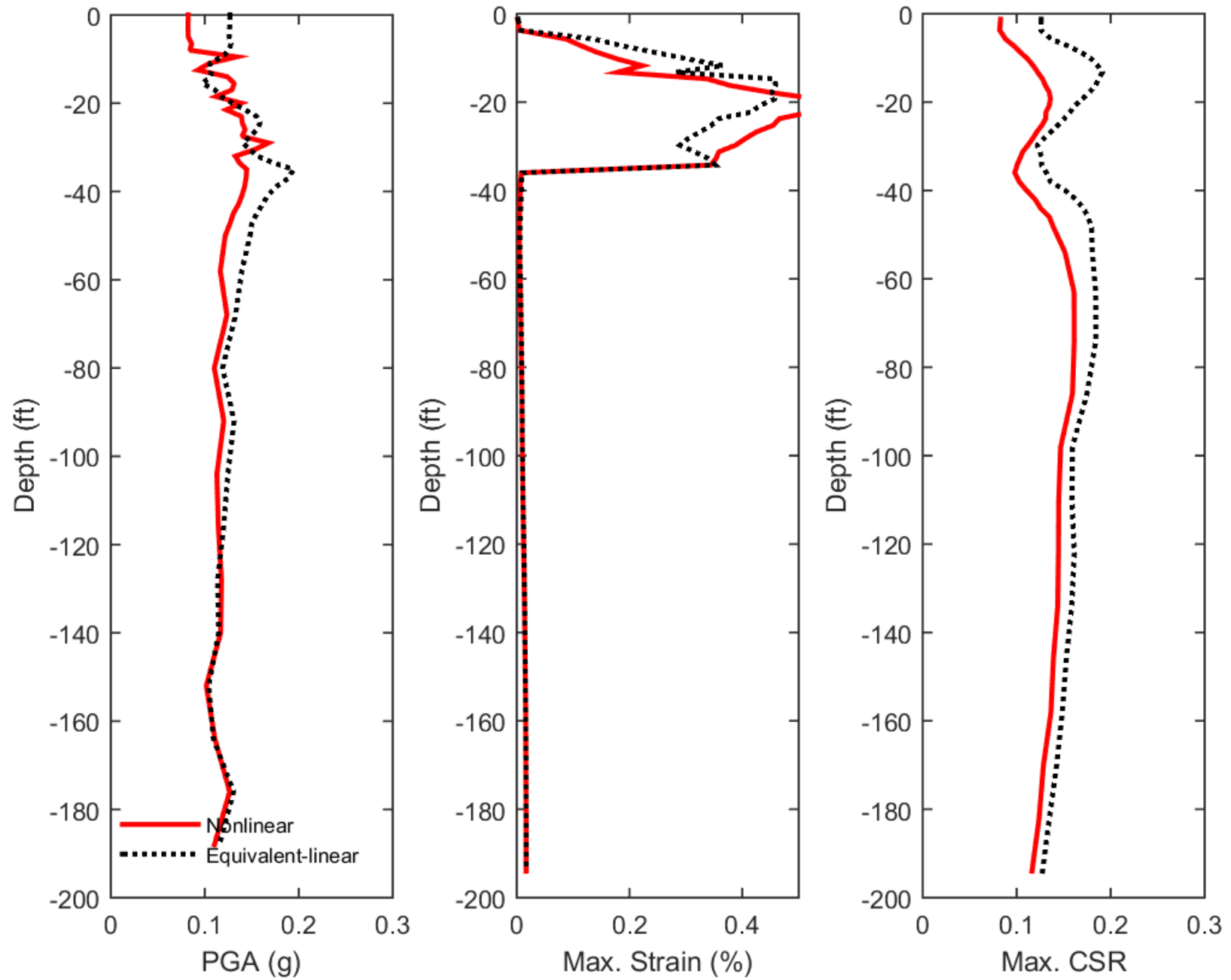


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2

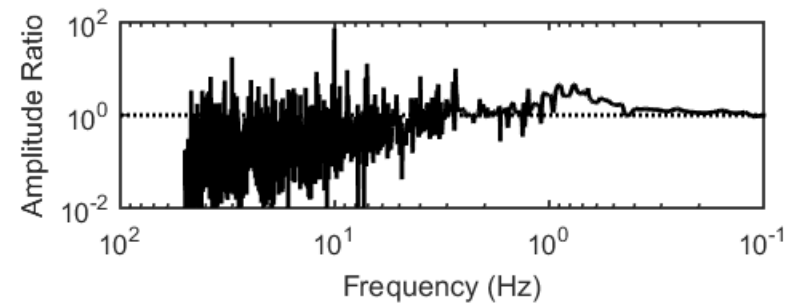
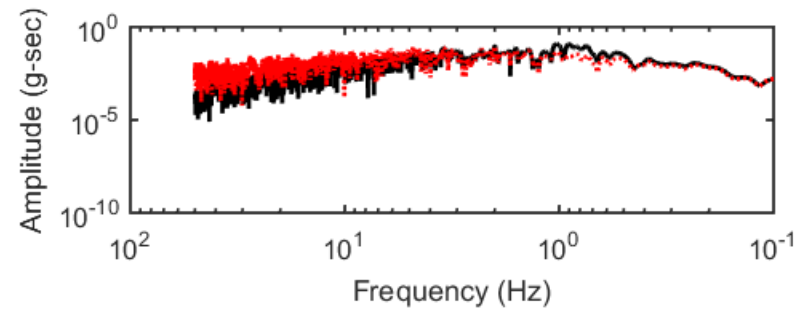
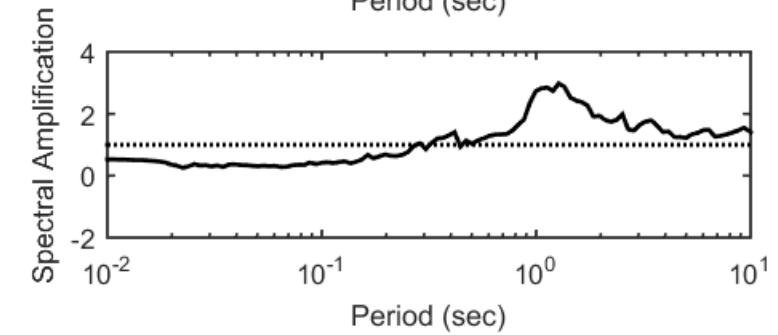
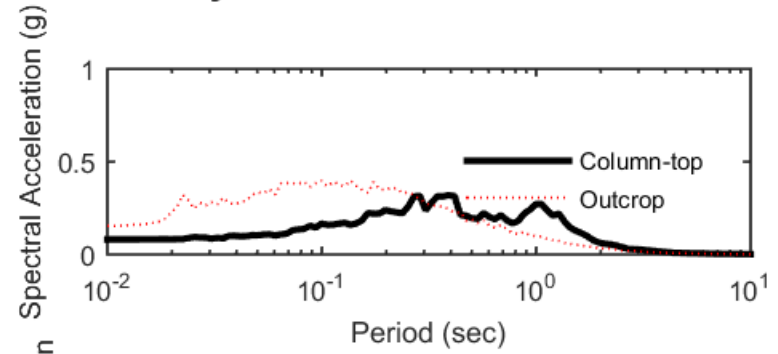
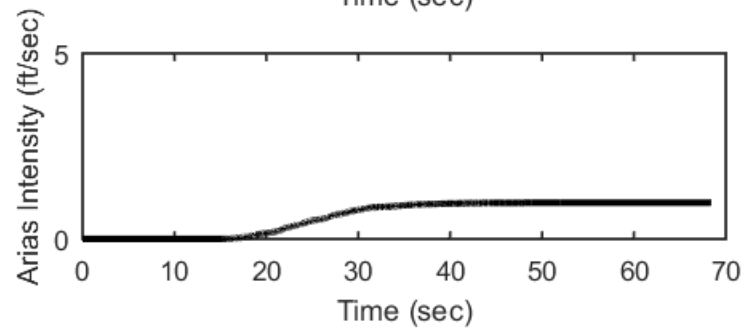
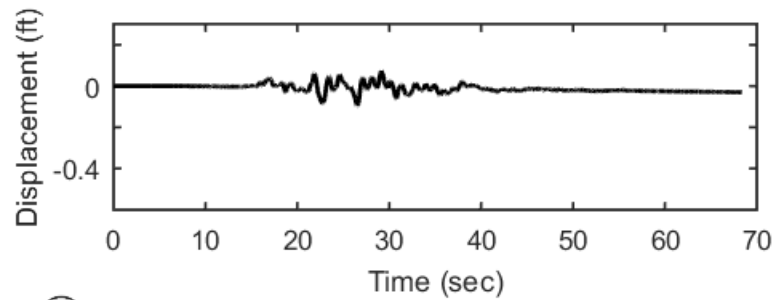
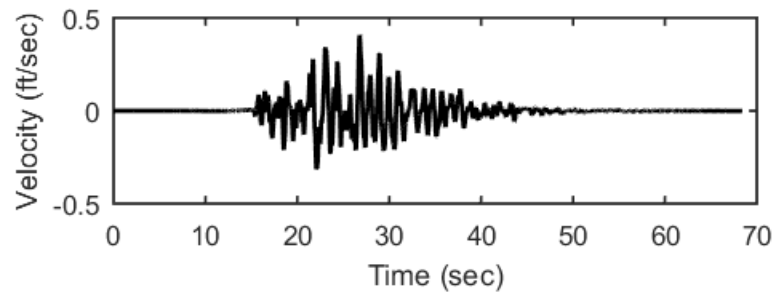
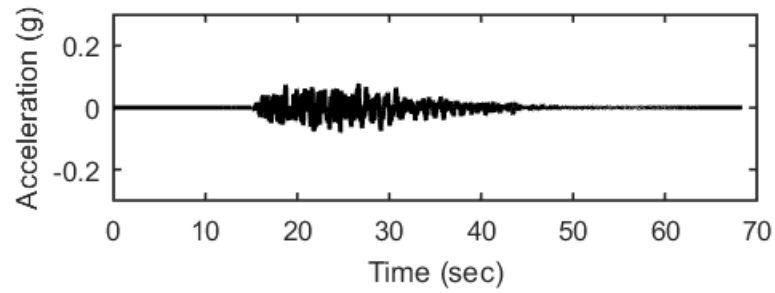




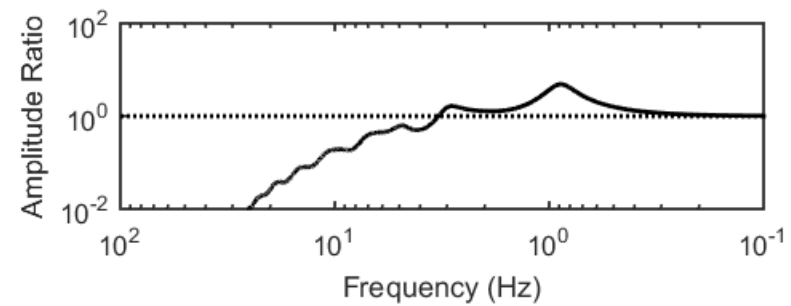
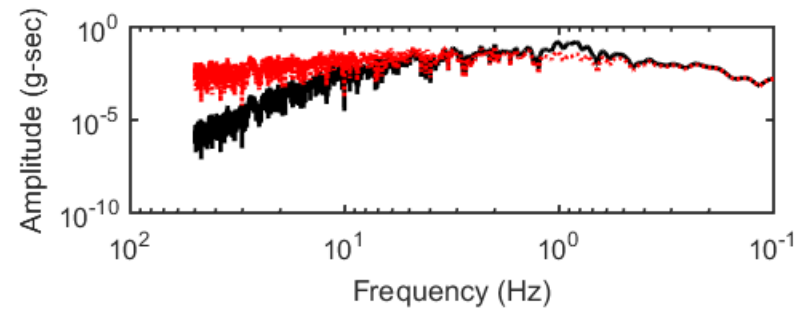
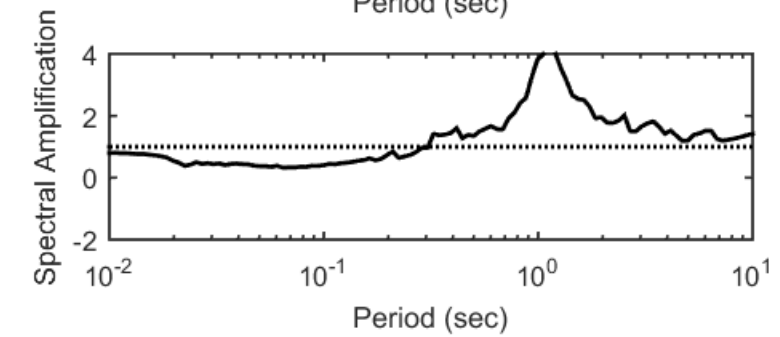
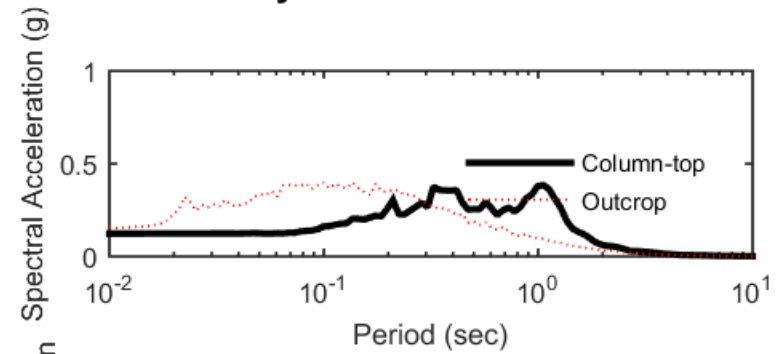
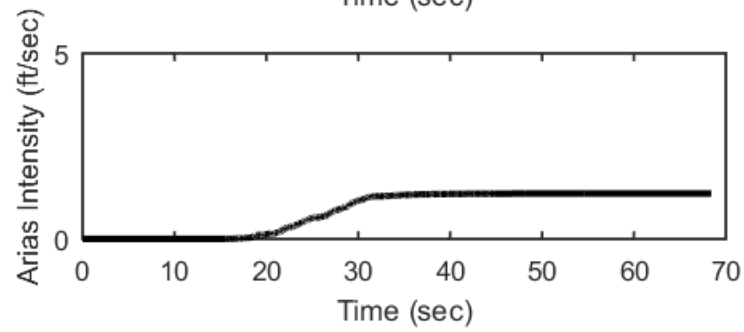
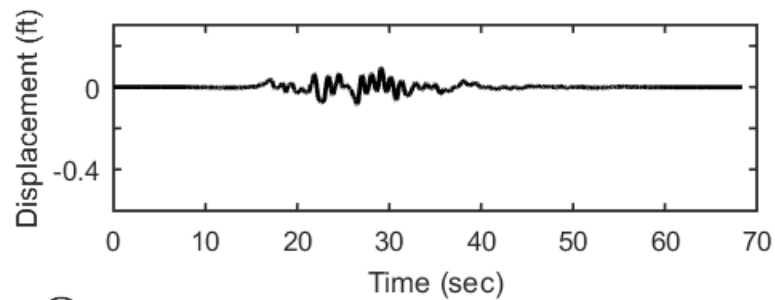
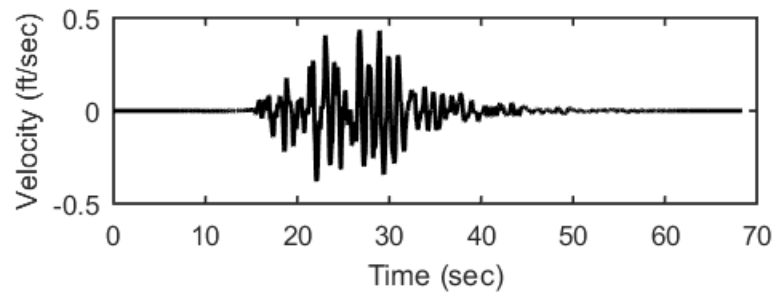
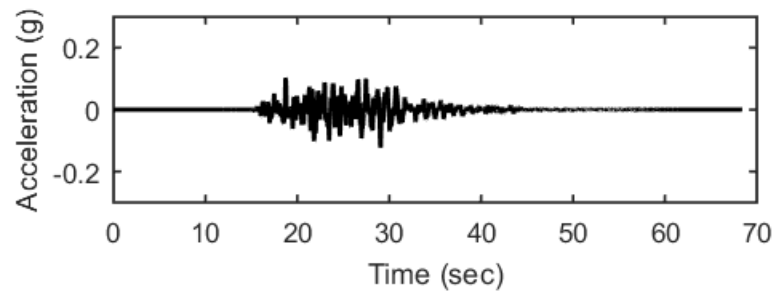
### Profile outputs for Motion: FEE2



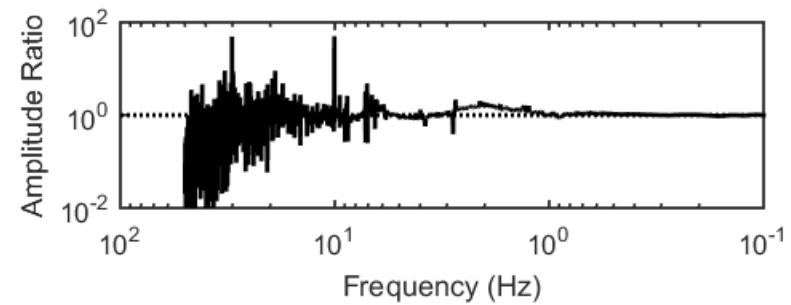
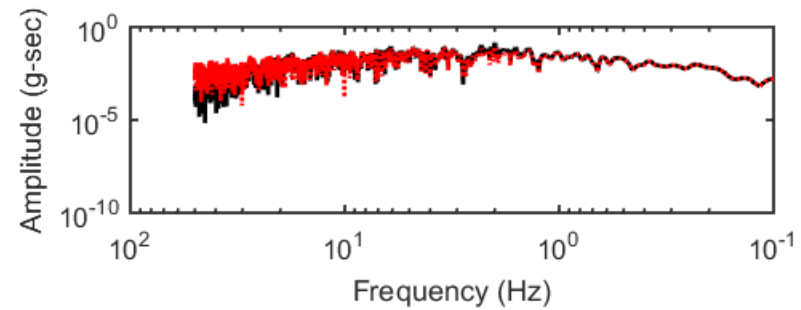
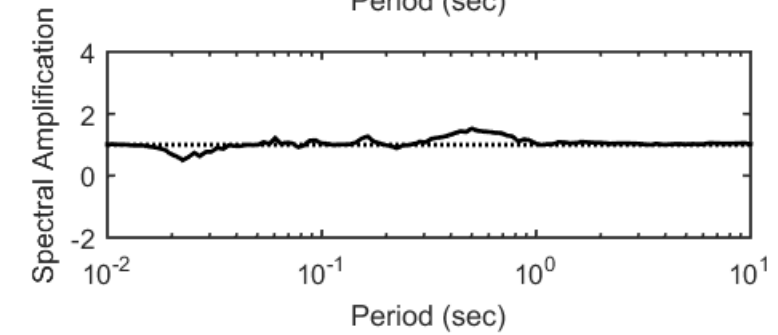
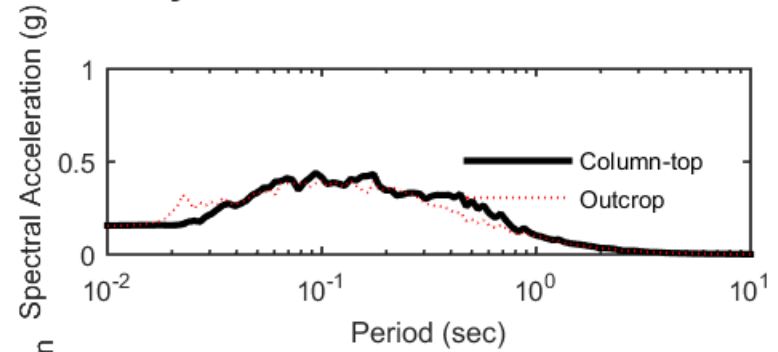
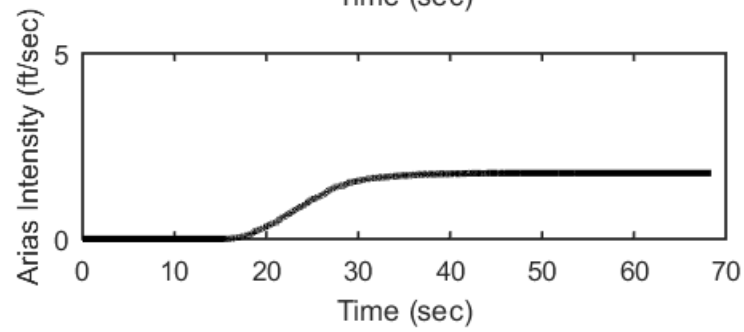
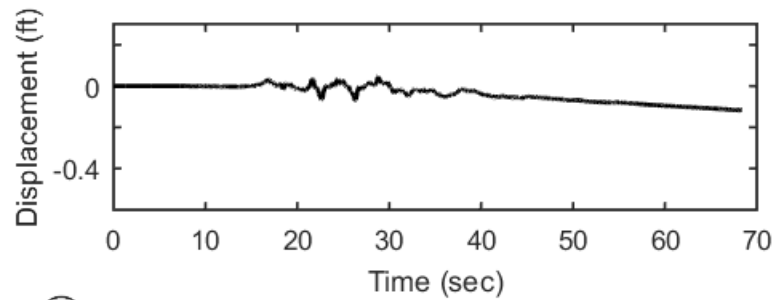
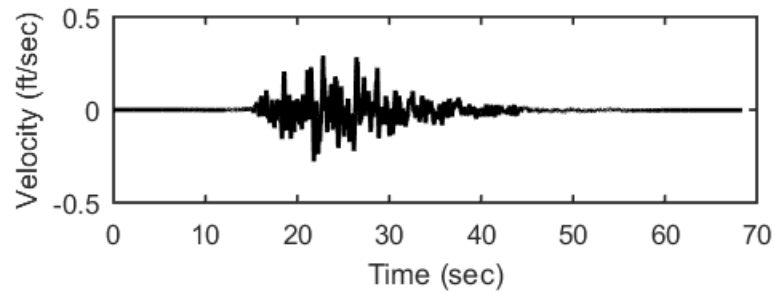
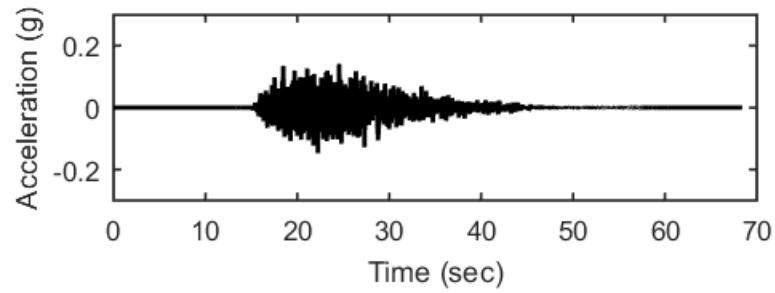
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



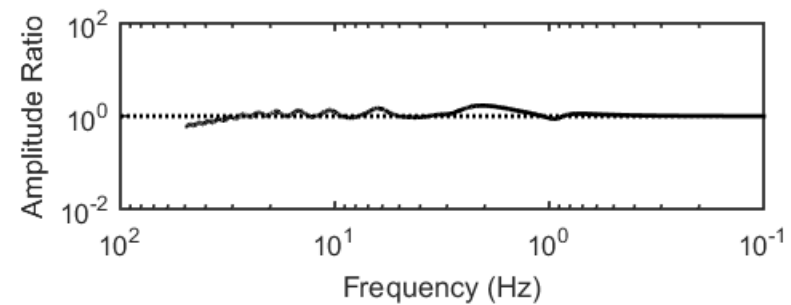
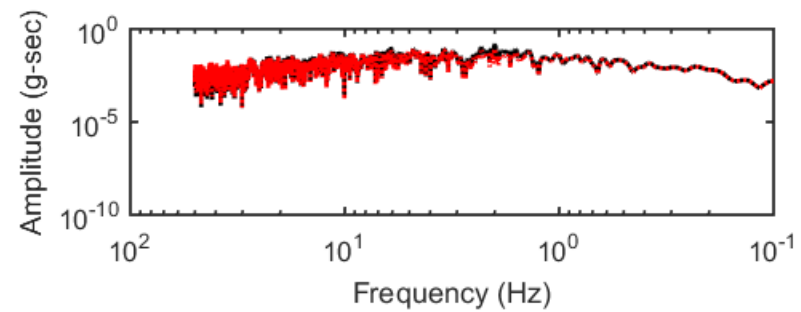
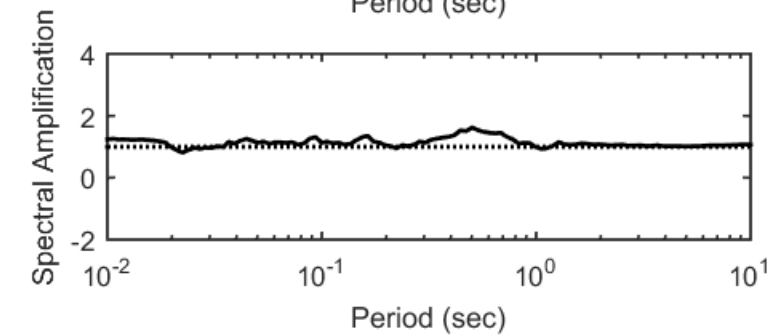
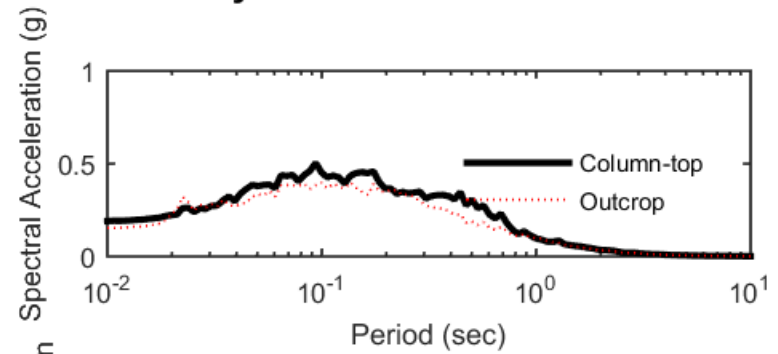
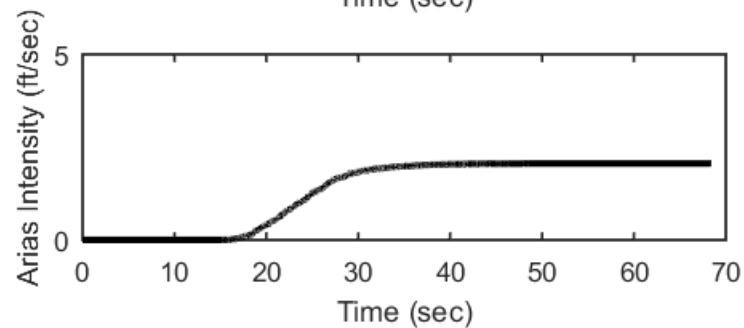
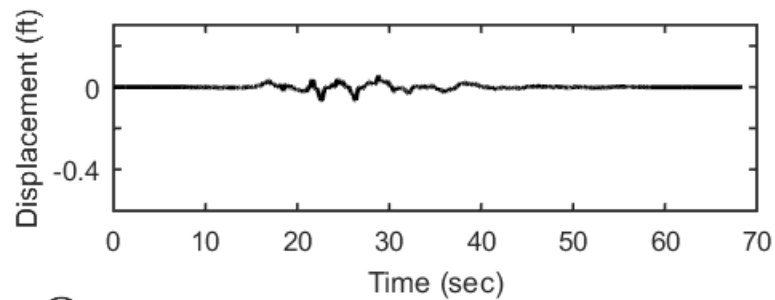
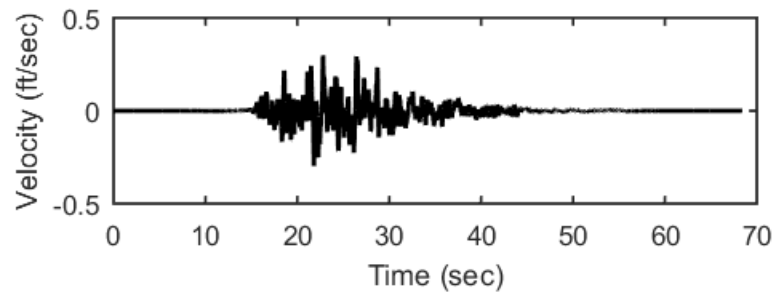
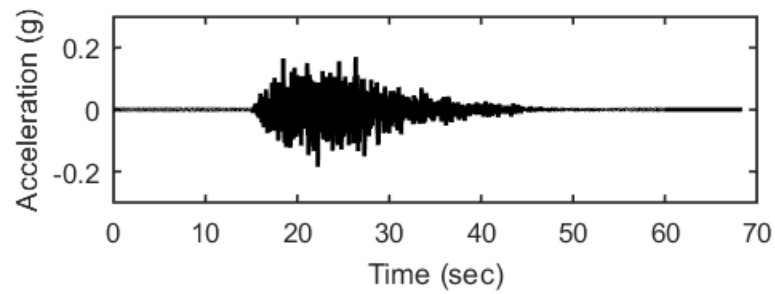
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



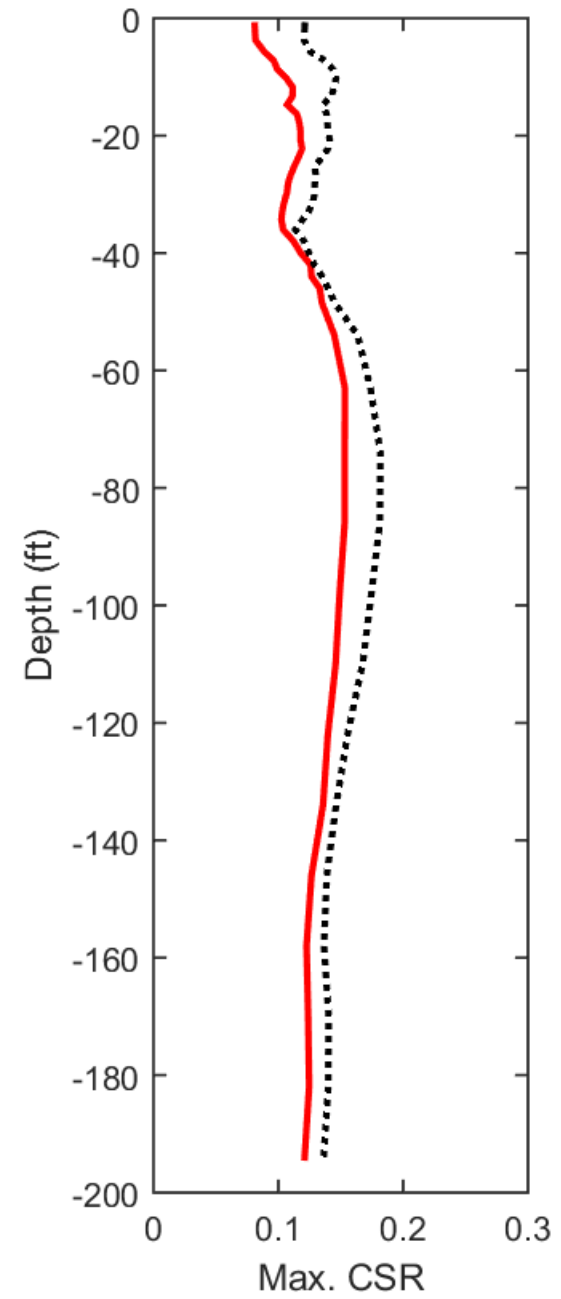
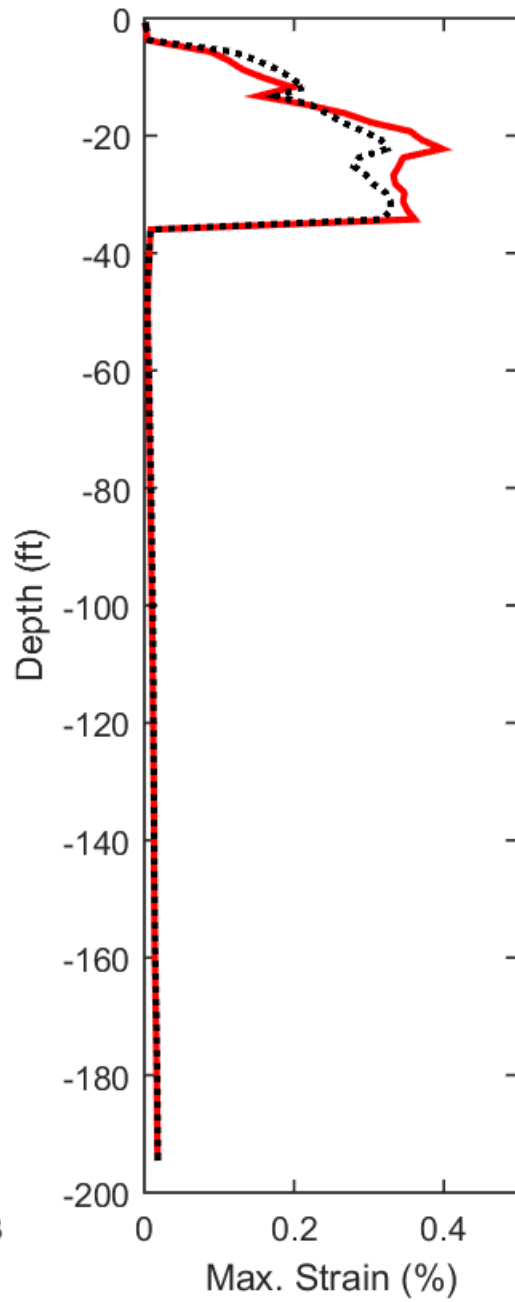
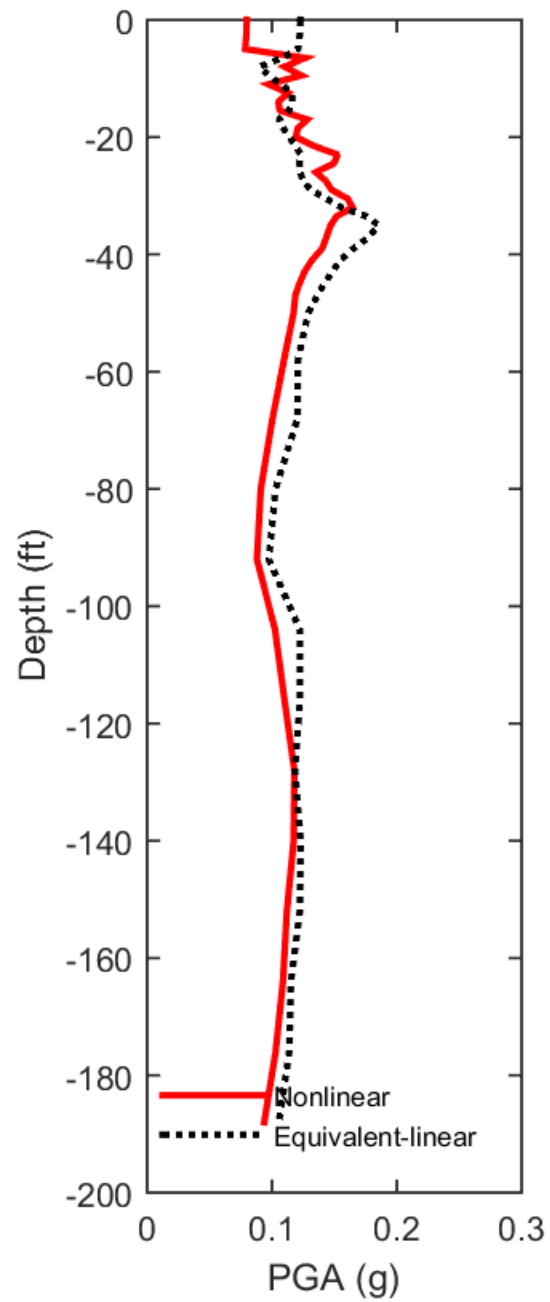
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



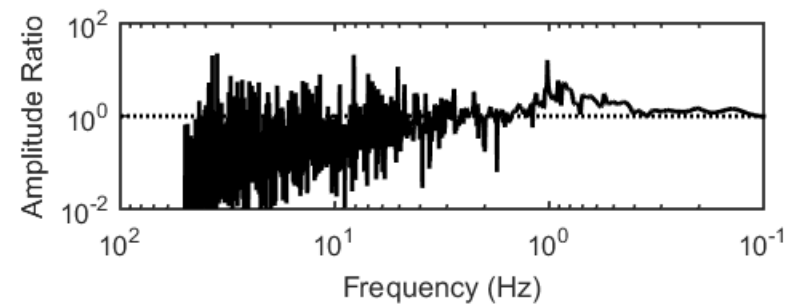
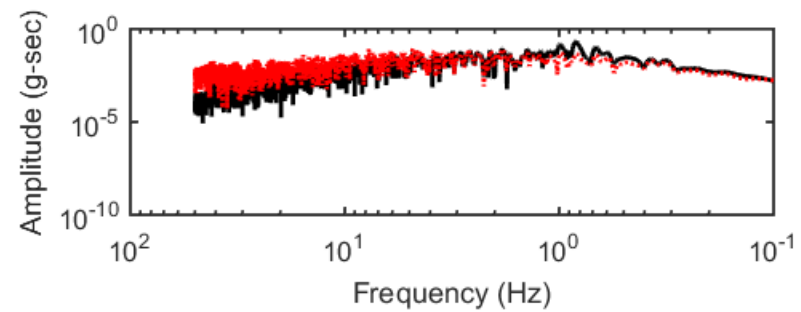
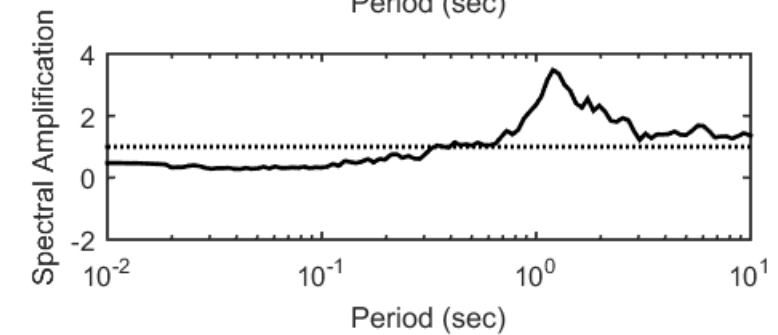
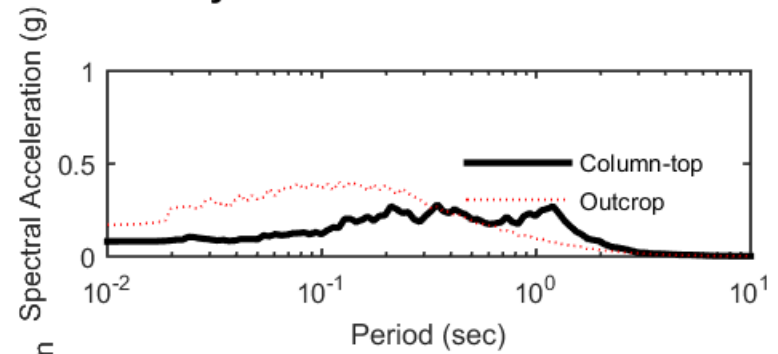
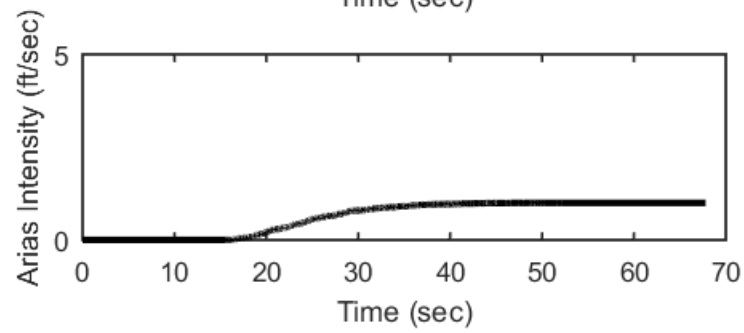
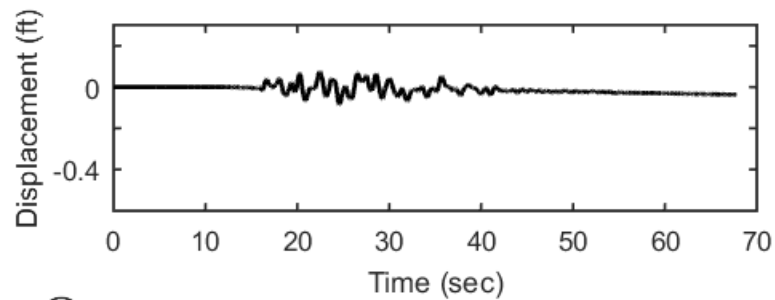
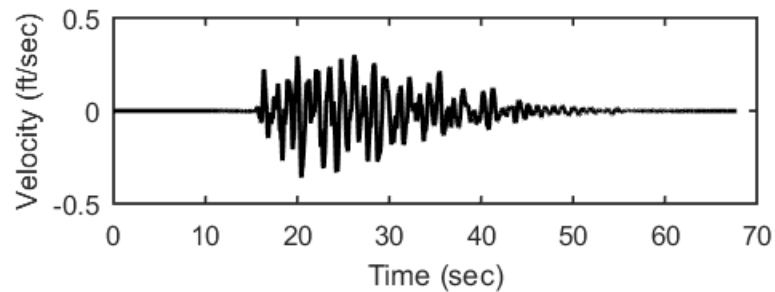
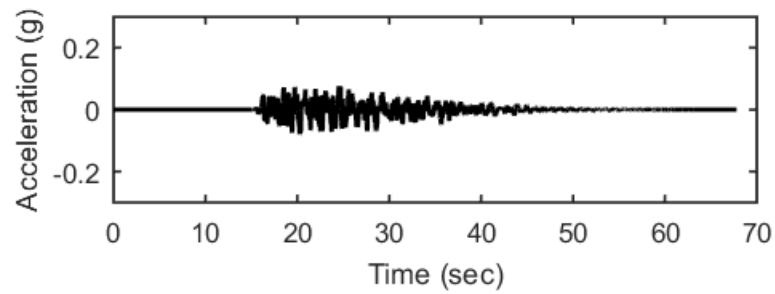
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



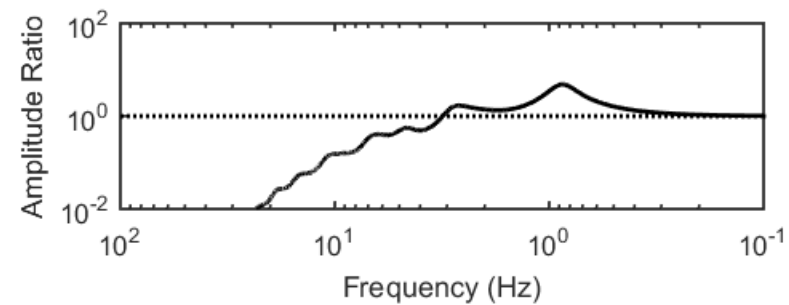
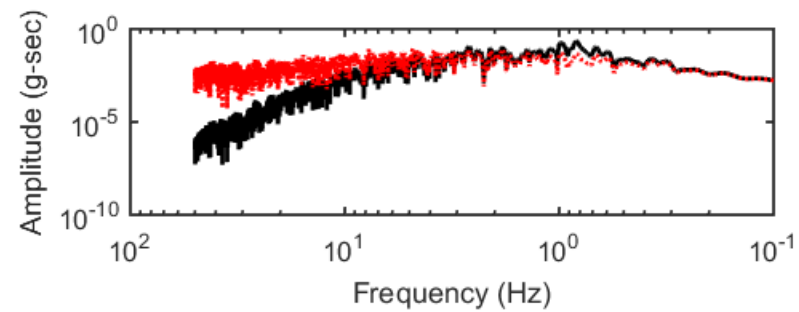
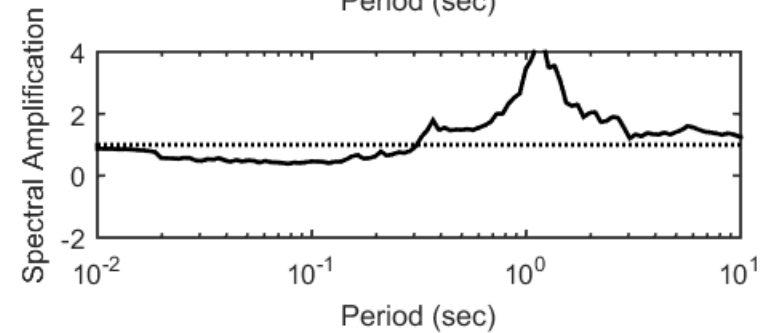
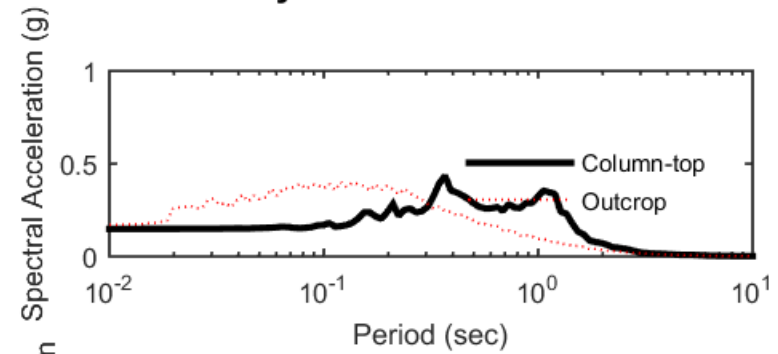
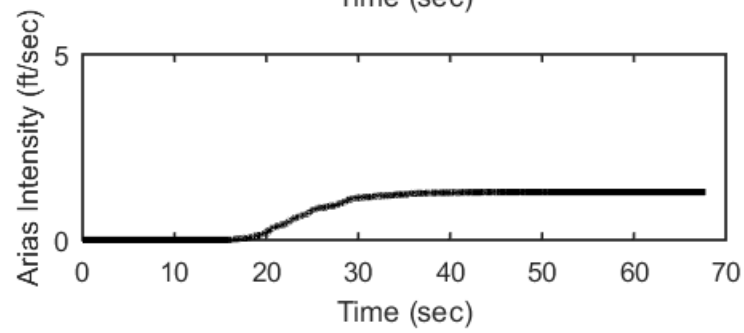
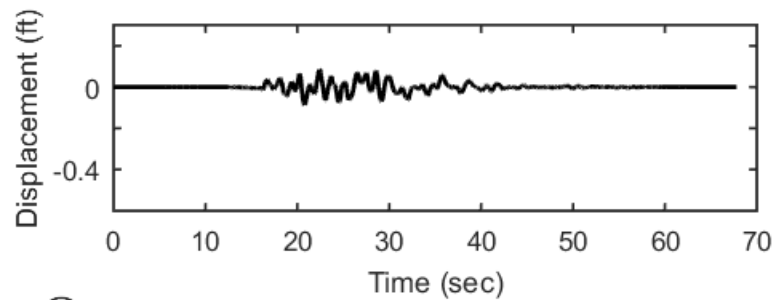
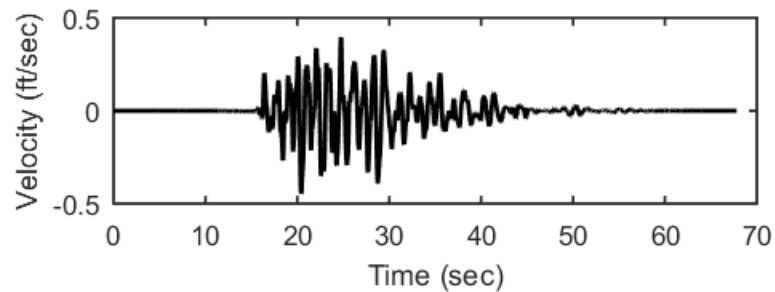
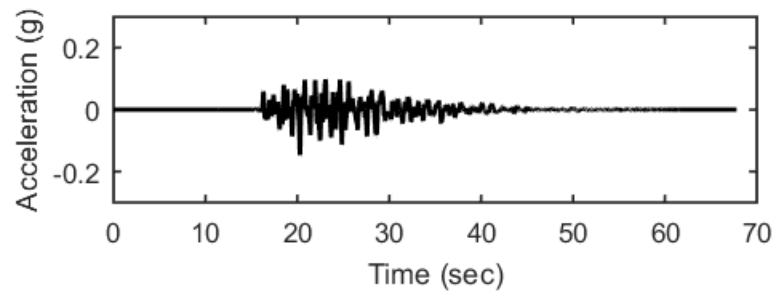
### Profile outputs for Motion: FEE3



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4

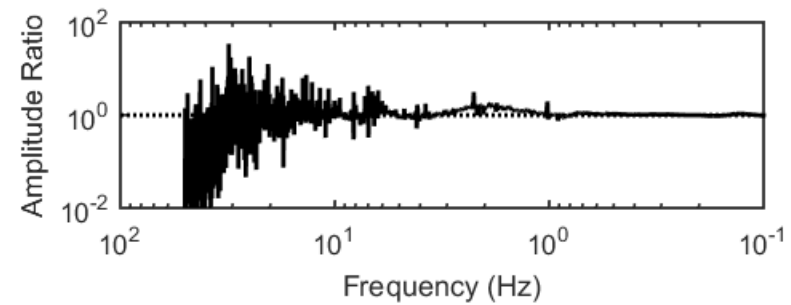
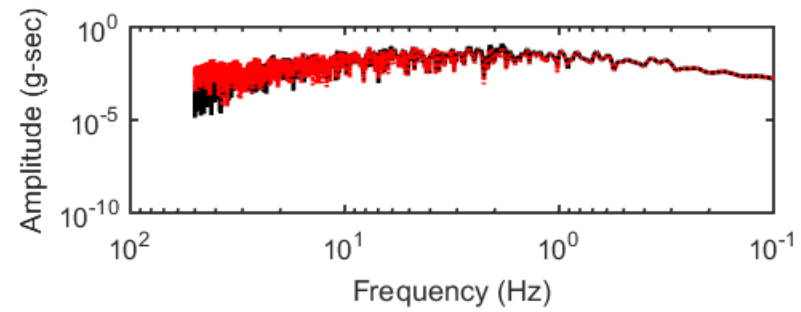
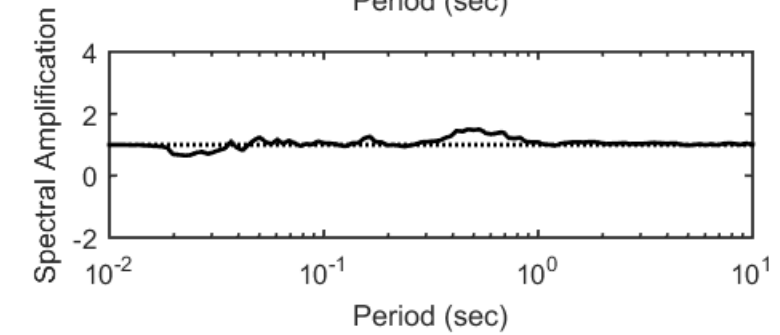
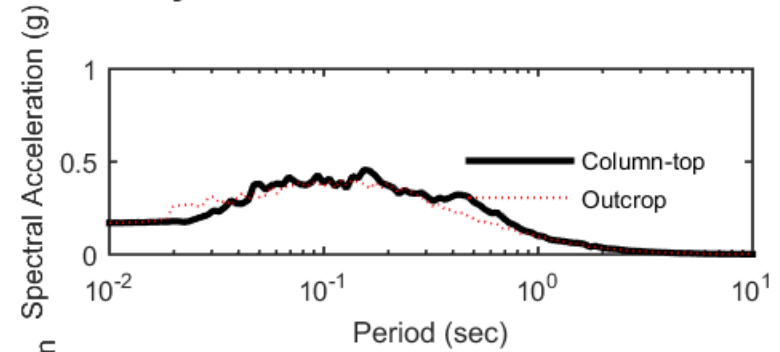
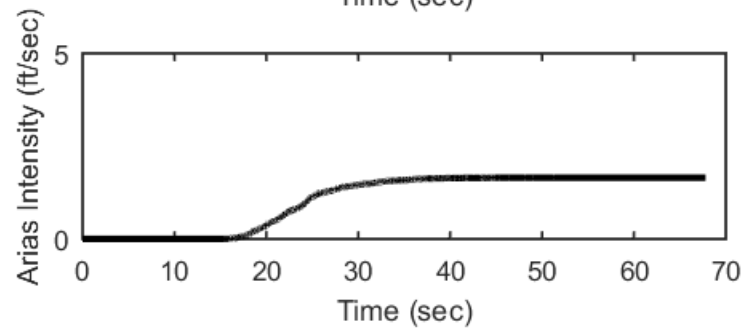
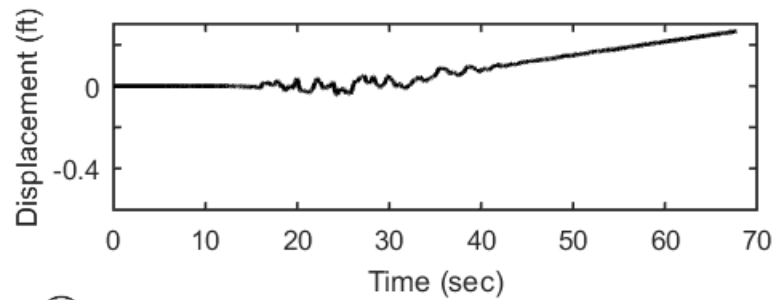
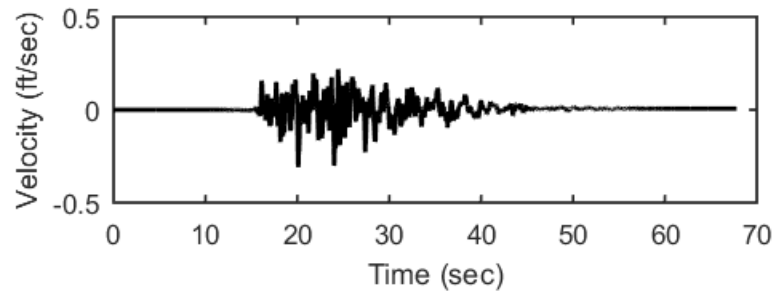
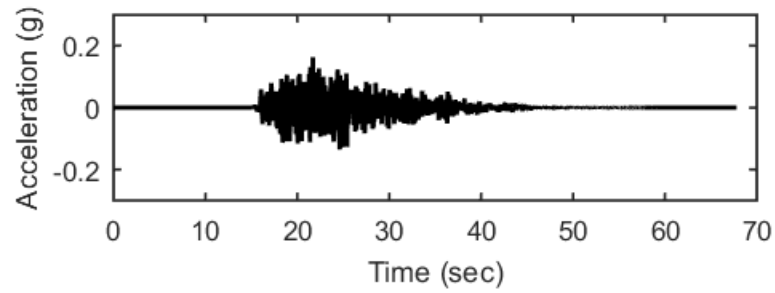


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4

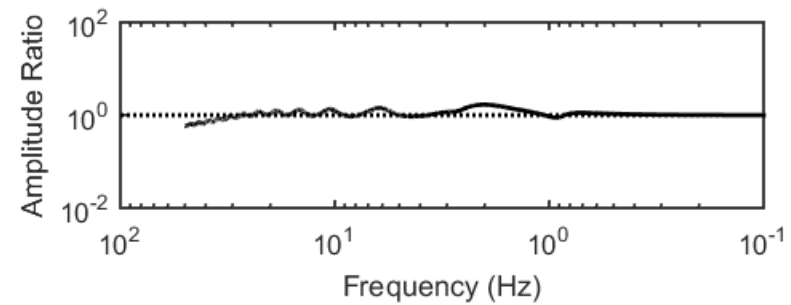
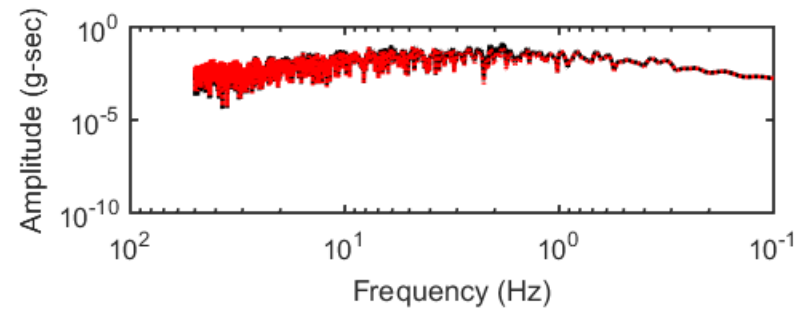
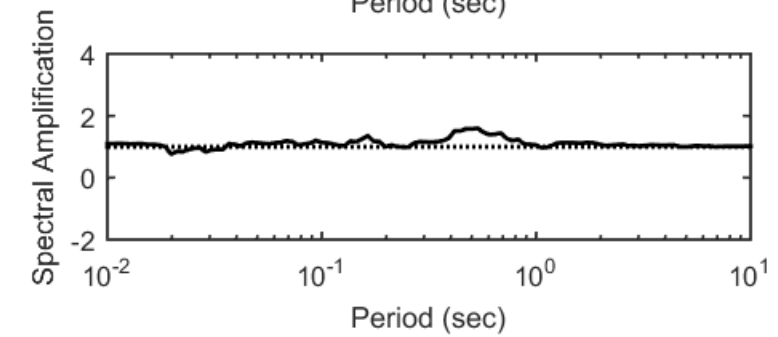
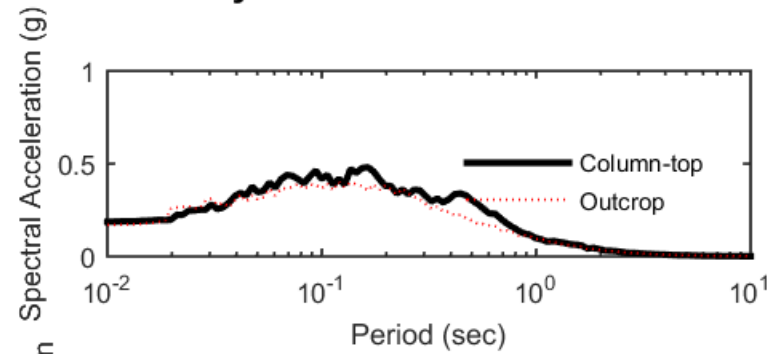
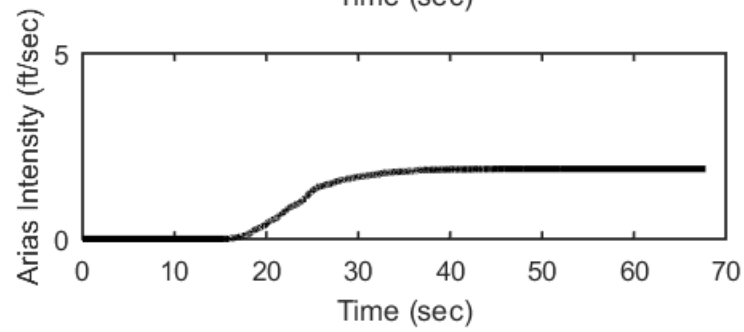
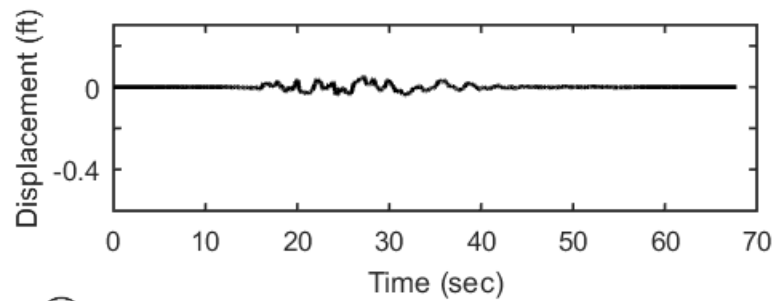
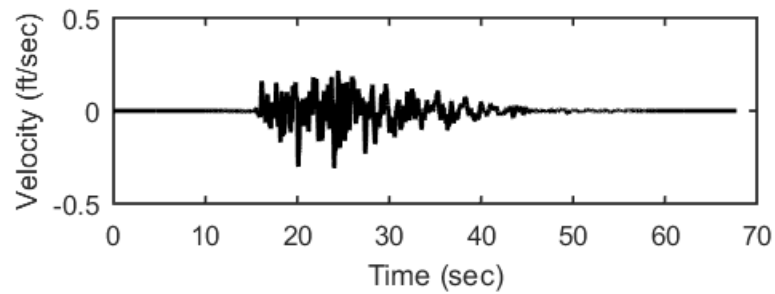
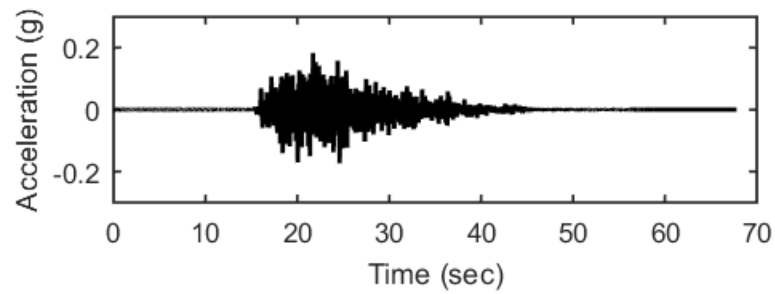




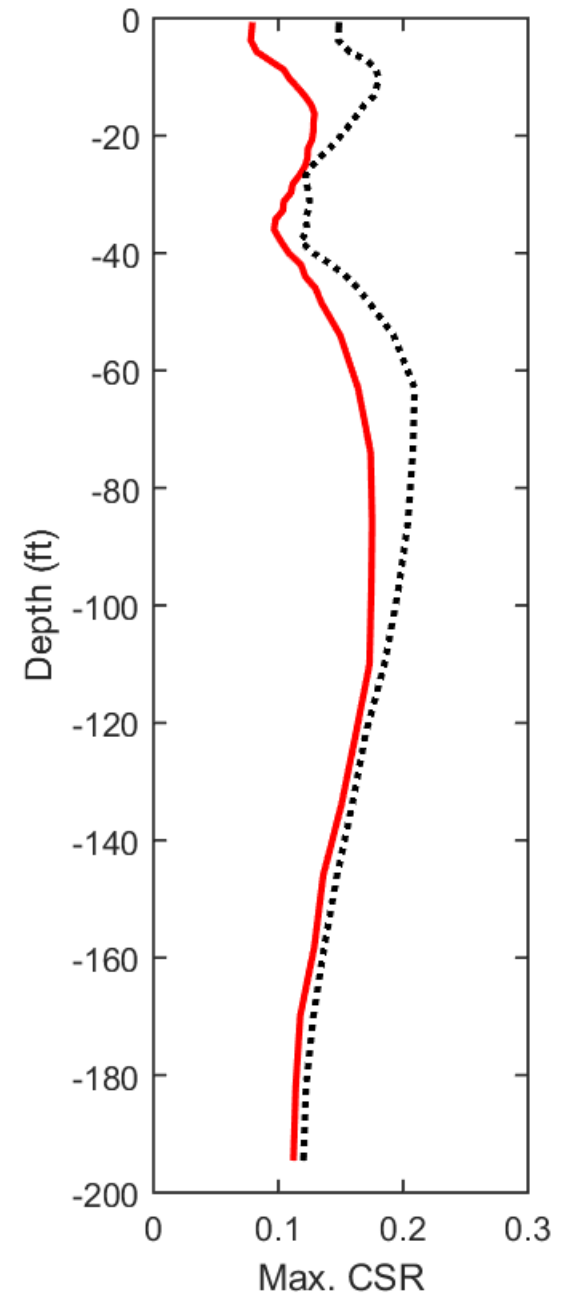
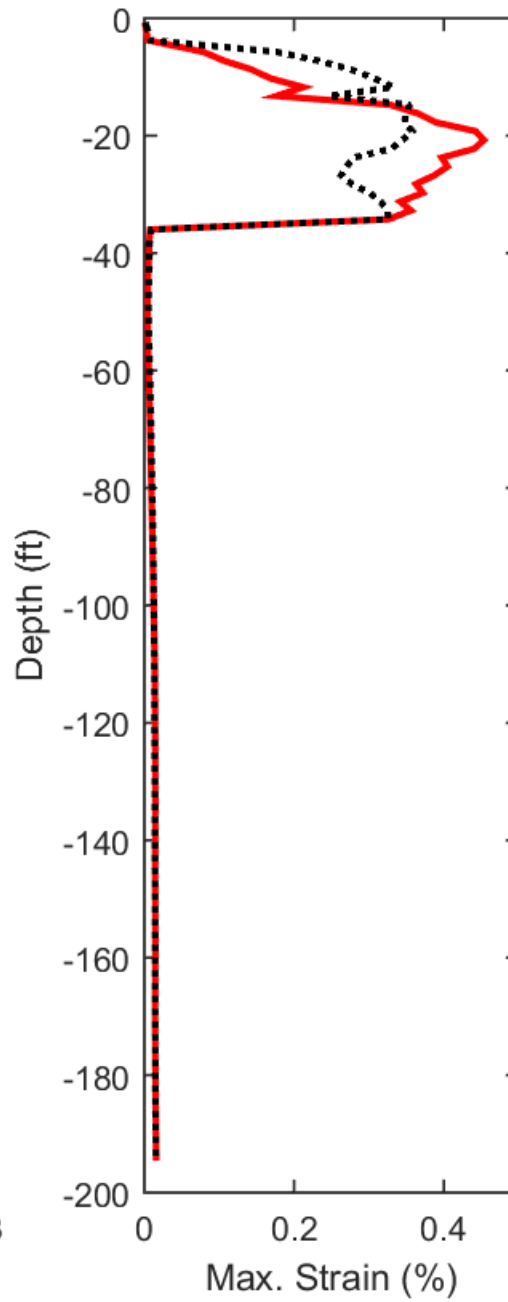
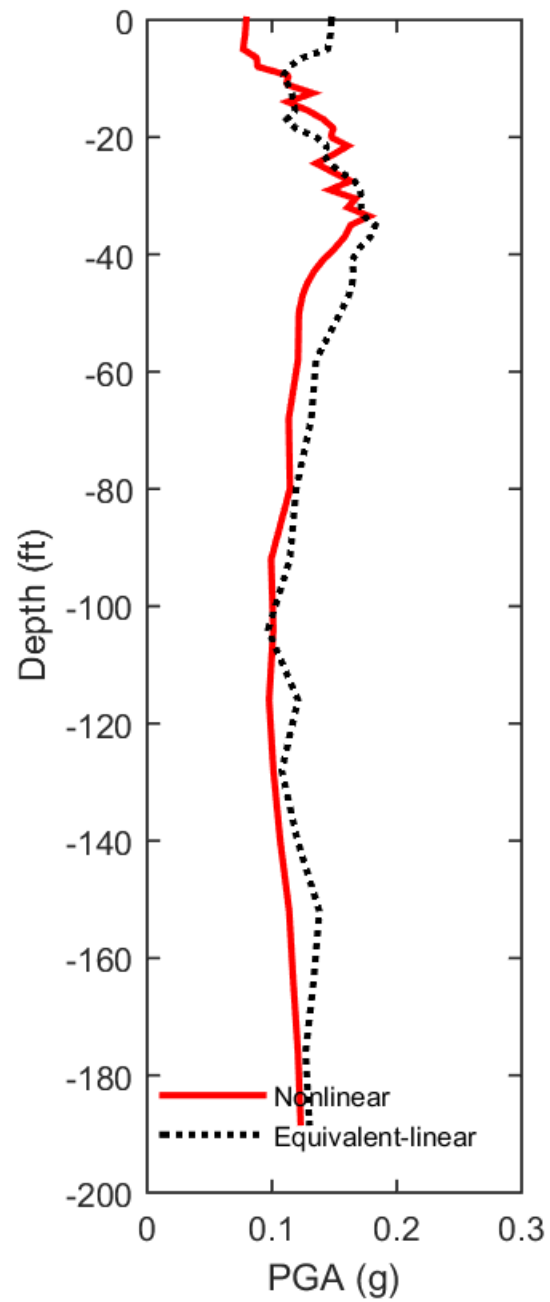
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



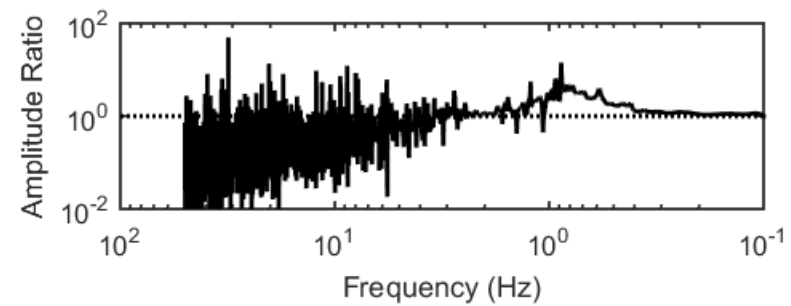
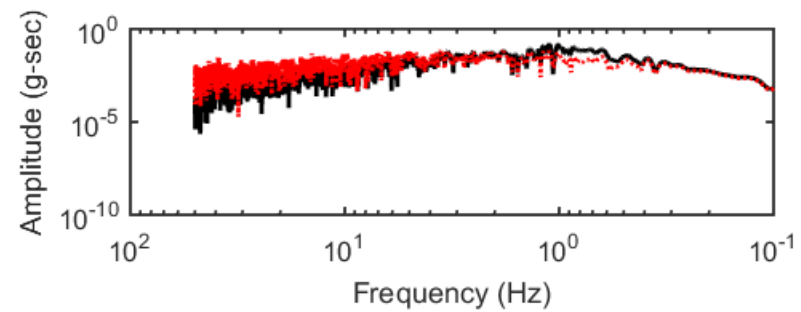
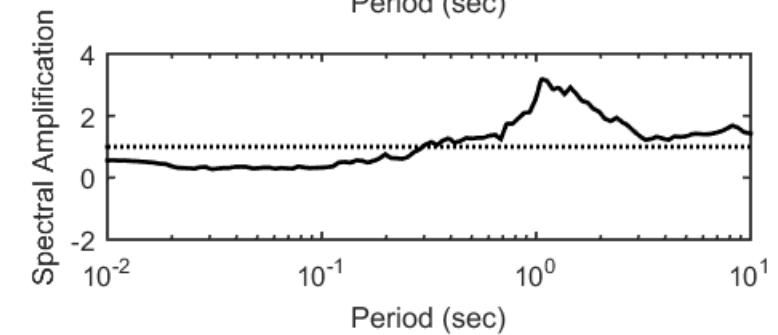
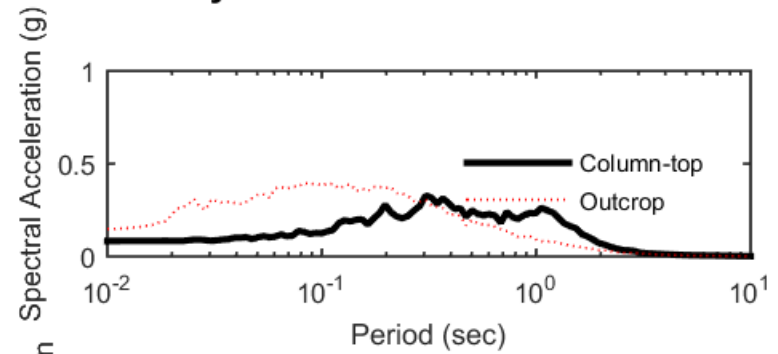
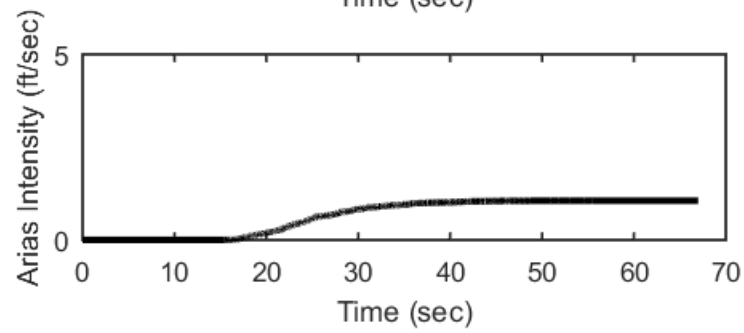
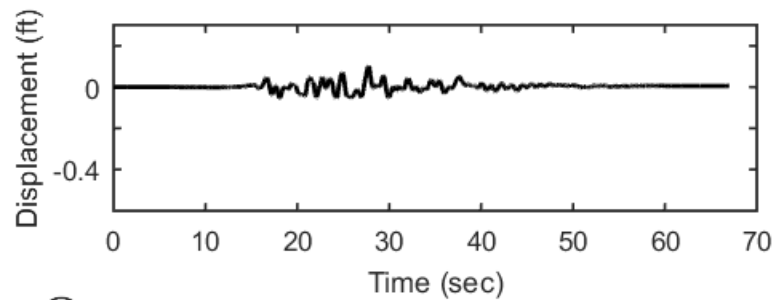
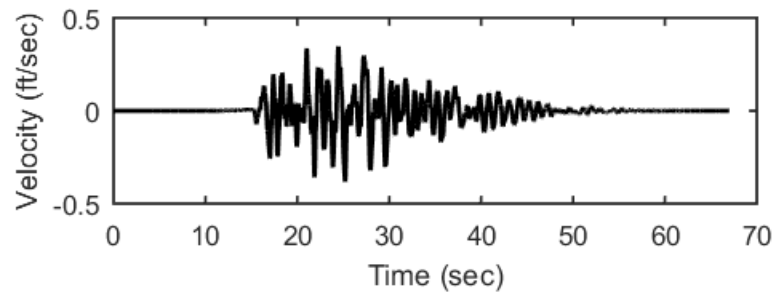
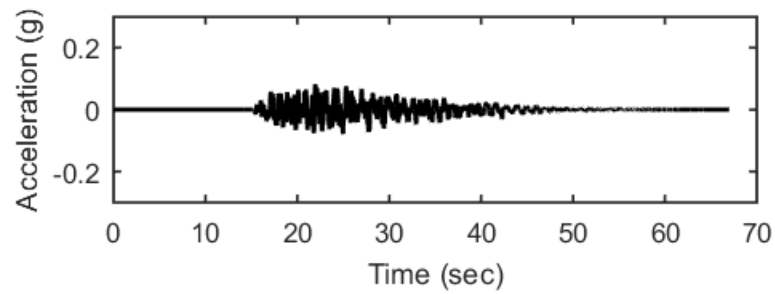
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



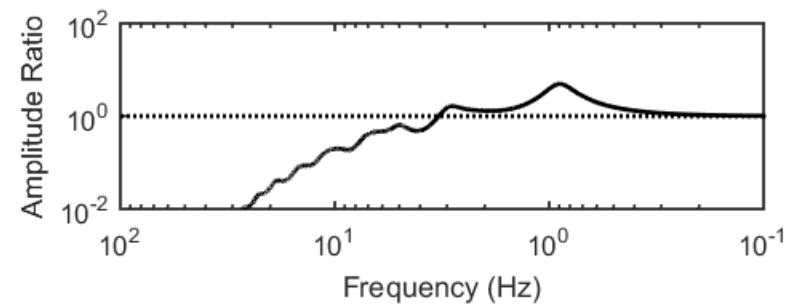
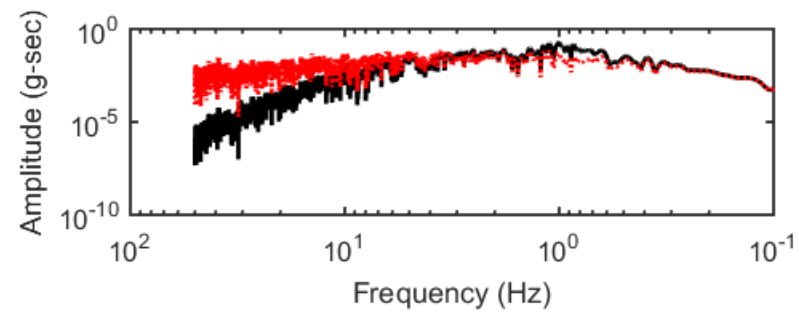
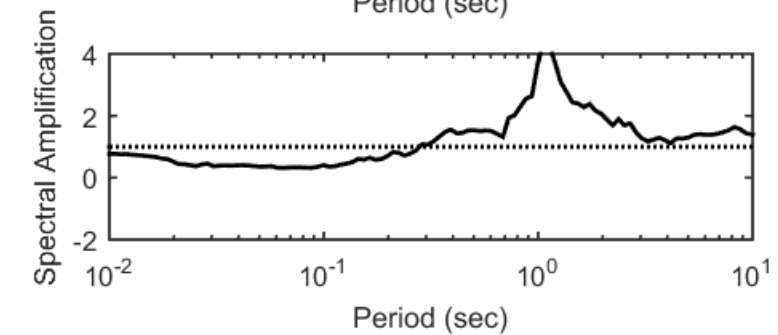
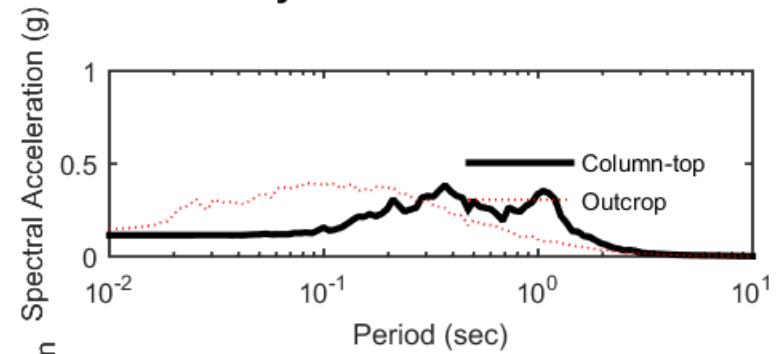
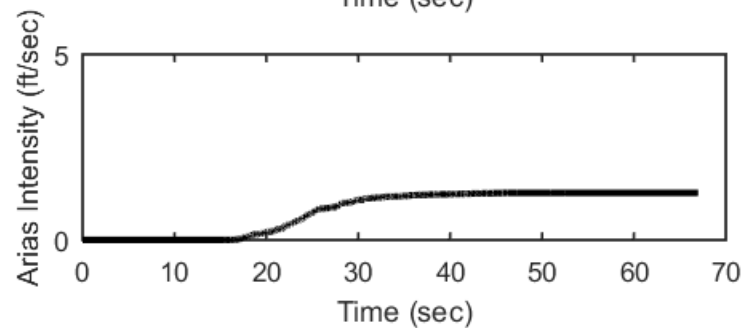
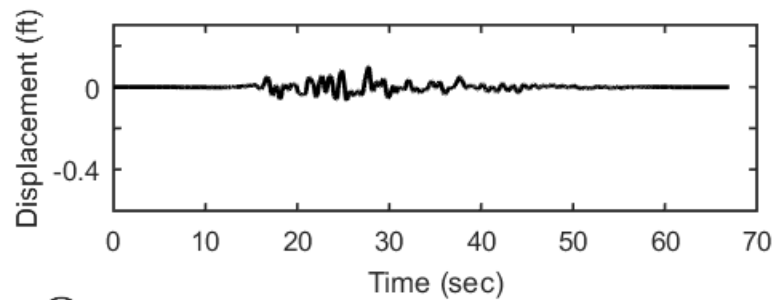
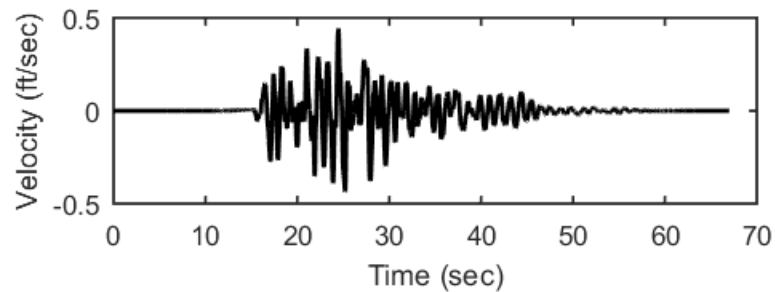
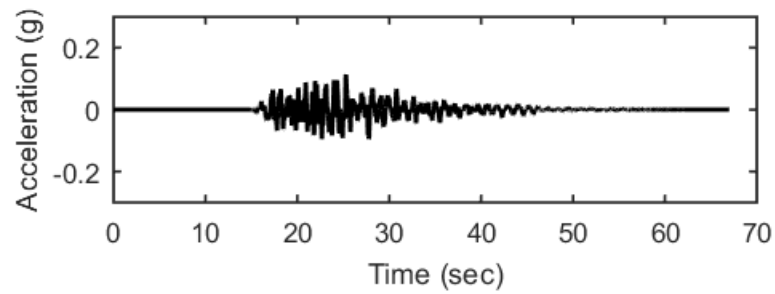
### Profile outputs for Motion: FEE4



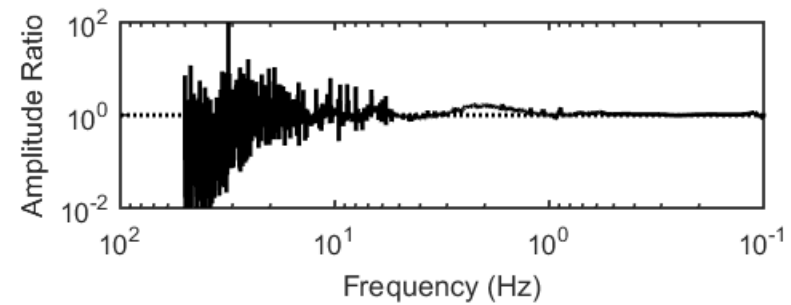
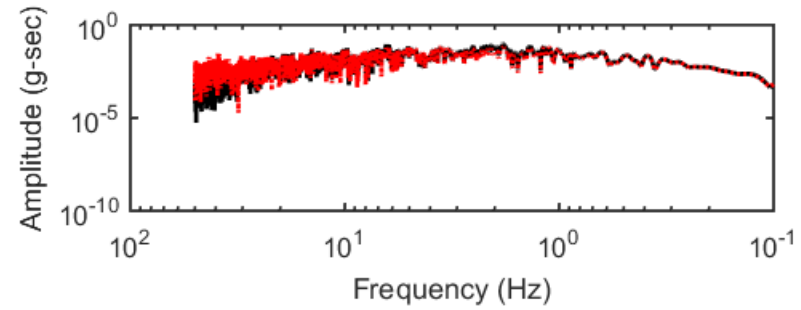
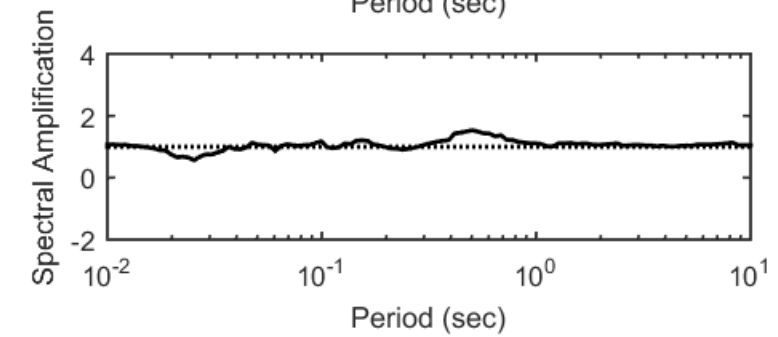
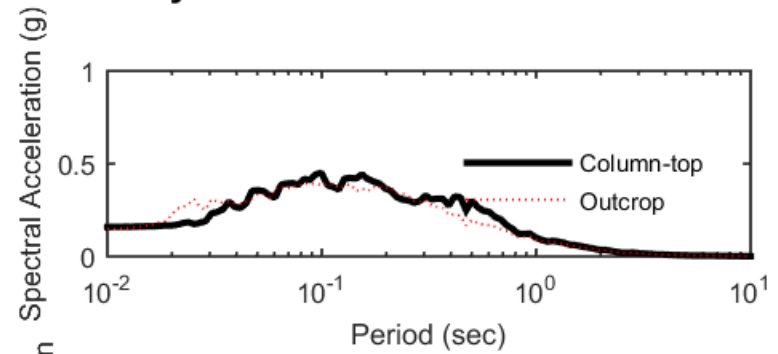
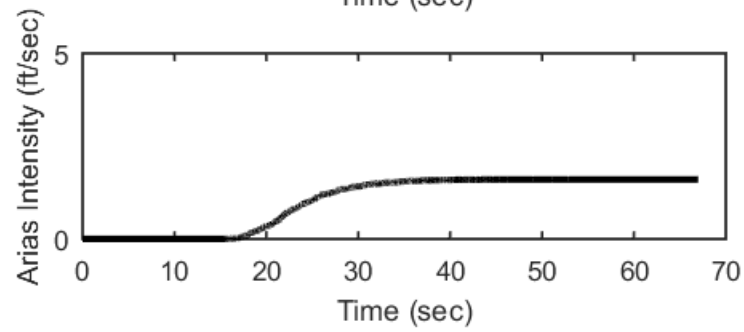
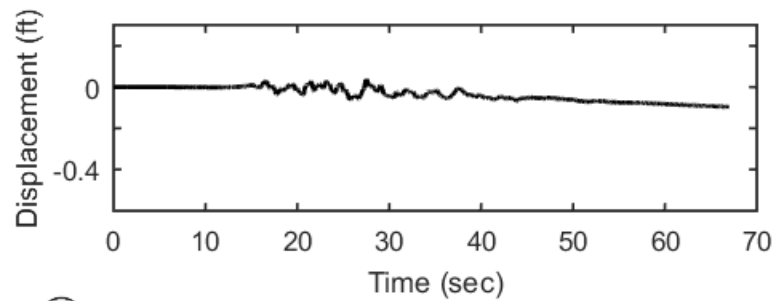
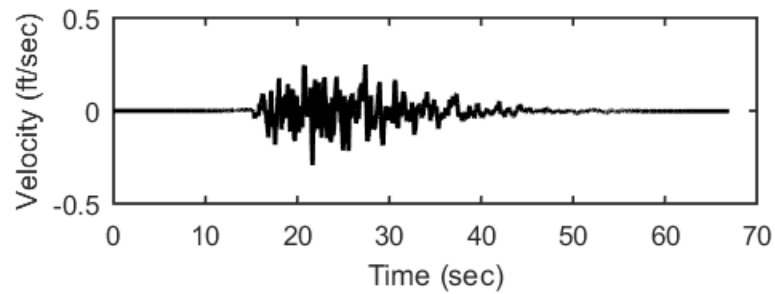
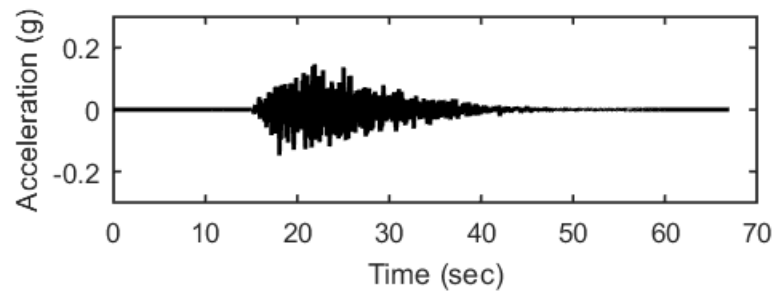
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



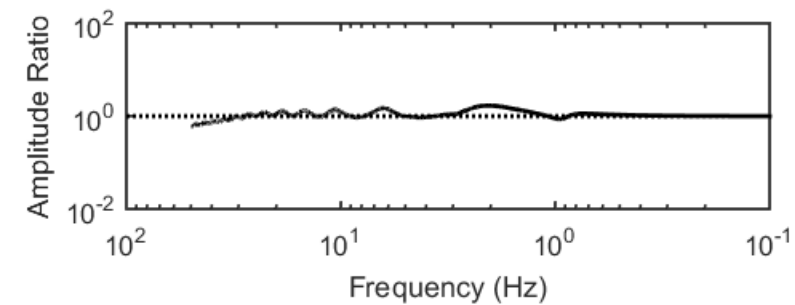
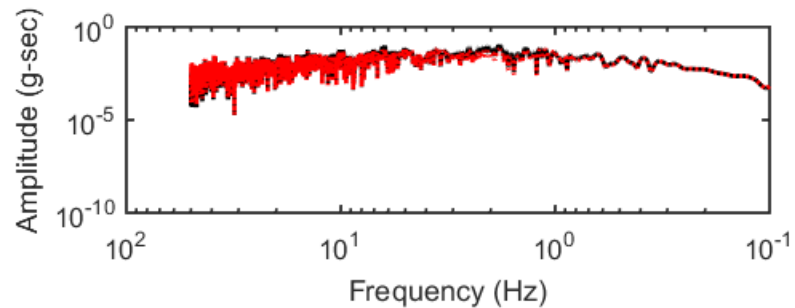
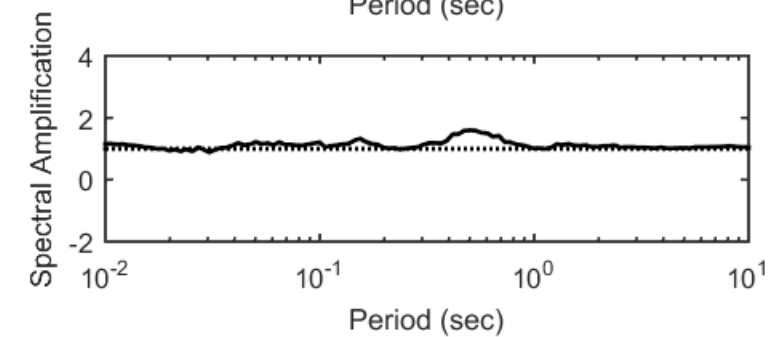
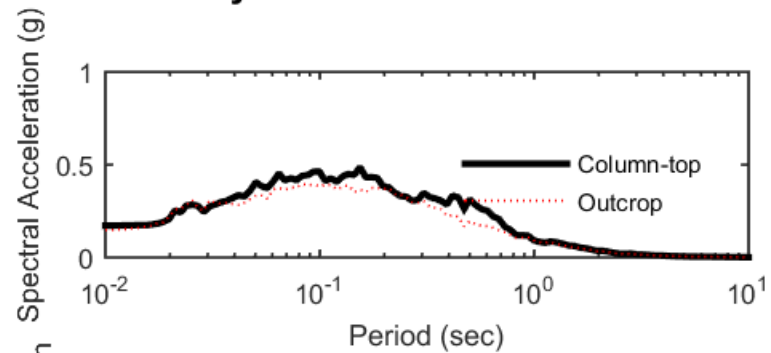
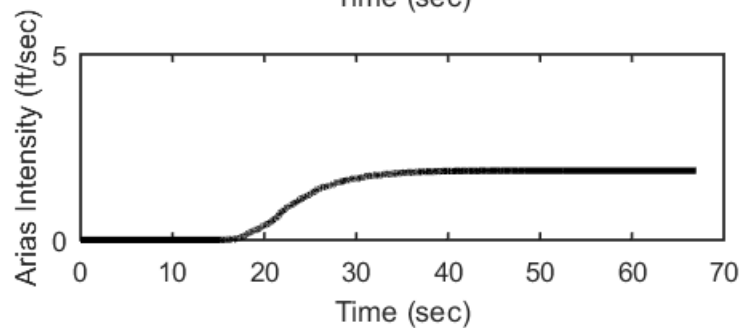
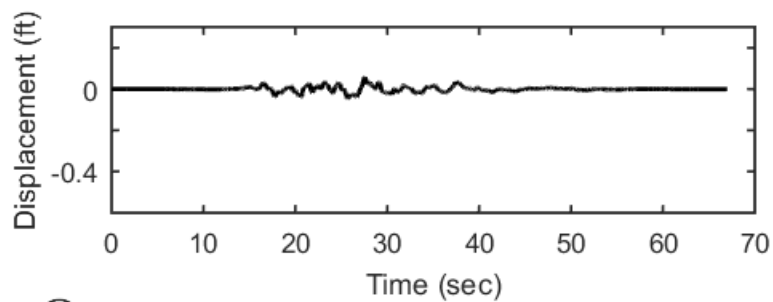
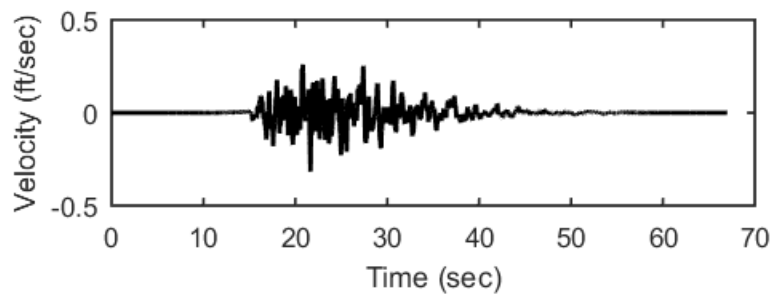
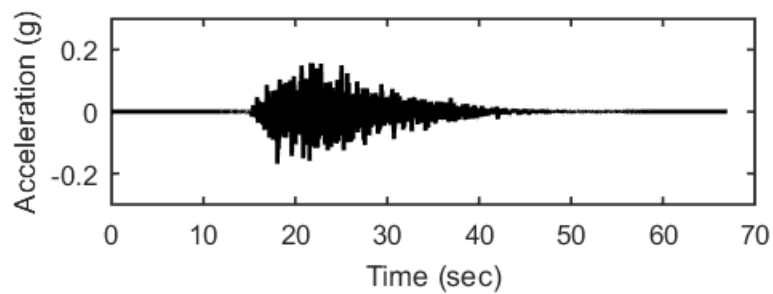
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



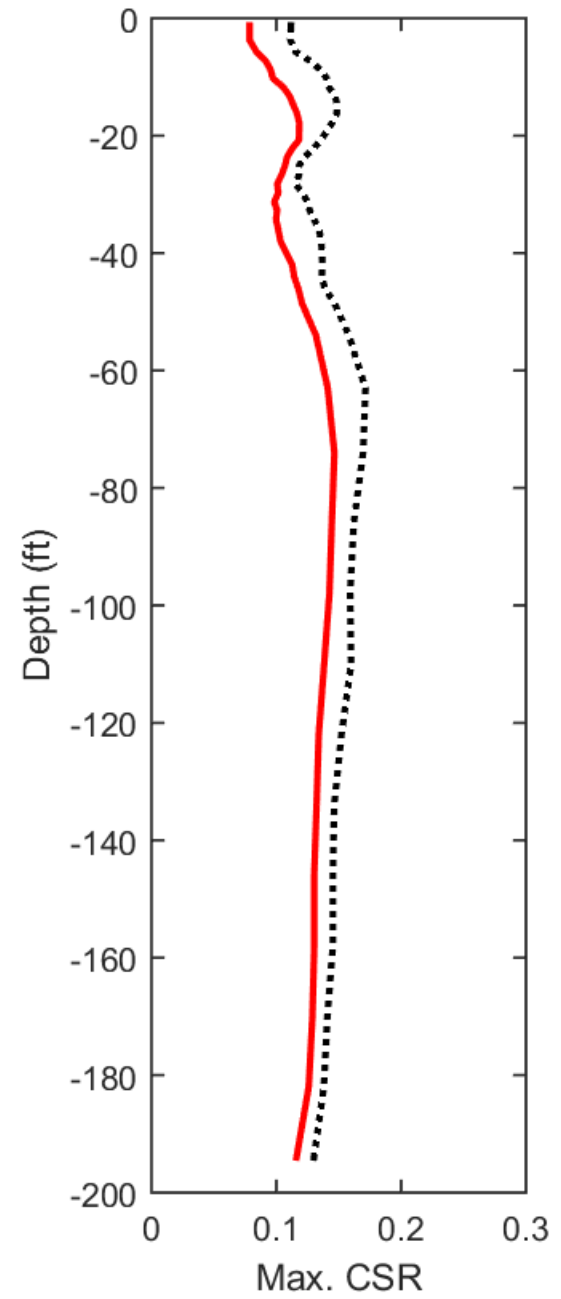
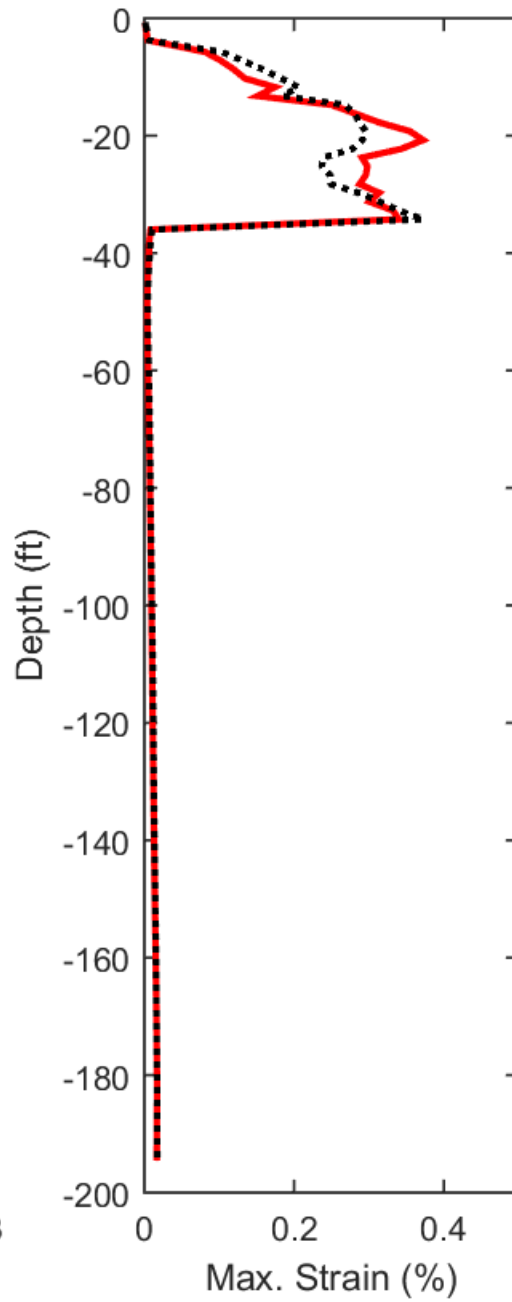
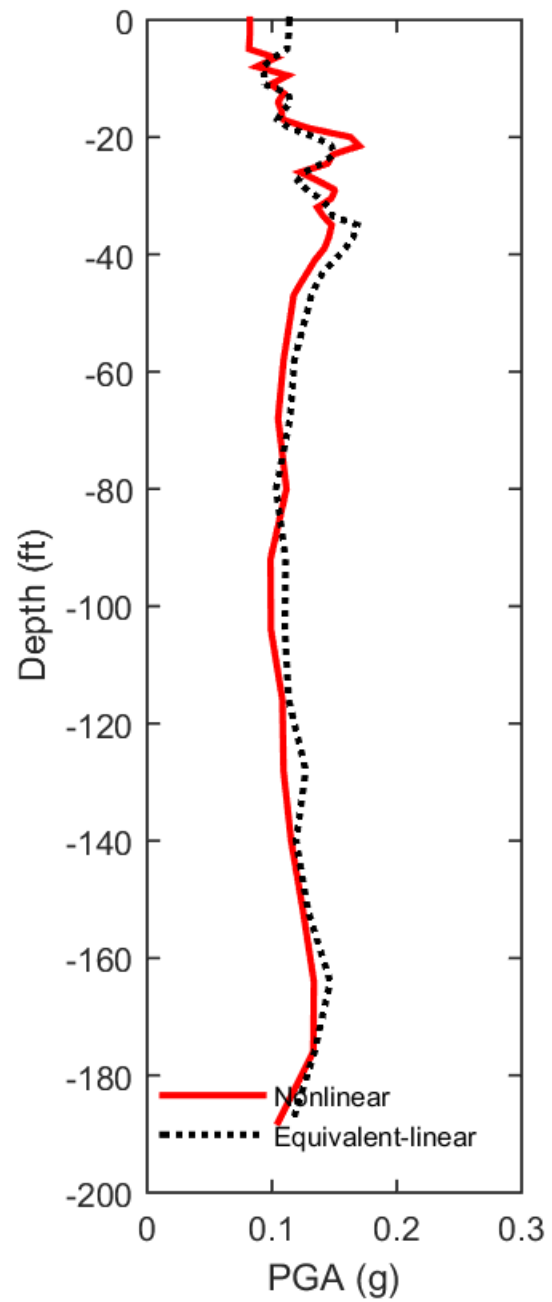
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5

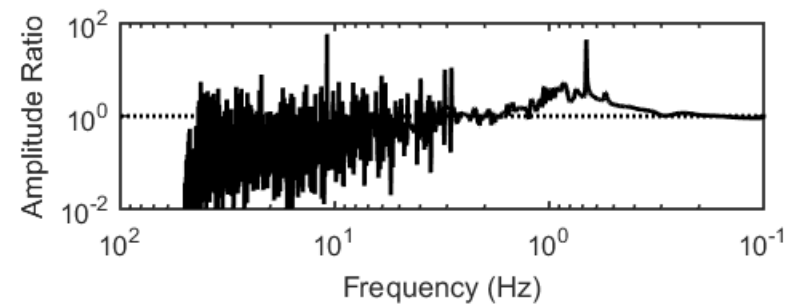
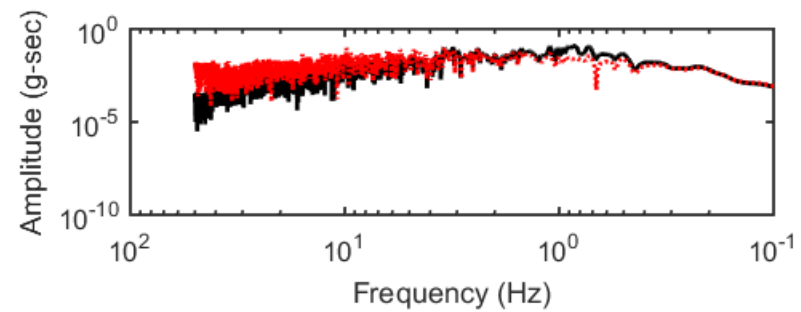
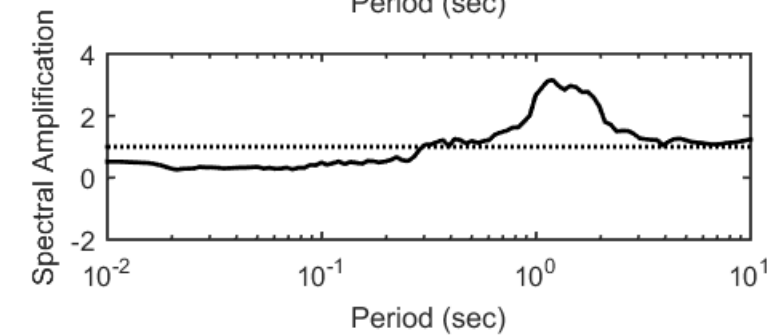
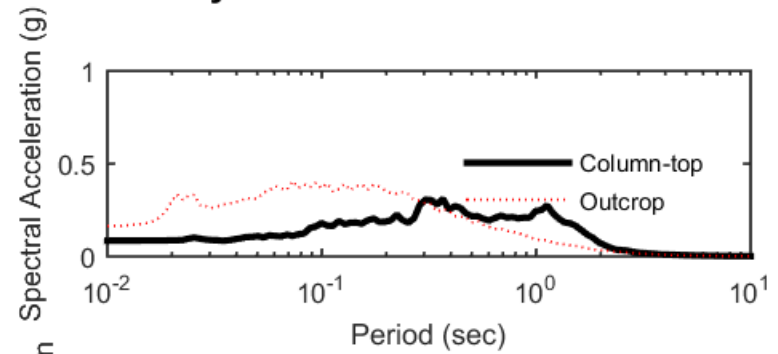
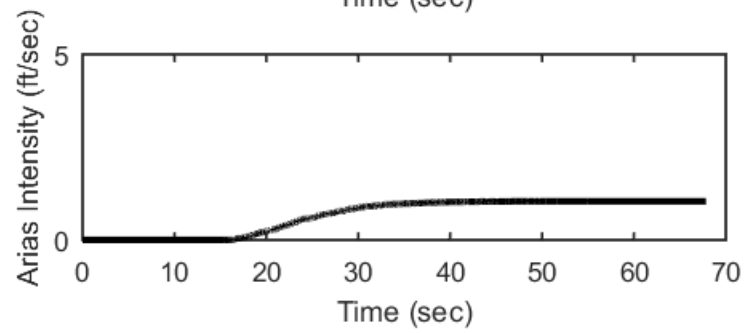
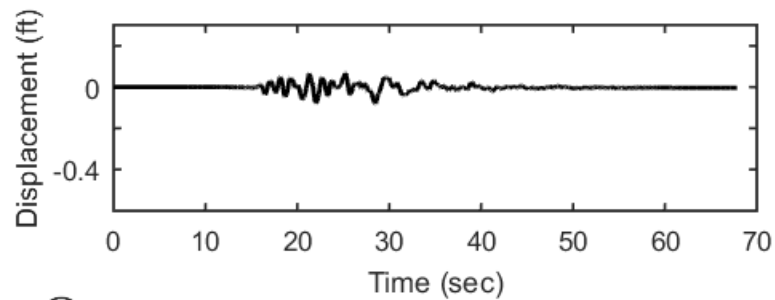
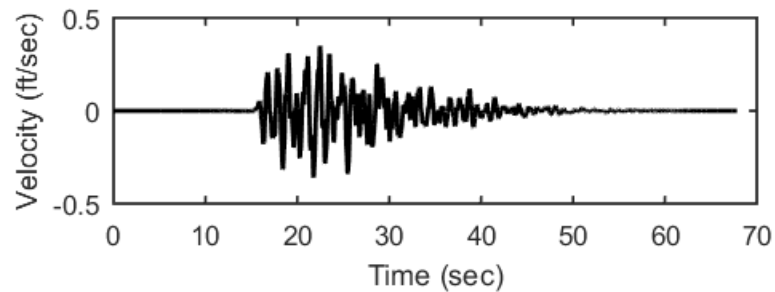
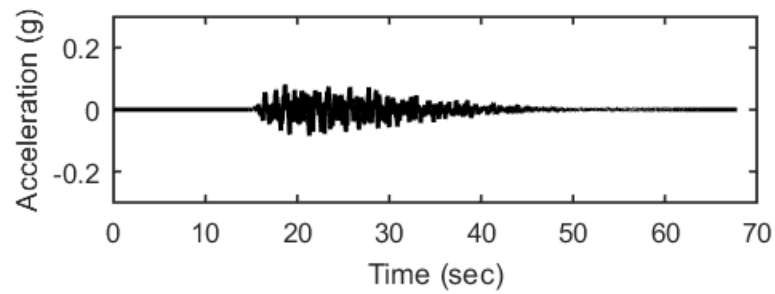


### Profile outputs for Motion: FEE5

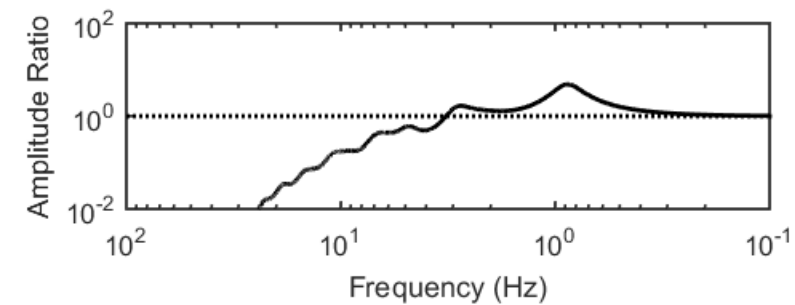
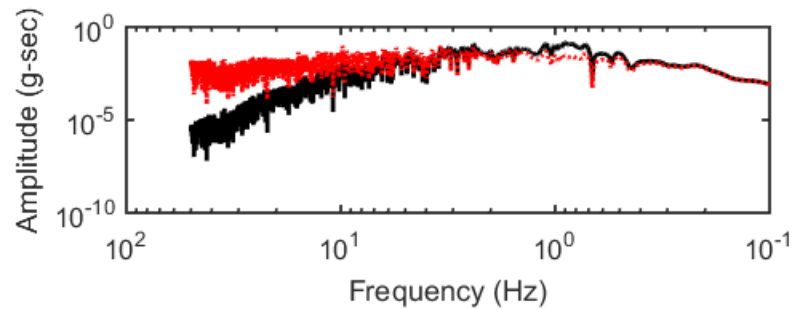
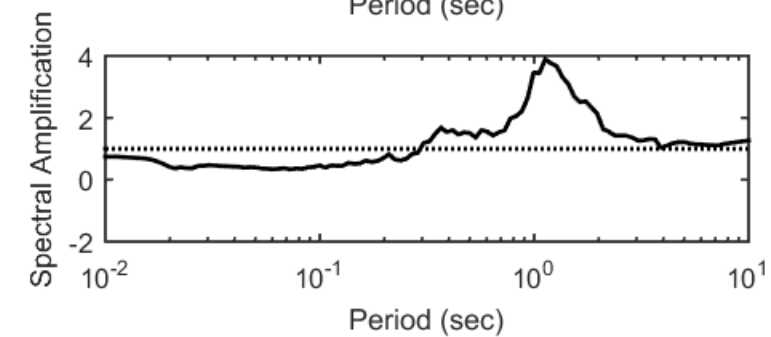
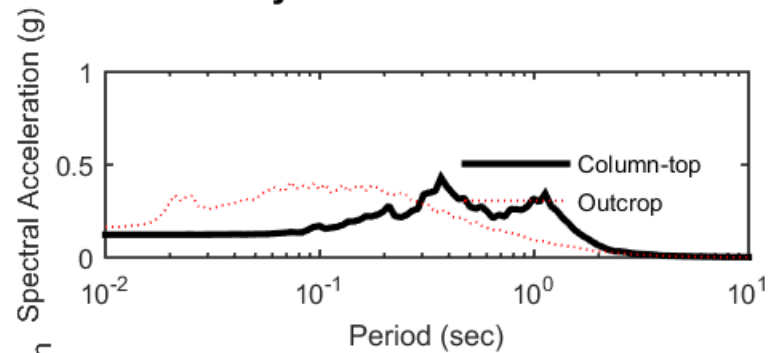
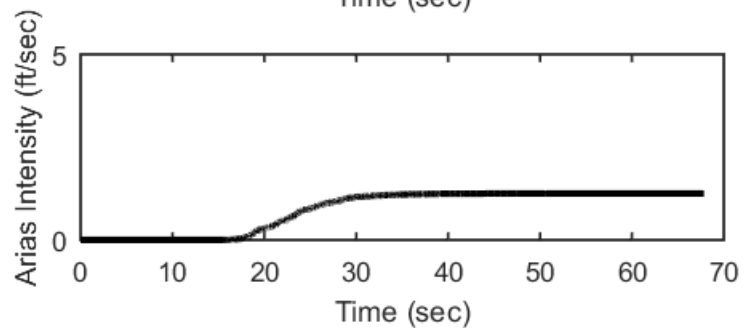
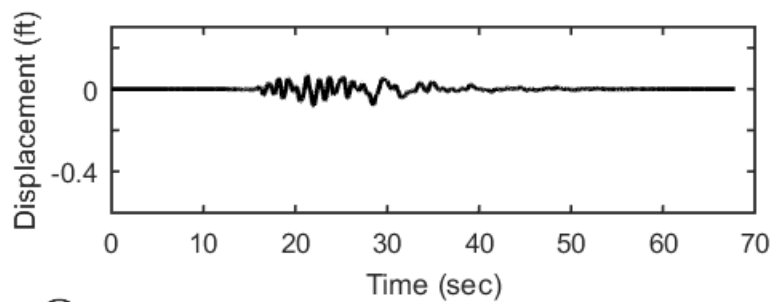
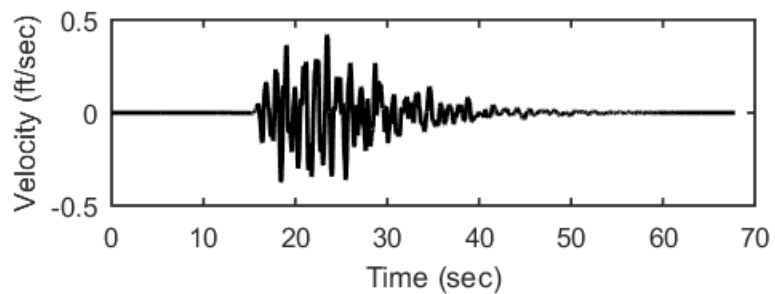
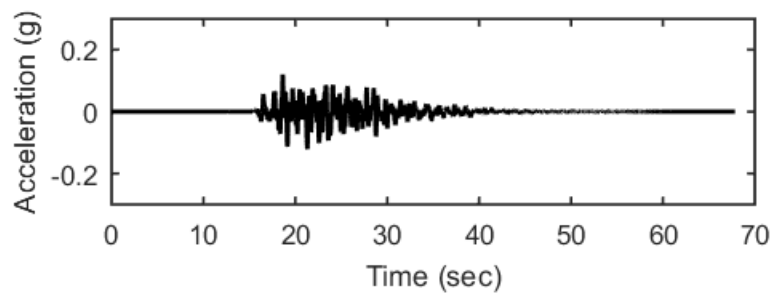




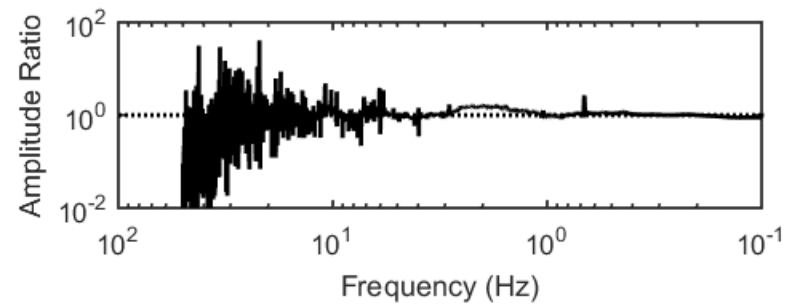
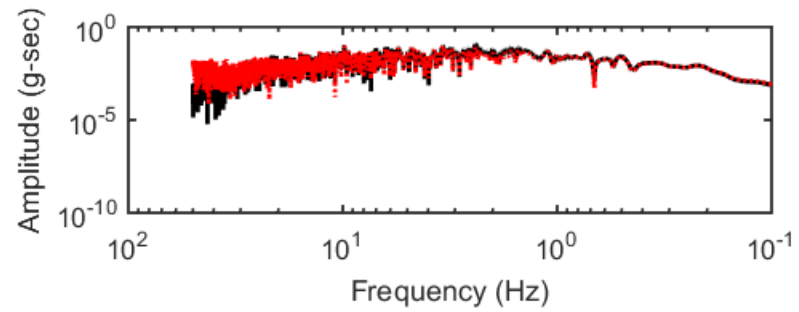
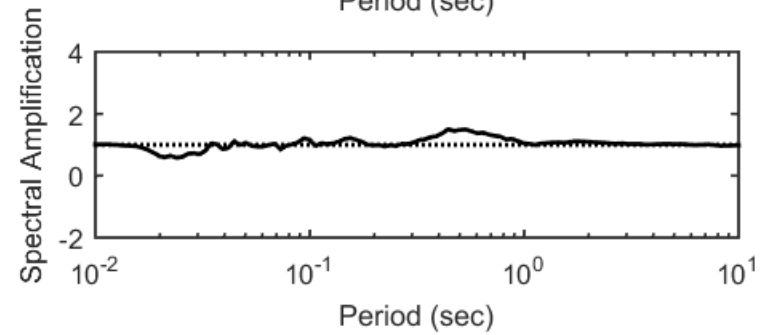
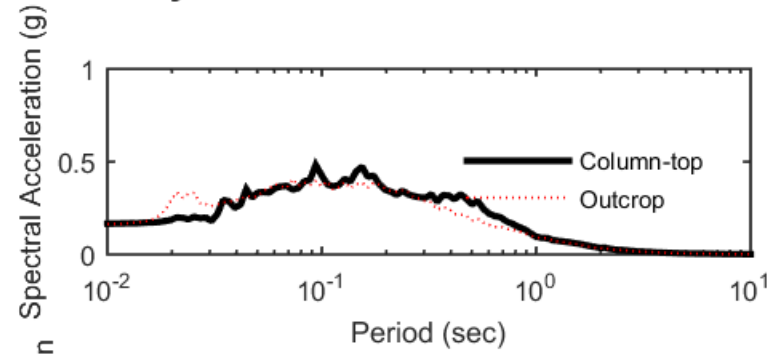
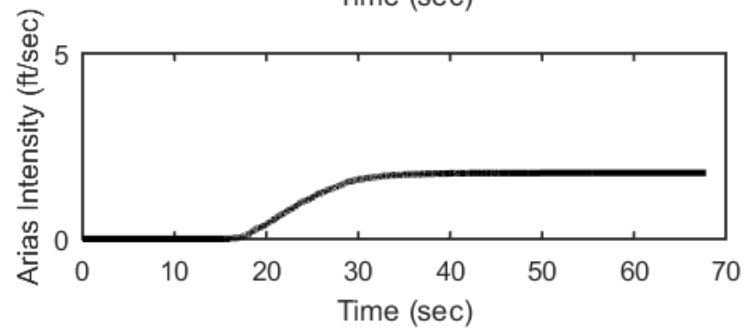
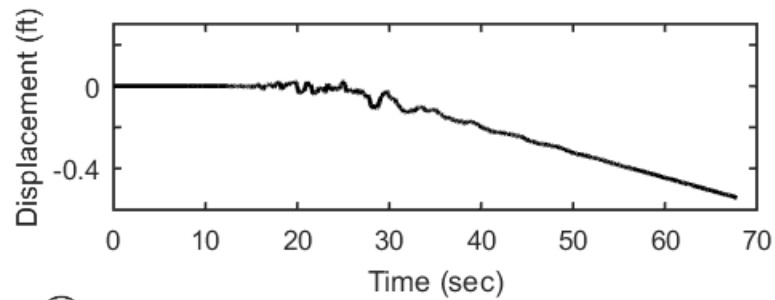
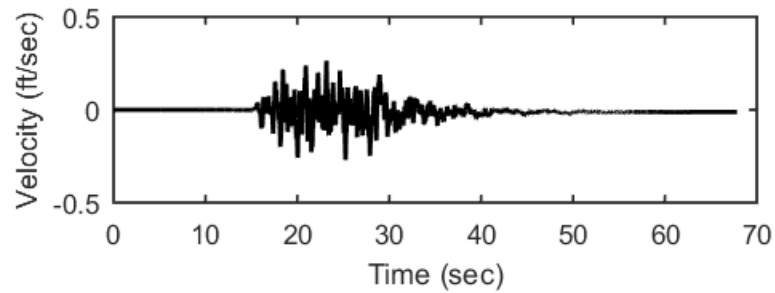
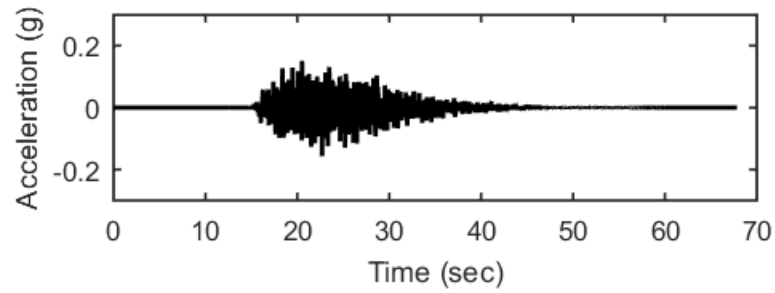
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



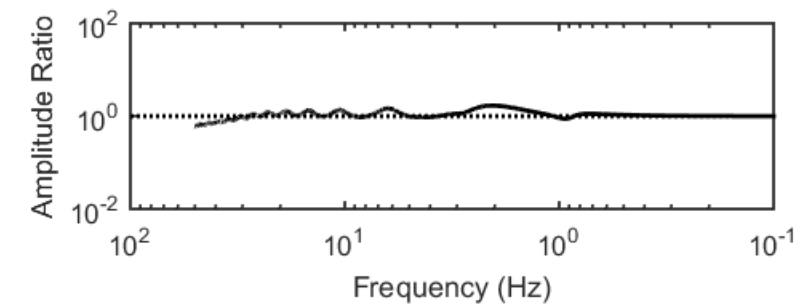
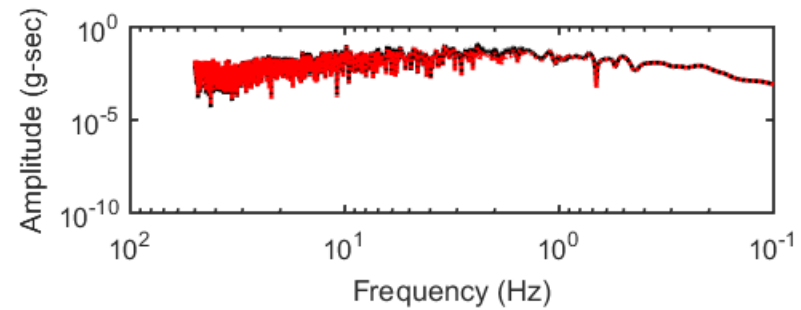
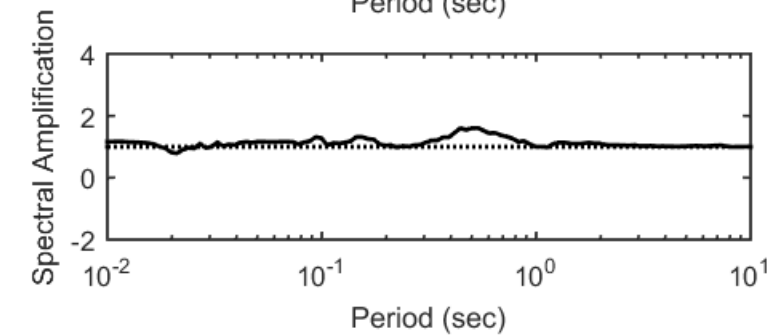
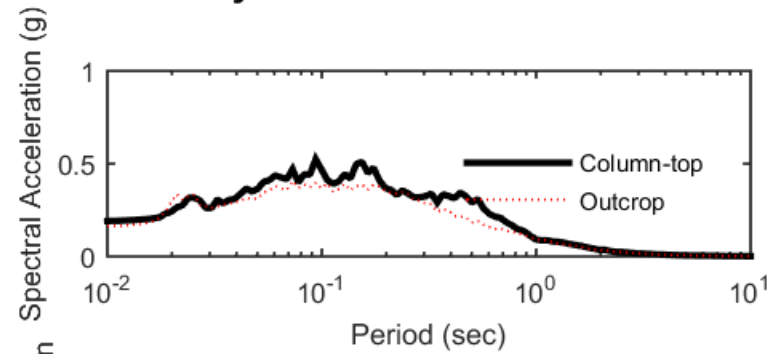
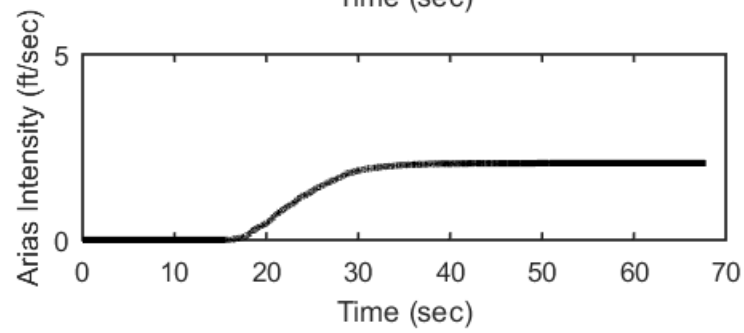
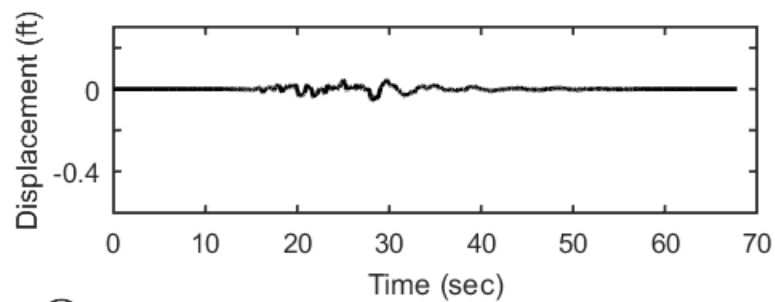
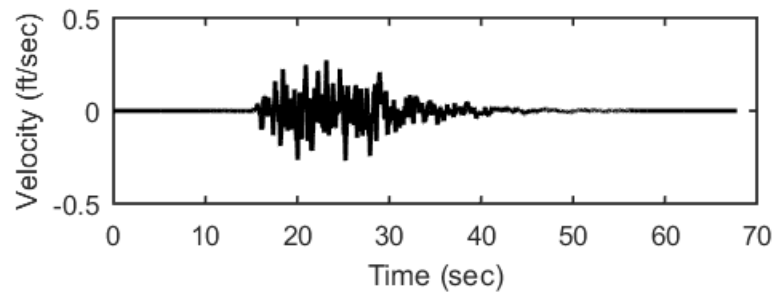
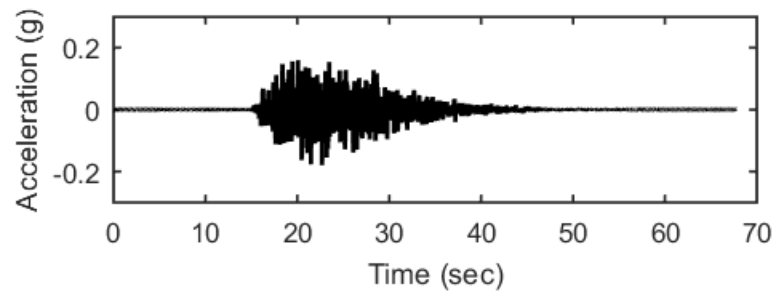
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



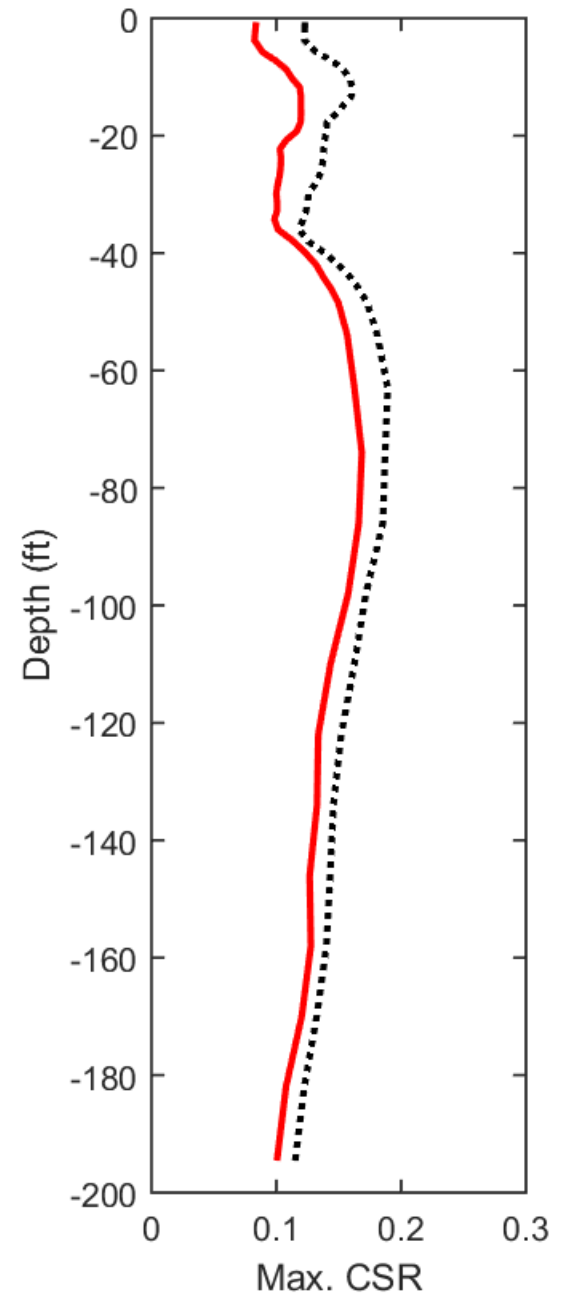
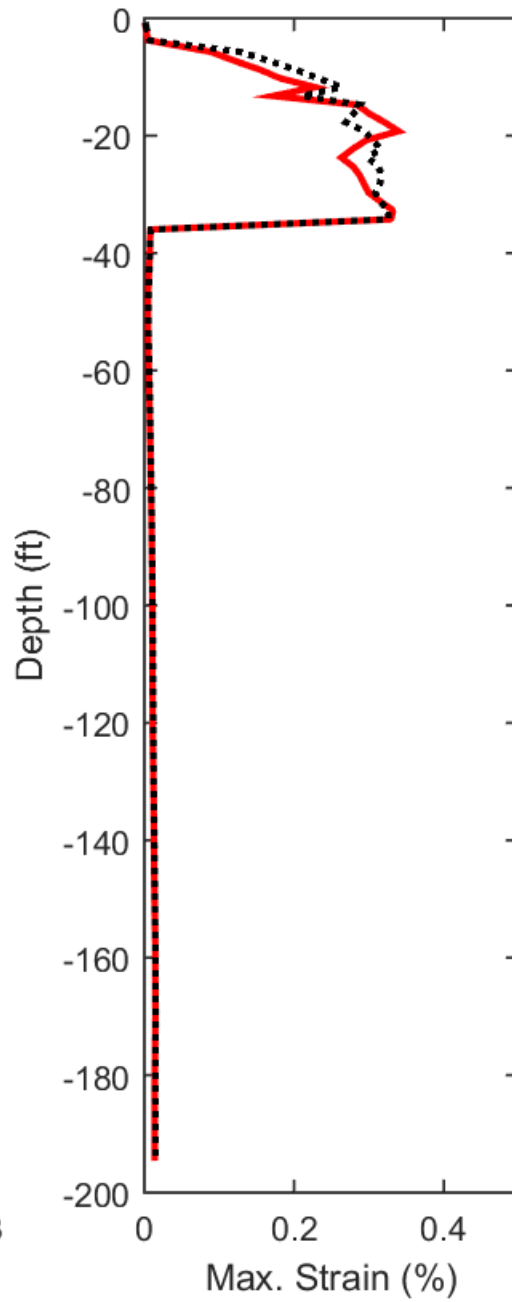
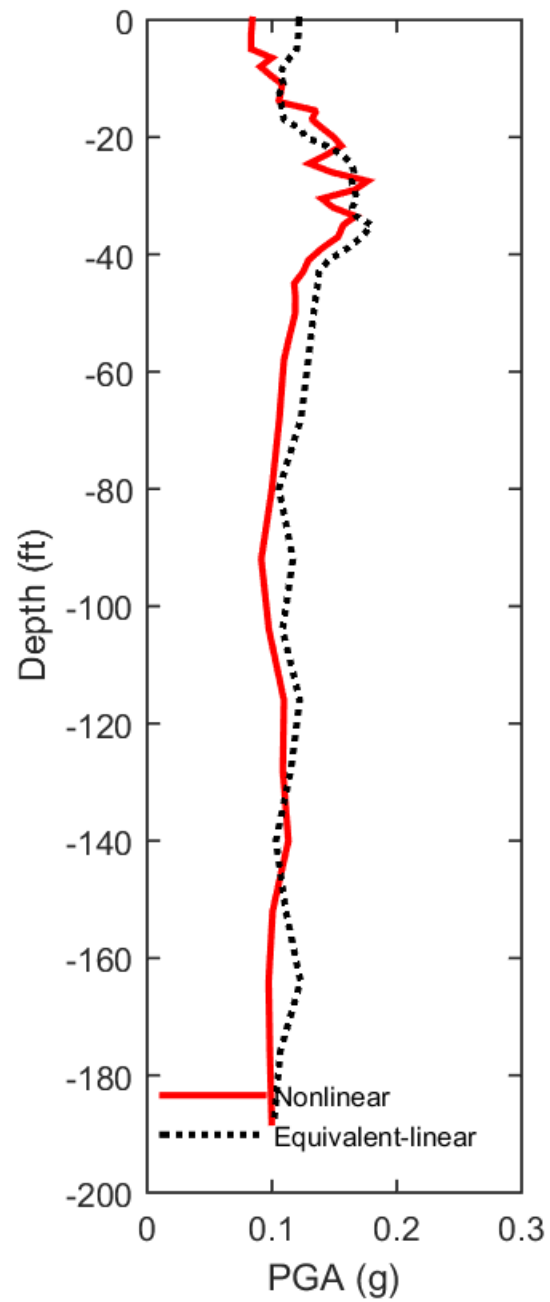
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



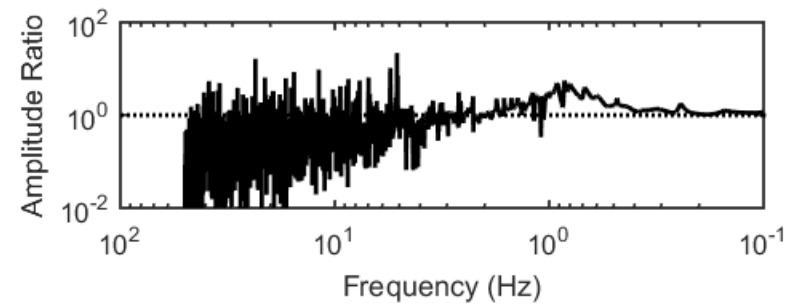
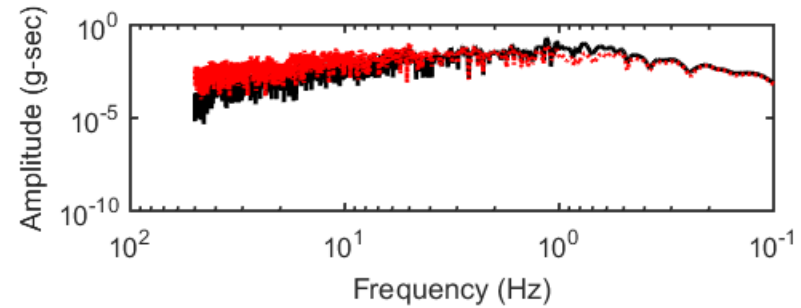
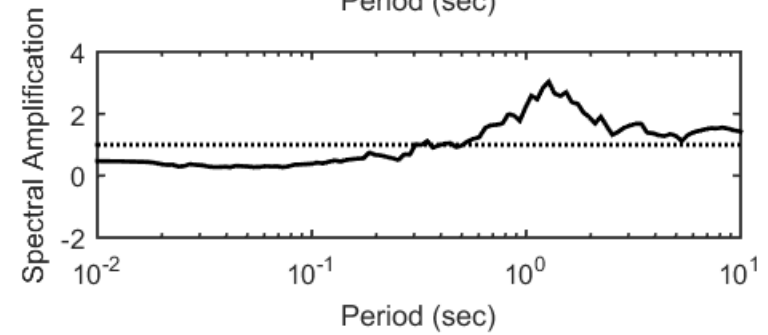
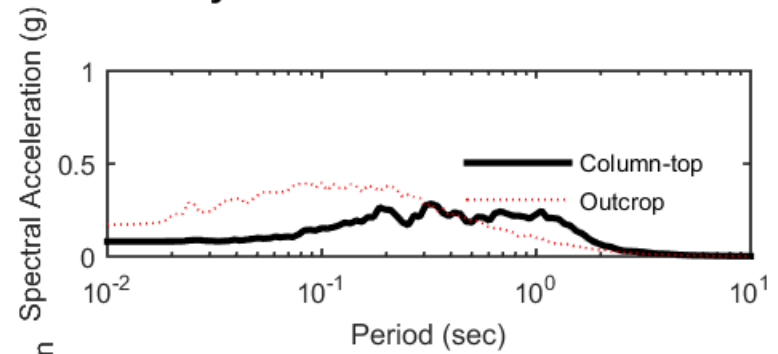
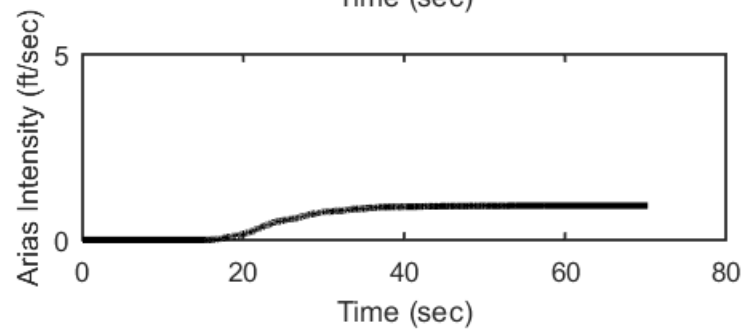
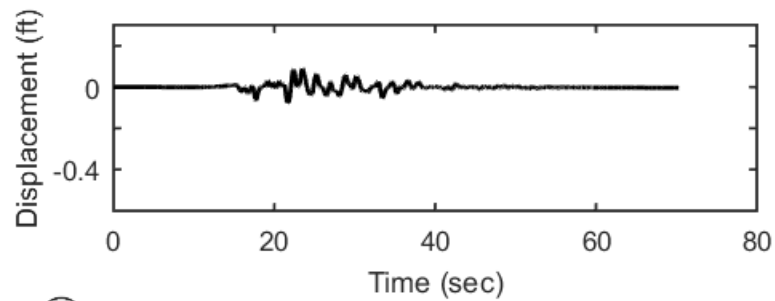
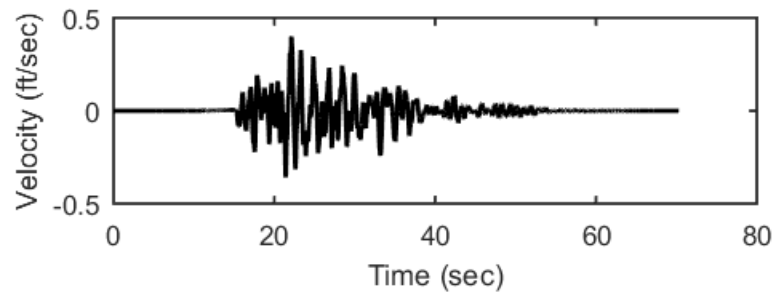
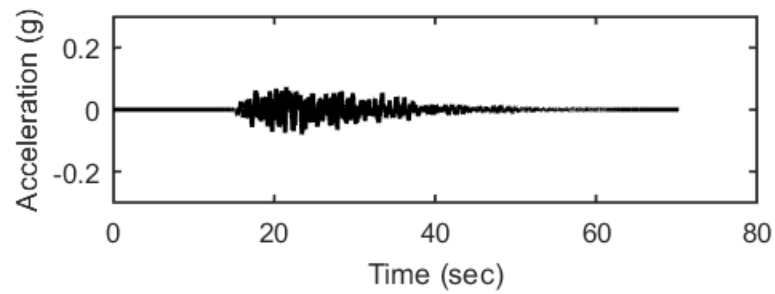
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



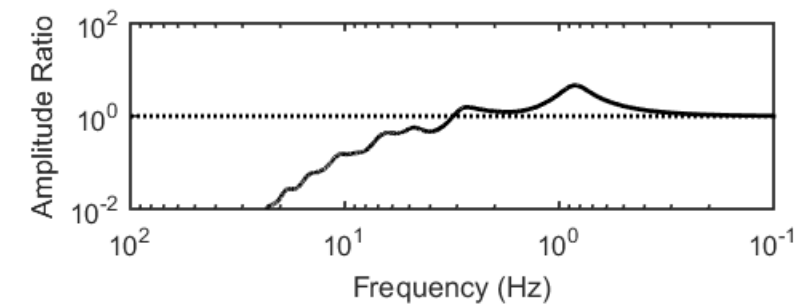
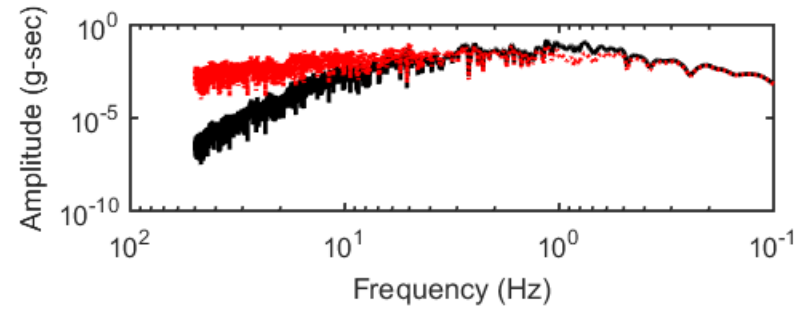
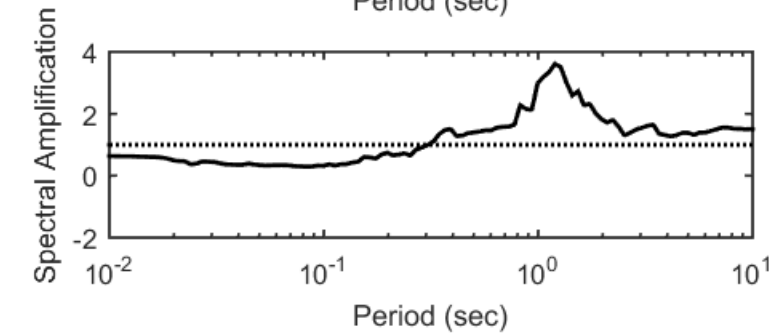
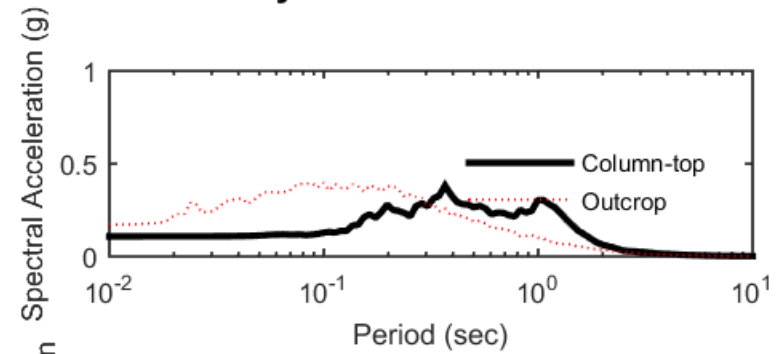
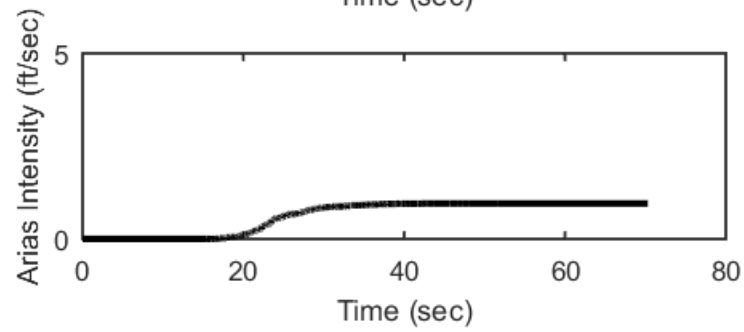
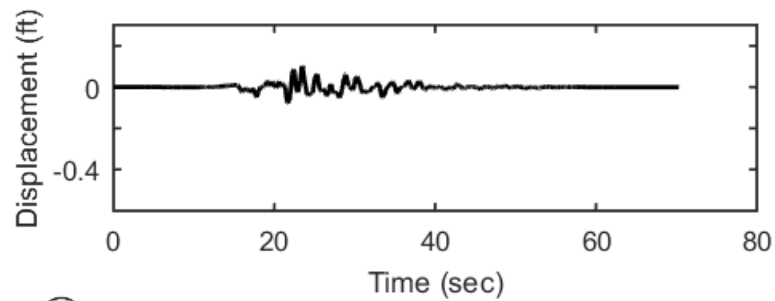
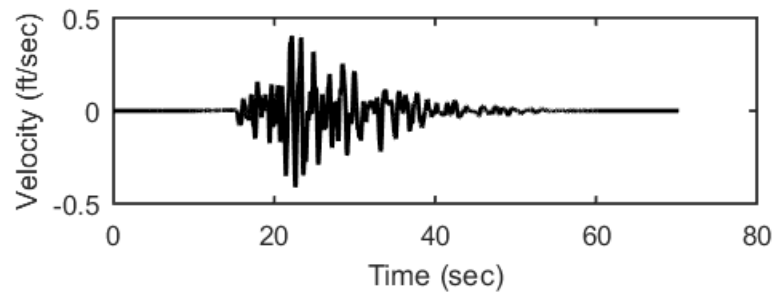
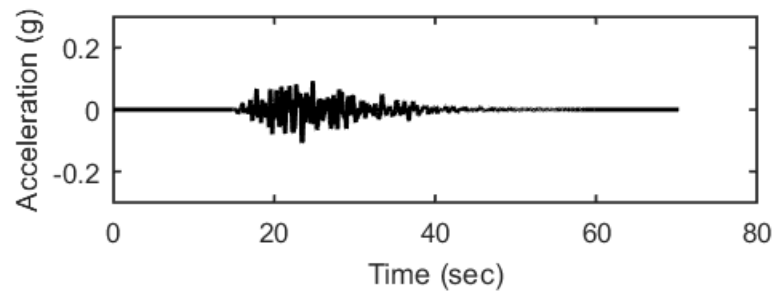
### Profile outputs for Motion: FEE6



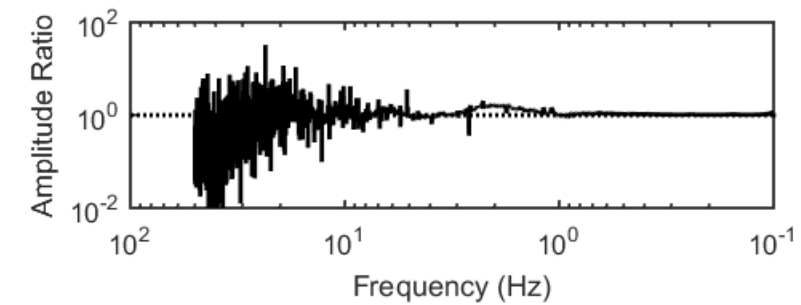
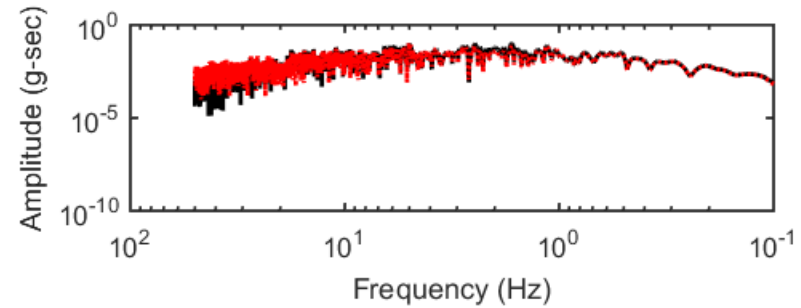
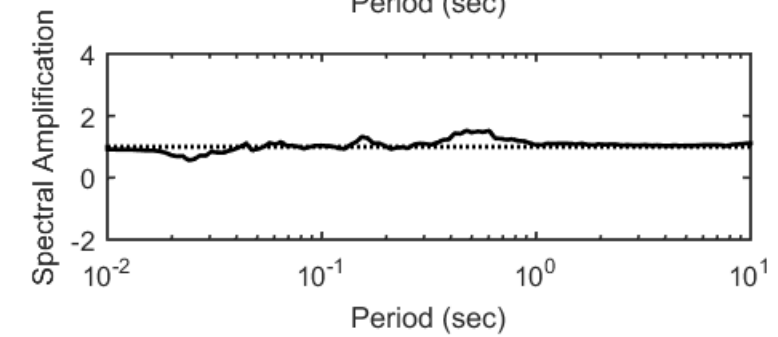
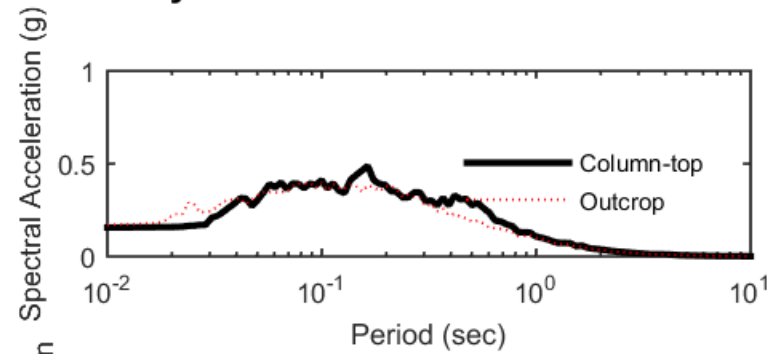
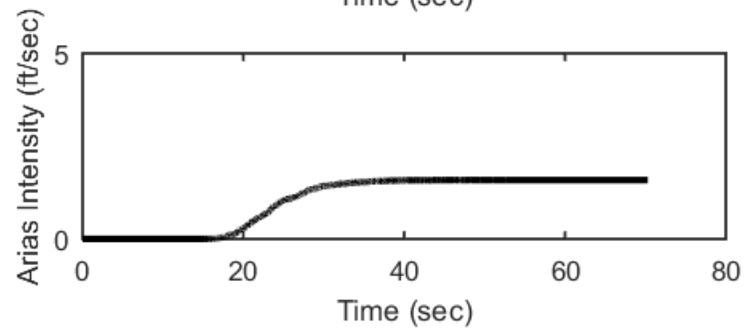
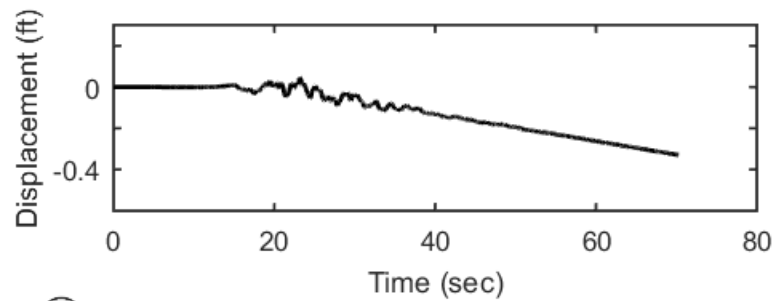
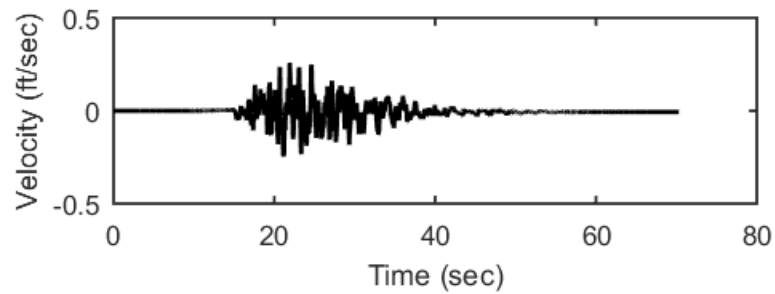
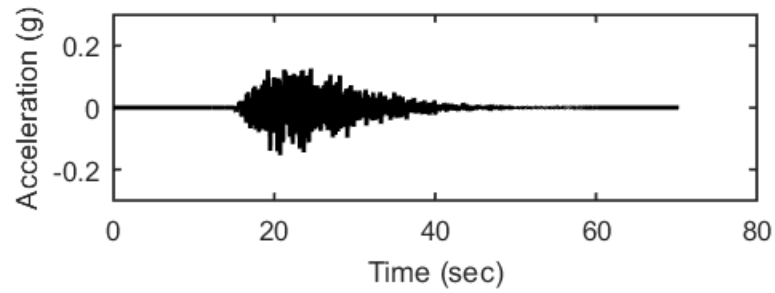
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7

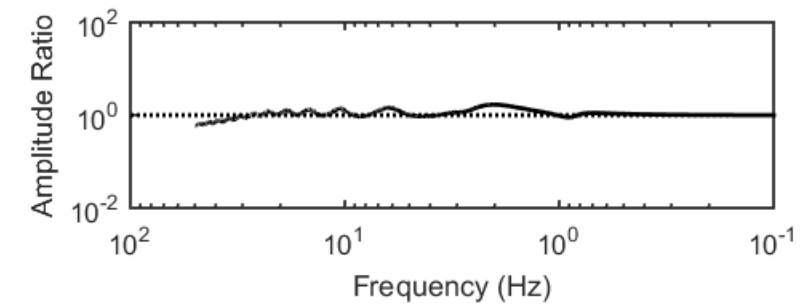
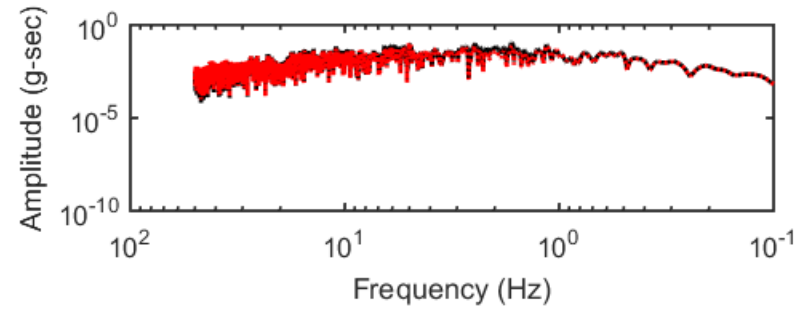
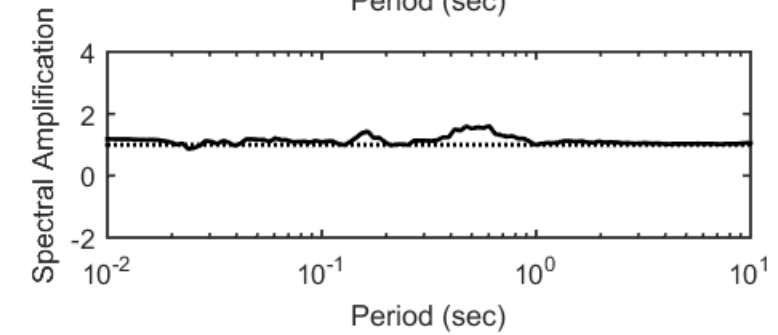
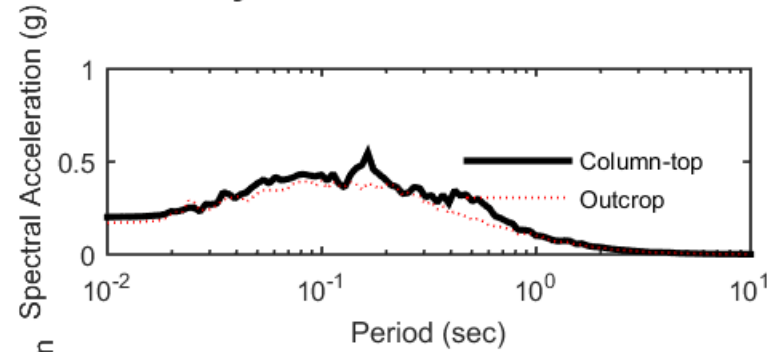
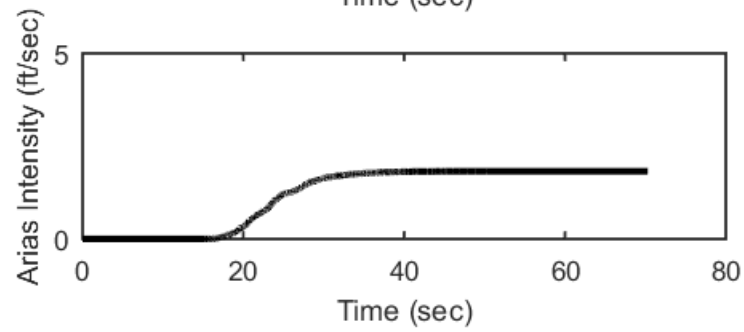
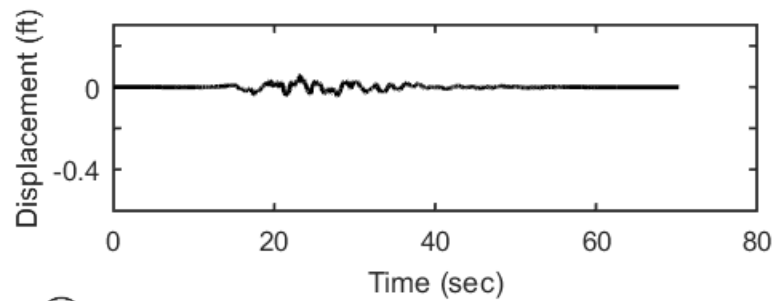
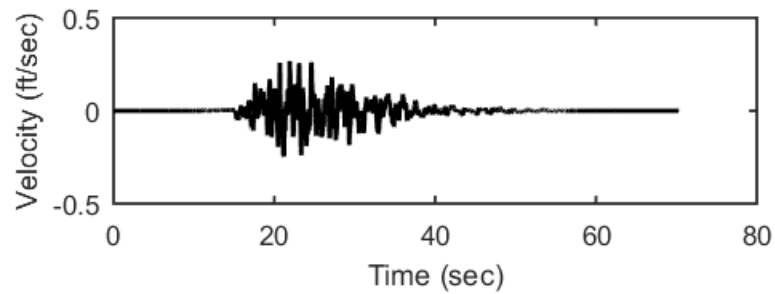
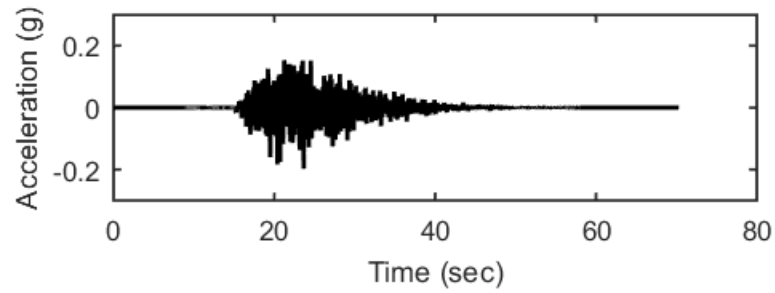


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7

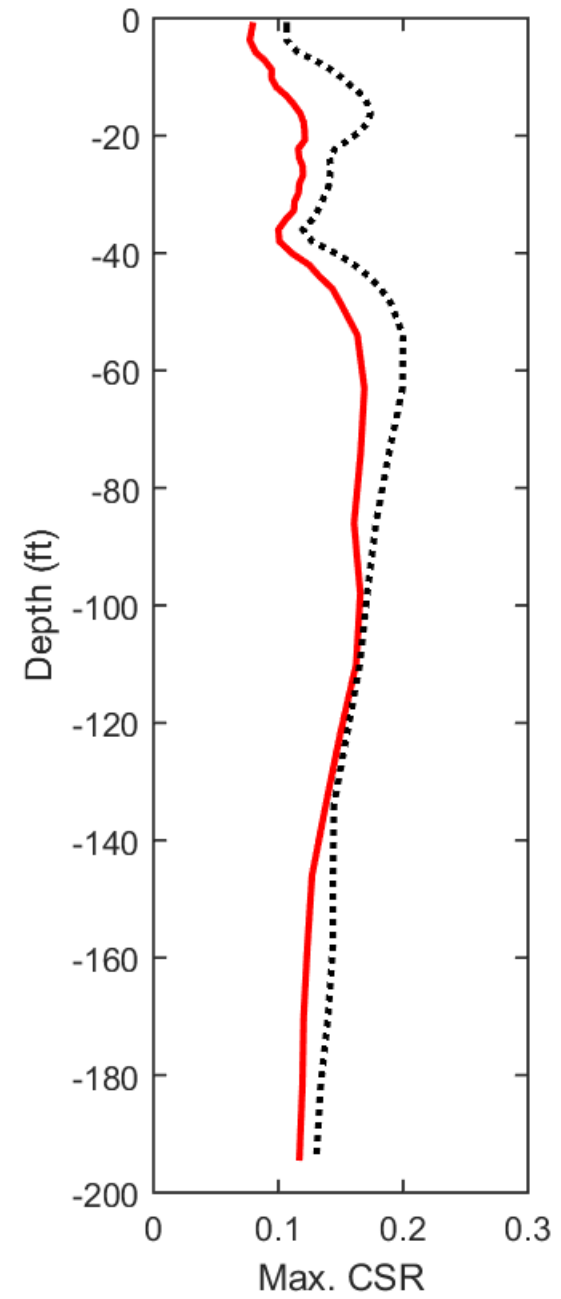
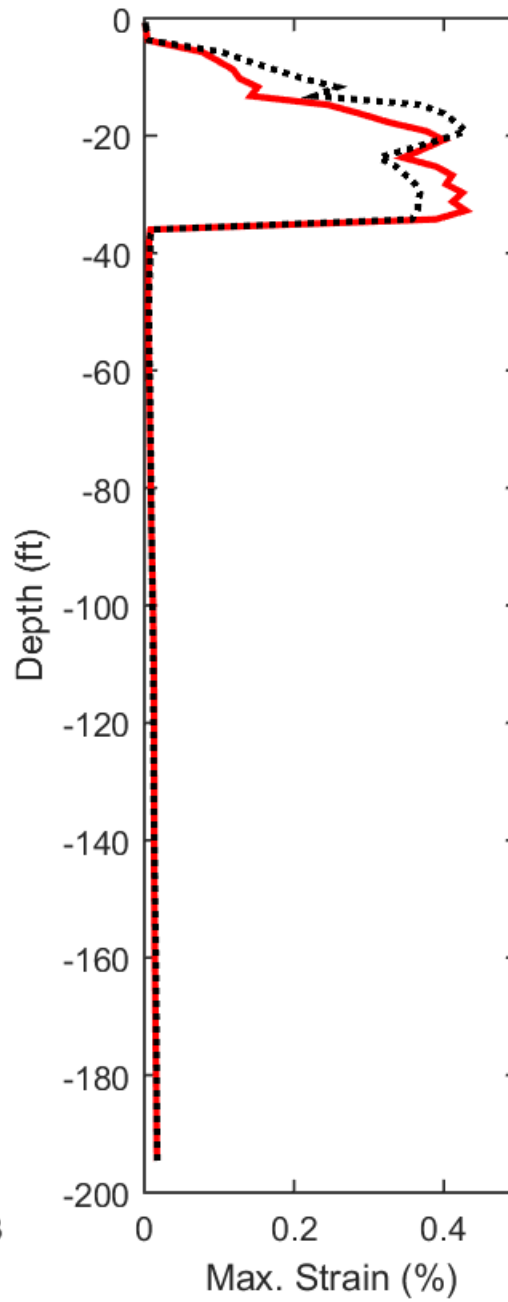
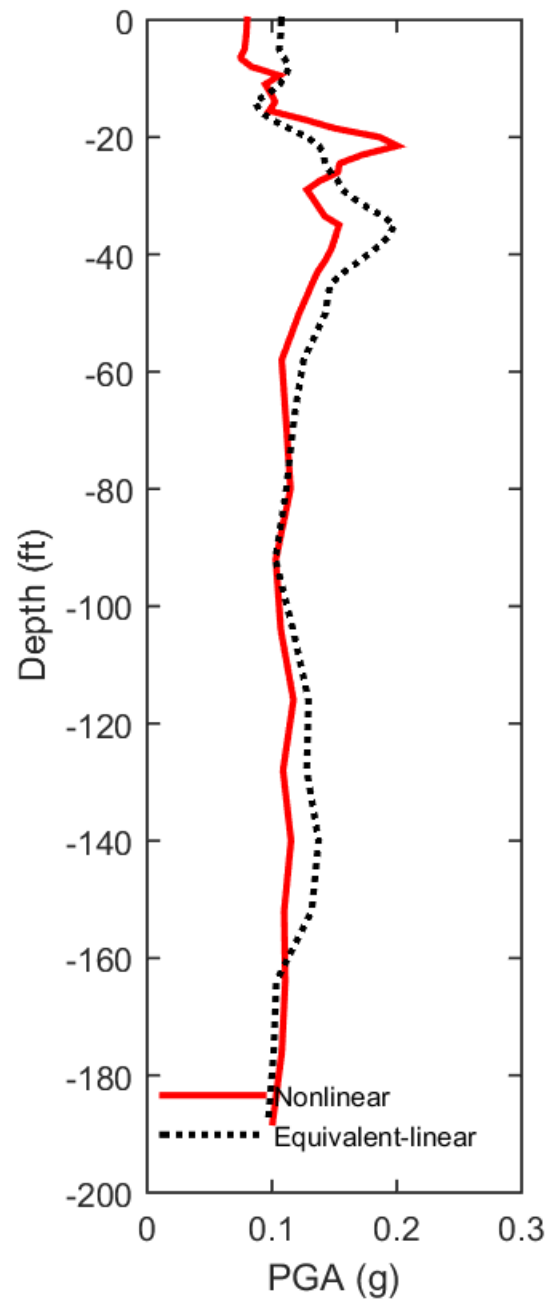




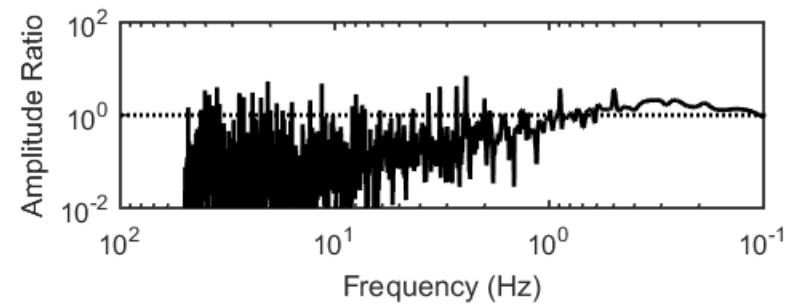
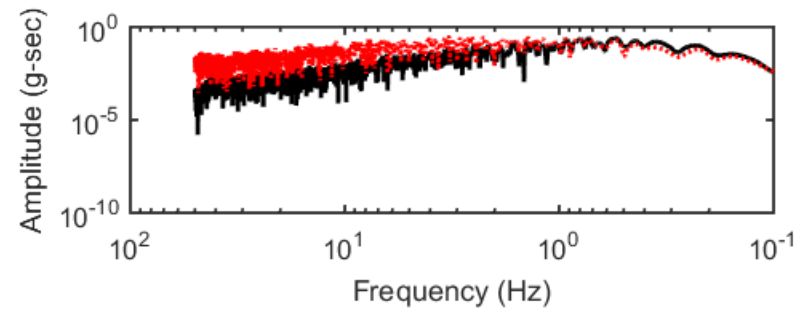
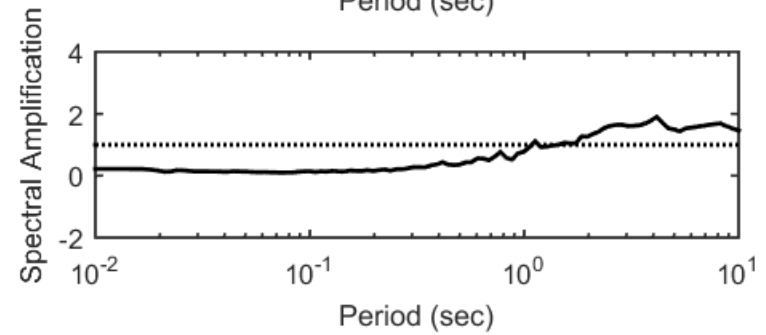
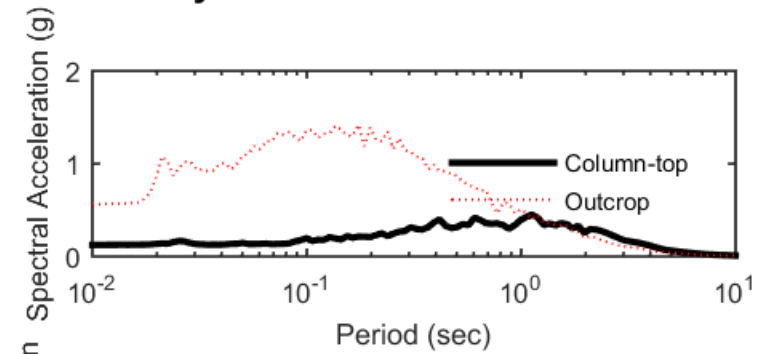
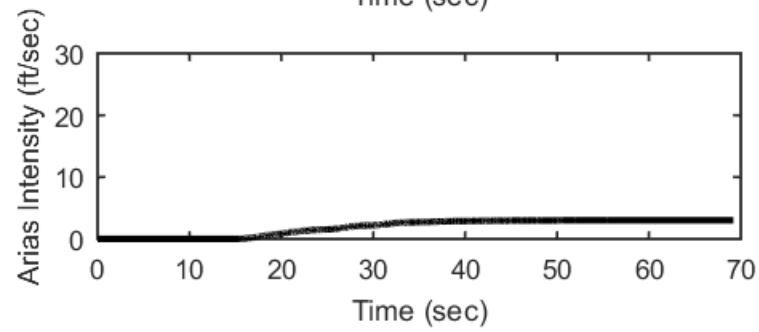
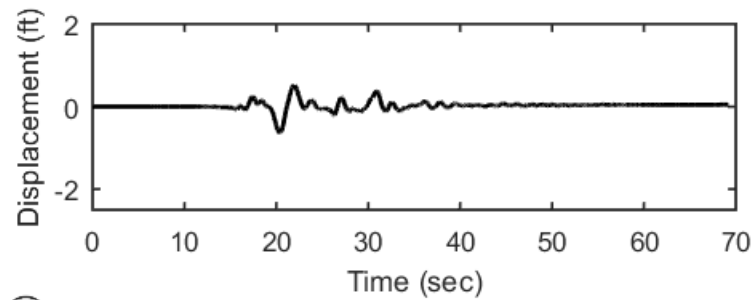
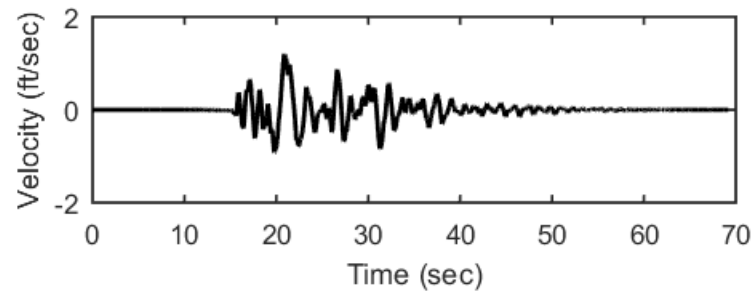
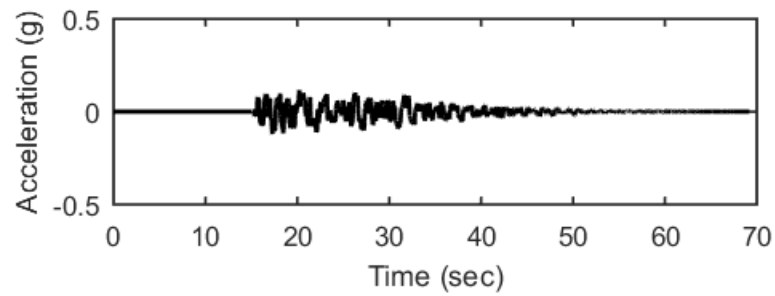
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



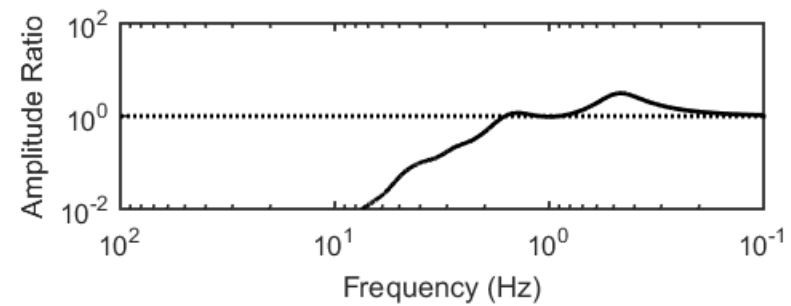
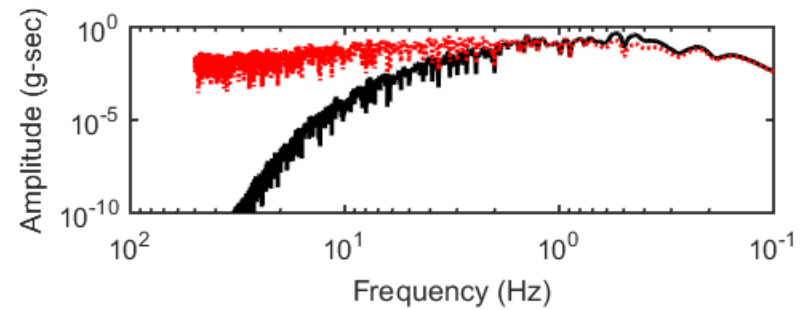
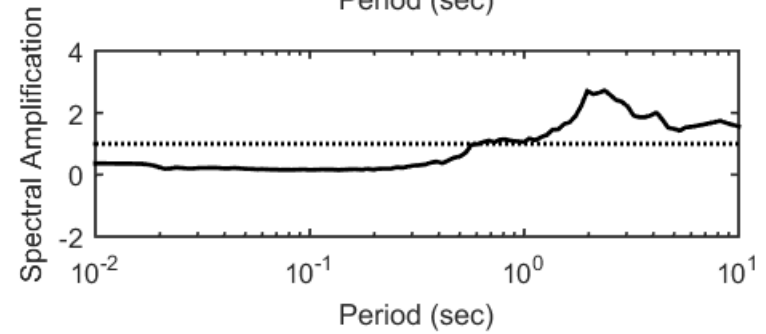
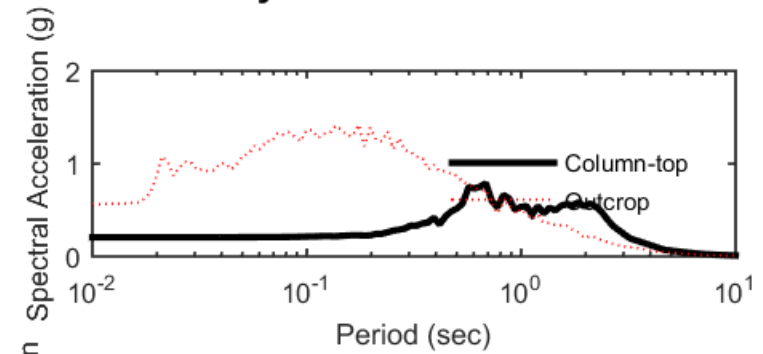
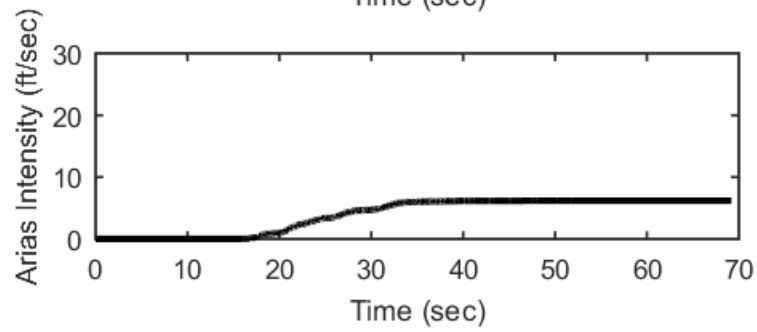
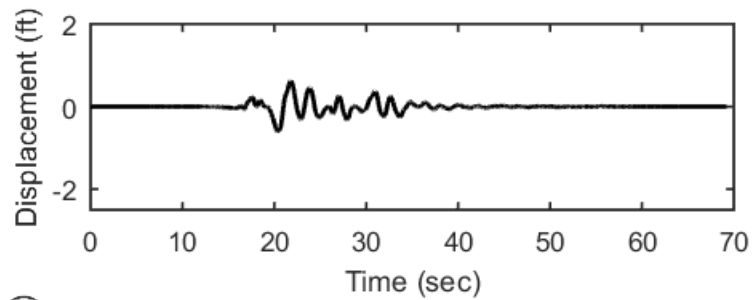
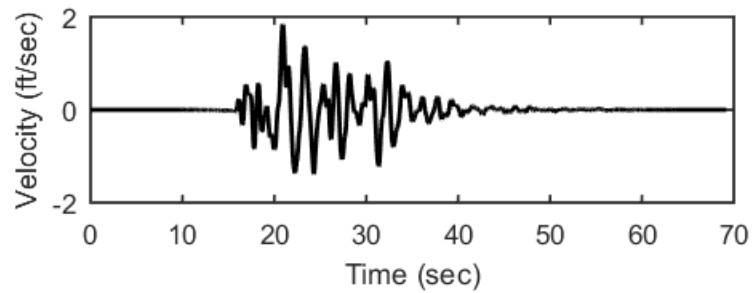
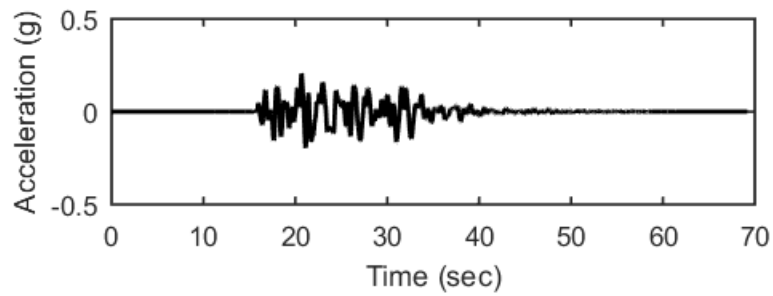
### Profile outputs for Motion: FEE7



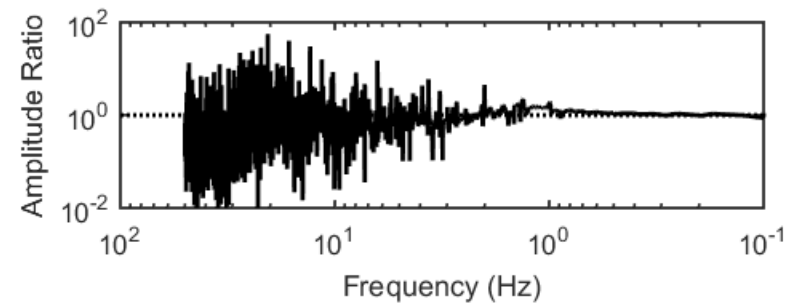
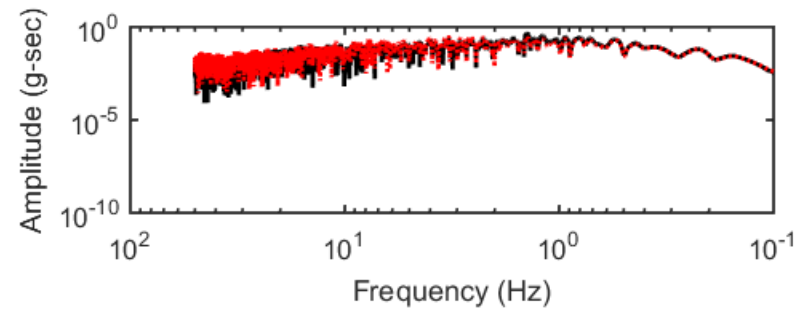
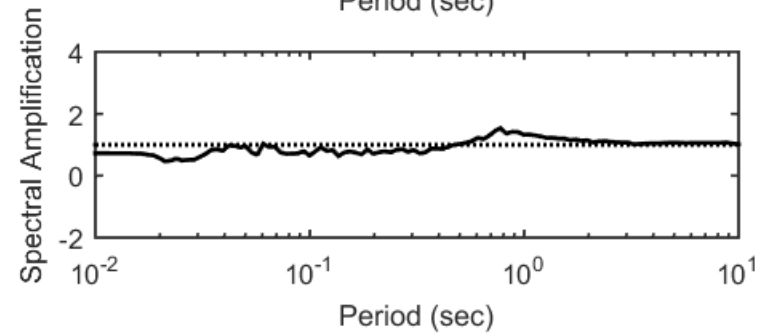
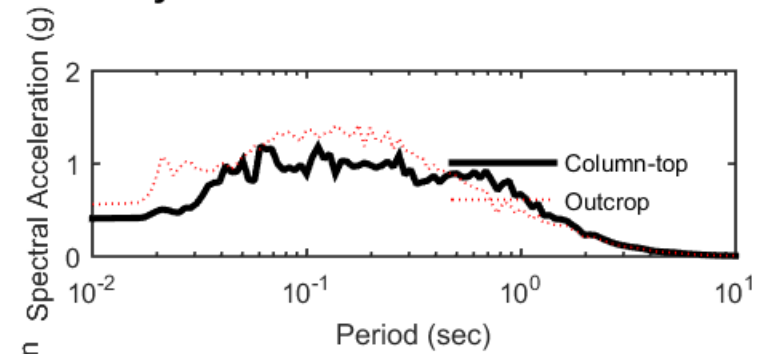
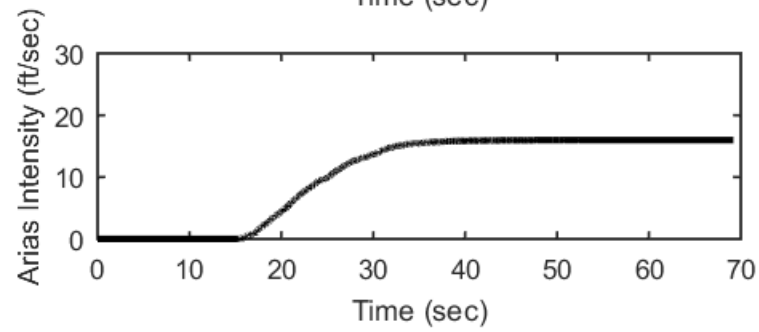
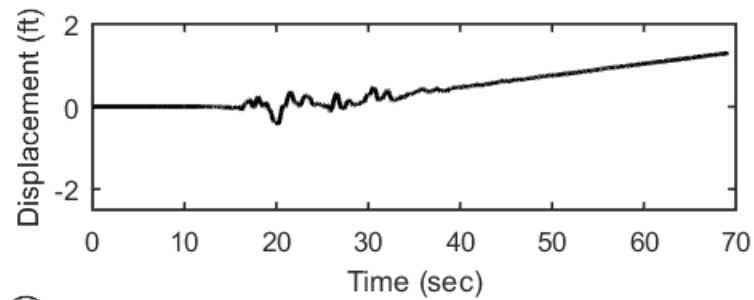
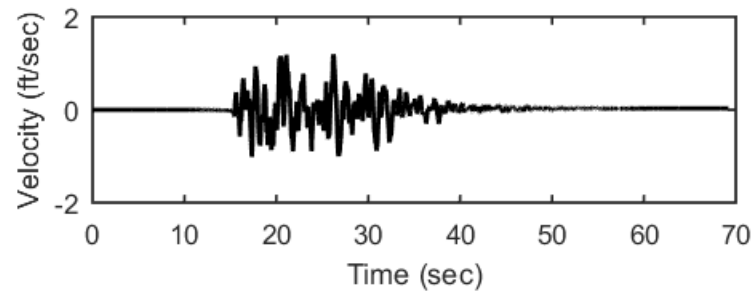
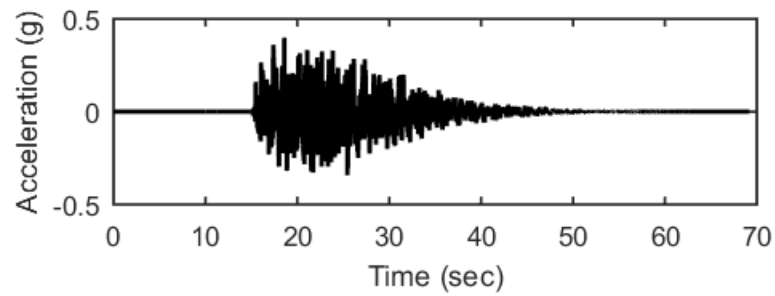
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



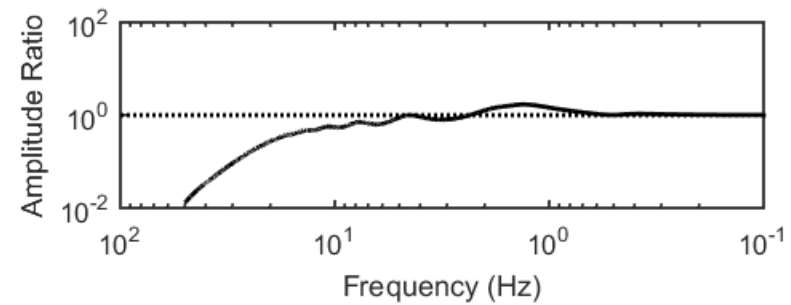
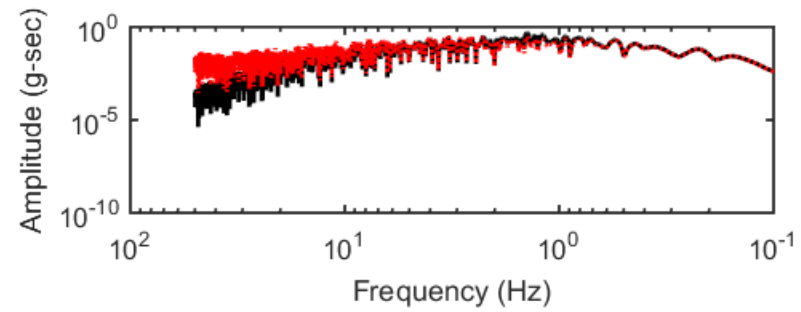
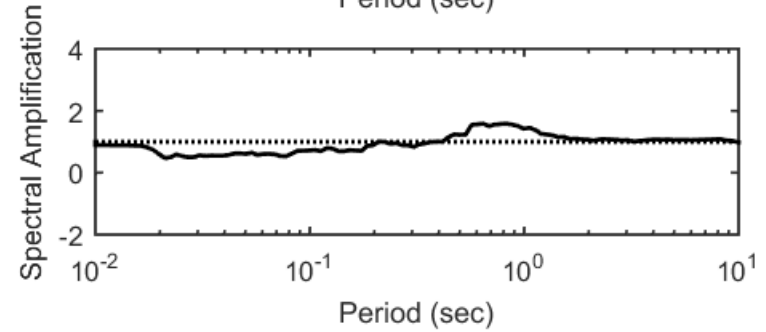
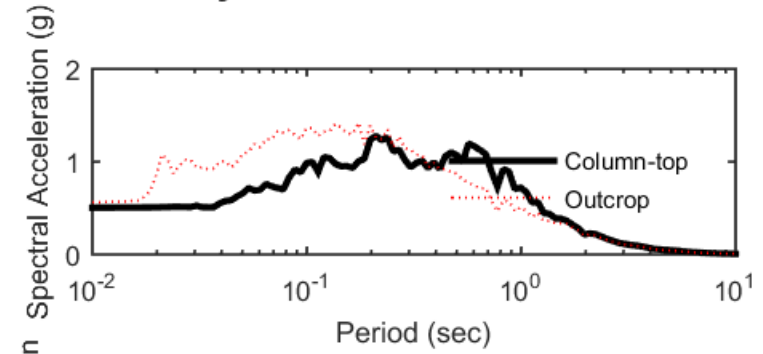
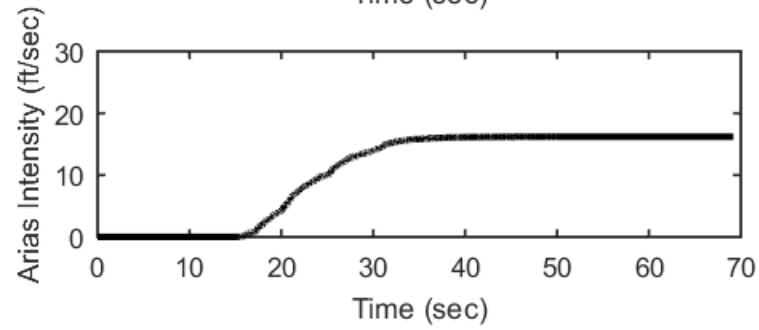
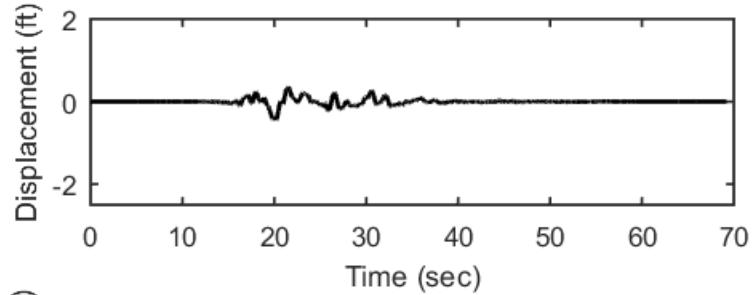
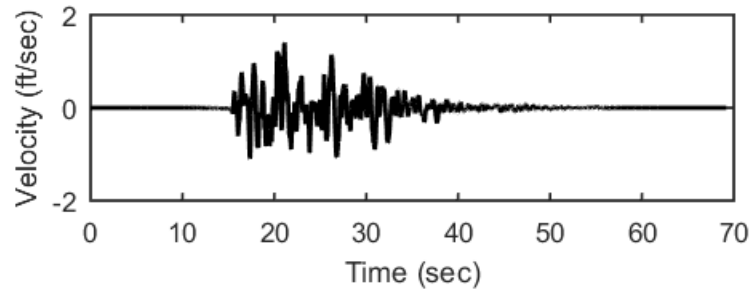
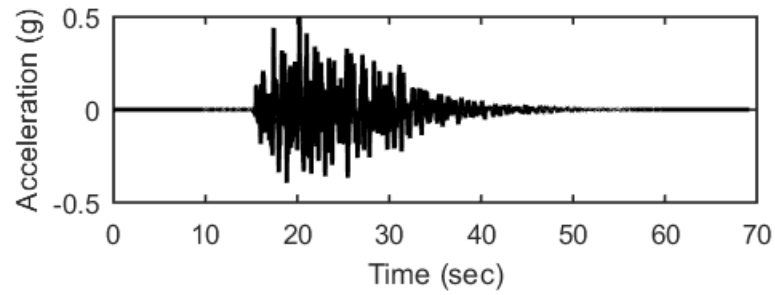
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



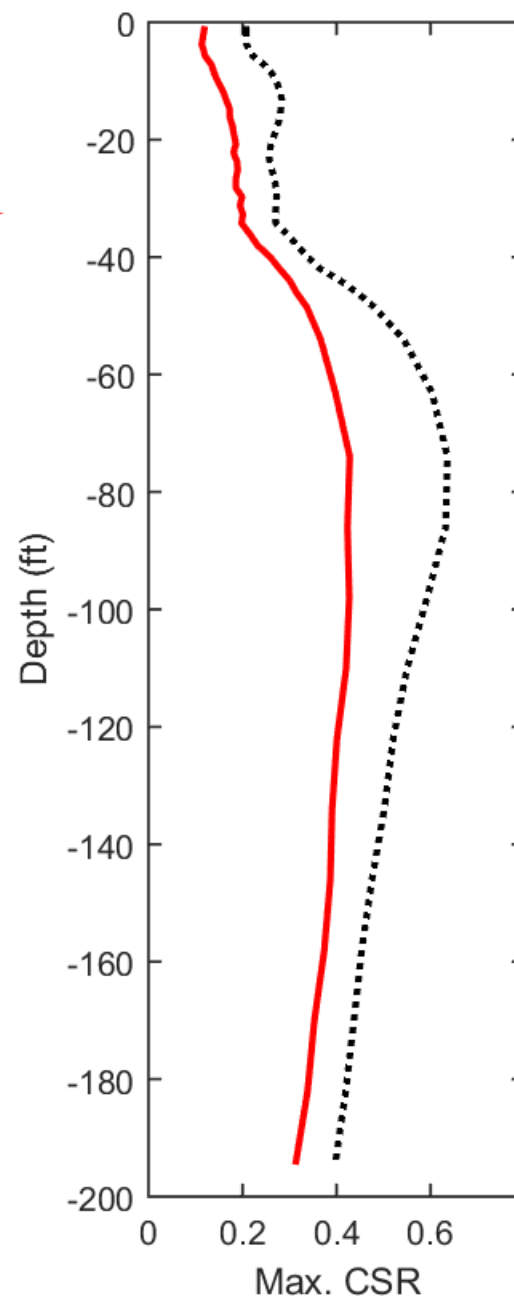
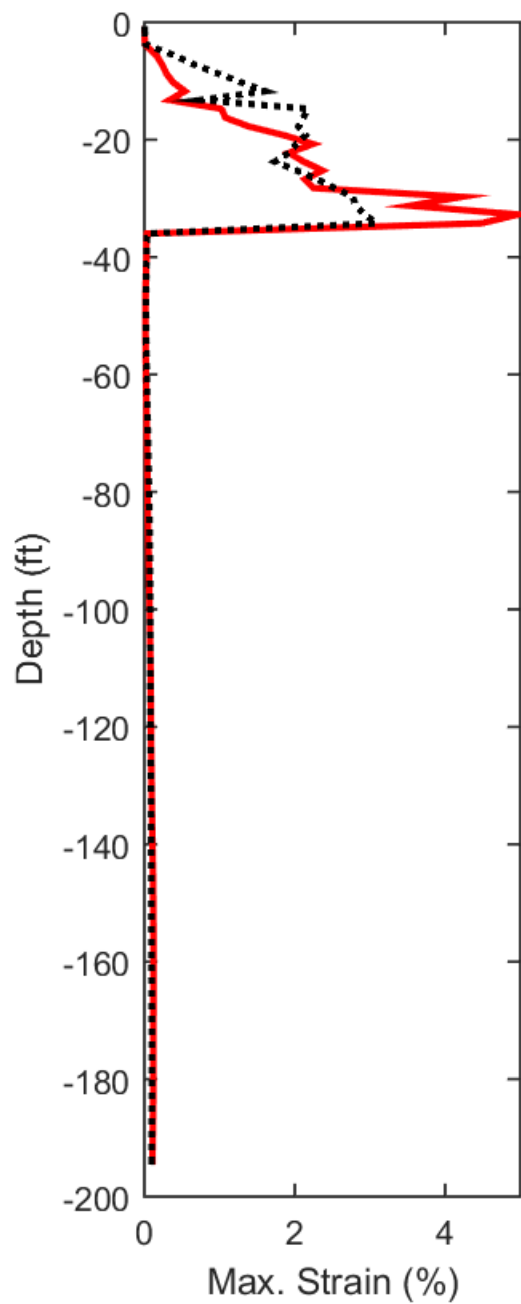
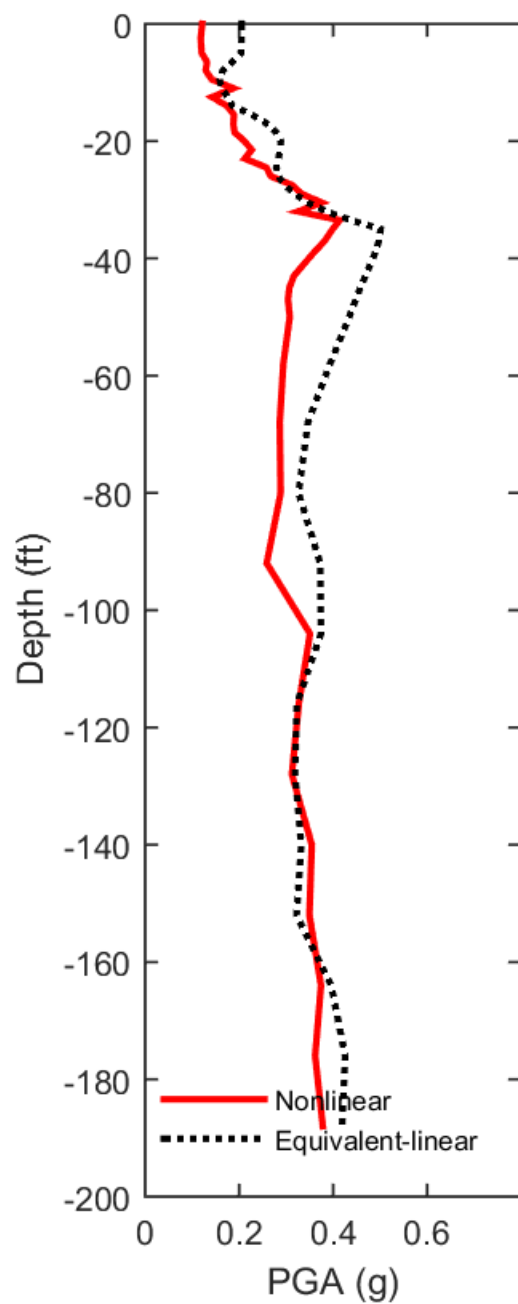
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



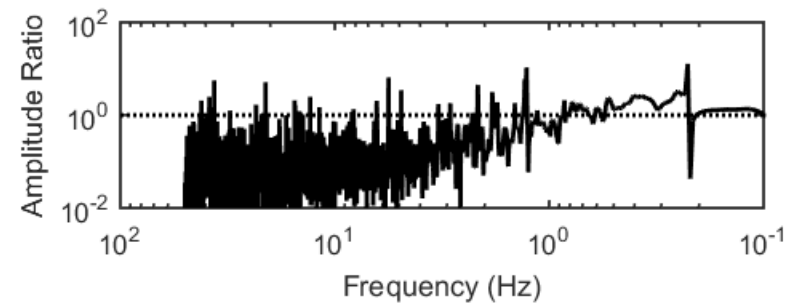
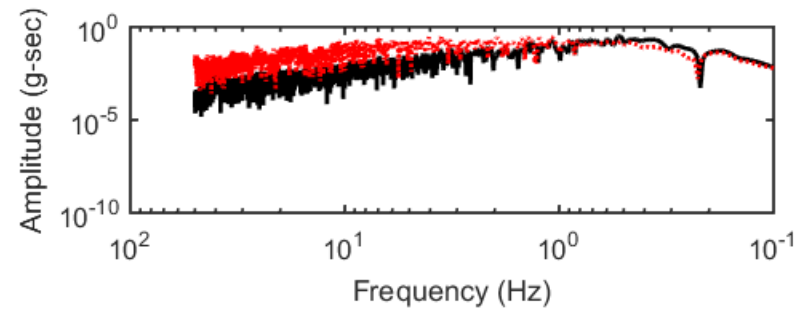
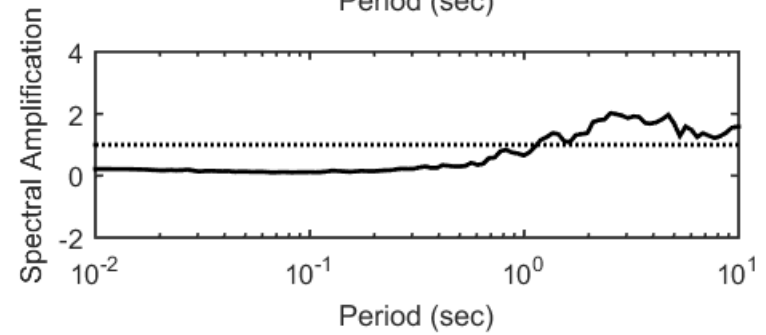
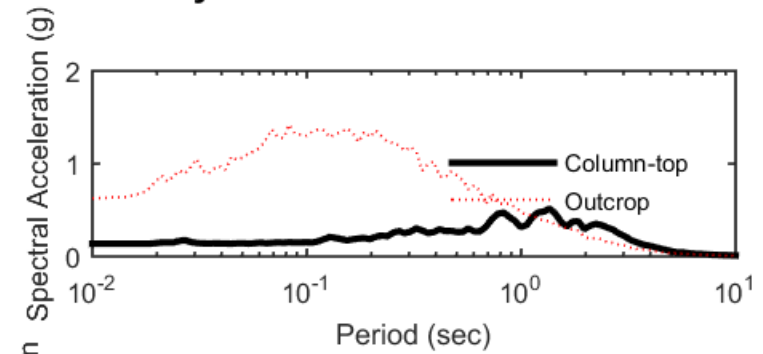
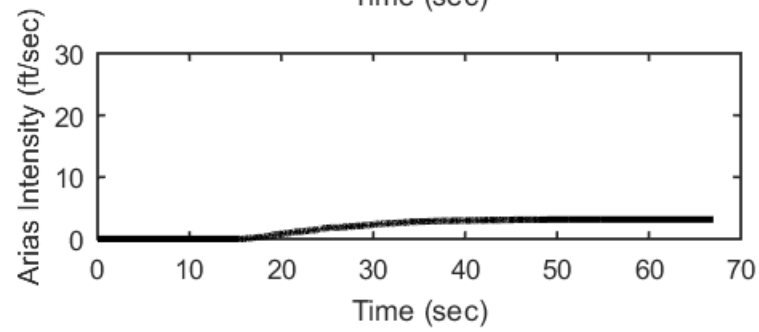
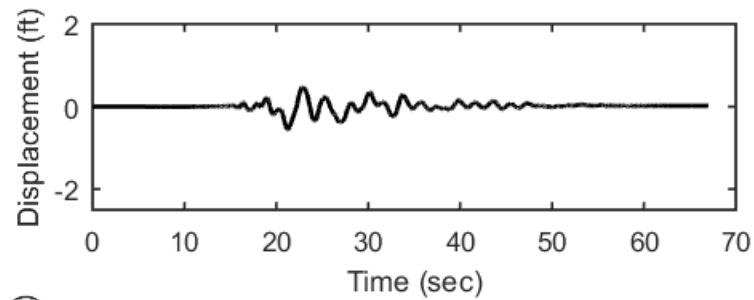
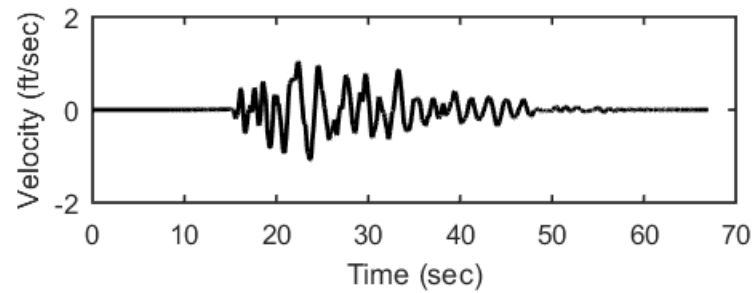
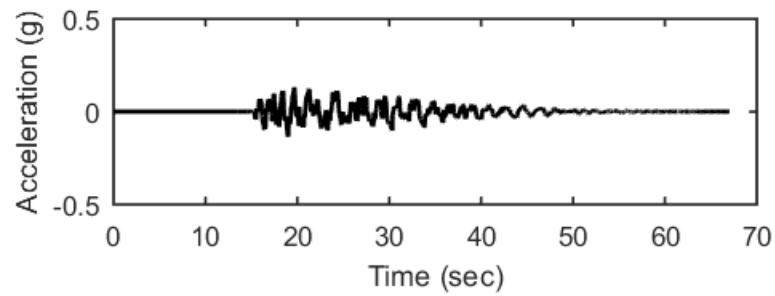
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



### Profile outputs for Motion: SEE1

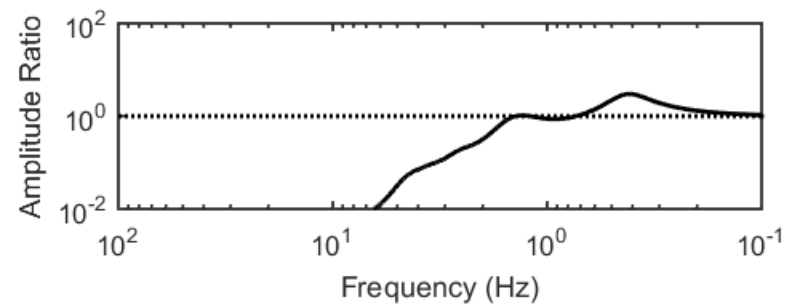
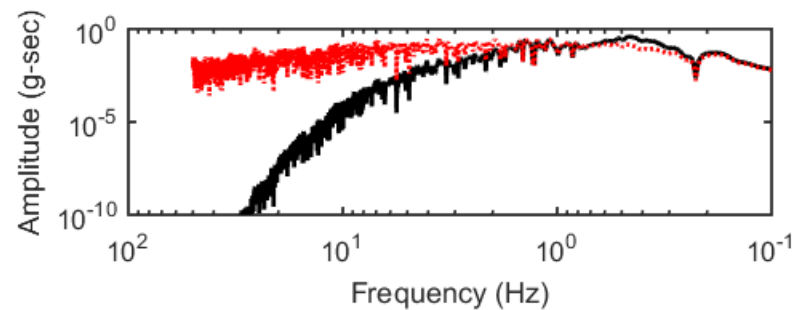
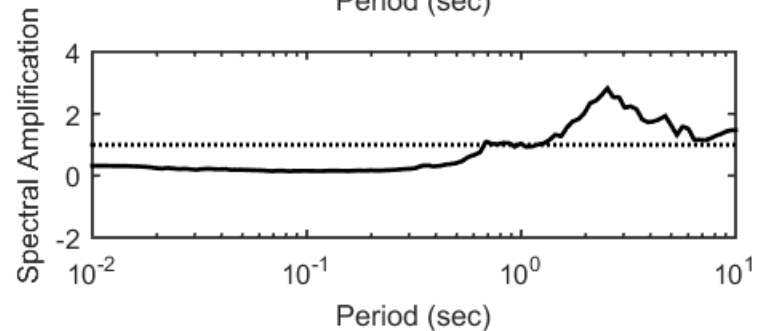
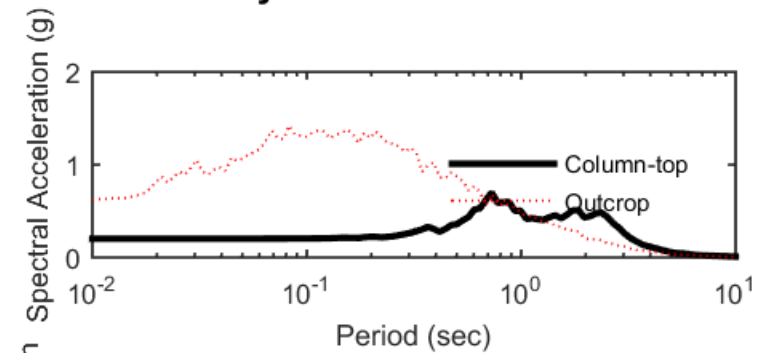
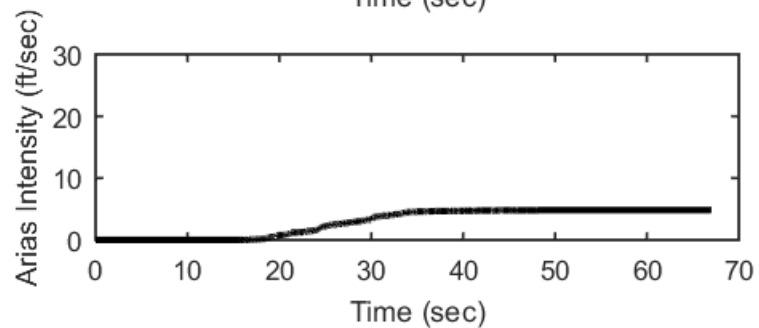
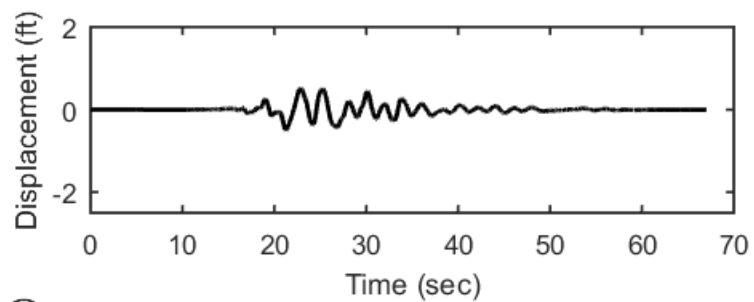
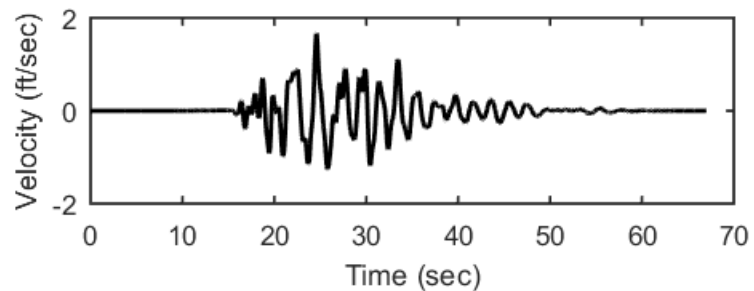
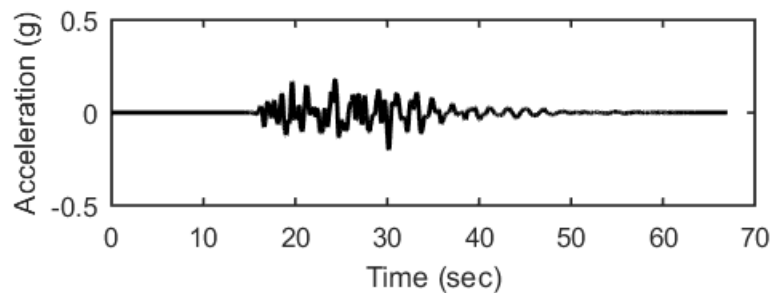


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2

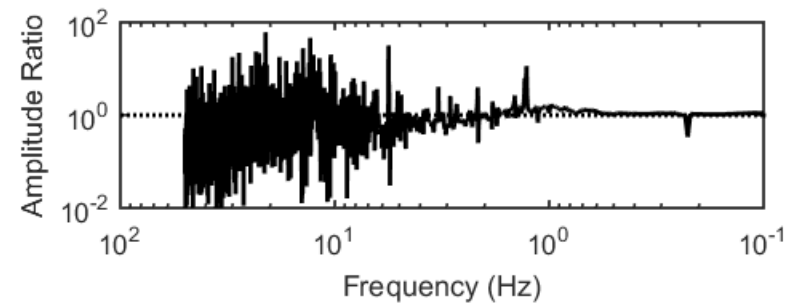
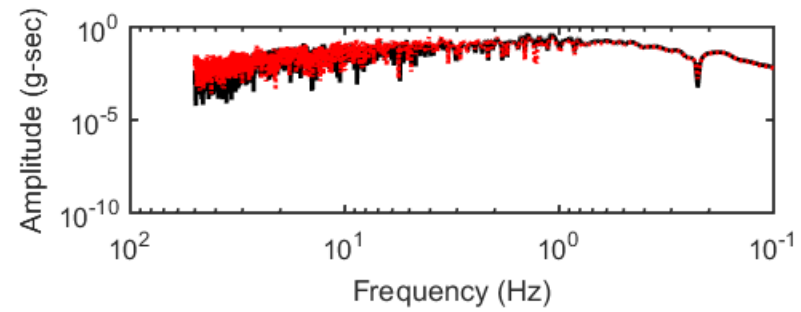
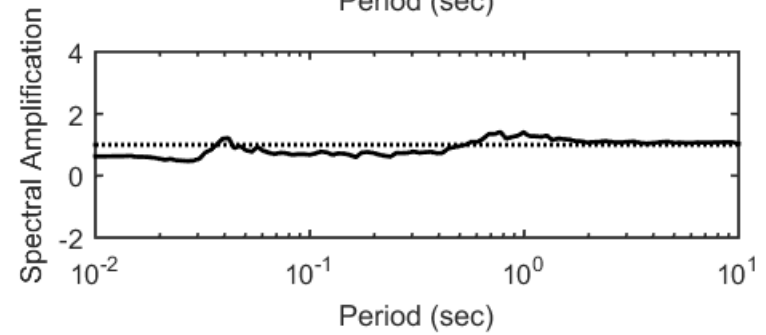
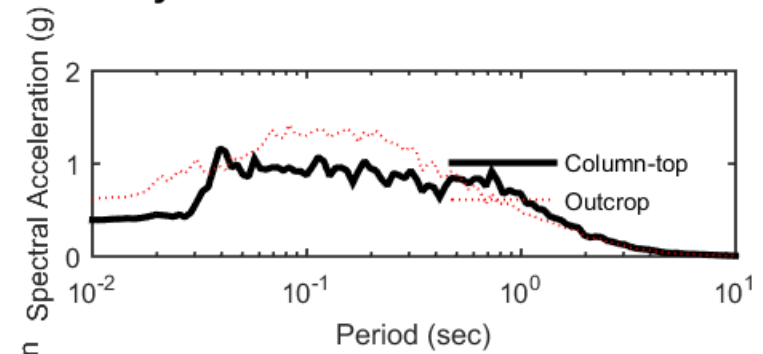
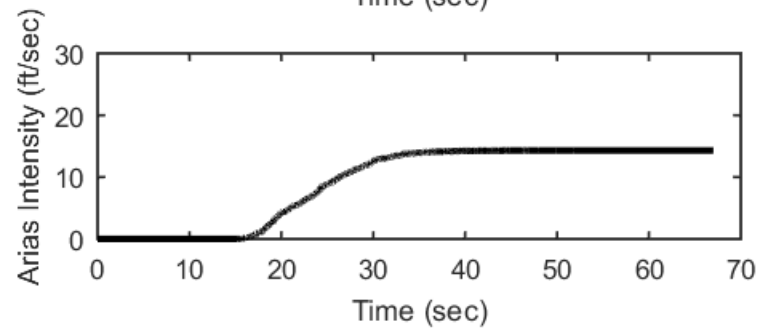
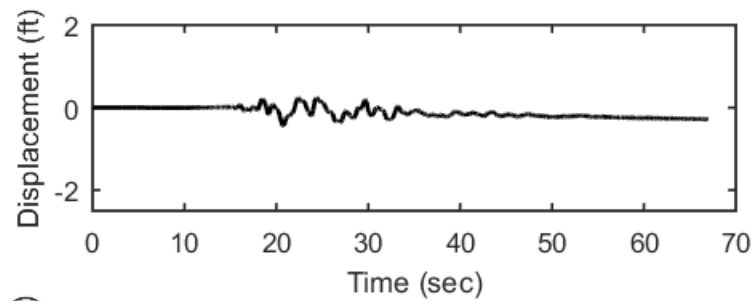
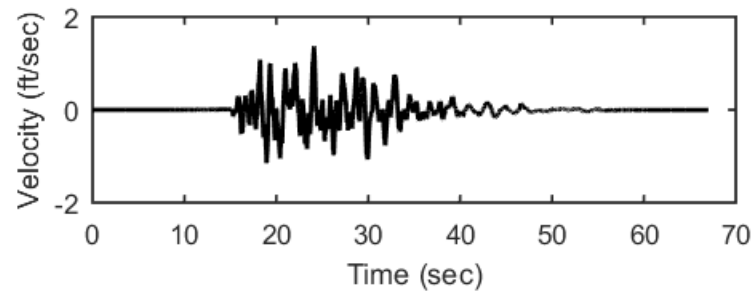
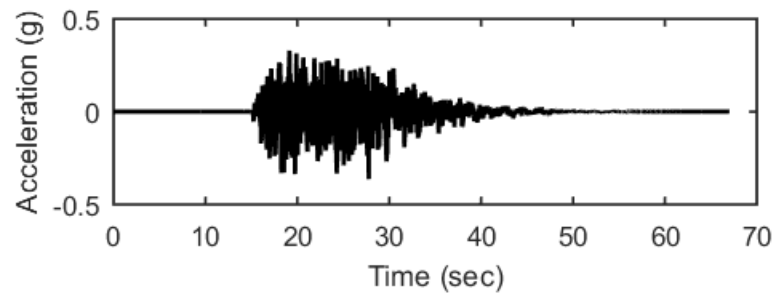




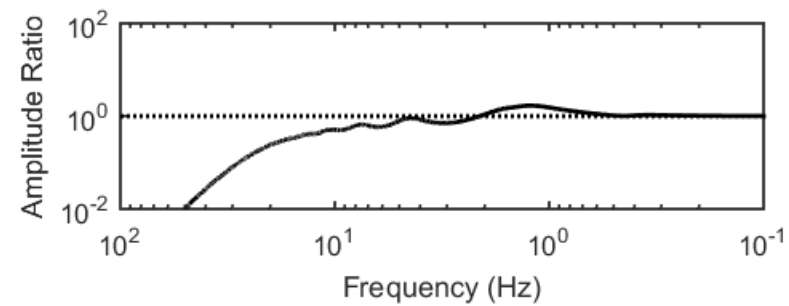
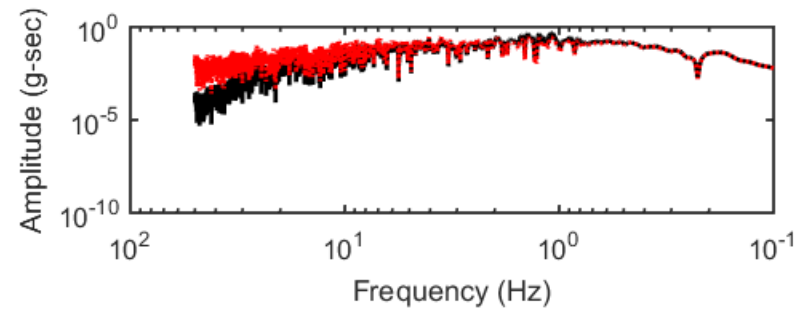
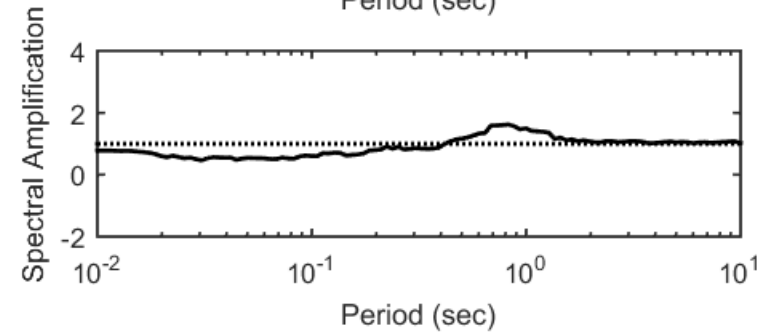
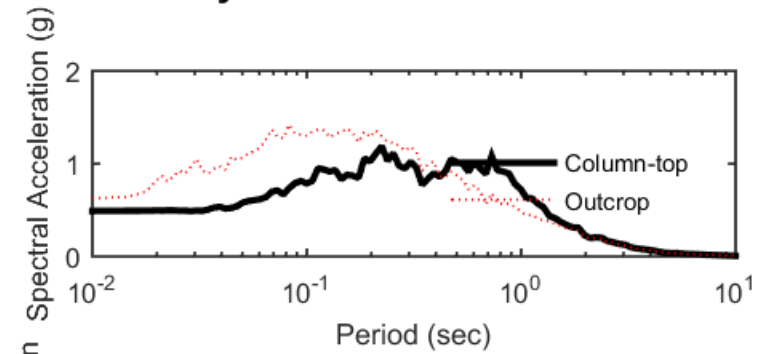
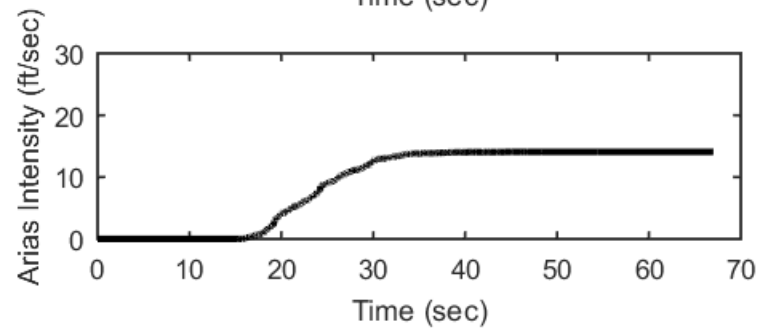
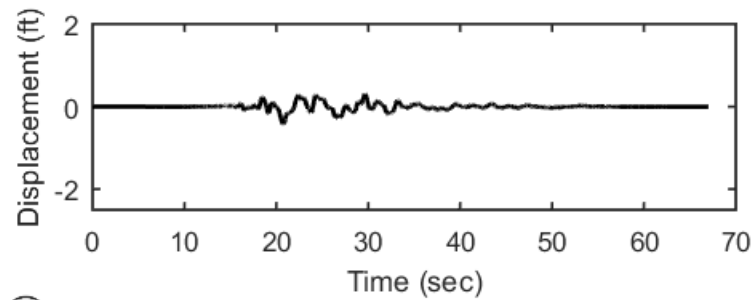
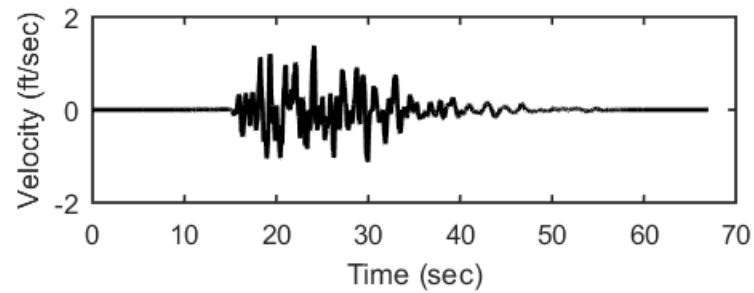
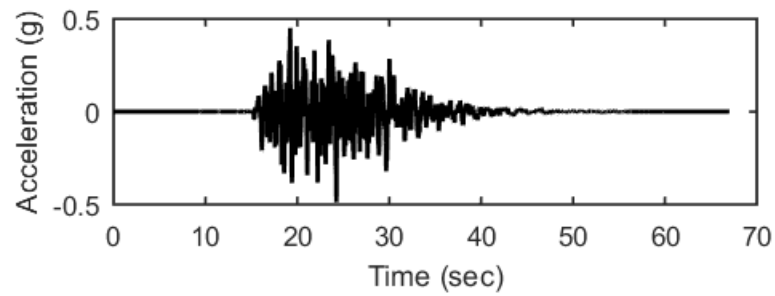
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



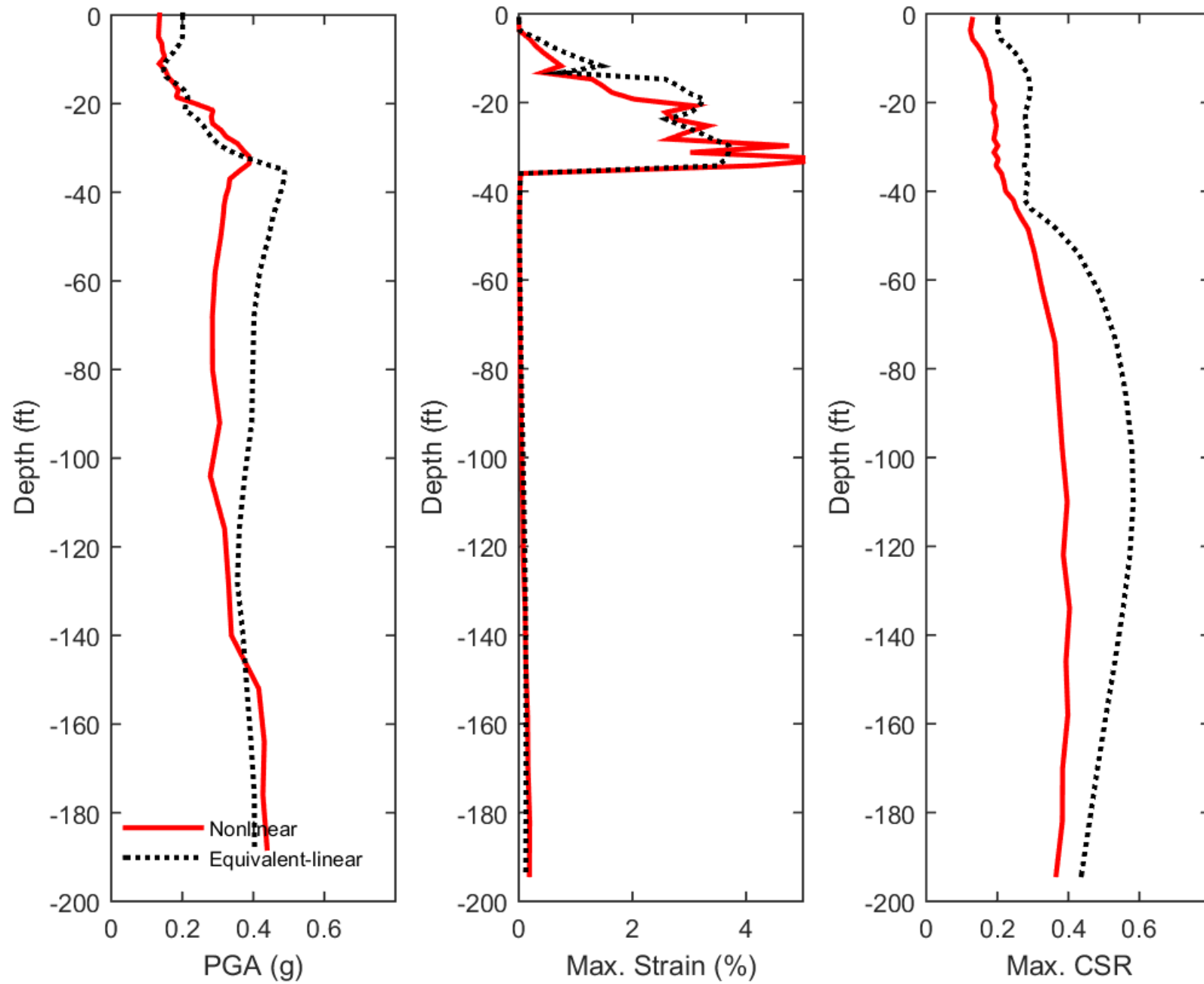
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



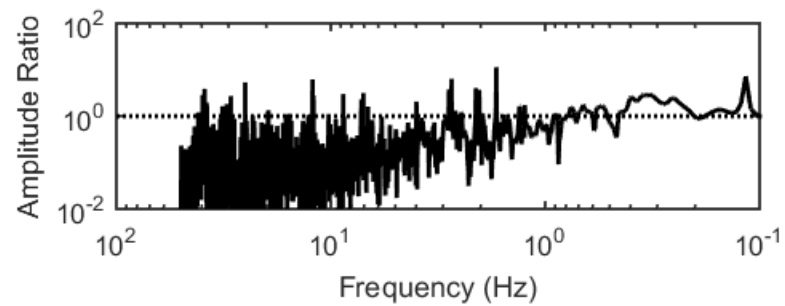
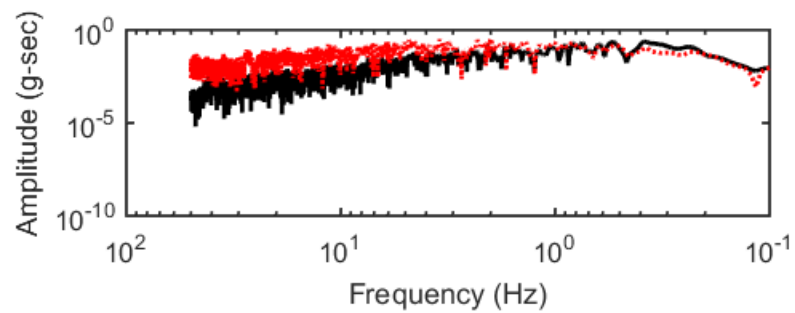
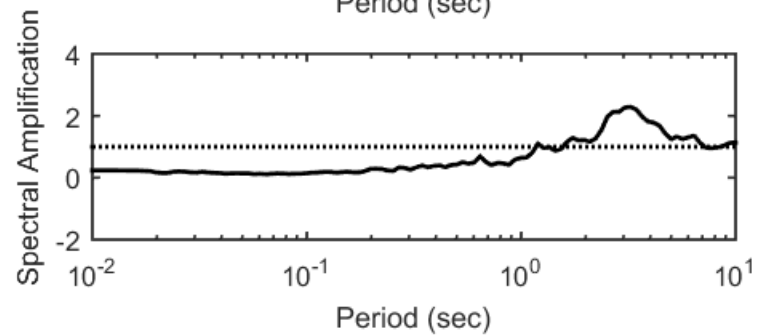
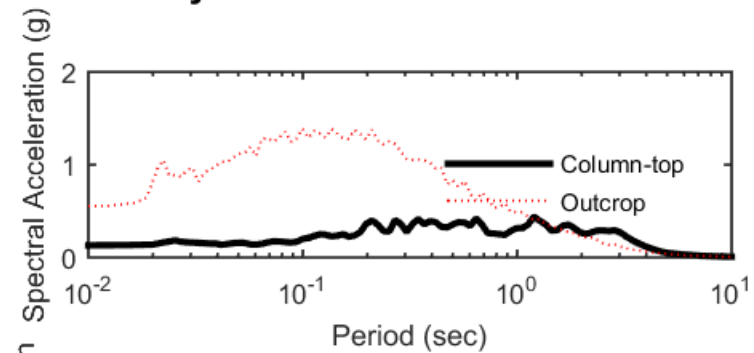
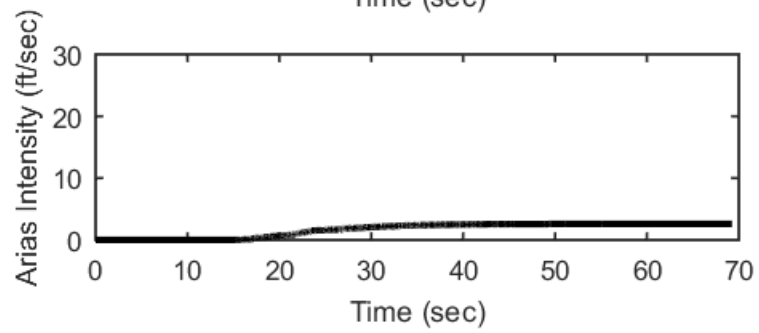
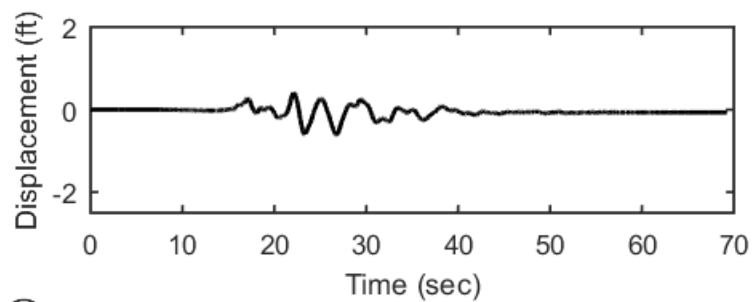
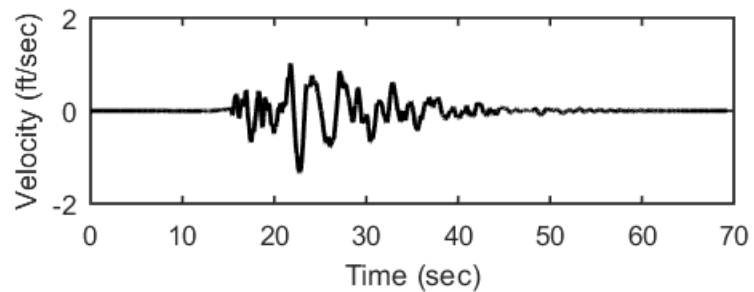
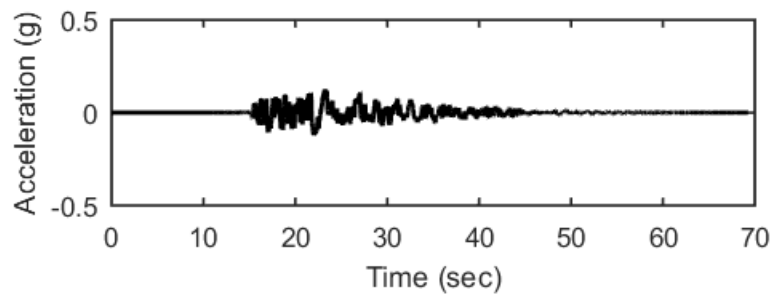
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



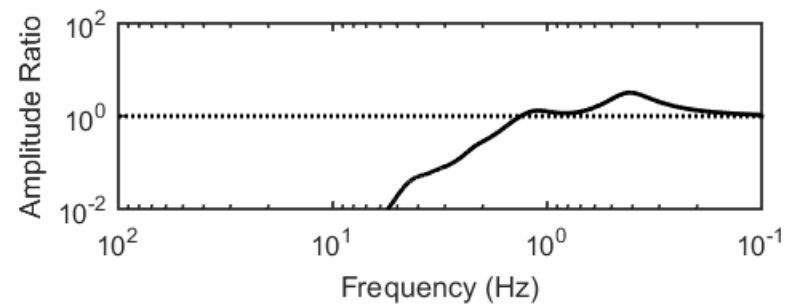
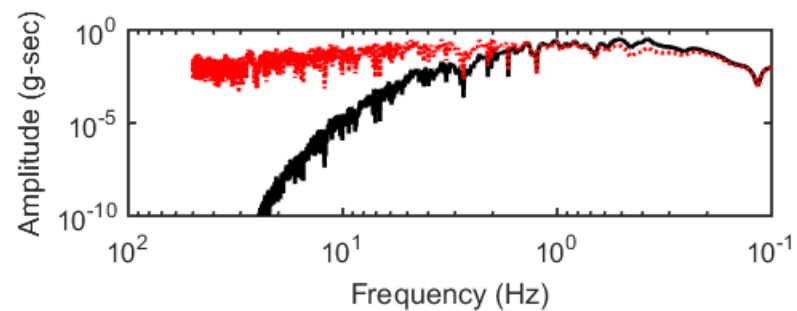
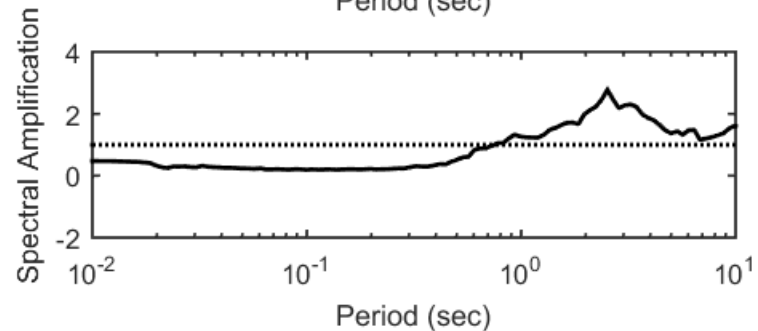
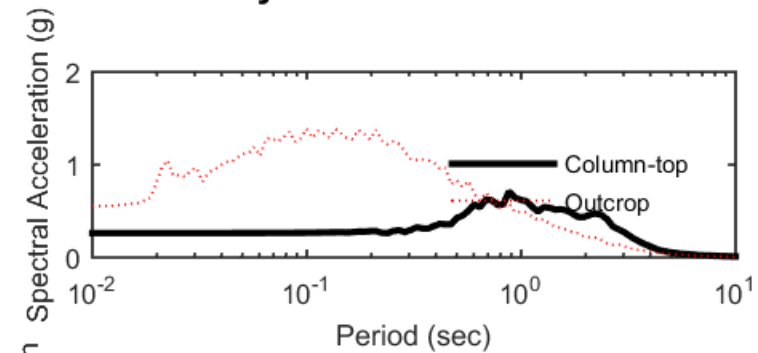
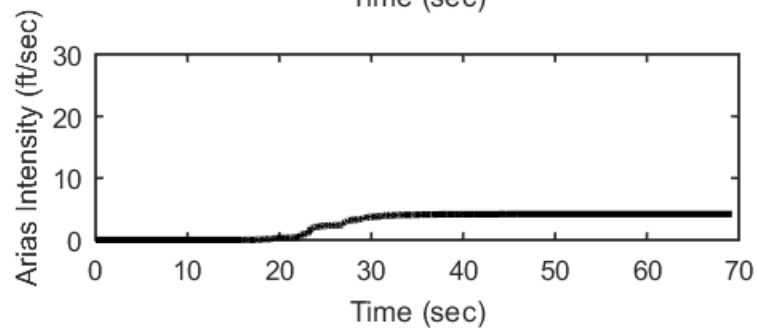
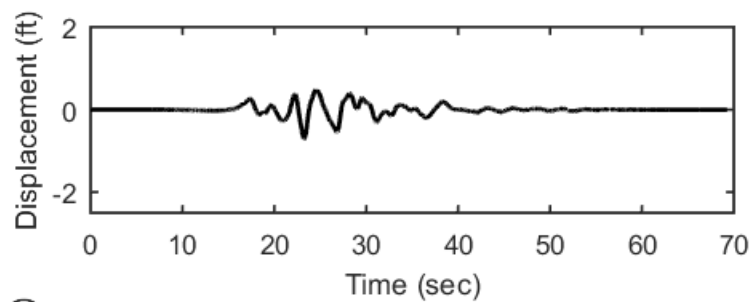
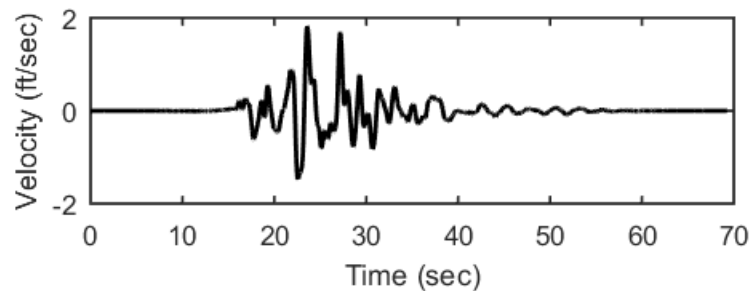
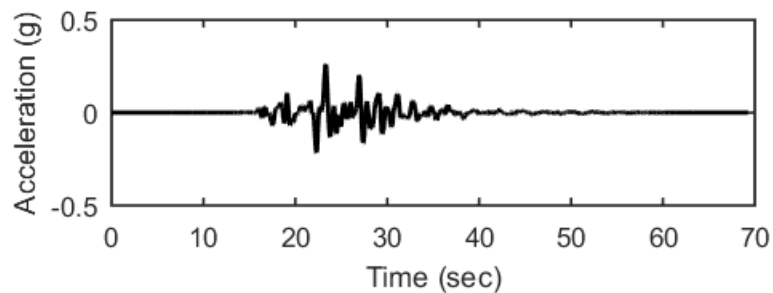
### Profile outputs for Motion: SEE2



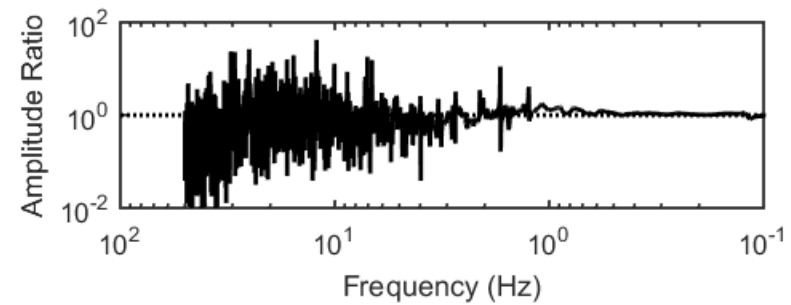
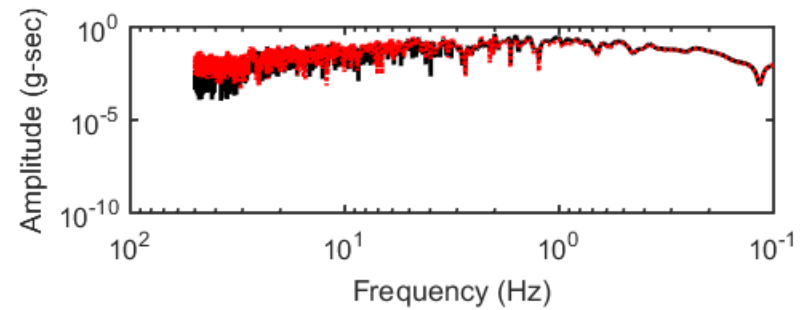
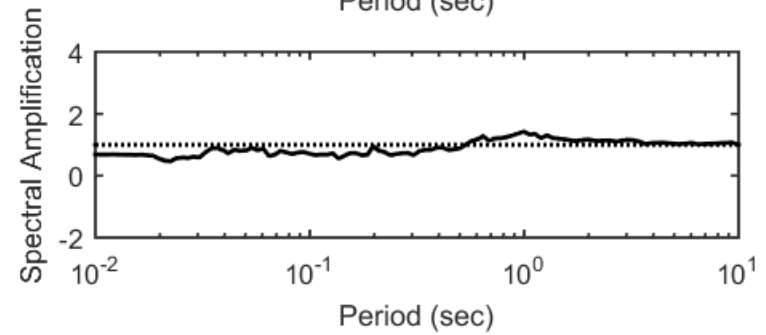
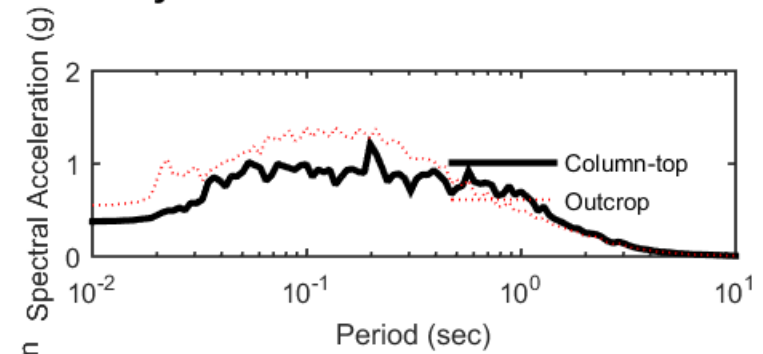
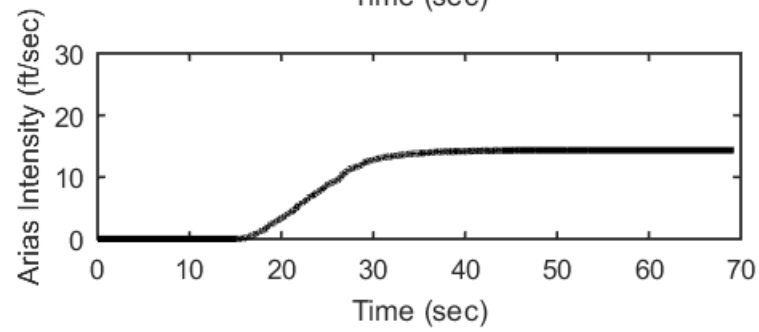
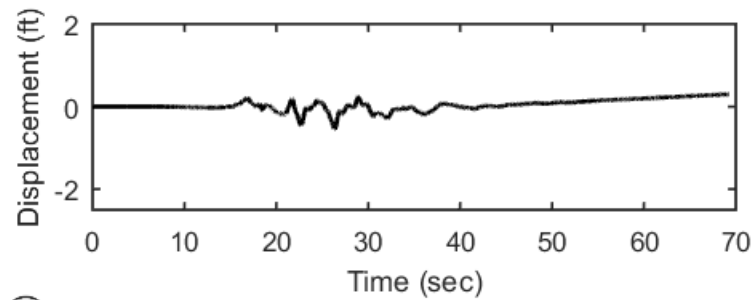
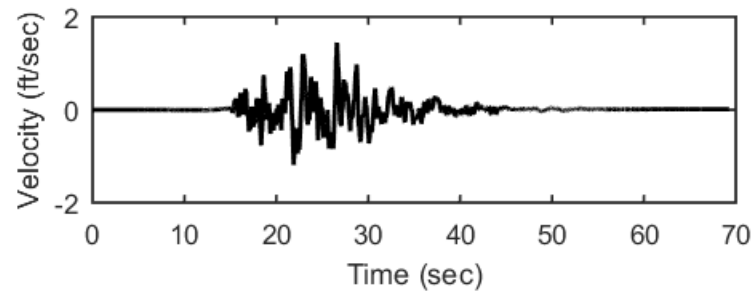
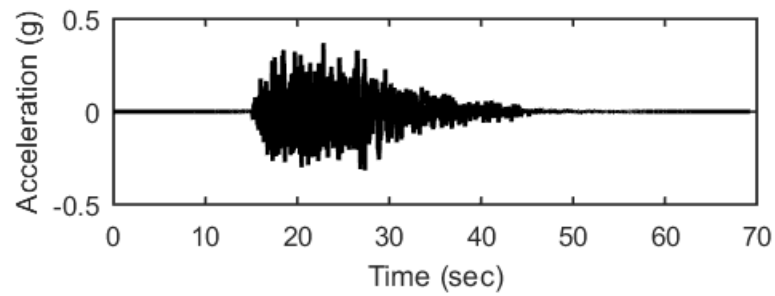
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



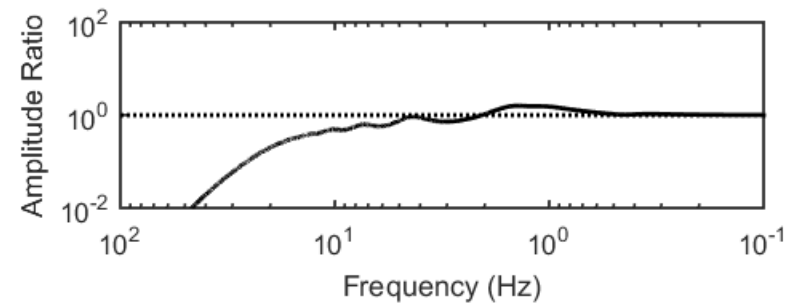
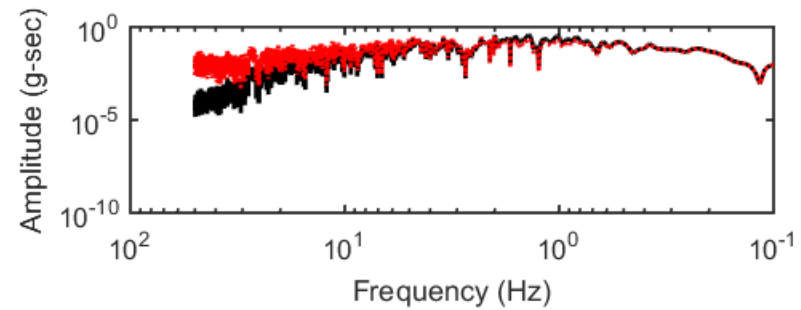
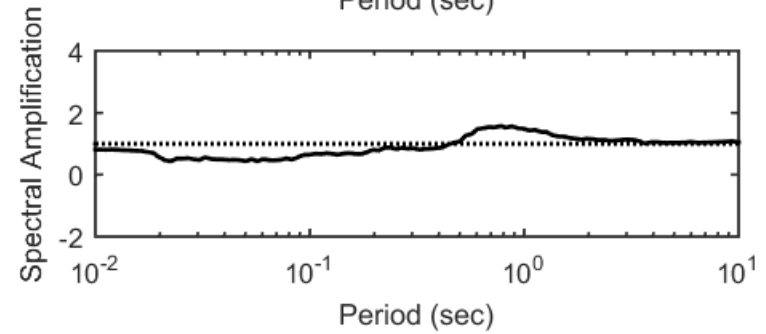
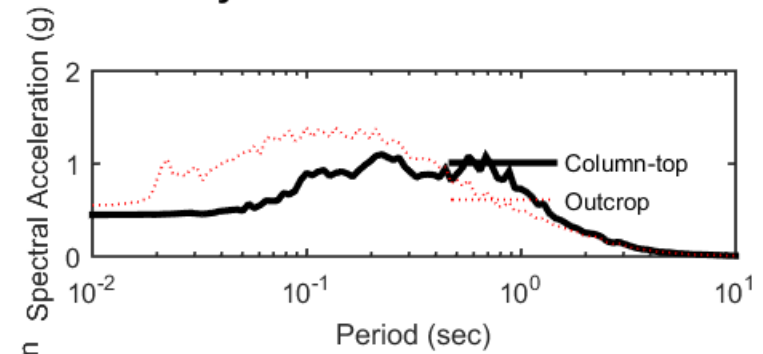
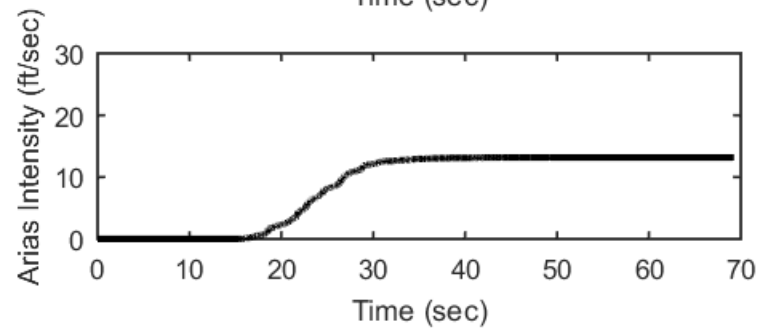
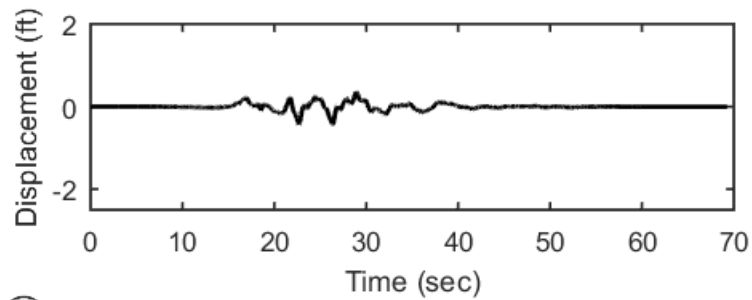
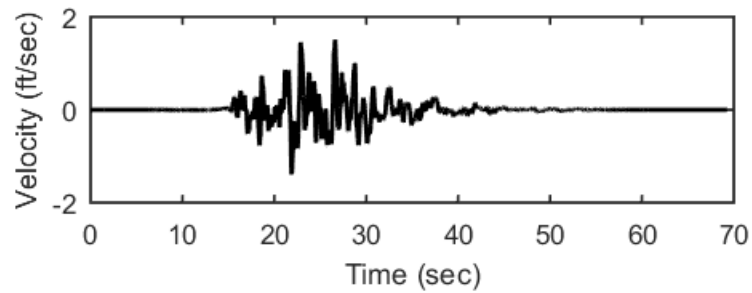
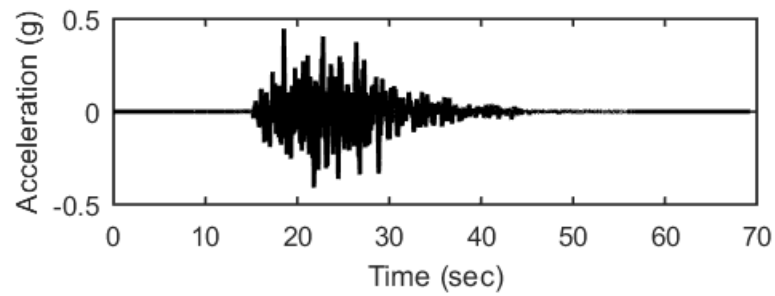
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3

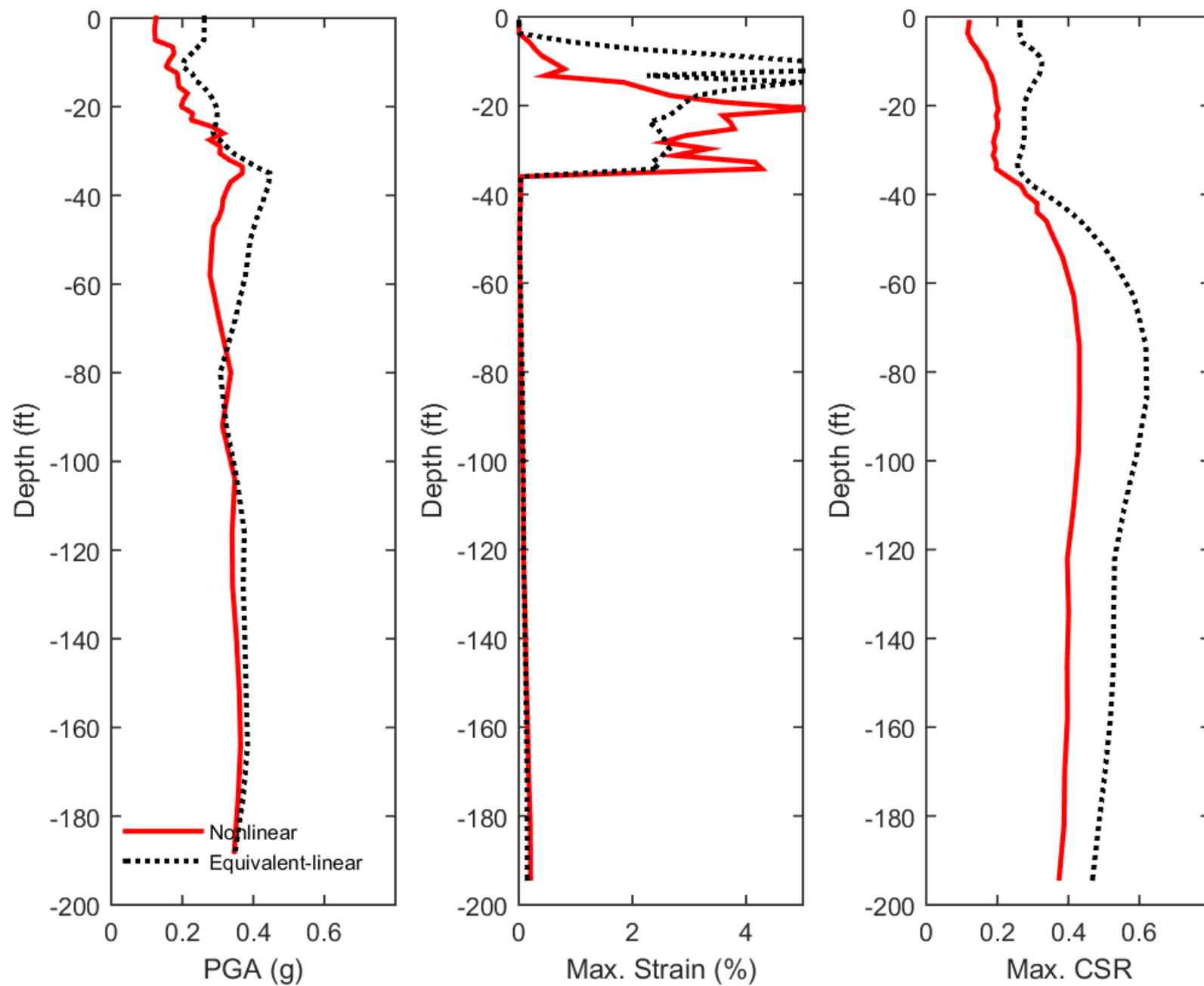


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3

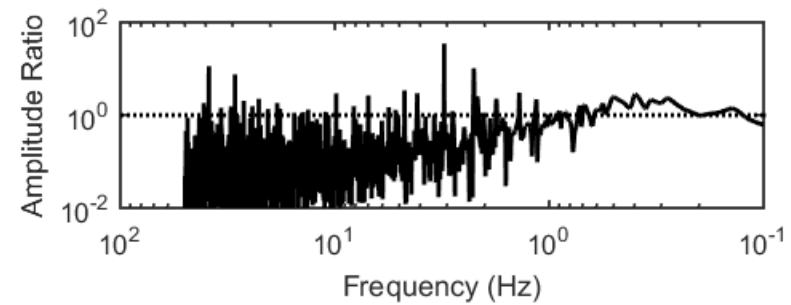
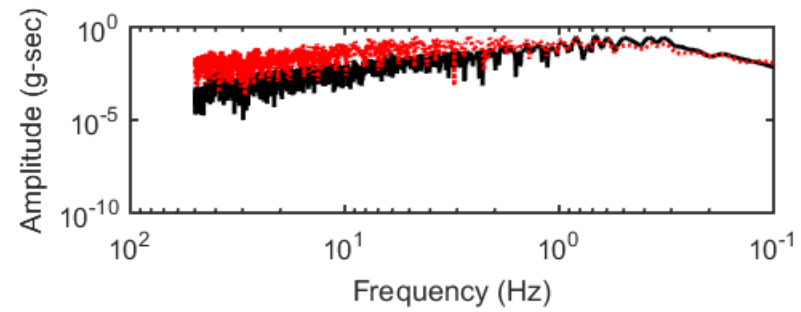
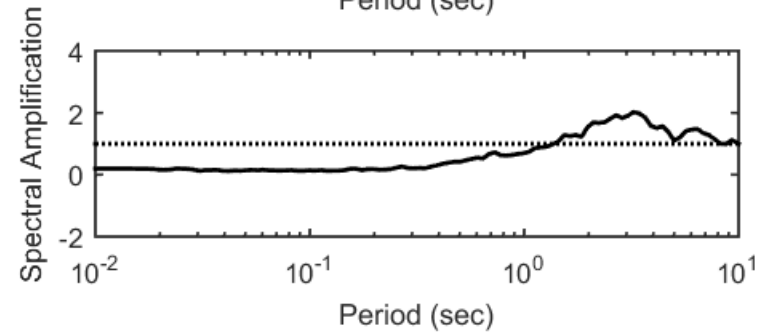
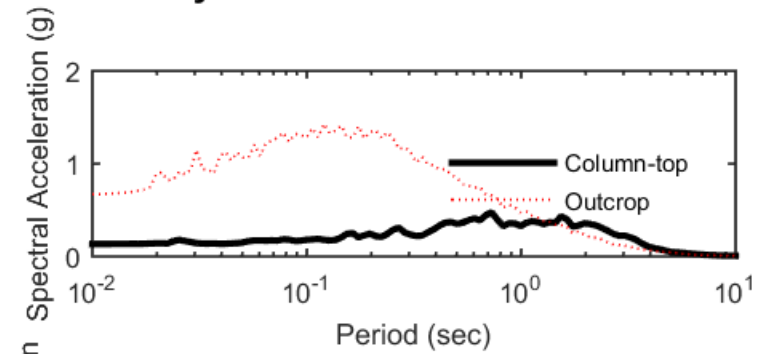
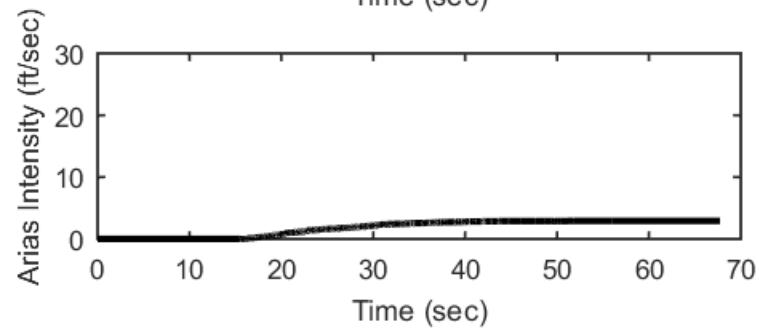
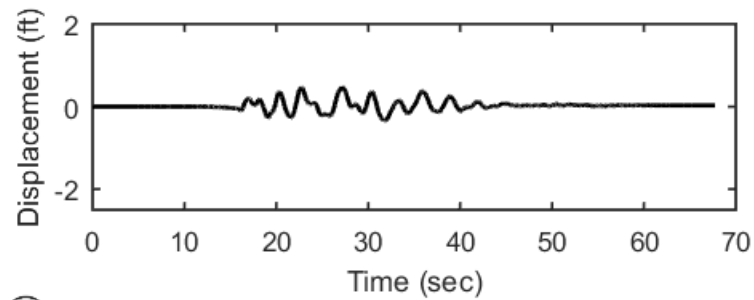
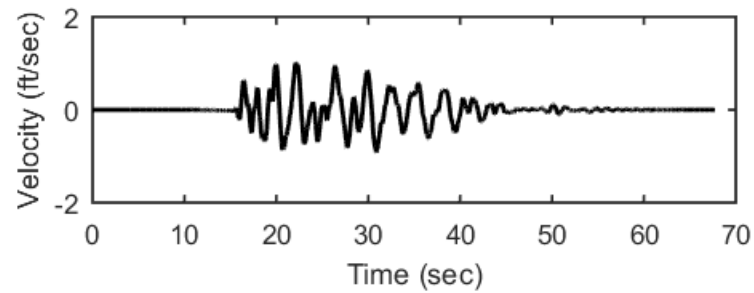
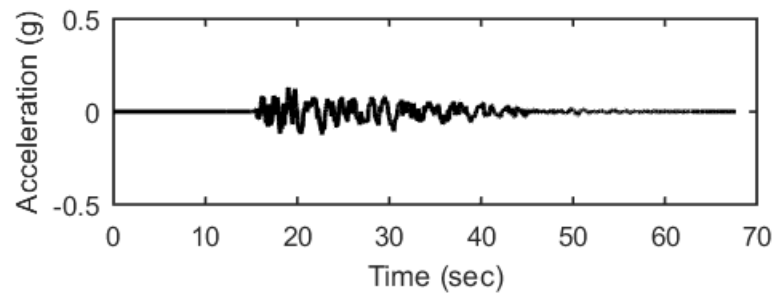




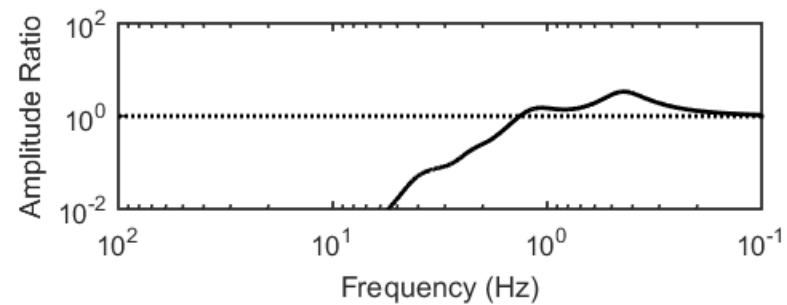
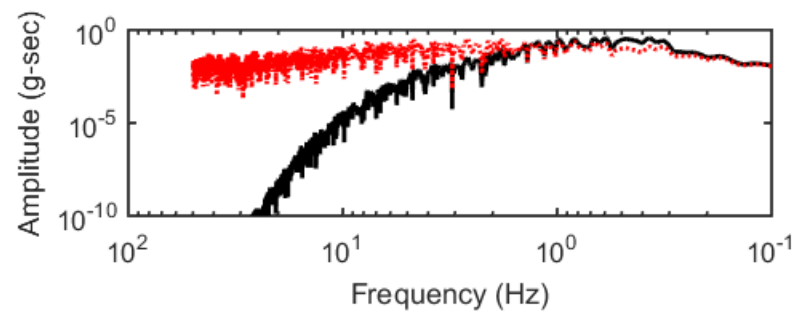
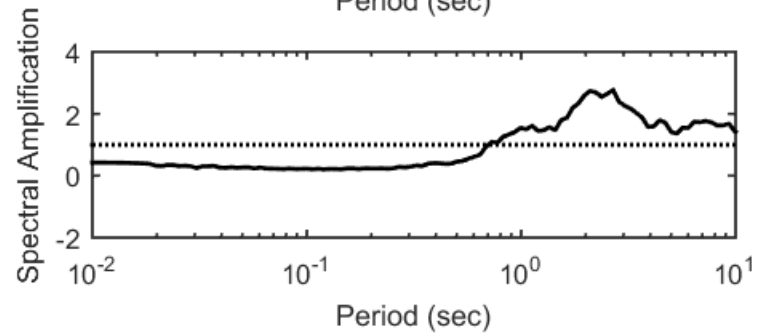
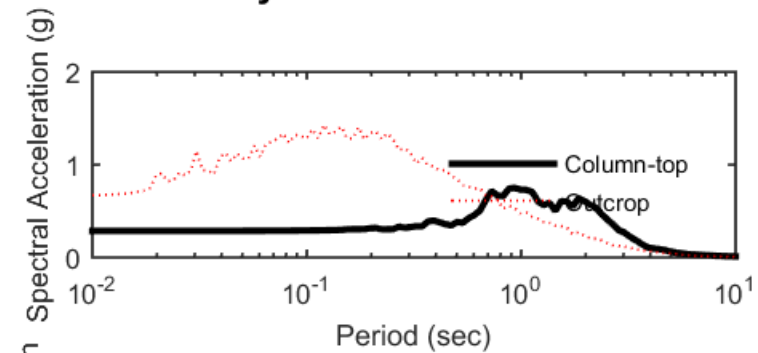
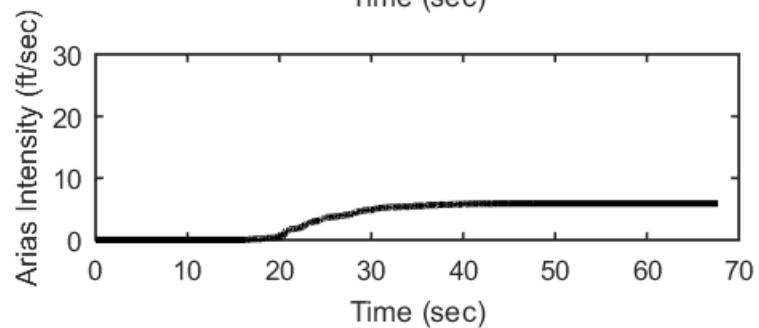
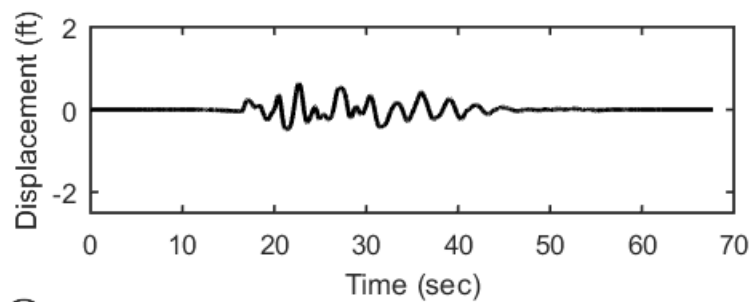
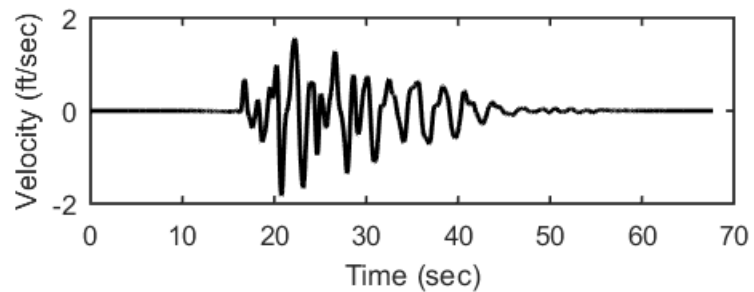
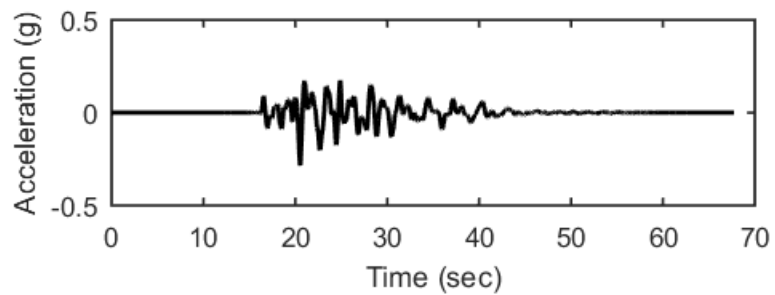
### Profile outputs for Motion: SEE3



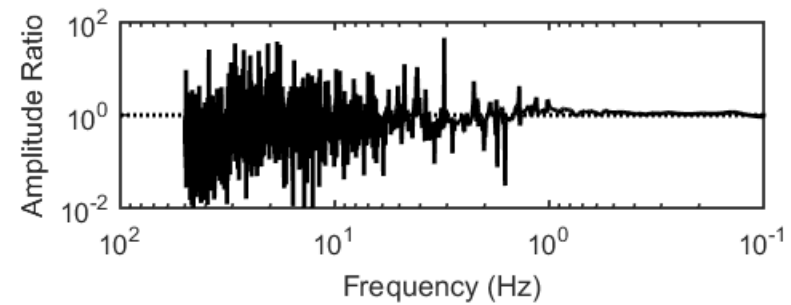
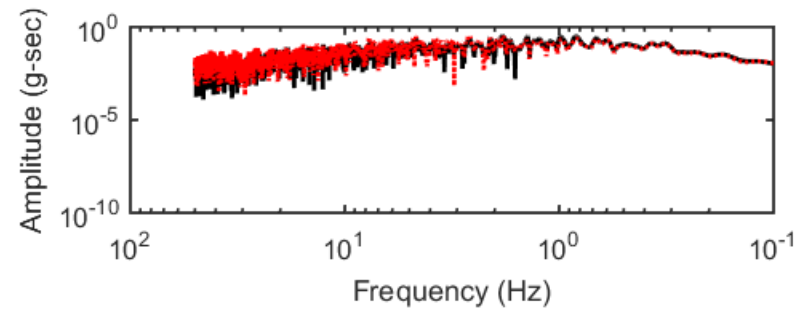
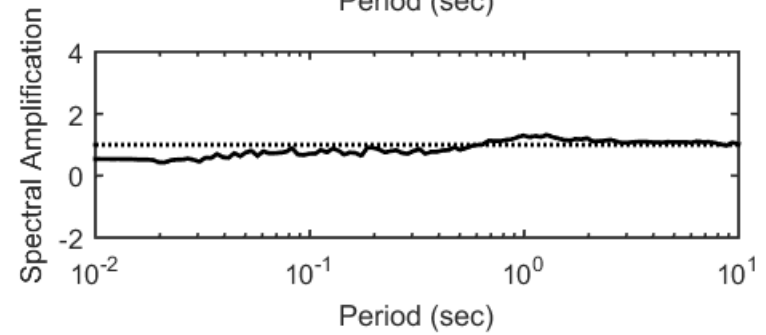
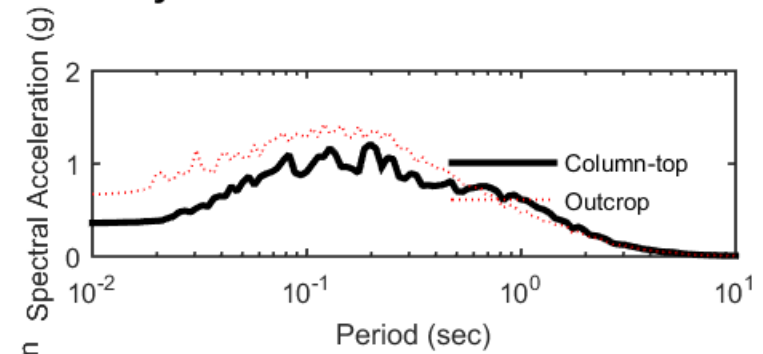
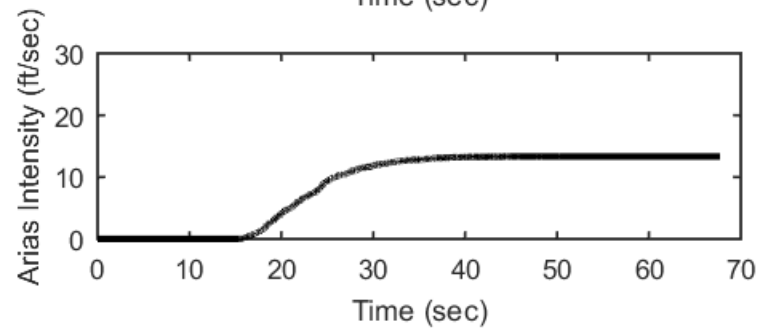
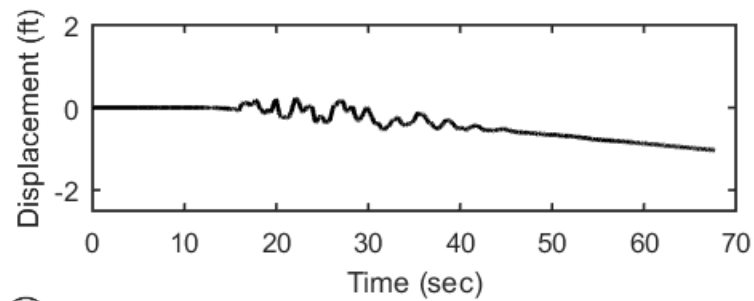
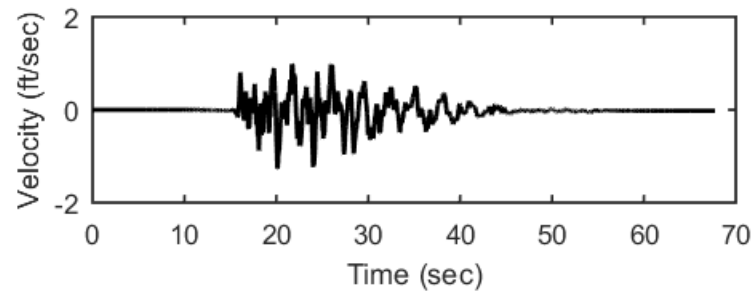
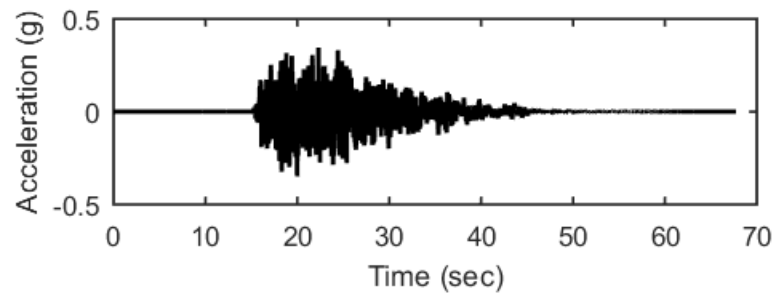
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



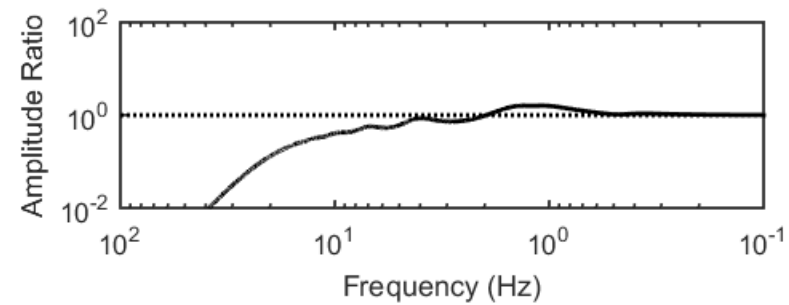
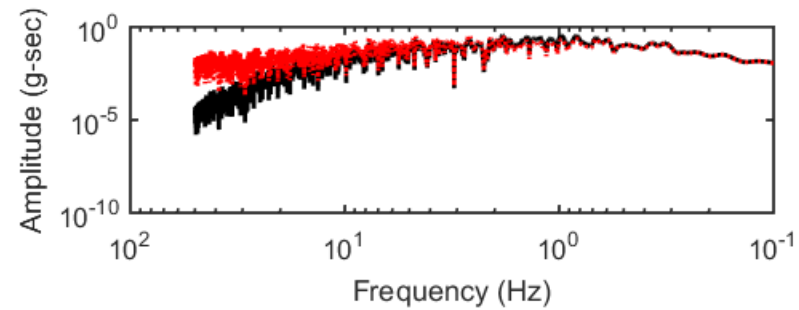
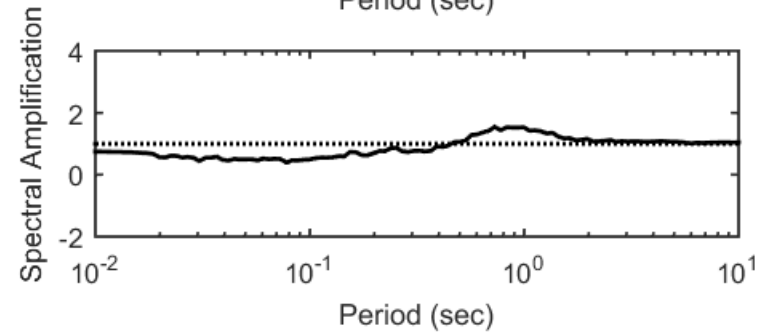
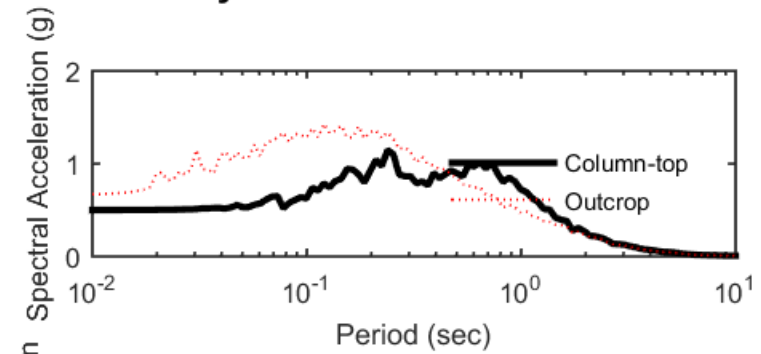
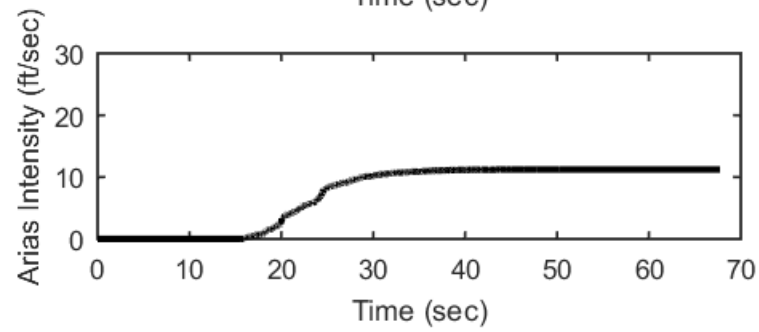
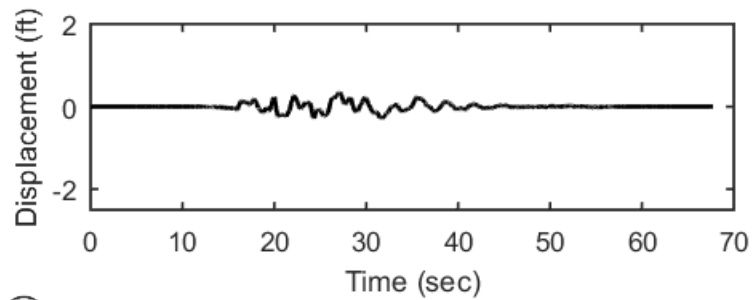
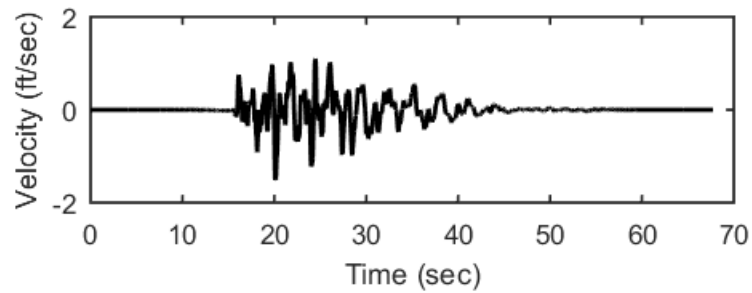
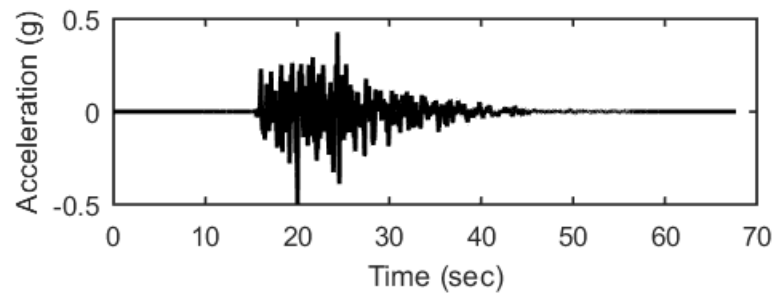
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



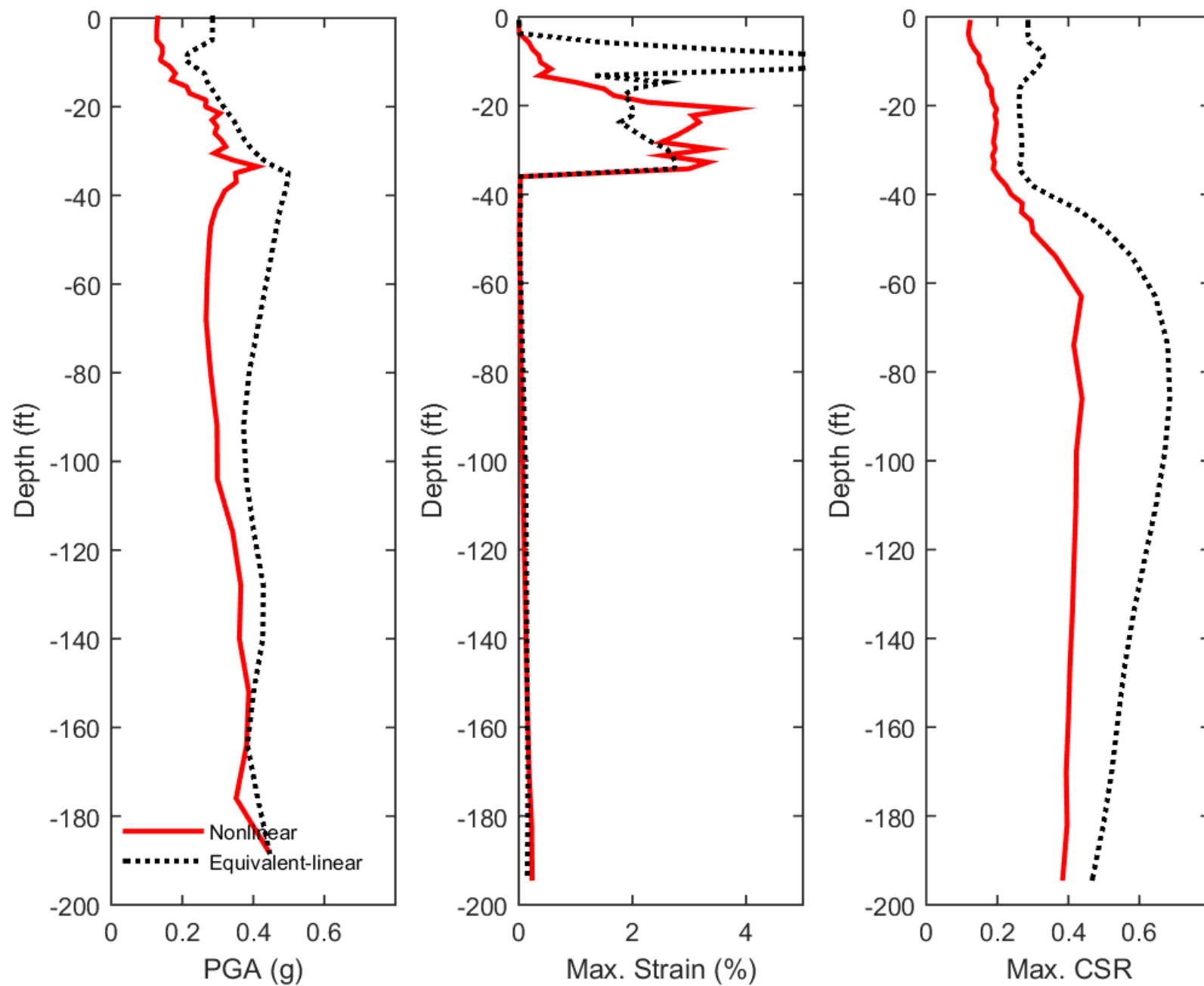
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



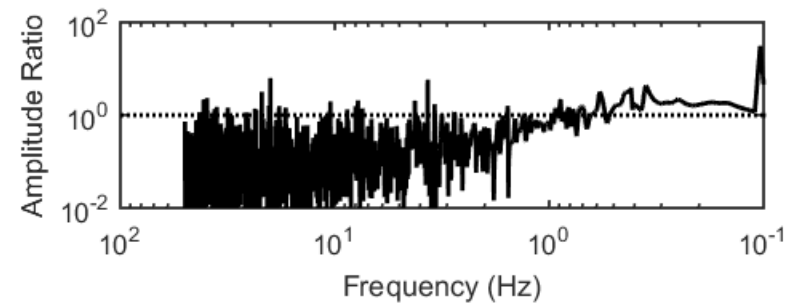
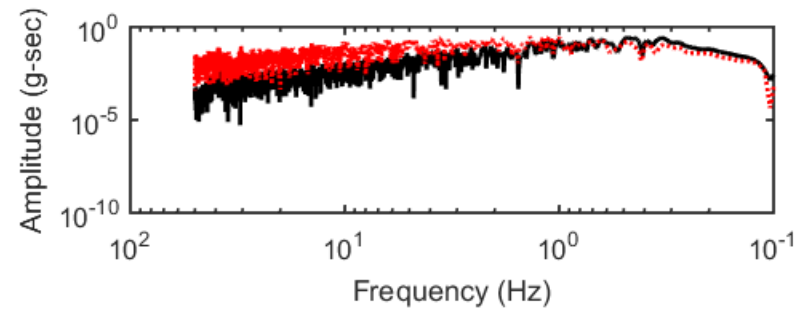
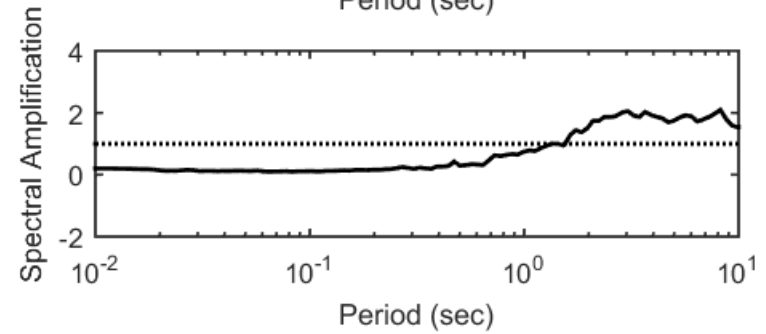
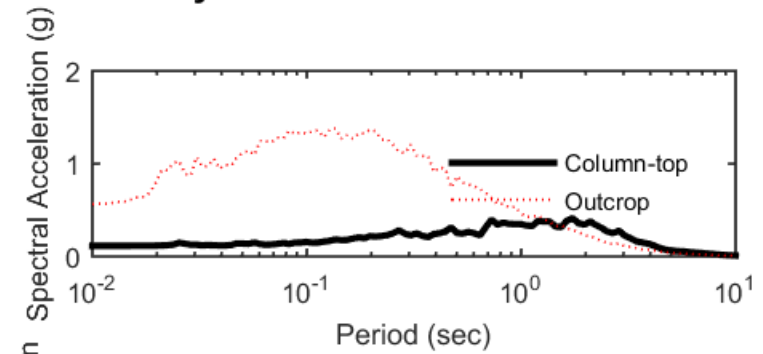
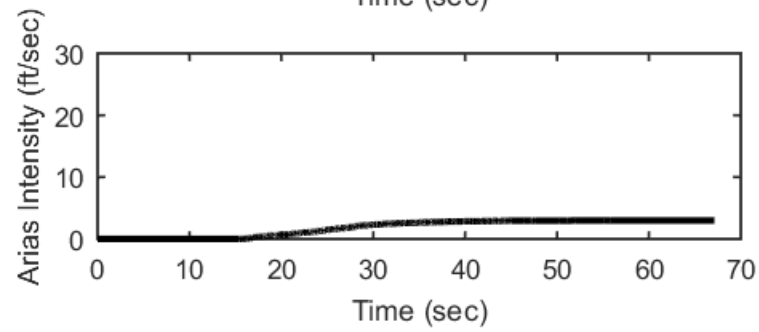
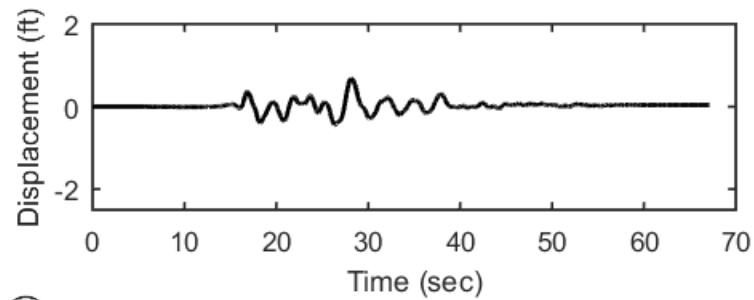
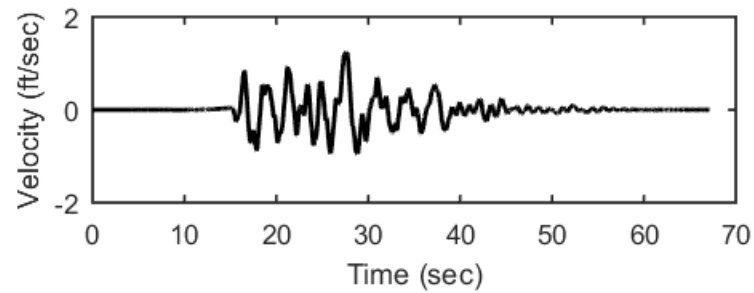
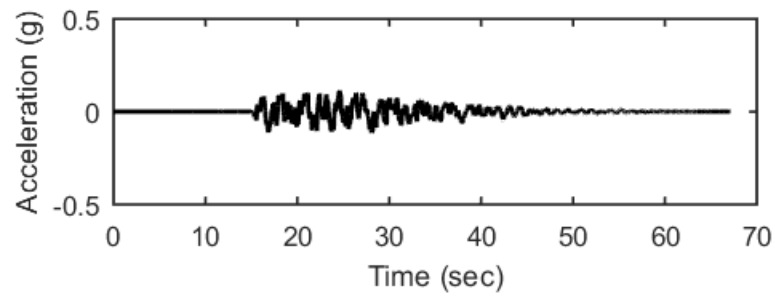
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



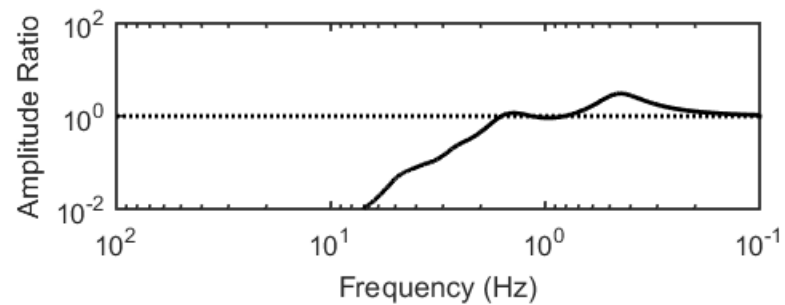
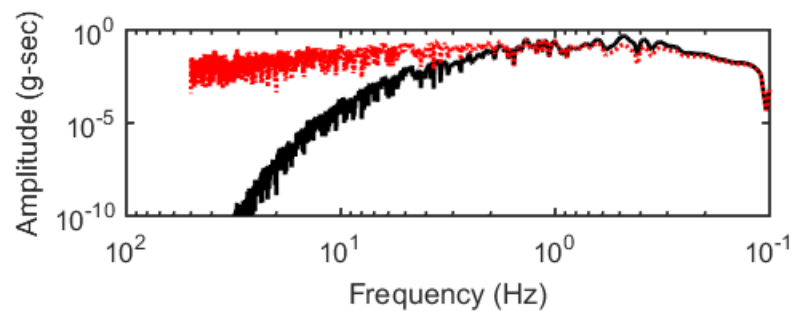
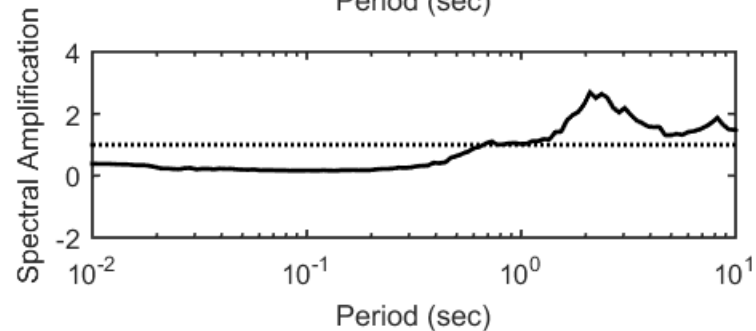
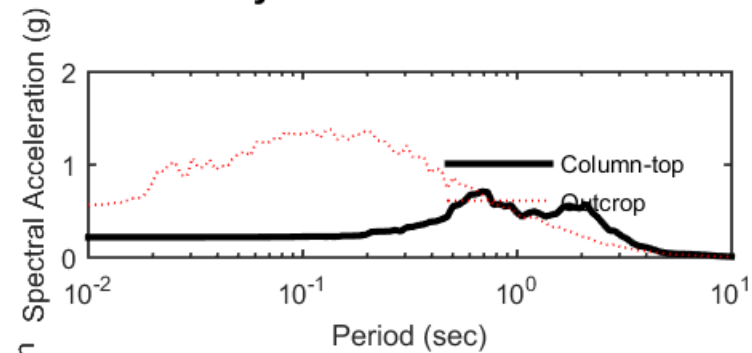
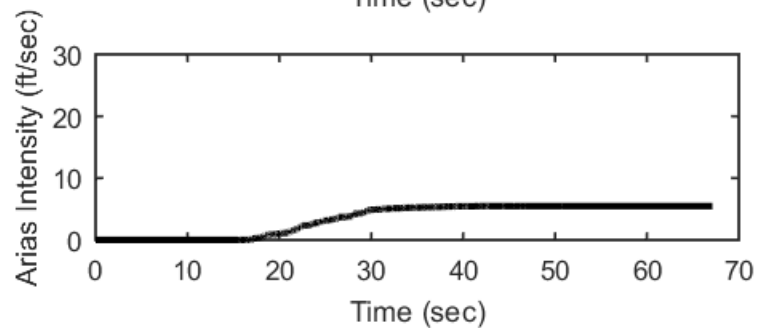
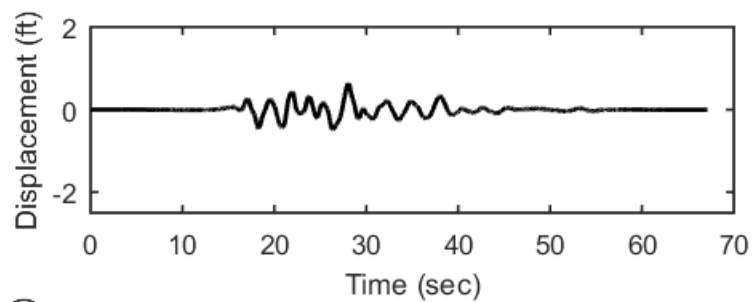
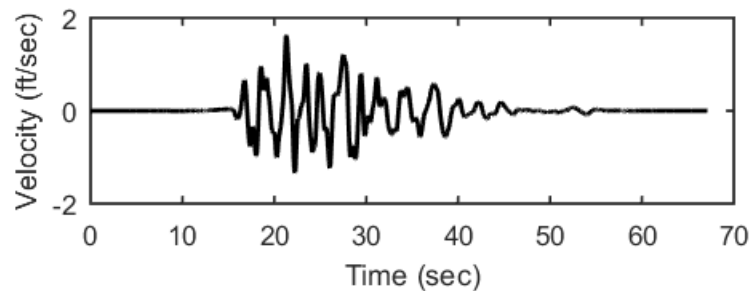
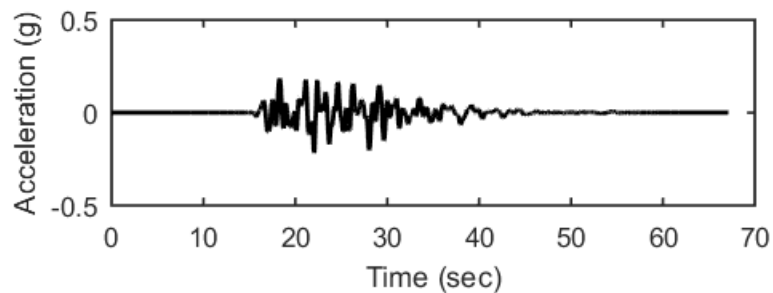
### Profile outputs for Motion: SEE4



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5

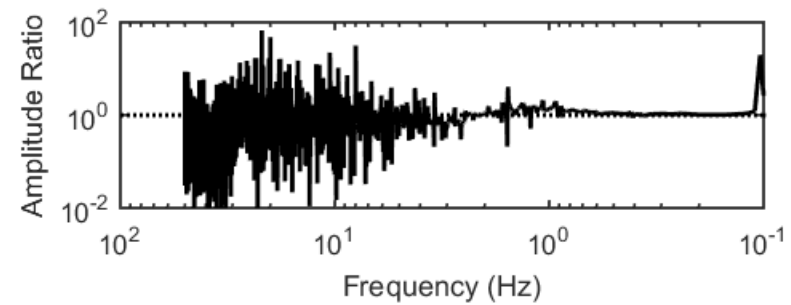
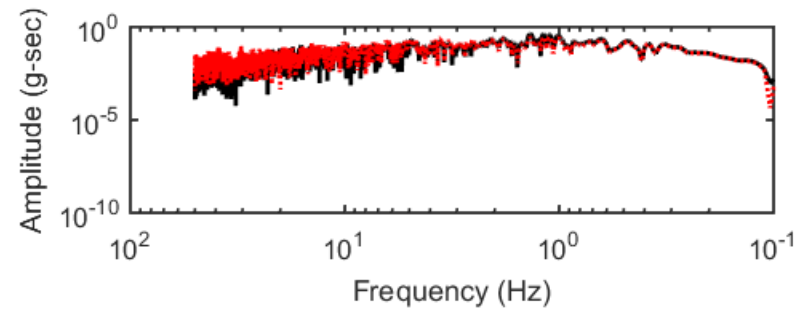
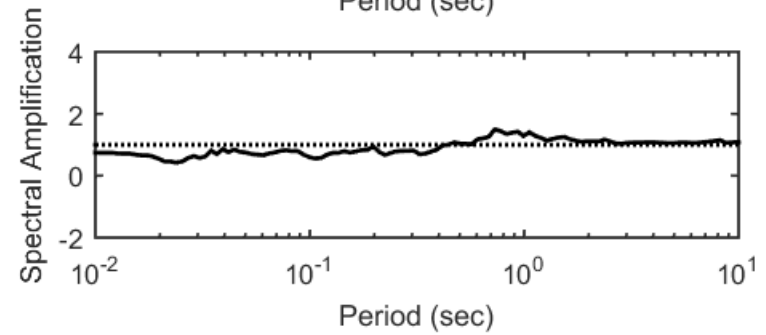
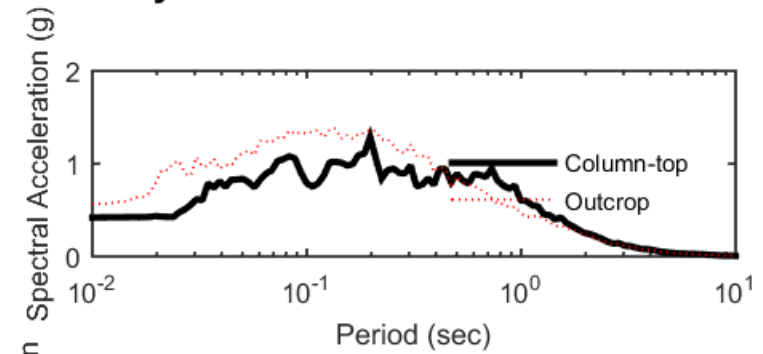
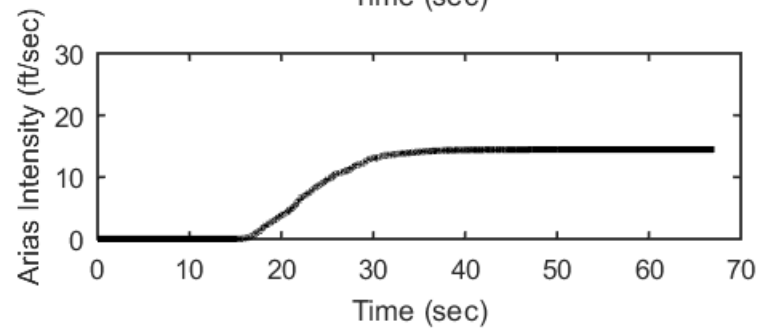
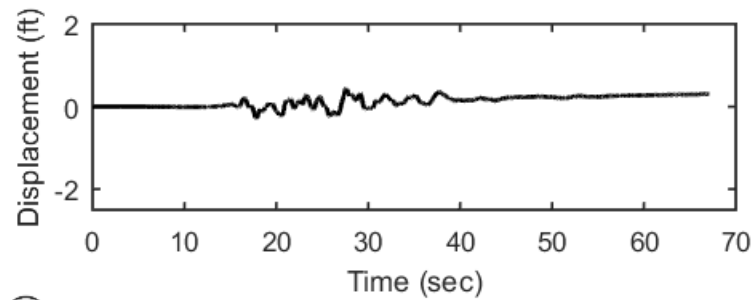
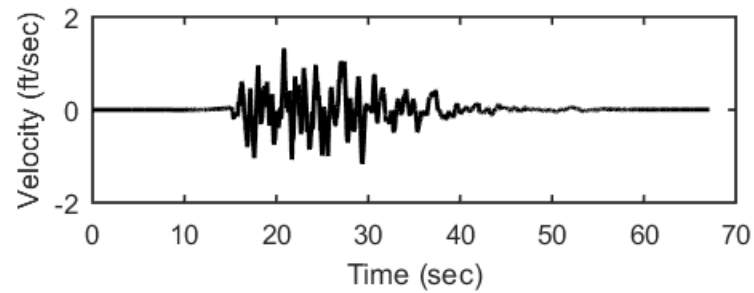
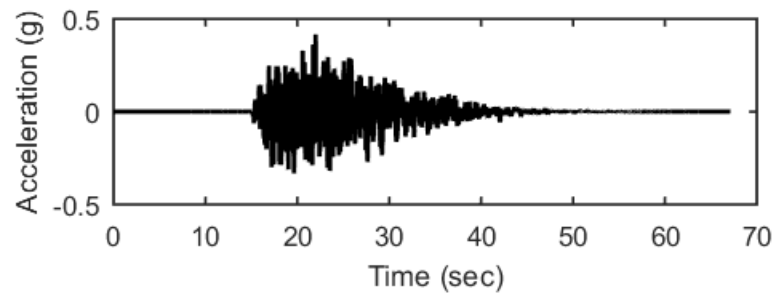


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5

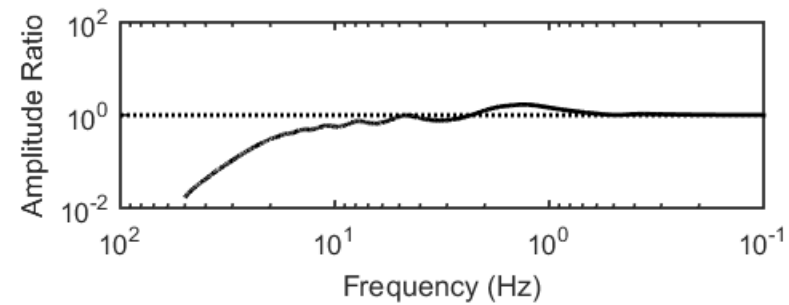
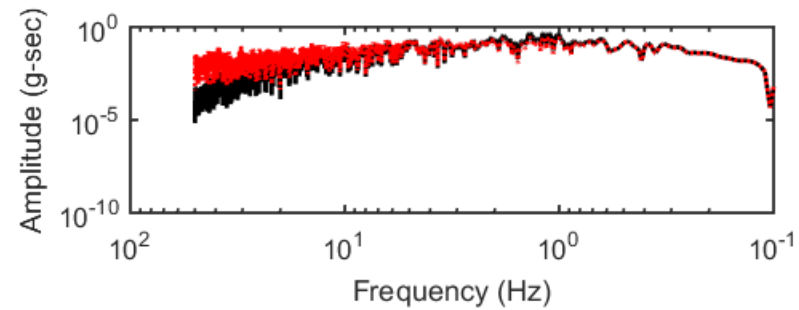
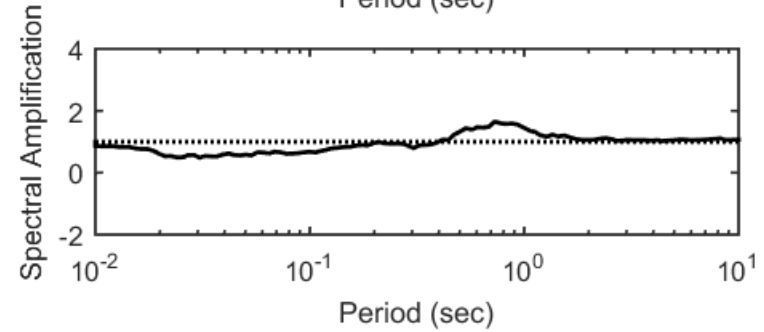
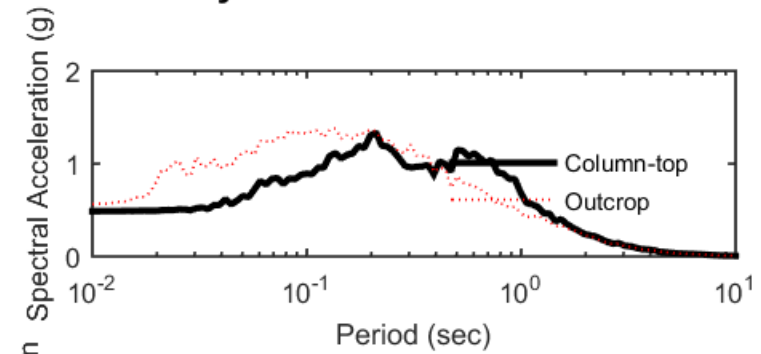
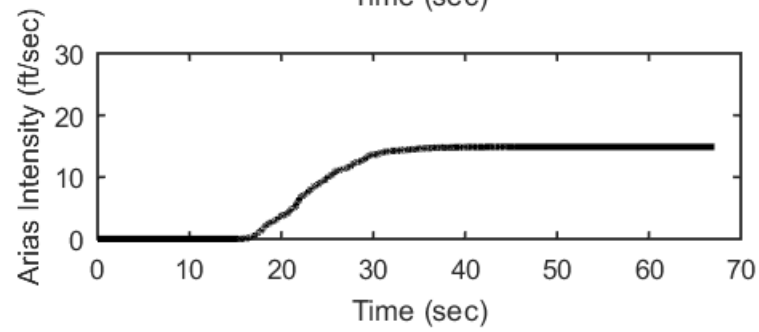
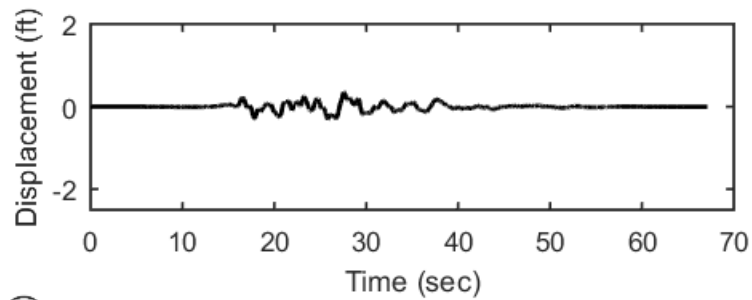
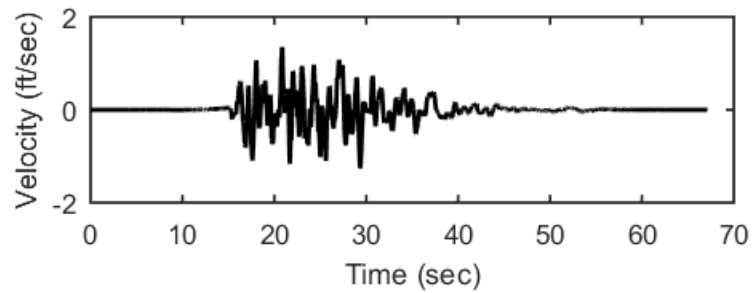
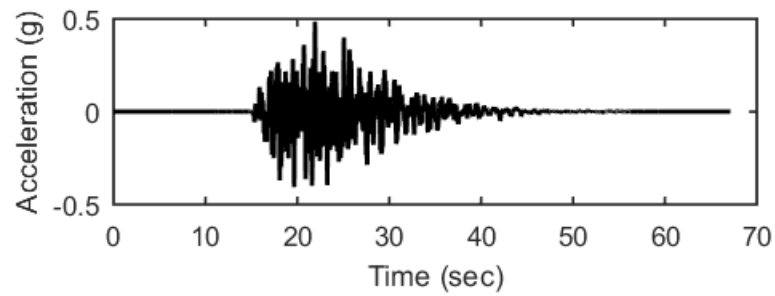




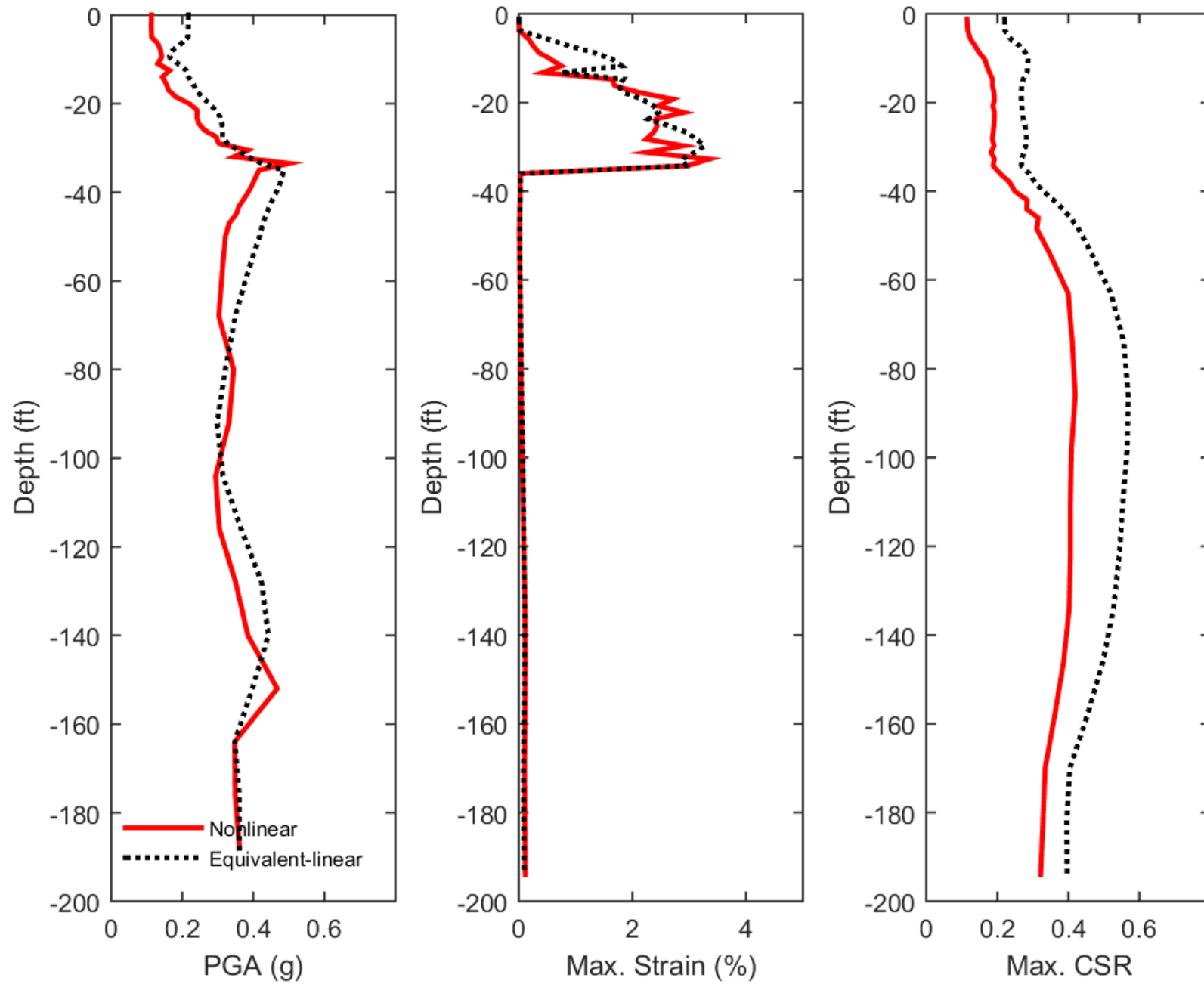
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



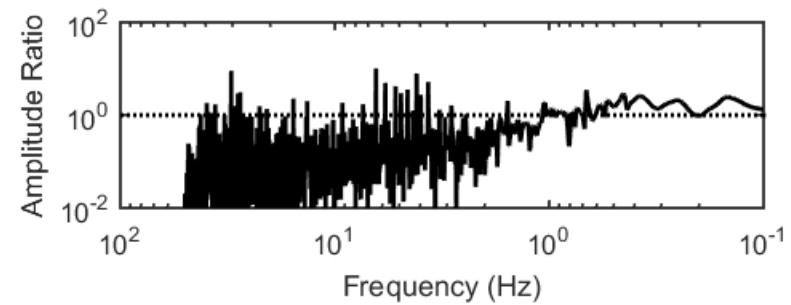
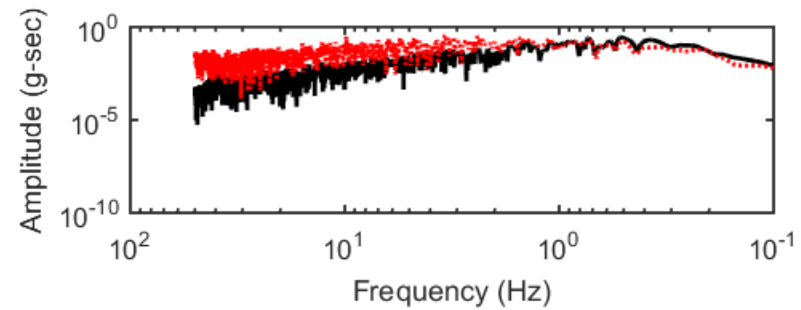
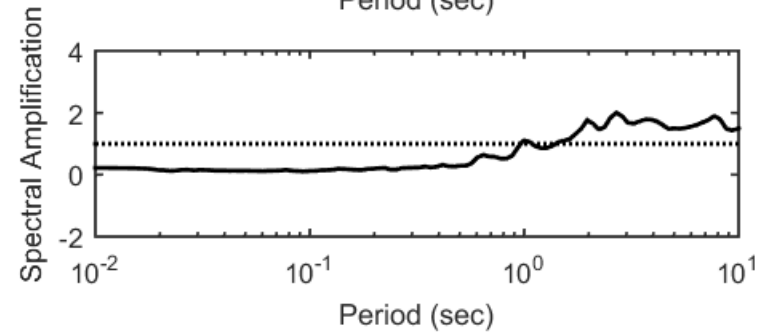
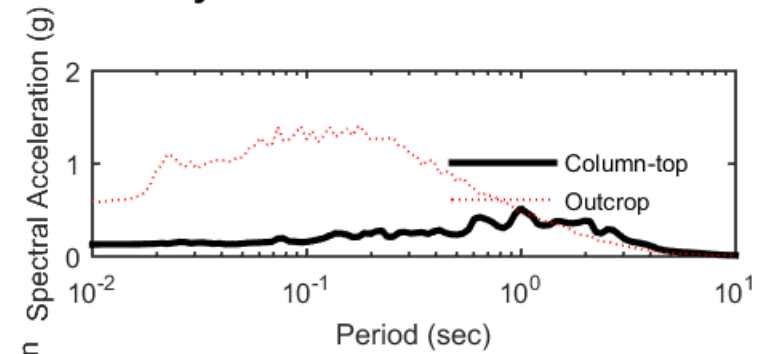
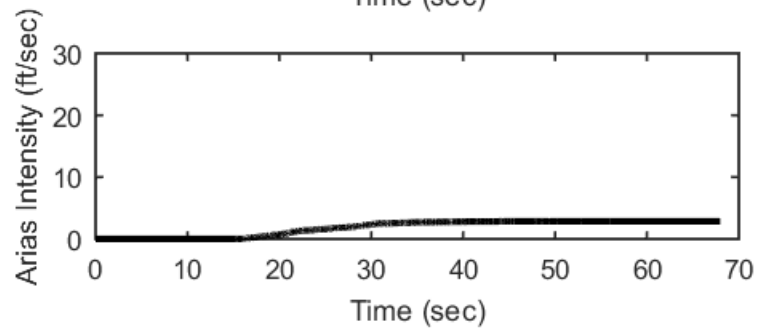
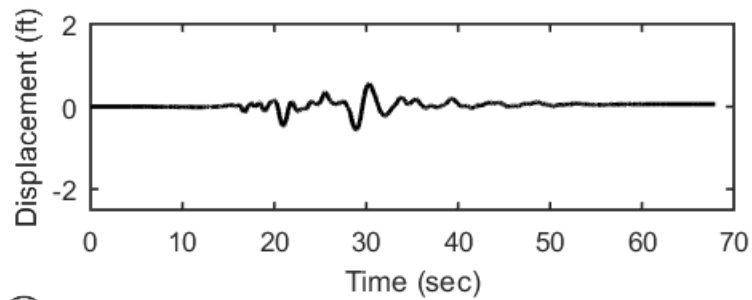
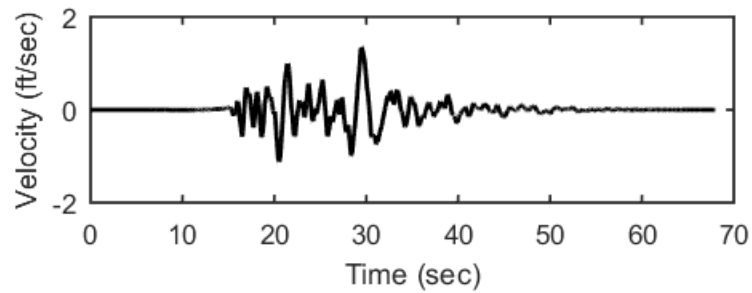
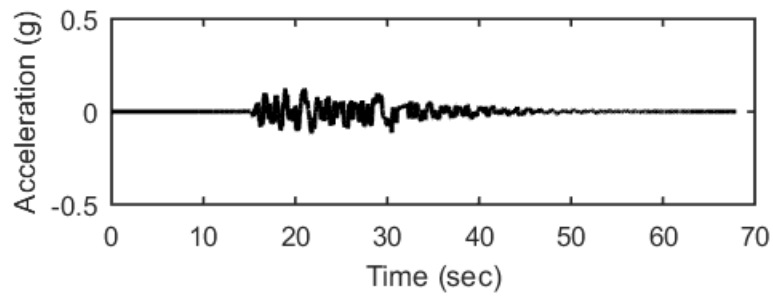
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



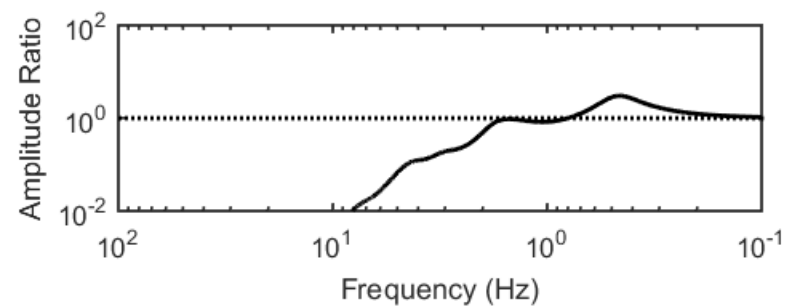
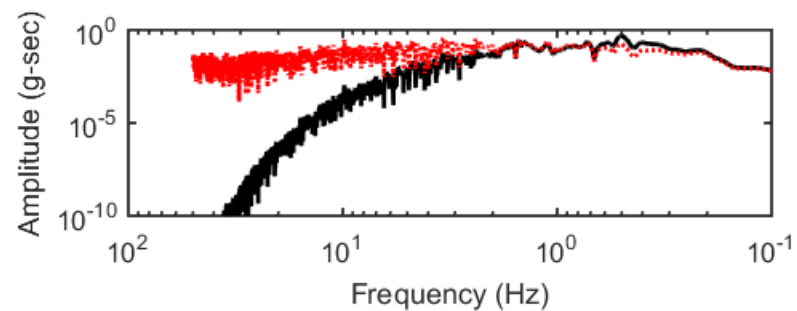
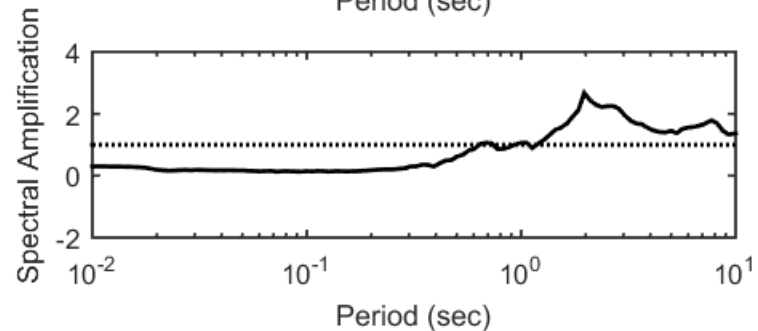
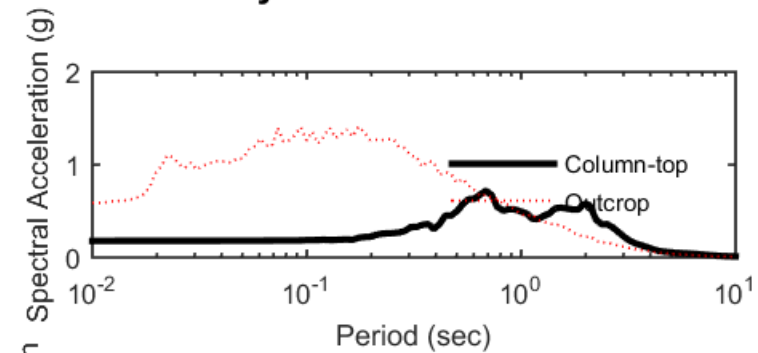
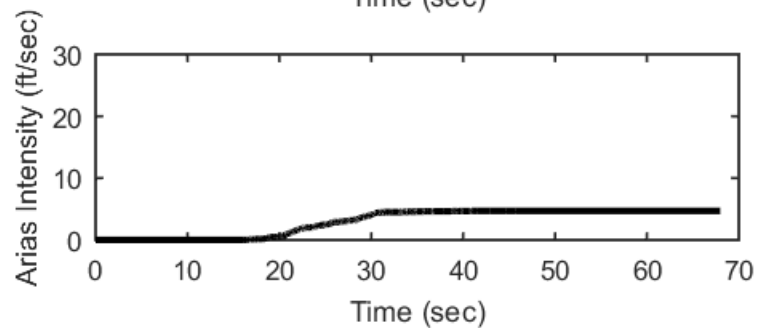
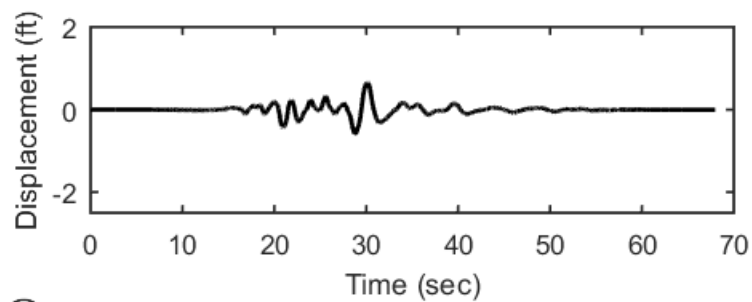
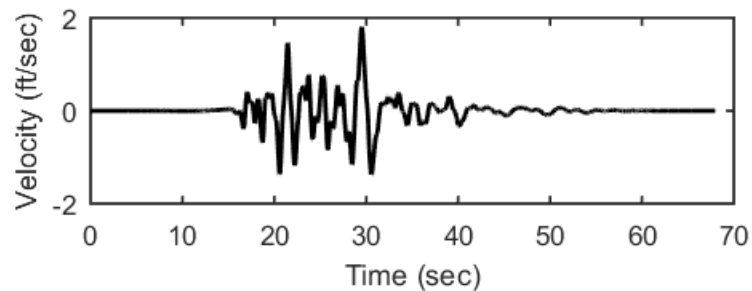
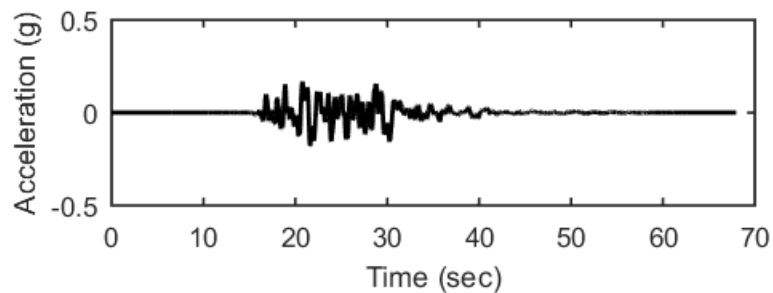
### Profile outputs for Motion: SEE5



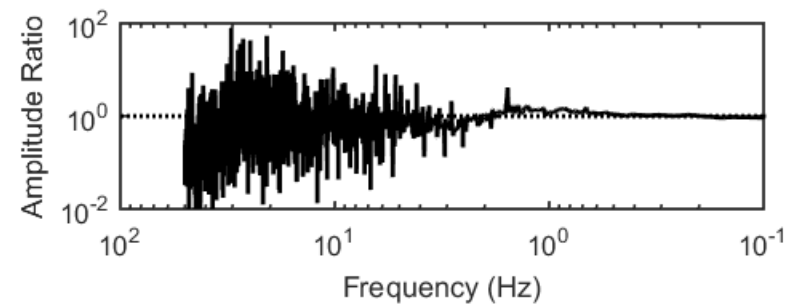
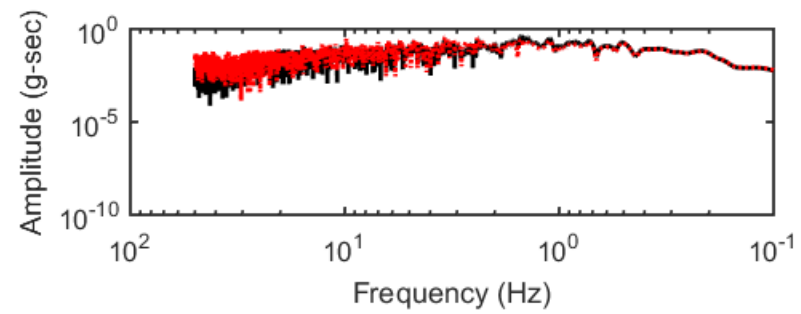
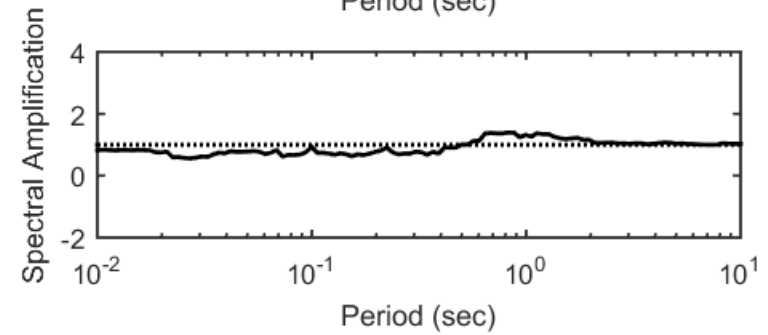
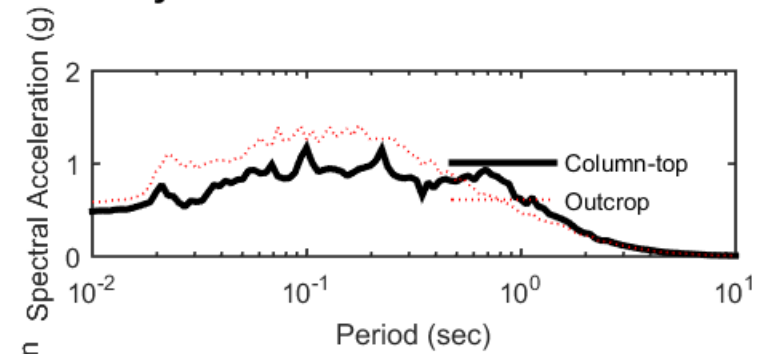
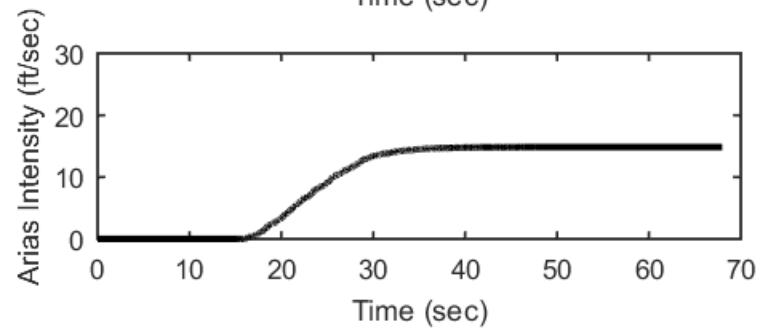
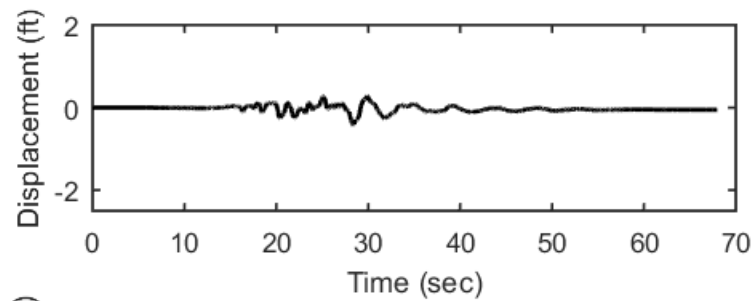
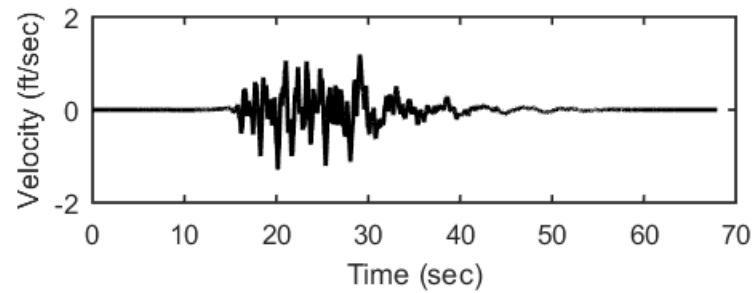
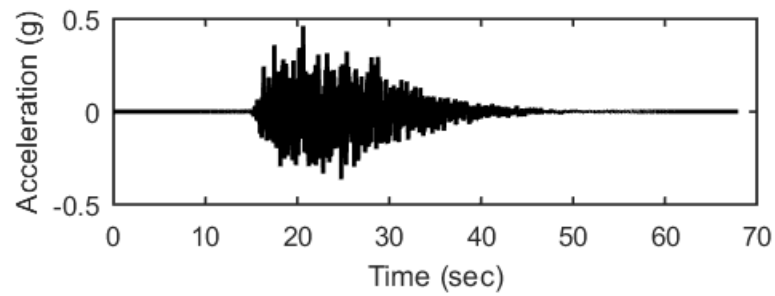
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



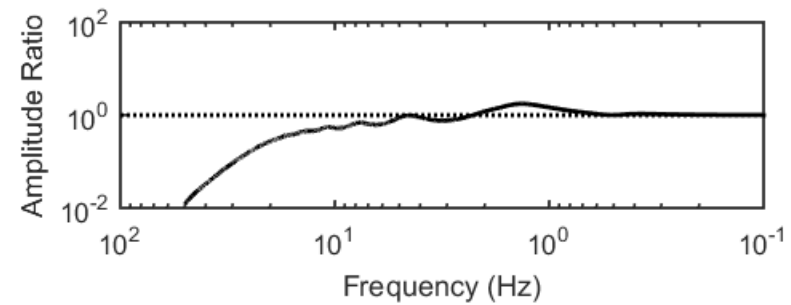
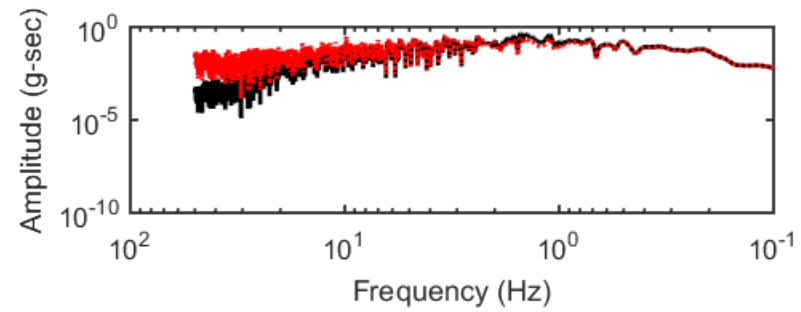
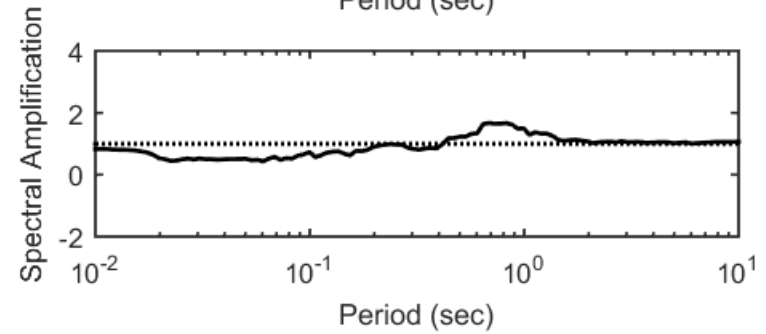
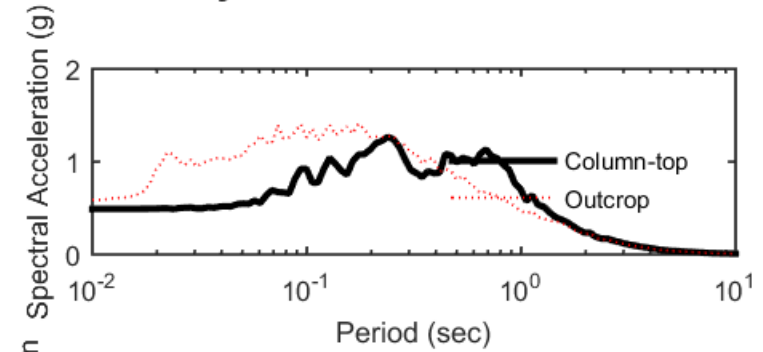
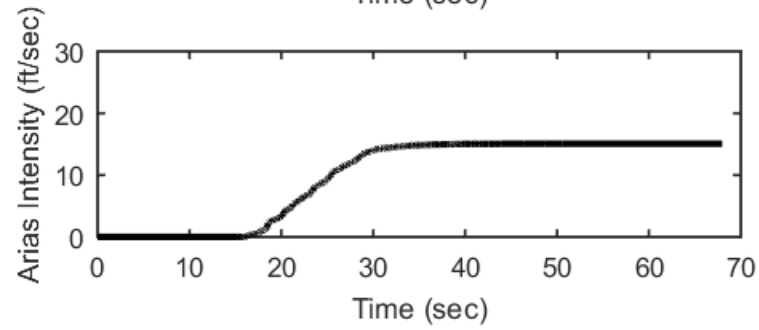
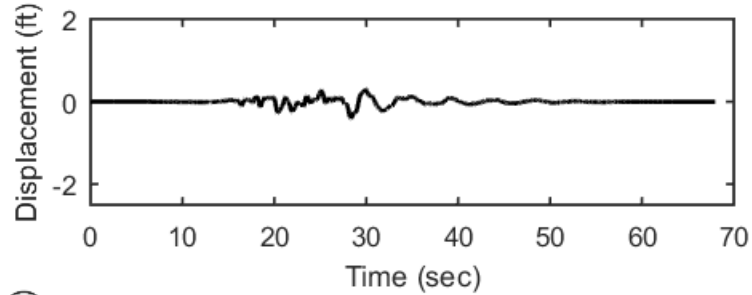
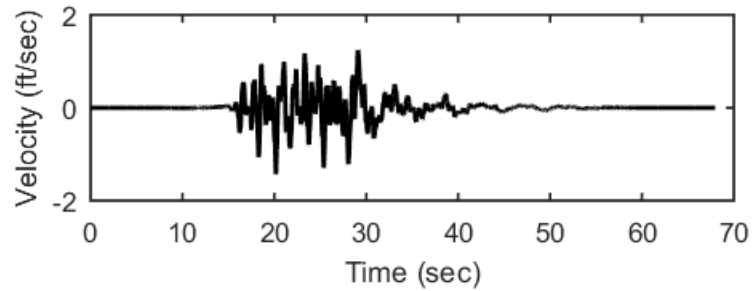
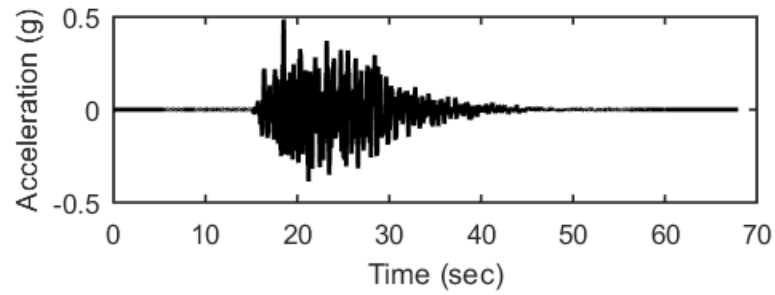
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



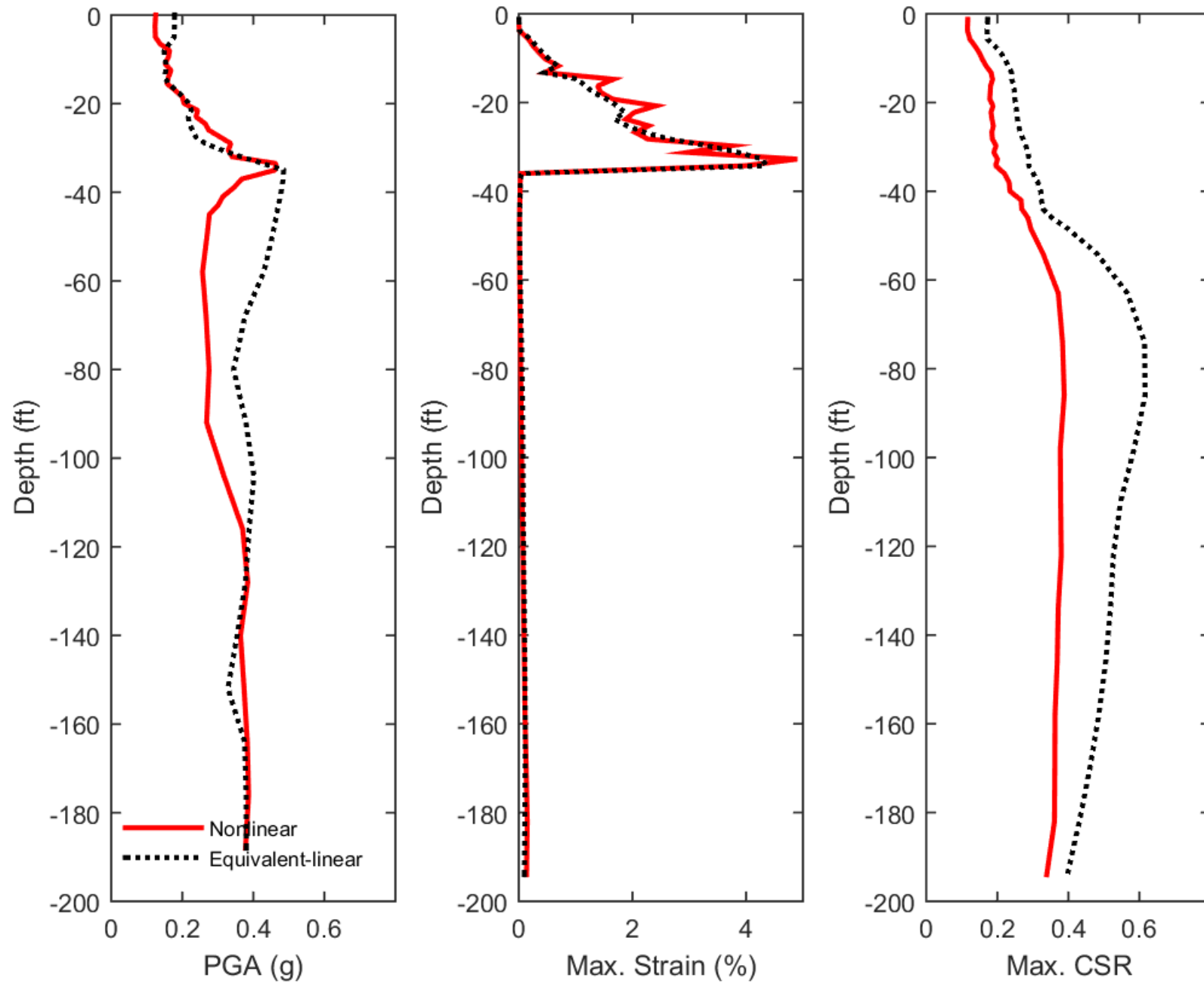
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6

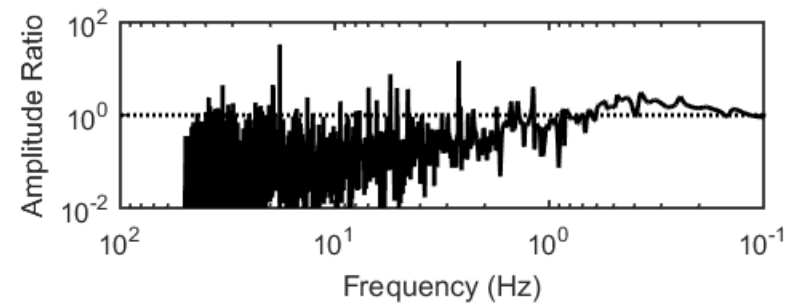
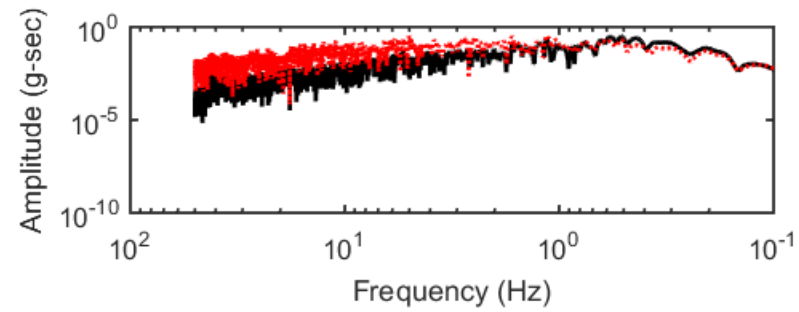
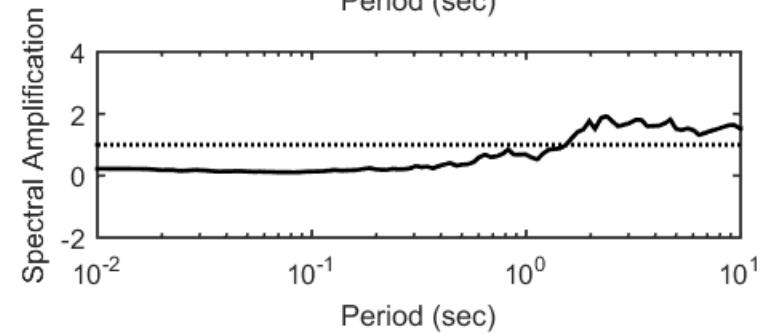
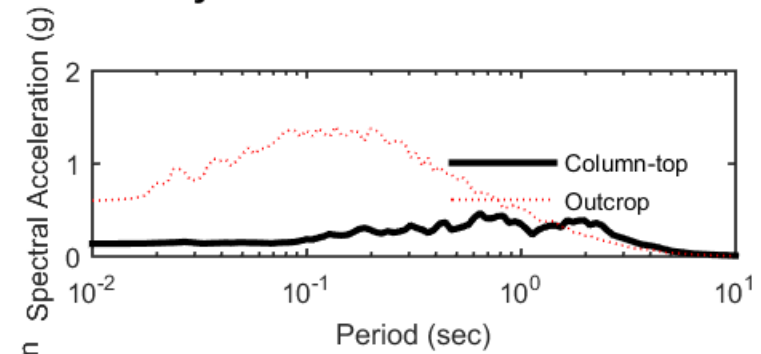
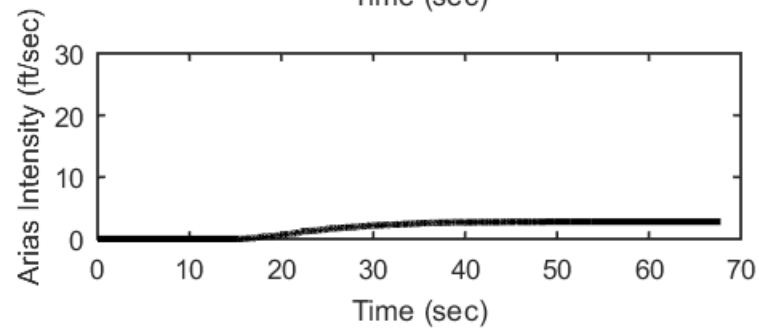
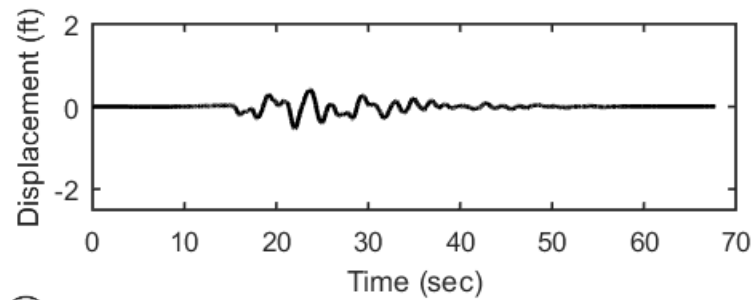
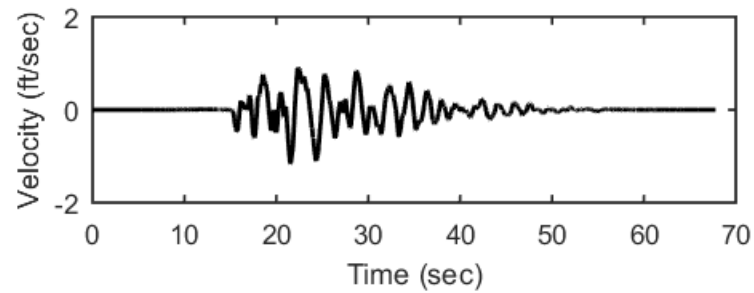
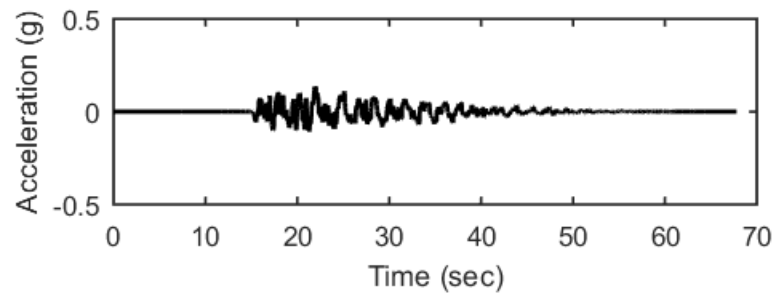


### Profile outputs for Motion: SEE6

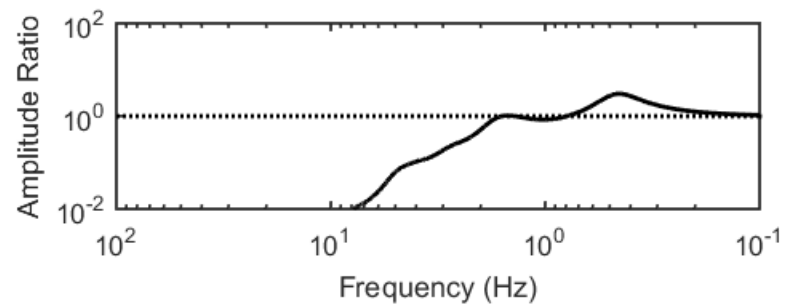
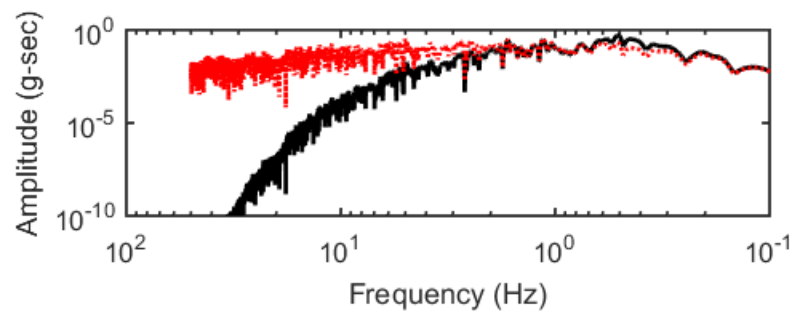
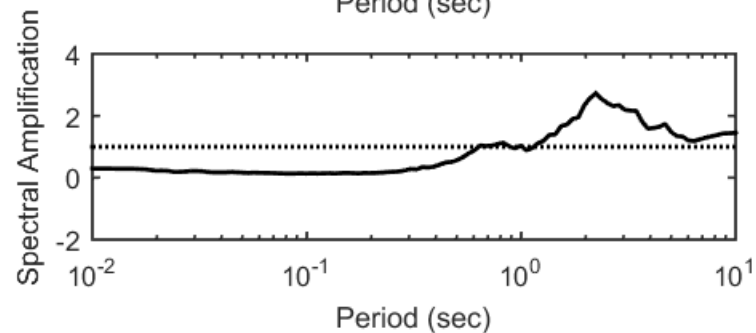
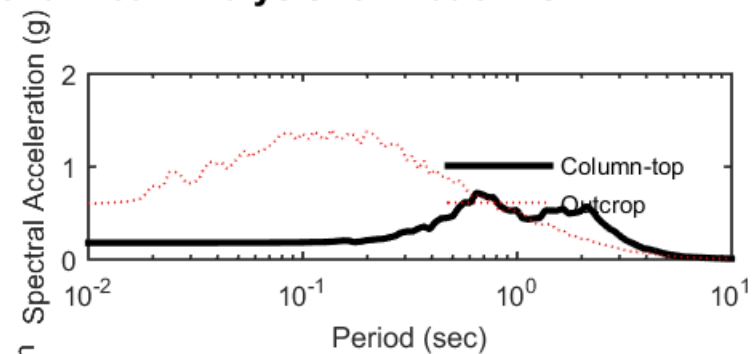
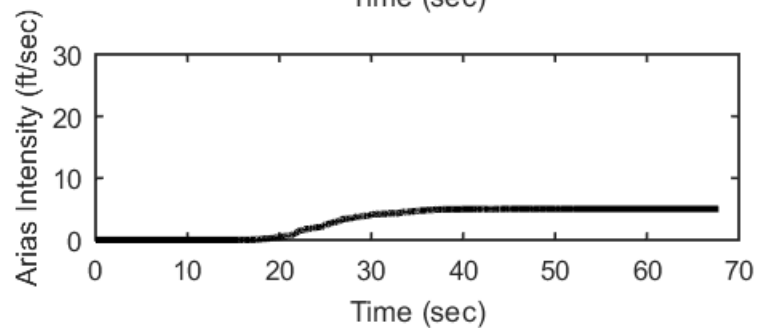
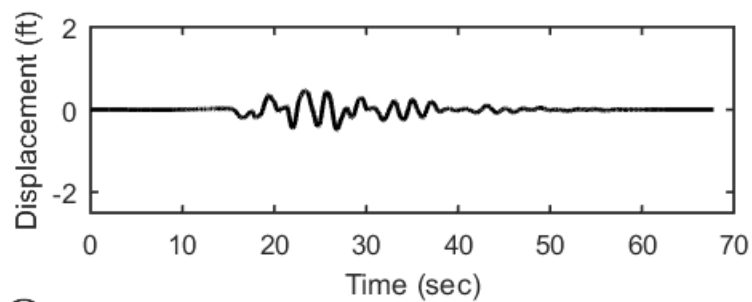
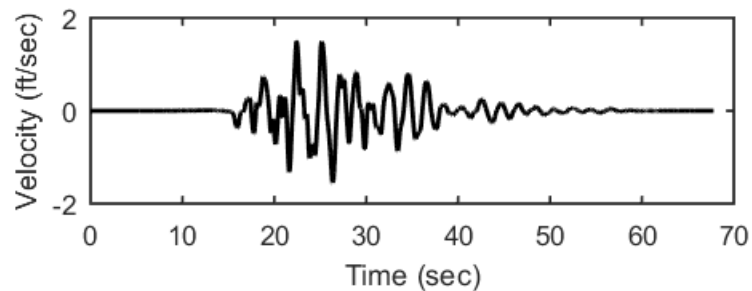
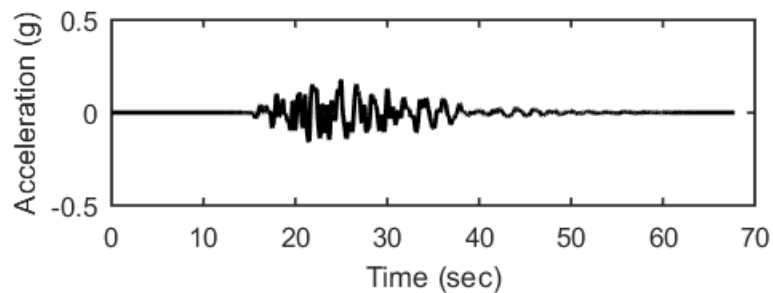




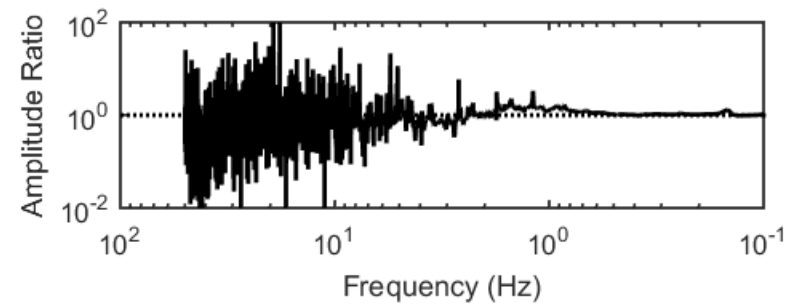
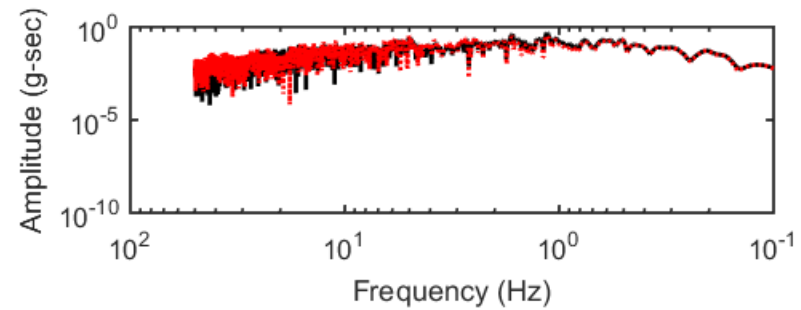
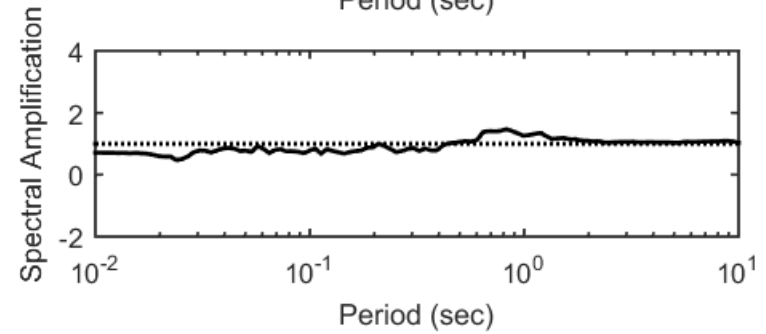
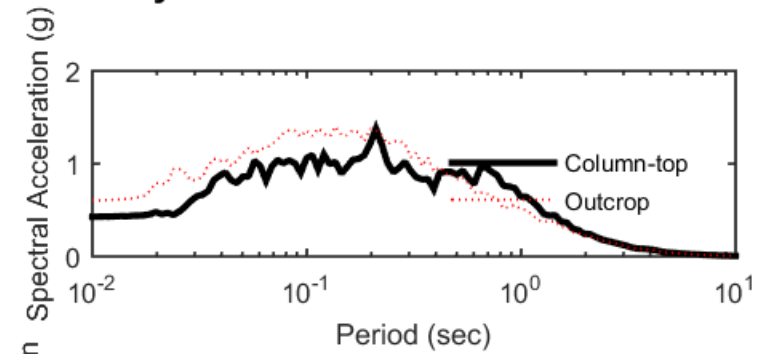
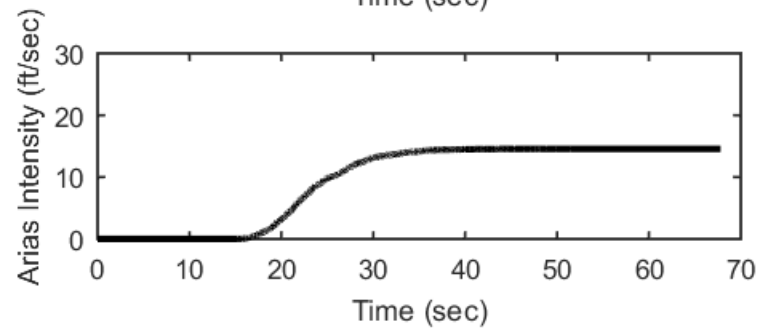
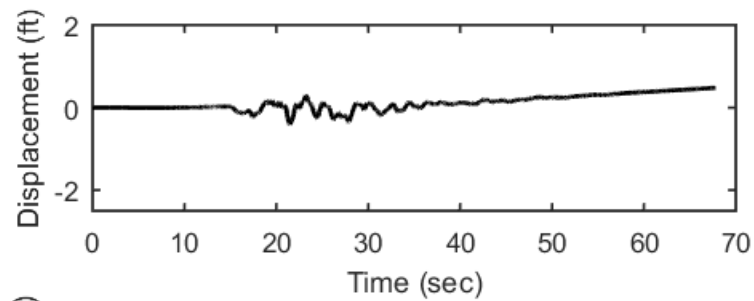
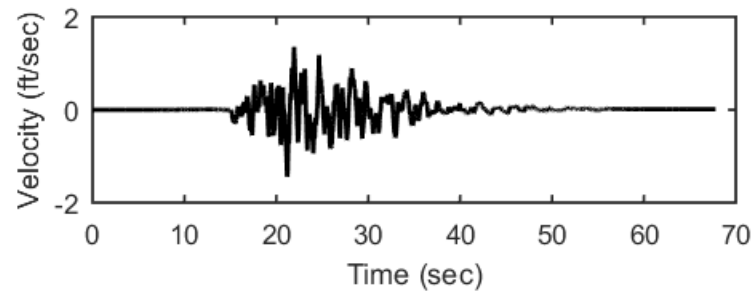
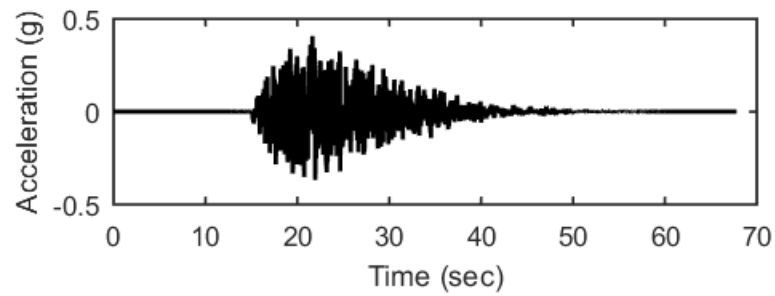
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



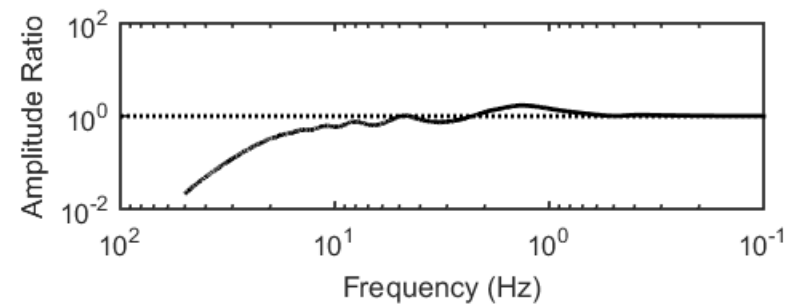
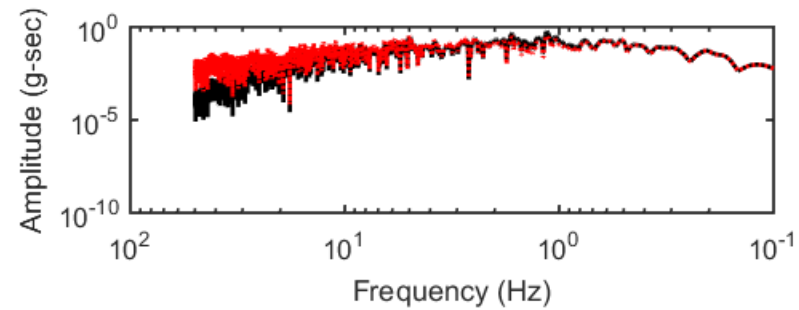
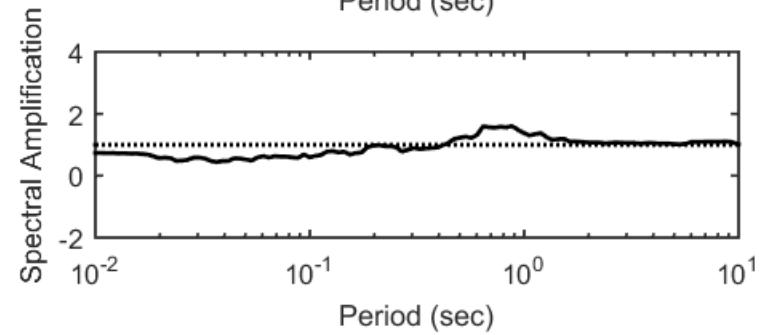
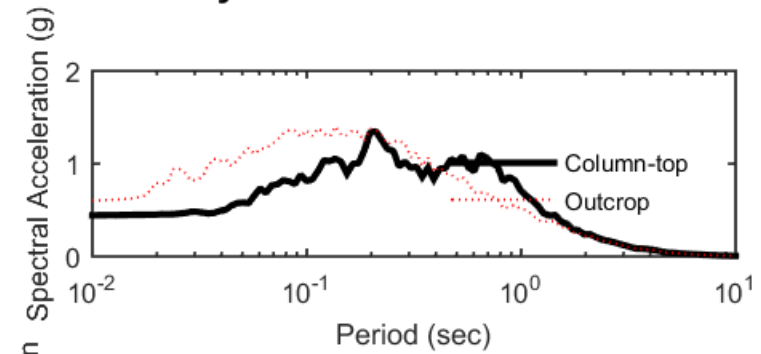
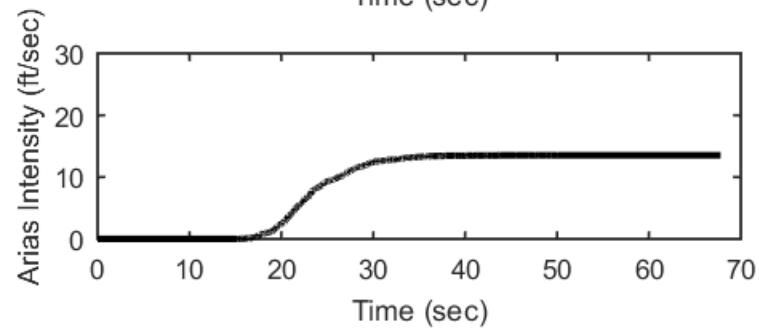
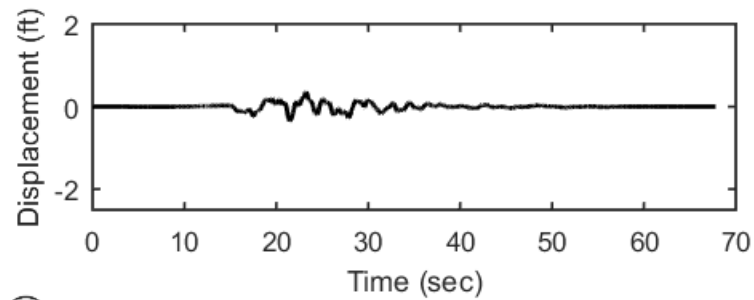
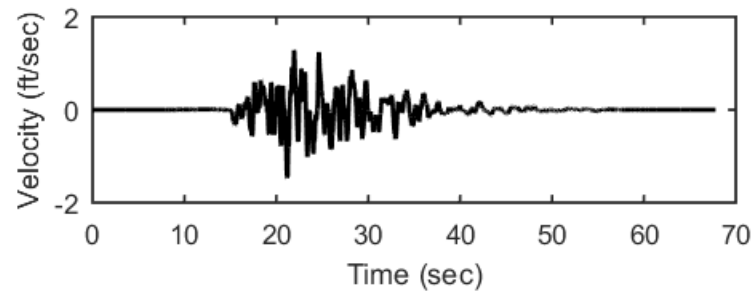
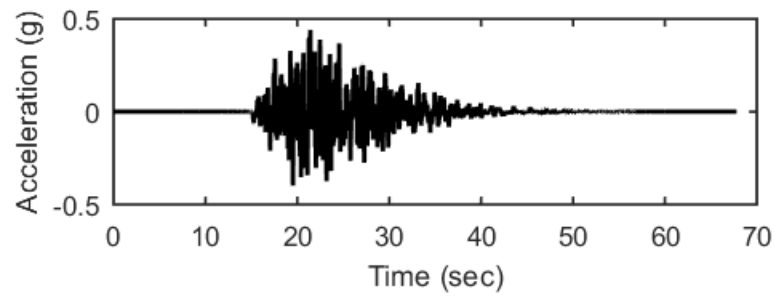
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



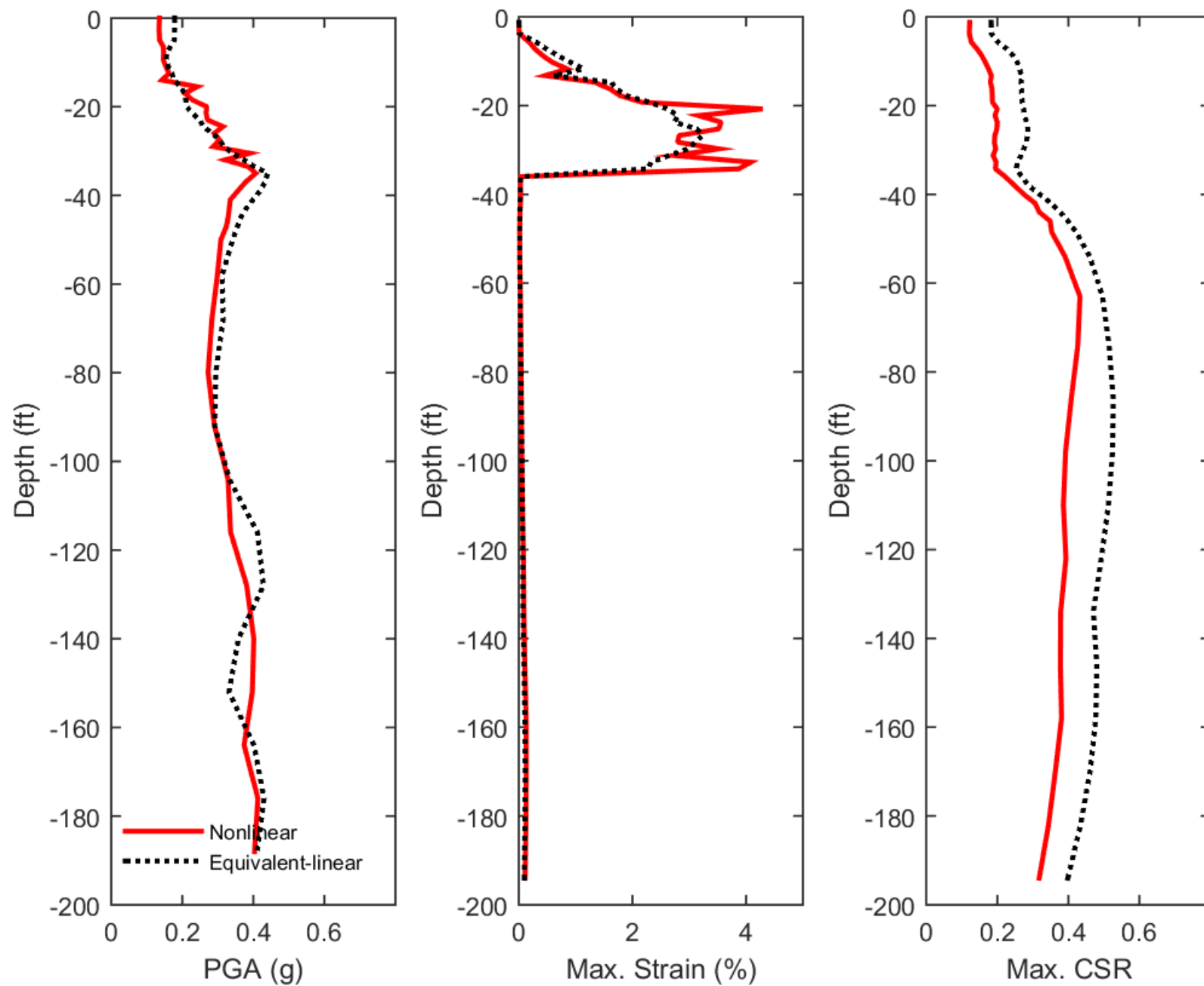
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



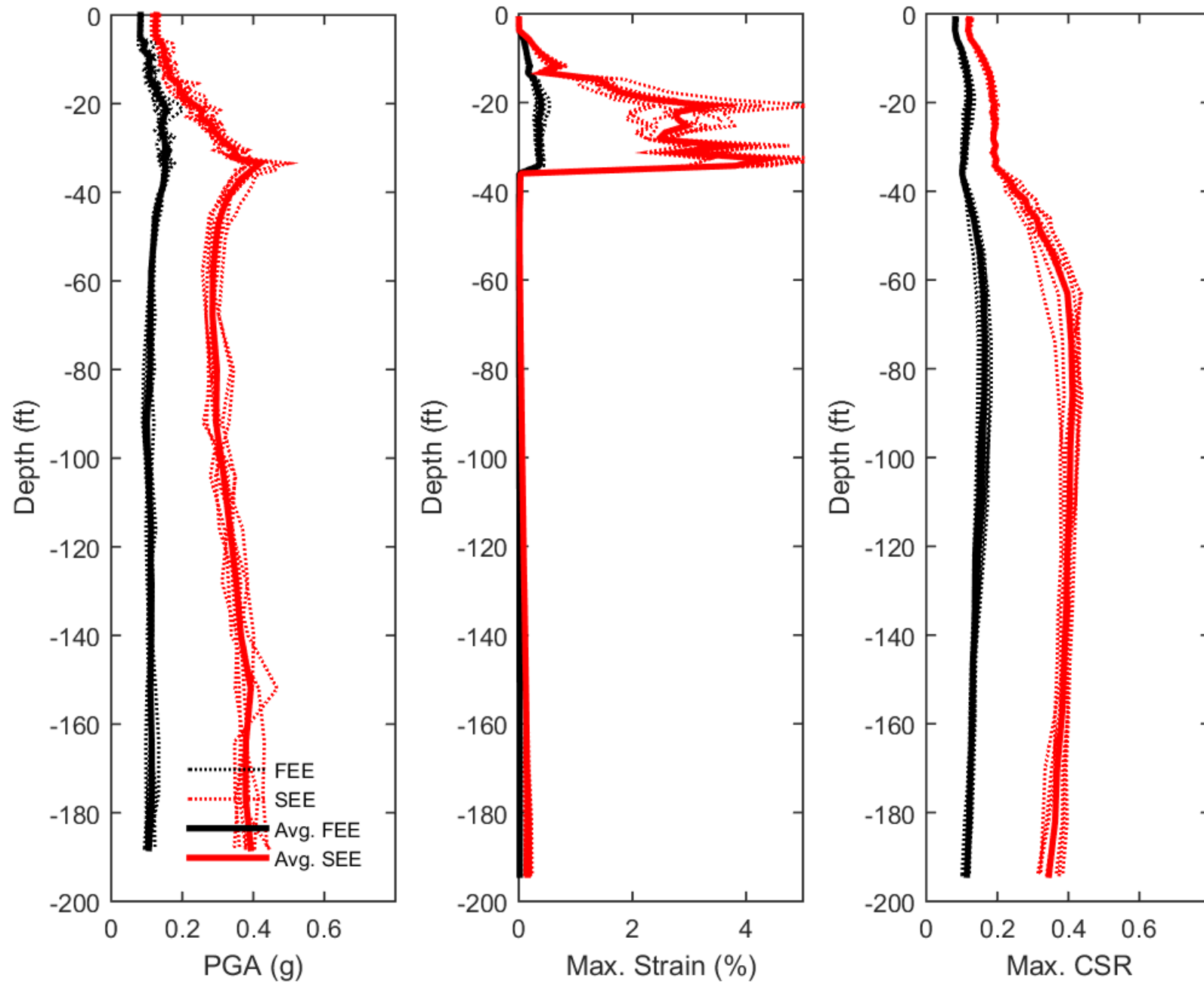
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



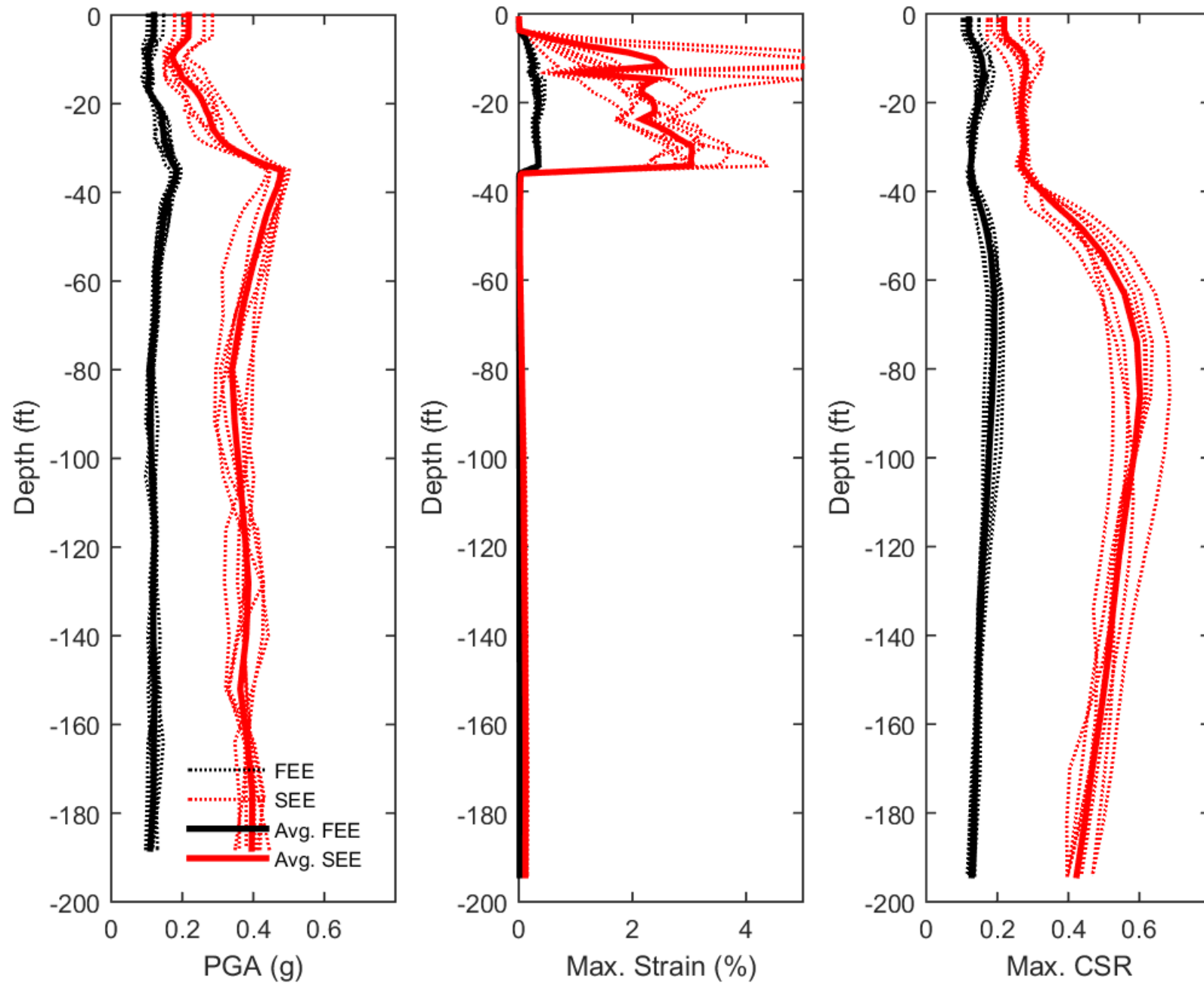
### Profile outputs for Motion: SEE7



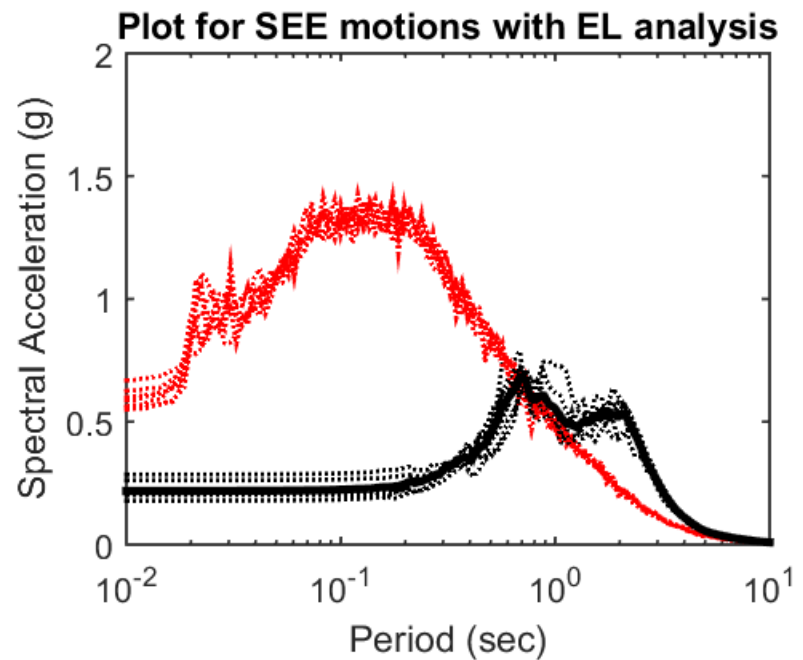
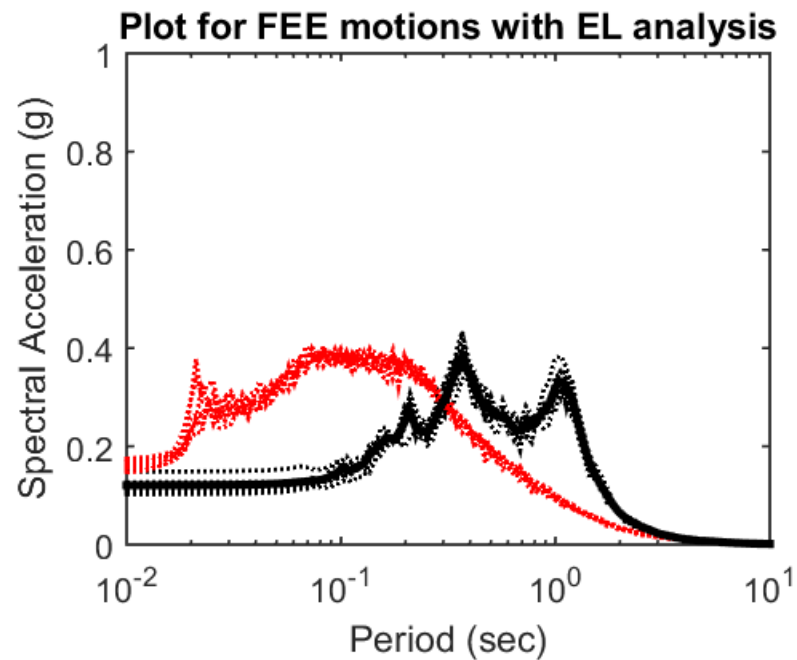
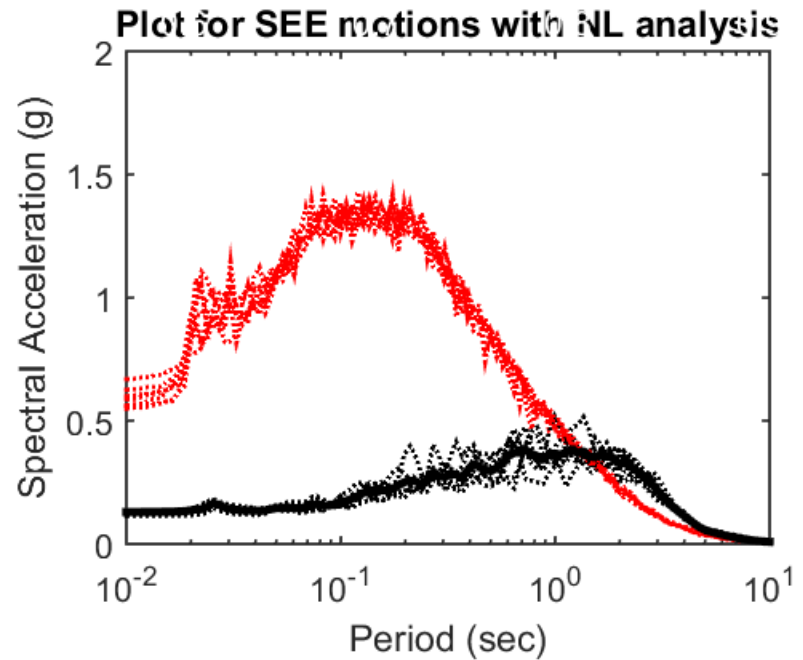
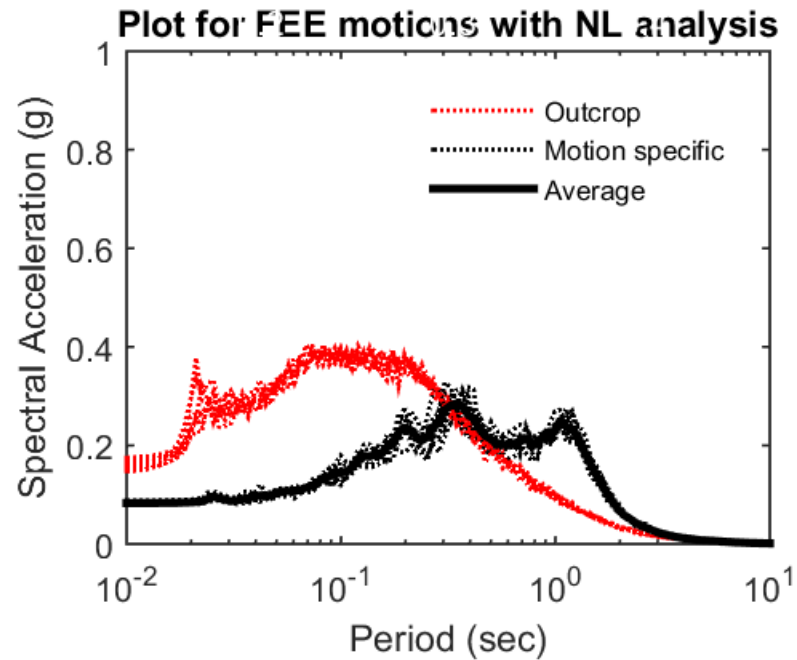
## Summary of the profile outputs for Nonlinear analysis



### Summary of the profile outputs for Equivalent-linear analysis

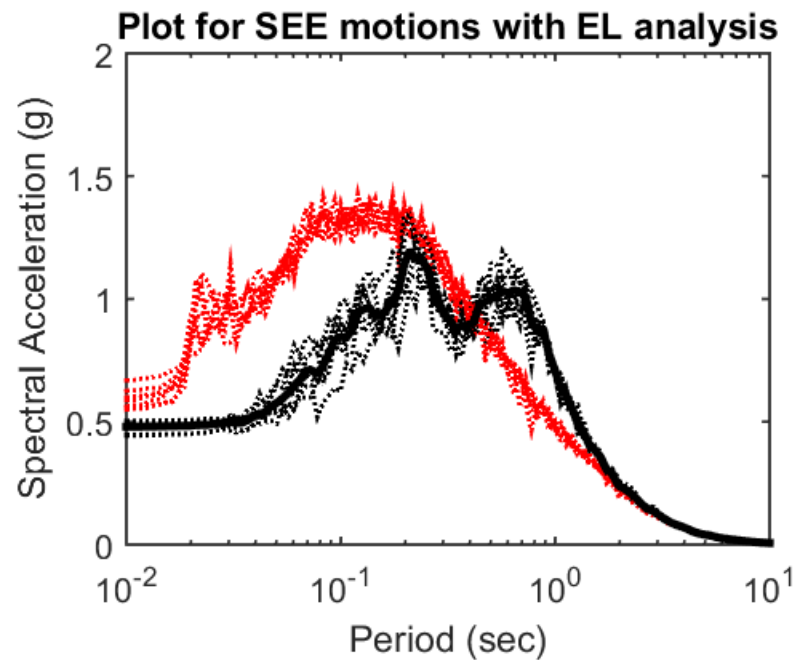
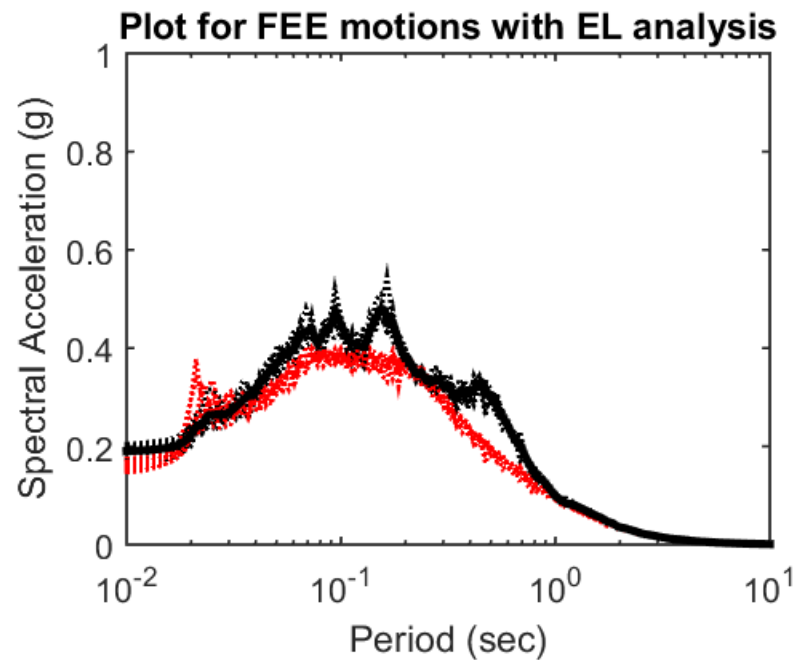
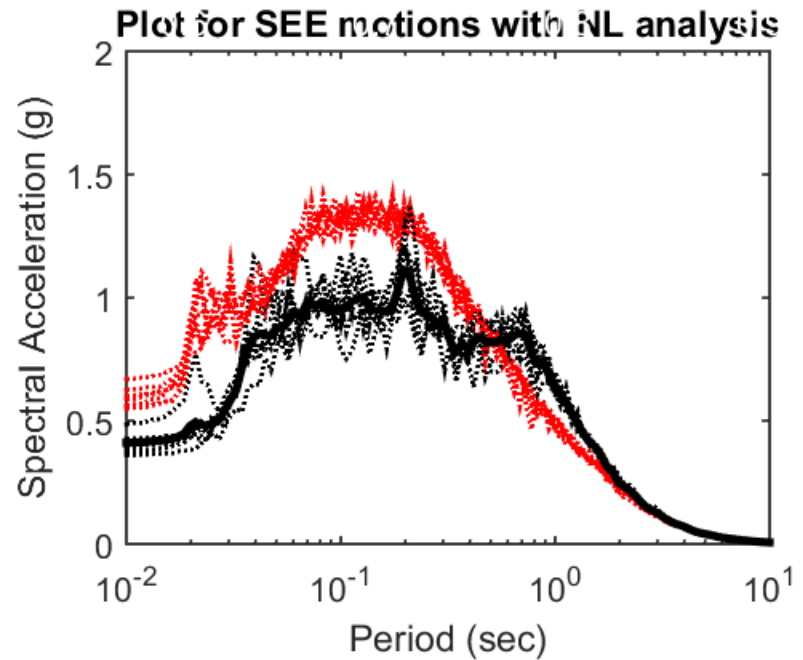
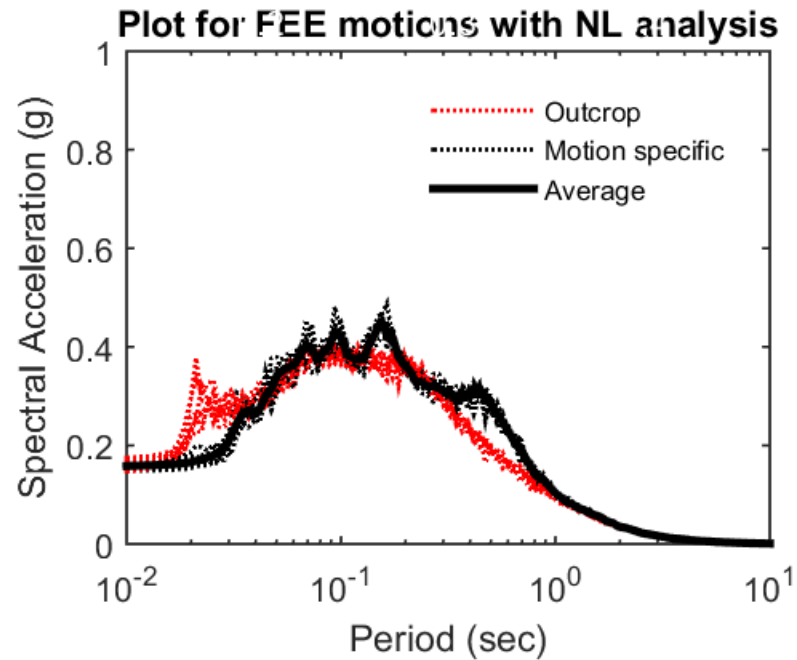


## Summary plots: RSA at ground surface

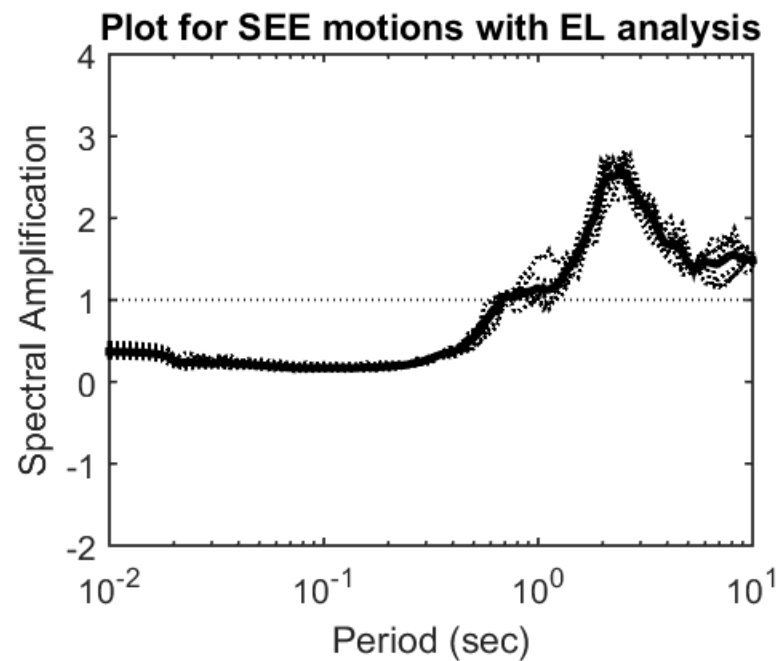
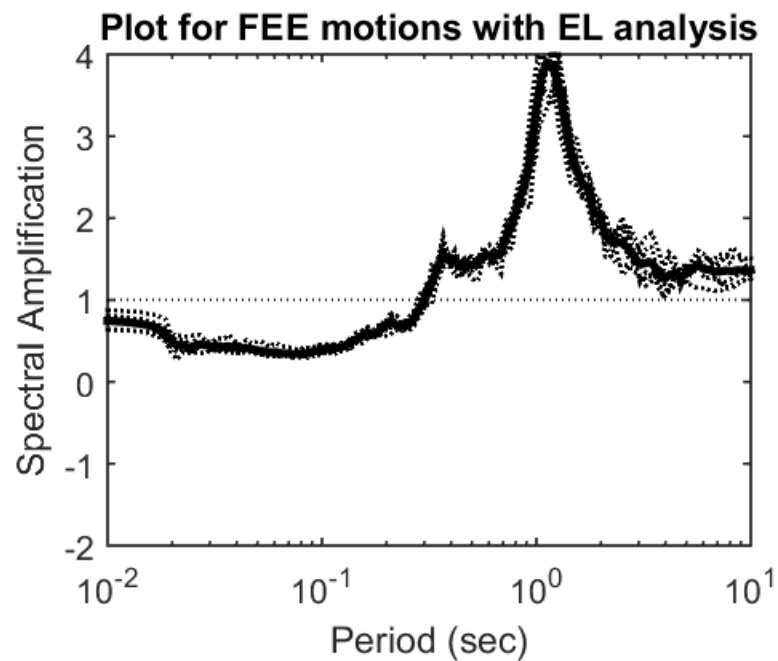
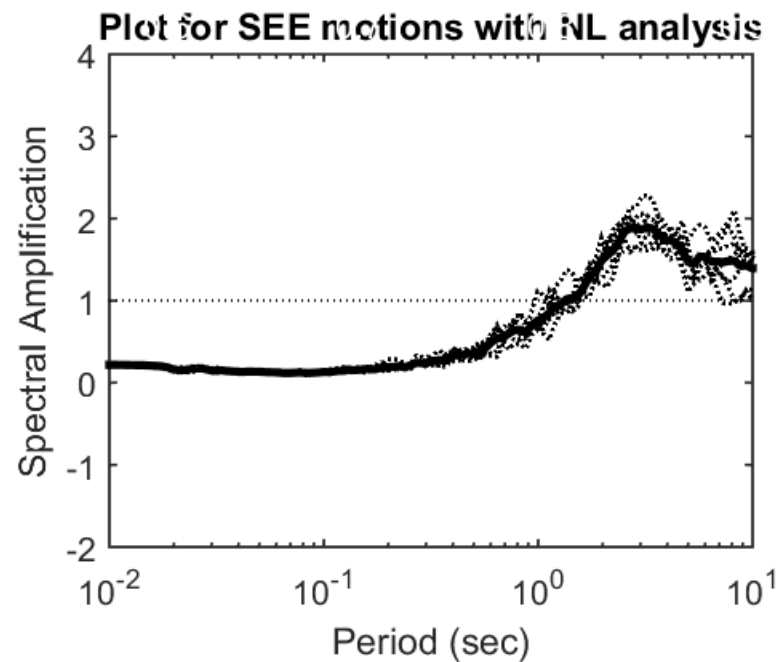
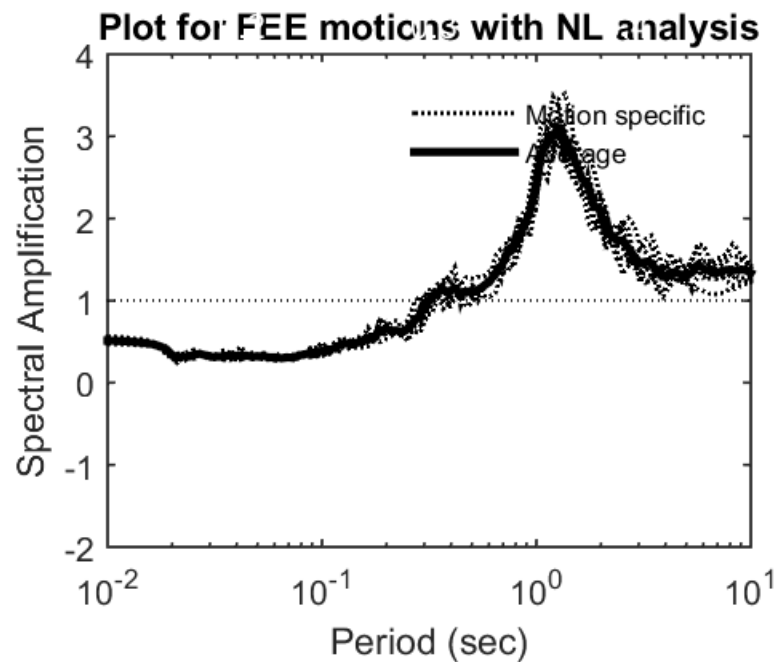




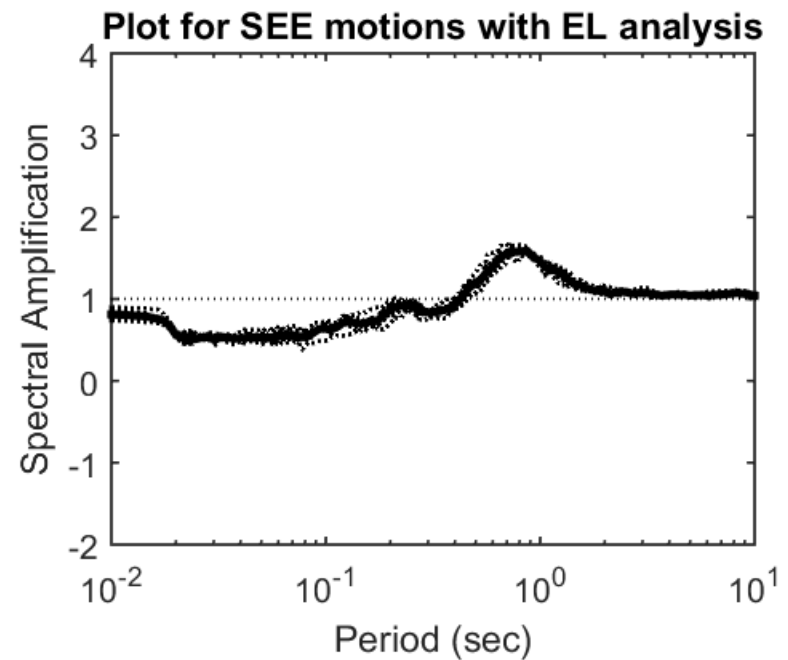
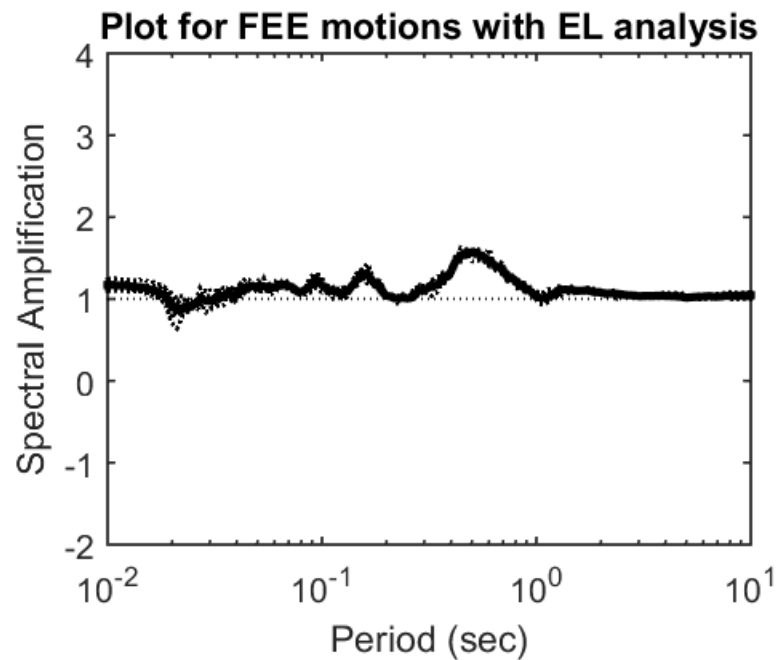
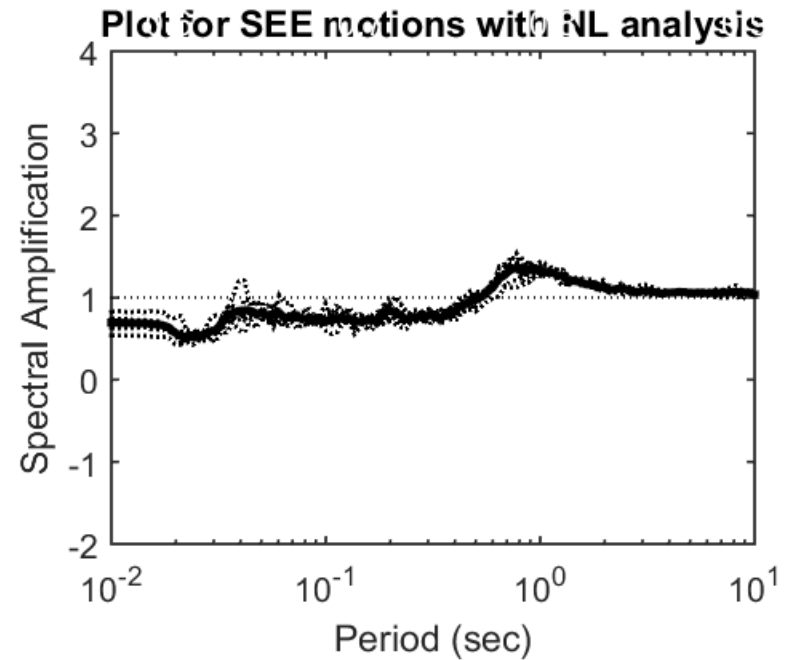
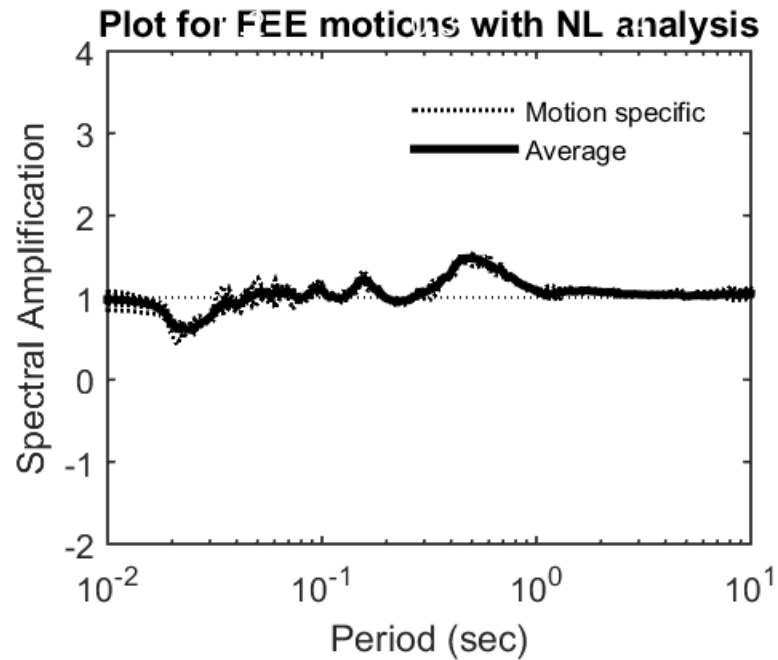
### Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

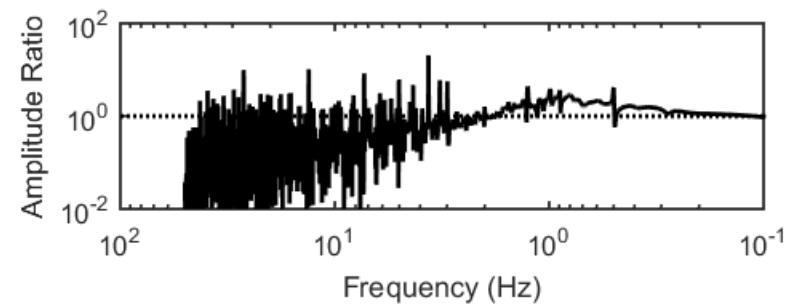
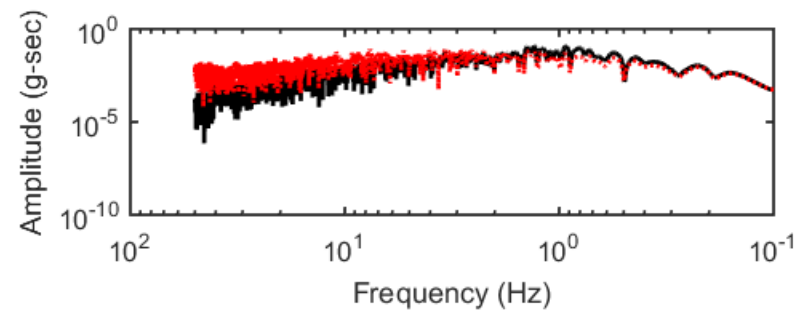
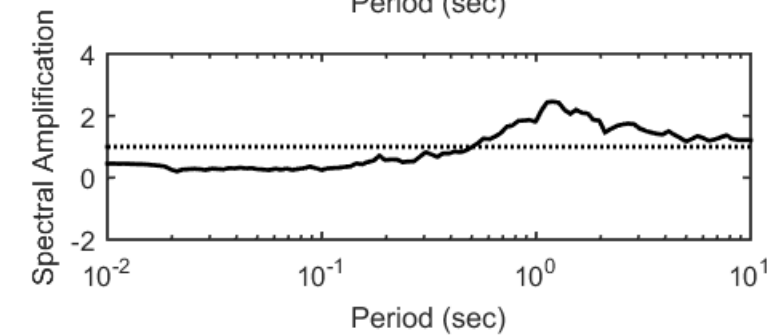
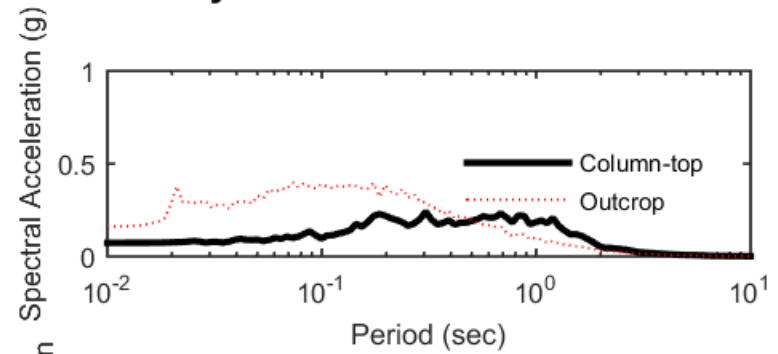
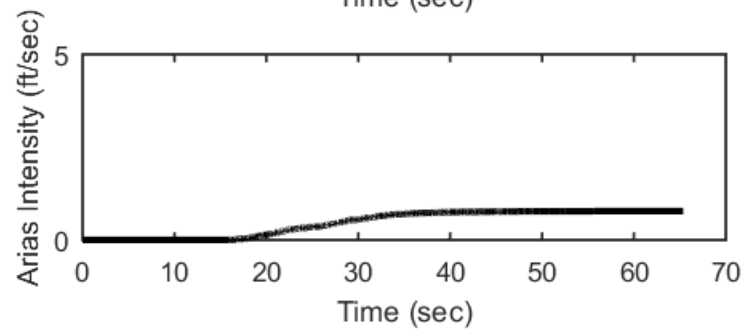
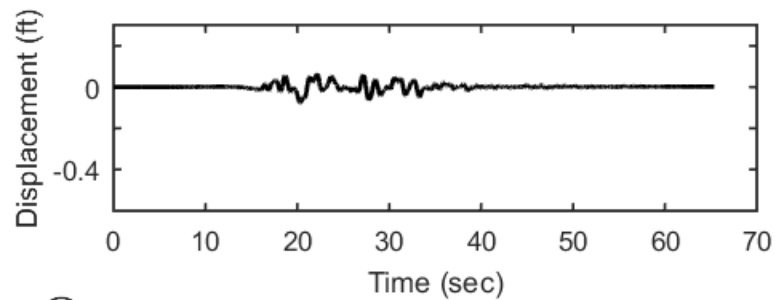
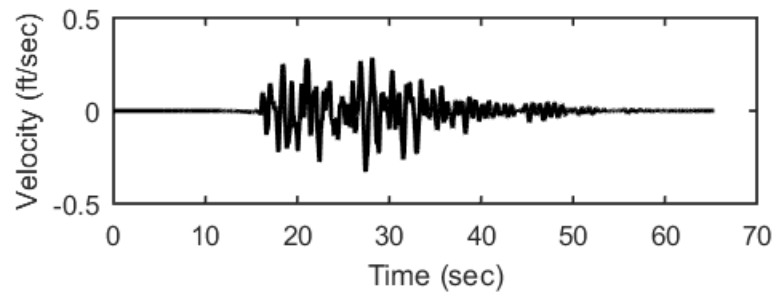
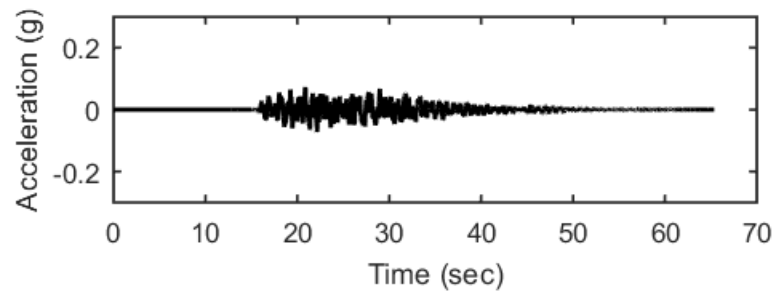


## Summary plots: Spectral amplification at top of Marl

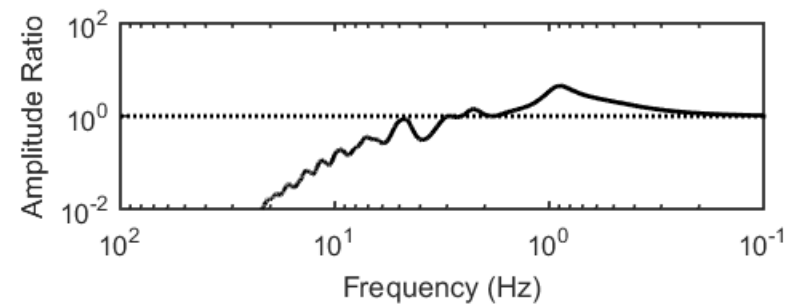
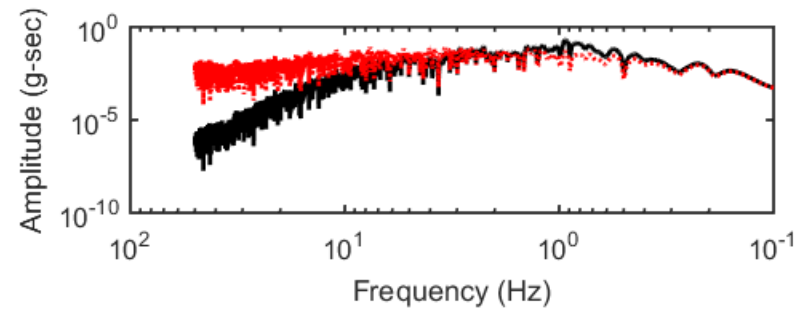
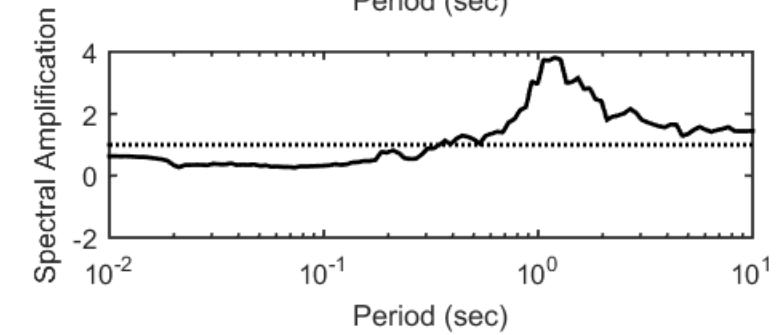
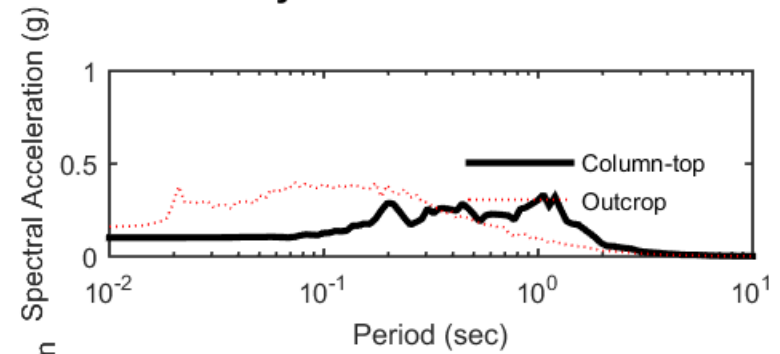
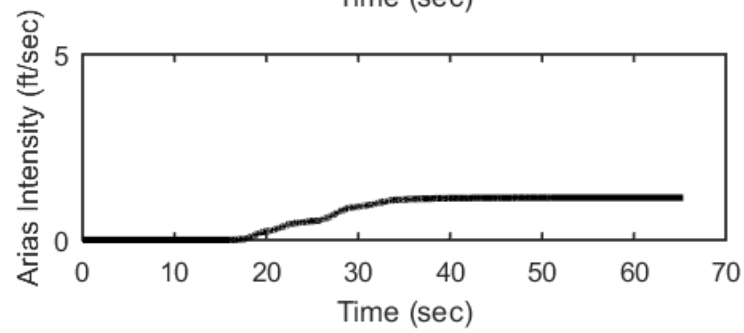
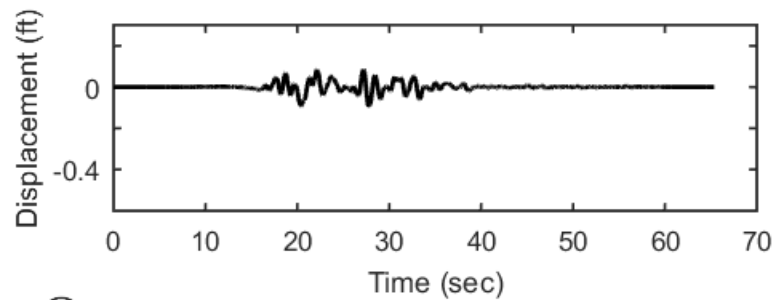
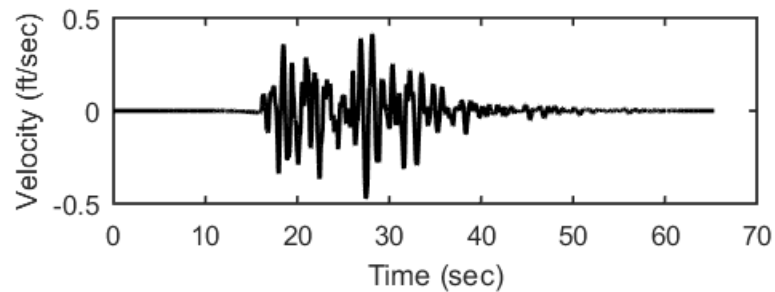
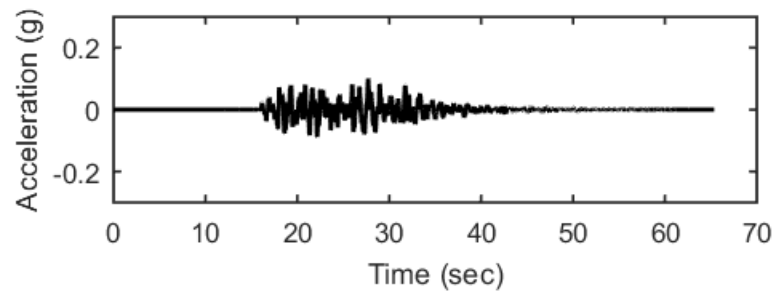


## **500 FT MODEL**

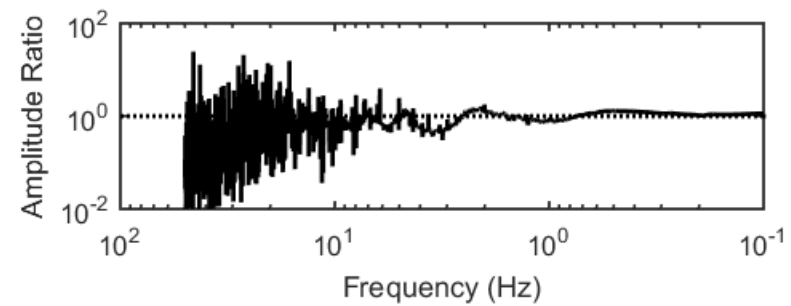
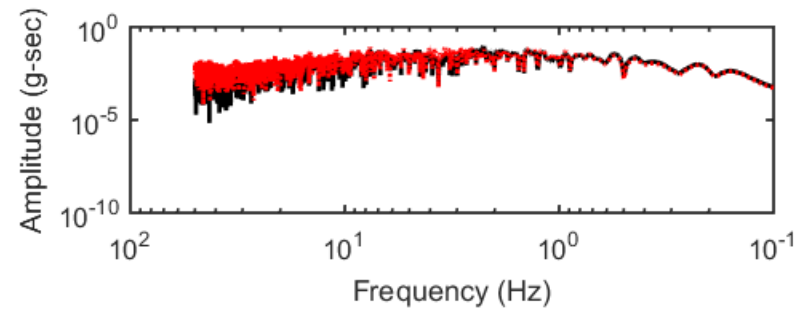
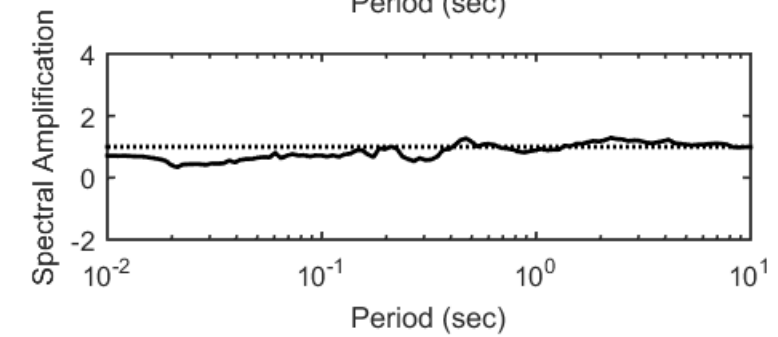
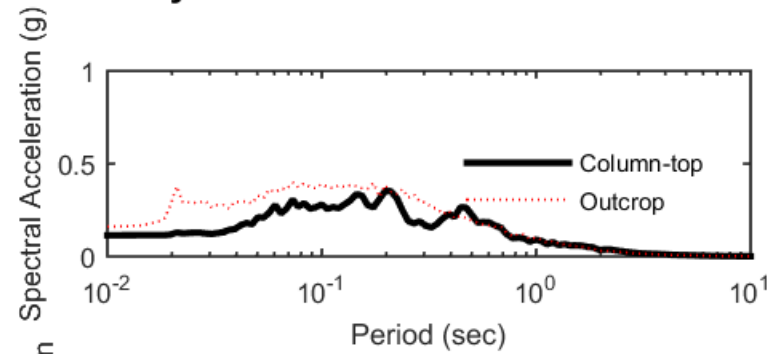
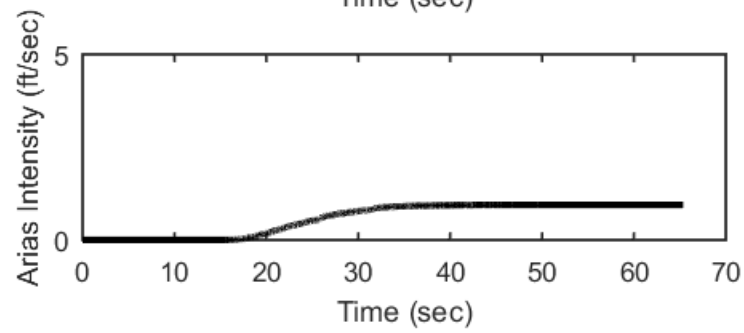
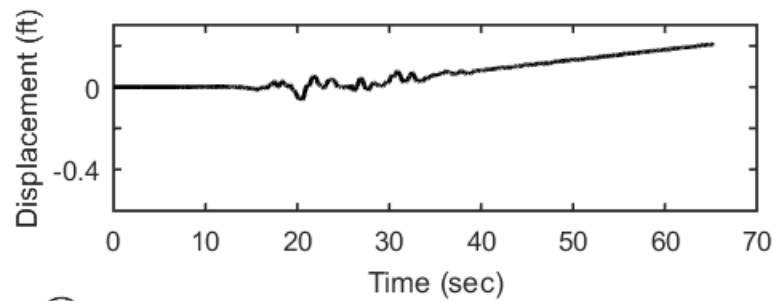
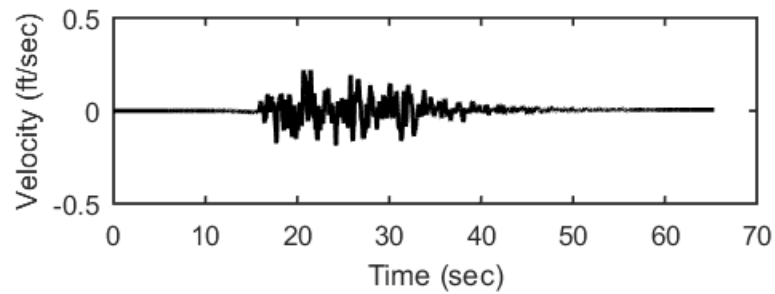
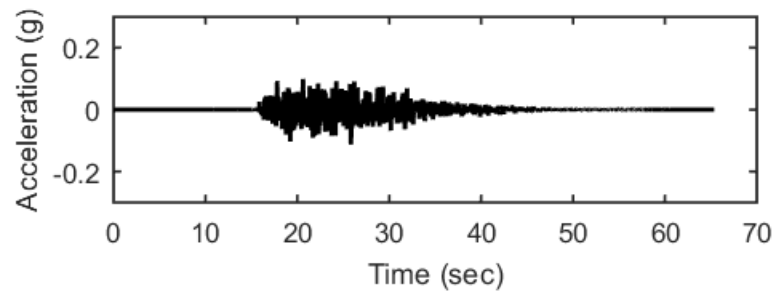
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



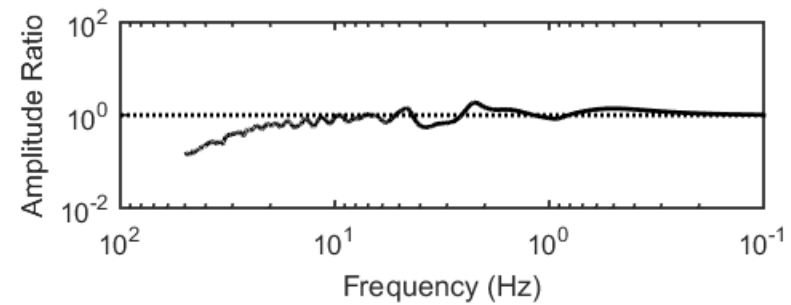
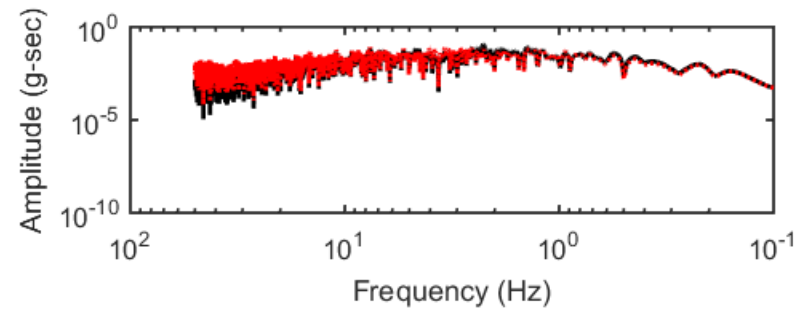
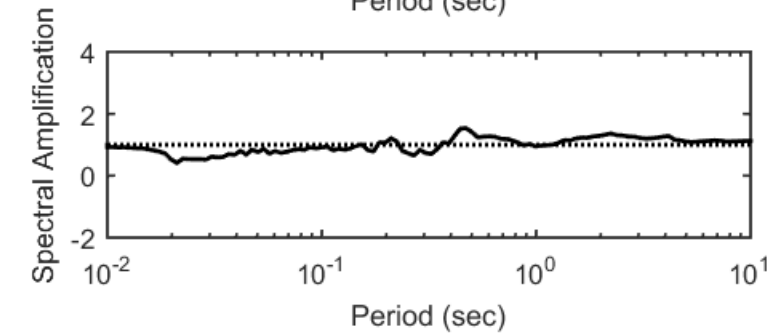
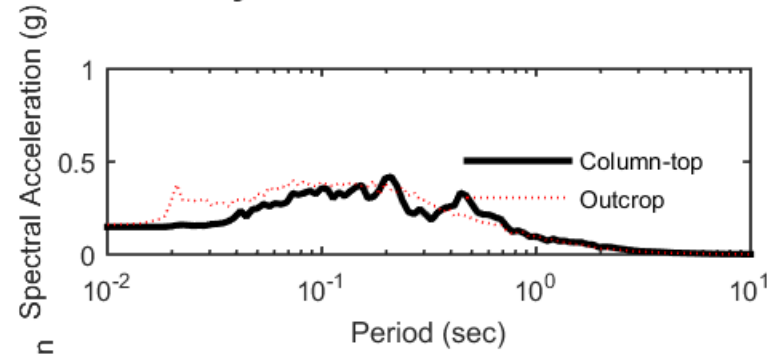
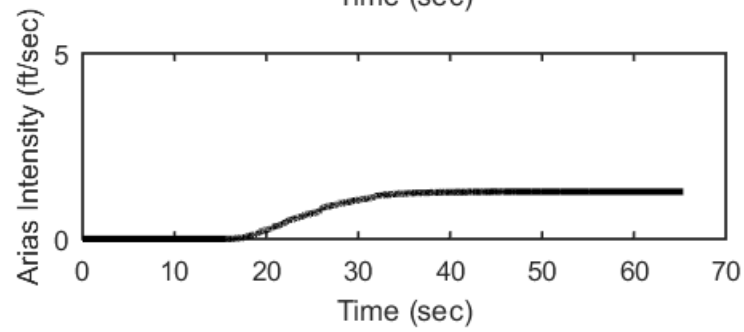
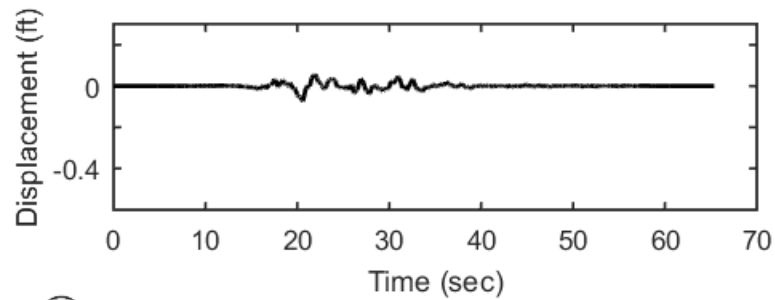
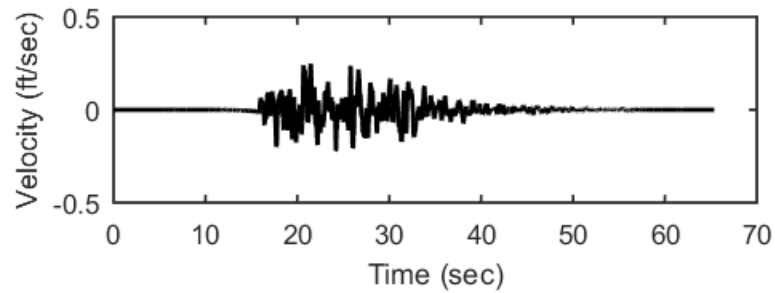
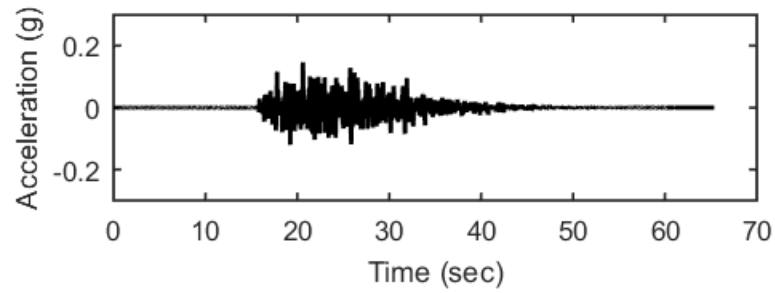
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1

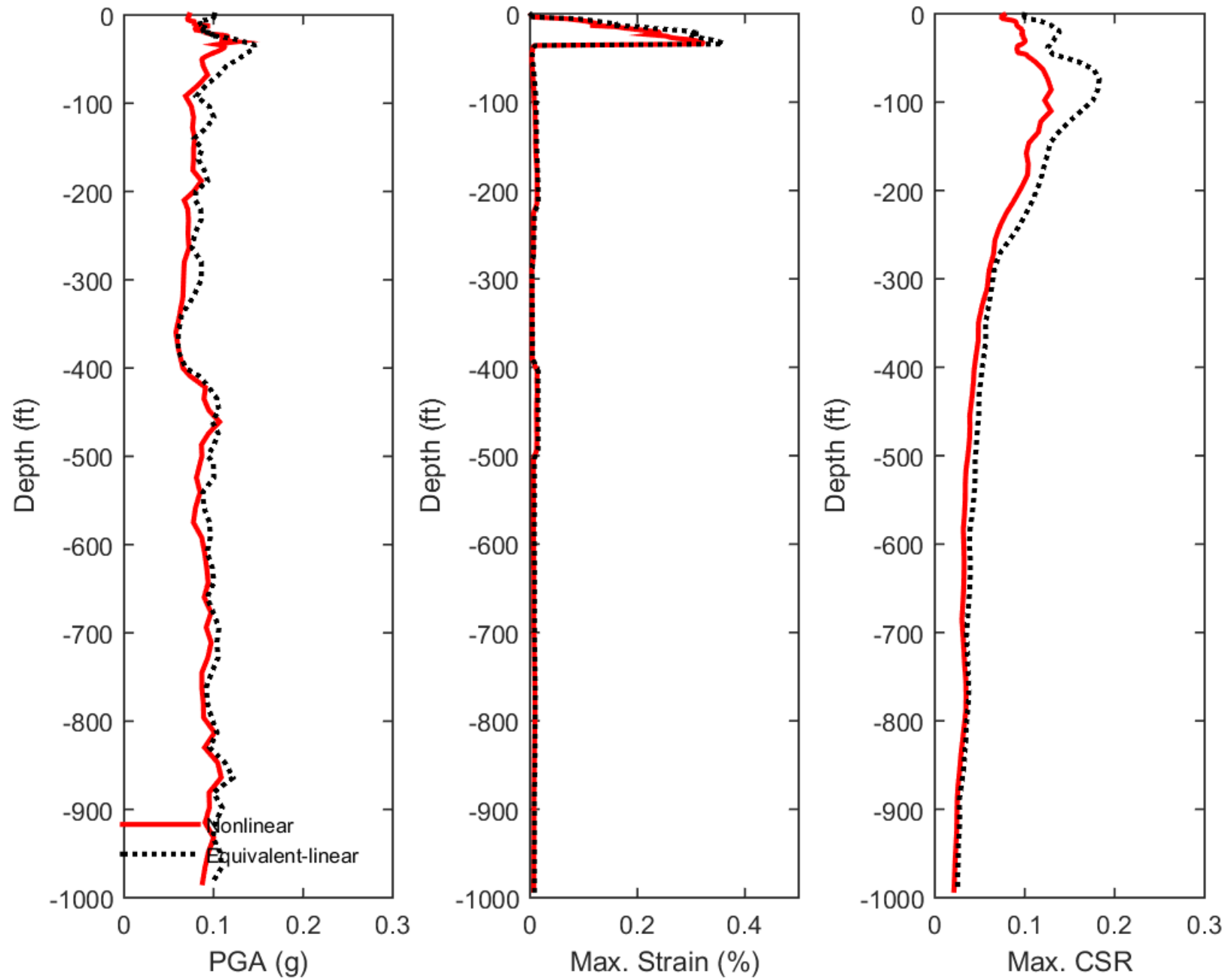


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1

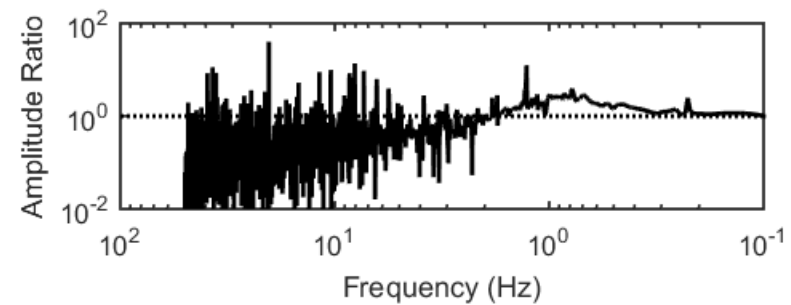
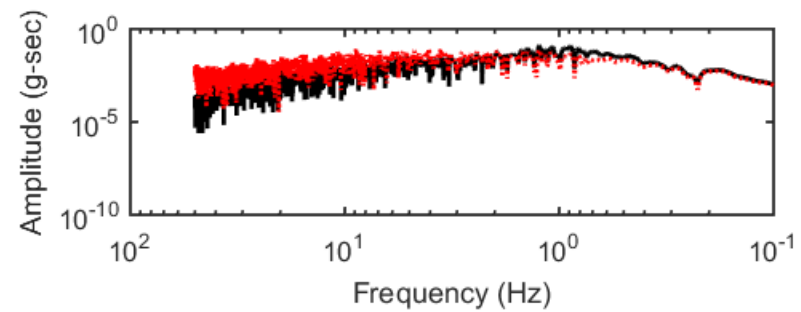
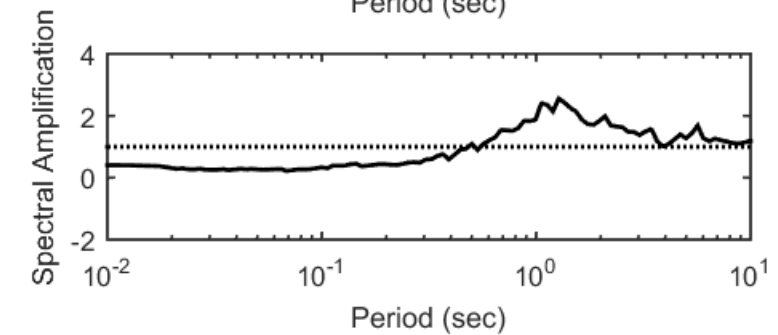
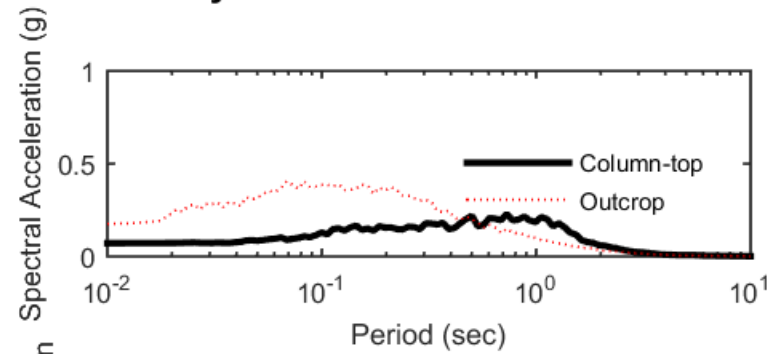
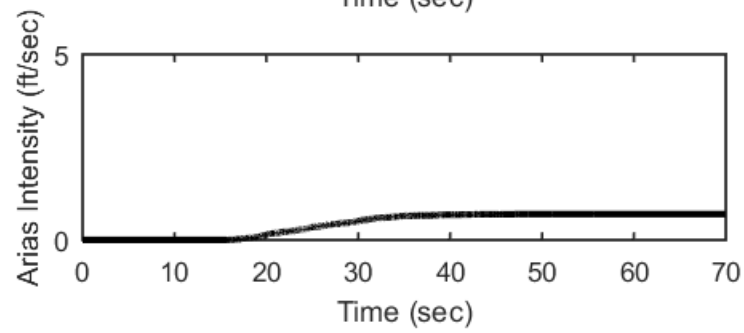
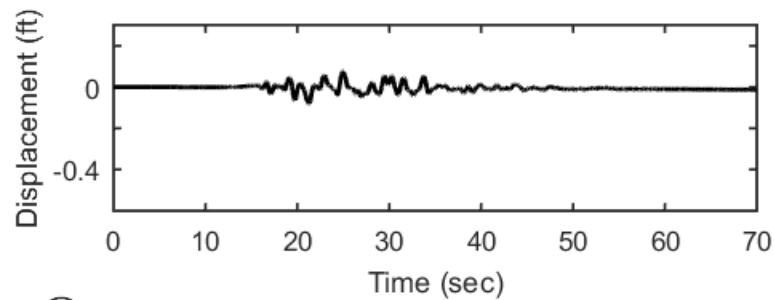
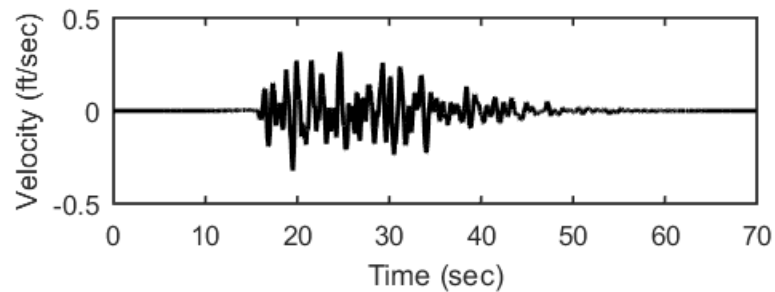
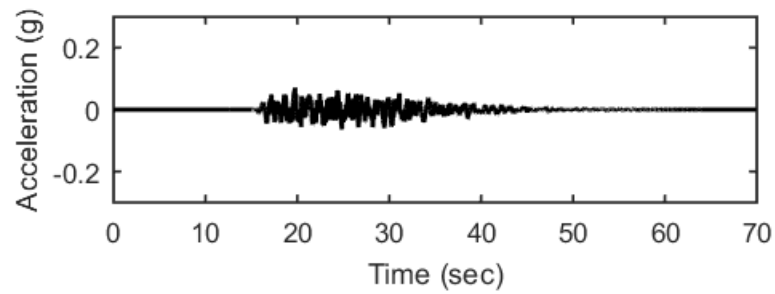




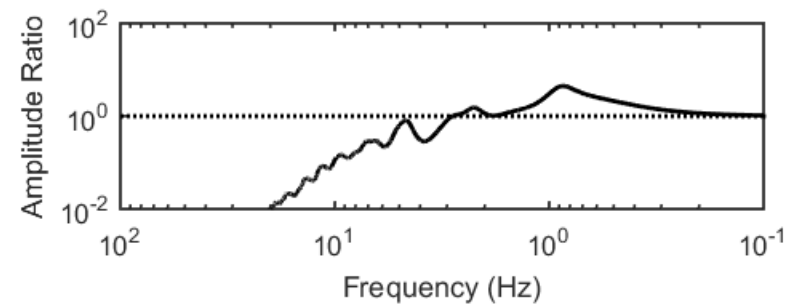
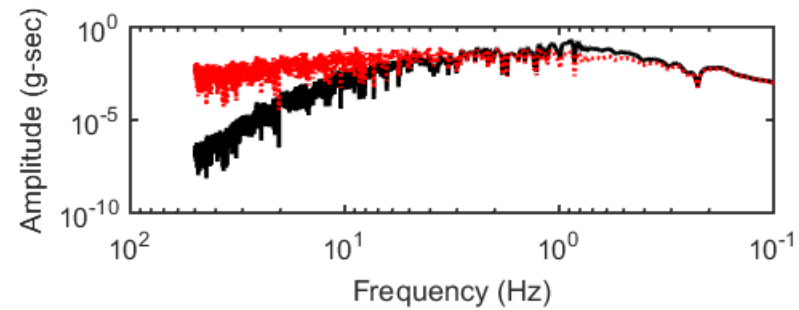
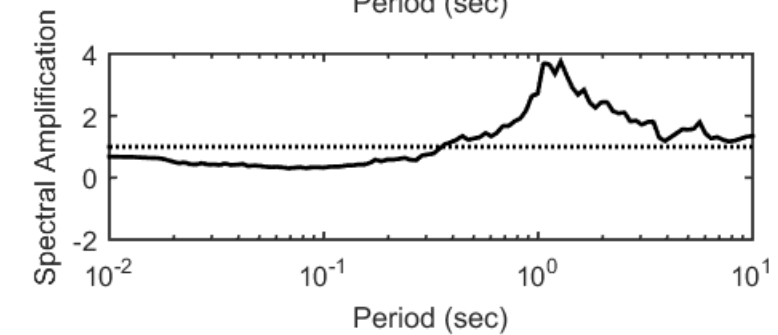
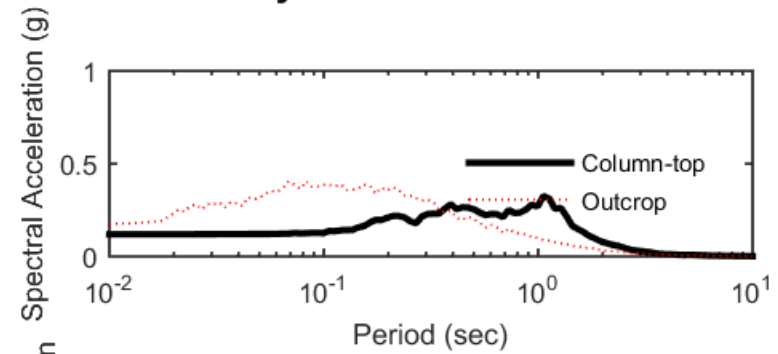
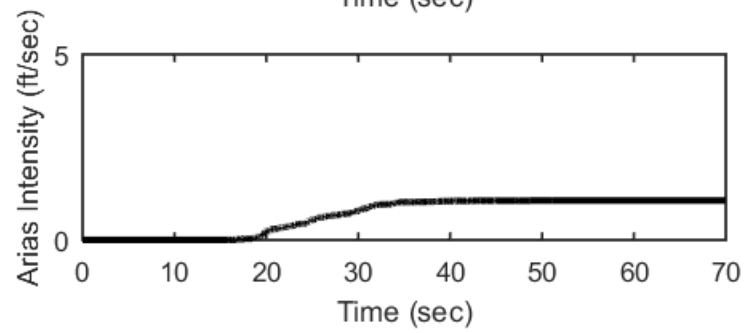
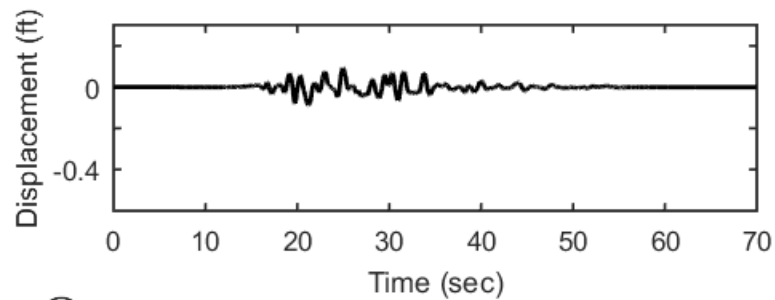
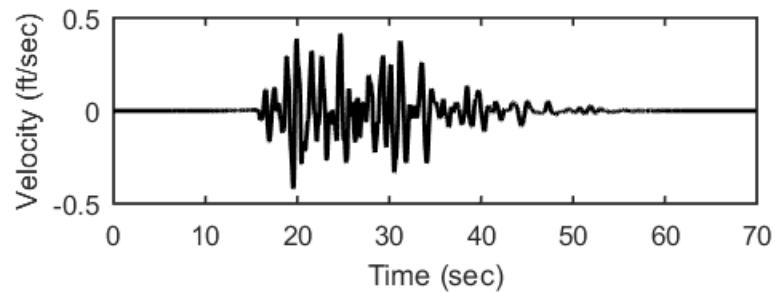
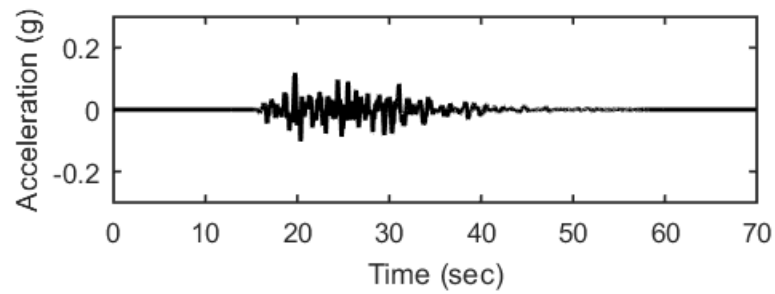
### Profile outputs for Motion: FEE1



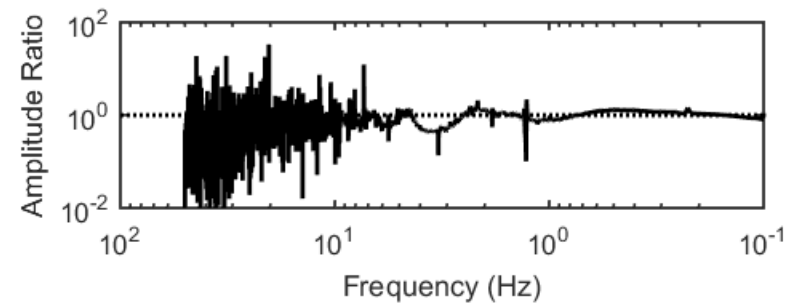
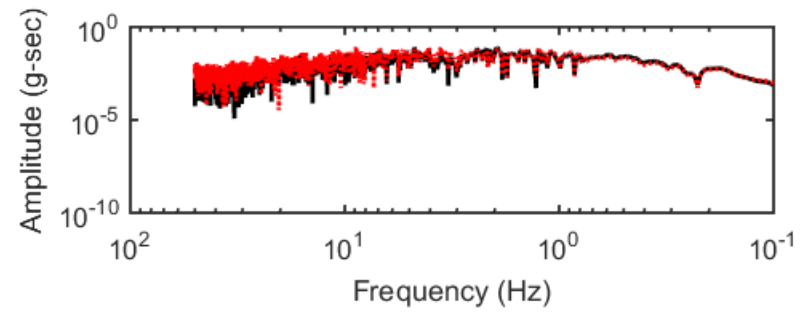
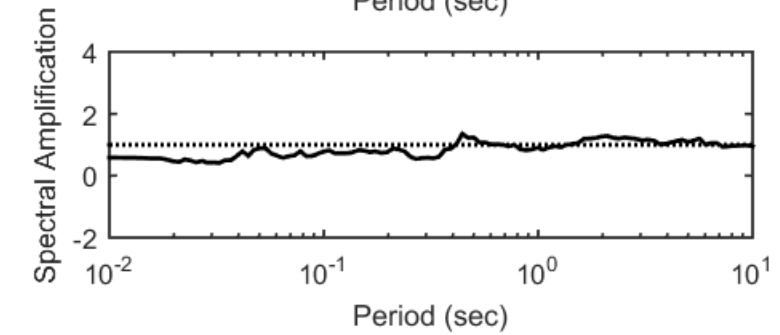
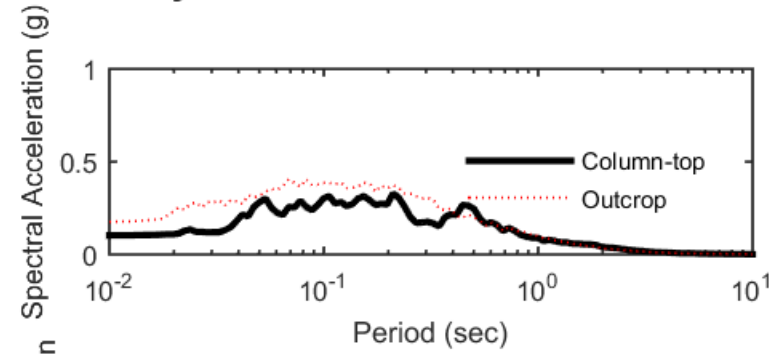
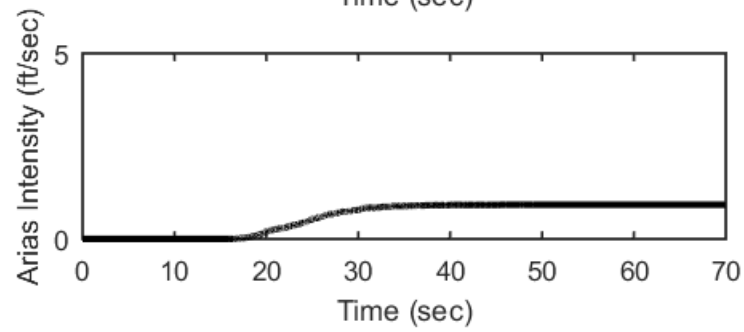
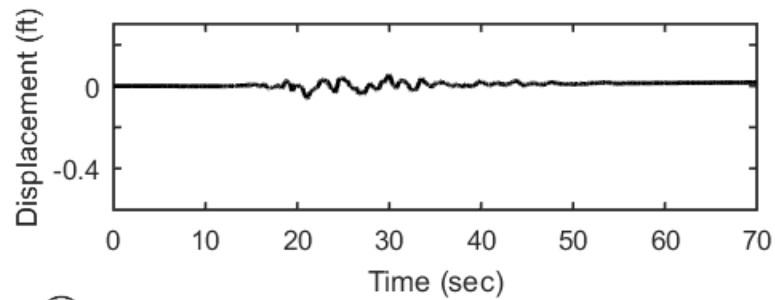
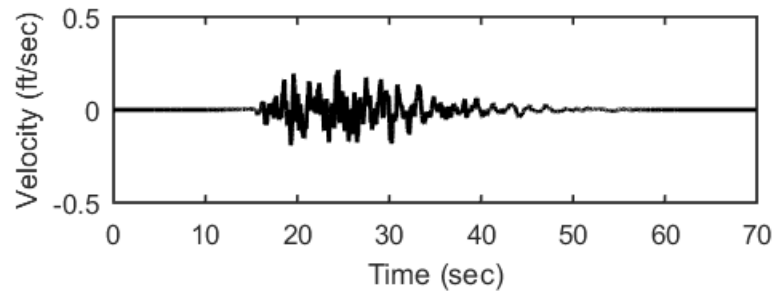
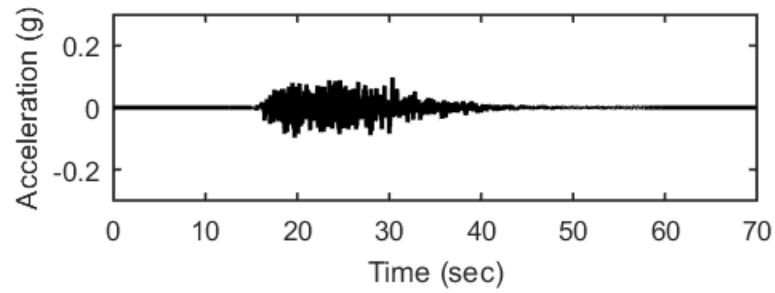
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



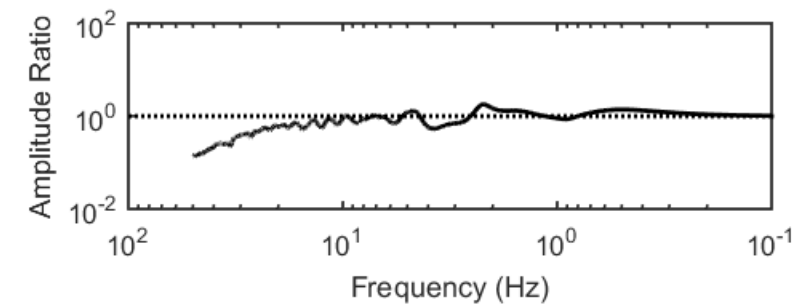
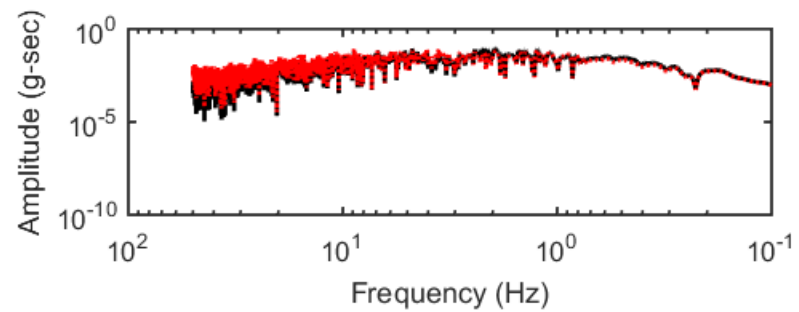
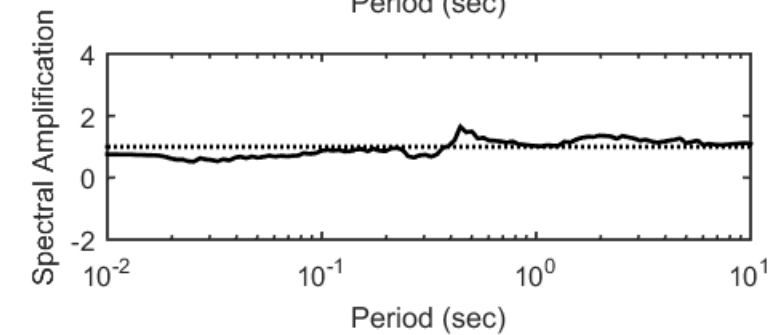
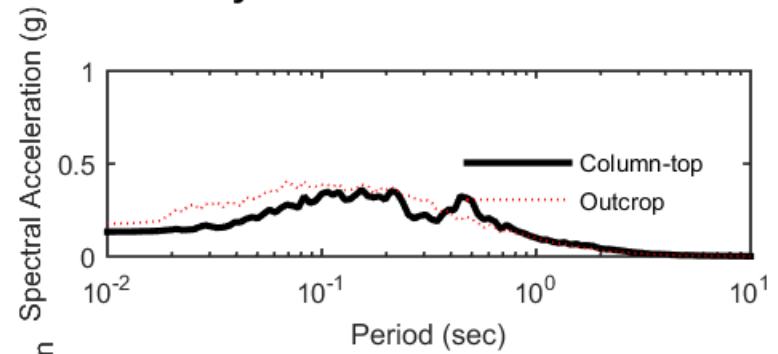
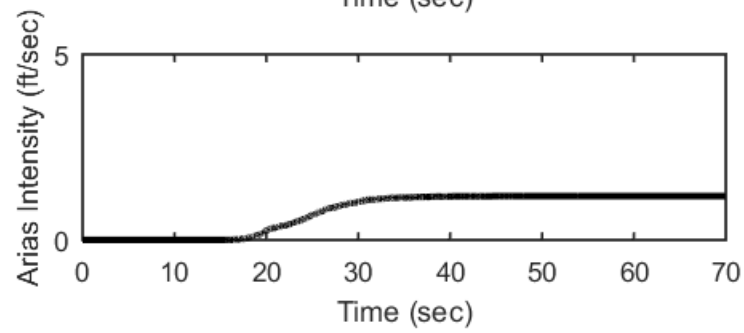
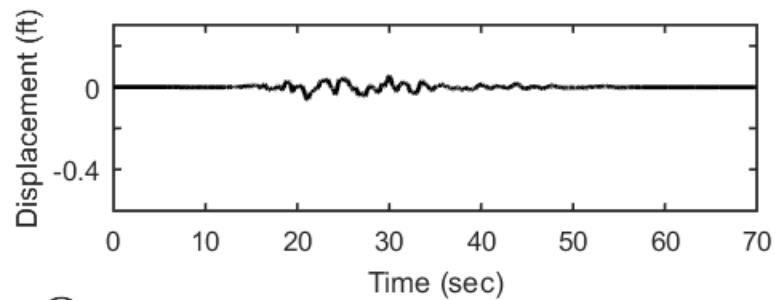
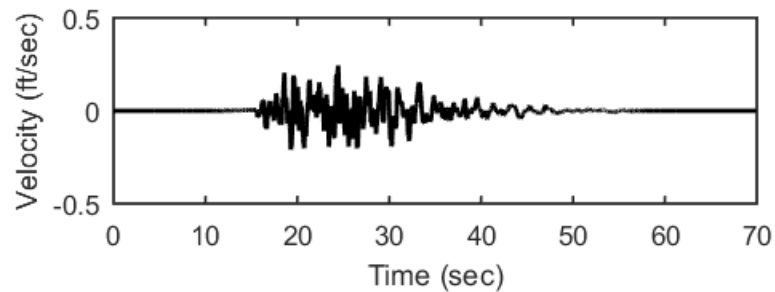
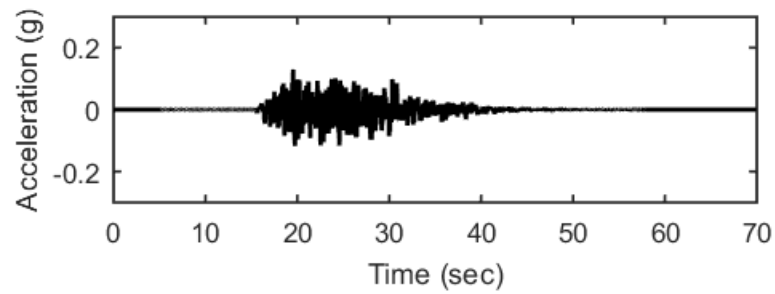
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



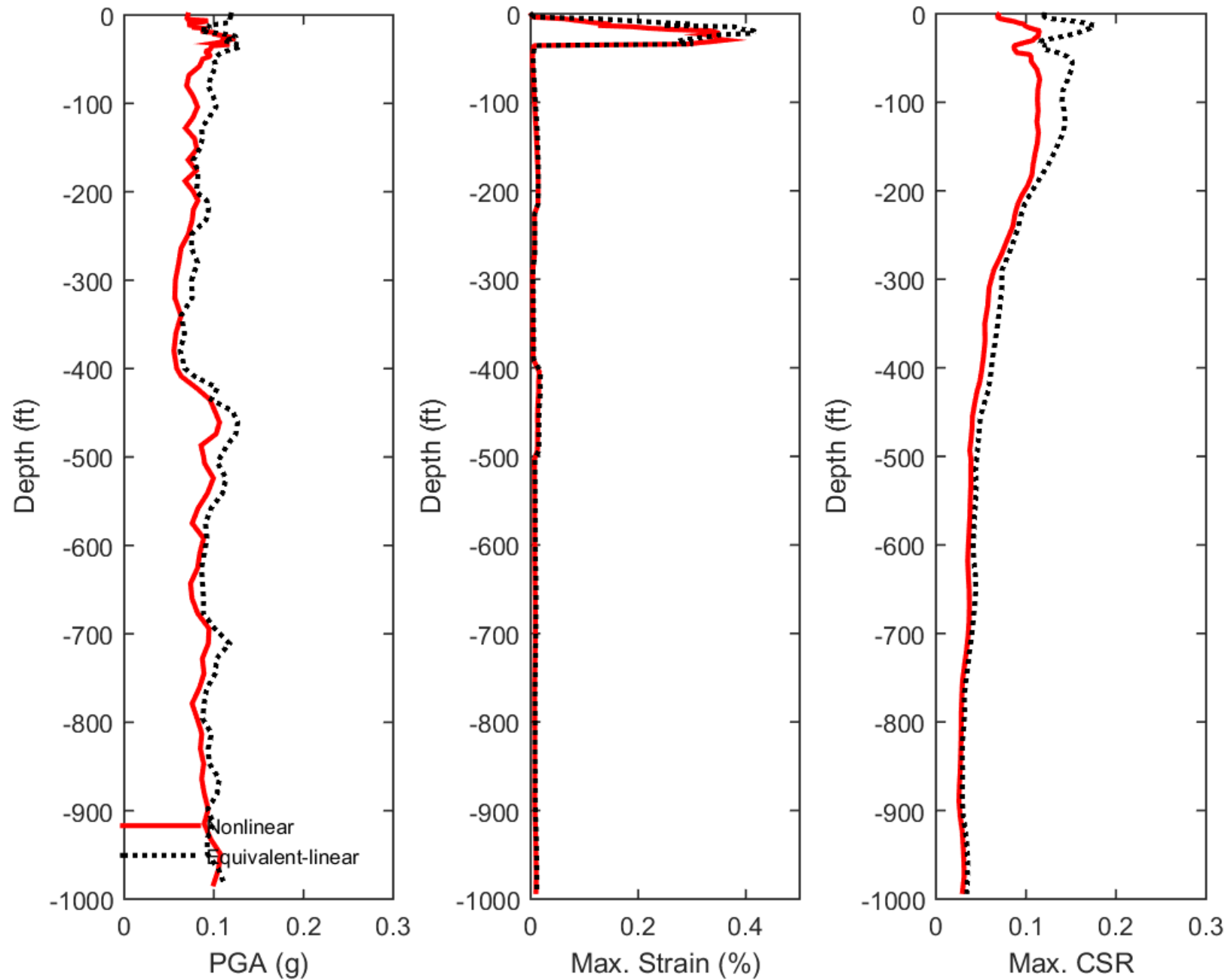
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



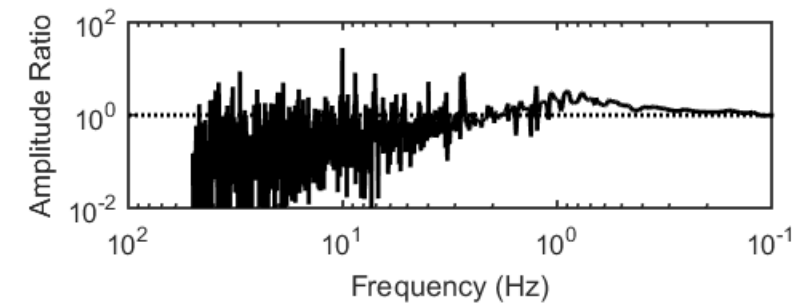
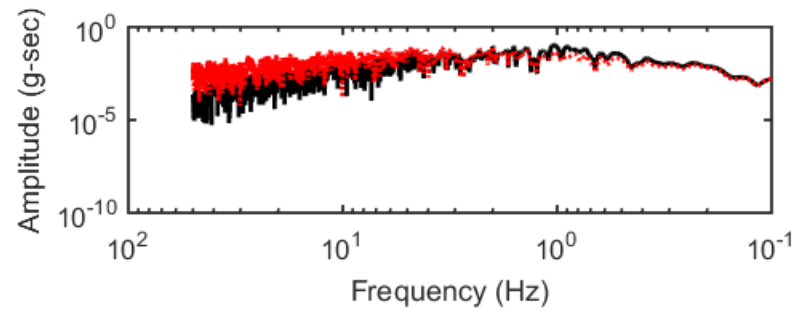
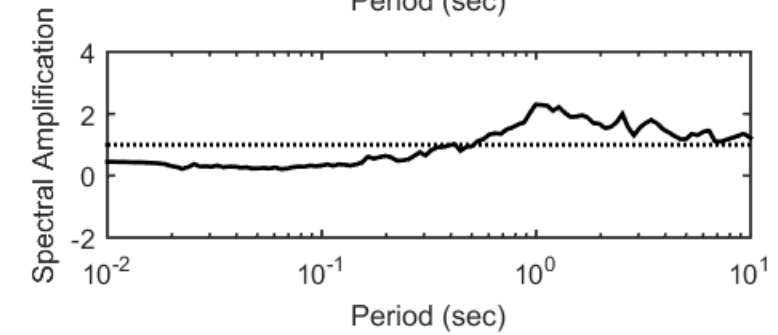
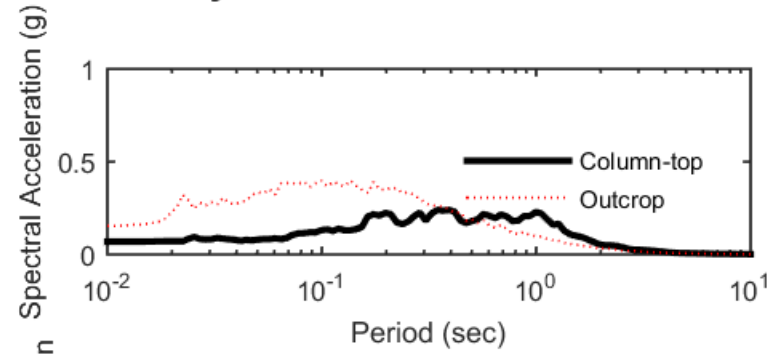
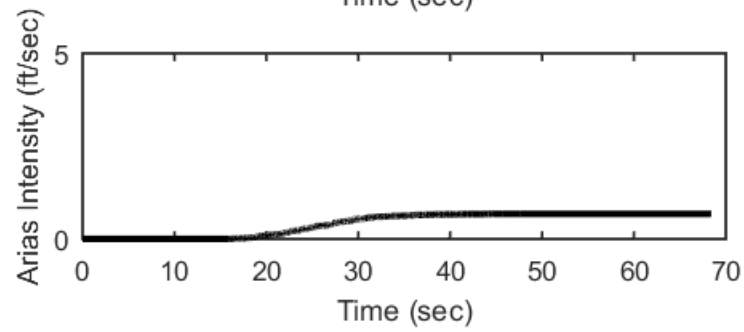
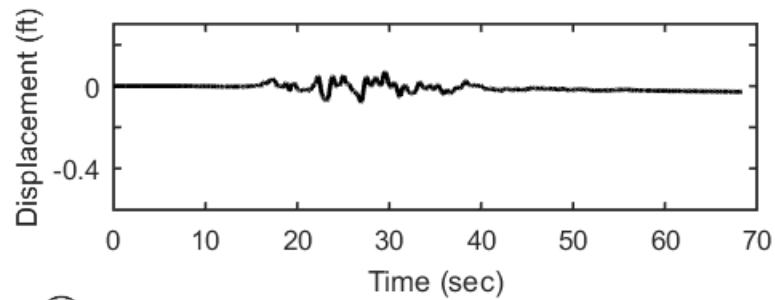
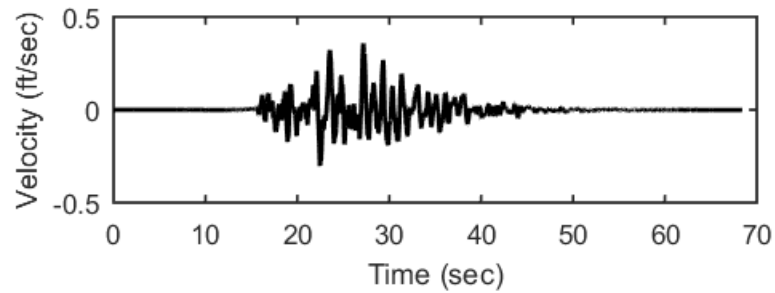
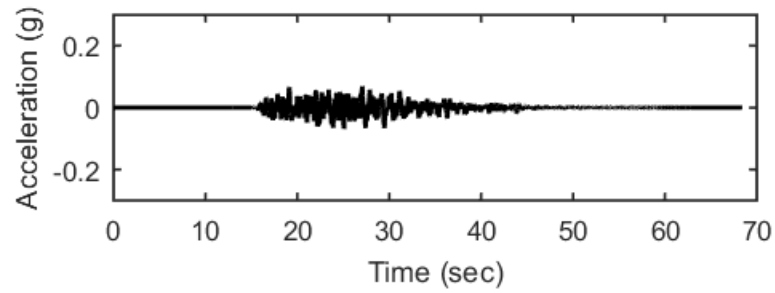
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



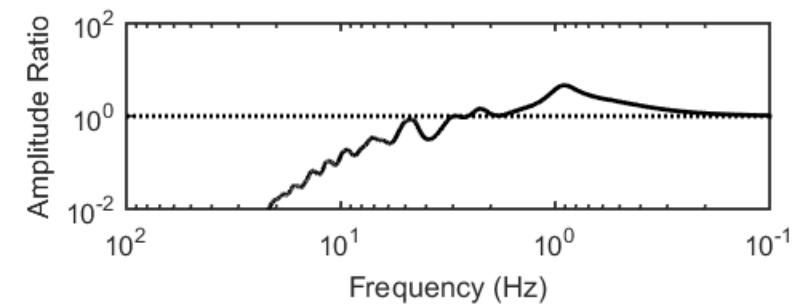
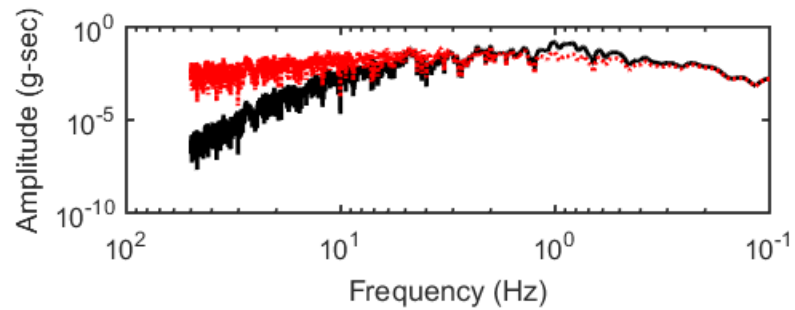
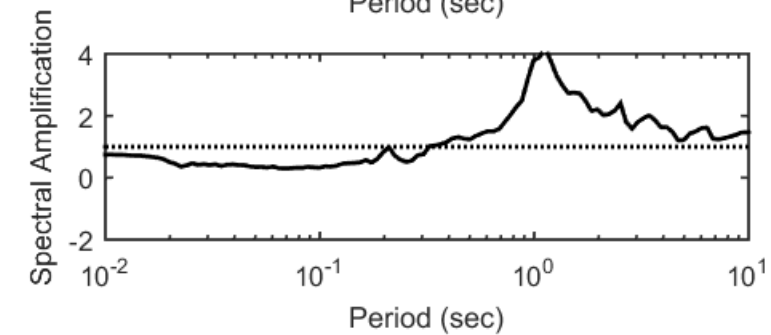
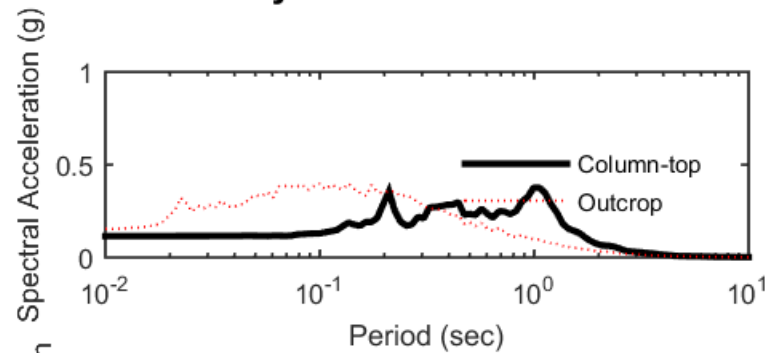
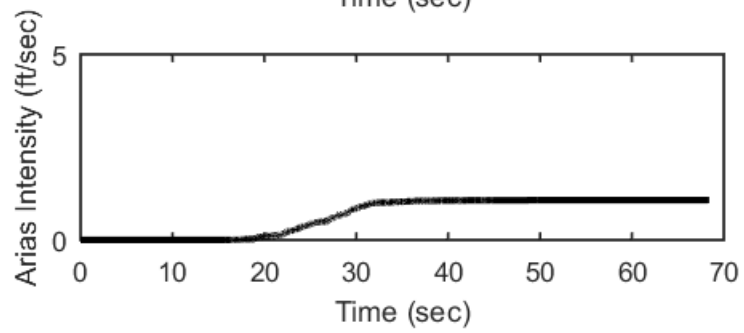
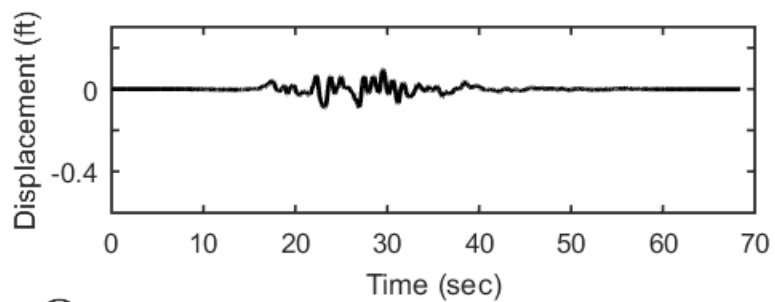
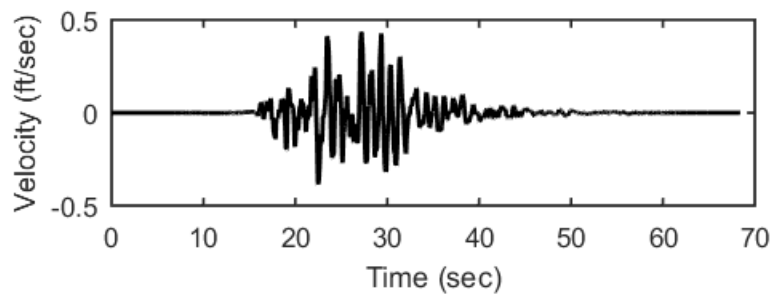
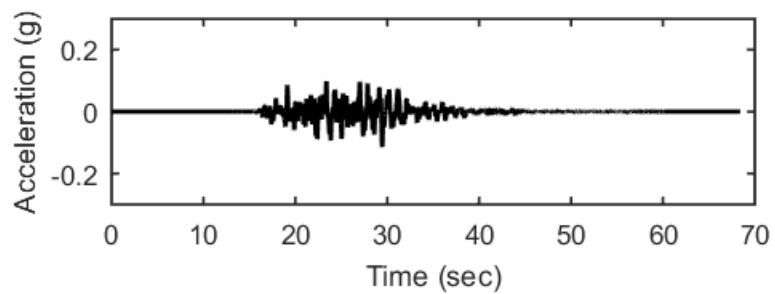
### Profile outputs for Motion: FEE2



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3

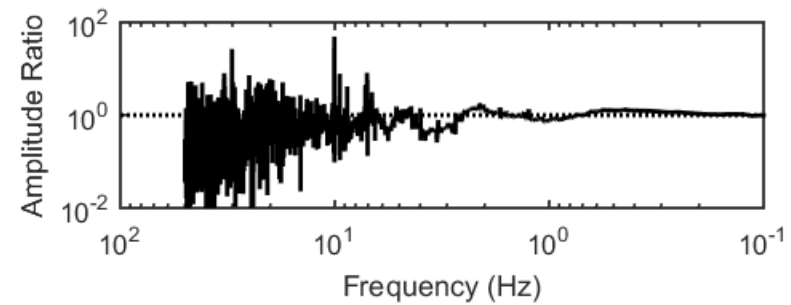
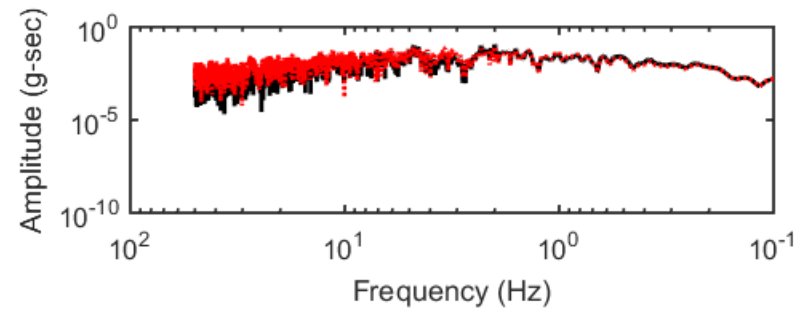
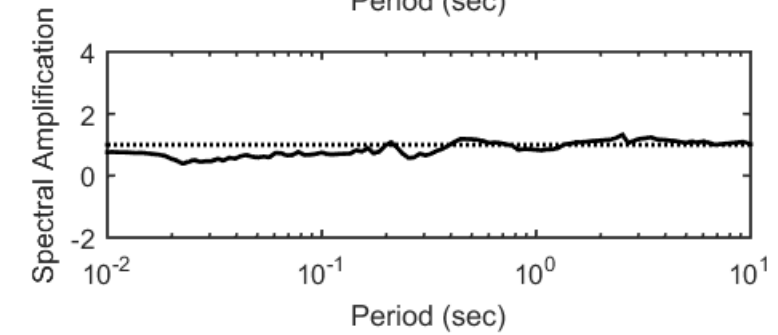
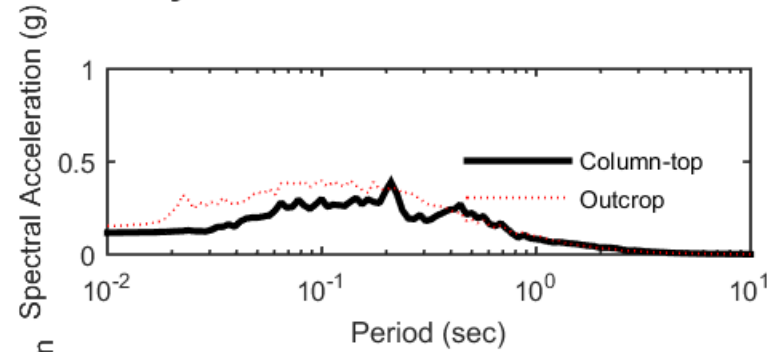
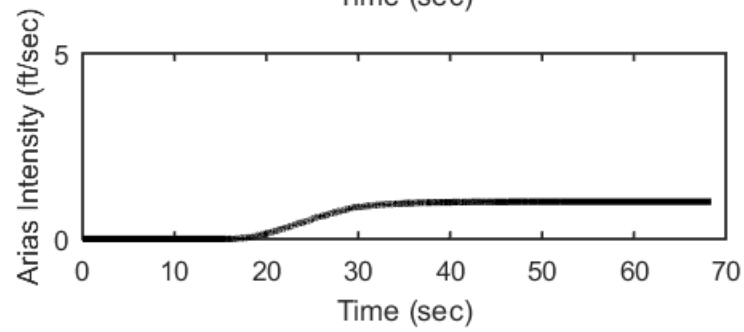
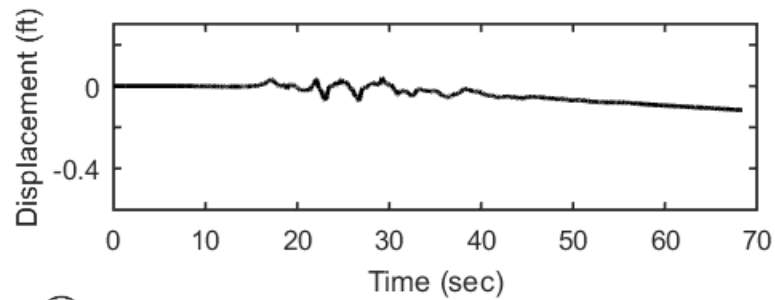
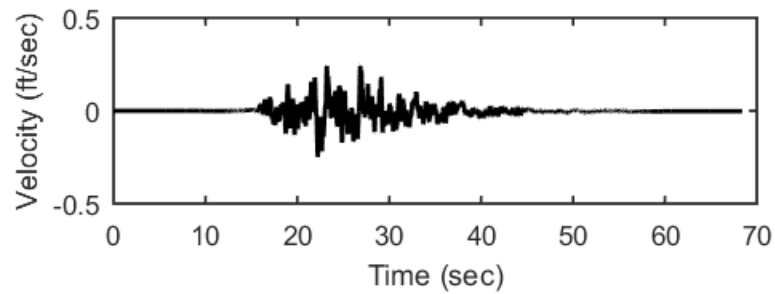
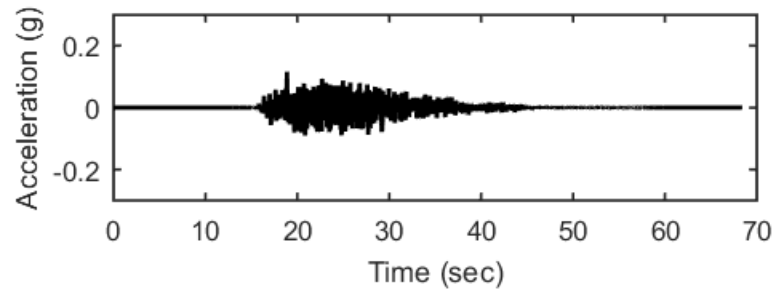


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3

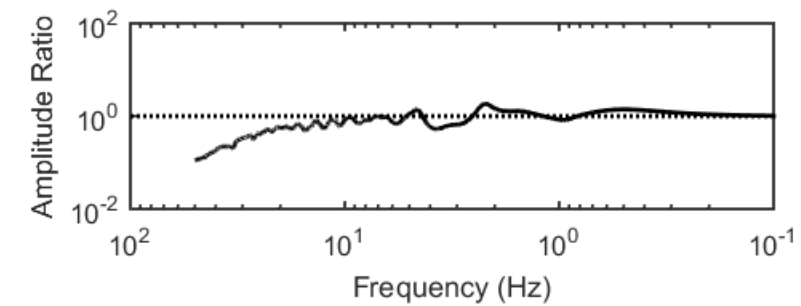
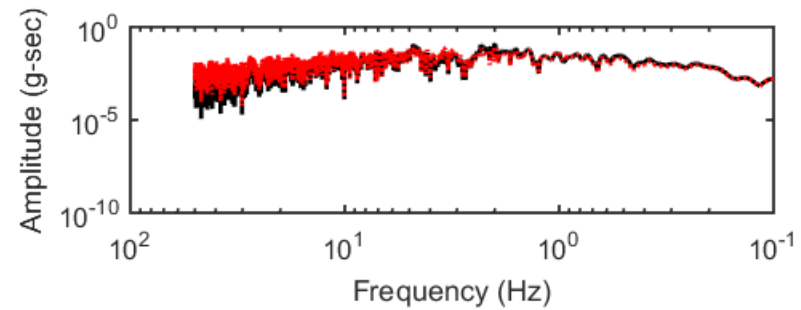
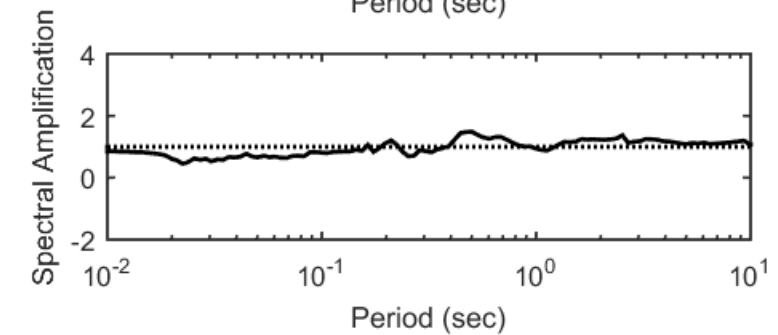
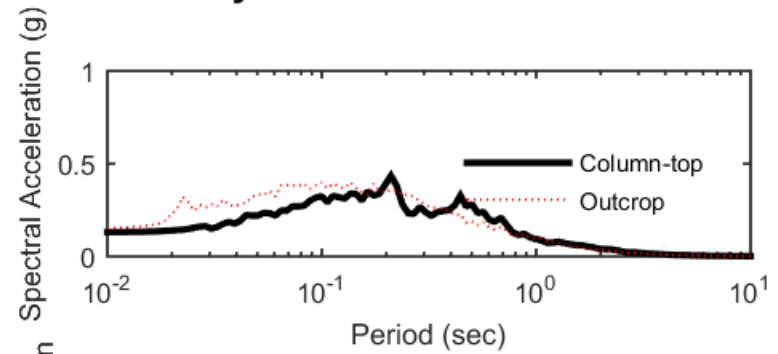
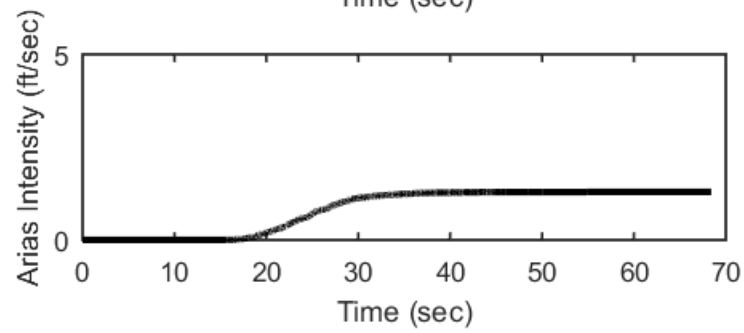
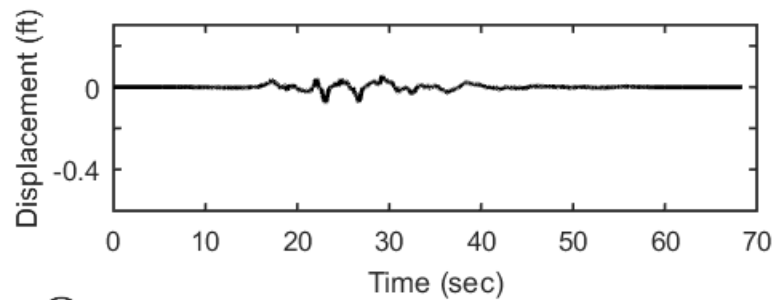
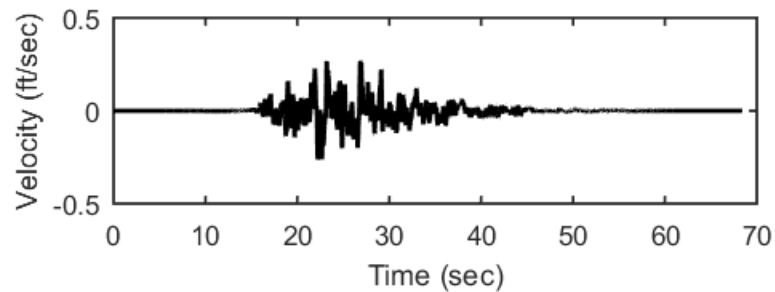
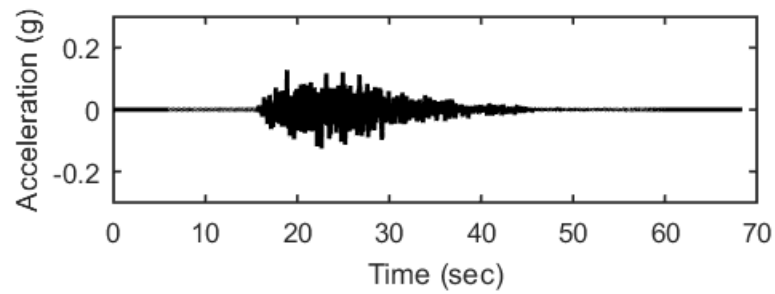




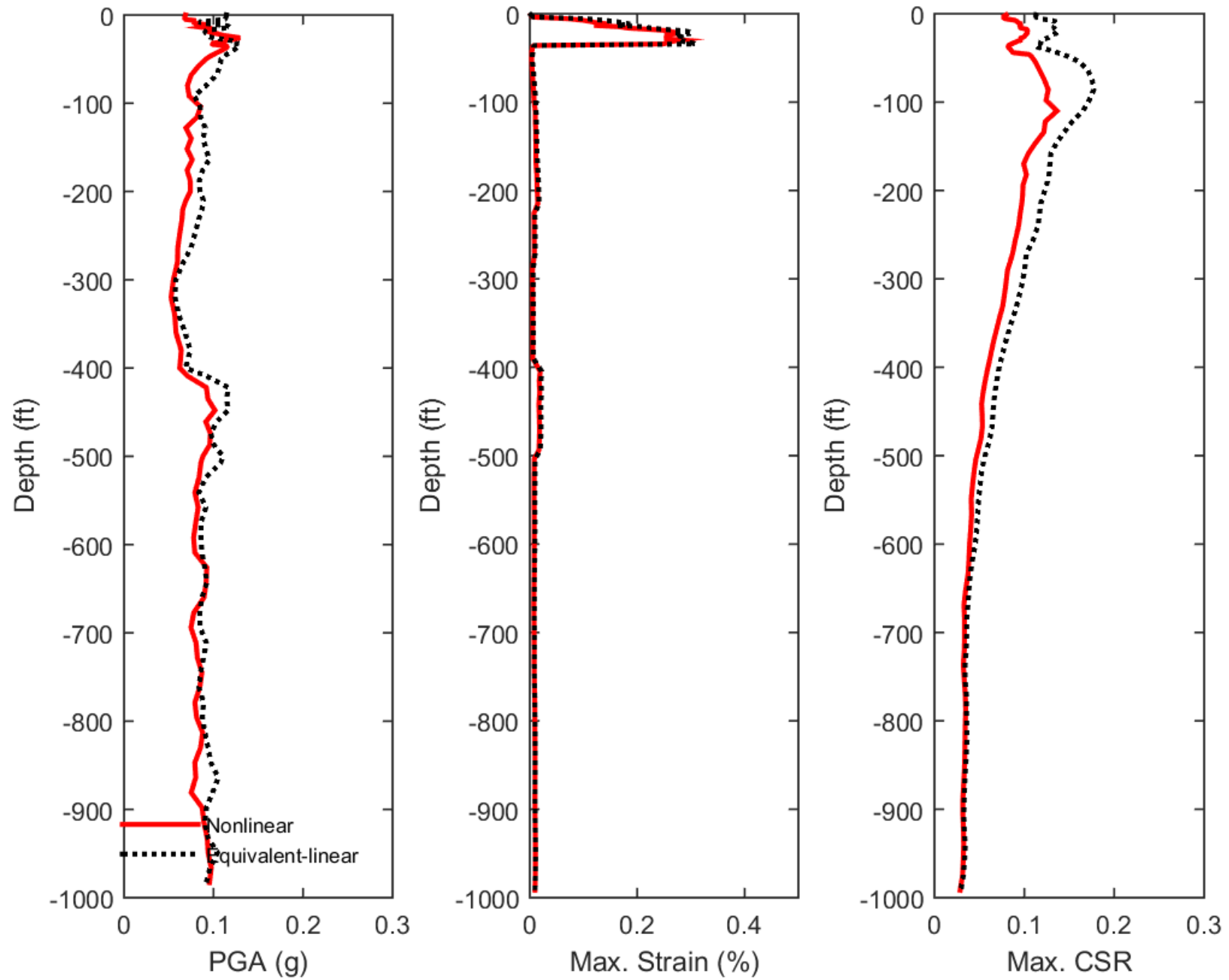
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



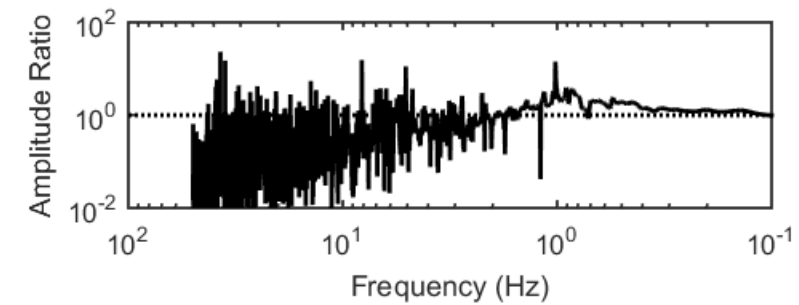
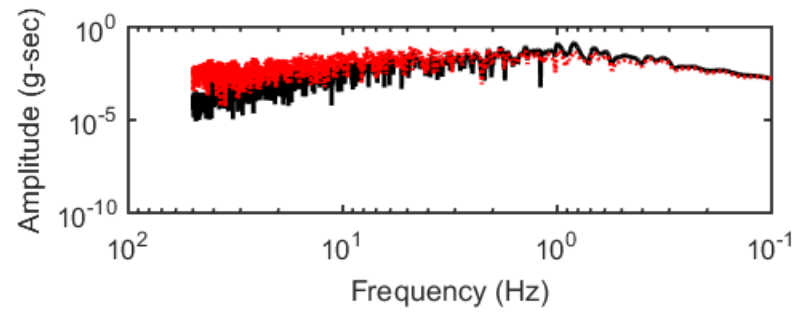
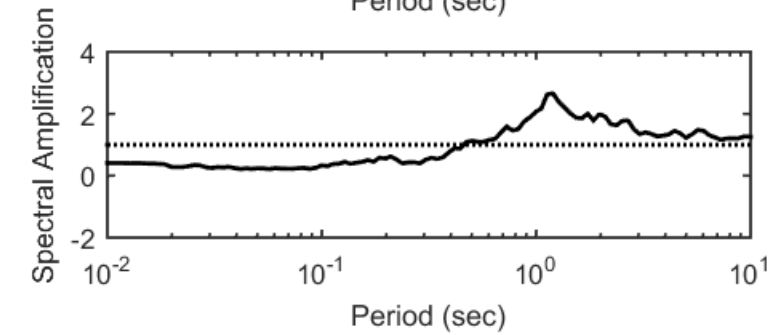
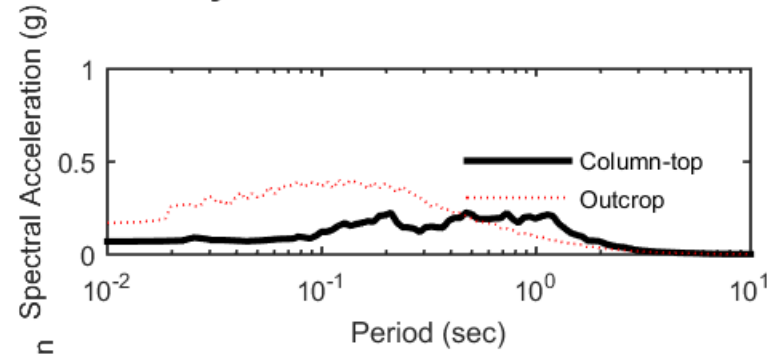
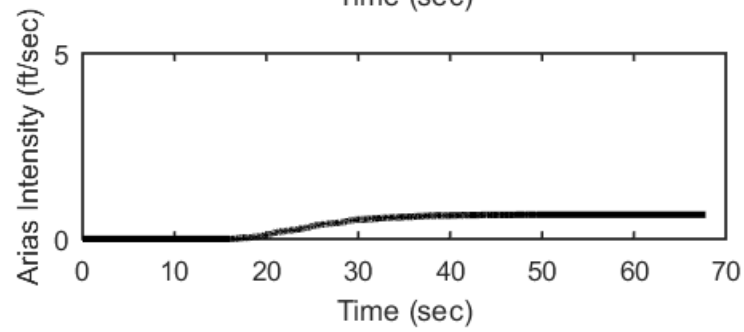
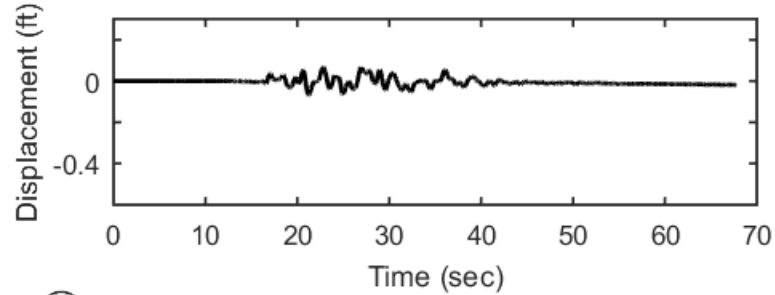
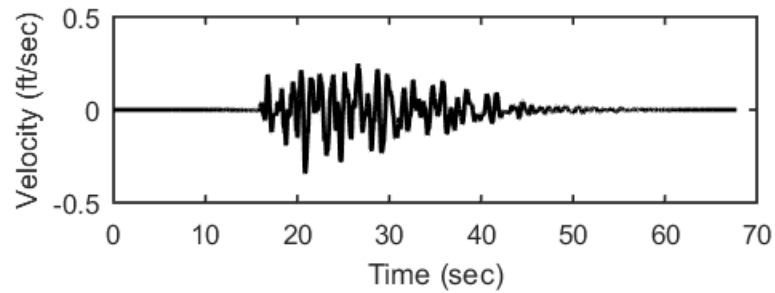
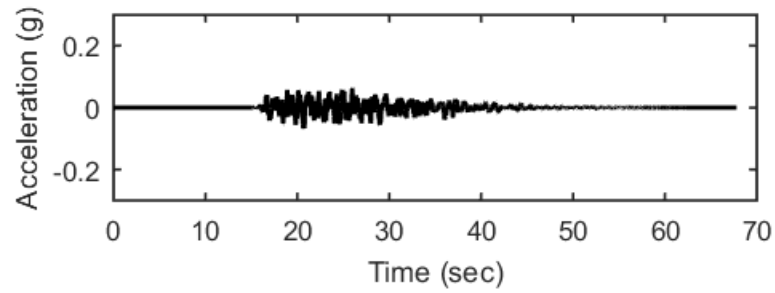
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



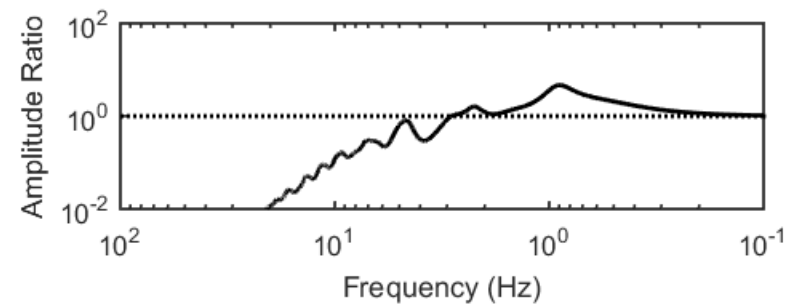
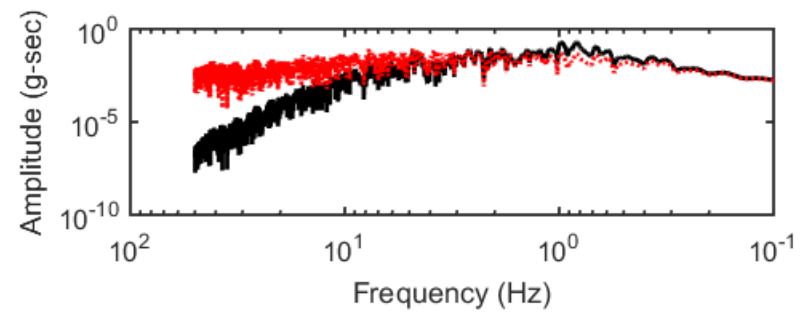
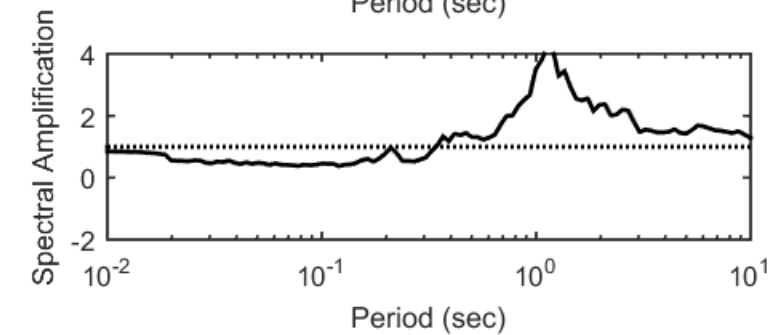
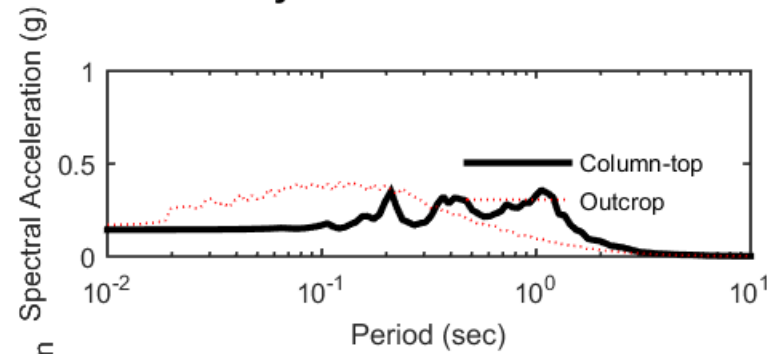
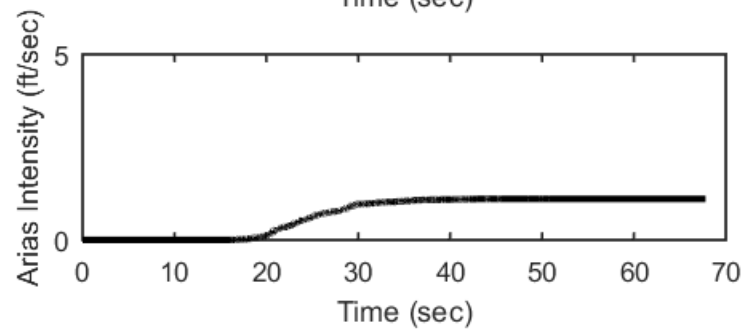
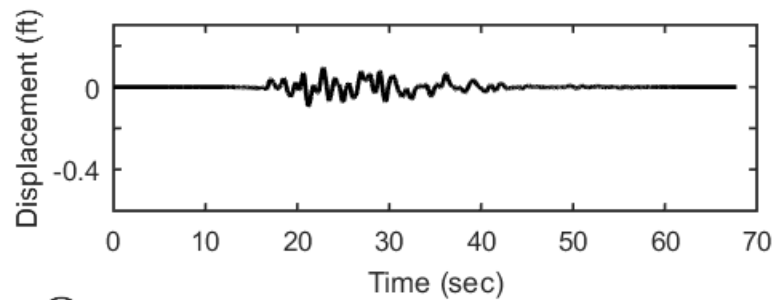
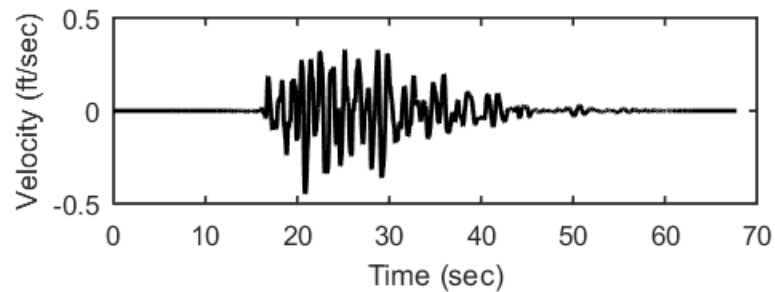
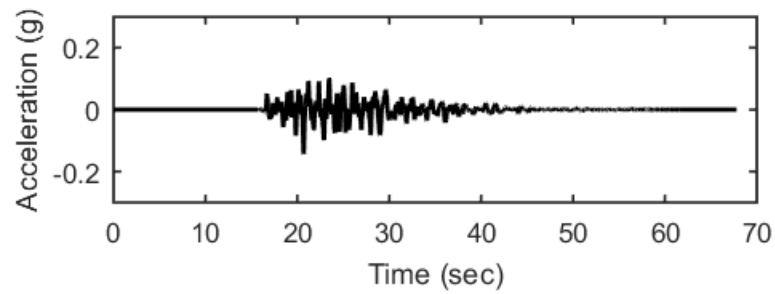
### Profile outputs for Motion: FEE3



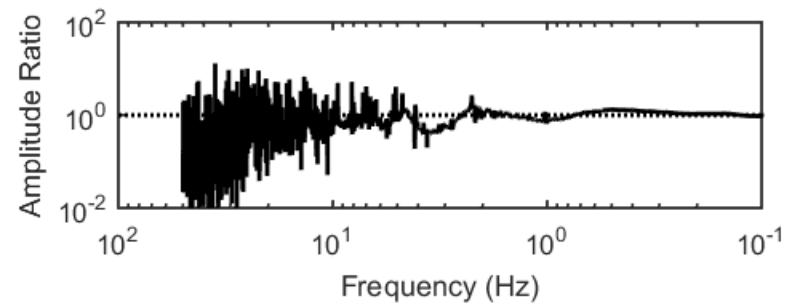
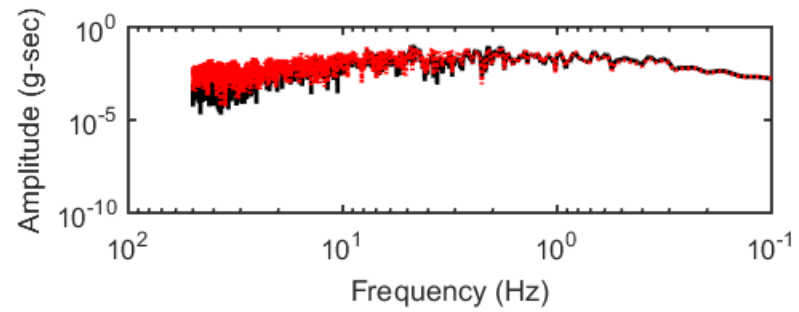
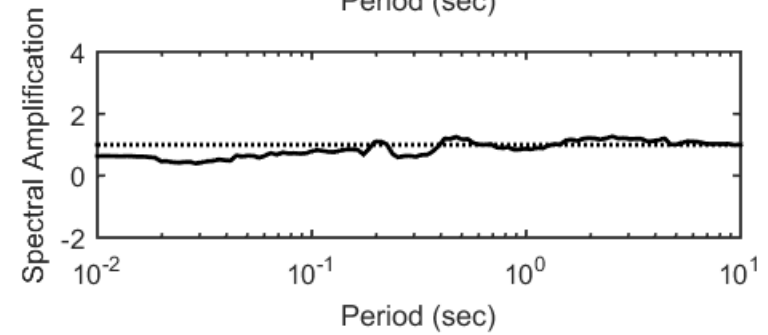
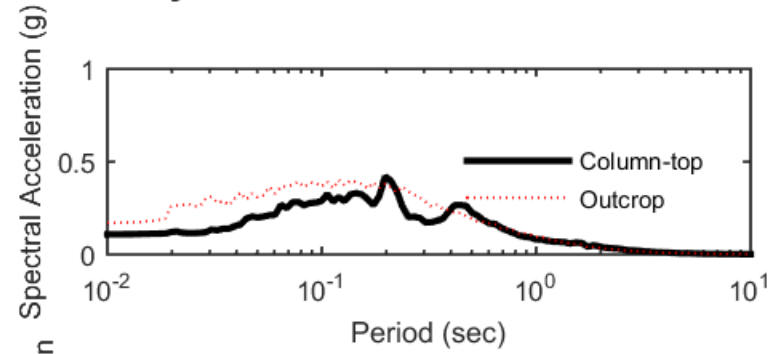
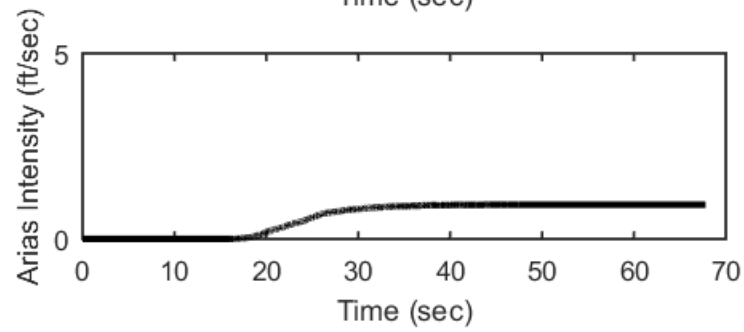
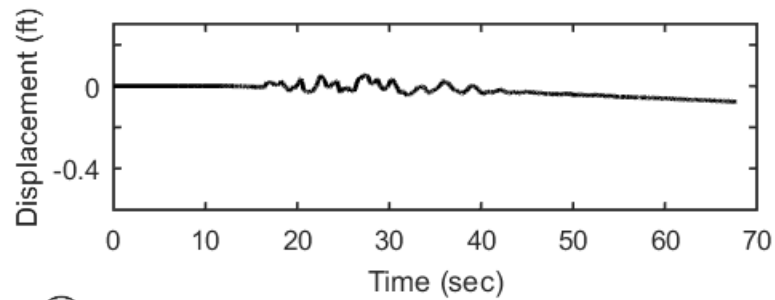
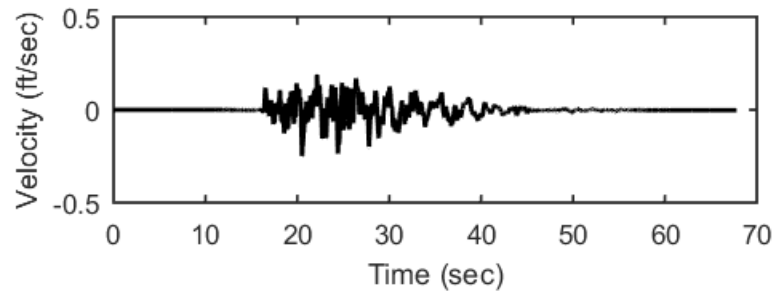
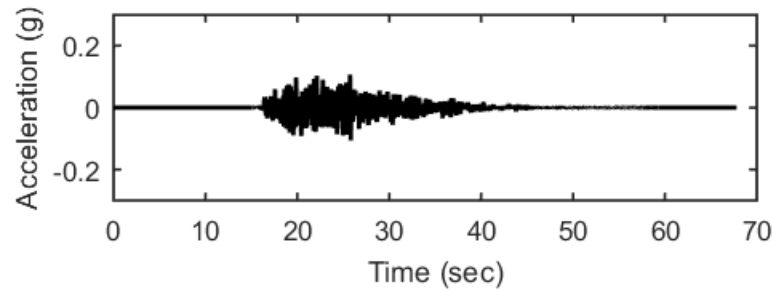
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



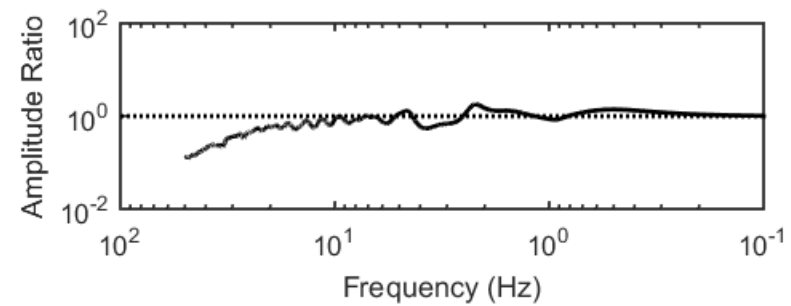
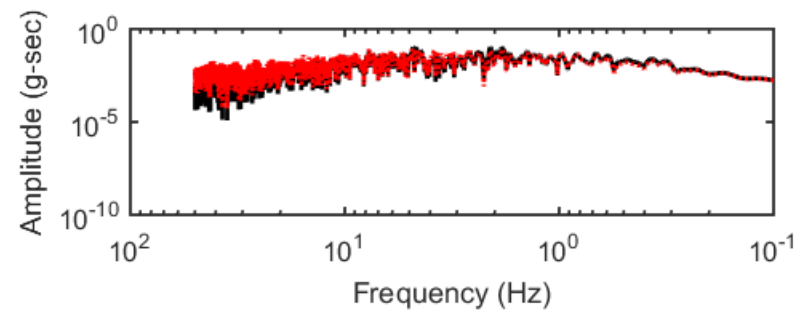
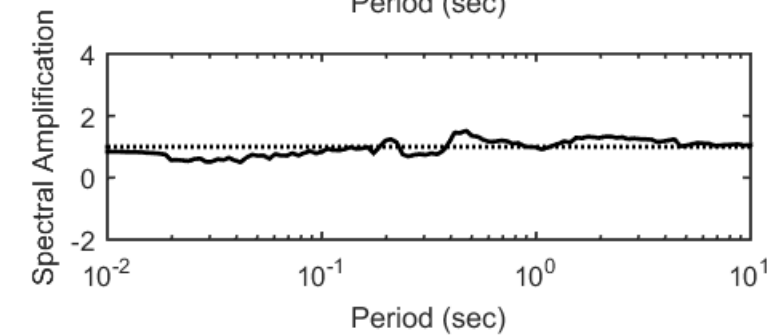
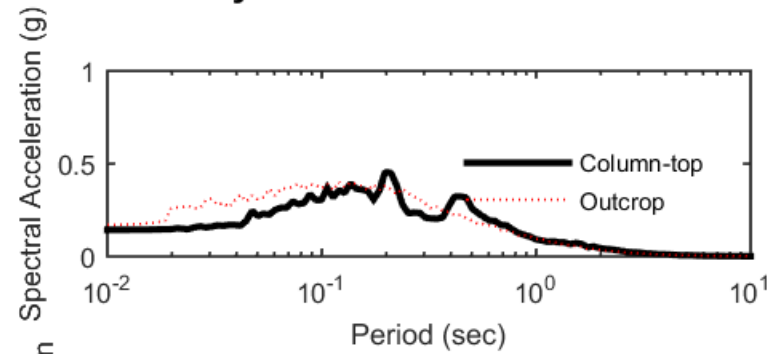
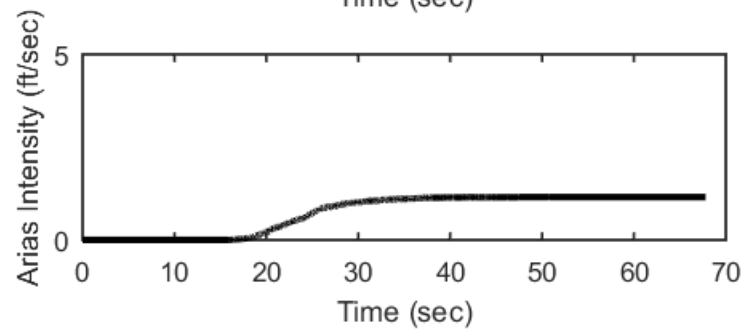
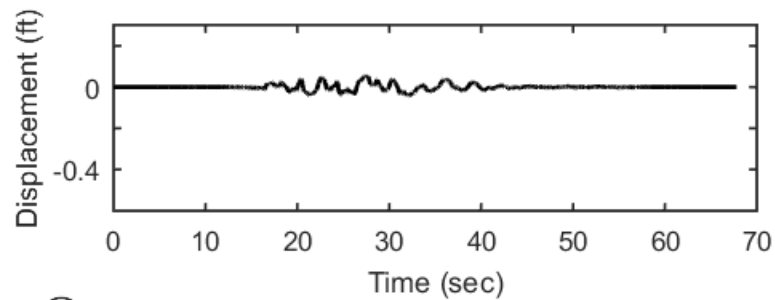
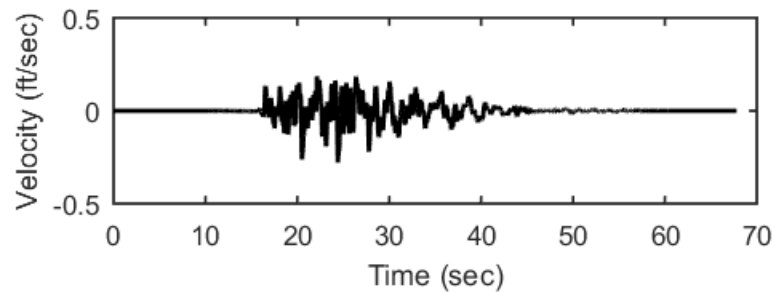
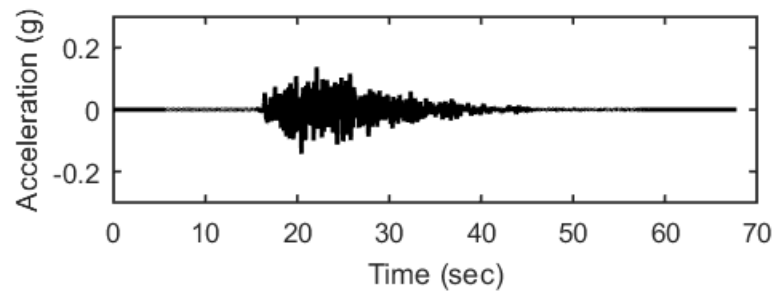
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



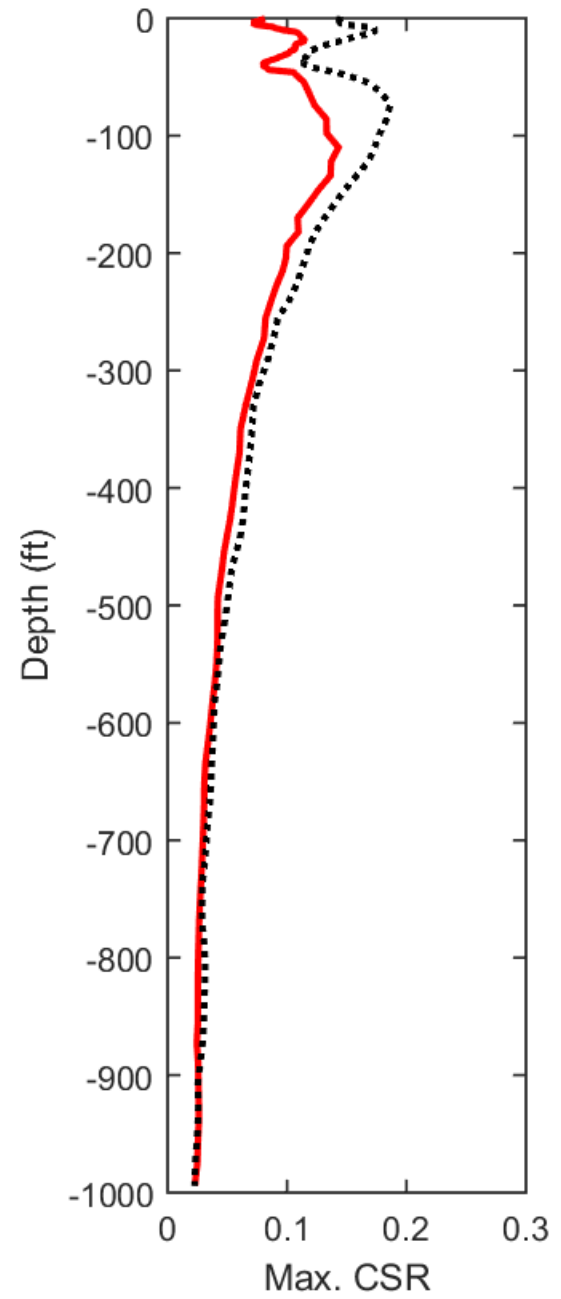
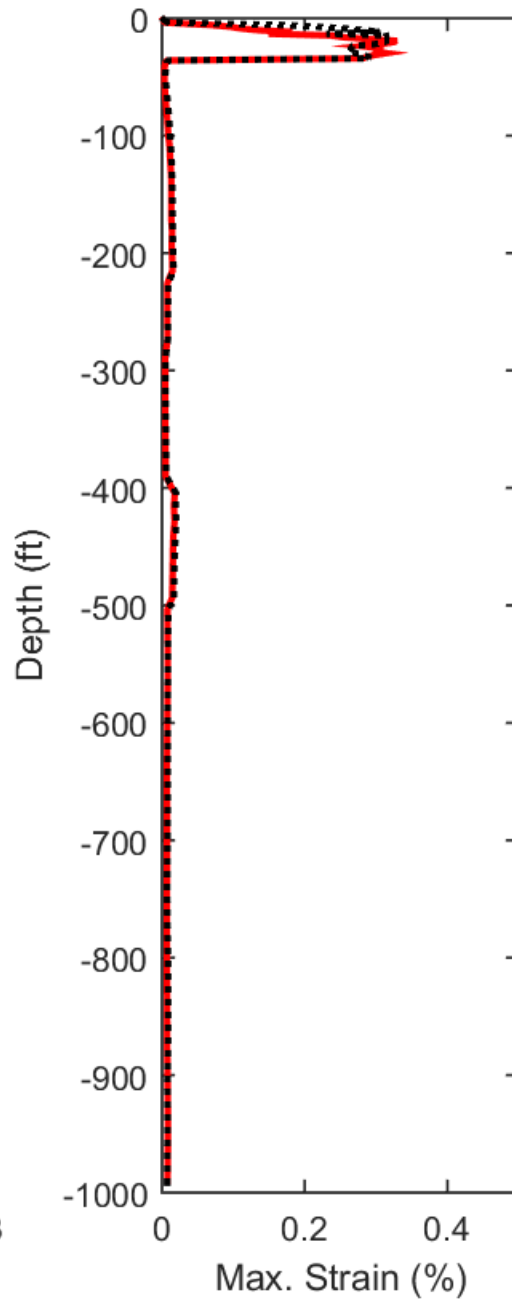
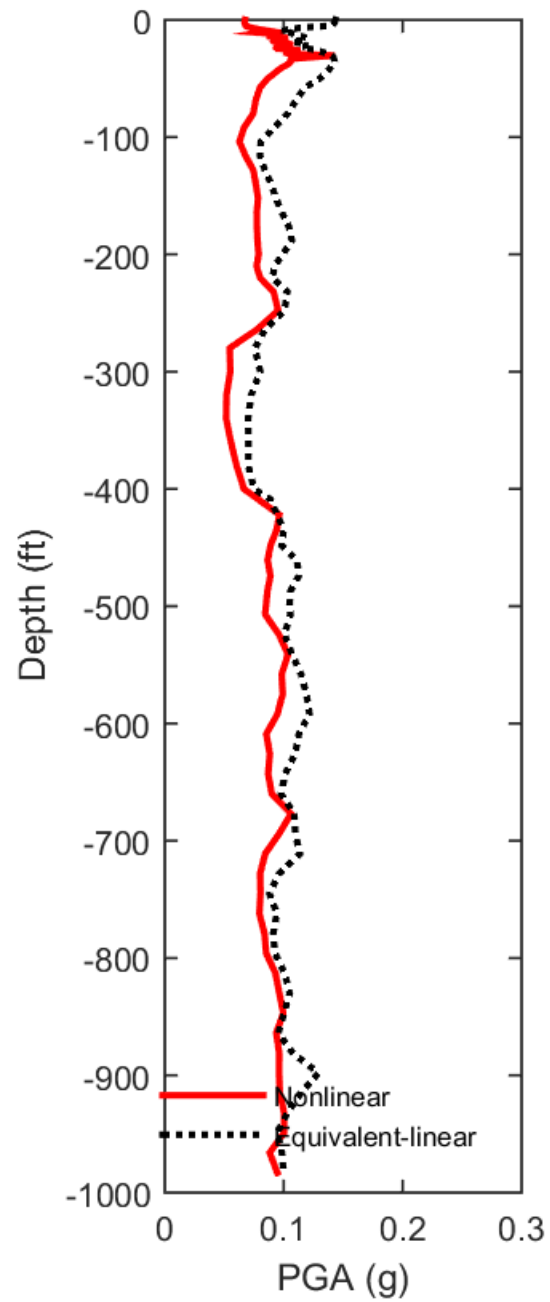
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4

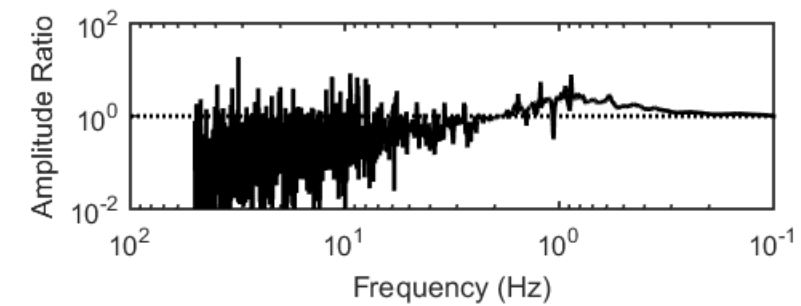
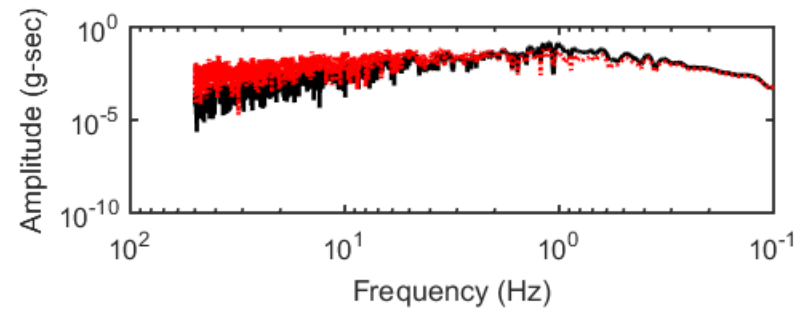
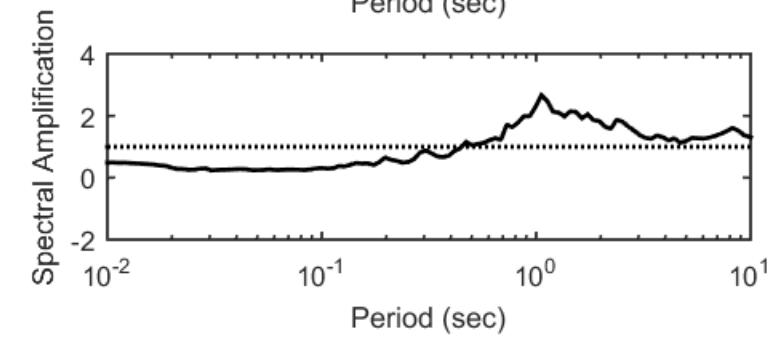
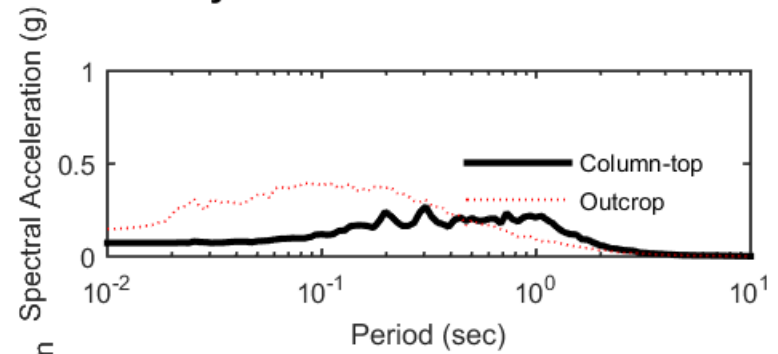
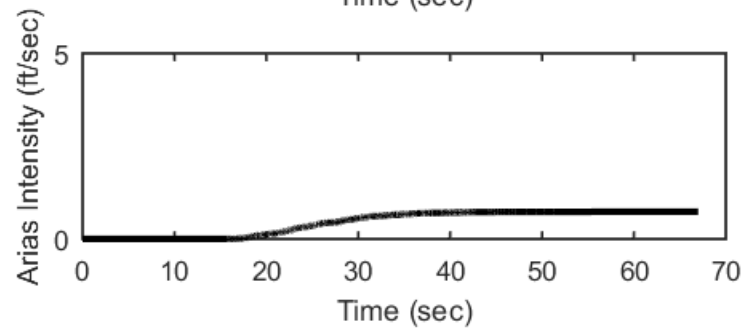
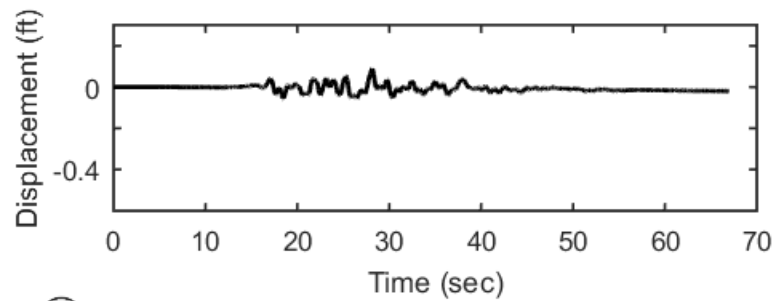
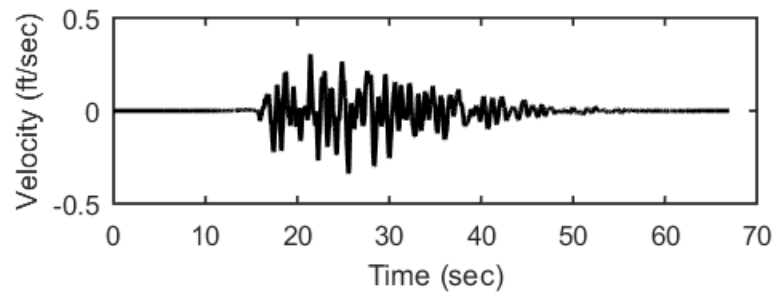
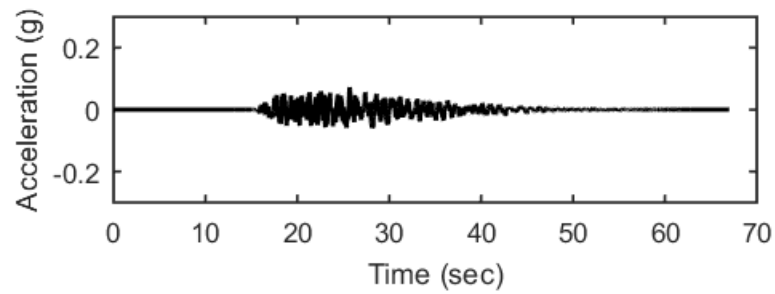


### Profile outputs for Motion: FEE4

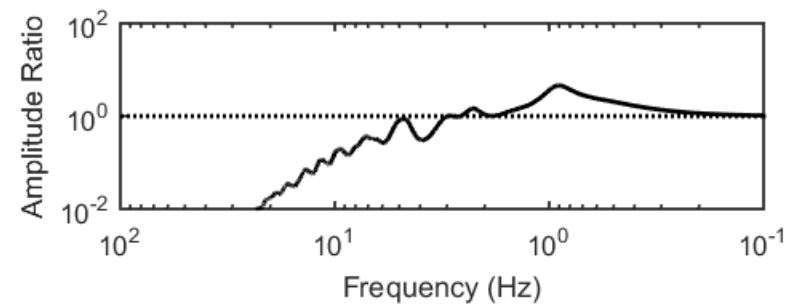
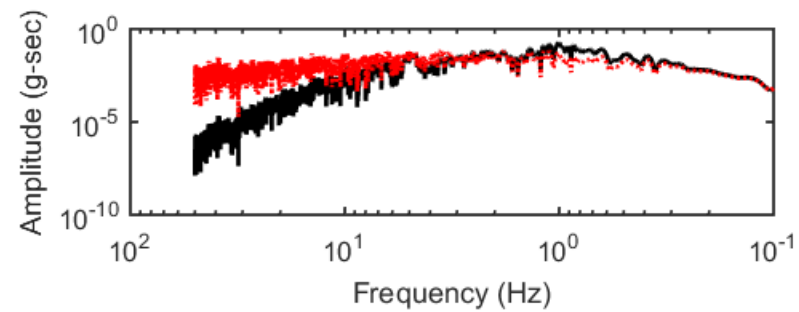
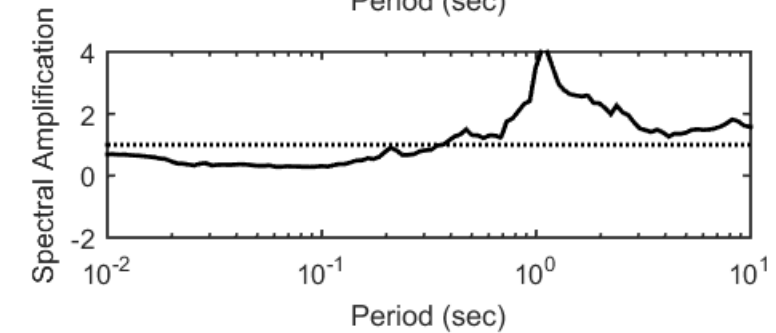
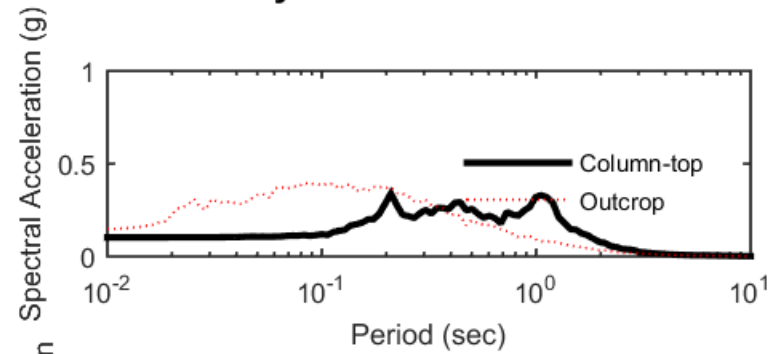
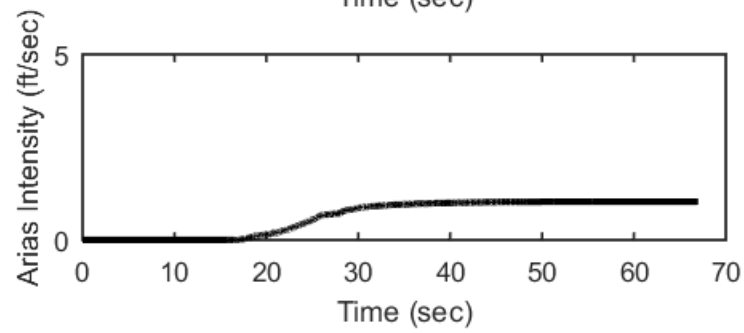
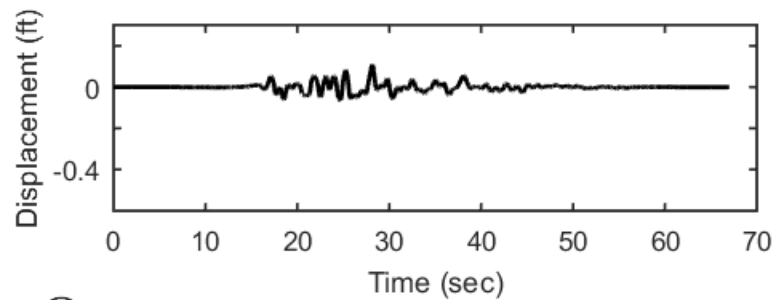
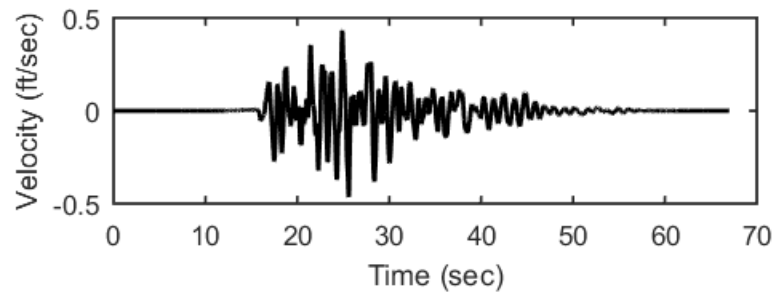
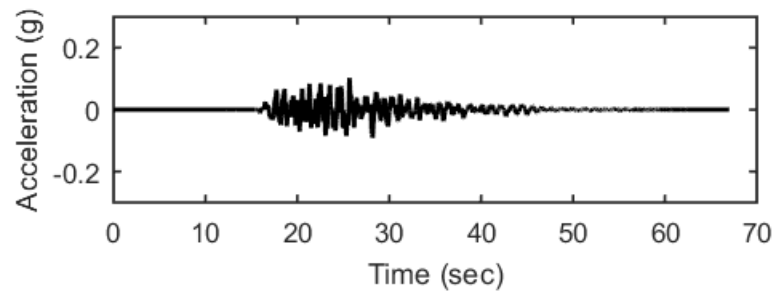




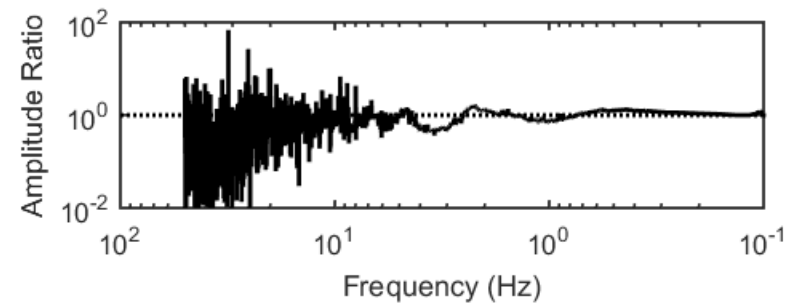
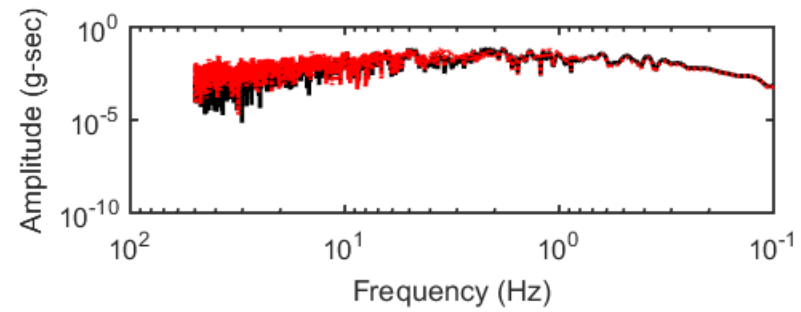
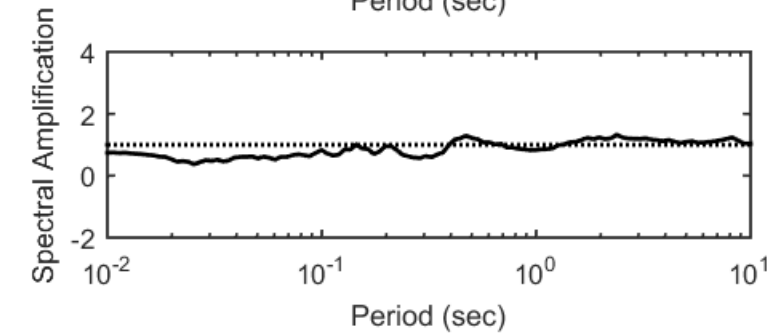
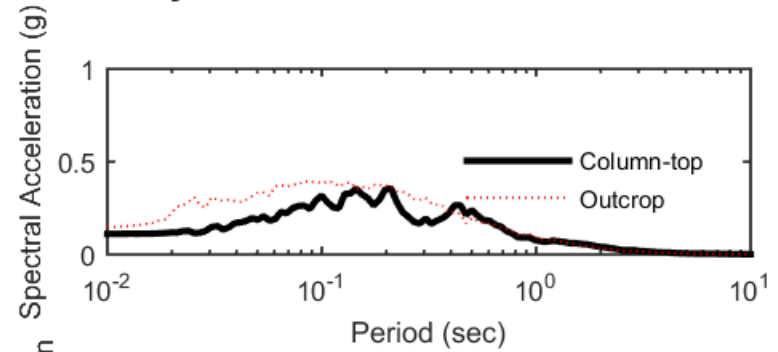
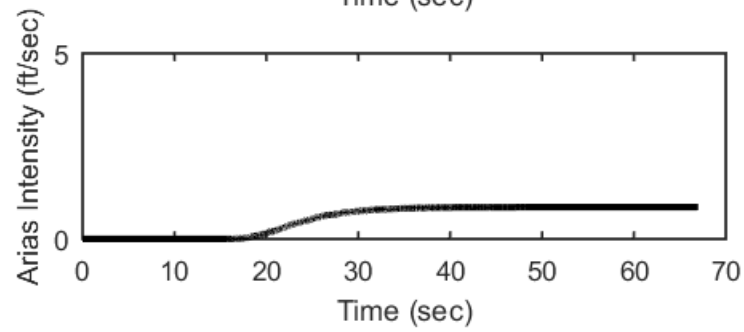
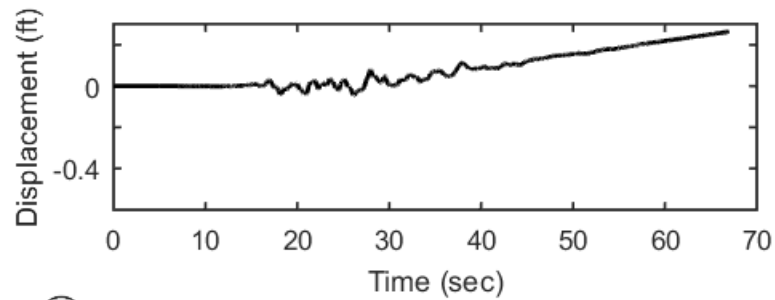
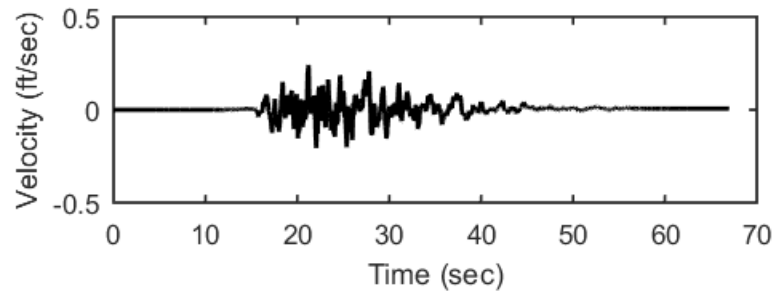
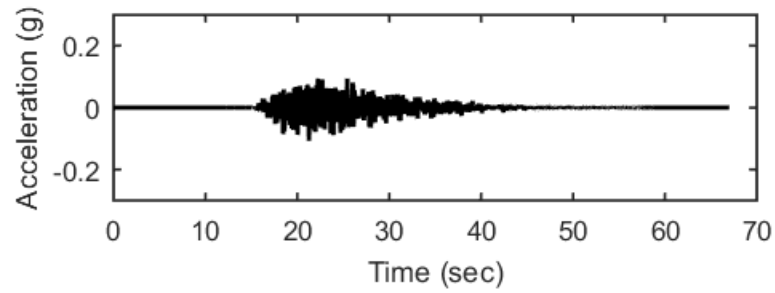
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



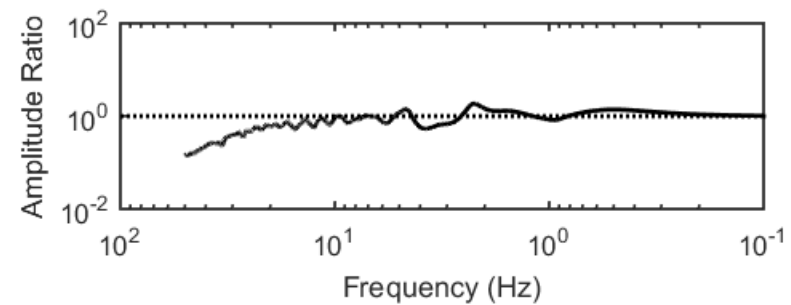
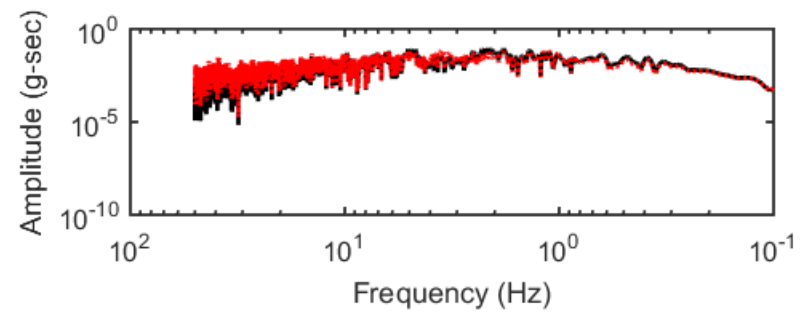
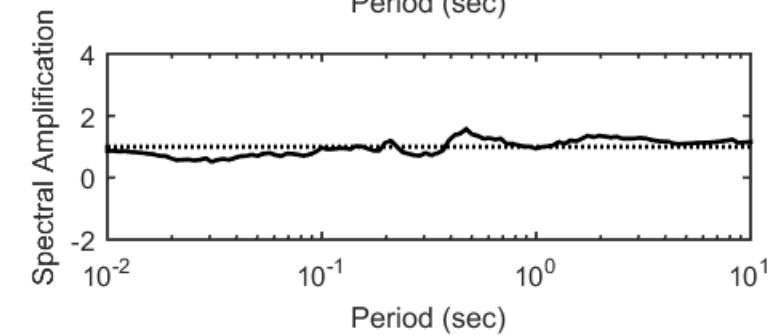
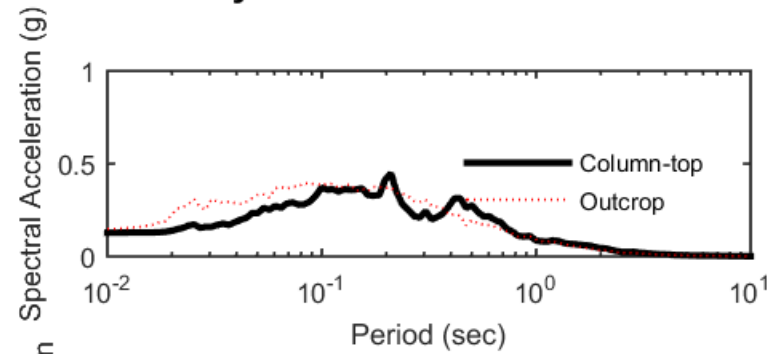
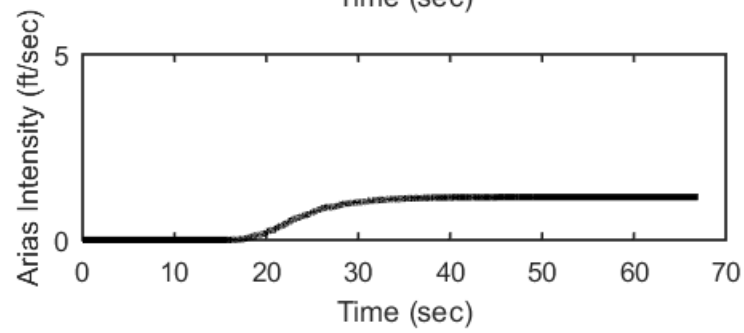
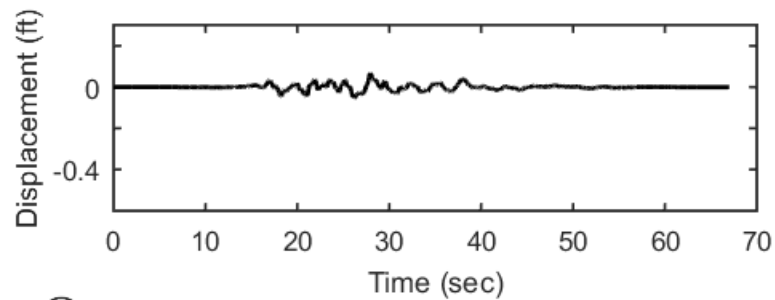
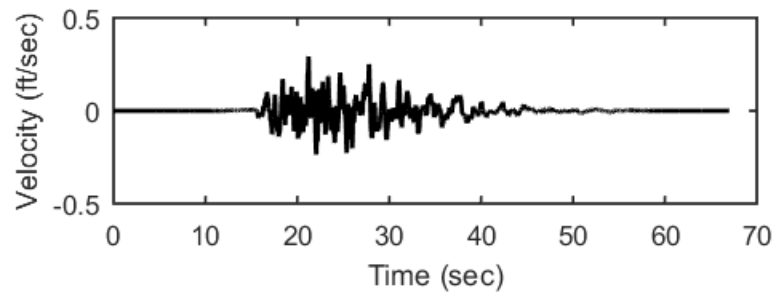
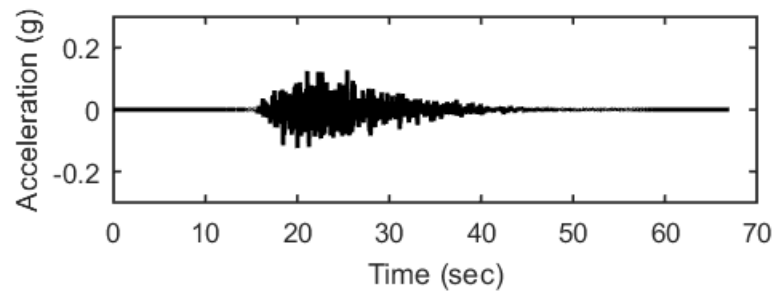
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



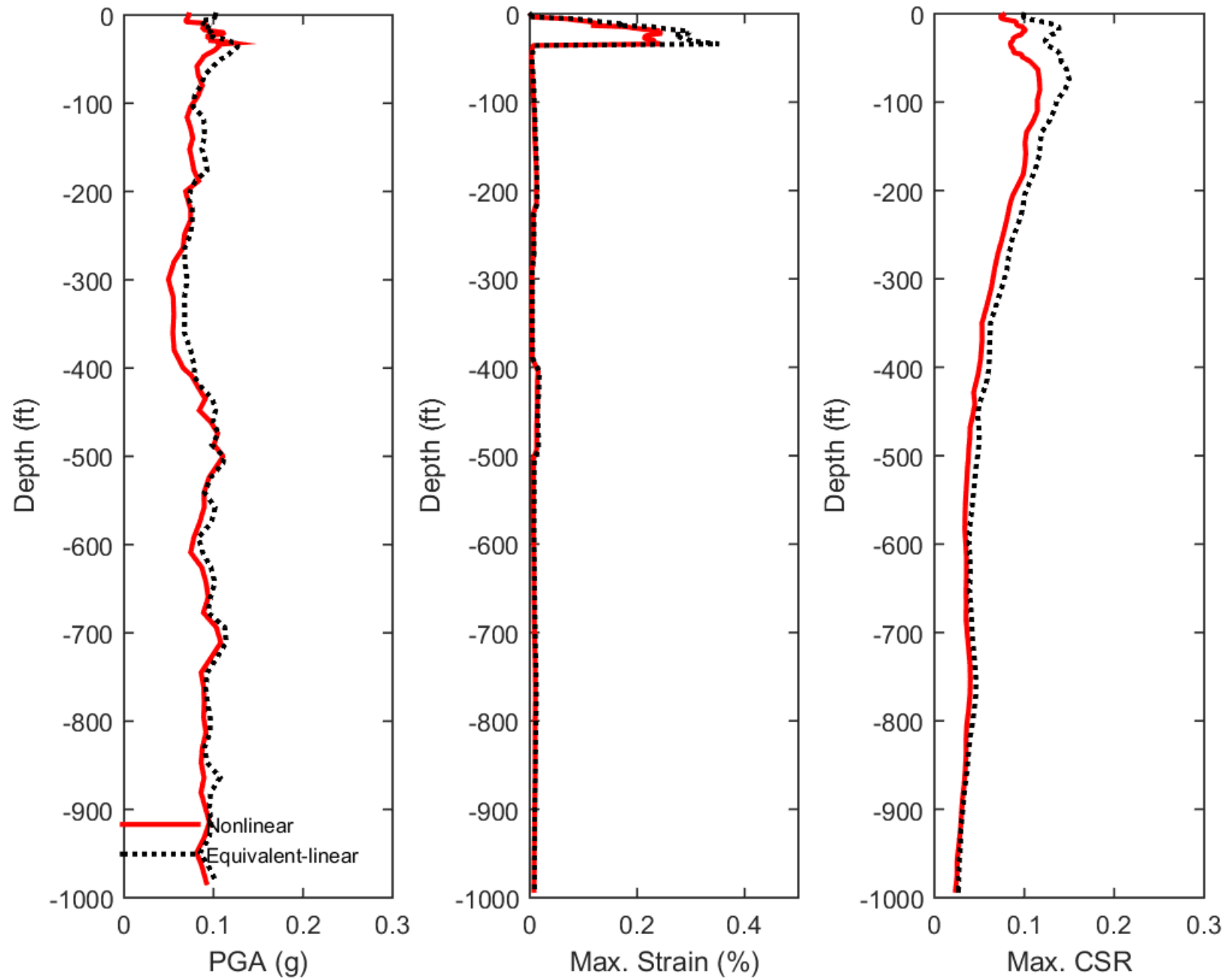
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



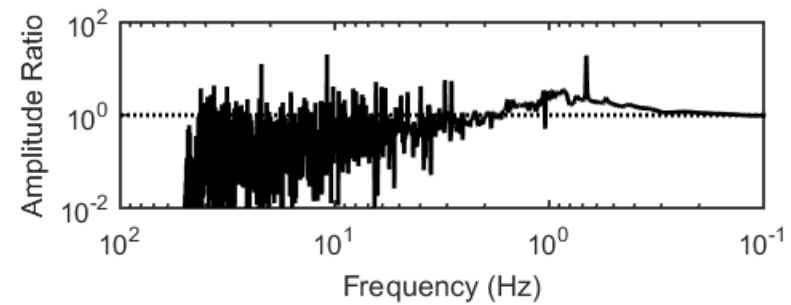
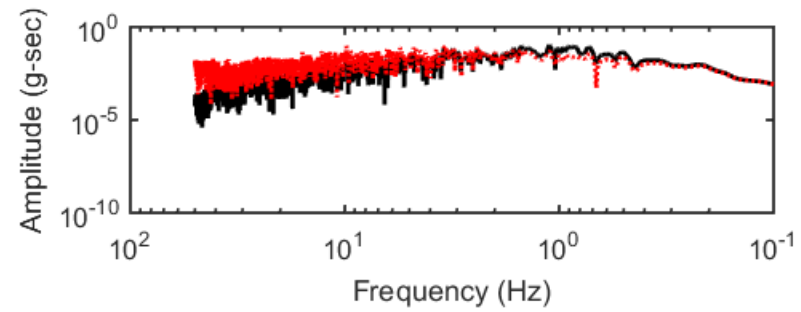
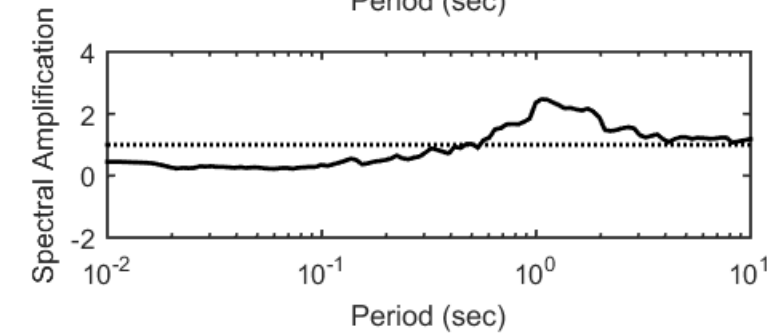
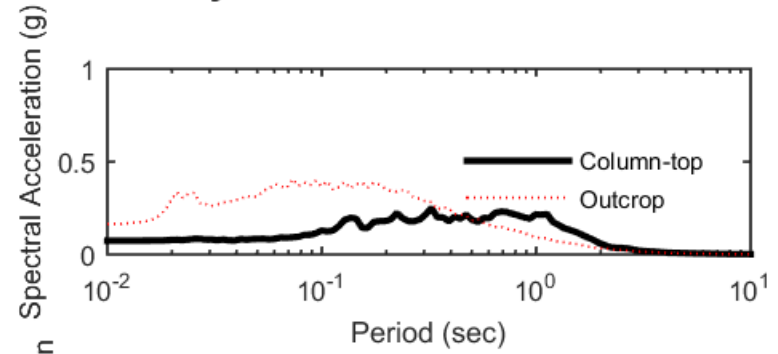
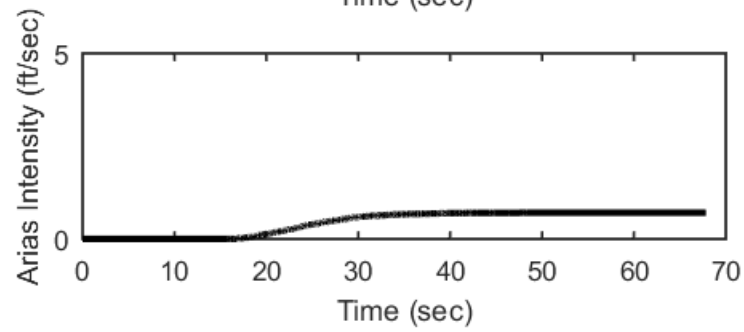
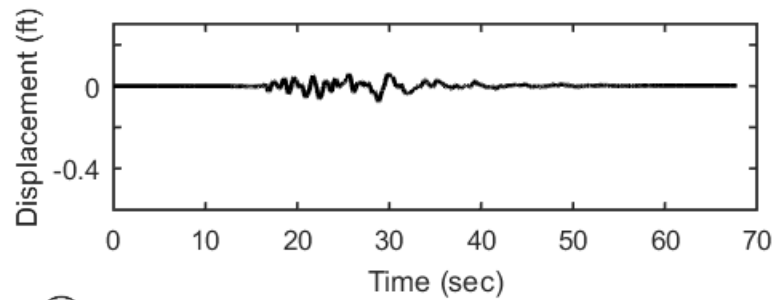
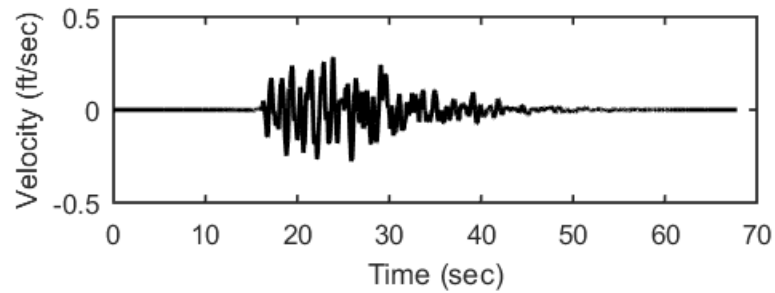
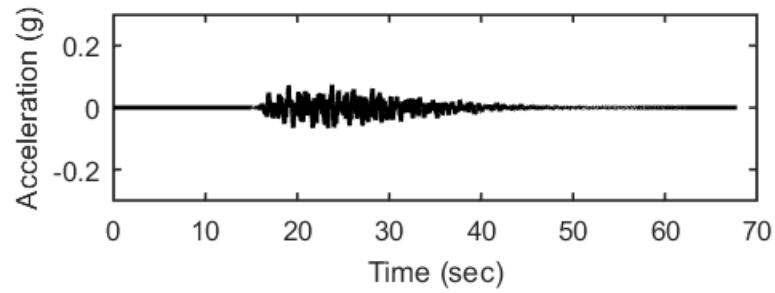
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



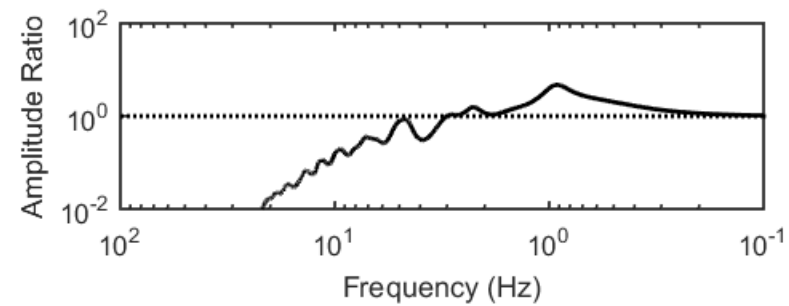
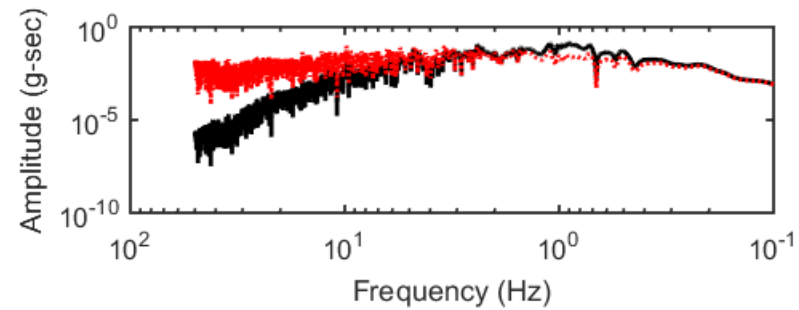
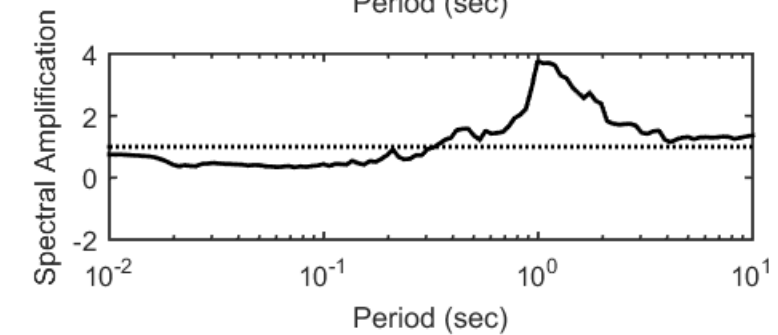
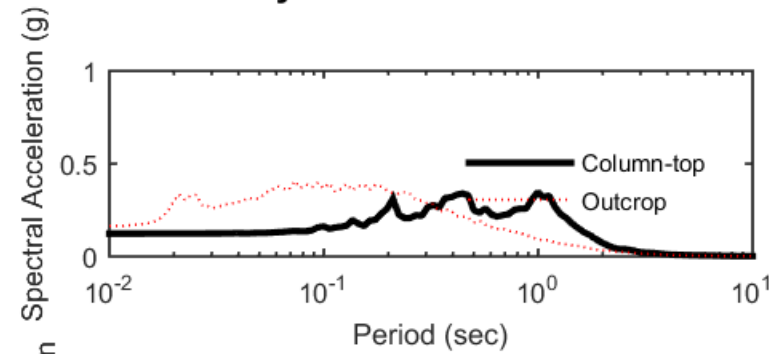
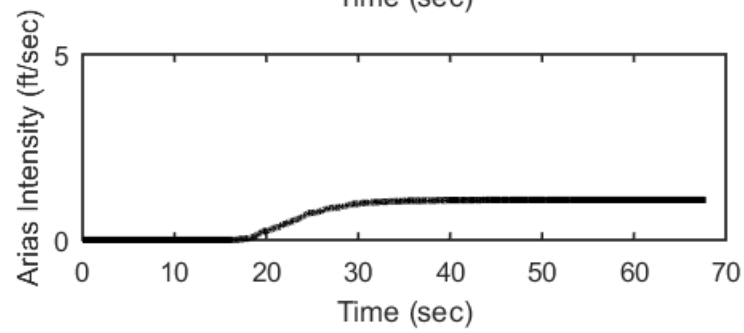
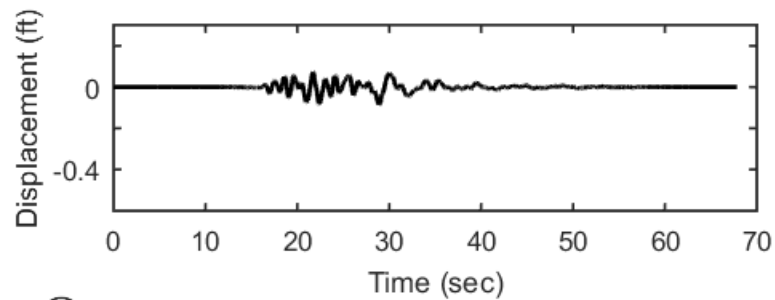
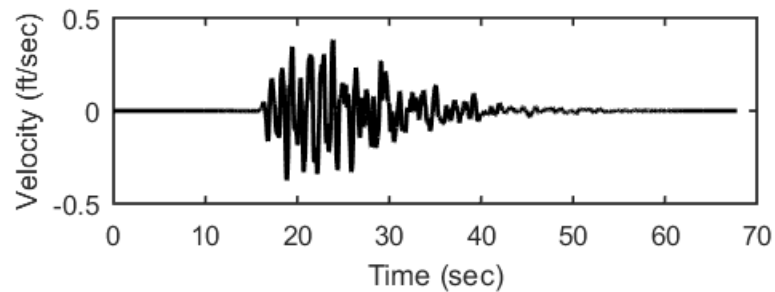
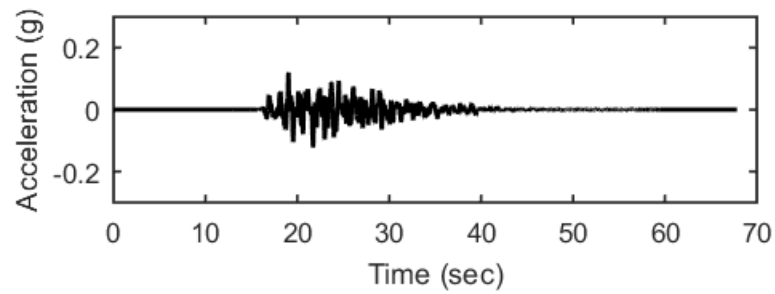
### Profile outputs for Motion: FEE5



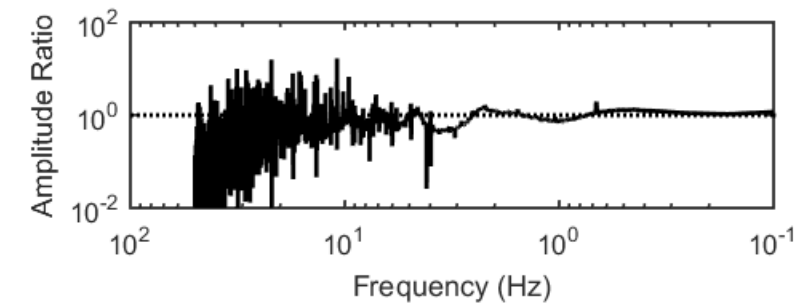
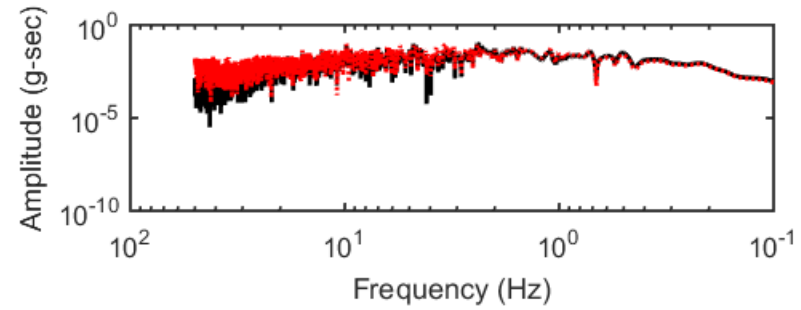
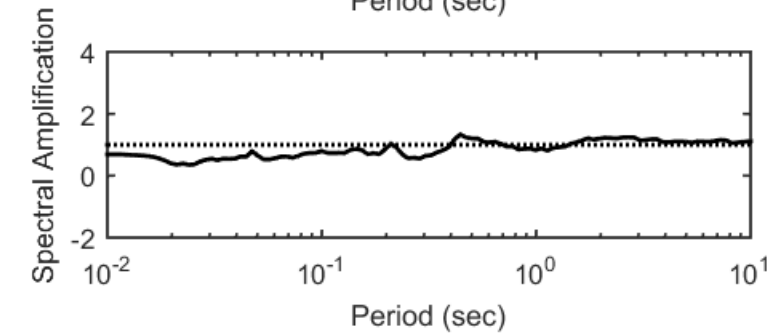
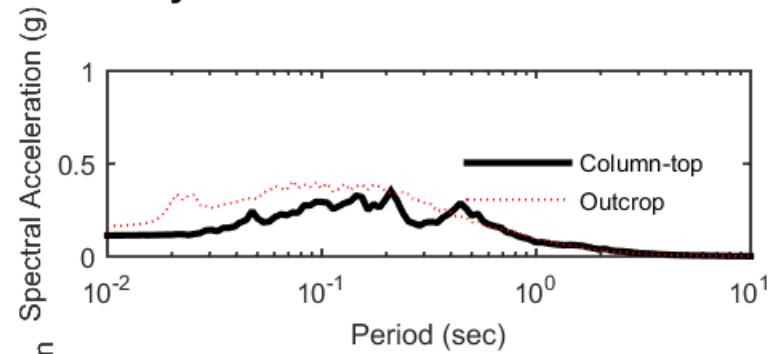
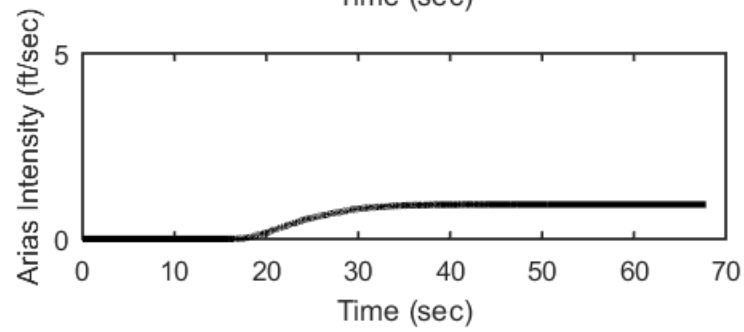
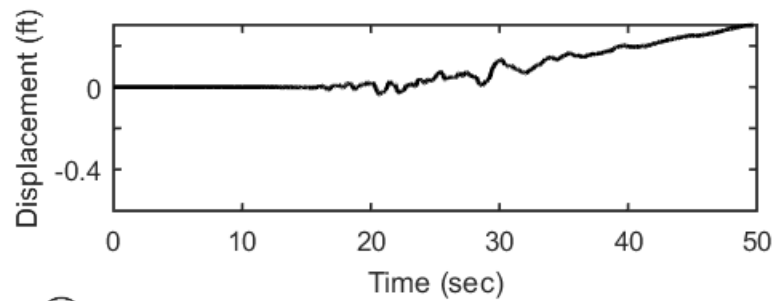
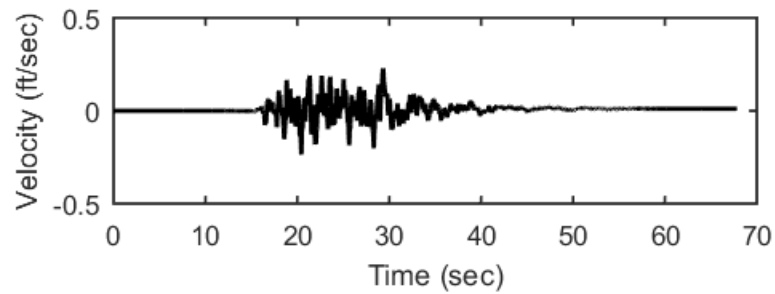
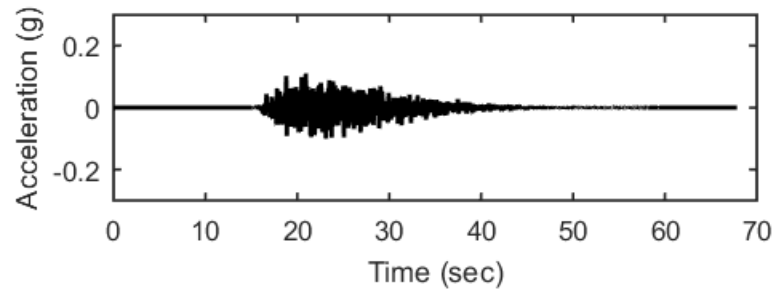
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6

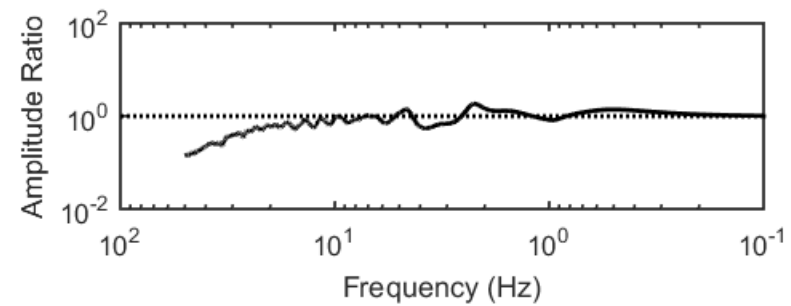
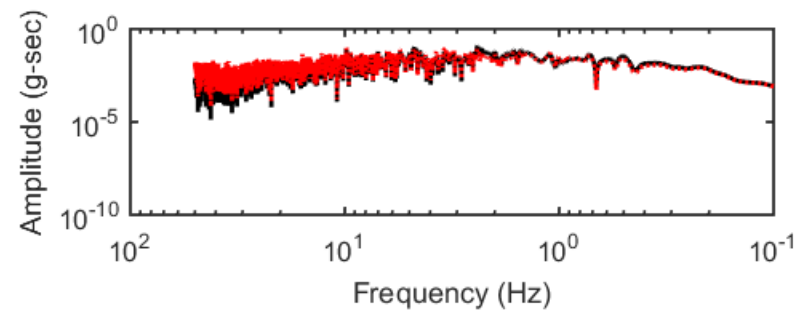
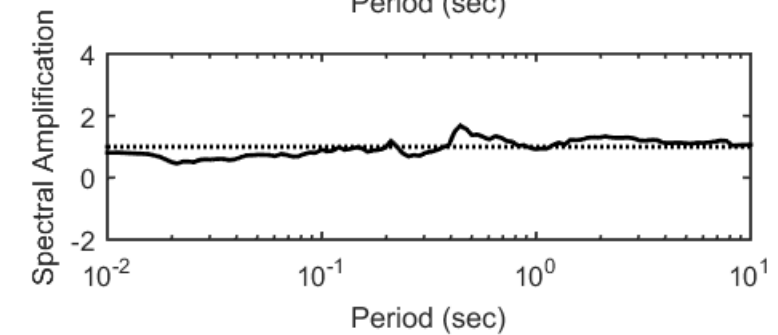
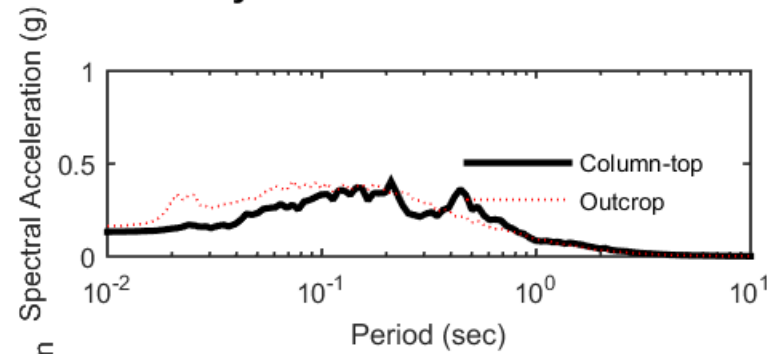
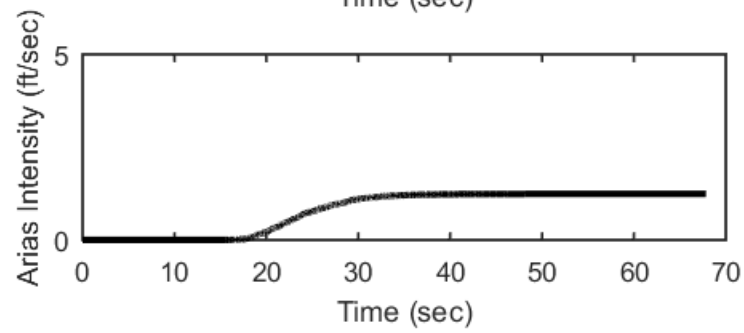
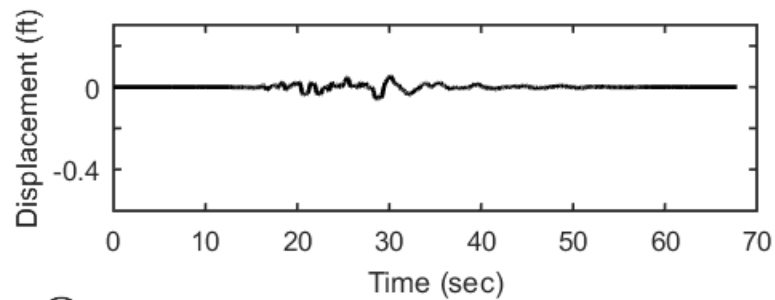
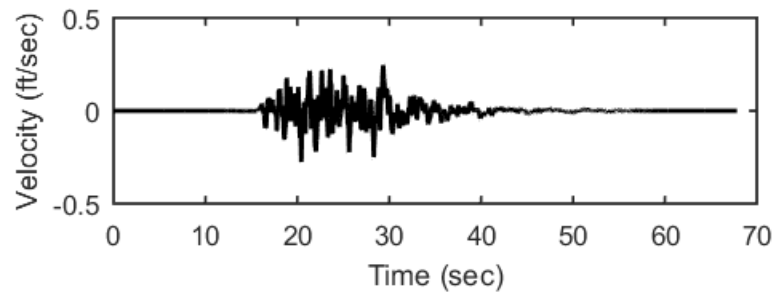
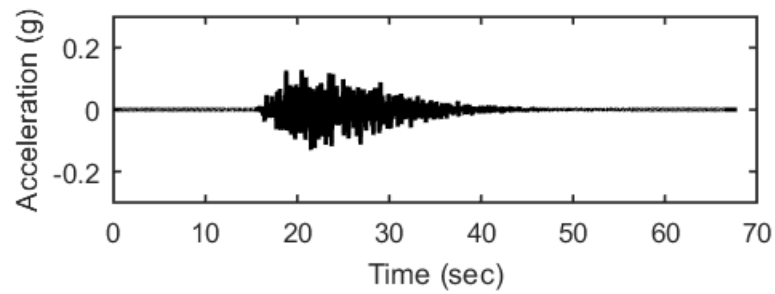


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6

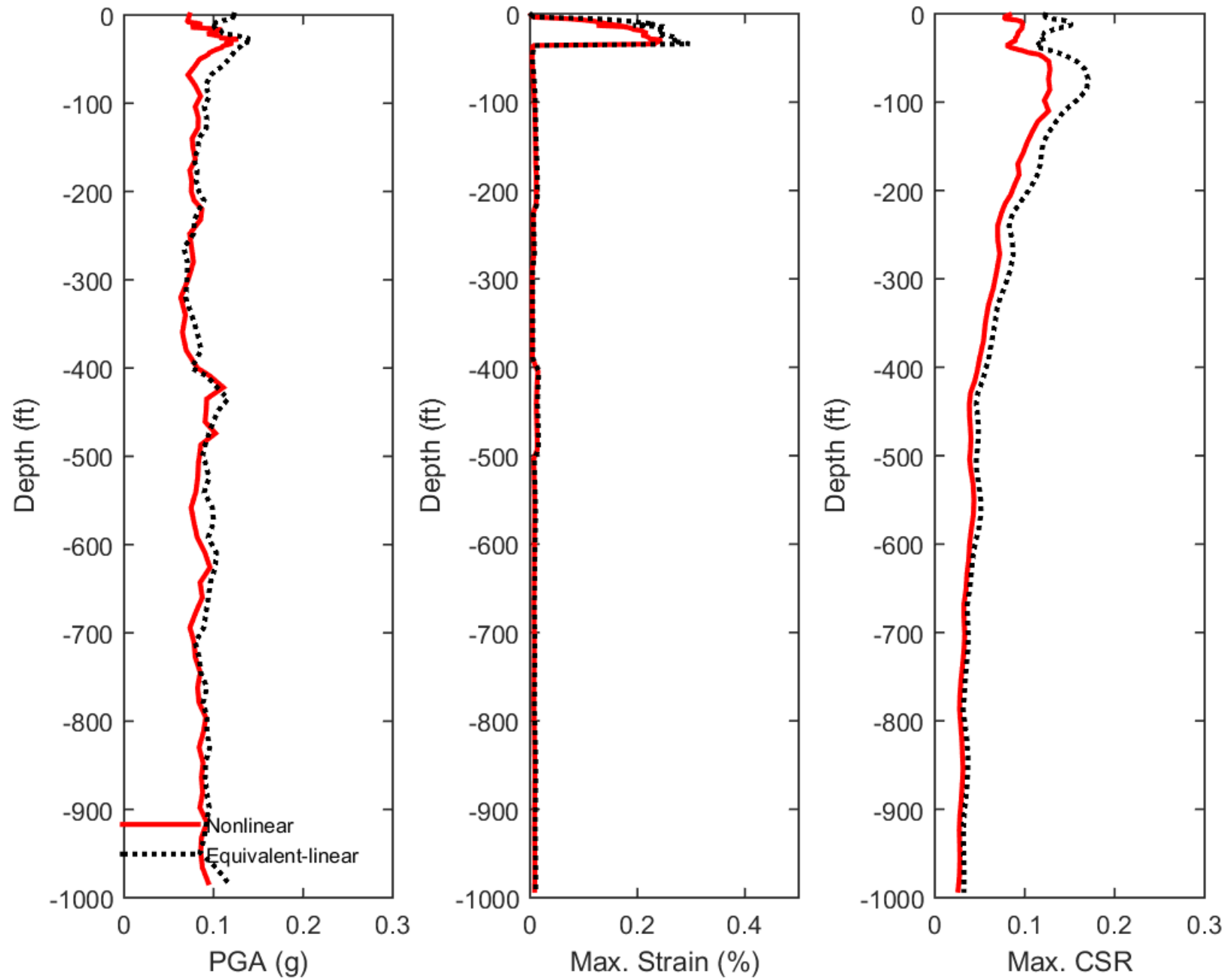




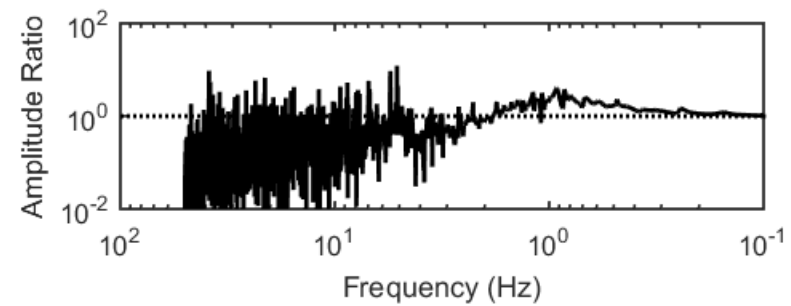
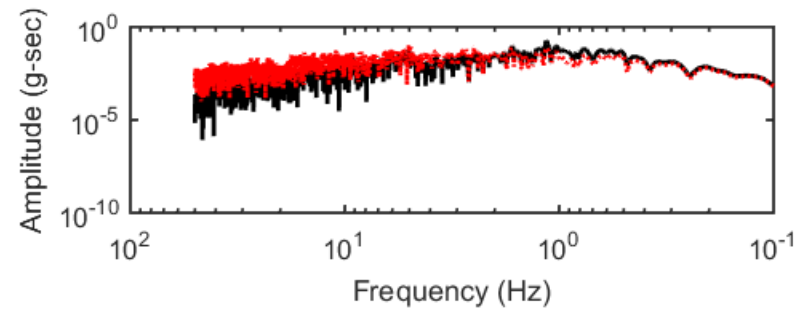
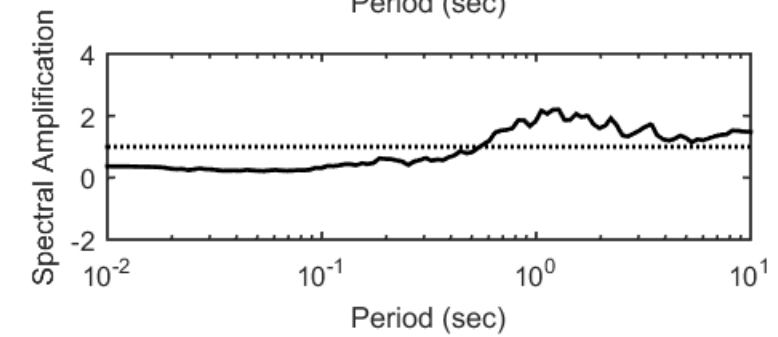
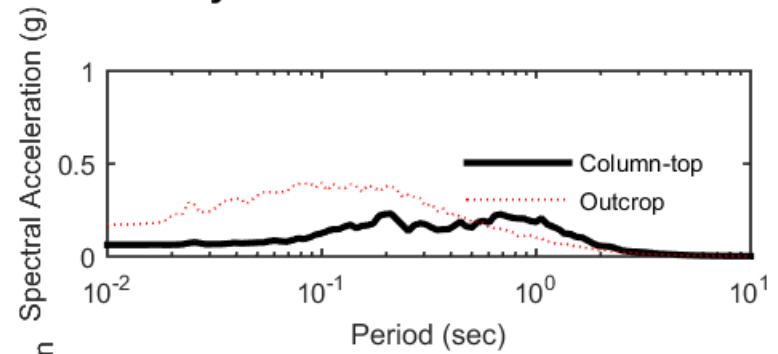
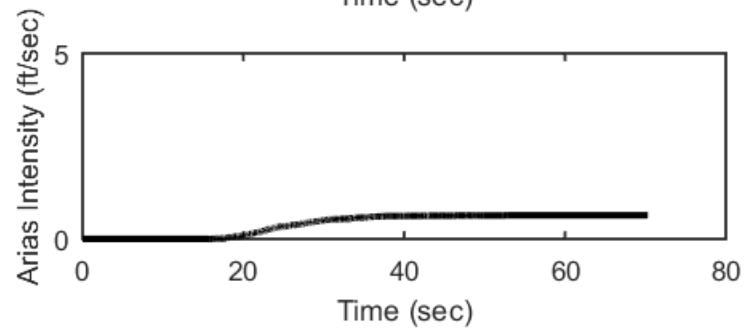
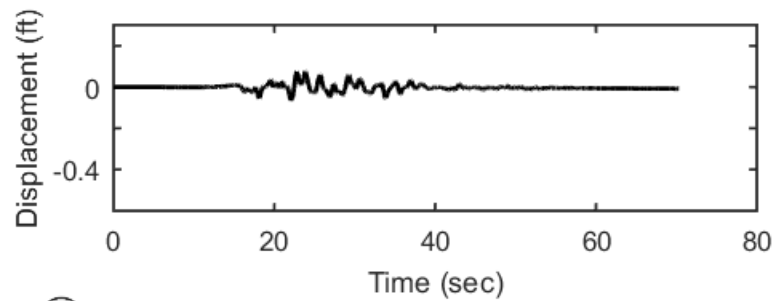
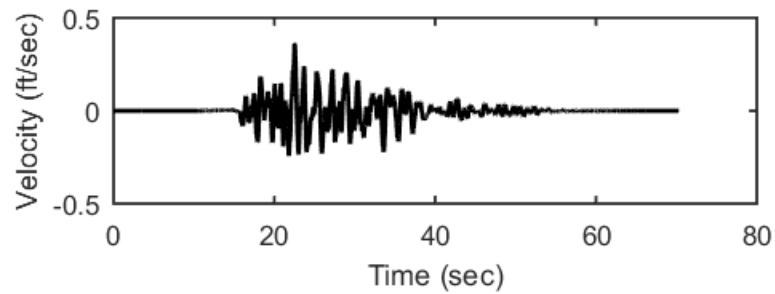
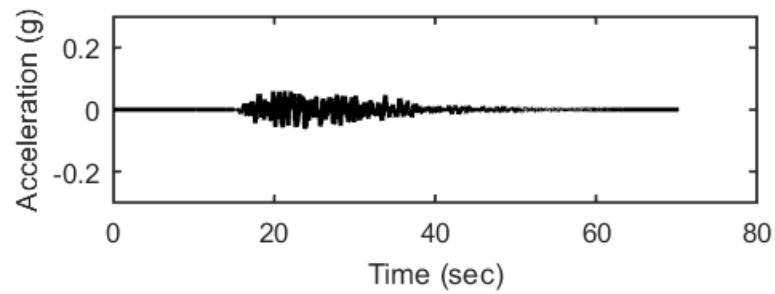
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



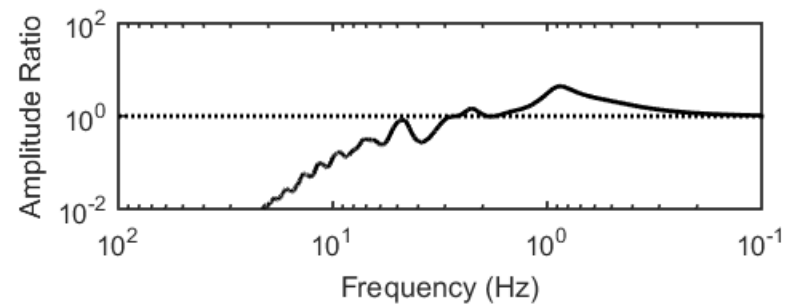
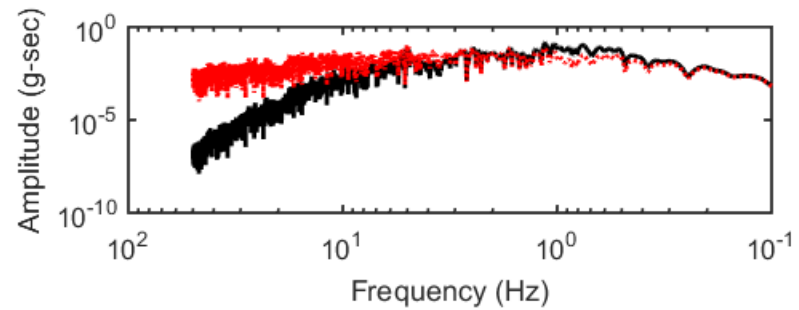
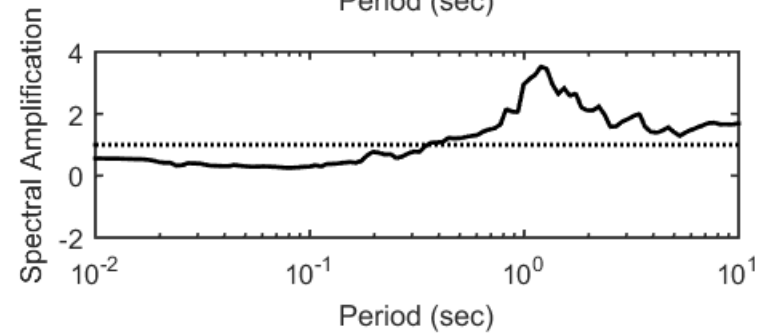
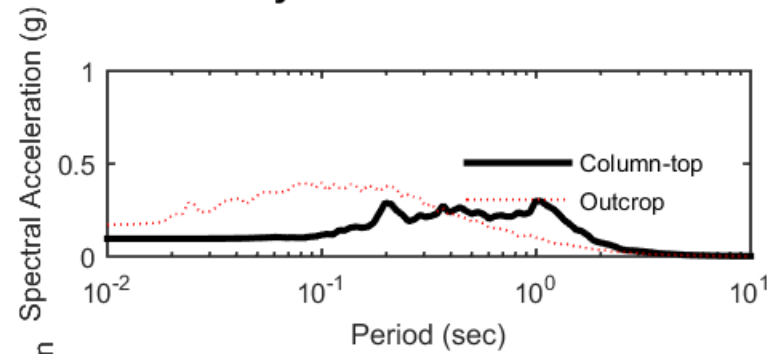
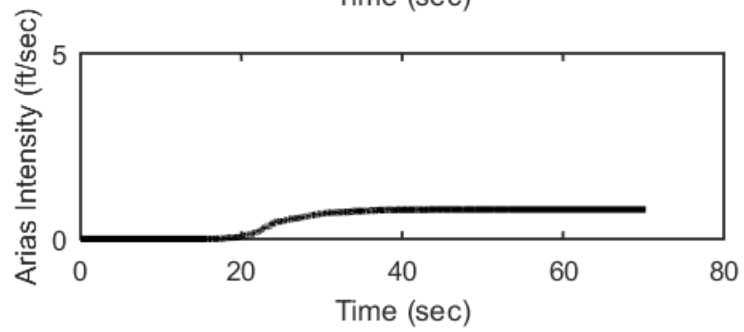
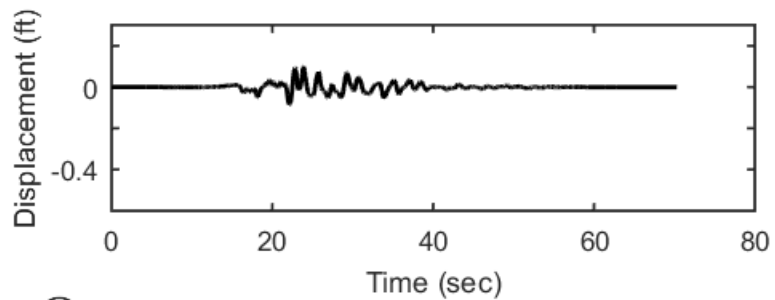
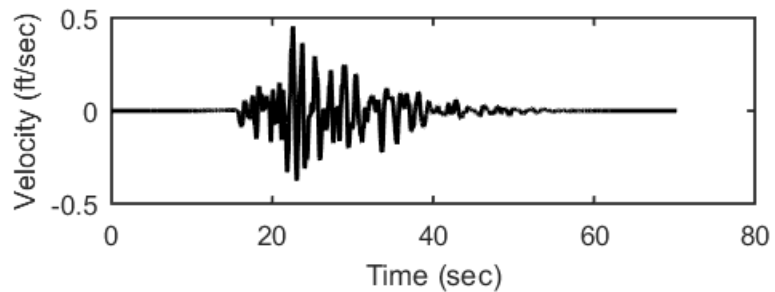
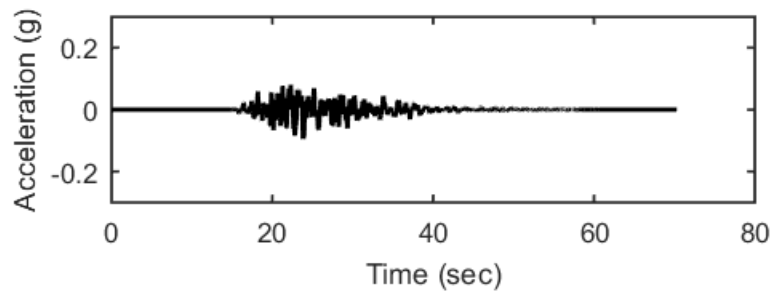
### Profile outputs for Motion: FEE6



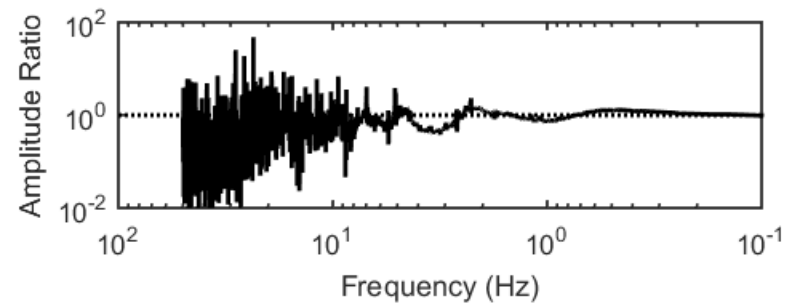
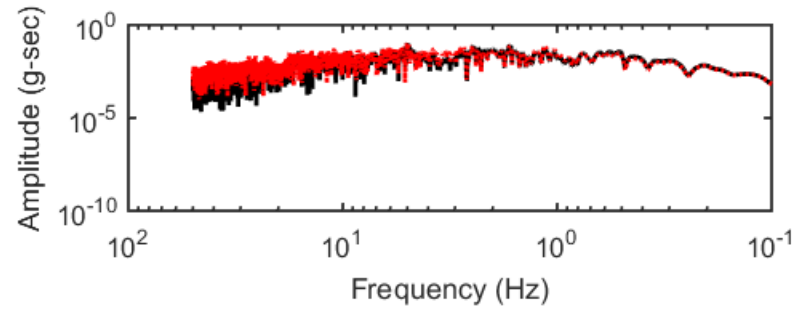
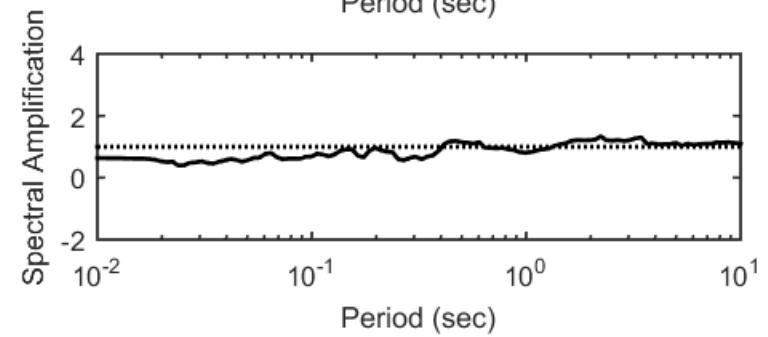
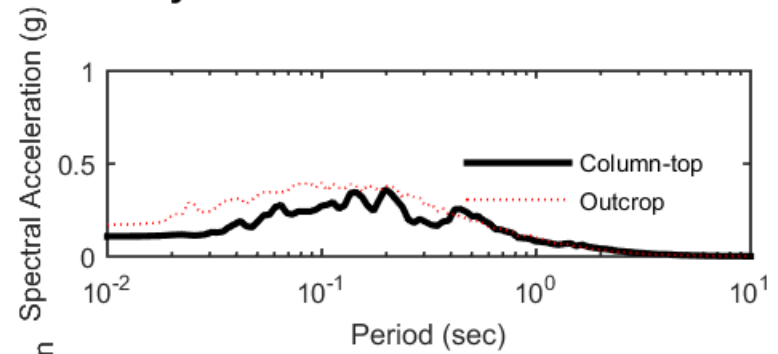
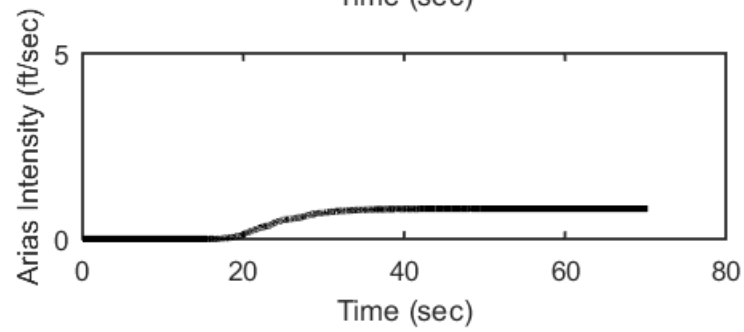
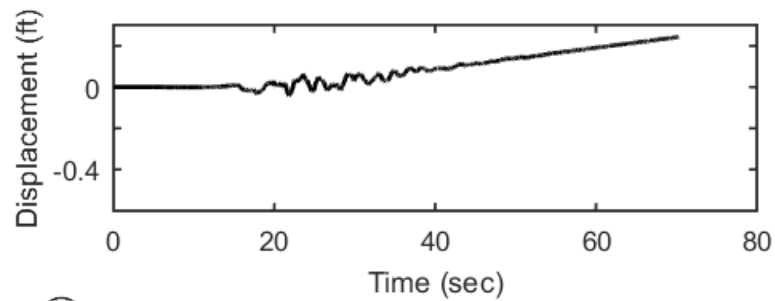
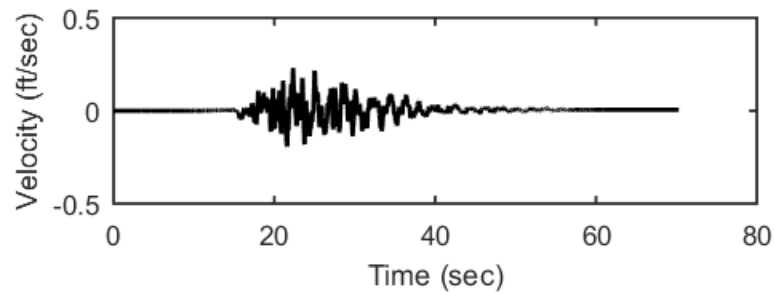
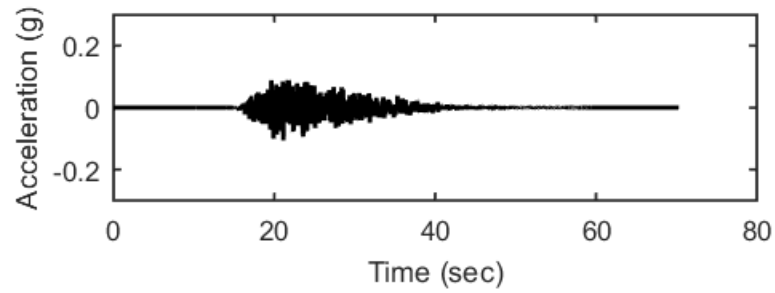
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



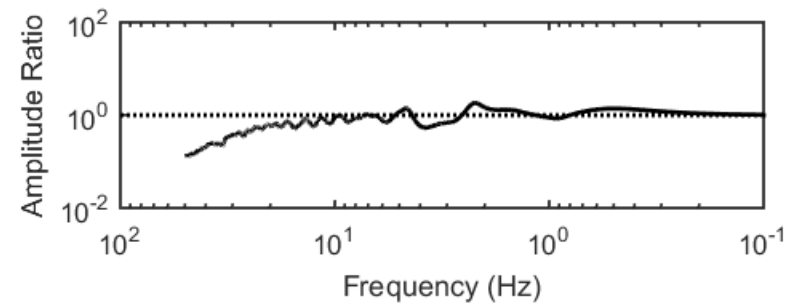
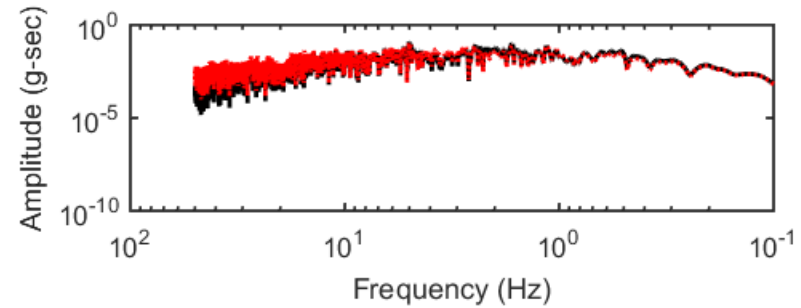
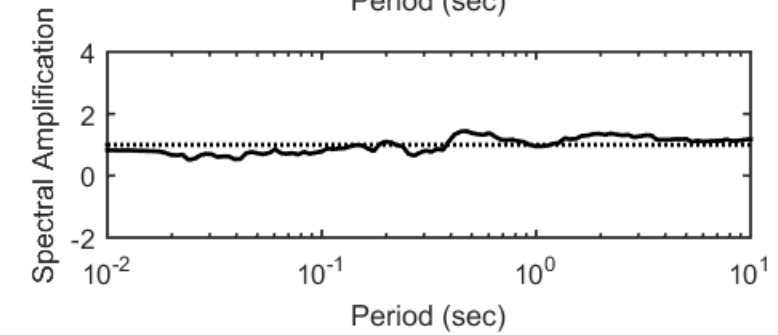
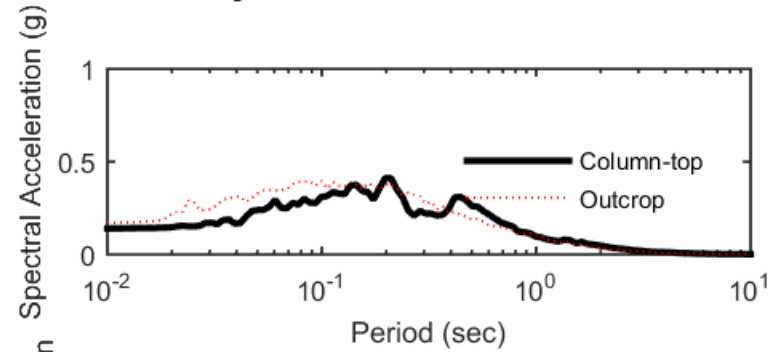
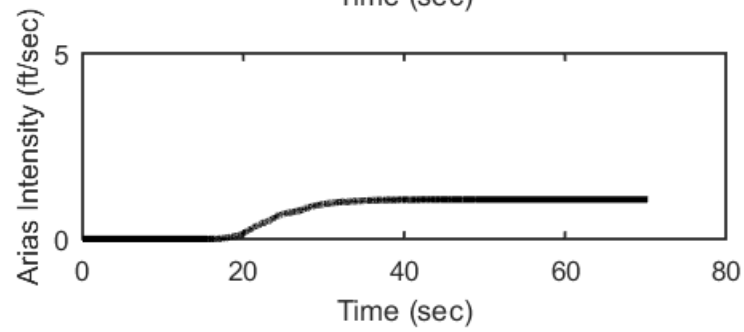
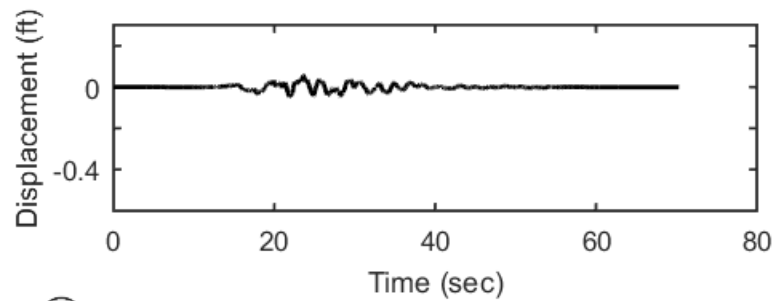
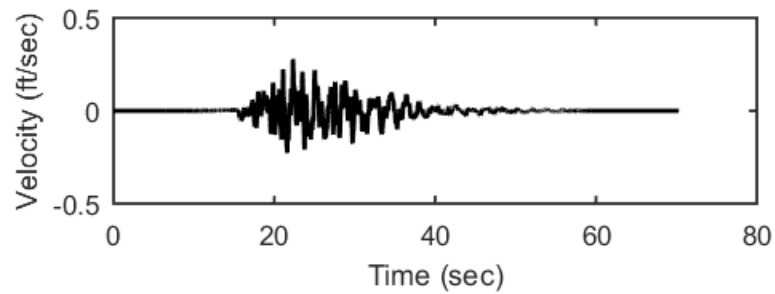
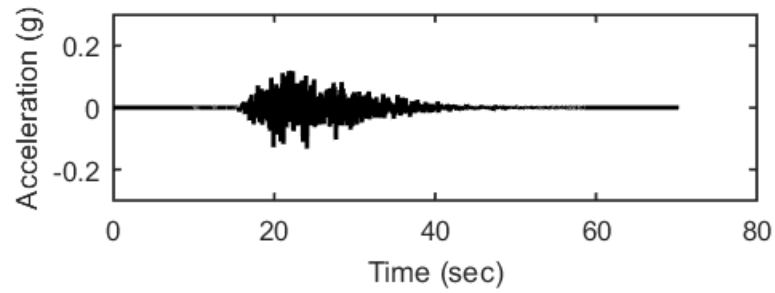
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



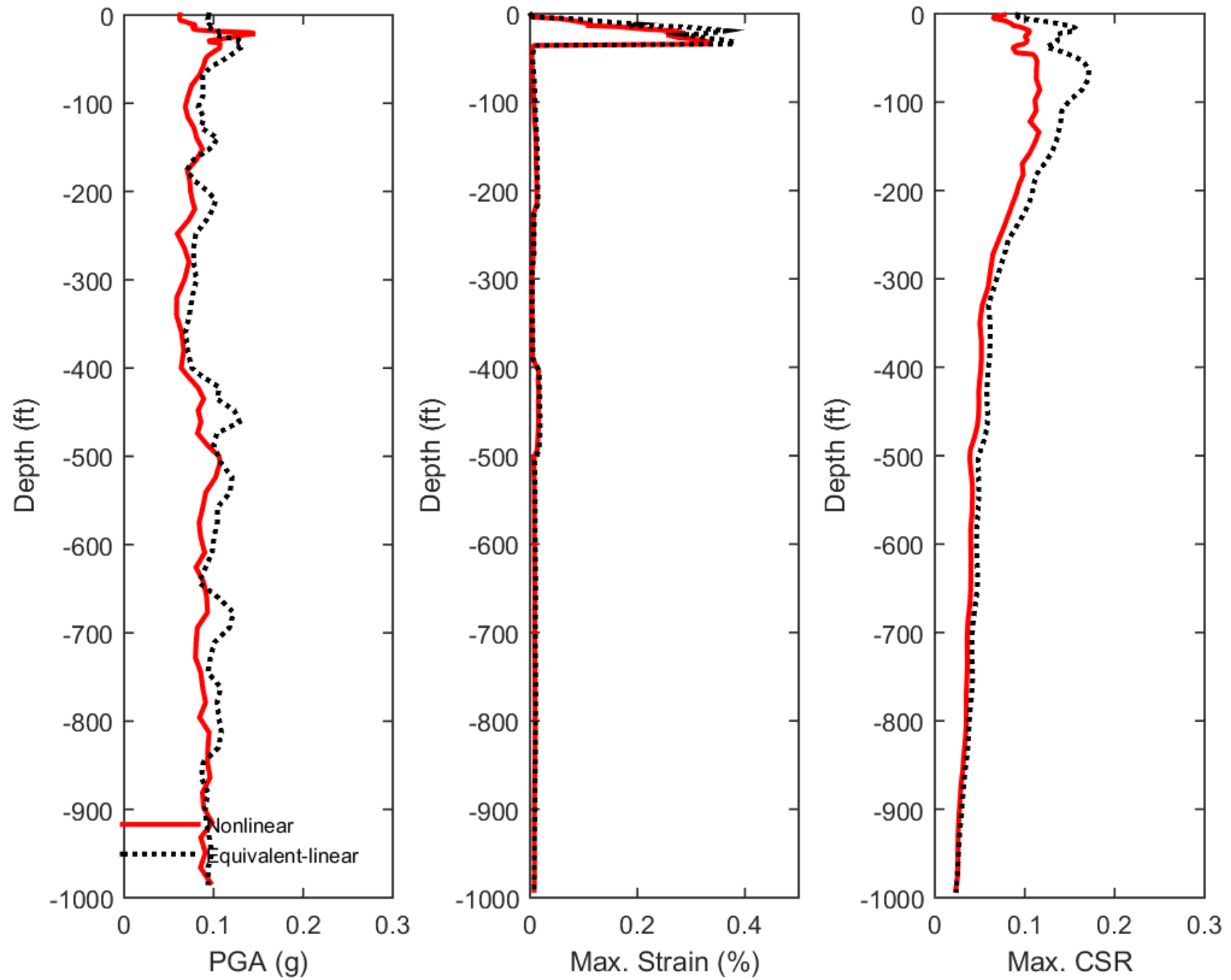
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



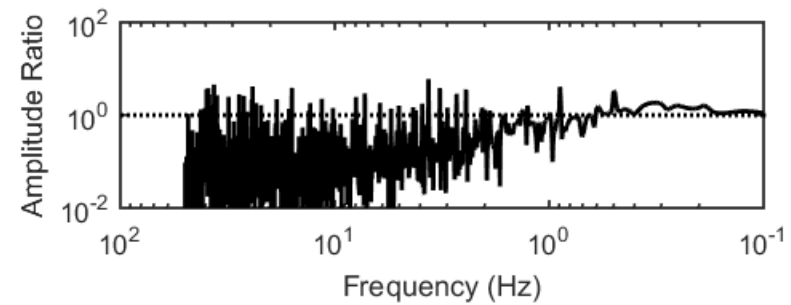
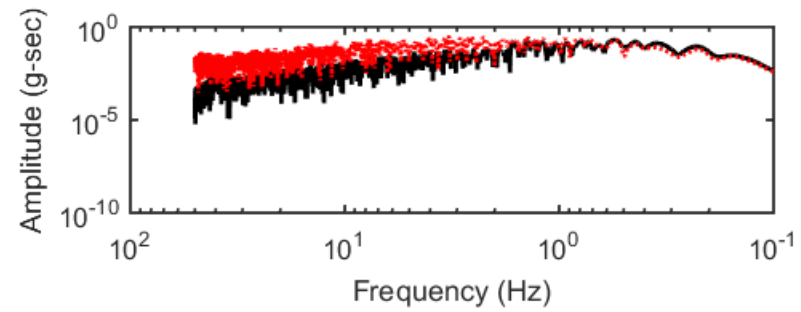
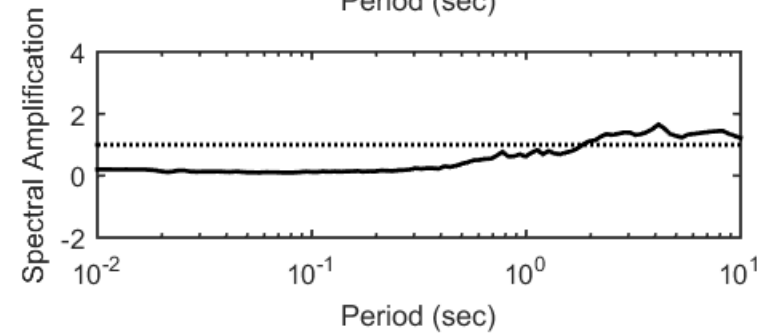
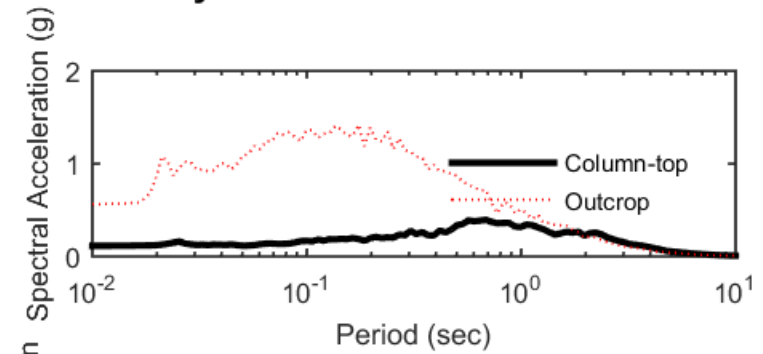
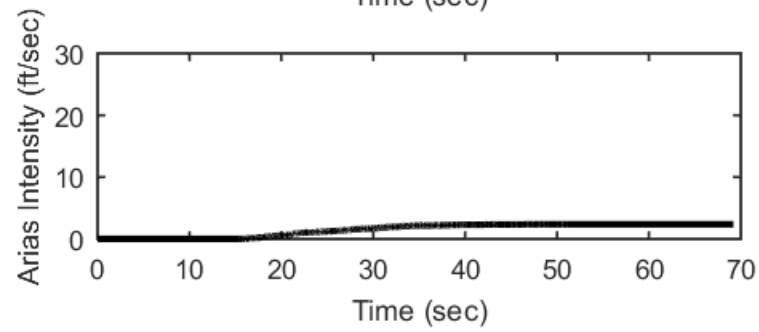
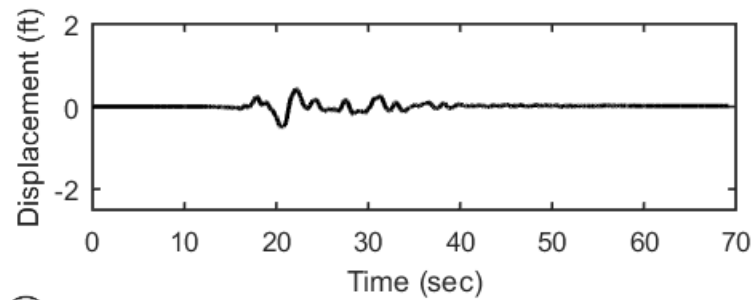
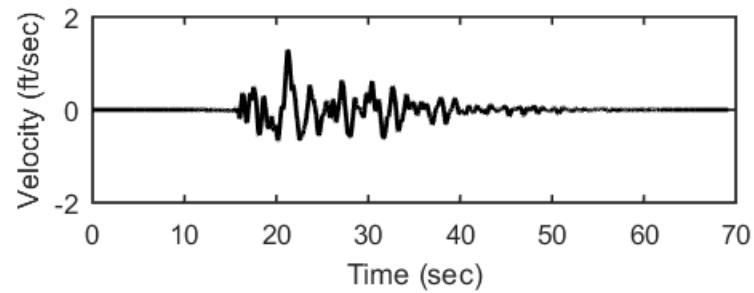
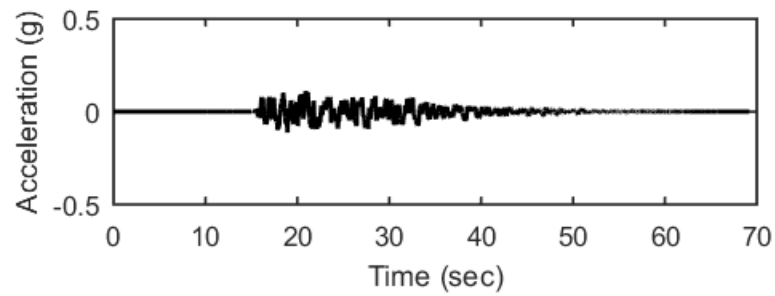
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



### Profile outputs for Motion: FEE7

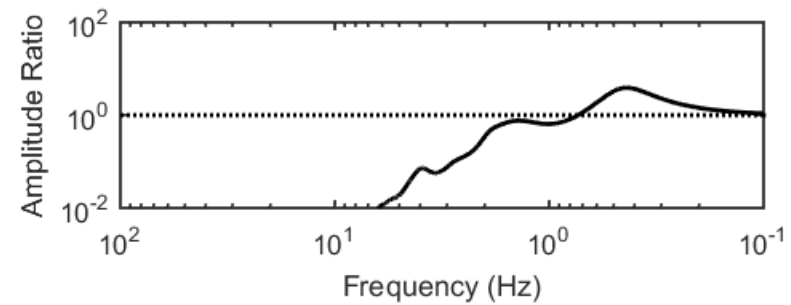
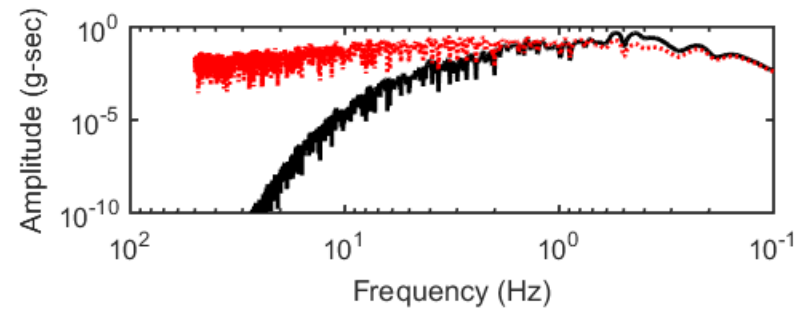
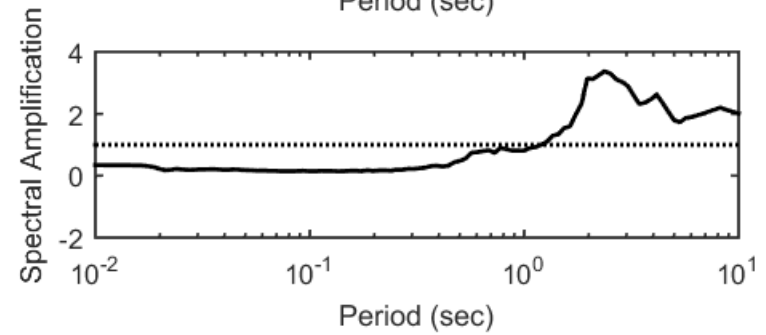
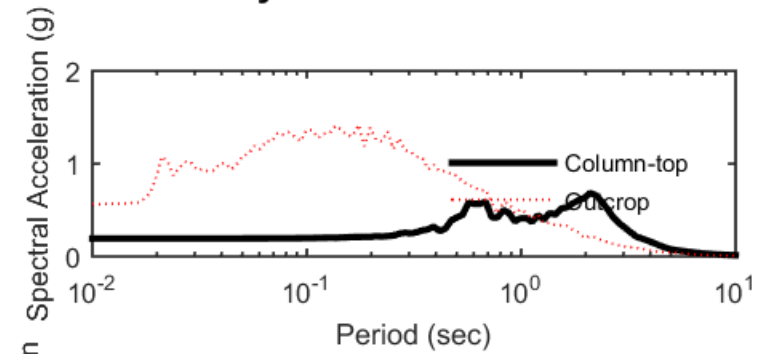
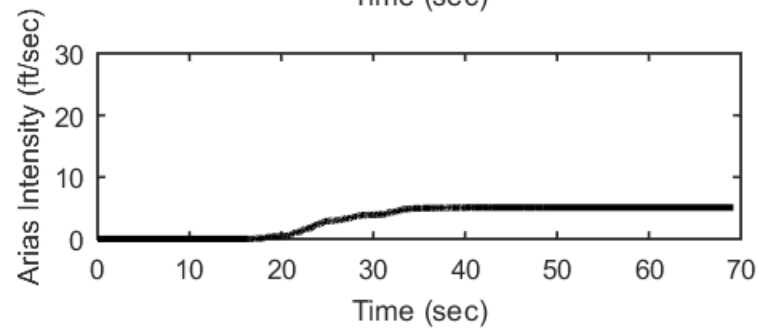
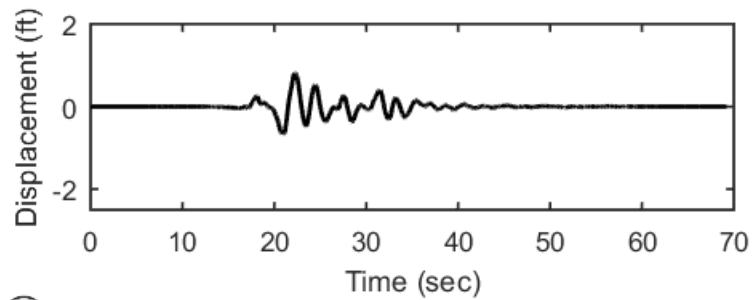
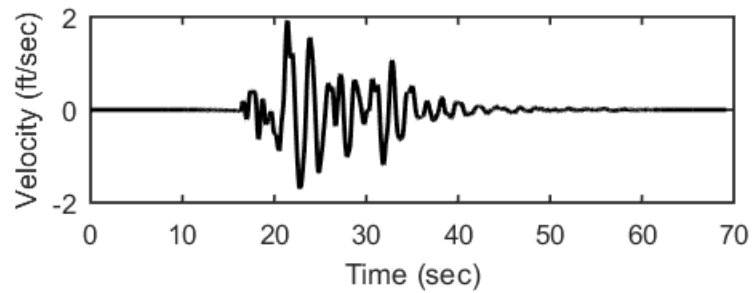
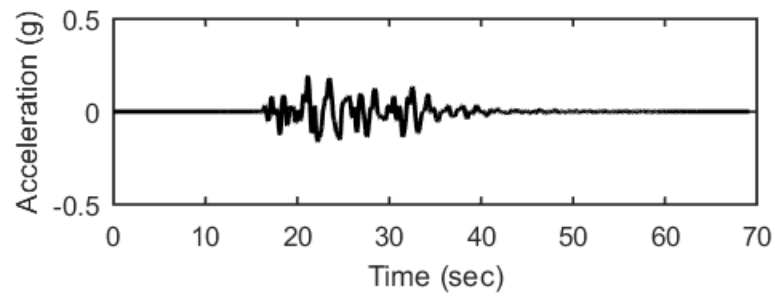


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1

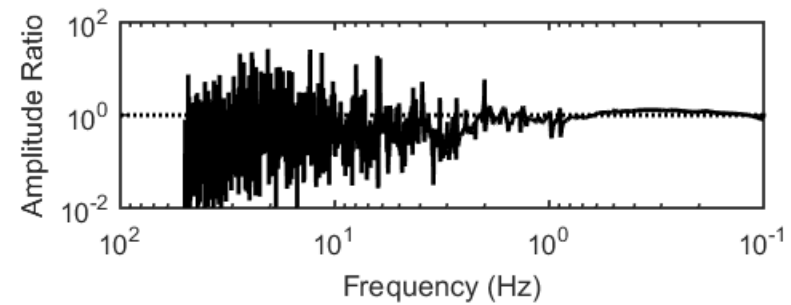
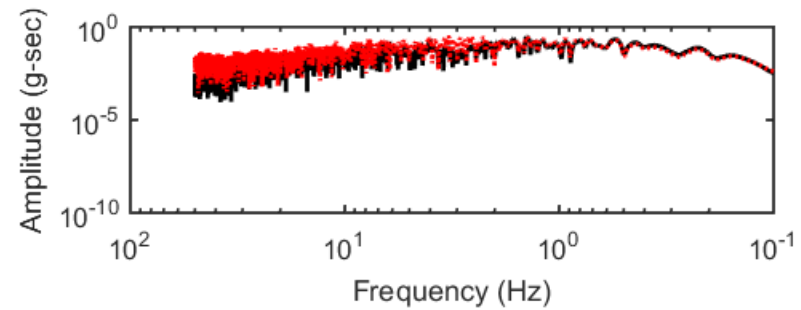
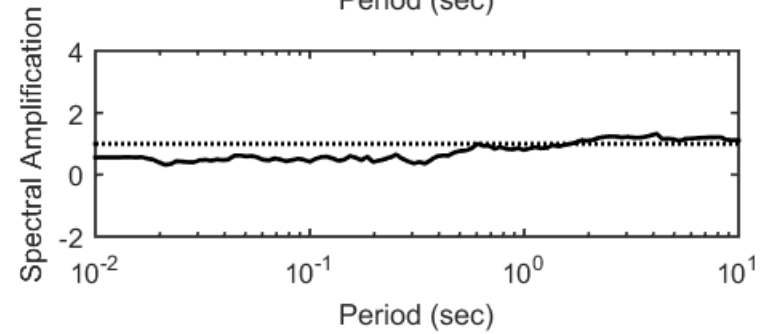
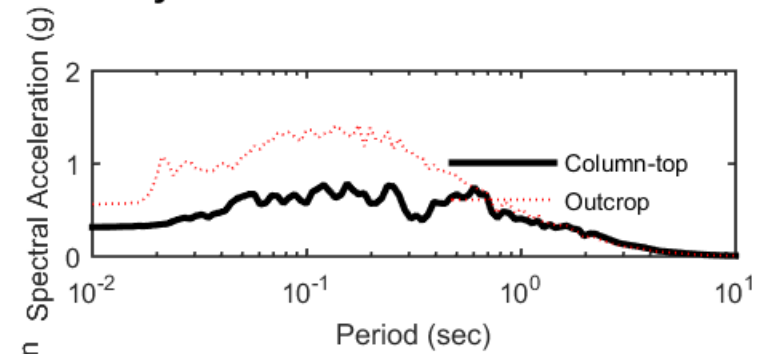
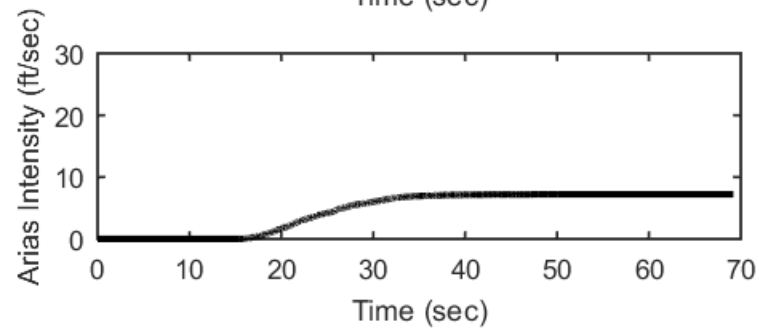
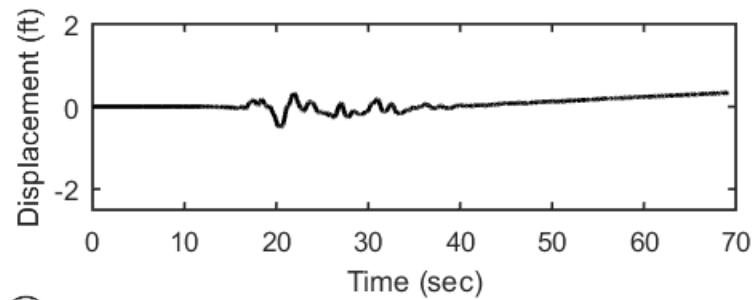
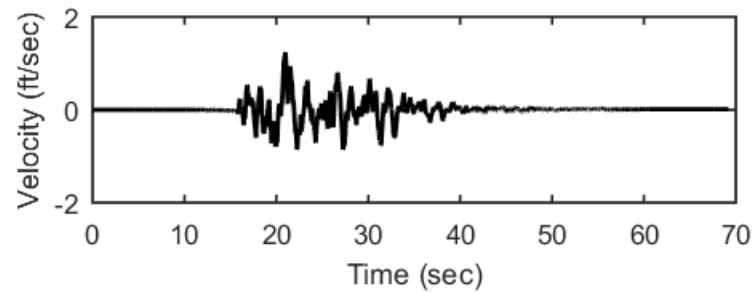
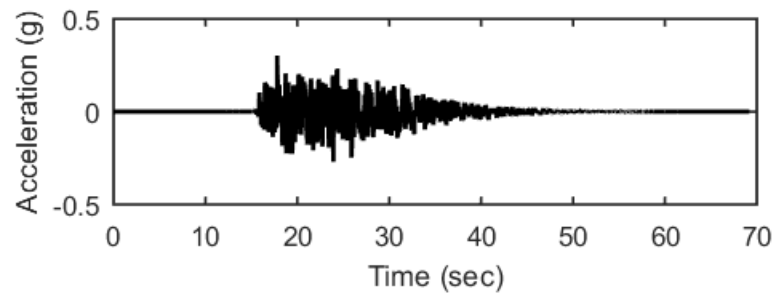




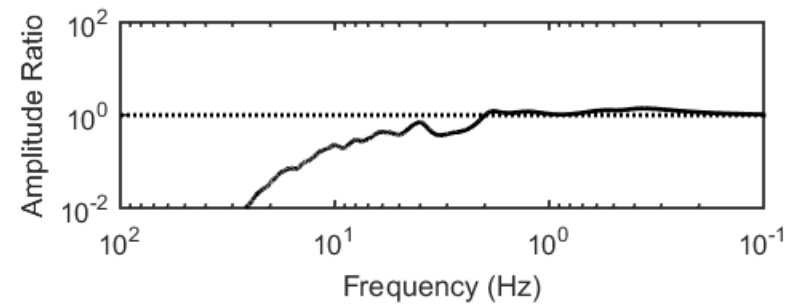
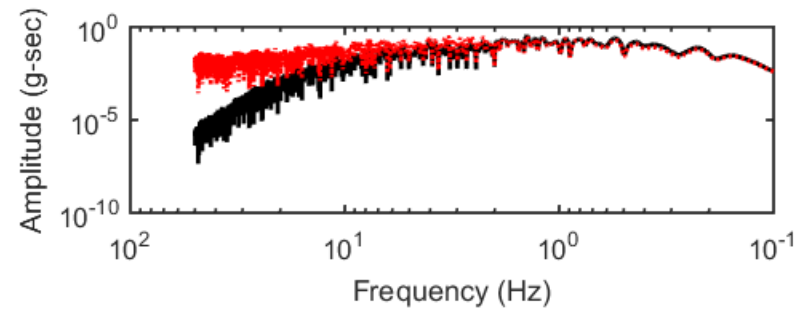
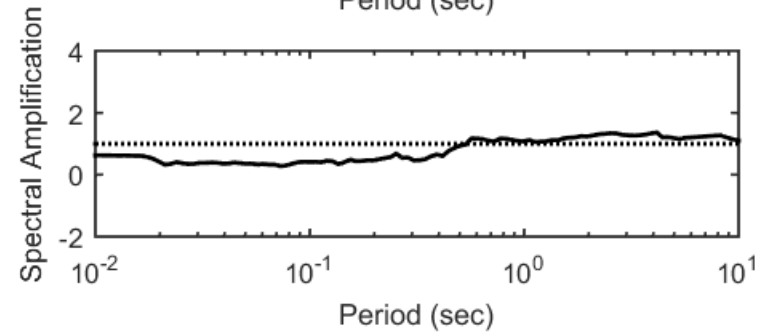
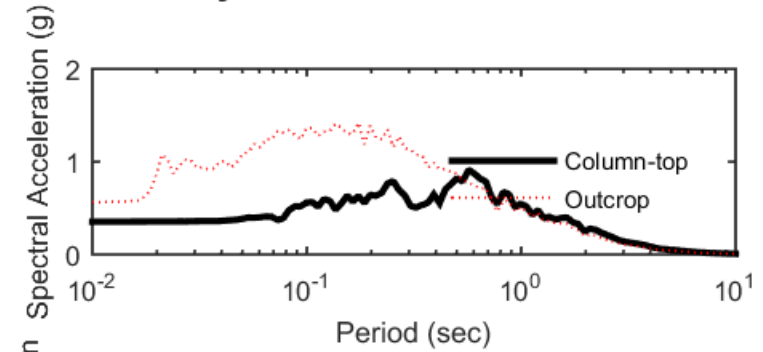
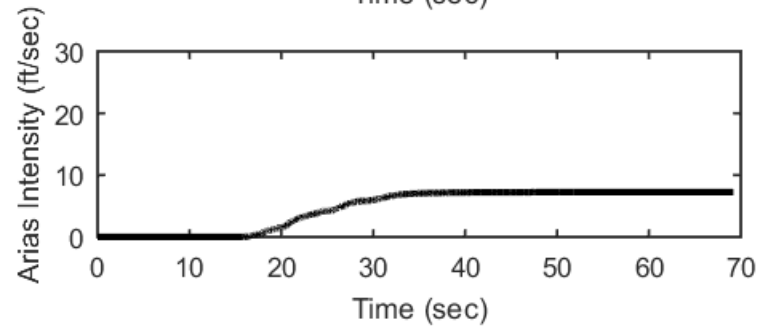
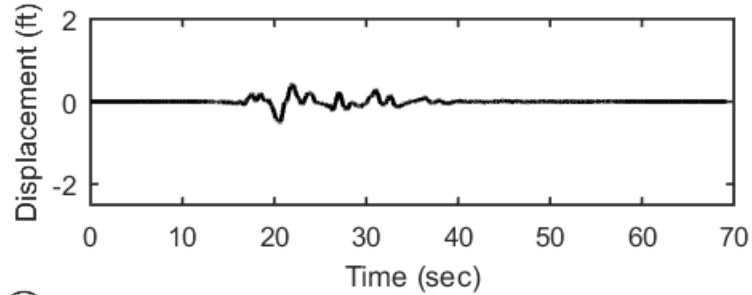
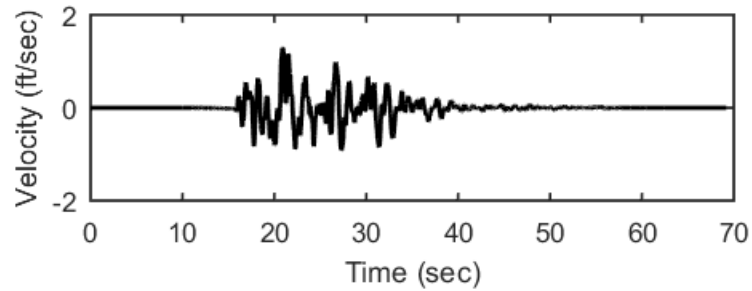
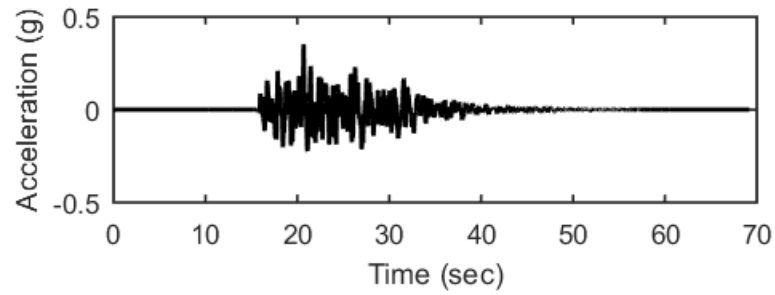
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



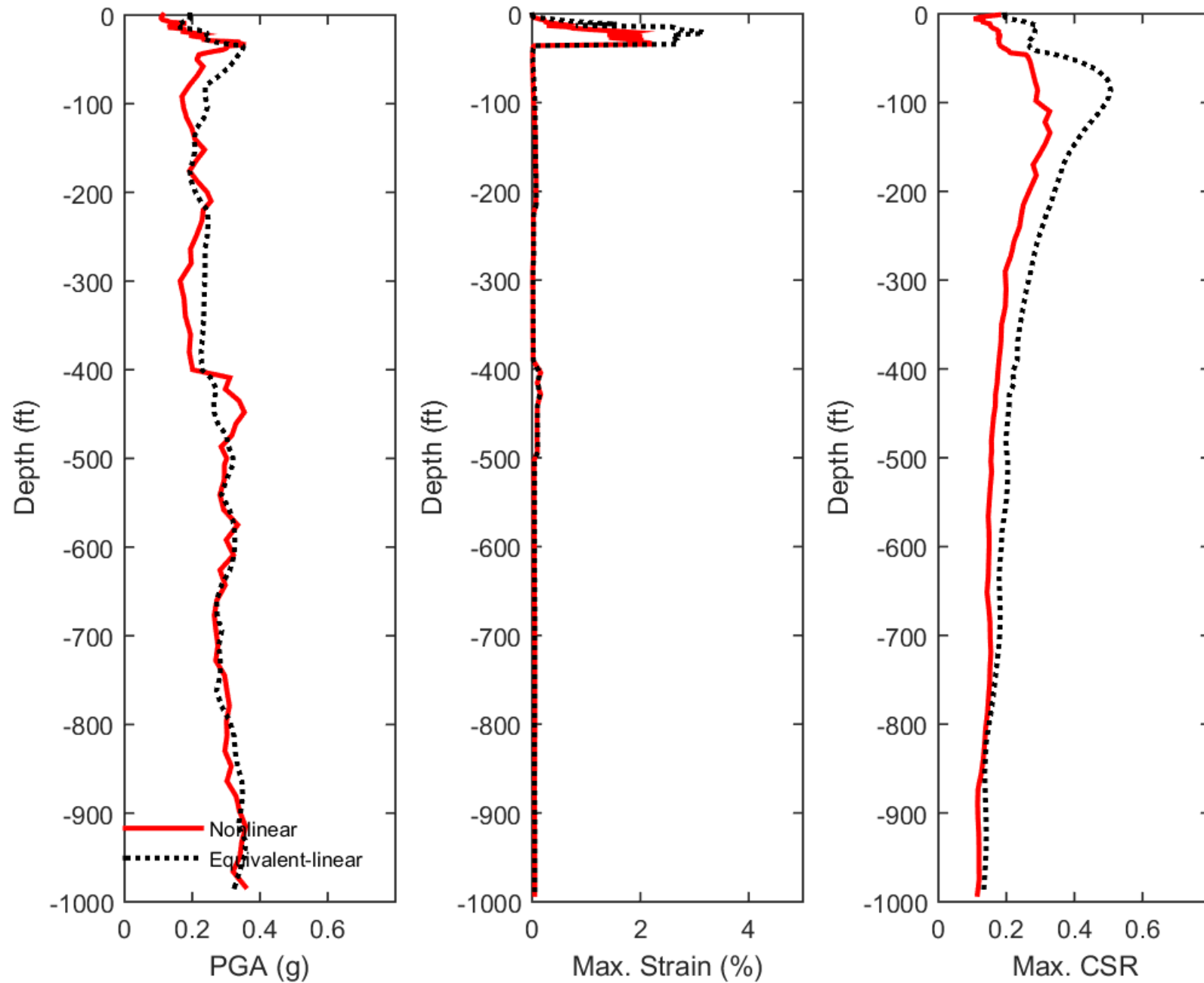
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



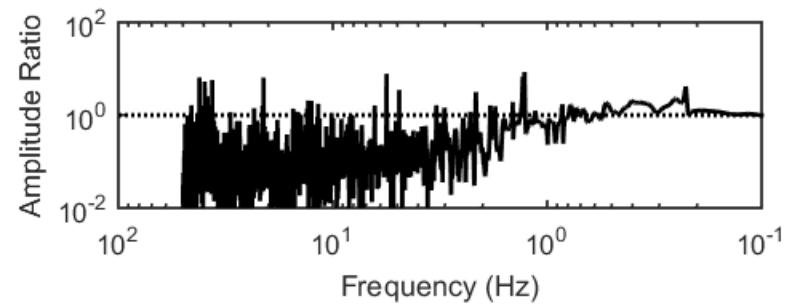
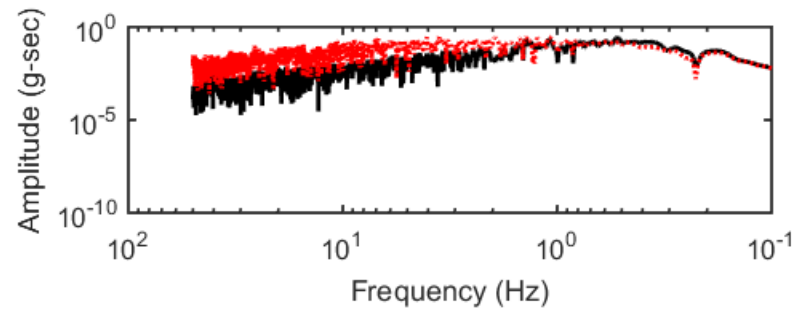
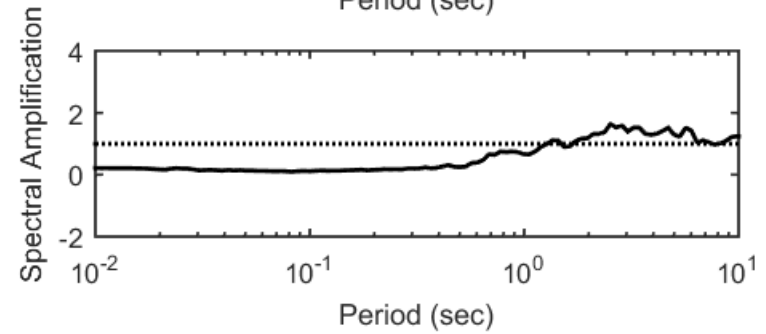
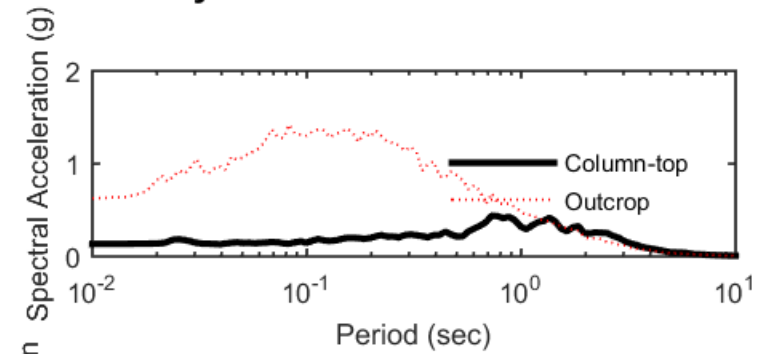
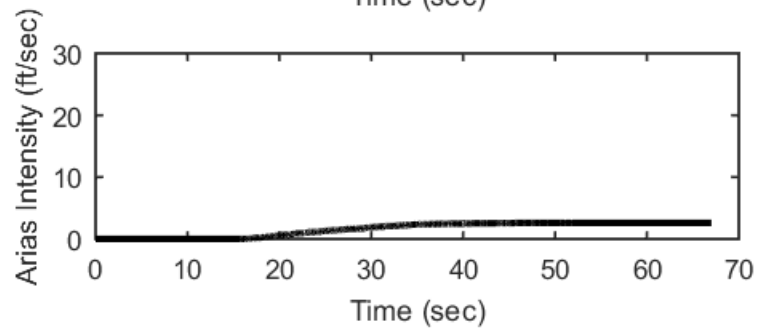
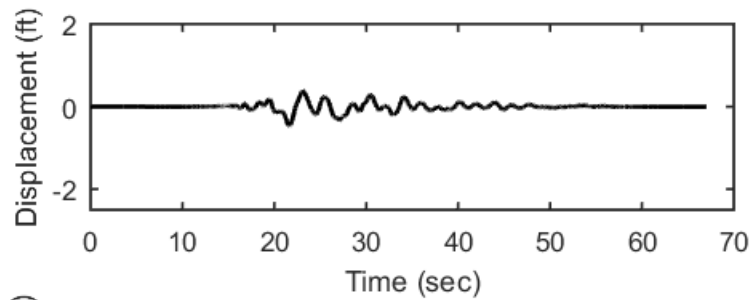
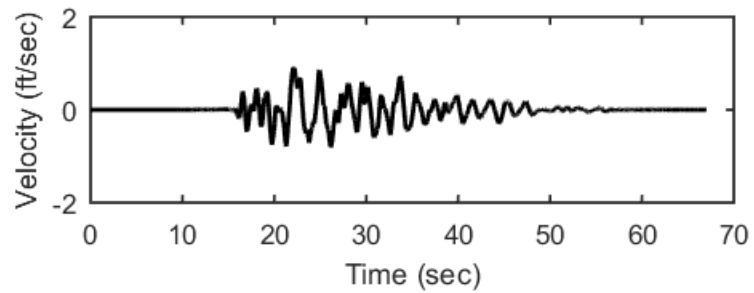
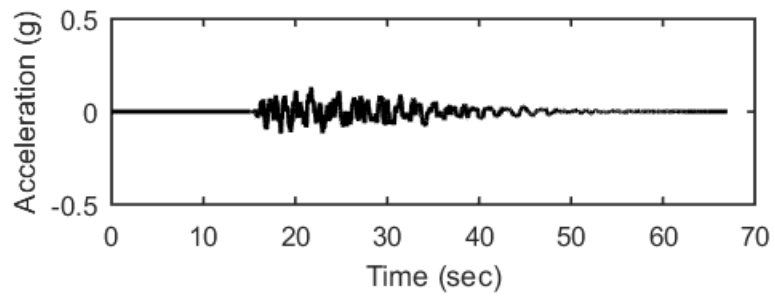
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



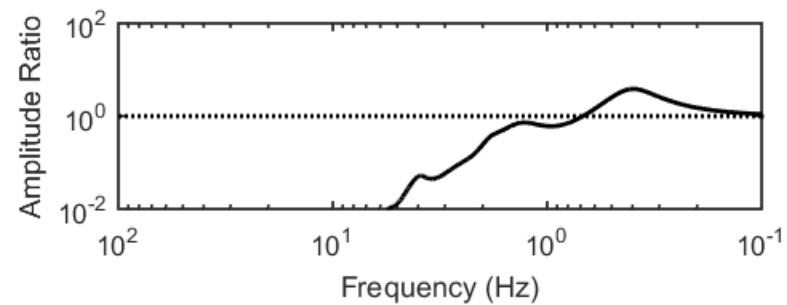
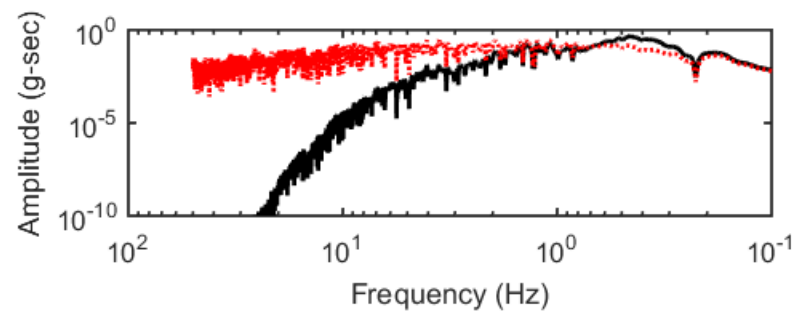
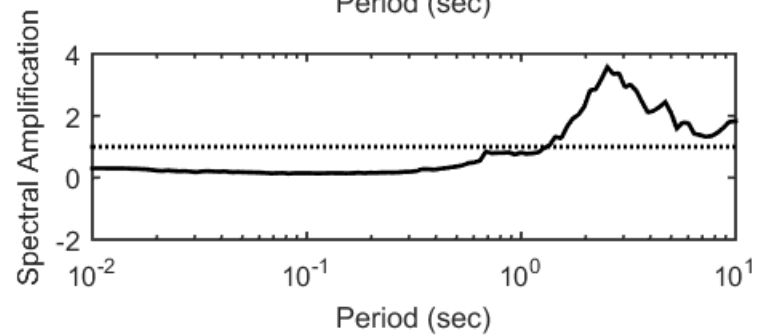
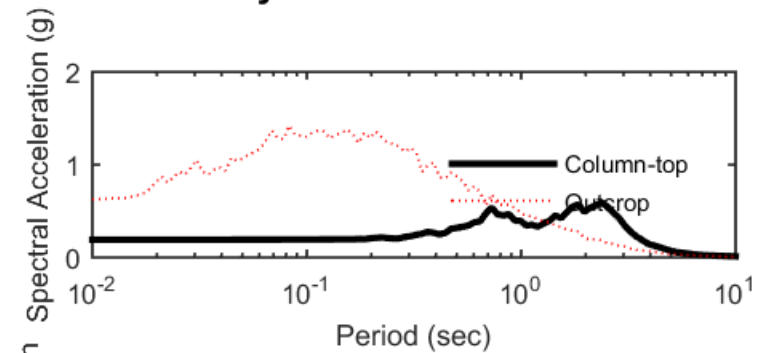
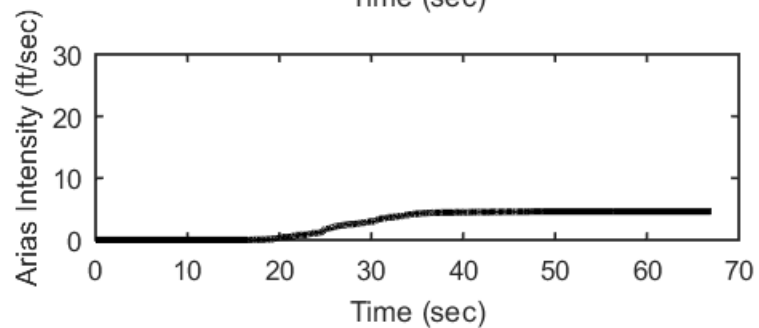
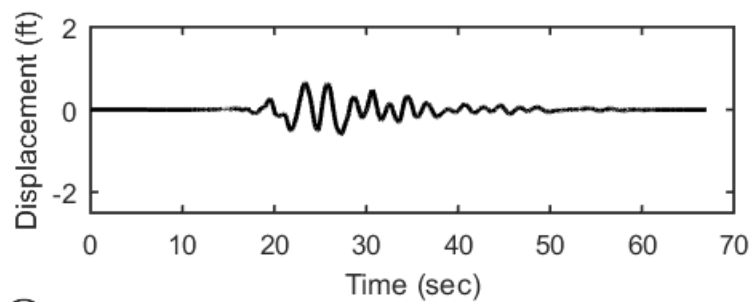
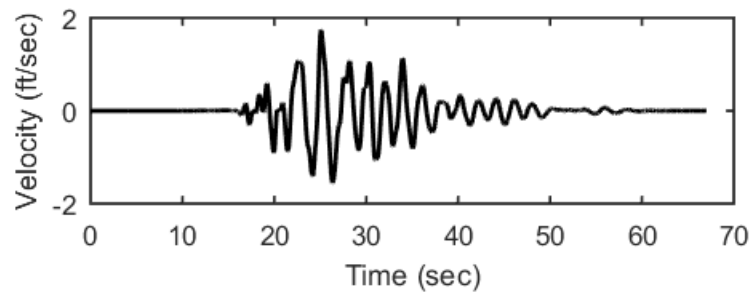
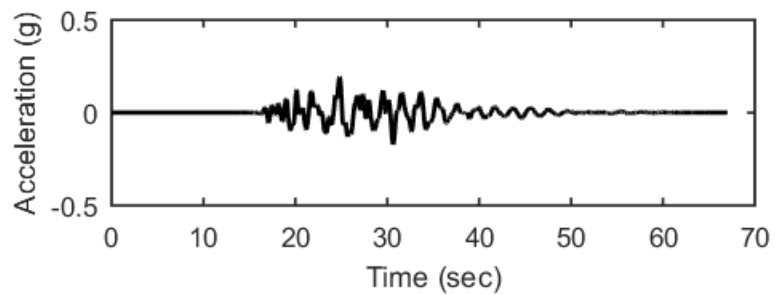
### Profile outputs for Motion: SEE1



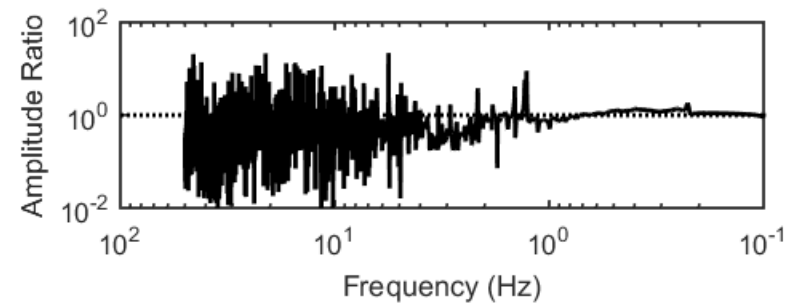
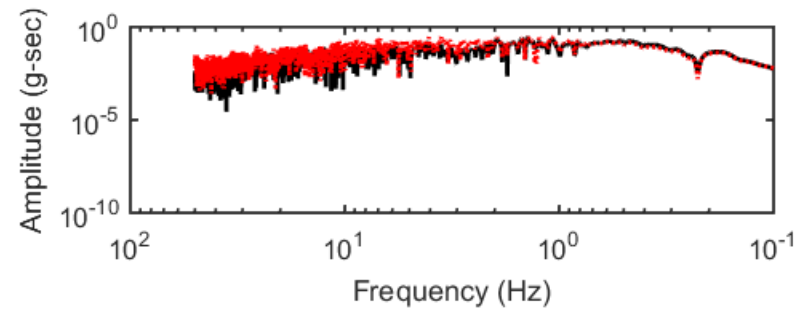
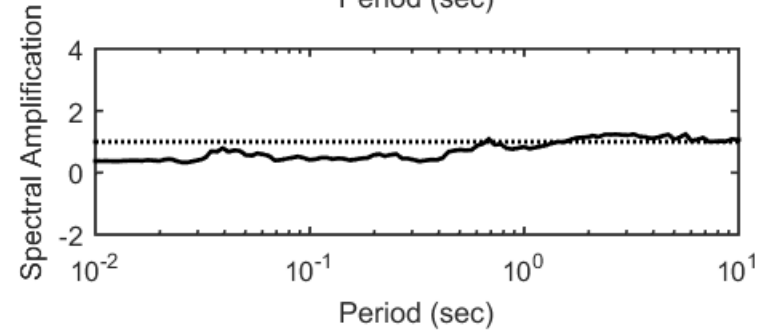
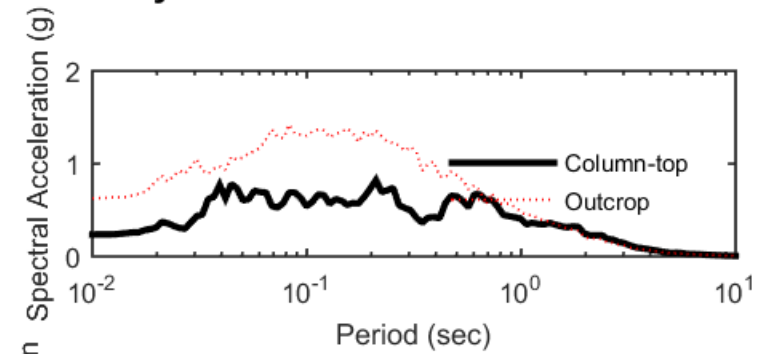
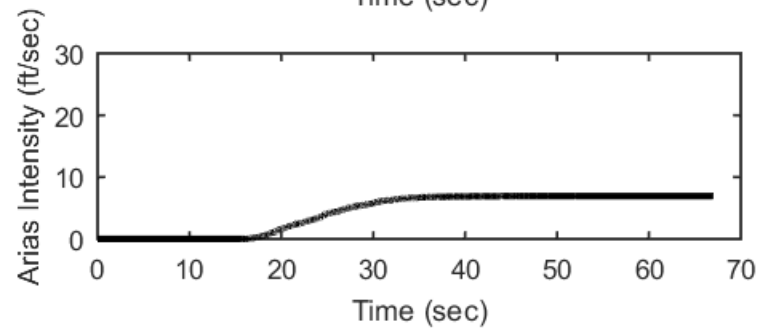
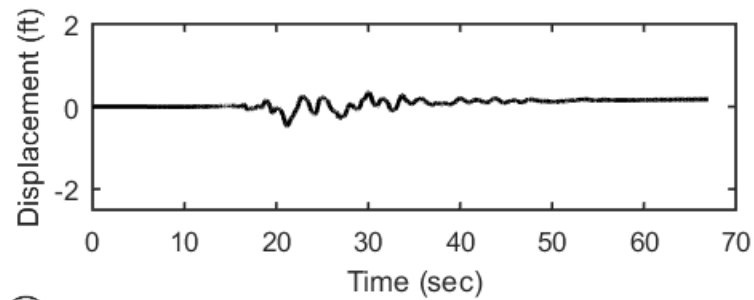
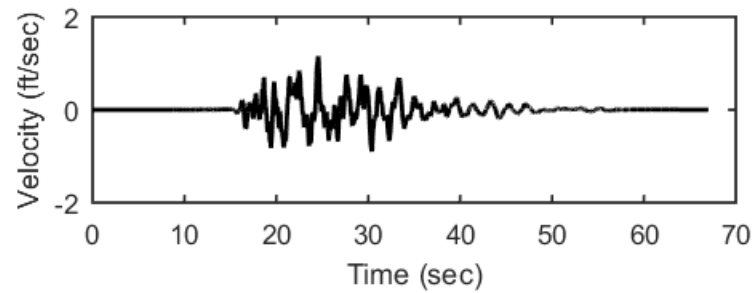
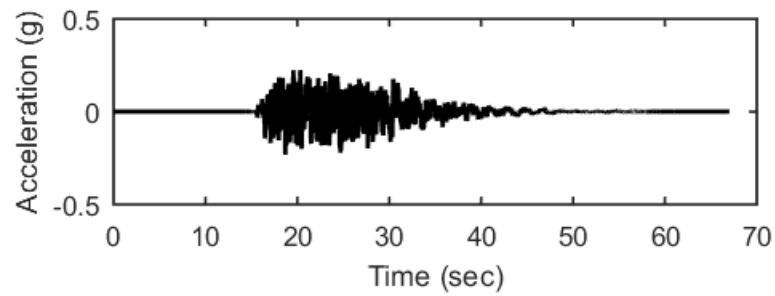
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



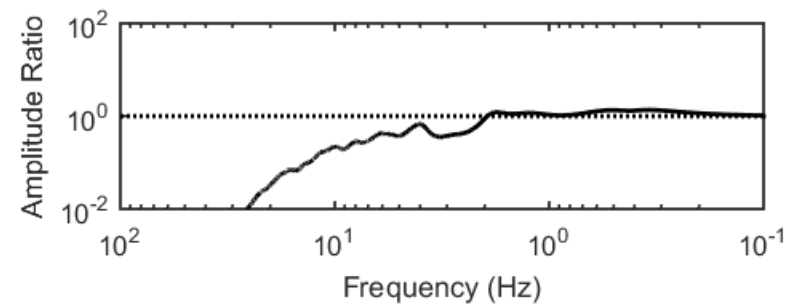
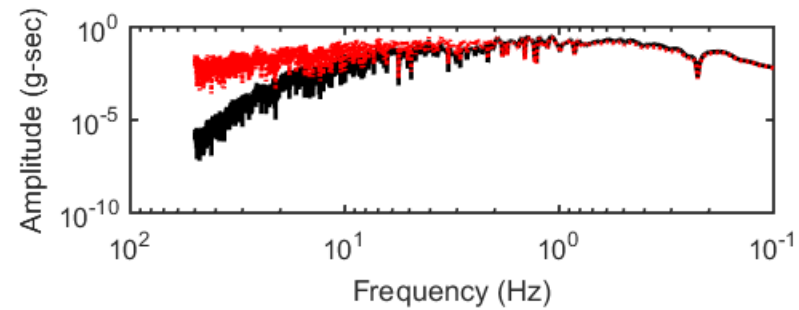
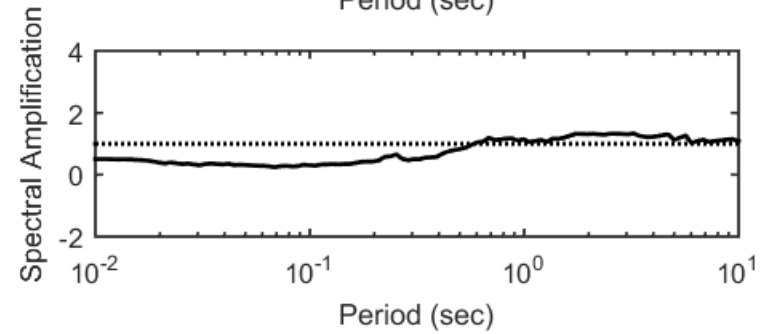
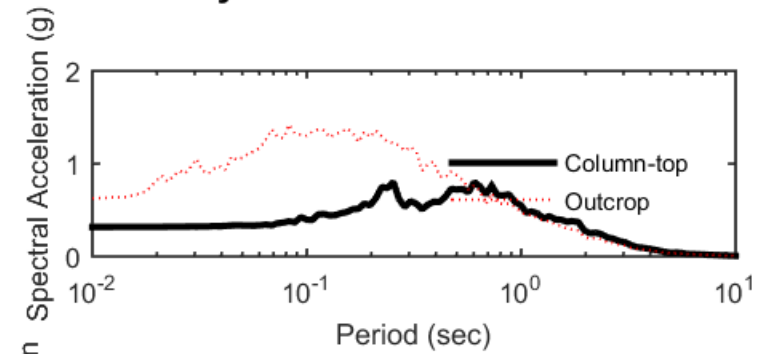
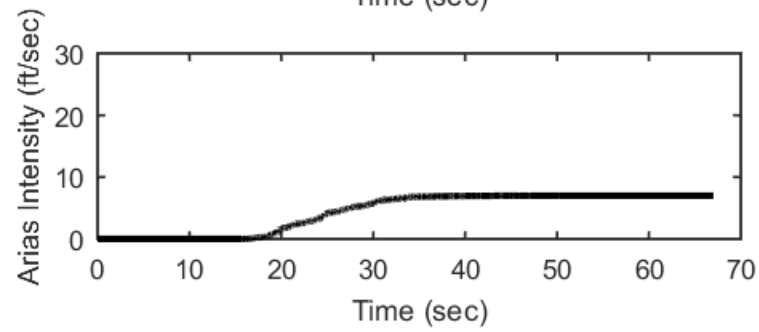
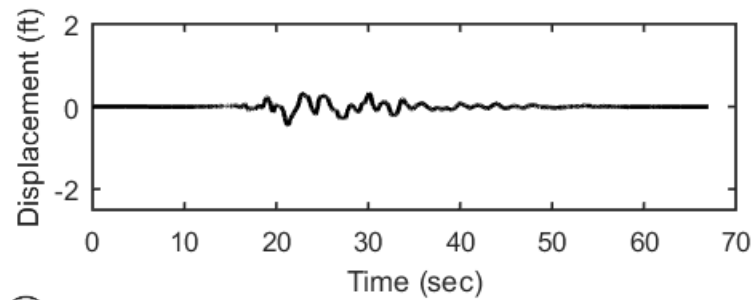
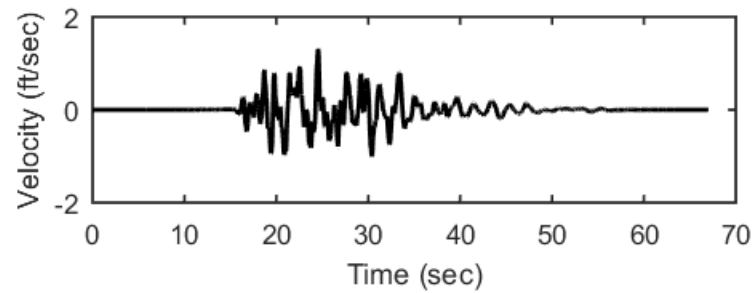
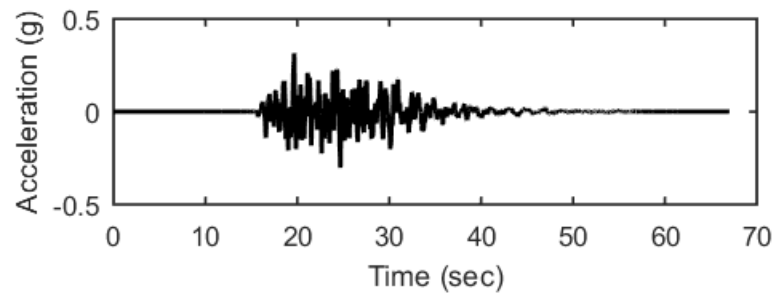
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2

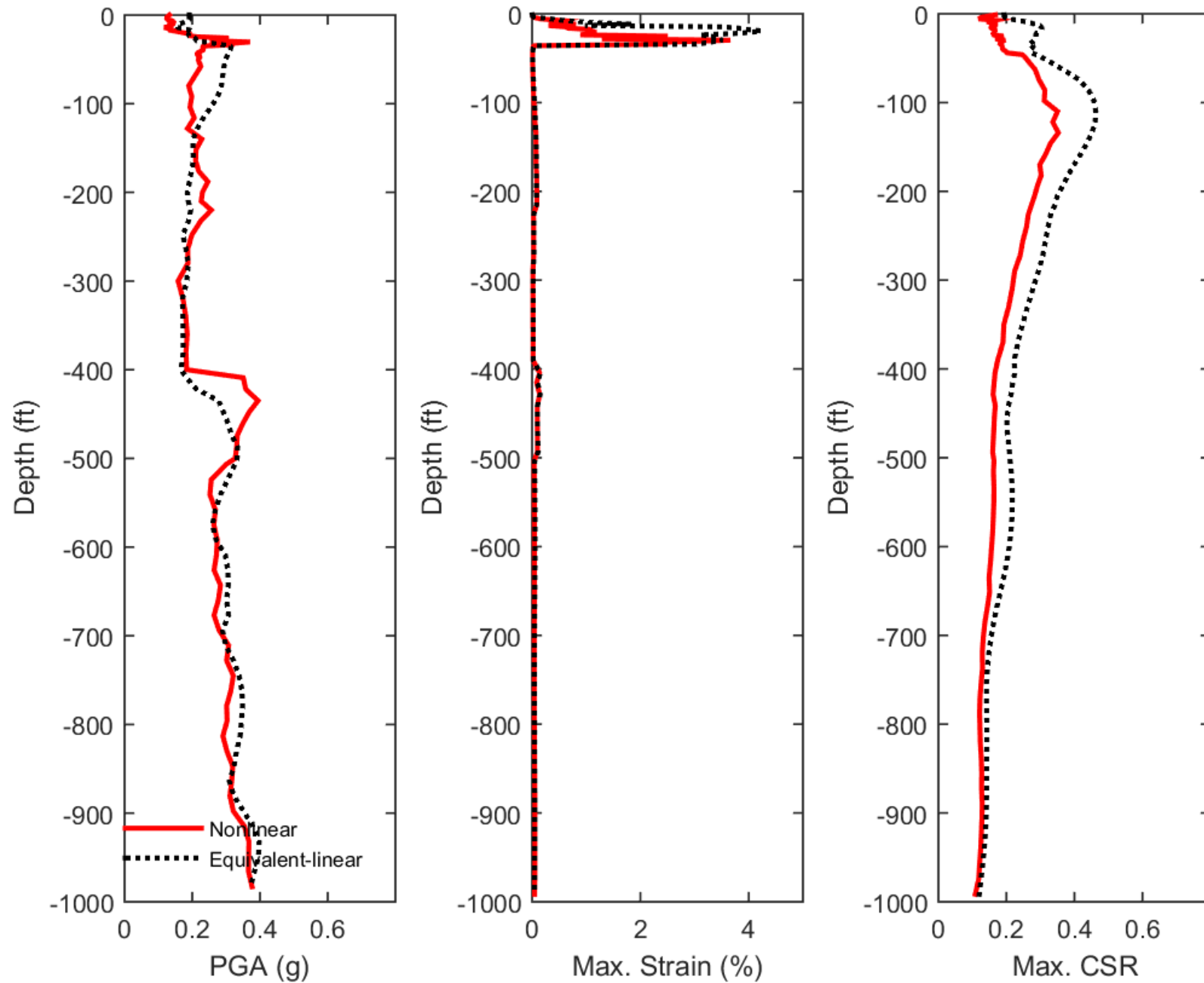


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2

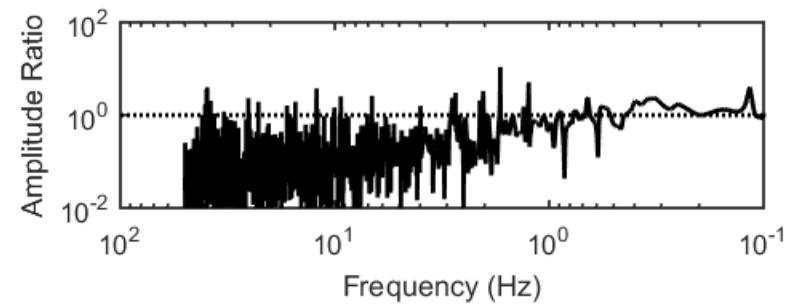
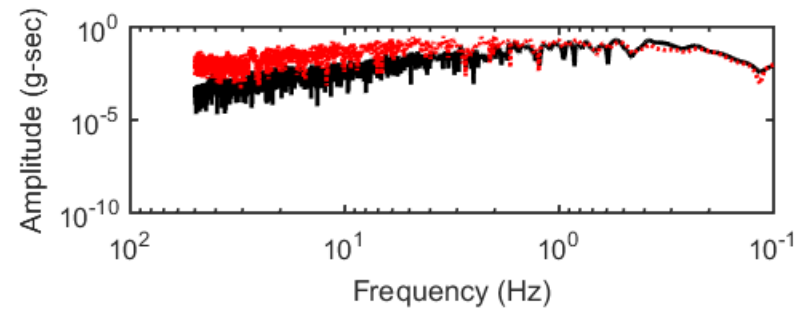
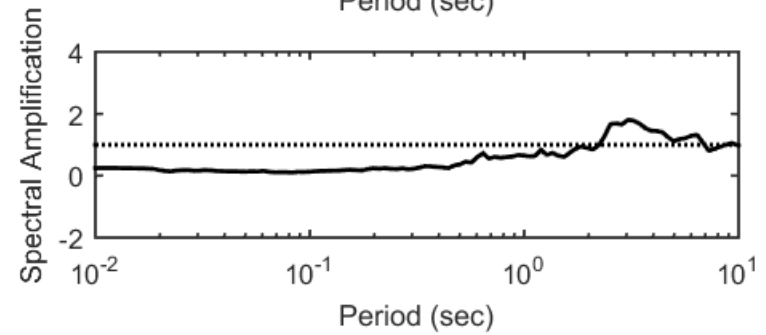
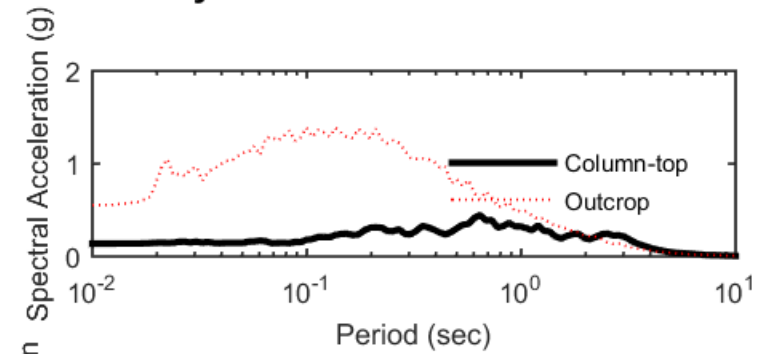
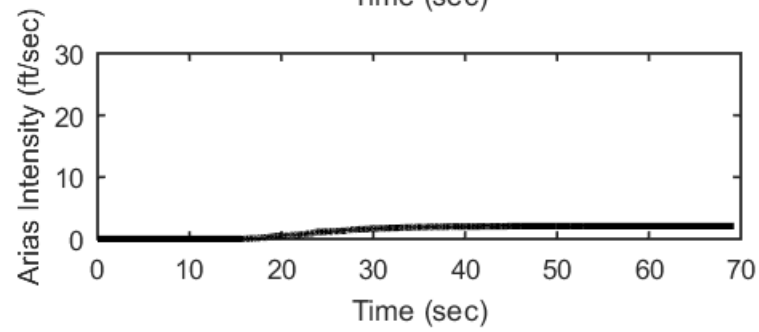
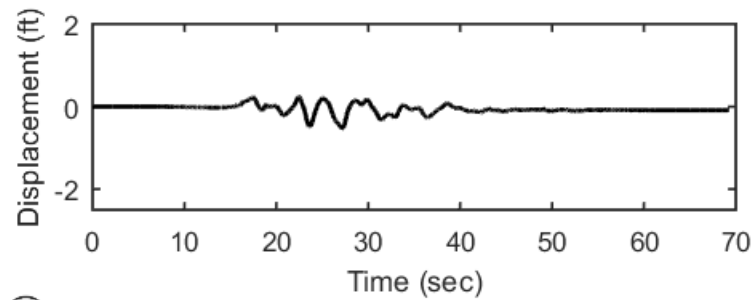
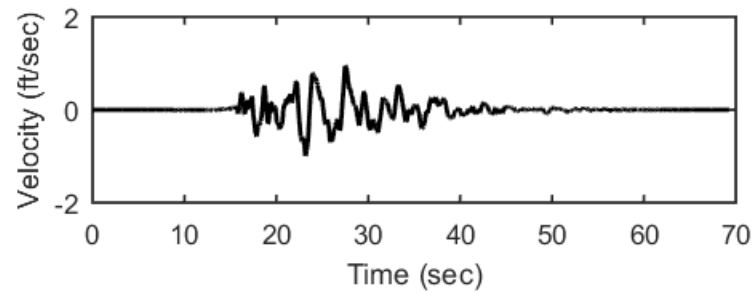
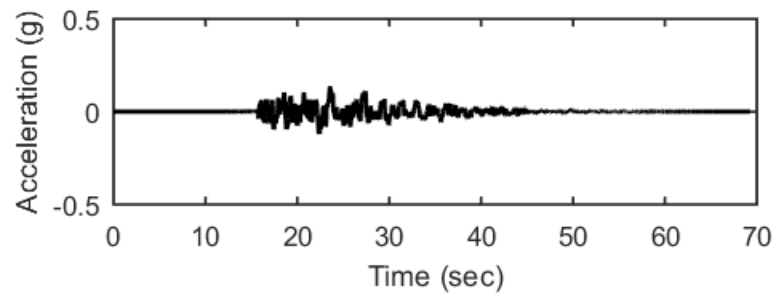




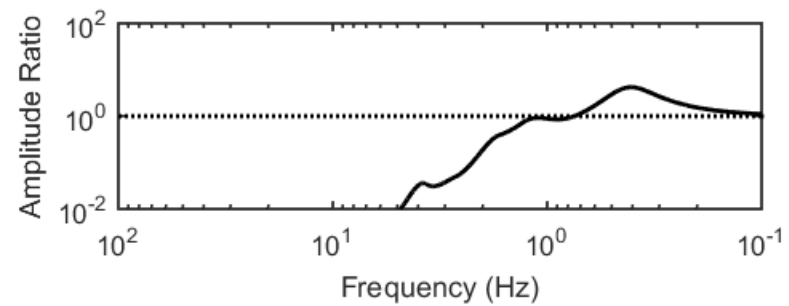
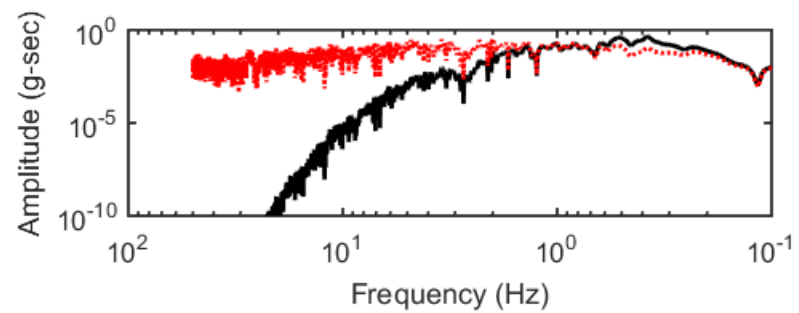
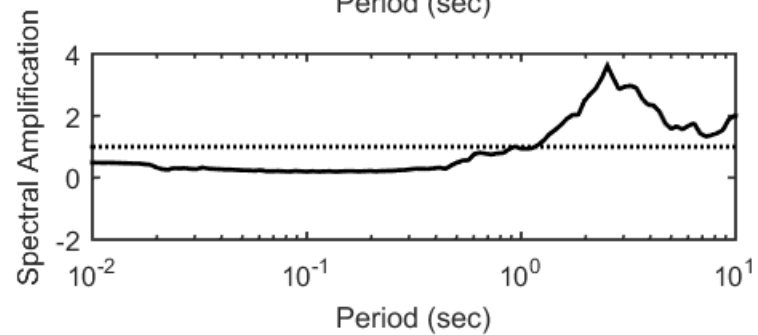
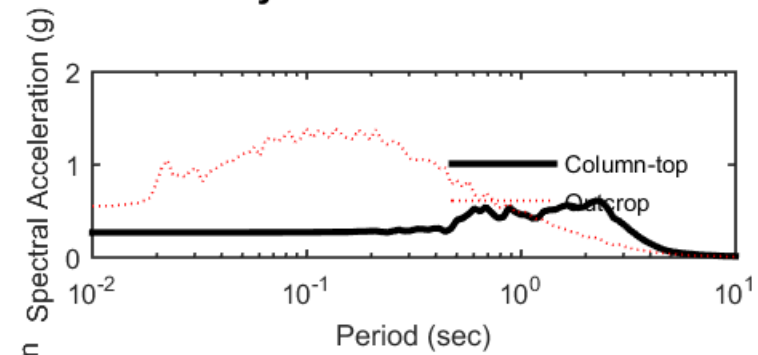
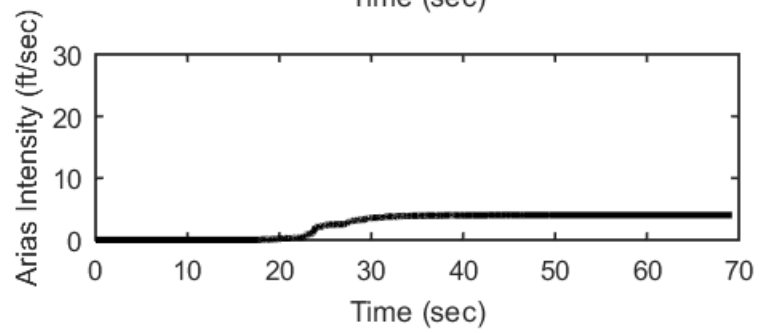
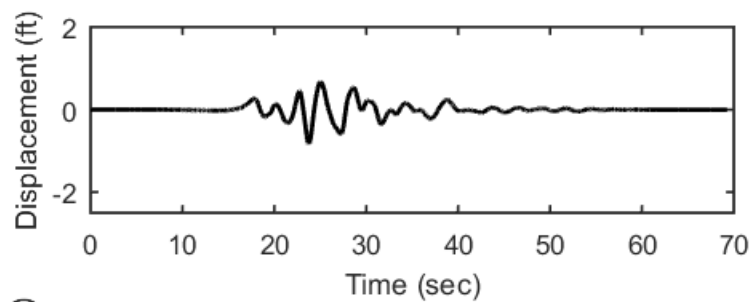
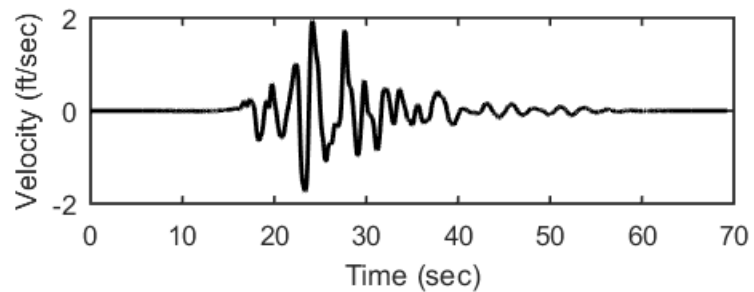
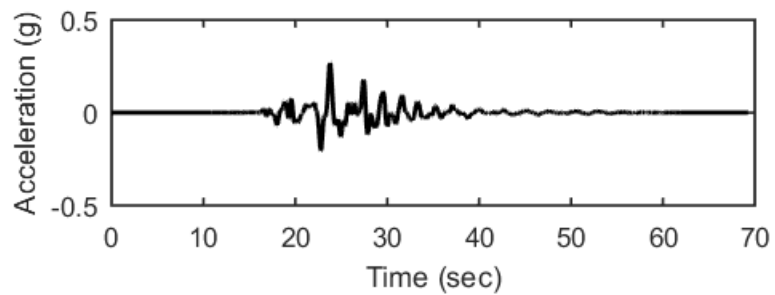
### Profile outputs for Motion: SEE2



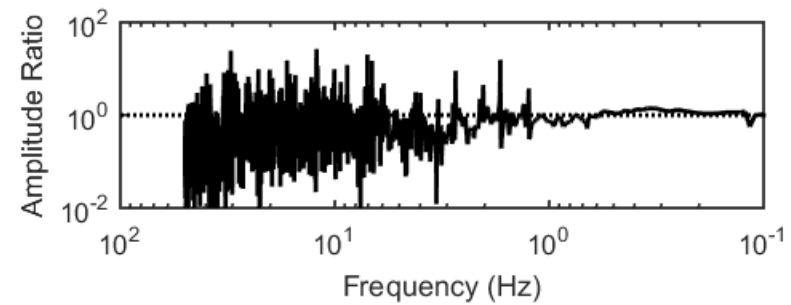
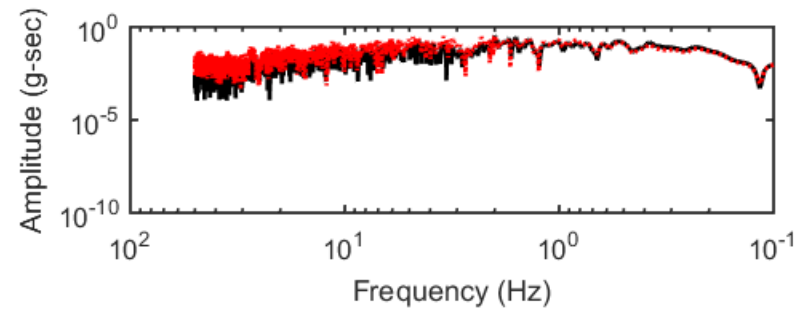
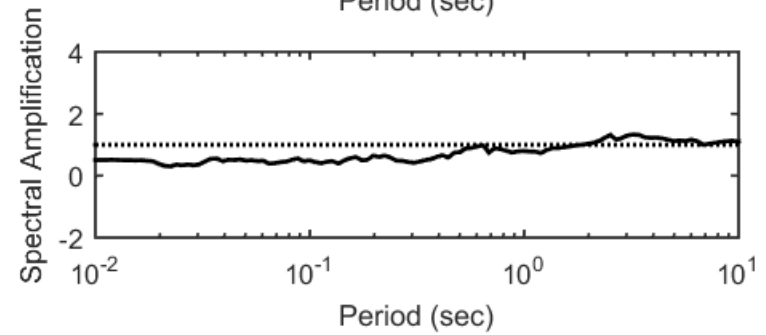
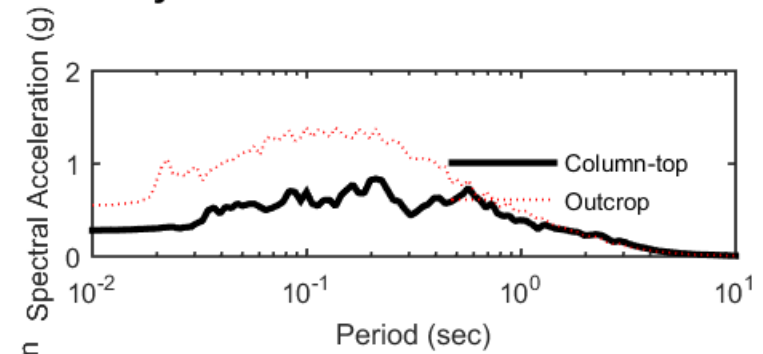
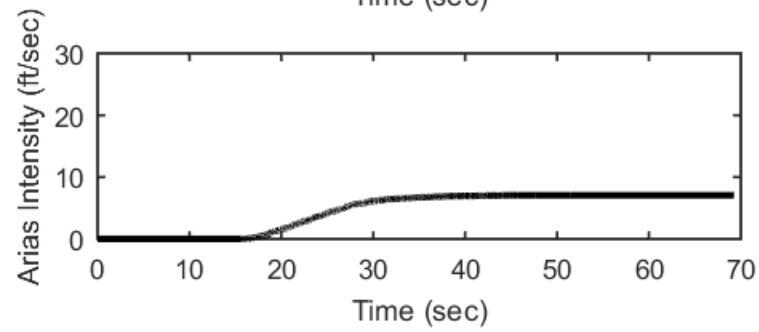
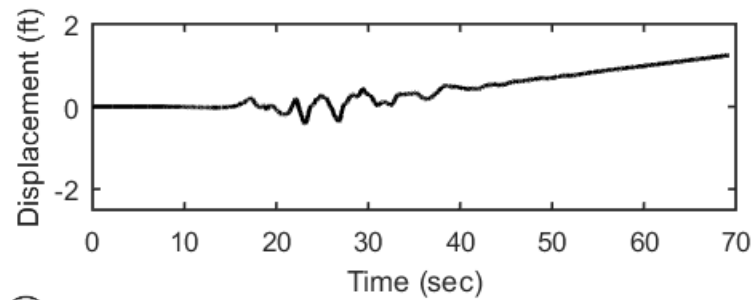
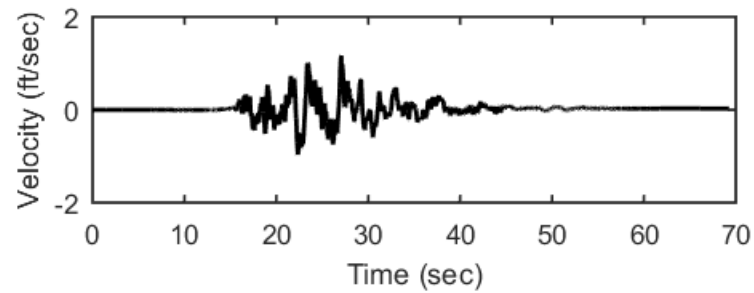
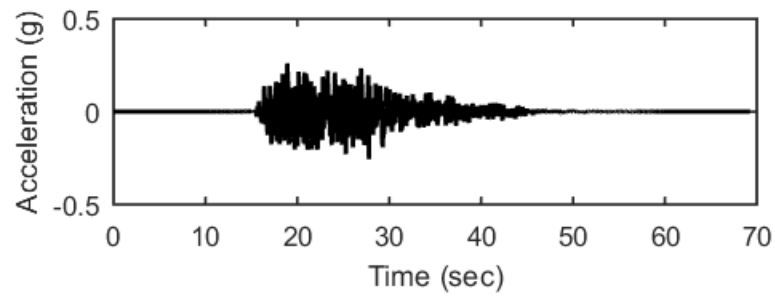
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



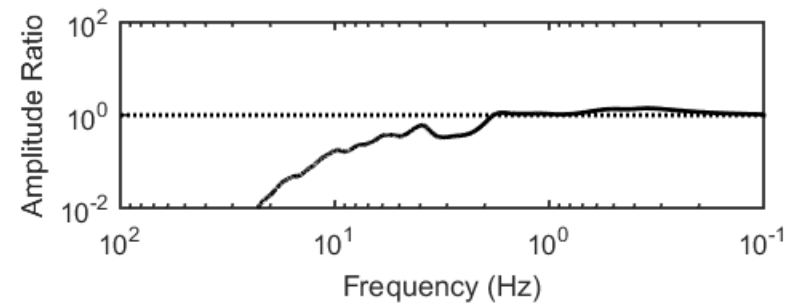
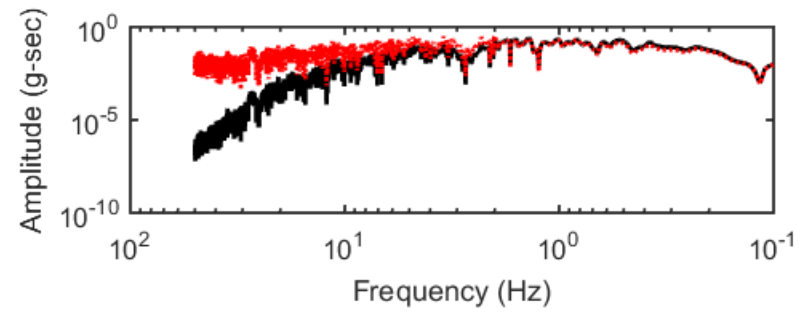
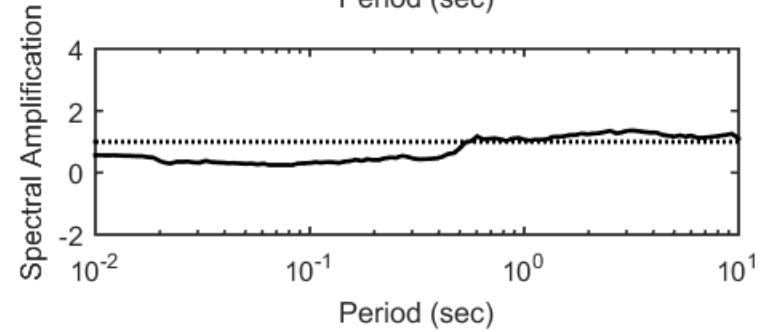
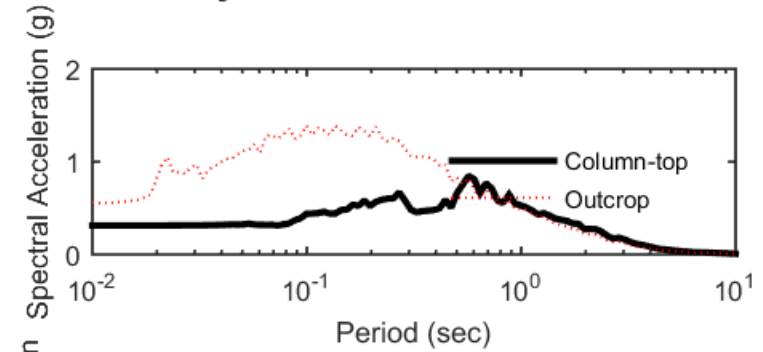
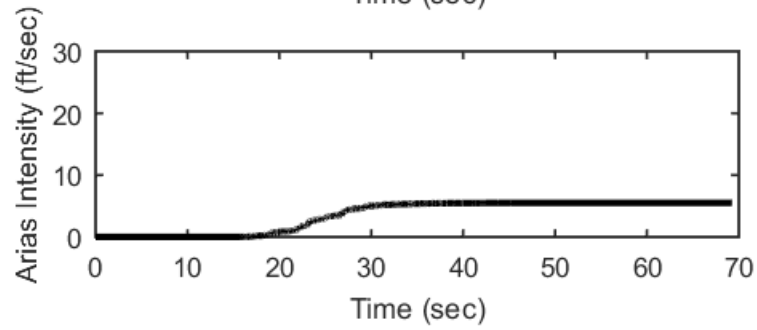
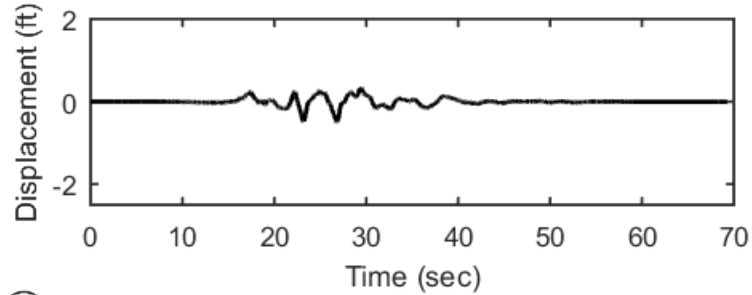
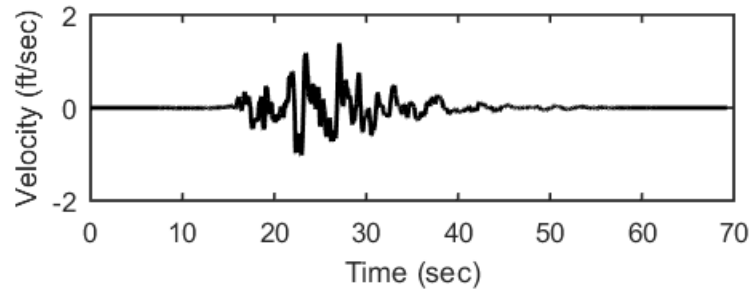
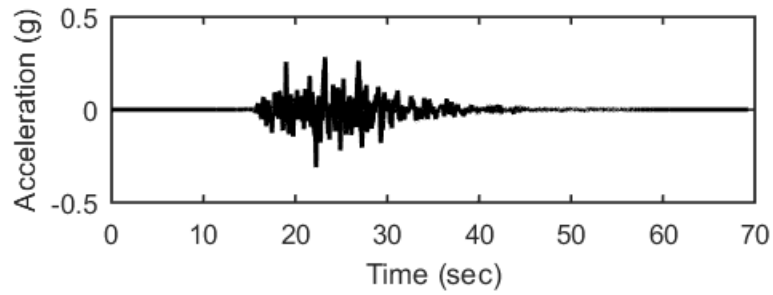
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



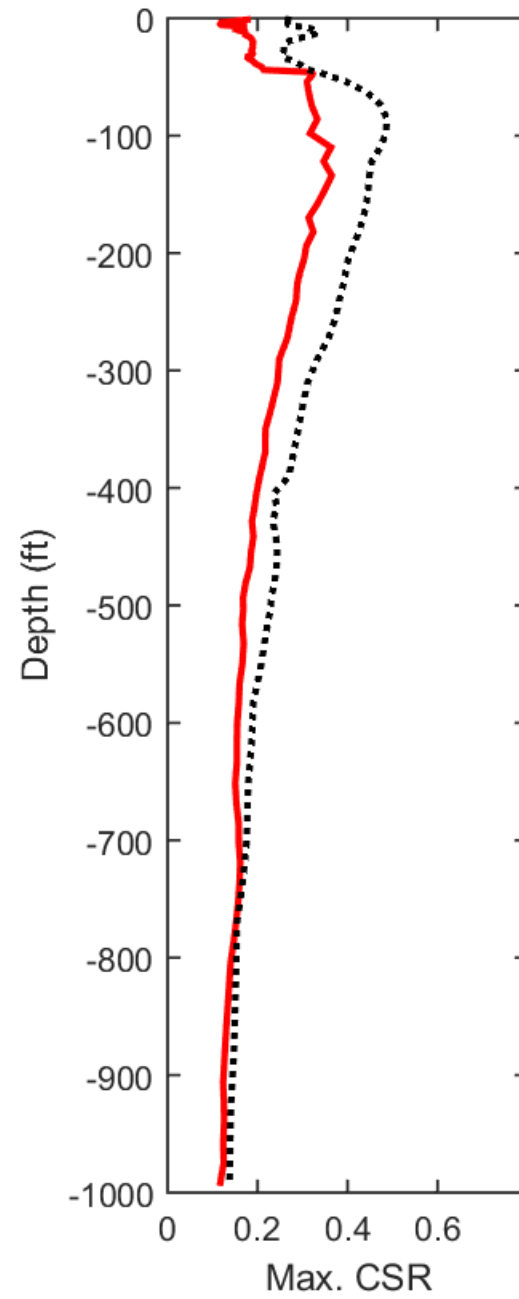
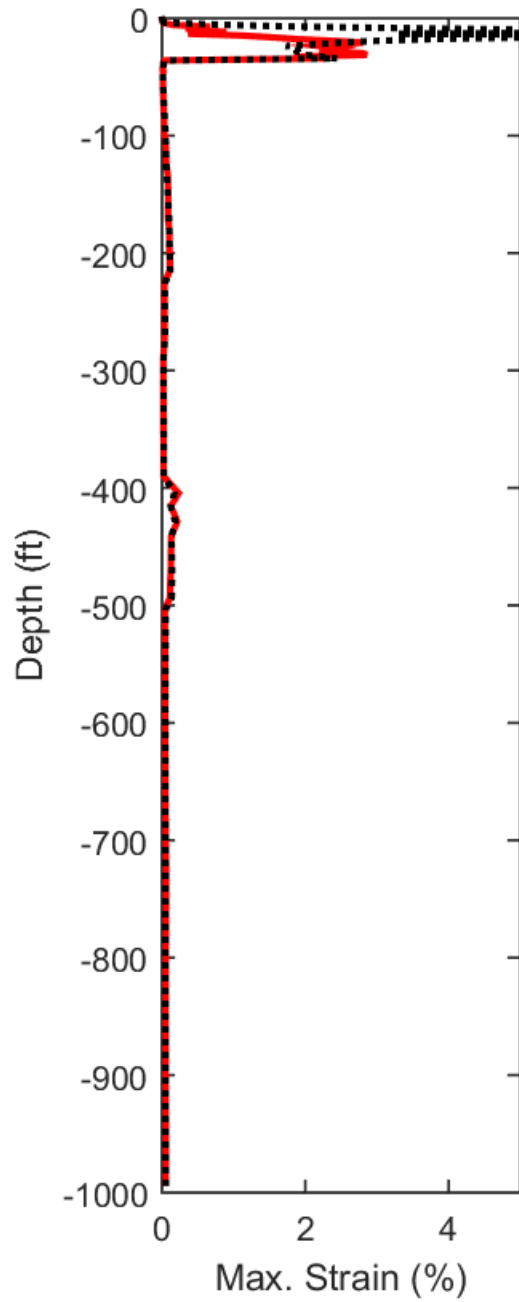
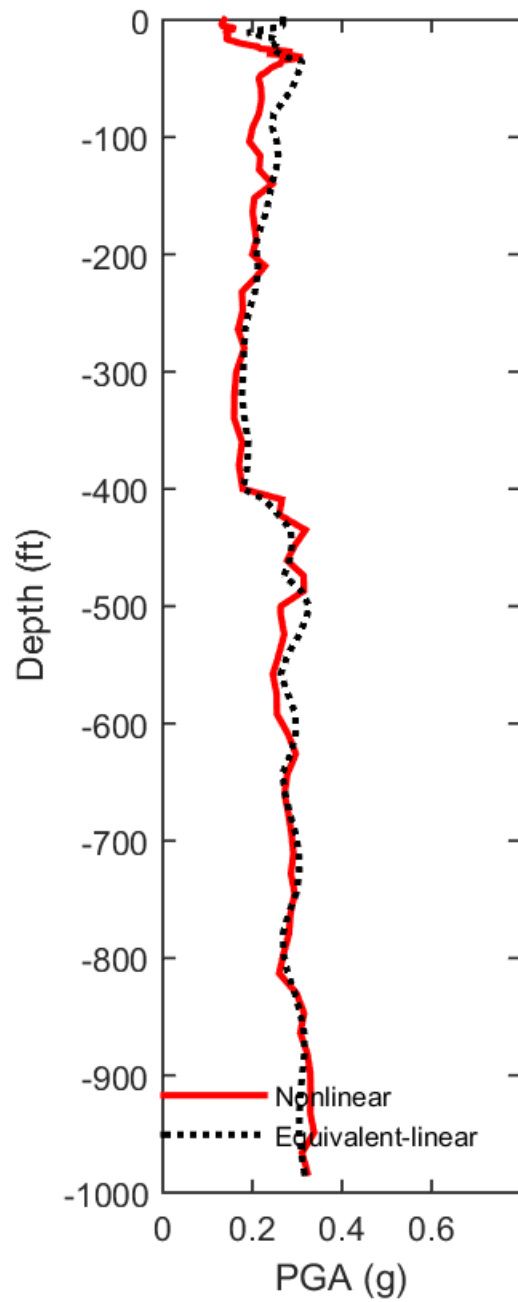
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



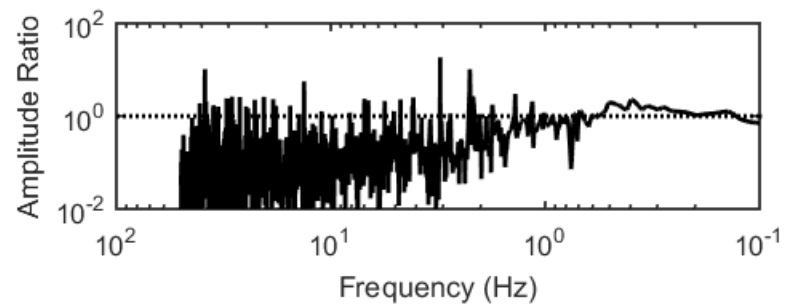
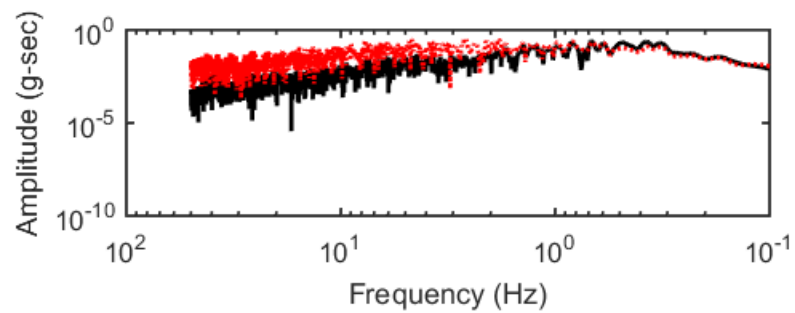
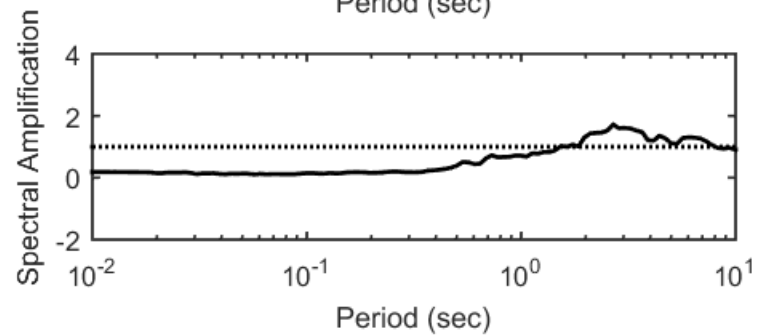
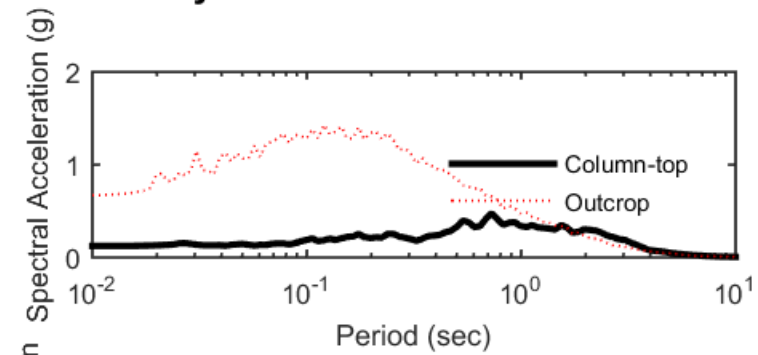
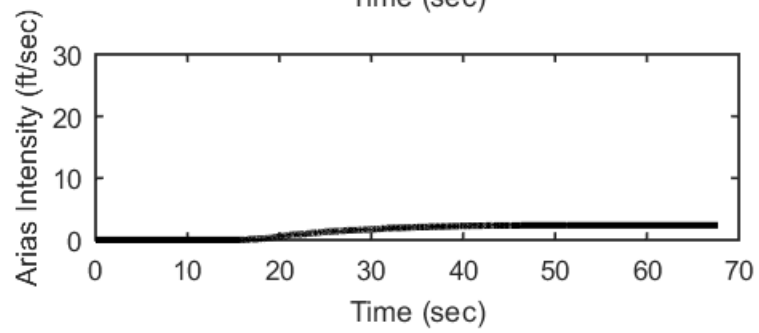
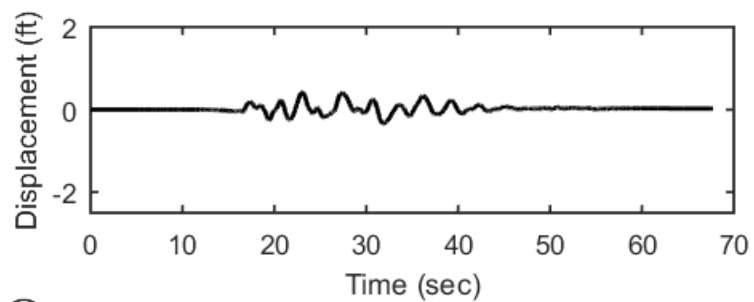
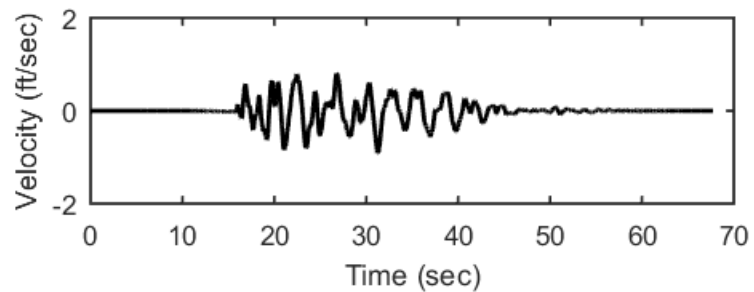
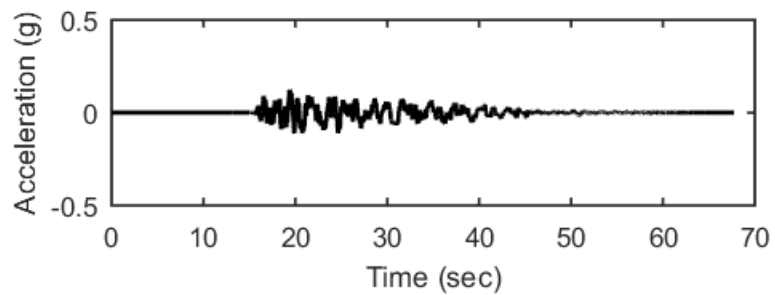
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



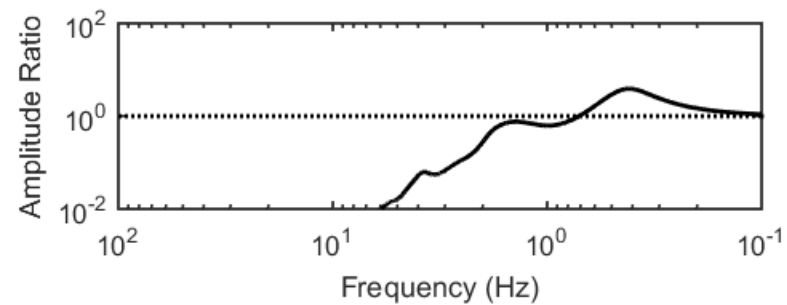
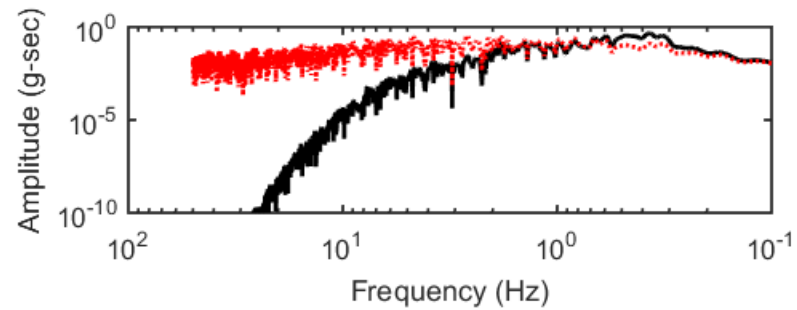
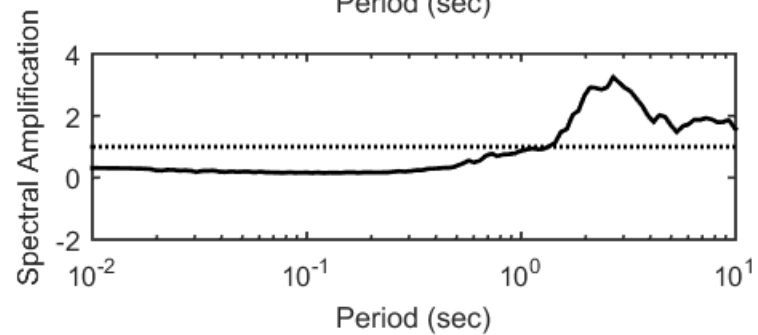
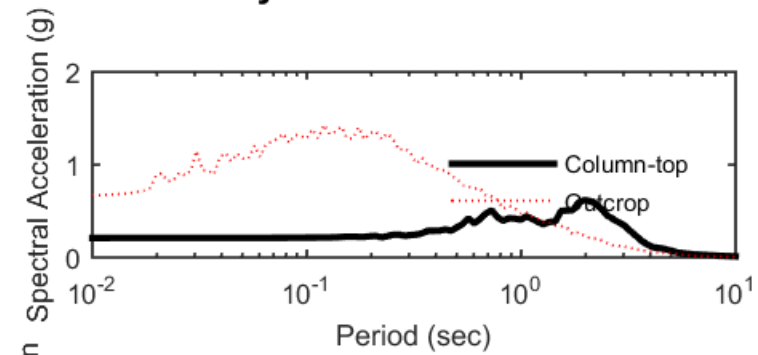
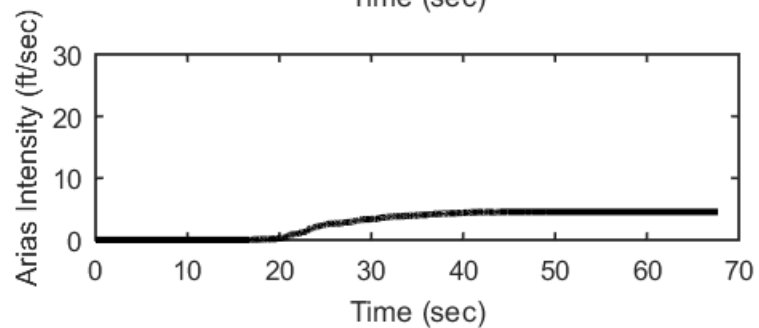
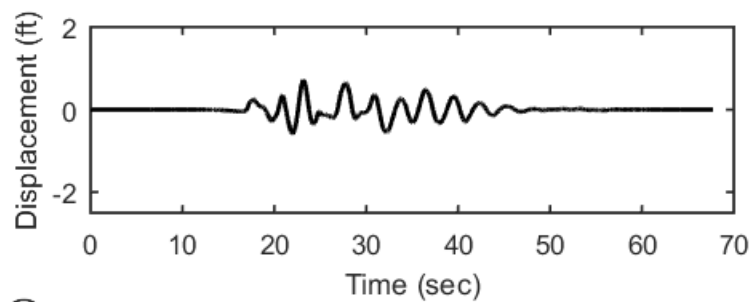
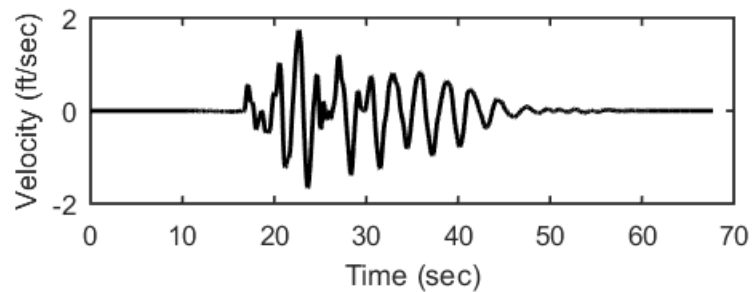
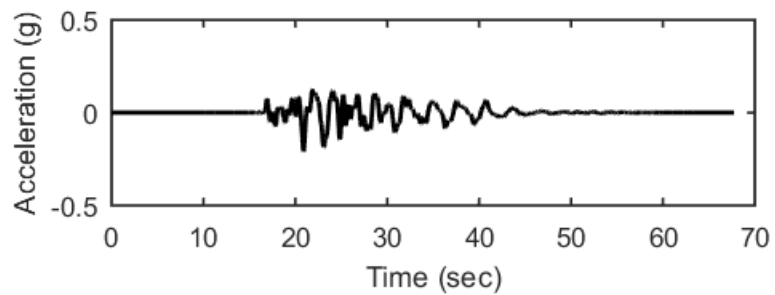
### Profile outputs for Motion: SEE3



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4

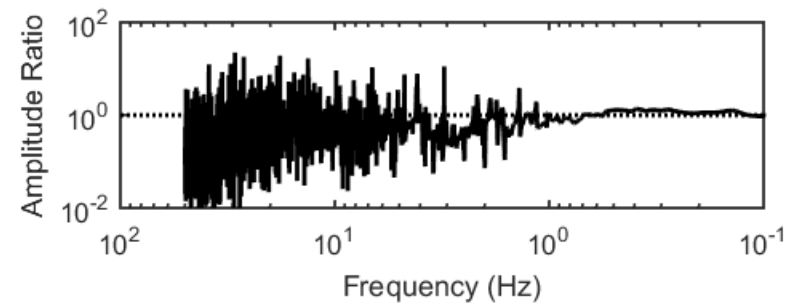
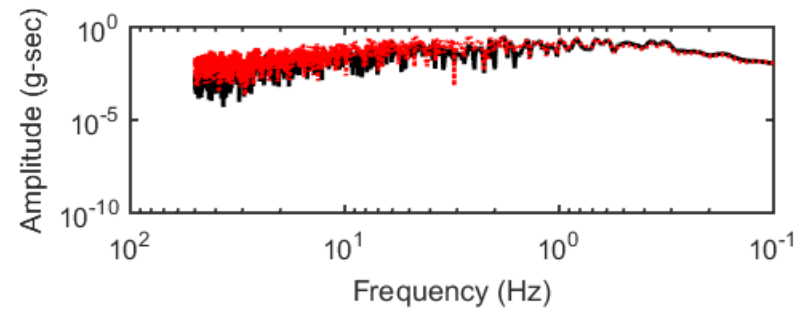
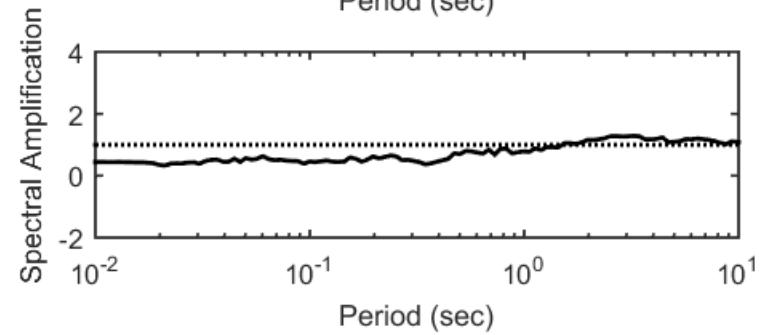
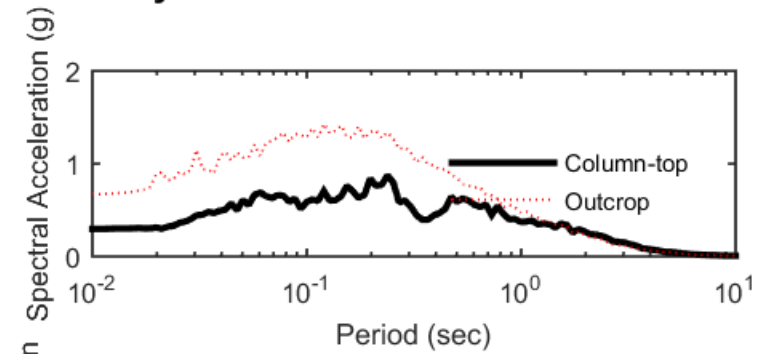
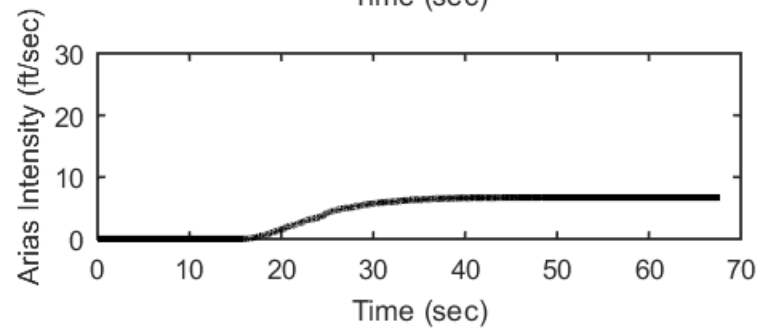
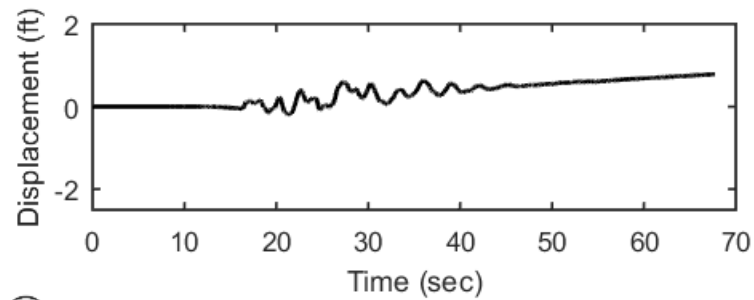
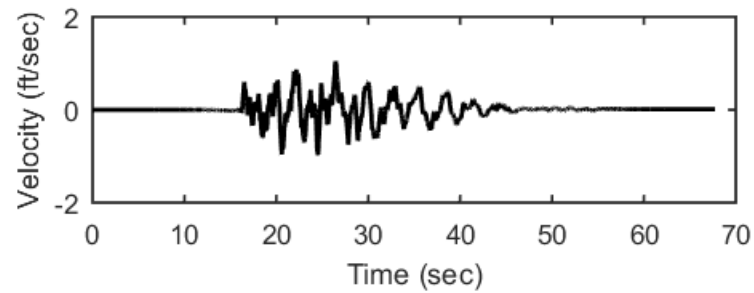
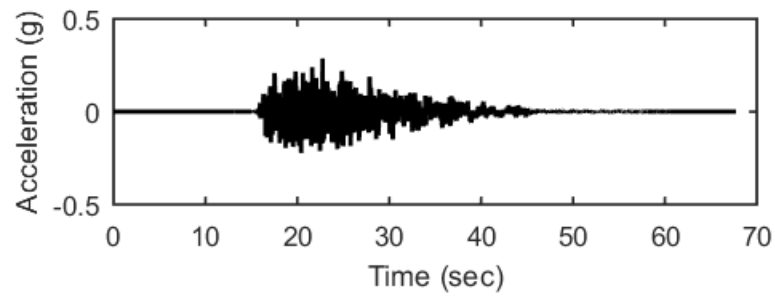


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4

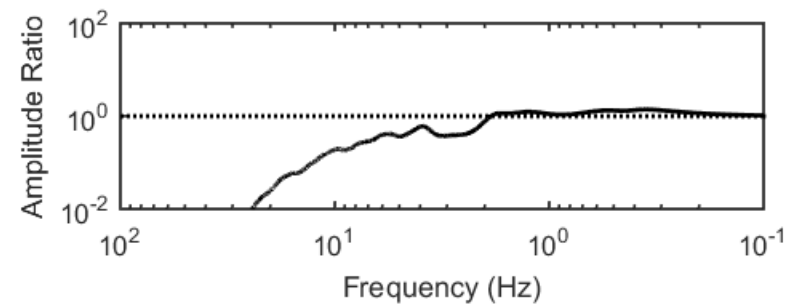
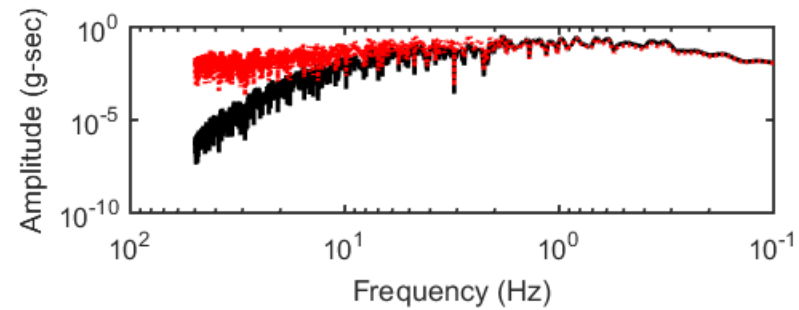
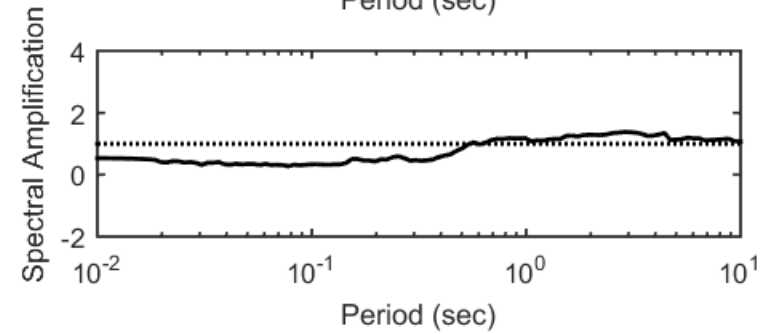
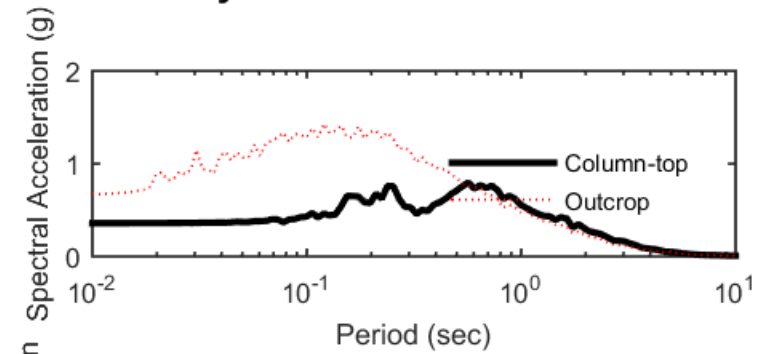
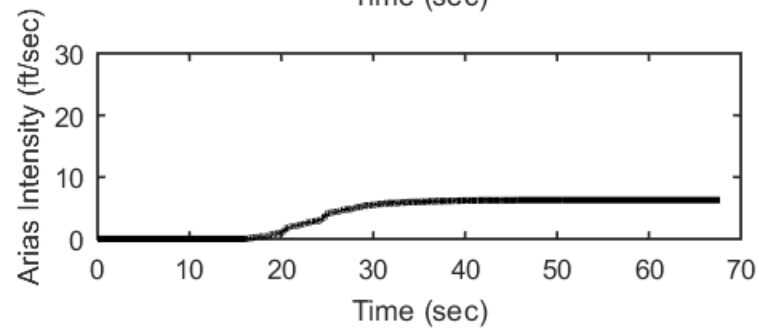
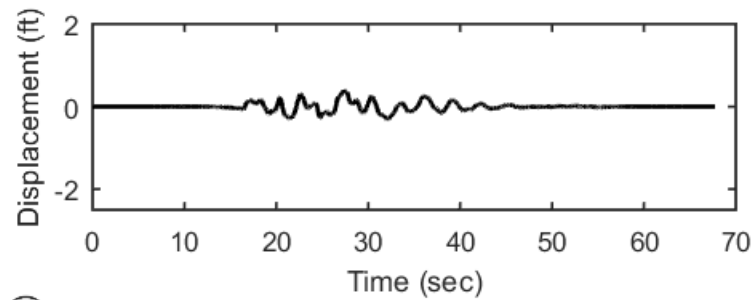
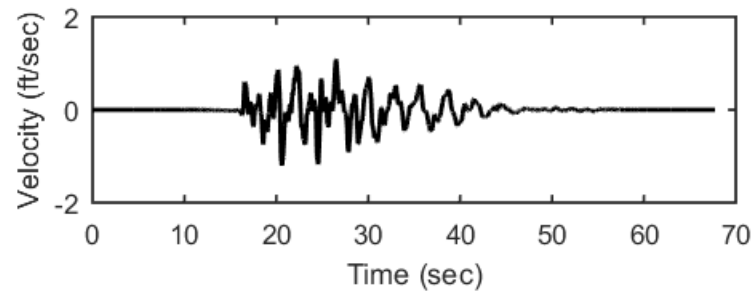
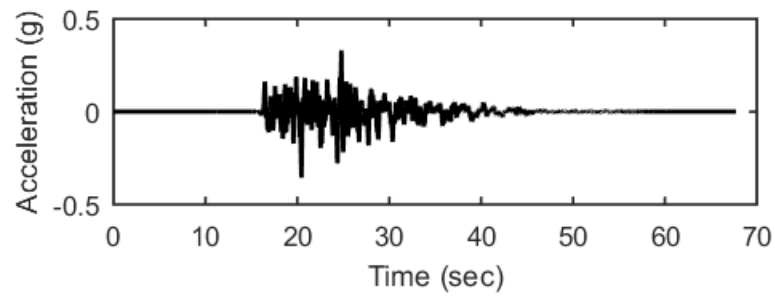




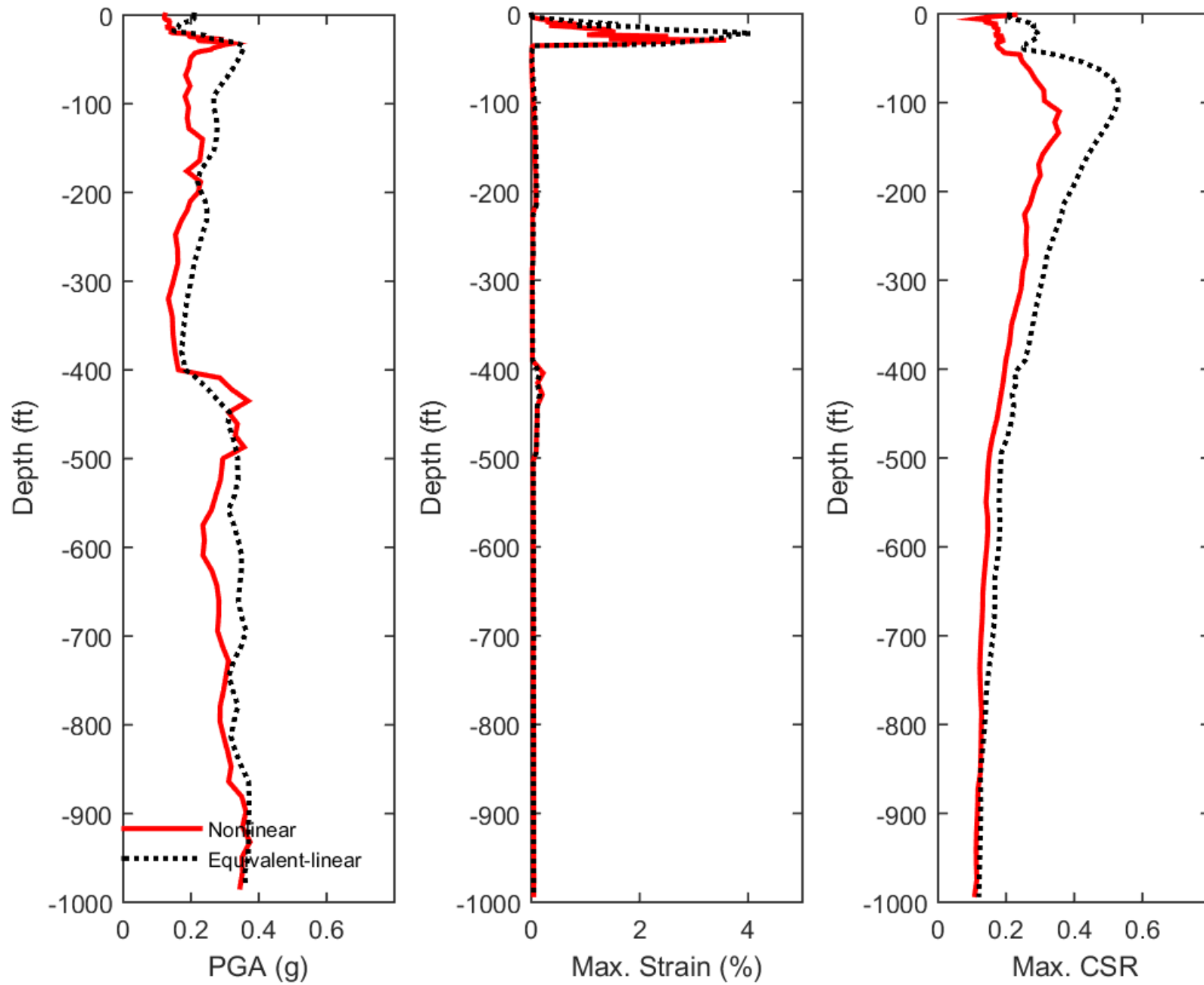
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



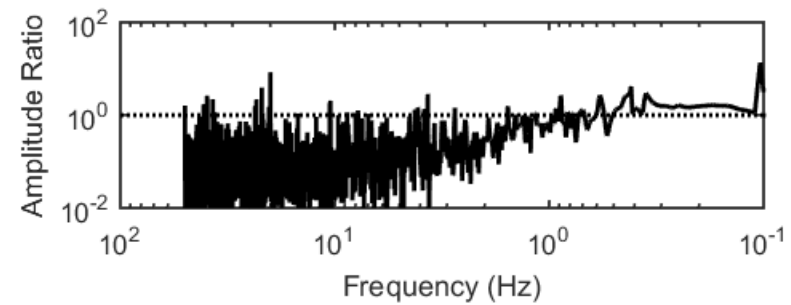
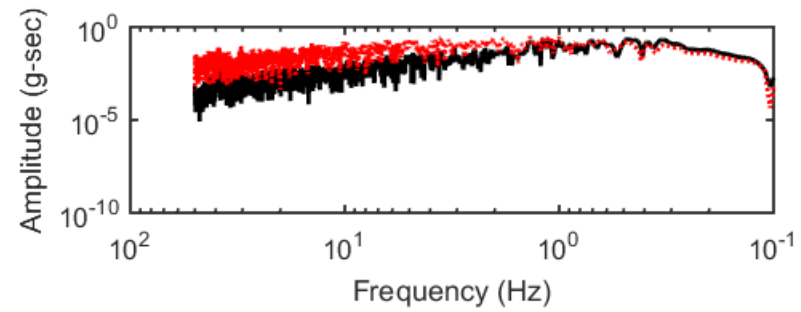
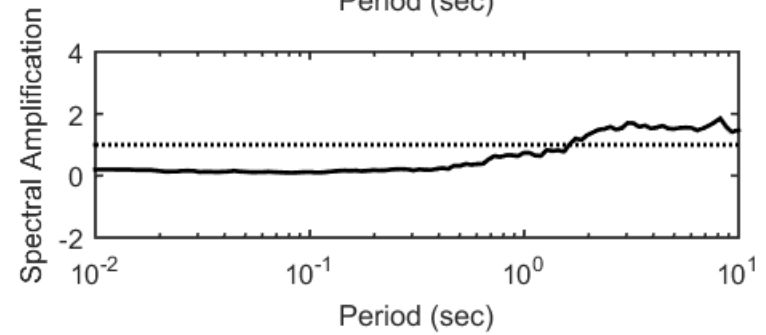
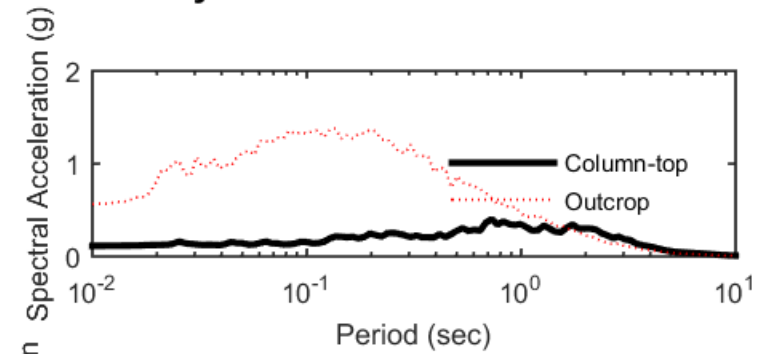
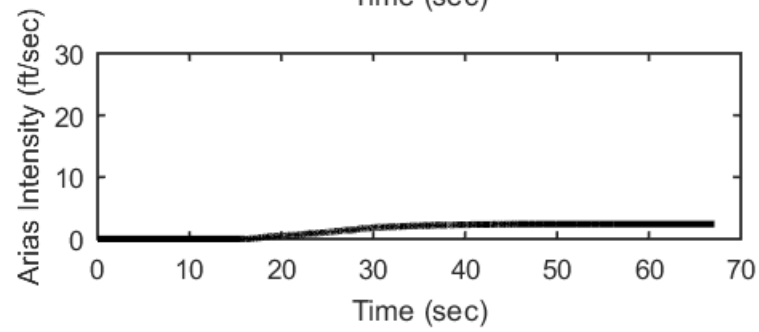
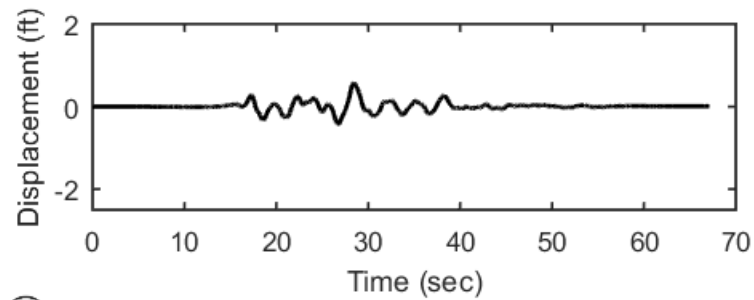
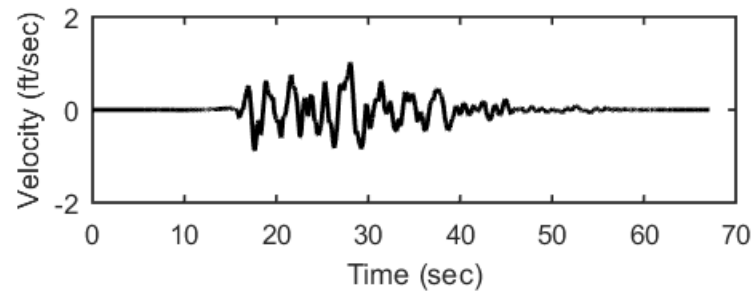
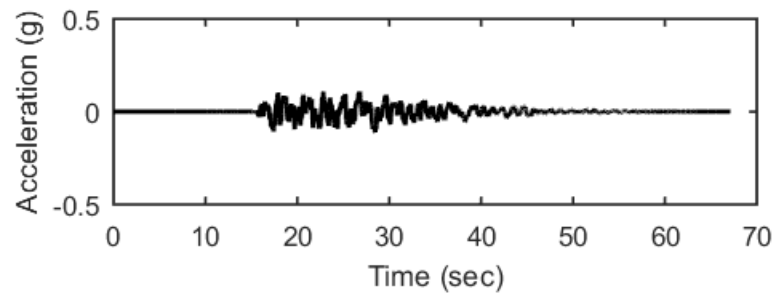
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



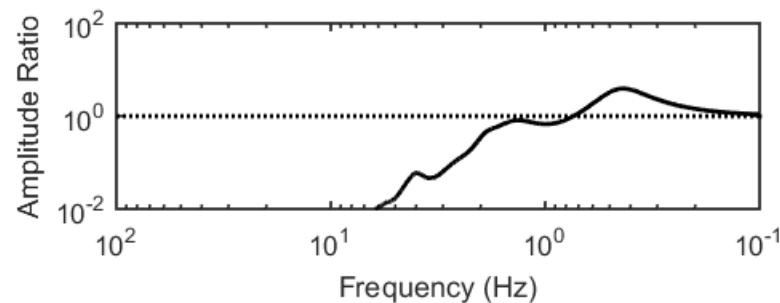
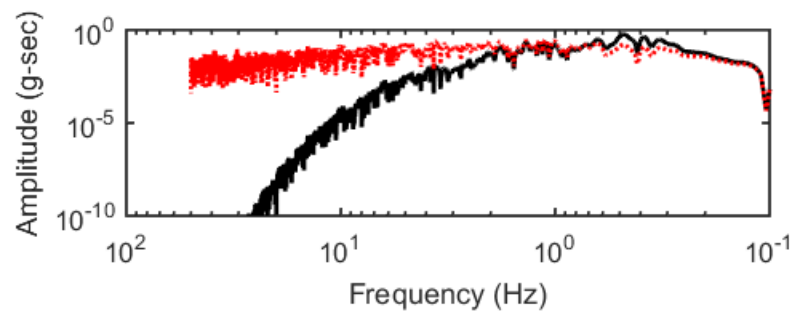
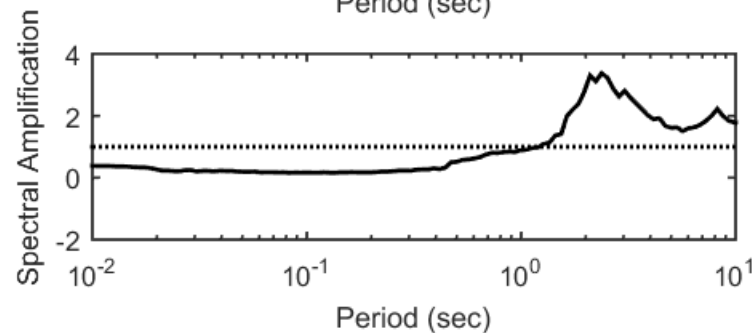
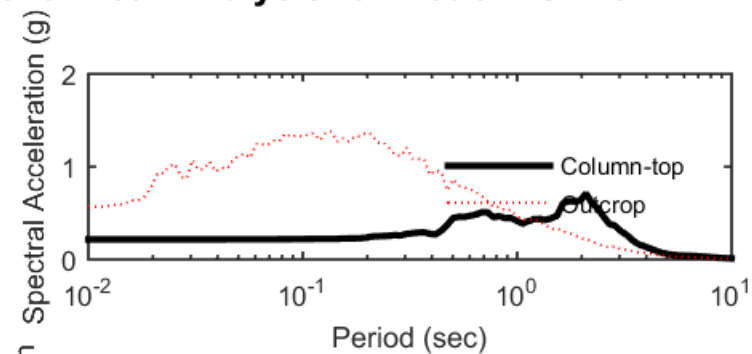
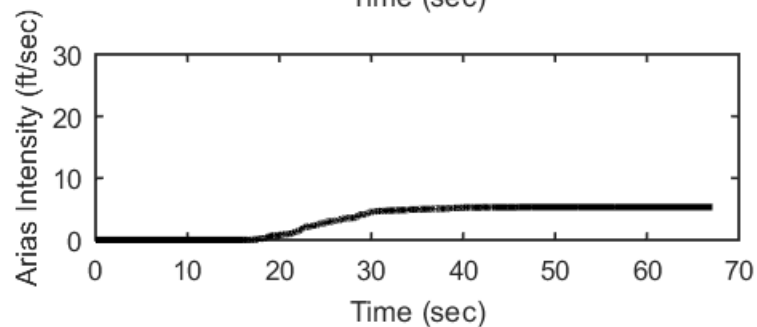
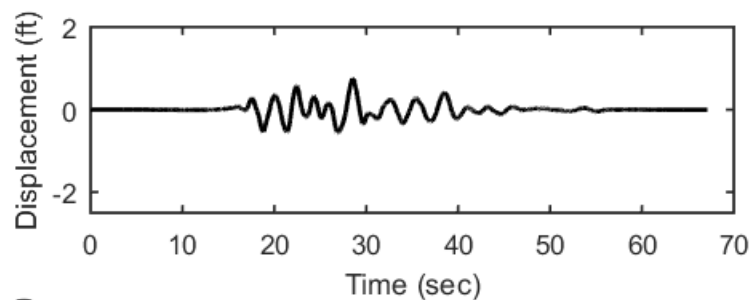
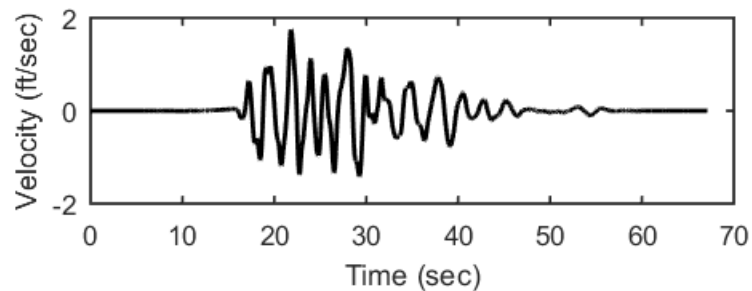
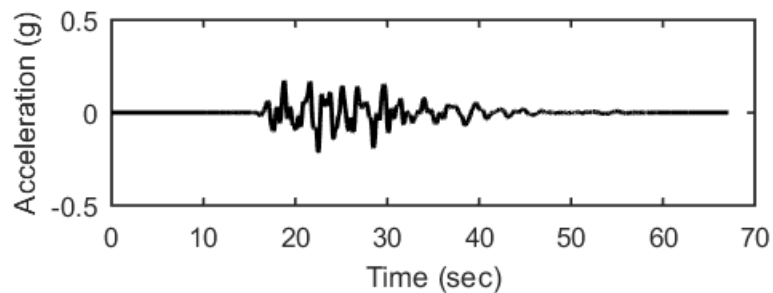
### Profile outputs for Motion: SEE4



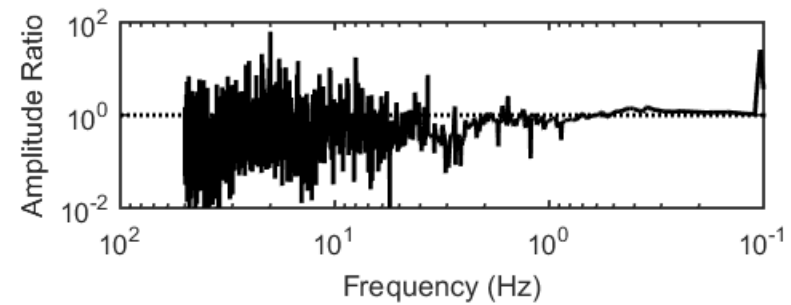
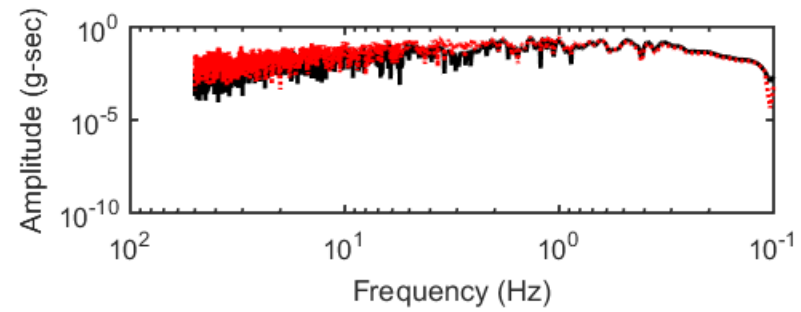
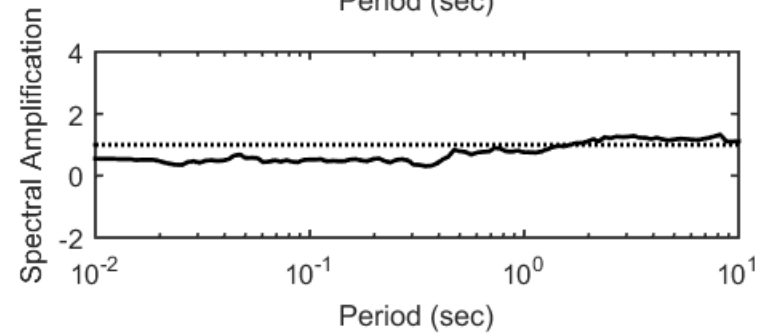
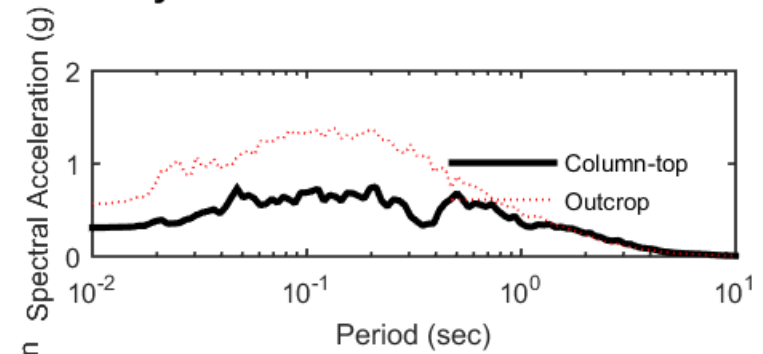
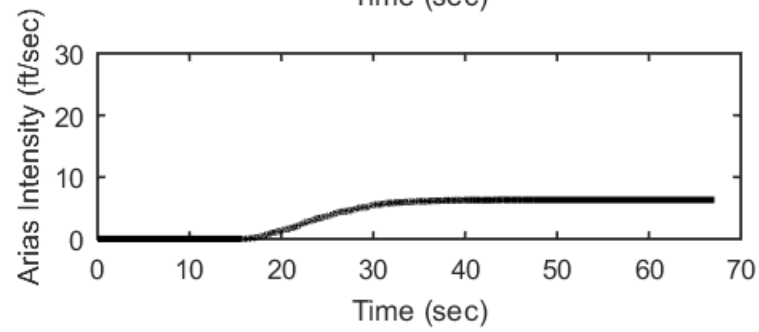
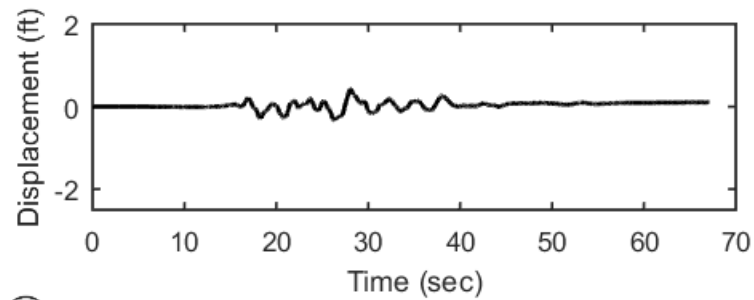
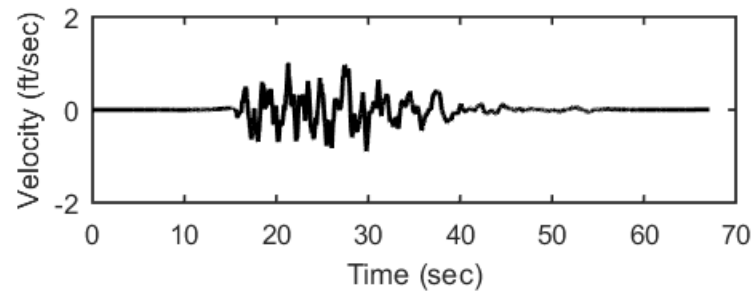
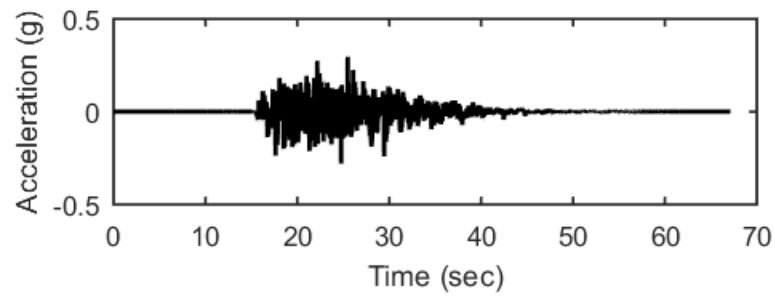
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



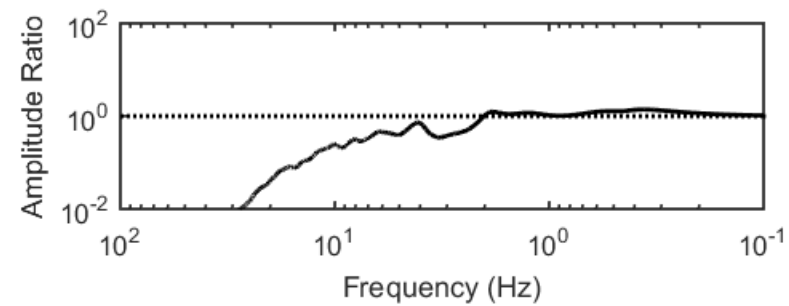
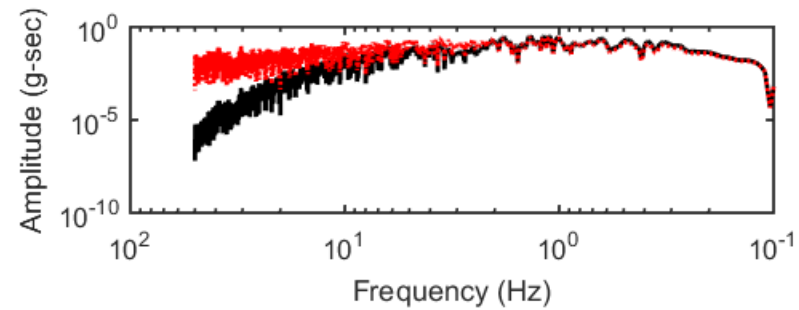
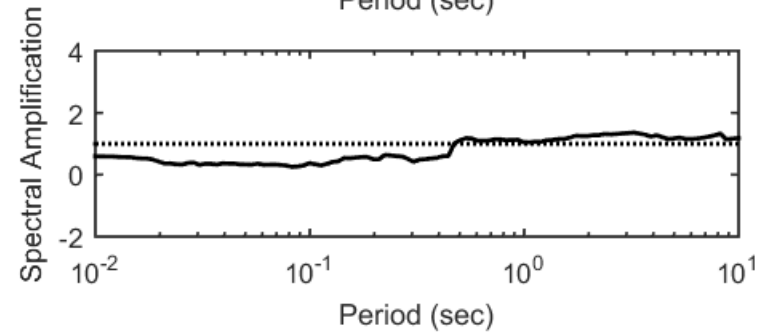
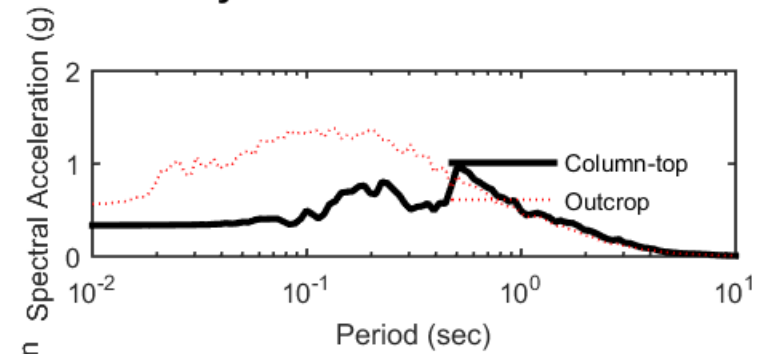
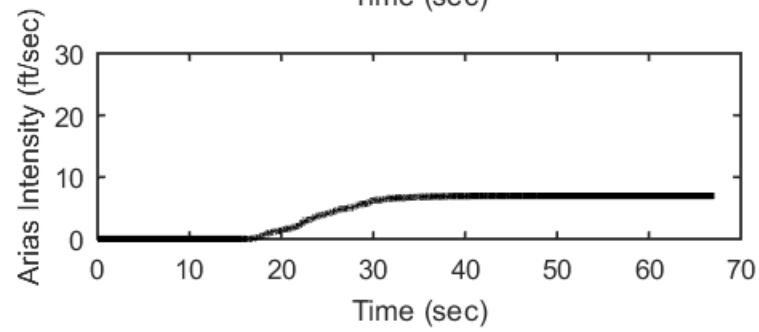
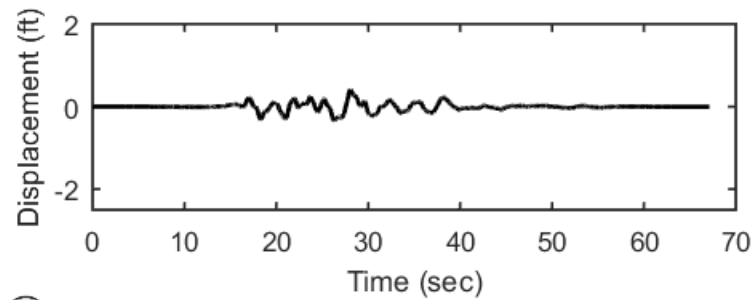
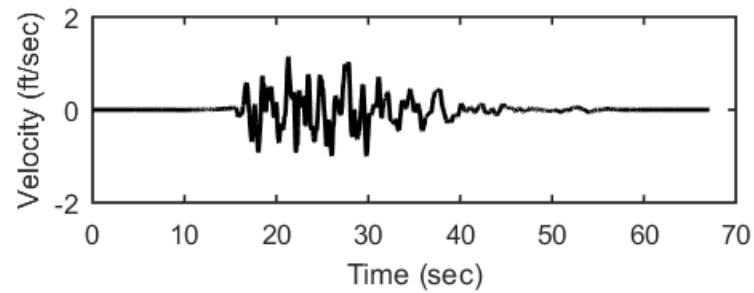
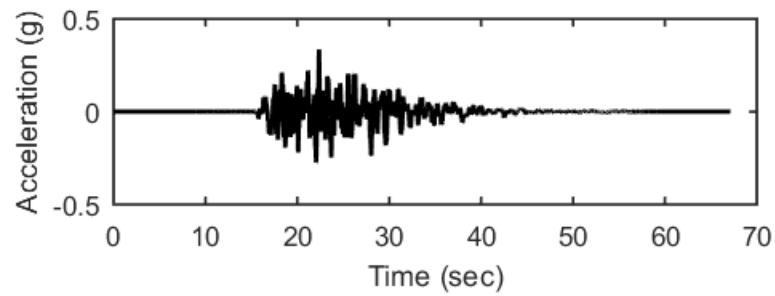
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



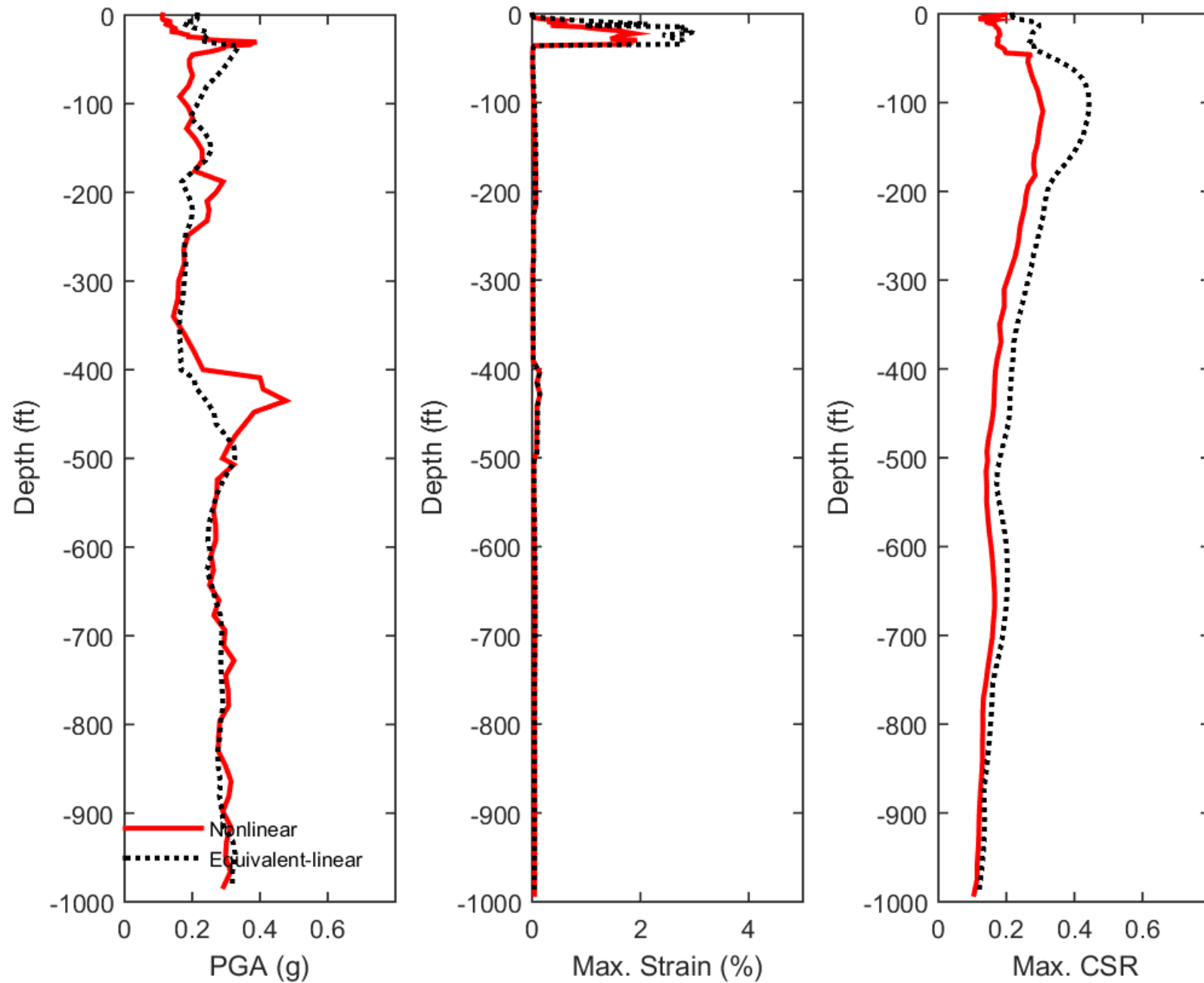
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5

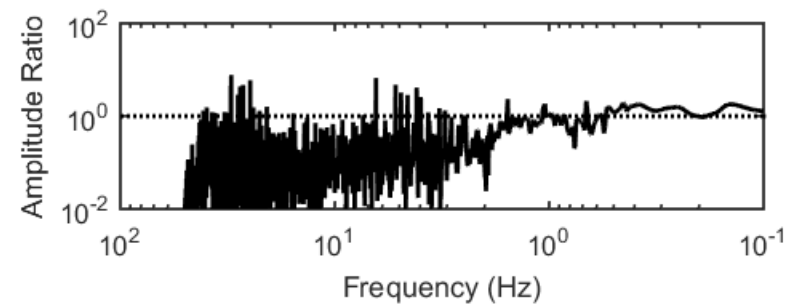
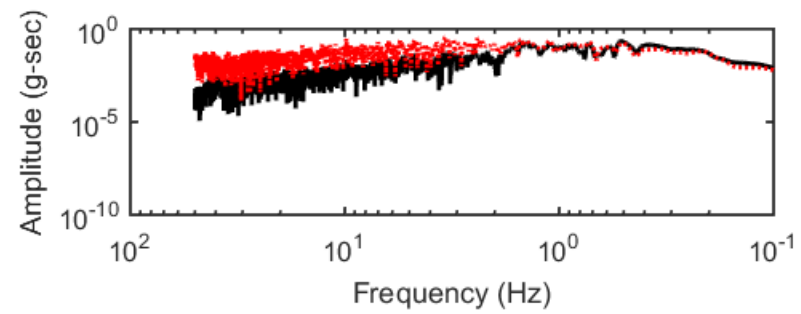
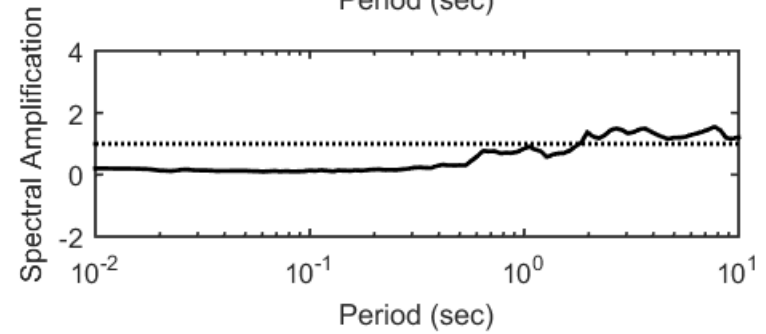
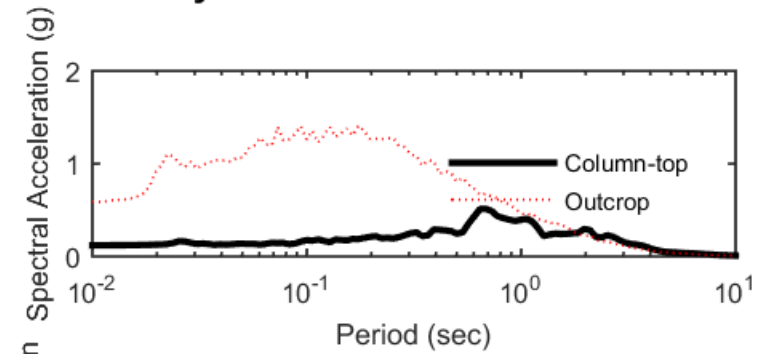
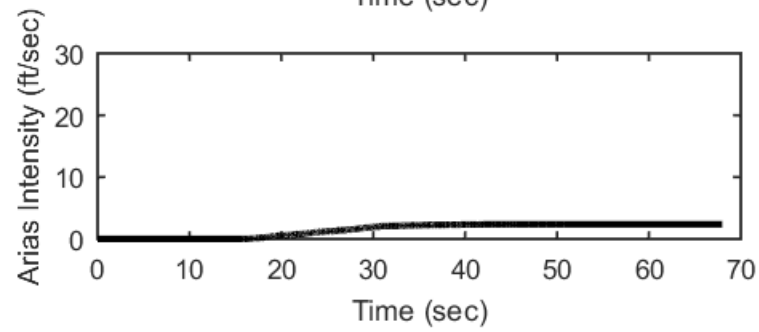
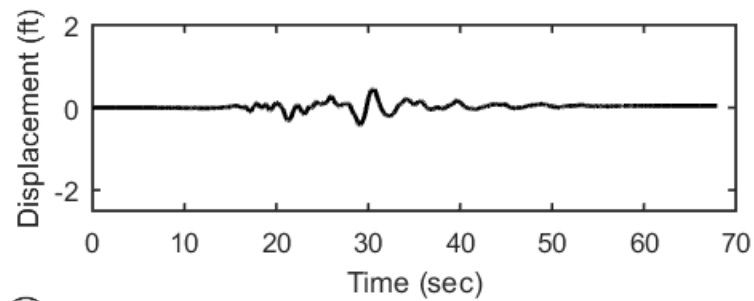
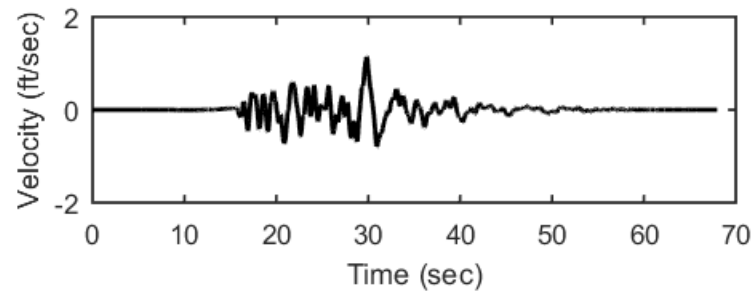
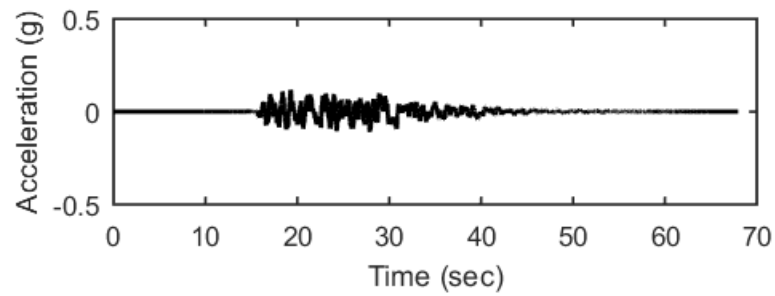


### Profile outputs for Motion: SEE5

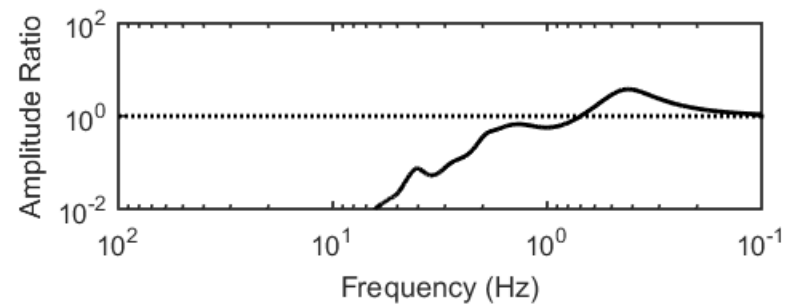
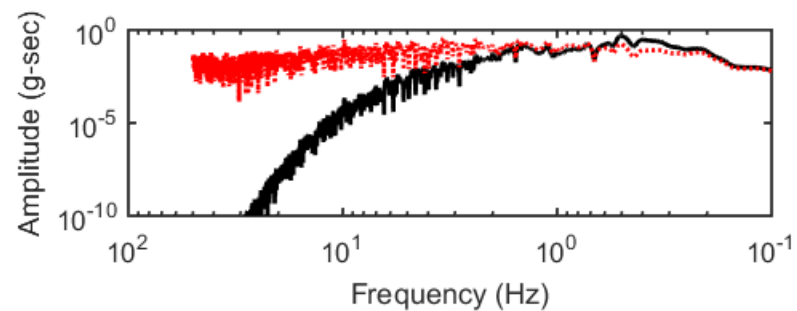
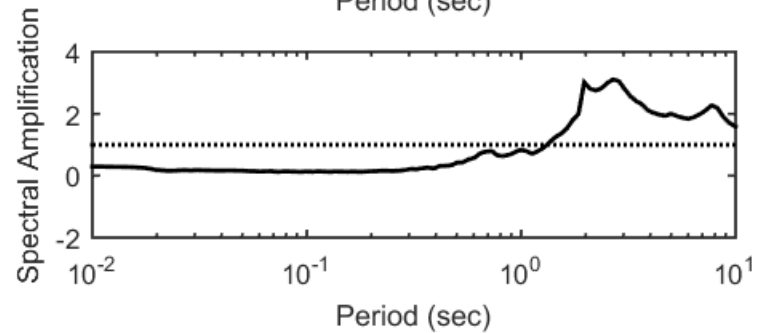
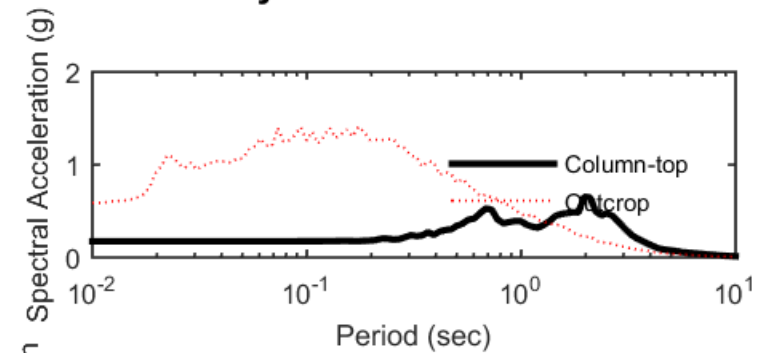
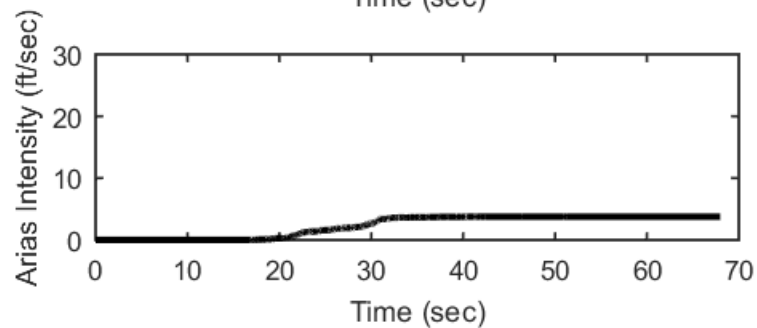
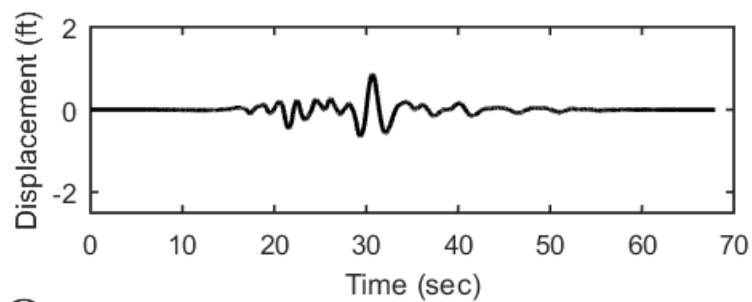
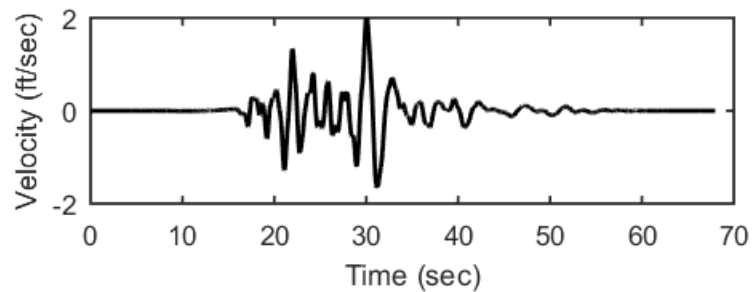
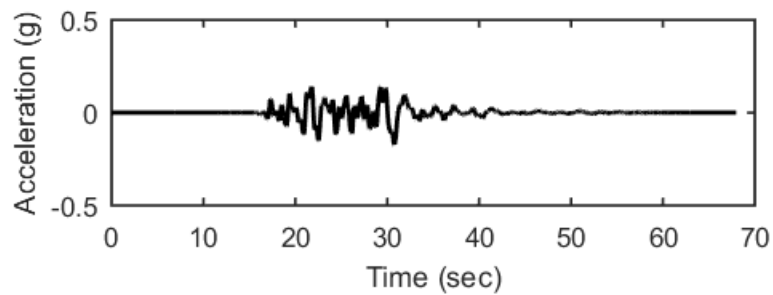




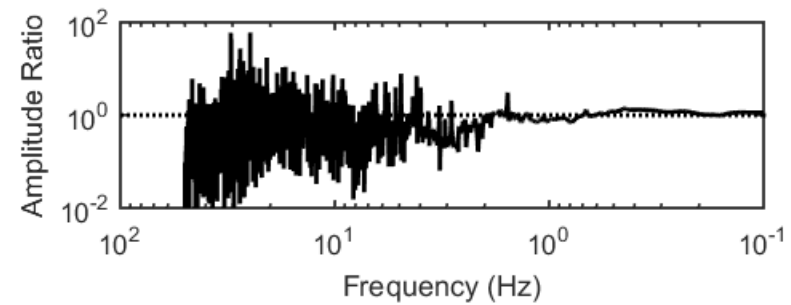
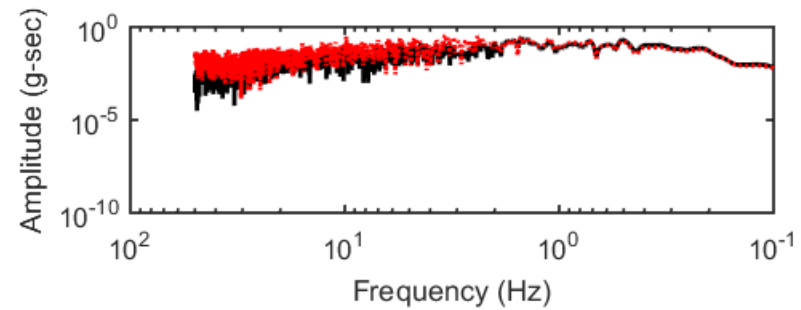
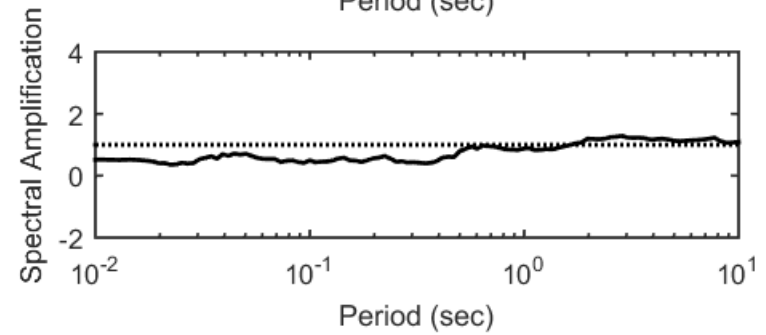
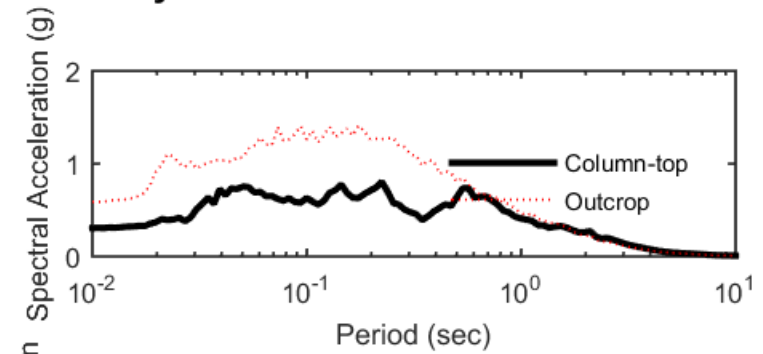
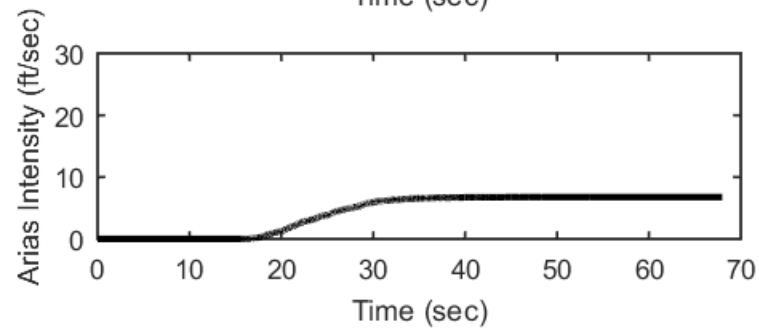
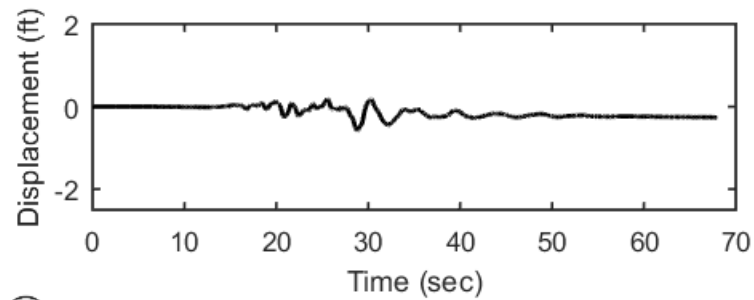
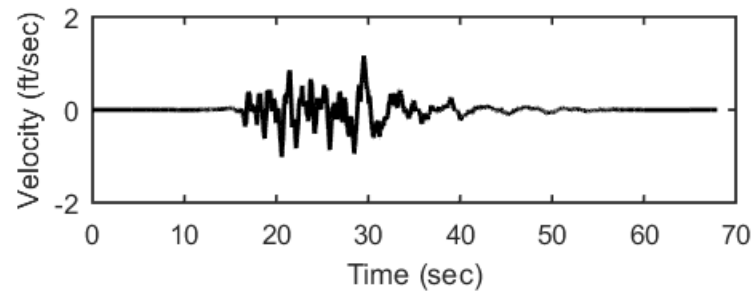
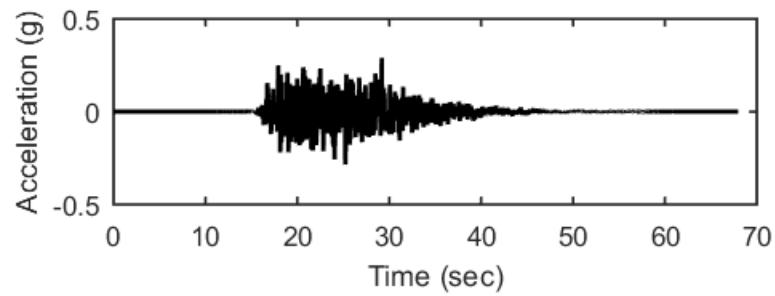
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



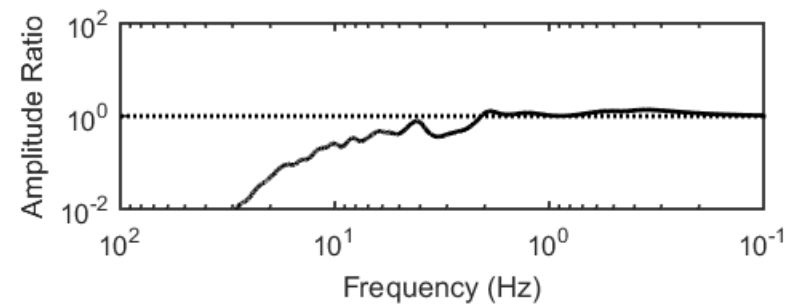
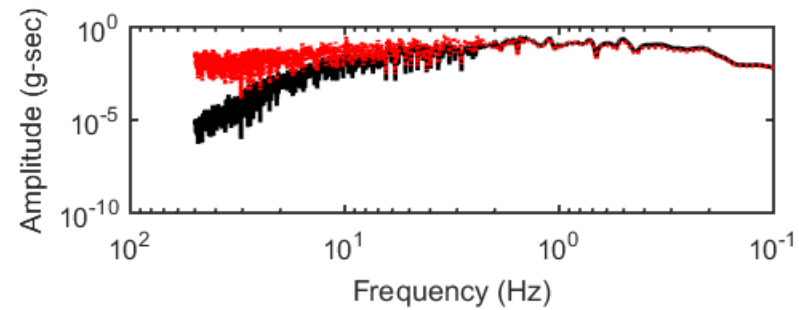
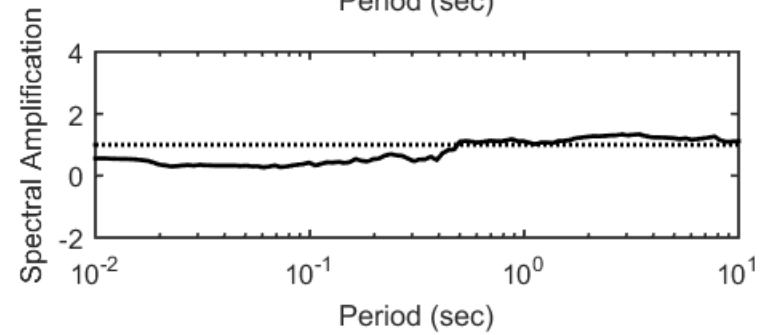
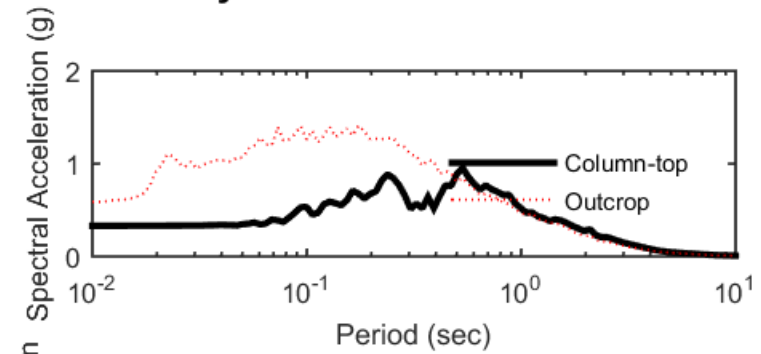
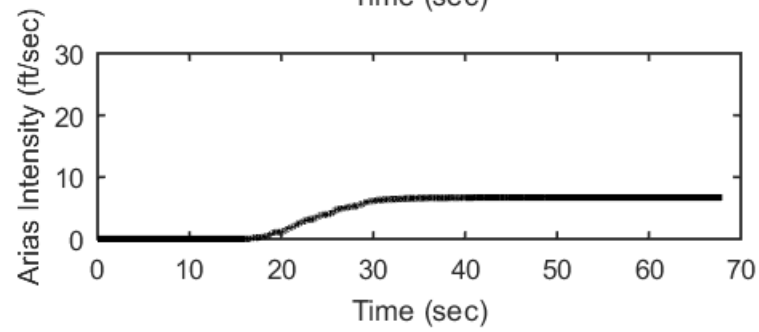
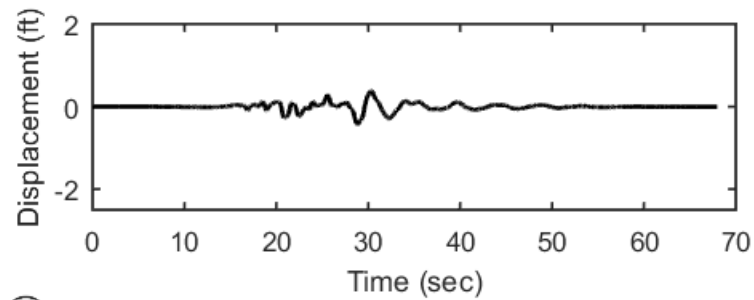
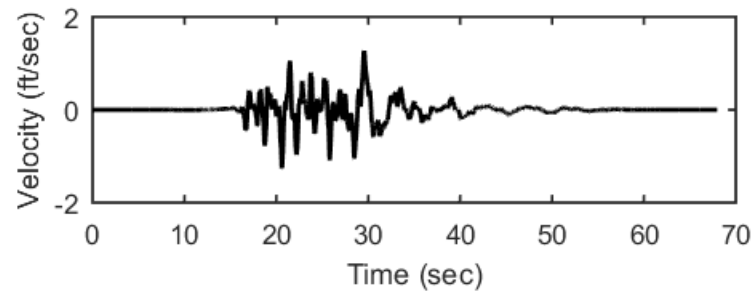
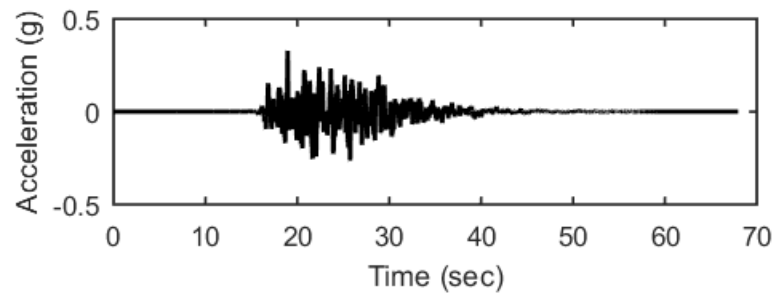
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



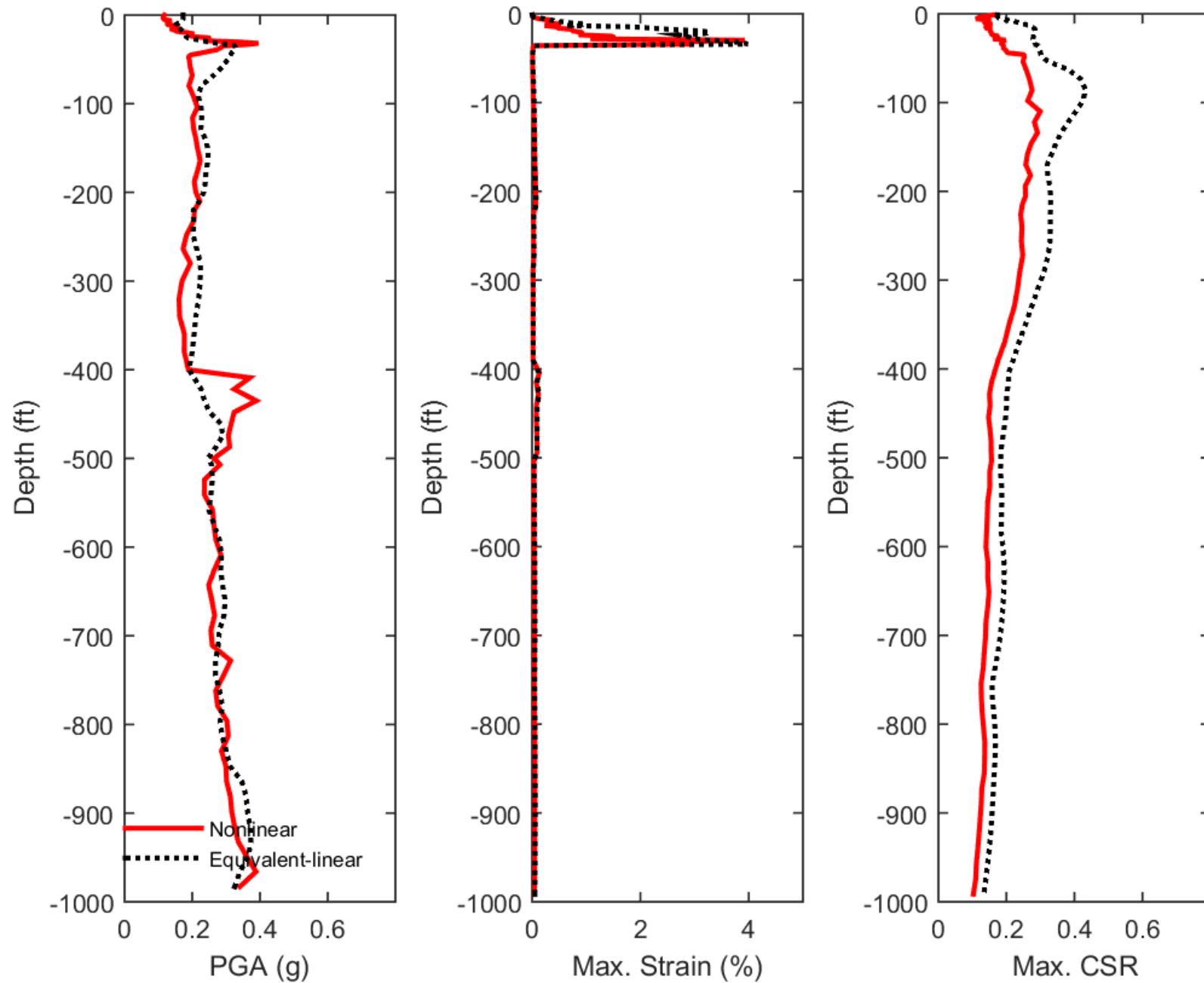
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



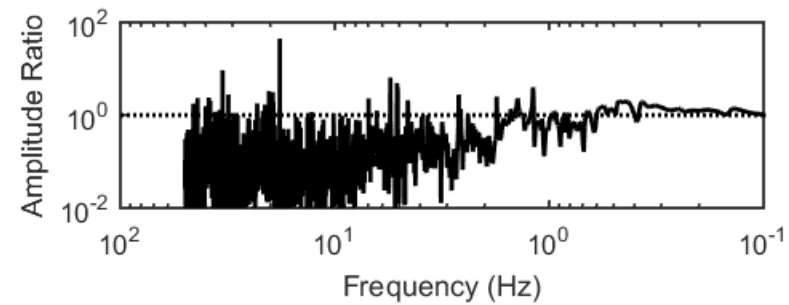
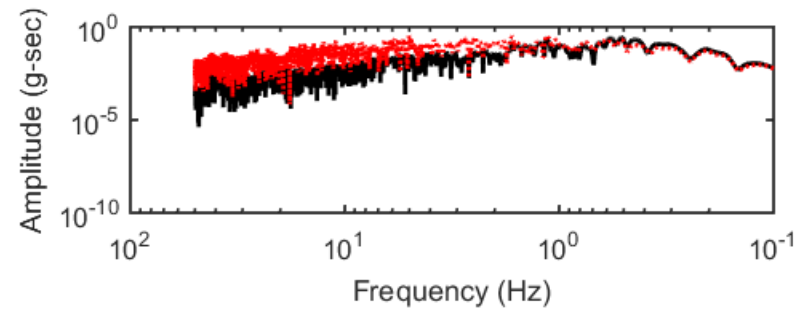
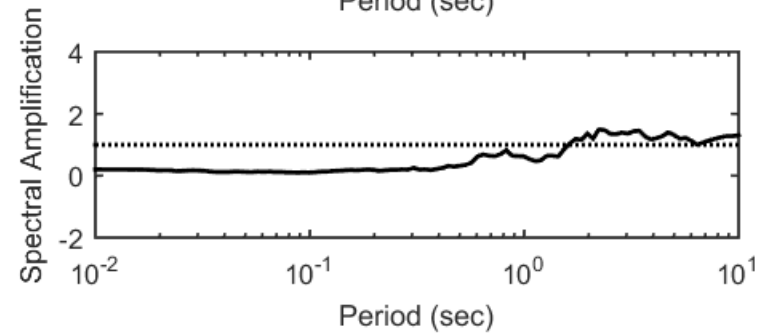
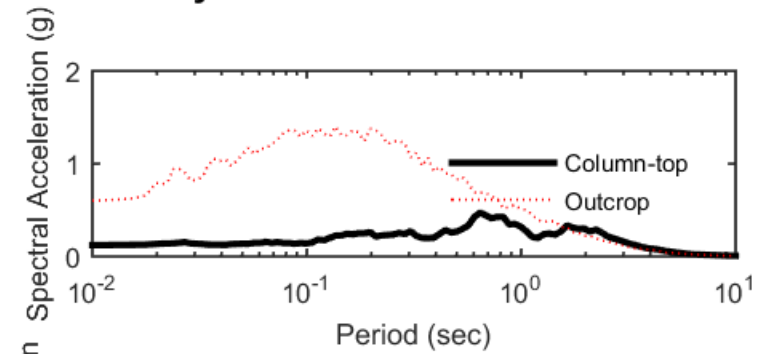
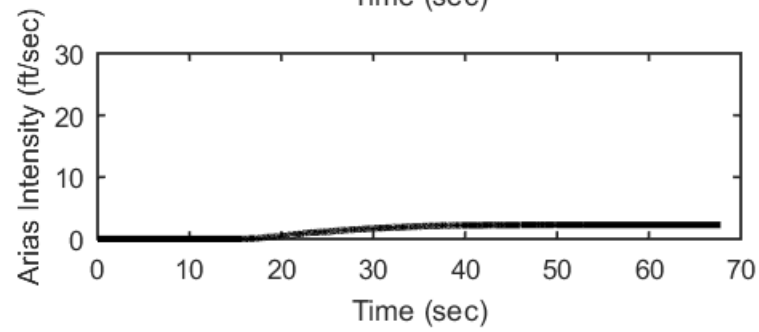
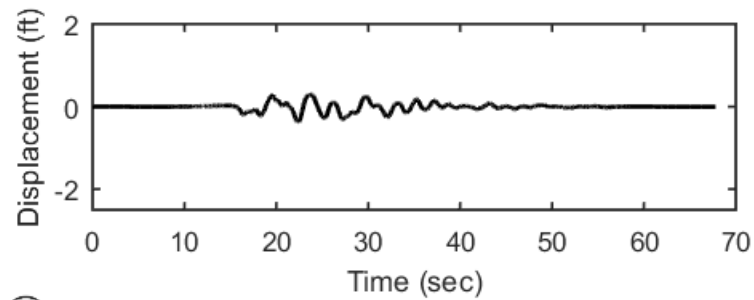
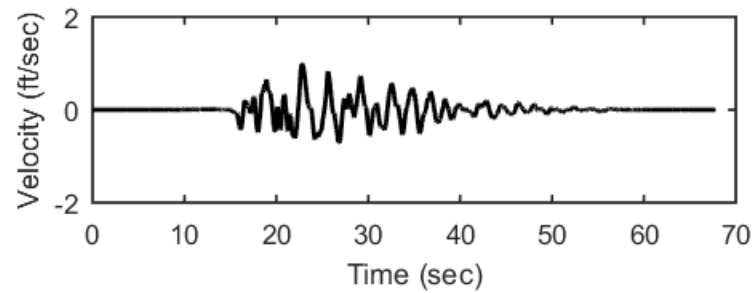
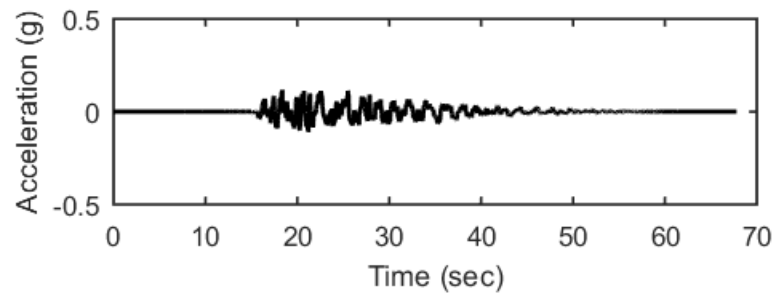
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



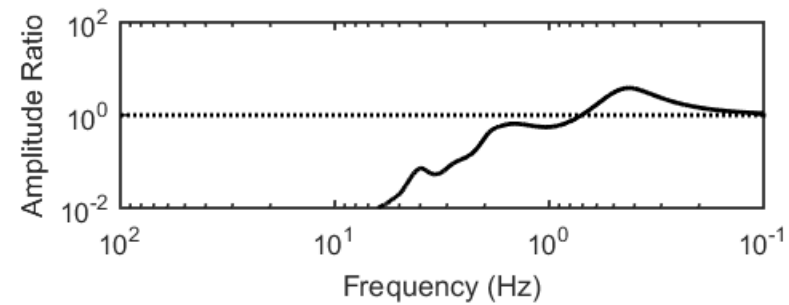
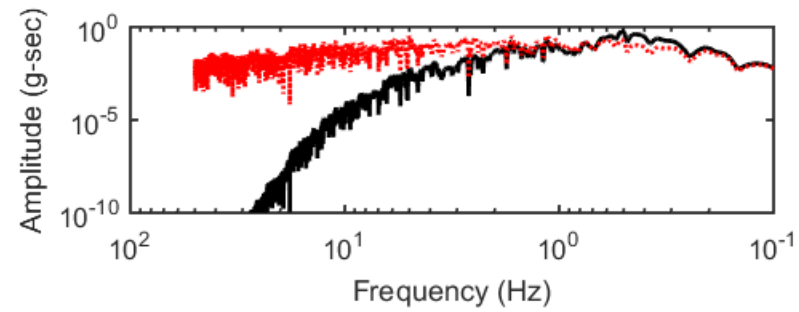
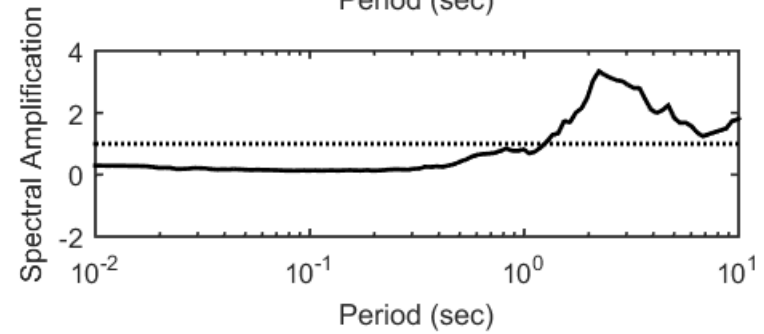
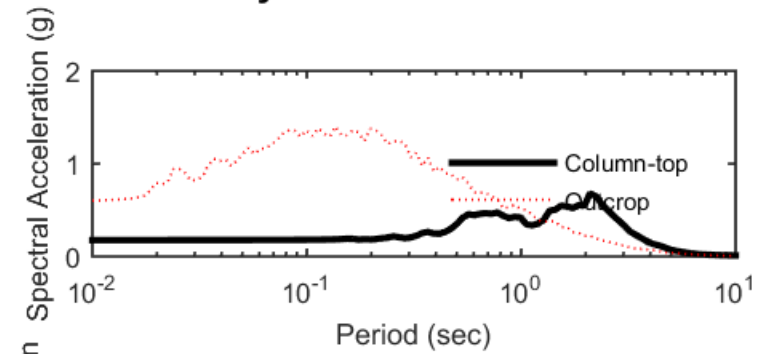
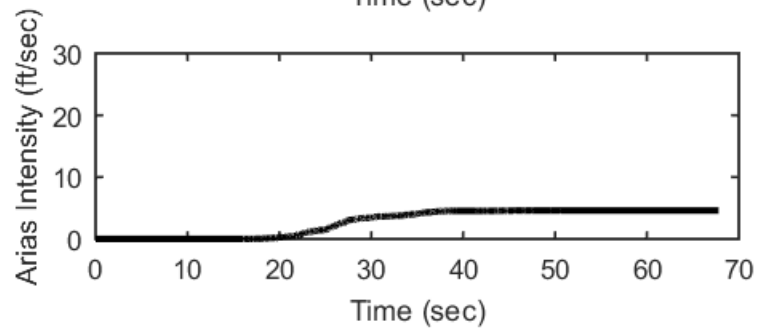
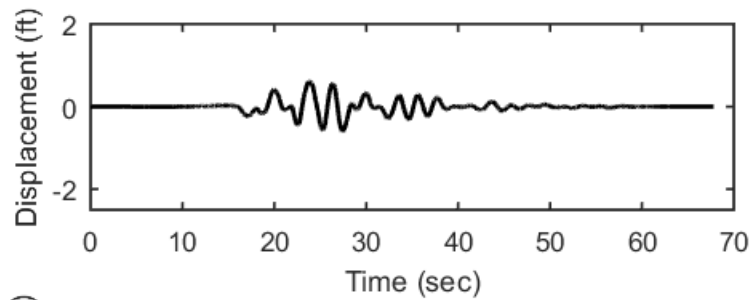
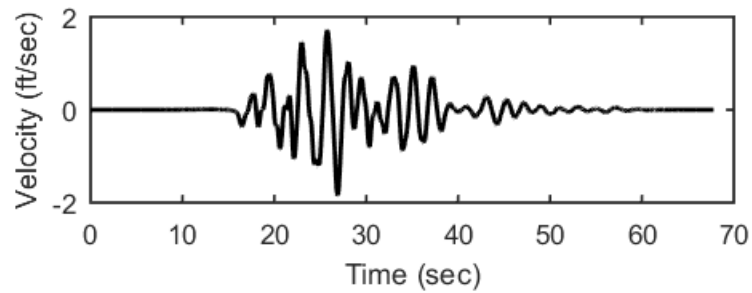
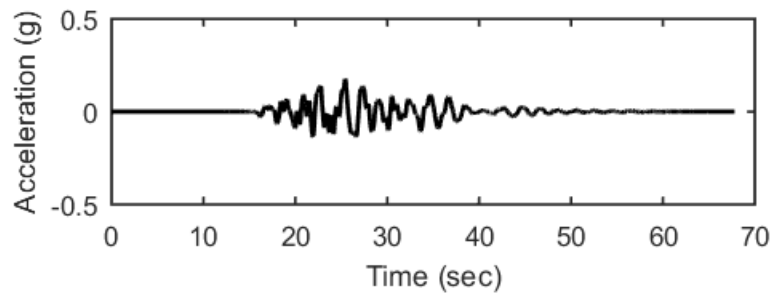
### Profile outputs for Motion: SEE6



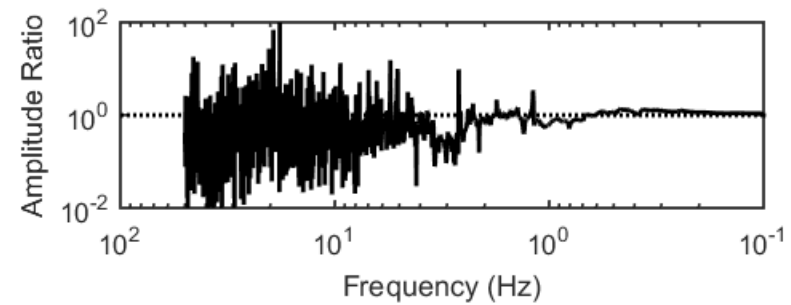
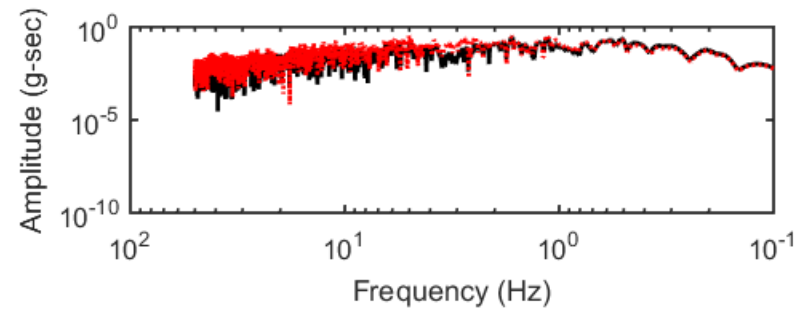
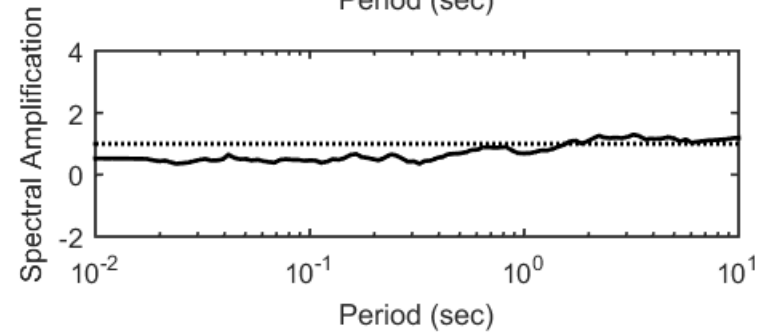
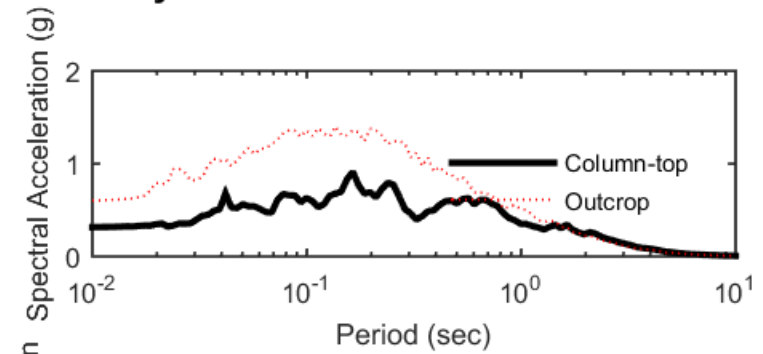
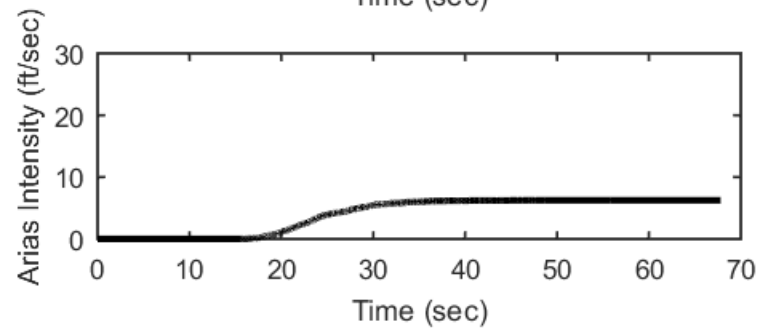
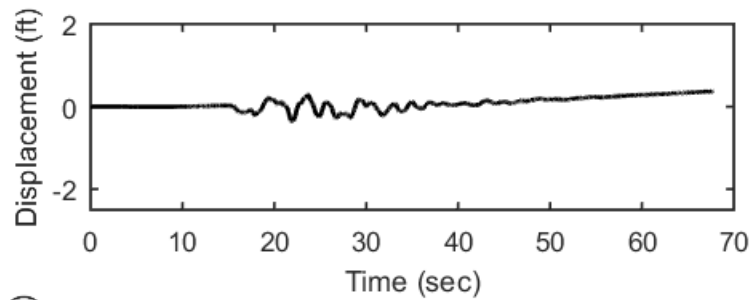
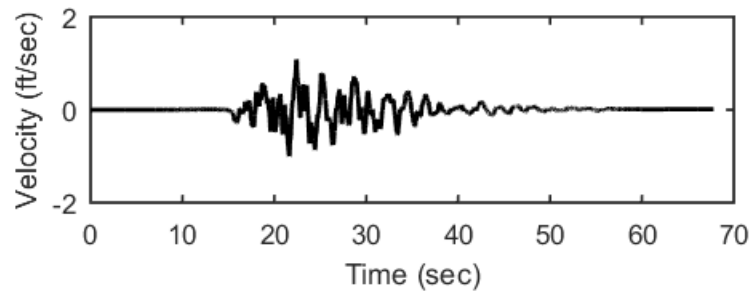
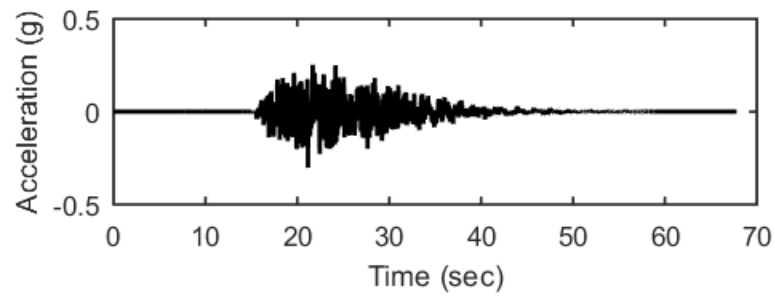
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7

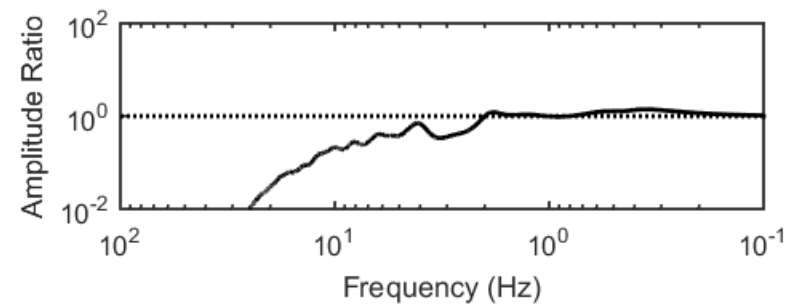
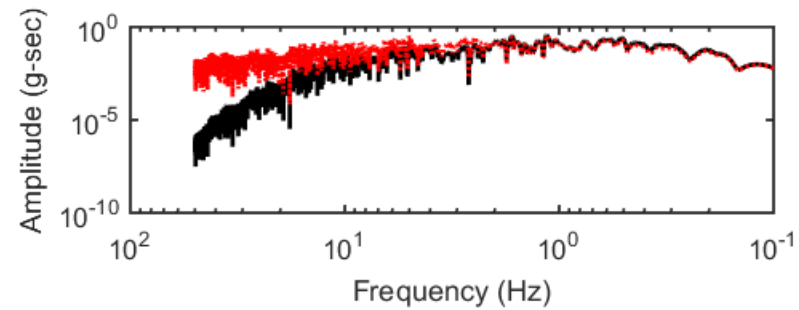
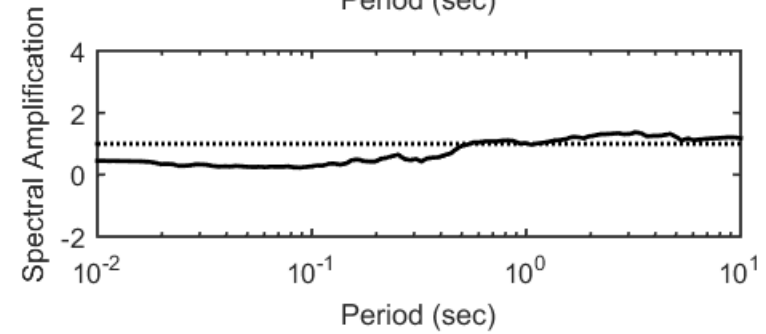
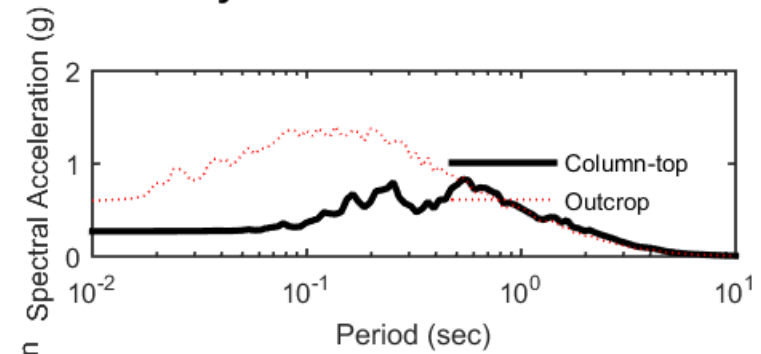
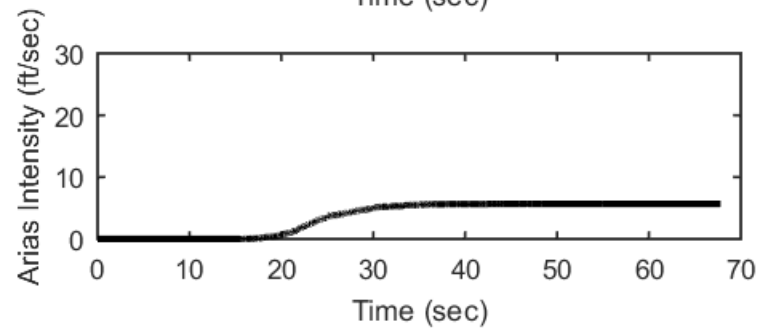
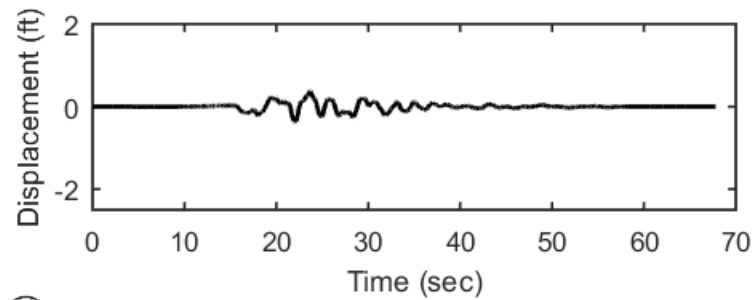
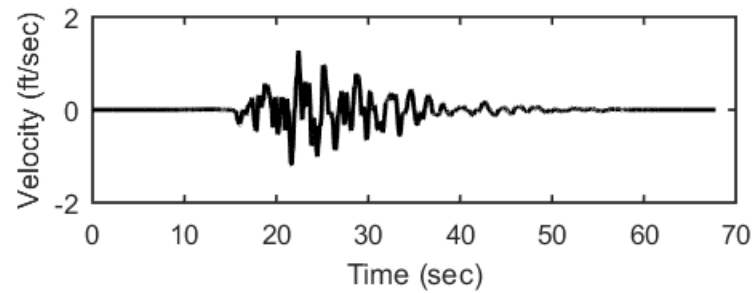
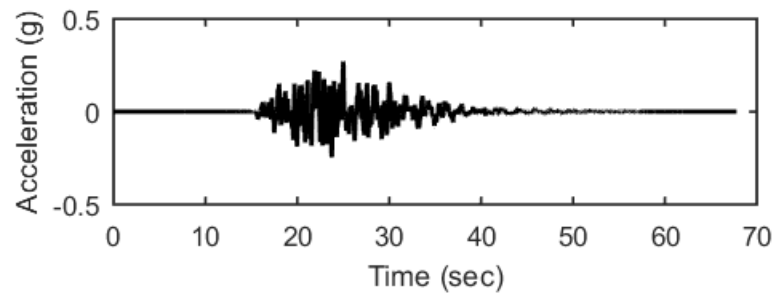


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7

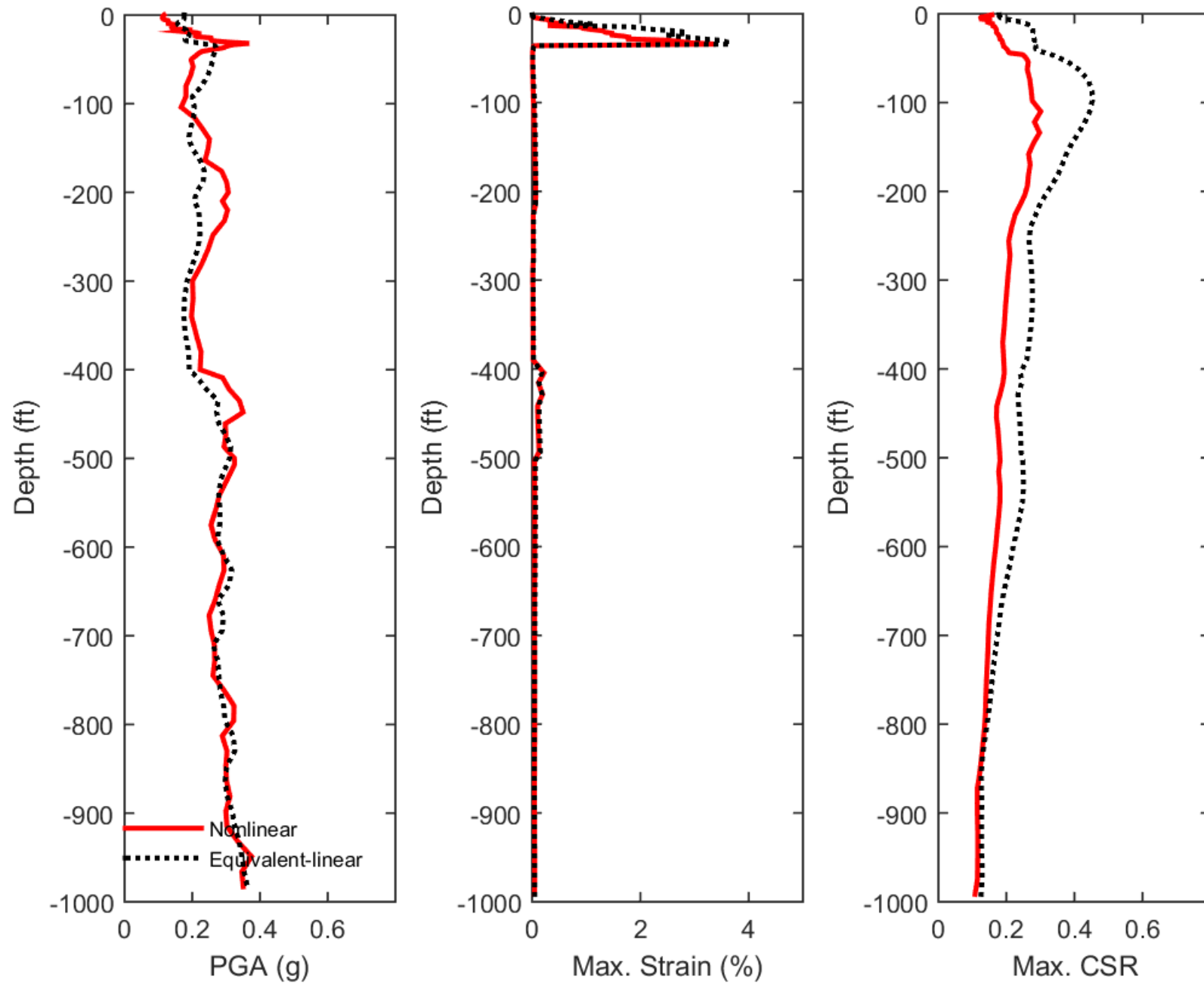




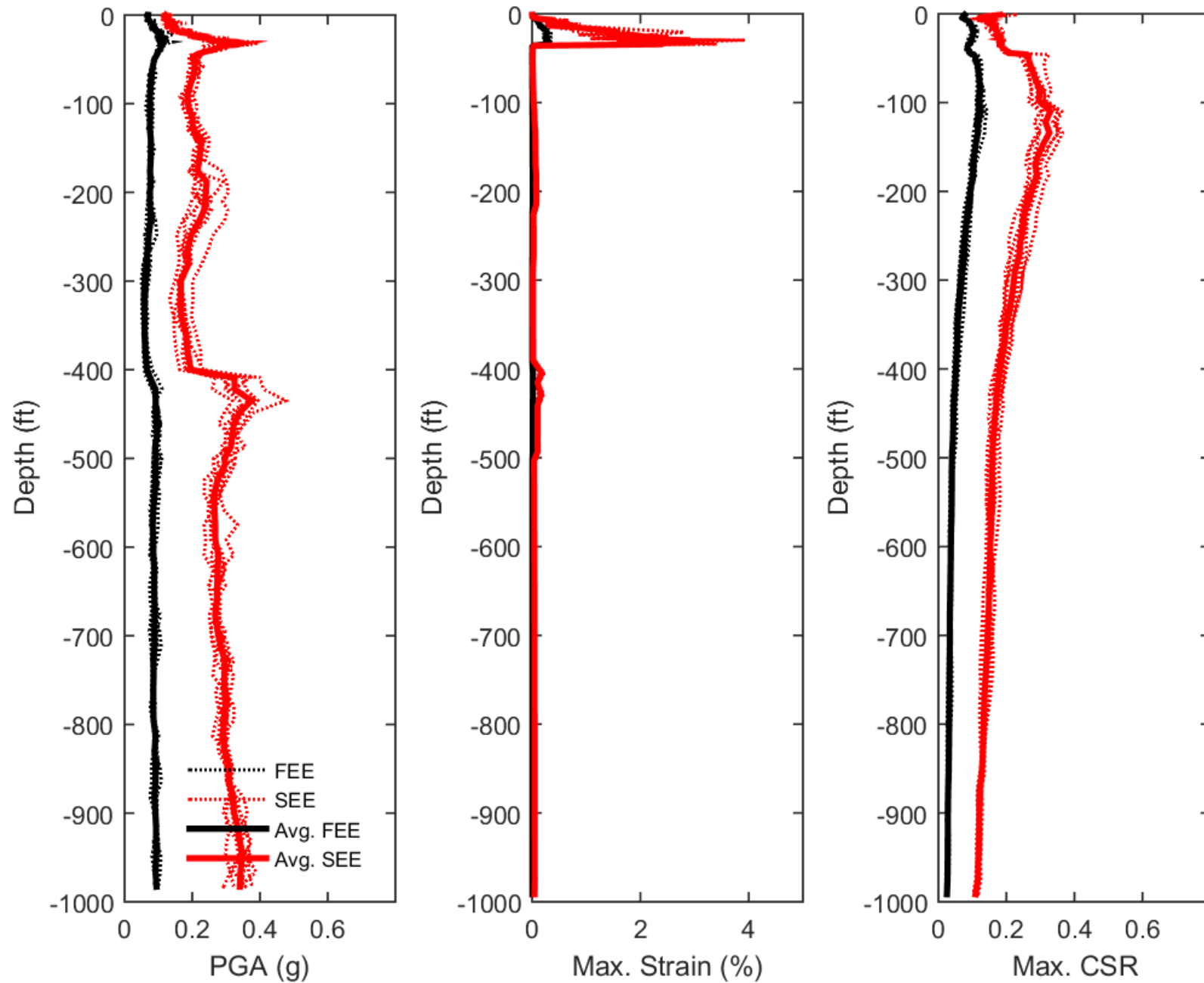
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



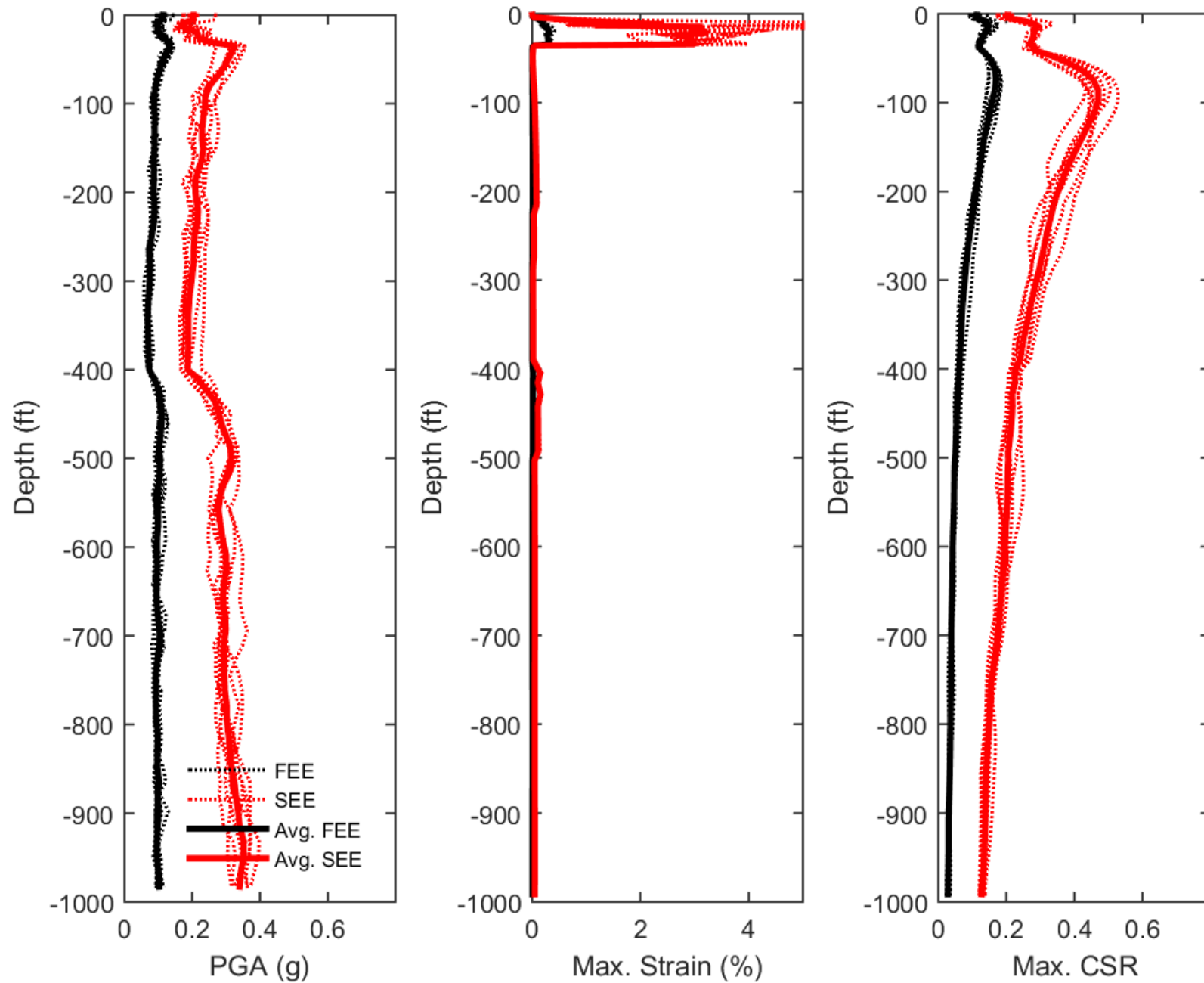
### Profile outputs for Motion: SEE7



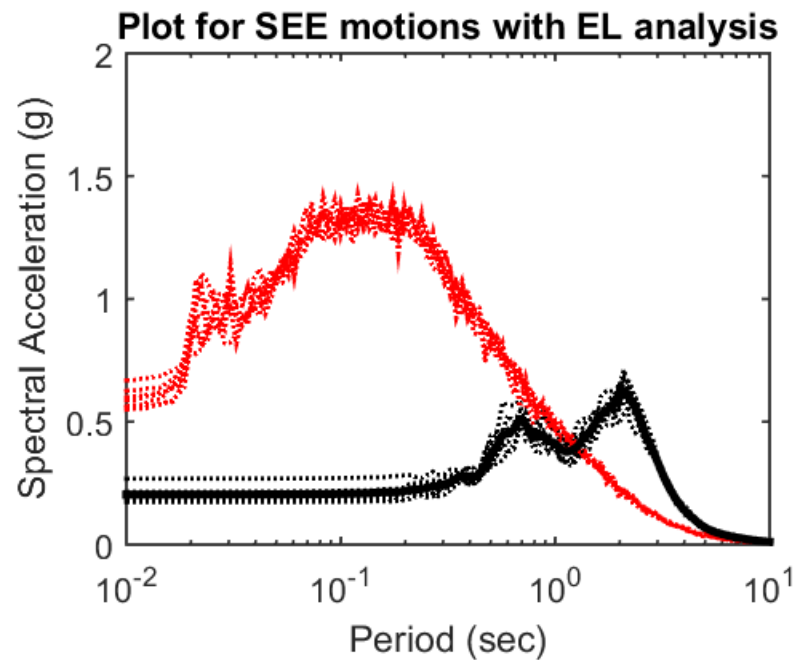
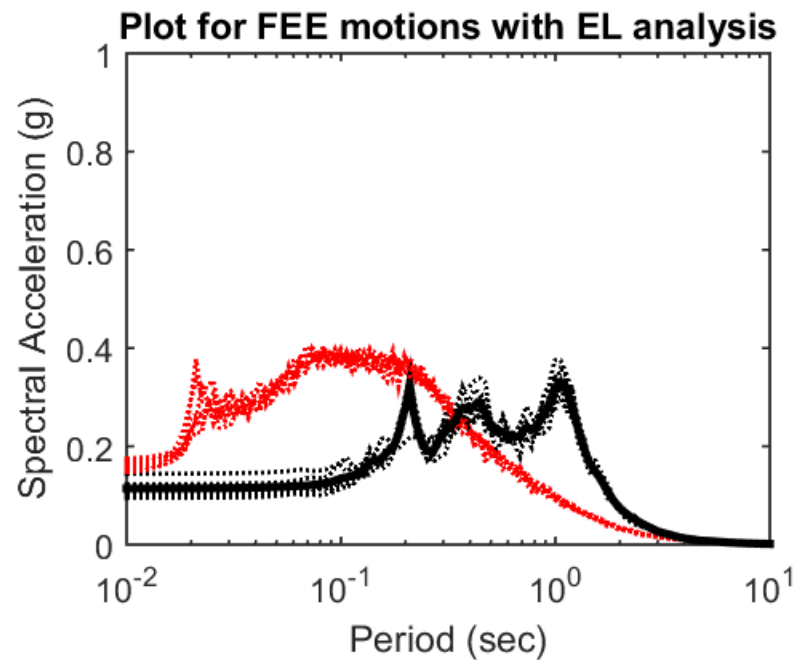
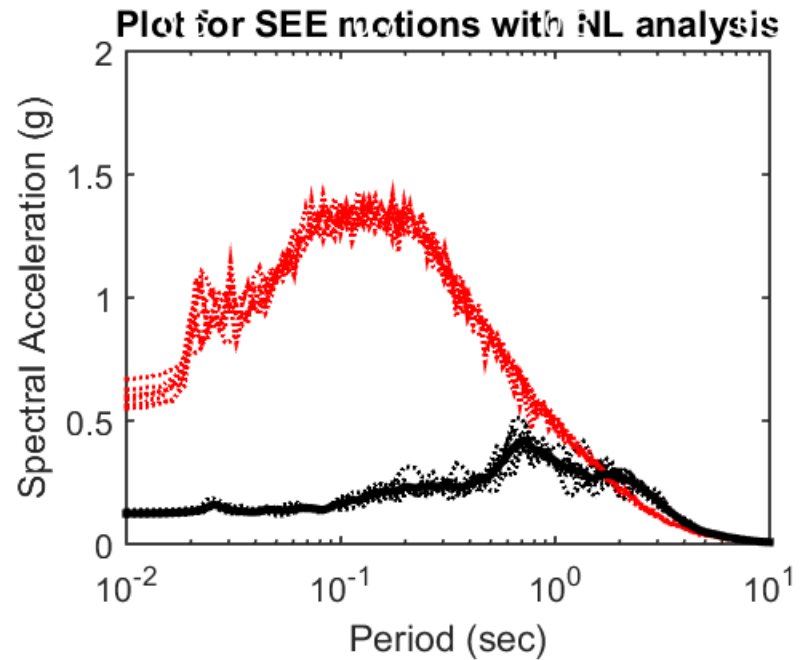
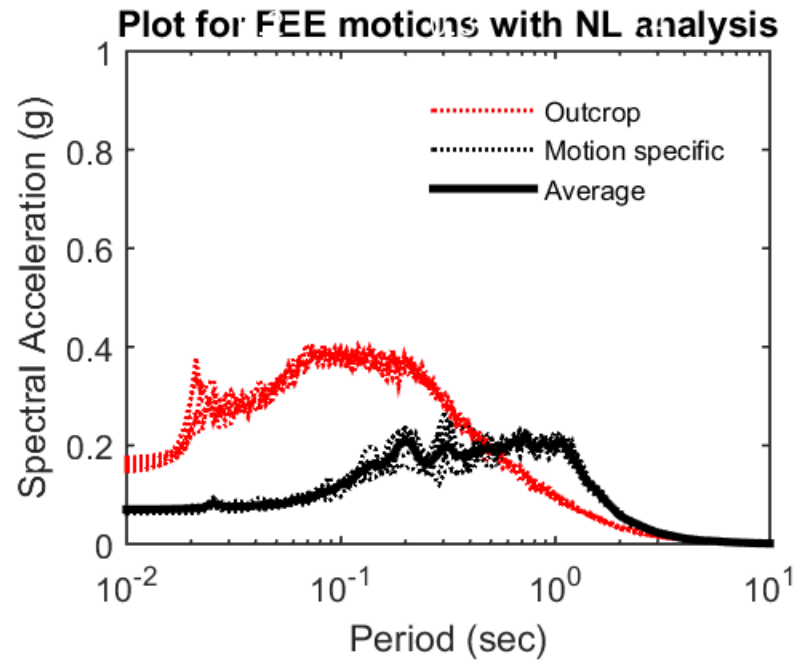
## Summary of the profile outputs for Nonlinear analysis



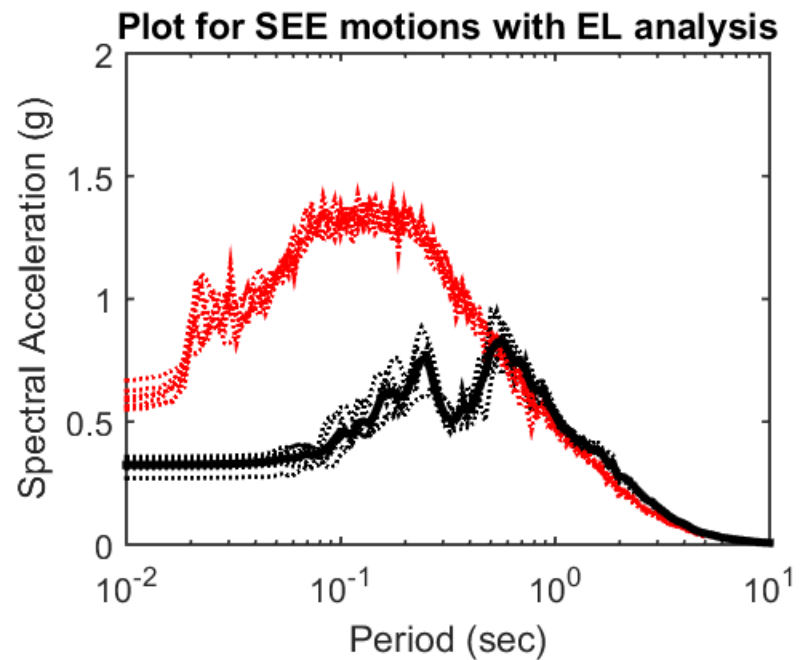
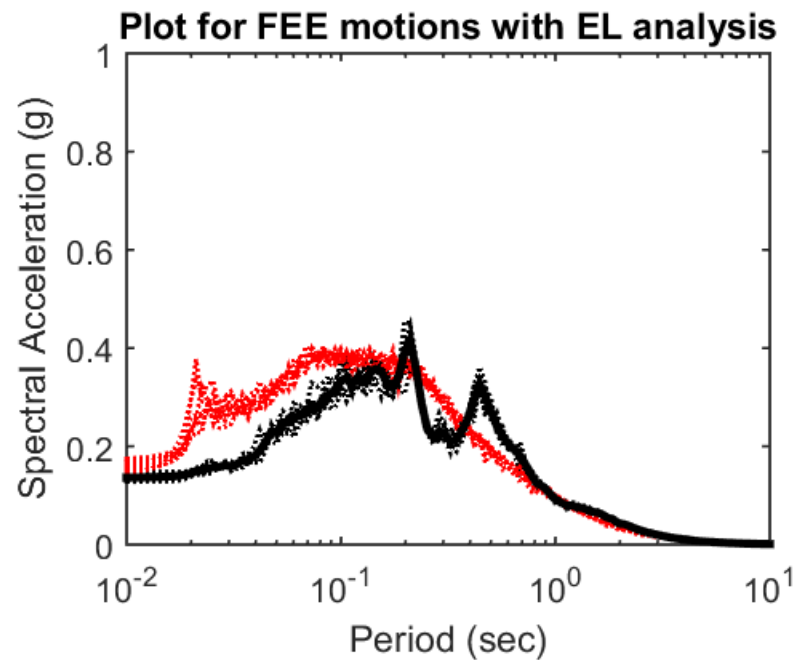
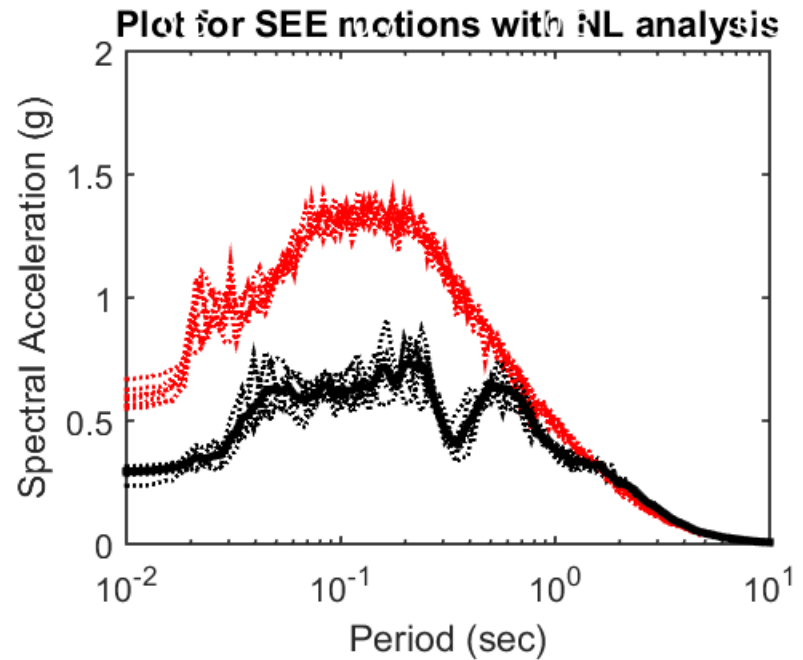
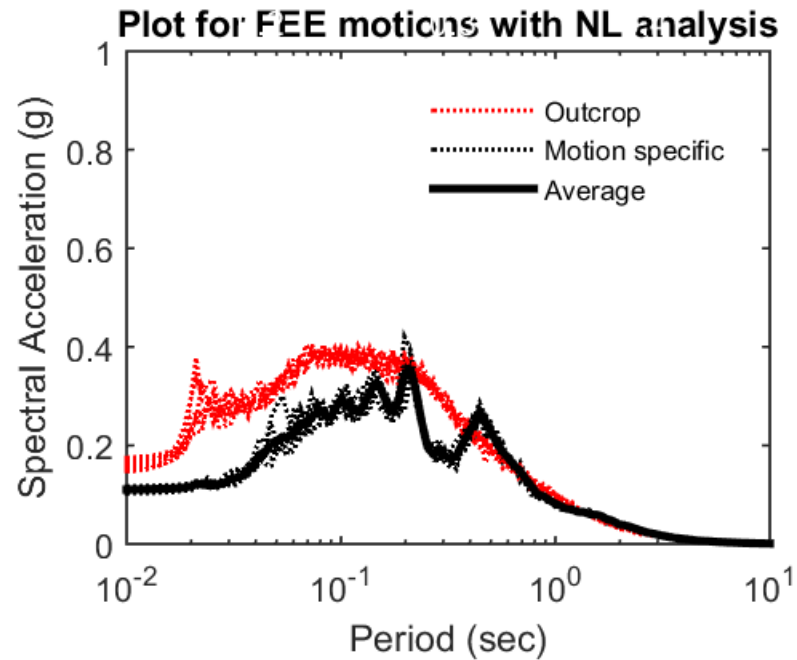
# Summary of the profile outputs for Equivalent-linear analysis



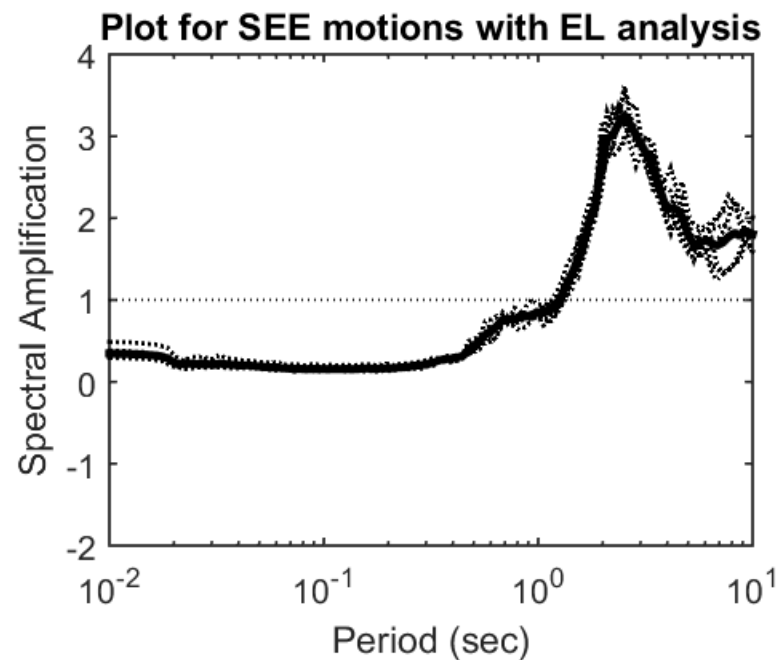
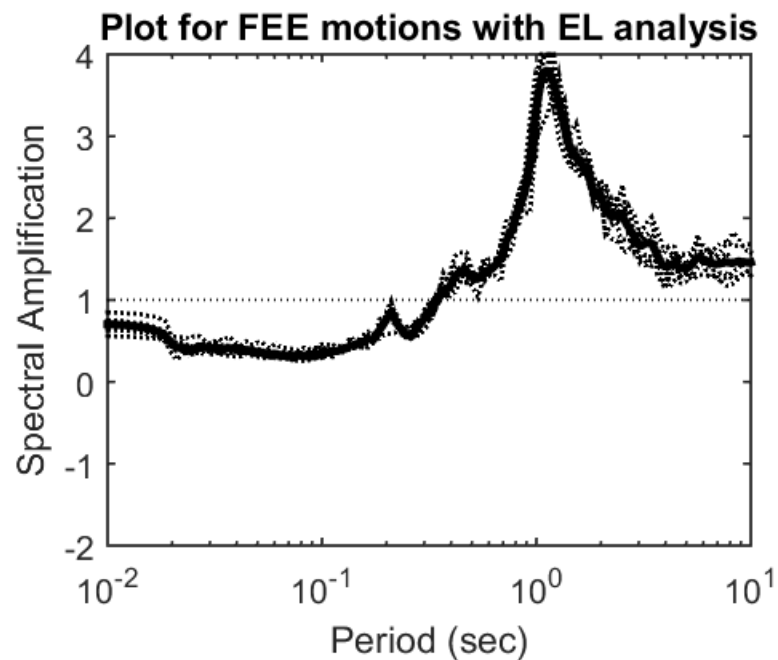
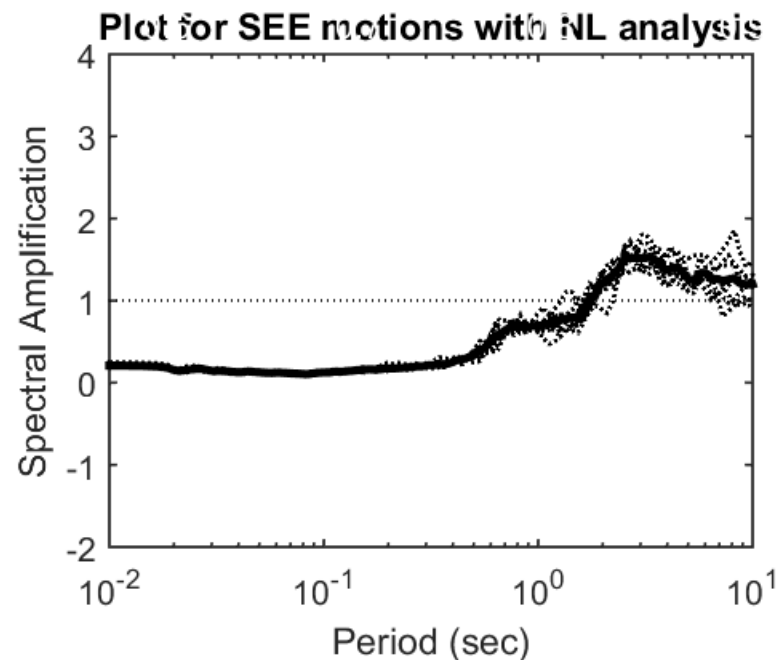
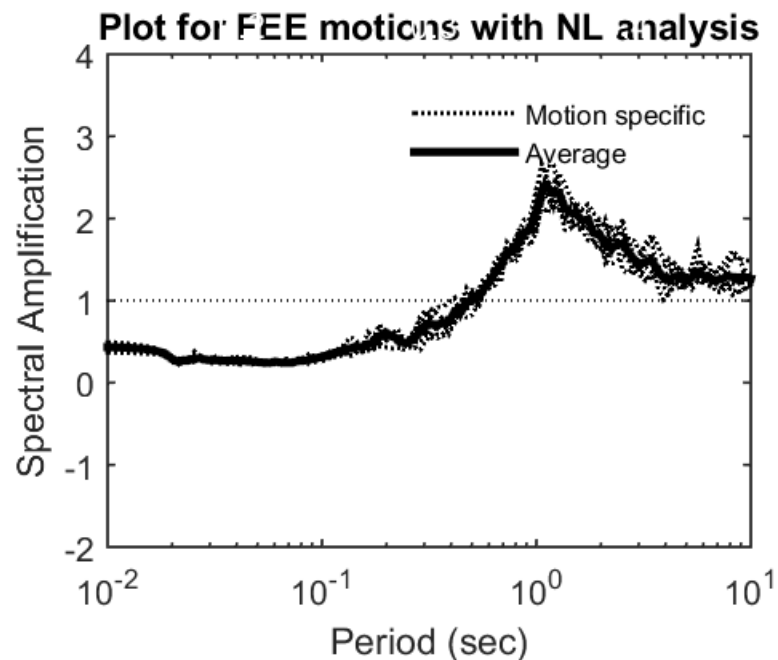
## Summary plots: RSA at ground surface



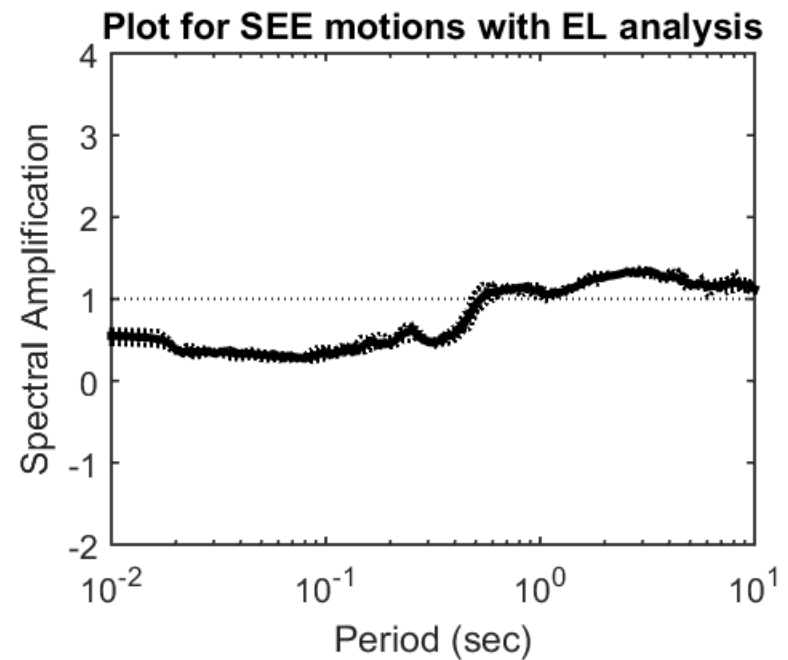
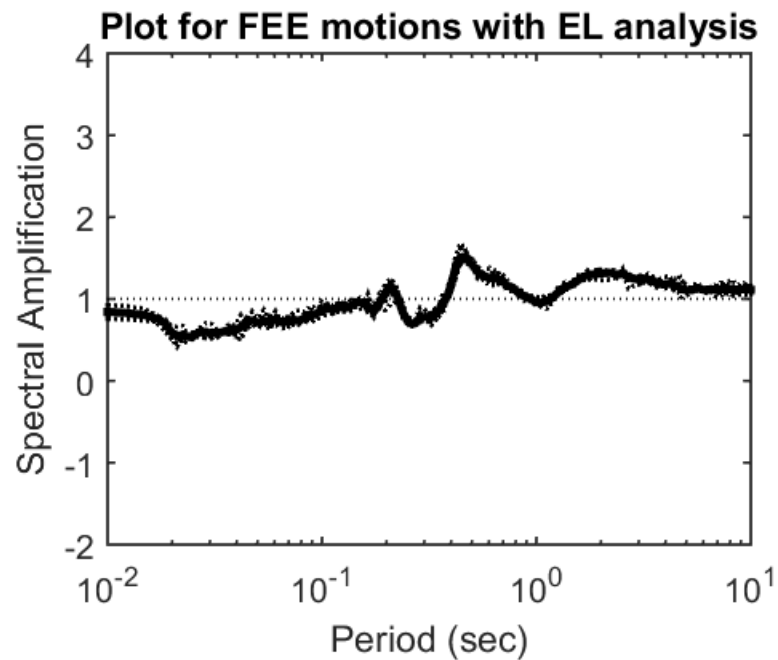
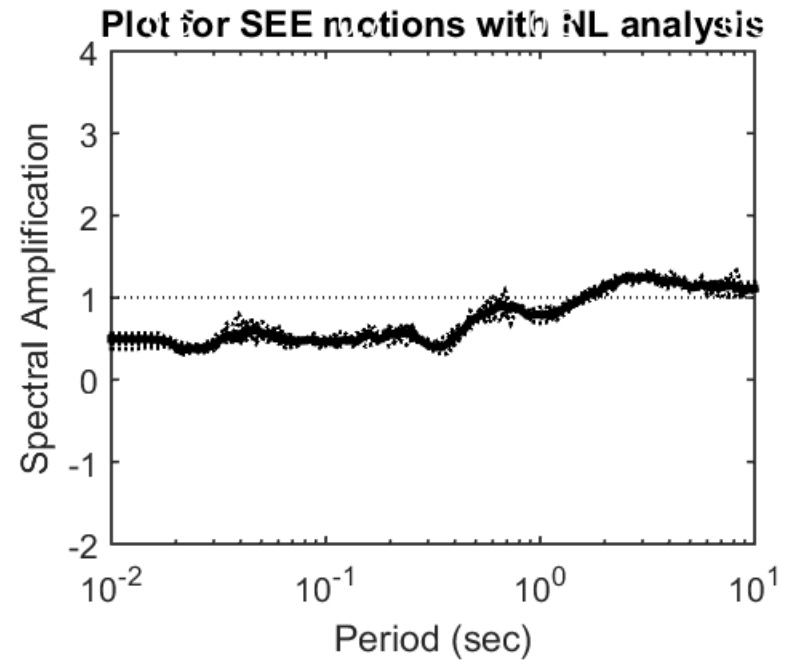
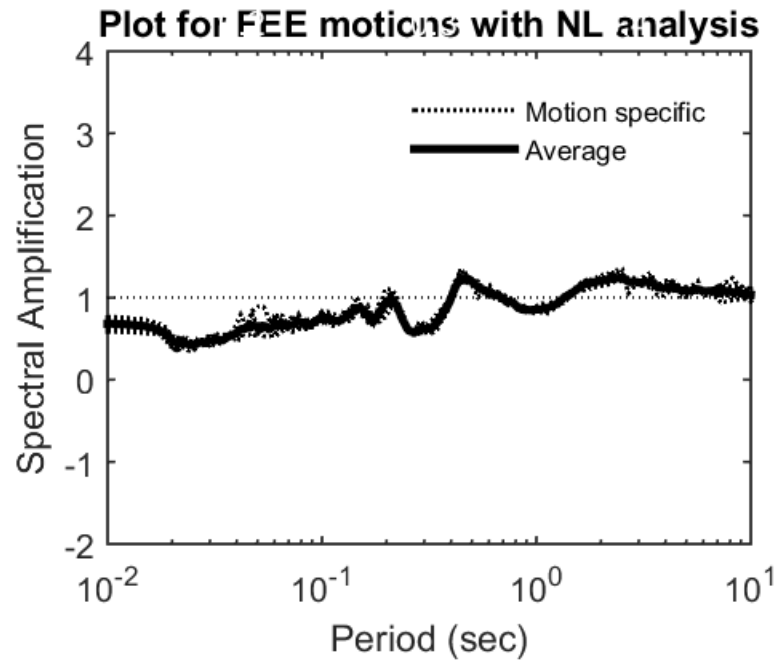
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



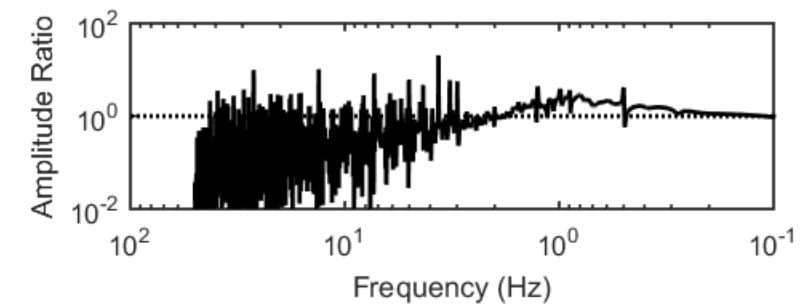
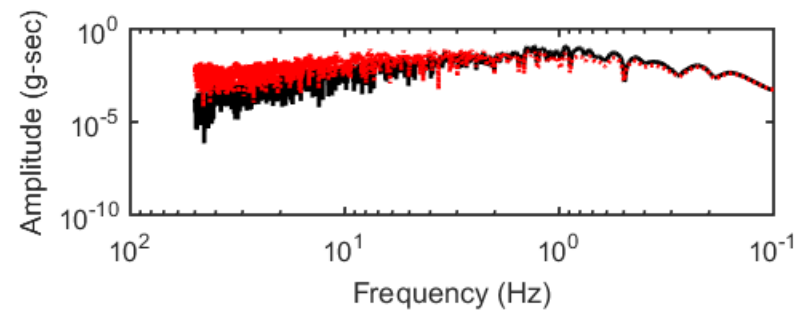
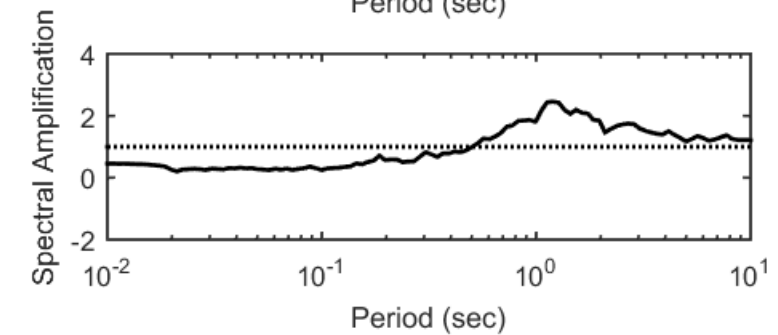
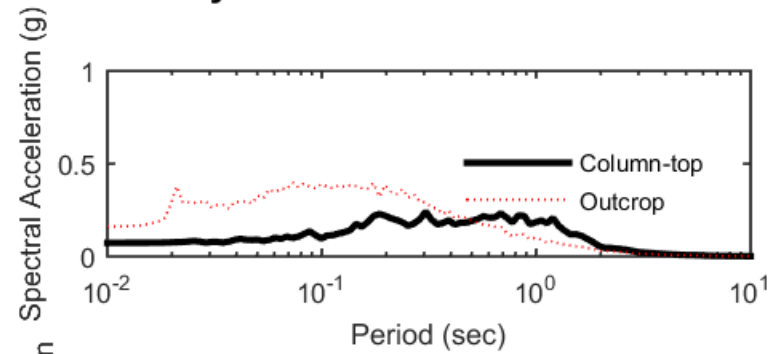
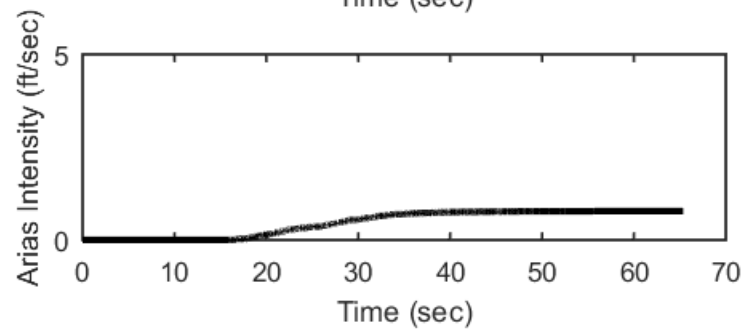
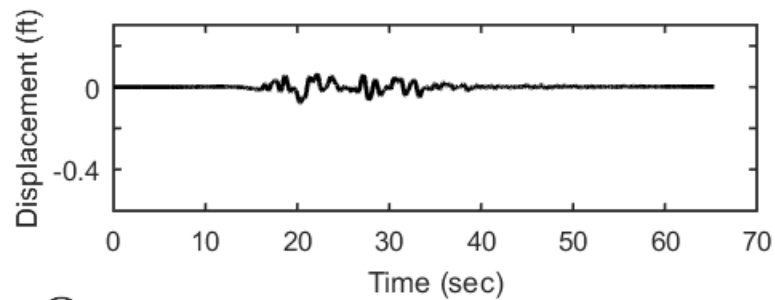
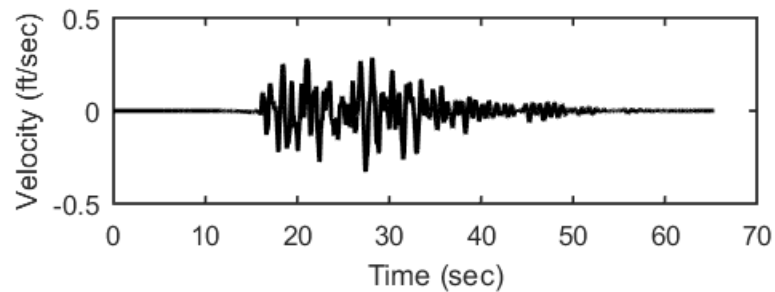
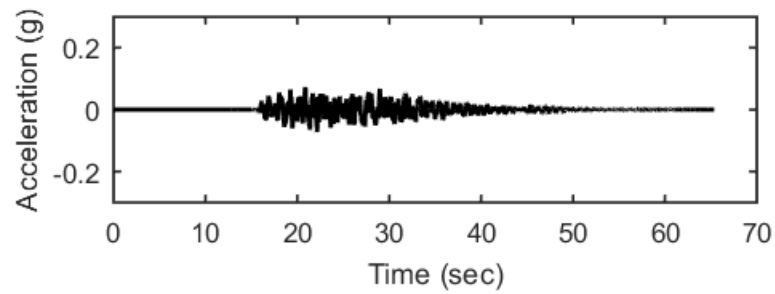
## Summary plots: Spectral amplification at top of Marl



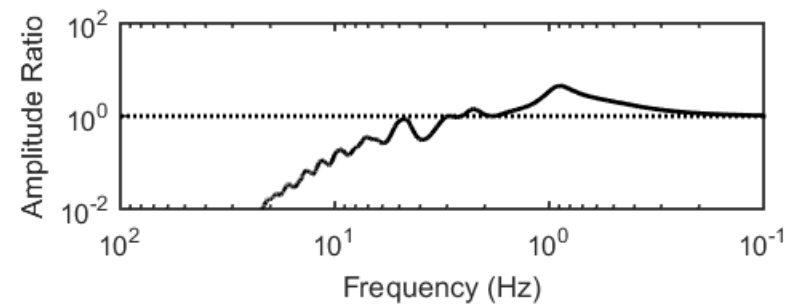
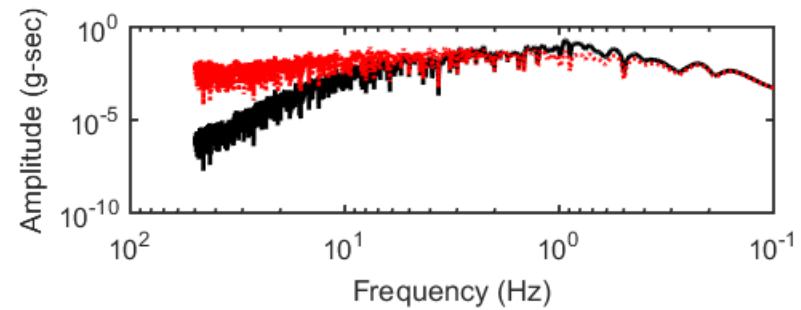
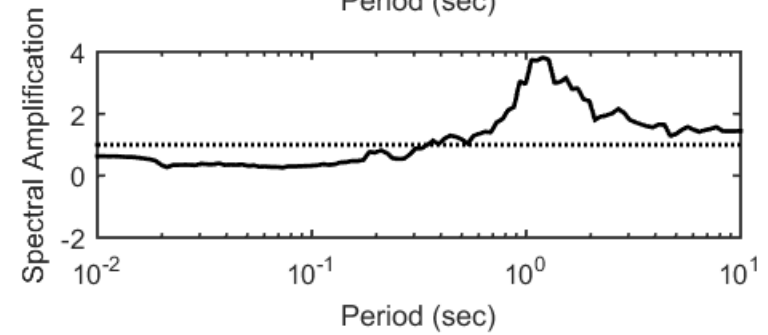
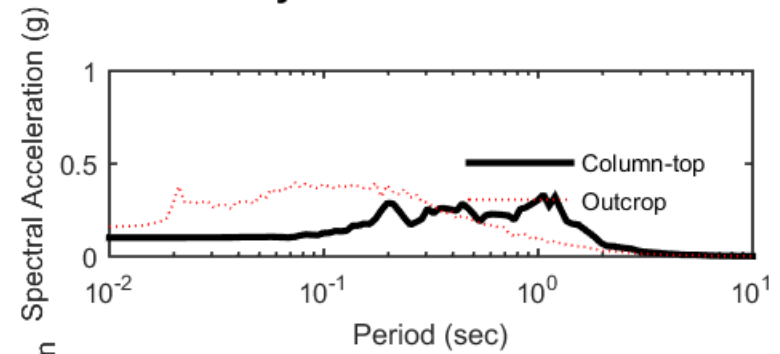
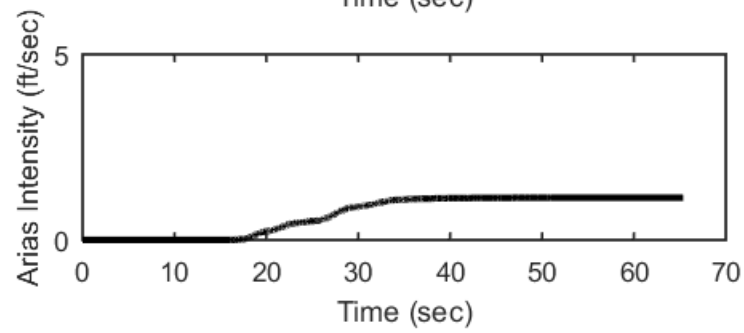
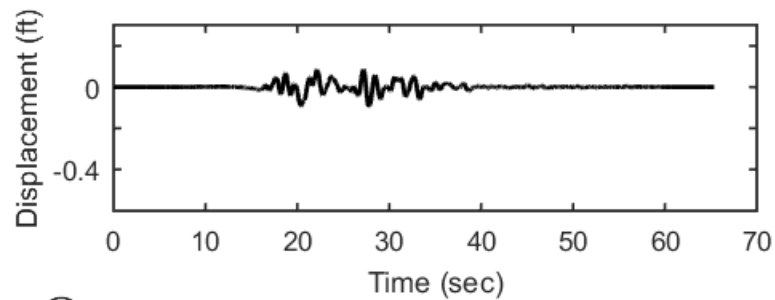
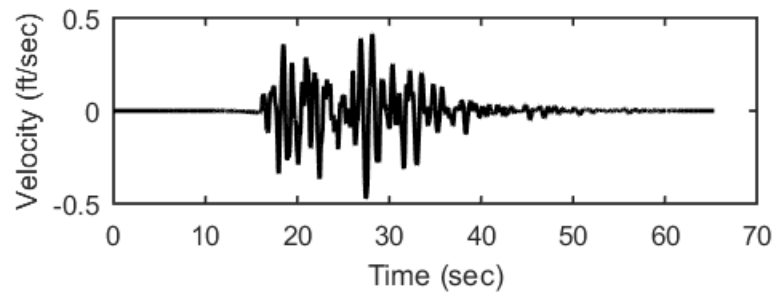
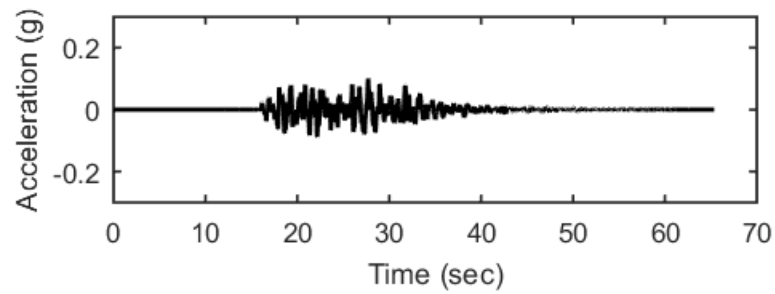


## **1,000 FT MODEL**

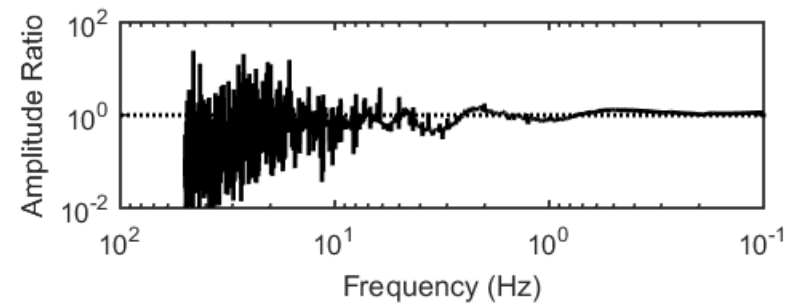
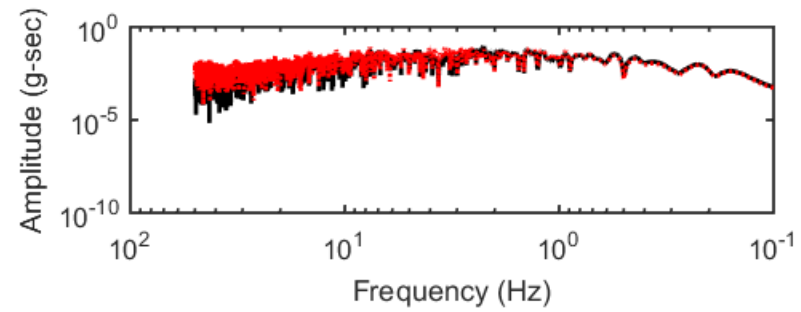
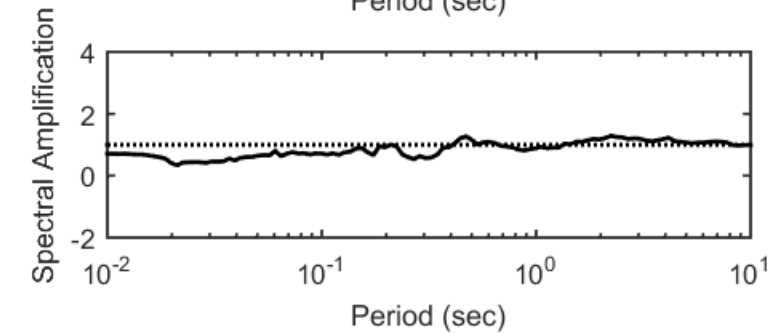
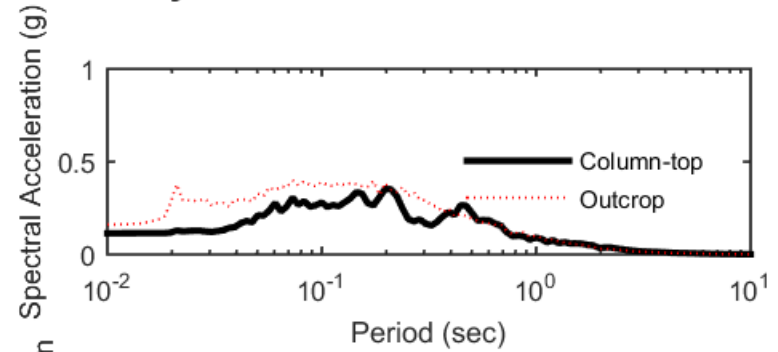
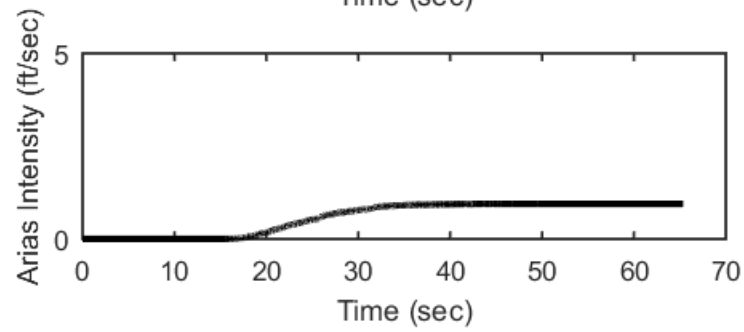
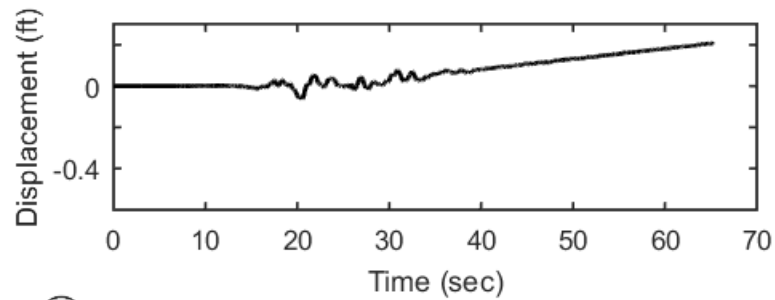
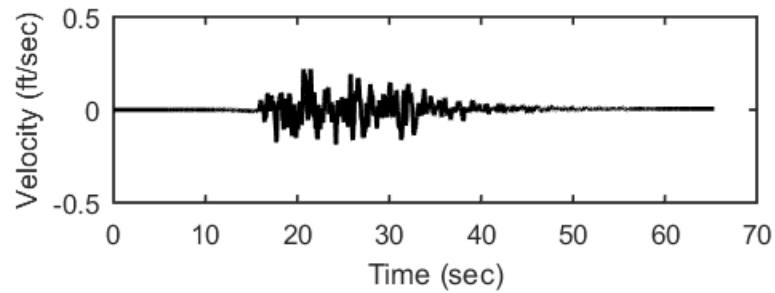
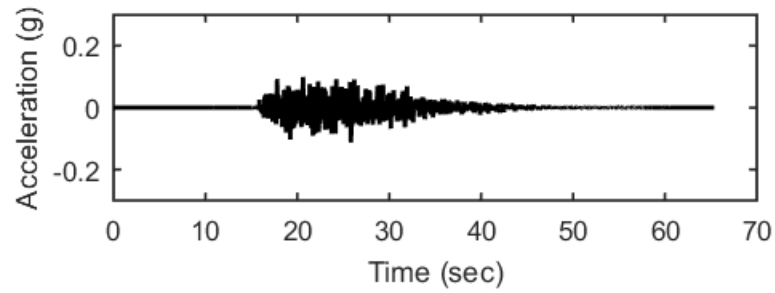
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



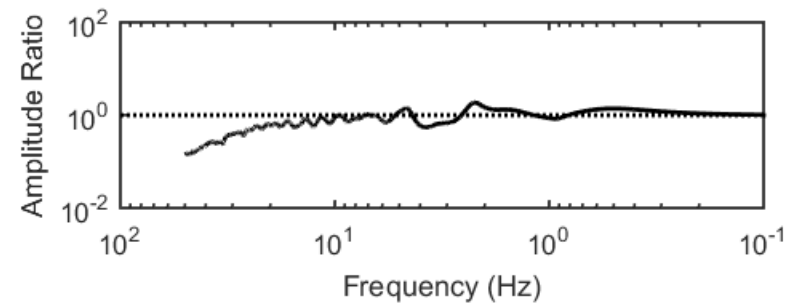
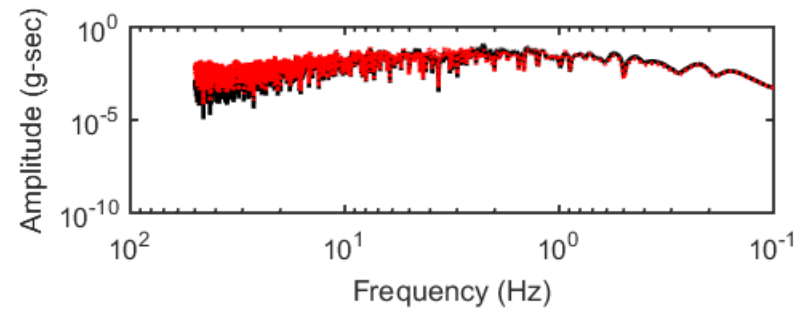
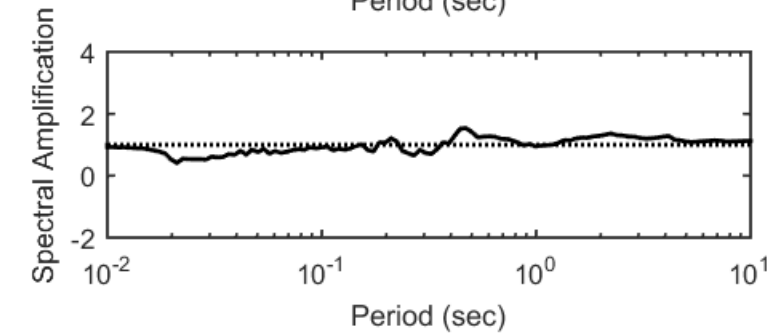
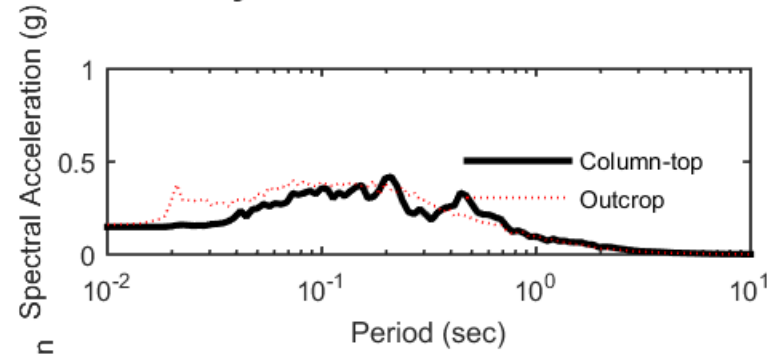
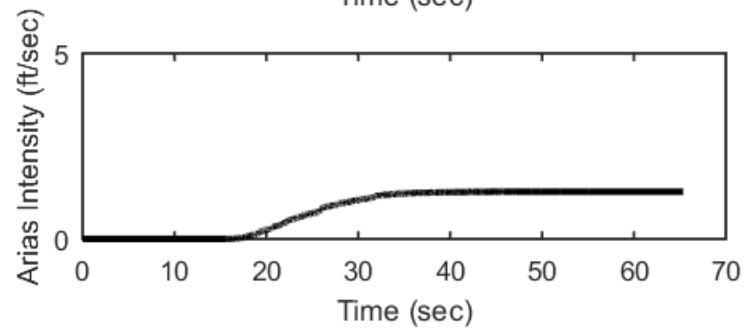
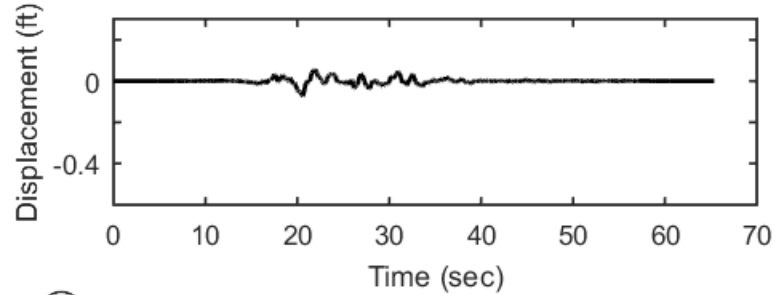
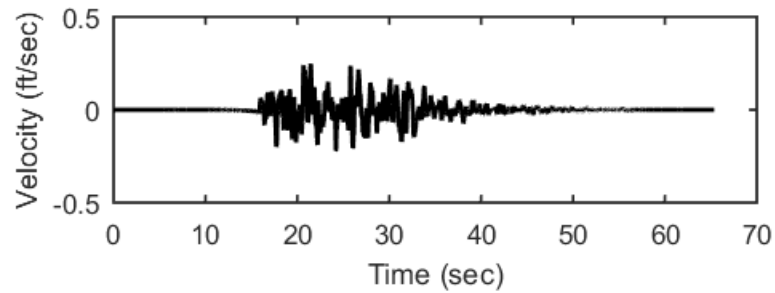
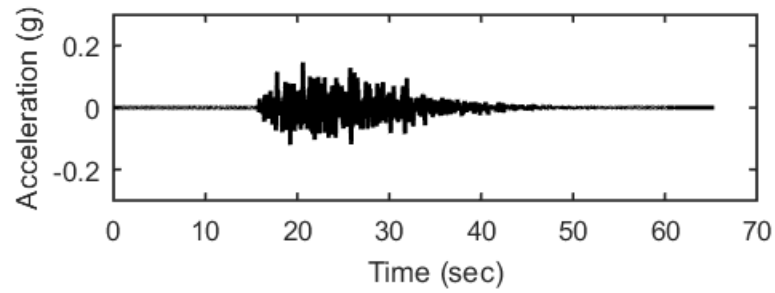
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



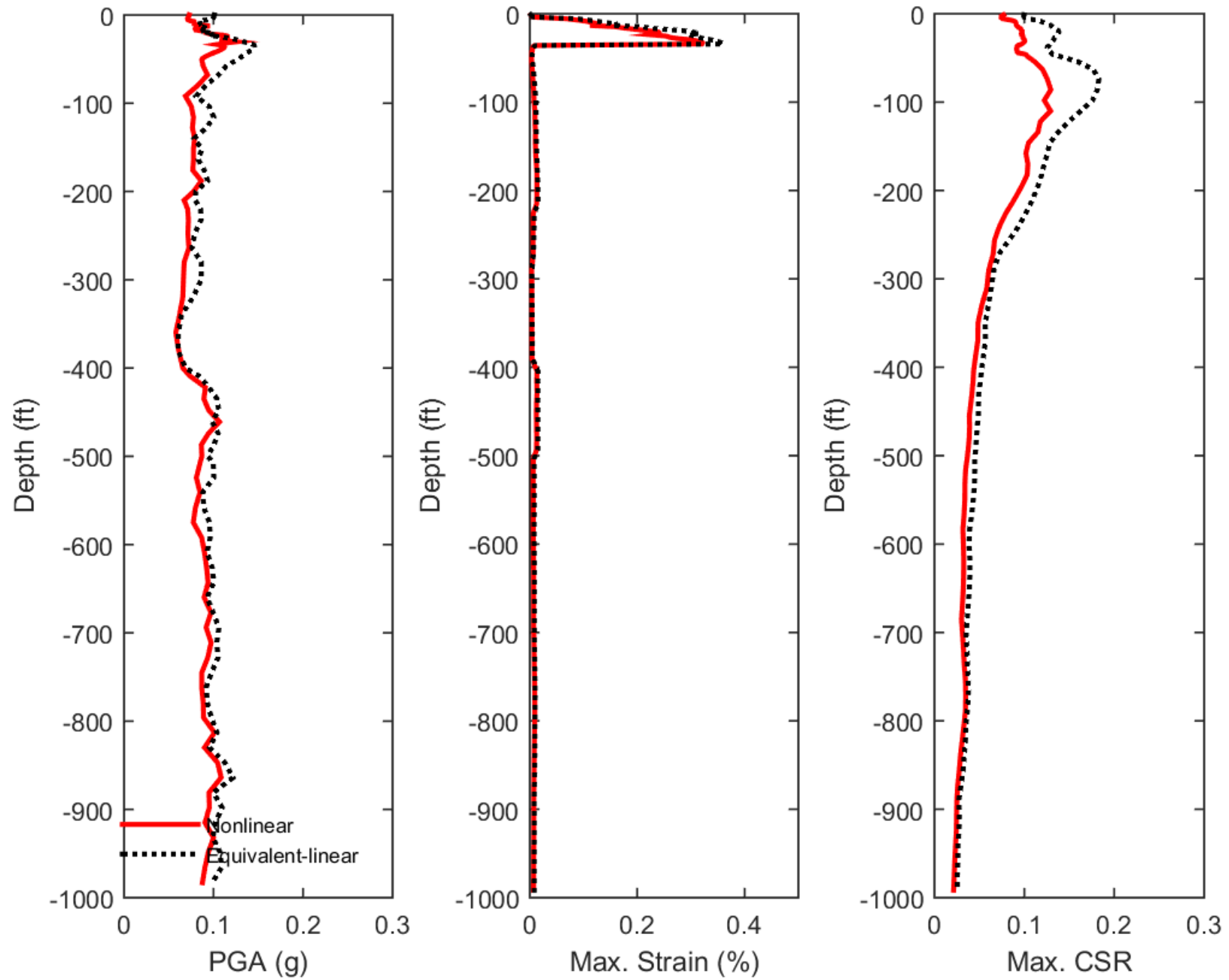
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



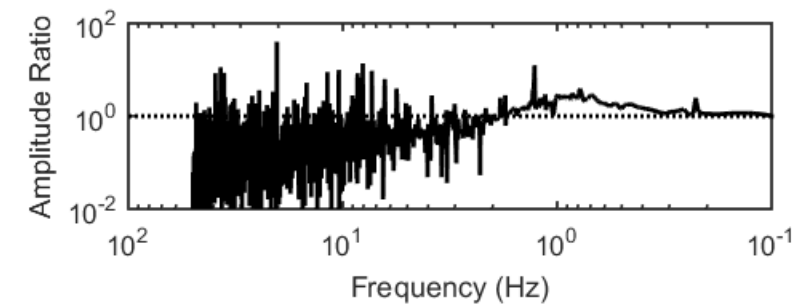
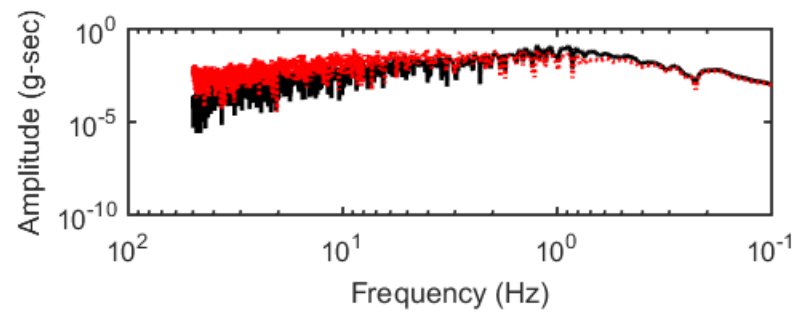
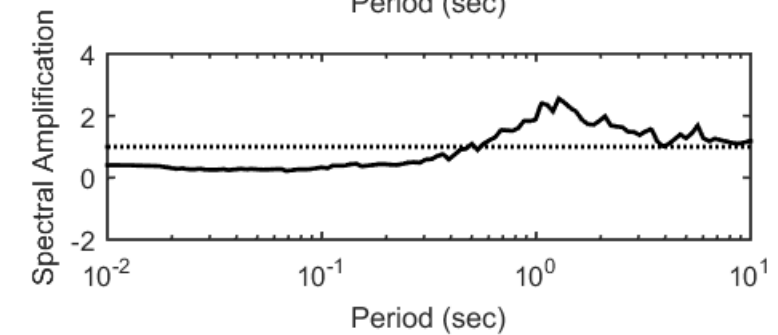
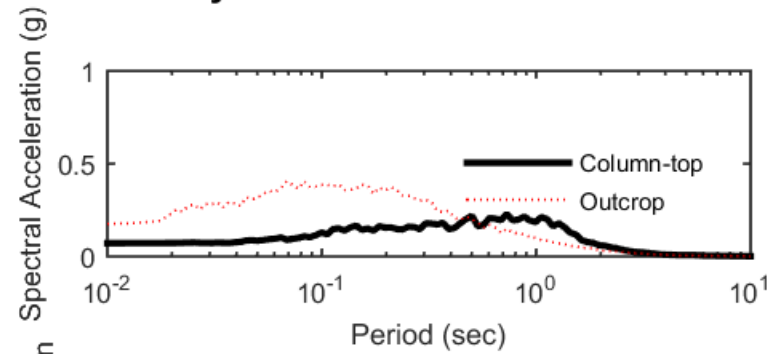
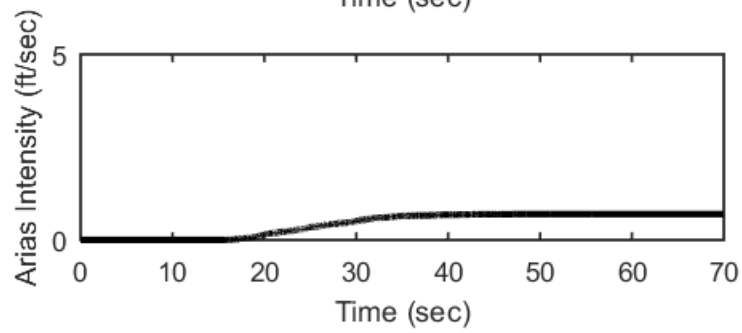
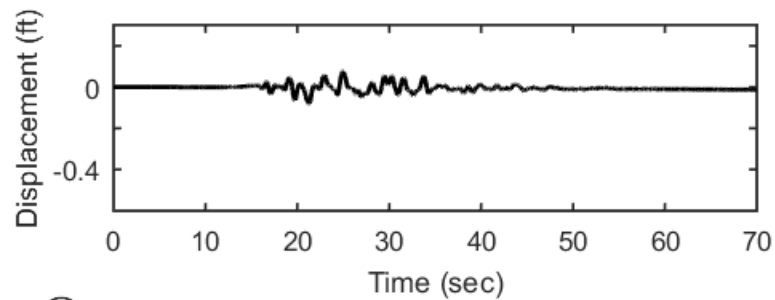
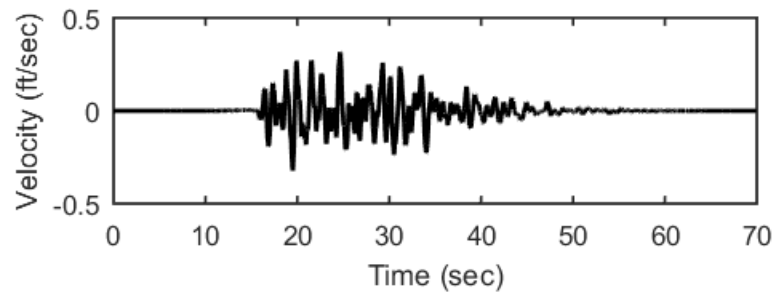
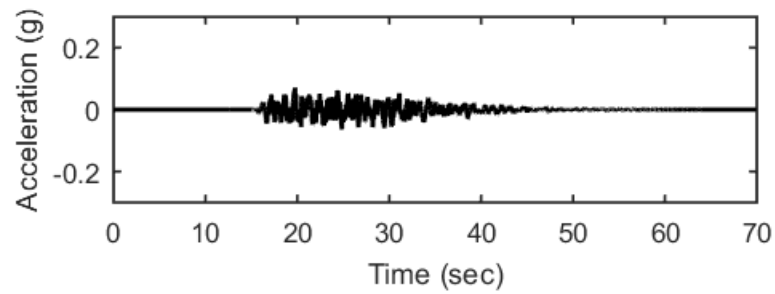
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



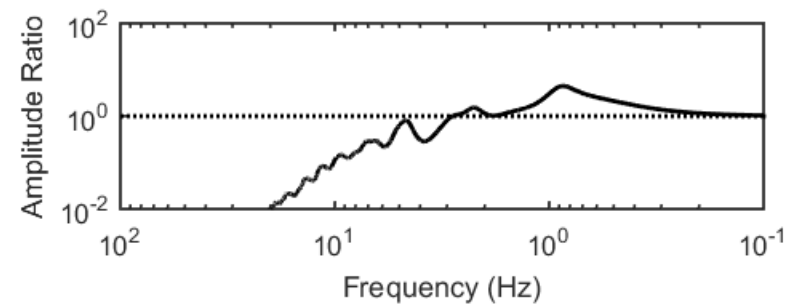
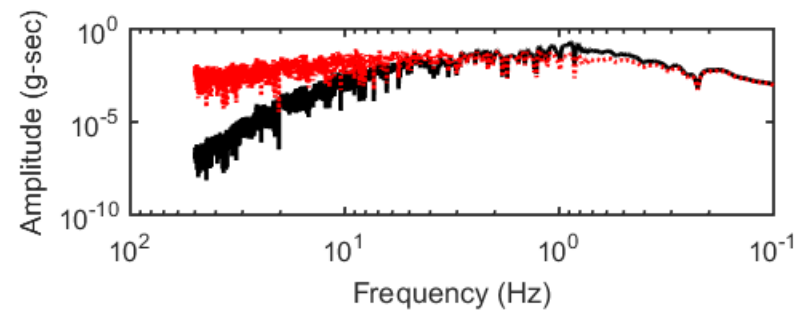
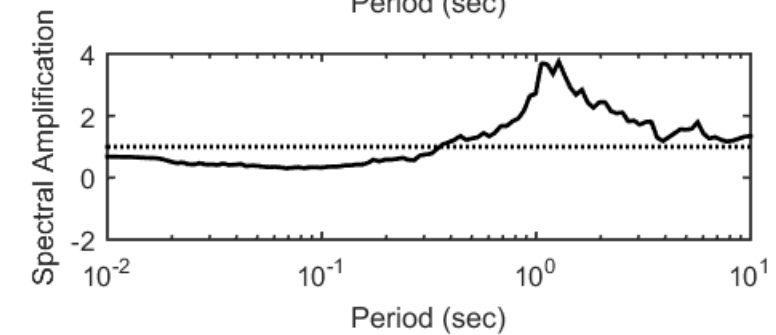
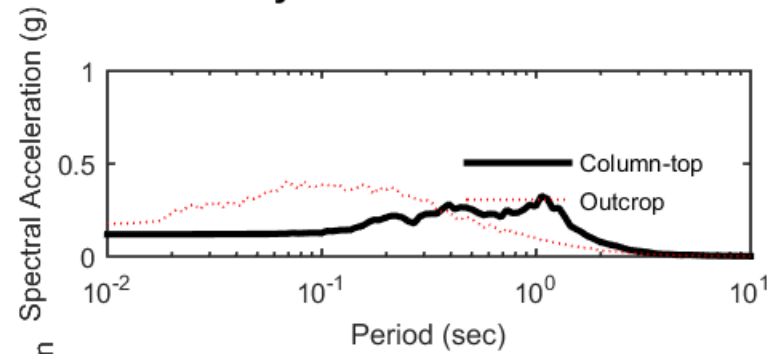
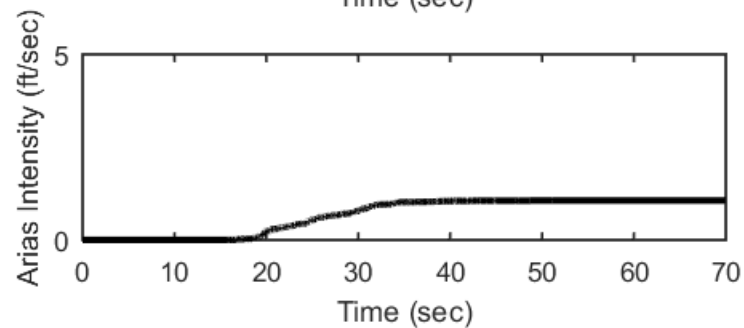
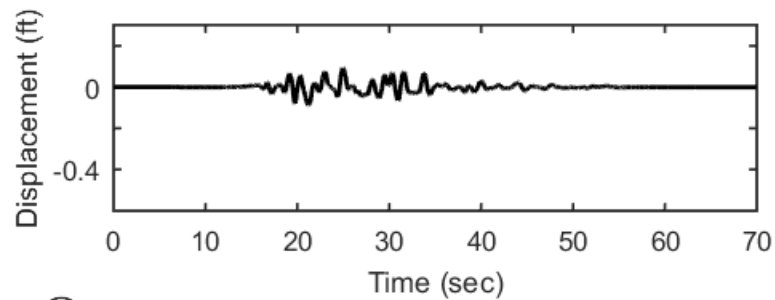
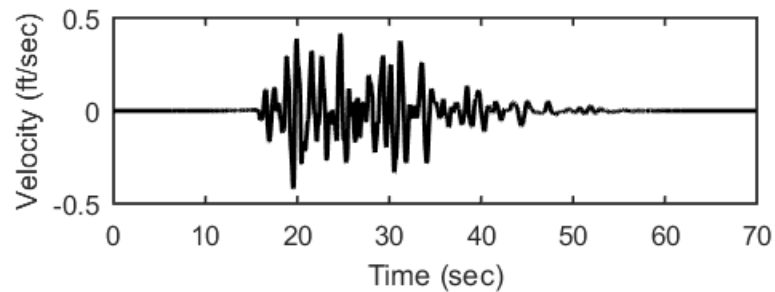
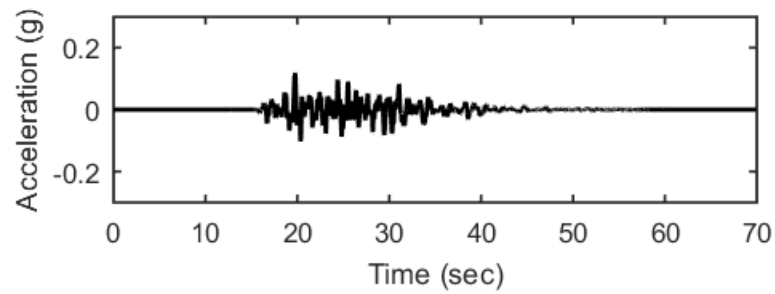
### Profile outputs for Motion: FEE1



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2

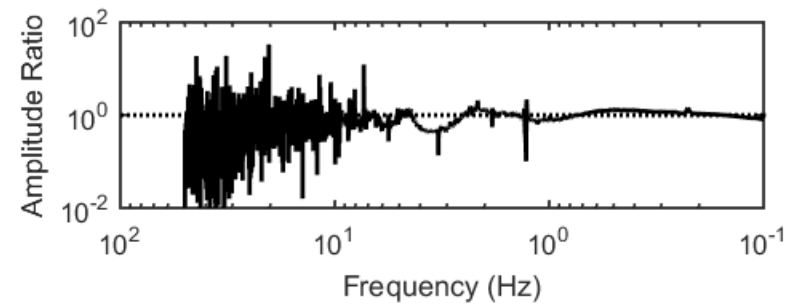
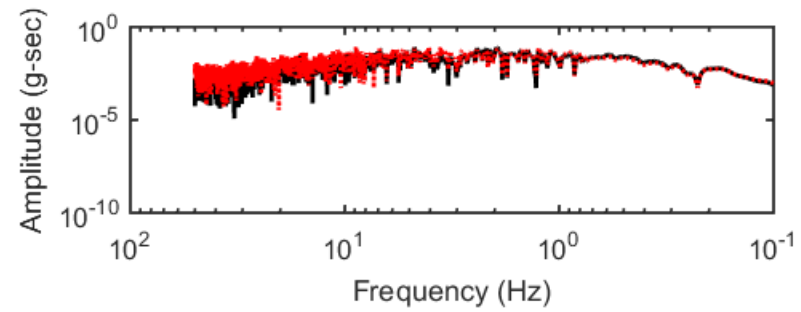
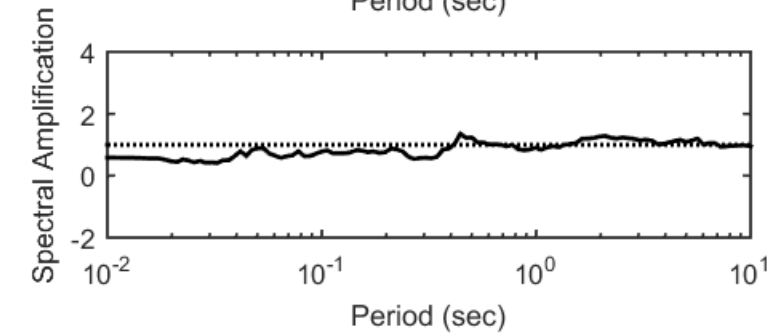
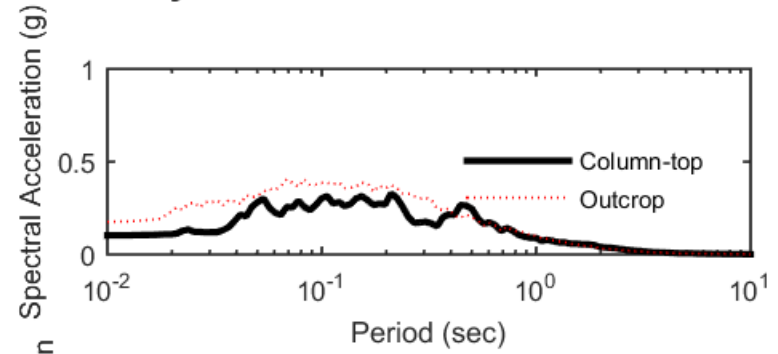
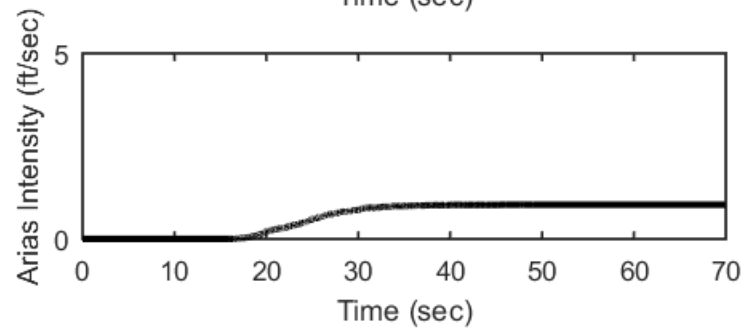
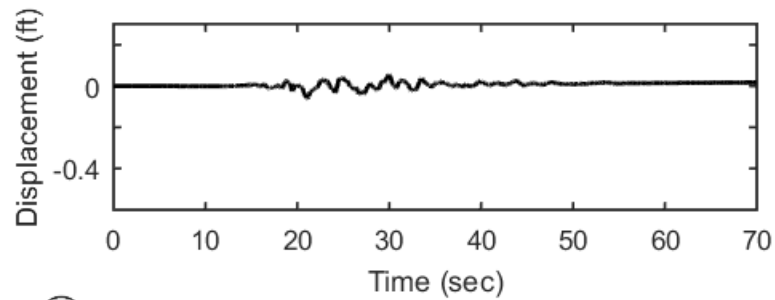
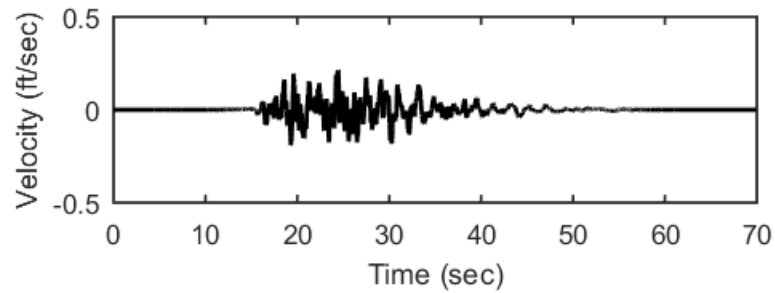
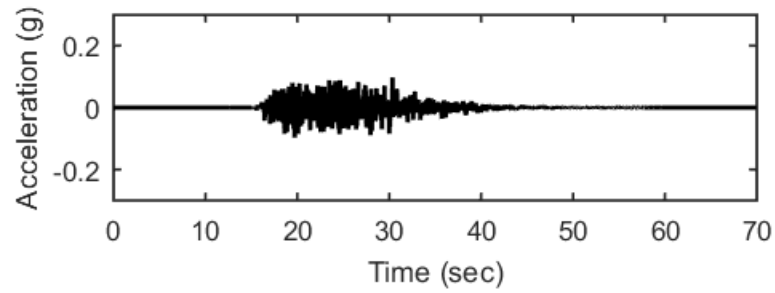


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2

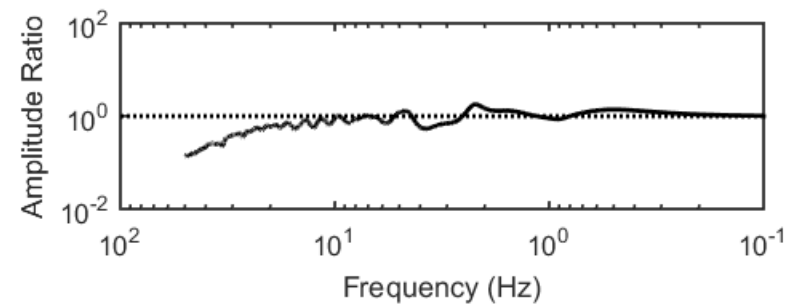
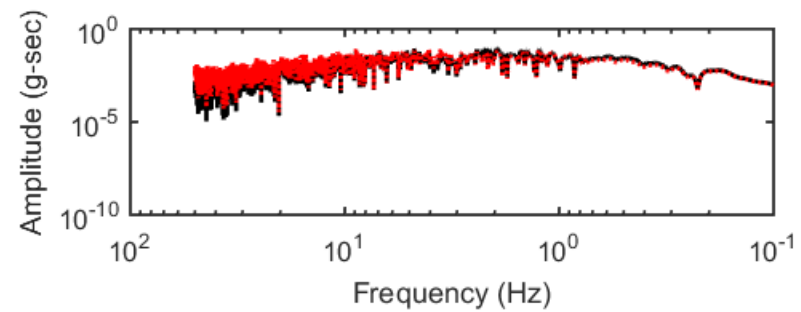
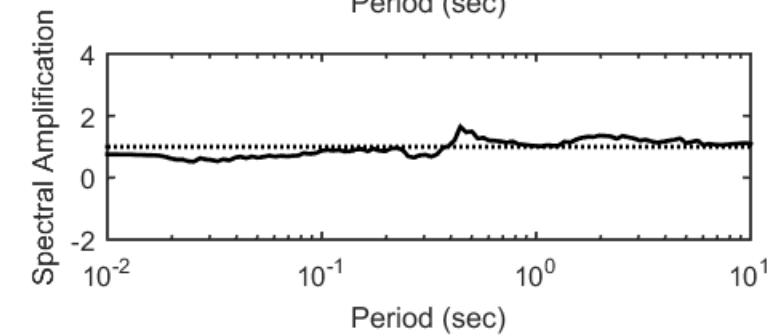
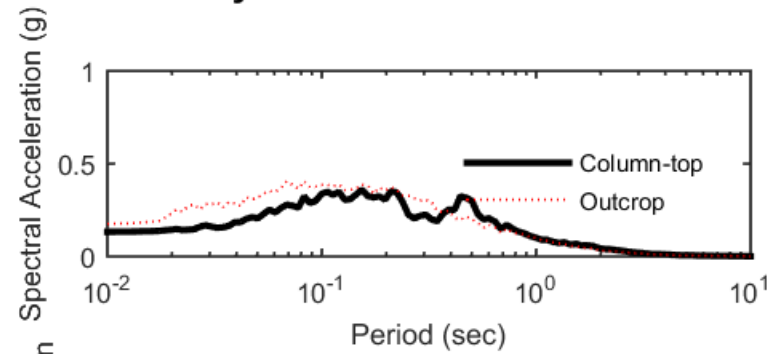
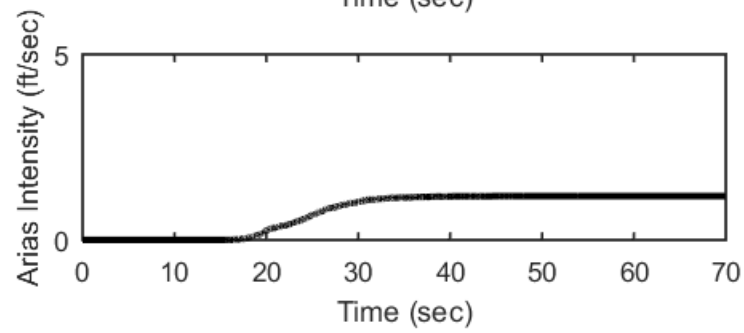
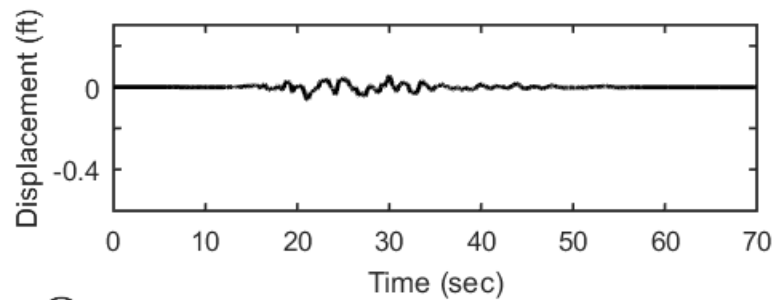
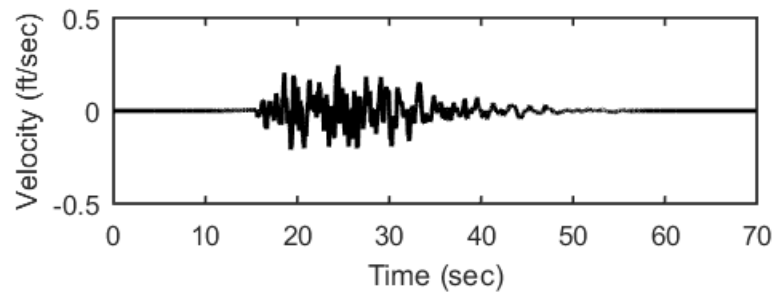
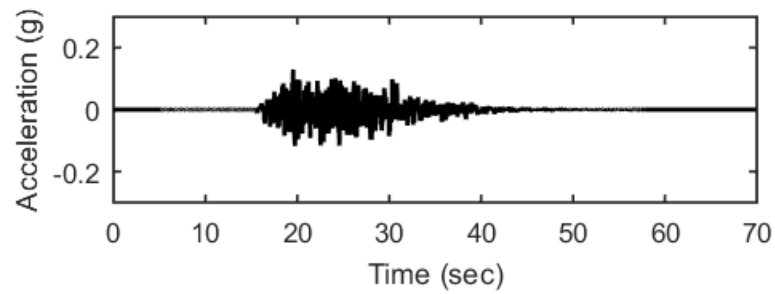




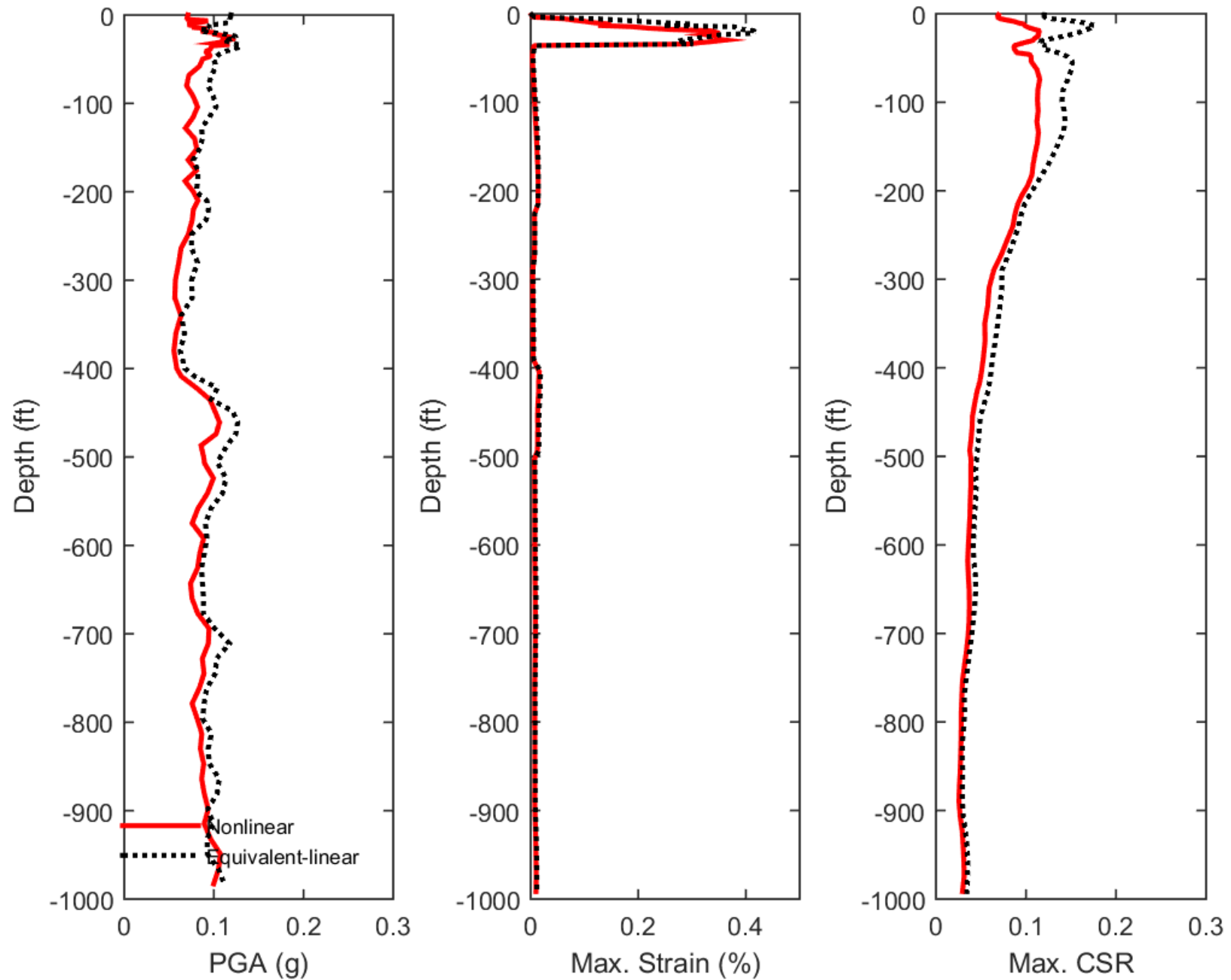
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



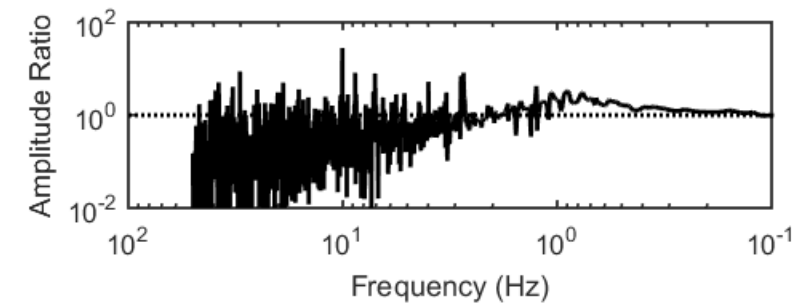
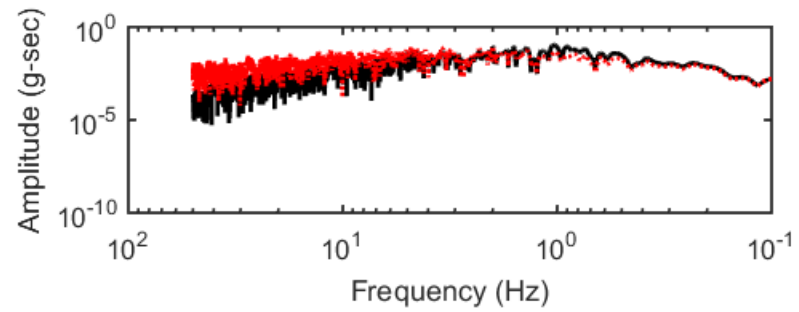
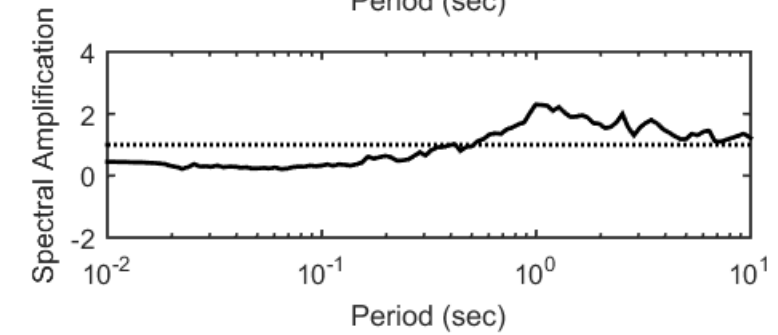
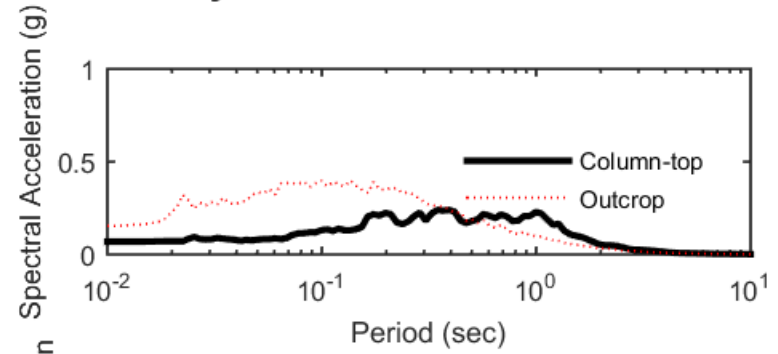
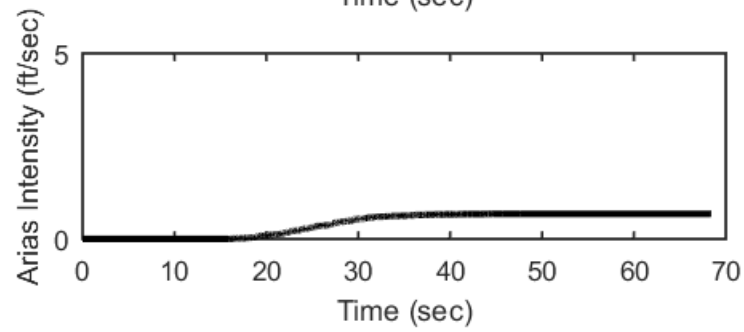
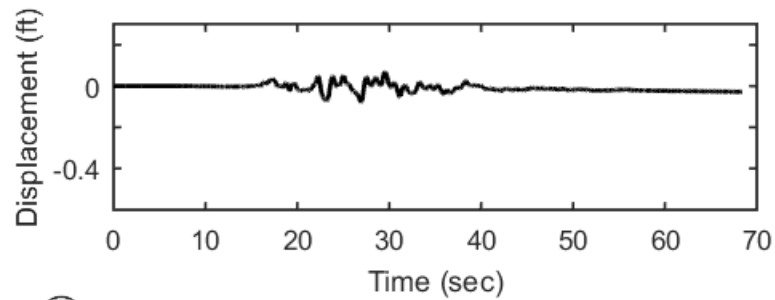
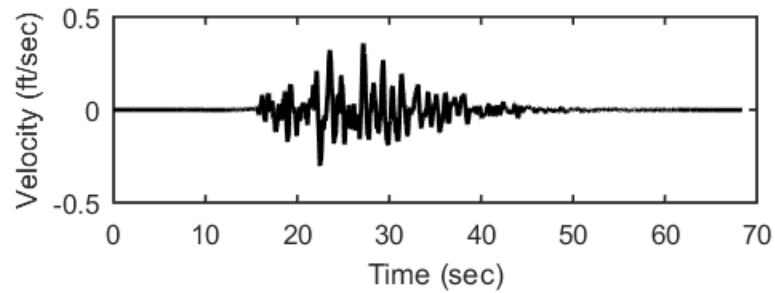
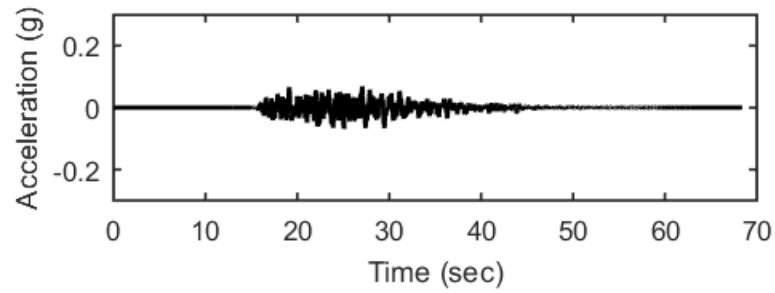
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



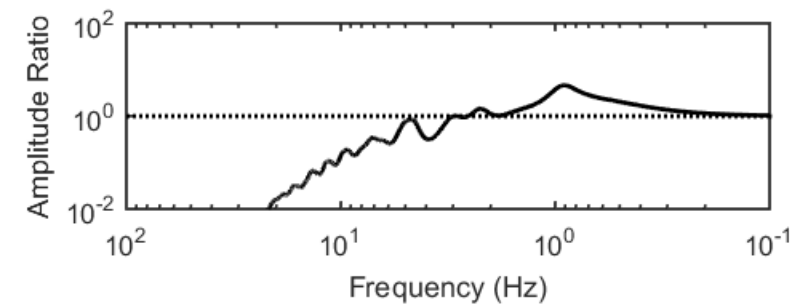
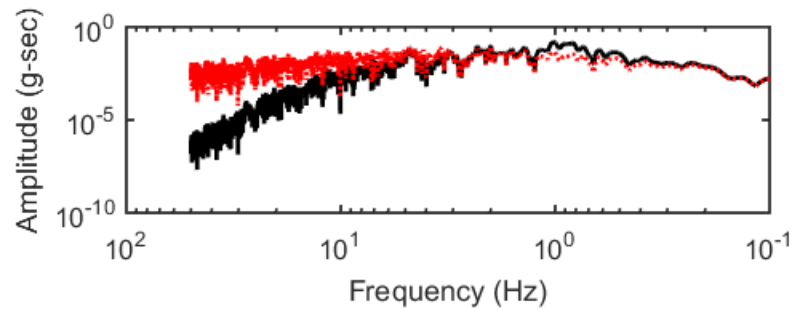
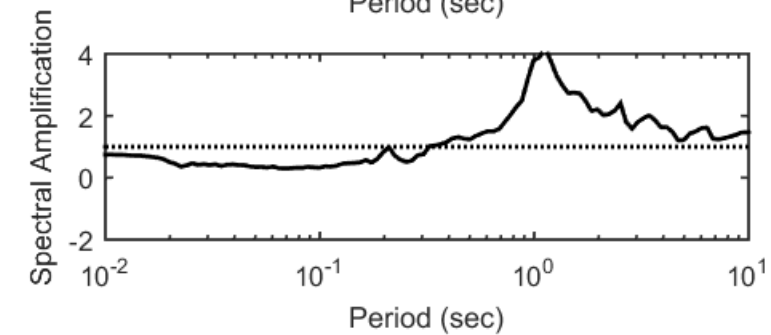
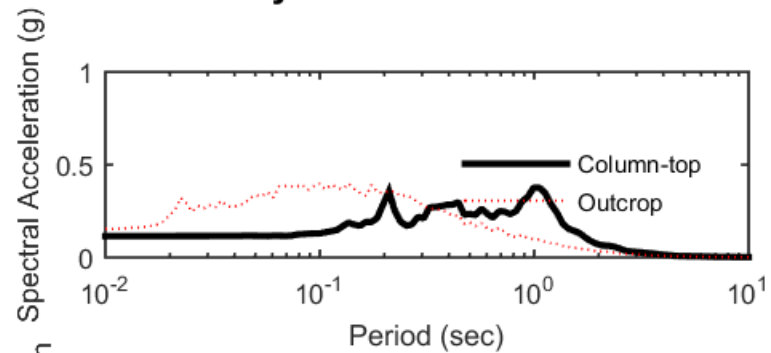
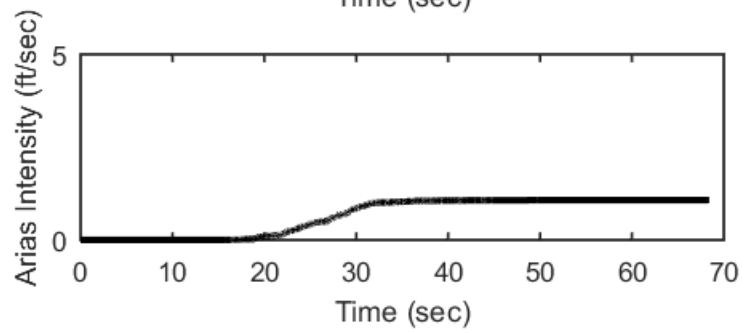
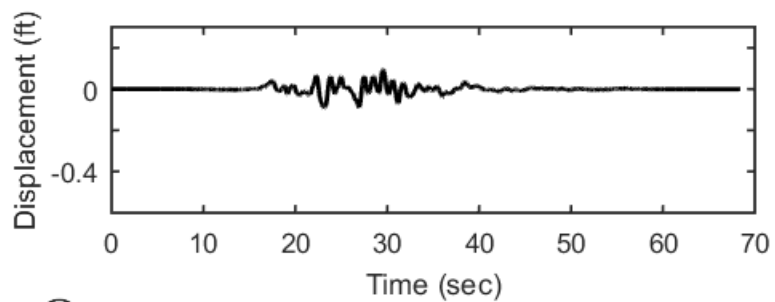
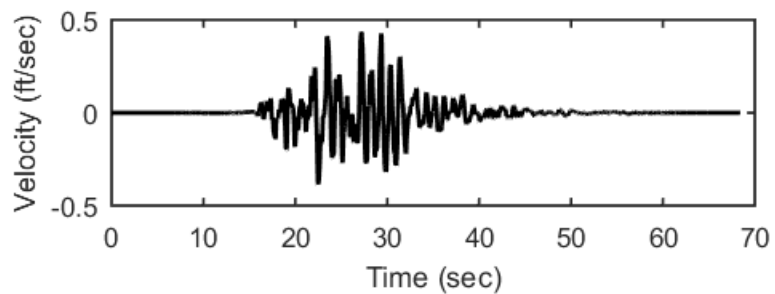
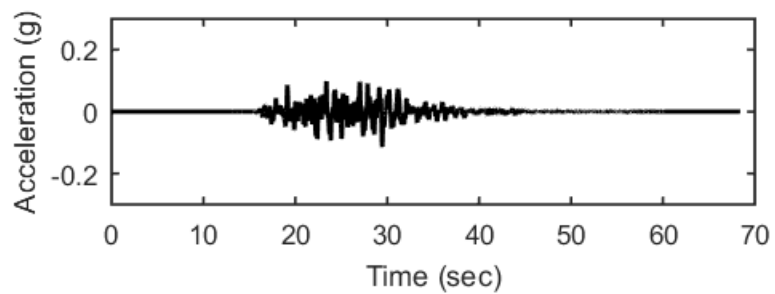
### Profile outputs for Motion: FEE2



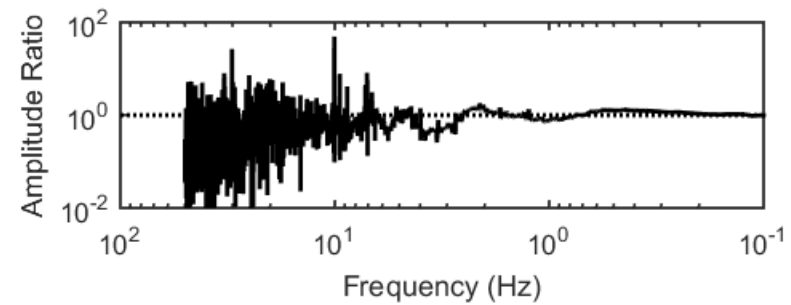
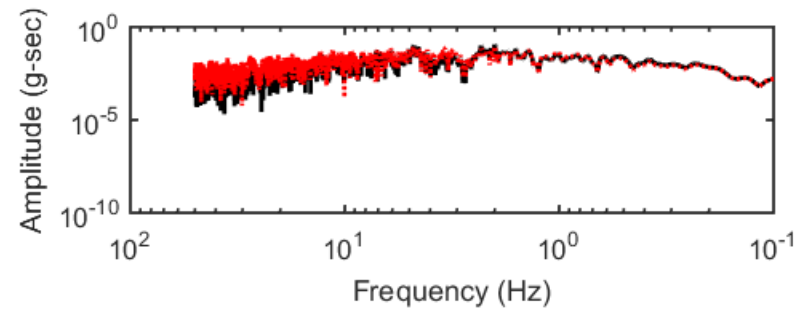
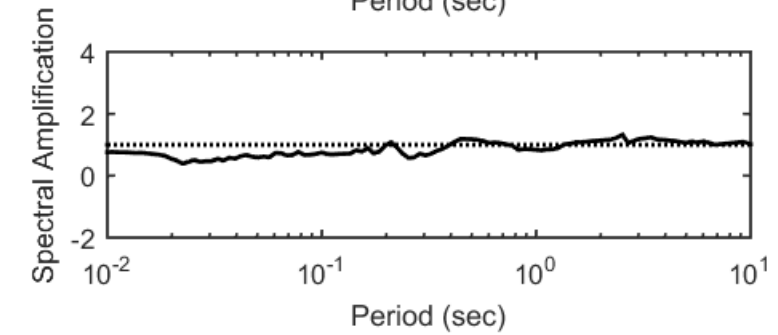
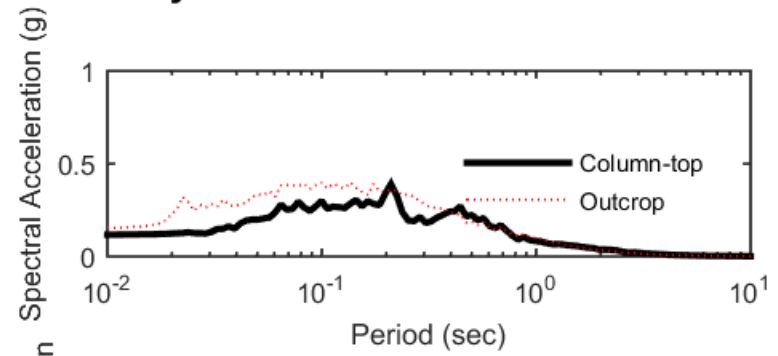
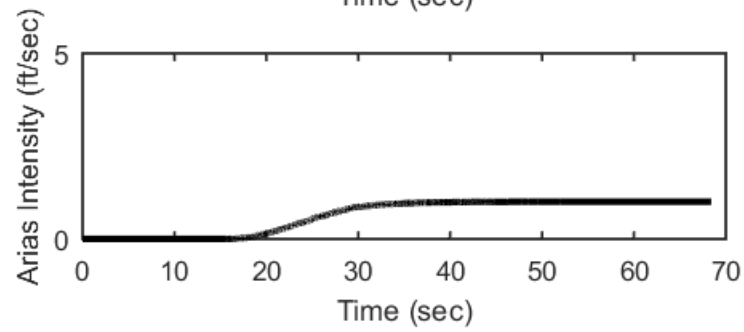
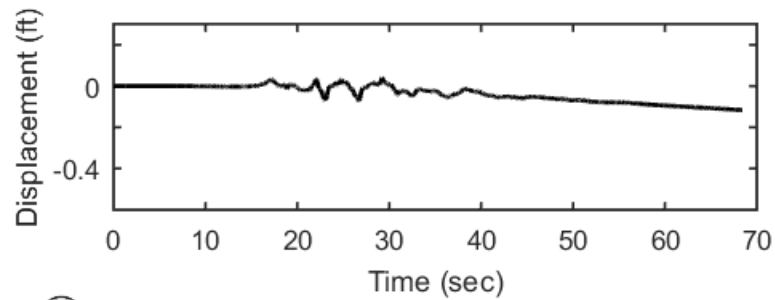
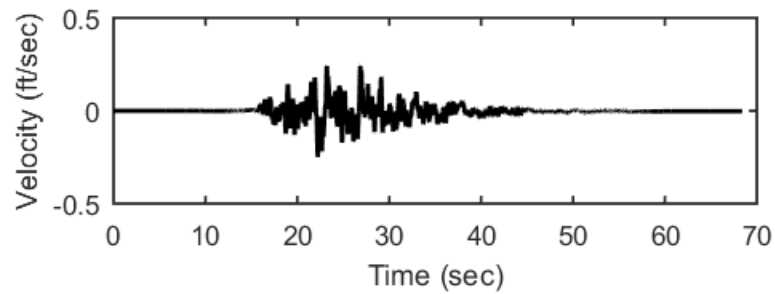
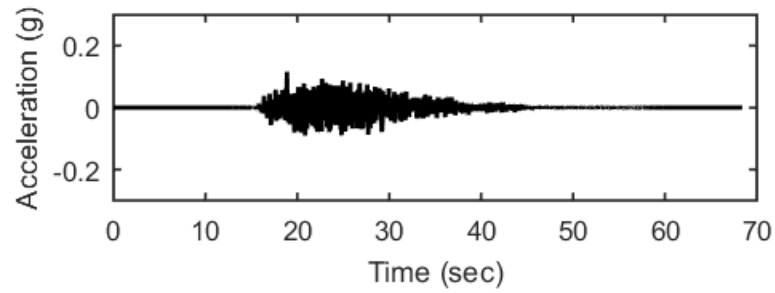
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



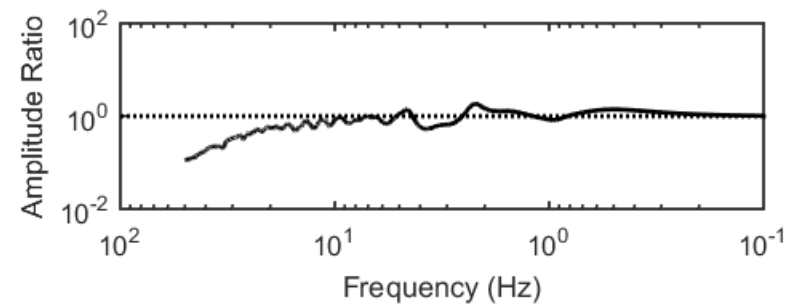
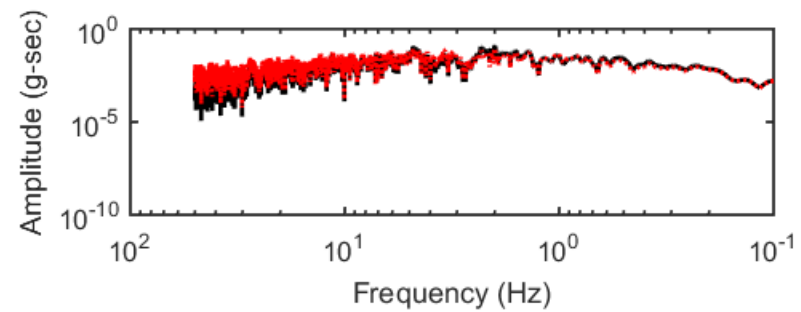
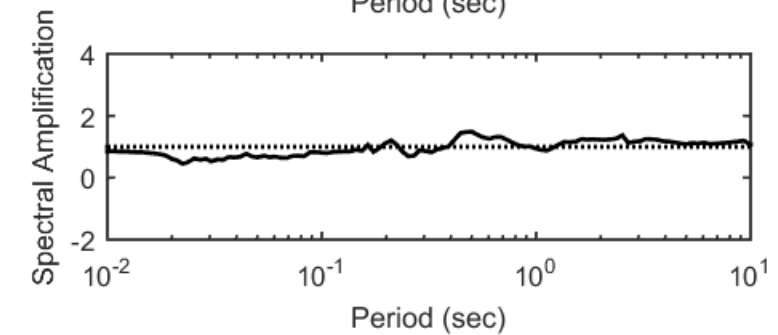
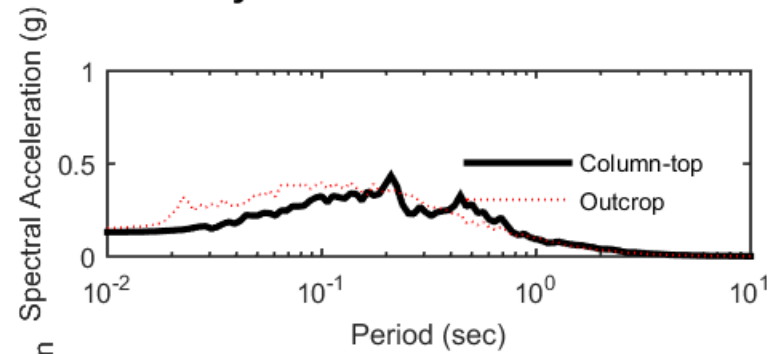
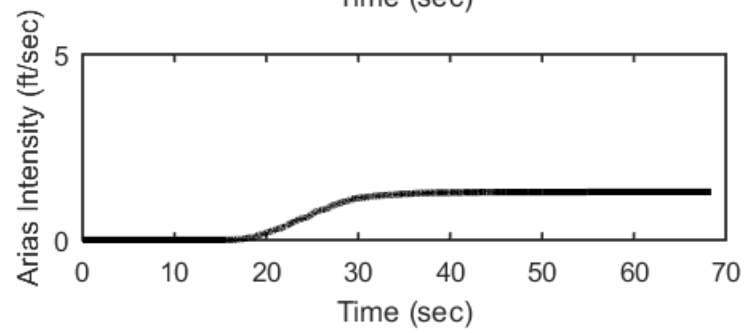
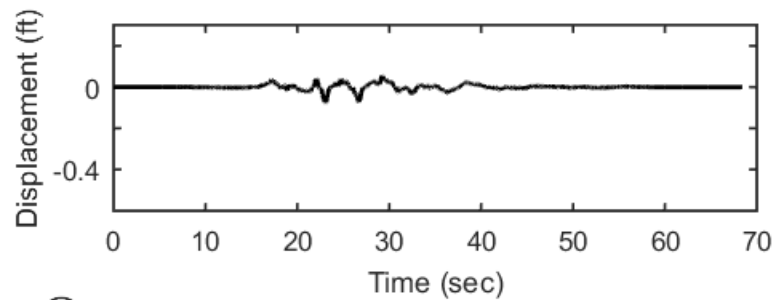
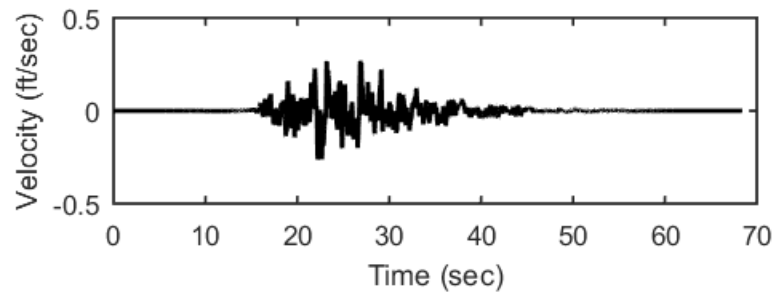
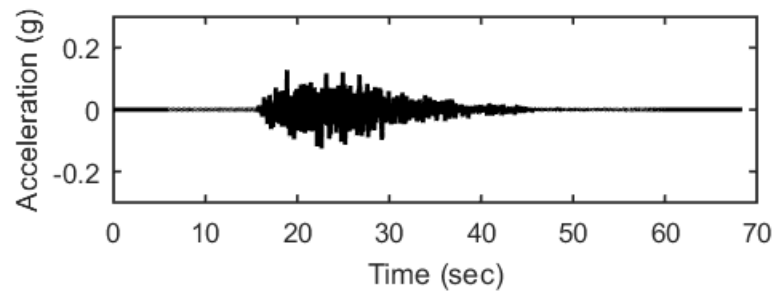
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



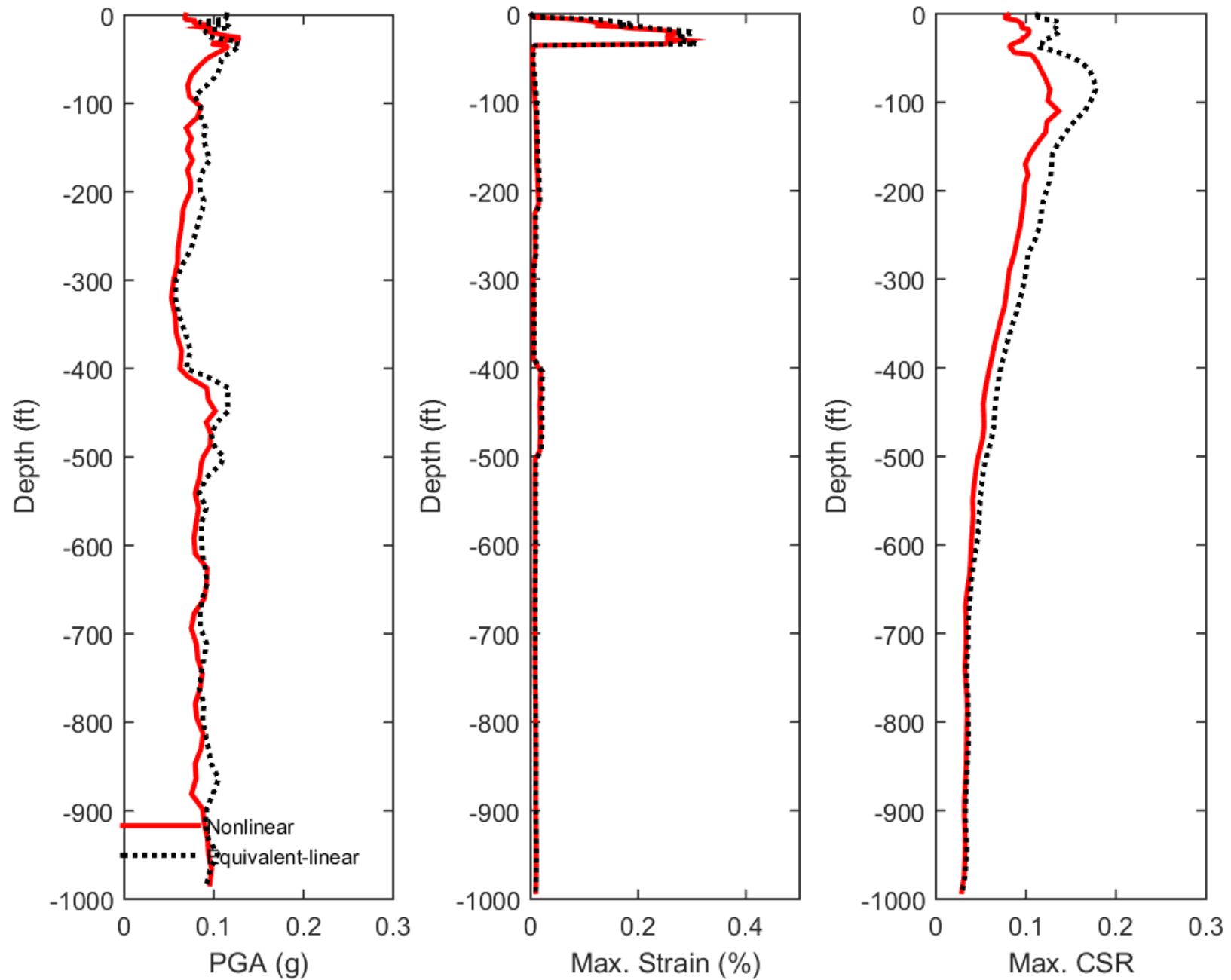
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3

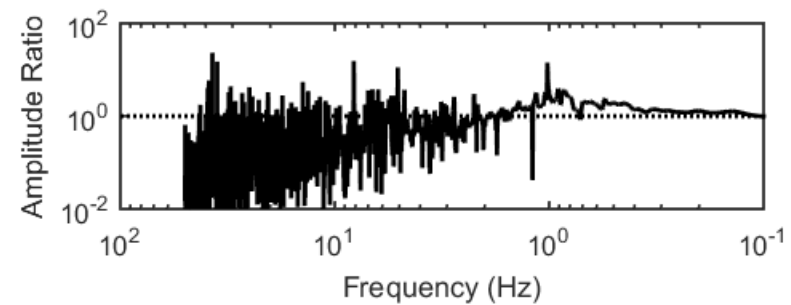
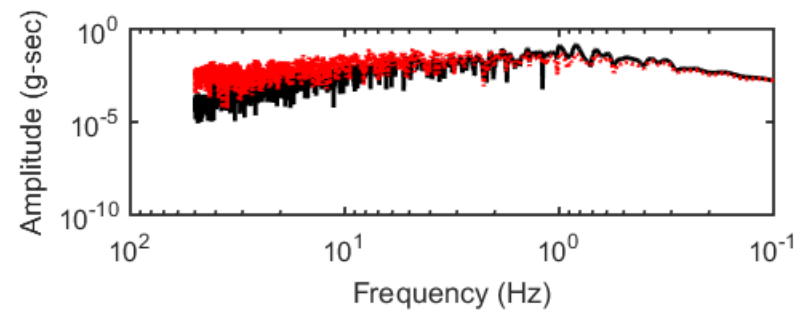
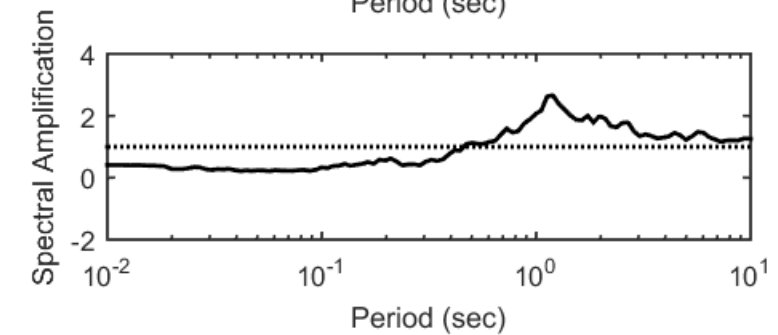
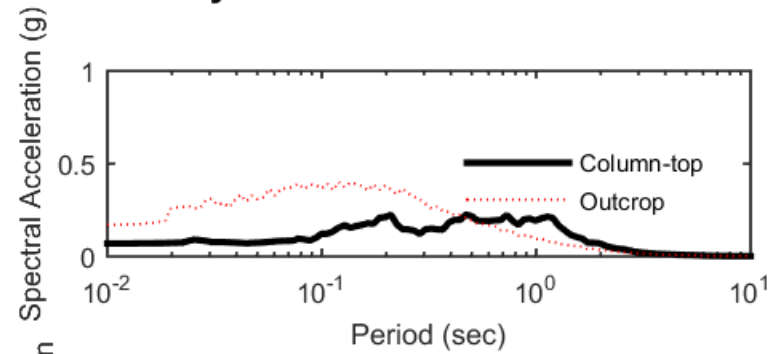
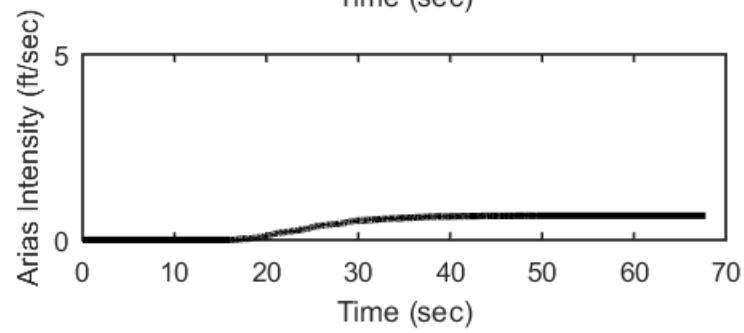
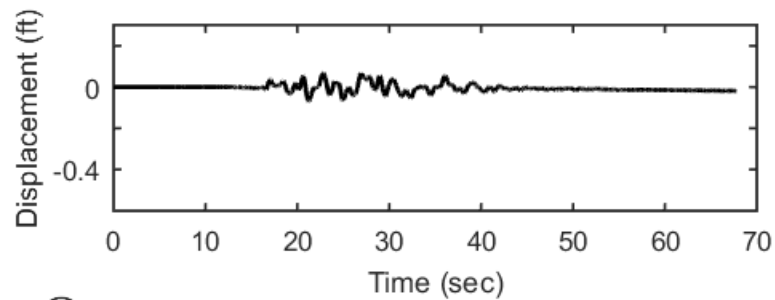
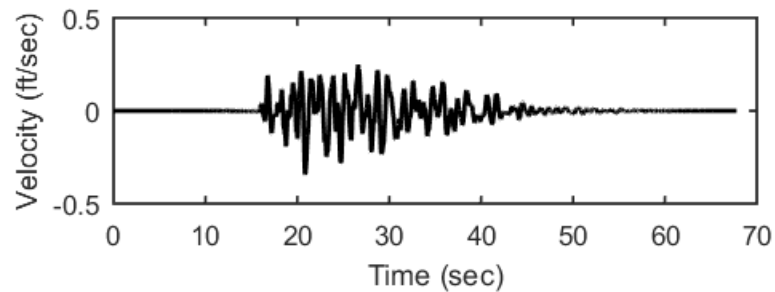
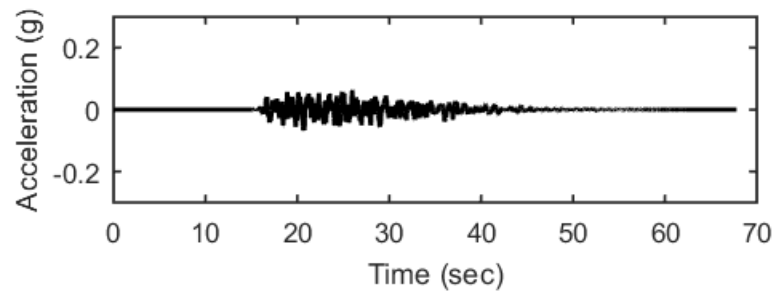


### Profile outputs for Motion: FEE3

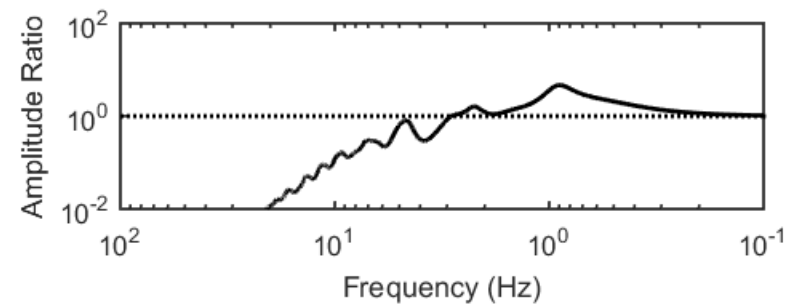
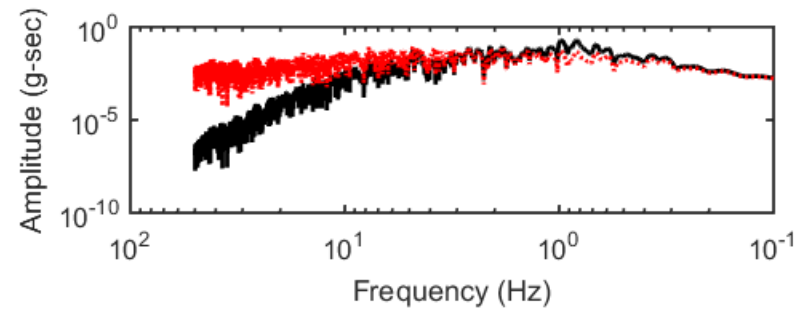
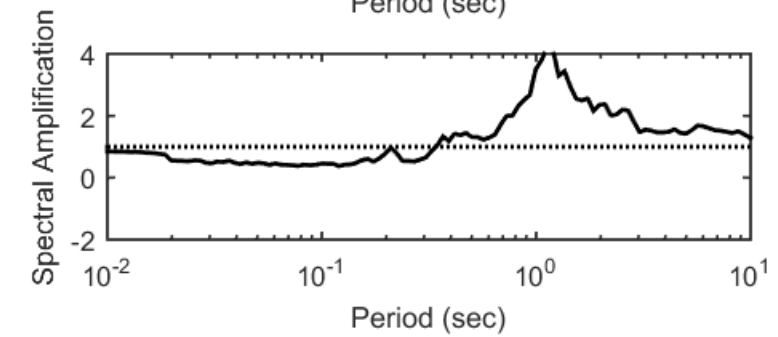
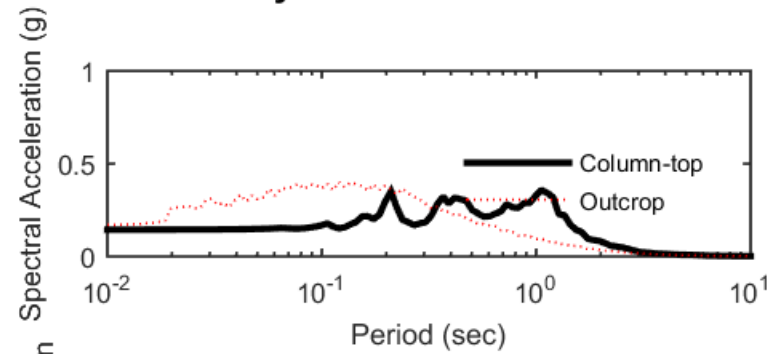
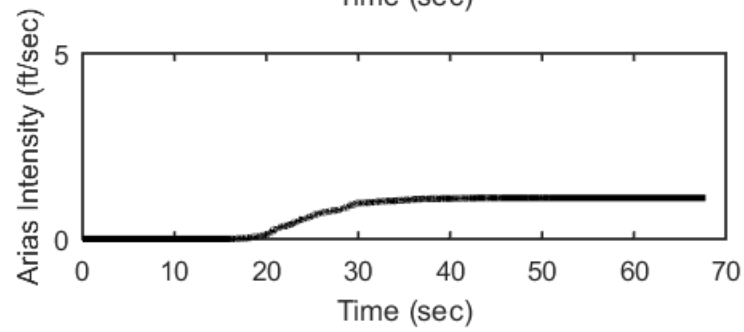
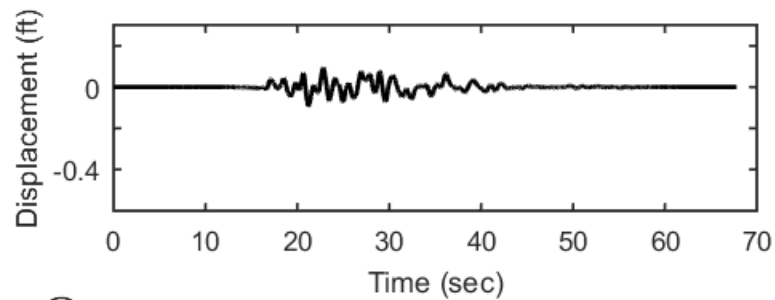
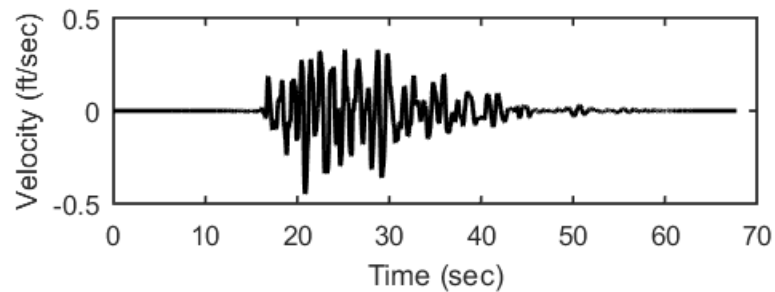
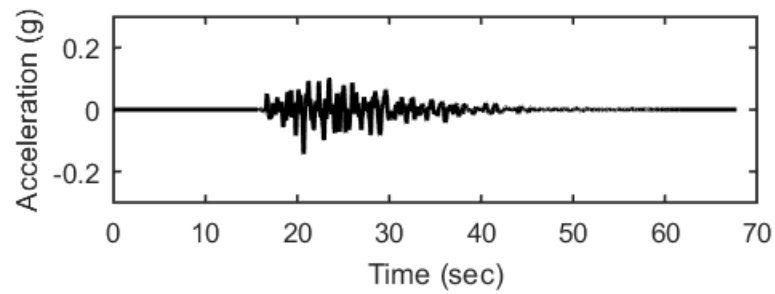




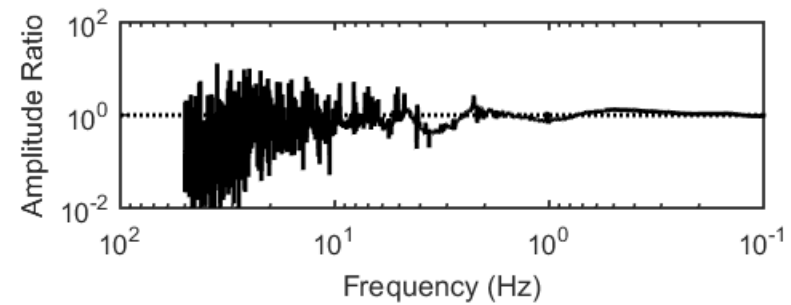
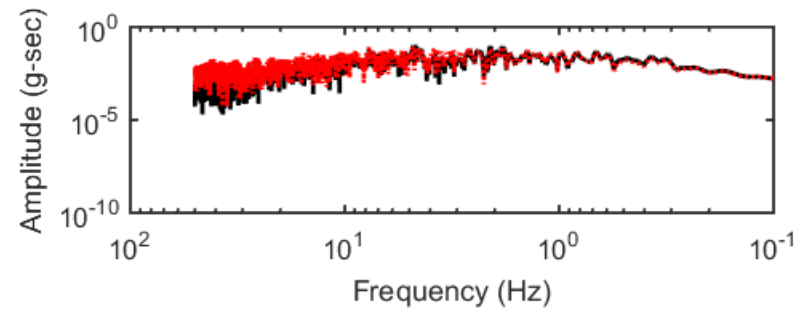
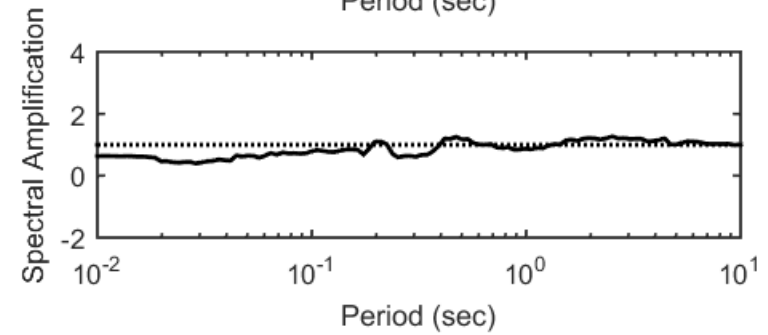
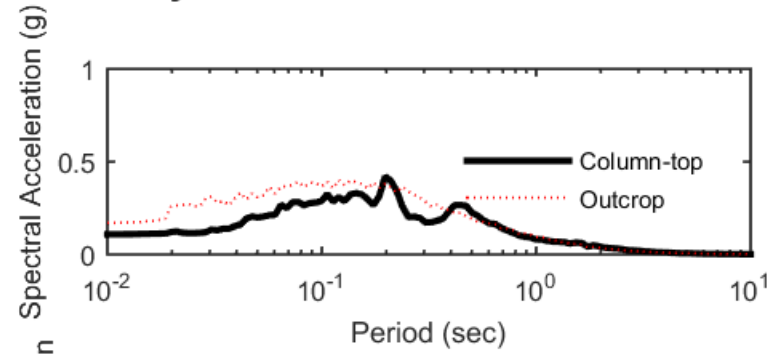
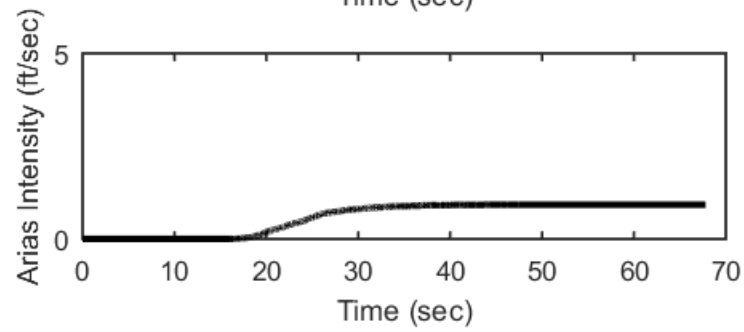
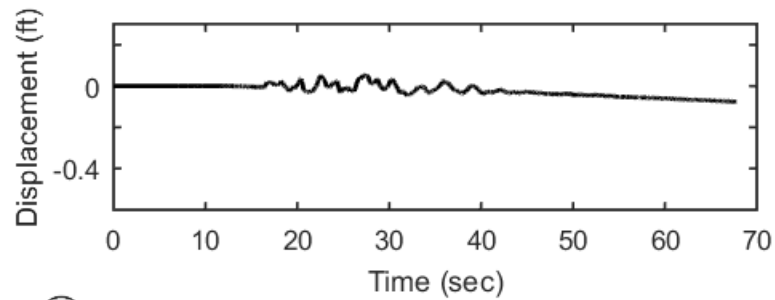
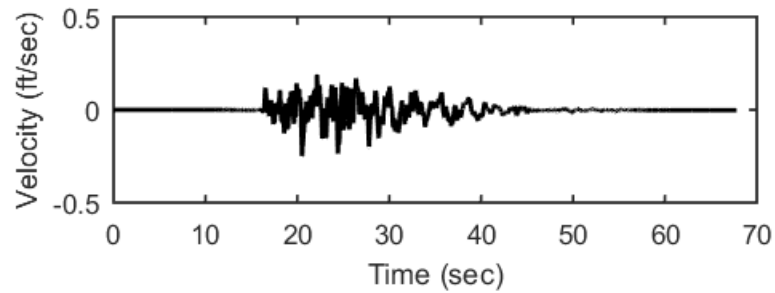
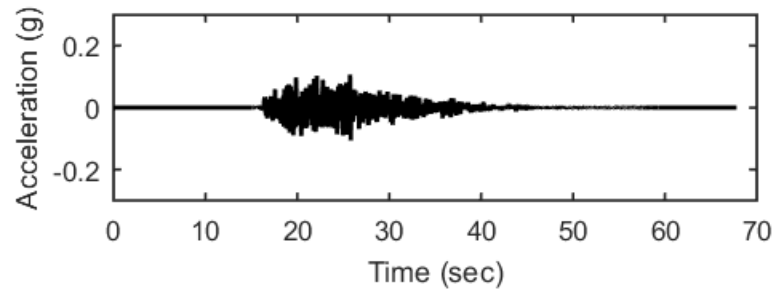
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



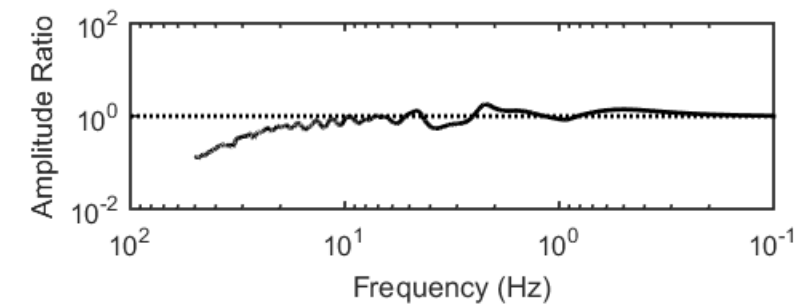
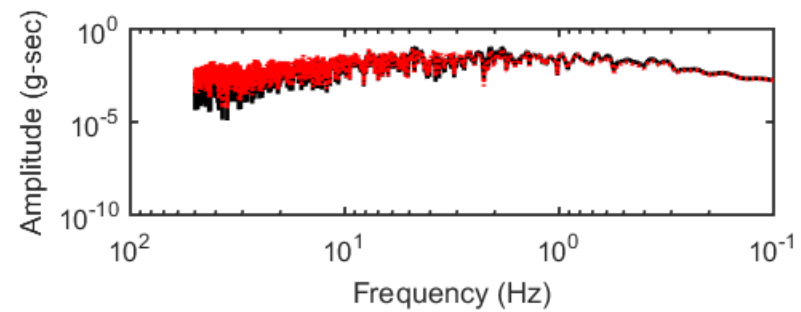
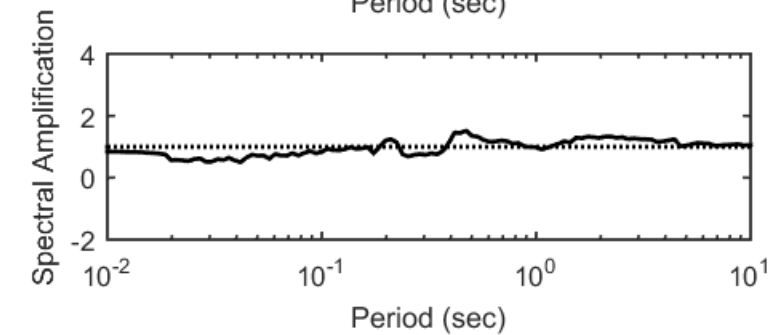
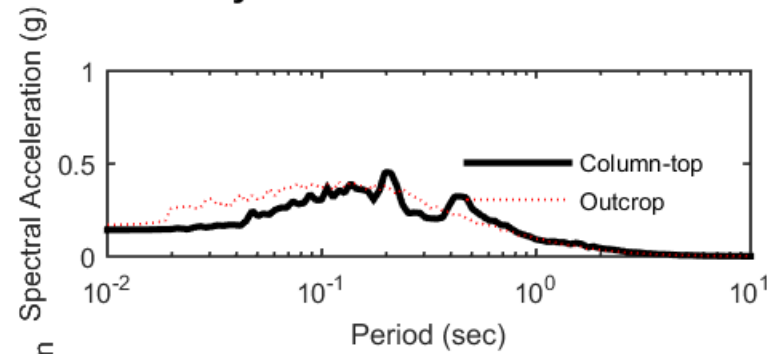
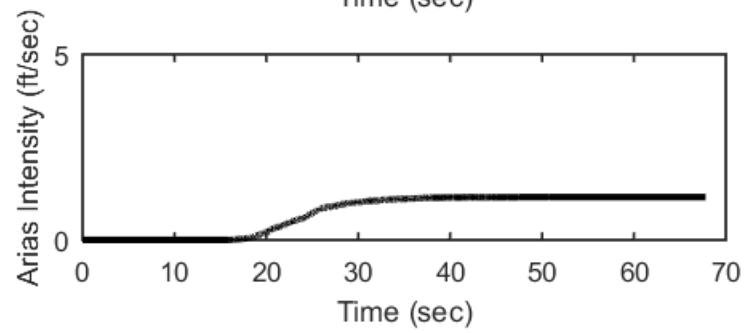
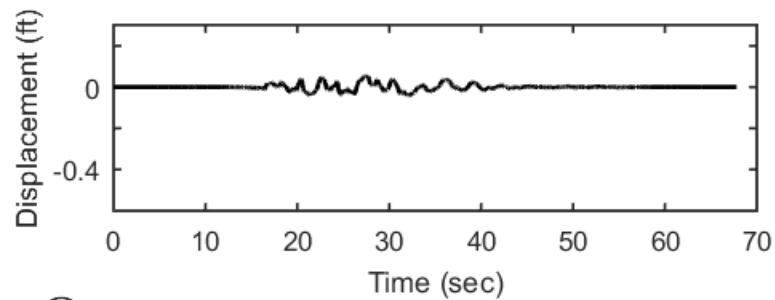
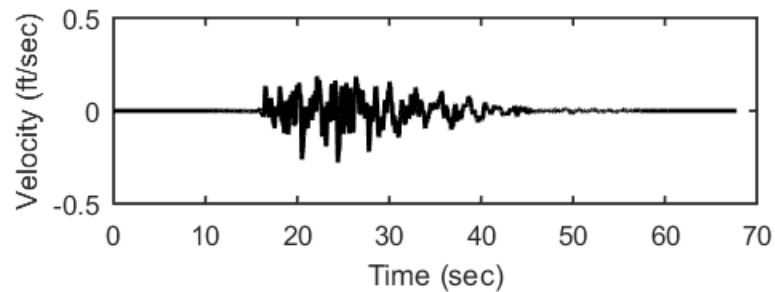
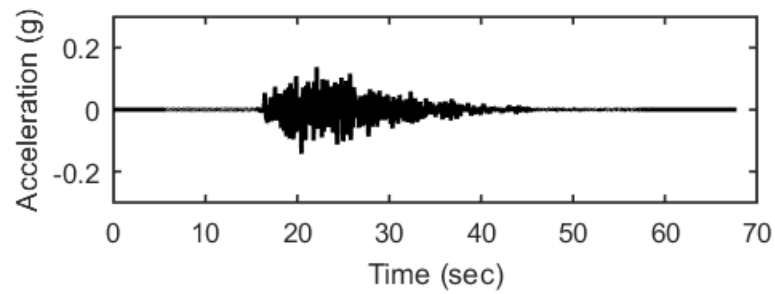
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



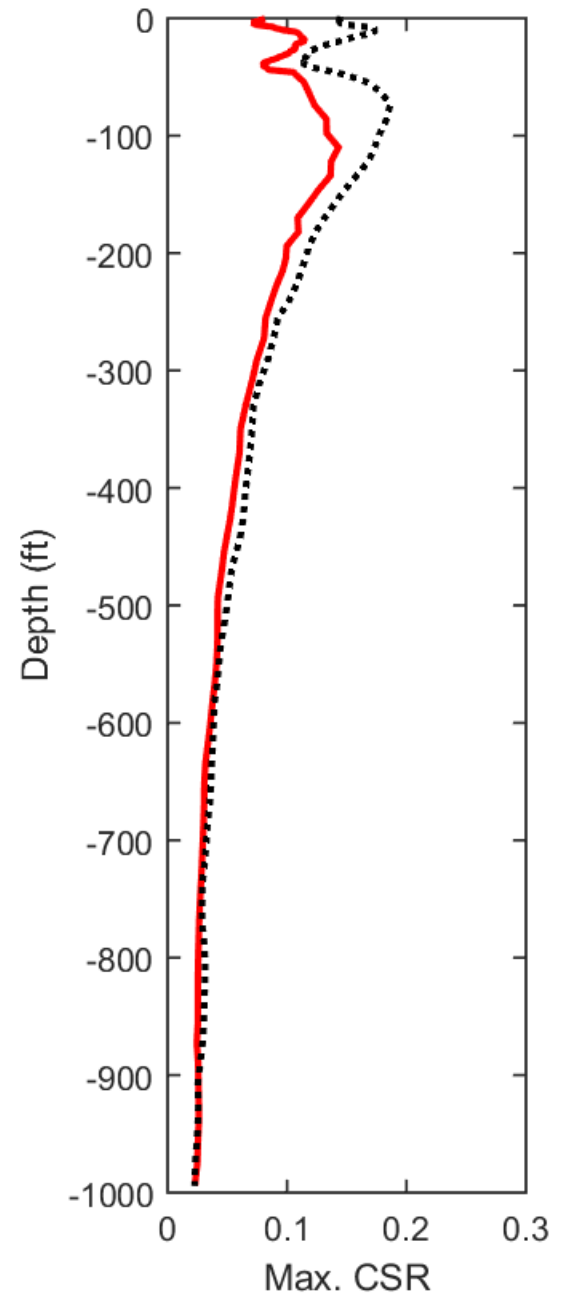
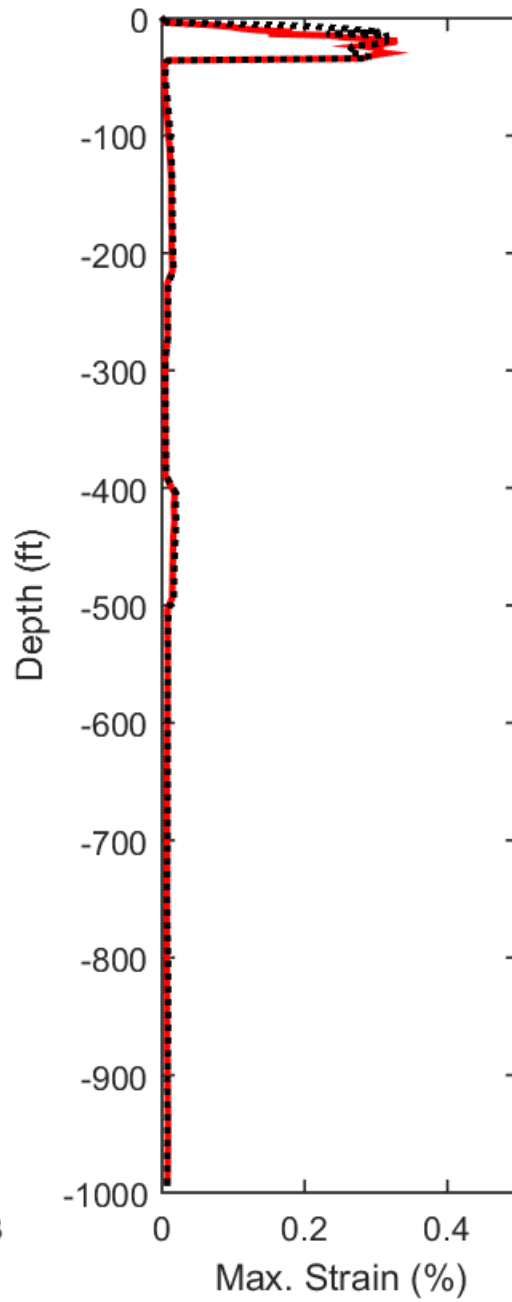
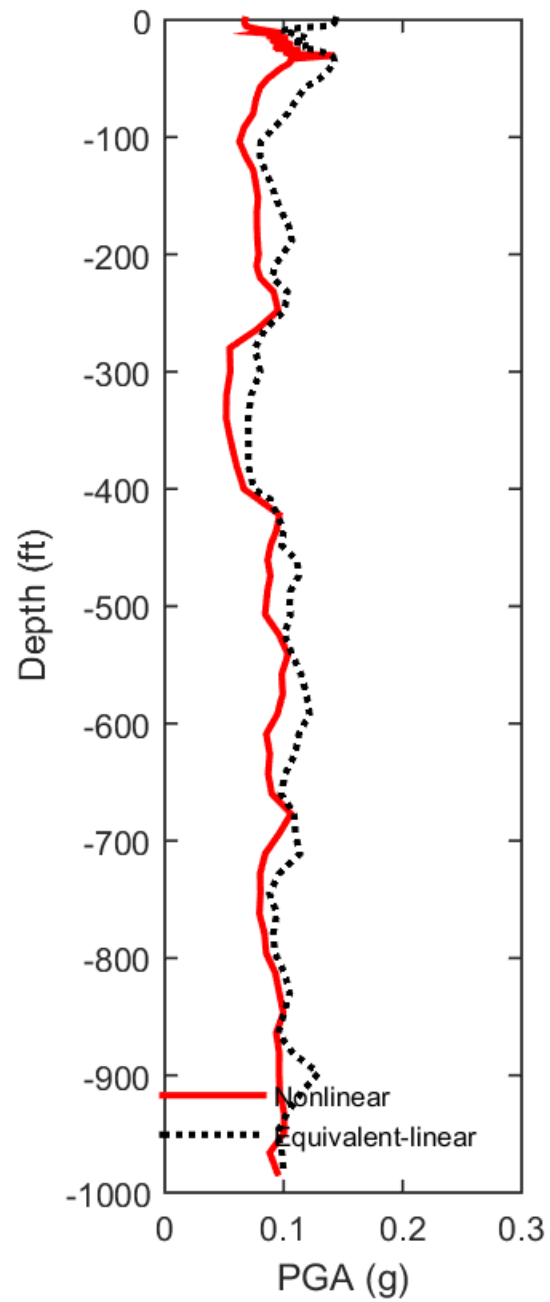
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



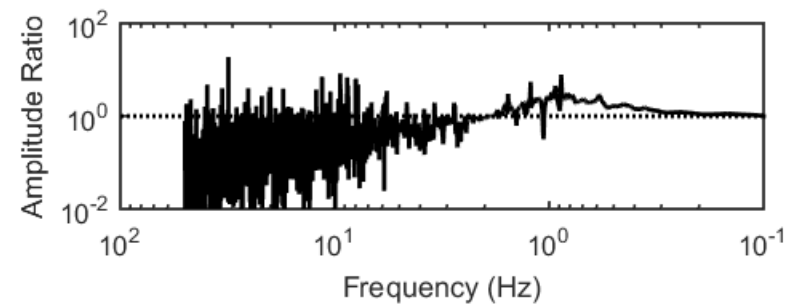
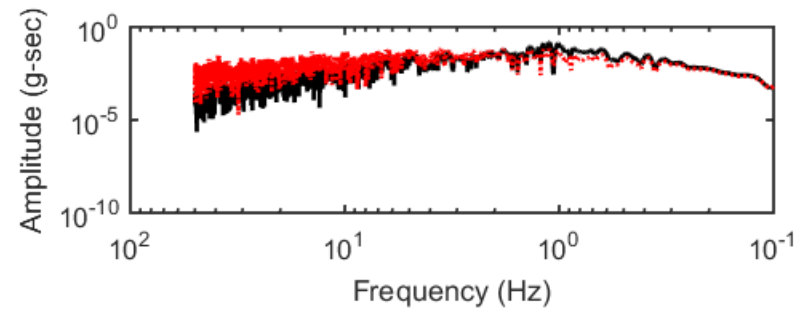
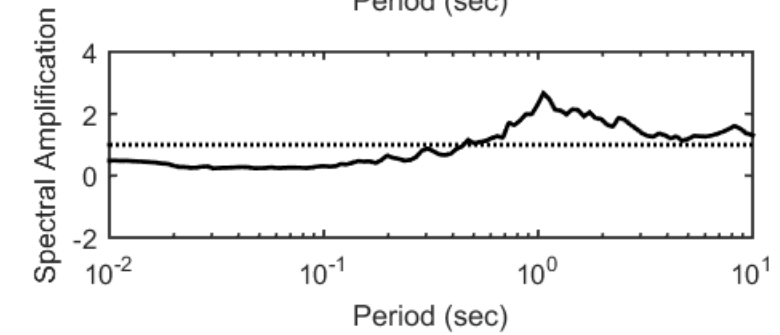
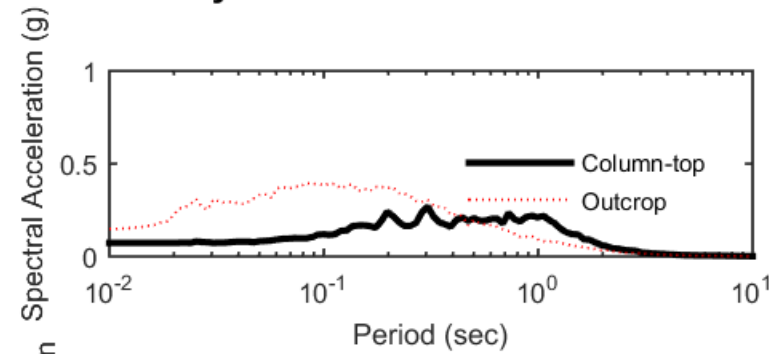
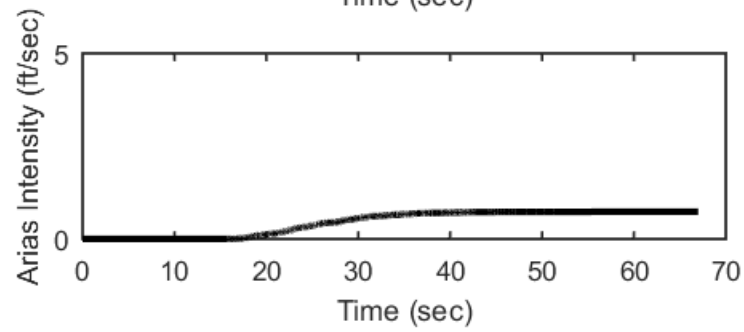
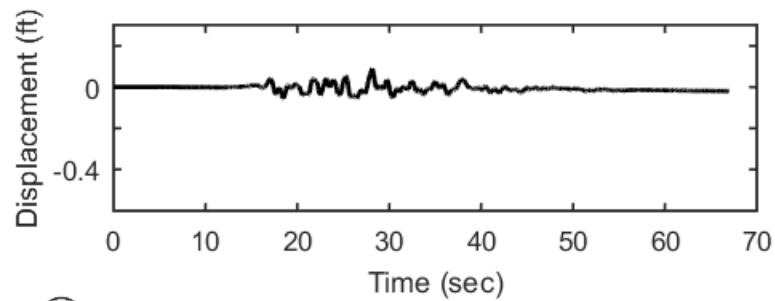
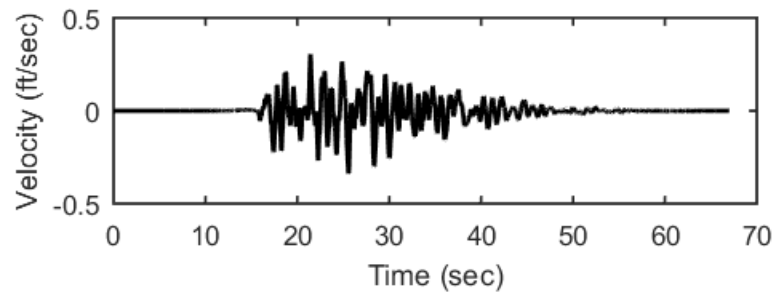
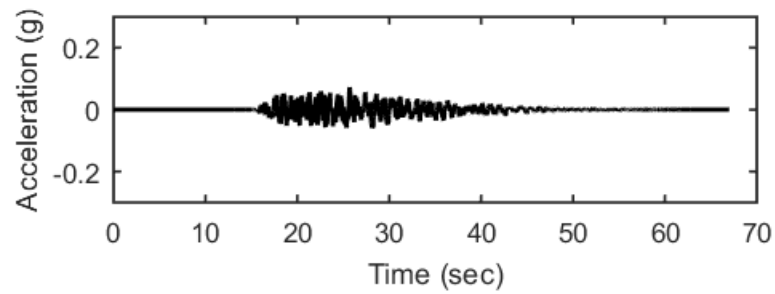
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



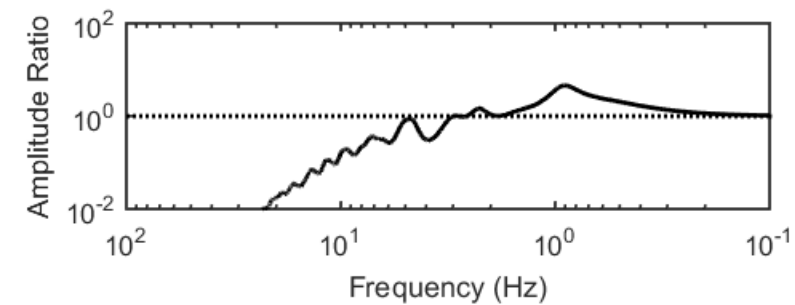
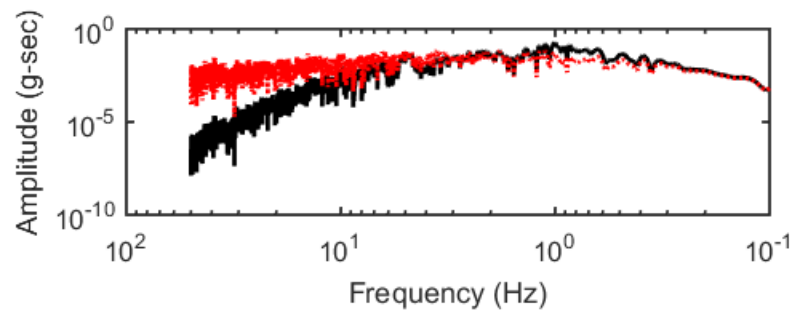
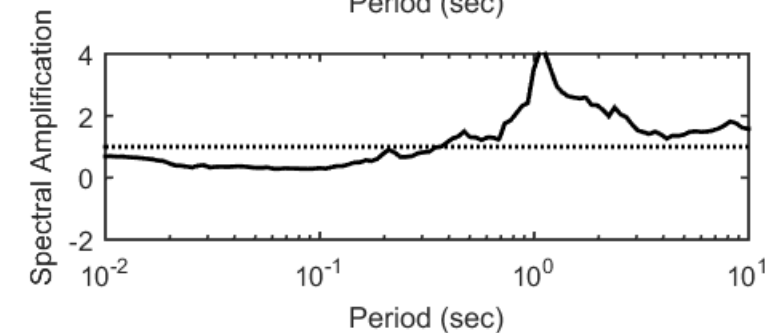
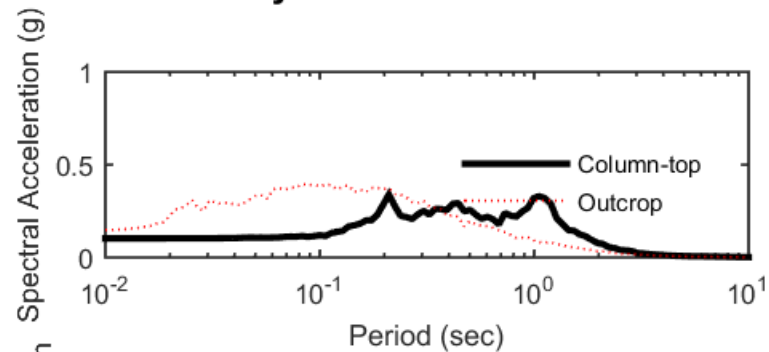
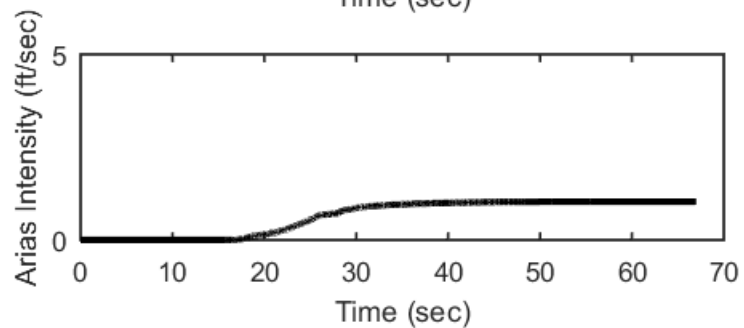
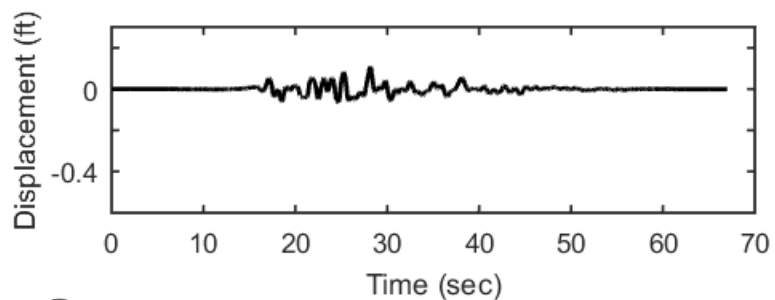
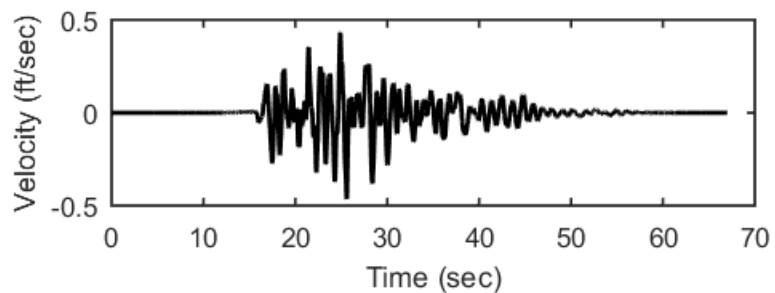
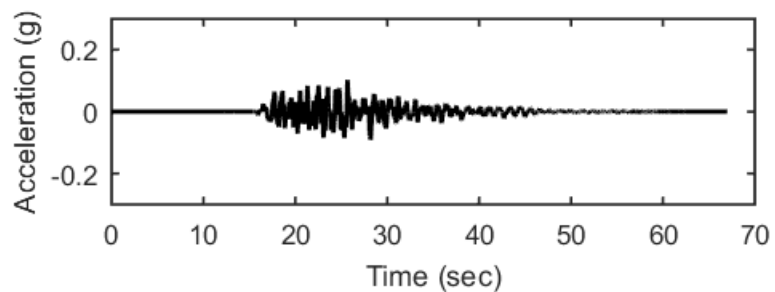
### Profile outputs for Motion: FEE4



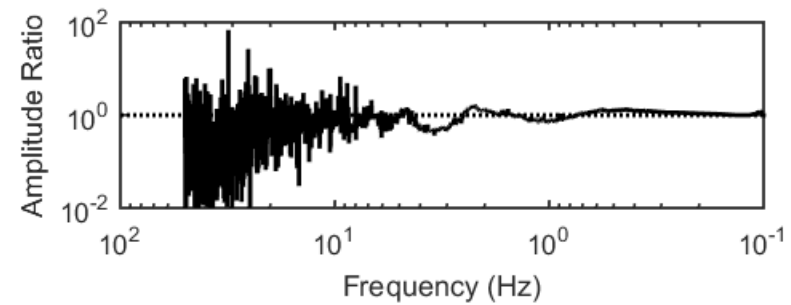
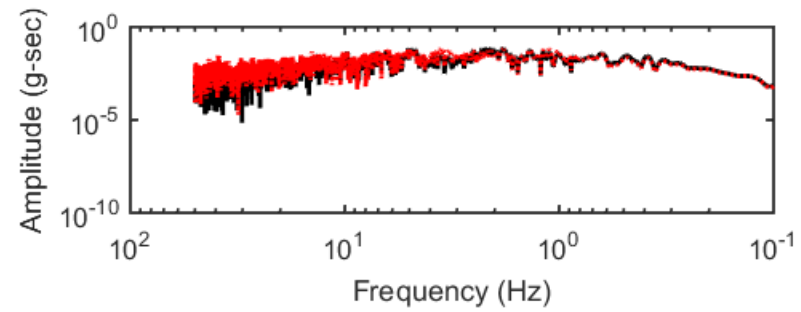
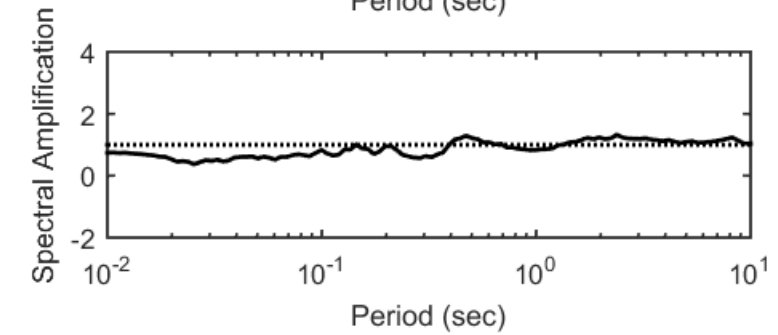
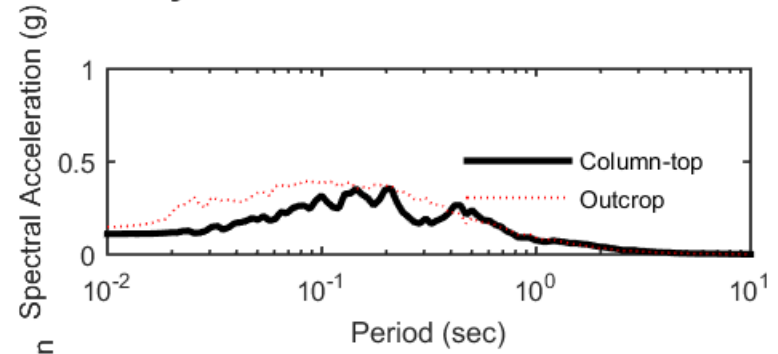
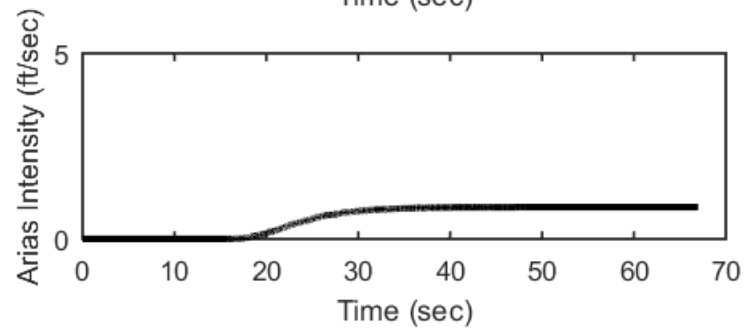
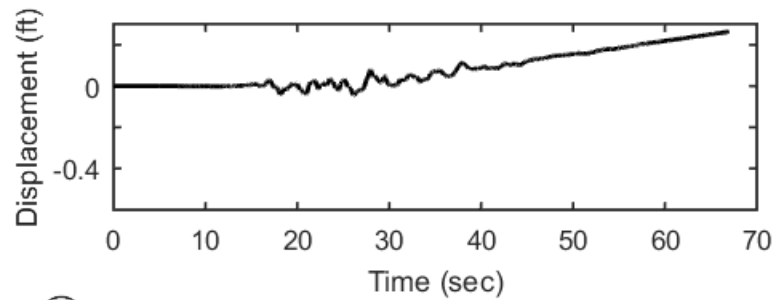
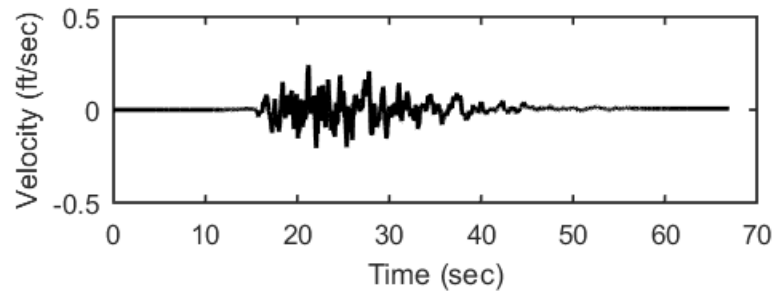
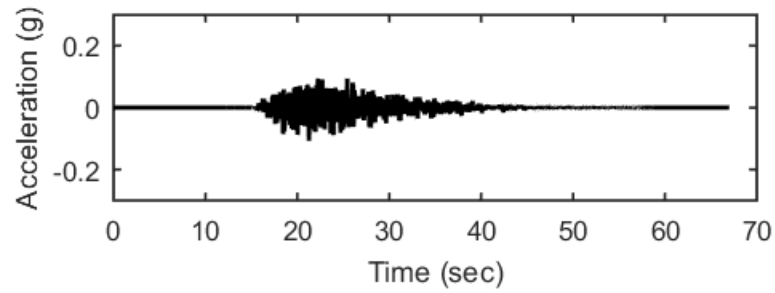
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5

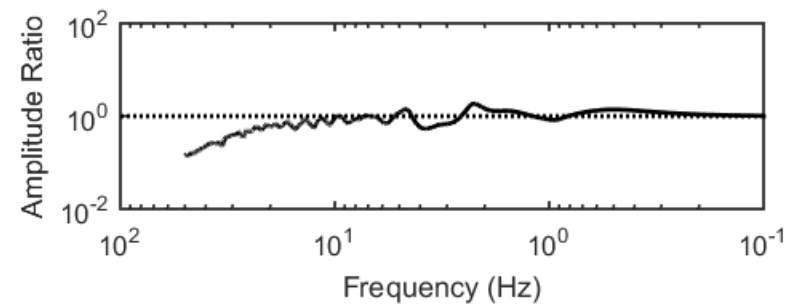
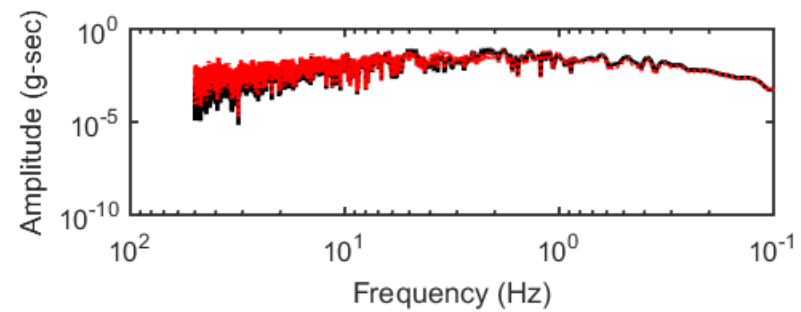
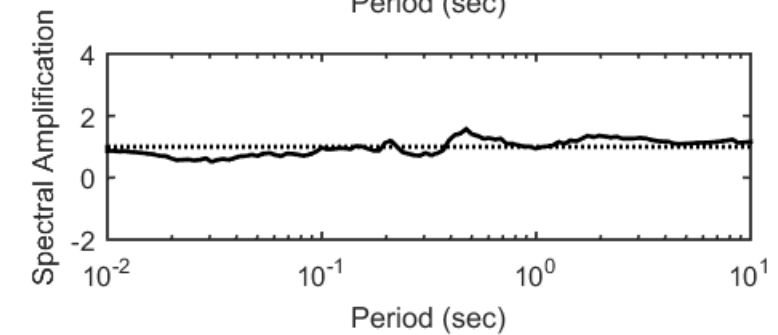
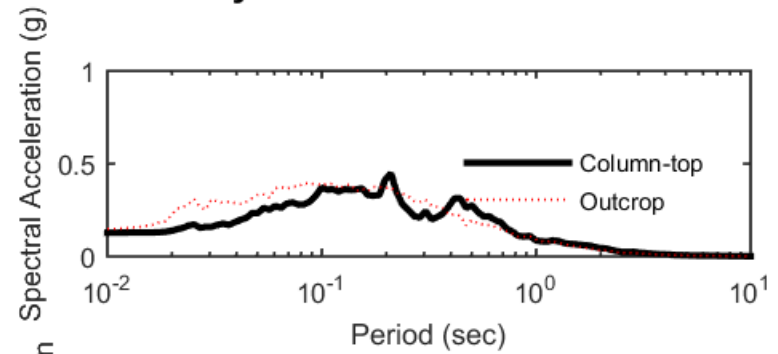
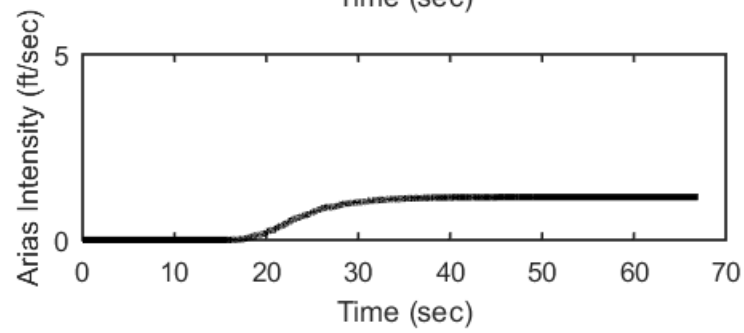
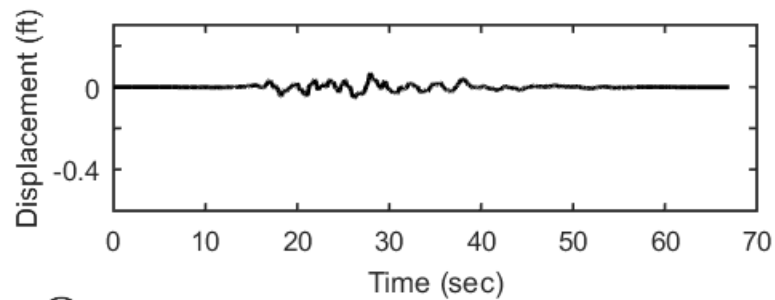
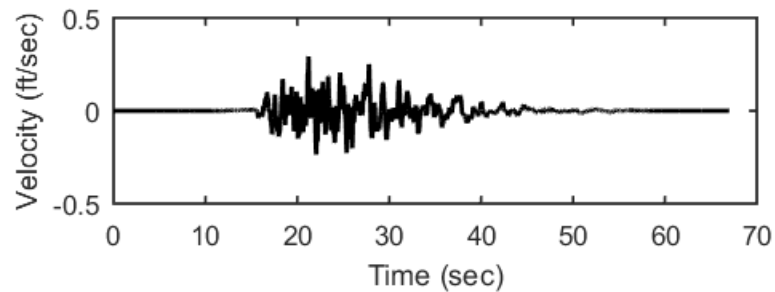
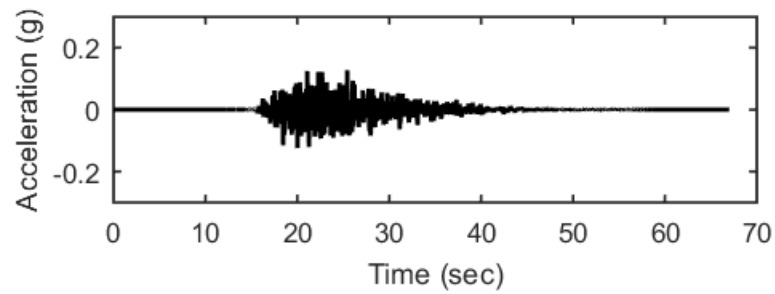


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5

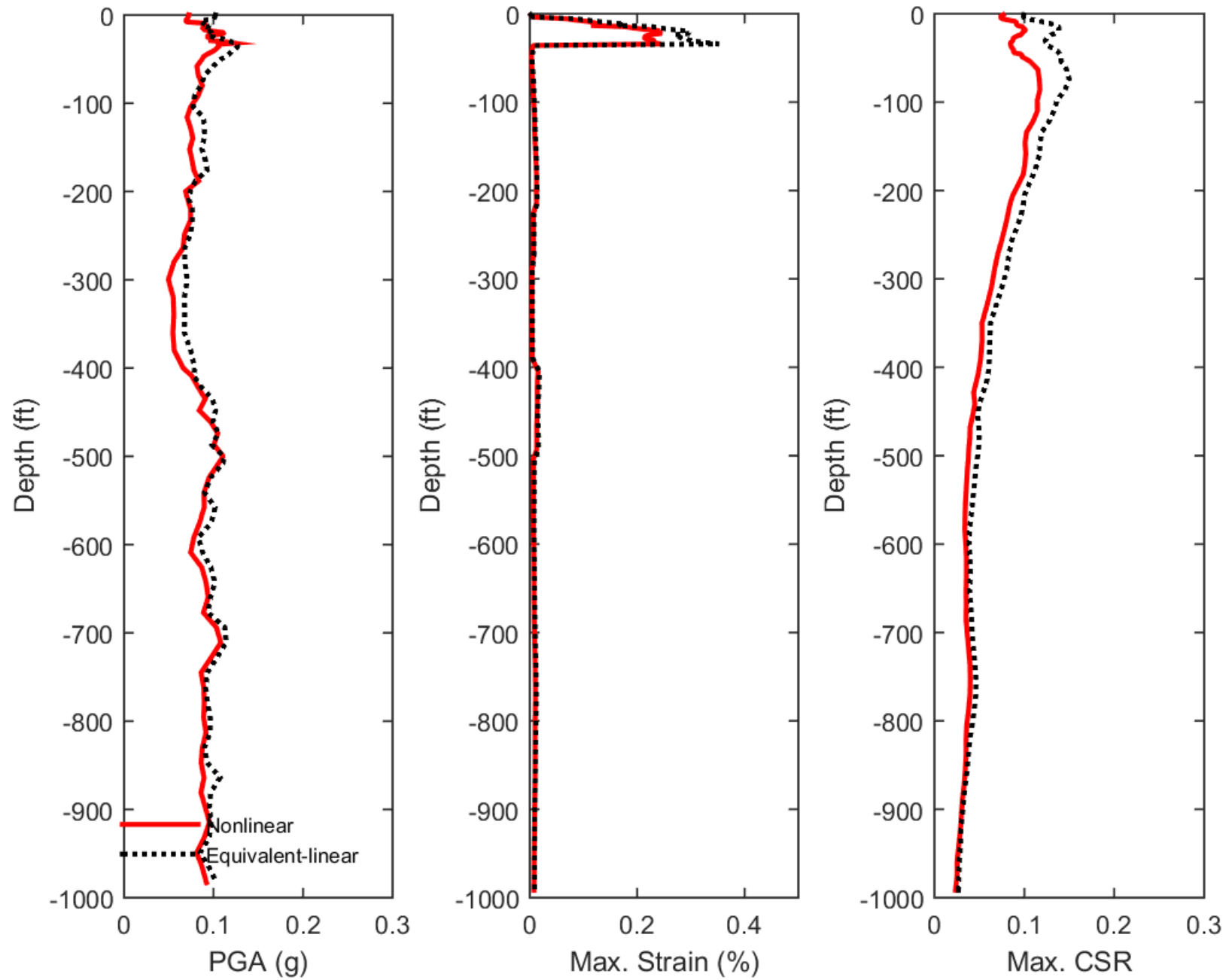




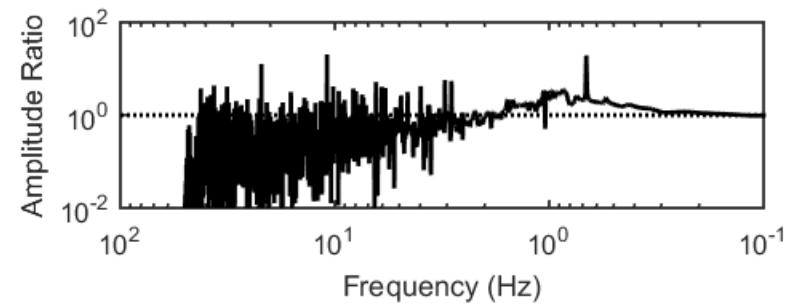
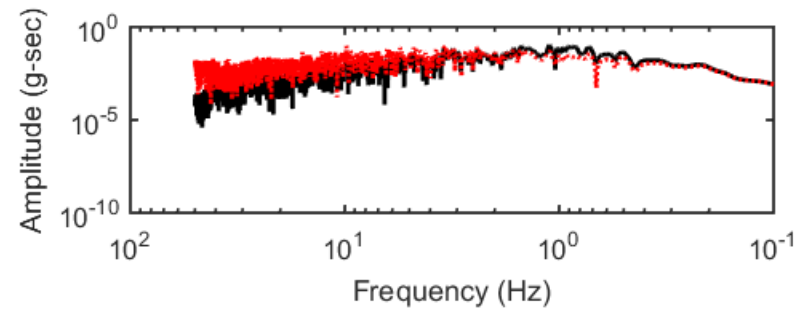
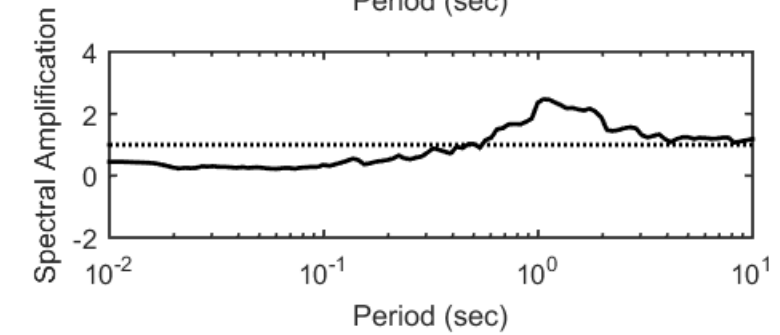
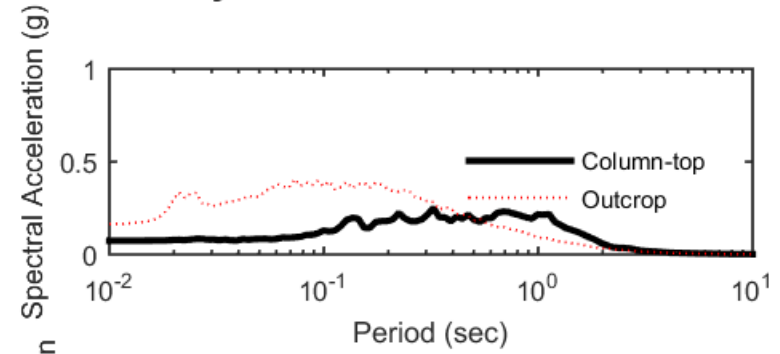
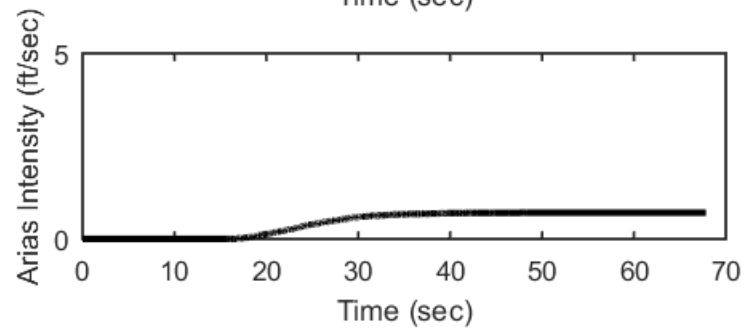
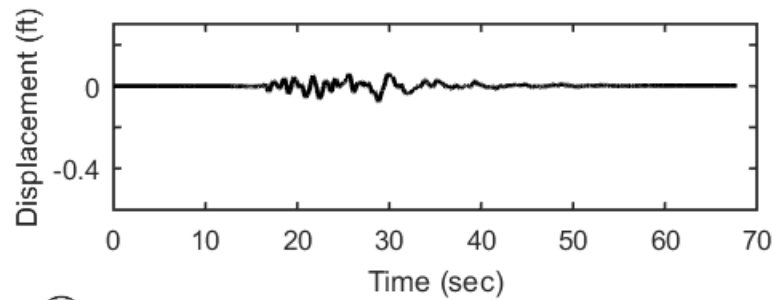
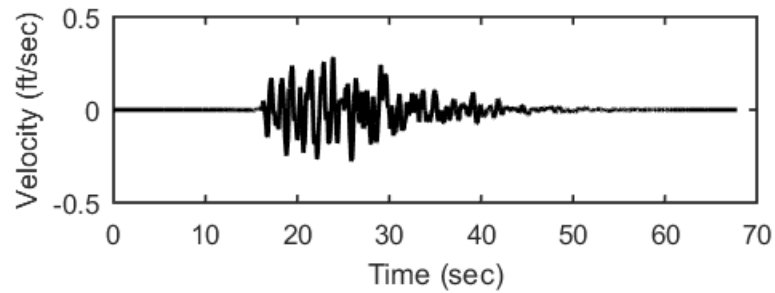
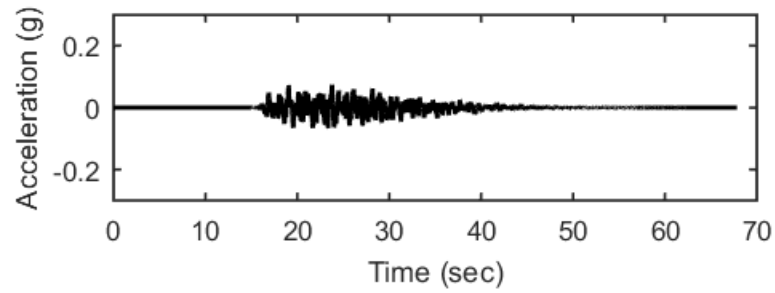
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



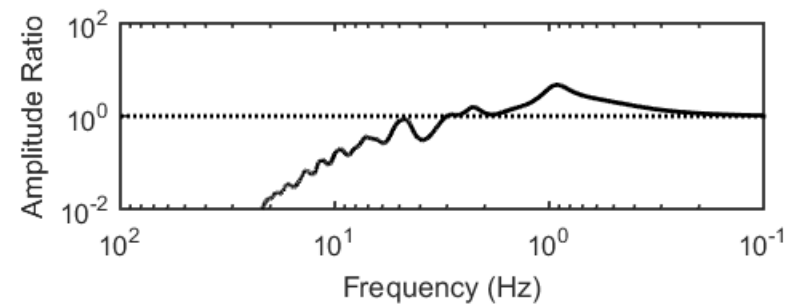
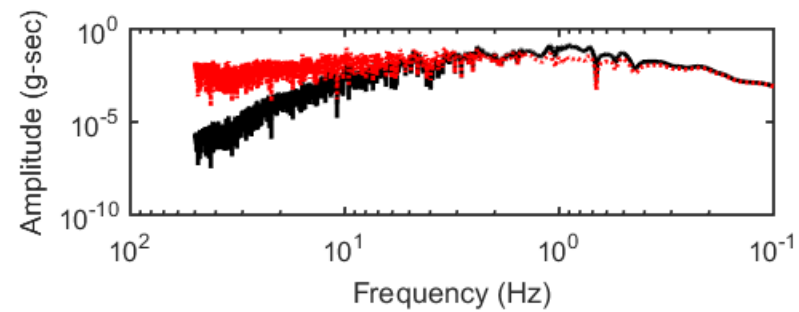
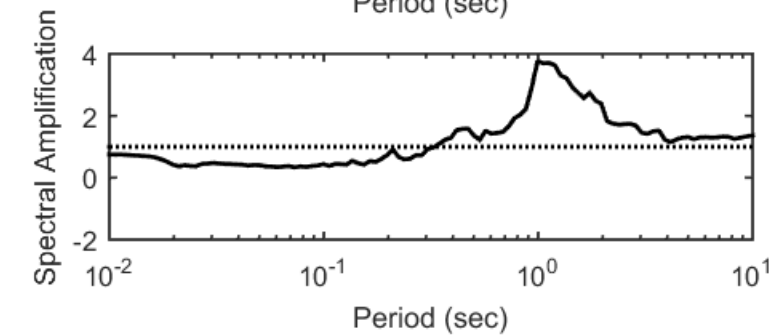
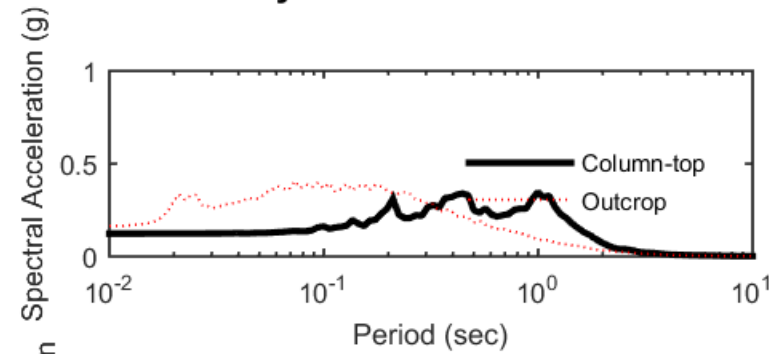
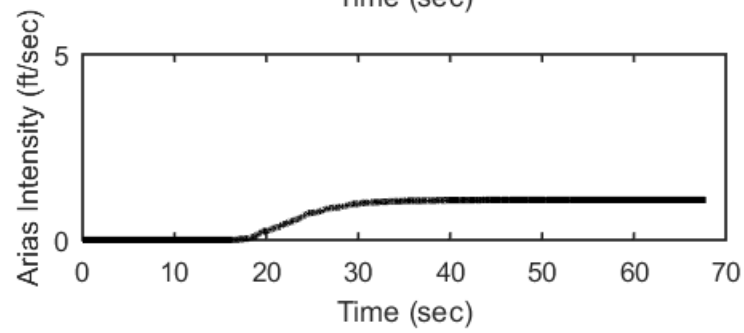
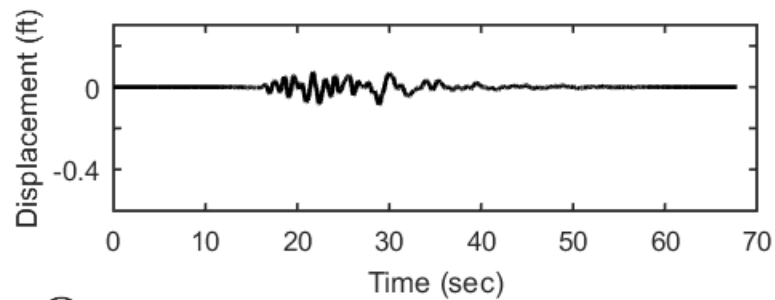
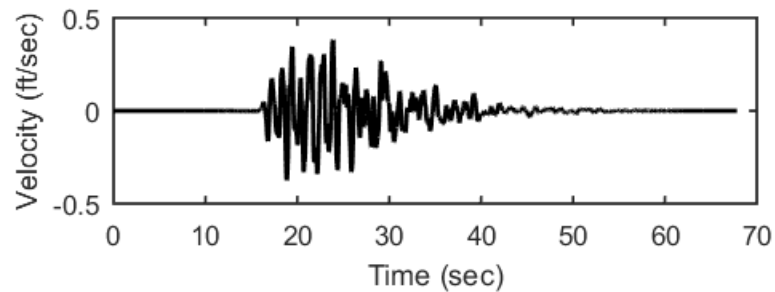
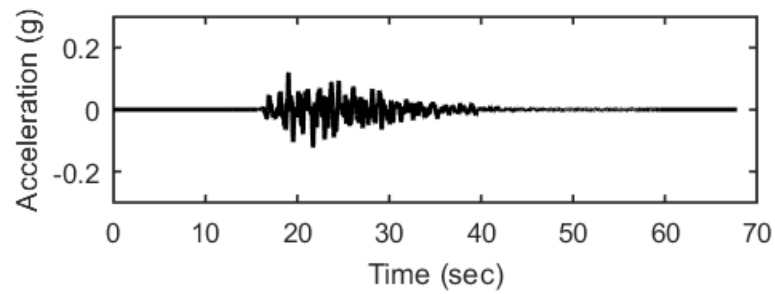
### Profile outputs for Motion: FEE5



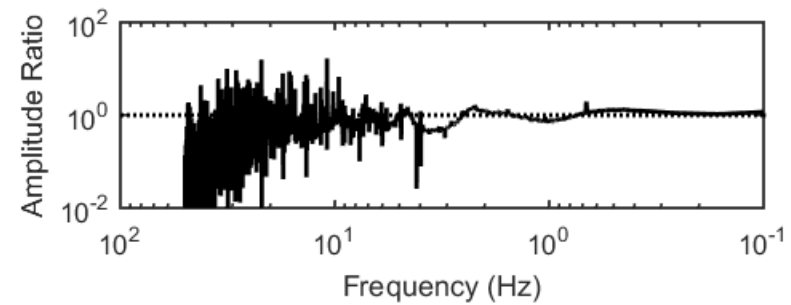
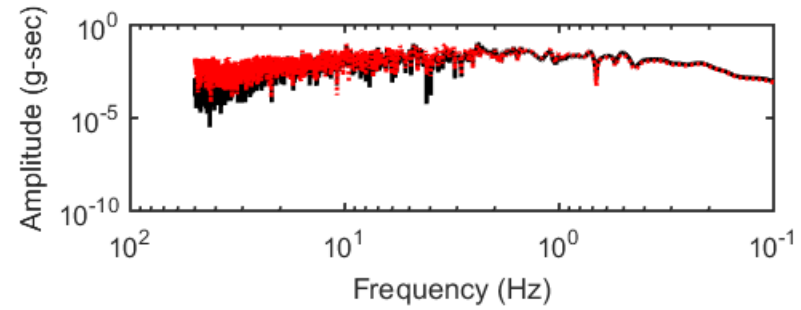
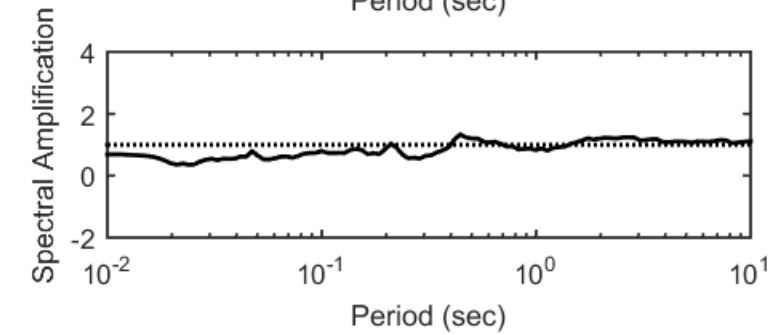
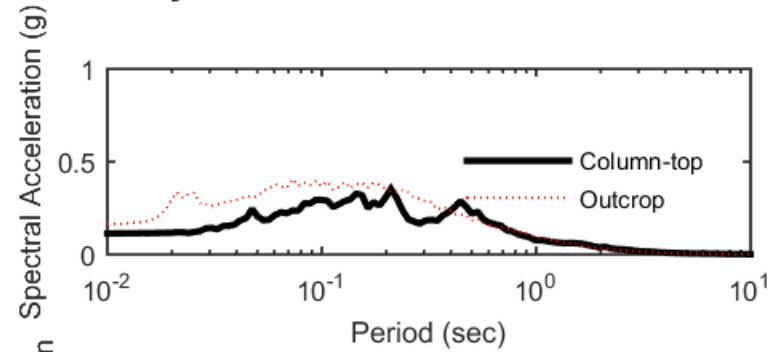
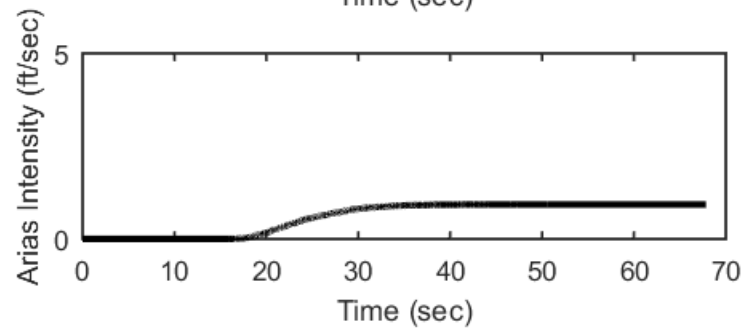
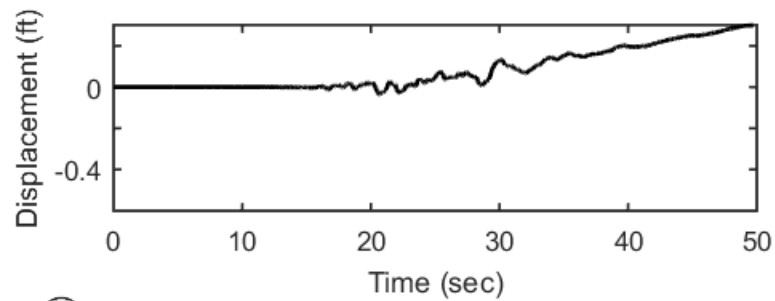
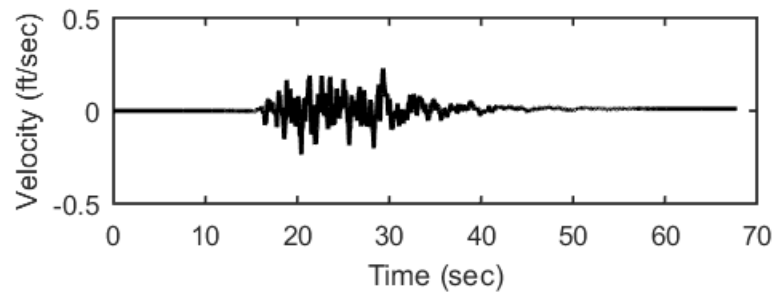
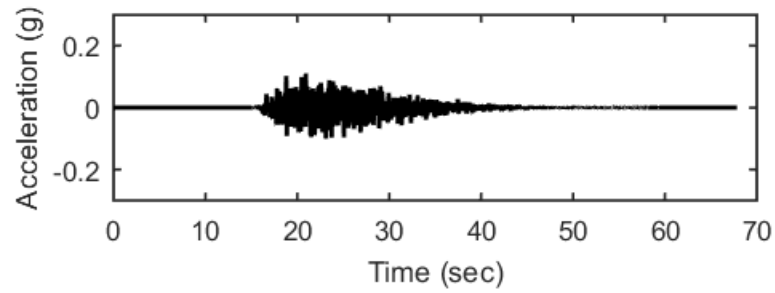
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



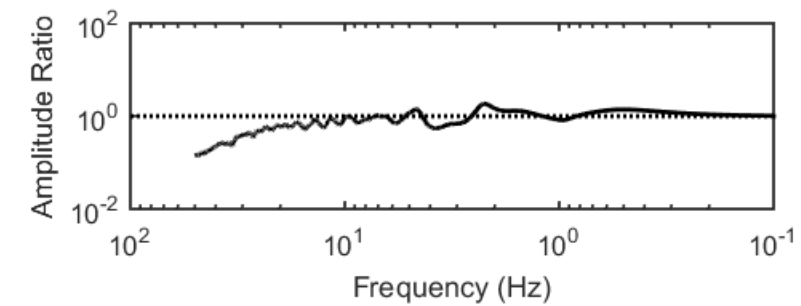
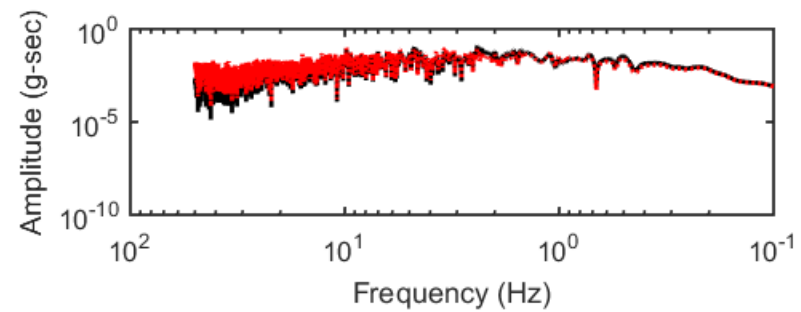
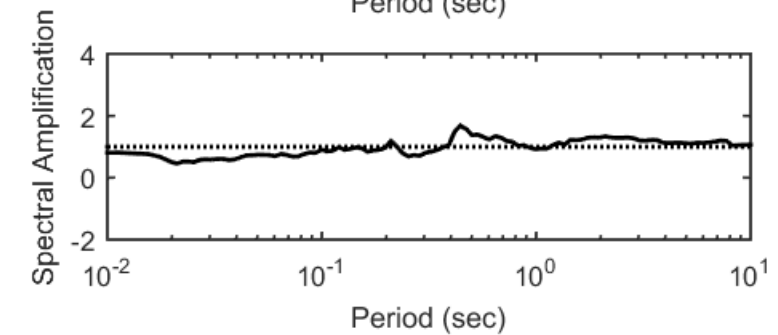
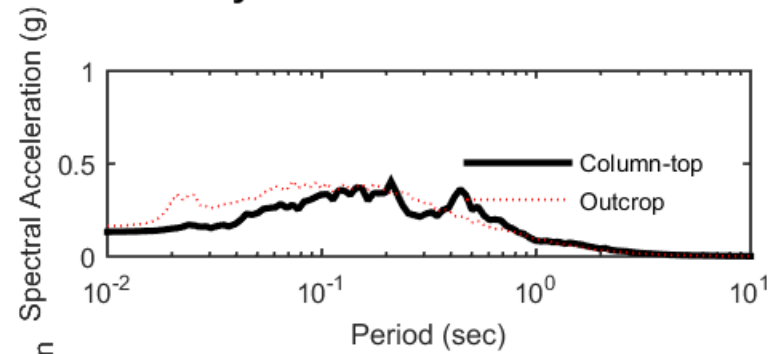
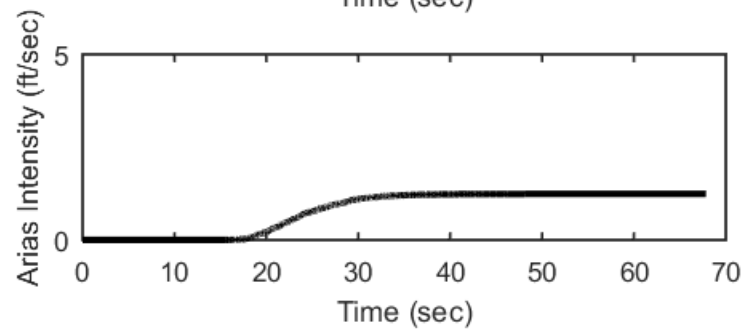
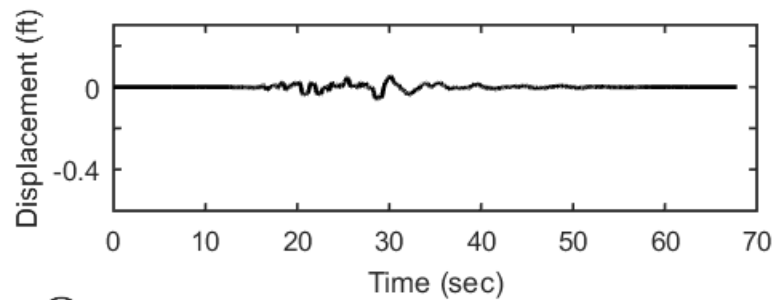
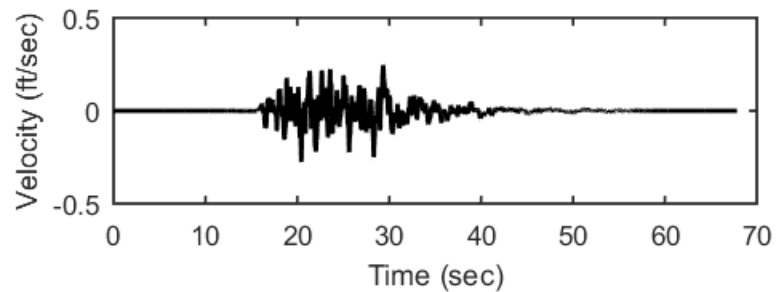
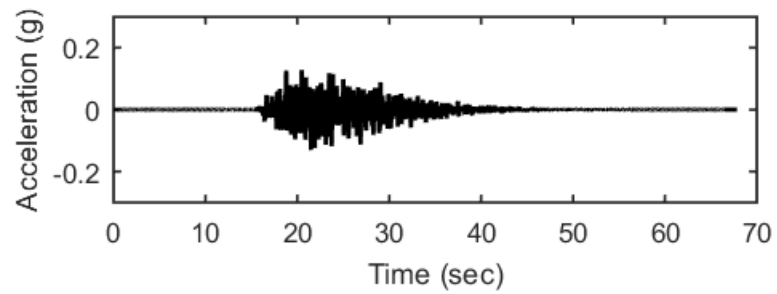
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



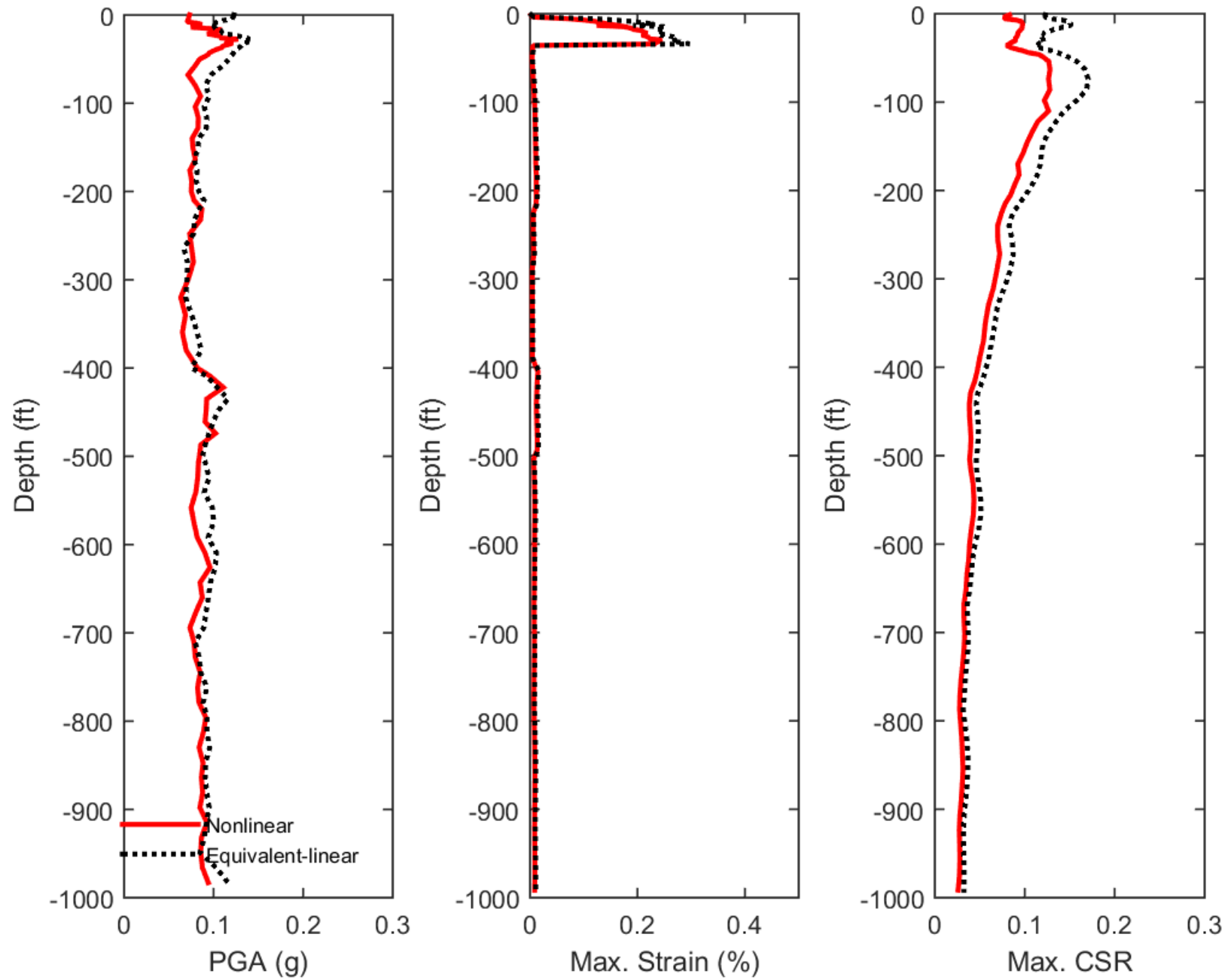
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



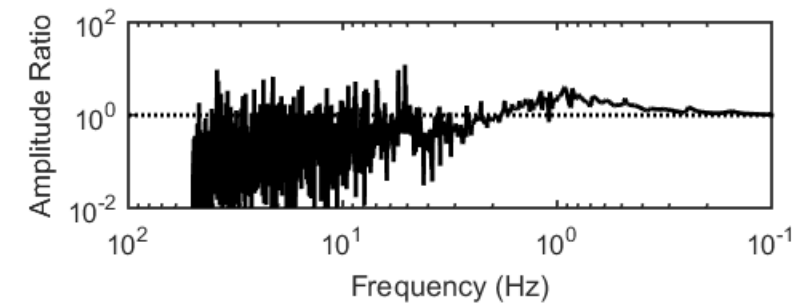
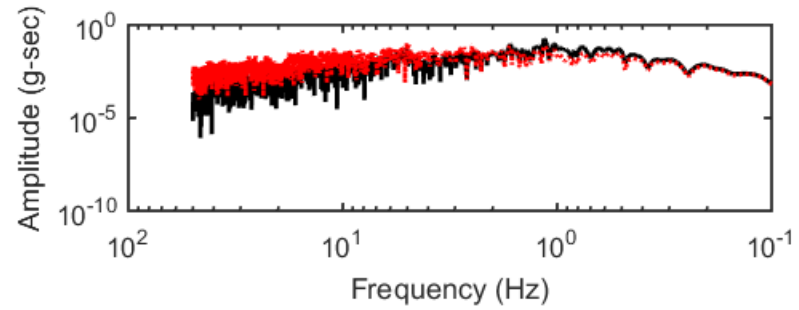
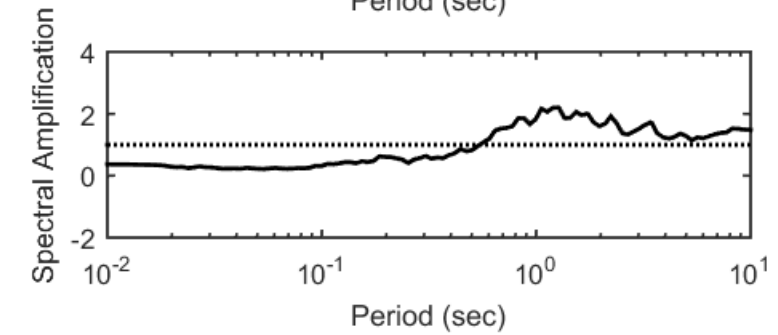
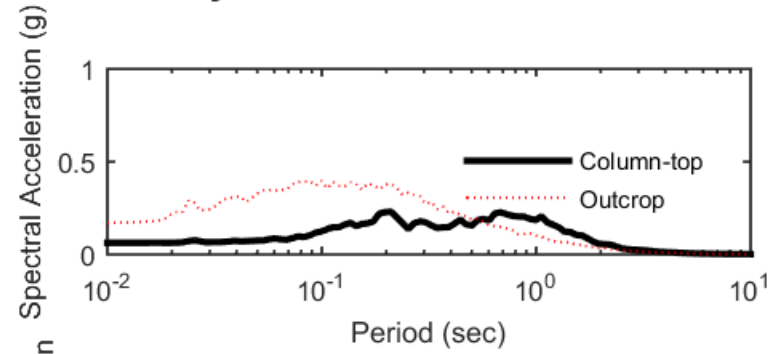
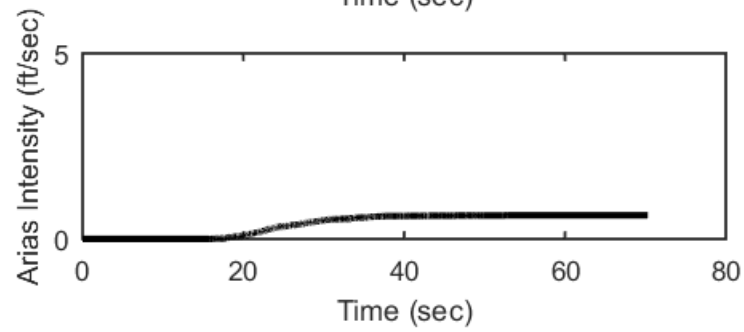
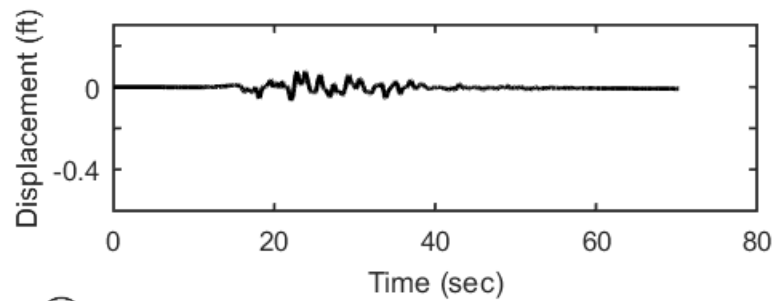
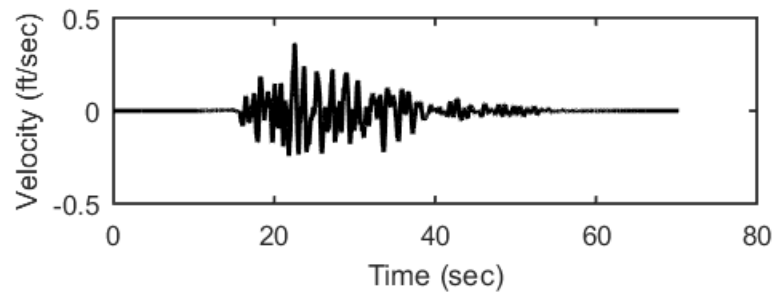
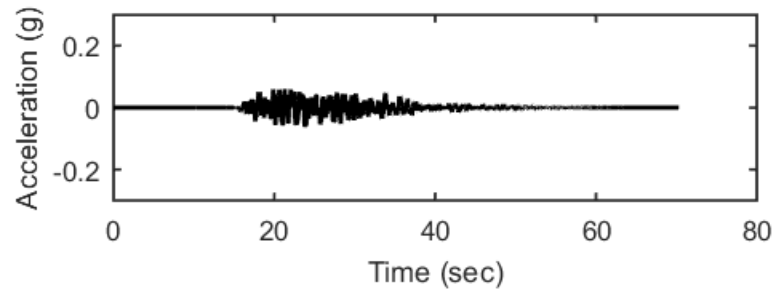
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



### Profile outputs for Motion: FEE6

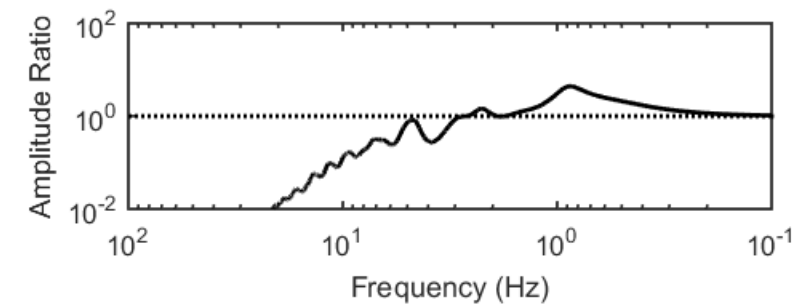
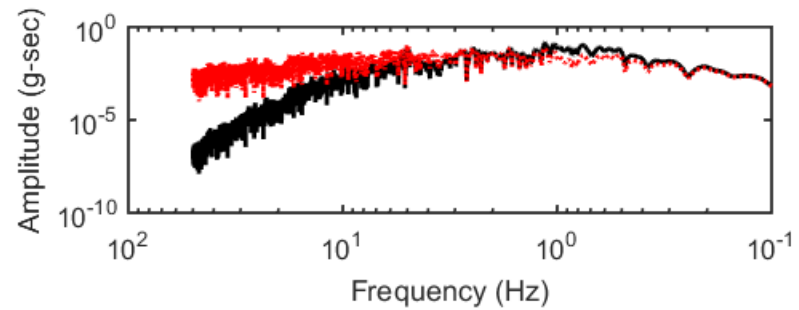
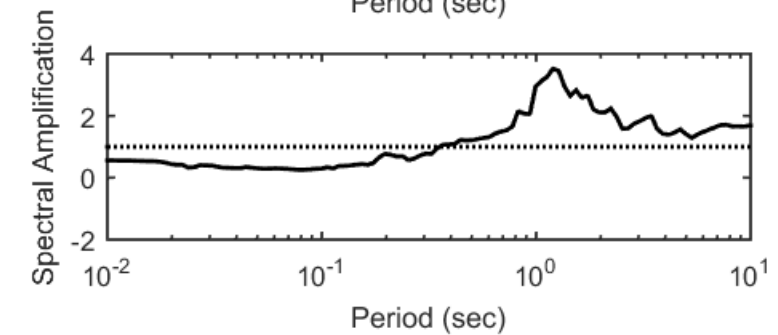
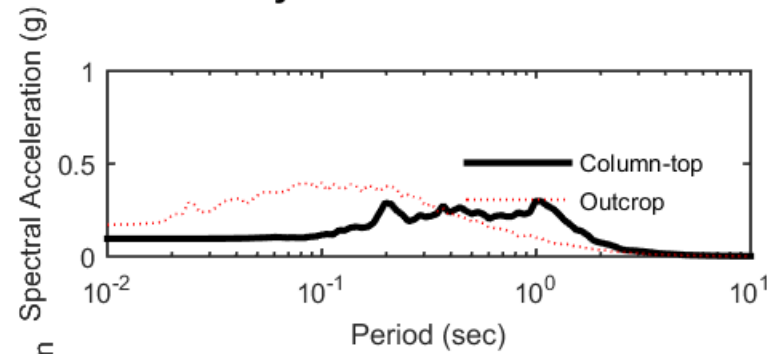
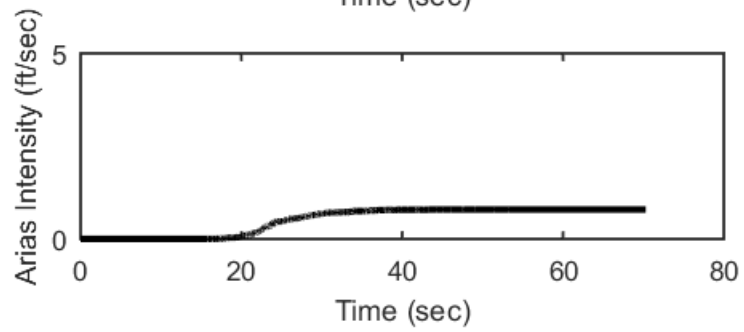
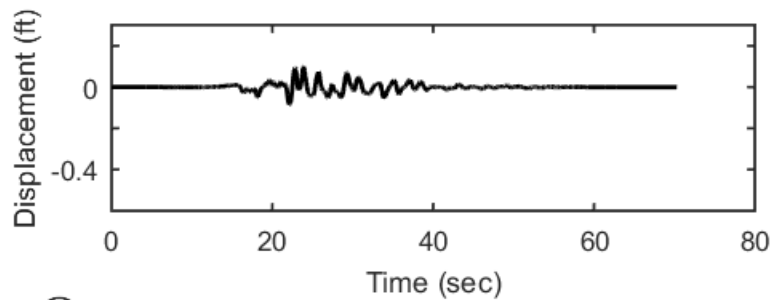
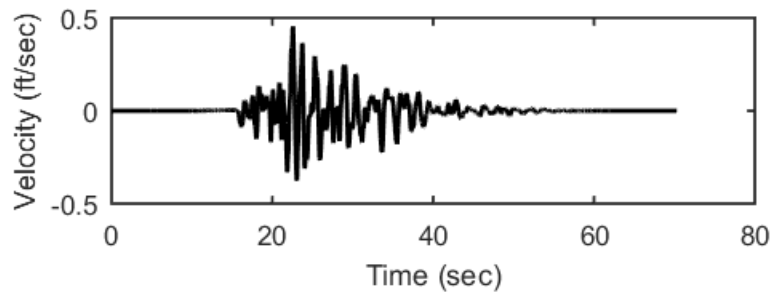
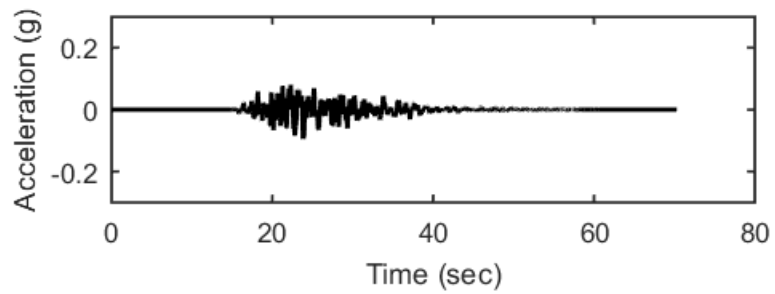


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7

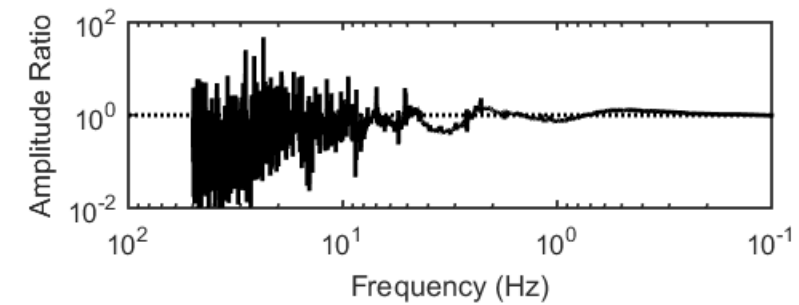
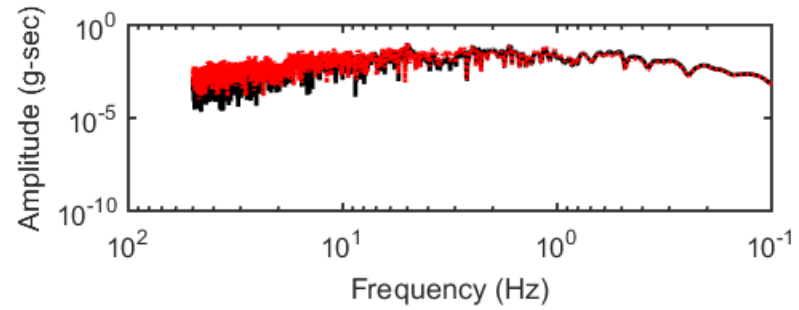
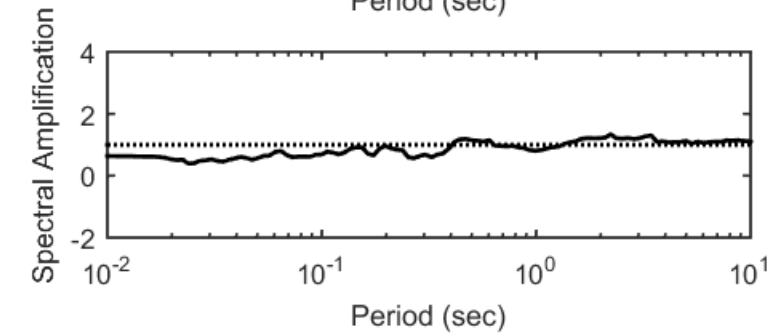
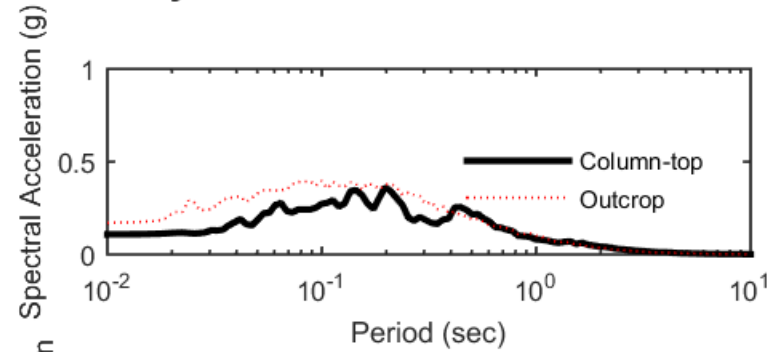
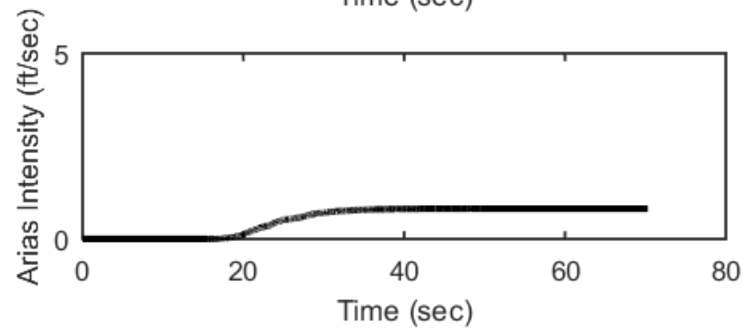
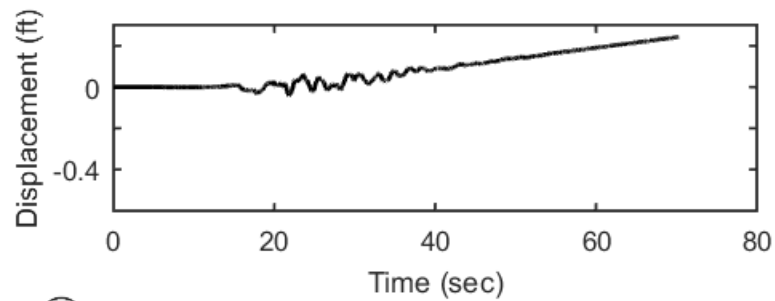
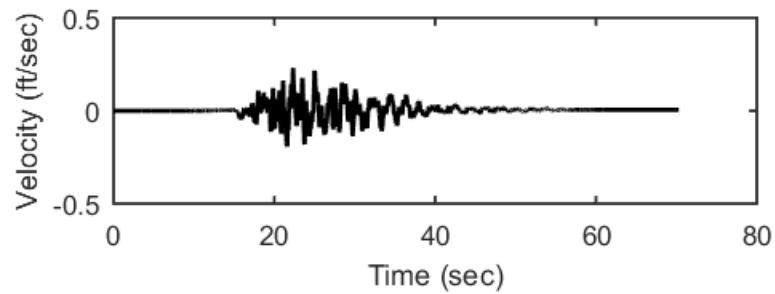
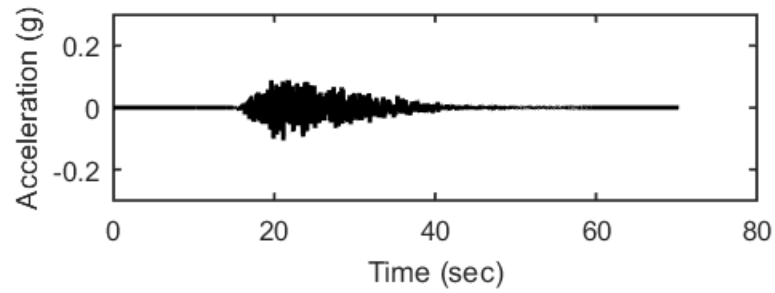




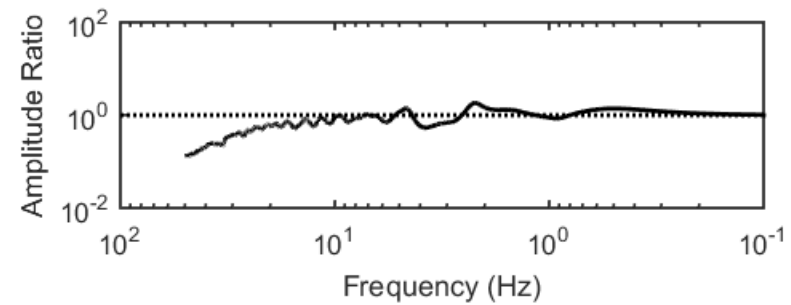
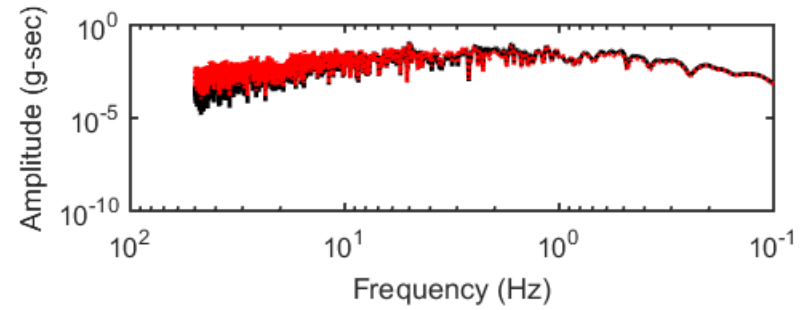
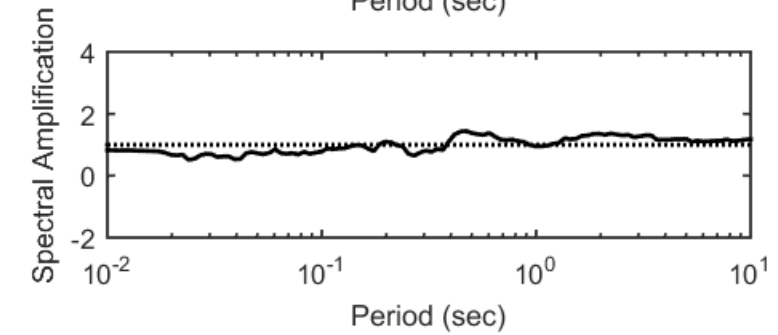
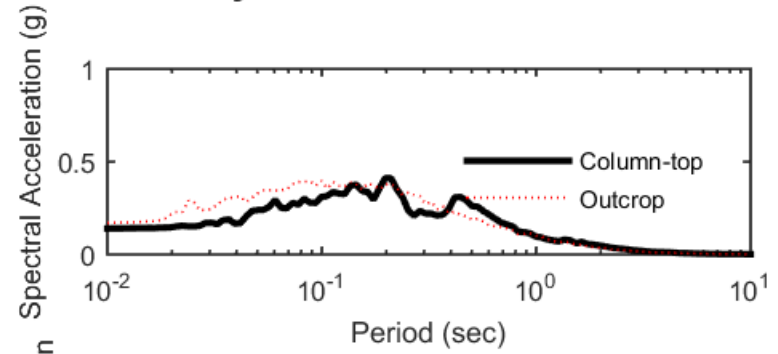
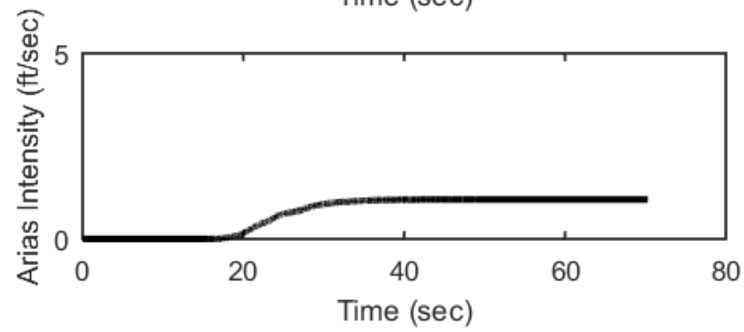
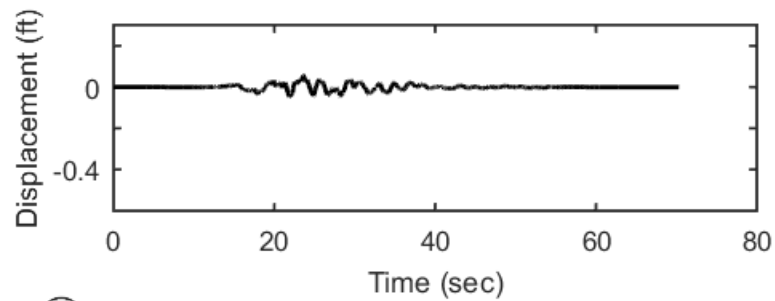
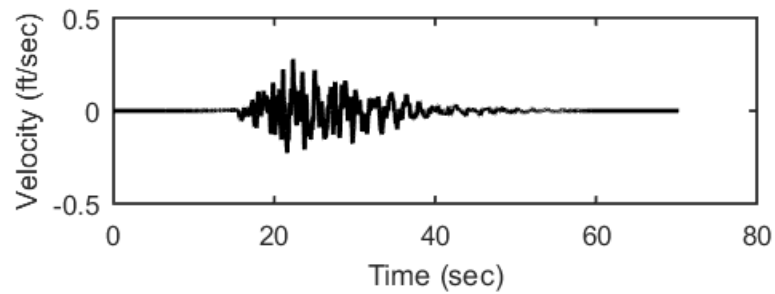
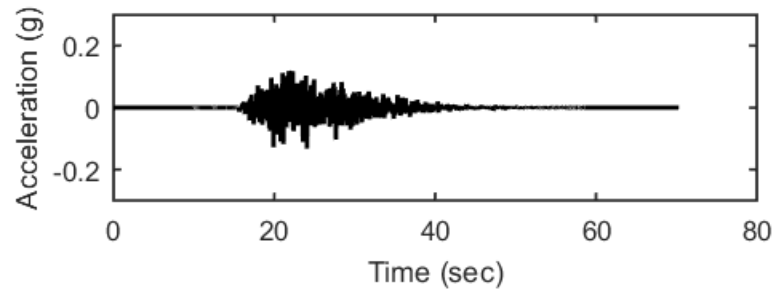
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



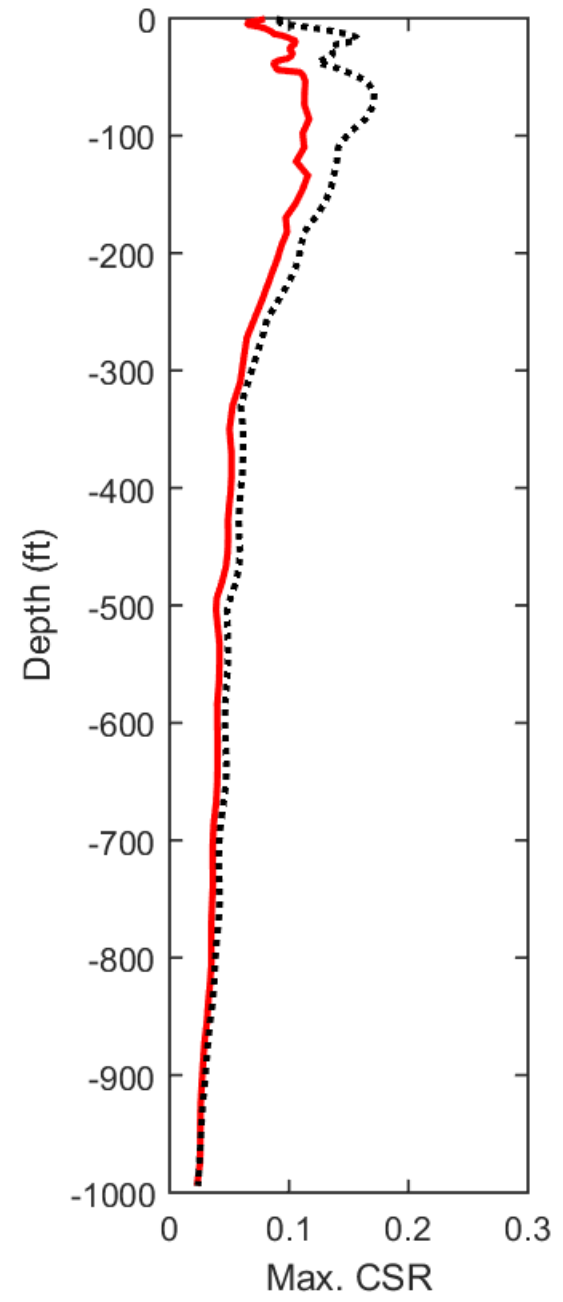
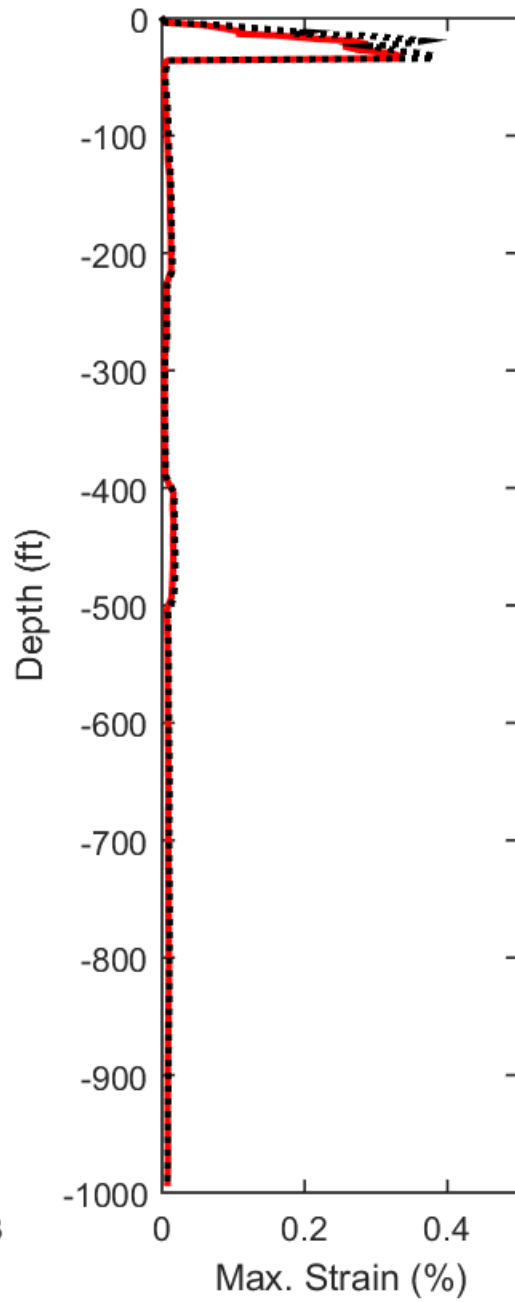
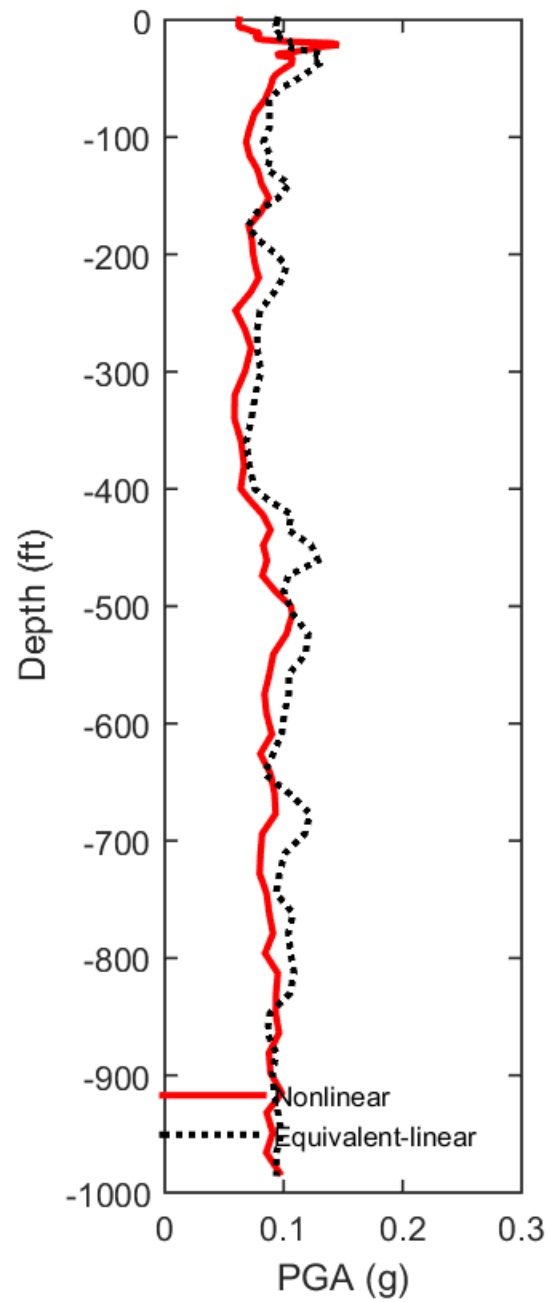
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



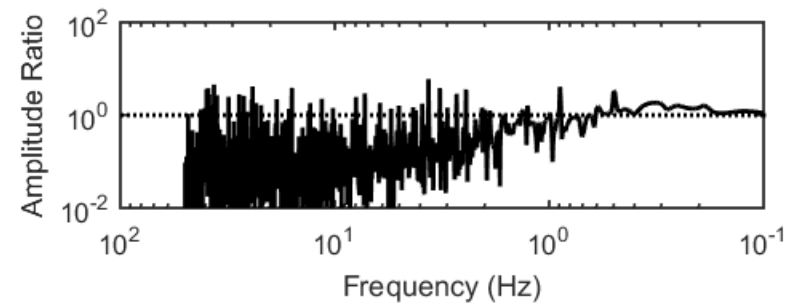
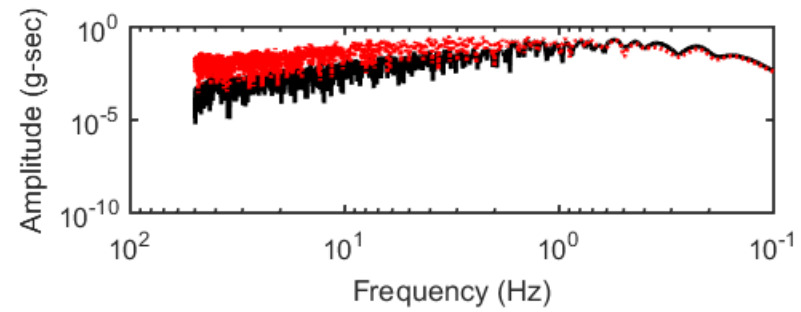
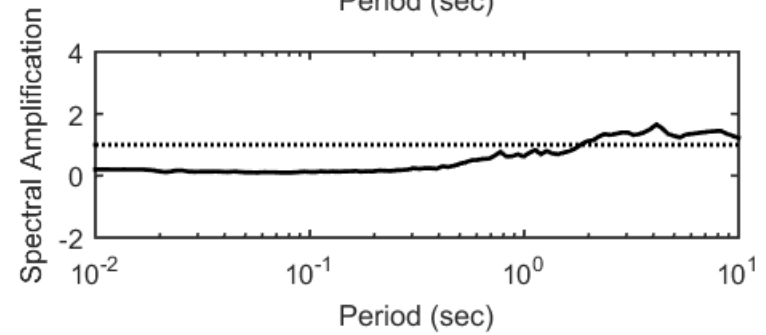
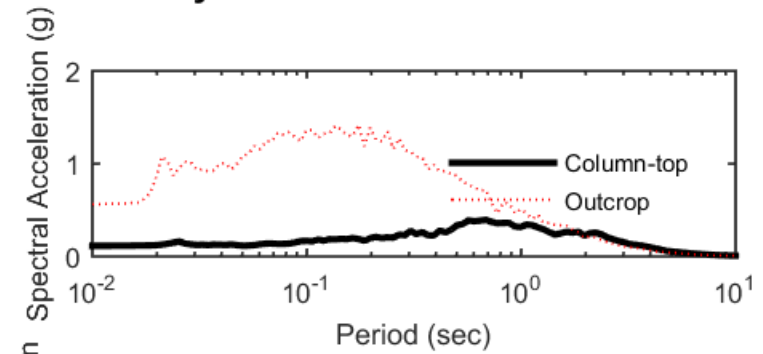
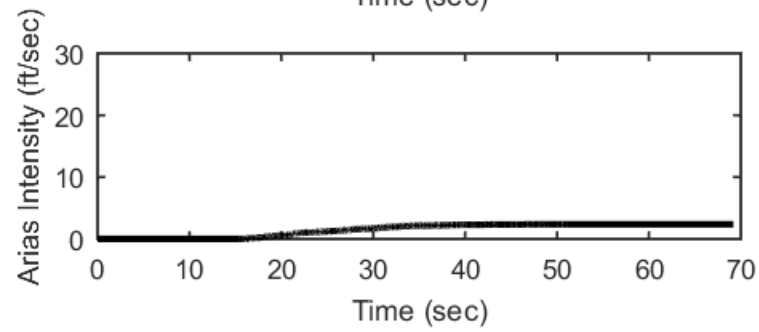
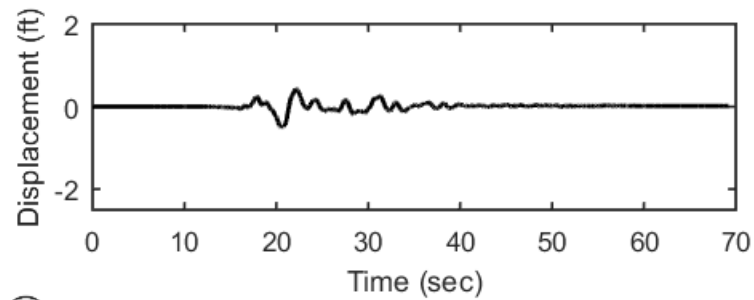
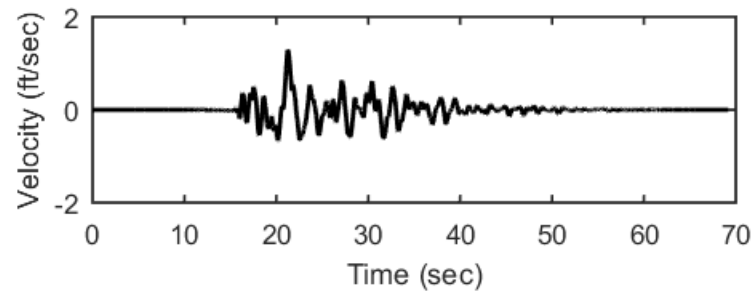
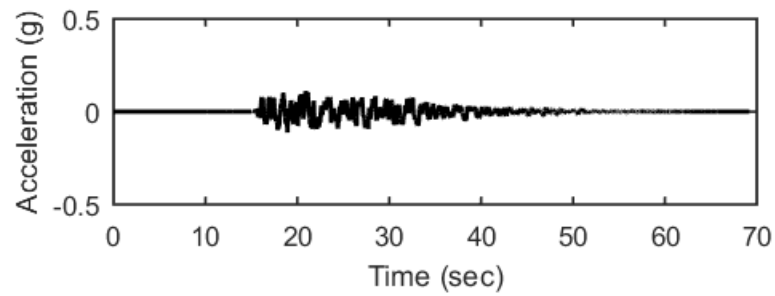
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



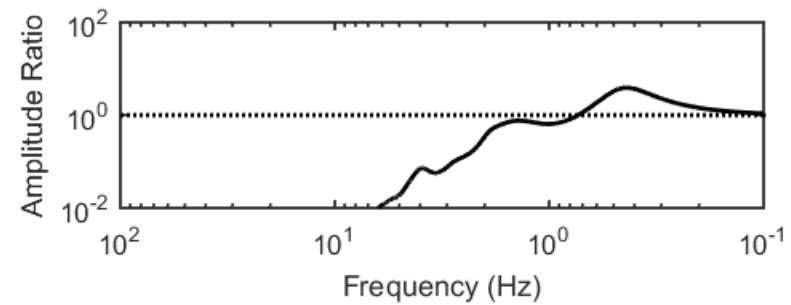
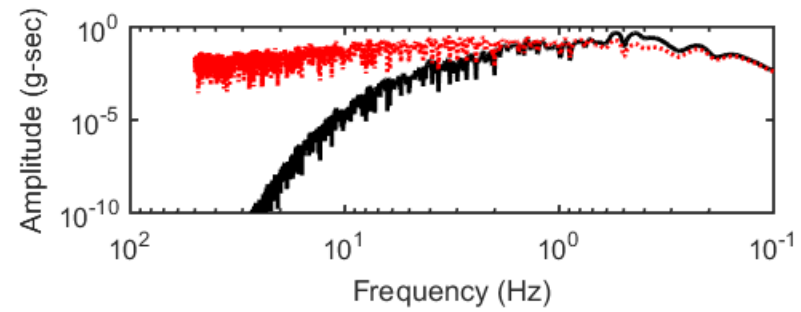
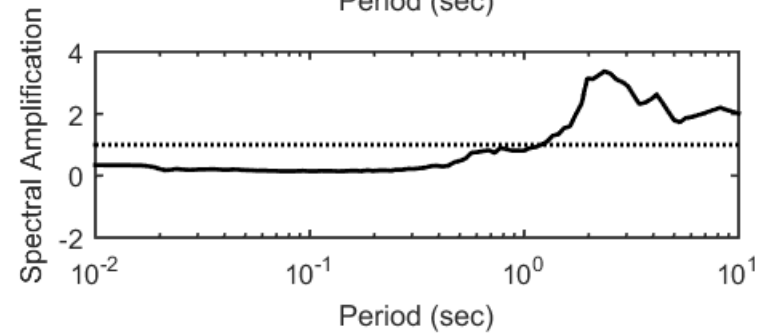
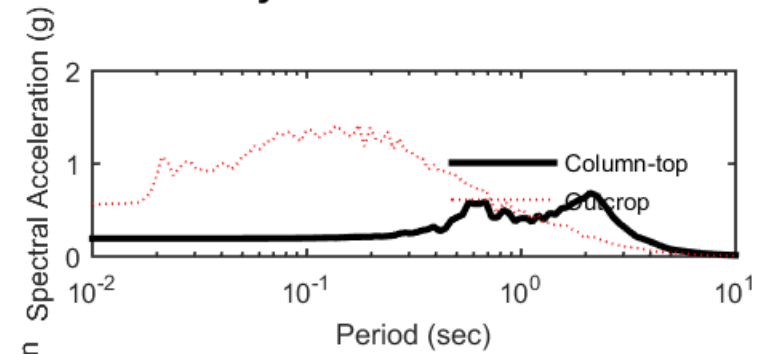
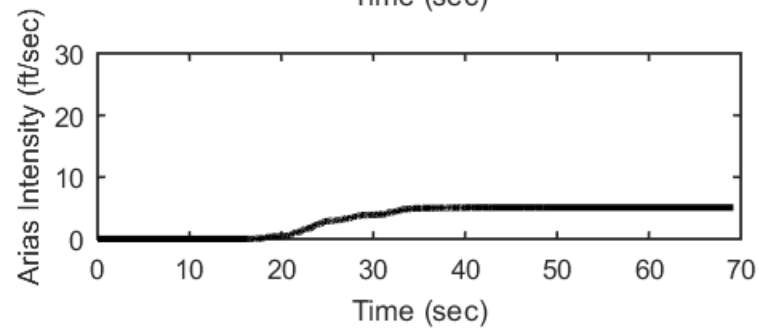
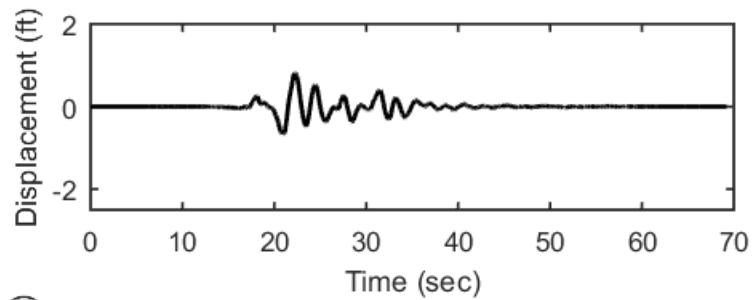
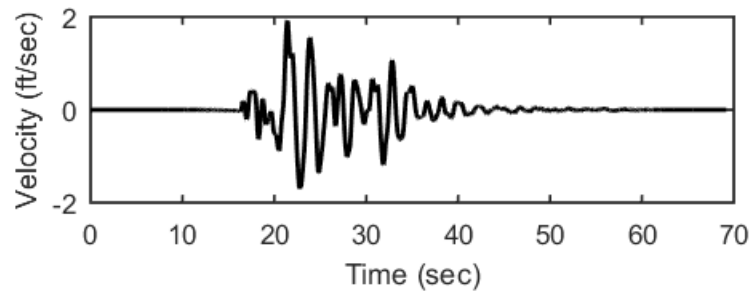
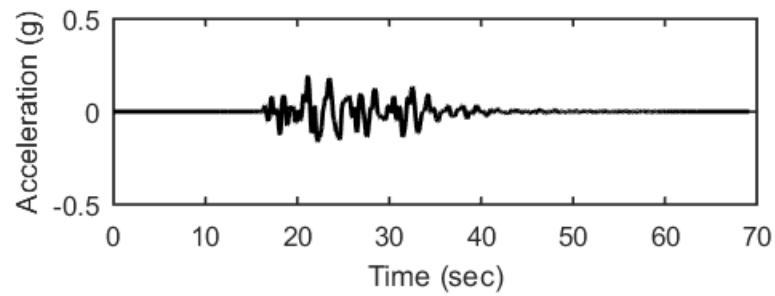
# Profile outputs for Motion: FEE7



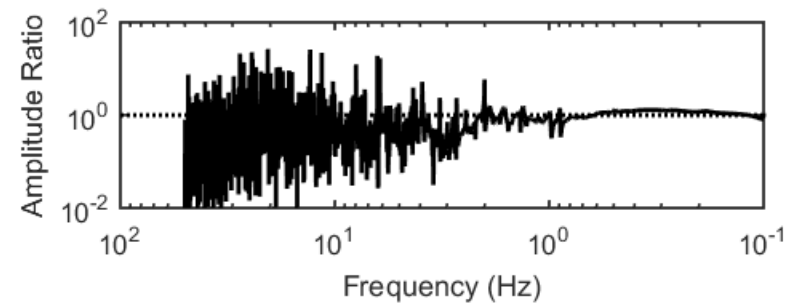
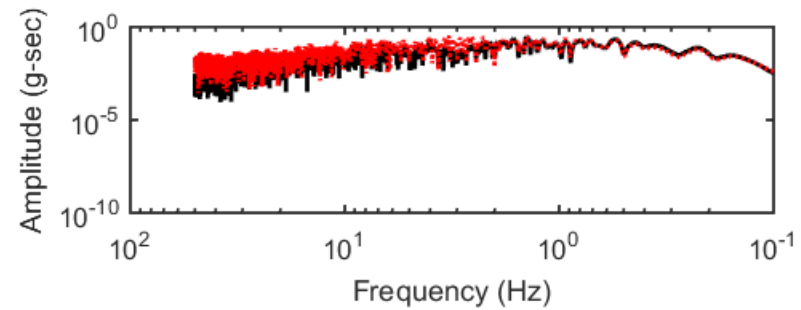
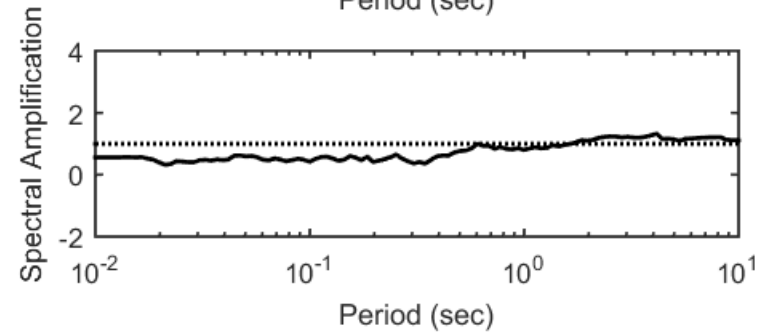
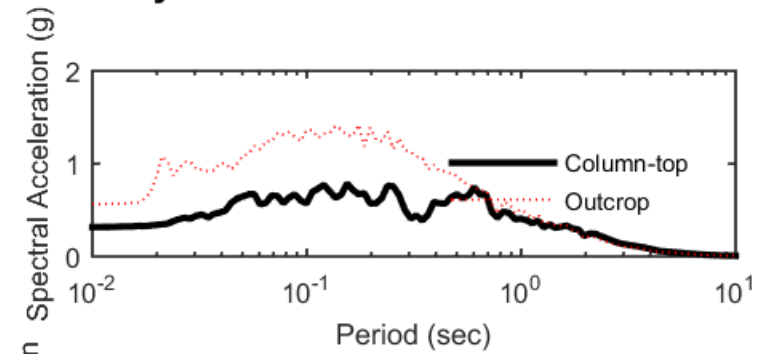
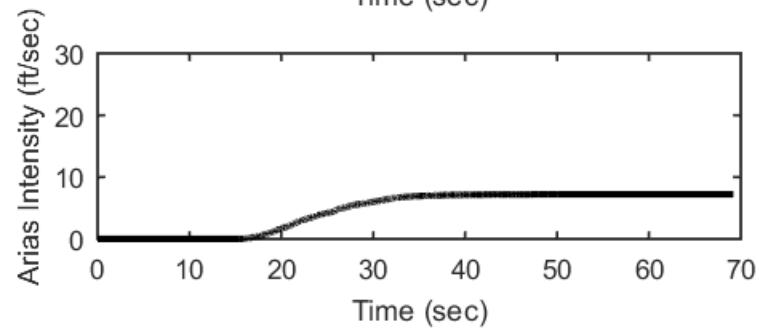
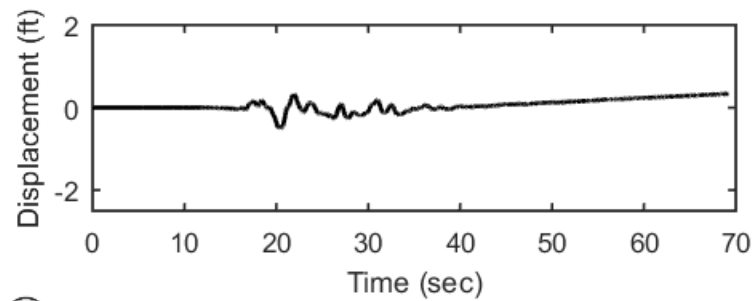
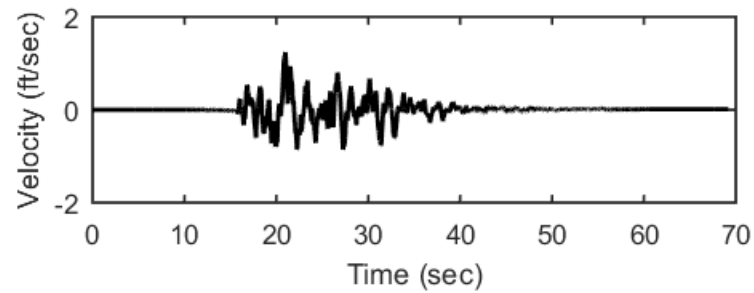
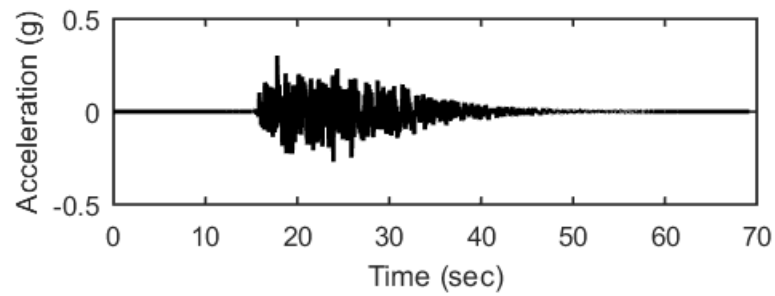
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



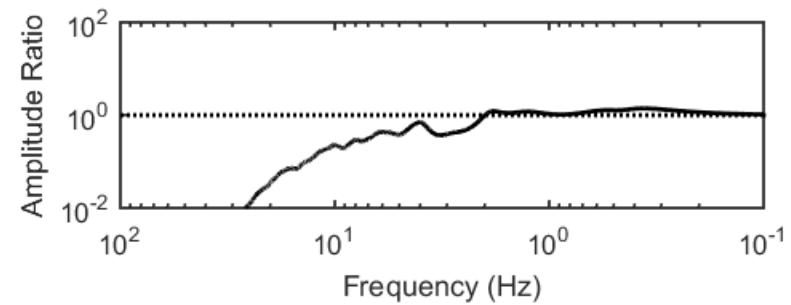
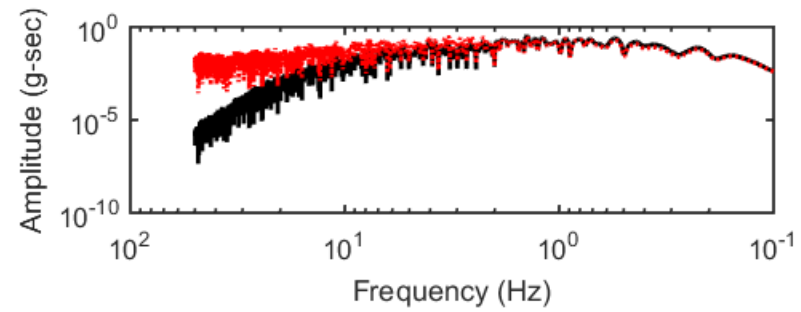
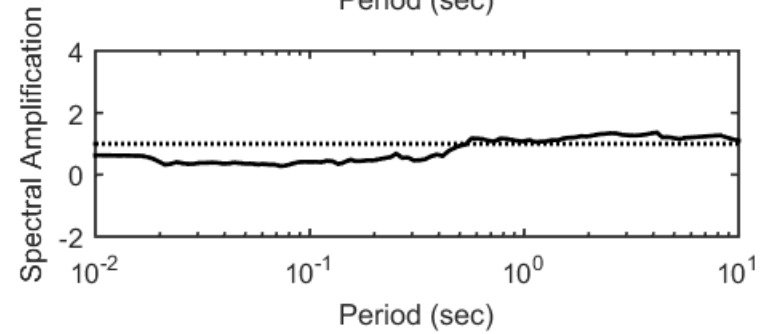
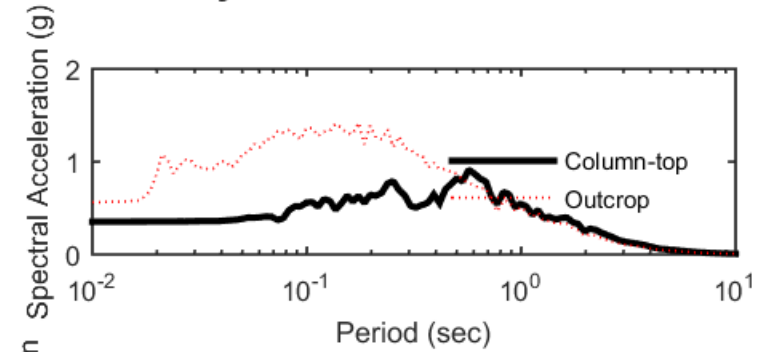
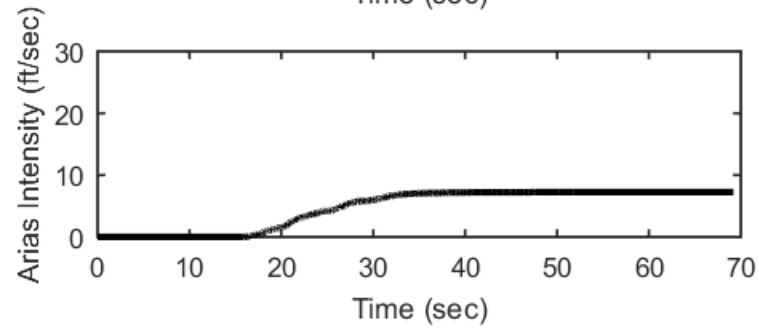
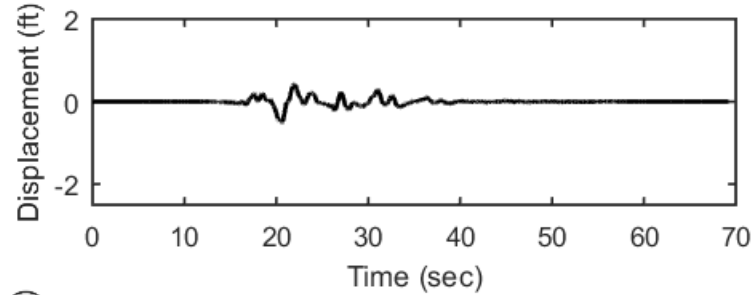
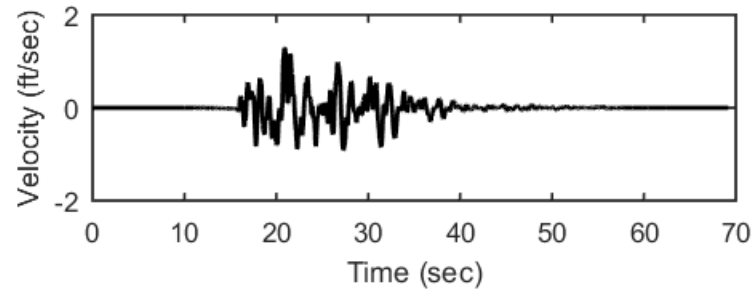
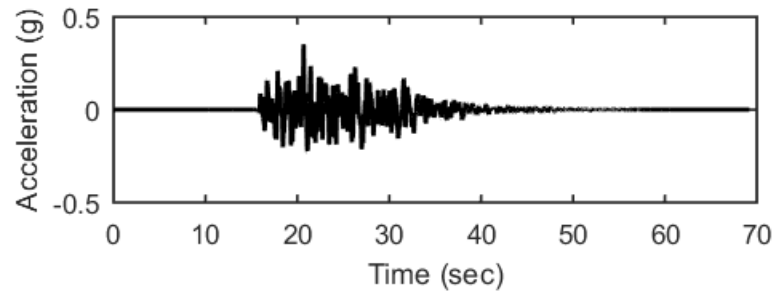
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1

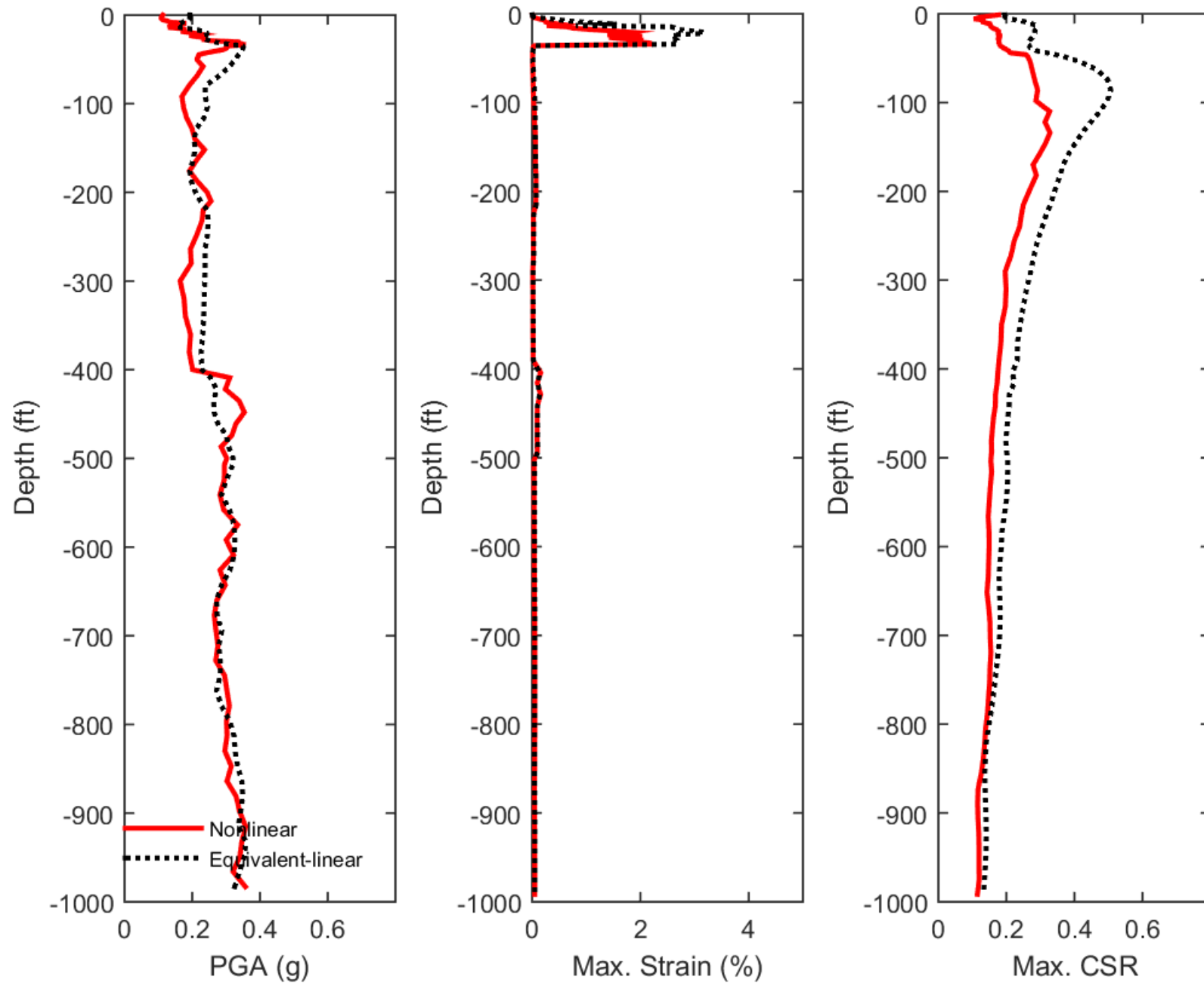


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1

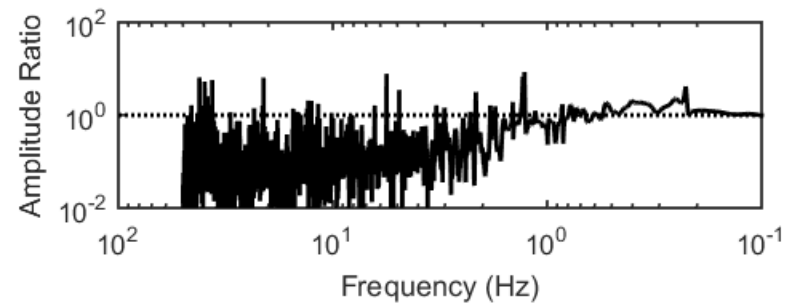
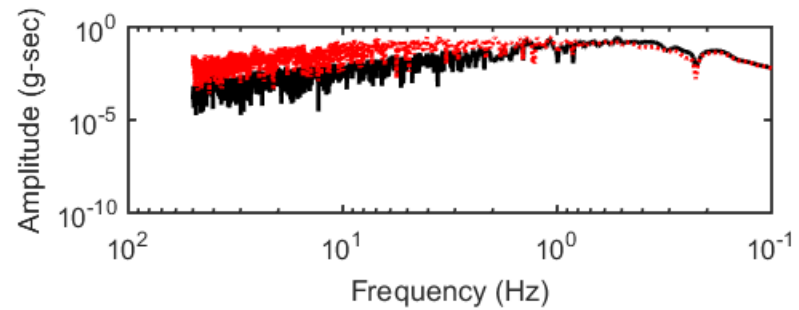
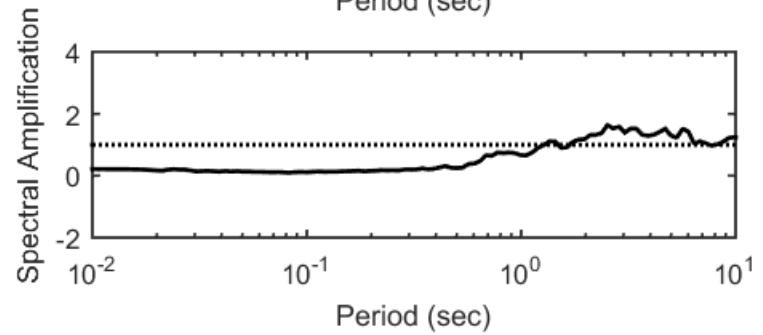
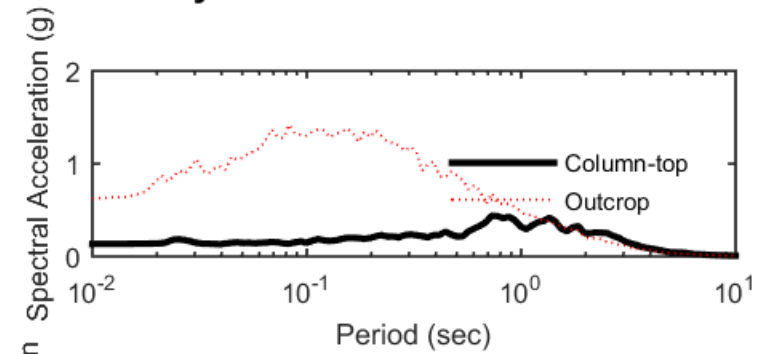
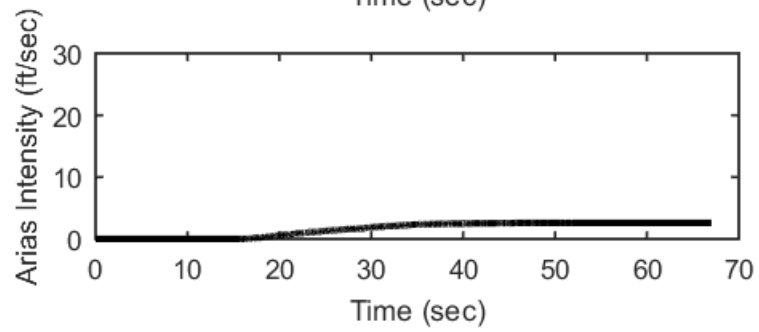
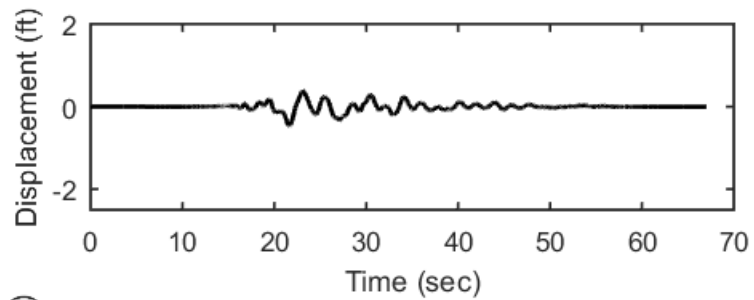
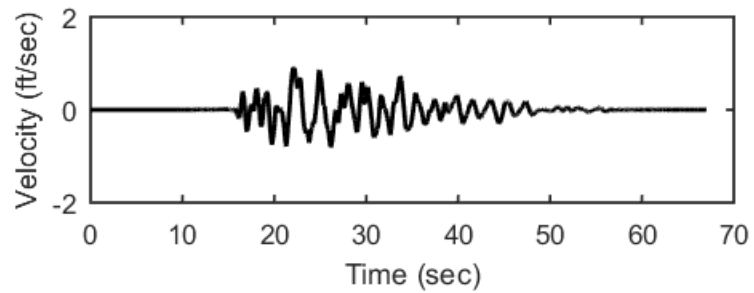
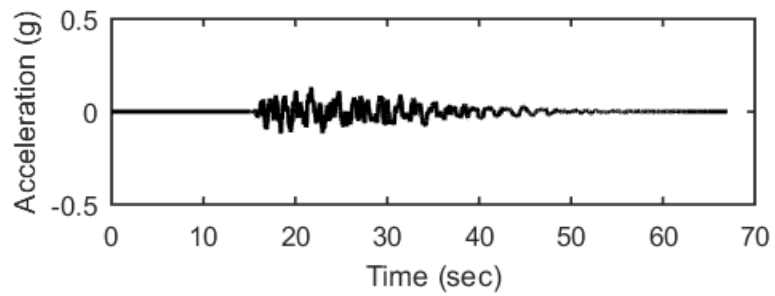




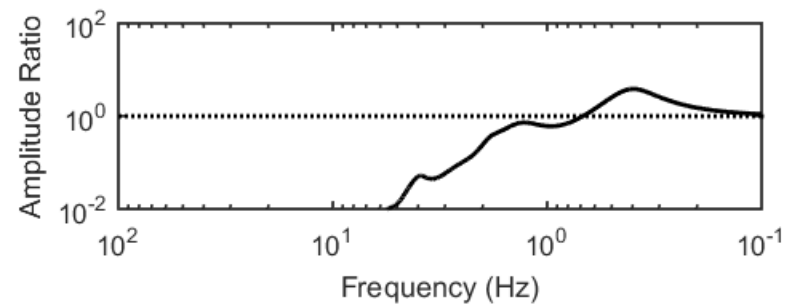
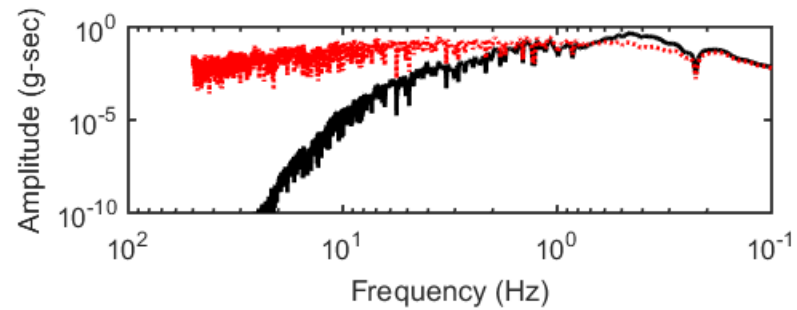
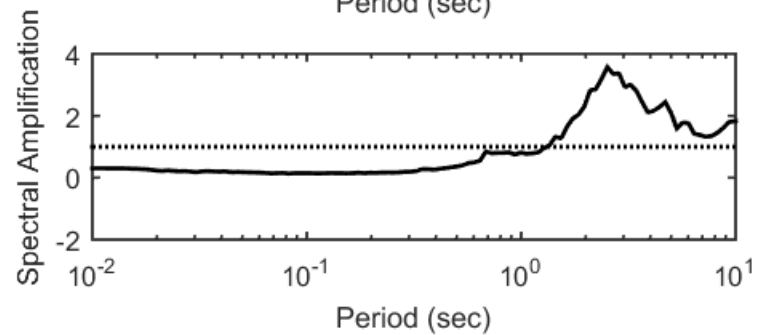
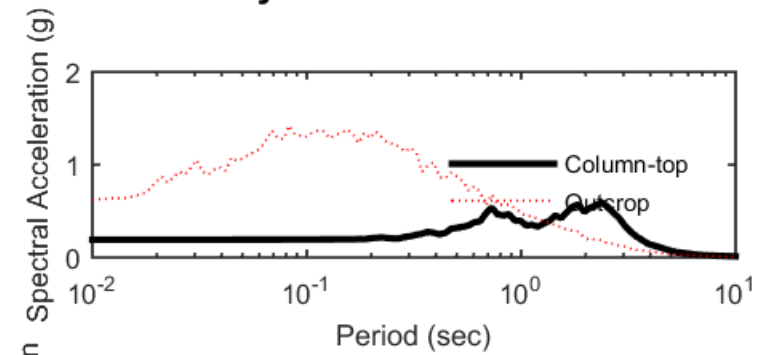
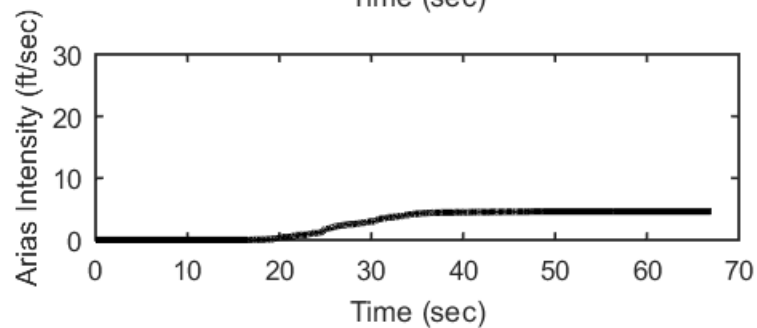
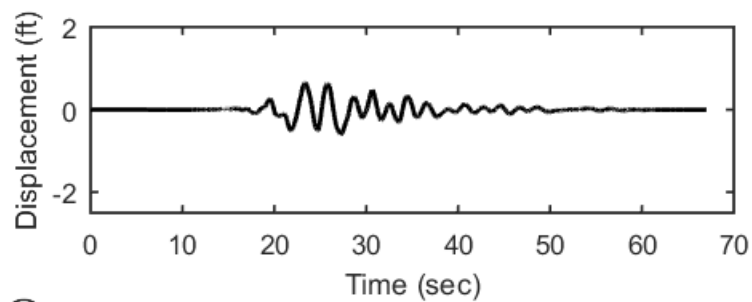
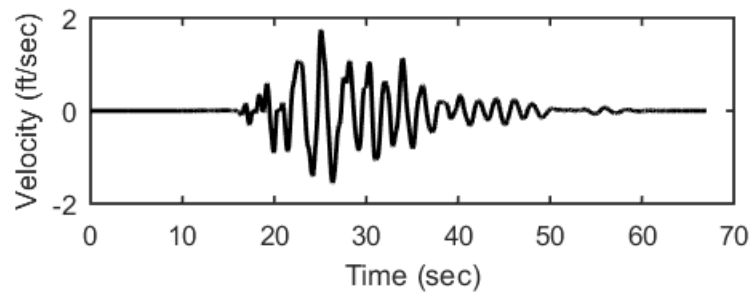
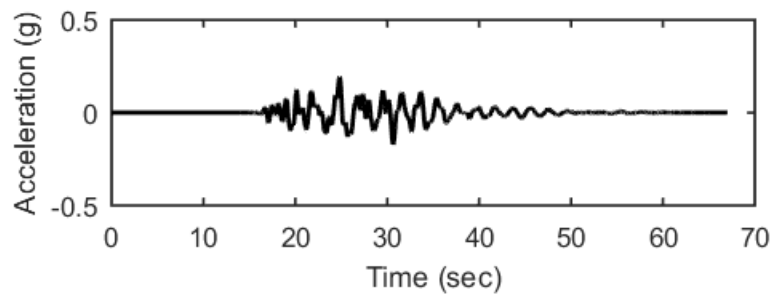
### Profile outputs for Motion: SEE1



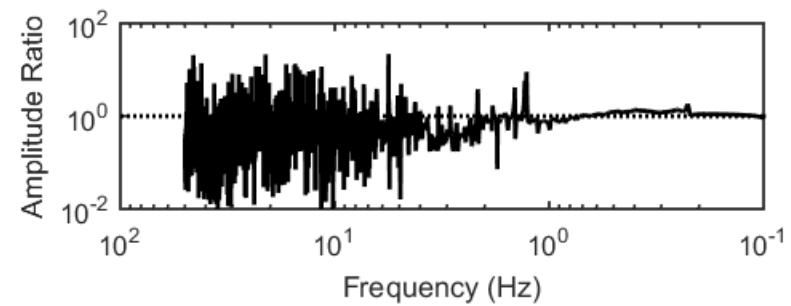
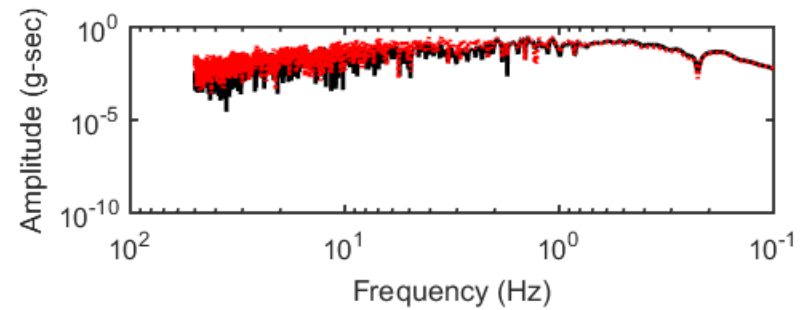
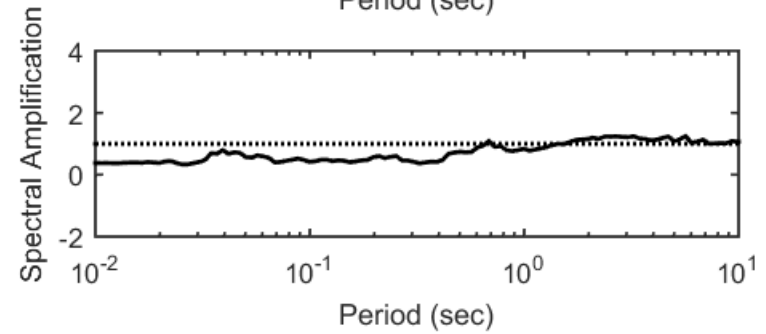
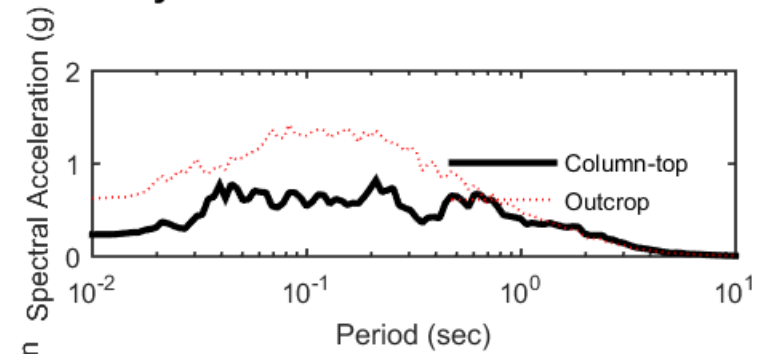
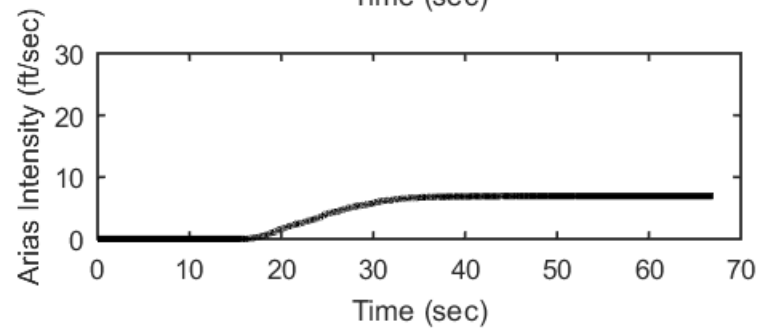
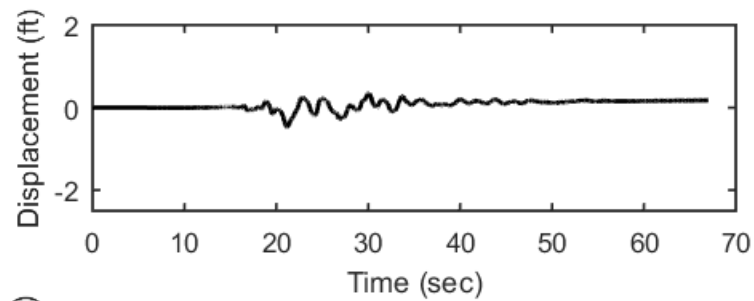
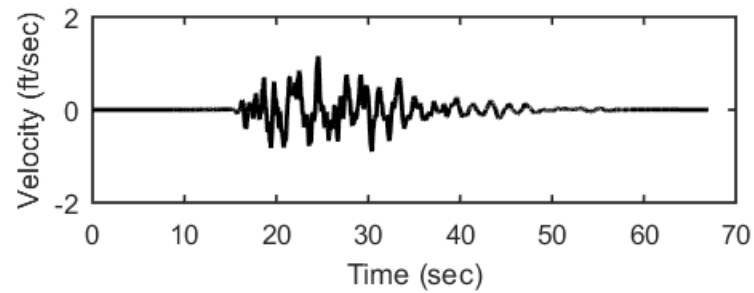
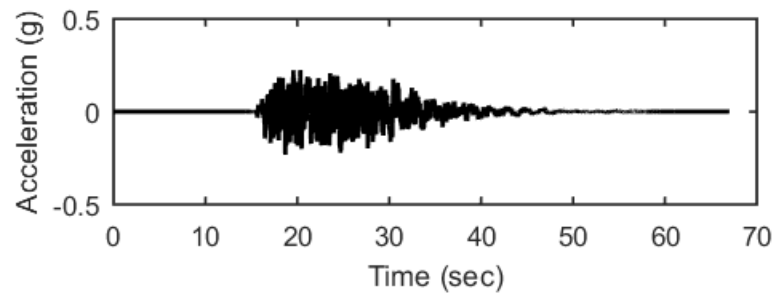
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



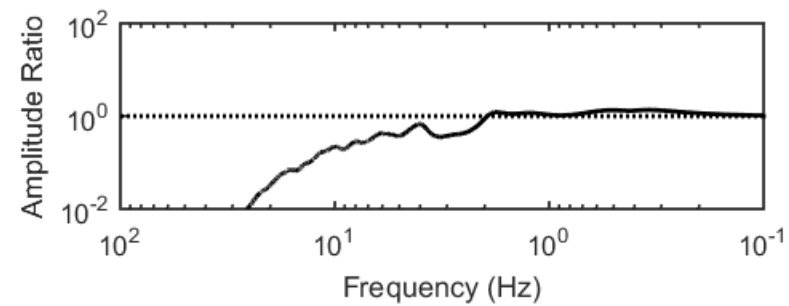
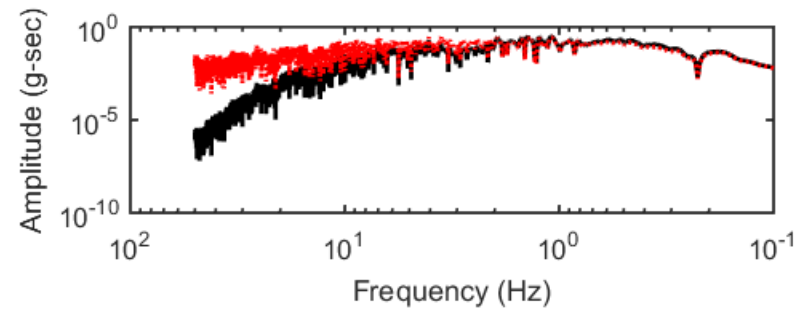
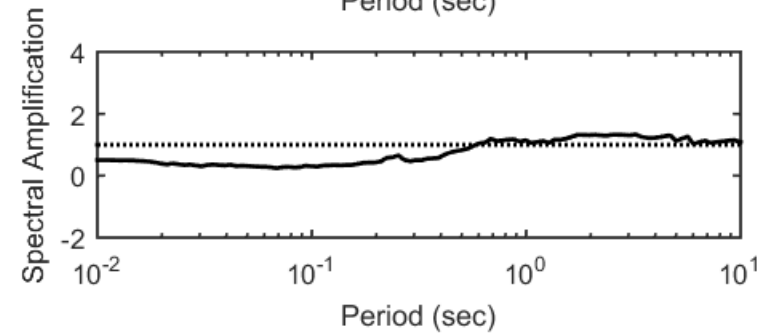
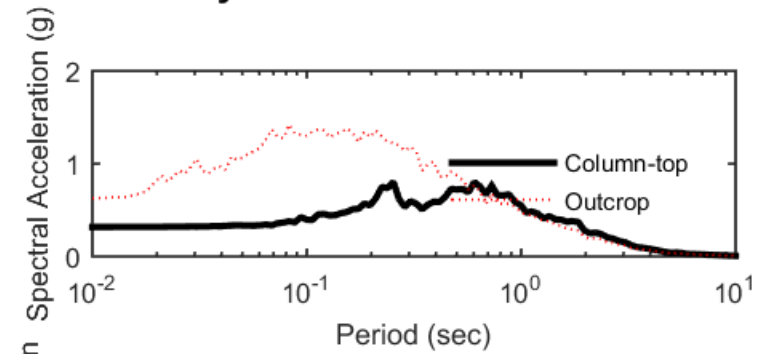
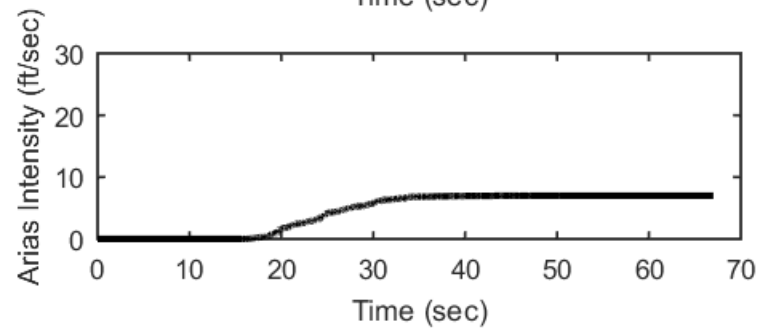
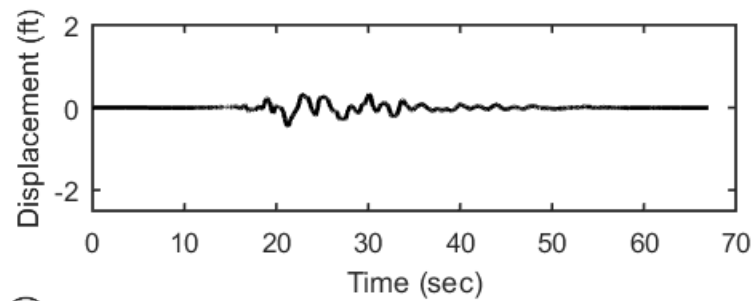
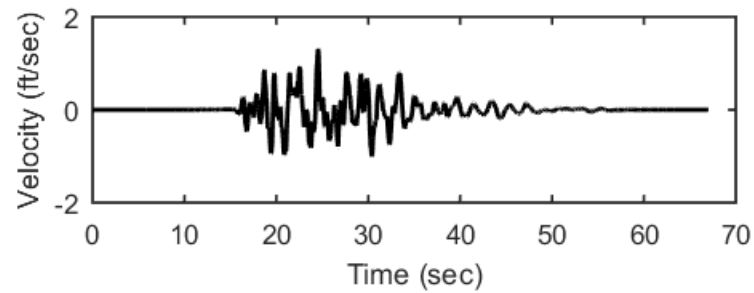
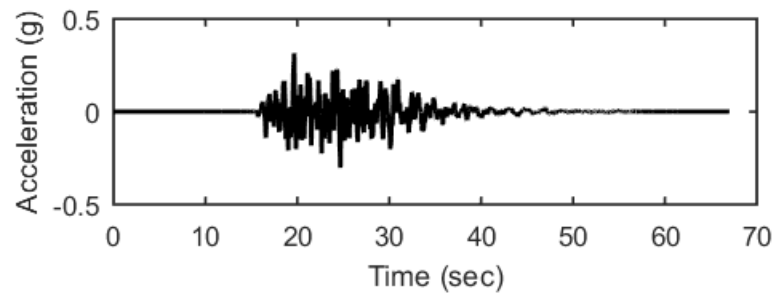
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



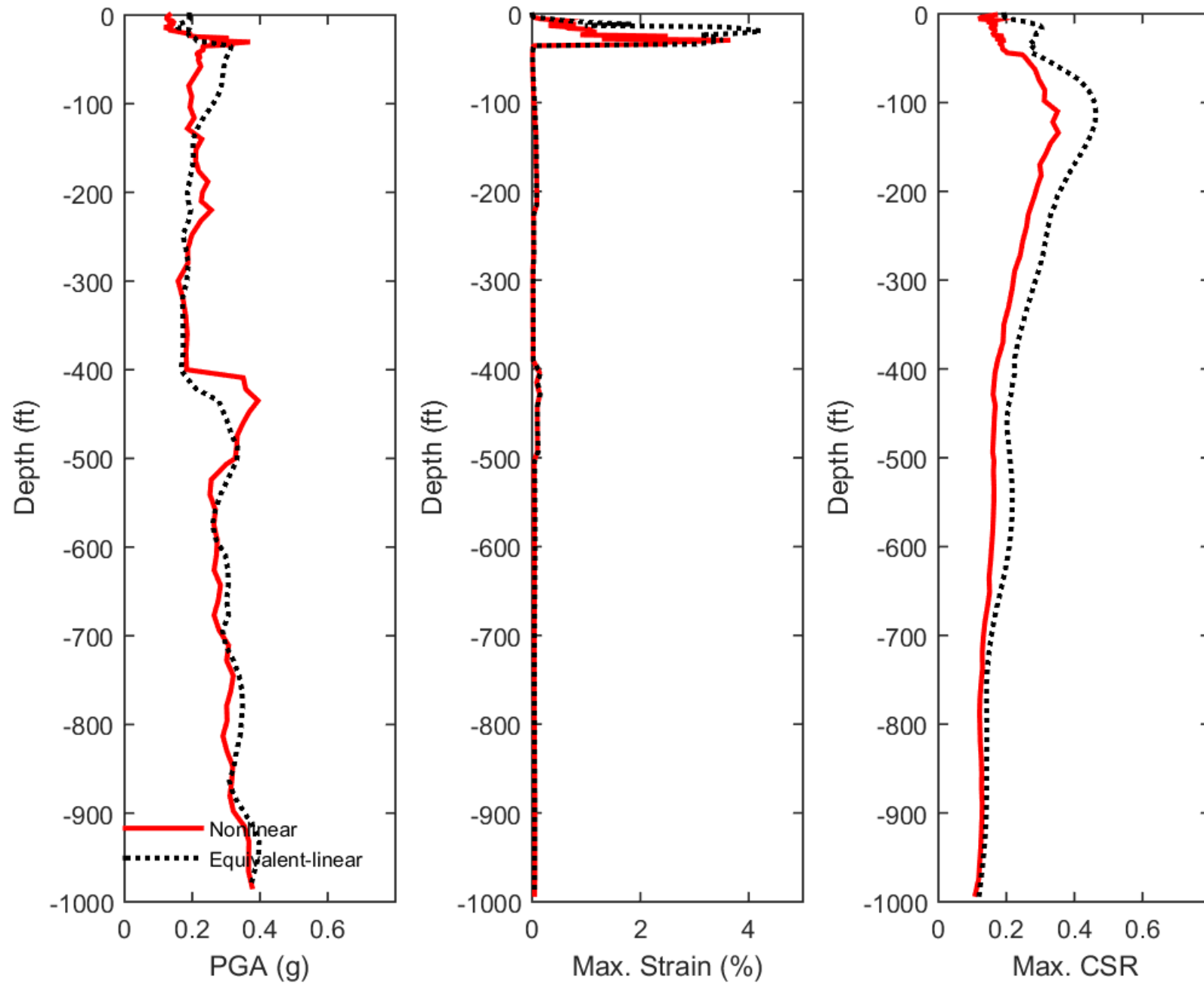
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



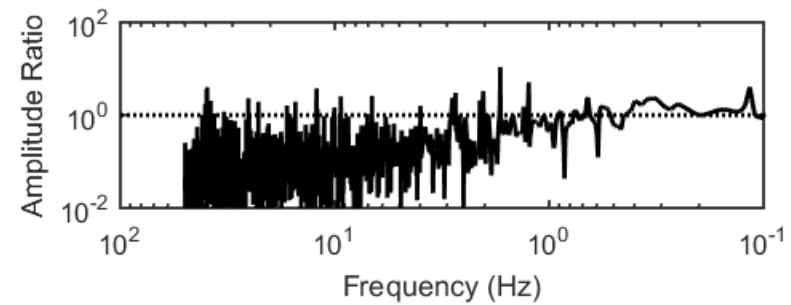
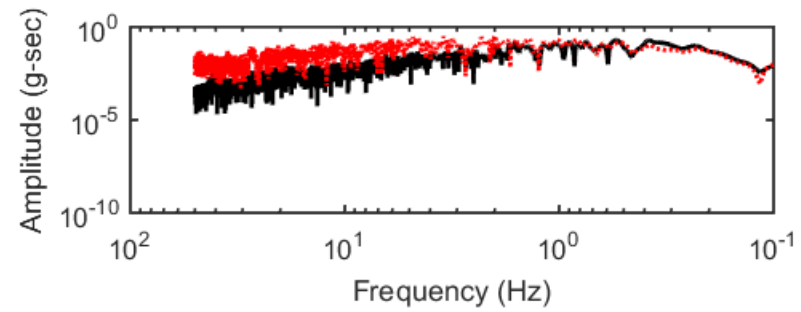
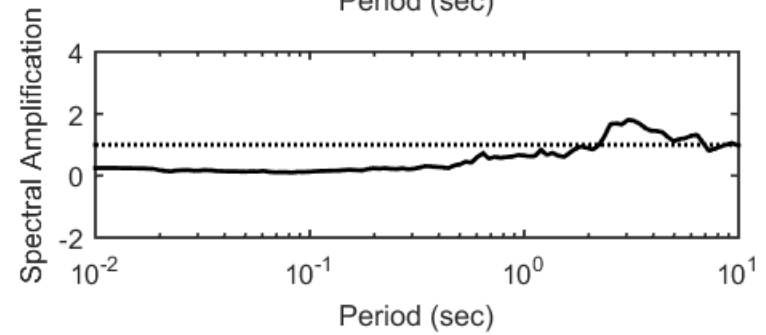
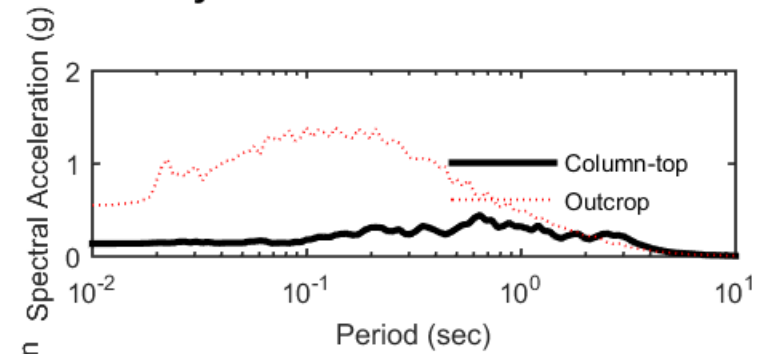
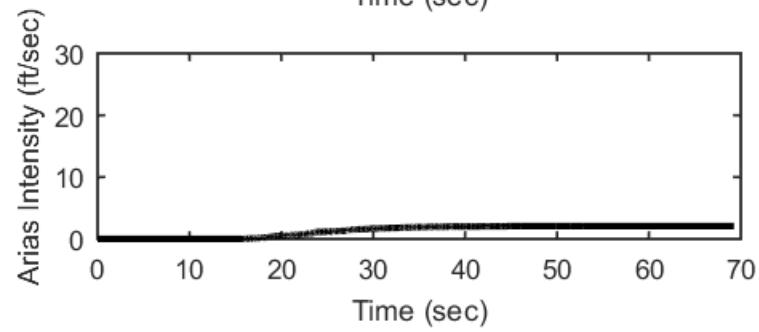
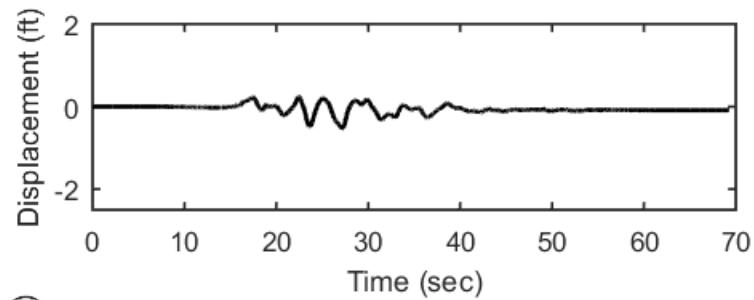
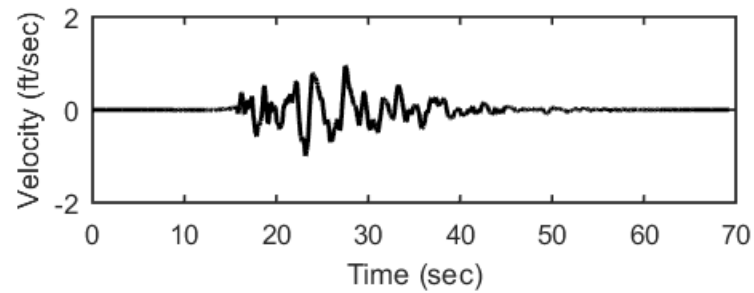
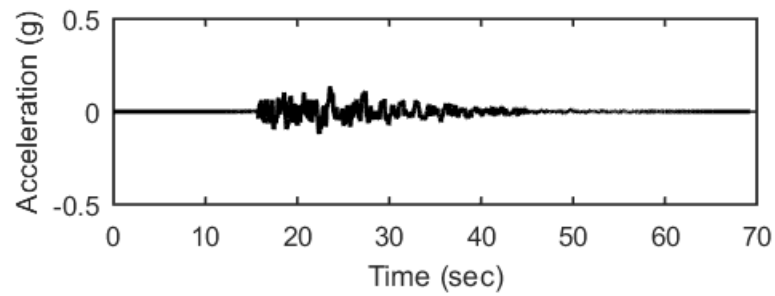
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



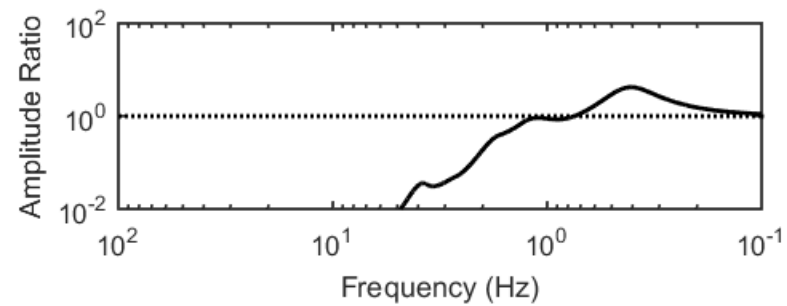
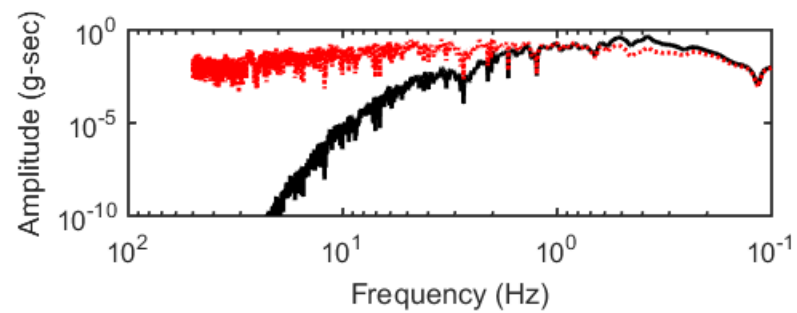
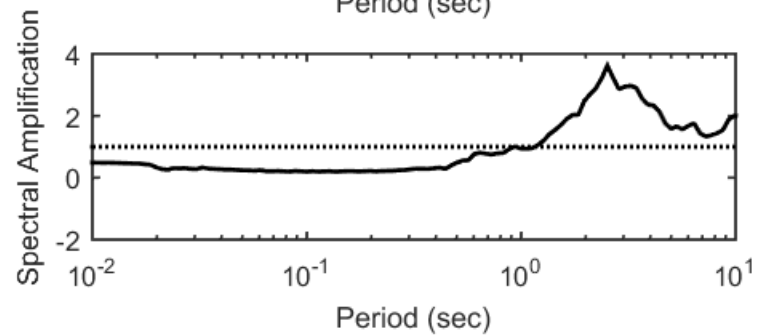
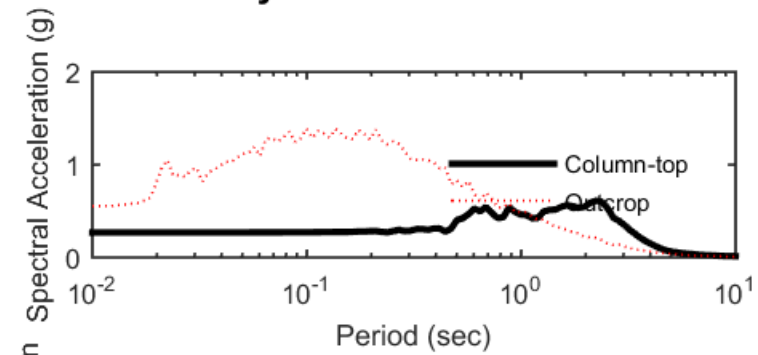
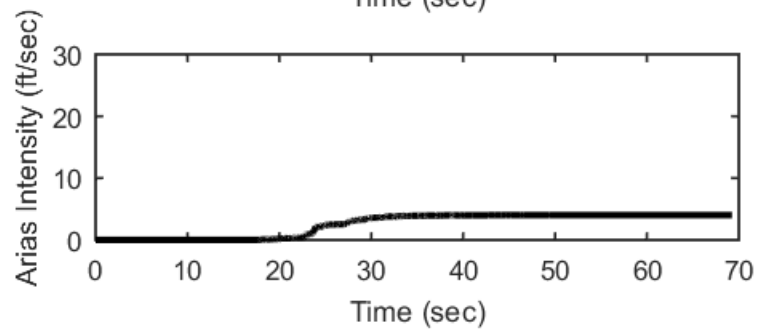
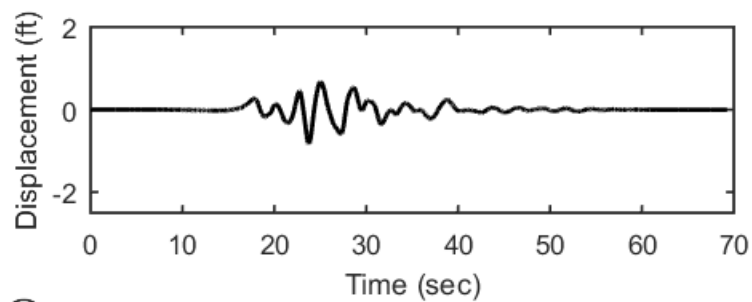
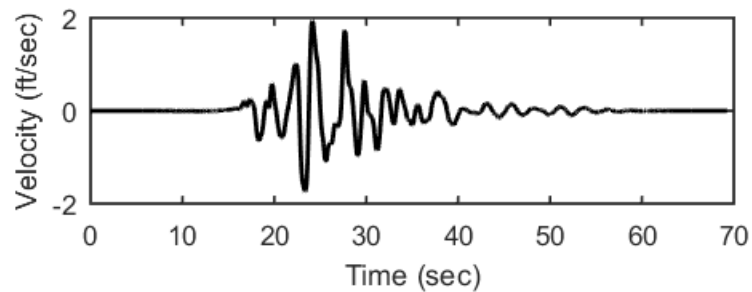
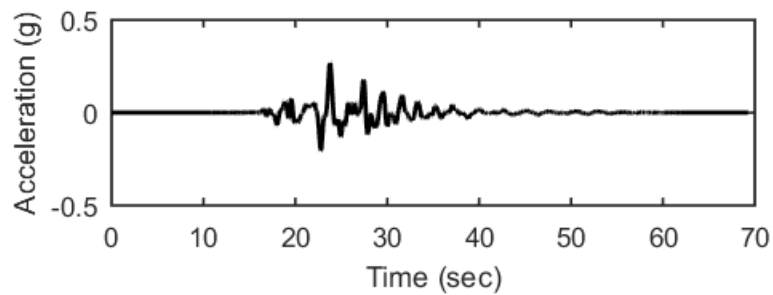
### Profile outputs for Motion: SEE2



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3

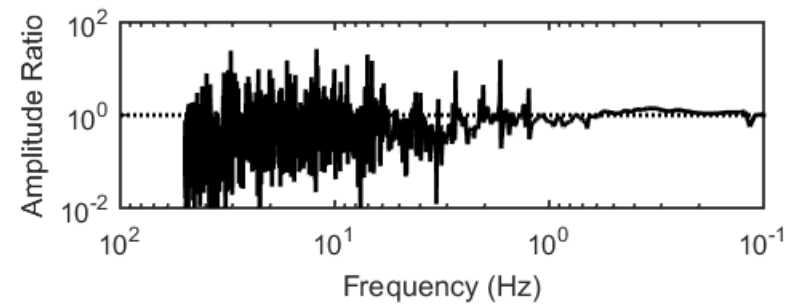
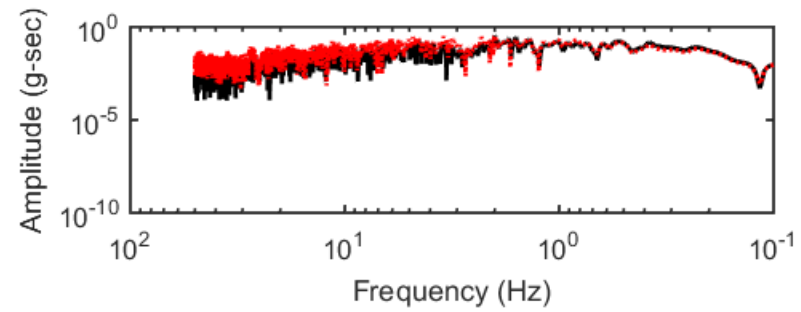
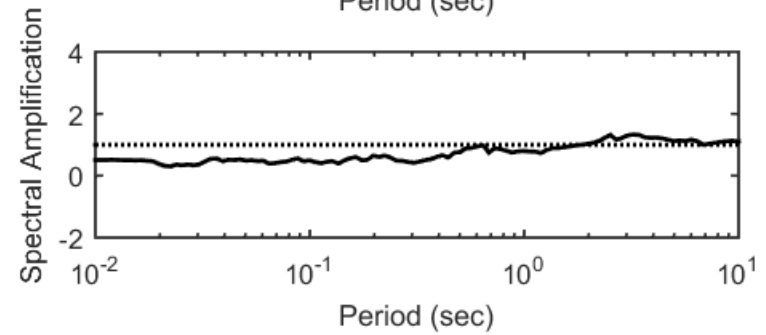
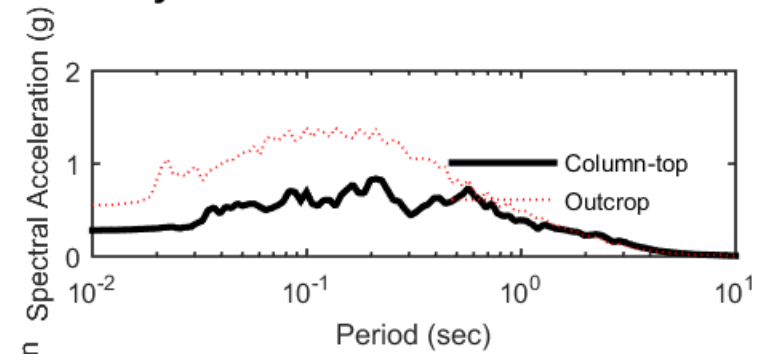
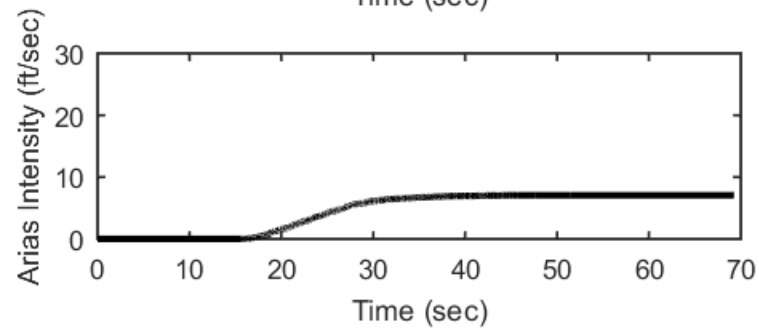
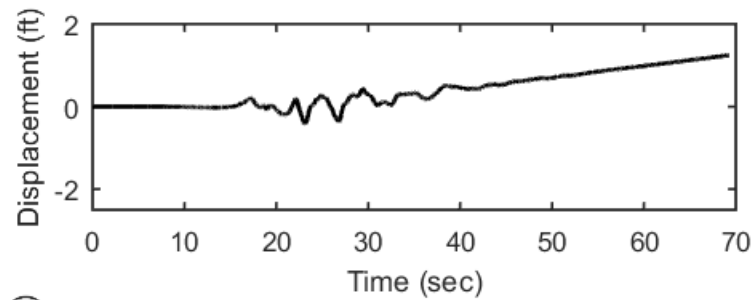
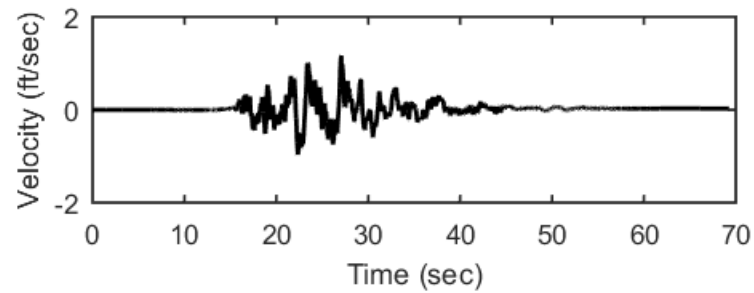
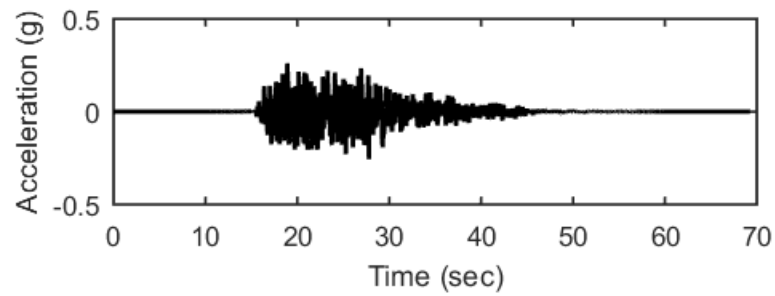


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3

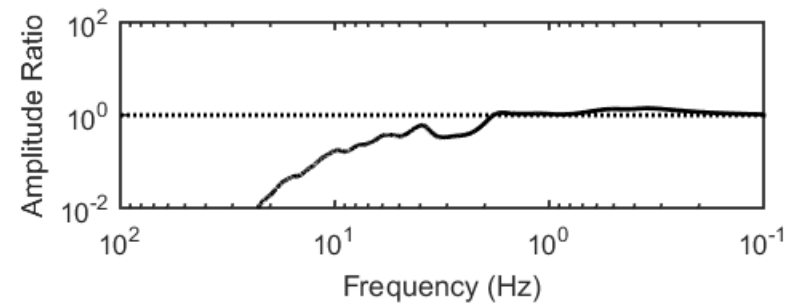
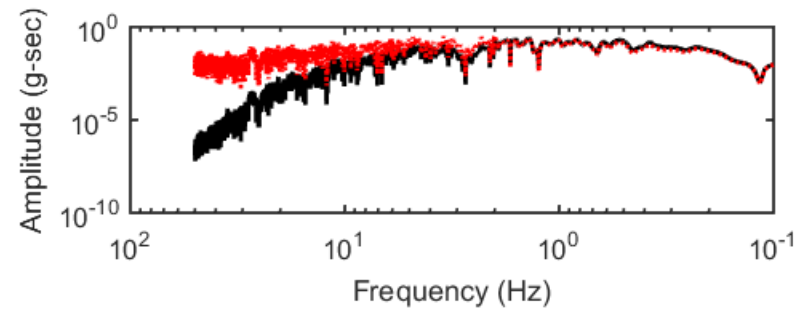
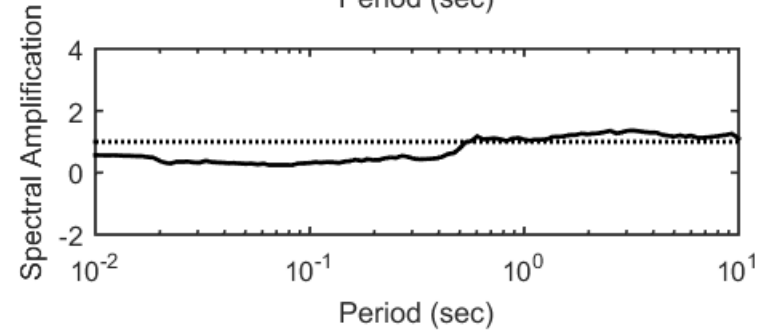
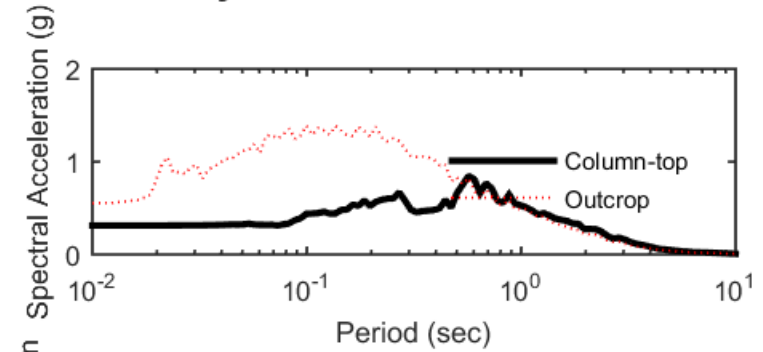
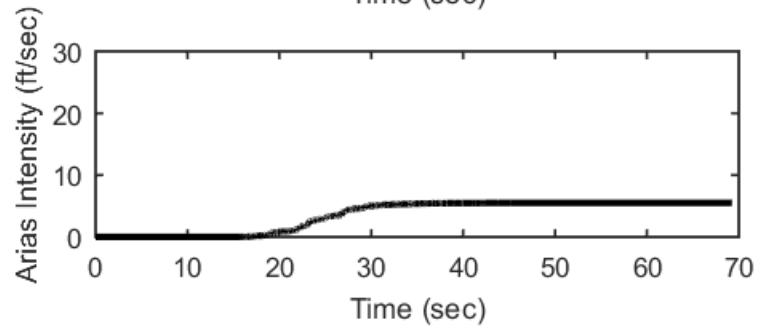
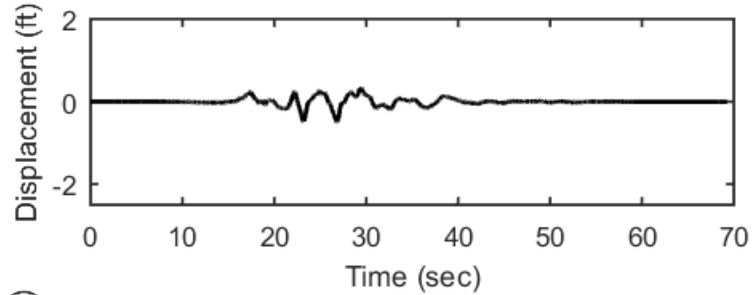
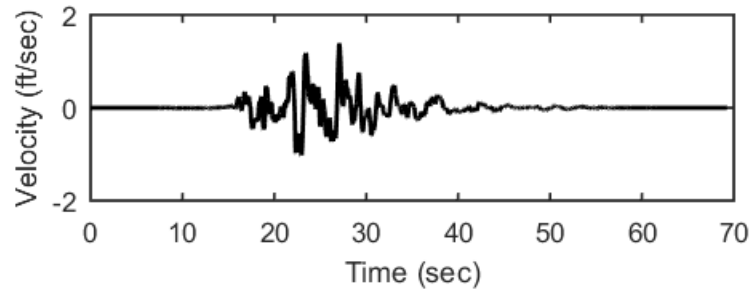
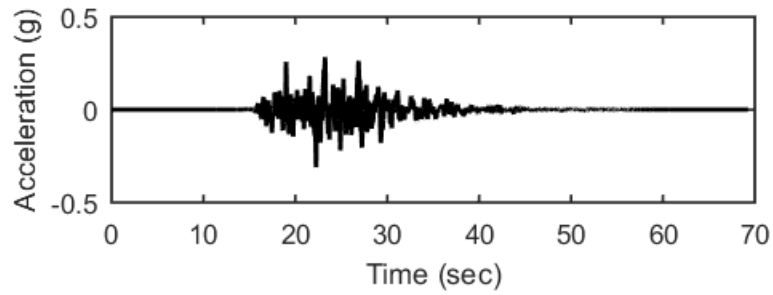




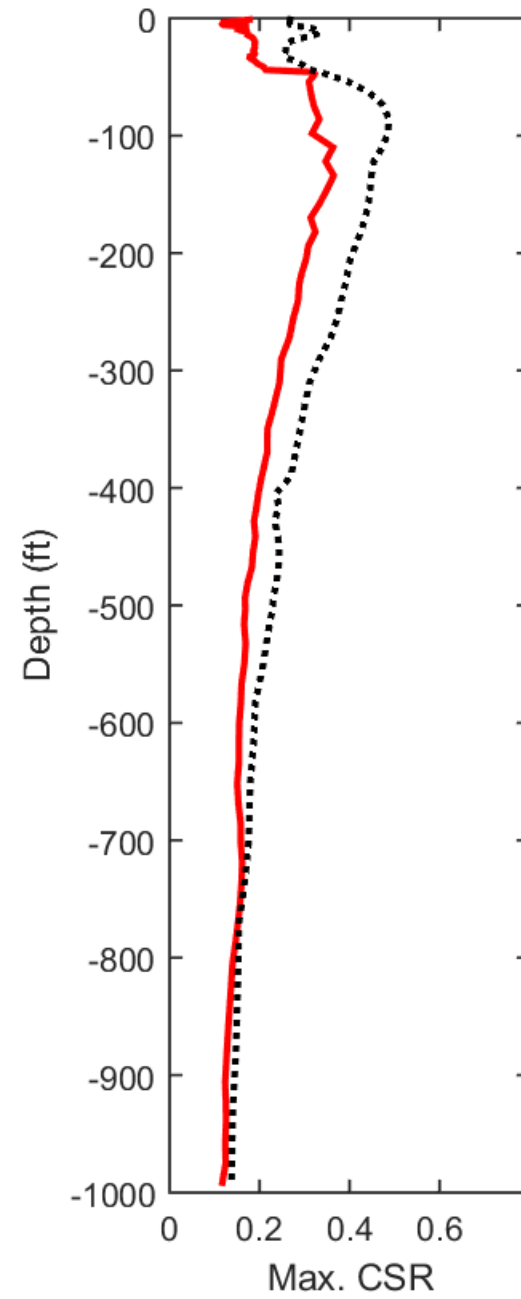
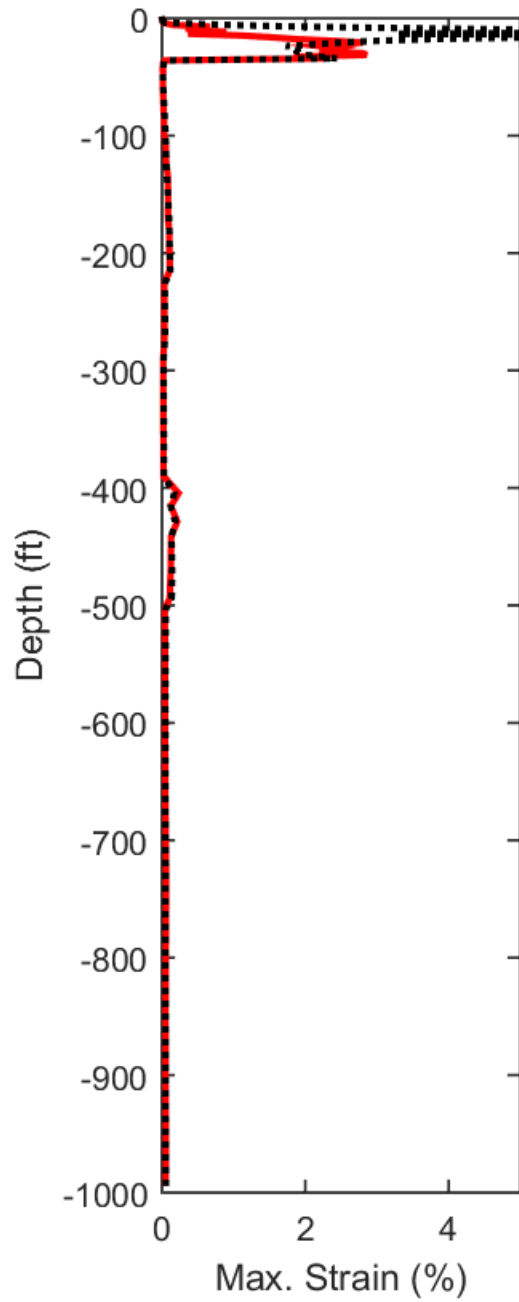
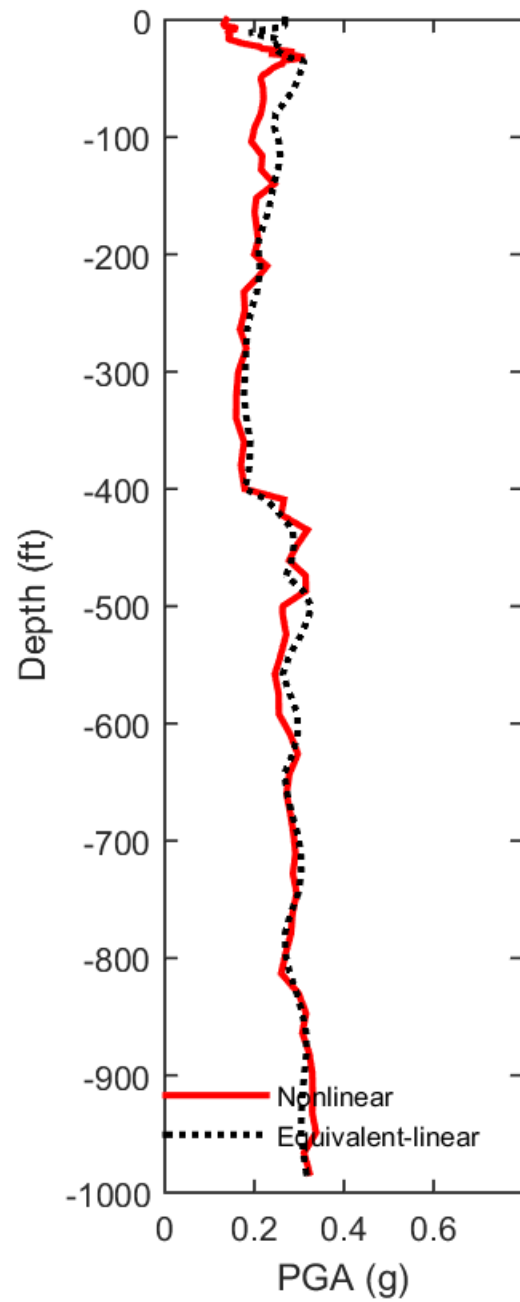
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



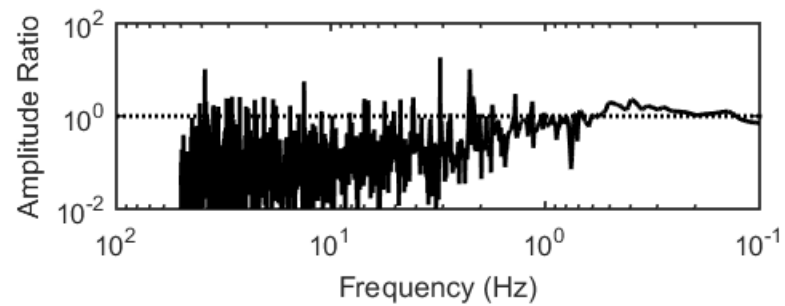
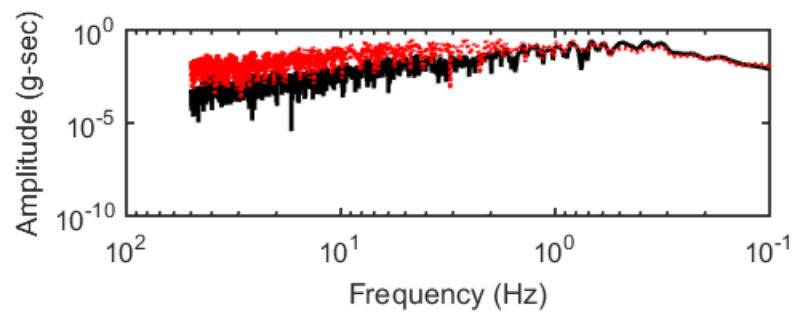
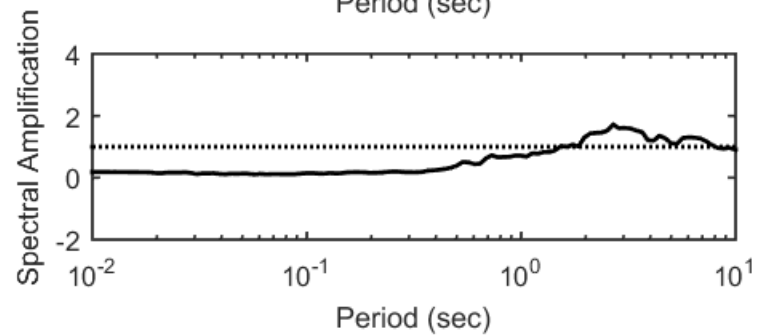
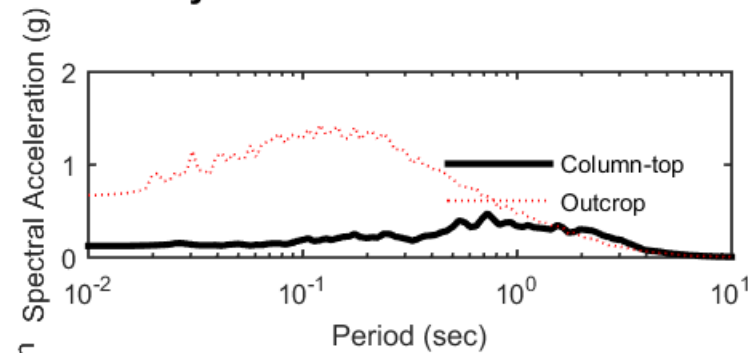
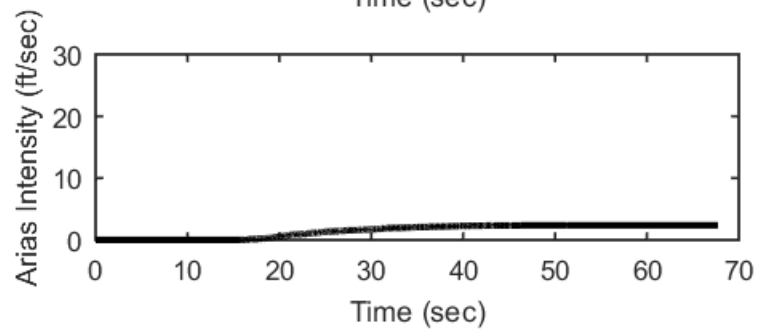
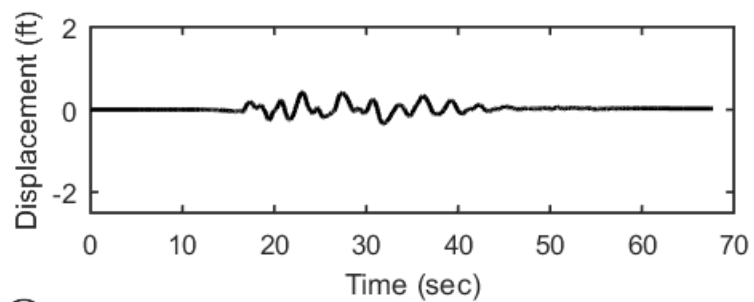
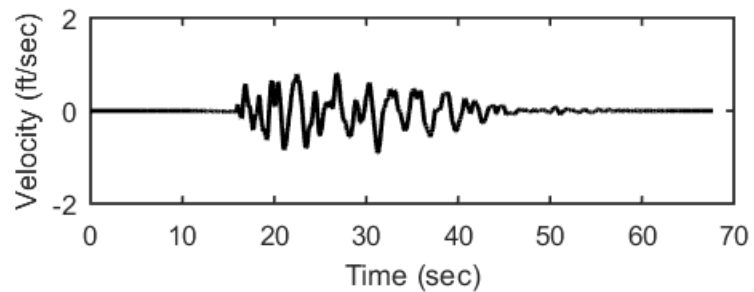
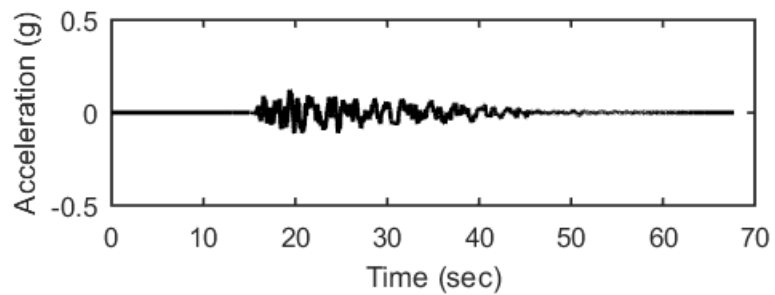
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



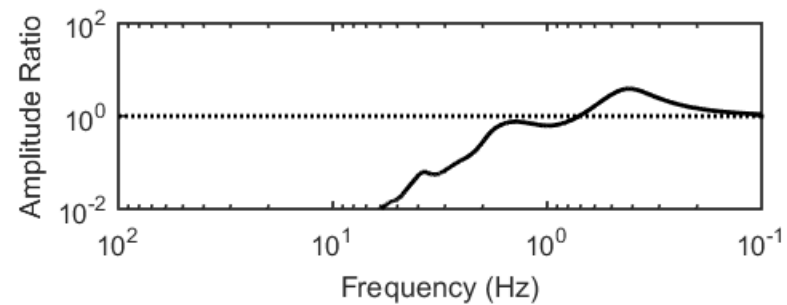
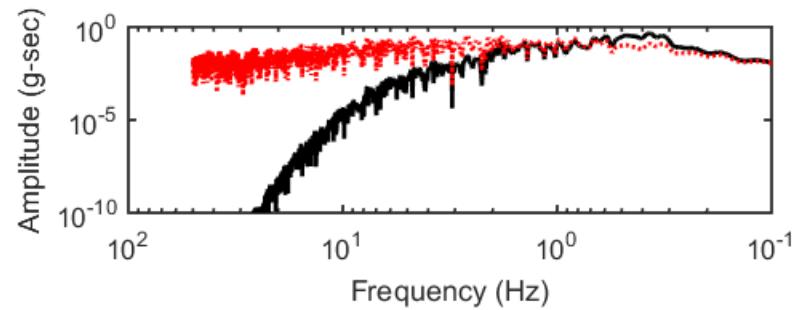
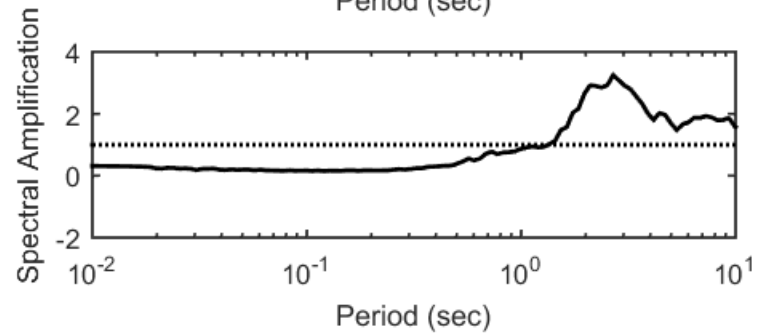
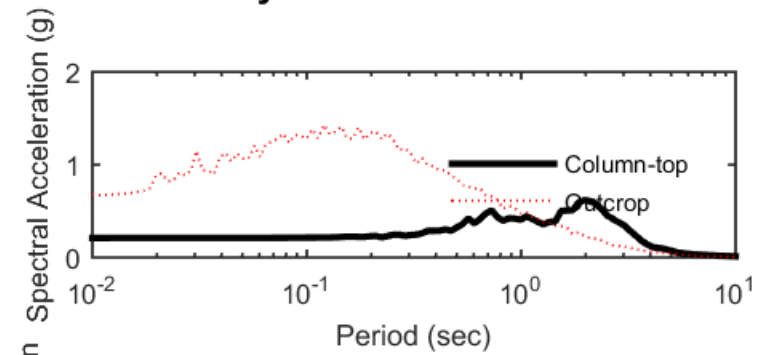
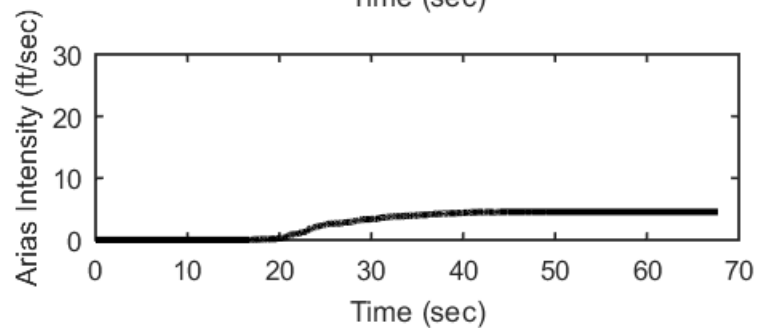
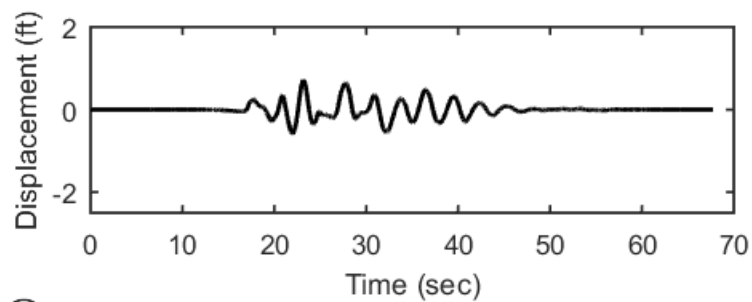
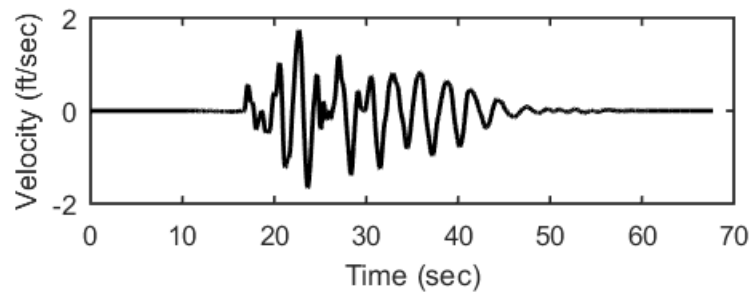
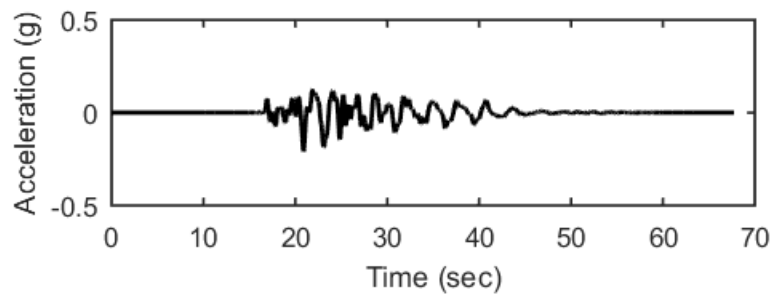
### Profile outputs for Motion: SEE3



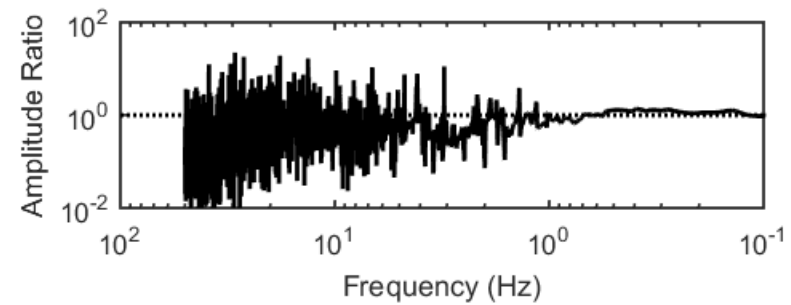
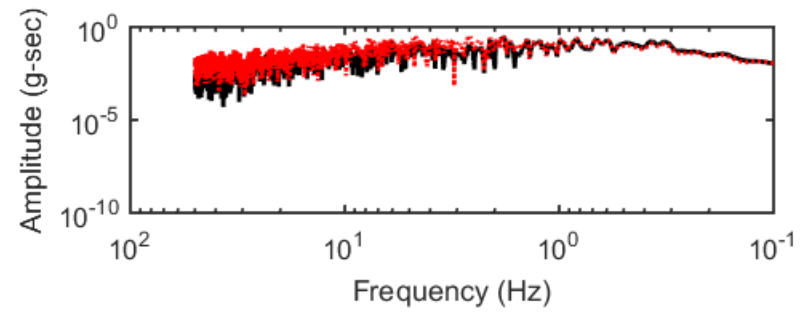
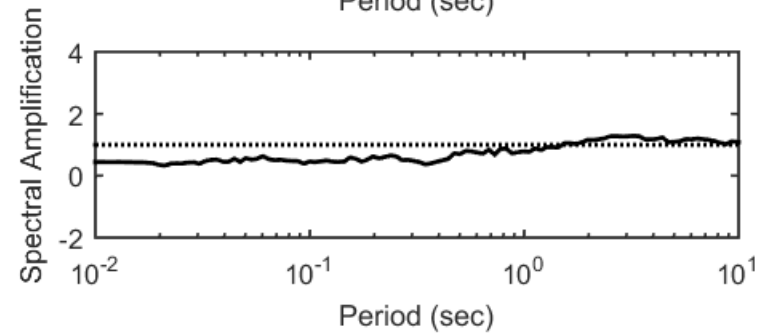
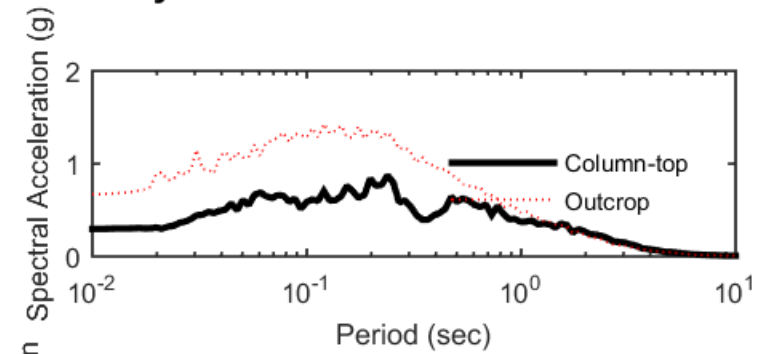
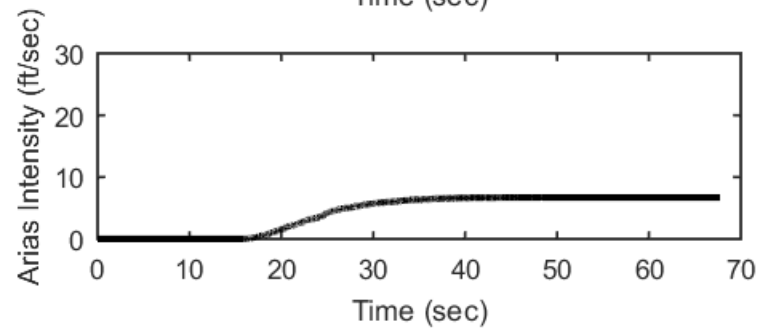
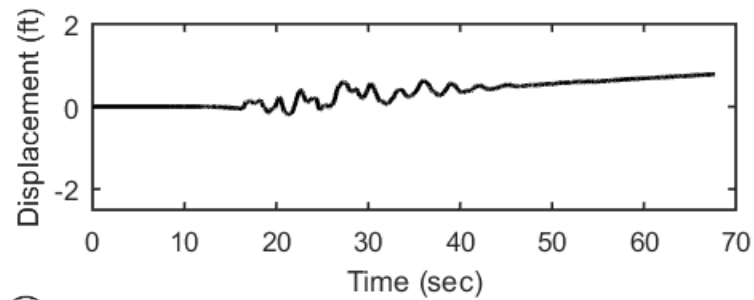
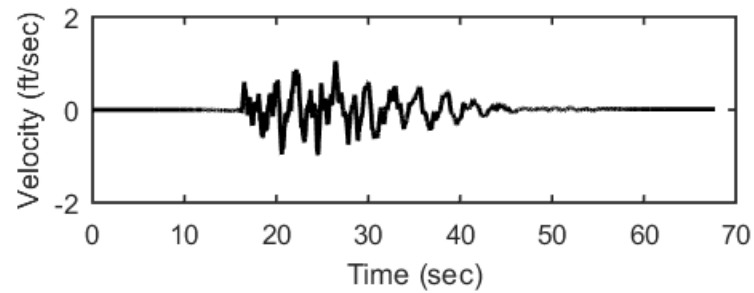
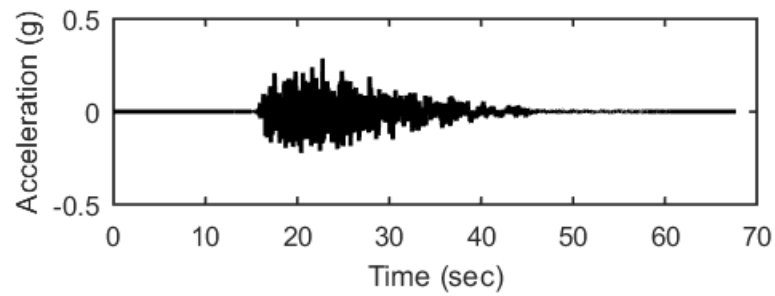
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



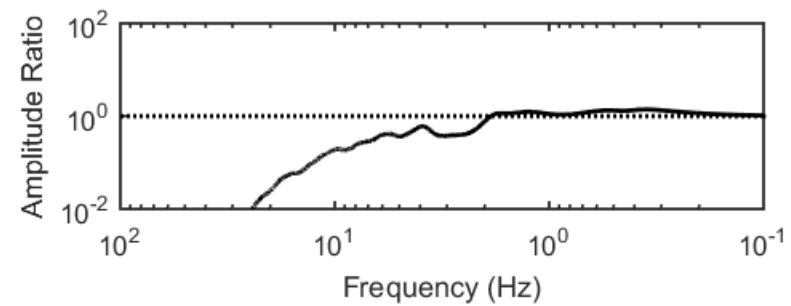
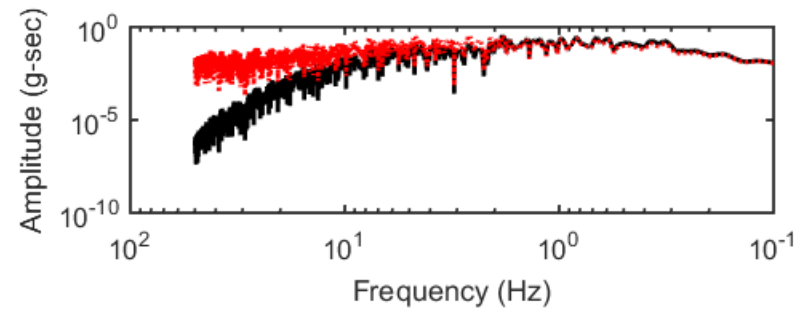
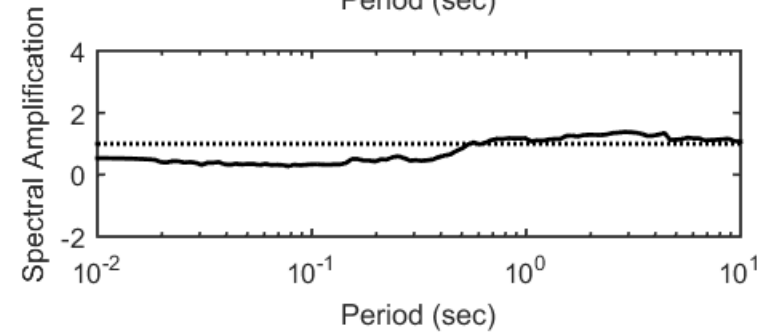
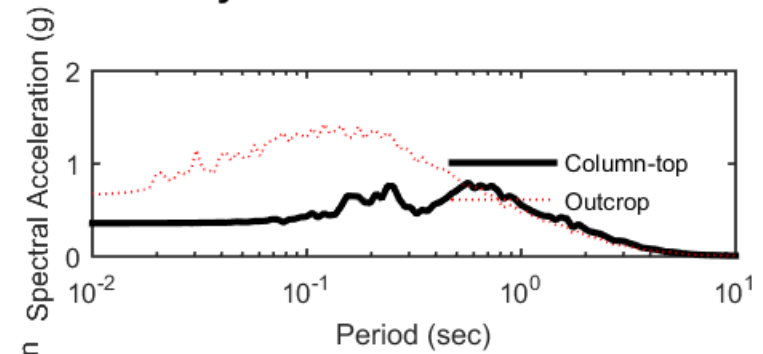
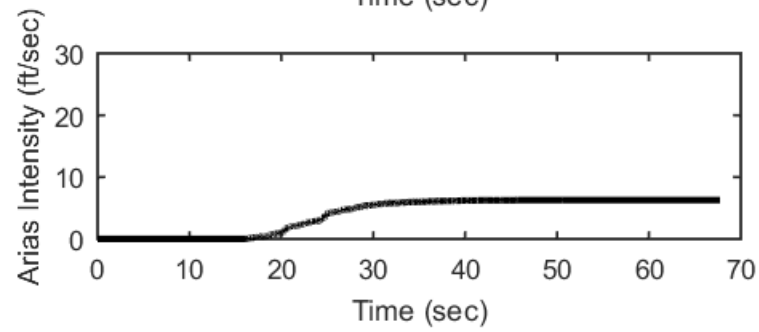
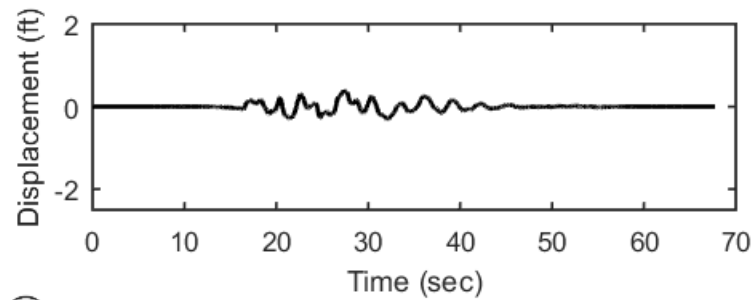
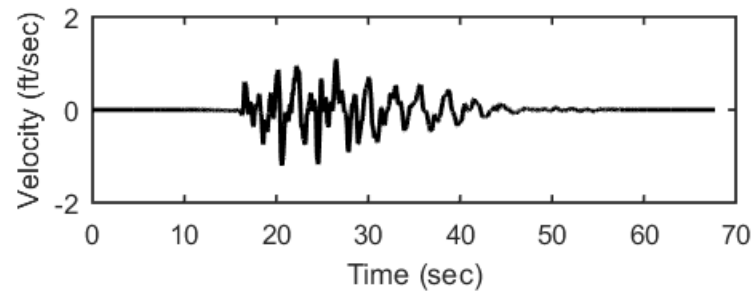
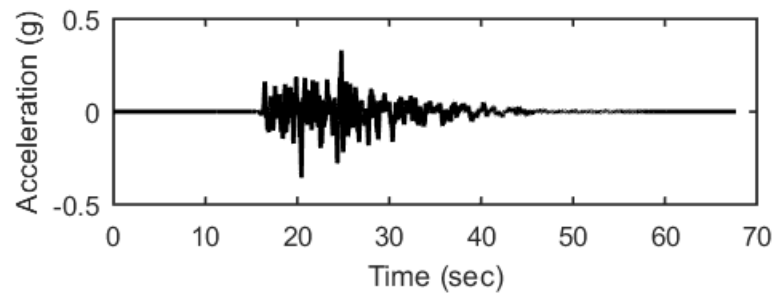
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



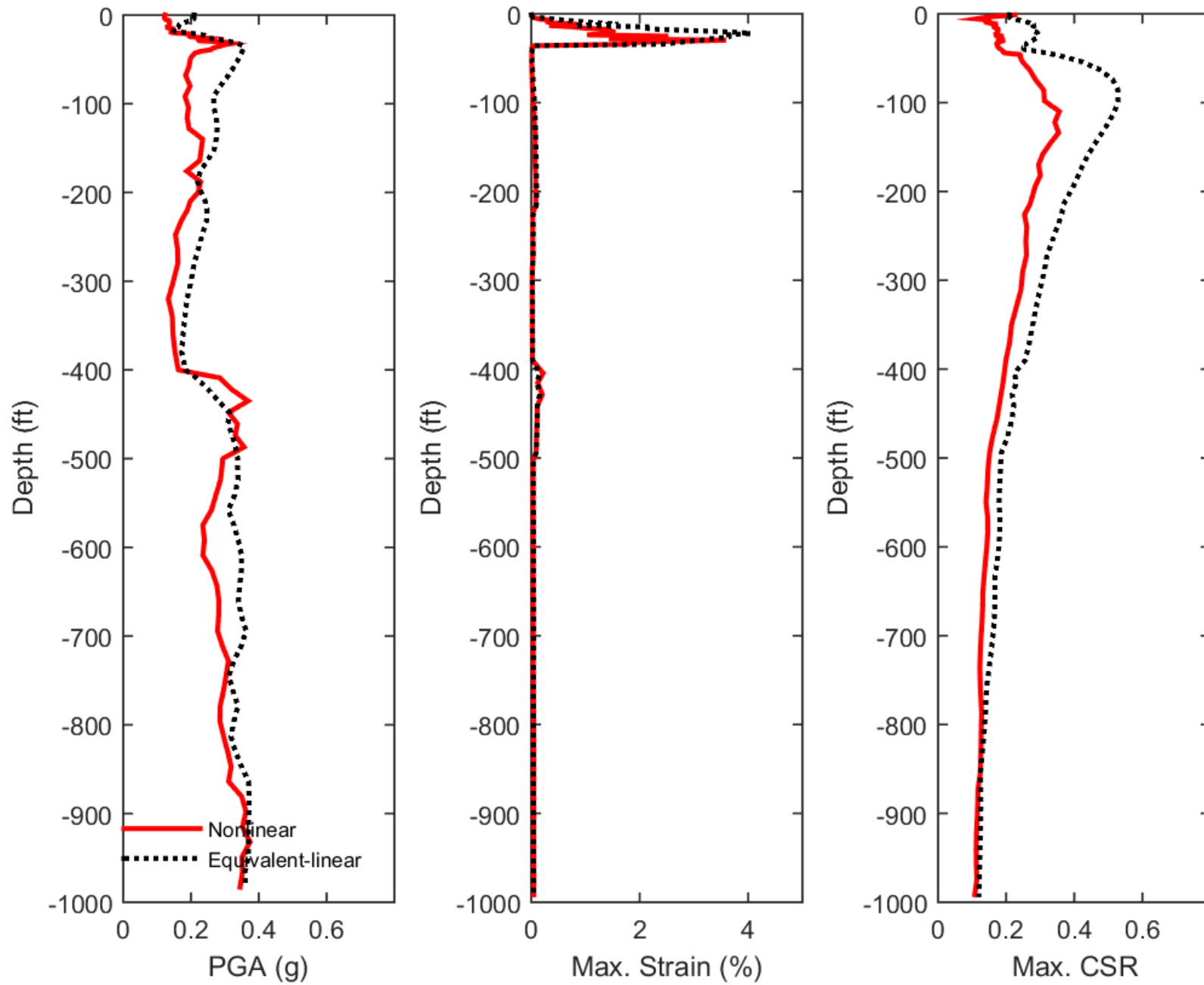
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4

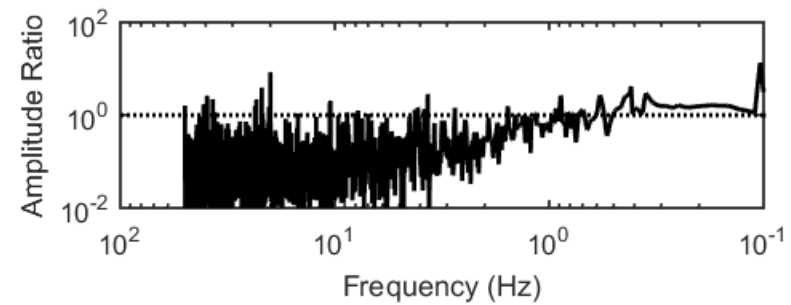
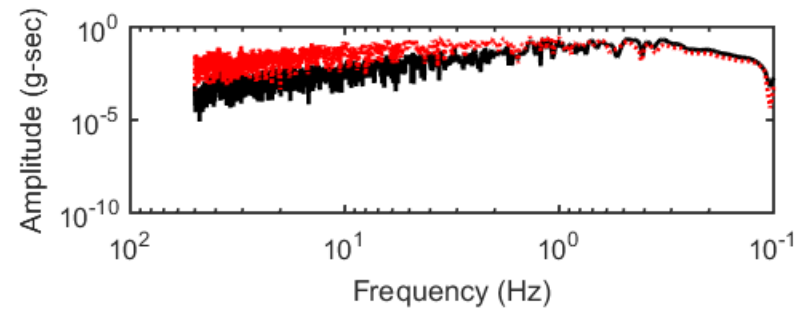
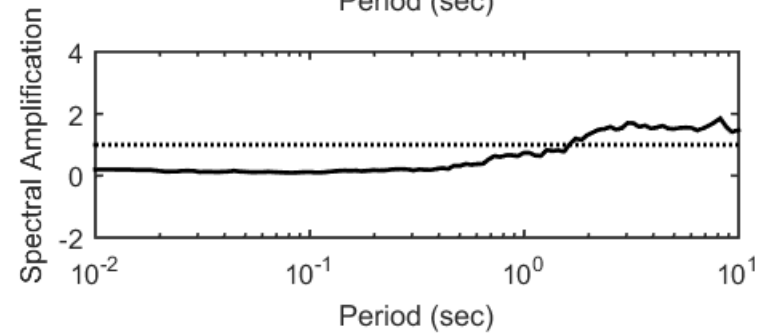
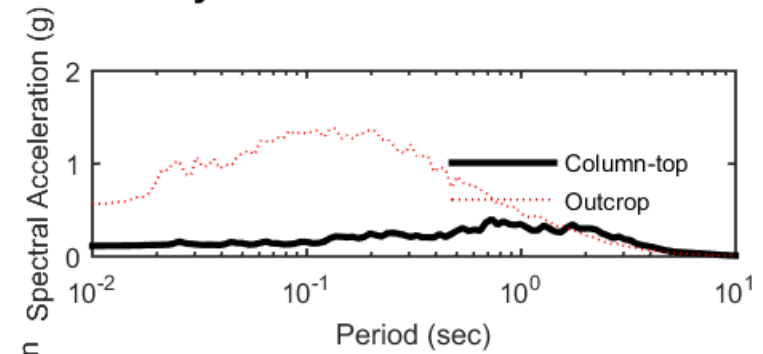
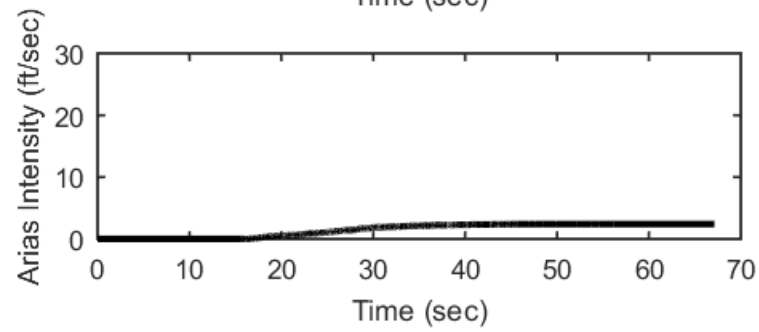
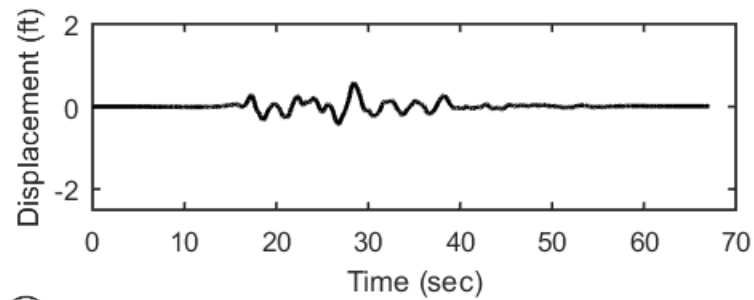
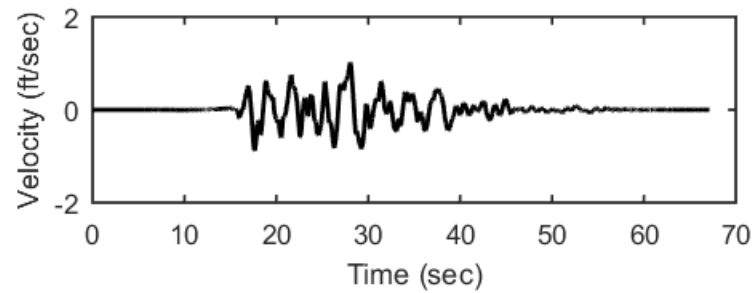
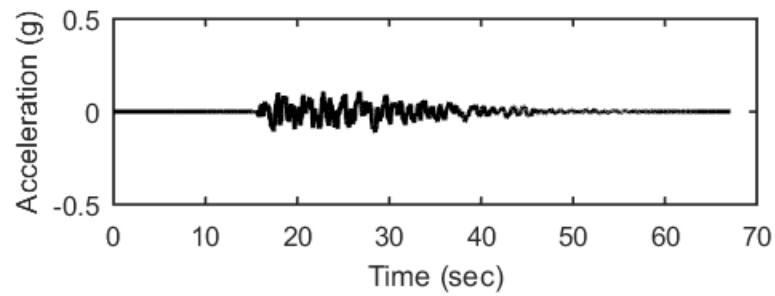


### Profile outputs for Motion: SEE4

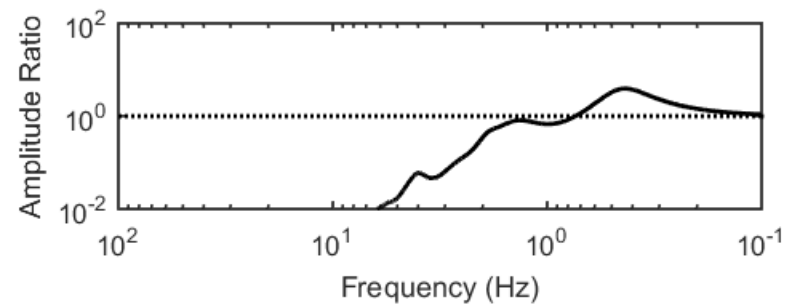
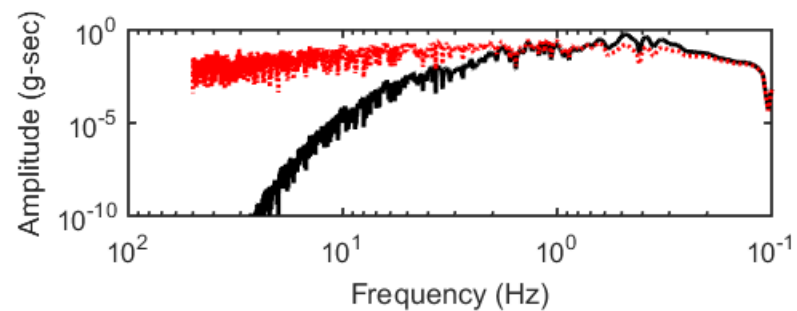
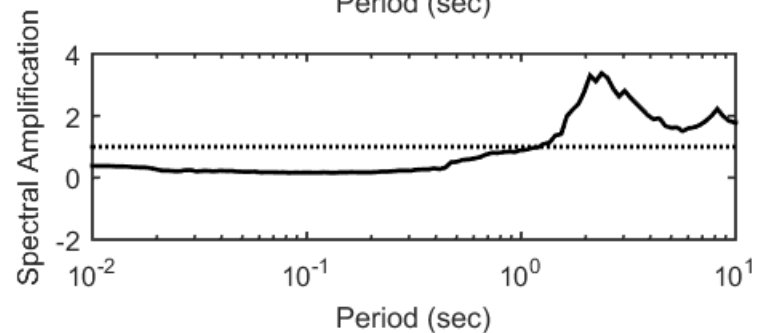
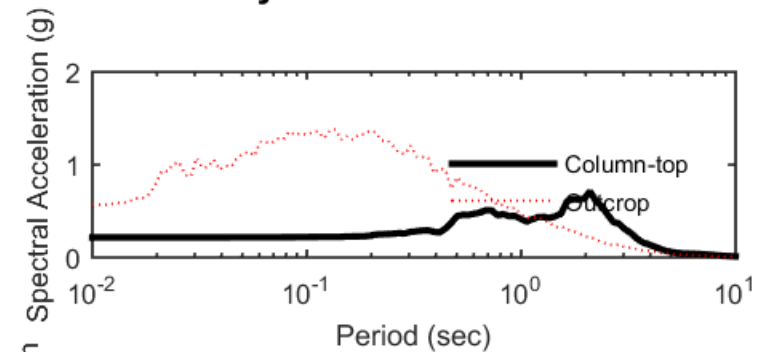
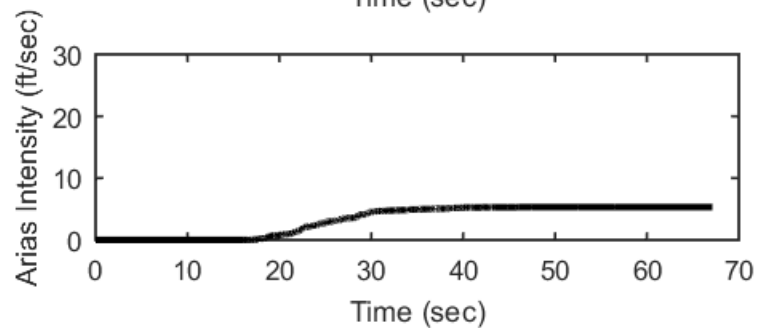
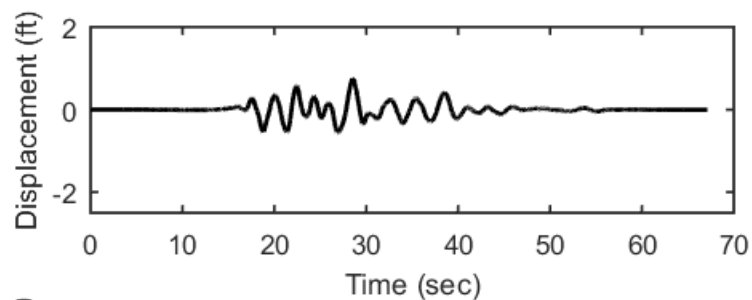
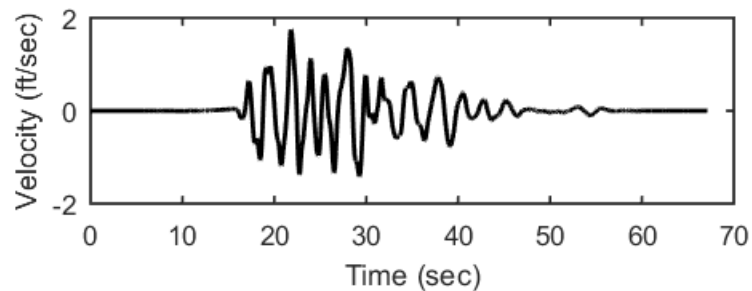
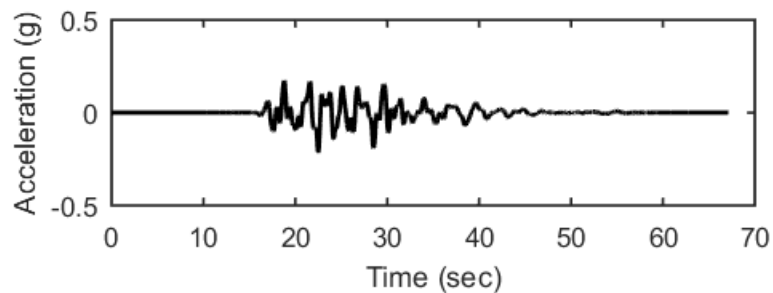




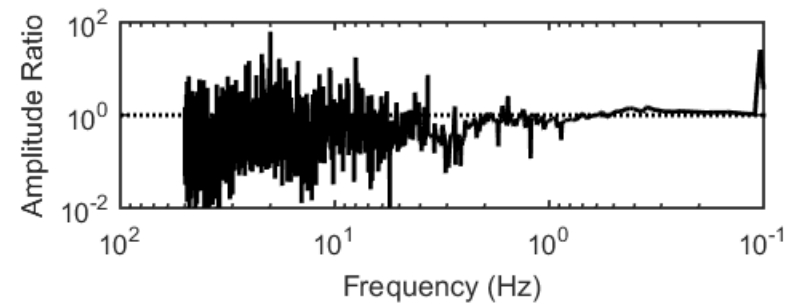
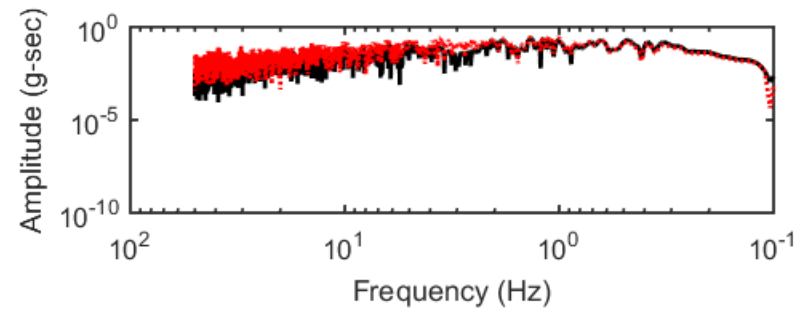
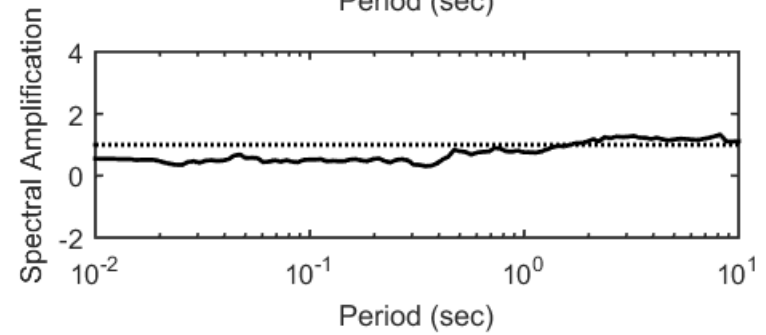
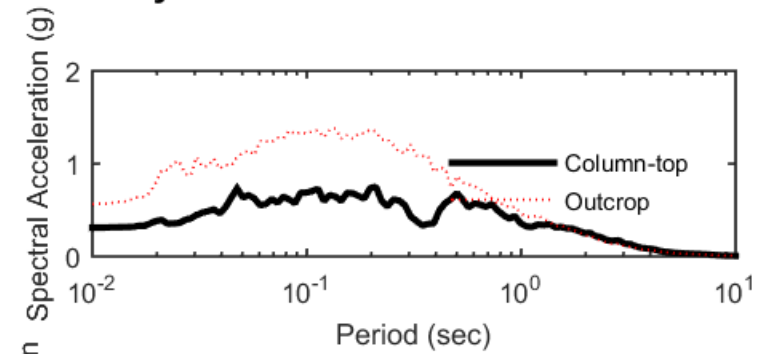
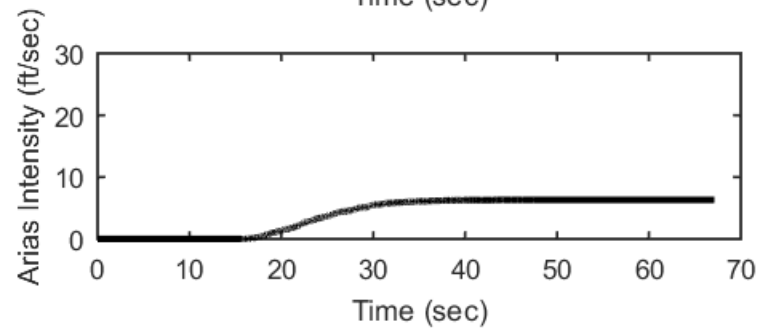
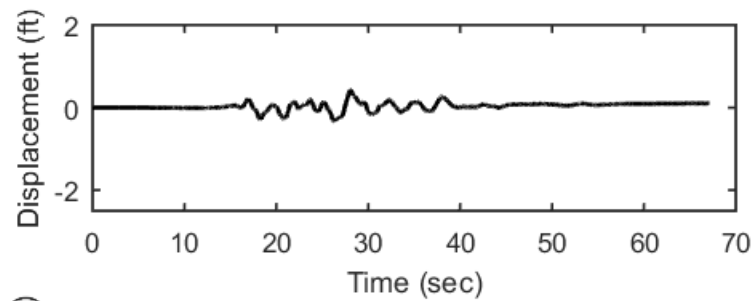
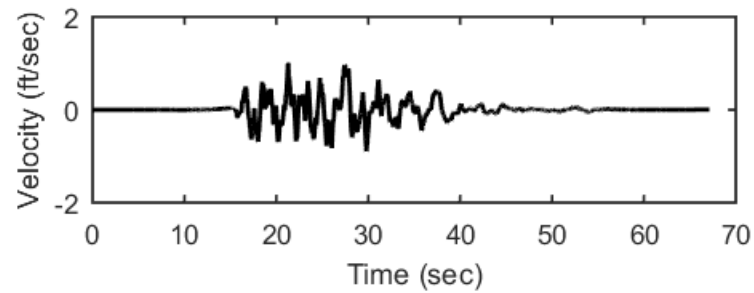
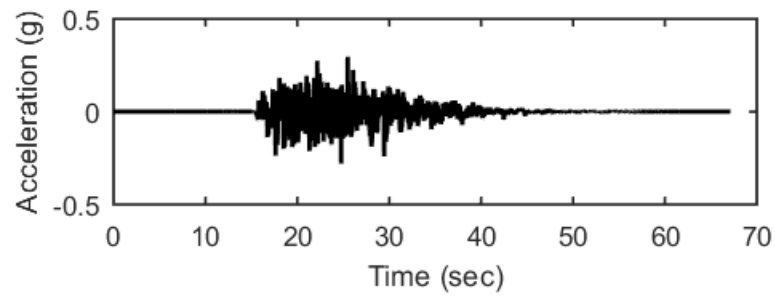
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



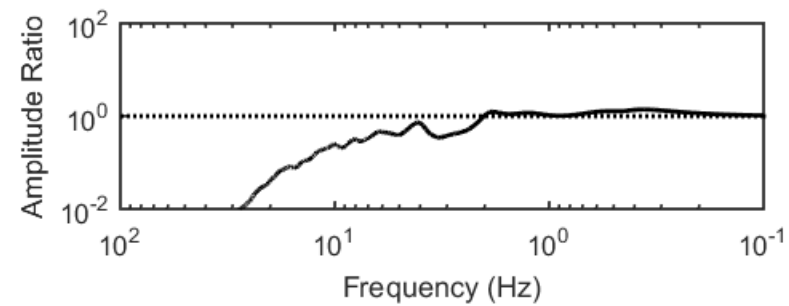
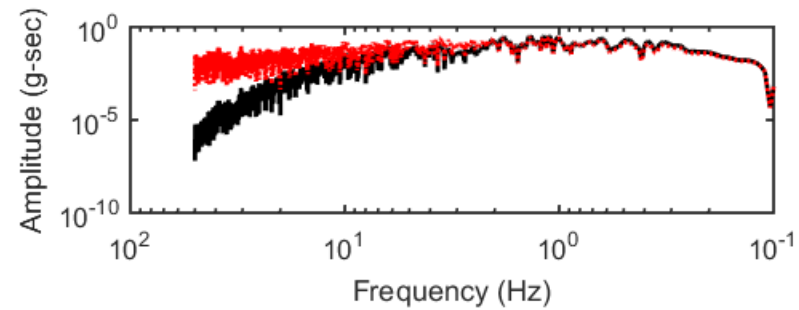
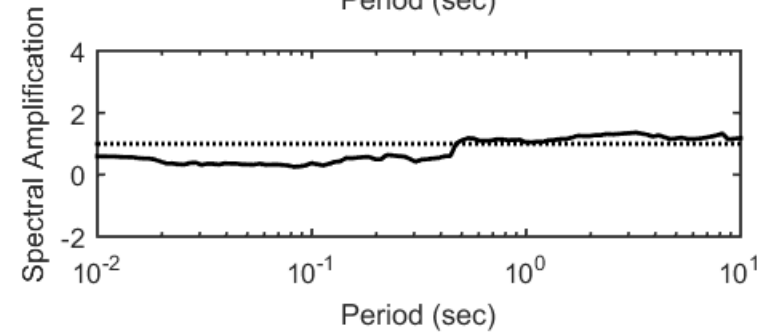
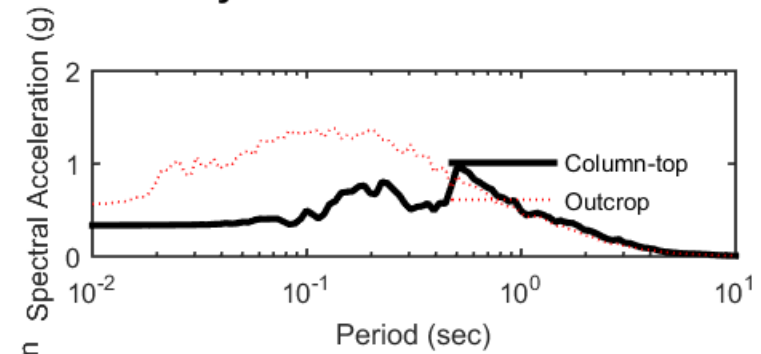
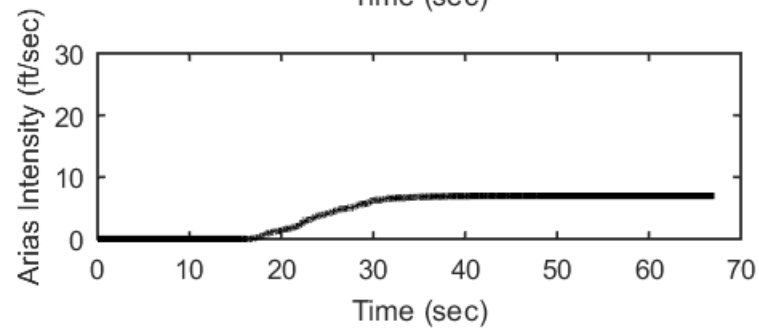
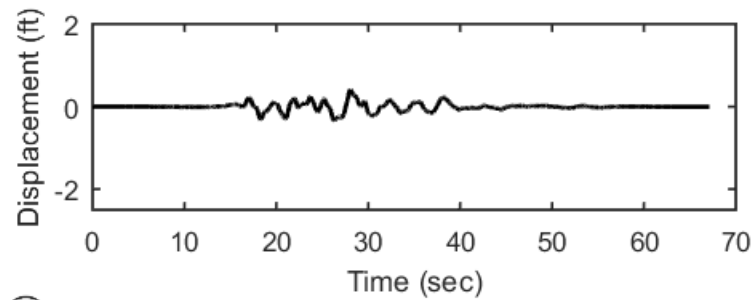
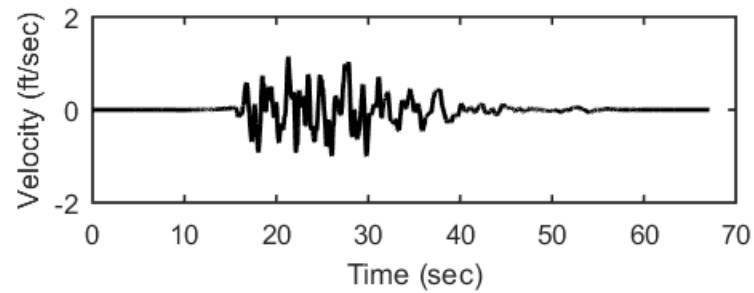
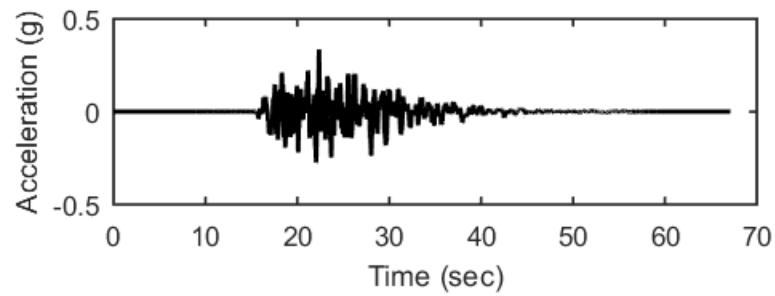
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



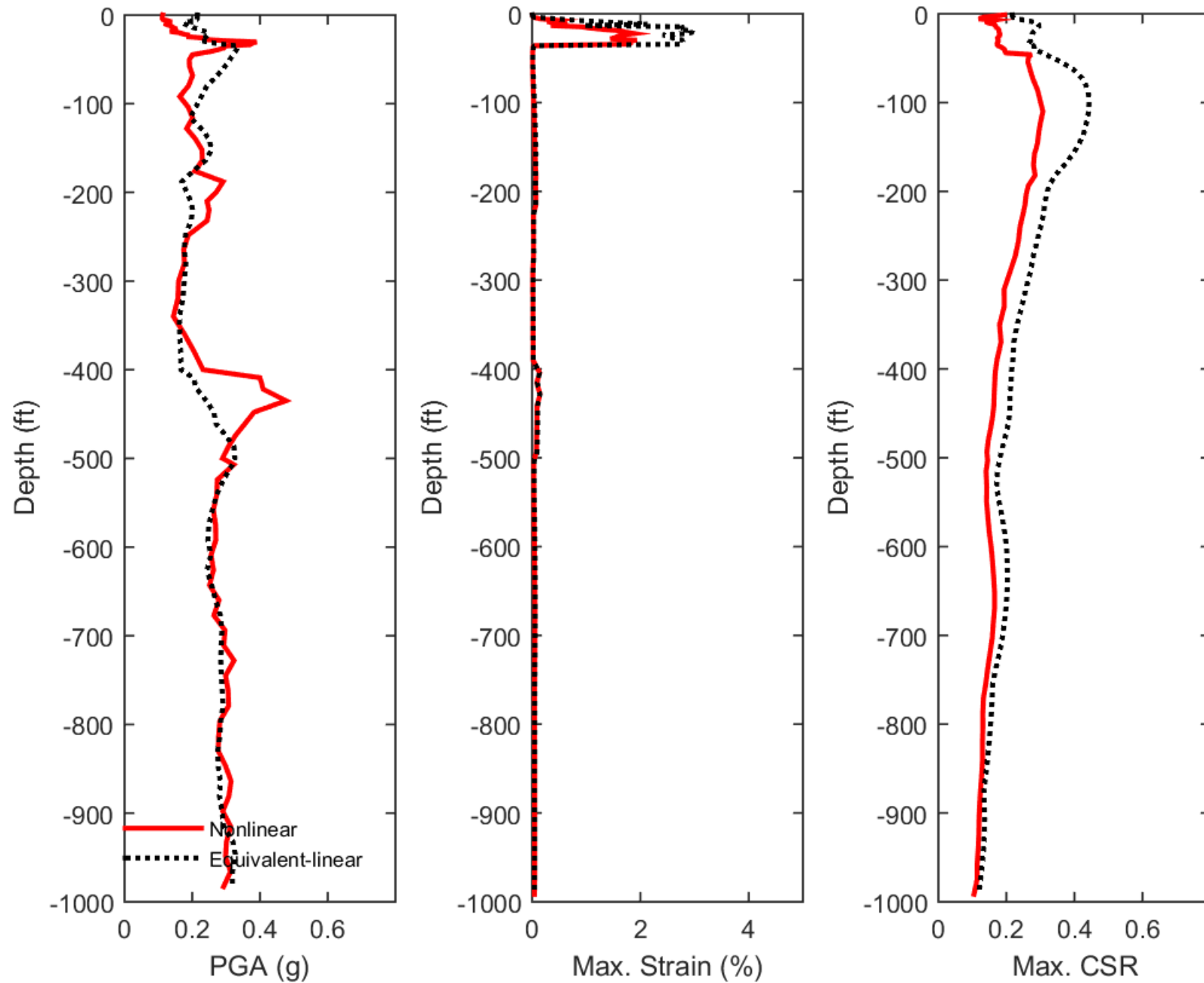
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



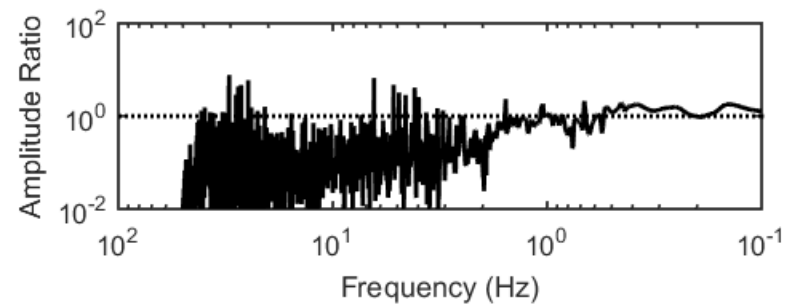
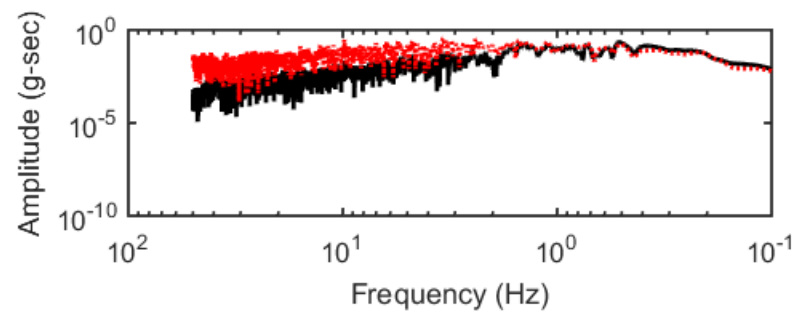
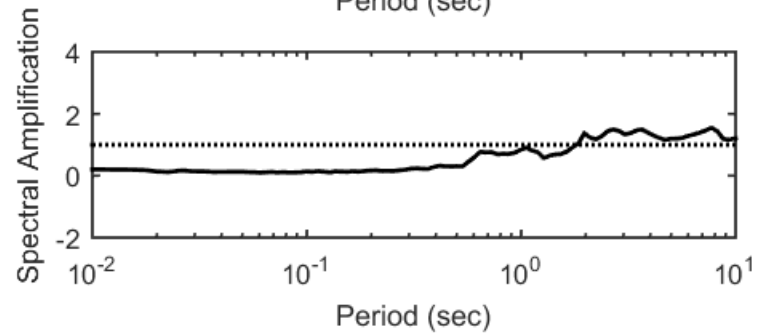
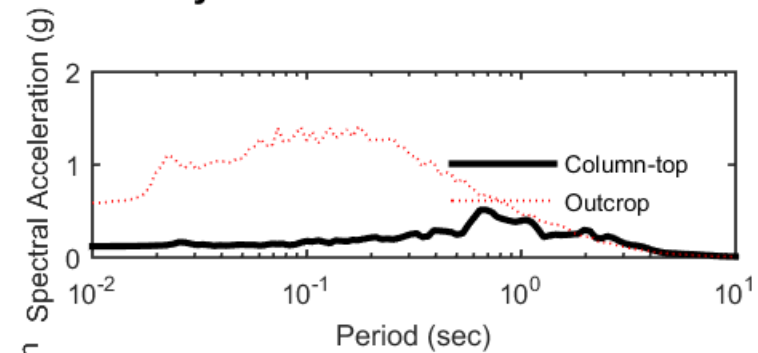
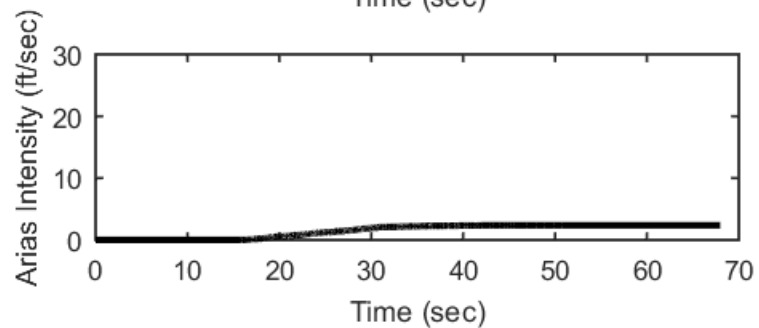
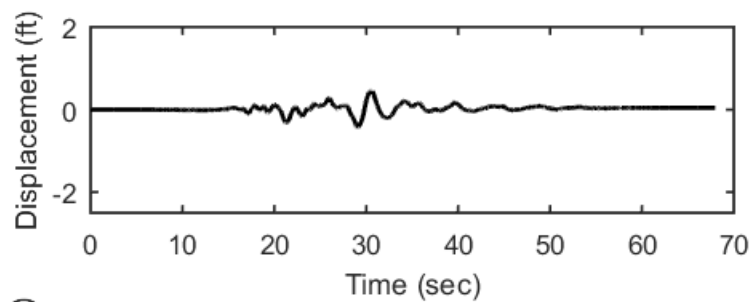
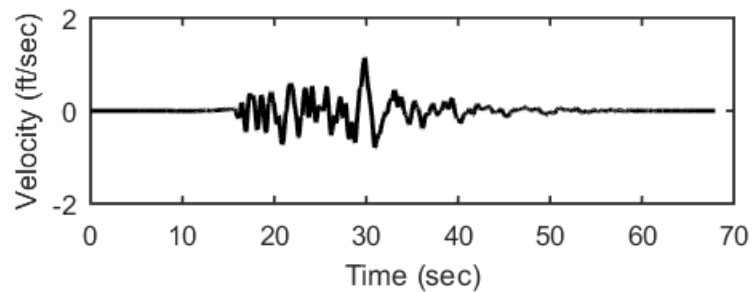
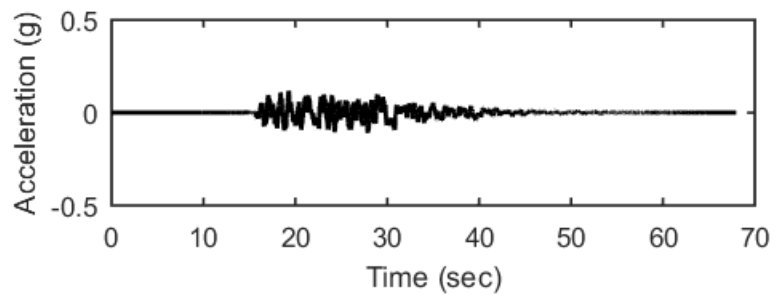
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



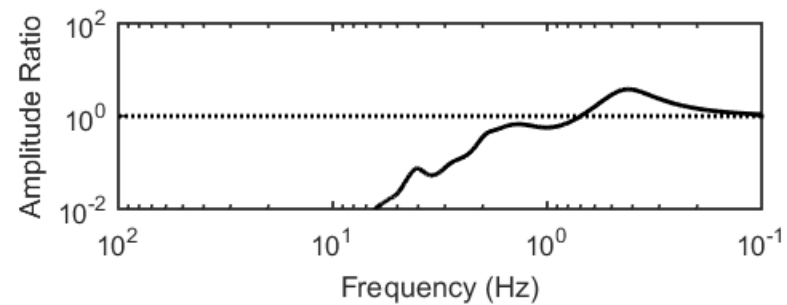
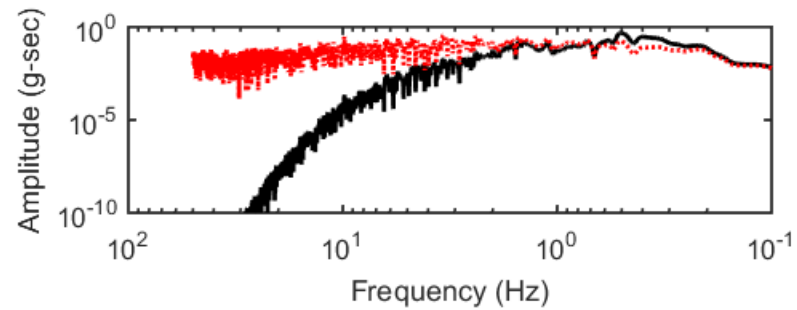
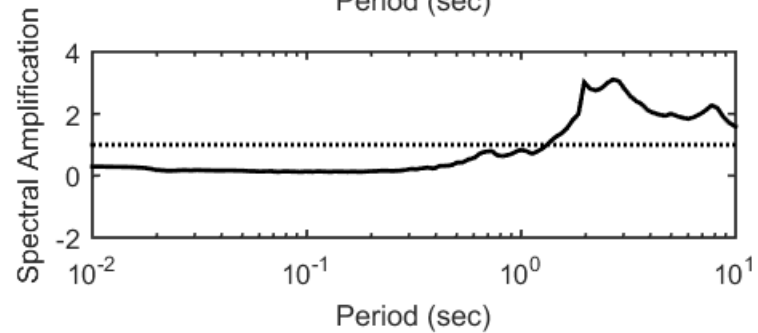
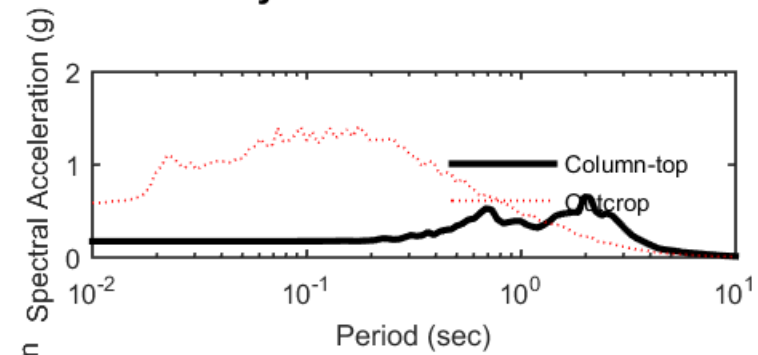
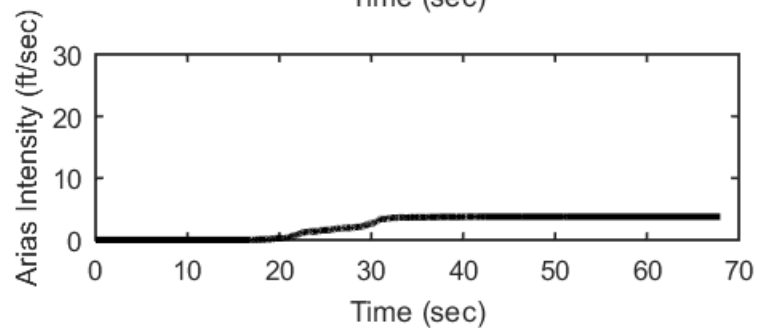
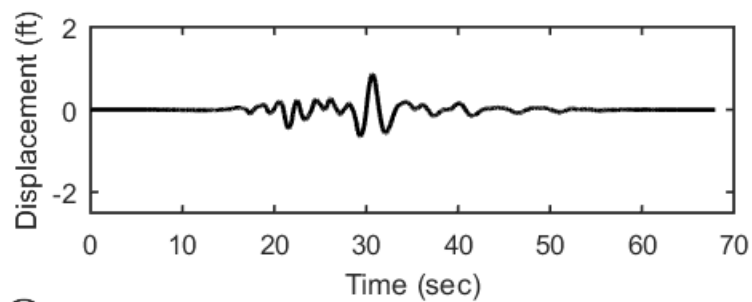
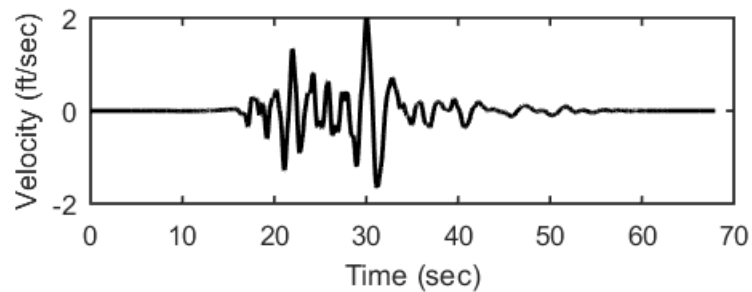
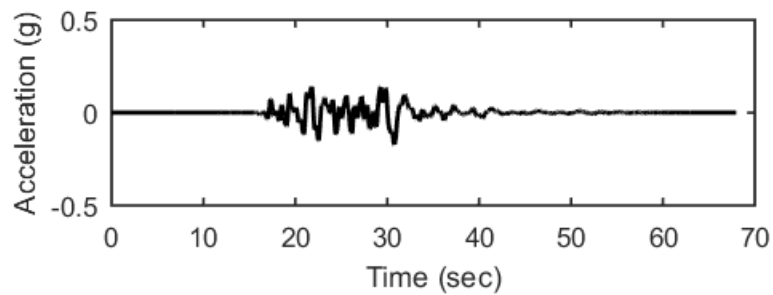
### Profile outputs for Motion: SEE5



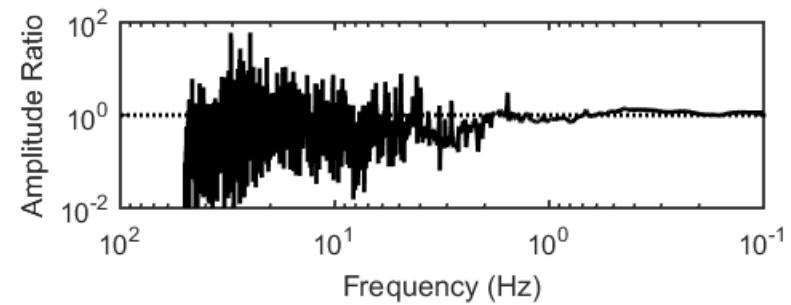
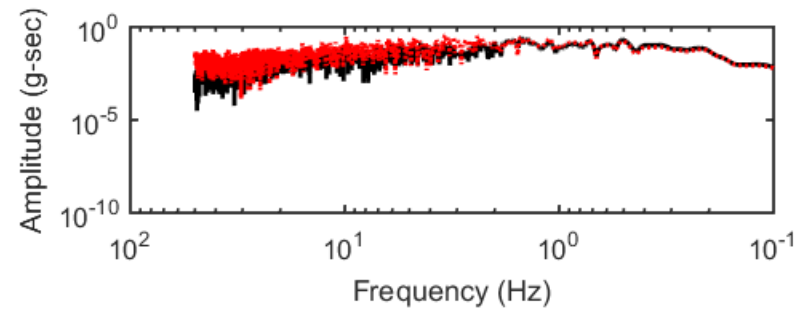
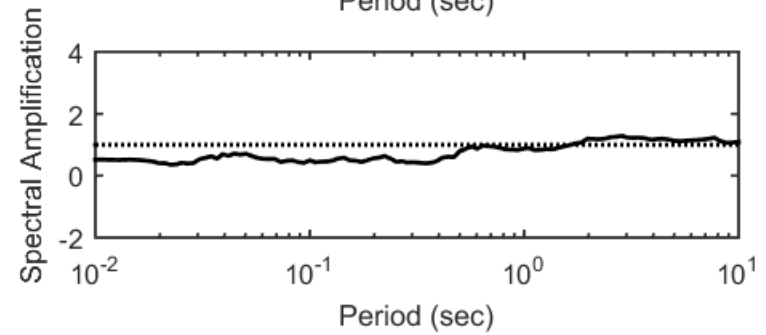
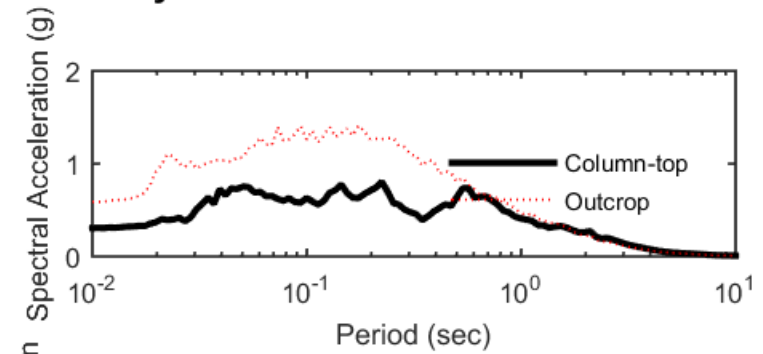
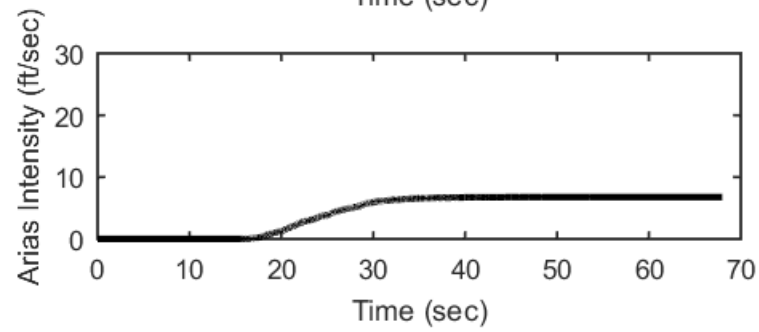
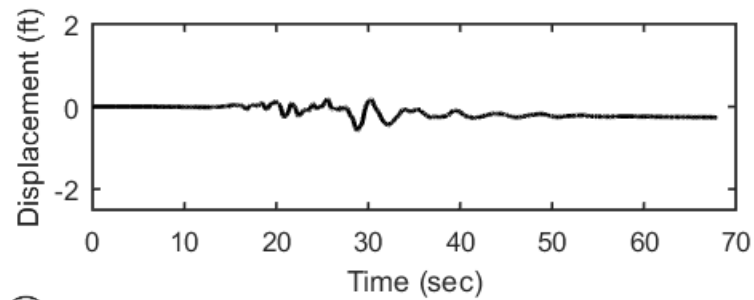
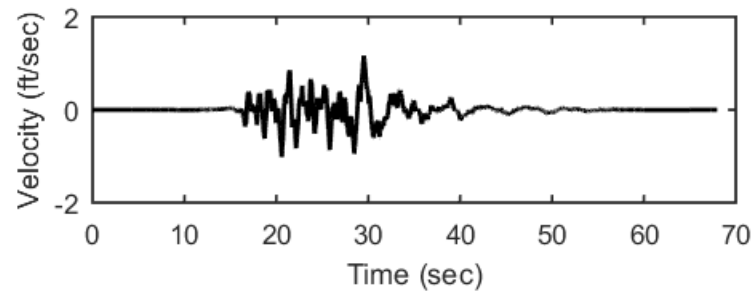
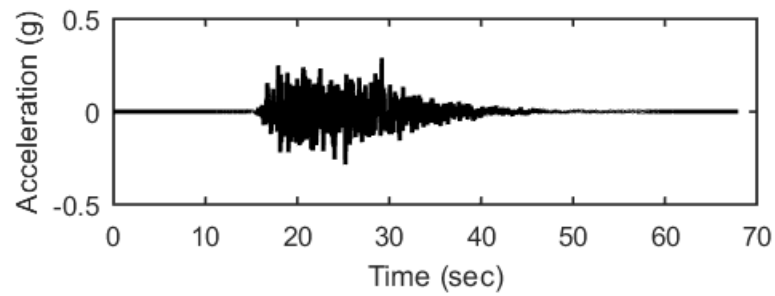
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6

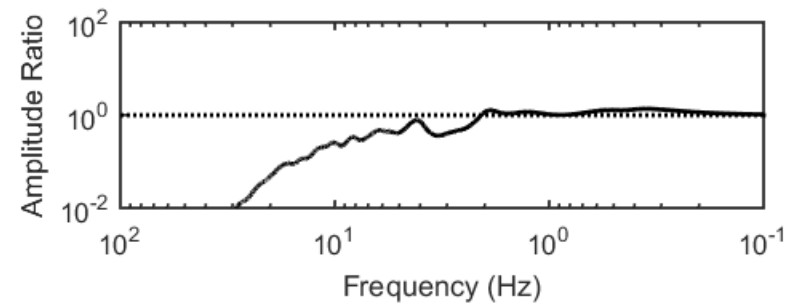
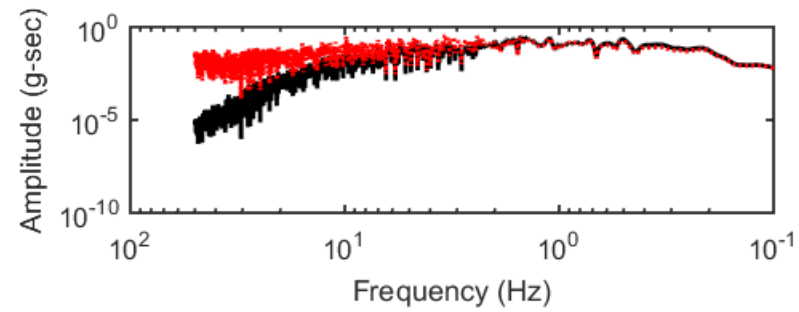
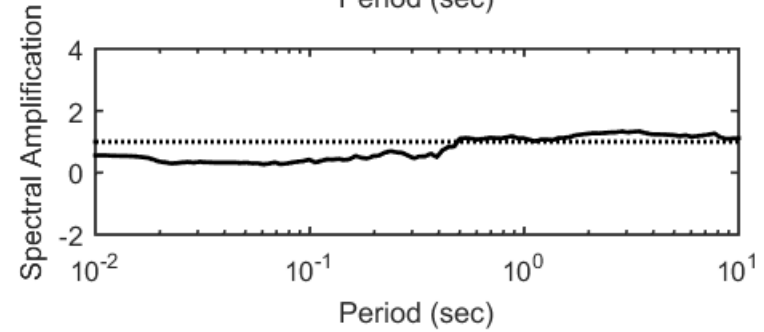
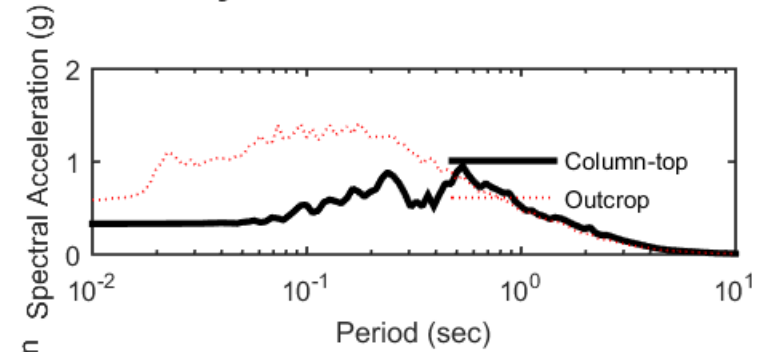
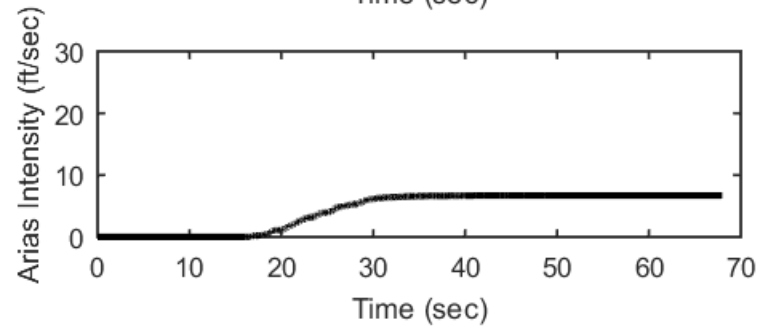
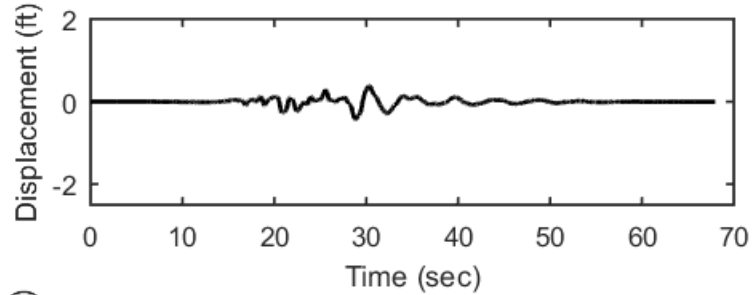
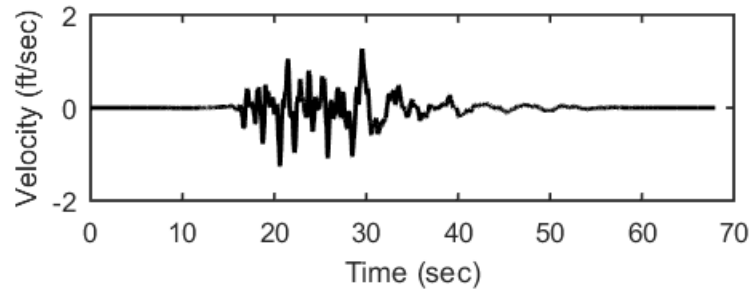
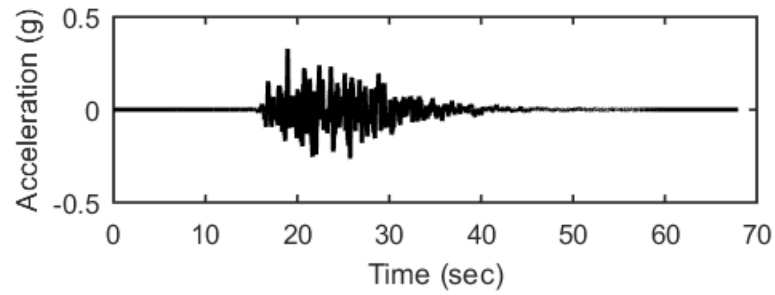


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6

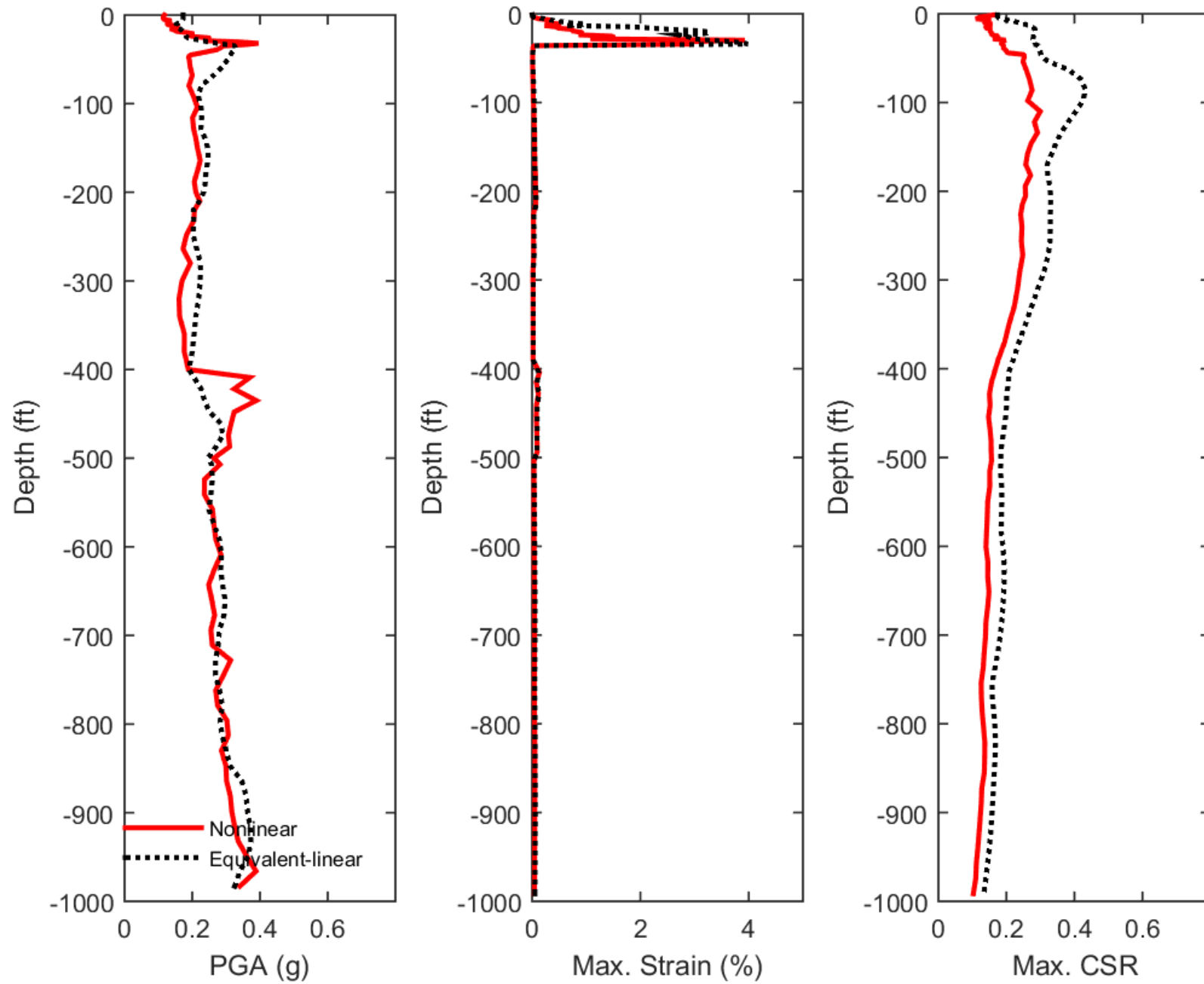




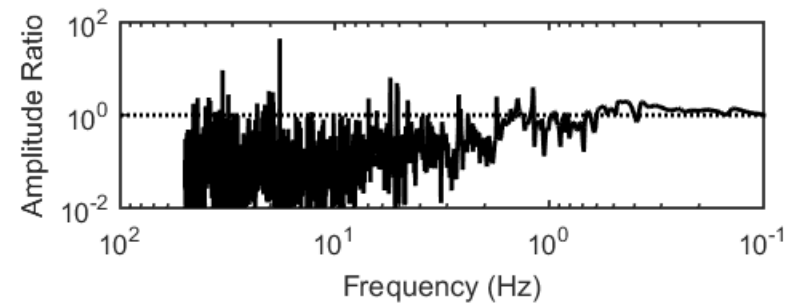
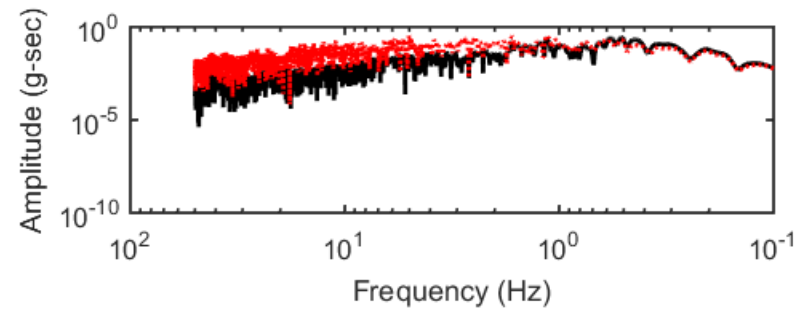
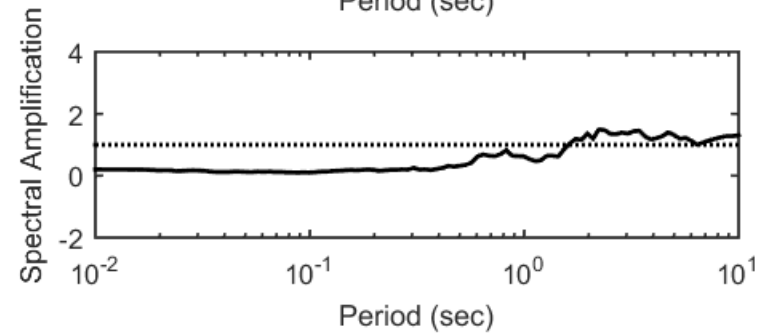
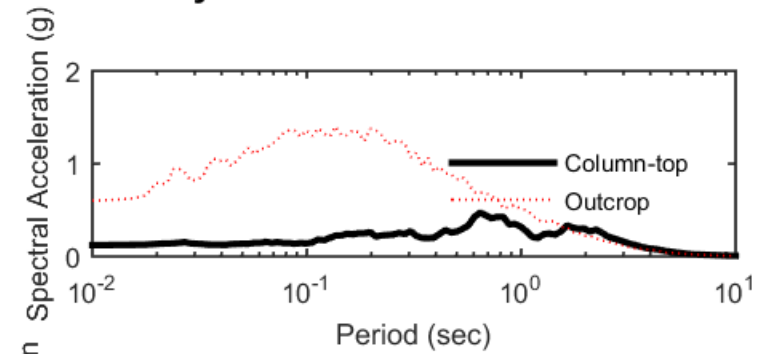
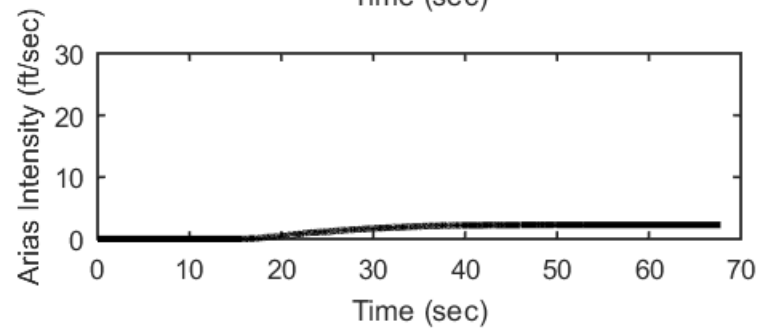
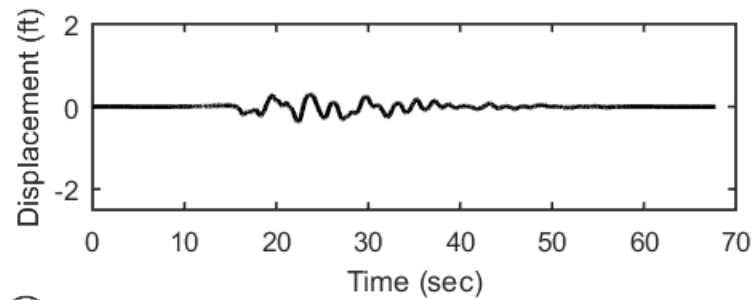
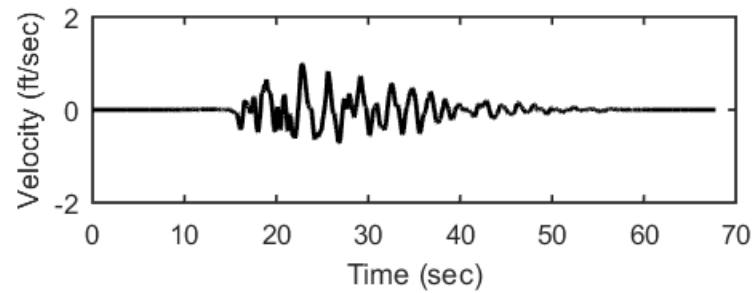
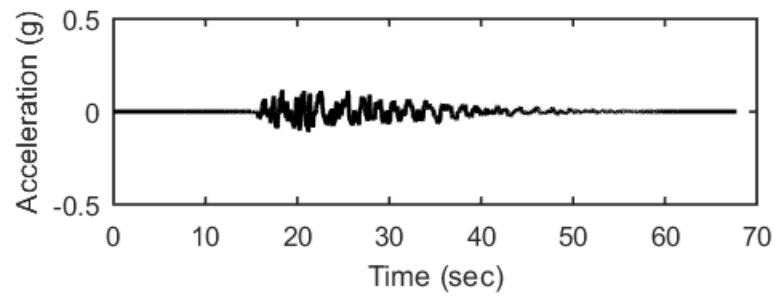
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



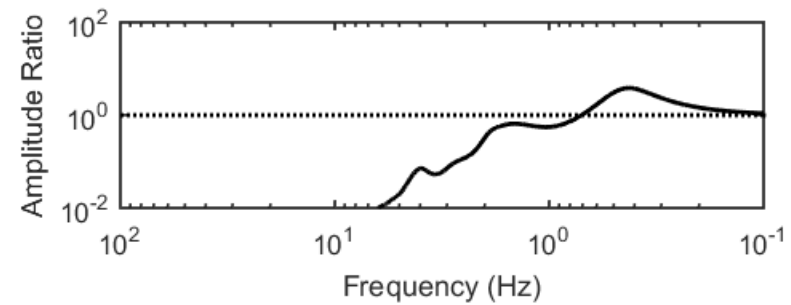
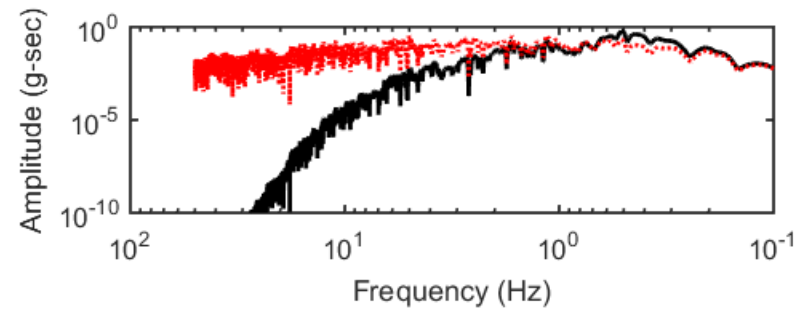
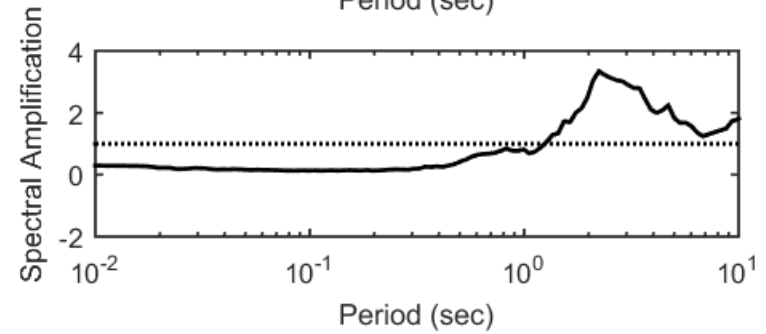
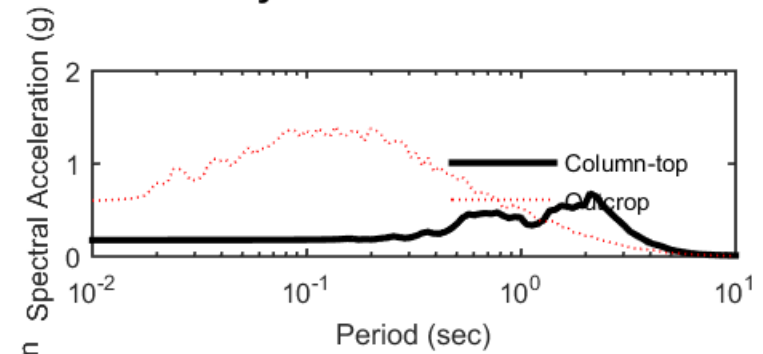
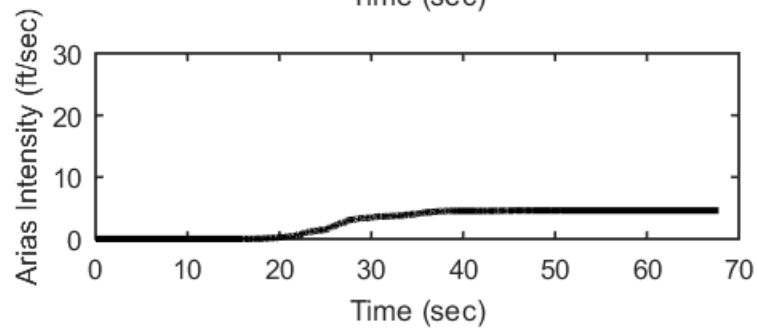
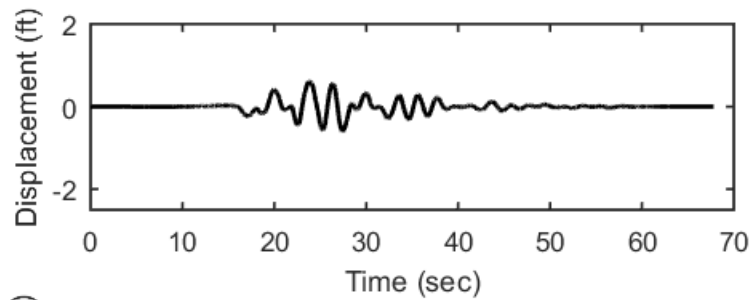
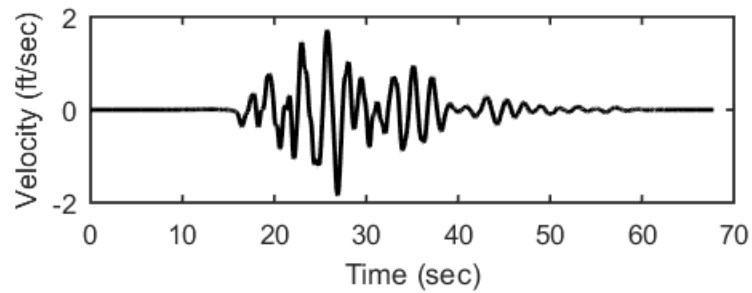
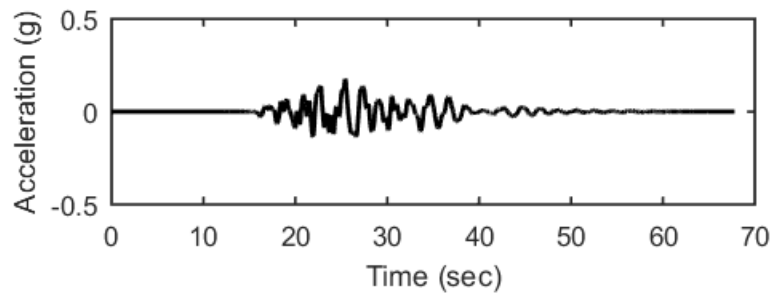
### Profile outputs for Motion: SEE6



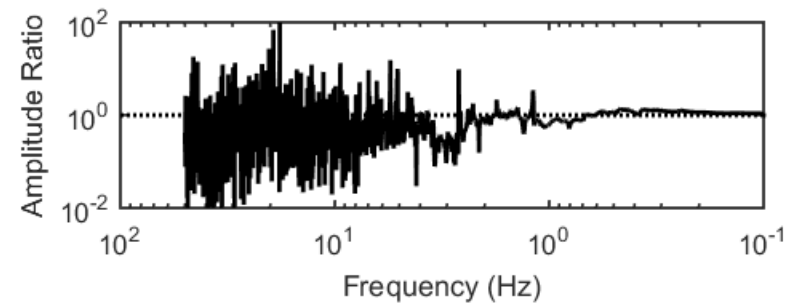
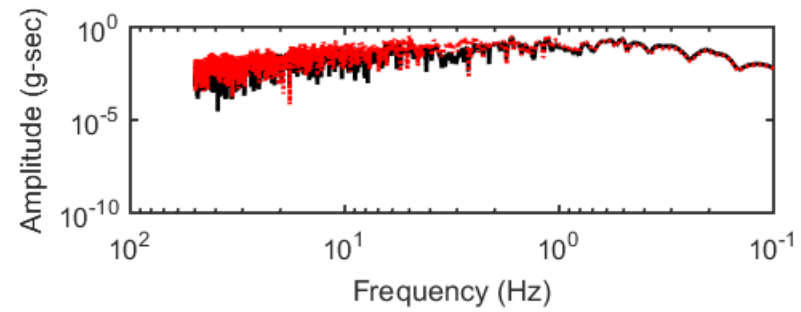
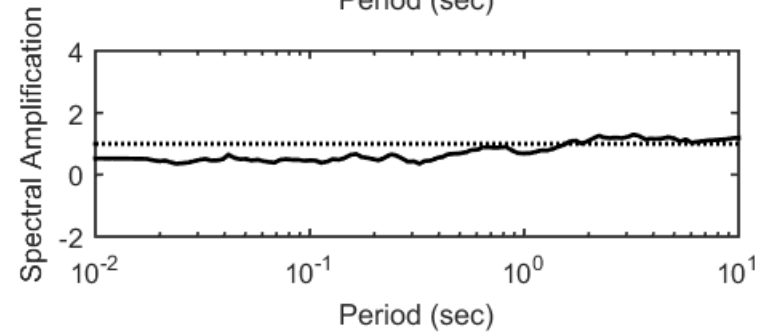
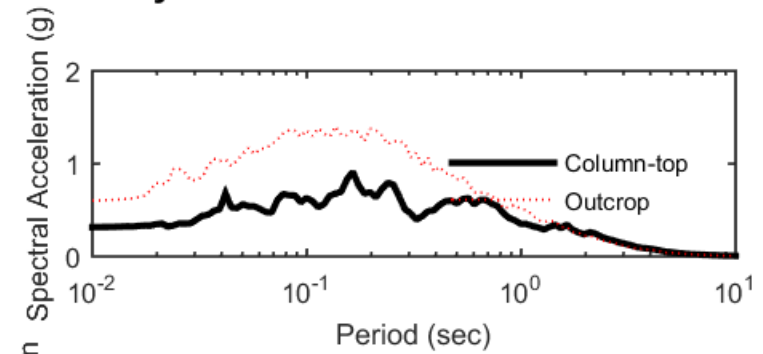
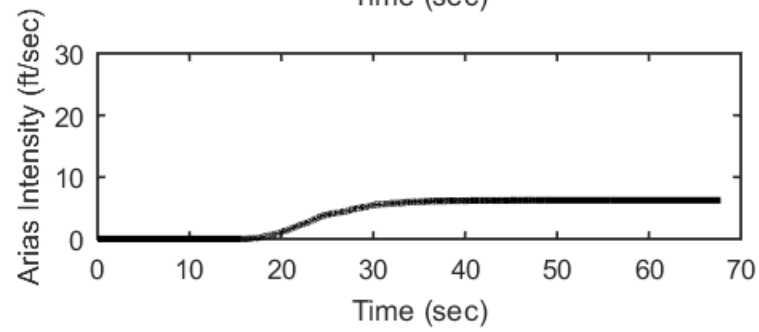
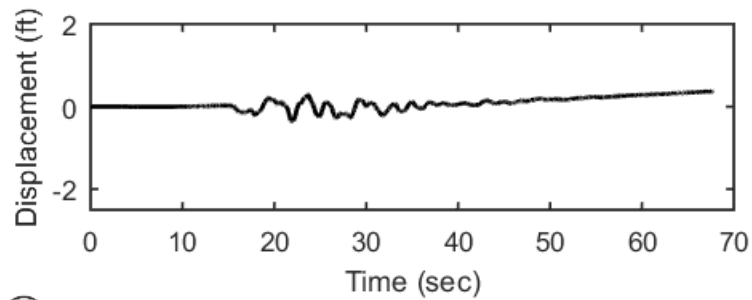
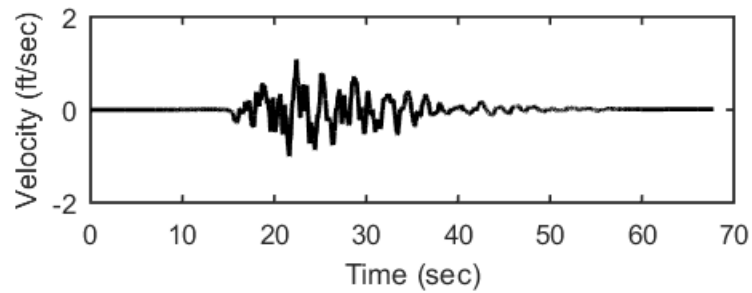
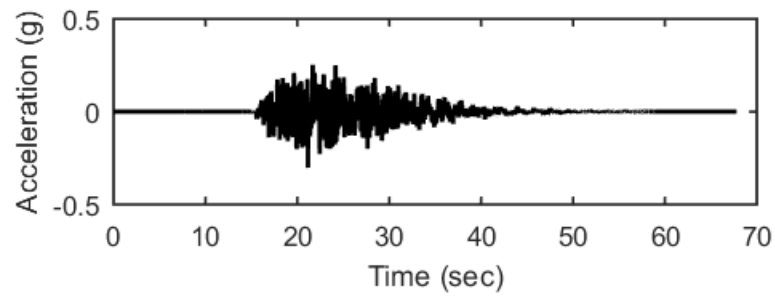
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



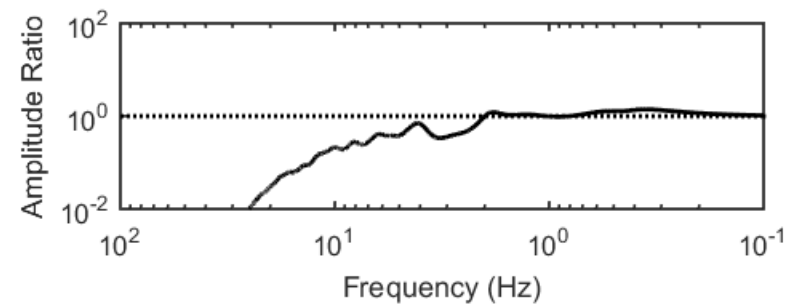
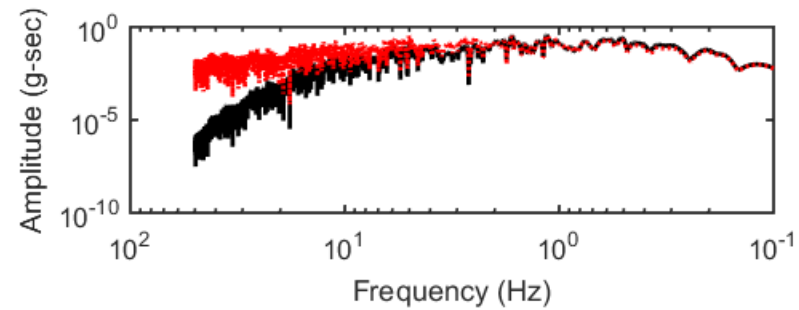
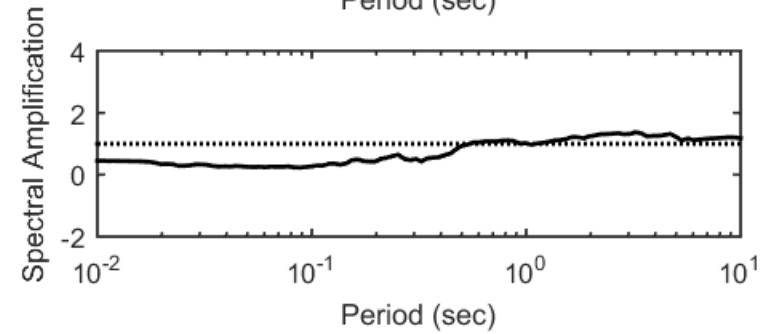
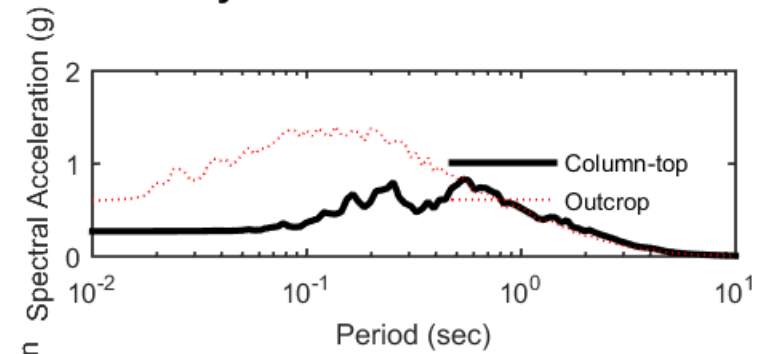
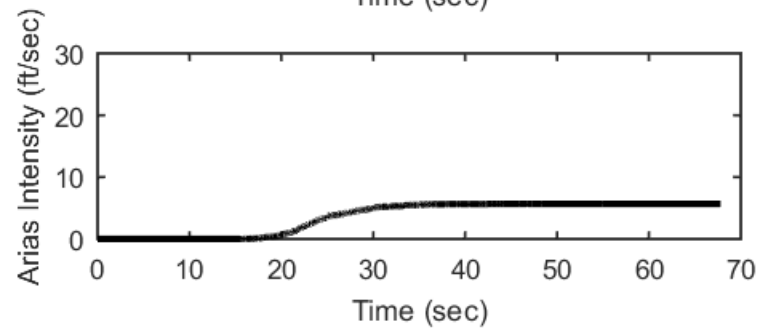
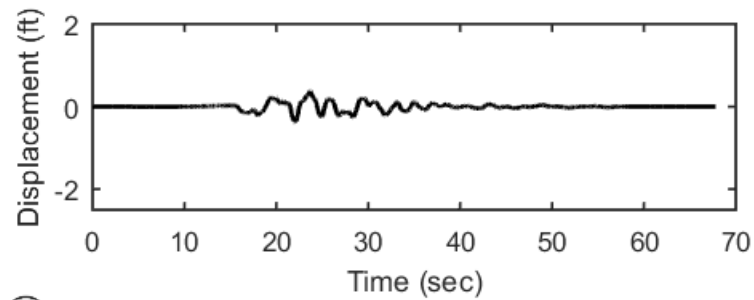
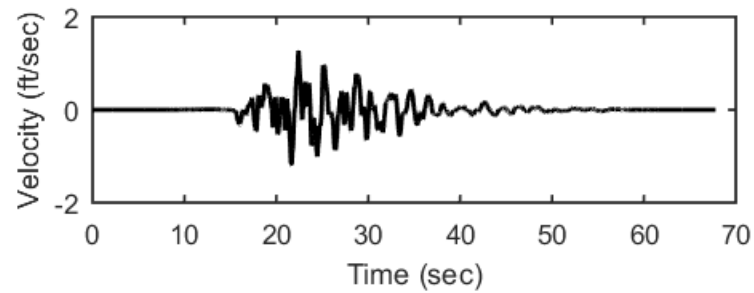
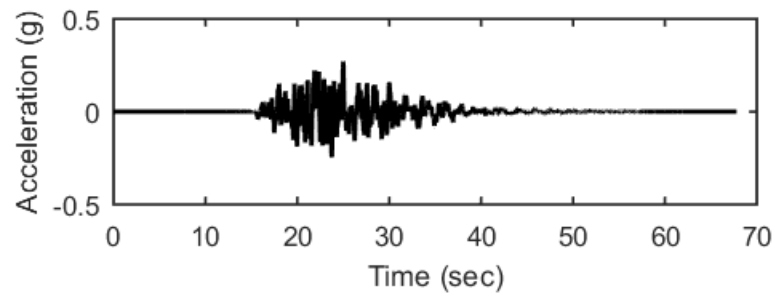
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



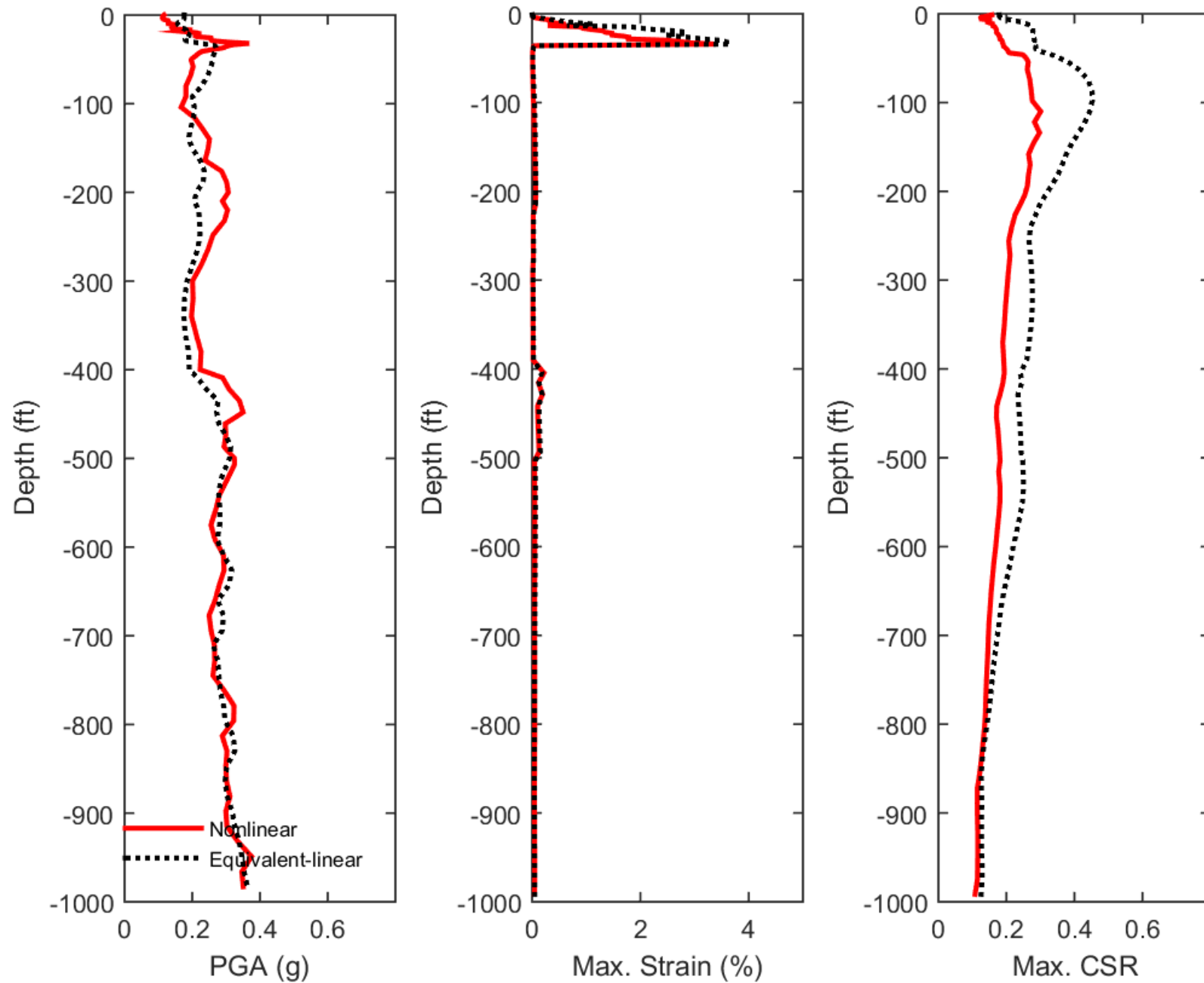
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



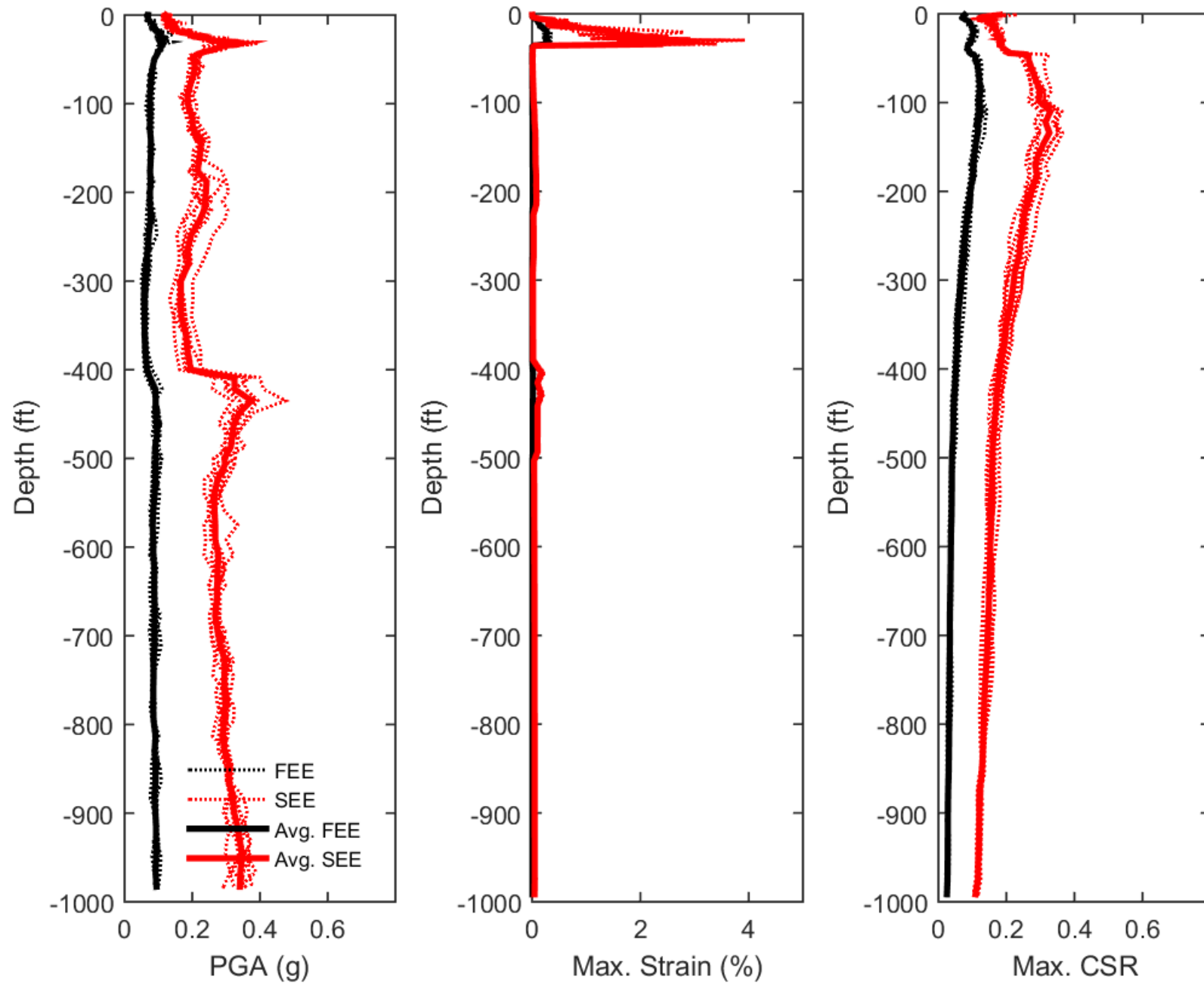
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



### Profile outputs for Motion: SEE7

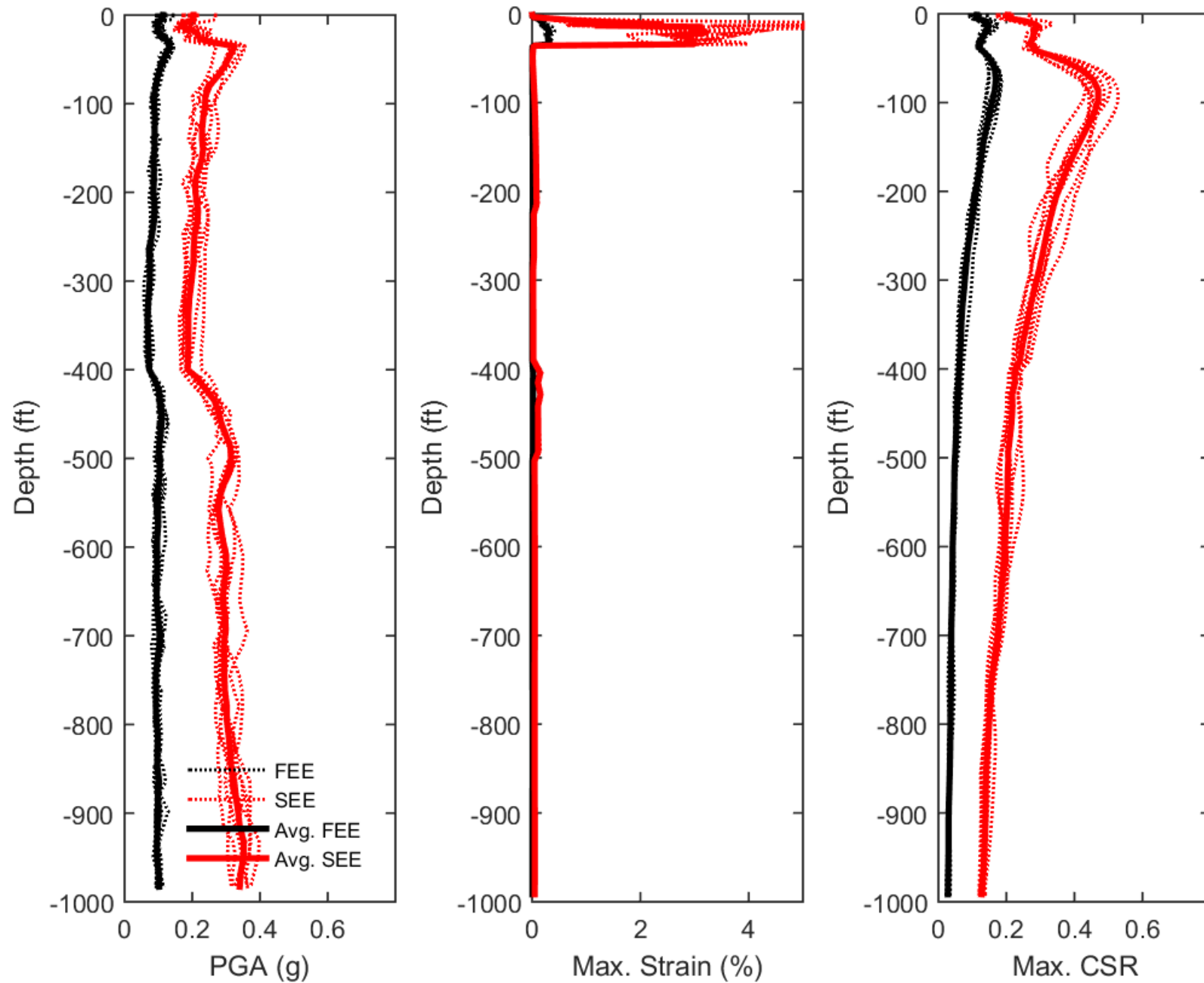


## Summary of the profile outputs for Nonlinear analysis

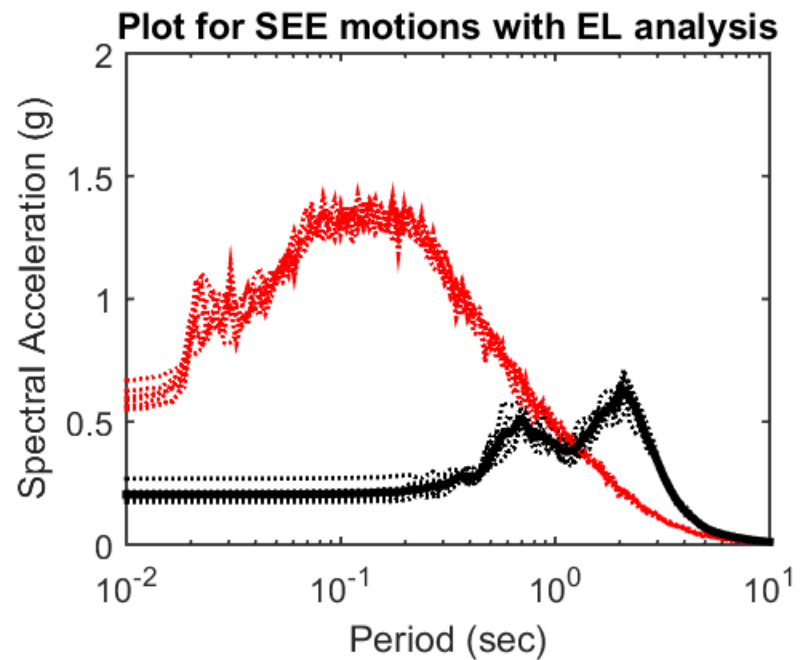
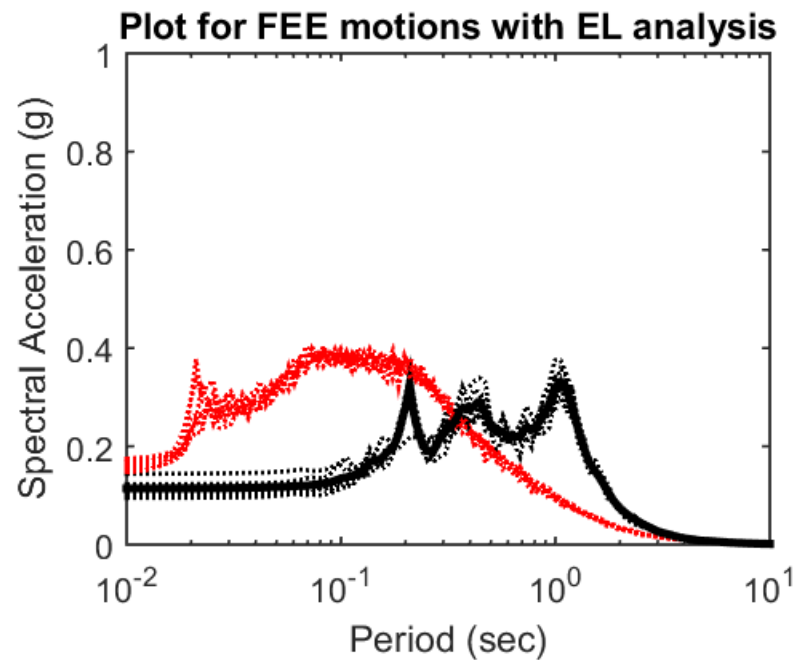
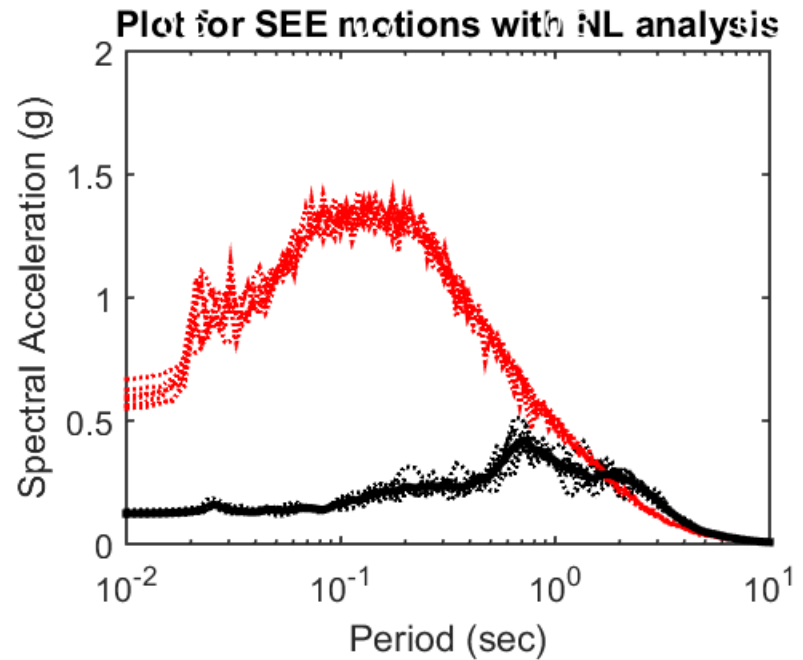
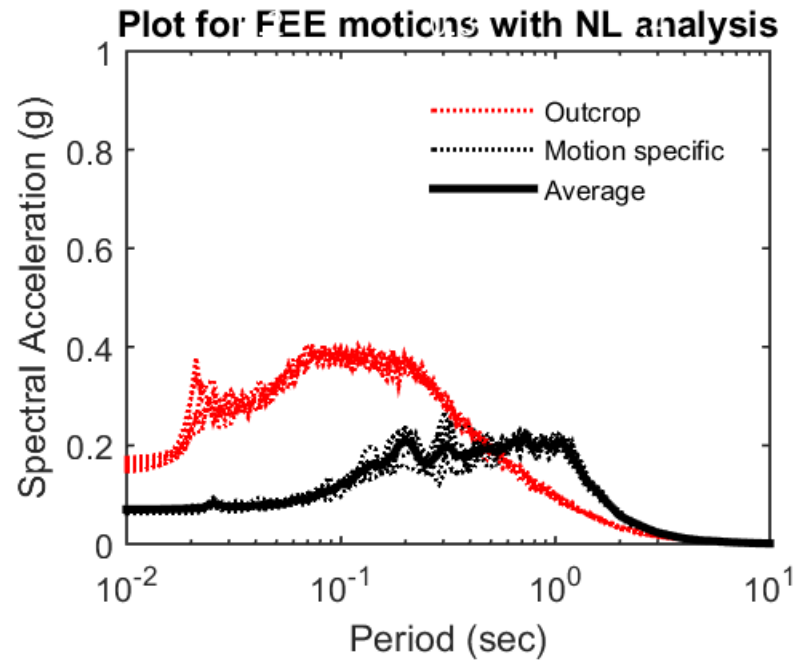




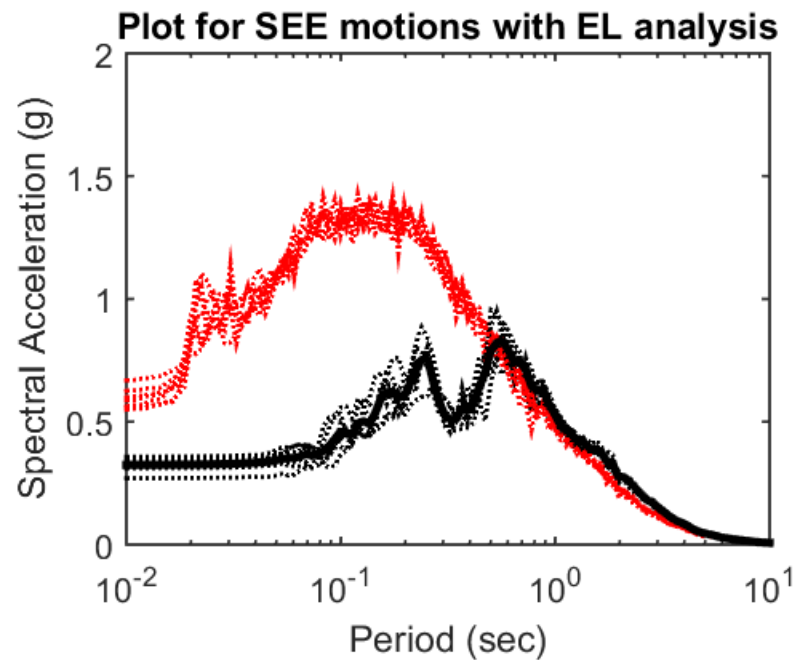
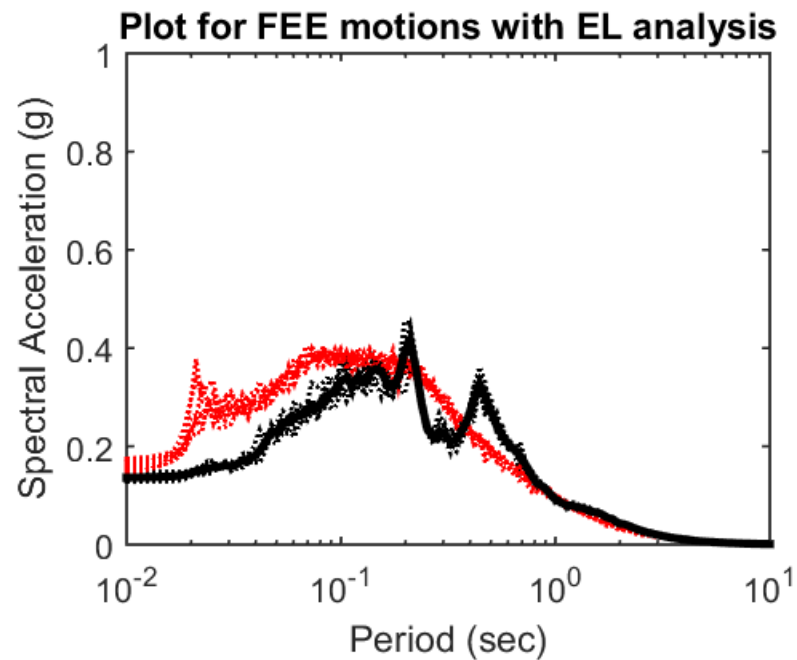
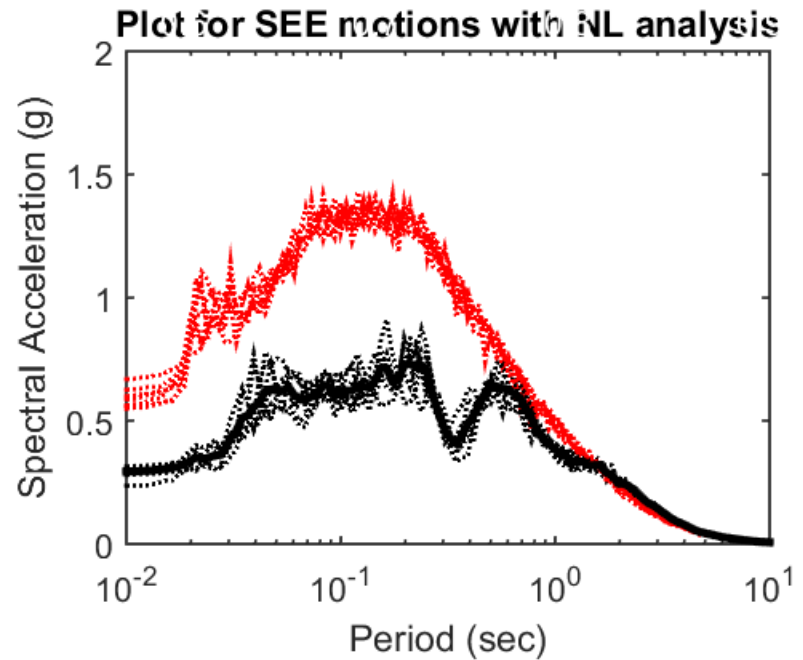
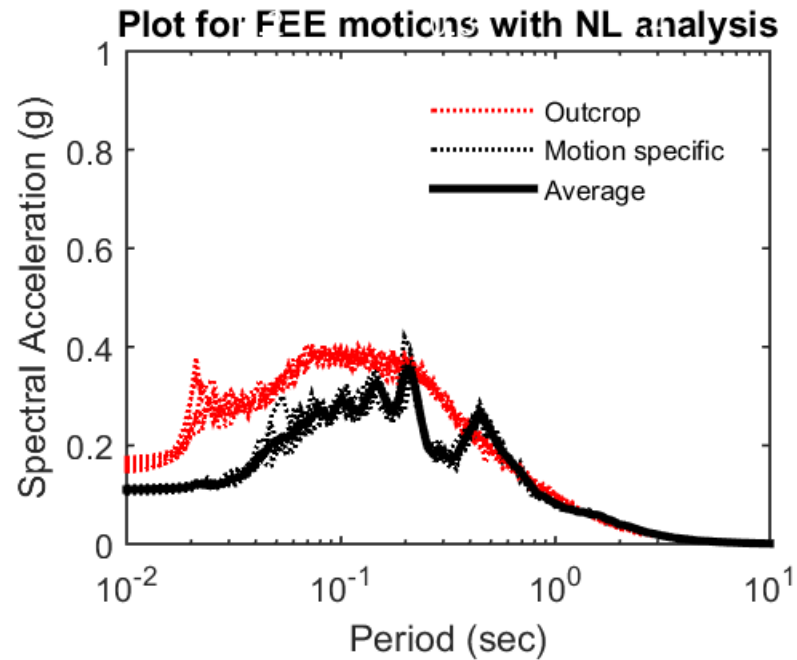
# Summary of the profile outputs for Equivalent-linear analysis



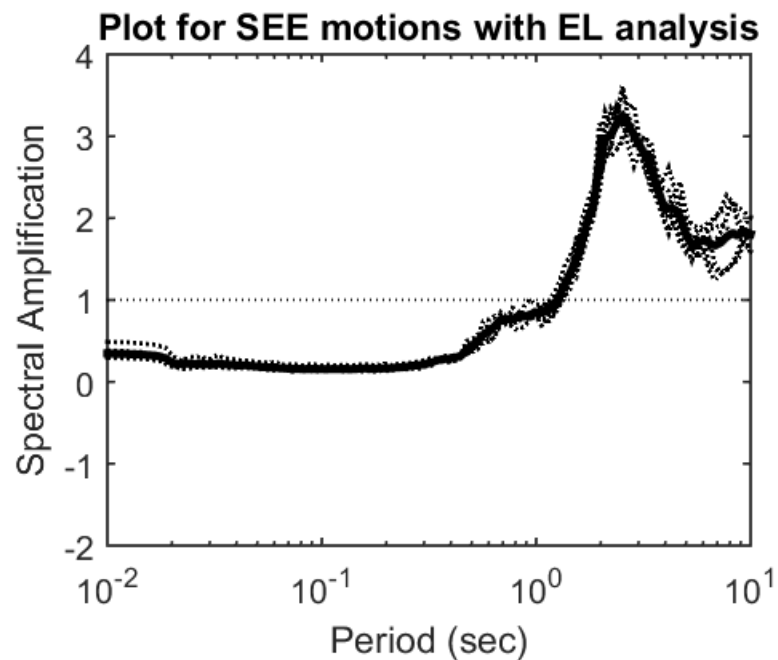
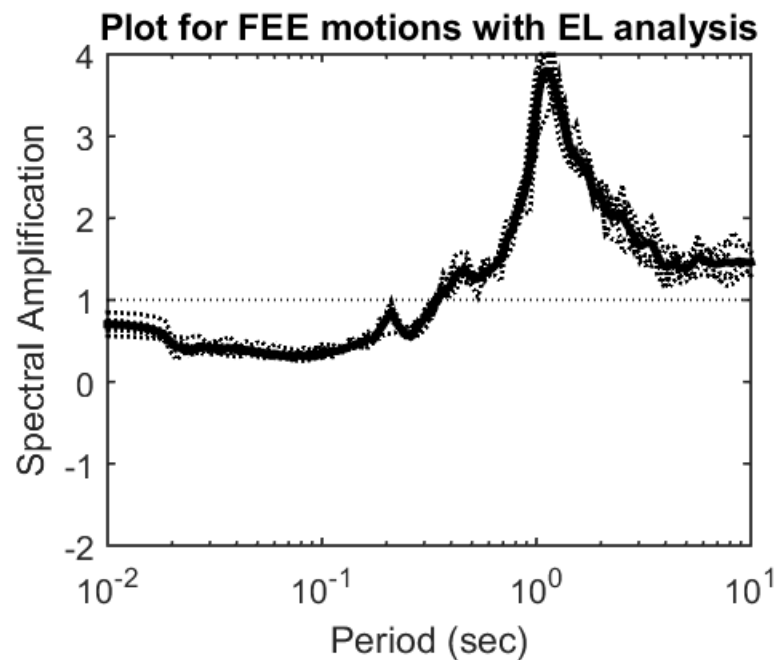
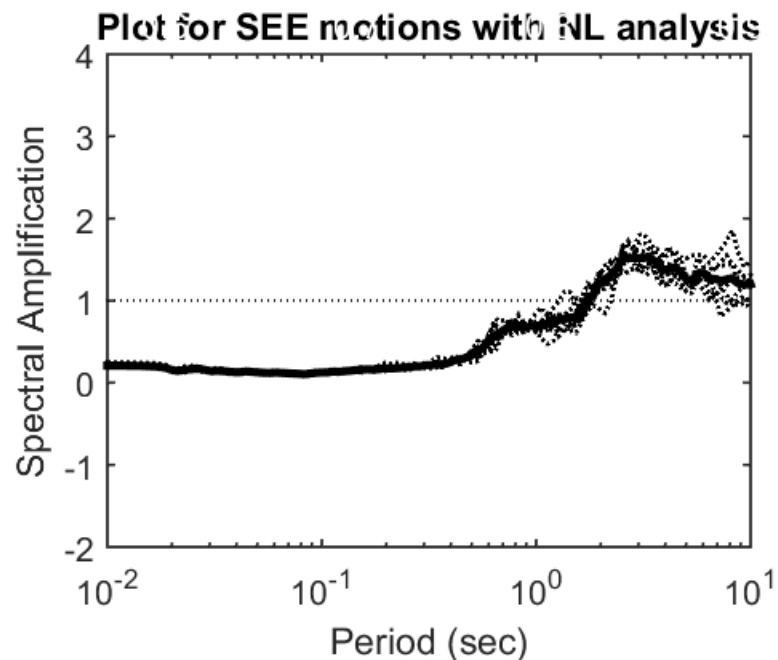
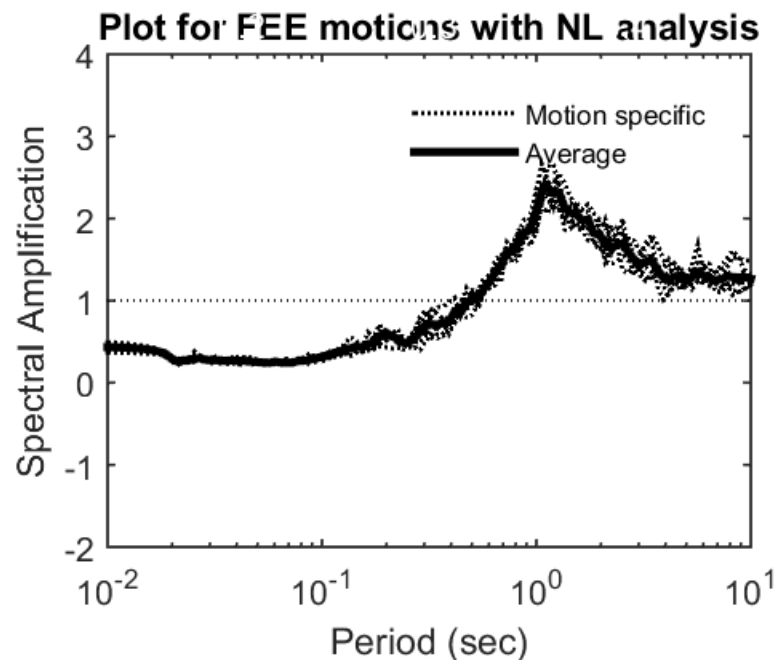
## Summary plots: RSA at ground surface



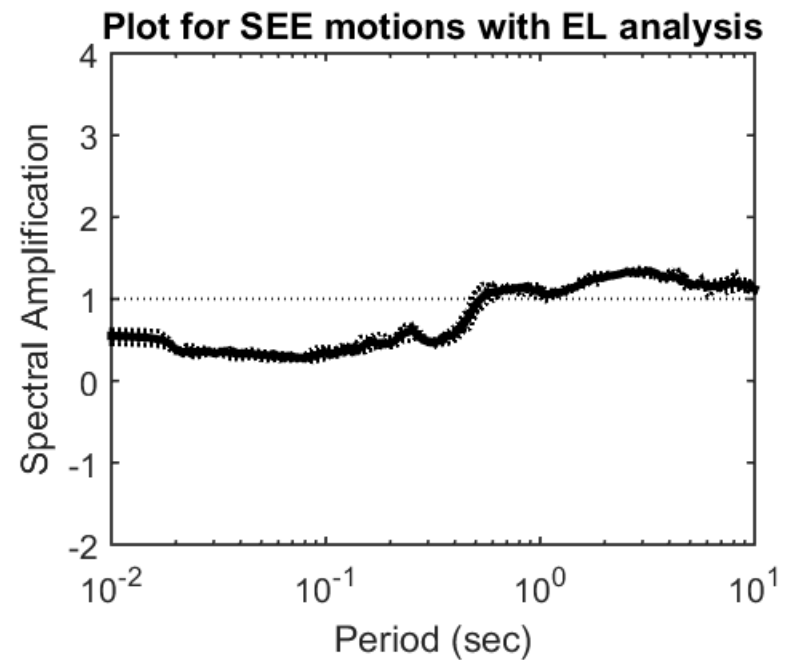
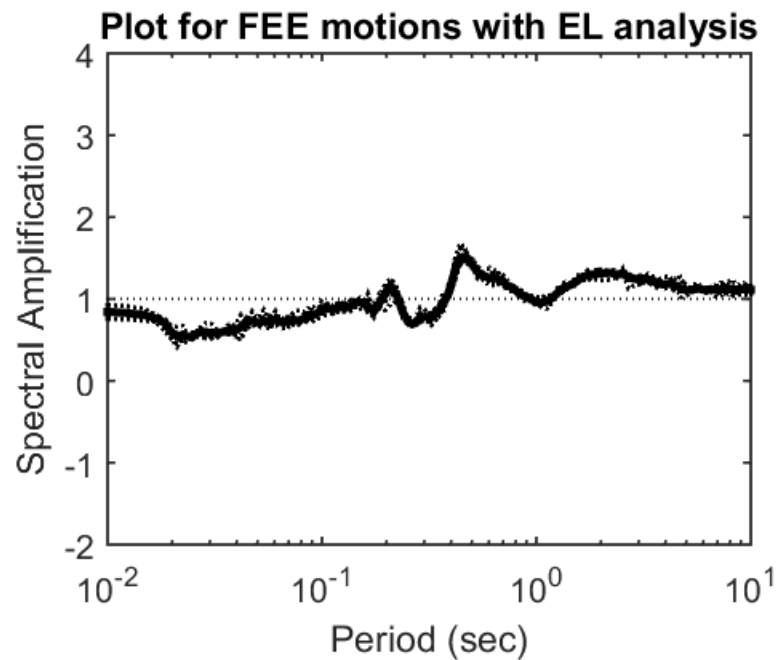
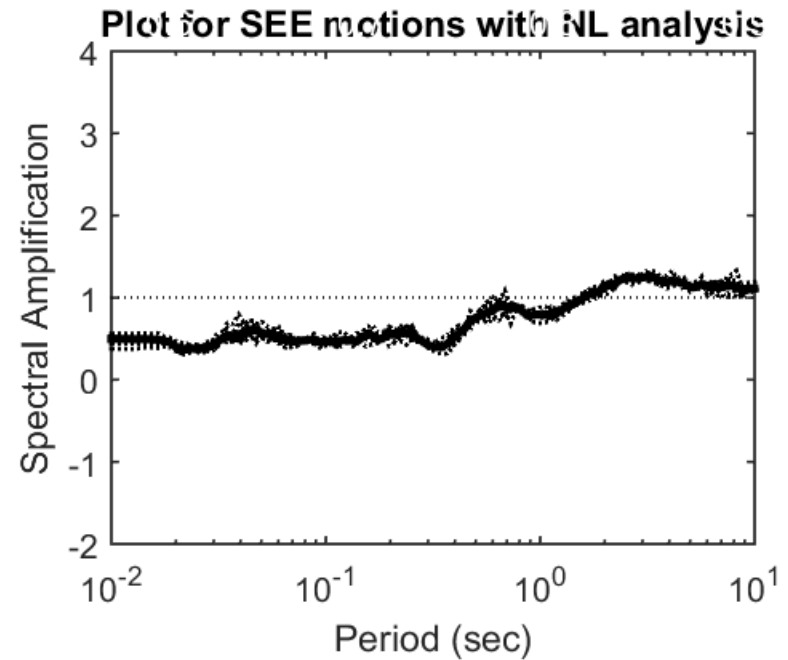
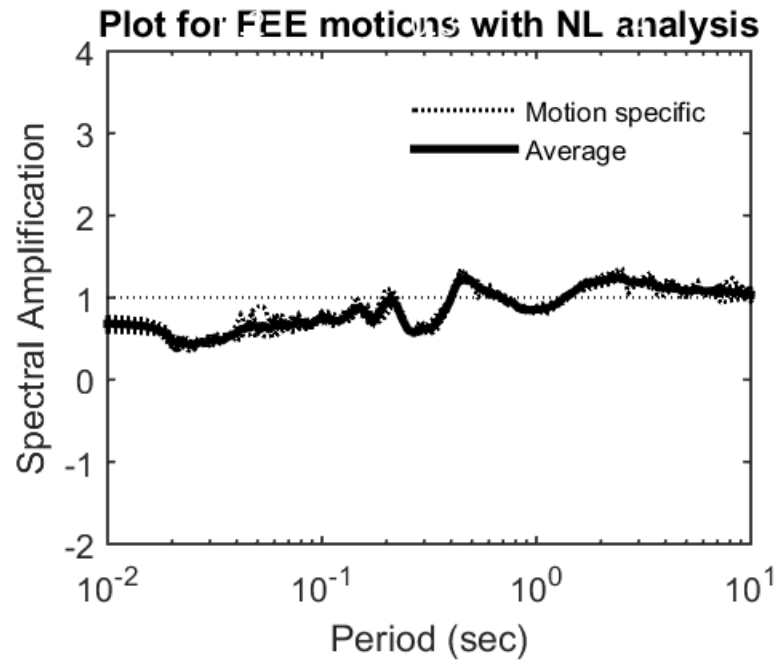
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

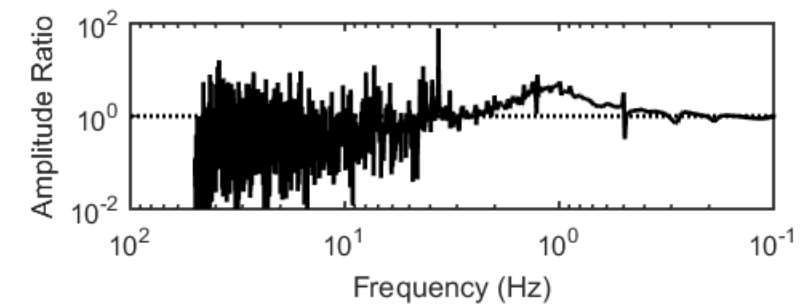
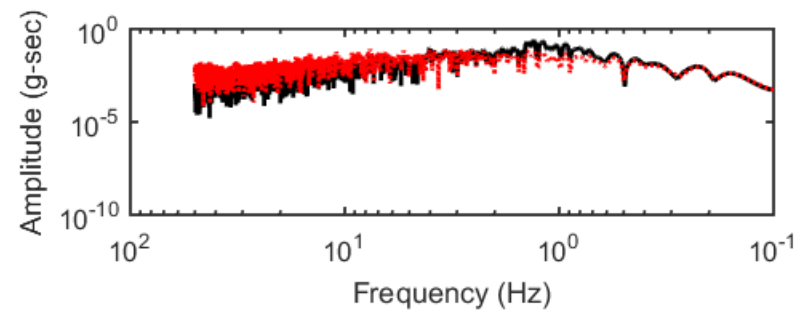
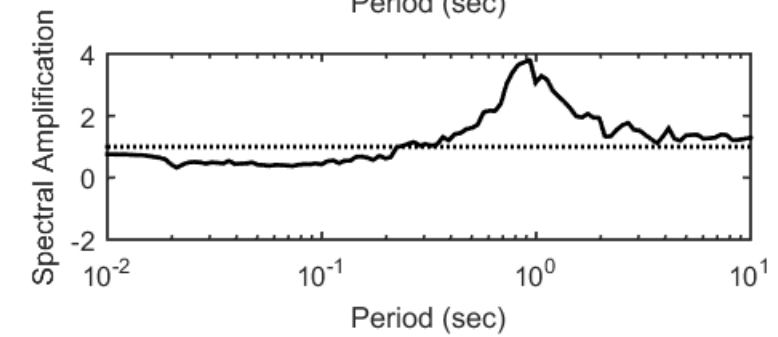
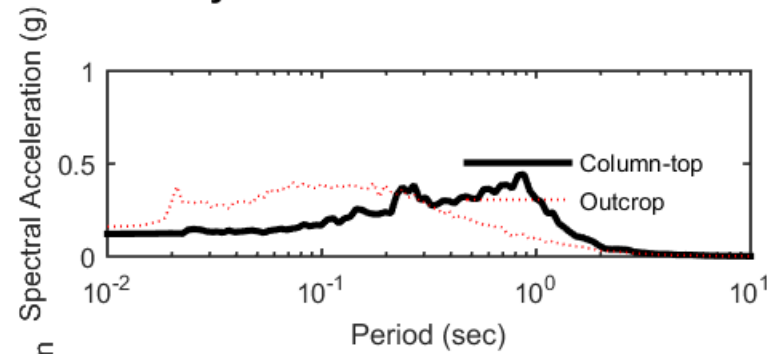
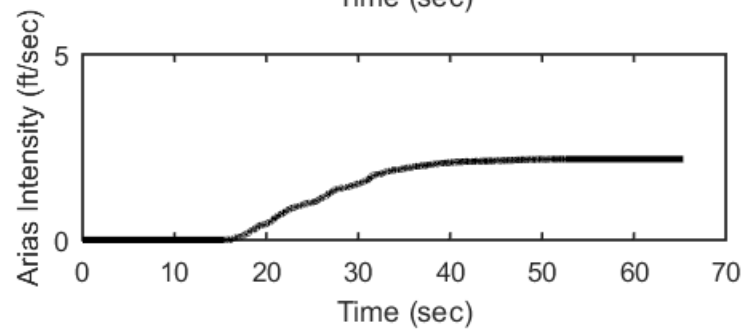
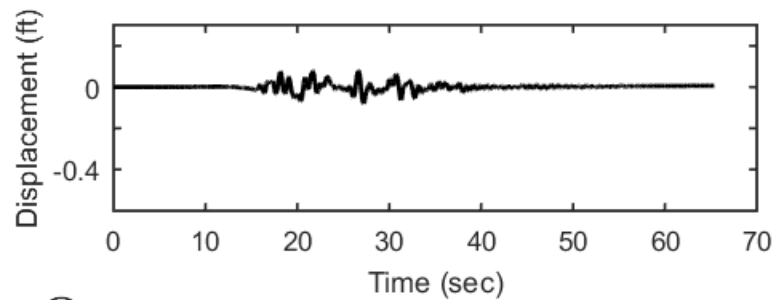
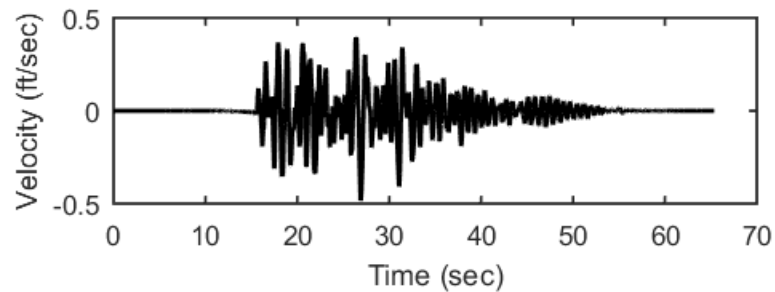
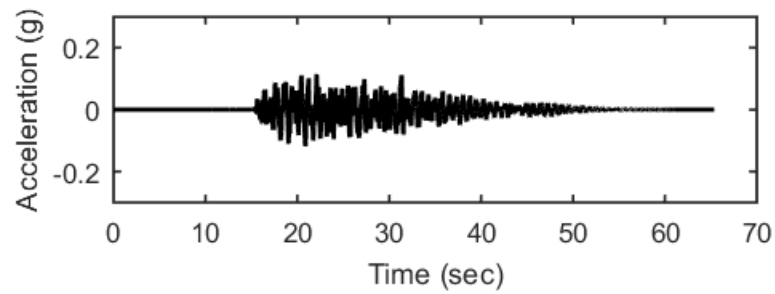


## Summary plots: Spectral amplification at top of Marl

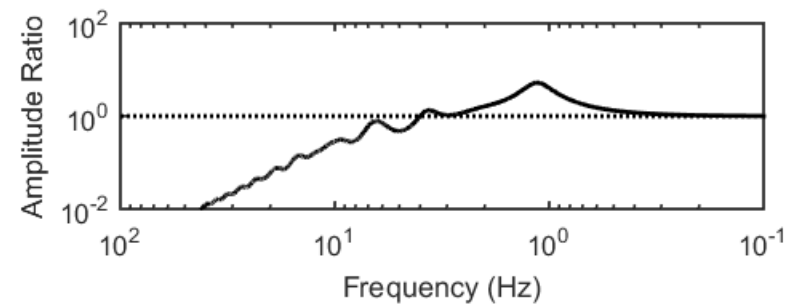
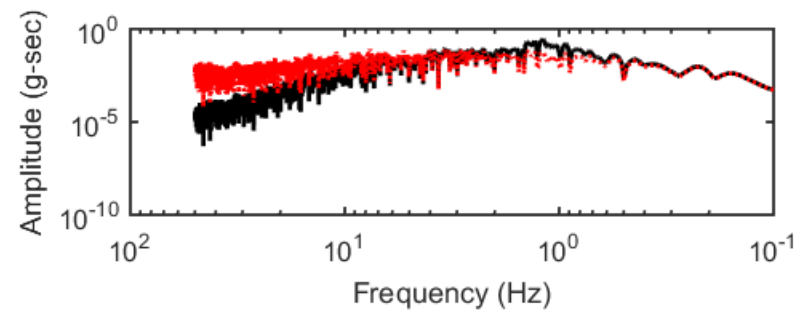
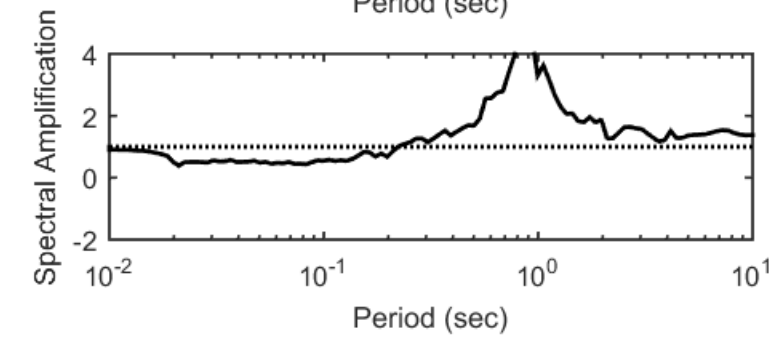
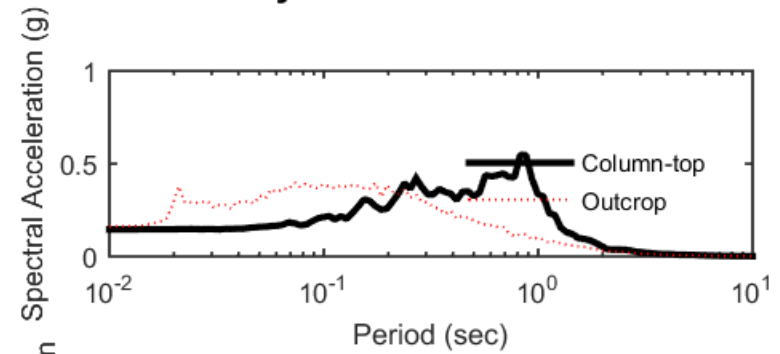
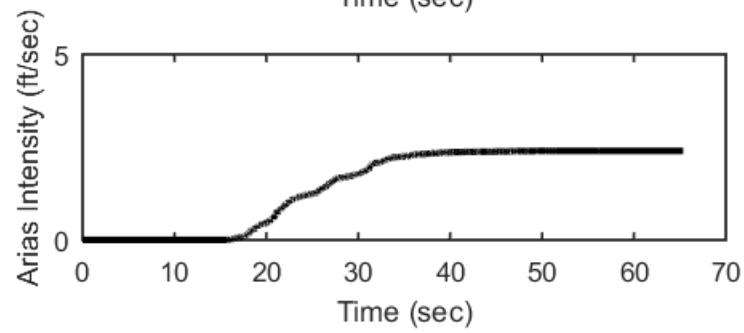
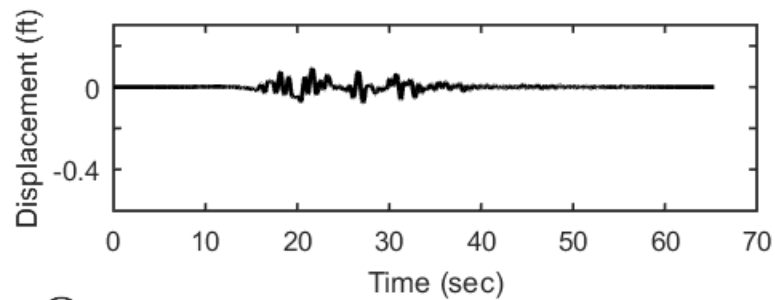
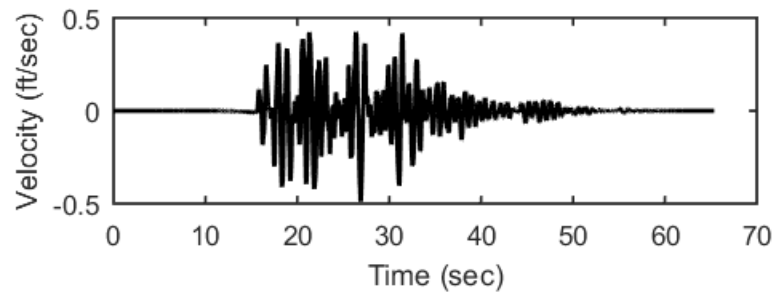
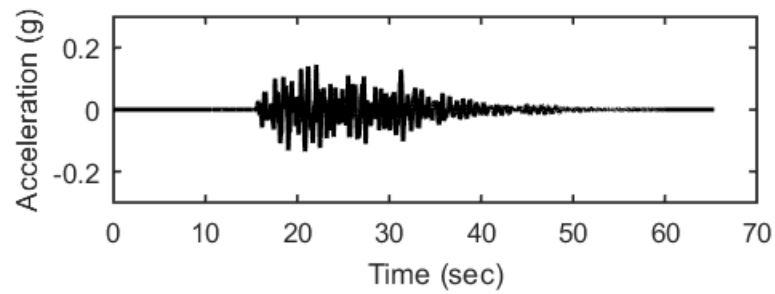


## **BASE MODEL AND HIGH SHEAR WAVE**

## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1

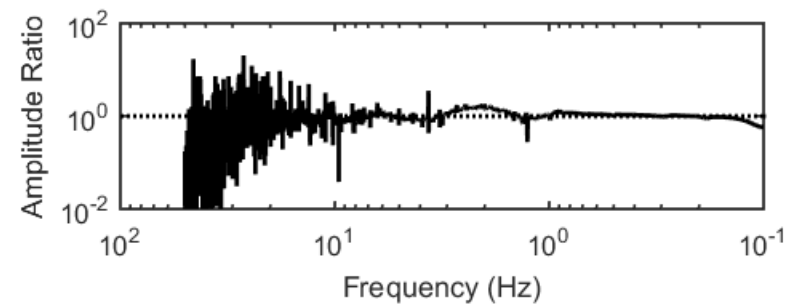
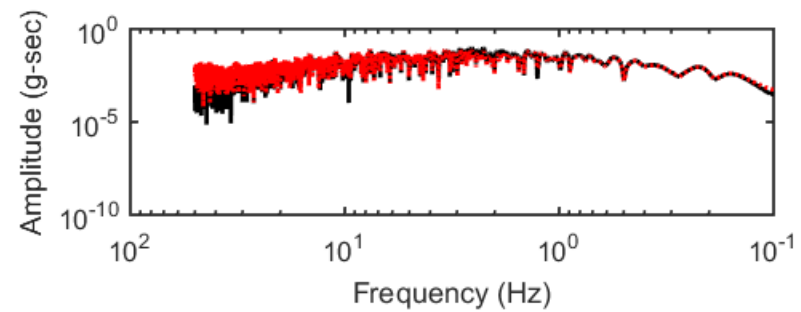
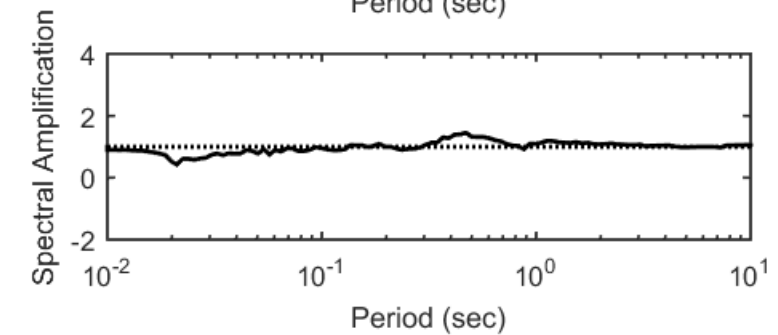
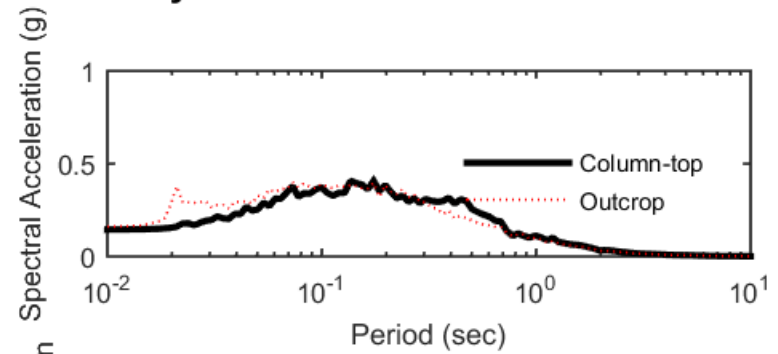
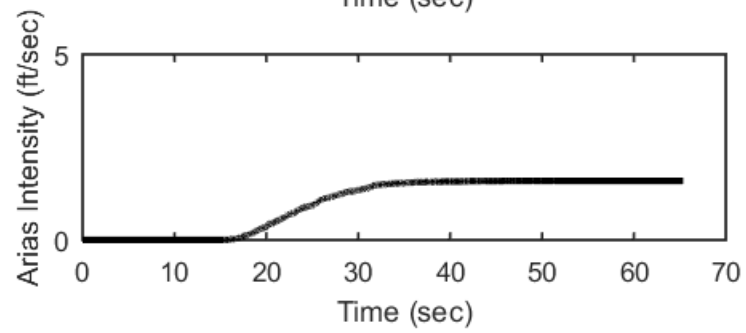
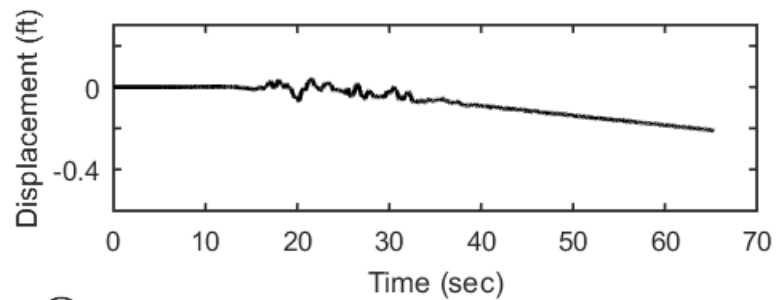
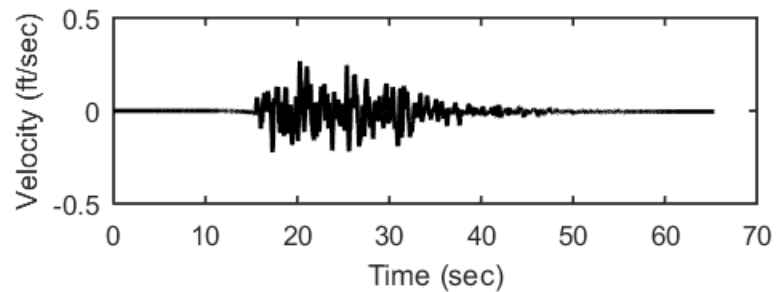
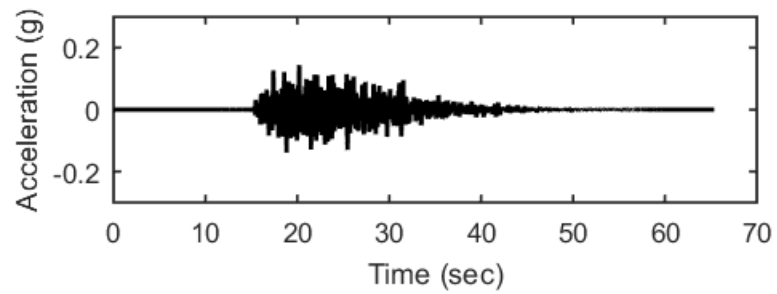


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1

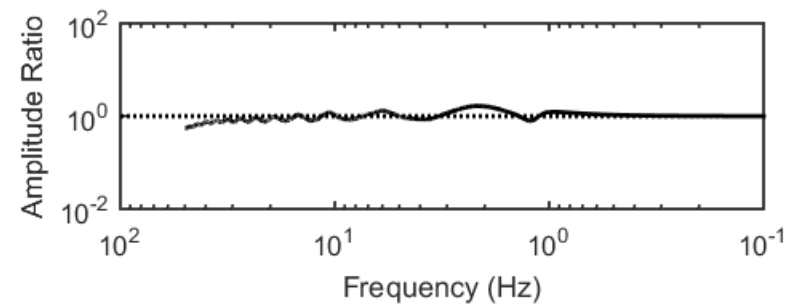
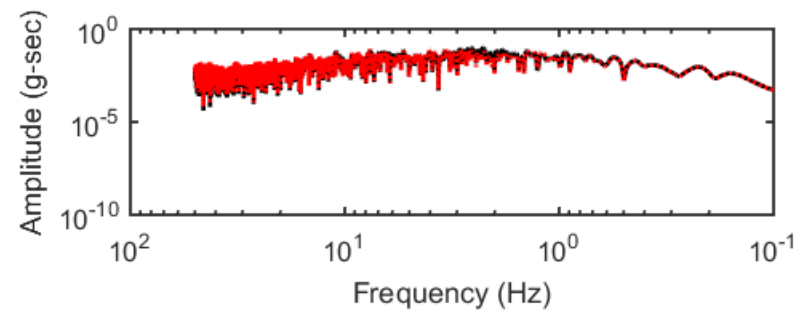
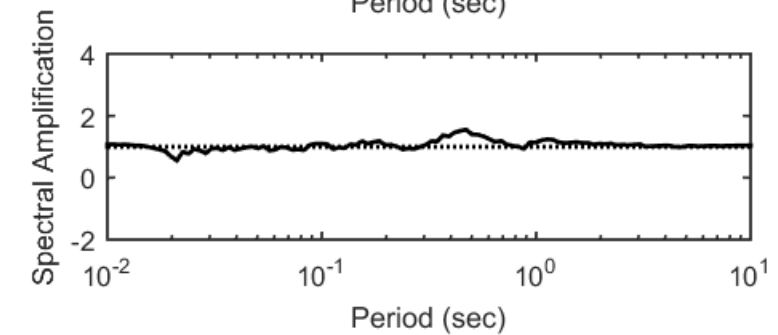
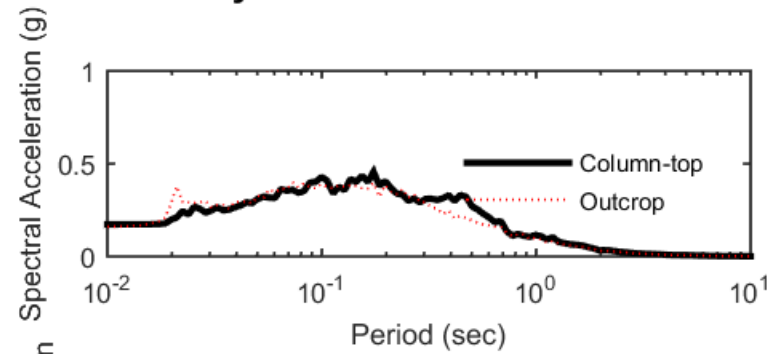
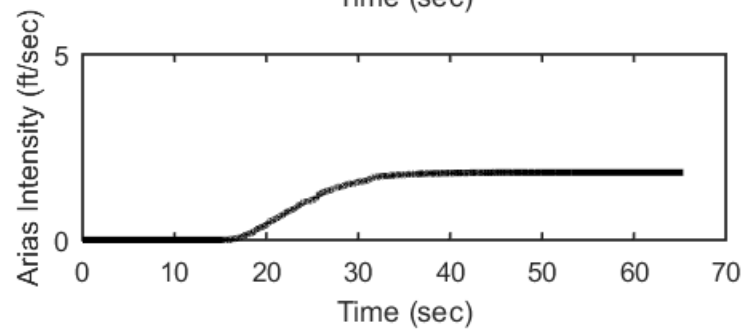
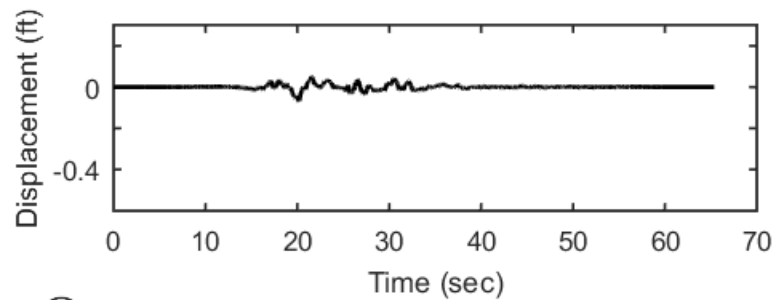
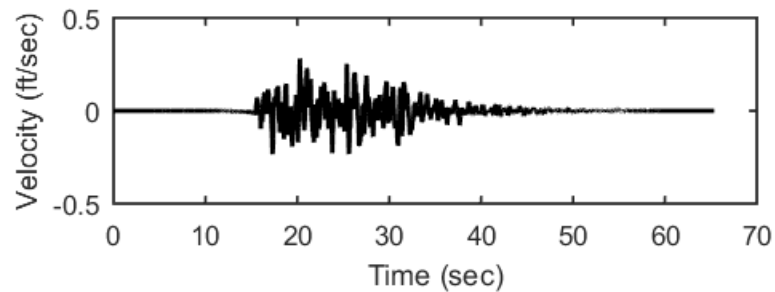
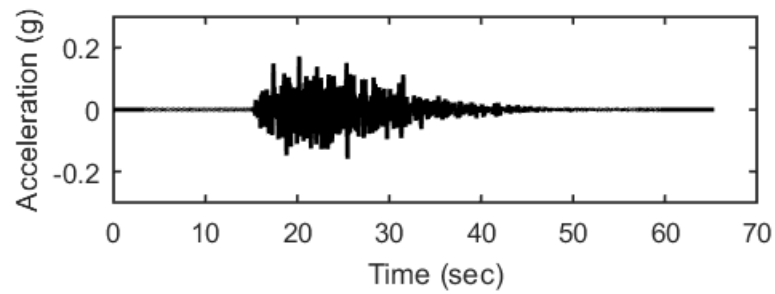




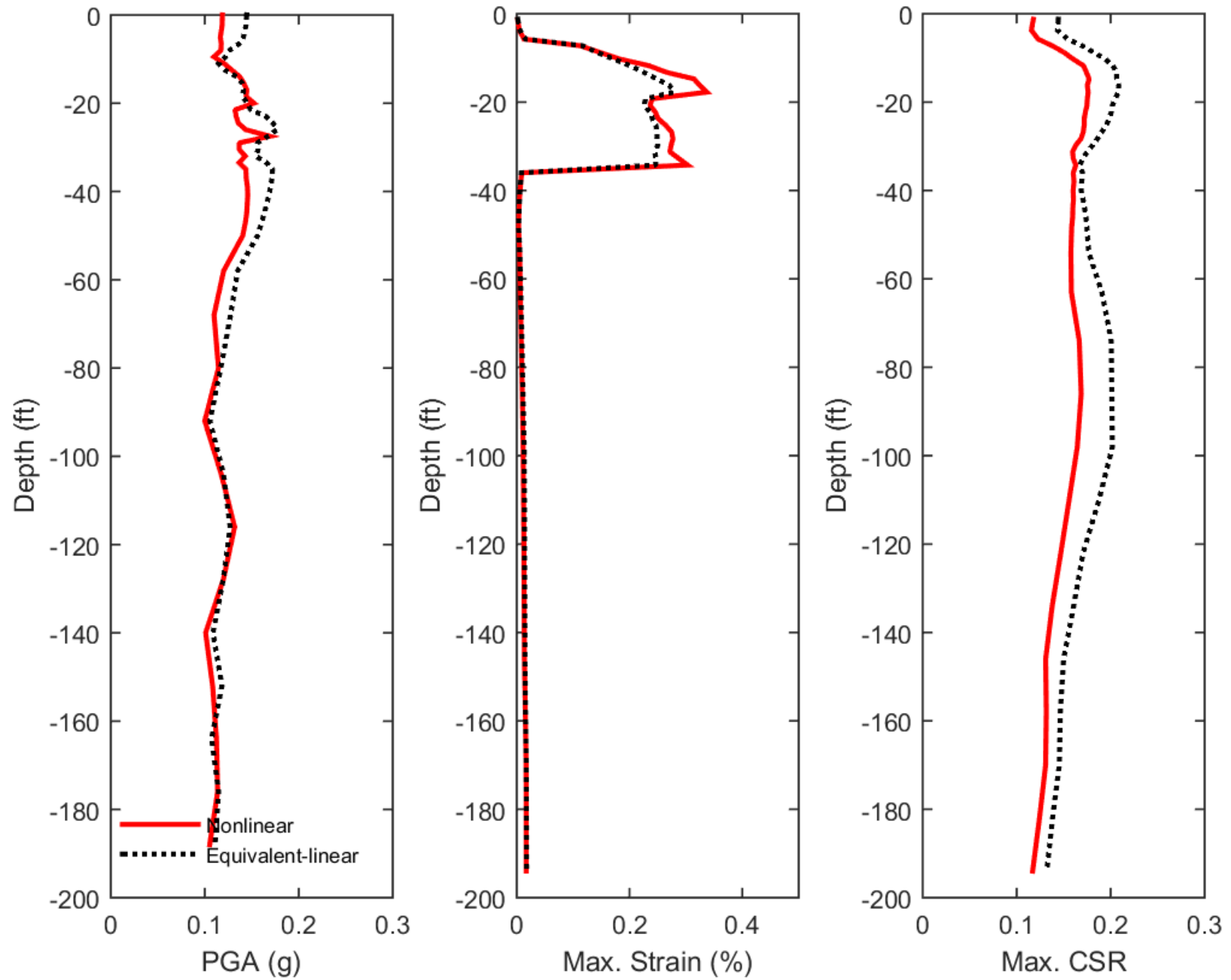
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



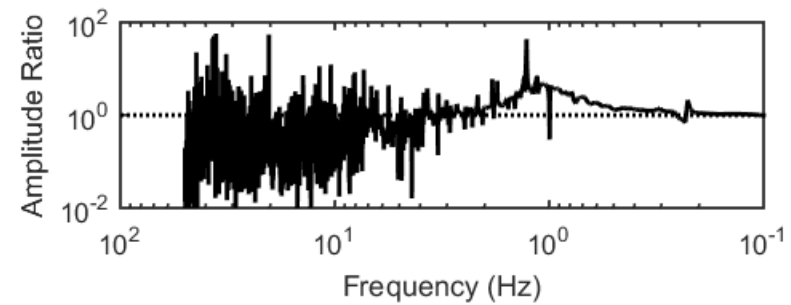
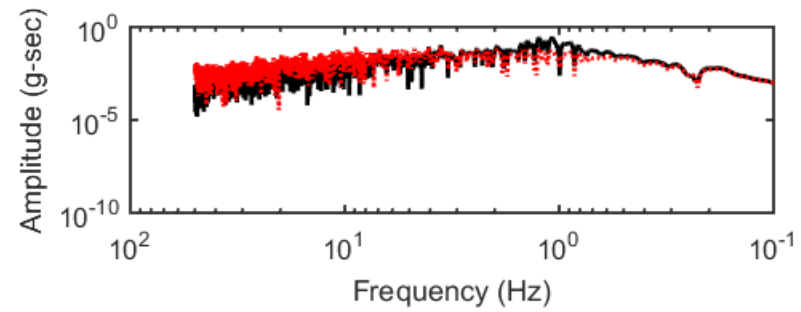
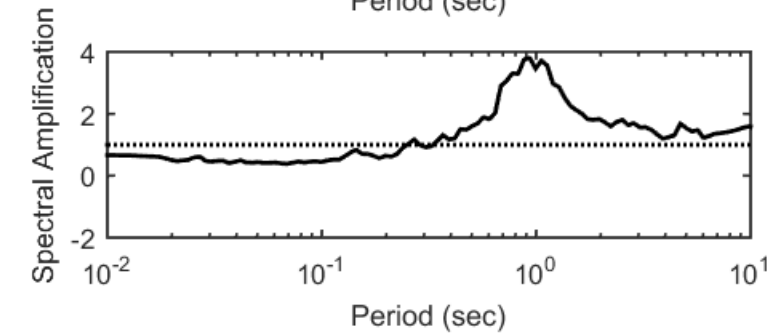
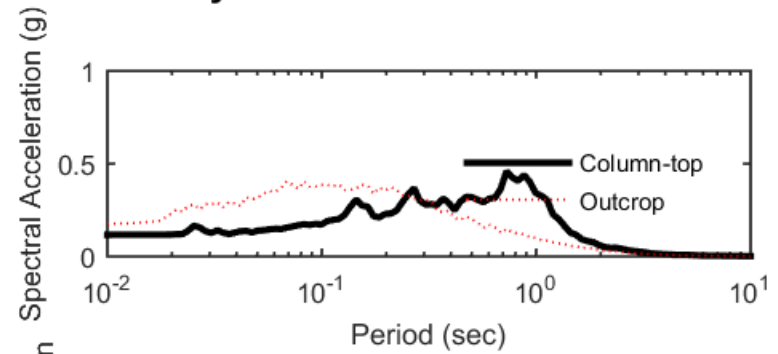
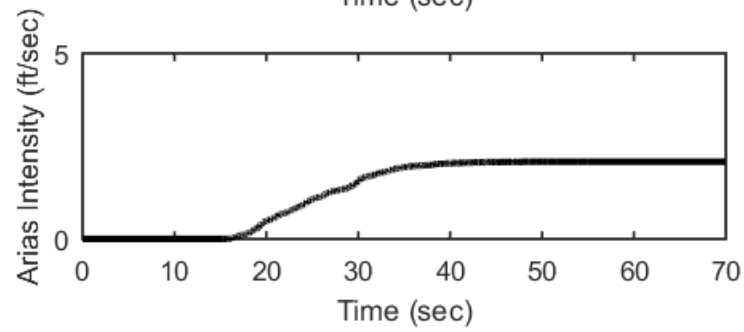
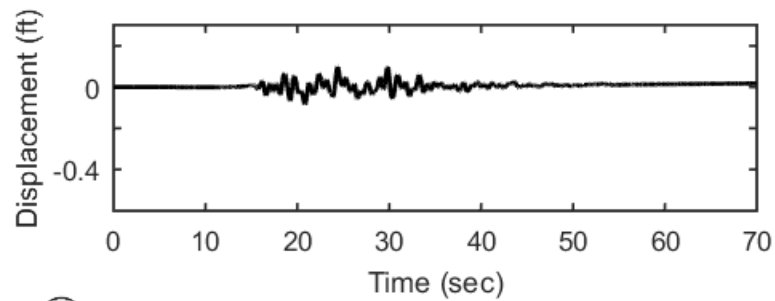
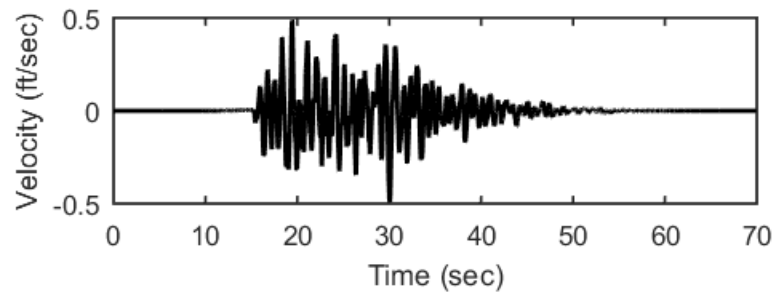
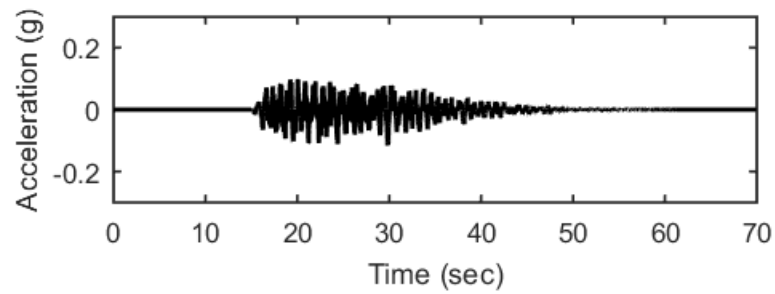
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



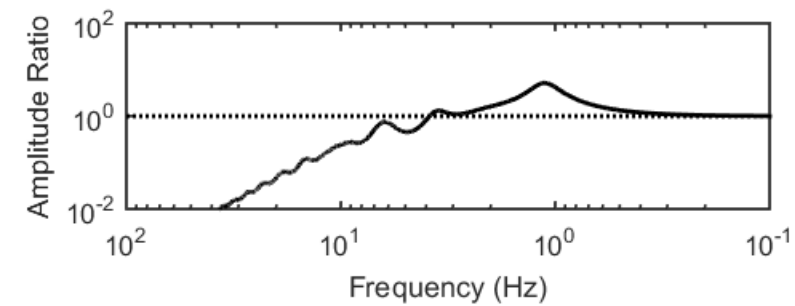
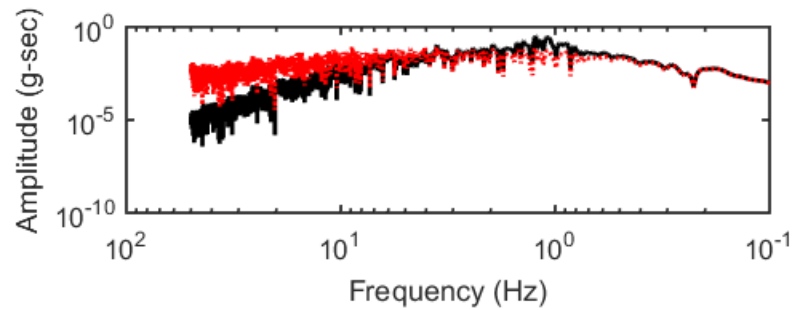
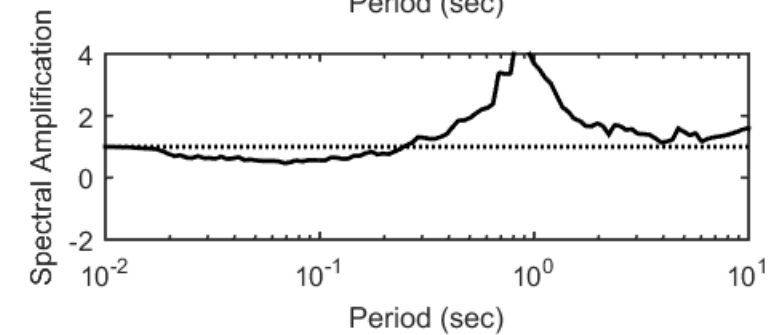
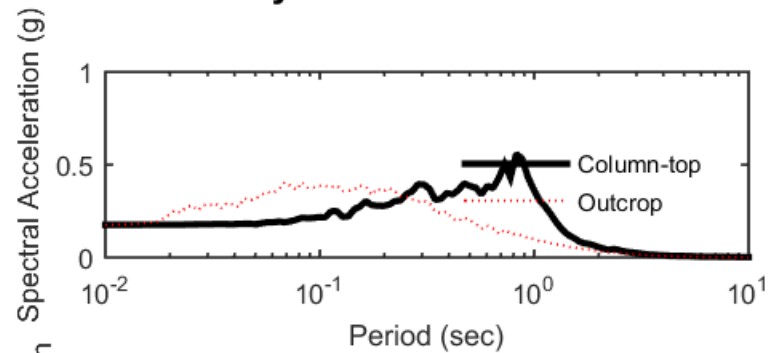
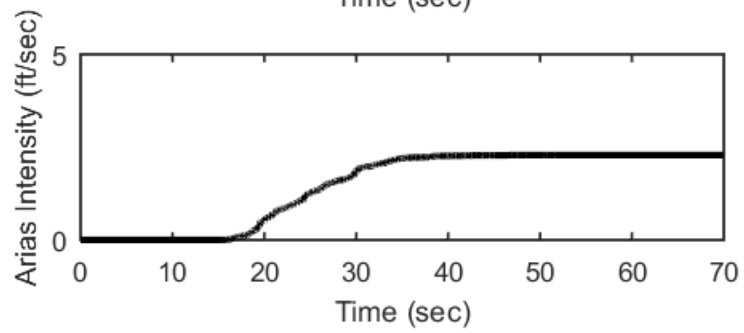
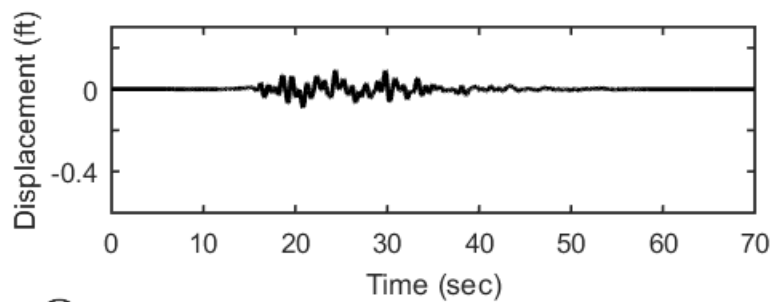
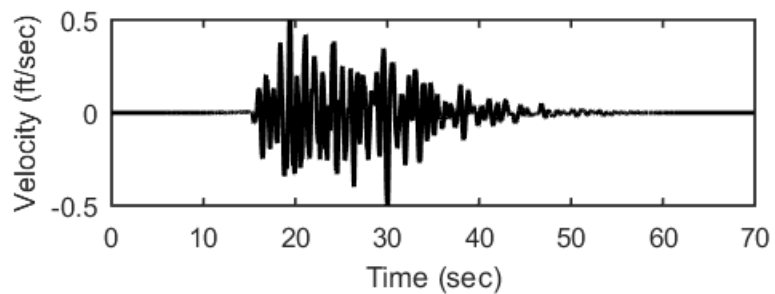
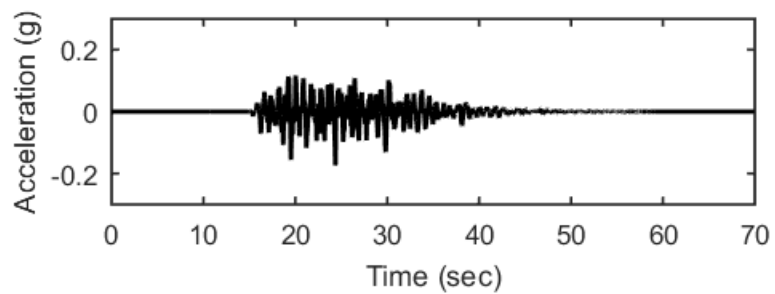
### Profile outputs for Motion: FEE1



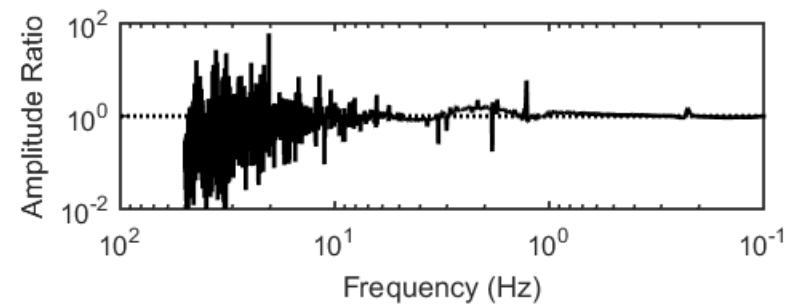
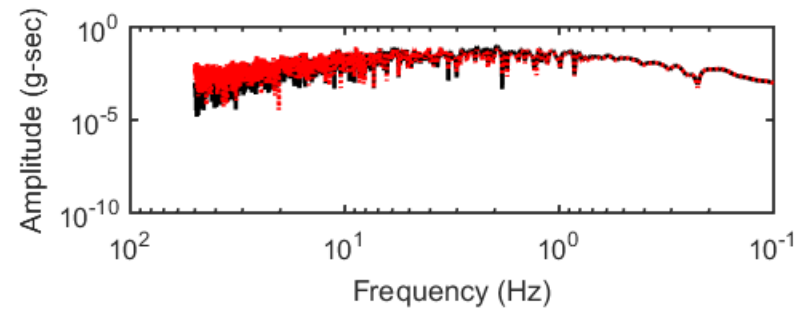
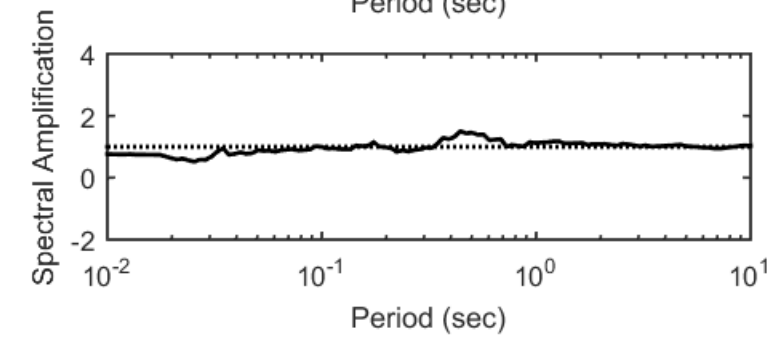
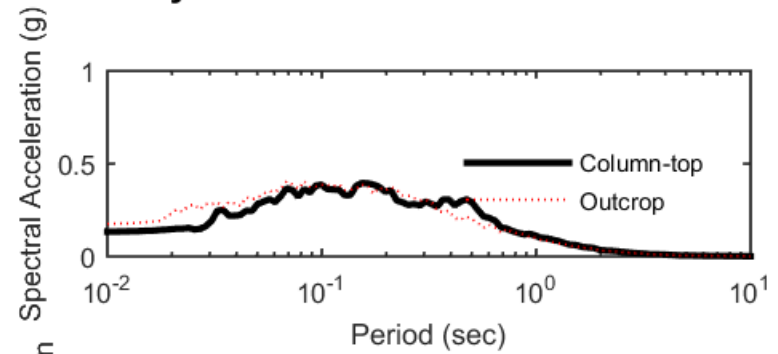
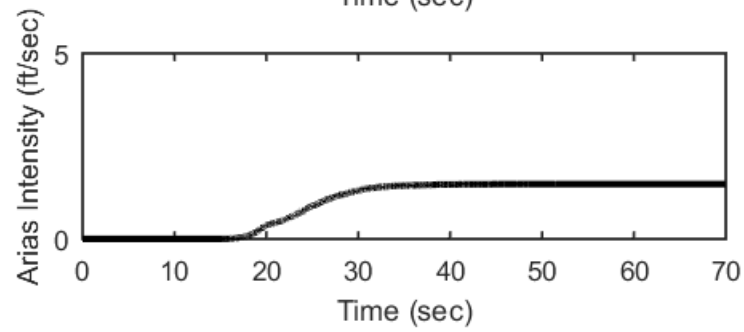
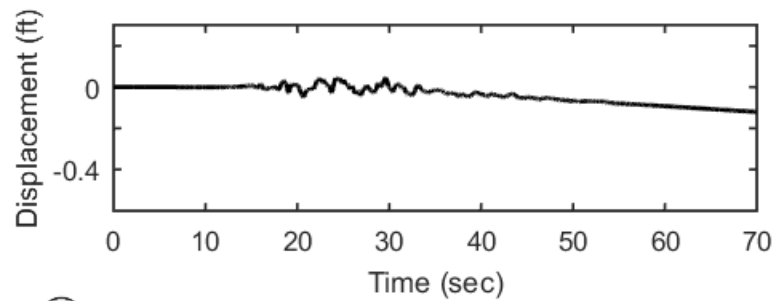
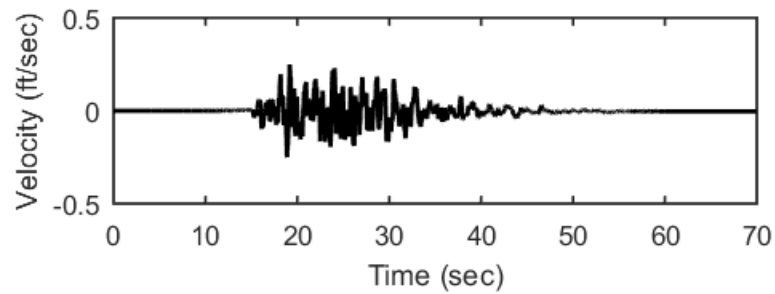
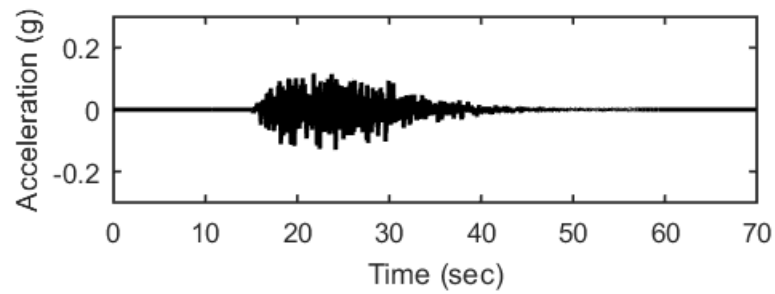
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



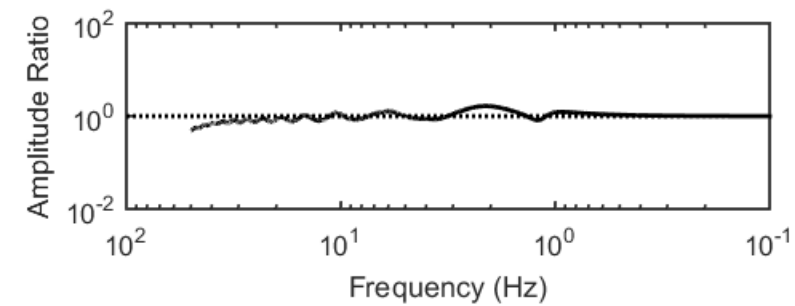
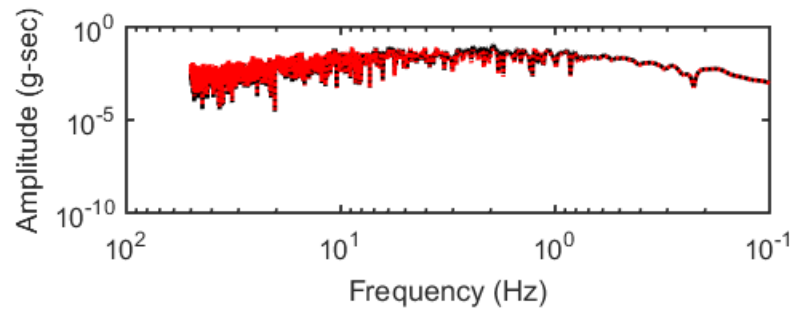
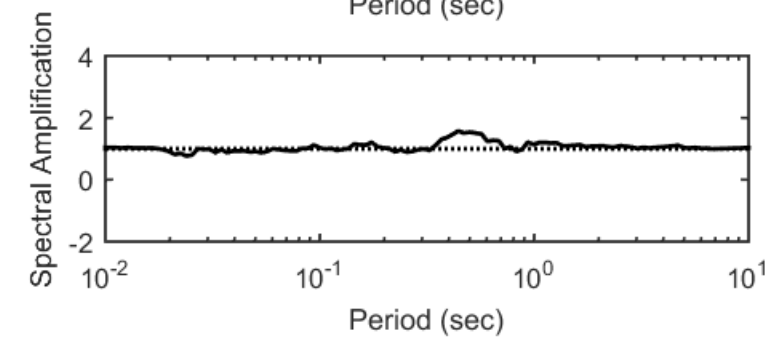
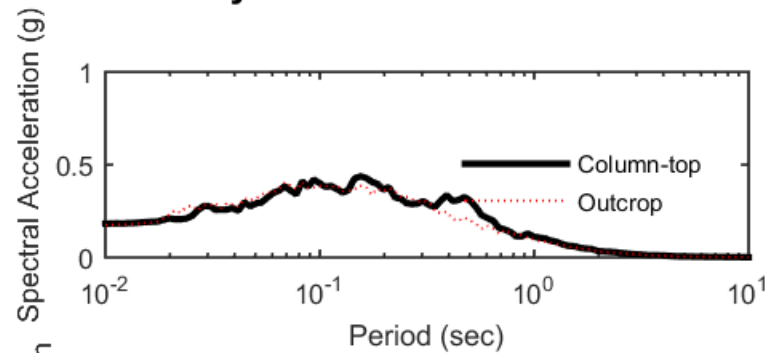
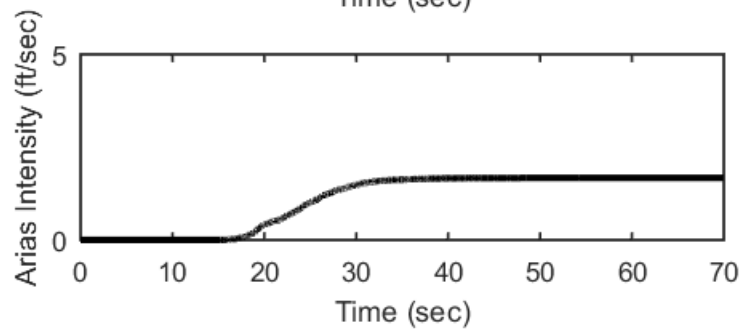
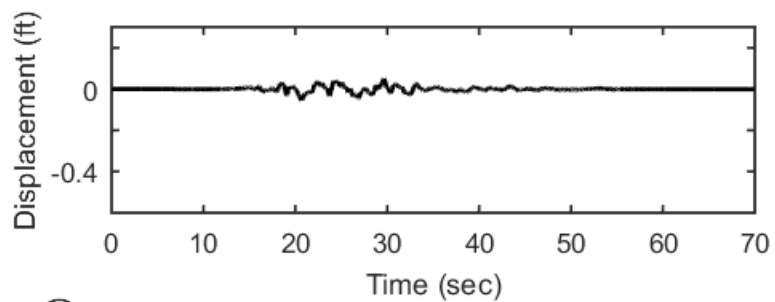
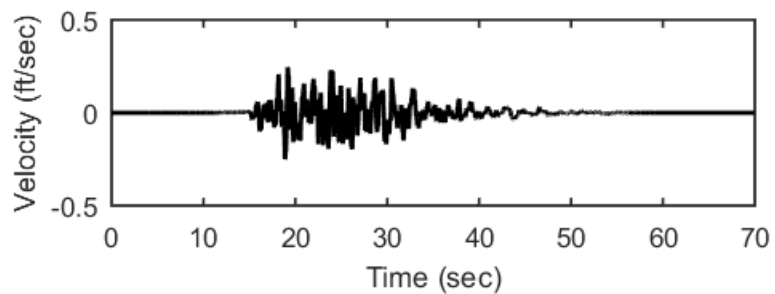
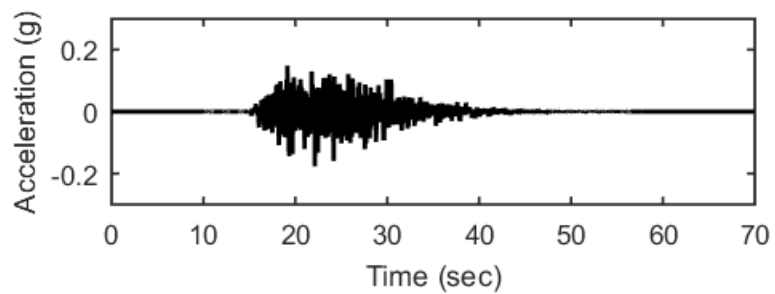
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



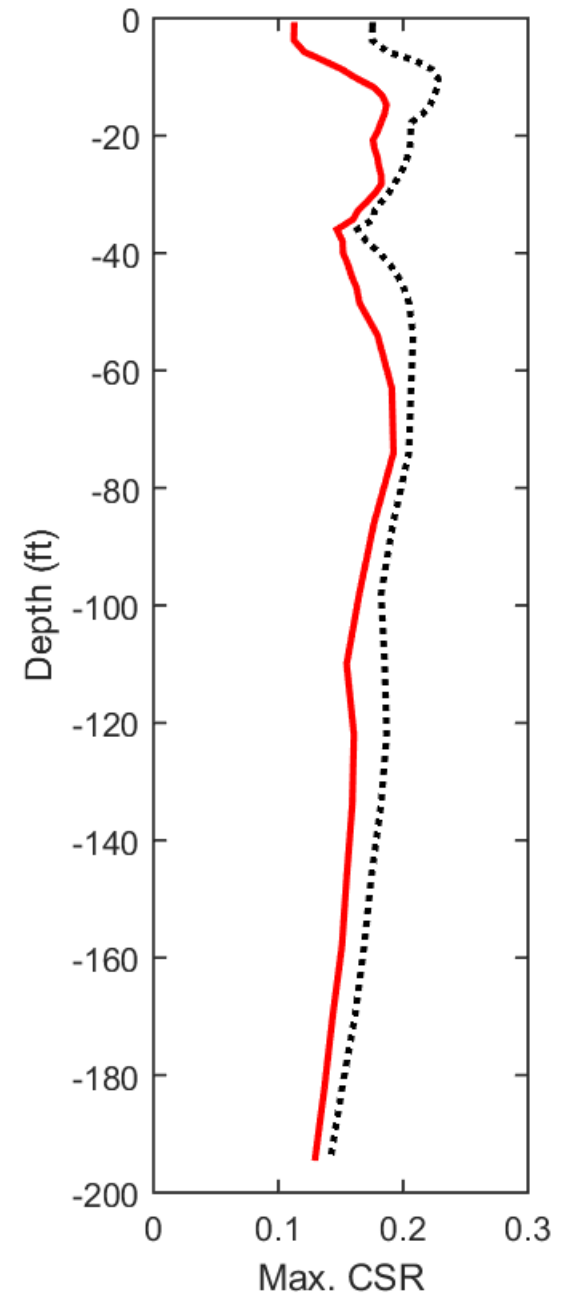
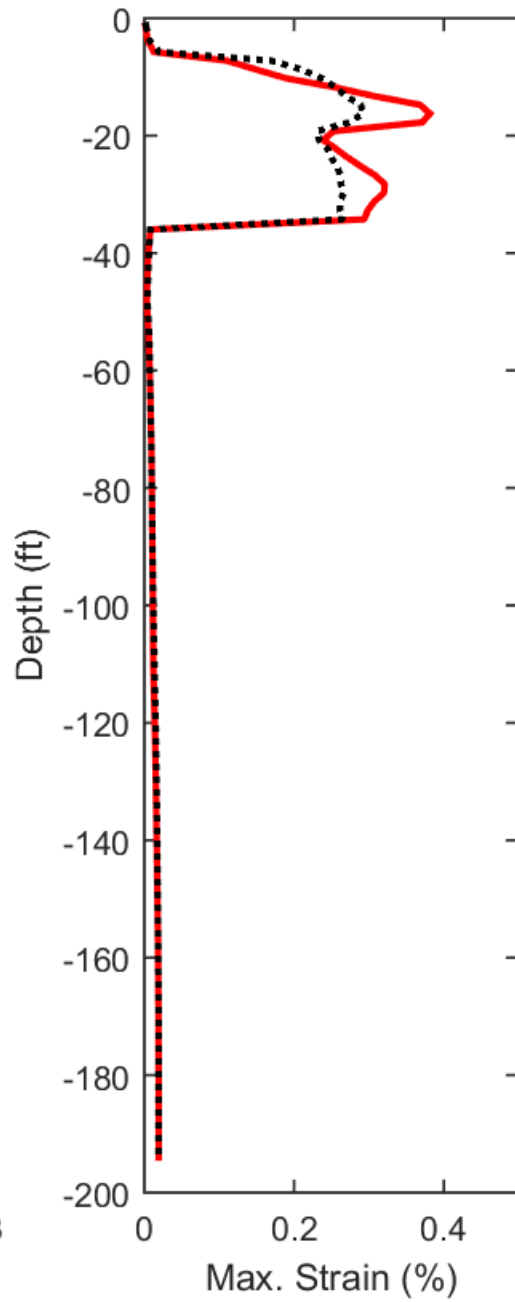
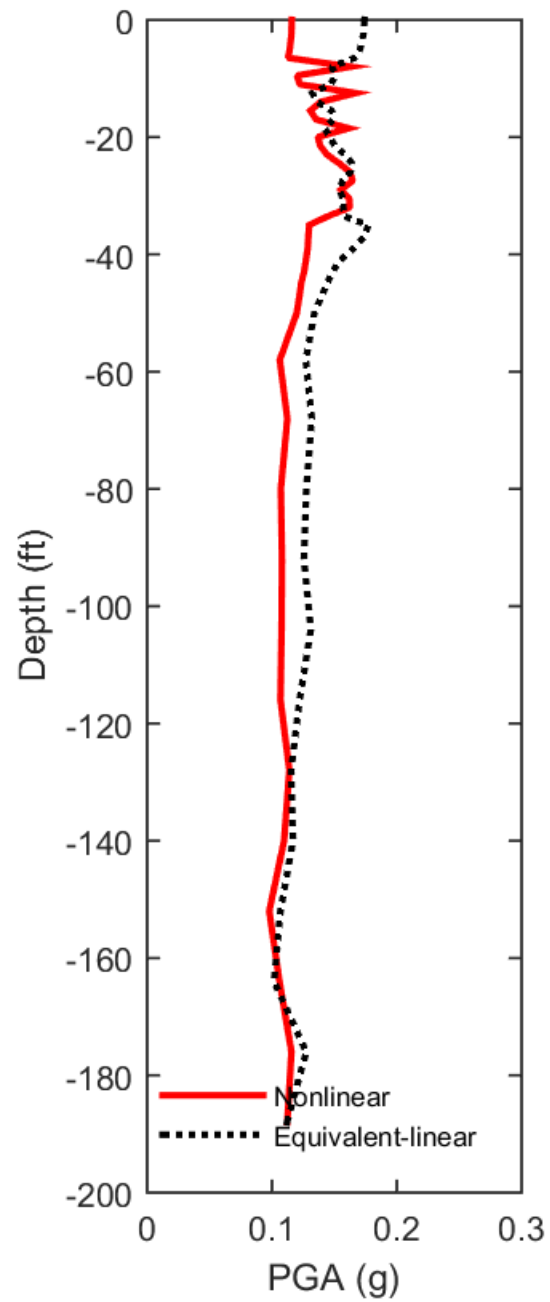
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2

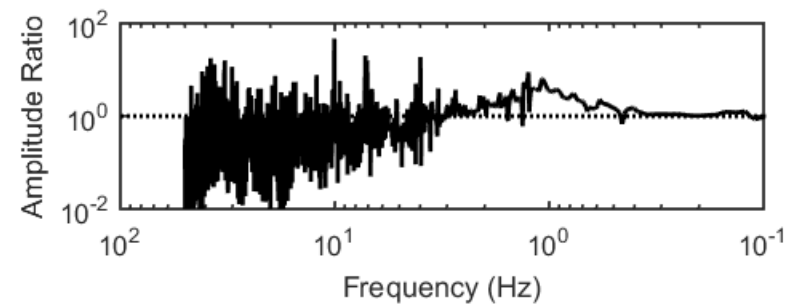
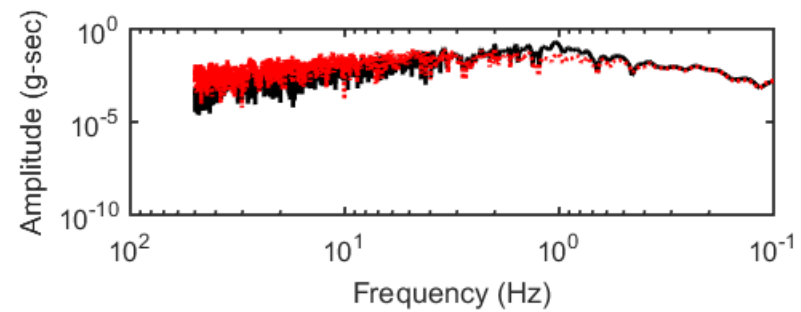
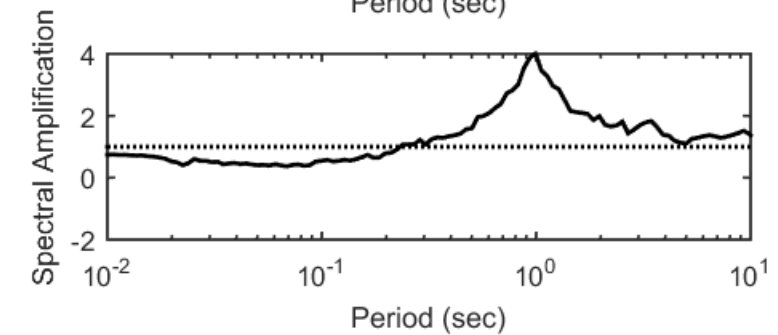
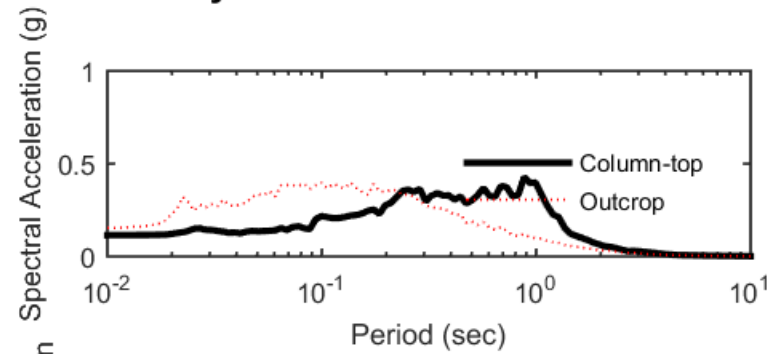
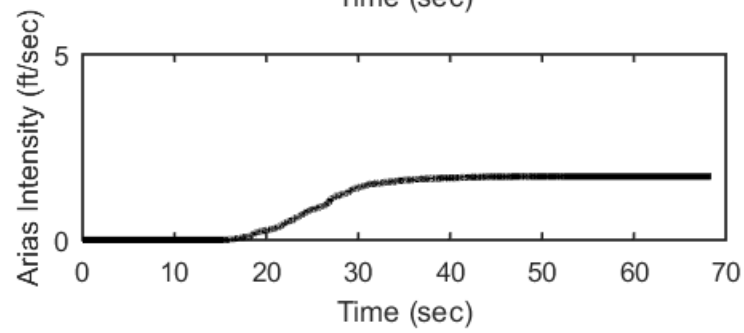
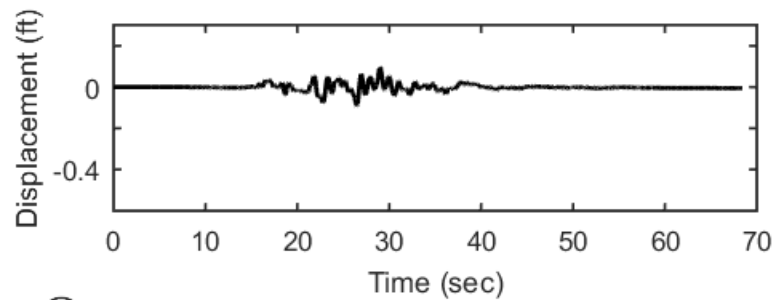
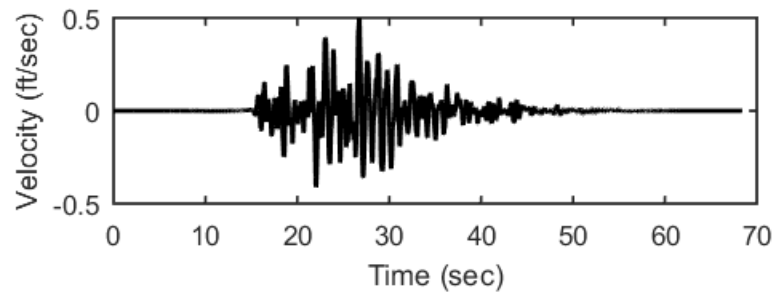
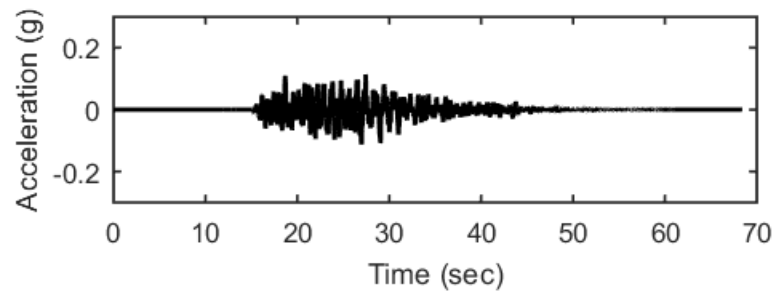


### Profile outputs for Motion: FEE2

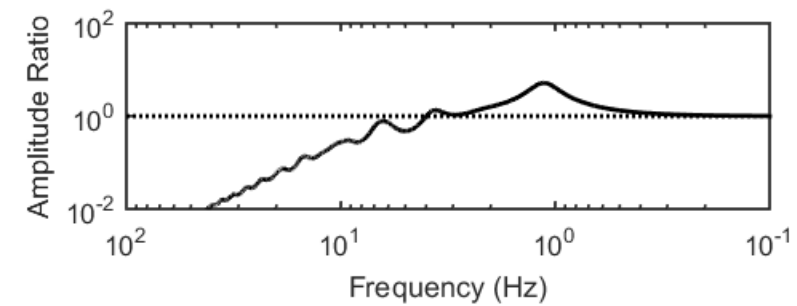
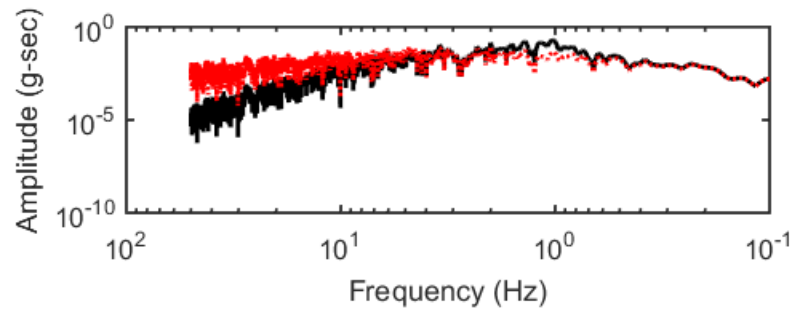
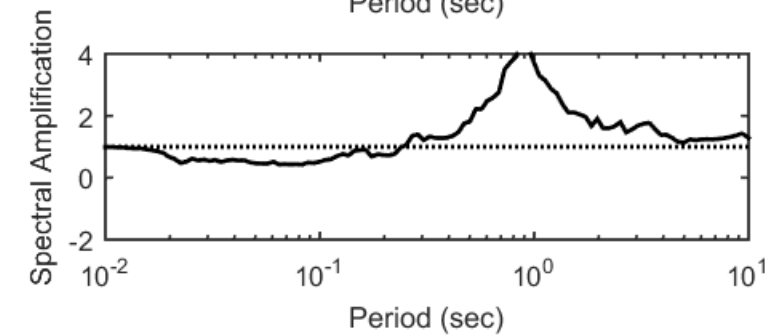
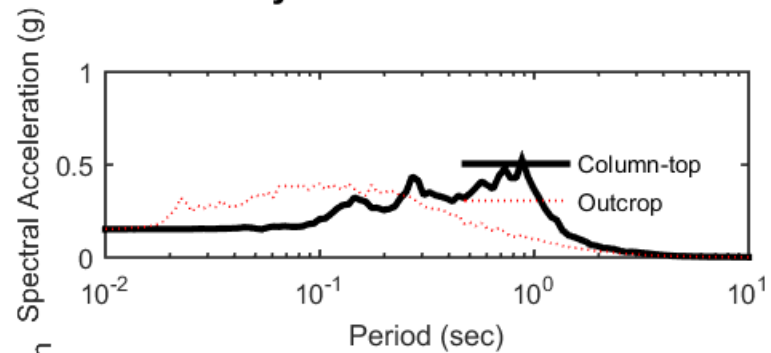
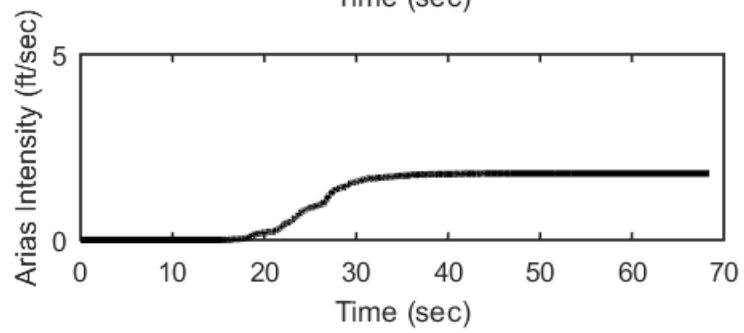
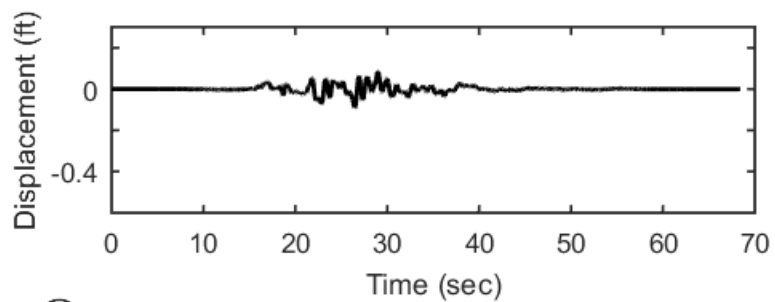
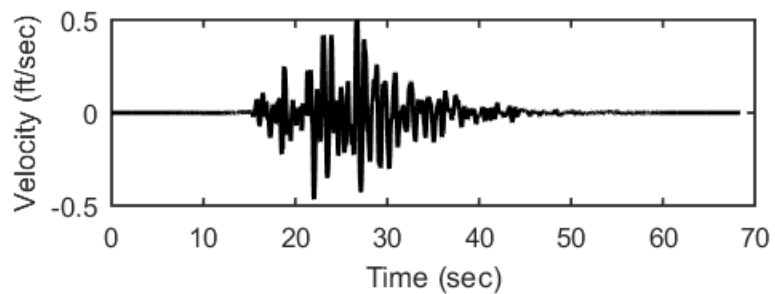
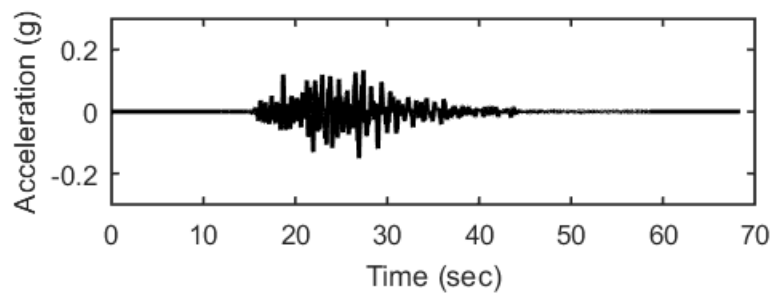




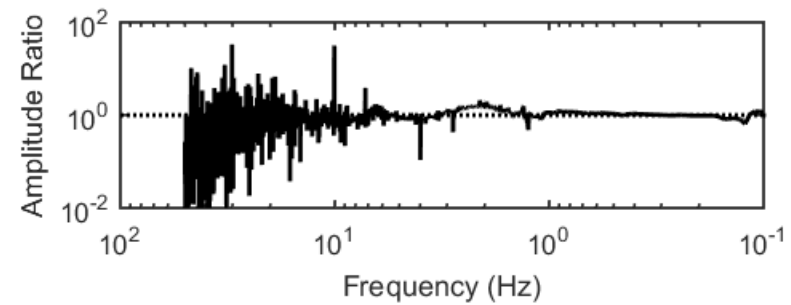
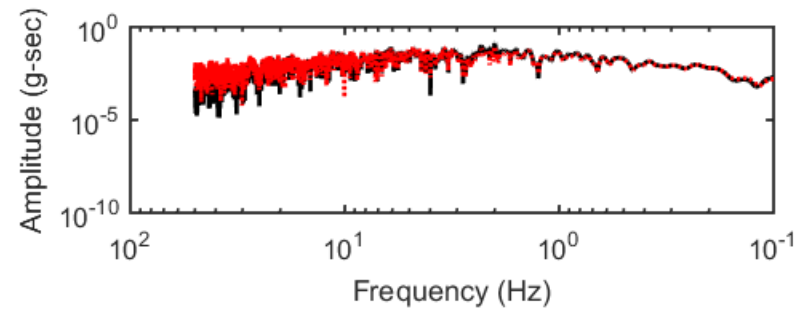
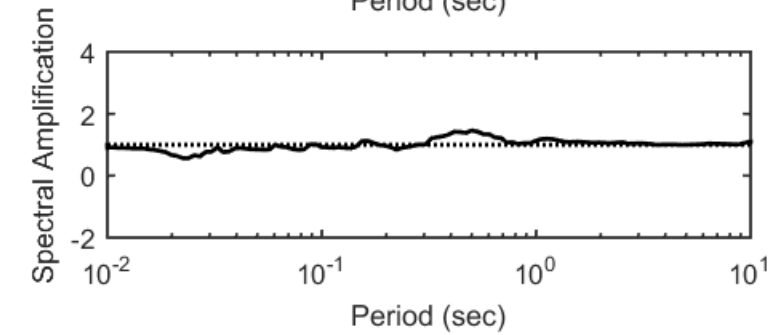
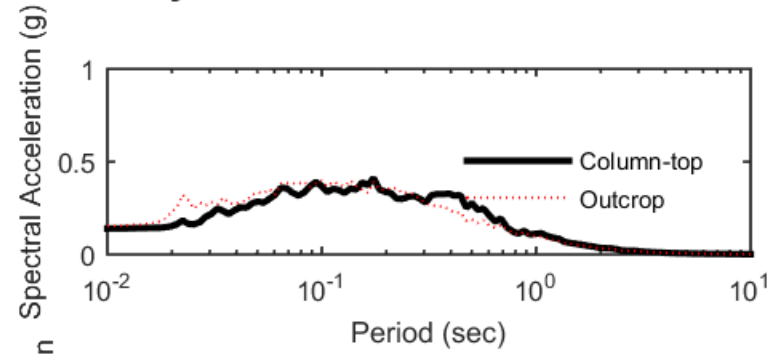
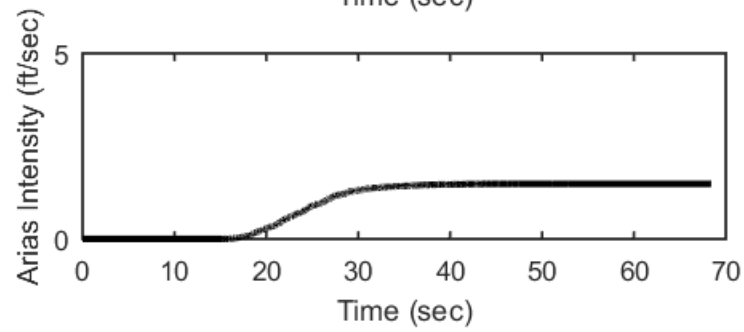
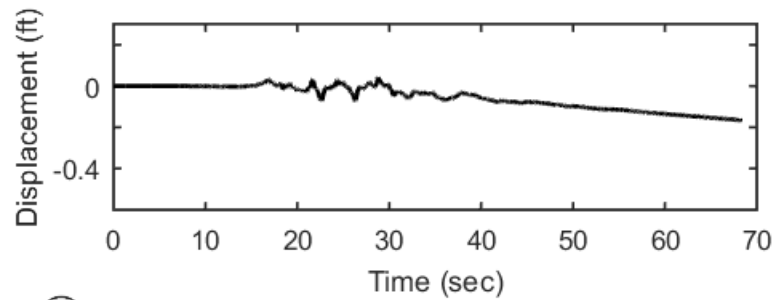
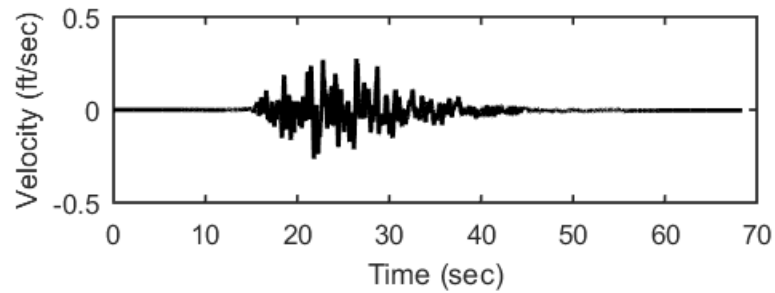
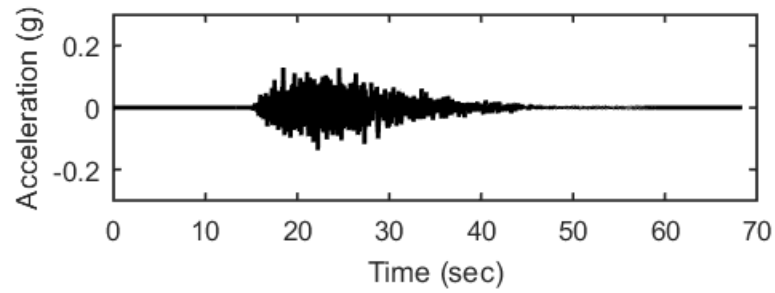
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



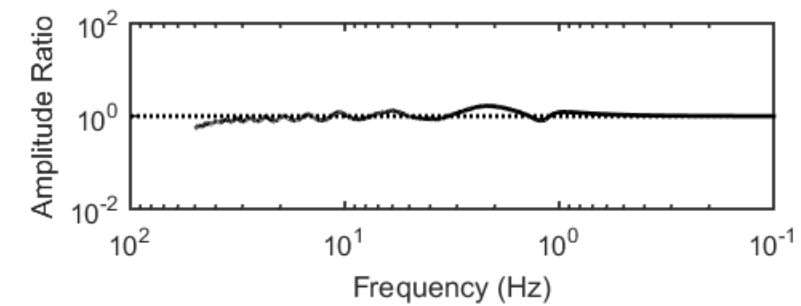
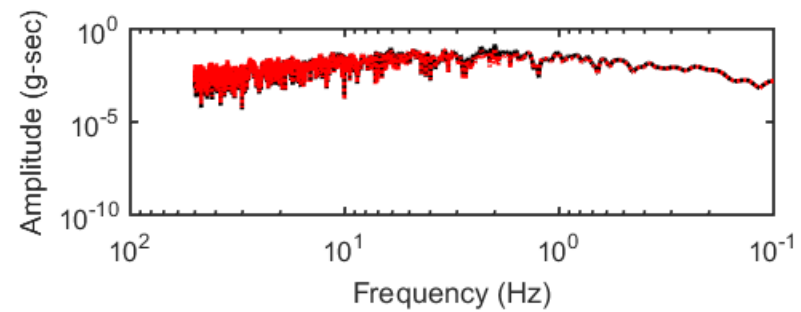
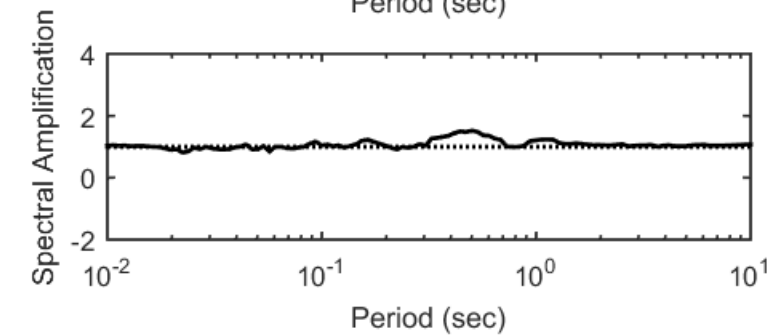
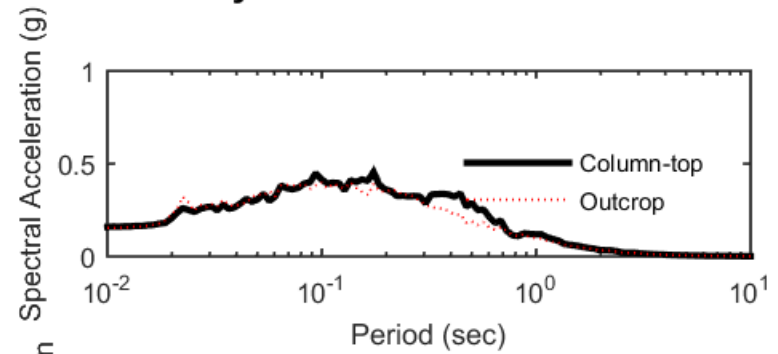
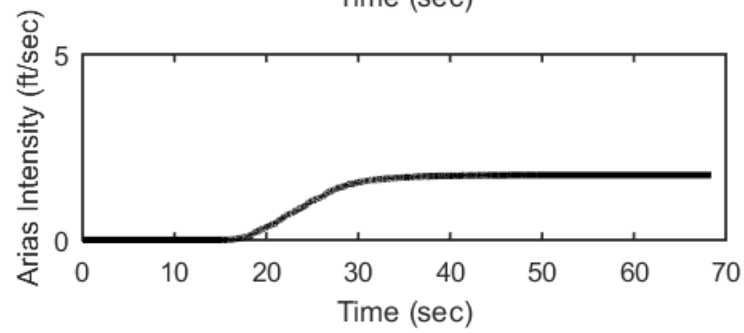
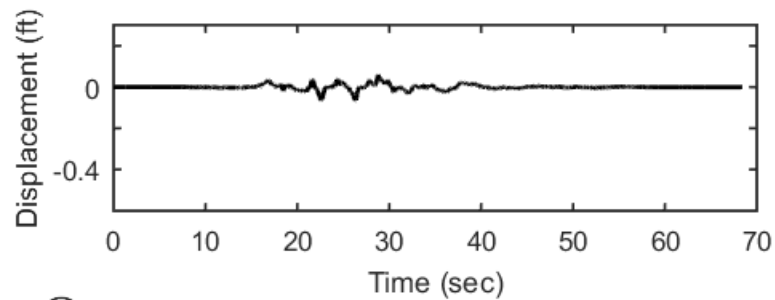
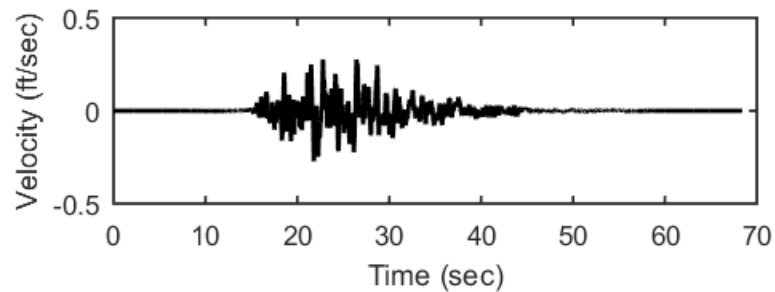
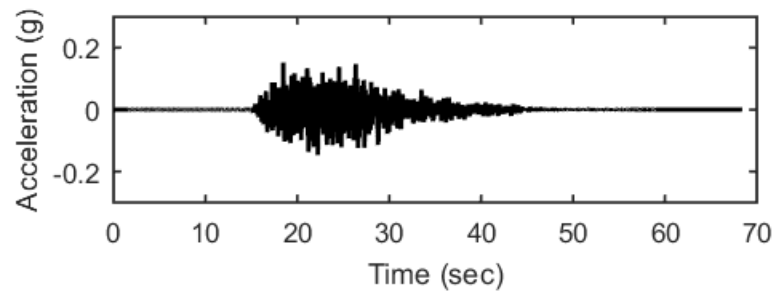
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



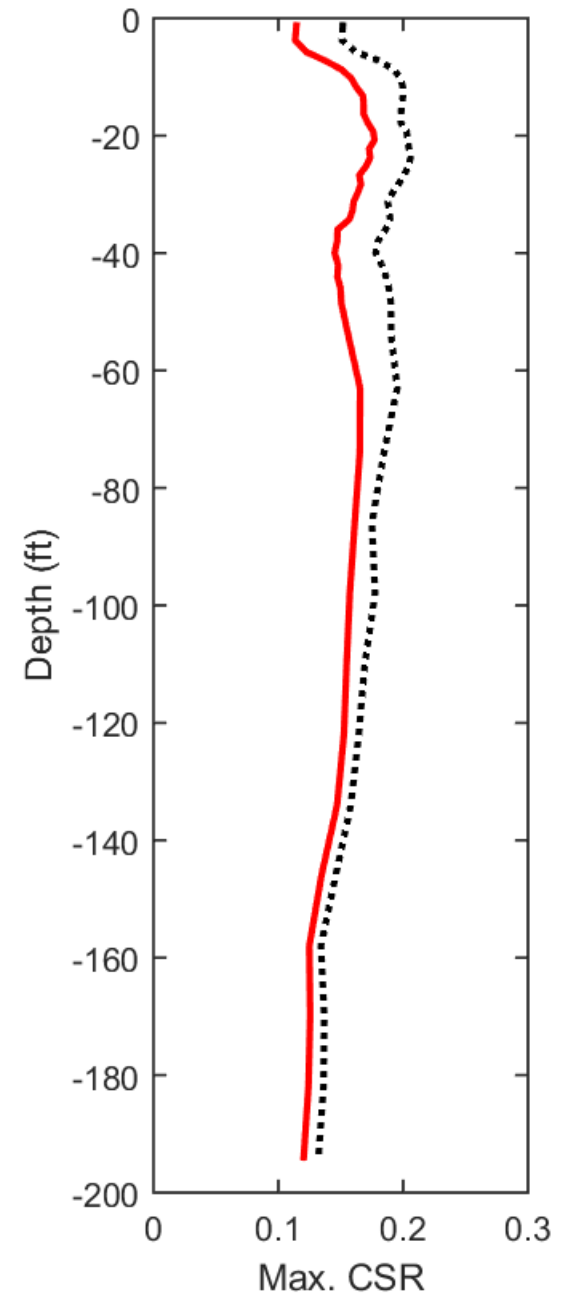
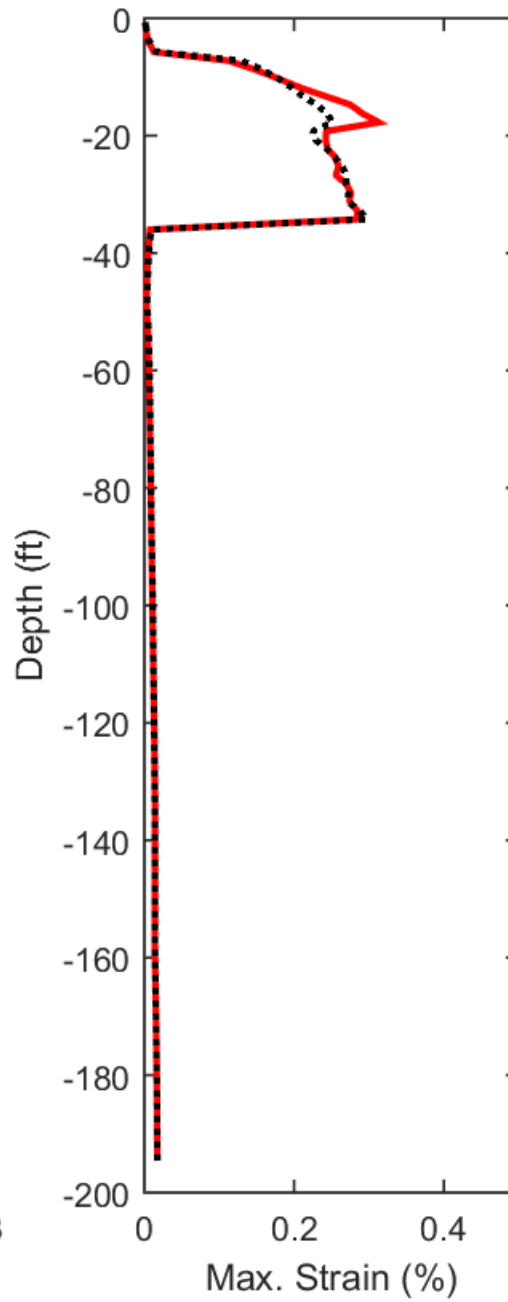
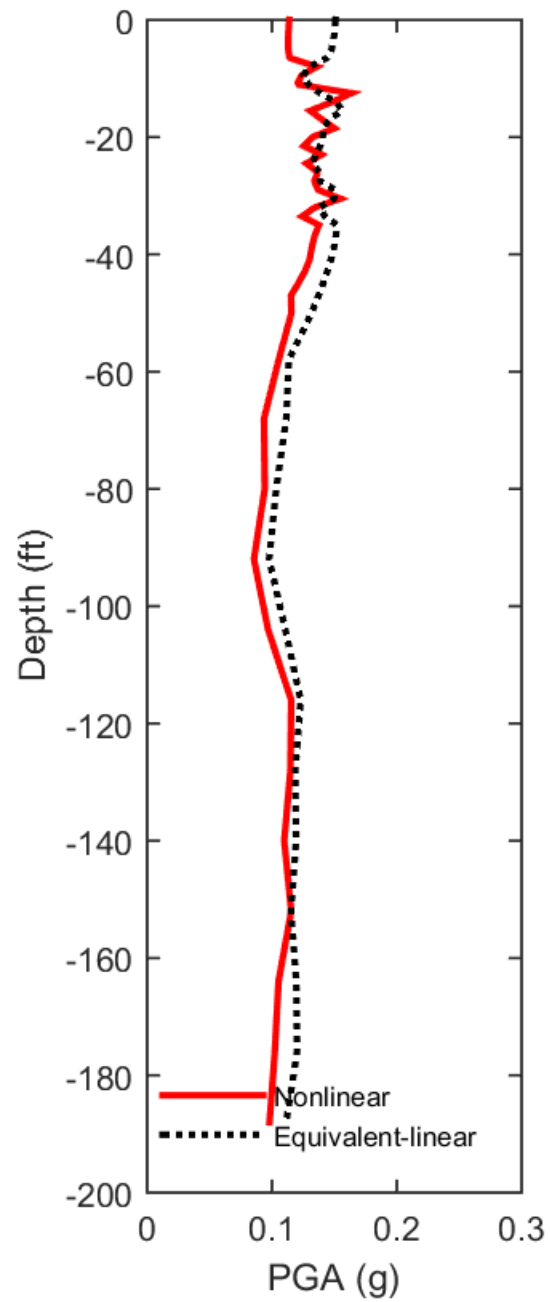
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



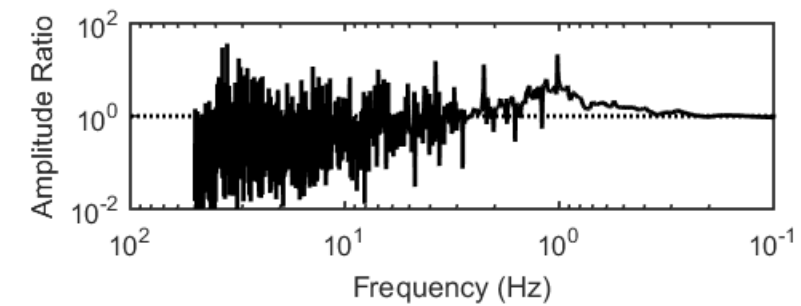
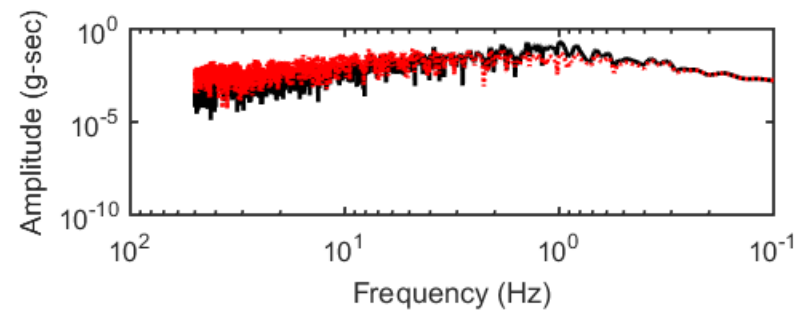
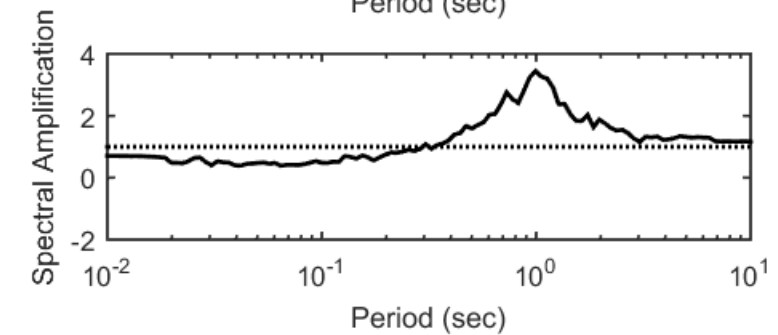
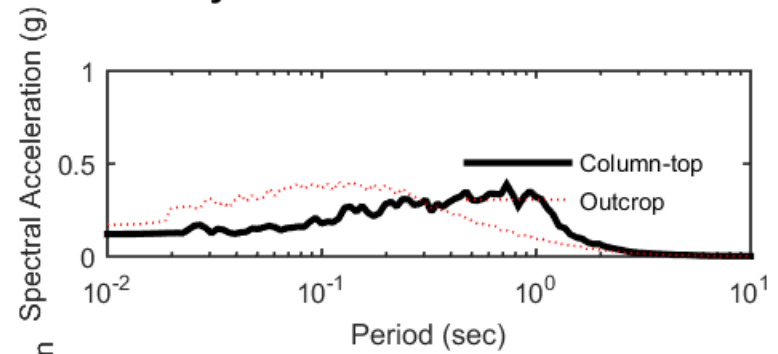
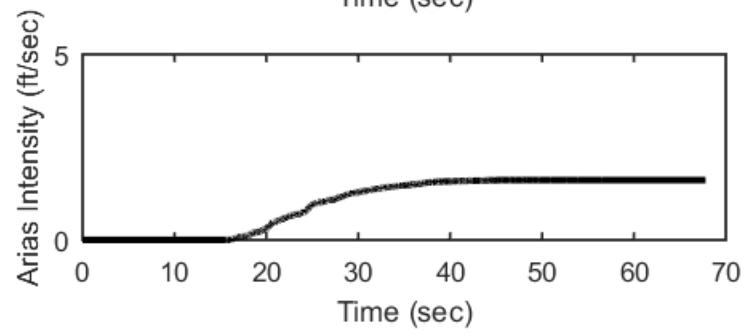
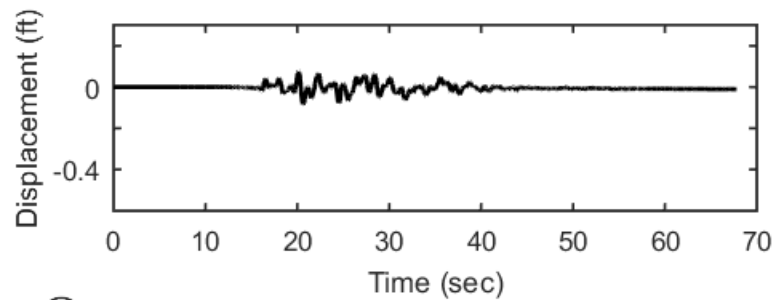
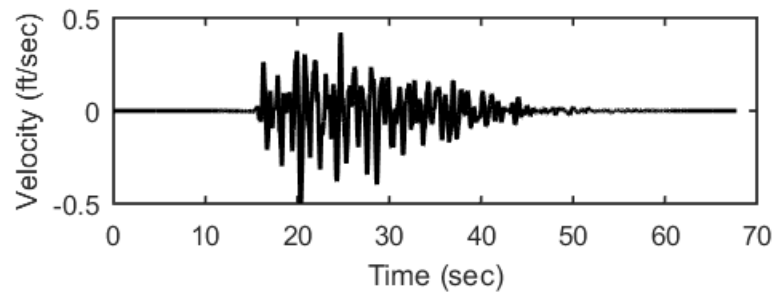
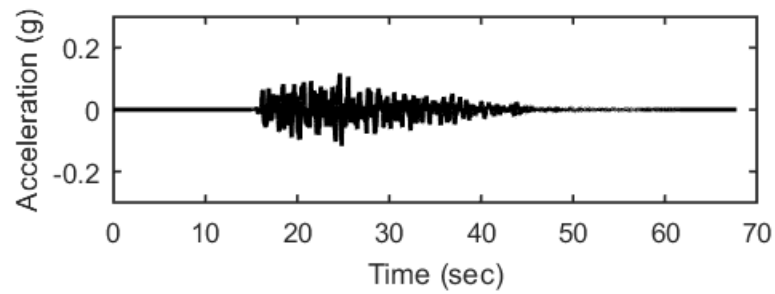
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



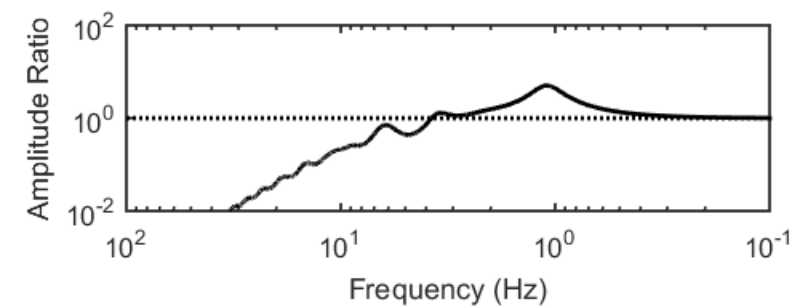
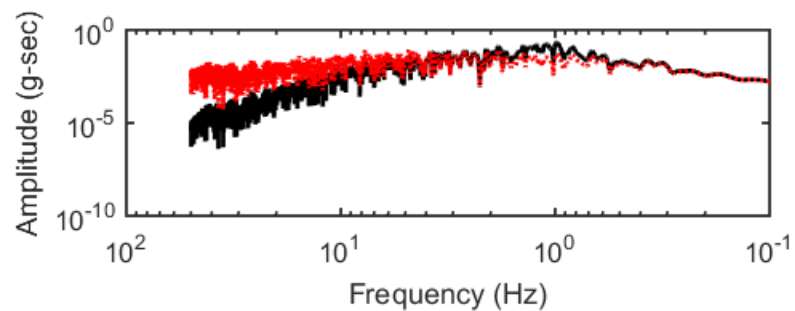
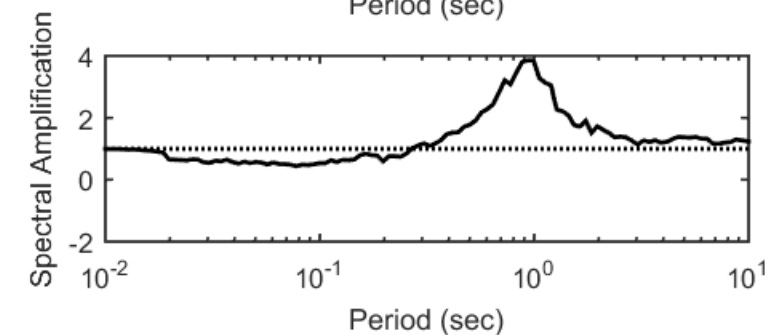
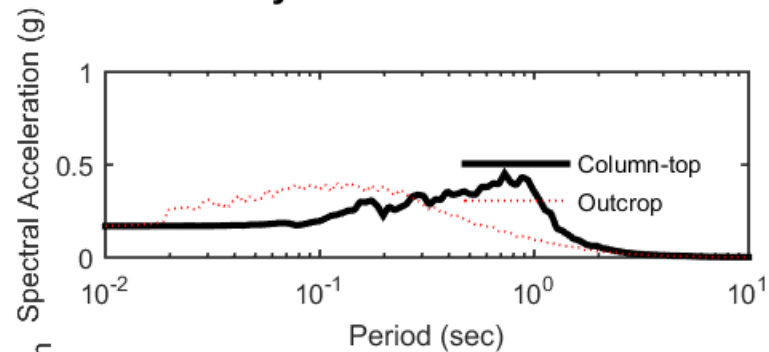
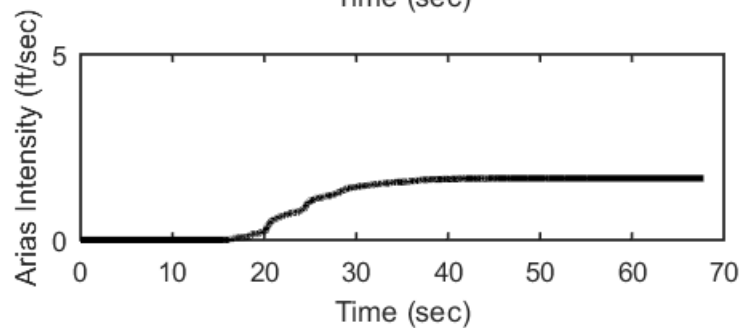
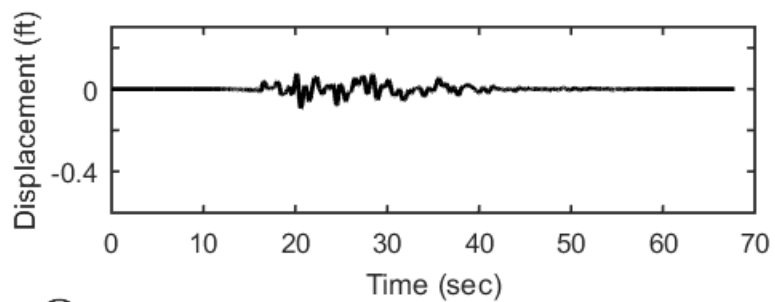
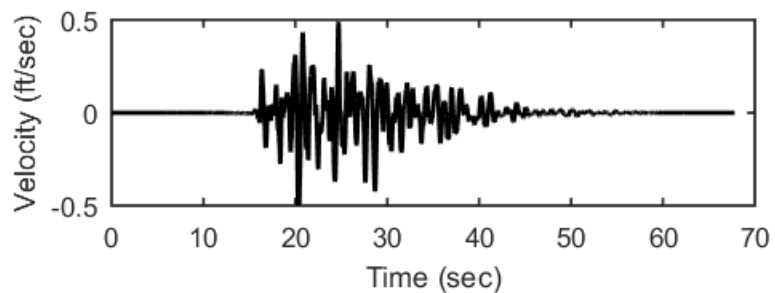
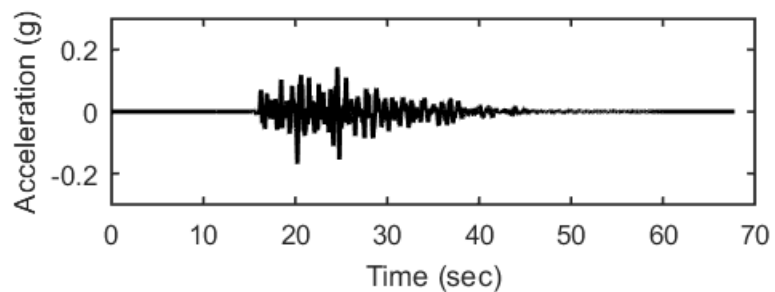
### Profile outputs for Motion: FEE3



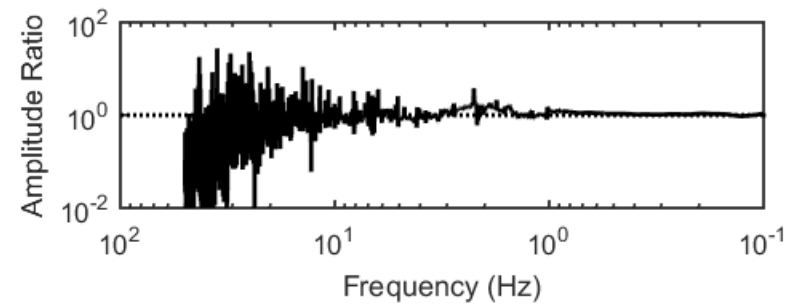
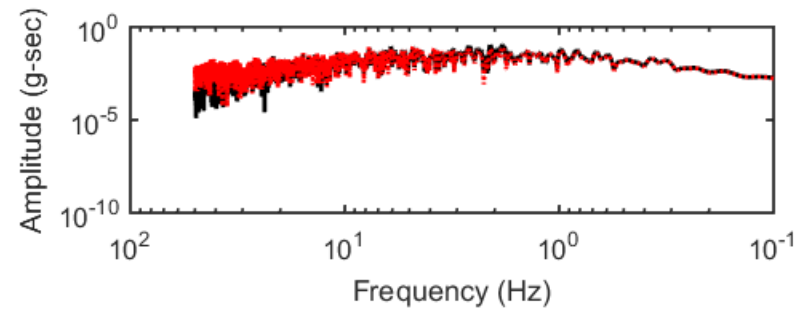
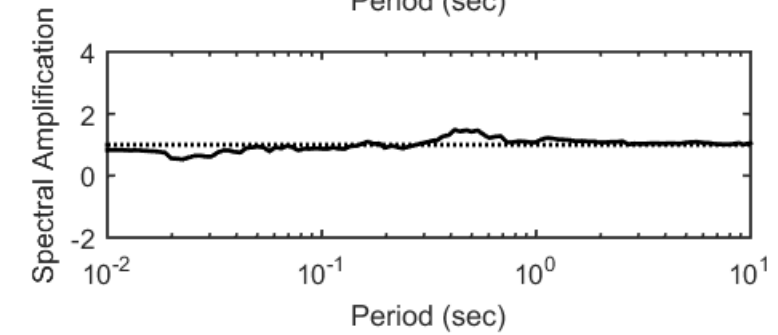
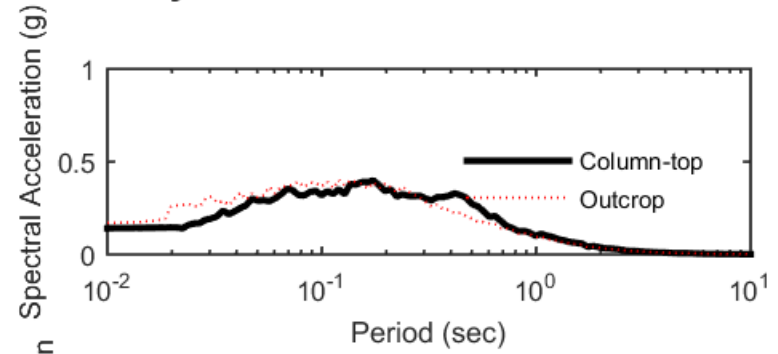
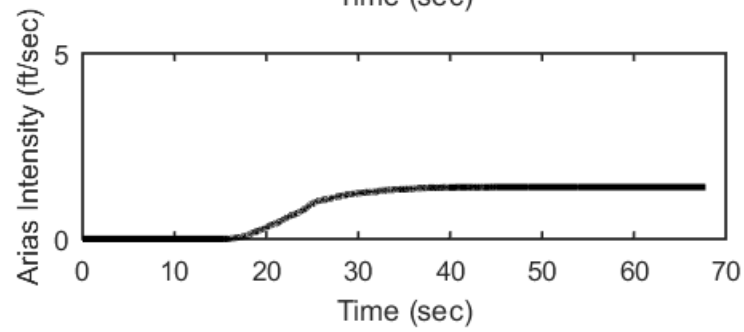
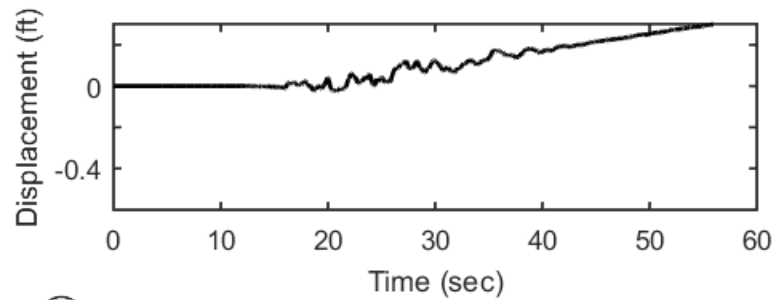
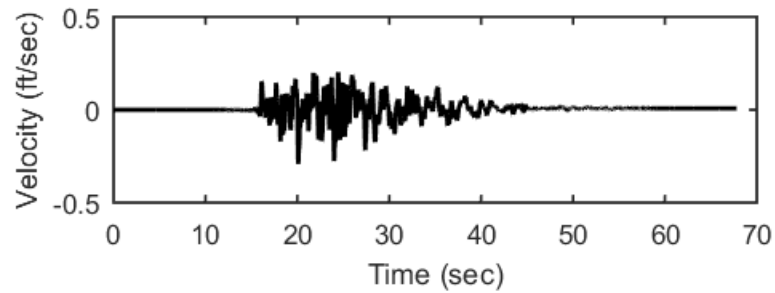
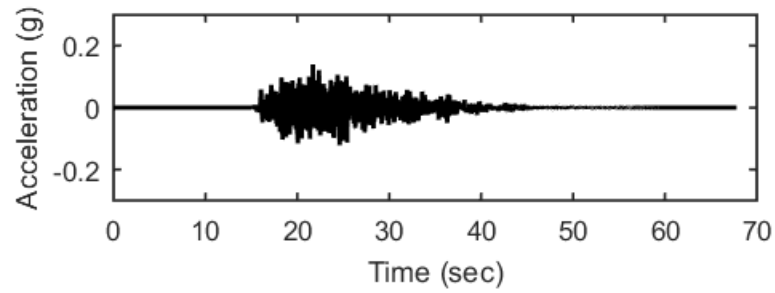
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4

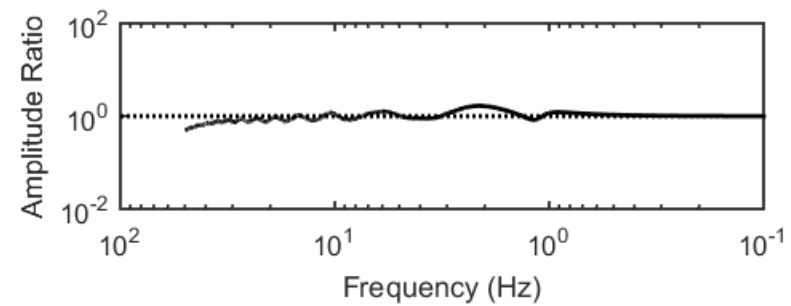
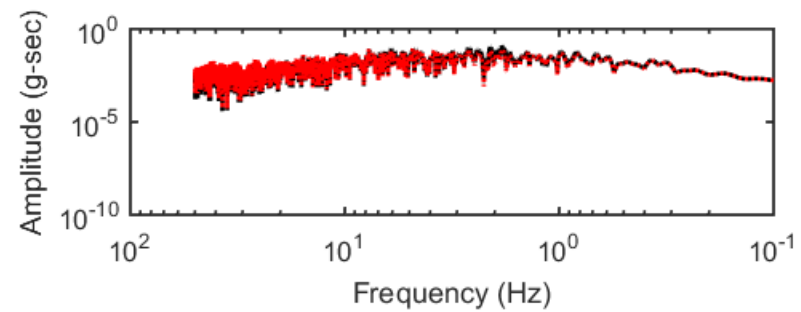
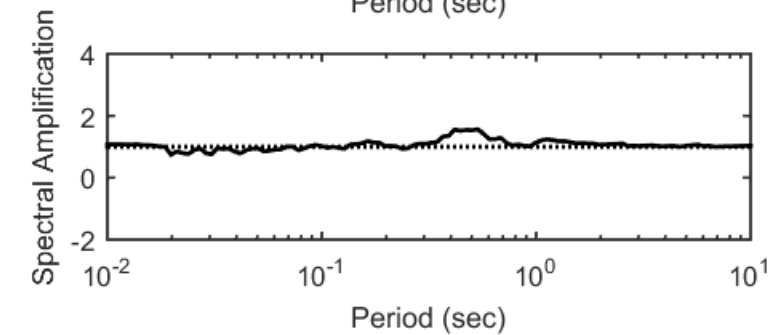
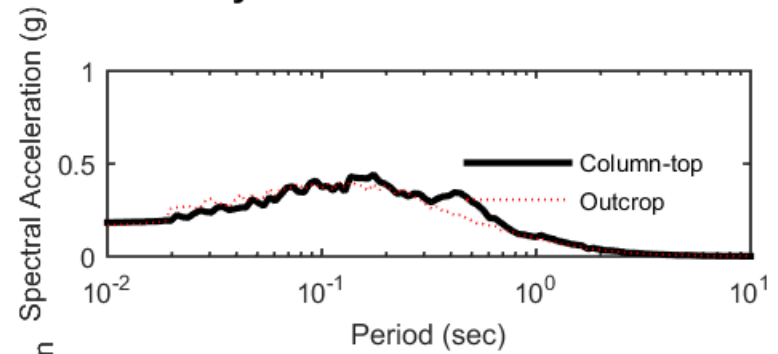
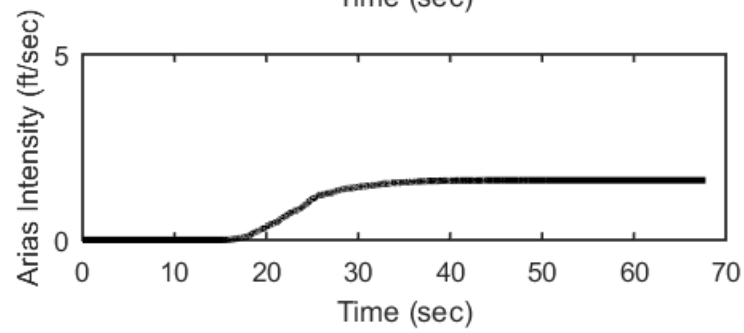
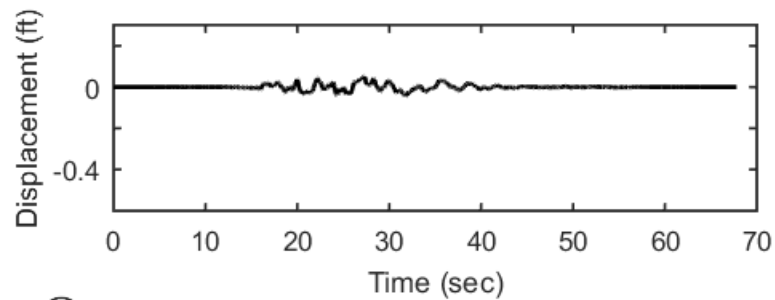
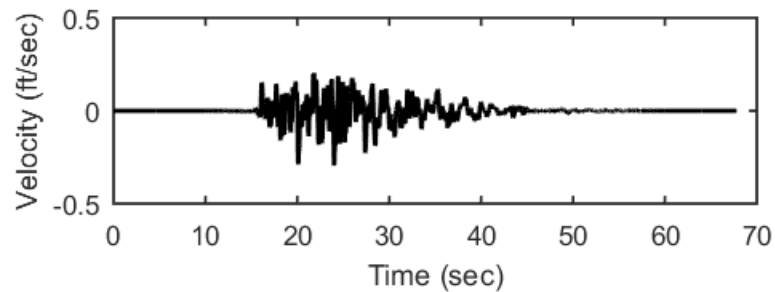
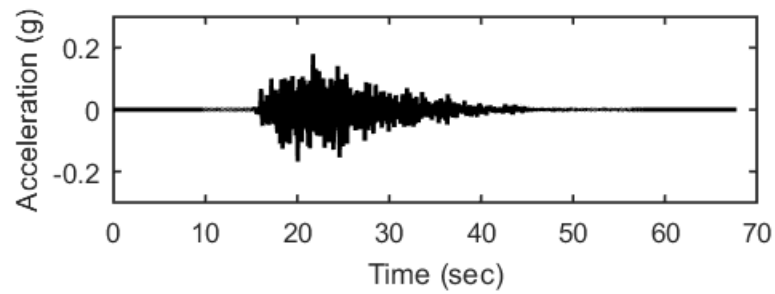


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4

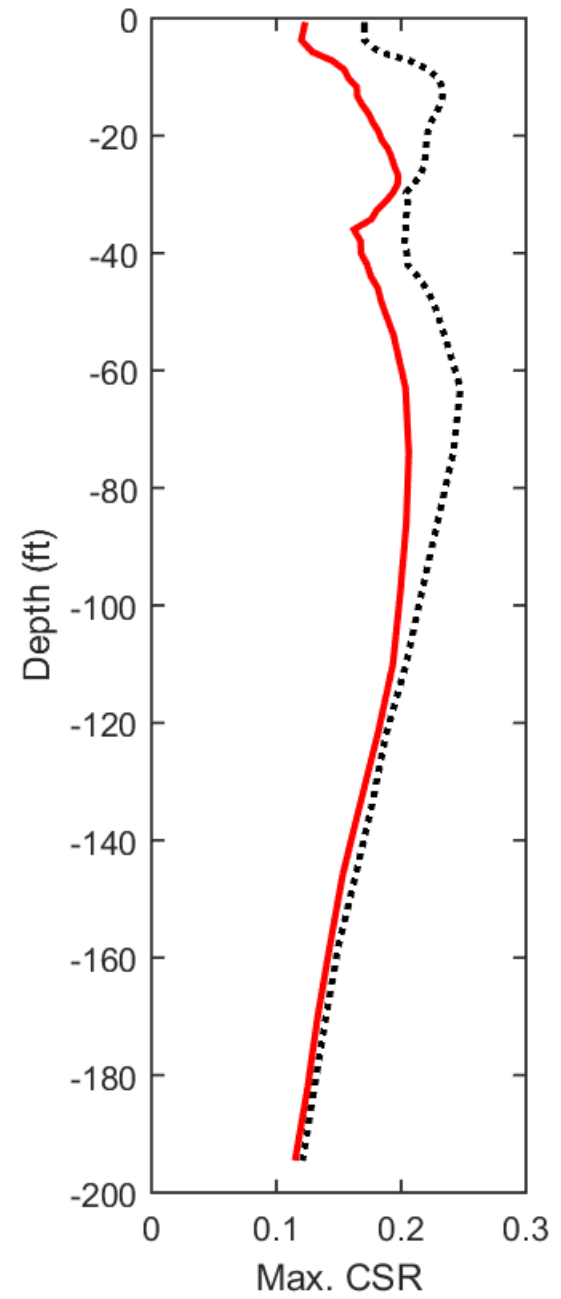
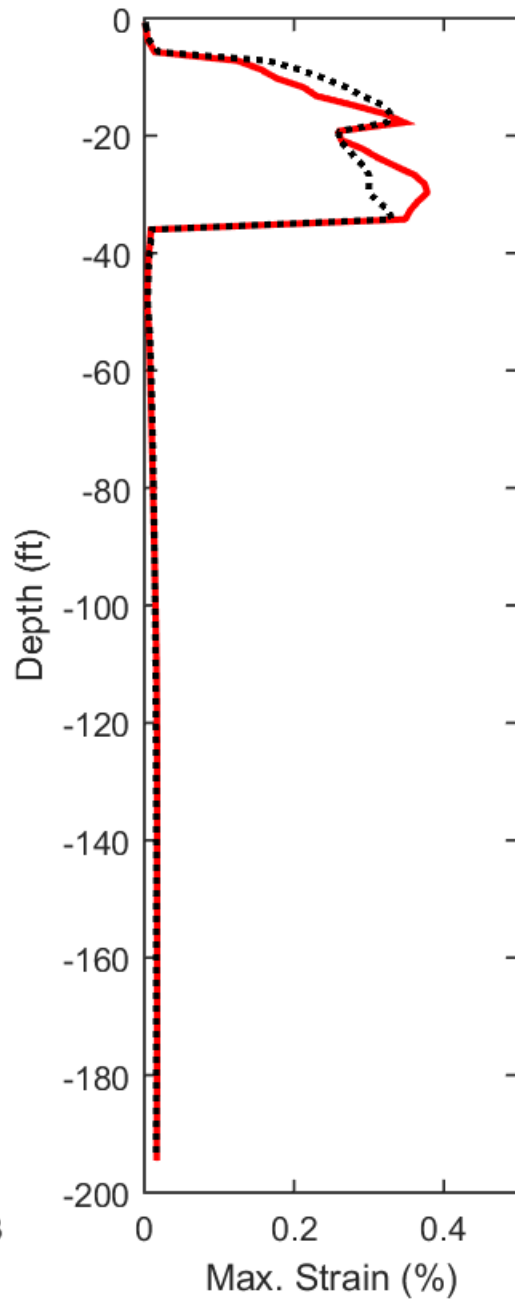
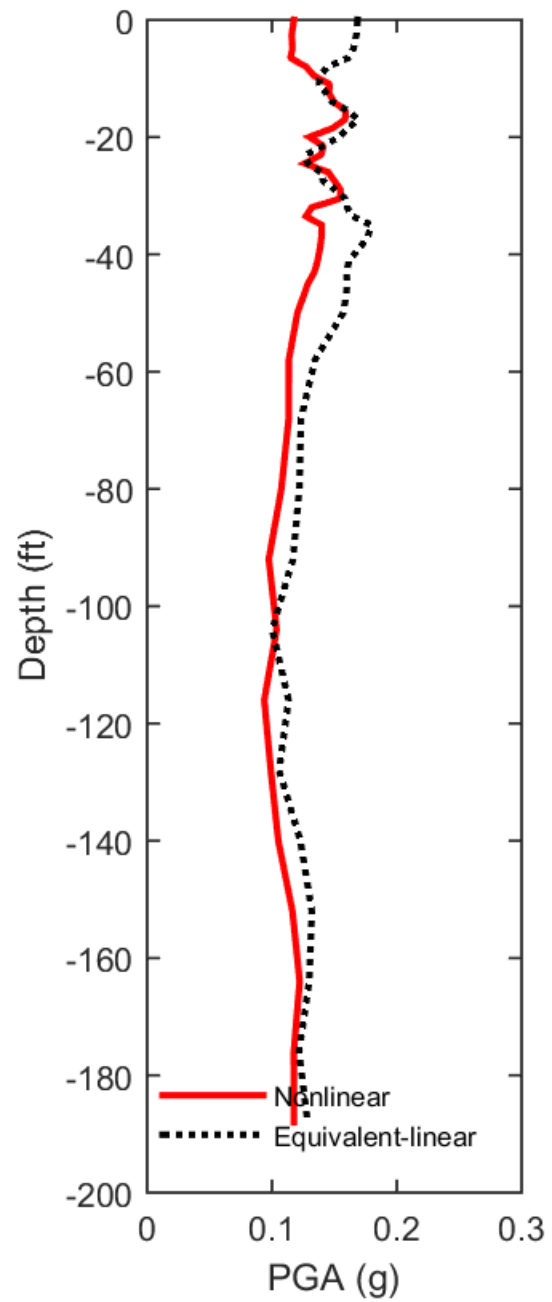




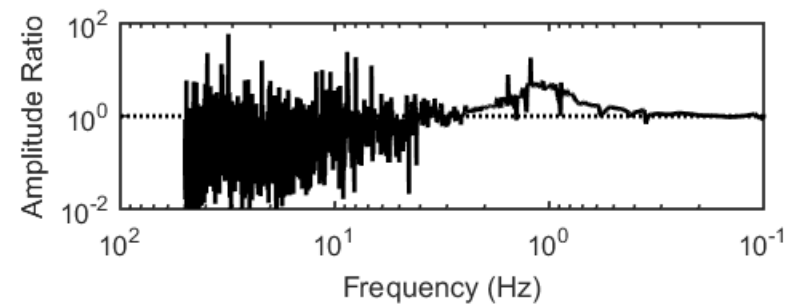
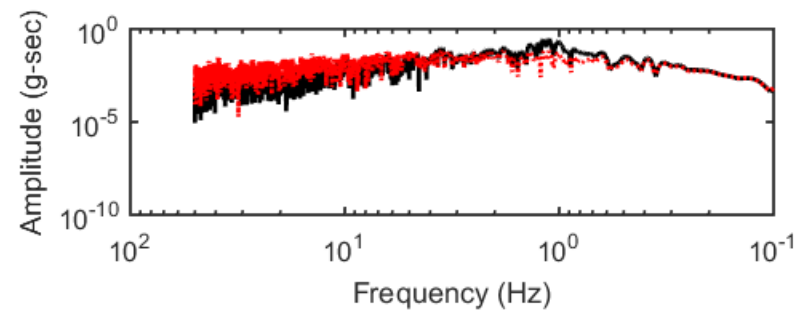
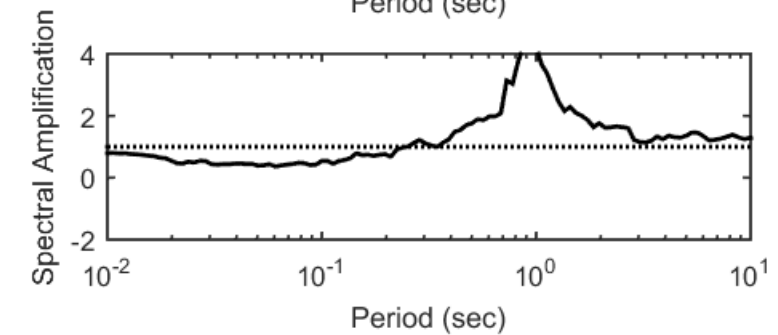
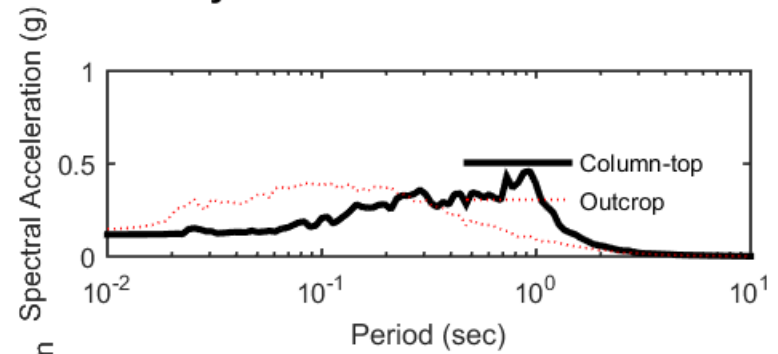
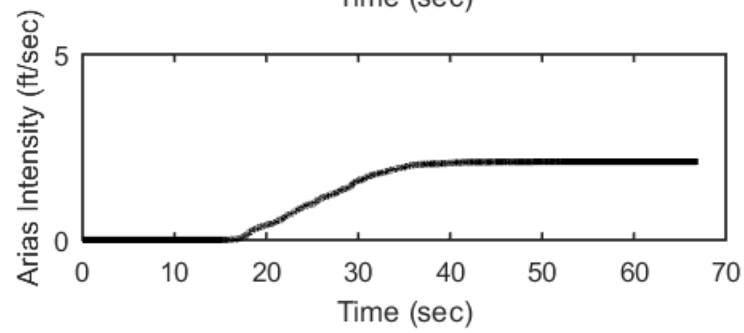
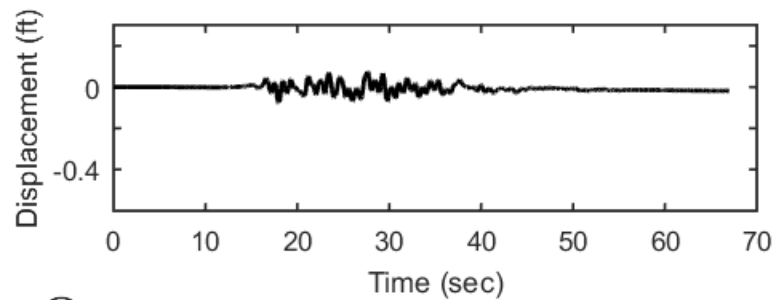
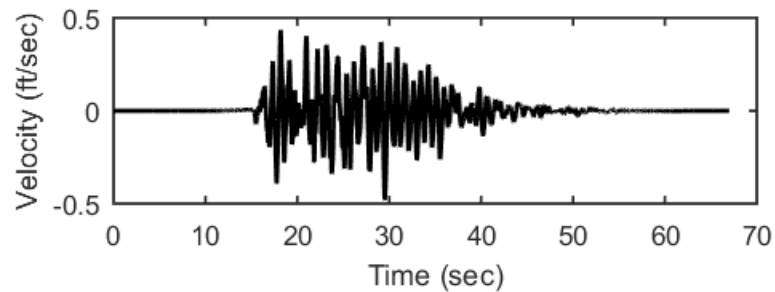
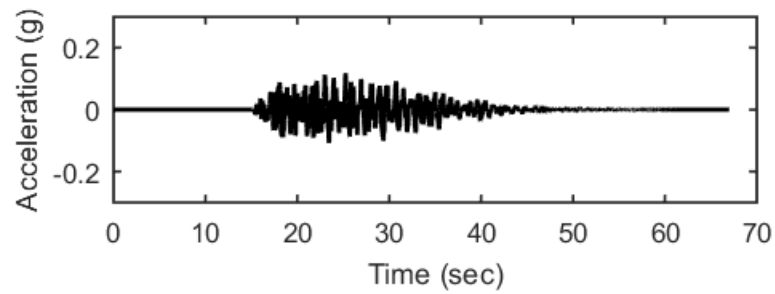
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



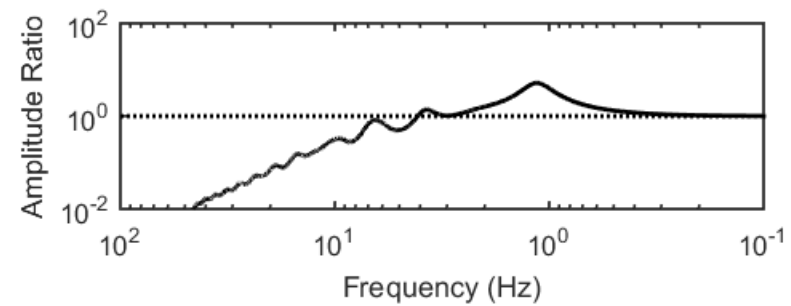
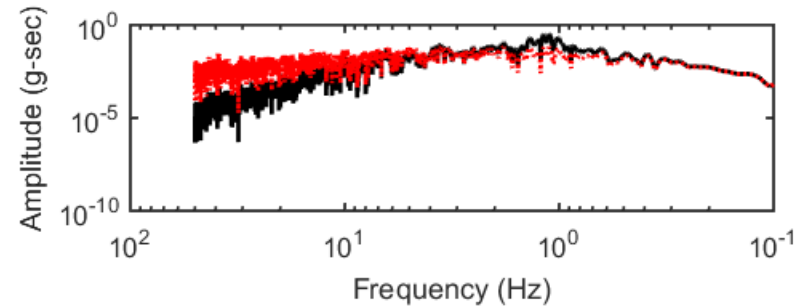
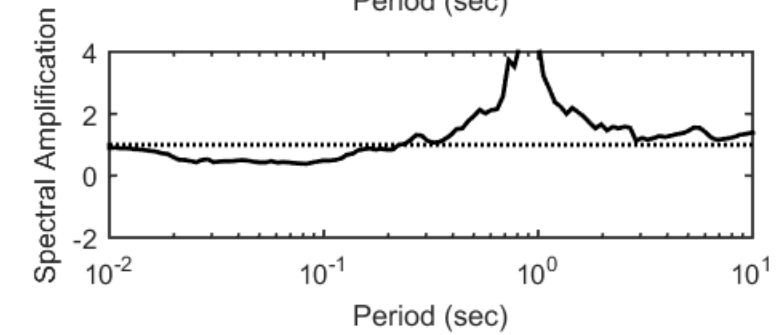
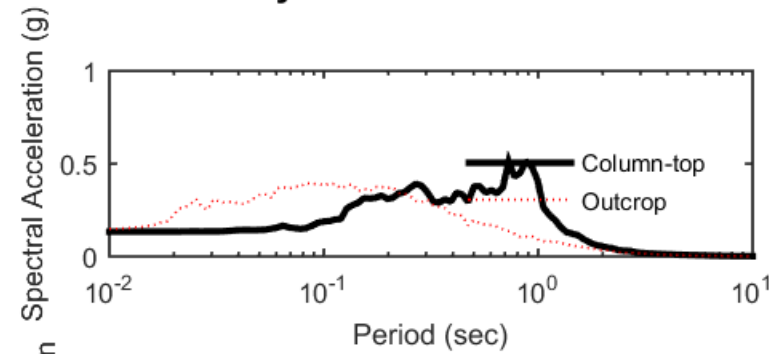
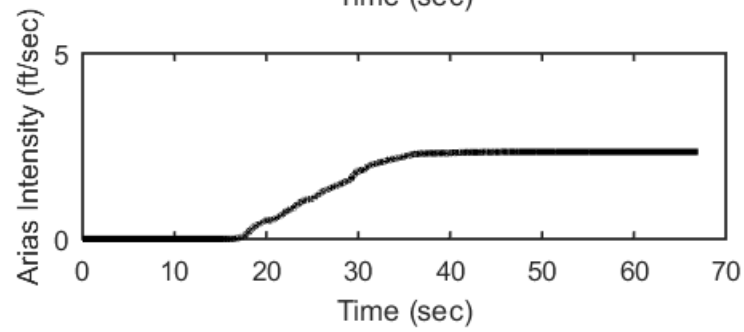
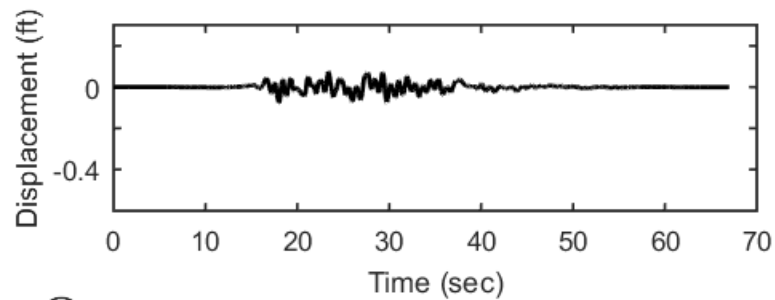
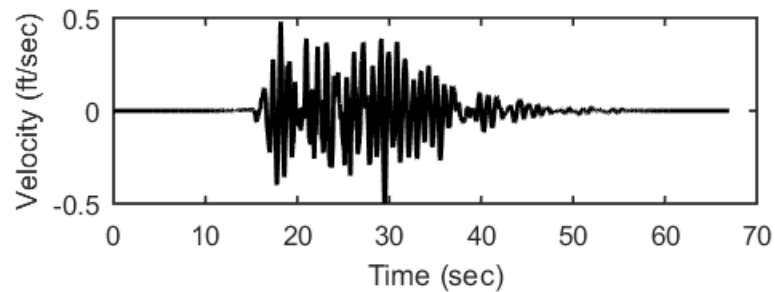
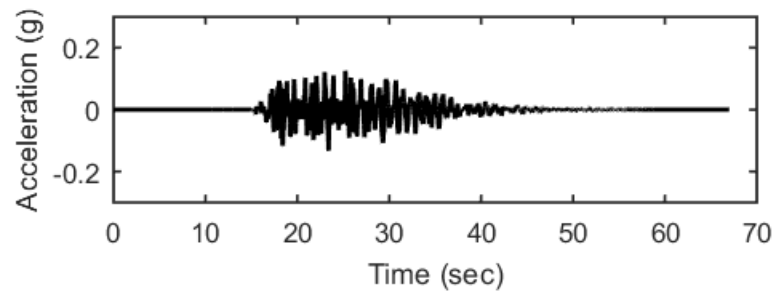
### Profile outputs for Motion: FEE4



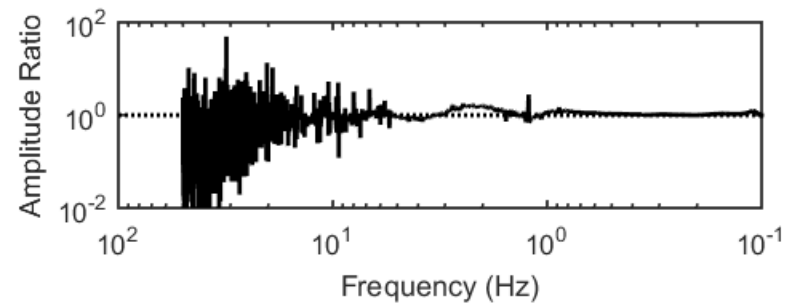
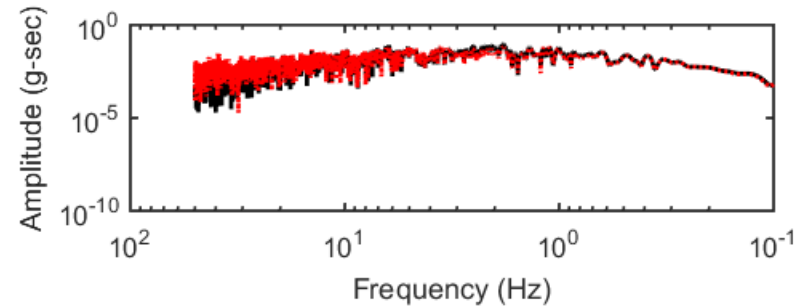
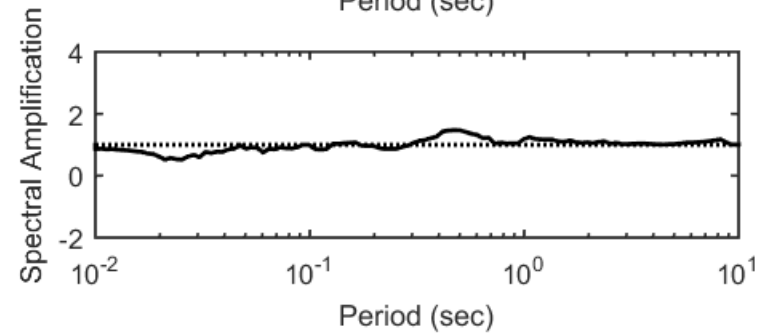
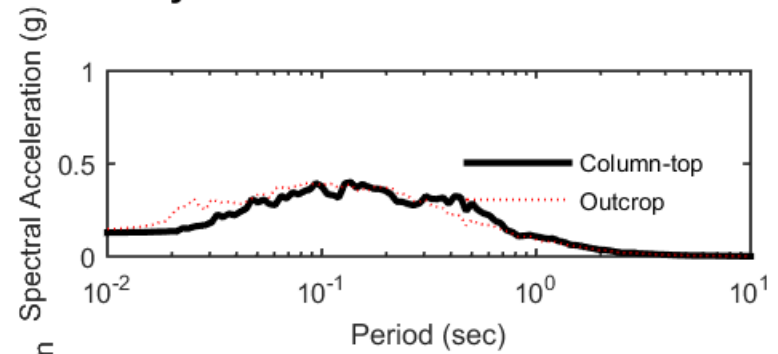
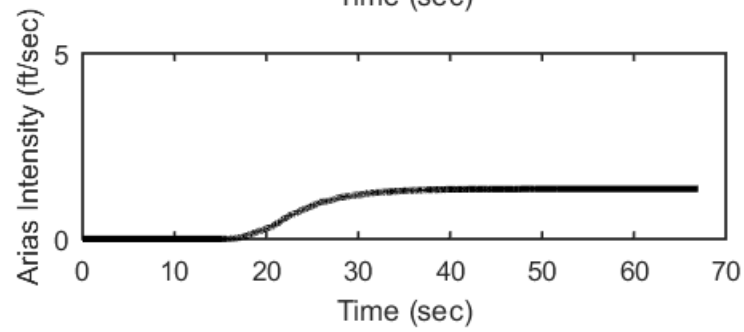
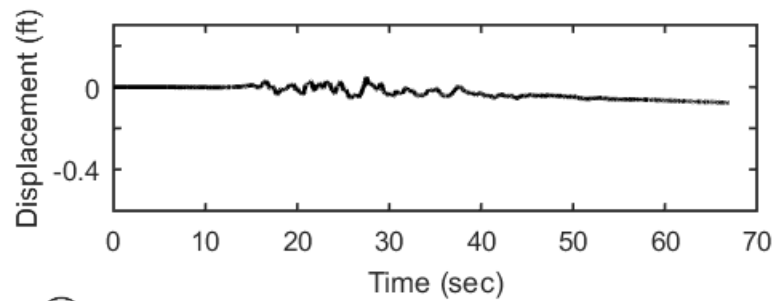
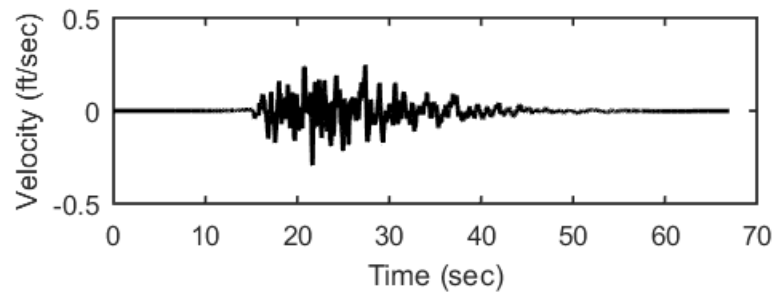
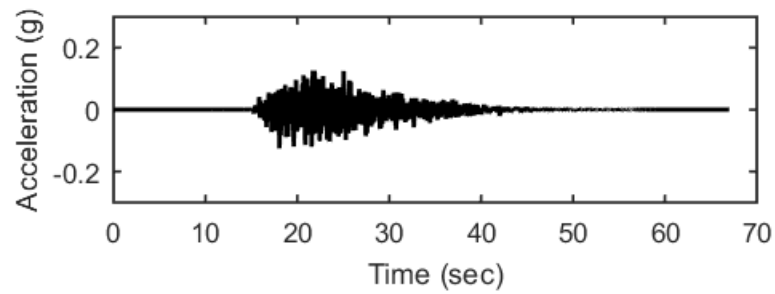
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



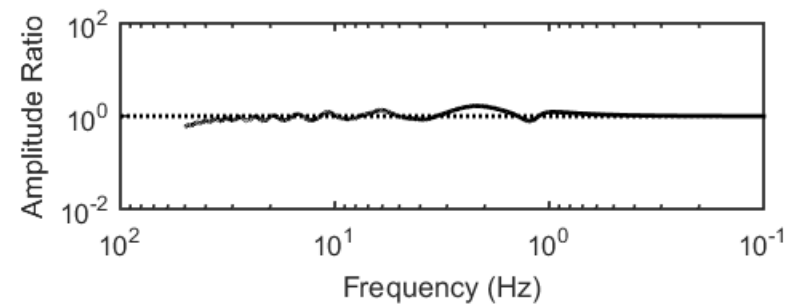
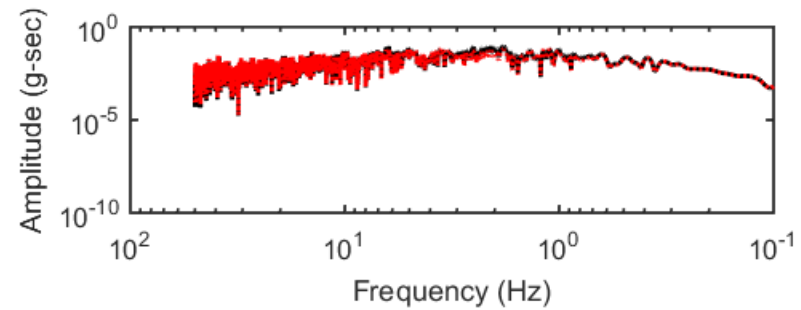
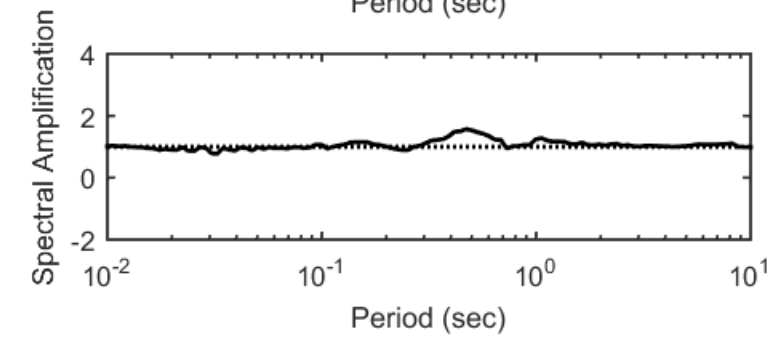
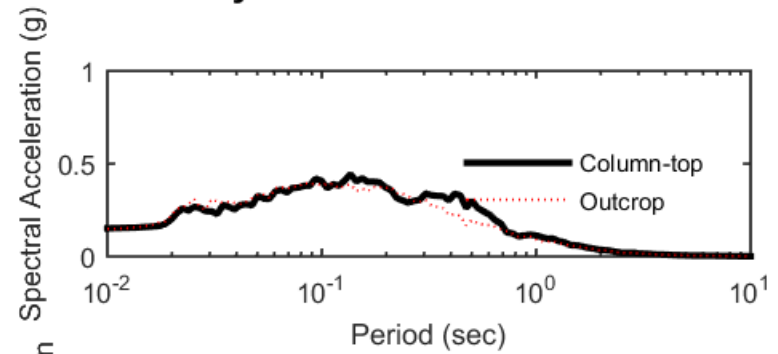
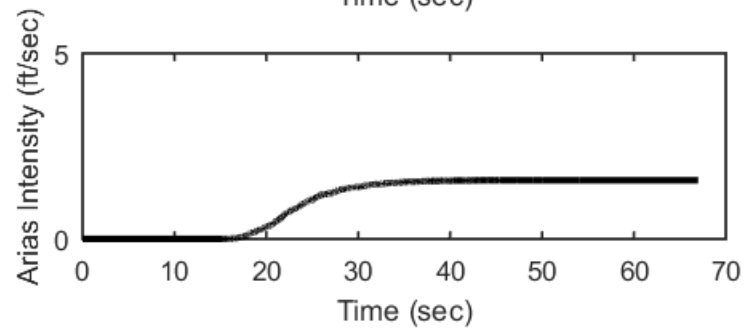
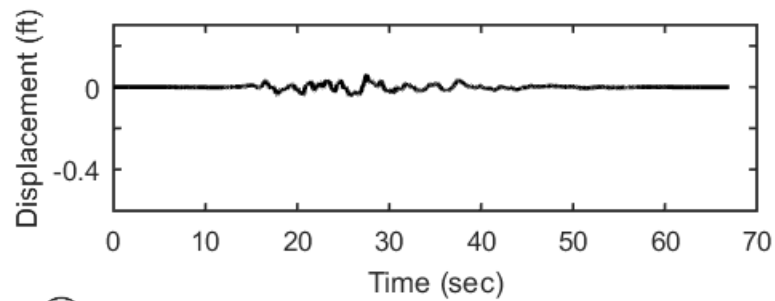
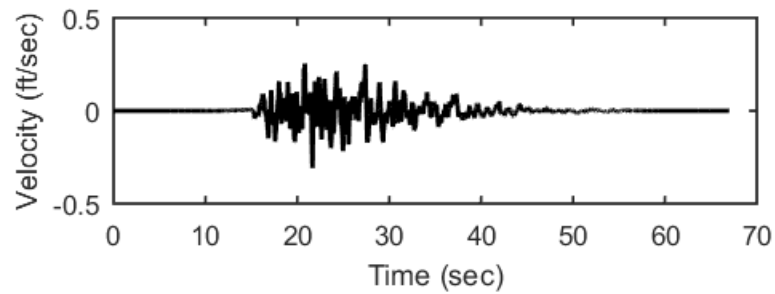
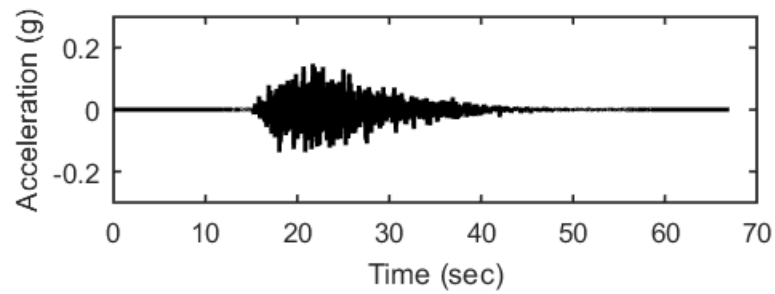
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



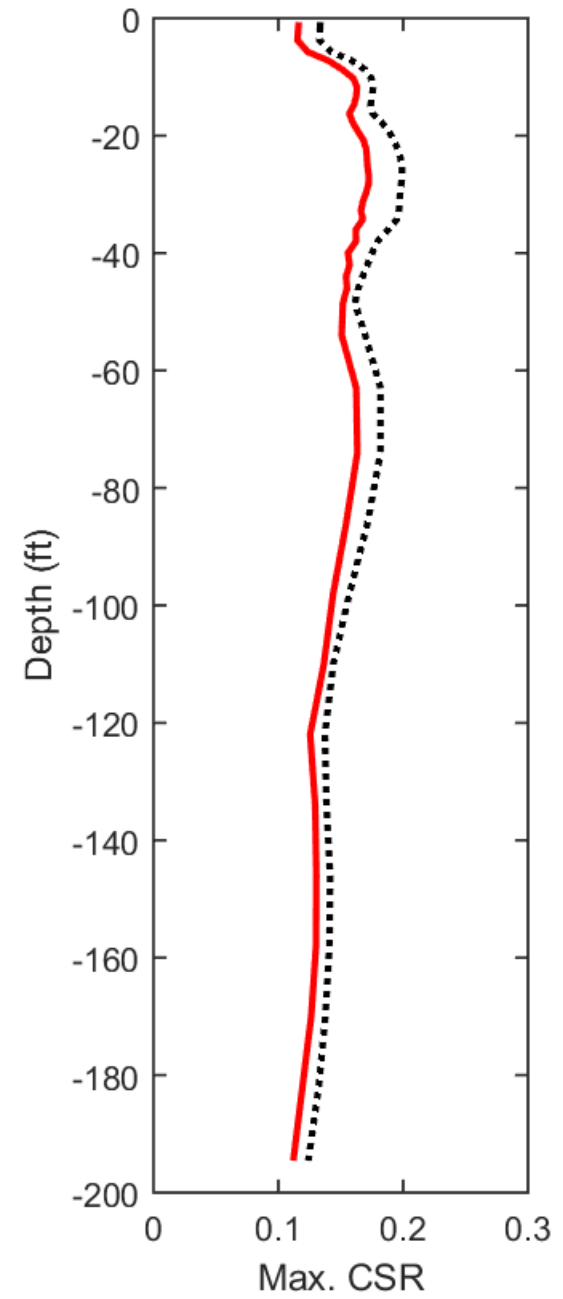
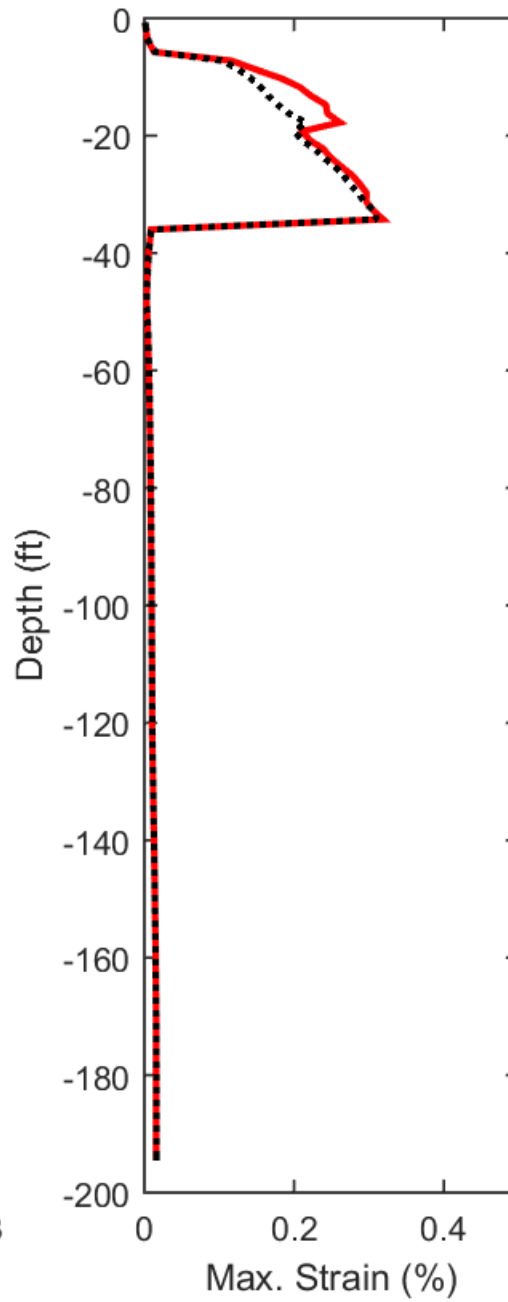
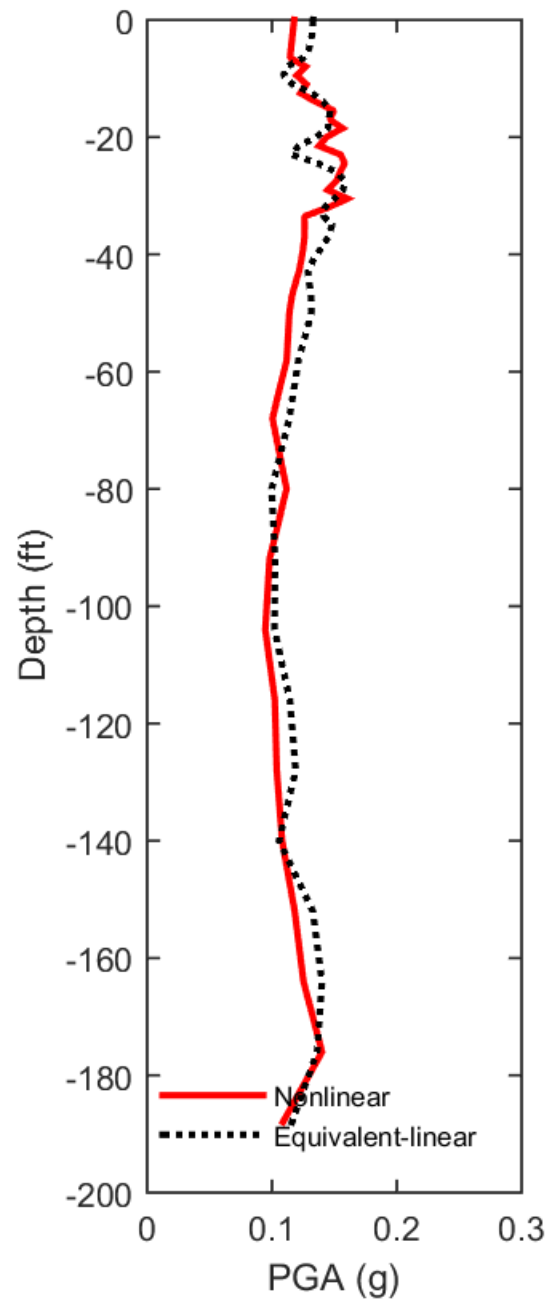
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



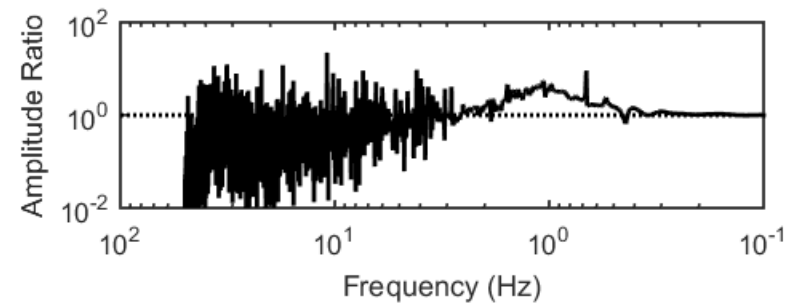
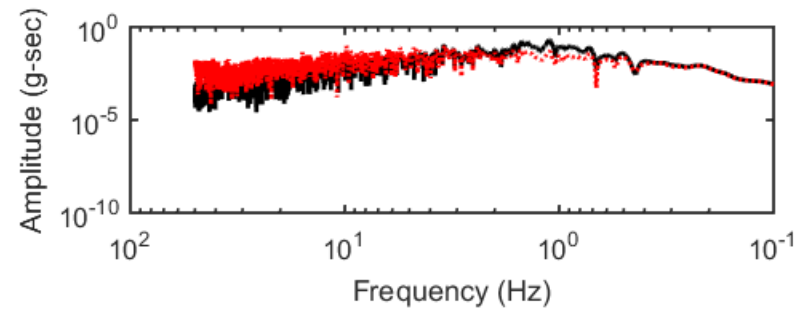
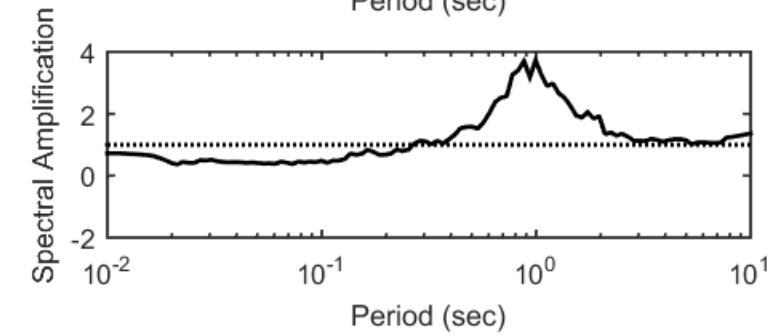
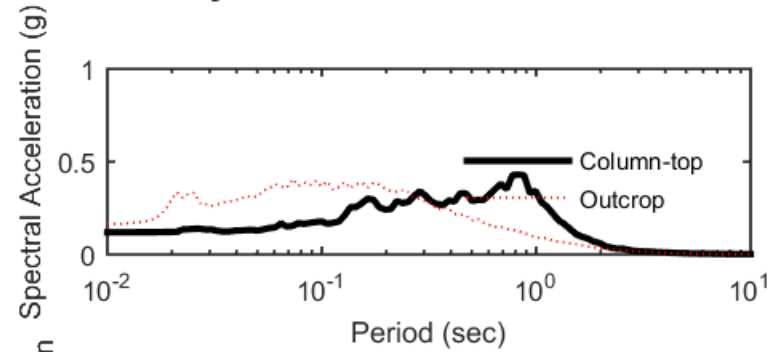
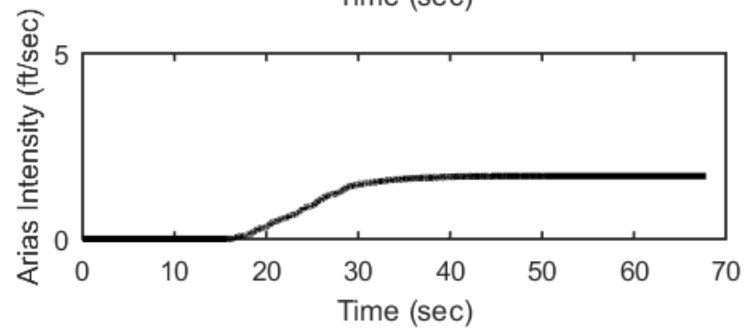
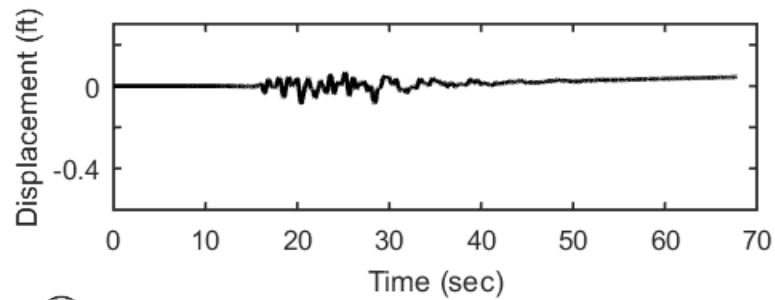
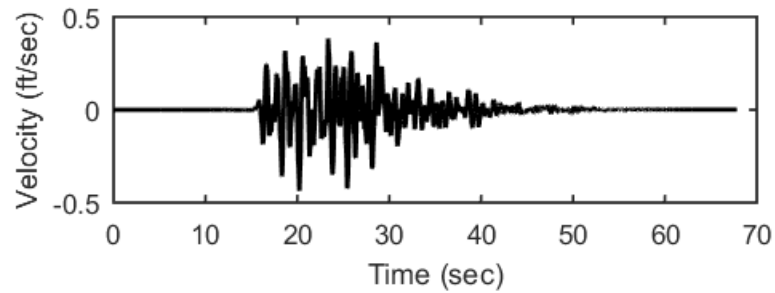
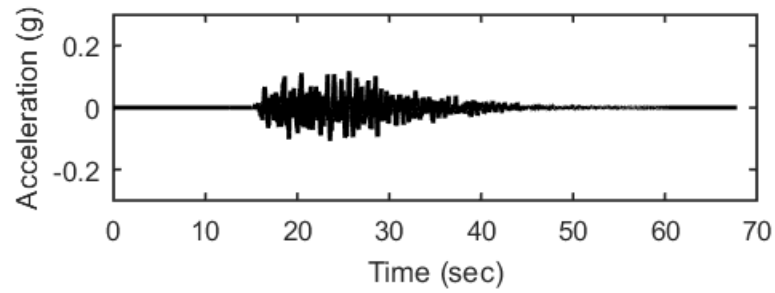
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



### Profile outputs for Motion: FEE5

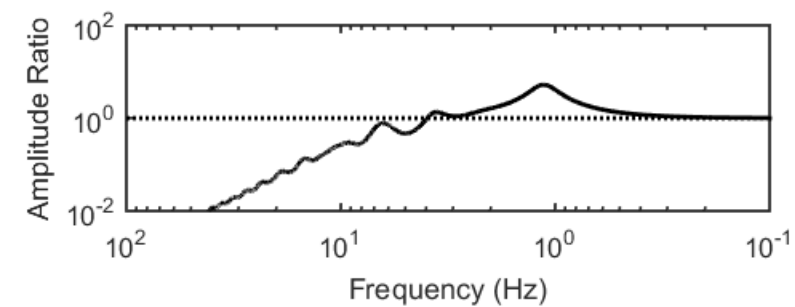
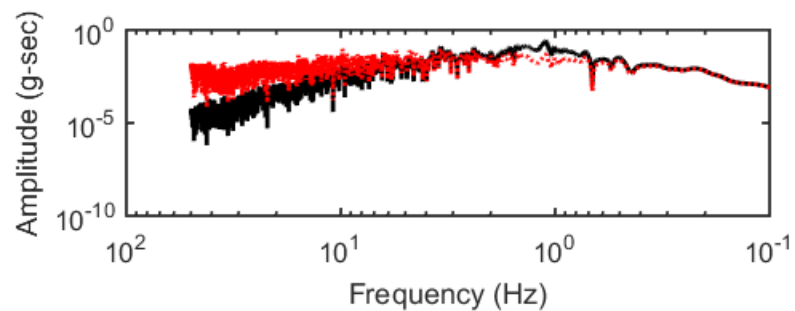
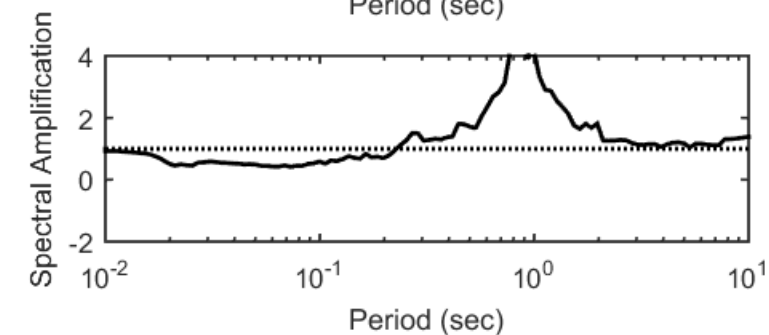
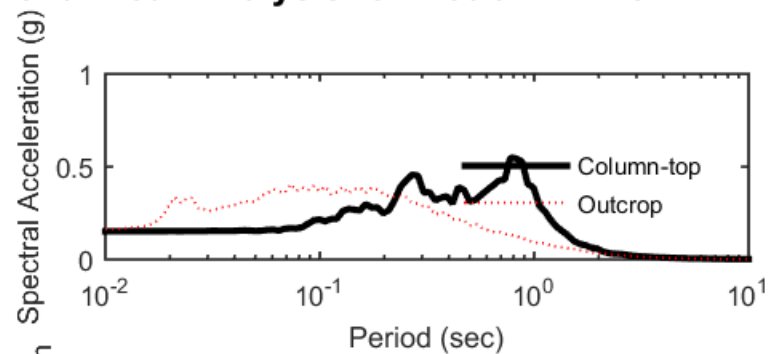
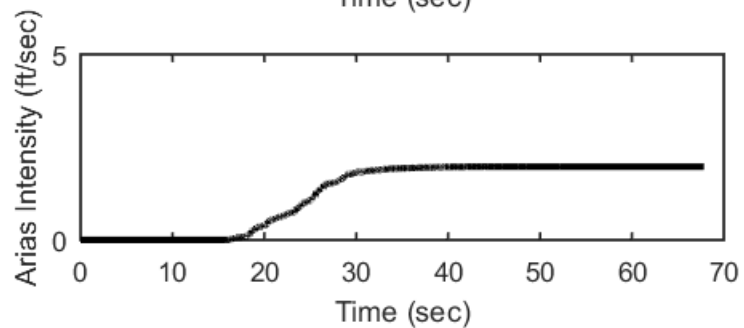
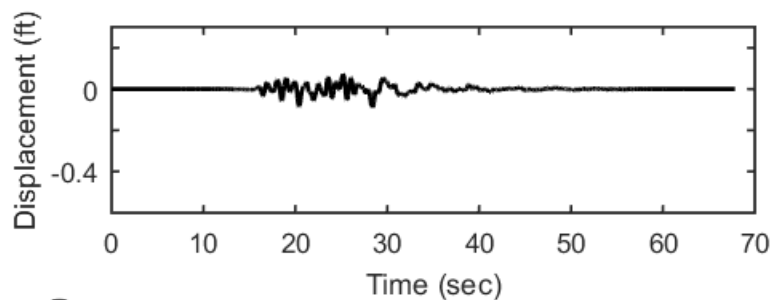
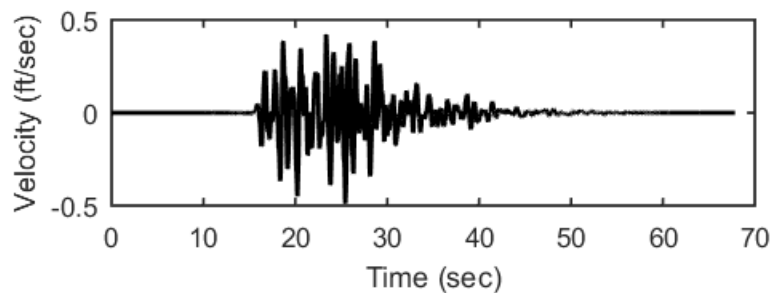
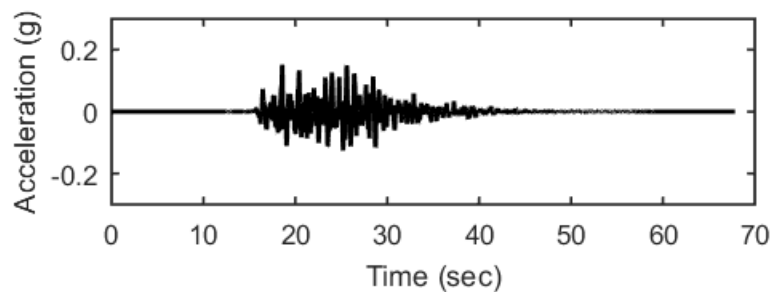


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6

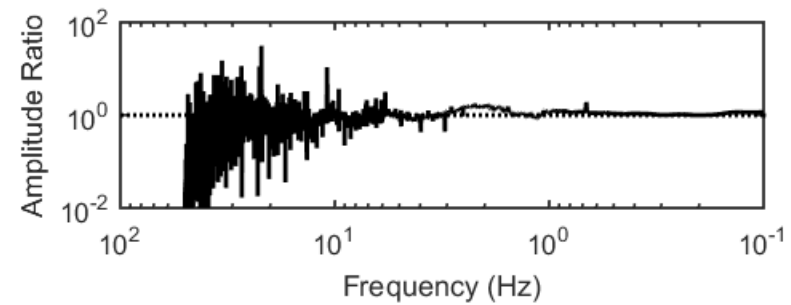
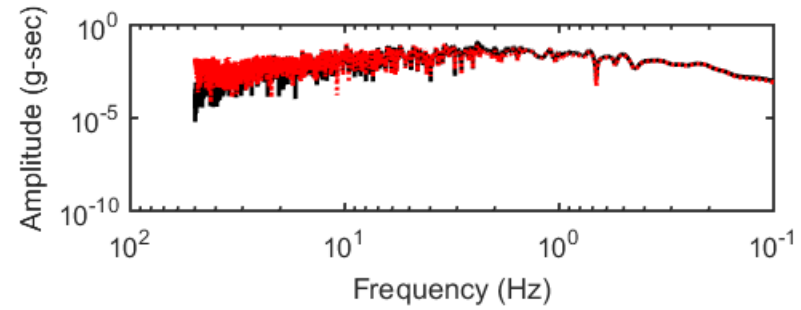
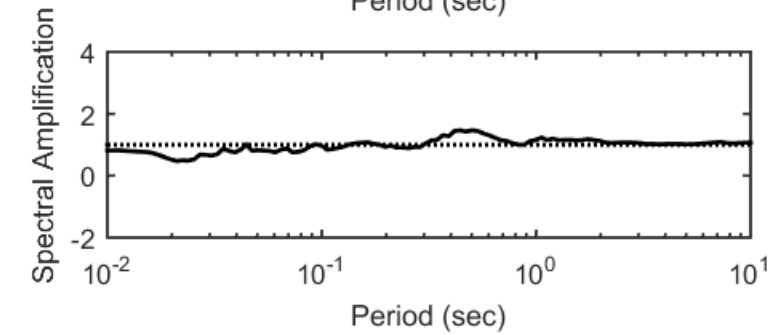
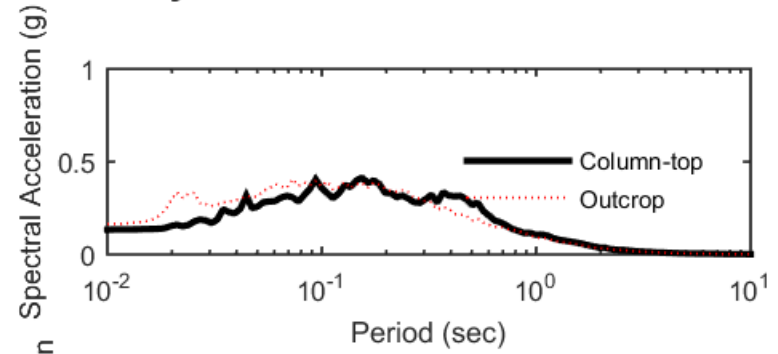
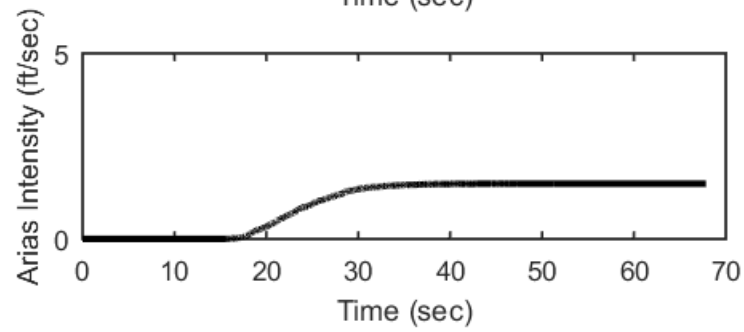
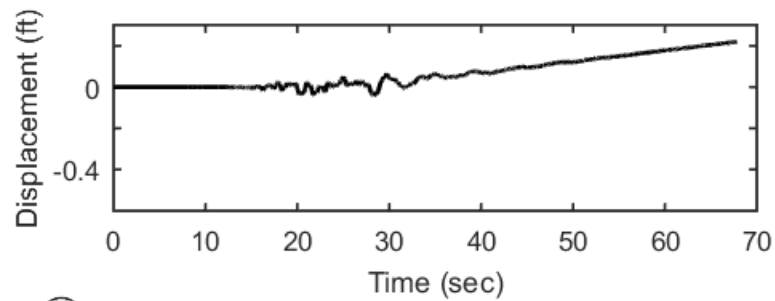
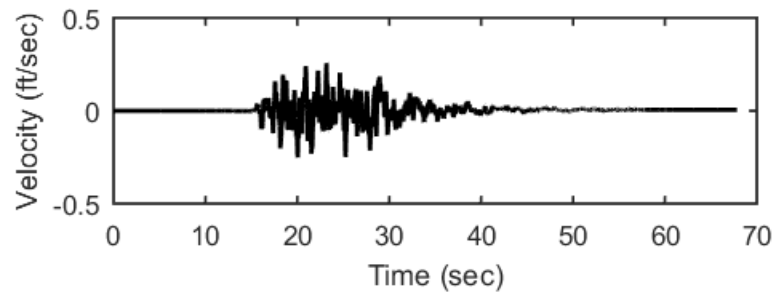
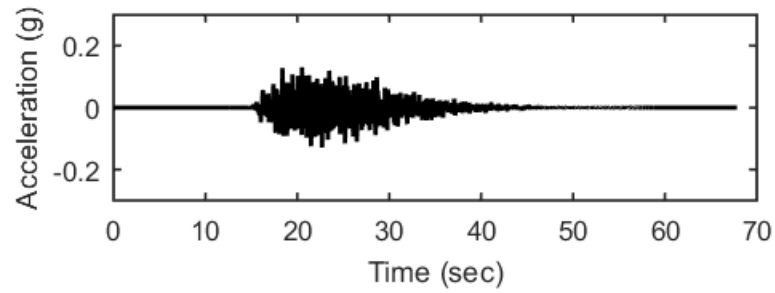




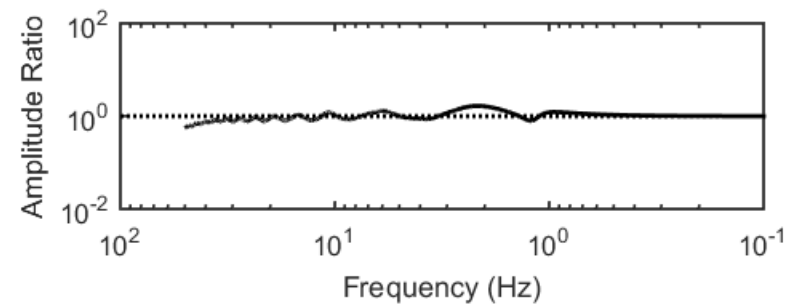
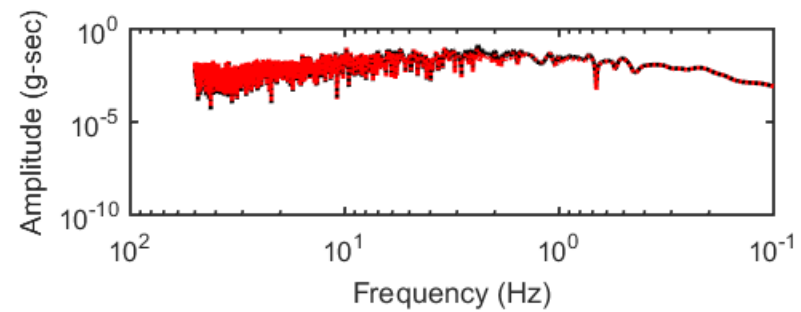
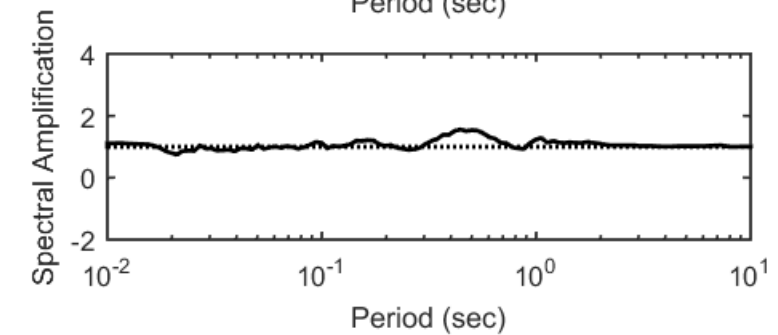
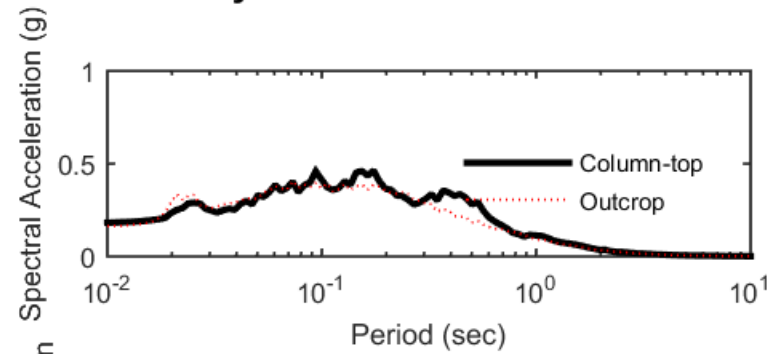
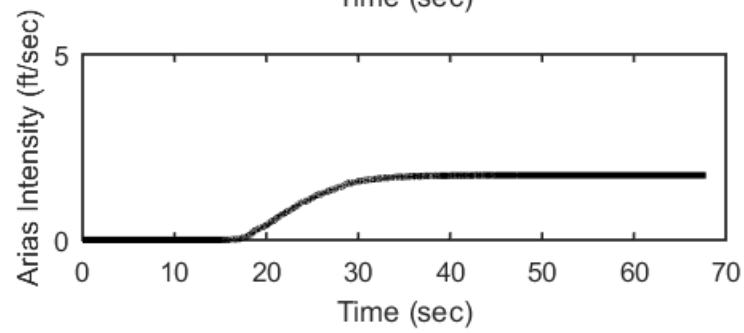
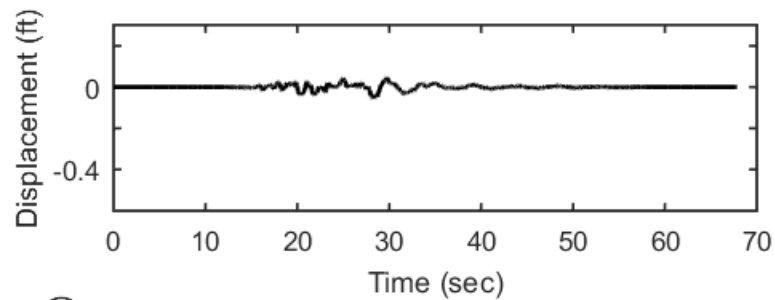
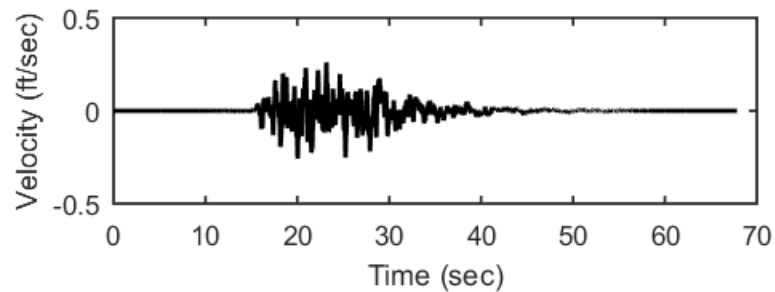
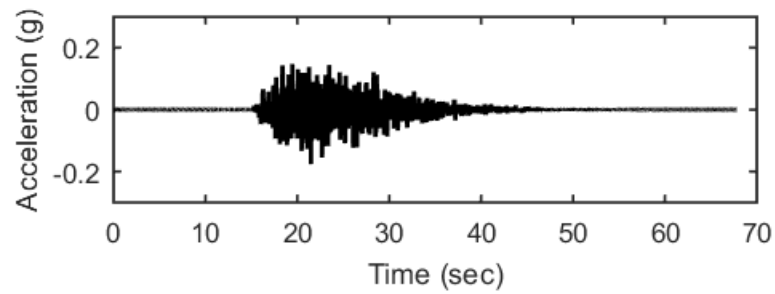
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



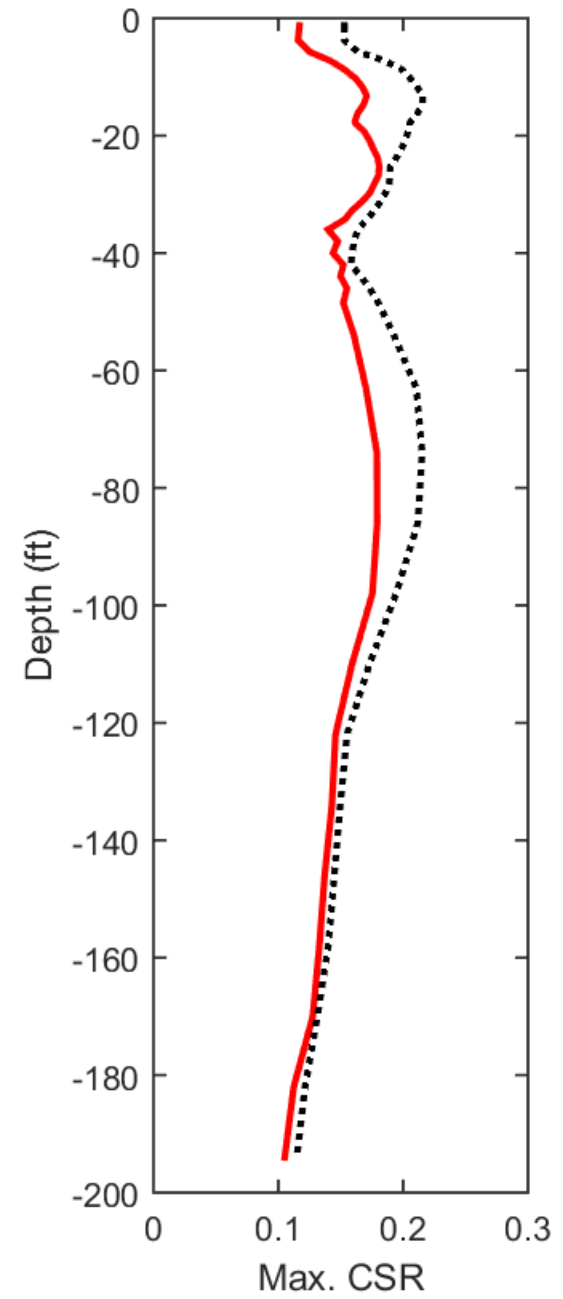
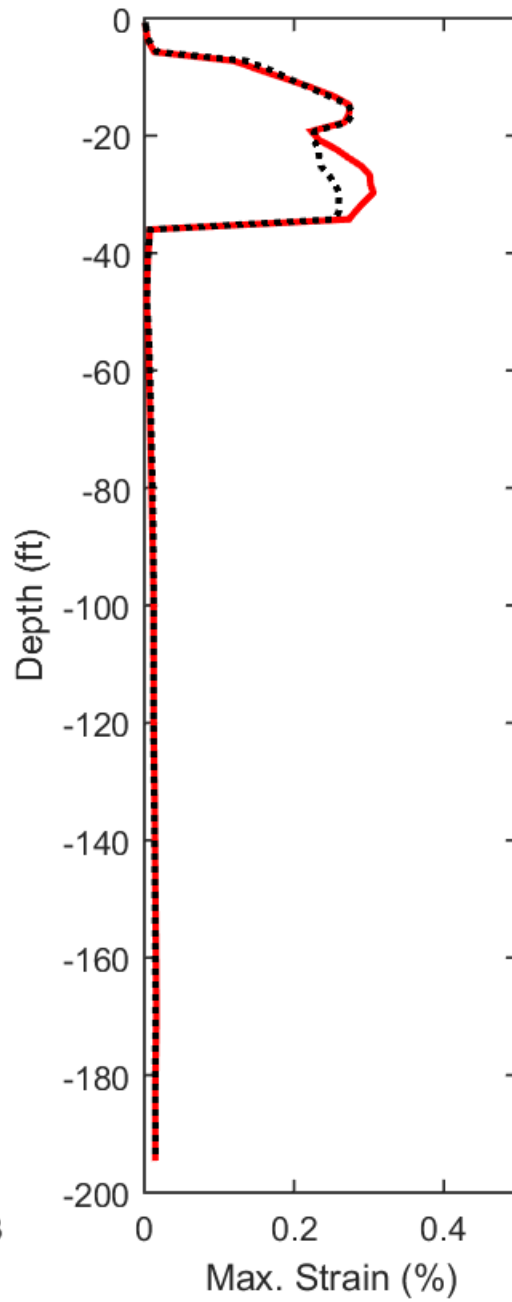
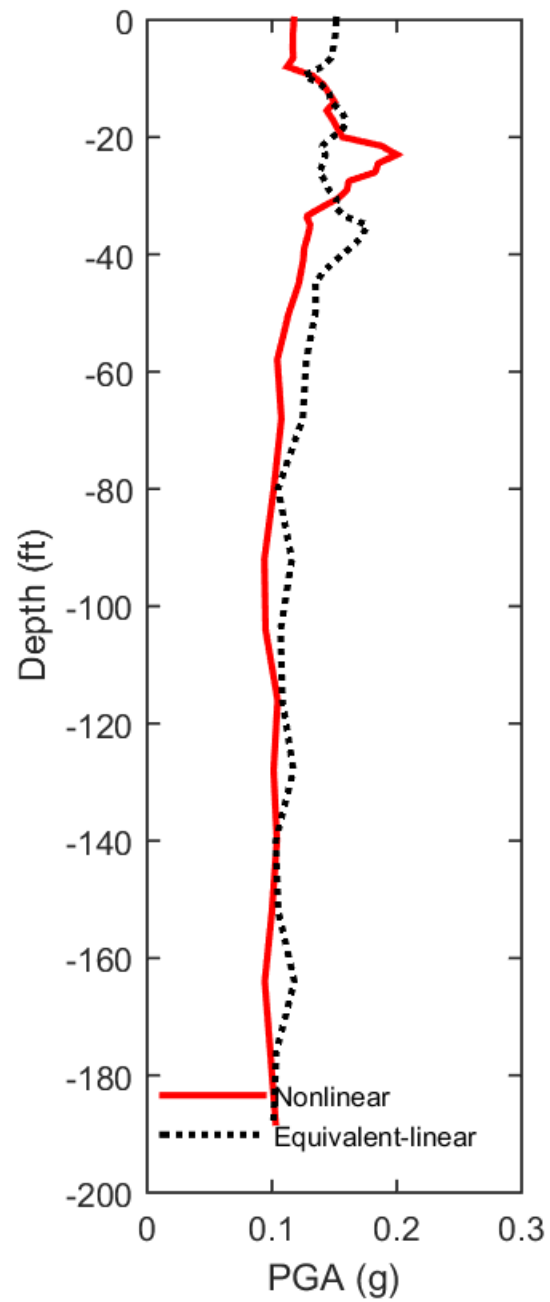
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



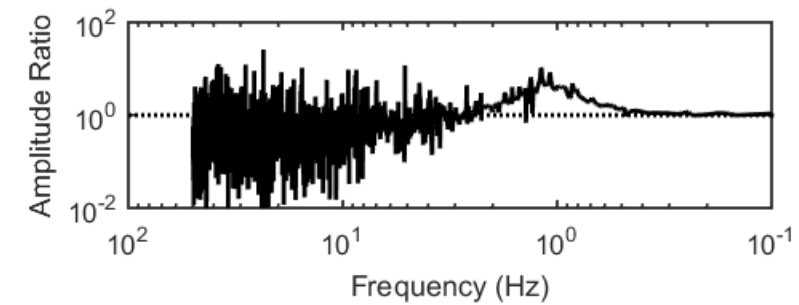
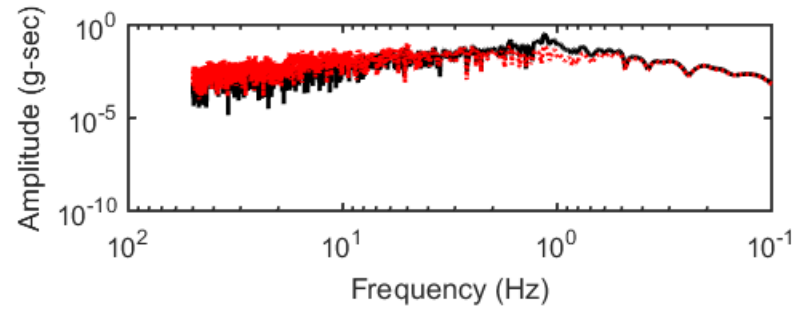
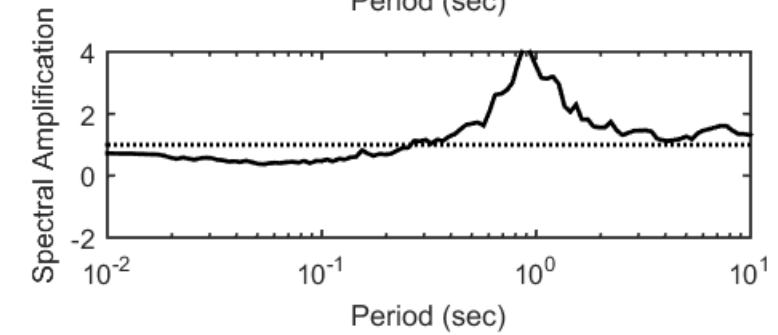
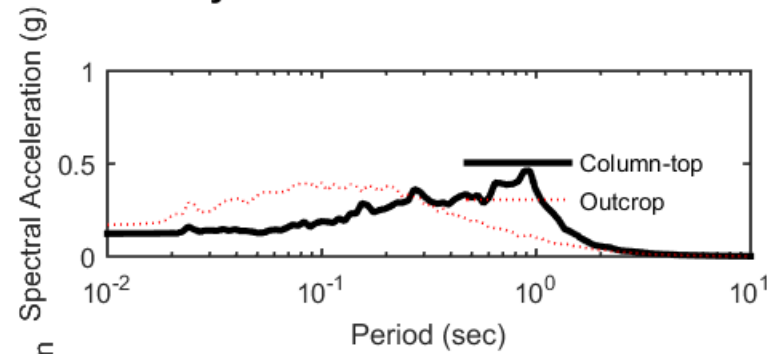
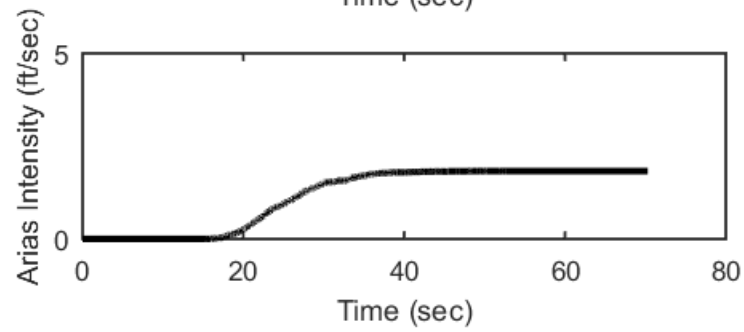
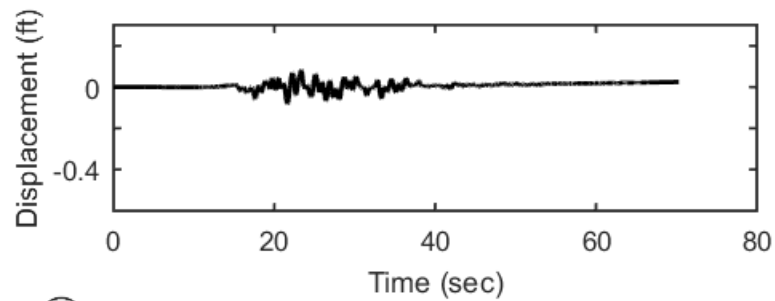
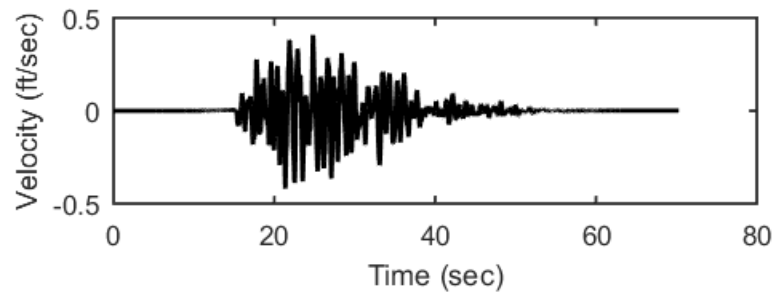
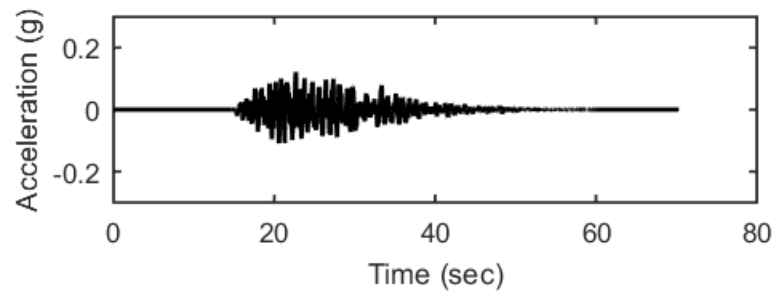
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



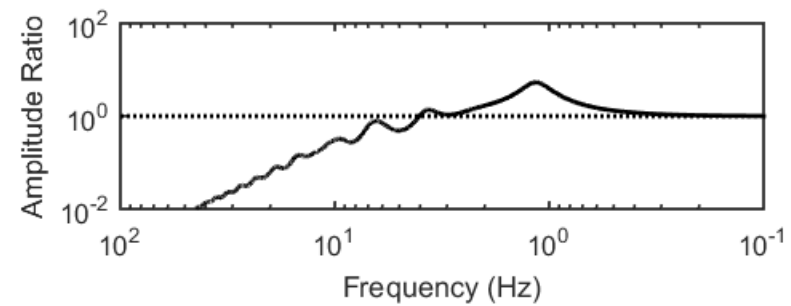
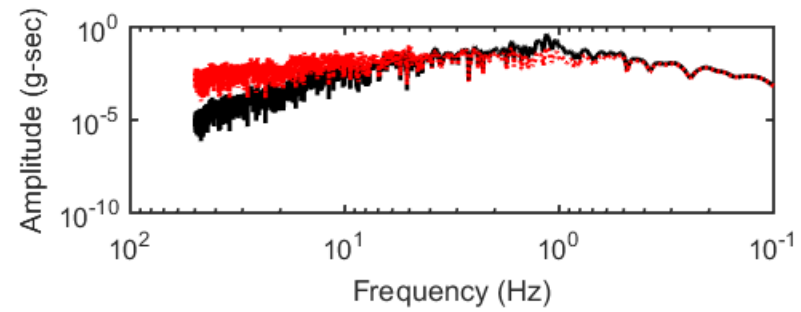
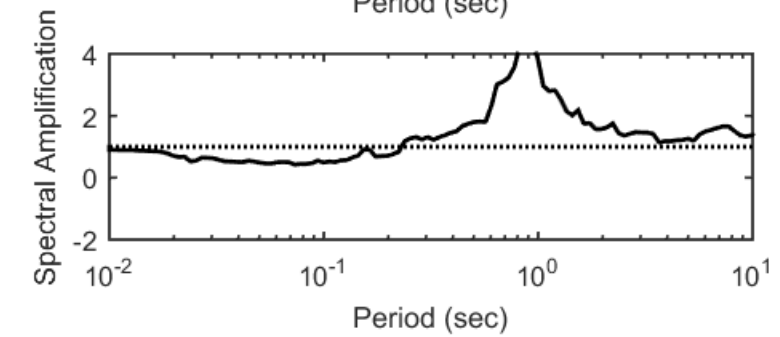
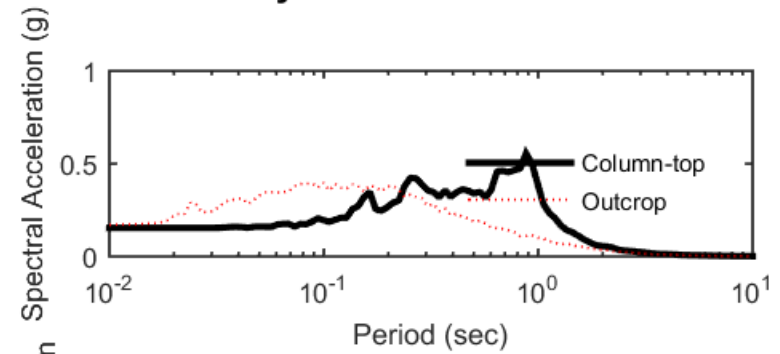
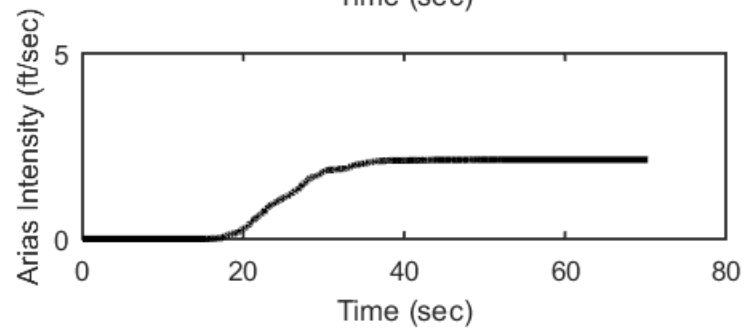
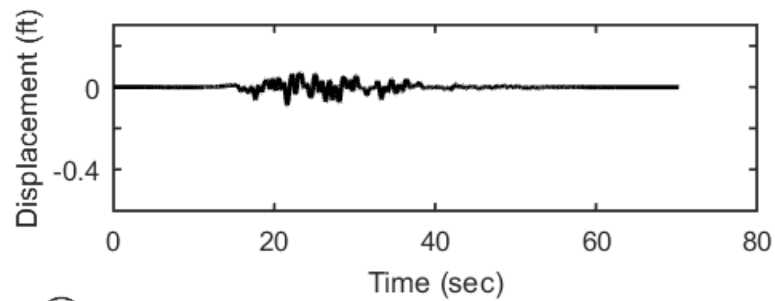
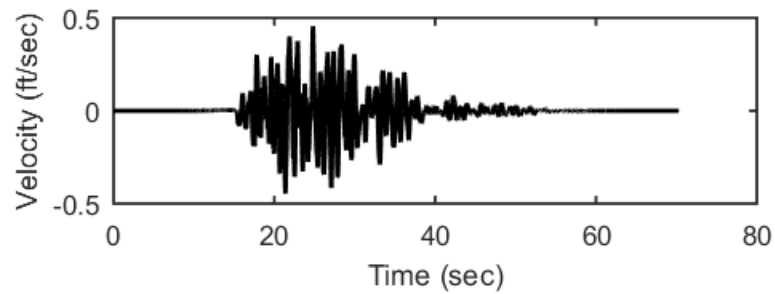
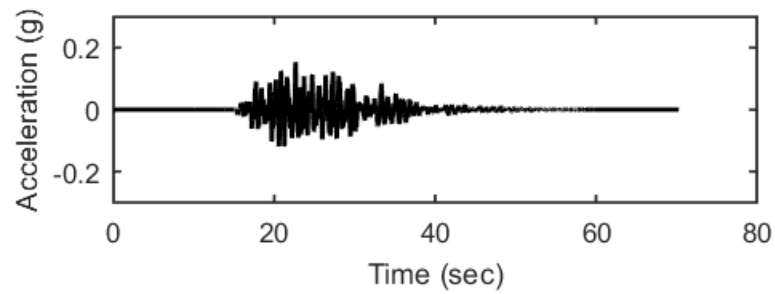
### Profile outputs for Motion: FEE6



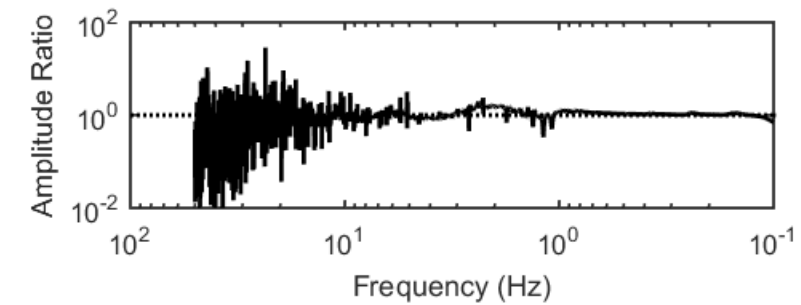
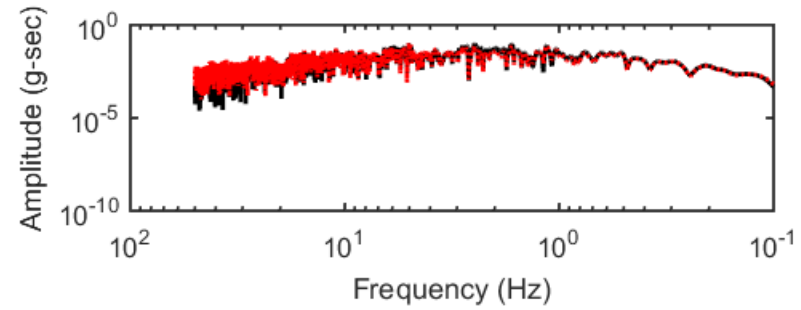
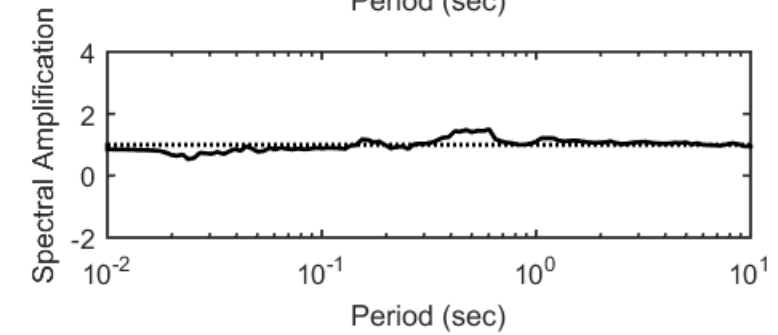
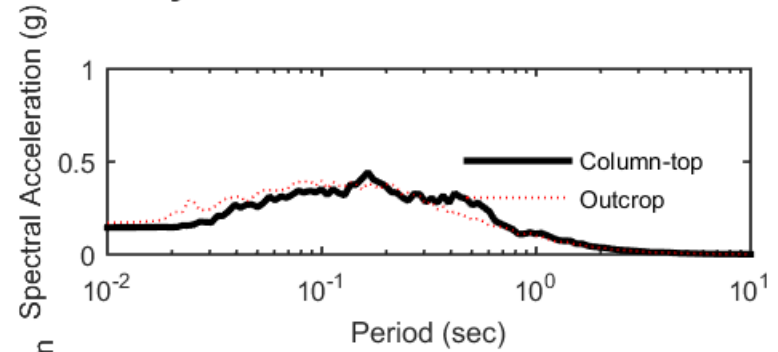
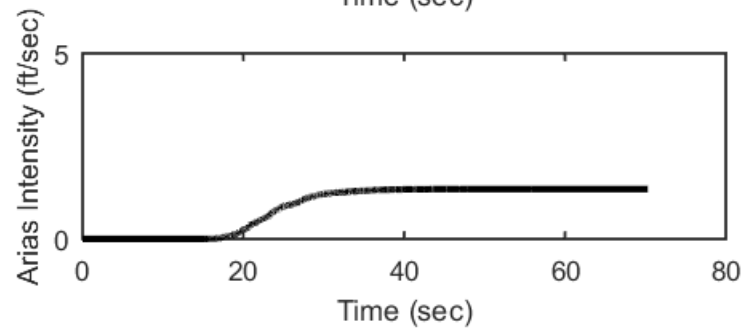
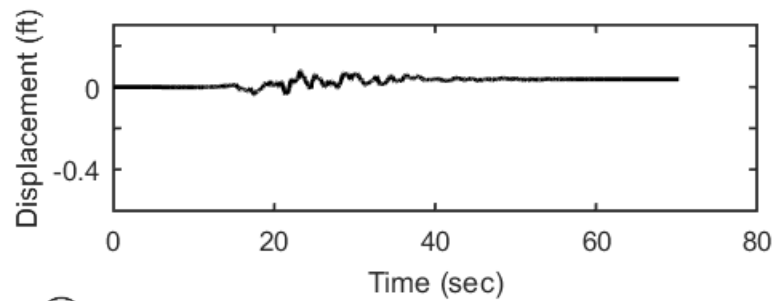
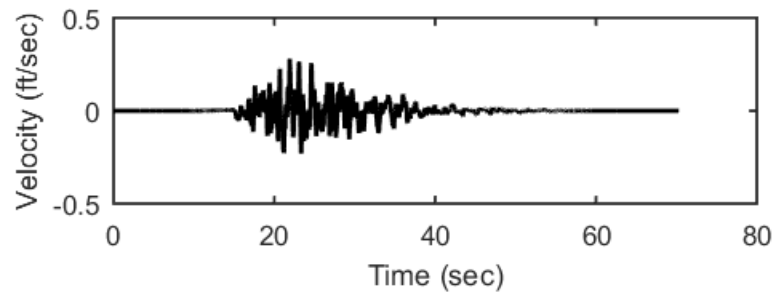
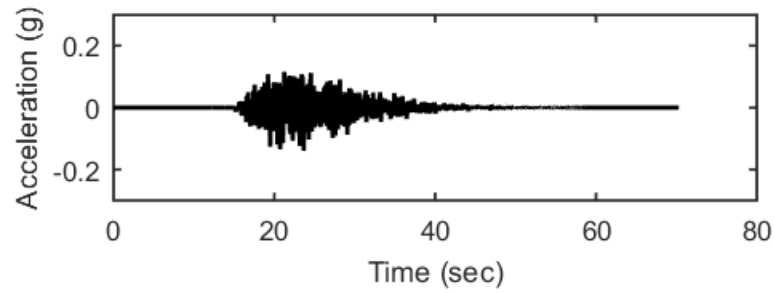
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



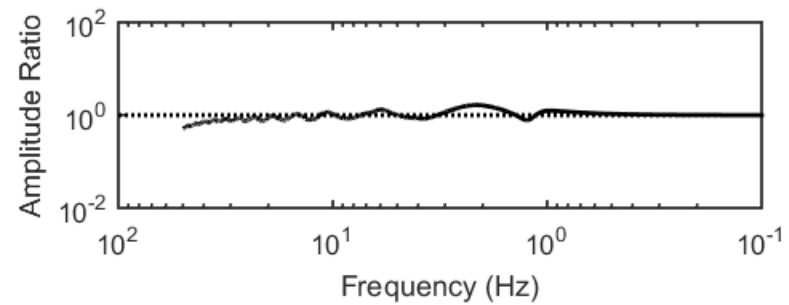
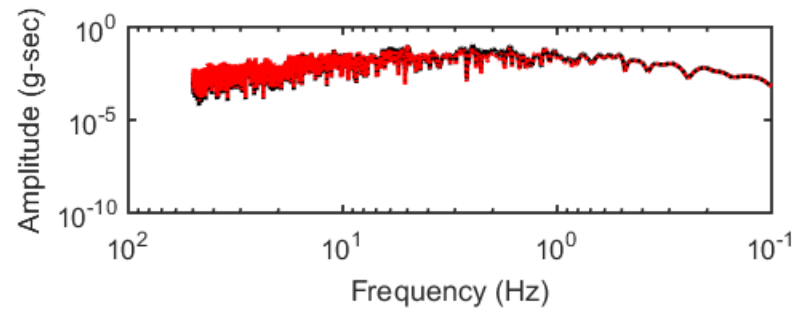
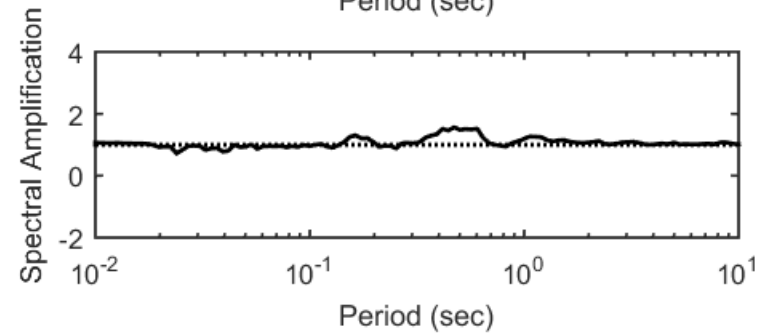
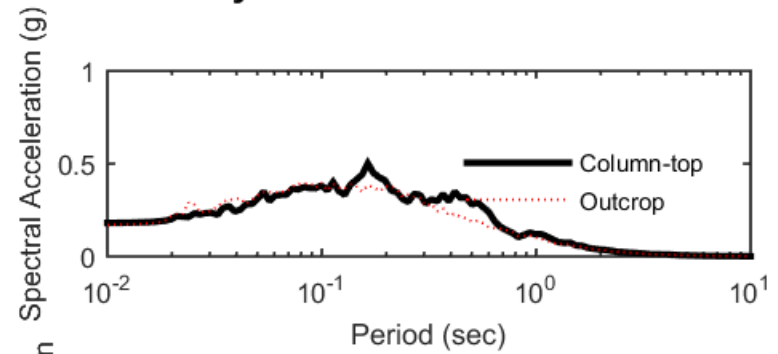
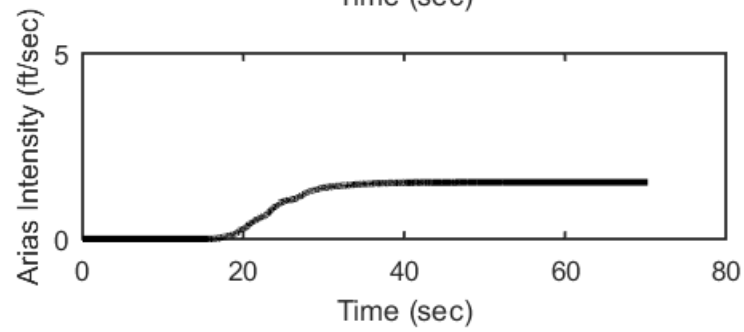
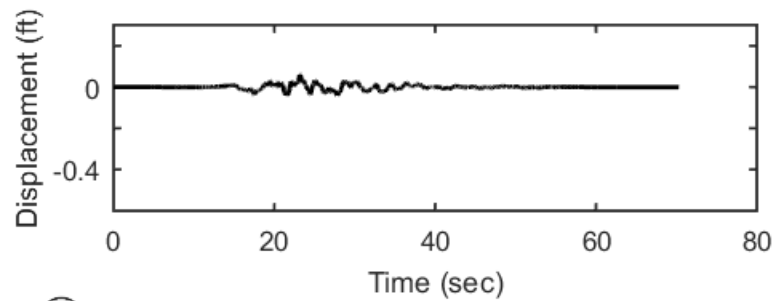
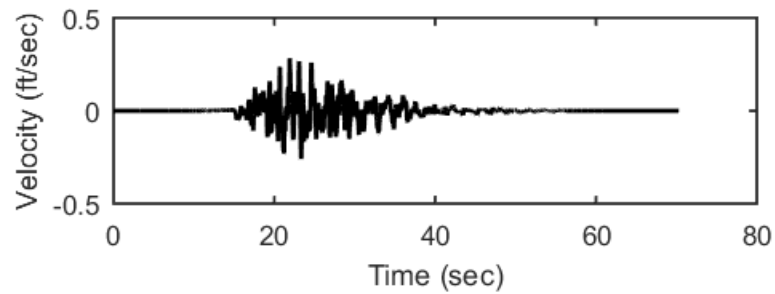
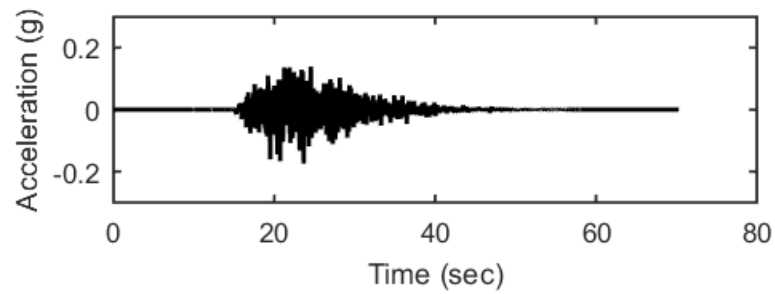
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7

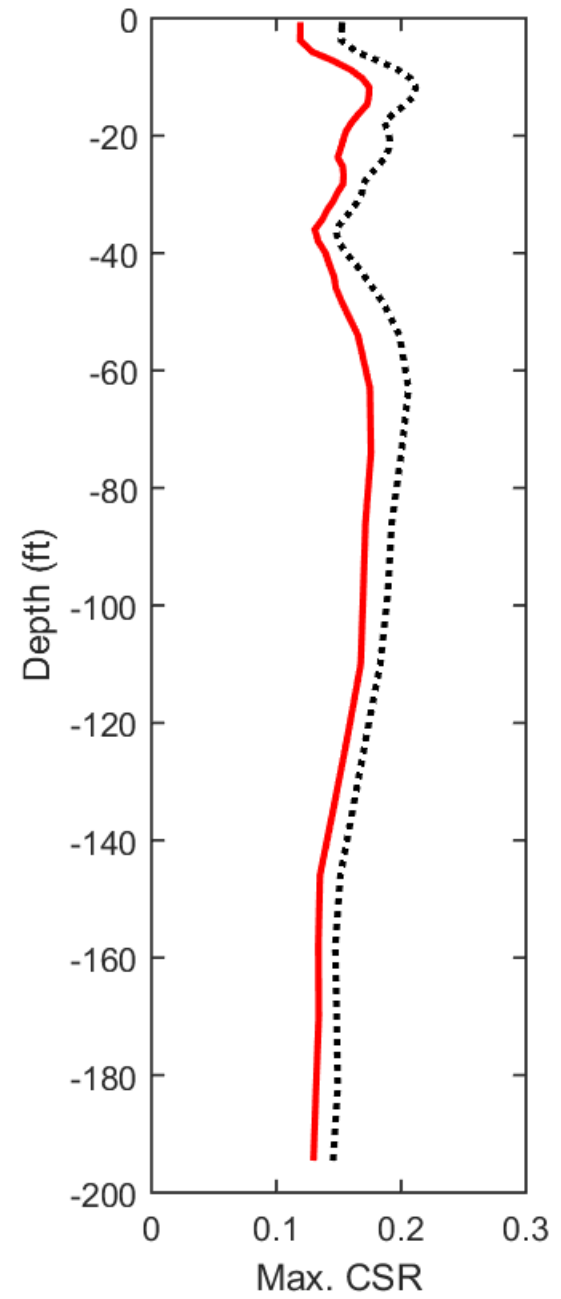
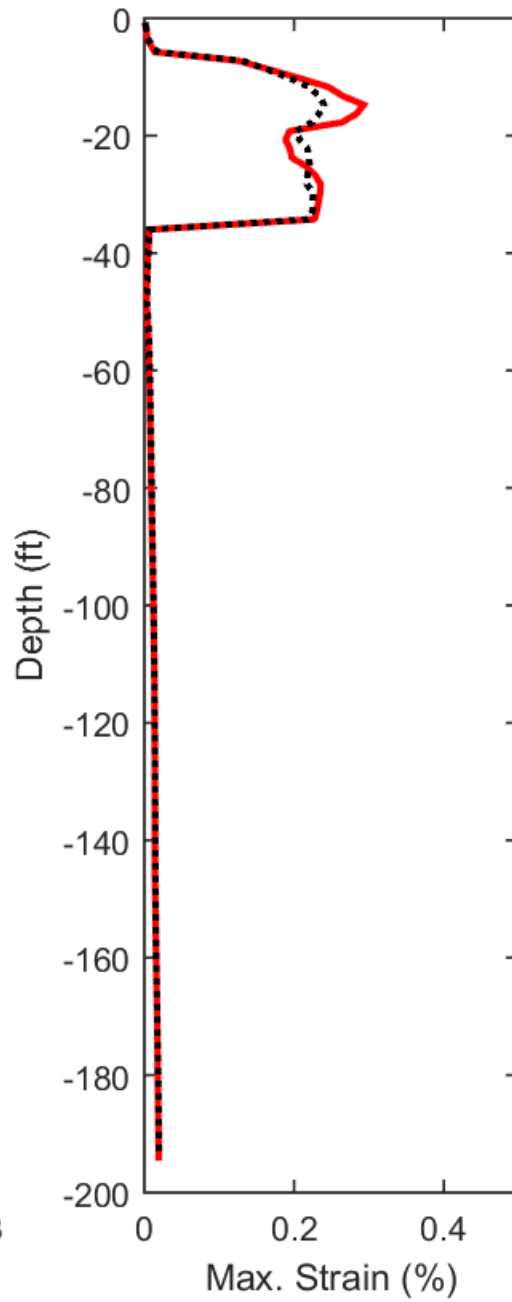
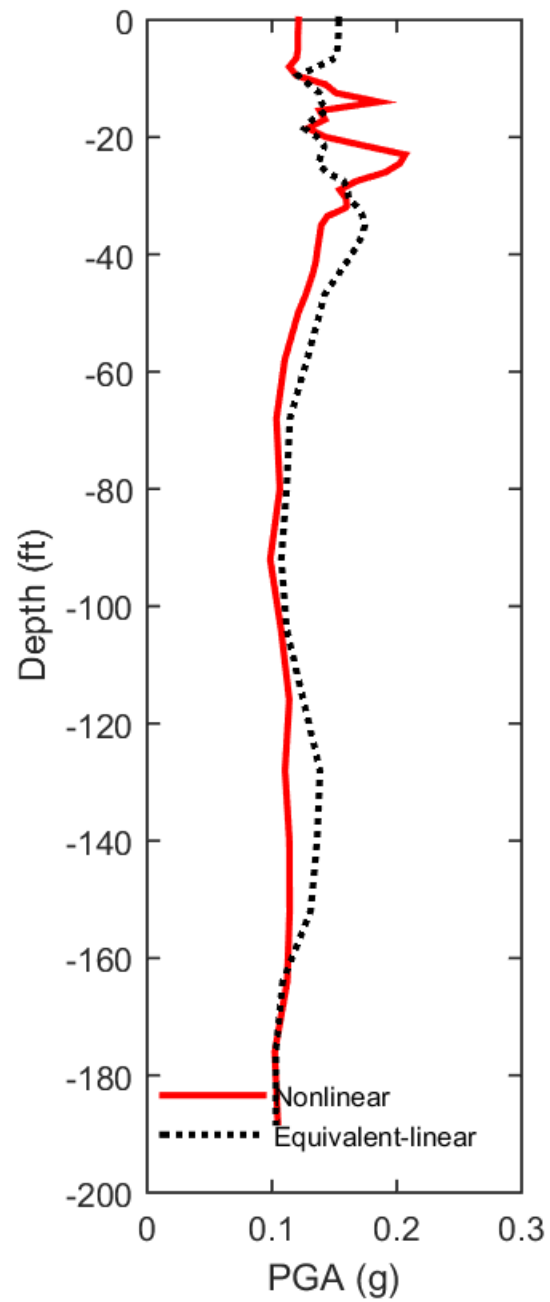


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7

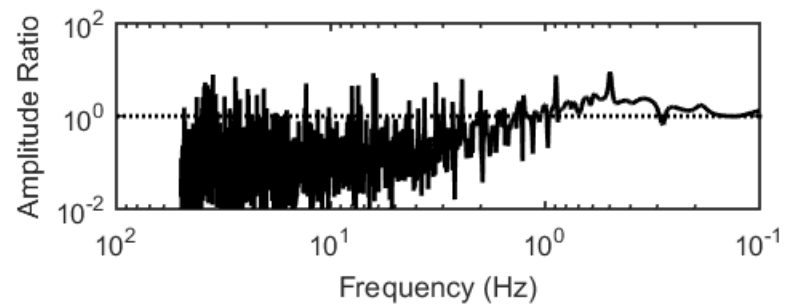
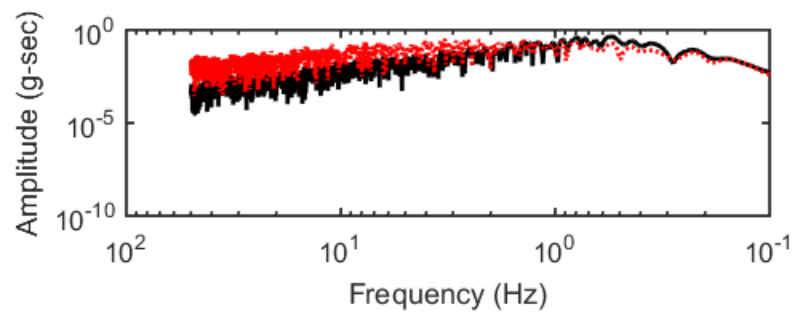
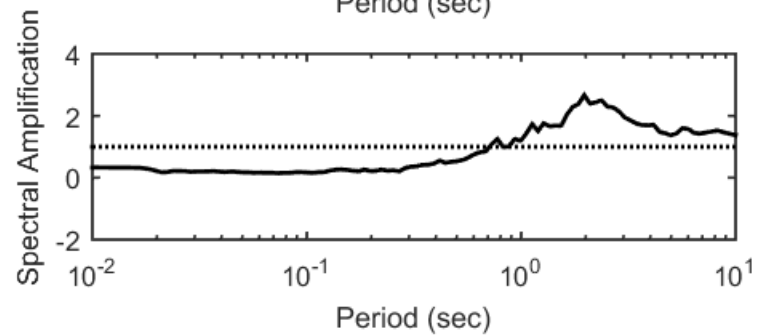
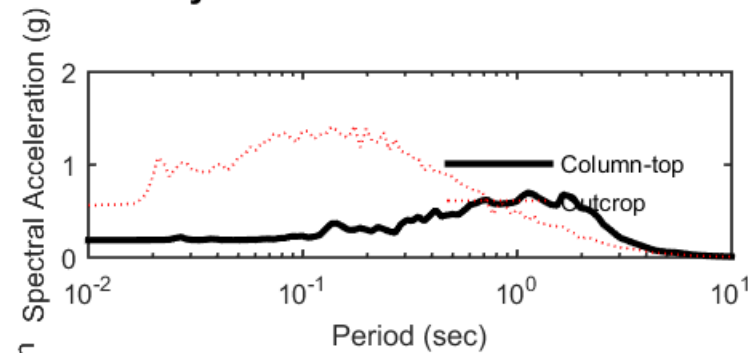
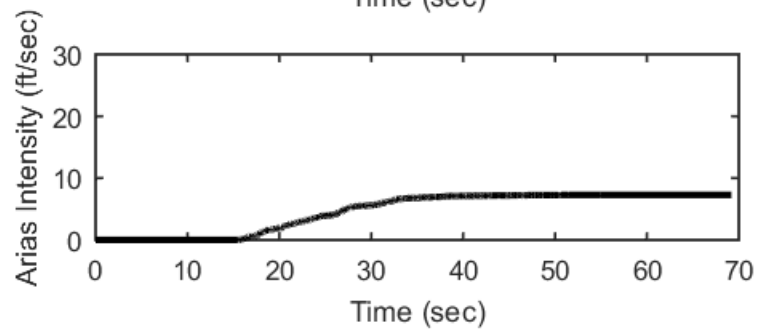
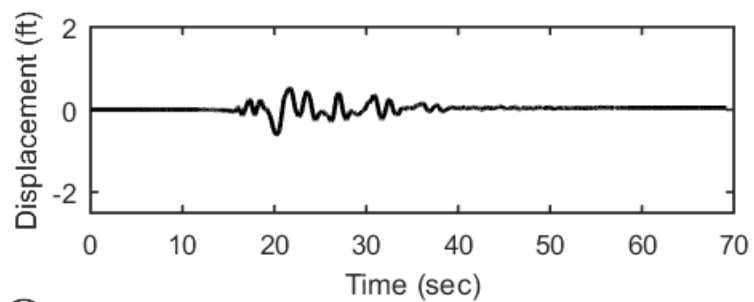
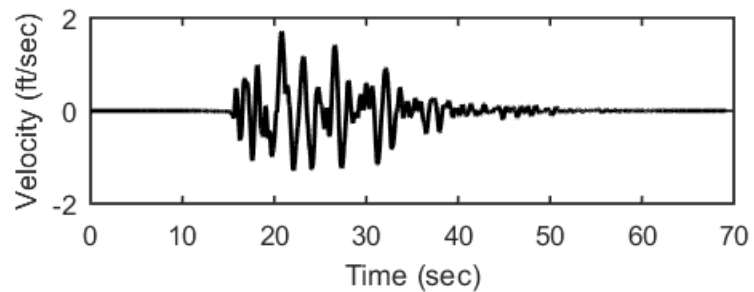
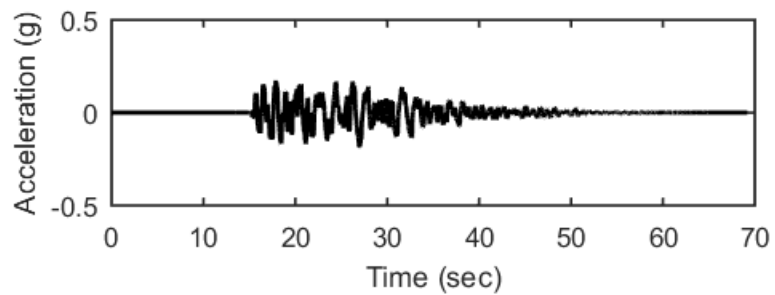




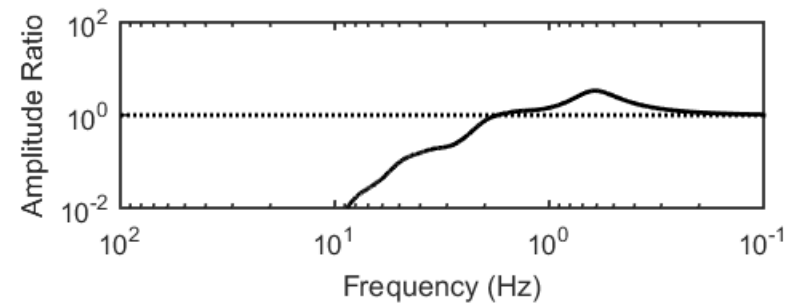
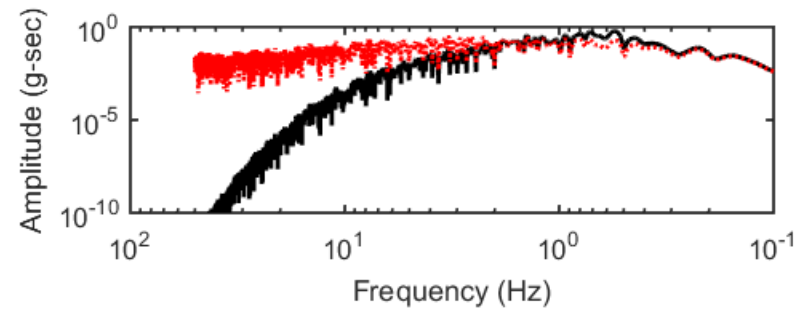
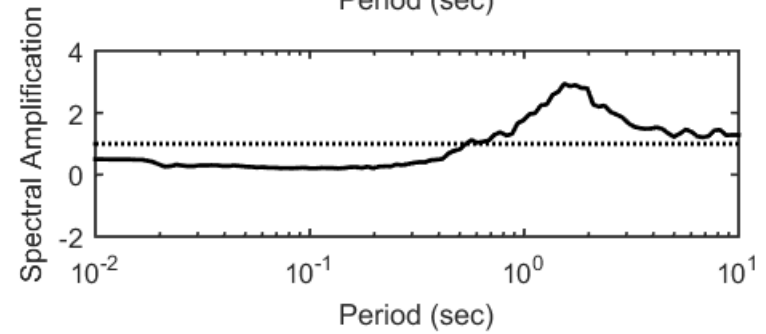
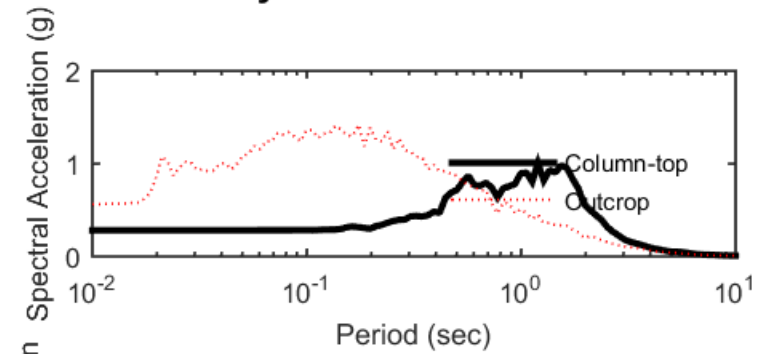
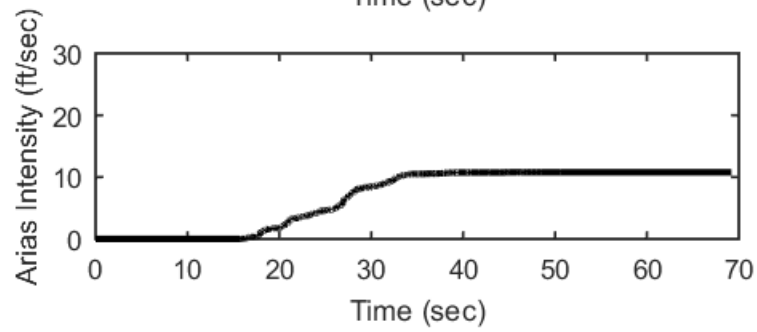
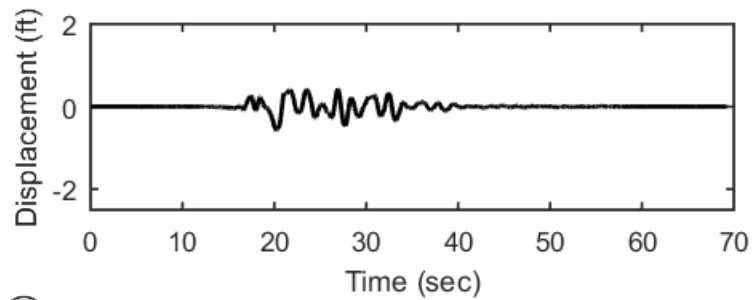
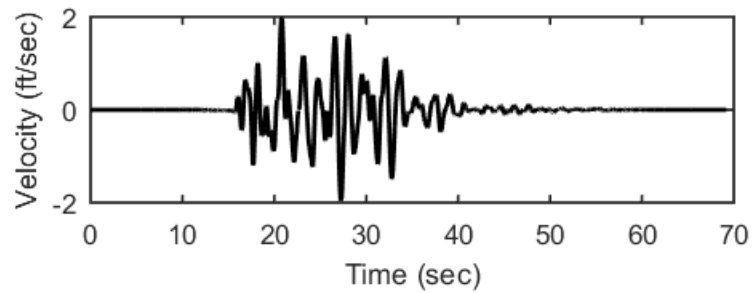
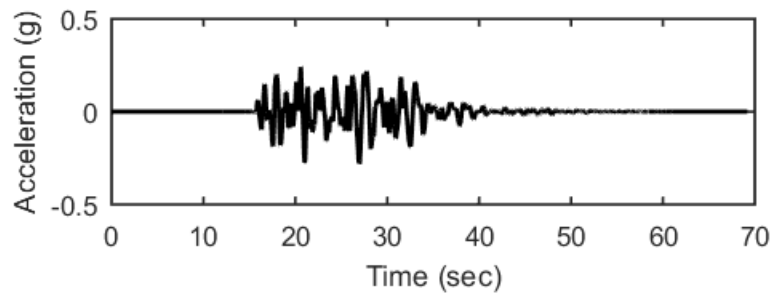
### Profile outputs for Motion: FEE7



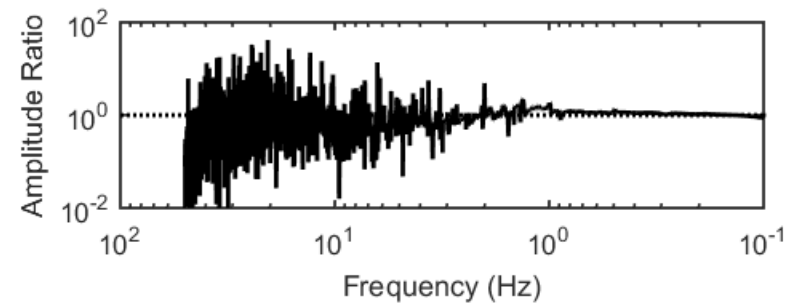
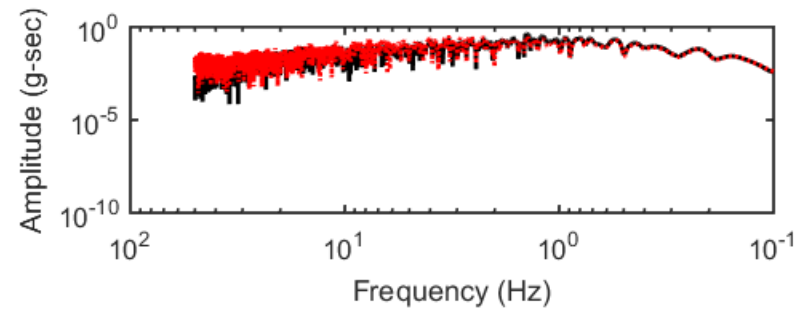
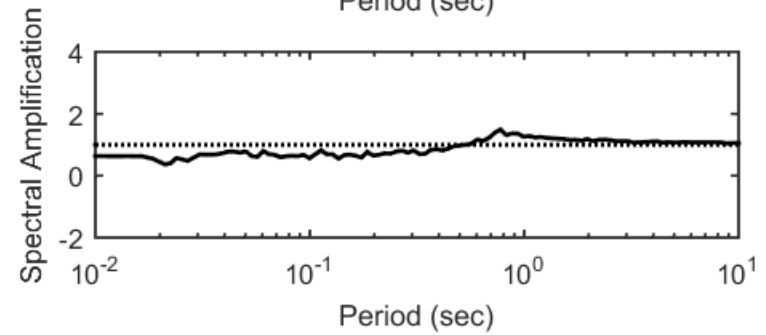
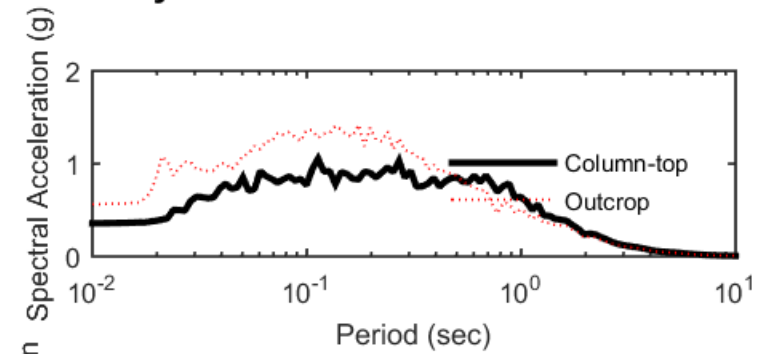
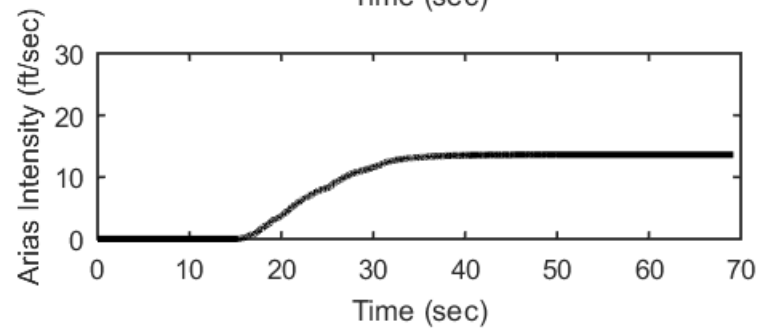
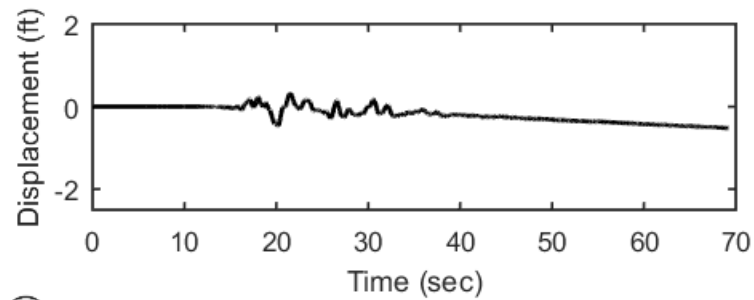
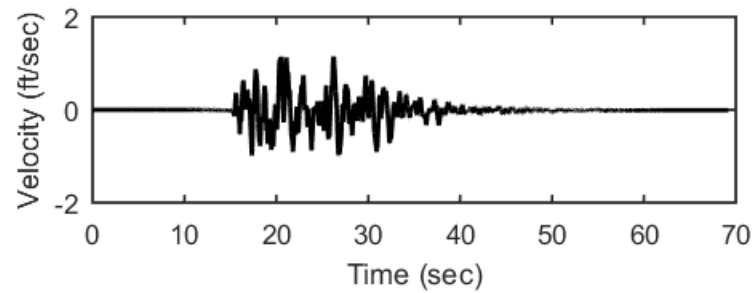
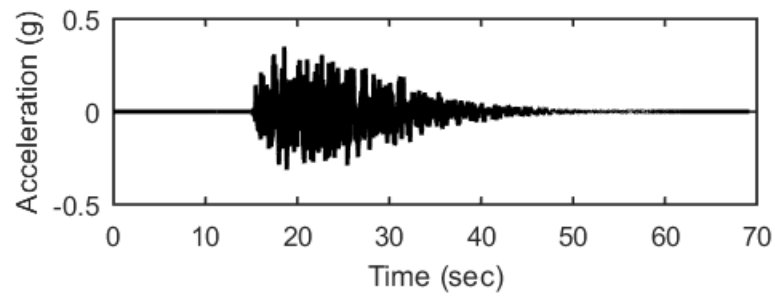
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



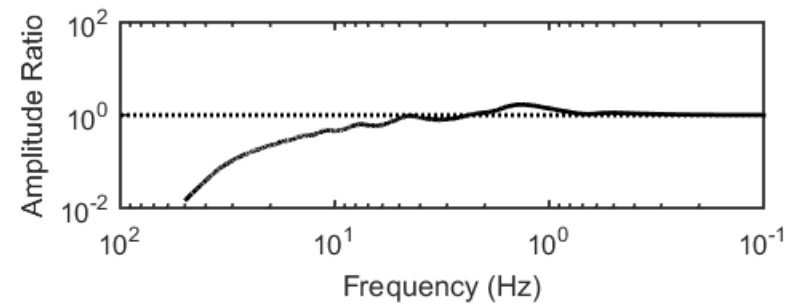
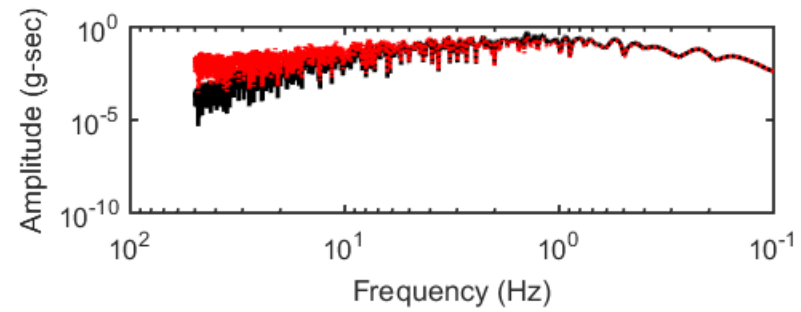
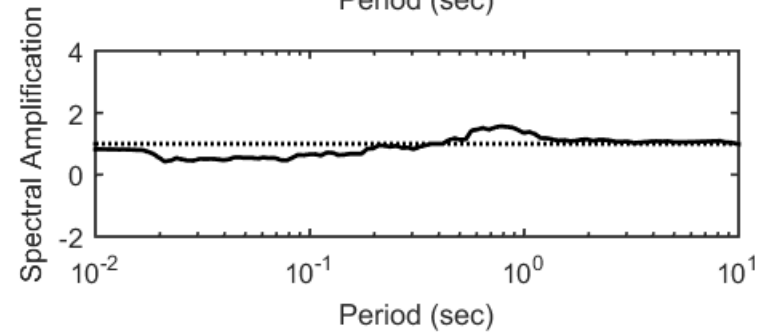
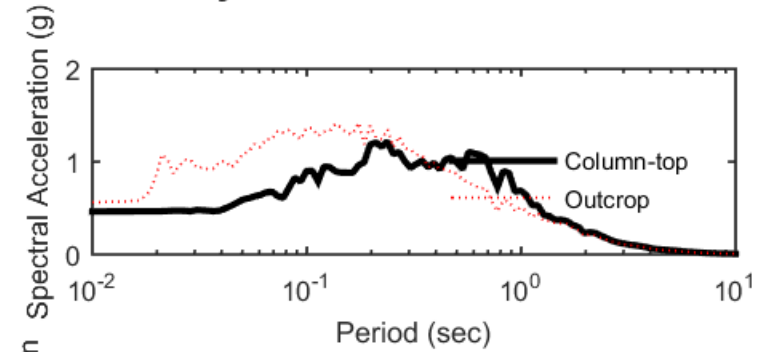
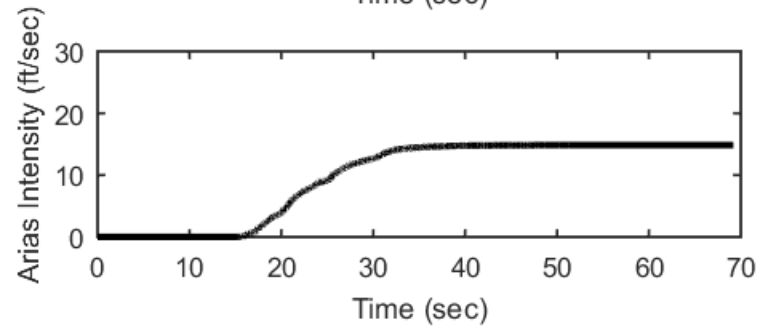
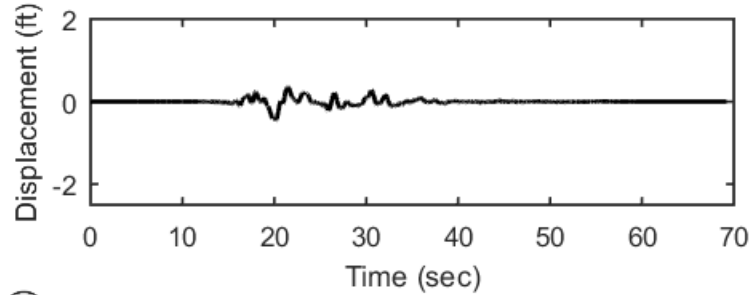
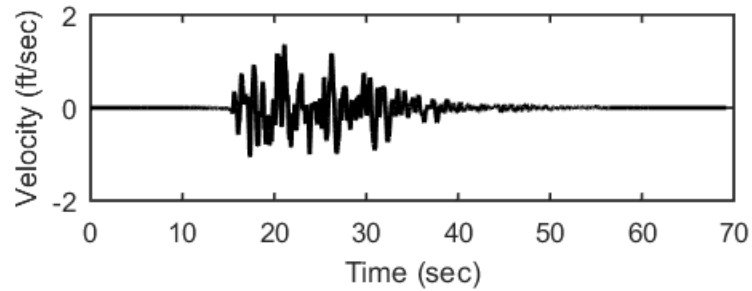
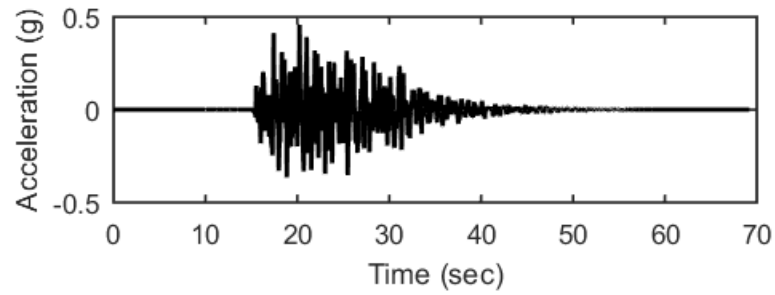
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



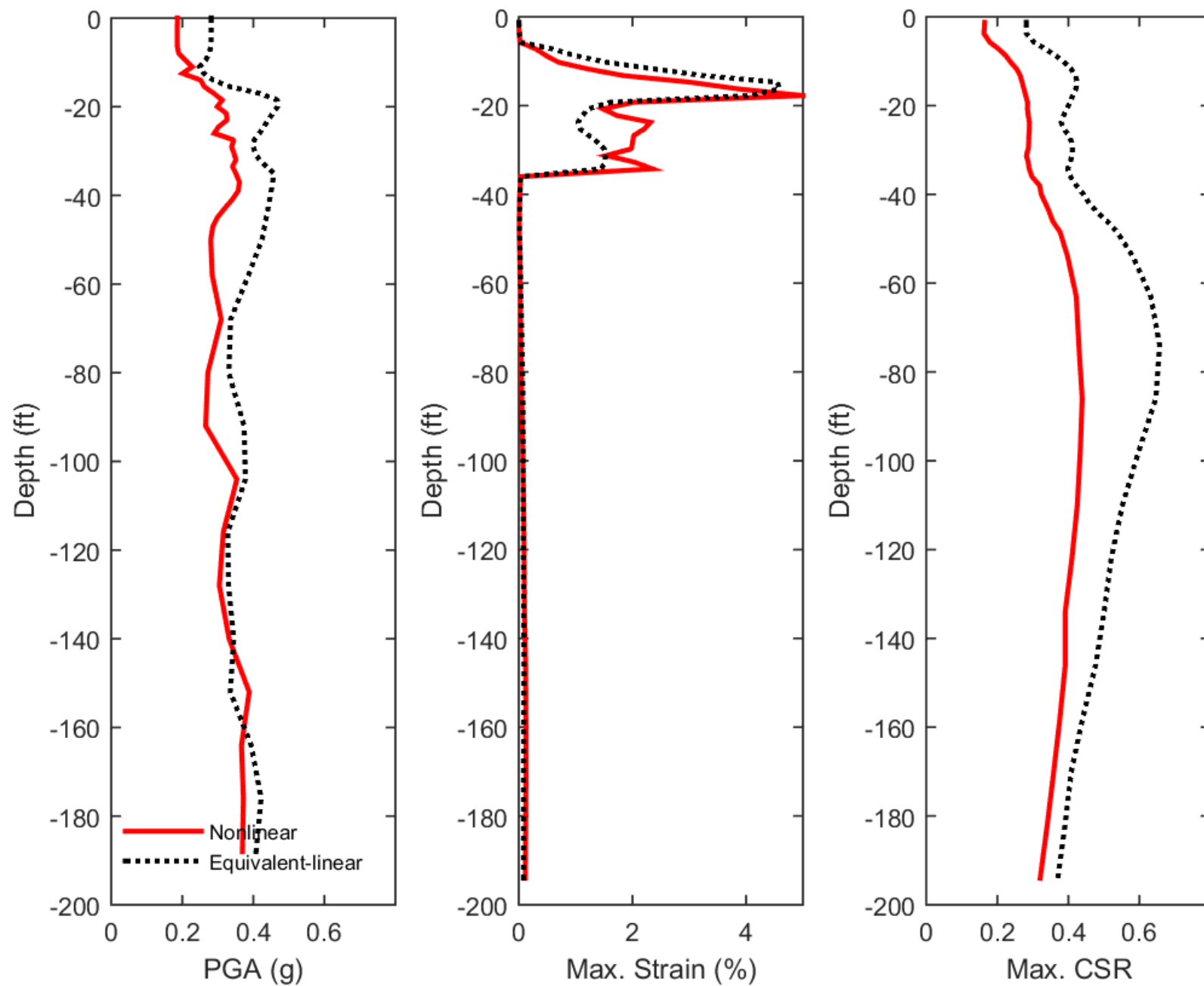
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



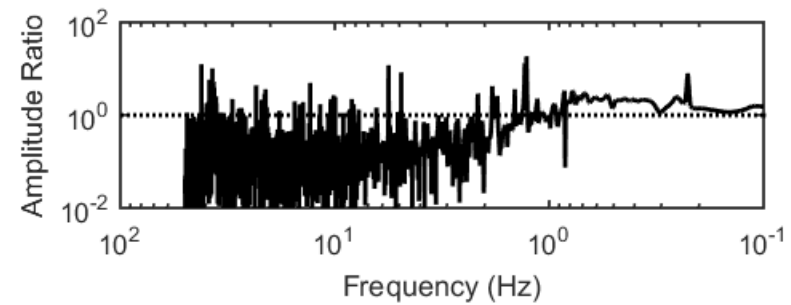
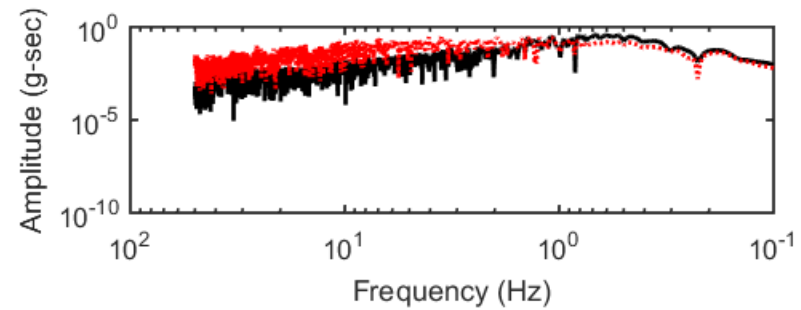
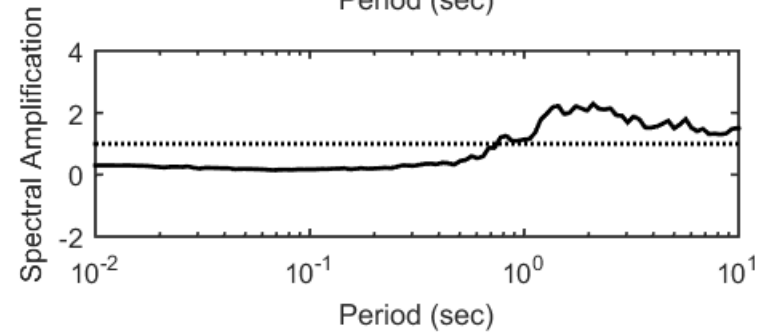
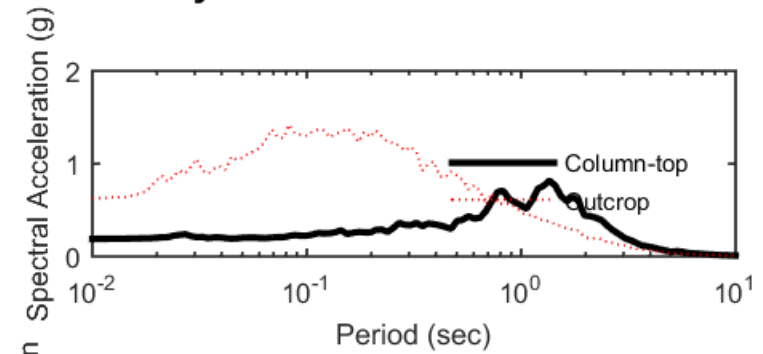
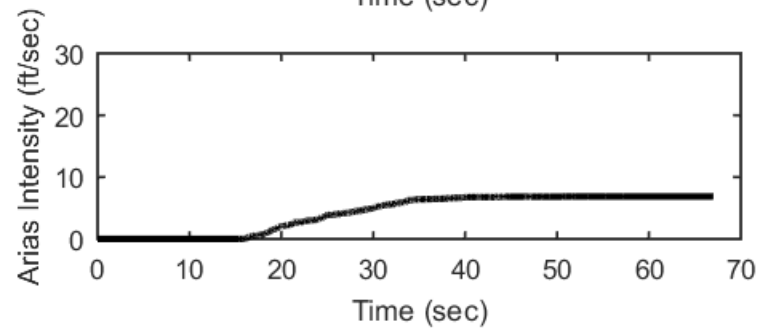
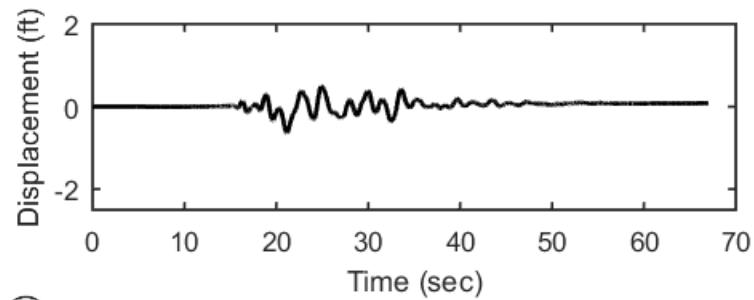
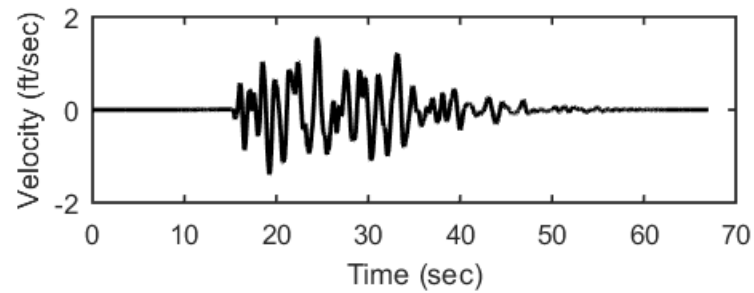
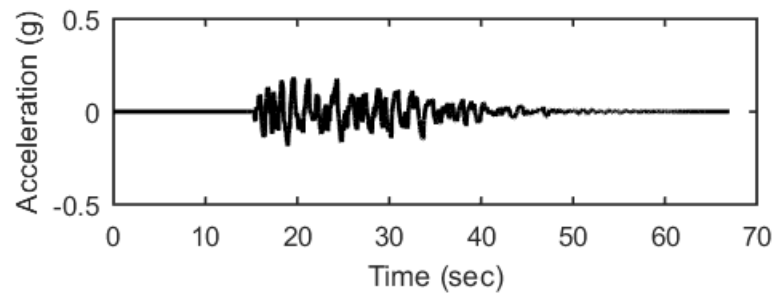
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



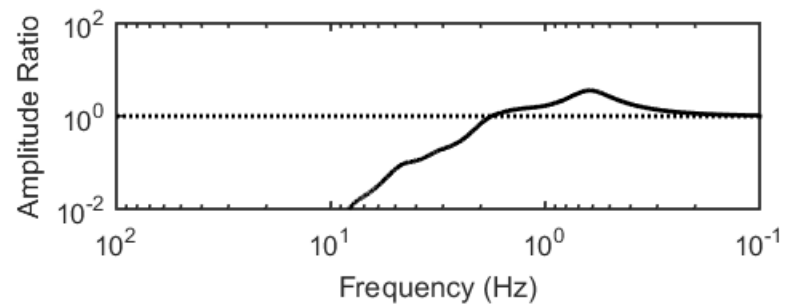
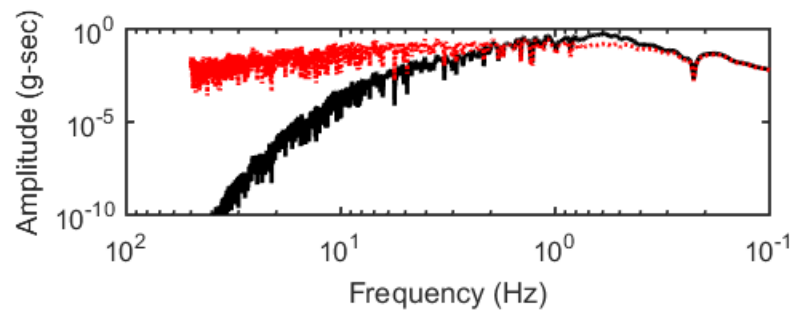
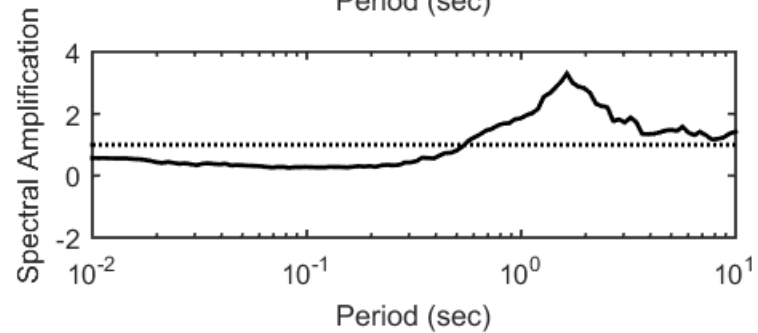
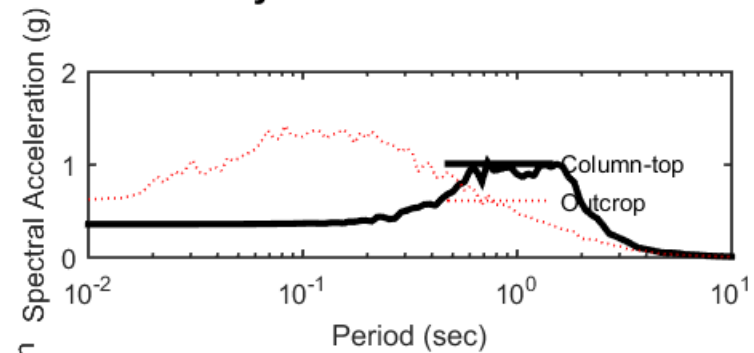
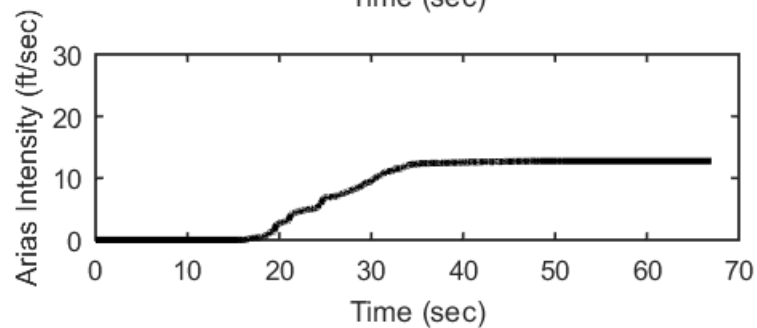
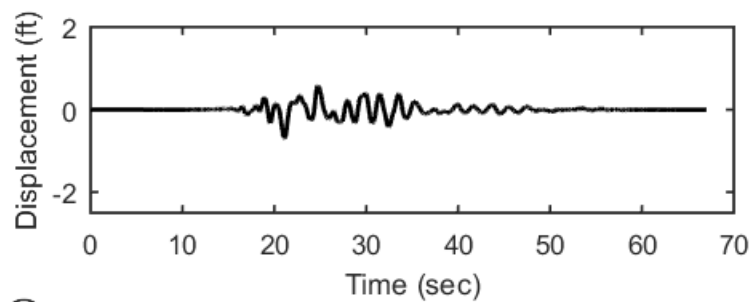
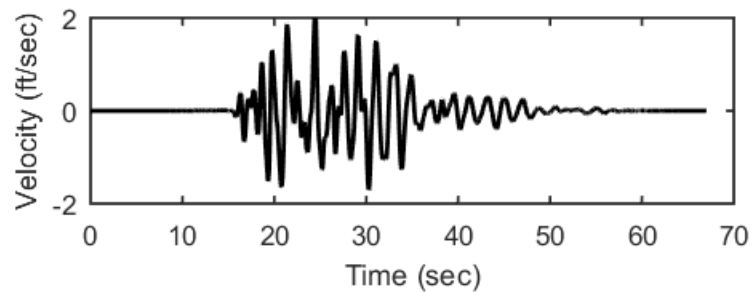
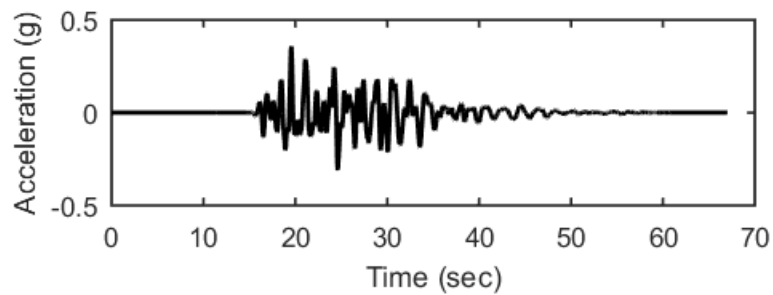
### Profile outputs for Motion: SEE1



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2

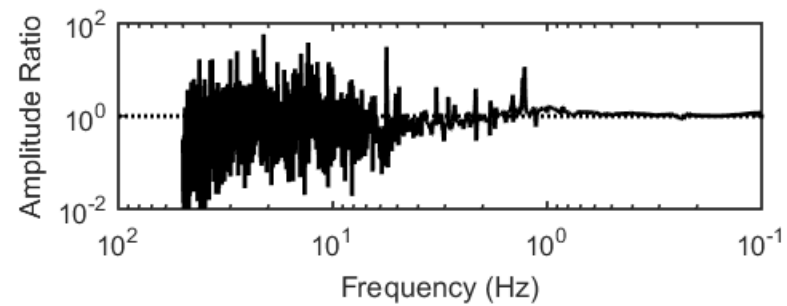
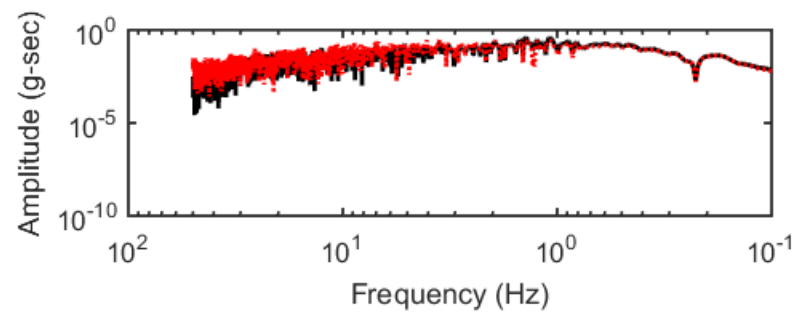
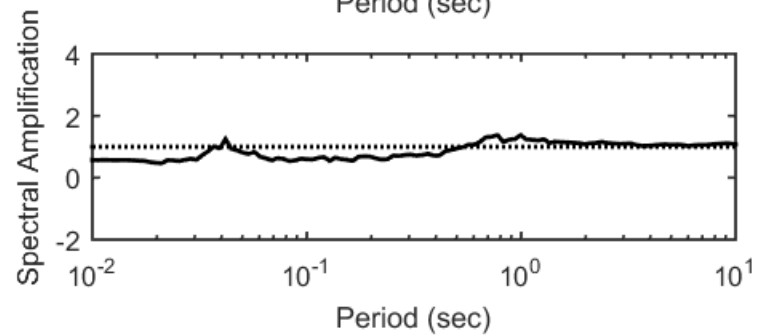
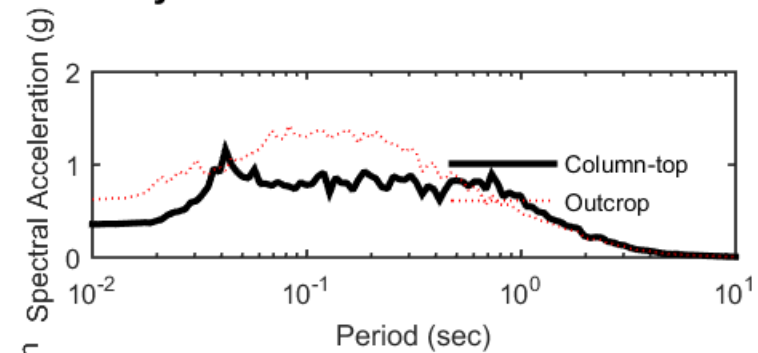
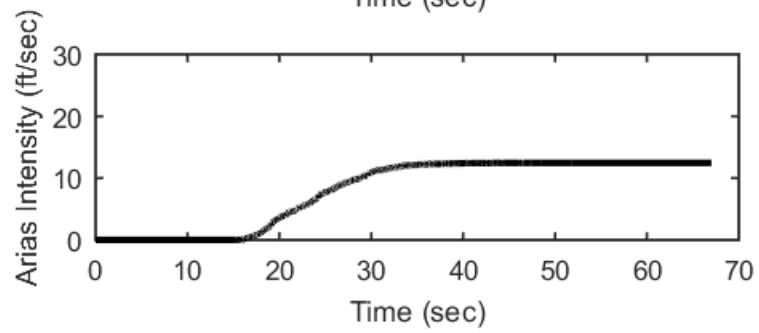
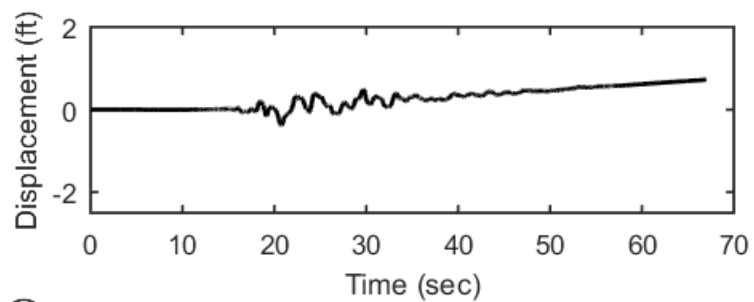
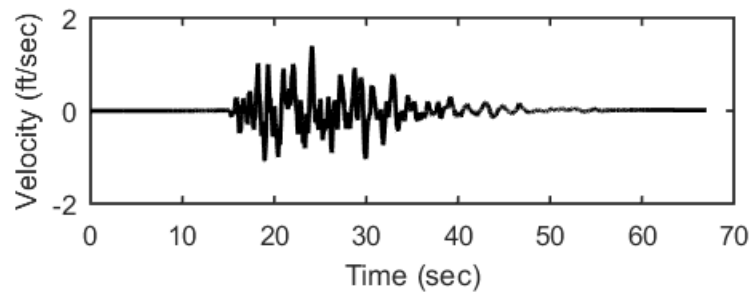
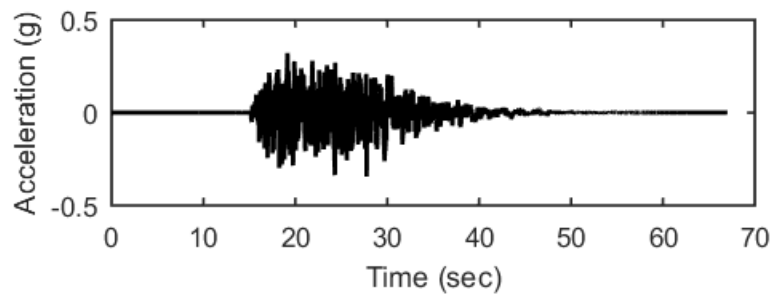


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2

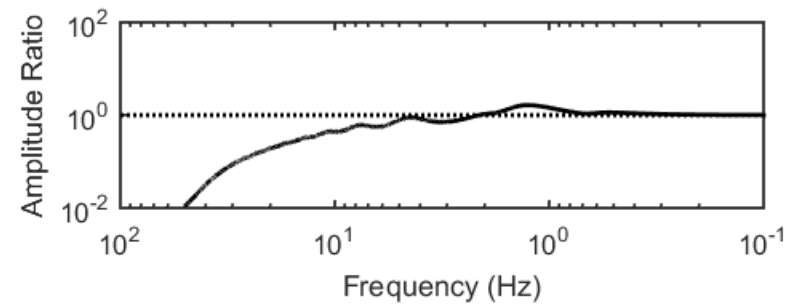
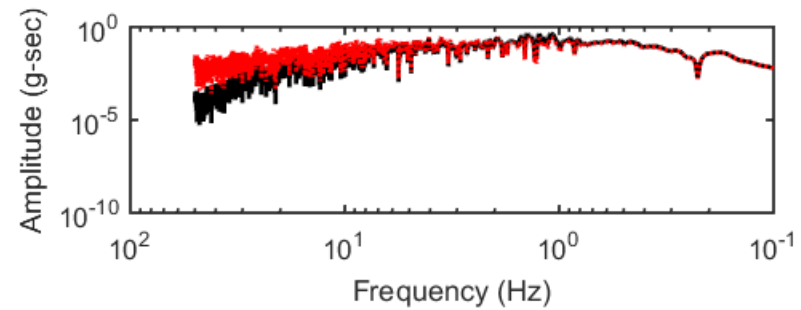
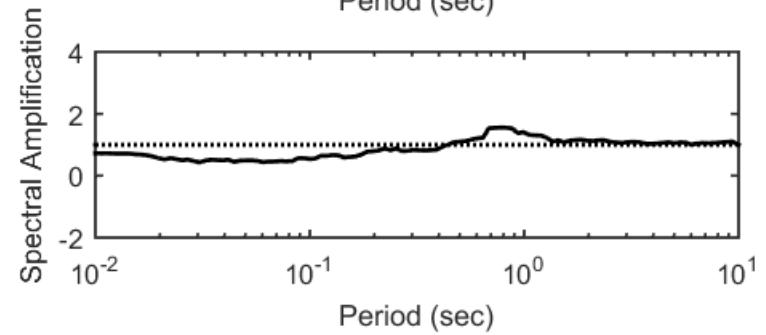
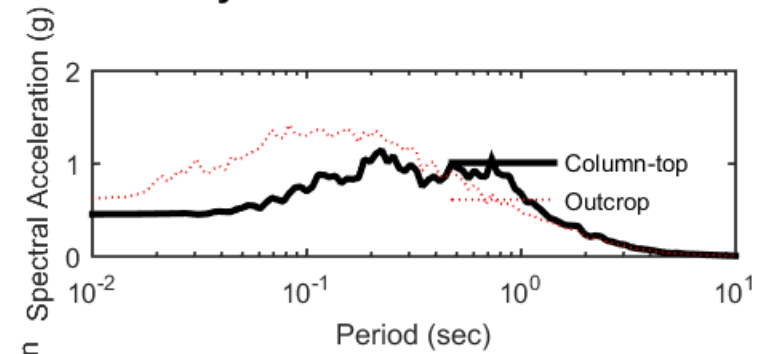
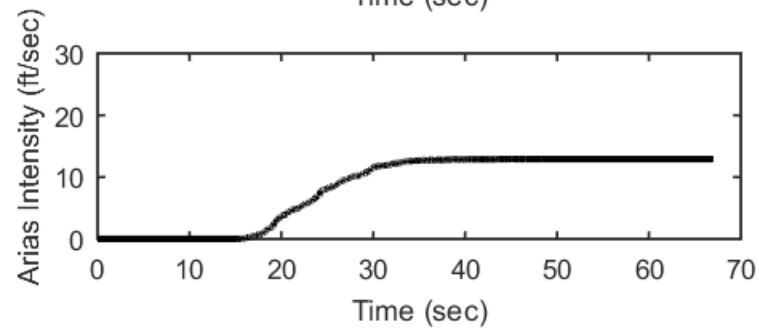
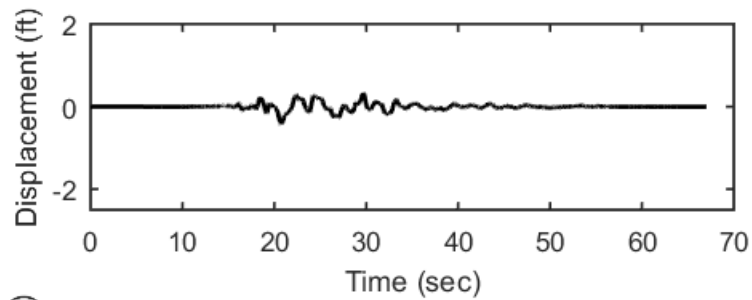
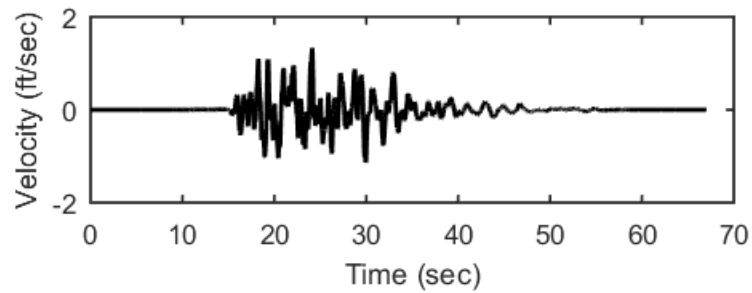
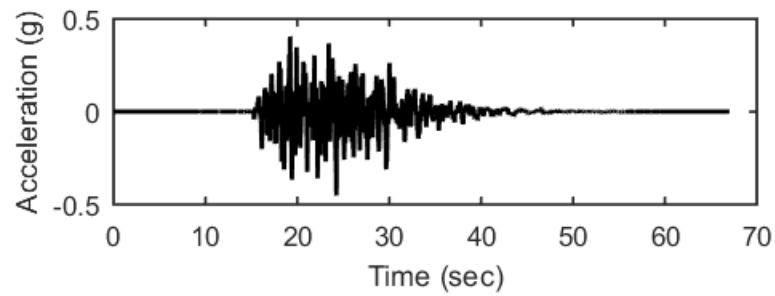




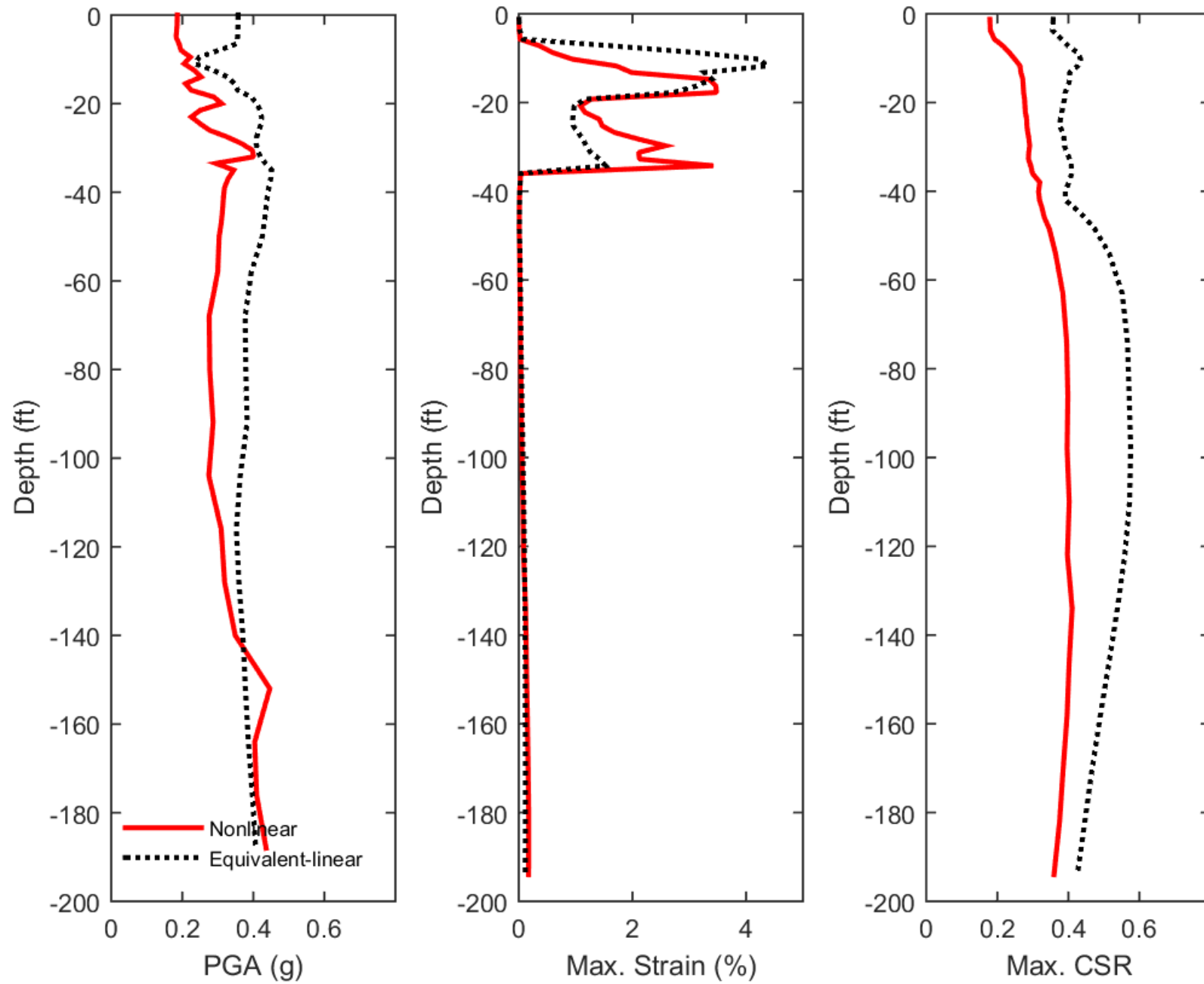
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



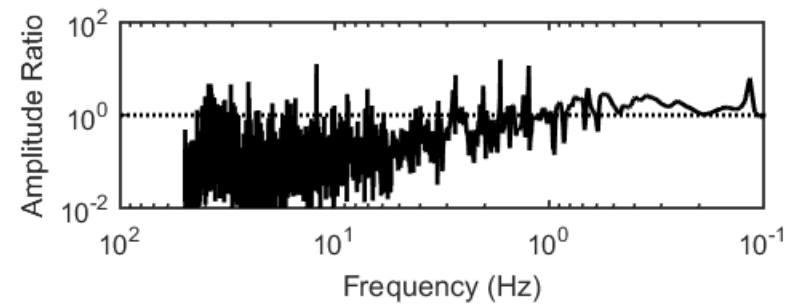
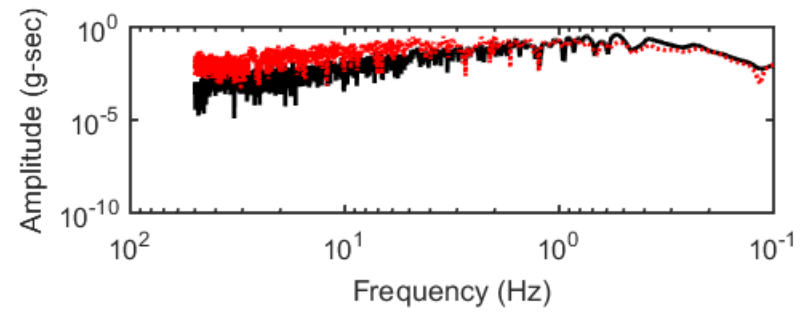
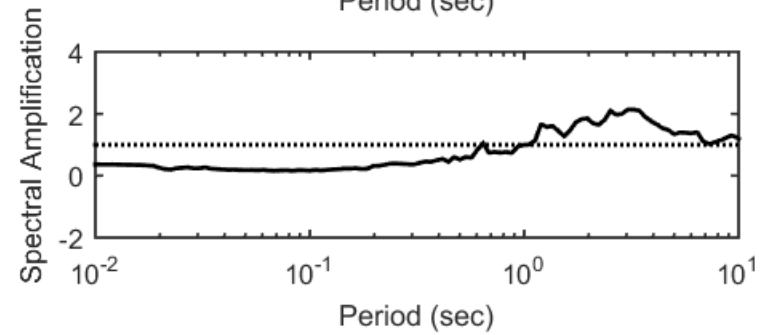
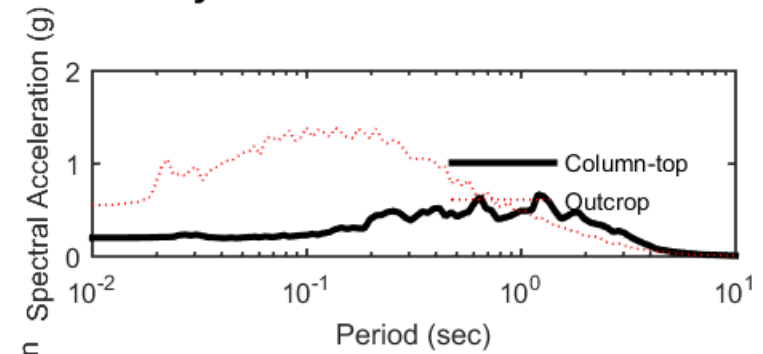
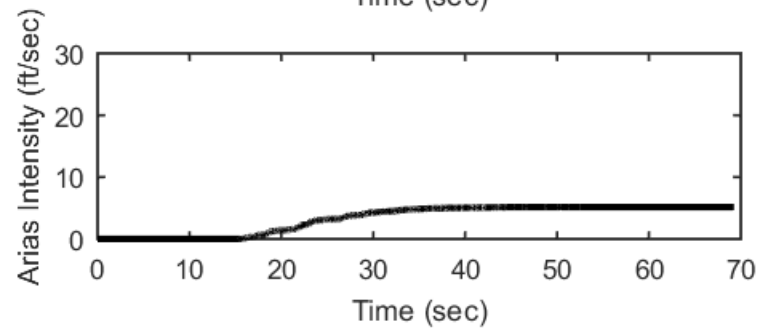
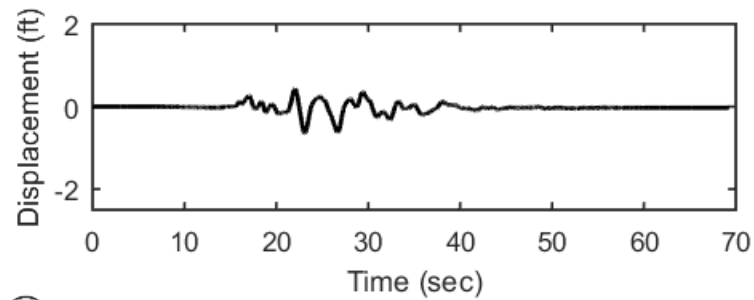
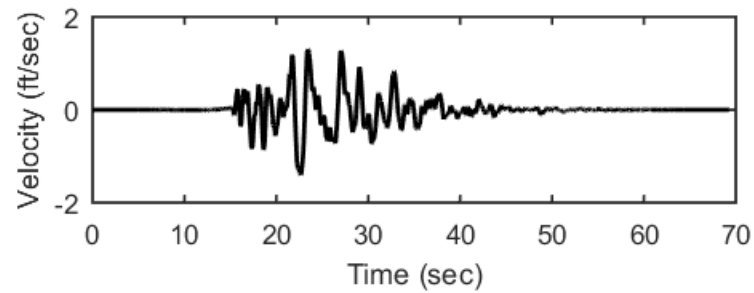
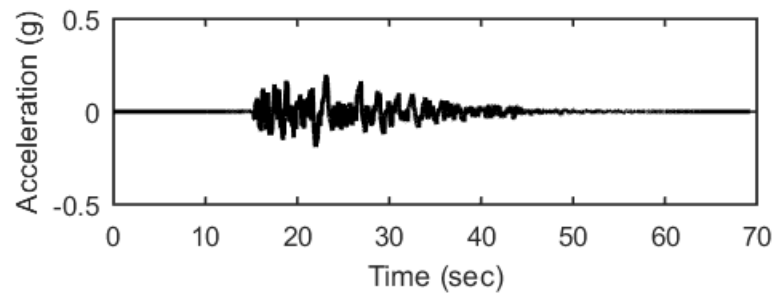
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



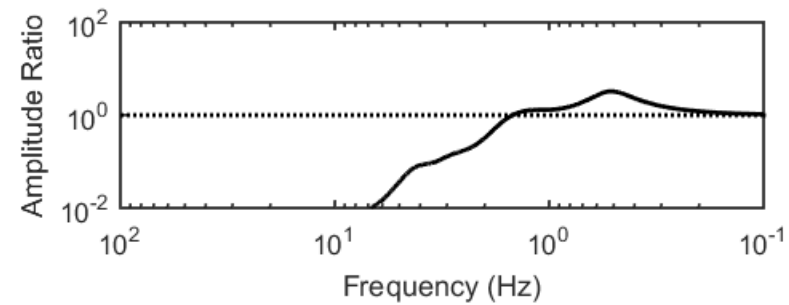
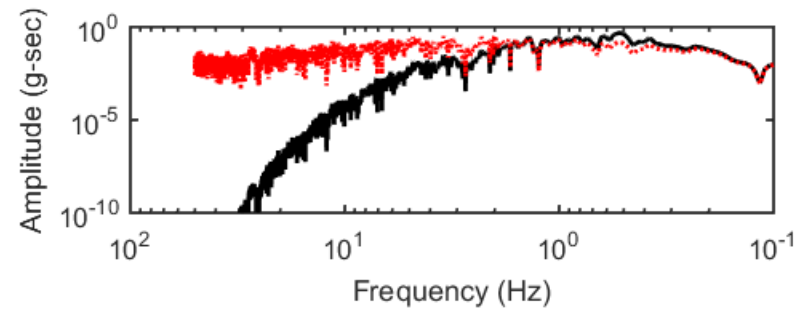
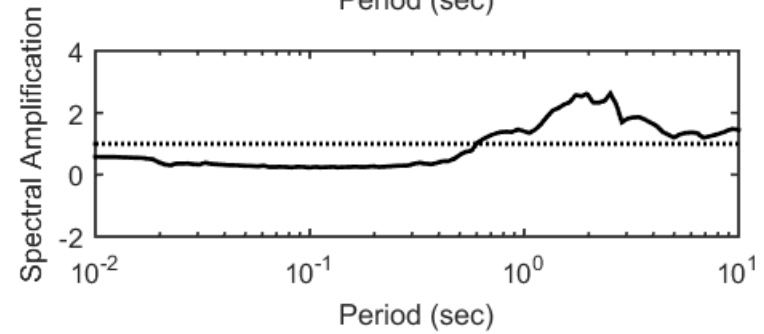
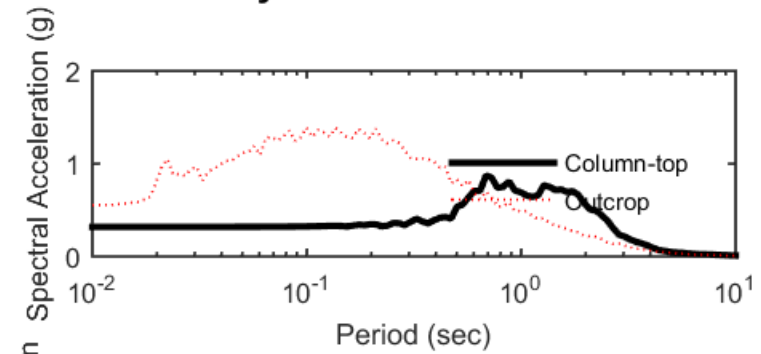
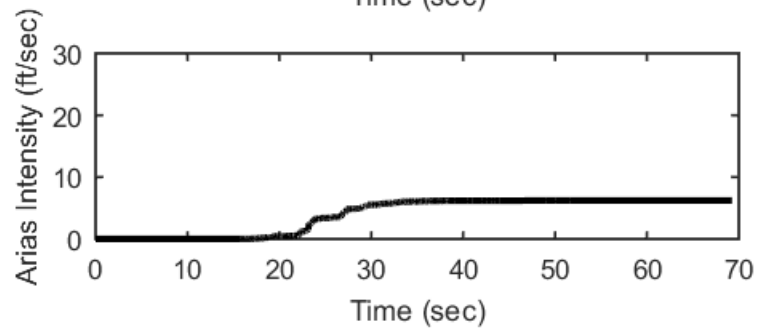
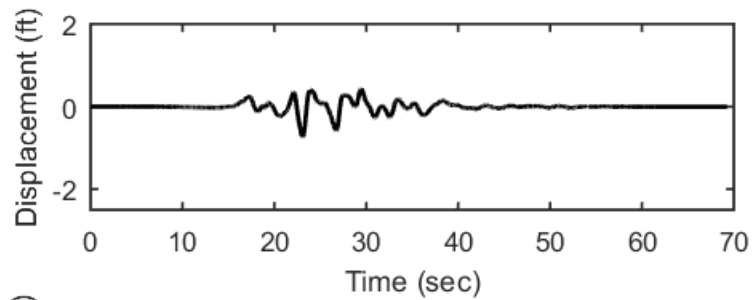
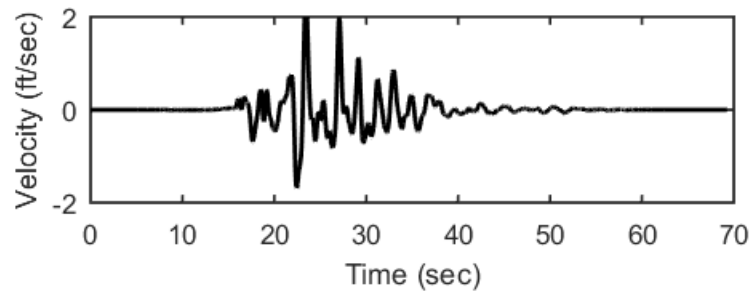
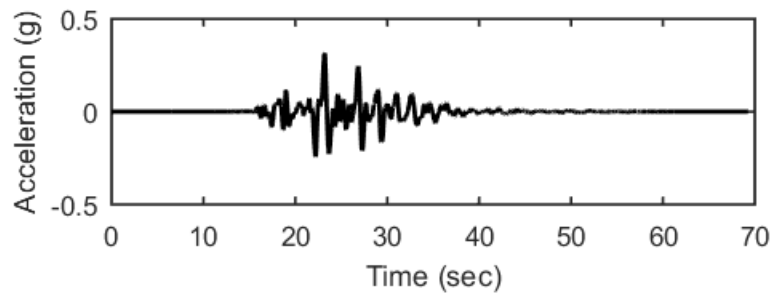
### Profile outputs for Motion: SEE2



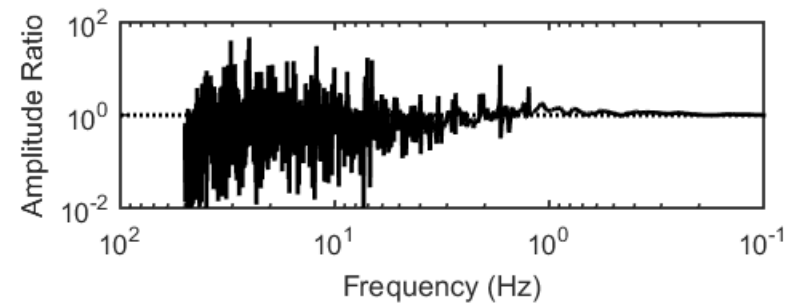
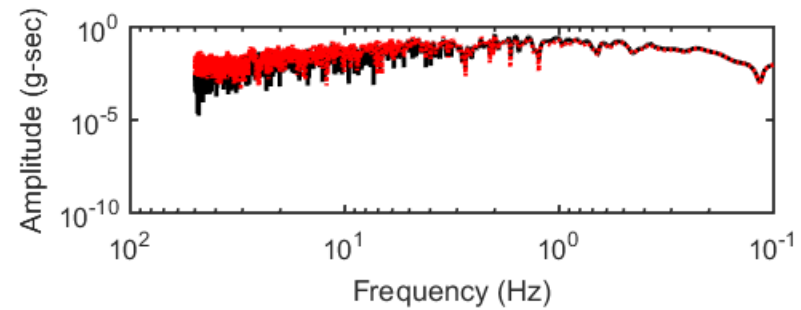
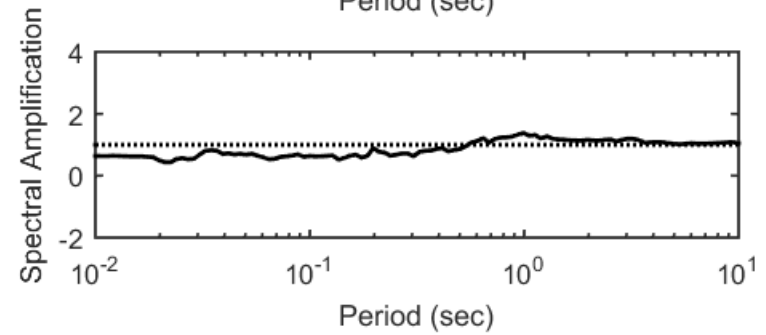
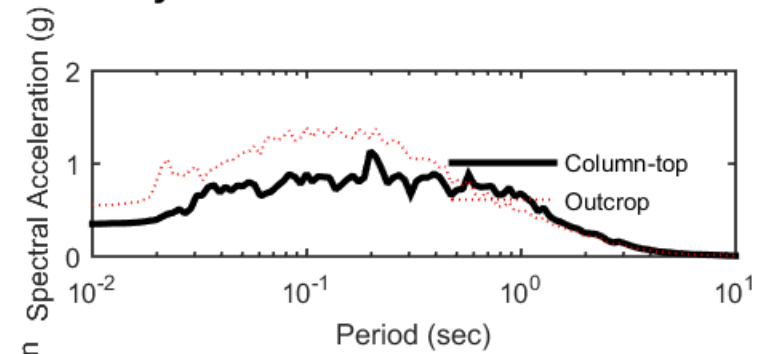
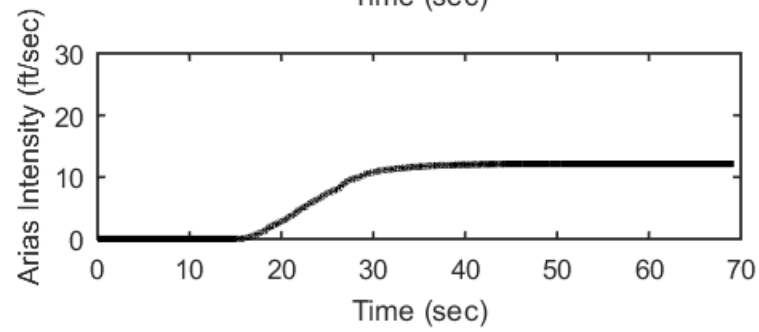
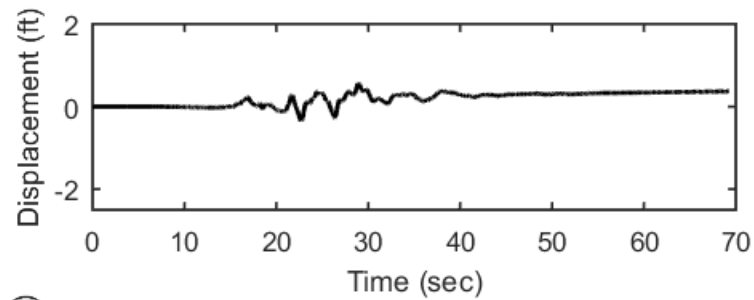
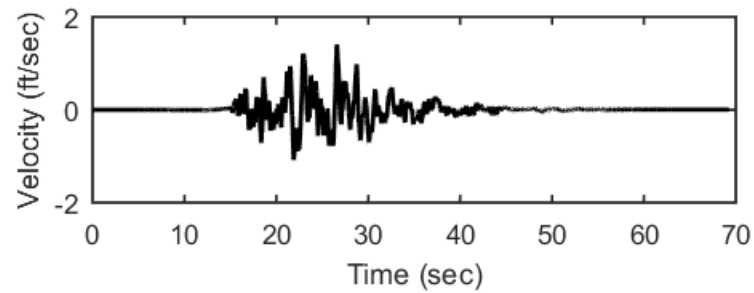
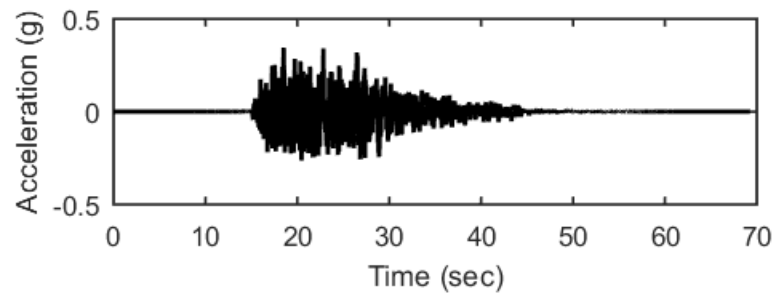
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



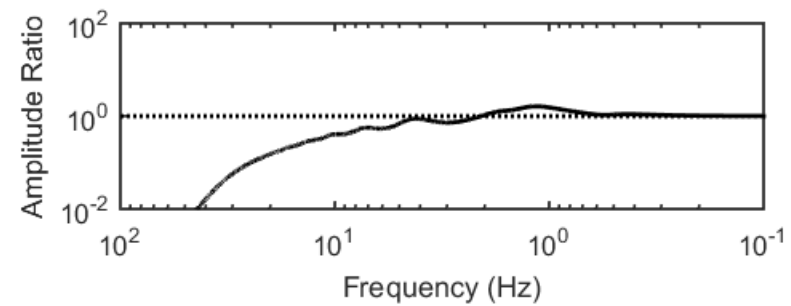
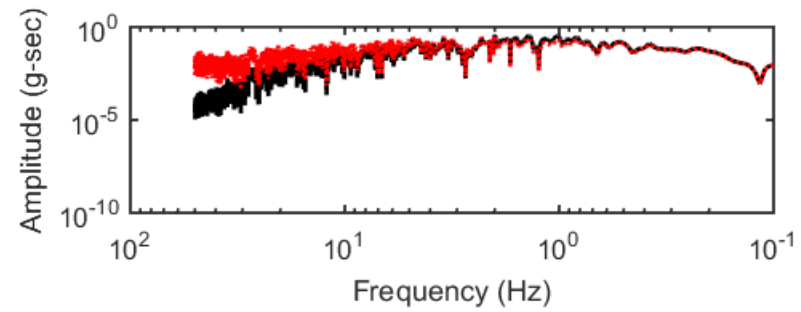
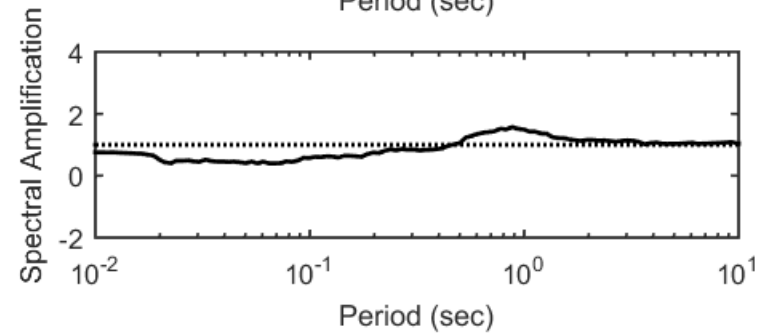
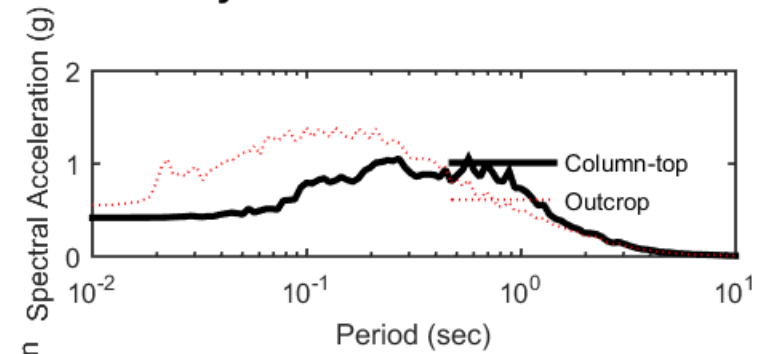
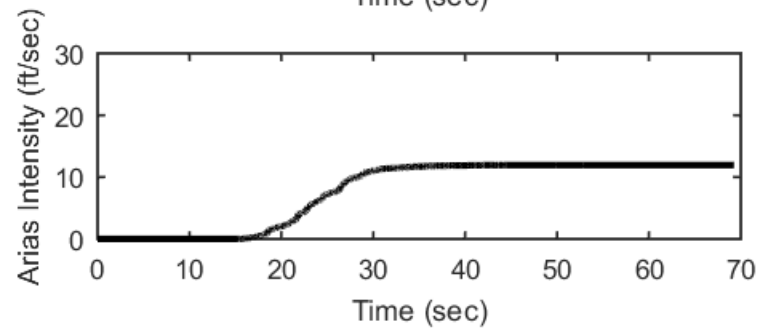
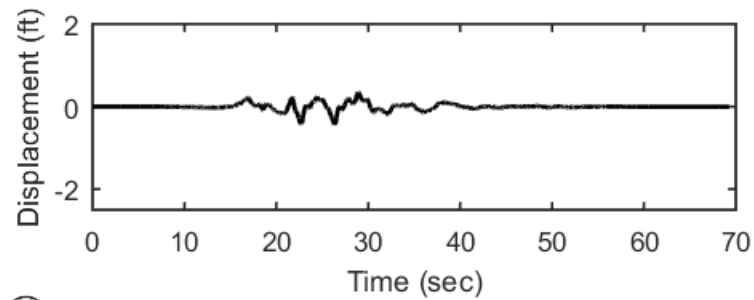
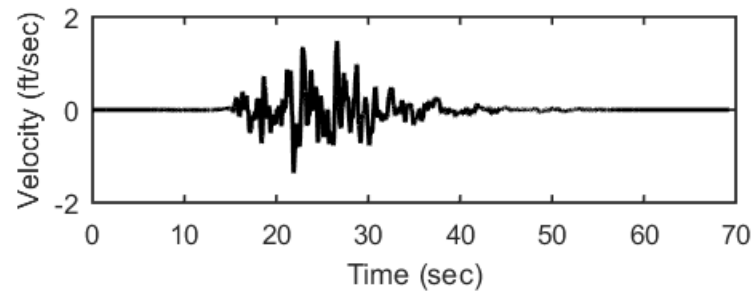
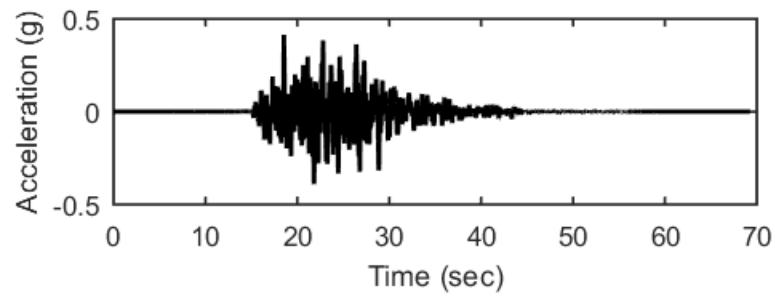
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



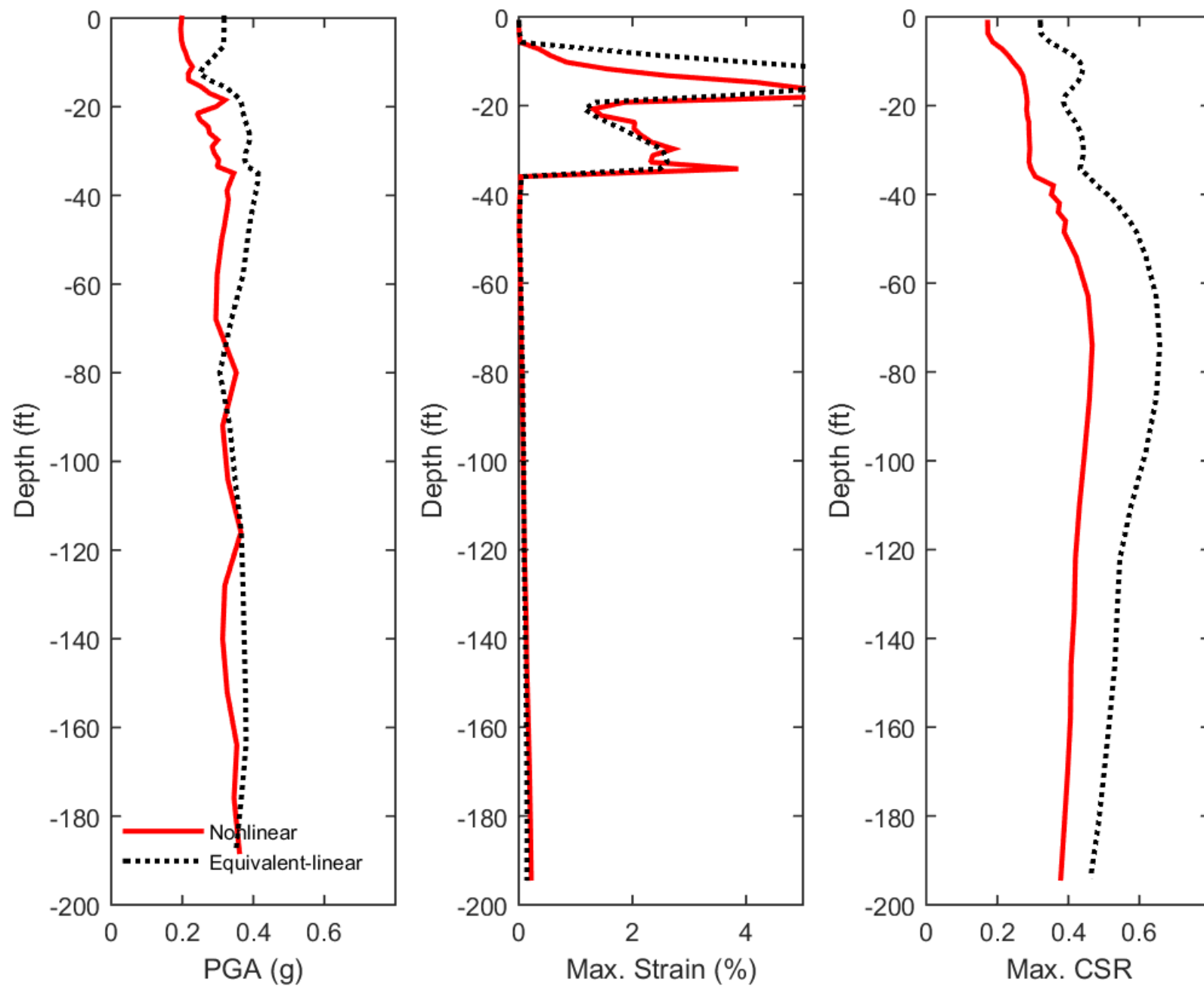
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3

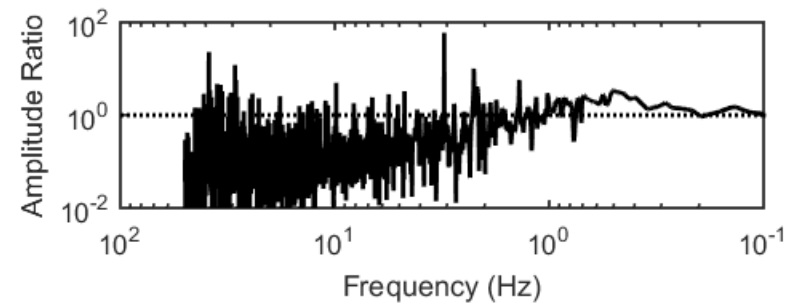
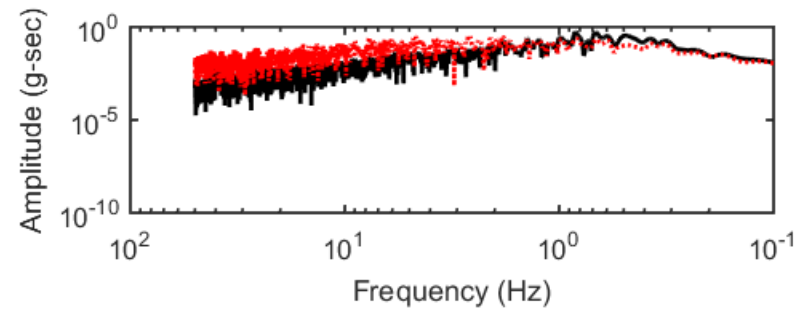
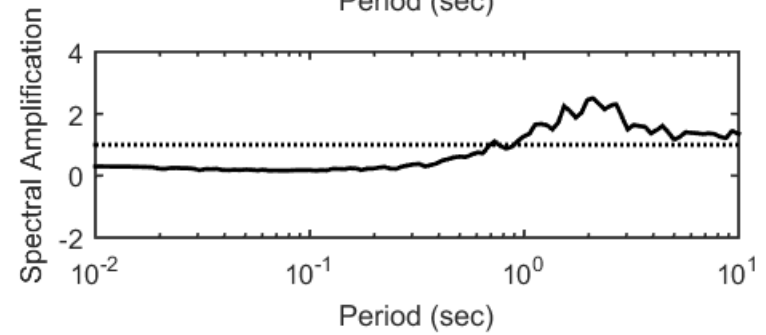
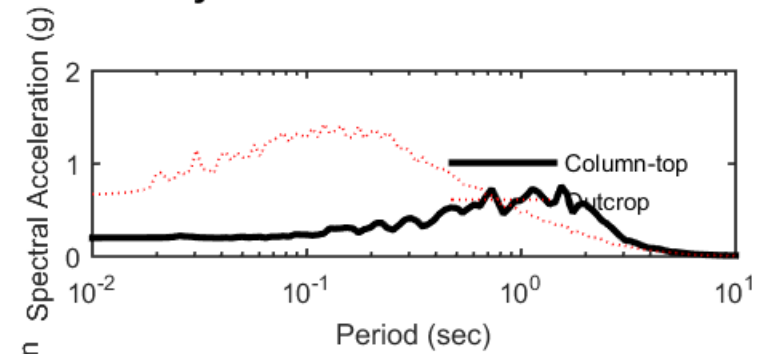
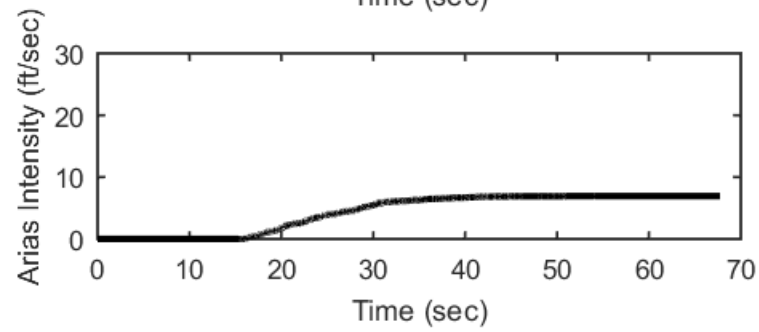
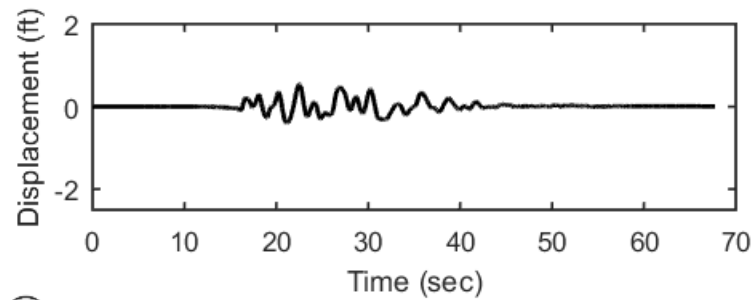
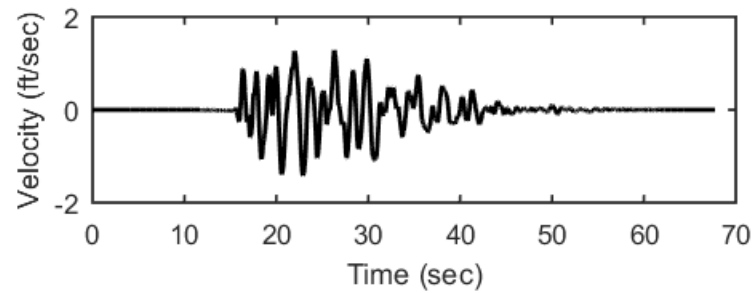
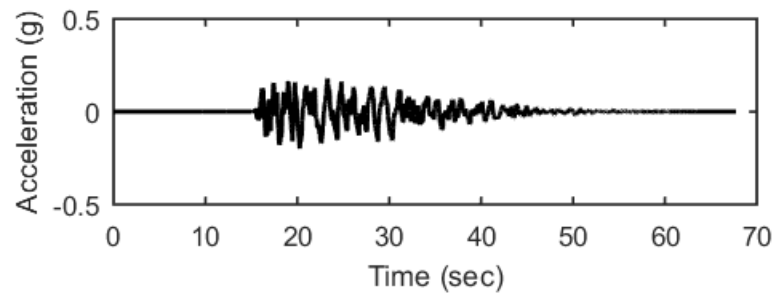


### Profile outputs for Motion: SEE3

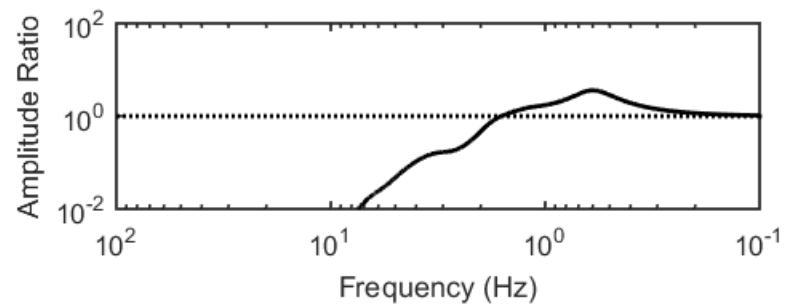
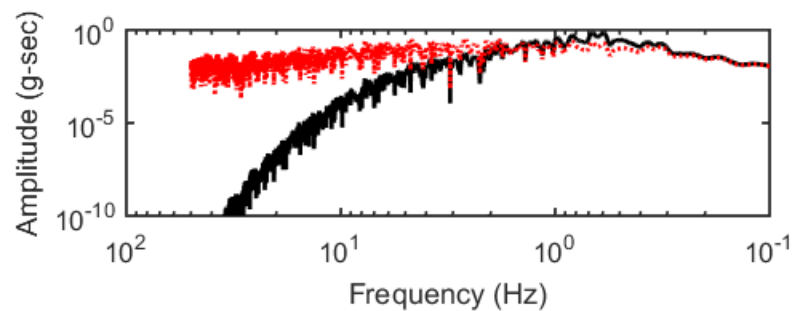
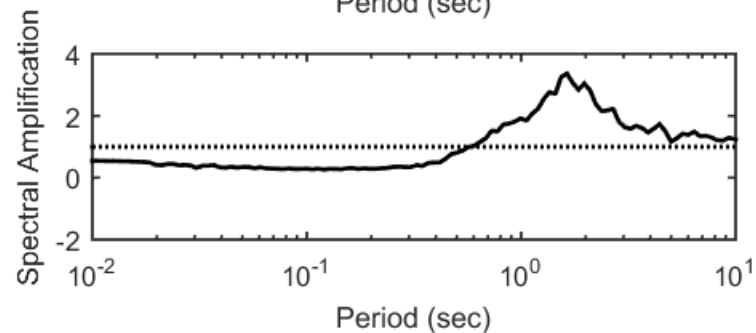
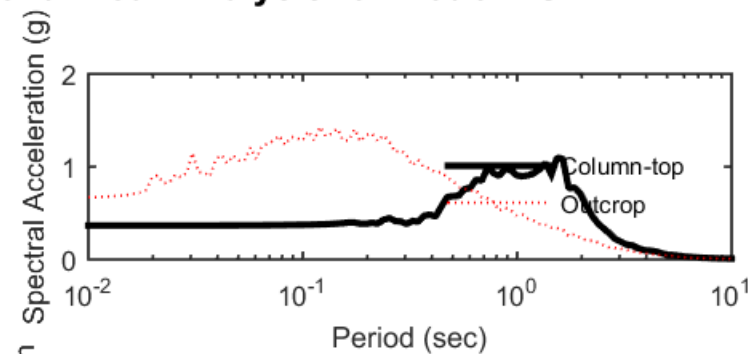
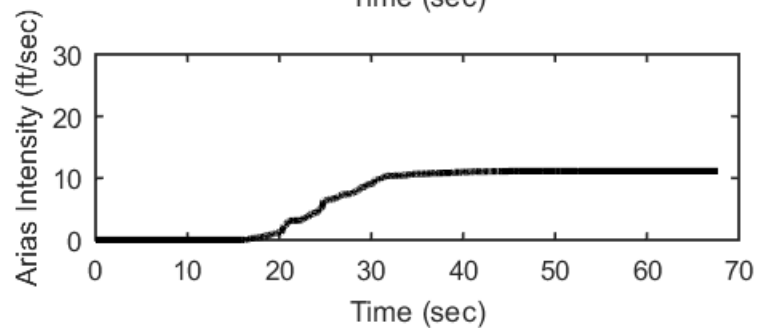
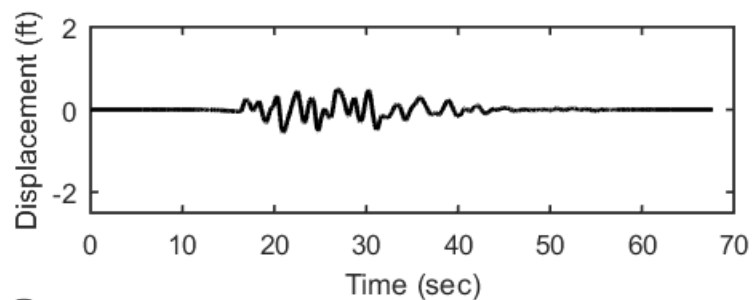
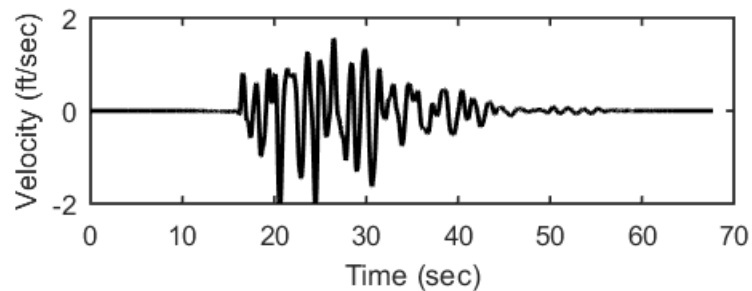
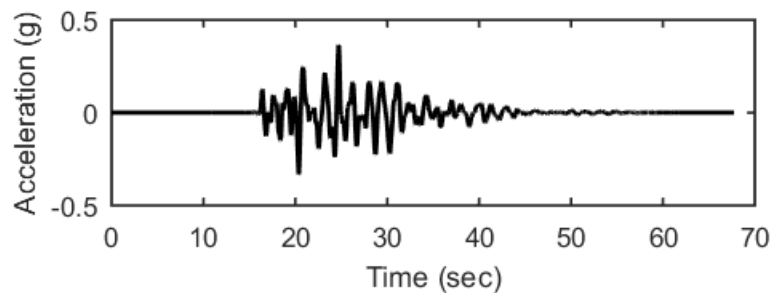




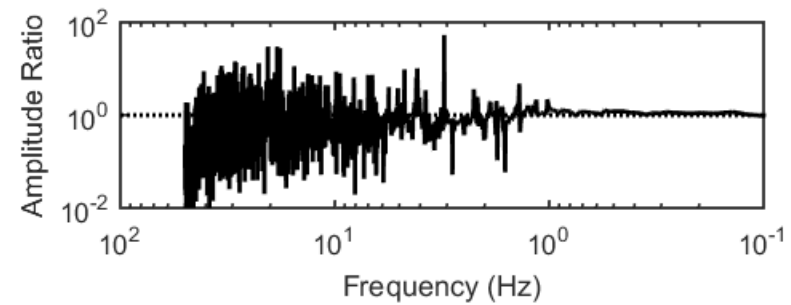
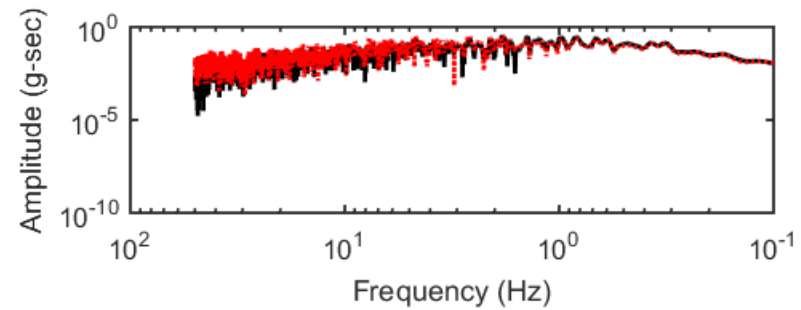
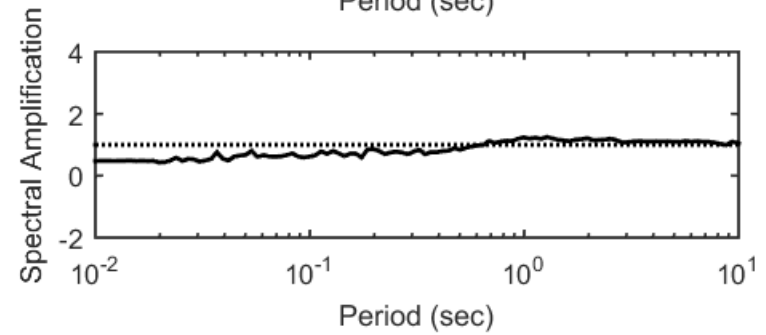
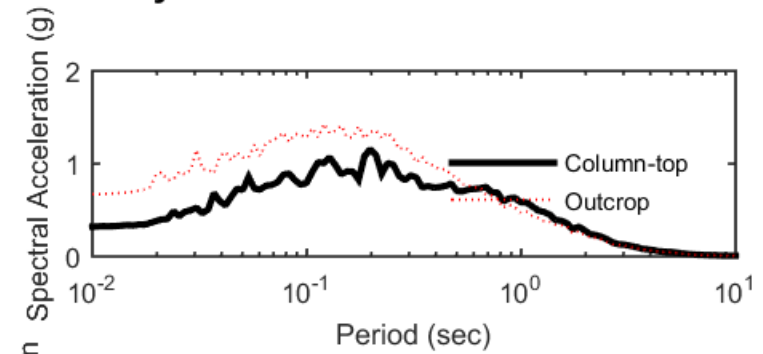
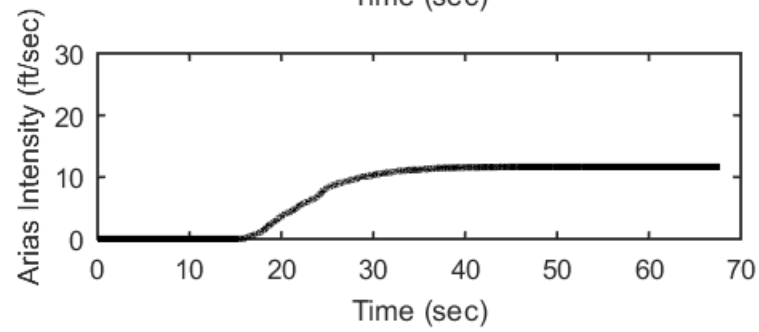
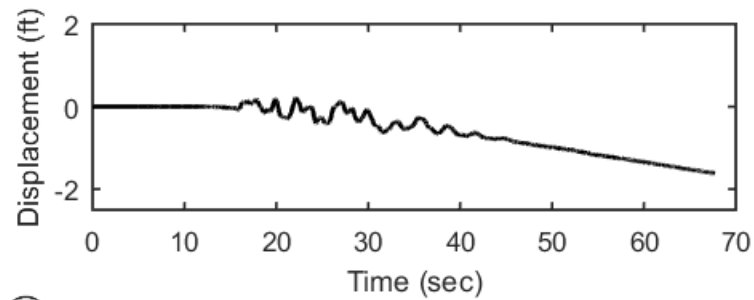
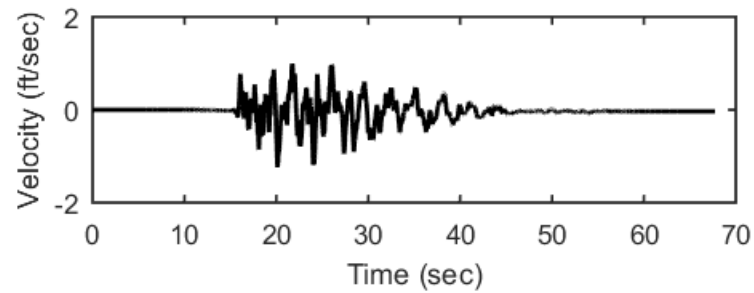
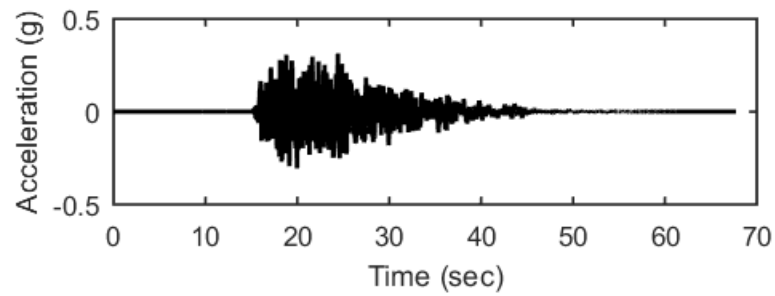
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



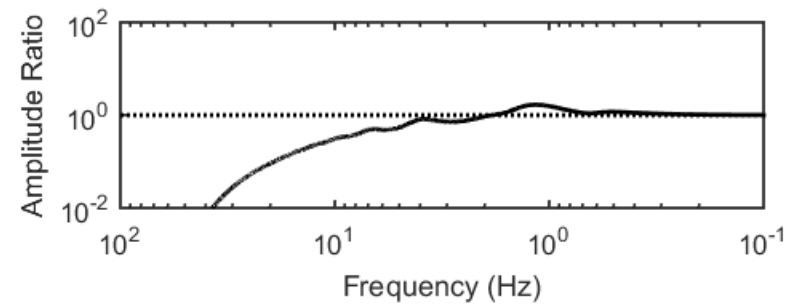
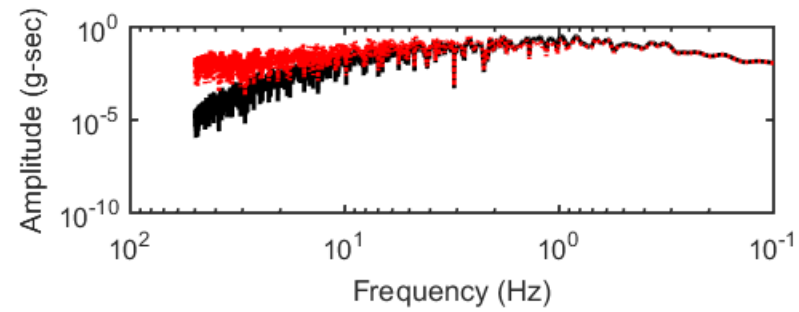
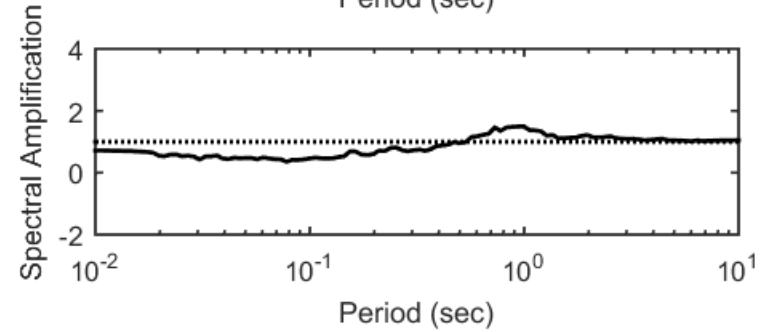
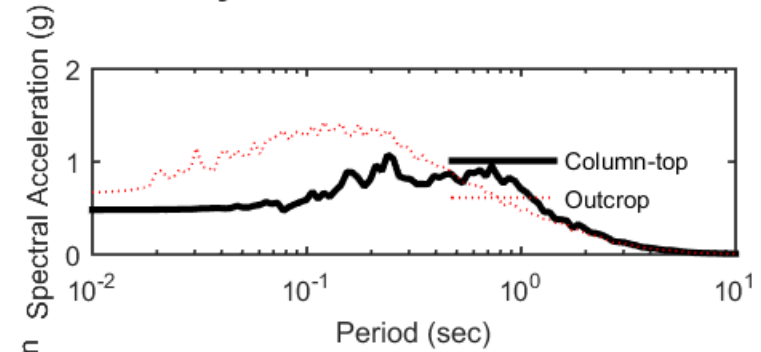
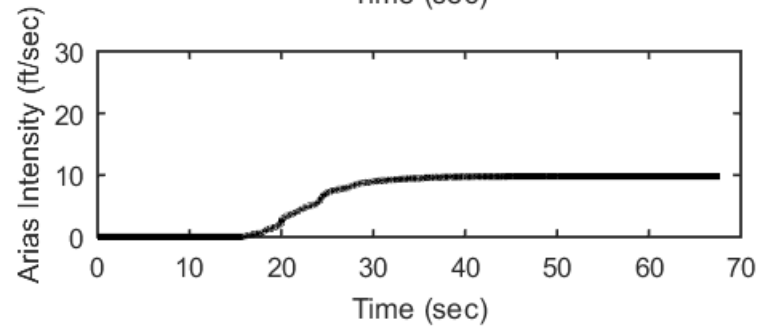
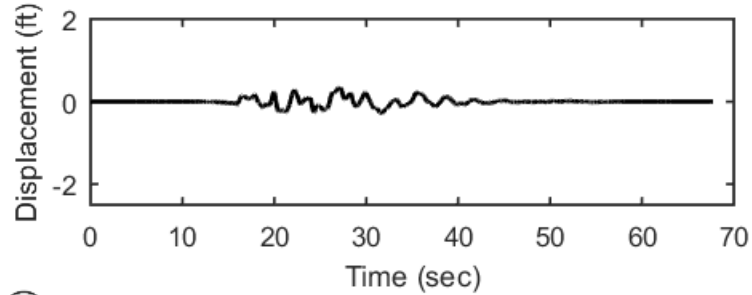
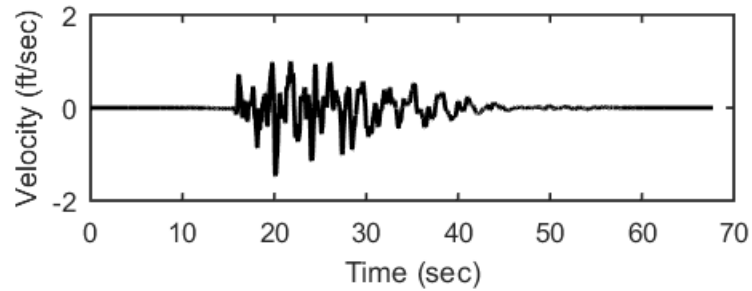
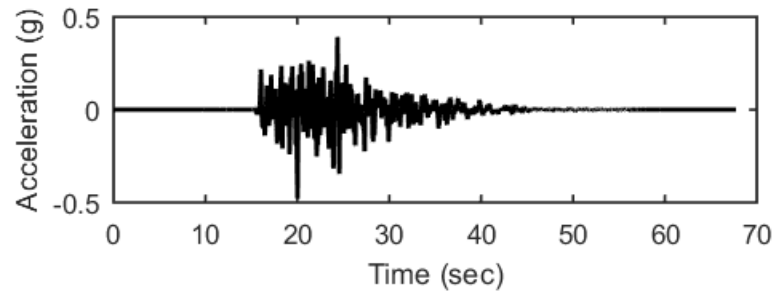
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



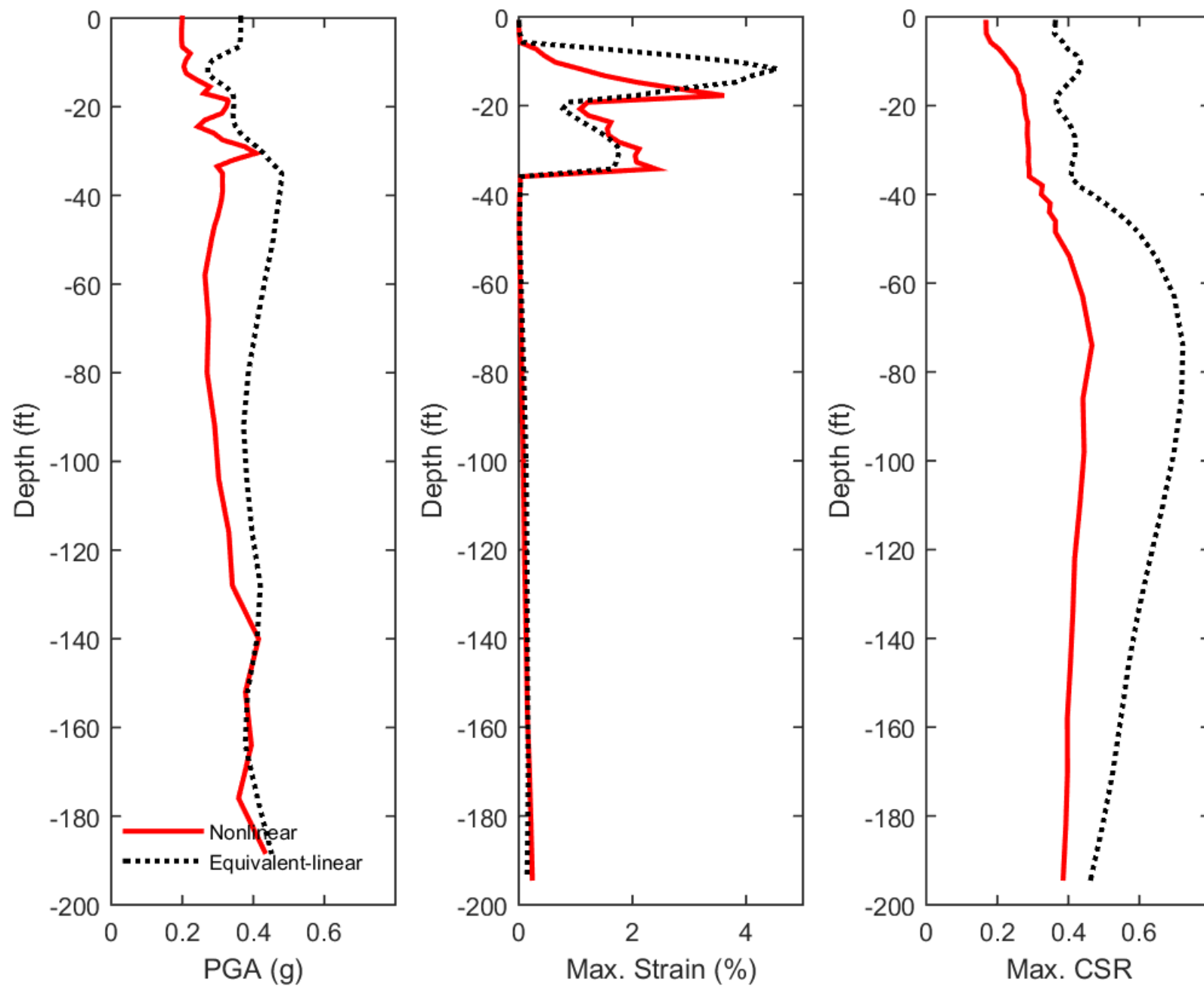
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



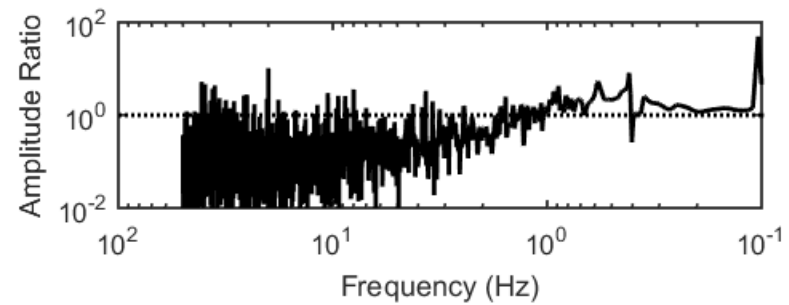
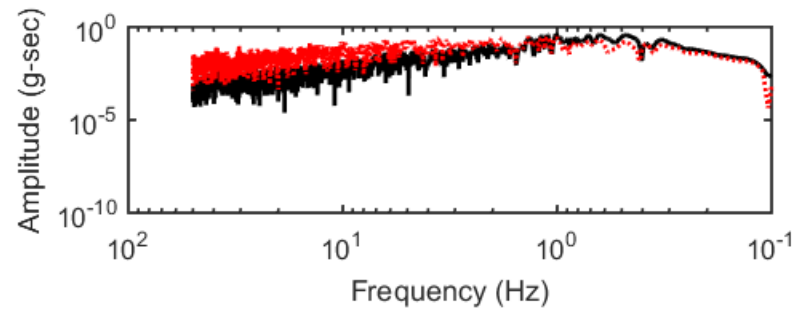
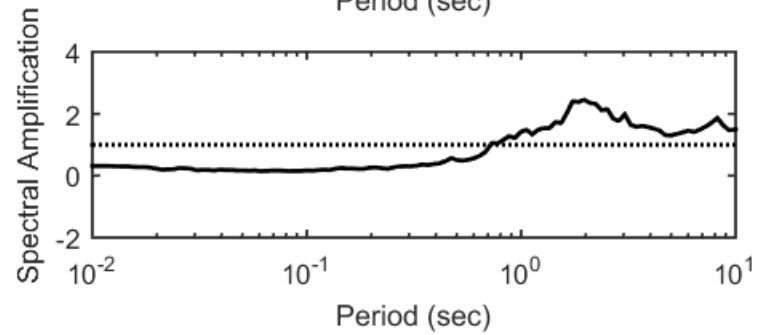
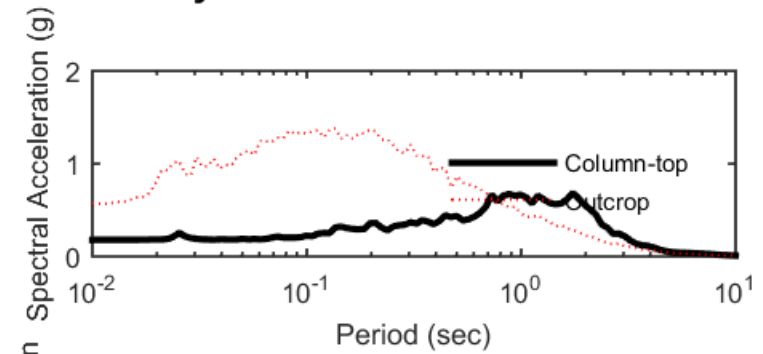
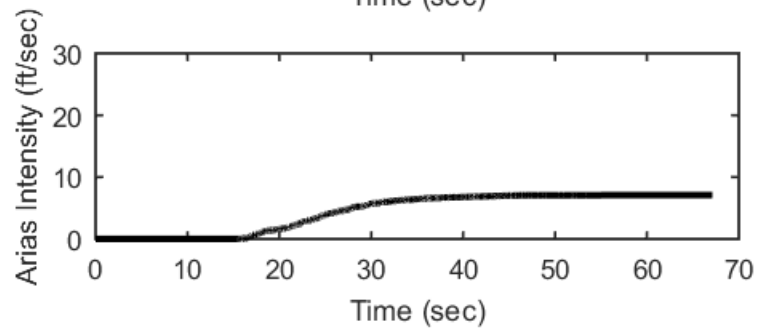
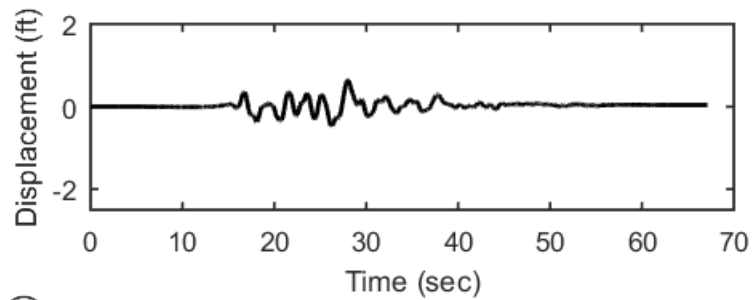
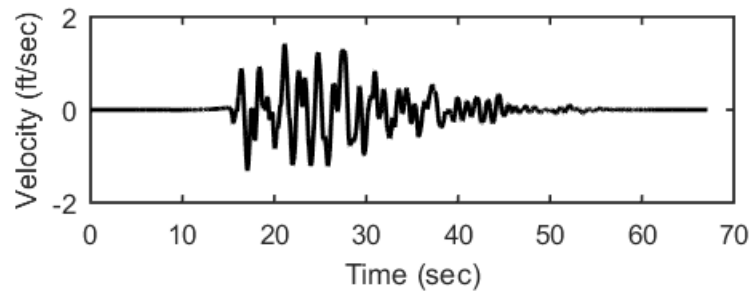
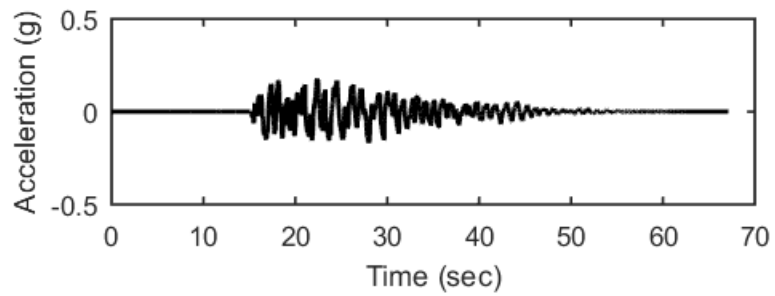
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



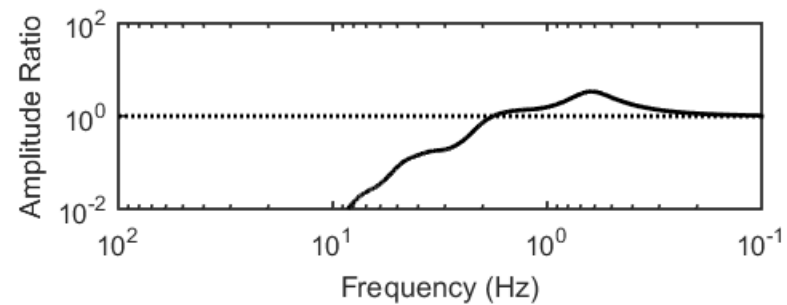
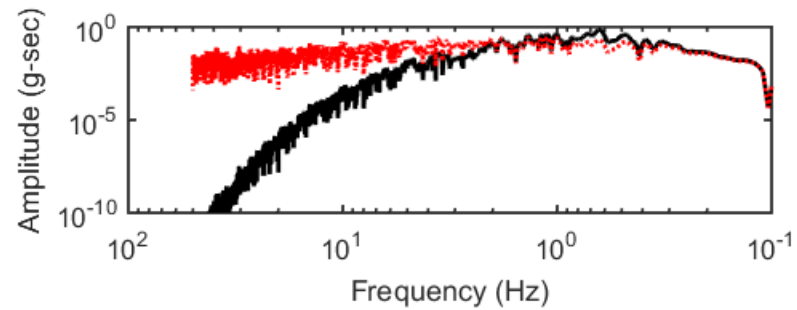
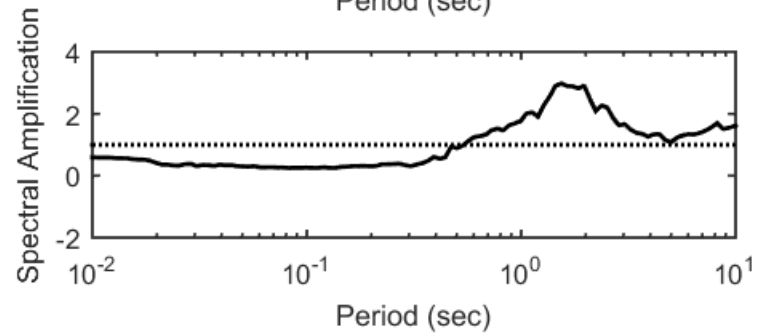
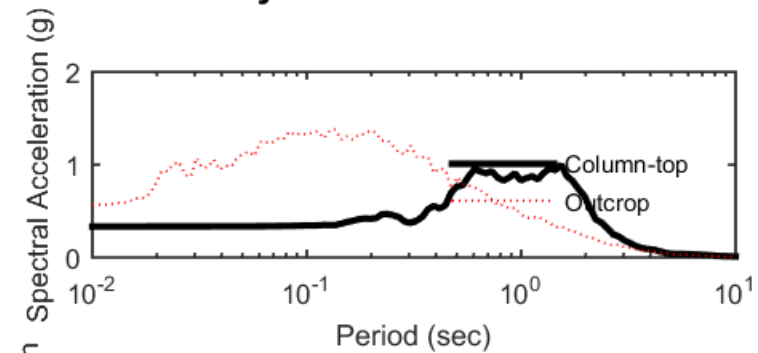
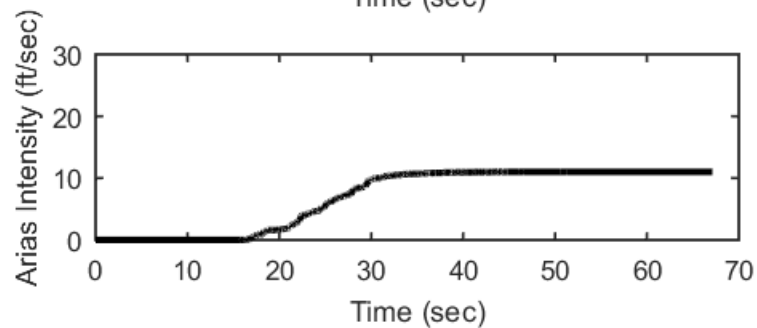
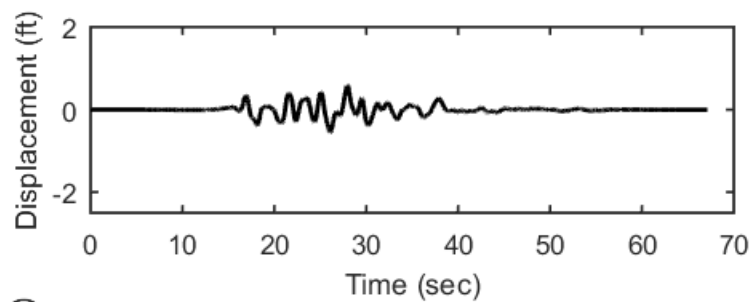
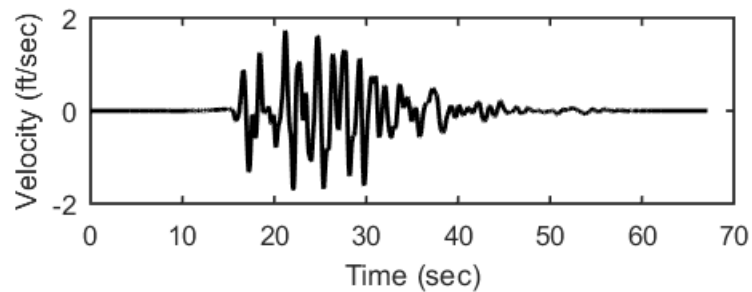
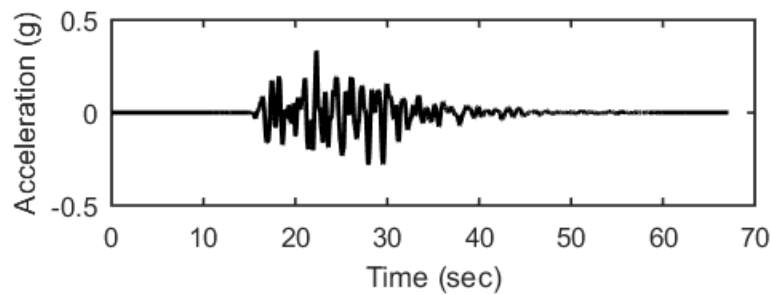
### Profile outputs for Motion: SEE4



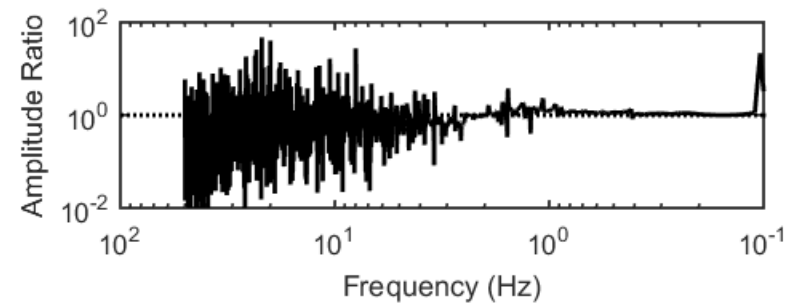
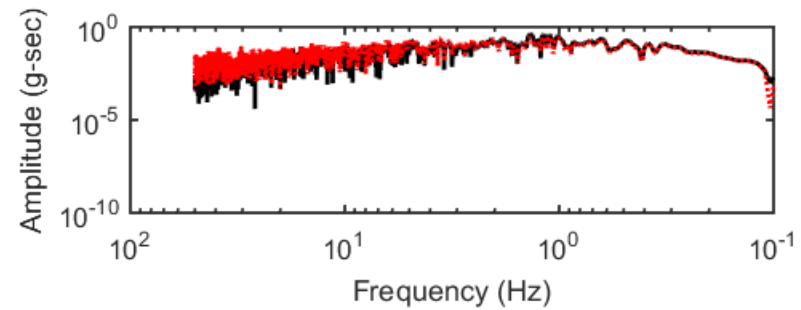
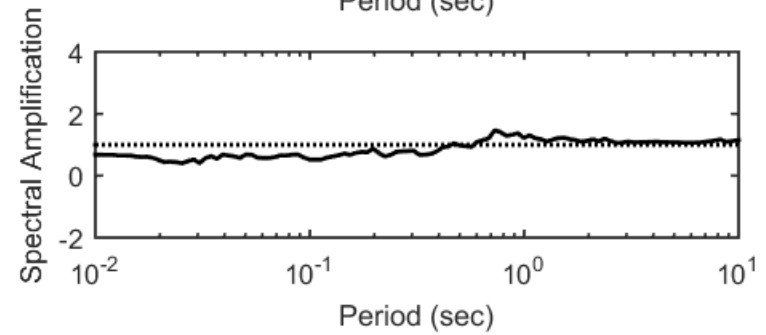
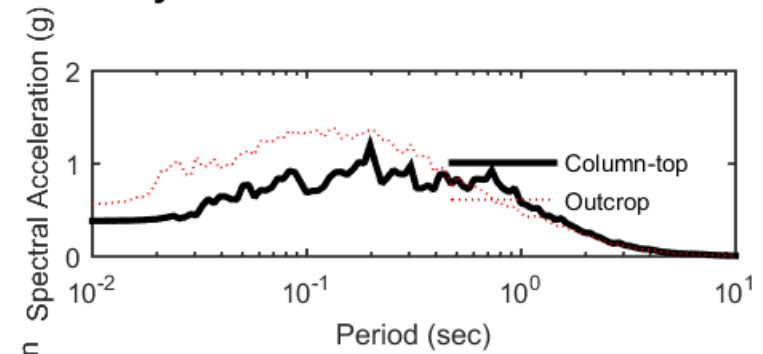
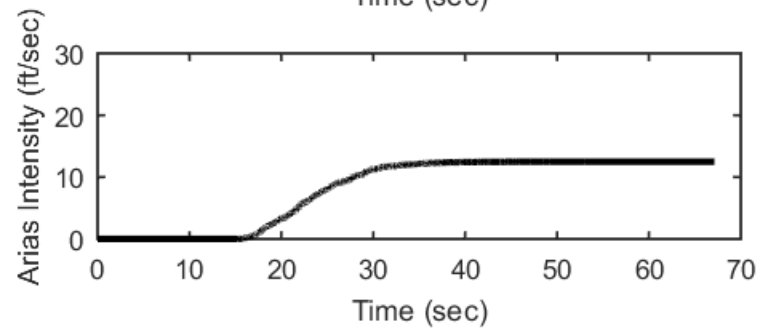
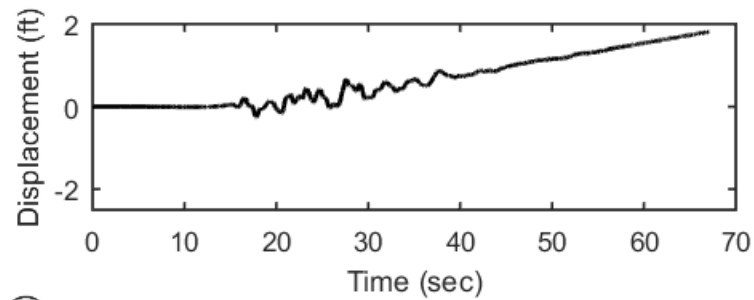
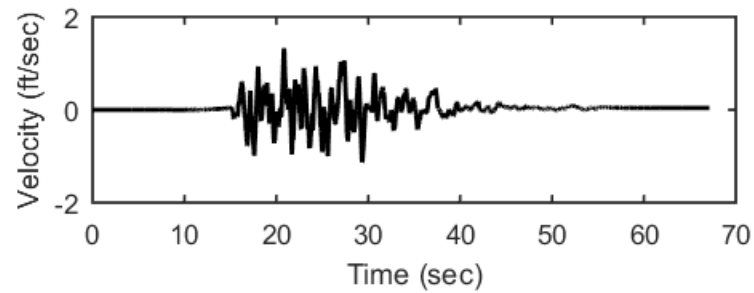
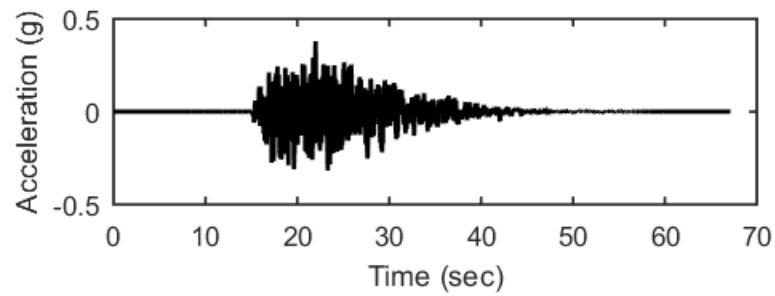
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5

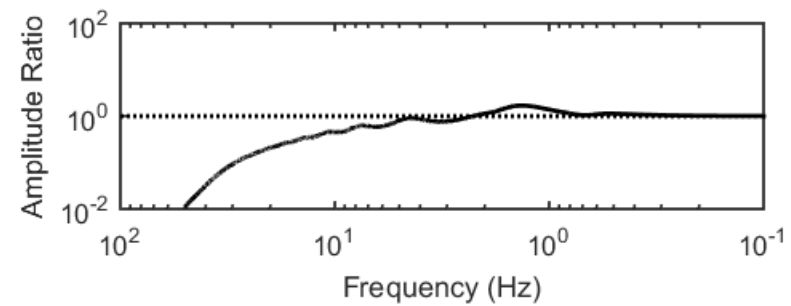
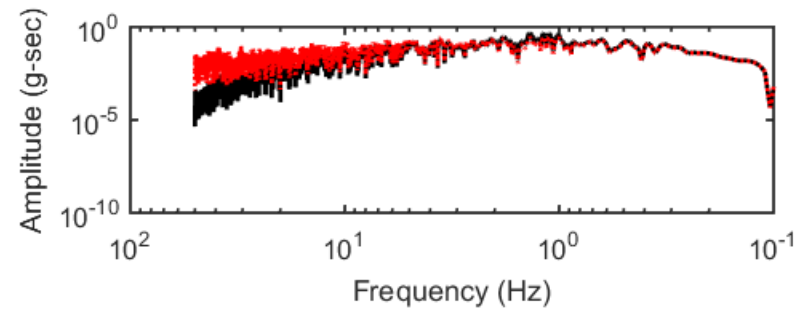
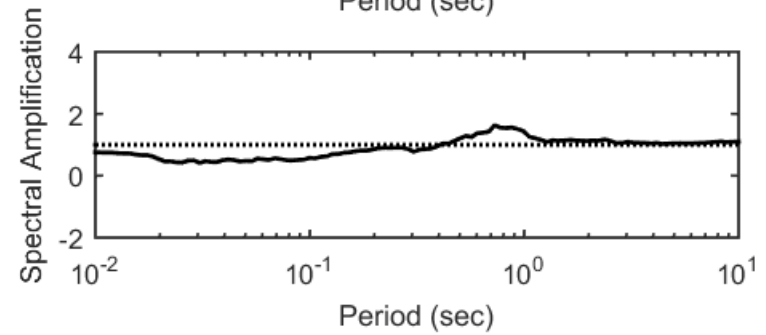
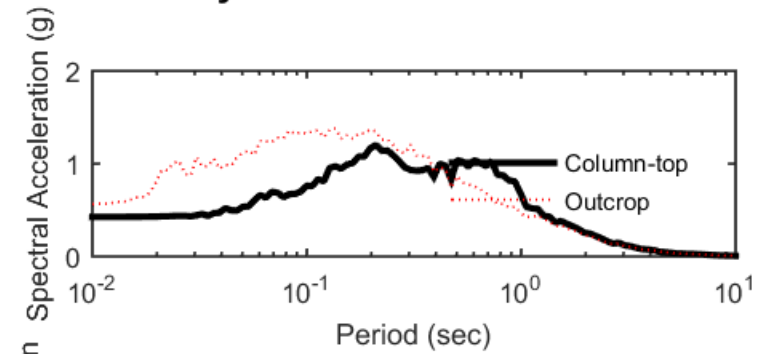
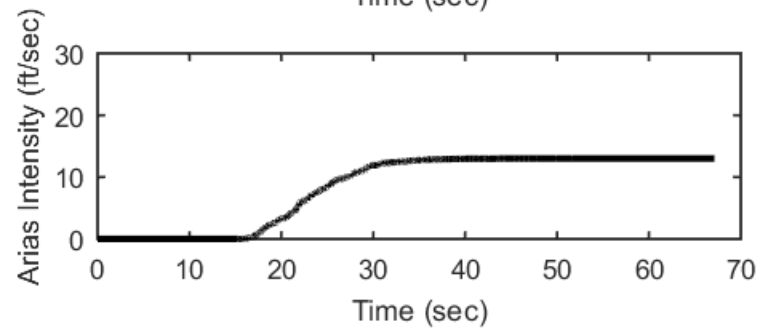
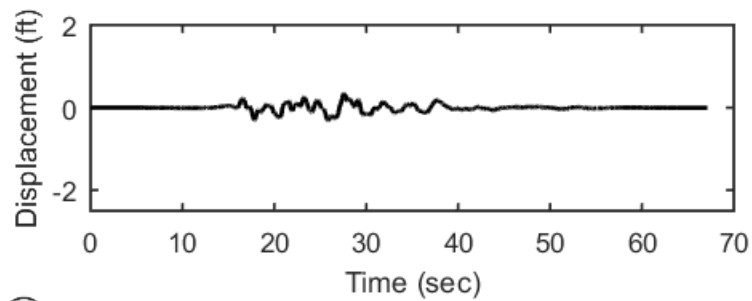
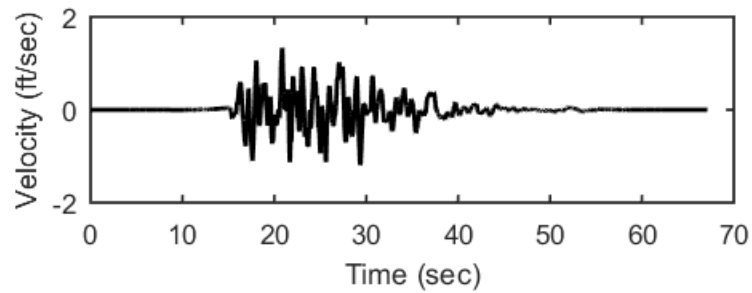
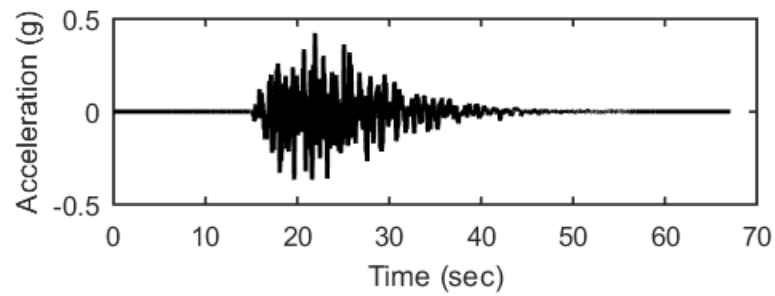


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5

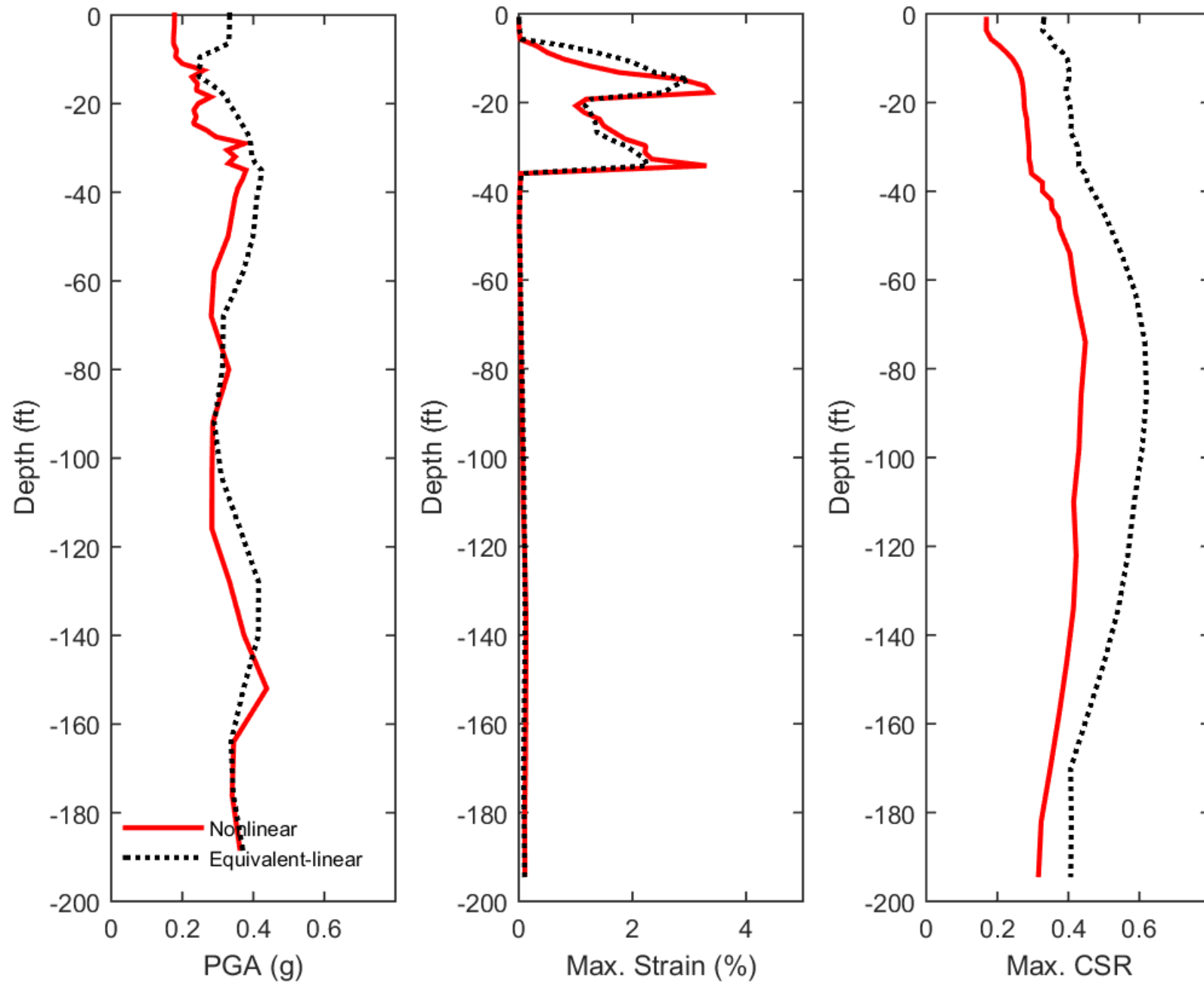




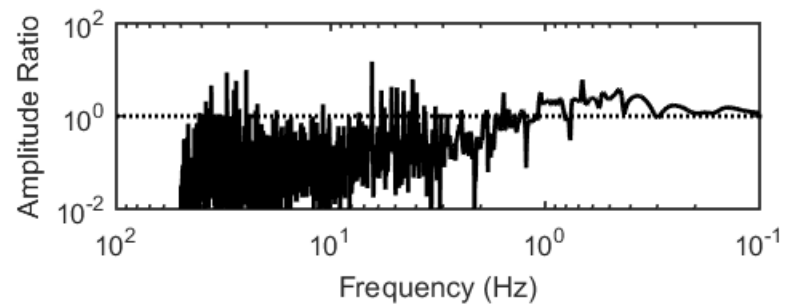
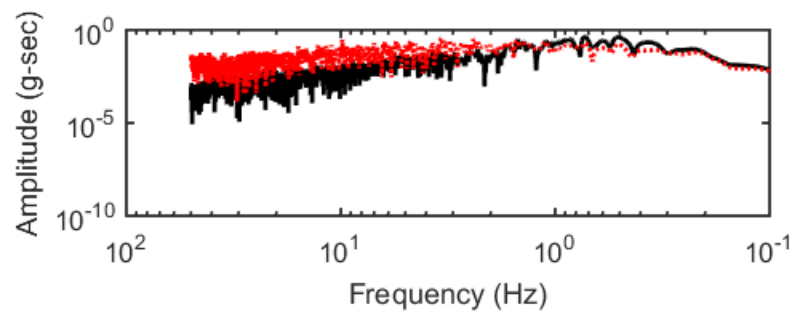
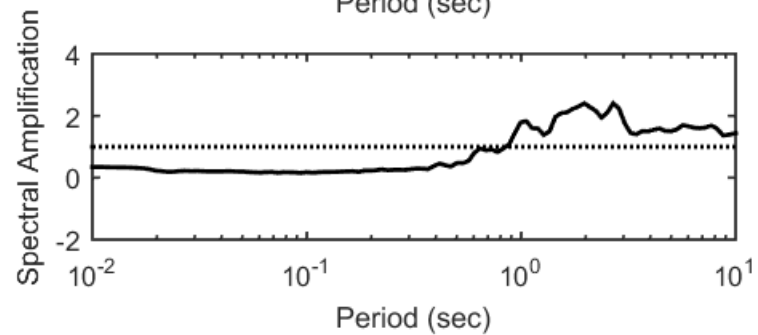
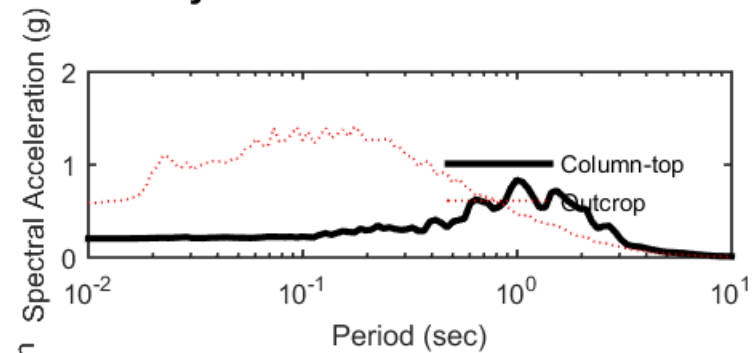
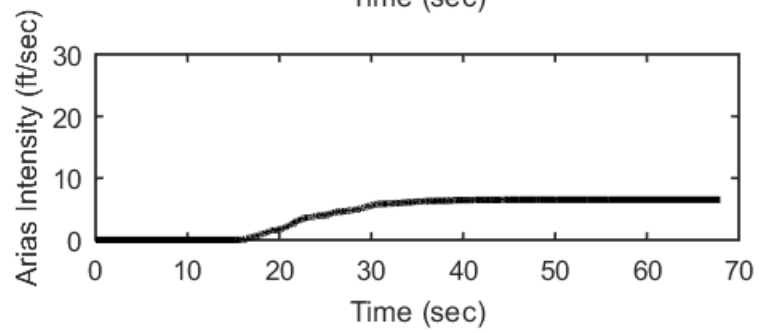
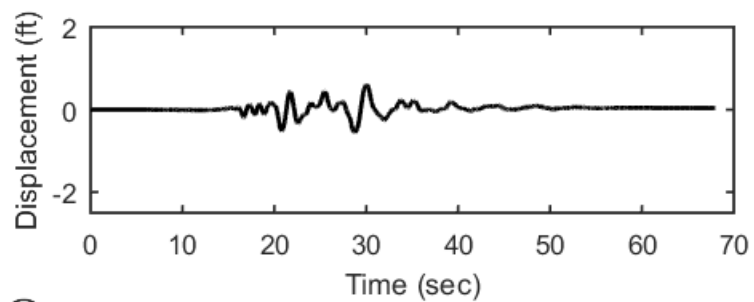
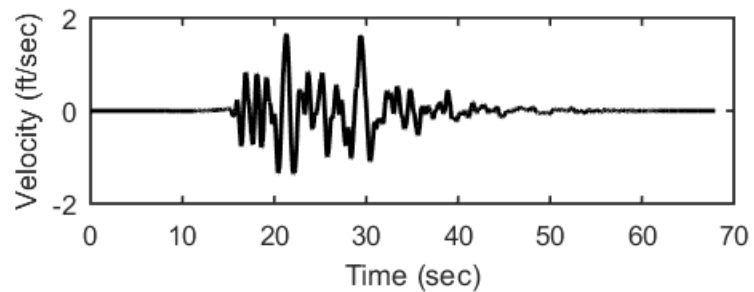
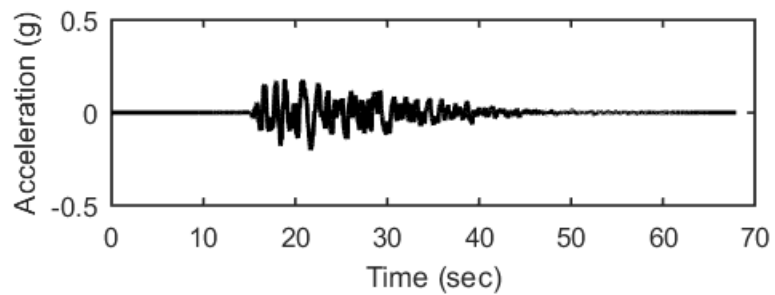
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



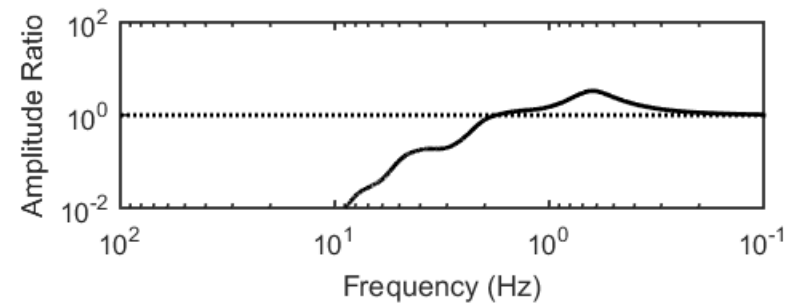
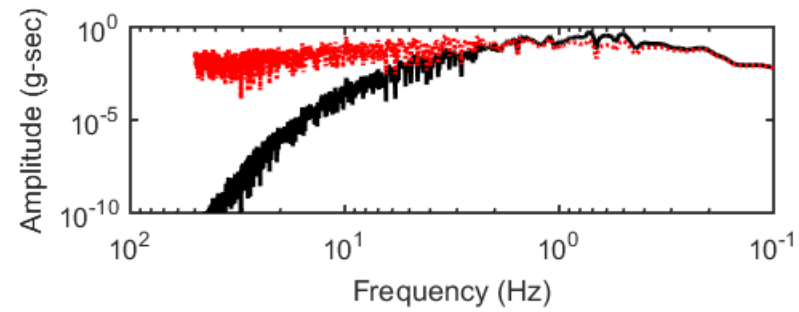
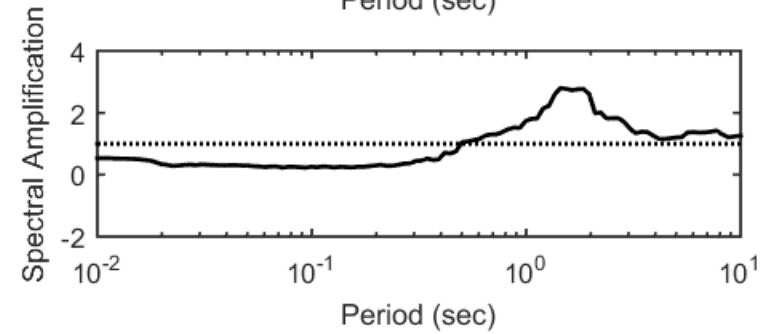
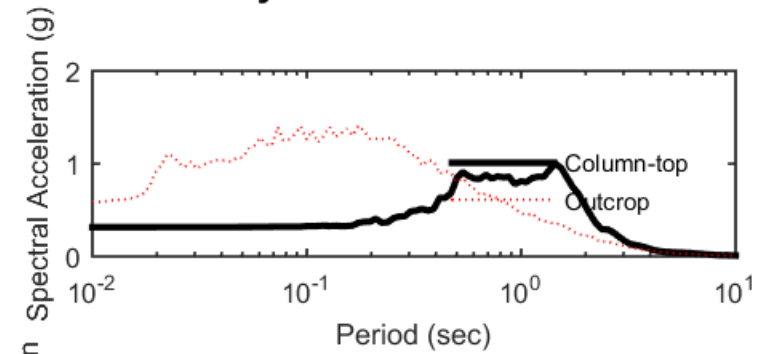
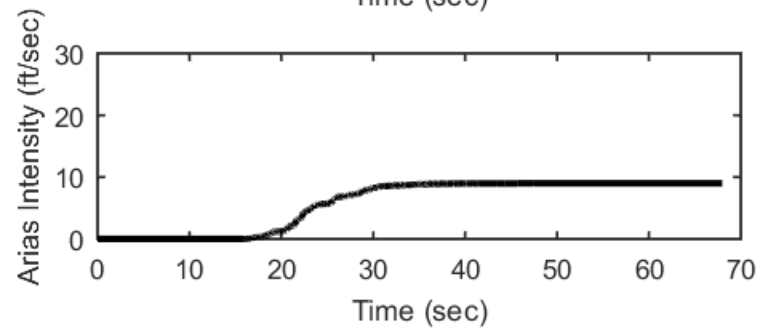
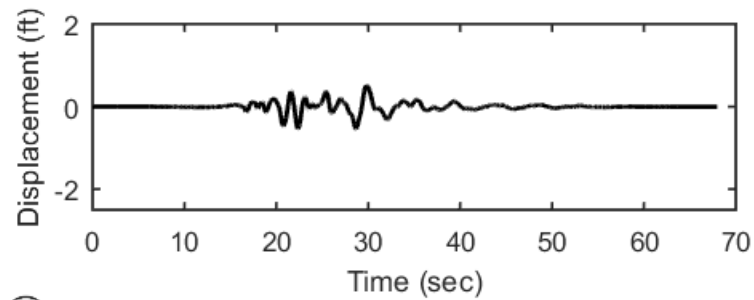
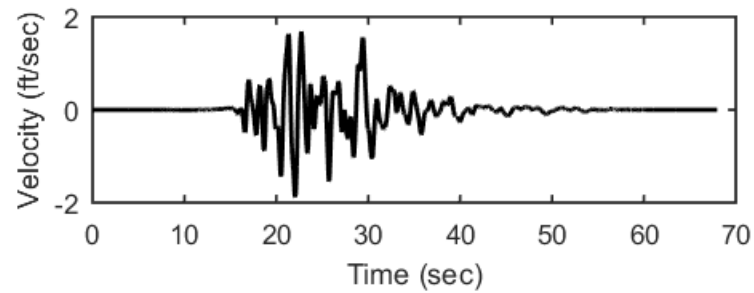
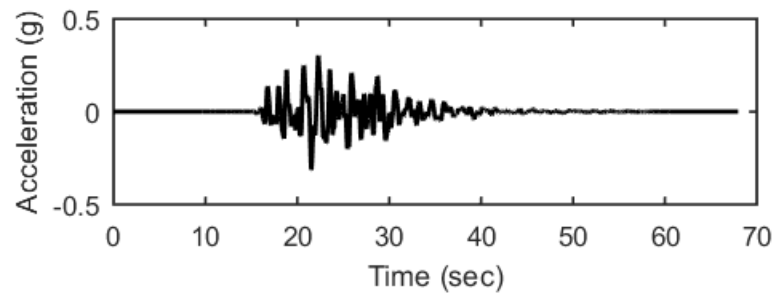
### Profile outputs for Motion: SEE5



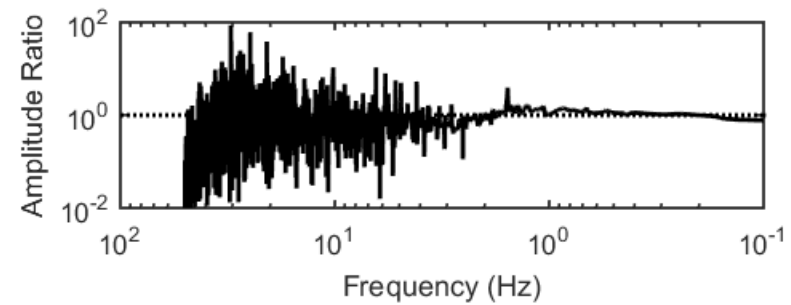
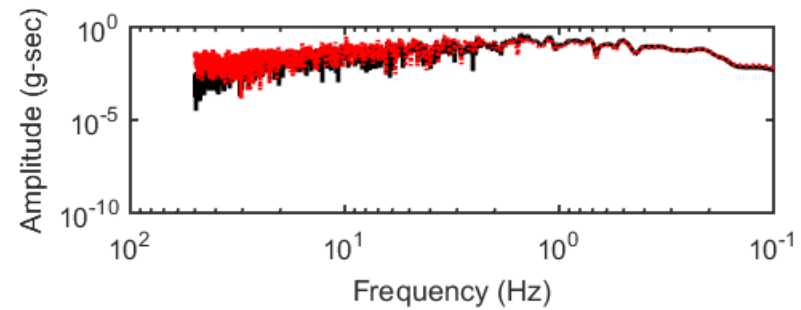
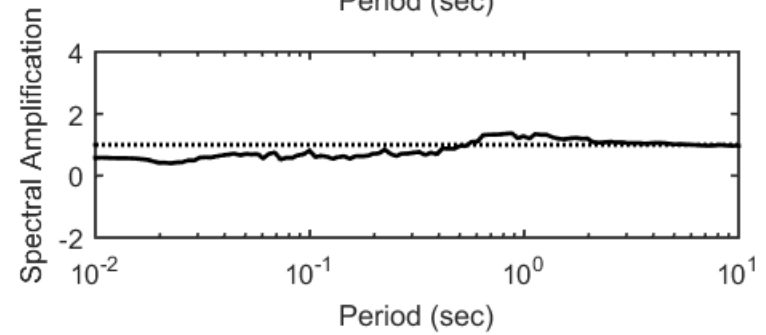
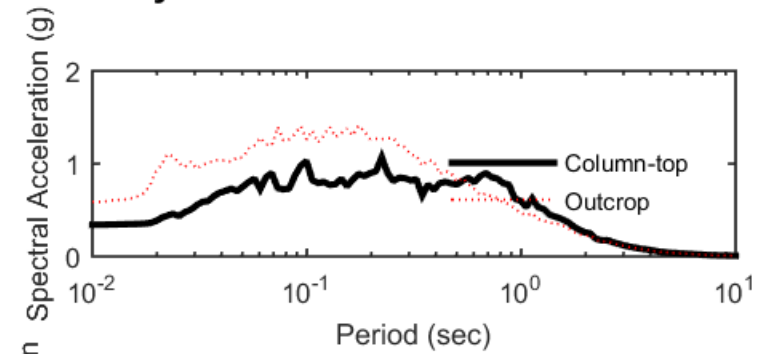
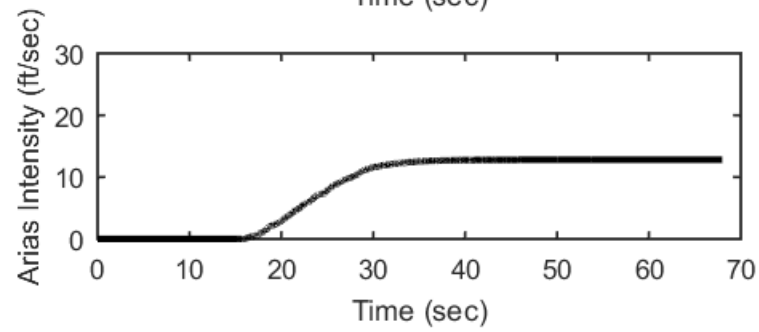
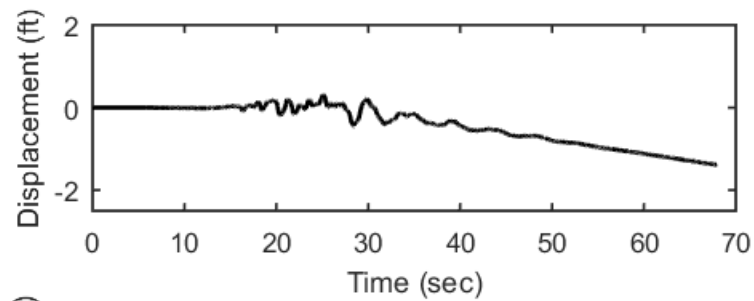
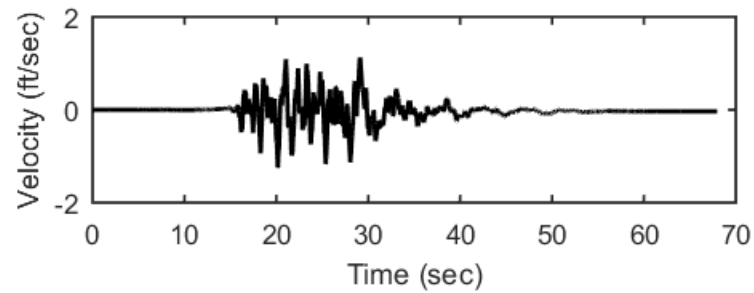
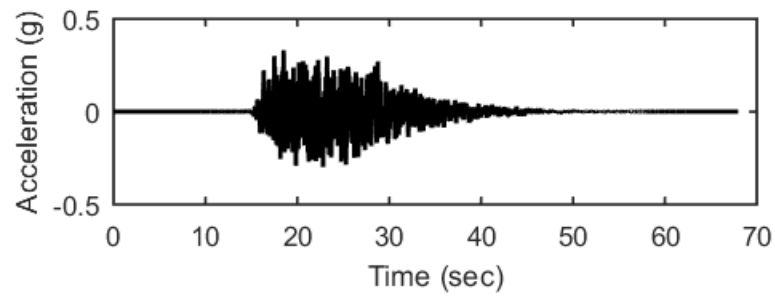
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



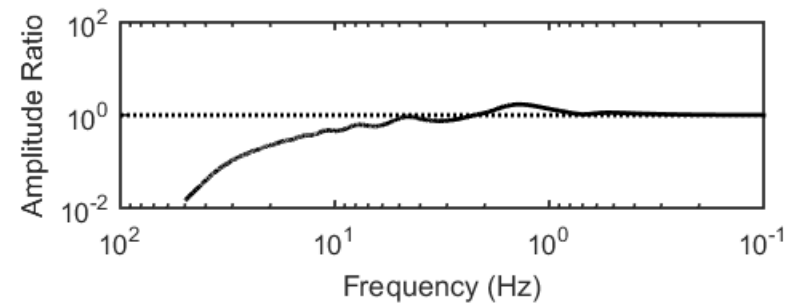
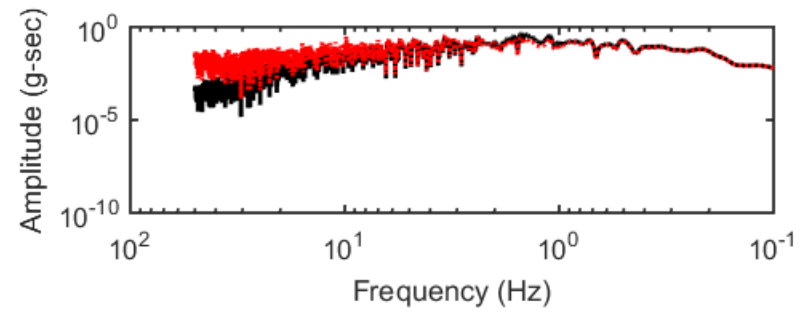
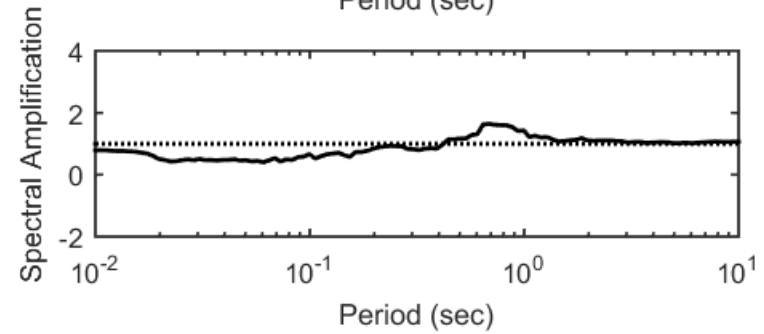
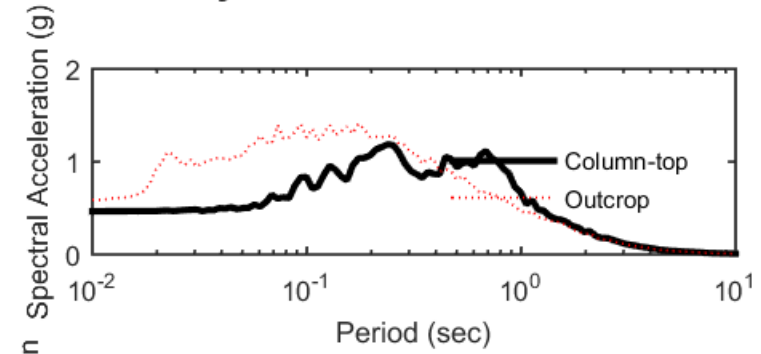
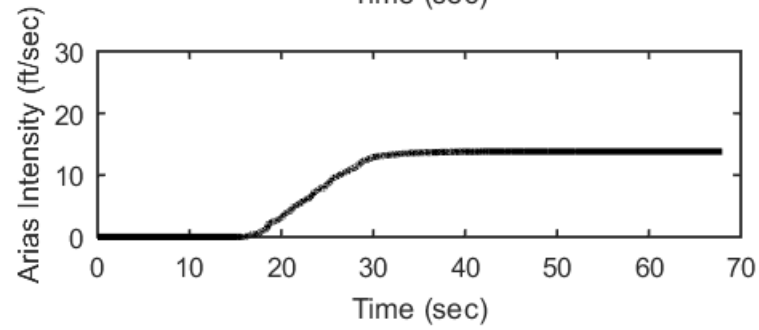
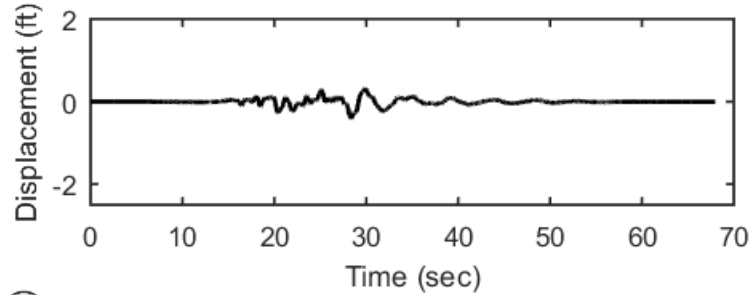
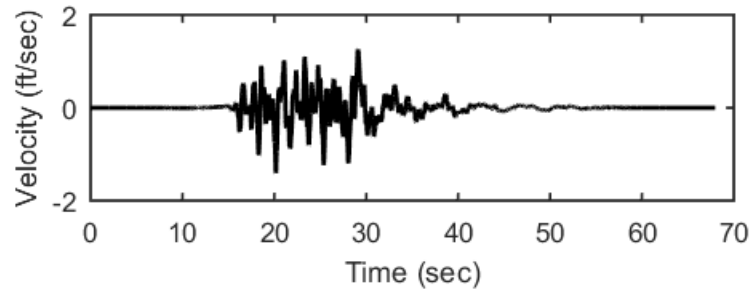
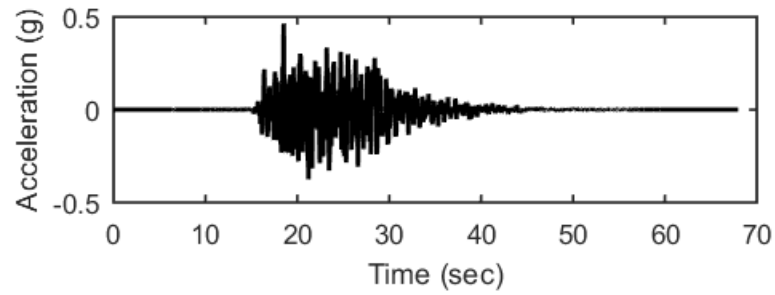
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



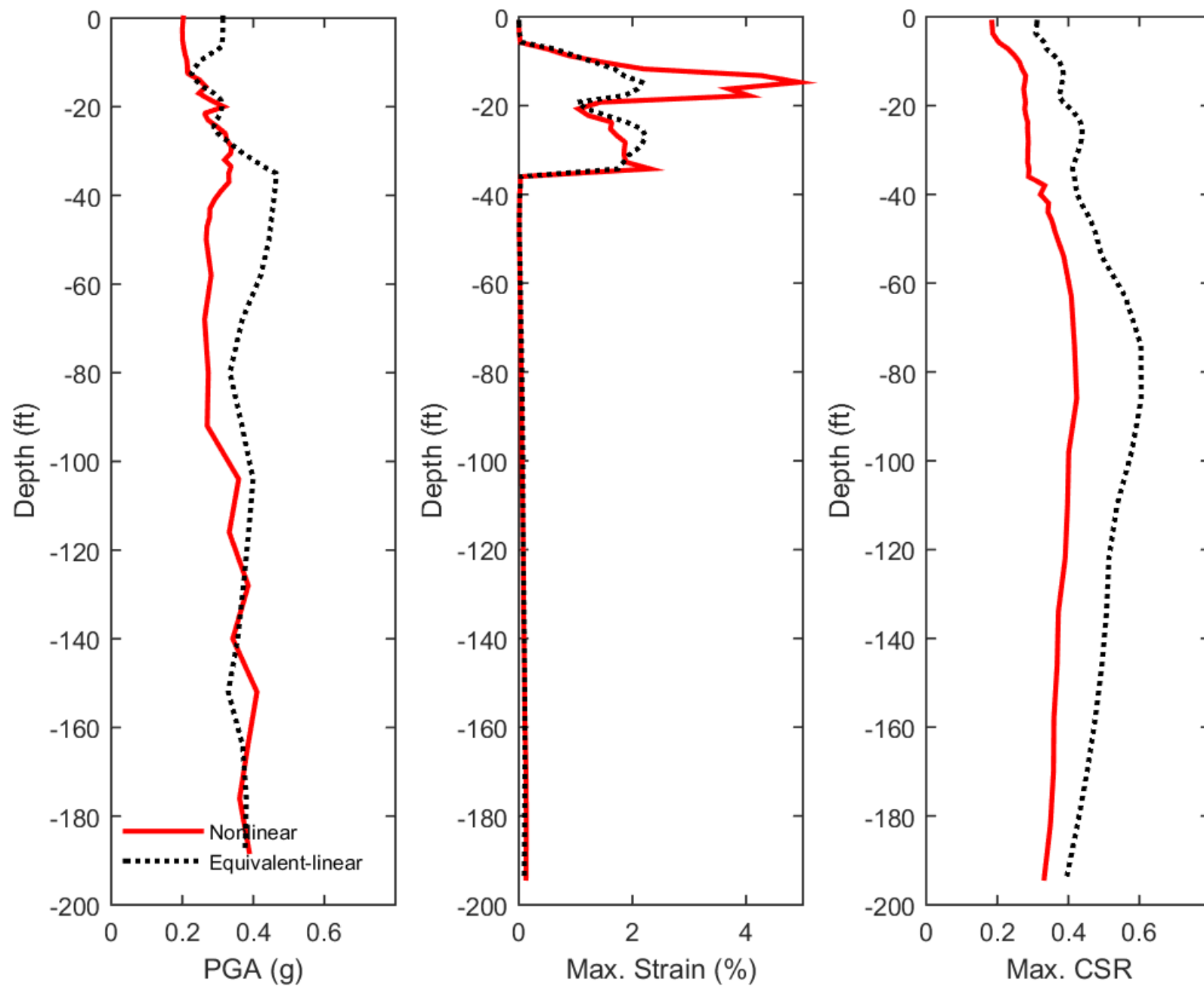
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



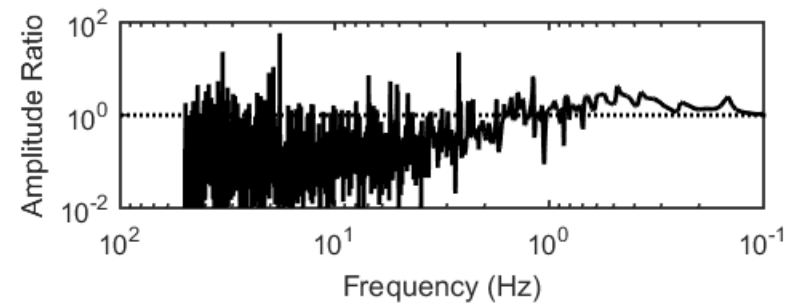
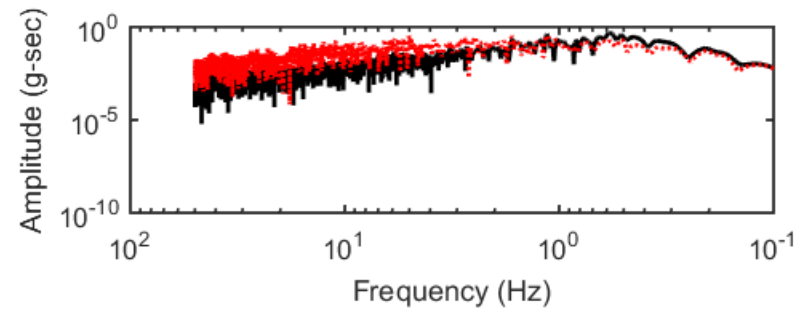
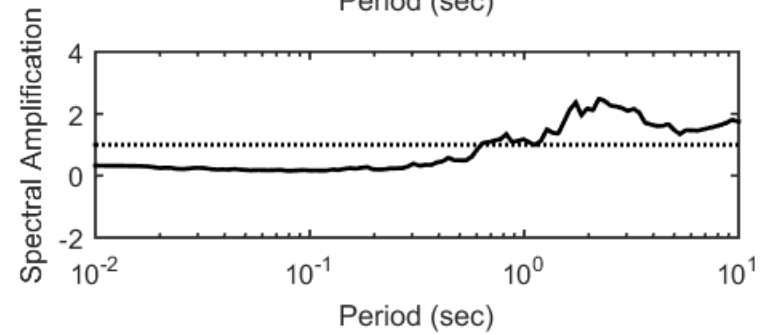
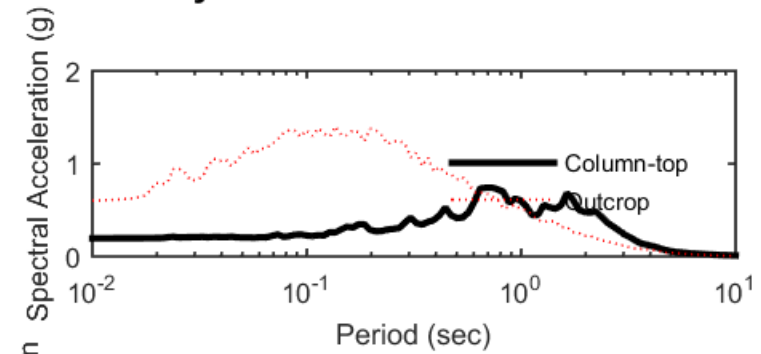
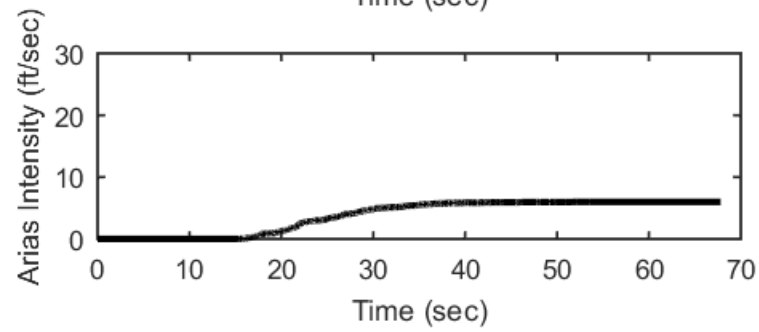
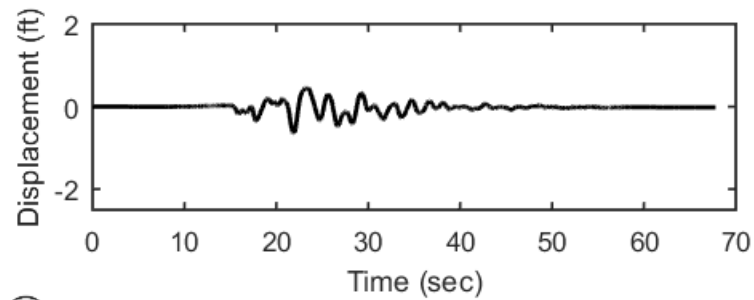
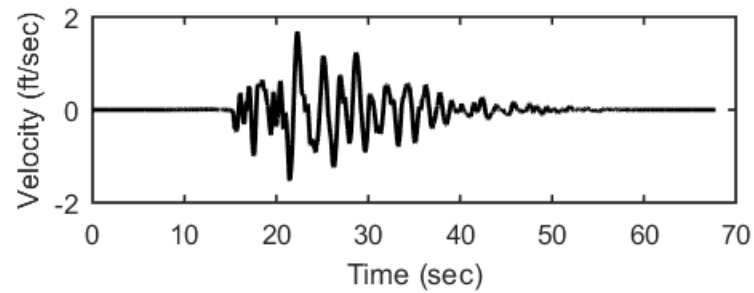
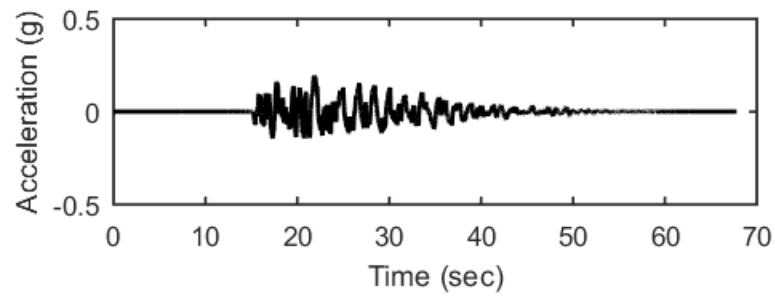
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



### Profile outputs for Motion: SEE6

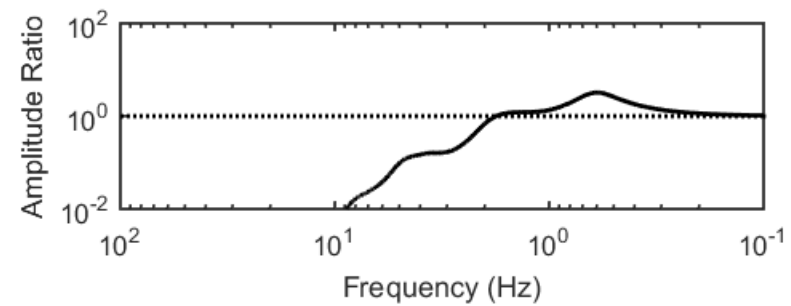
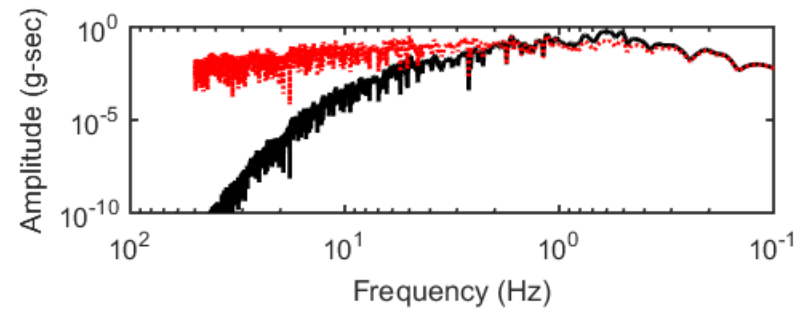
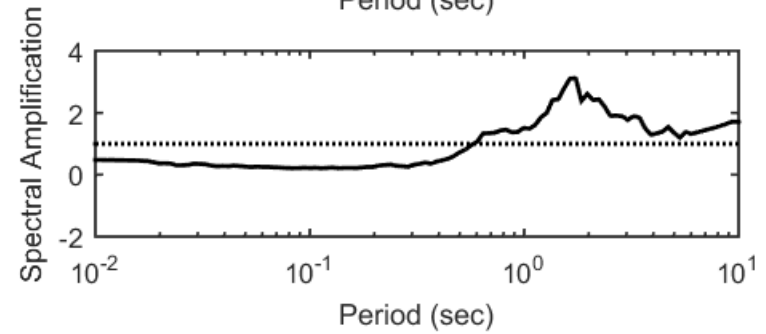
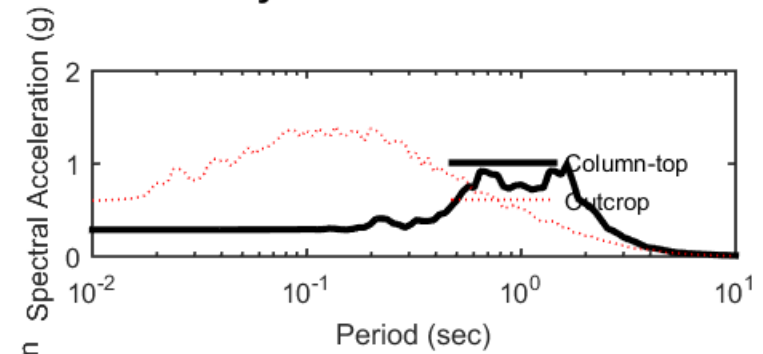
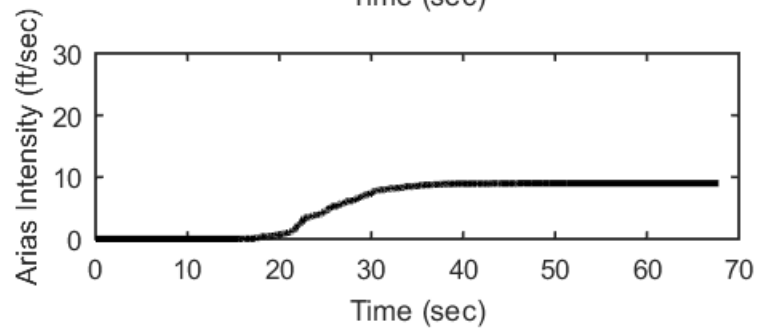
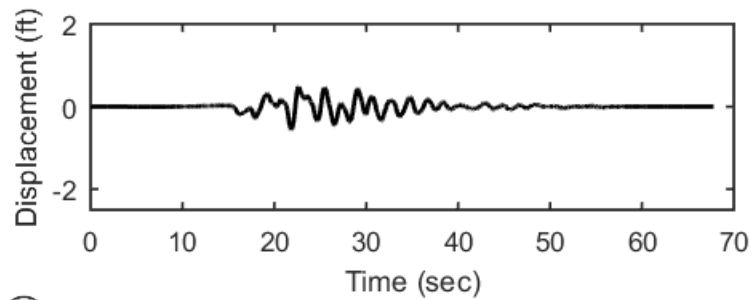
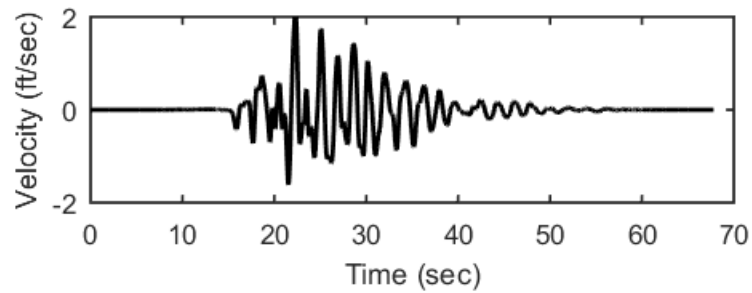
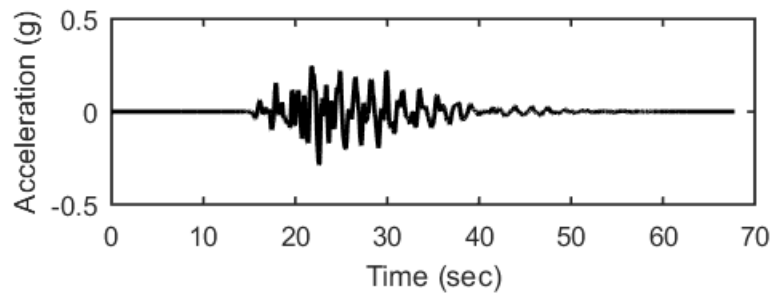


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7

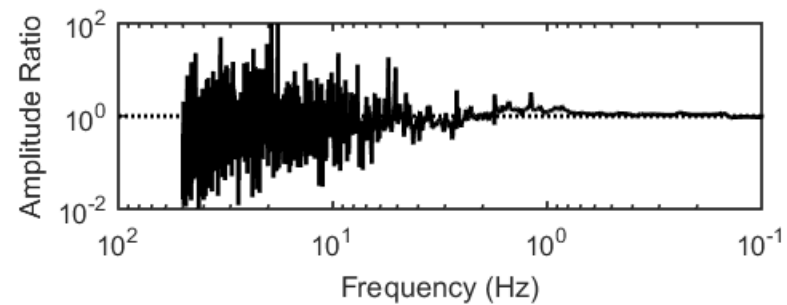
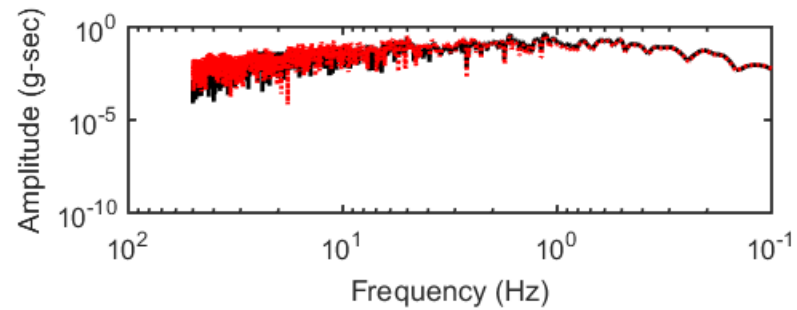
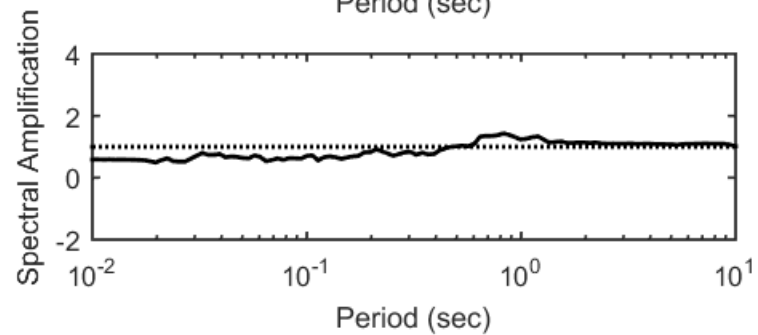
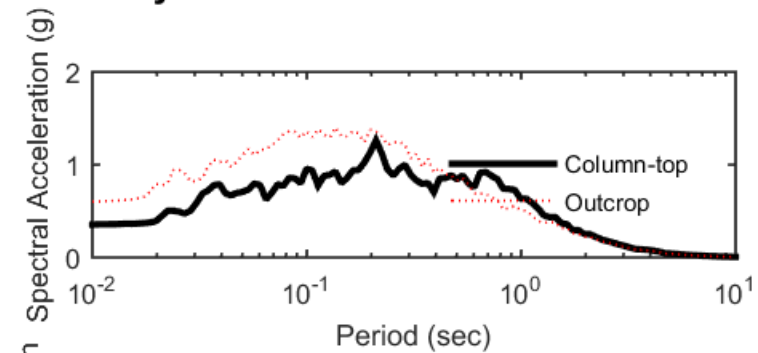
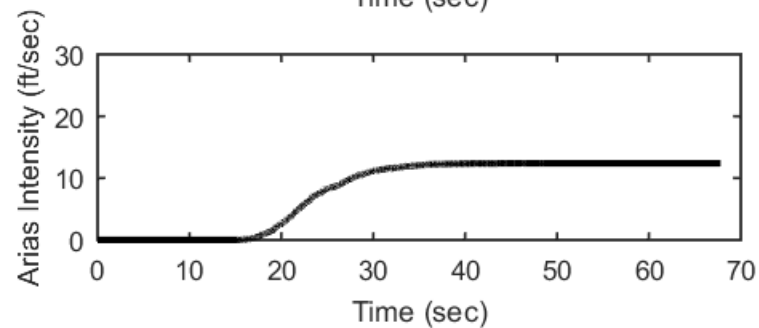
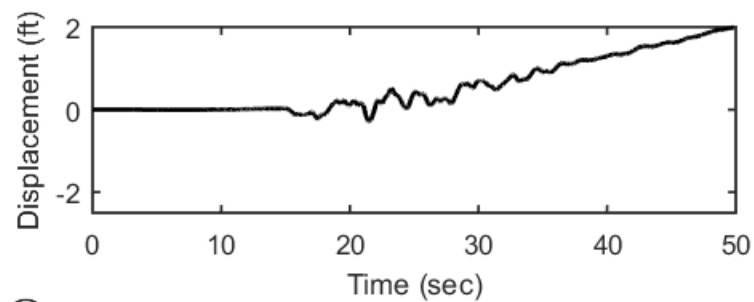
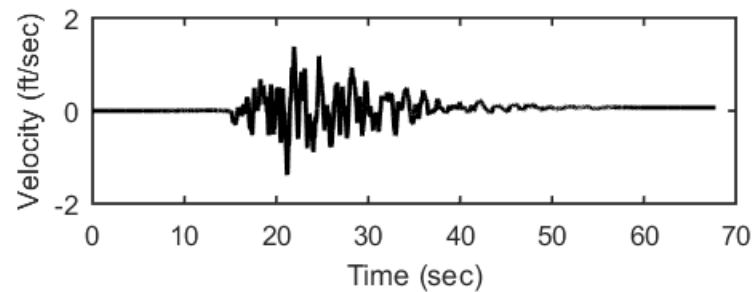
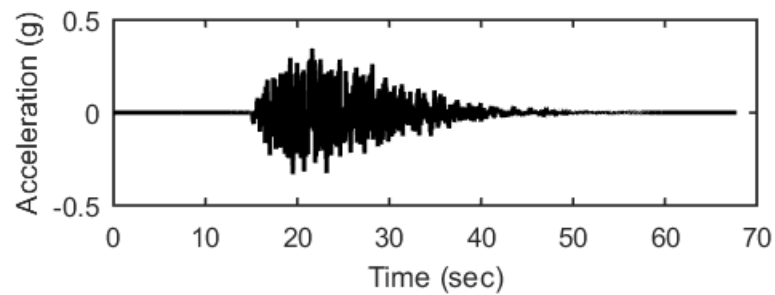




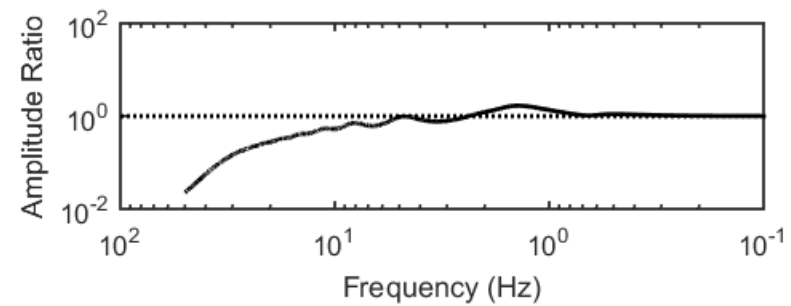
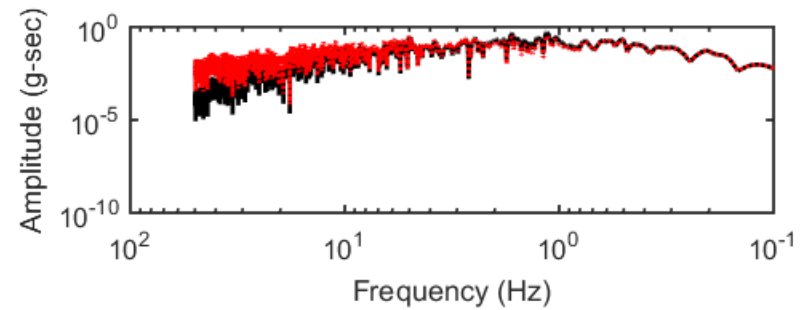
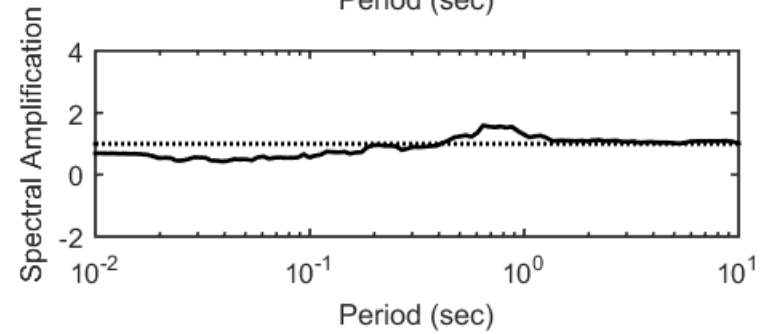
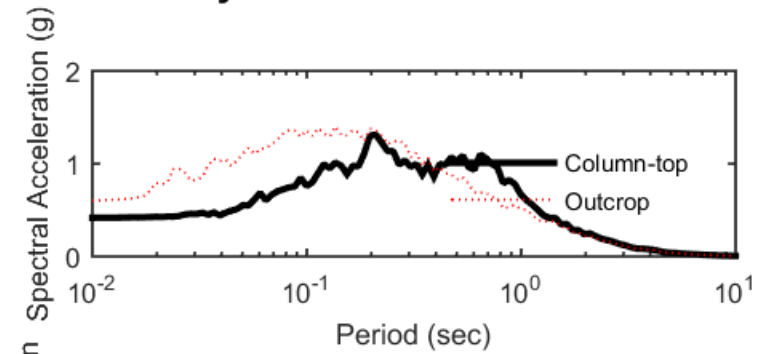
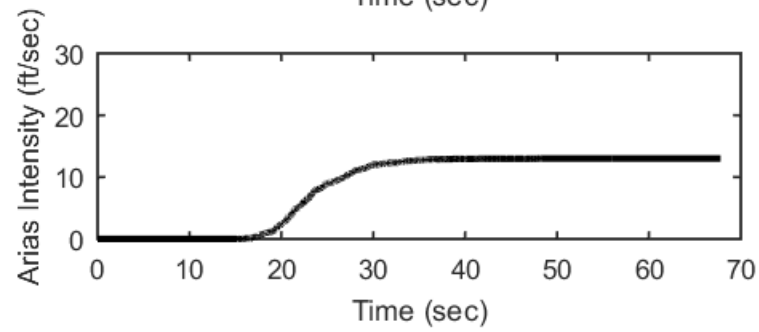
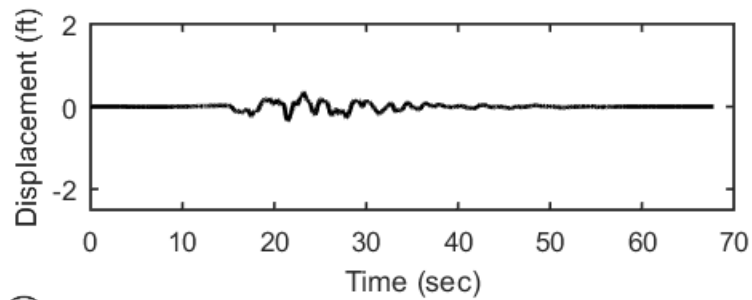
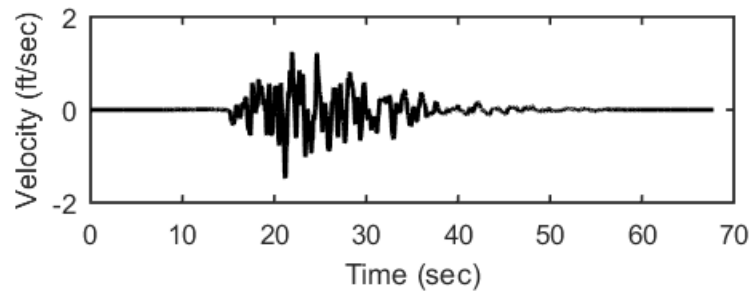
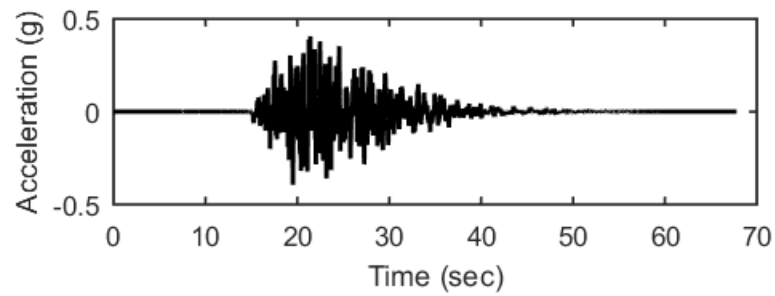
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



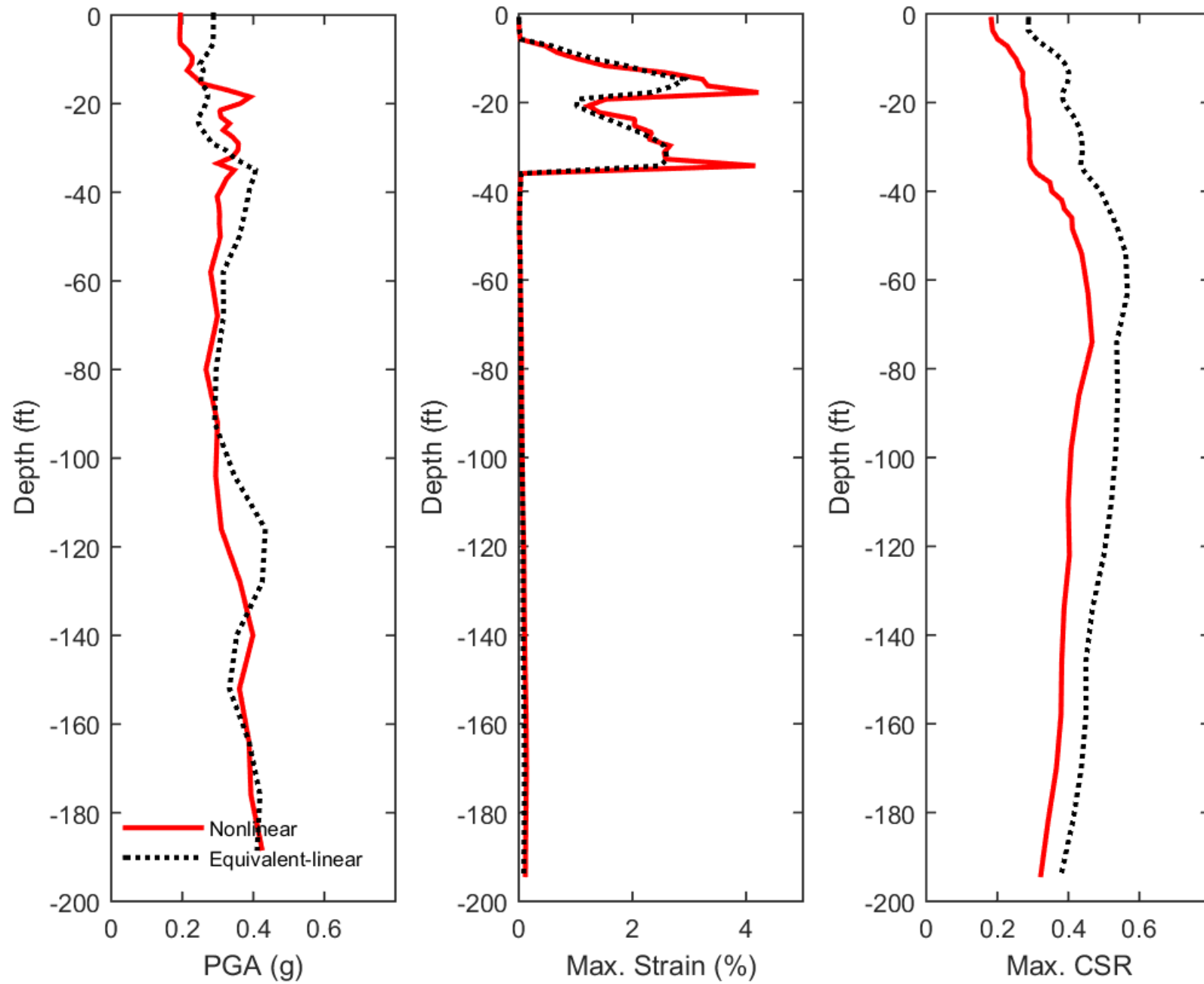
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



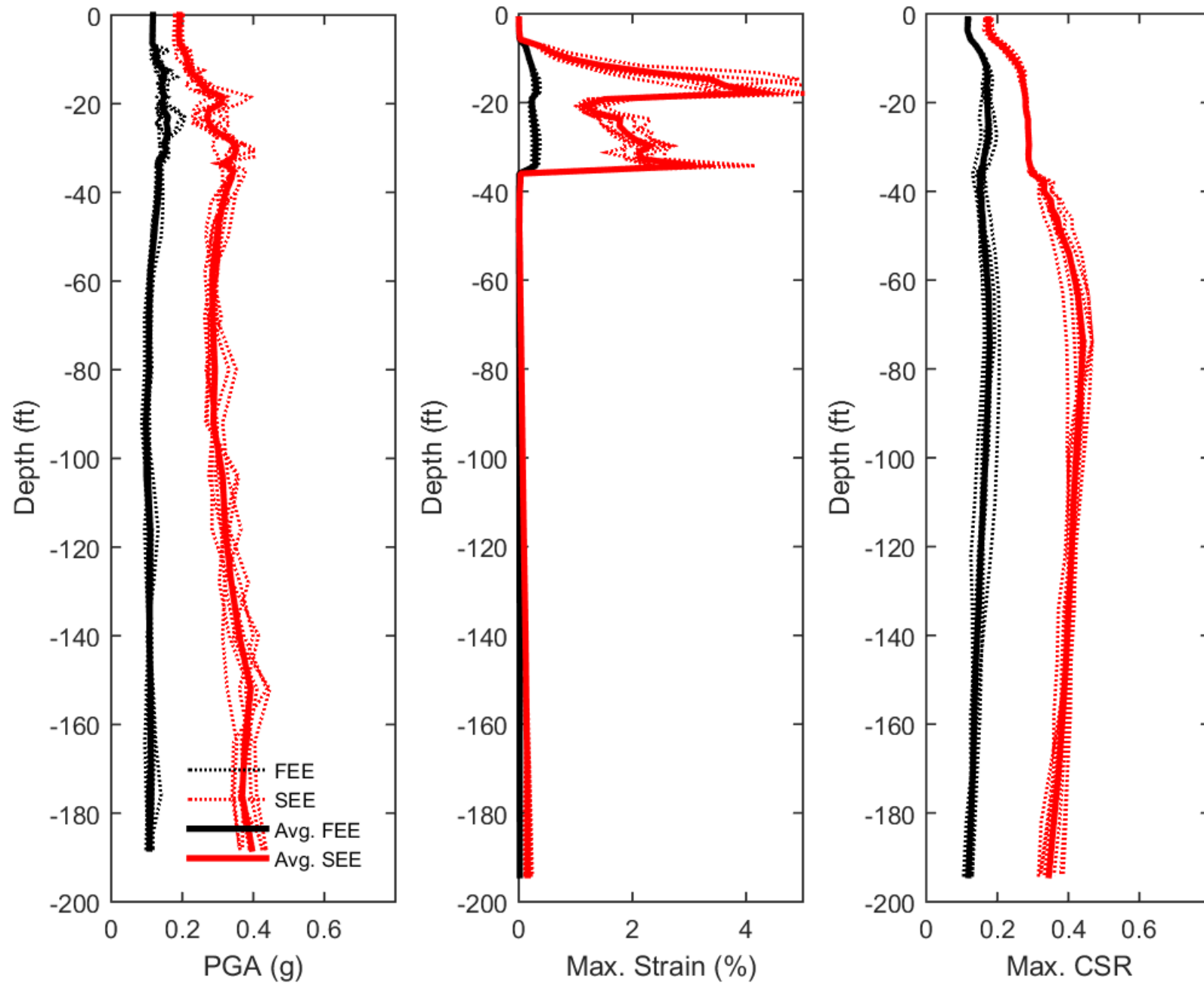
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



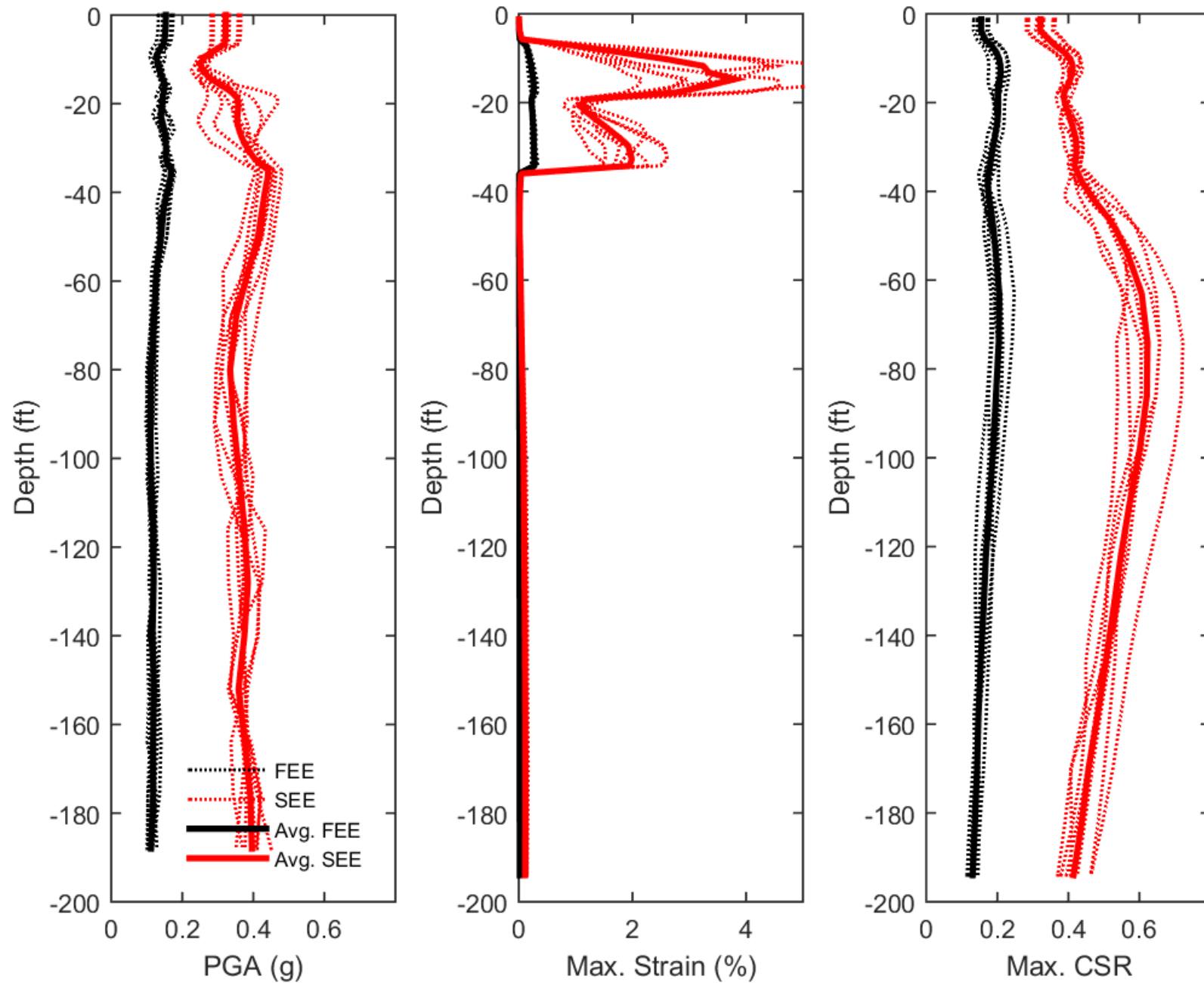
### Profile outputs for Motion: SEE7



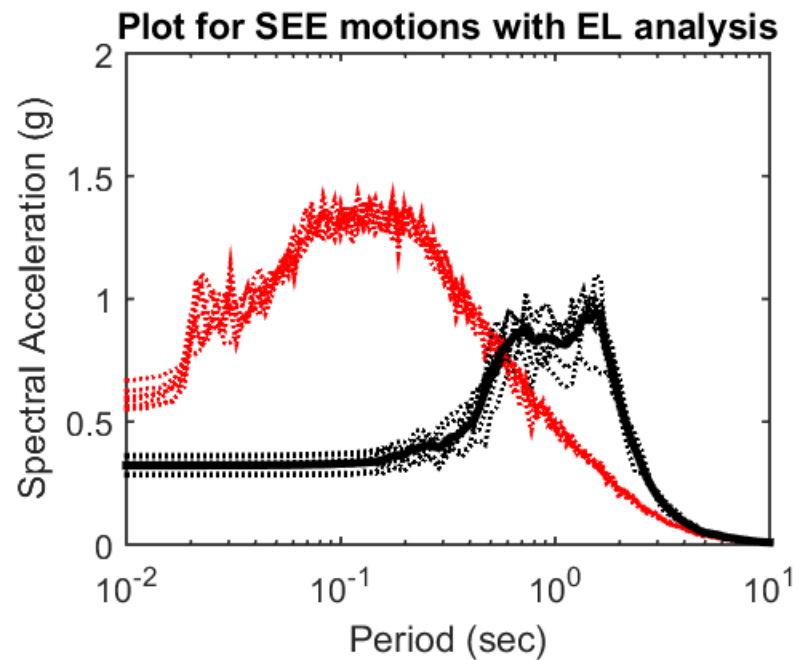
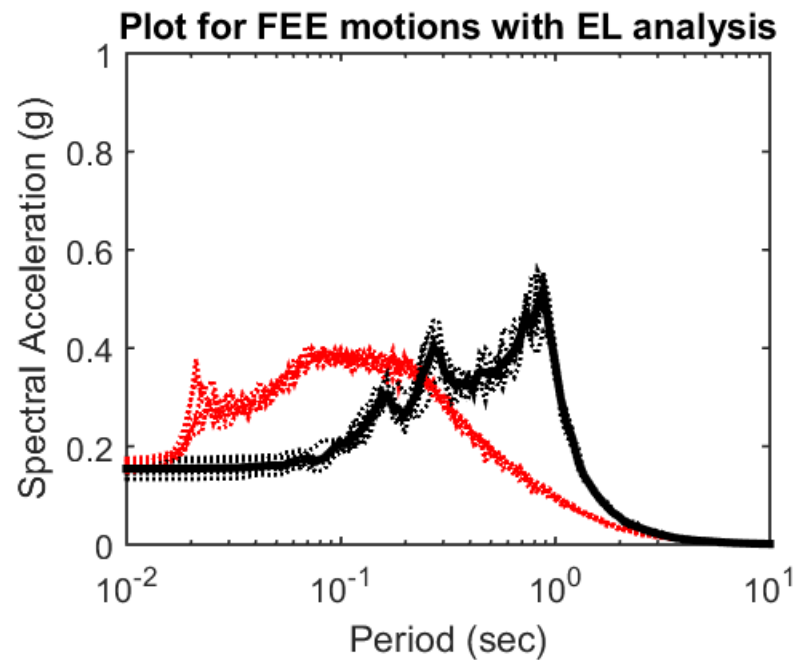
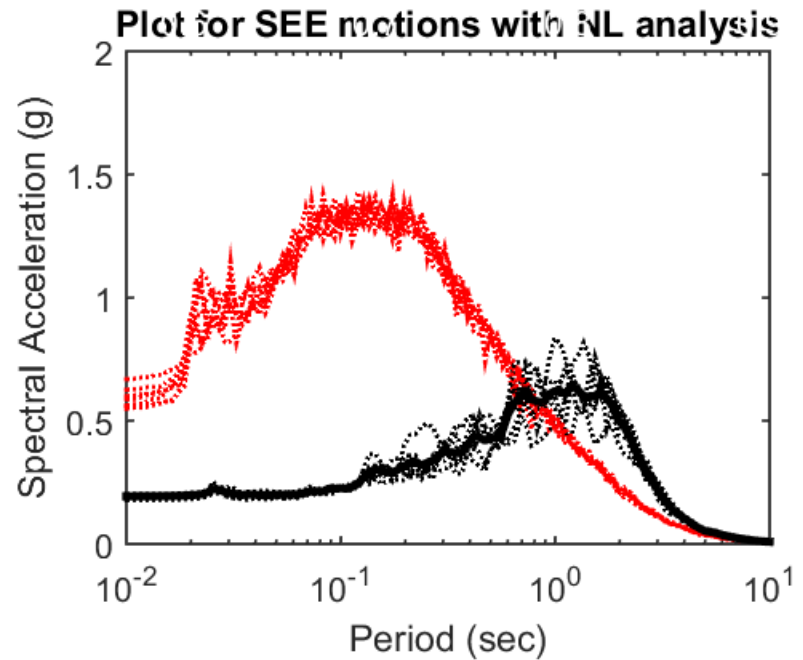
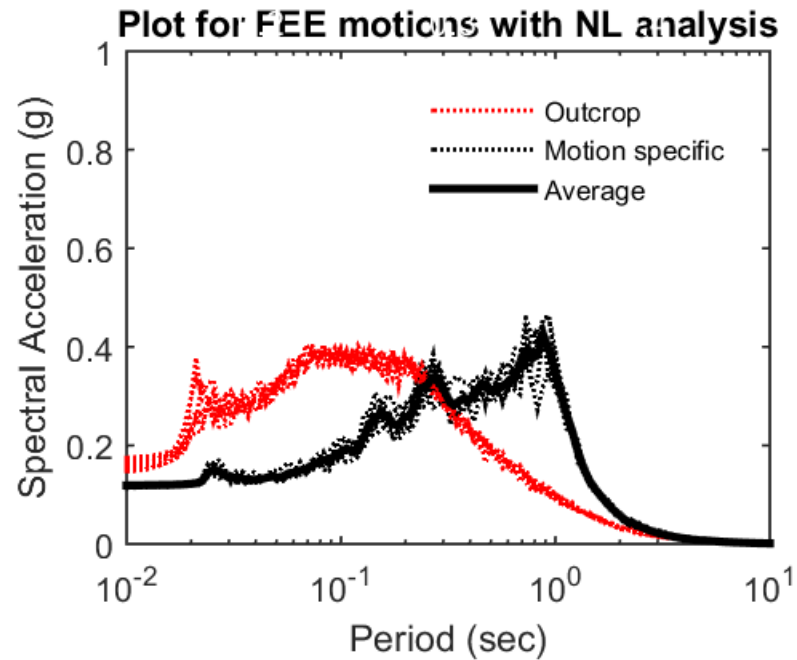
## Summary of the profile outputs for Nonlinear analysis



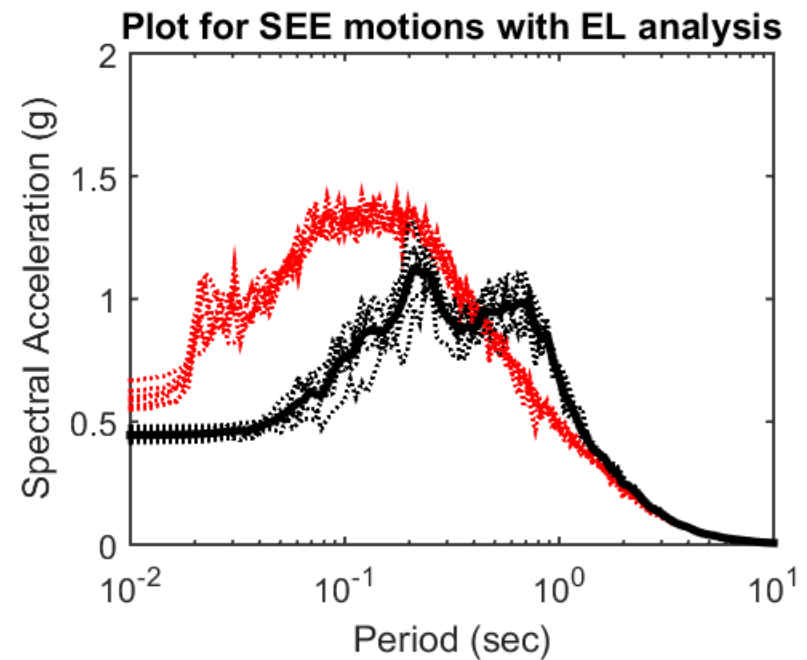
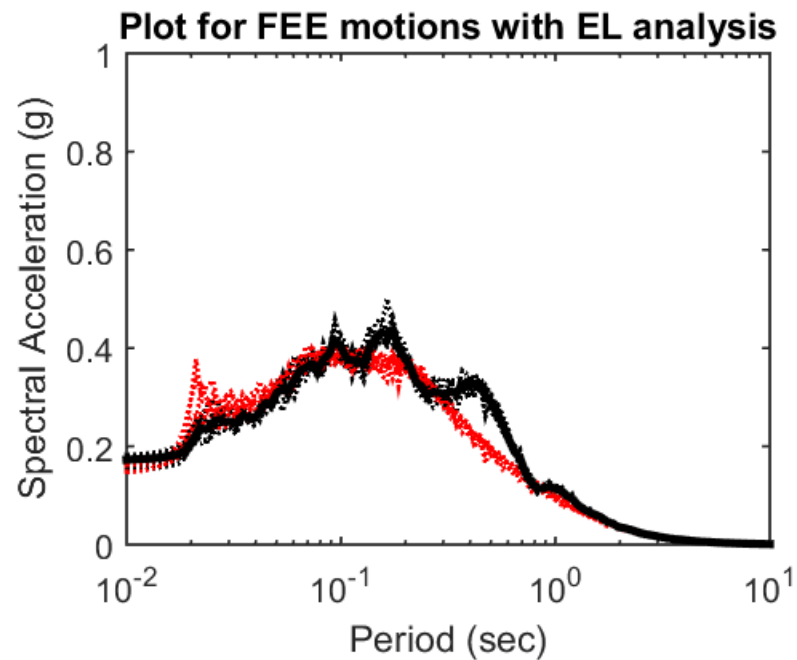
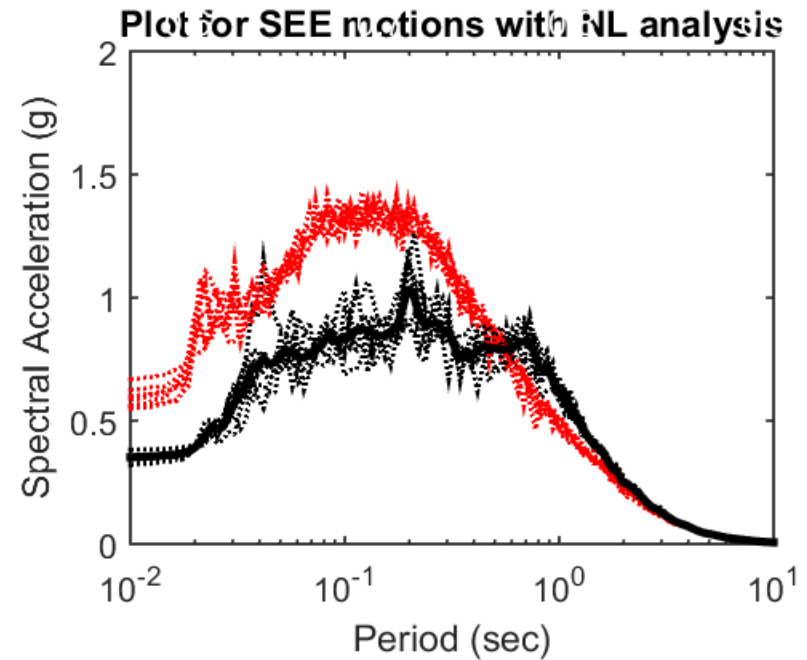
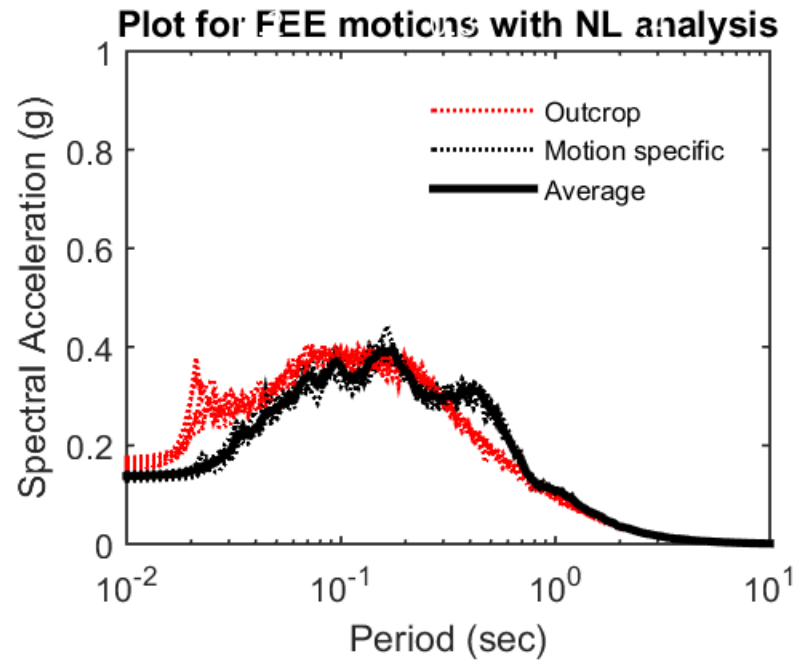
### Summary of the profile outputs for Equivalent-linear analysis



## Summary plots: RSA at ground surface

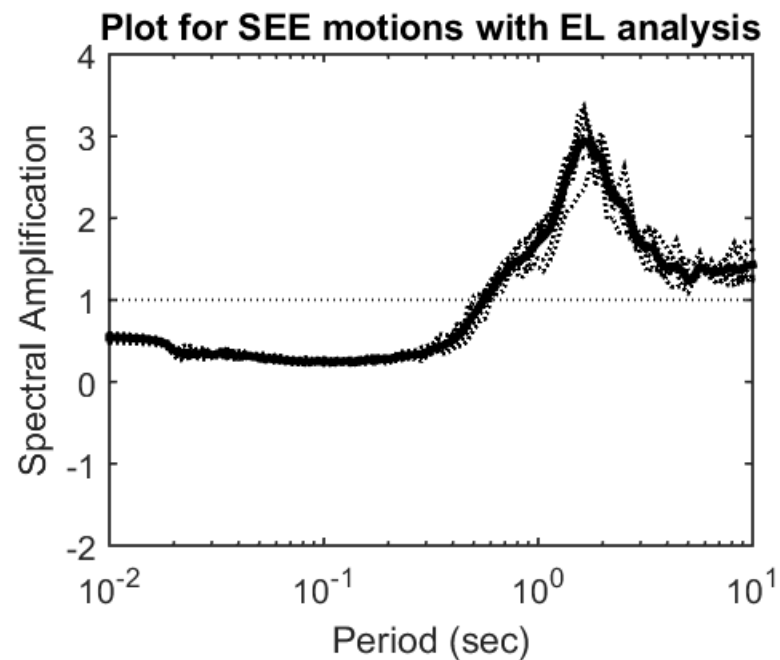
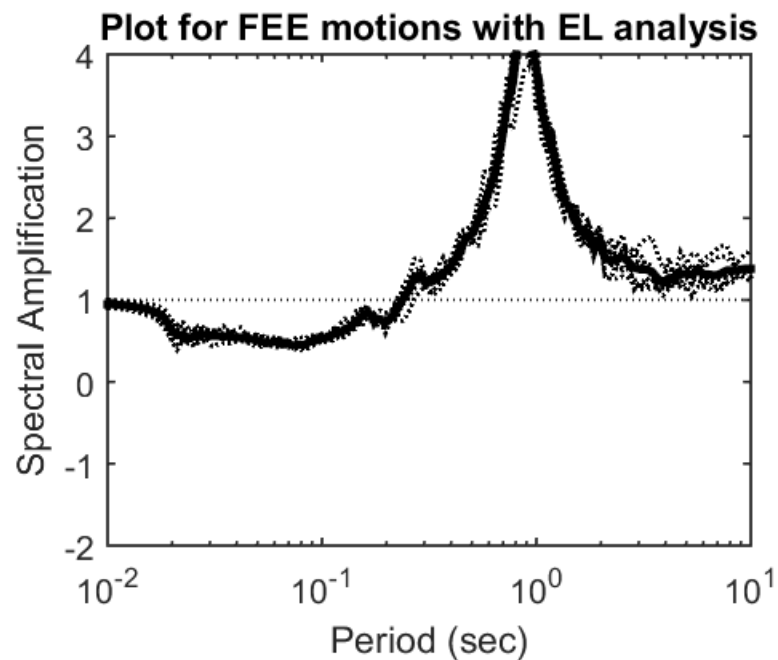
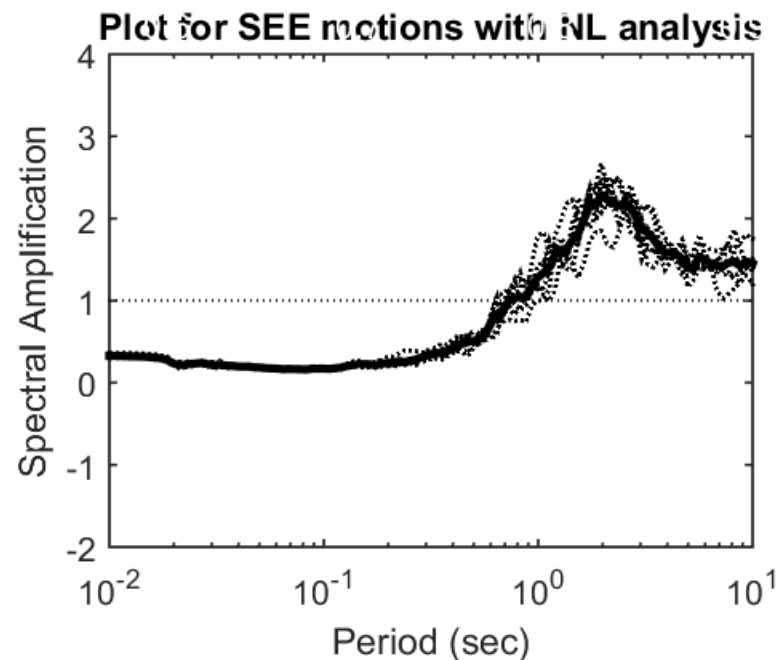
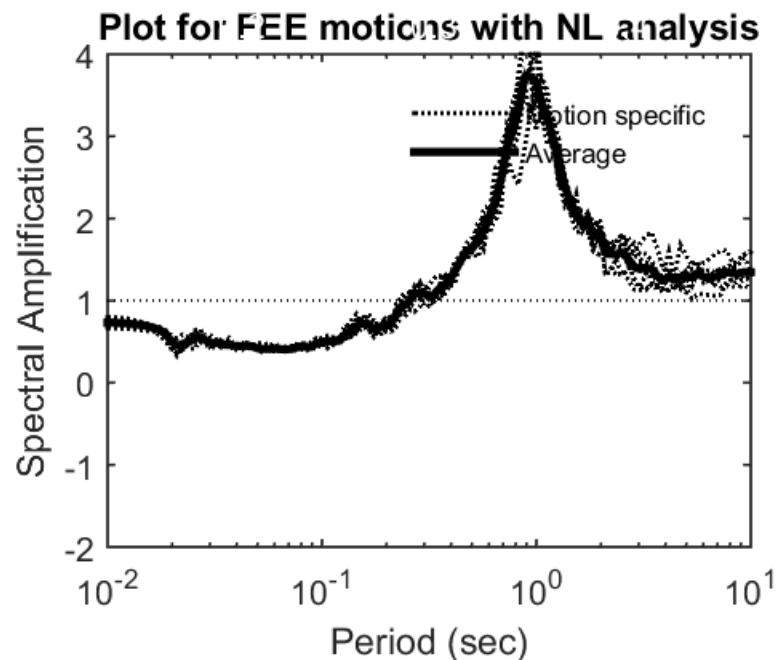


## Summary plots: RSA at top of Marl

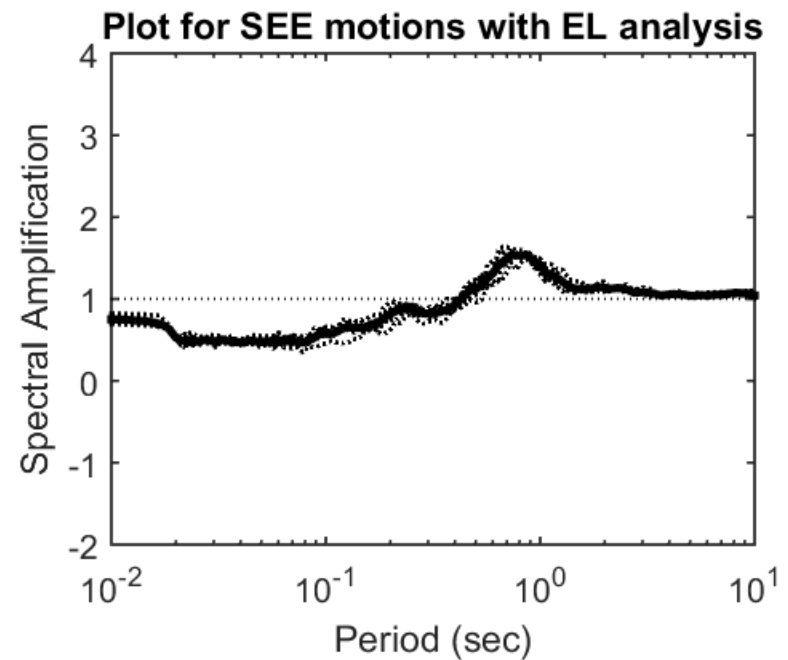
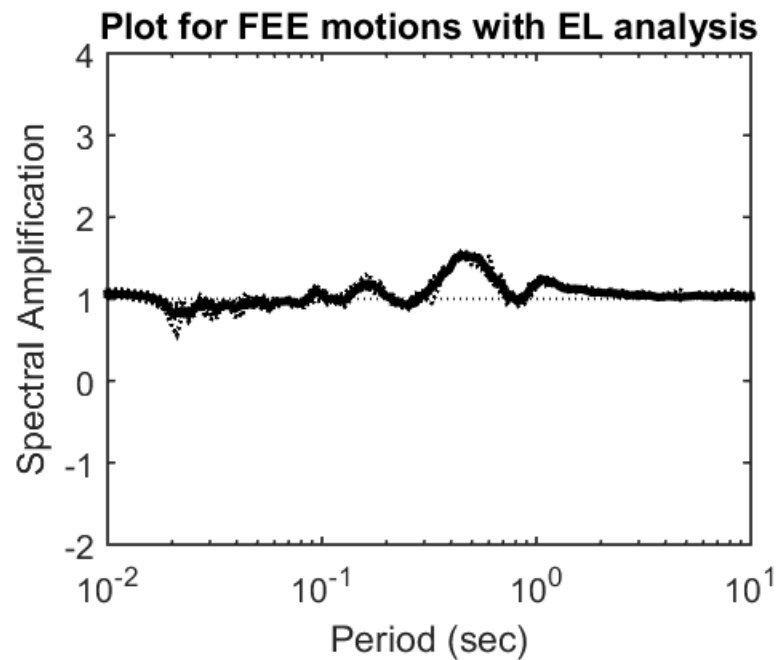
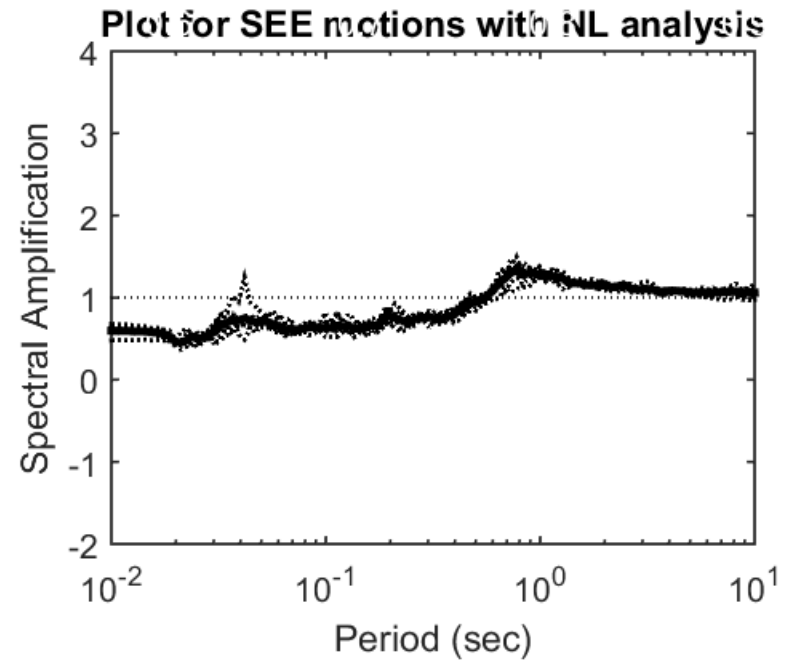
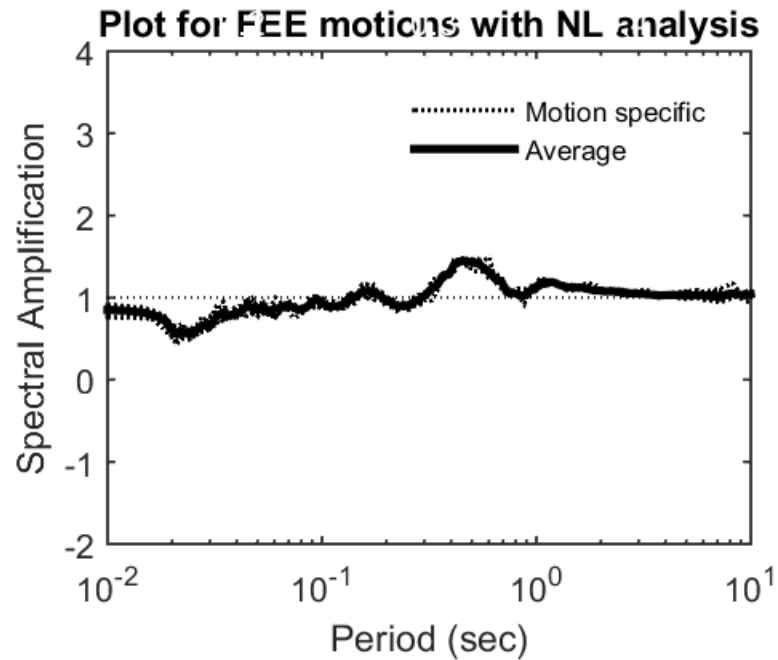




## Summary plots: Spectral amplification at ground surface

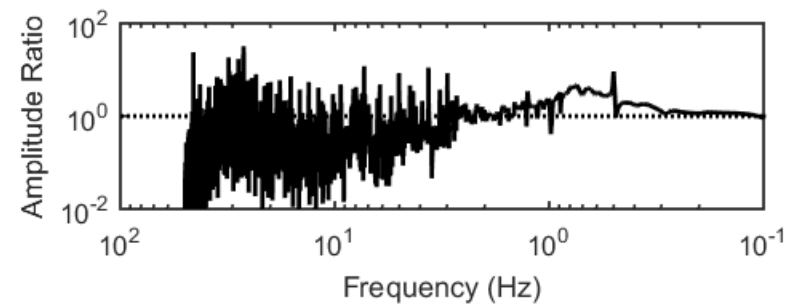
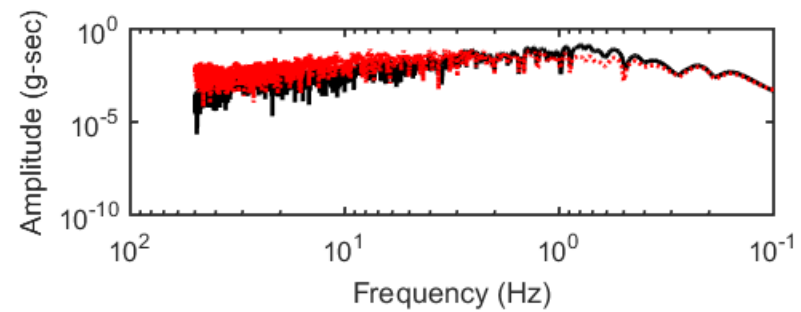
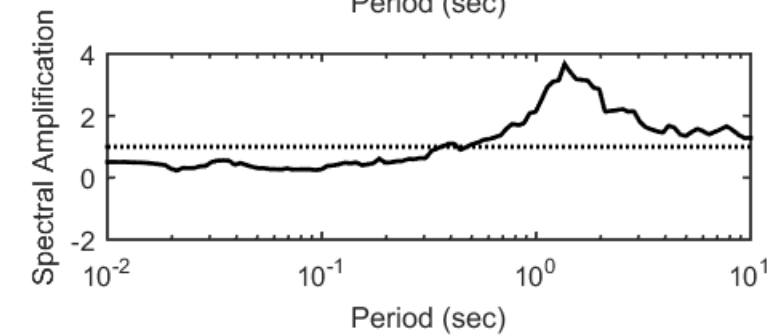
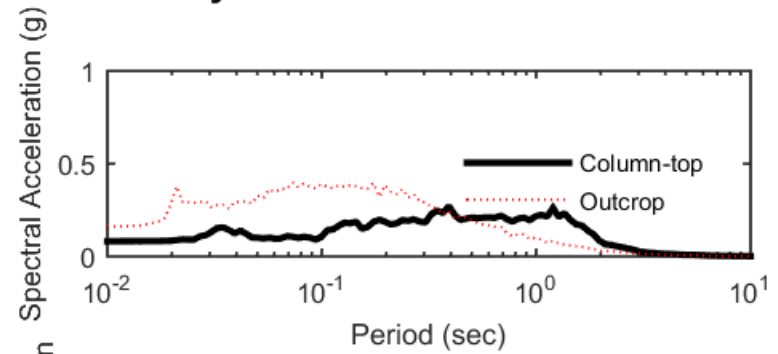
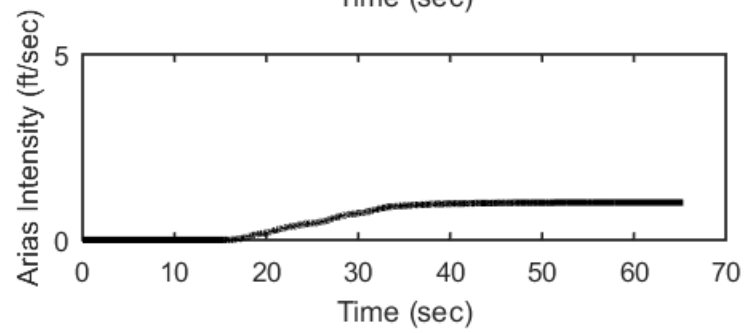
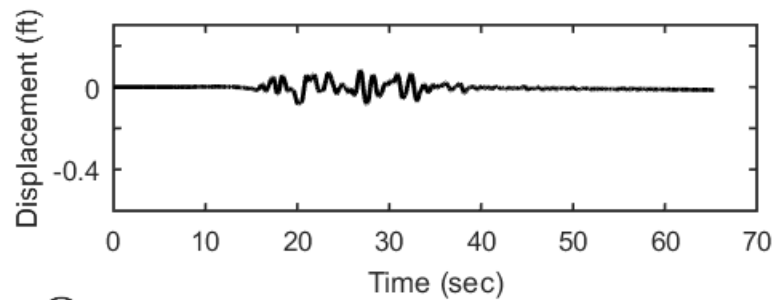
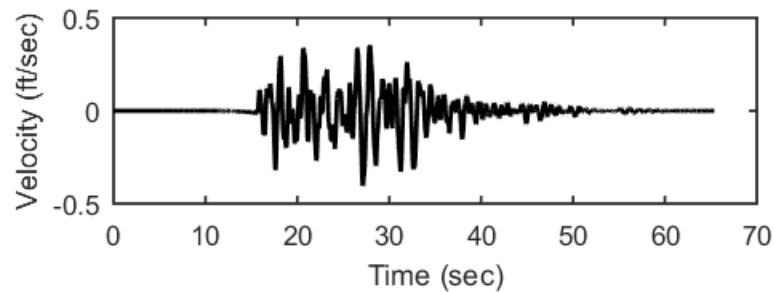
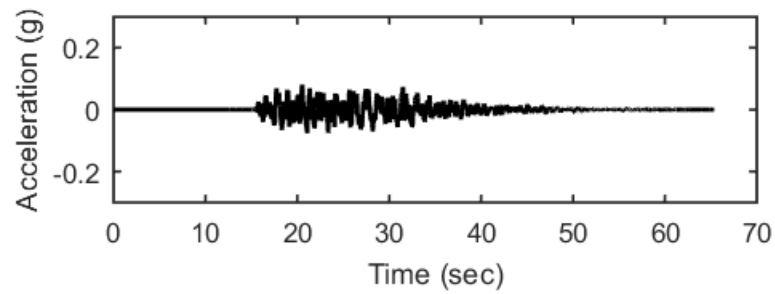


## Summary plots: Spectral amplification at top of Marl

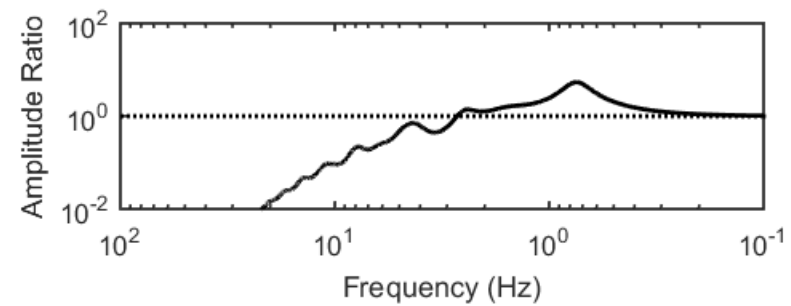
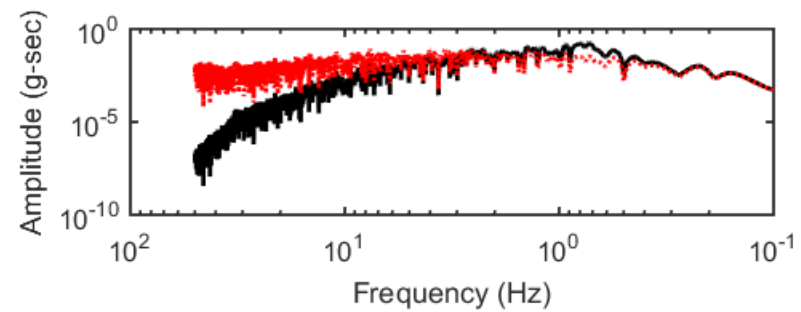
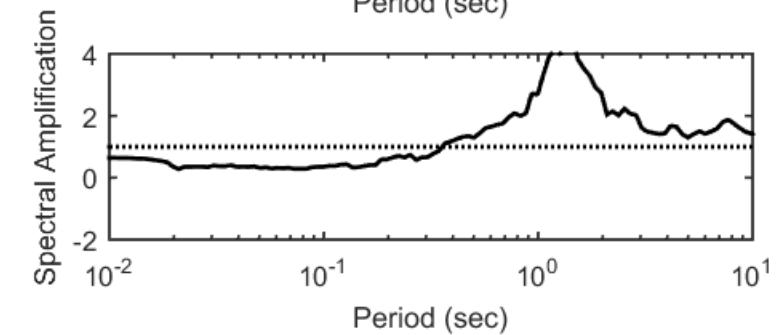
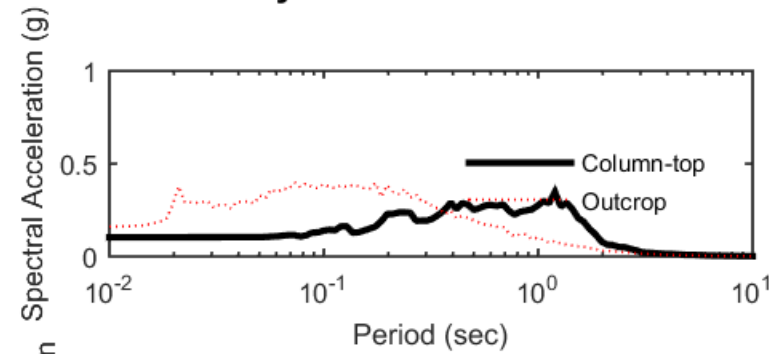
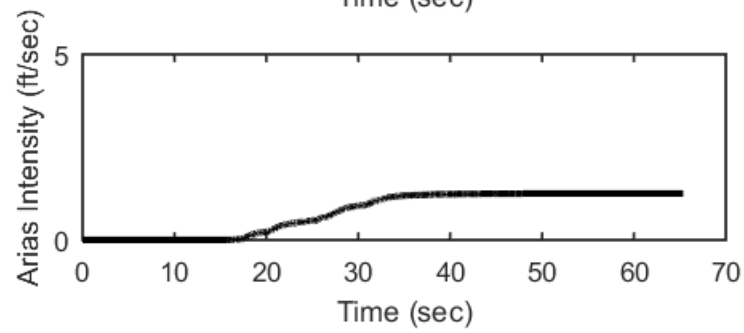
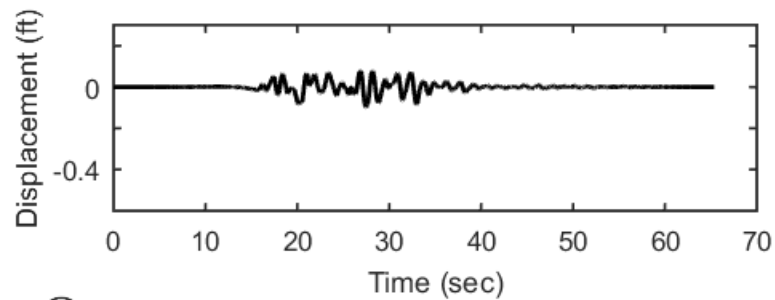
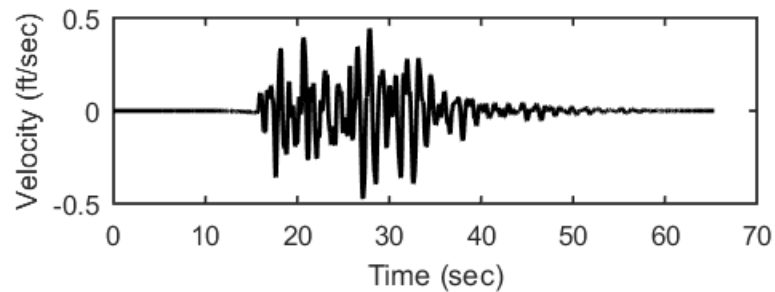
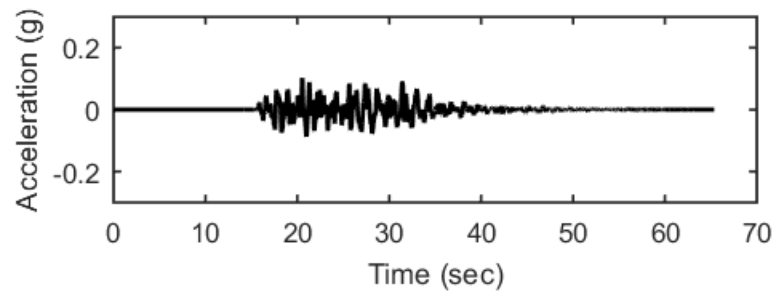


## **BASE MODEL AND LOW SHEAR WAVE**

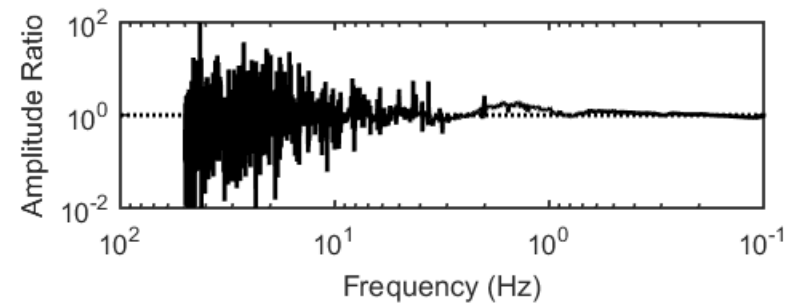
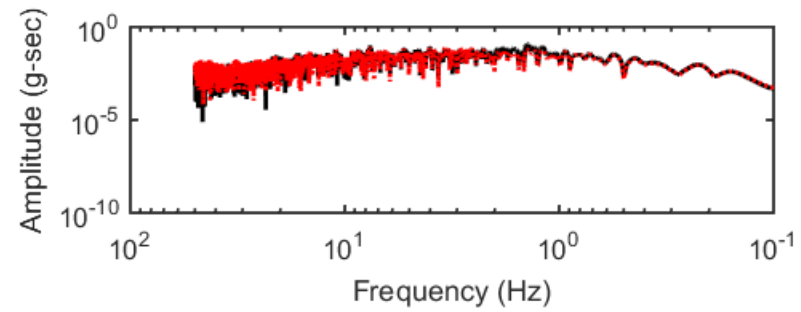
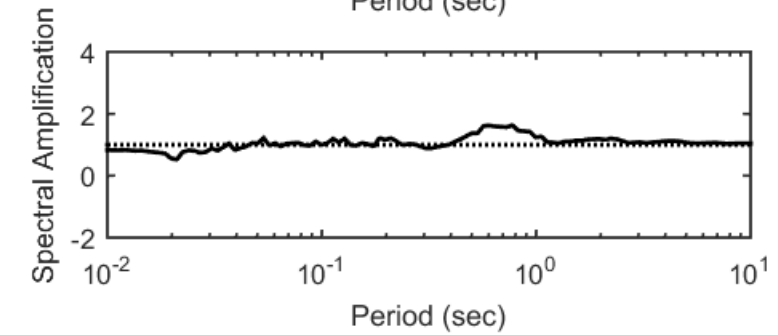
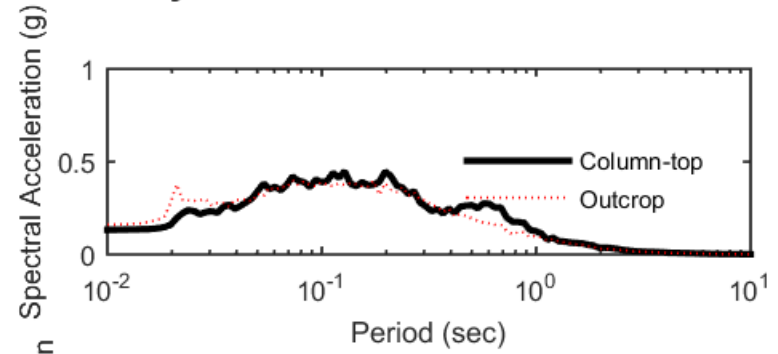
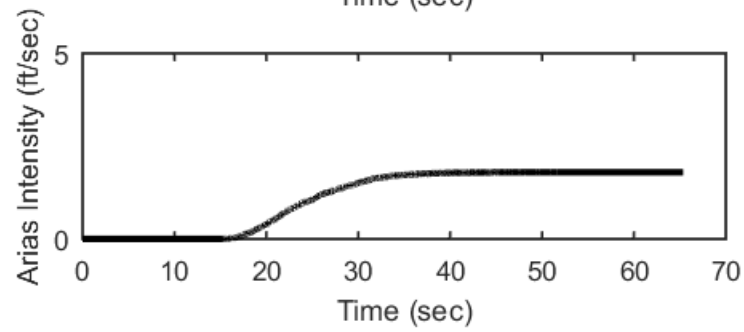
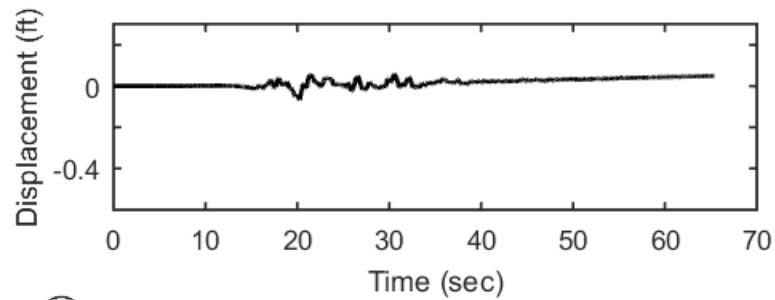
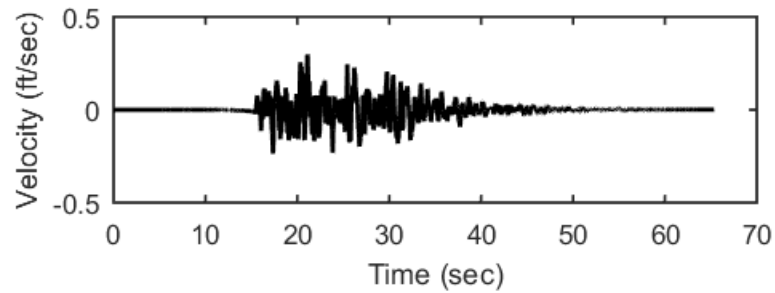
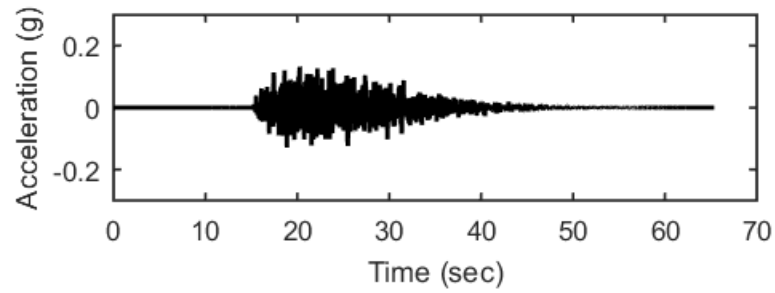
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



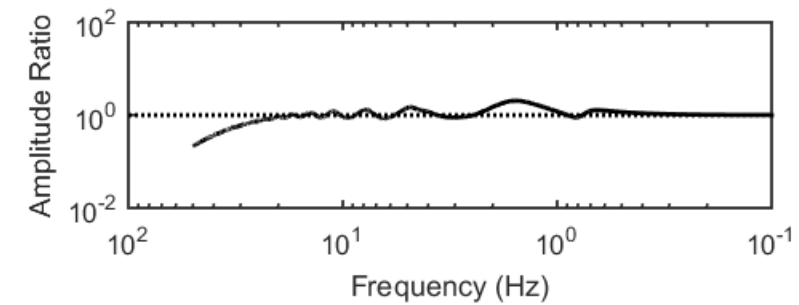
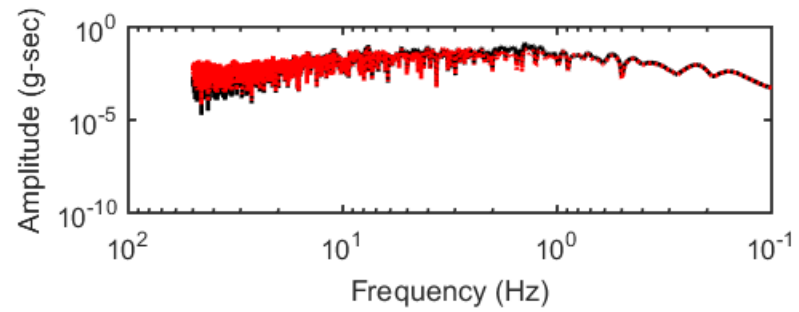
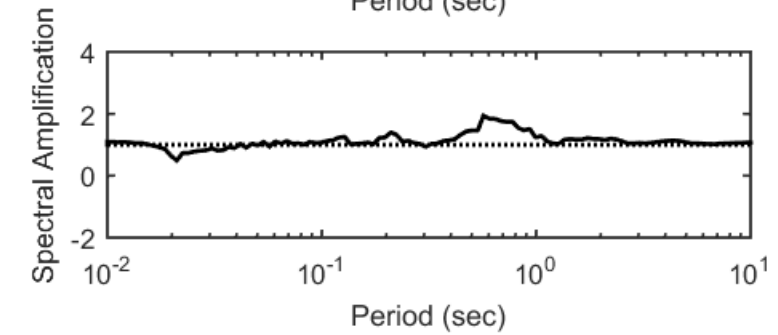
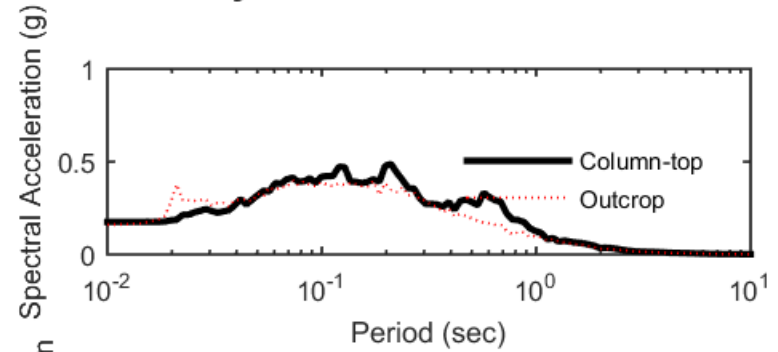
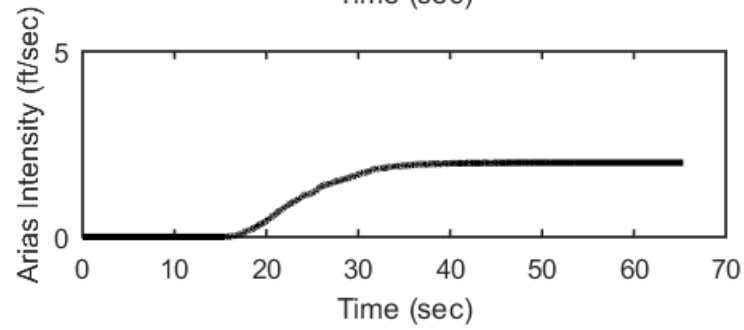
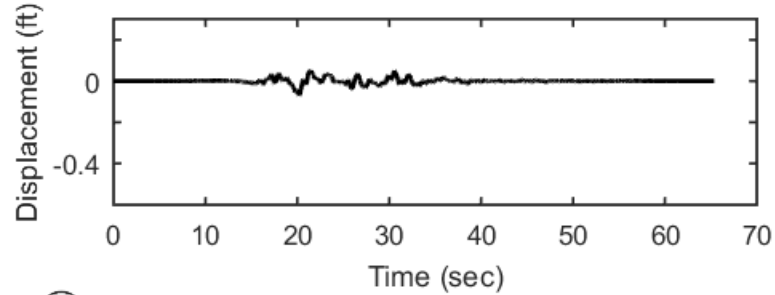
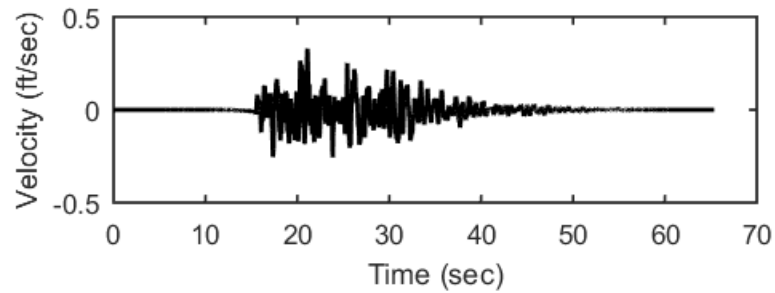
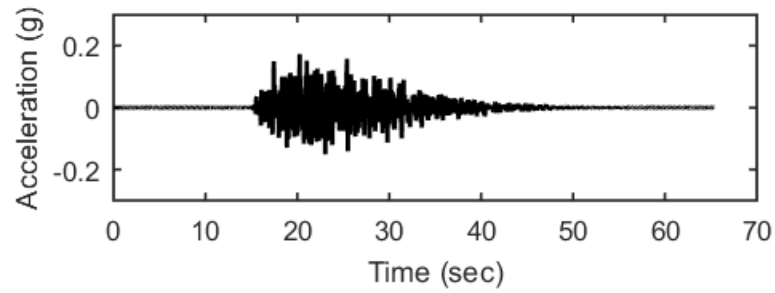
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



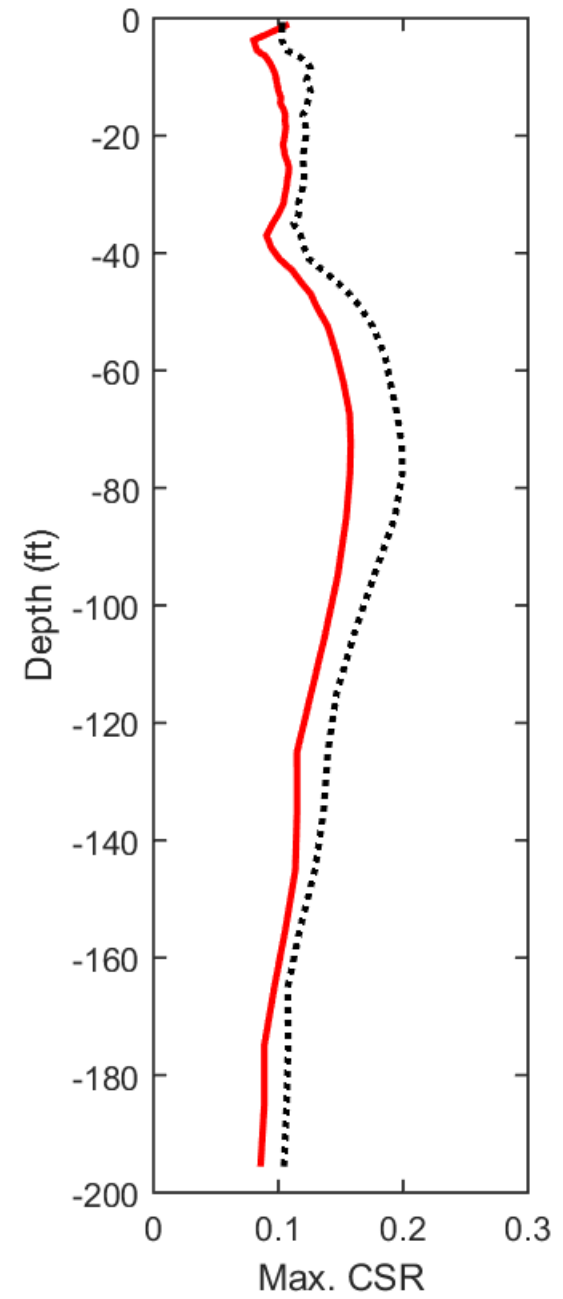
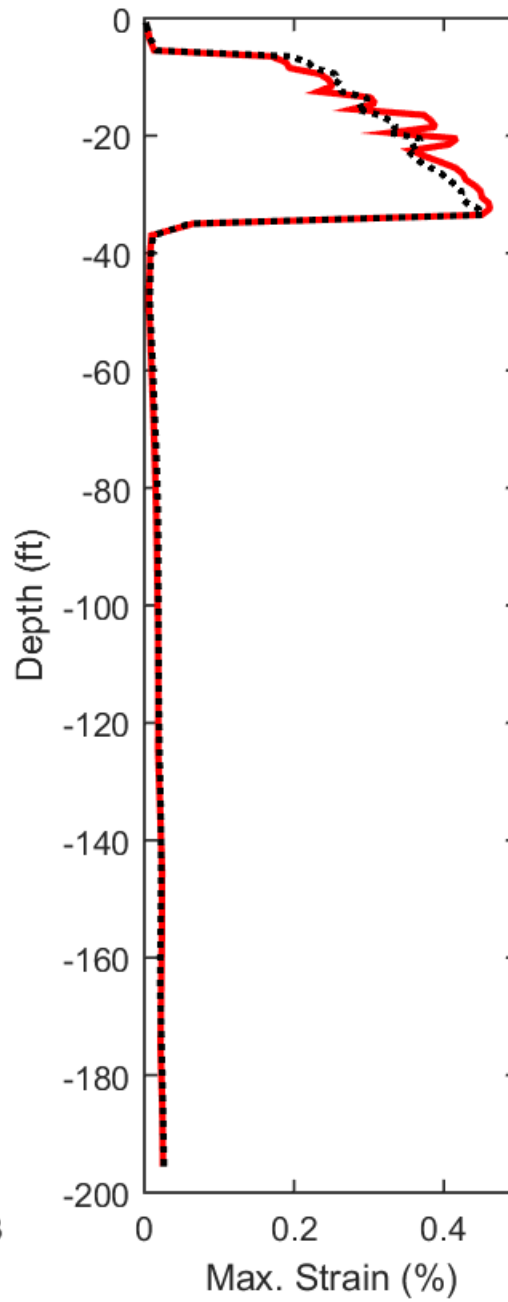
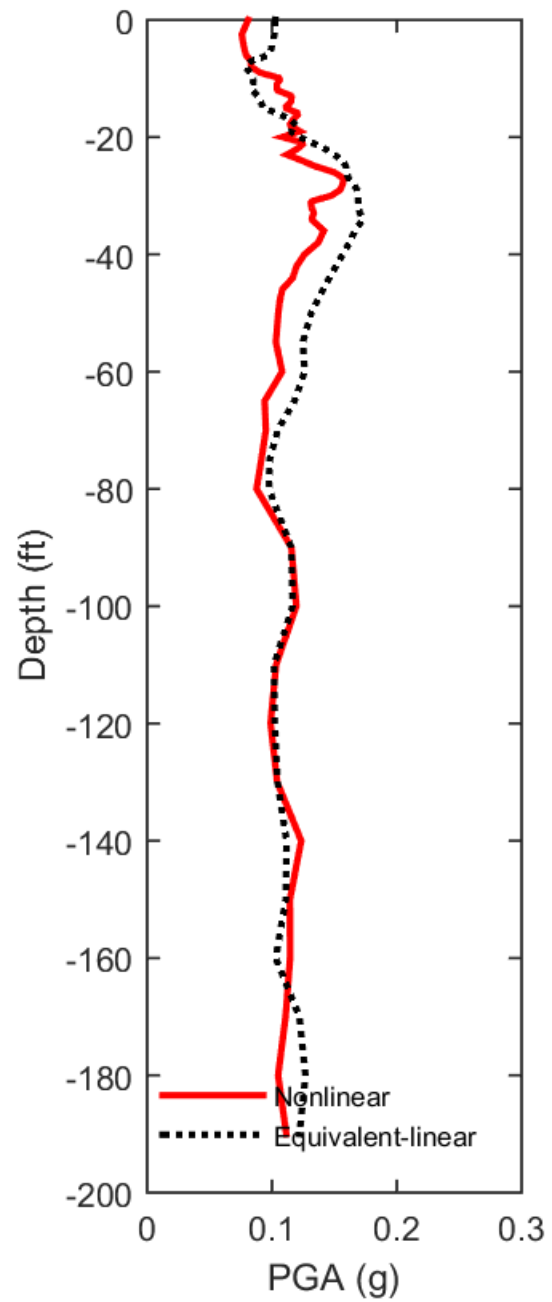
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1

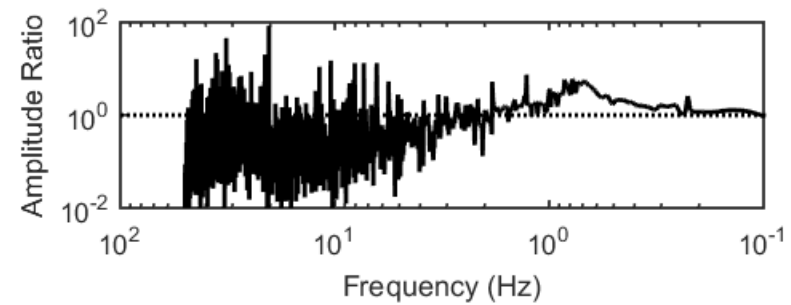
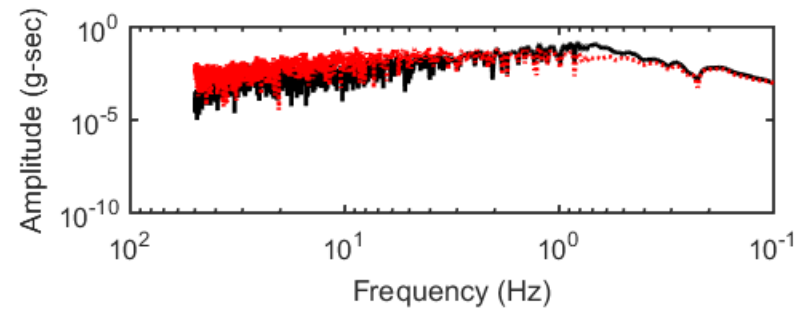
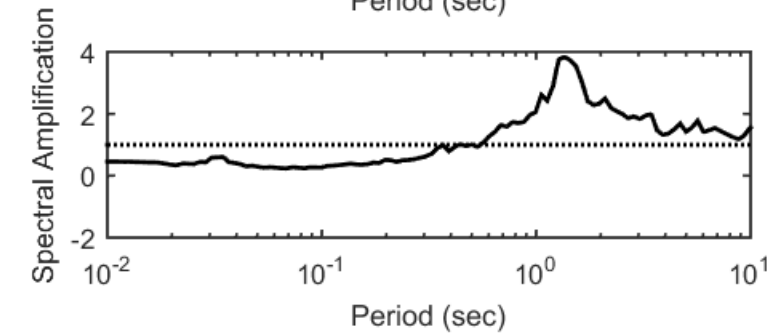
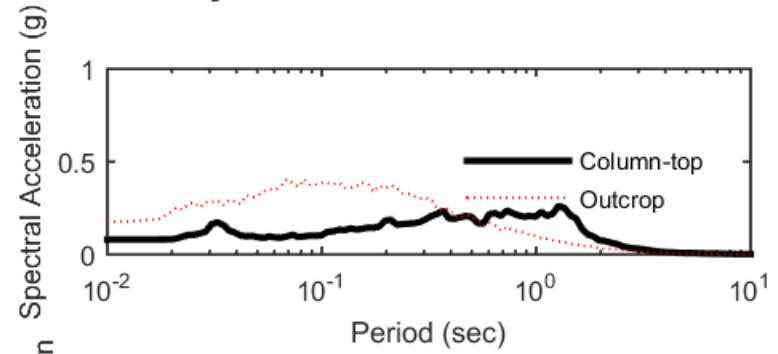
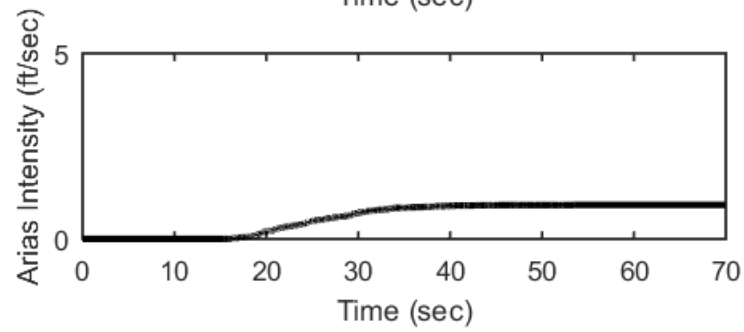
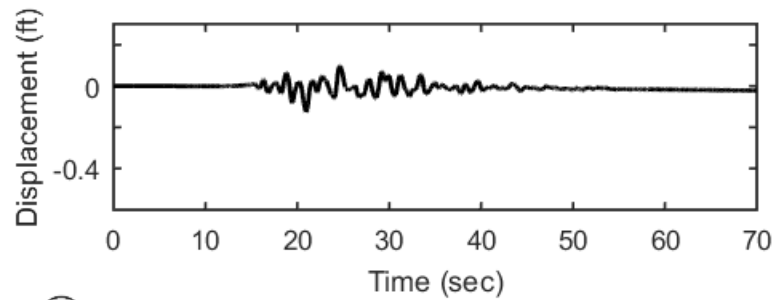
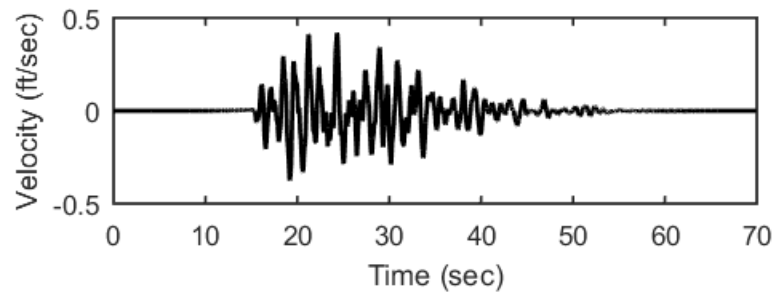
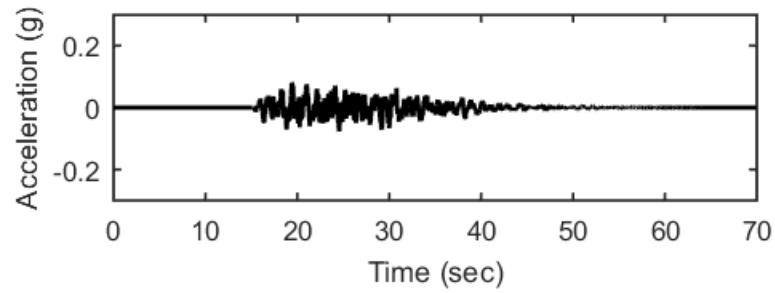


### Profile outputs for Motion: FEE1

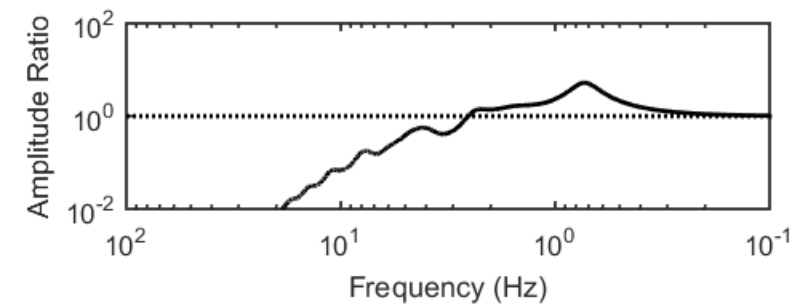
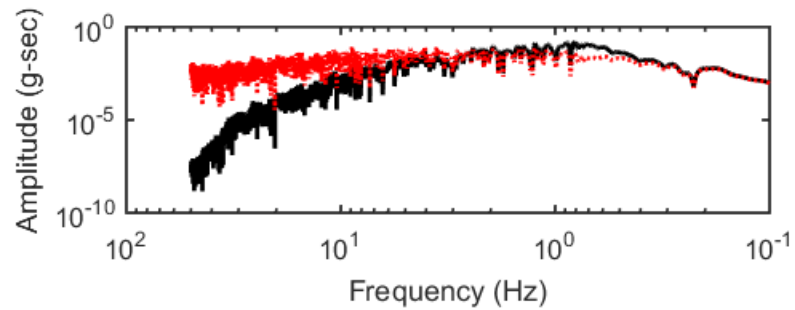
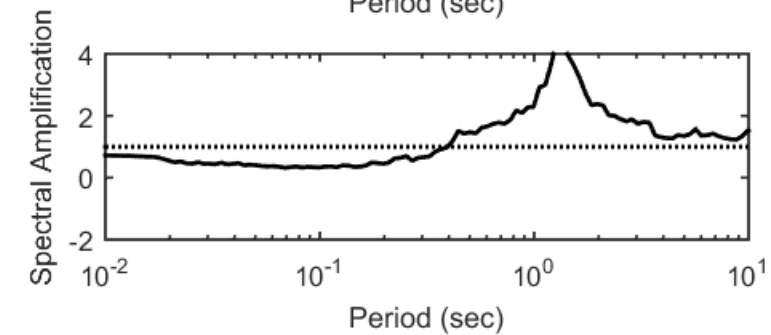
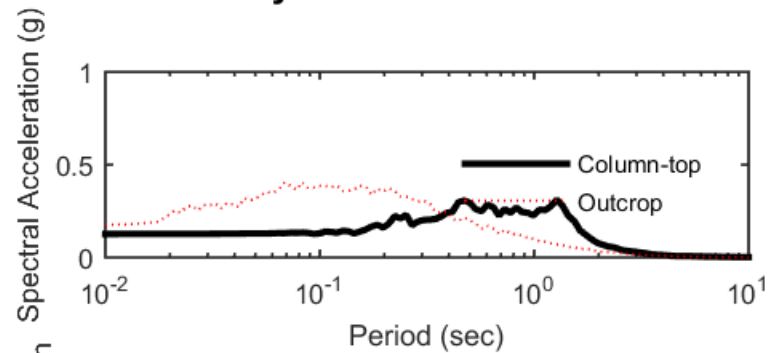
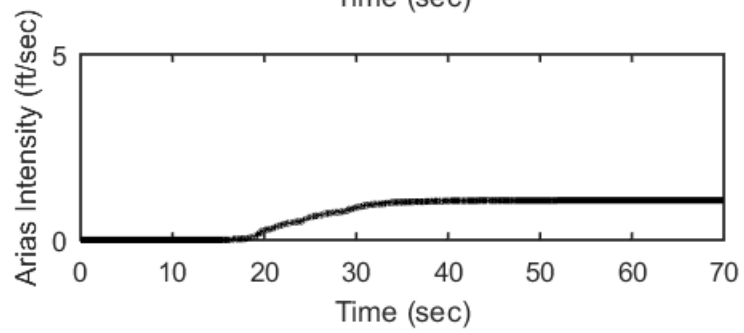
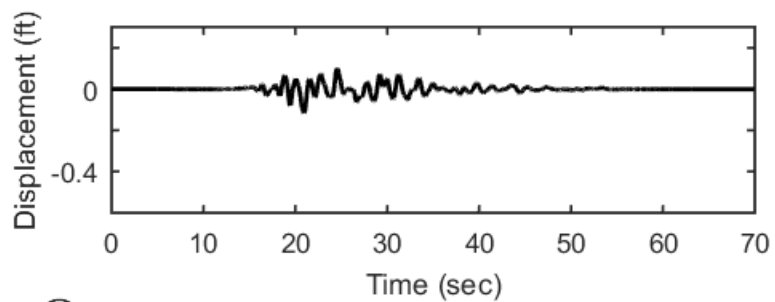
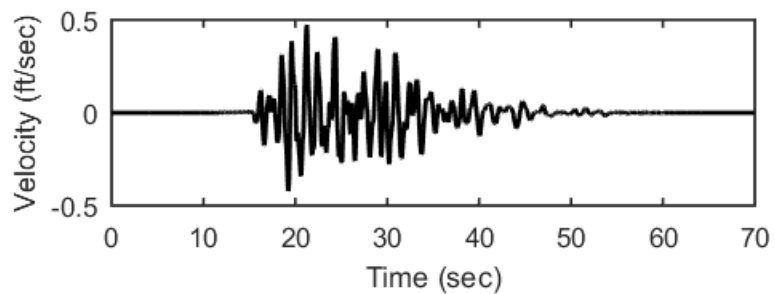
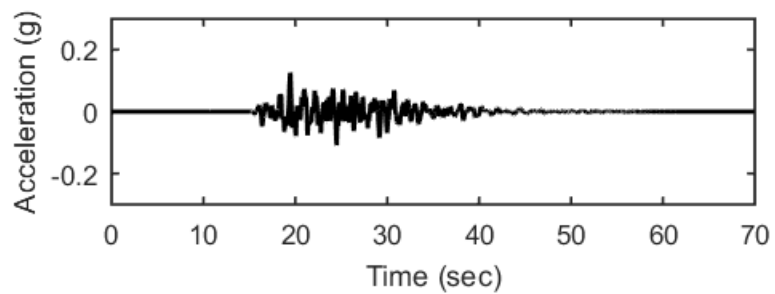




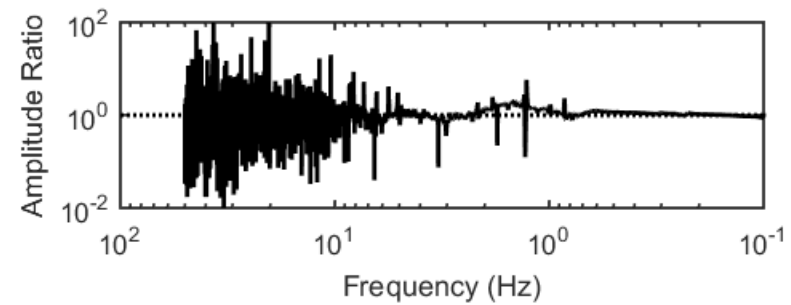
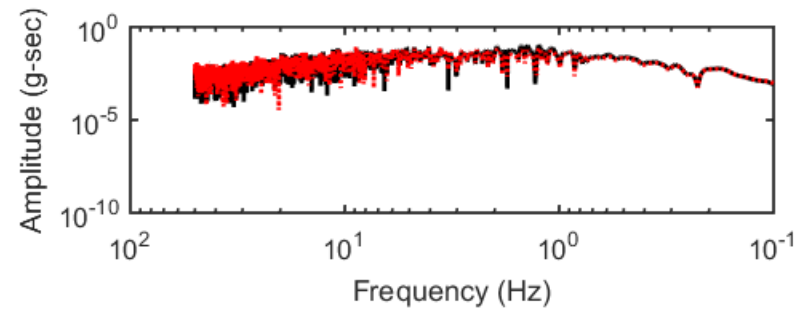
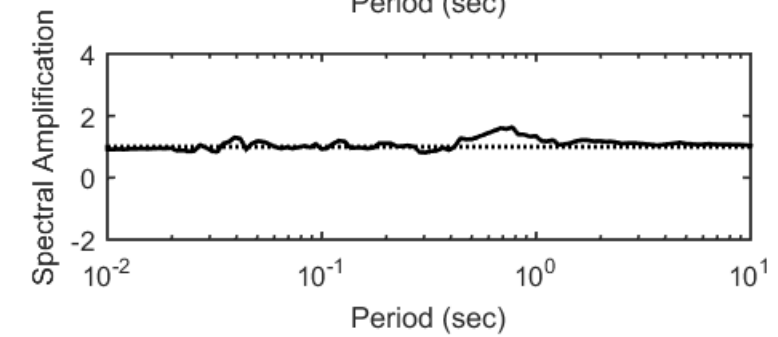
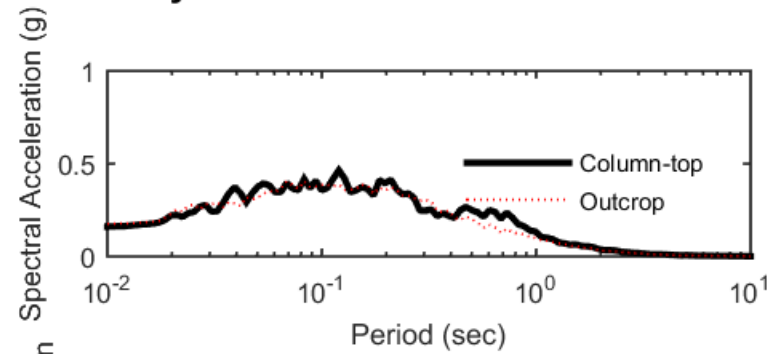
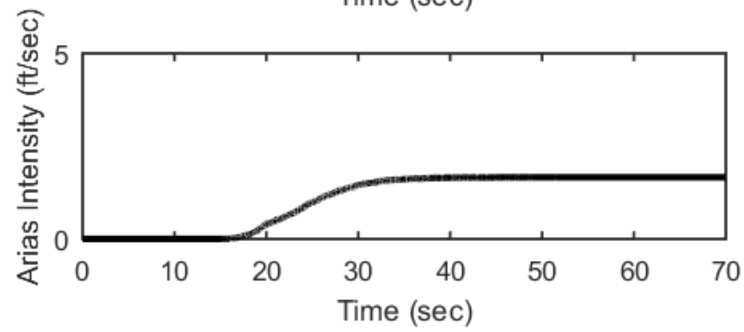
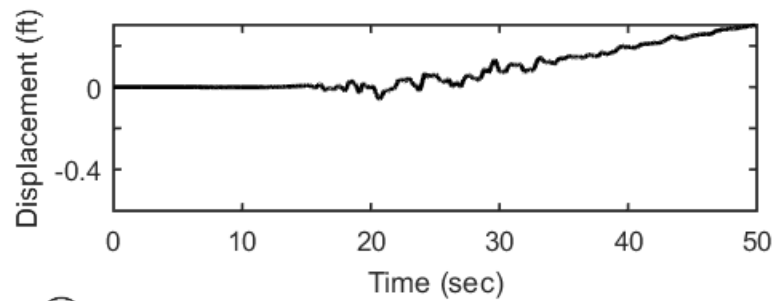
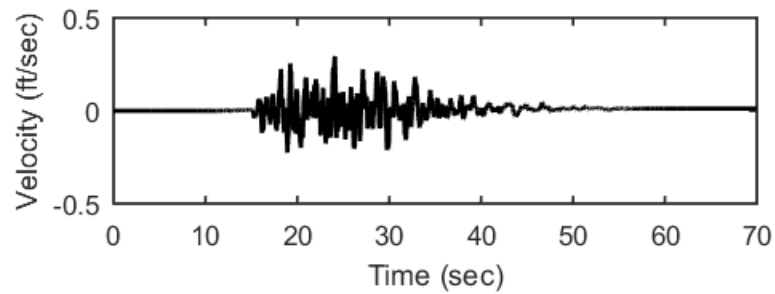
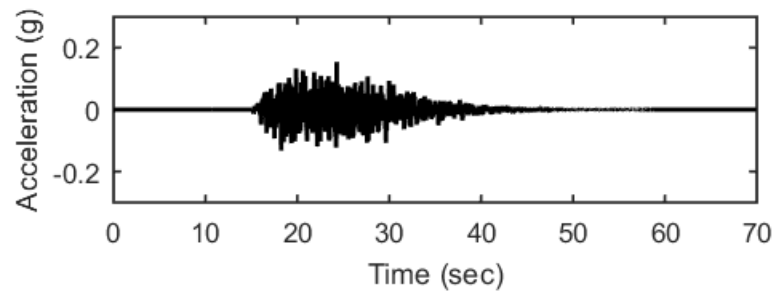
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



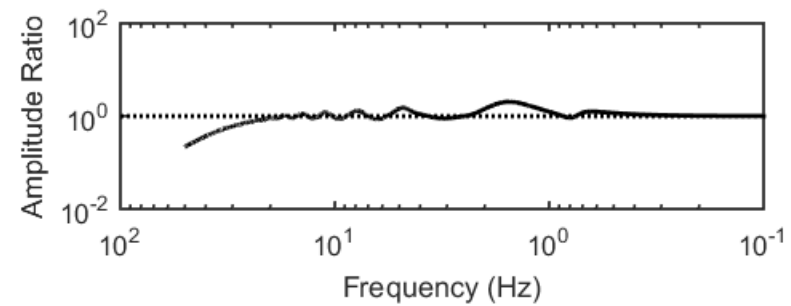
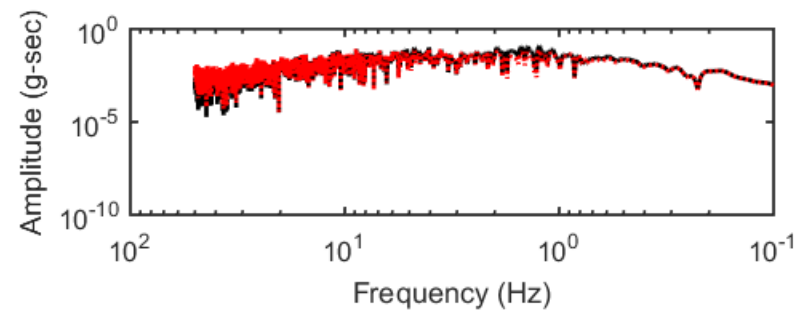
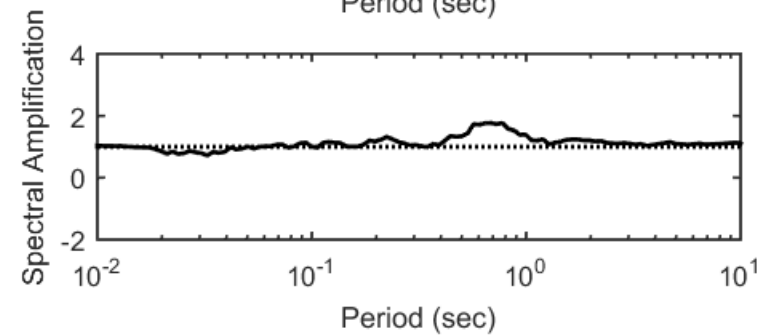
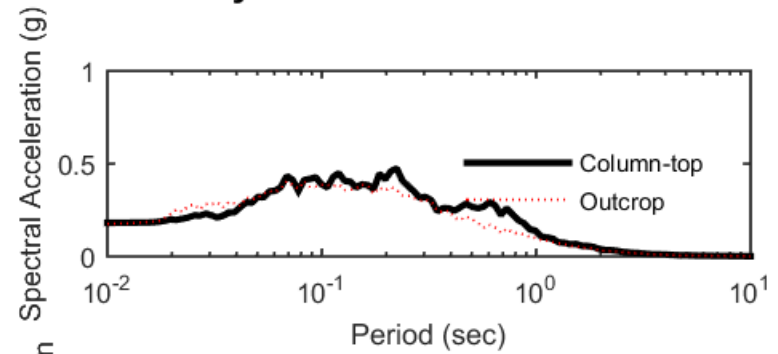
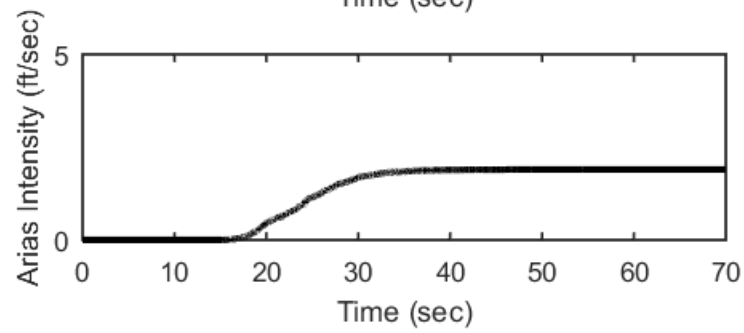
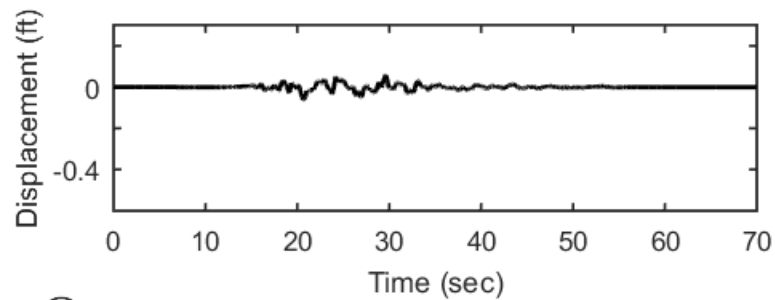
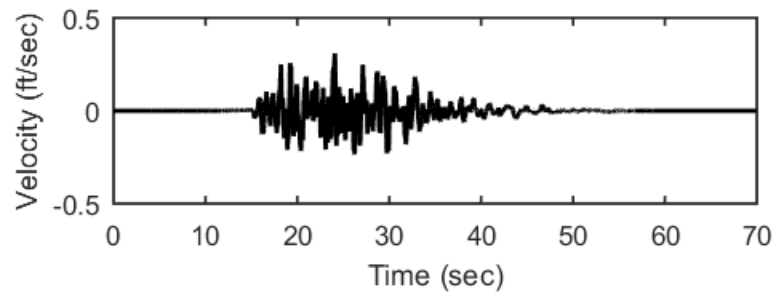
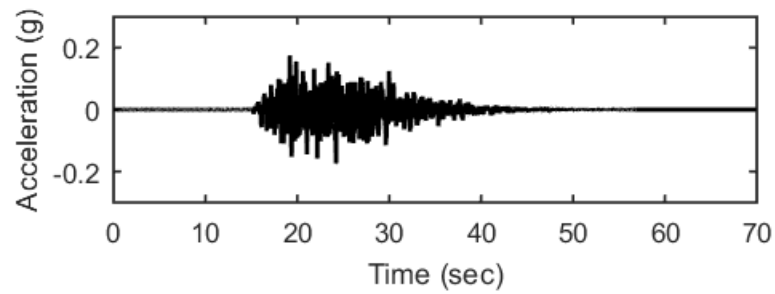
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



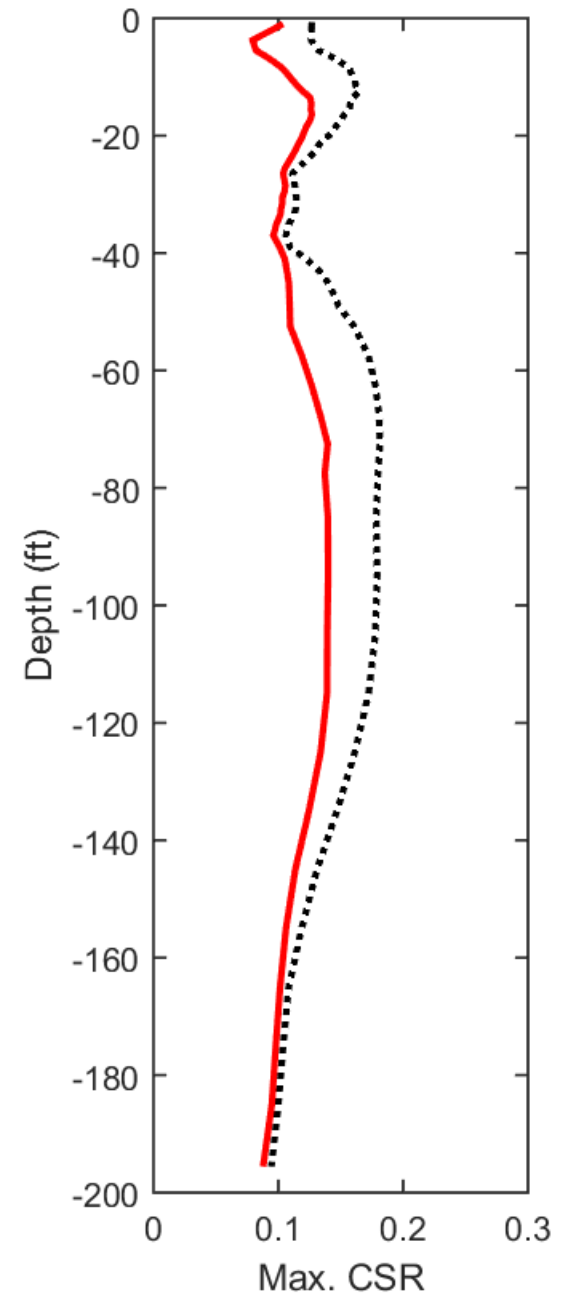
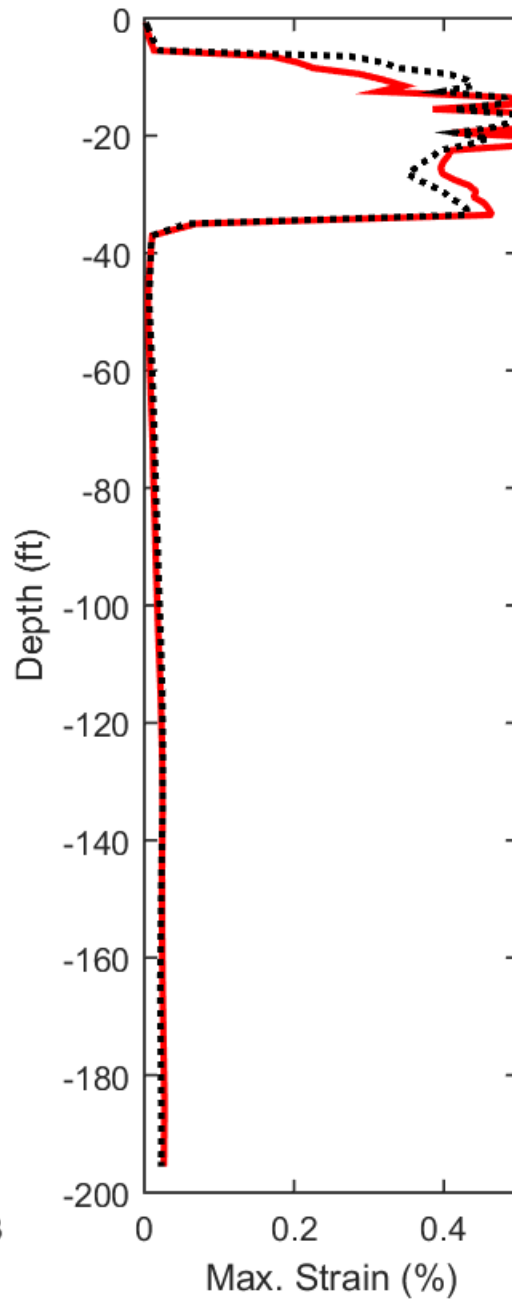
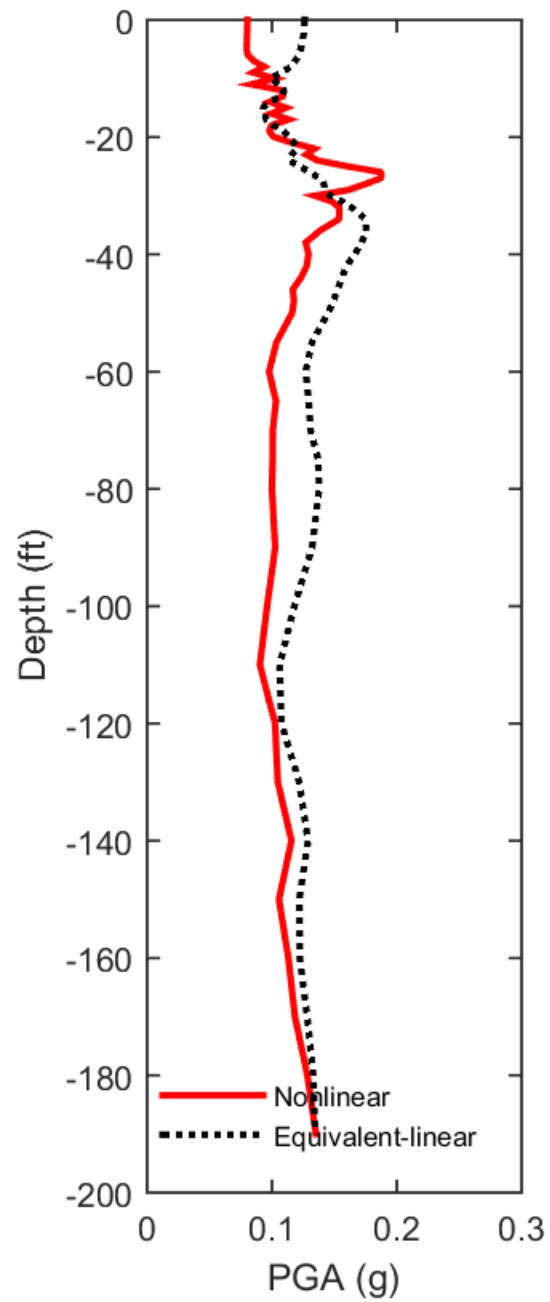
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



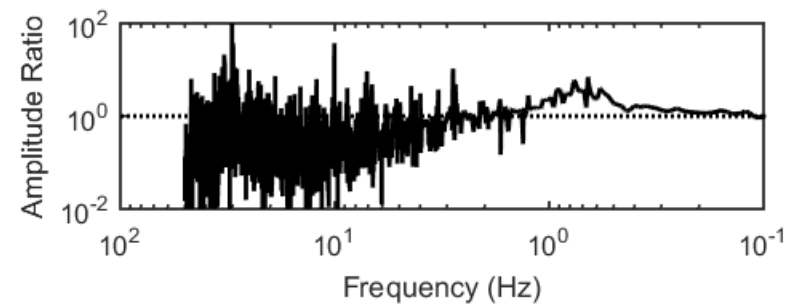
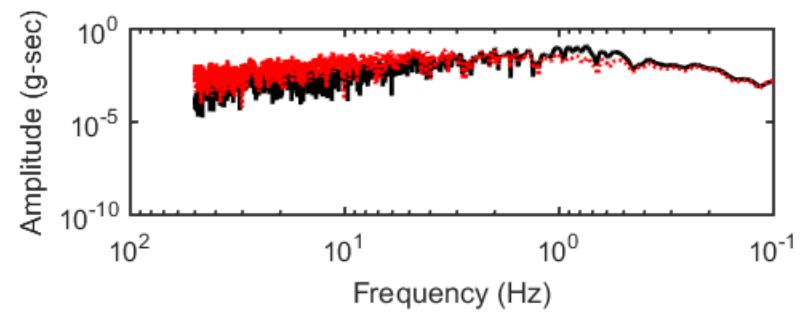
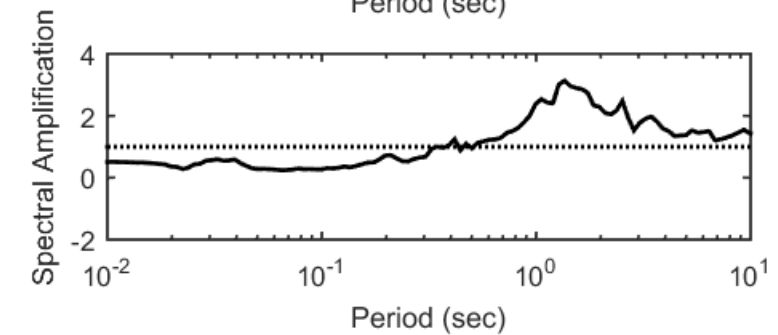
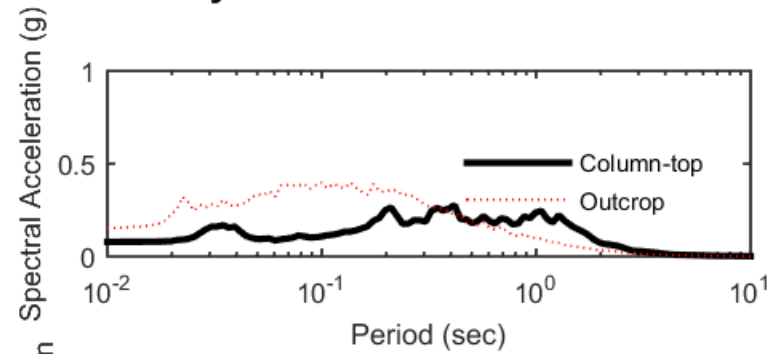
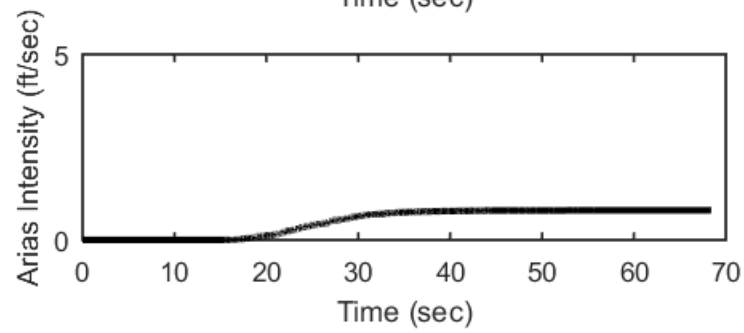
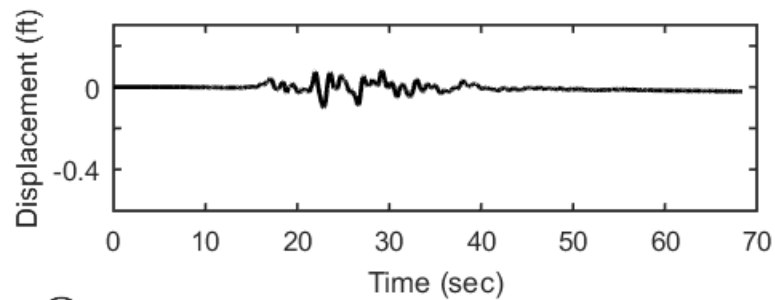
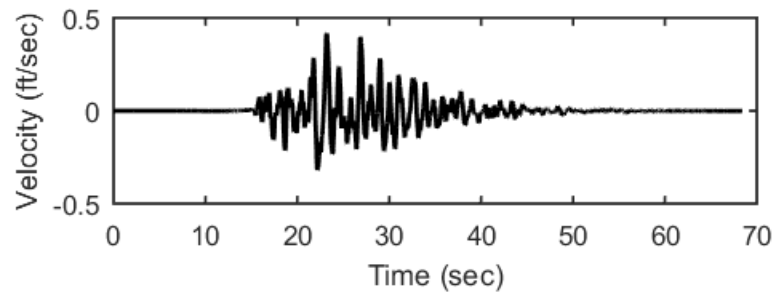
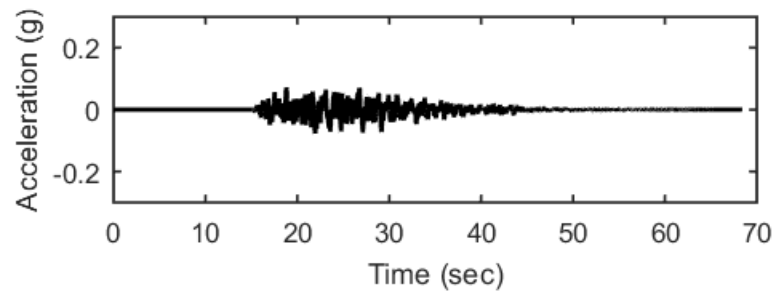
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



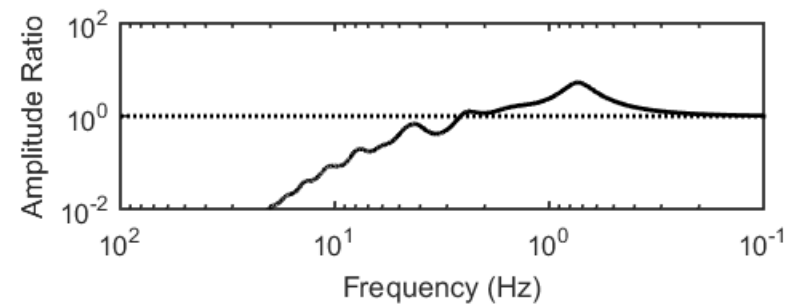
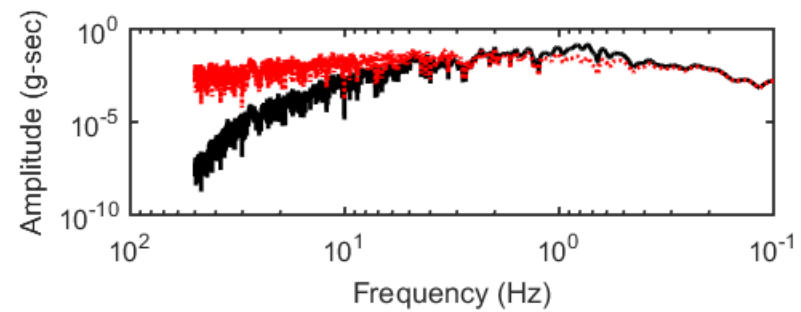
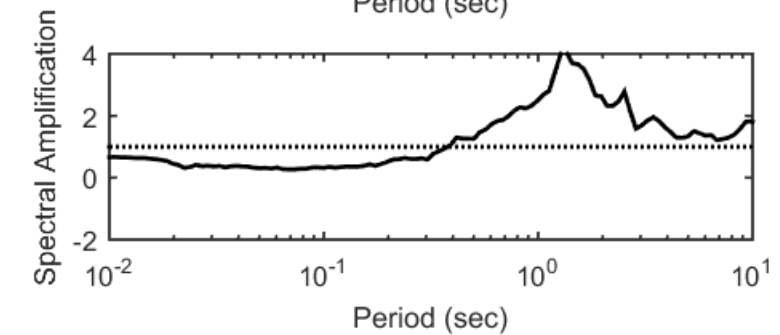
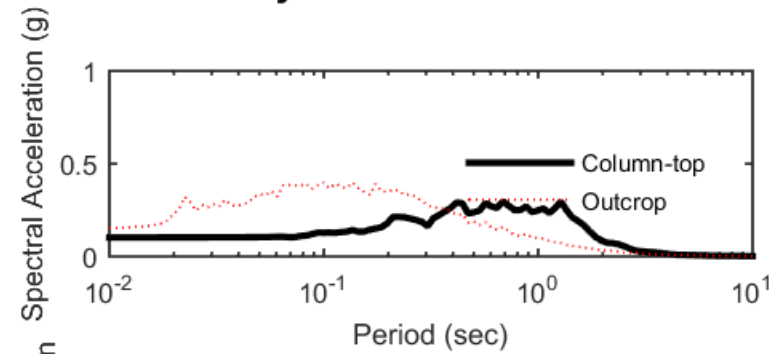
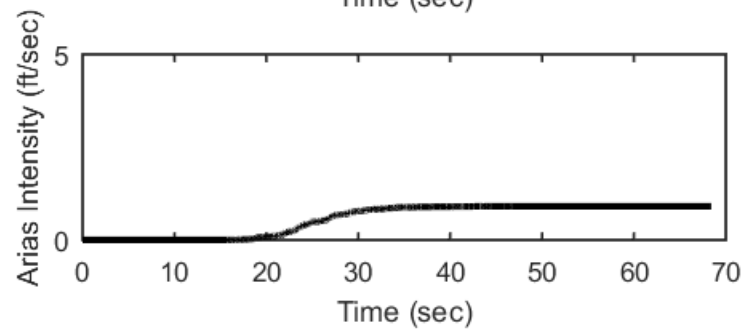
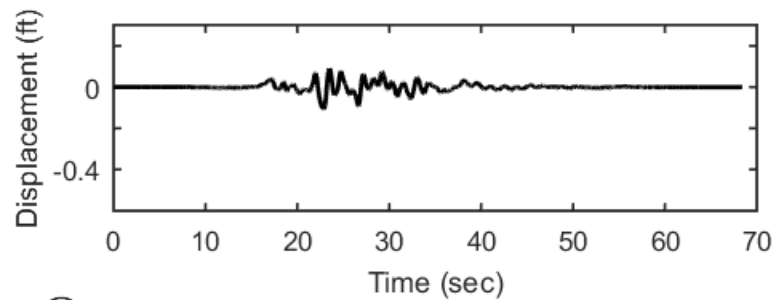
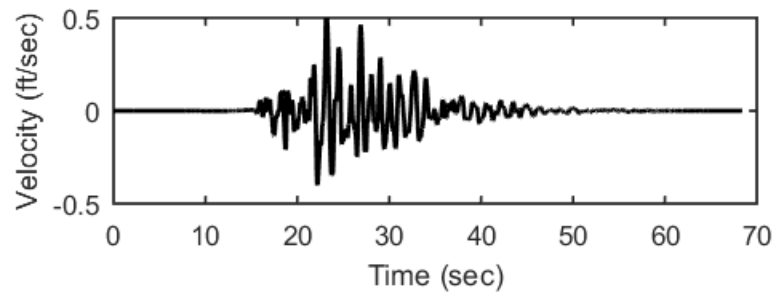
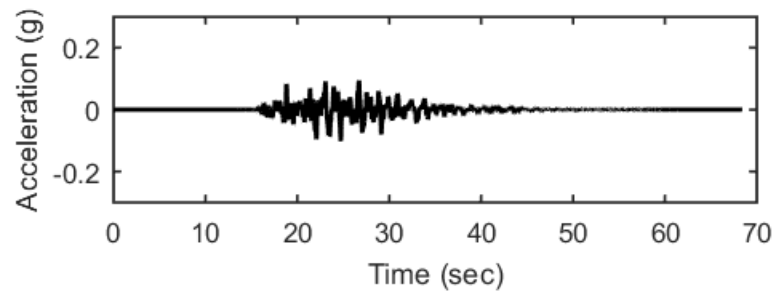
### Profile outputs for Motion: FEE2



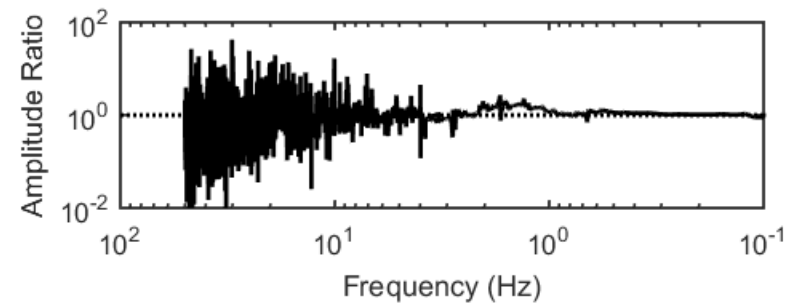
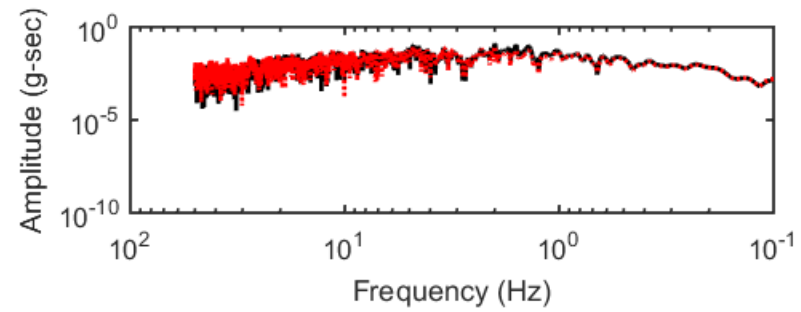
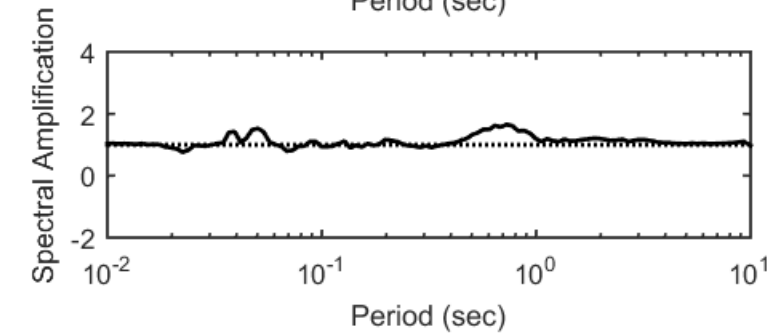
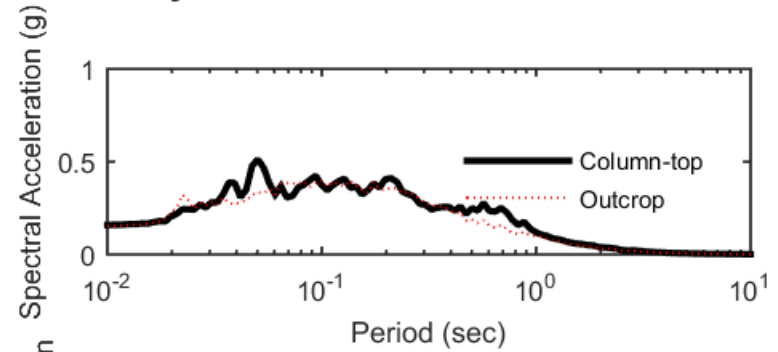
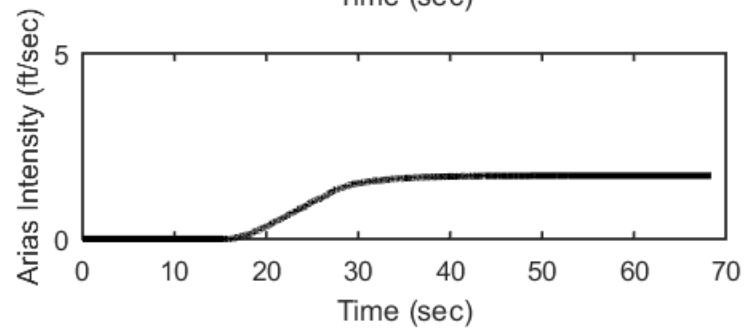
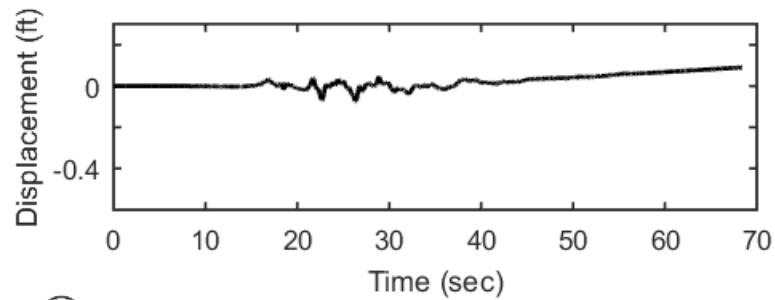
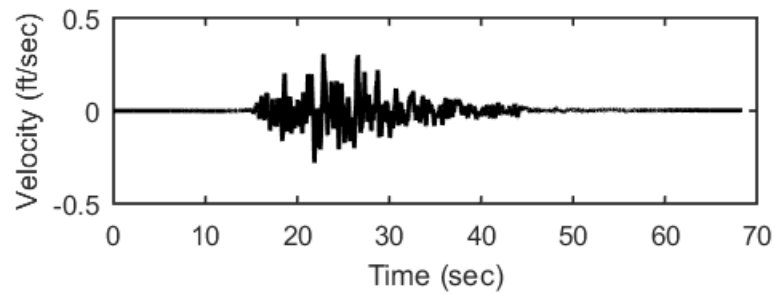
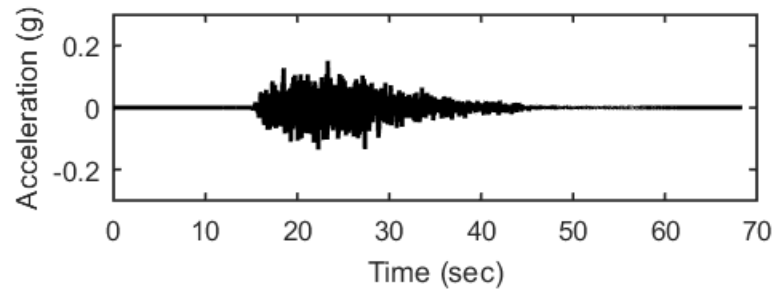
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3

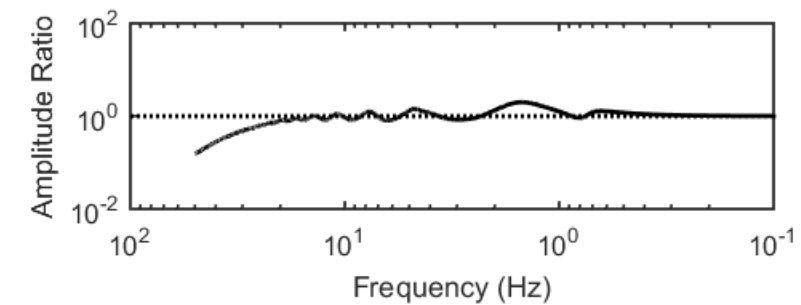
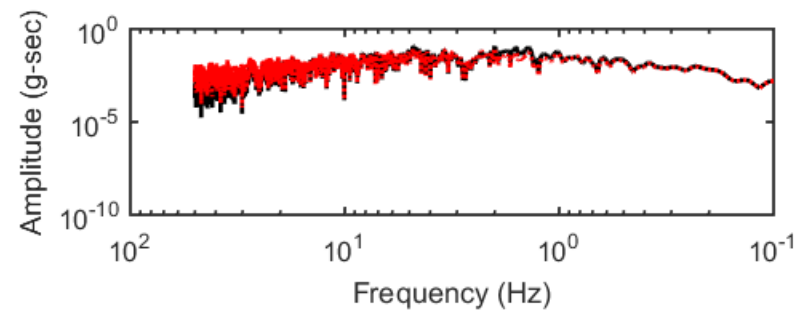
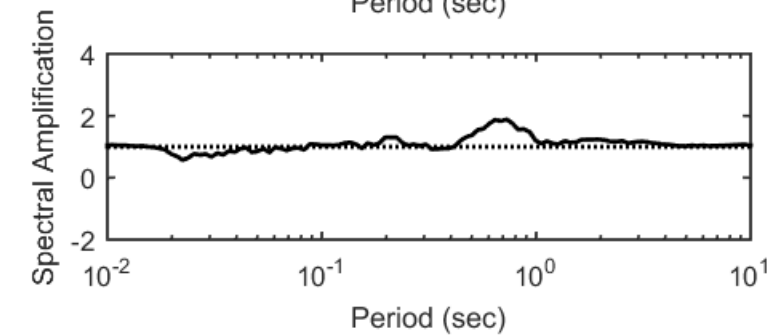
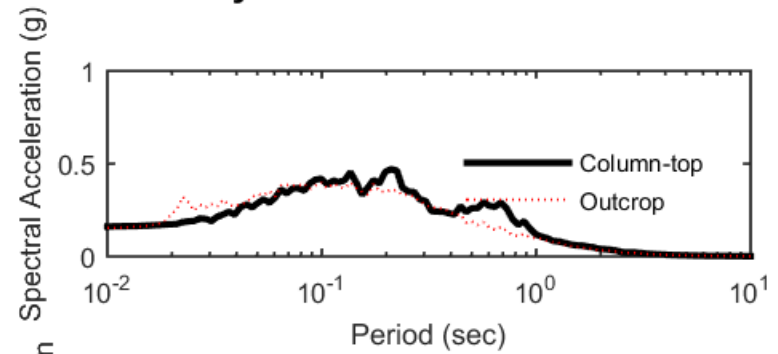
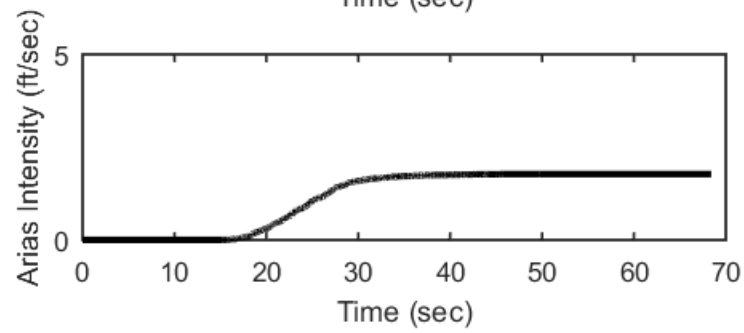
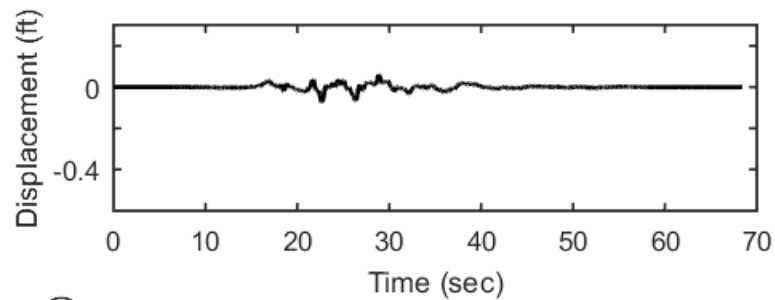
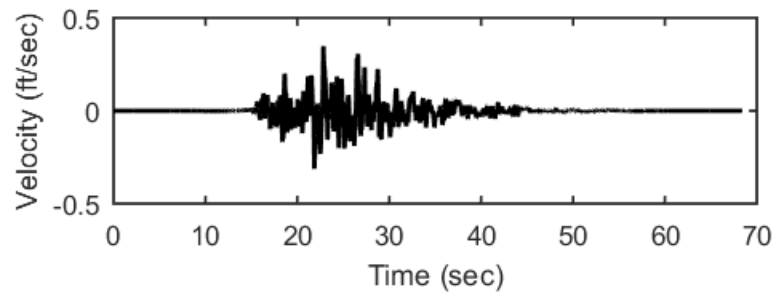
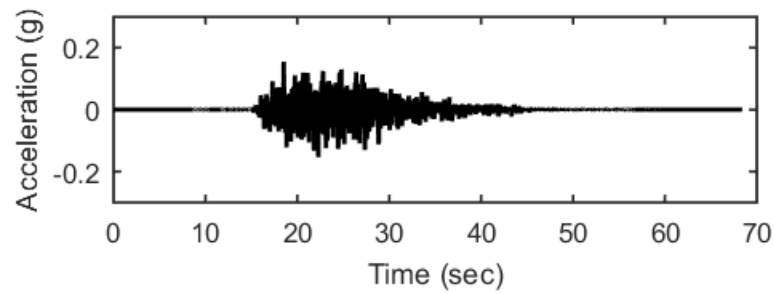


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3

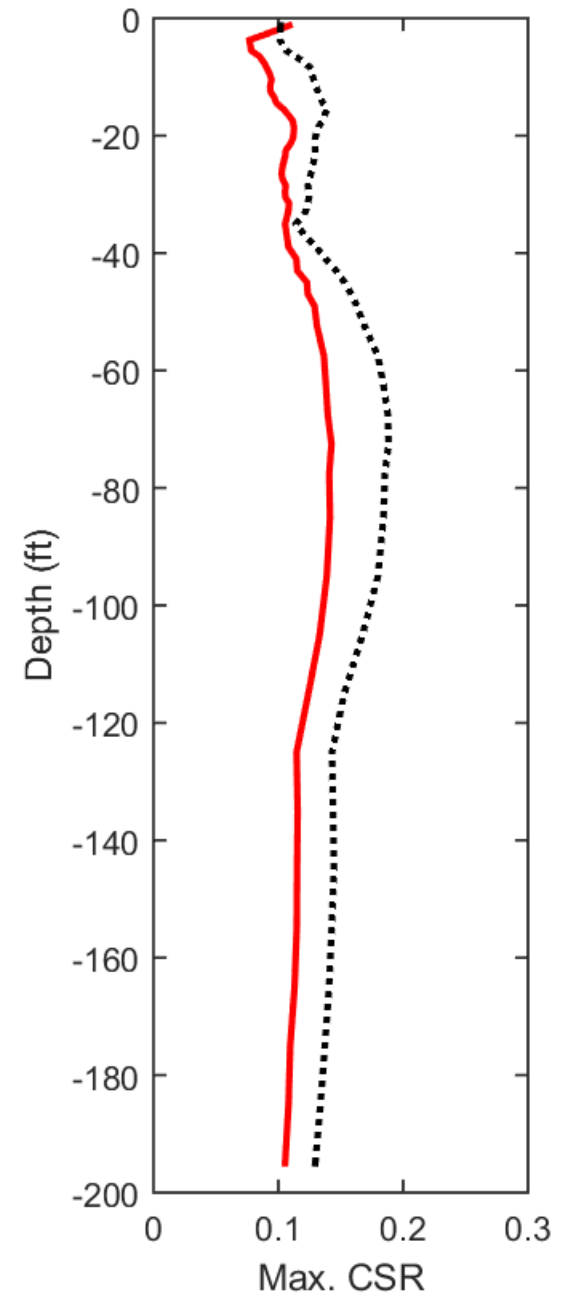
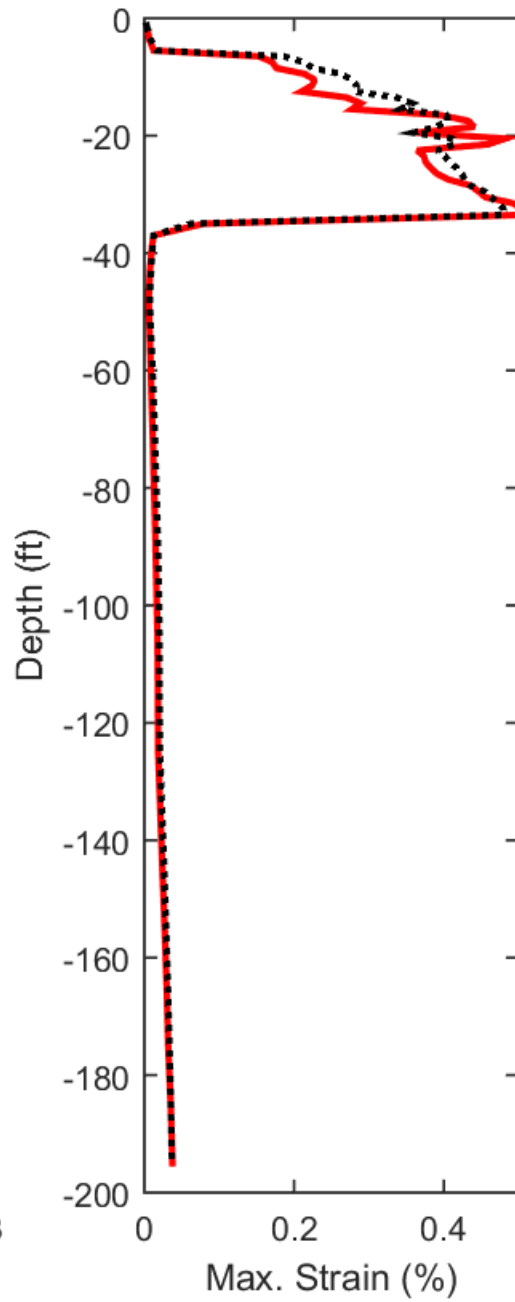
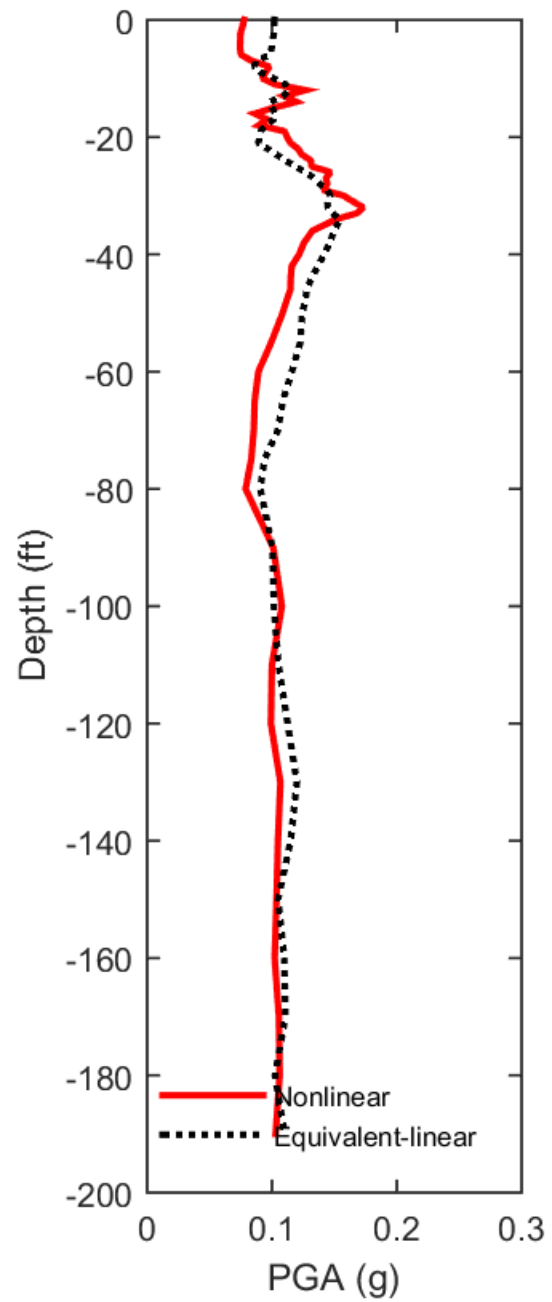




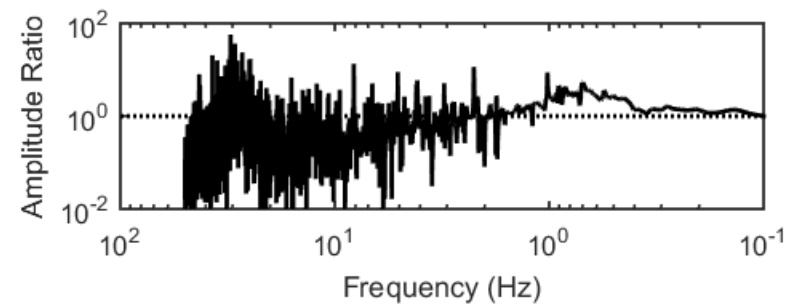
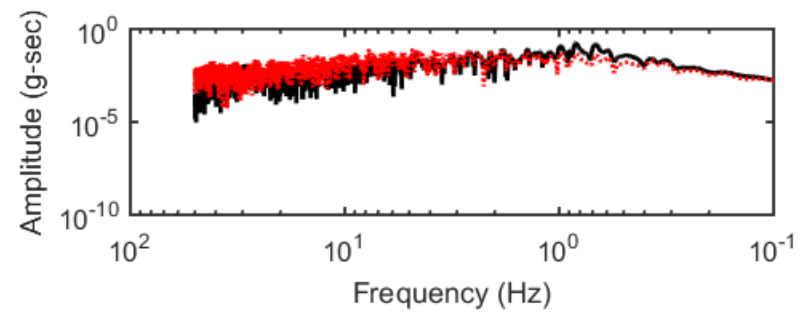
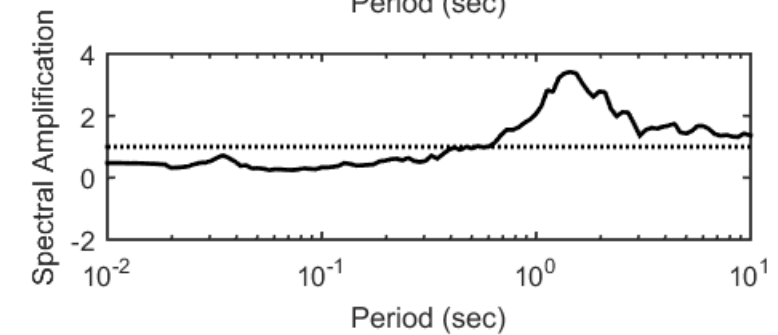
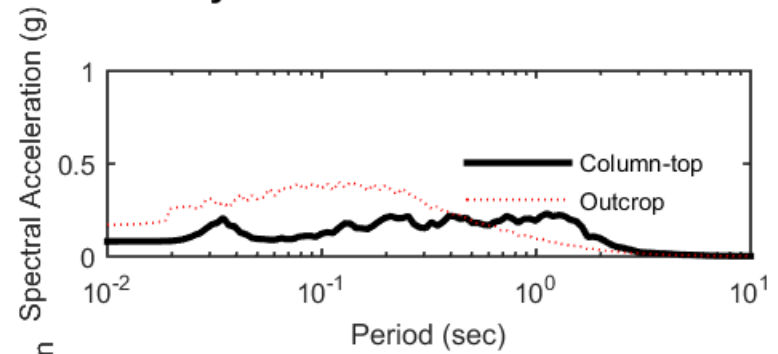
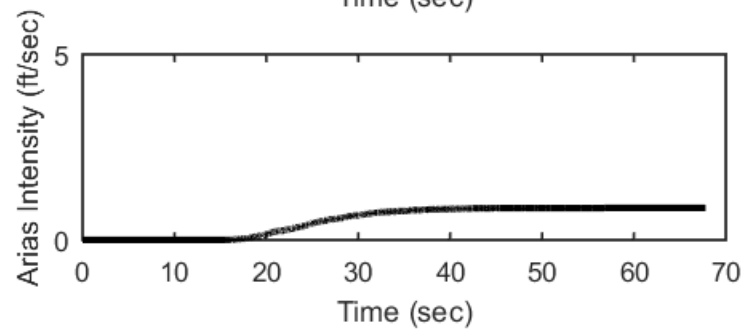
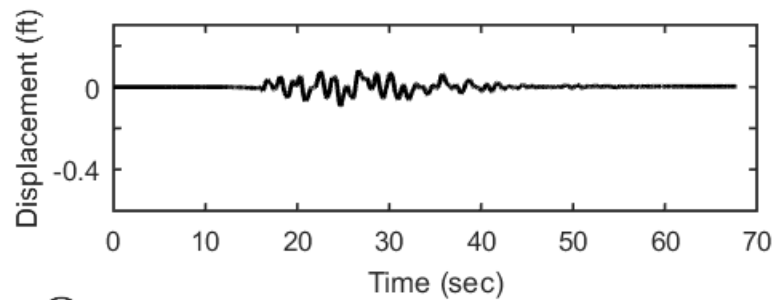
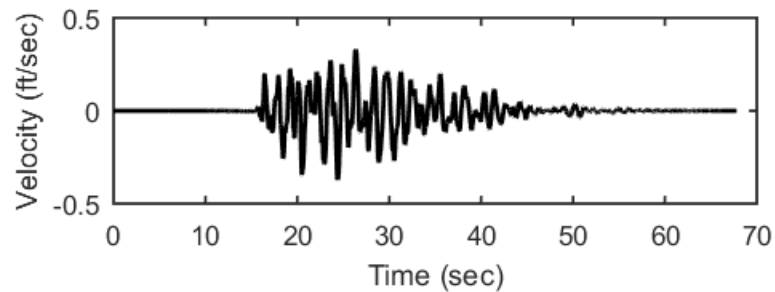
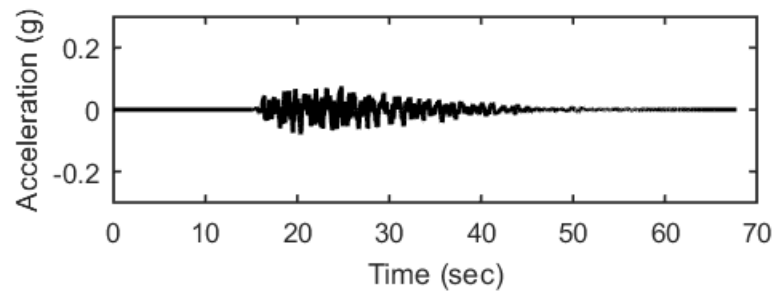
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



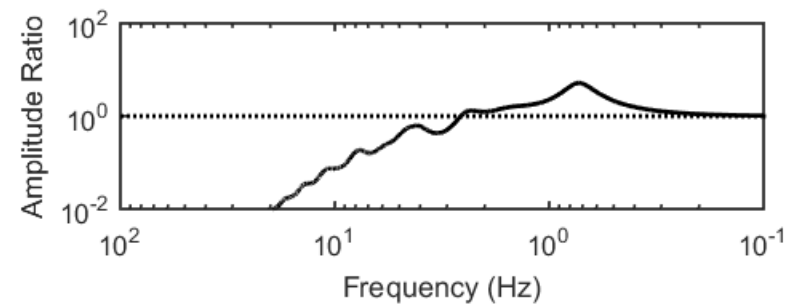
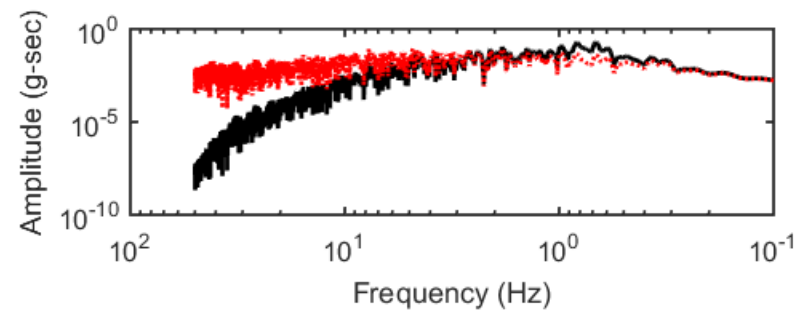
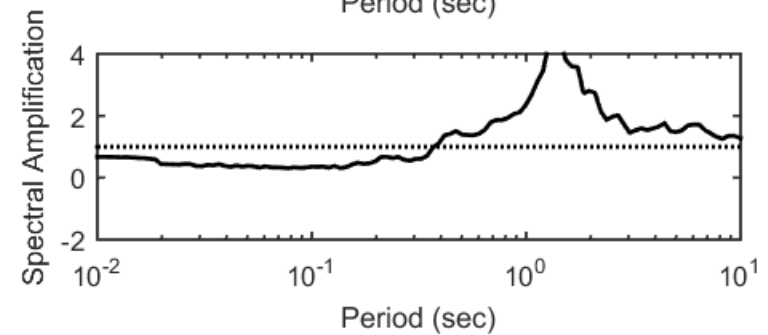
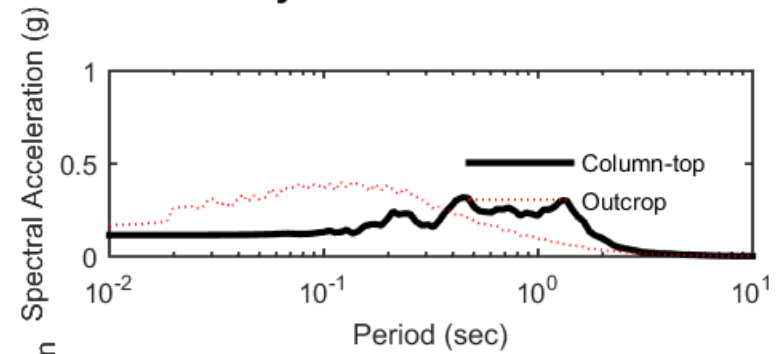
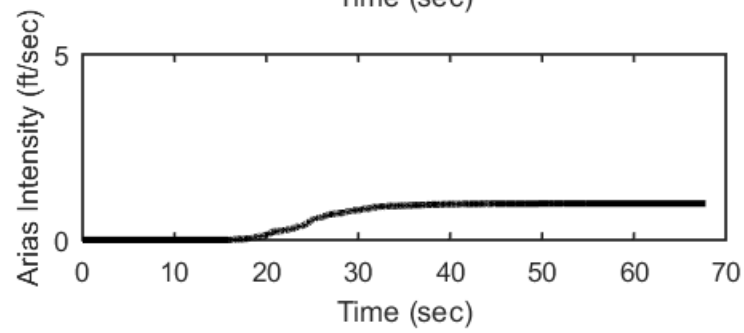
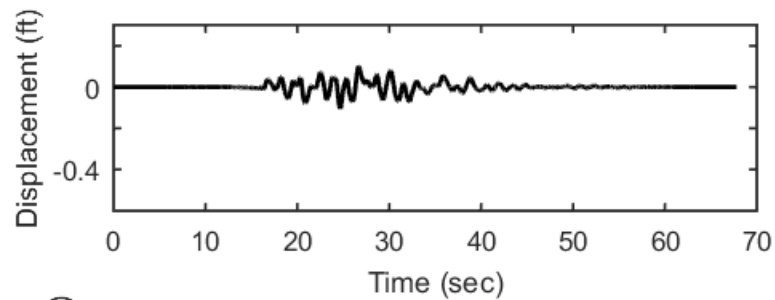
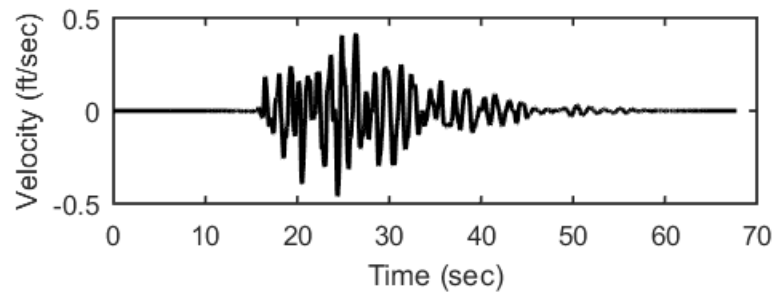
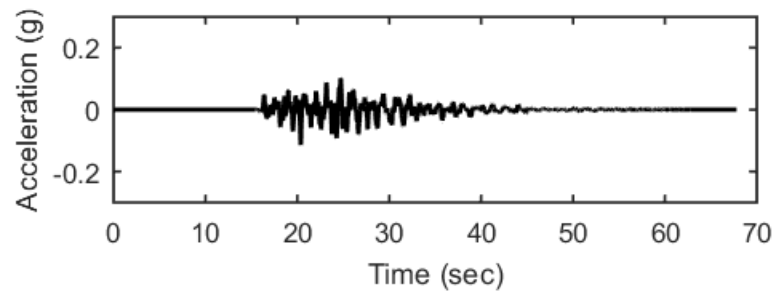
### Profile outputs for Motion: FEE3



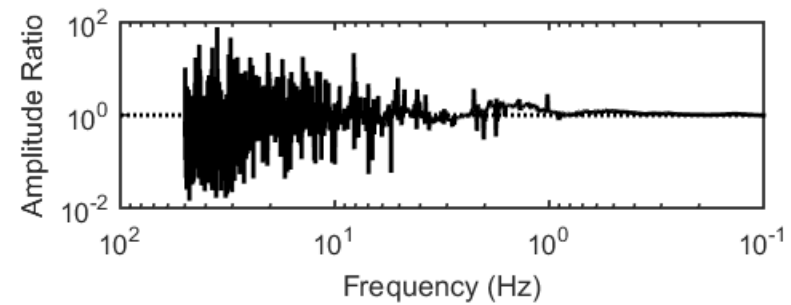
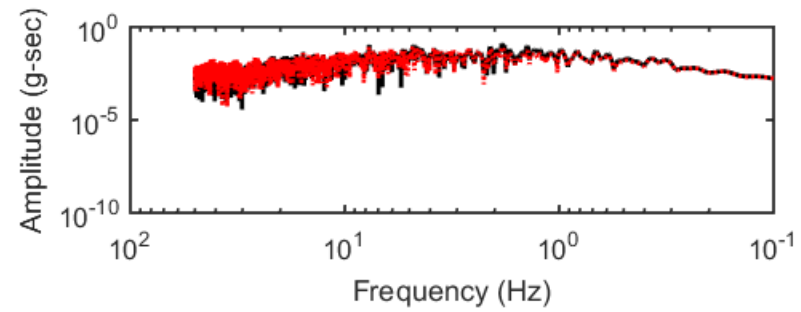
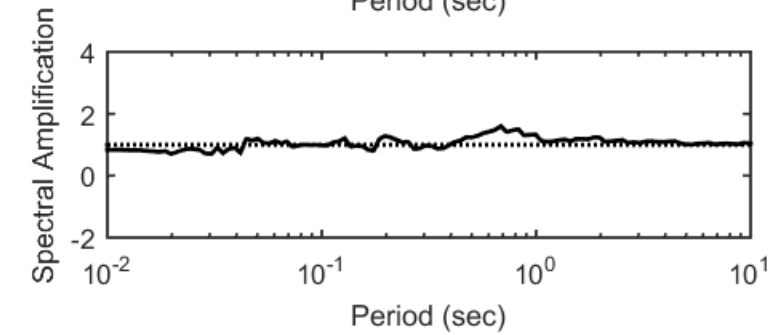
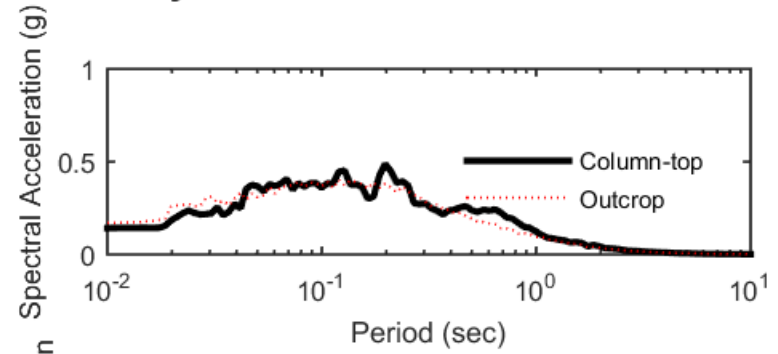
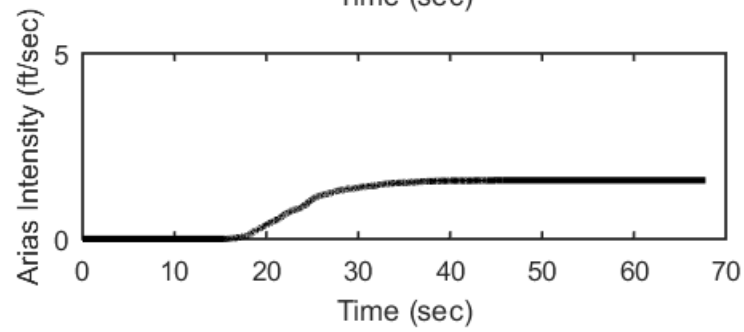
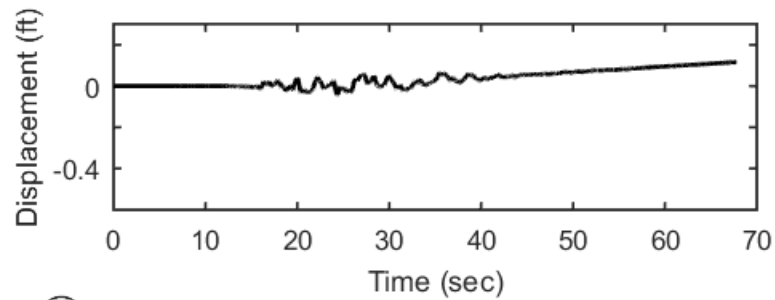
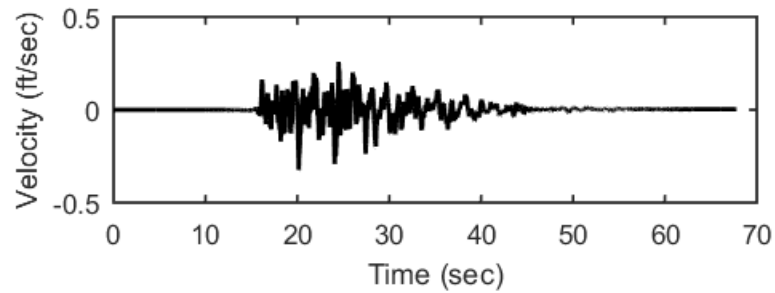
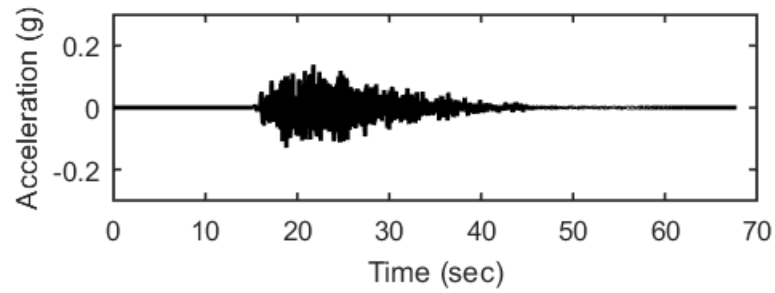
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



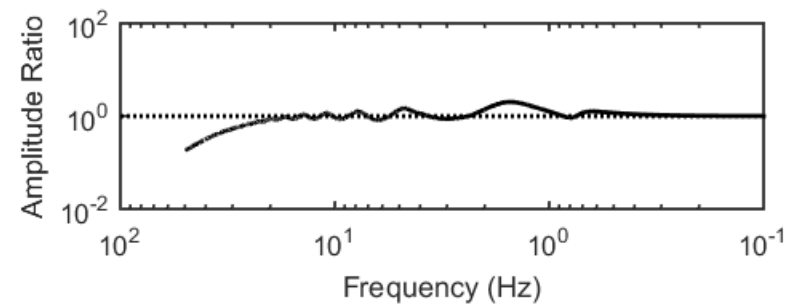
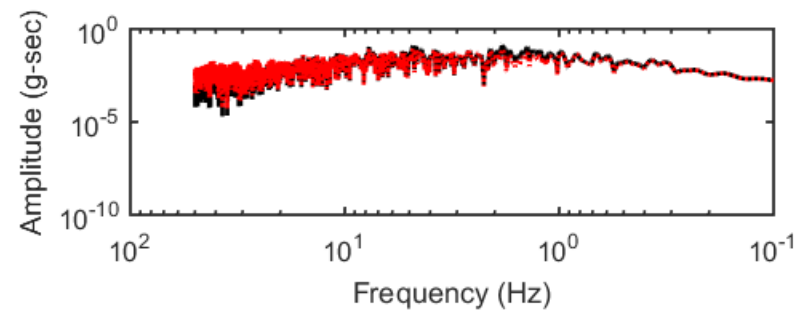
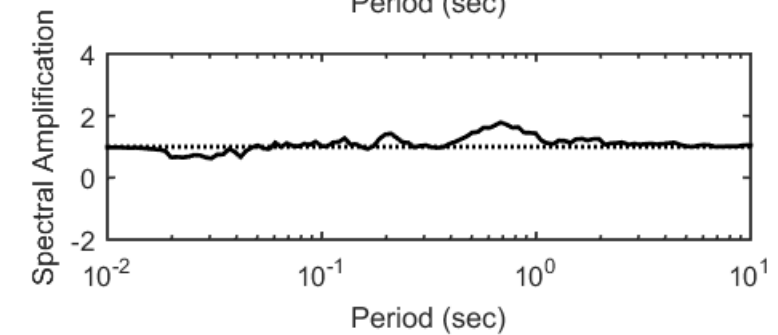
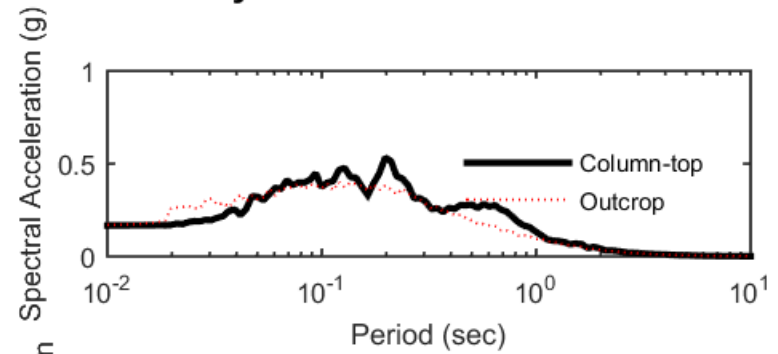
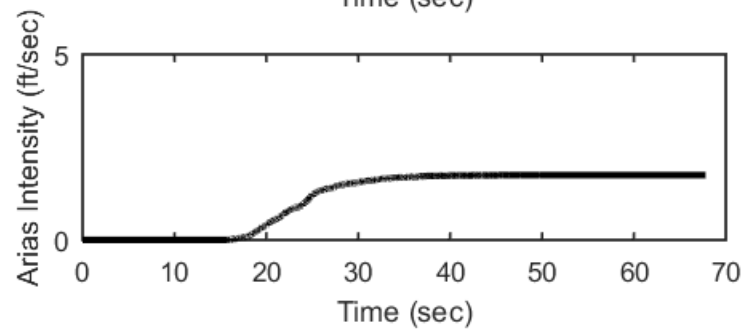
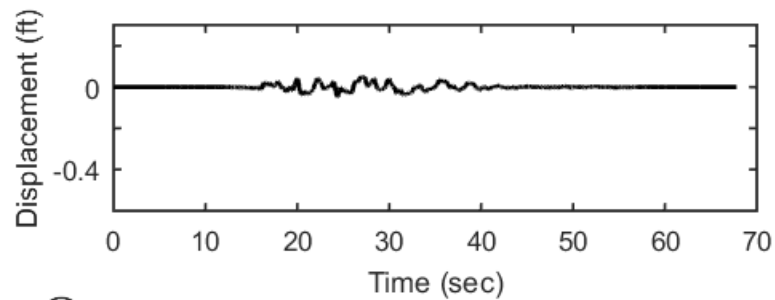
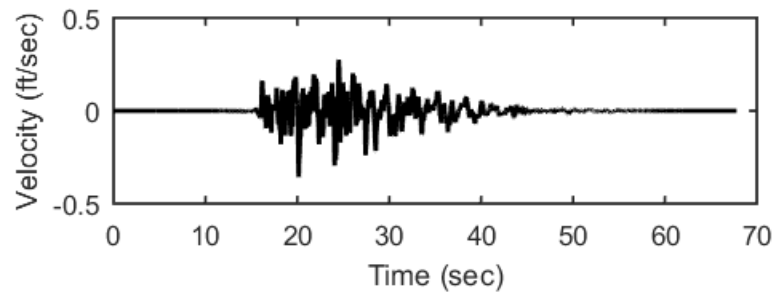
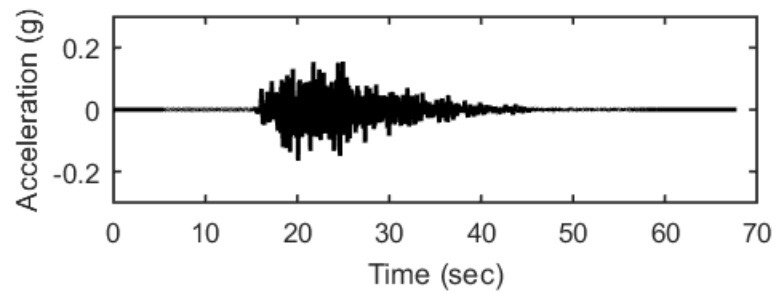
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



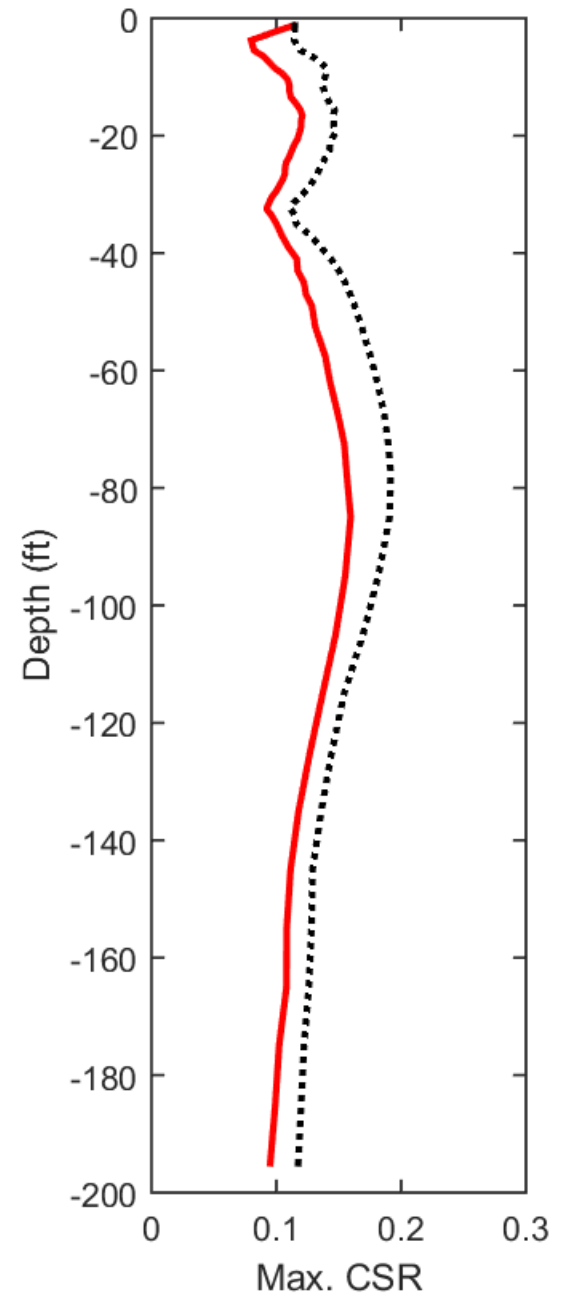
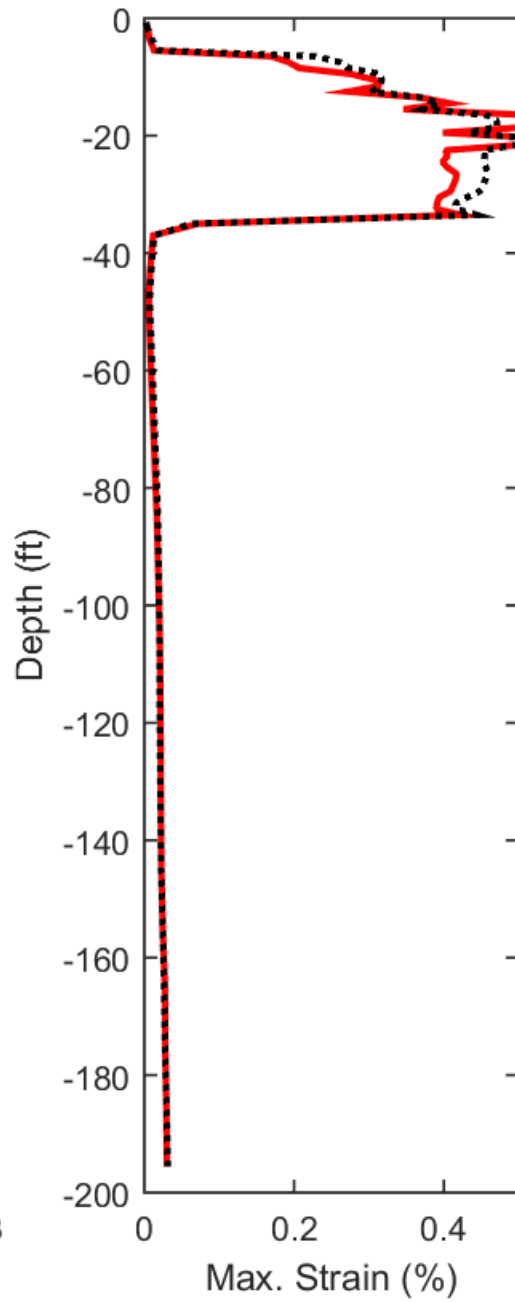
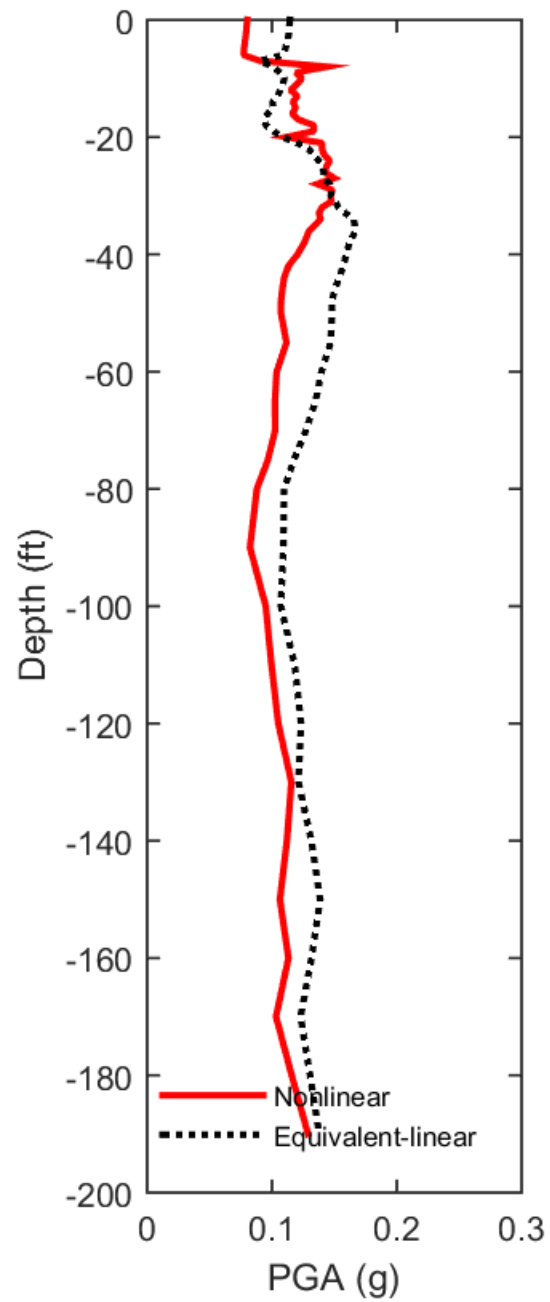
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



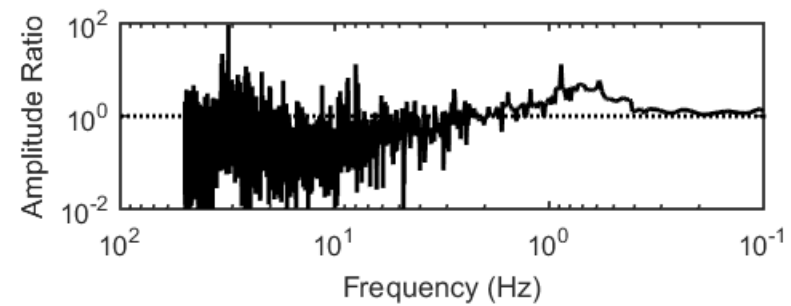
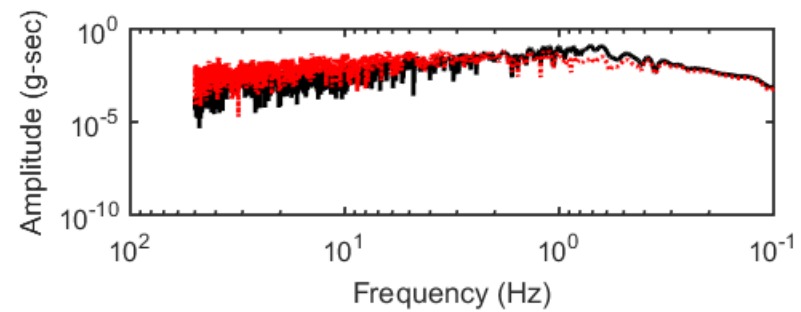
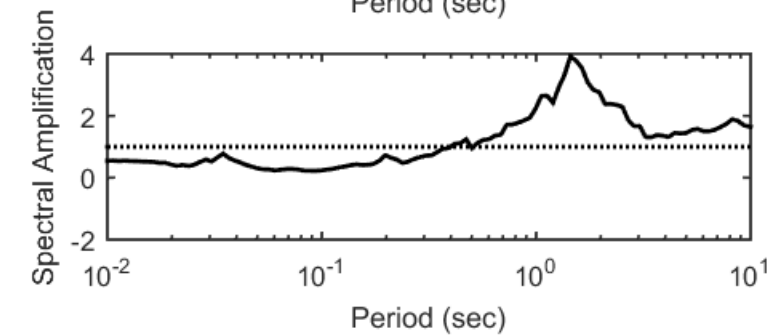
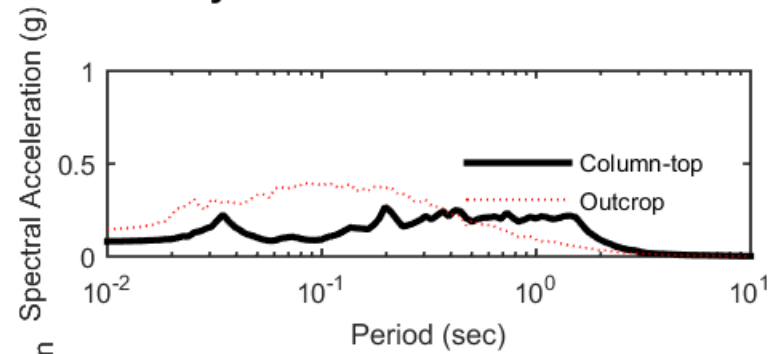
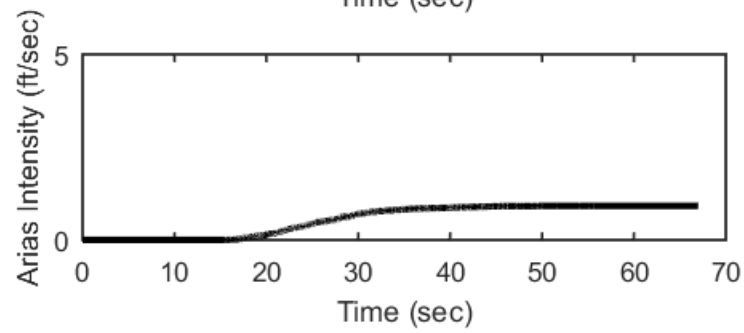
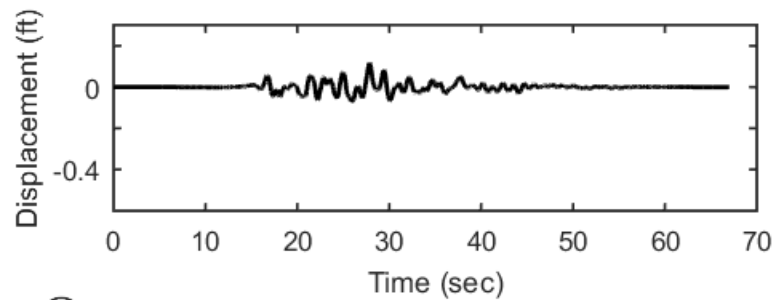
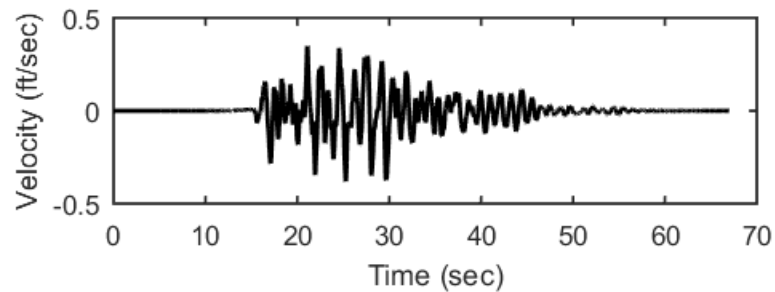
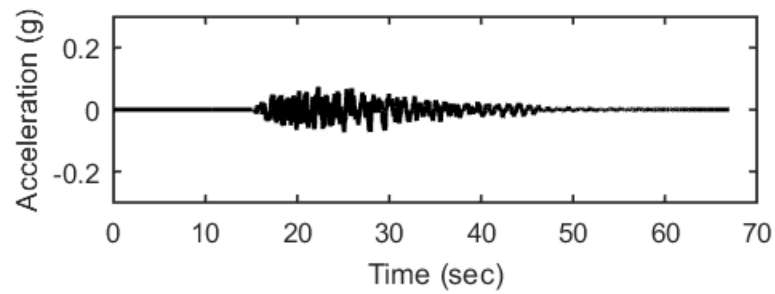
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



### Profile outputs for Motion: FEE4

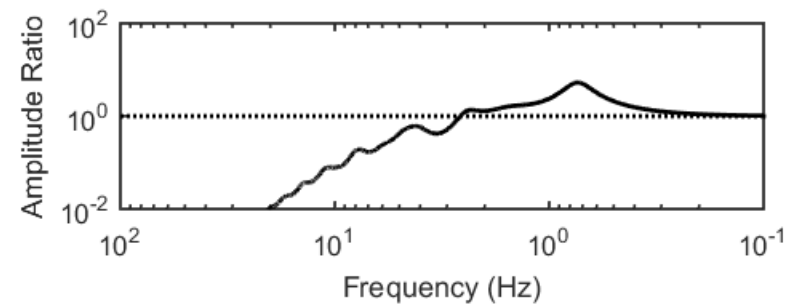
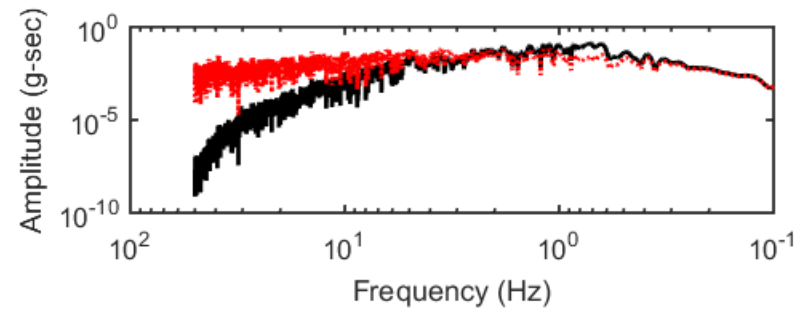
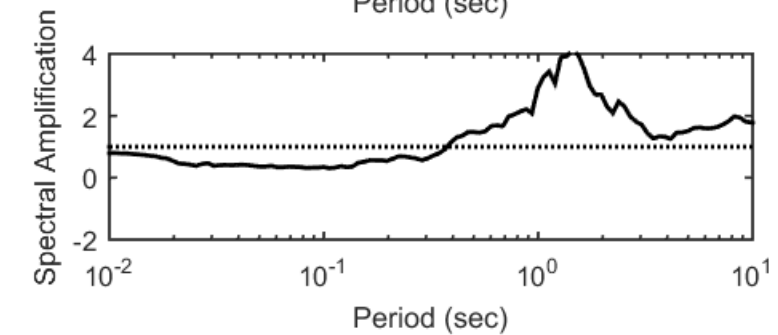
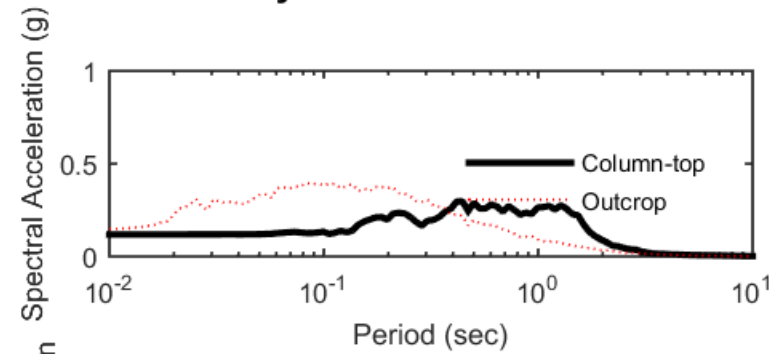
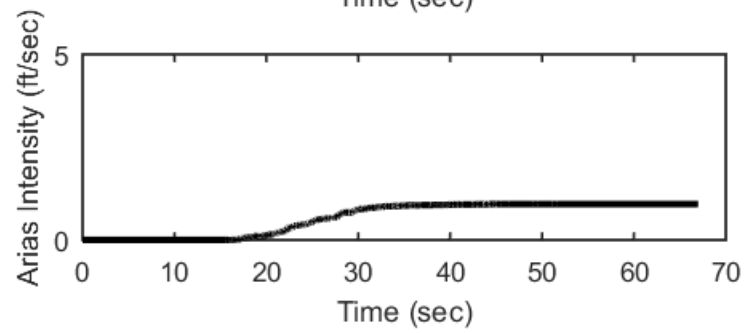
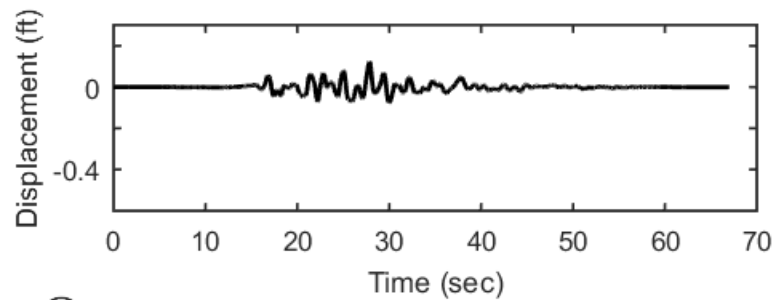
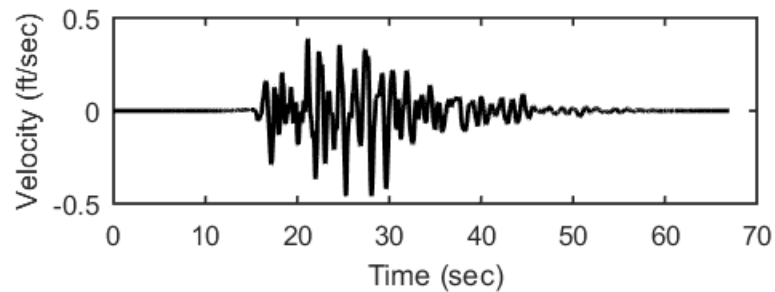
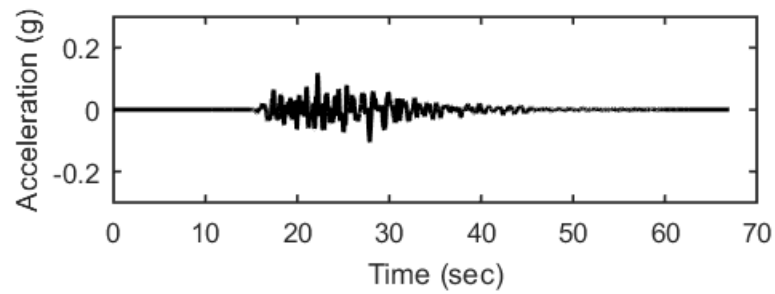


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5

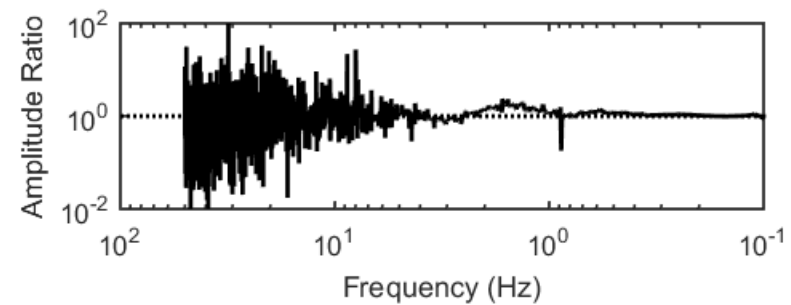
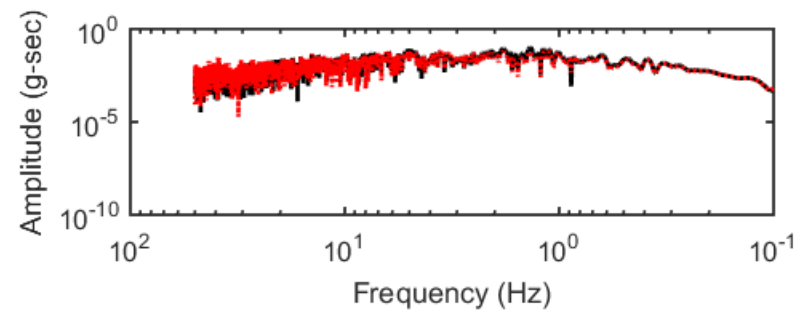
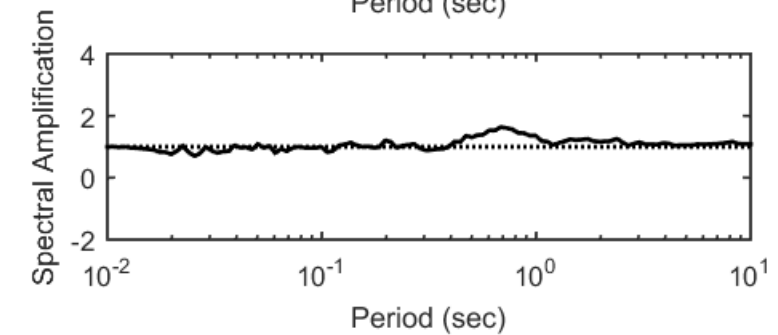
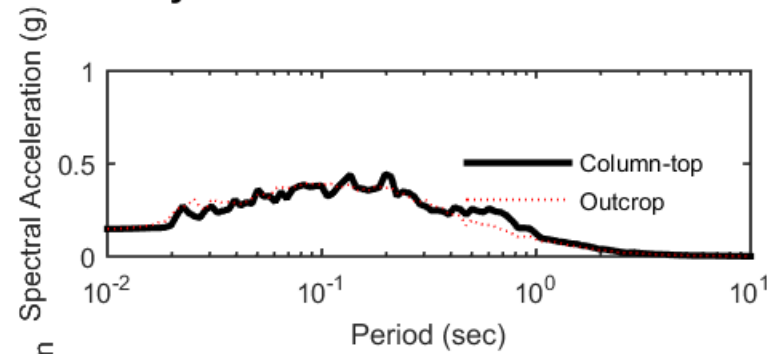
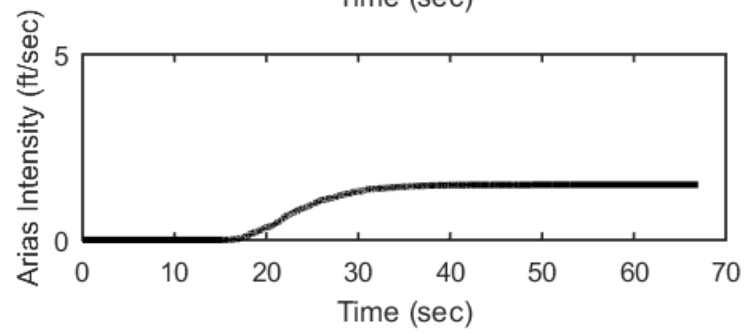
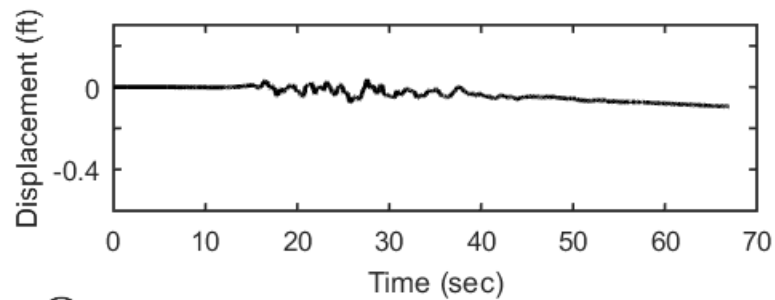
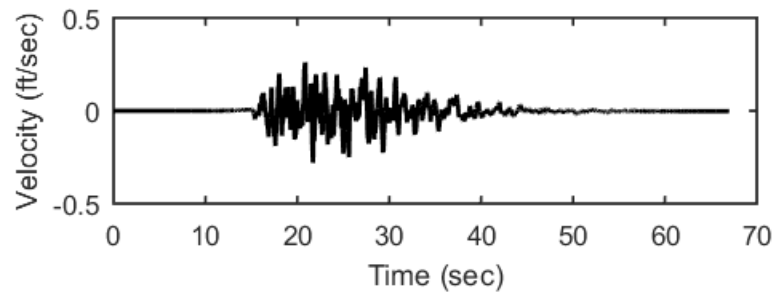
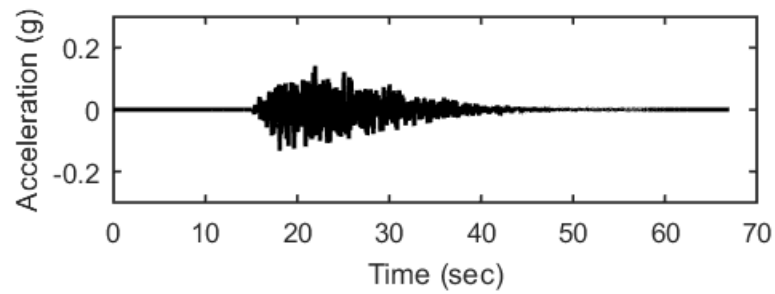




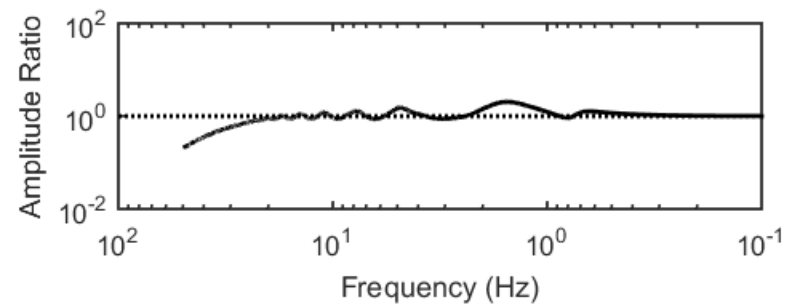
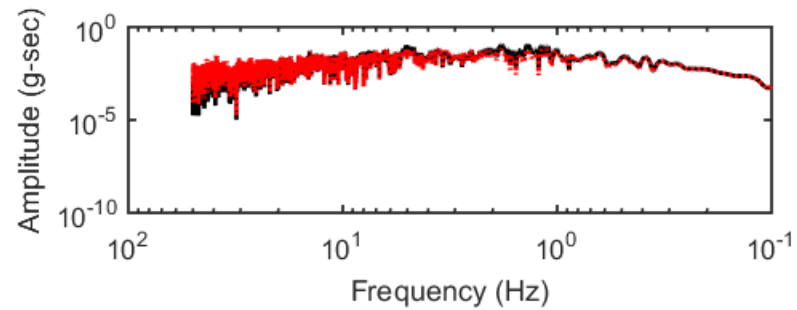
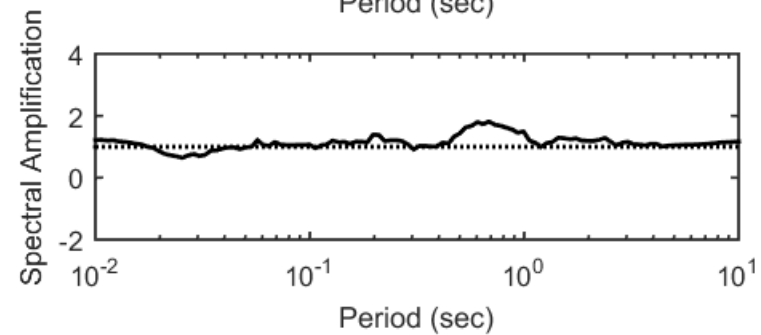
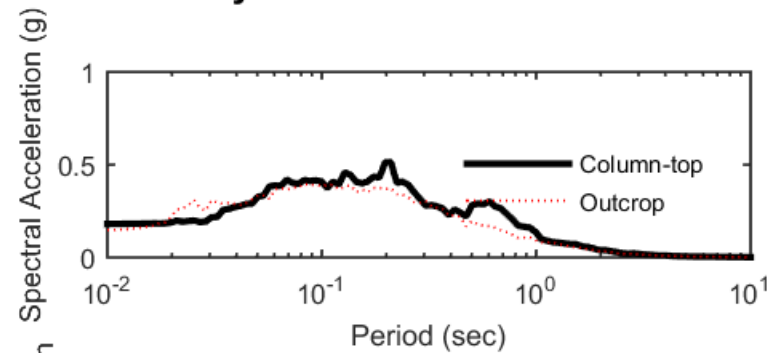
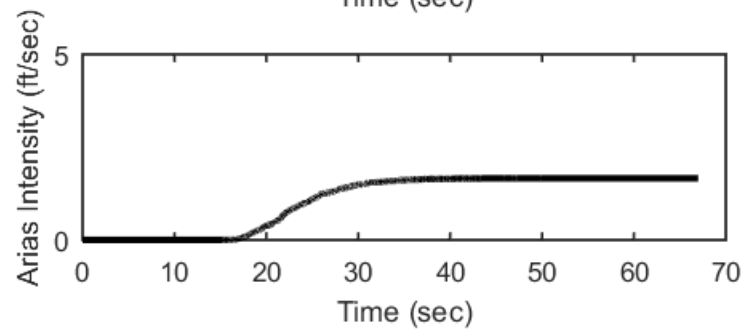
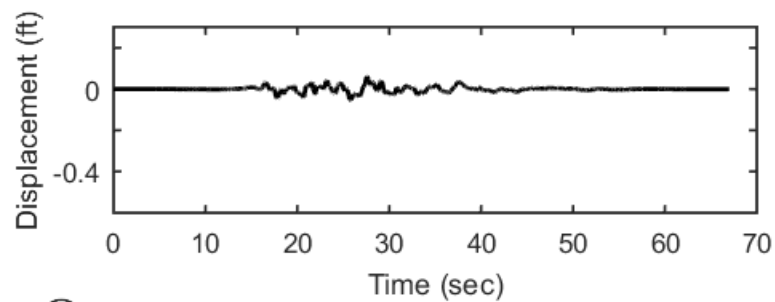
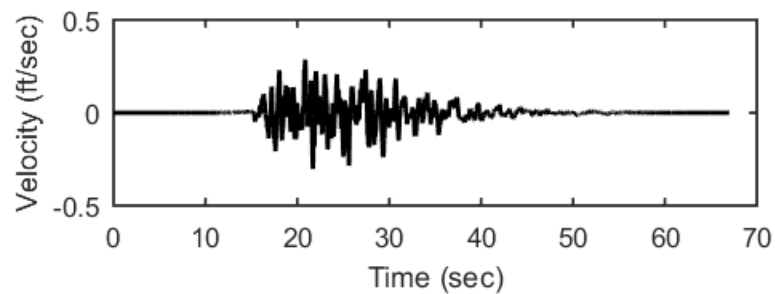
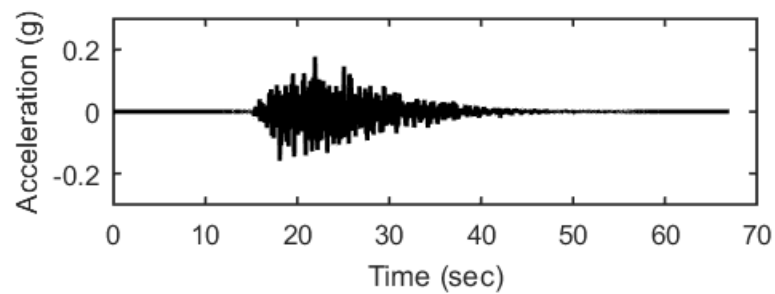
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



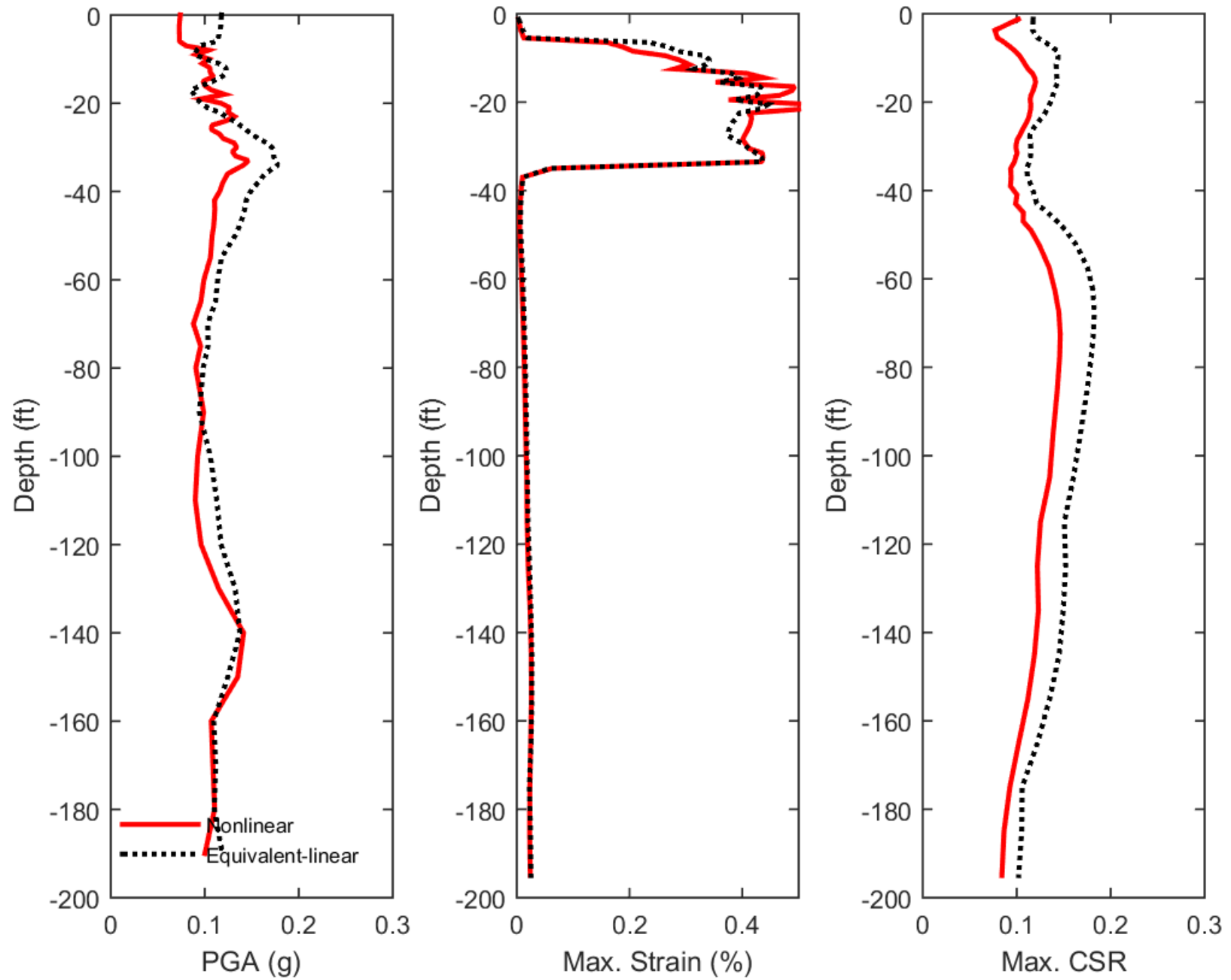
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



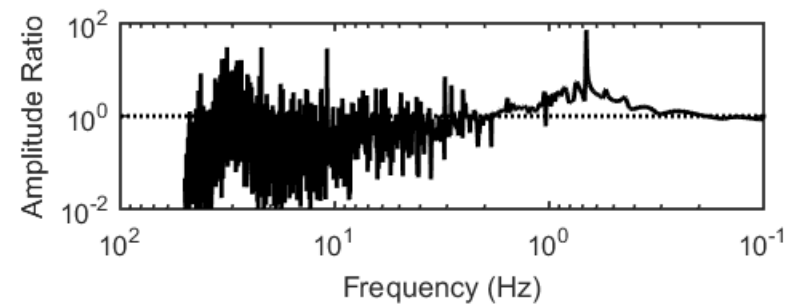
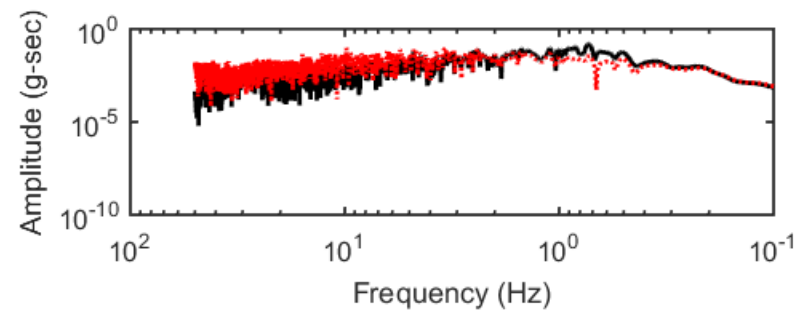
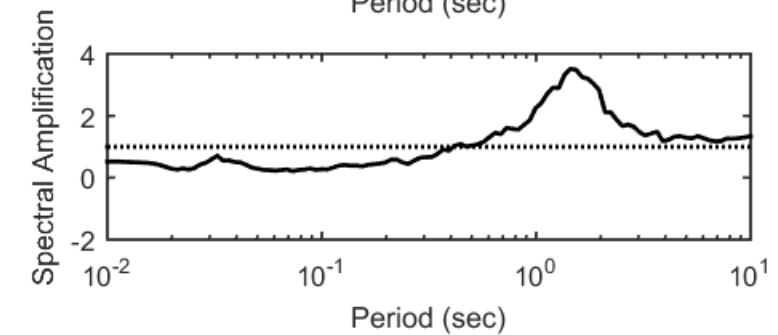
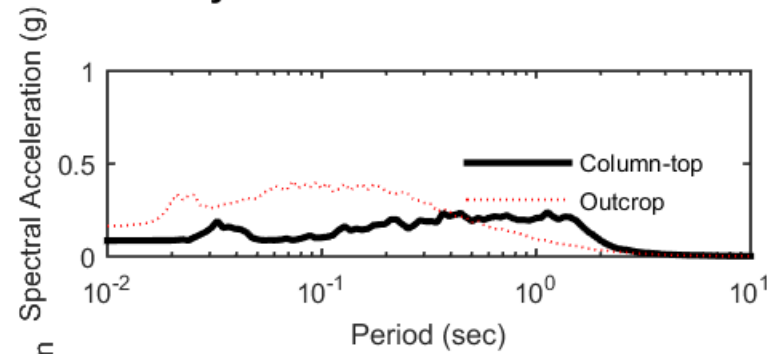
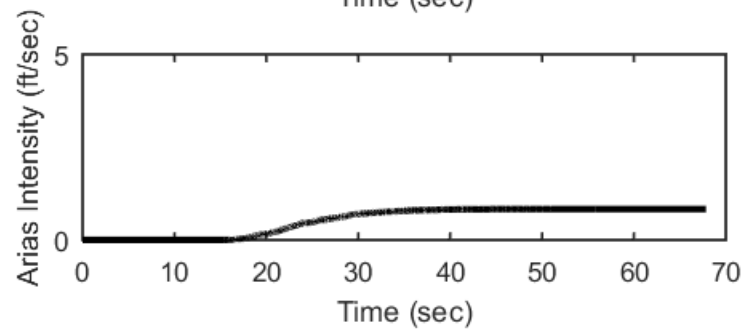
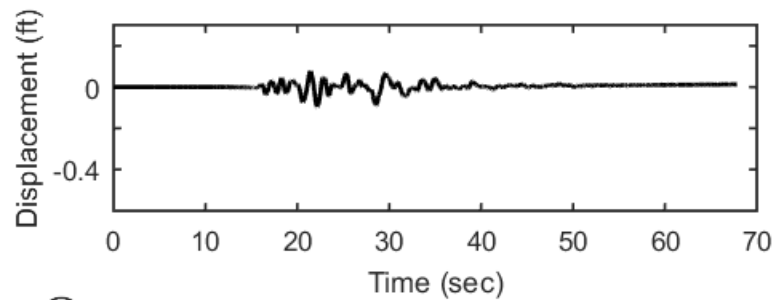
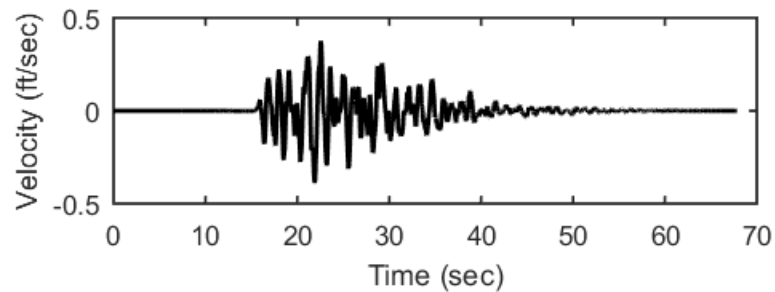
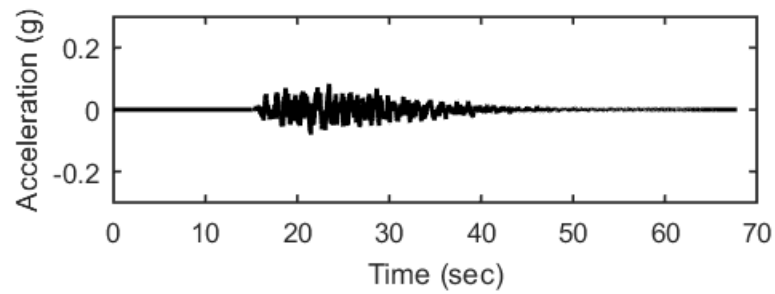
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



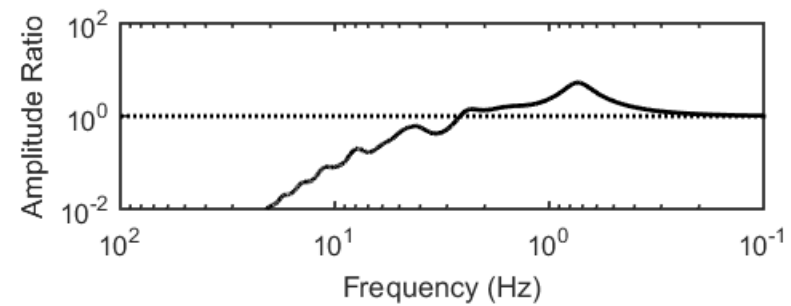
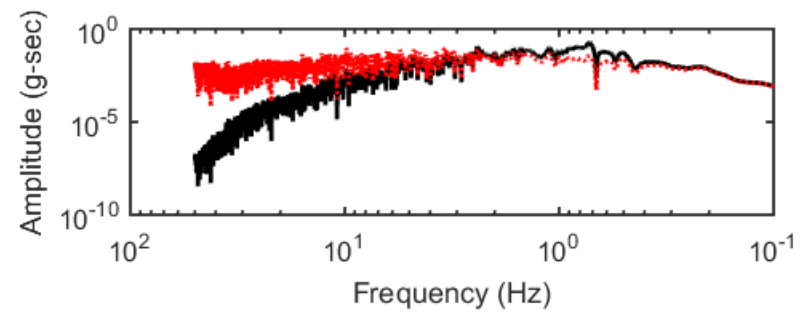
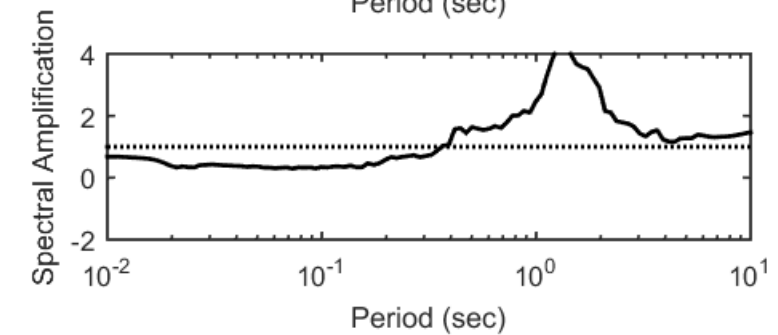
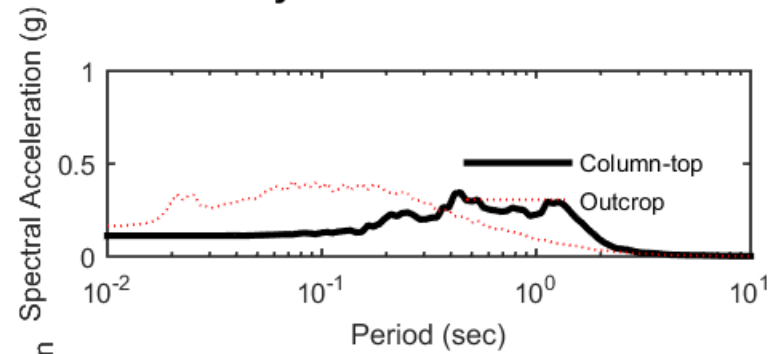
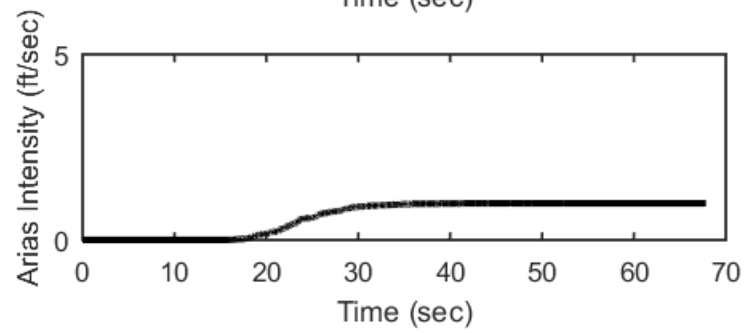
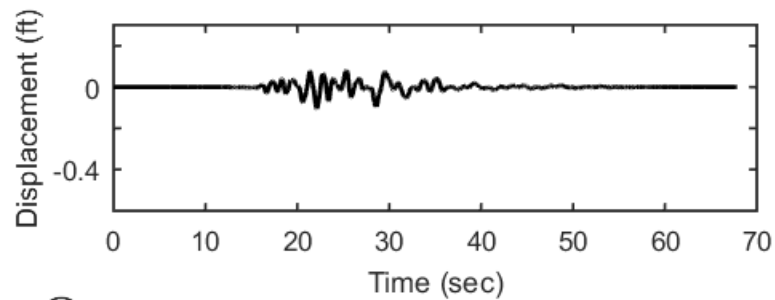
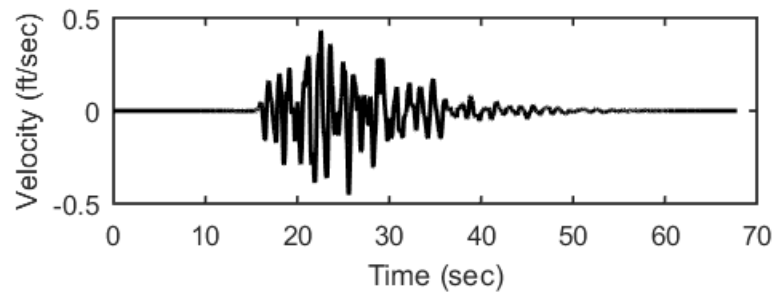
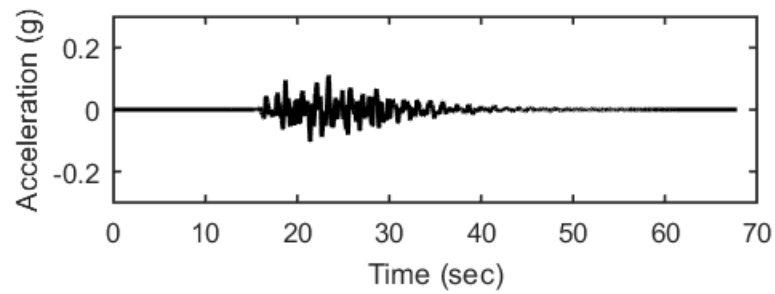
### Profile outputs for Motion: FEE5



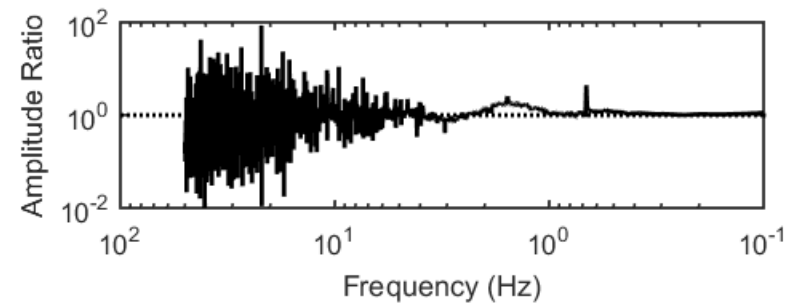
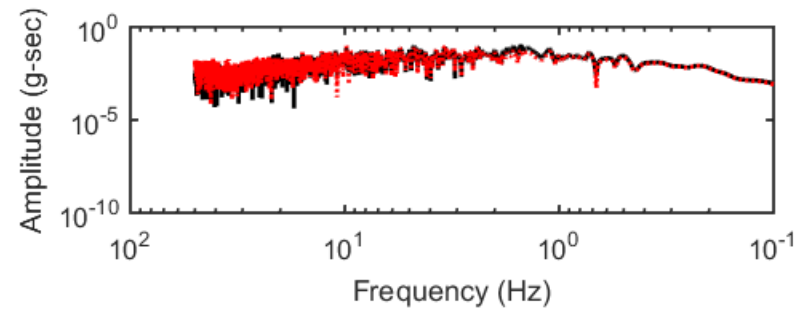
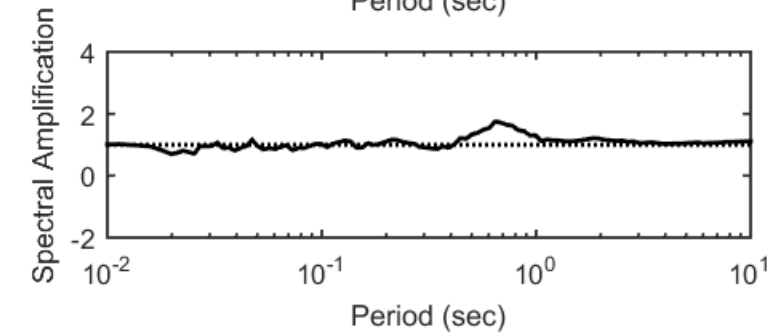
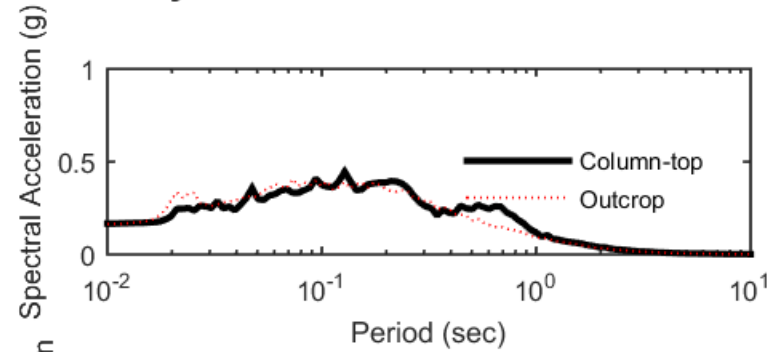
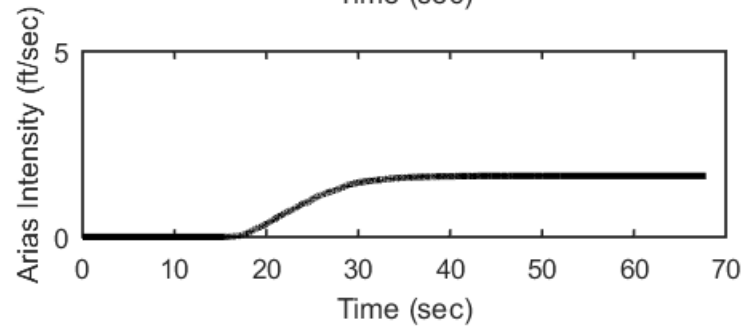
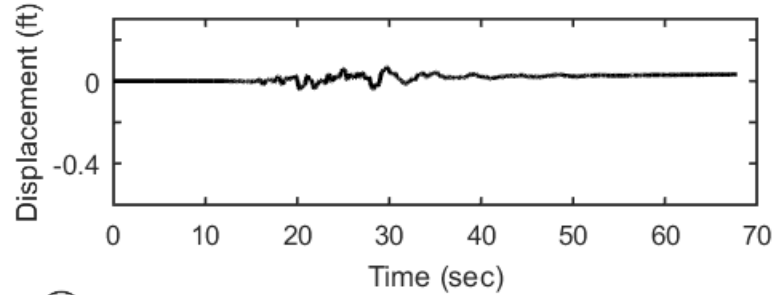
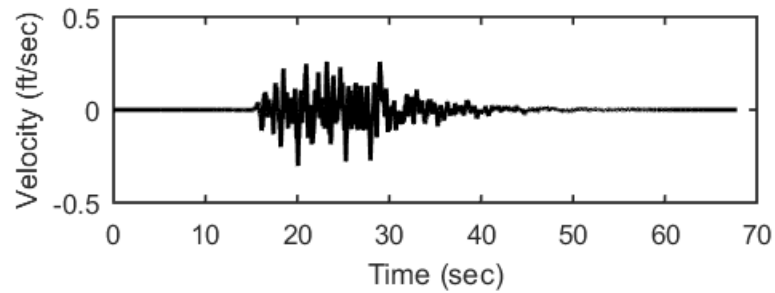
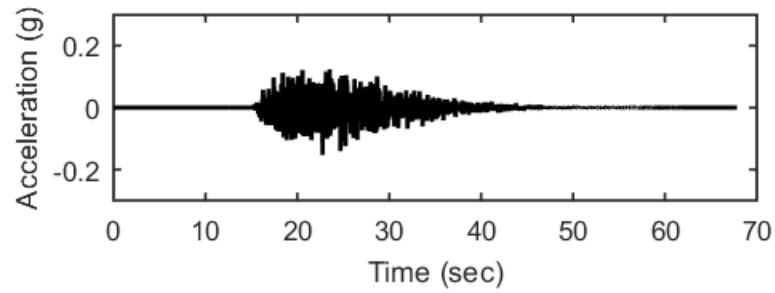
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



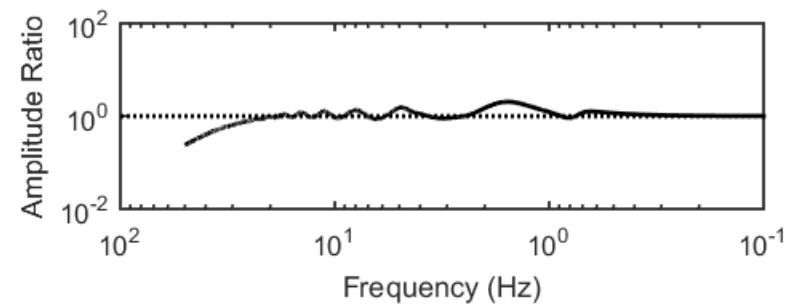
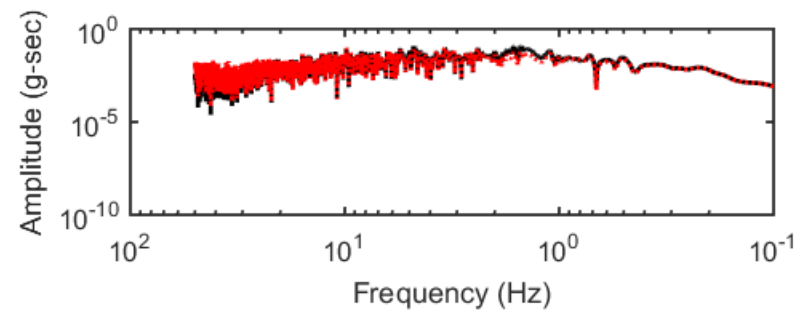
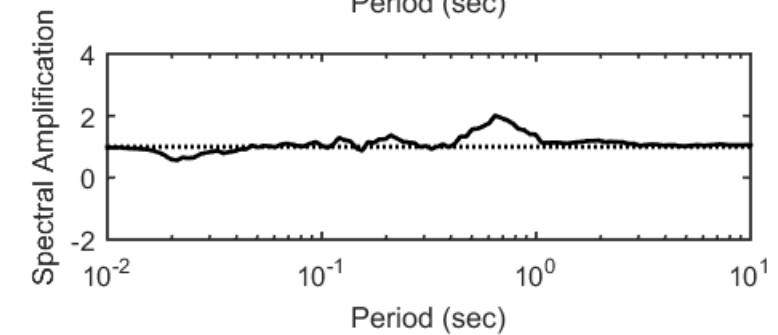
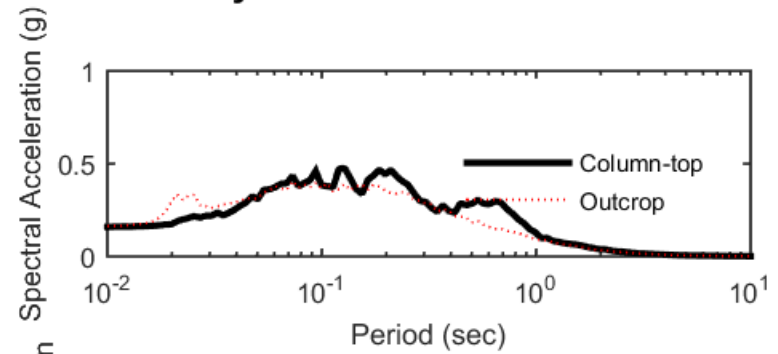
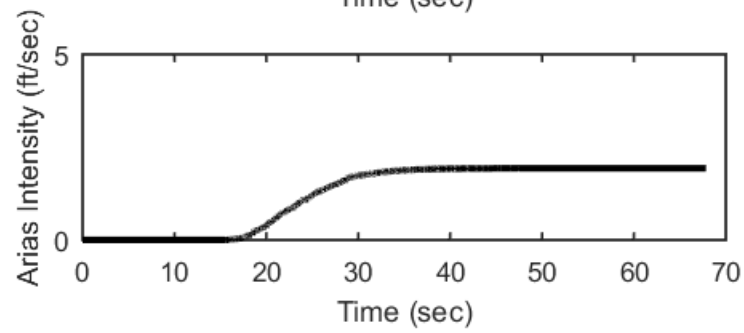
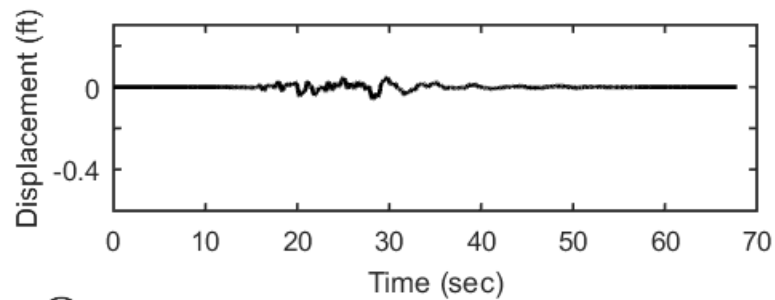
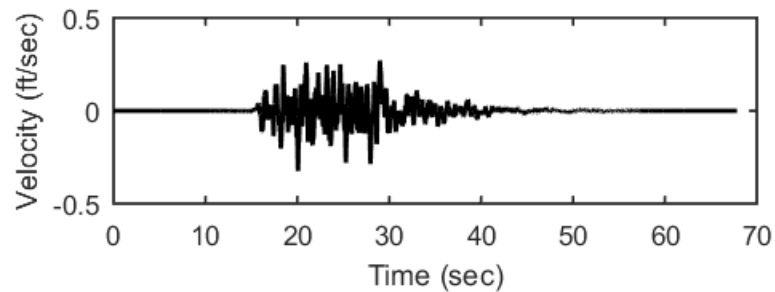
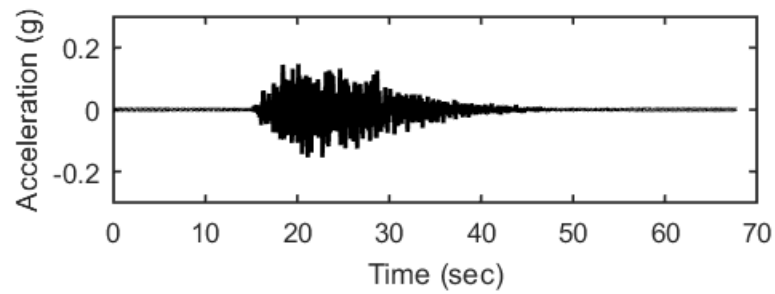
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6

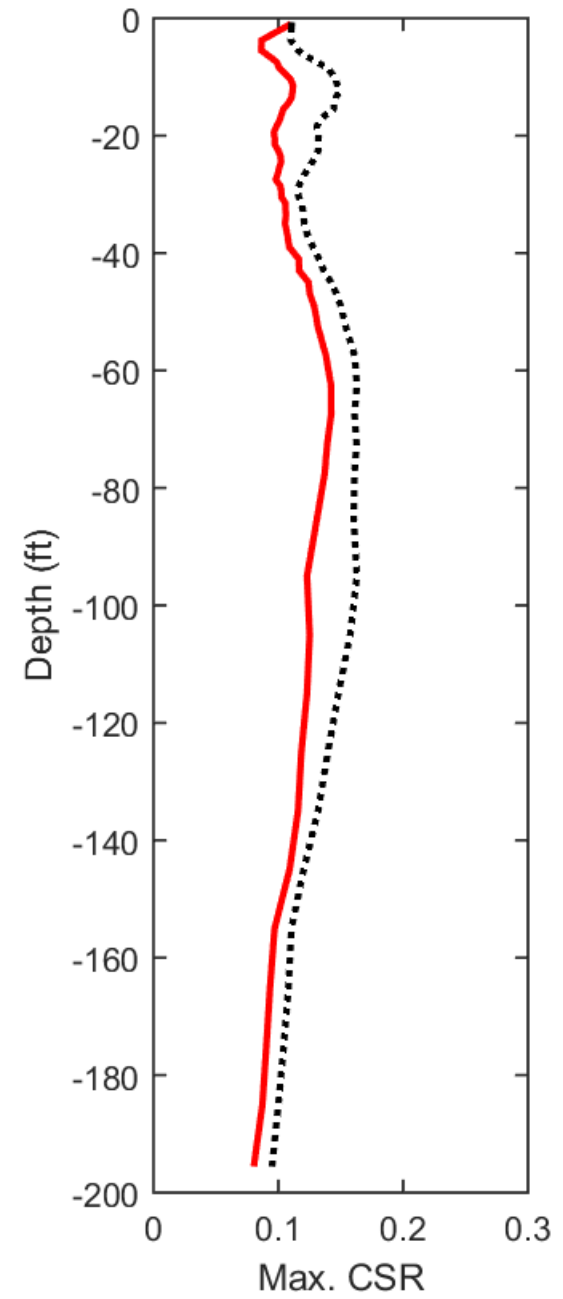
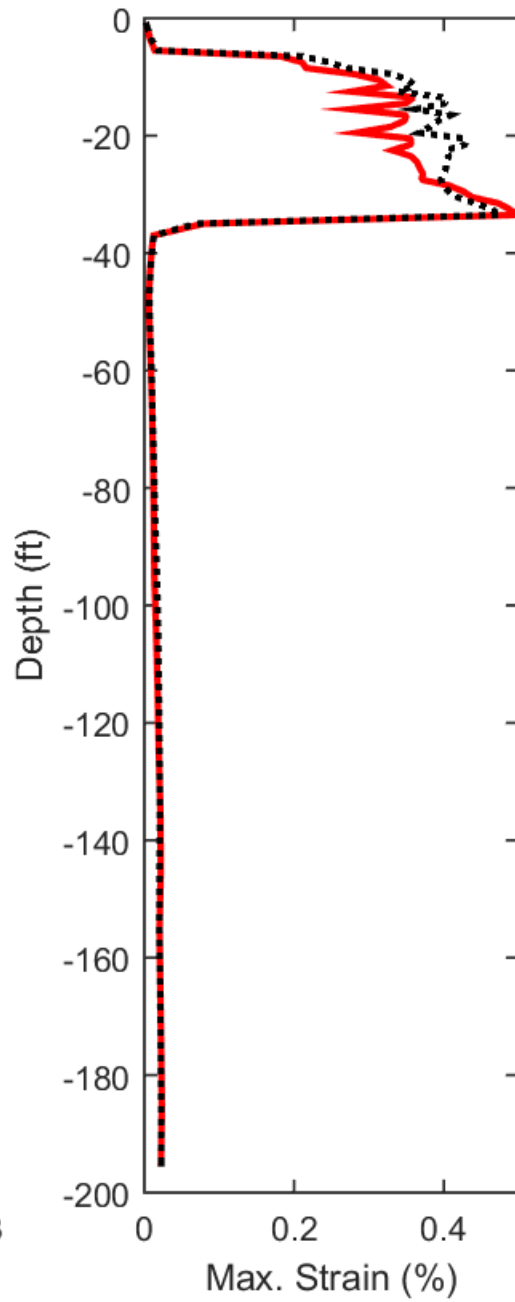
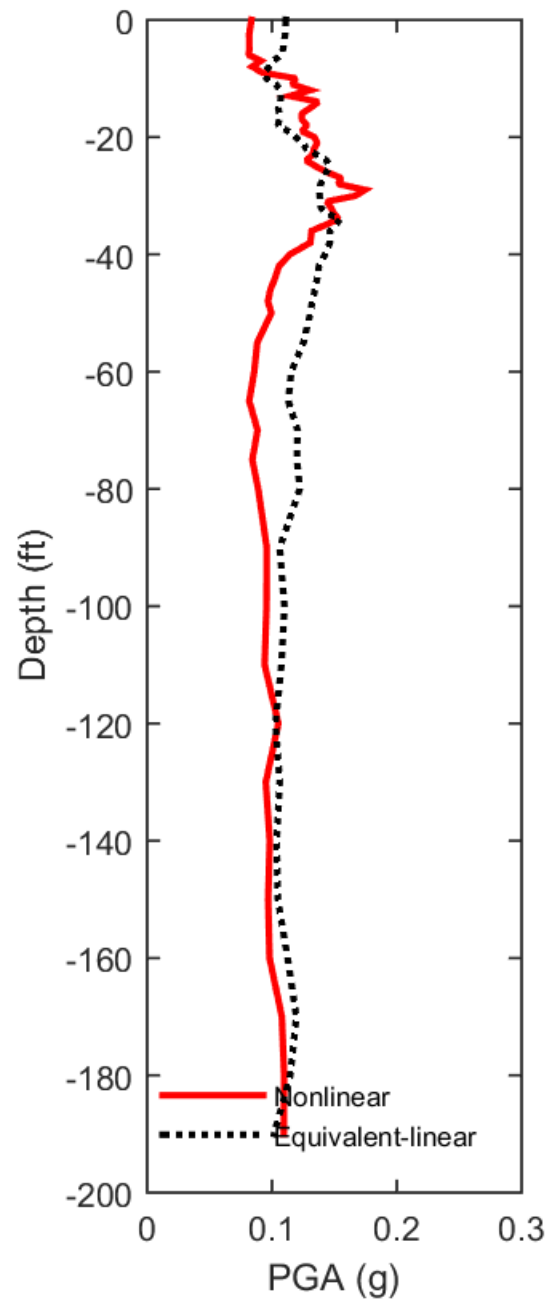


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6

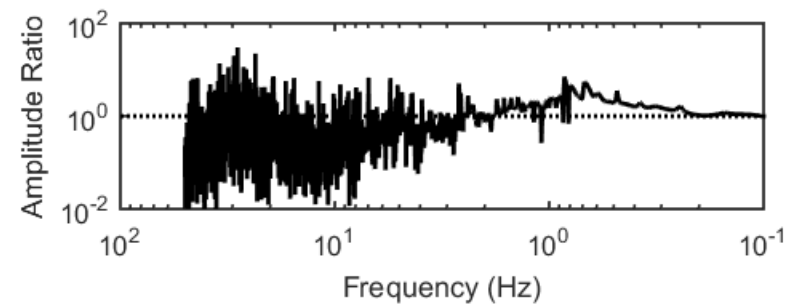
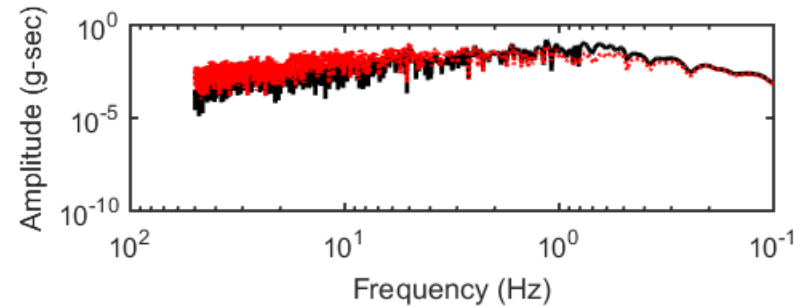
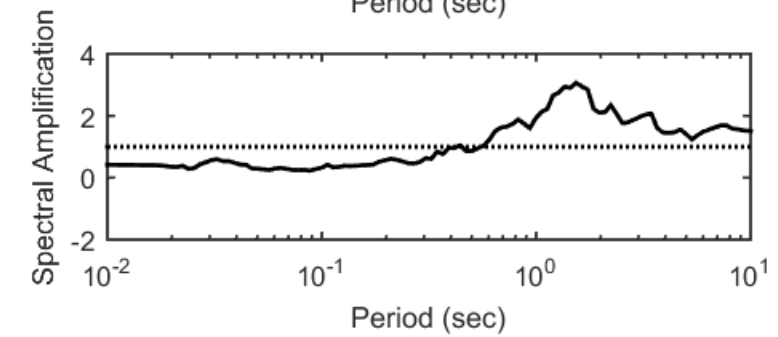
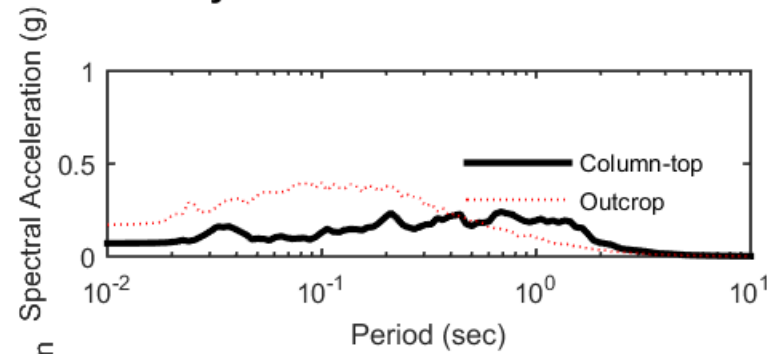
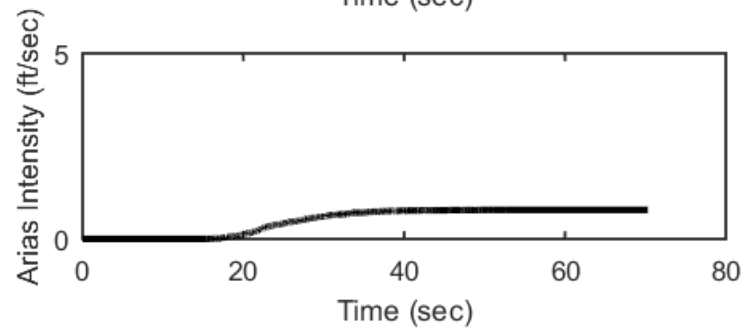
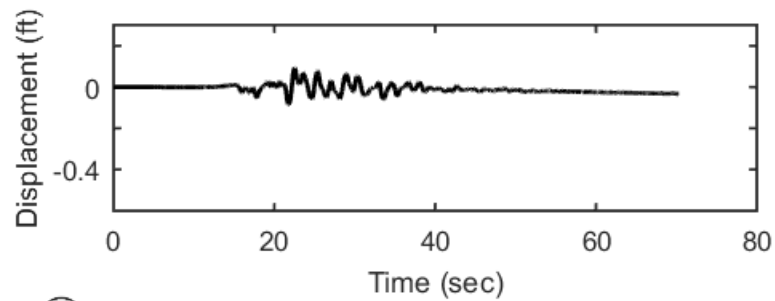
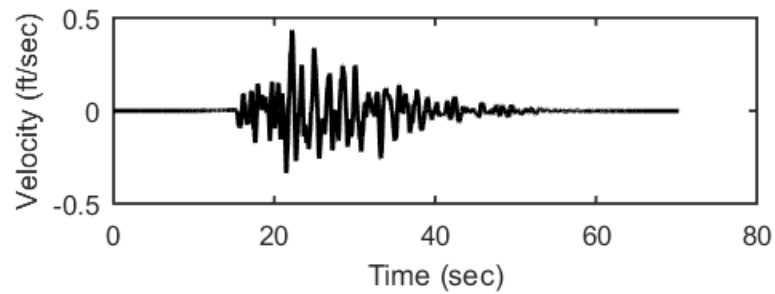
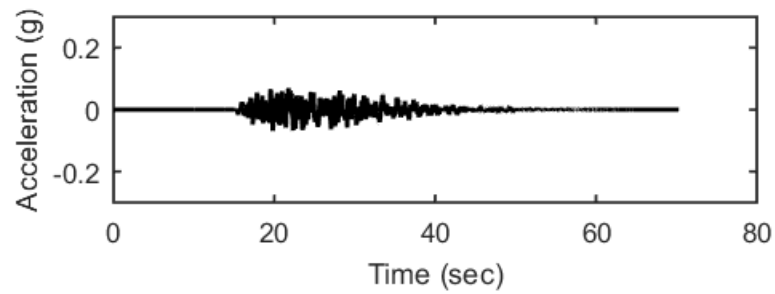




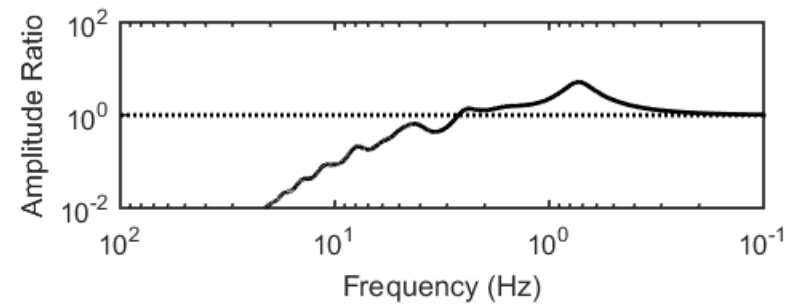
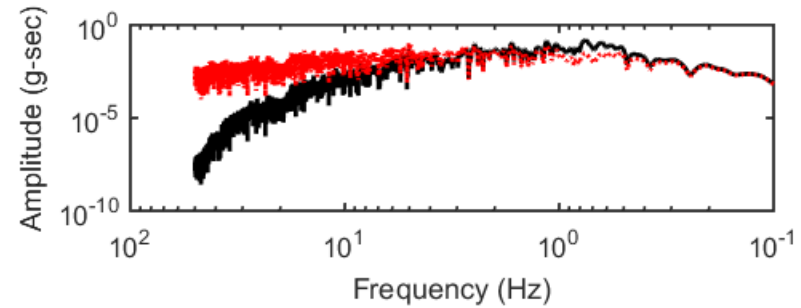
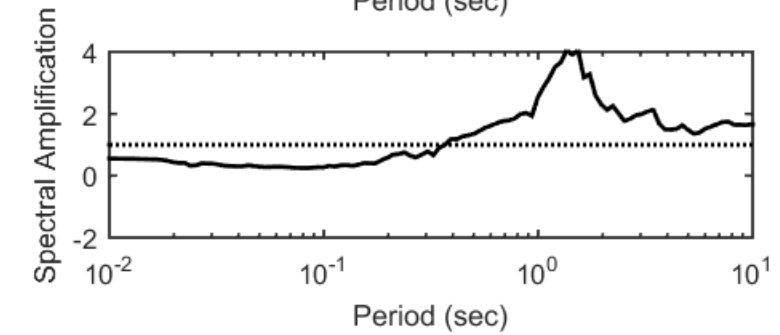
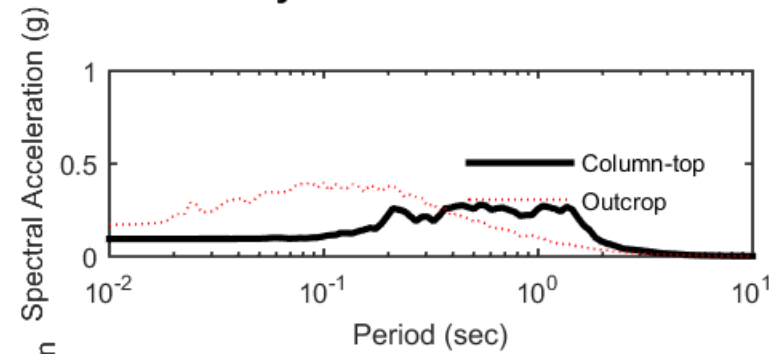
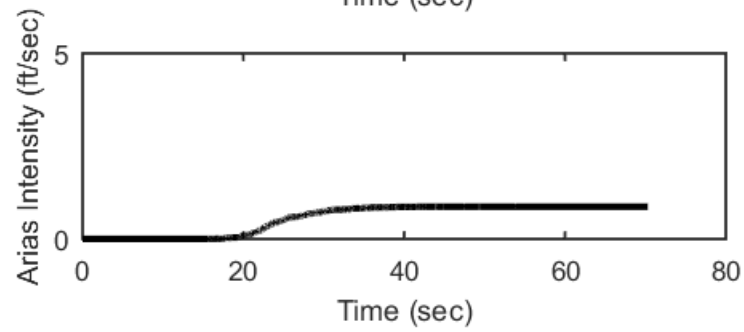
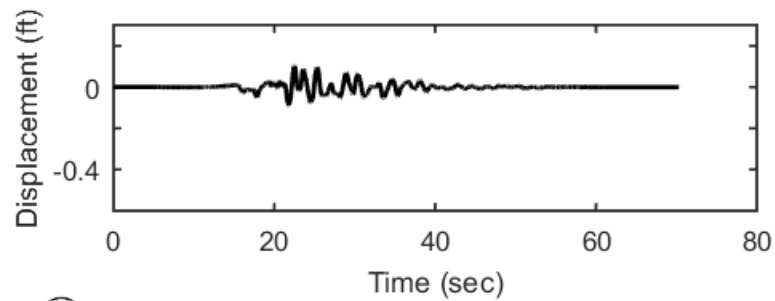
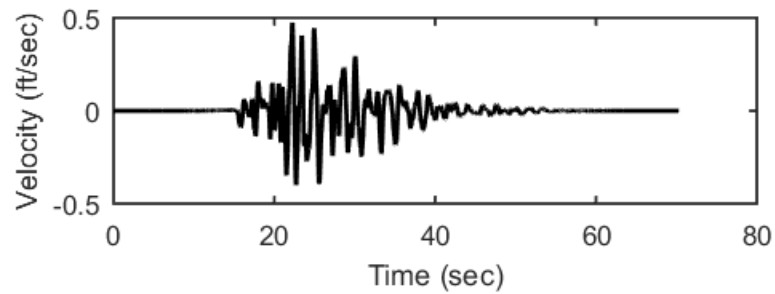
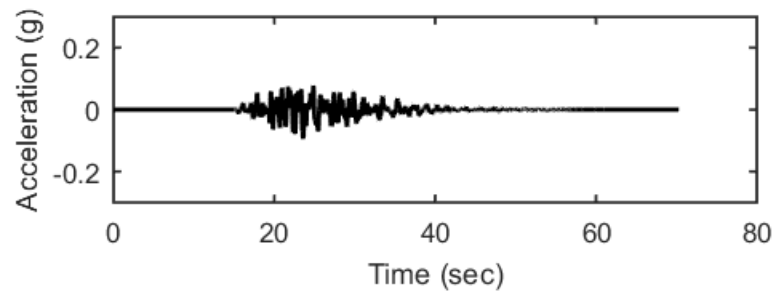
### Profile outputs for Motion: FEE6



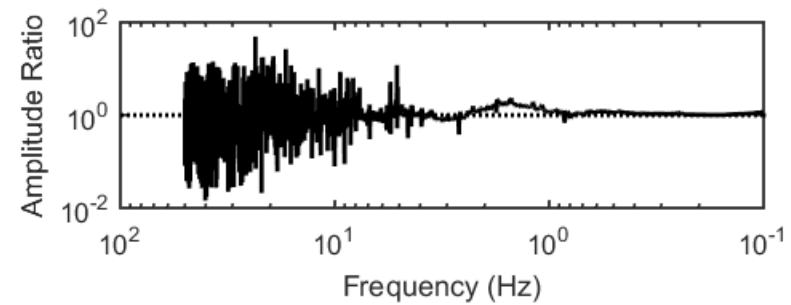
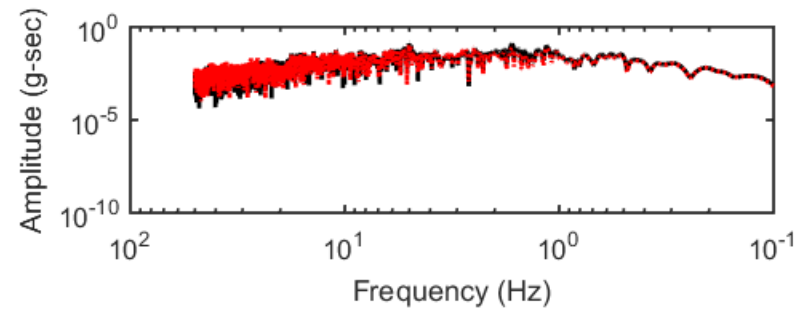
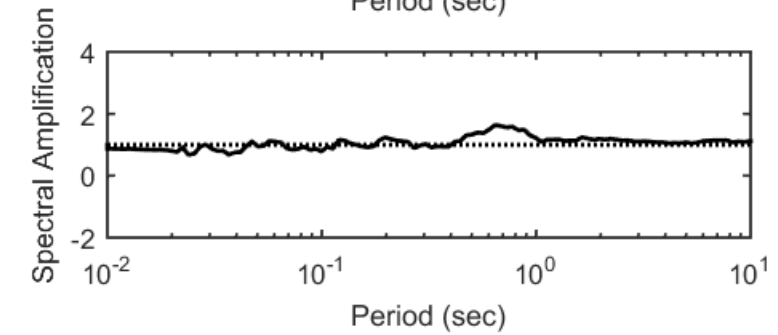
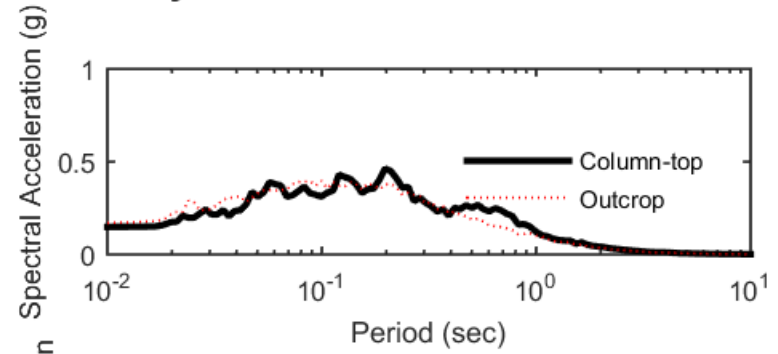
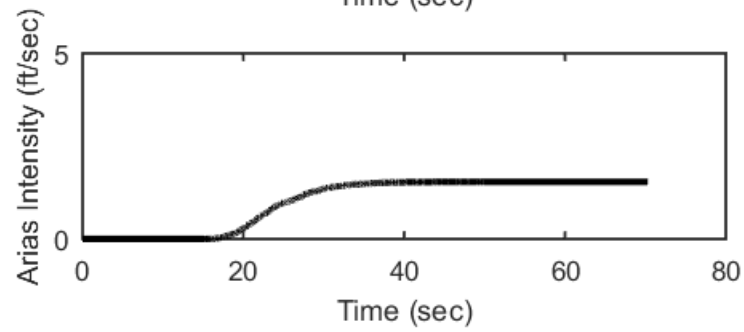
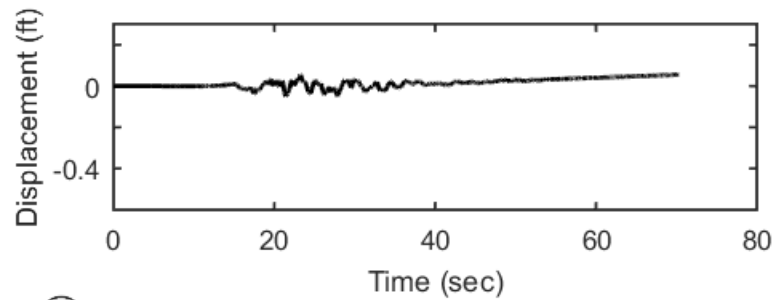
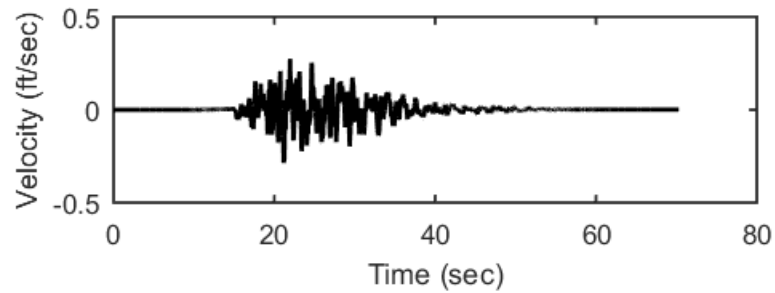
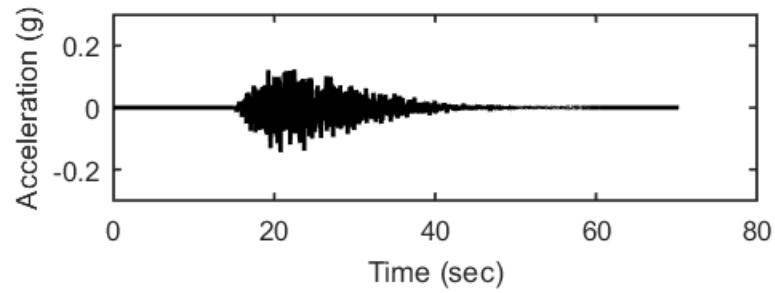
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



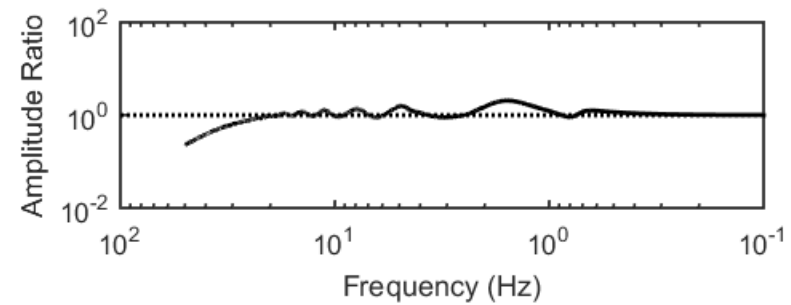
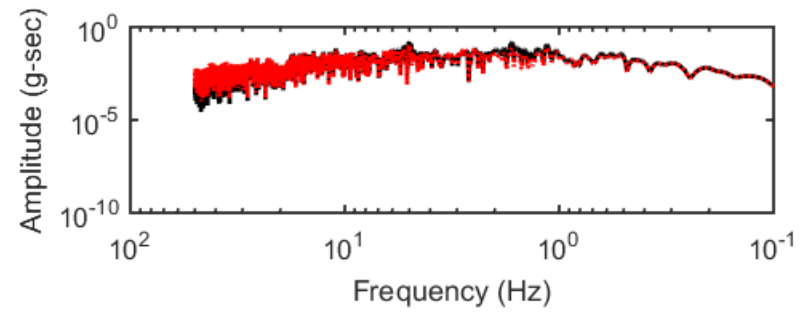
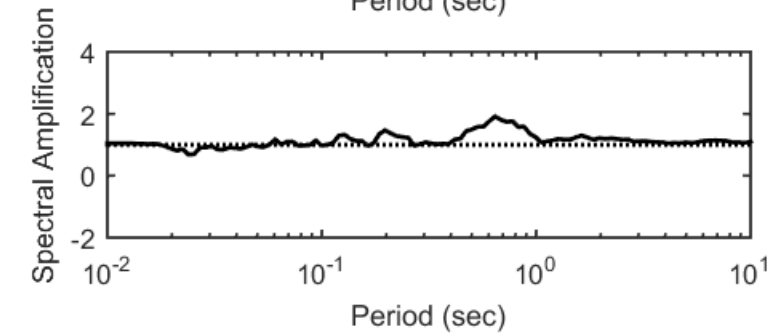
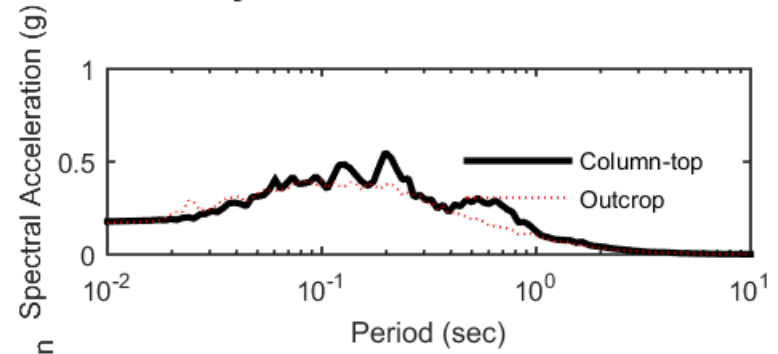
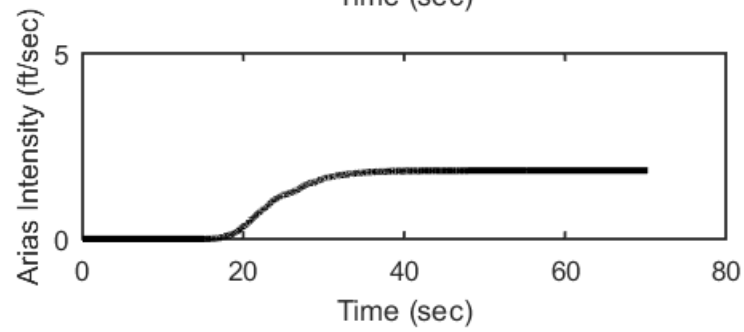
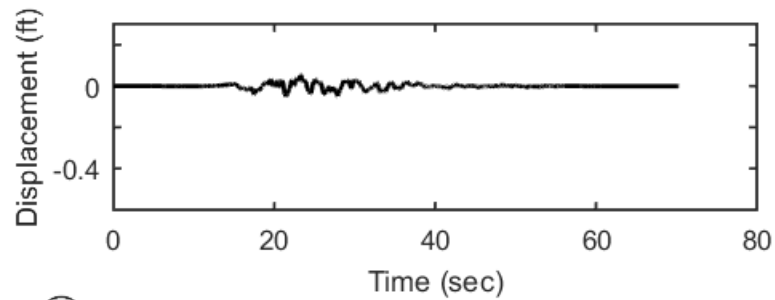
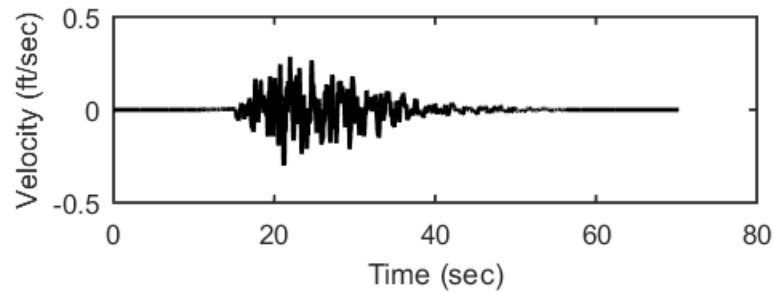
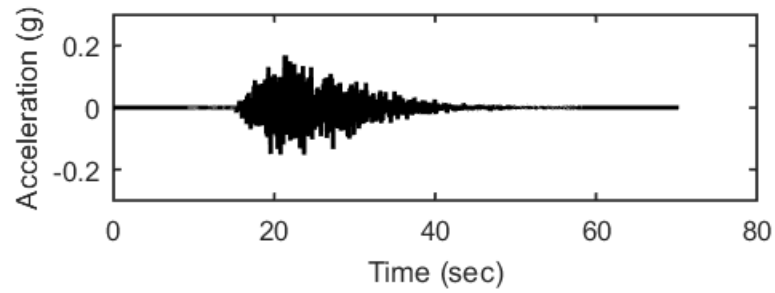
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



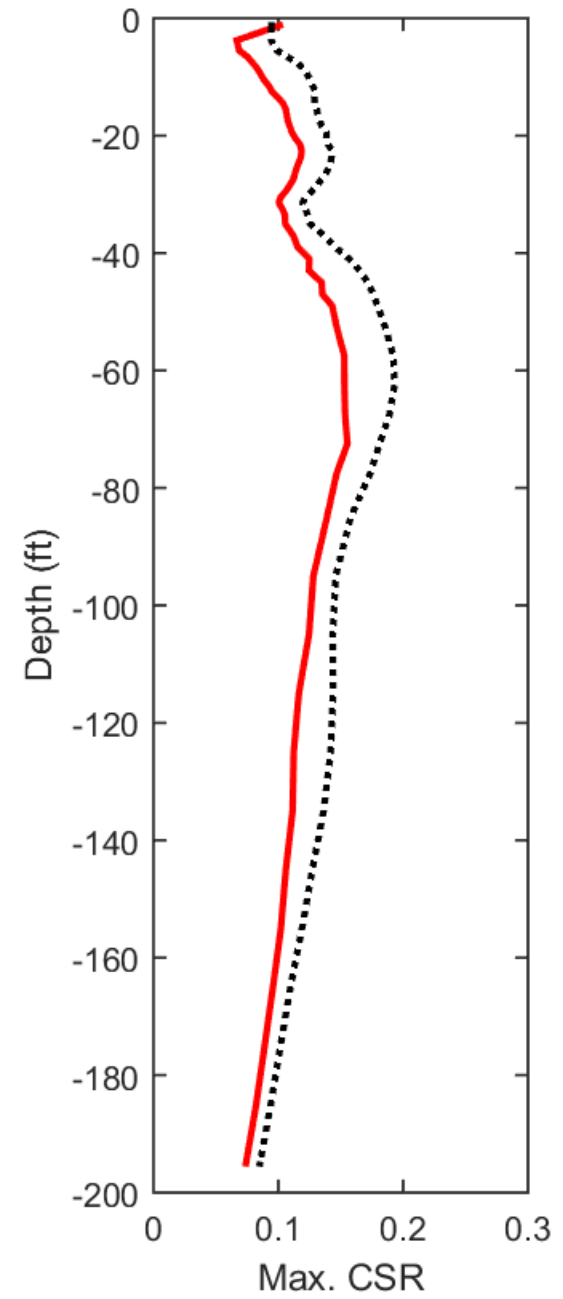
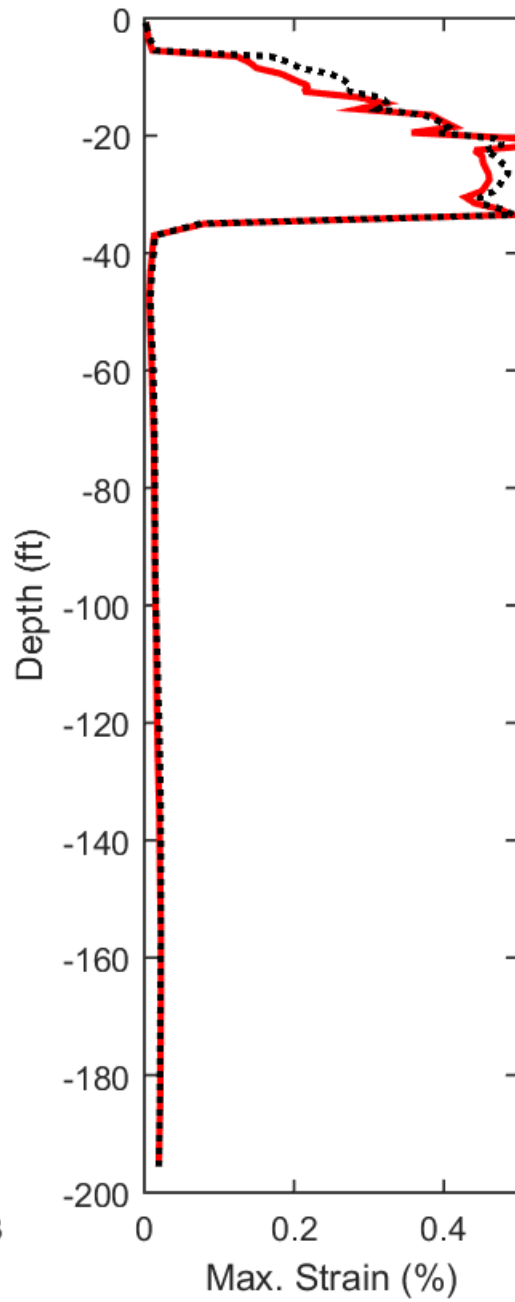
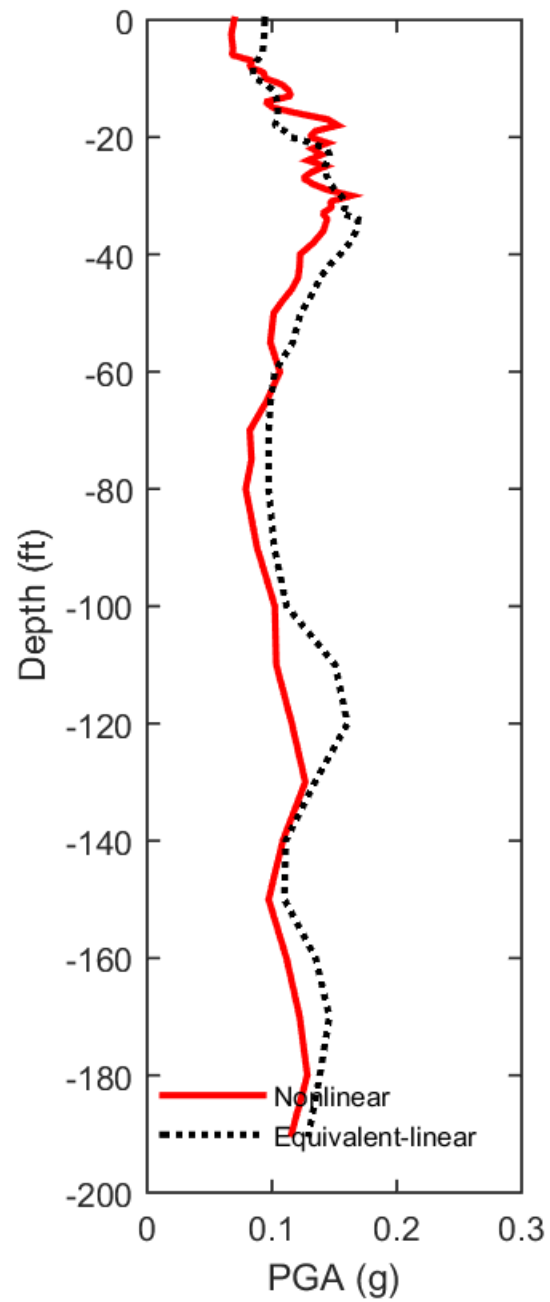
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



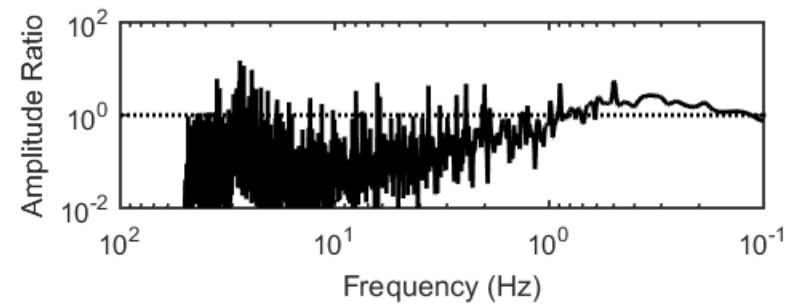
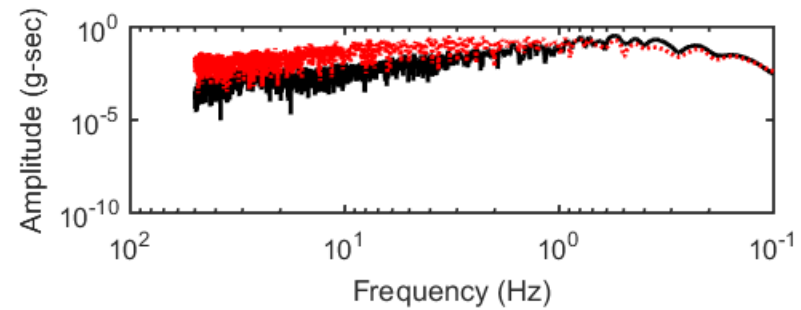
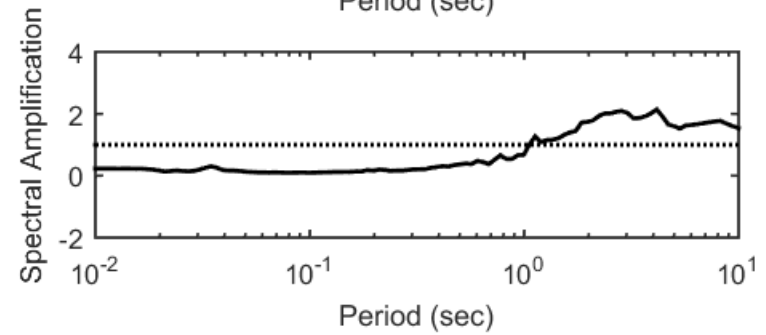
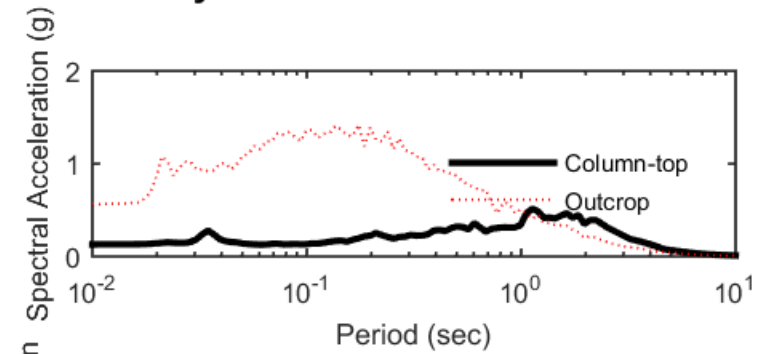
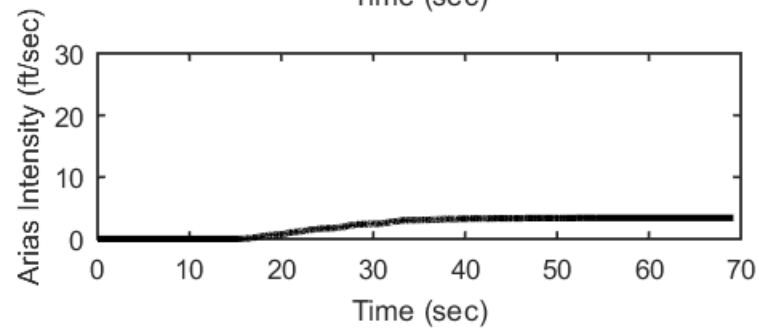
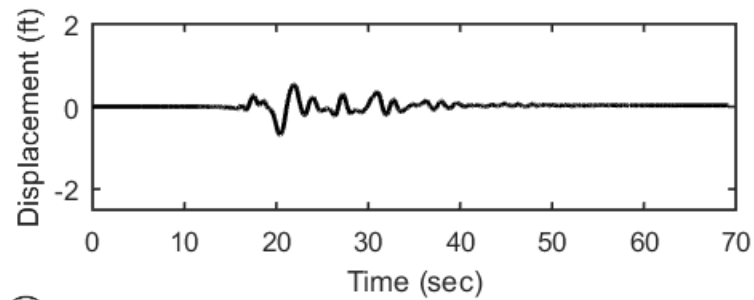
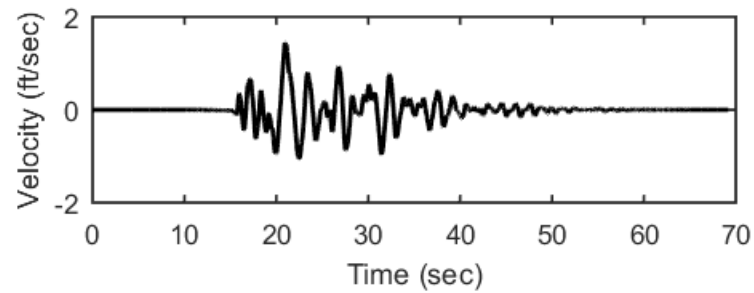
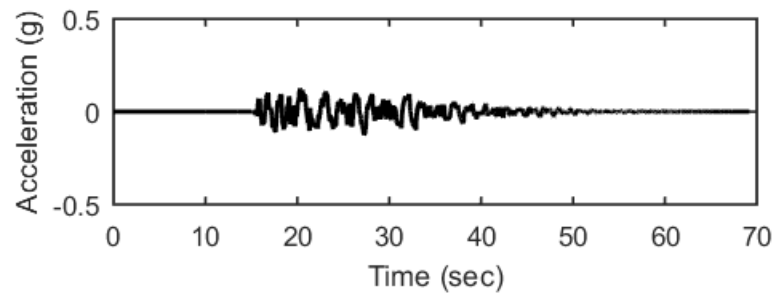
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



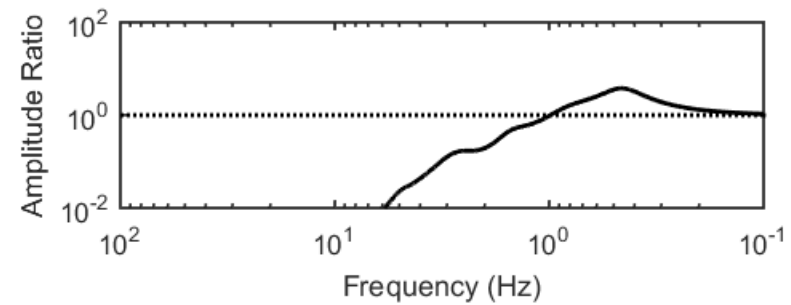
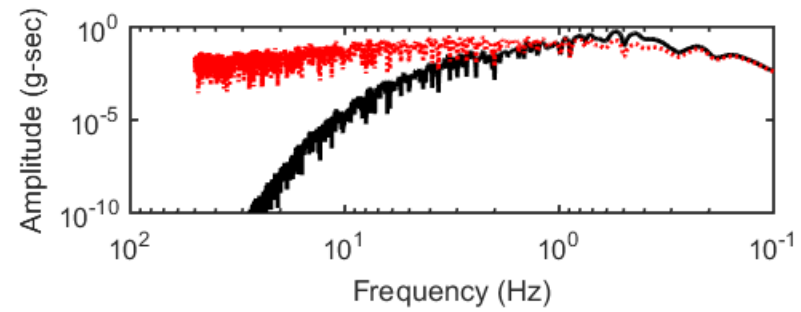
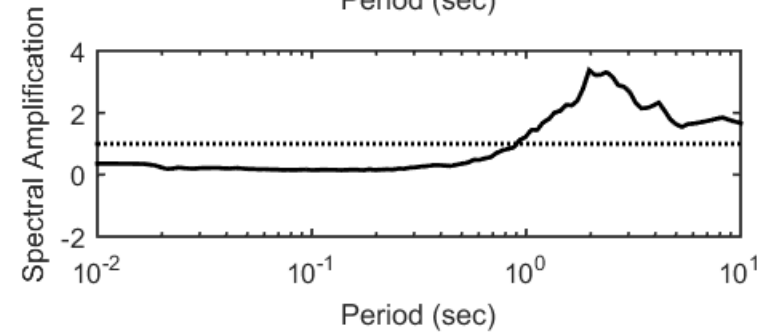
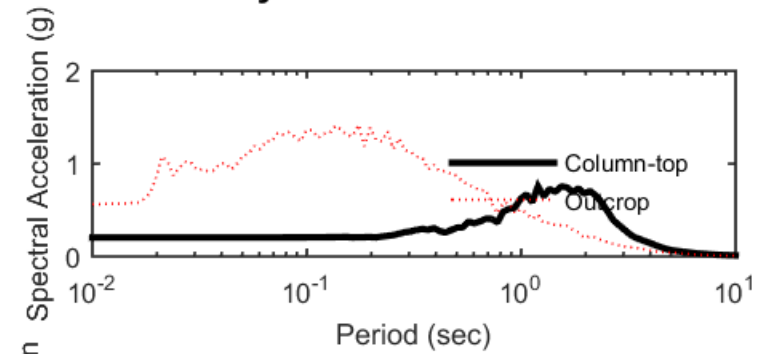
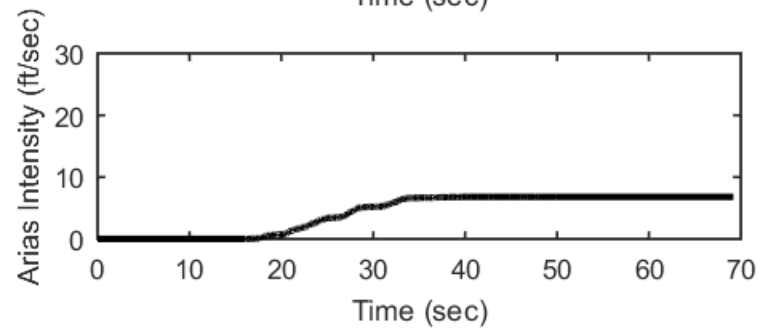
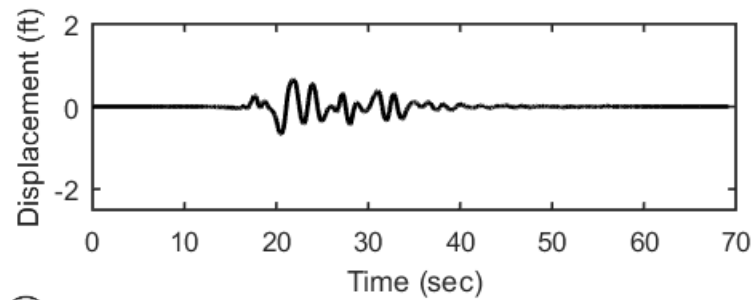
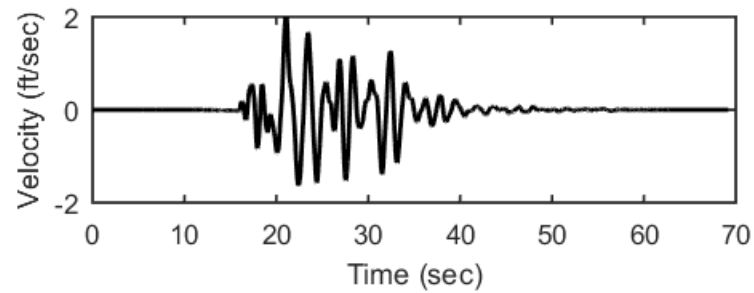
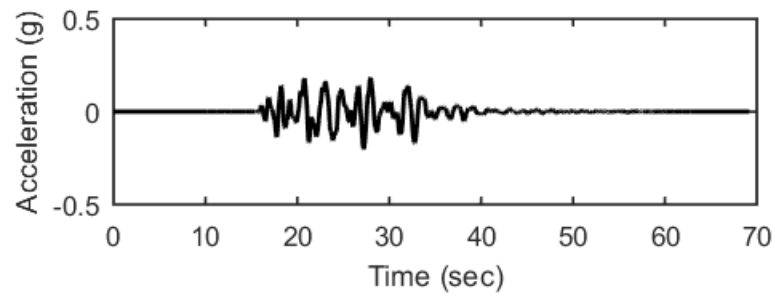
### Profile outputs for Motion: FEE7



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1

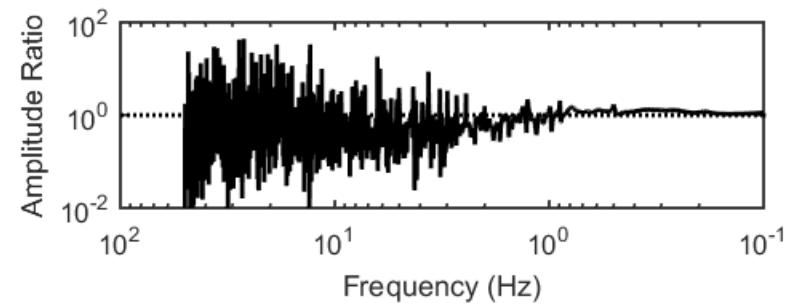
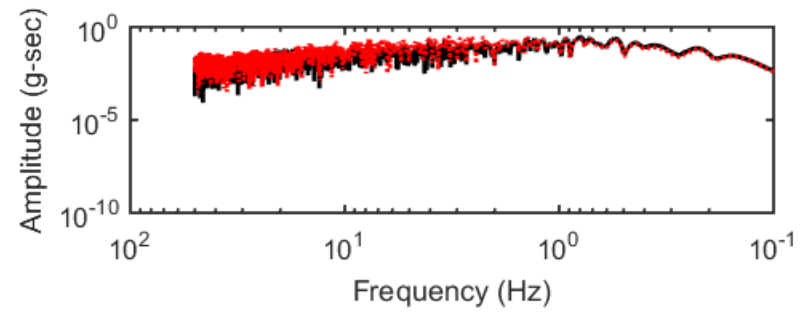
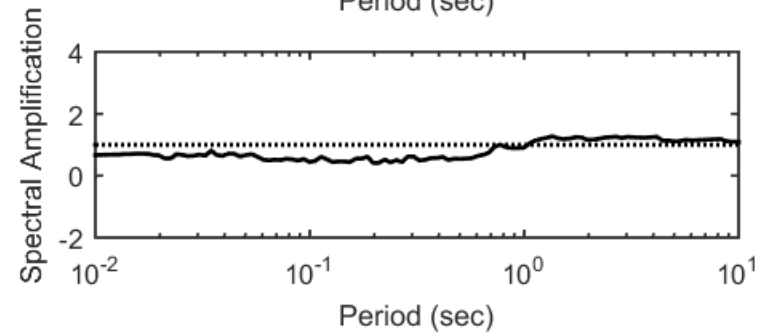
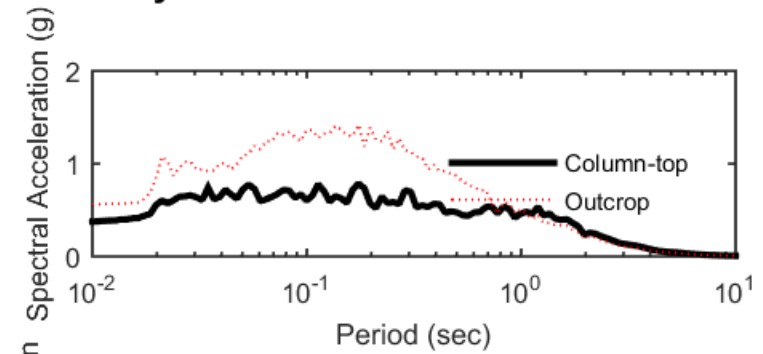
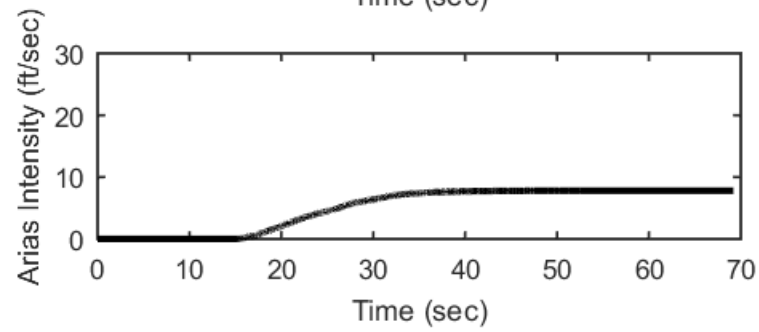
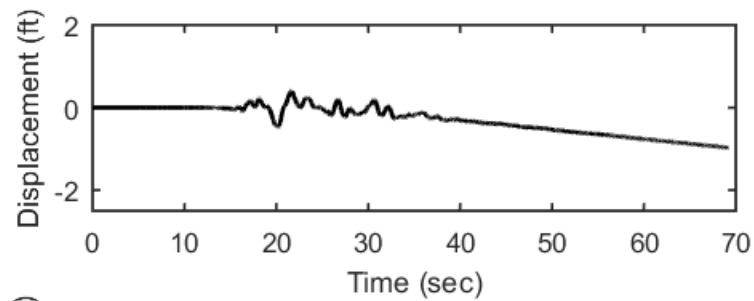
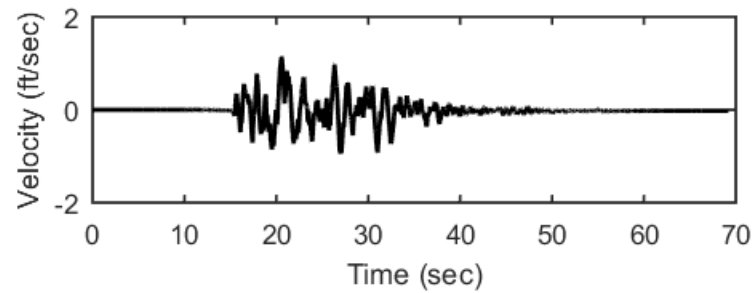
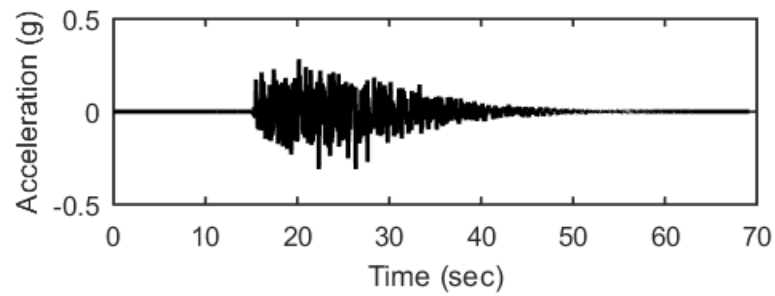


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1

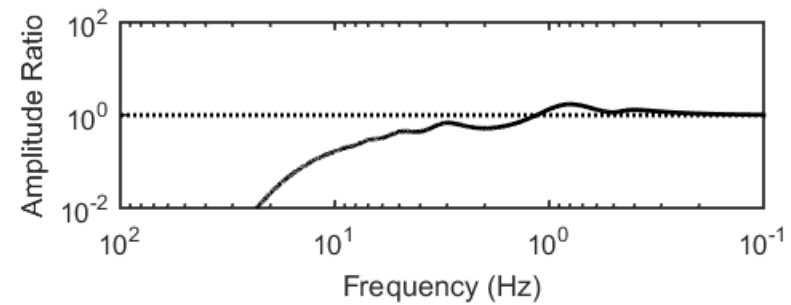
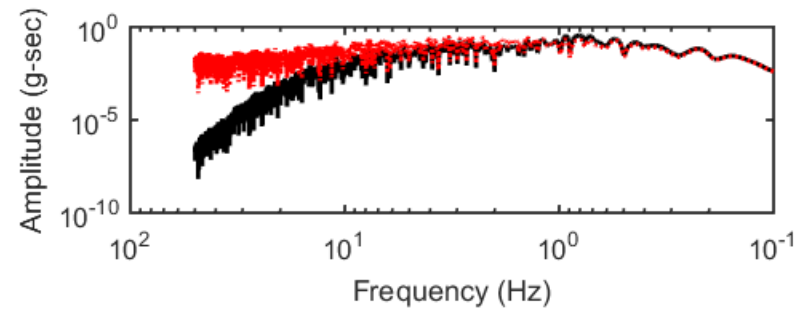
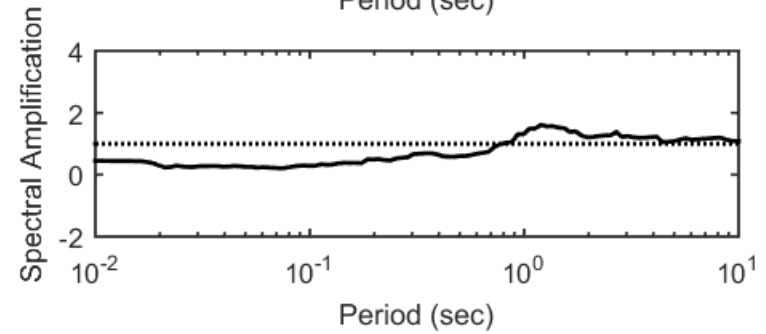
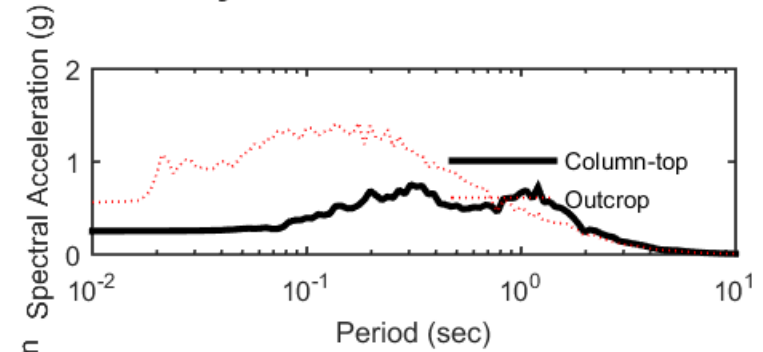
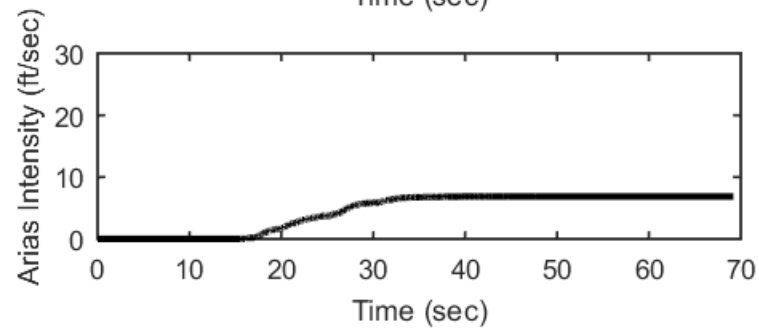
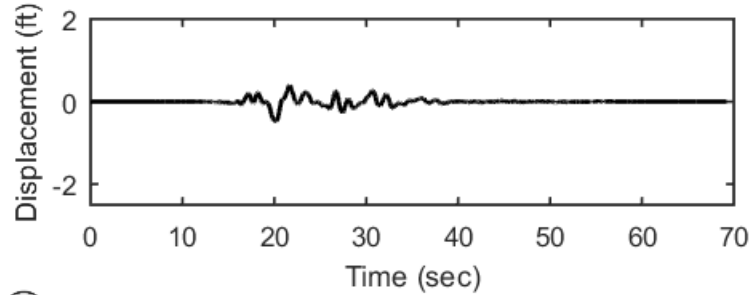
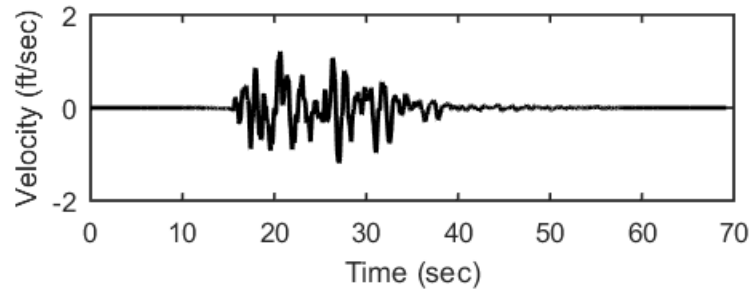
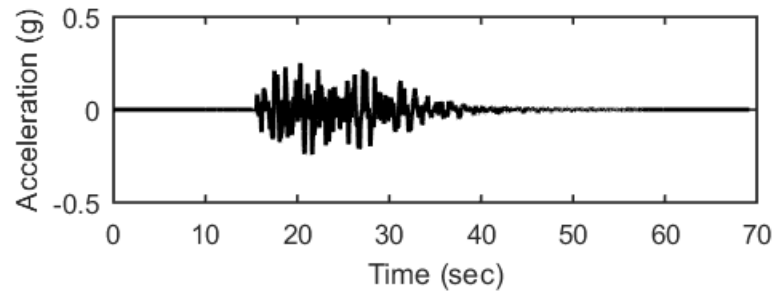




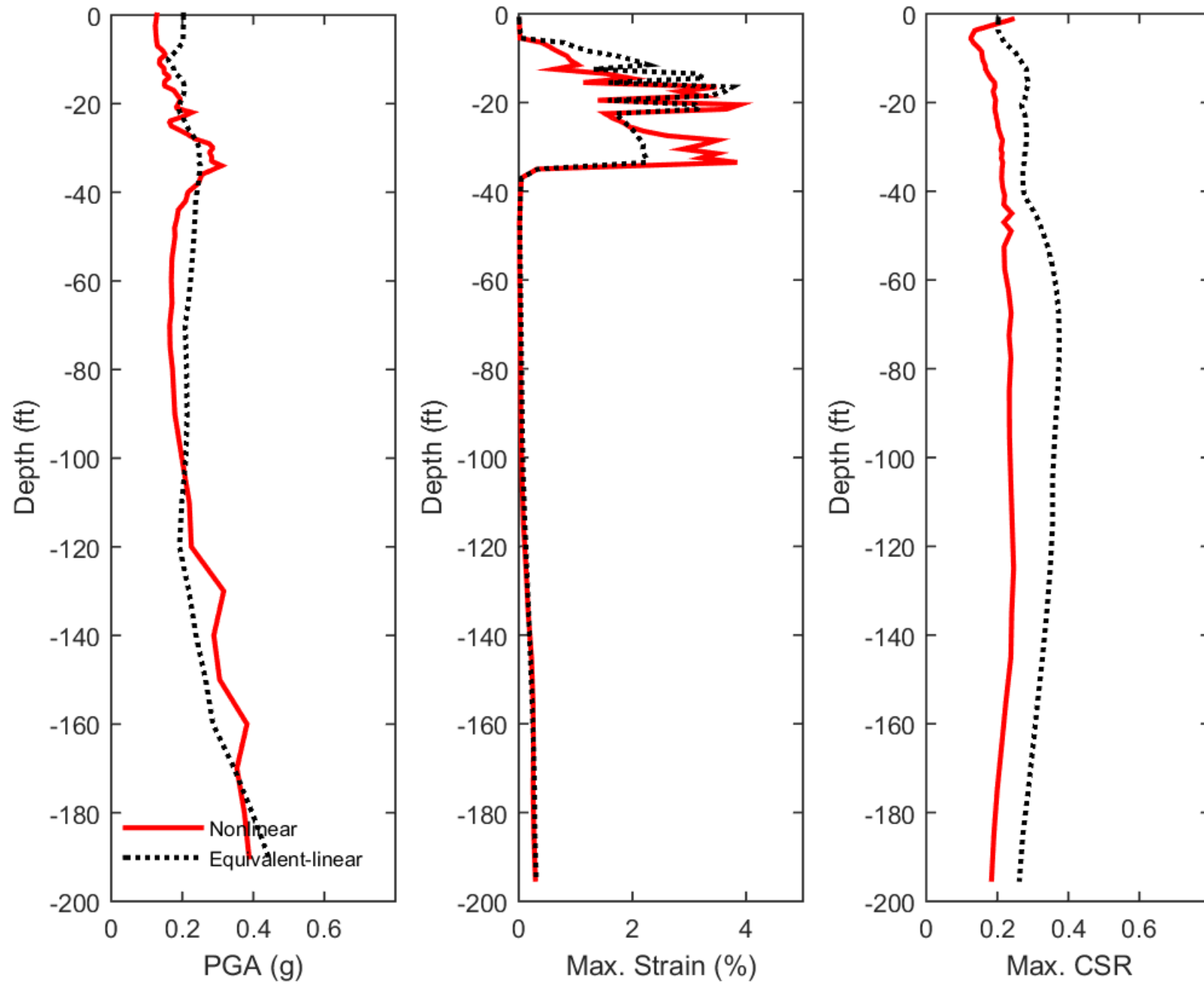
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



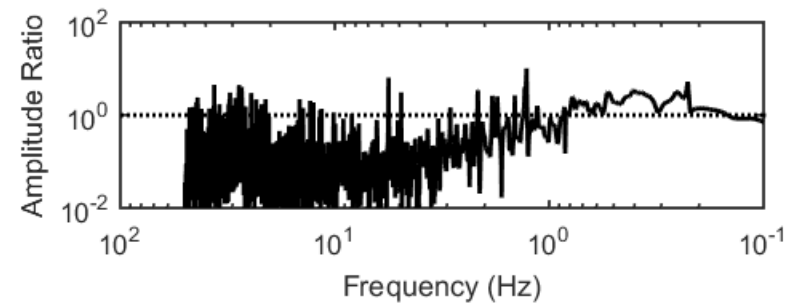
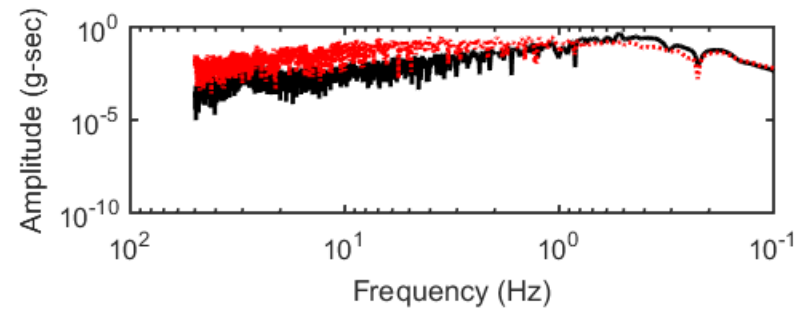
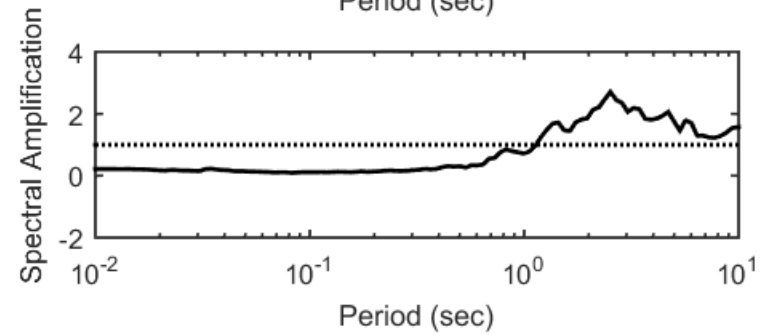
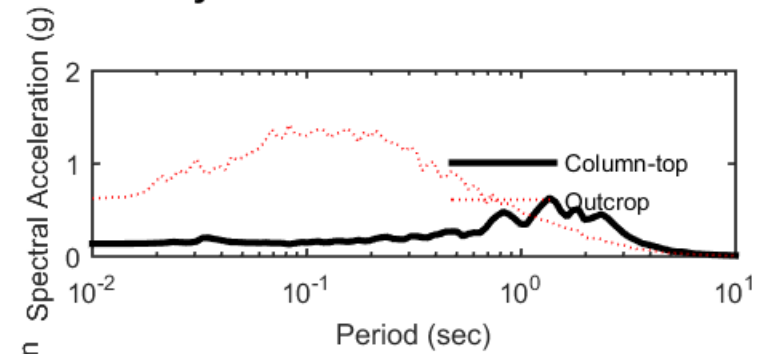
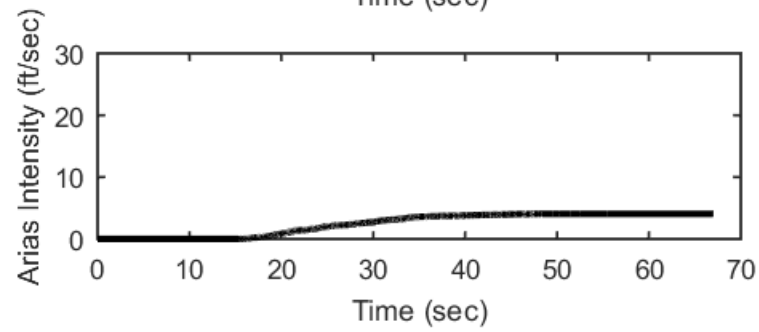
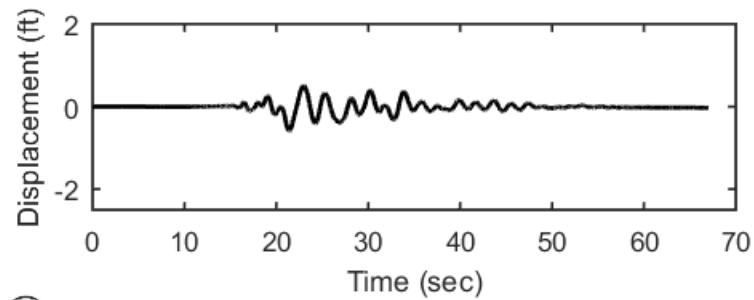
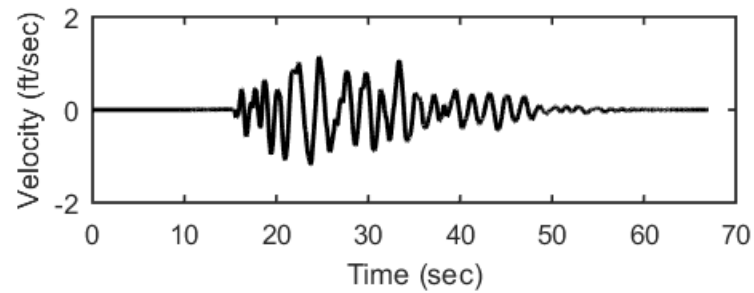
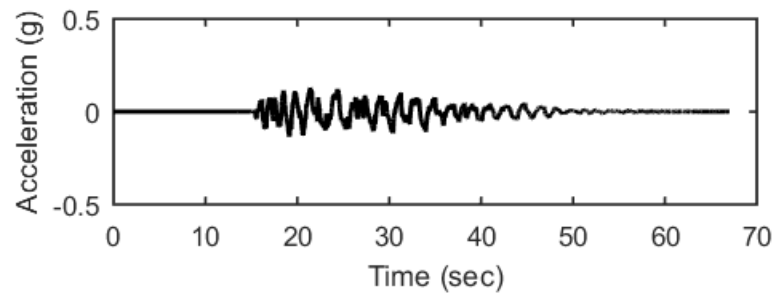
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



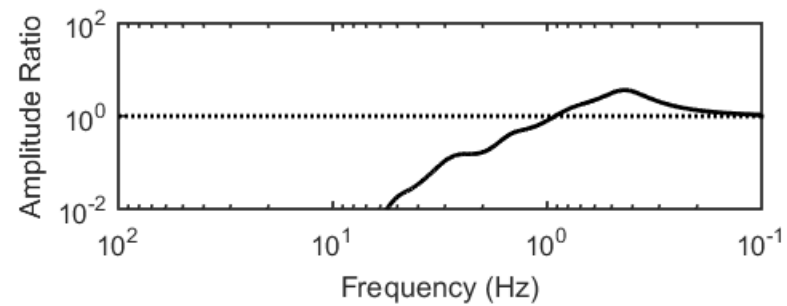
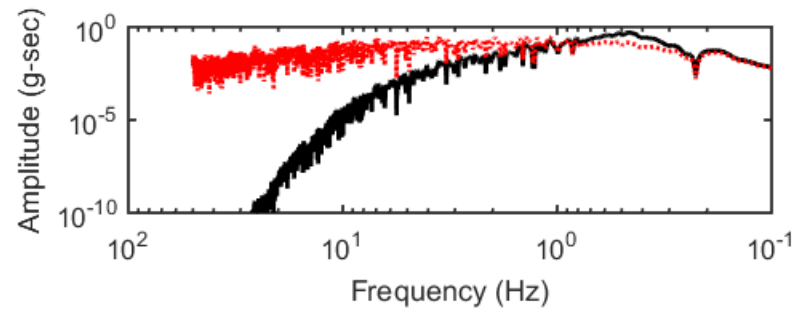
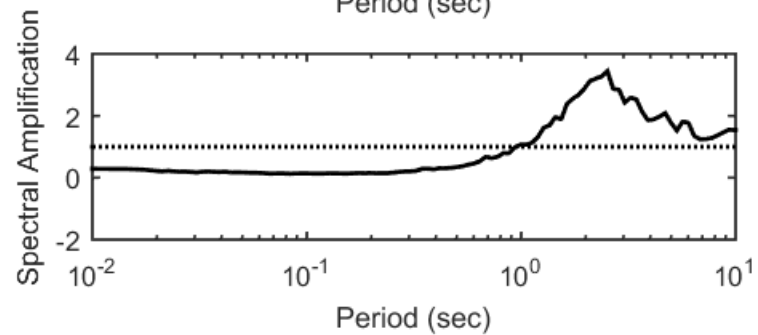
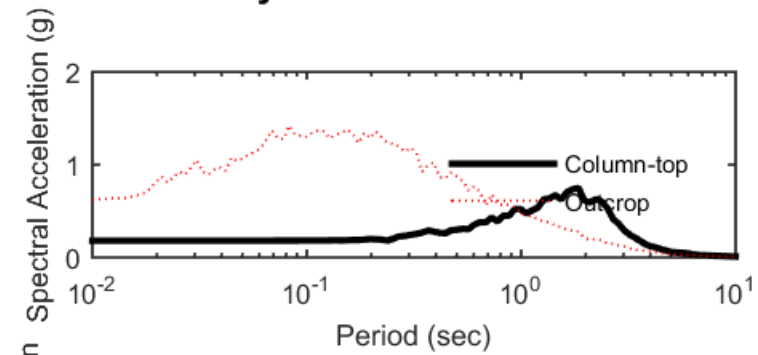
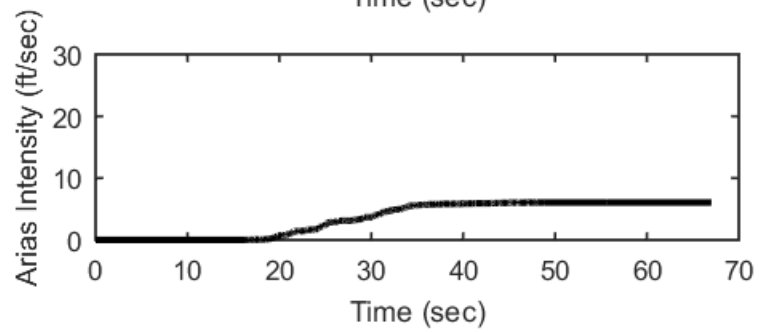
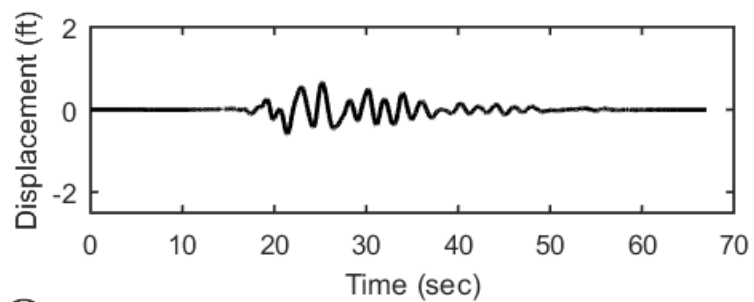
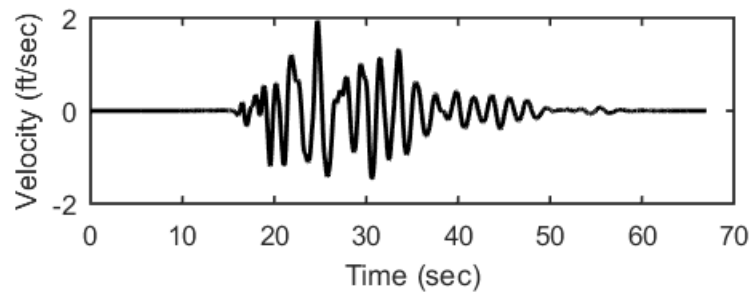
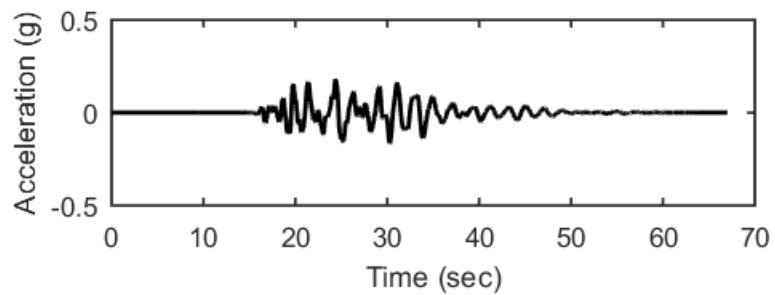
### Profile outputs for Motion: SEE1



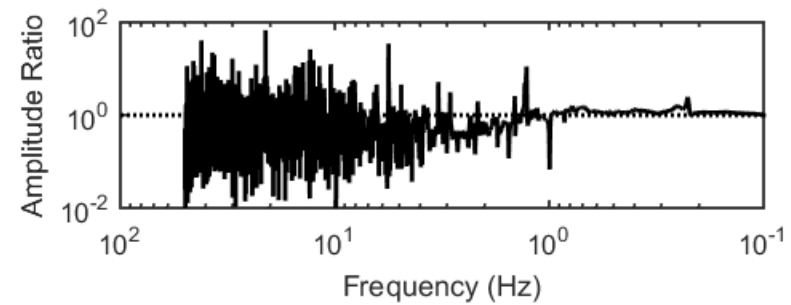
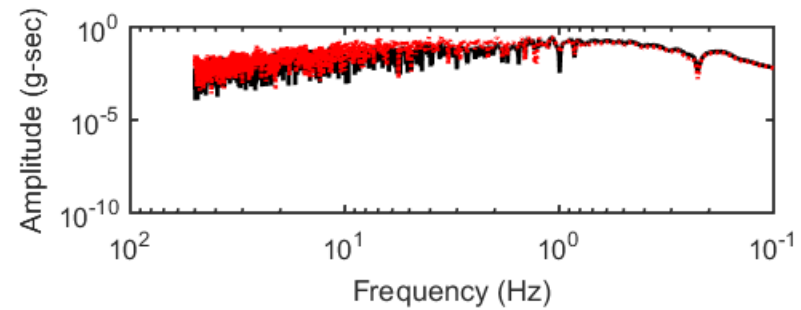
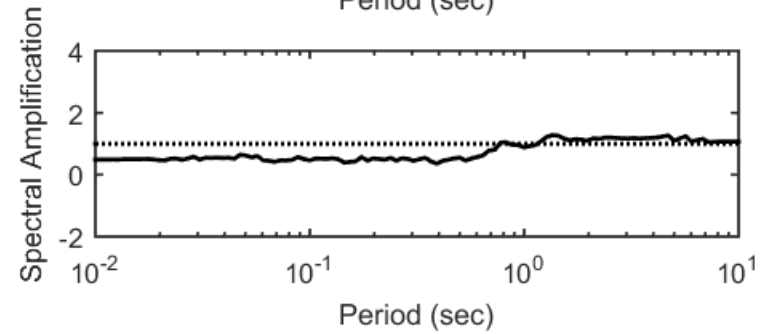
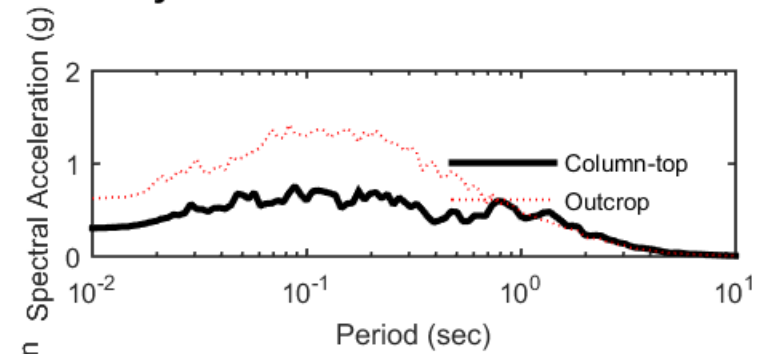
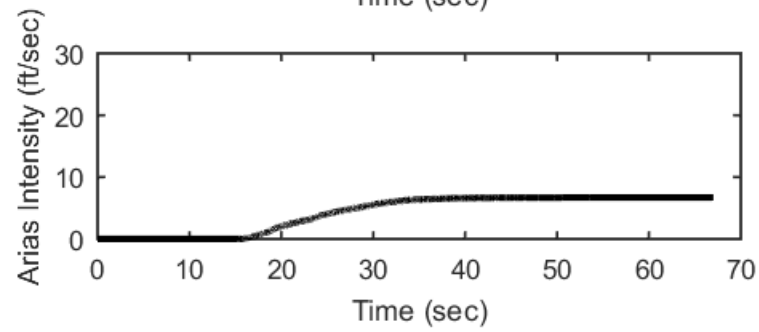
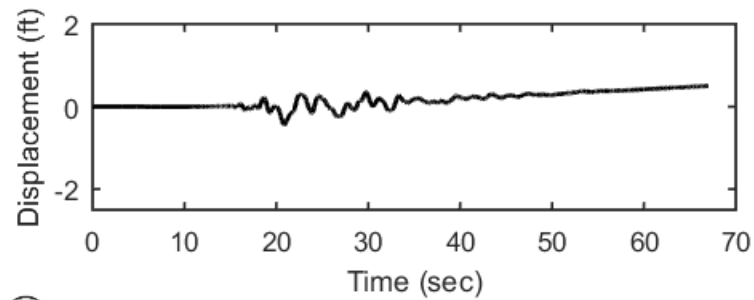
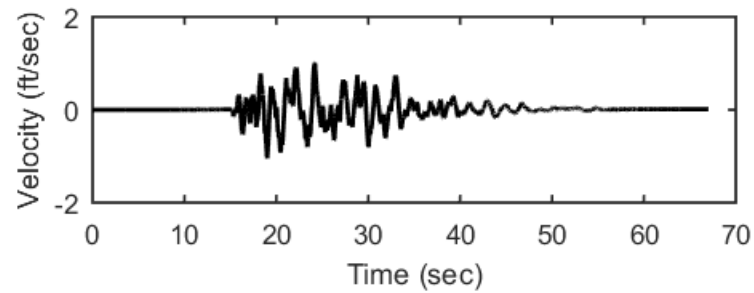
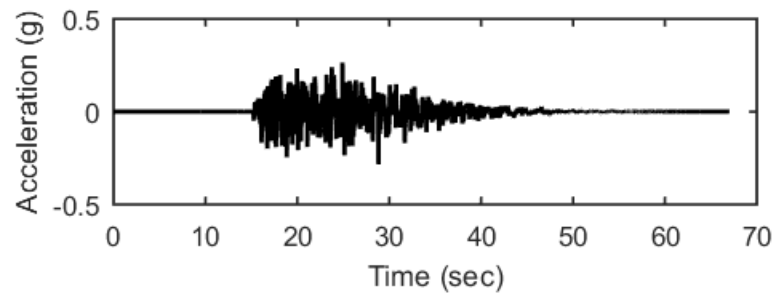
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



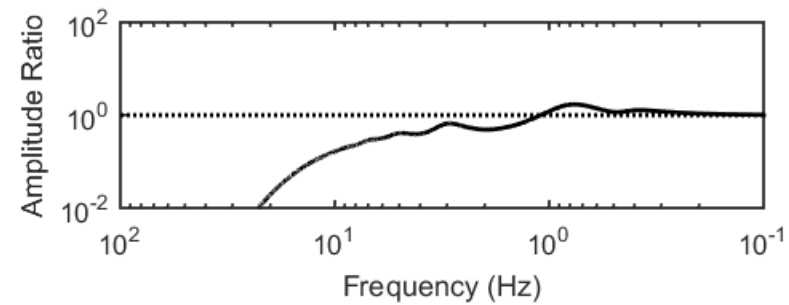
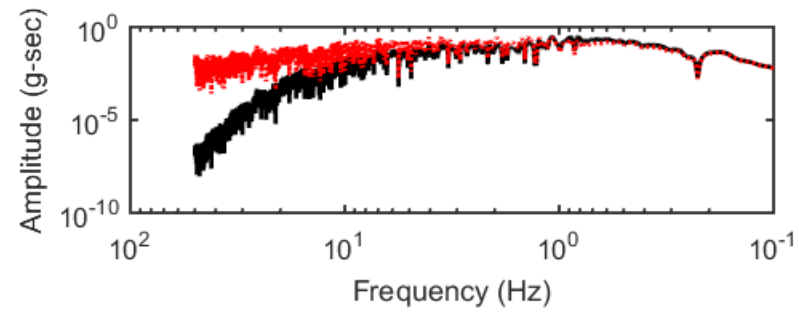
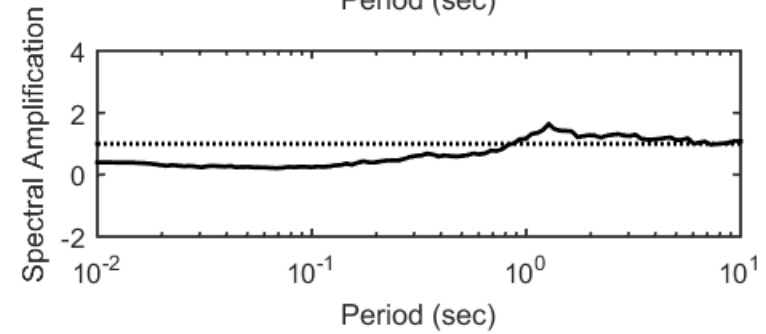
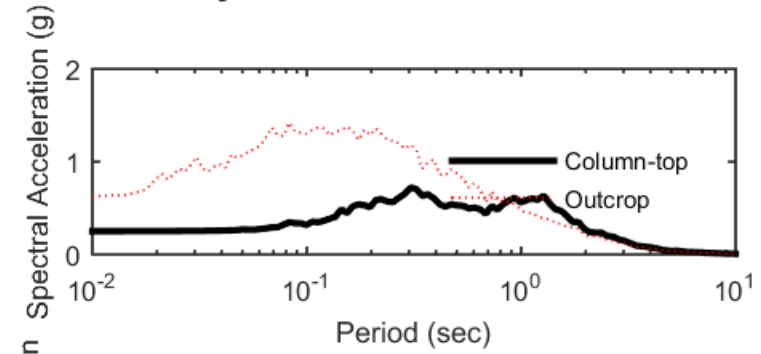
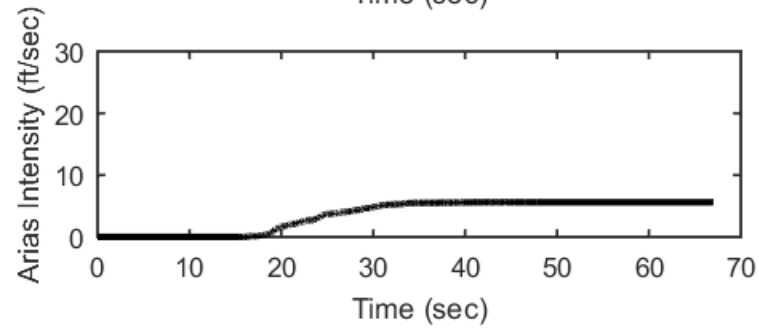
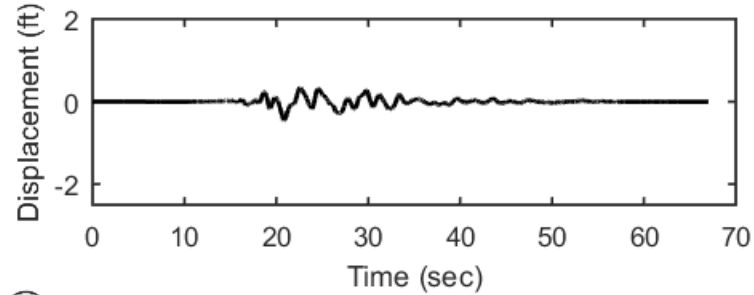
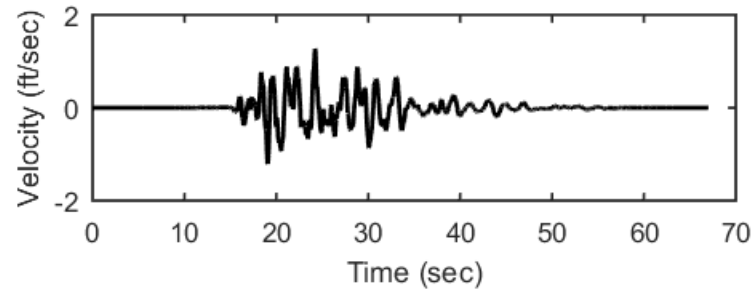
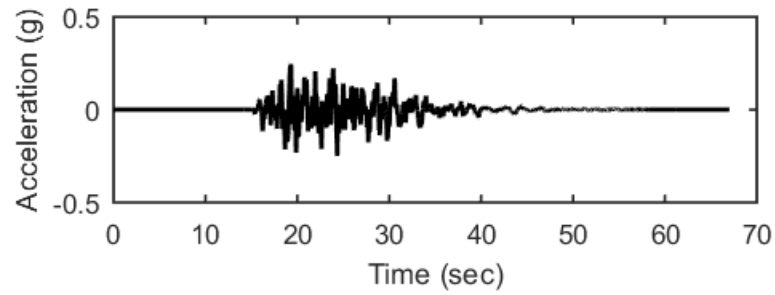
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



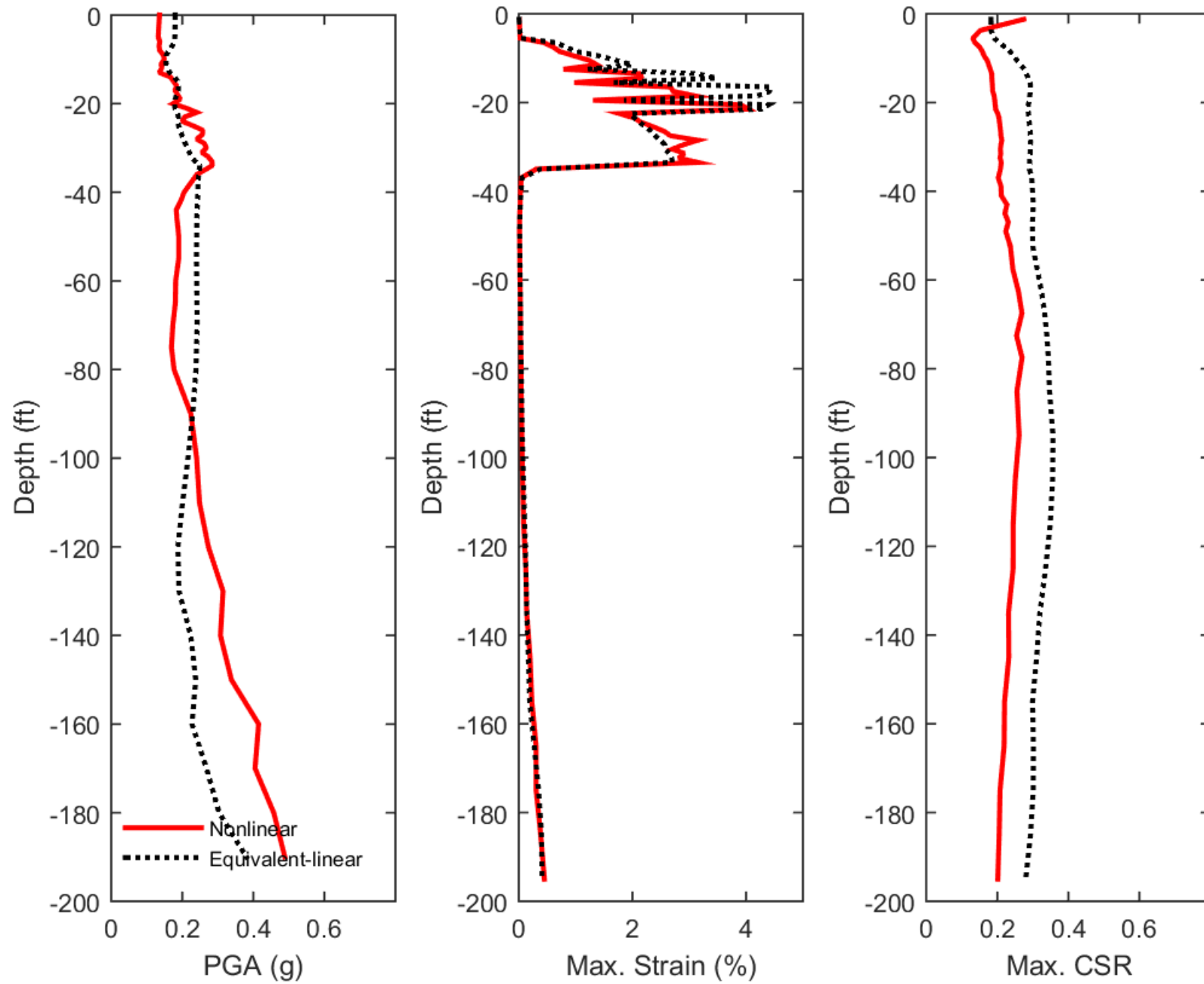
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2

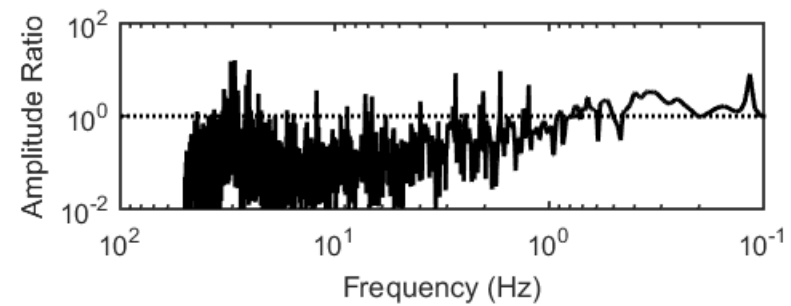
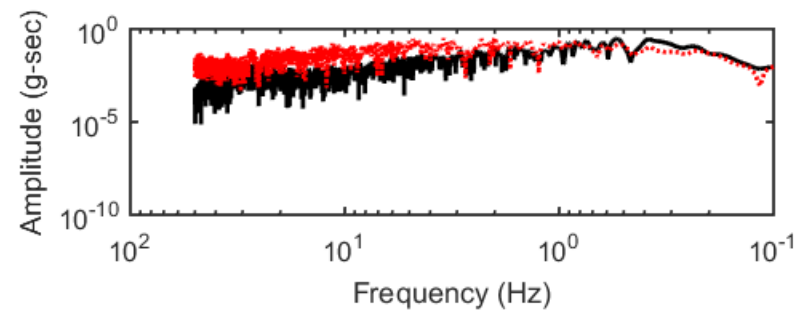
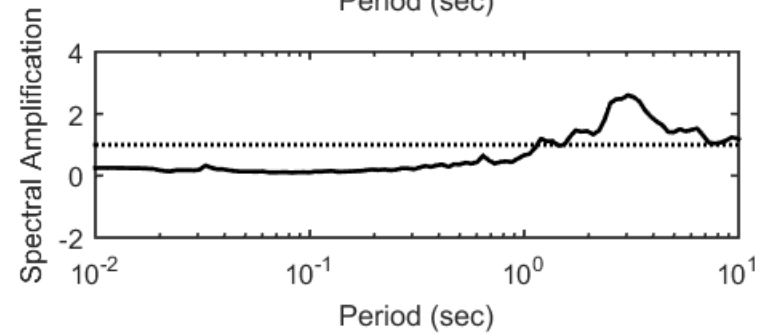
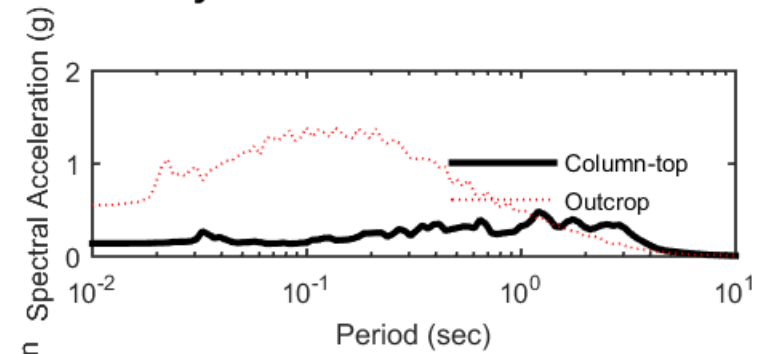
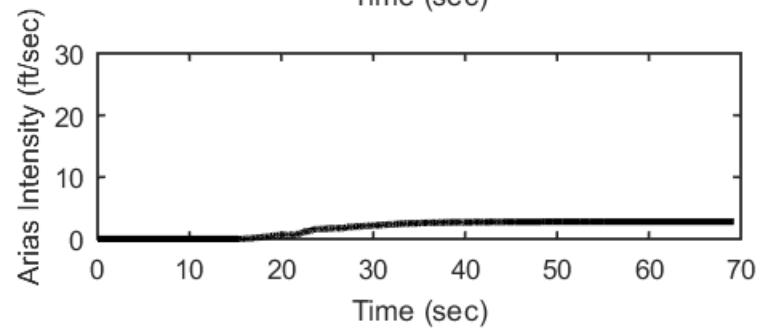
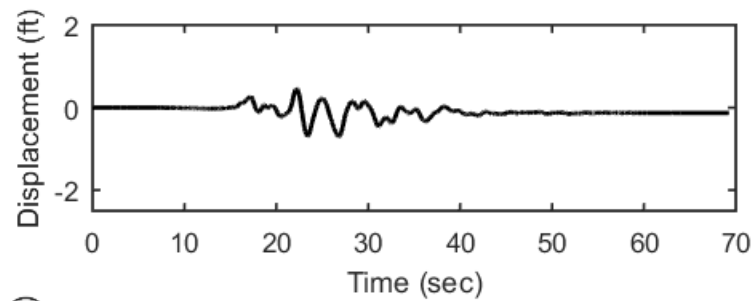
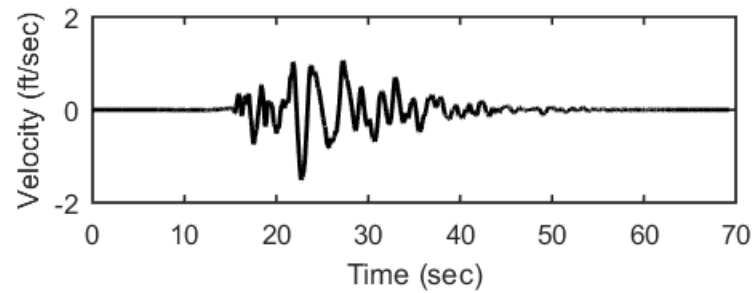
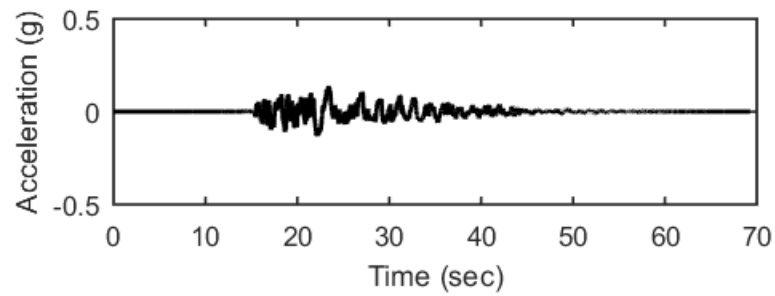


### Profile outputs for Motion: SEE2

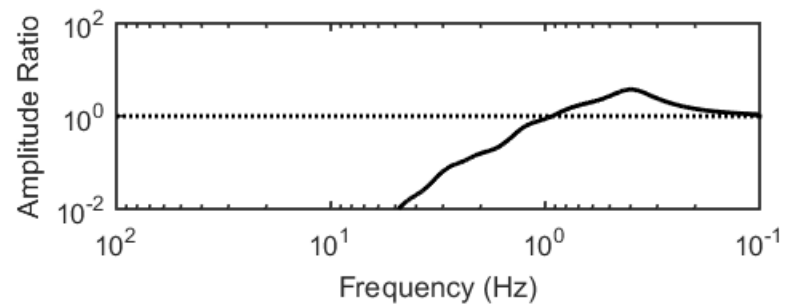
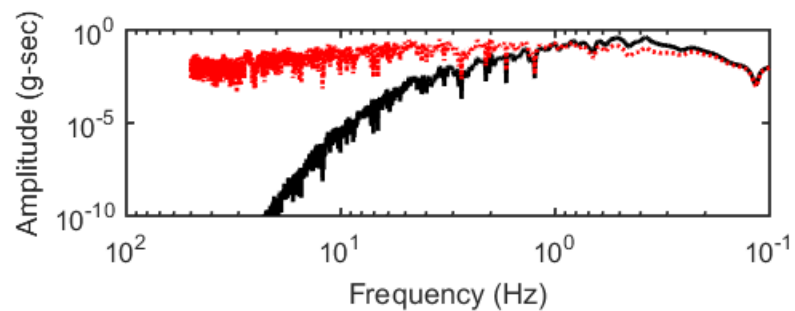
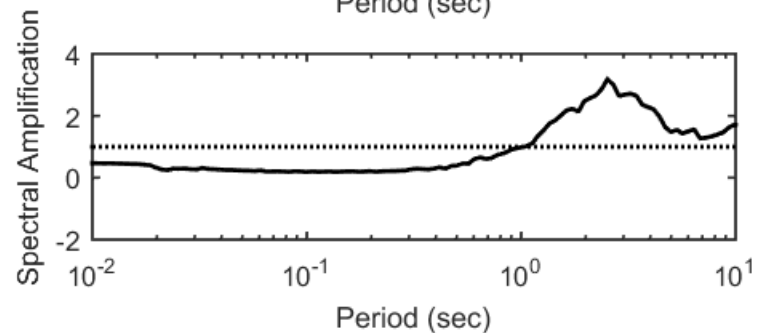
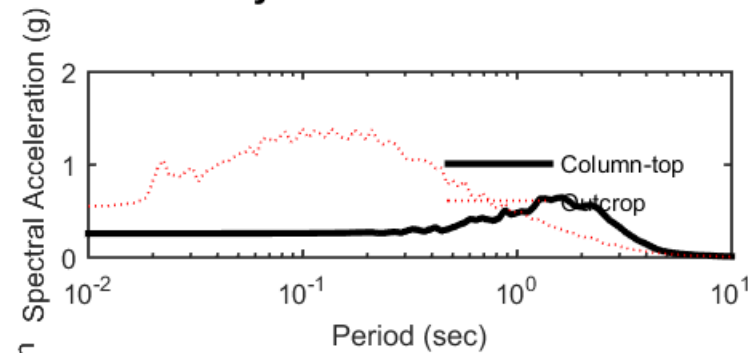
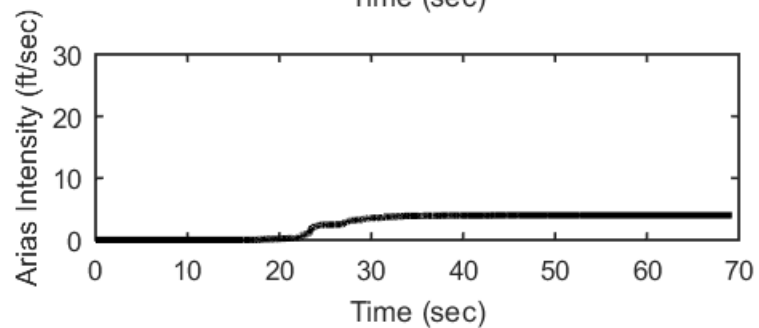
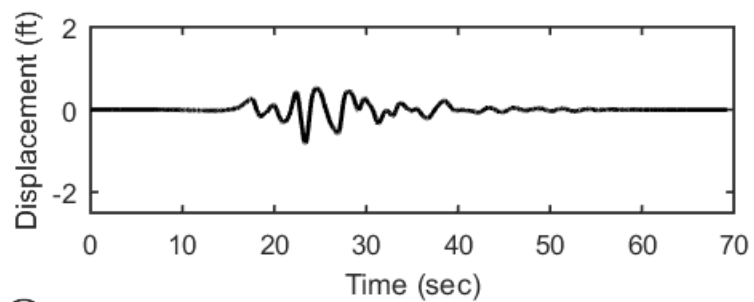
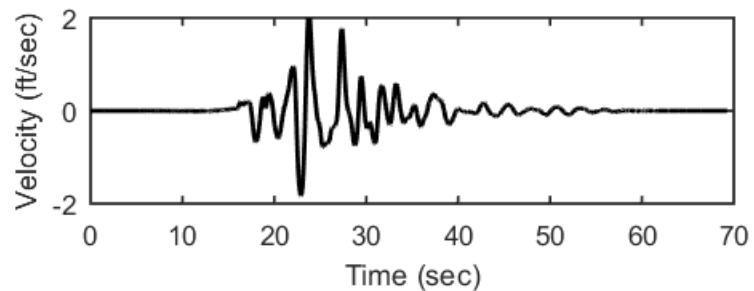
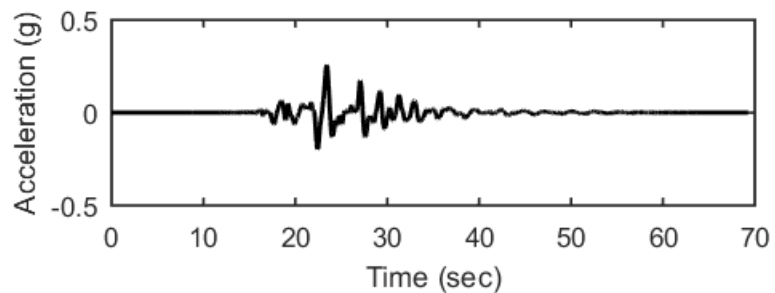




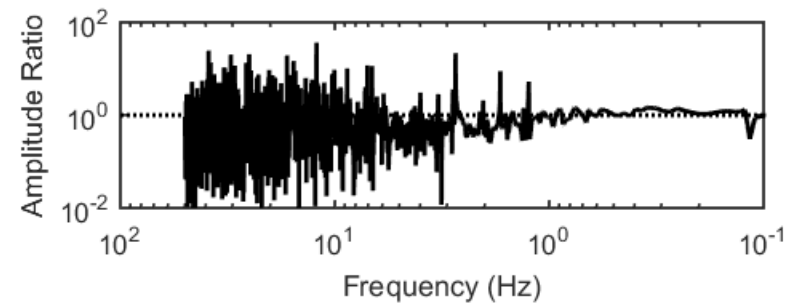
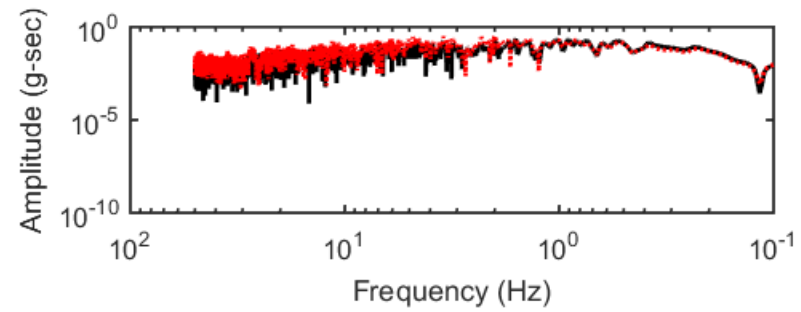
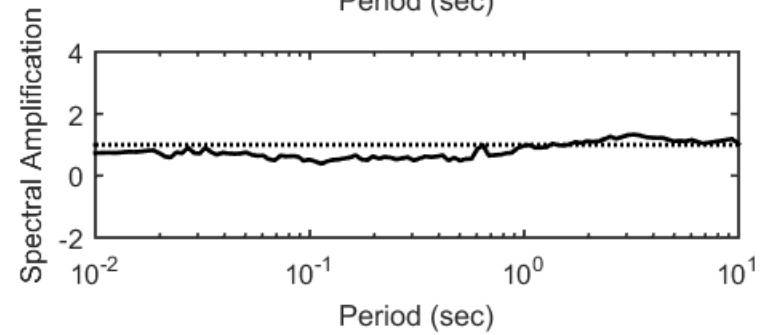
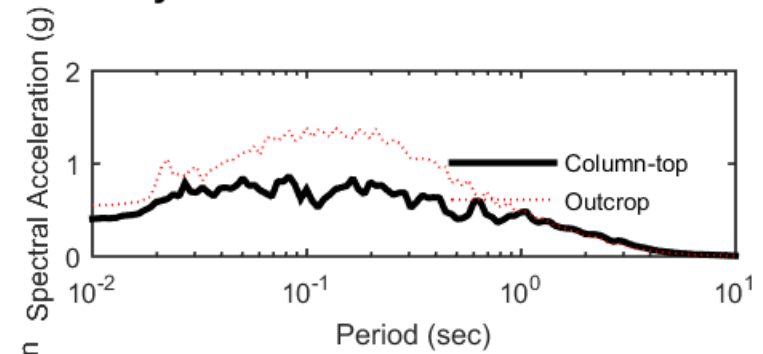
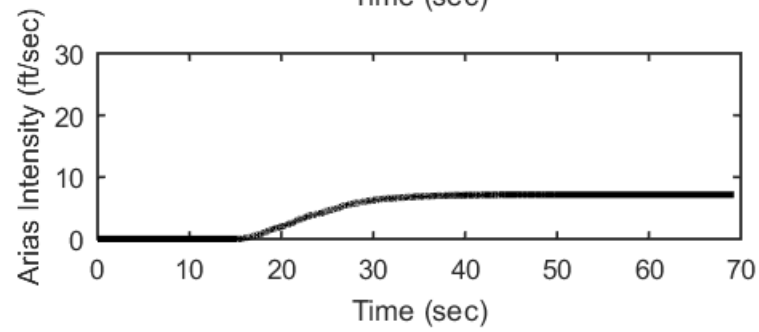
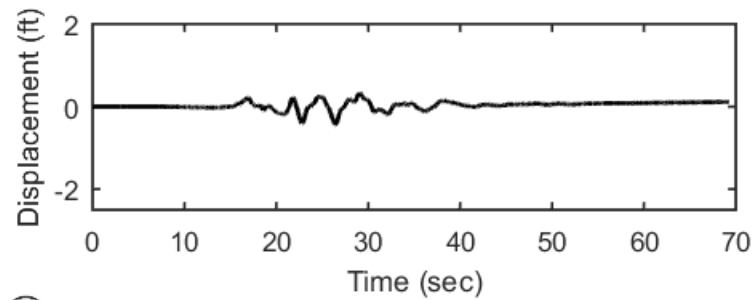
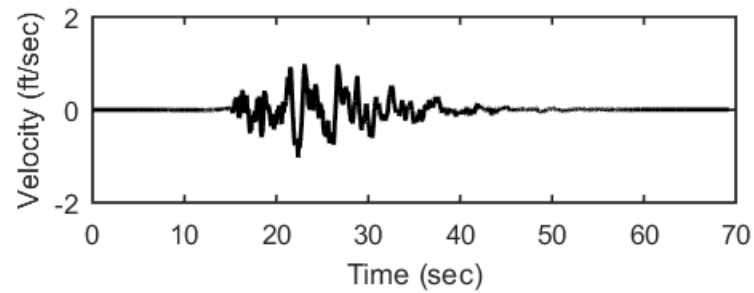
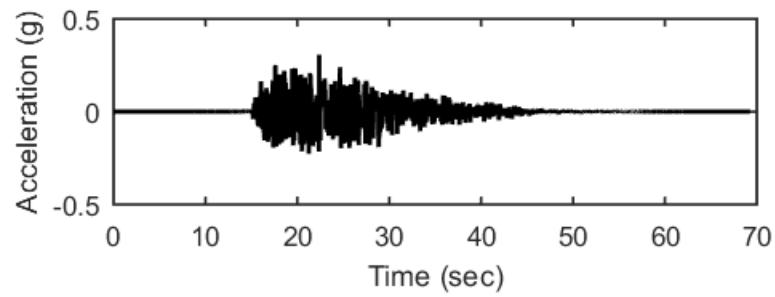
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



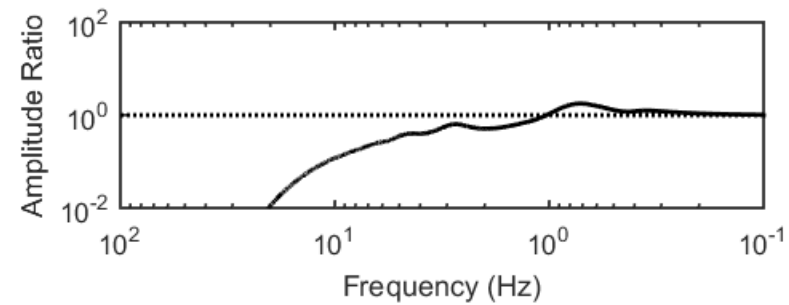
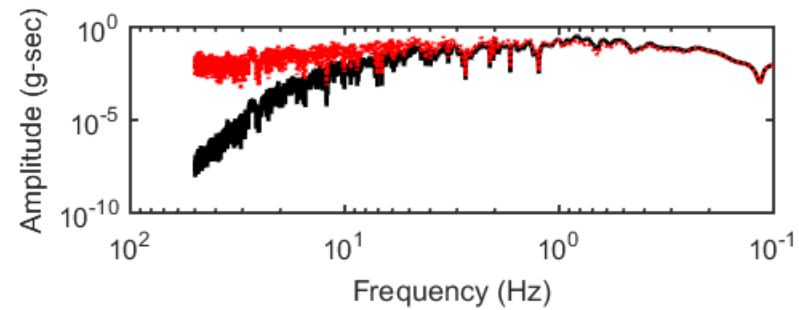
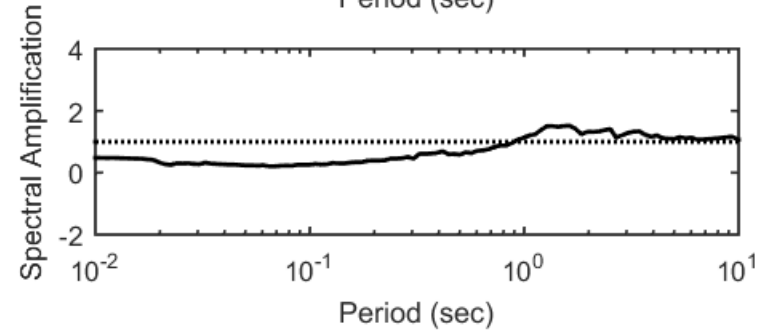
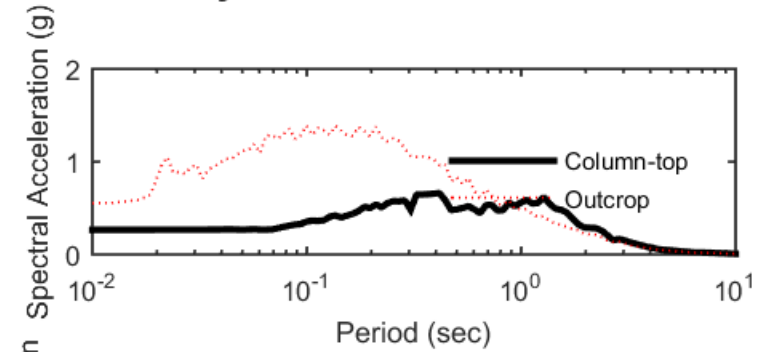
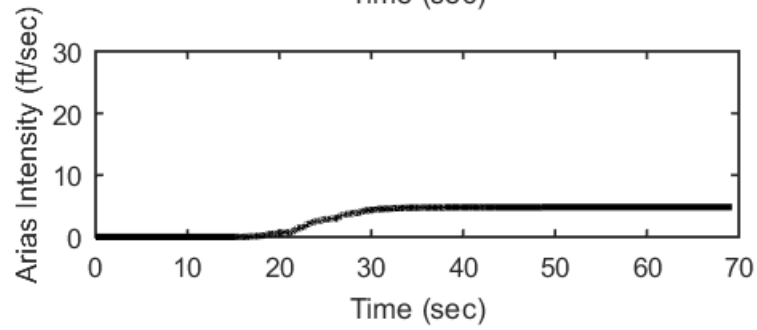
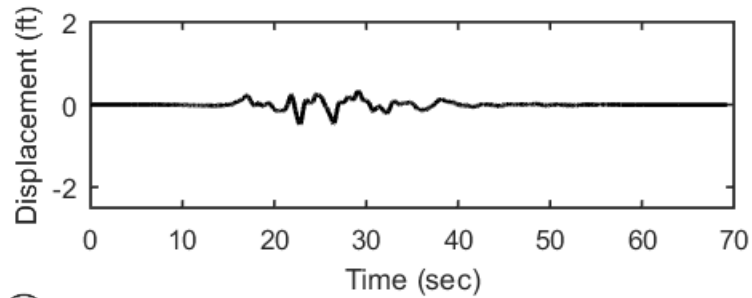
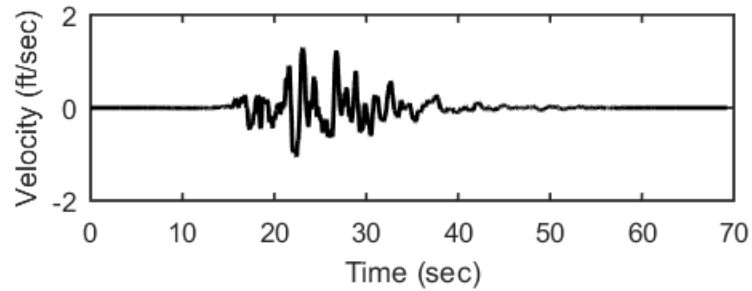
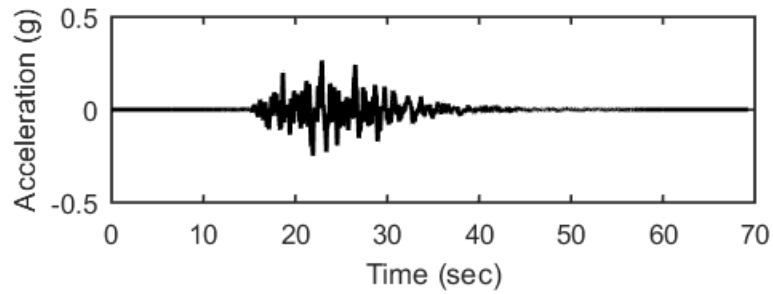
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



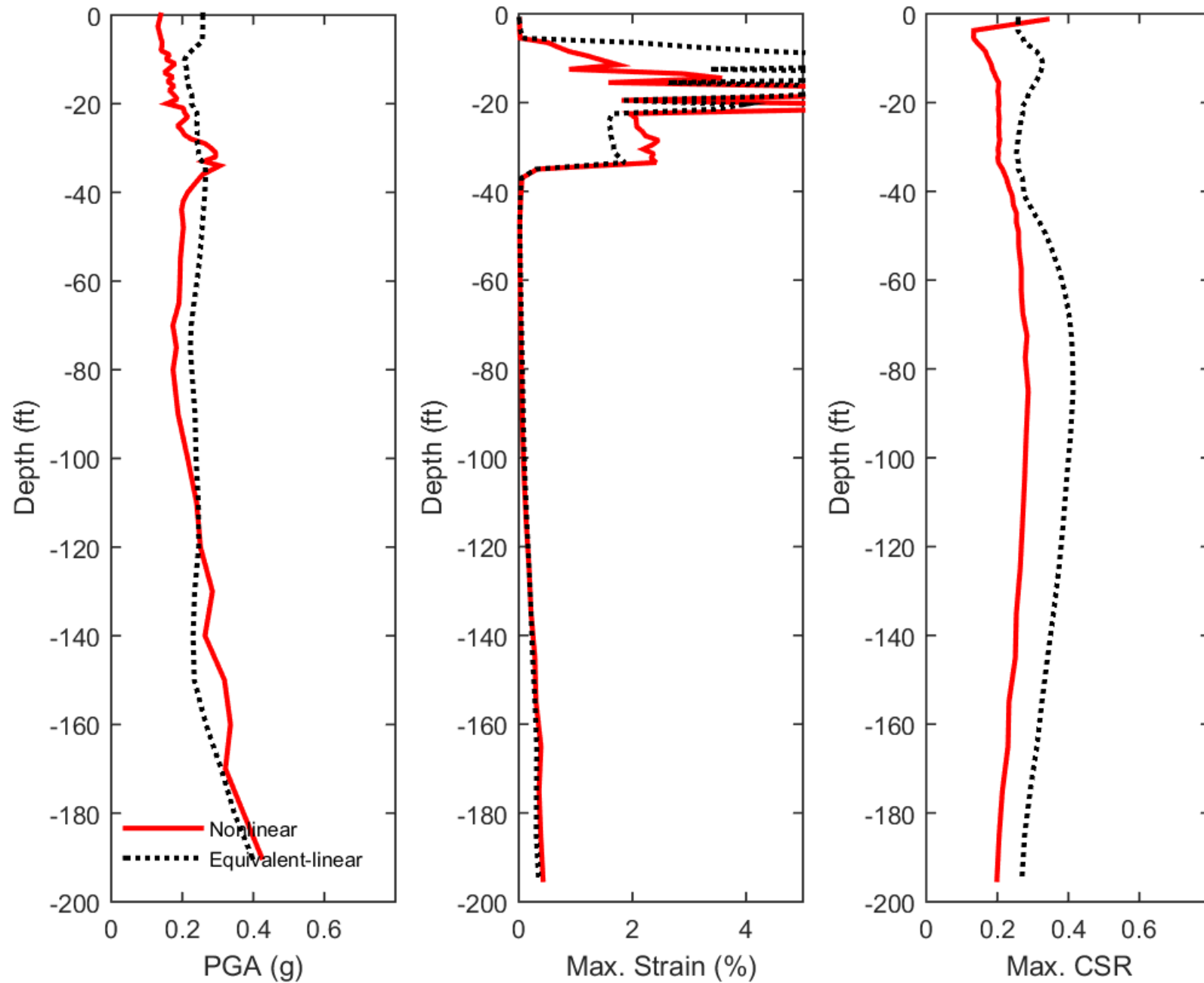
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



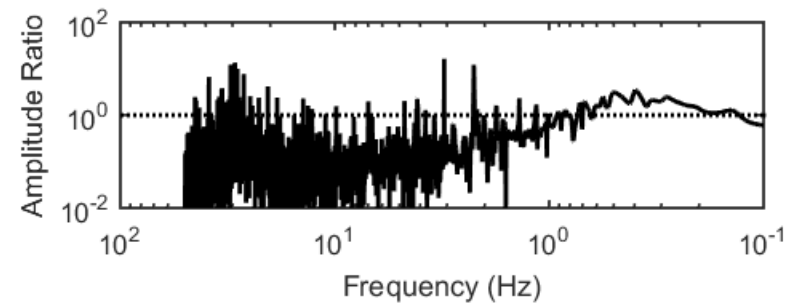
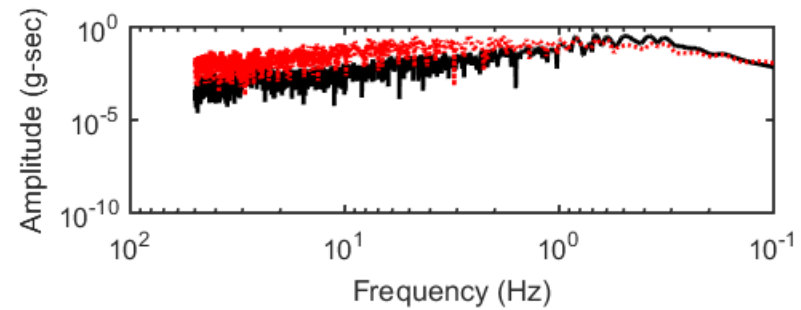
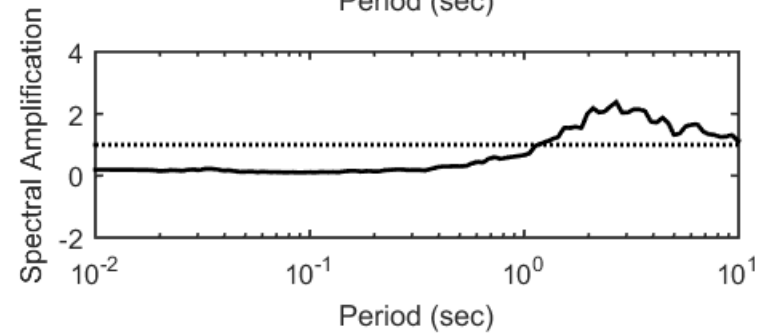
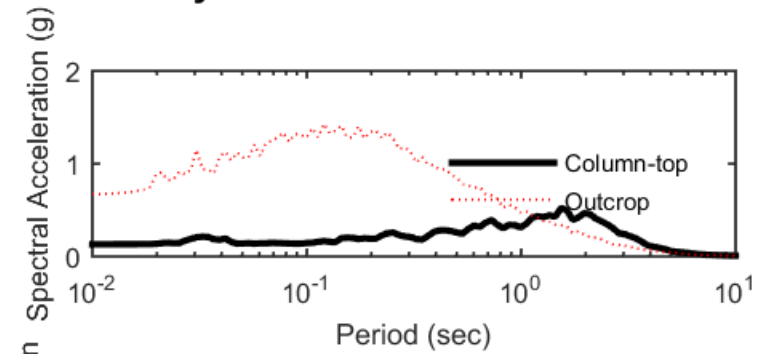
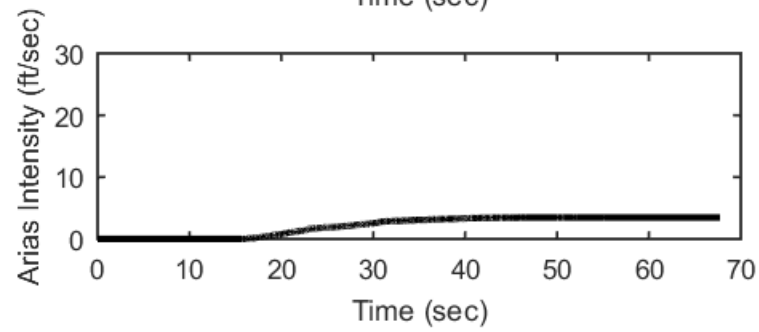
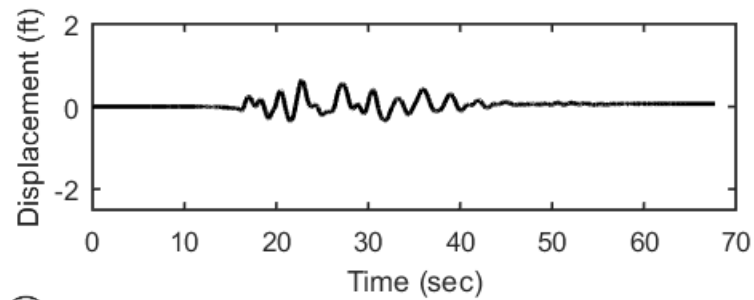
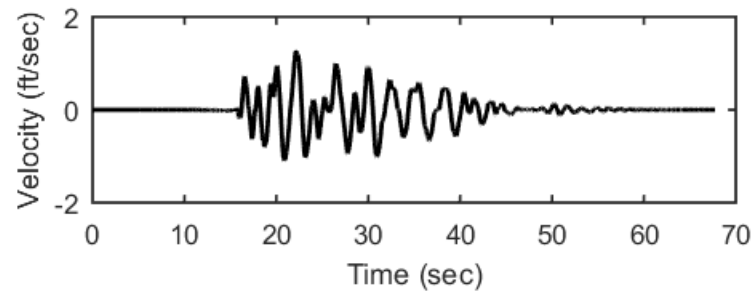
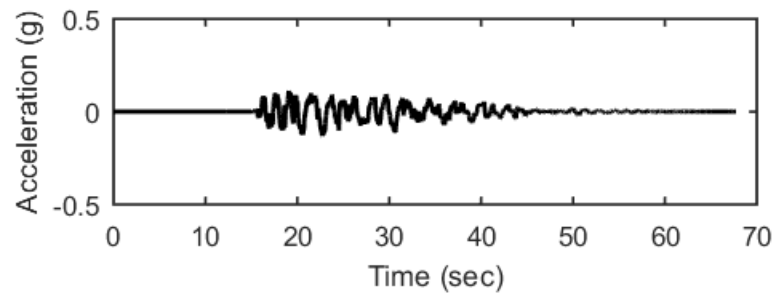
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



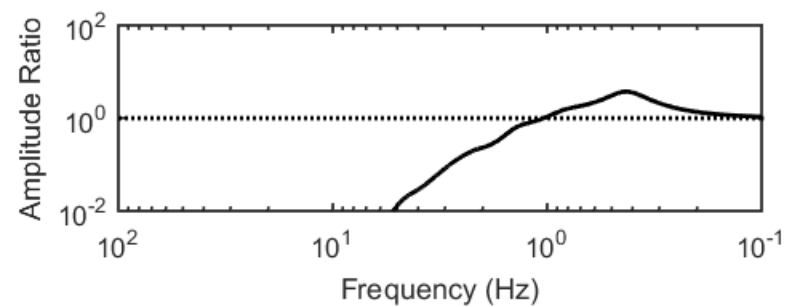
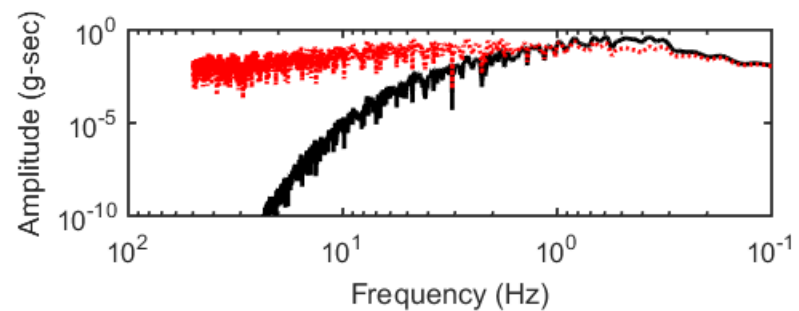
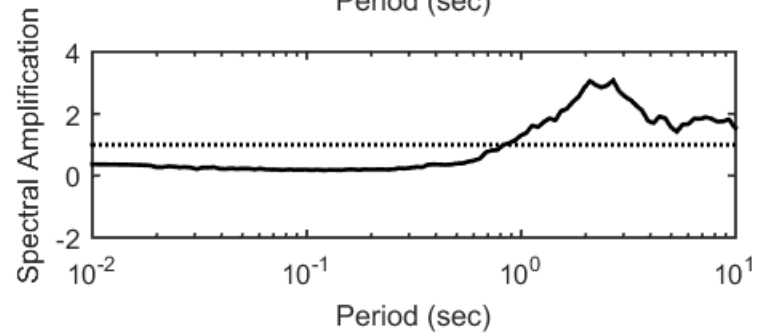
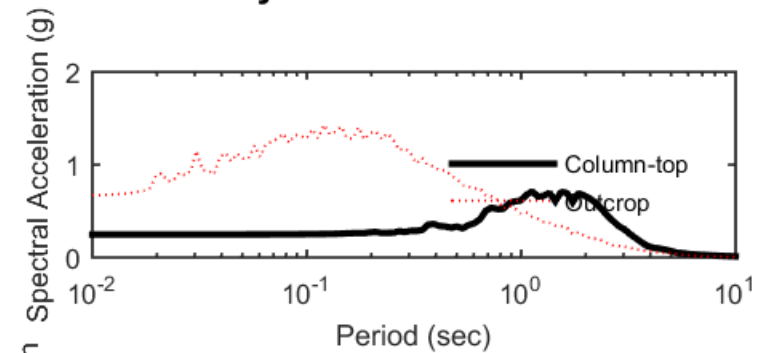
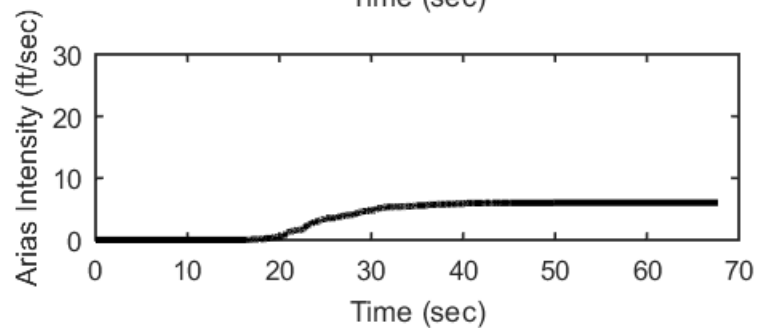
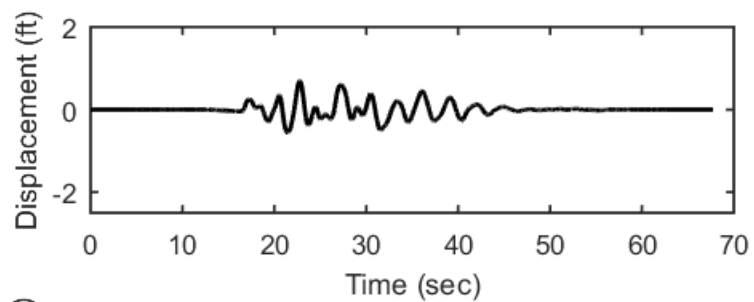
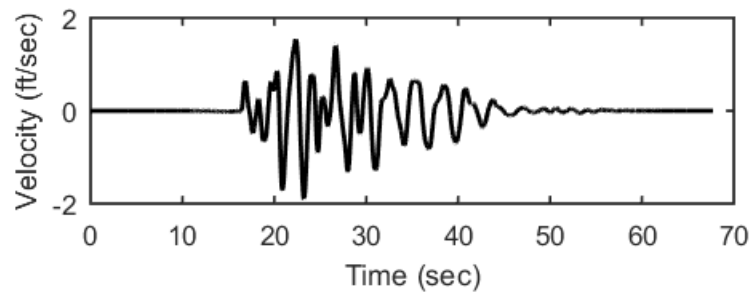
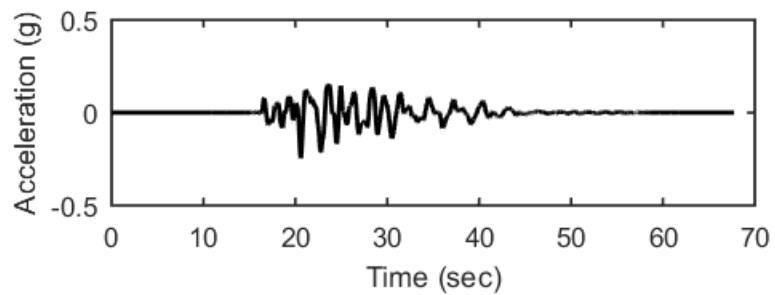
### Profile outputs for Motion: SEE3



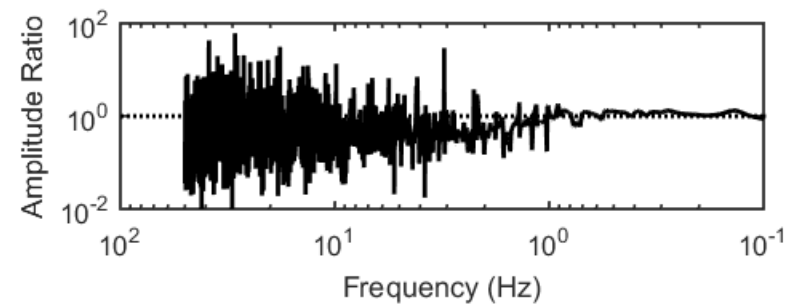
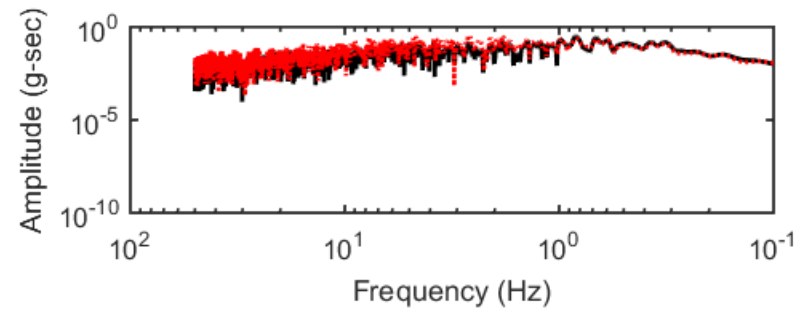
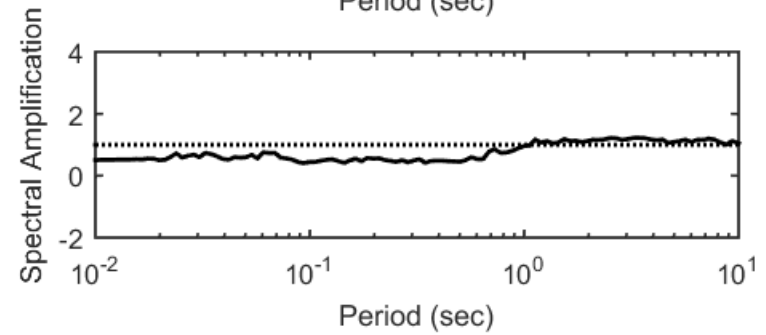
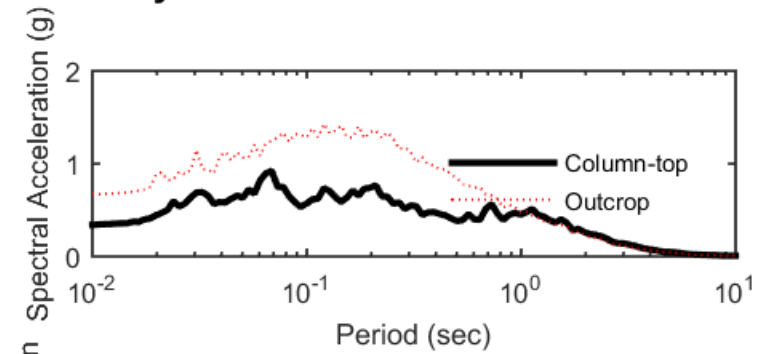
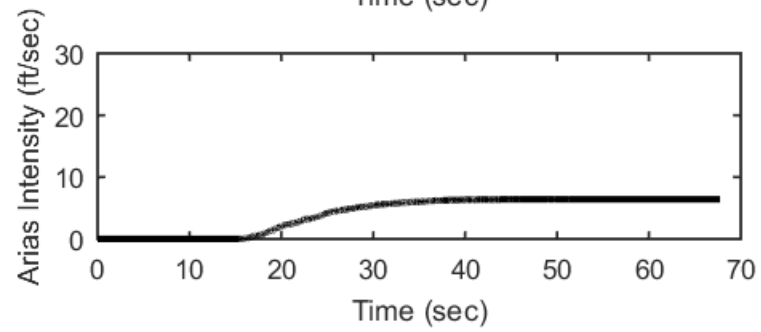
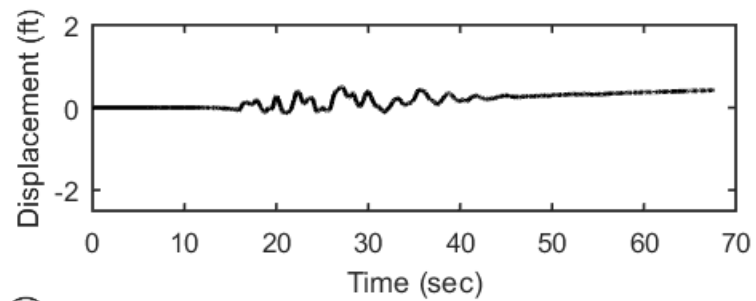
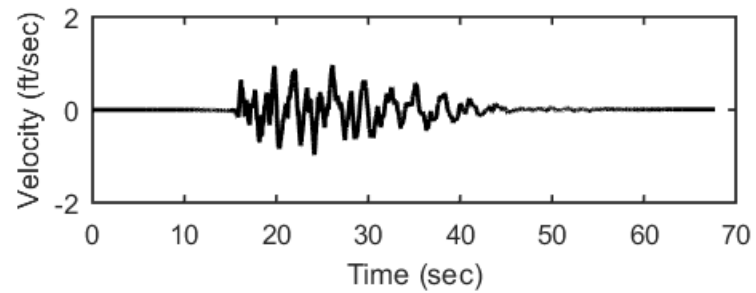
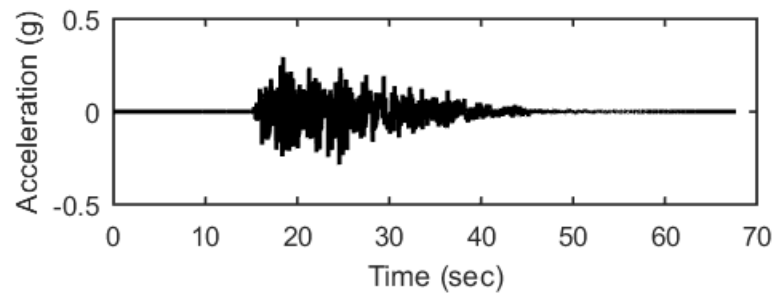
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4

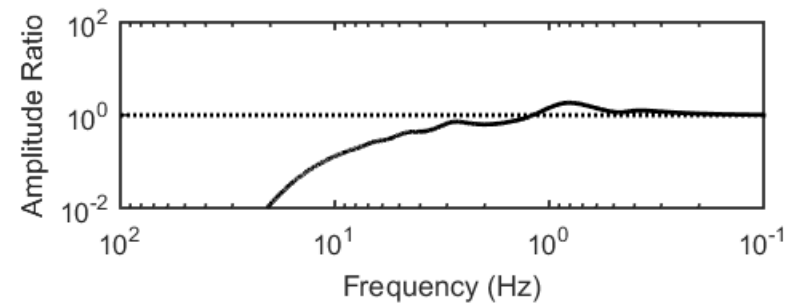
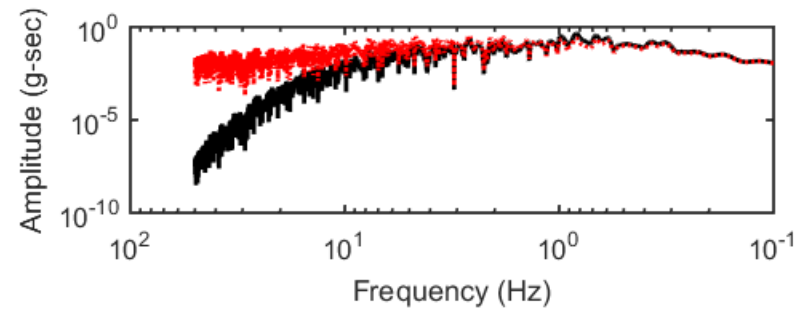
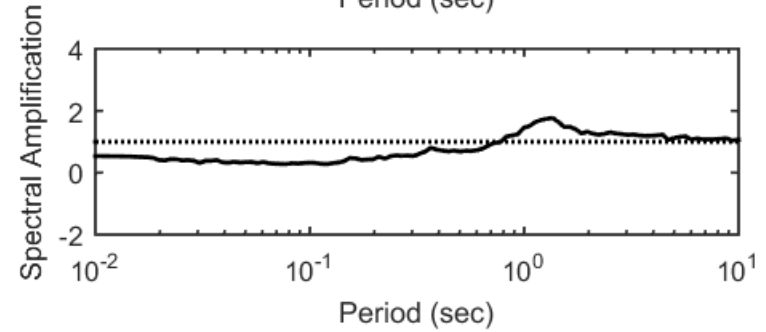
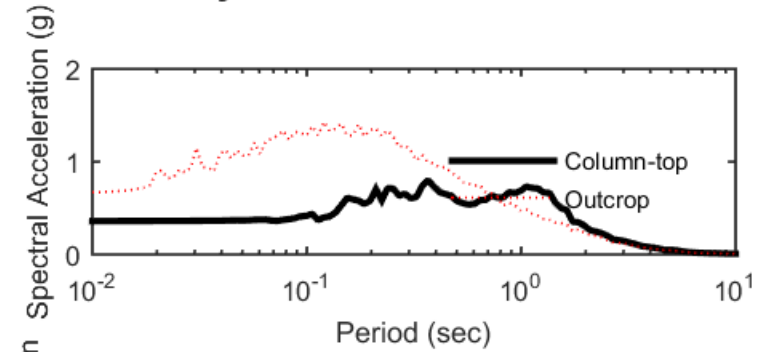
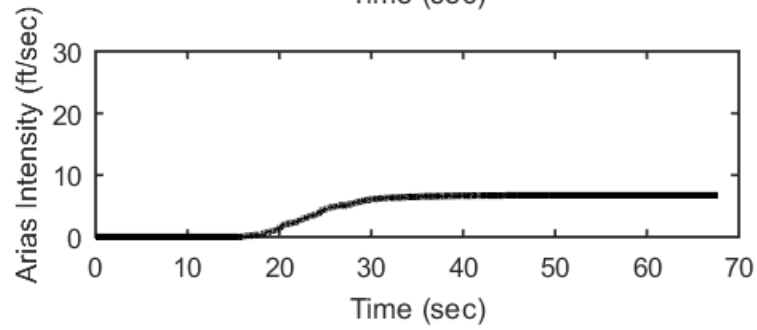
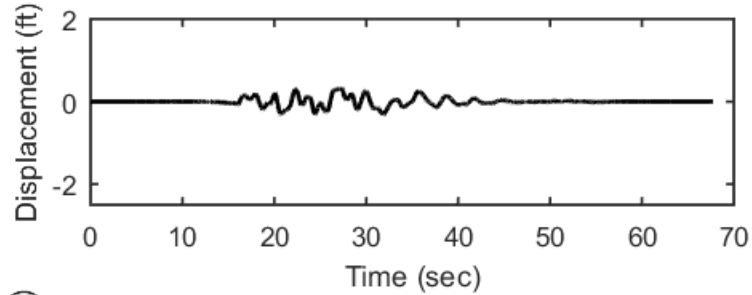
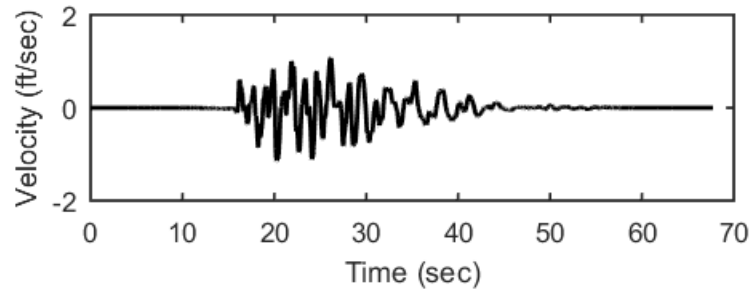
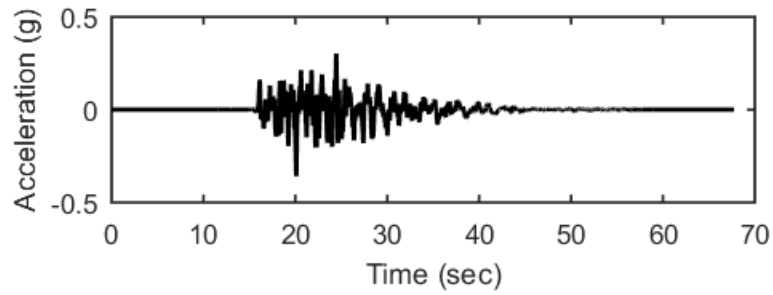


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4

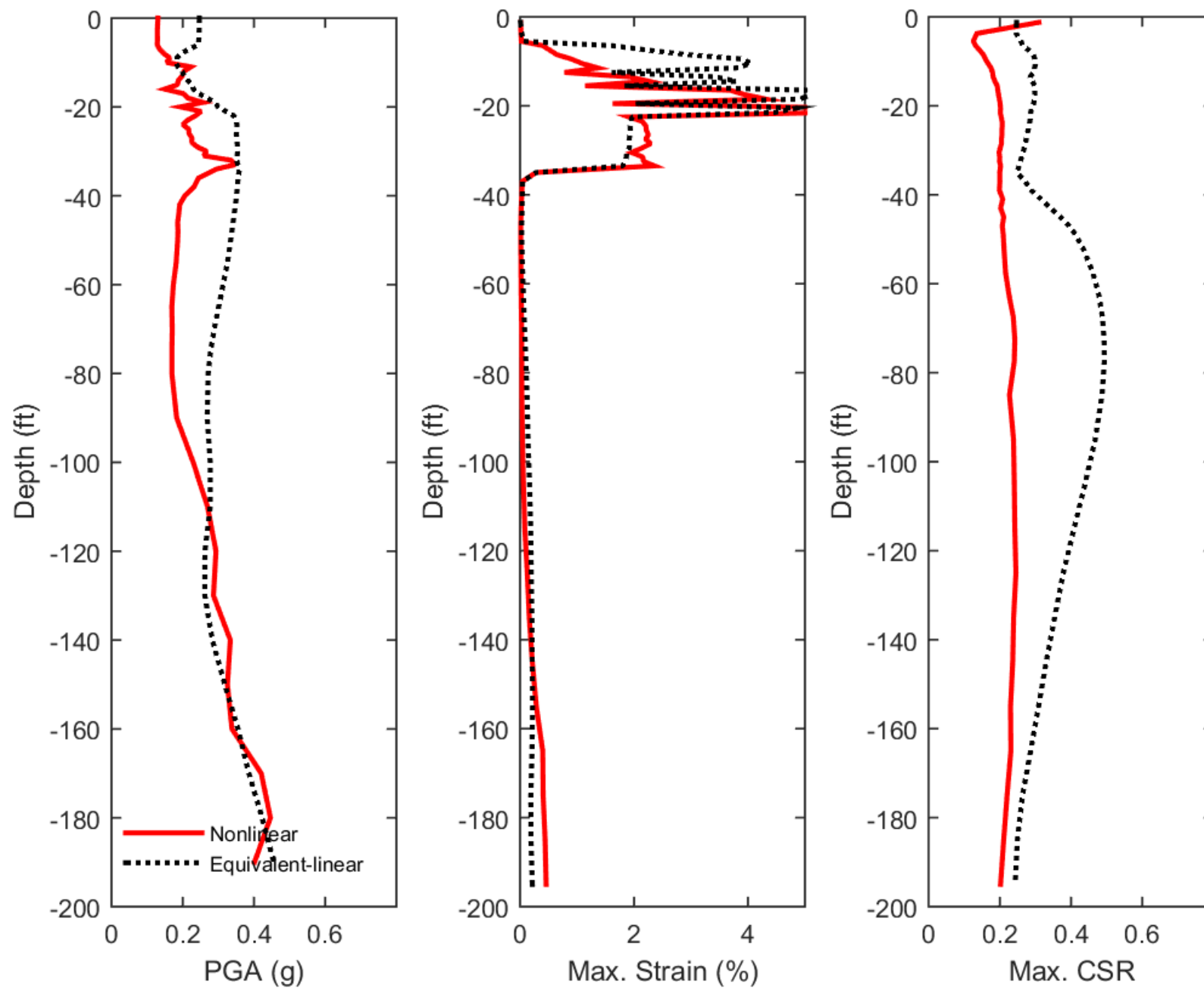




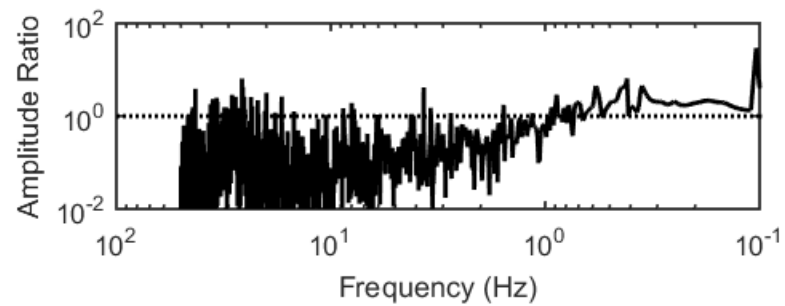
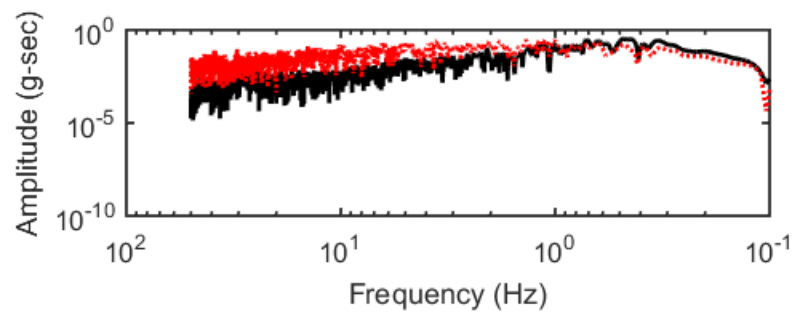
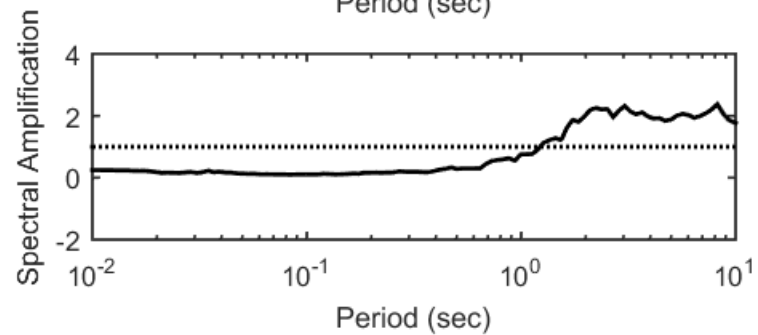
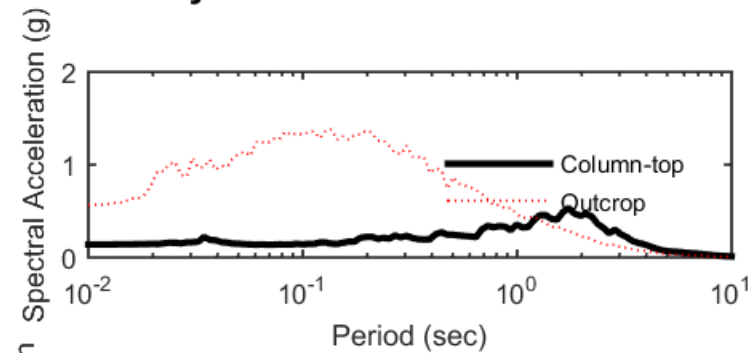
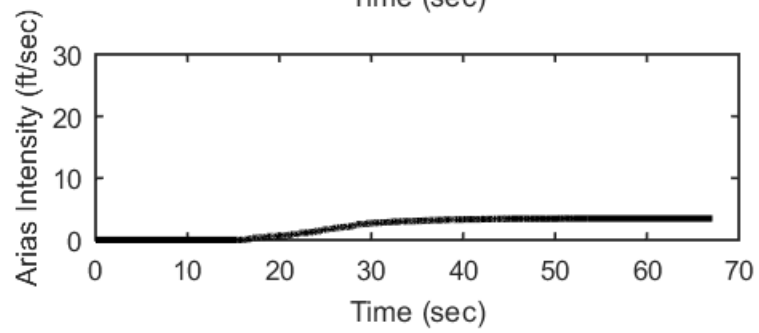
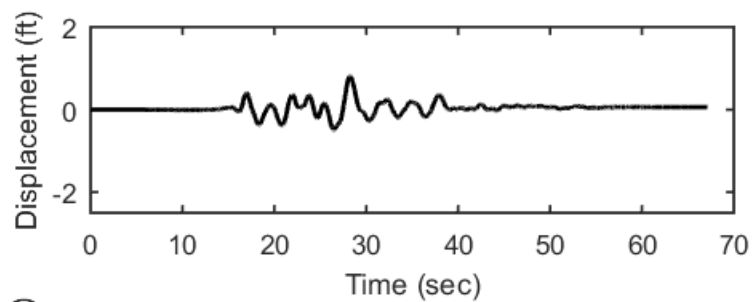
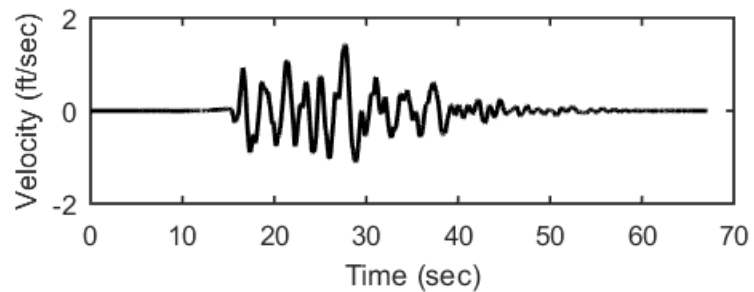
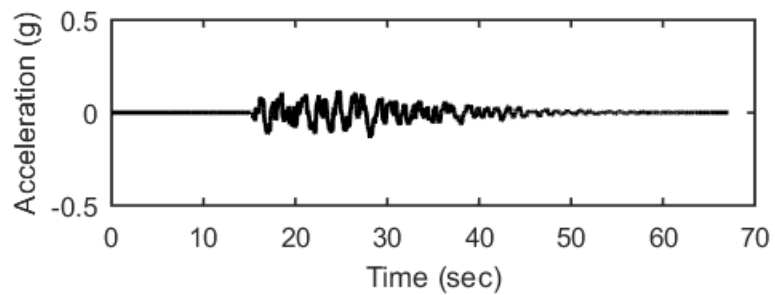
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



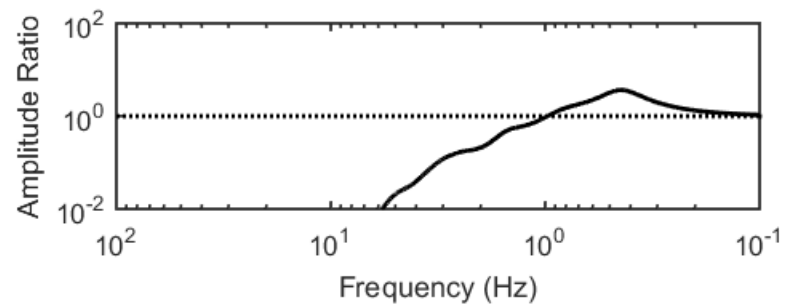
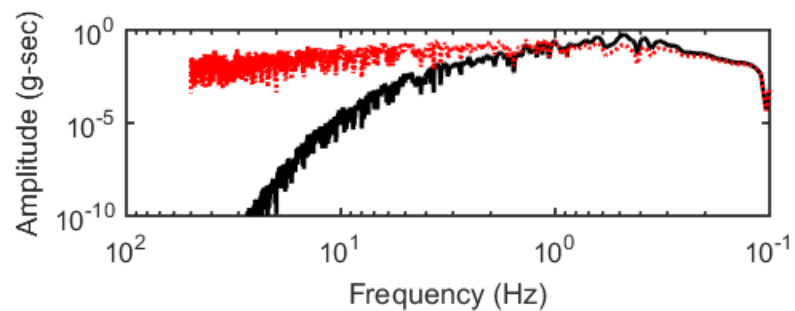
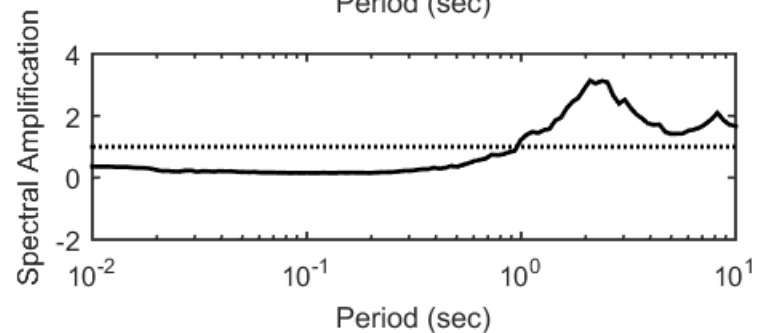
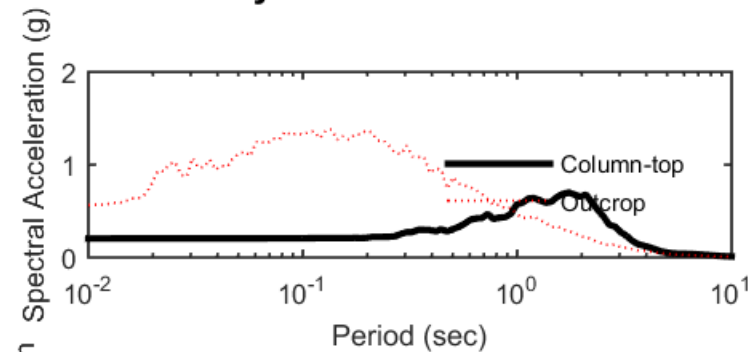
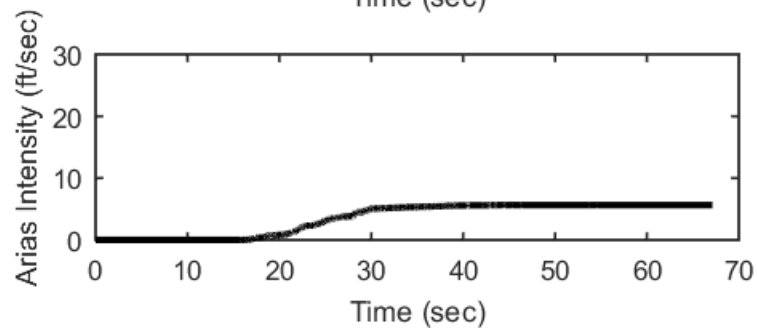
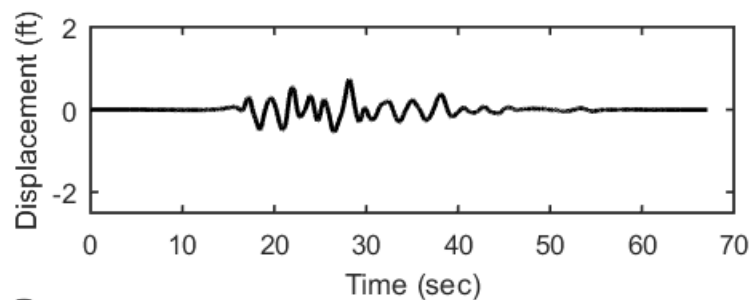
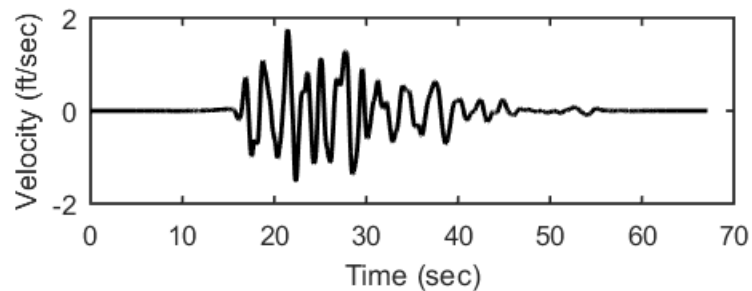
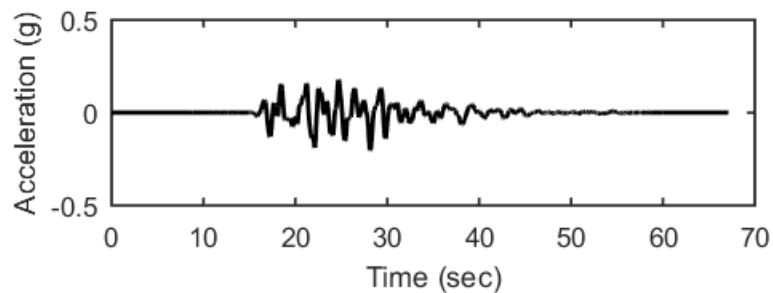
### Profile outputs for Motion: SEE4



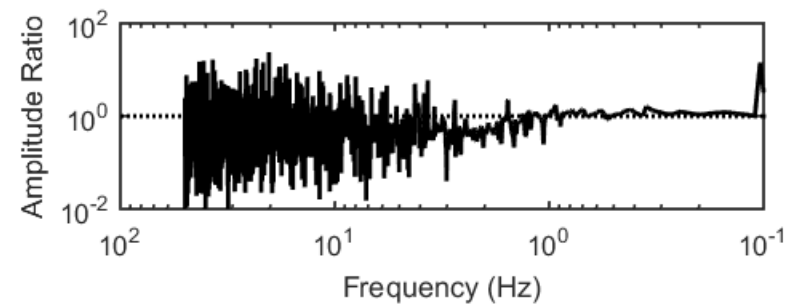
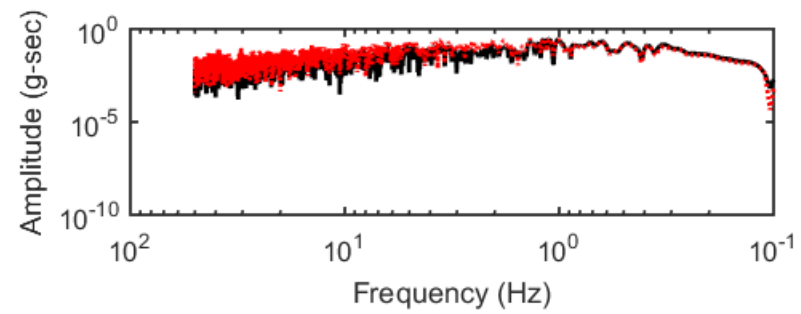
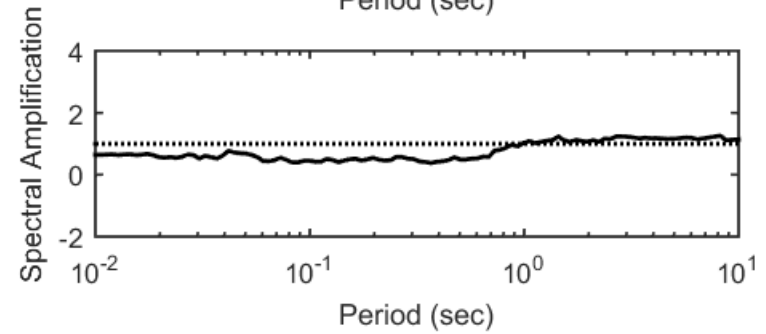
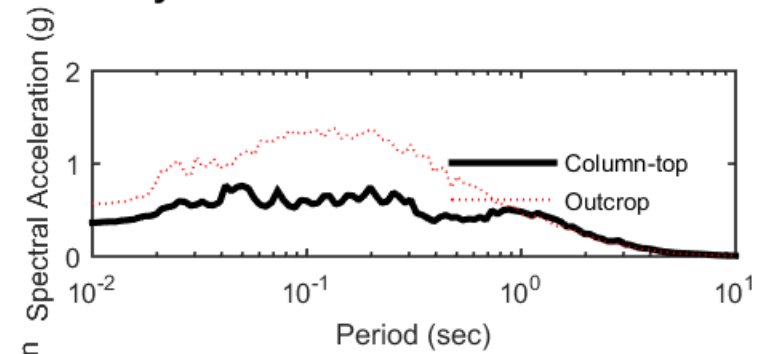
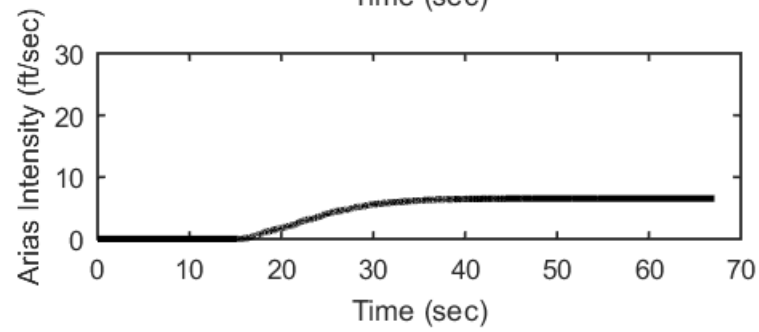
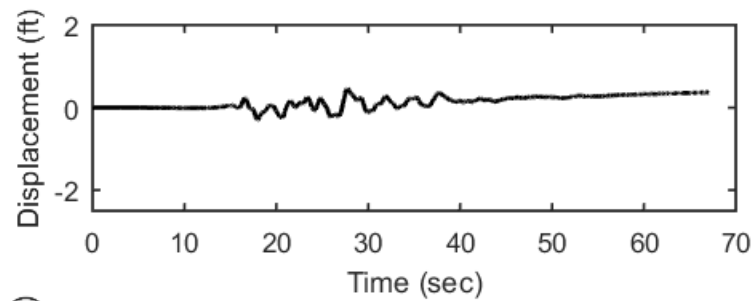
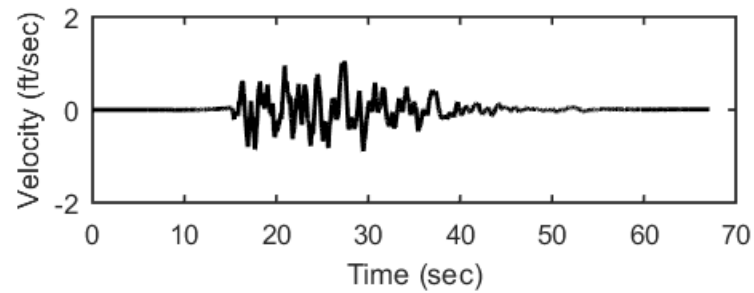
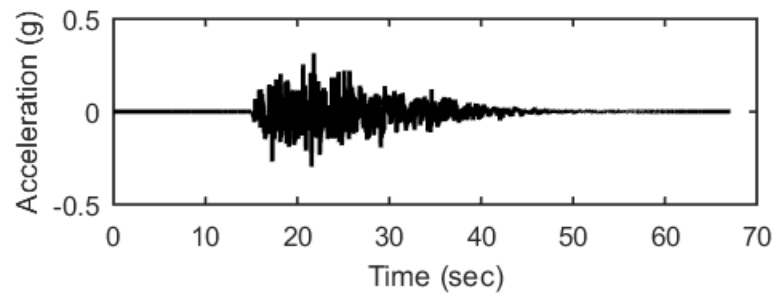
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



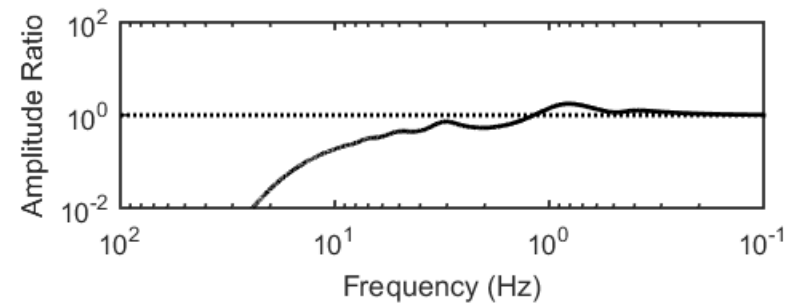
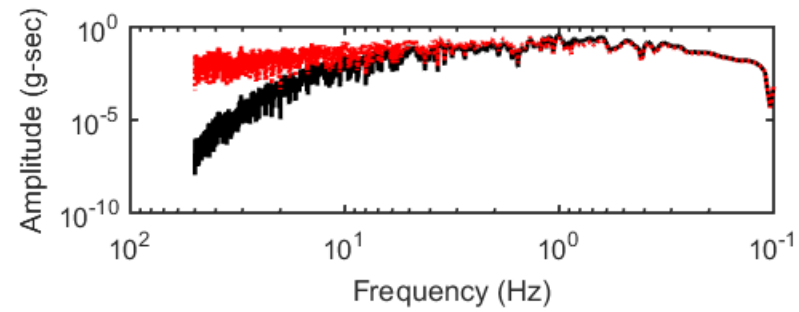
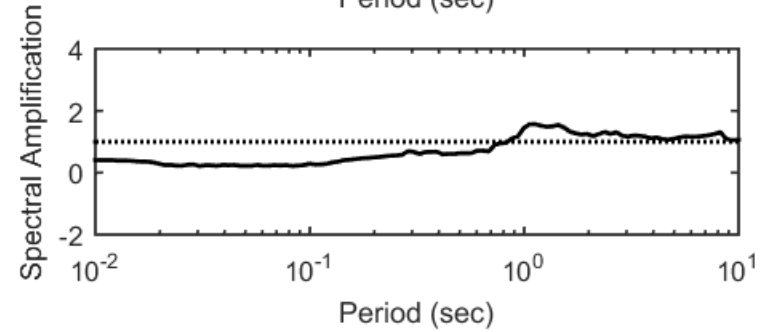
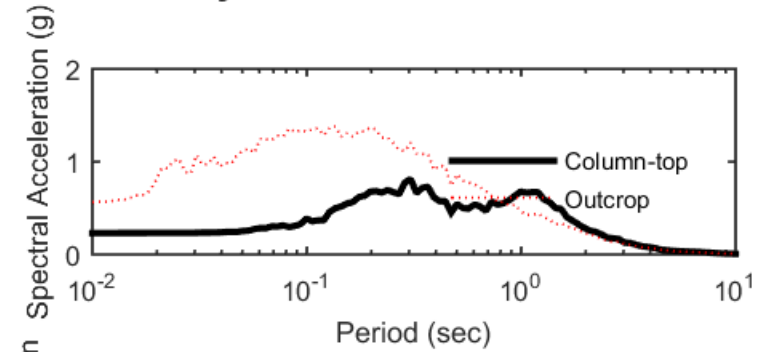
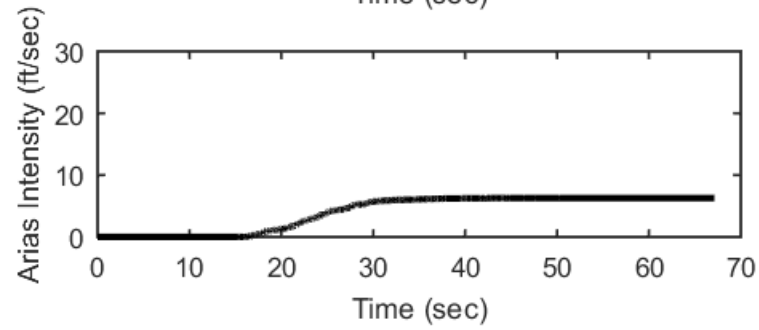
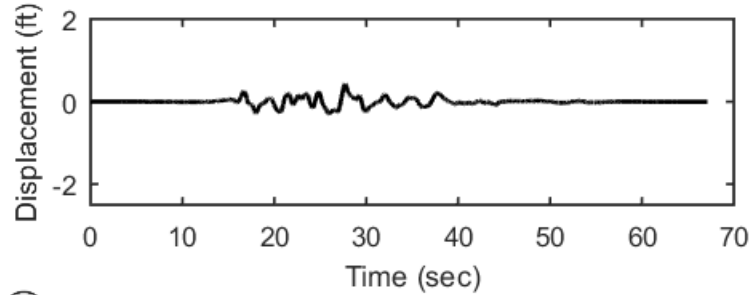
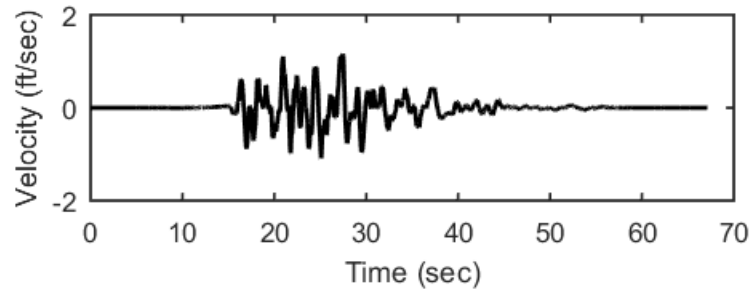
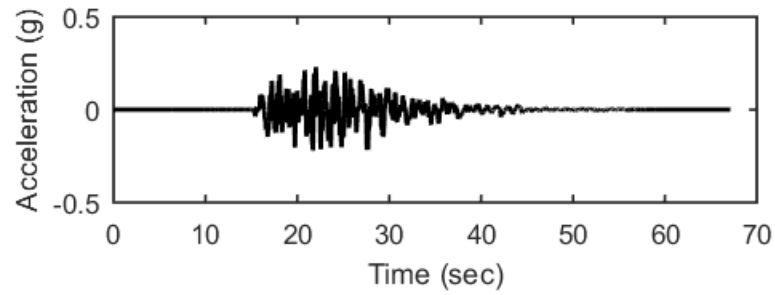
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



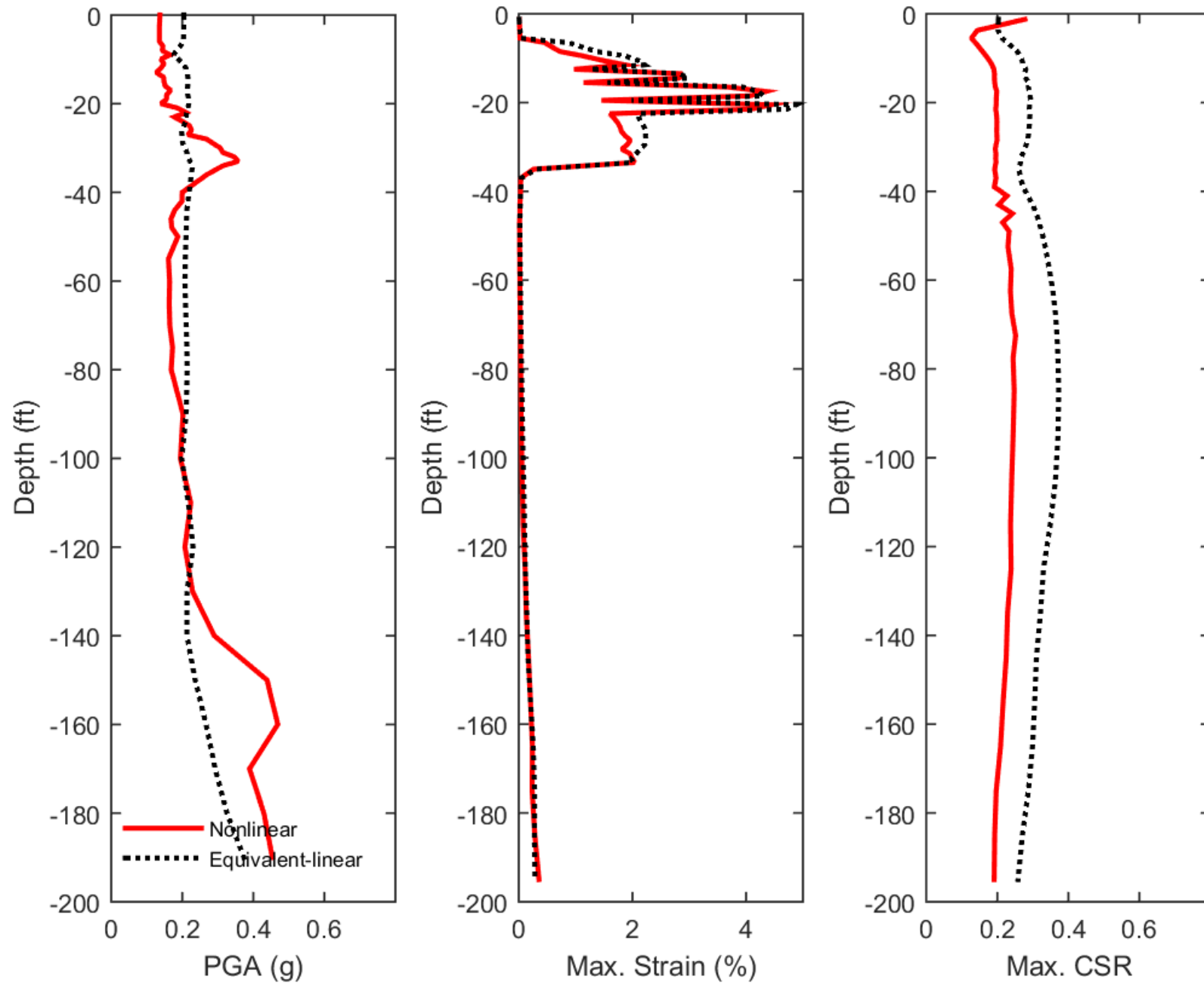
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



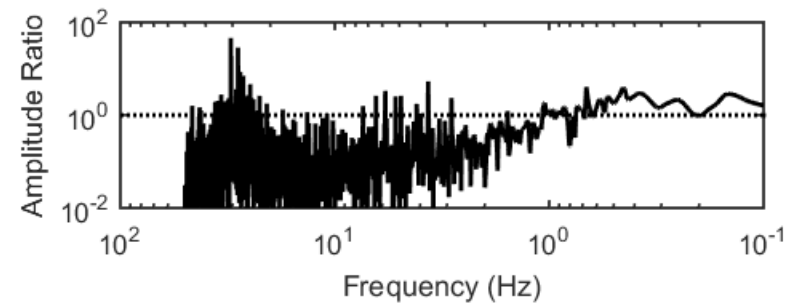
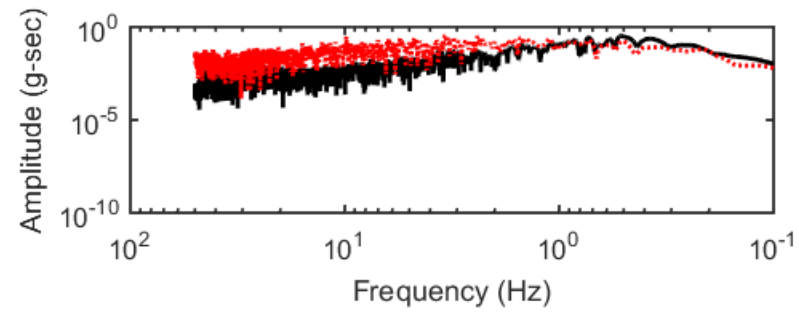
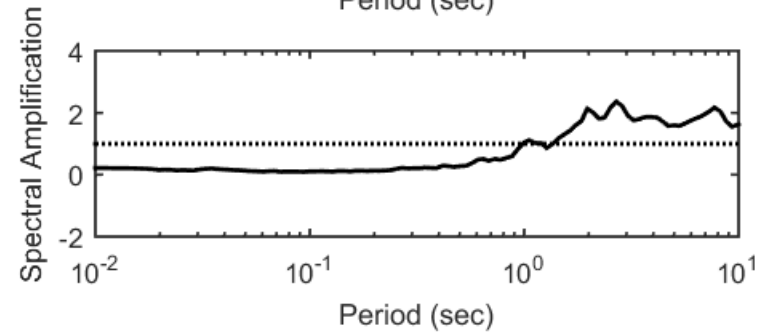
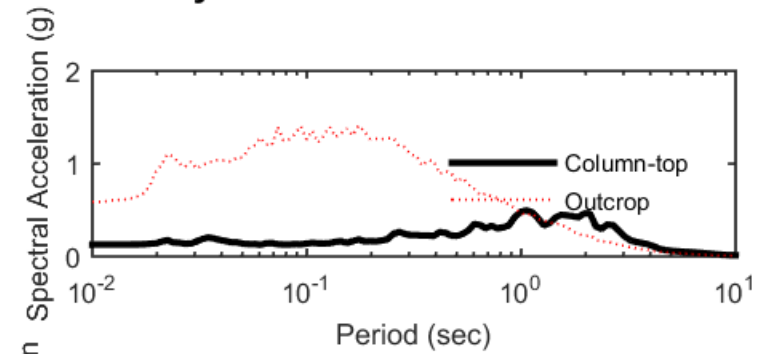
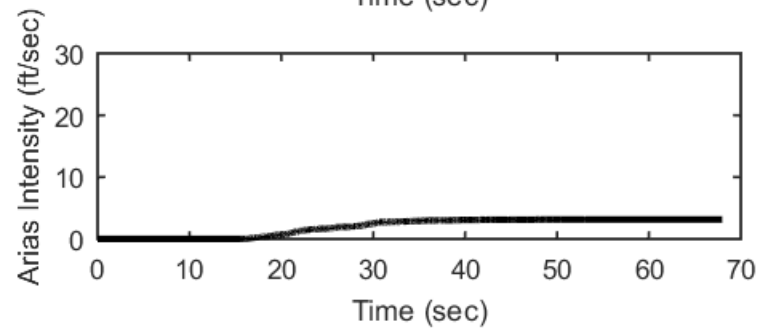
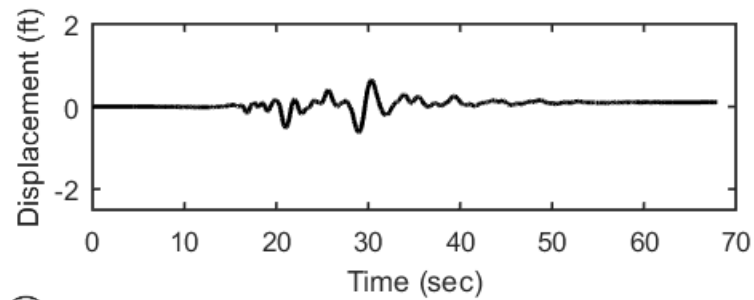
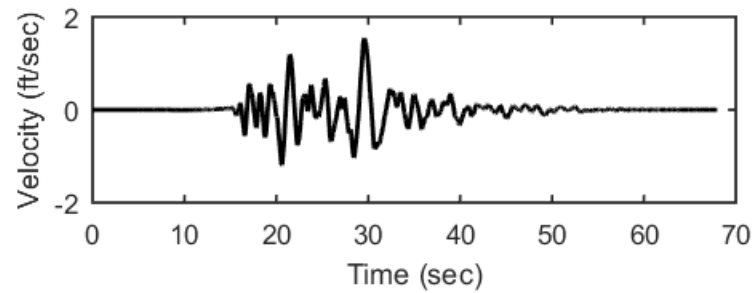
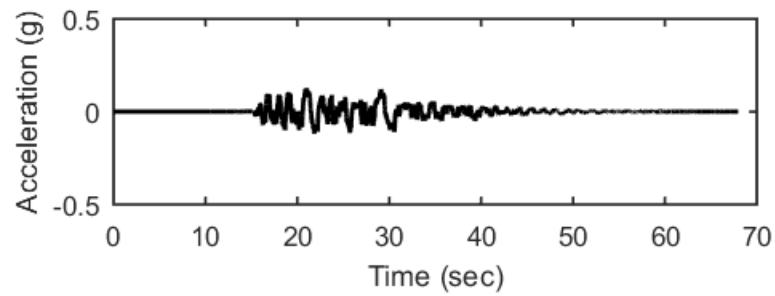
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



### Profile outputs for Motion: SEE5

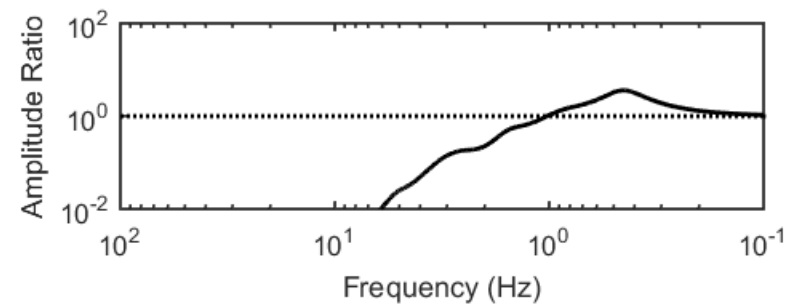
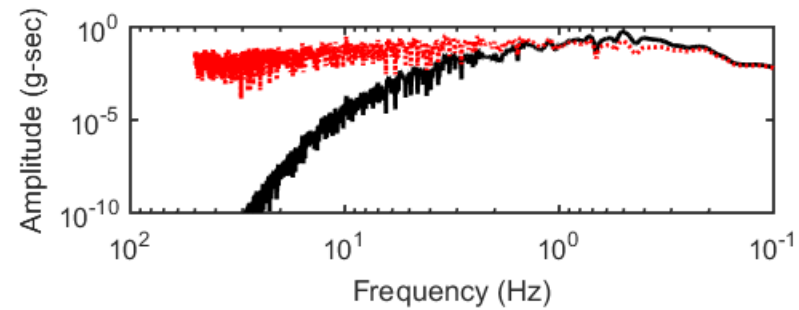
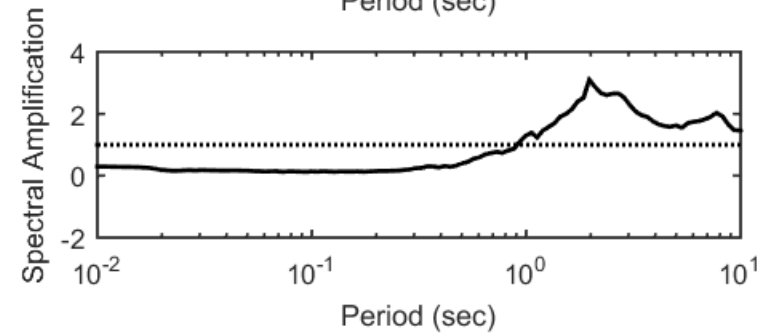
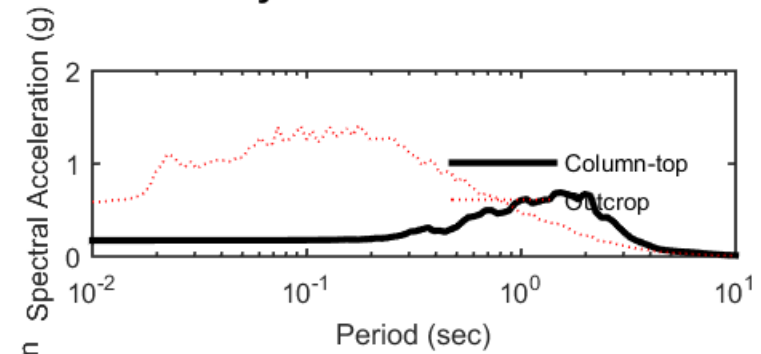
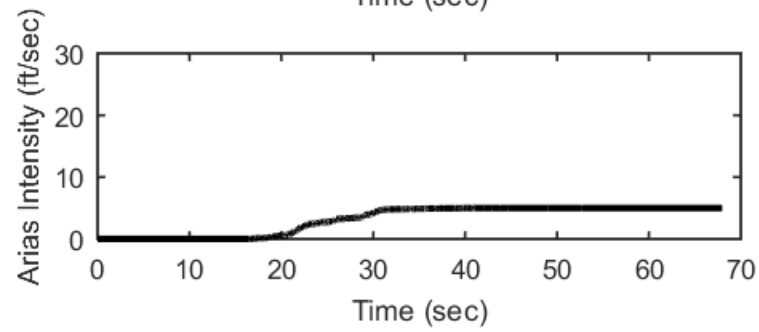
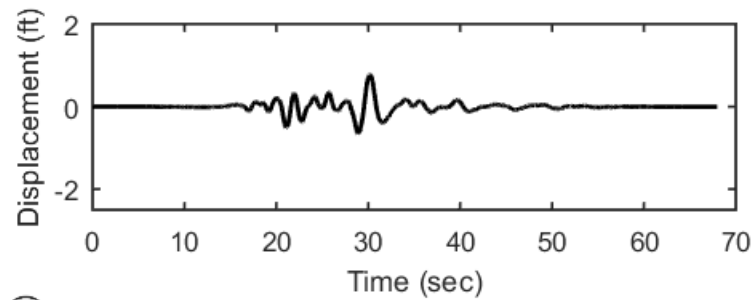
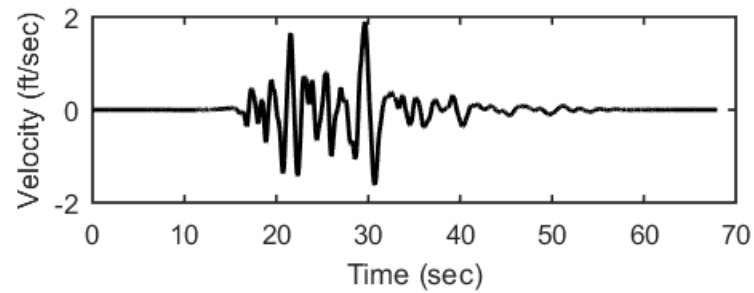
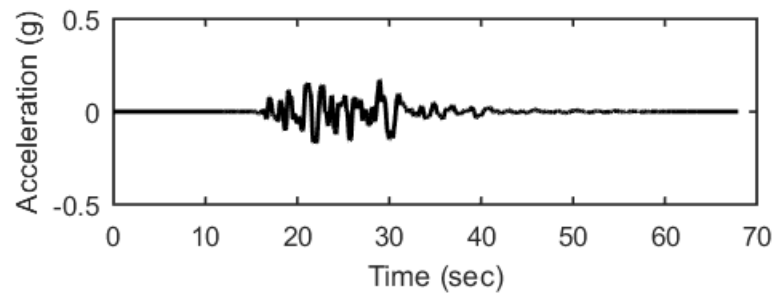


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6

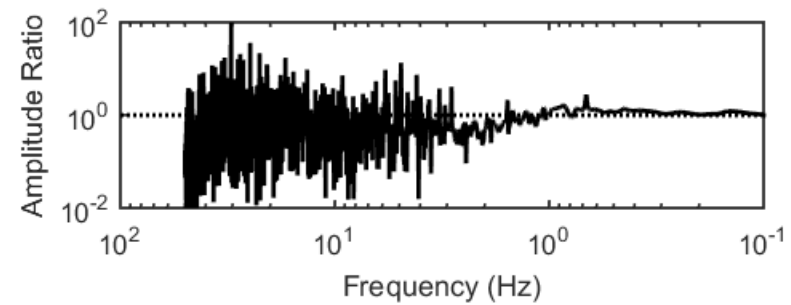
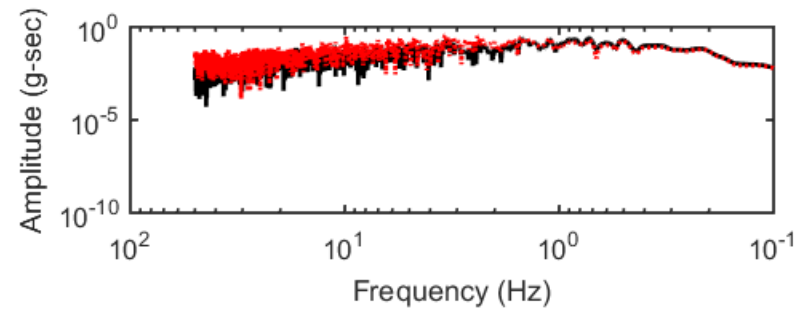
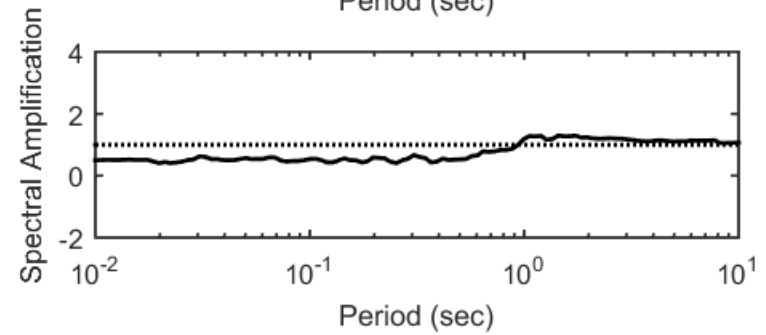
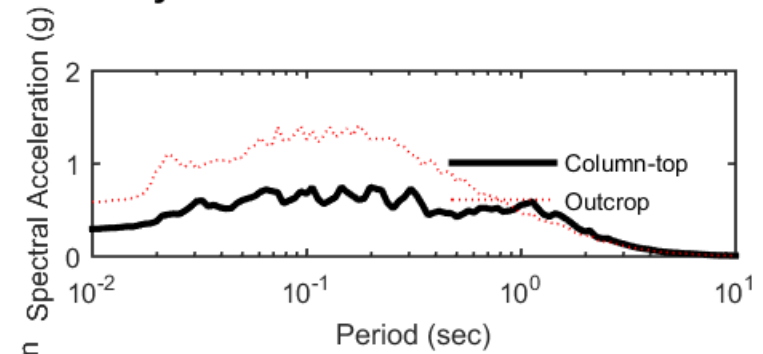
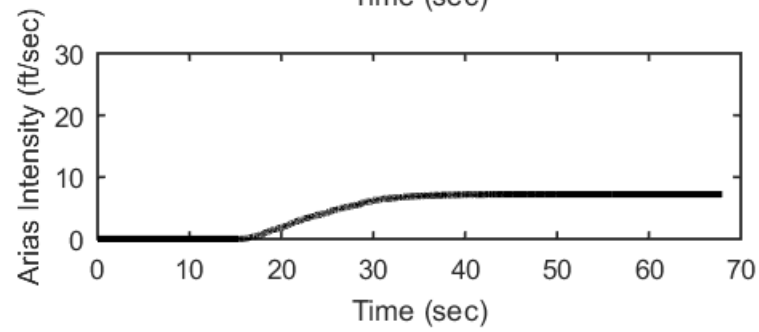
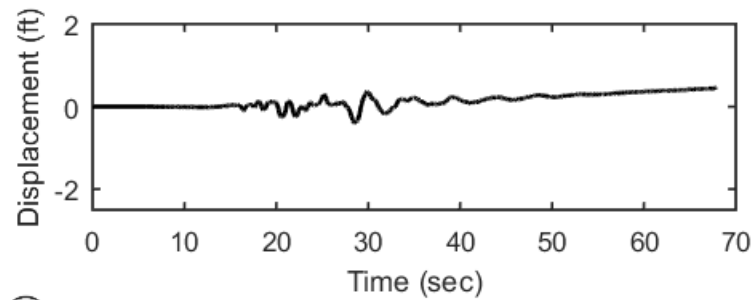
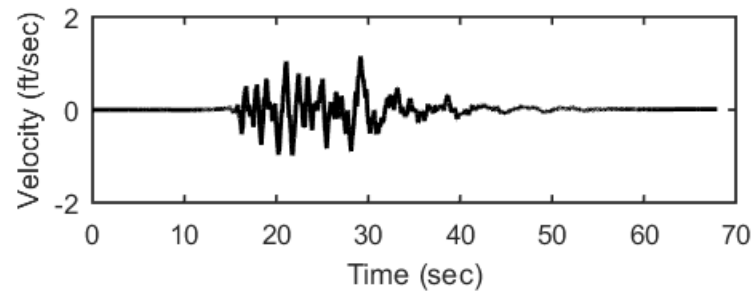
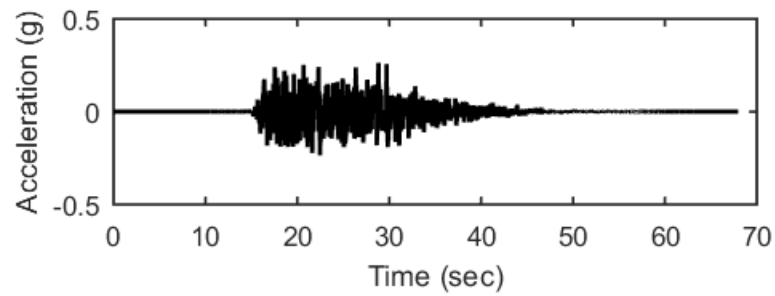




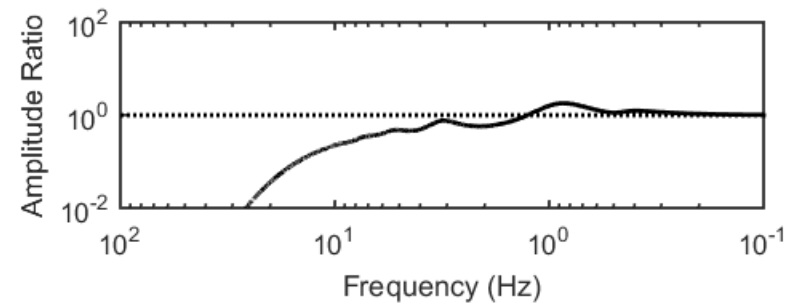
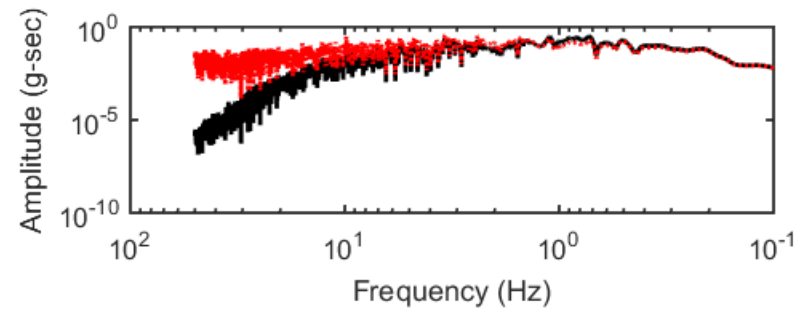
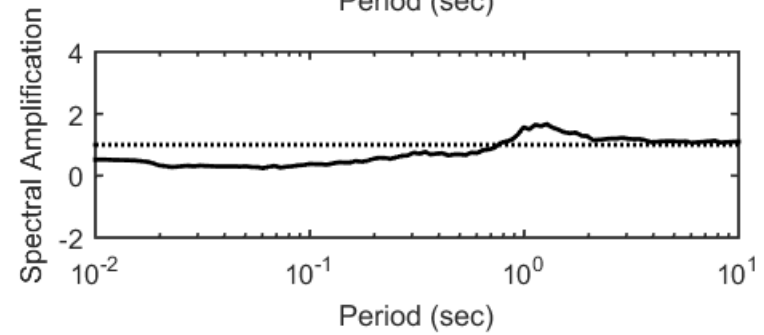
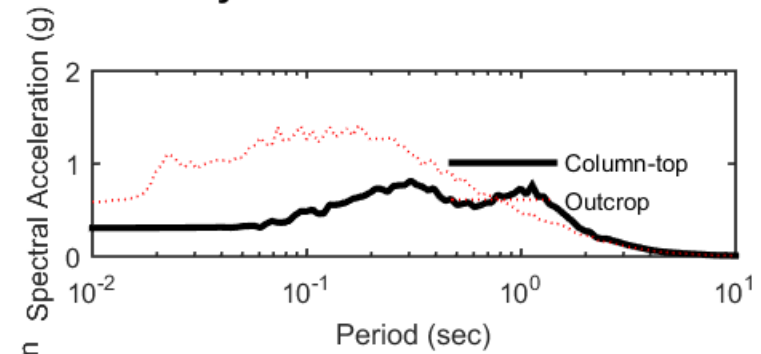
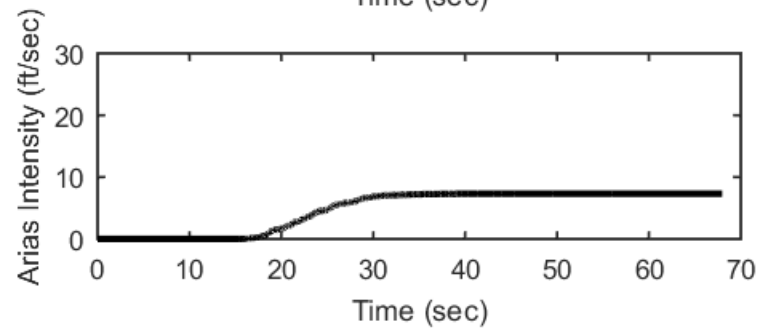
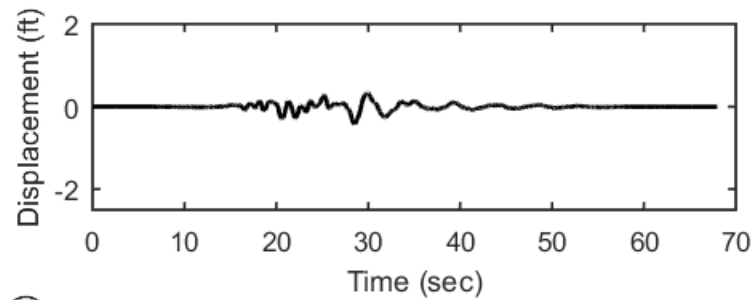
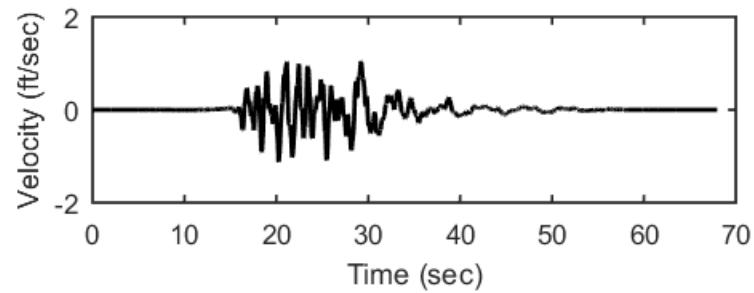
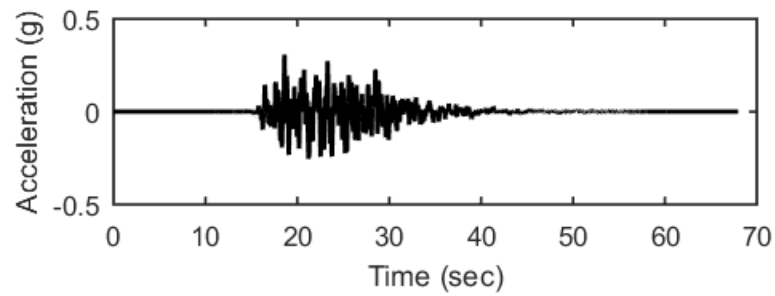
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



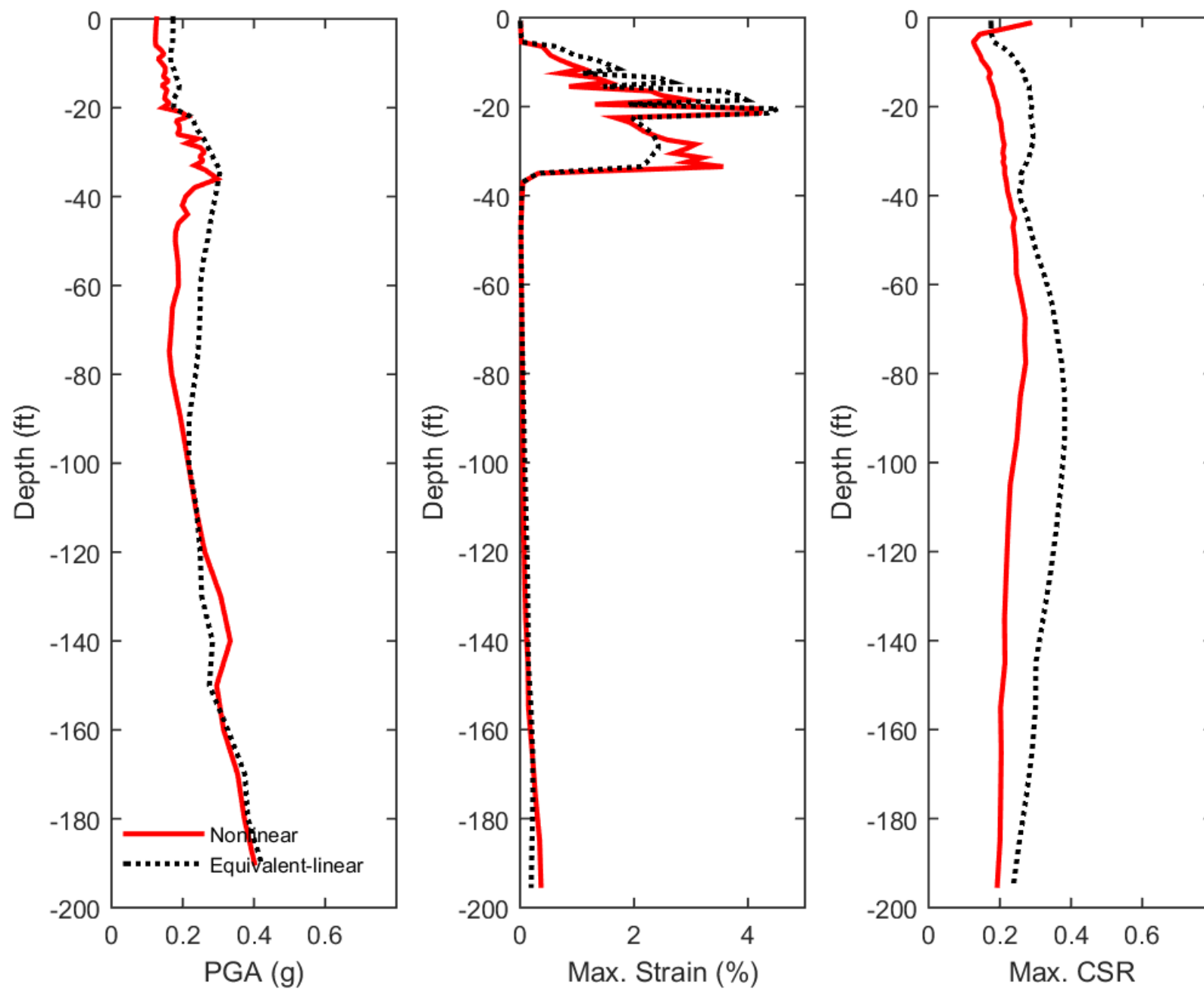
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



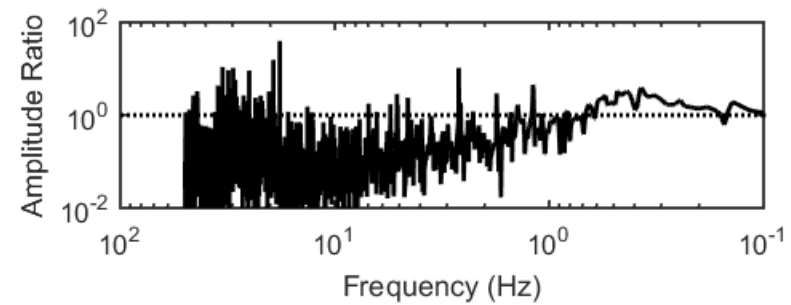
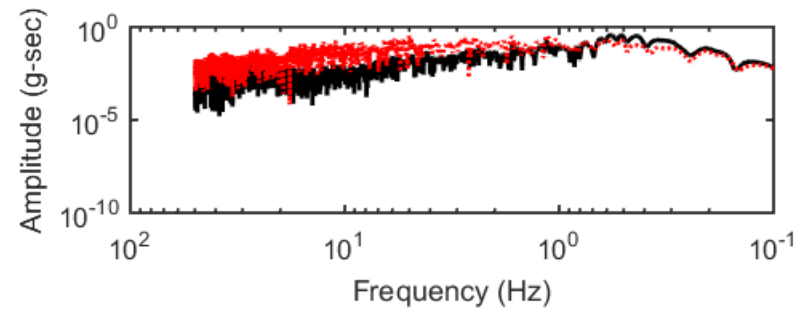
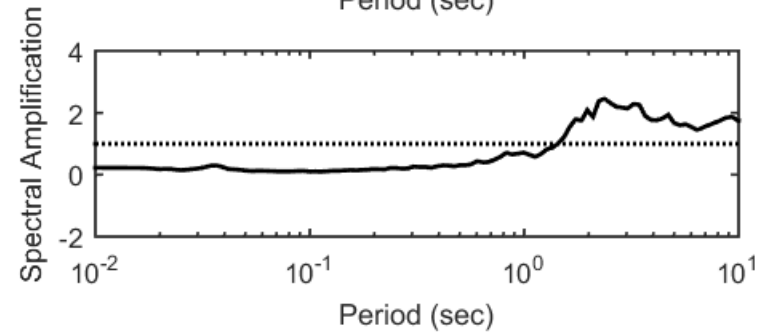
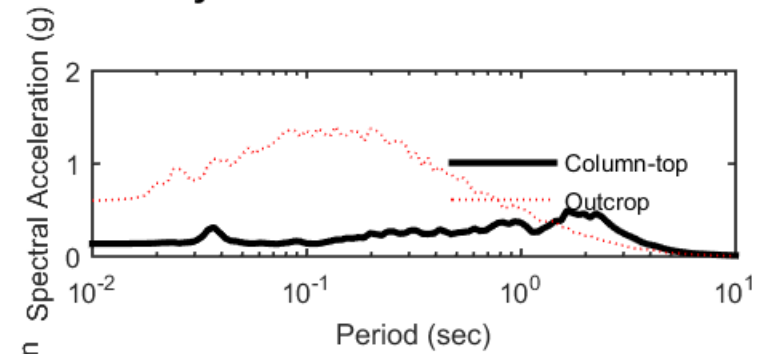
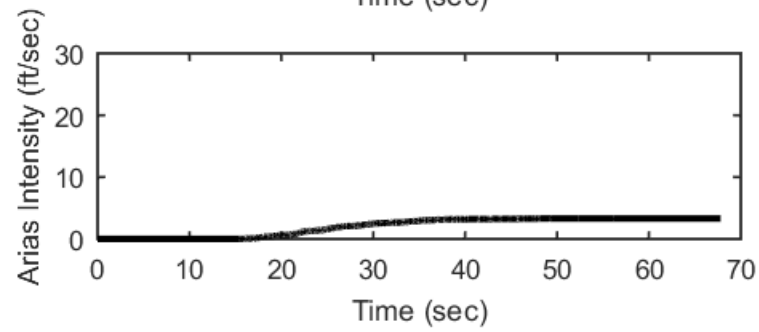
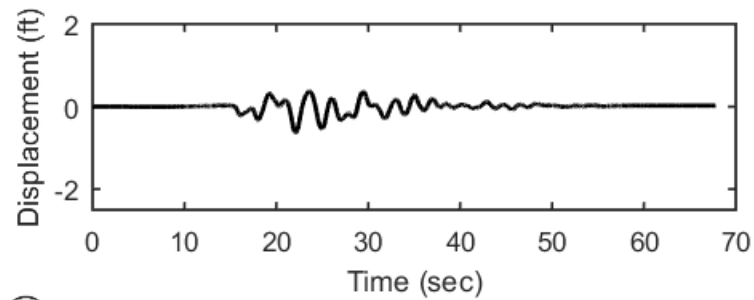
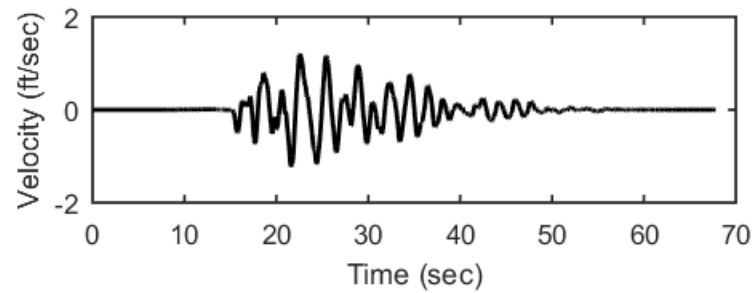
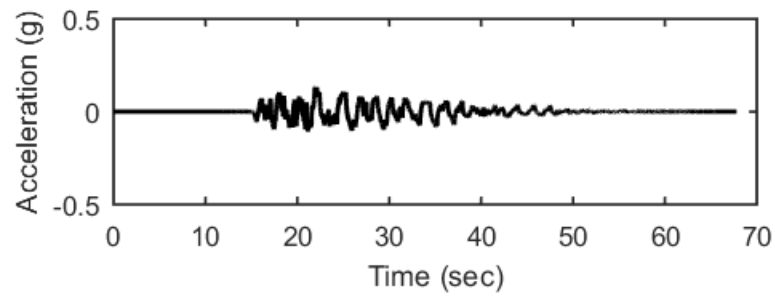
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



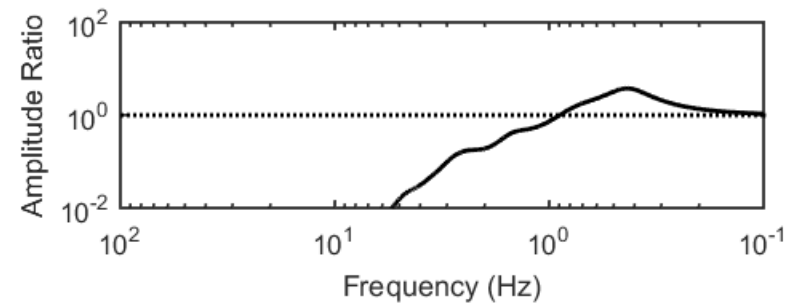
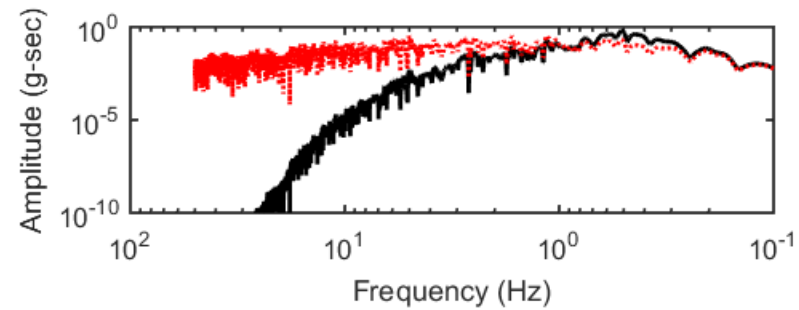
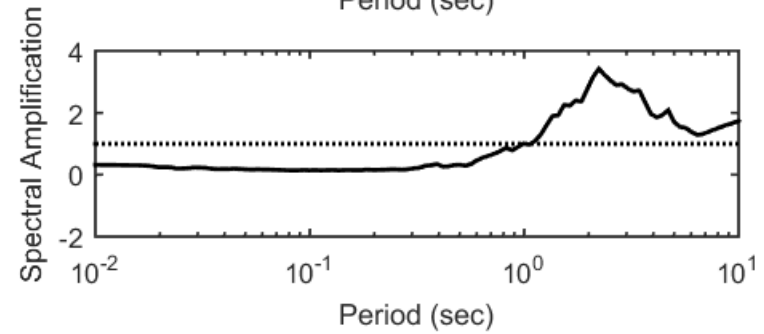
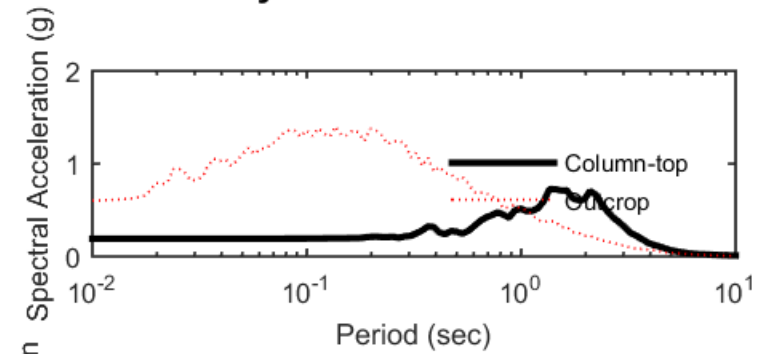
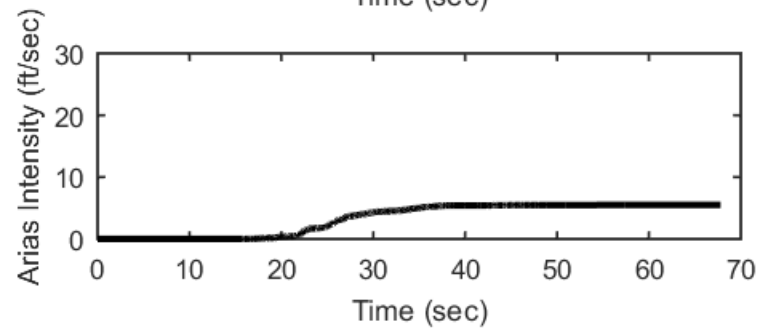
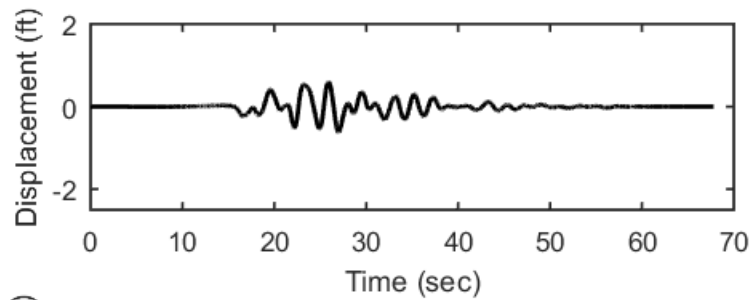
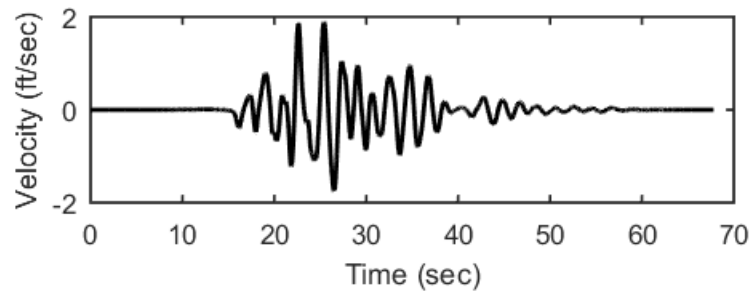
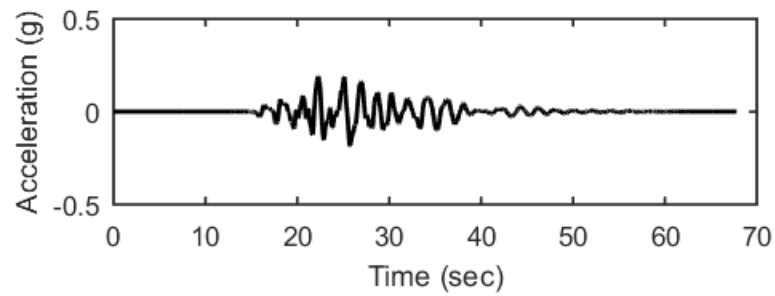
### Profile outputs for Motion: SEE6



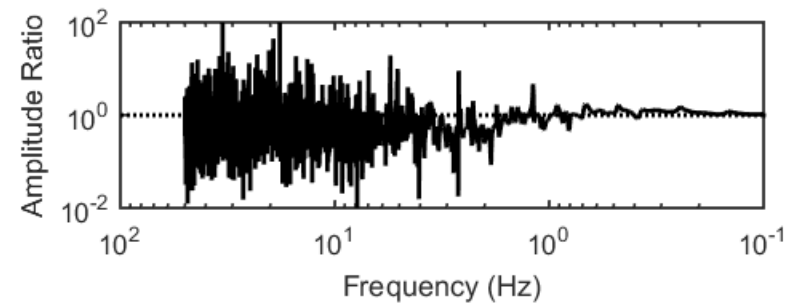
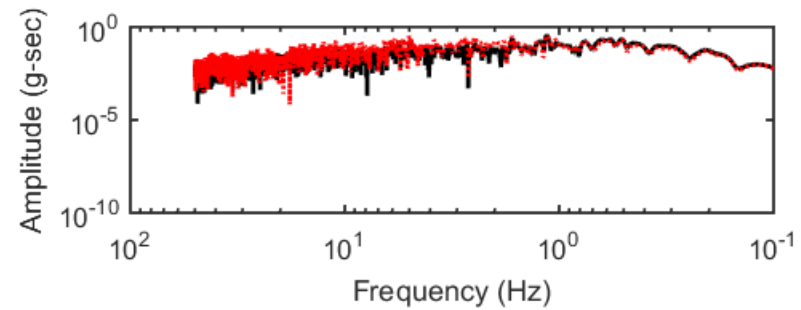
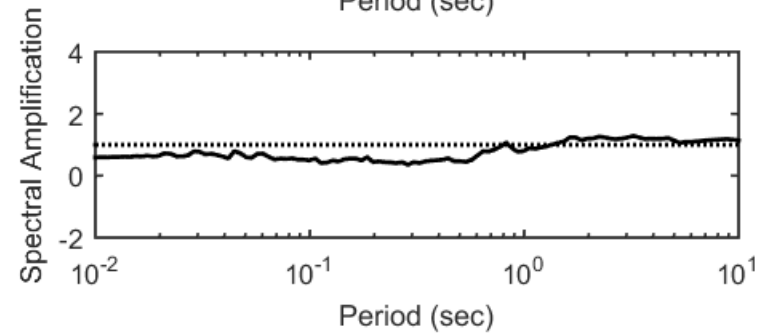
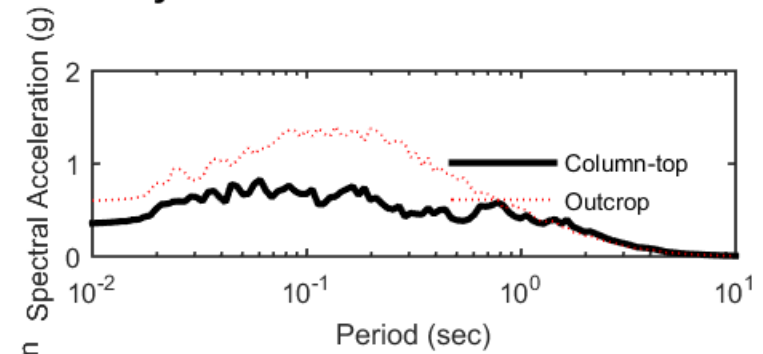
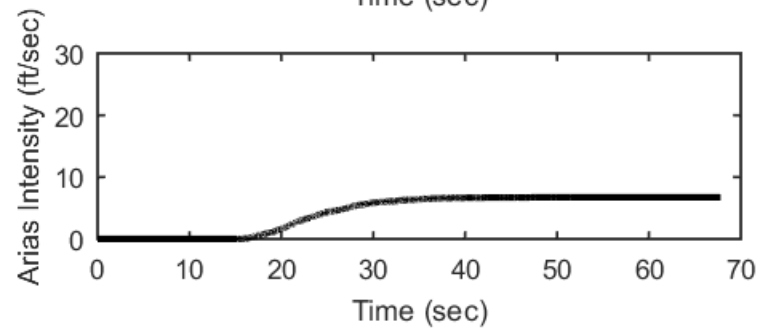
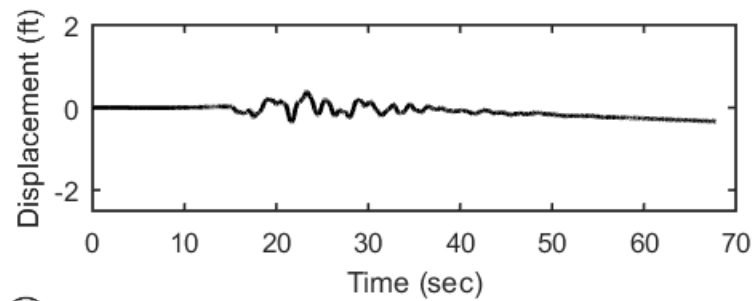
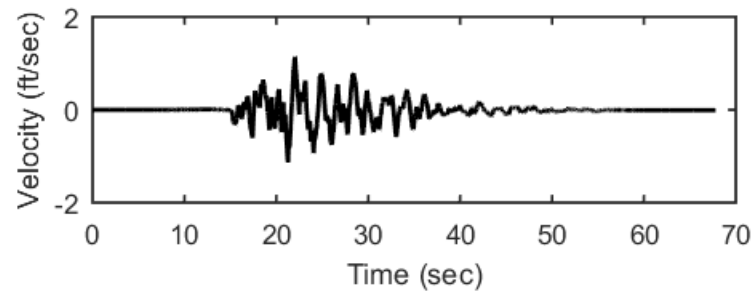
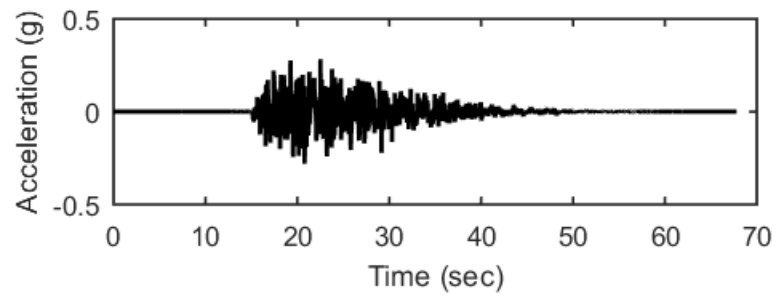
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



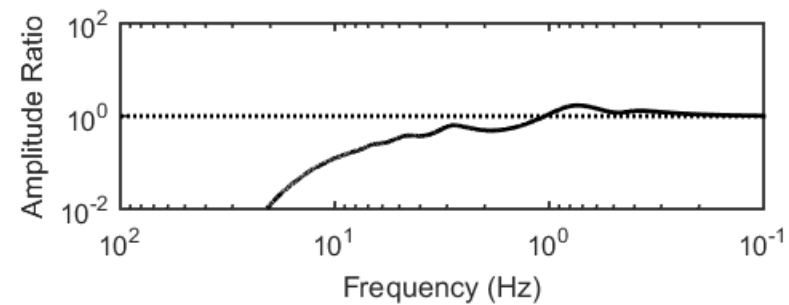
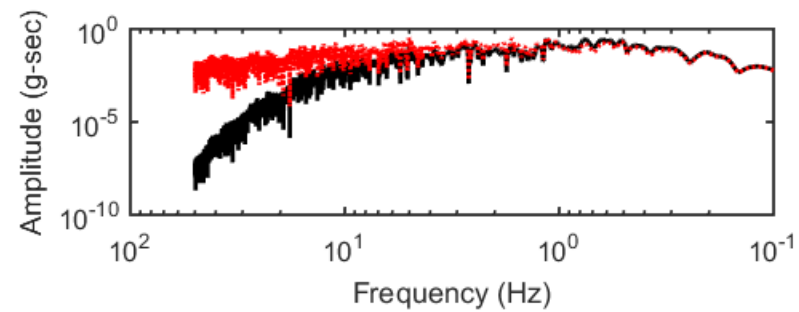
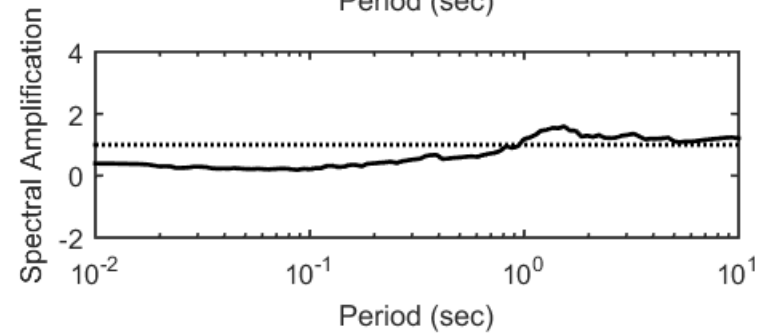
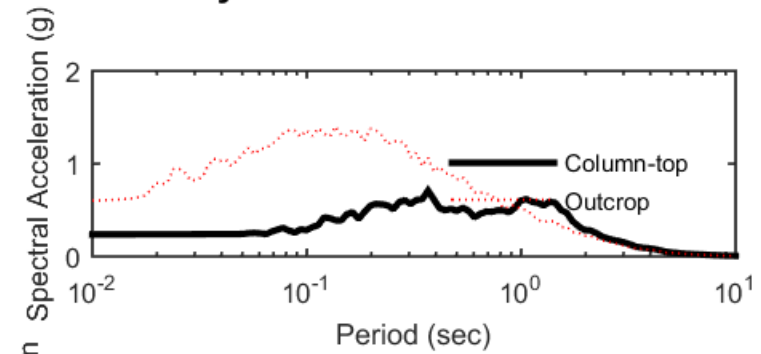
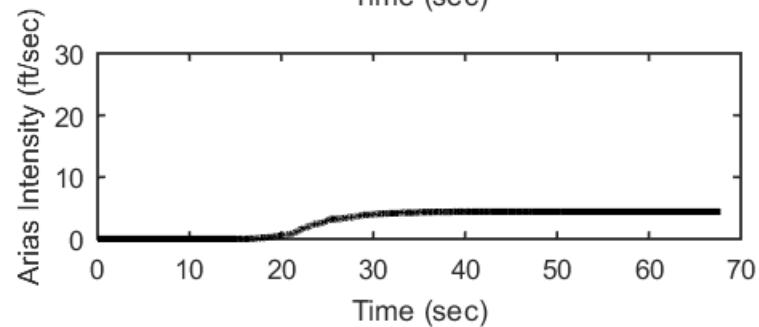
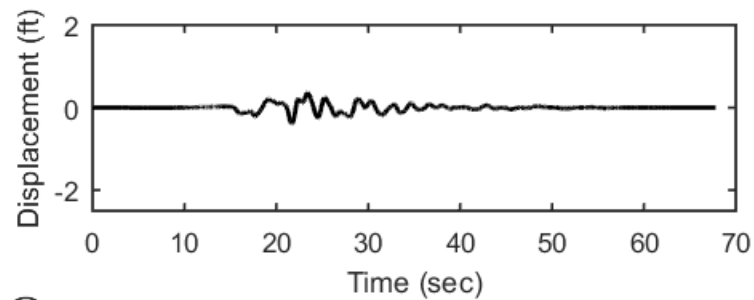
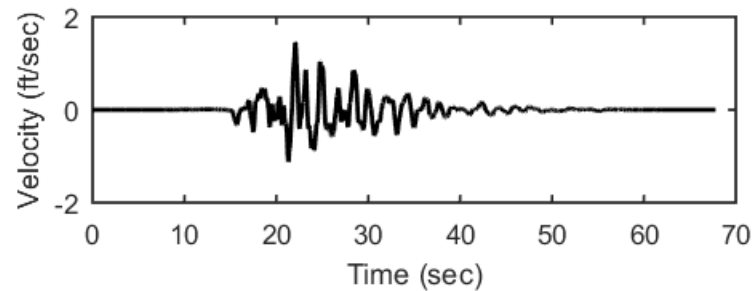
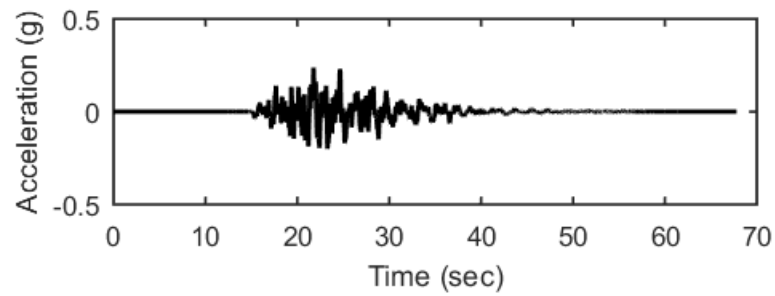
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7

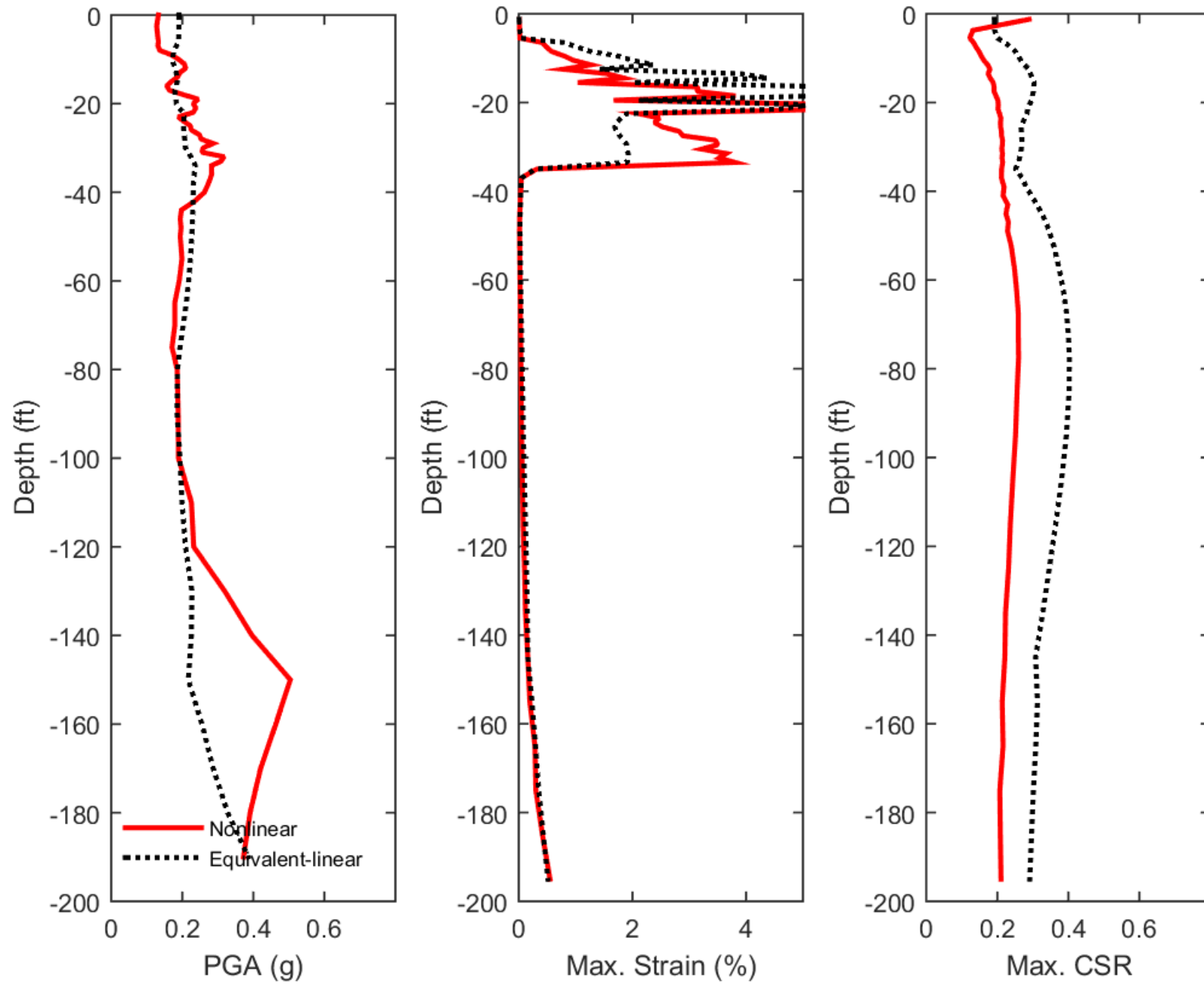


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7

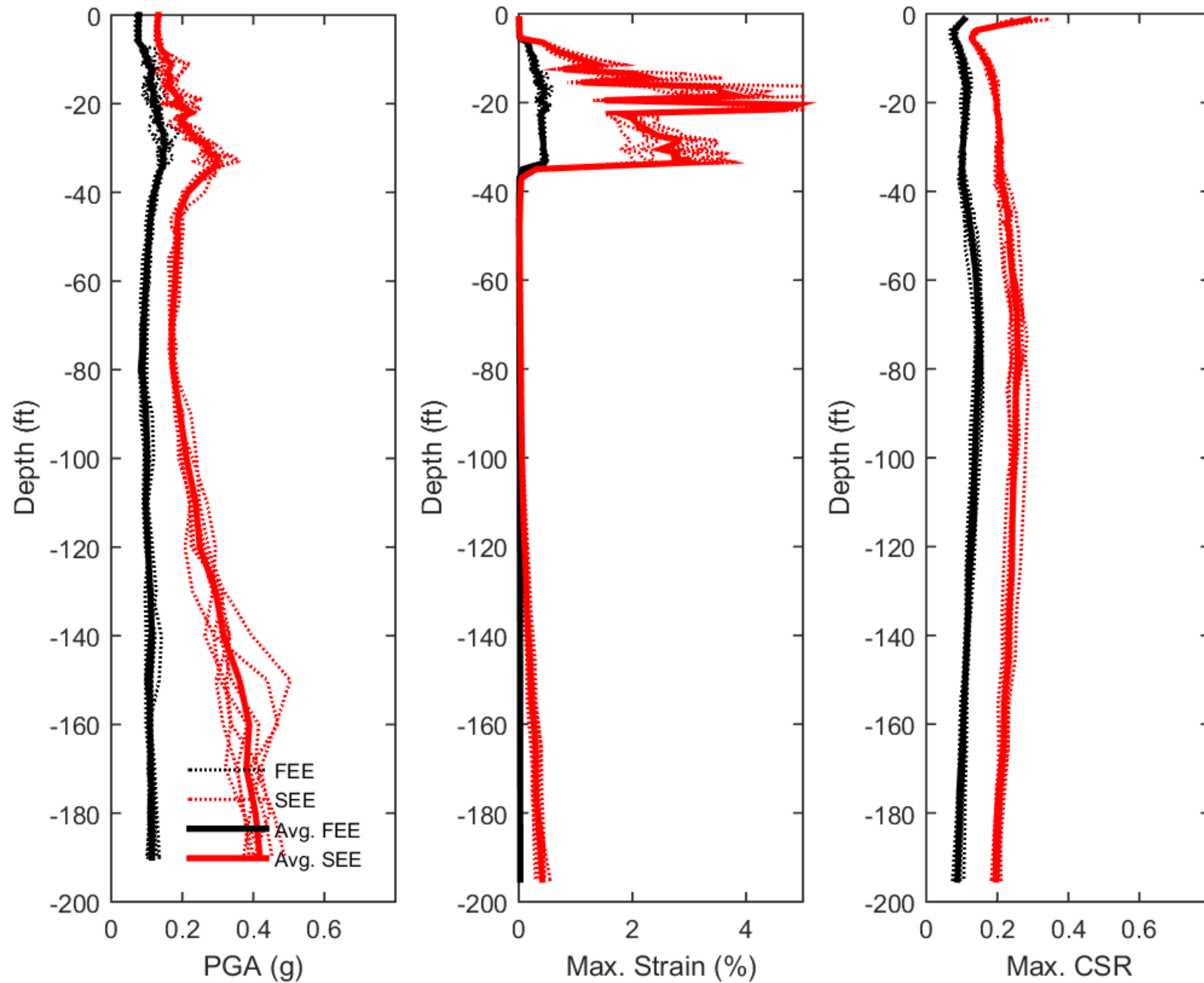




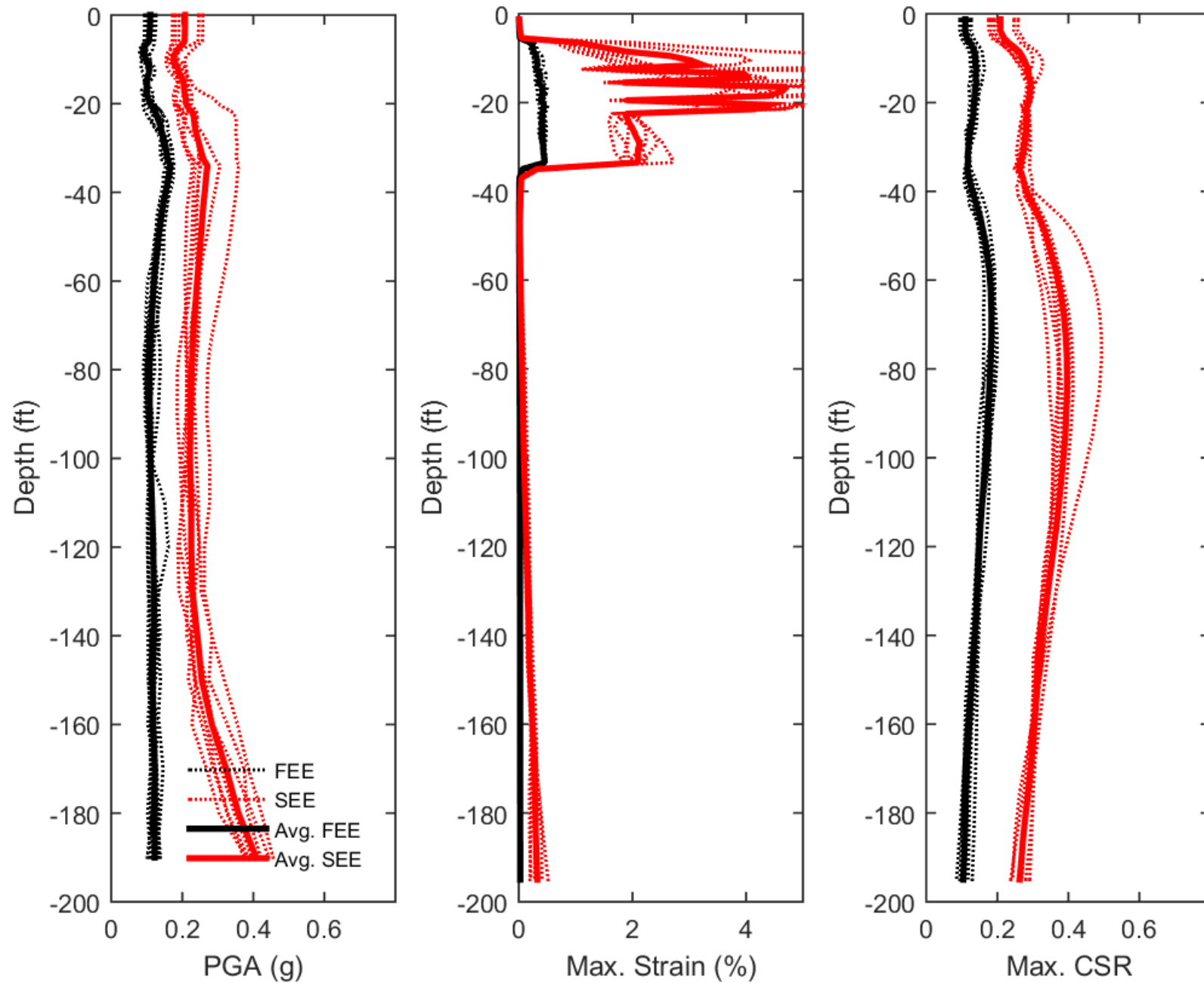
### Profile outputs for Motion: SEE7



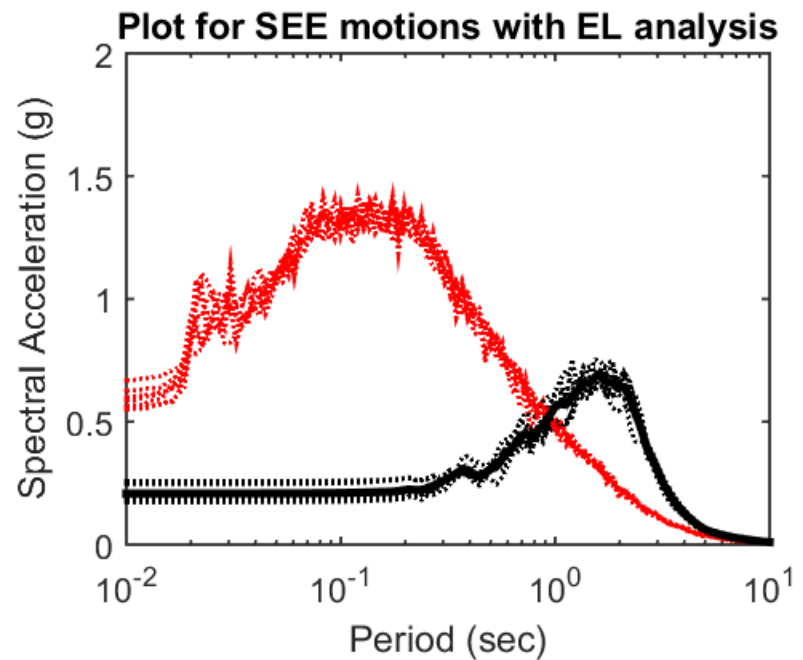
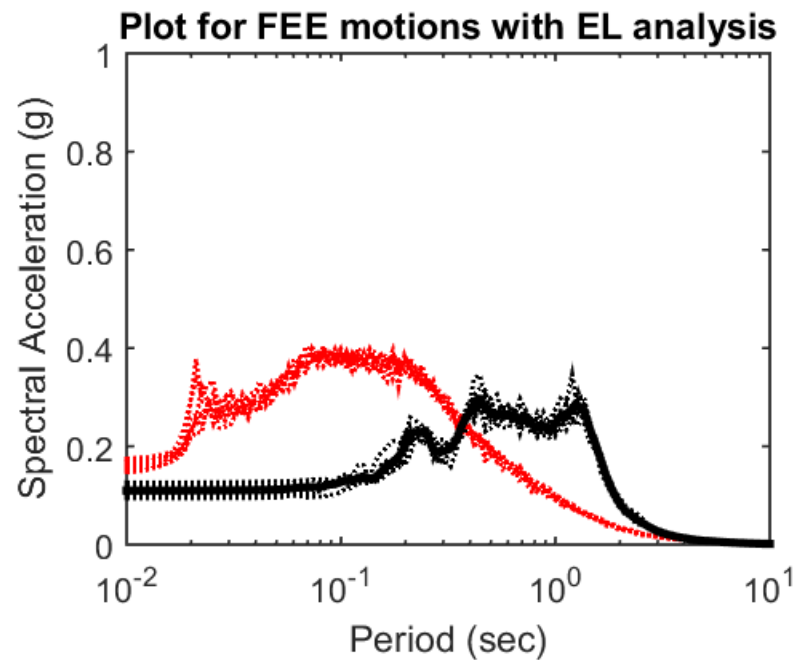
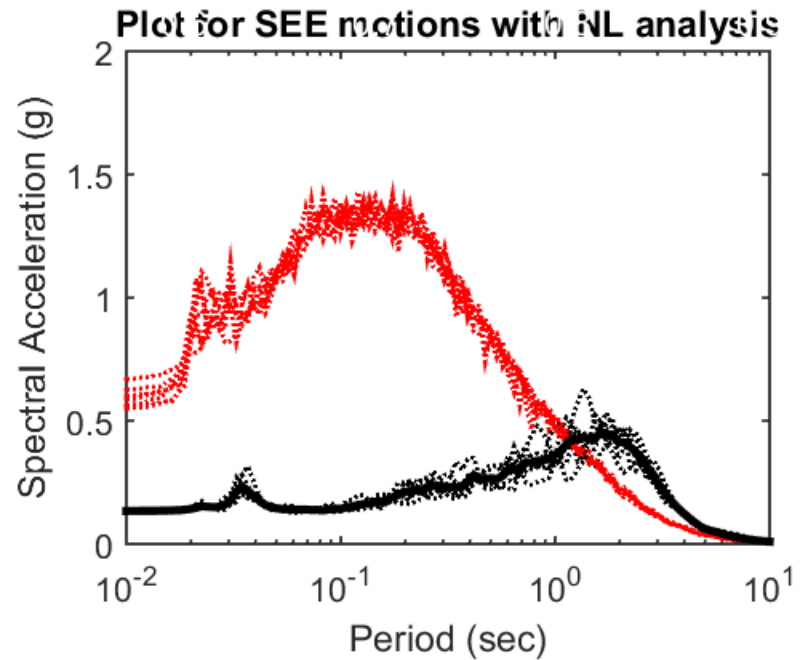
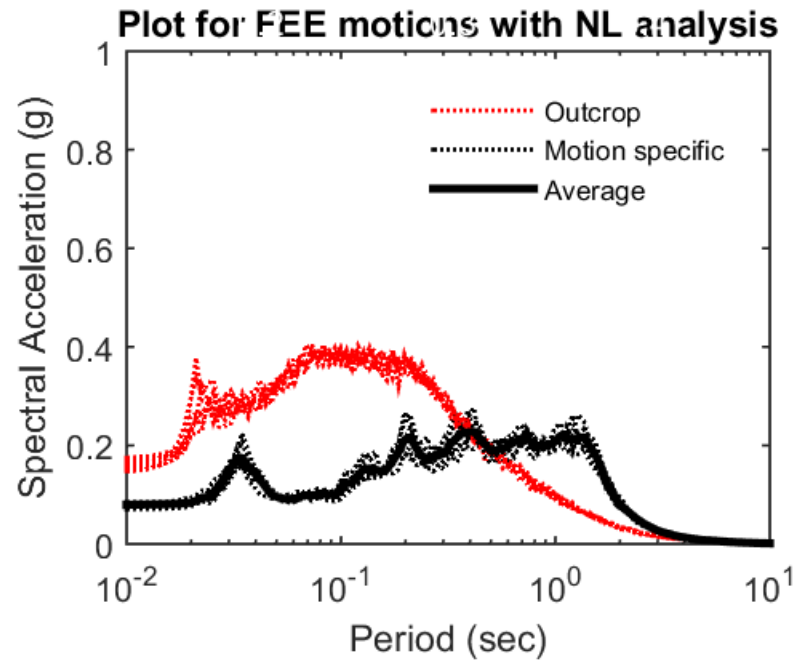
## Summary of the profile outputs for Nonlinear analysis



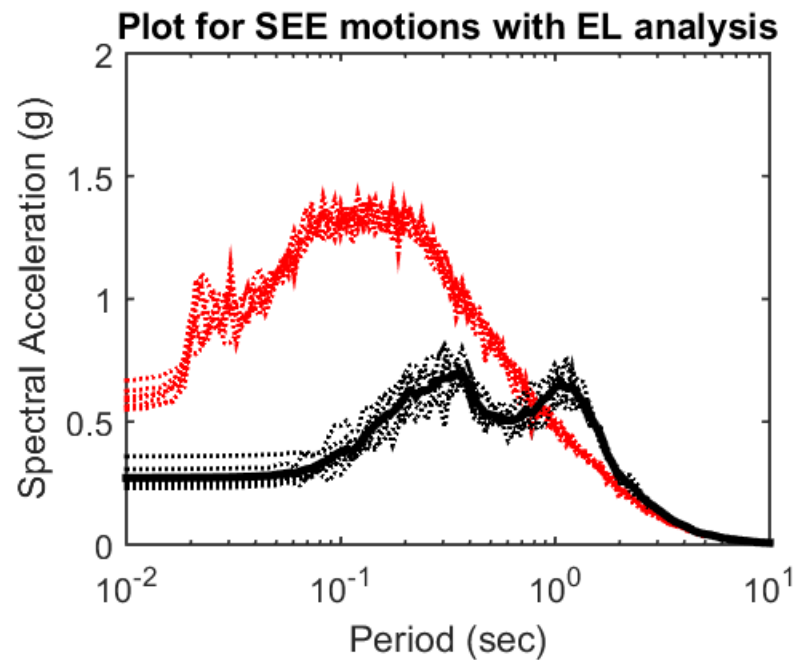
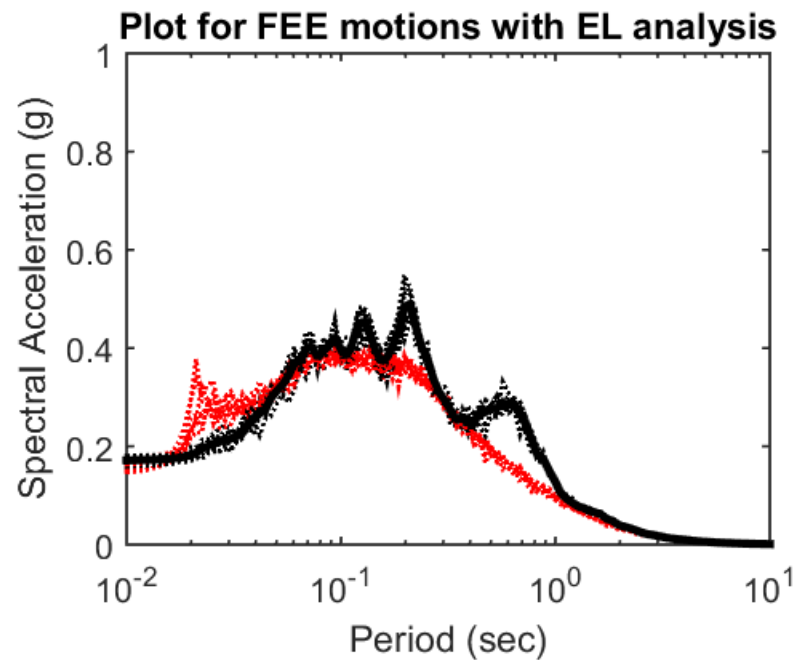
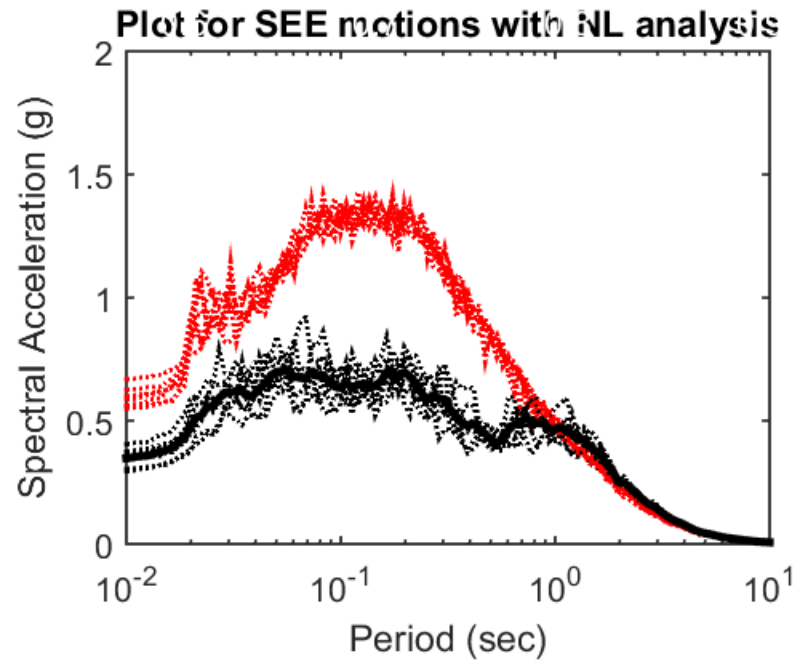
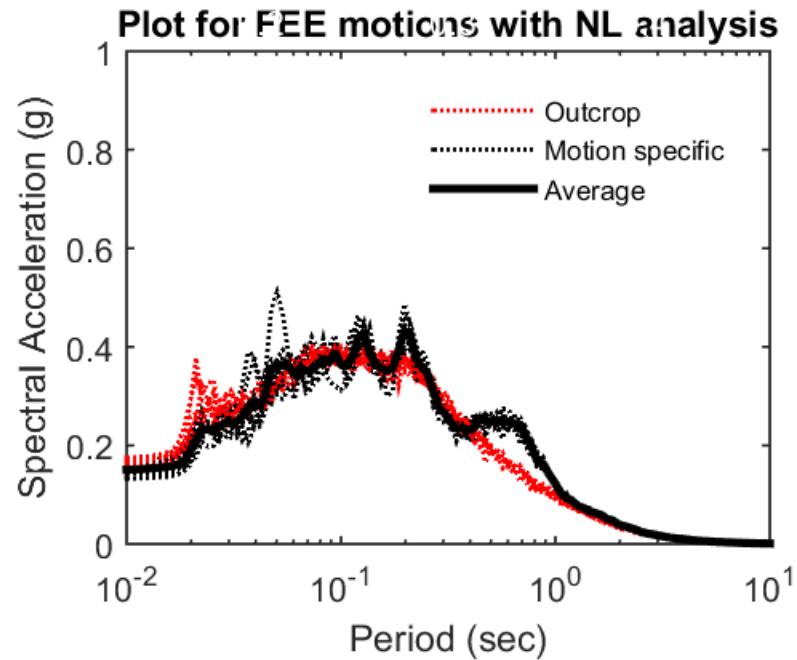
### Summary of the profile outputs for Equivalent-linear analysis



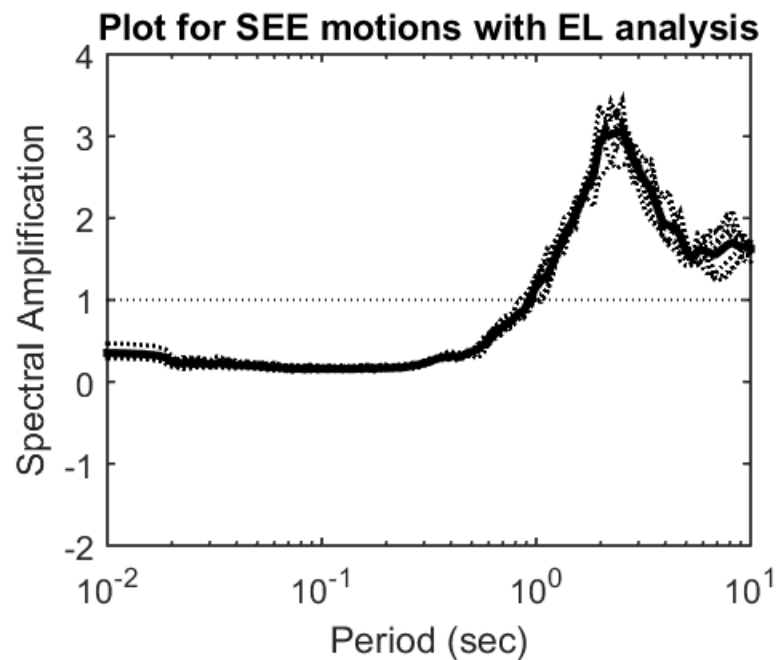
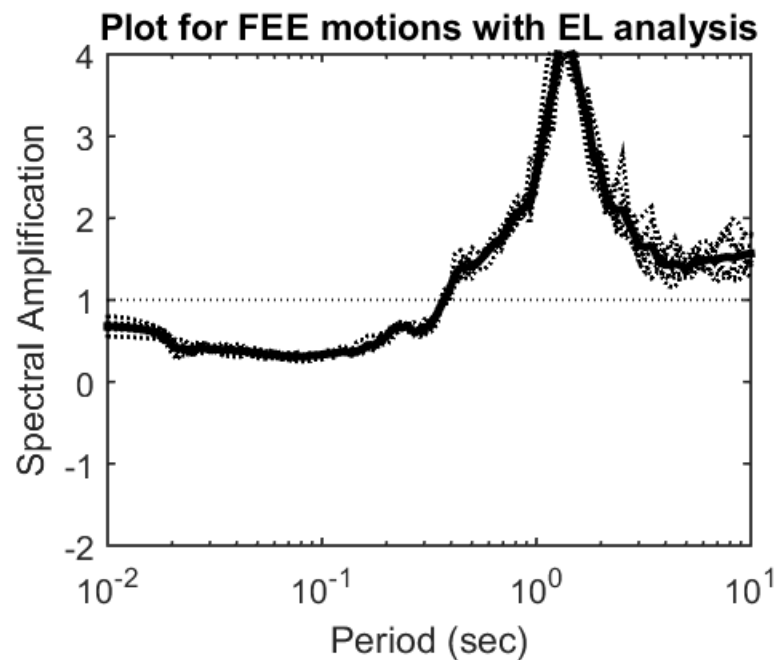
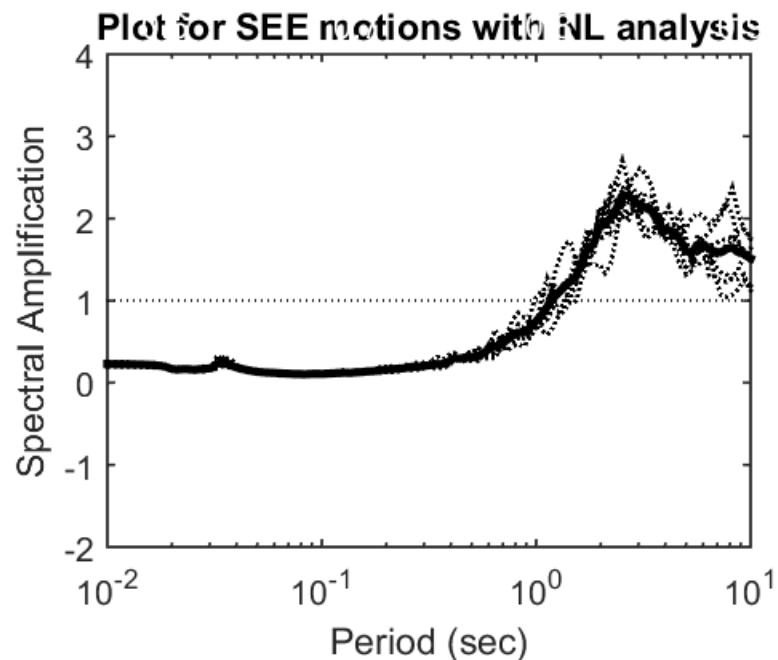
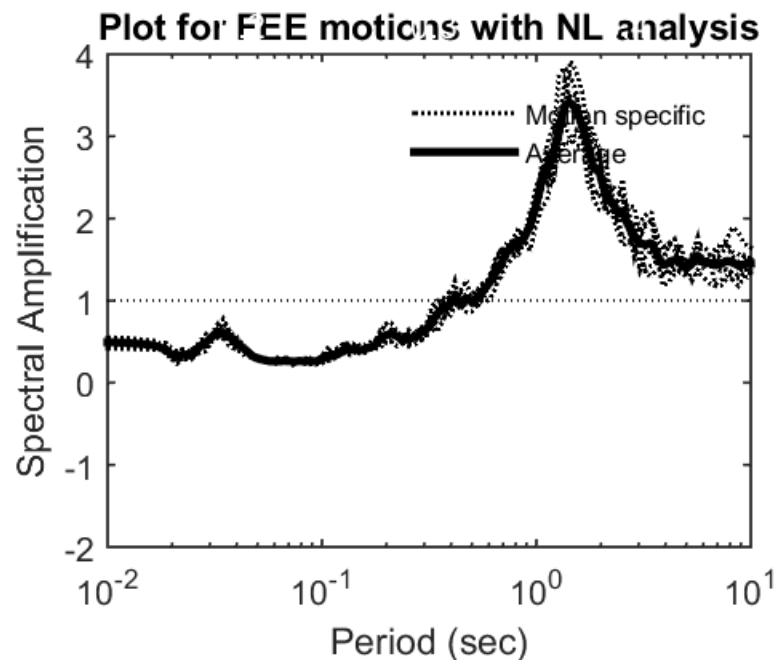
## Summary plots: RSA at ground surface



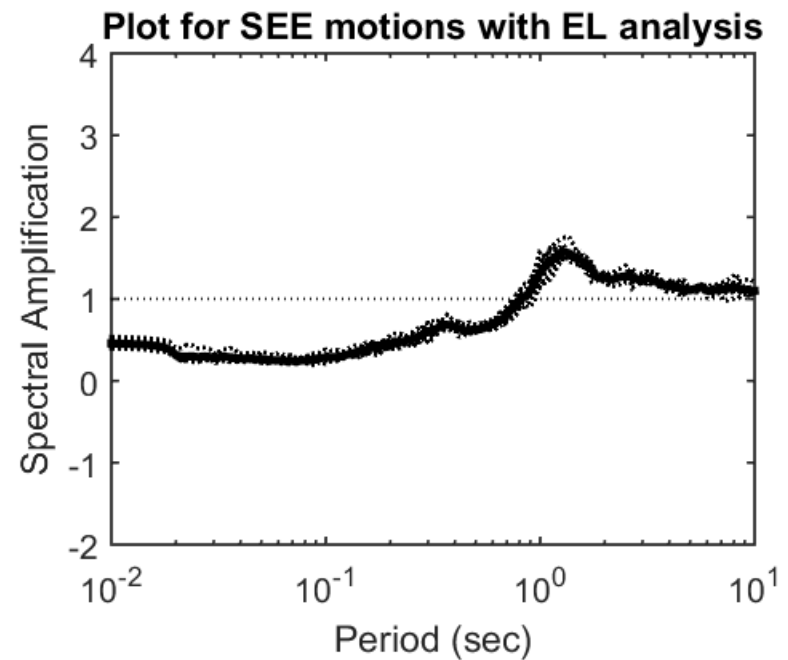
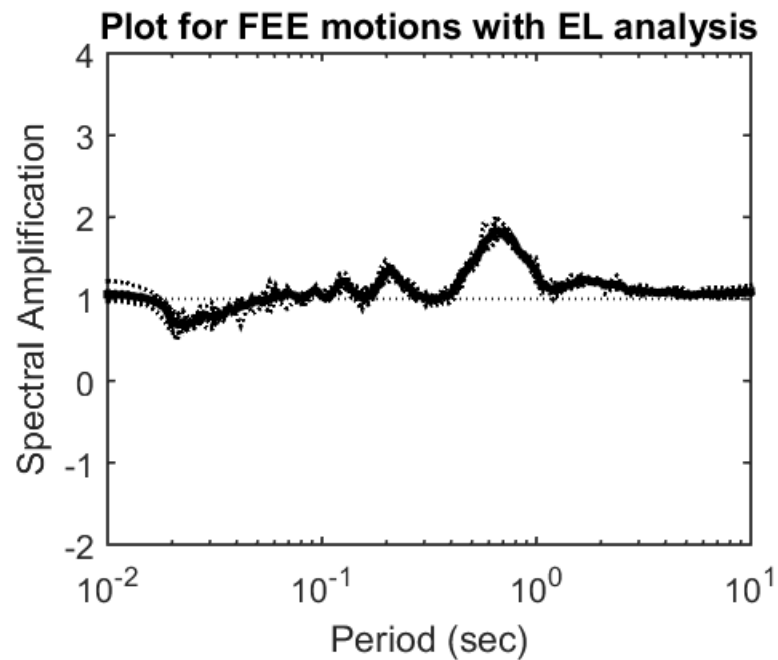
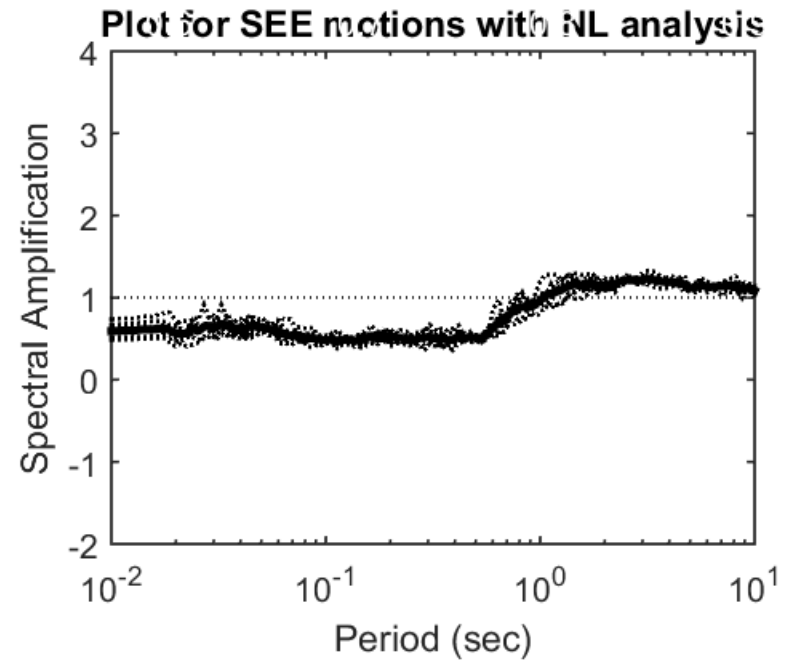
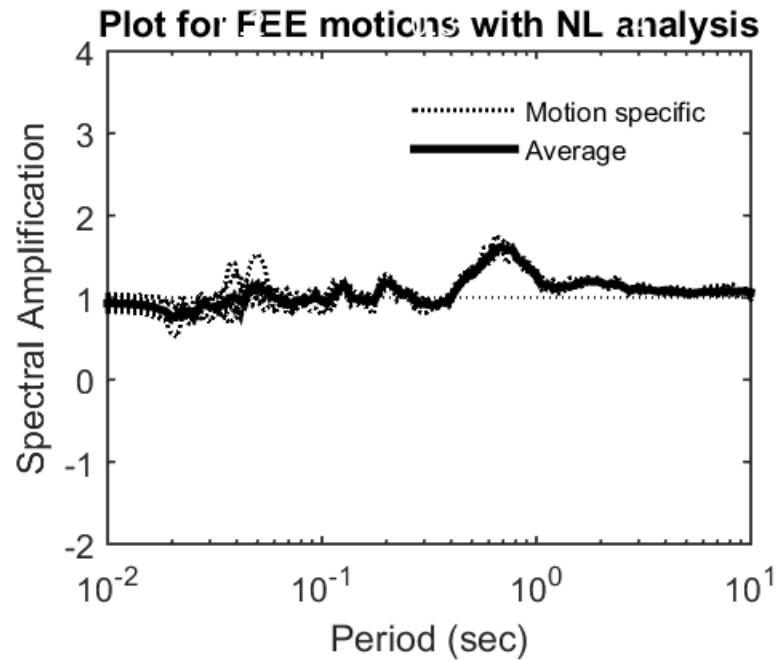
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



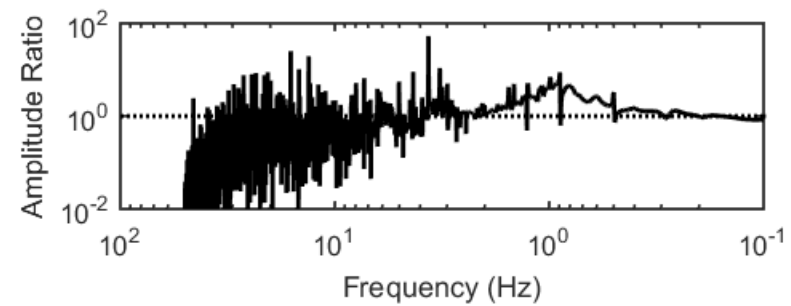
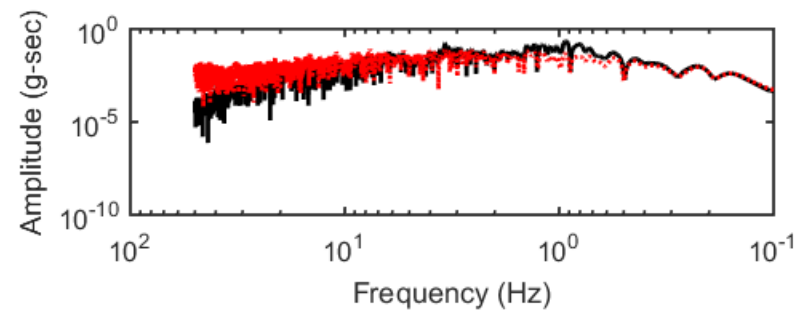
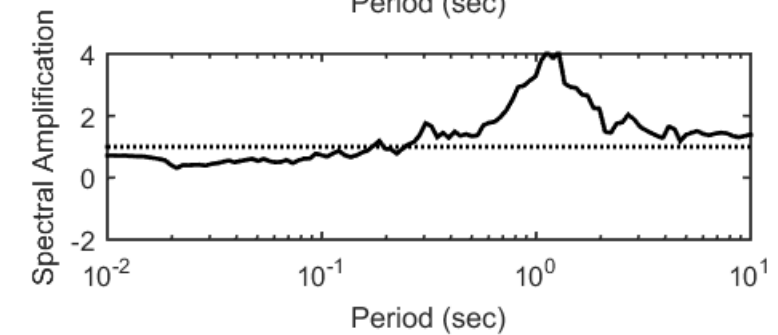
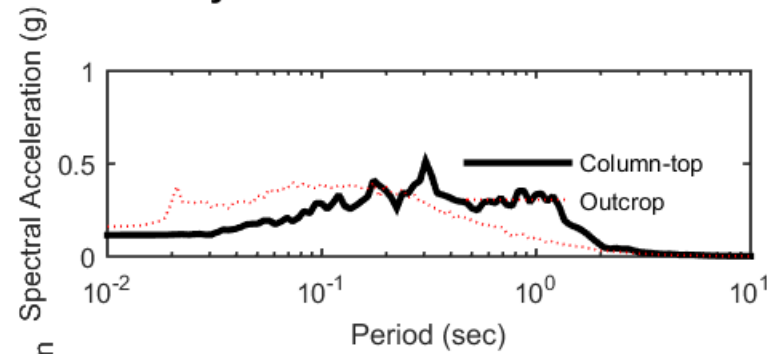
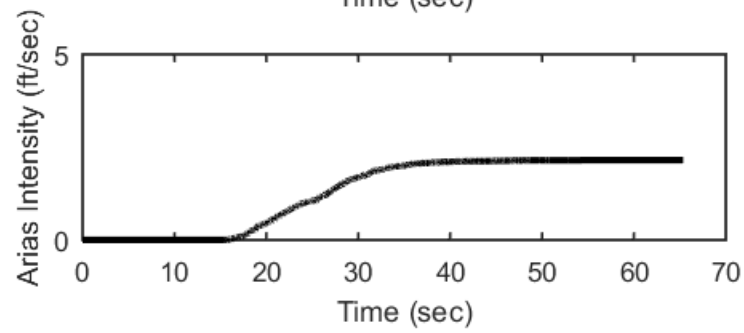
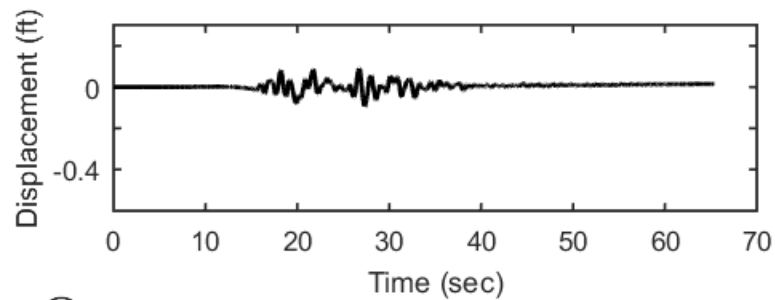
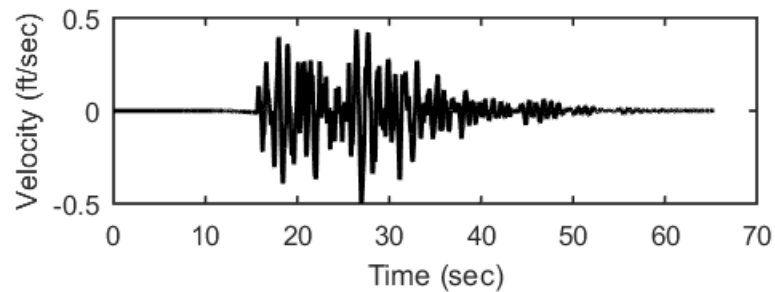
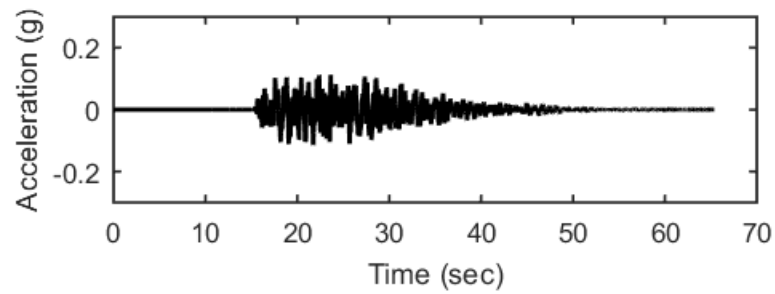
## Summary plots: Spectral amplification at top of Marl



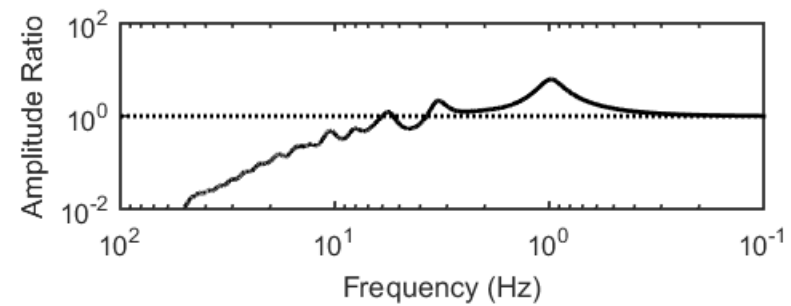
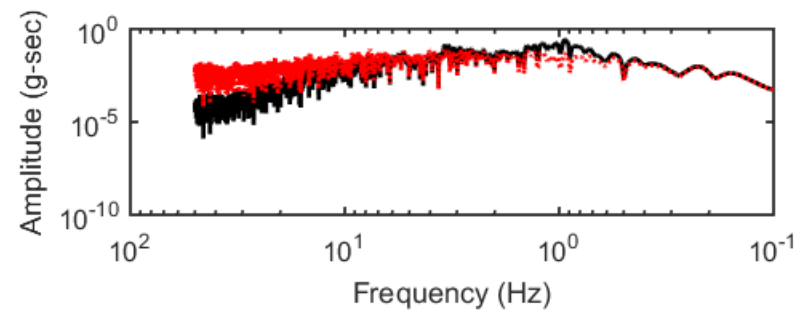
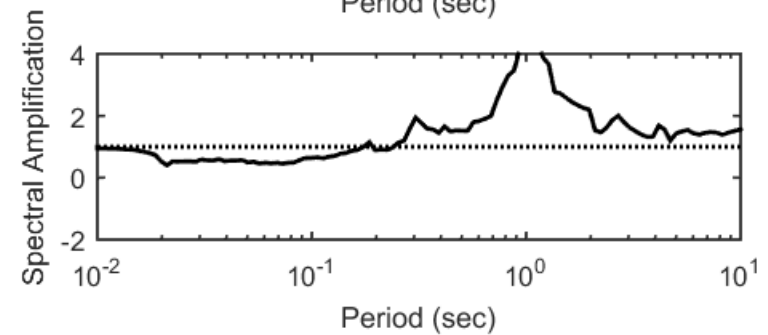
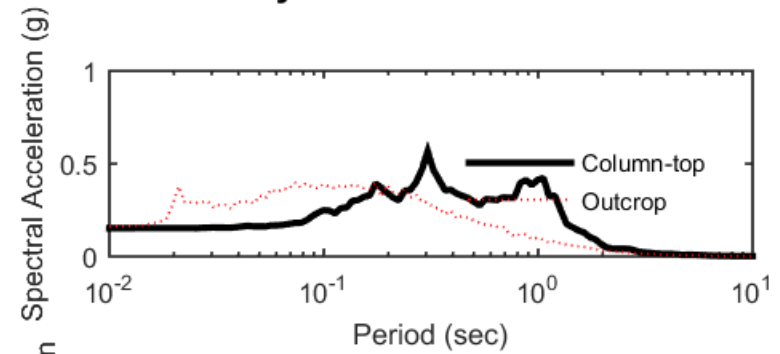
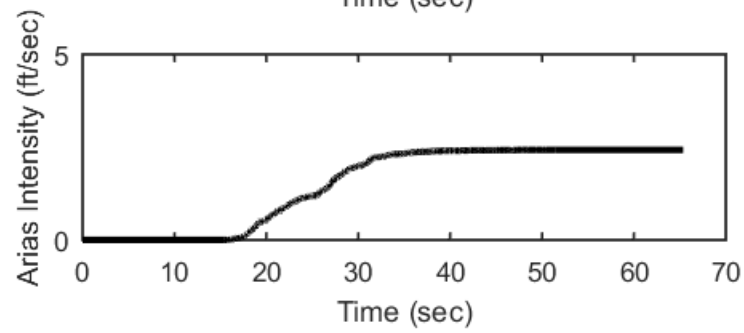
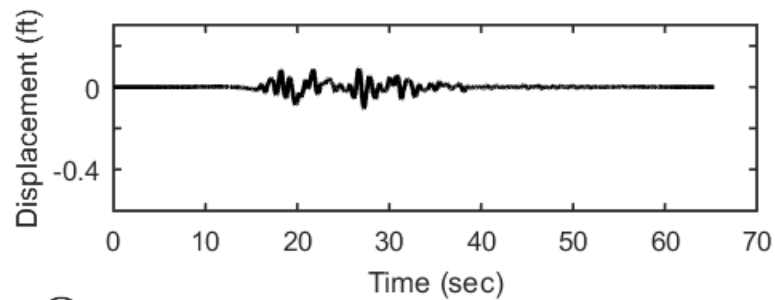
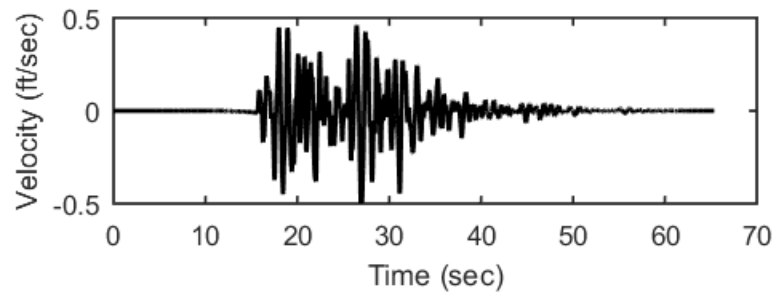
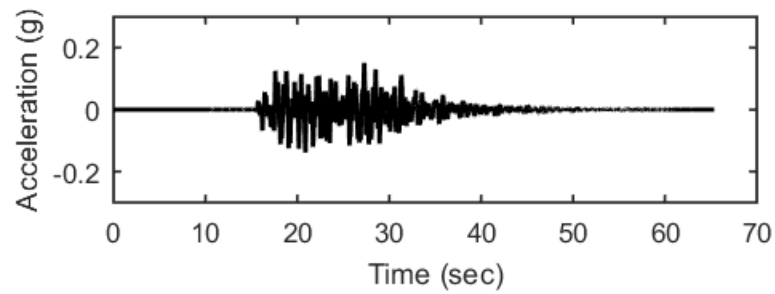
# **BASE MODEL AND HIGH PLASTICITY INDEX**



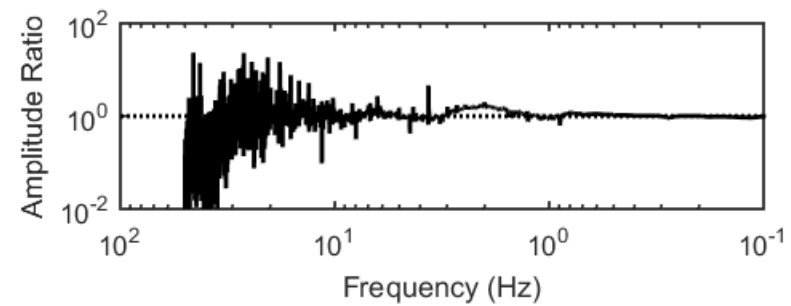
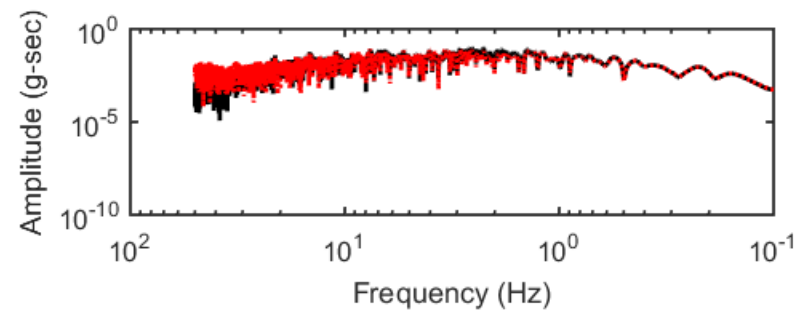
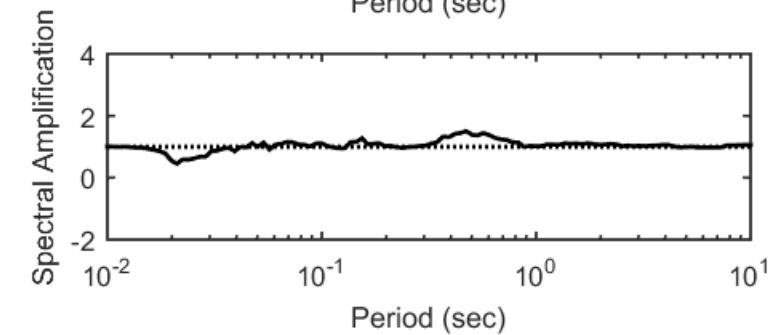
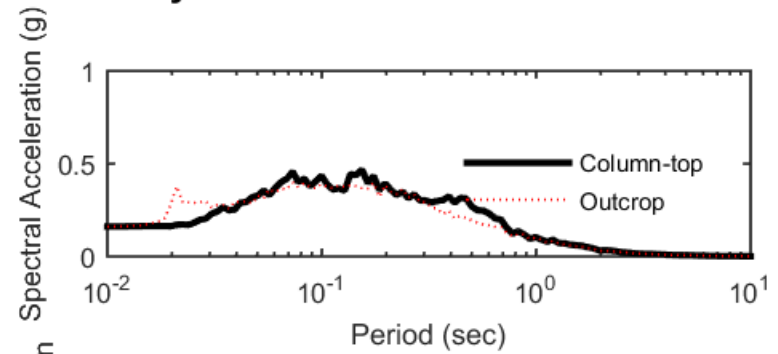
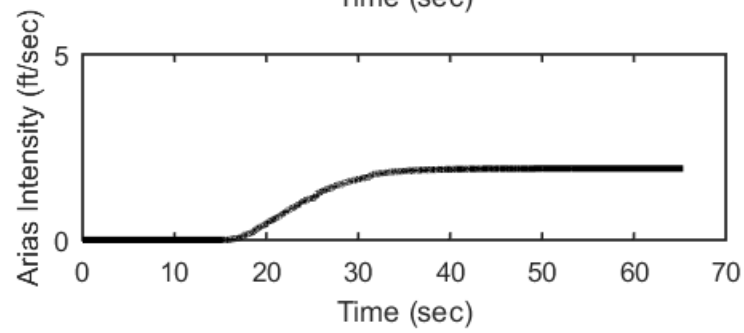
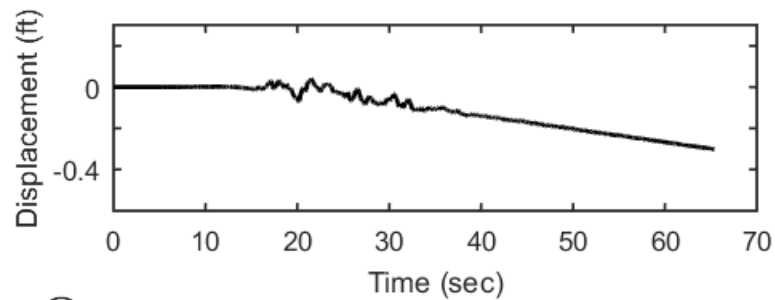
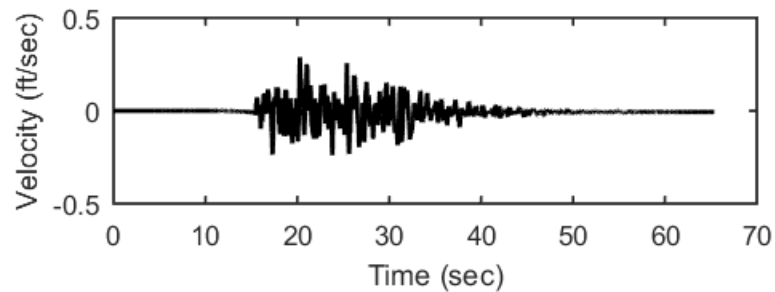
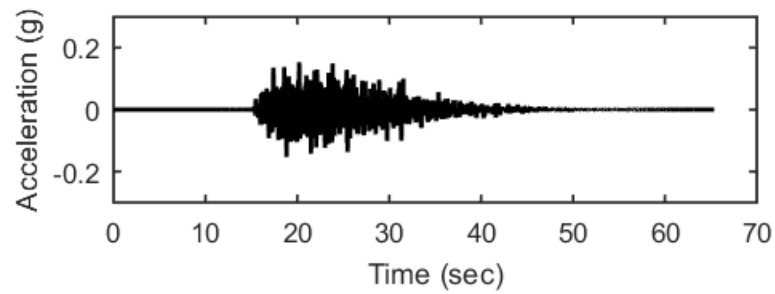
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



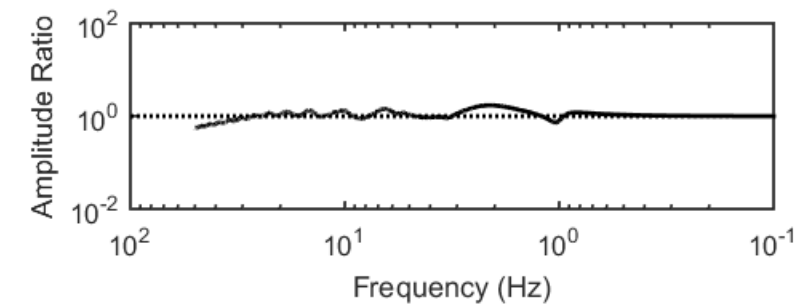
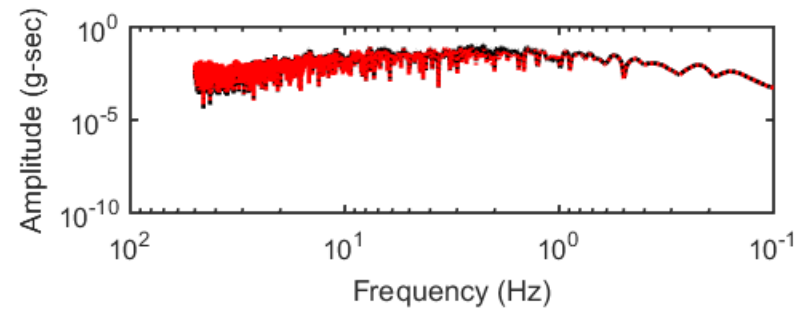
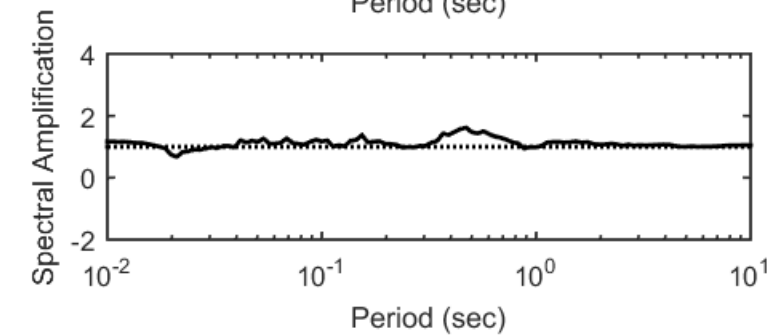
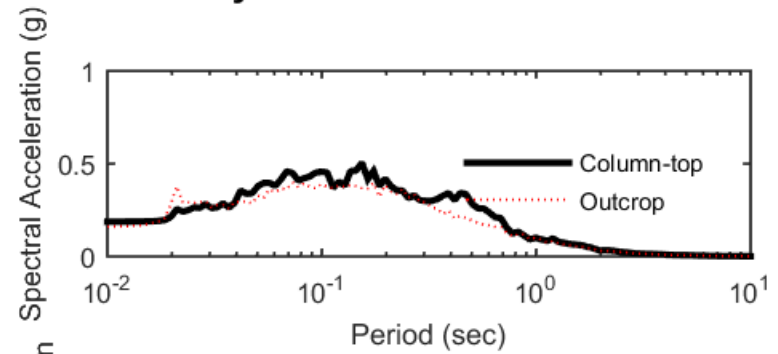
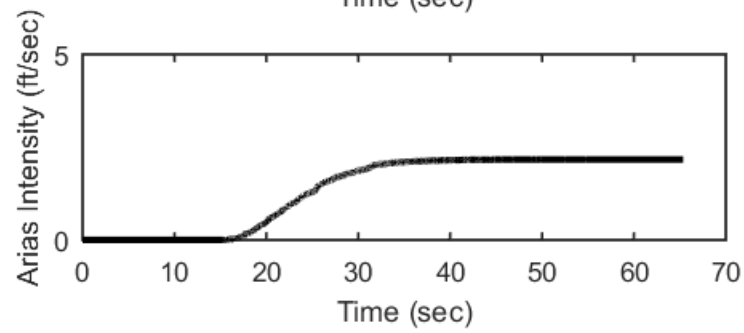
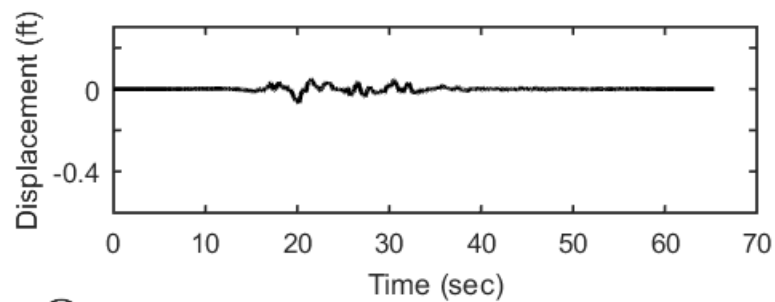
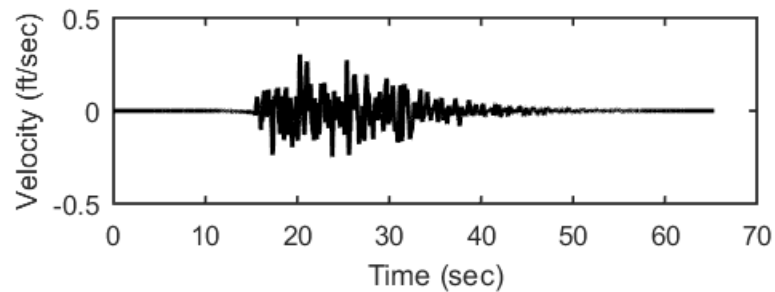
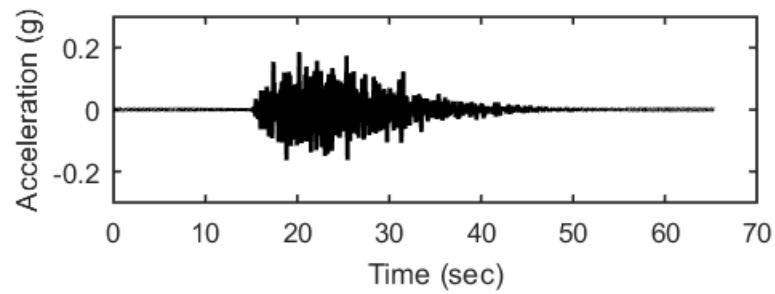
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



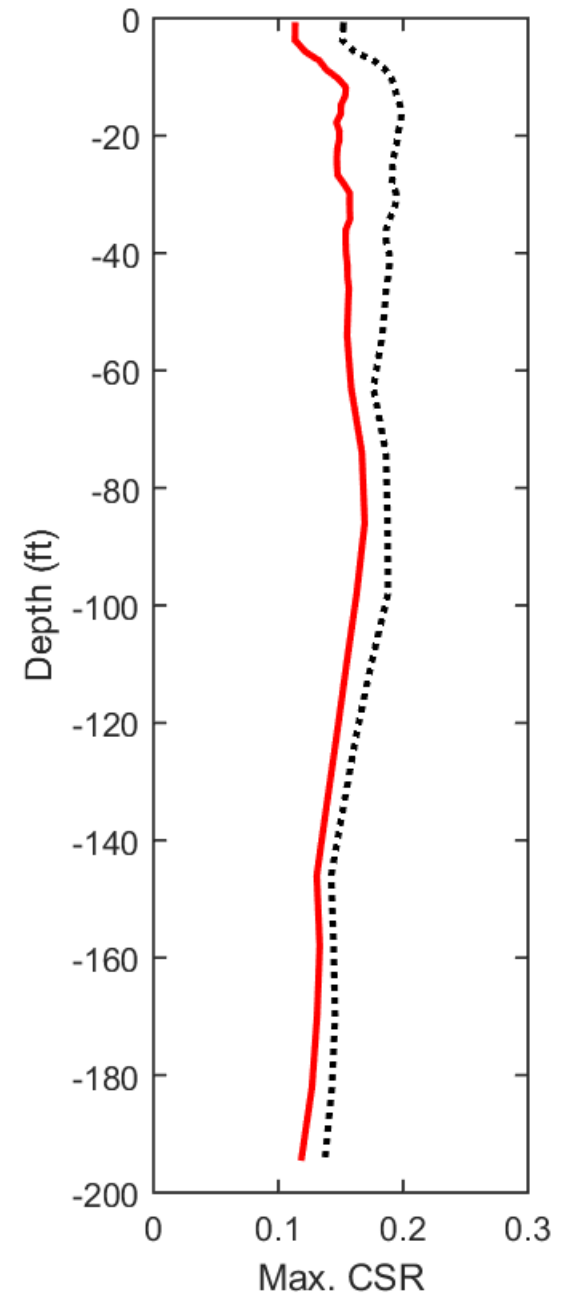
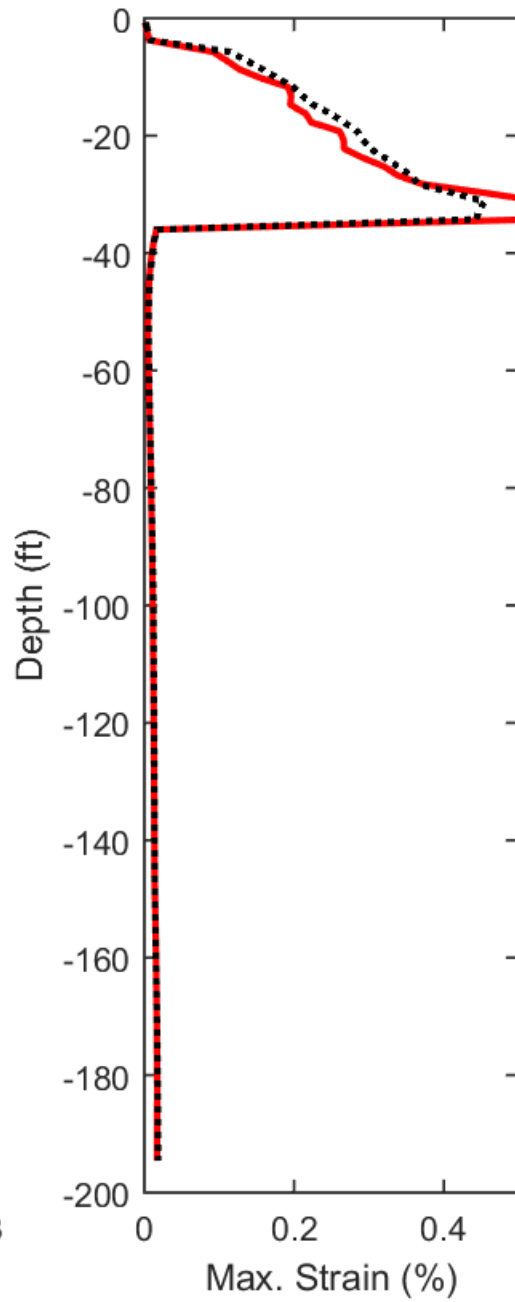
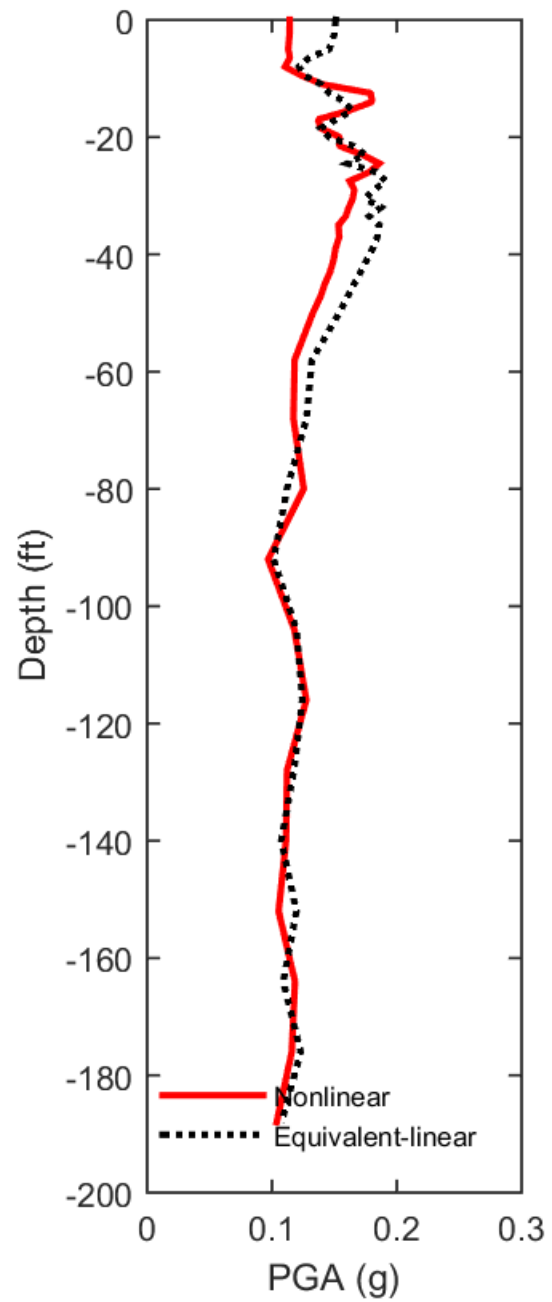
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



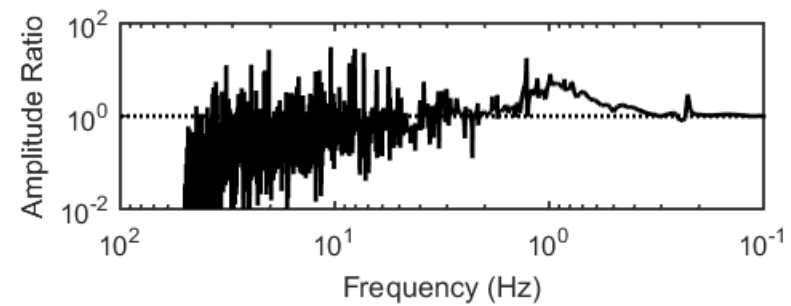
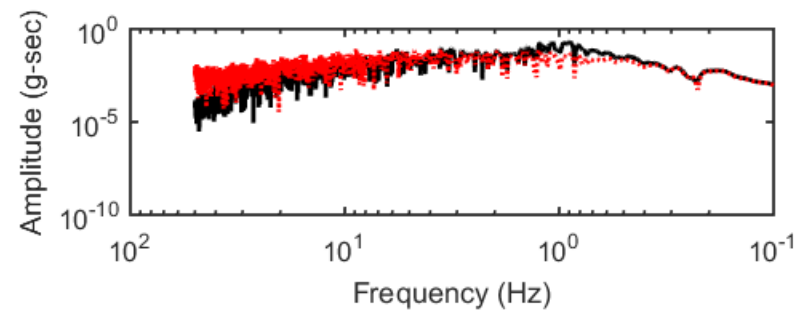
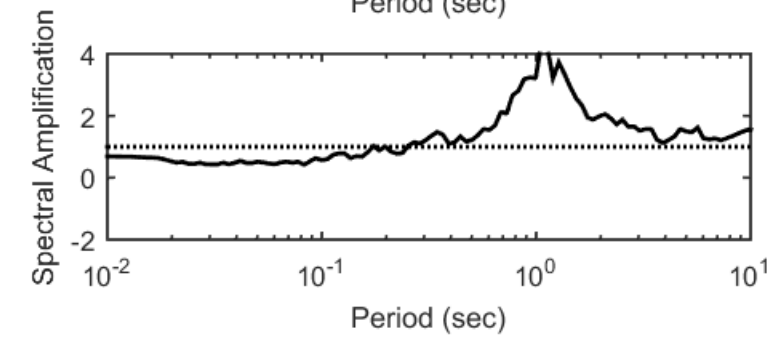
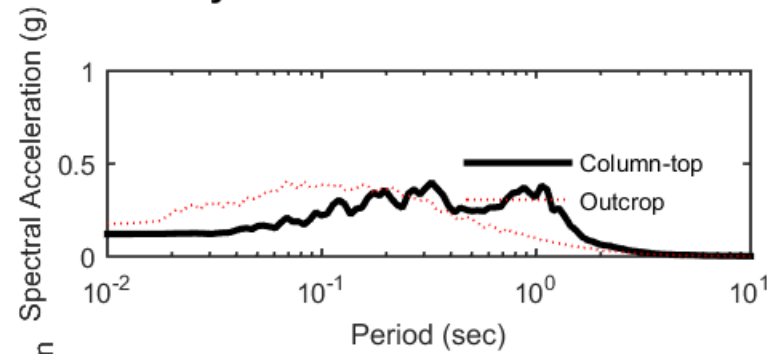
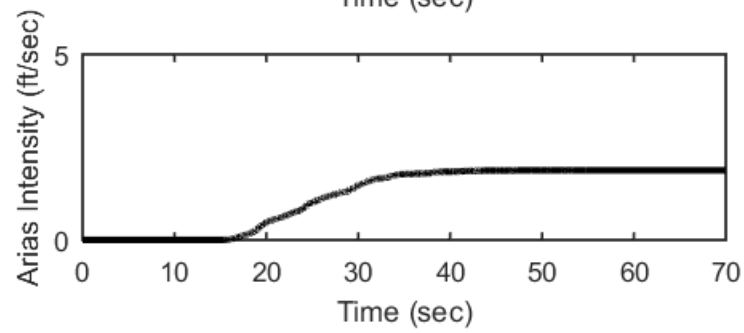
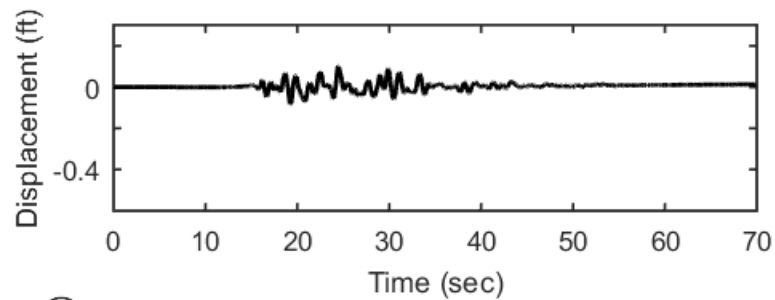
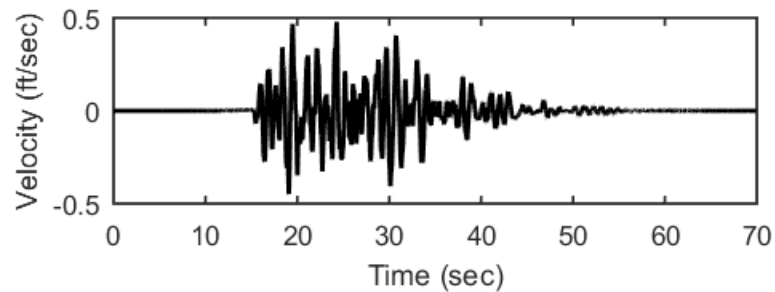
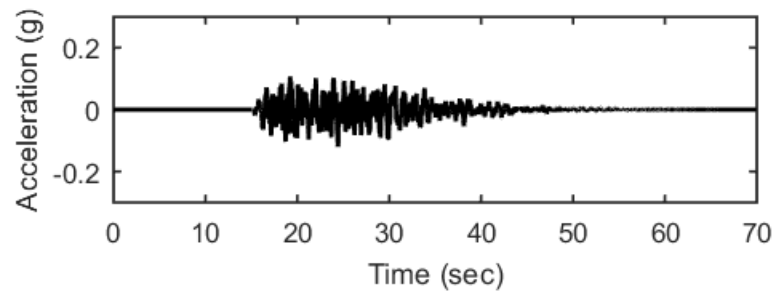
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



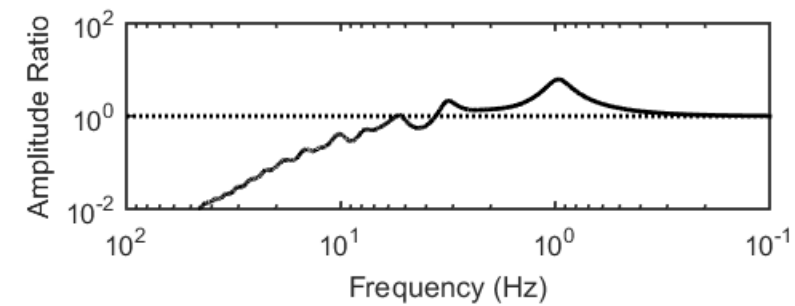
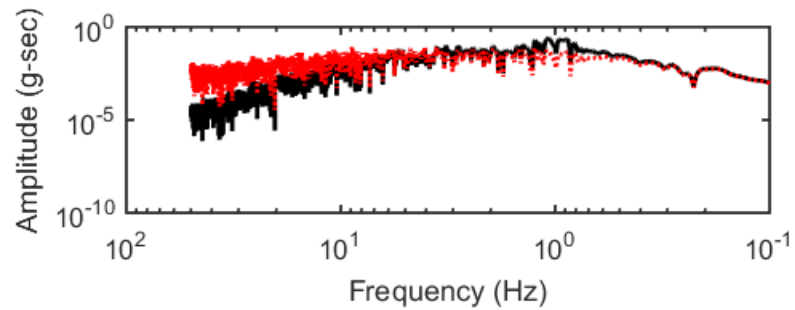
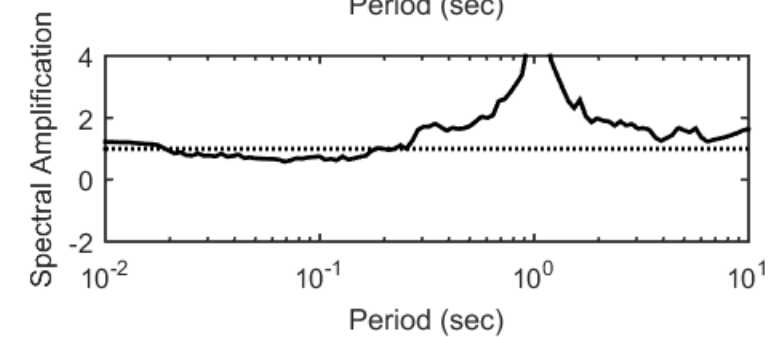
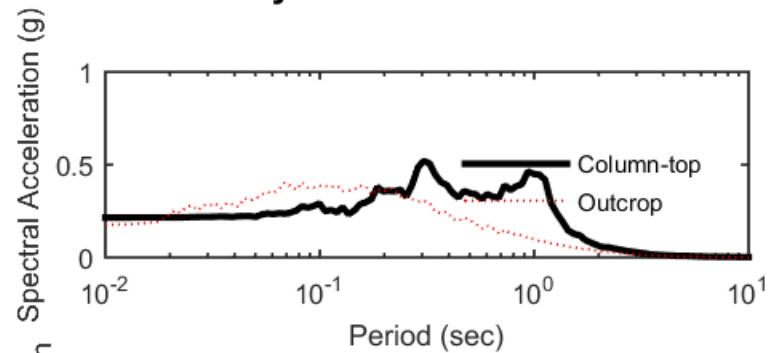
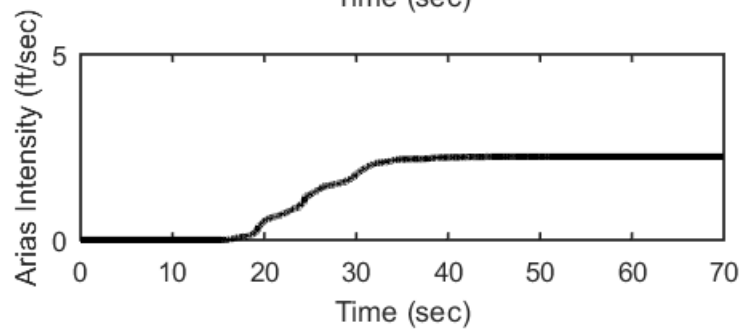
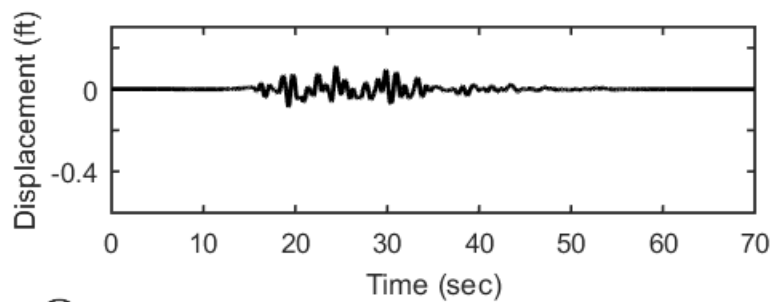
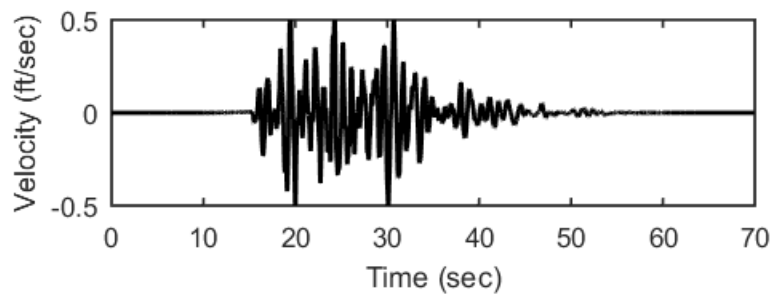
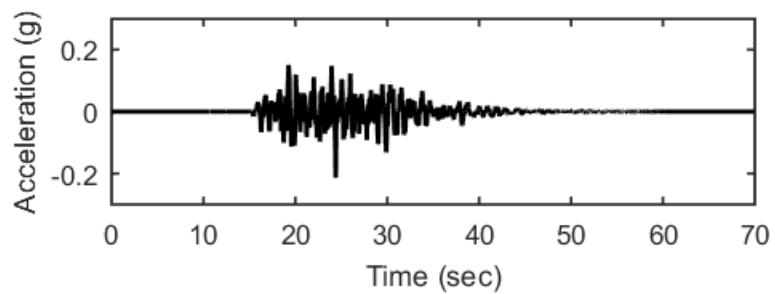
### Profile outputs for Motion: FEE1



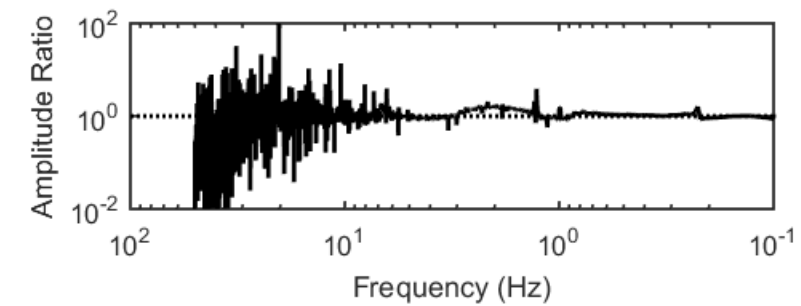
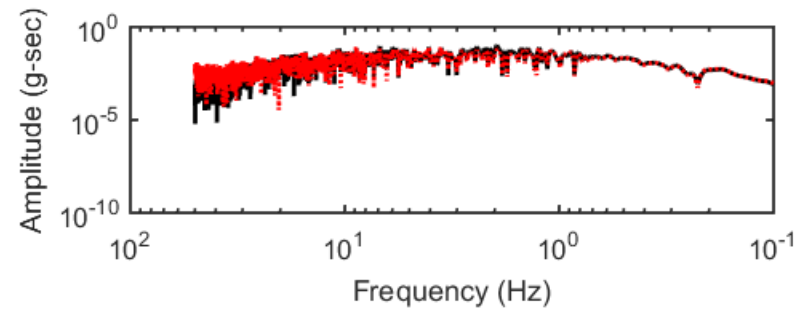
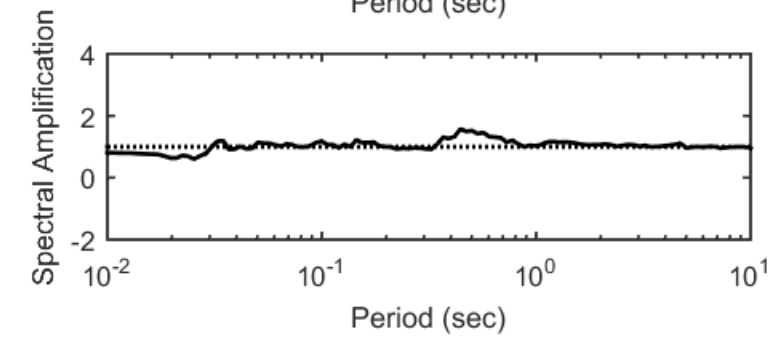
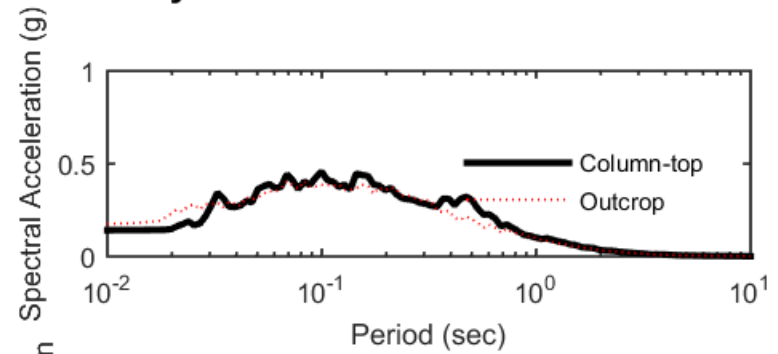
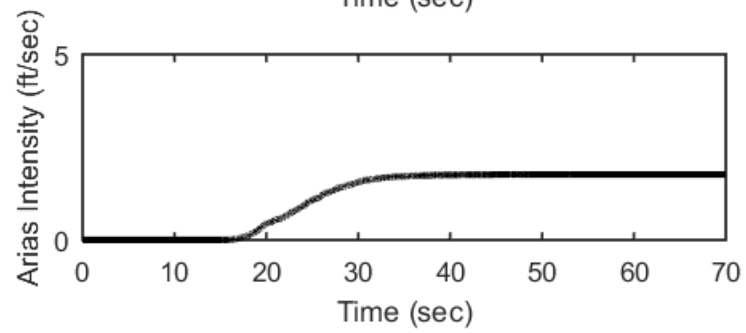
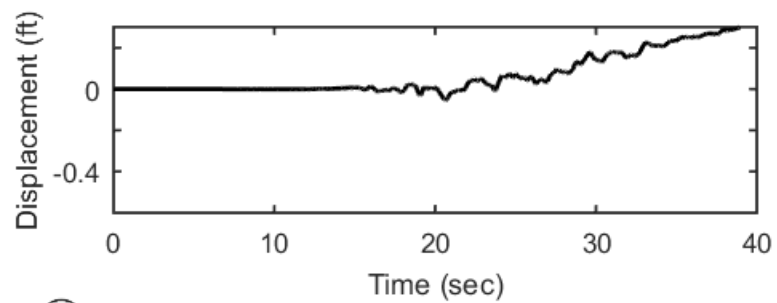
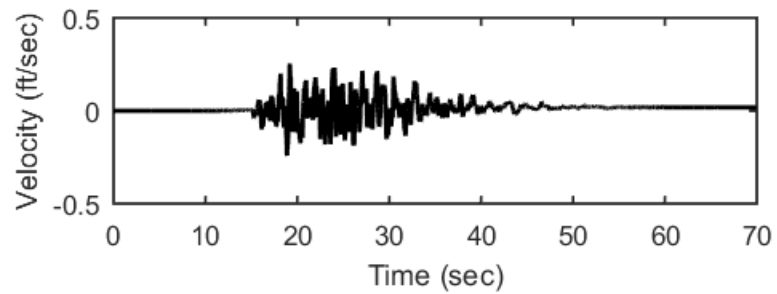
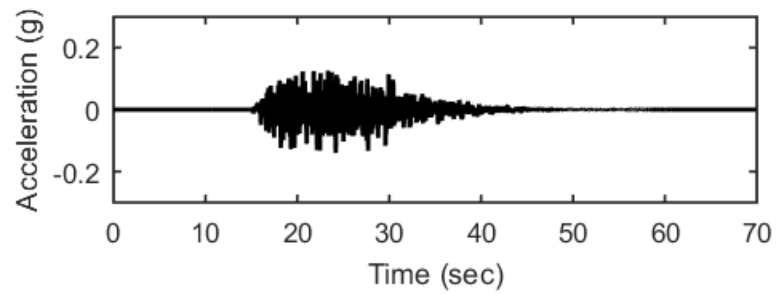
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2

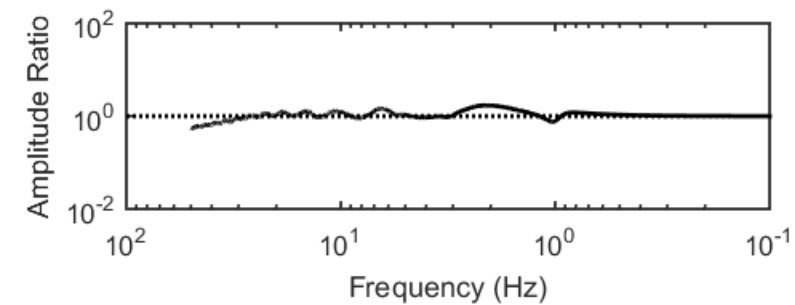
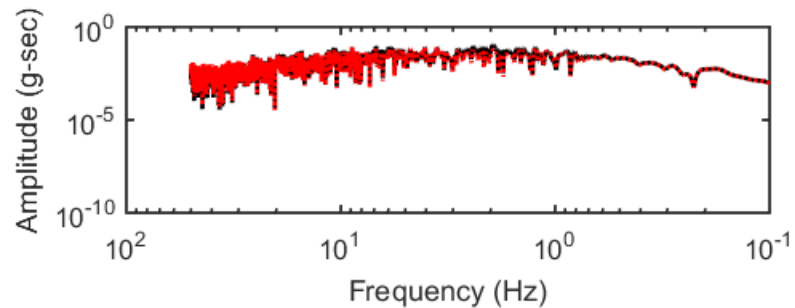
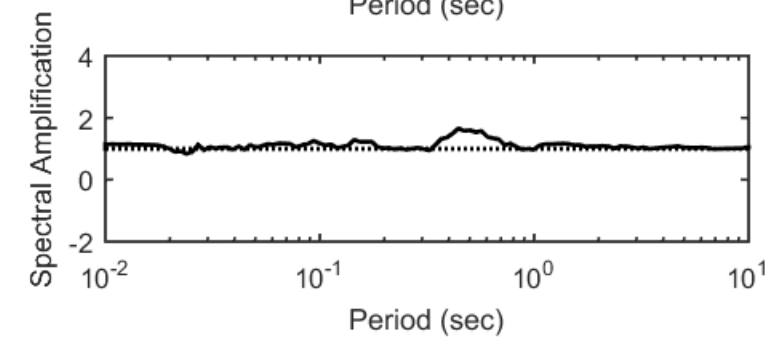
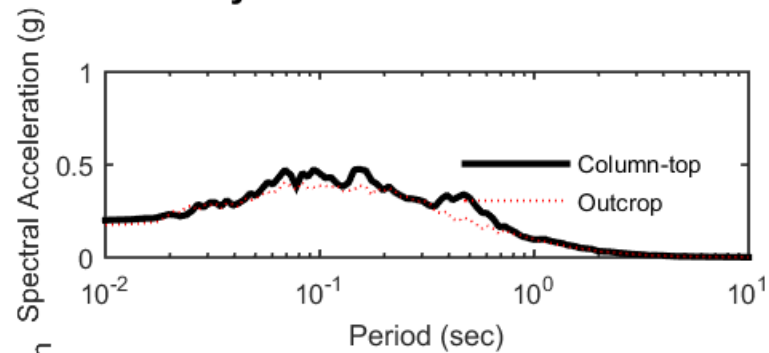
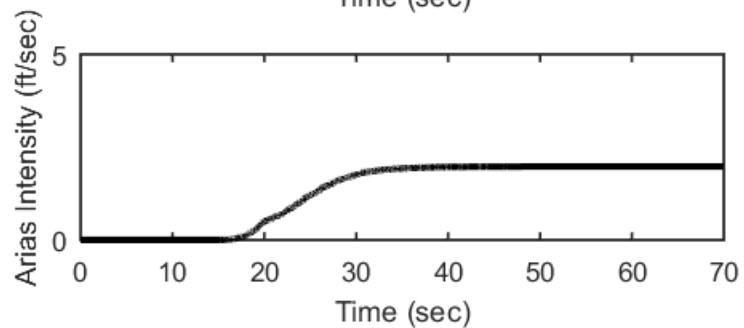
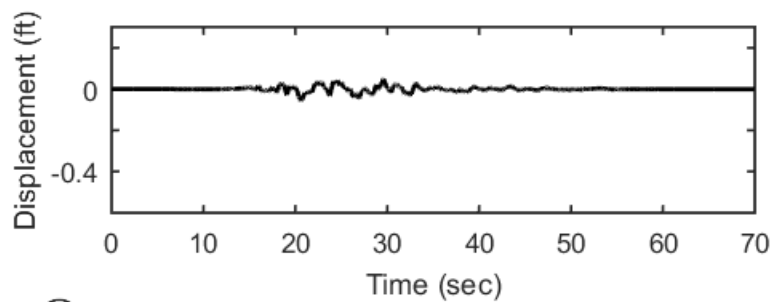
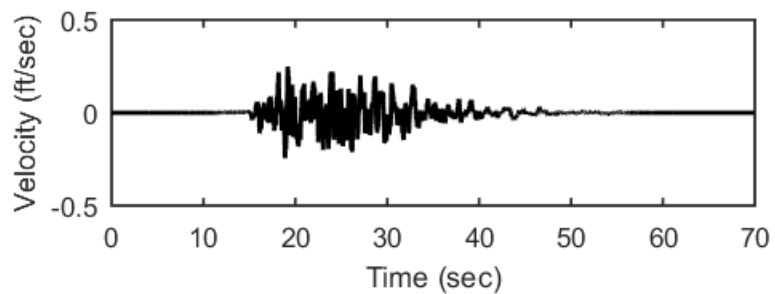
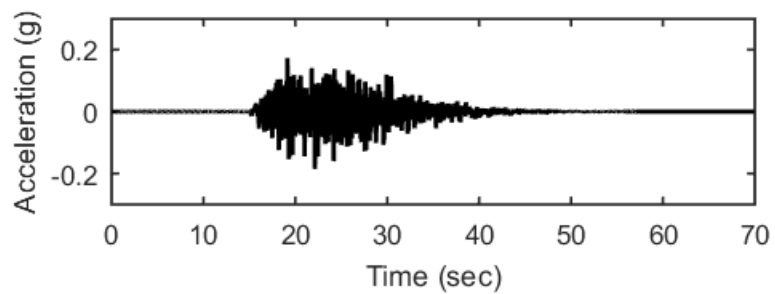


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2

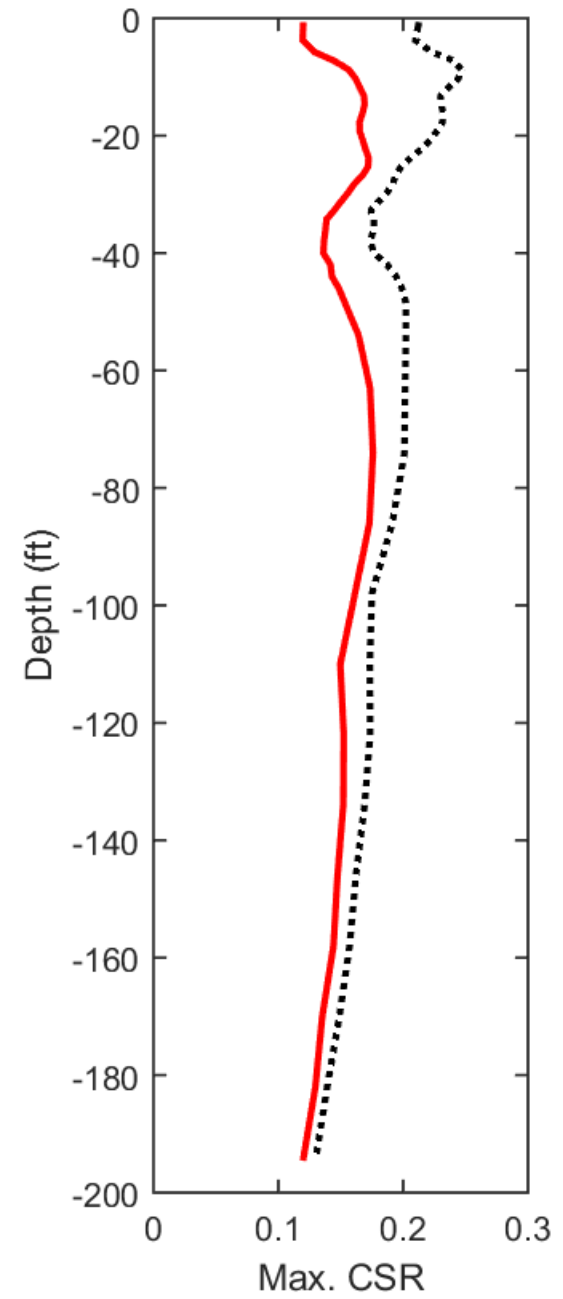
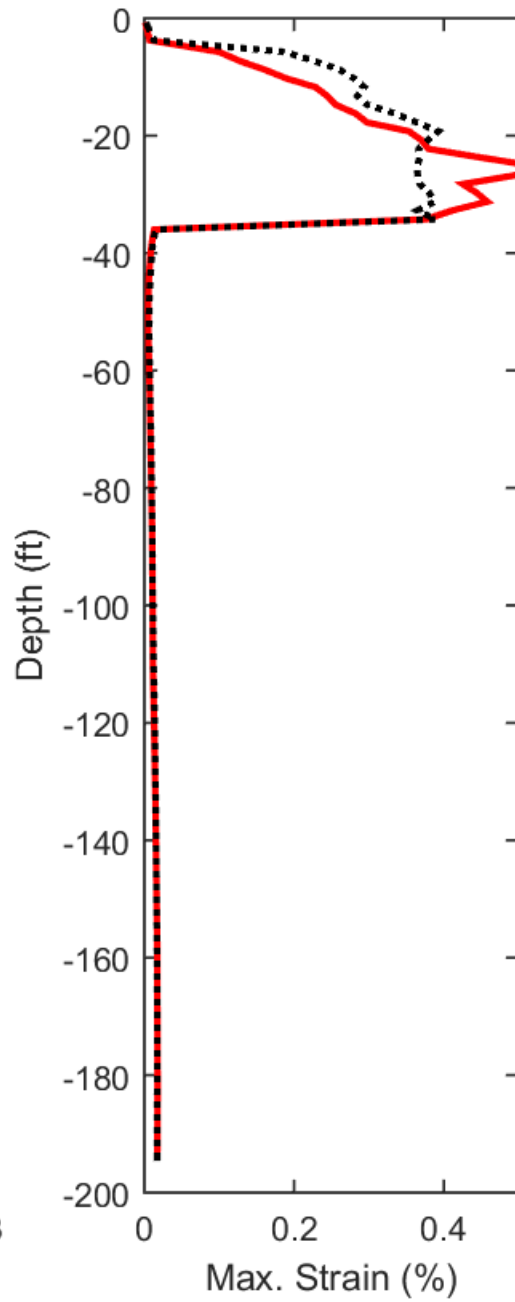
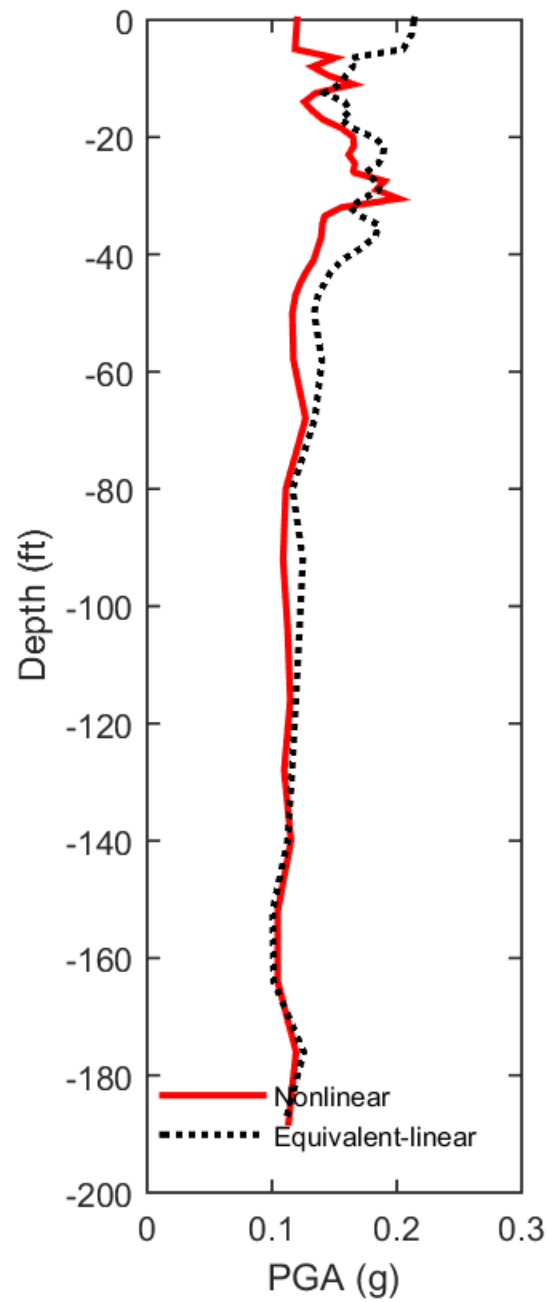




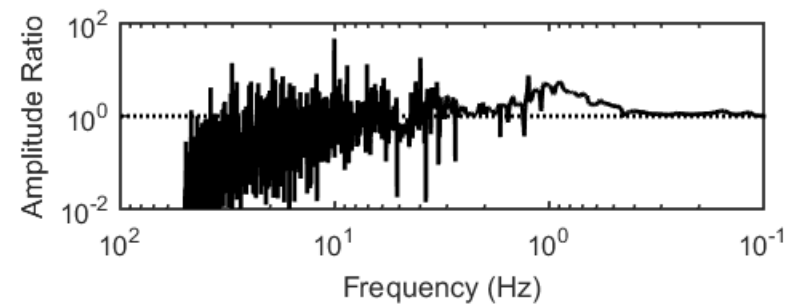
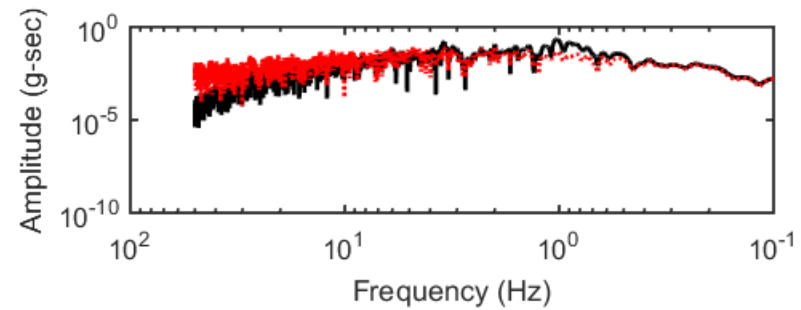
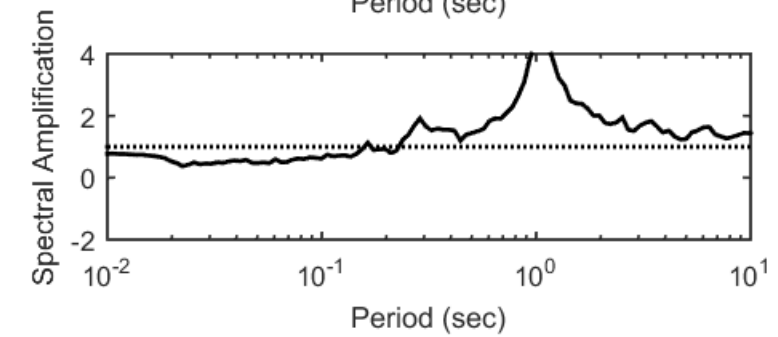
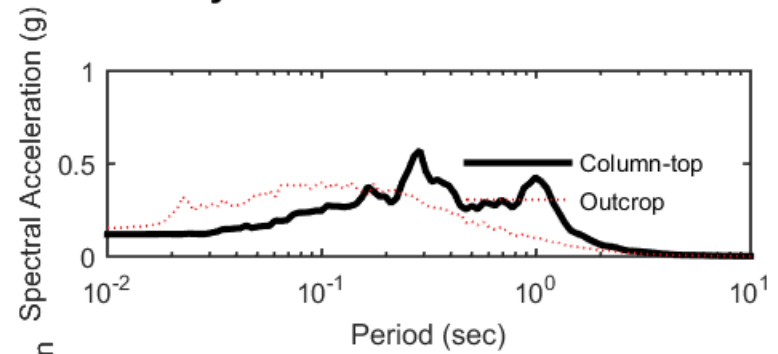
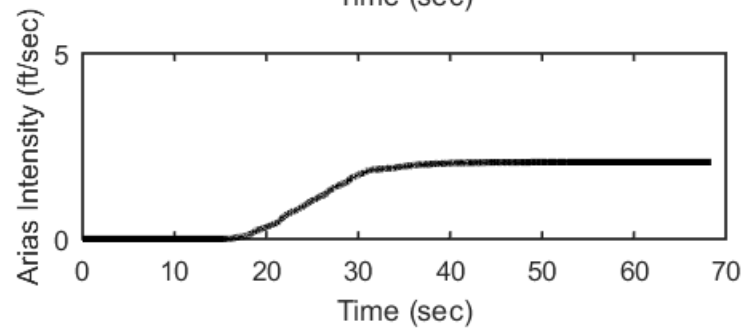
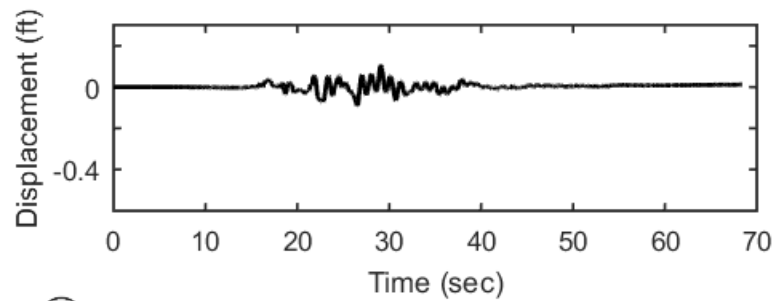
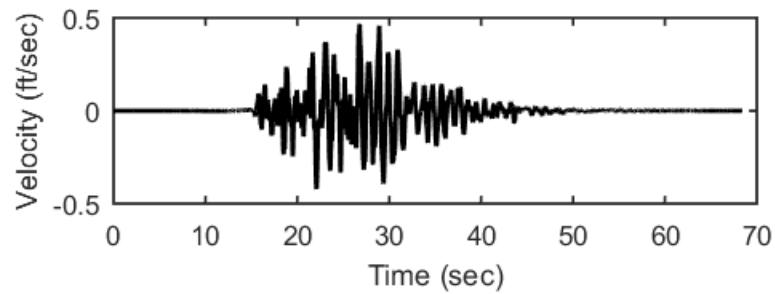
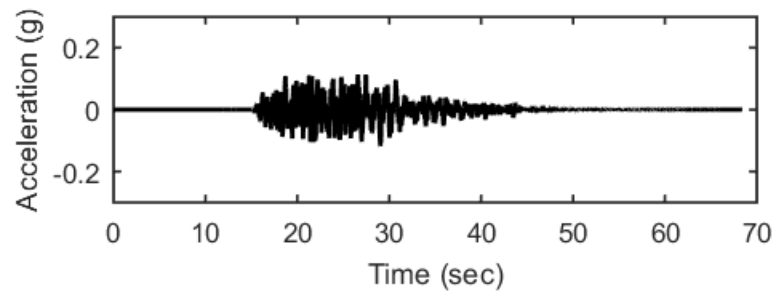
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



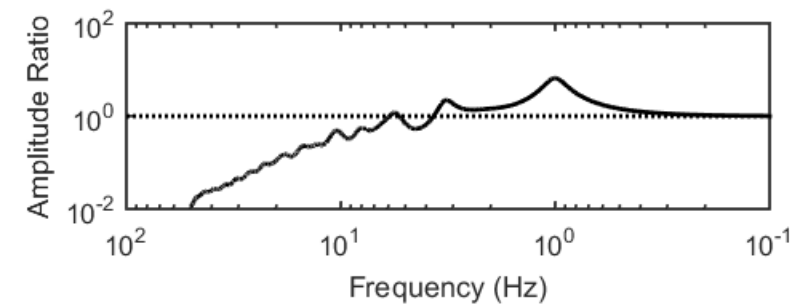
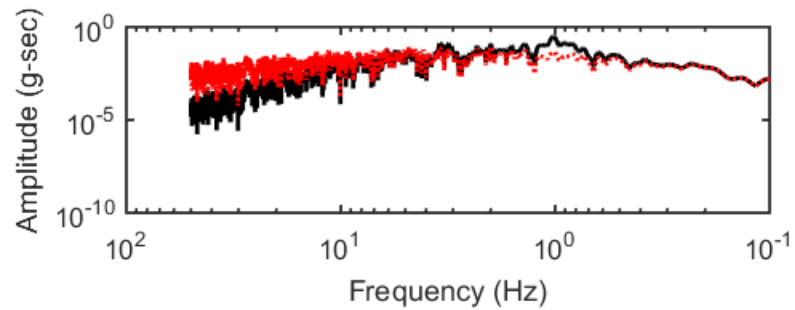
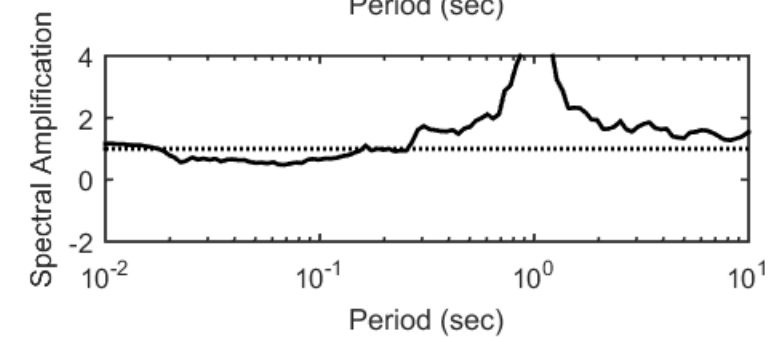
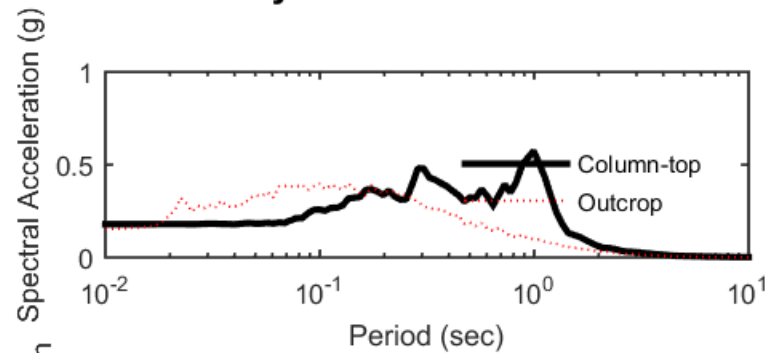
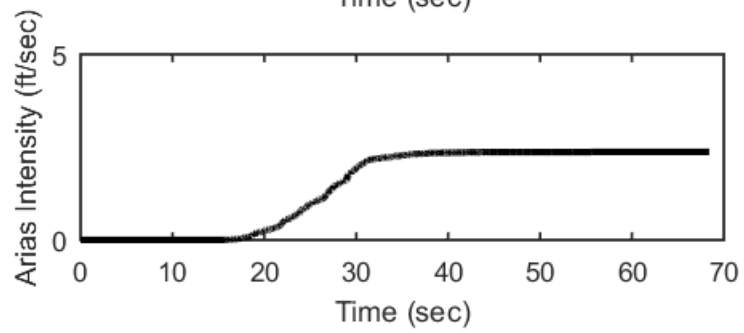
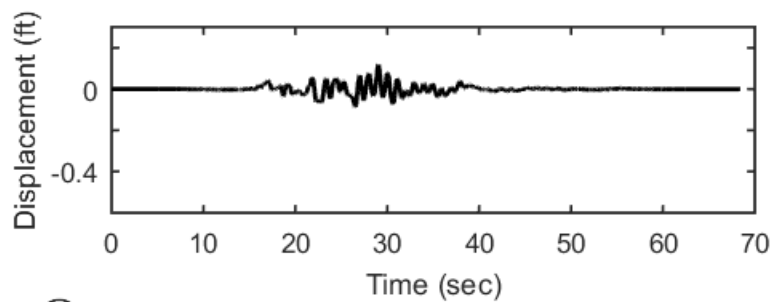
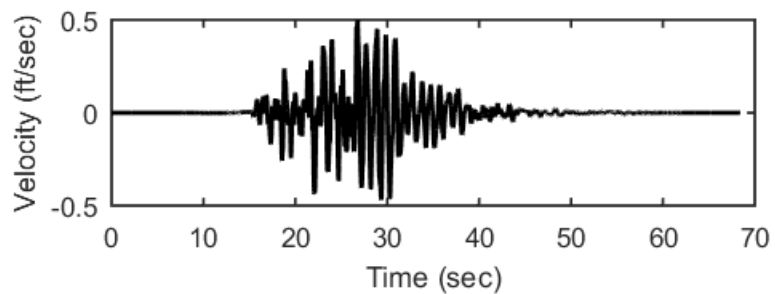
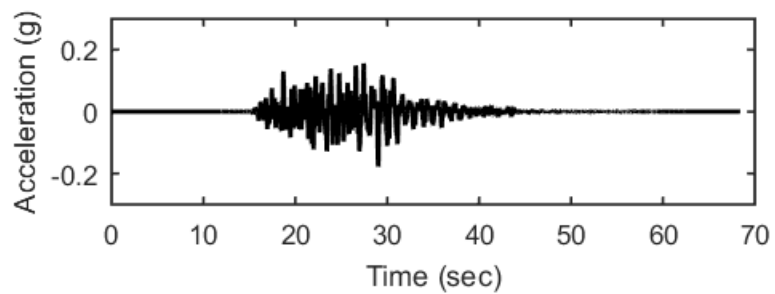
### Profile outputs for Motion: FEE2



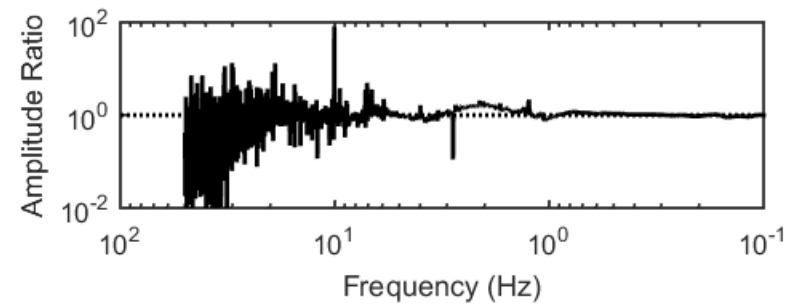
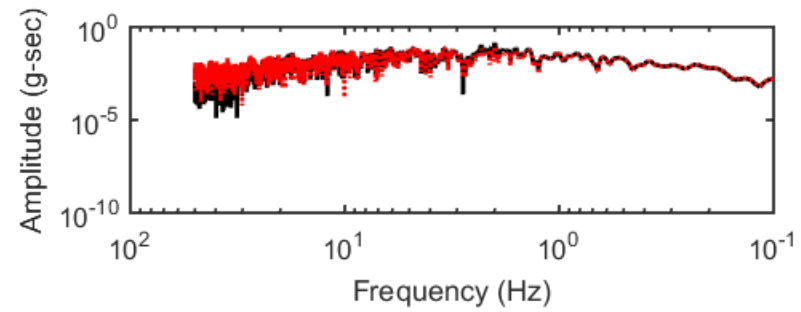
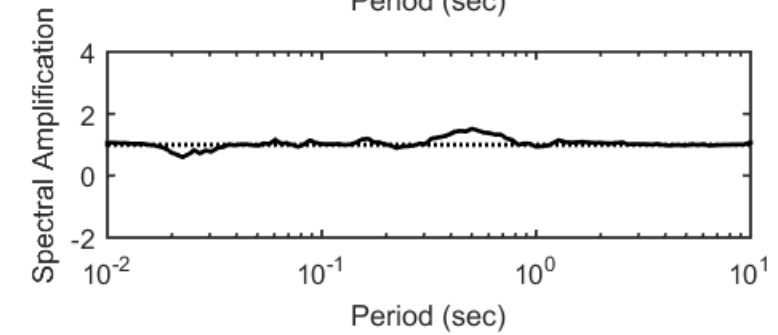
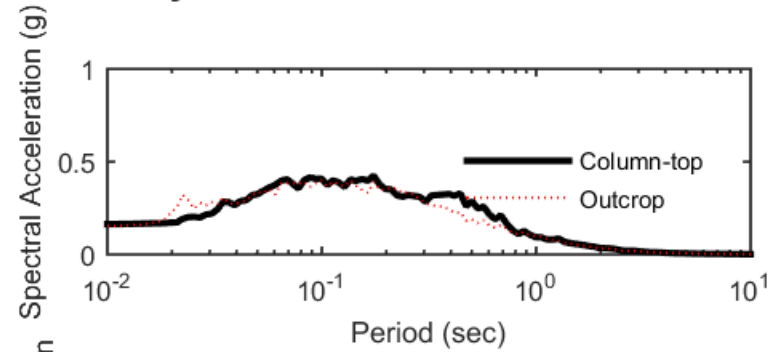
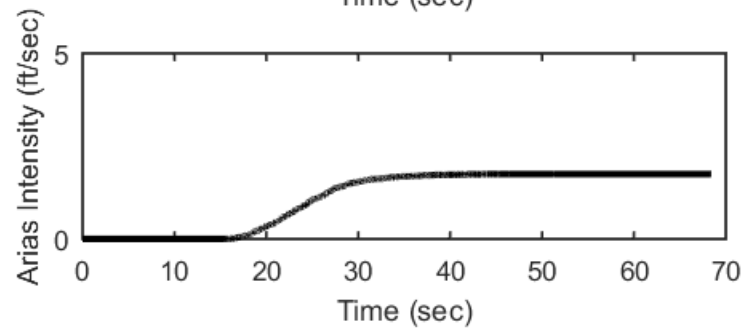
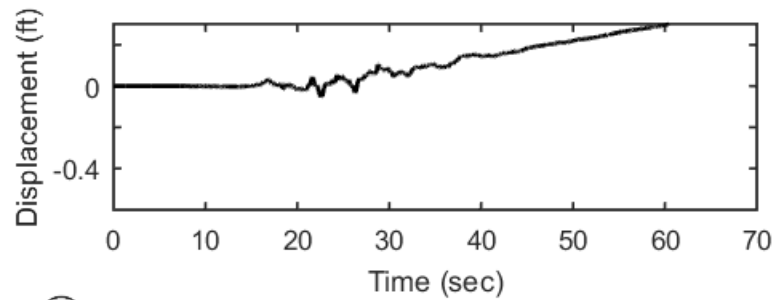
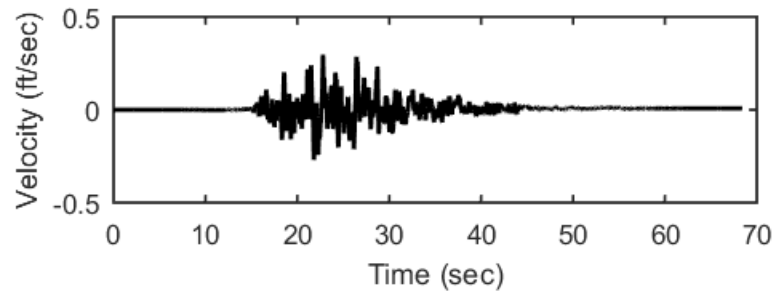
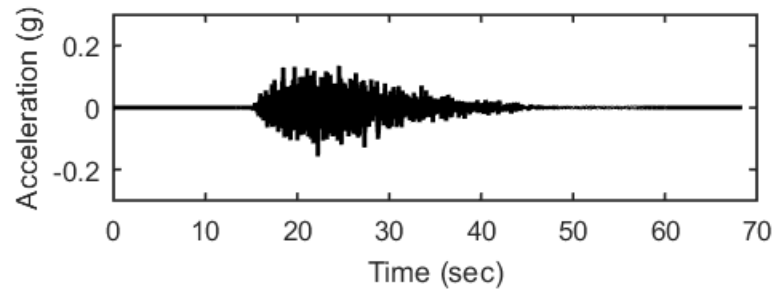
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



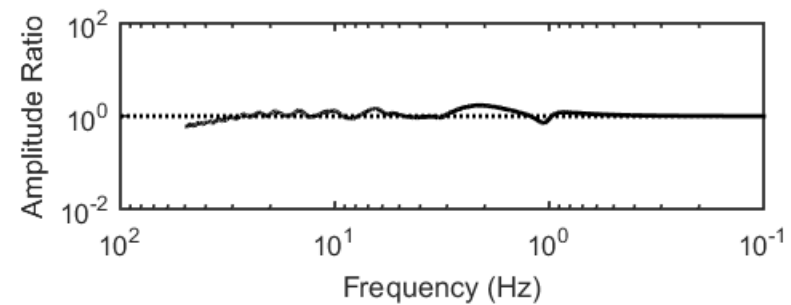
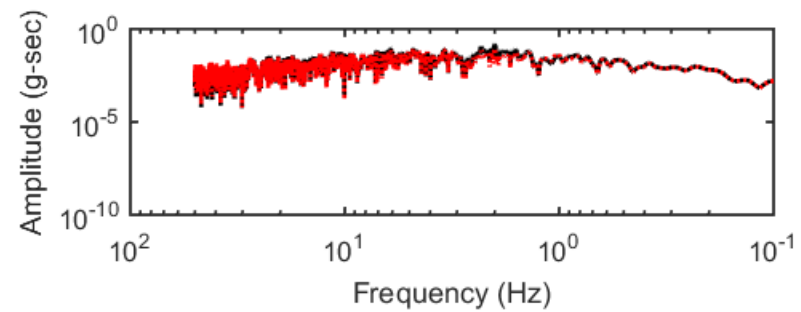
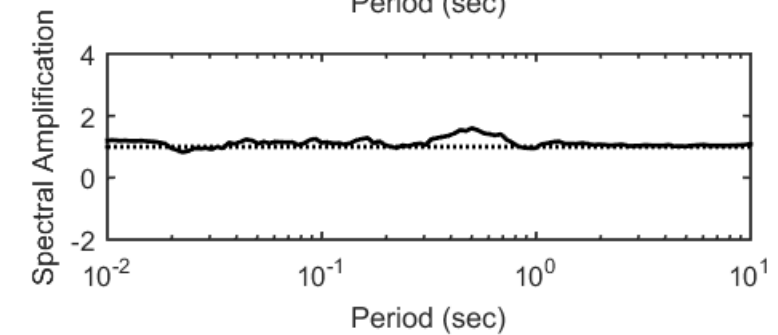
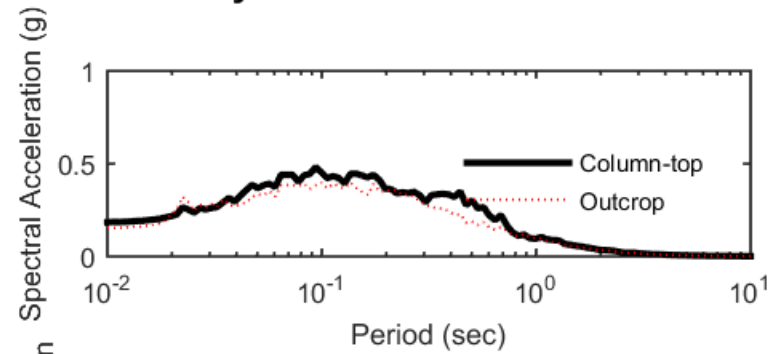
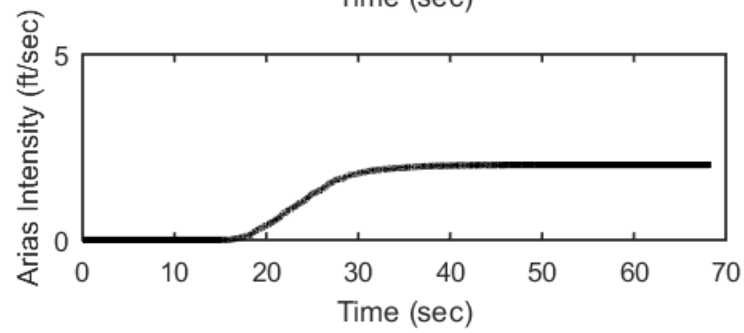
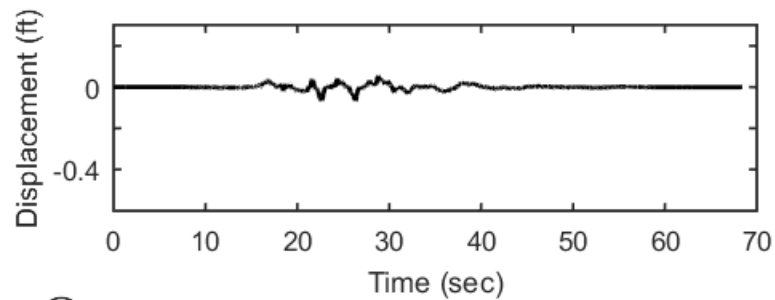
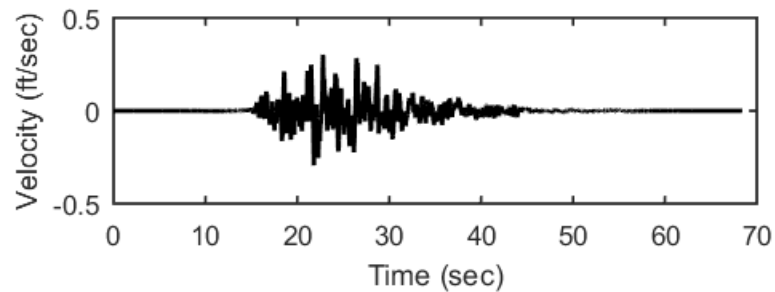
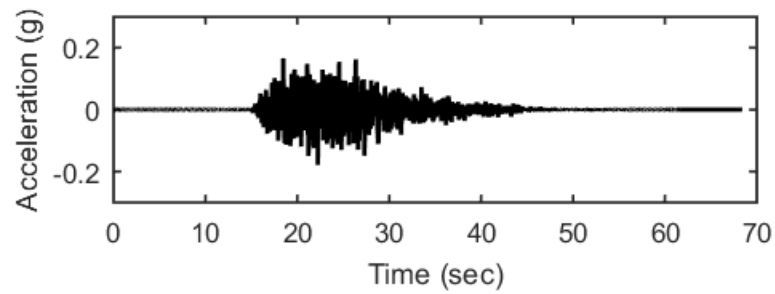
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



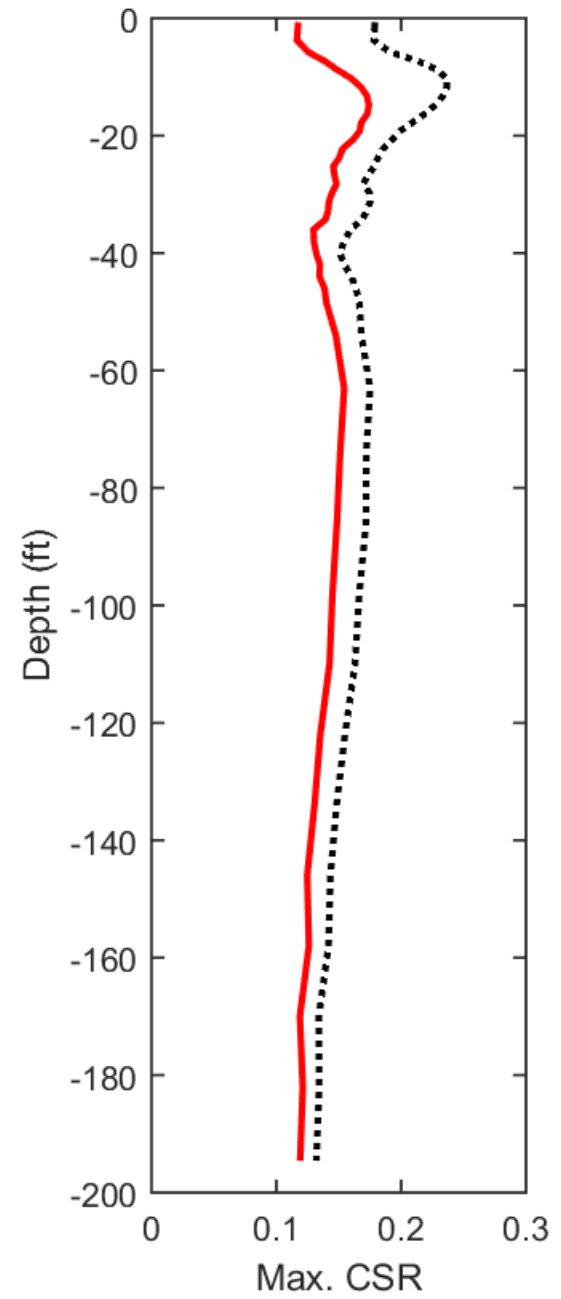
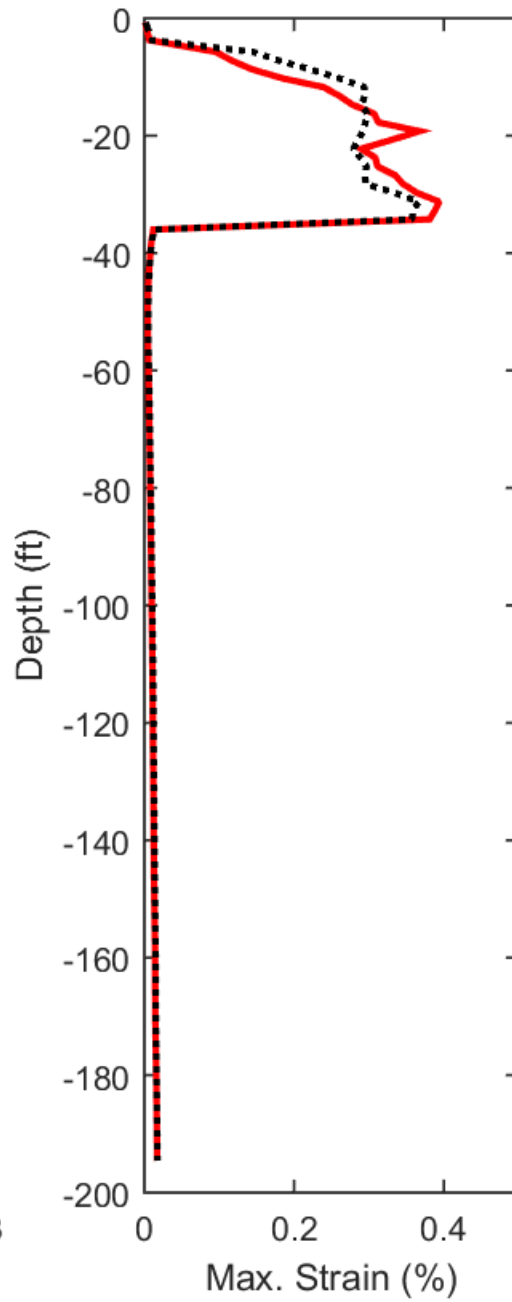
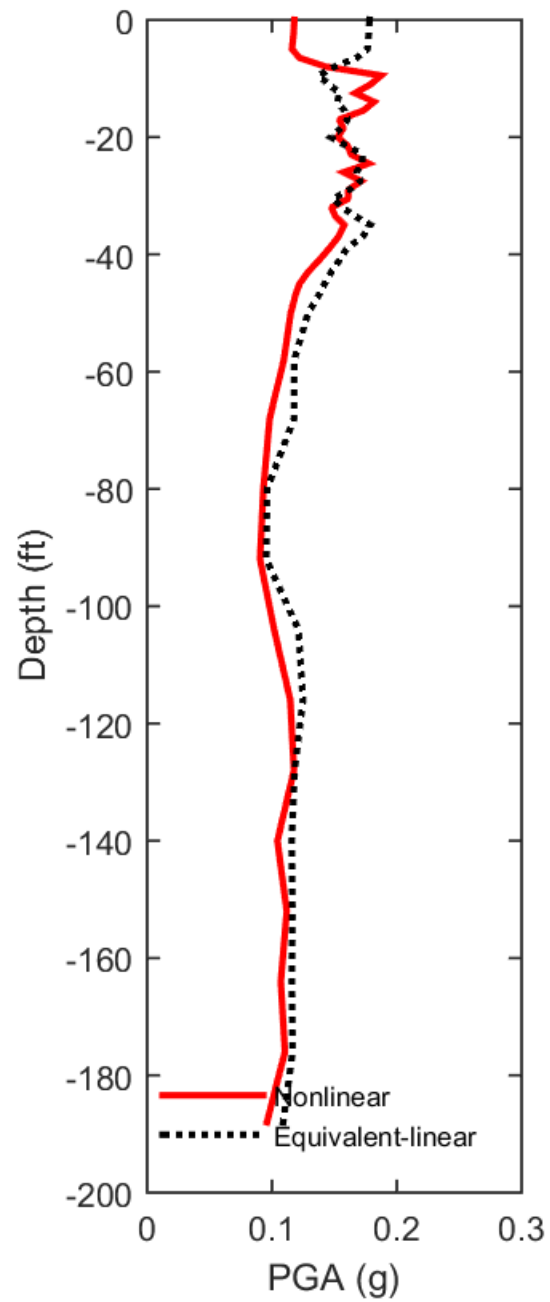
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



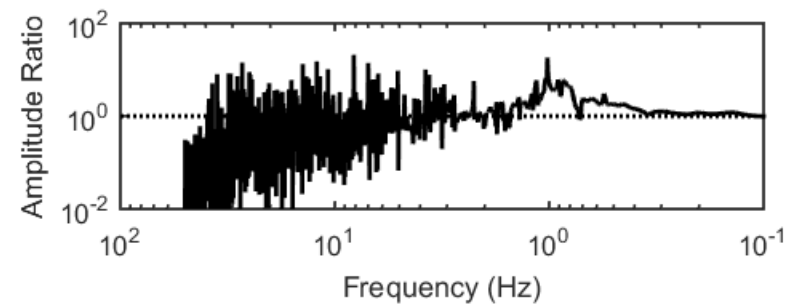
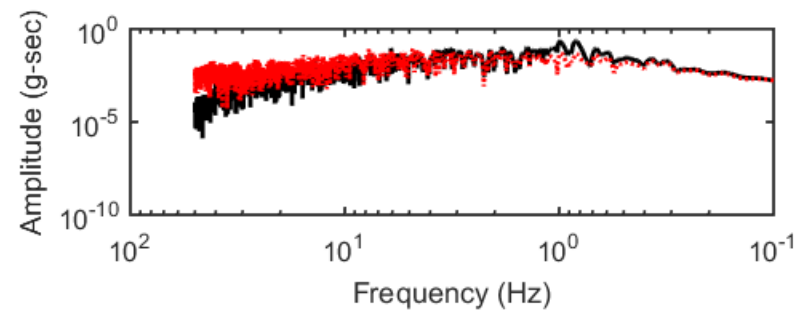
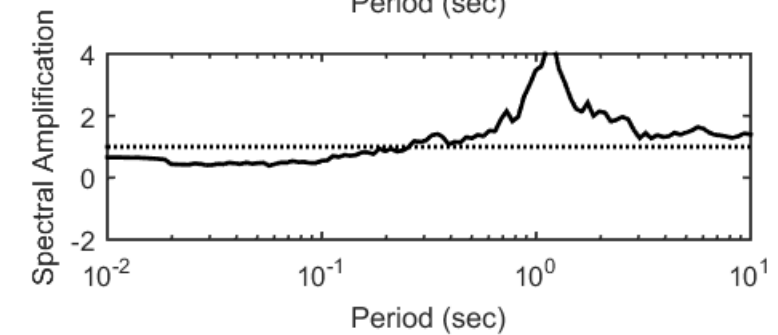
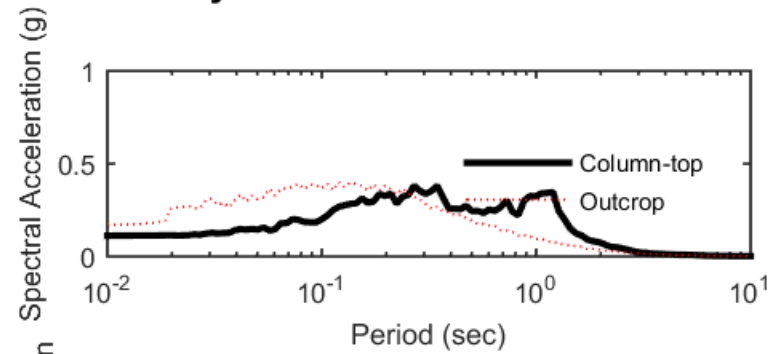
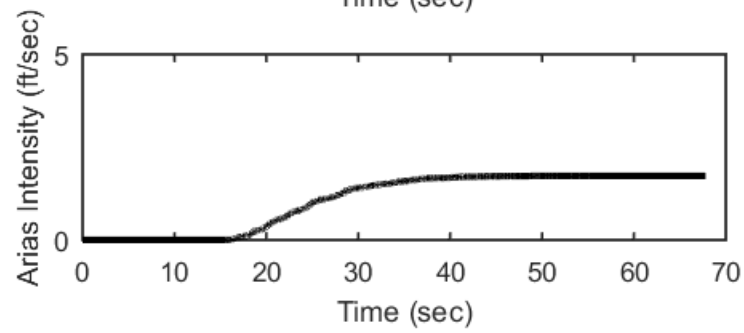
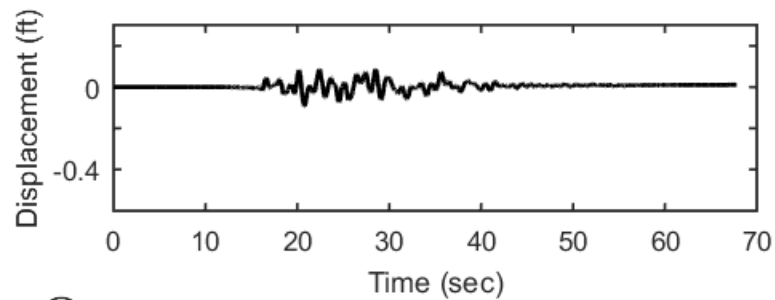
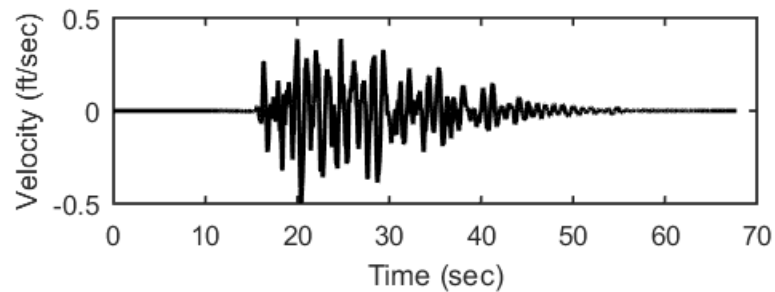
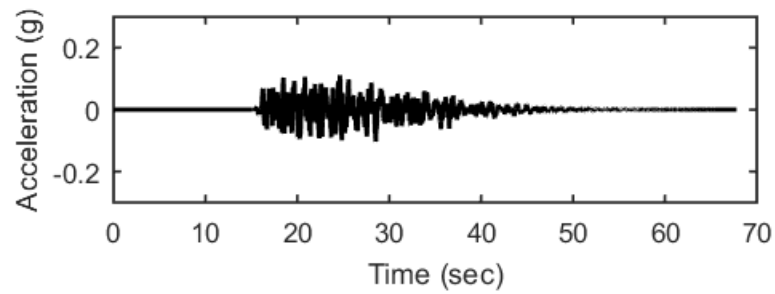
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



### Profile outputs for Motion: FEE3

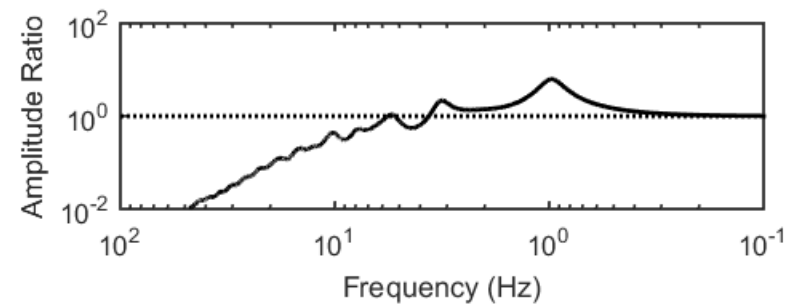
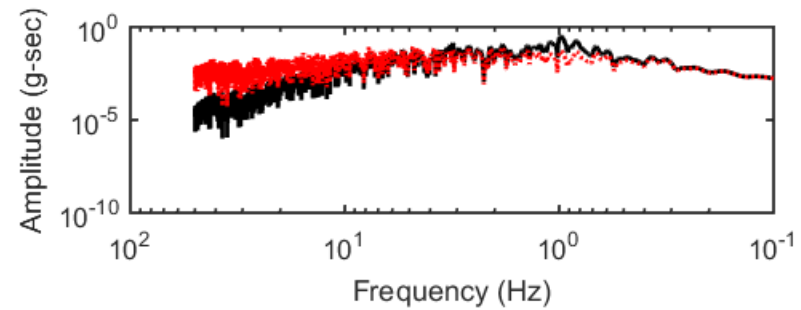
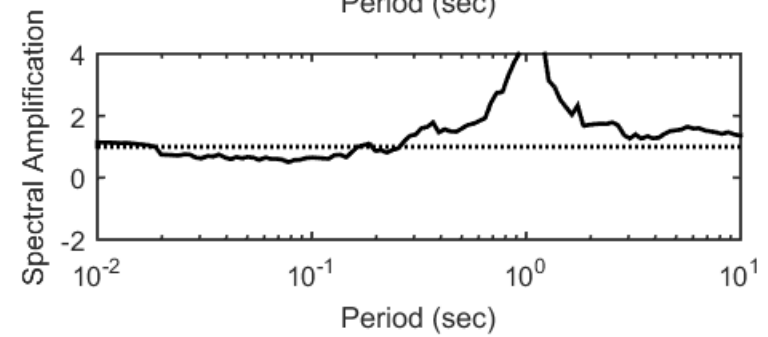
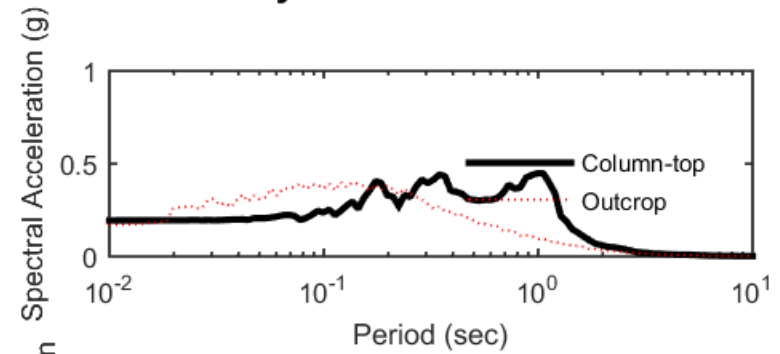
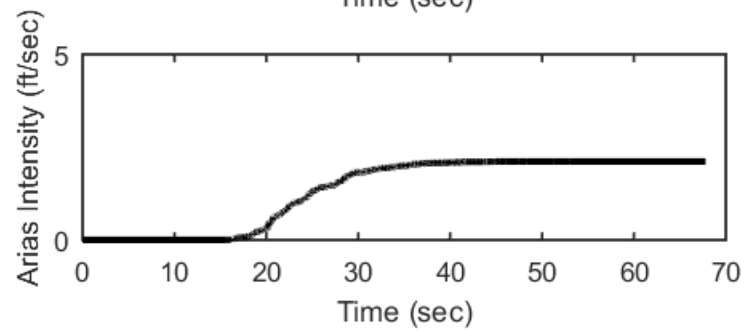
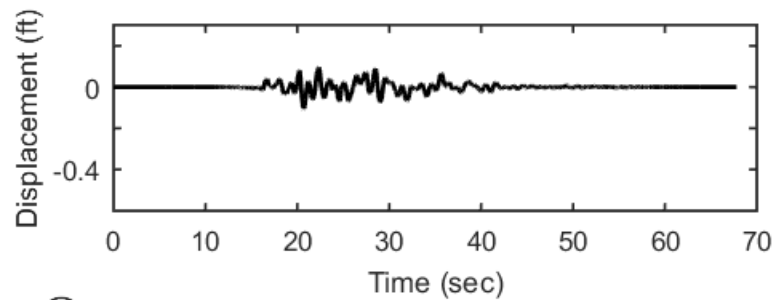
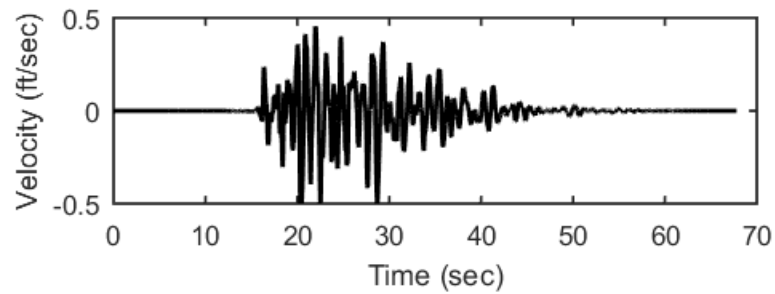
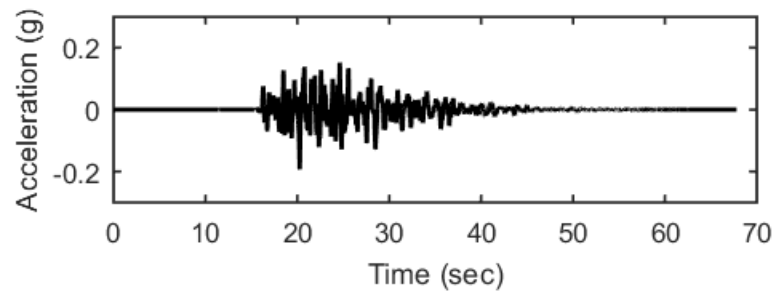


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4

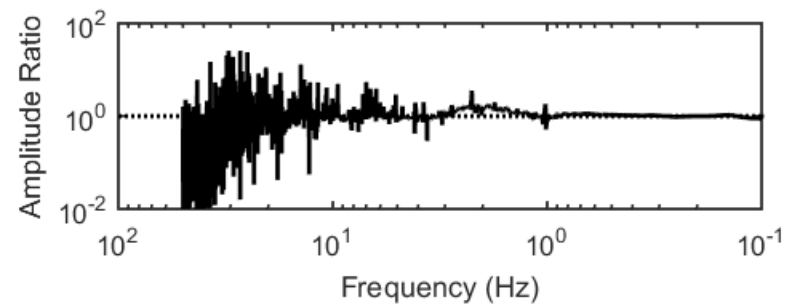
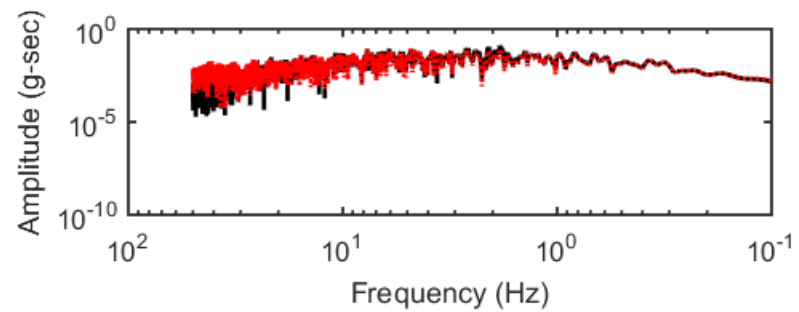
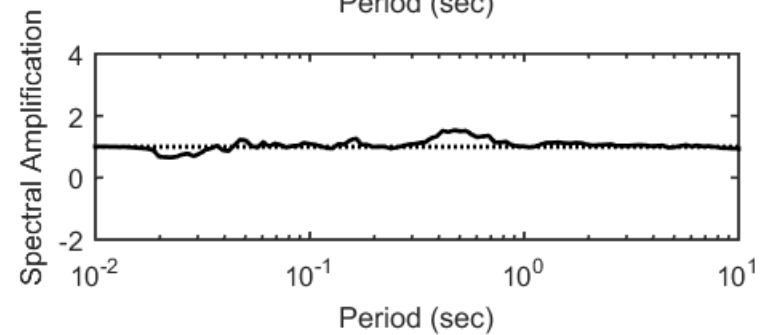
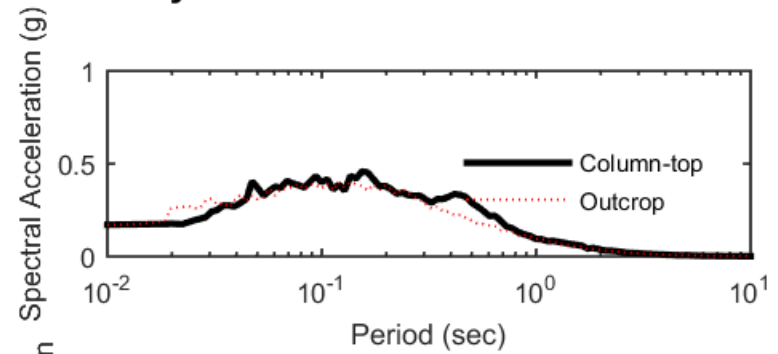
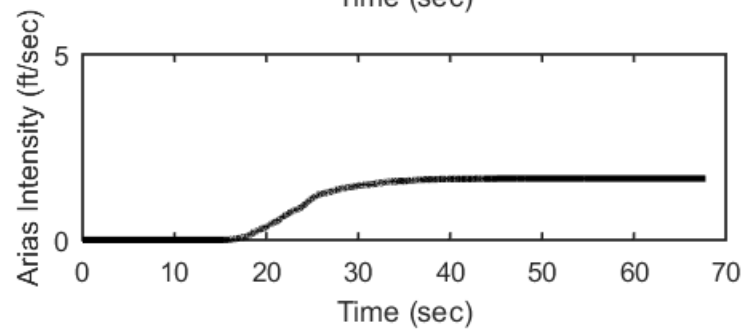
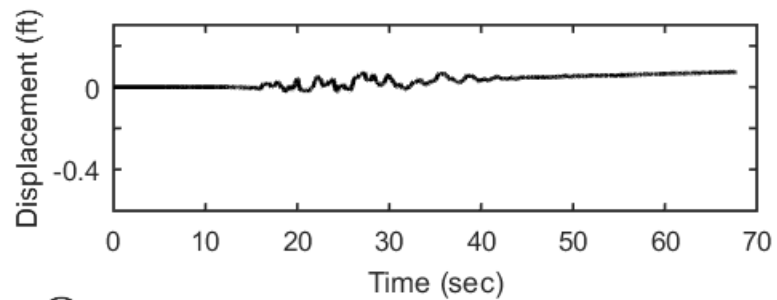
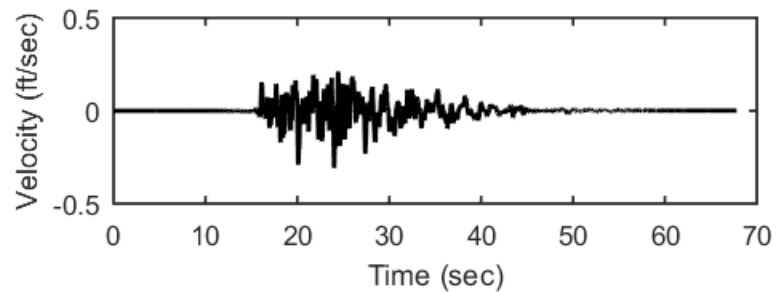
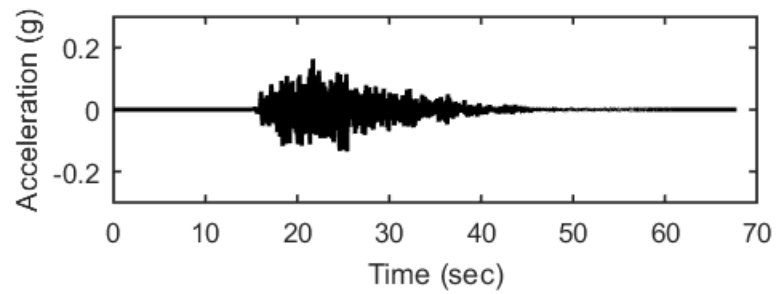




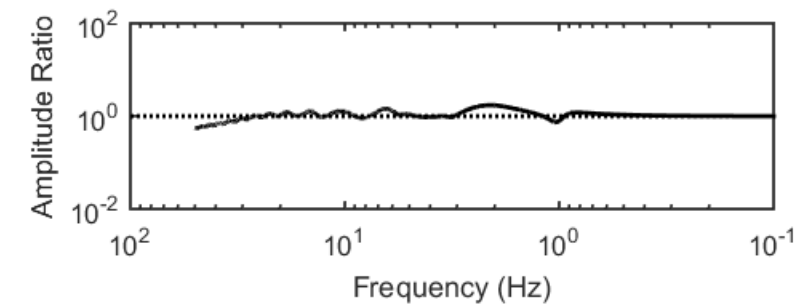
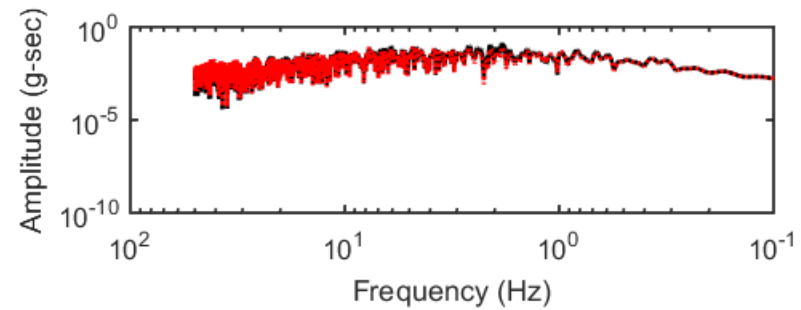
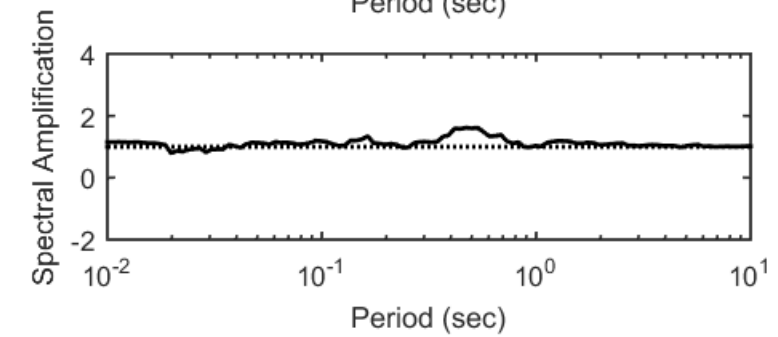
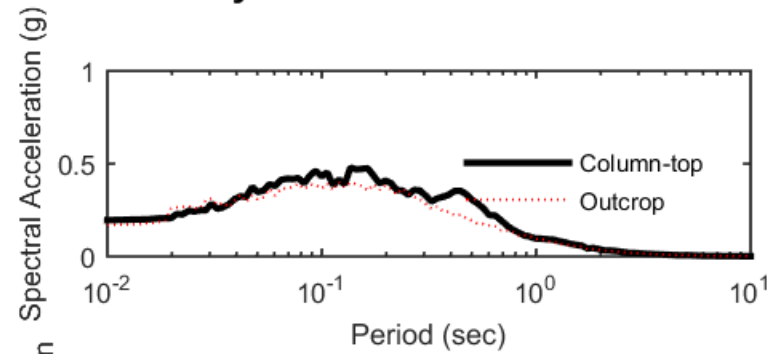
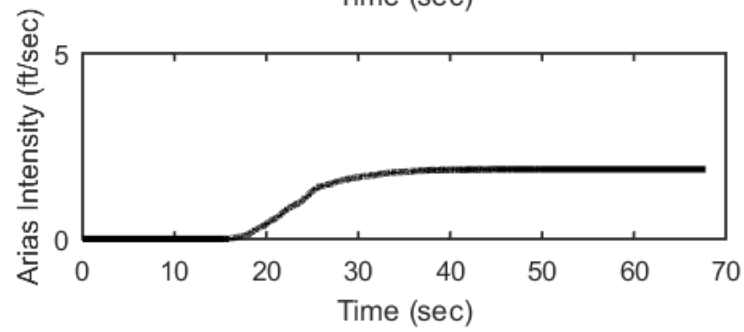
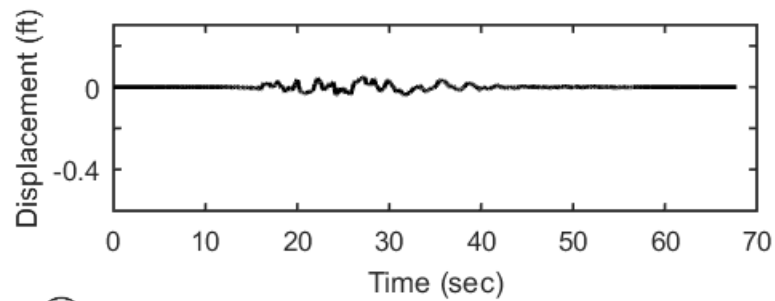
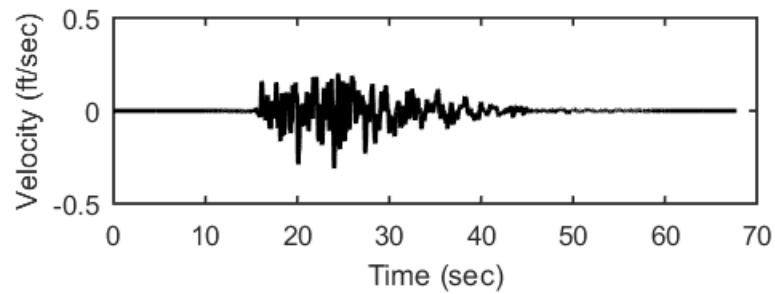
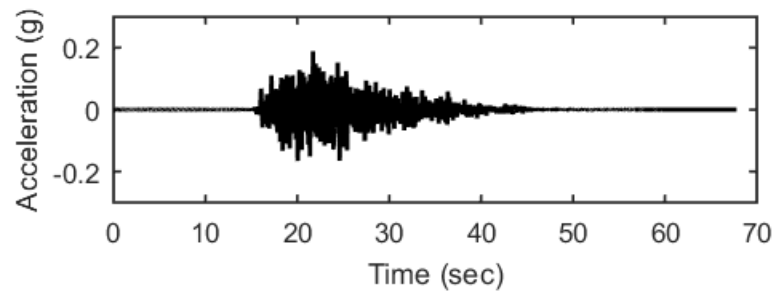
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



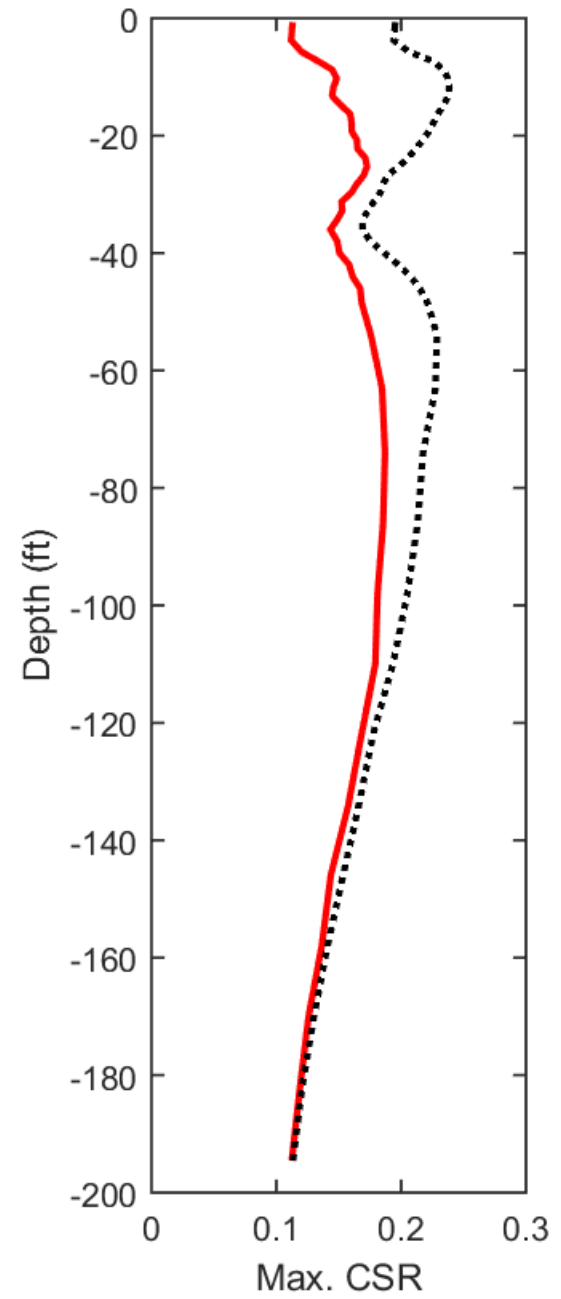
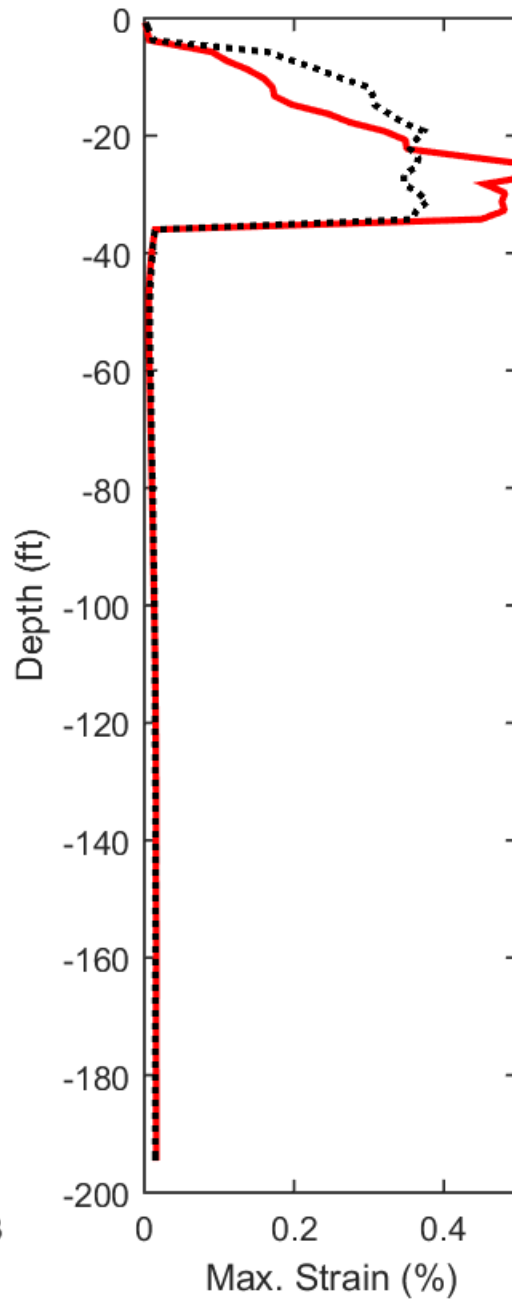
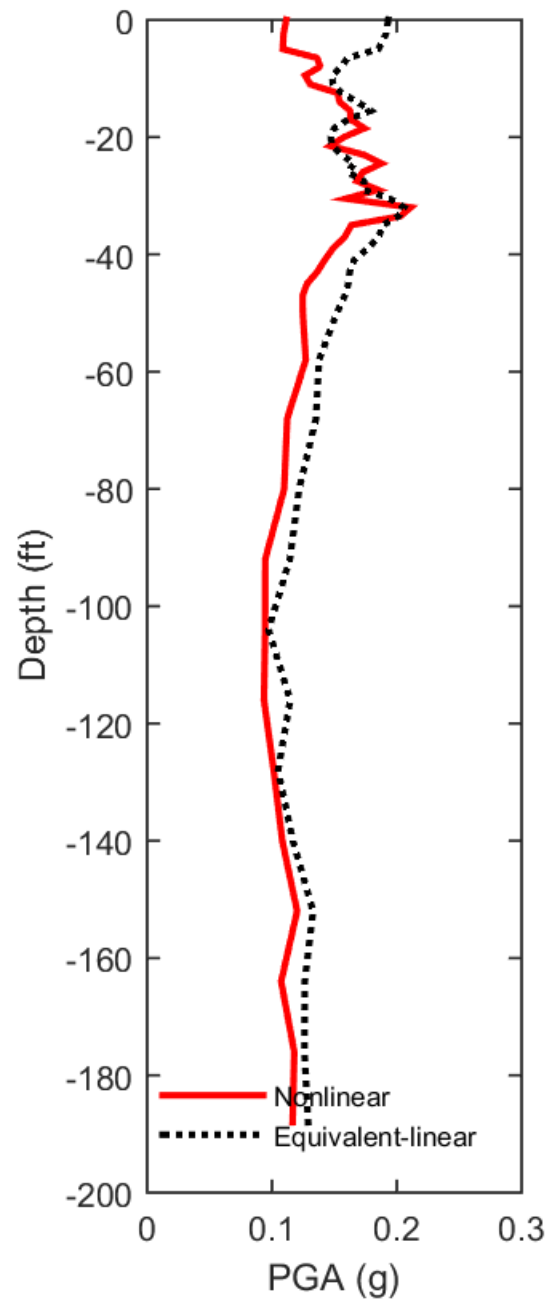
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



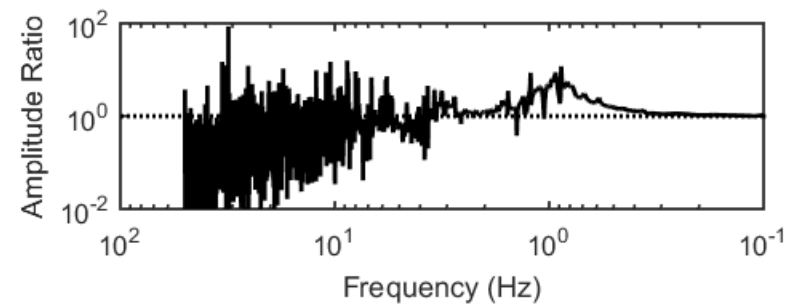
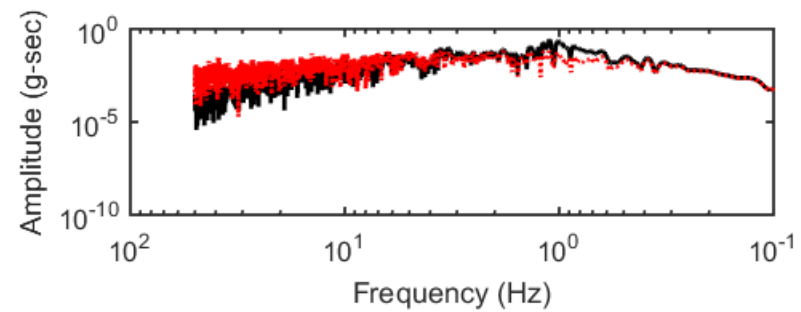
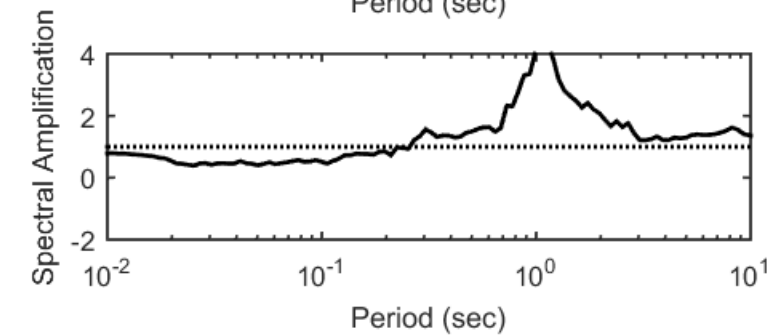
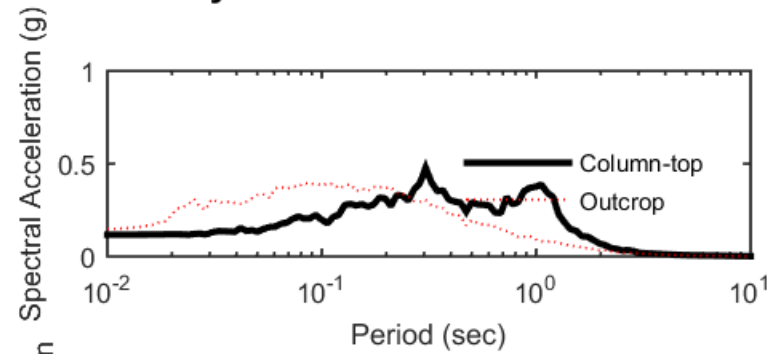
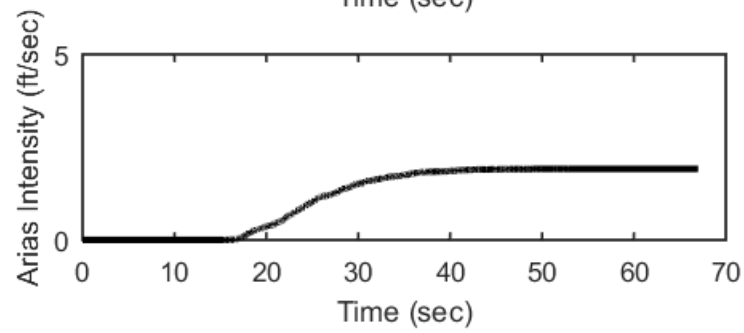
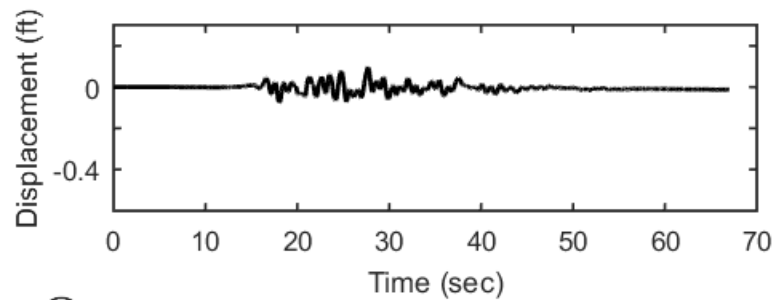
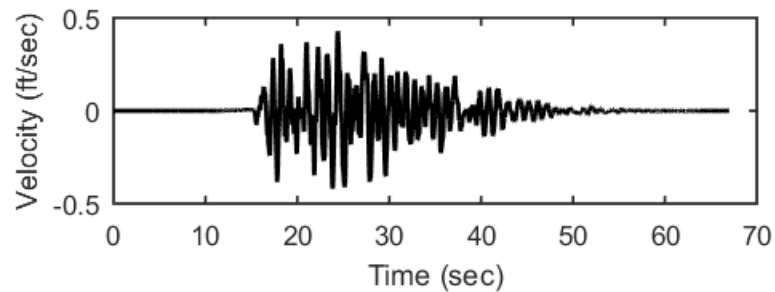
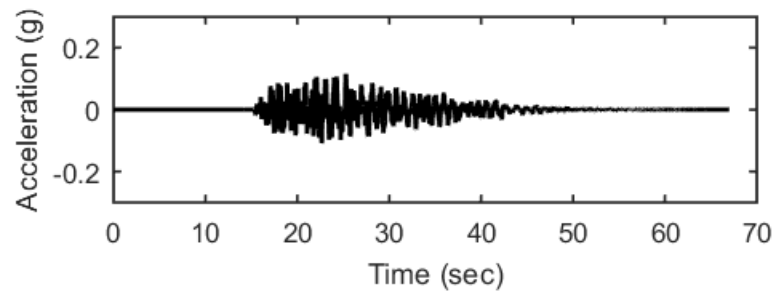
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



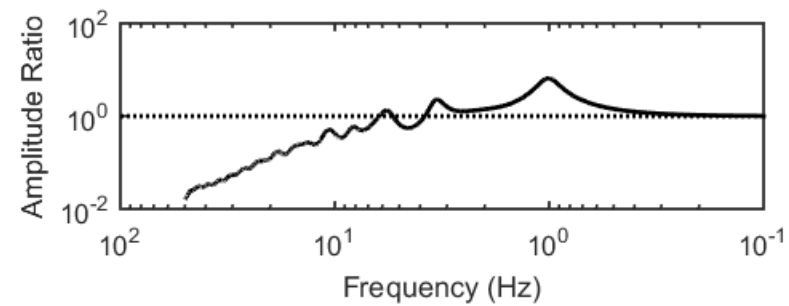
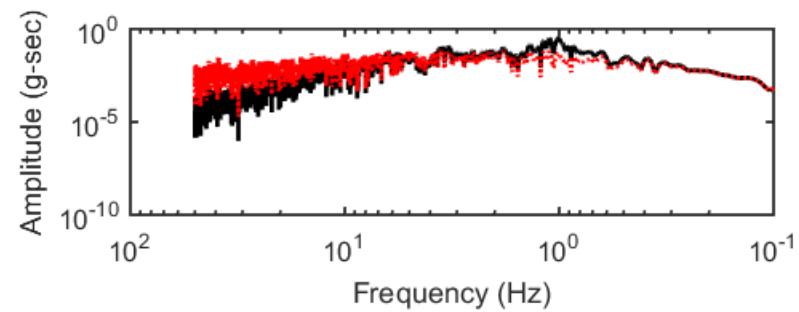
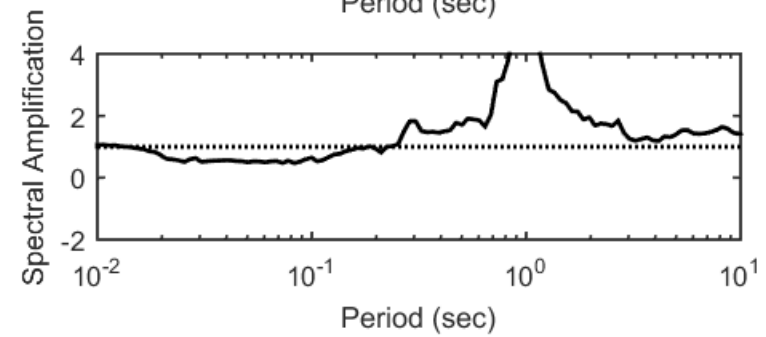
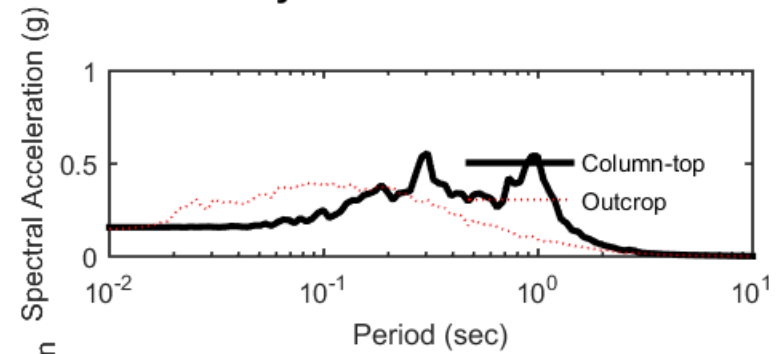
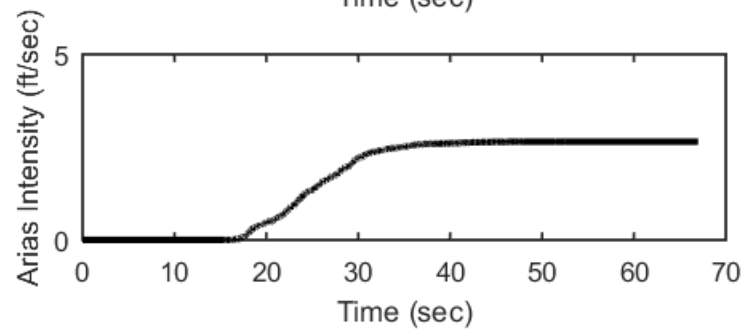
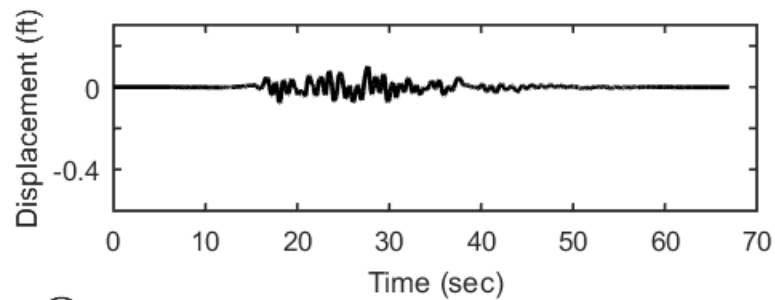
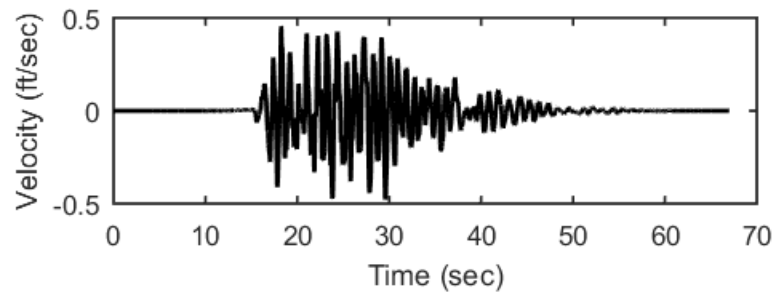
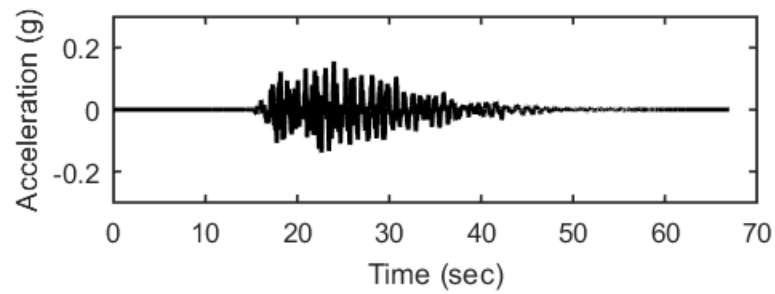
### Profile outputs for Motion: FEE4



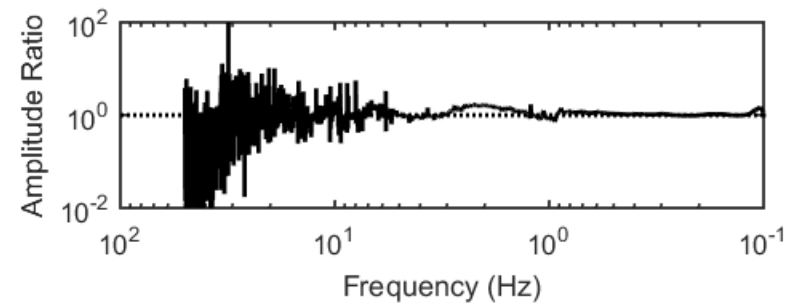
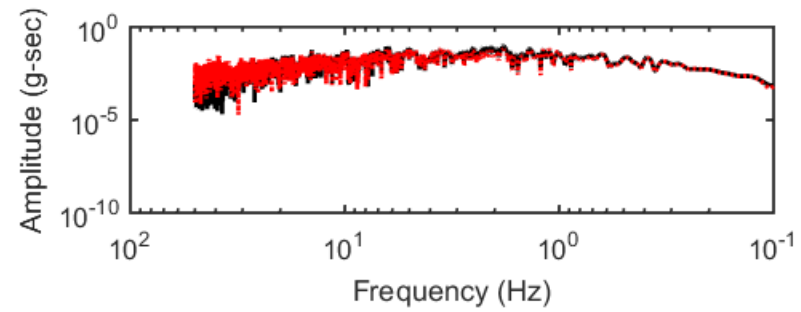
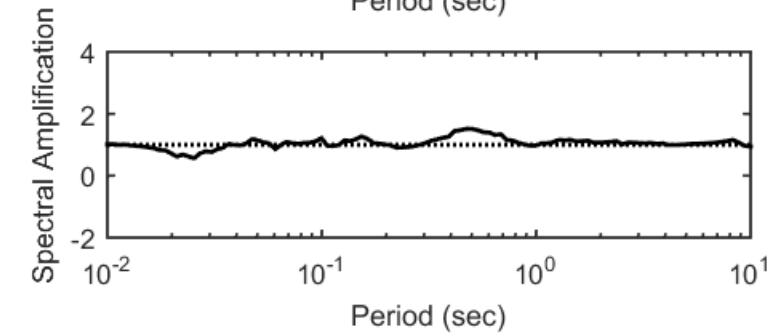
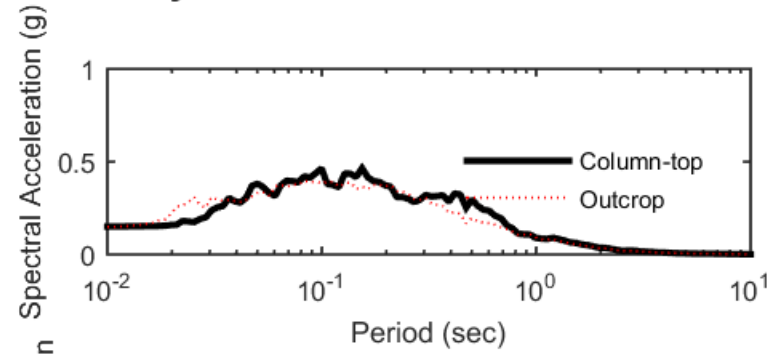
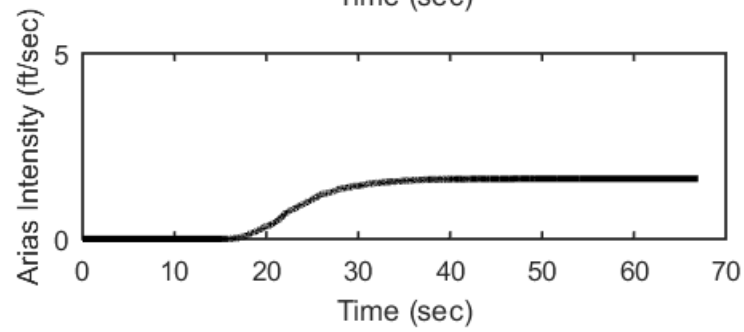
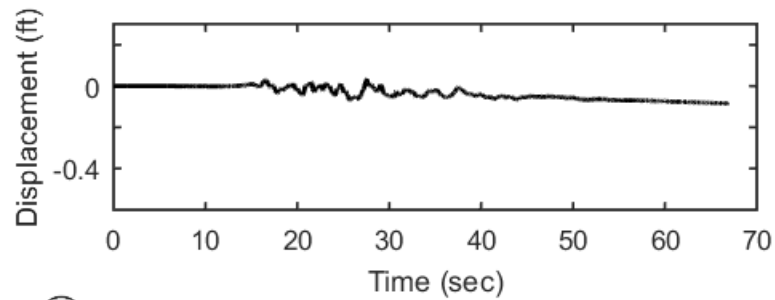
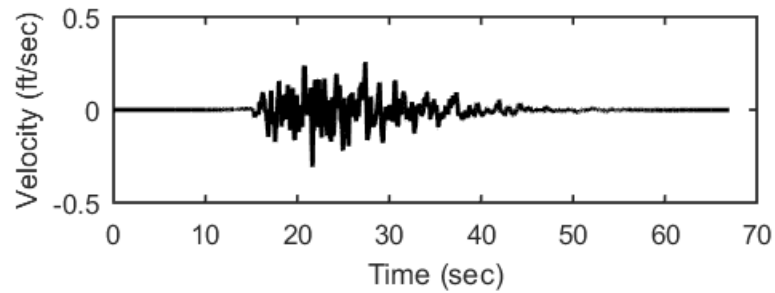
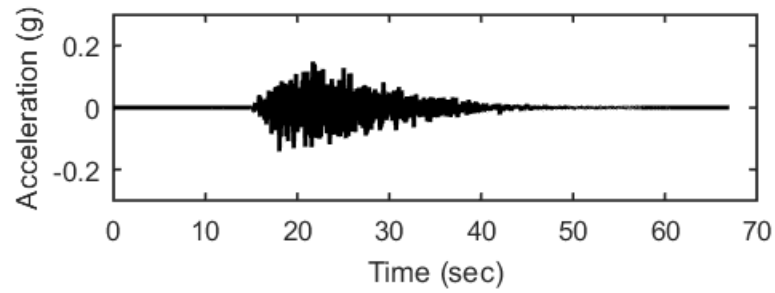
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



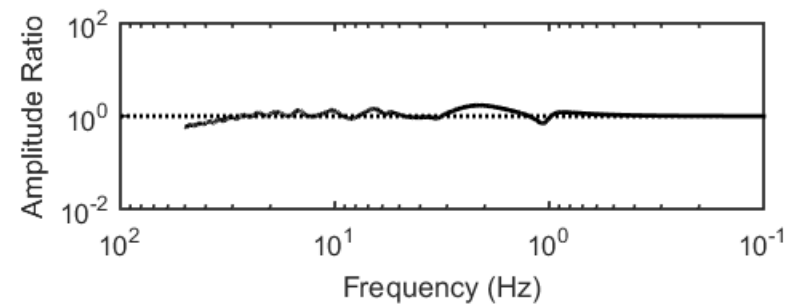
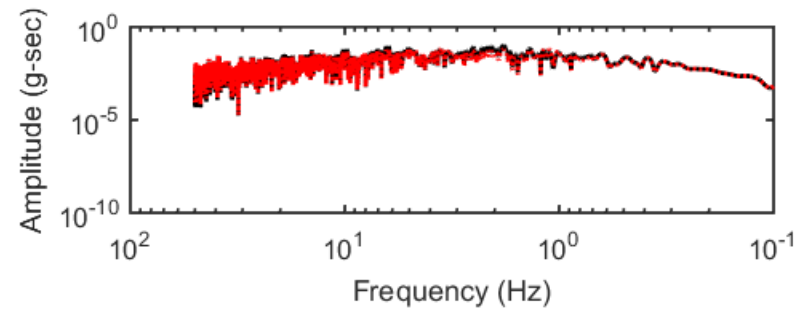
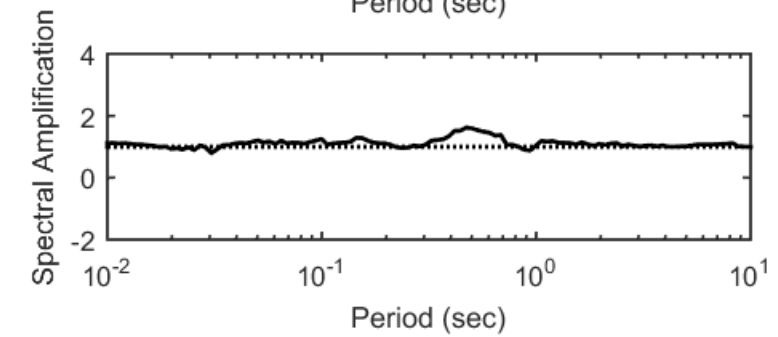
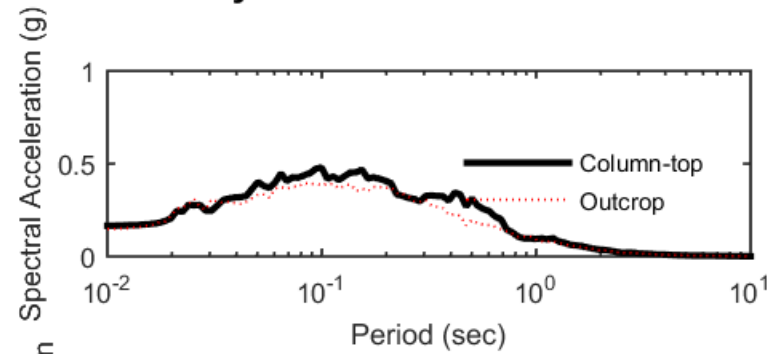
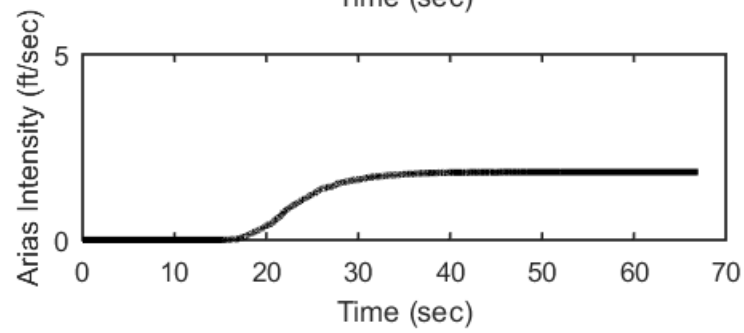
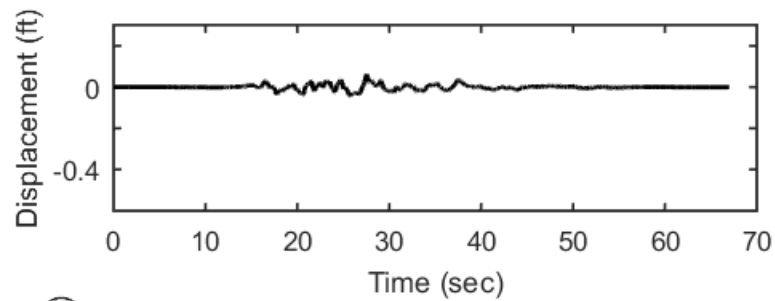
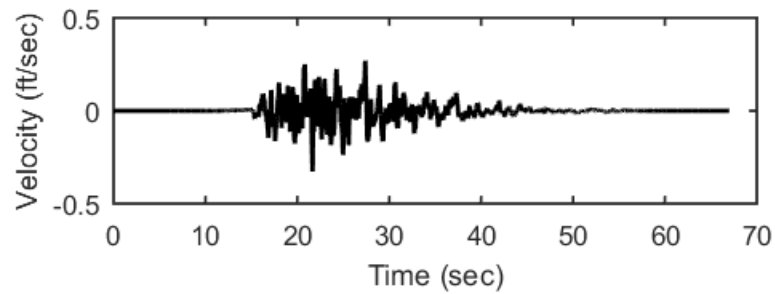
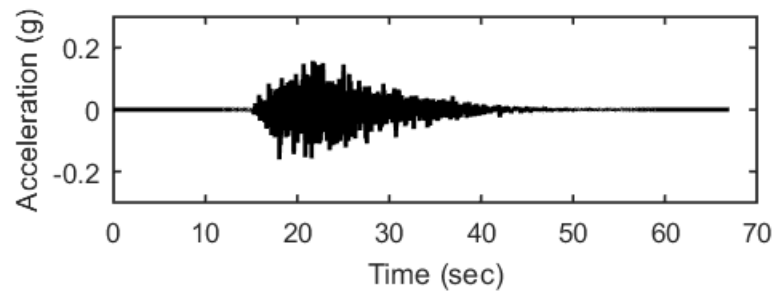
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5

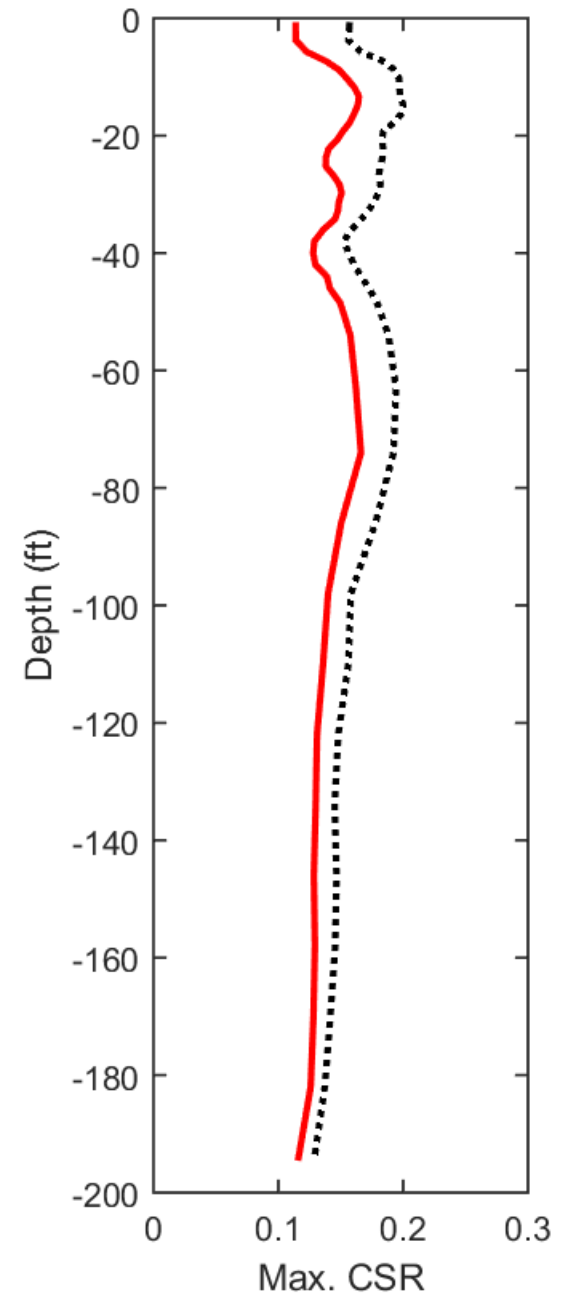
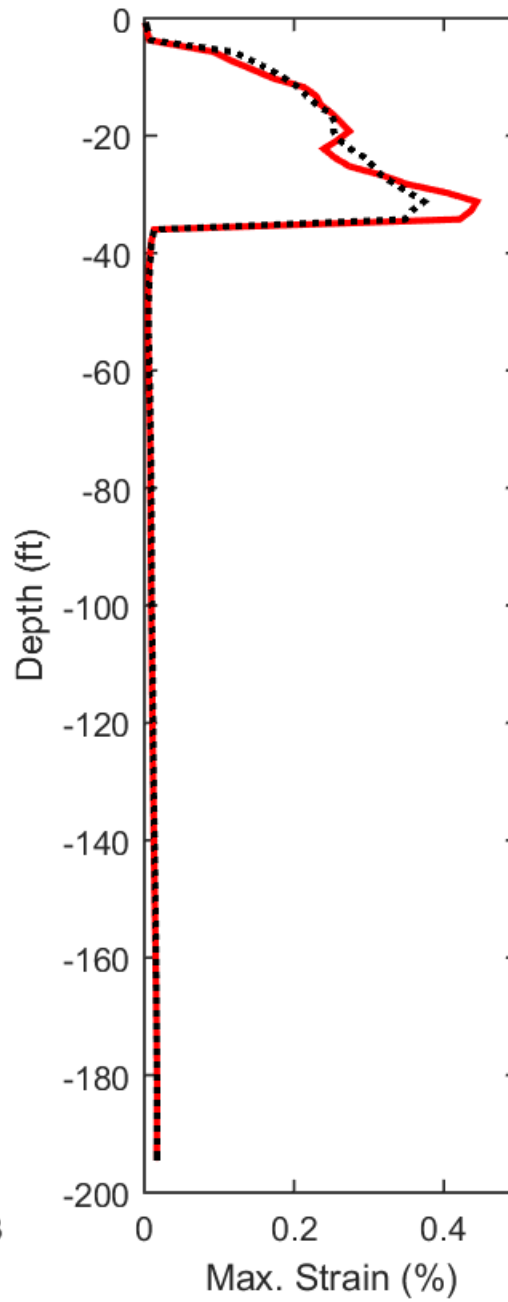
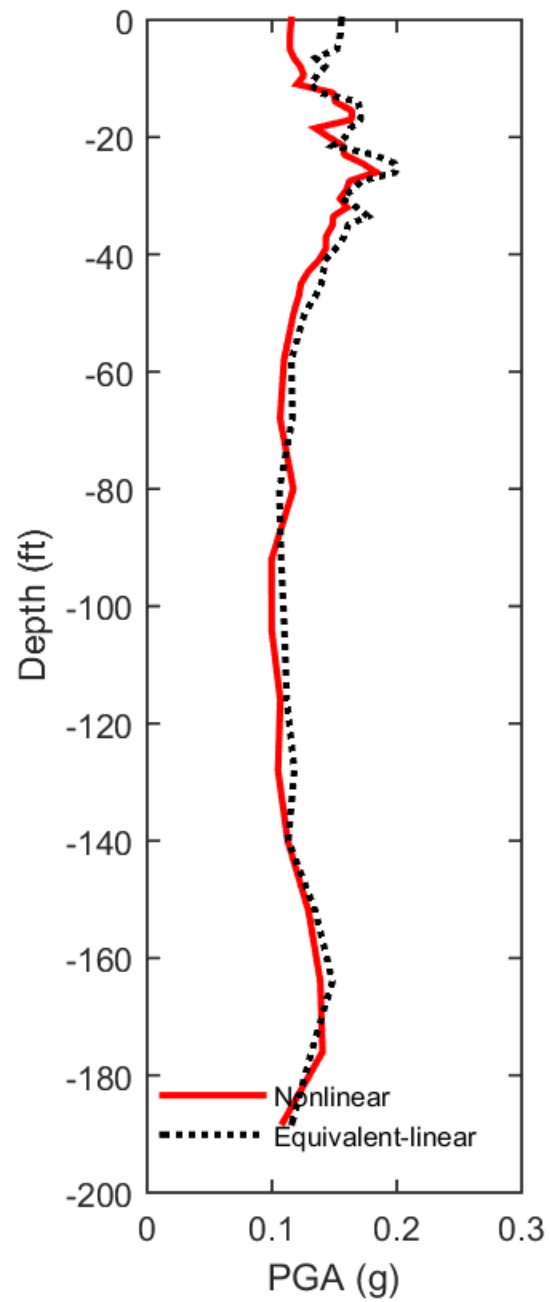


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5

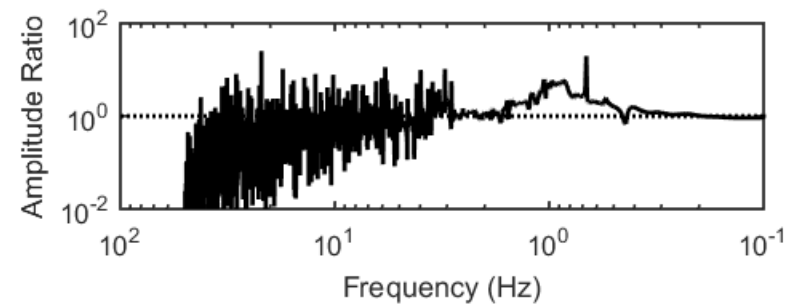
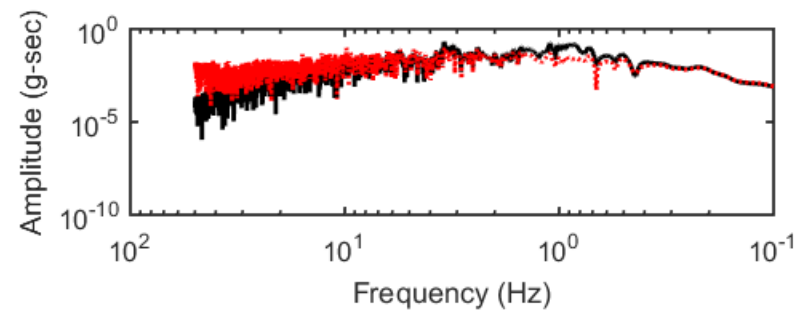
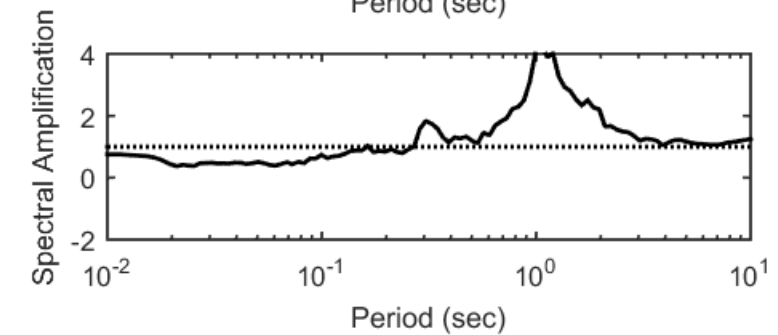
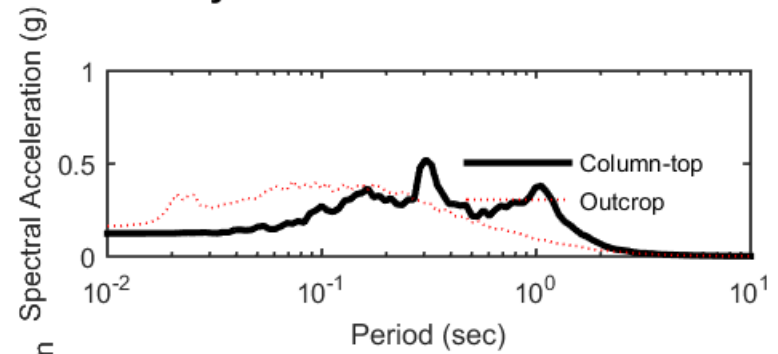
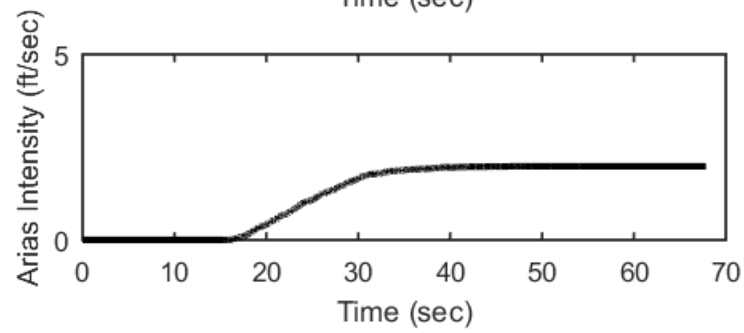
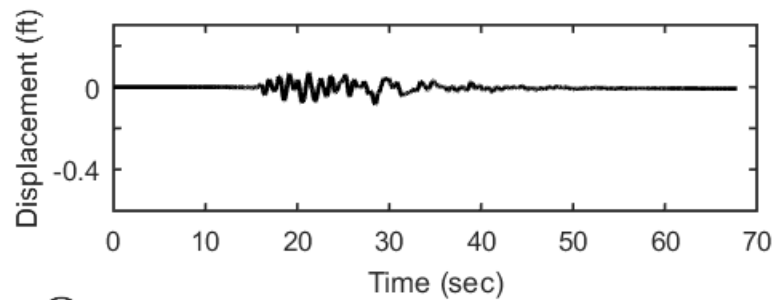
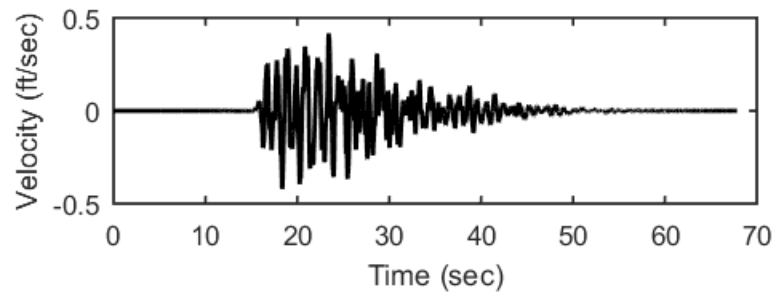
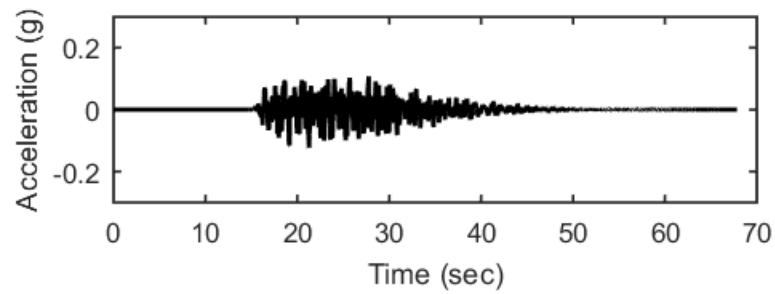




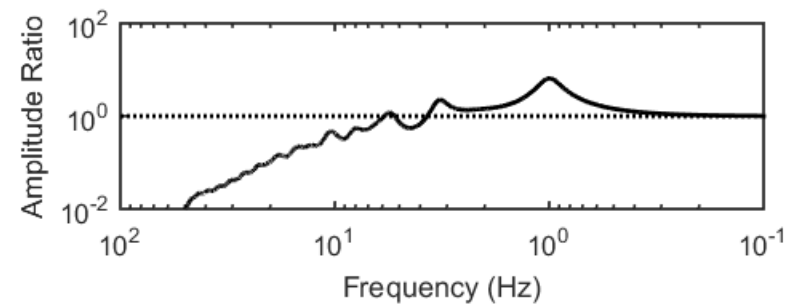
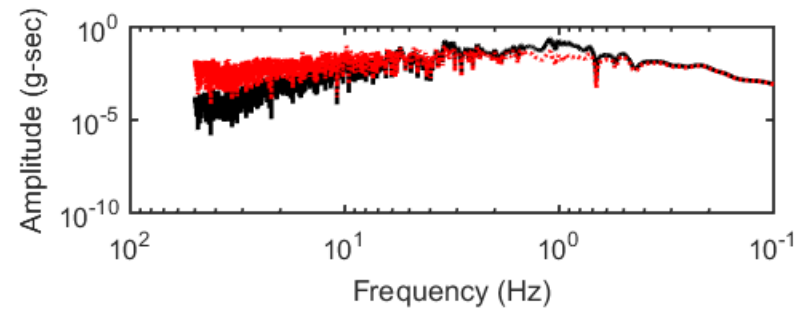
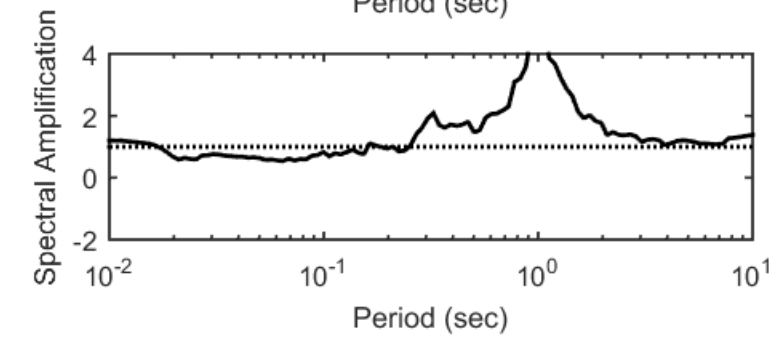
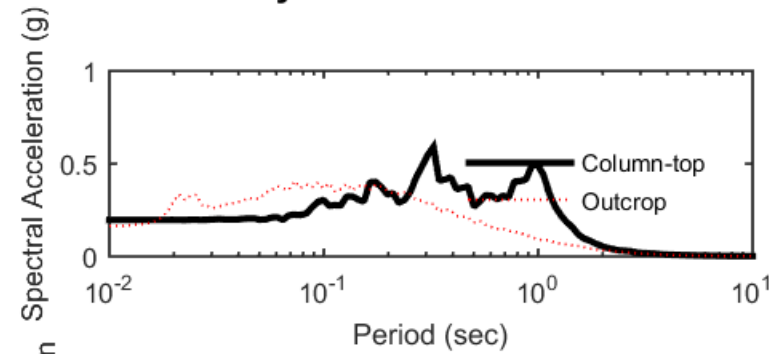
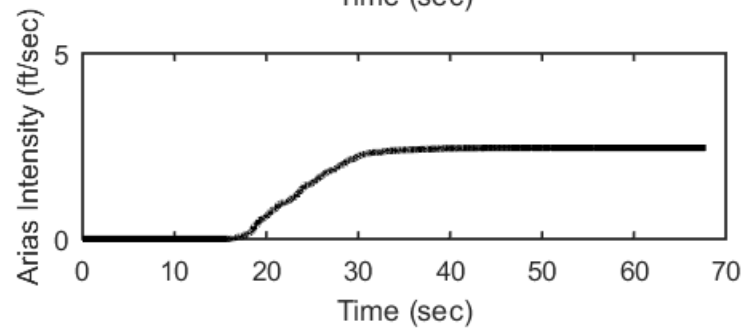
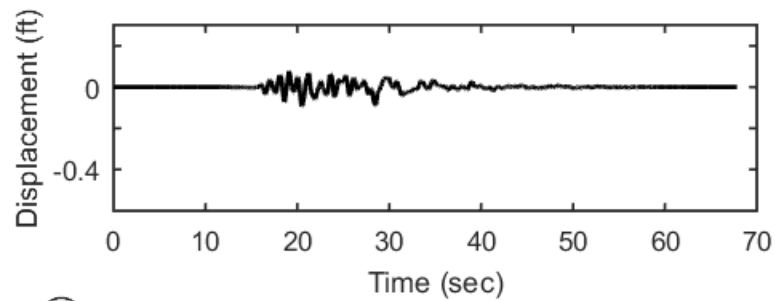
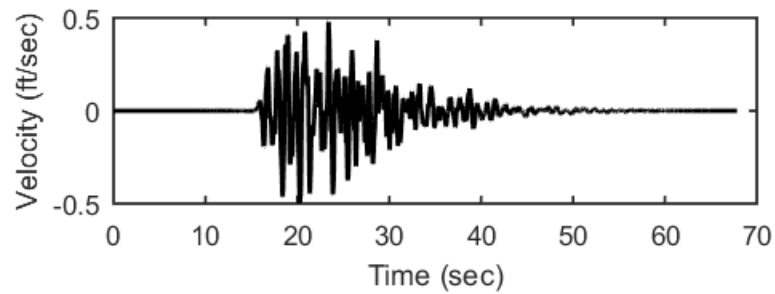
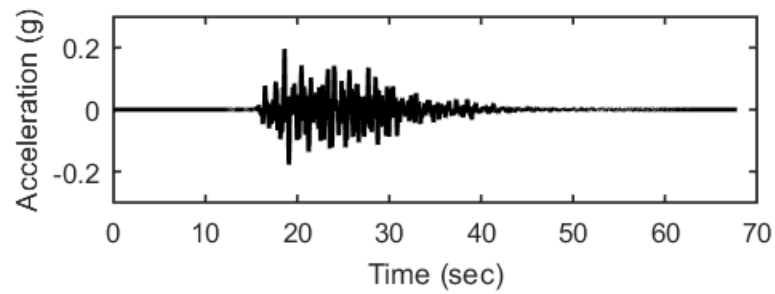
### Profile outputs for Motion: FEE5



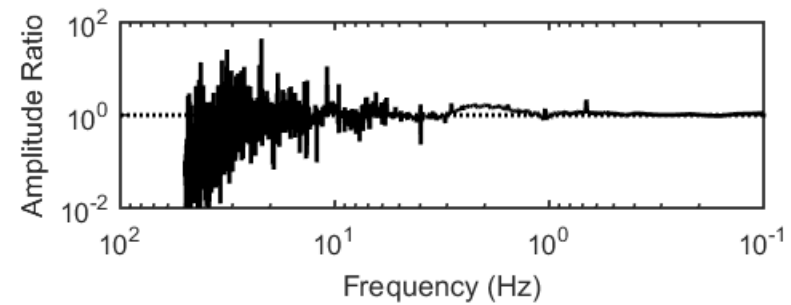
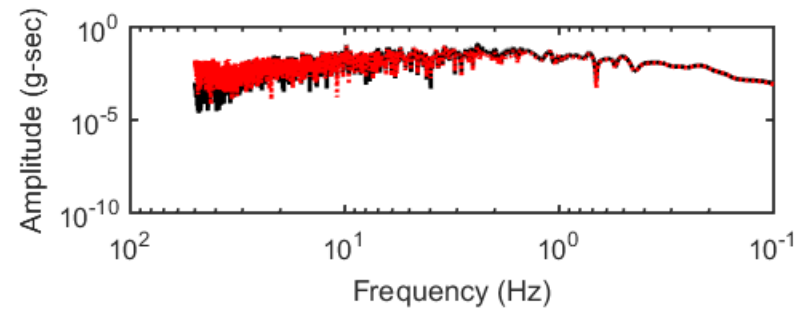
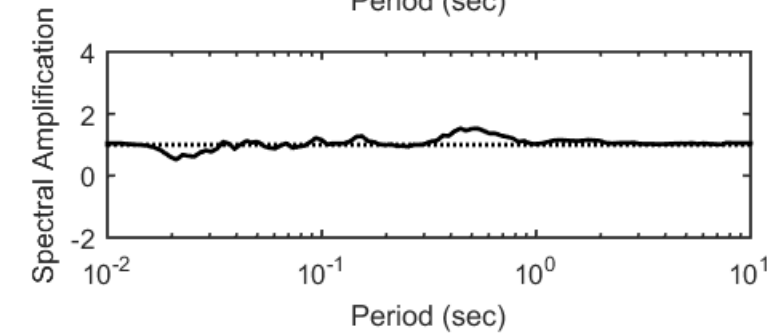
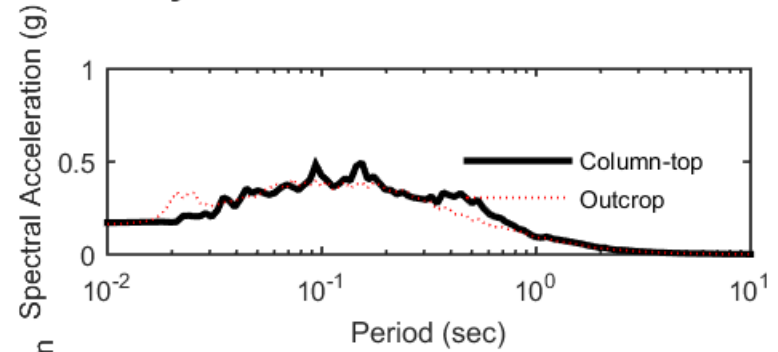
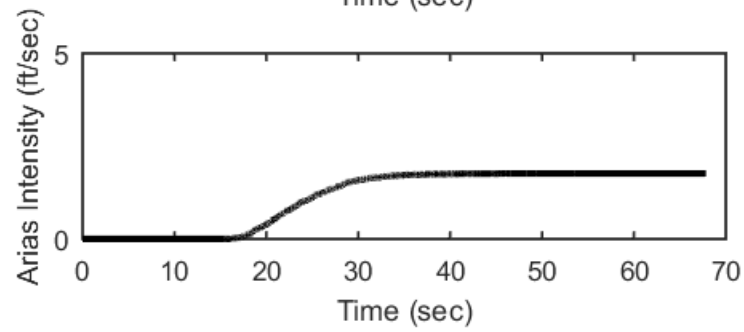
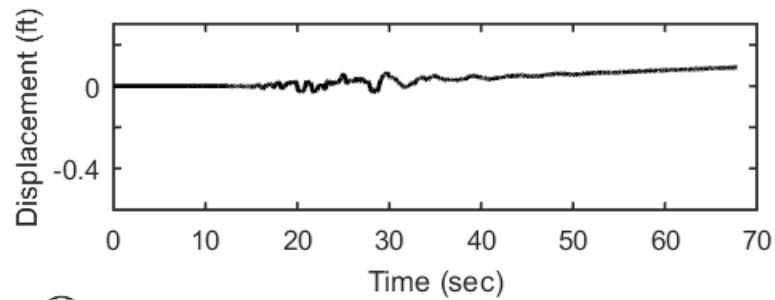
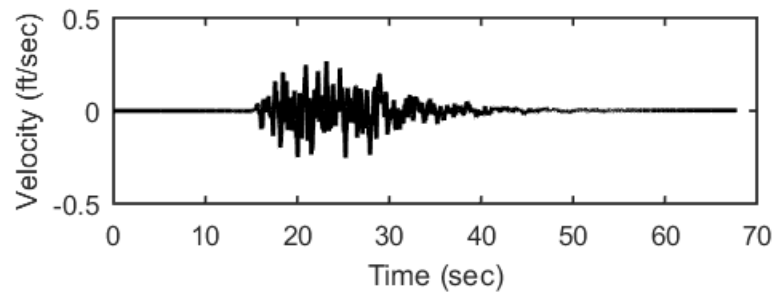
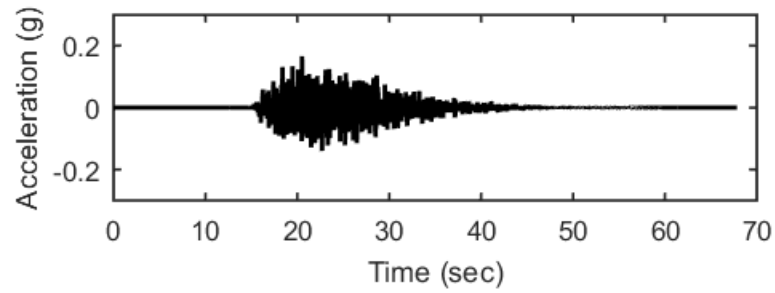
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



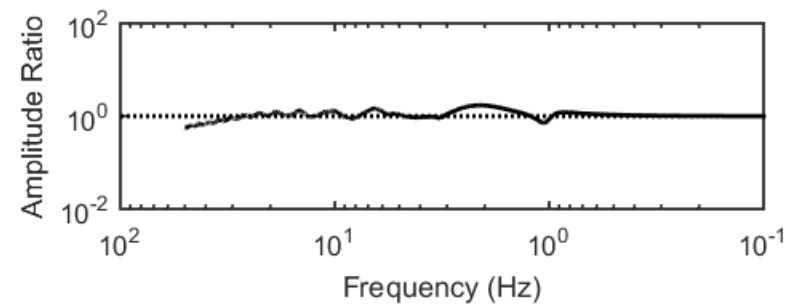
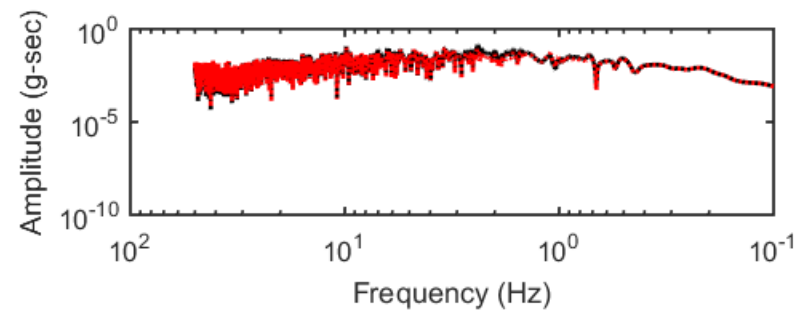
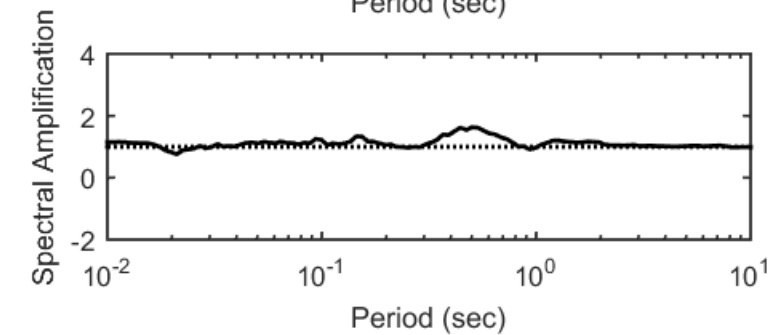
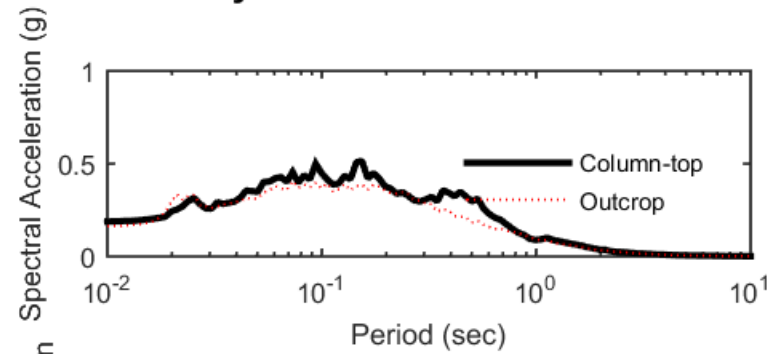
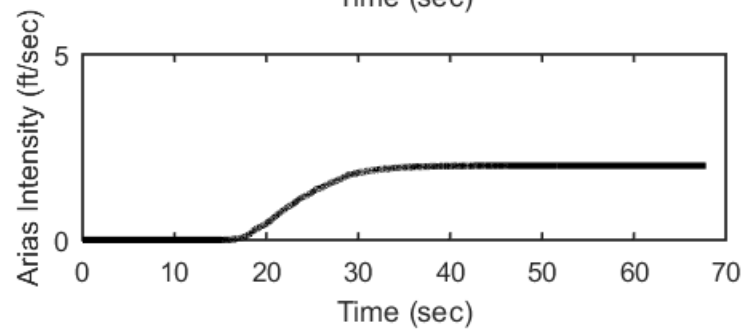
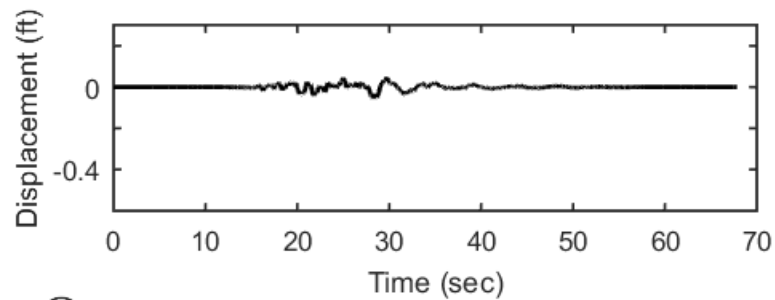
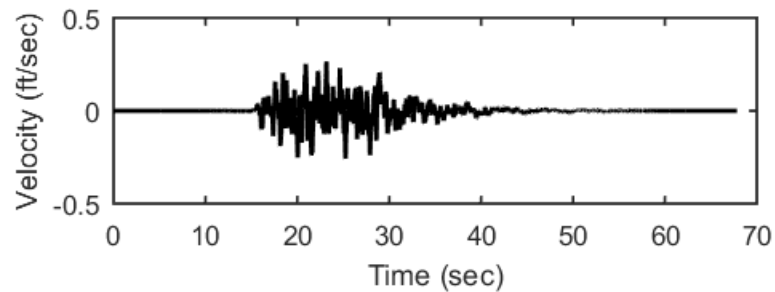
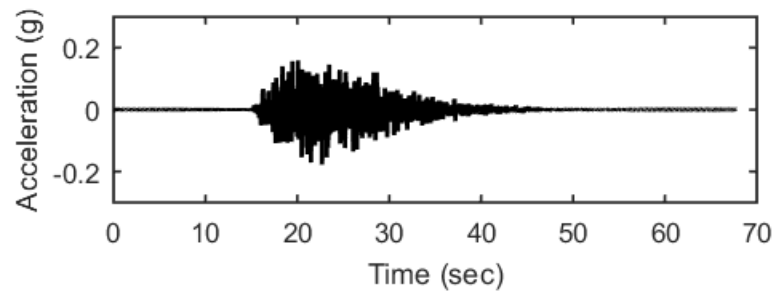
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



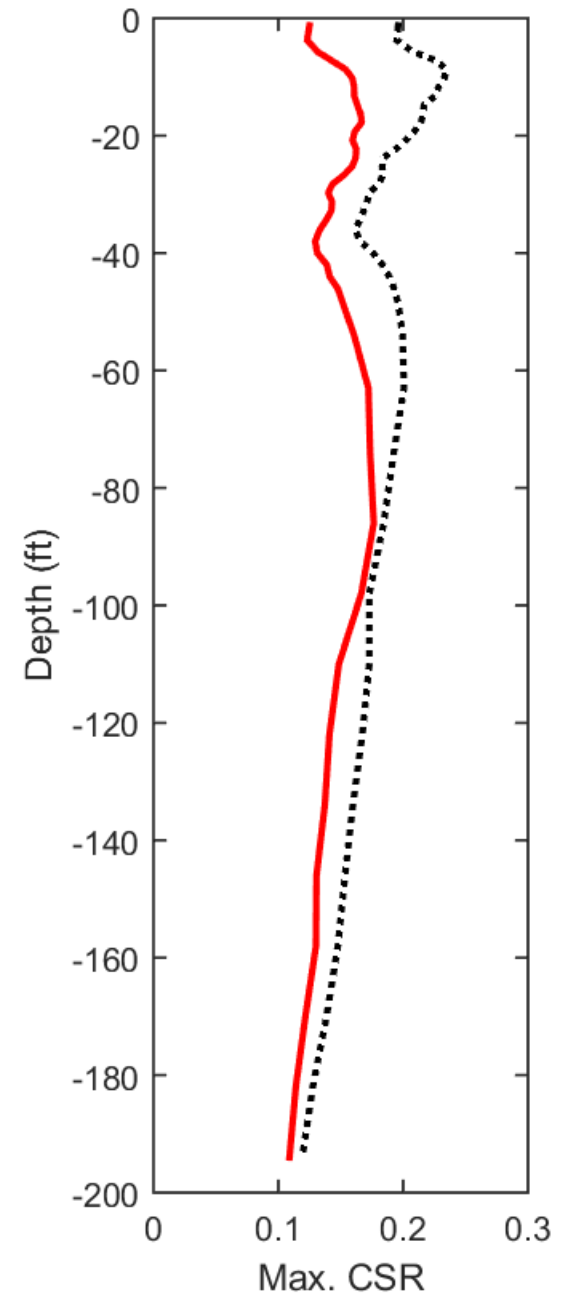
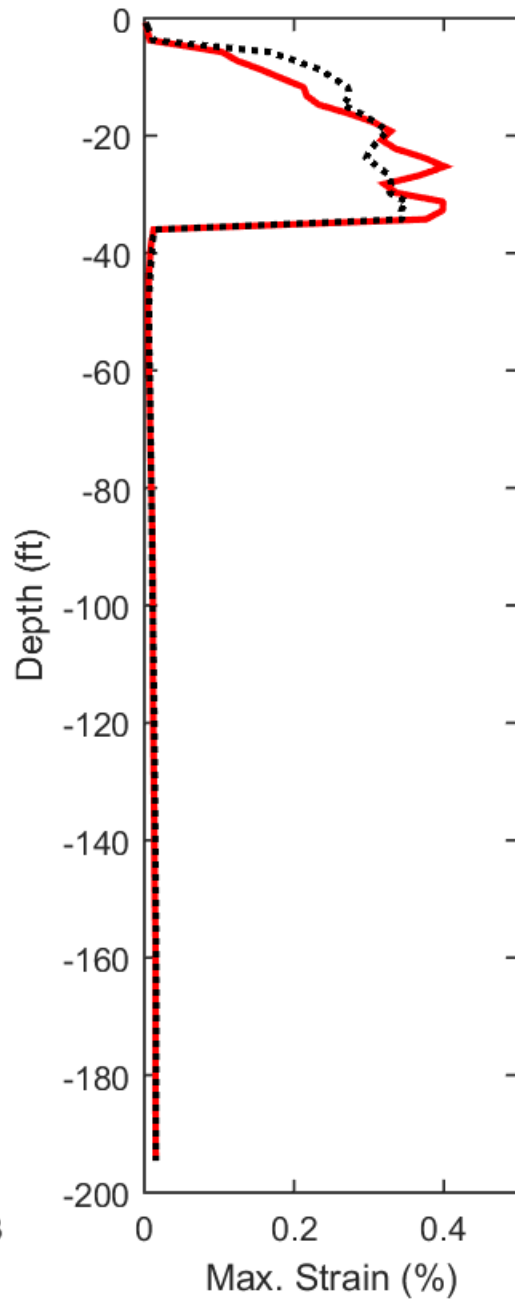
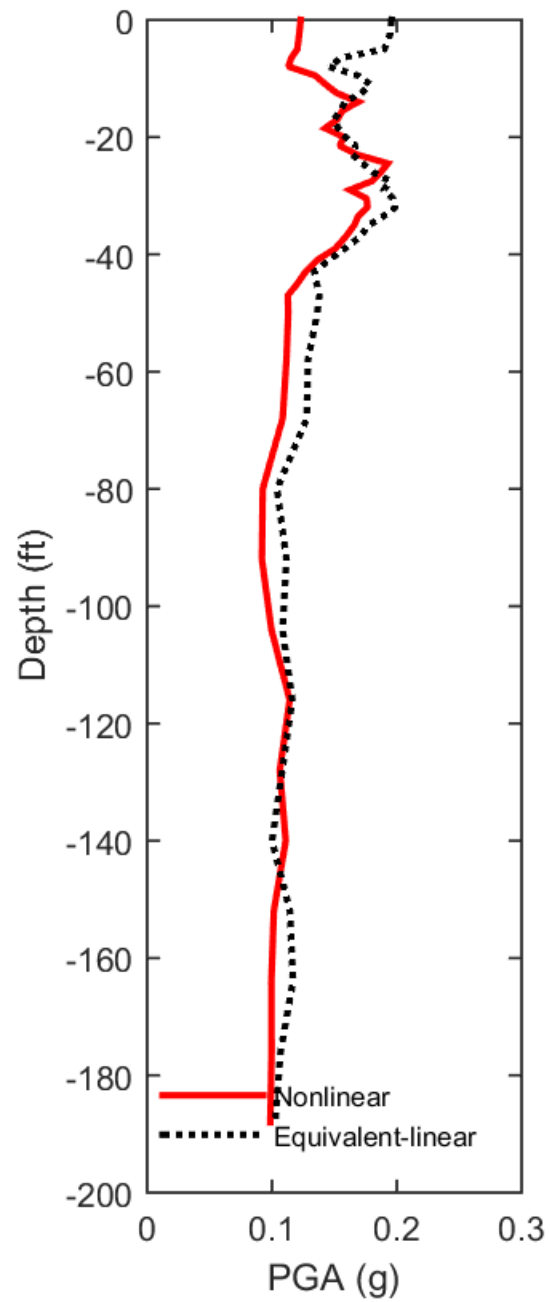
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



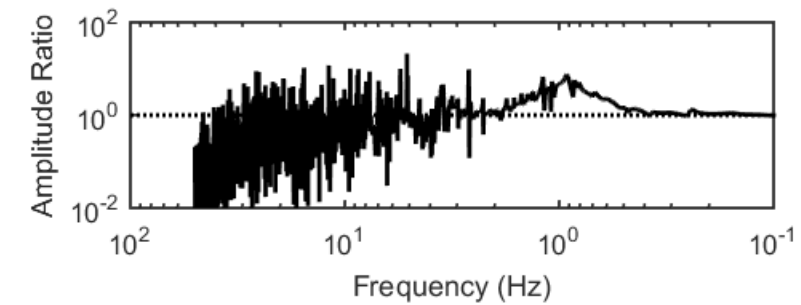
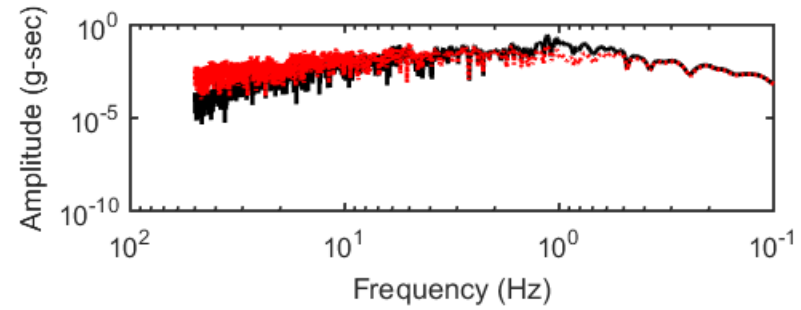
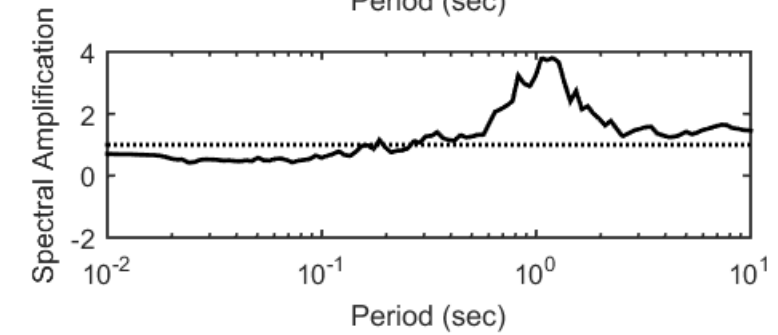
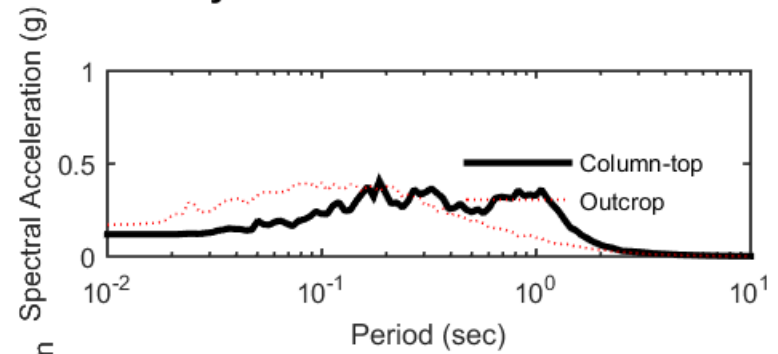
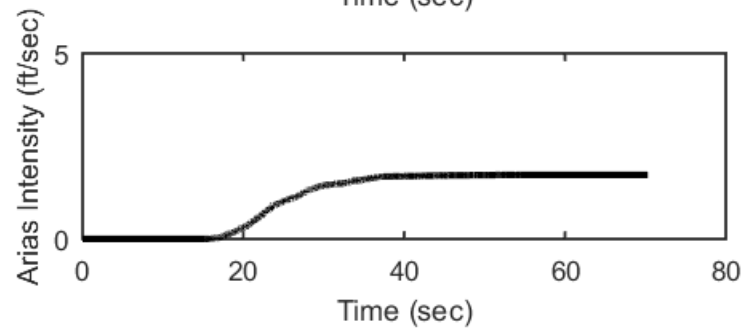
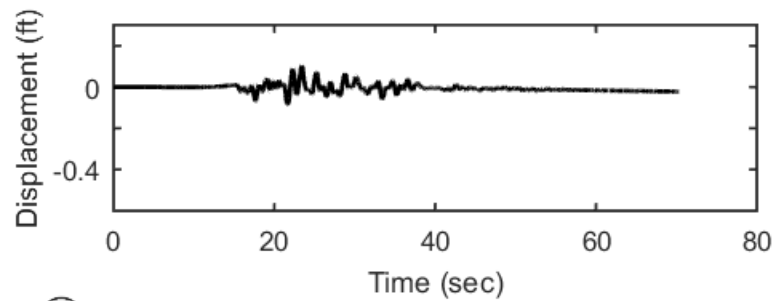
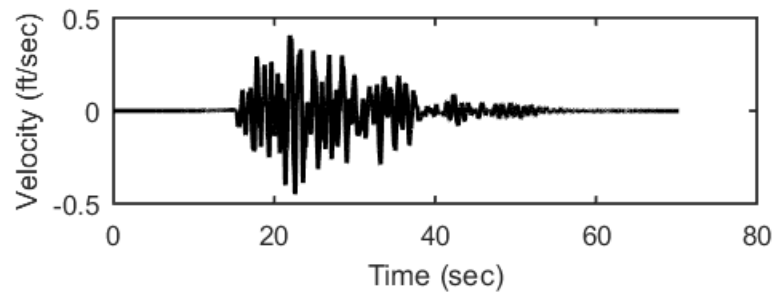
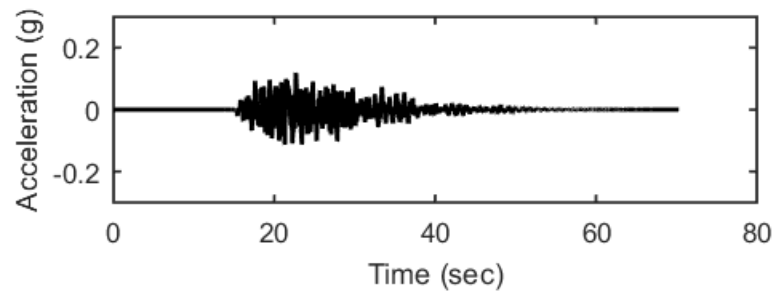
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



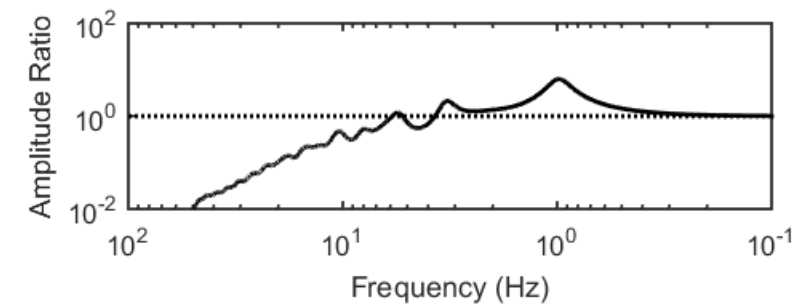
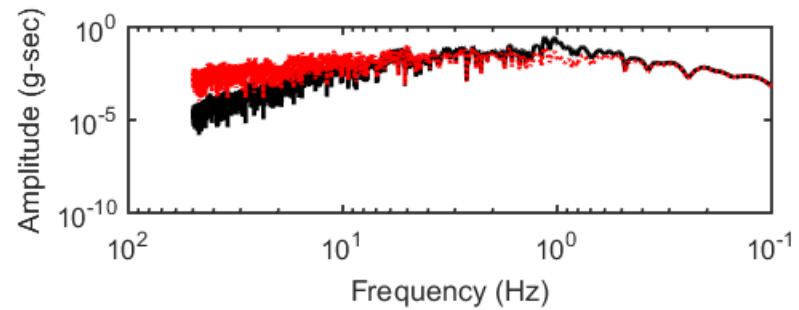
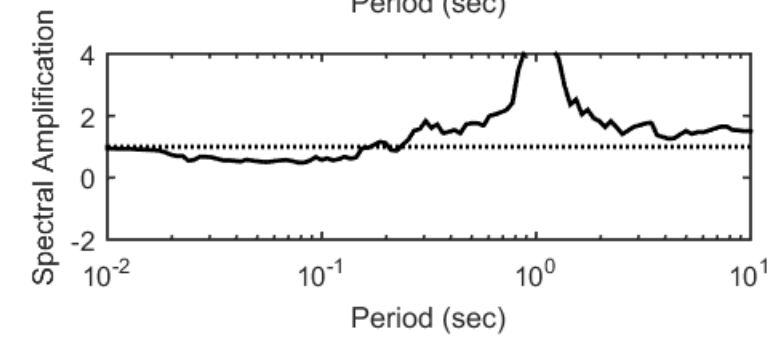
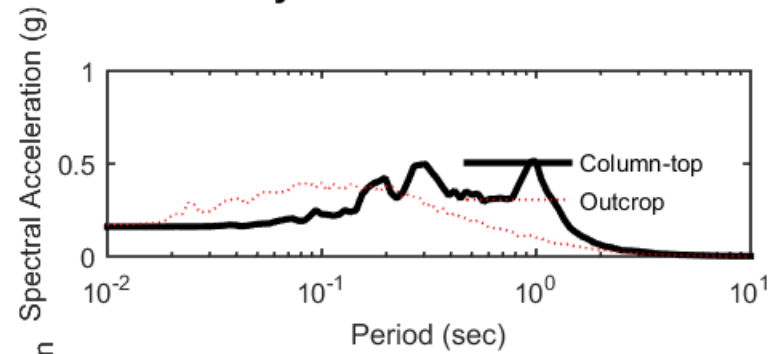
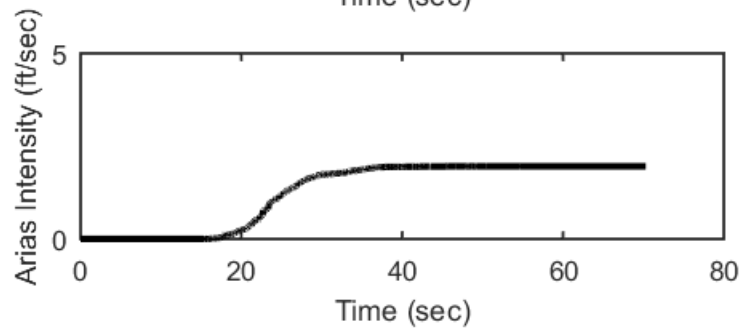
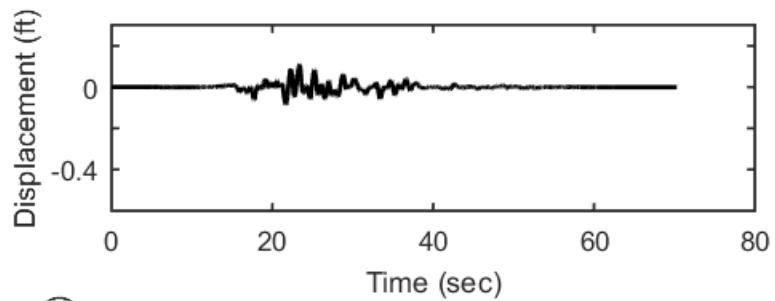
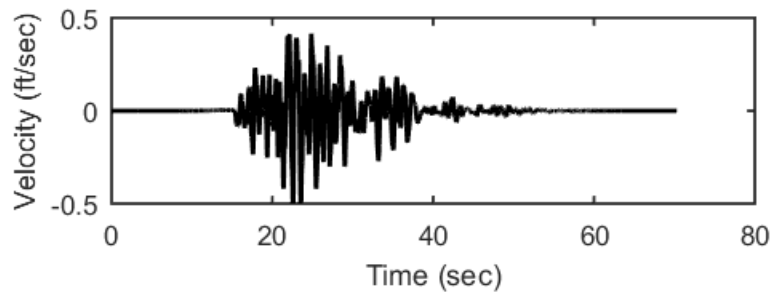
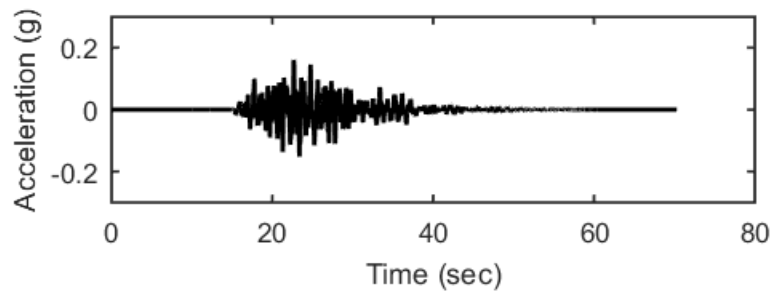
# Profile outputs for Motion: FEE6



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7

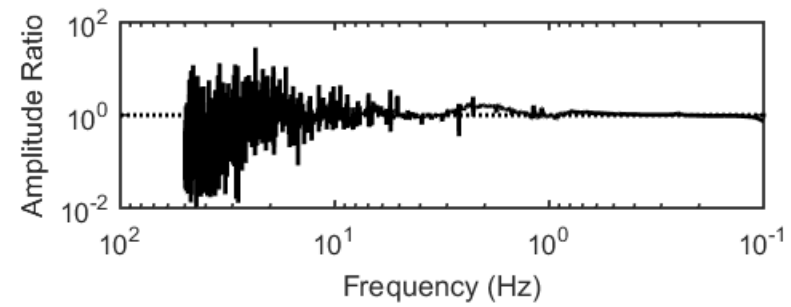
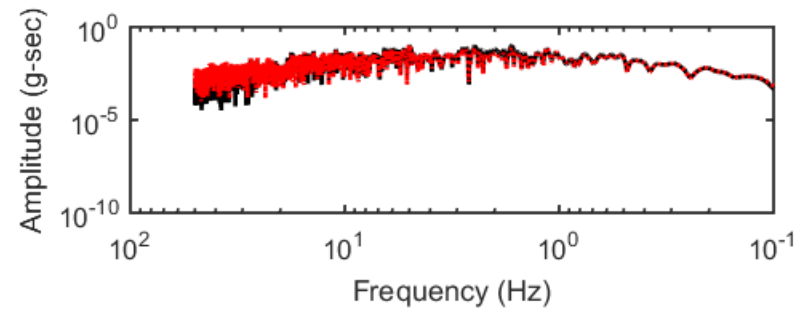
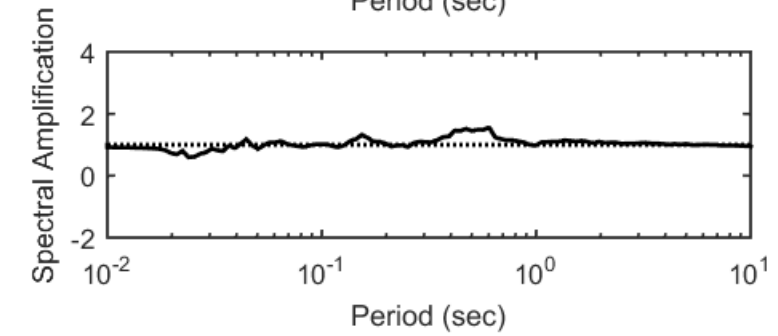
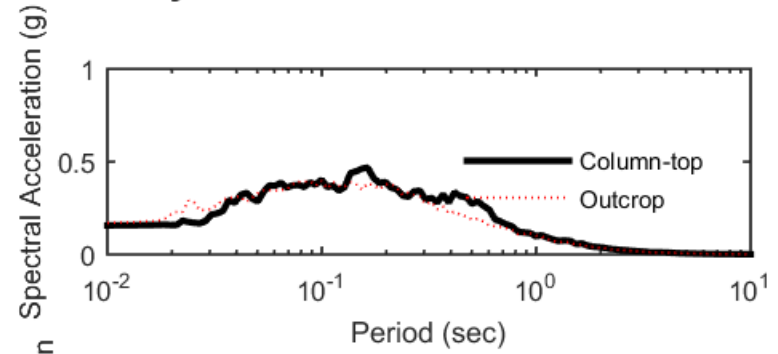
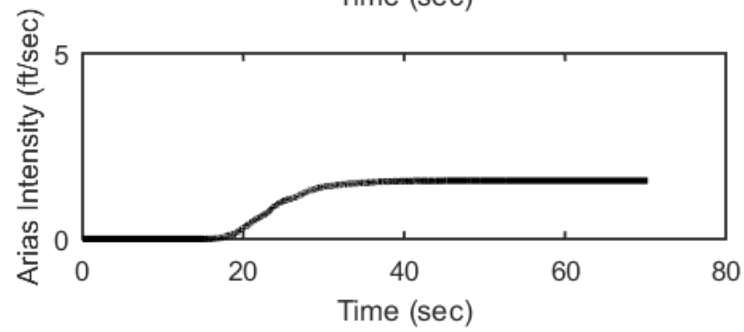
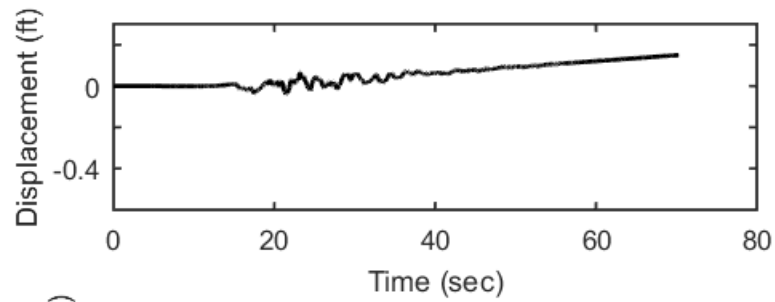
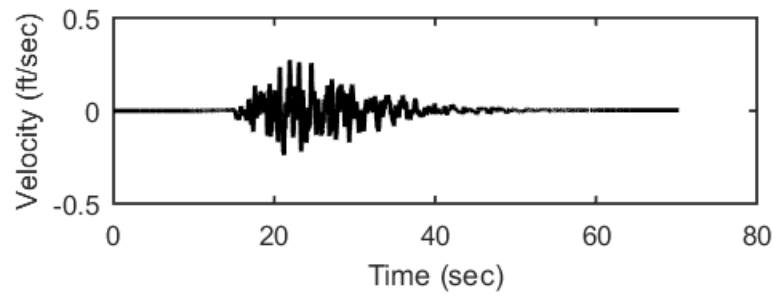
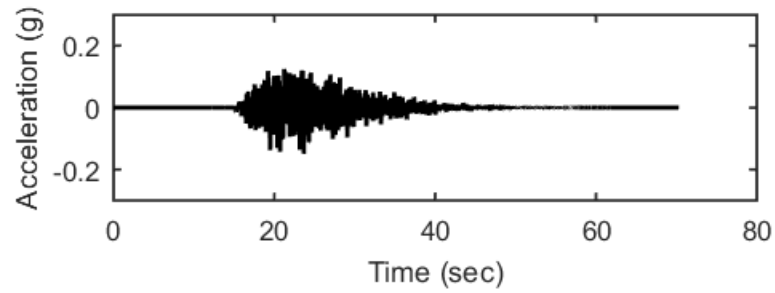


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7

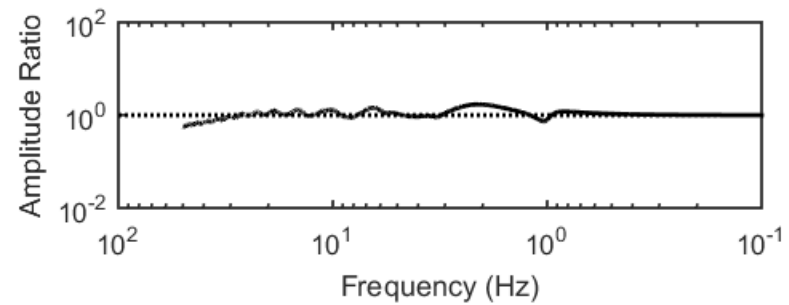
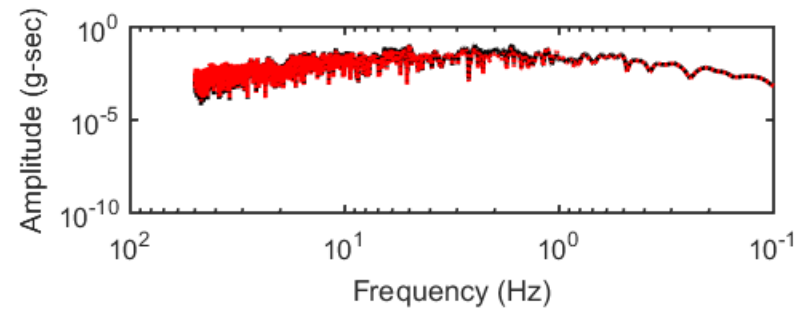
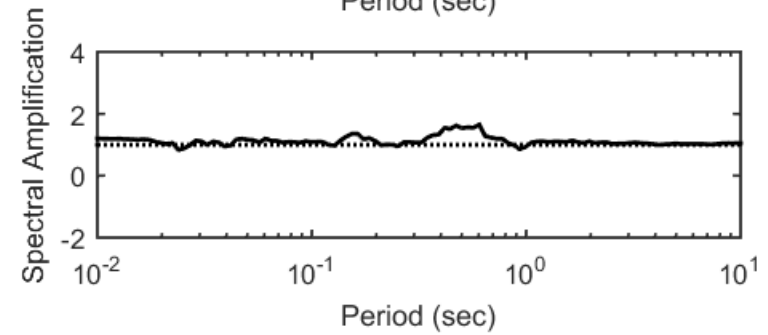
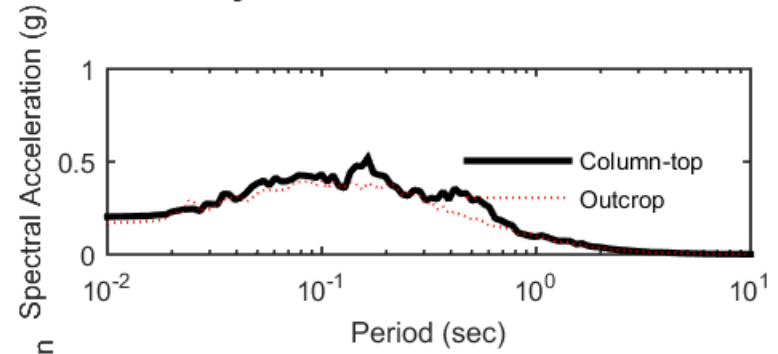
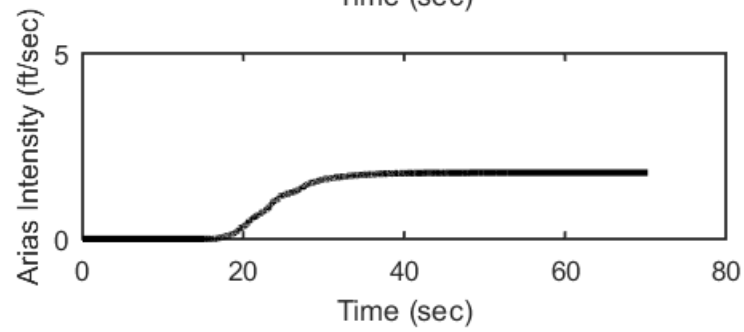
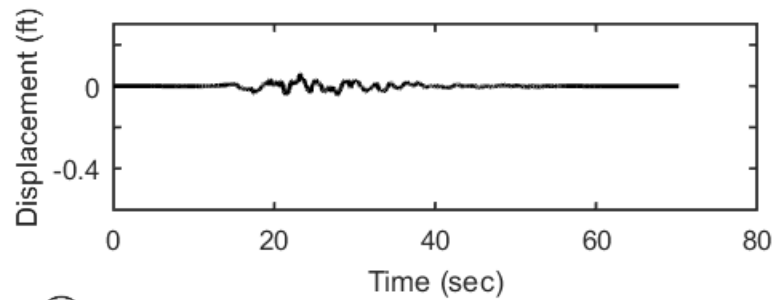
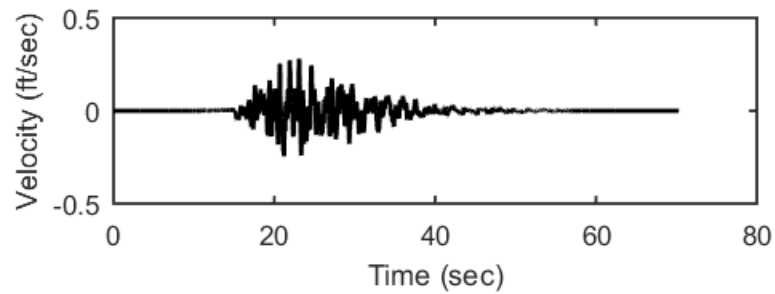
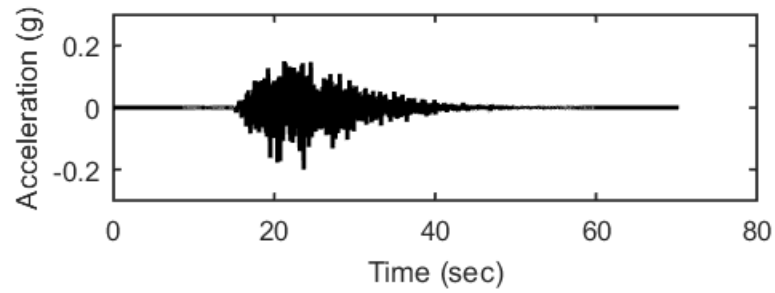




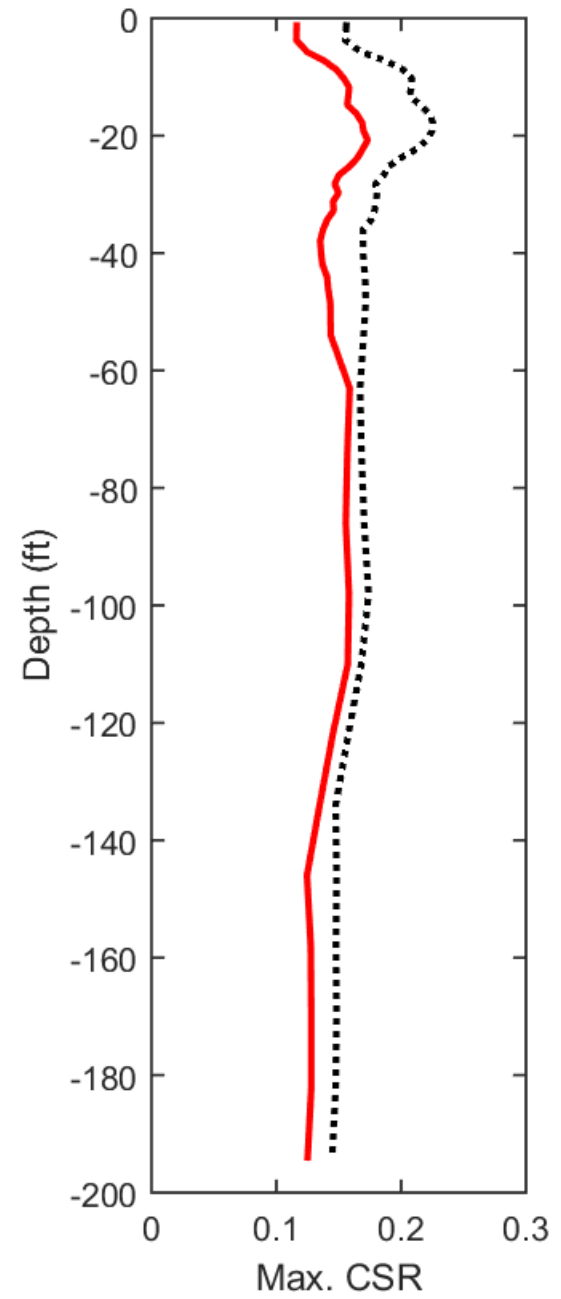
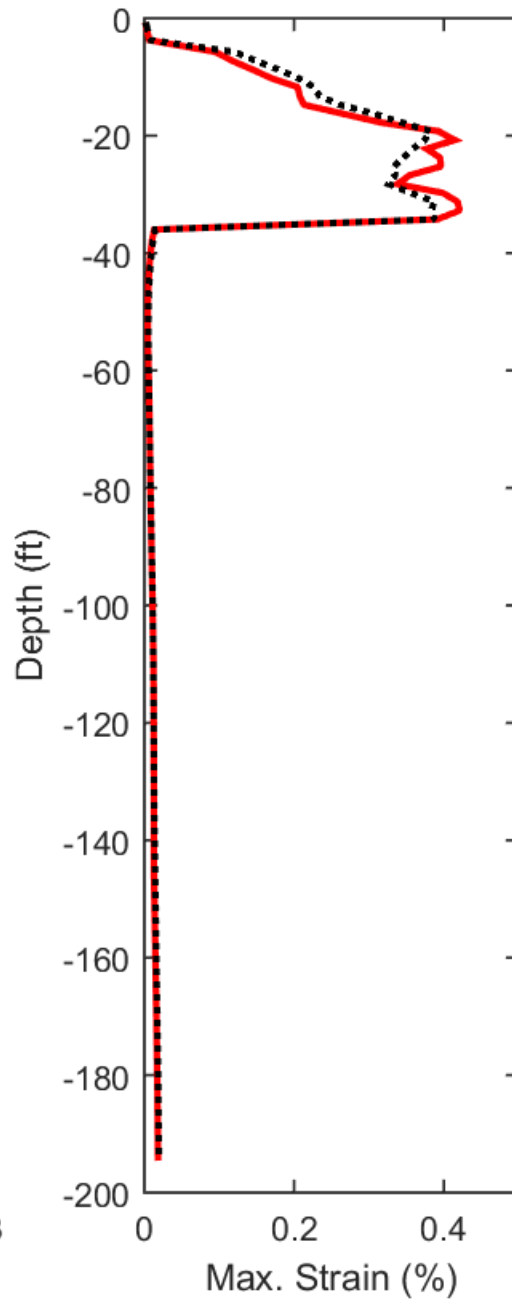
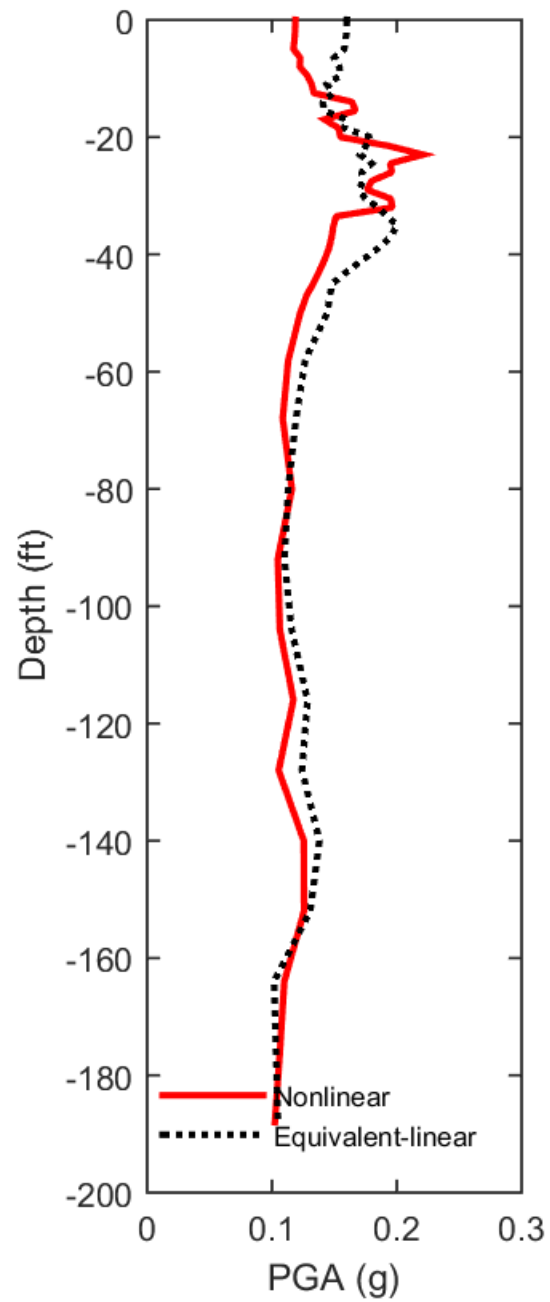
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



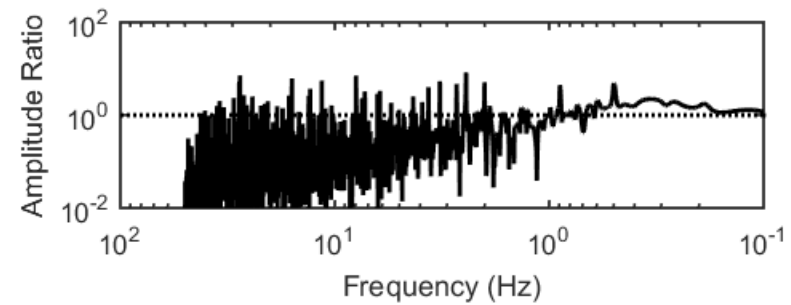
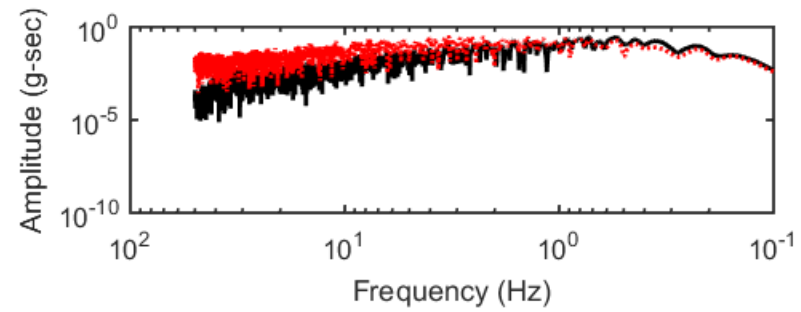
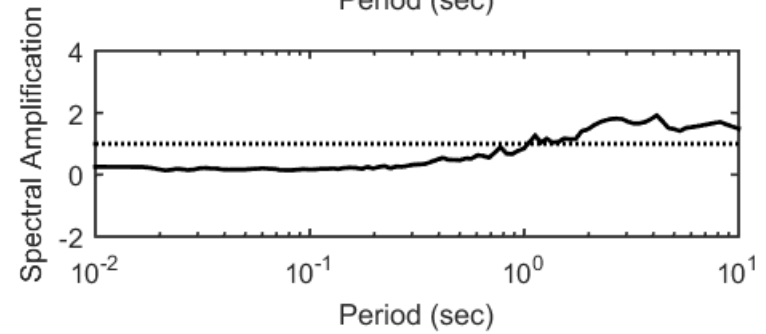
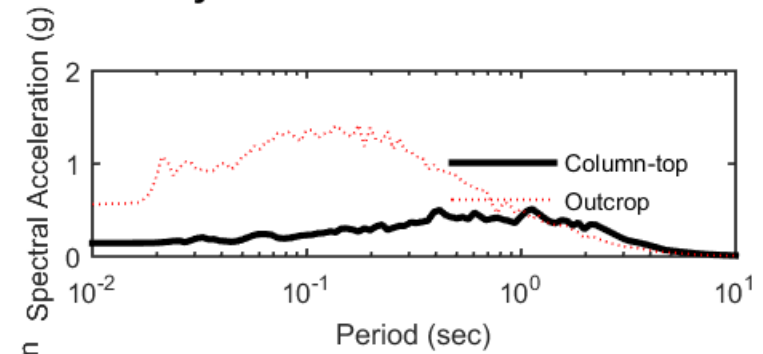
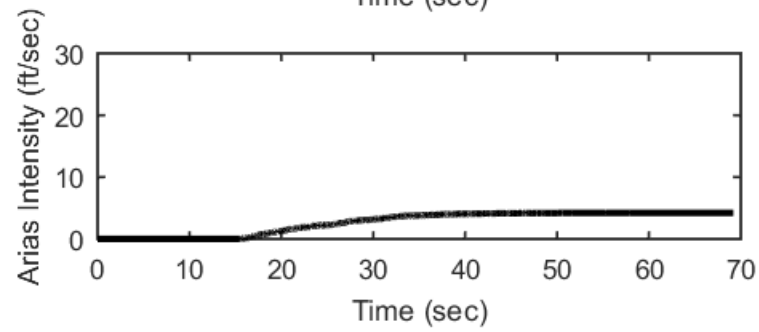
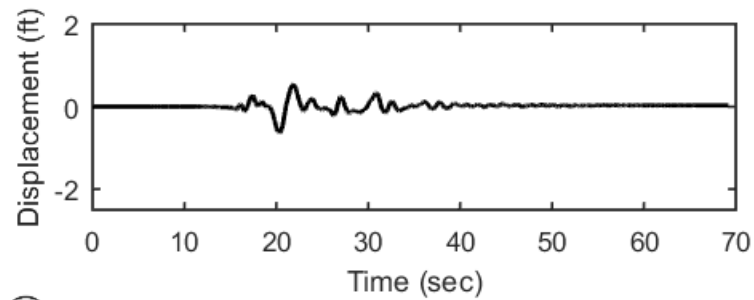
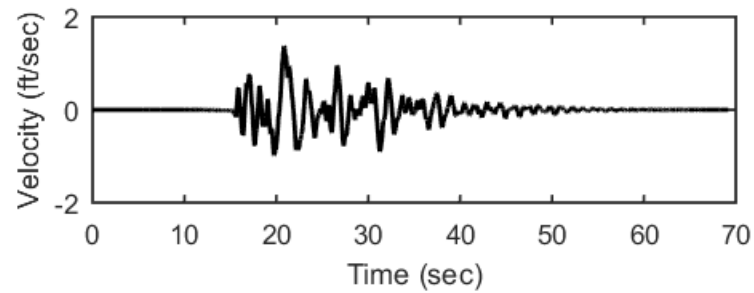
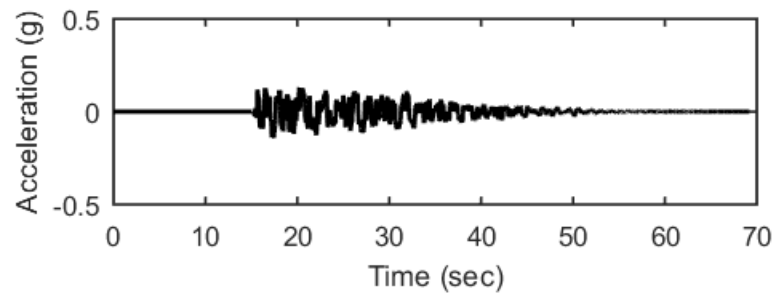
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



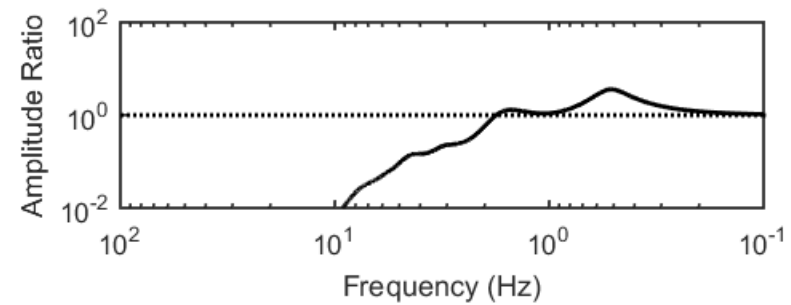
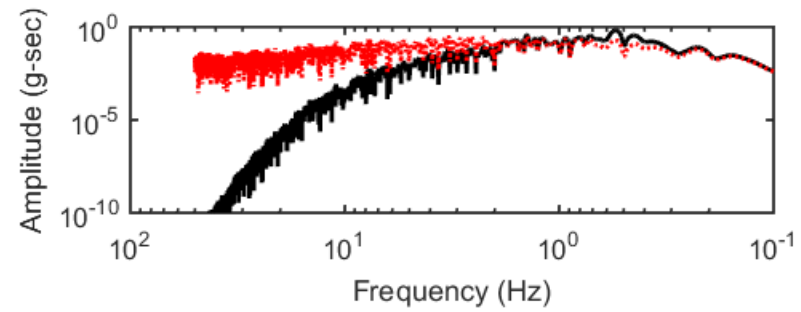
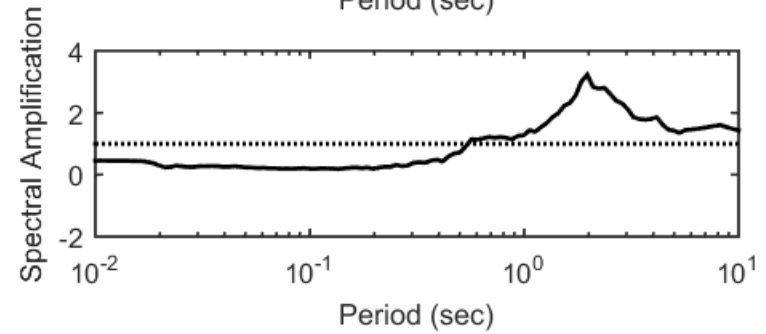
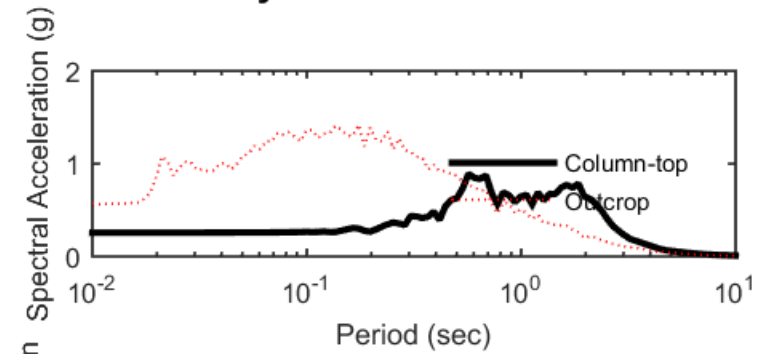
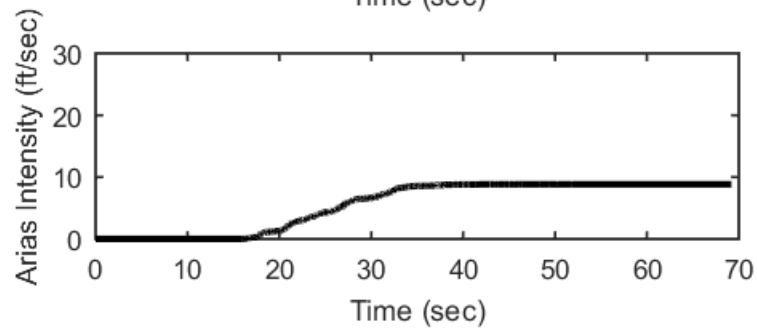
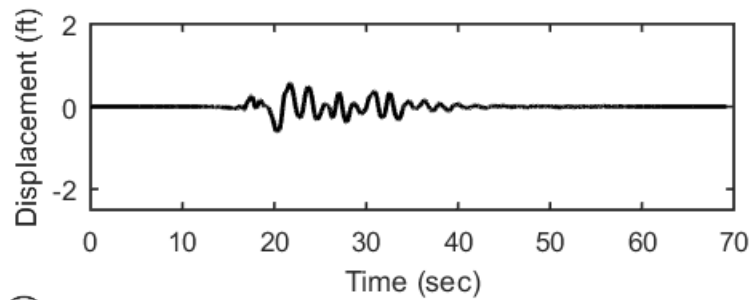
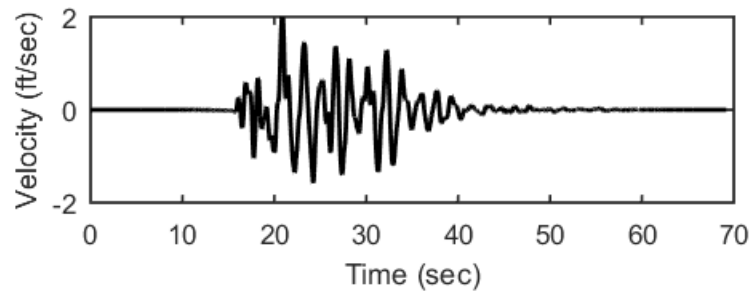
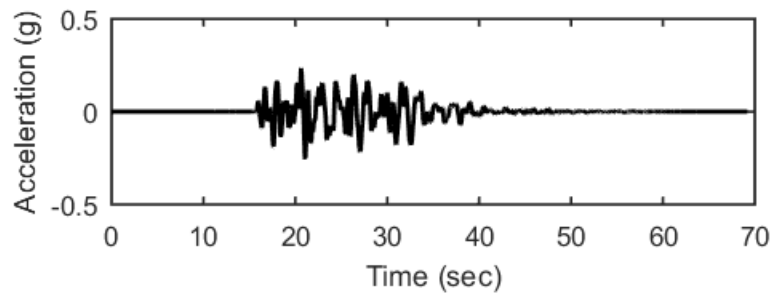
### Profile outputs for Motion: FEE7



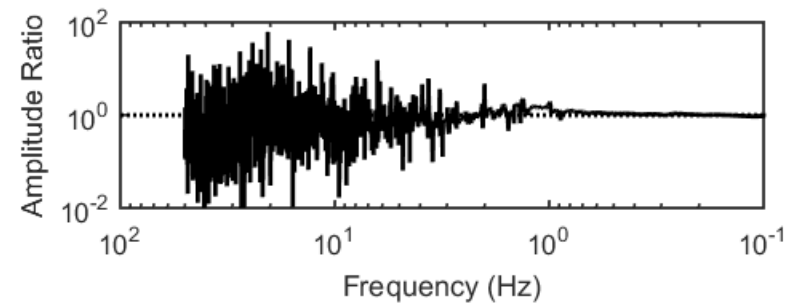
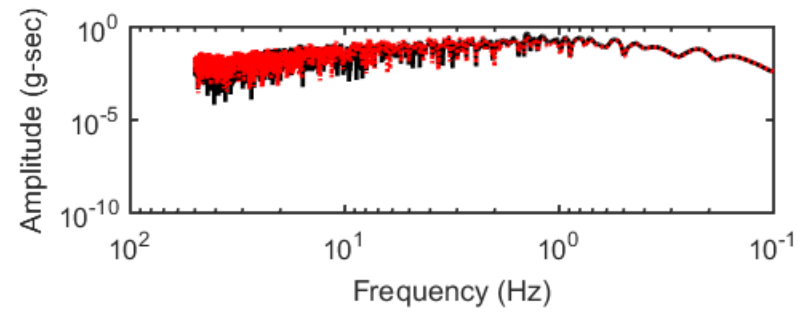
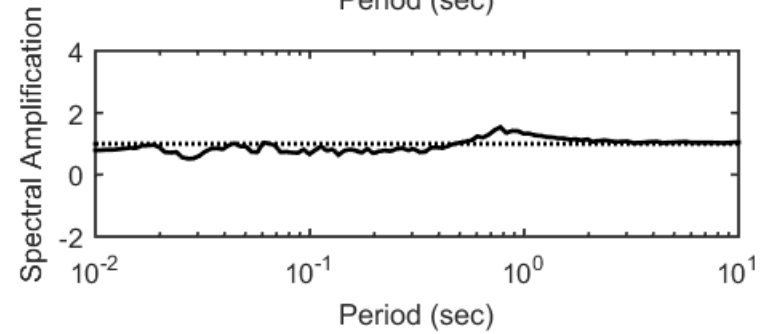
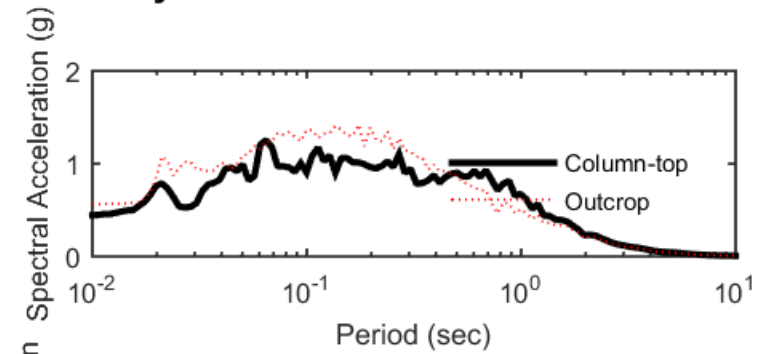
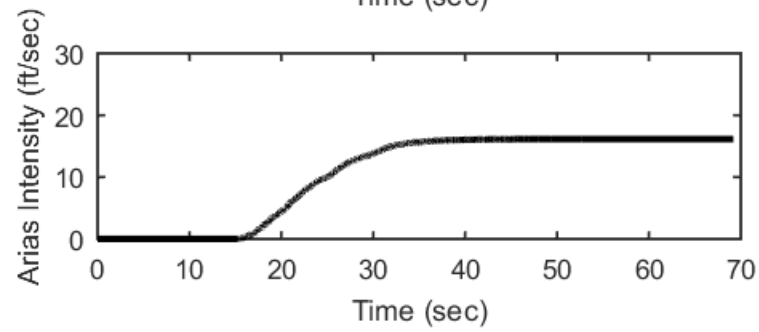
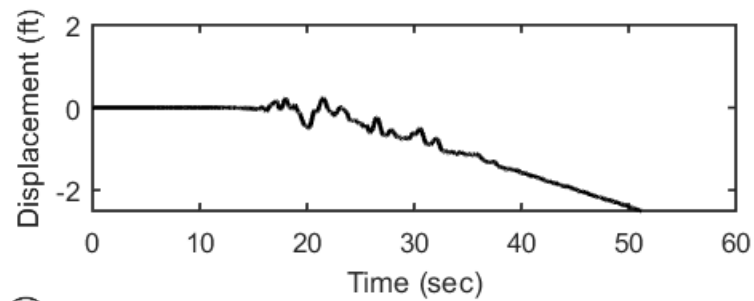
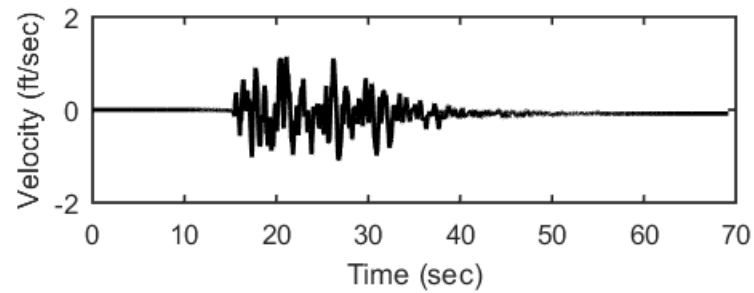
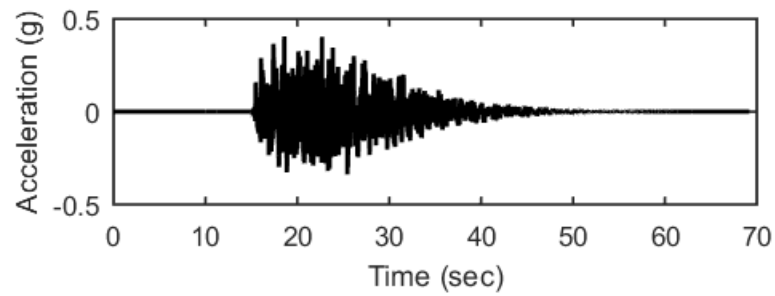
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



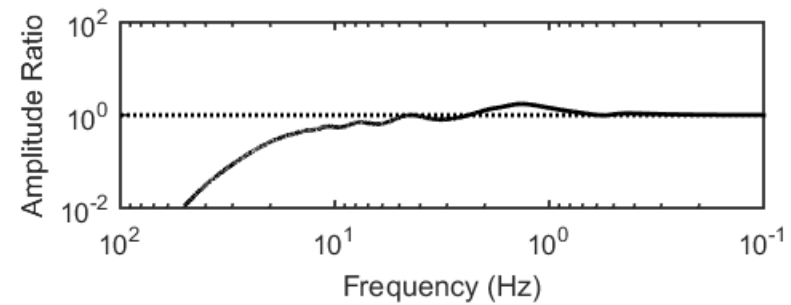
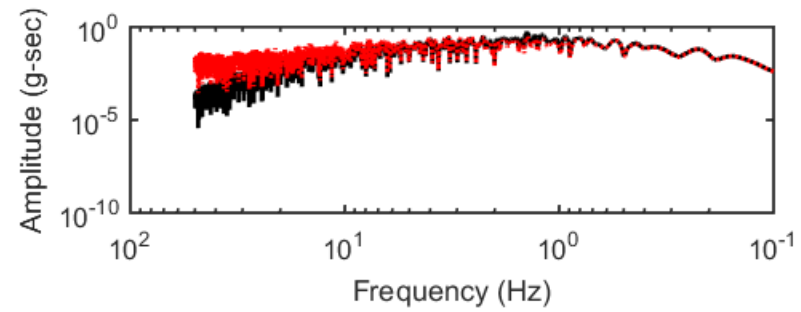
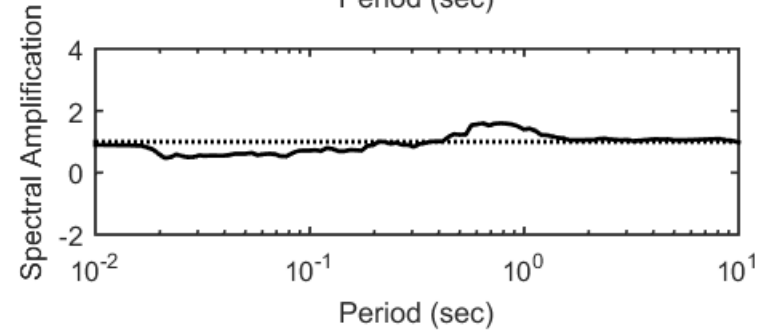
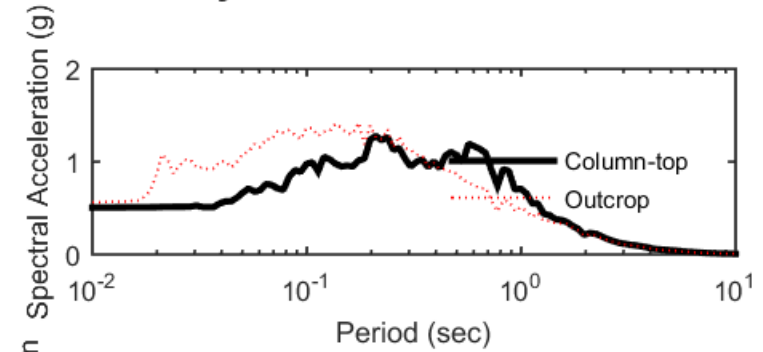
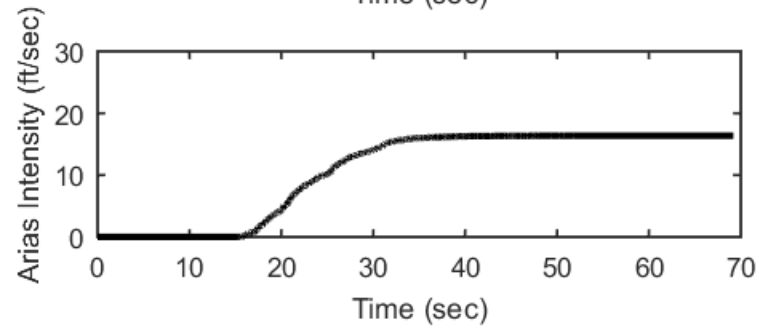
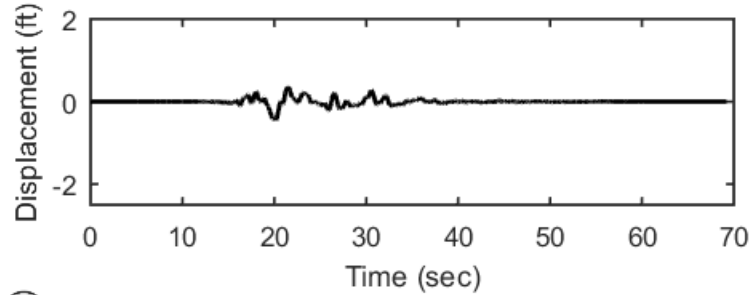
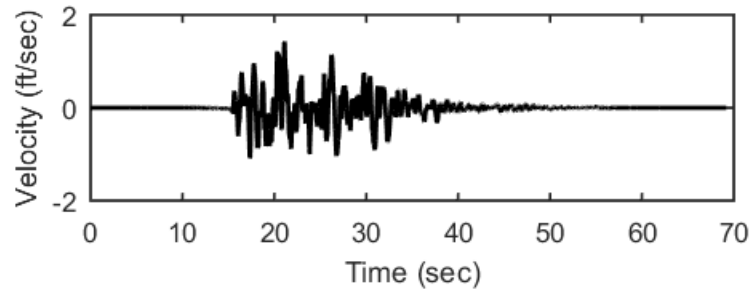
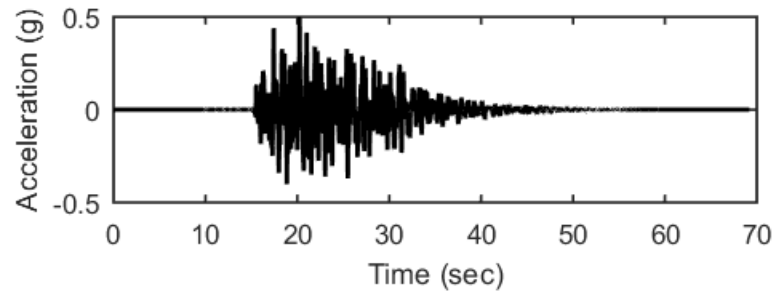
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



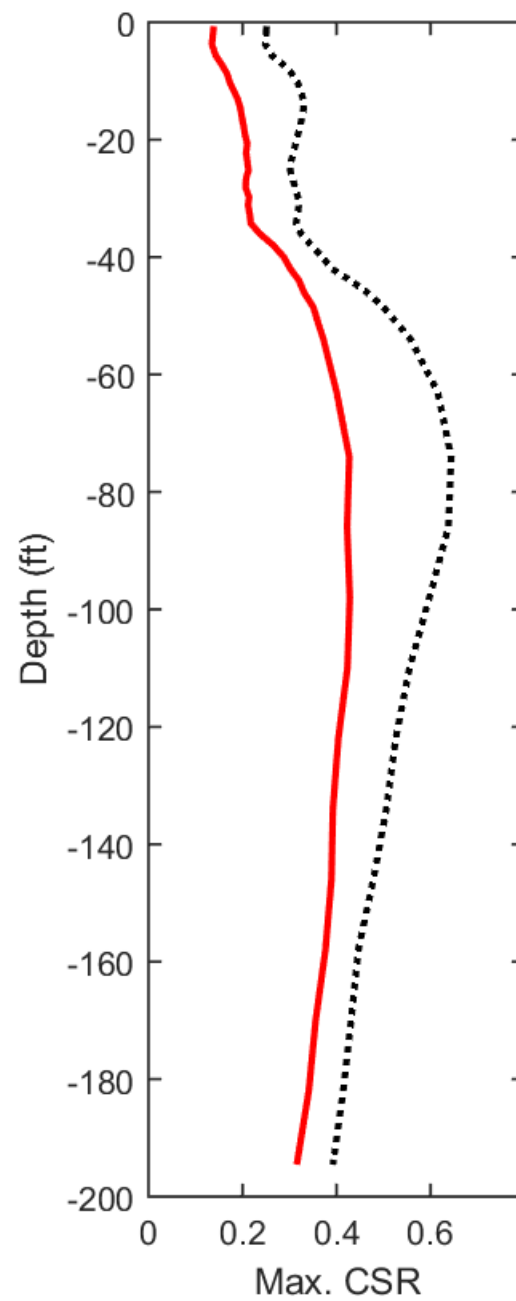
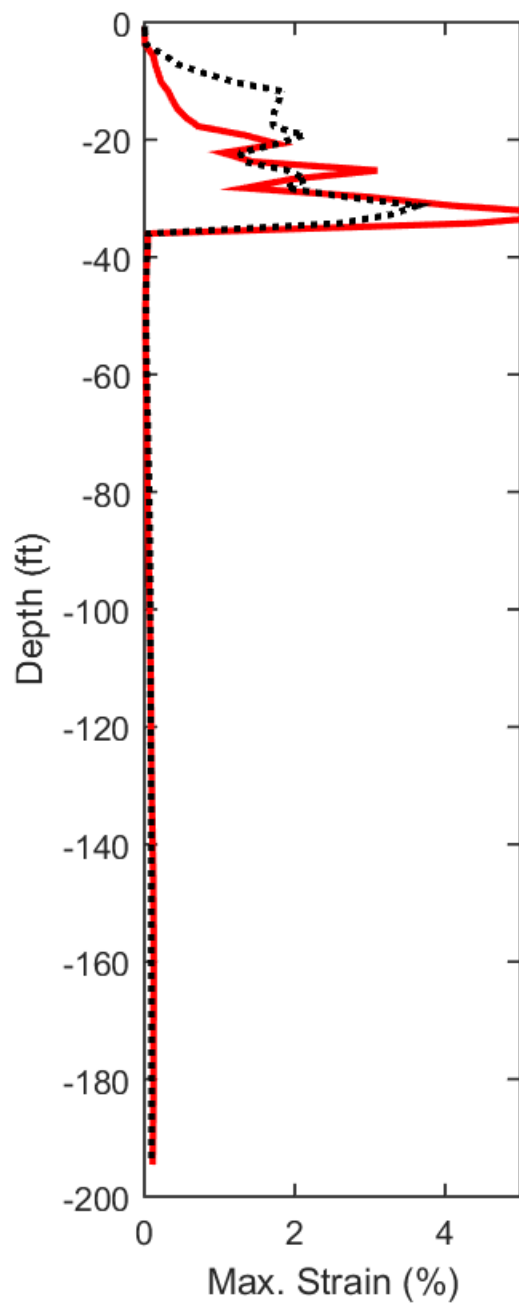
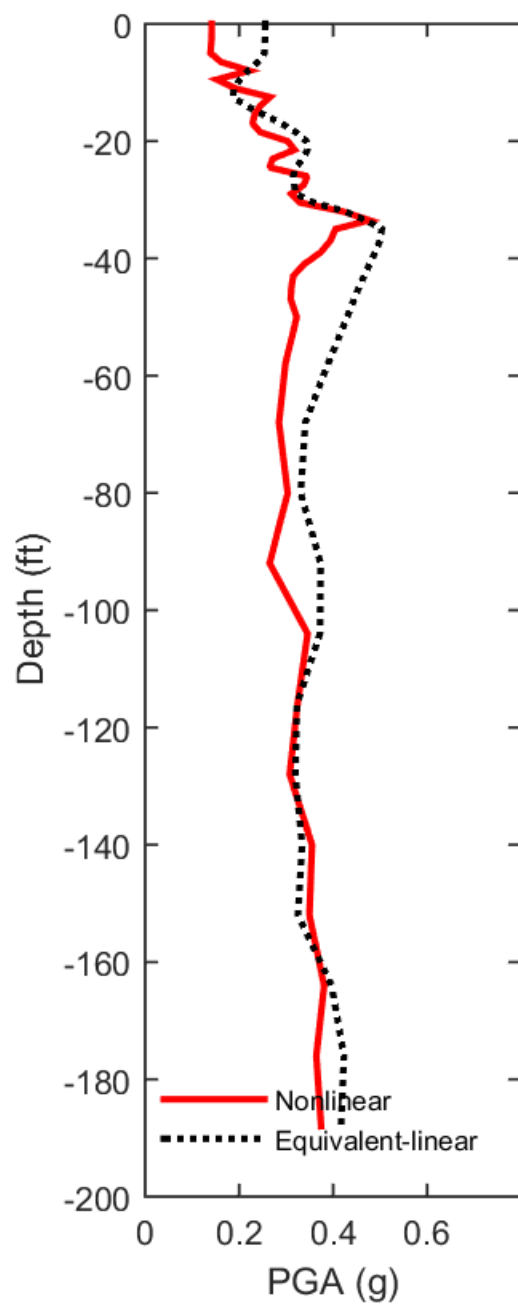
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1

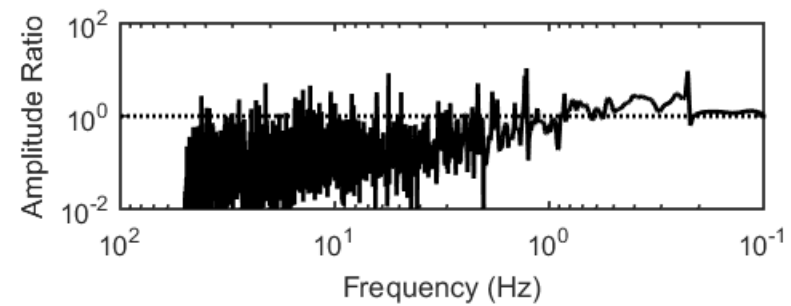
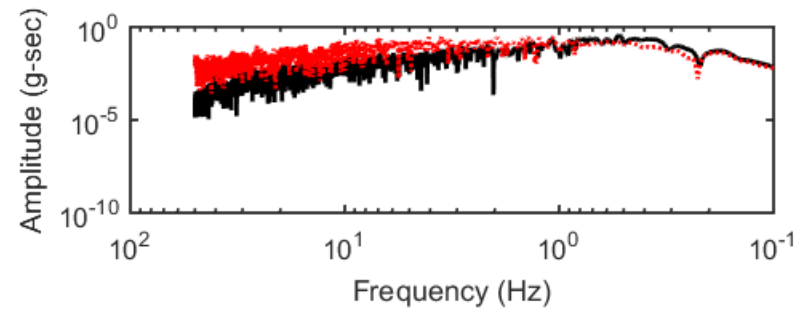
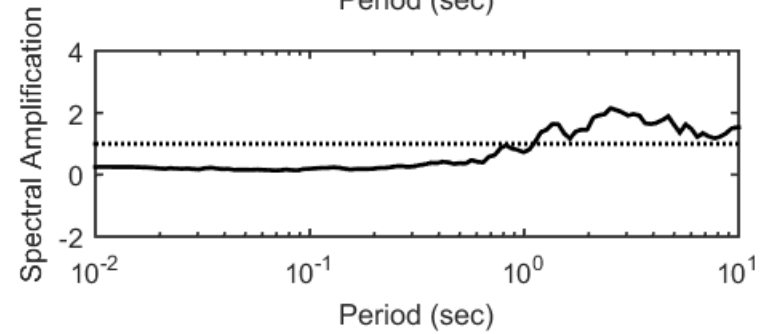
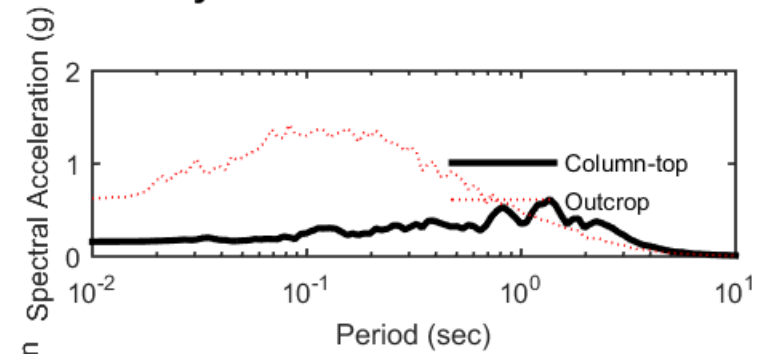
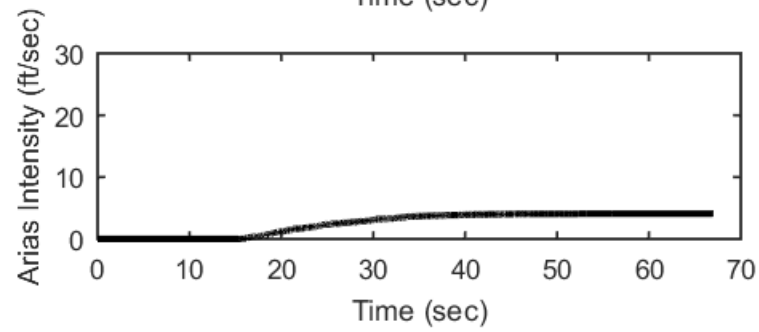
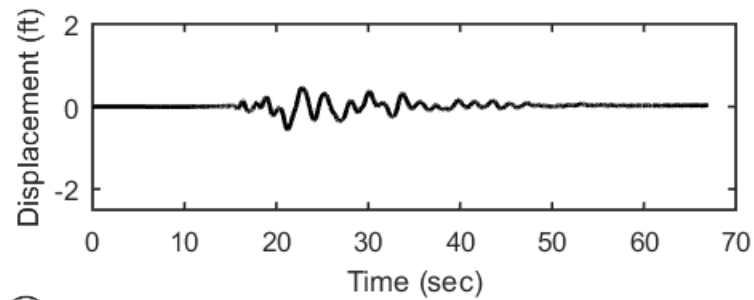
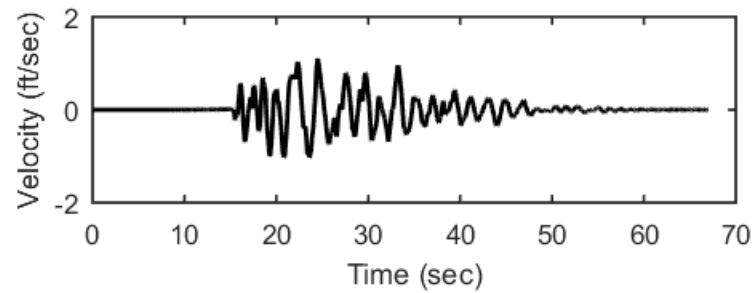
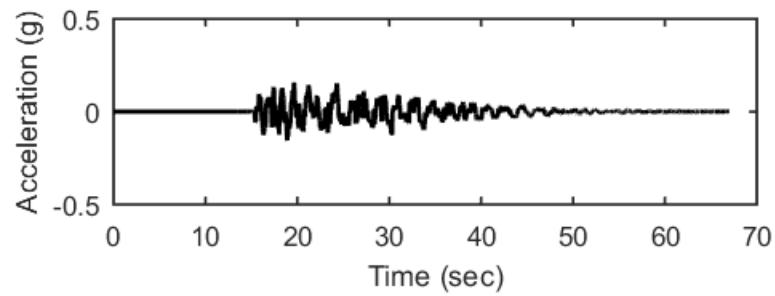


### Profile outputs for Motion: SEE1

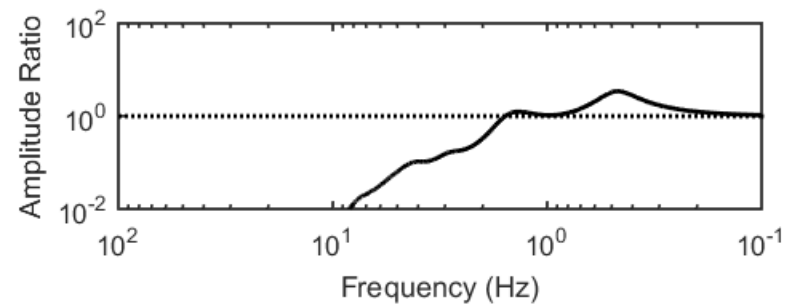
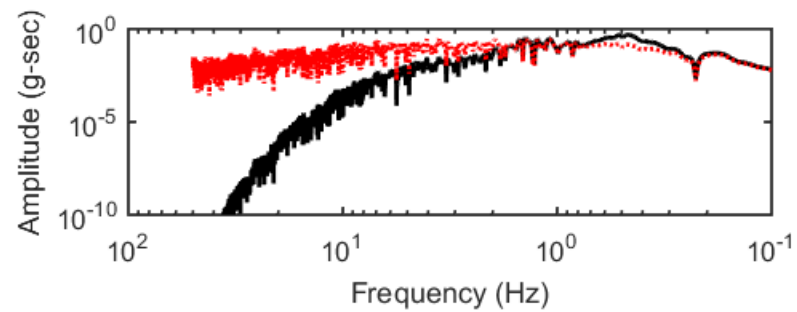
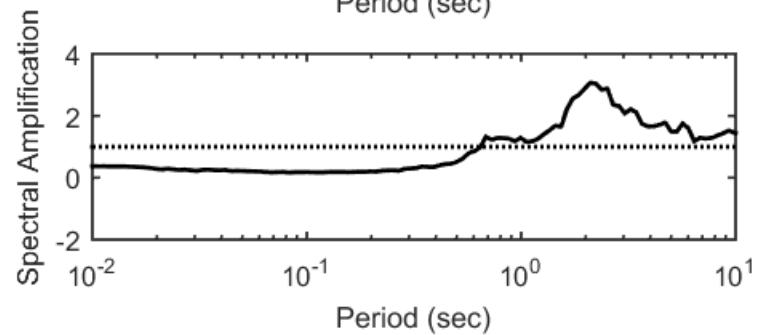
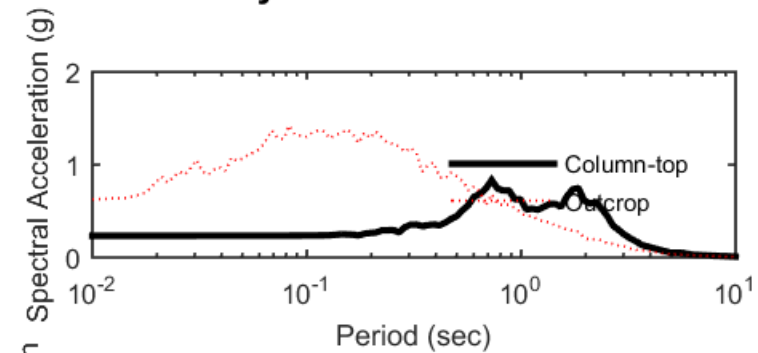
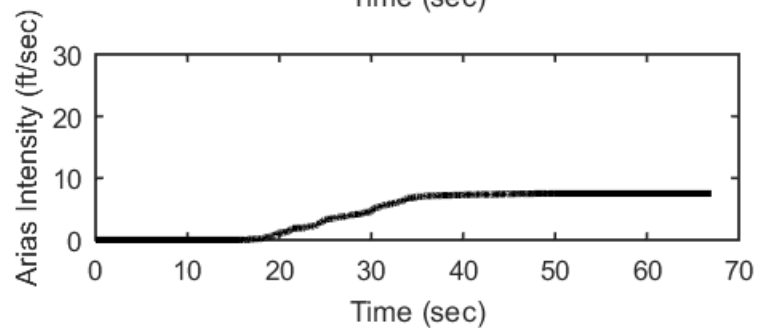
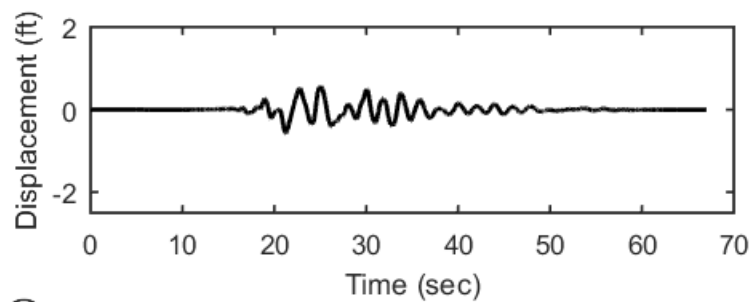
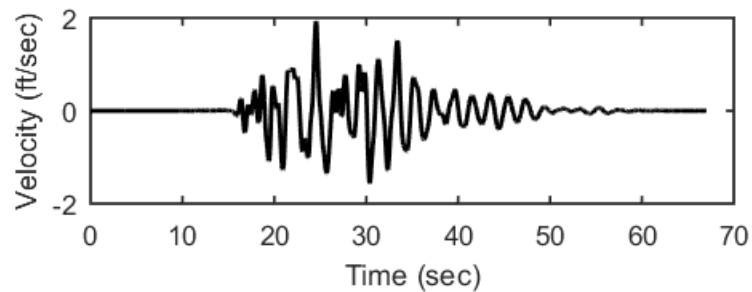
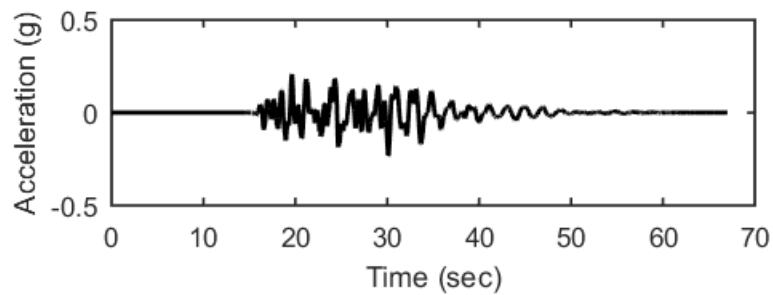




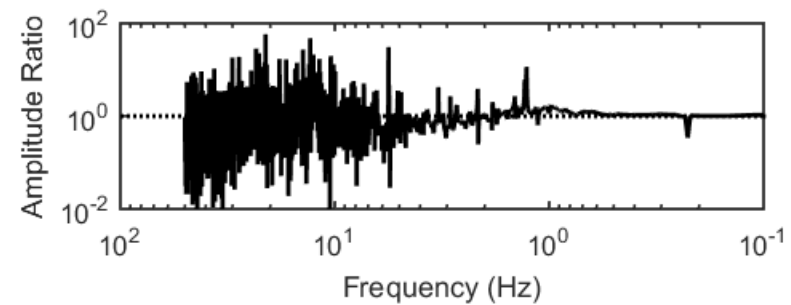
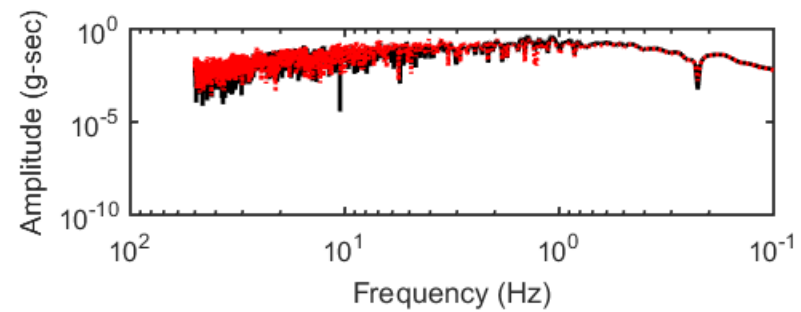
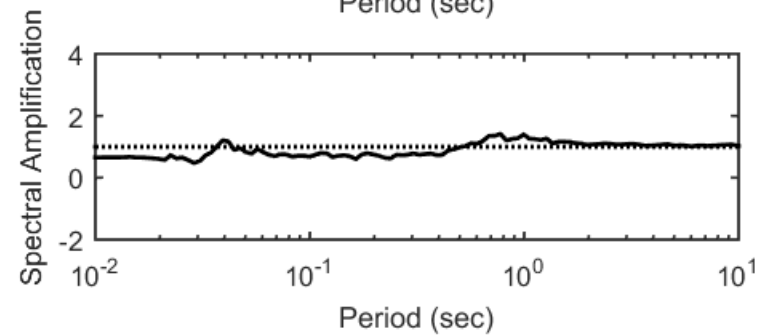
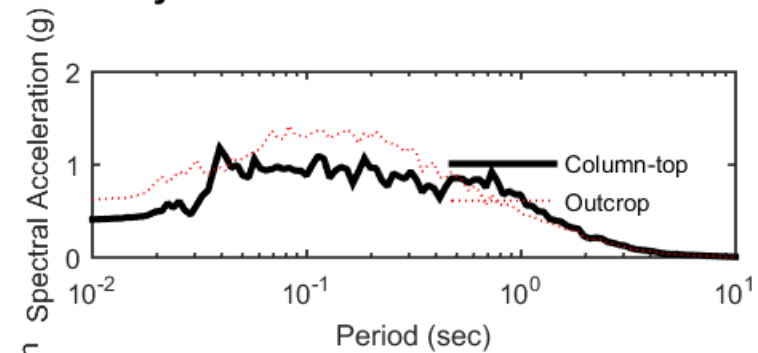
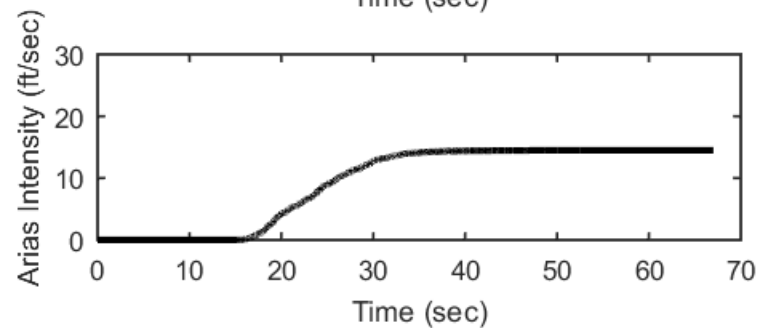
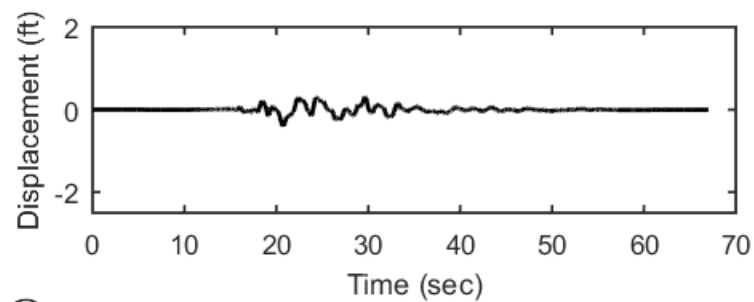
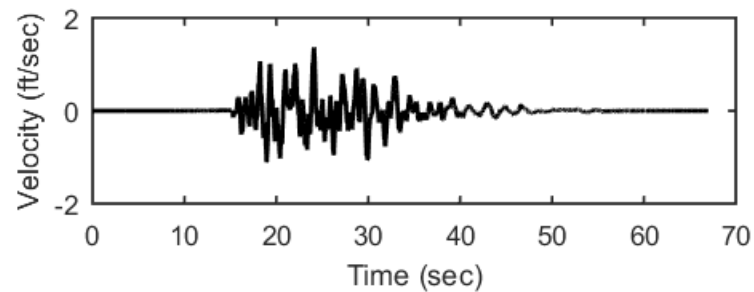
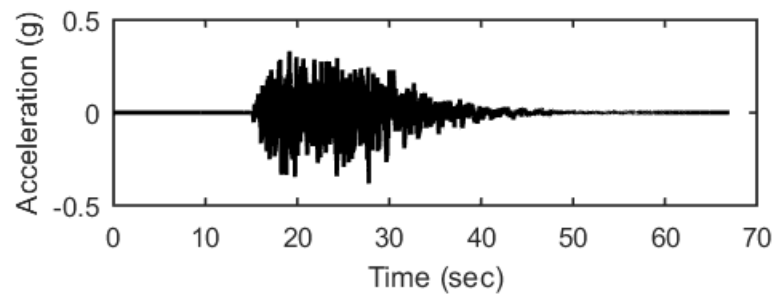
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



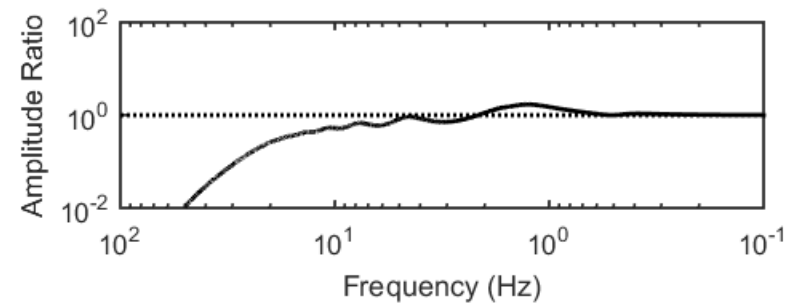
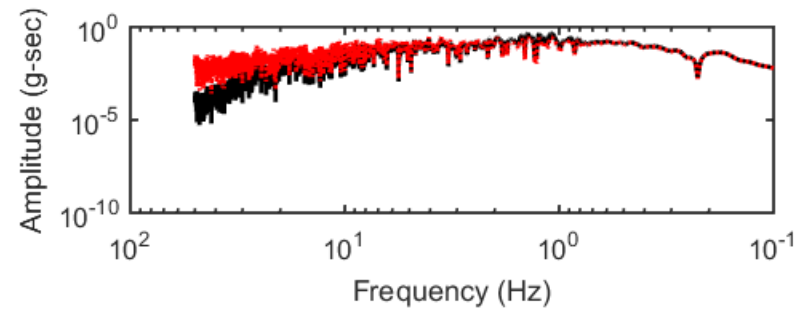
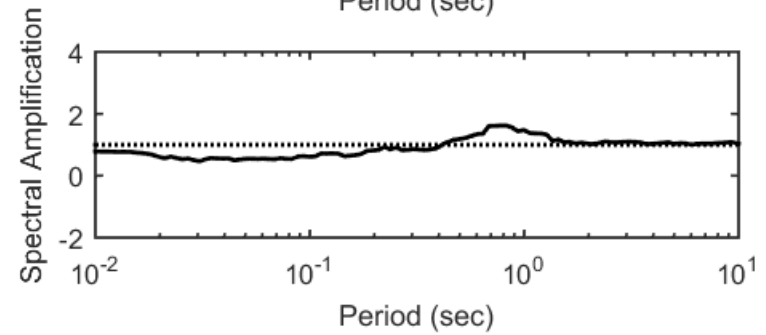
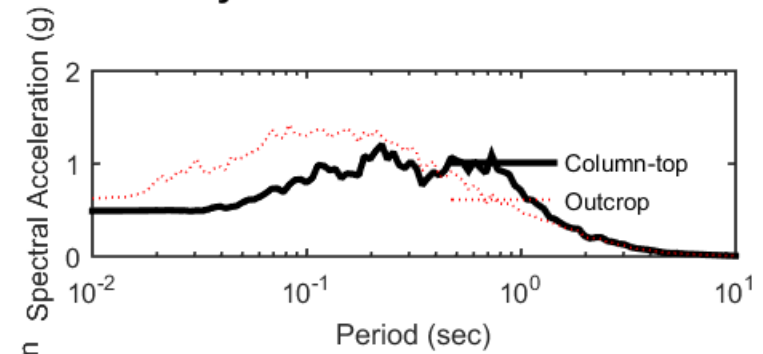
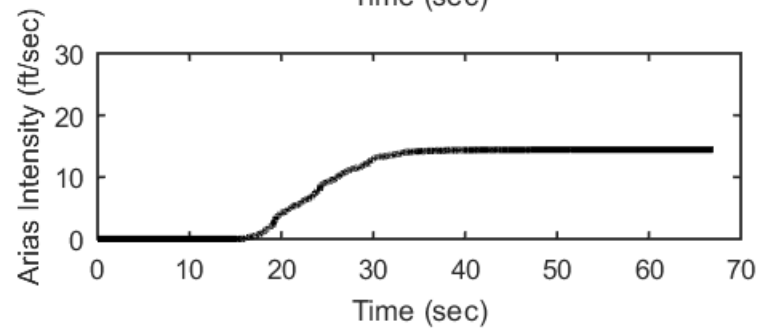
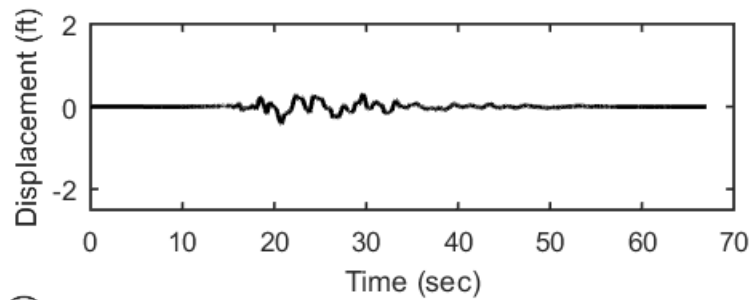
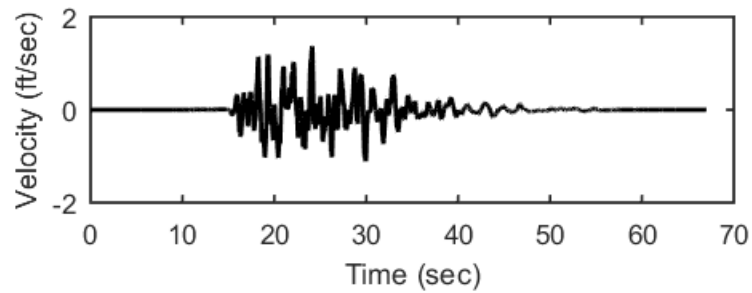
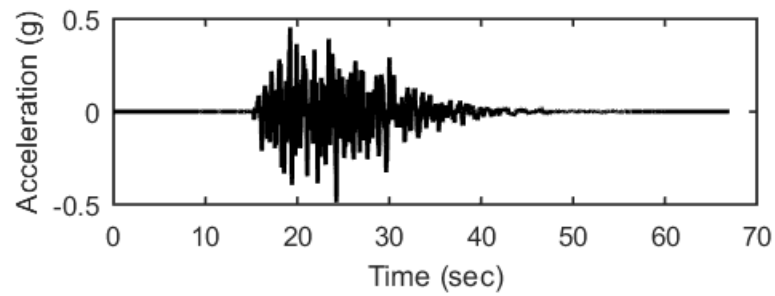
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



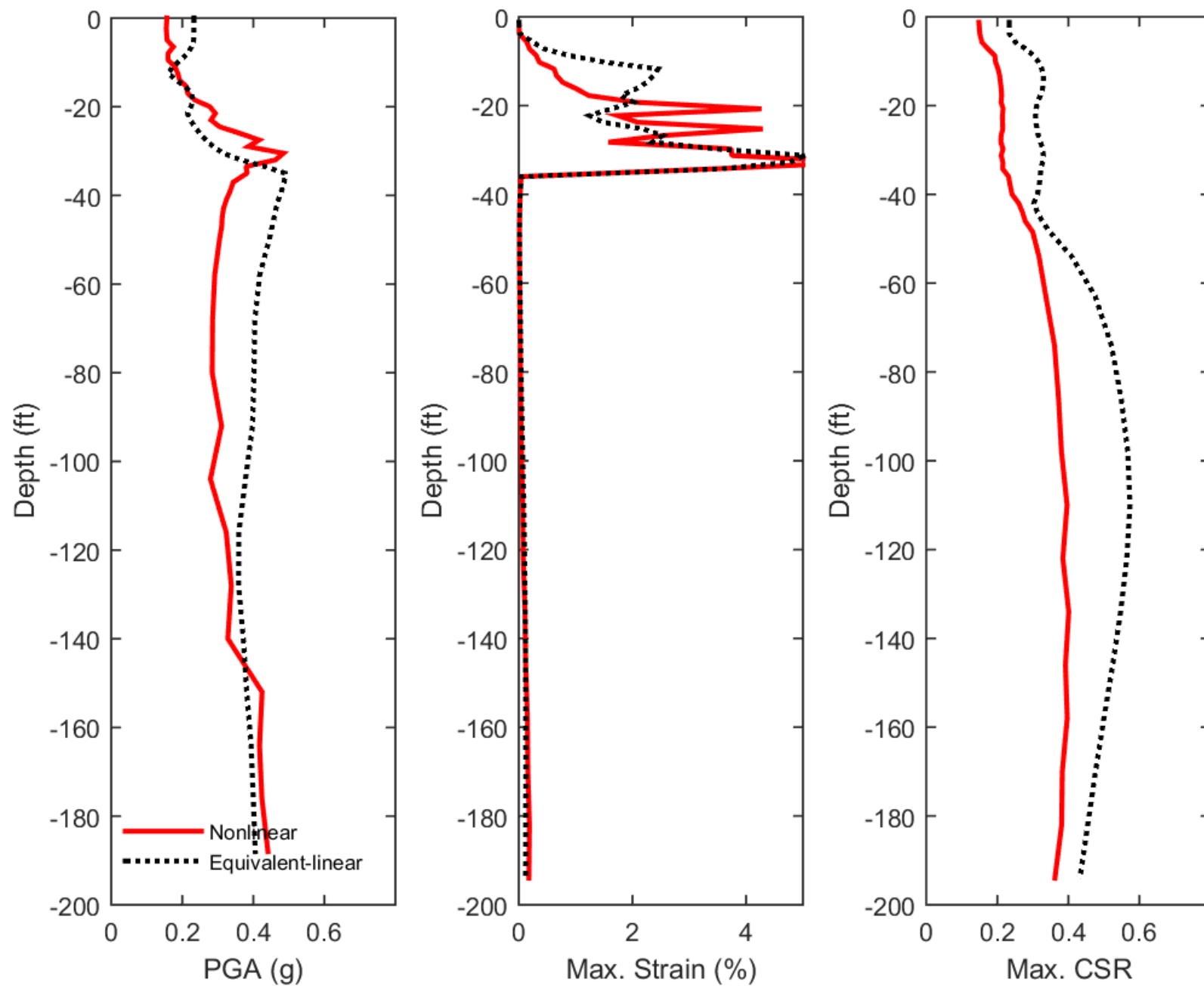
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



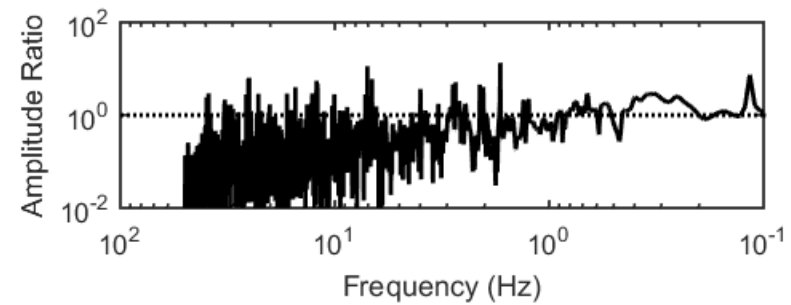
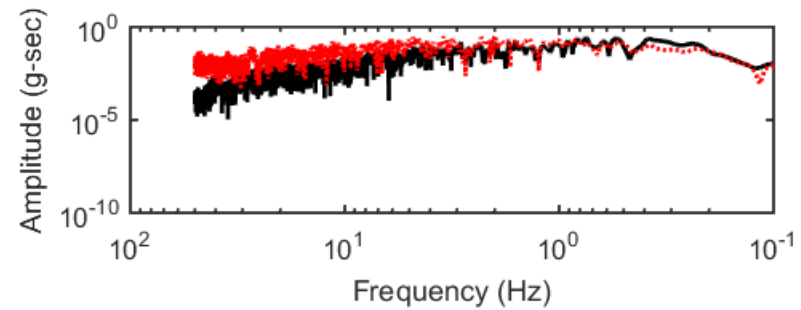
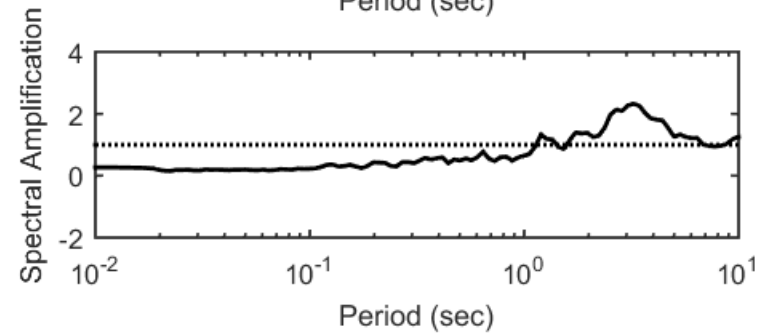
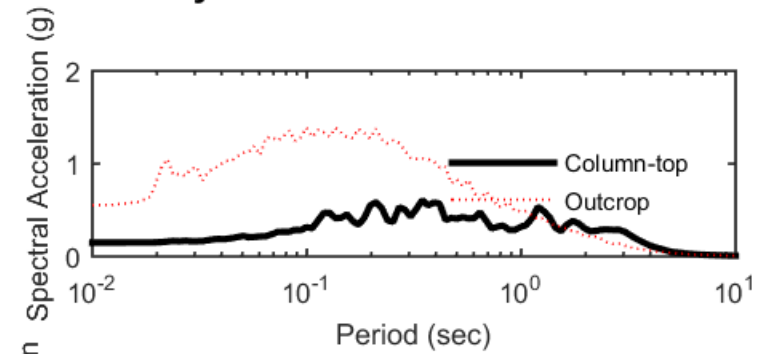
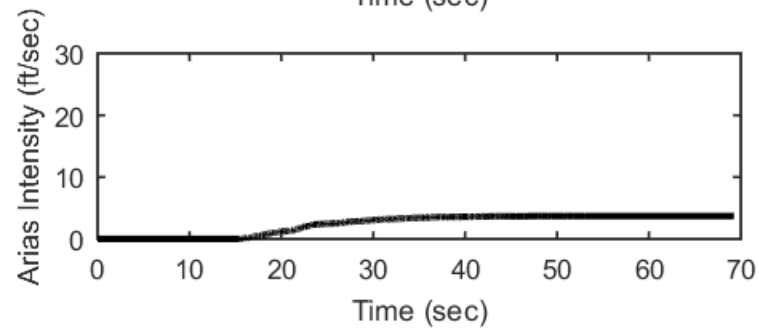
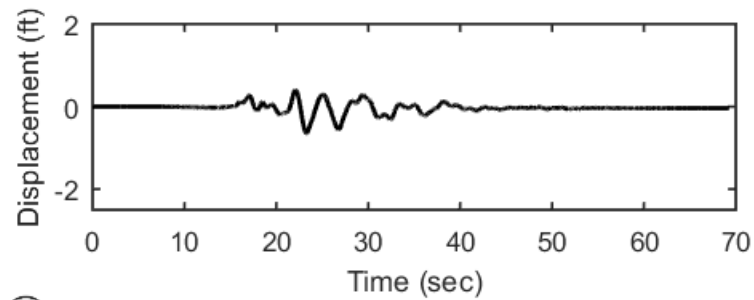
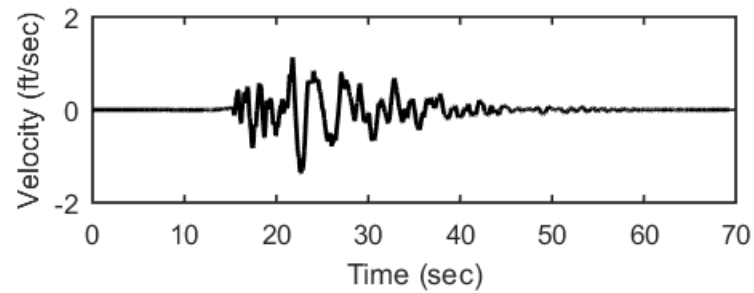
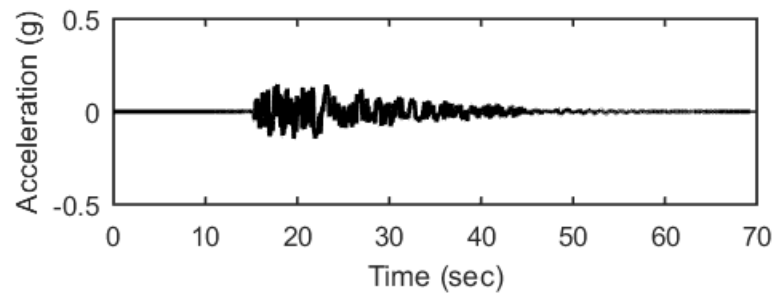
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



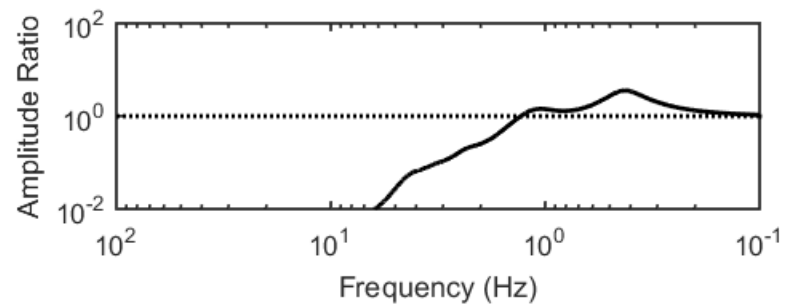
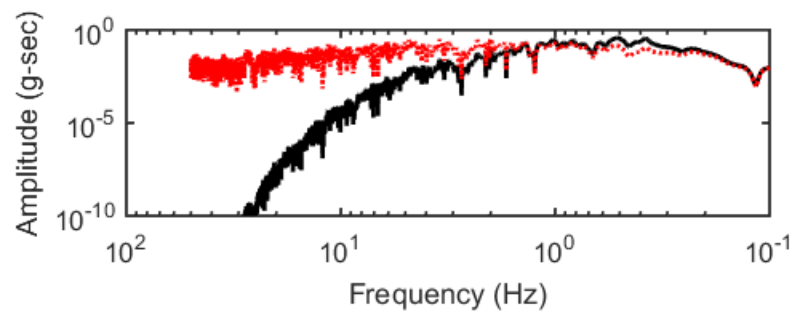
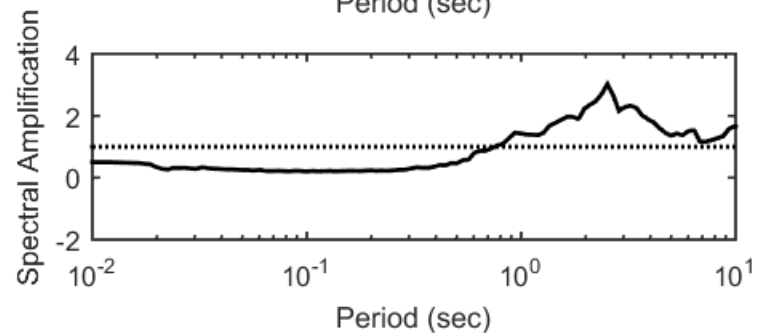
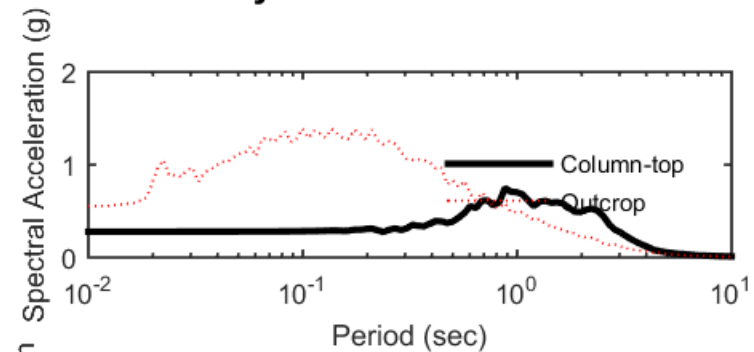
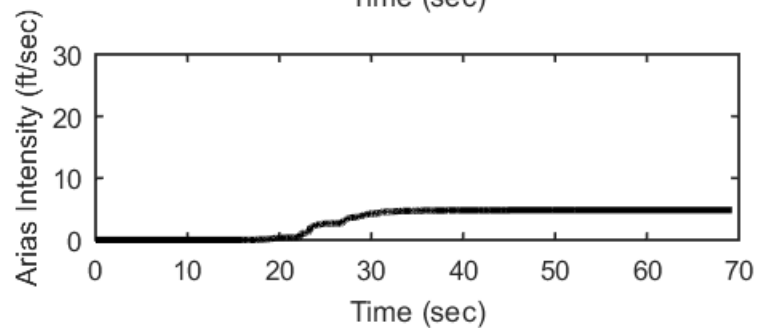
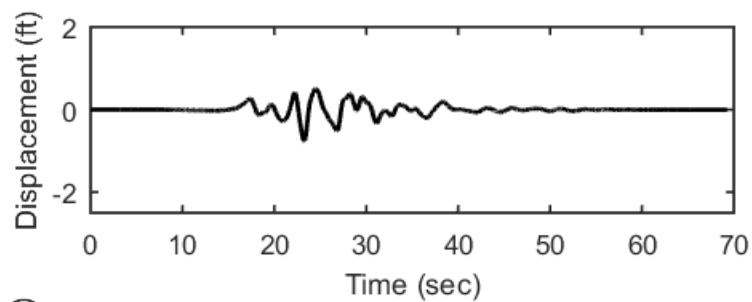
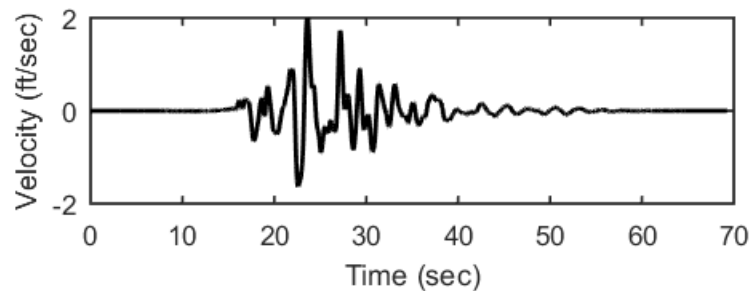
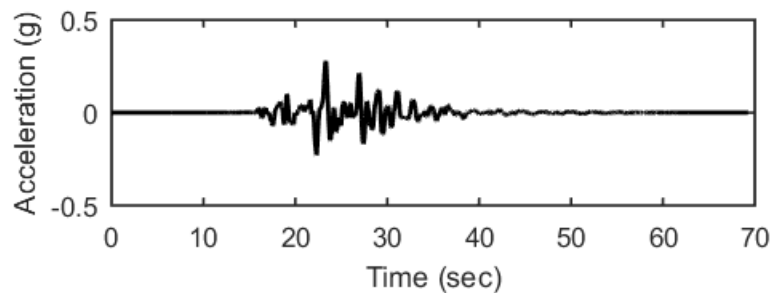
### Profile outputs for Motion: SEE2



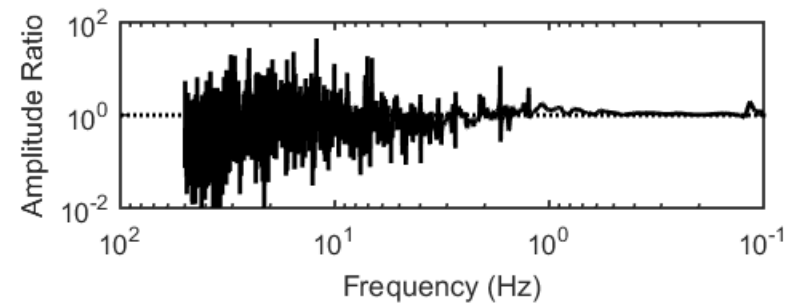
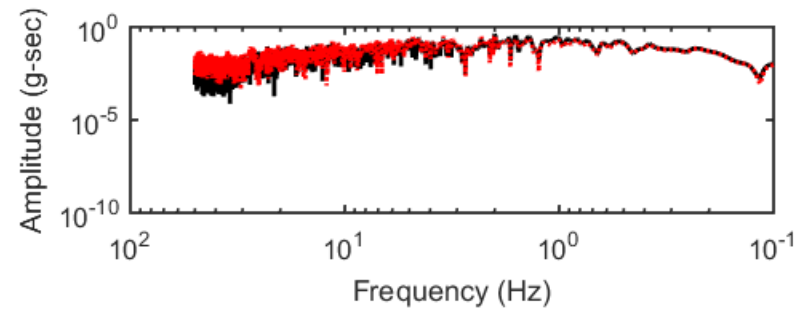
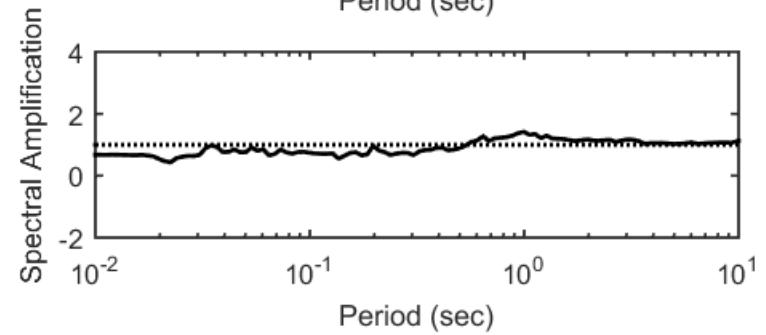
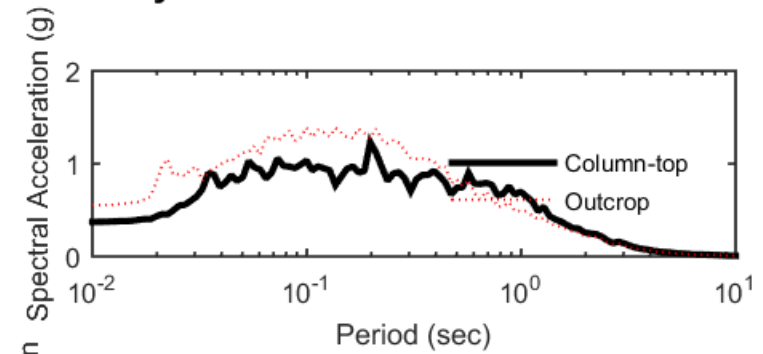
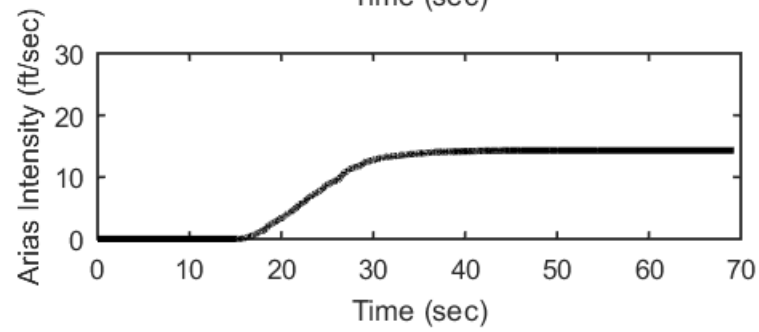
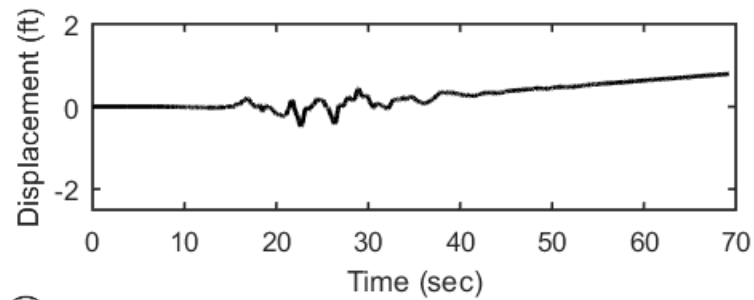
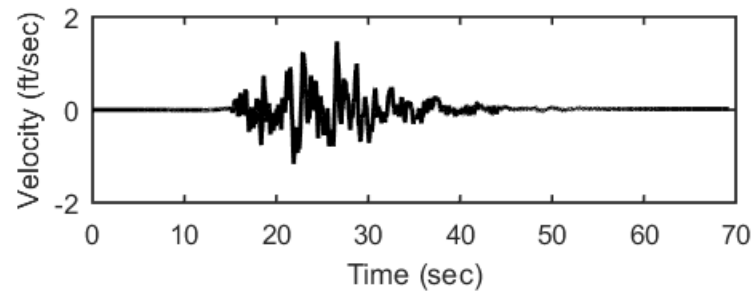
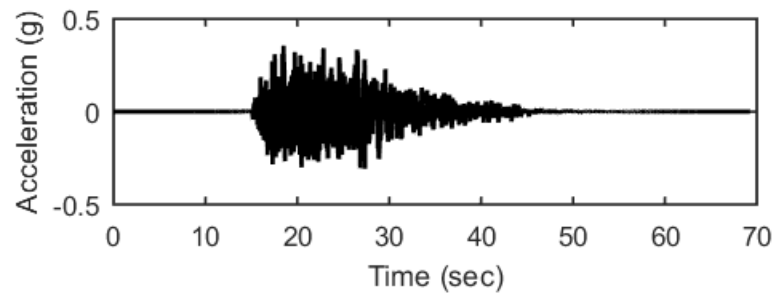
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3

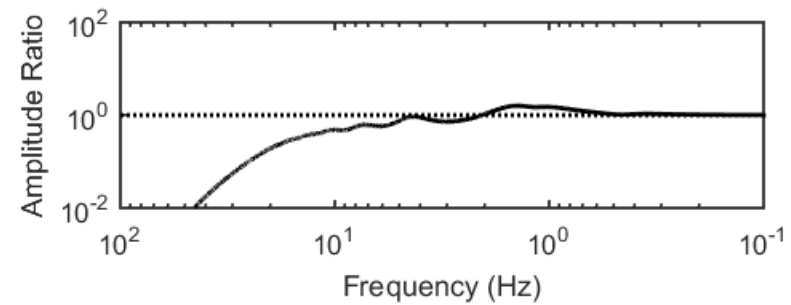
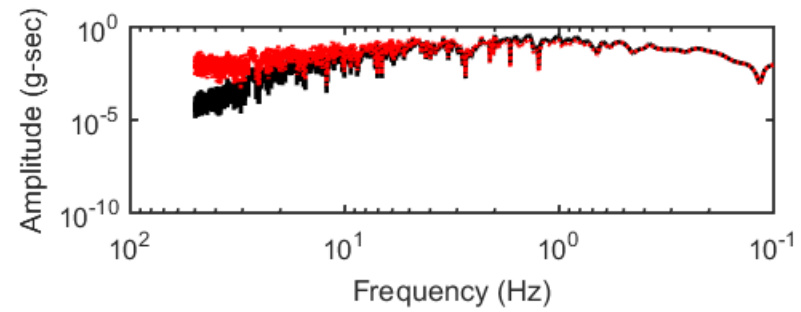
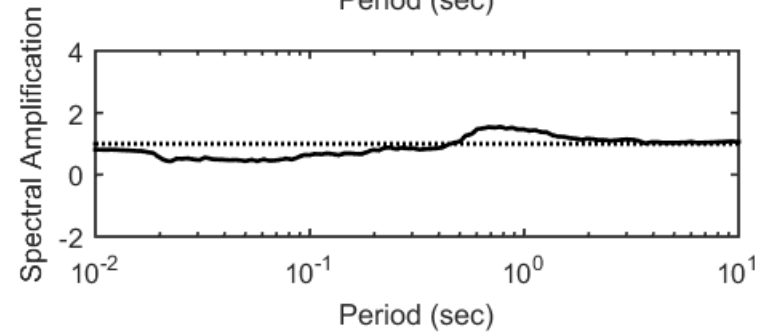
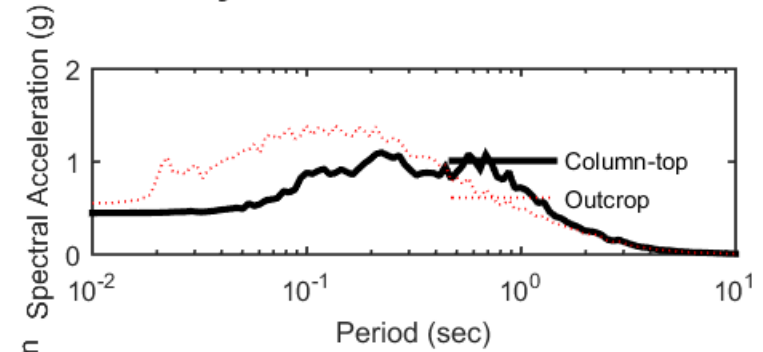
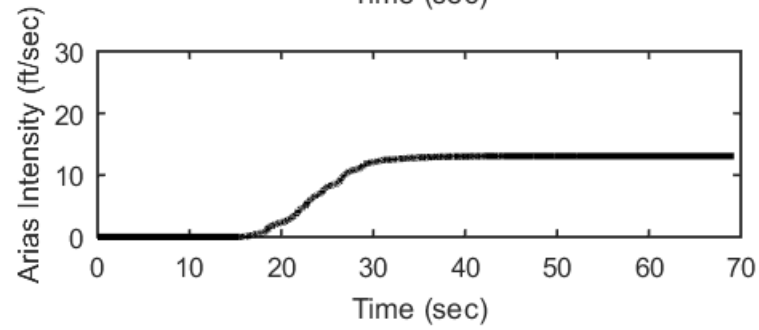
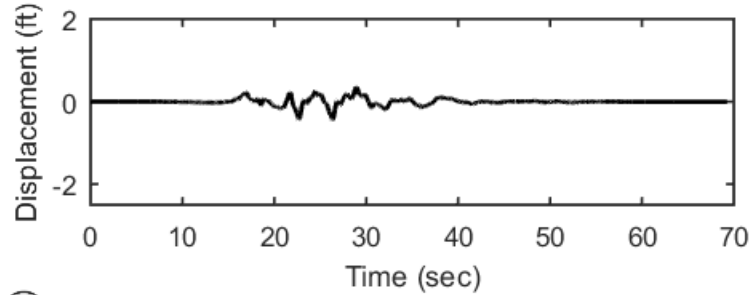
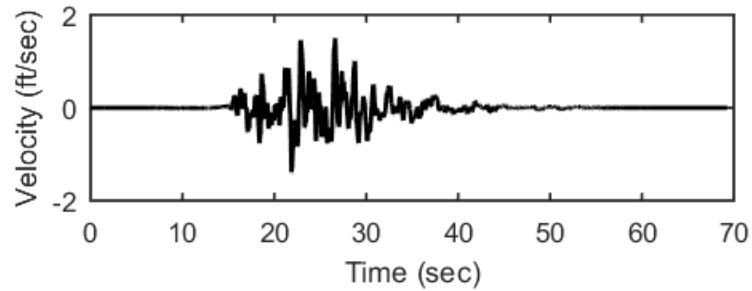
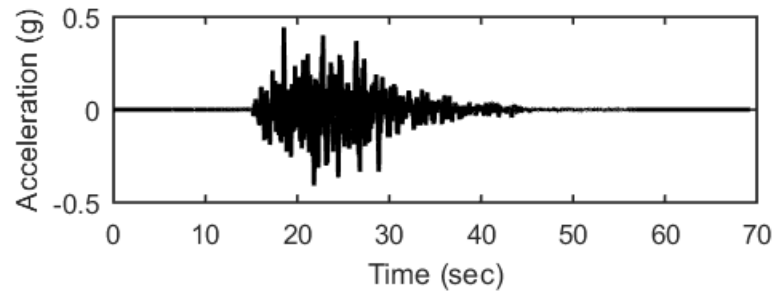


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3

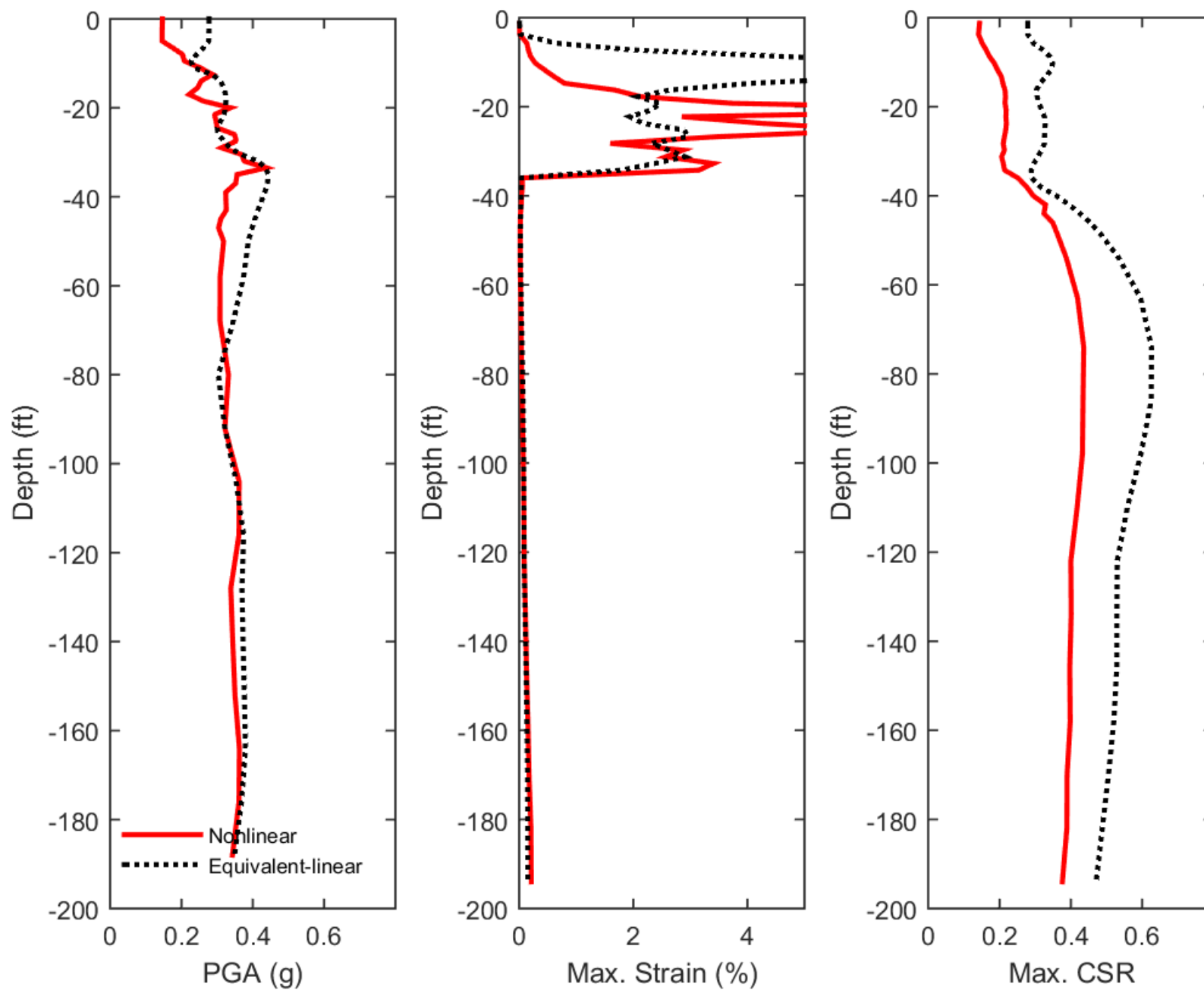




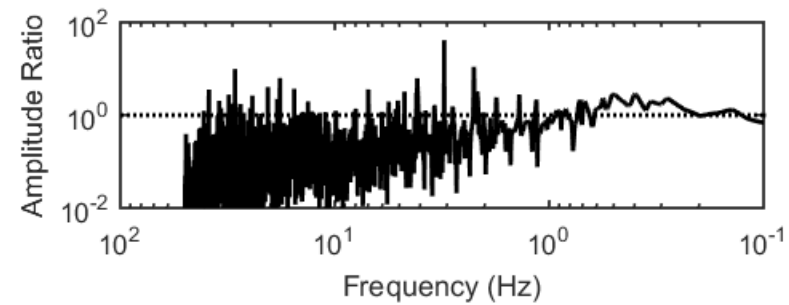
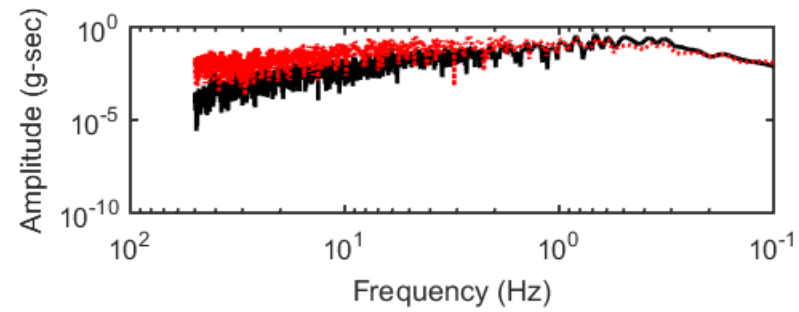
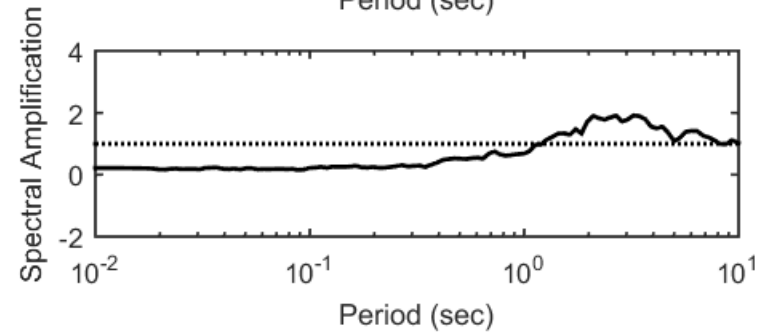
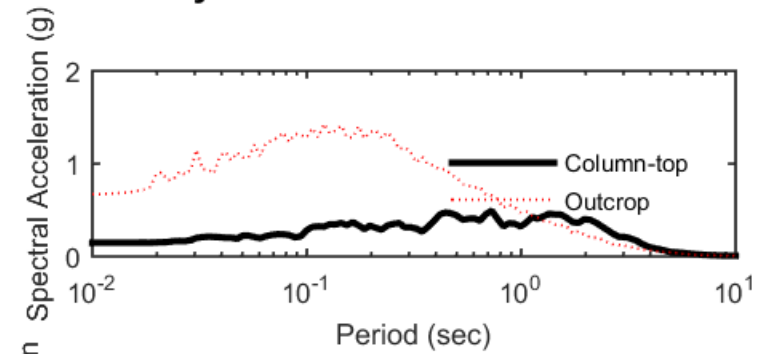
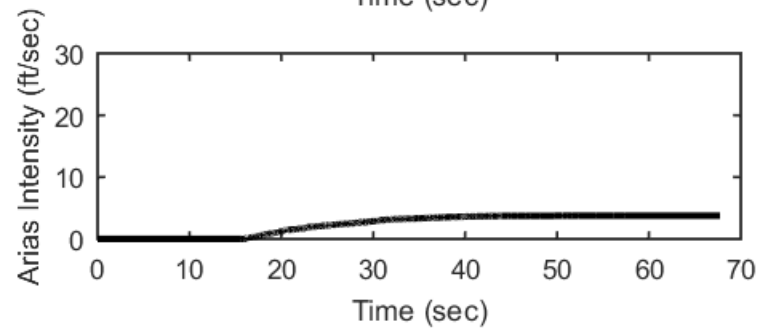
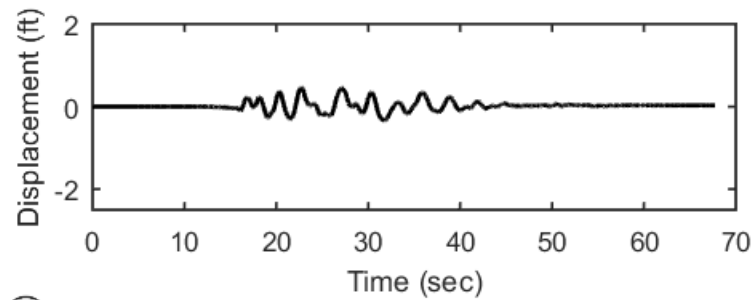
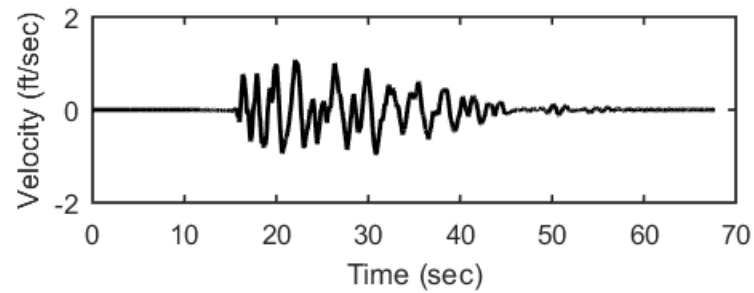
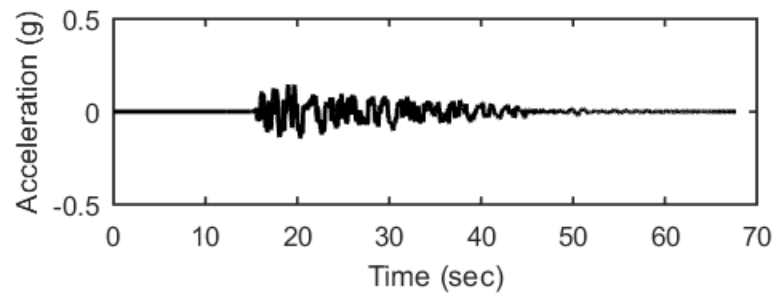
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



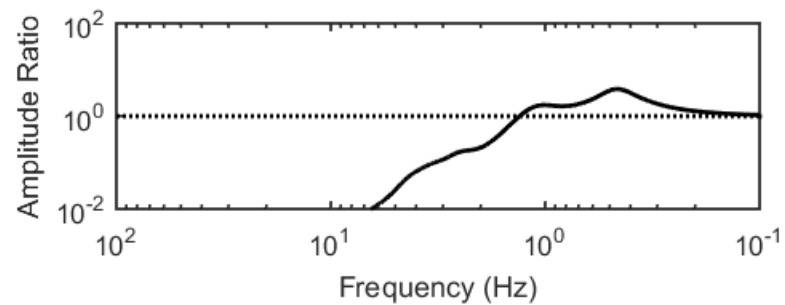
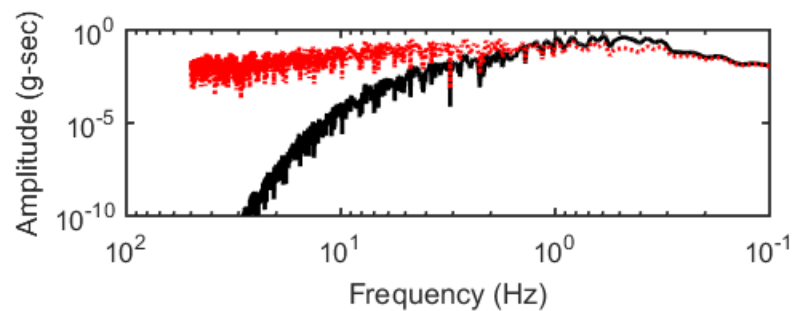
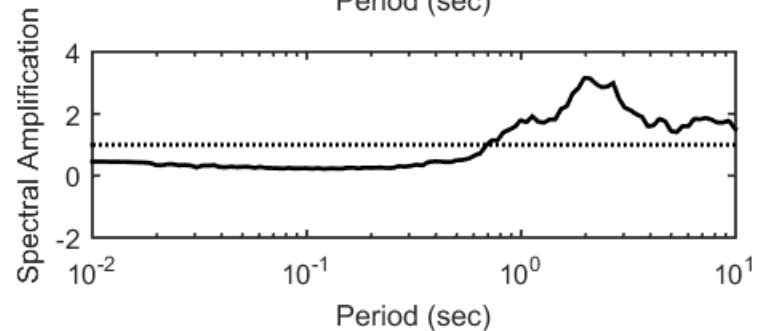
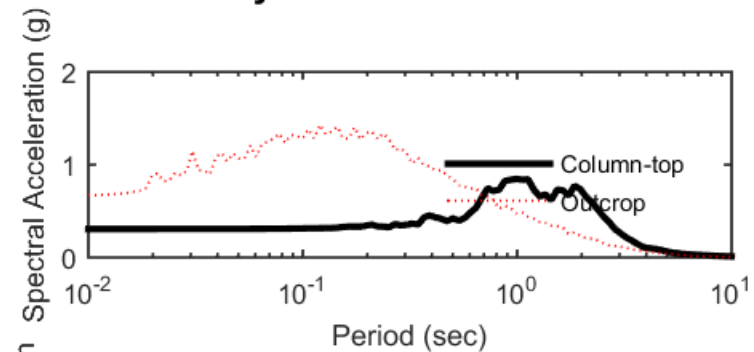
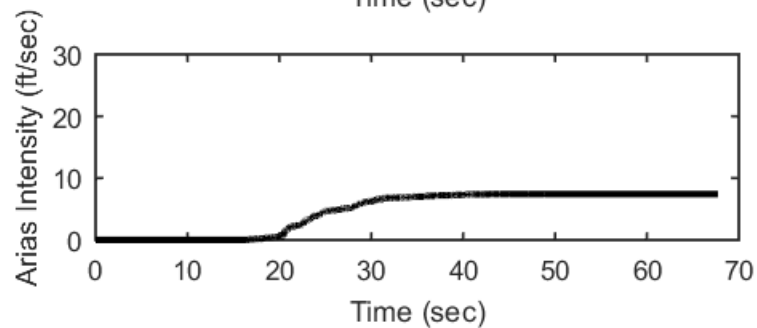
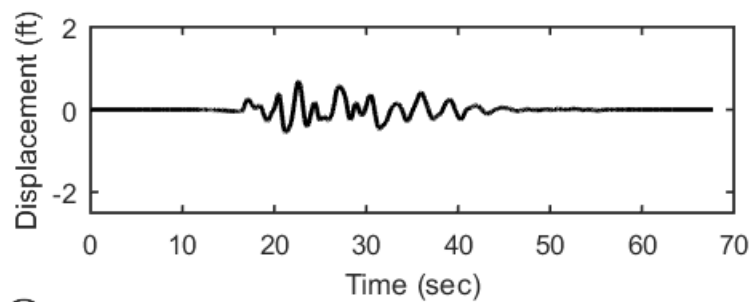
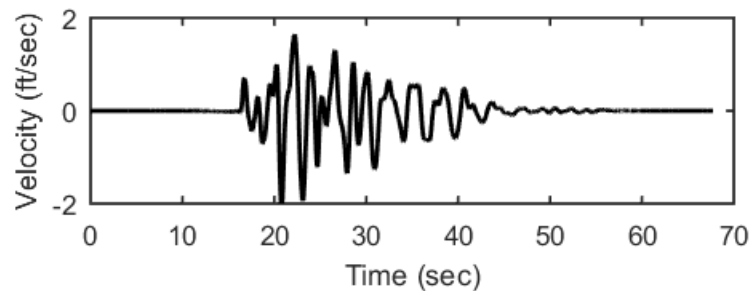
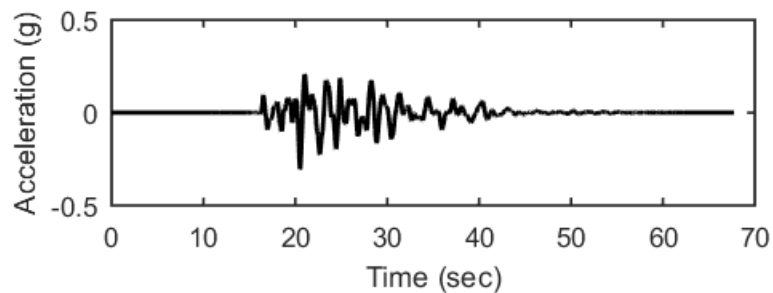
### Profile outputs for Motion: SEE3



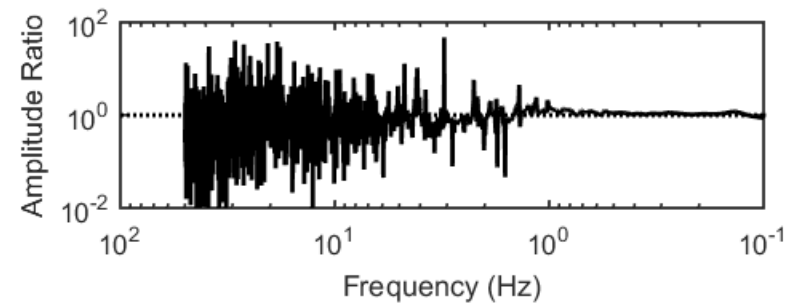
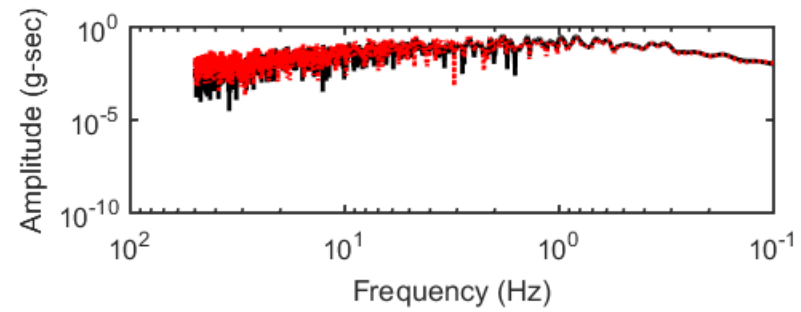
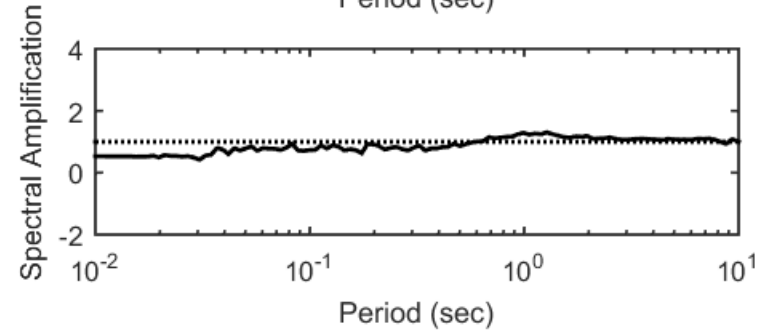
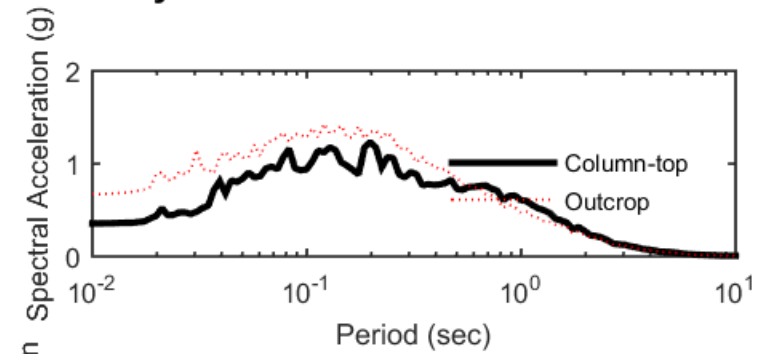
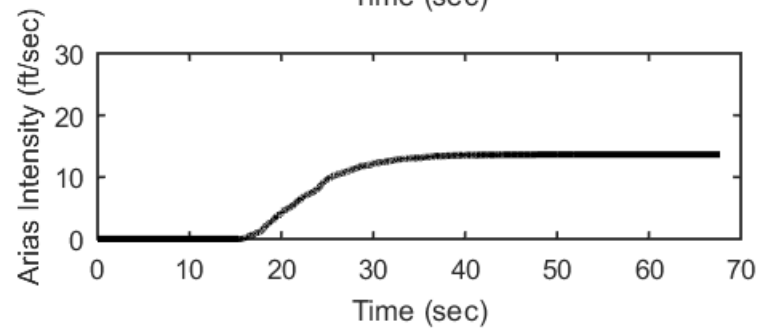
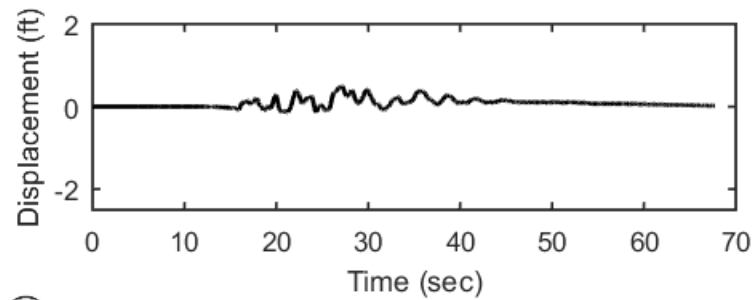
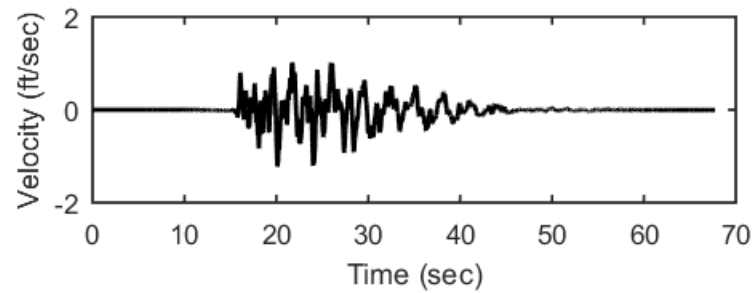
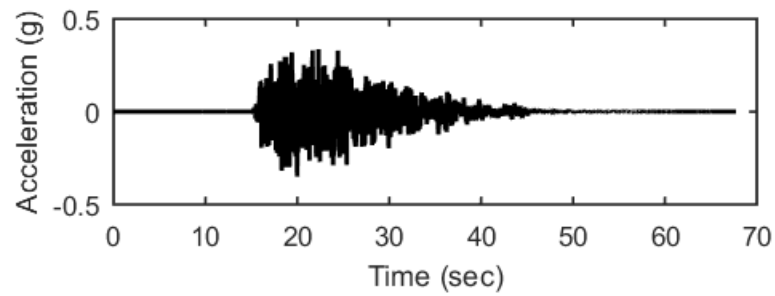
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



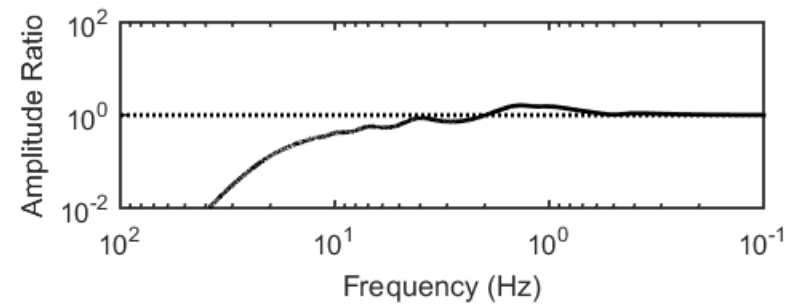
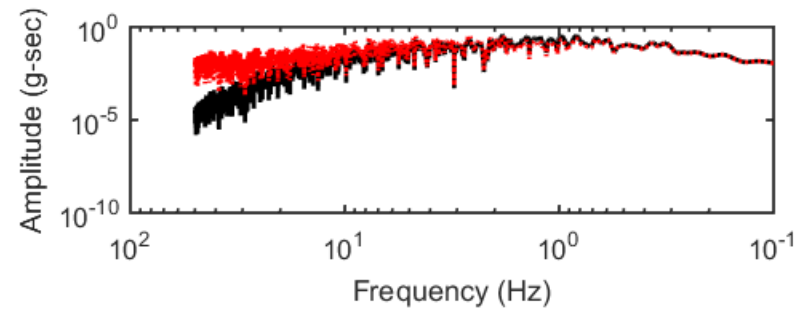
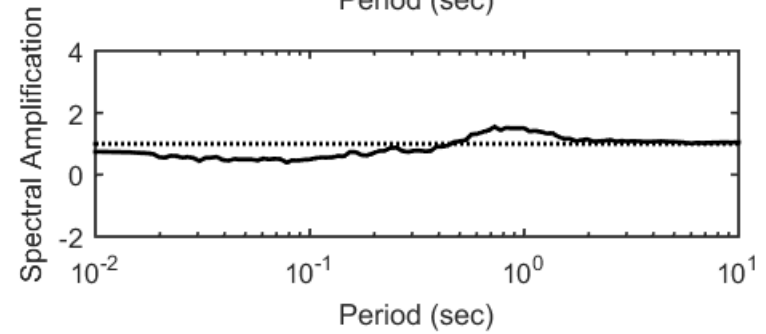
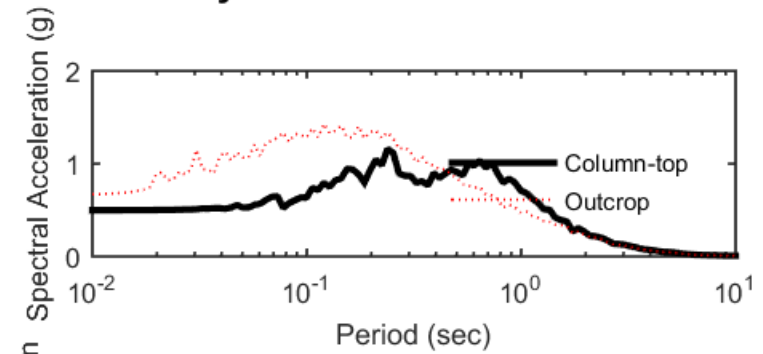
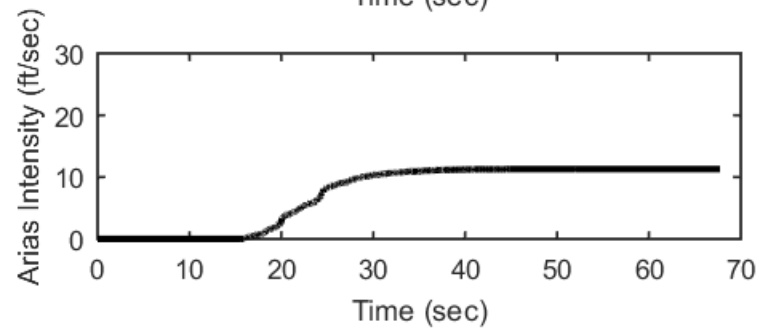
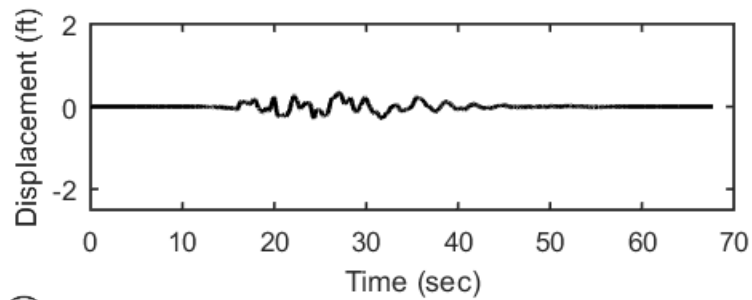
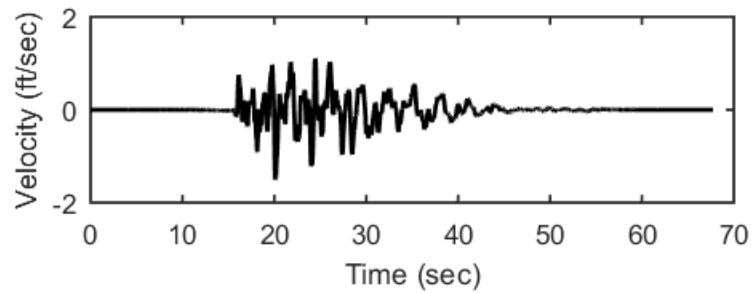
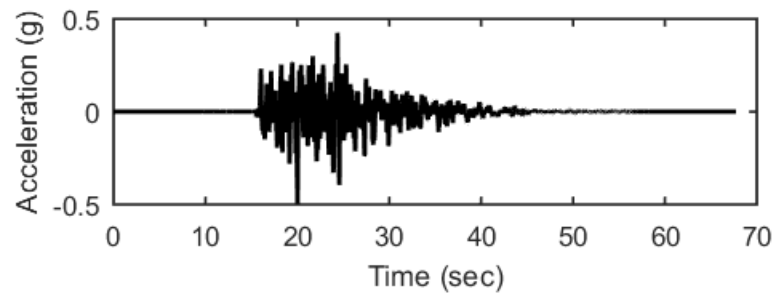
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



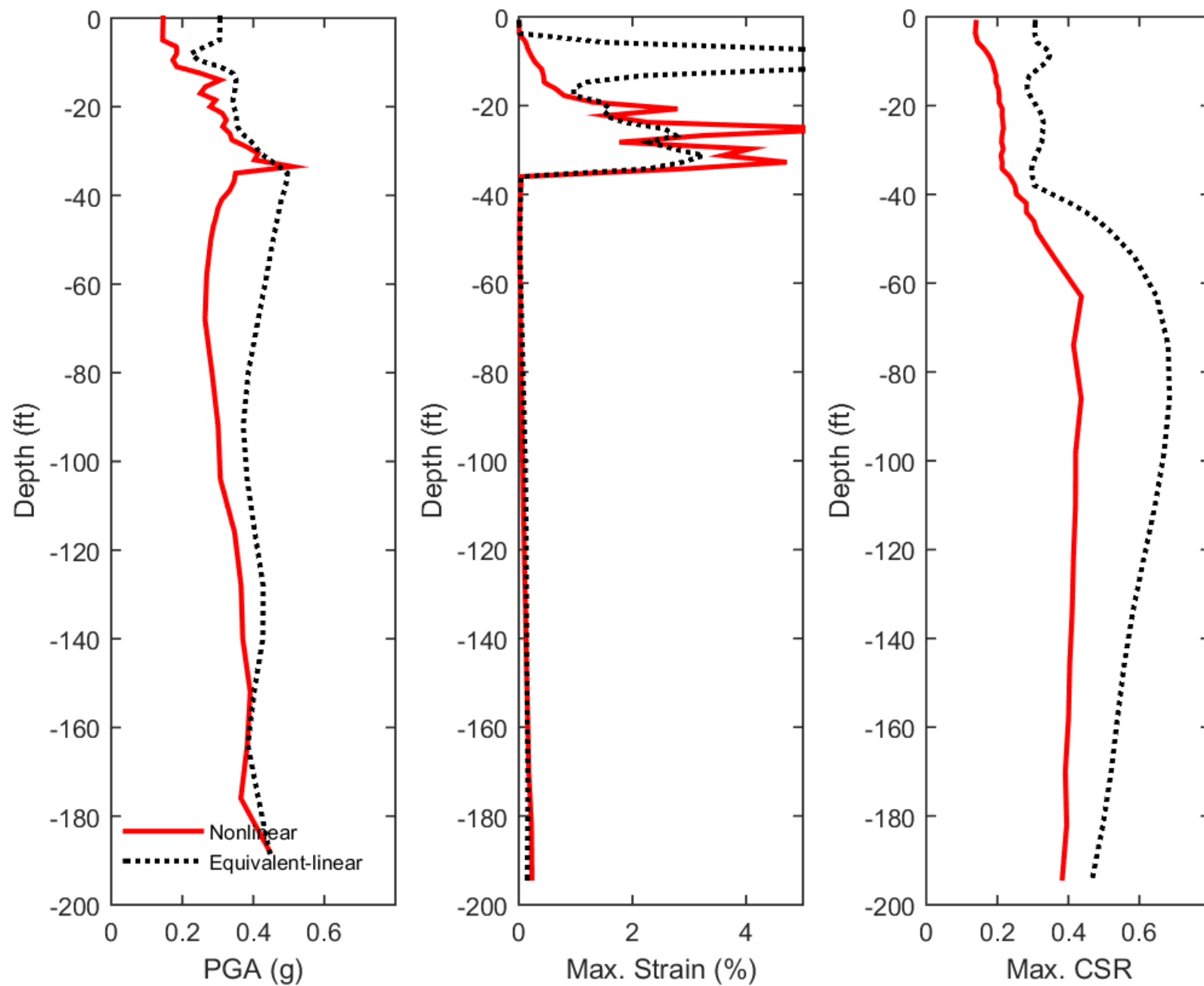
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



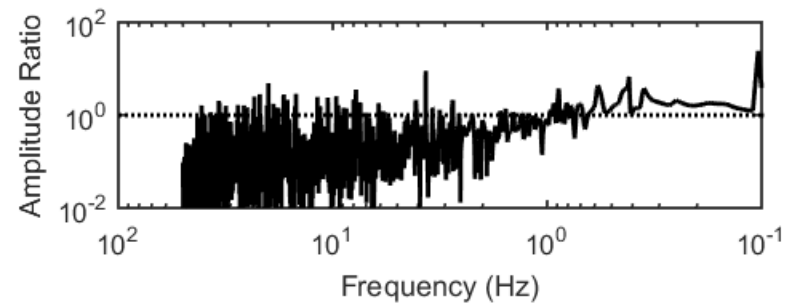
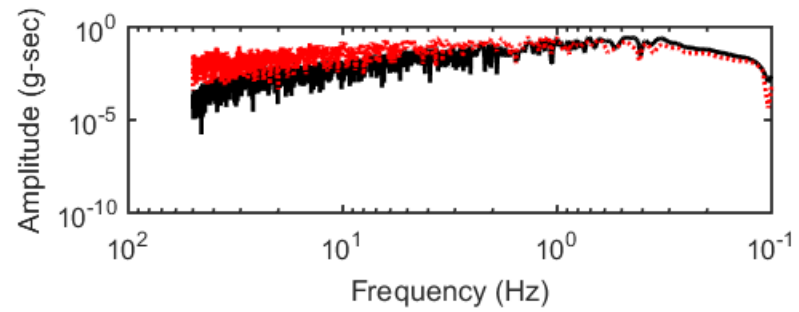
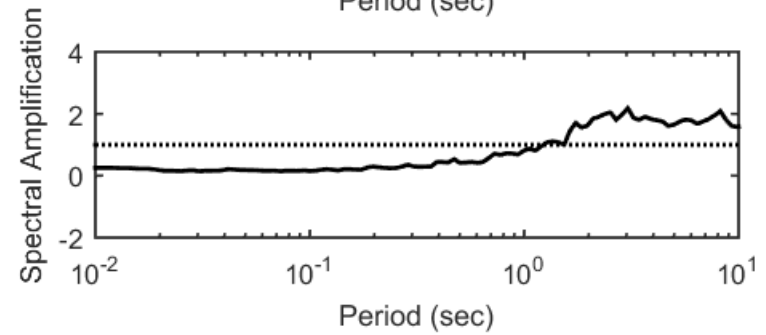
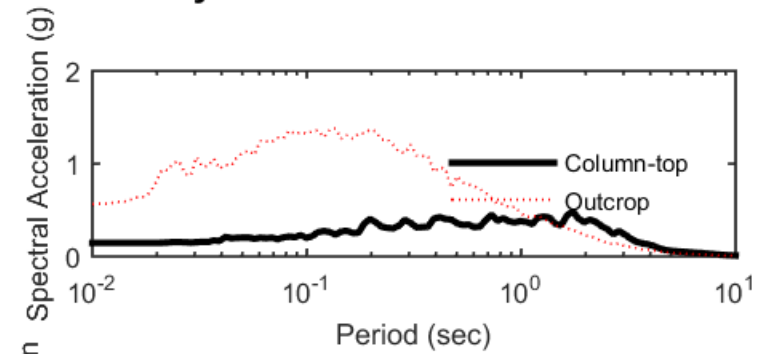
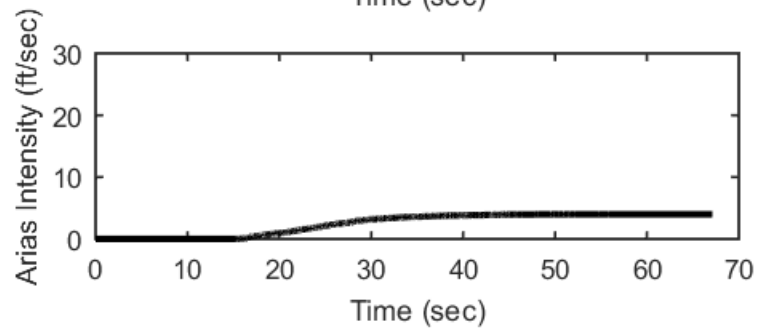
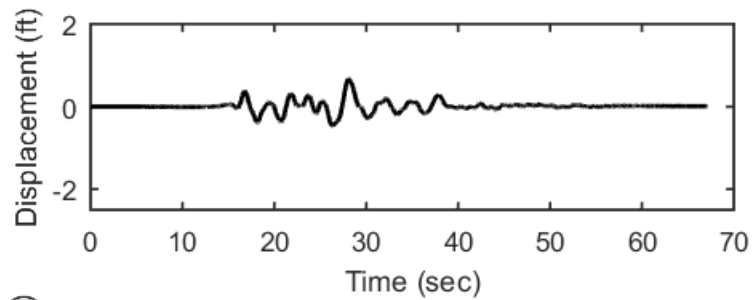
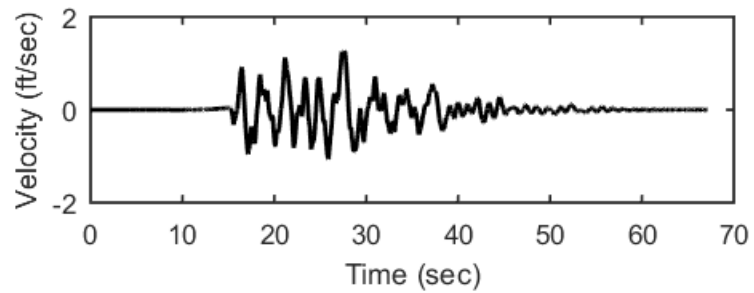
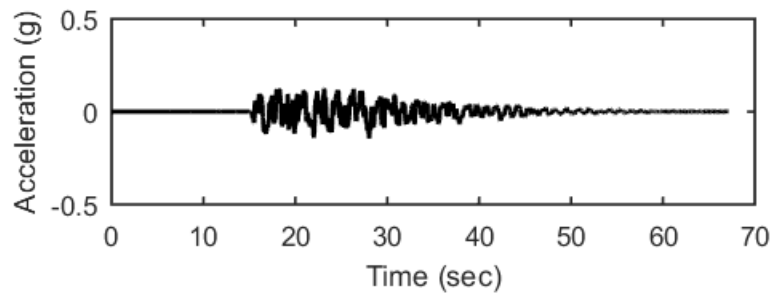
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



### Profile outputs for Motion: SEE4

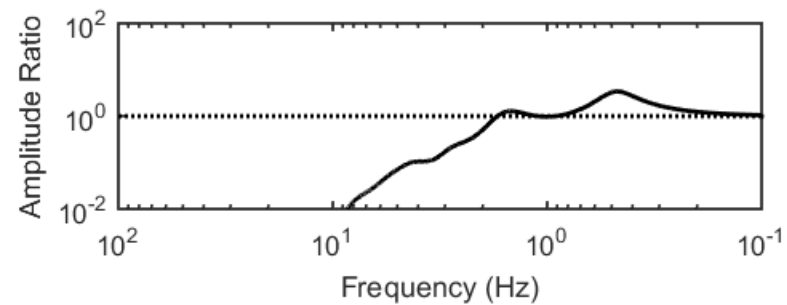
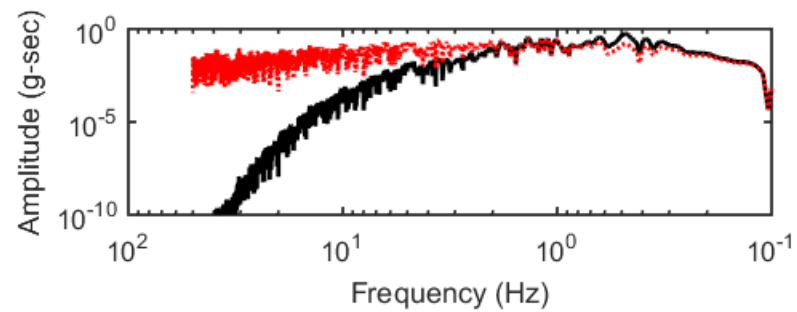
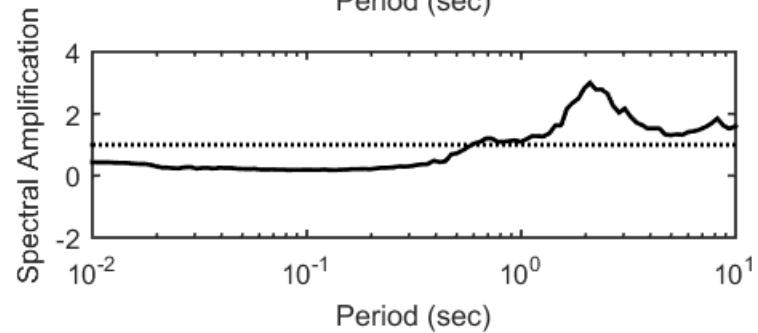
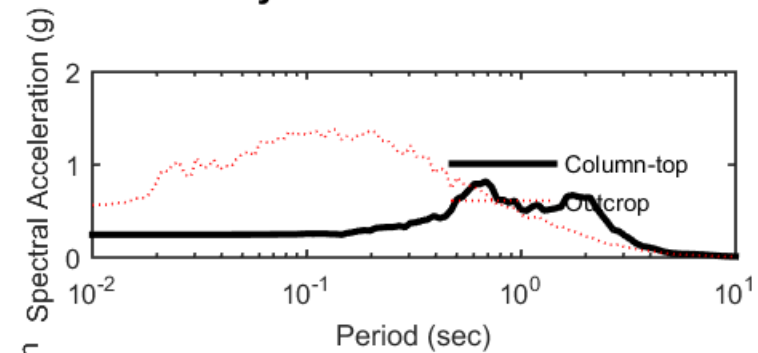
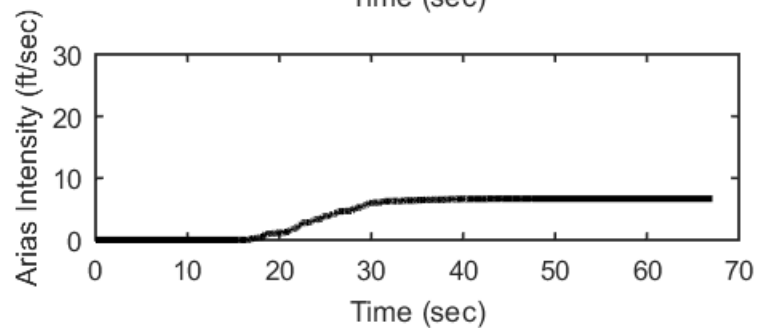
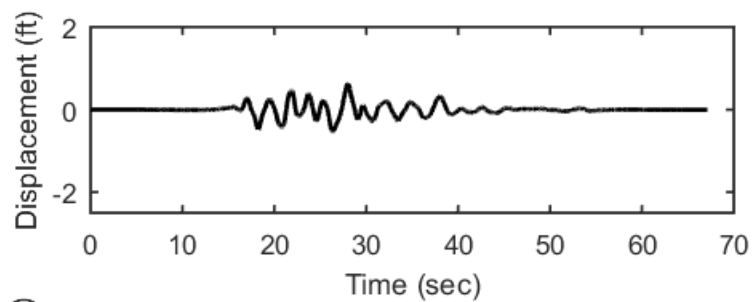
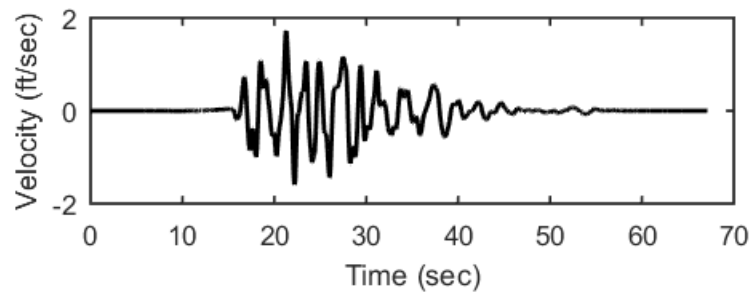
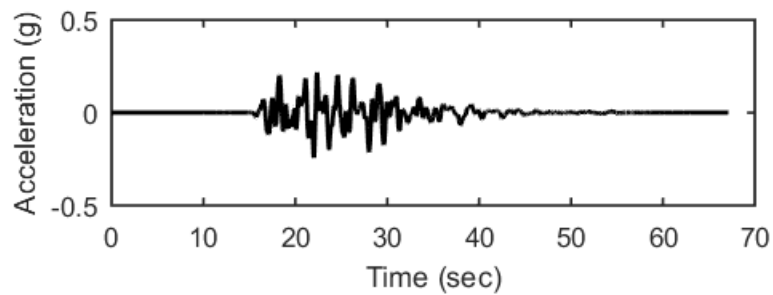


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5

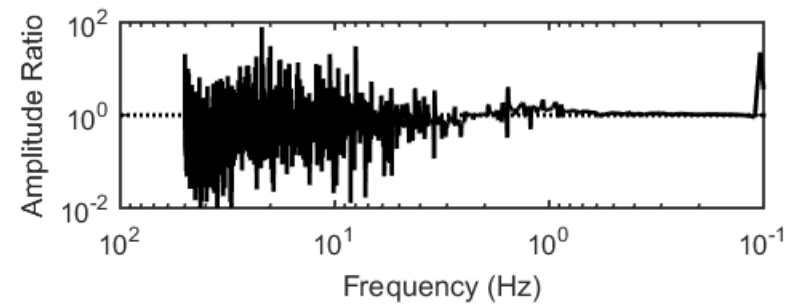
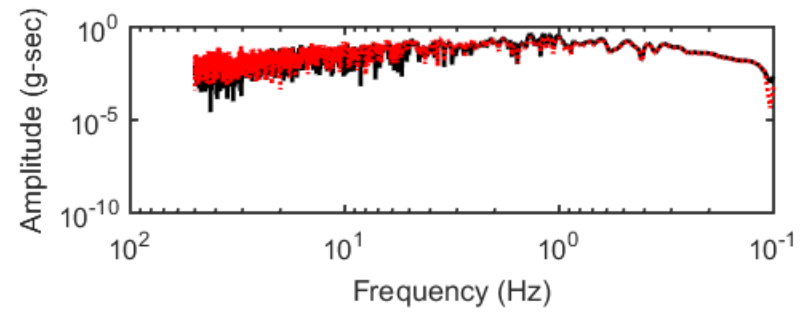
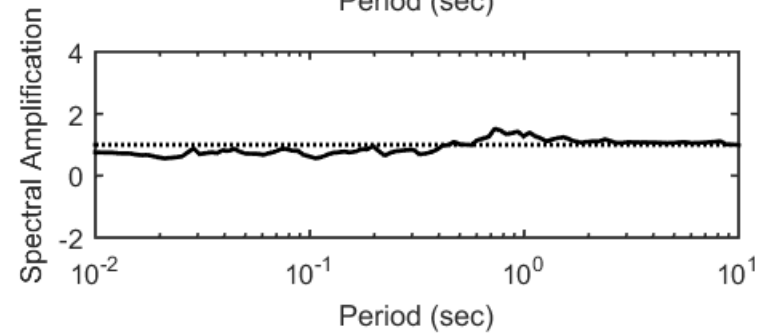
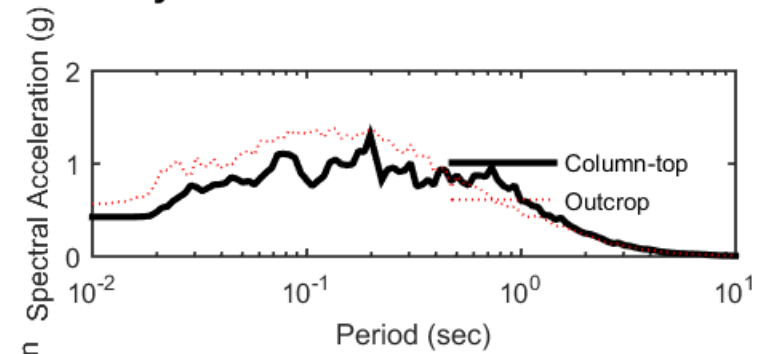
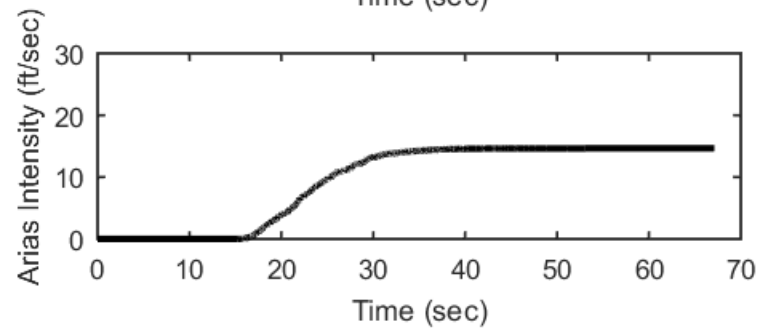
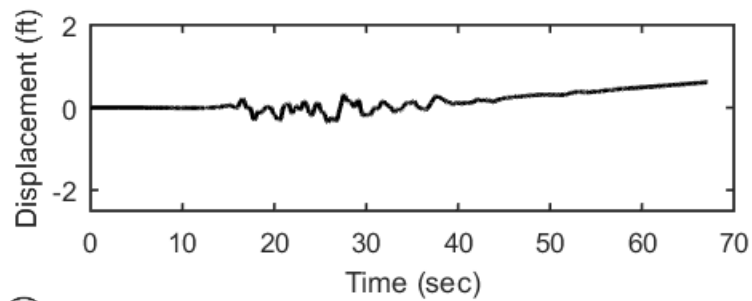
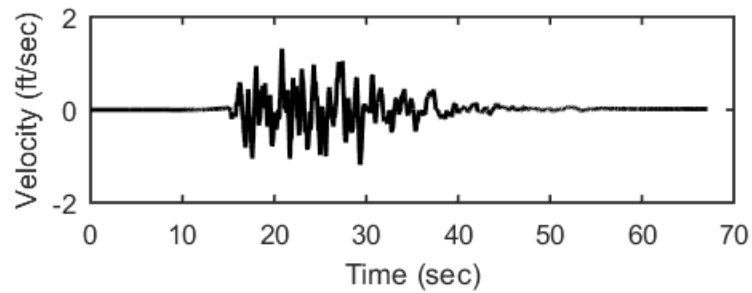
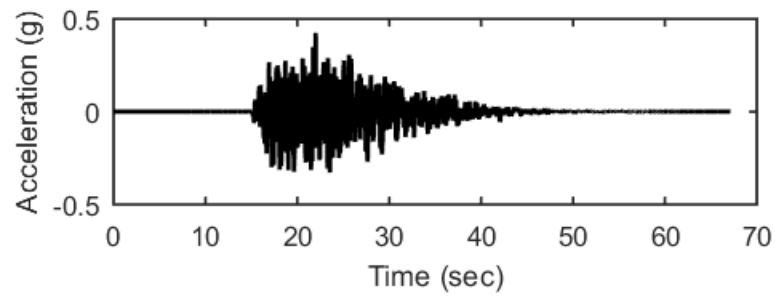




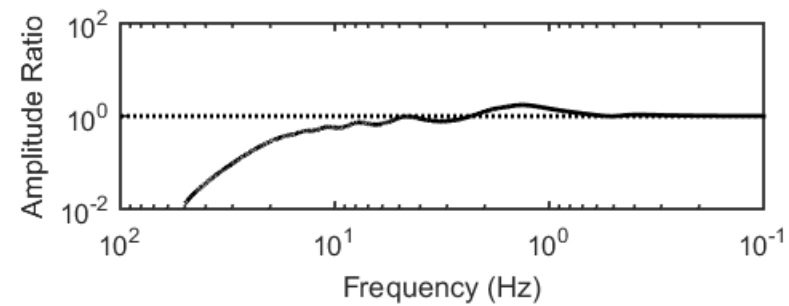
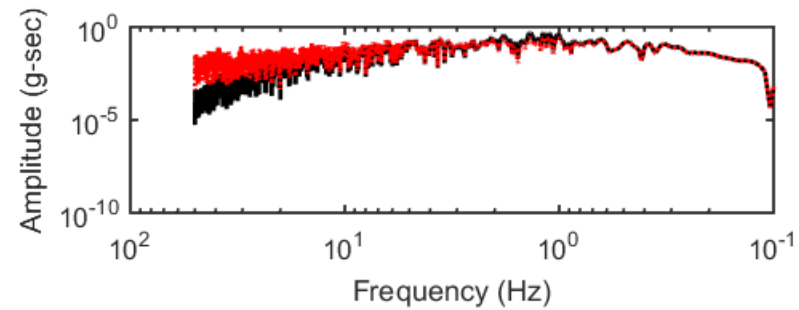
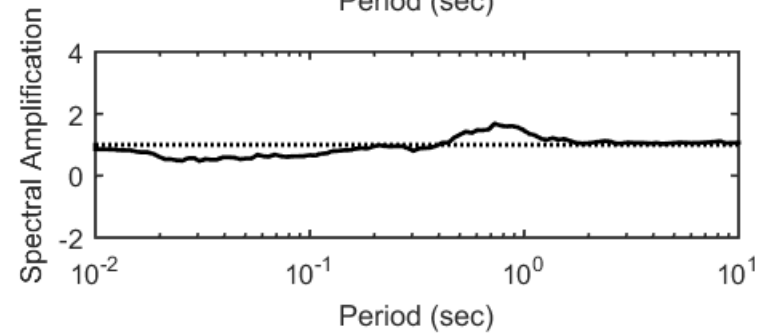
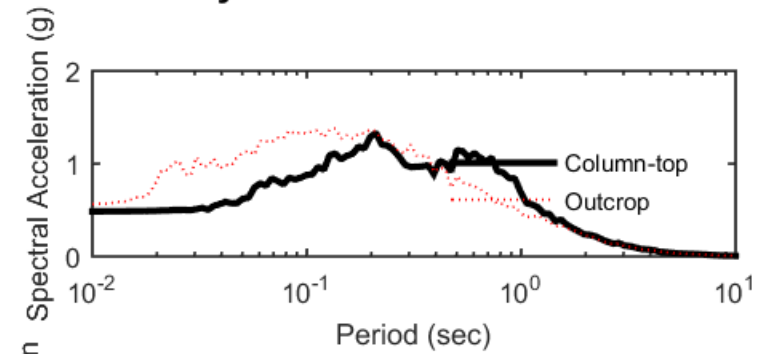
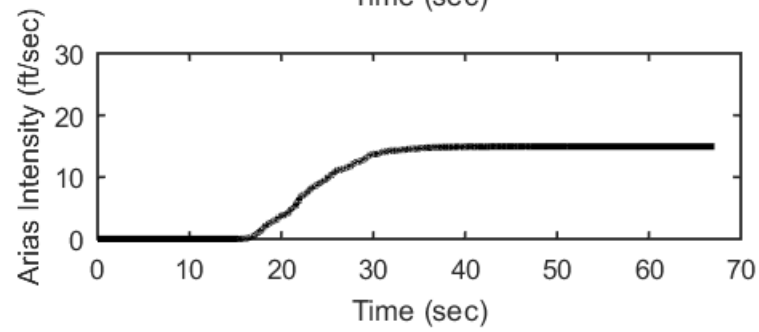
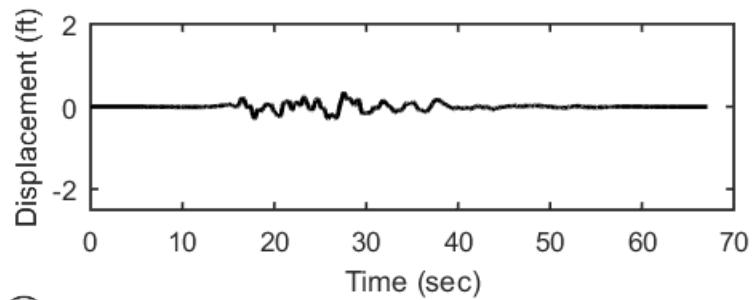
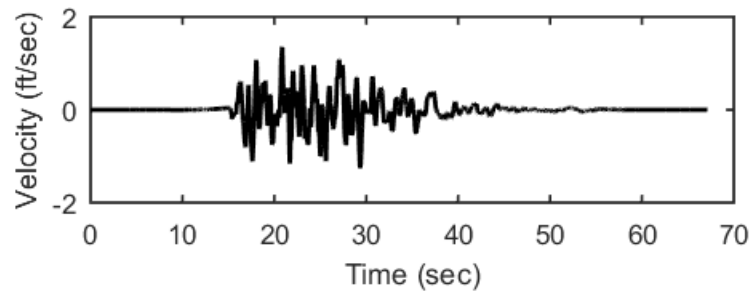
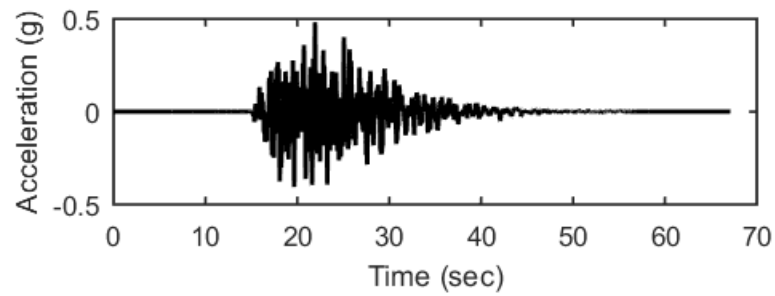
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



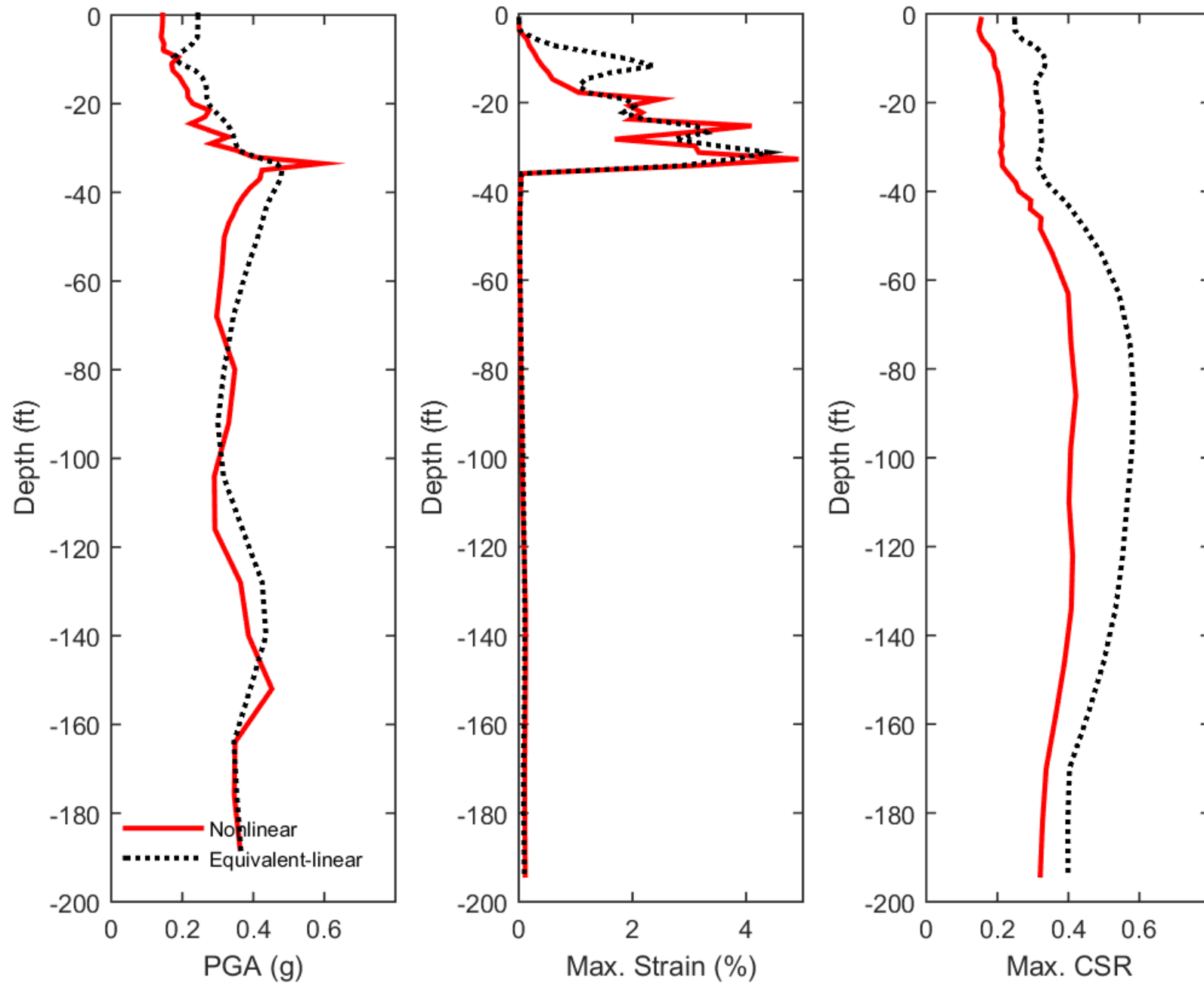
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



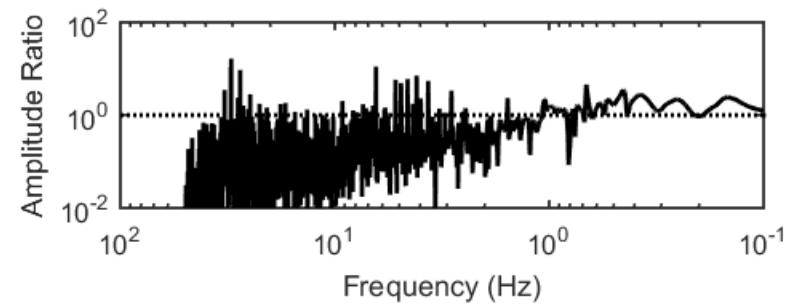
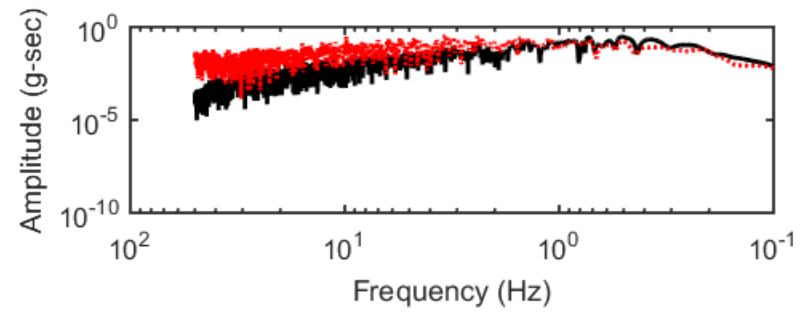
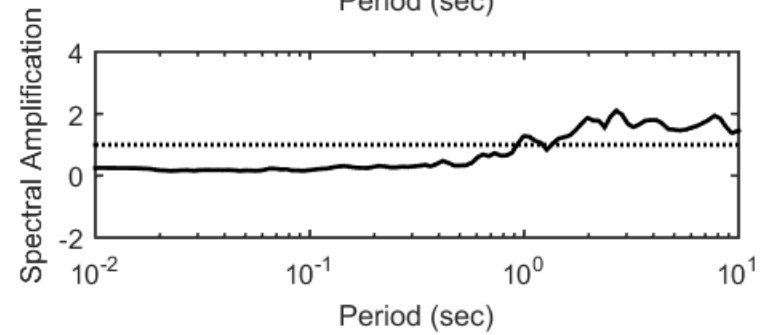
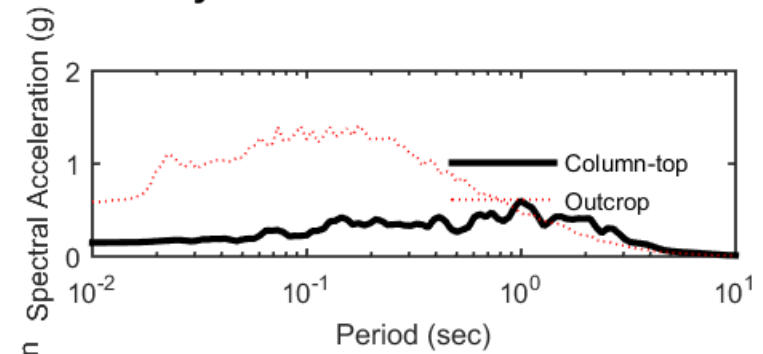
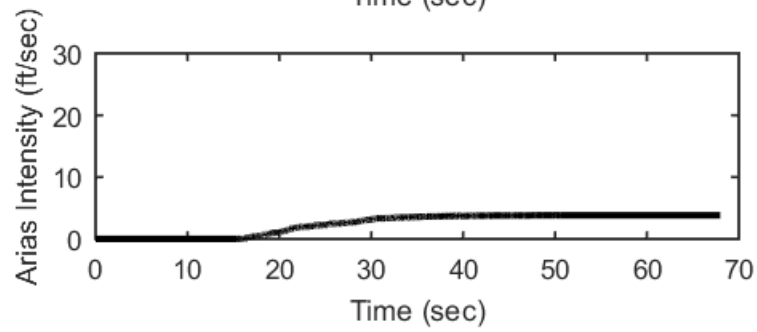
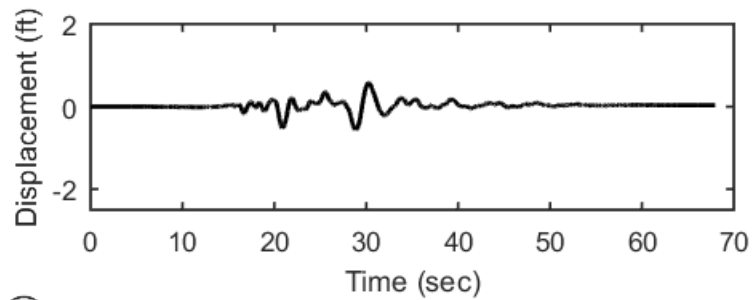
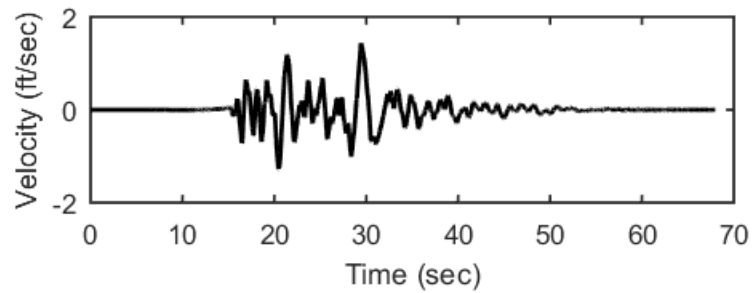
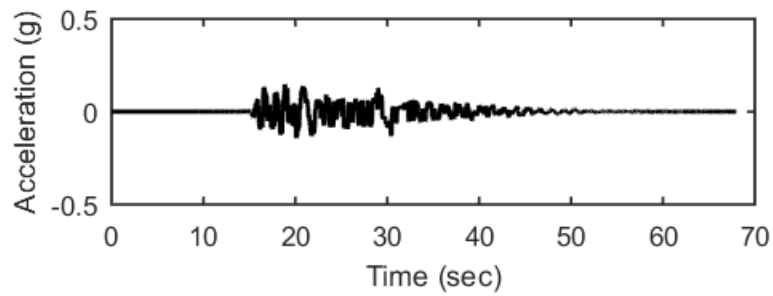
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



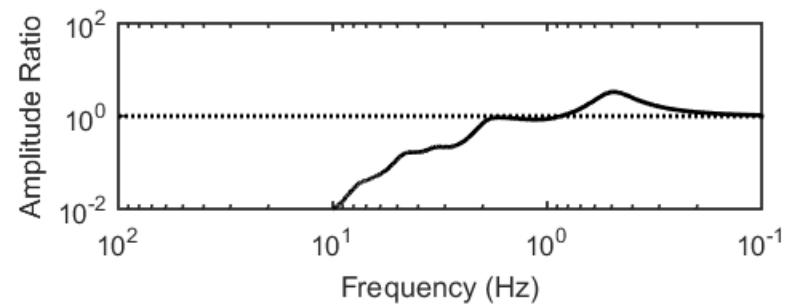
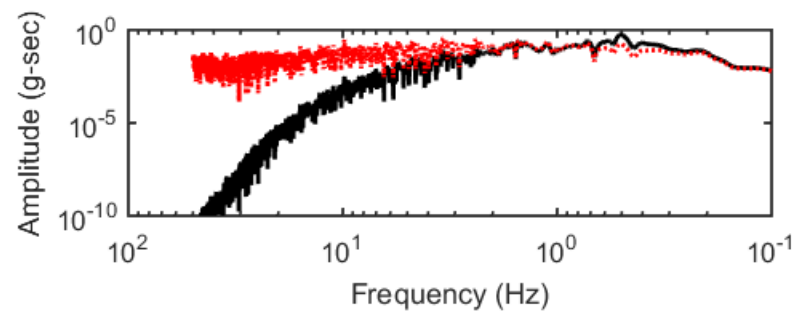
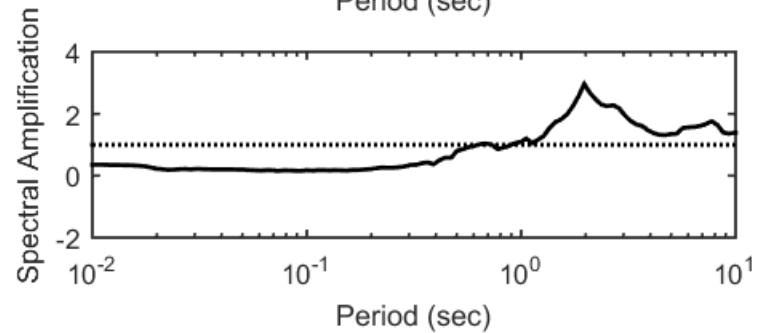
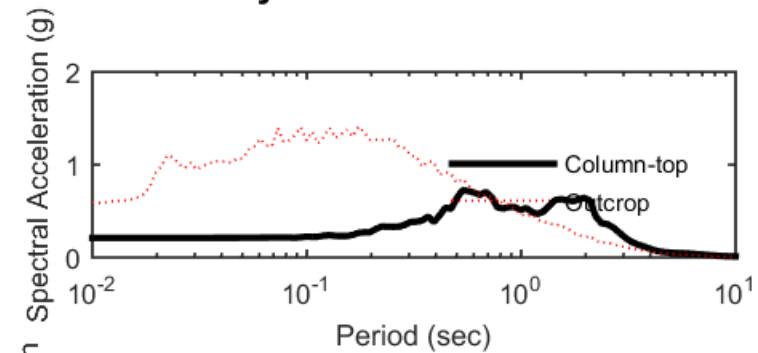
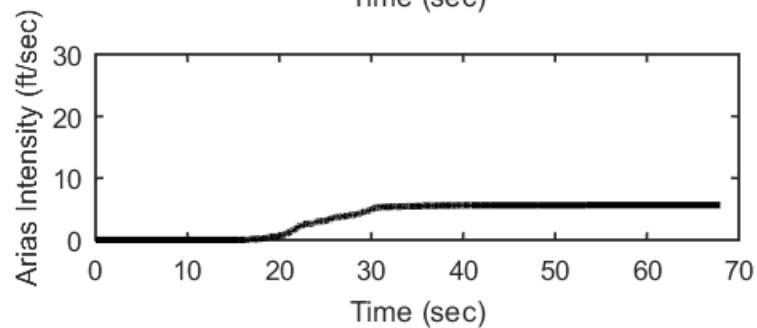
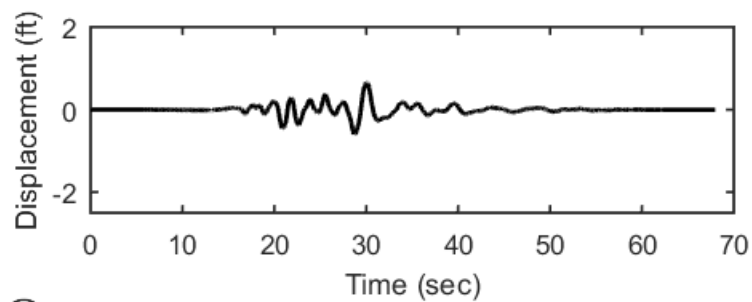
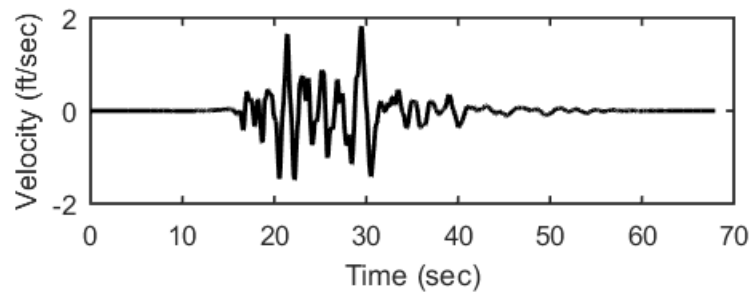
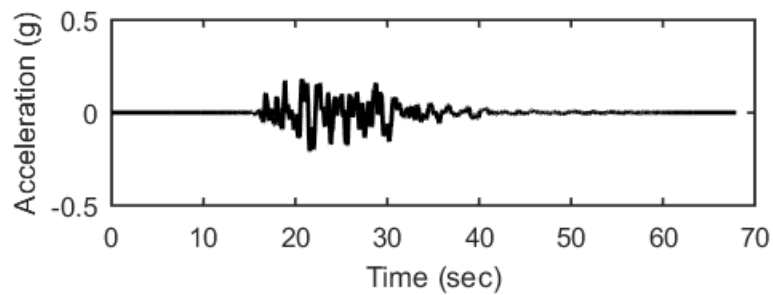
### Profile outputs for Motion: SEE5



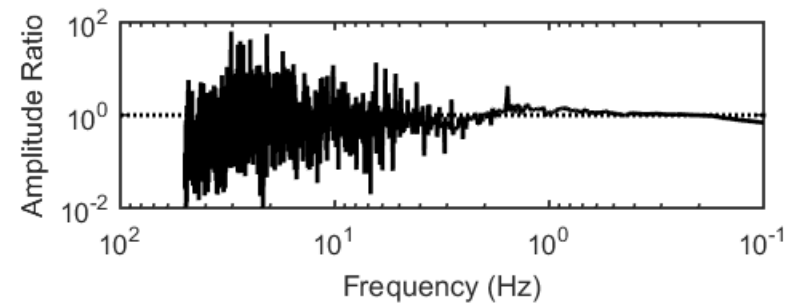
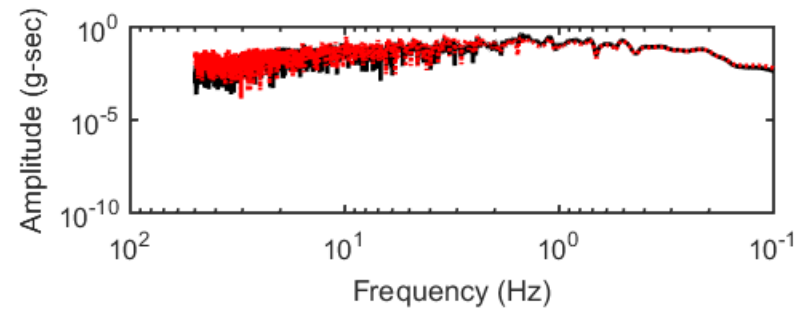
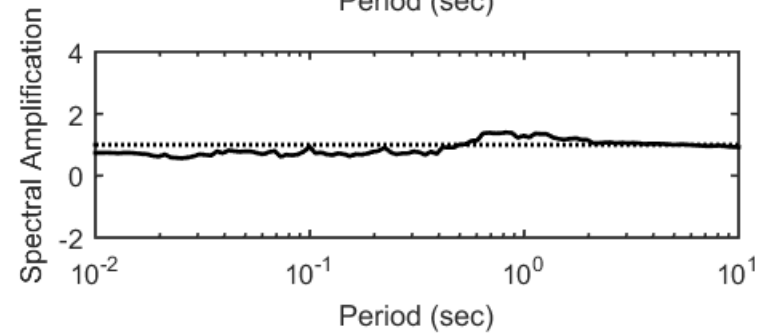
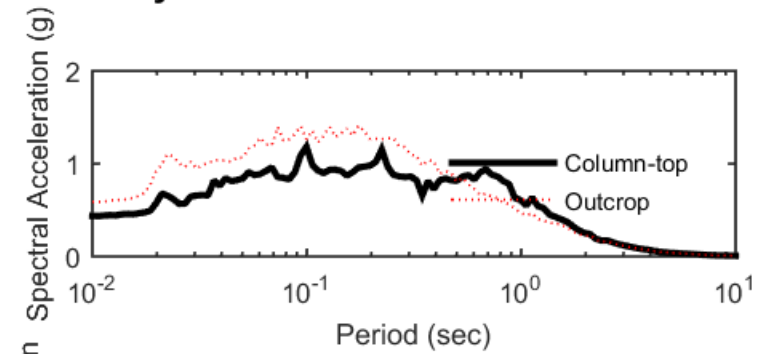
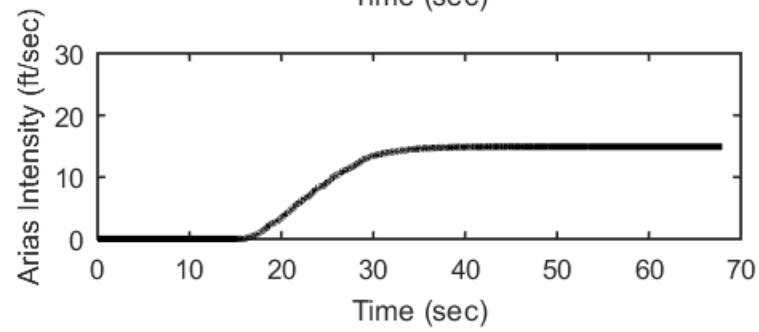
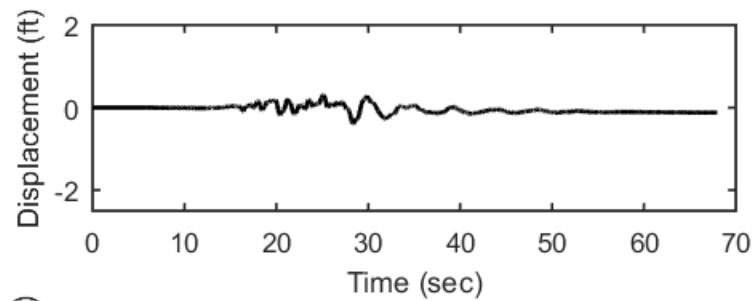
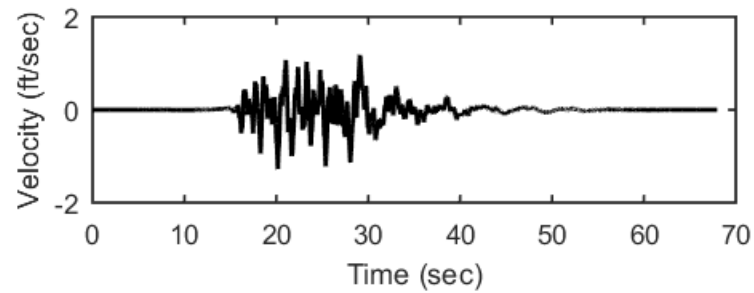
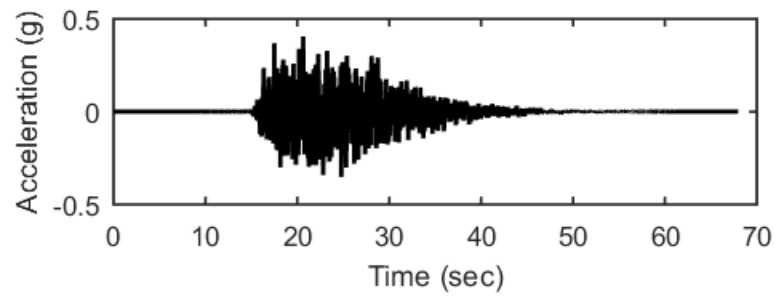
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



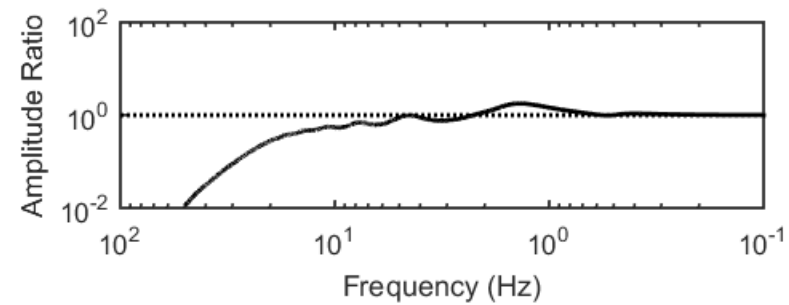
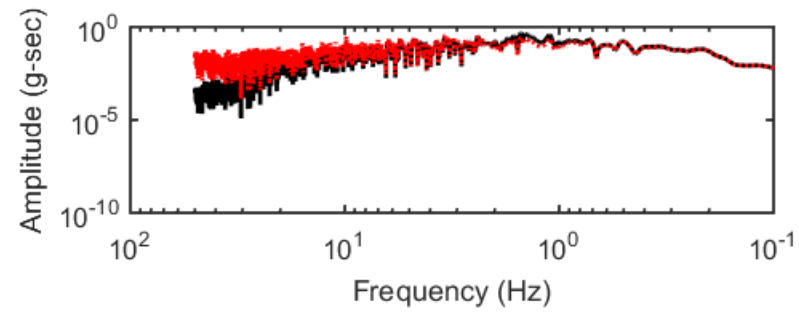
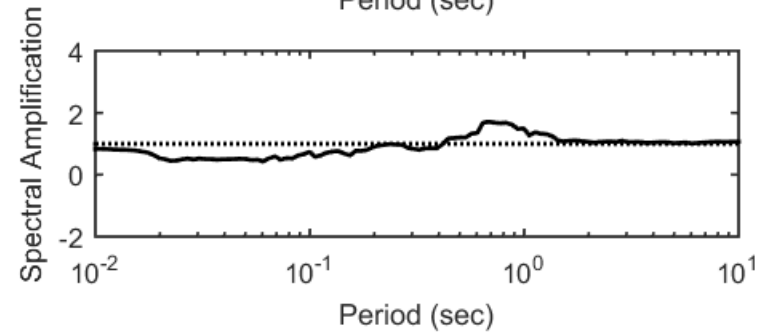
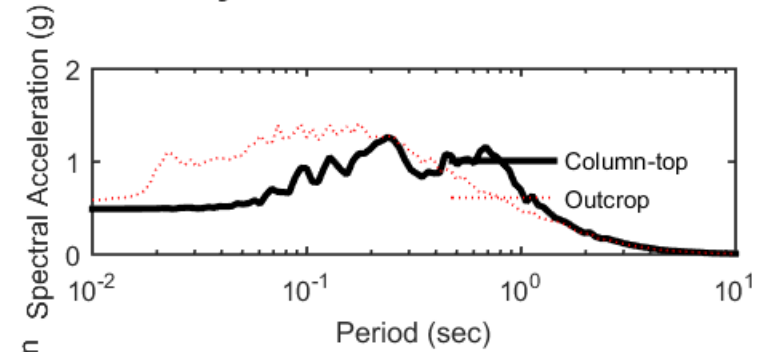
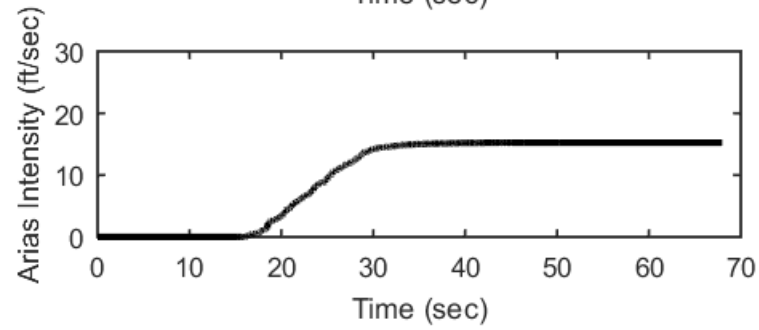
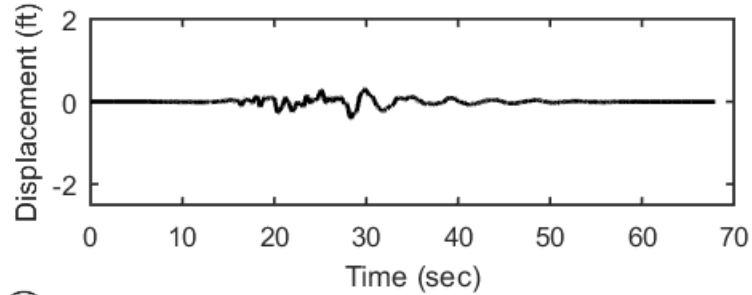
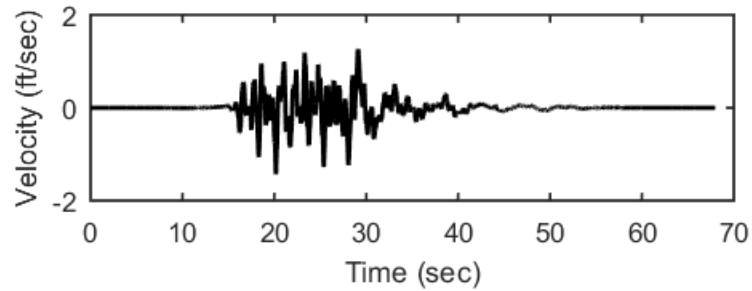
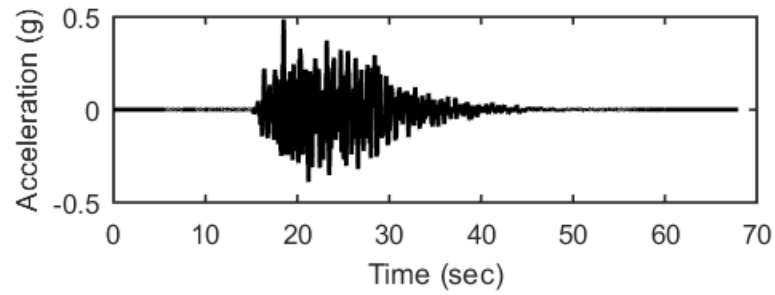
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6

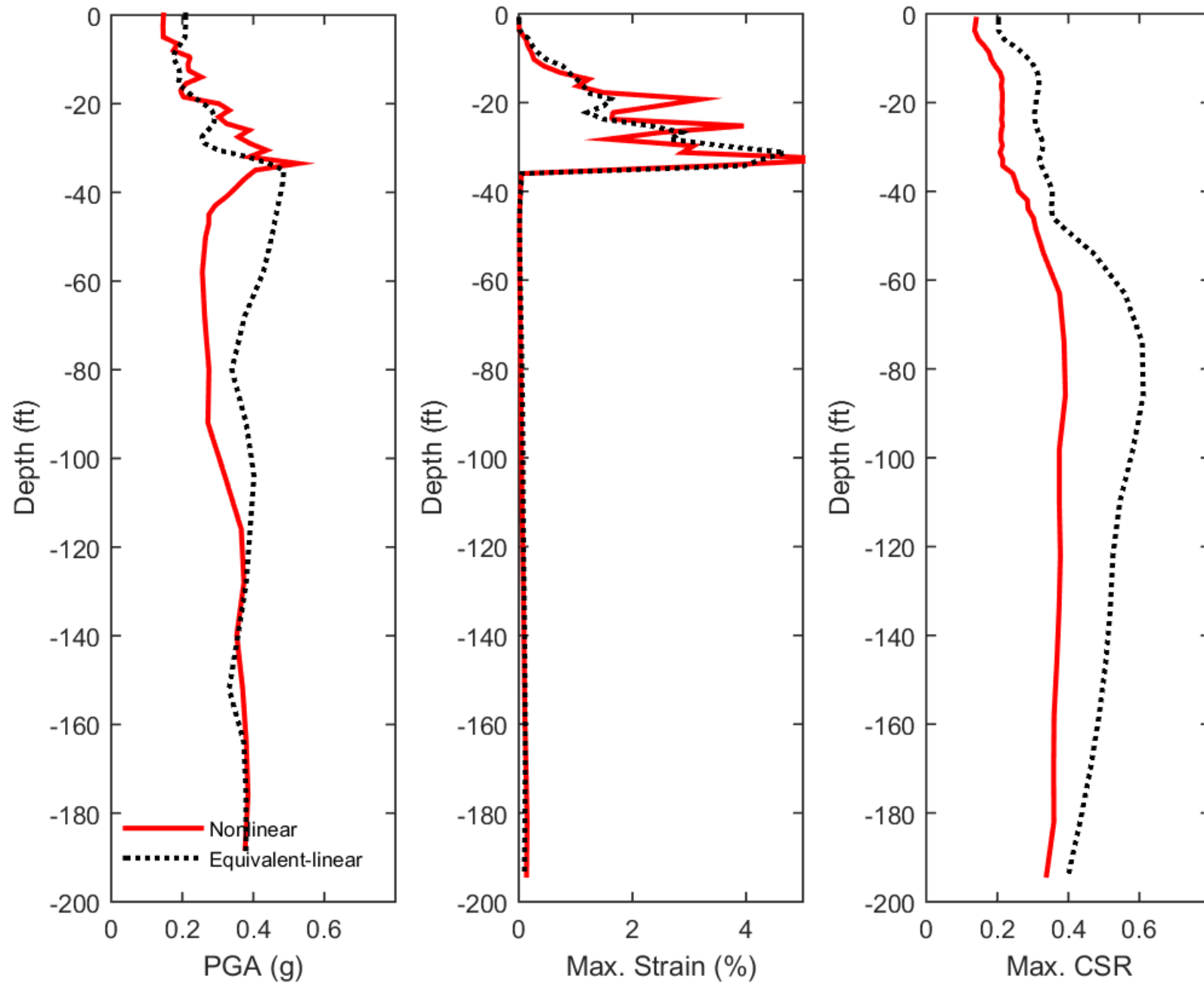


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6

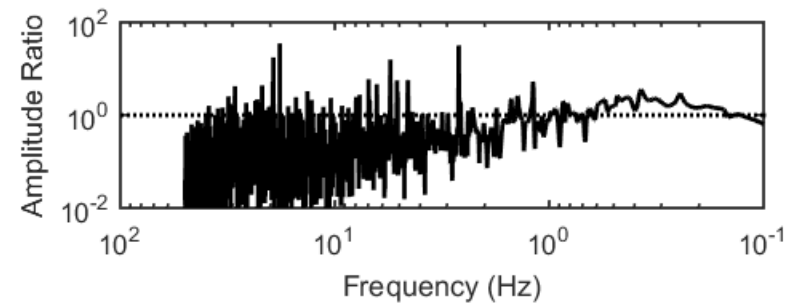
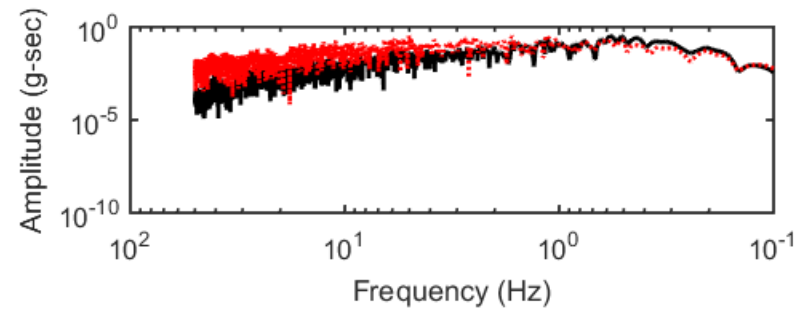
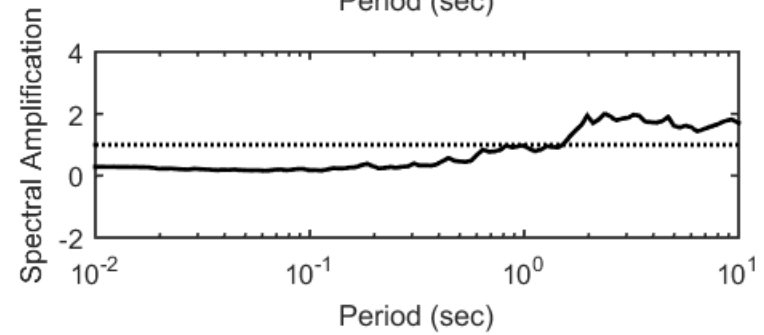
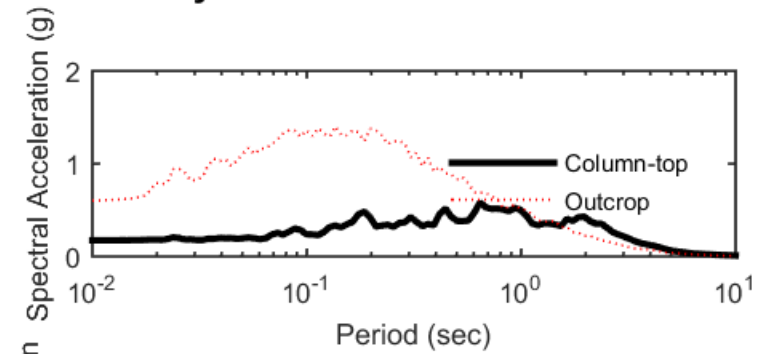
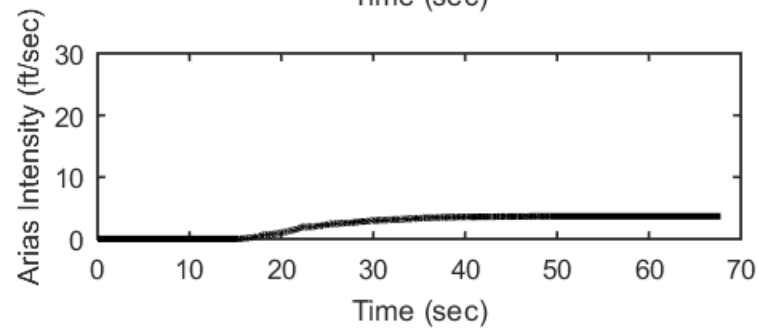
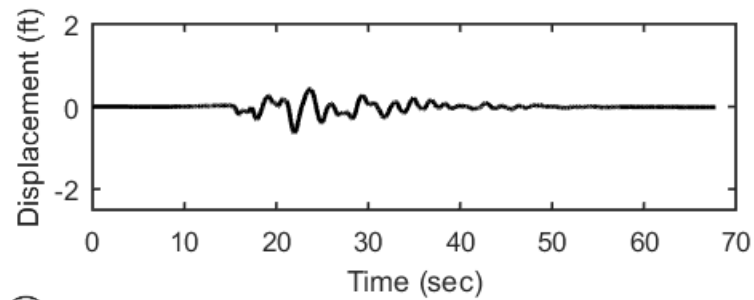
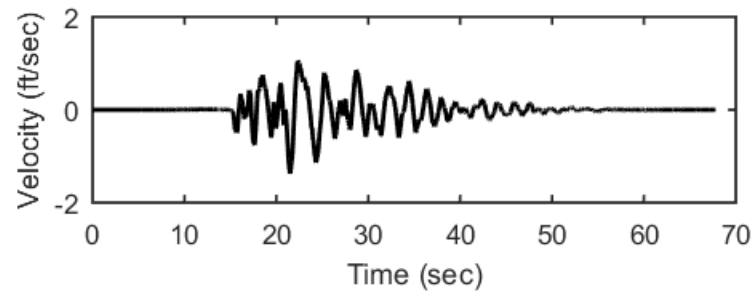
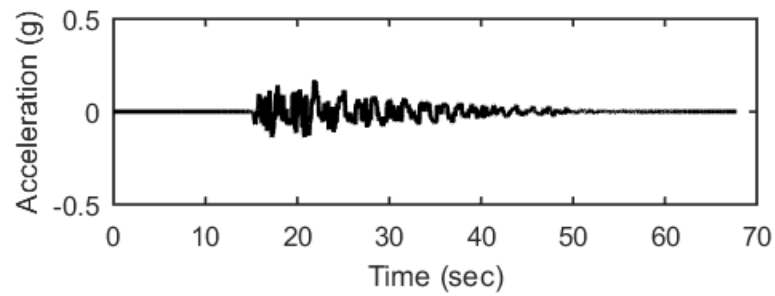




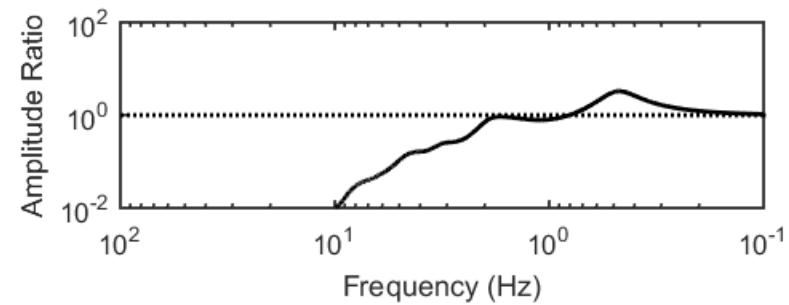
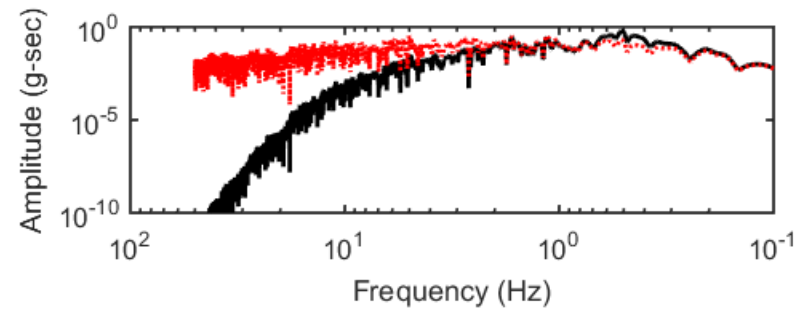
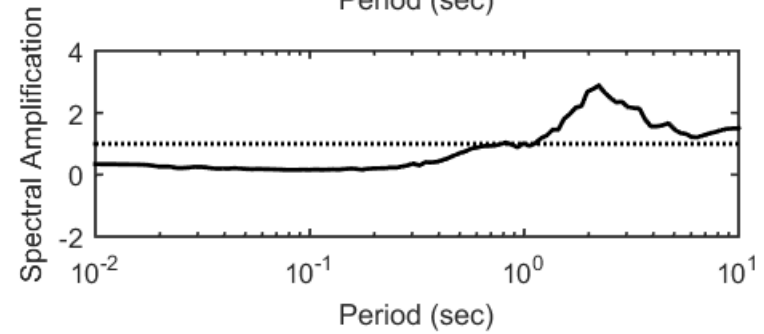
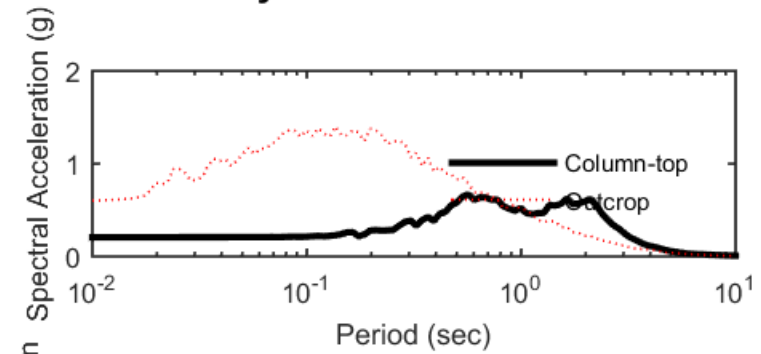
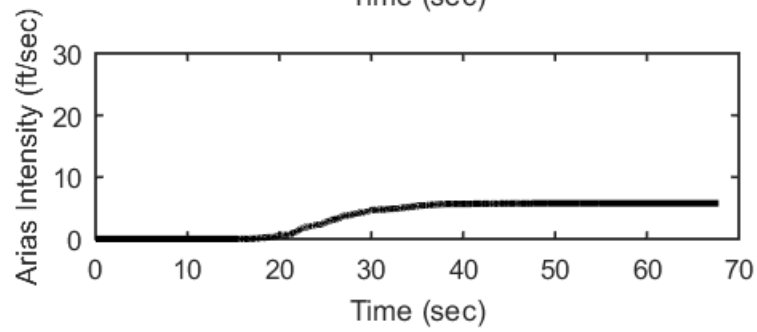
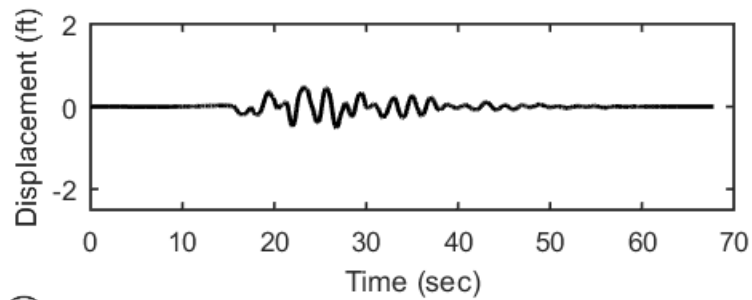
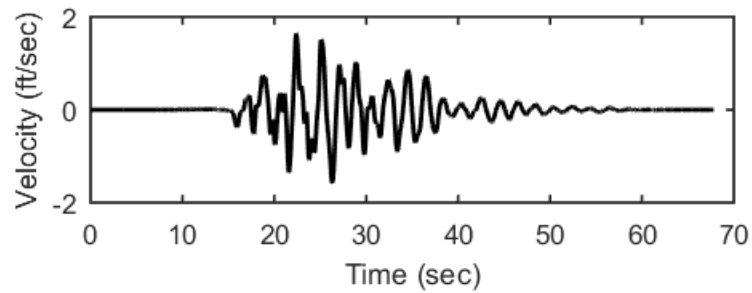
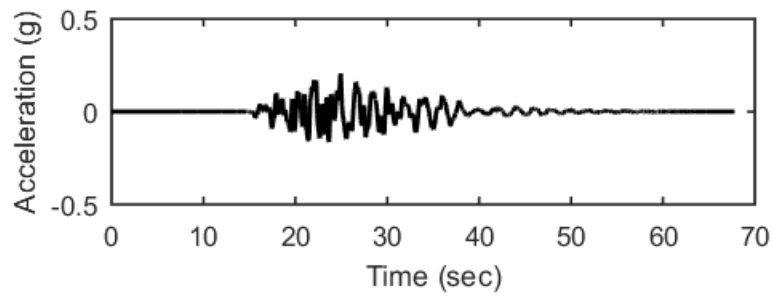
### Profile outputs for Motion: SEE6



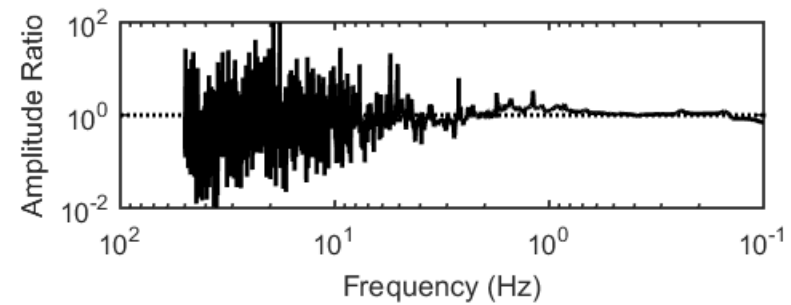
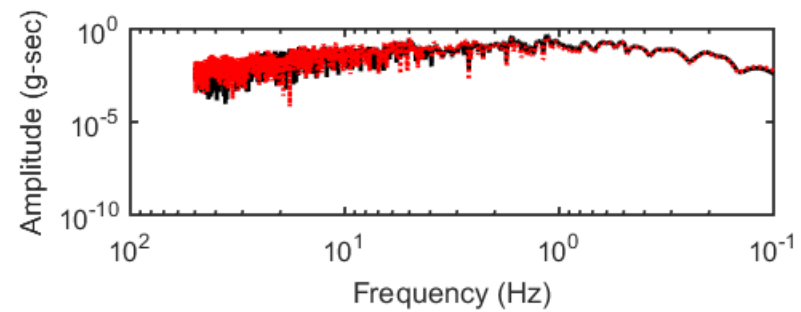
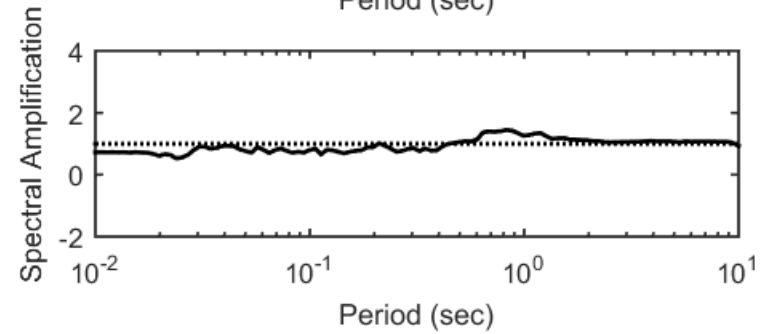
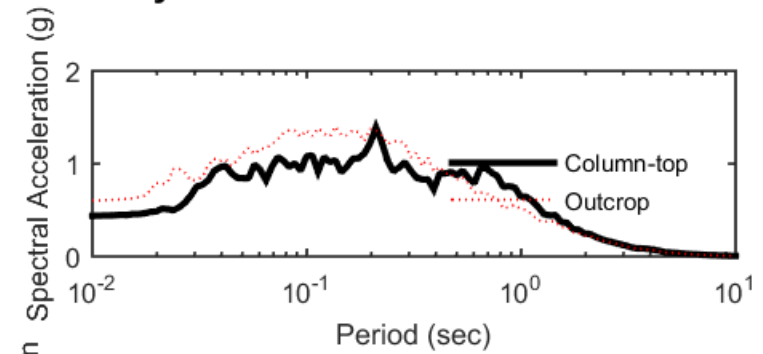
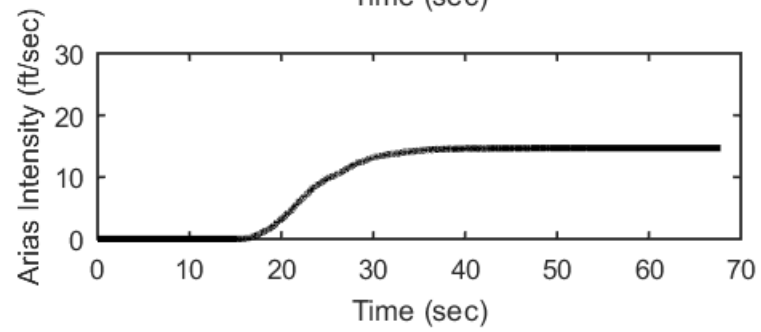
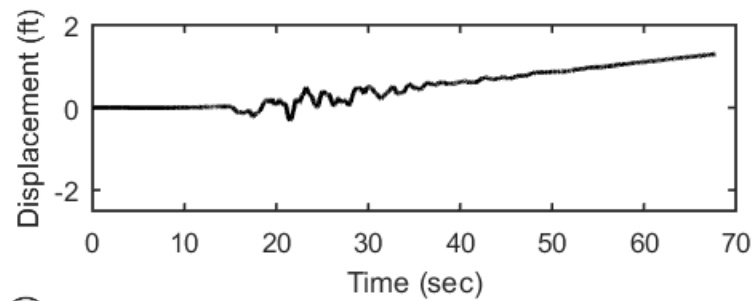
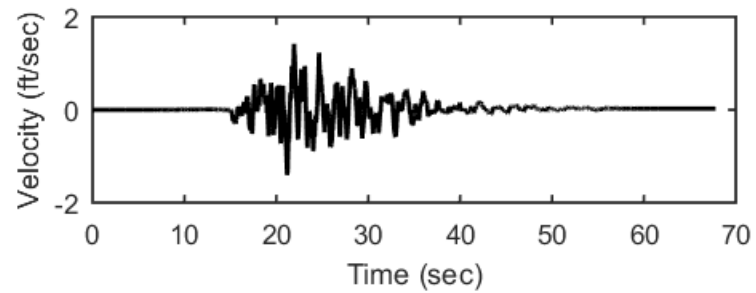
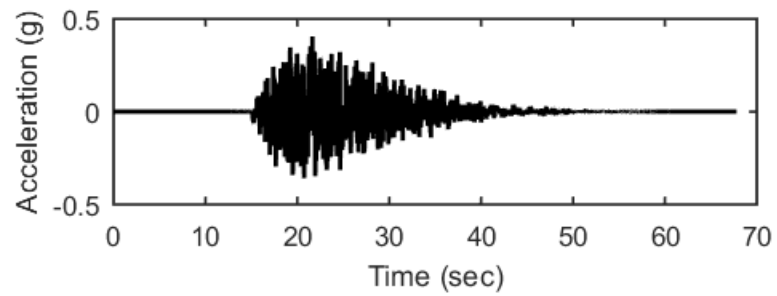
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



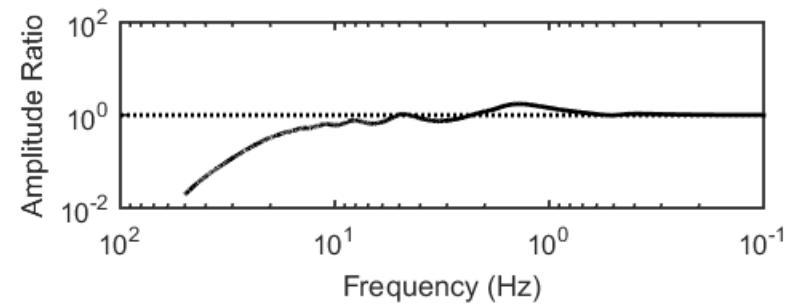
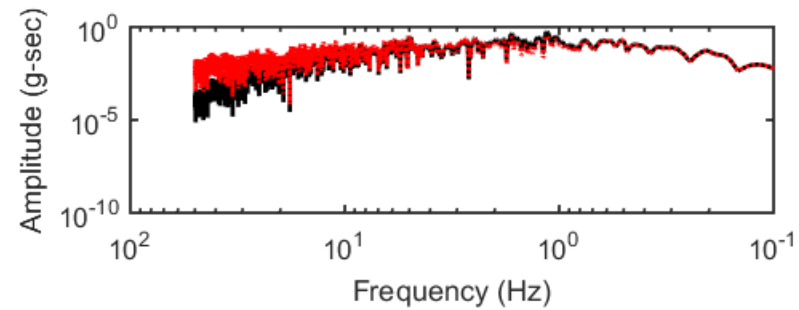
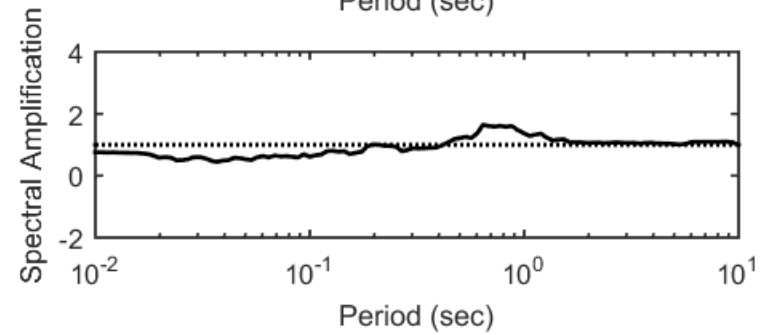
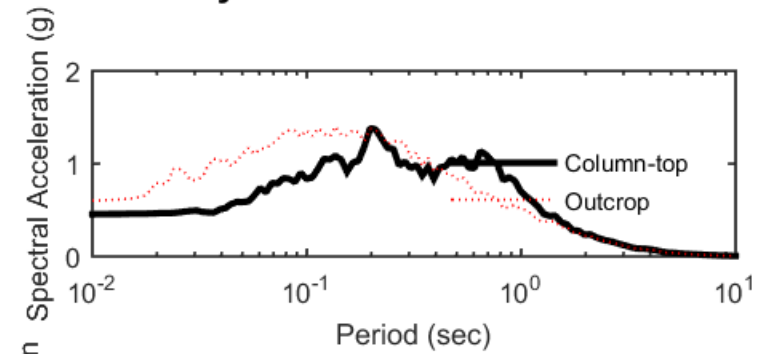
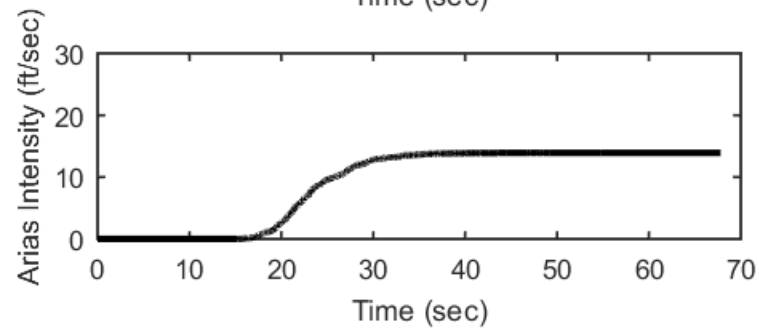
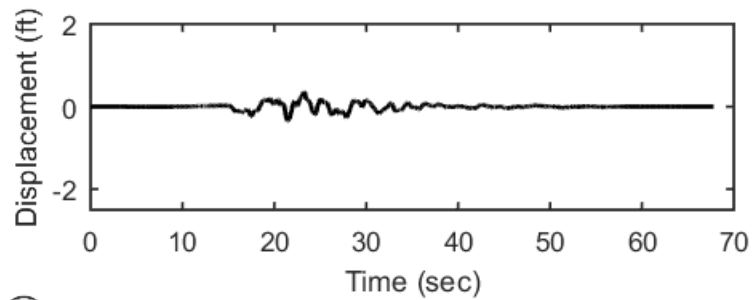
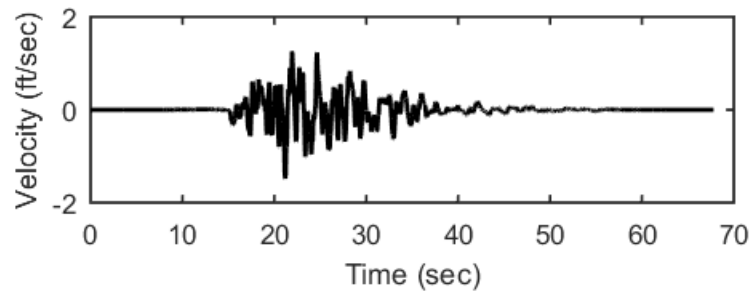
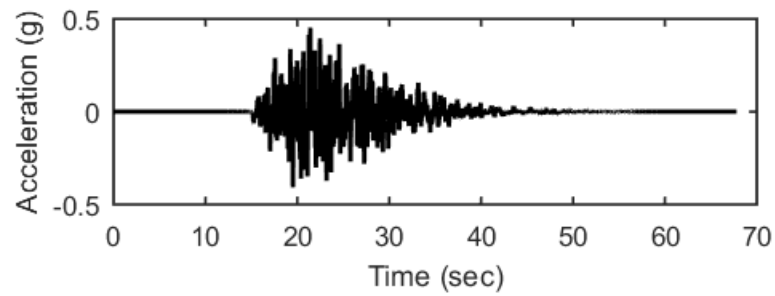
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



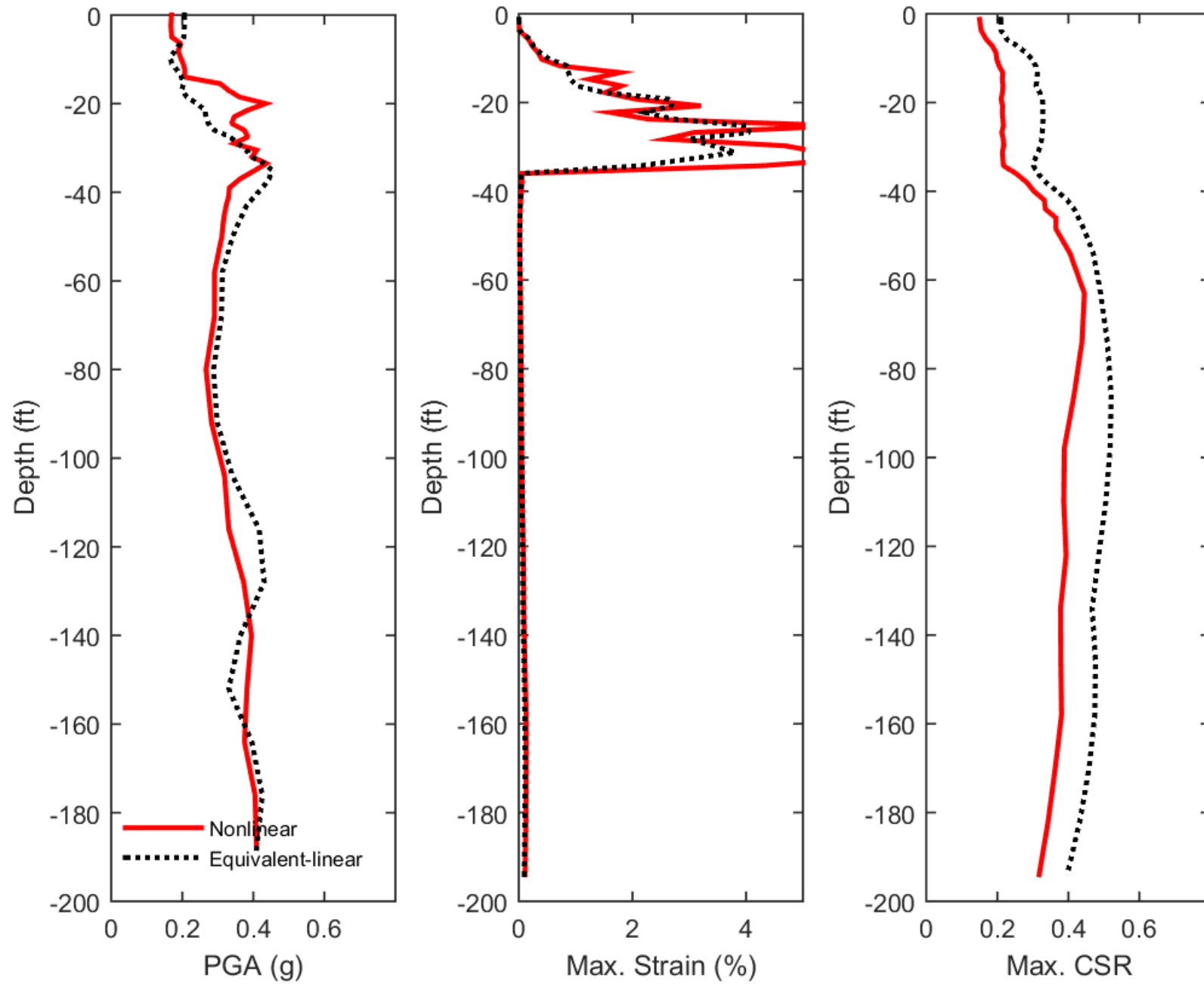
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



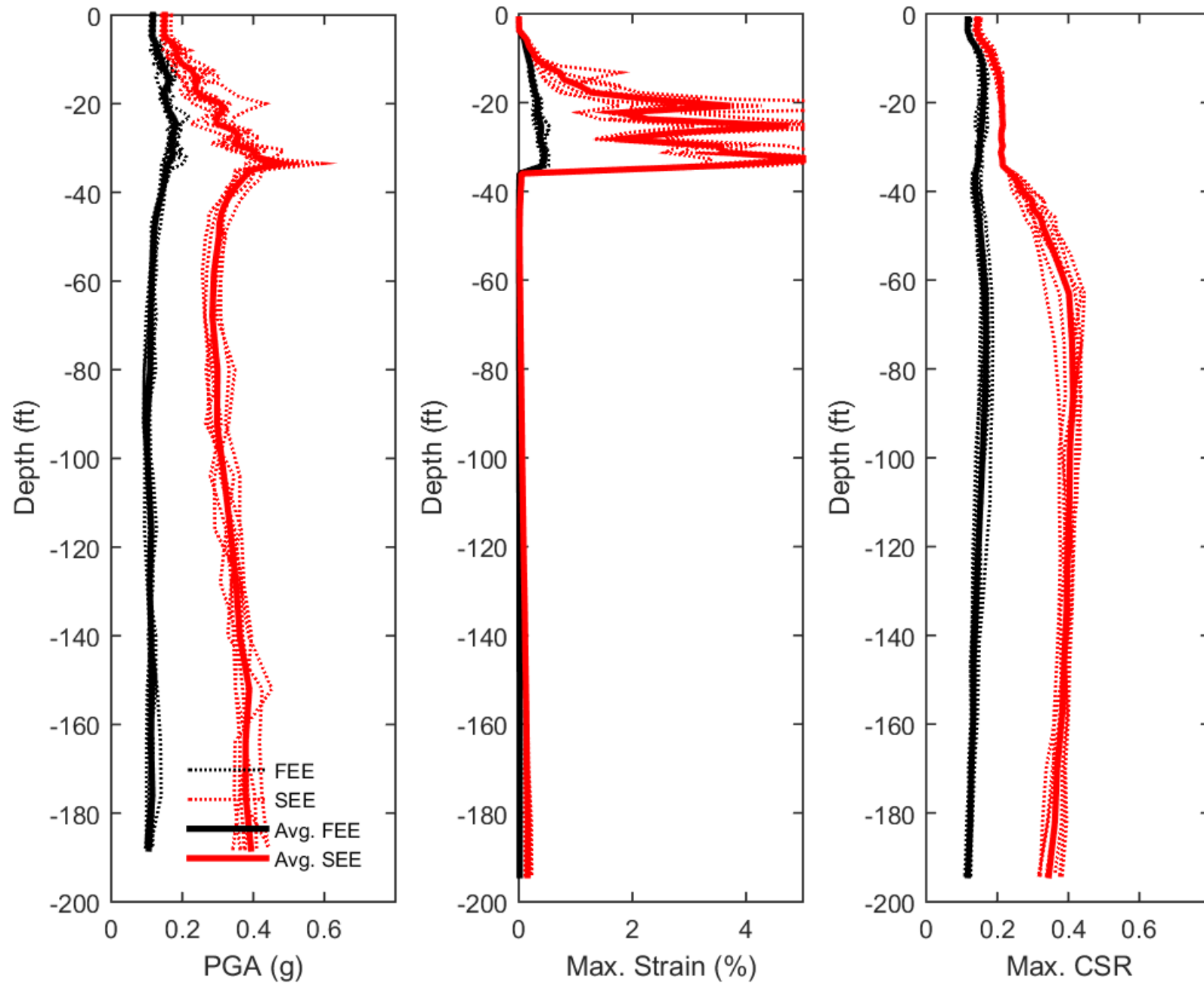
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



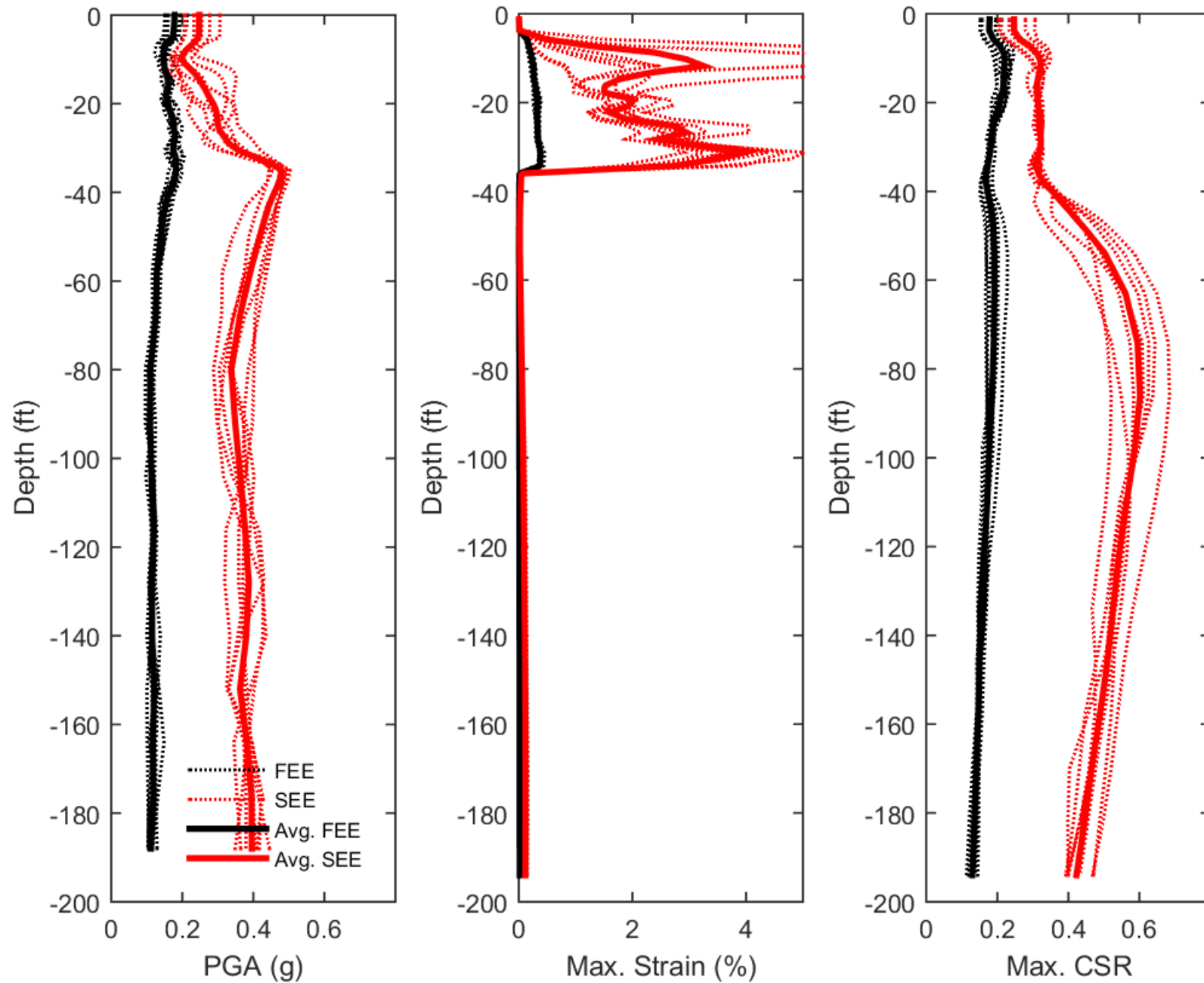
### Profile outputs for Motion: SEE7



## Summary of the profile outputs for Nonlinear analysis

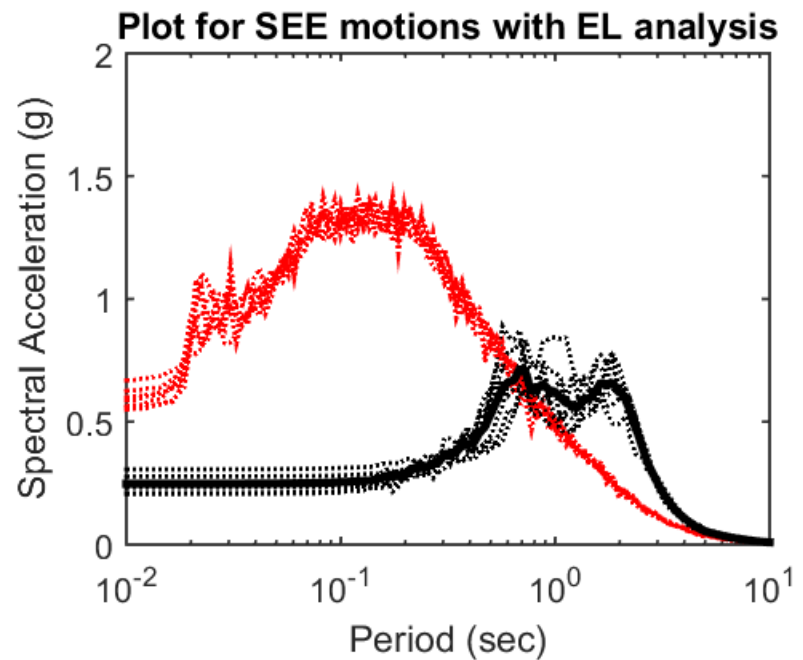
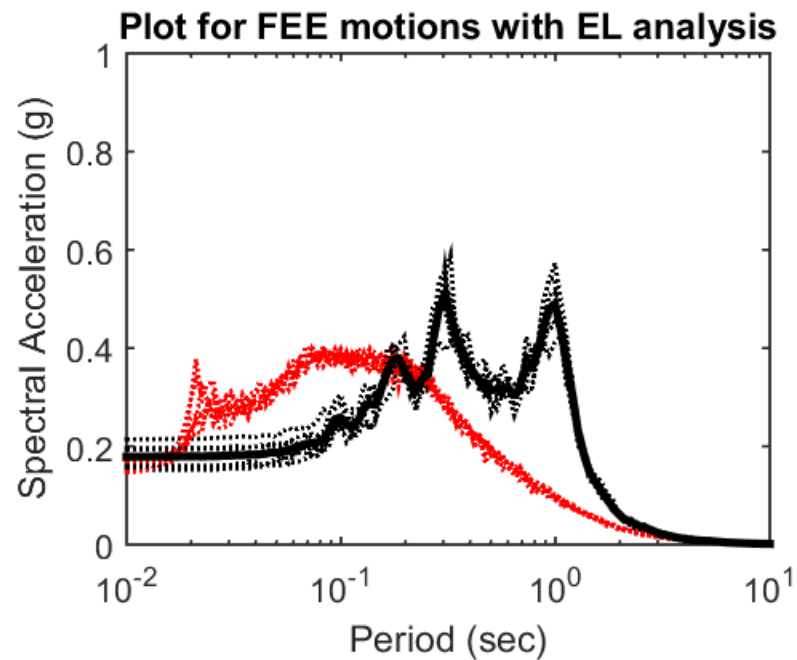
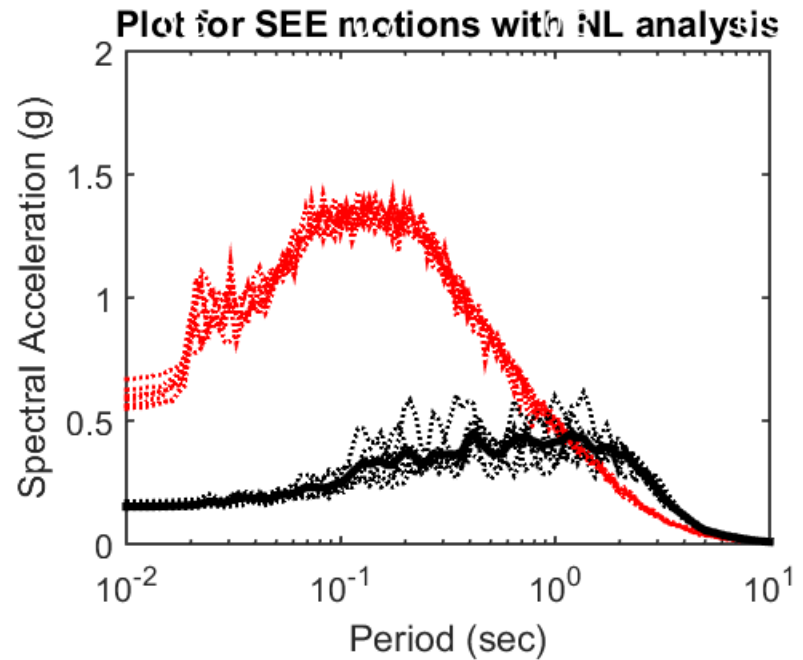
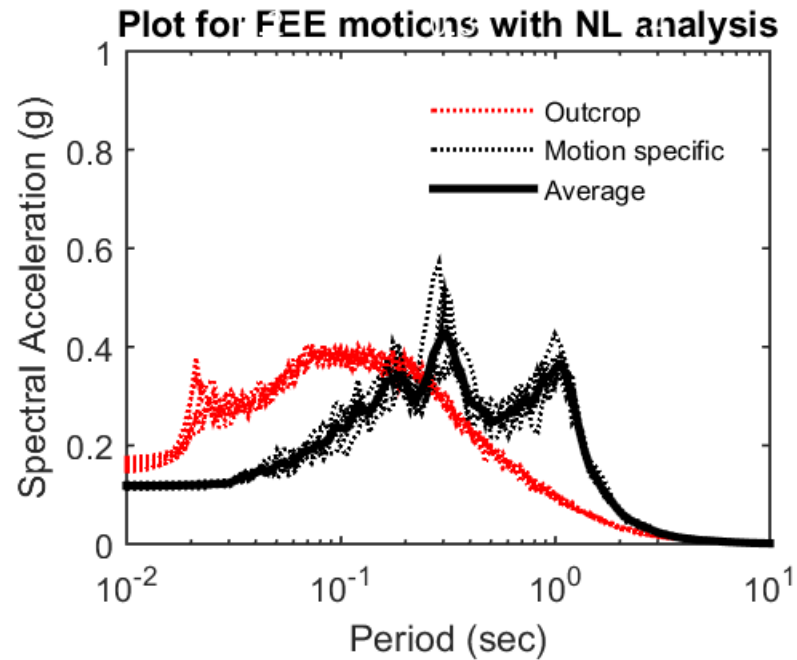


### Summary of the profile outputs for Equivalent-linear analysis

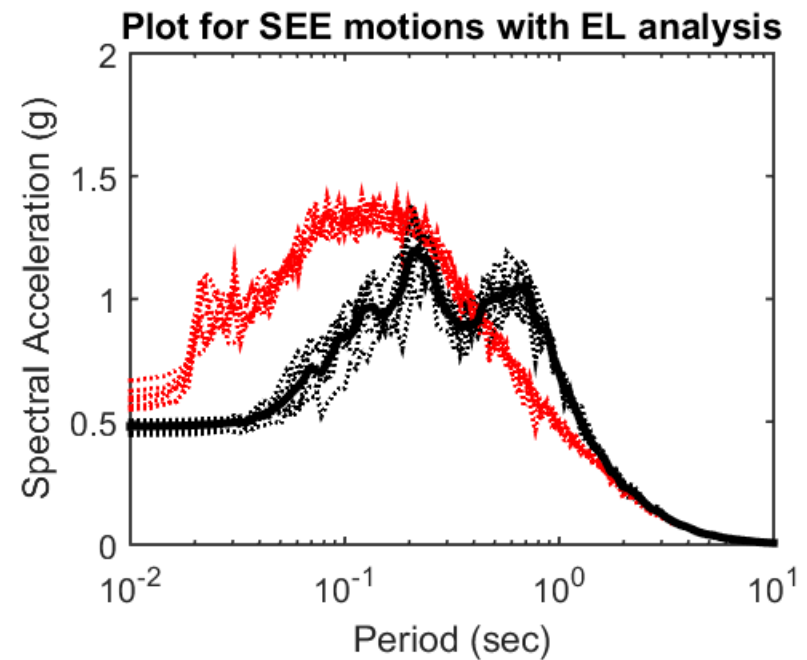
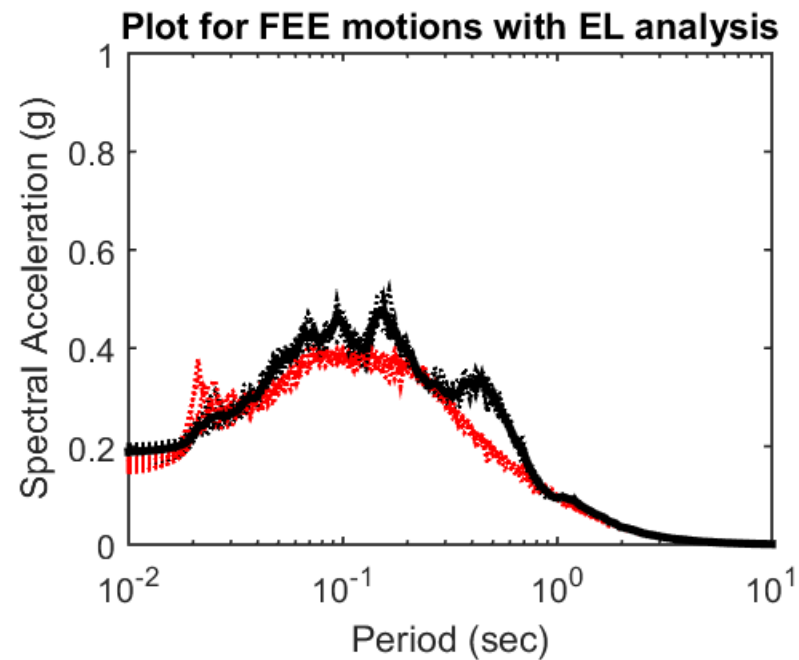
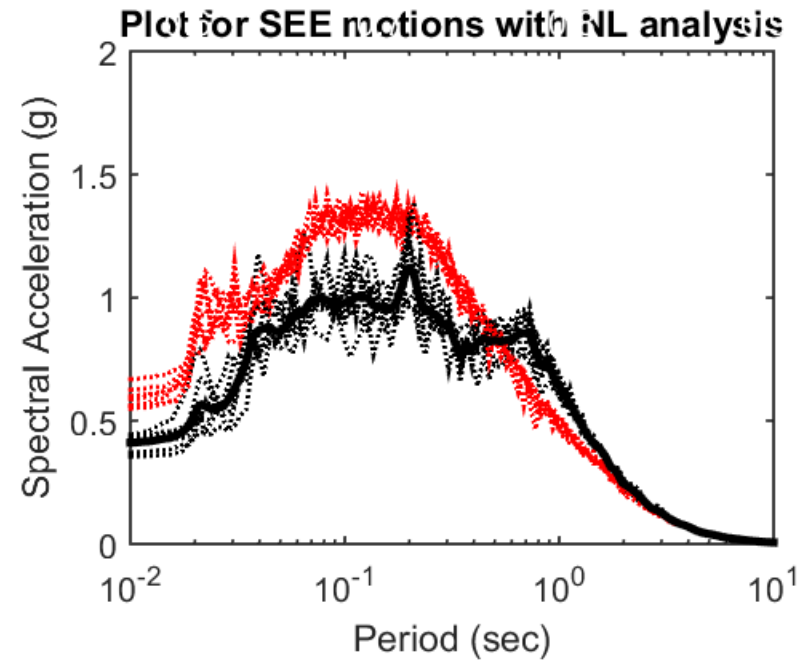
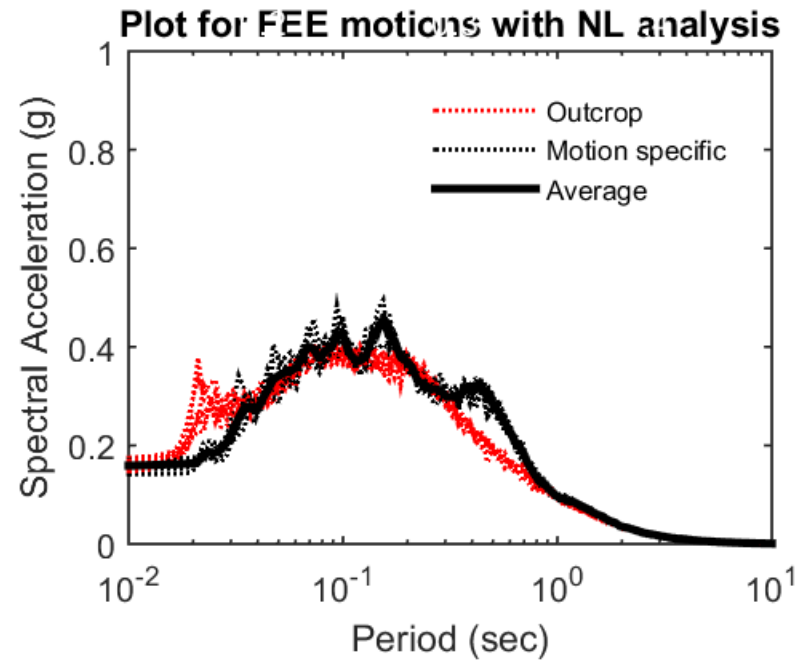




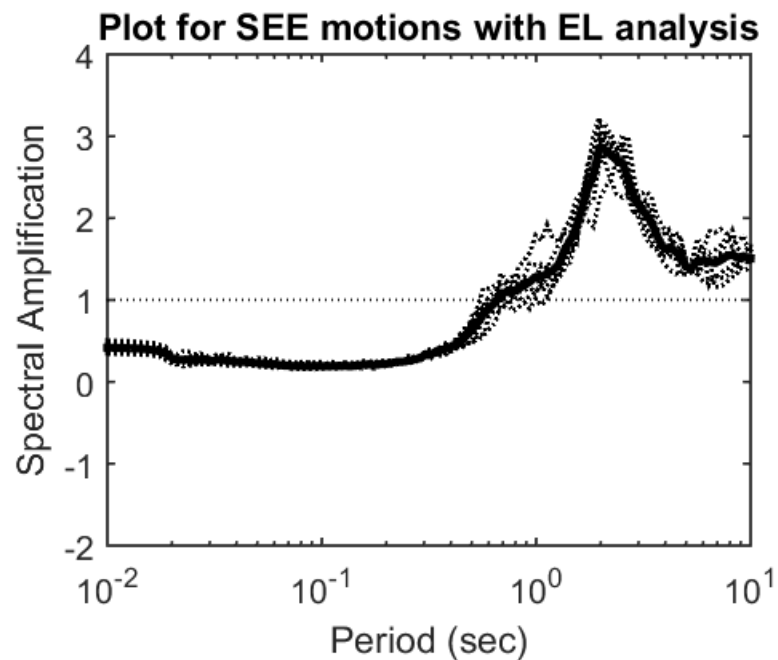
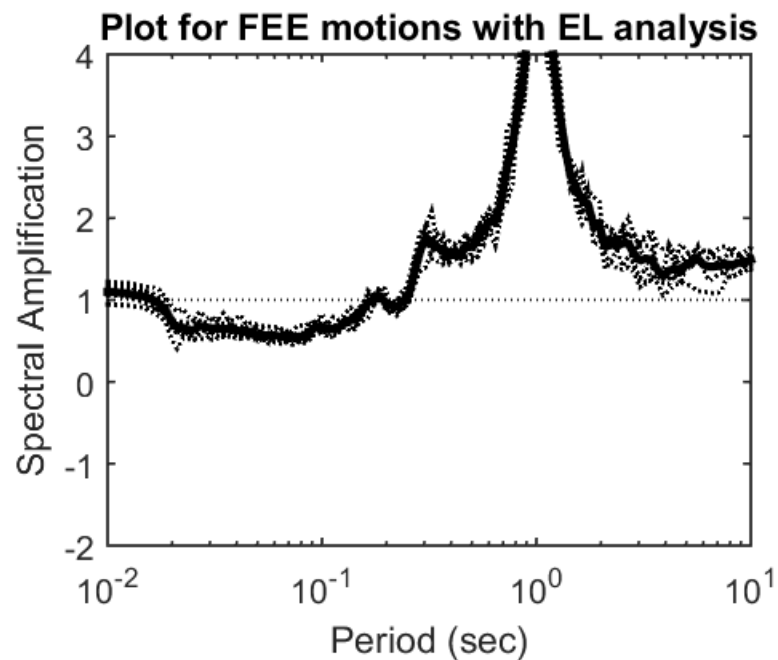
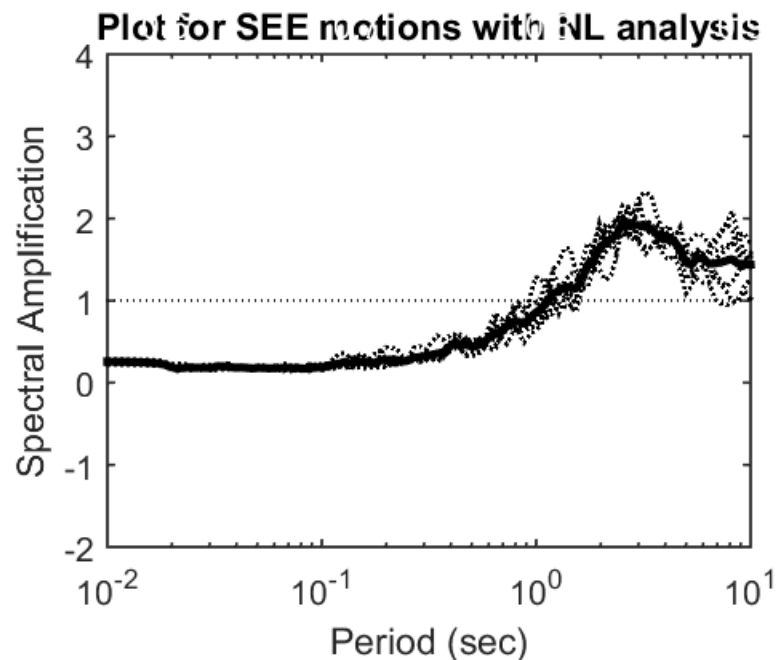
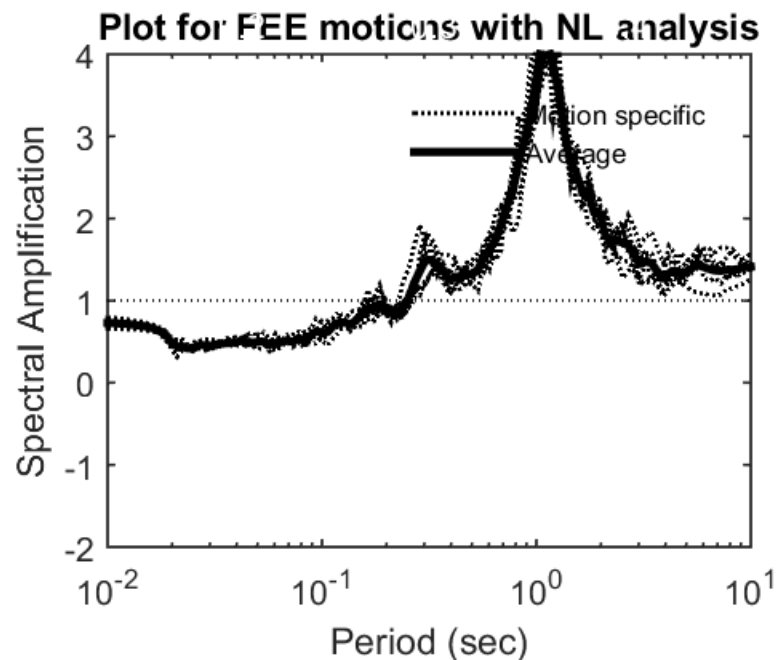
## Summary plots: RSA at ground surface



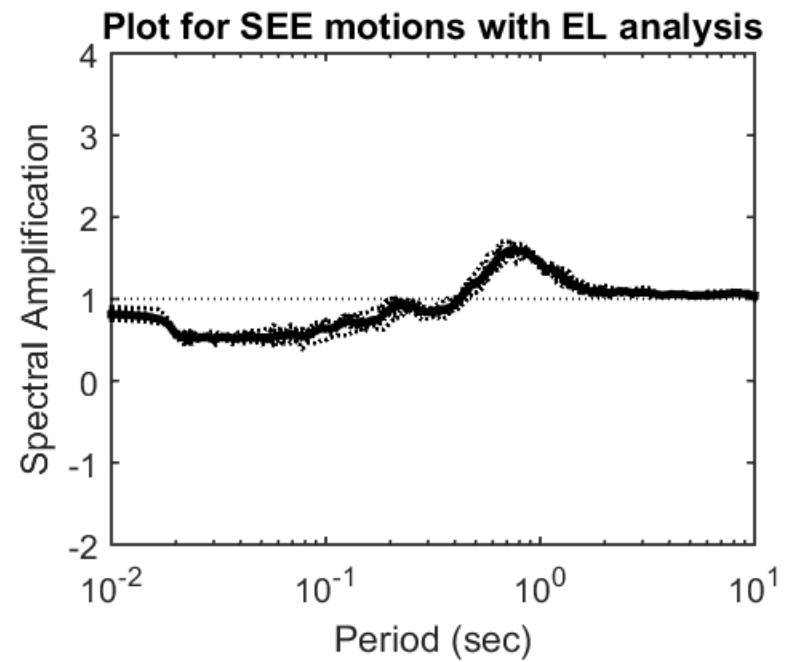
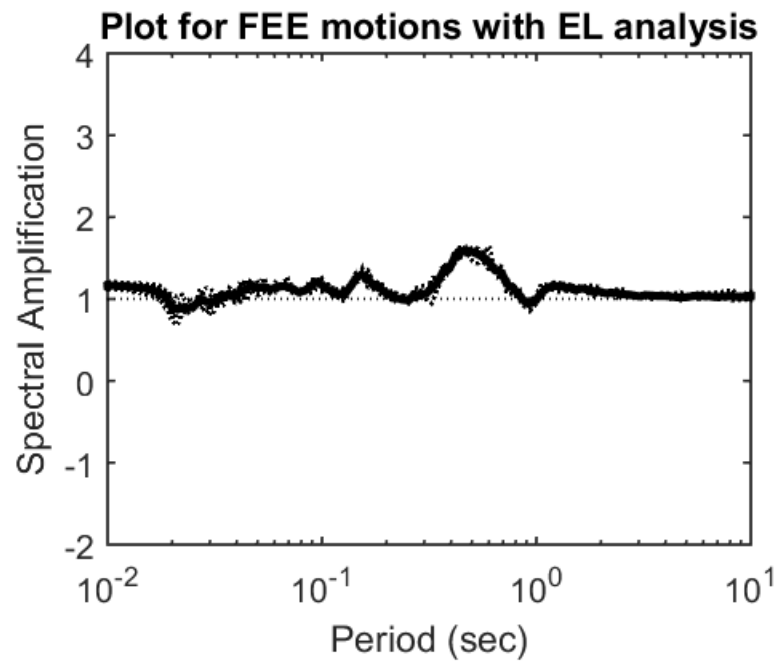
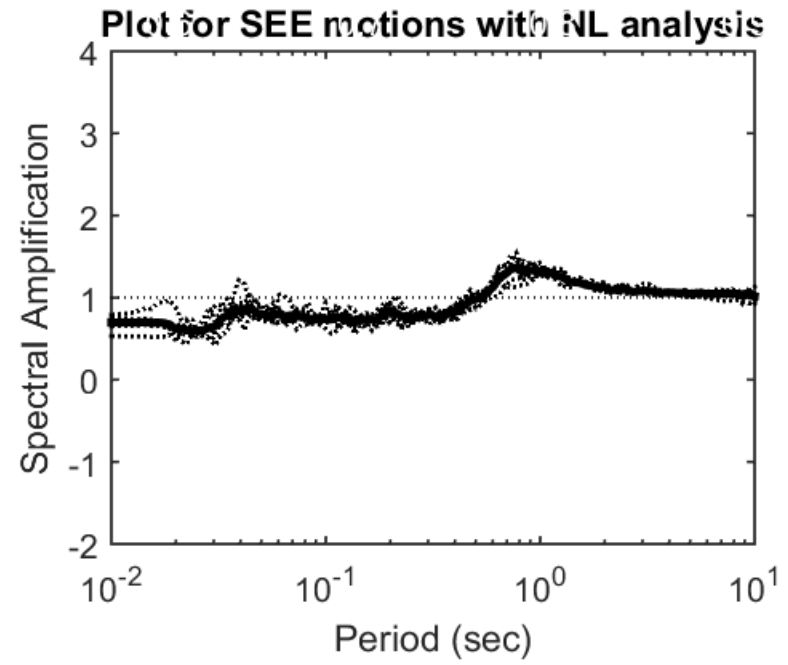
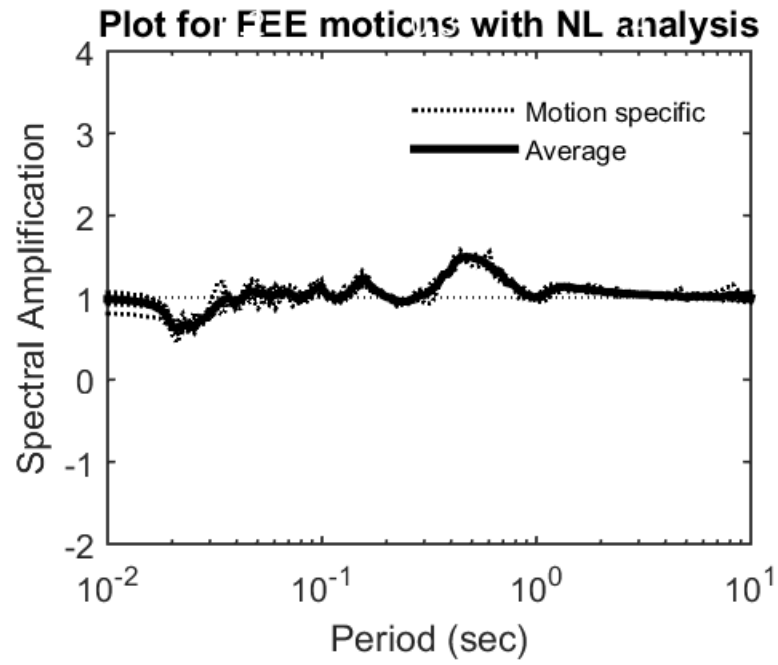
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

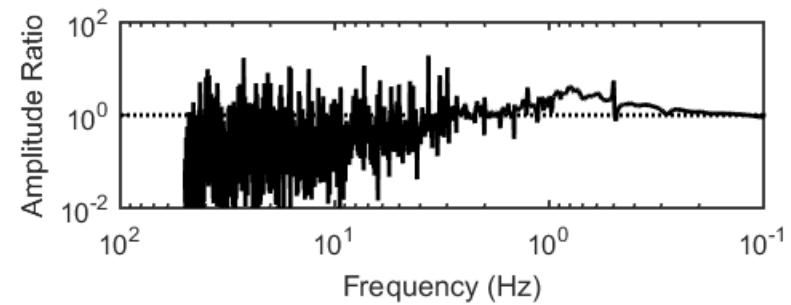
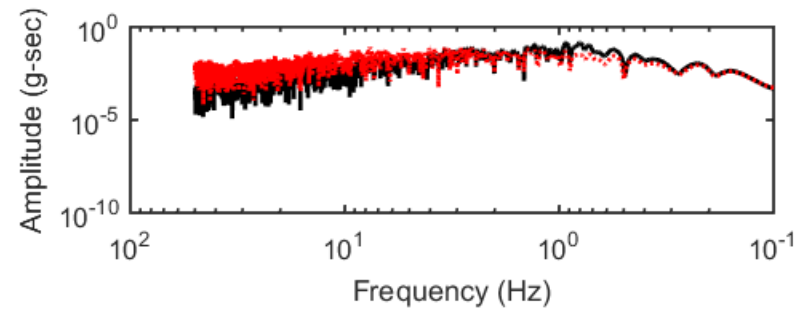
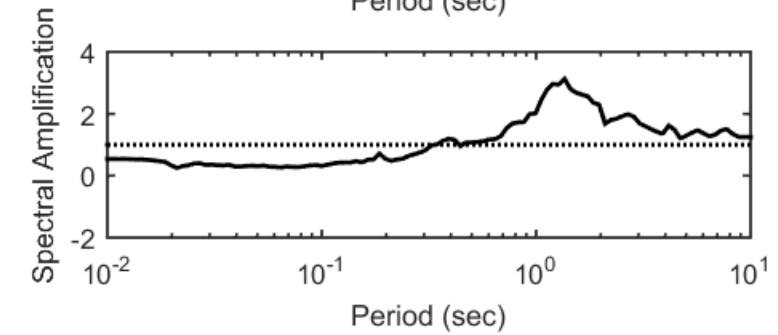
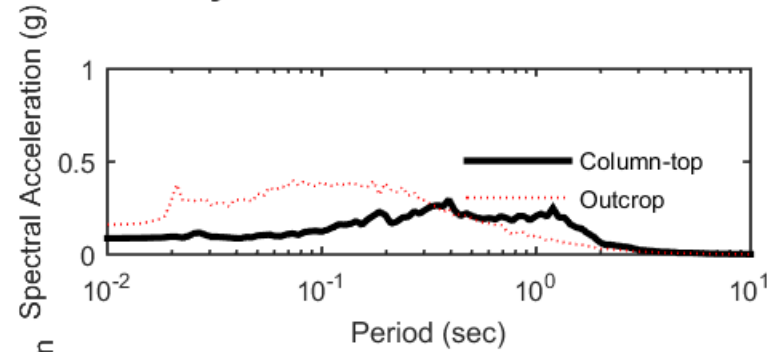
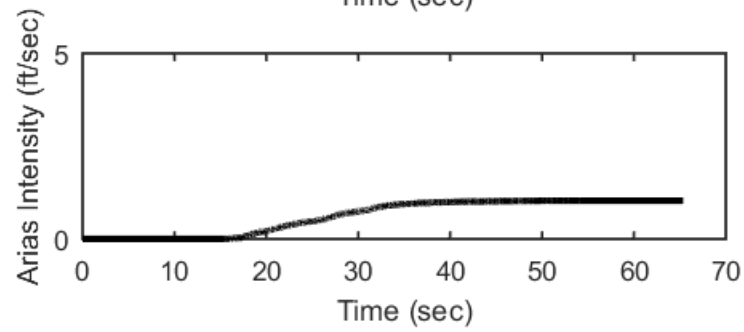
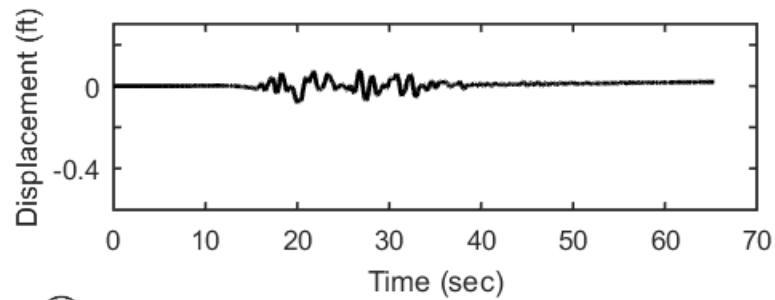
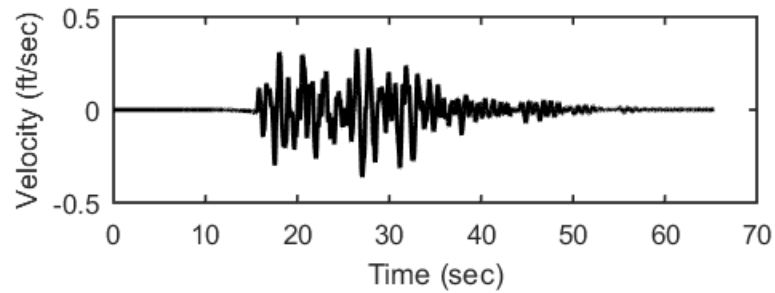
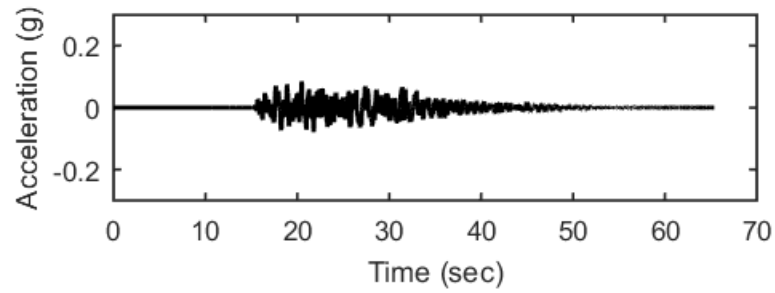


## Summary plots: Spectral amplification at top of Marl

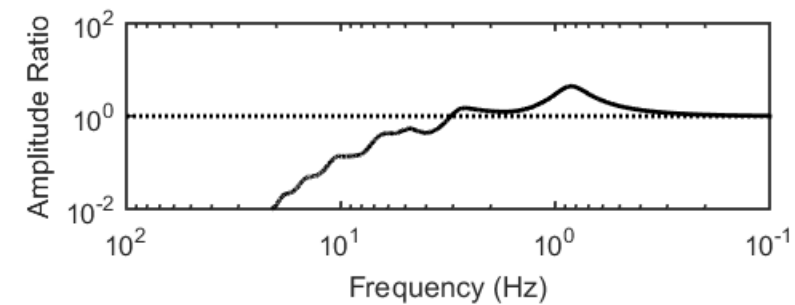
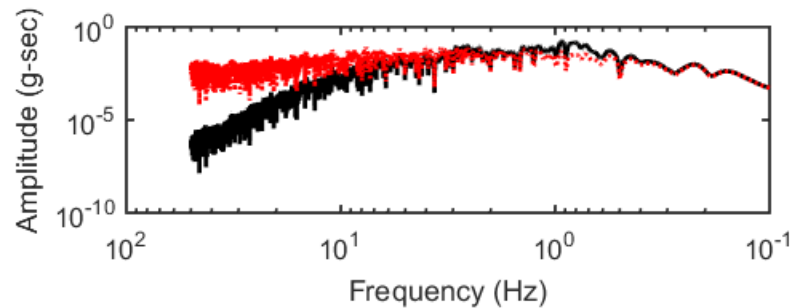
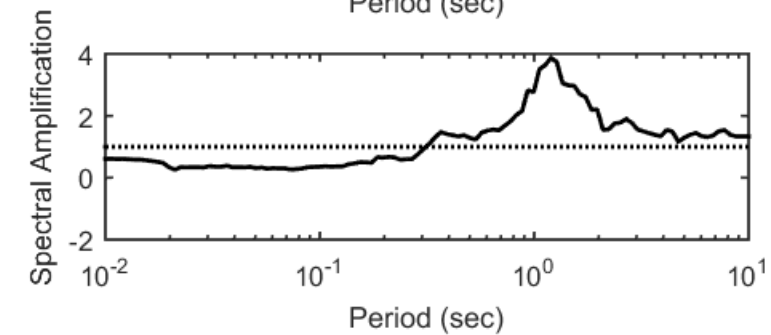
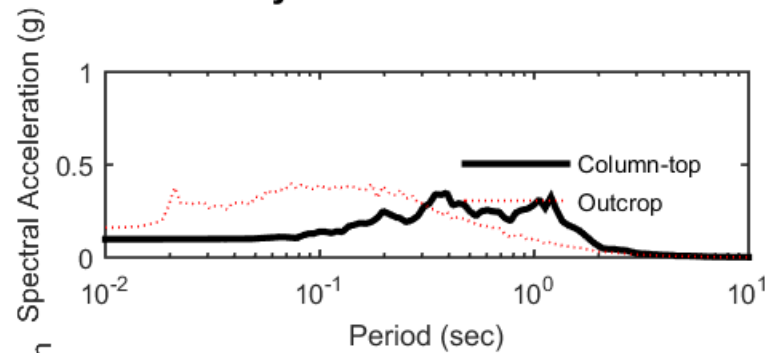
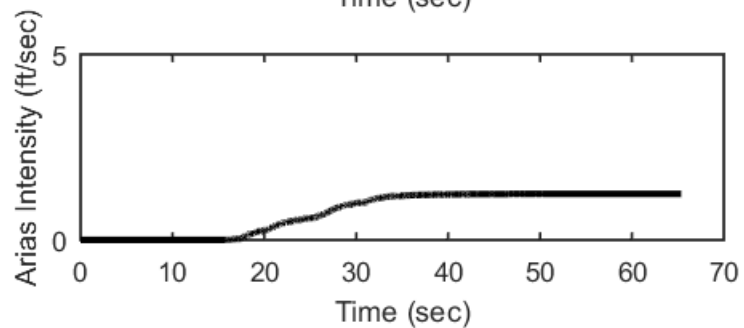
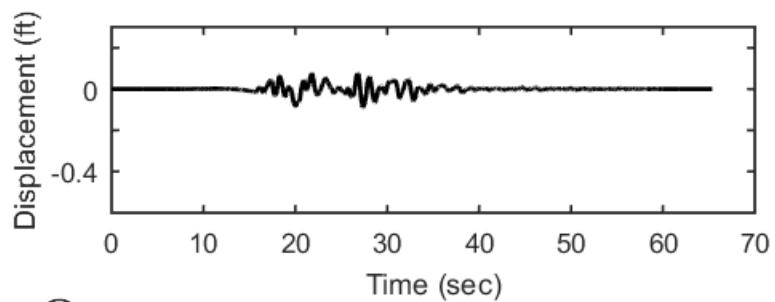
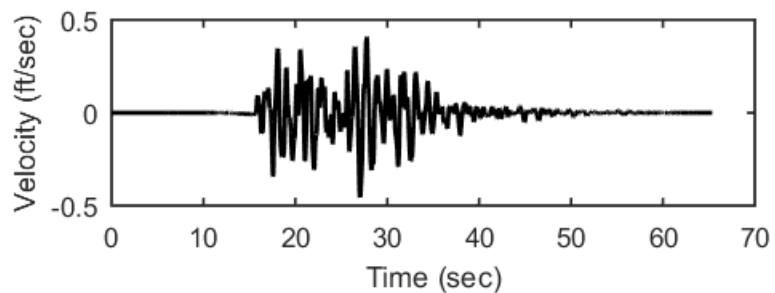
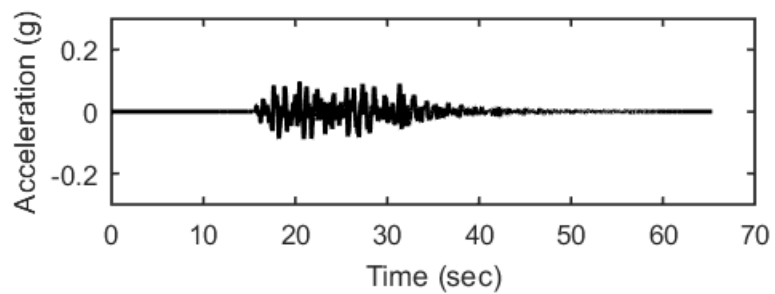


# **BASE MODEL AND LOW PLASTICITY INDEX**

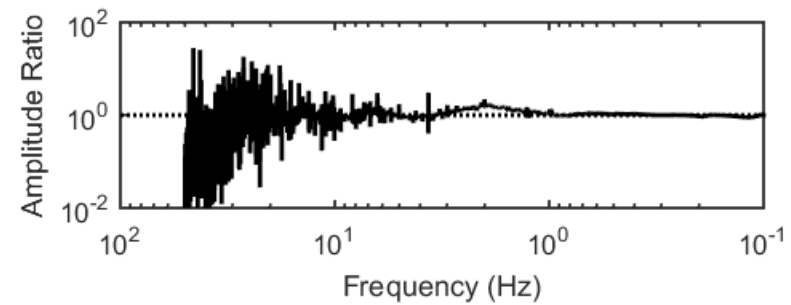
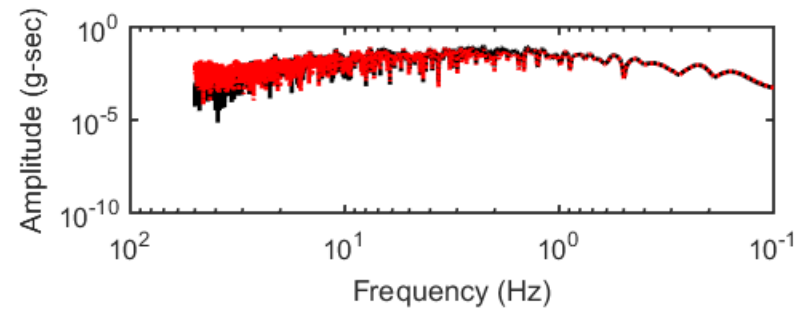
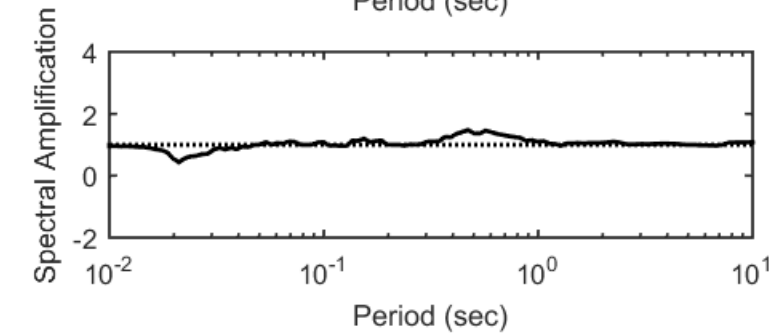
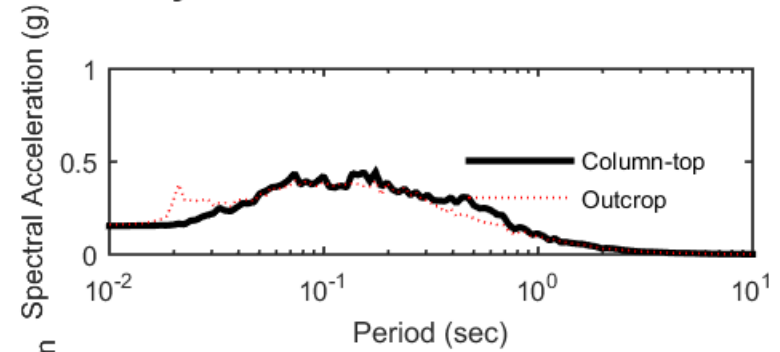
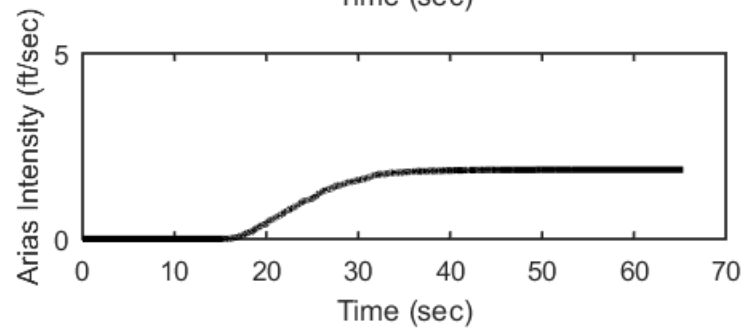
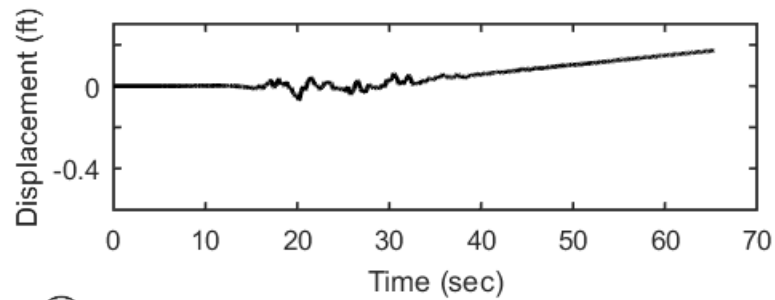
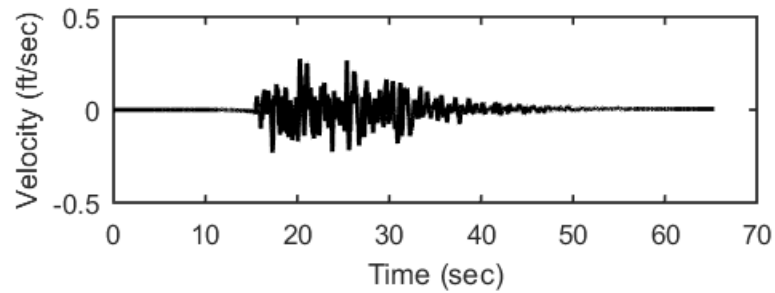
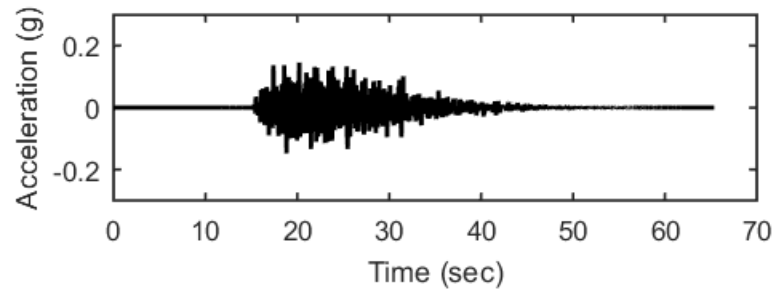
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1

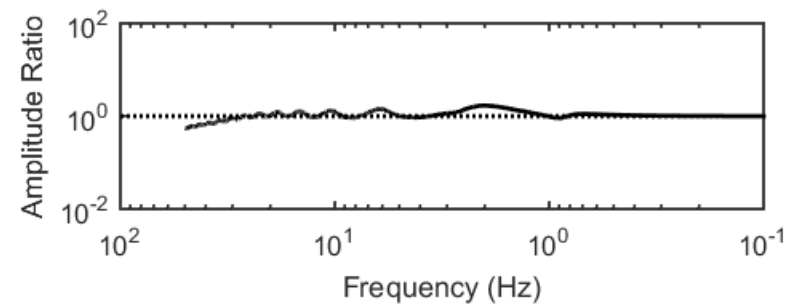
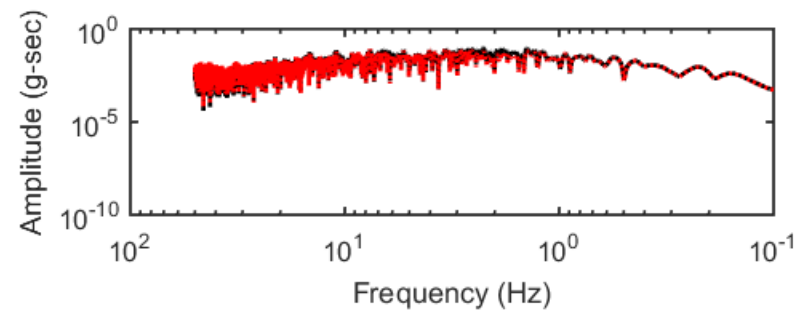
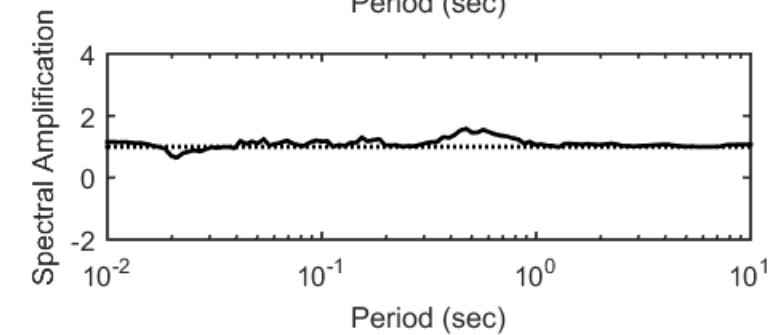
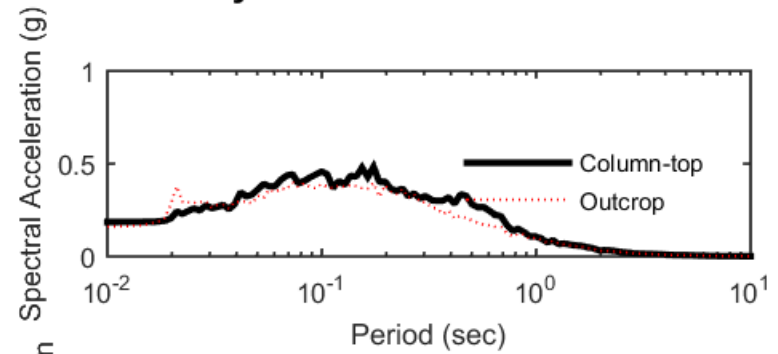
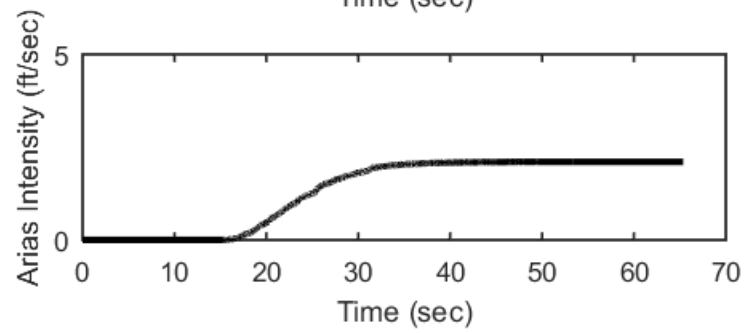
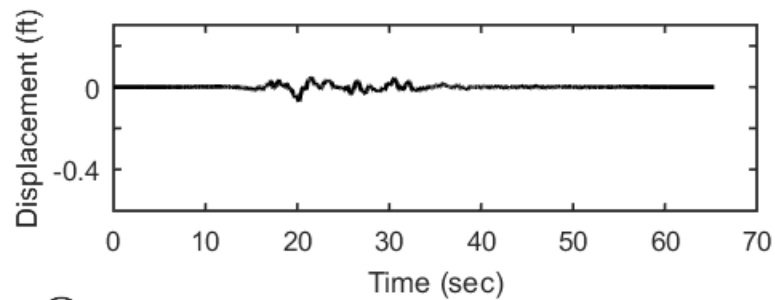
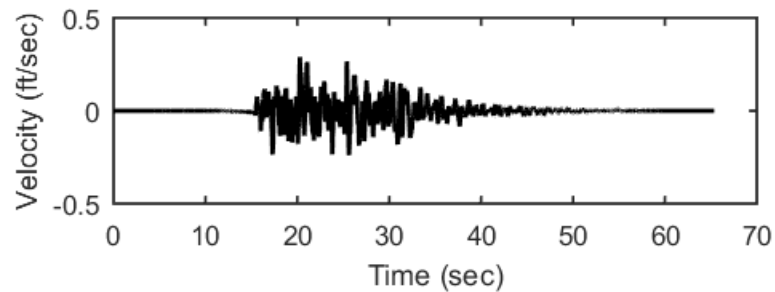
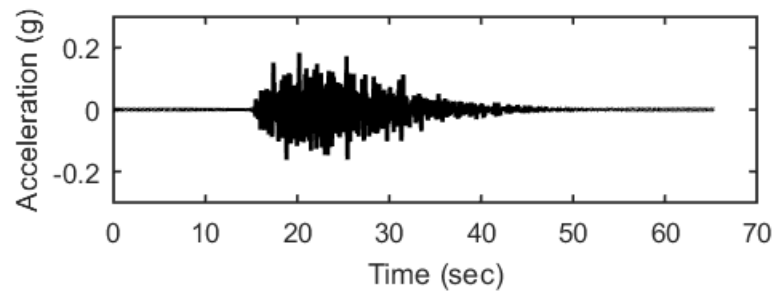


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1

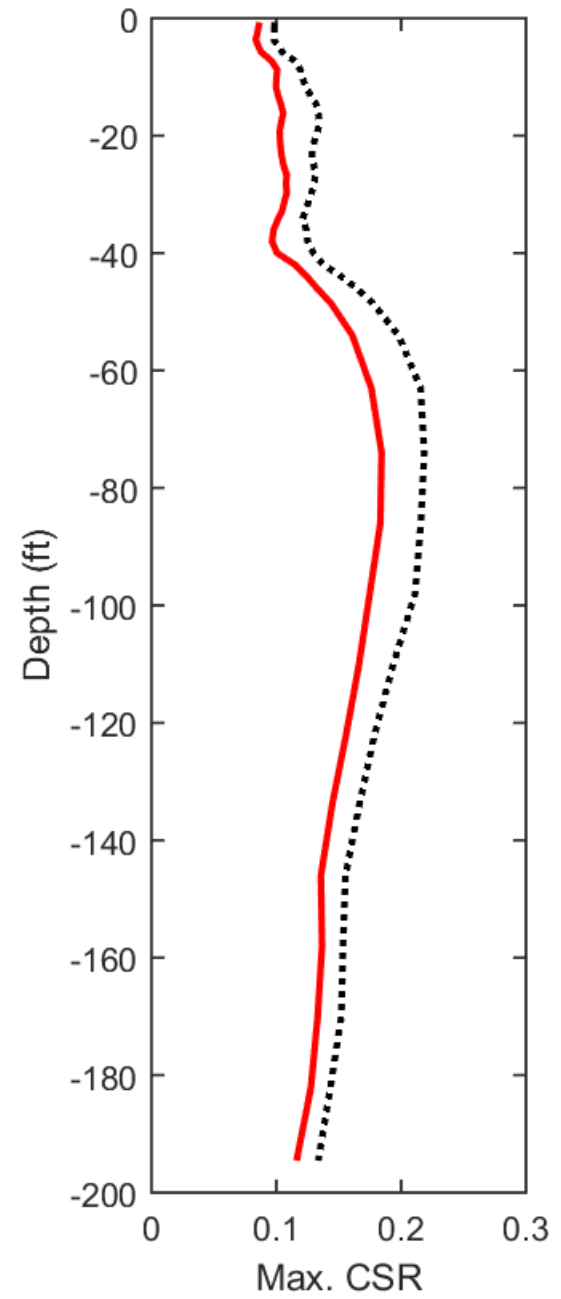
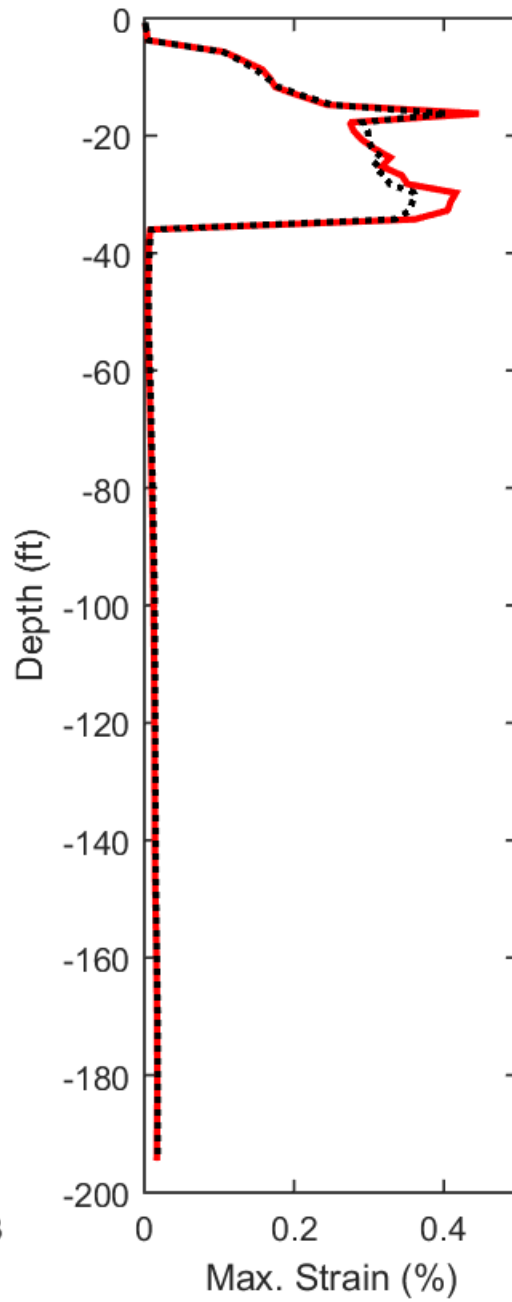
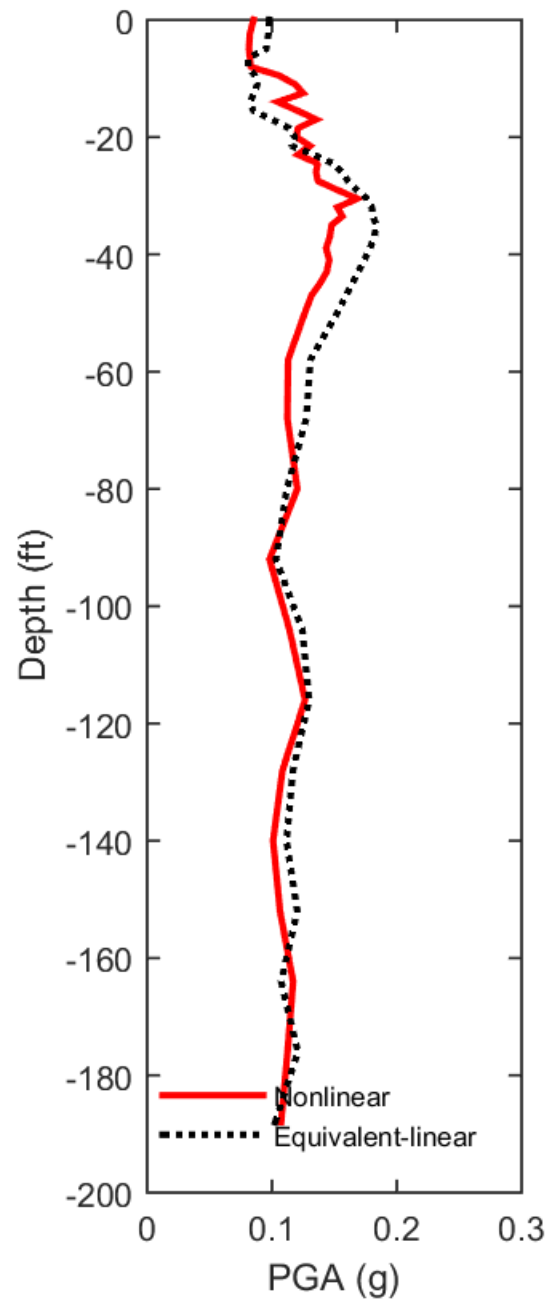




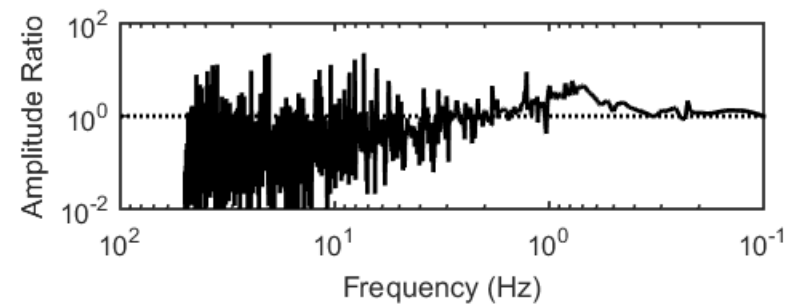
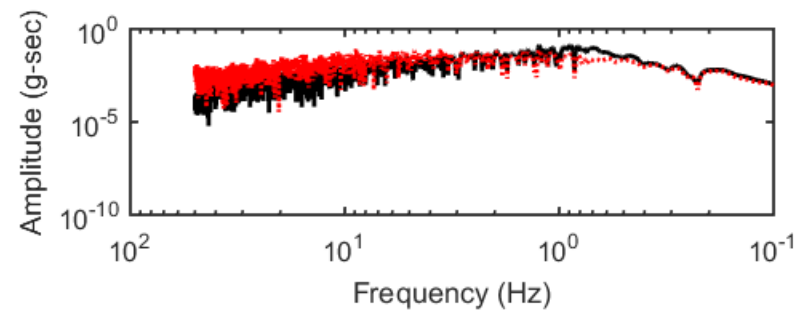
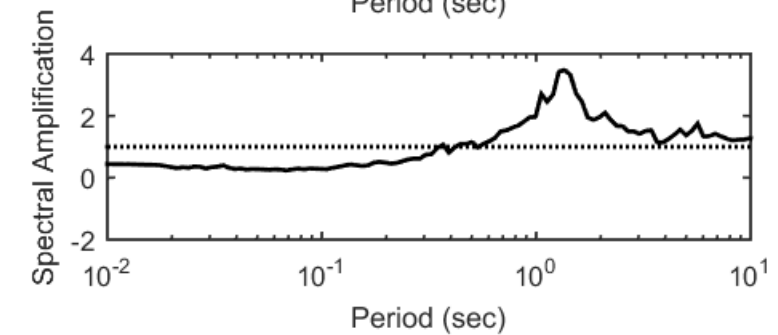
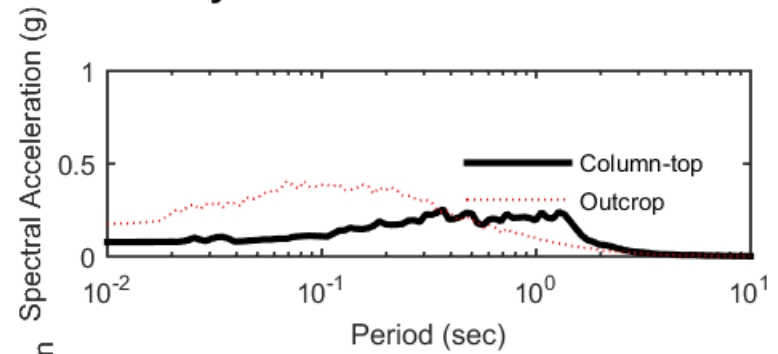
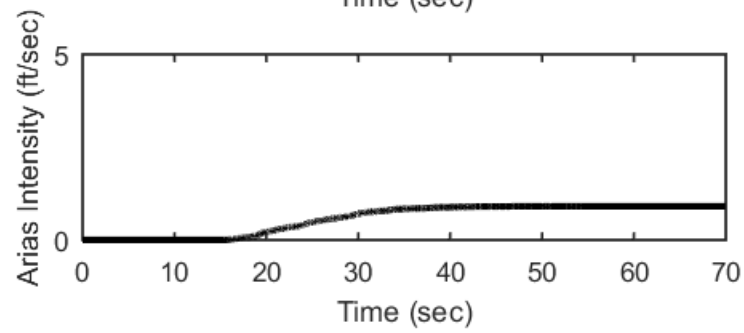
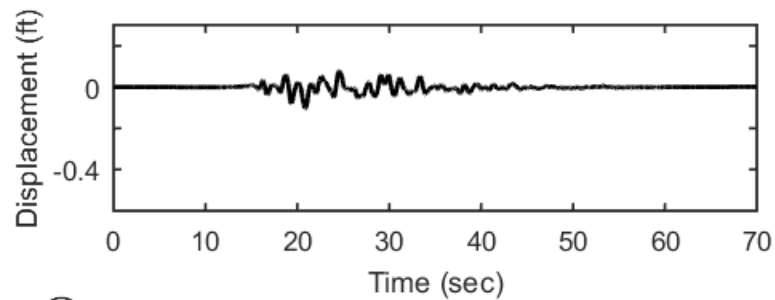
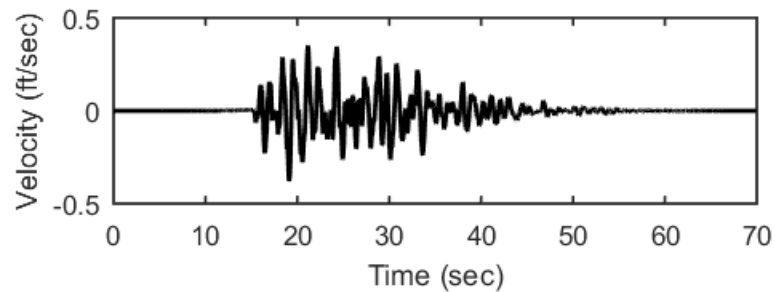
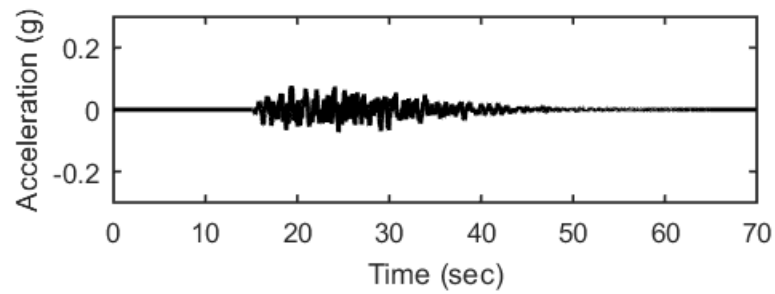
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



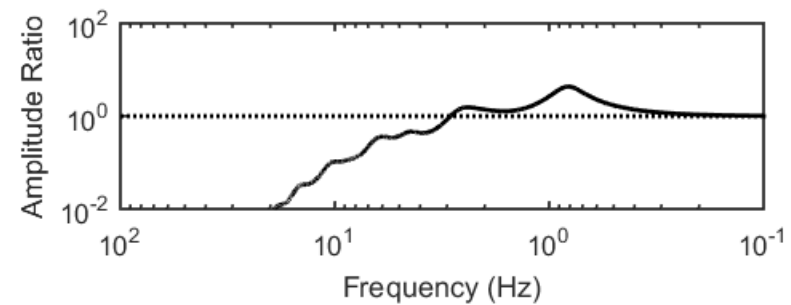
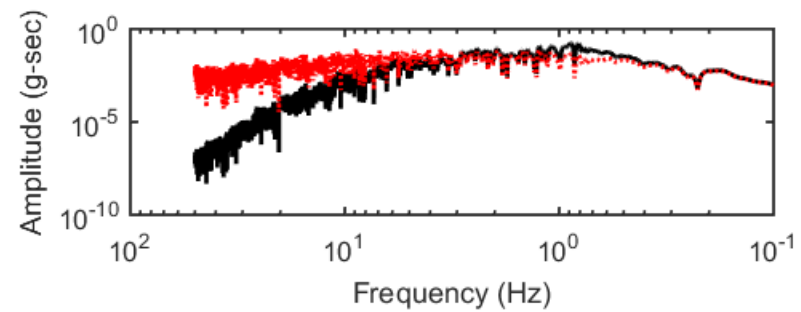
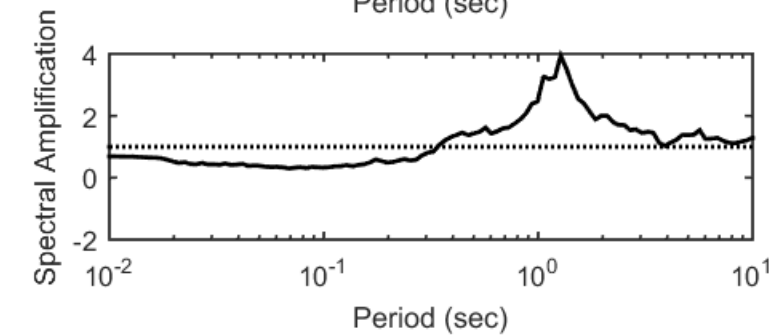
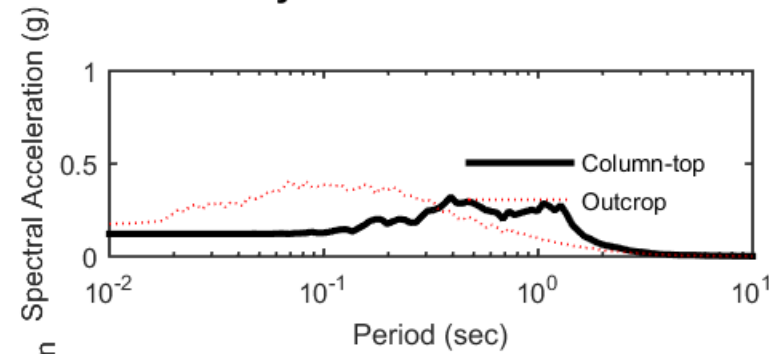
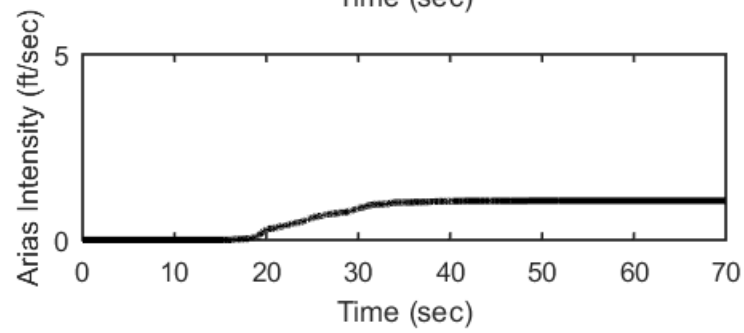
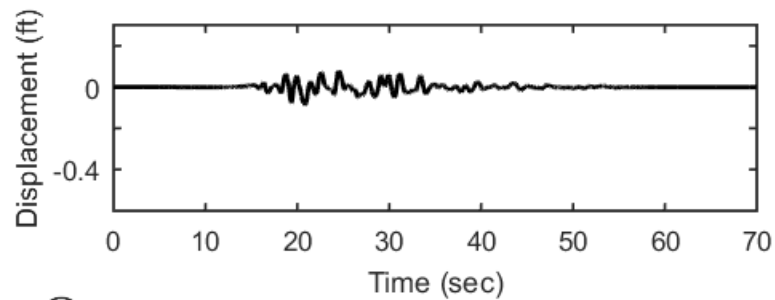
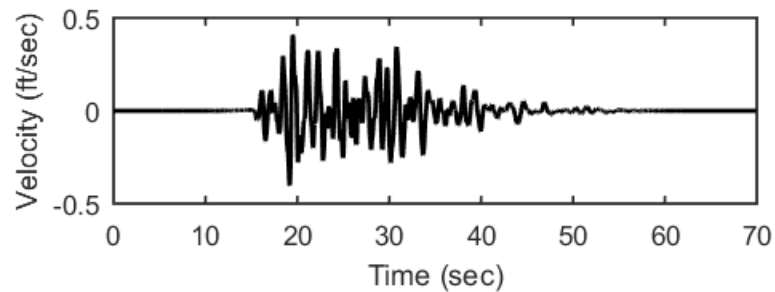
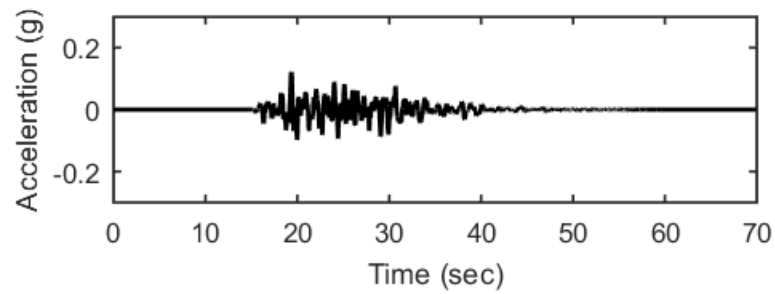
### Profile outputs for Motion: FEE1



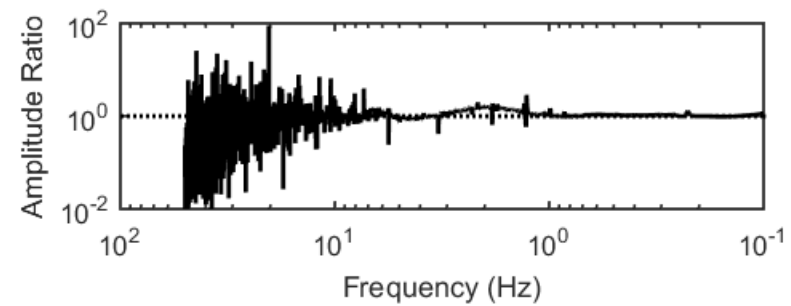
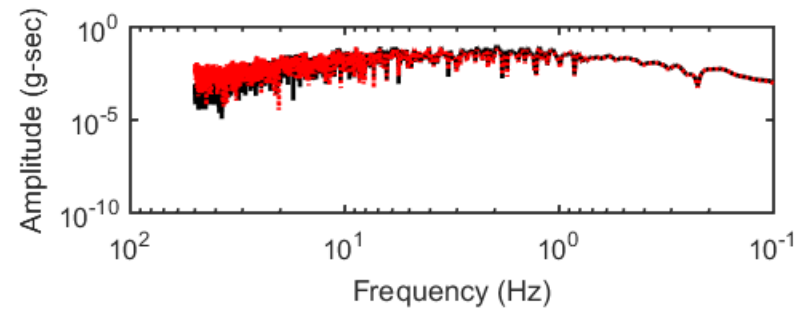
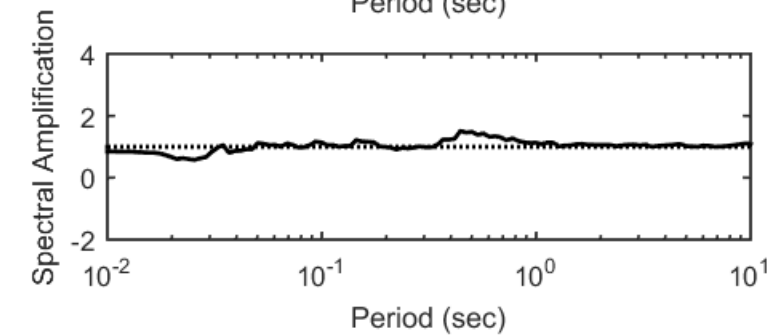
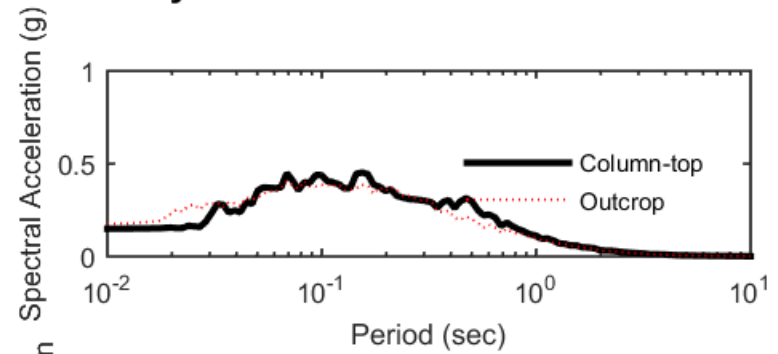
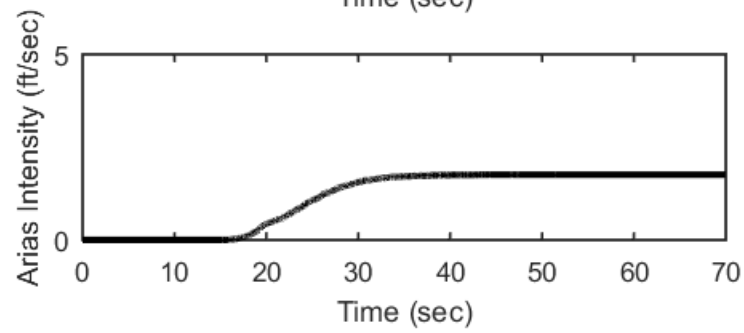
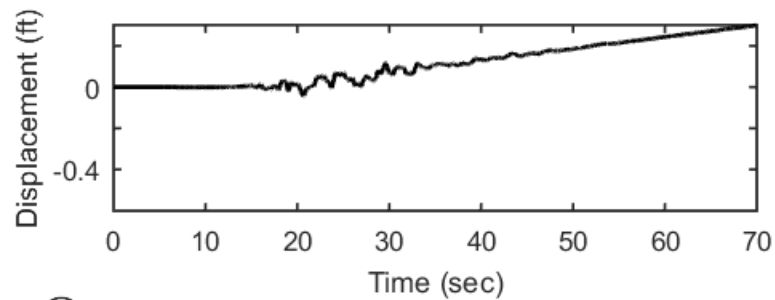
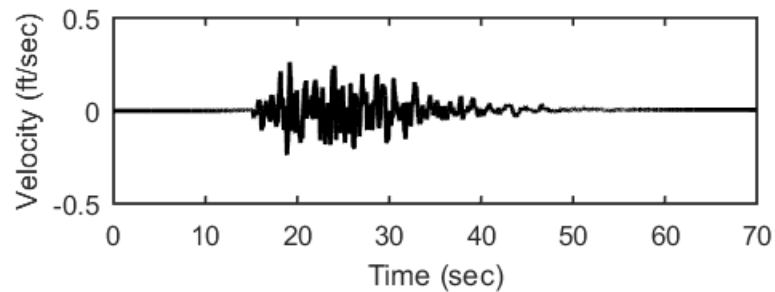
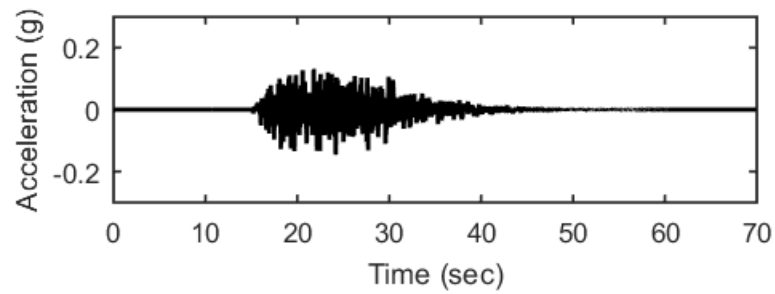
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



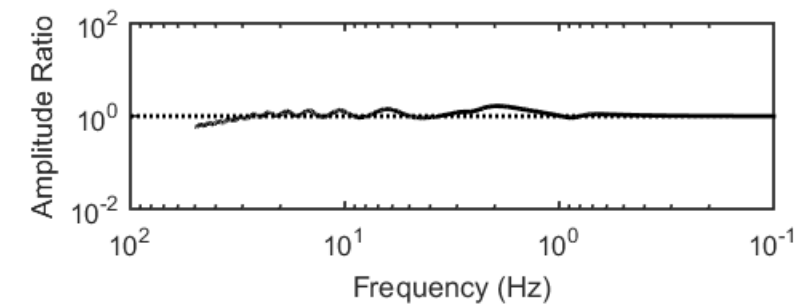
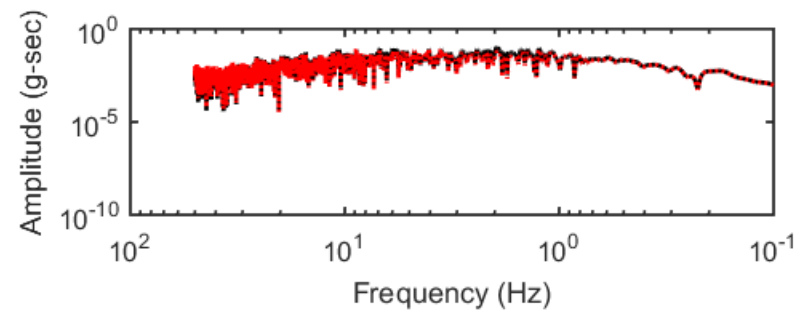
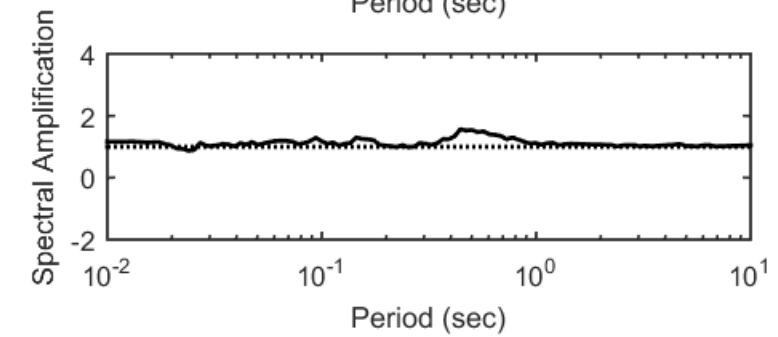
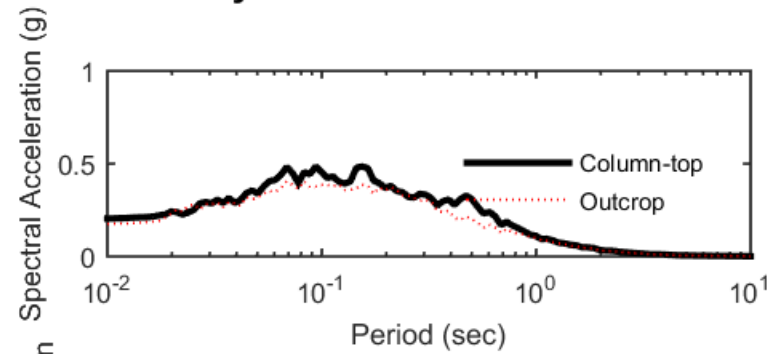
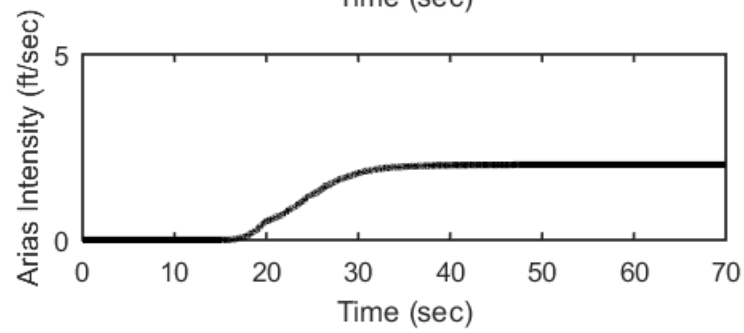
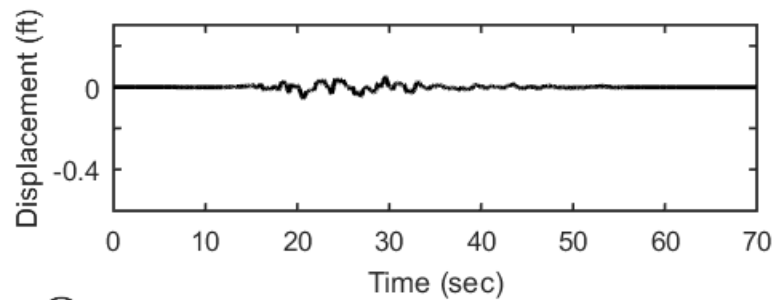
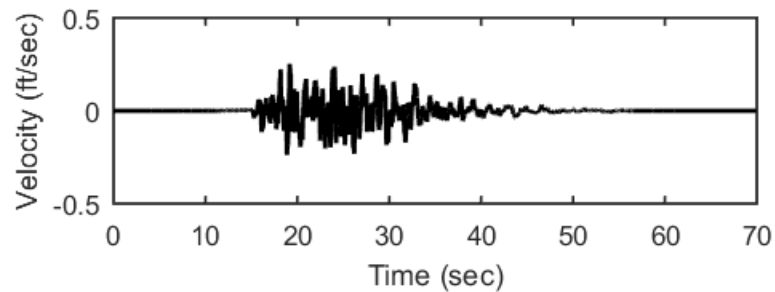
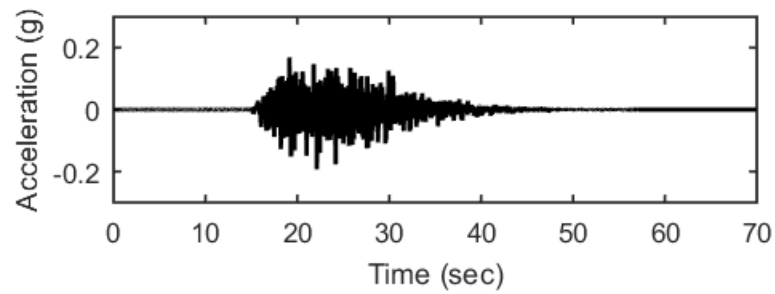
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



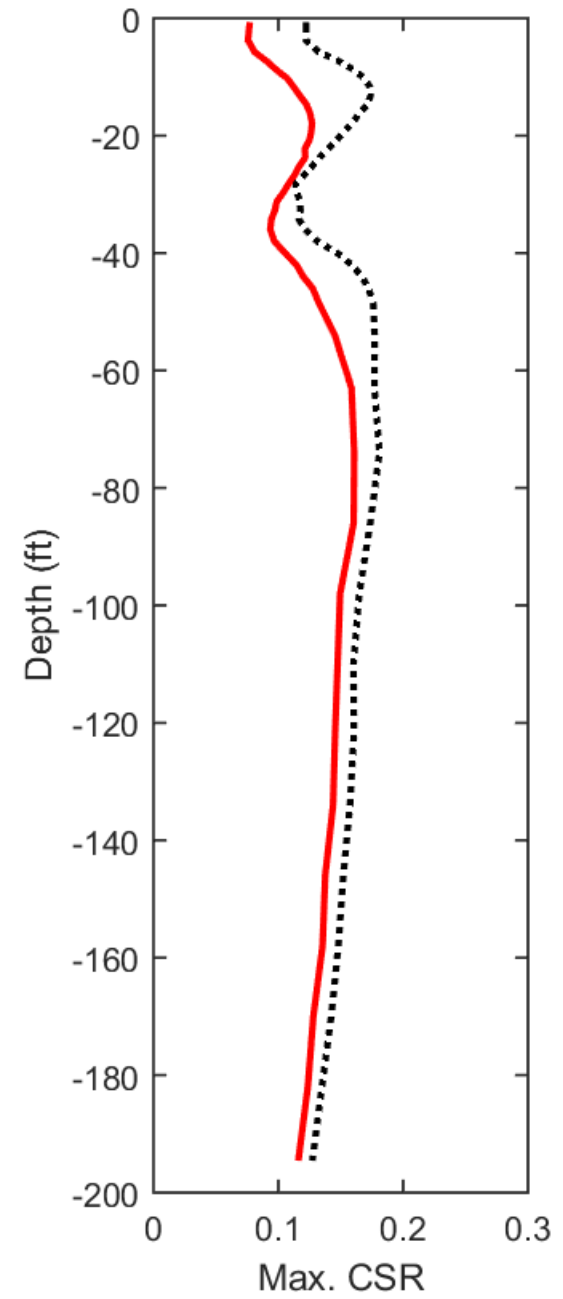
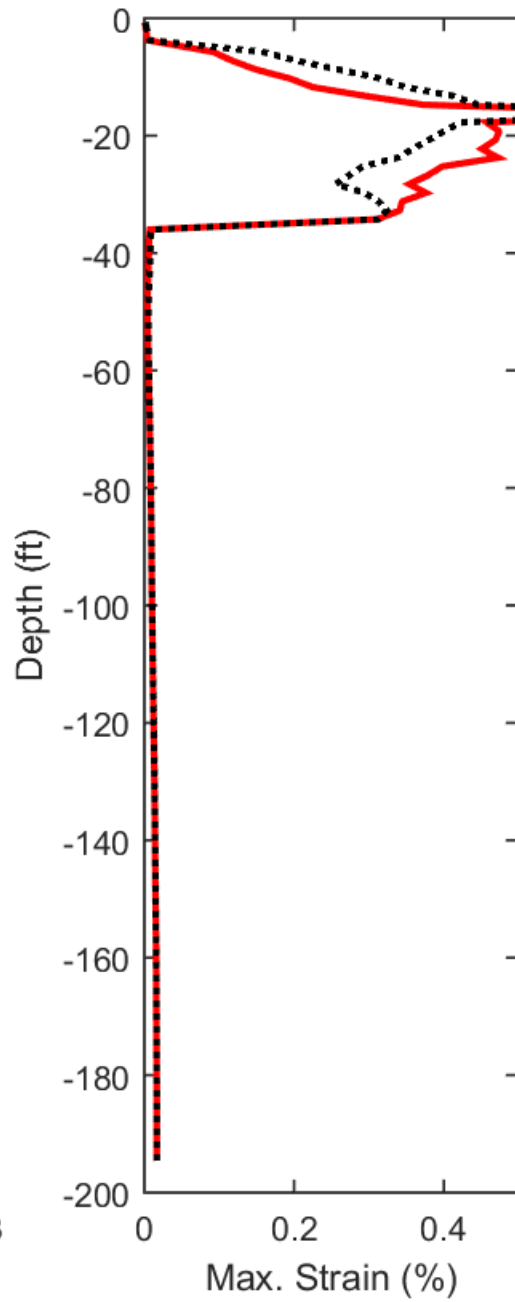
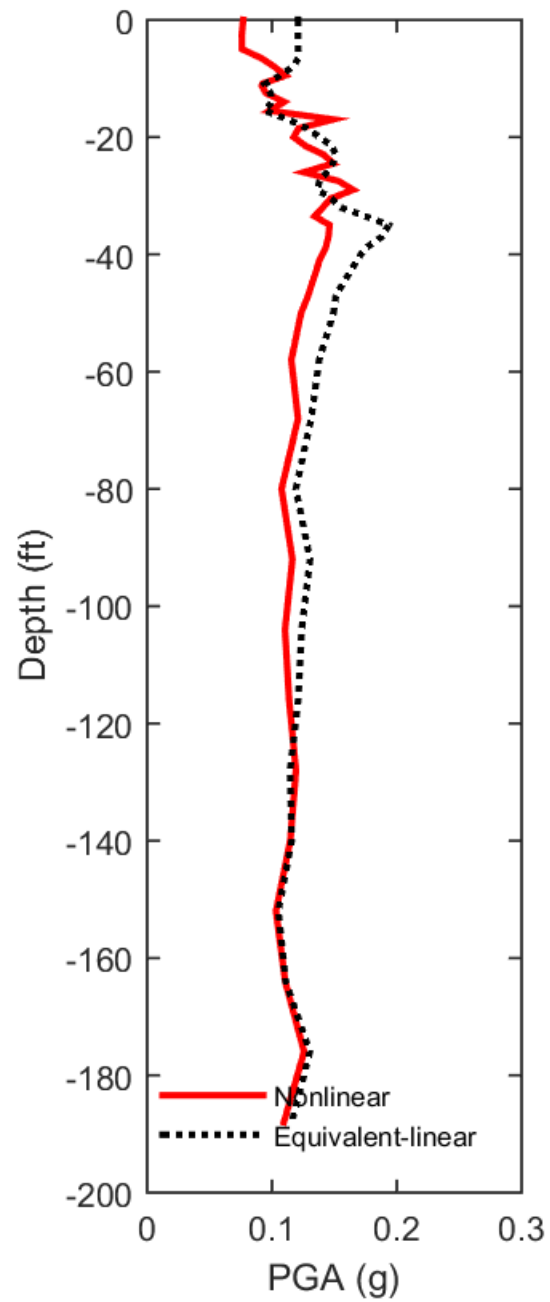
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



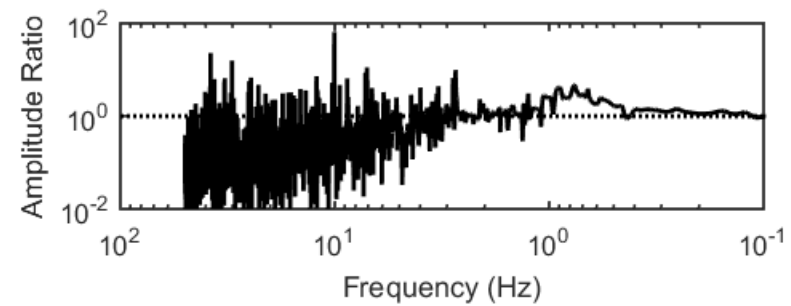
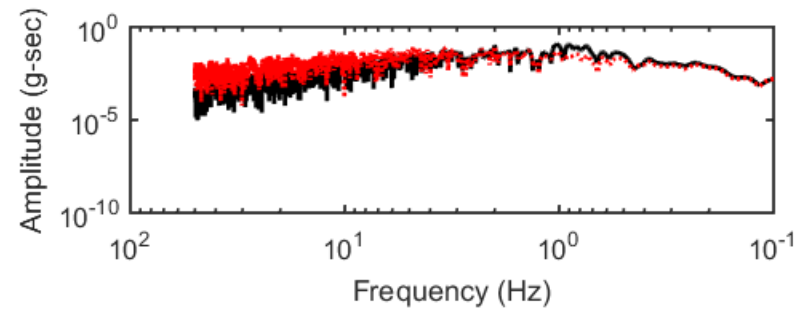
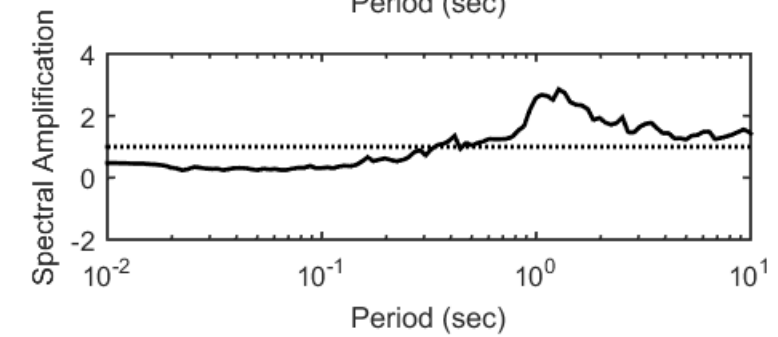
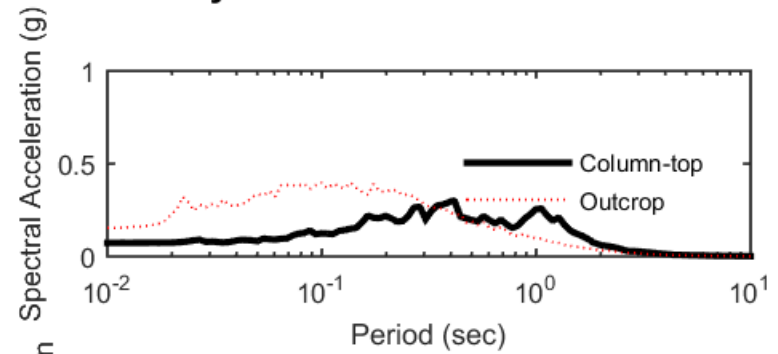
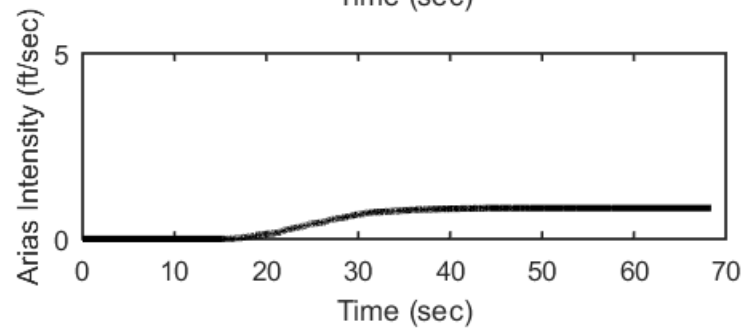
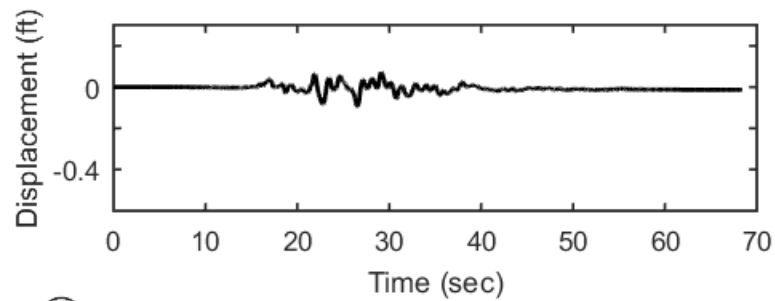
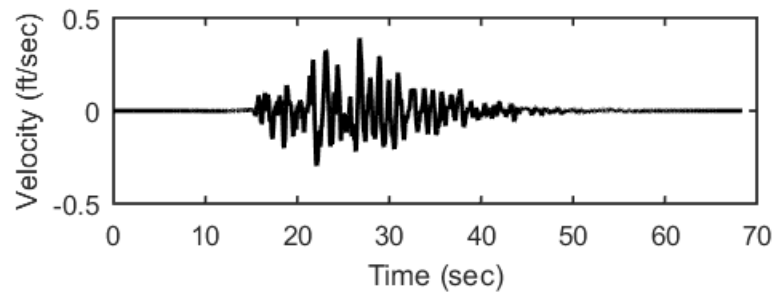
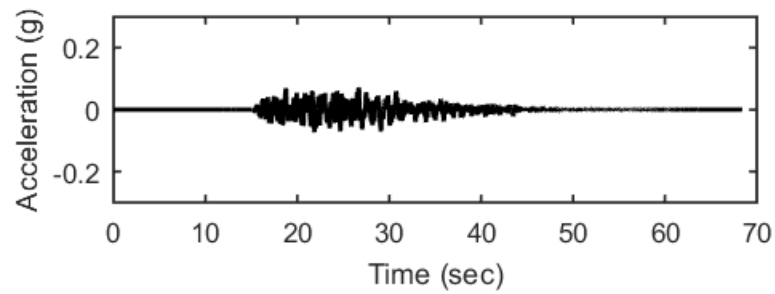
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



### Profile outputs for Motion: FEE2

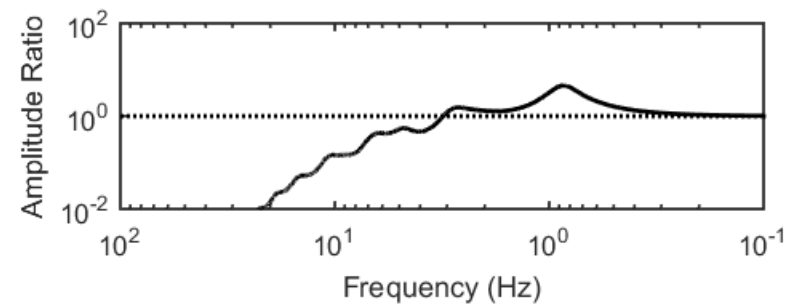
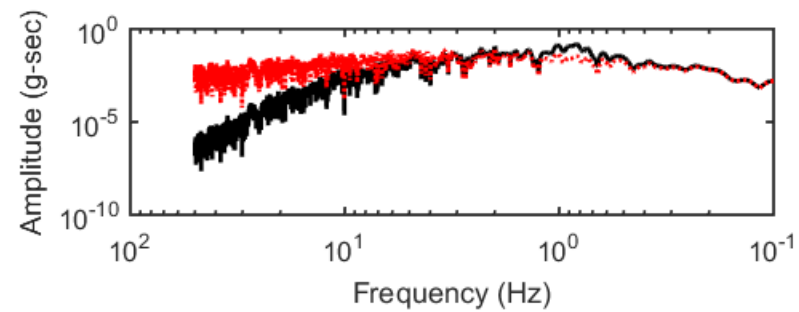
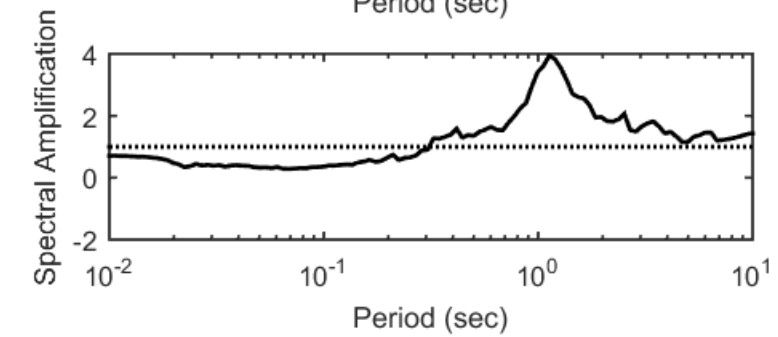
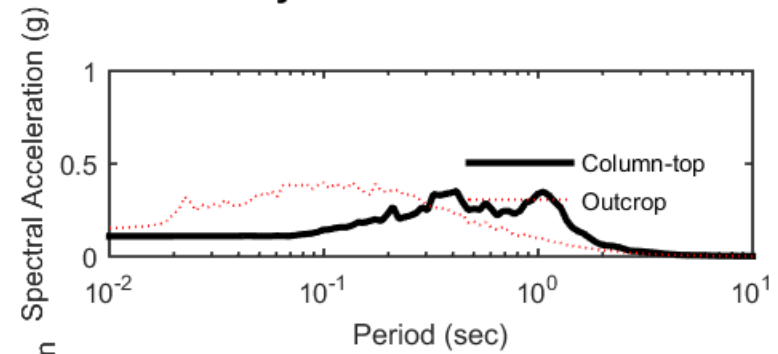
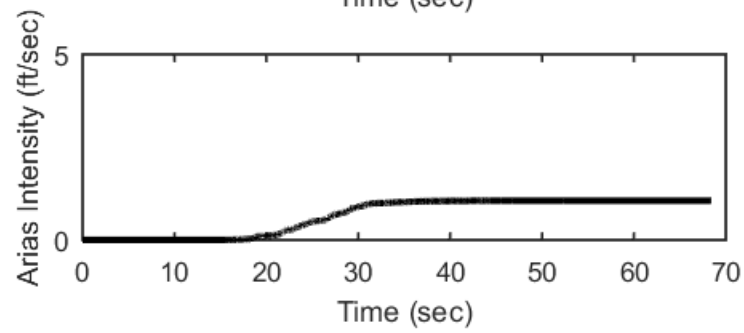
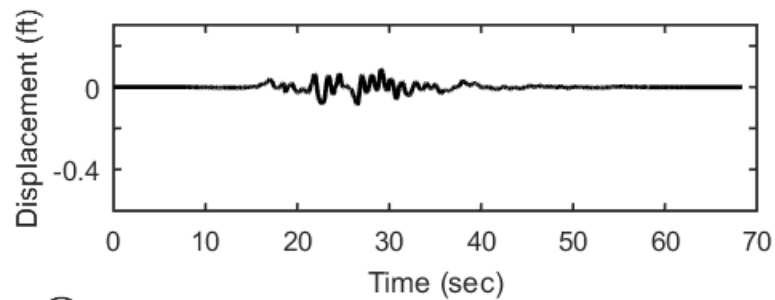
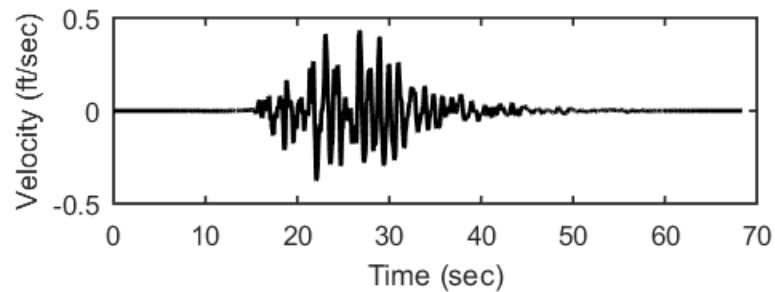
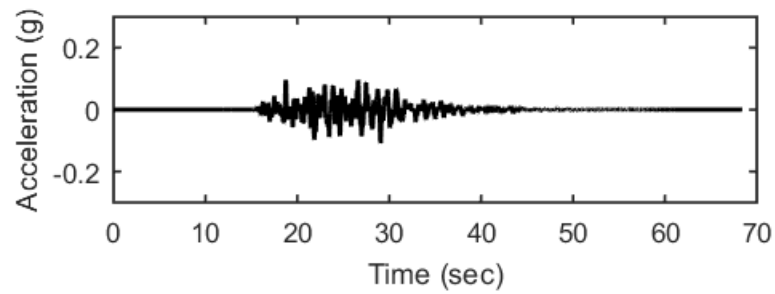


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3

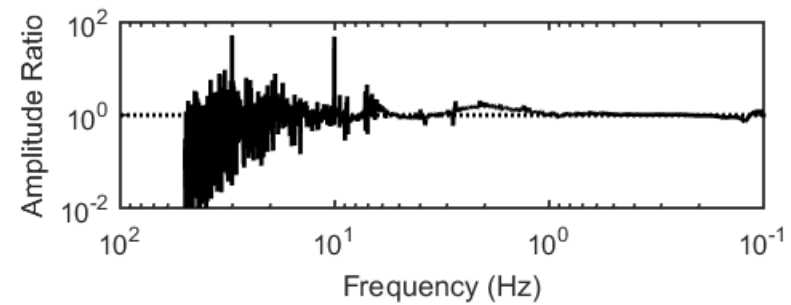
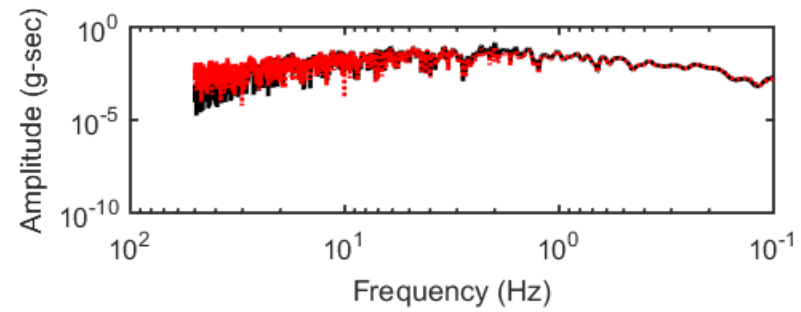
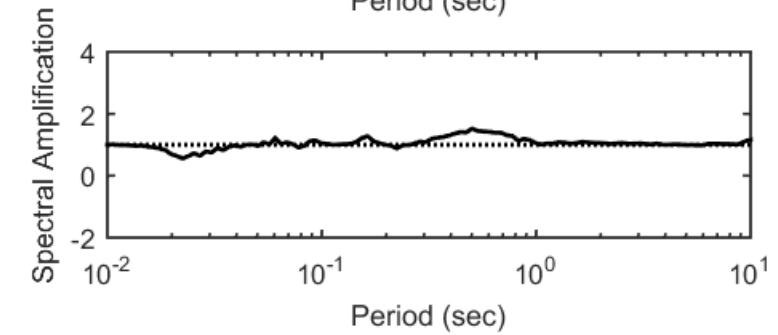
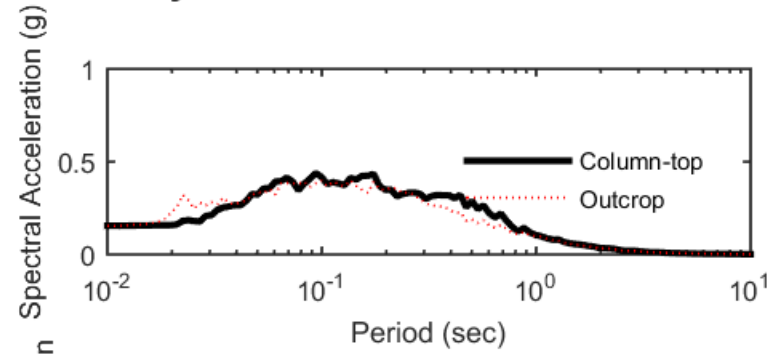
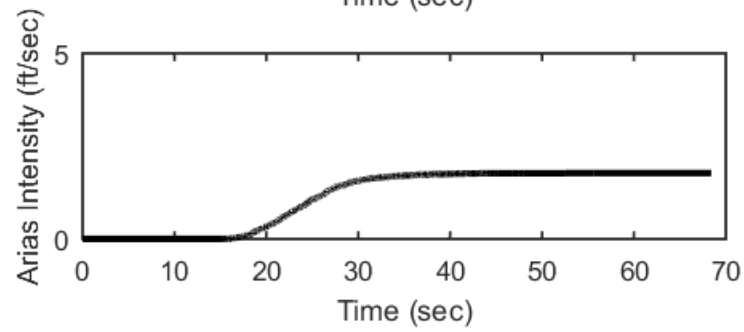
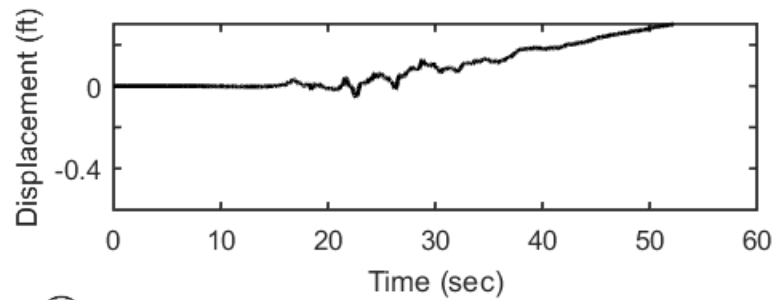
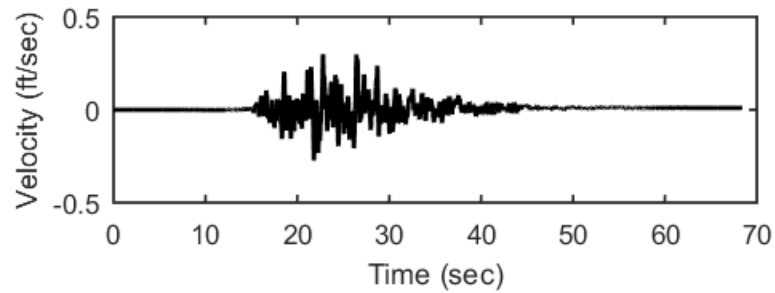
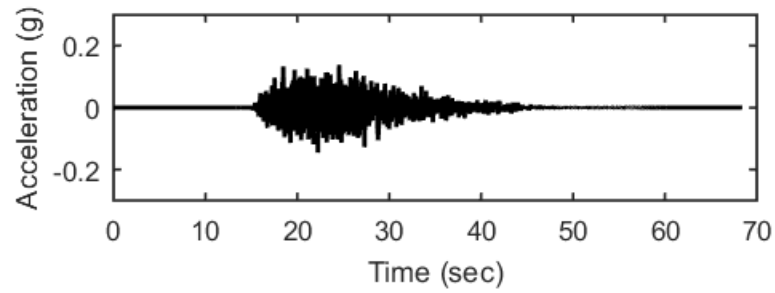




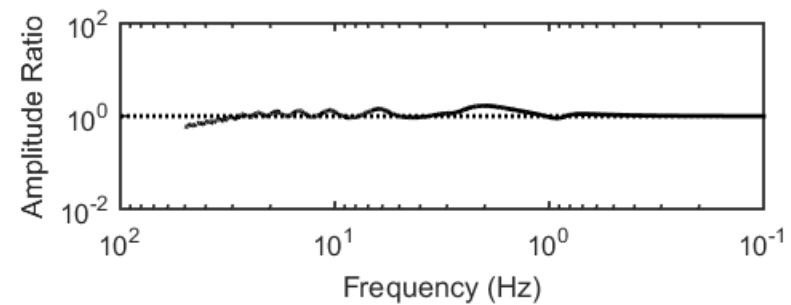
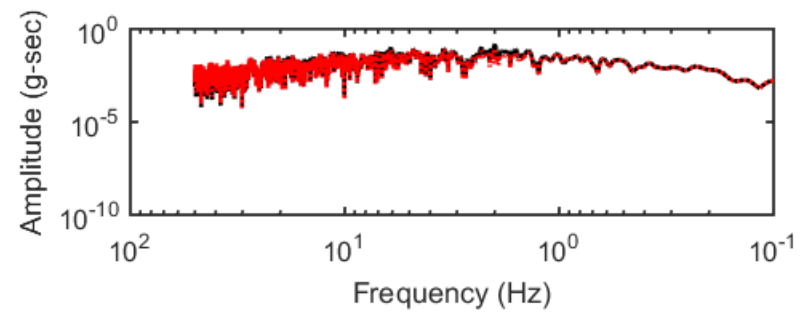
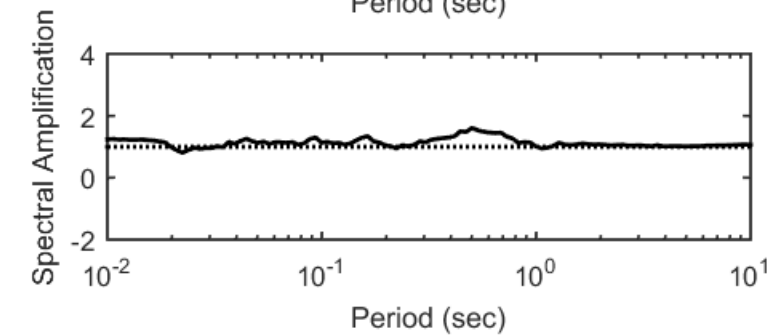
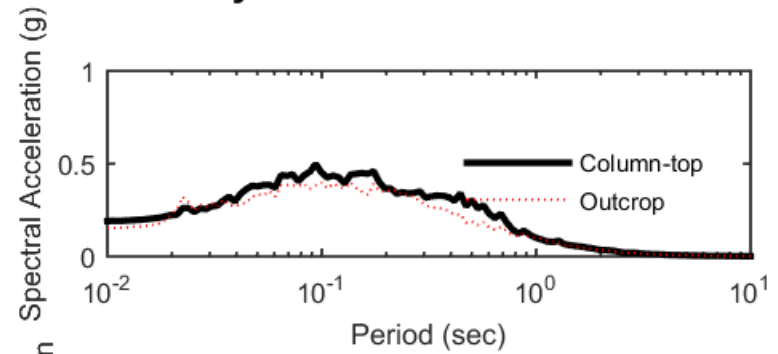
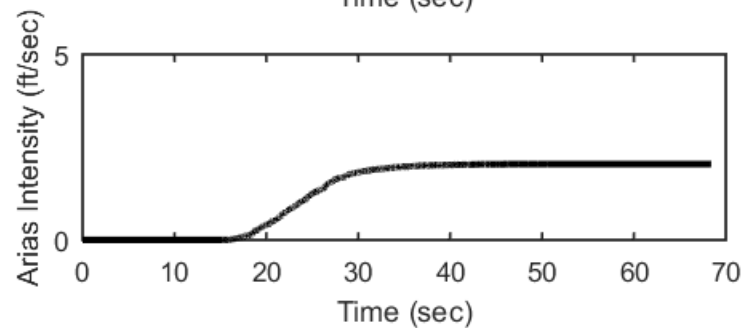
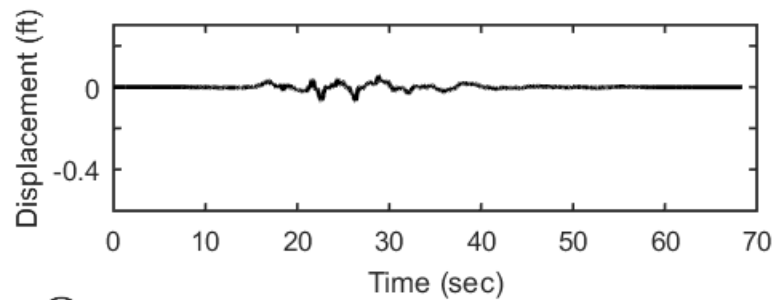
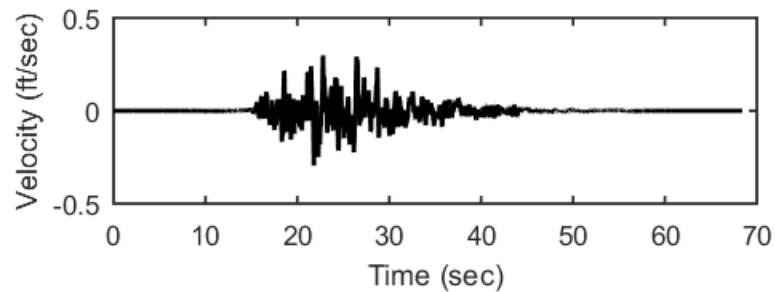
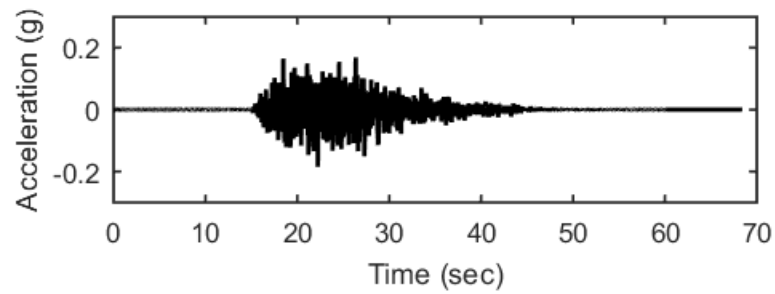
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



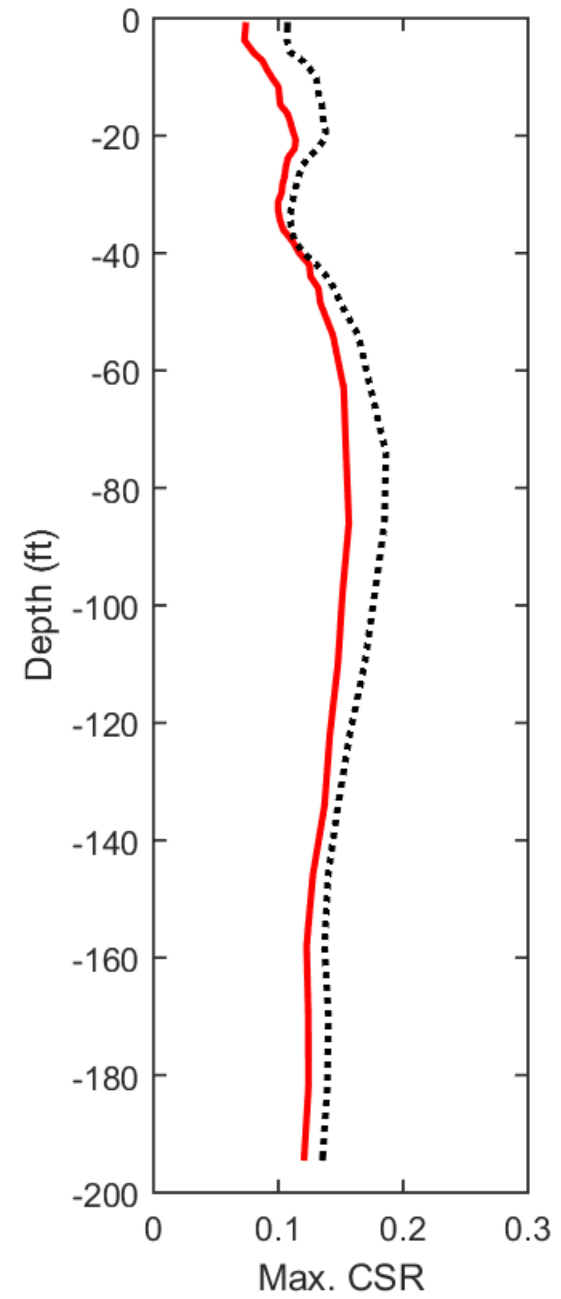
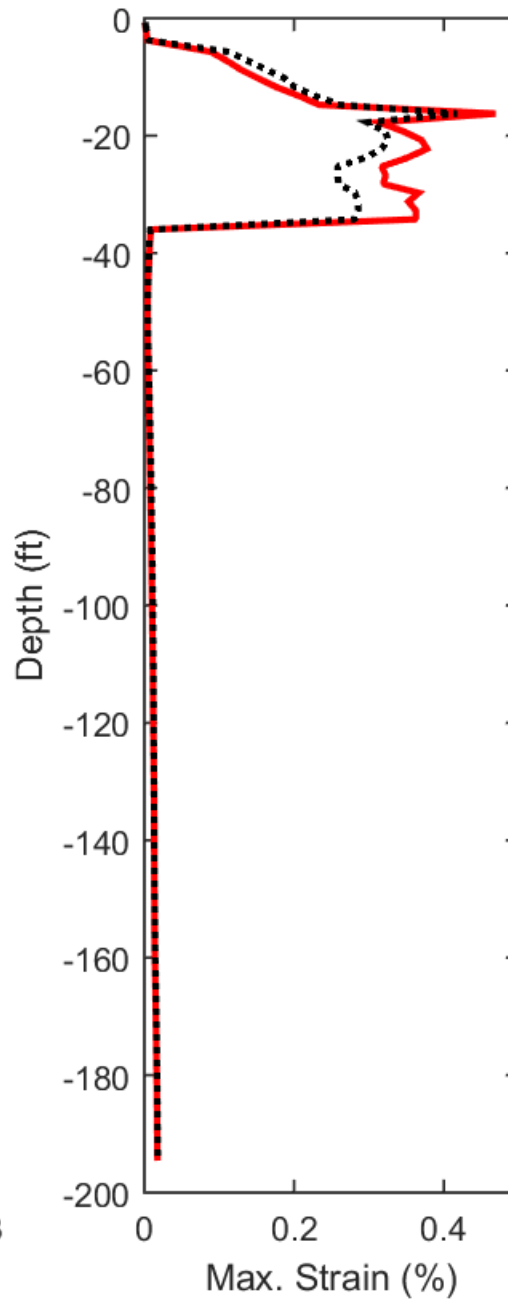
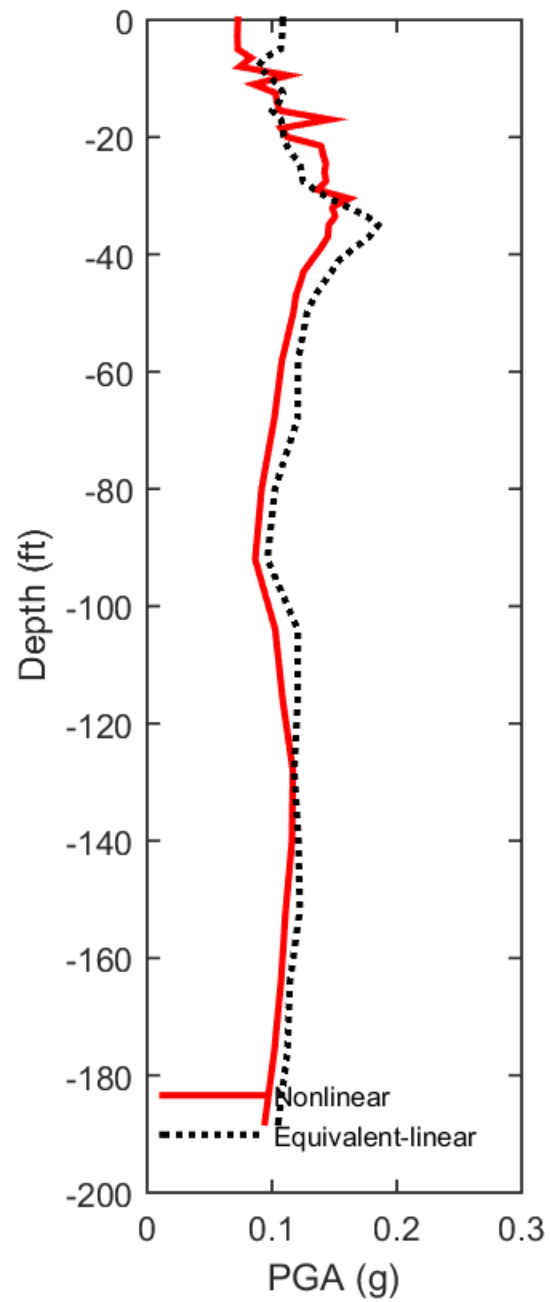
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



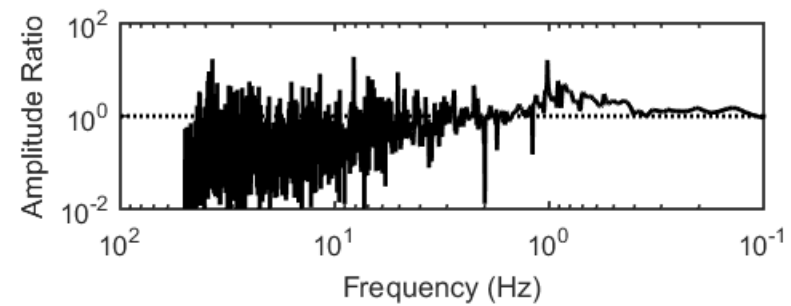
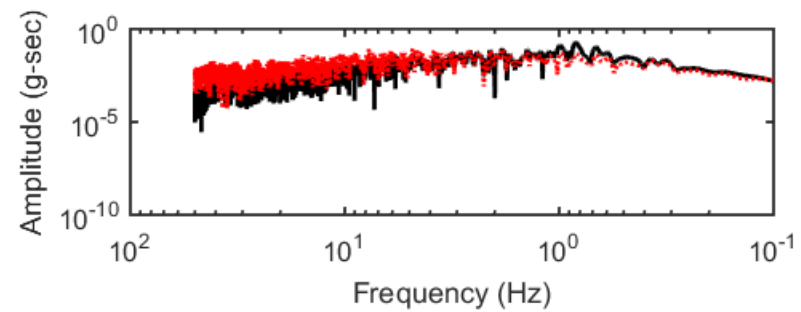
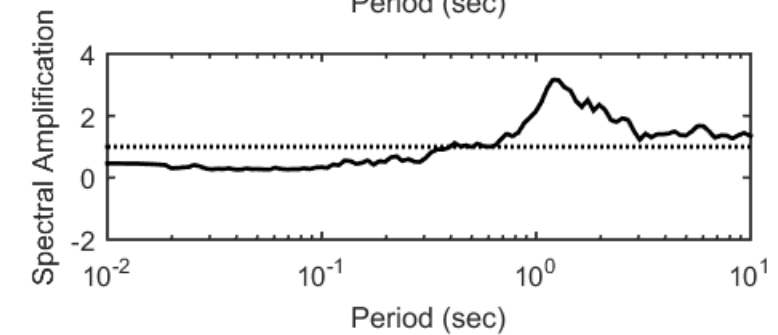
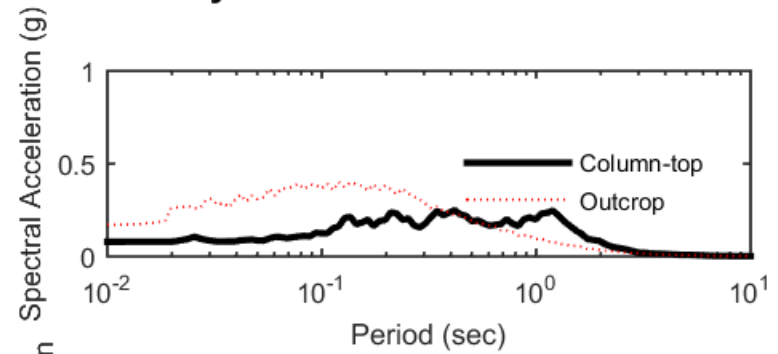
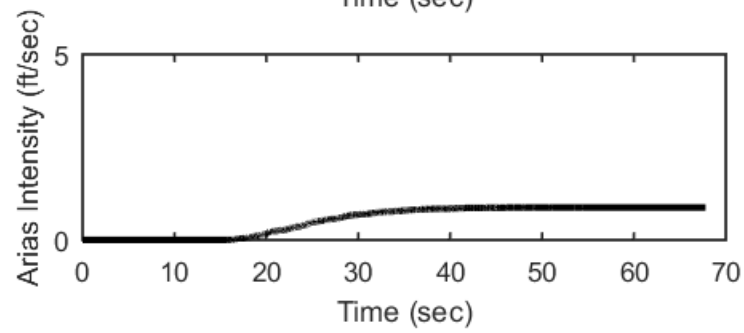
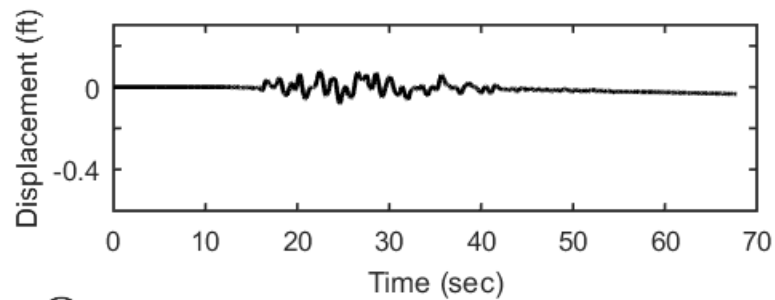
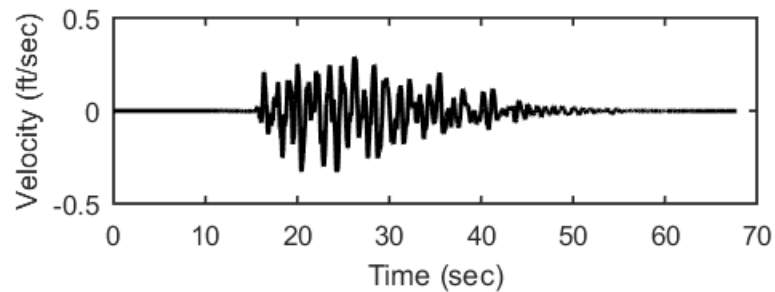
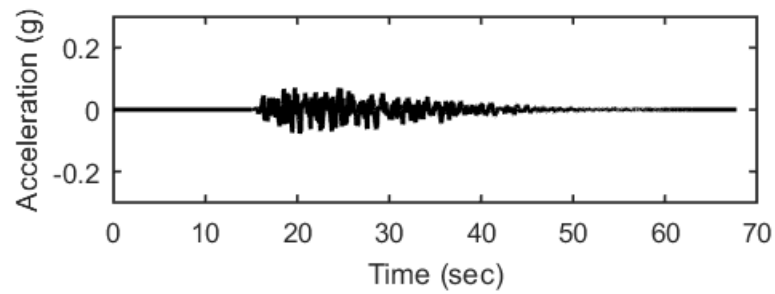
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



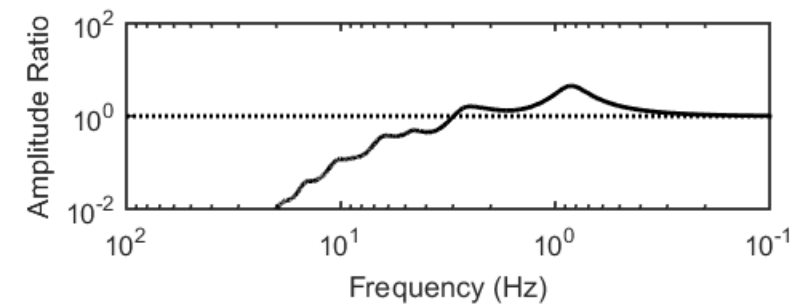
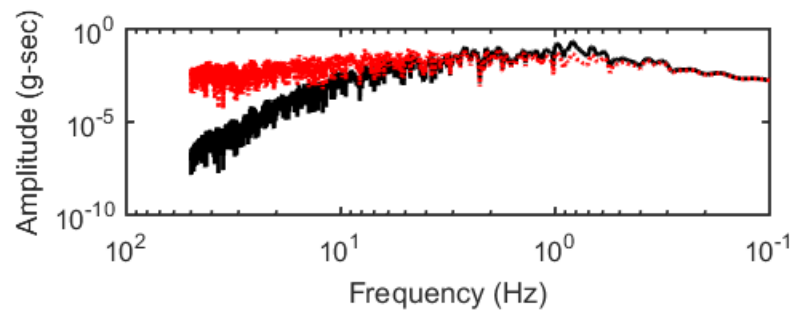
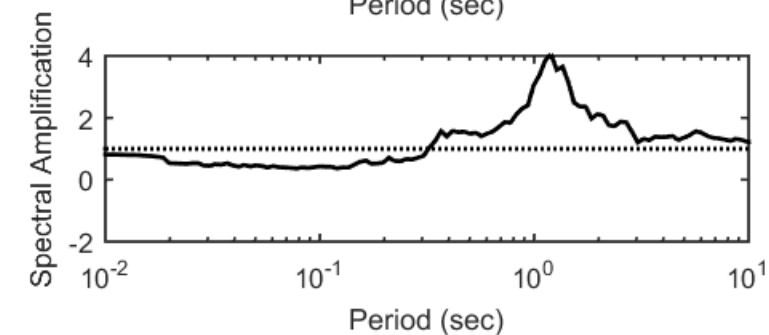
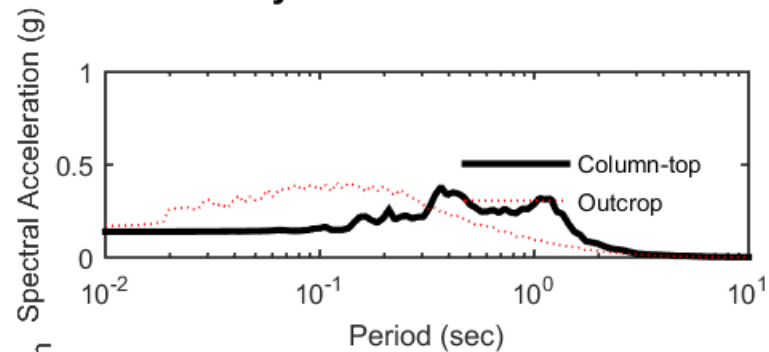
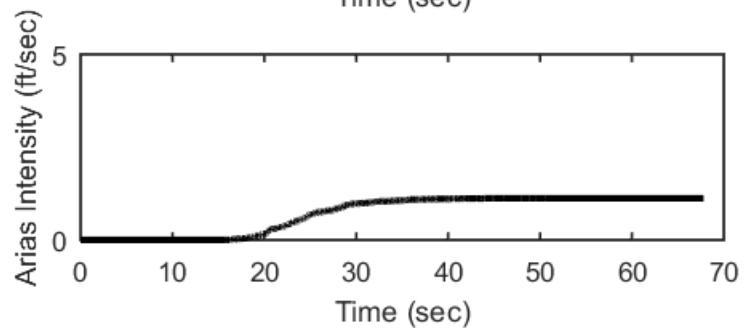
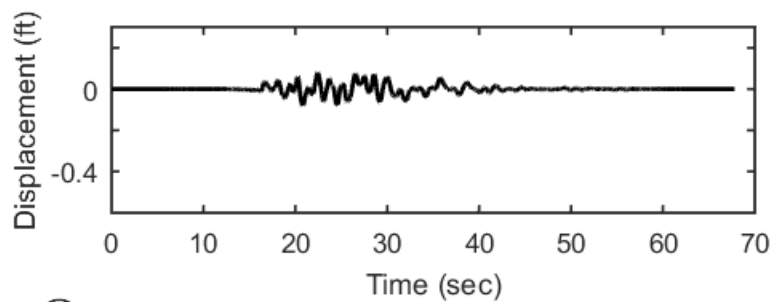
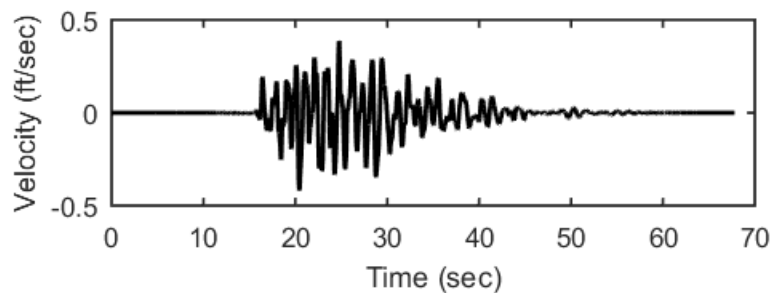
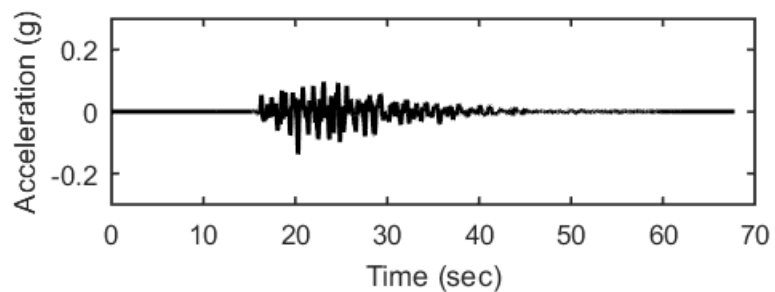
### Profile outputs for Motion: FEE3



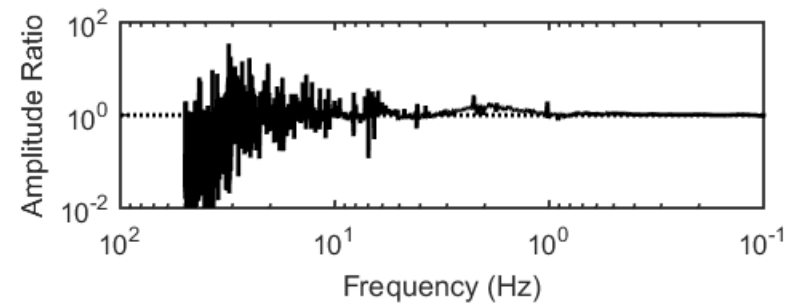
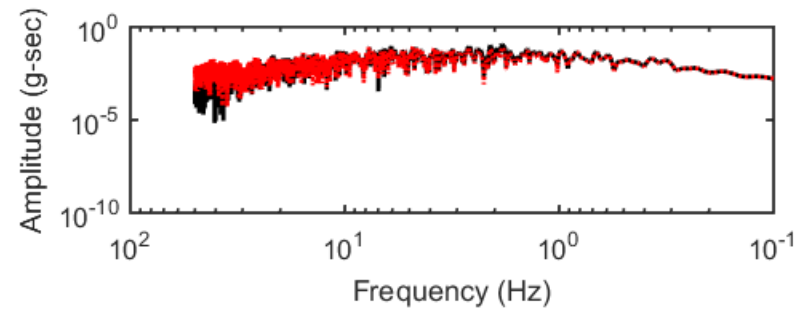
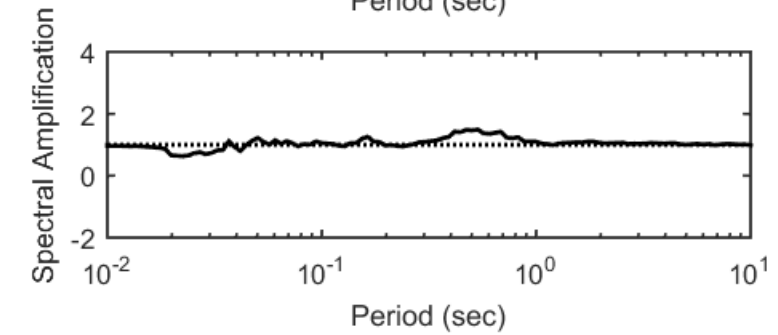
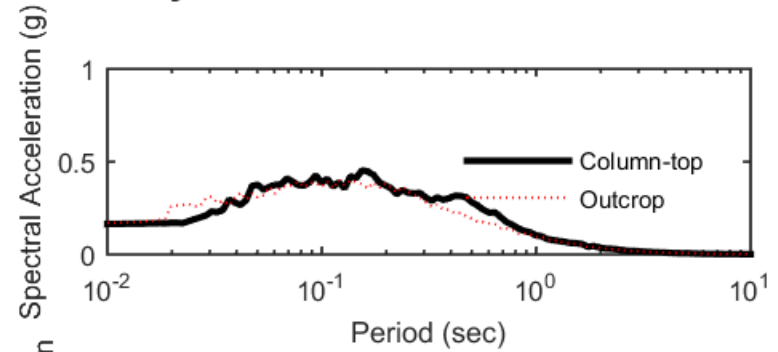
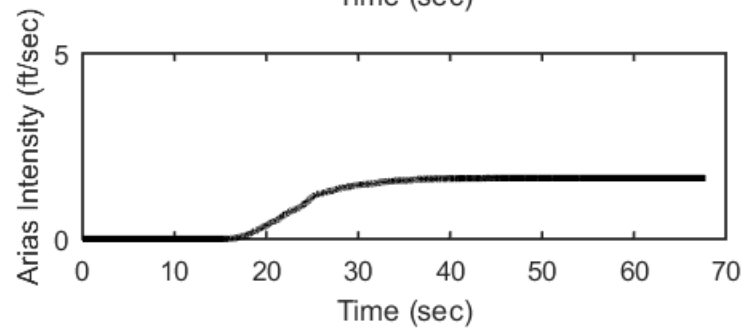
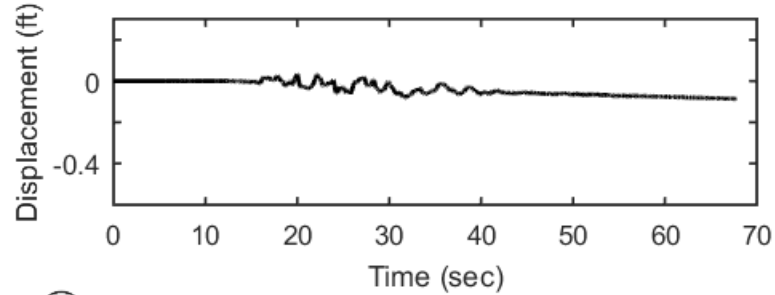
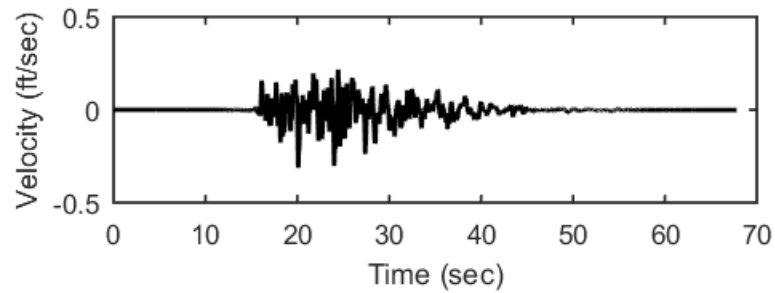
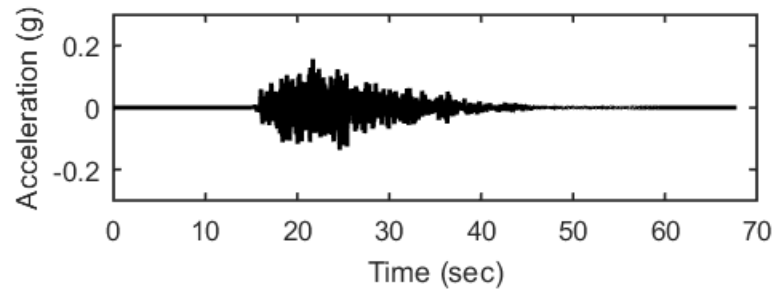
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



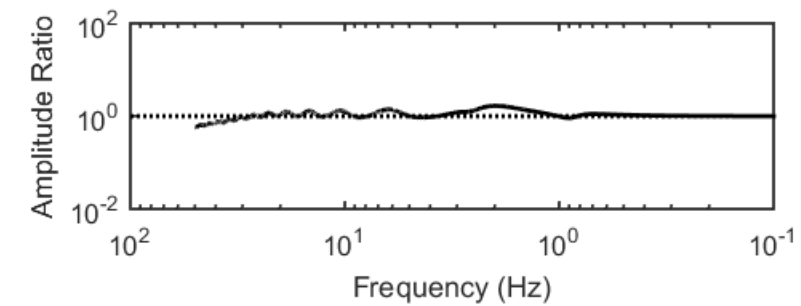
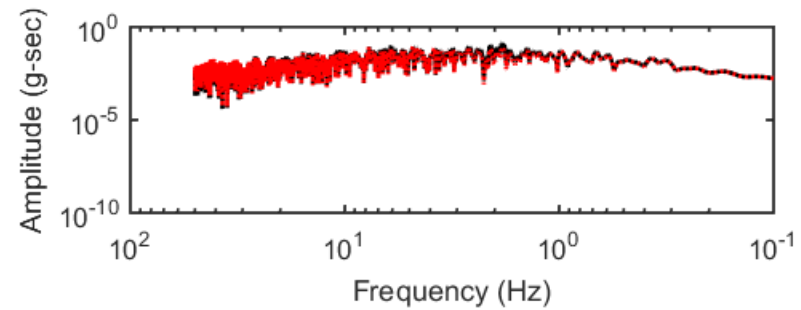
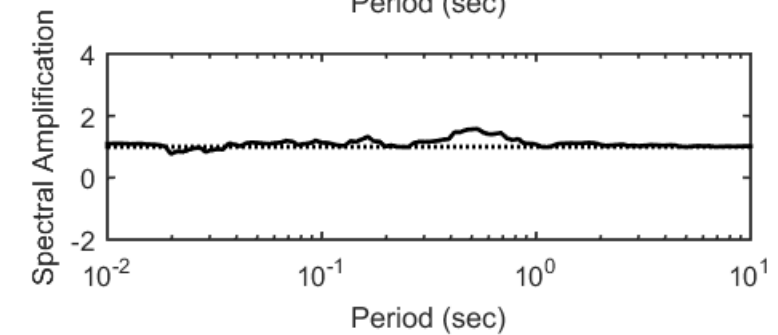
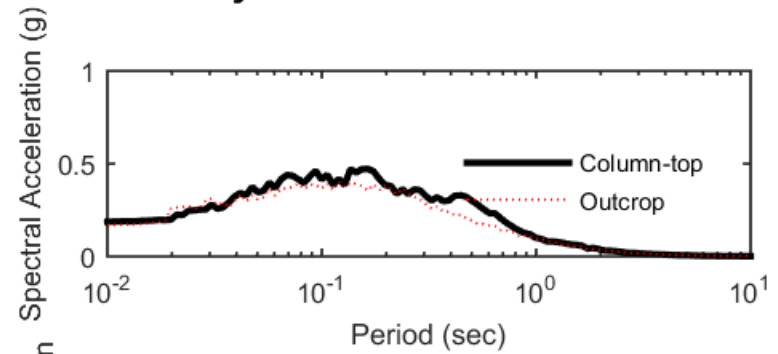
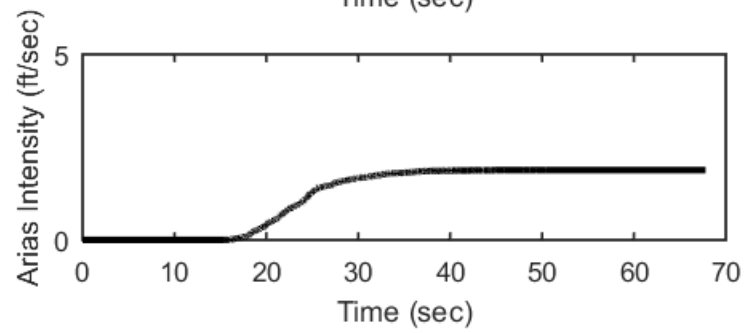
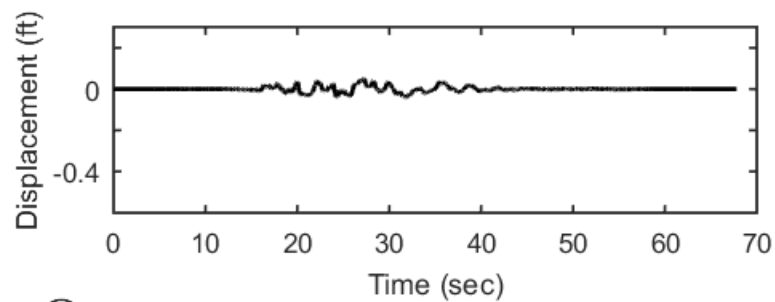
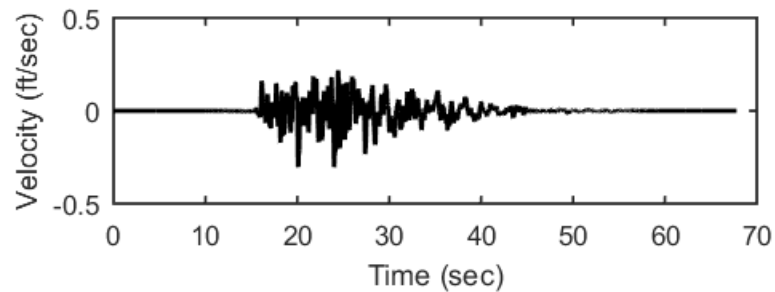
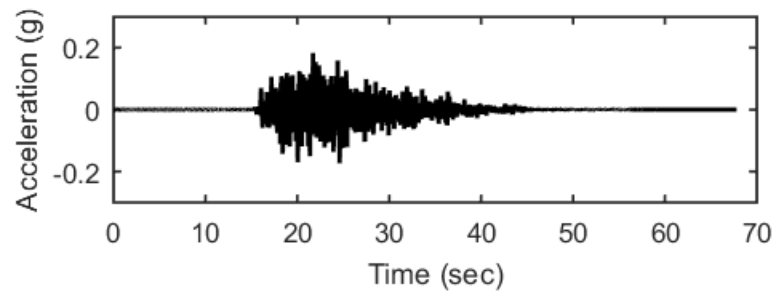
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4

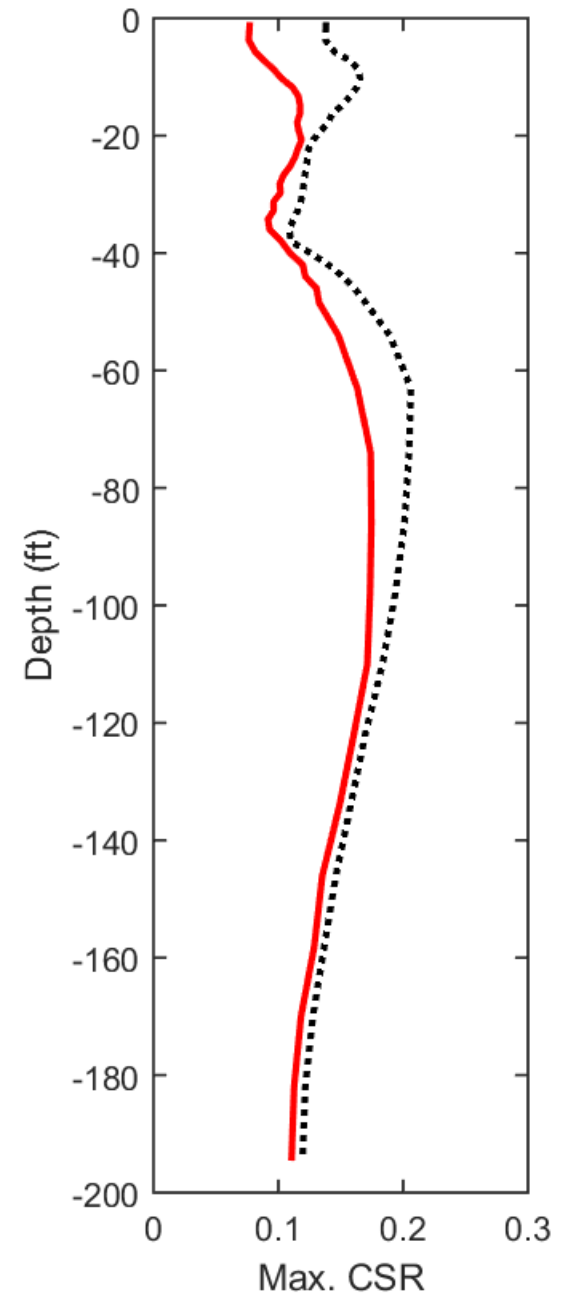
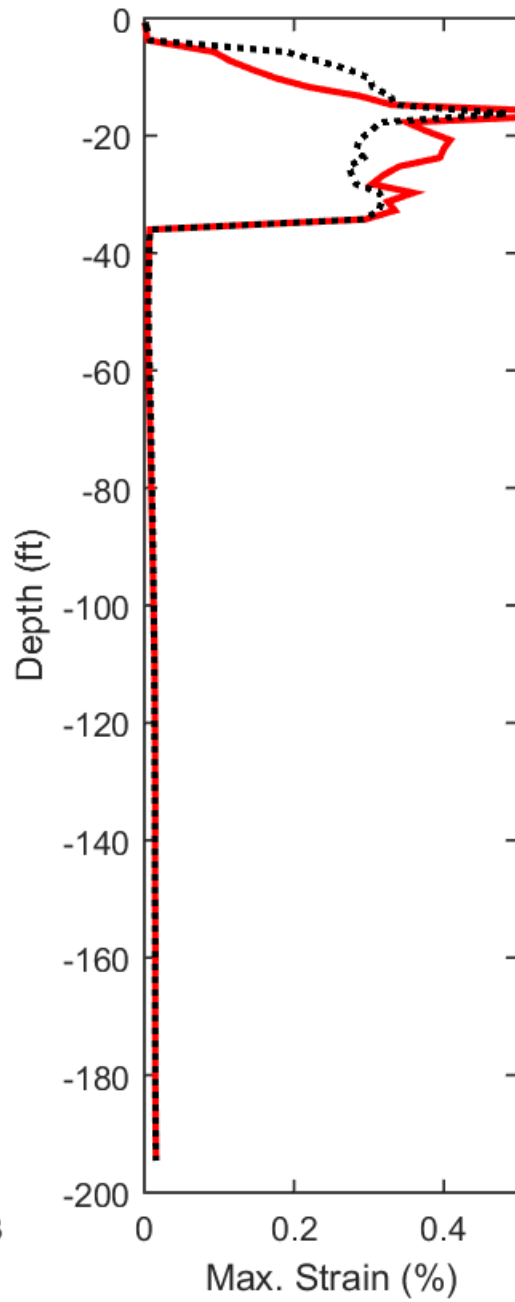
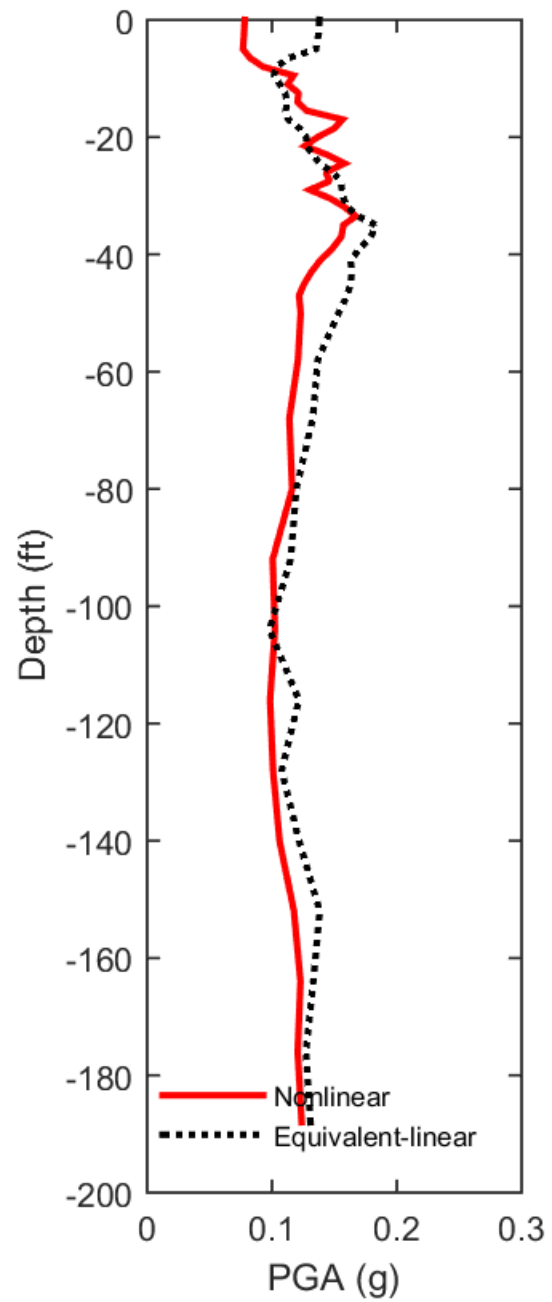


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4

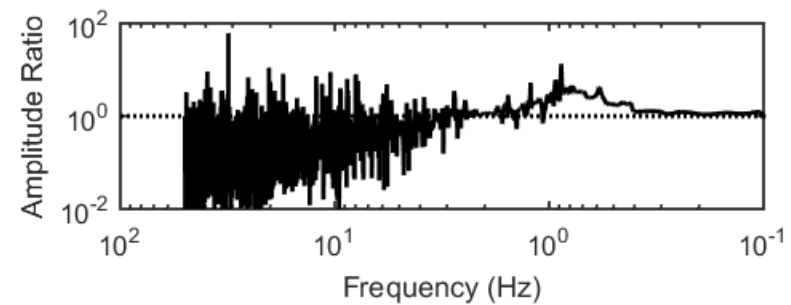
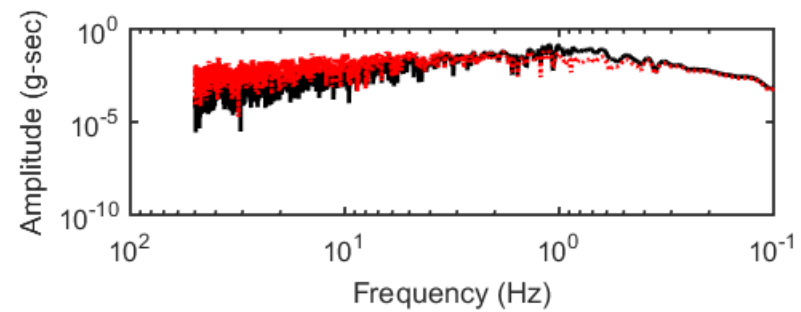
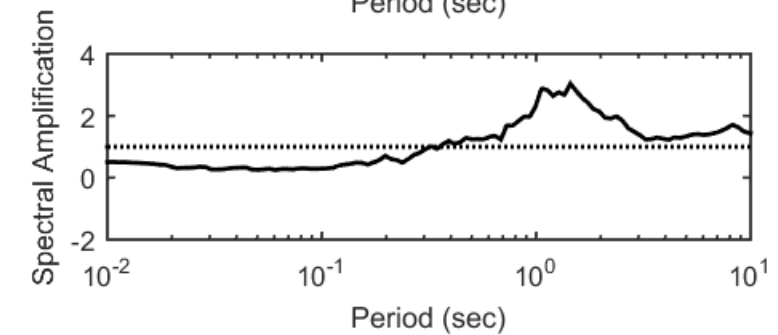
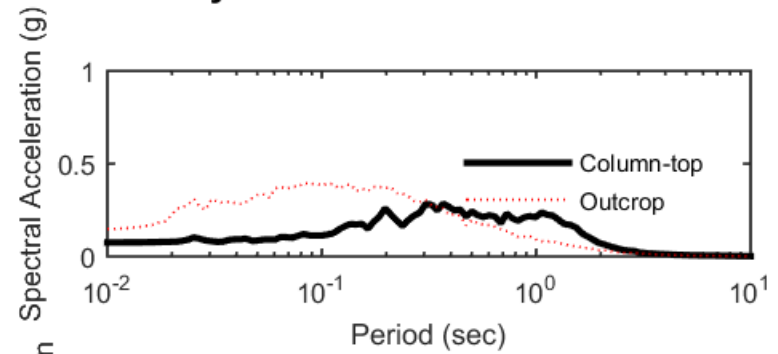
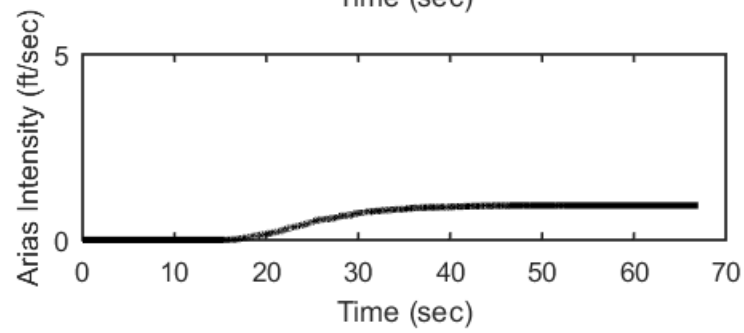
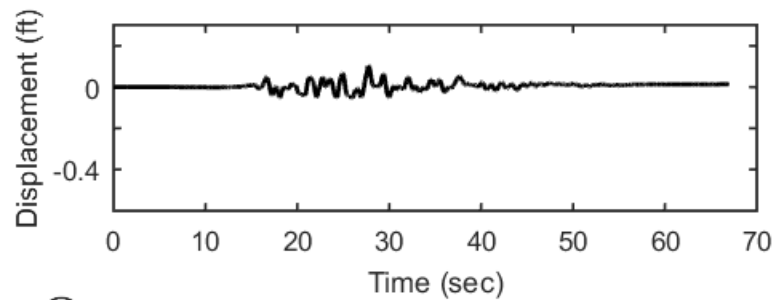
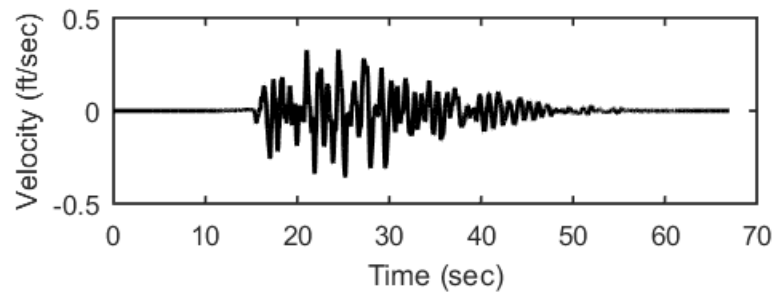
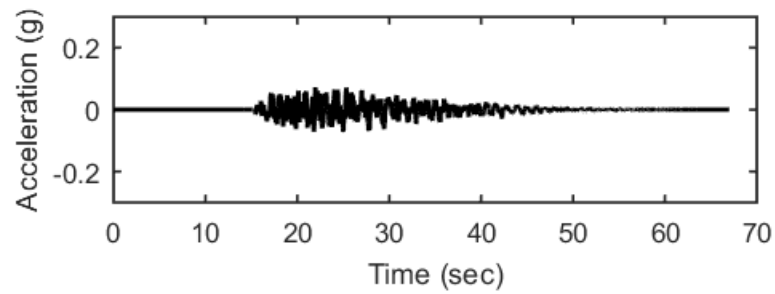




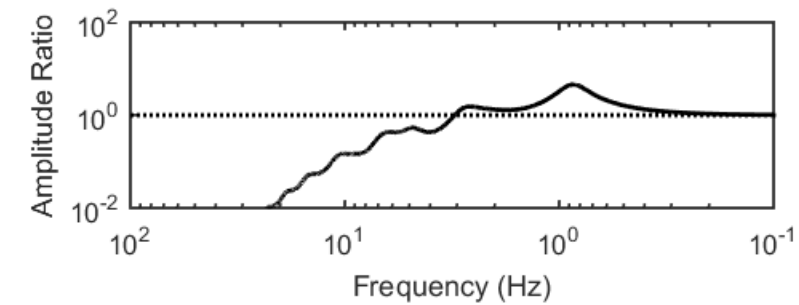
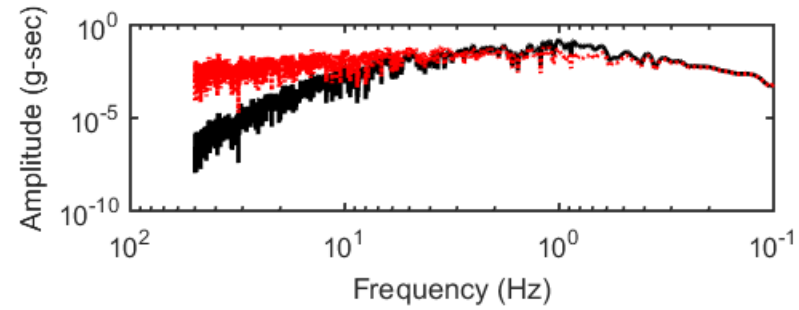
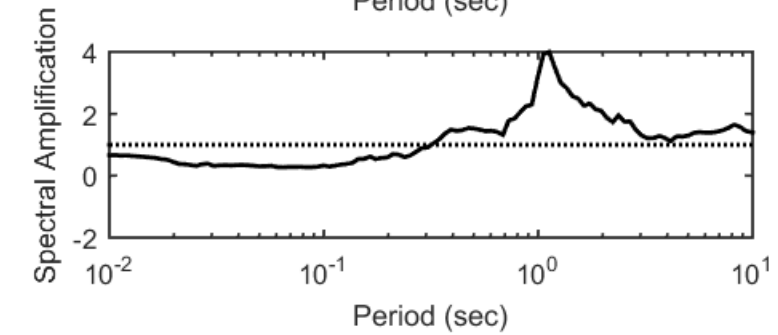
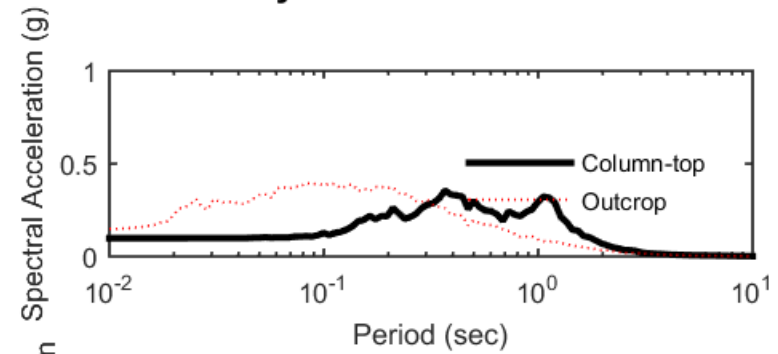
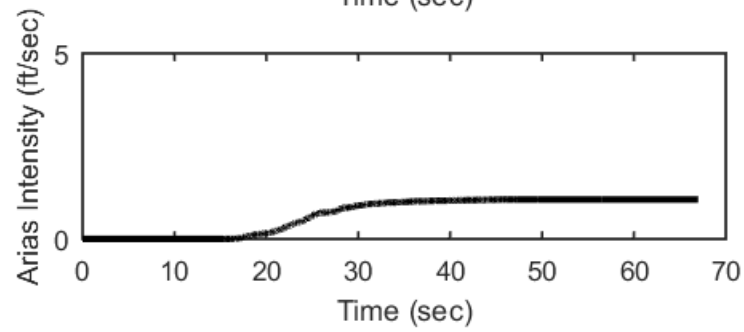
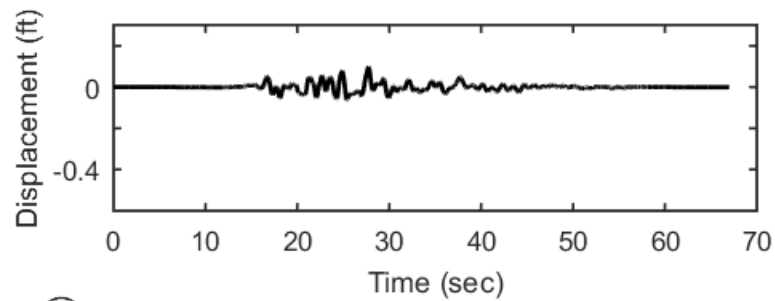
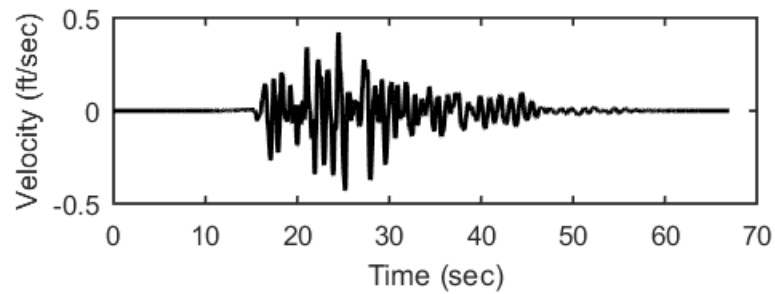
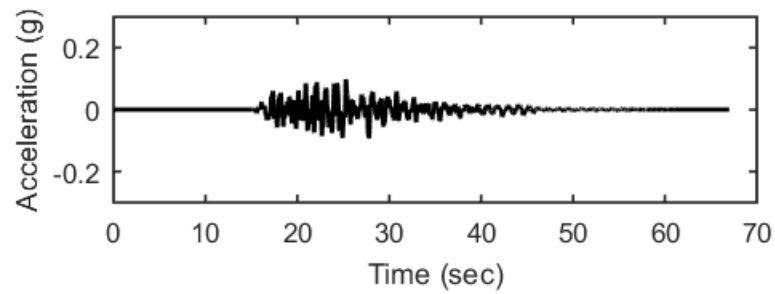
### Profile outputs for Motion: FEE4



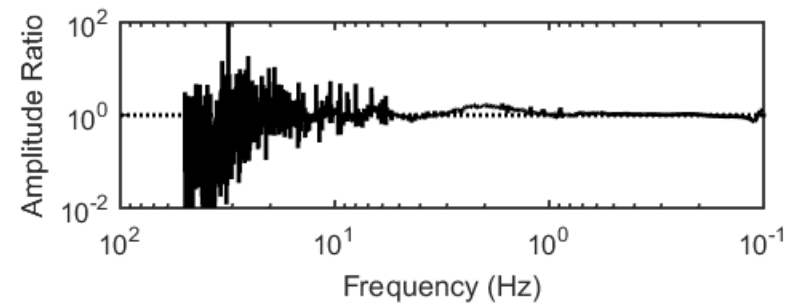
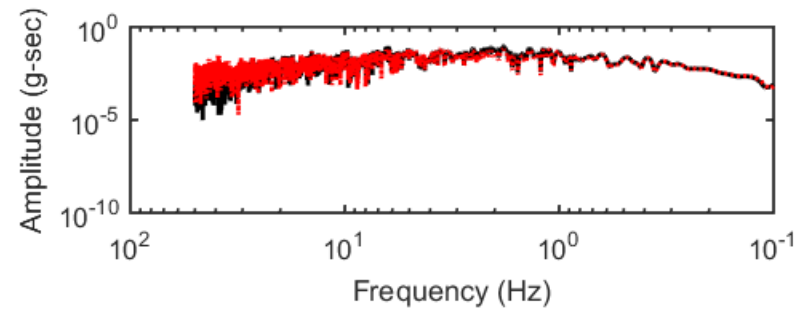
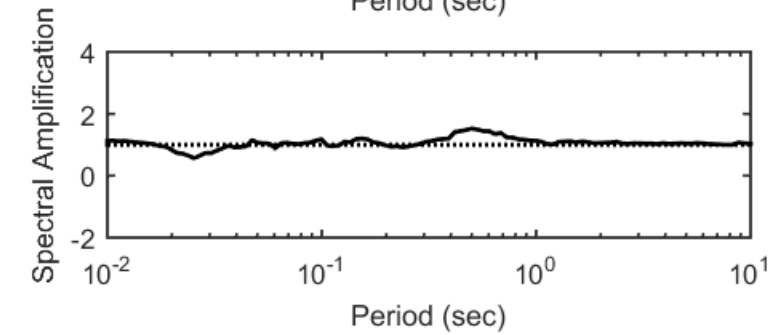
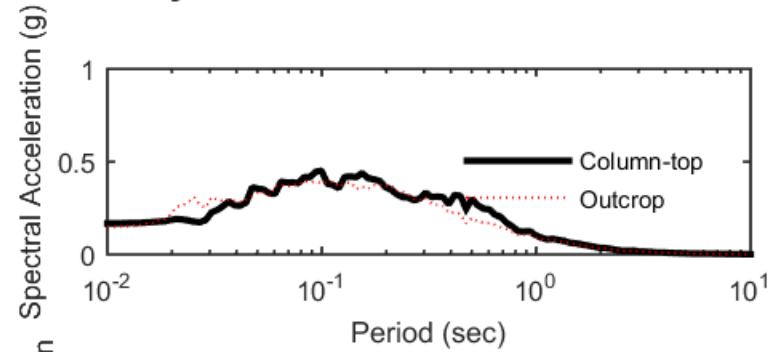
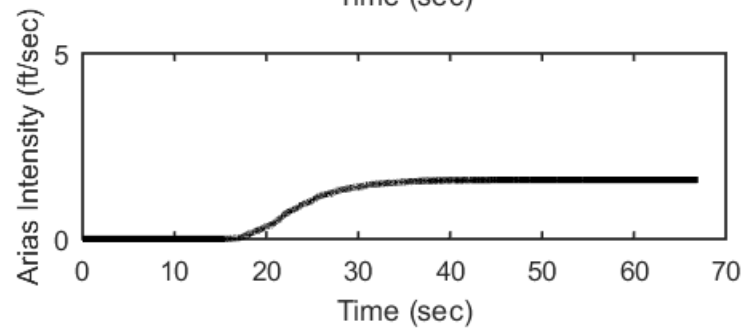
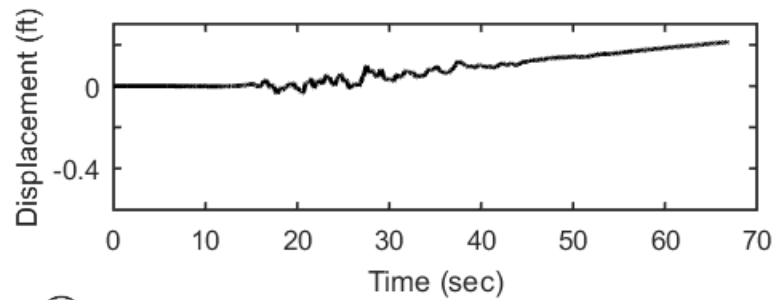
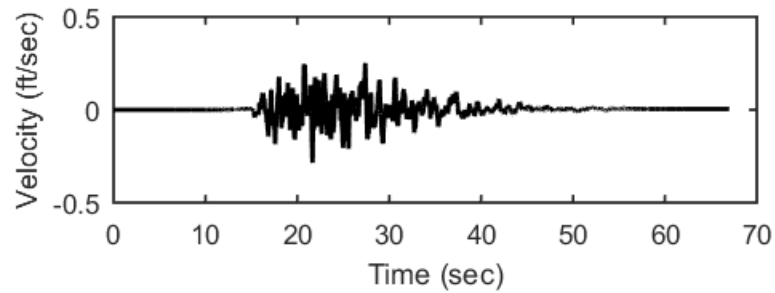
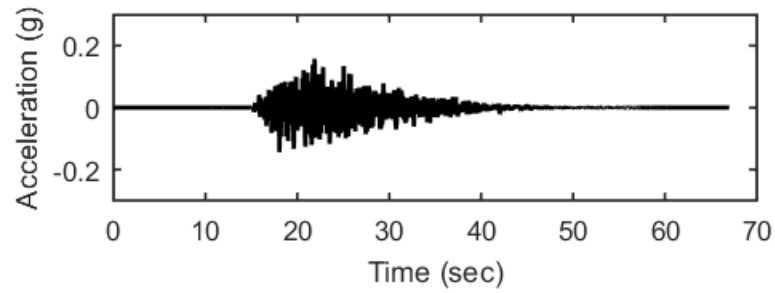
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



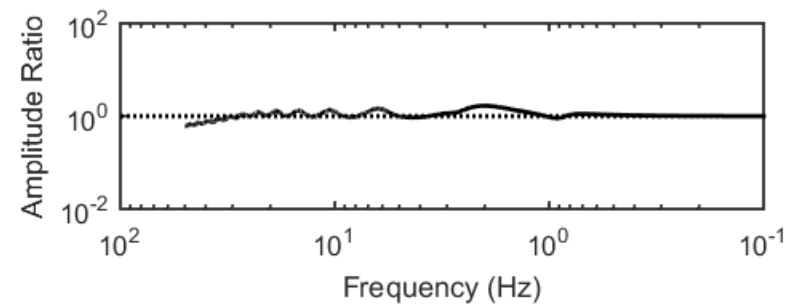
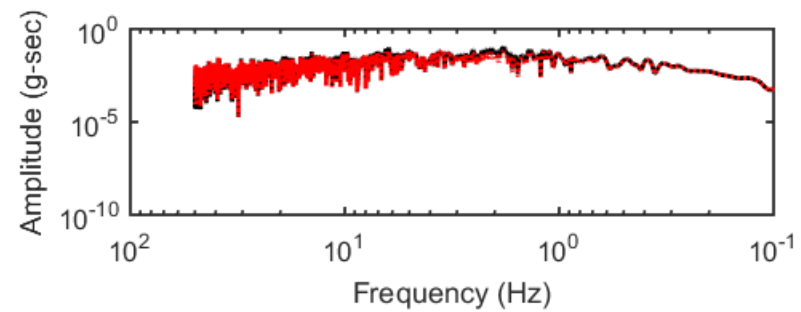
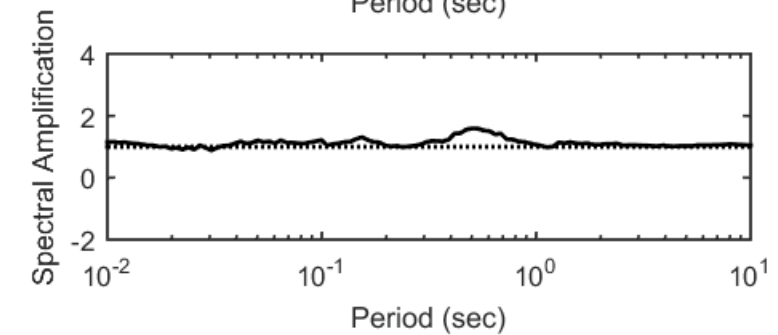
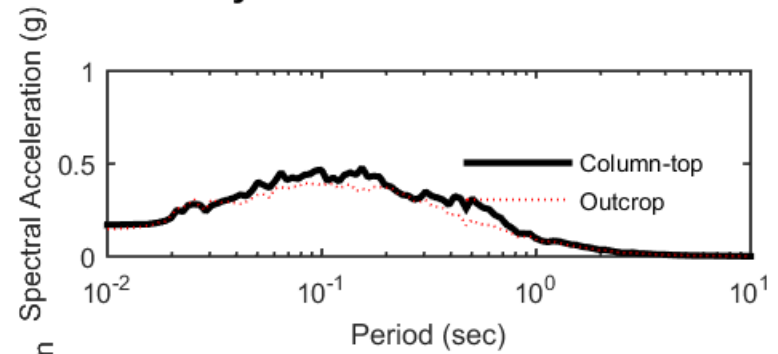
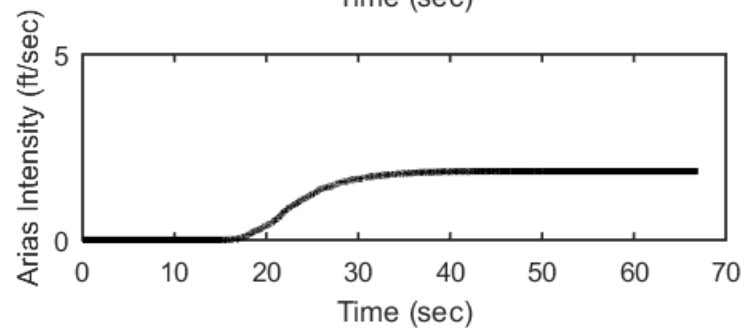
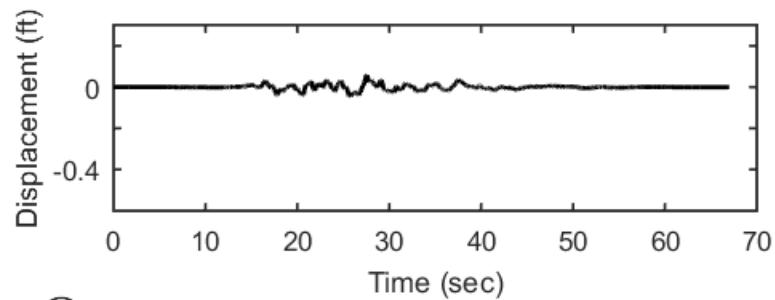
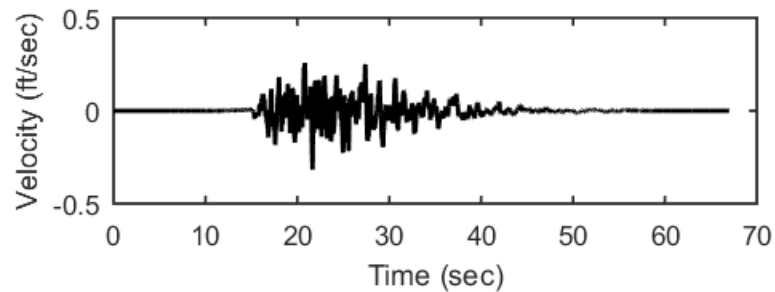
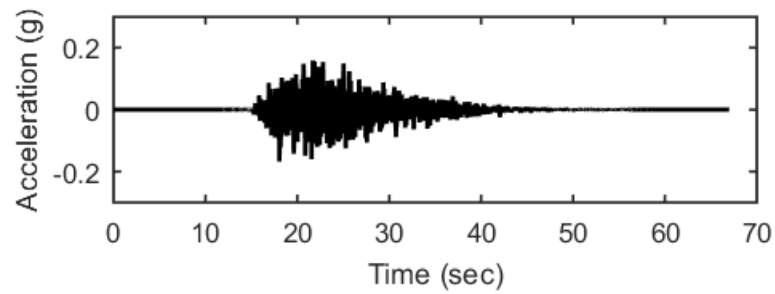
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



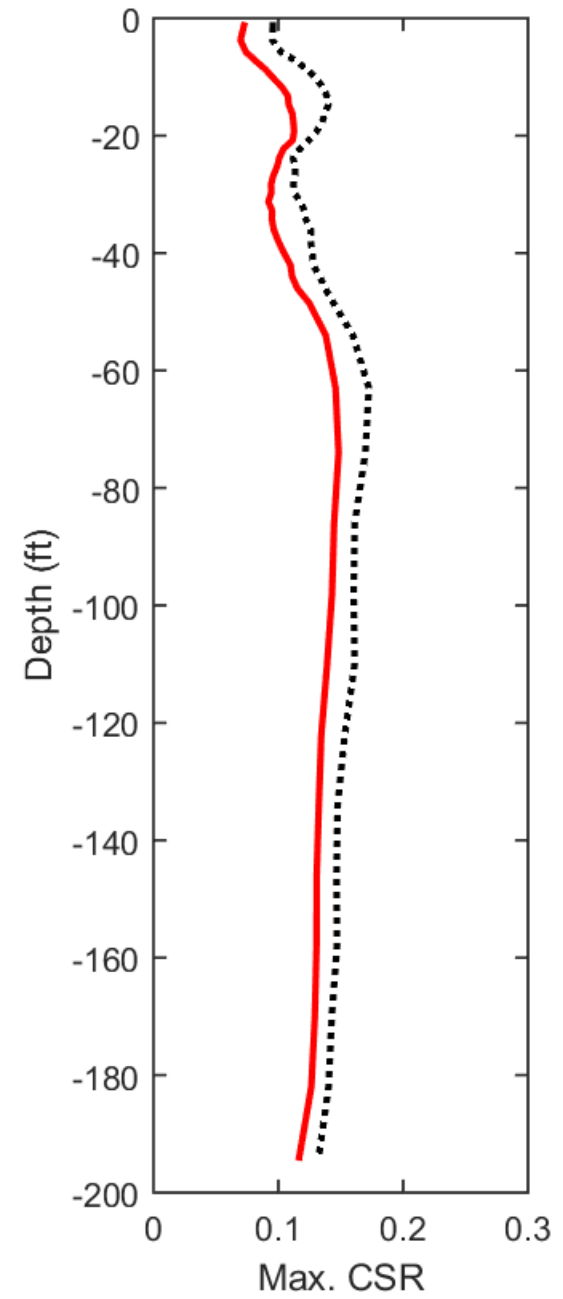
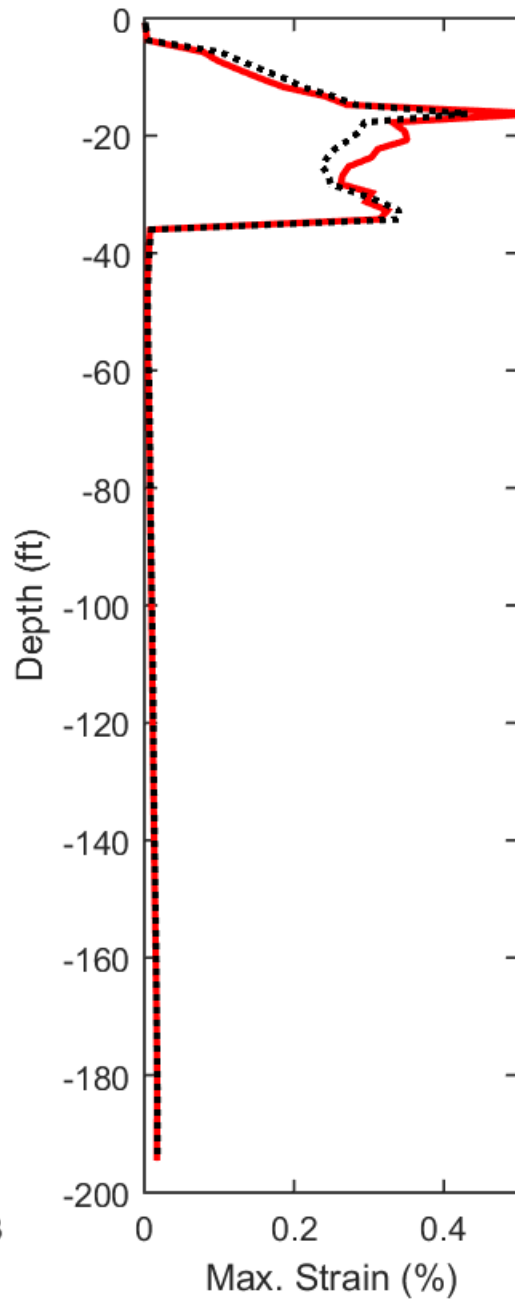
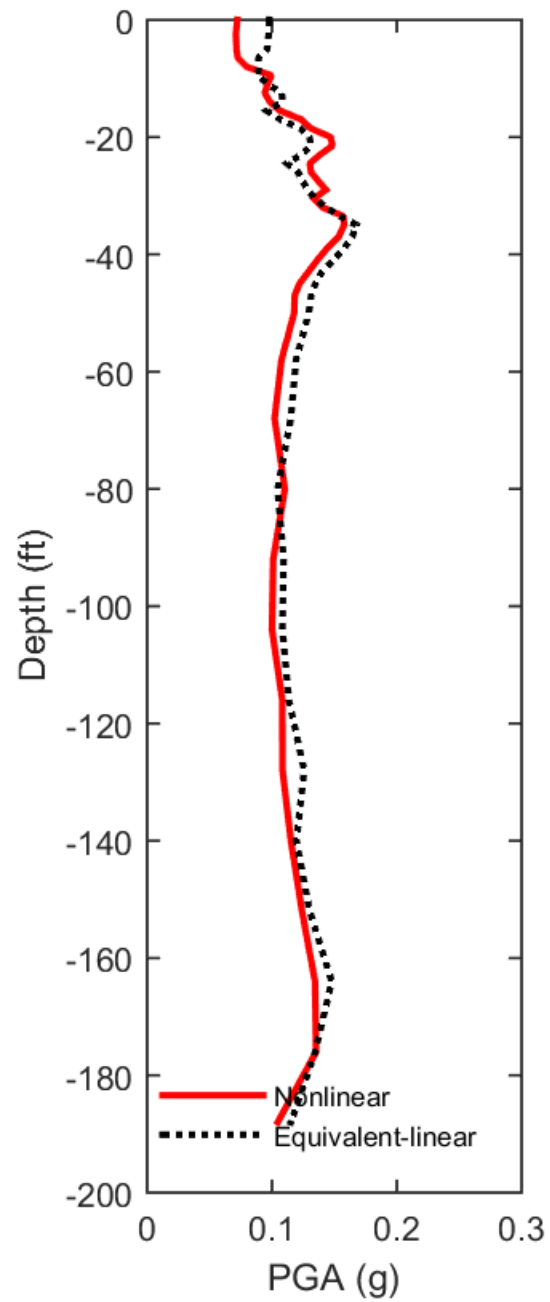
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



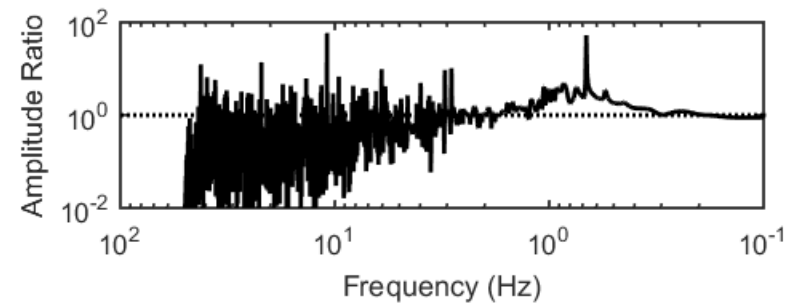
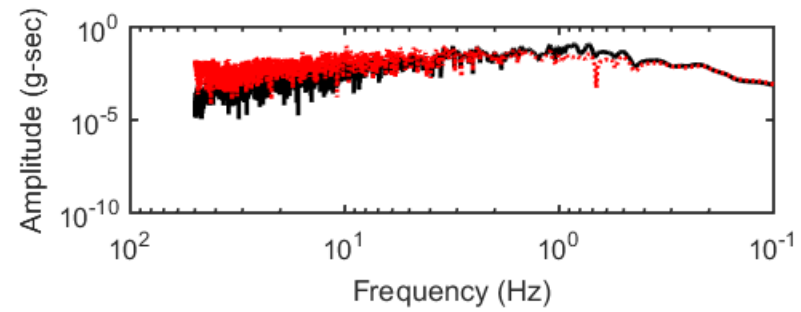
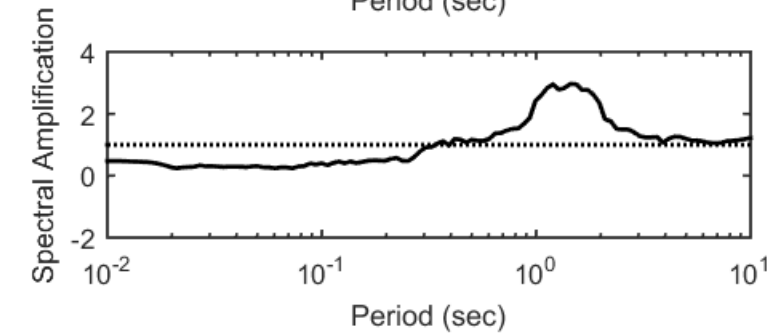
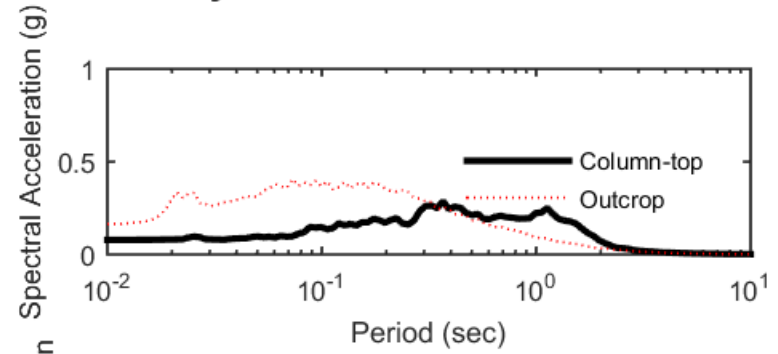
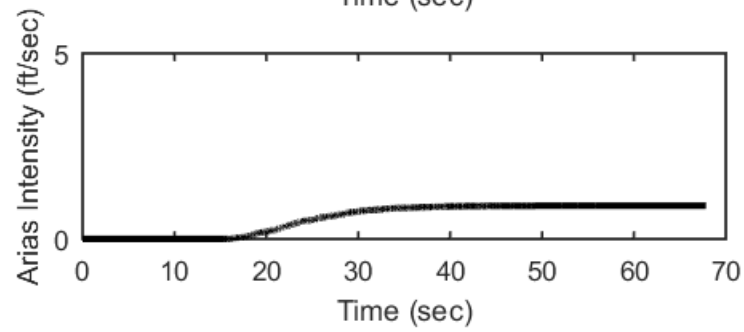
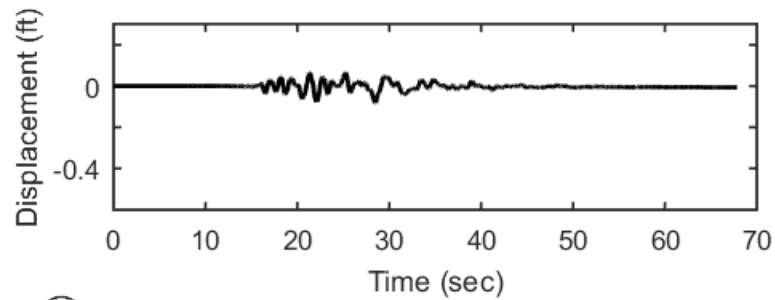
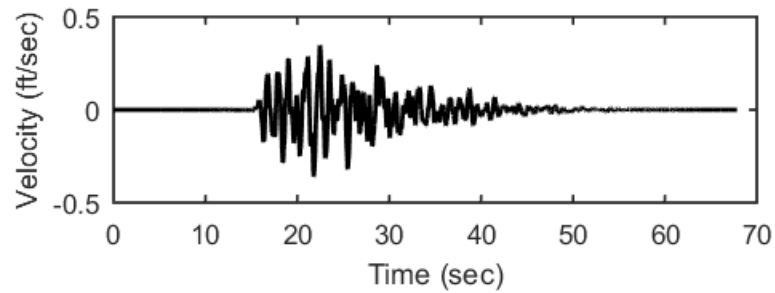
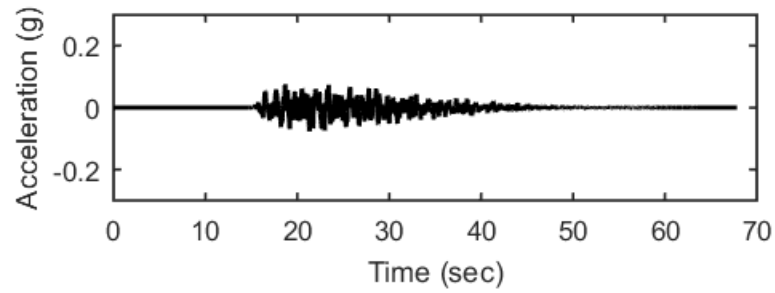
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



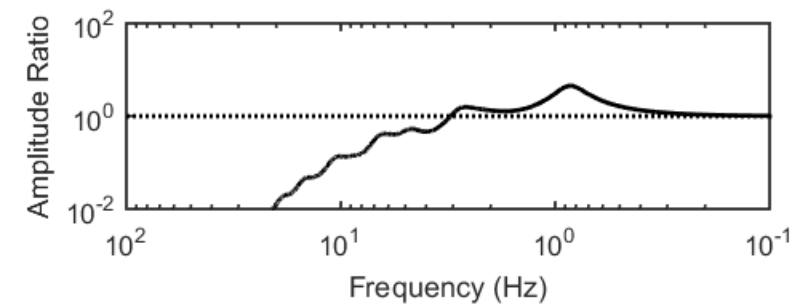
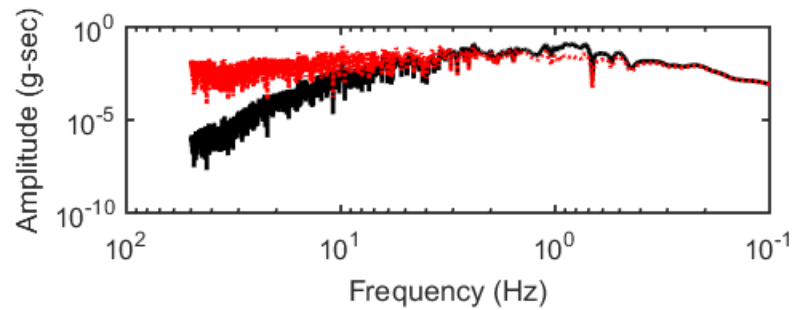
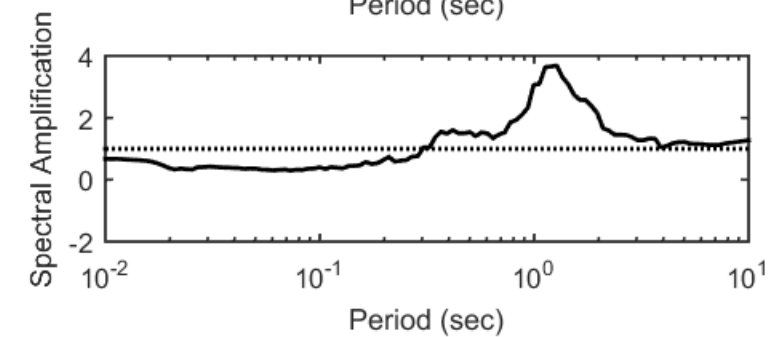
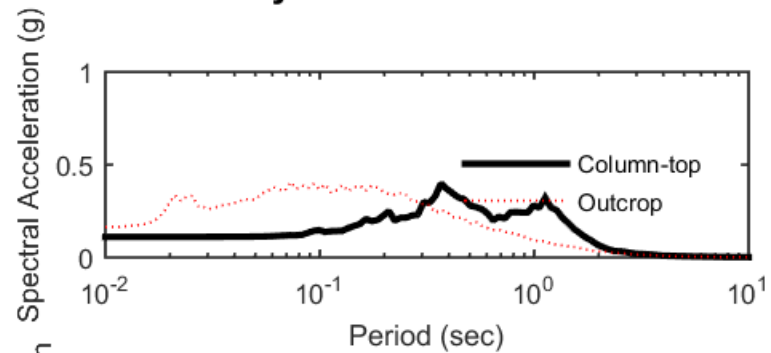
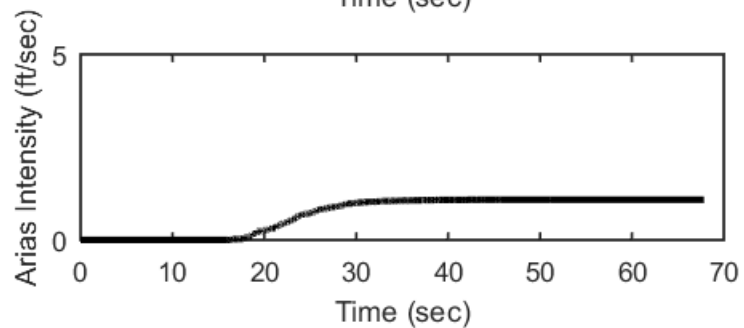
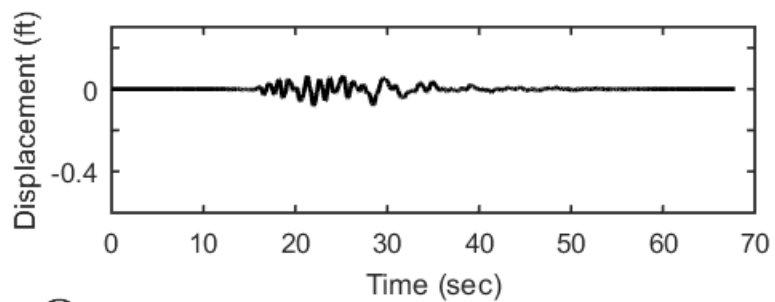
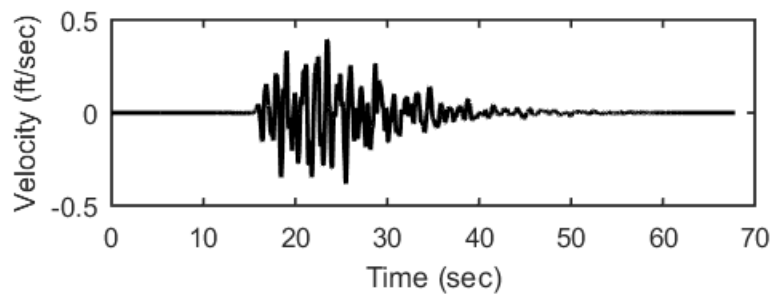
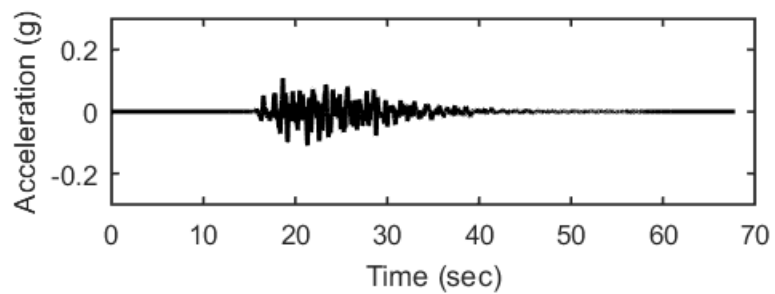
### Profile outputs for Motion: FEE5



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6

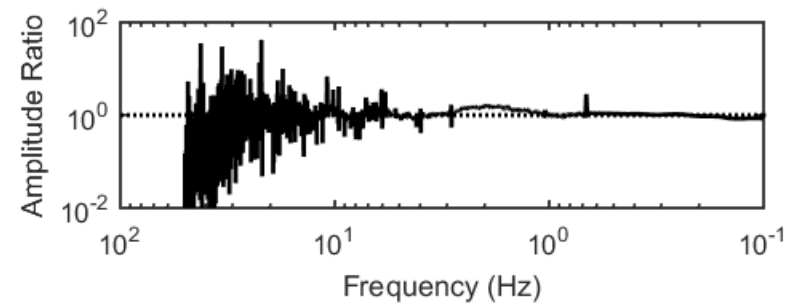
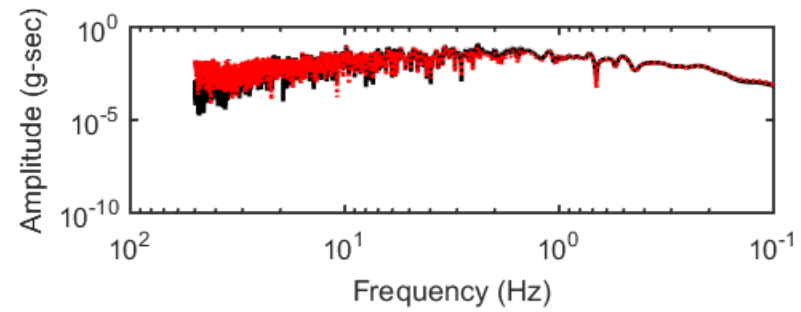
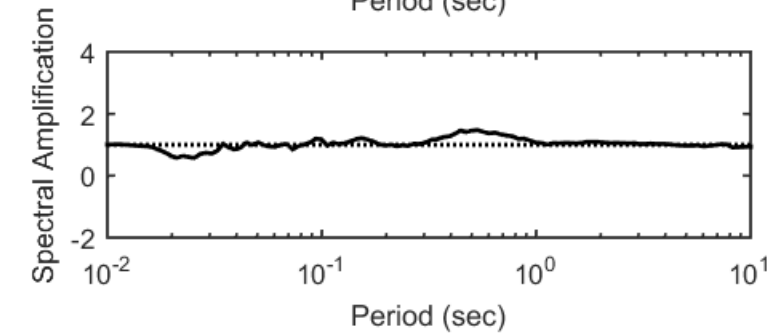
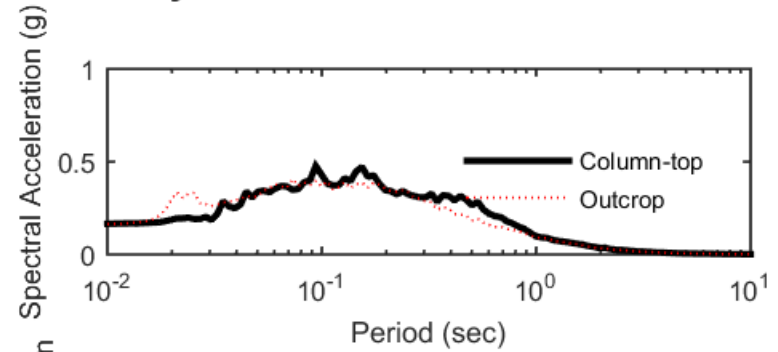
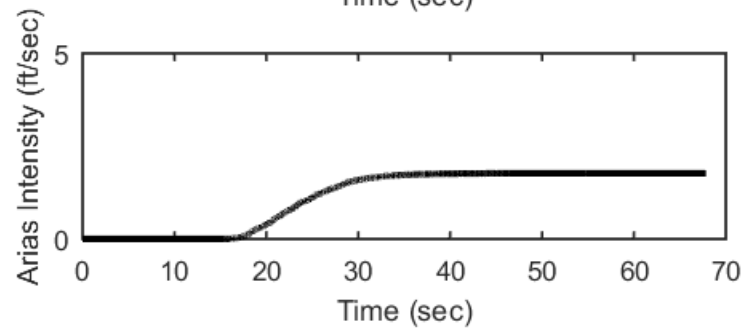
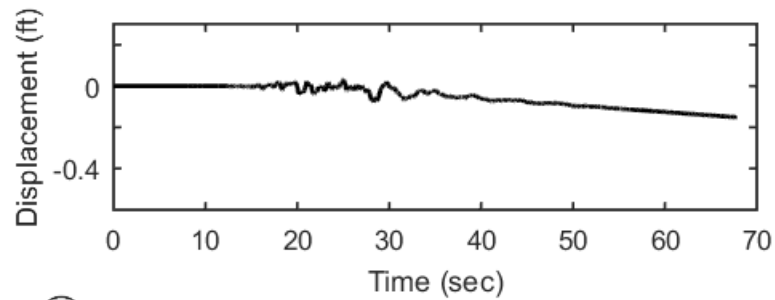
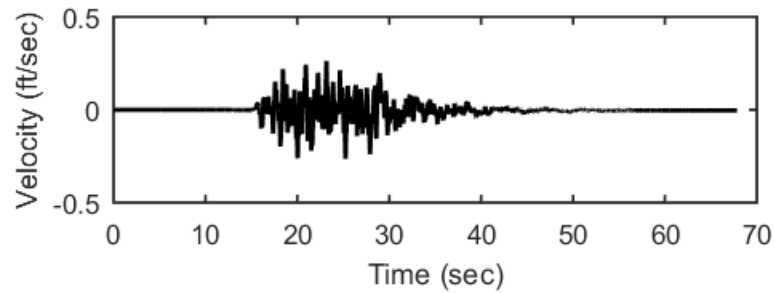
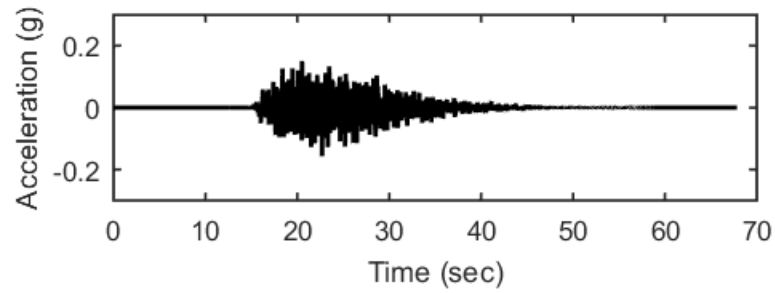


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6

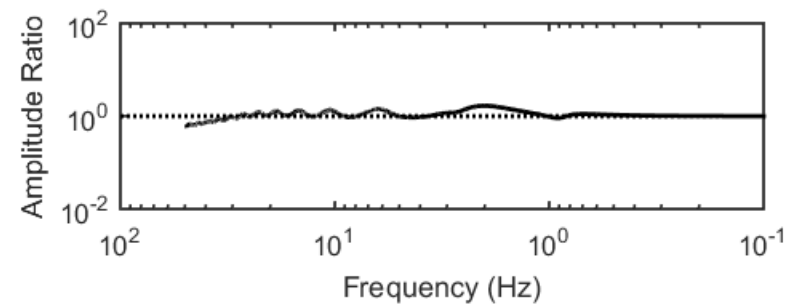
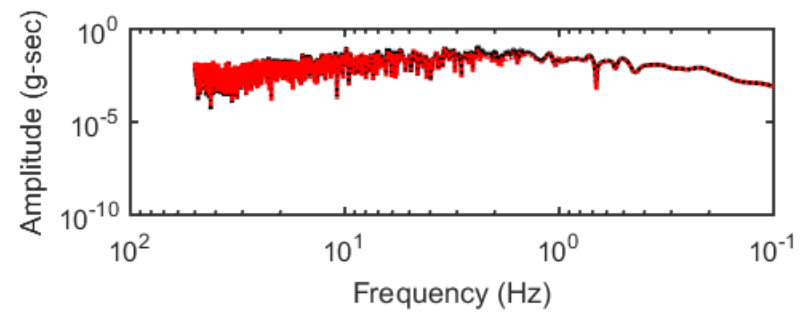
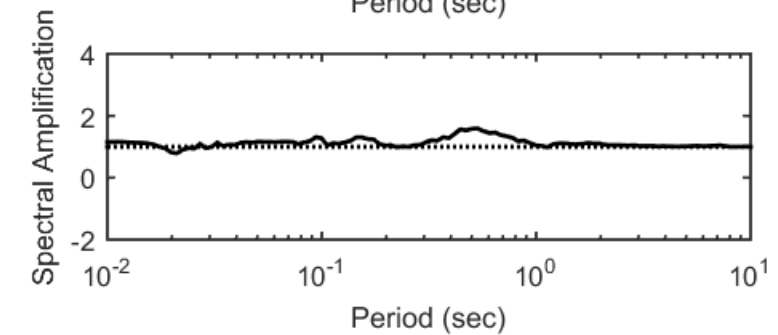
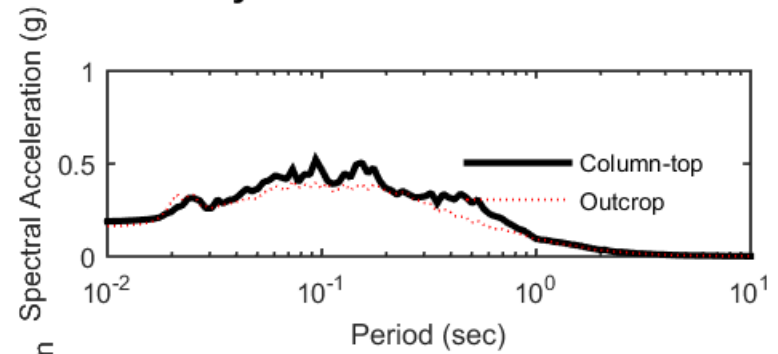
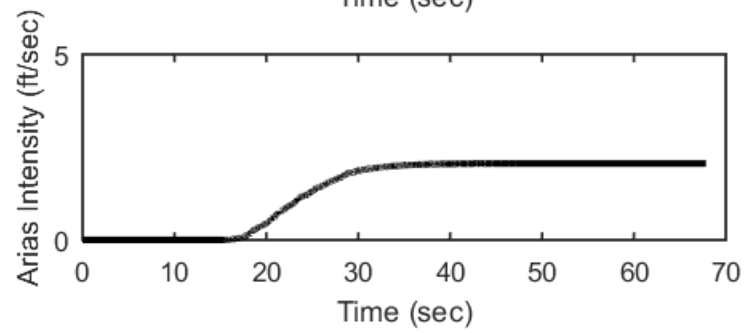
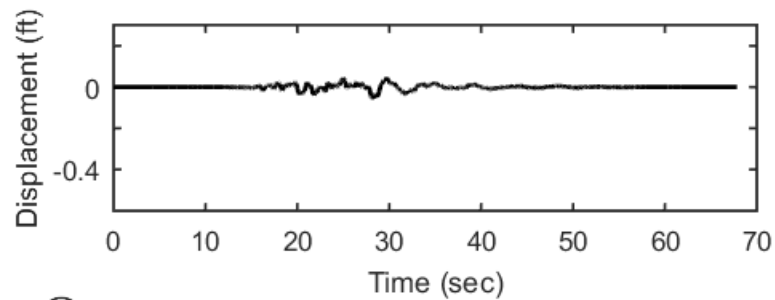
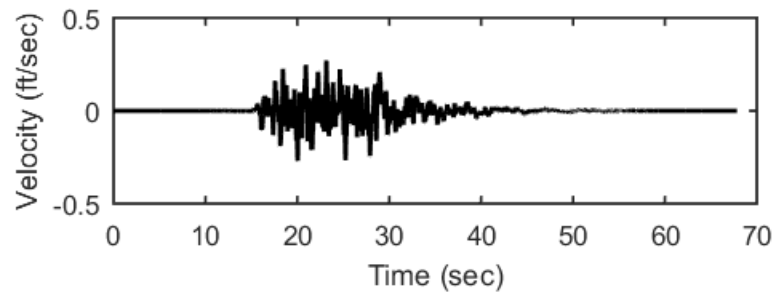
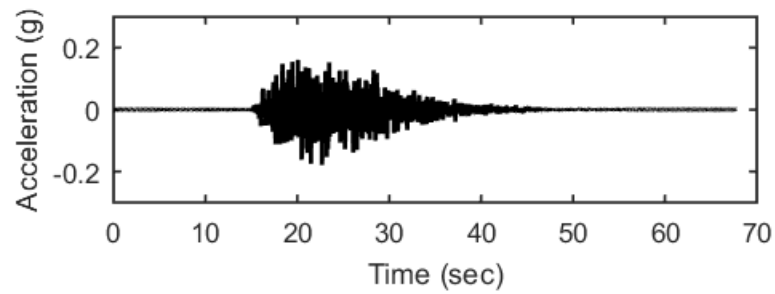




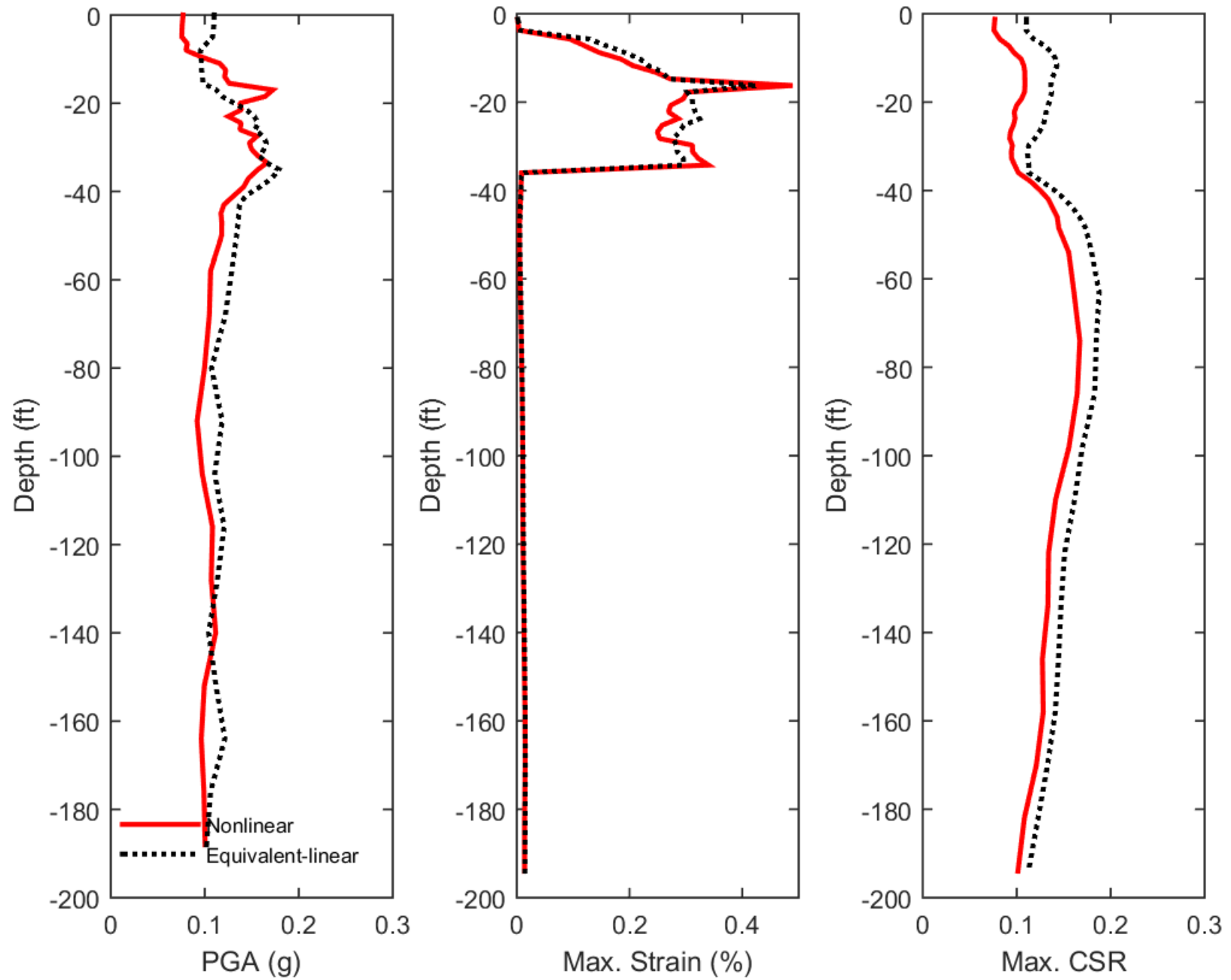
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



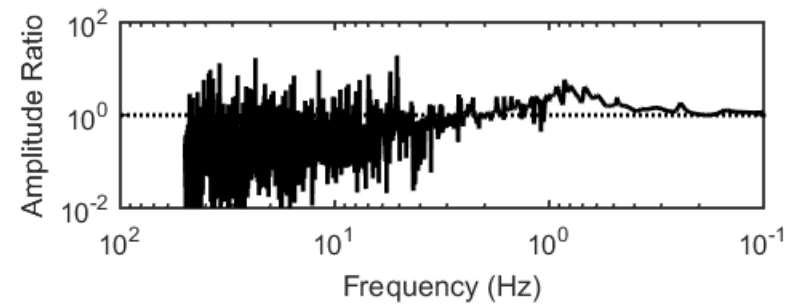
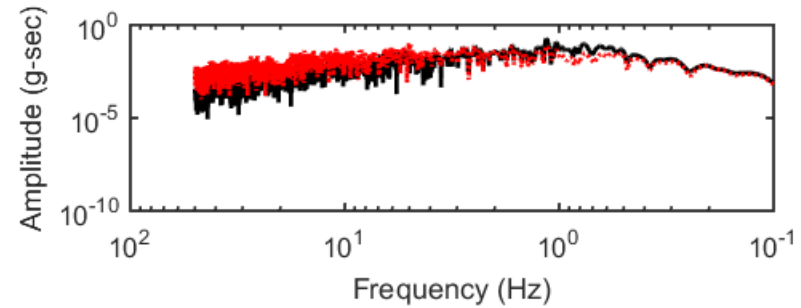
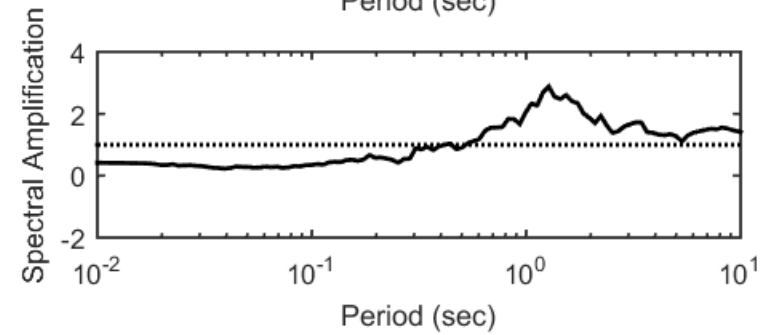
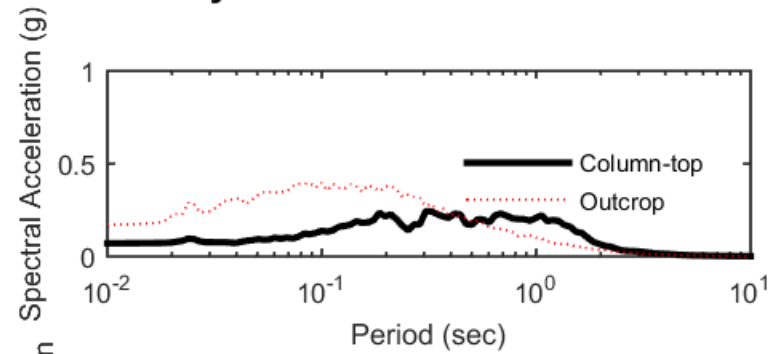
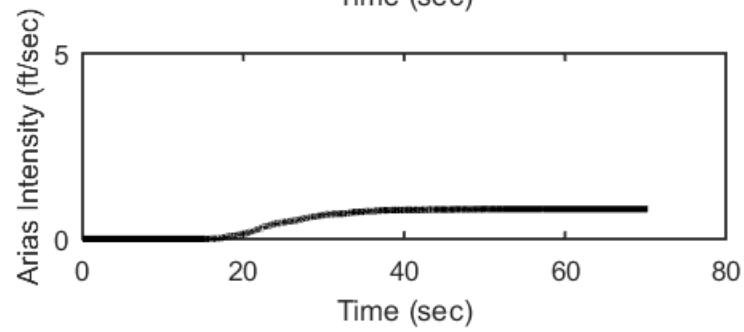
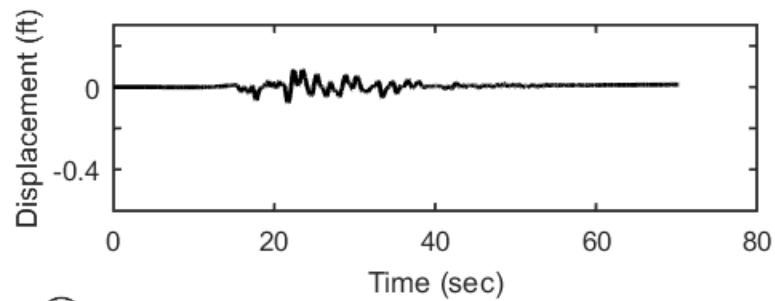
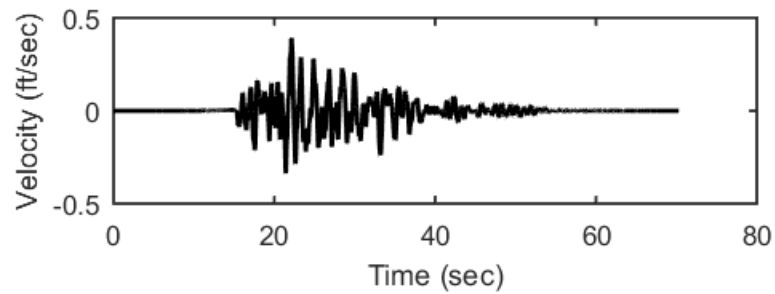
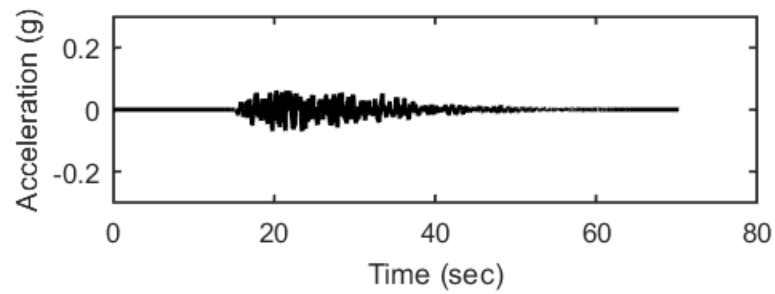
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



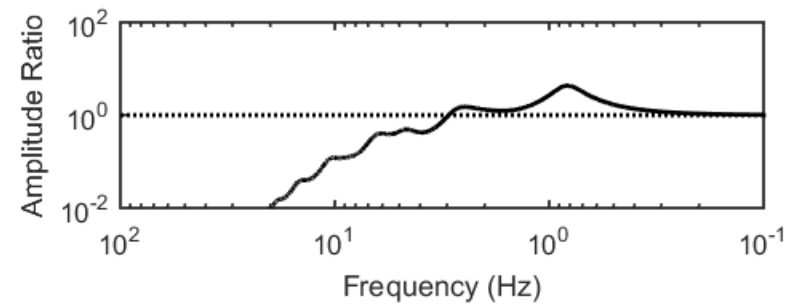
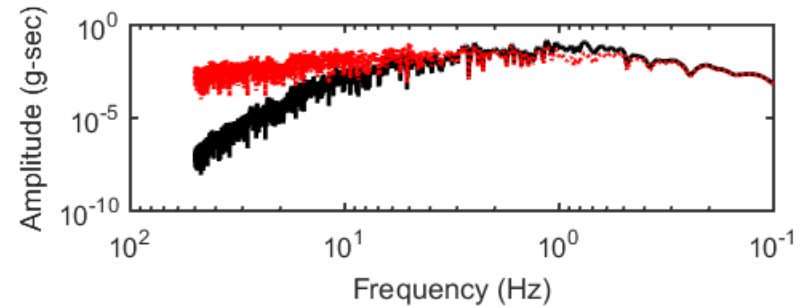
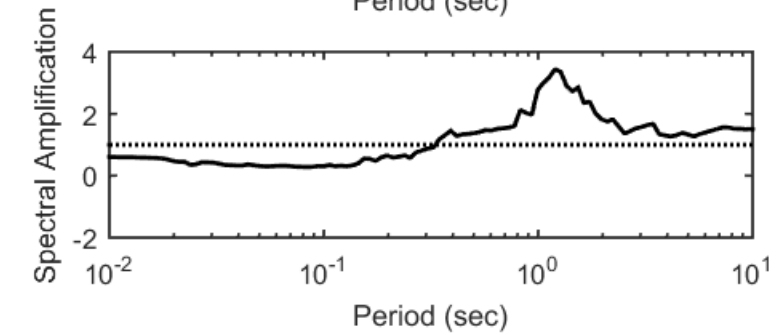
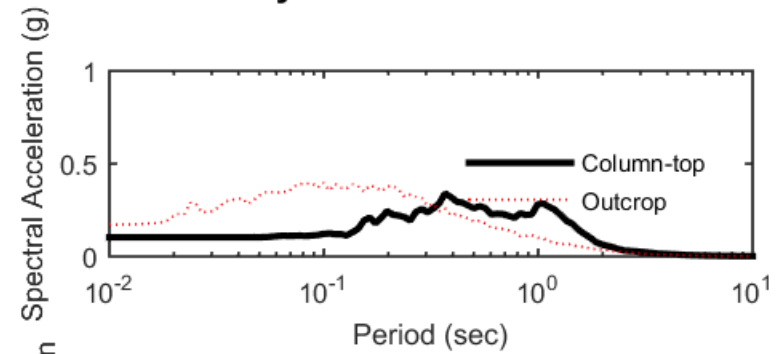
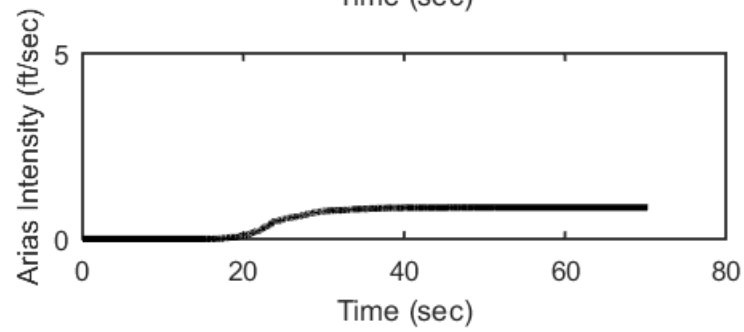
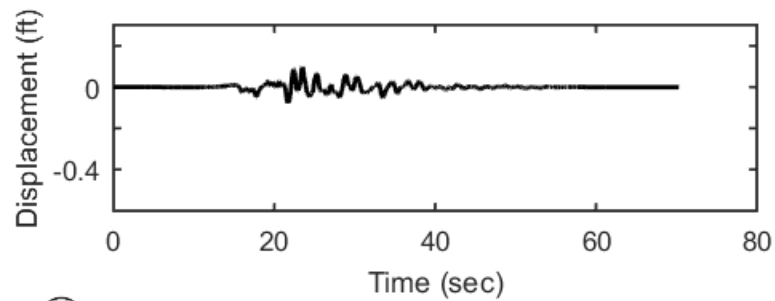
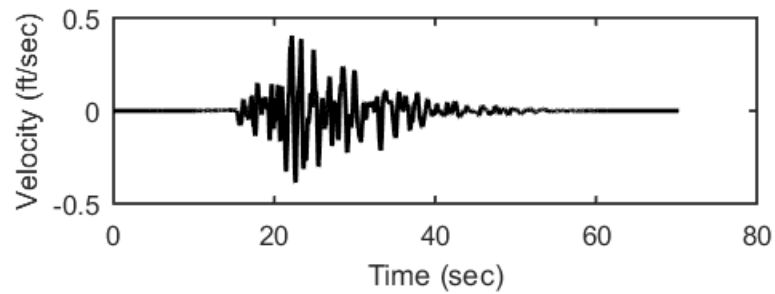
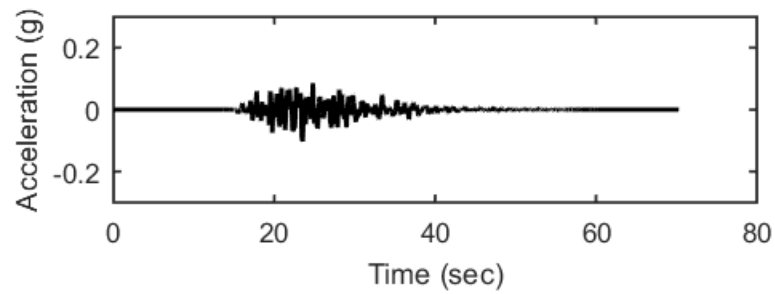
### Profile outputs for Motion: FEE6



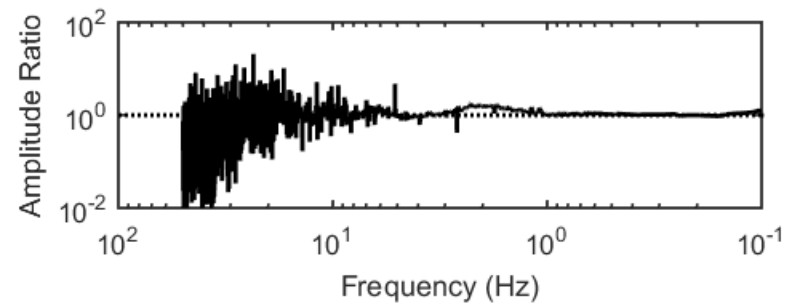
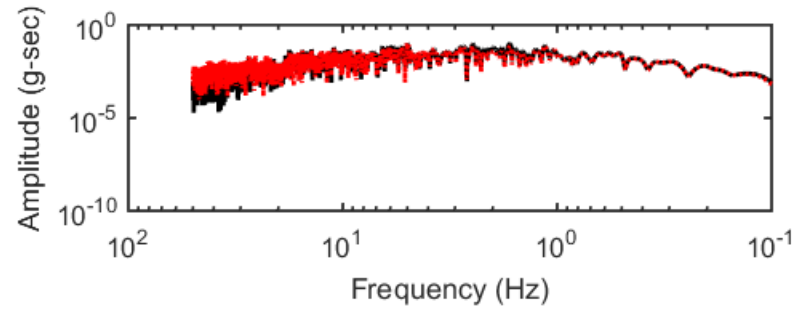
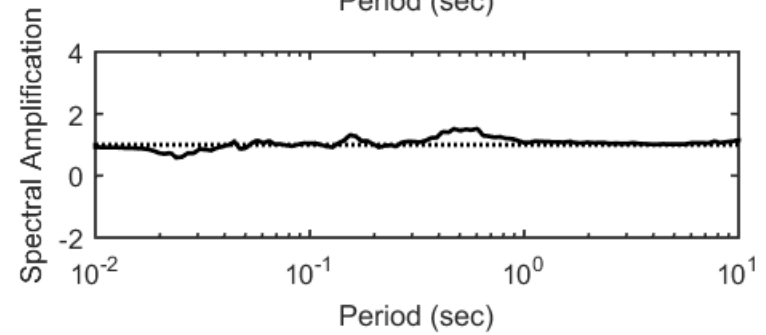
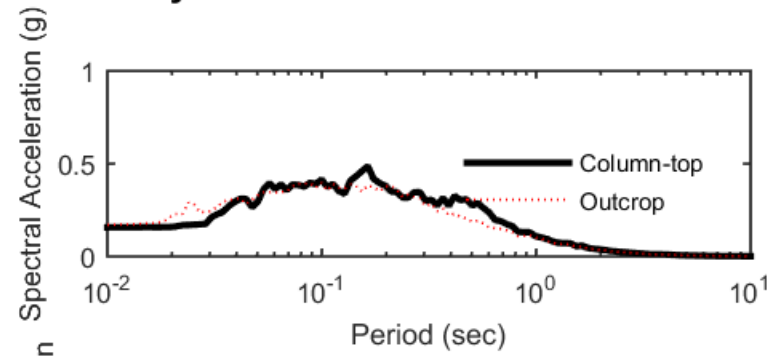
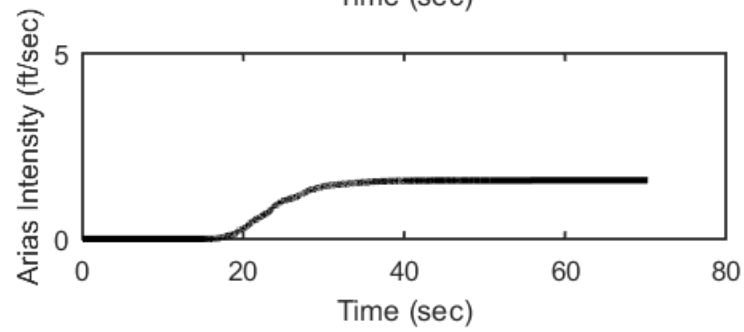
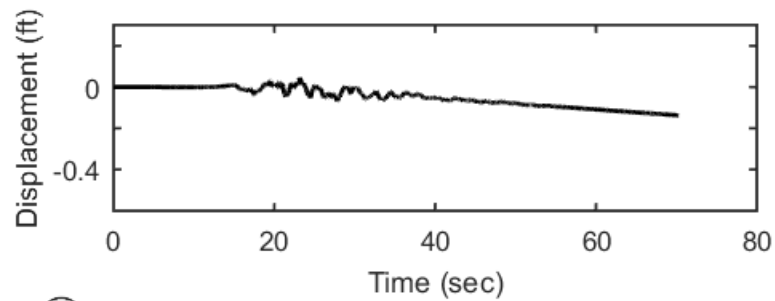
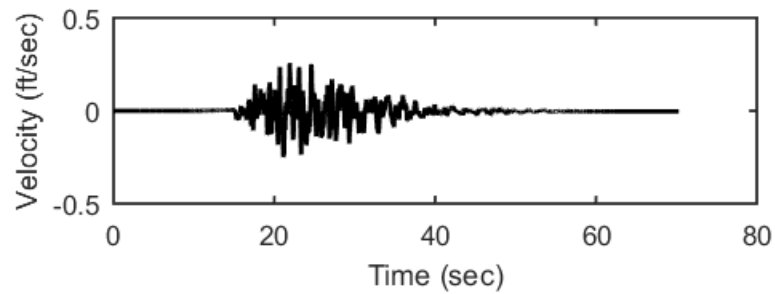
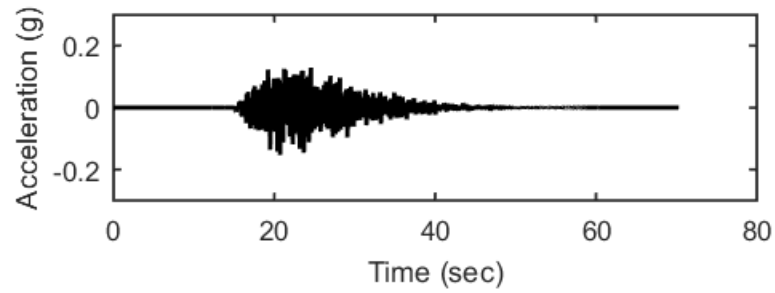
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



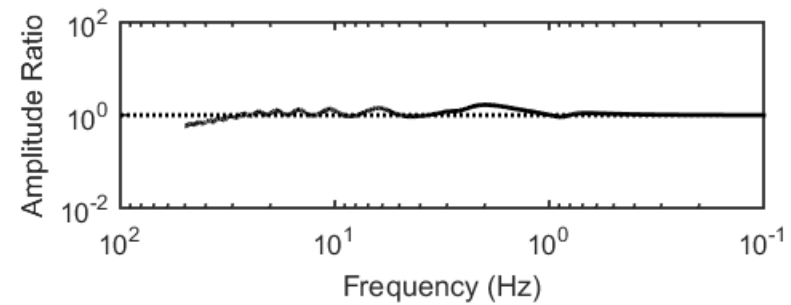
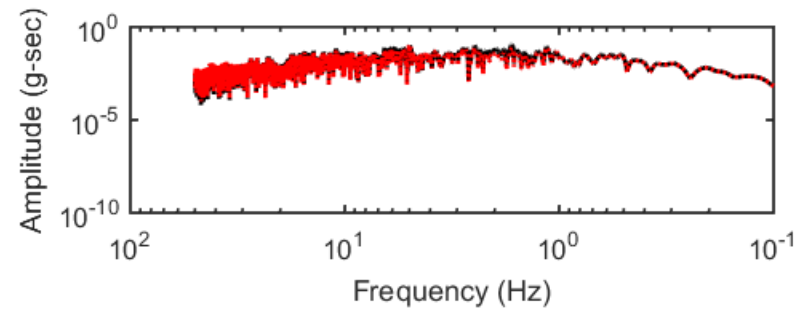
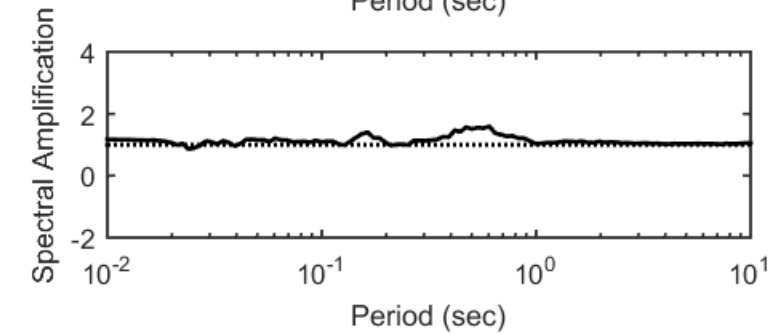
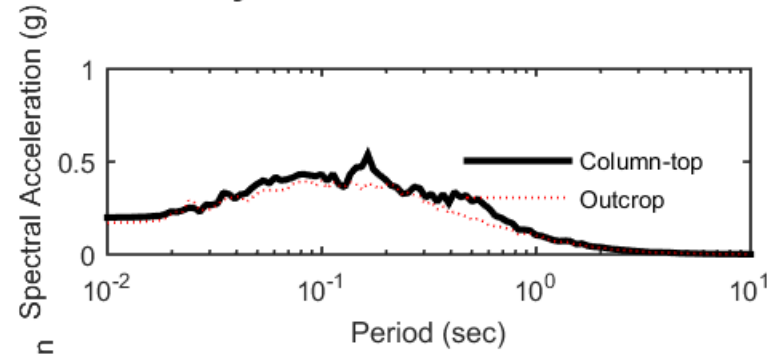
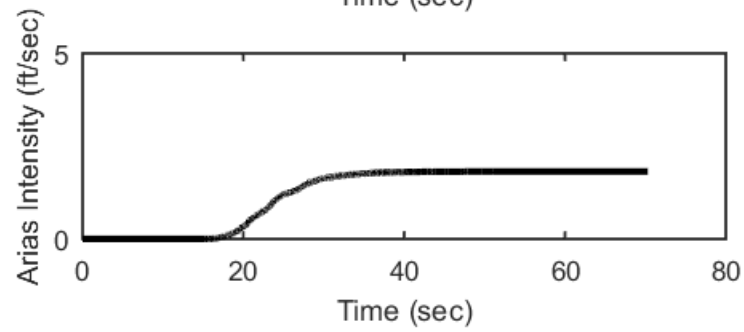
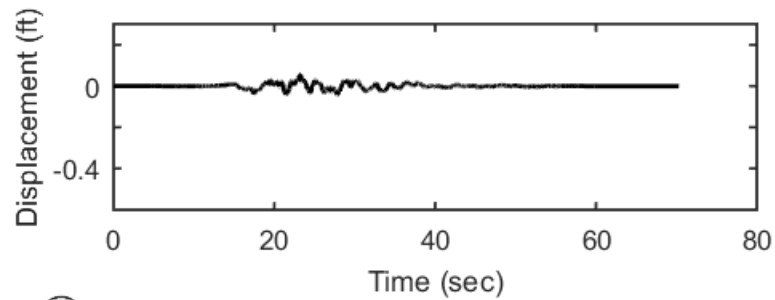
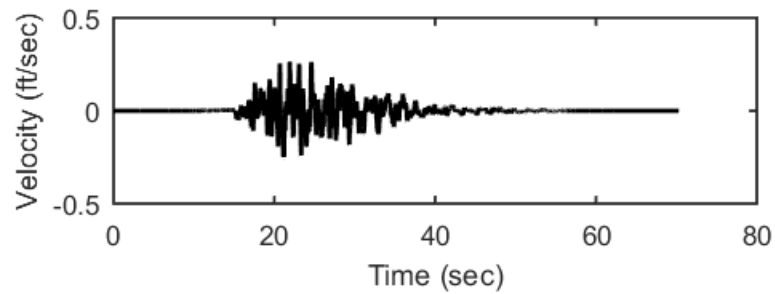
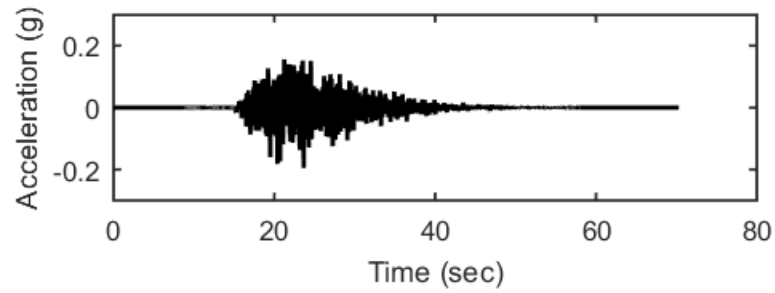
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



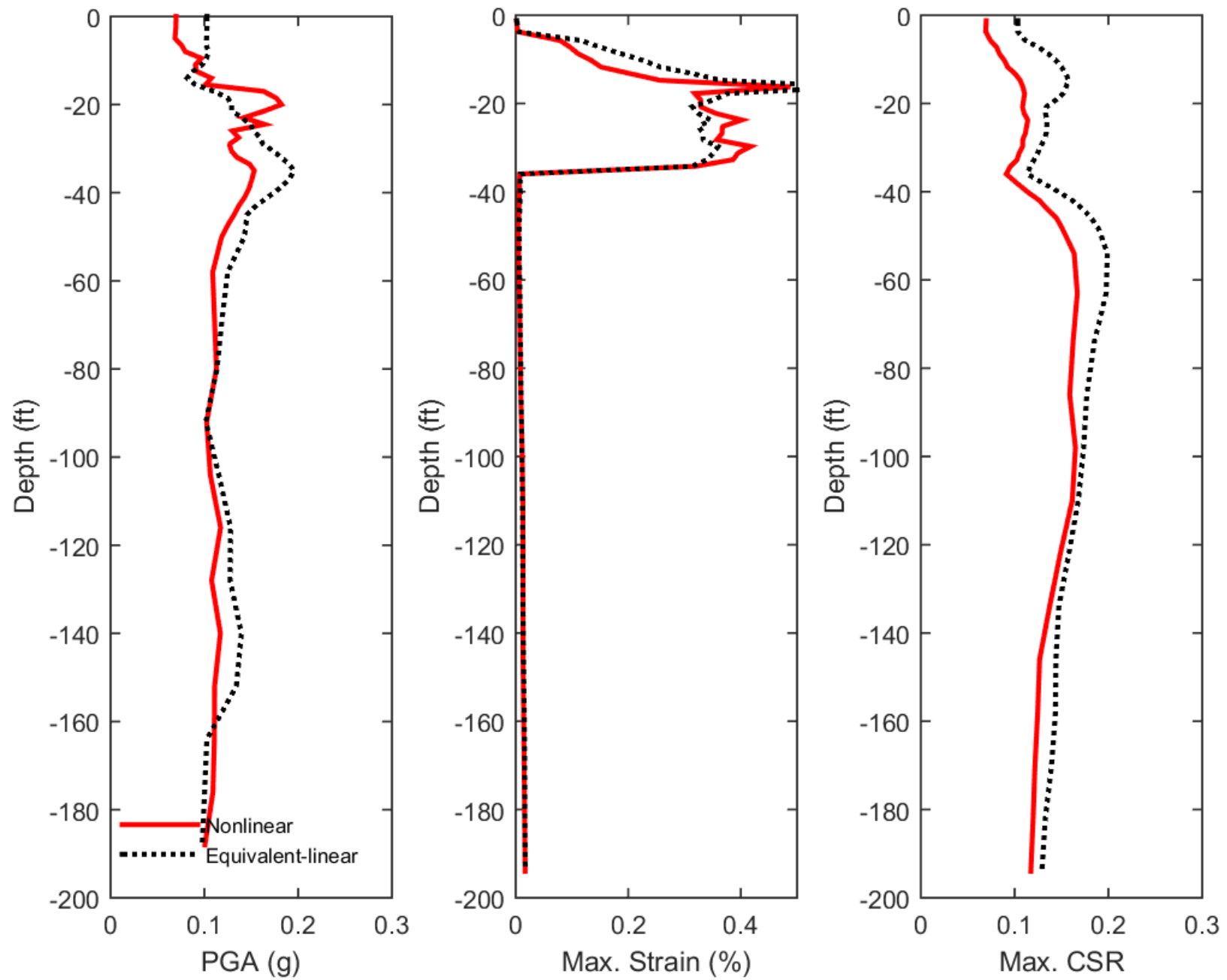
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7

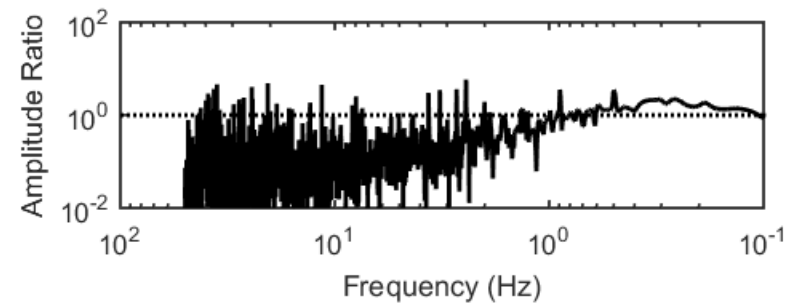
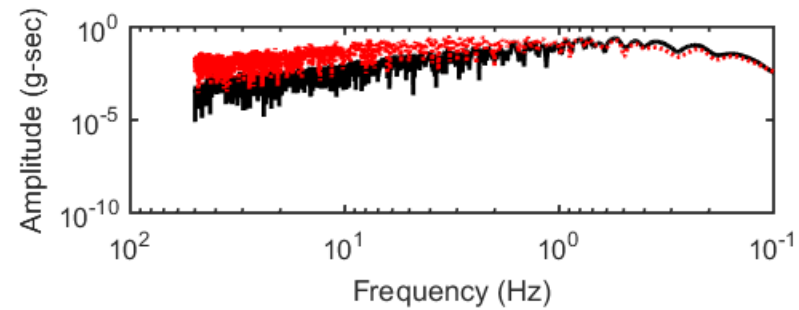
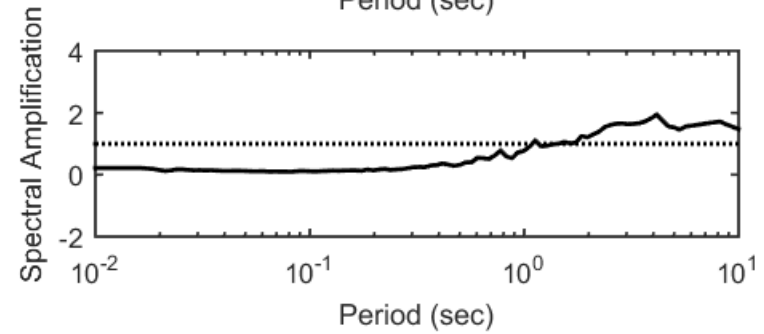
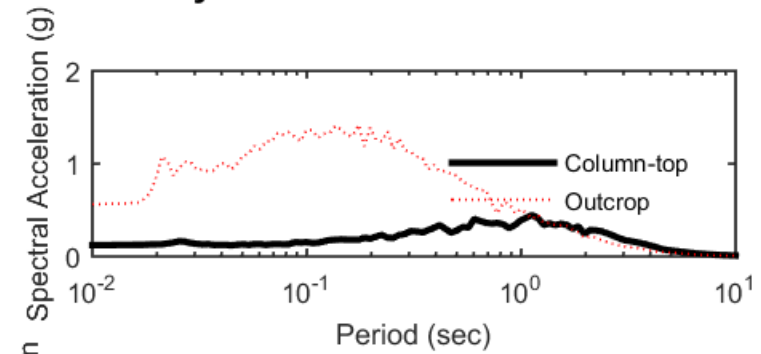
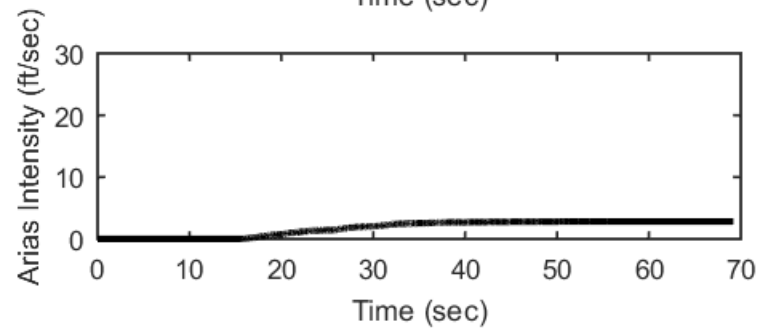
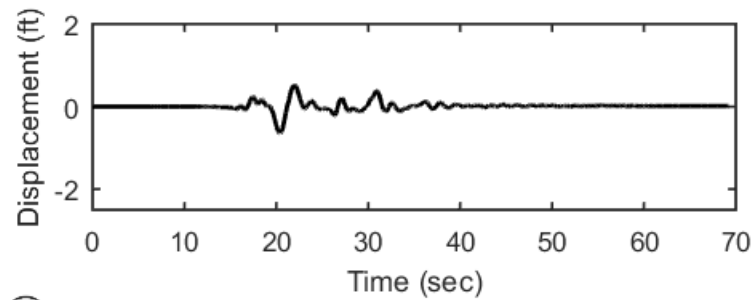
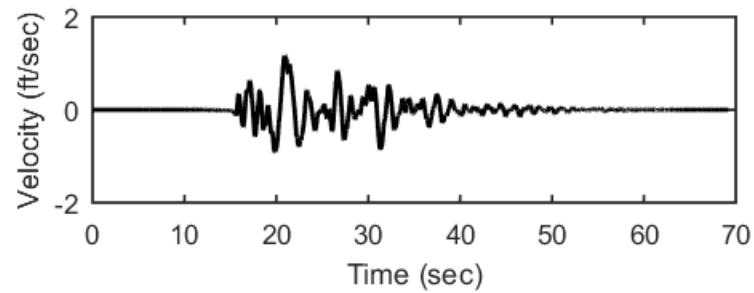
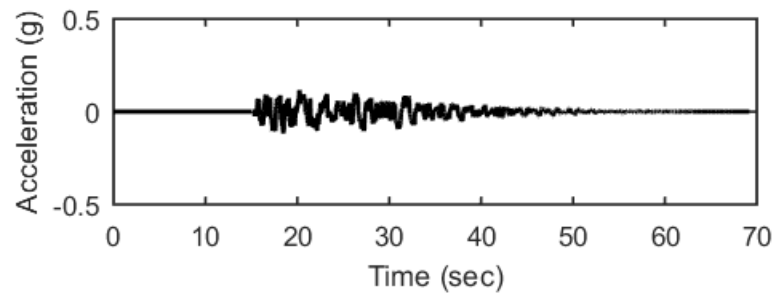


### Profile outputs for Motion: FEE7

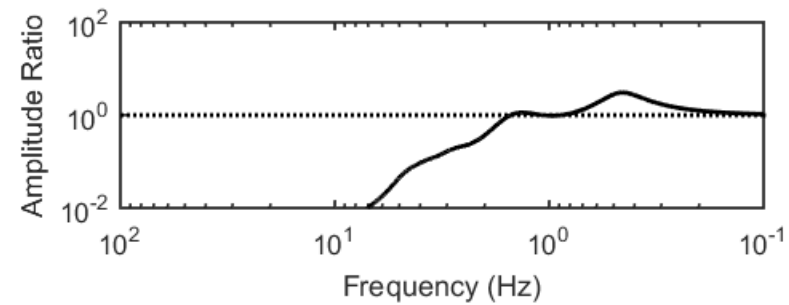
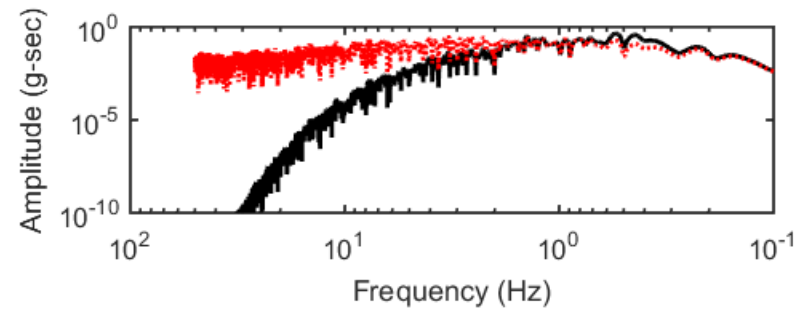
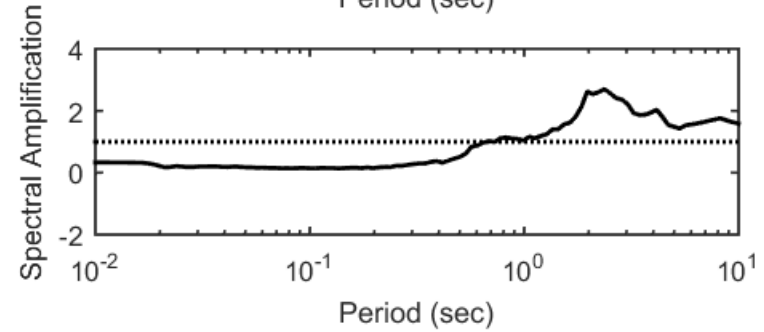
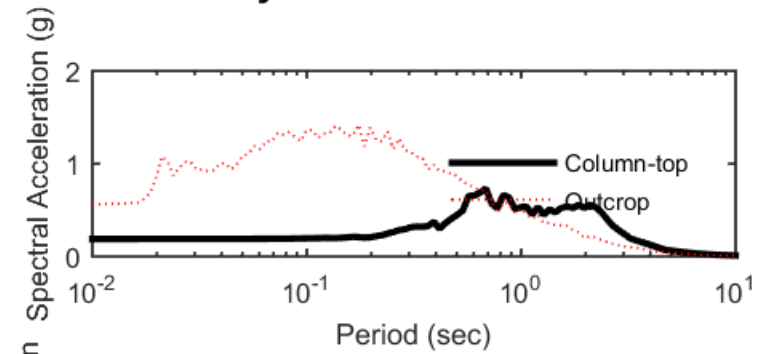
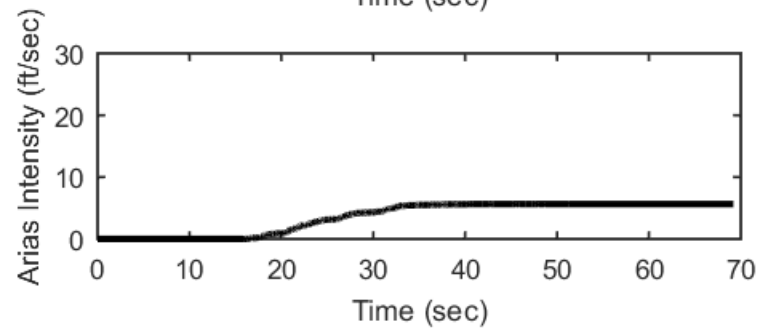
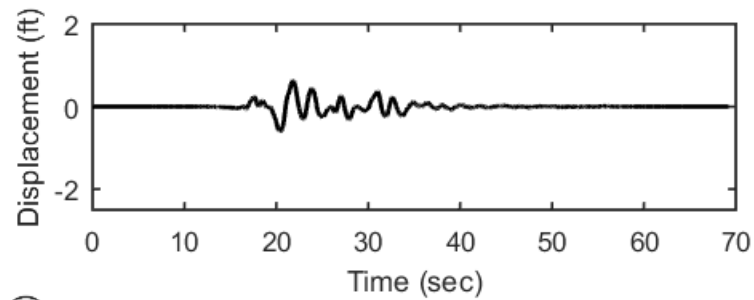
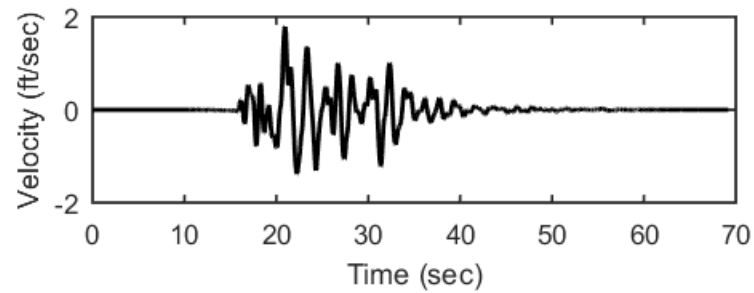
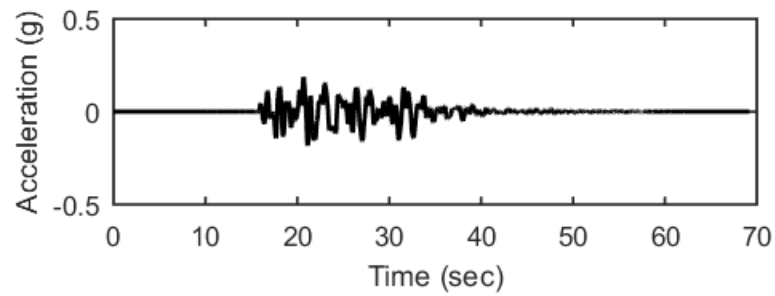




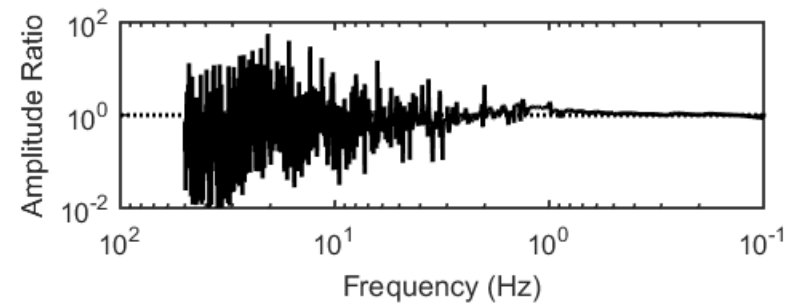
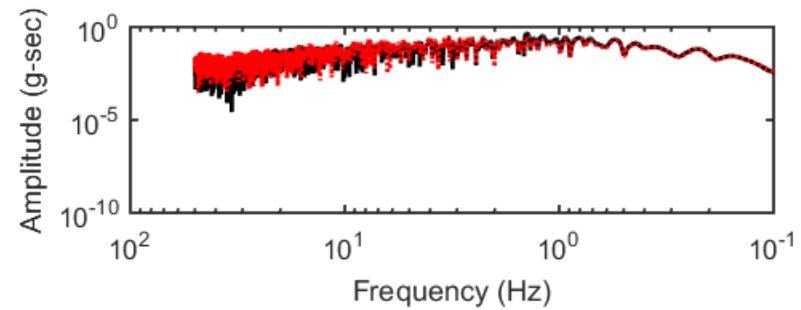
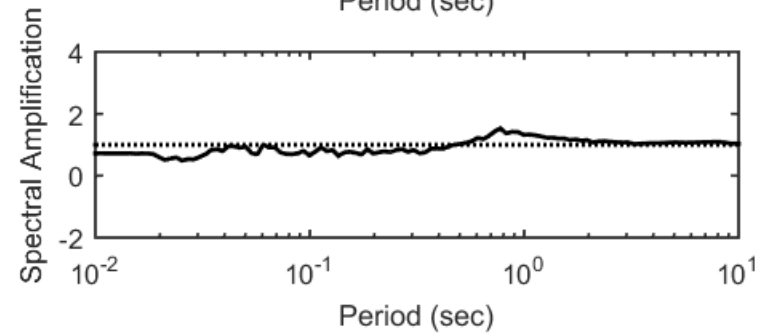
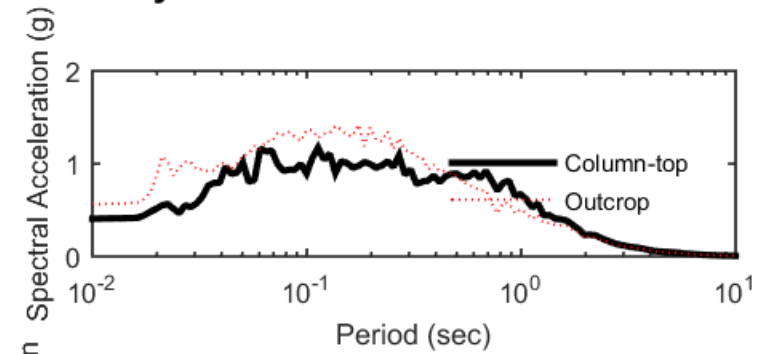
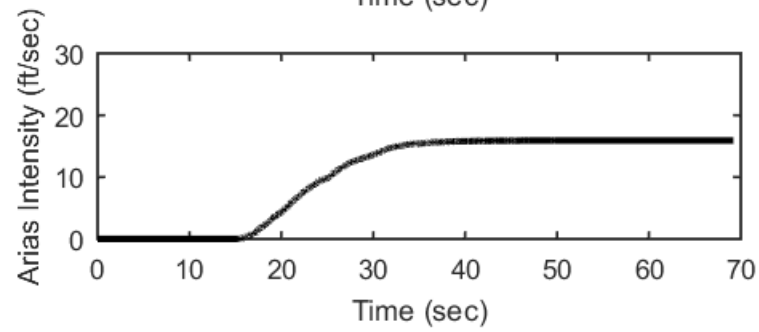
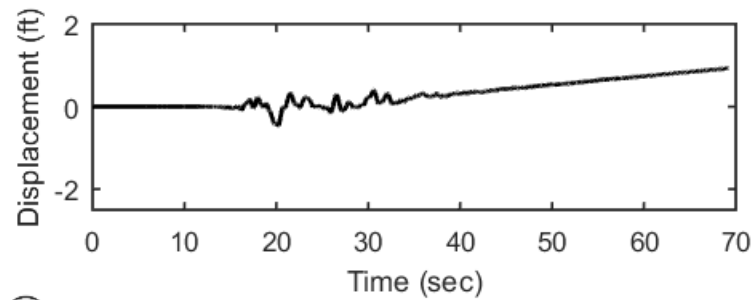
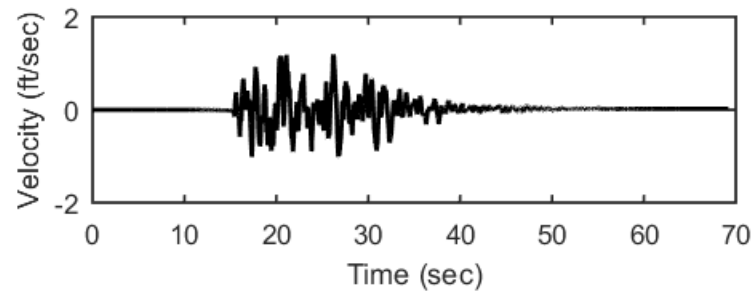
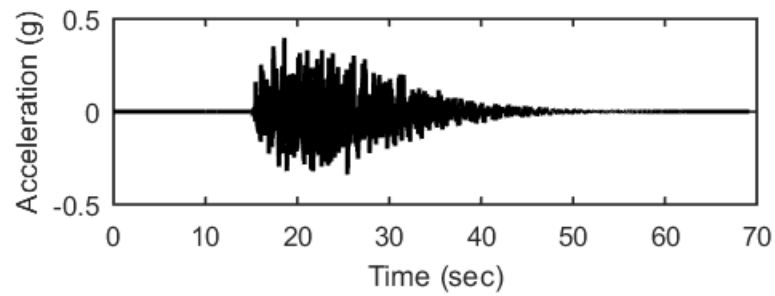
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



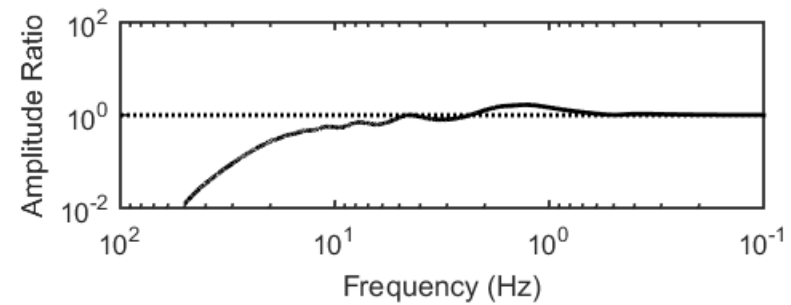
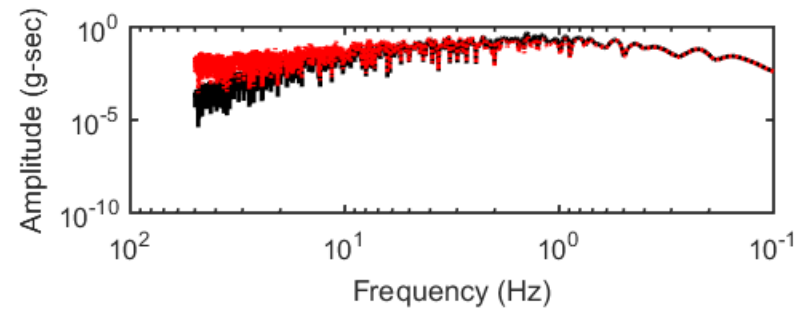
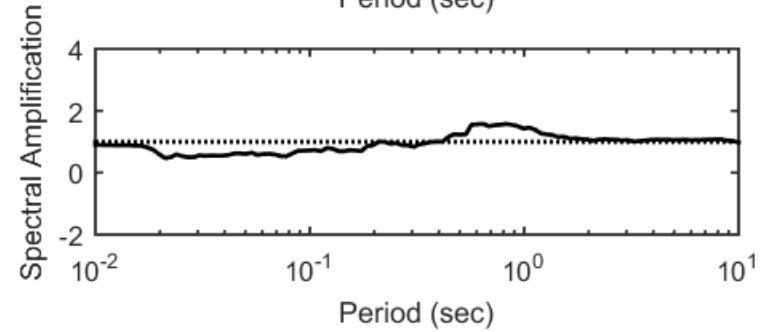
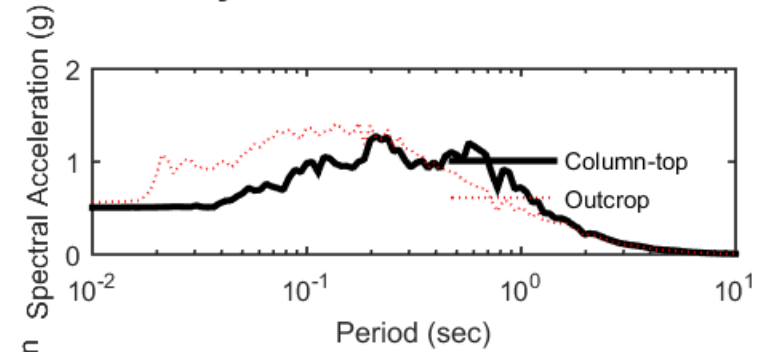
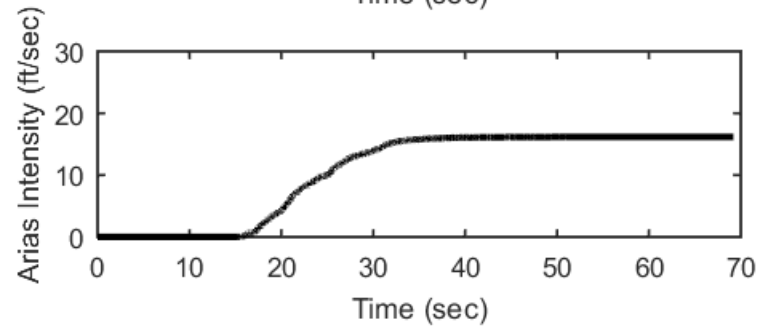
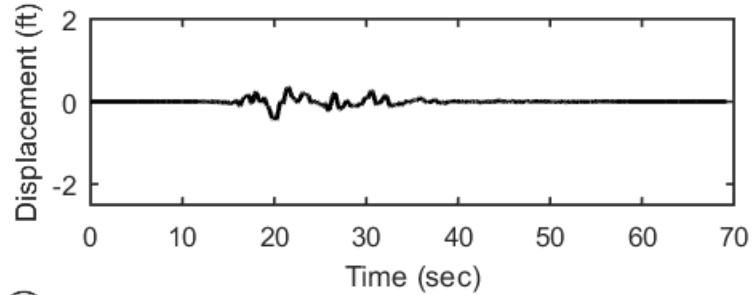
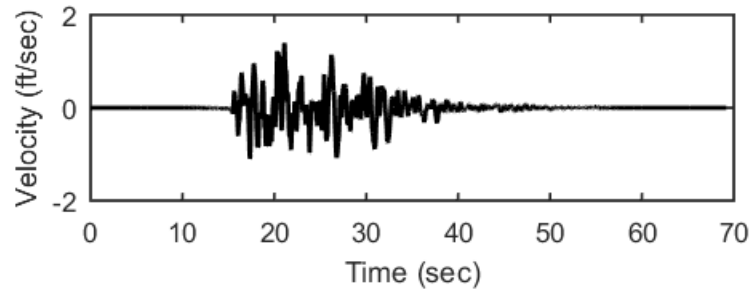
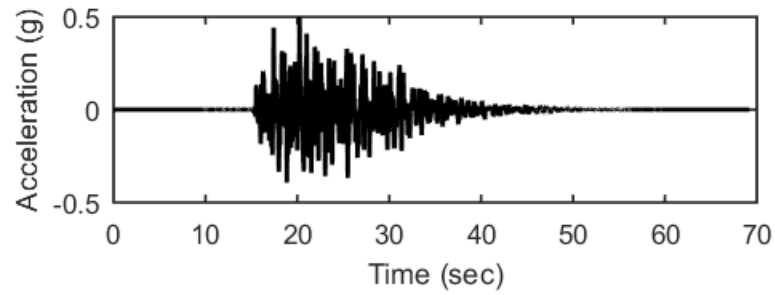
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



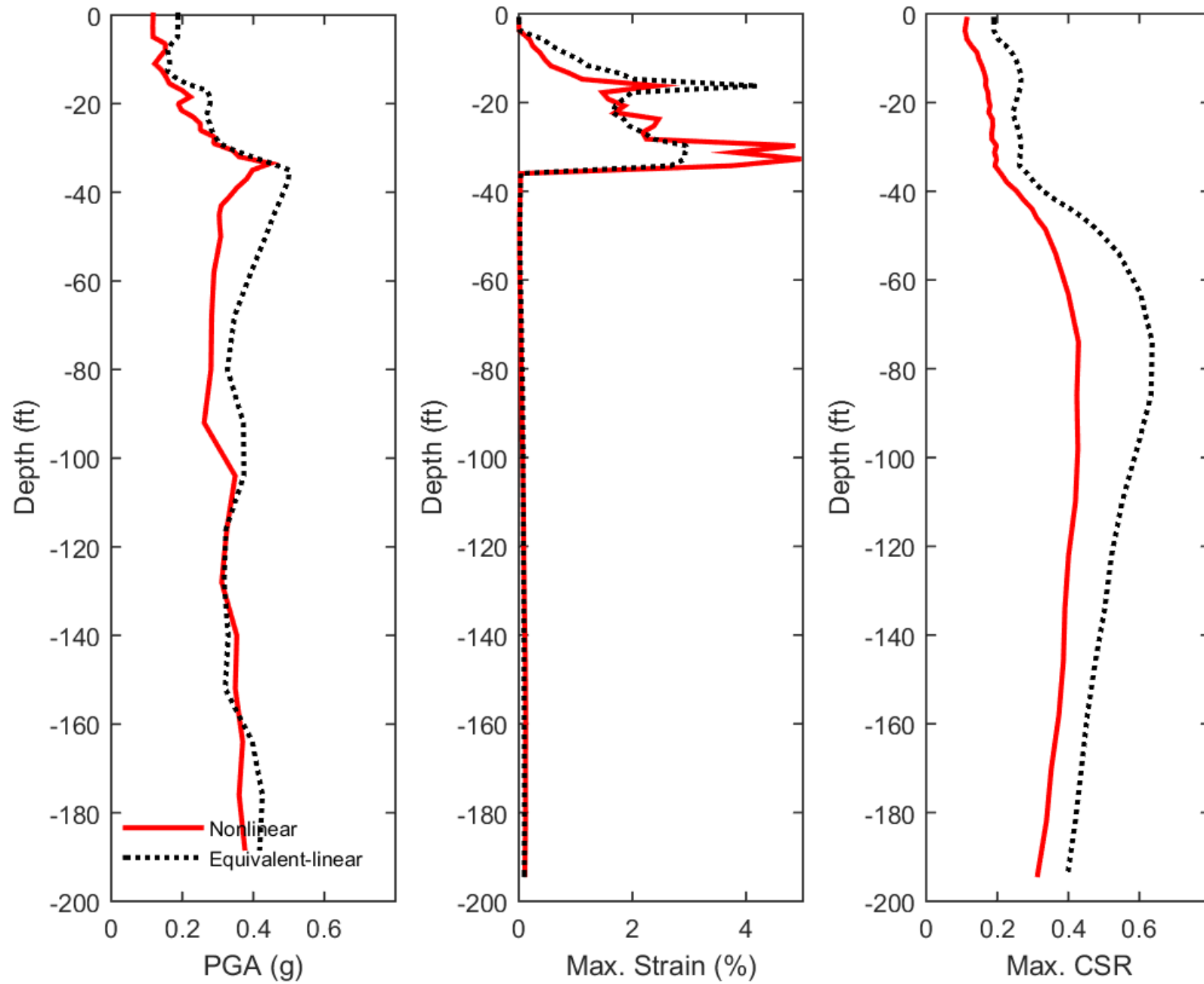
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



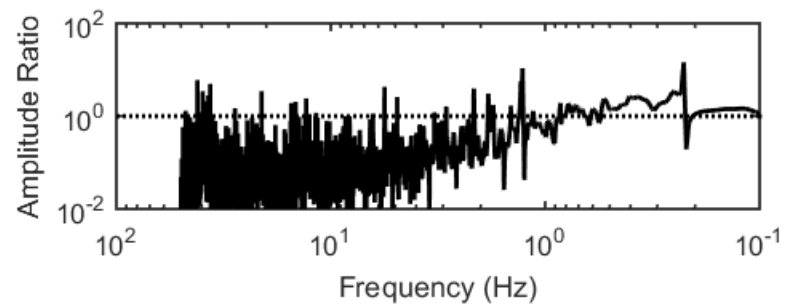
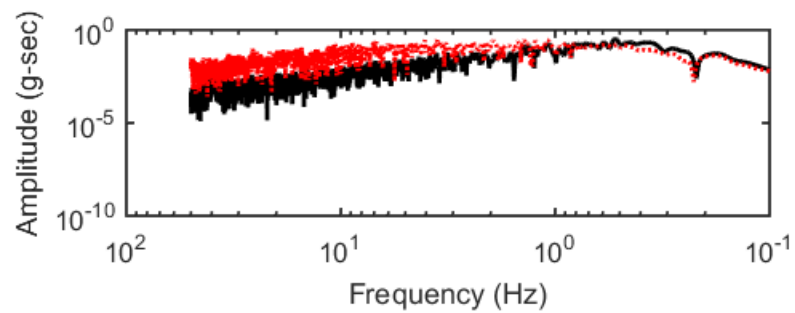
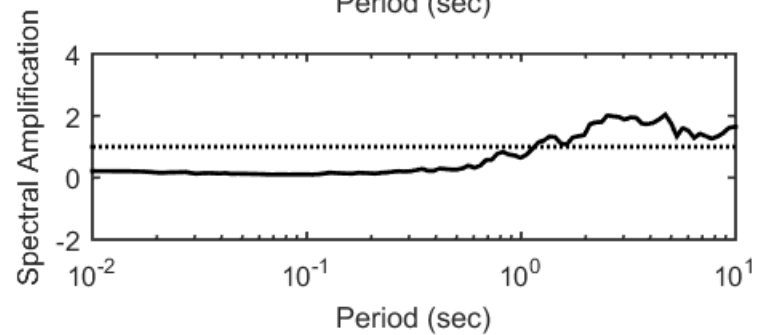
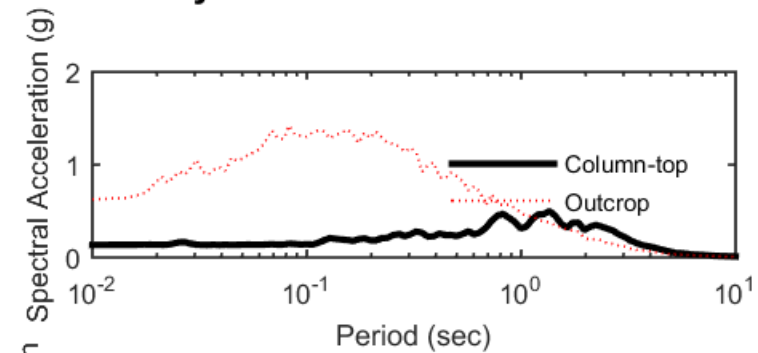
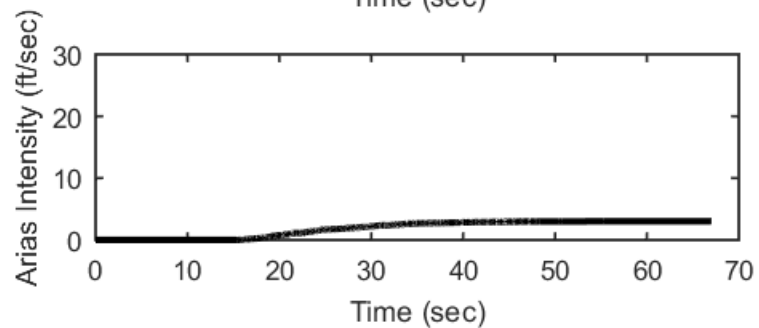
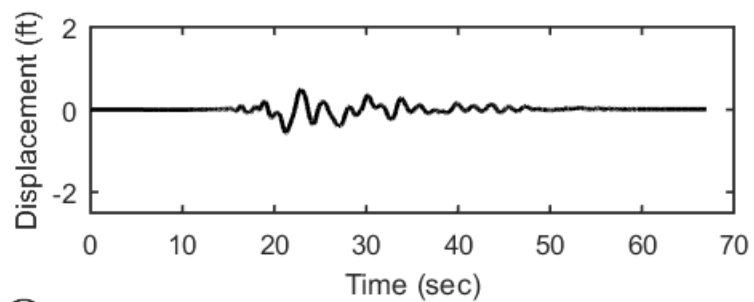
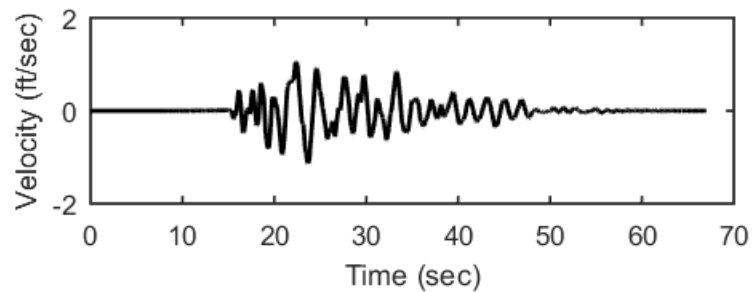
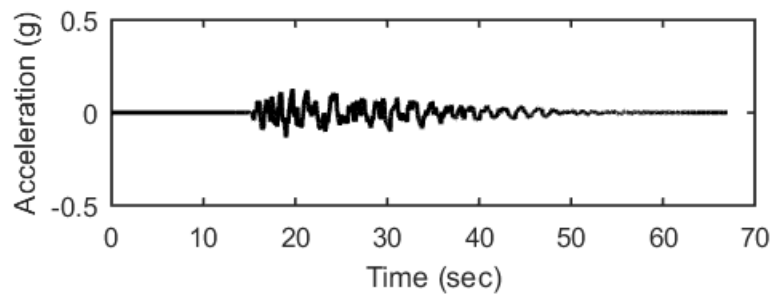
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



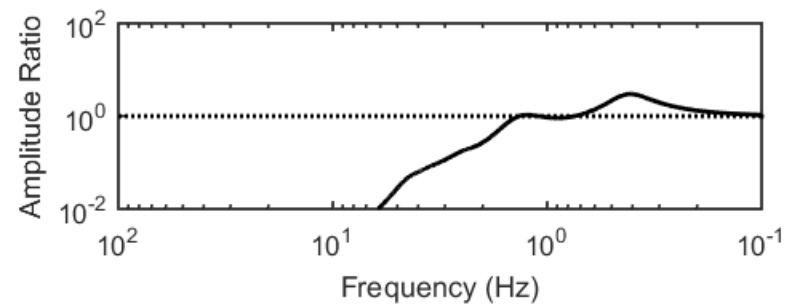
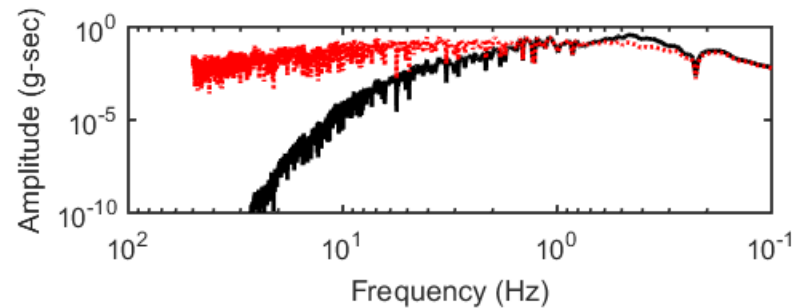
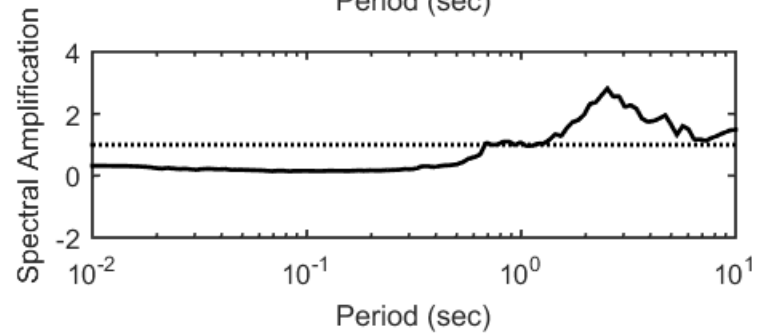
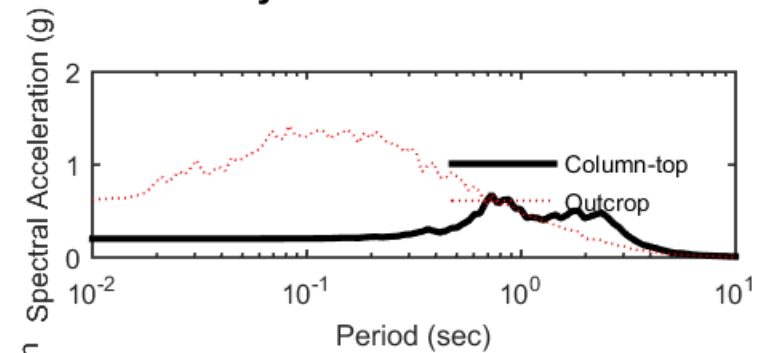
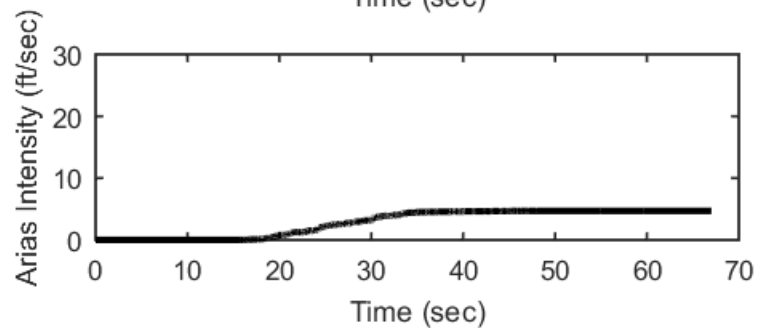
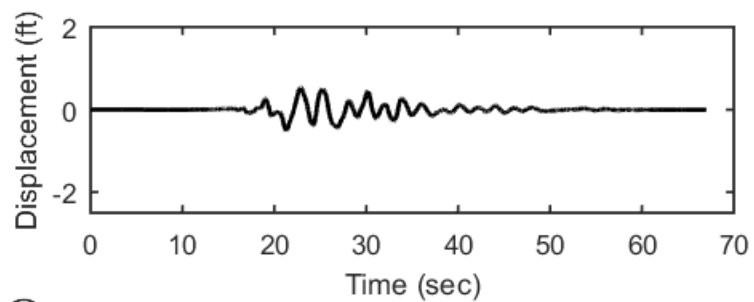
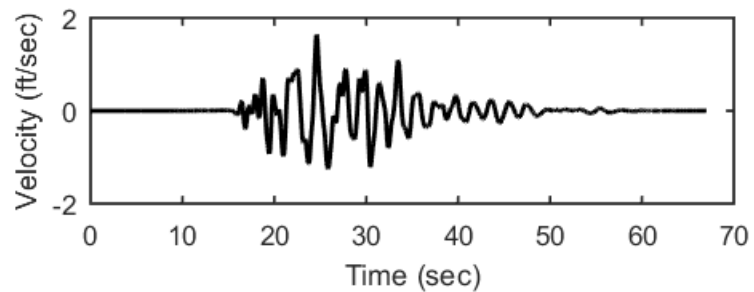
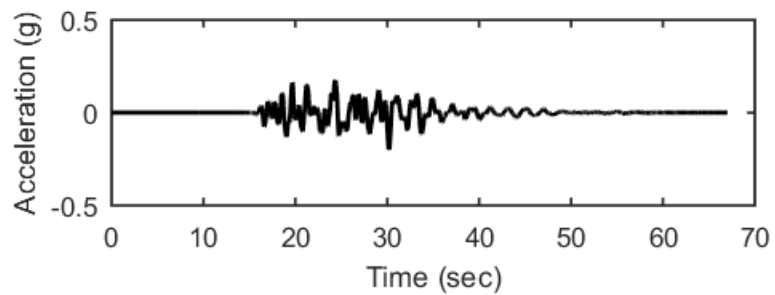
### Profile outputs for Motion: SEE1



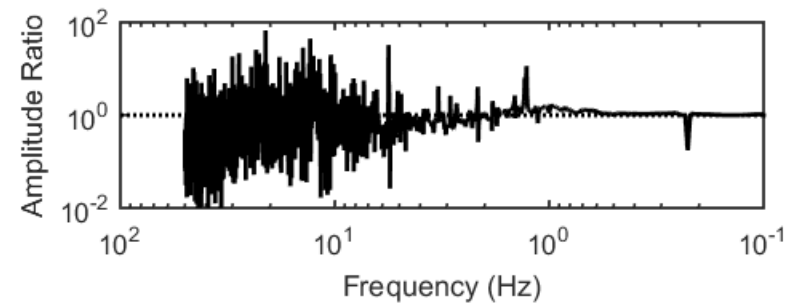
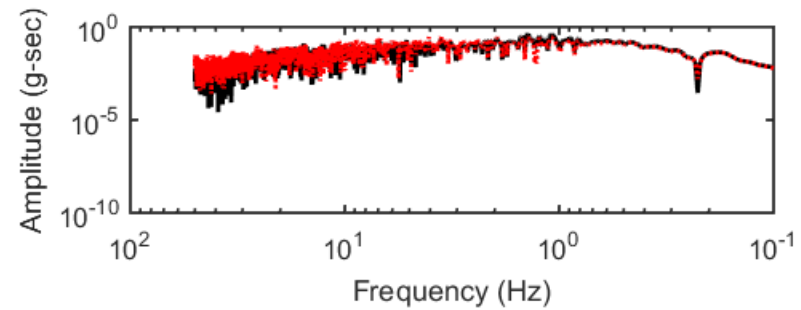
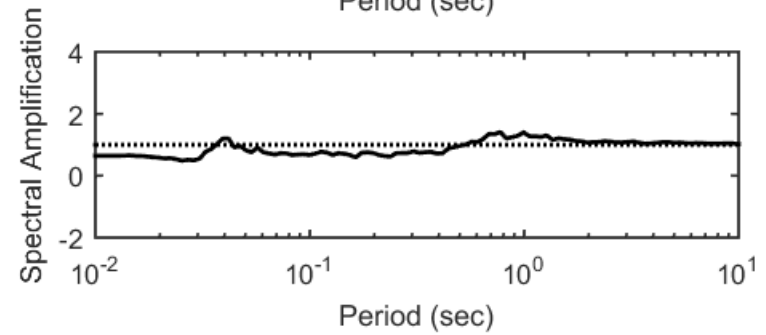
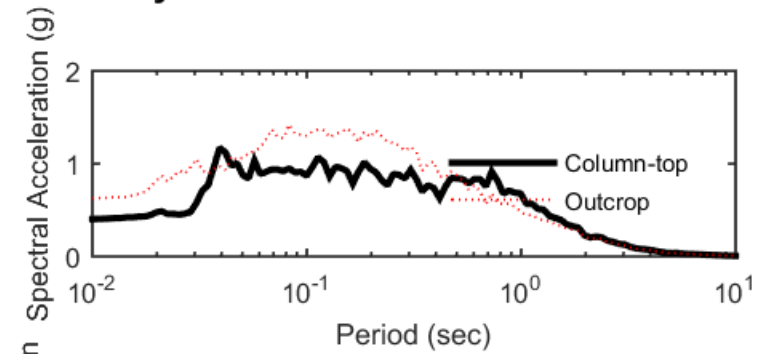
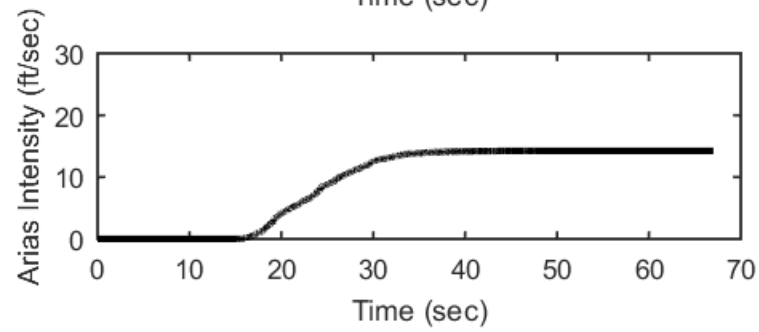
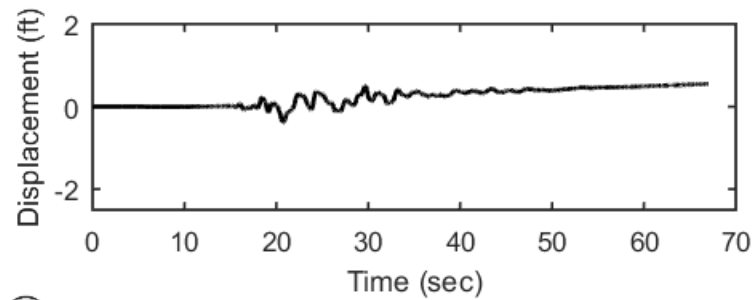
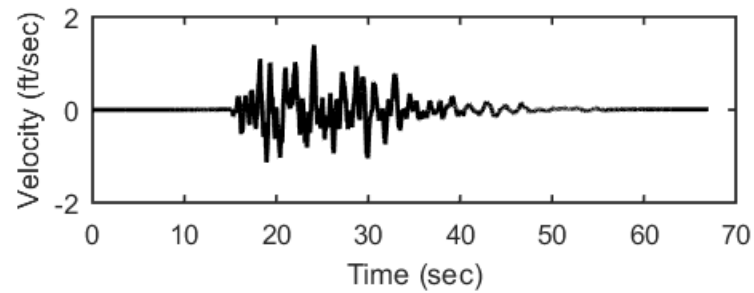
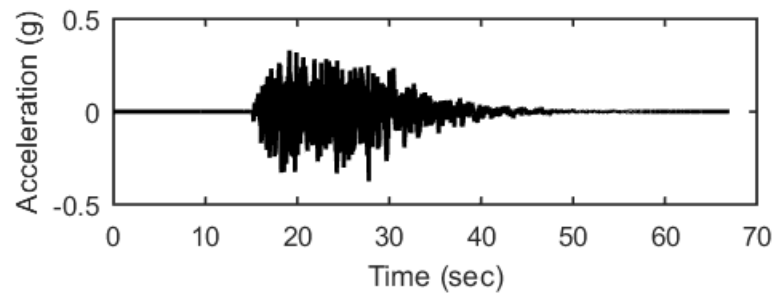
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2

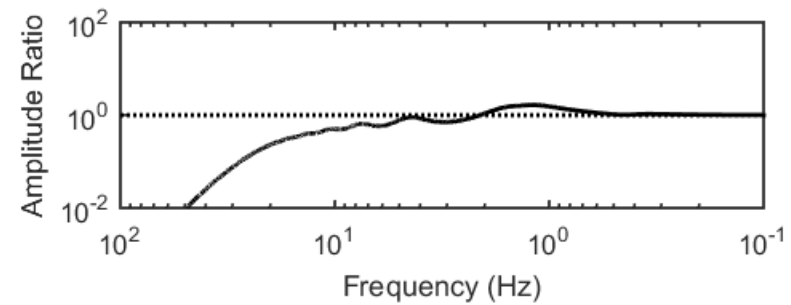
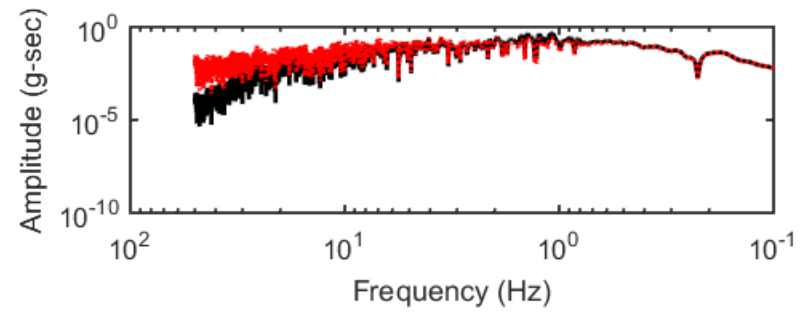
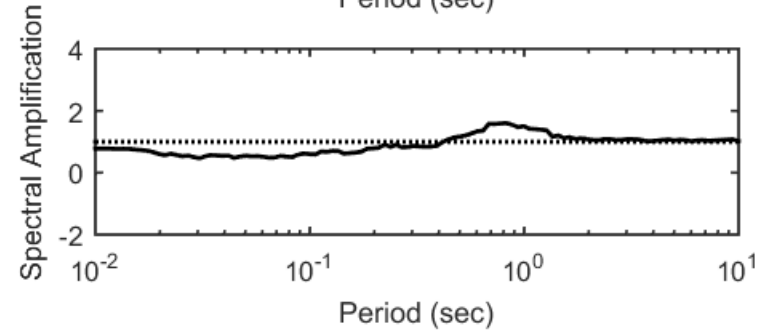
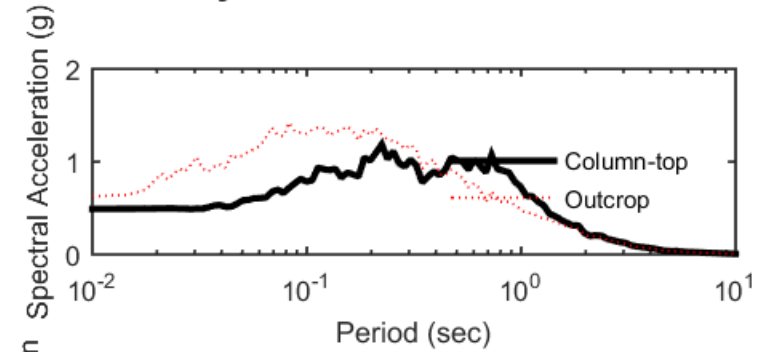
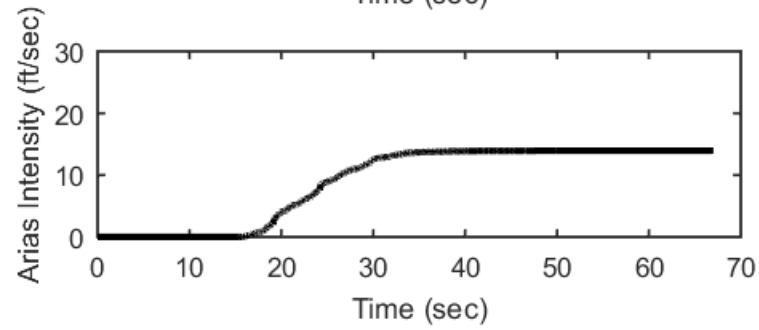
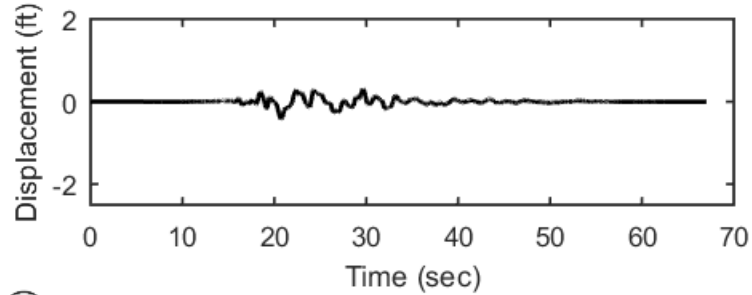
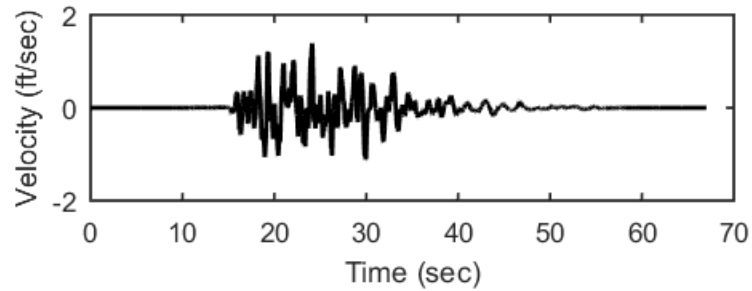
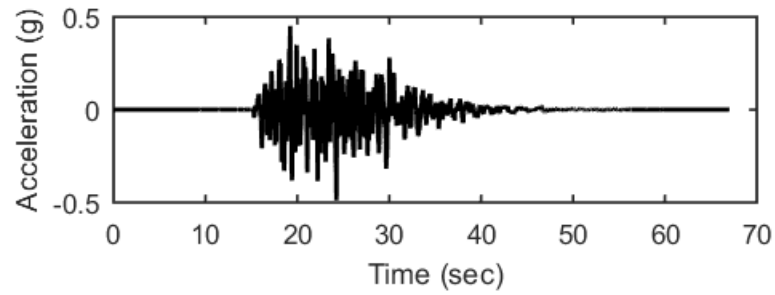


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2

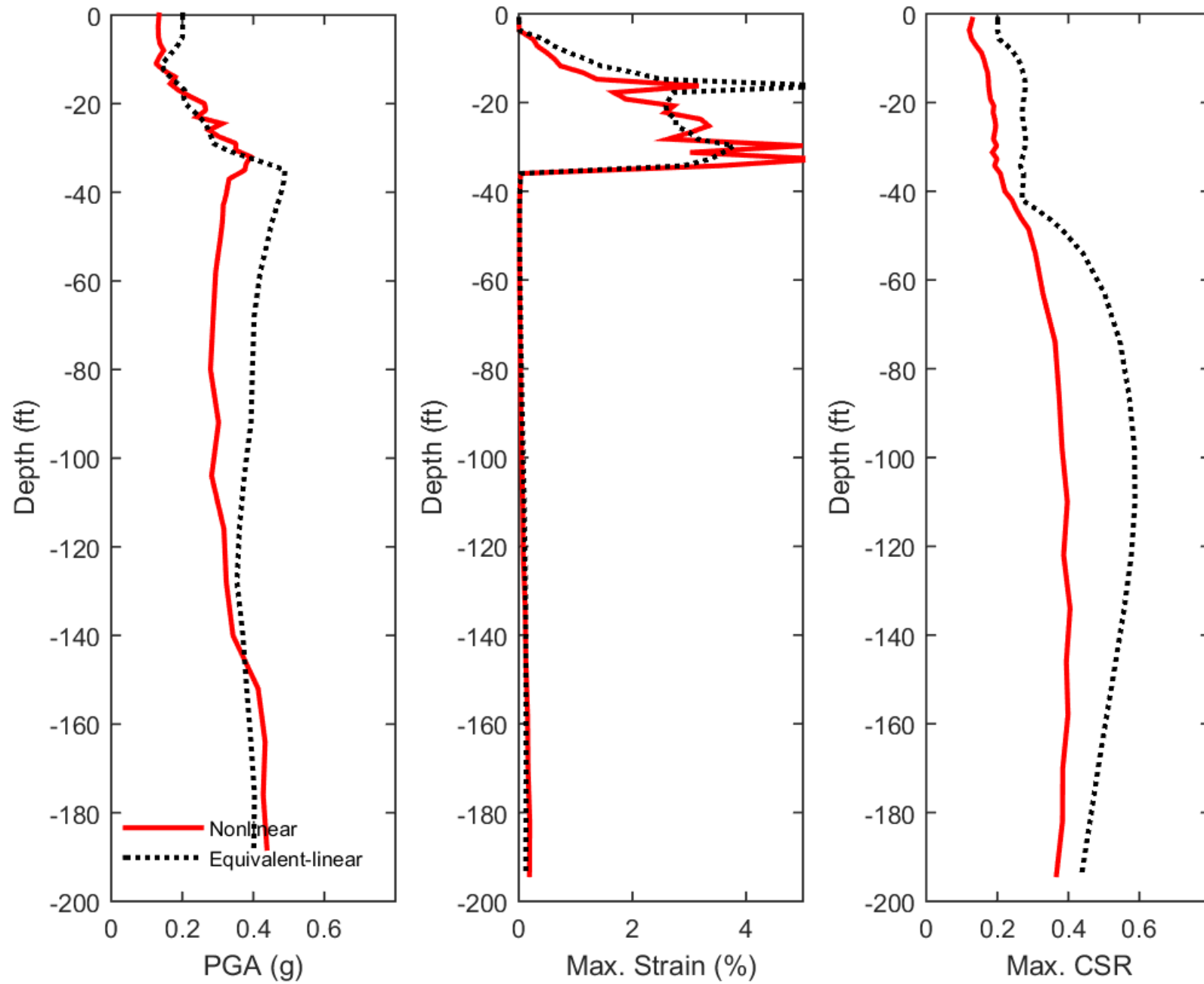




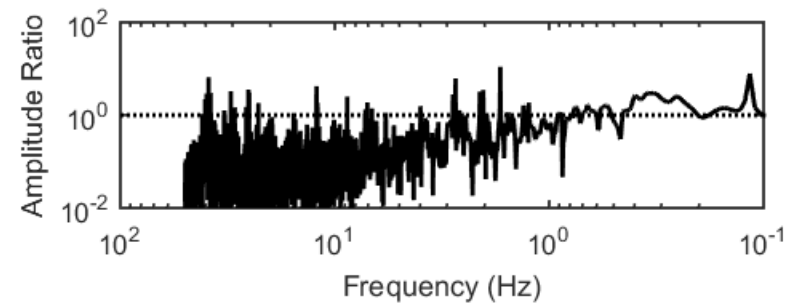
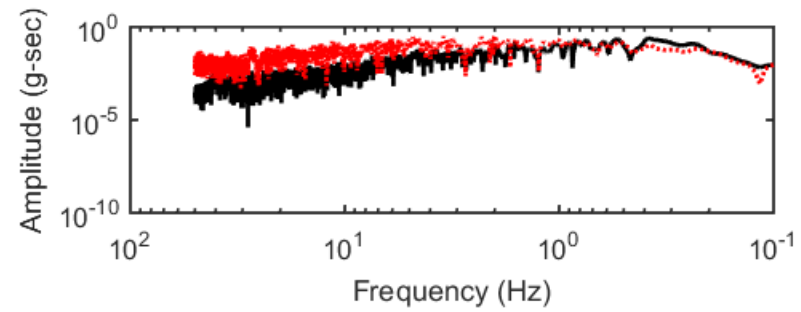
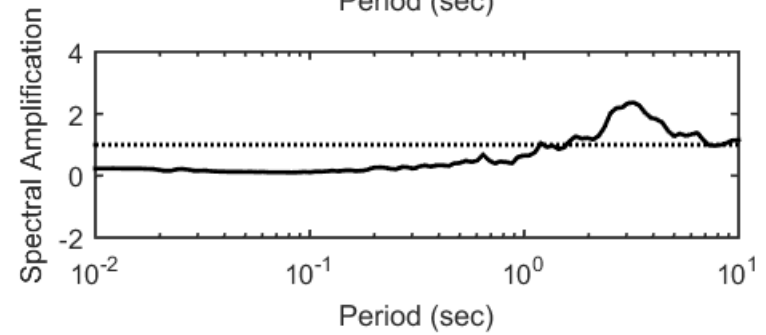
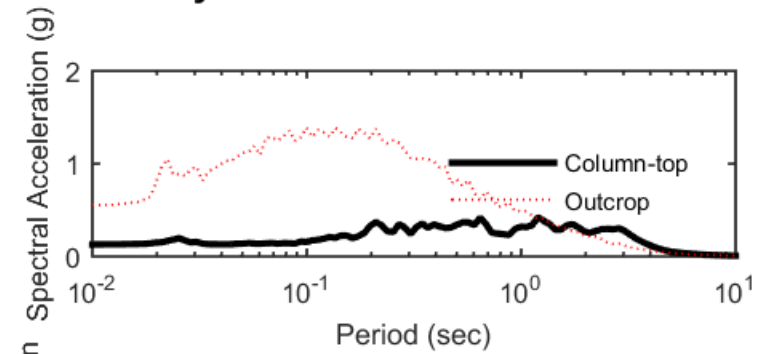
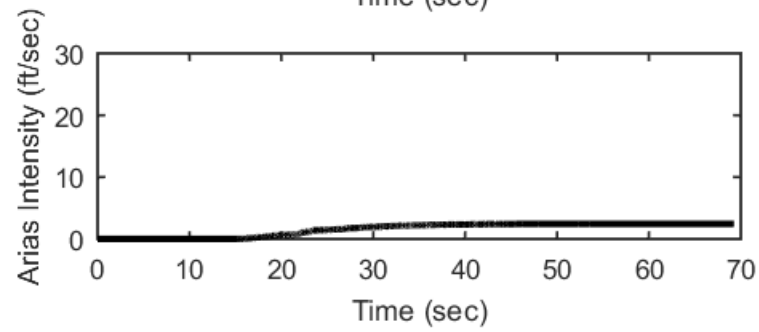
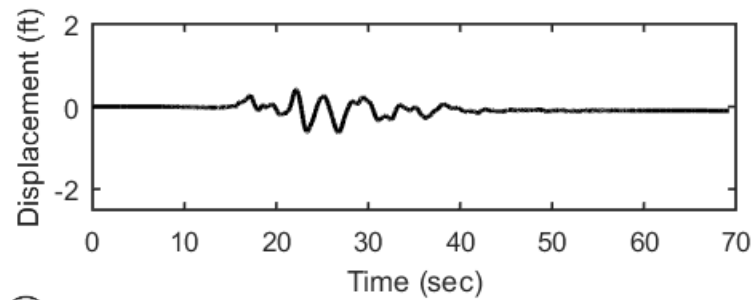
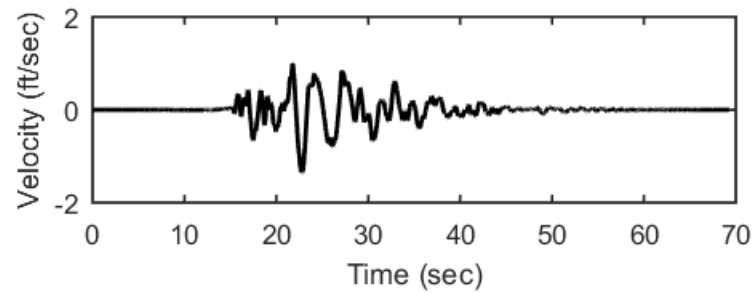
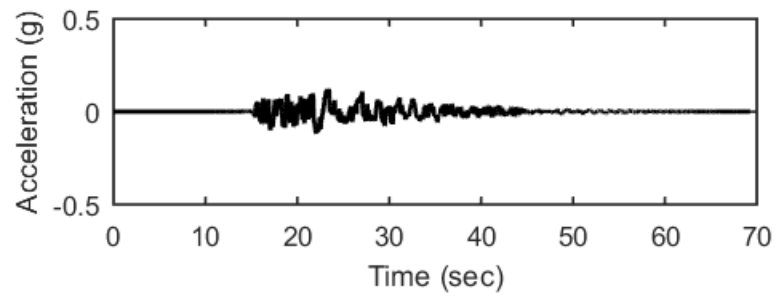
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



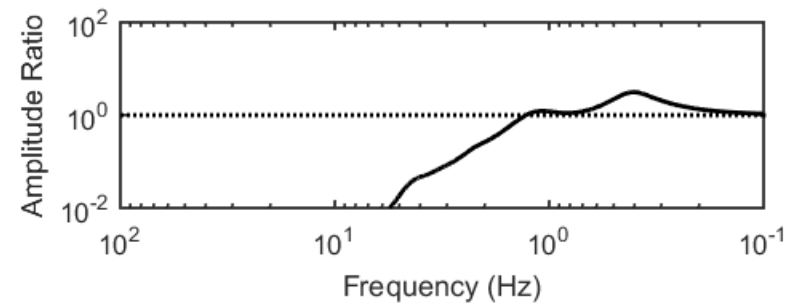
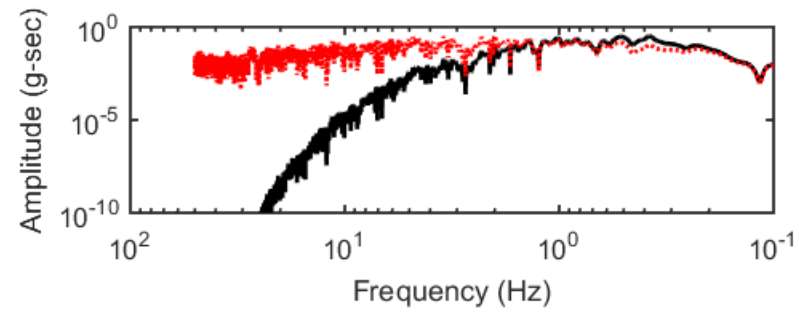
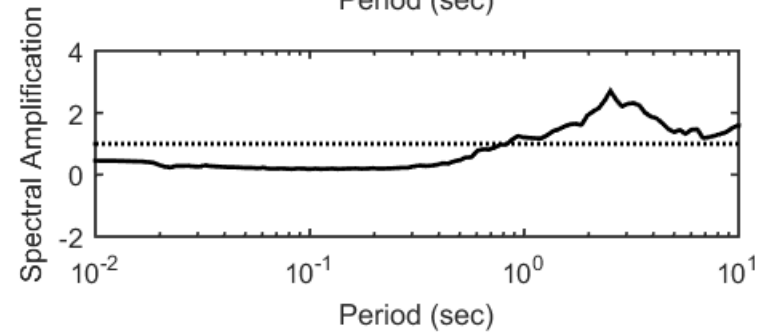
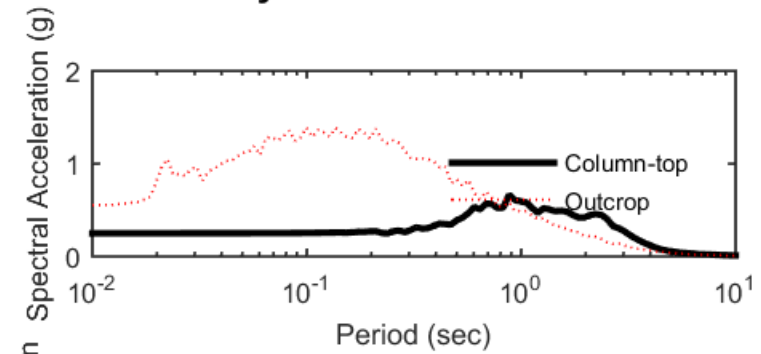
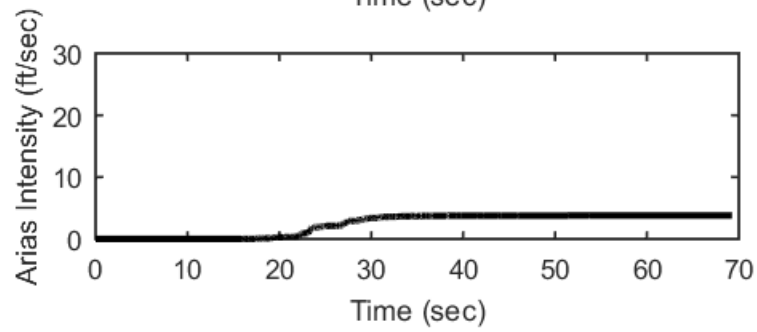
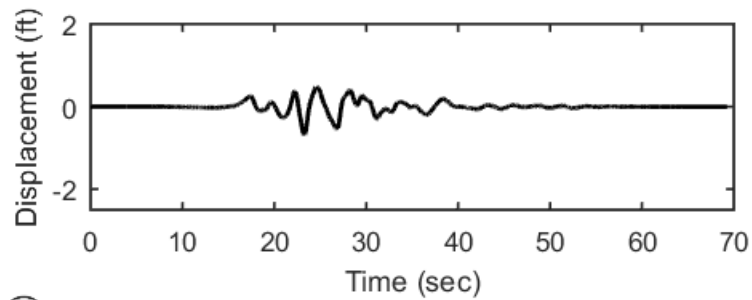
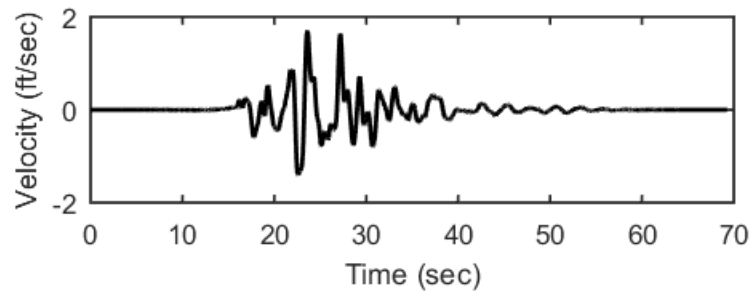
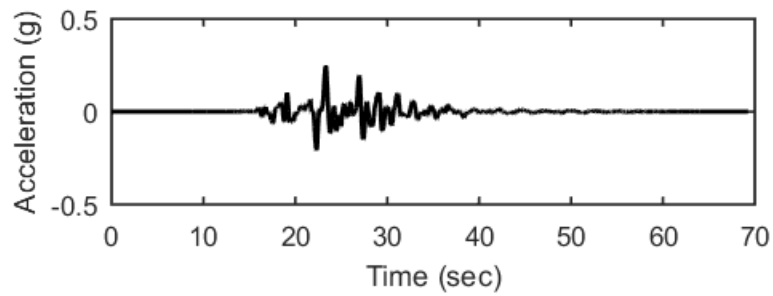
### Profile outputs for Motion: SEE2



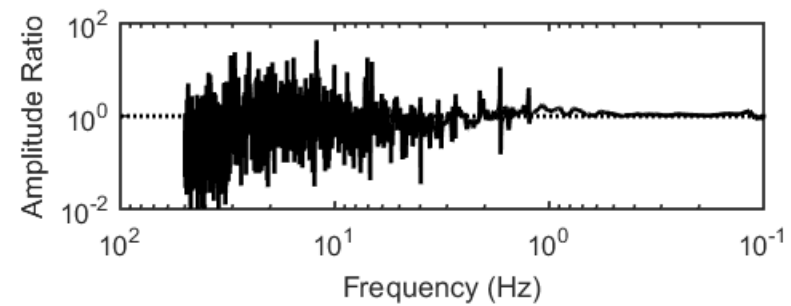
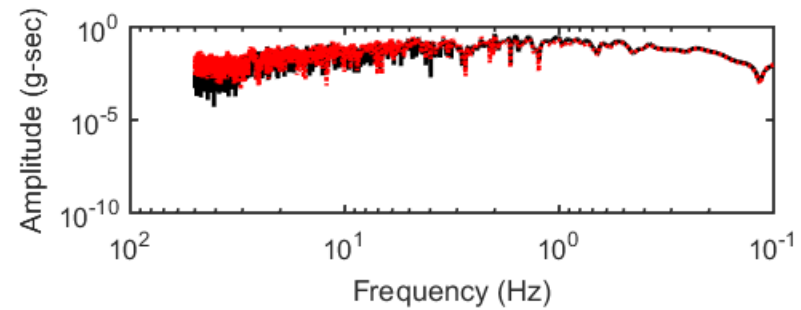
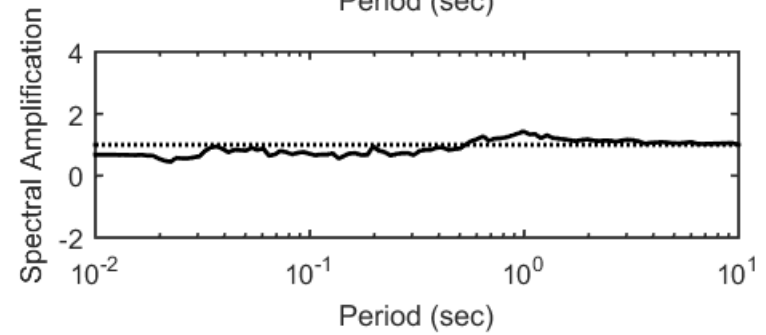
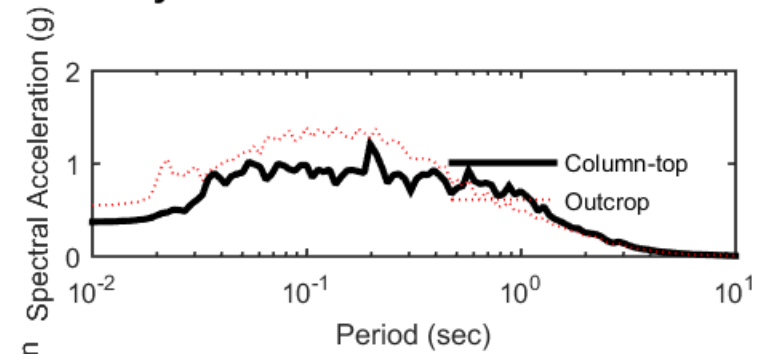
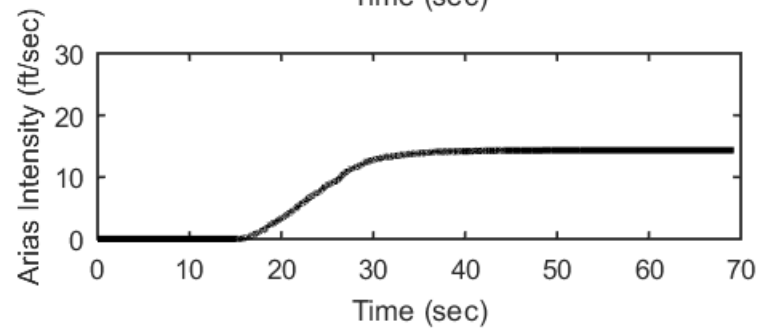
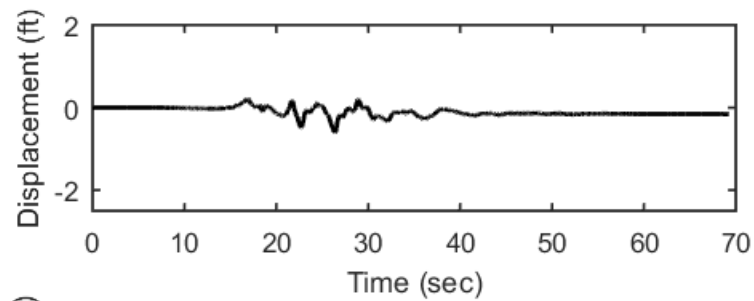
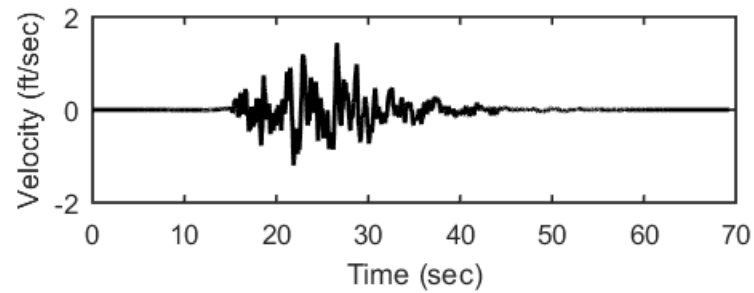
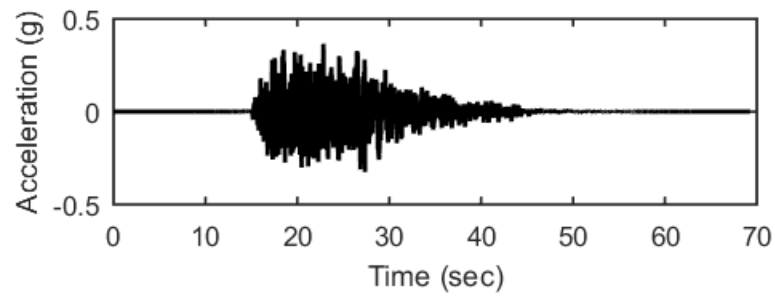
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



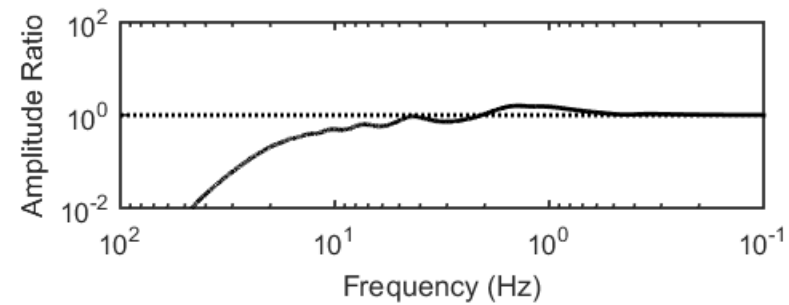
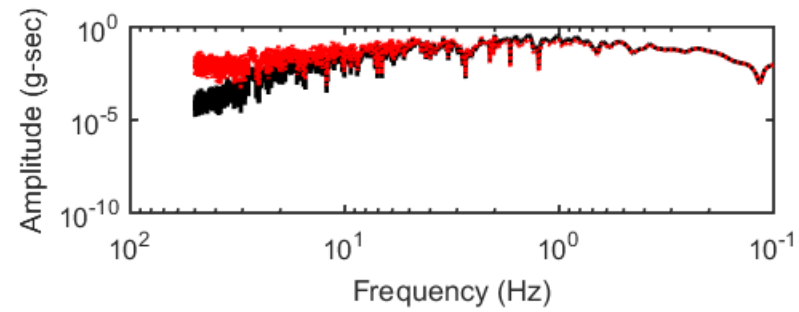
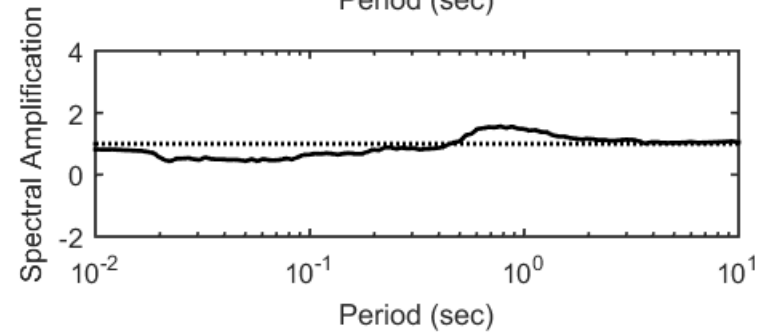
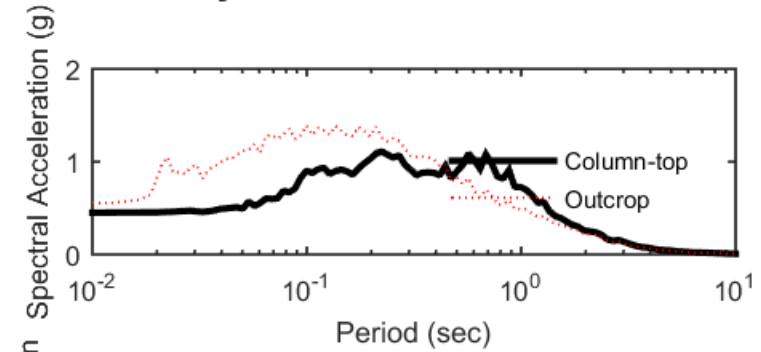
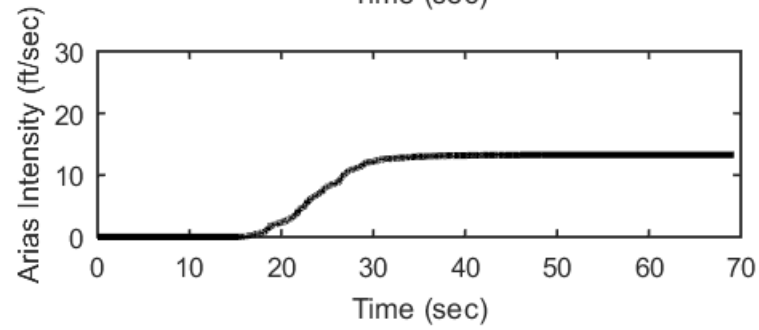
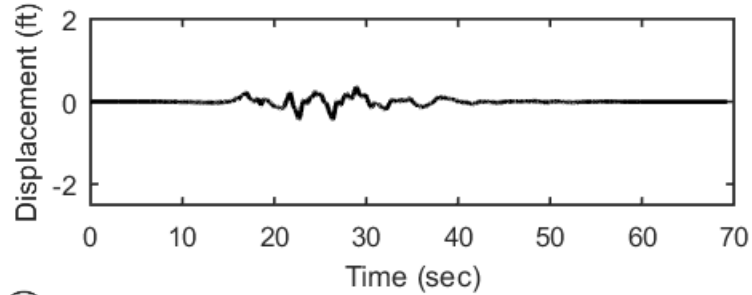
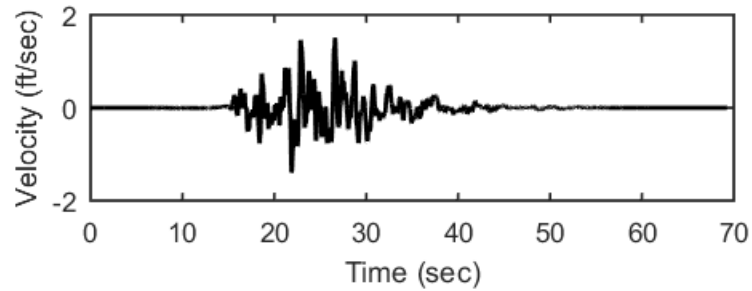
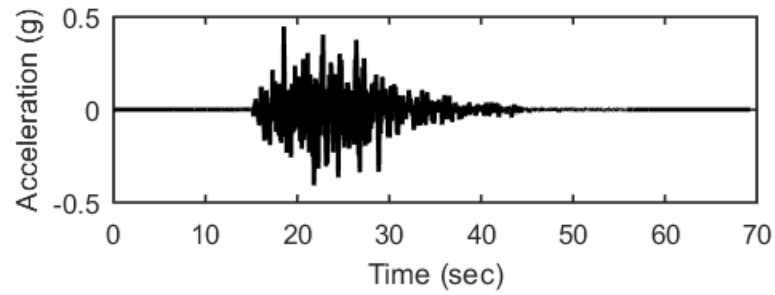
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



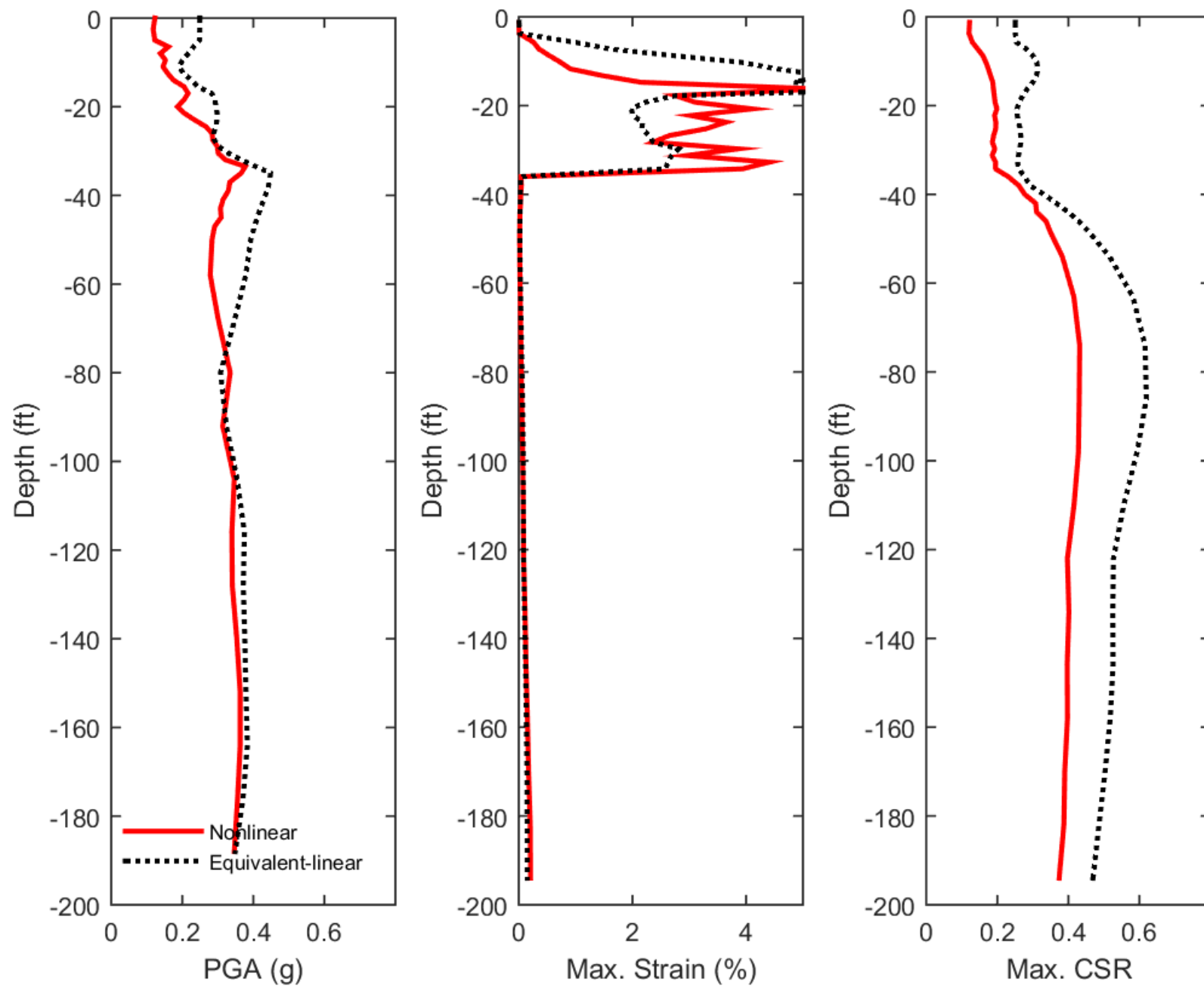
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



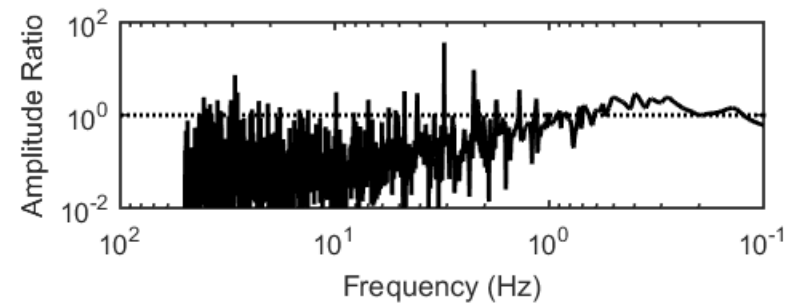
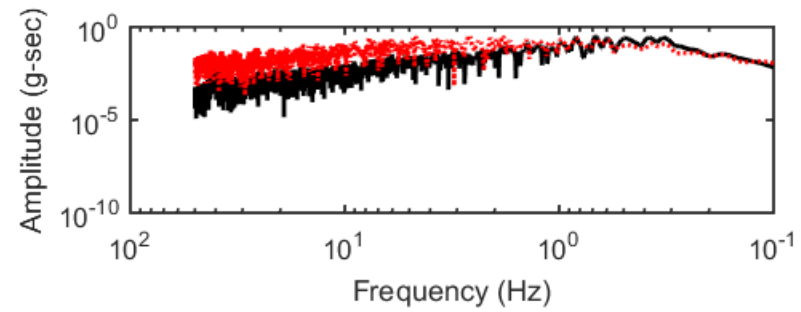
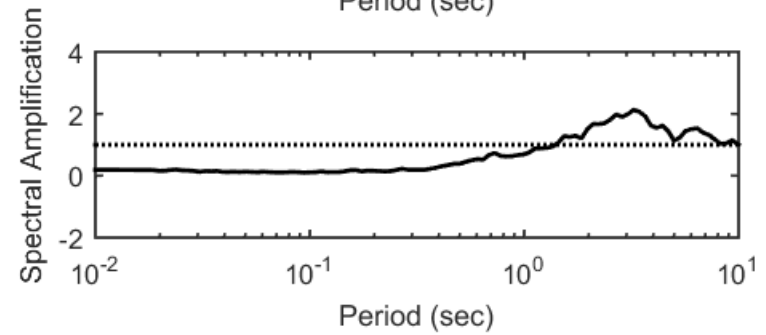
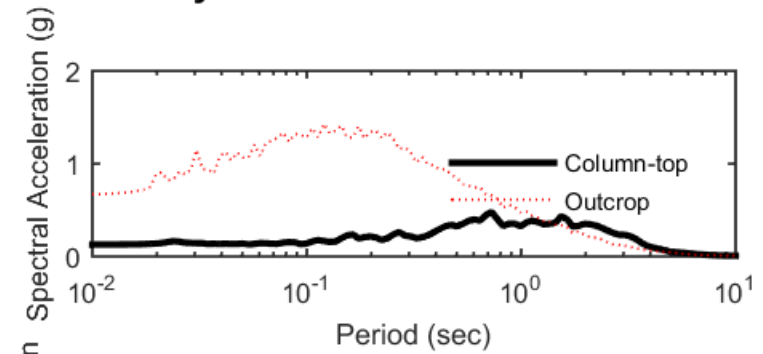
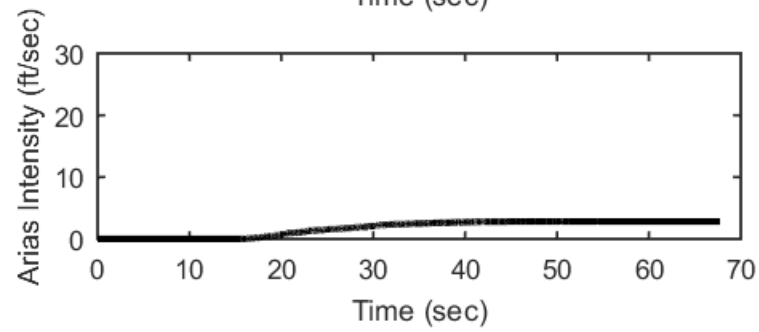
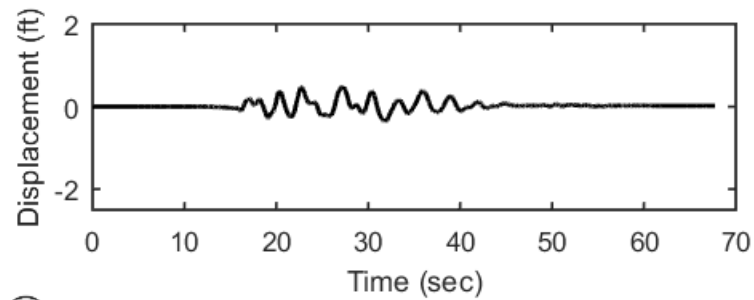
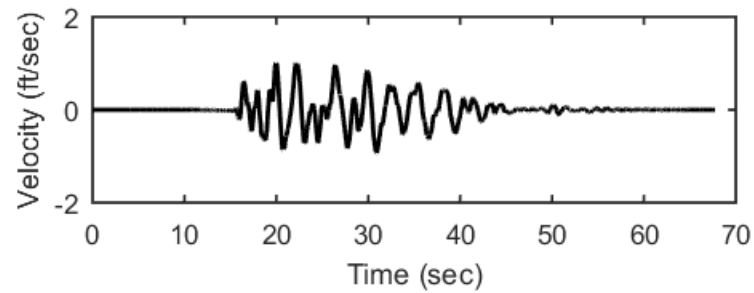
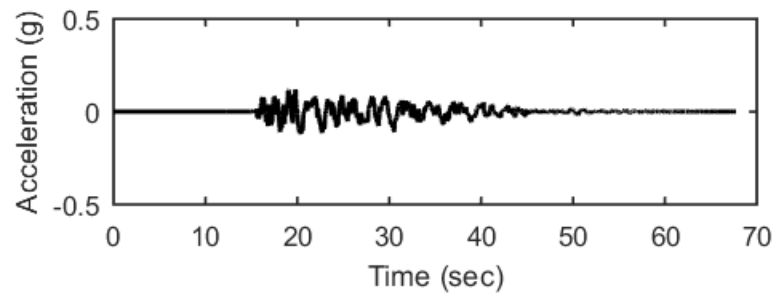
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



### Profile outputs for Motion: SEE3

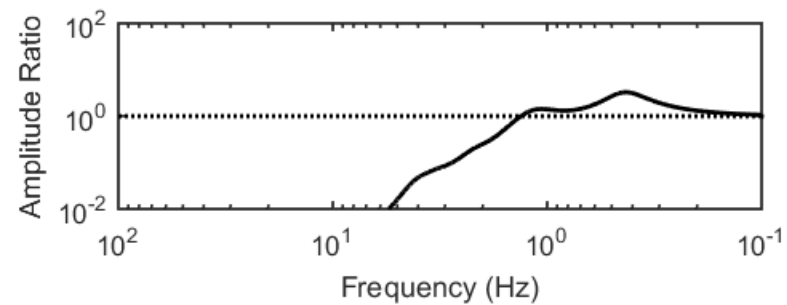
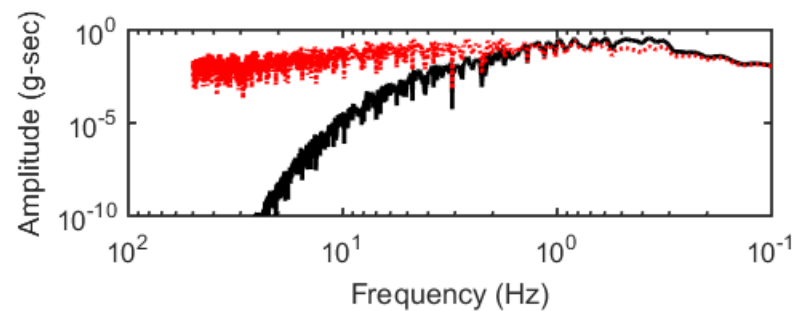
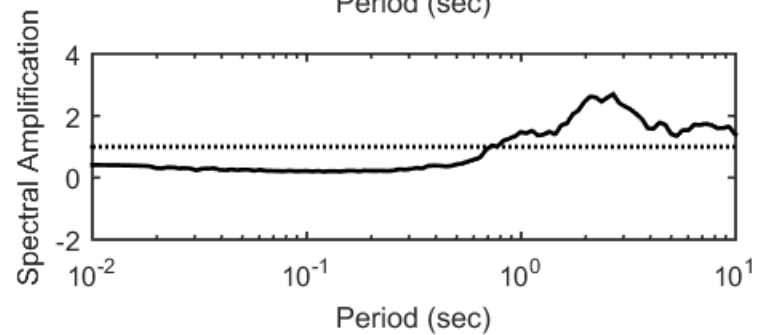
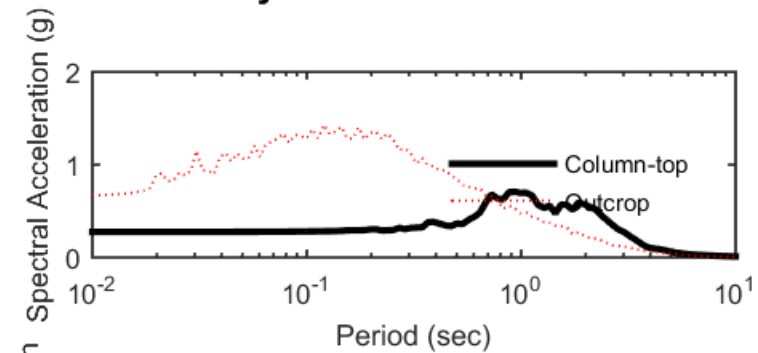
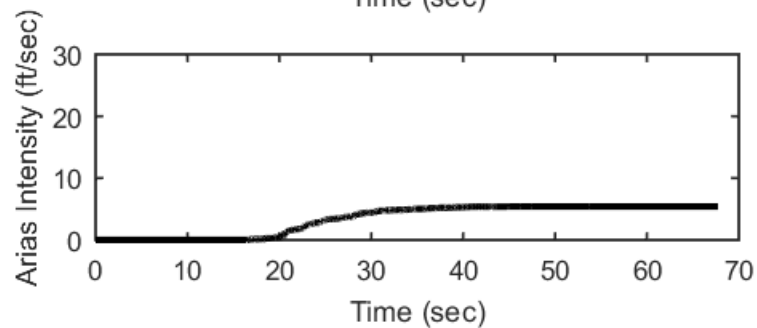
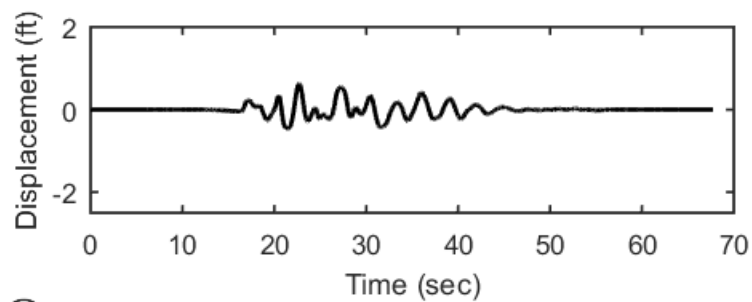
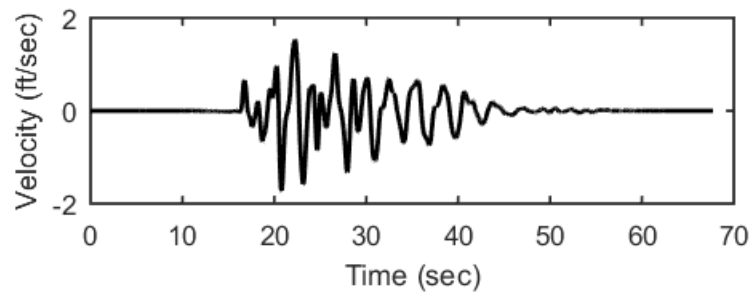
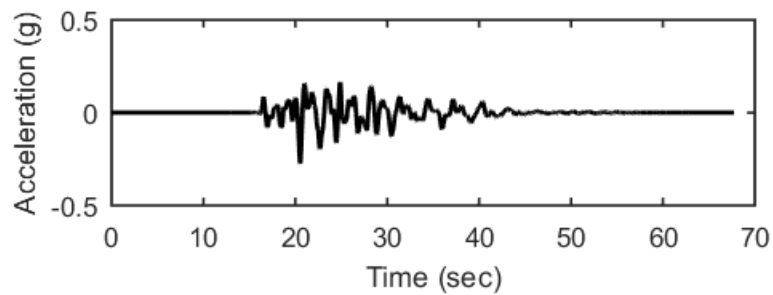


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4

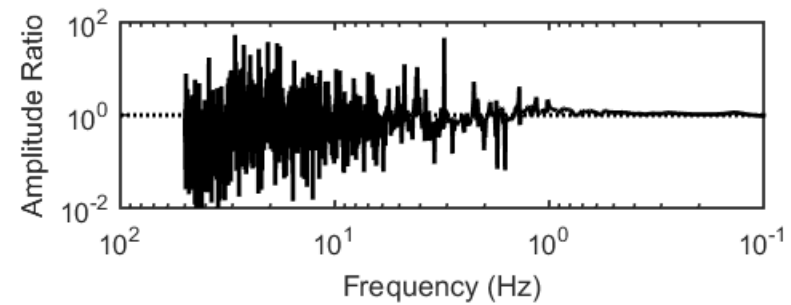
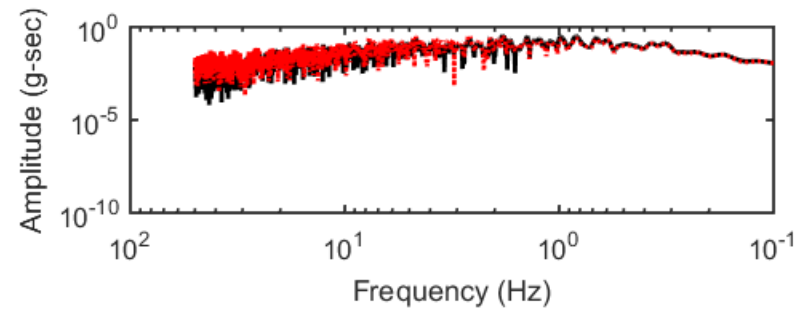
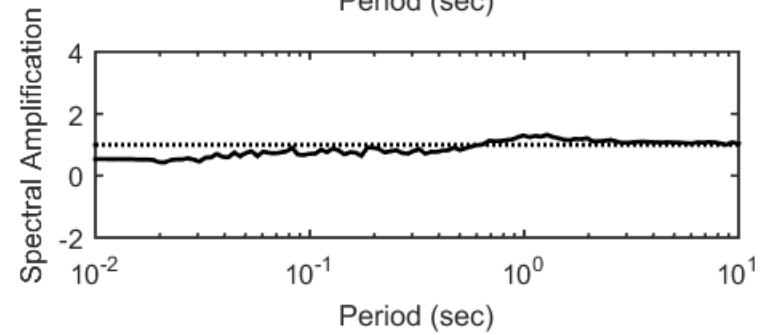
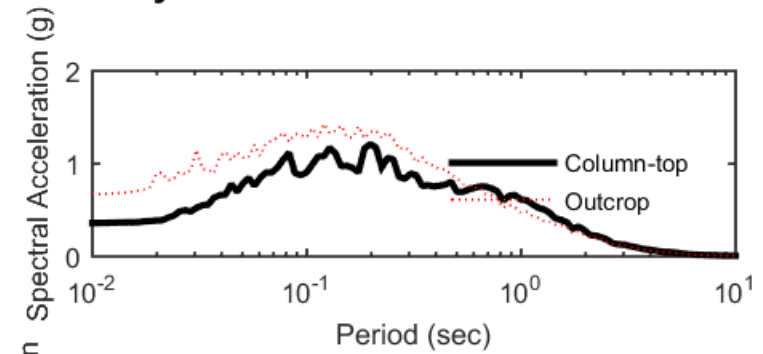
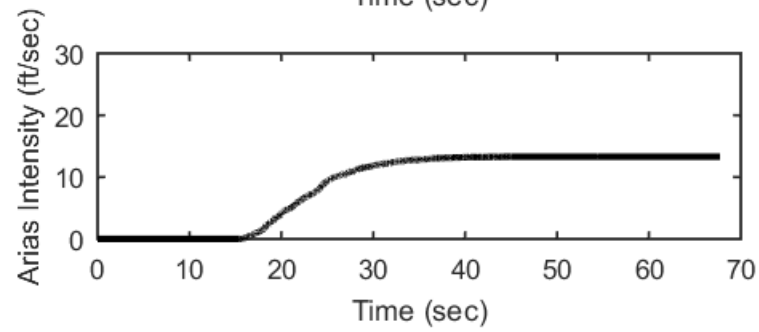
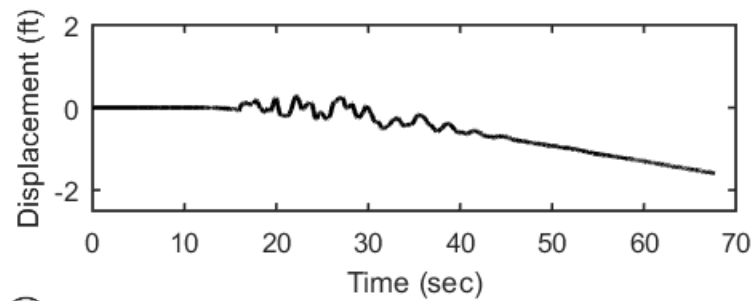
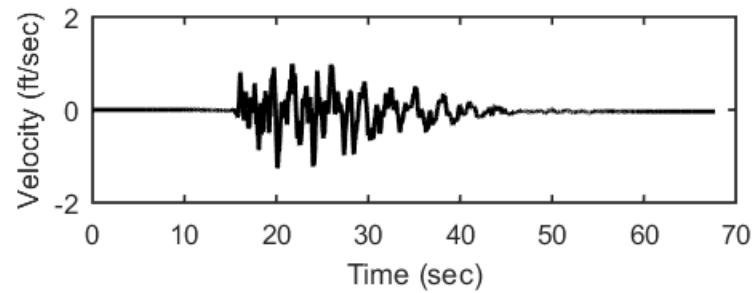
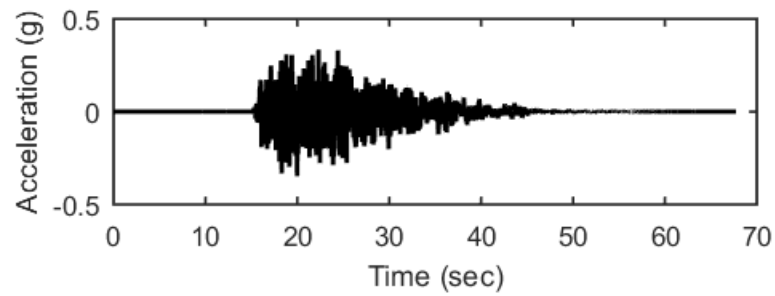




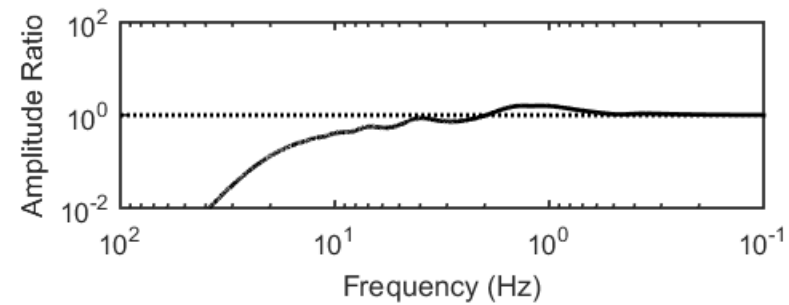
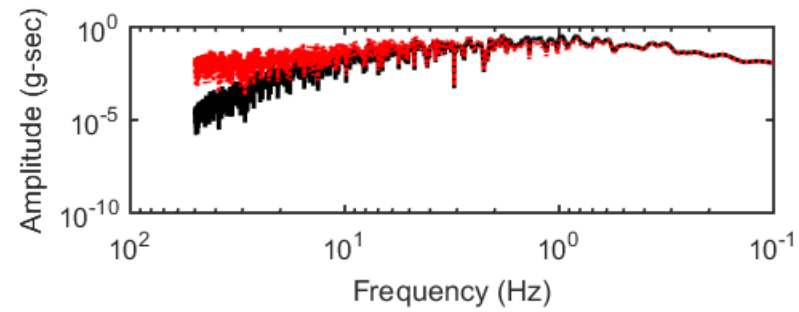
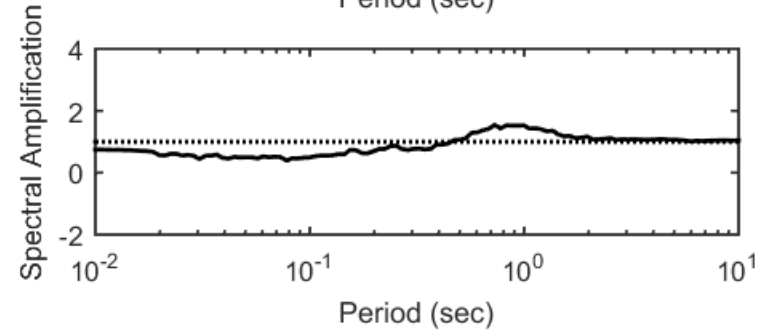
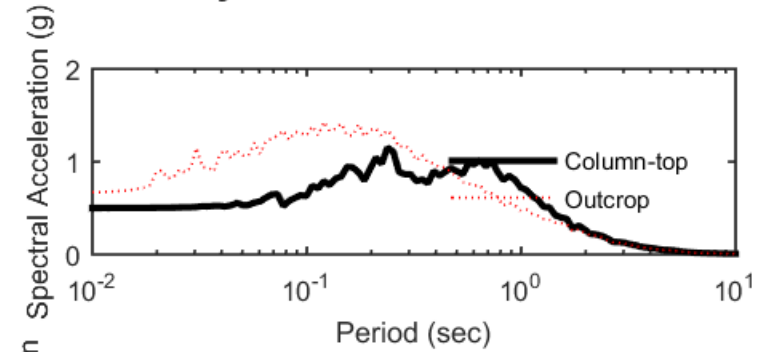
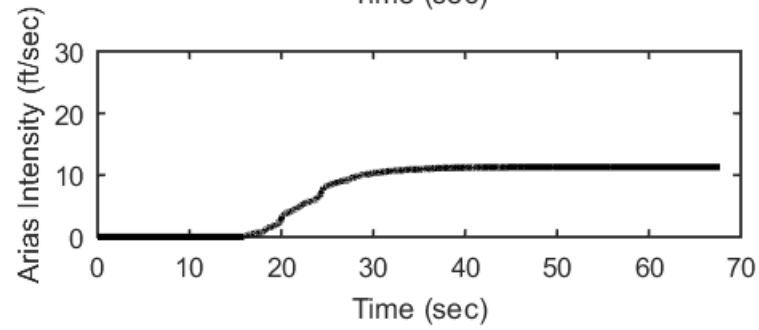
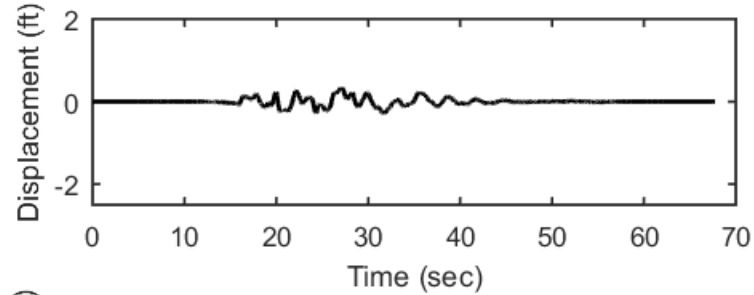
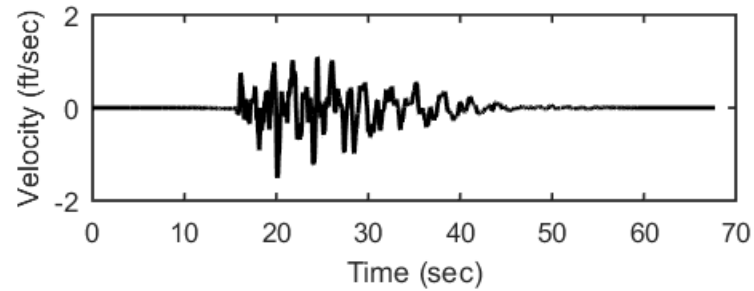
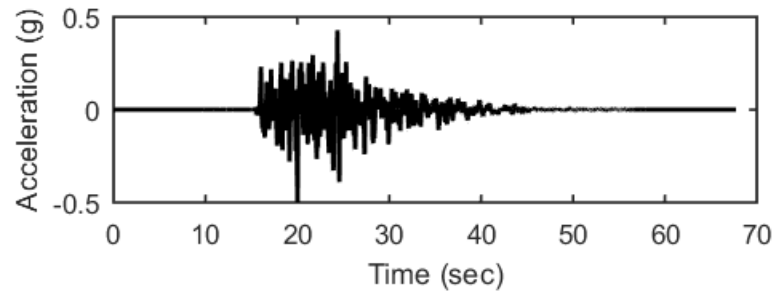
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



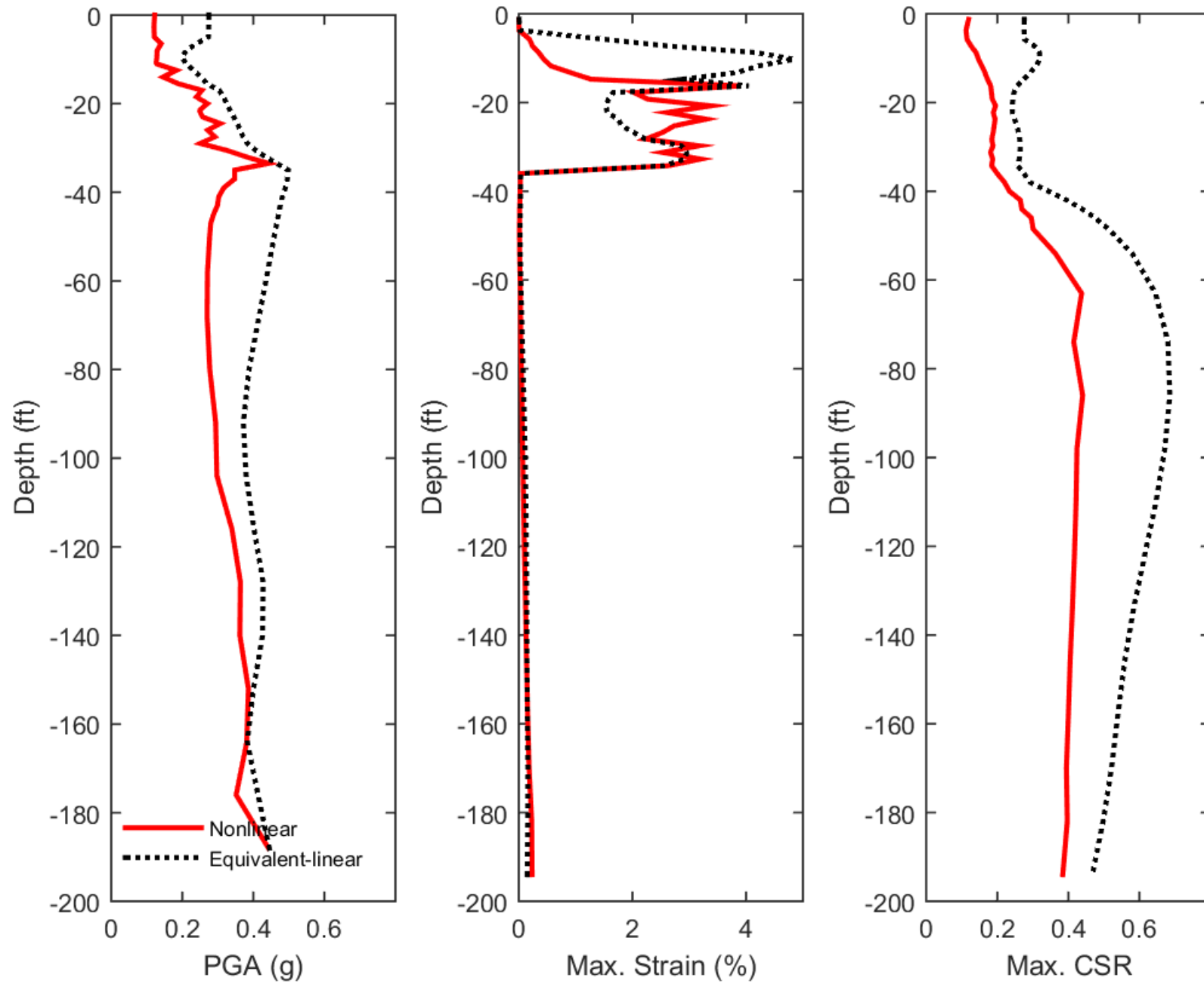
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



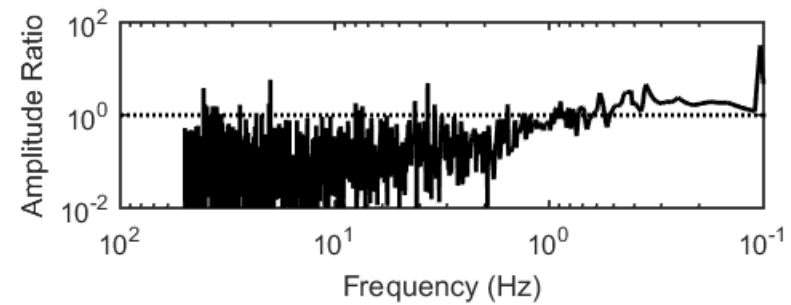
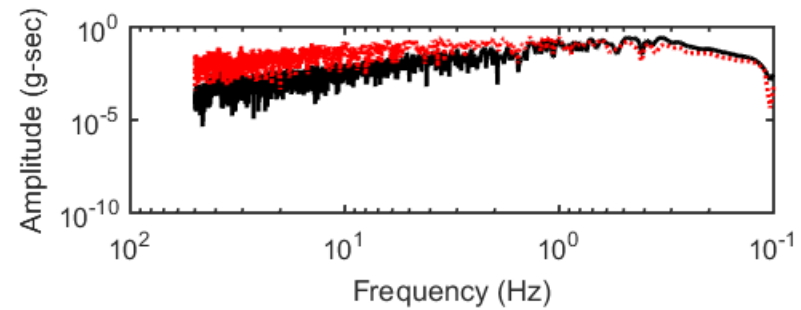
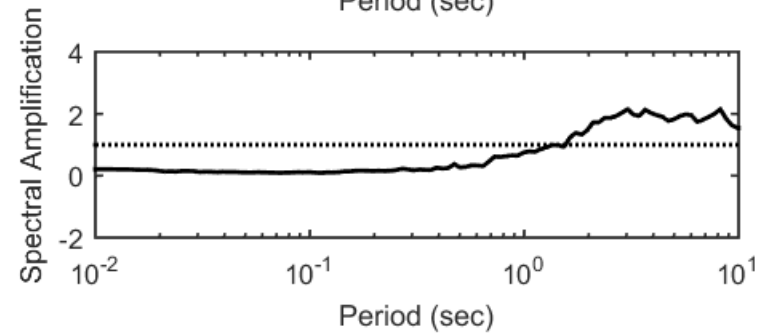
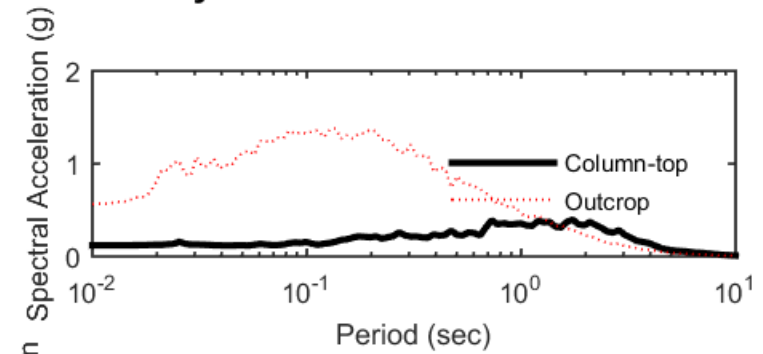
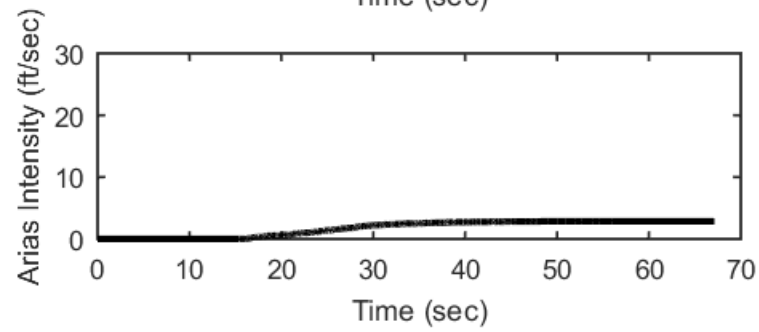
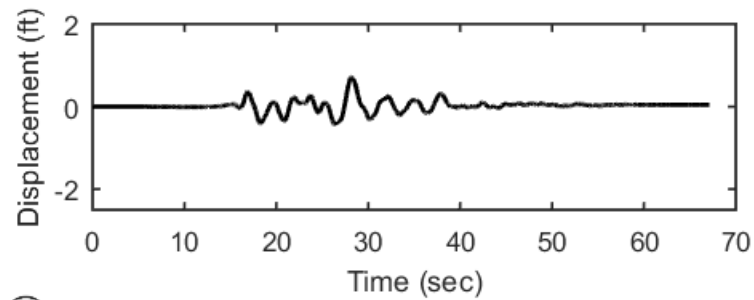
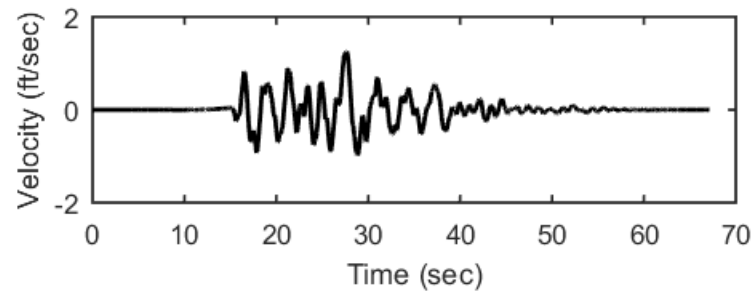
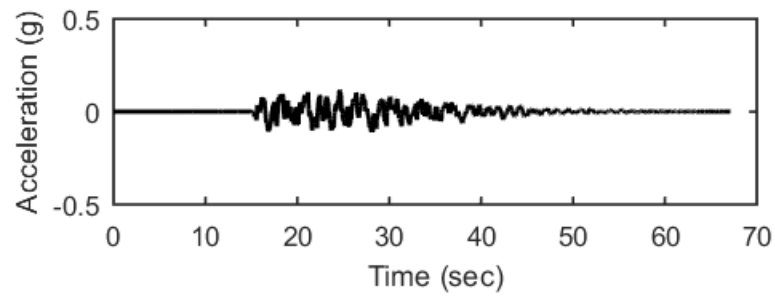
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



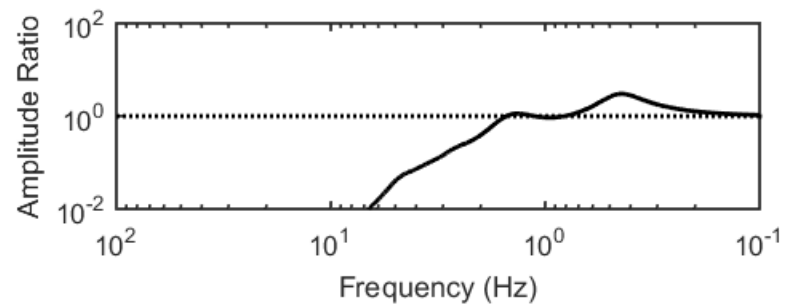
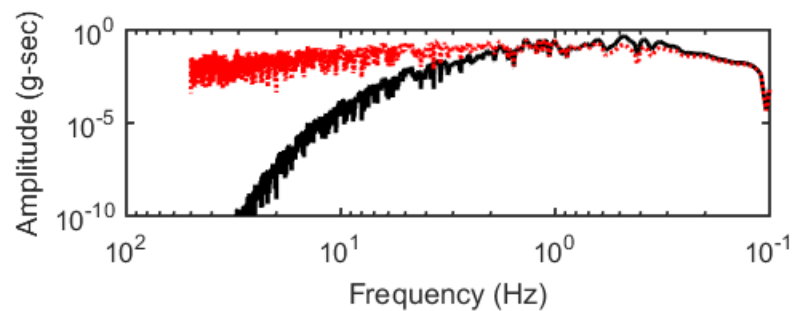
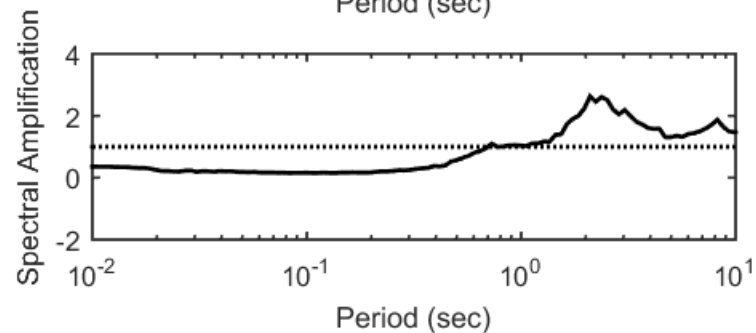
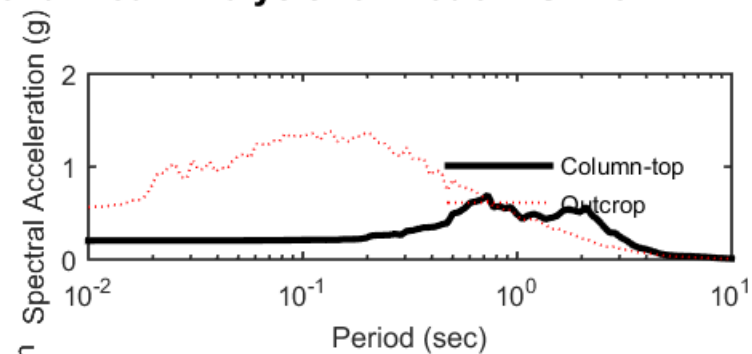
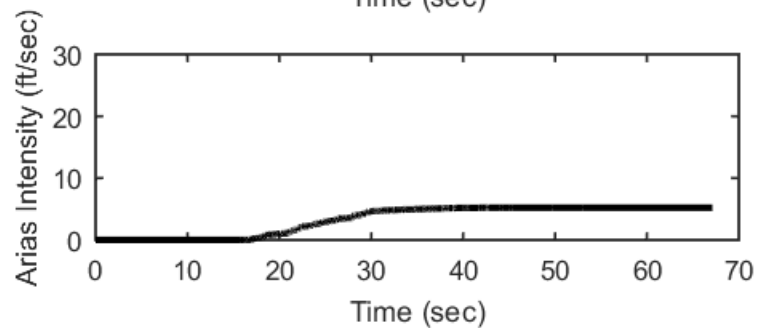
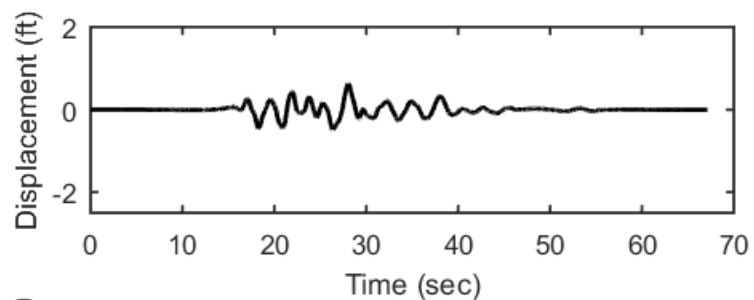
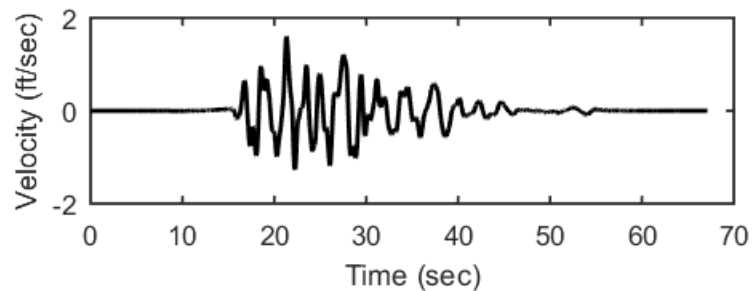
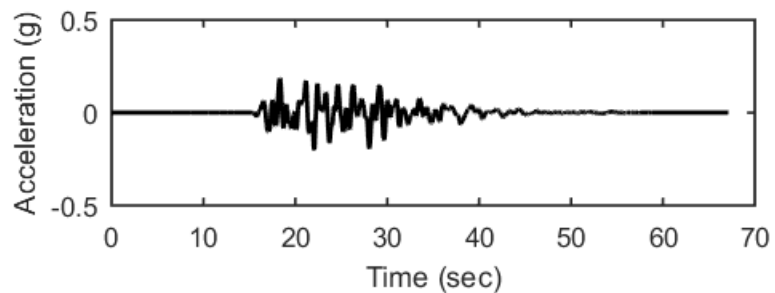
### Profile outputs for Motion: SEE4



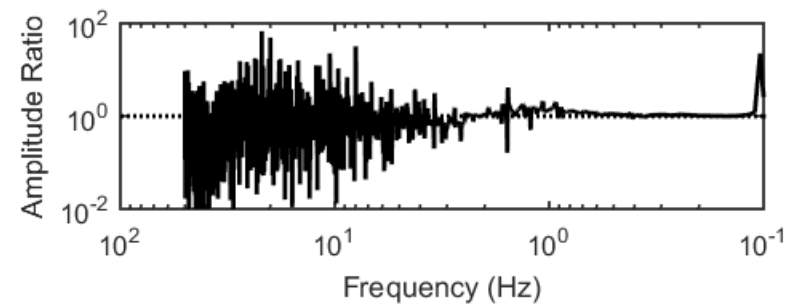
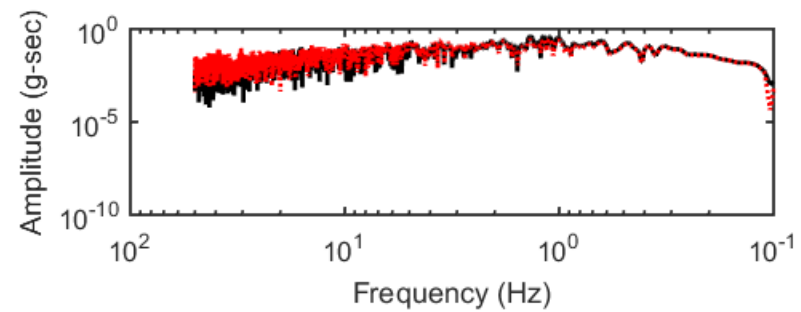
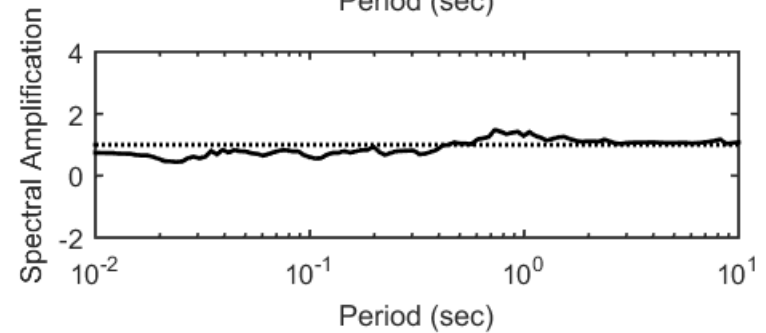
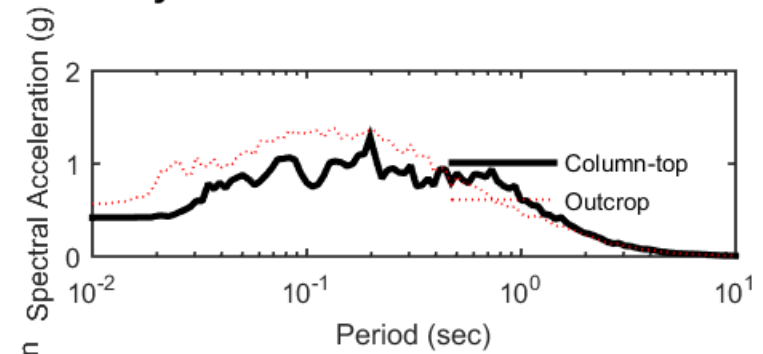
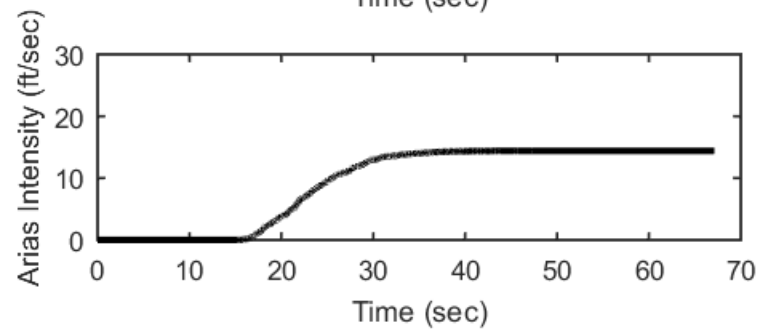
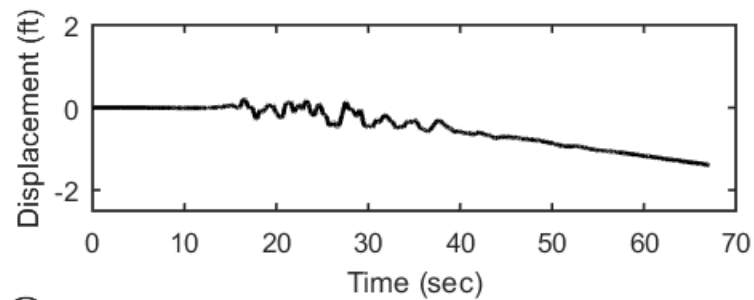
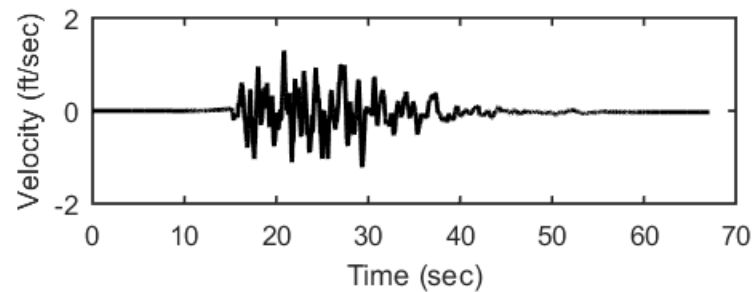
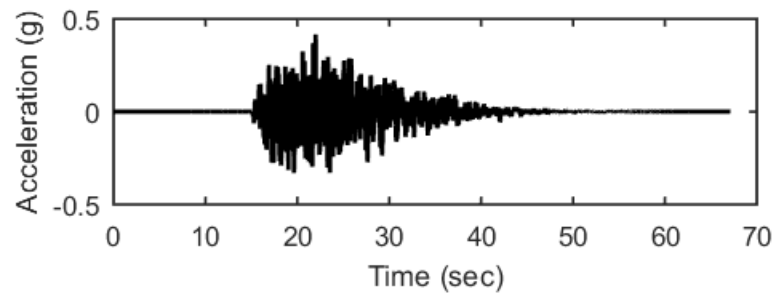
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



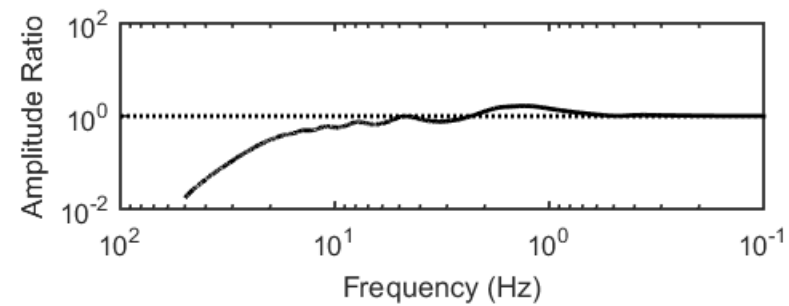
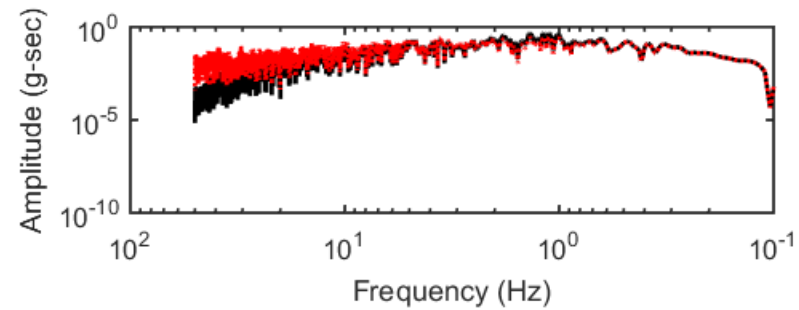
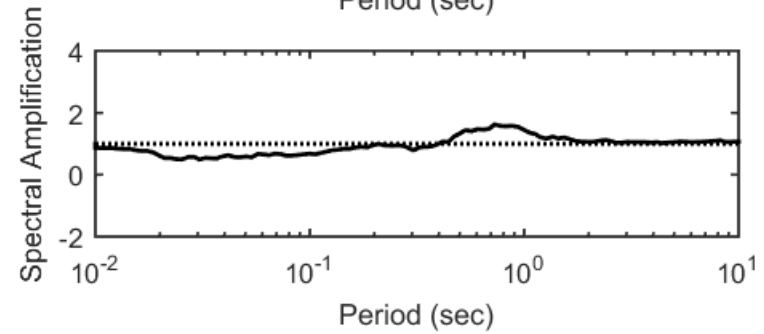
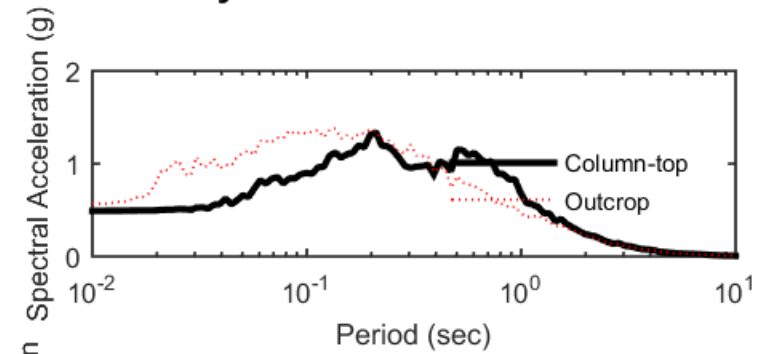
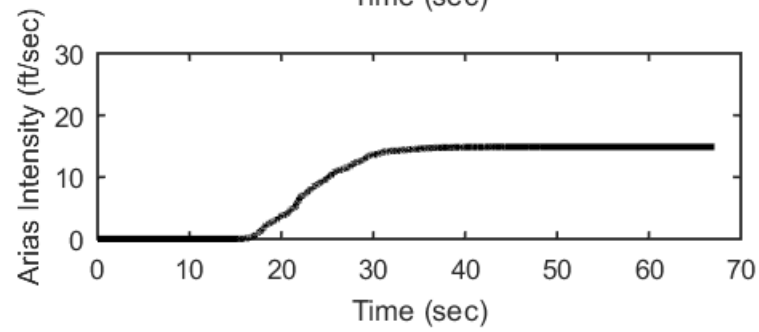
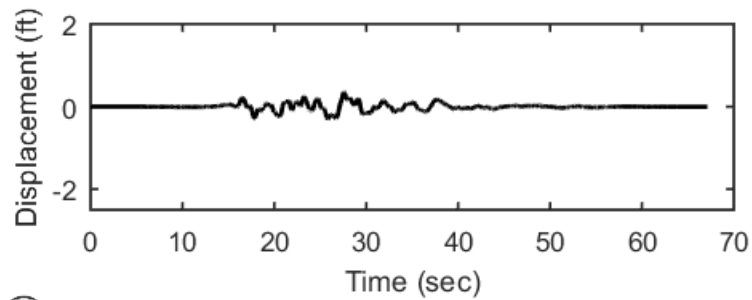
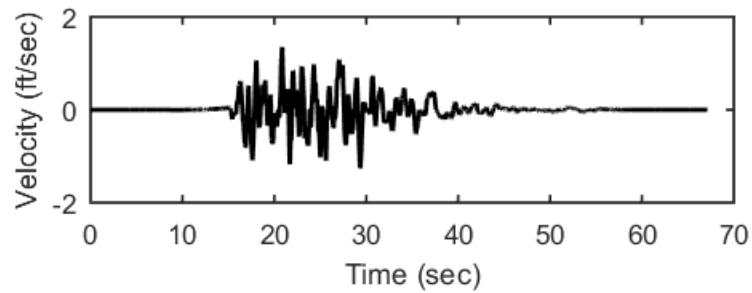
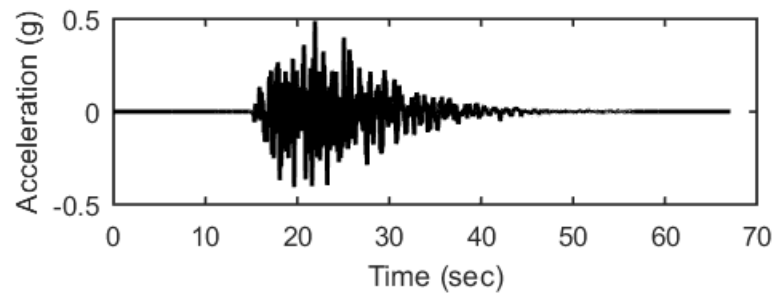
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5

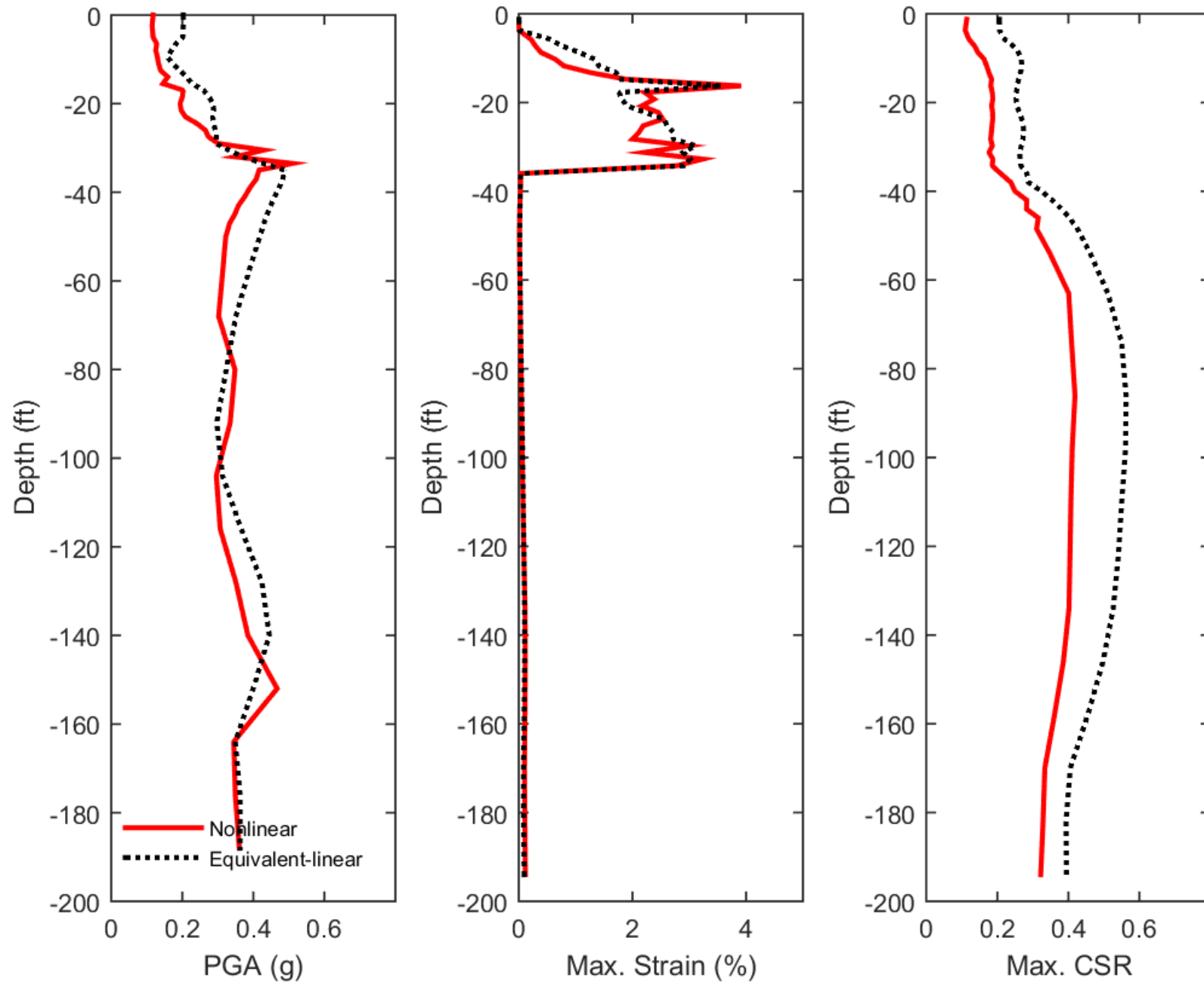


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5

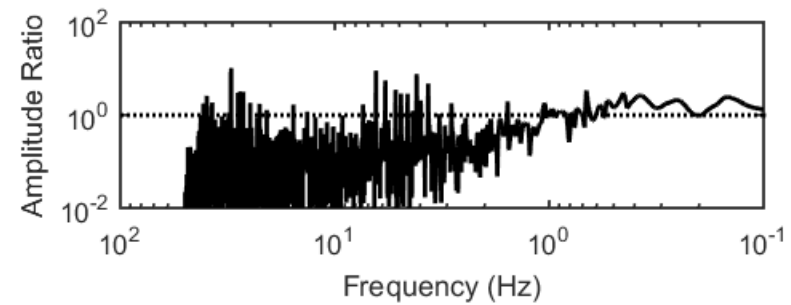
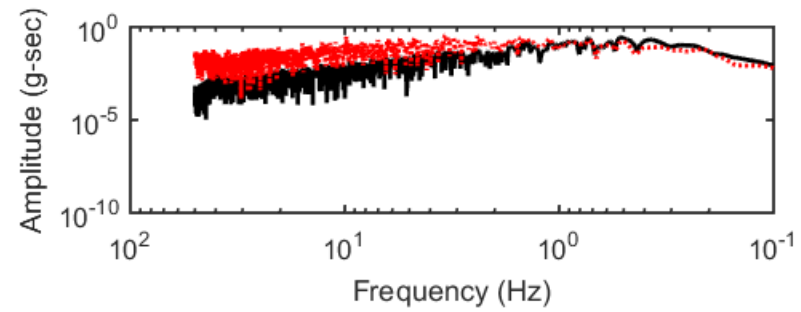
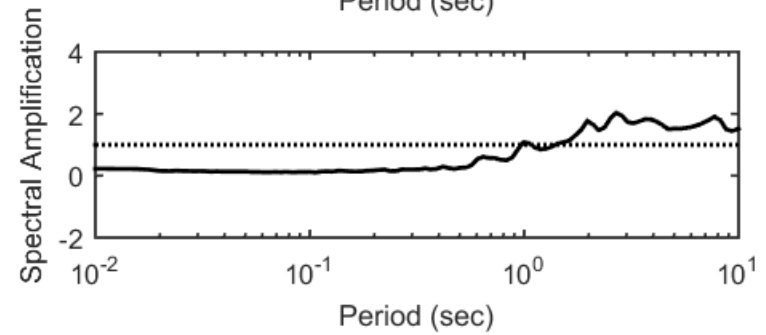
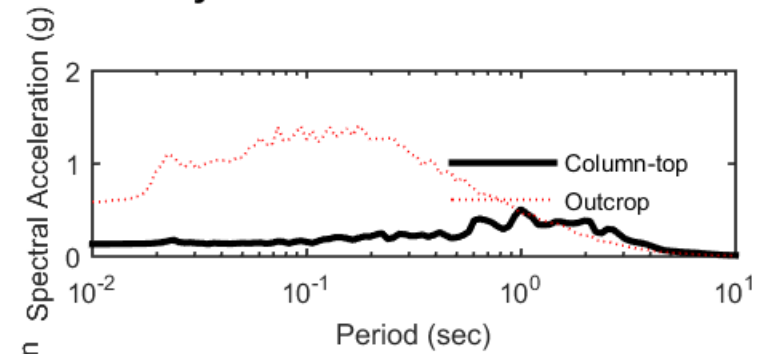
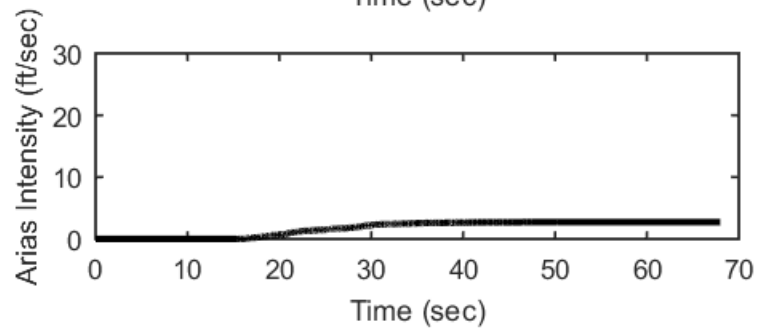
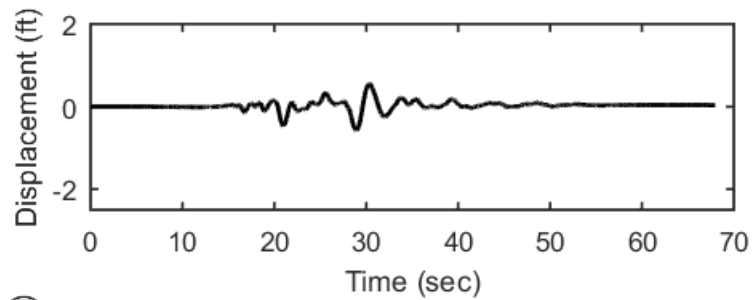
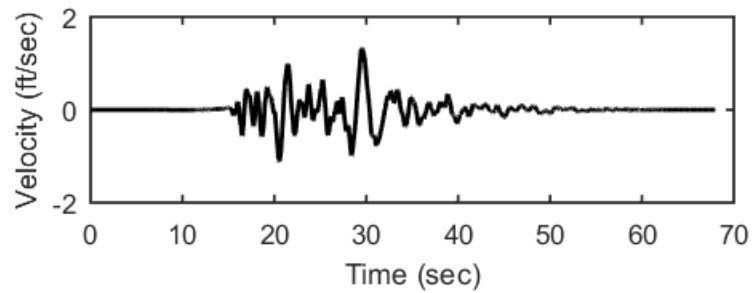
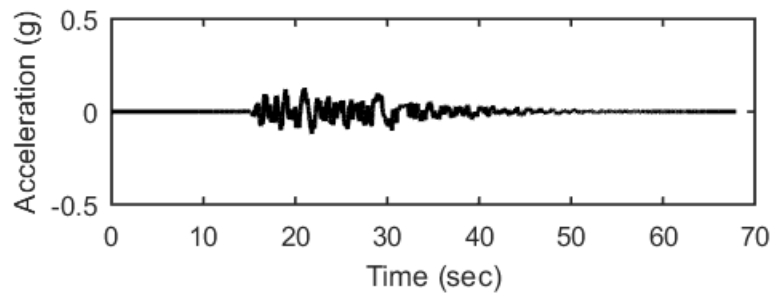




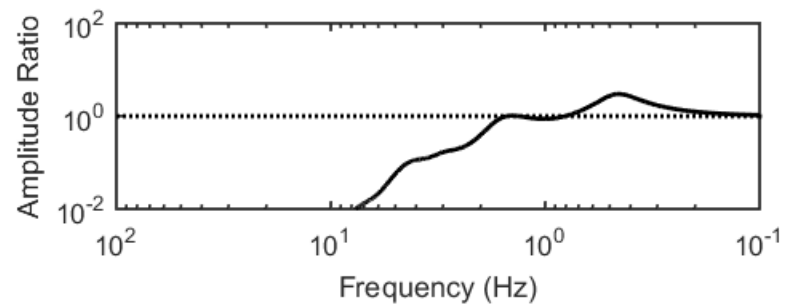
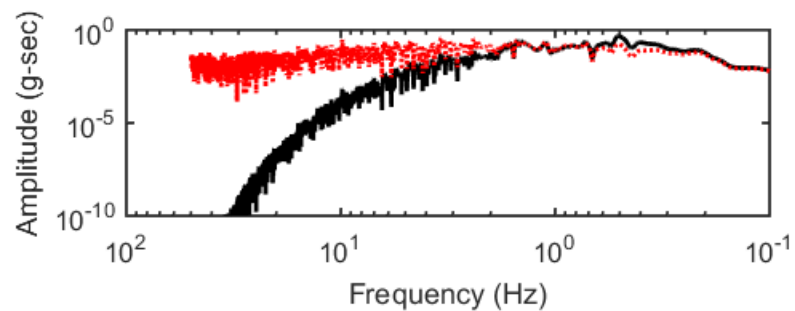
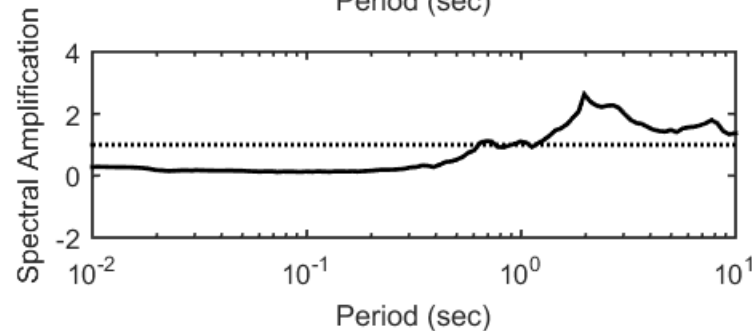
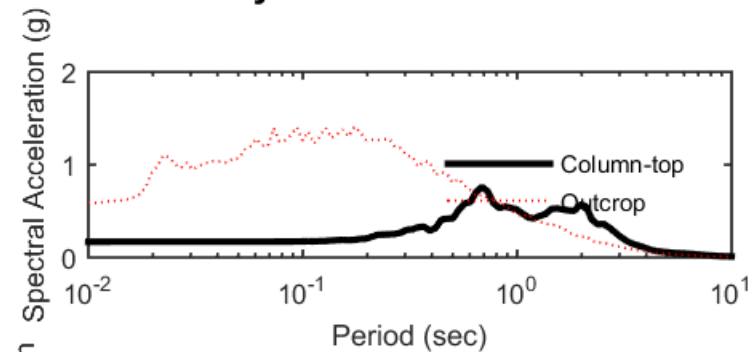
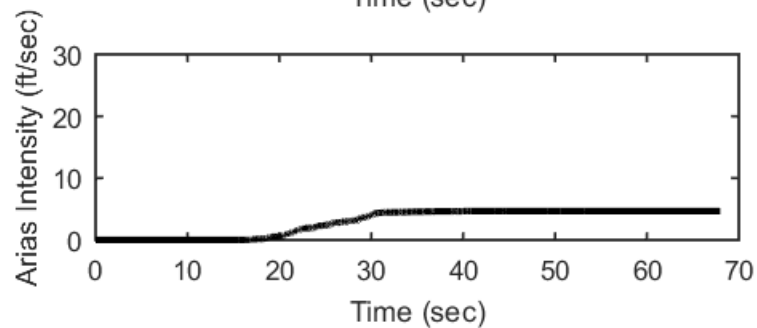
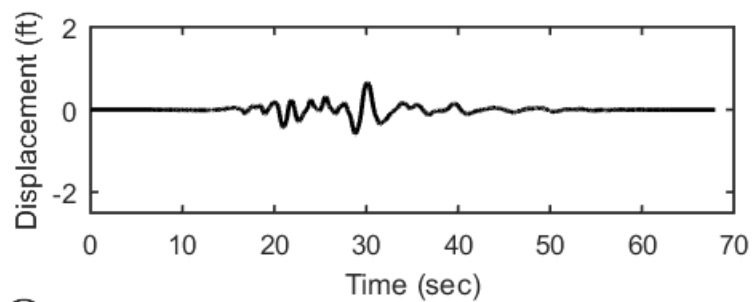
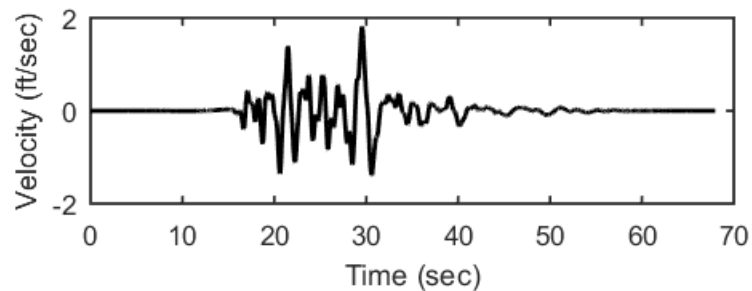
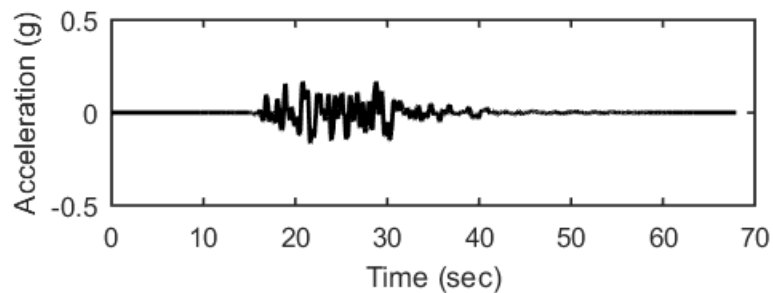
### Profile outputs for Motion: SEE5



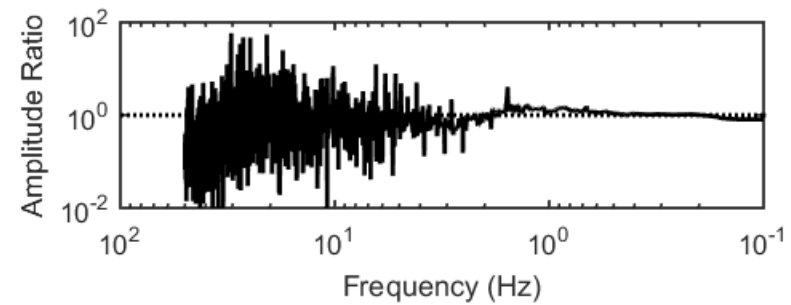
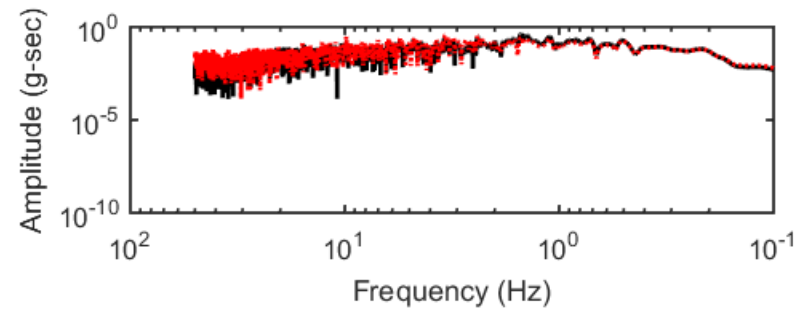
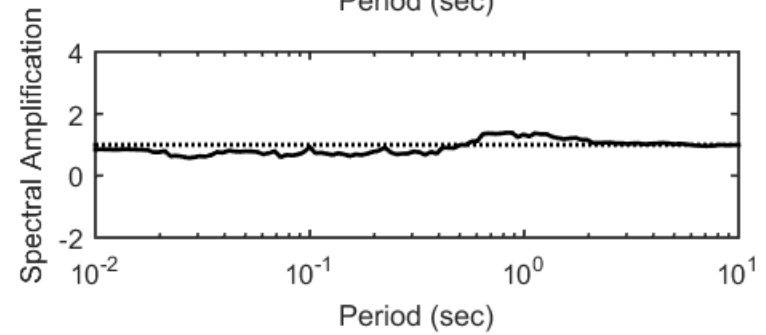
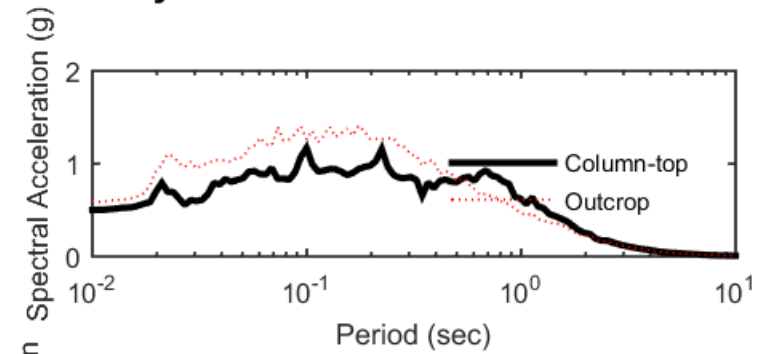
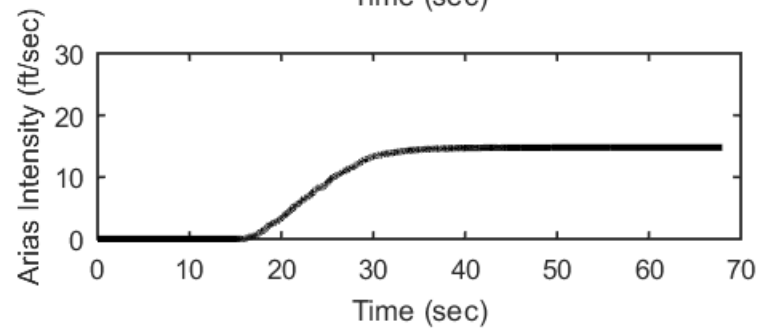
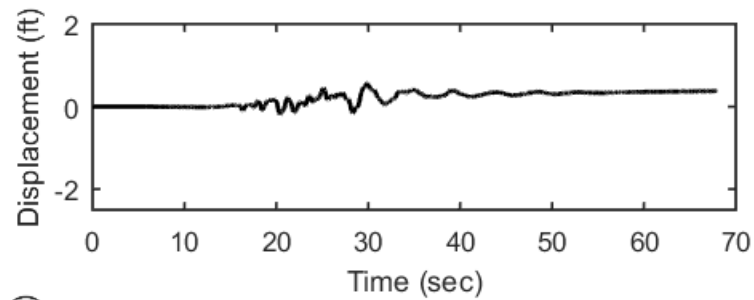
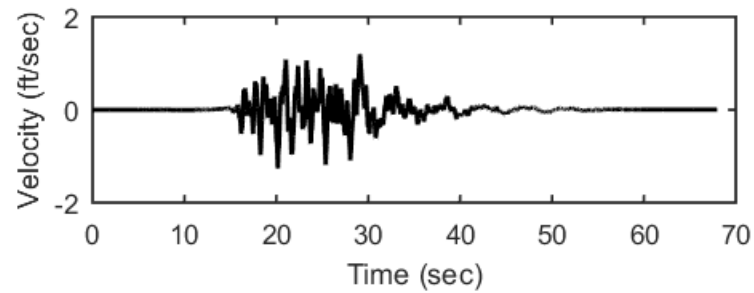
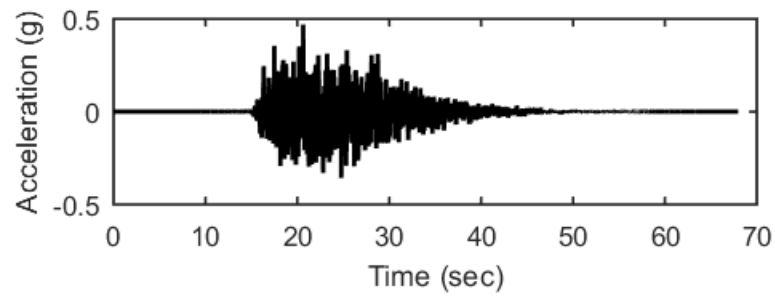
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



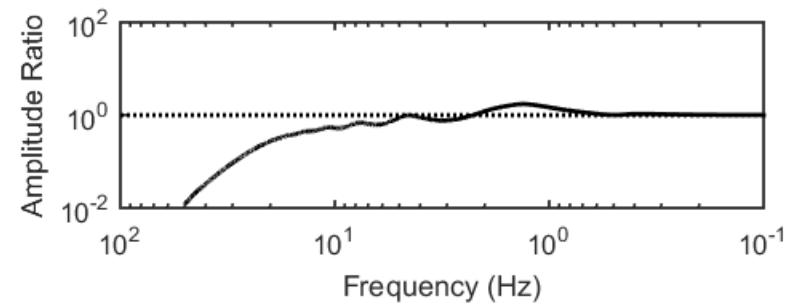
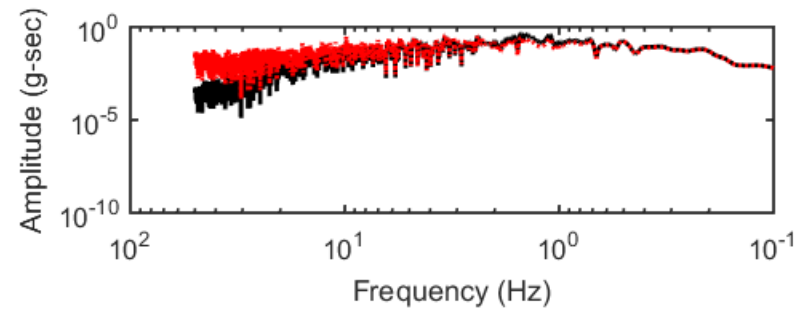
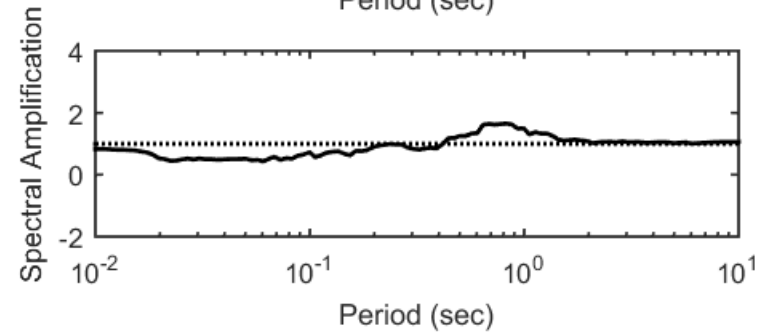
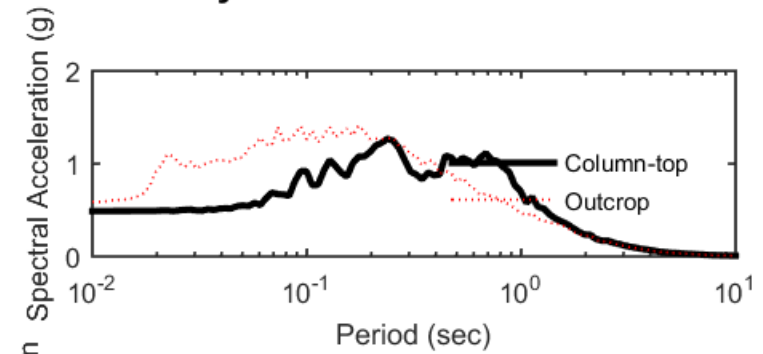
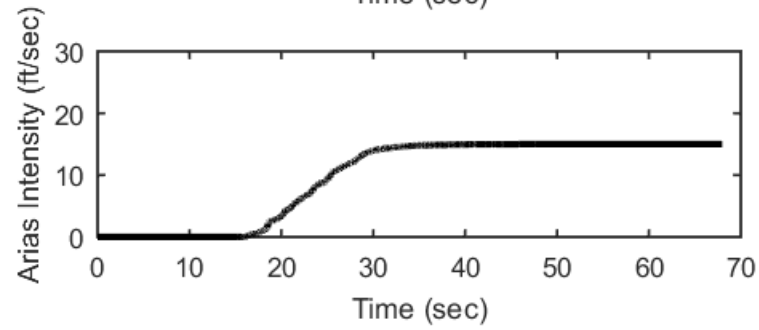
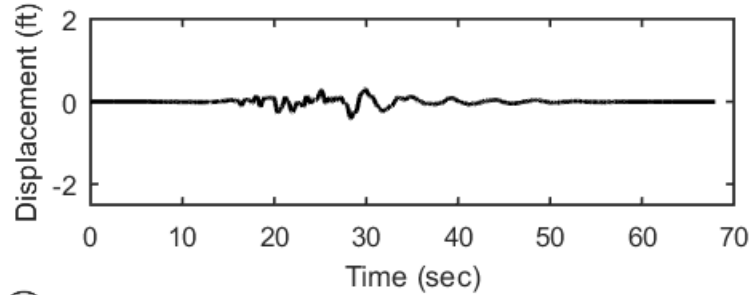
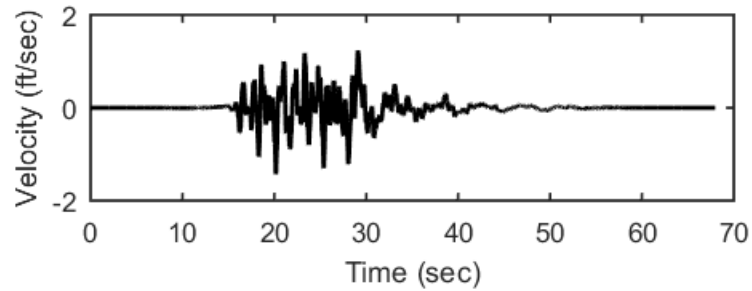
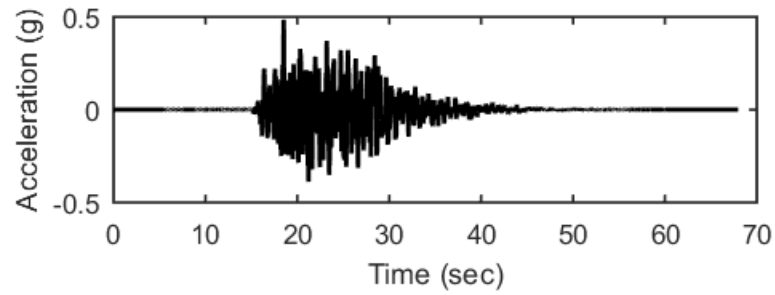
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



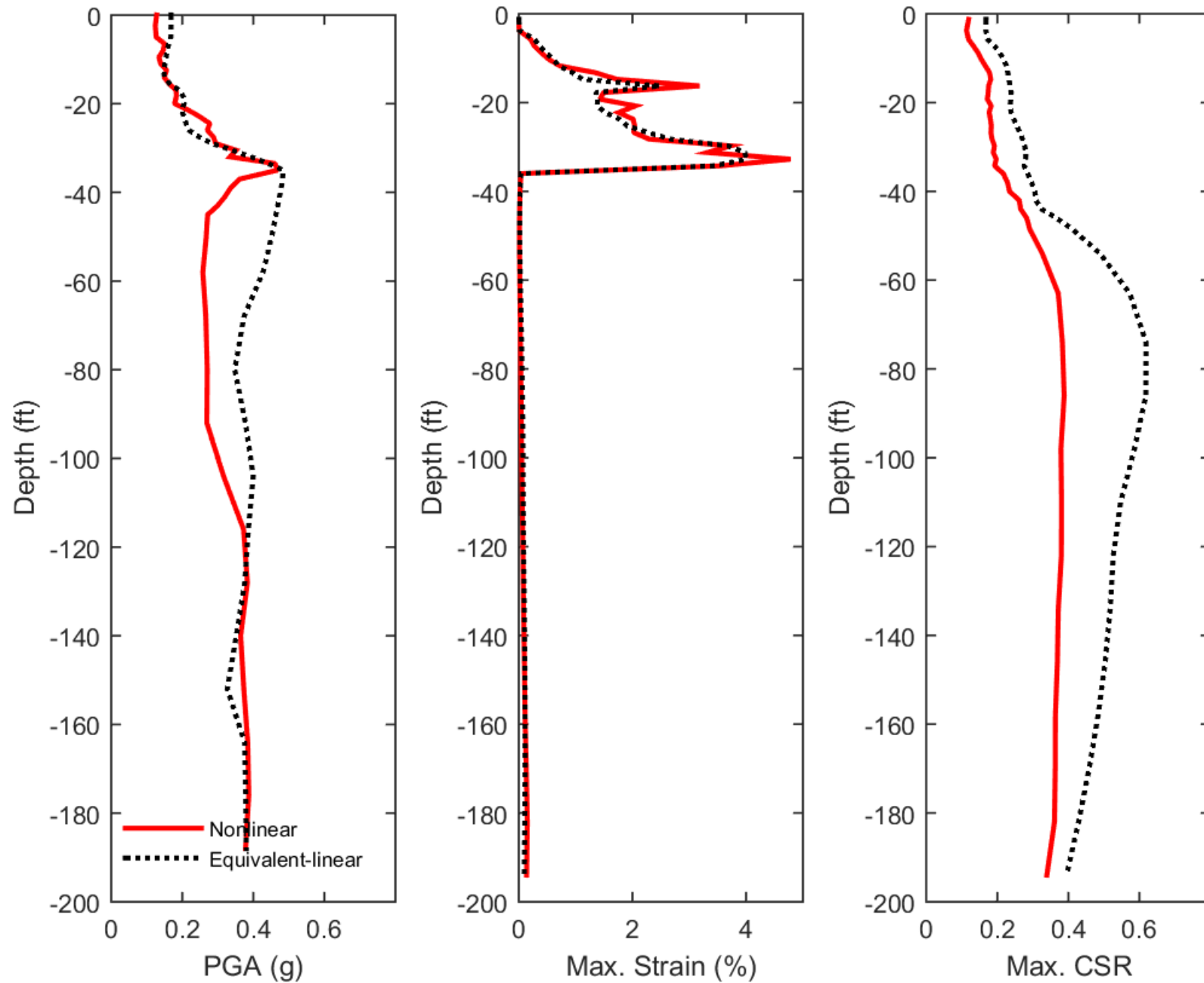
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



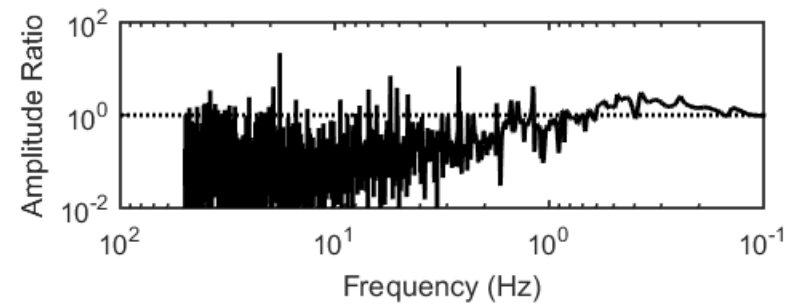
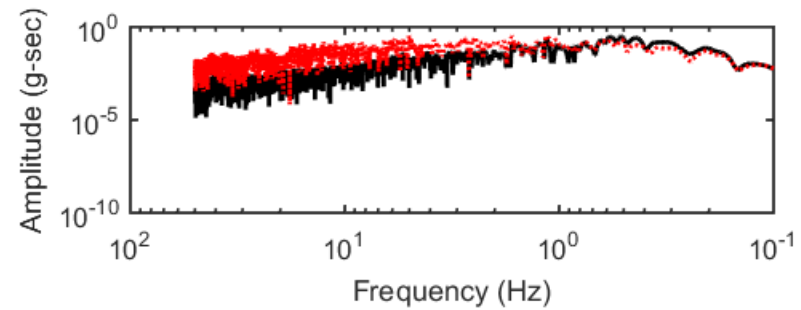
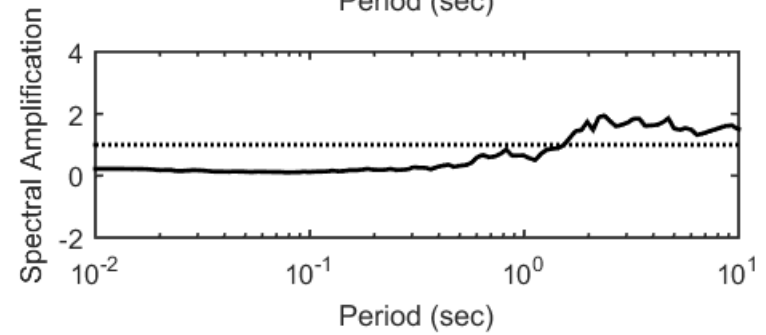
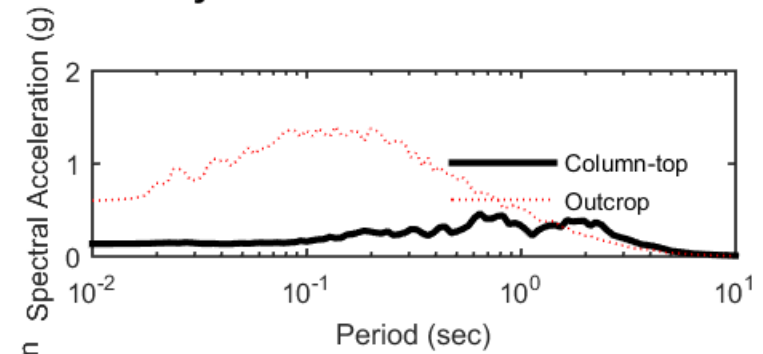
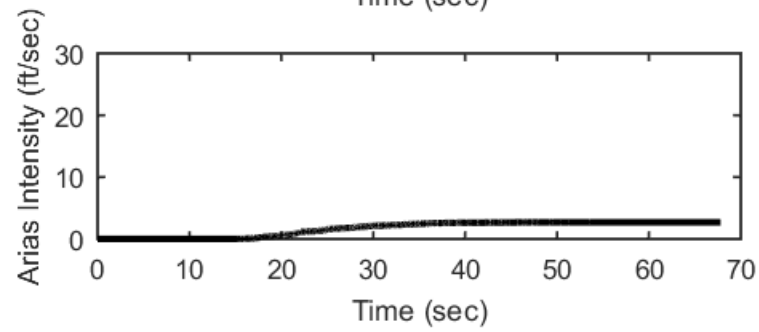
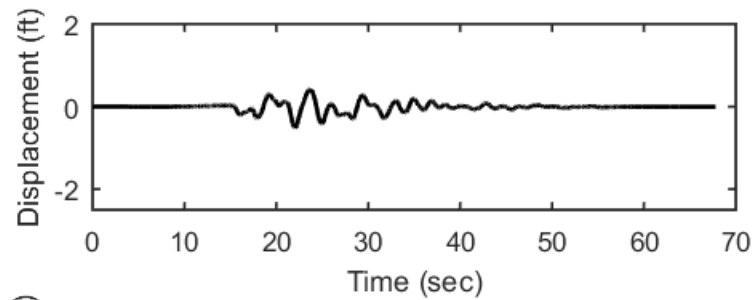
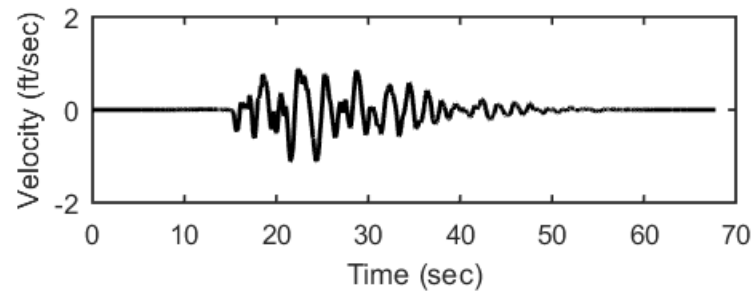
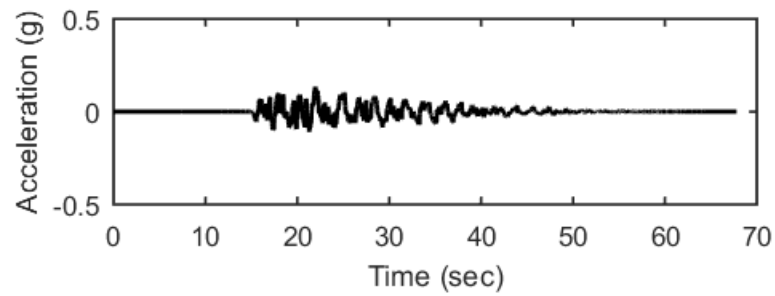
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



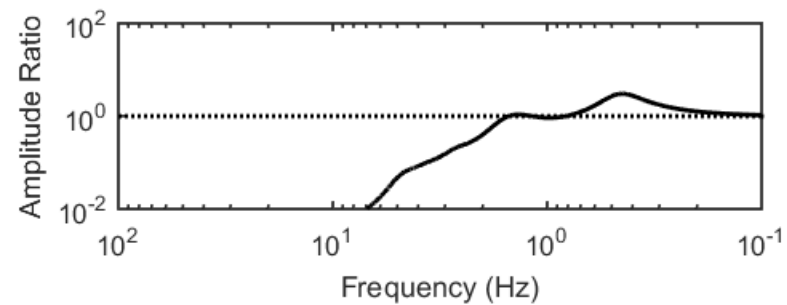
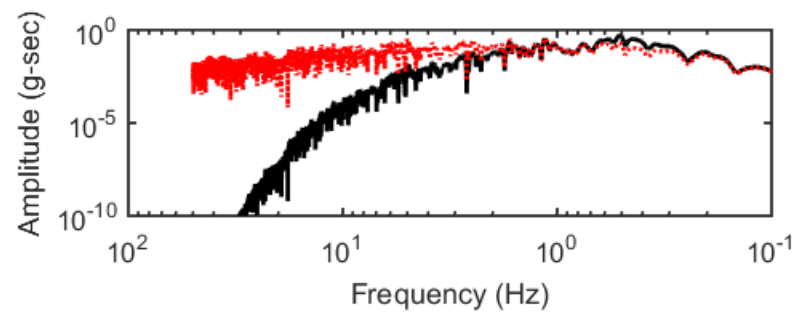
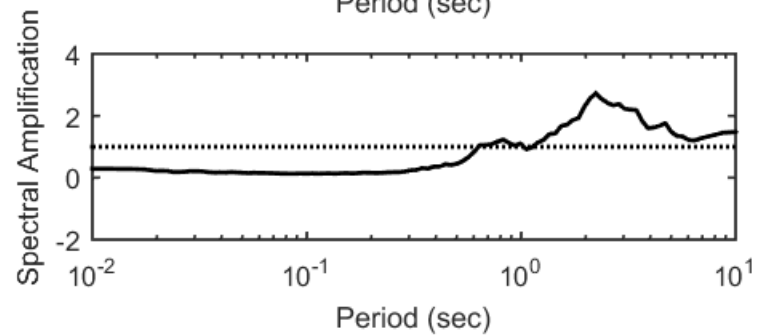
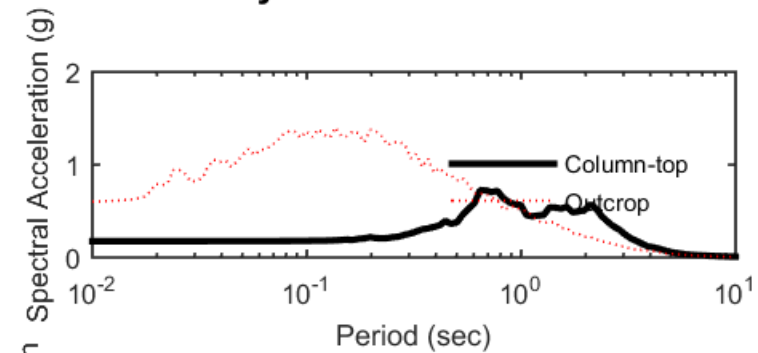
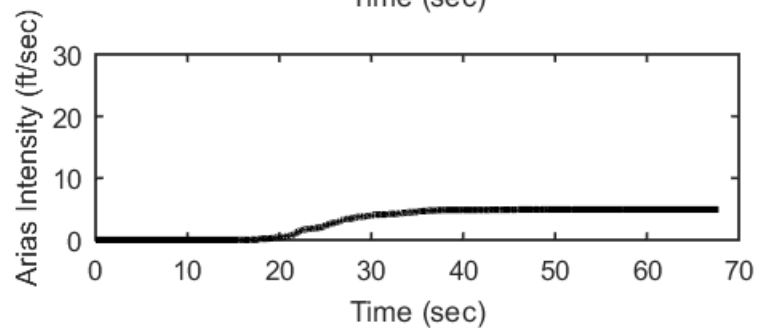
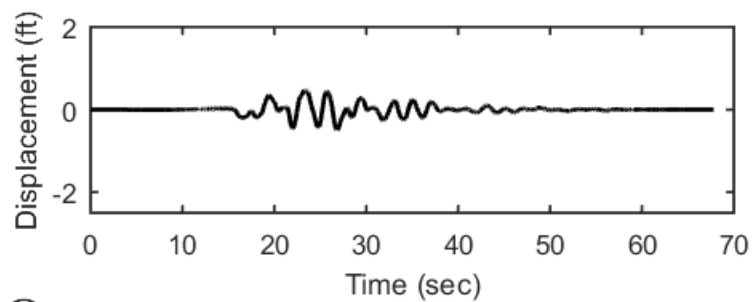
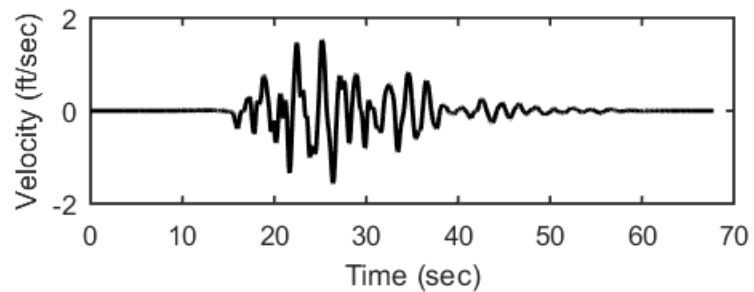
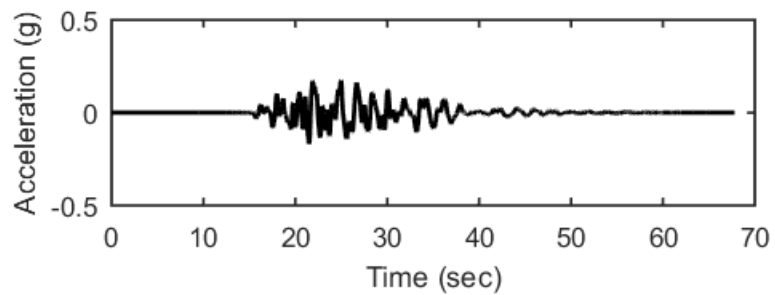
### Profile outputs for Motion: SEE6



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7

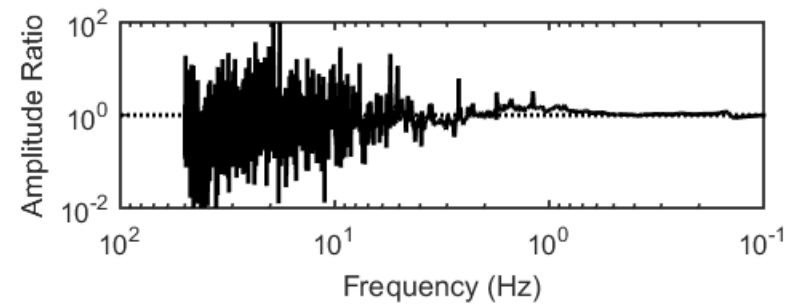
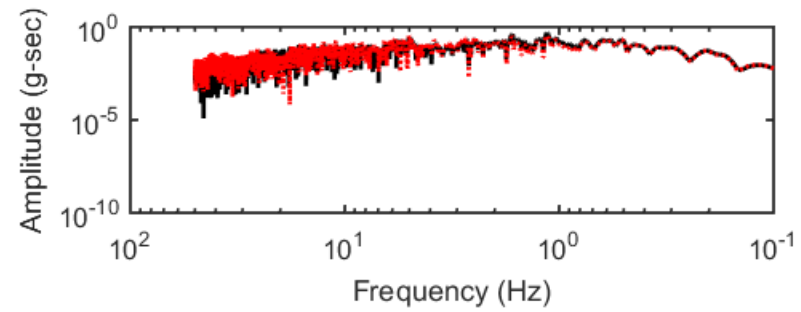
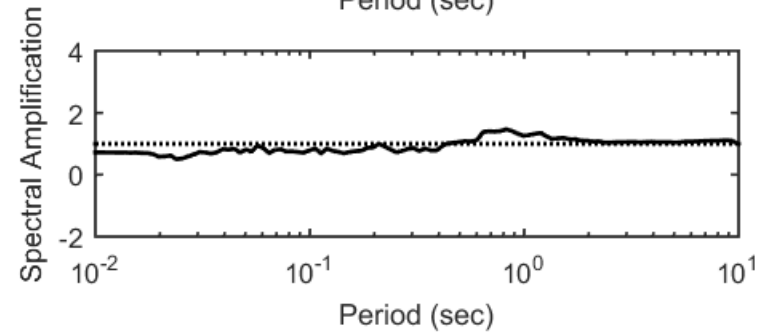
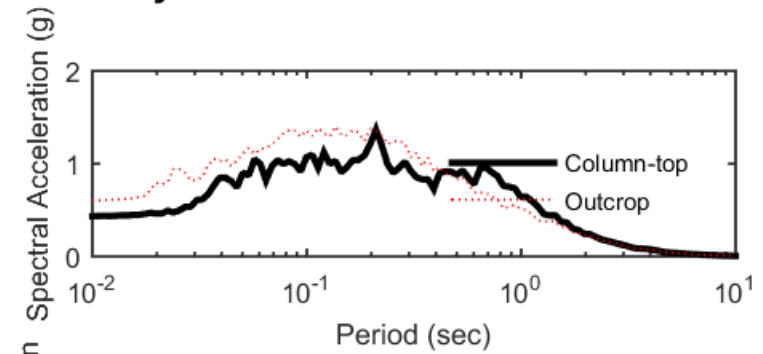
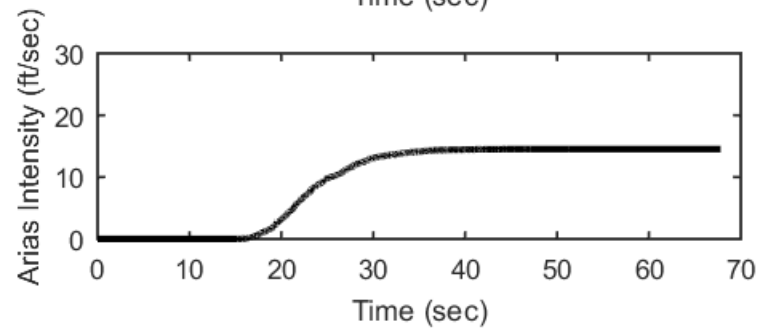
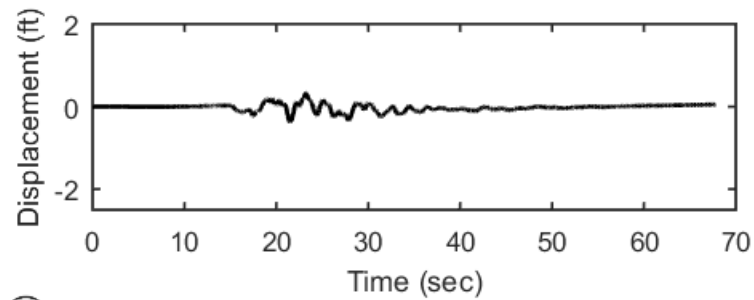
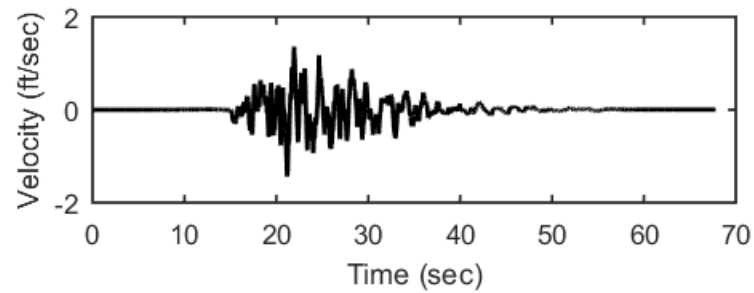
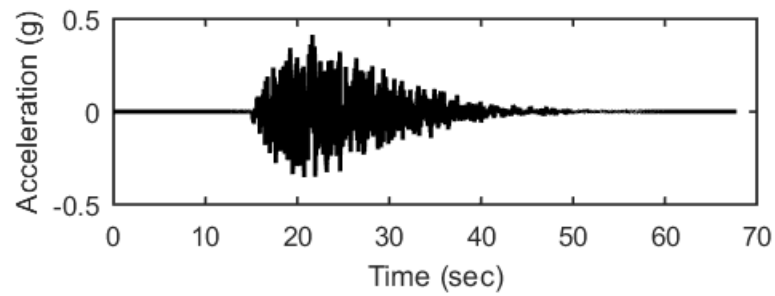


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7

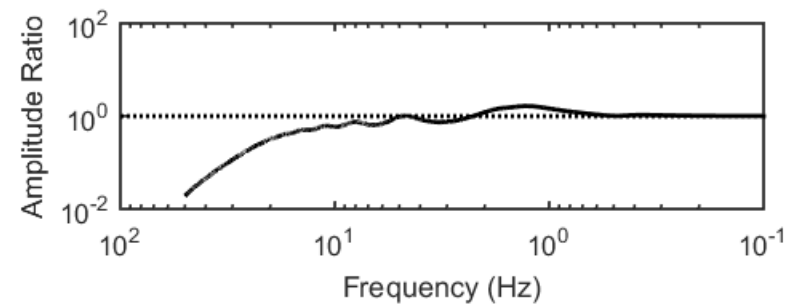
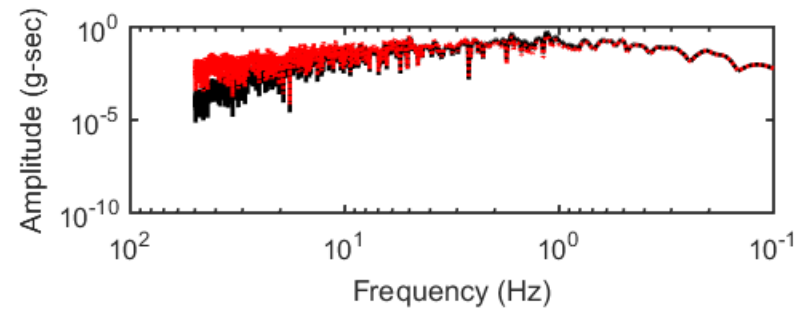
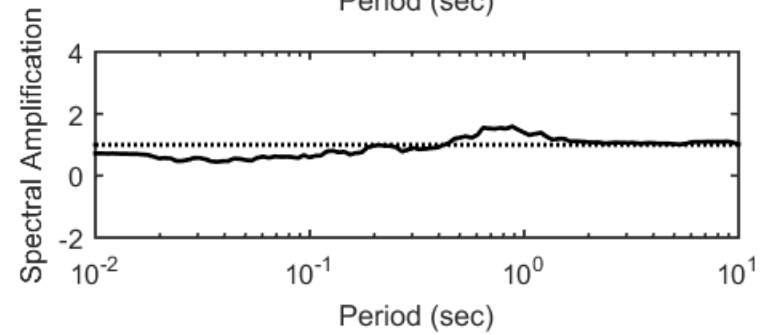
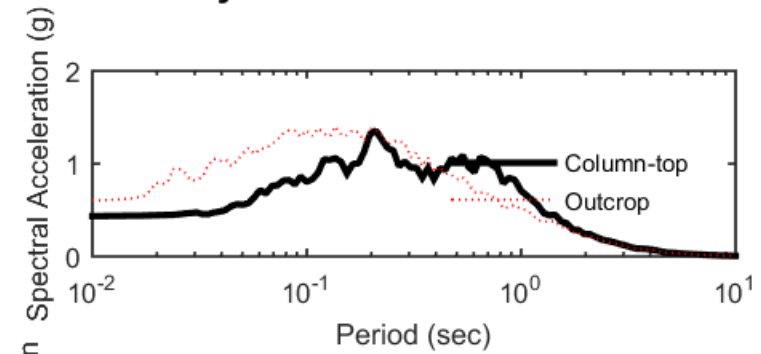
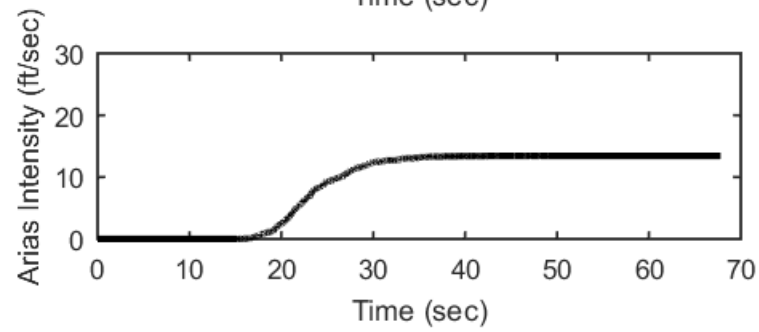
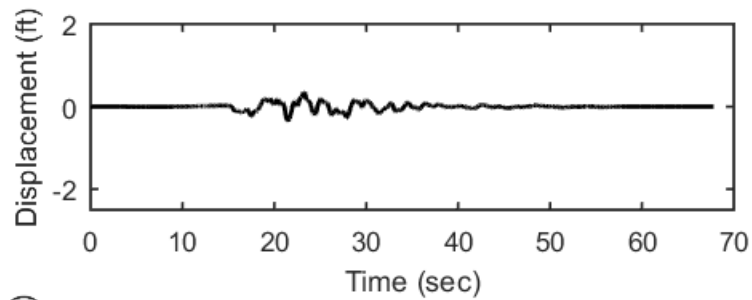
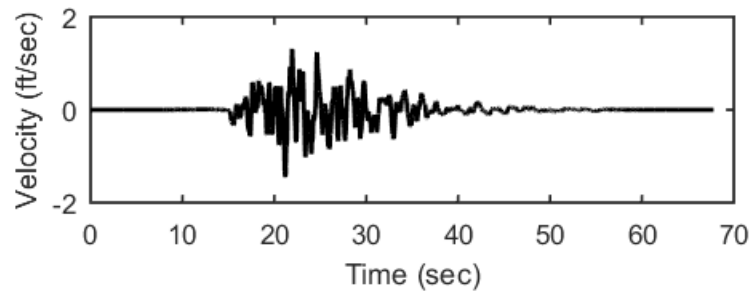
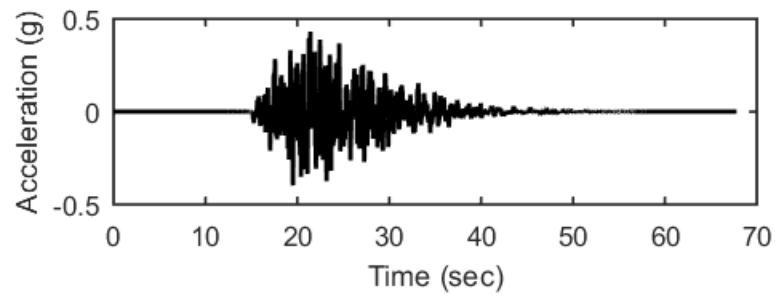




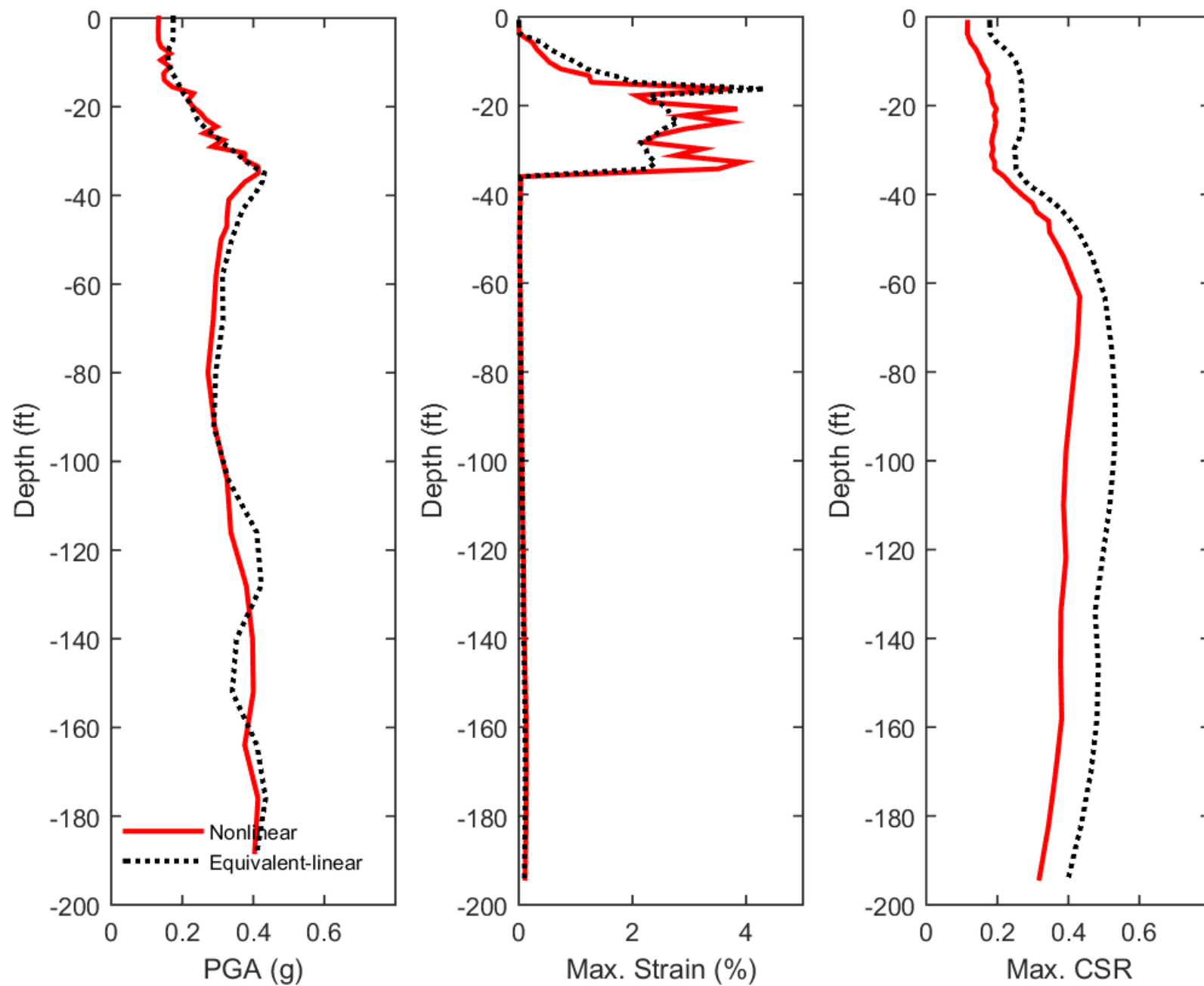
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



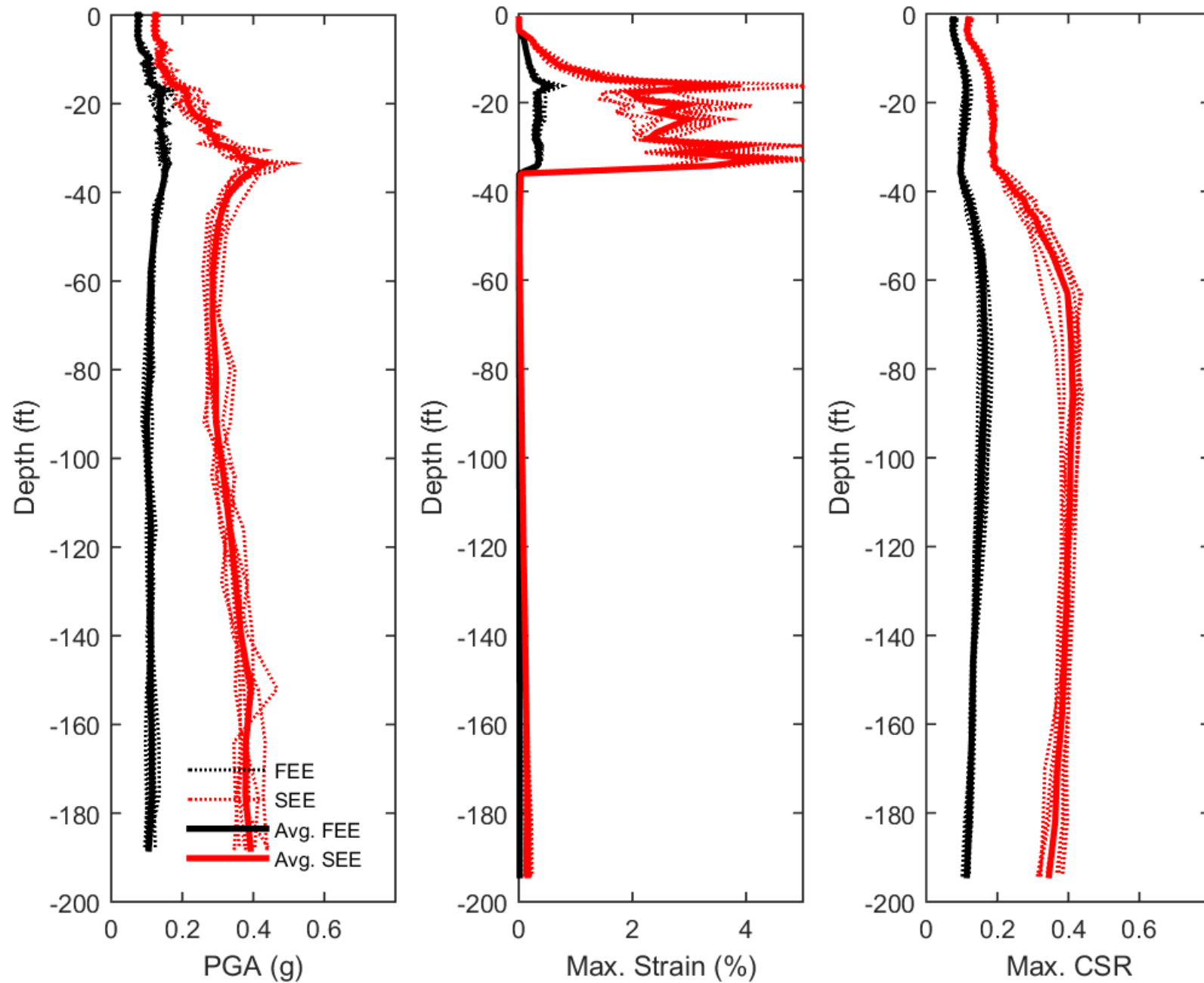
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



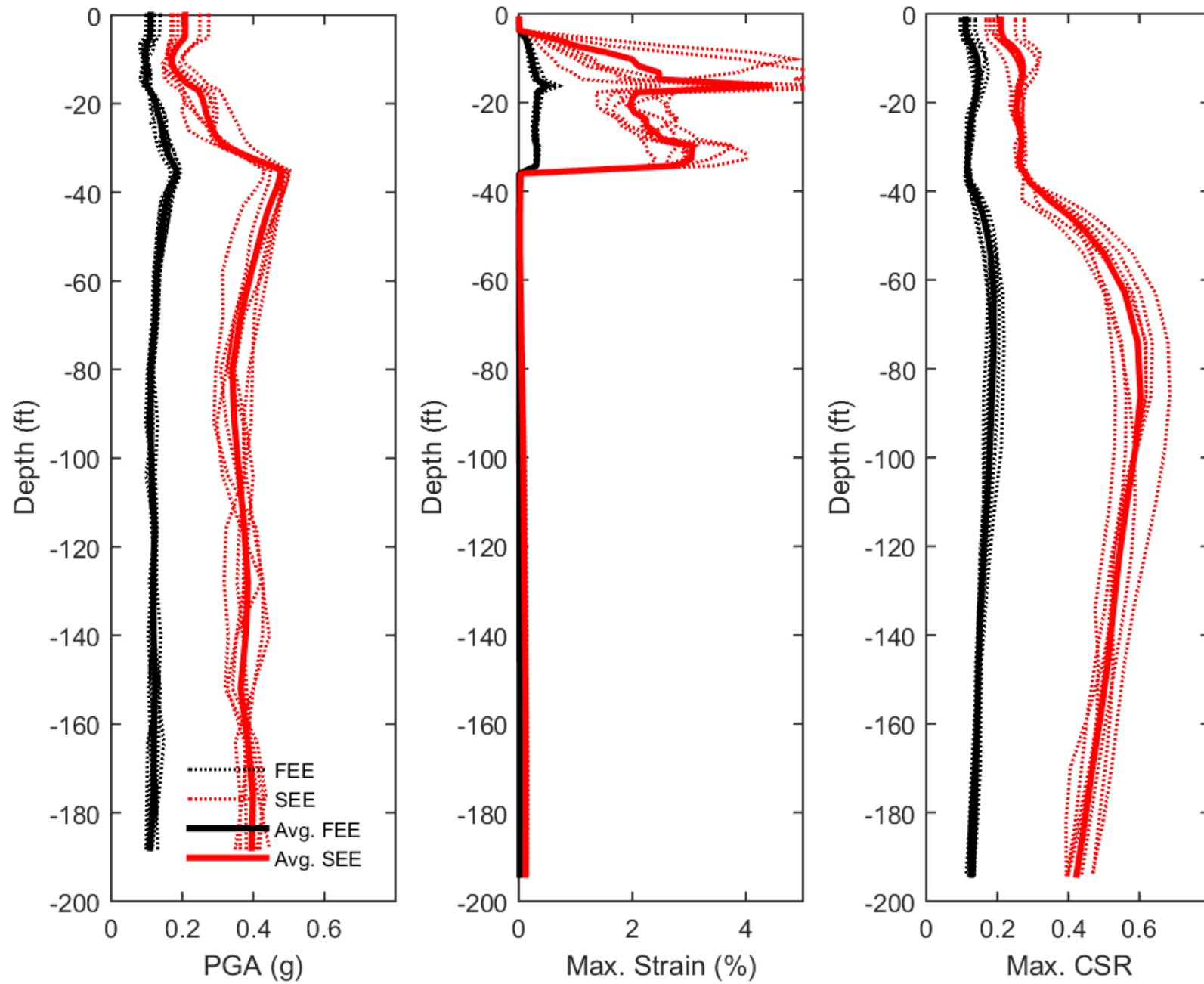
### Profile outputs for Motion: SEE7



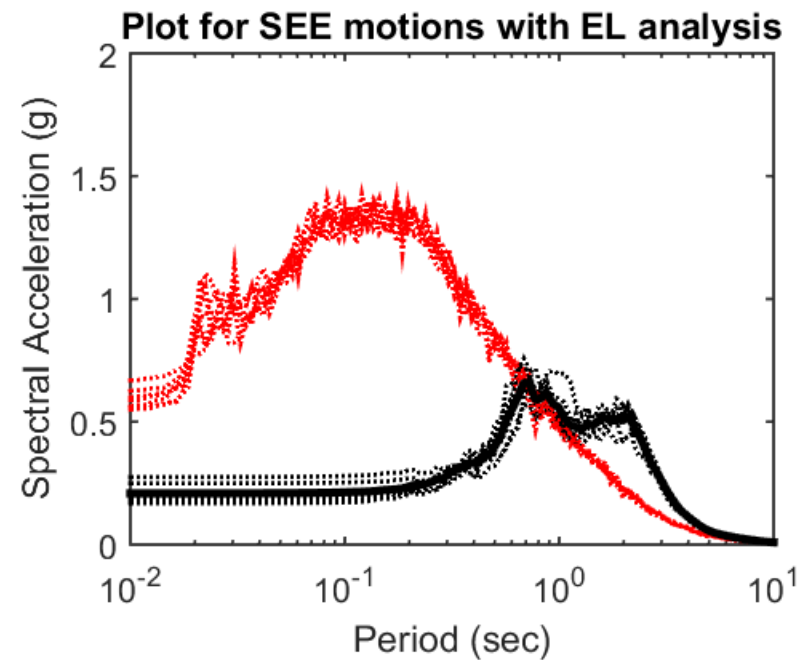
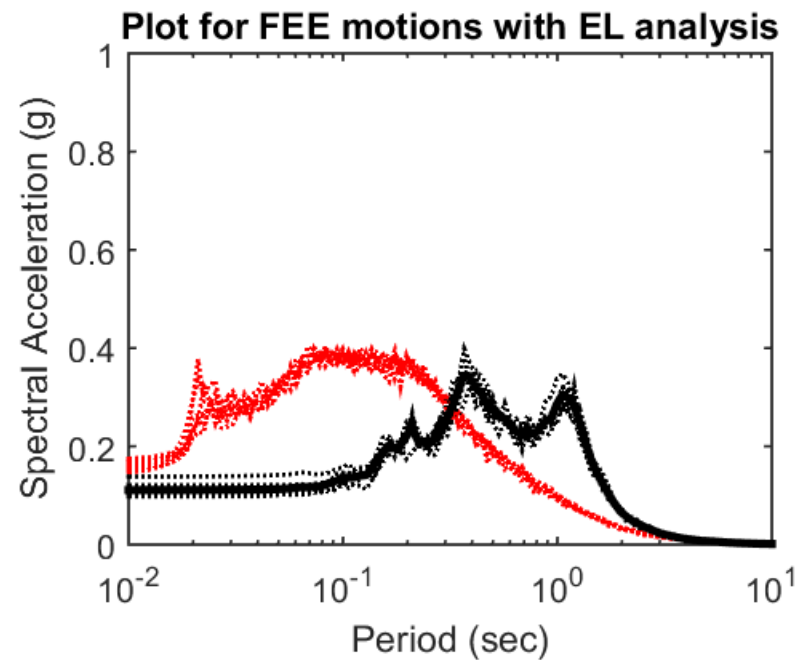
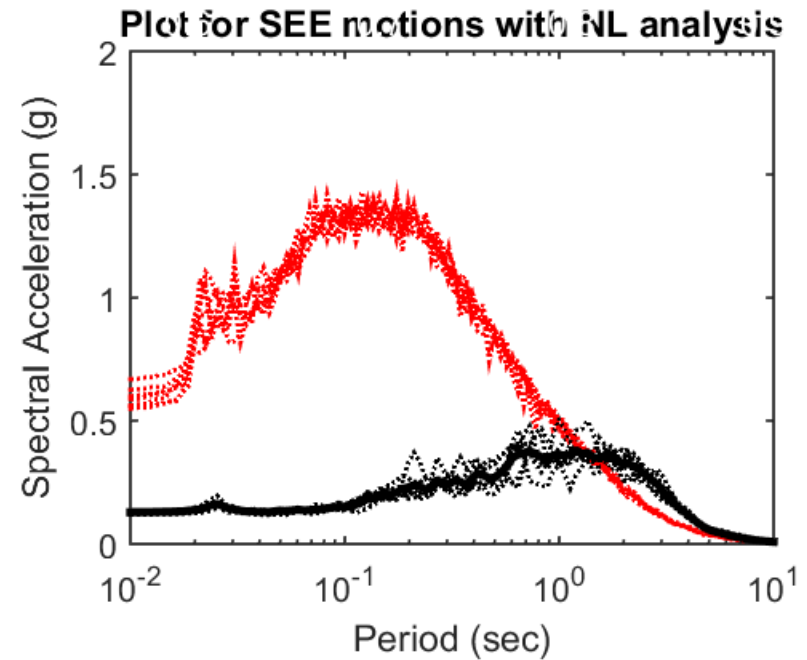
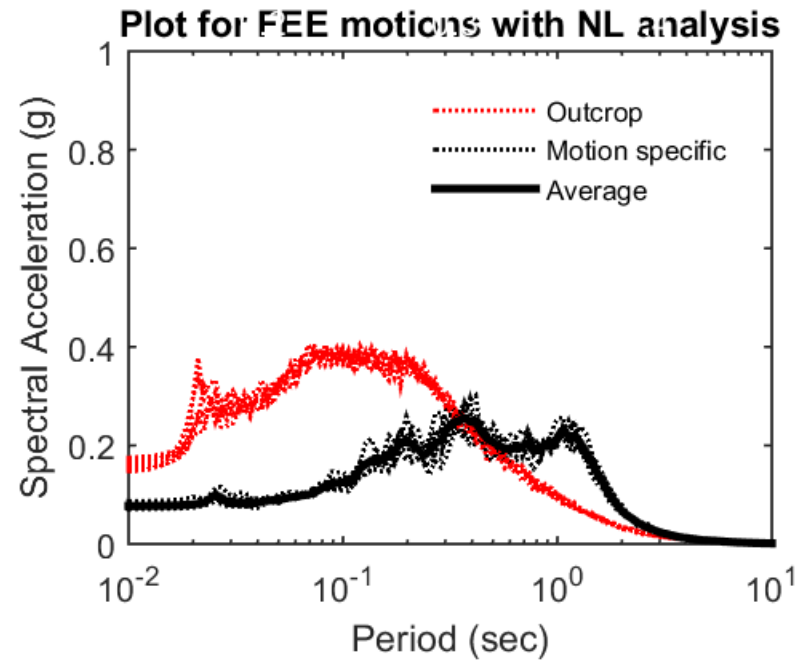
## Summary of the profile outputs for Nonlinear analysis



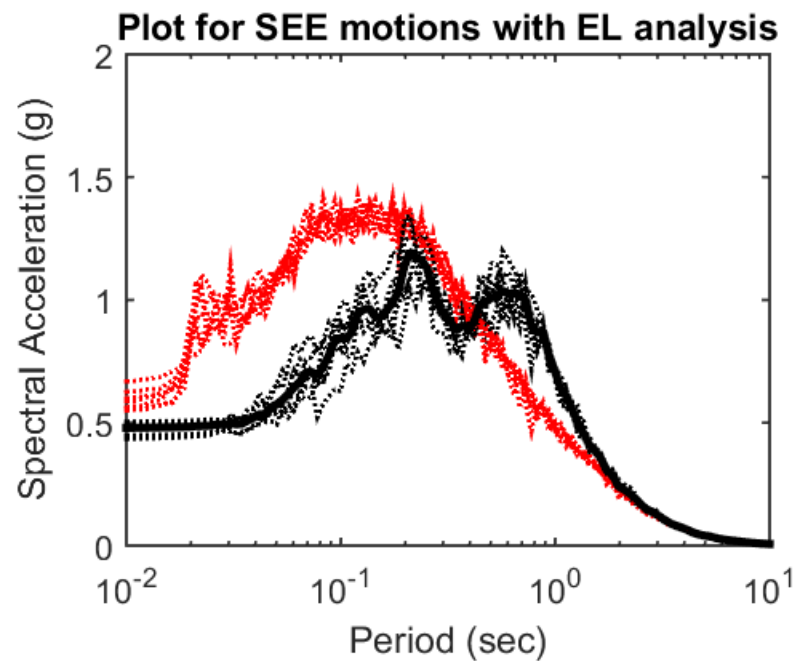
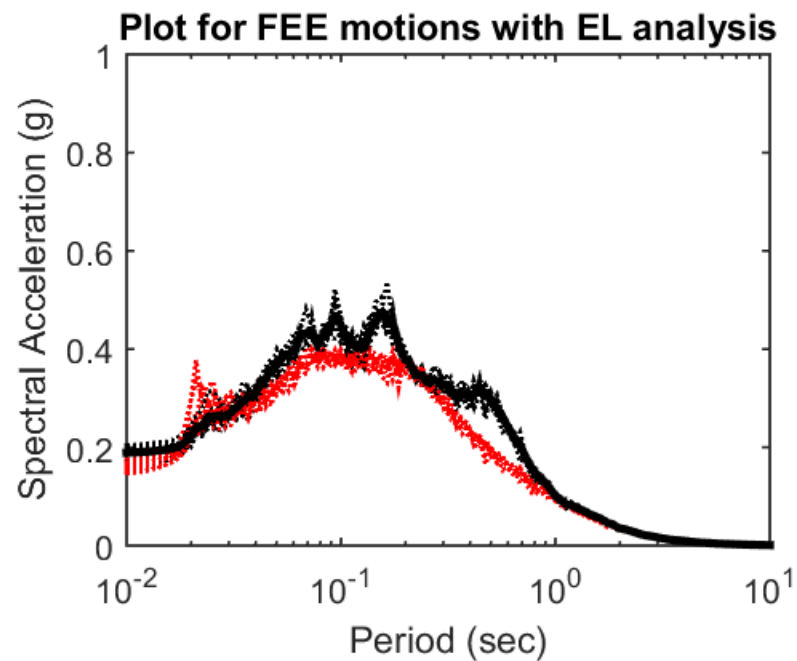
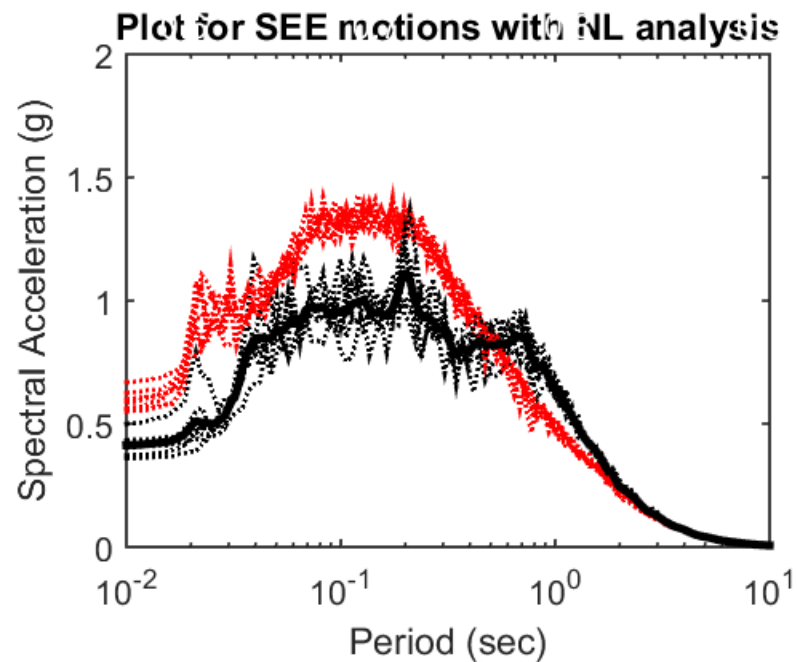
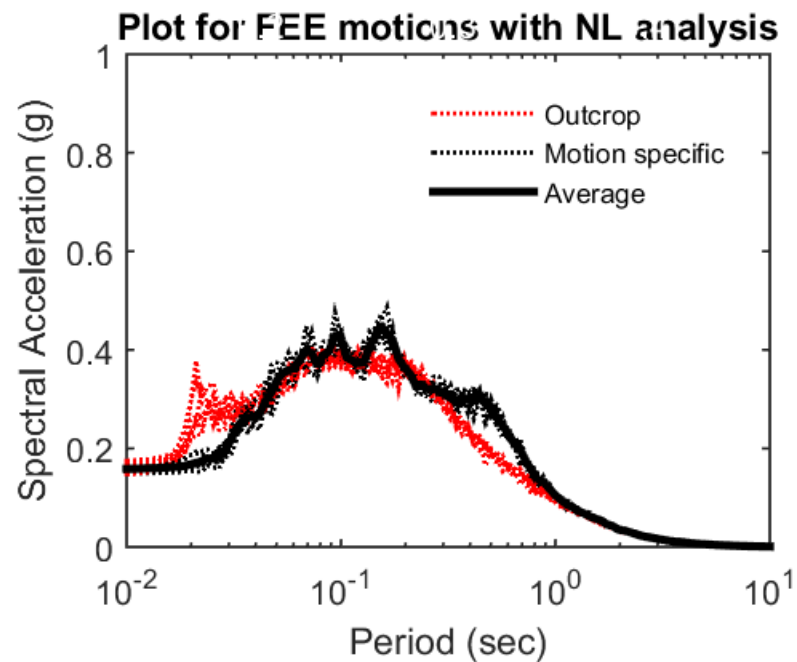
### Summary of the profile outputs for Equivalent-linear analysis



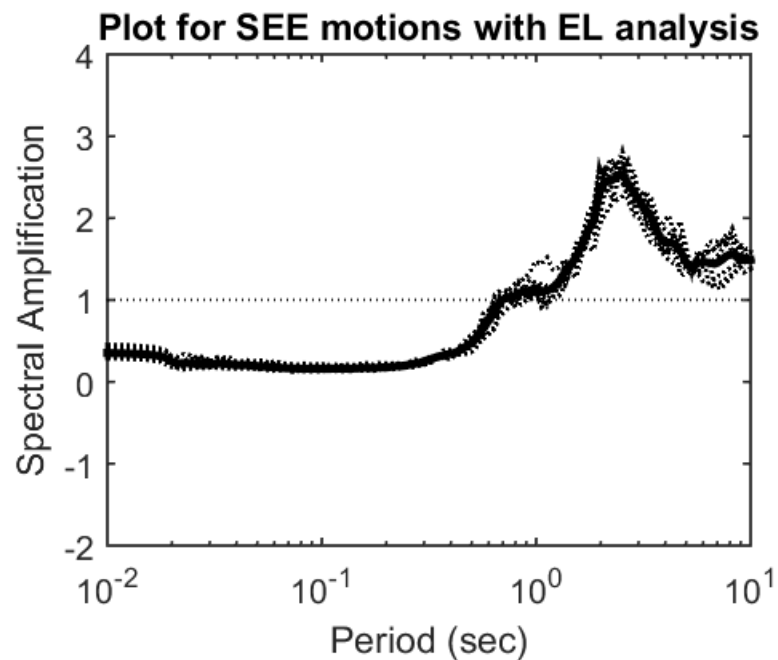
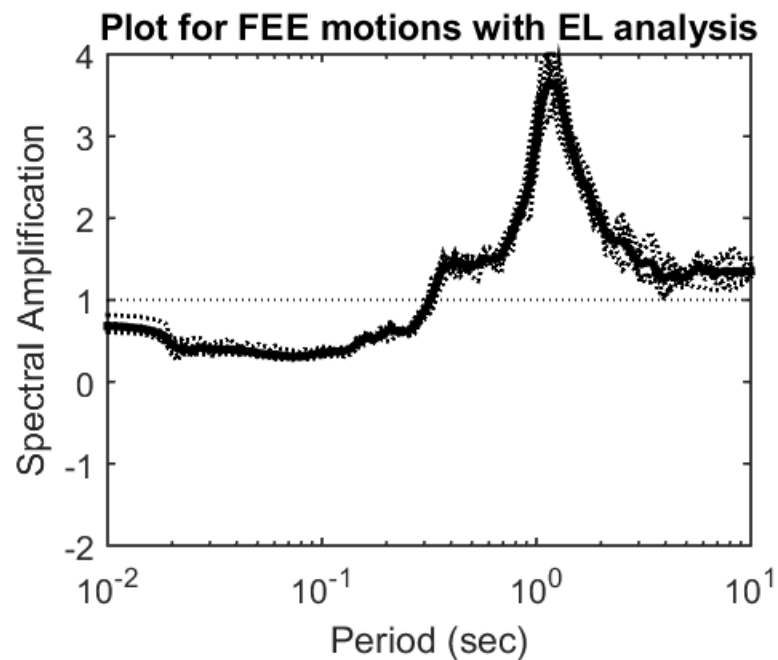
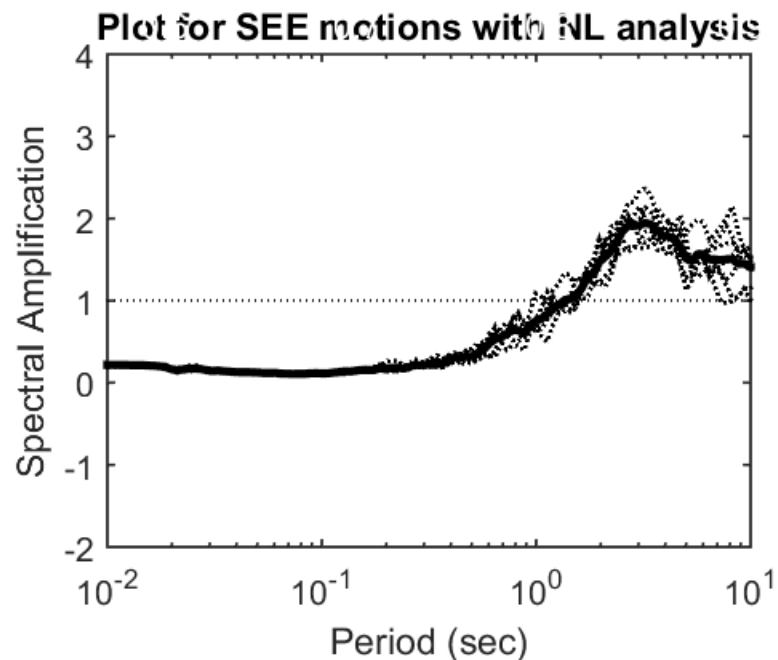
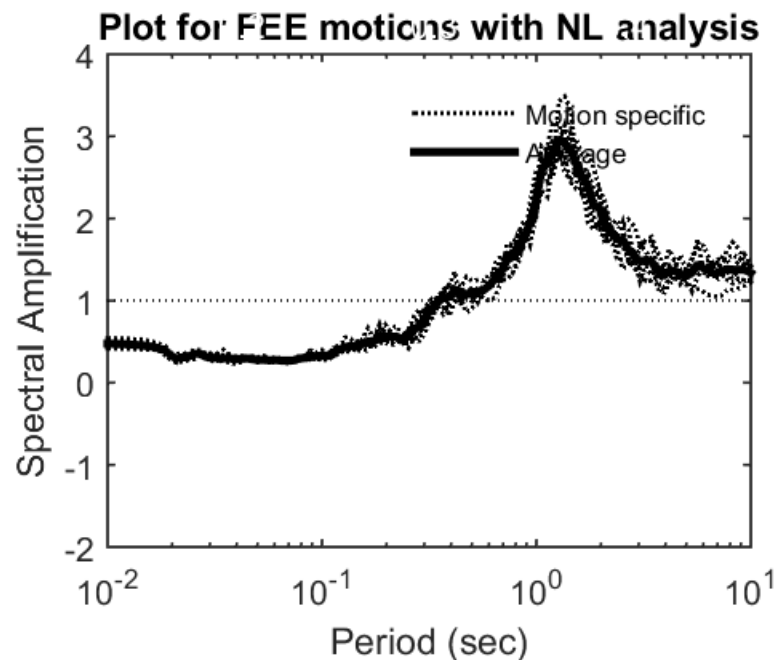
## Summary plots: RSA at ground surface



## Summary plots: RSA at top of Marl

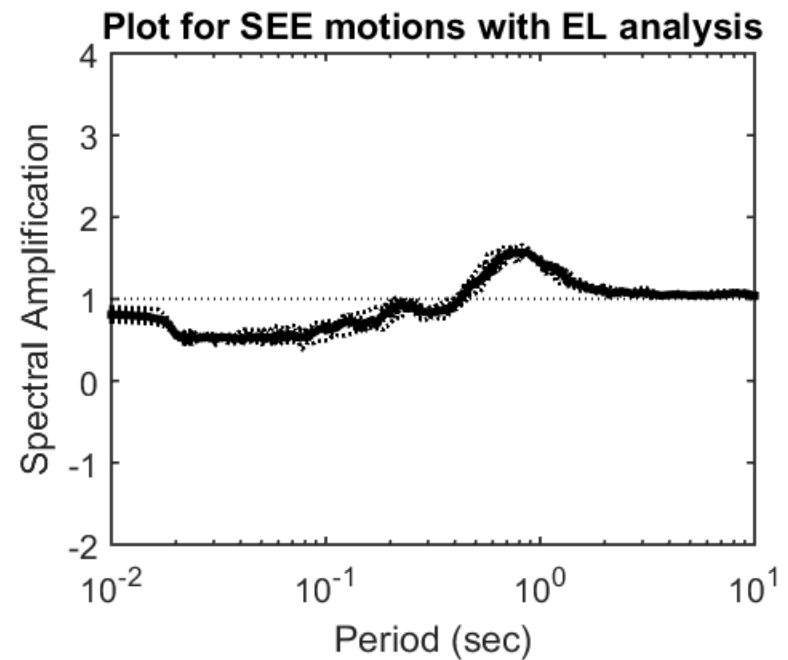
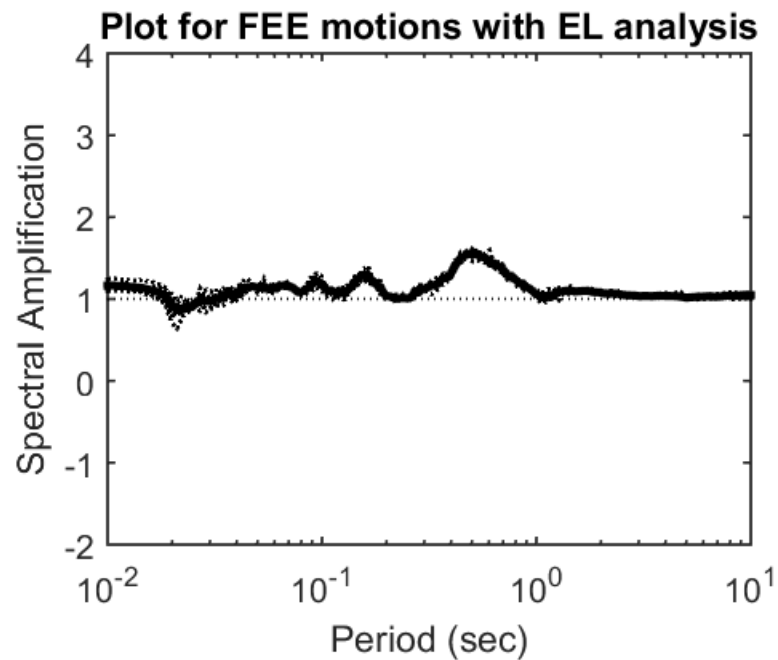
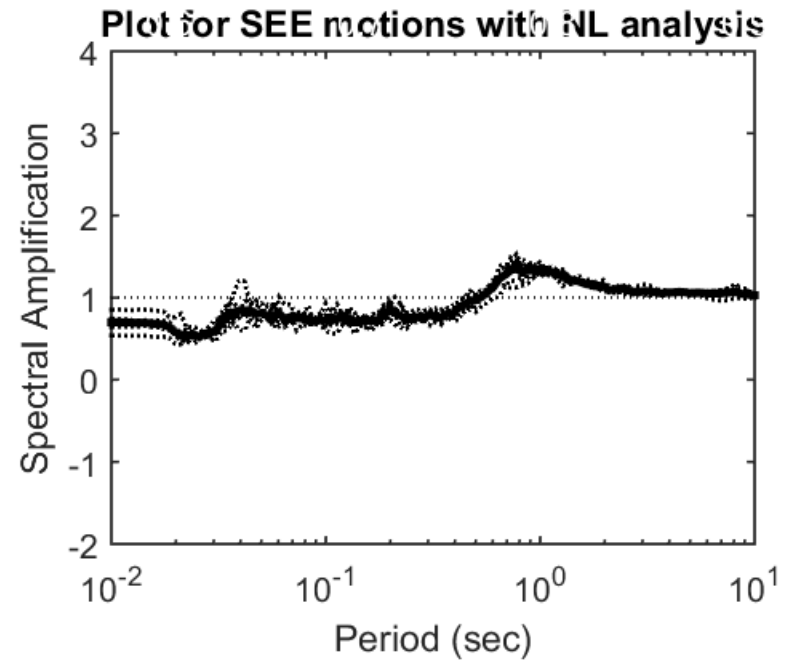
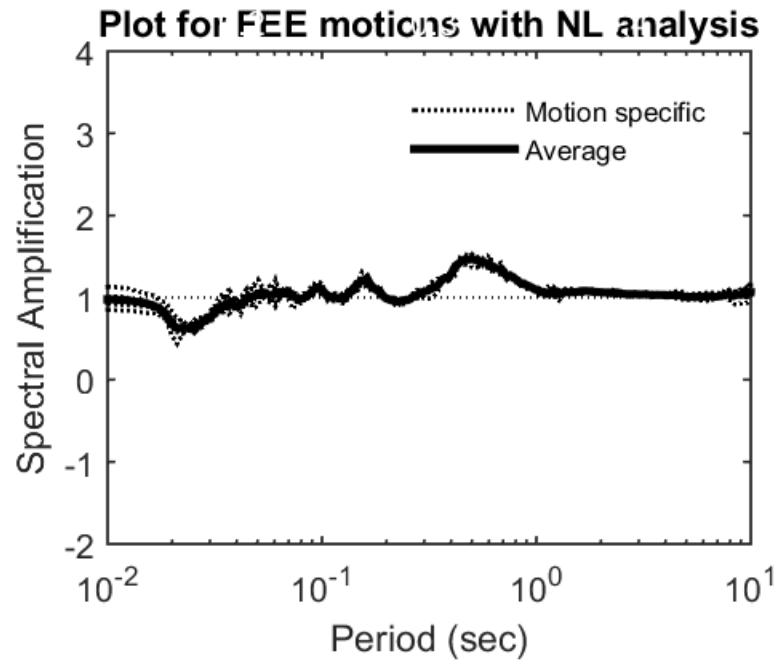


## Summary plots: Spectral amplification at ground surface





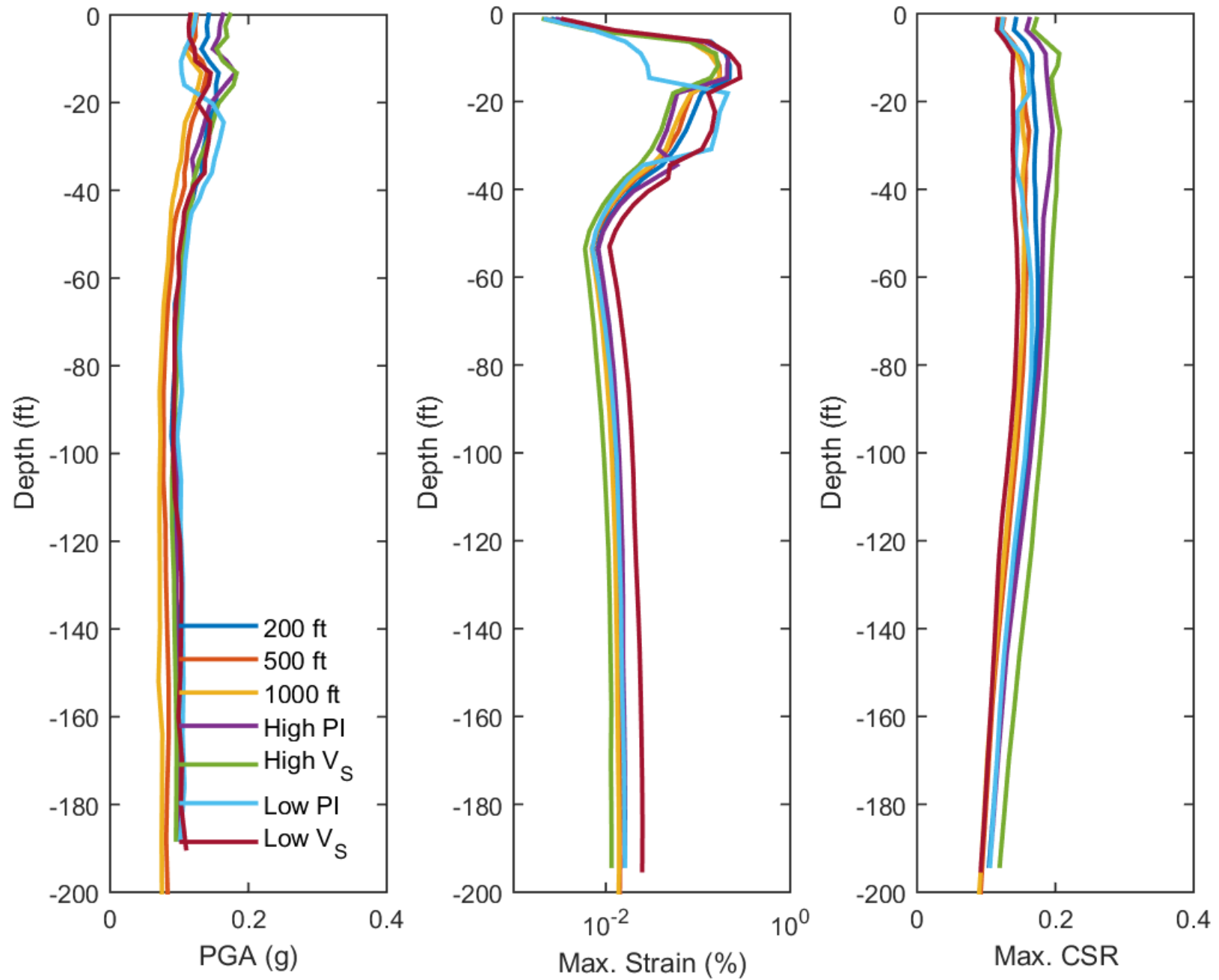
## Summary plots: Spectral amplification at top of Marl



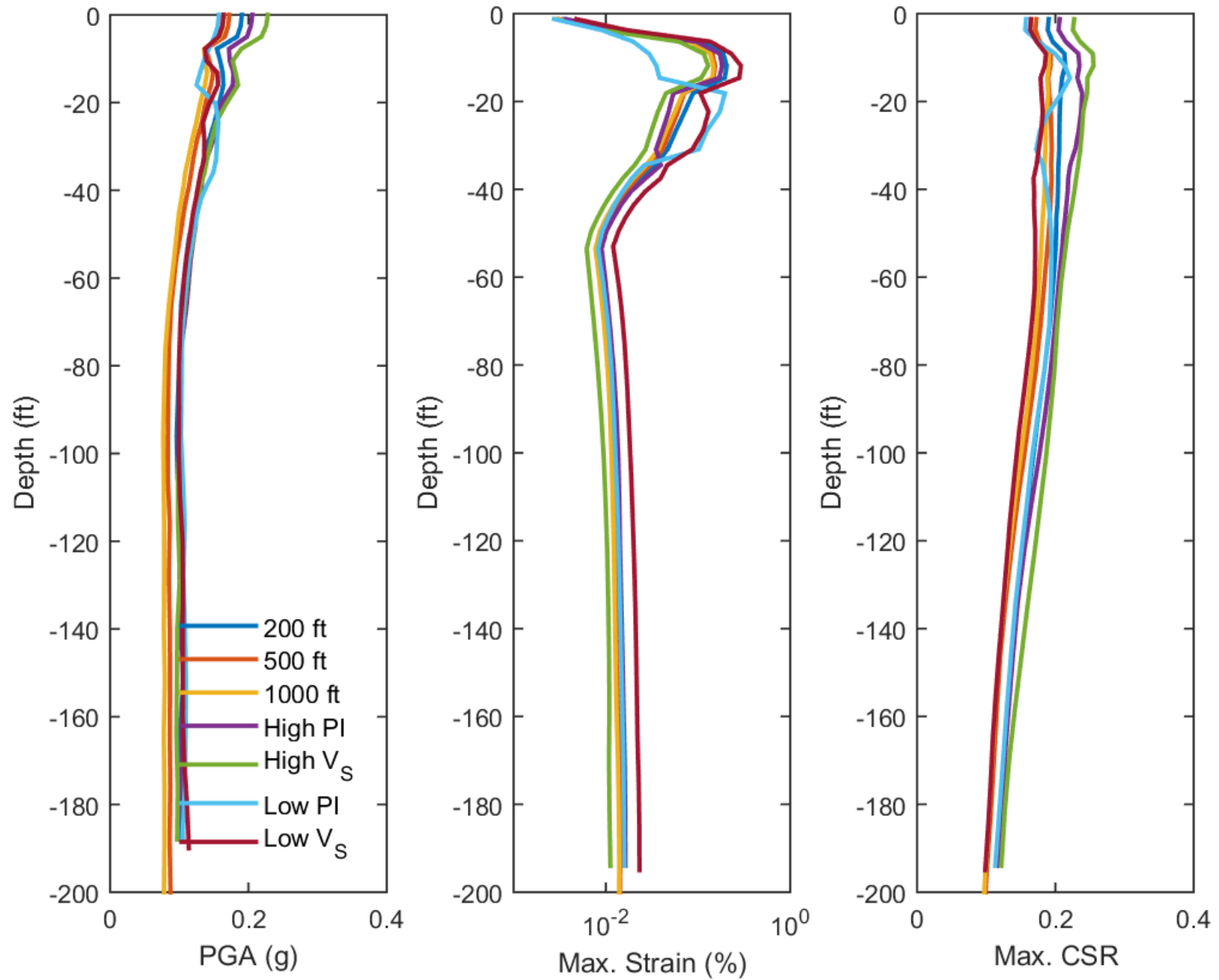
## **Appendix VII – Local Access Road Output**

## **FEE SUMMARY PLOTS**

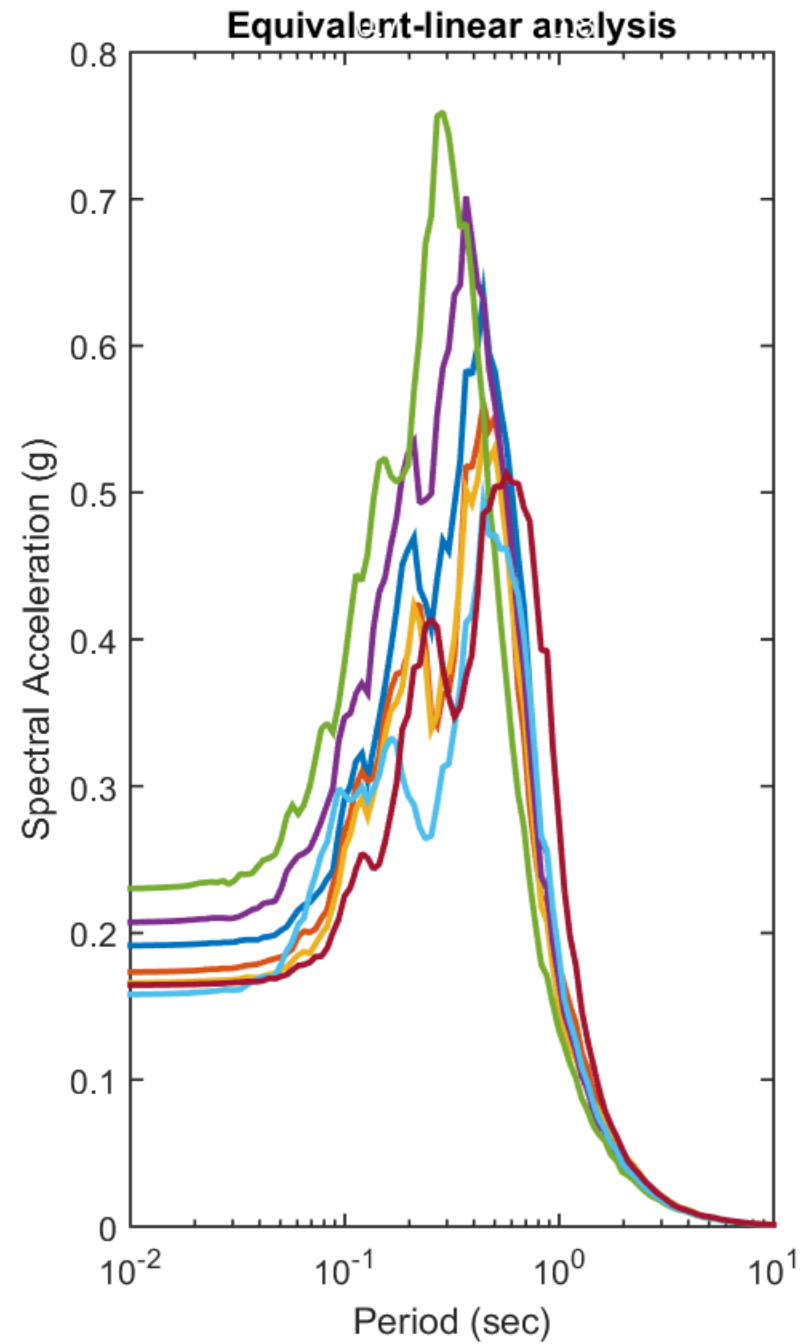
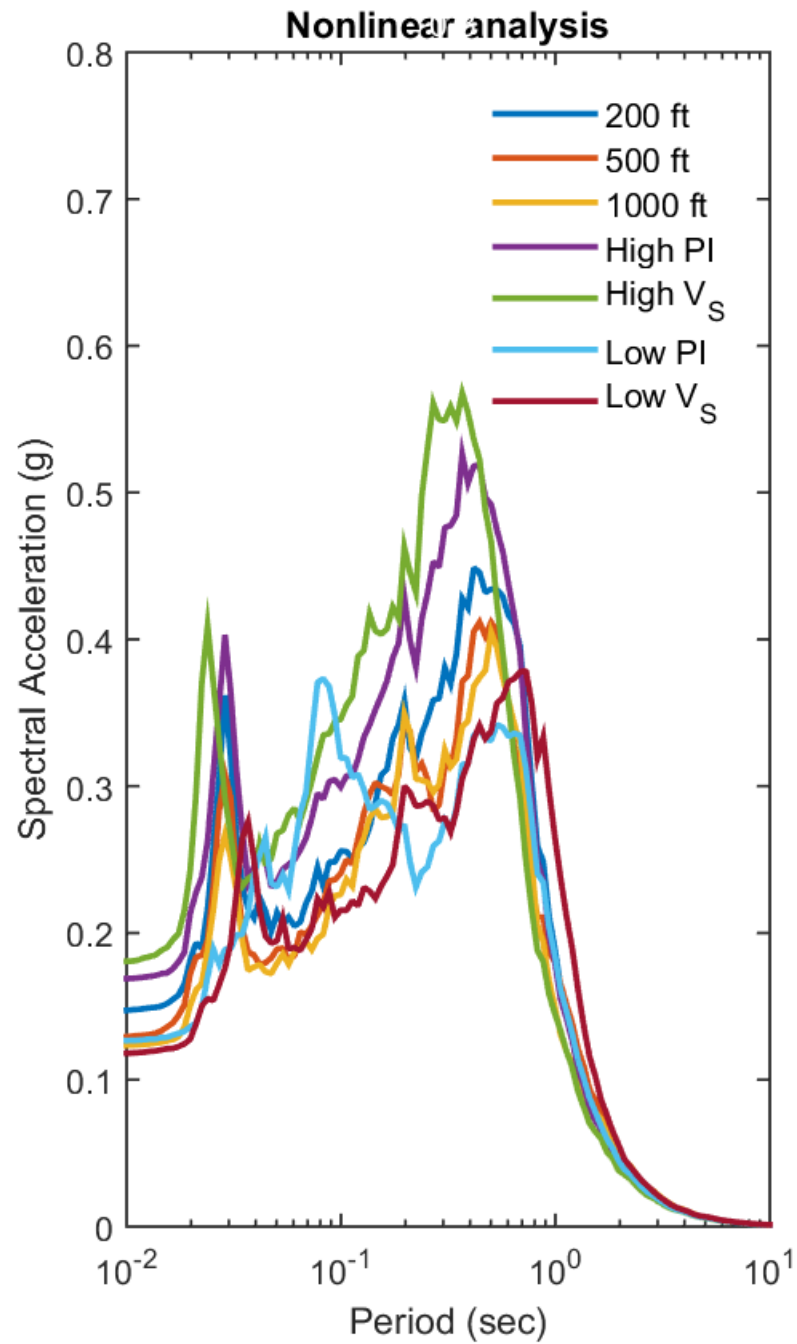
## Nonlinear Analysis for All Scenarios: LAR



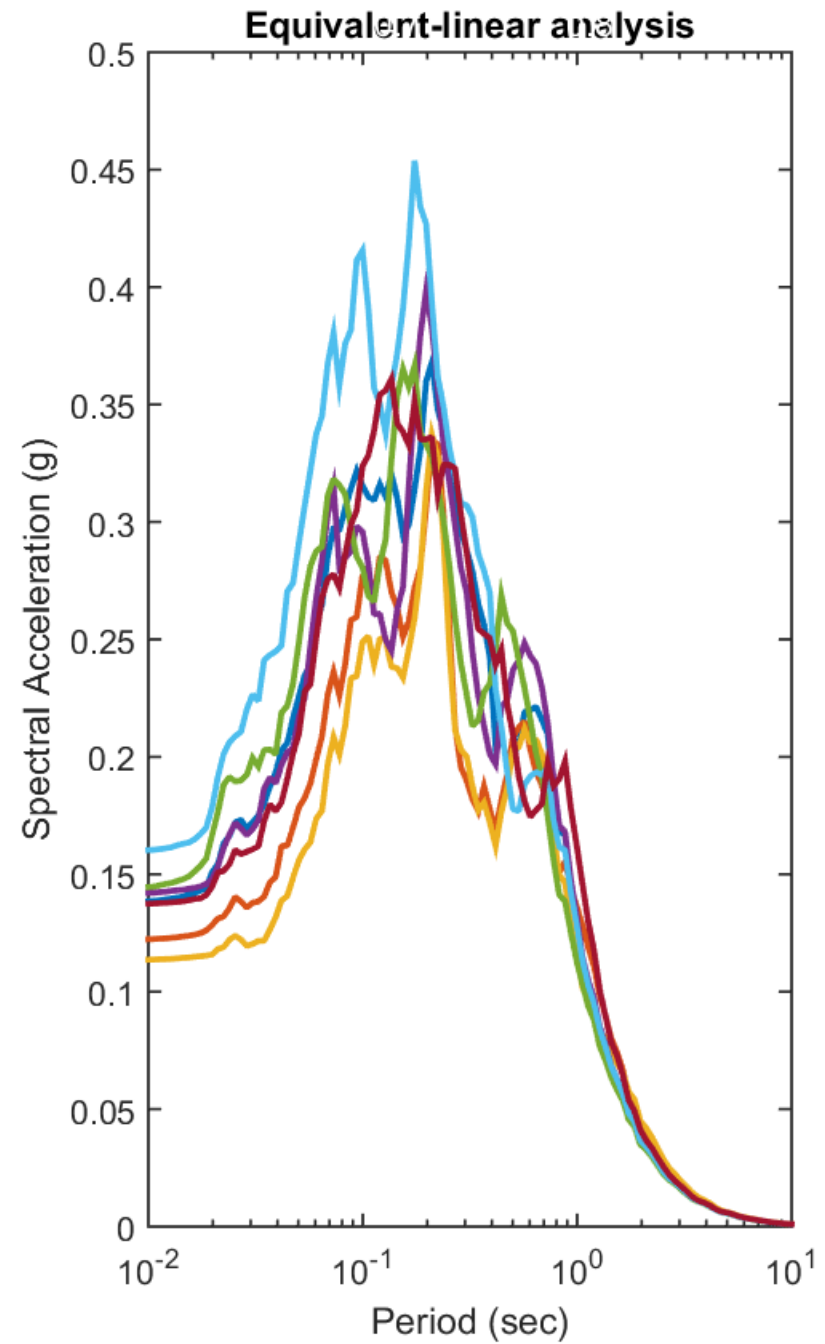
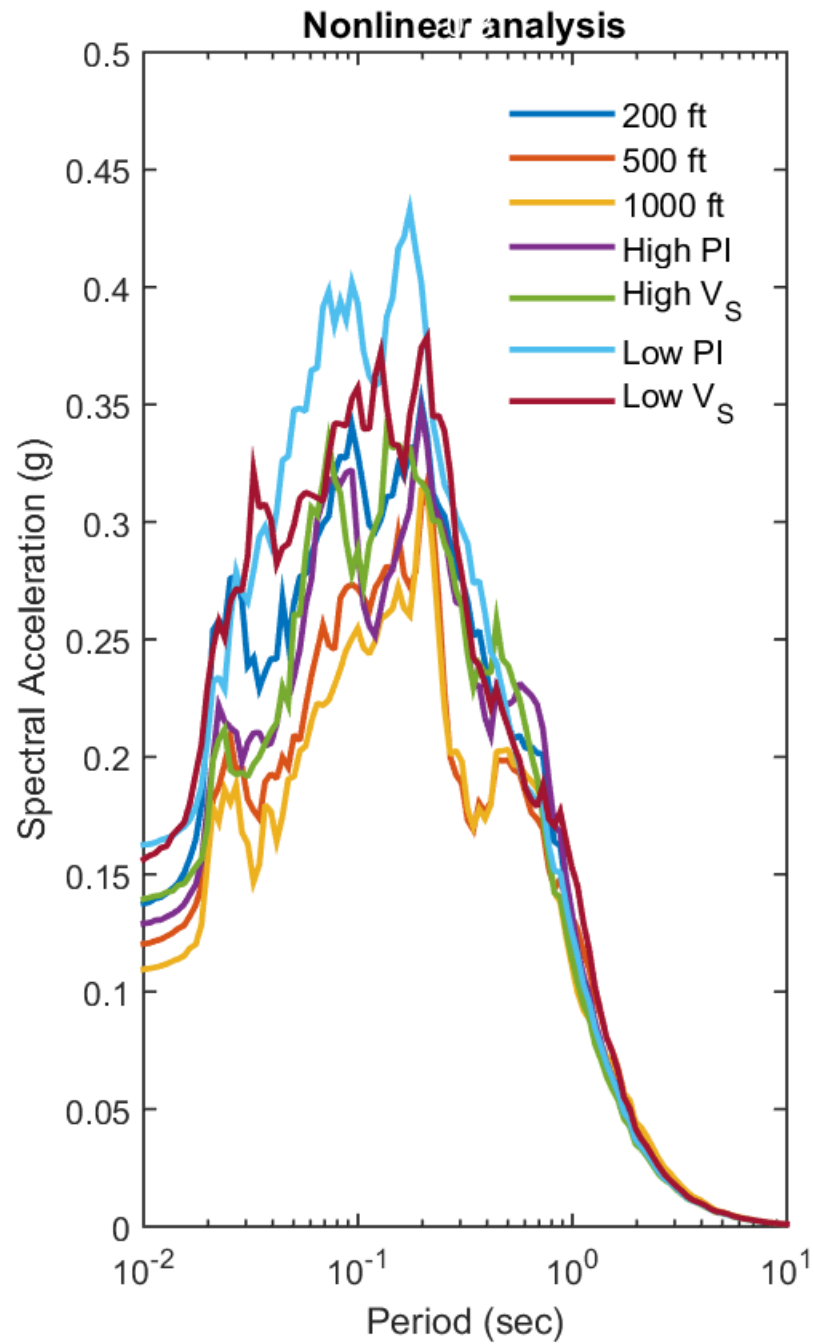
## Equivalent Linear Analysis for All Scenarios: LAR



## Ground Surface RS for All Scenarios: LAR

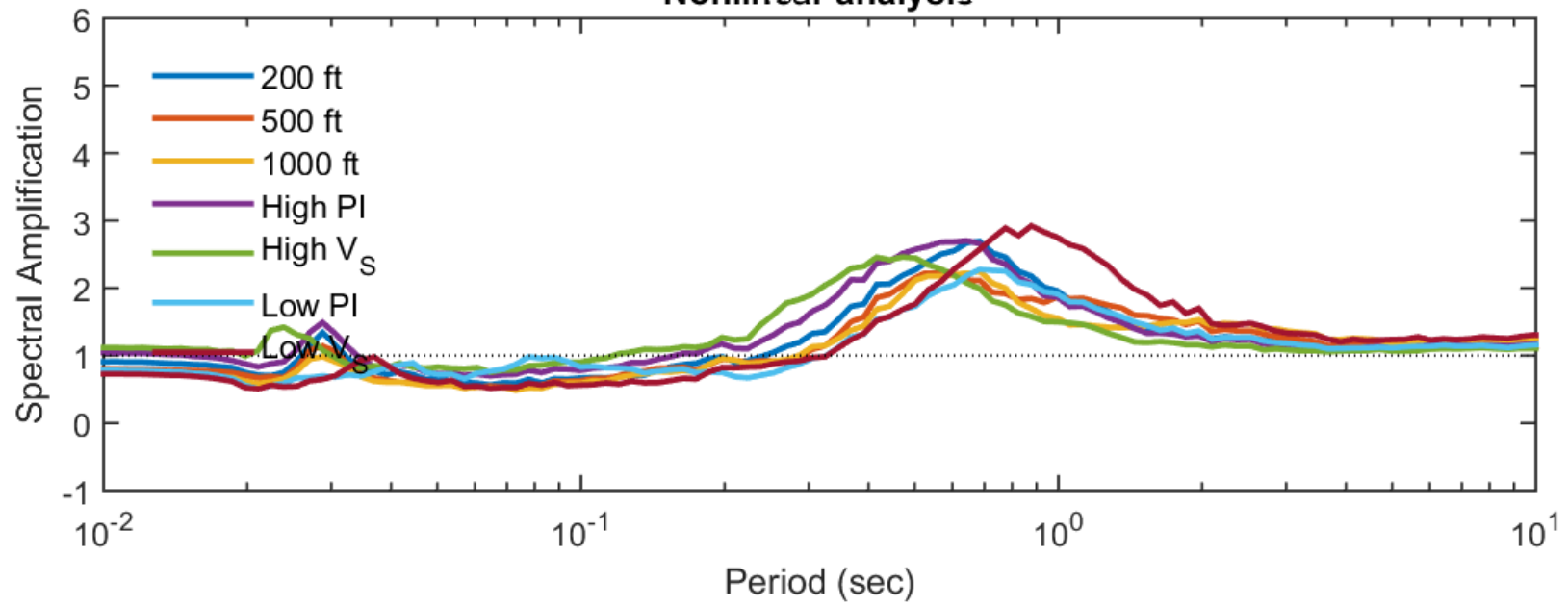


## Top of Marl RS for All Scenarios: LAR

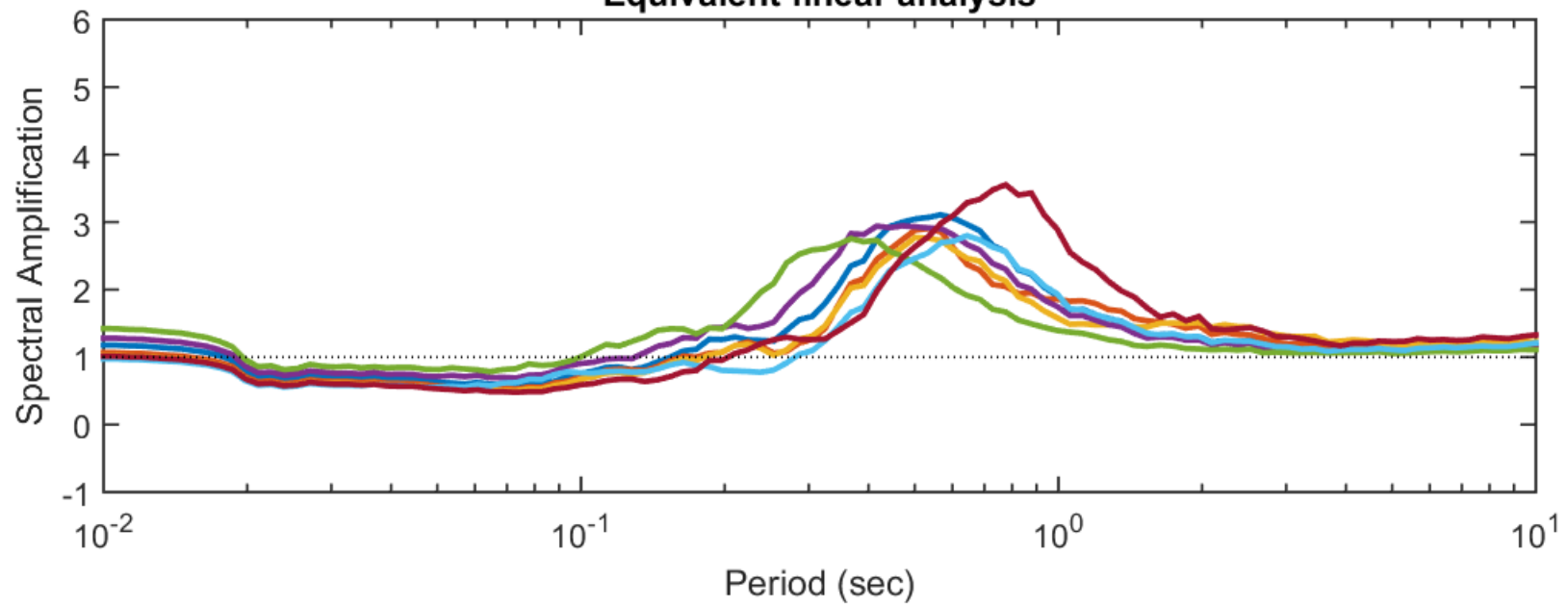


## Ground Surface Amplification for All Scenarios: LAR

### Nonlinear analysis



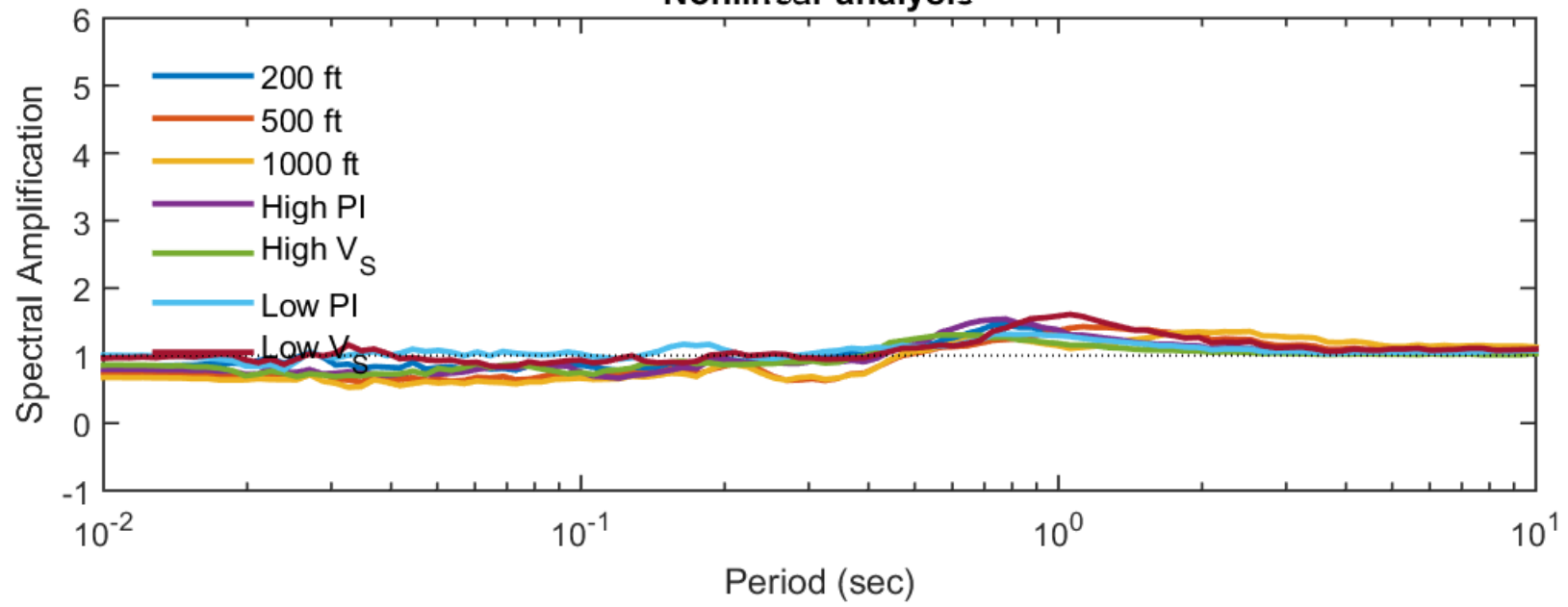
### Equivalent-linear analysis



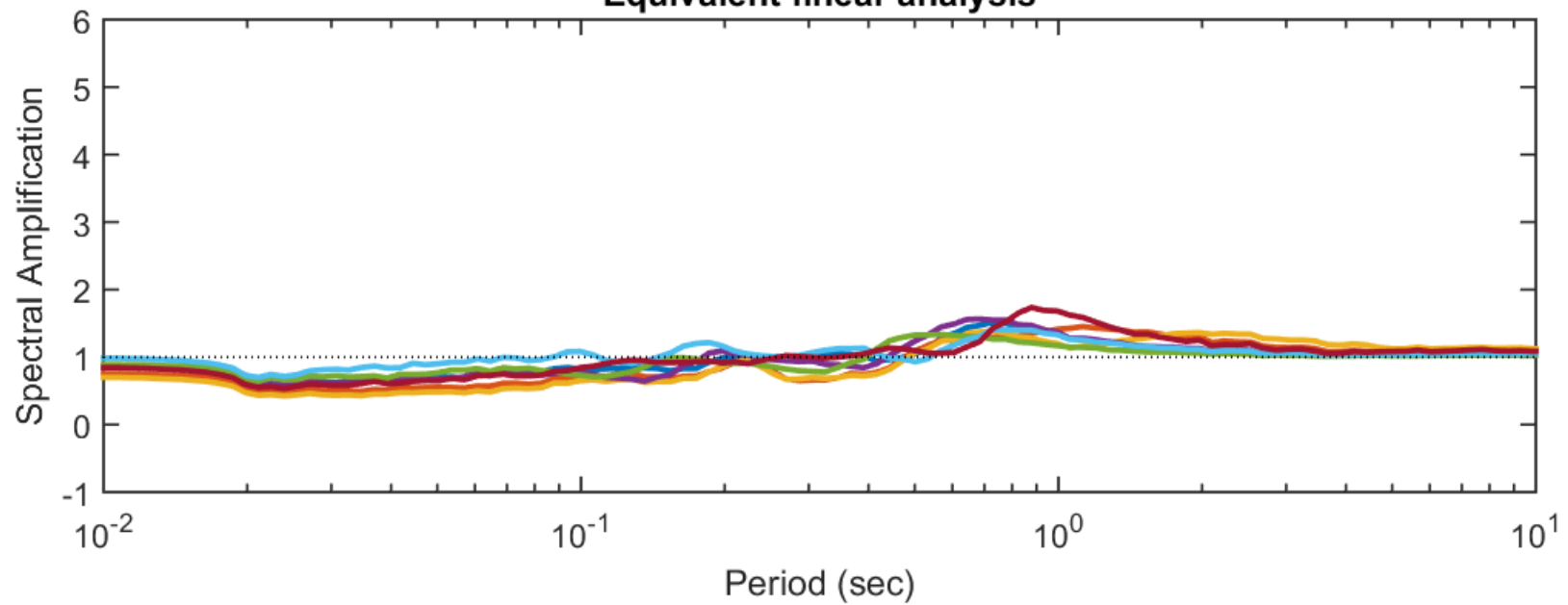


## Top of Marl Amplification for All Scenarios: LAR

### Nonlinear analysis

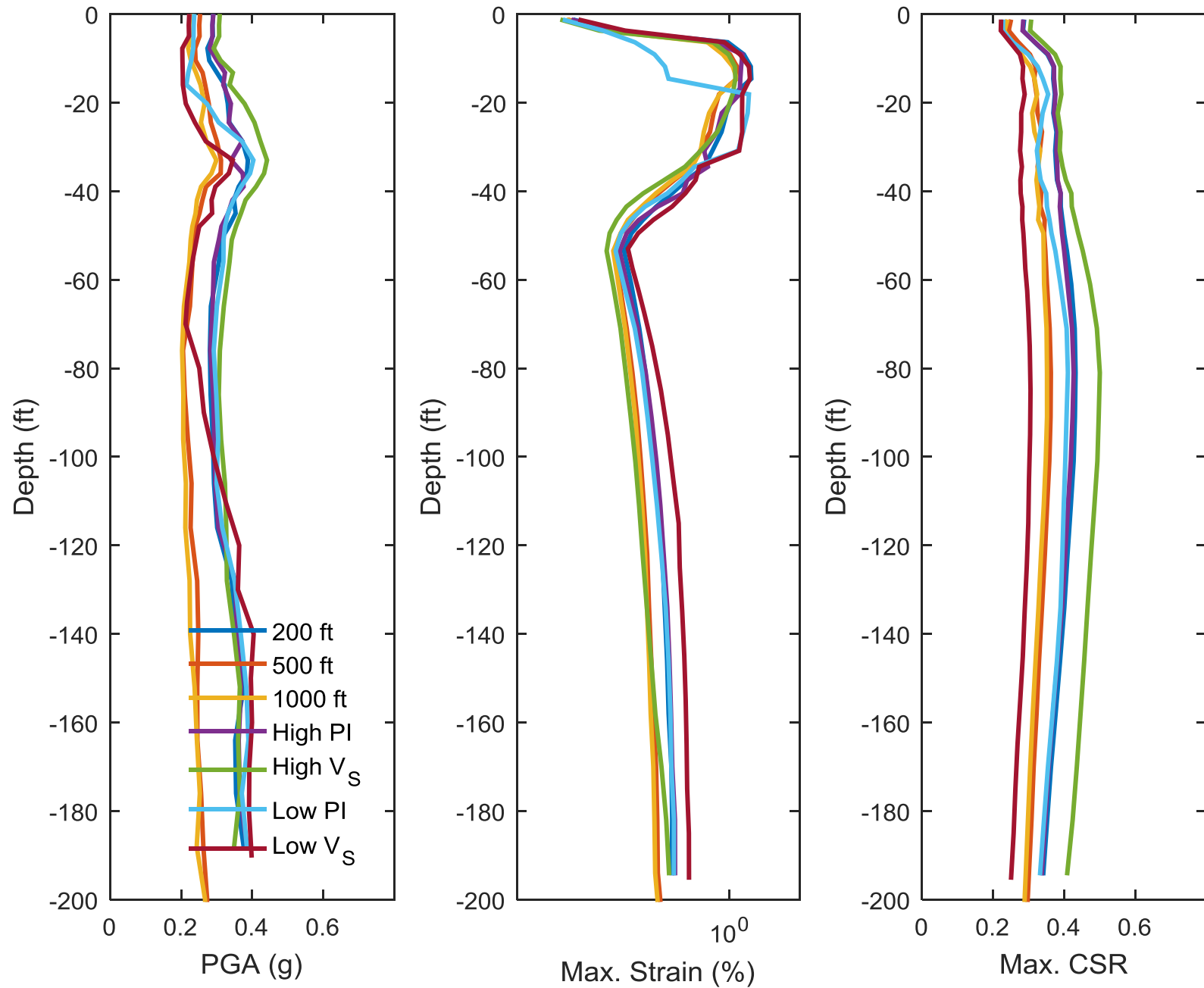


### Equivalent-linear analysis

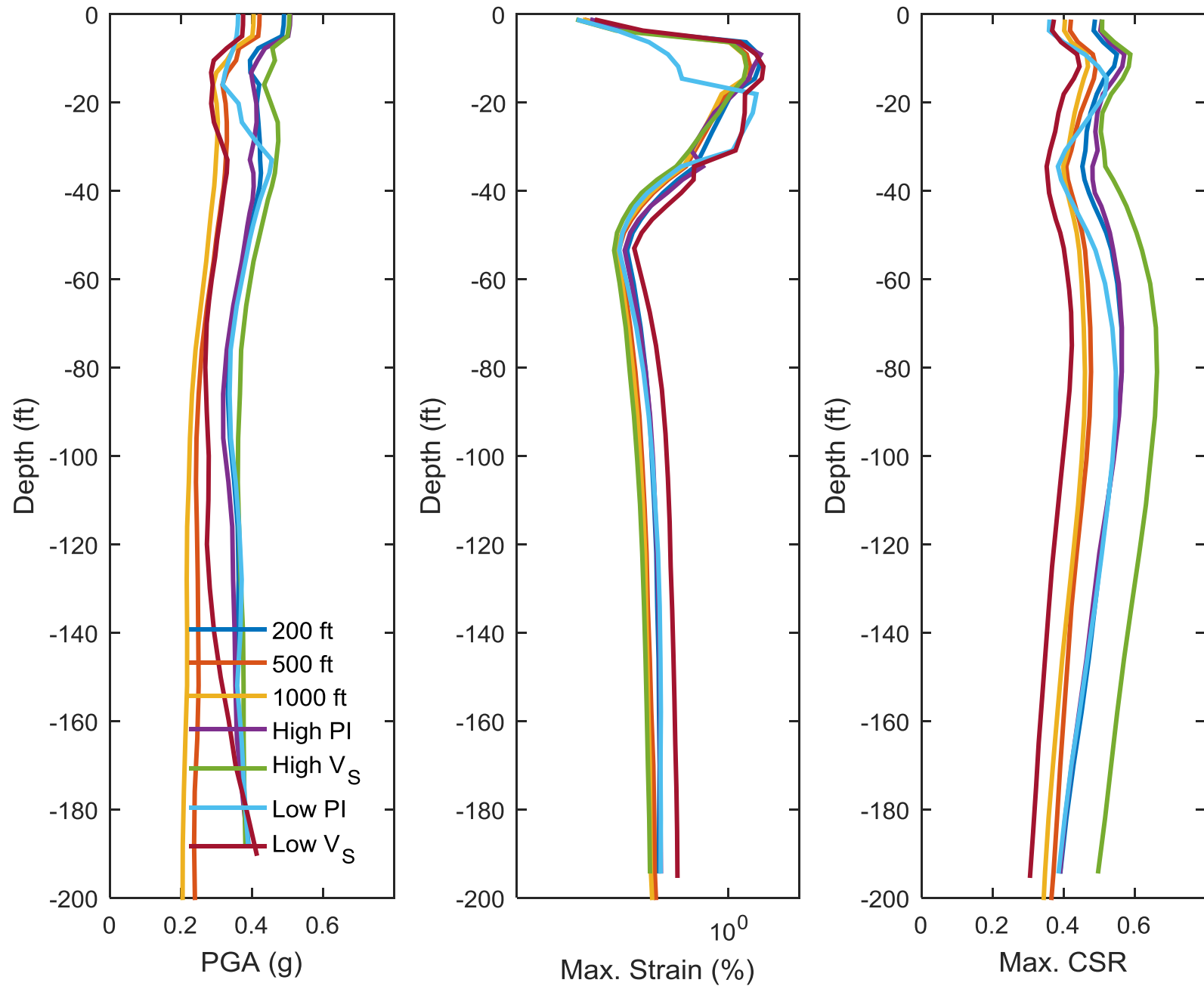


**SEE SUMMARY PLOTS**

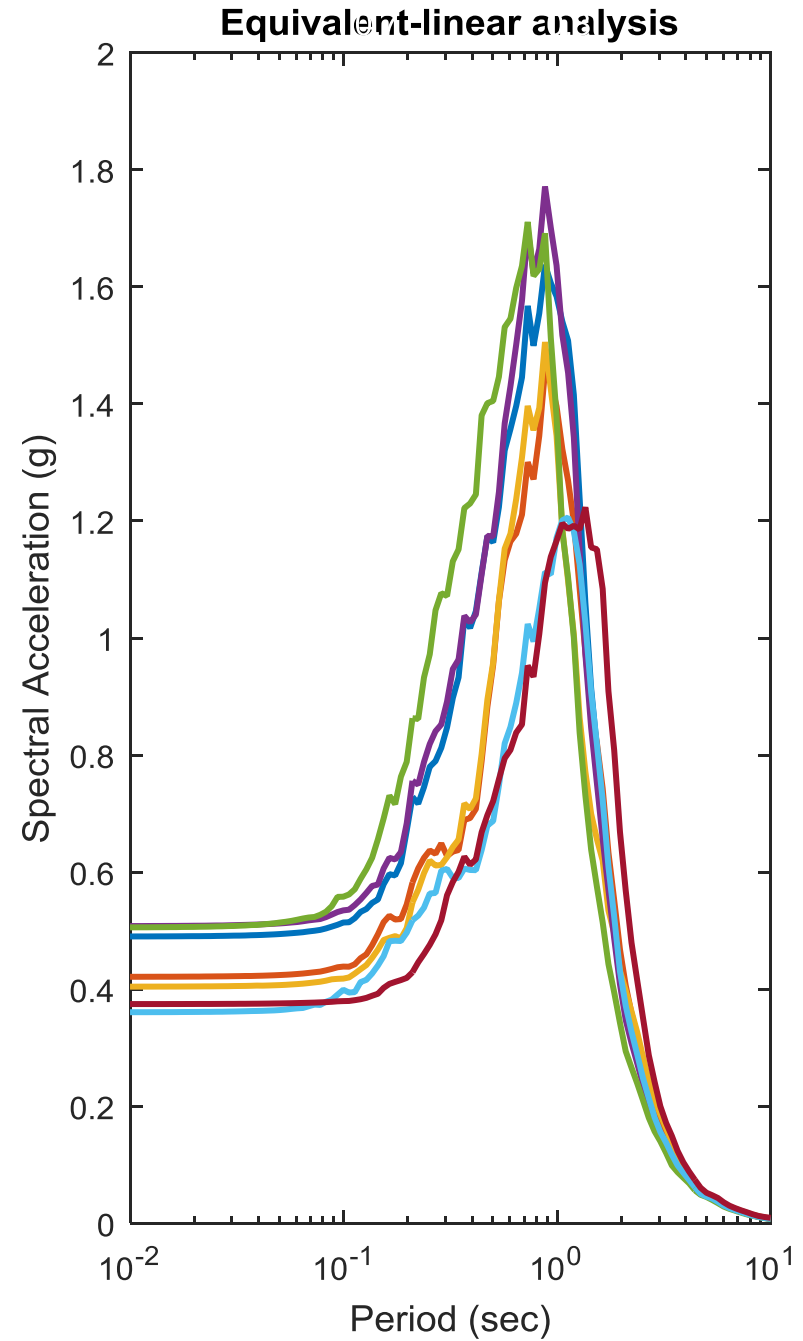
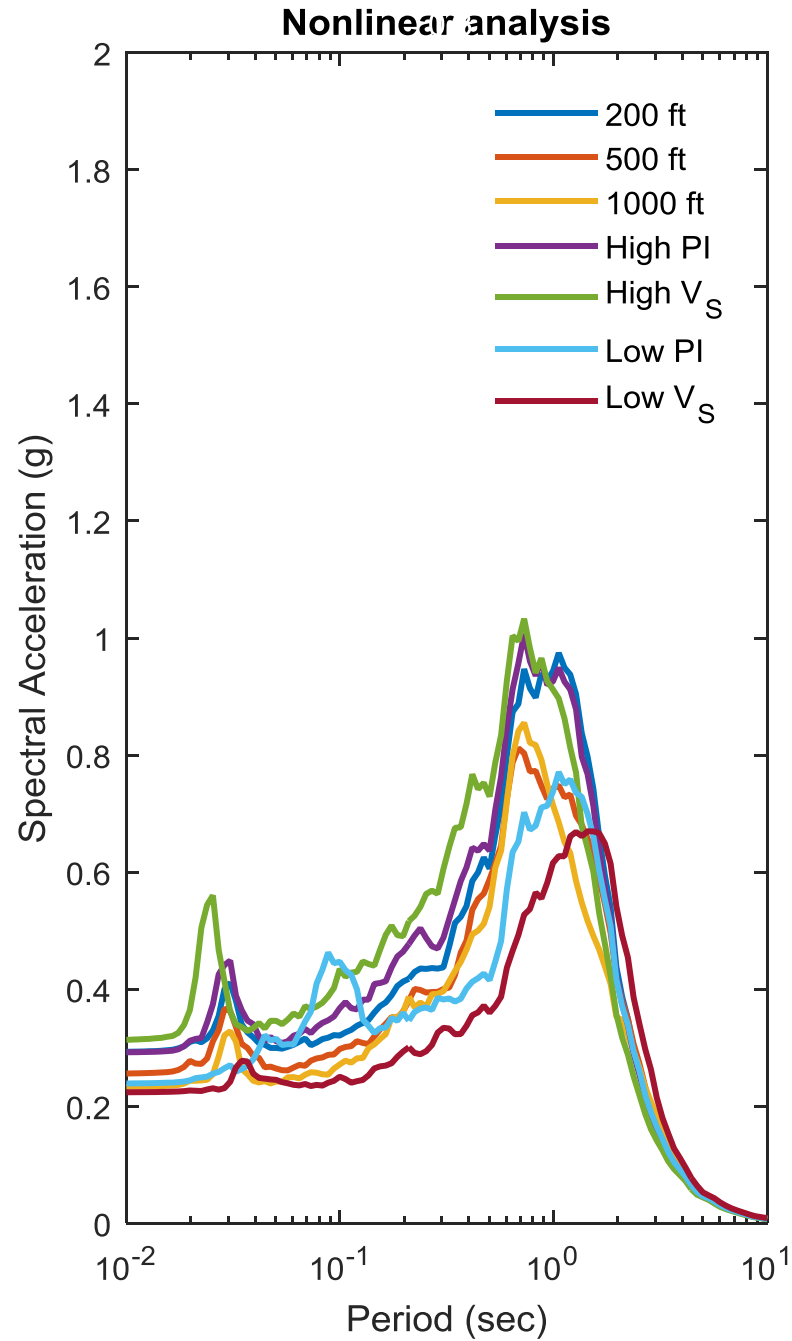
## Nonlinear Analysis for All Scenarios: LAR



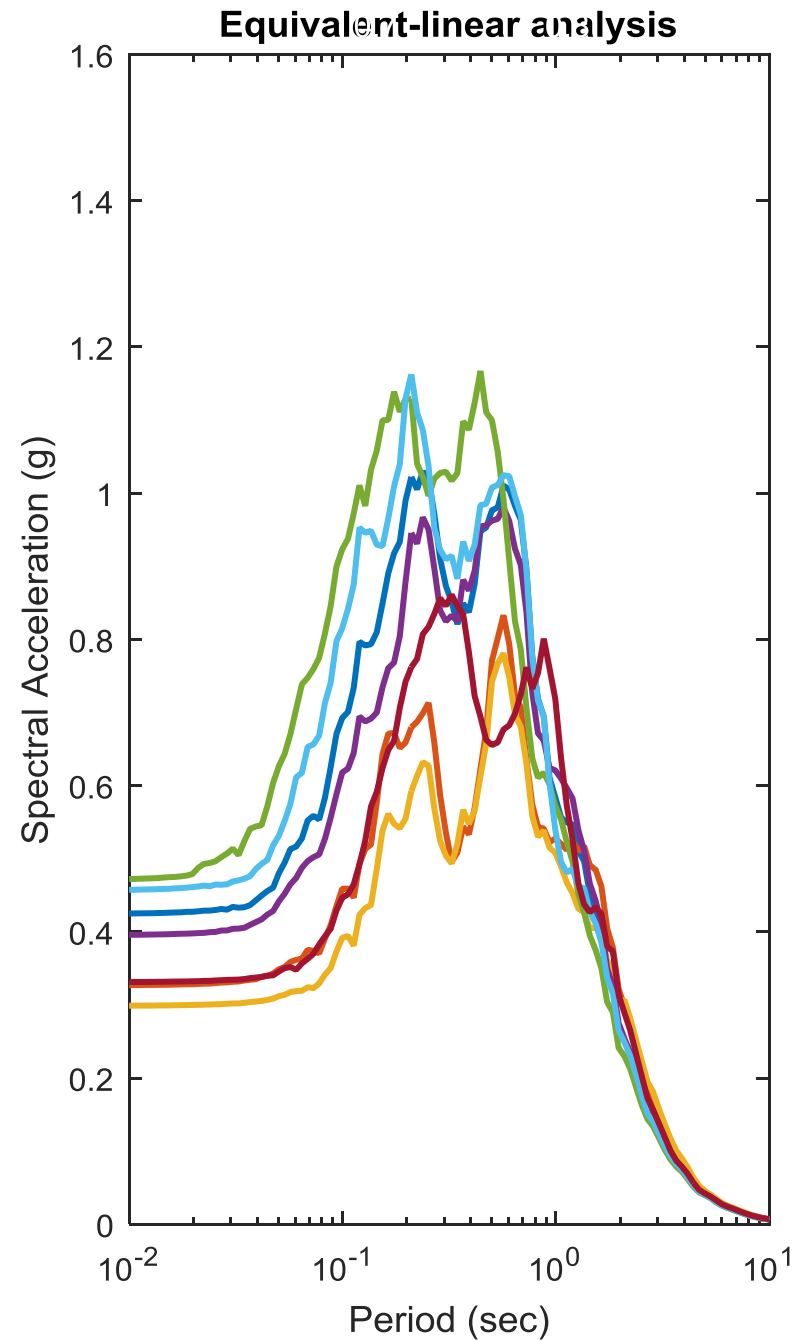
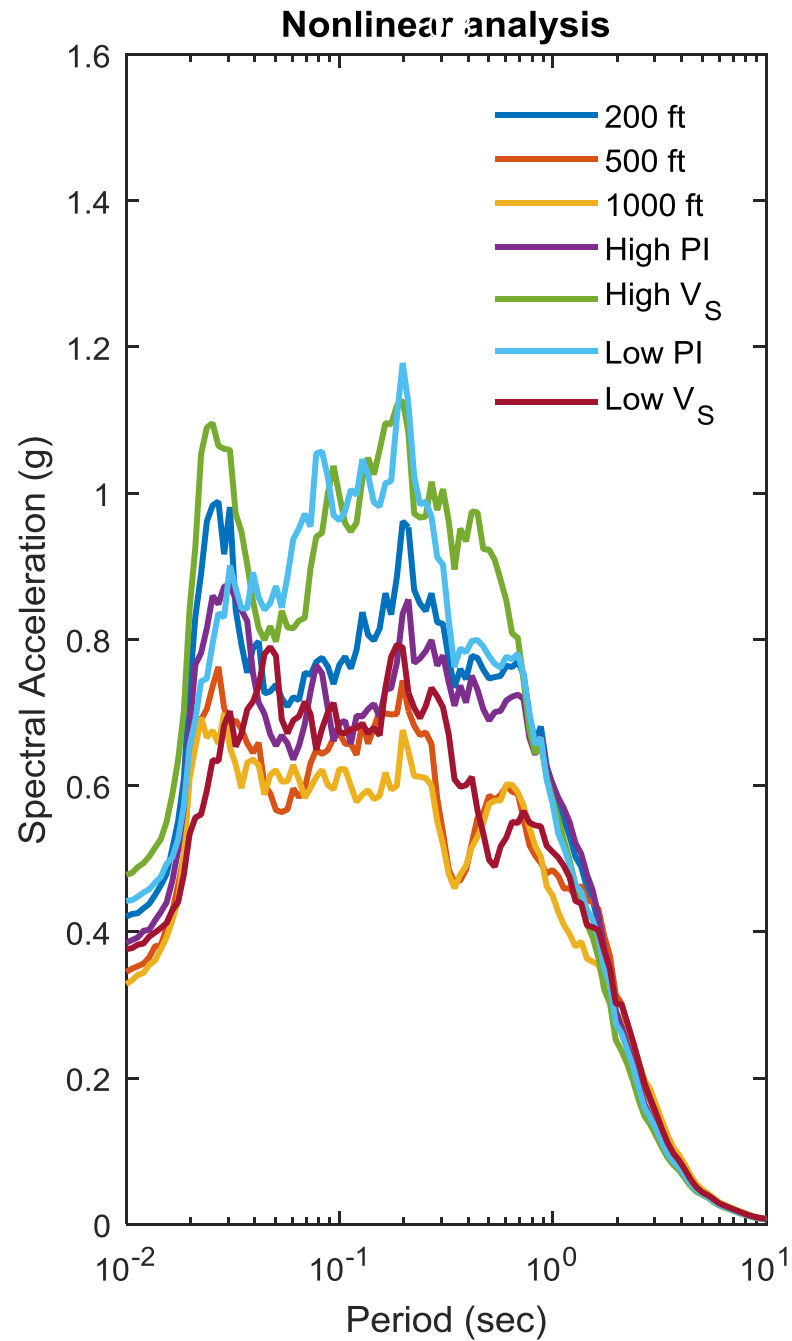
## Equivalent Linear Analysis for All Scenarios: LAR



## Ground Surface RS for All Scenarios: LAR

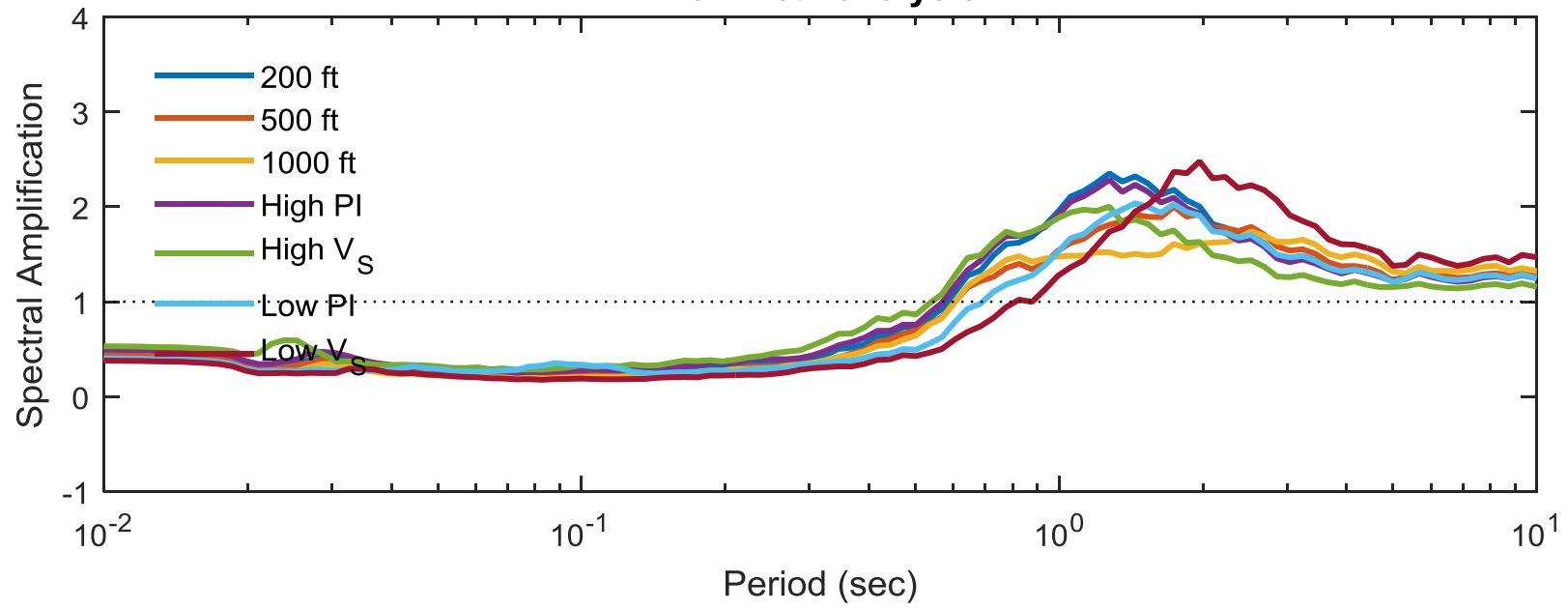


## Top of Marl RS for All Scenarios: LAR

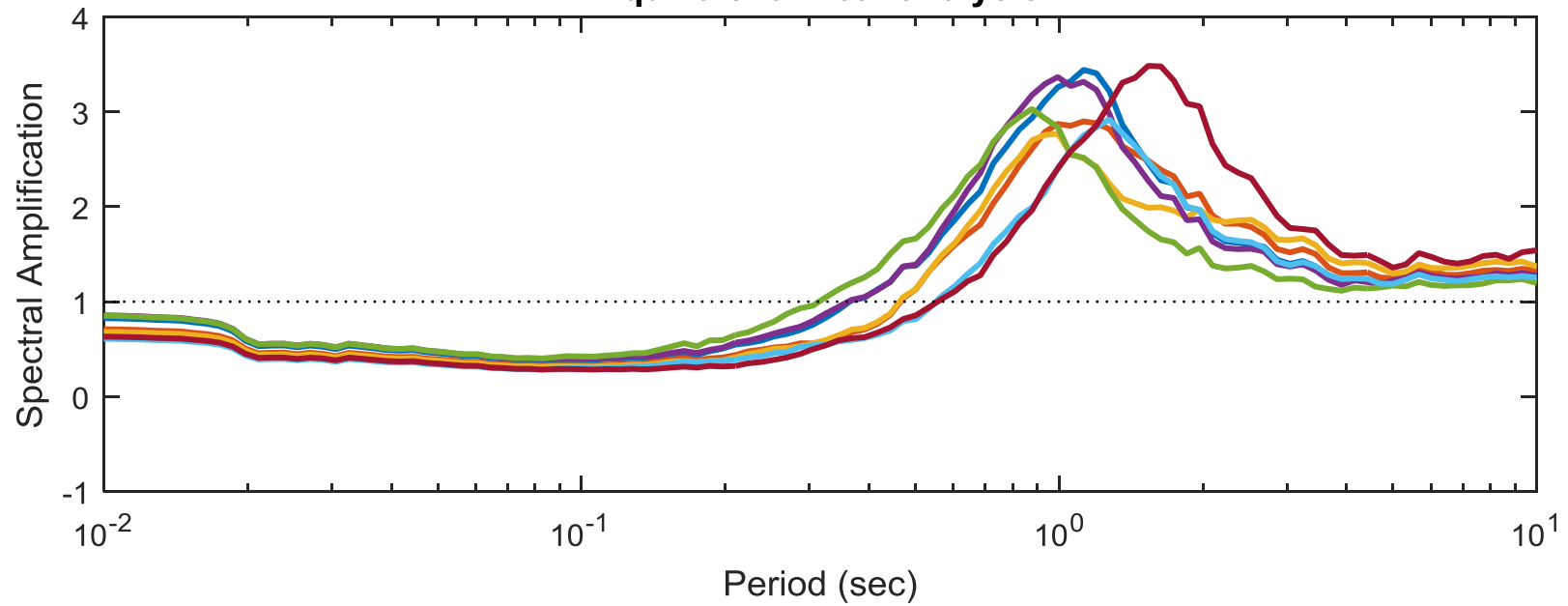


## Ground Surface Amplification for All Scenarios: LAR

### Nonlinear analysis

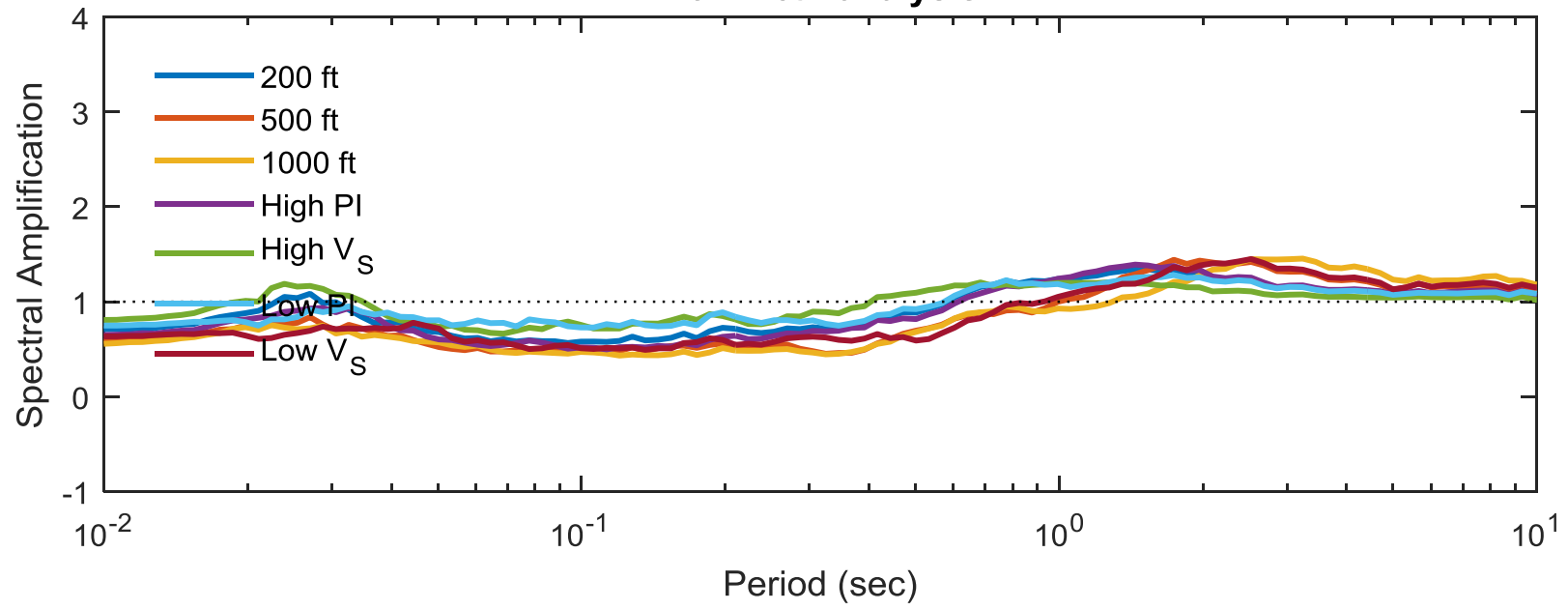


### Equivalent-linear analysis

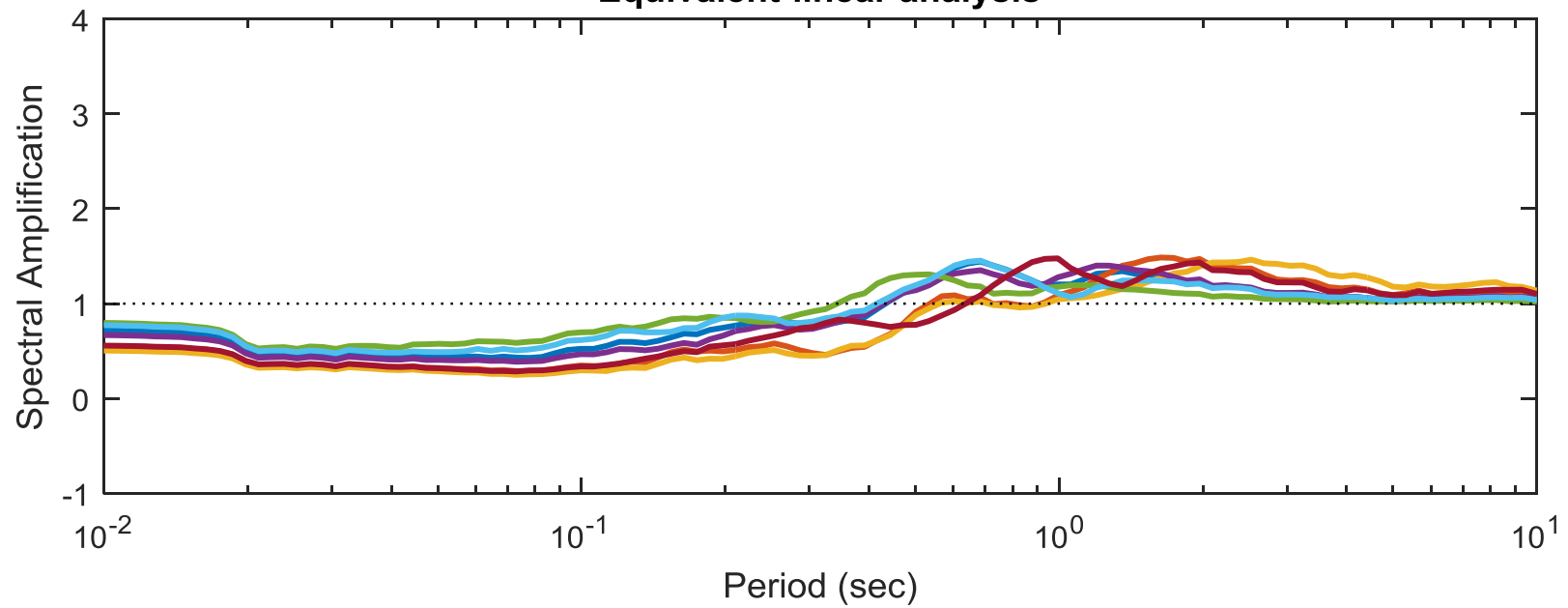


## Top of Marl Amplification for All Scenarios: LAR

### Nonlinear analysis



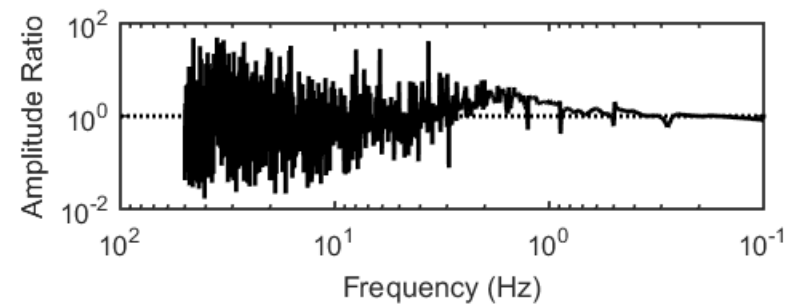
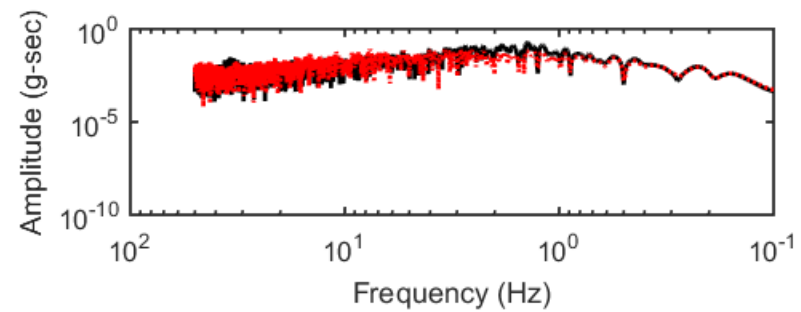
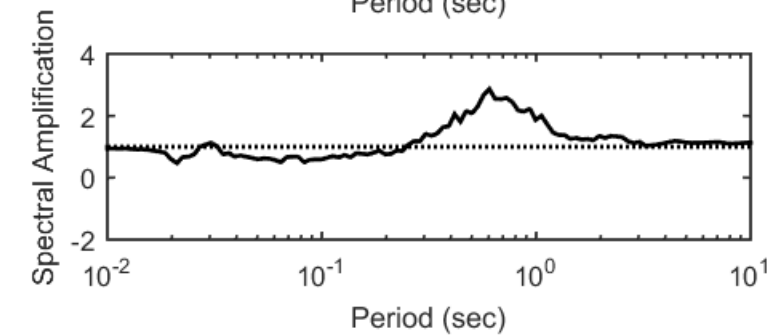
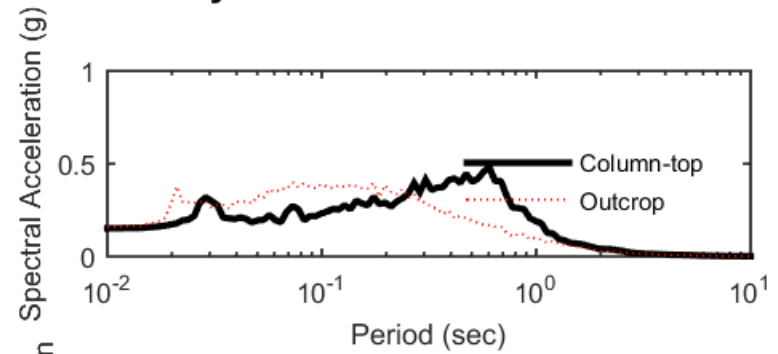
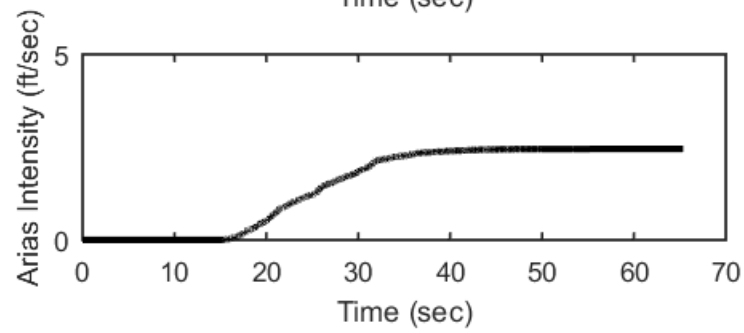
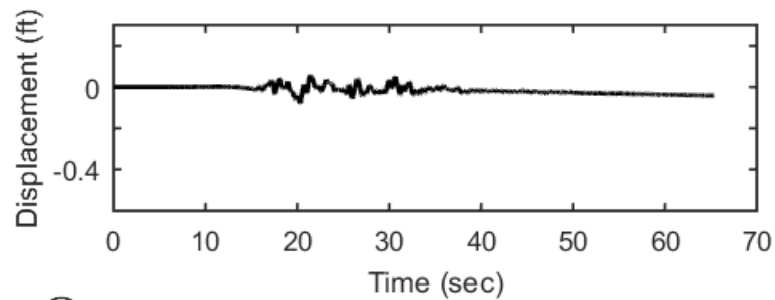
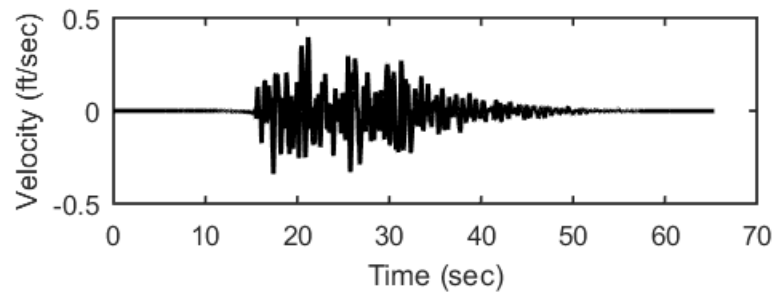
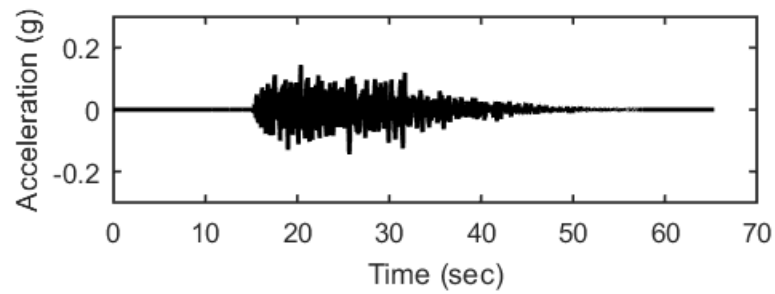
### Equivalent-linear analysis



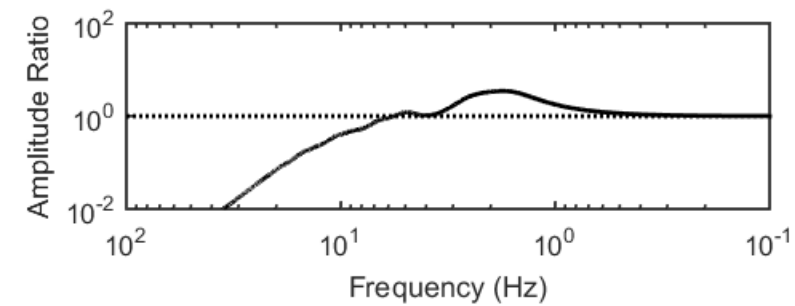
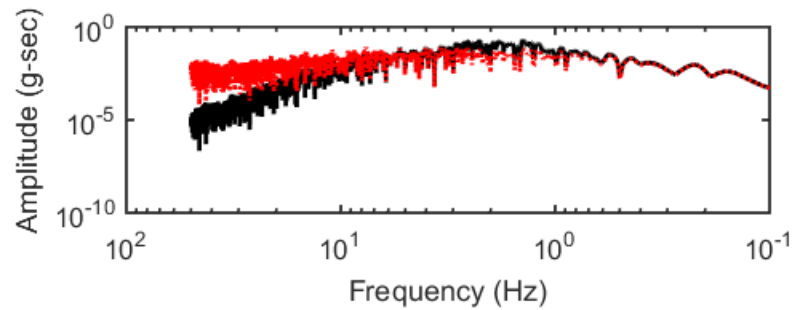
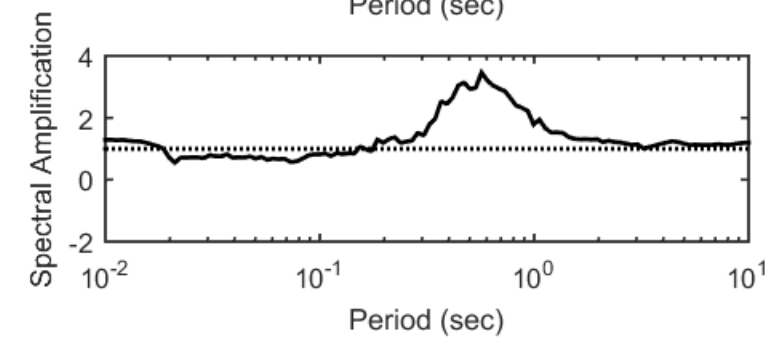
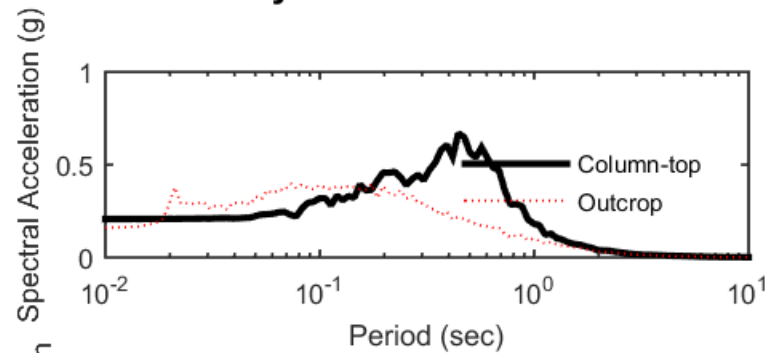
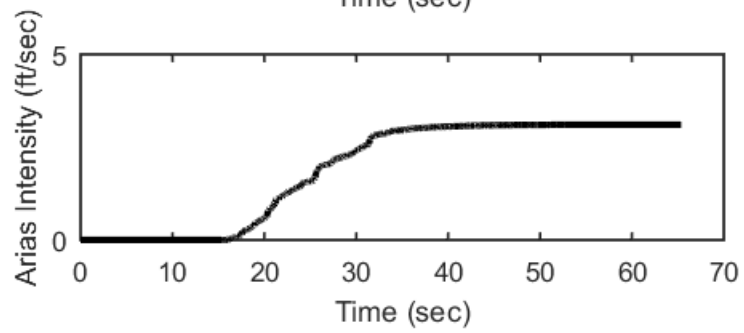
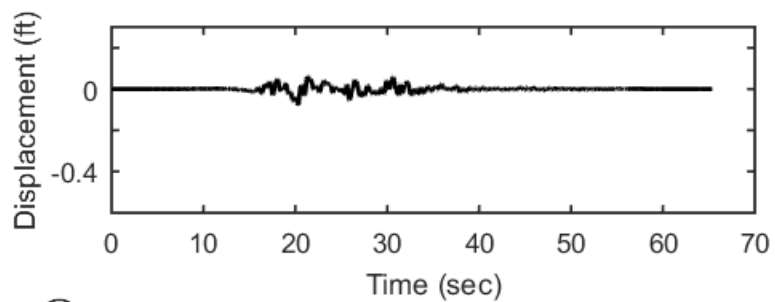
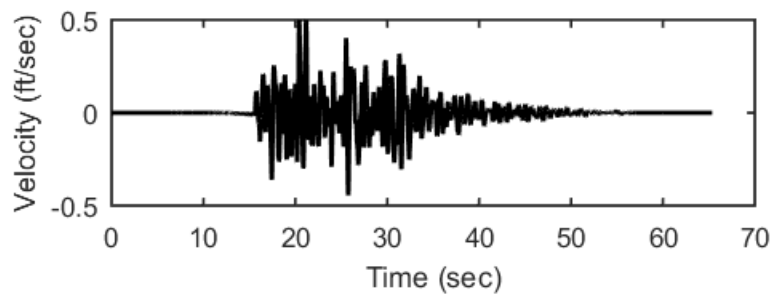
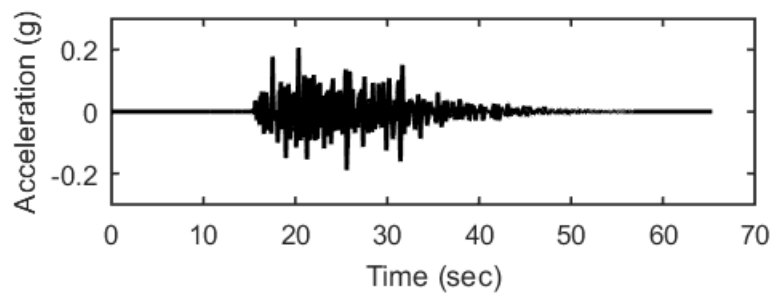


## **200 FT BASE MODEL**

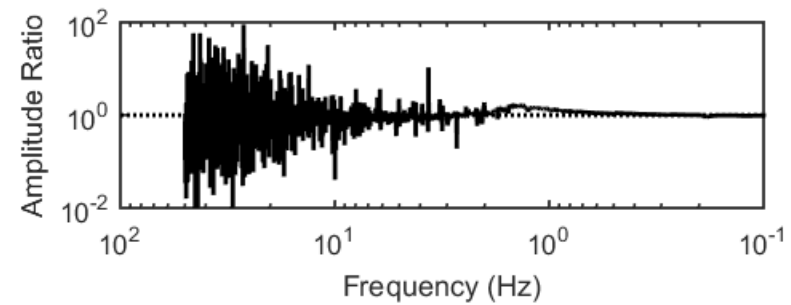
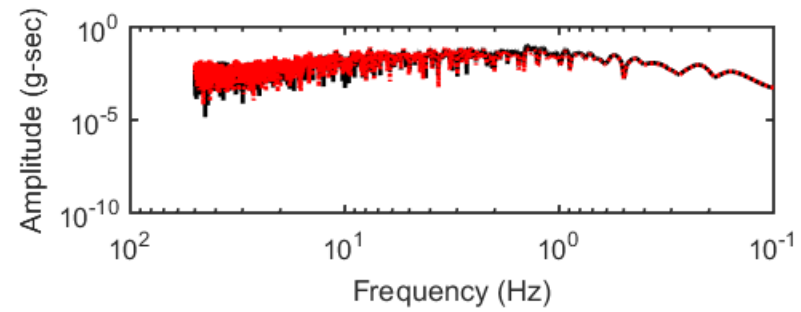
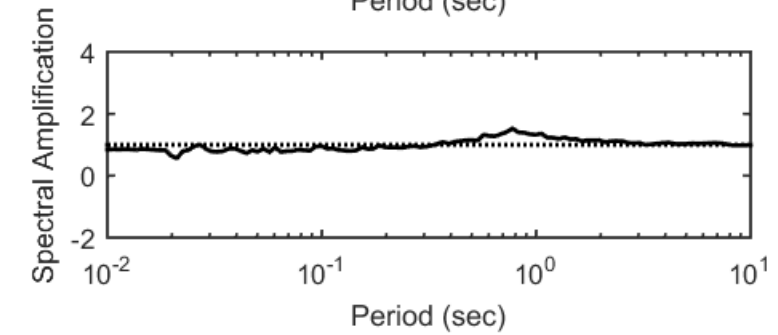
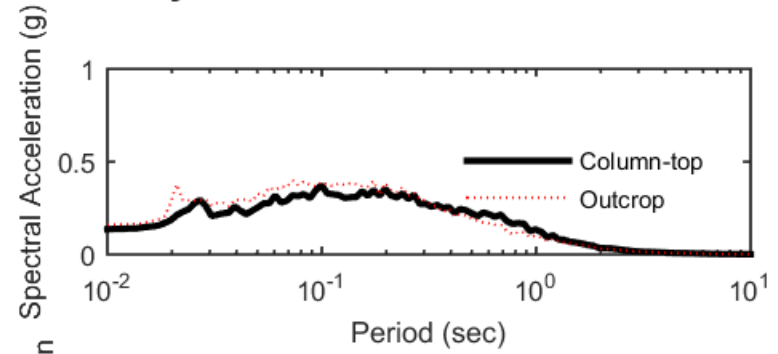
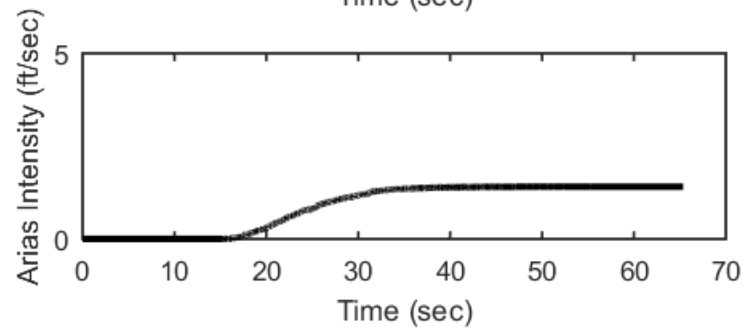
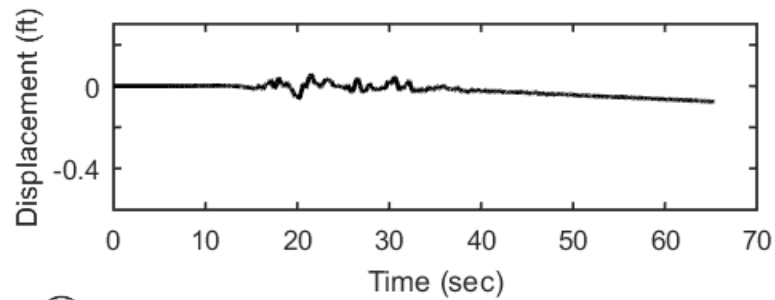
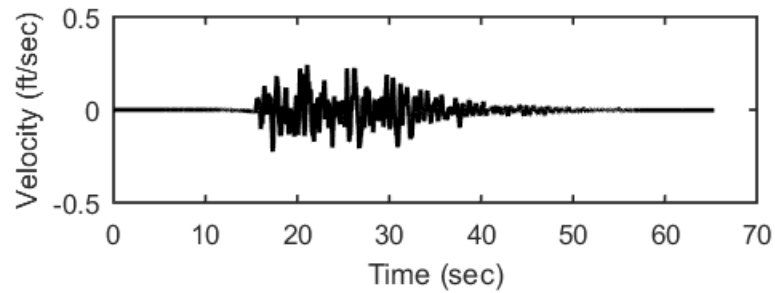
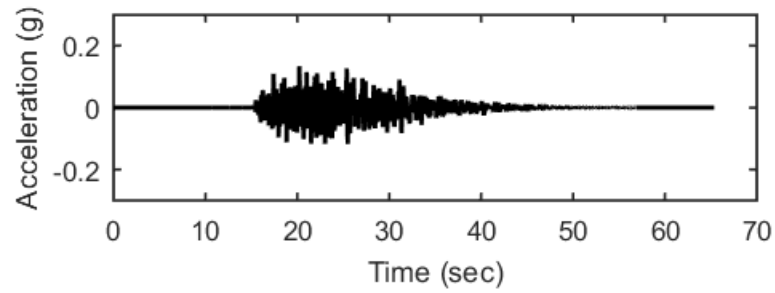
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



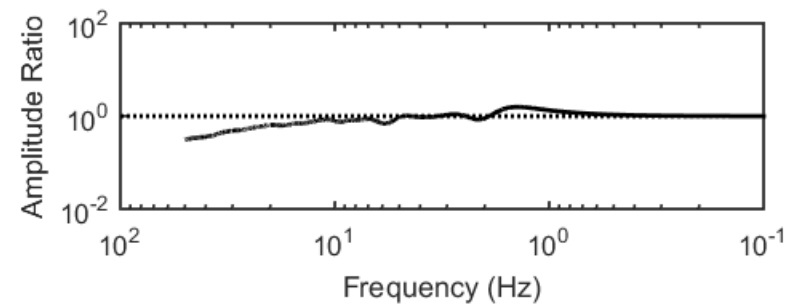
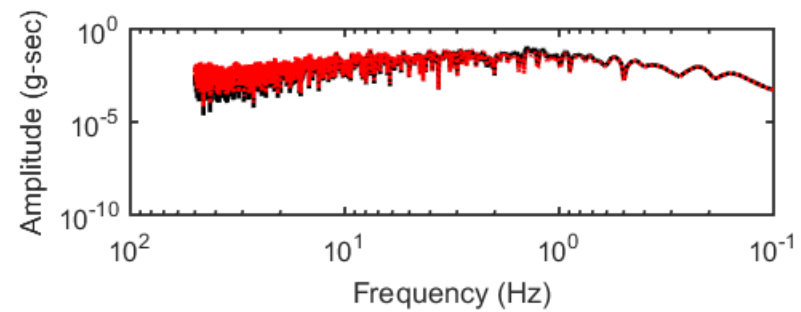
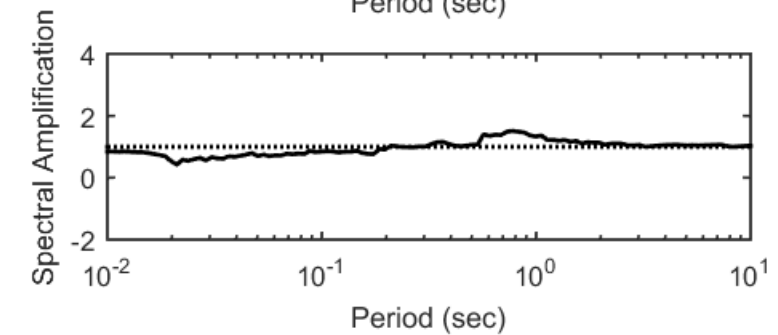
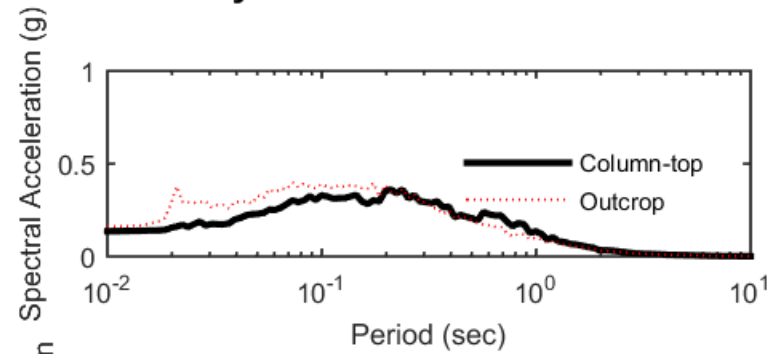
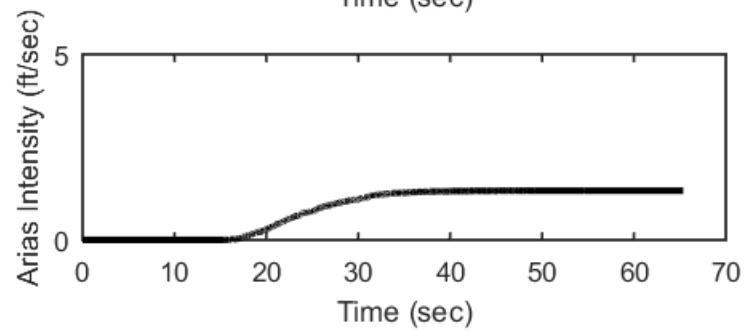
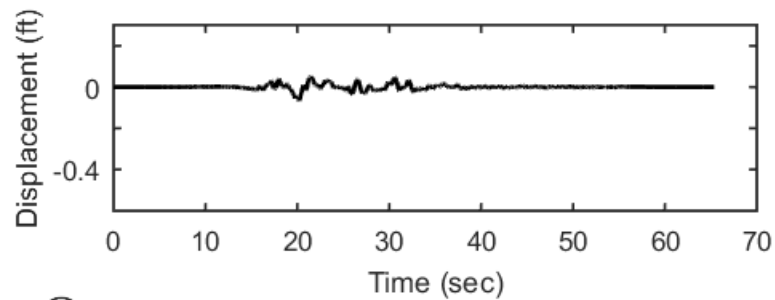
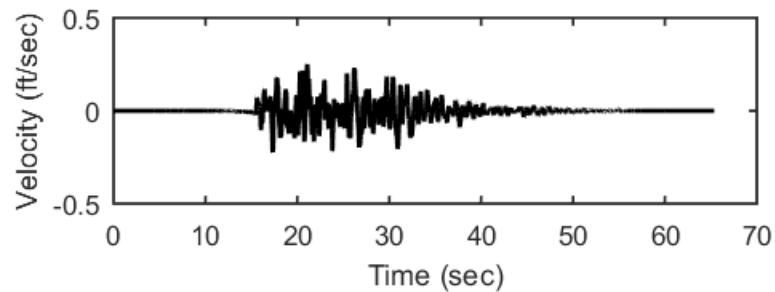
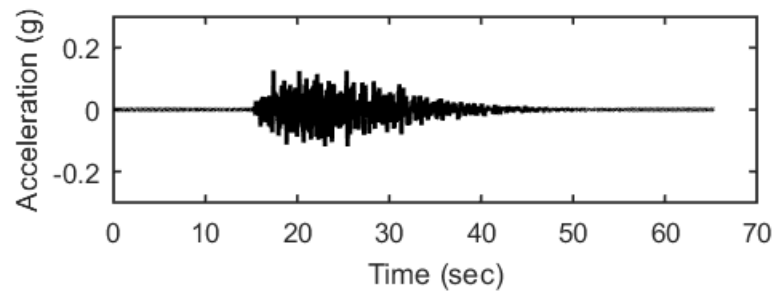
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



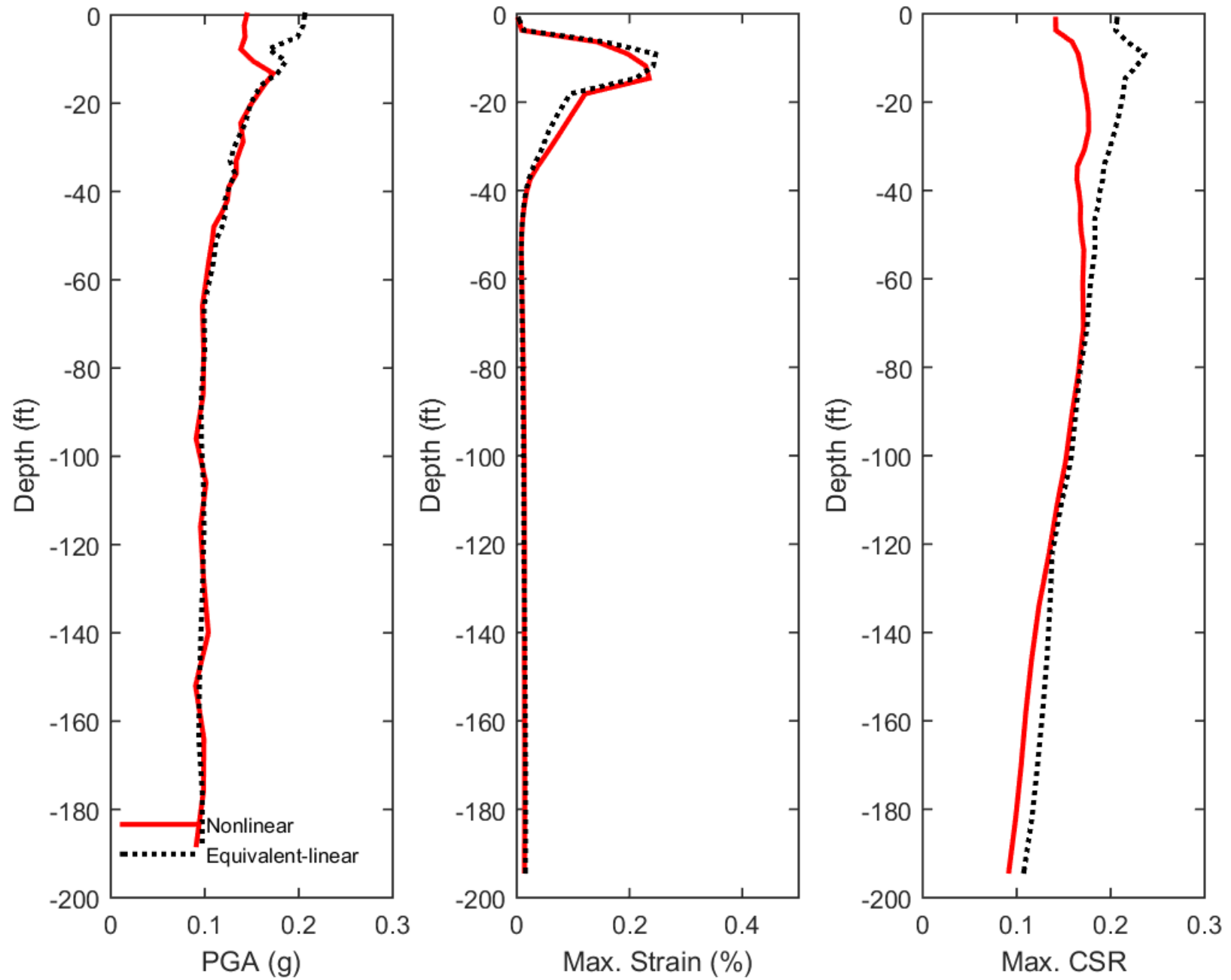
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



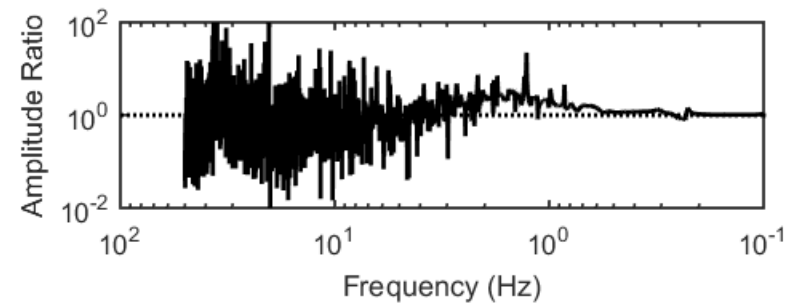
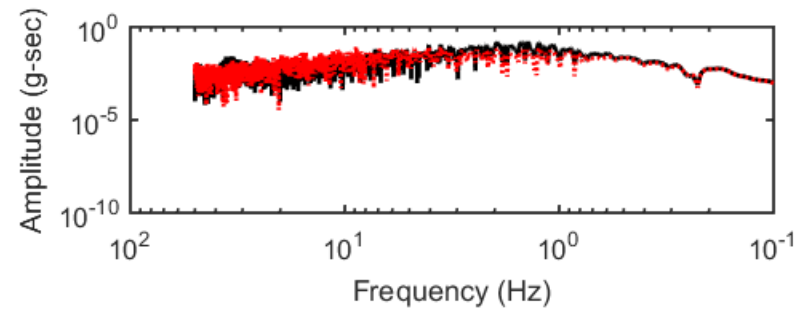
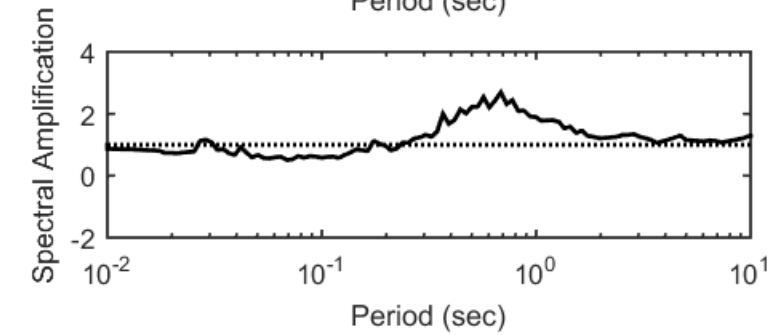
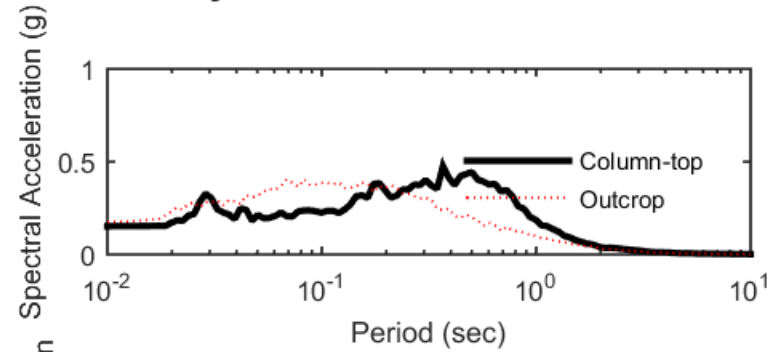
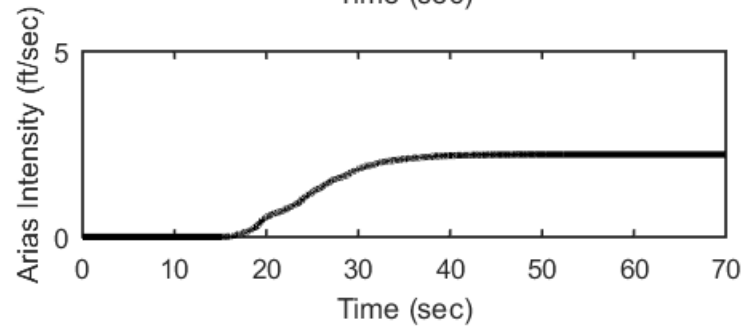
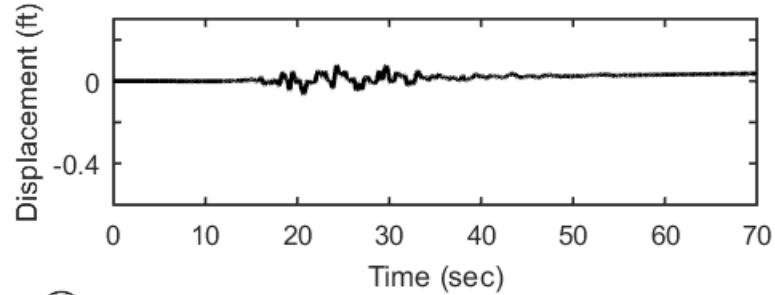
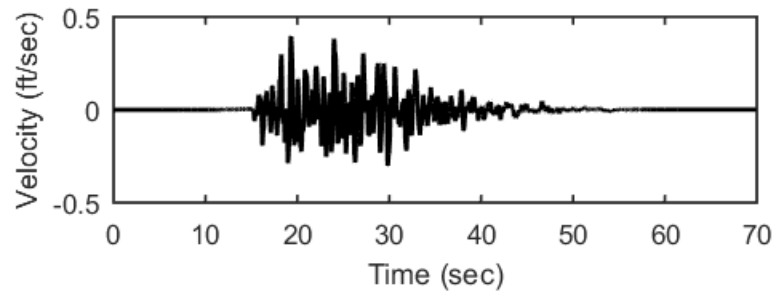
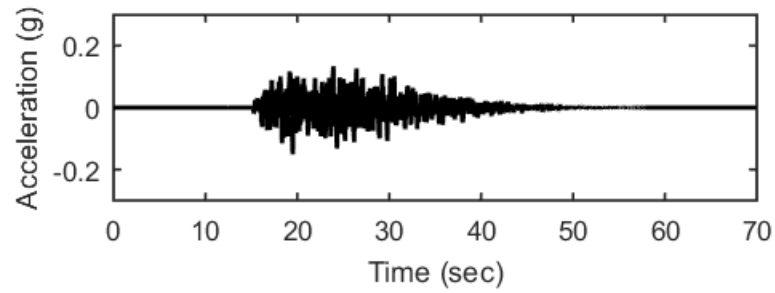
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



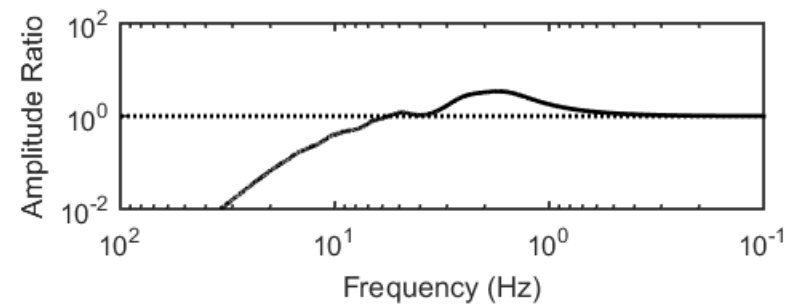
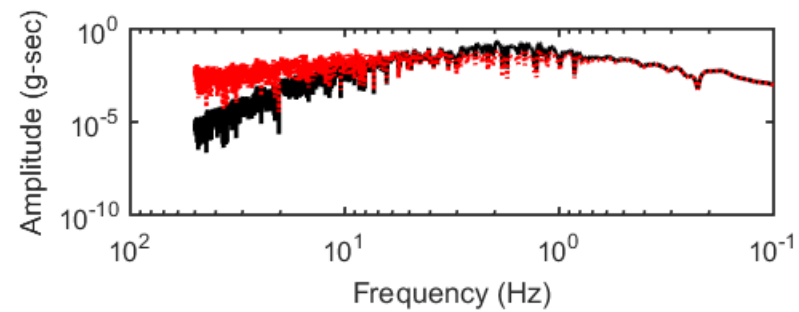
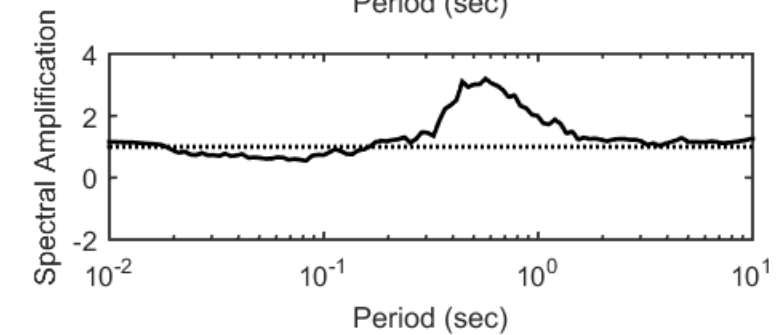
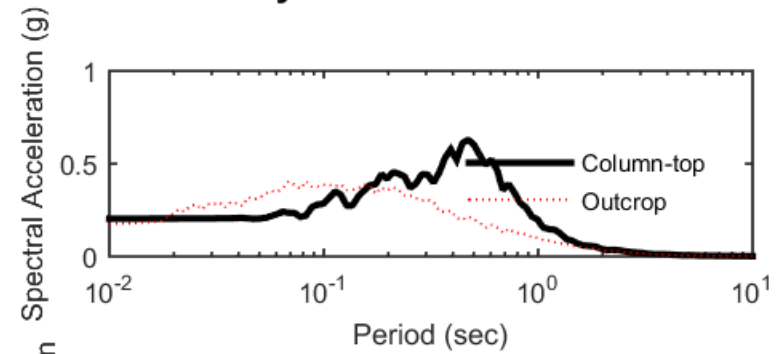
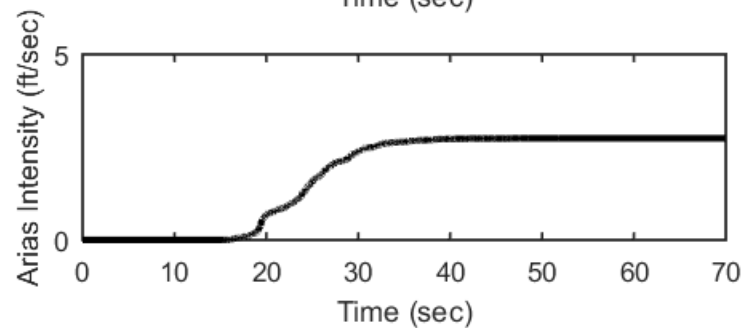
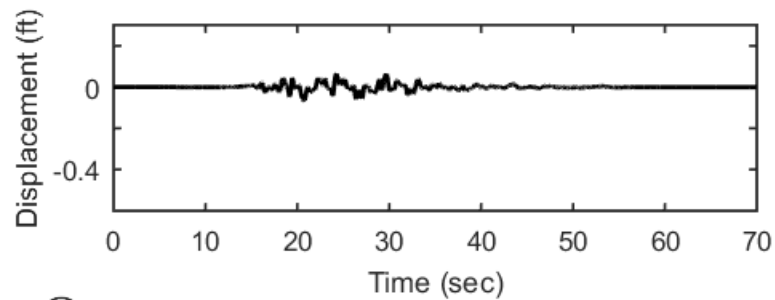
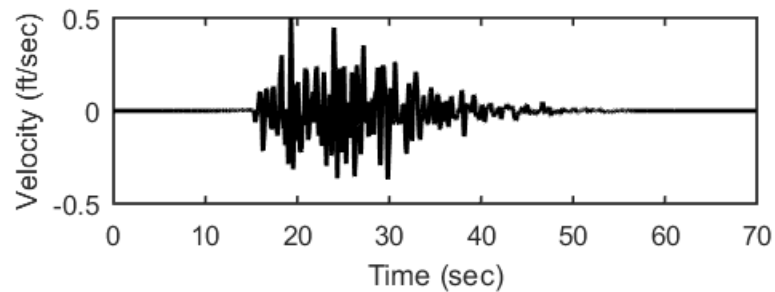
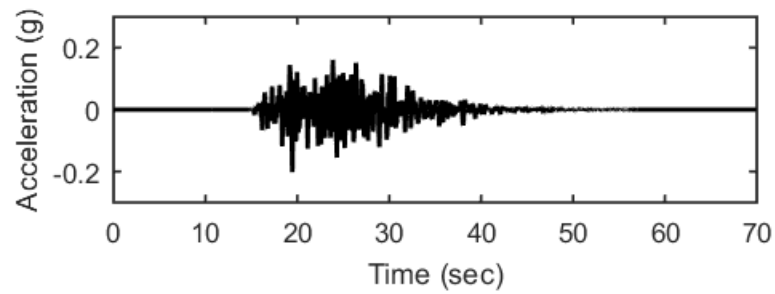
### Profile outputs for Motion: FEE1



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2

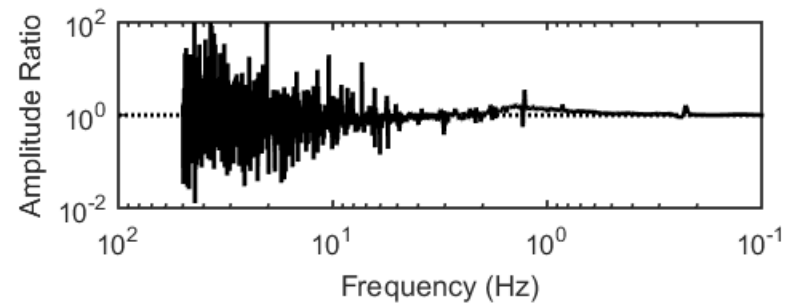
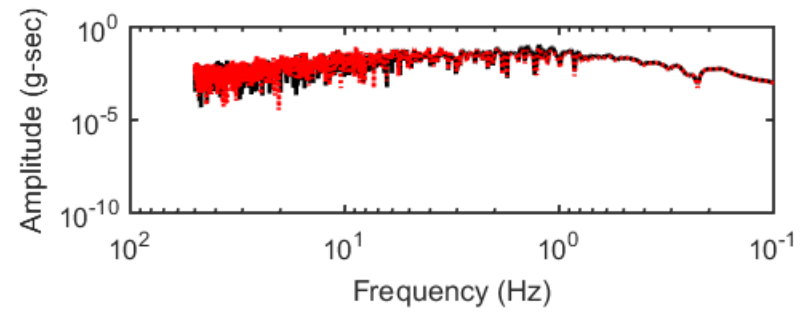
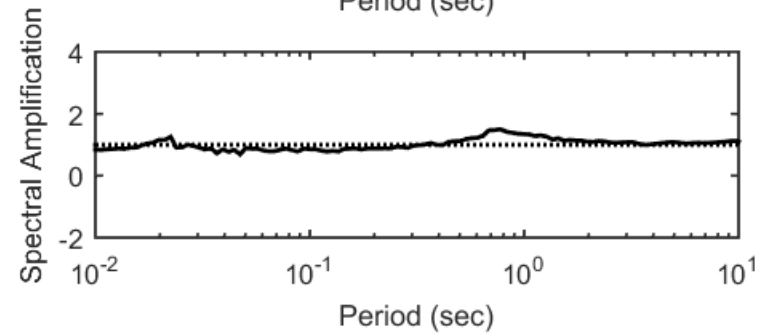
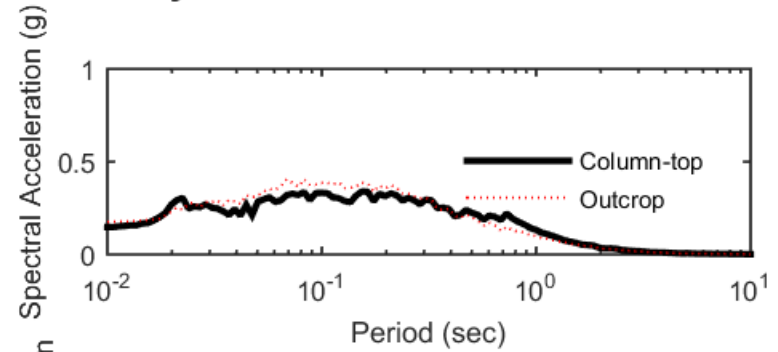
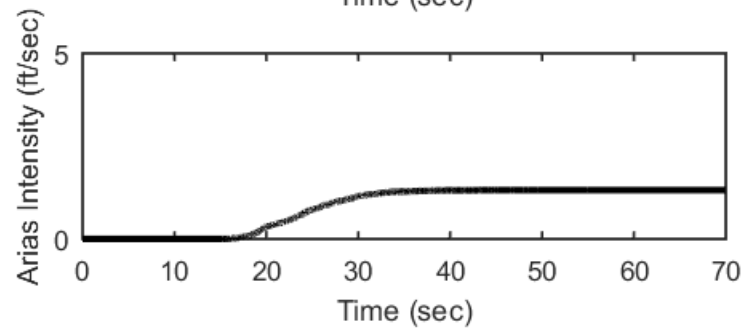
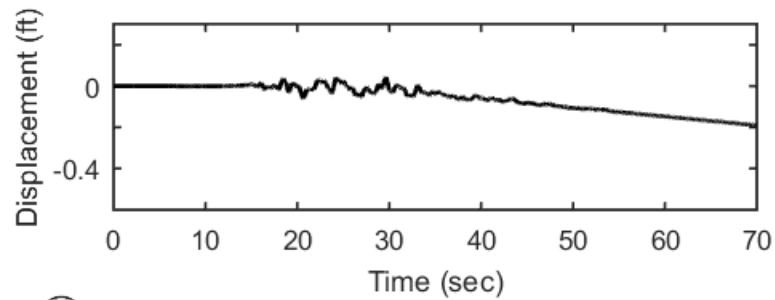
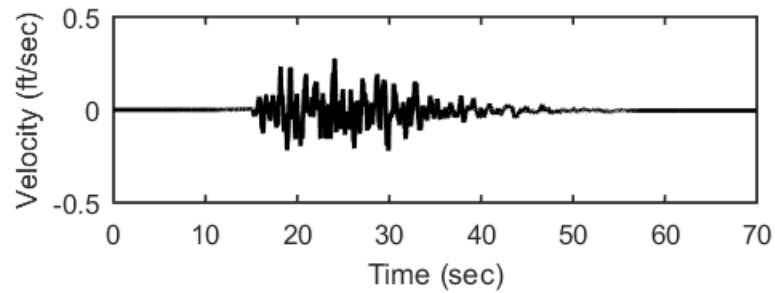
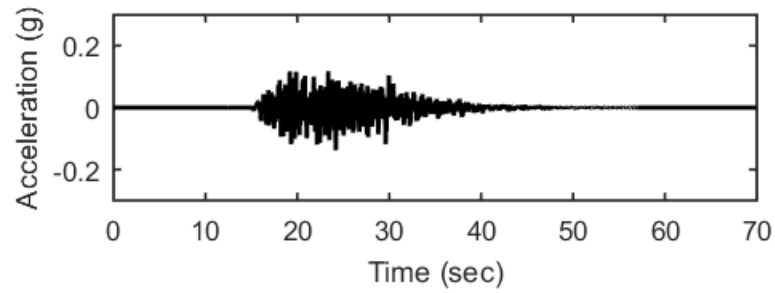


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2

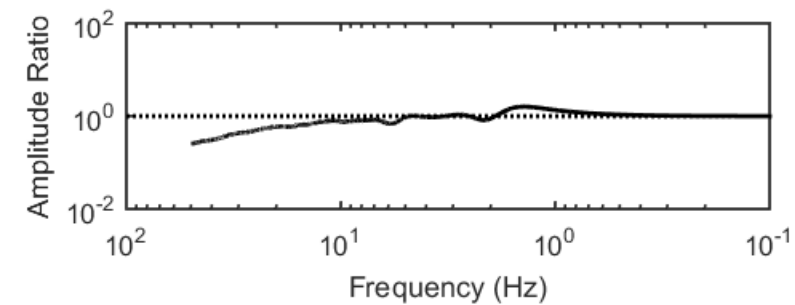
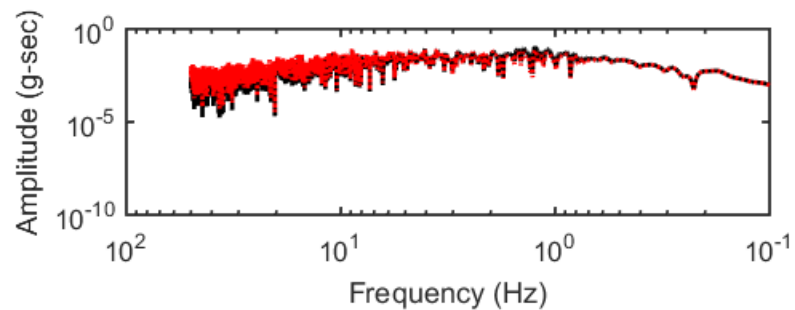
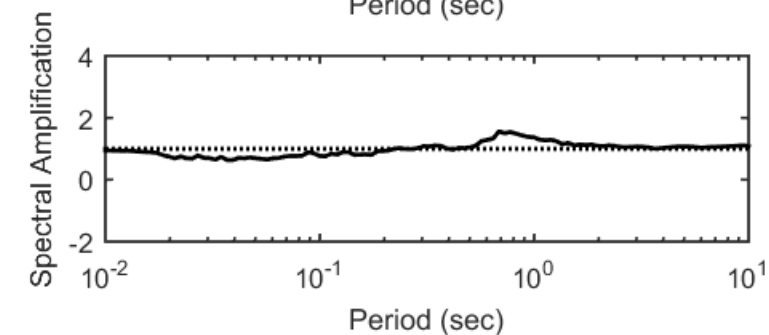
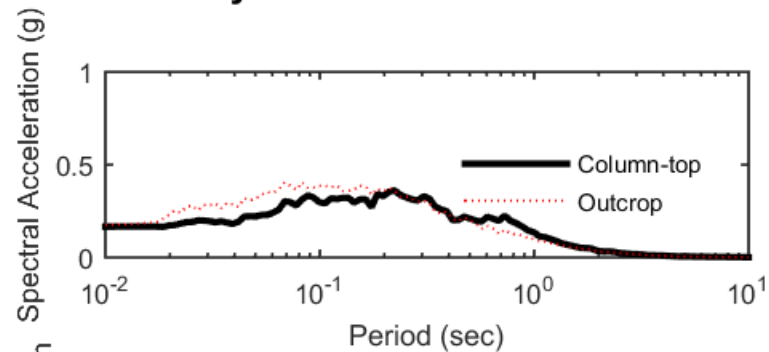
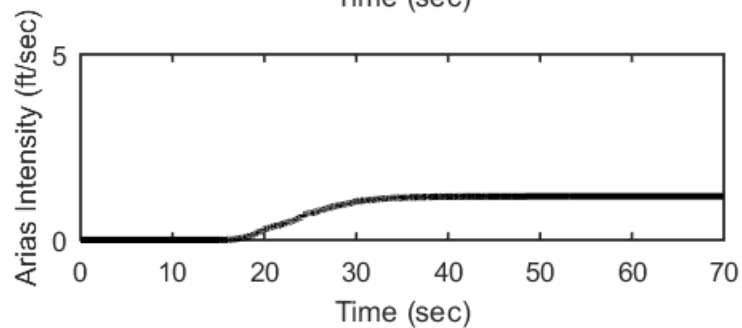
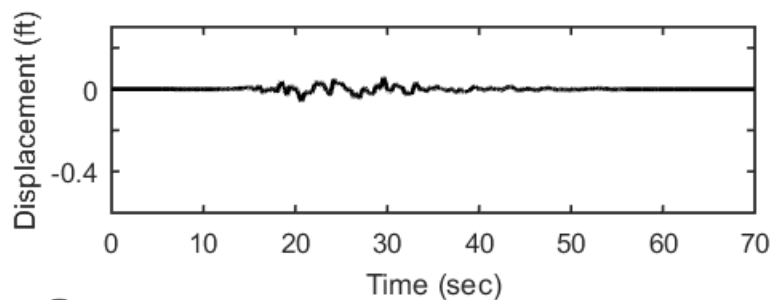
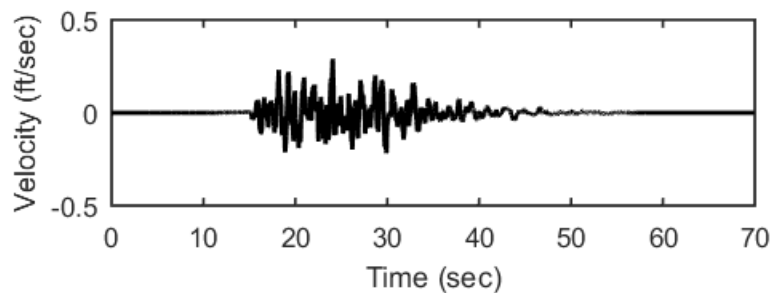
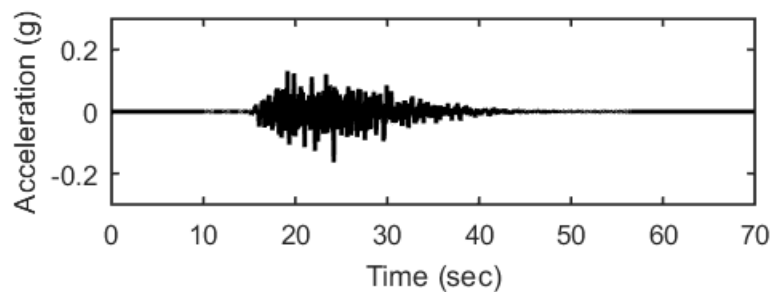




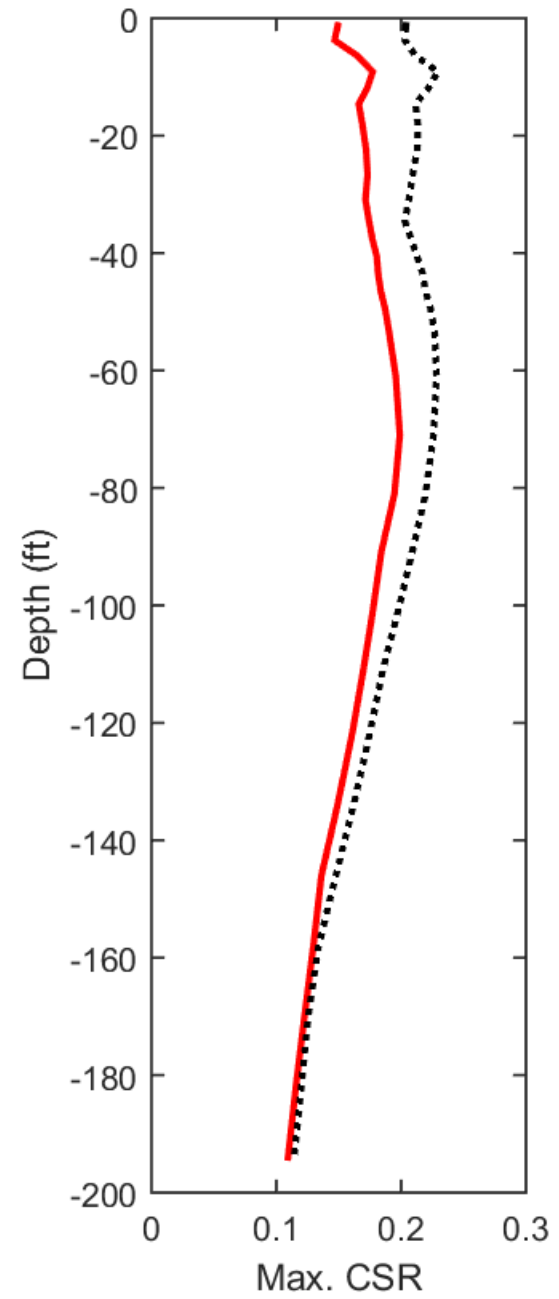
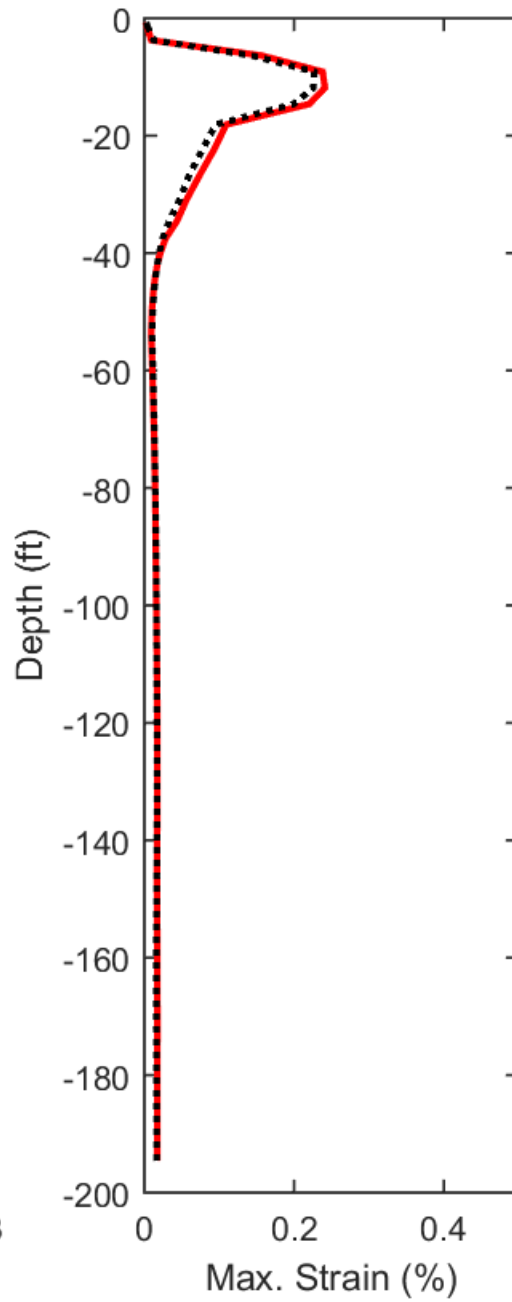
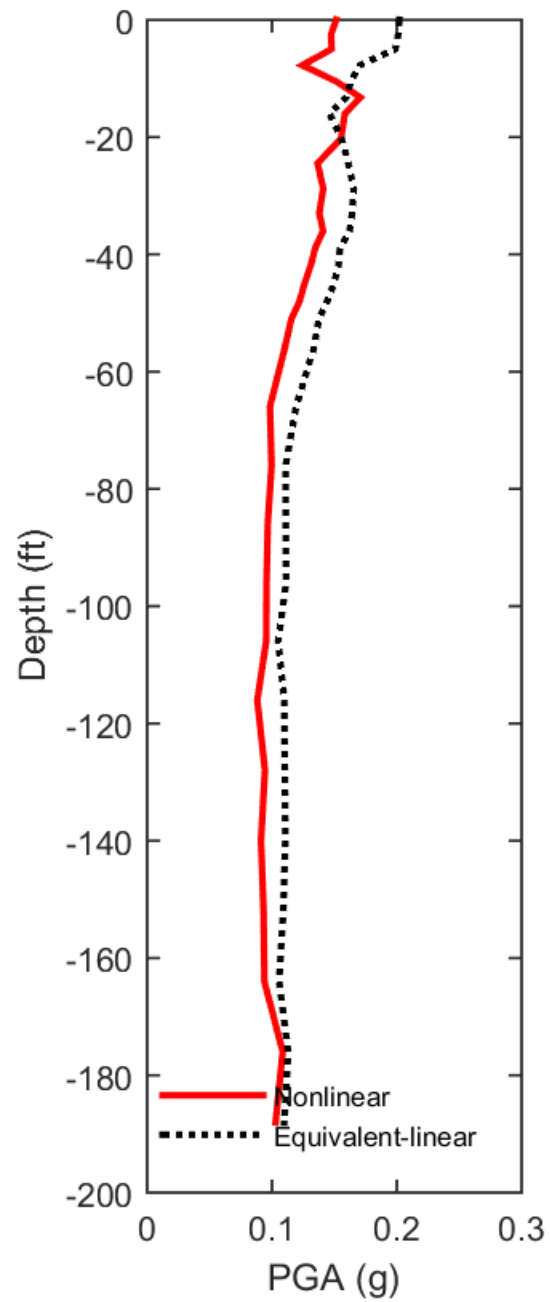
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



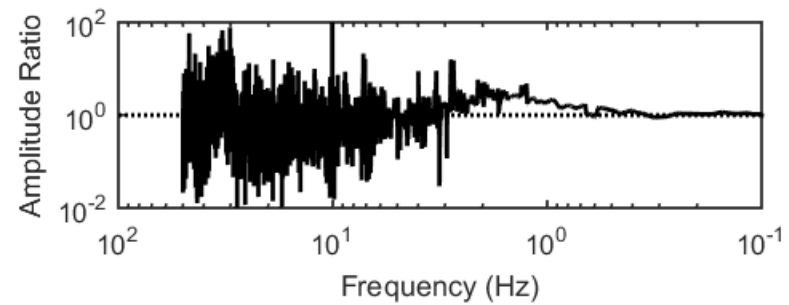
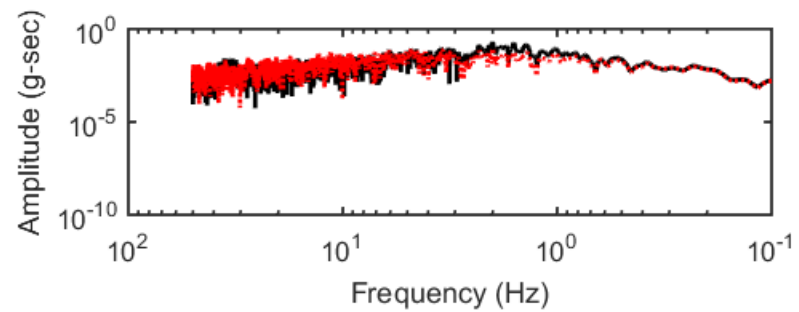
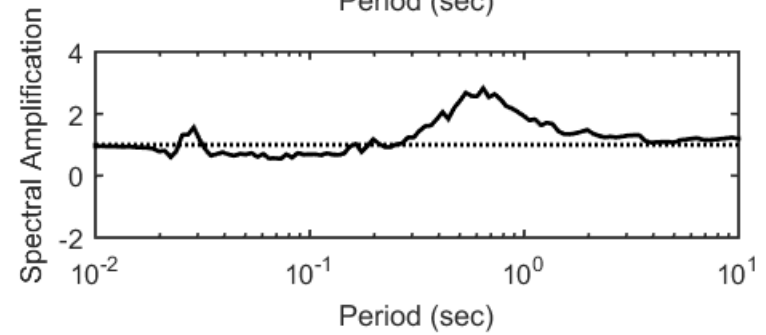
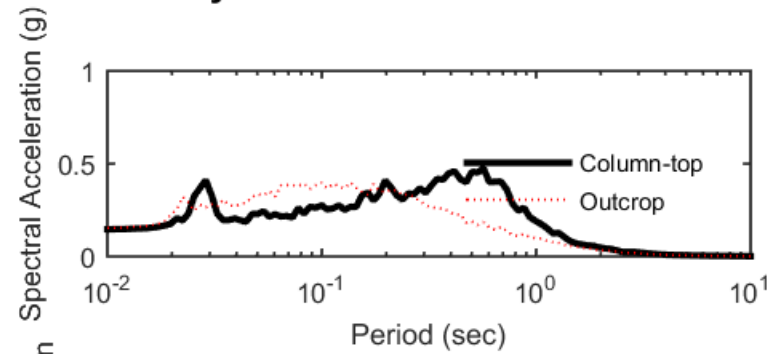
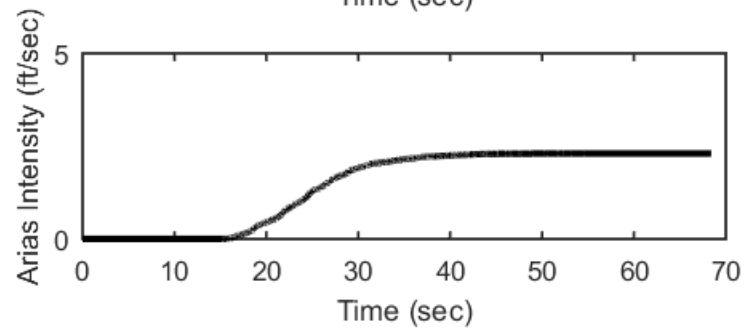
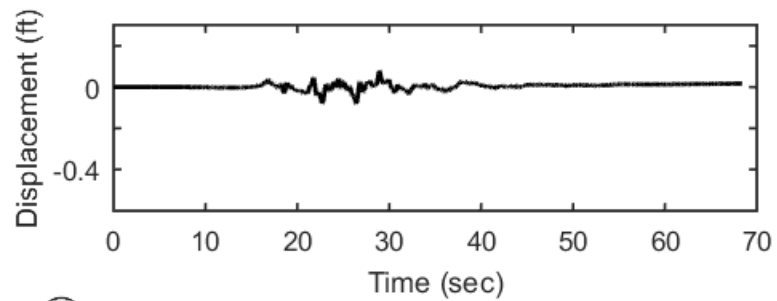
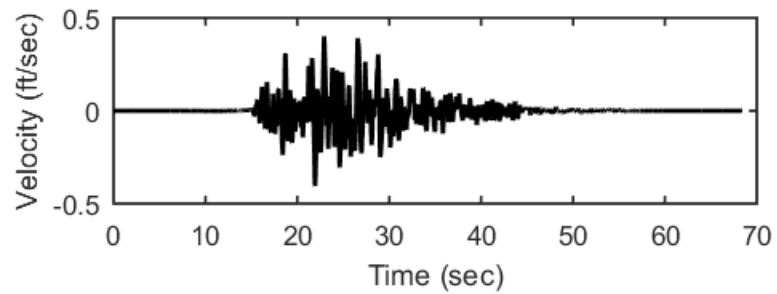
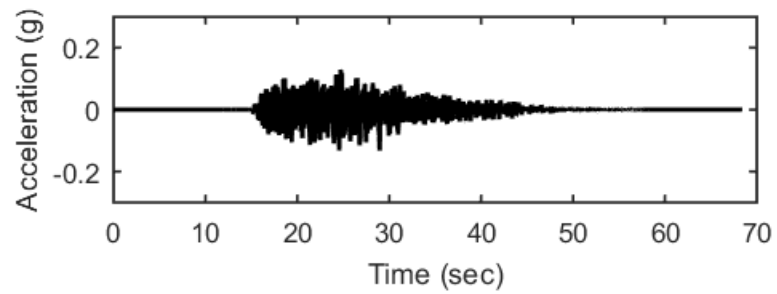
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



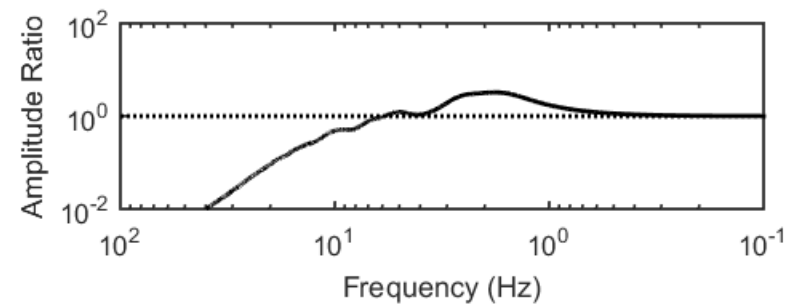
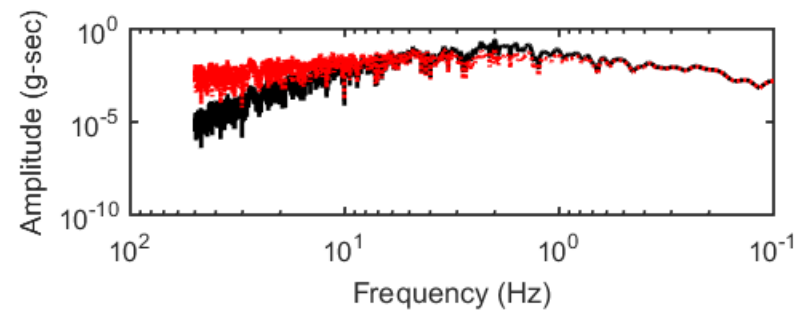
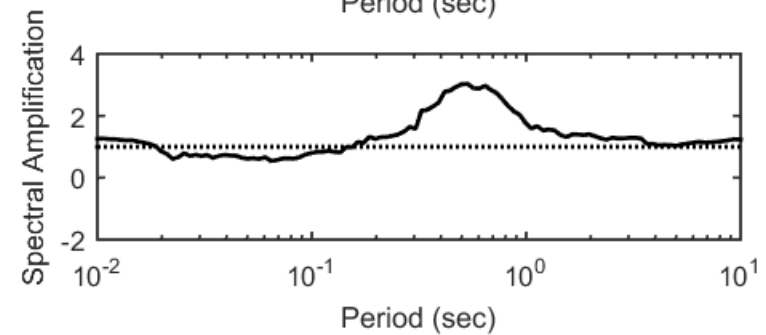
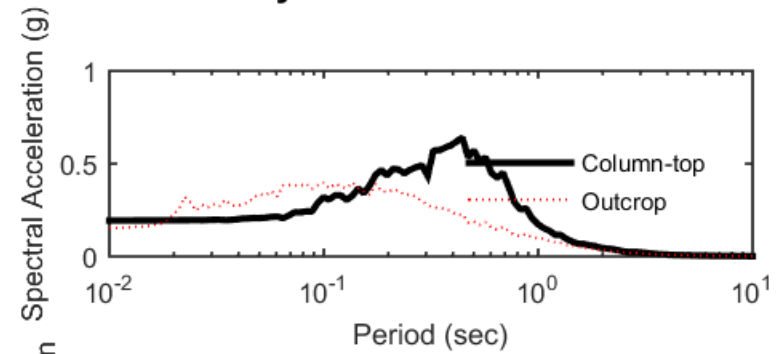
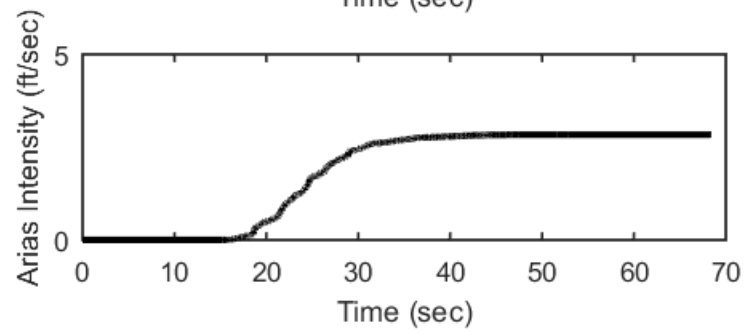
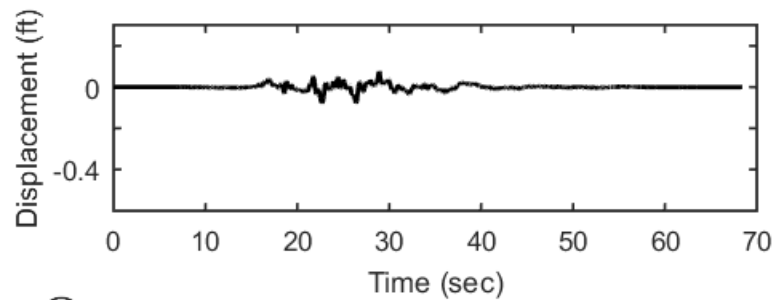
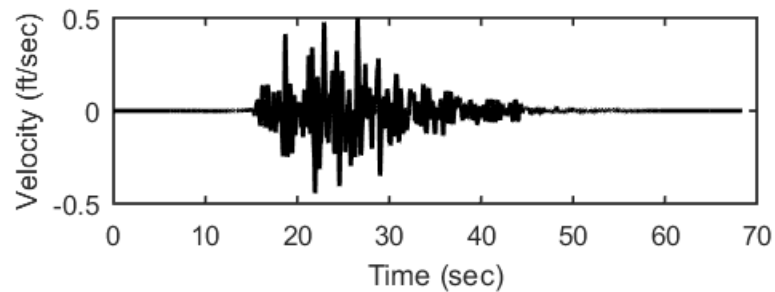
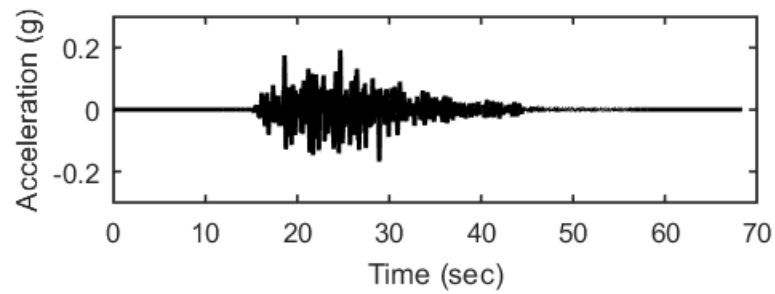
### Profile outputs for Motion: FEE2



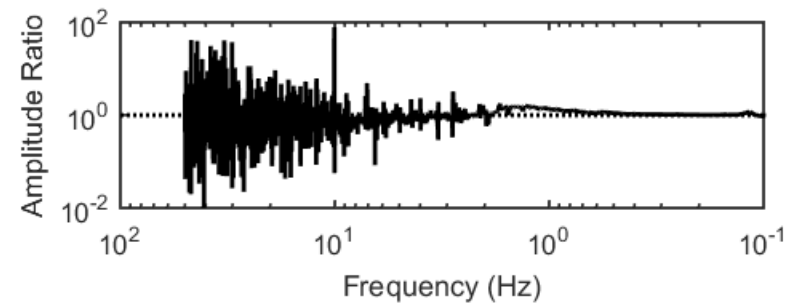
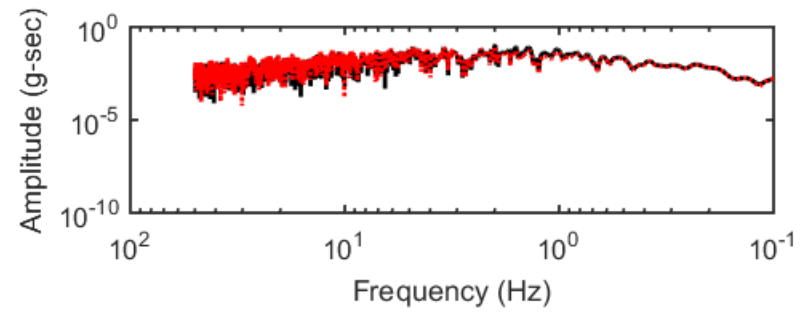
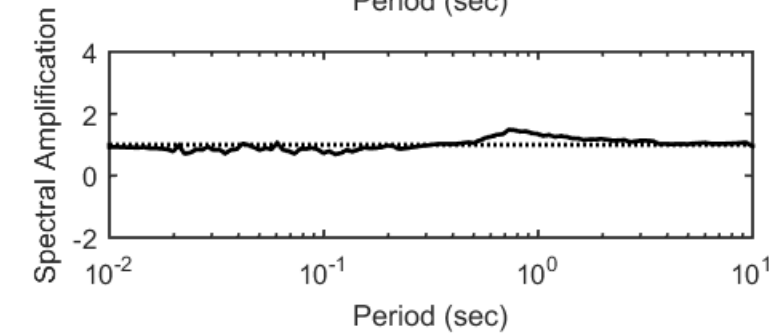
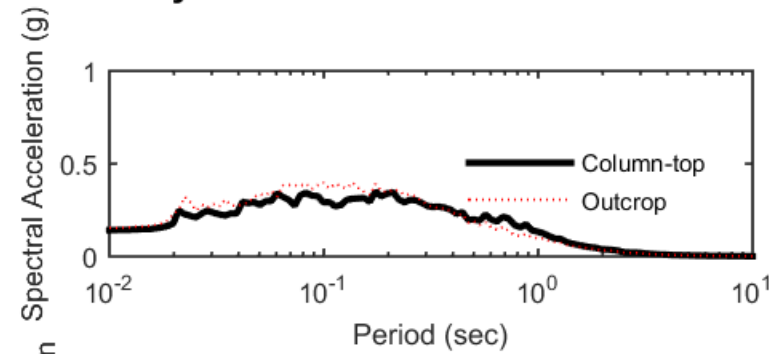
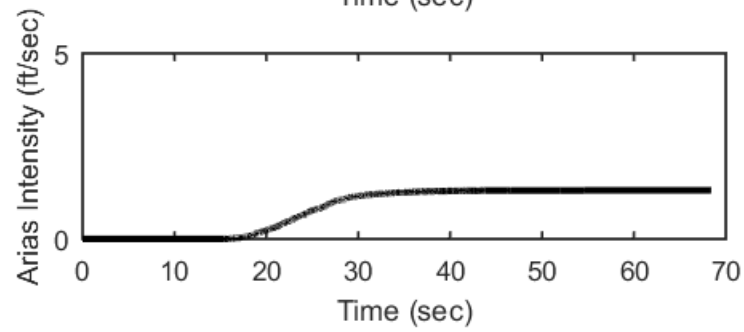
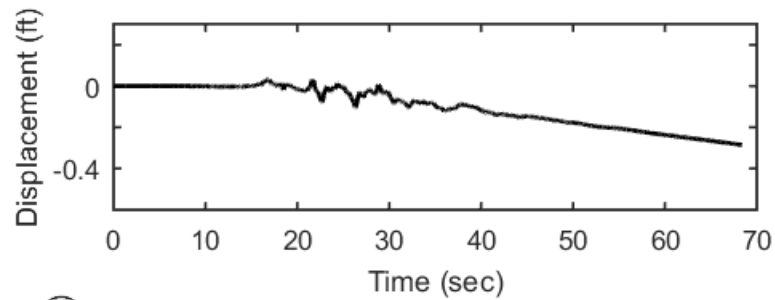
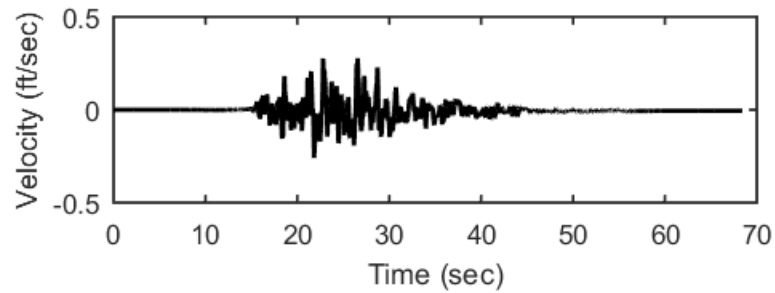
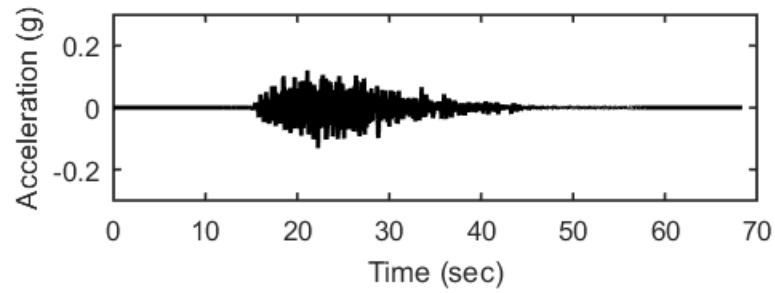
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



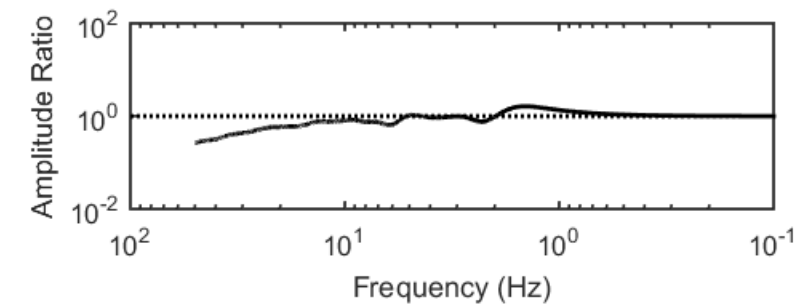
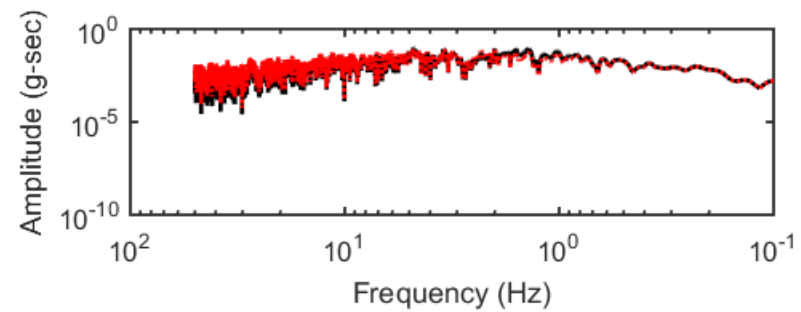
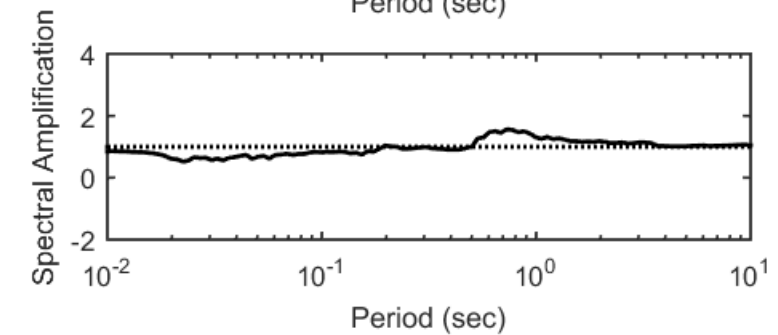
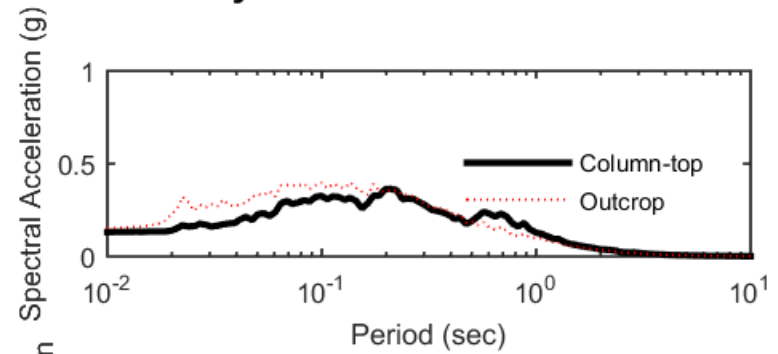
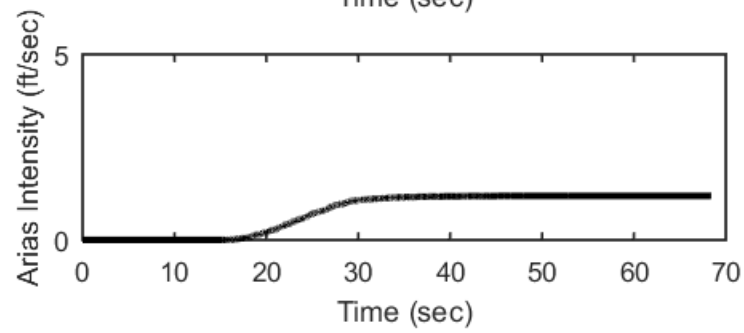
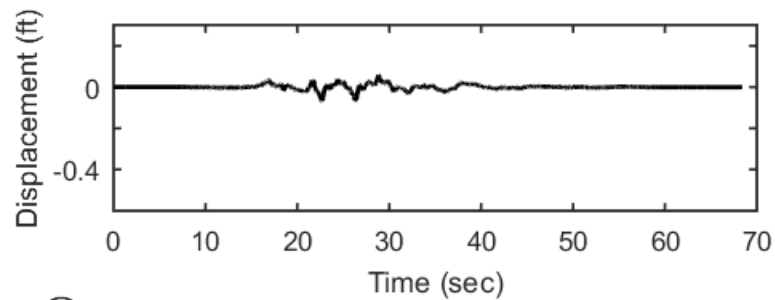
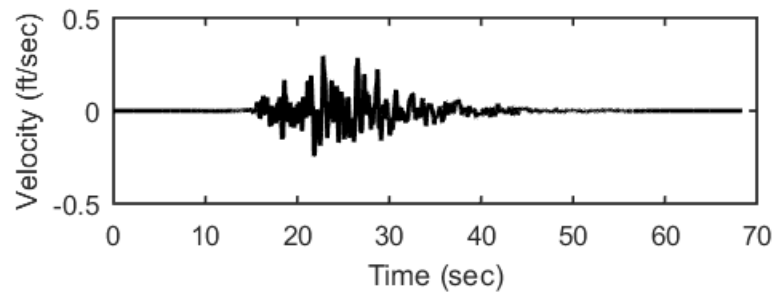
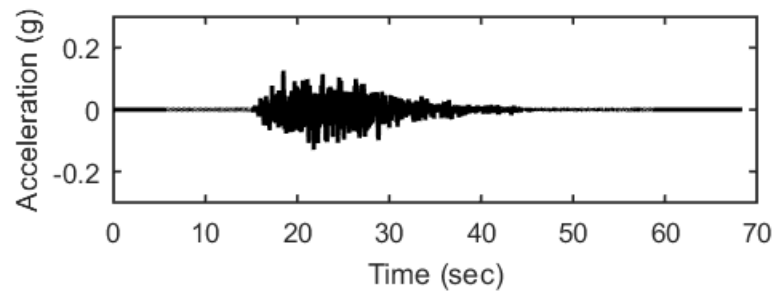
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



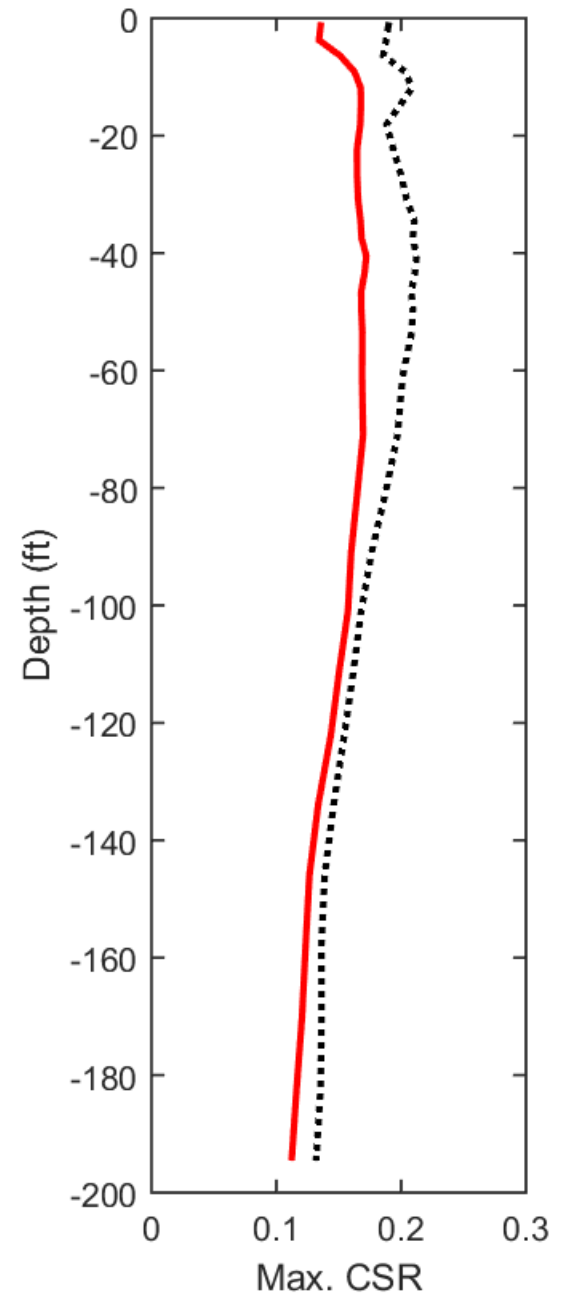
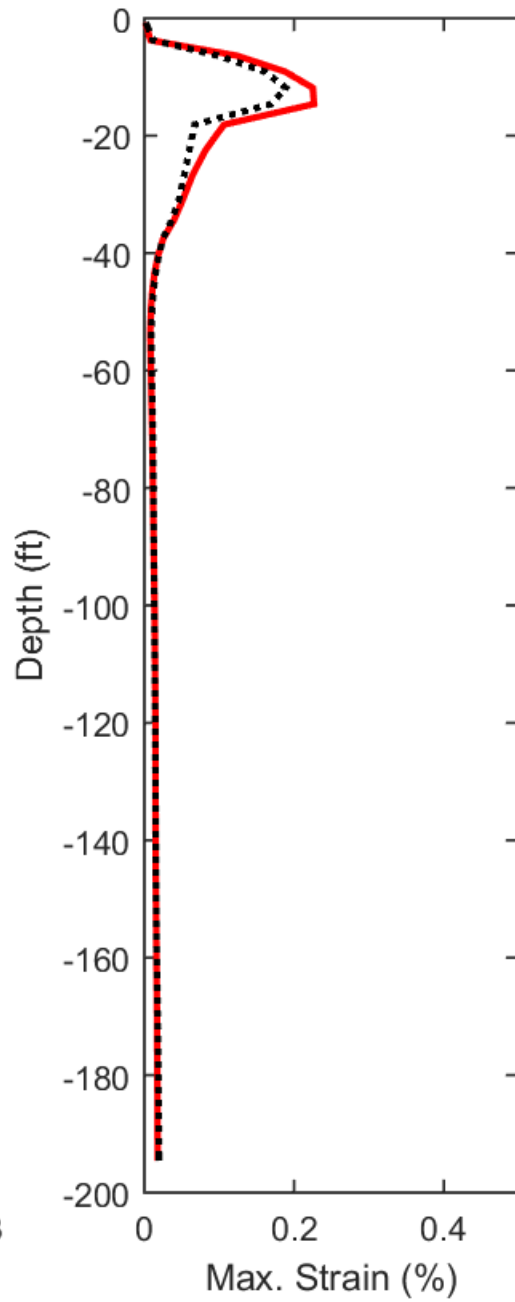
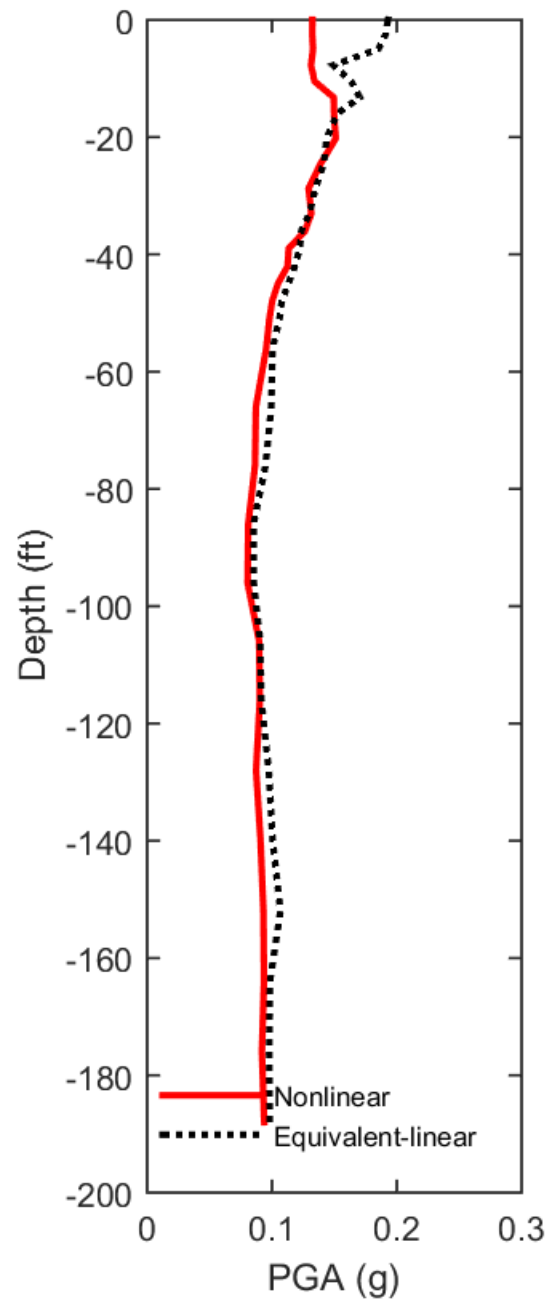
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3

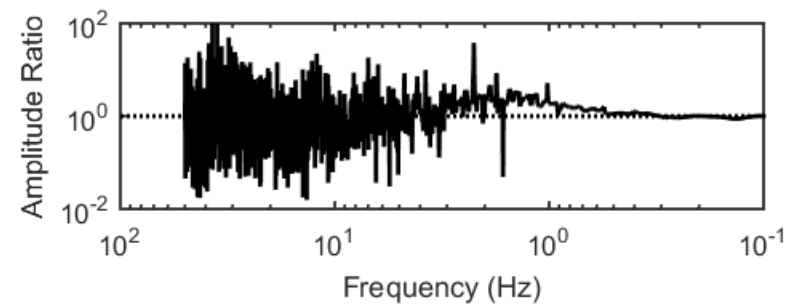
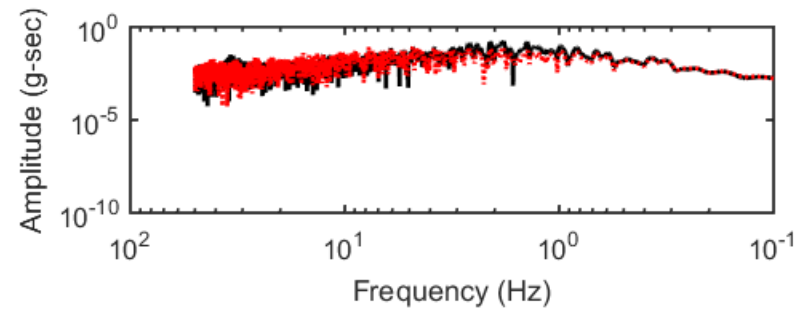
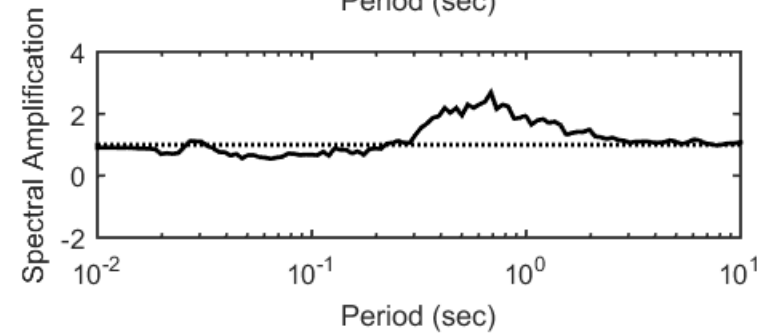
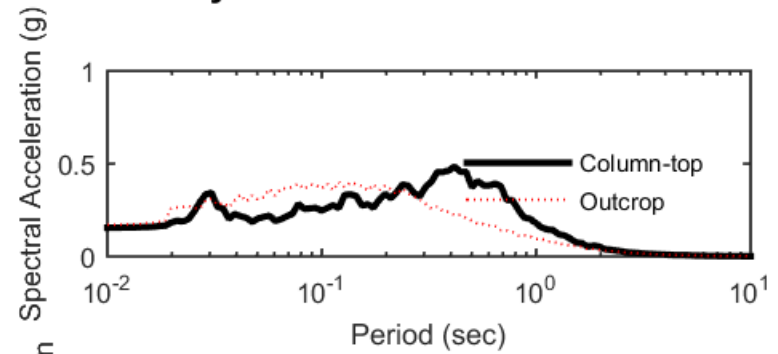
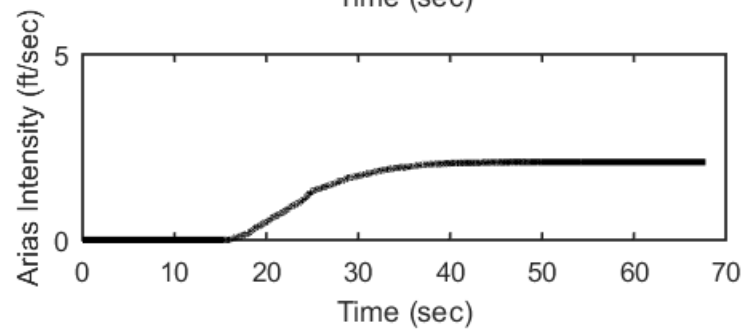
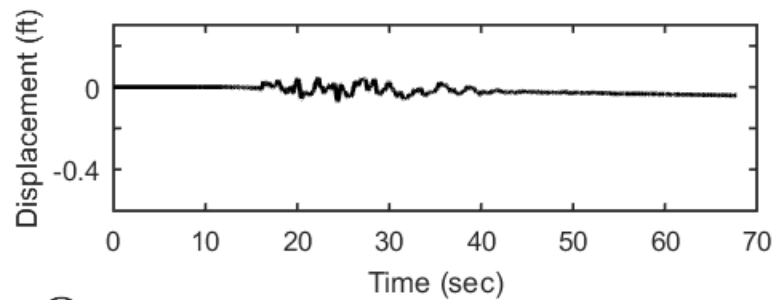
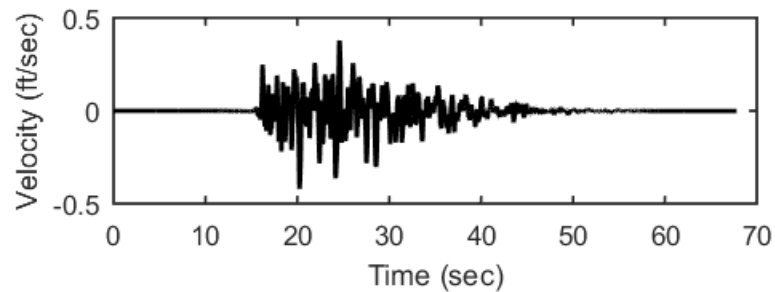
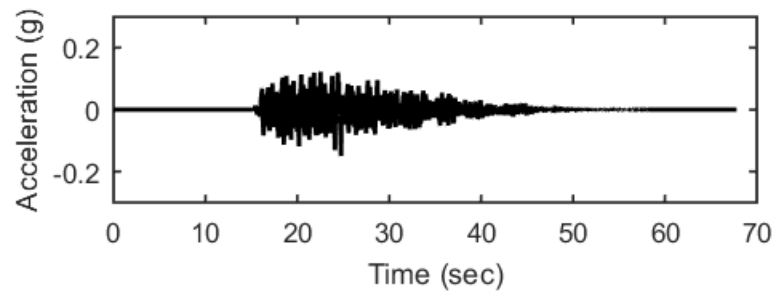


### Profile outputs for Motion: FEE3

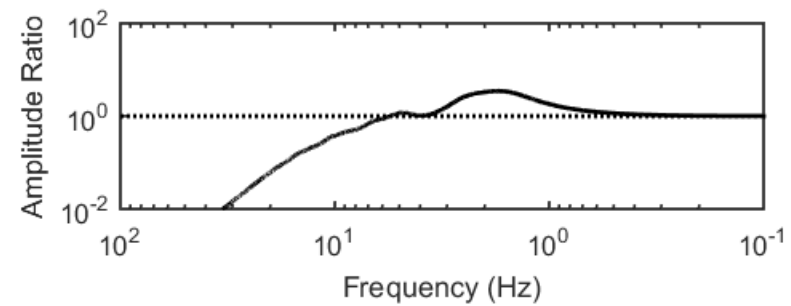
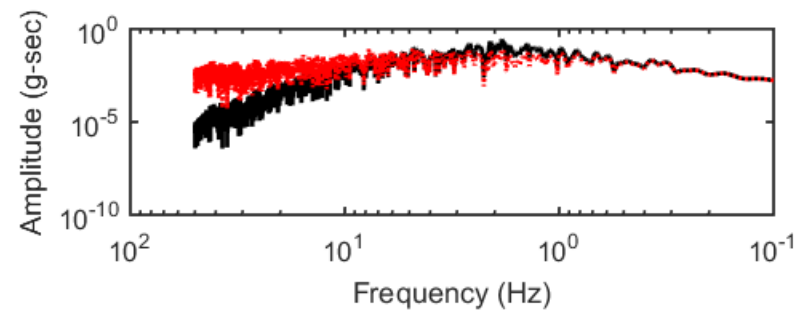
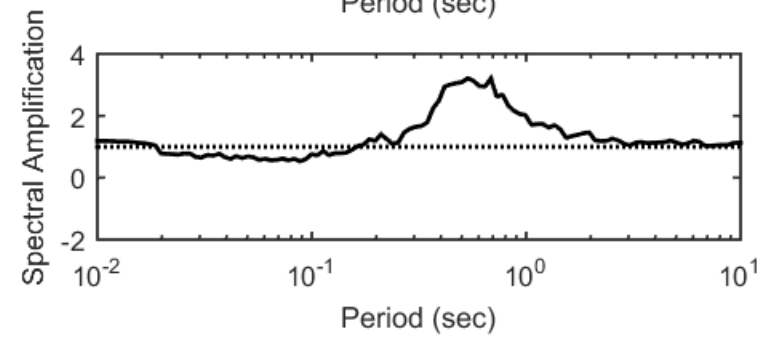
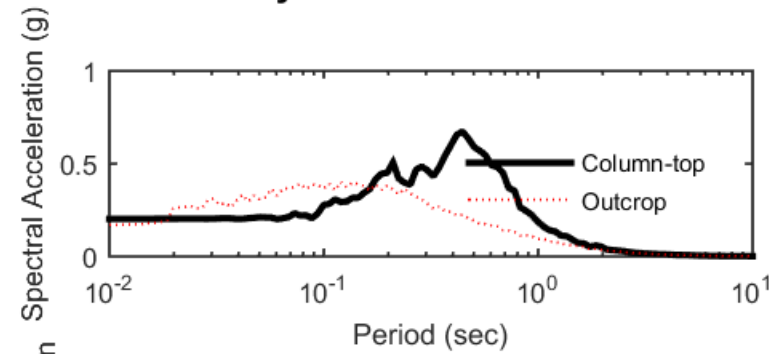
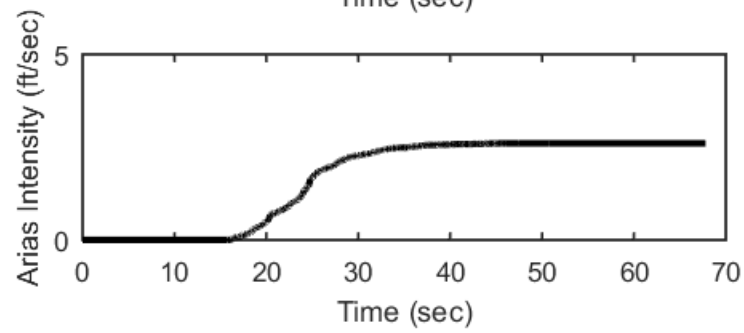
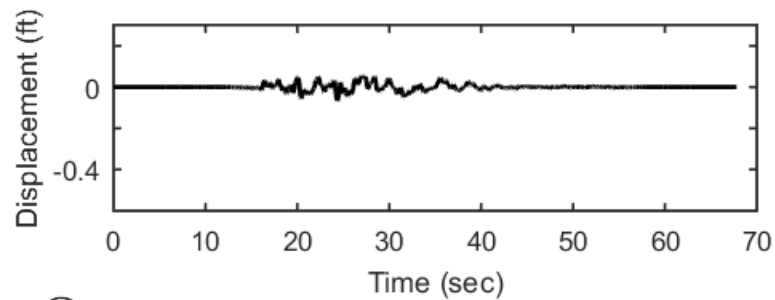
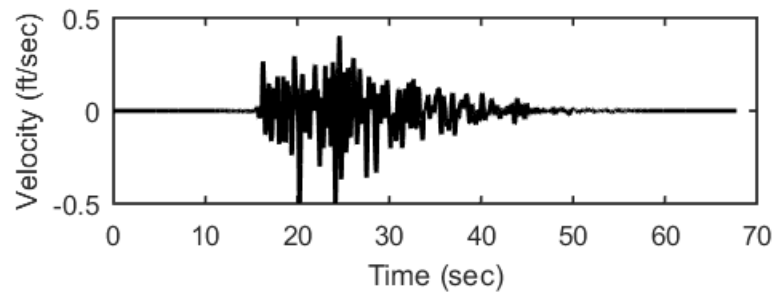
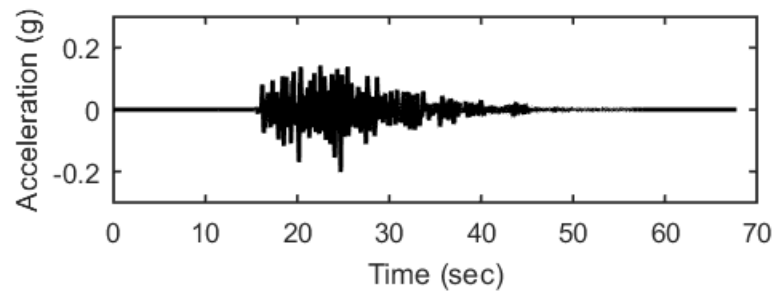




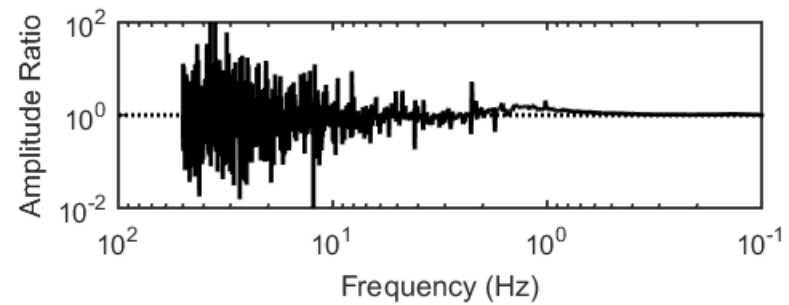
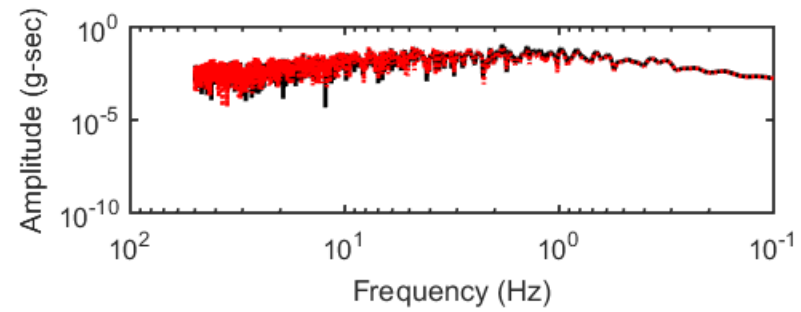
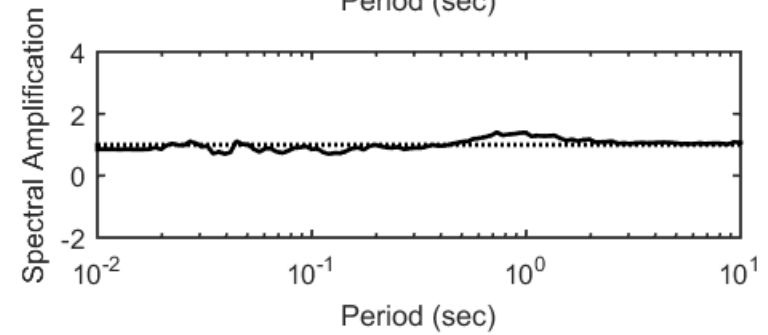
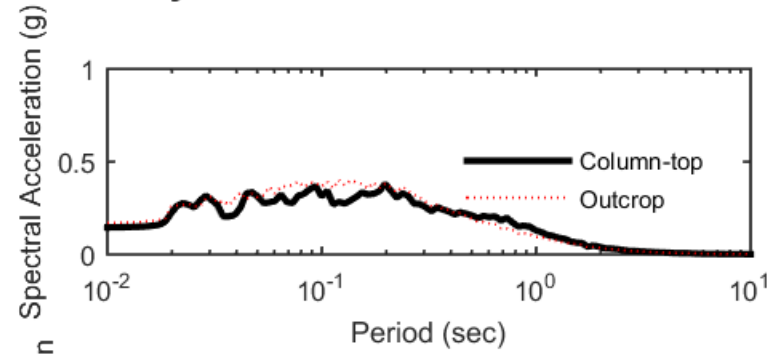
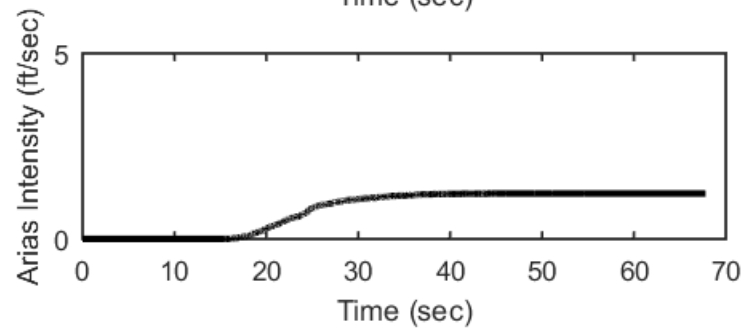
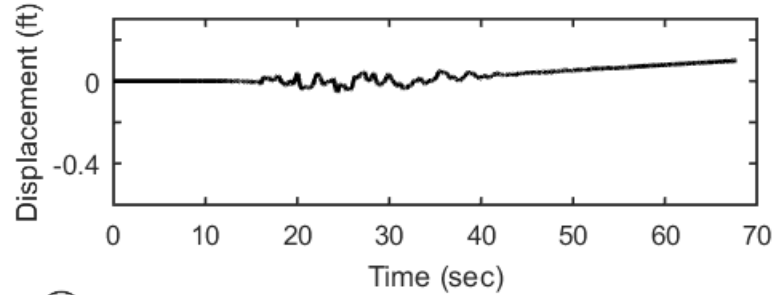
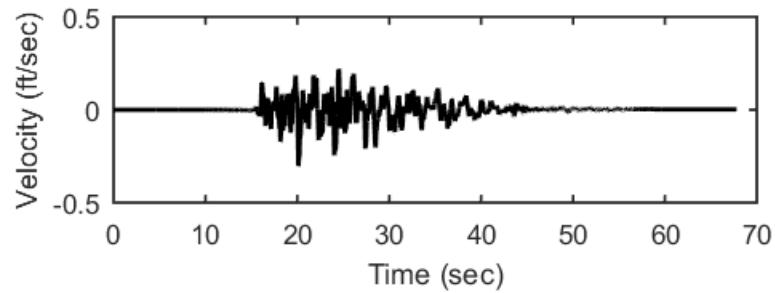
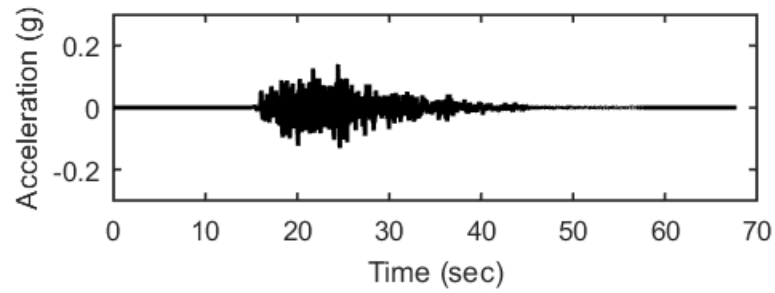
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



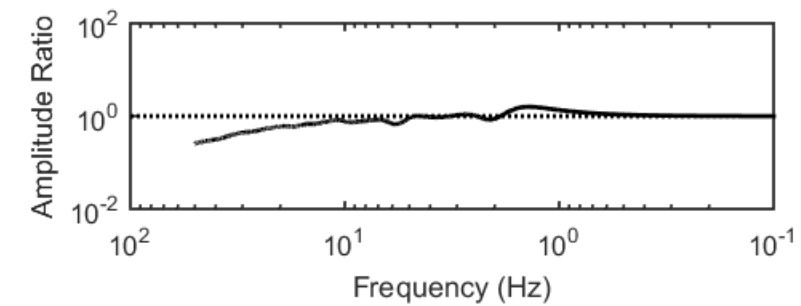
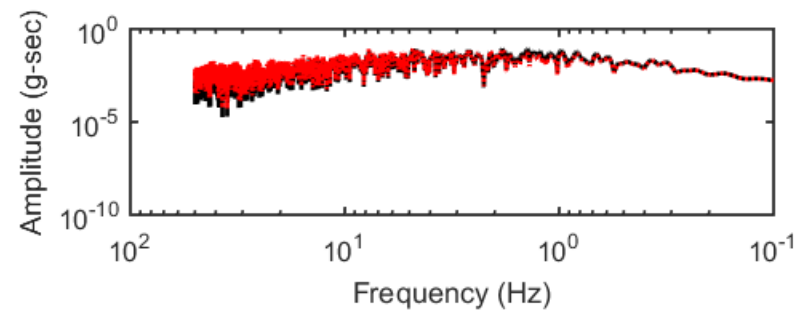
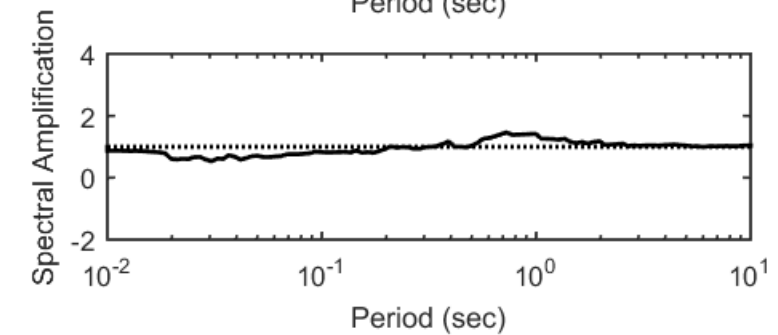
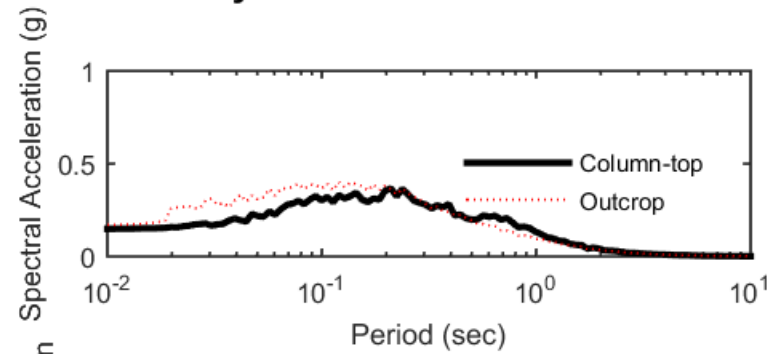
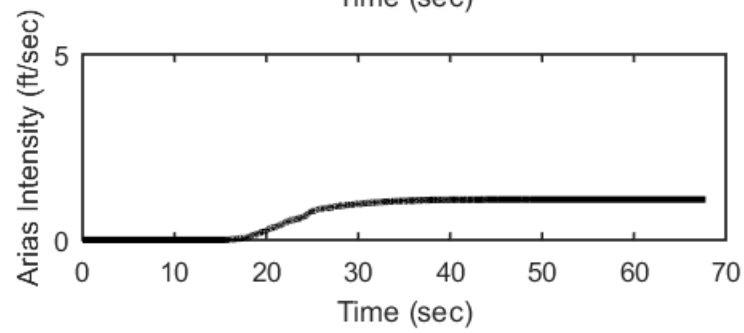
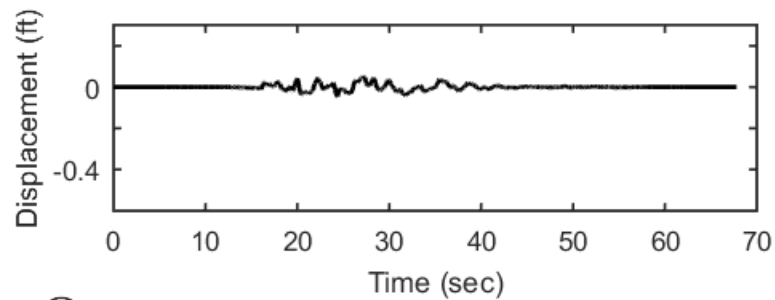
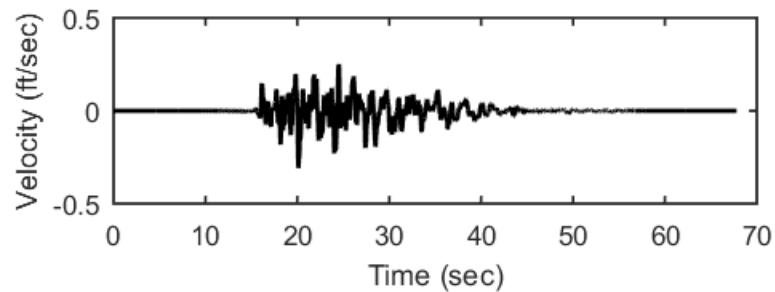
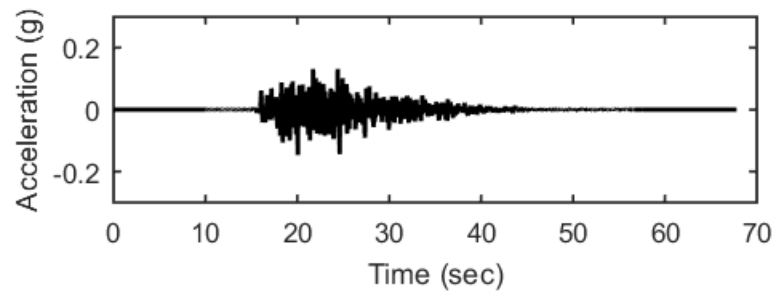
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



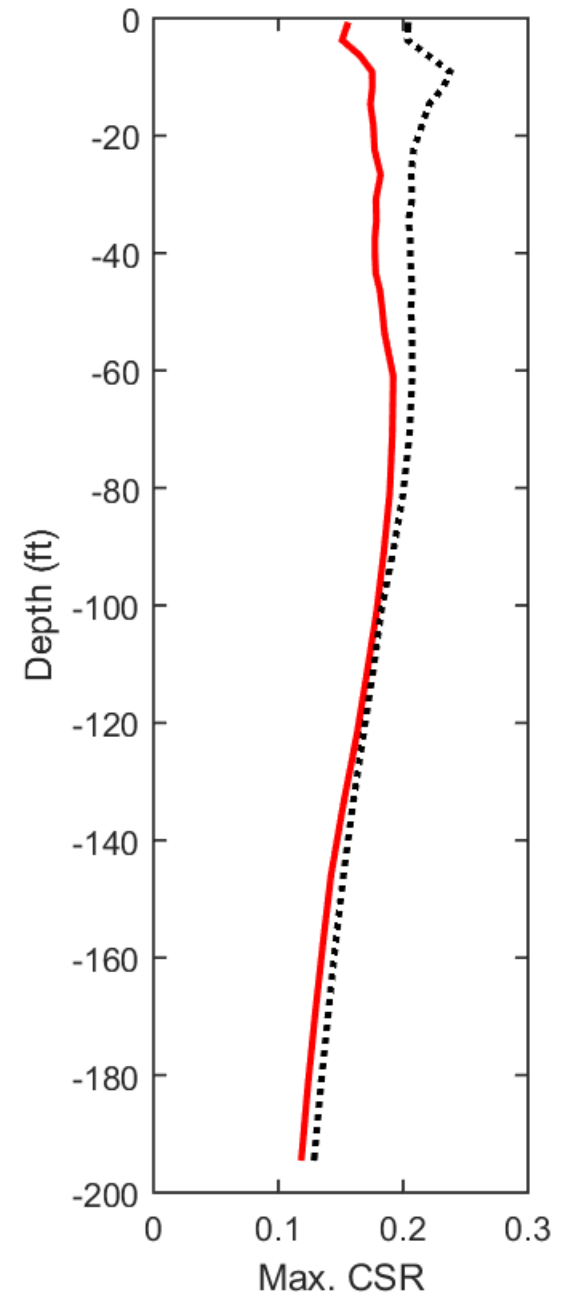
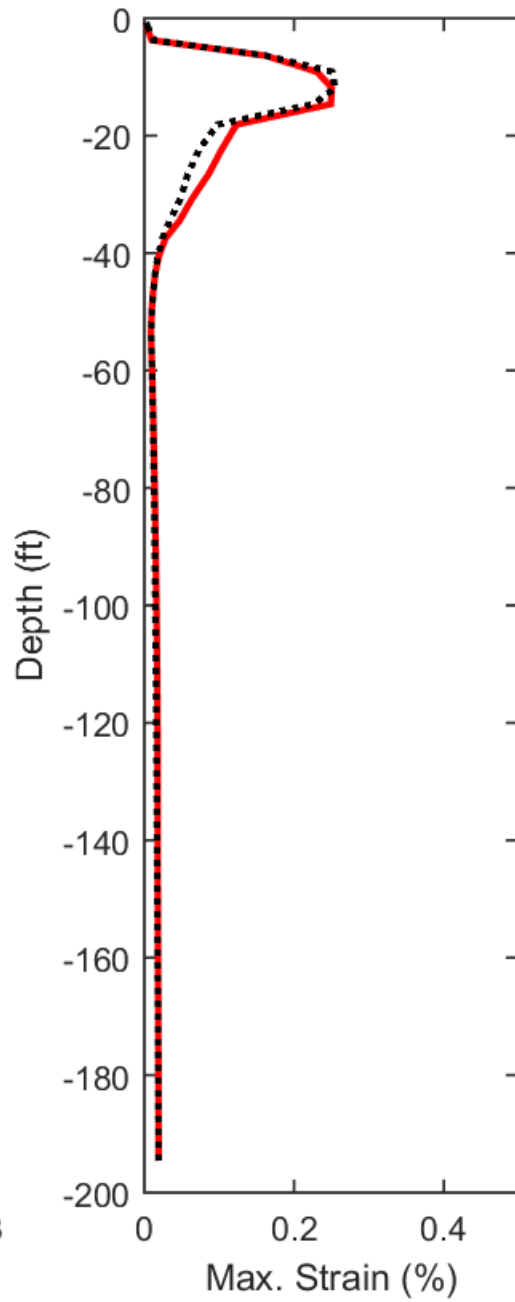
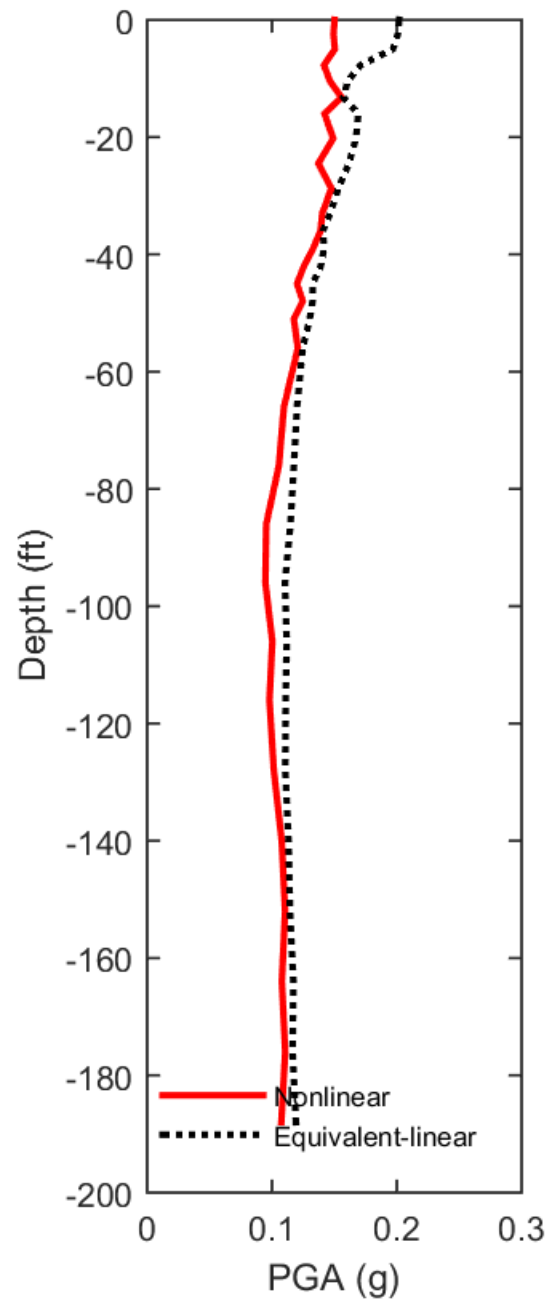
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



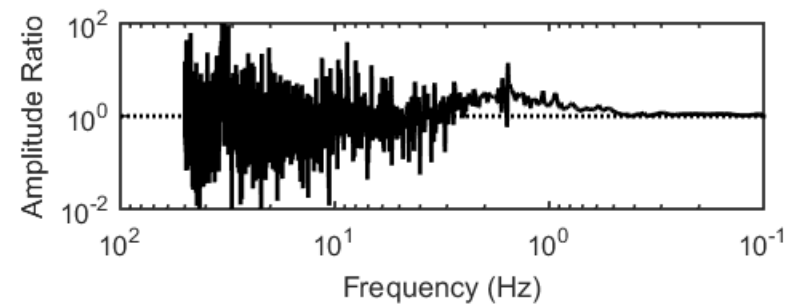
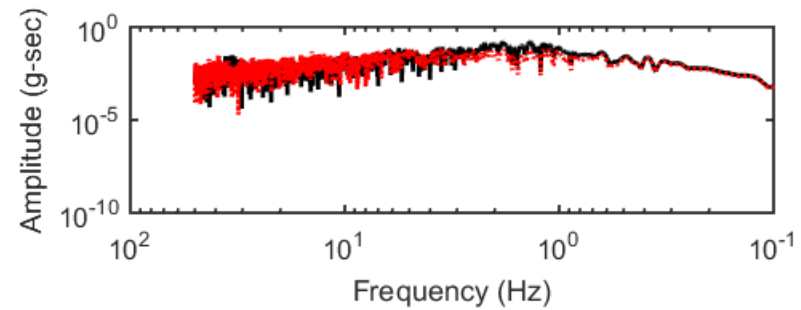
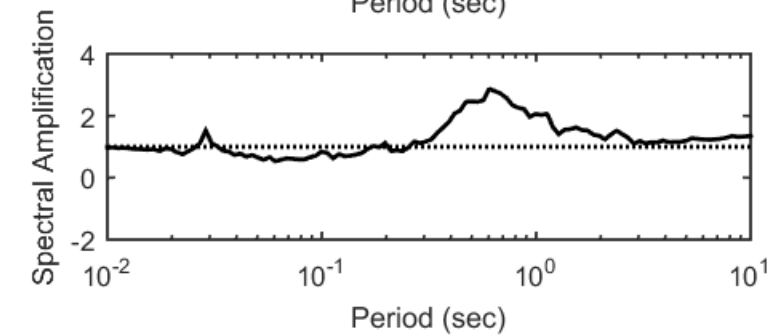
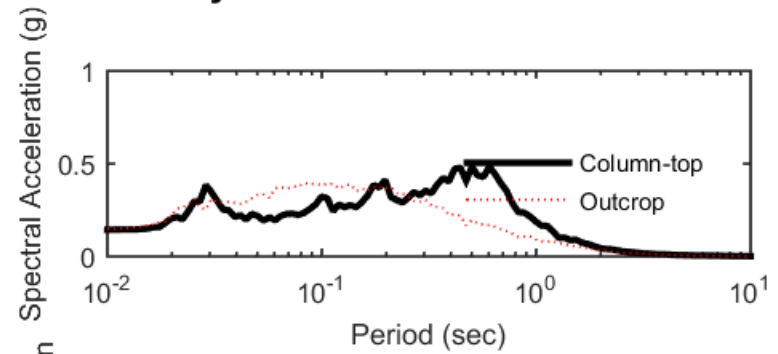
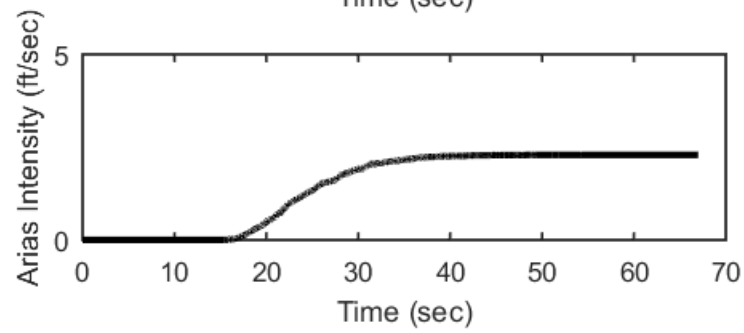
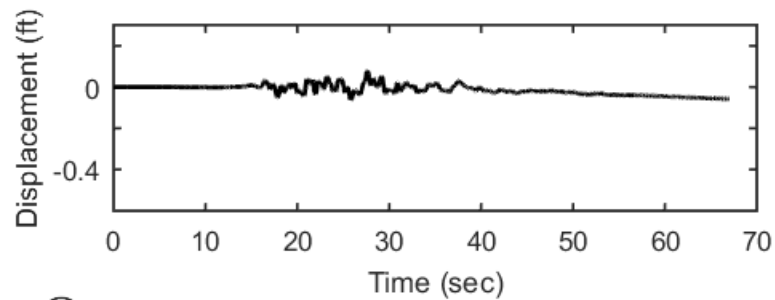
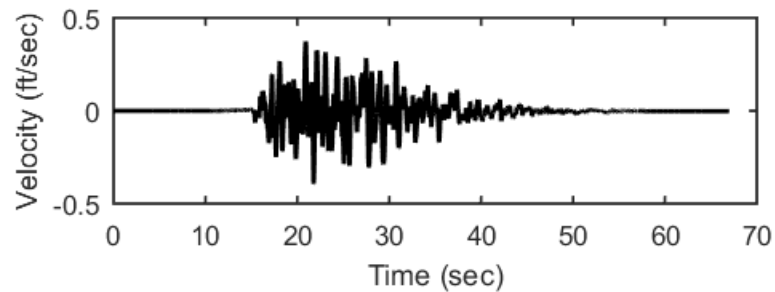
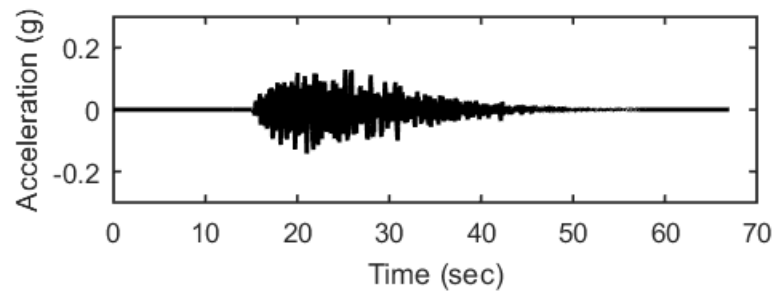
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



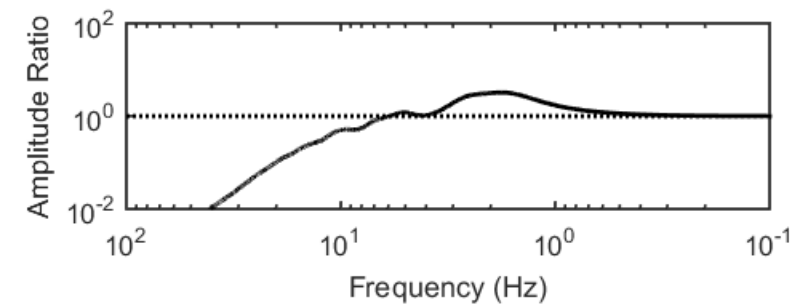
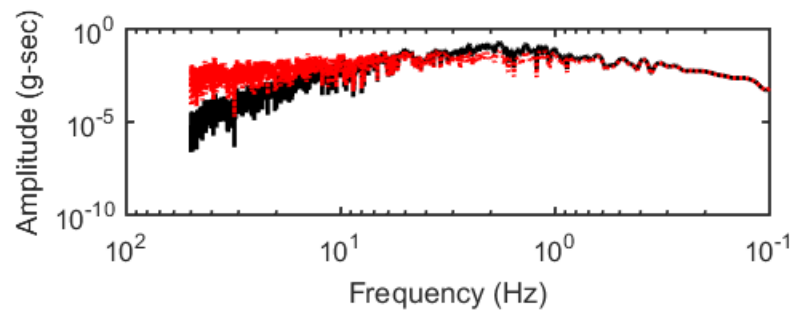
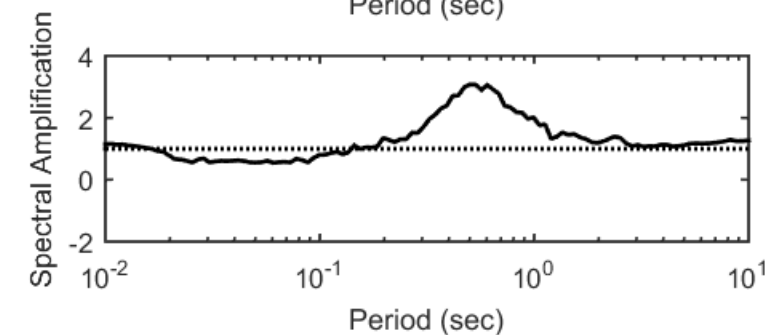
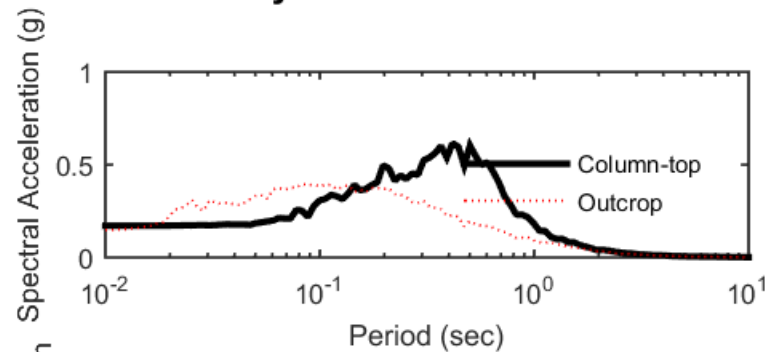
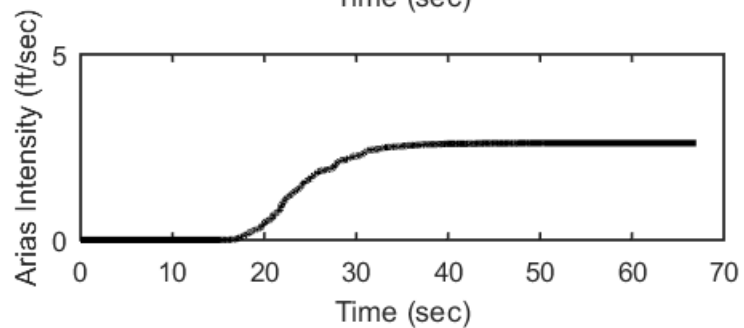
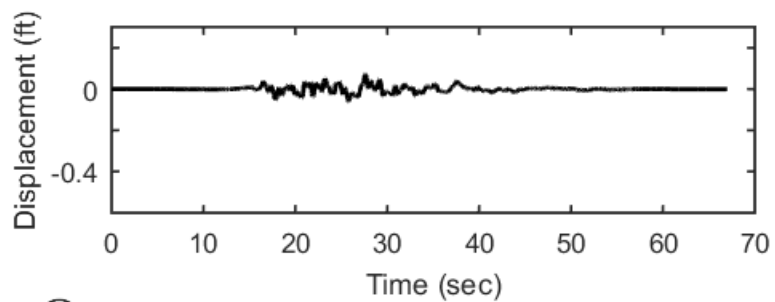
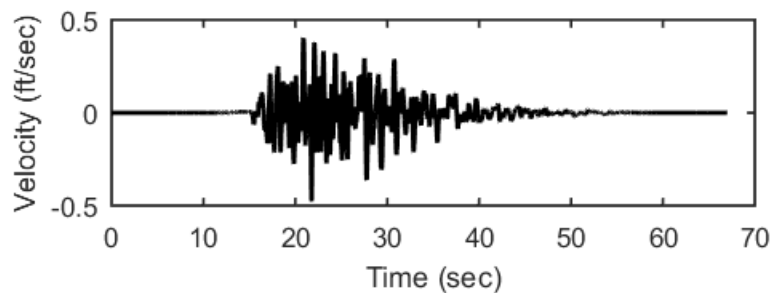
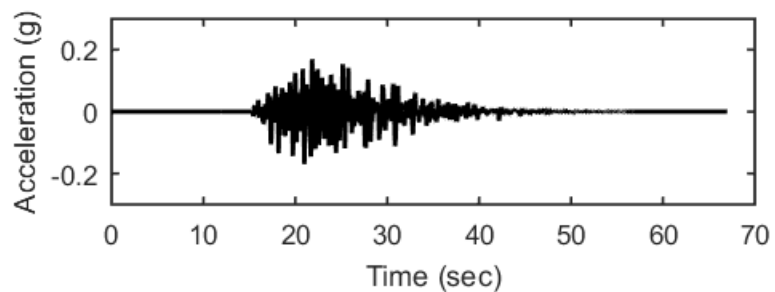
### Profile outputs for Motion: FEE4



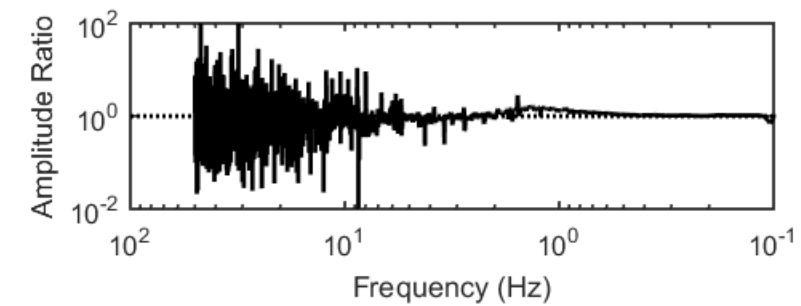
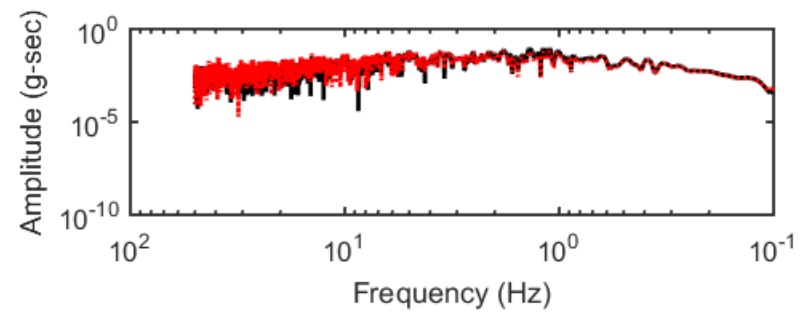
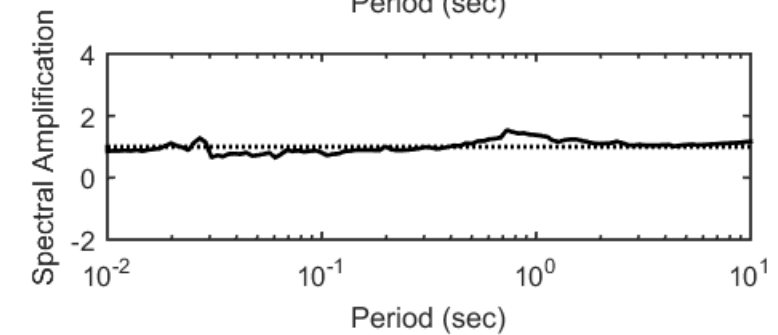
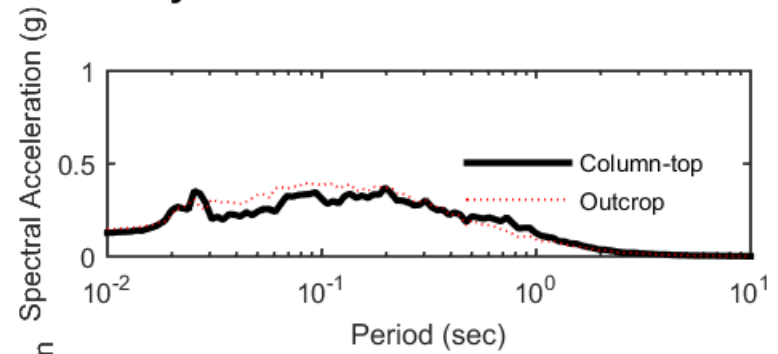
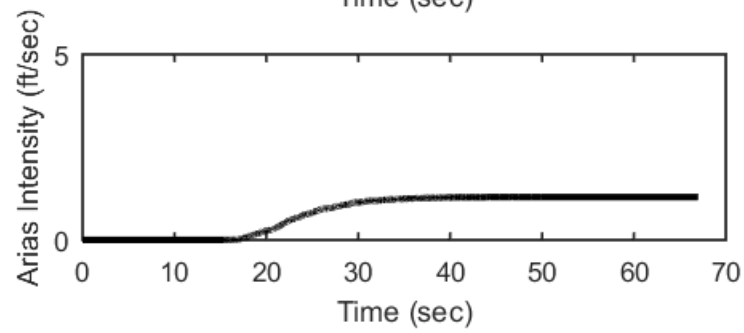
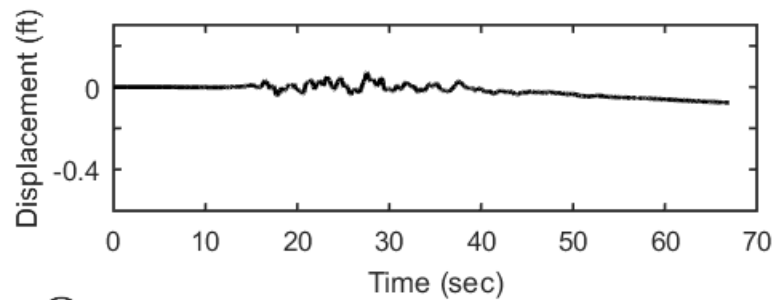
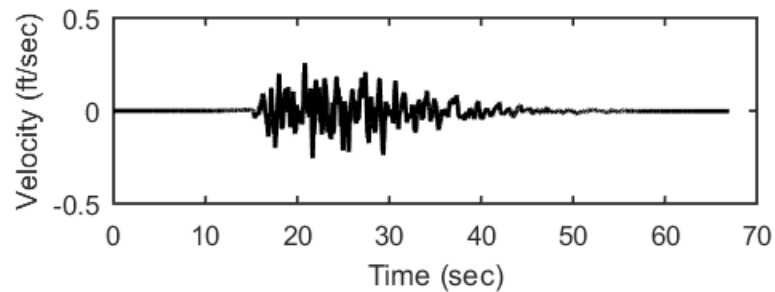
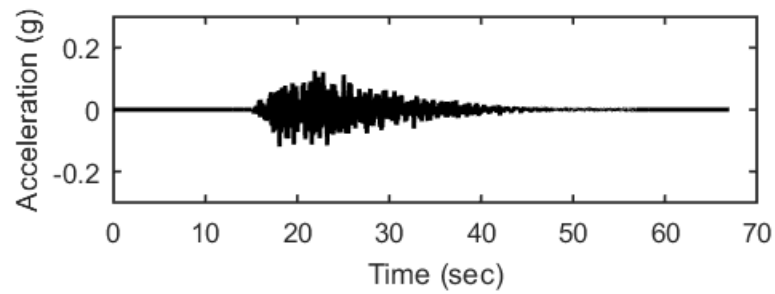
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5

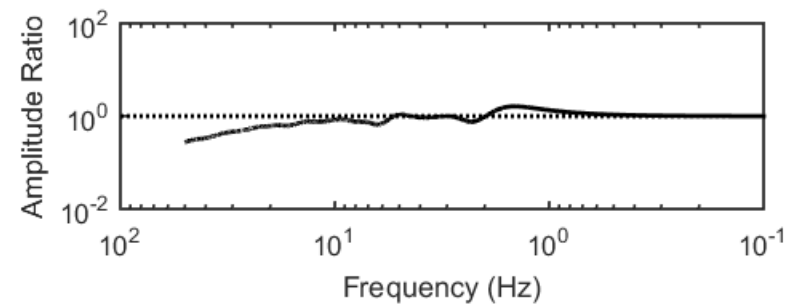
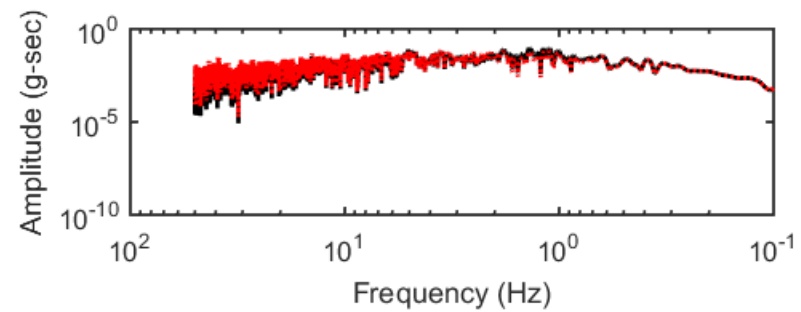
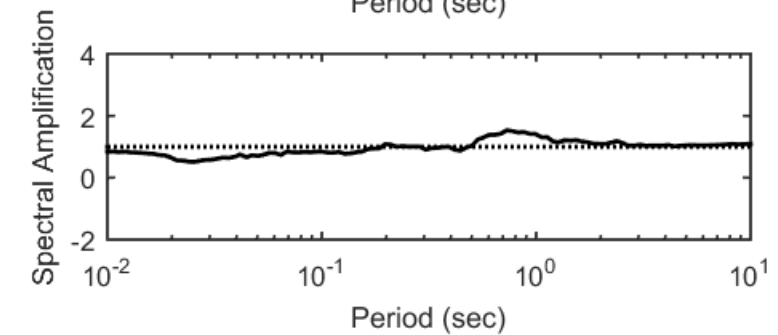
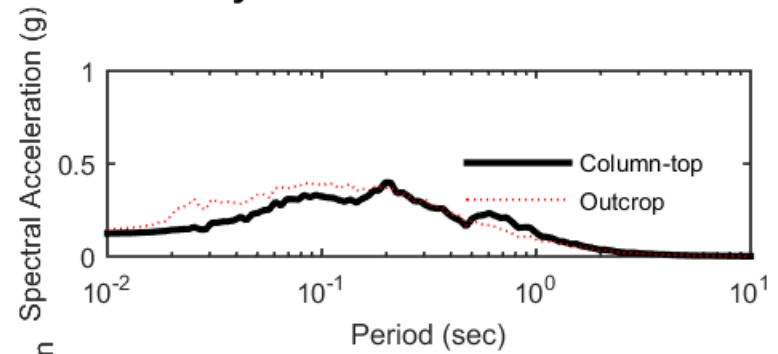
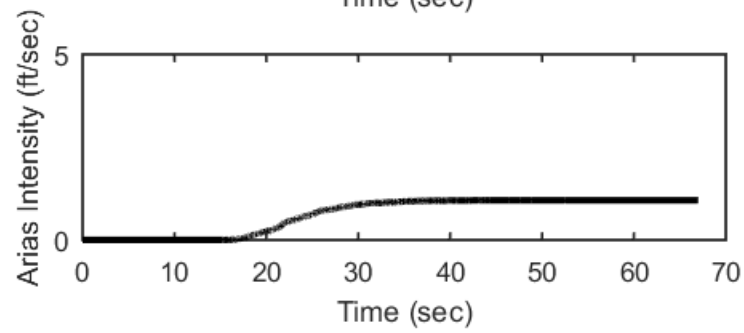
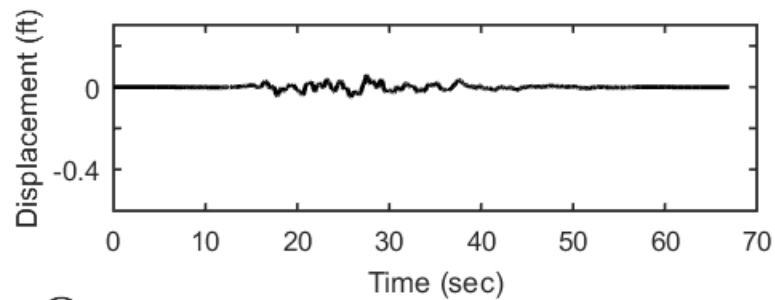
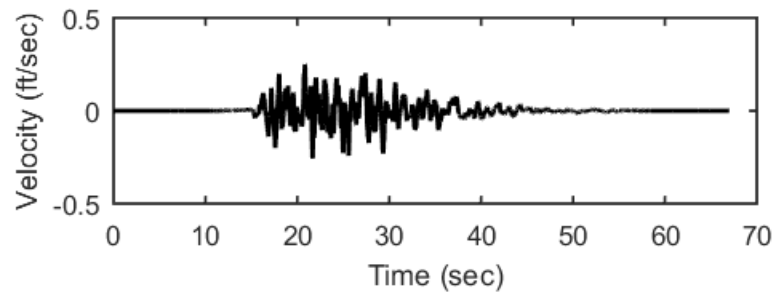
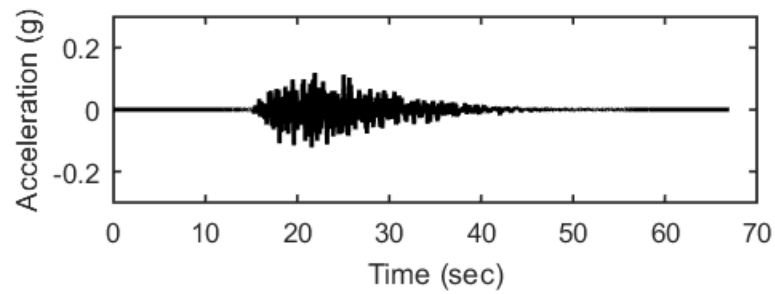


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5

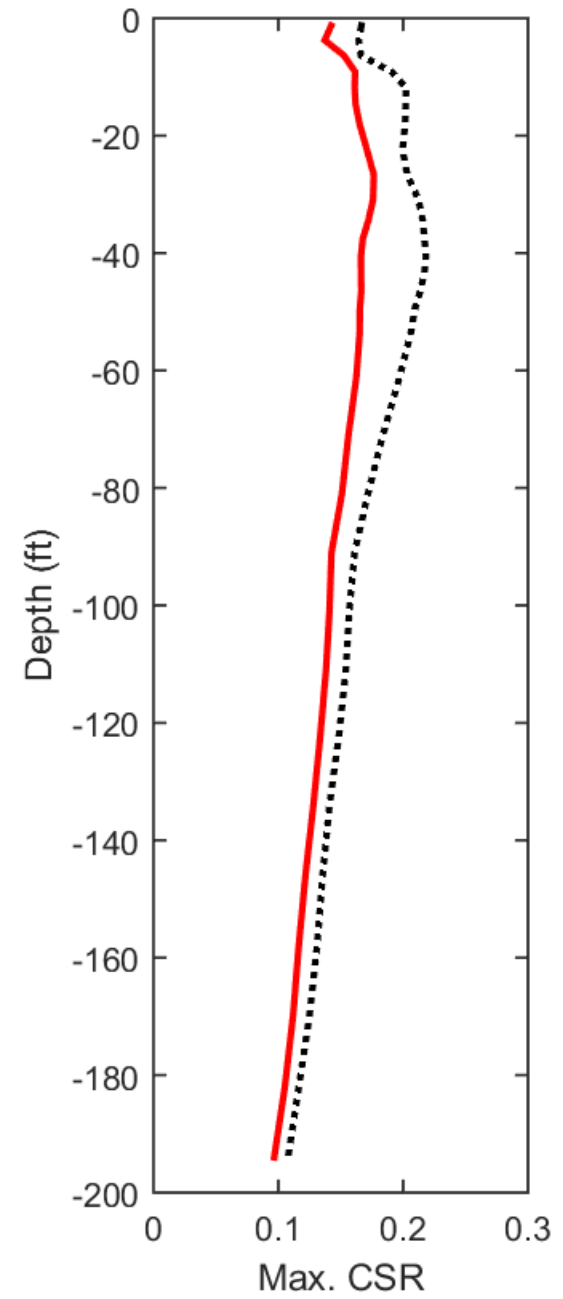
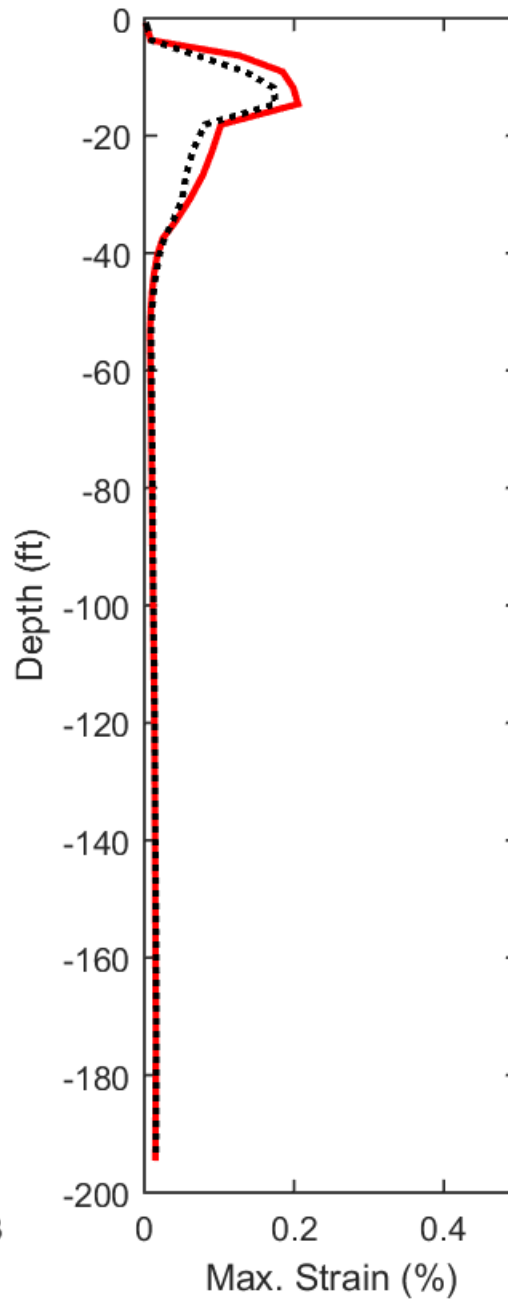
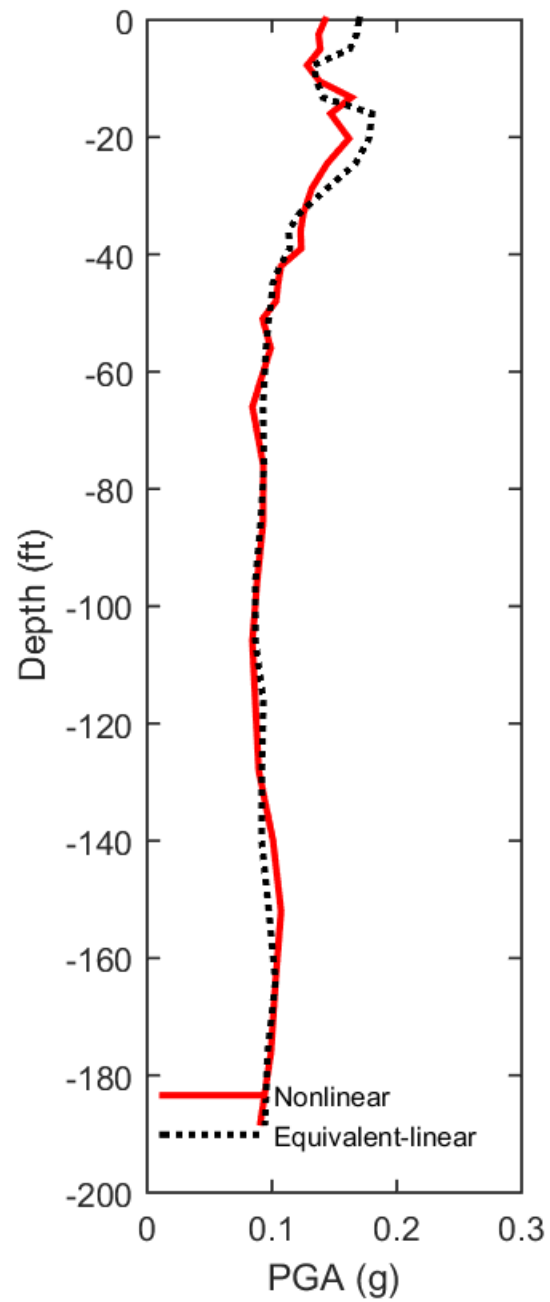




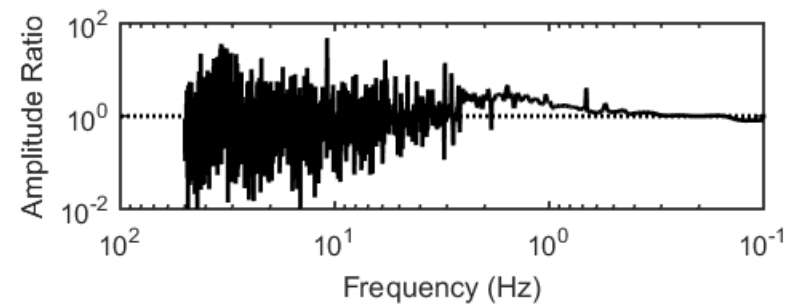
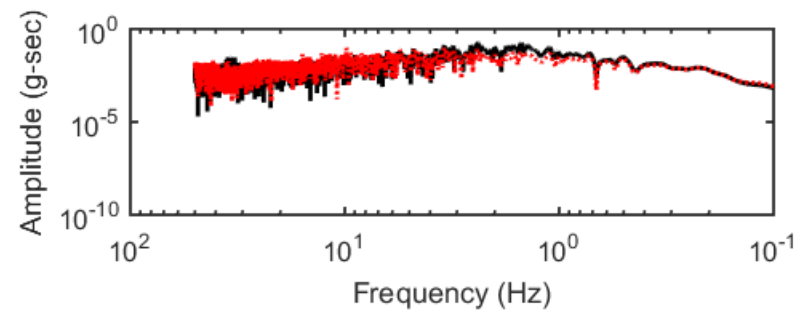
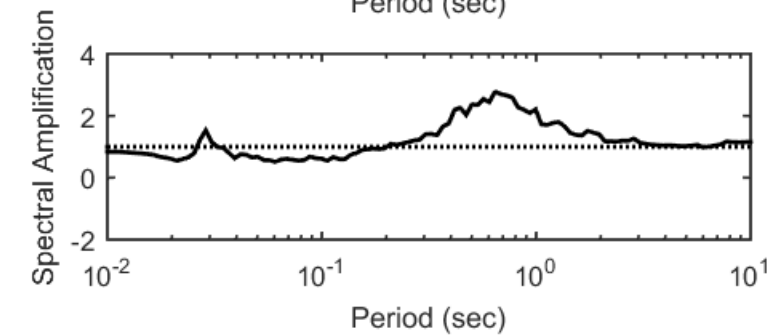
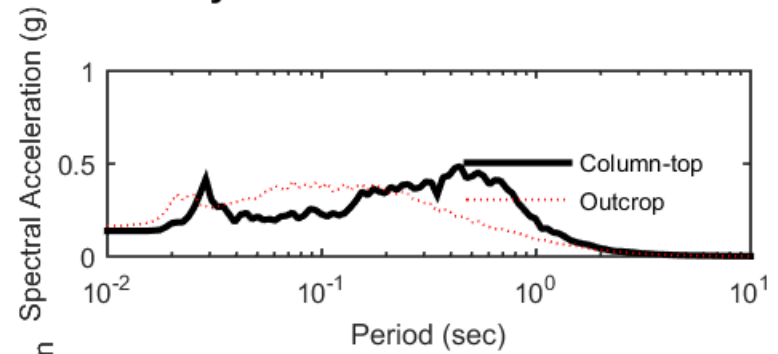
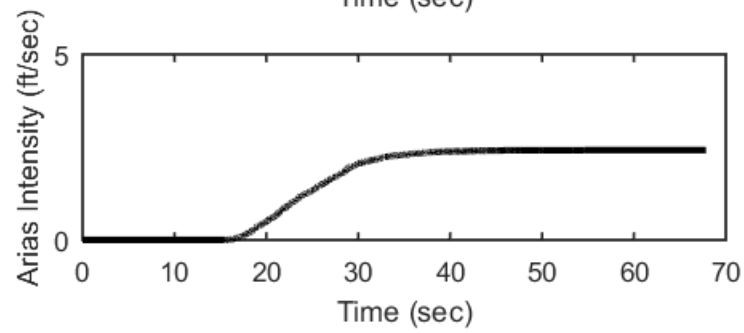
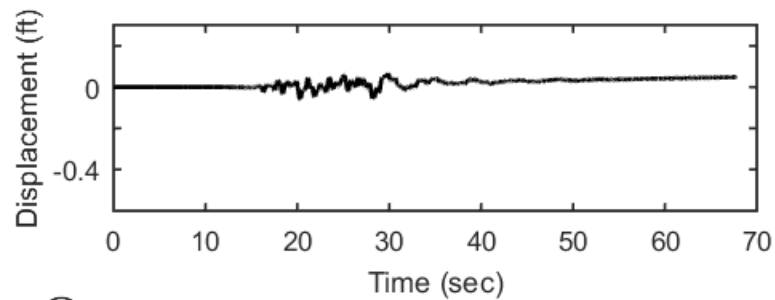
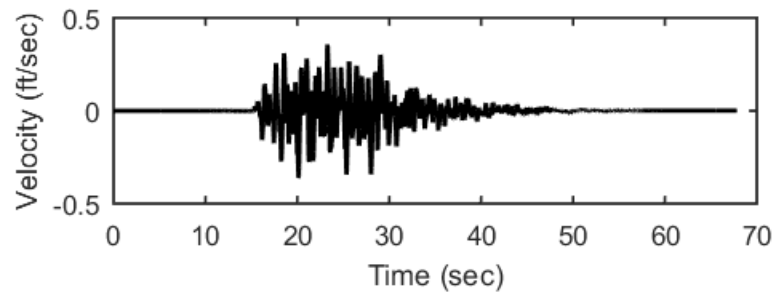
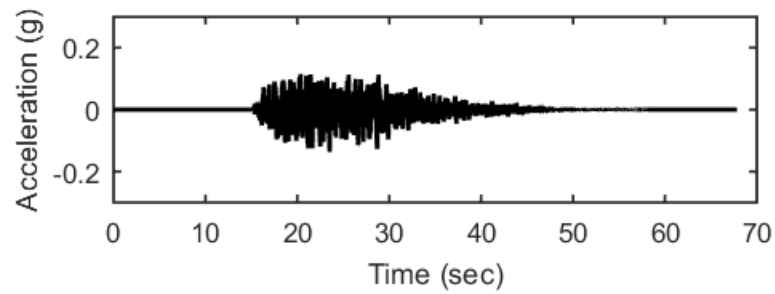
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



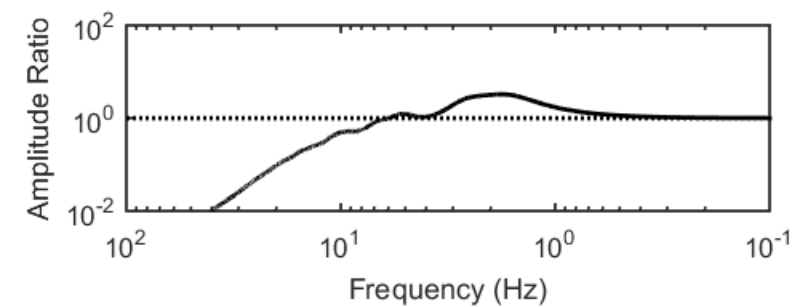
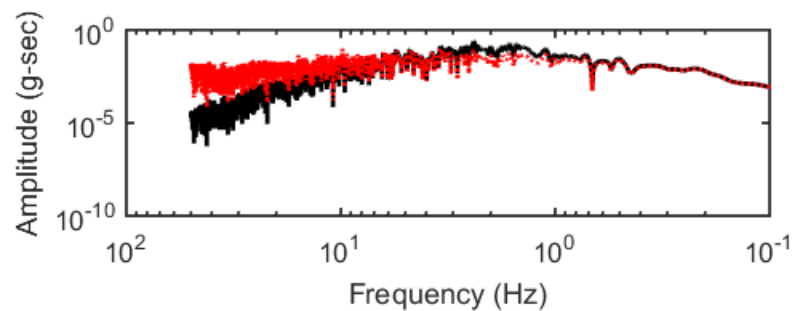
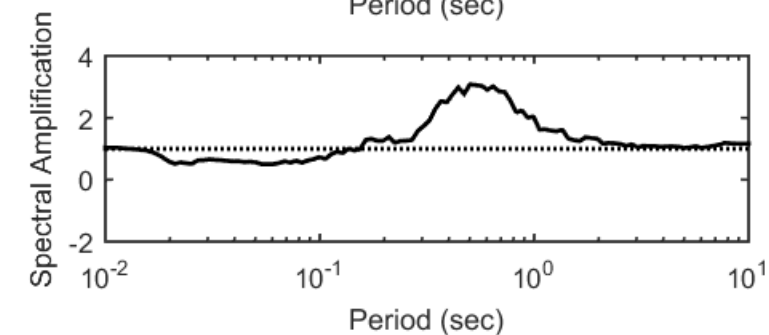
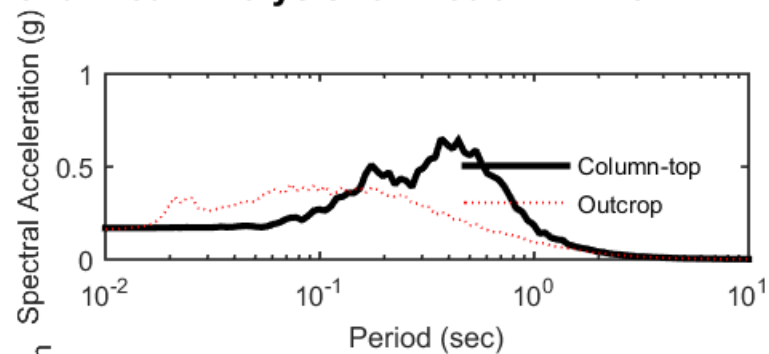
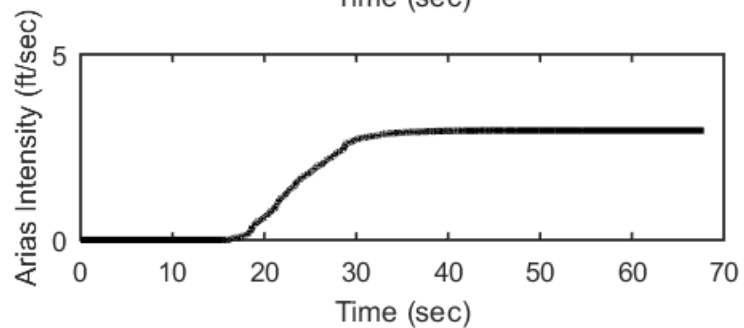
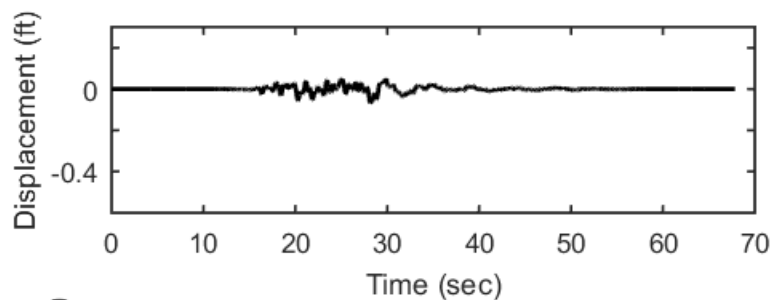
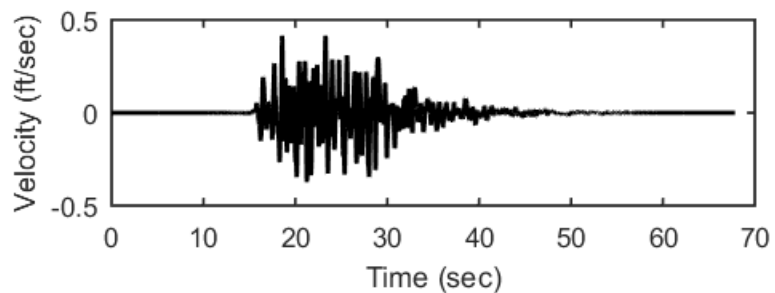
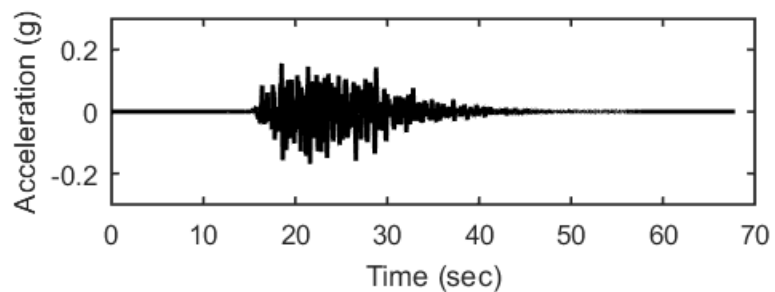
### Profile outputs for Motion: FEE5



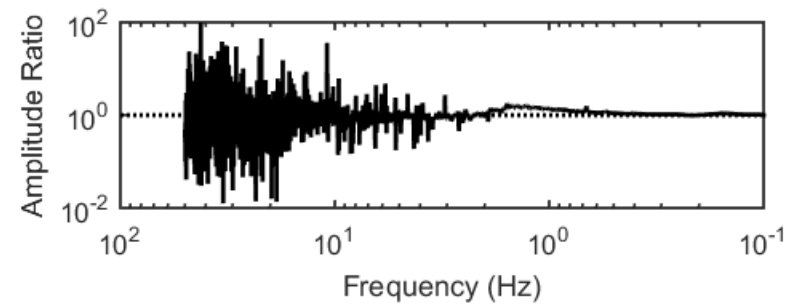
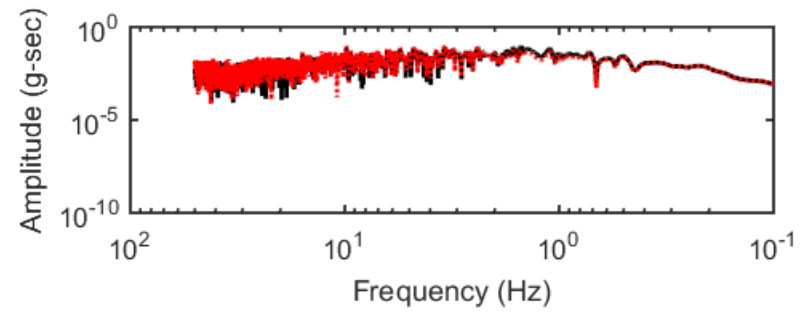
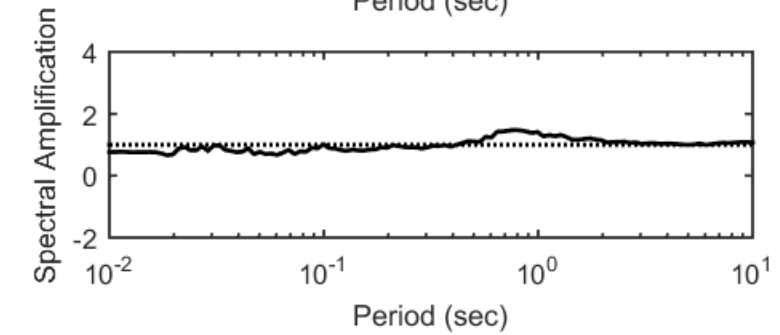
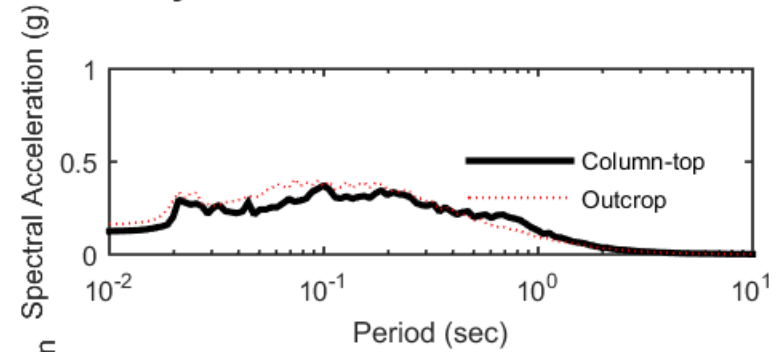
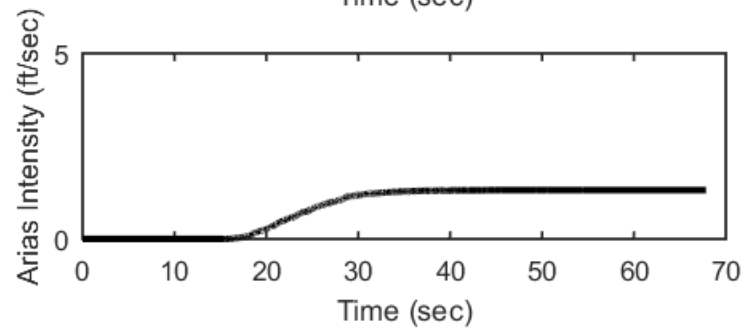
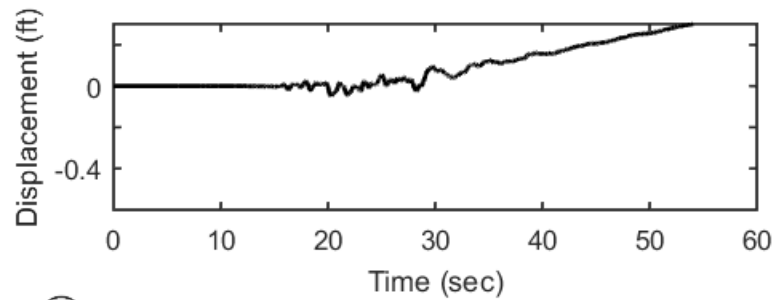
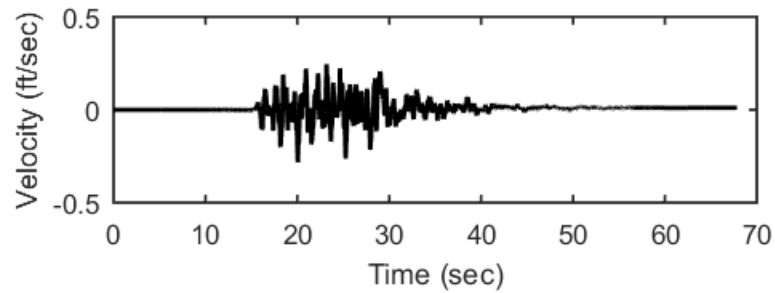
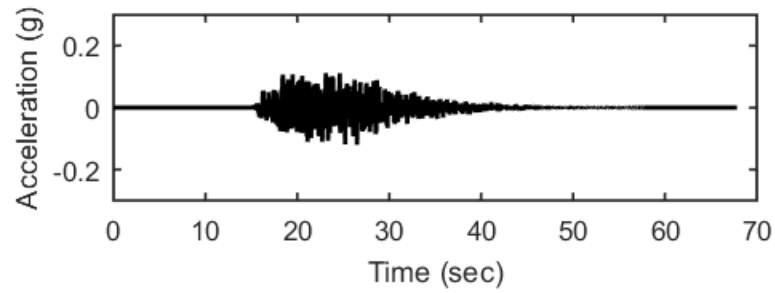
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



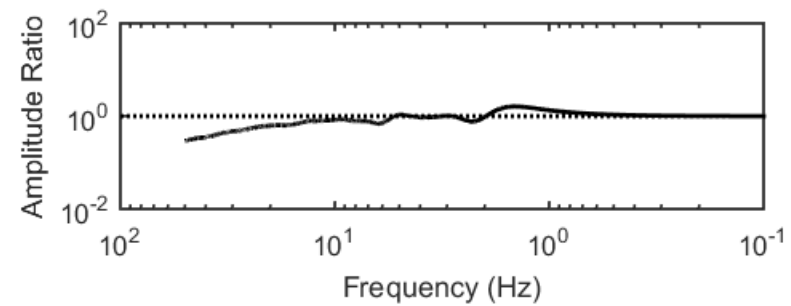
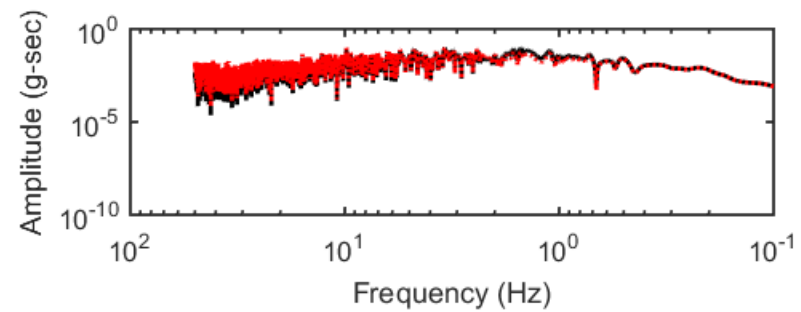
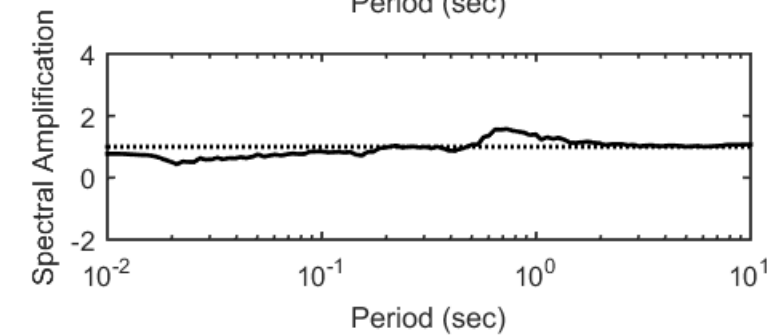
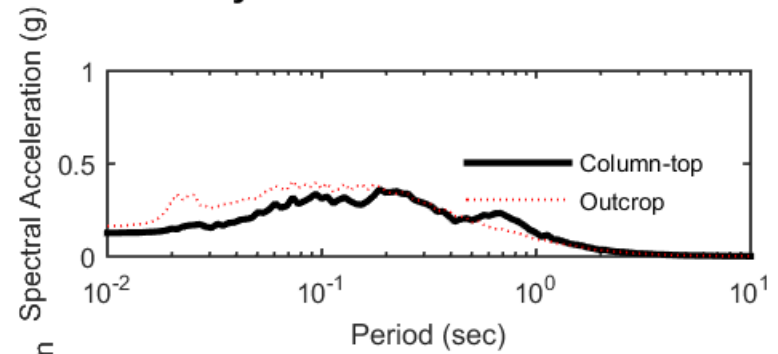
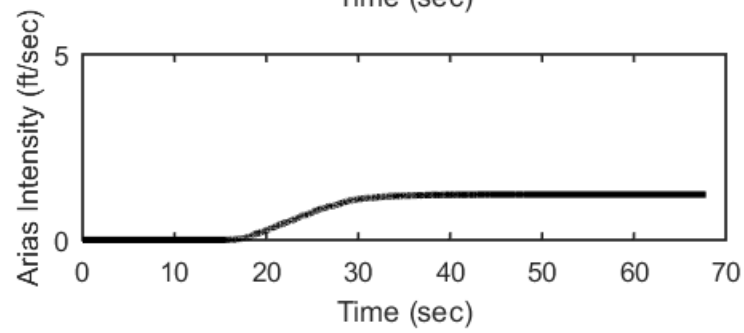
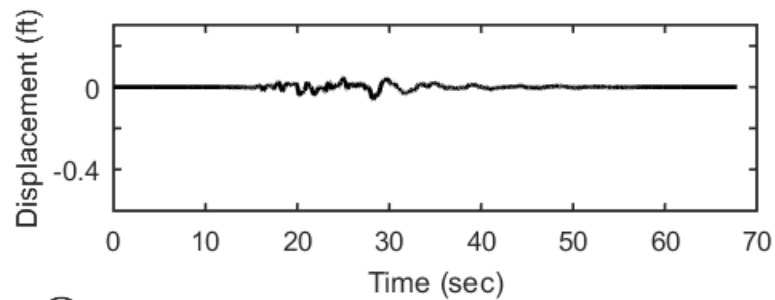
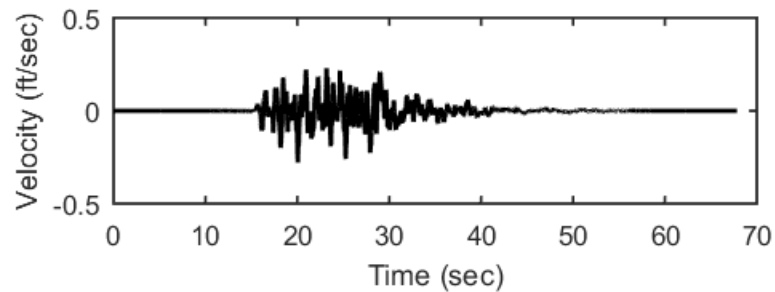
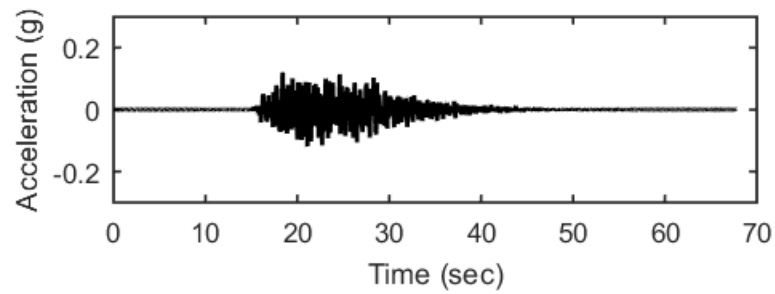
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



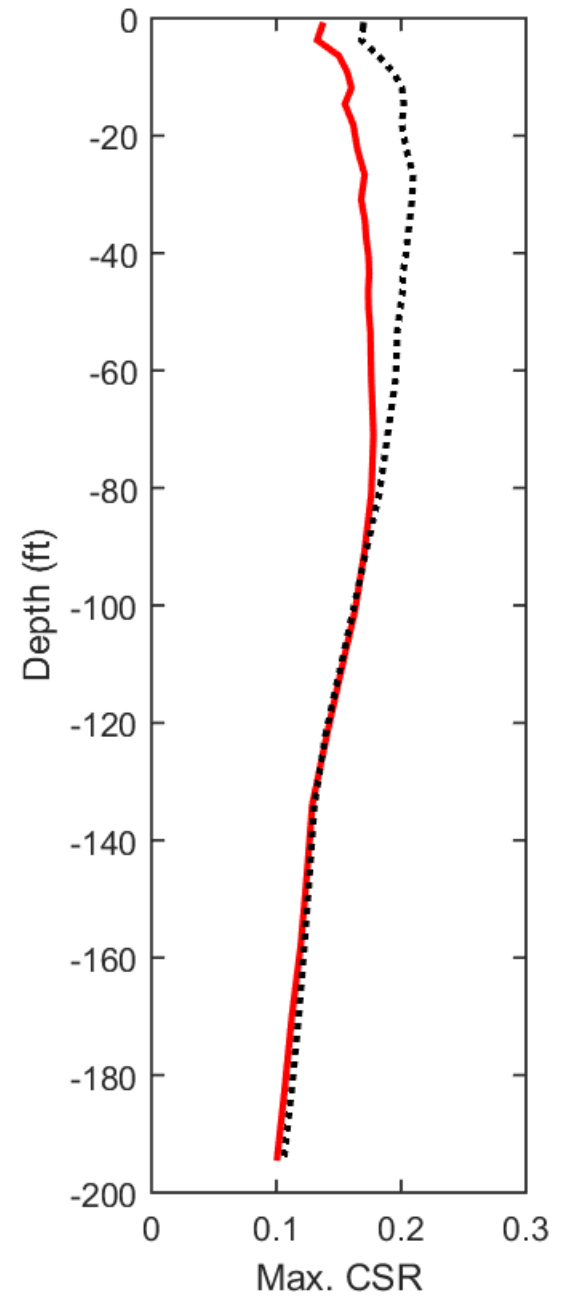
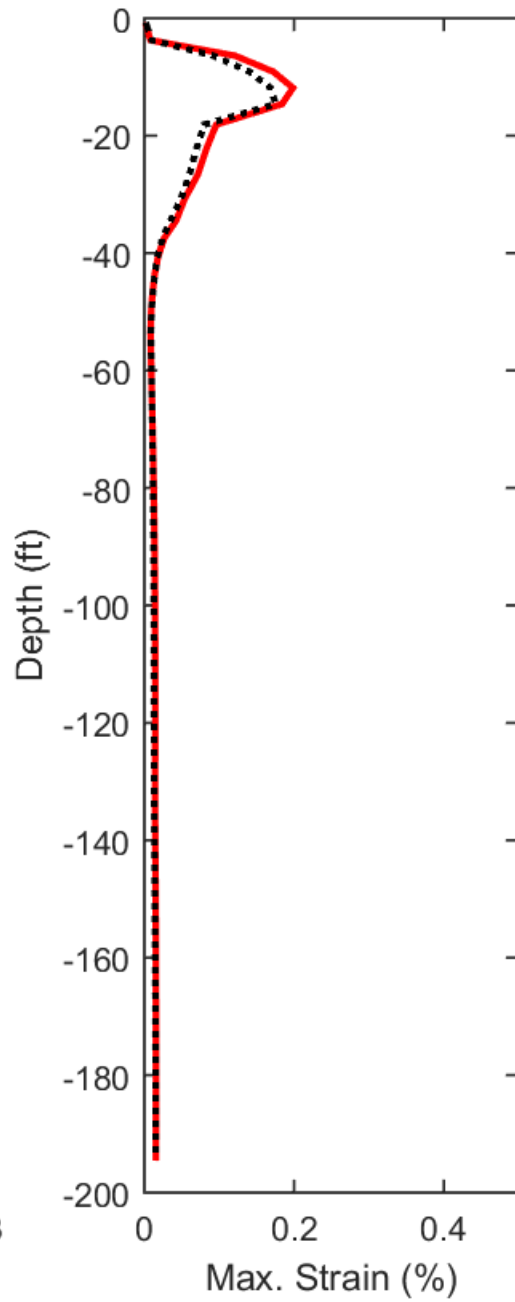
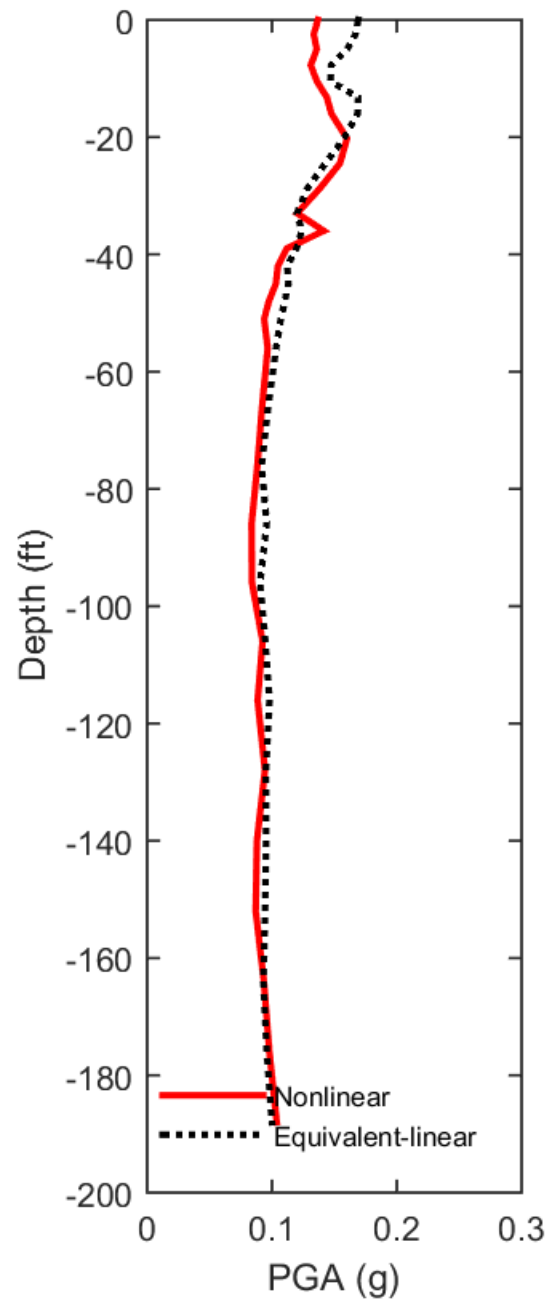
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



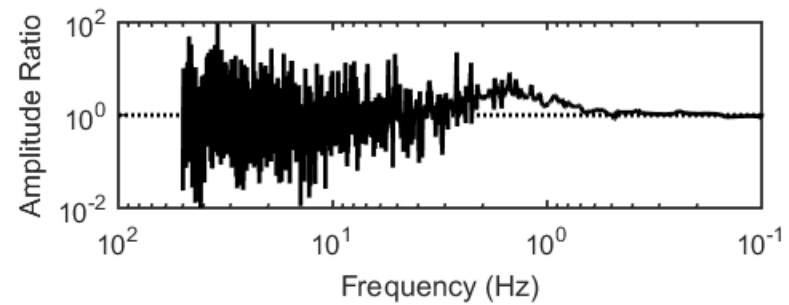
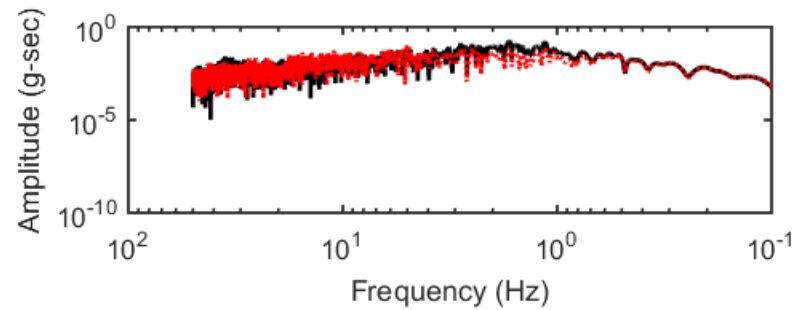
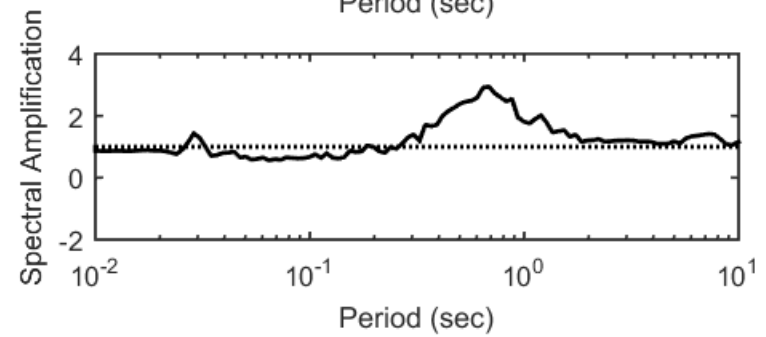
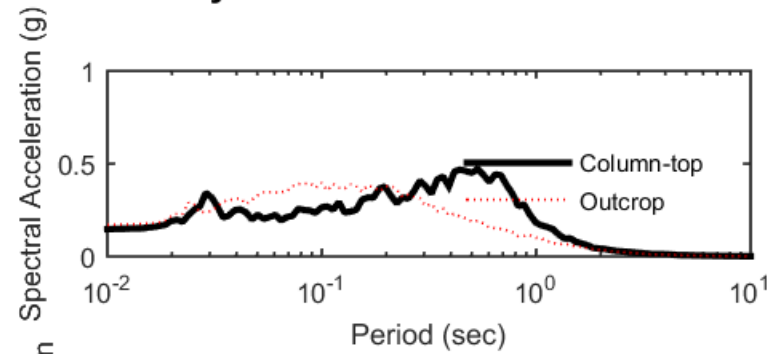
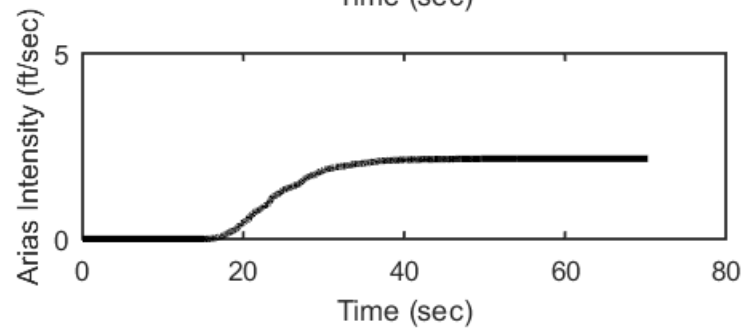
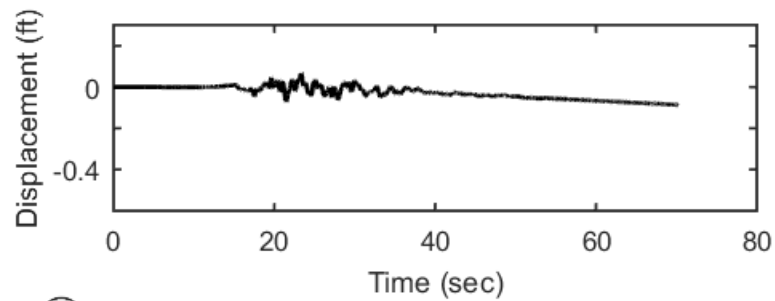
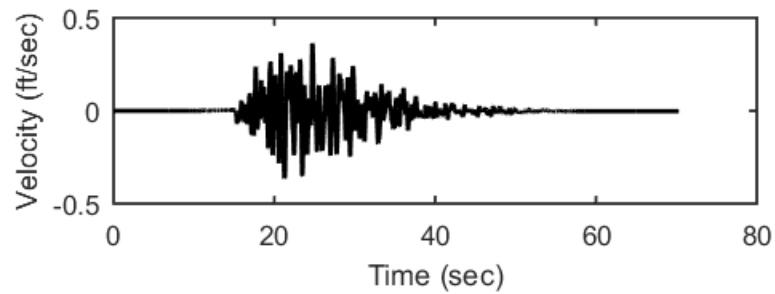
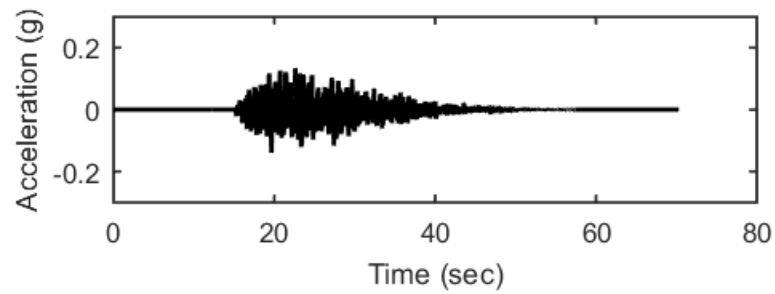
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



### Profile outputs for Motion: FEE6

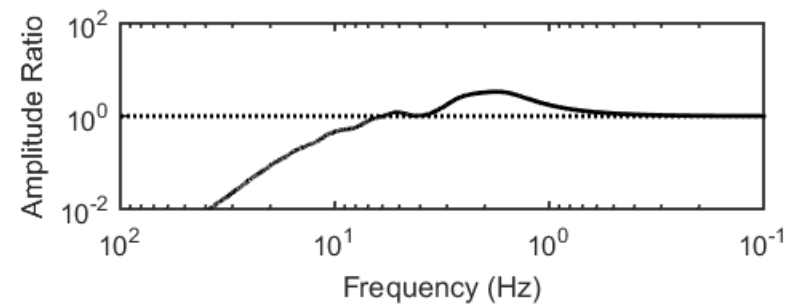
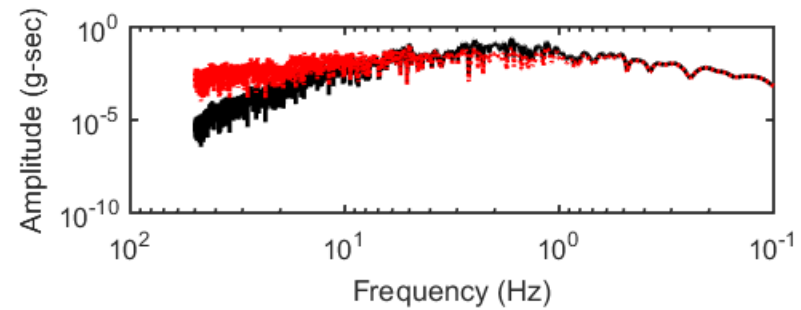
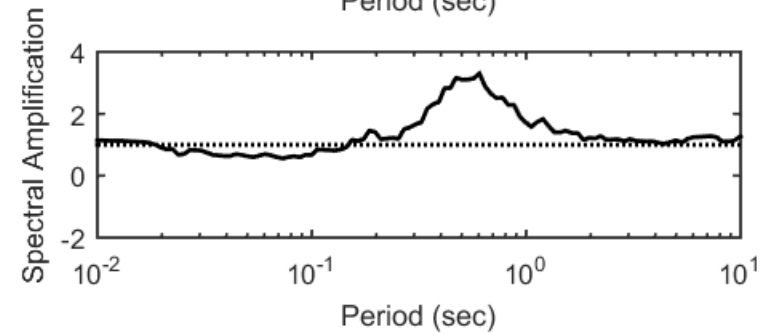
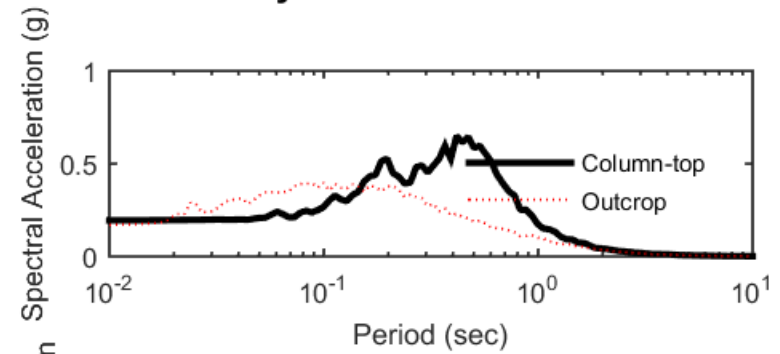
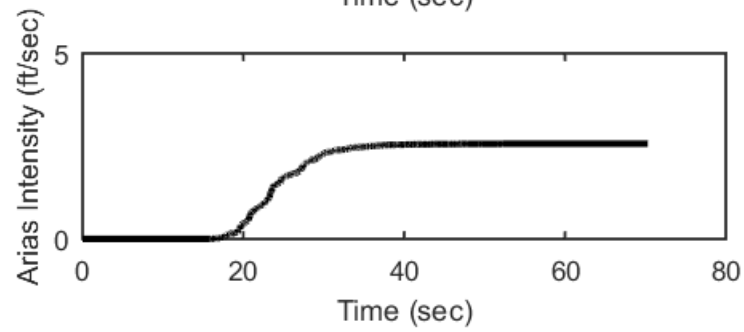
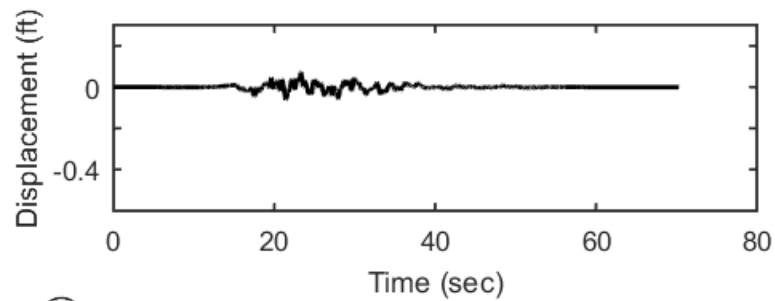
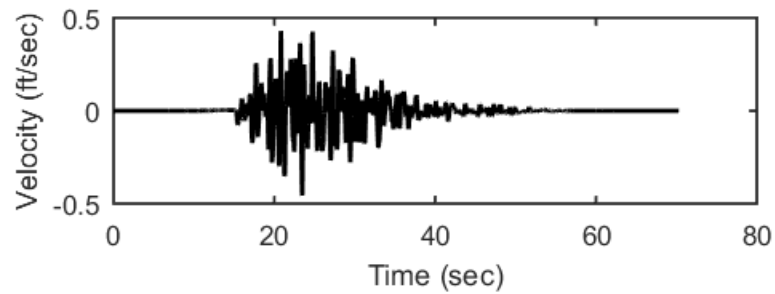
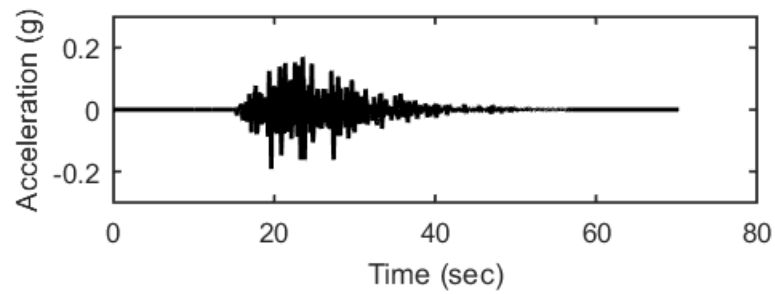


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7

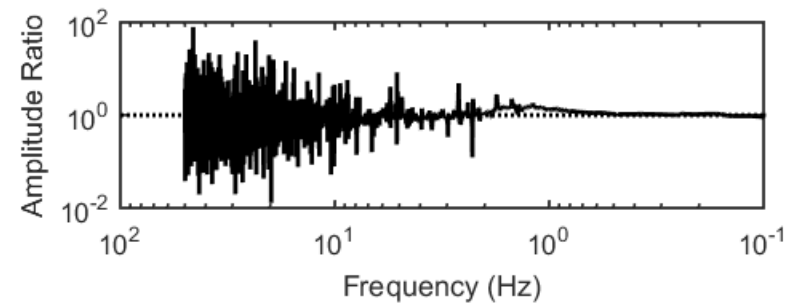
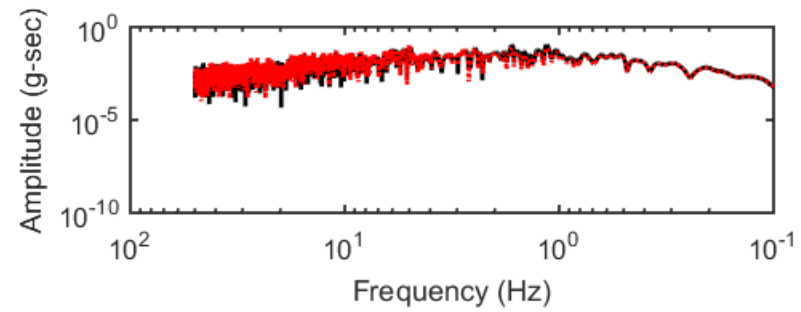
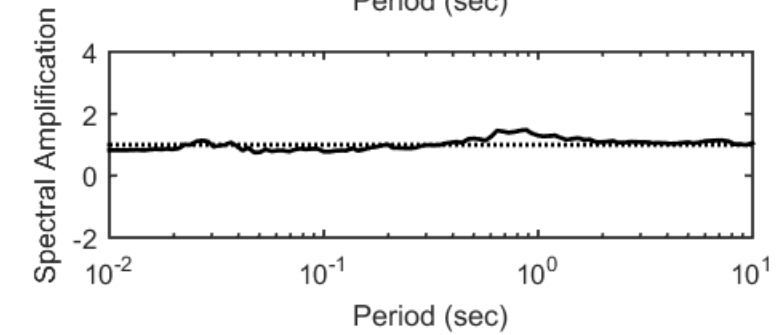
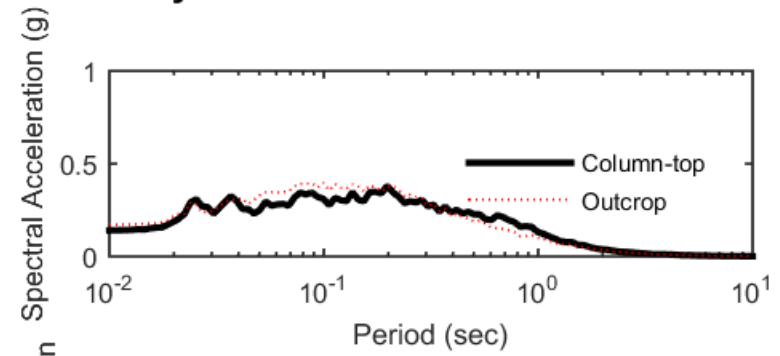
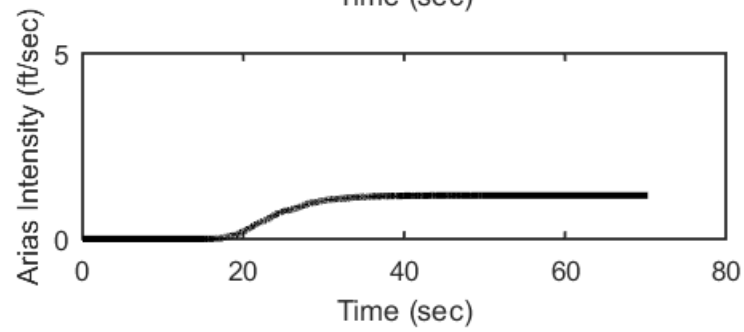
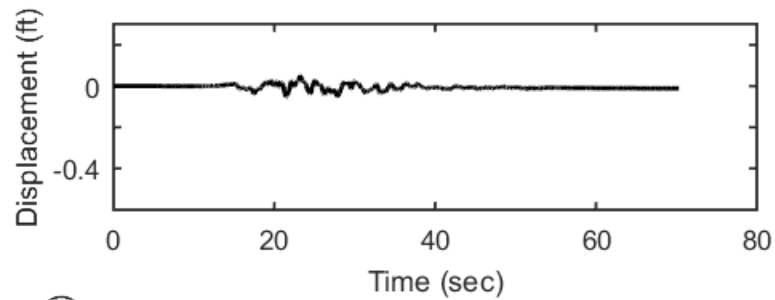
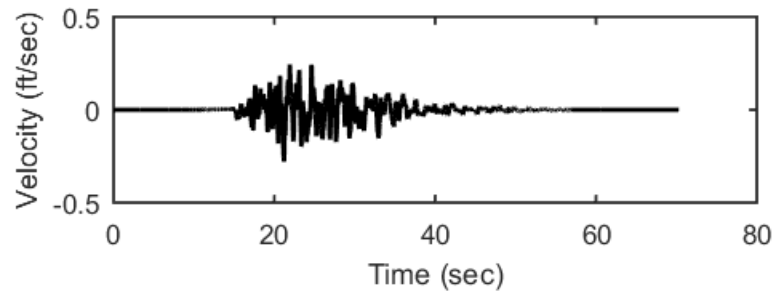
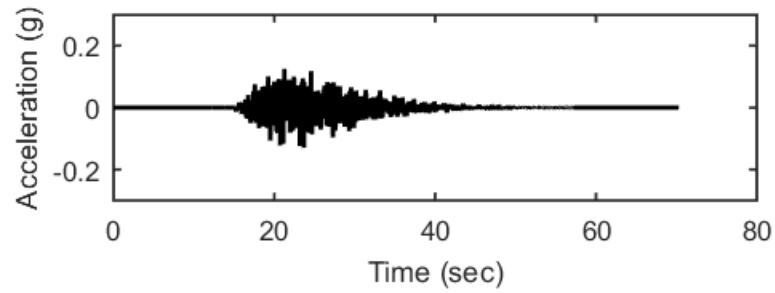




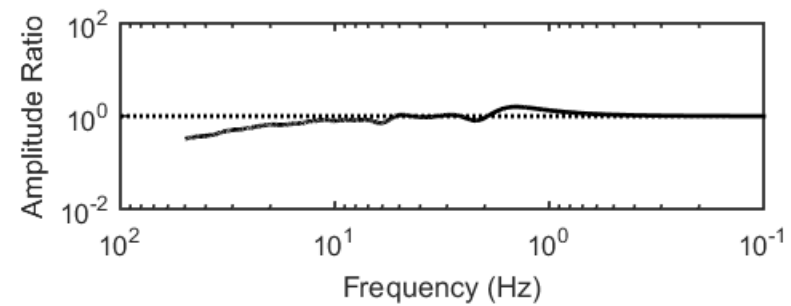
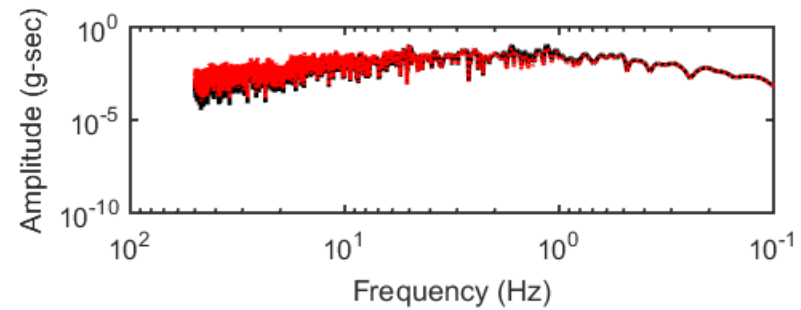
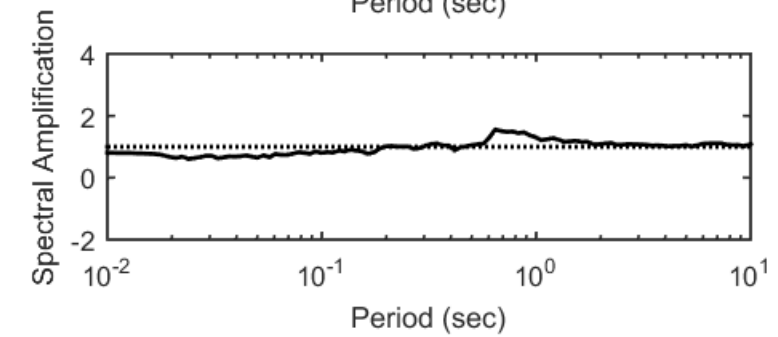
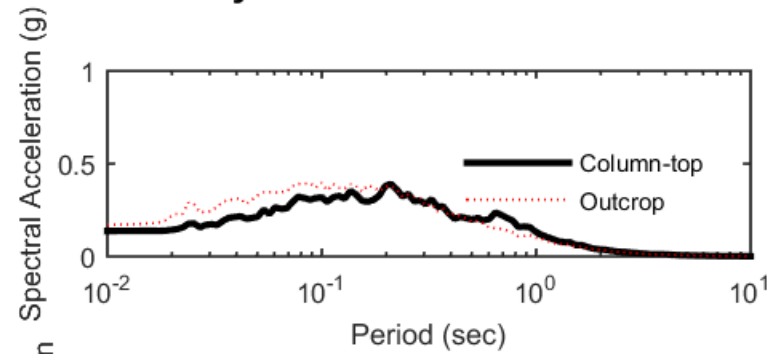
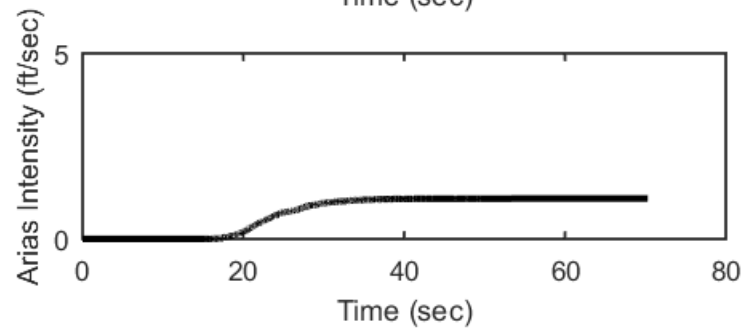
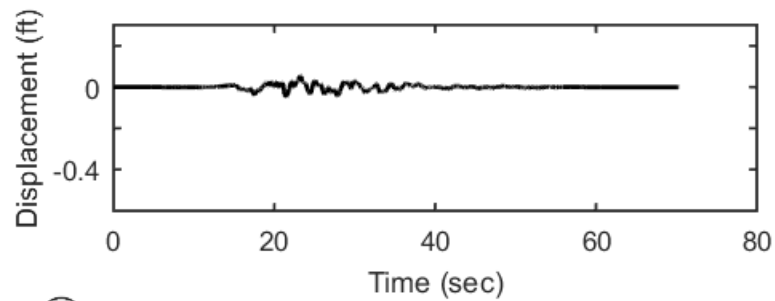
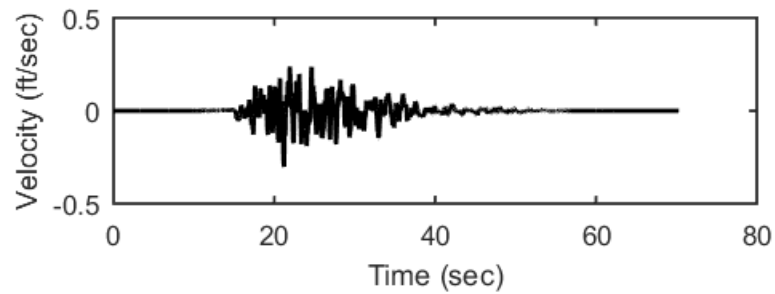
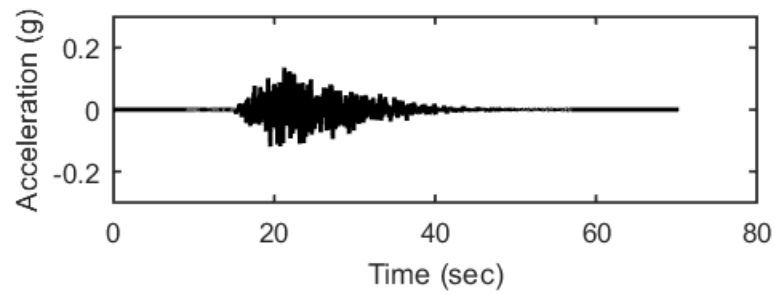
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



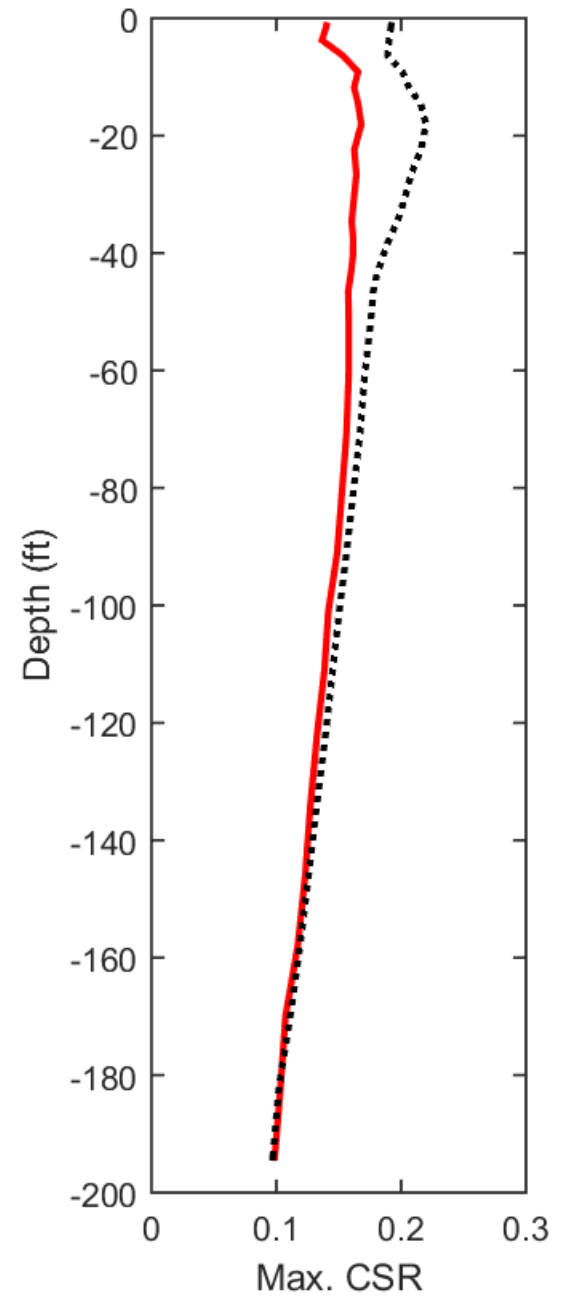
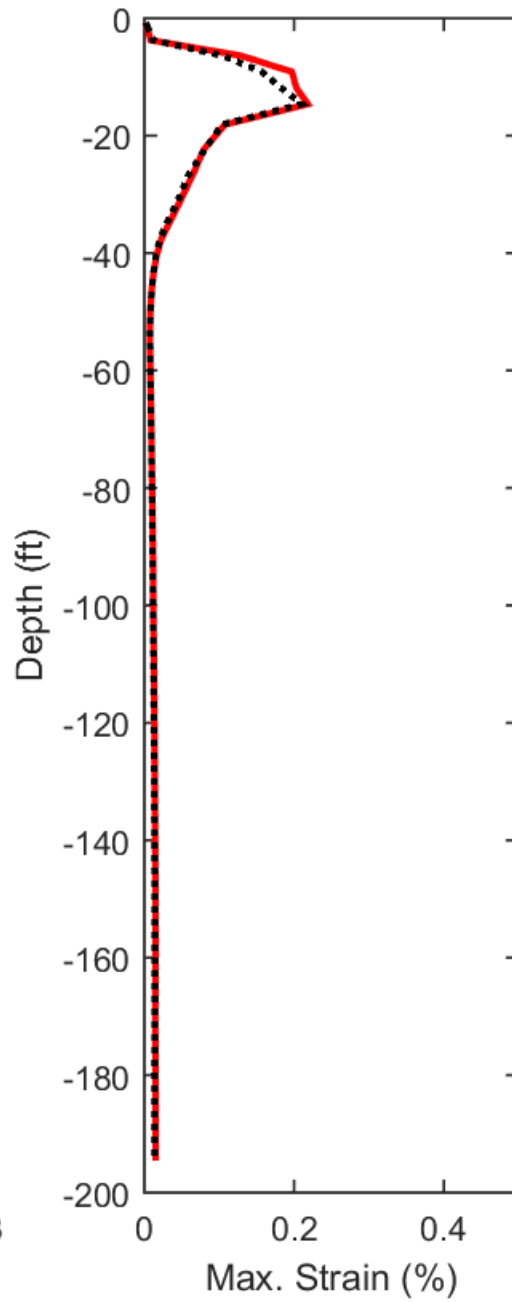
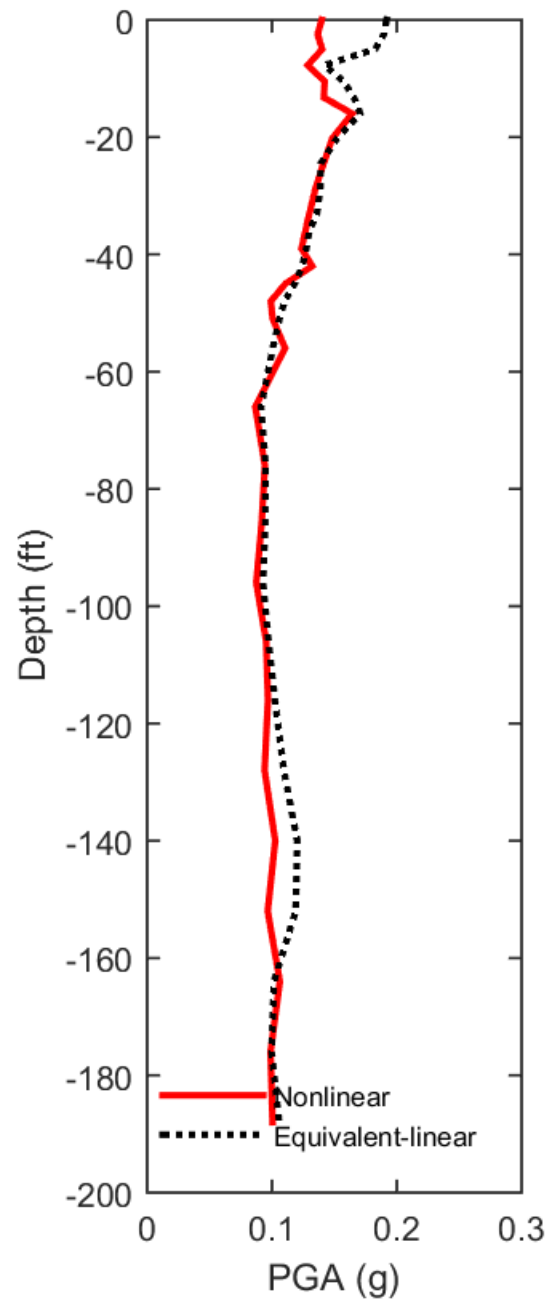
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



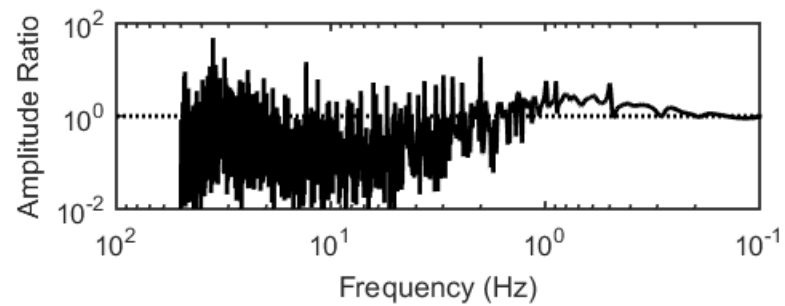
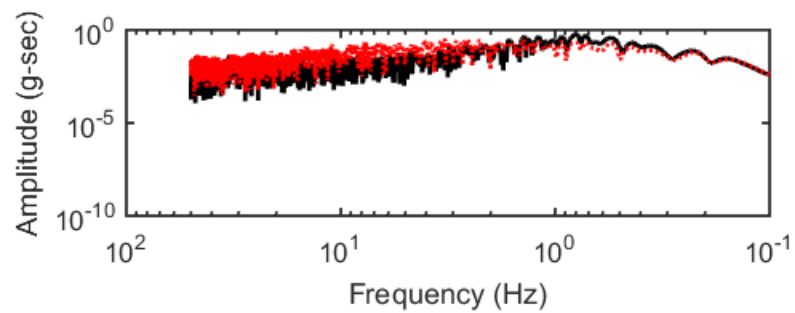
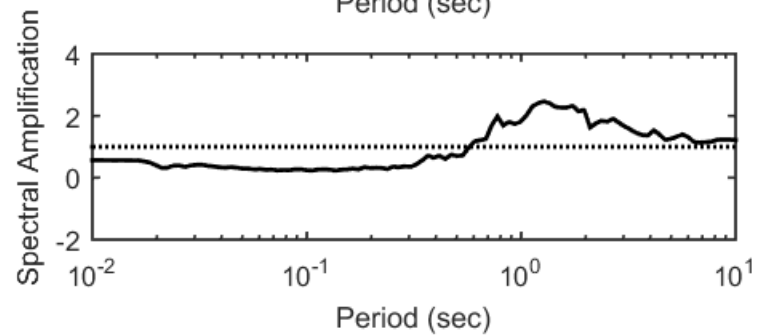
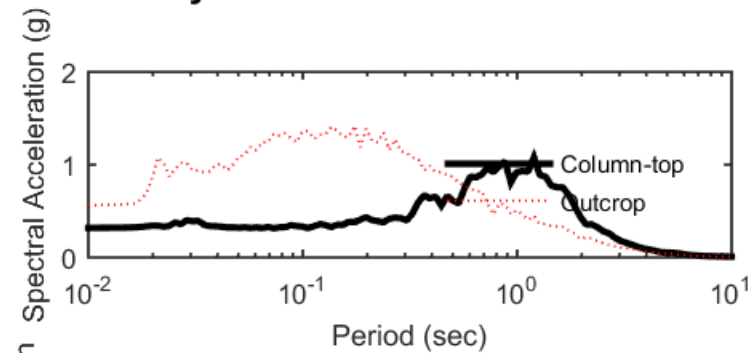
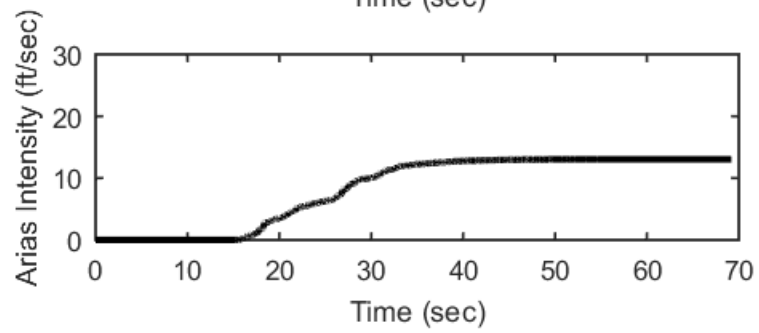
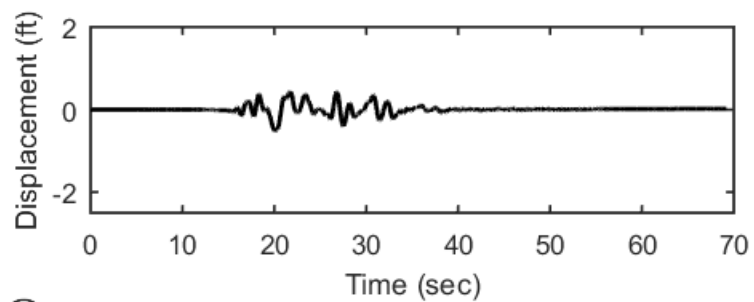
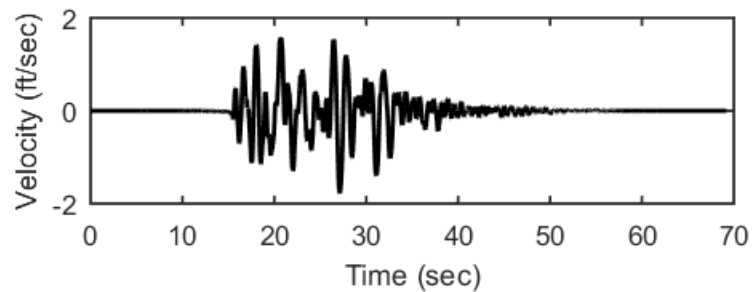
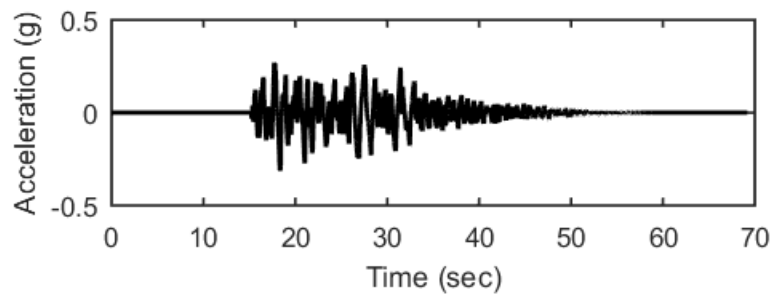
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



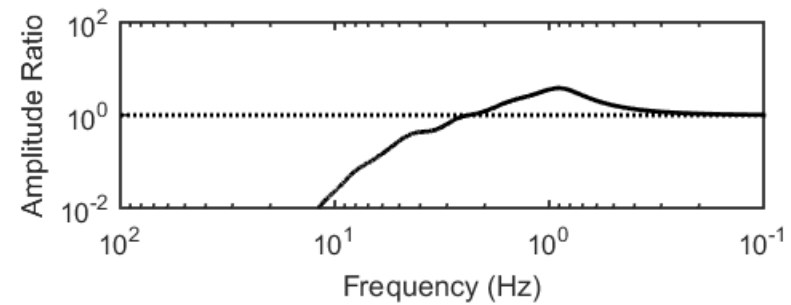
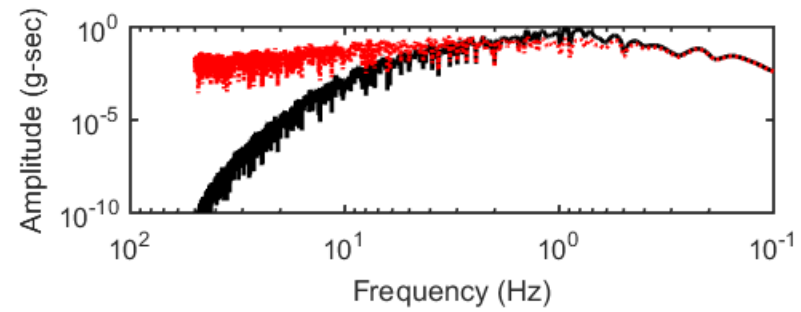
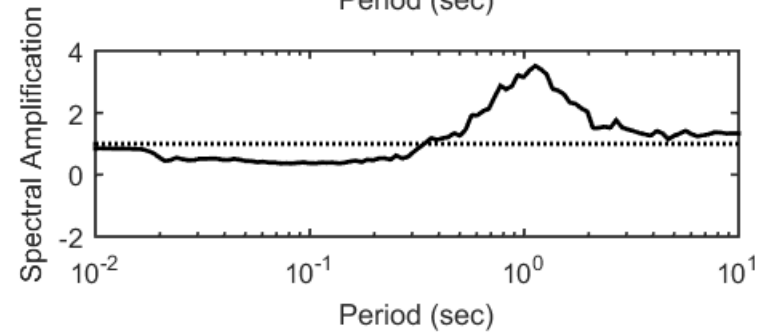
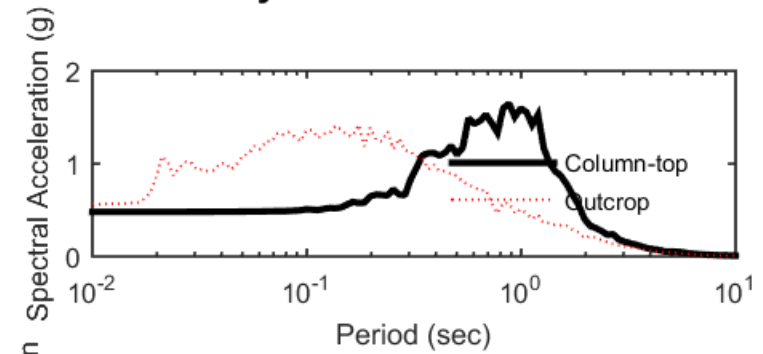
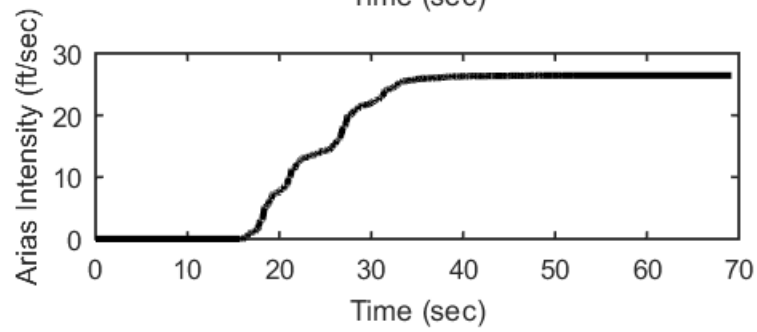
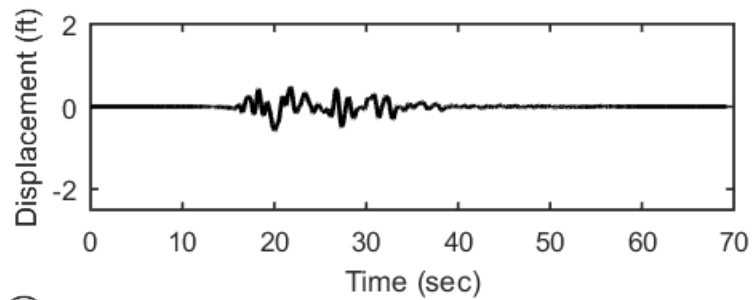
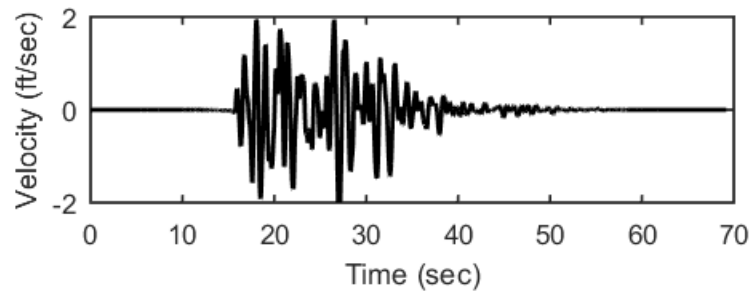
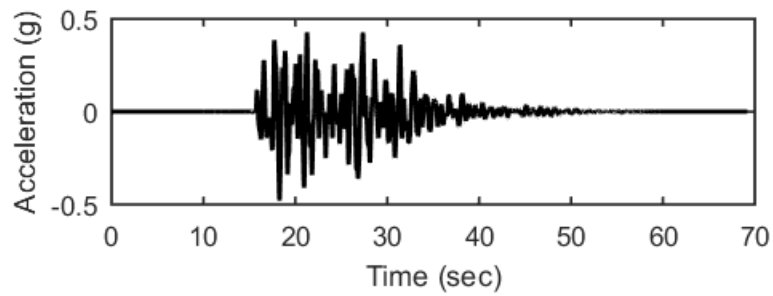
### Profile outputs for Motion: FEE7



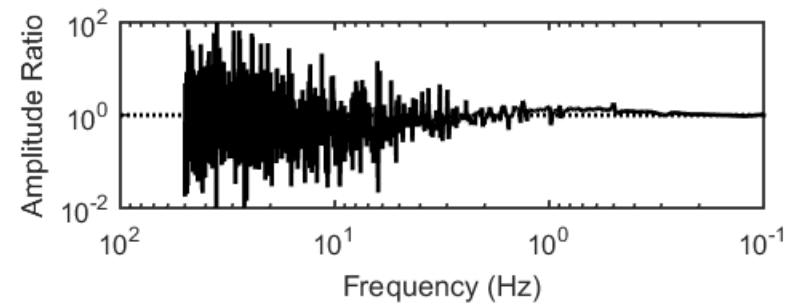
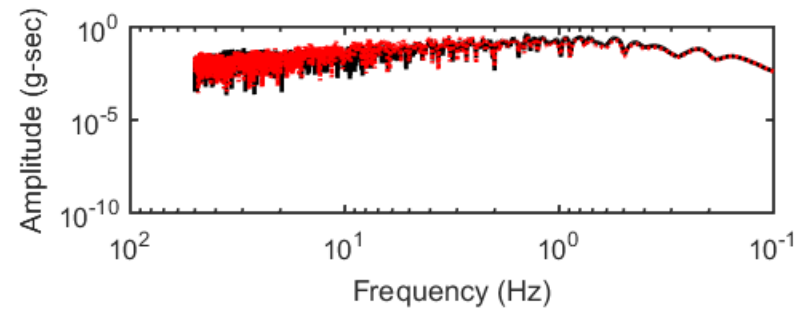
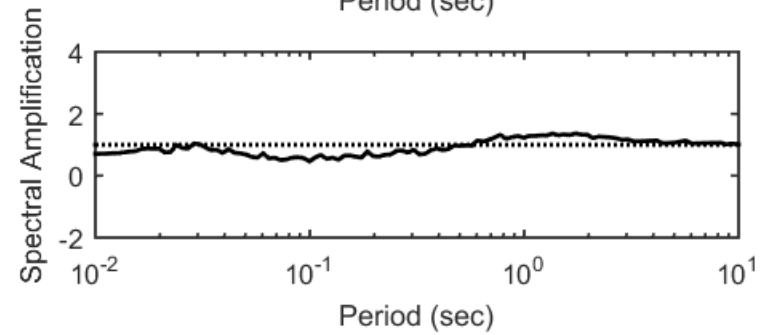
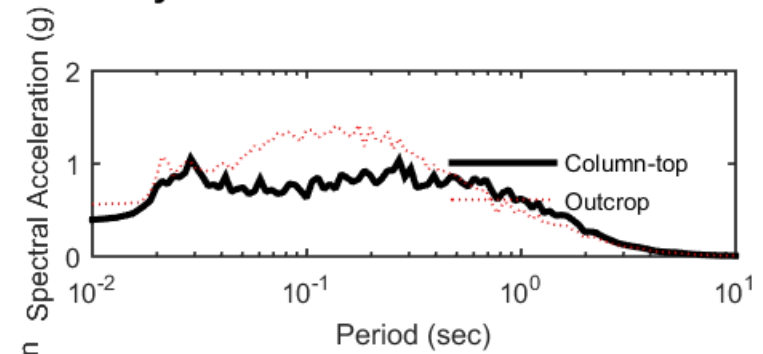
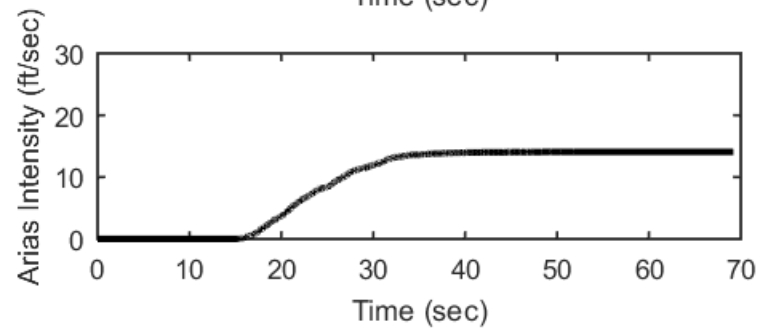
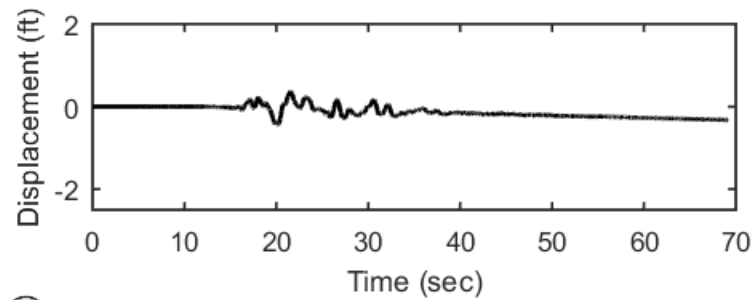
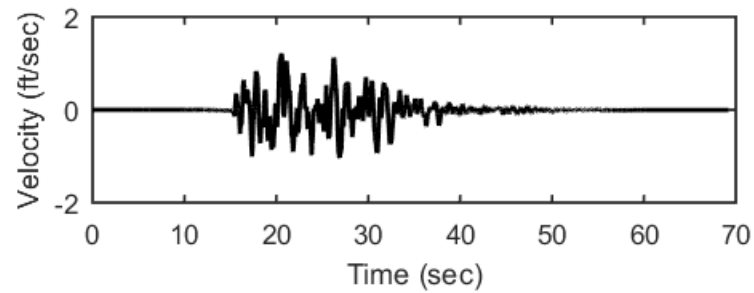
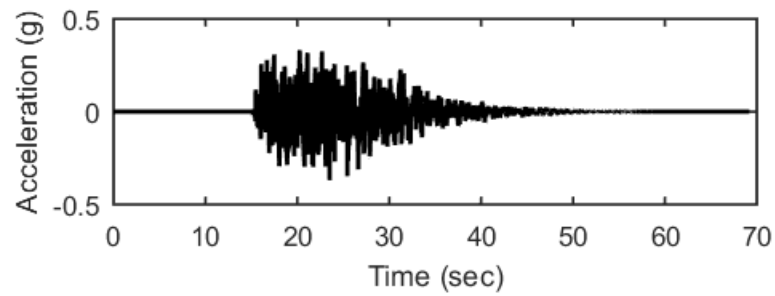
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



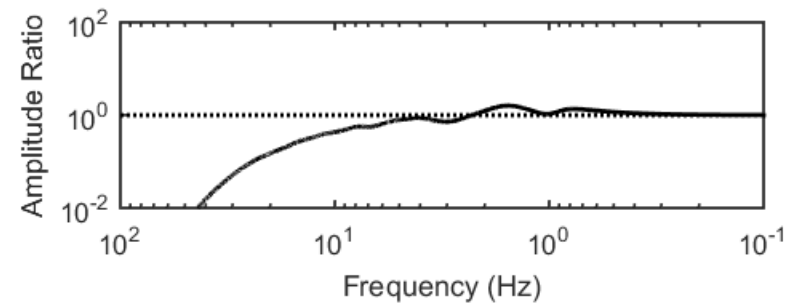
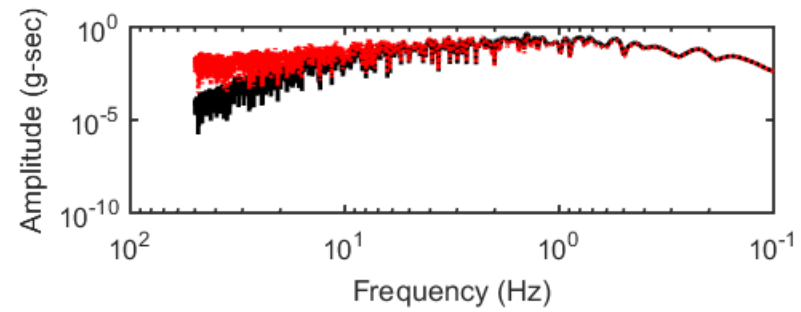
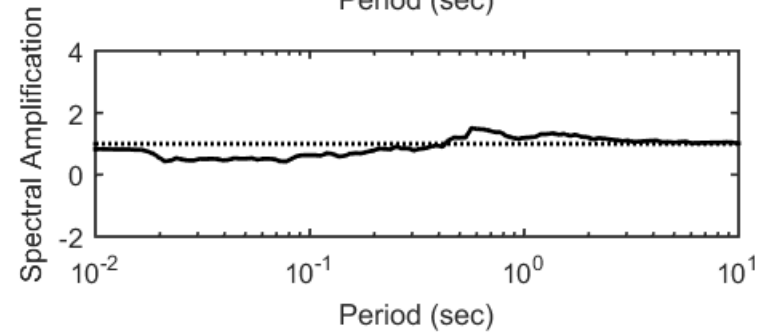
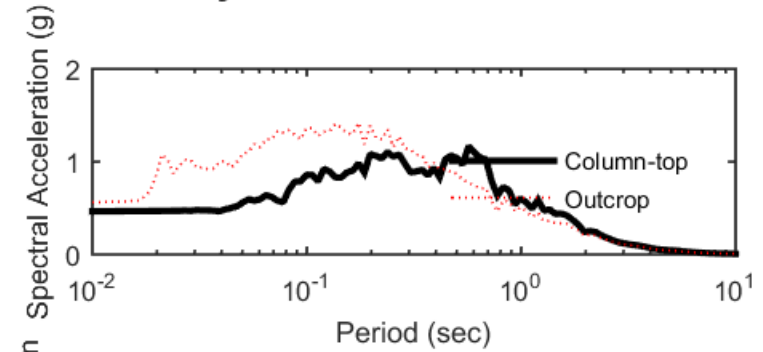
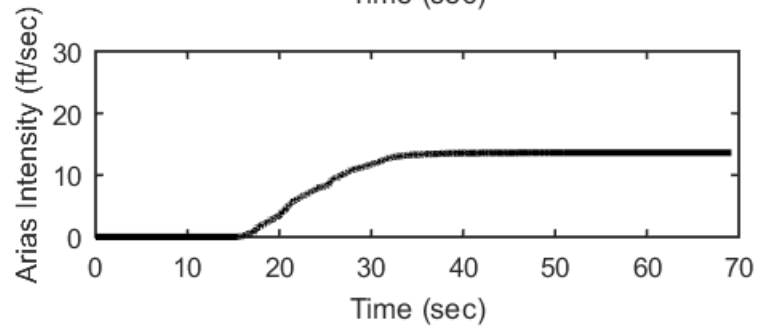
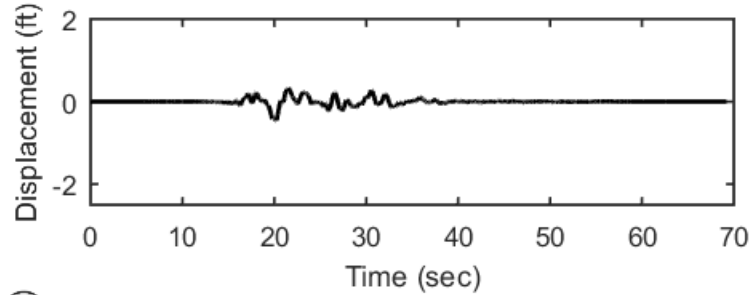
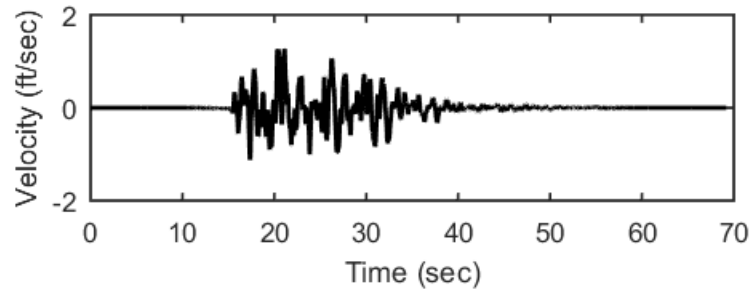
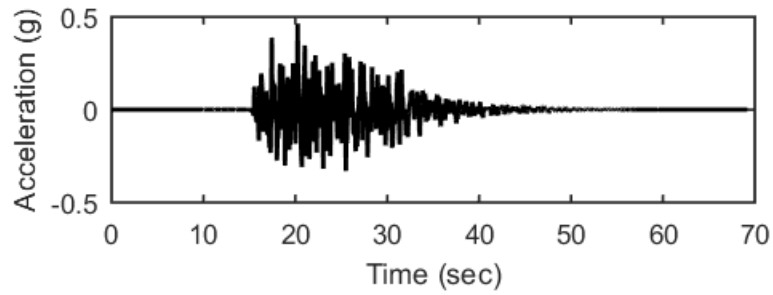
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1

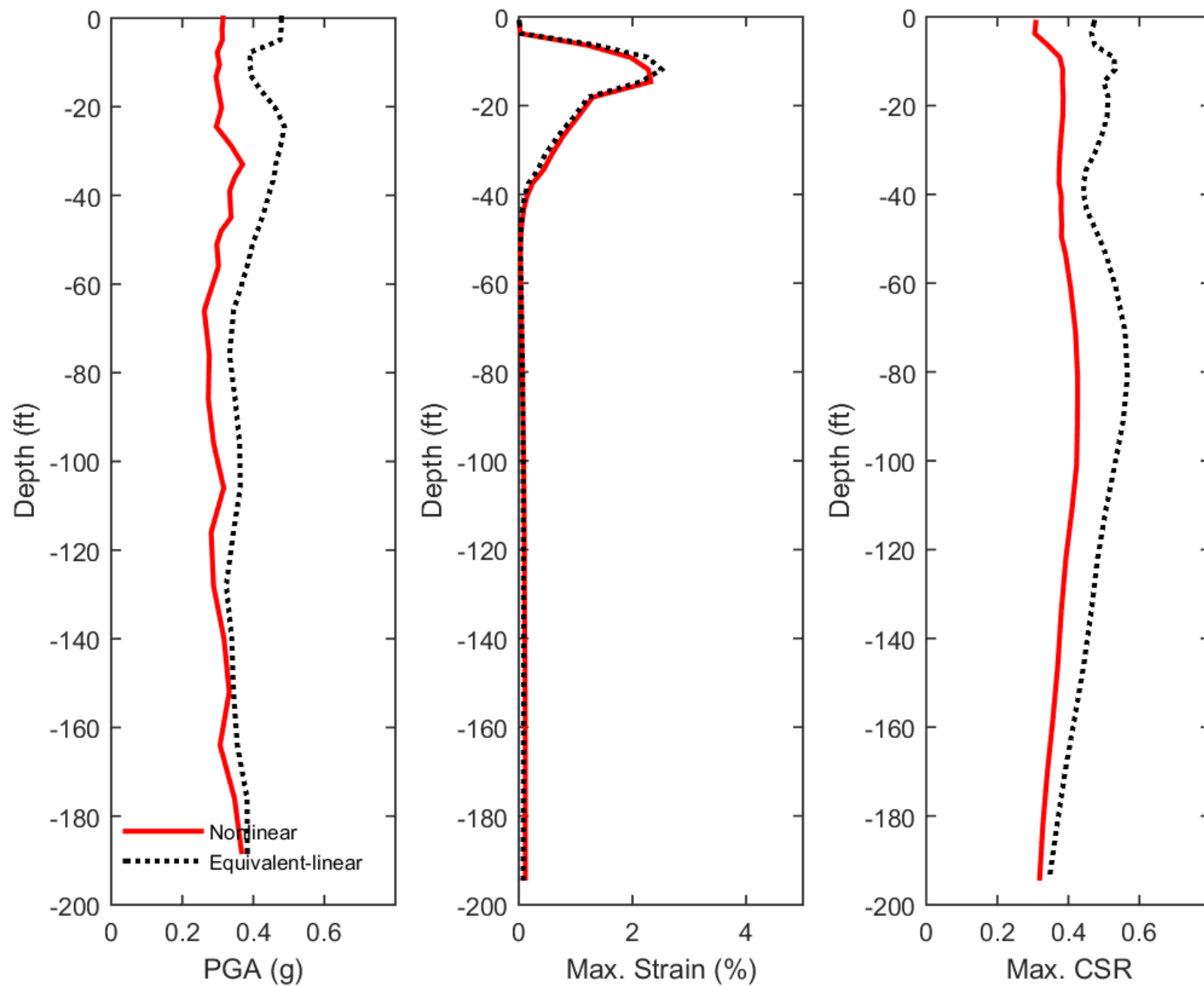


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1

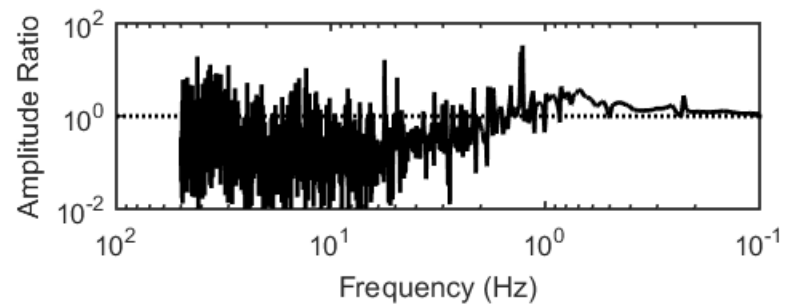
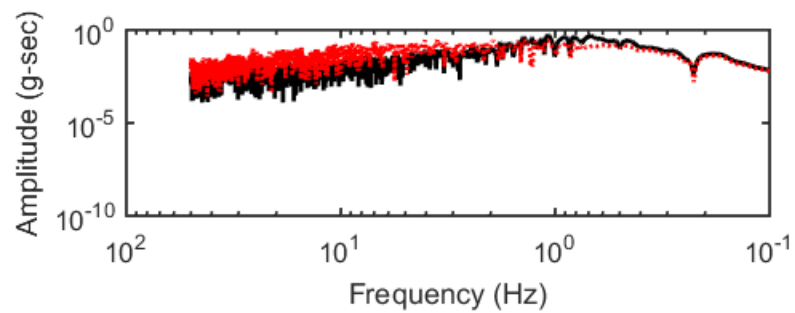
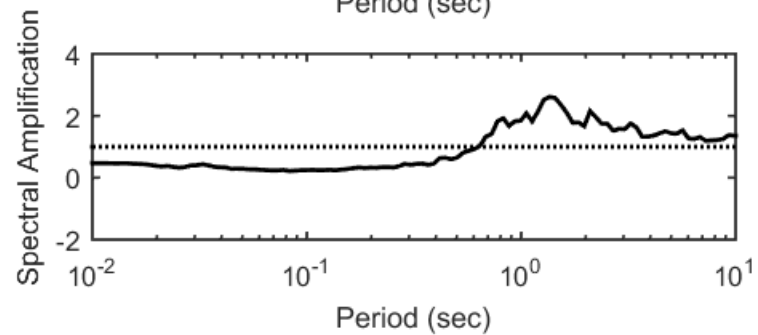
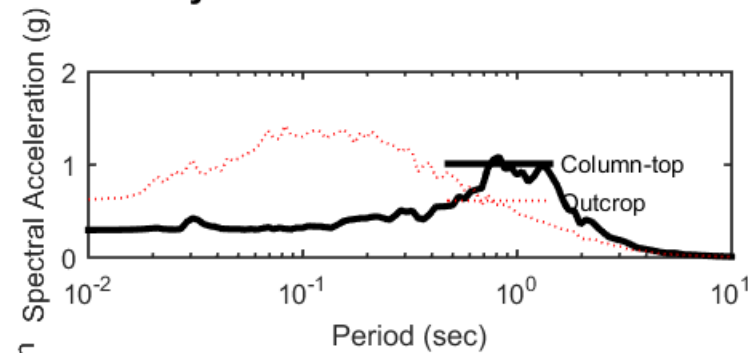
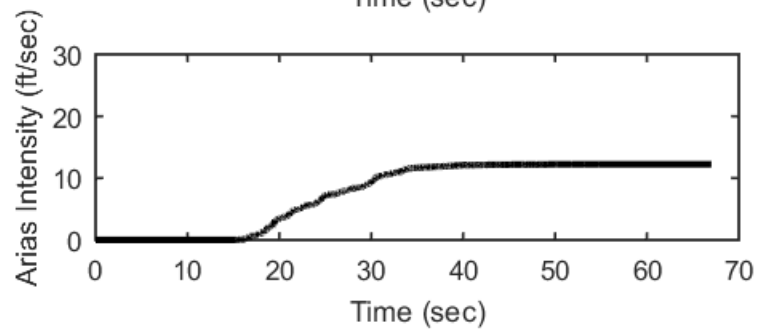
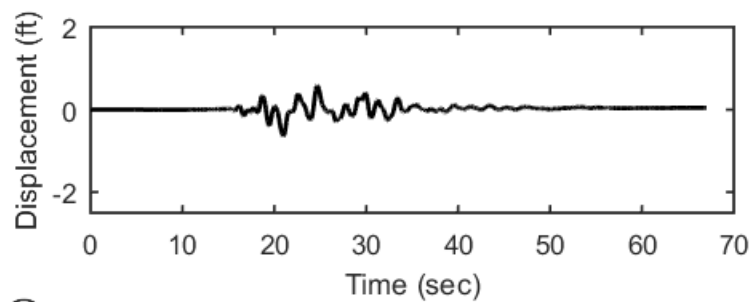
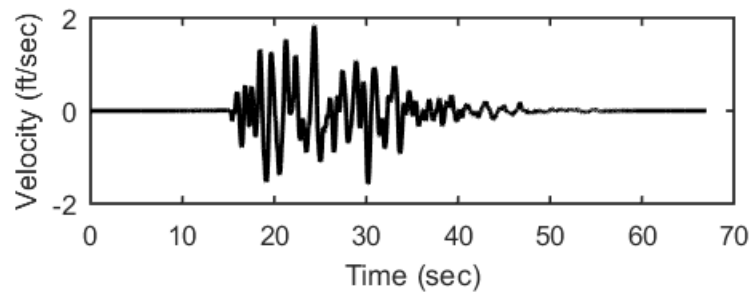
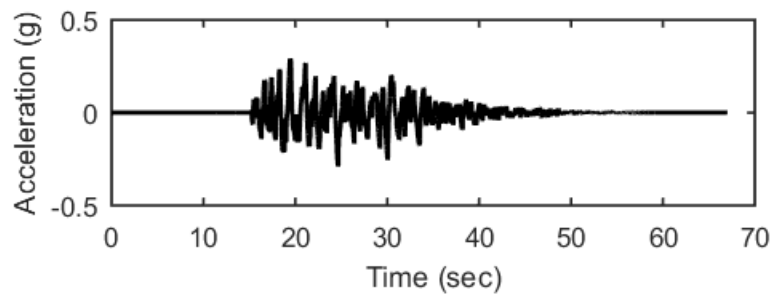




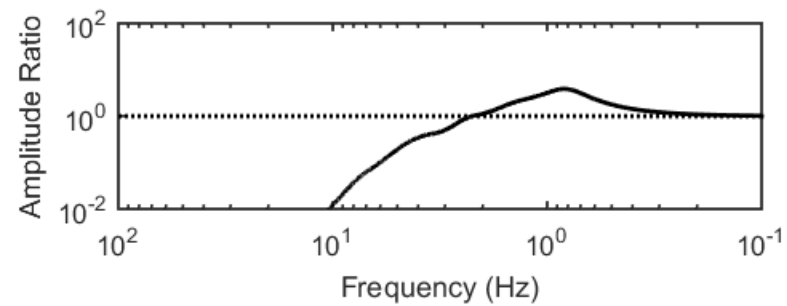
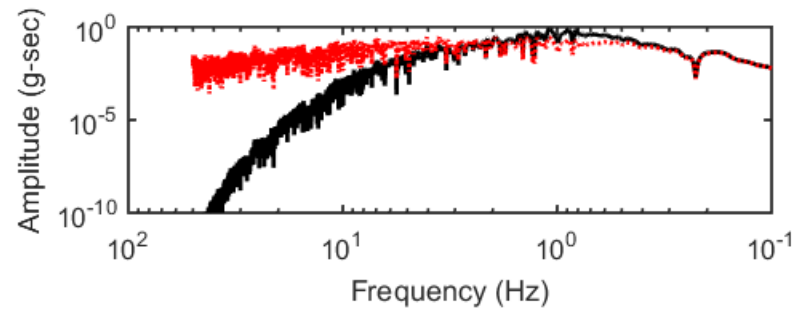
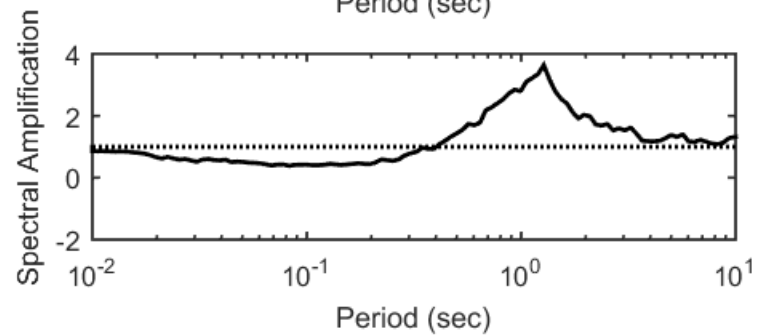
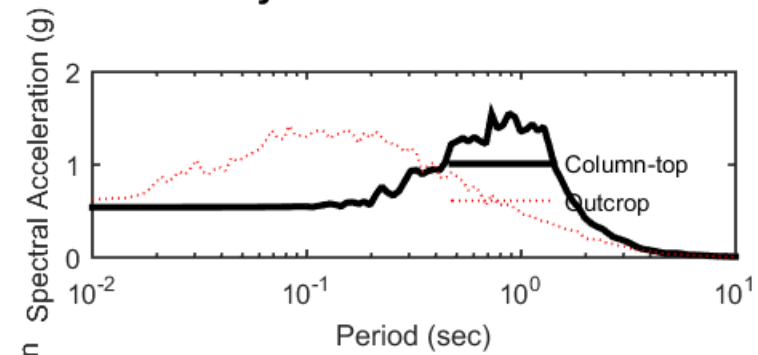
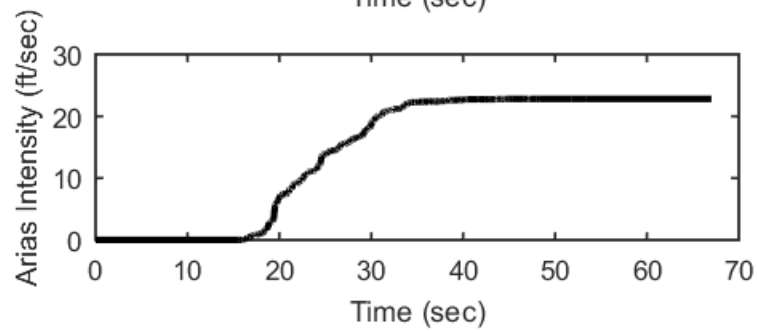
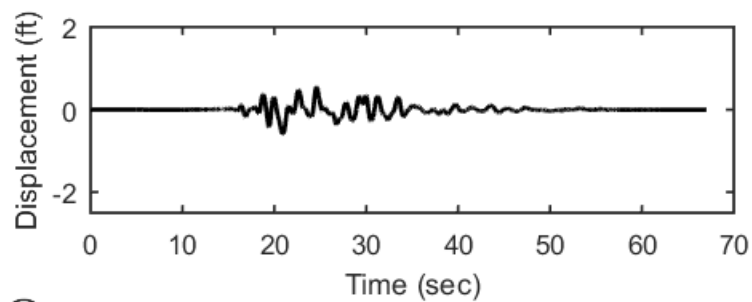
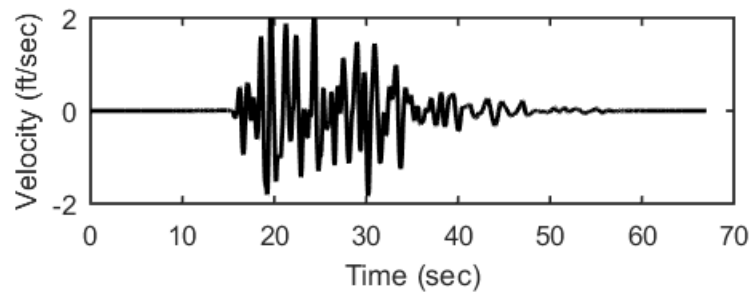
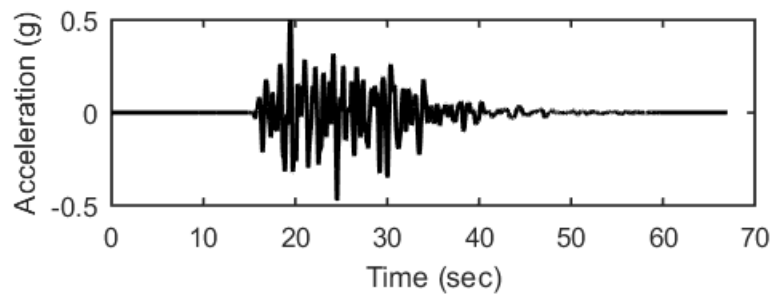
### Profile outputs for Motion: SEE1



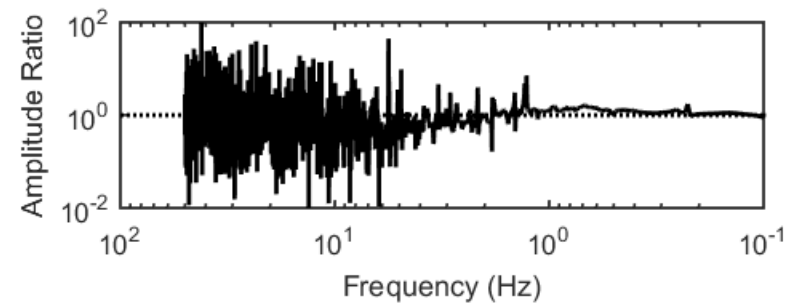
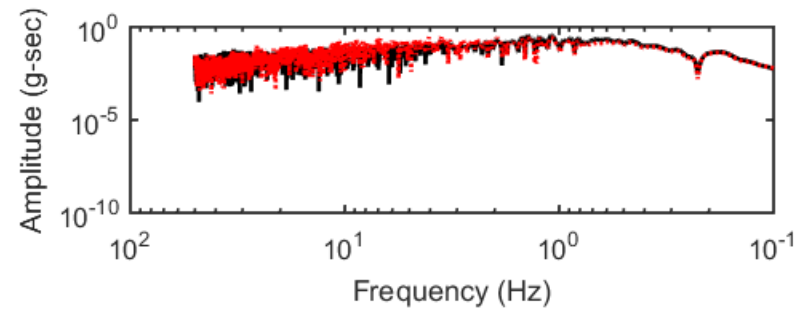
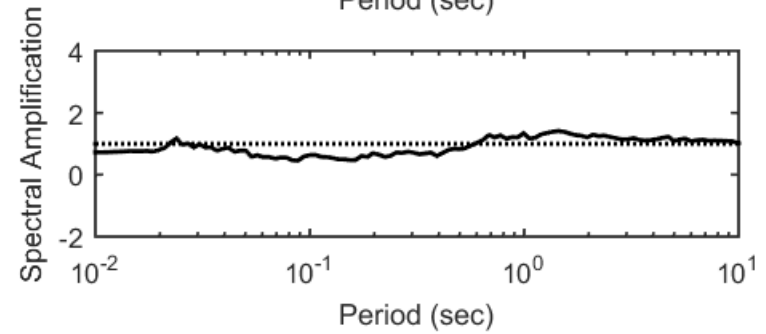
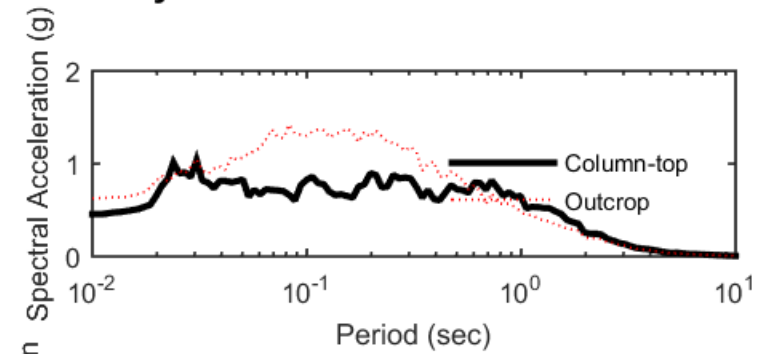
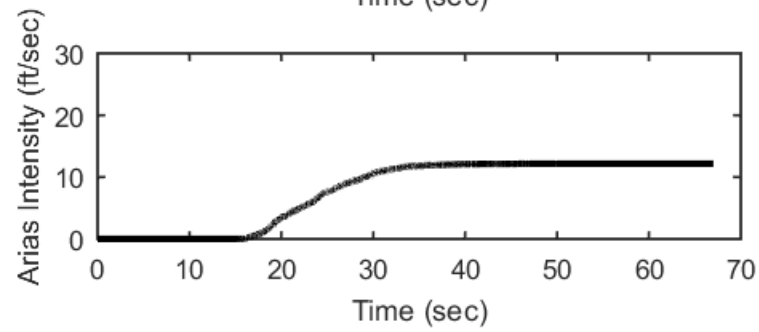
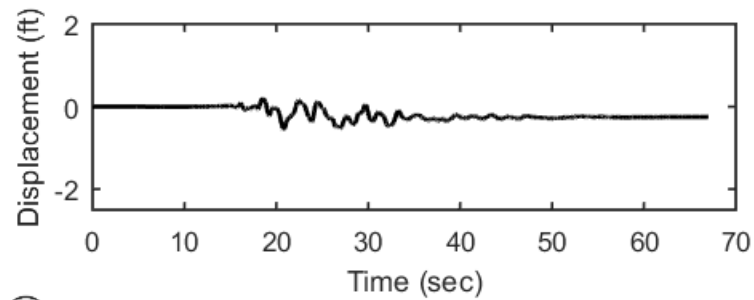
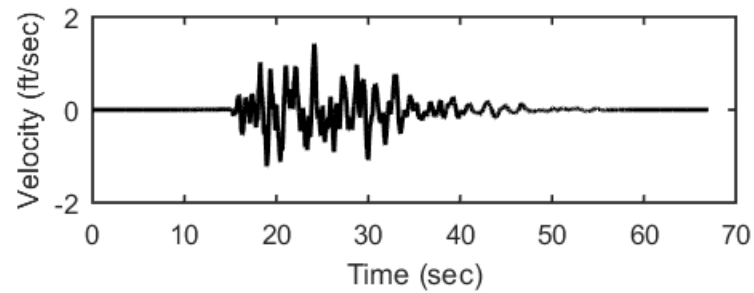
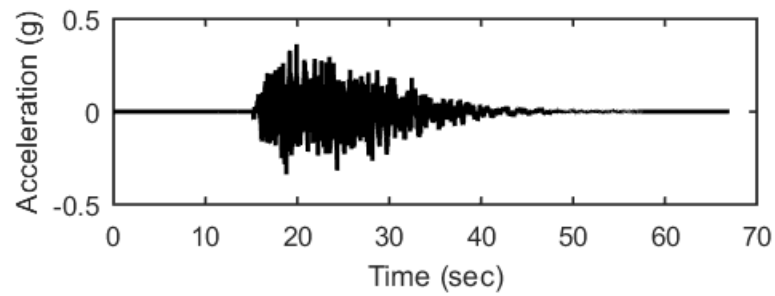
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



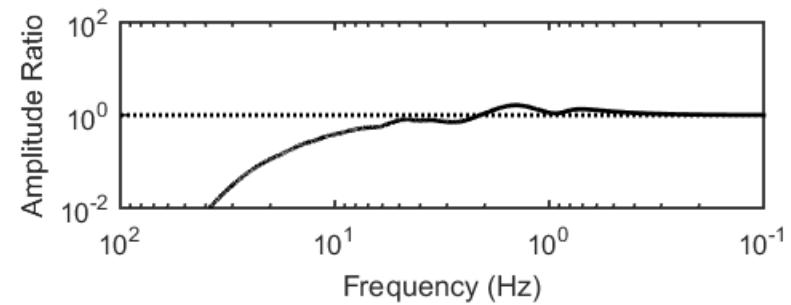
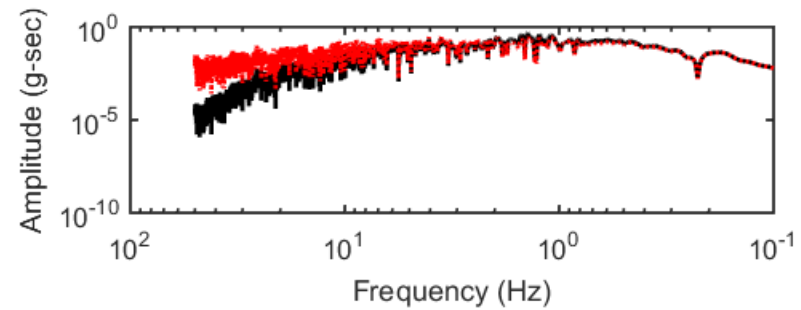
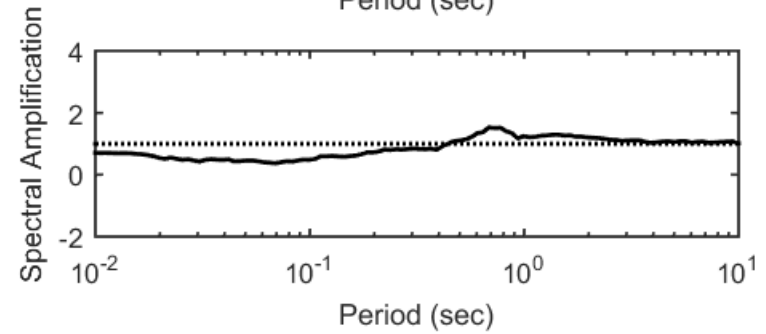
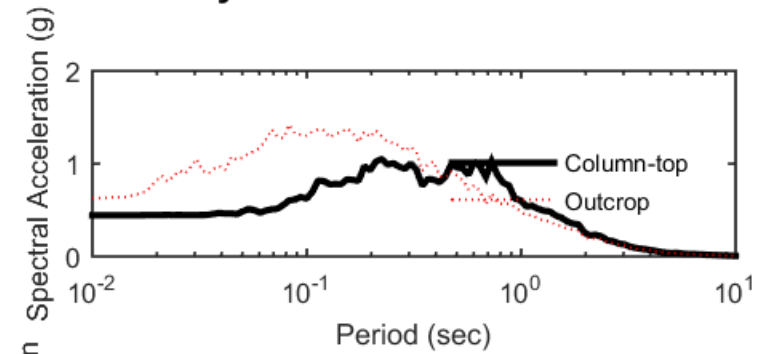
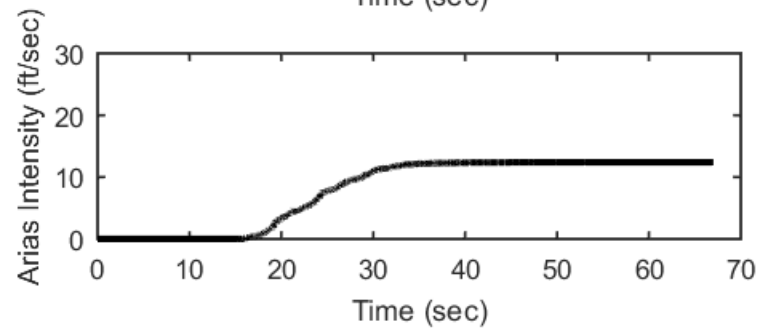
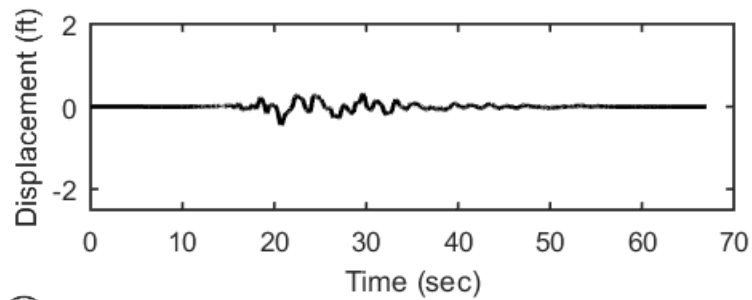
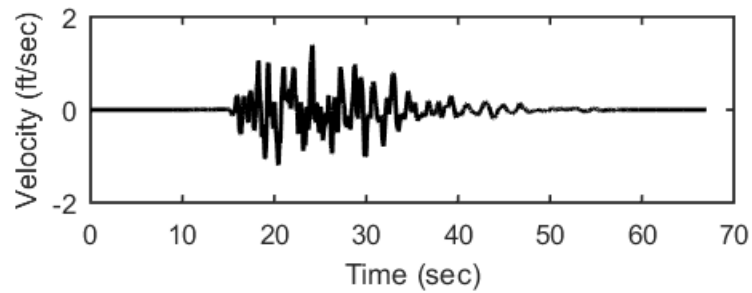
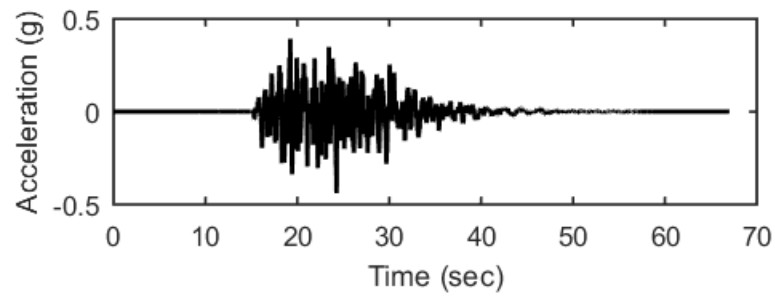
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



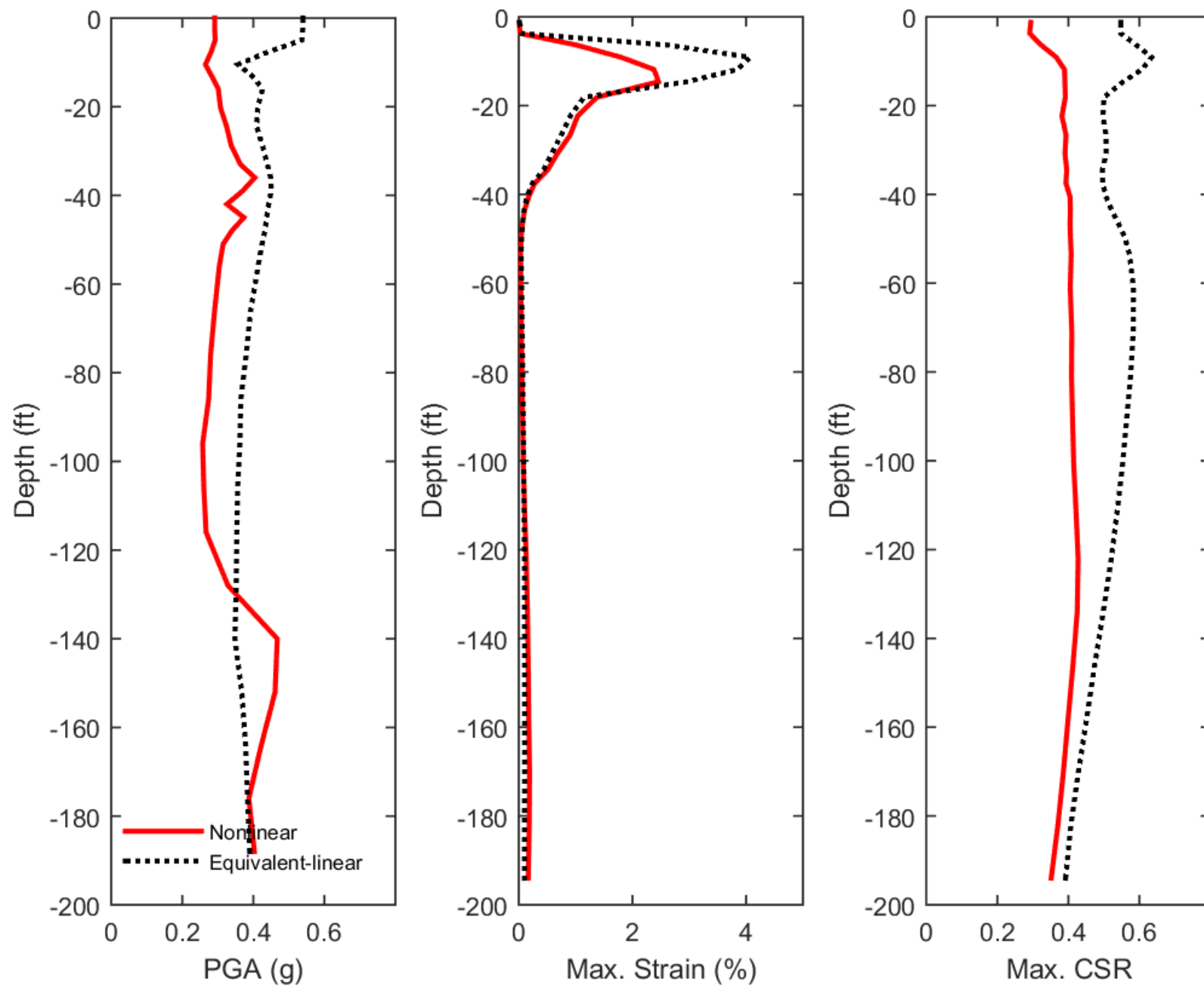
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



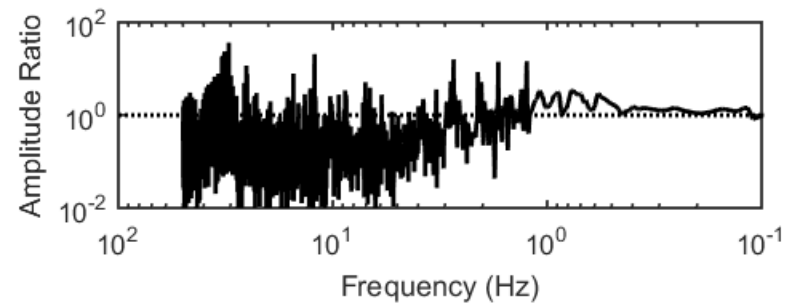
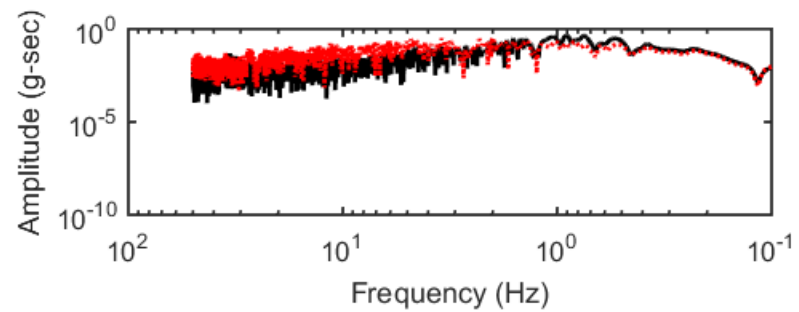
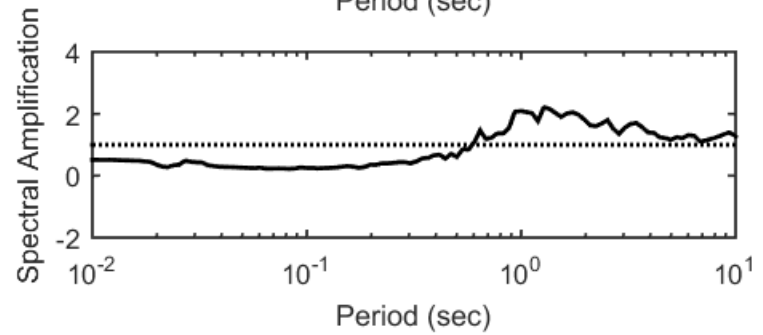
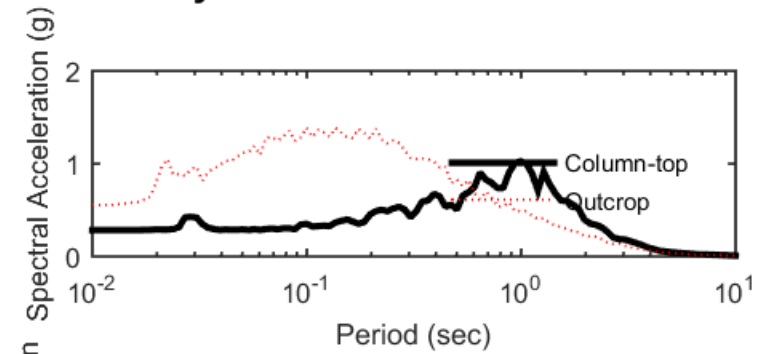
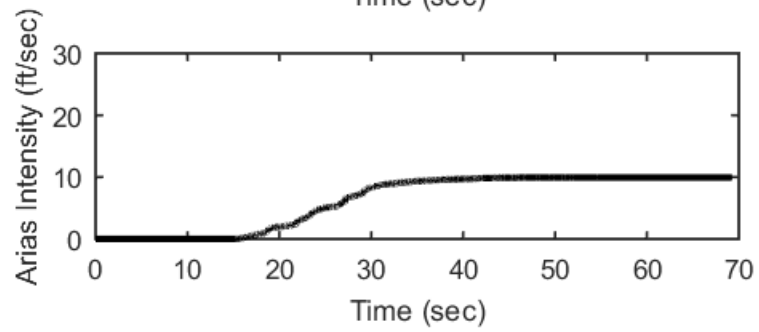
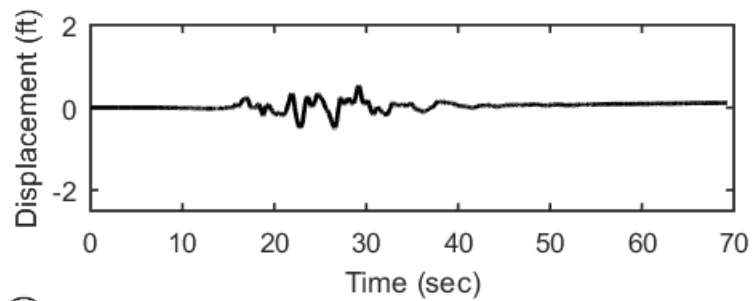
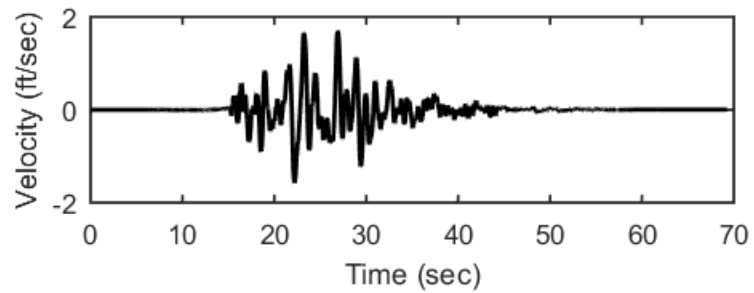
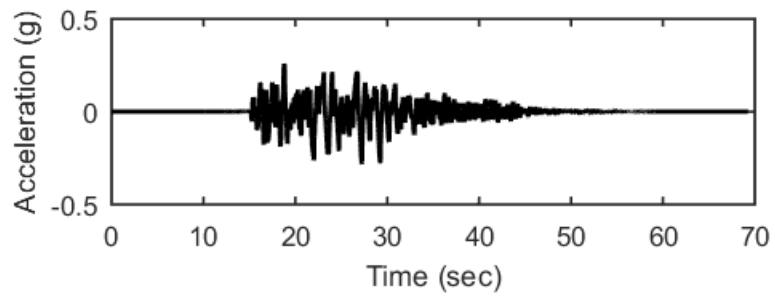
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



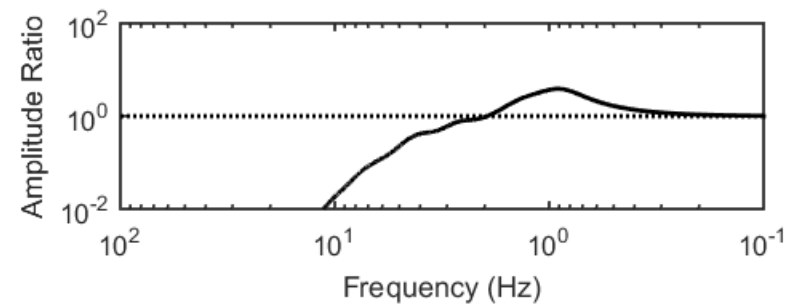
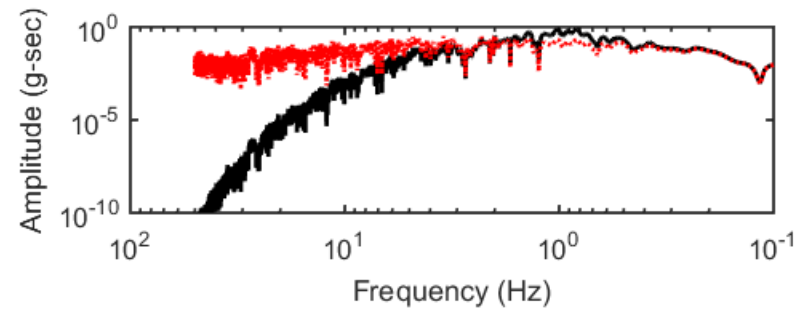
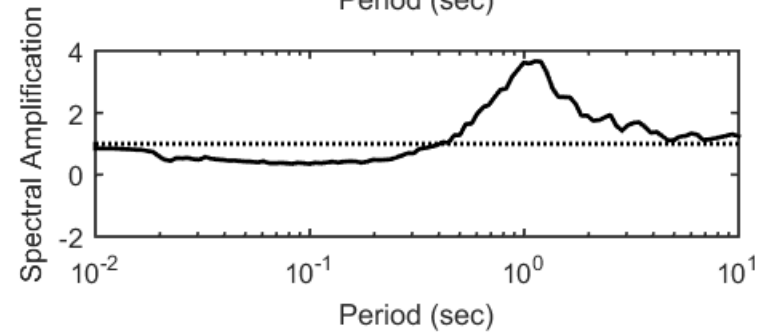
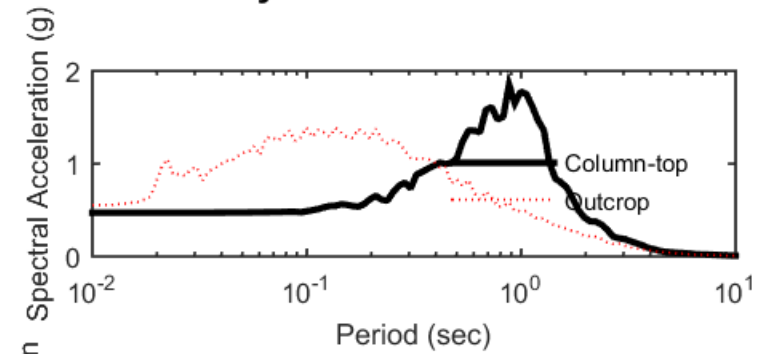
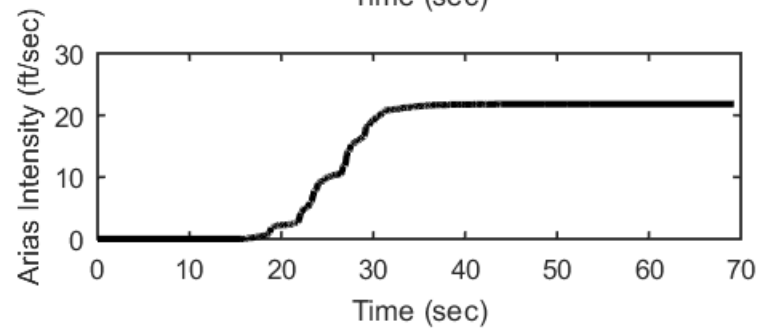
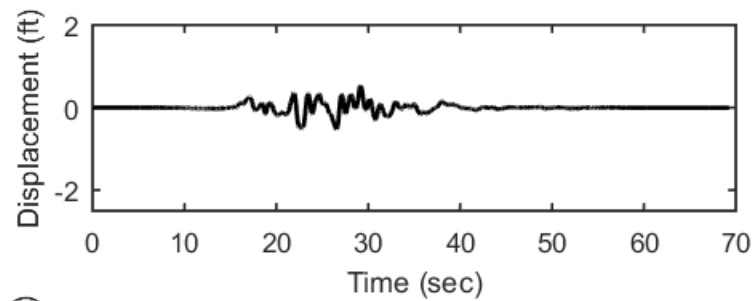
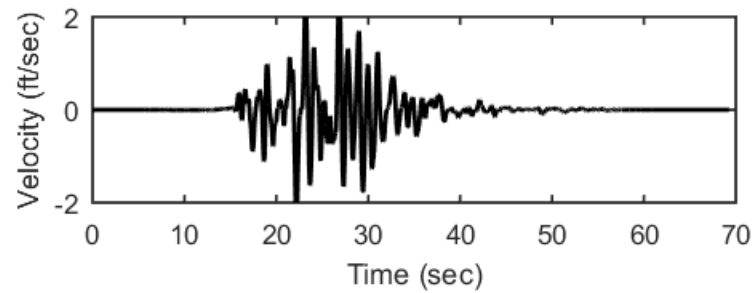
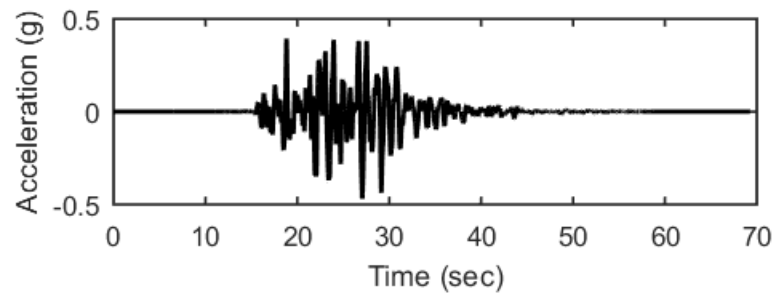
### Profile outputs for Motion: SEE2



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3

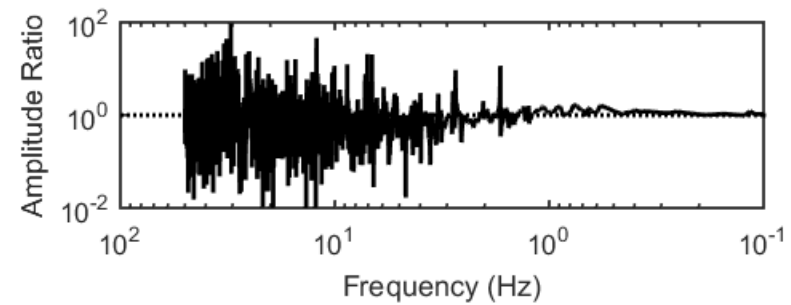
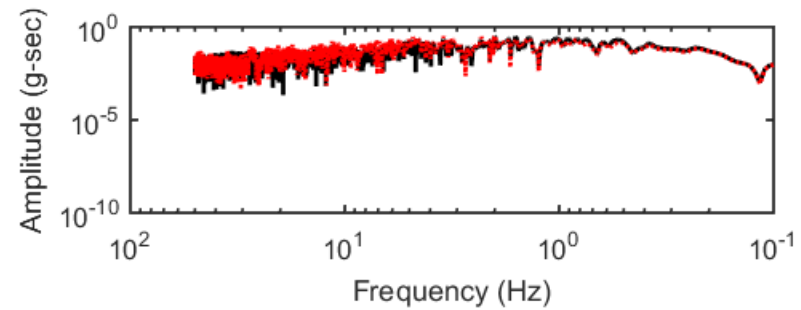
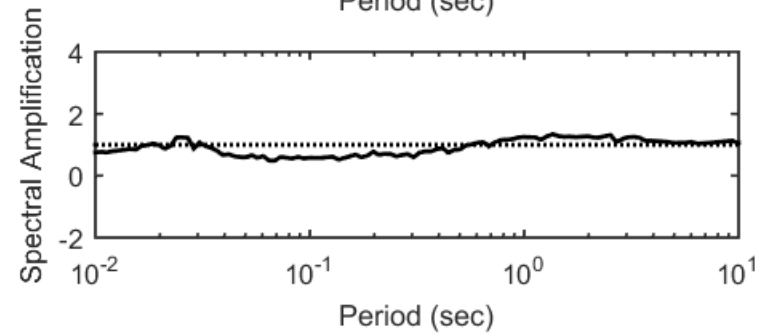
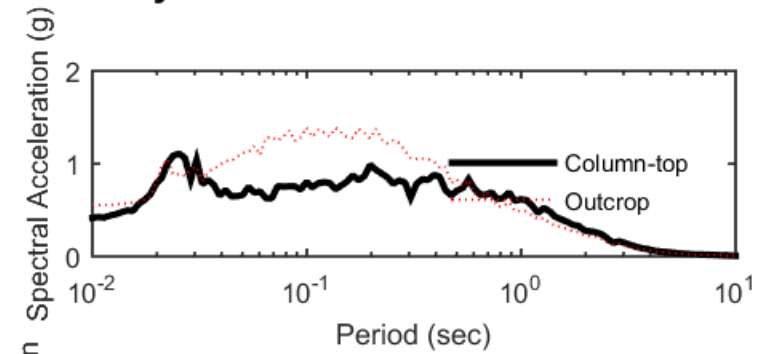
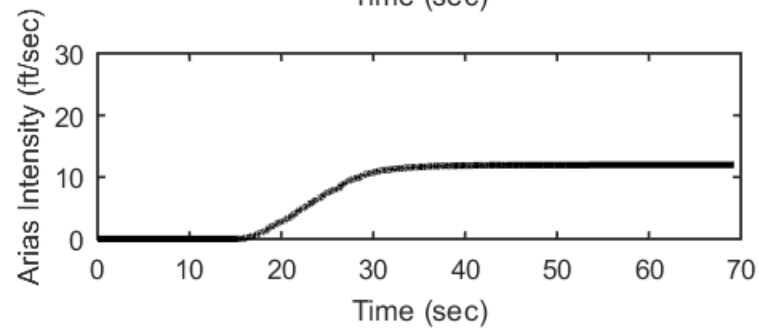
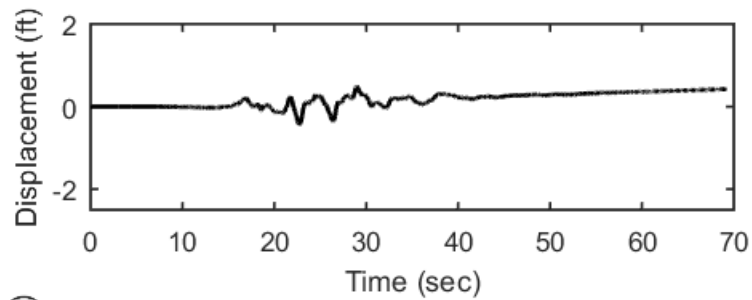
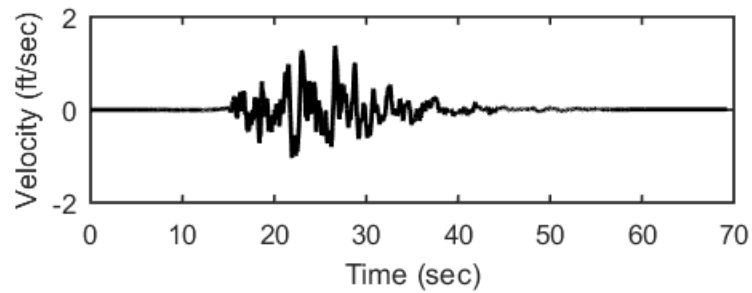
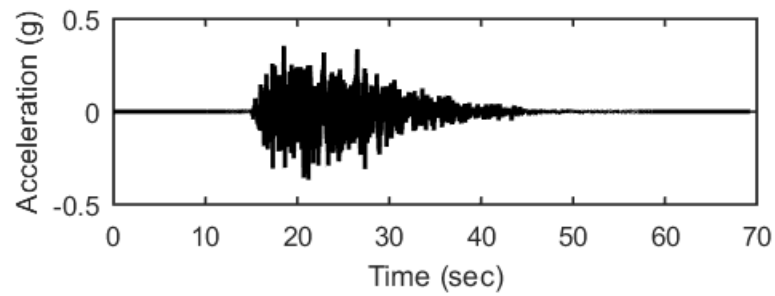


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3

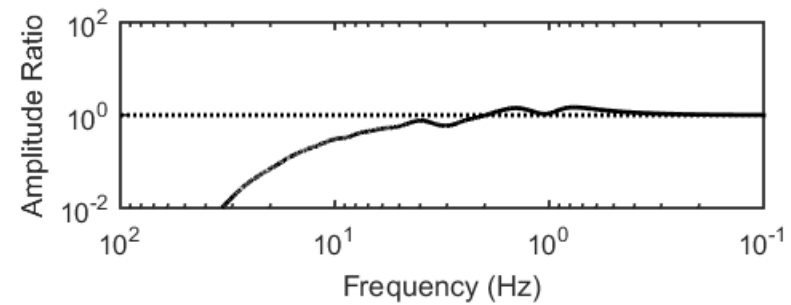
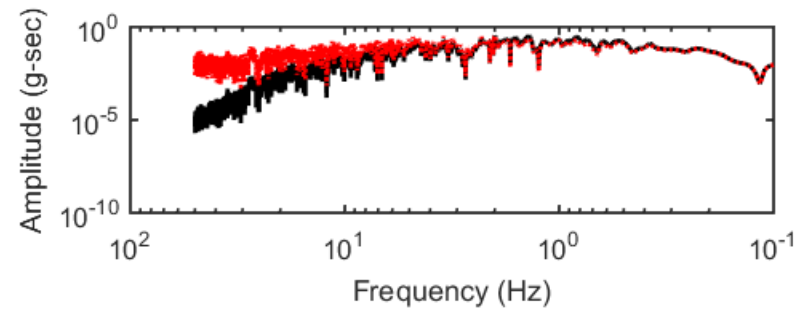
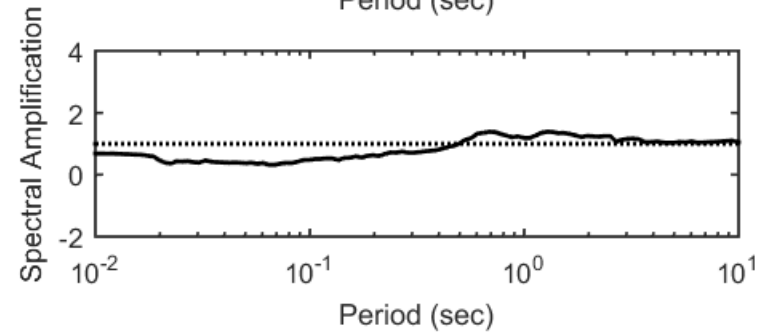
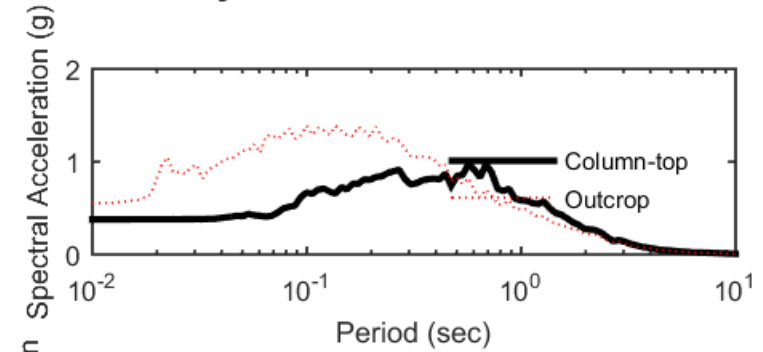
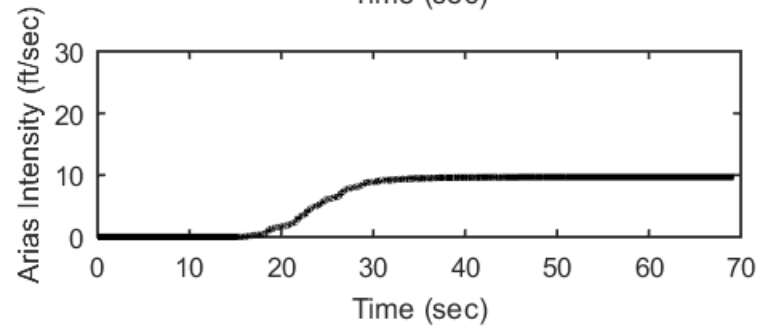
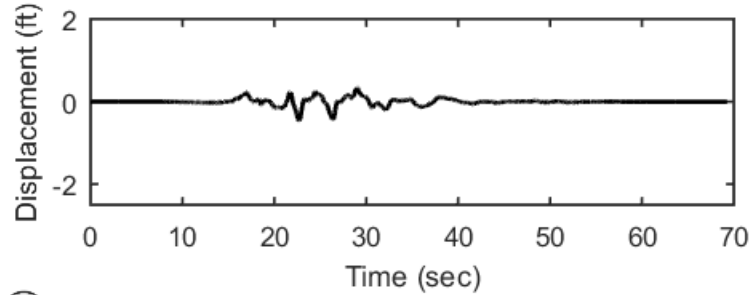
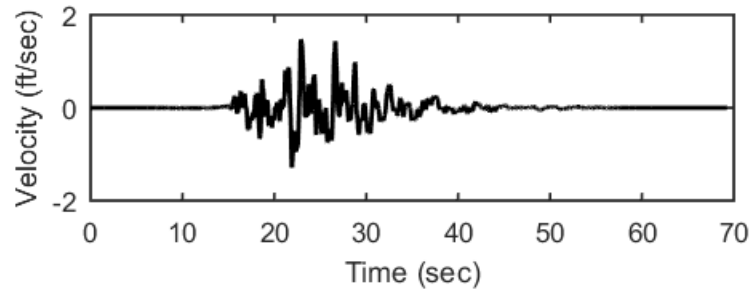
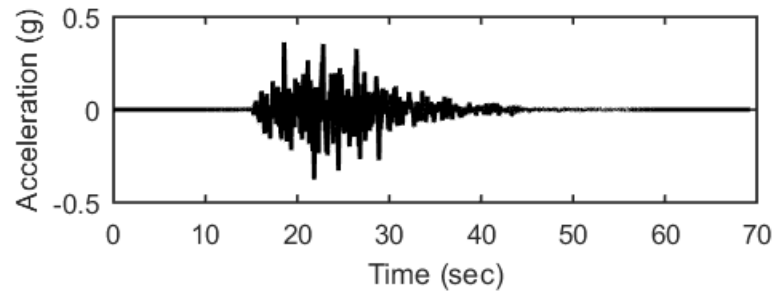




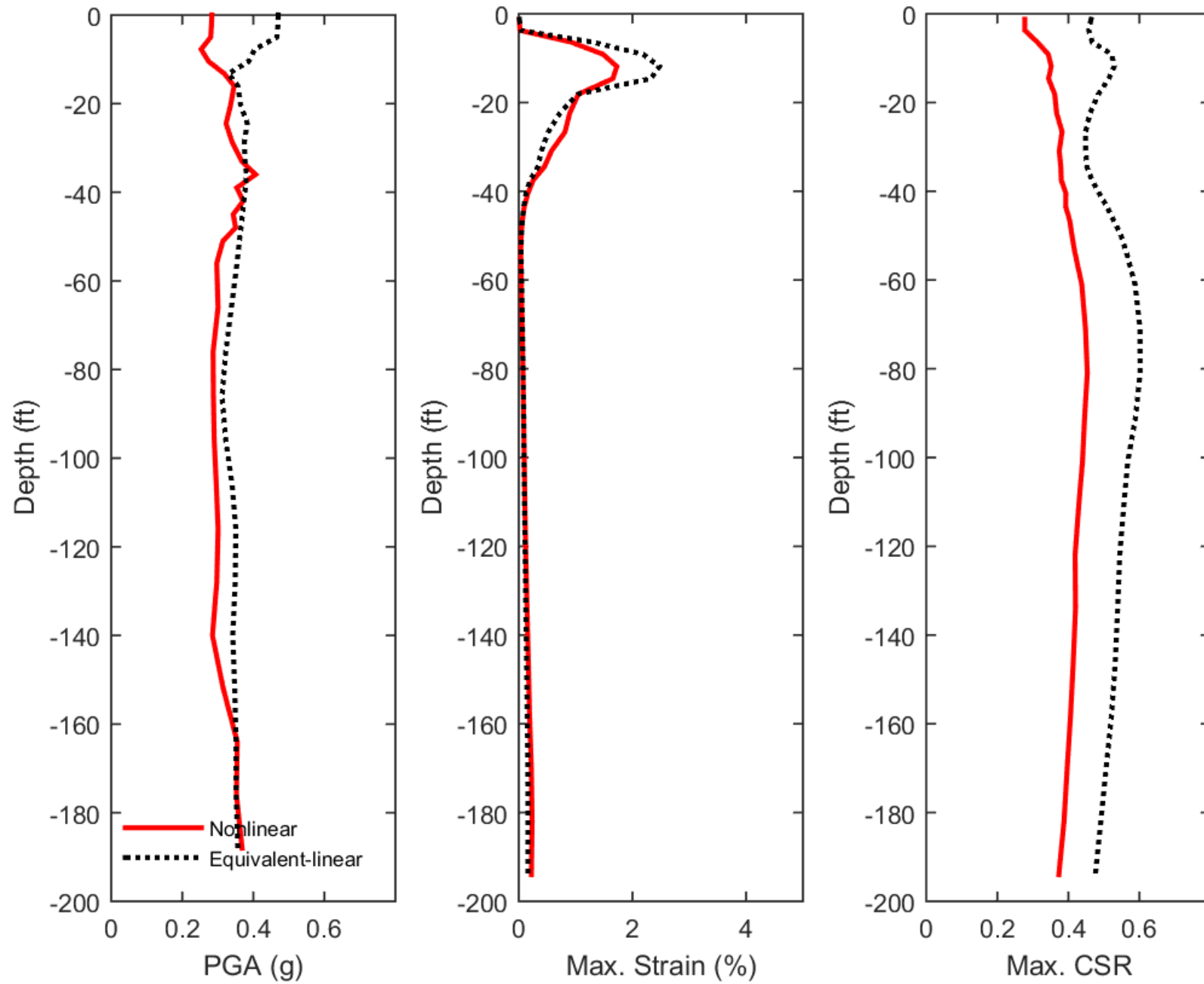
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



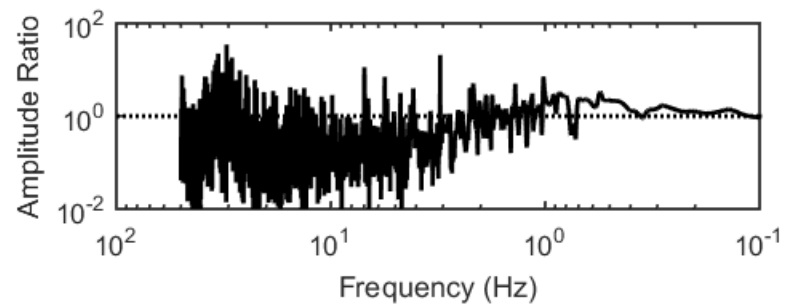
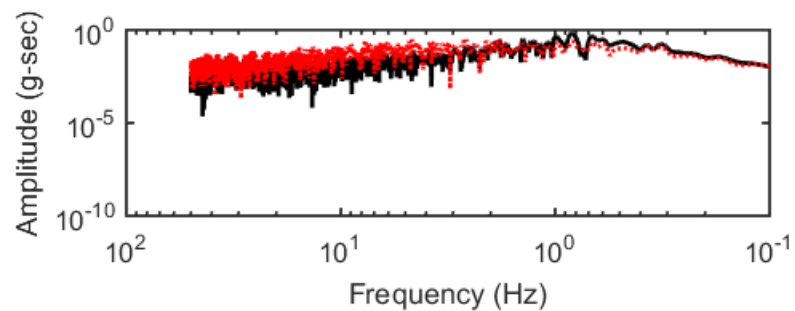
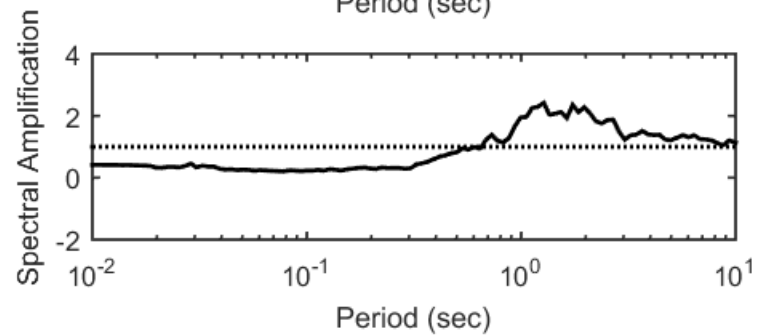
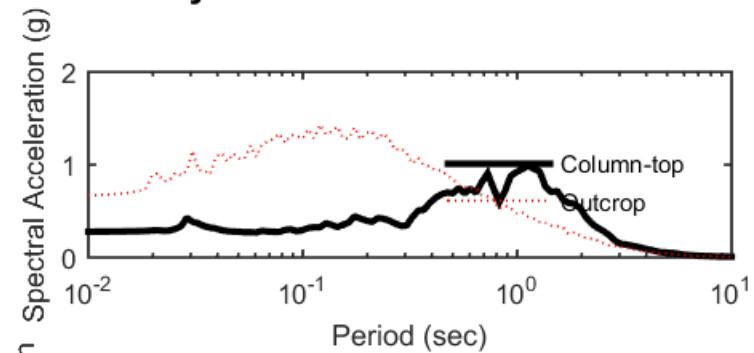
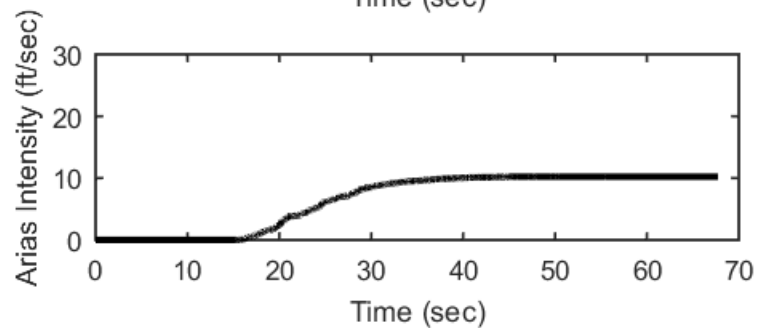
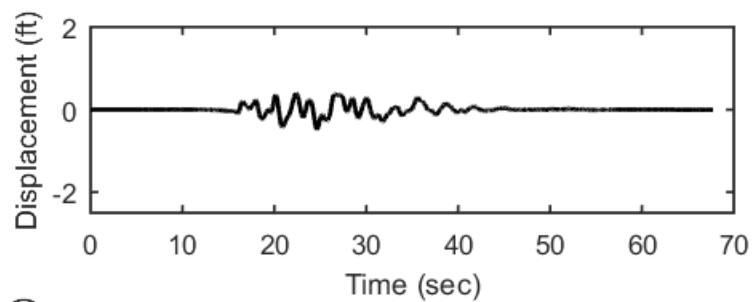
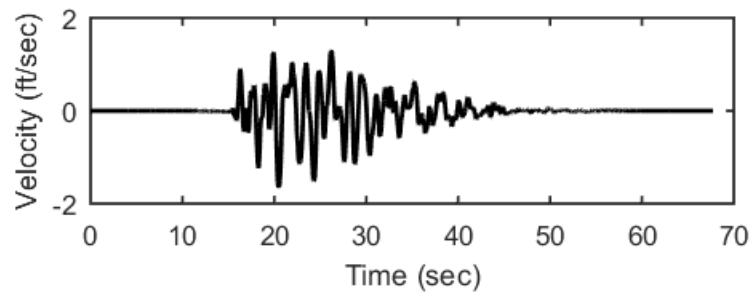
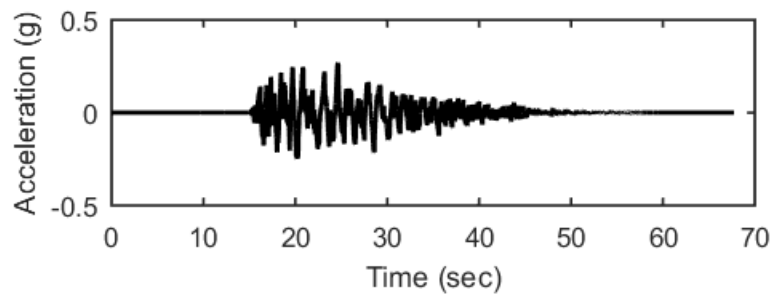
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



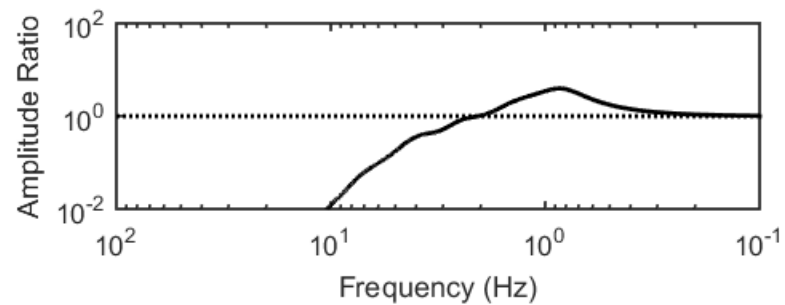
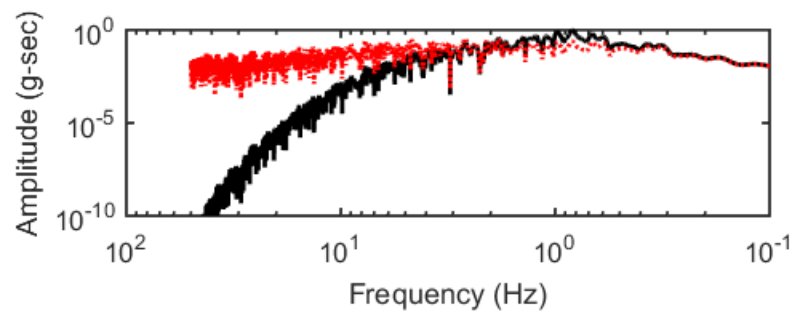
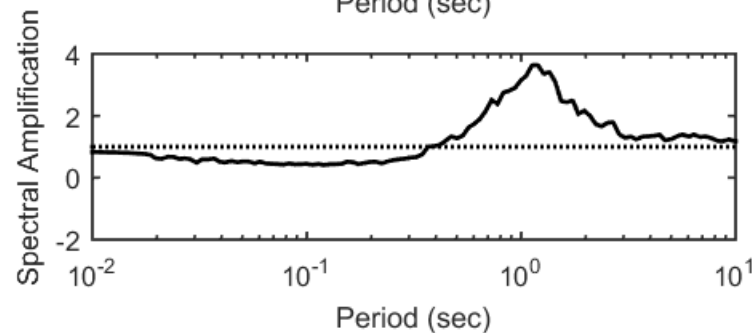
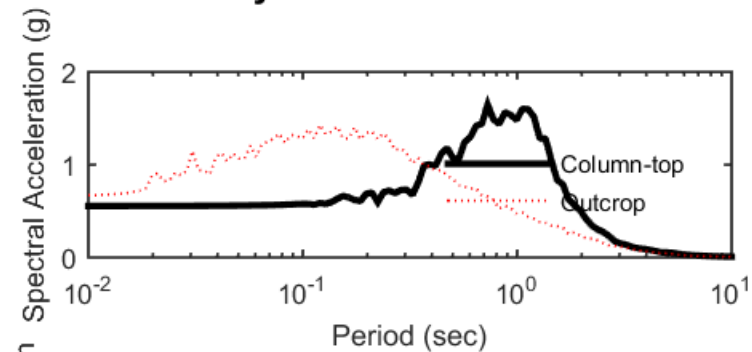
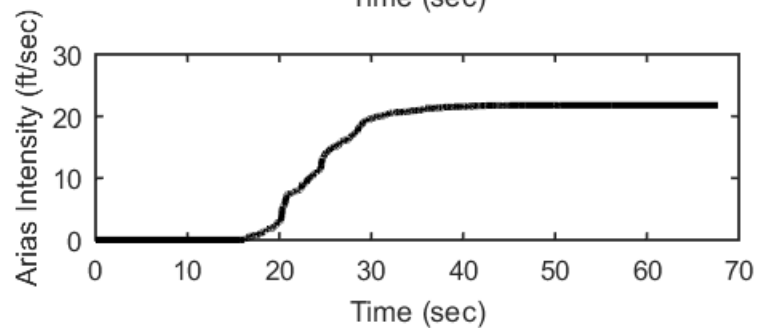
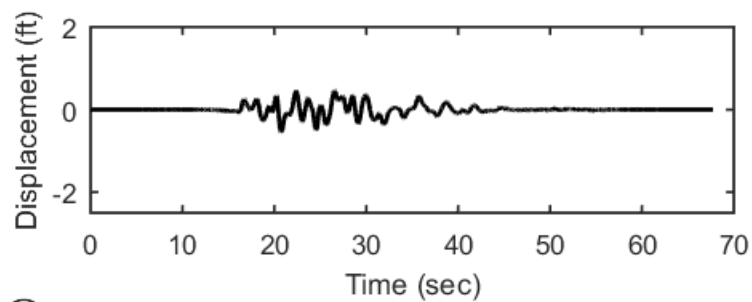
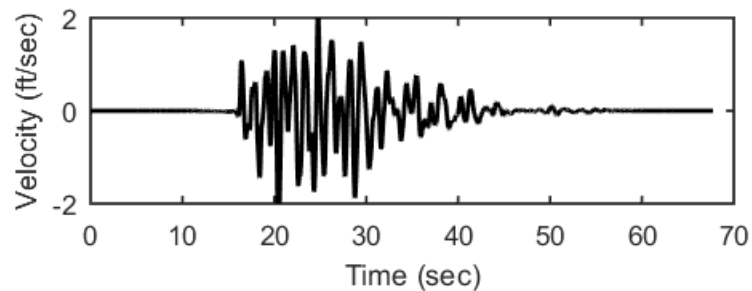
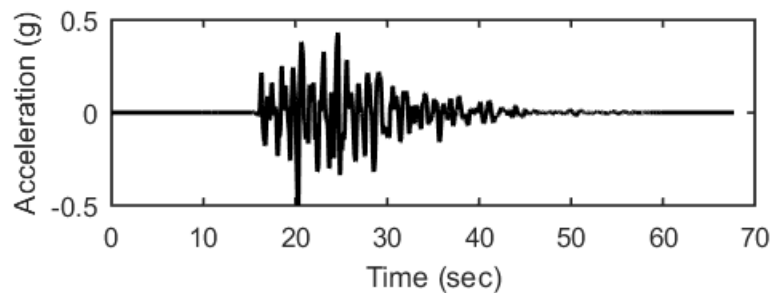
### Profile outputs for Motion: SEE3



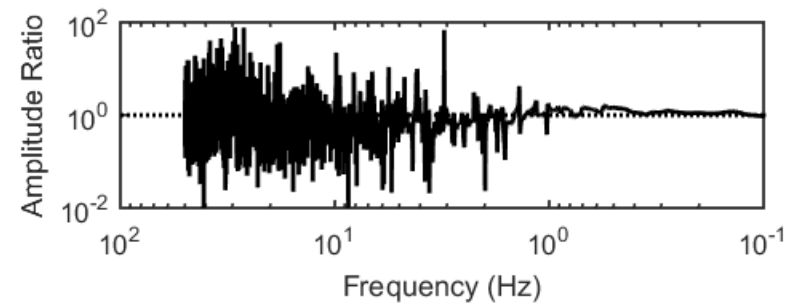
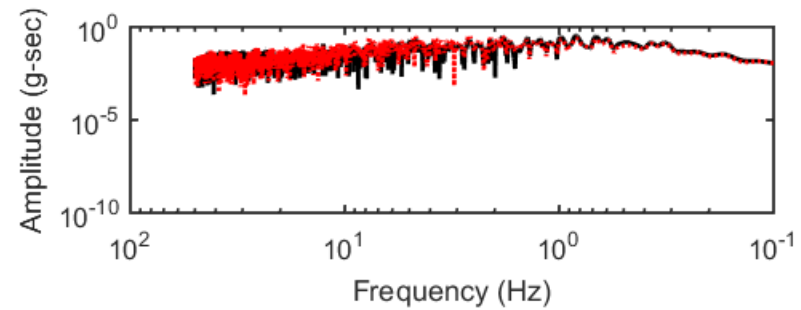
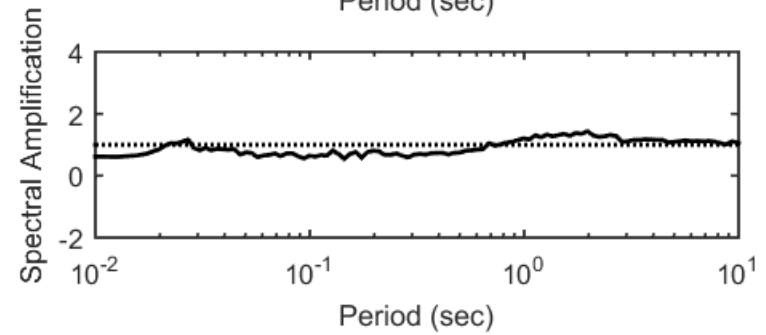
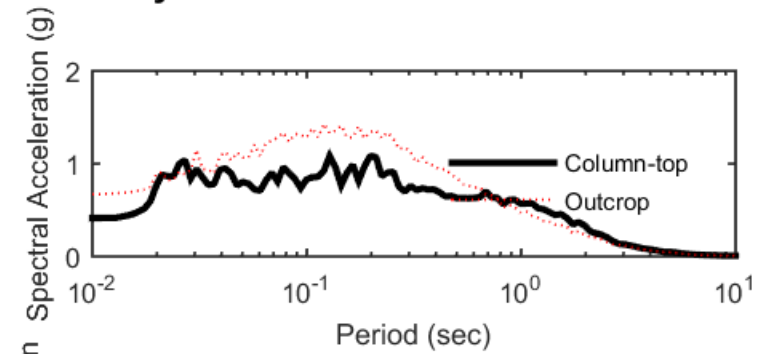
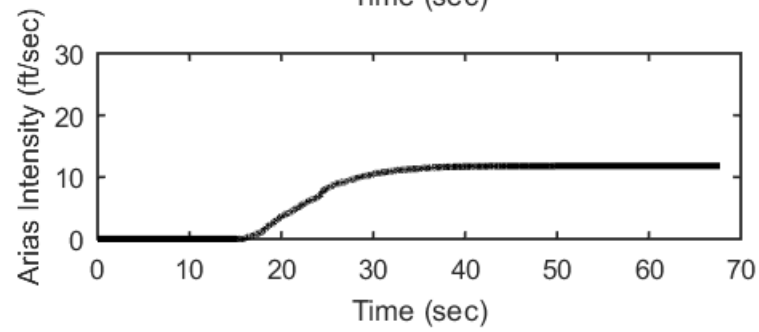
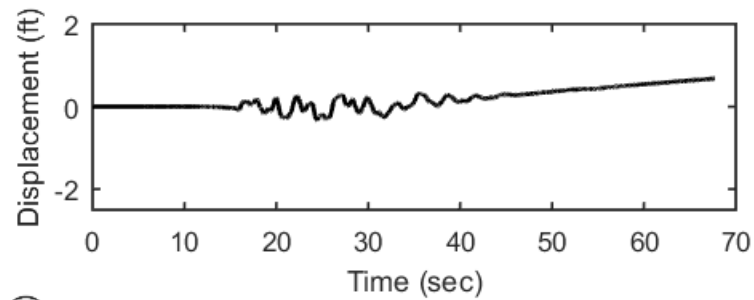
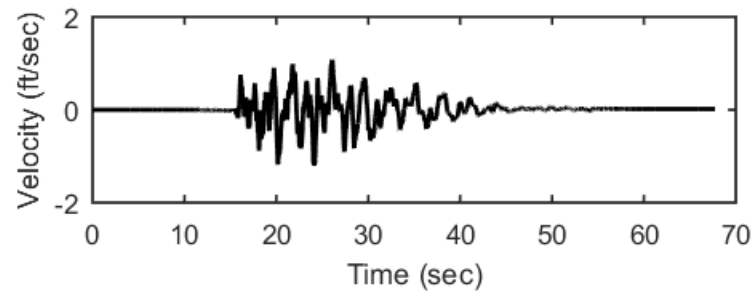
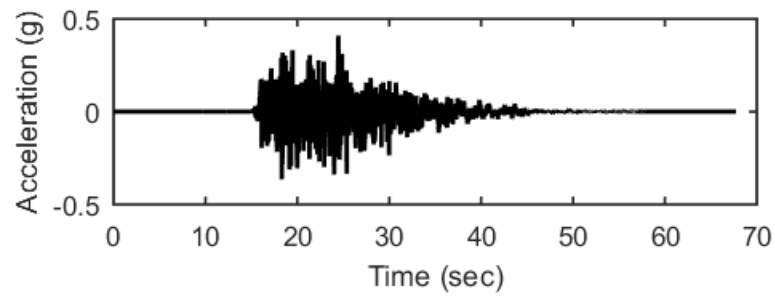
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



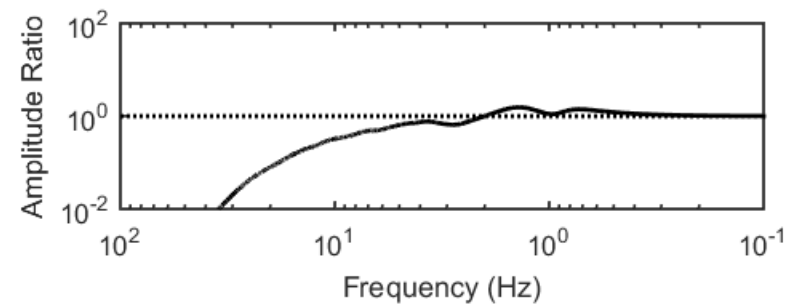
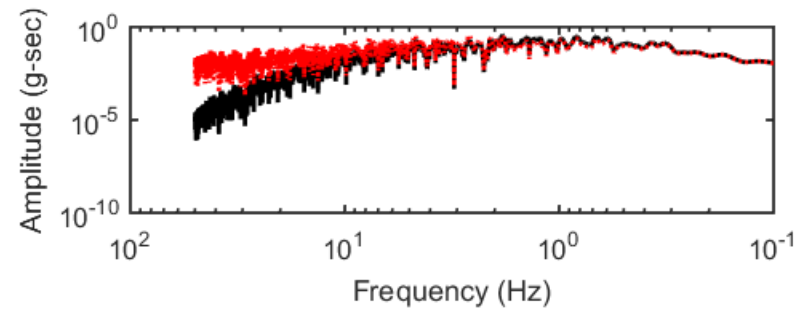
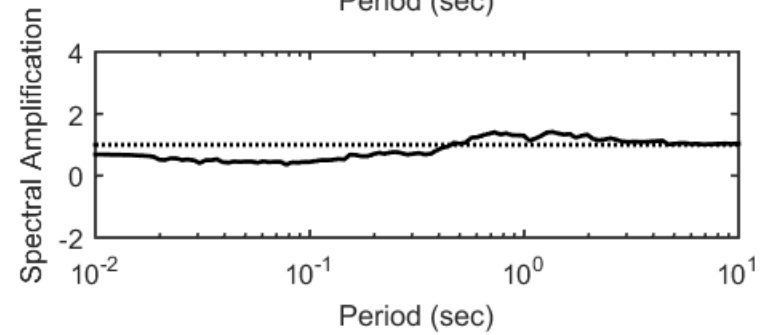
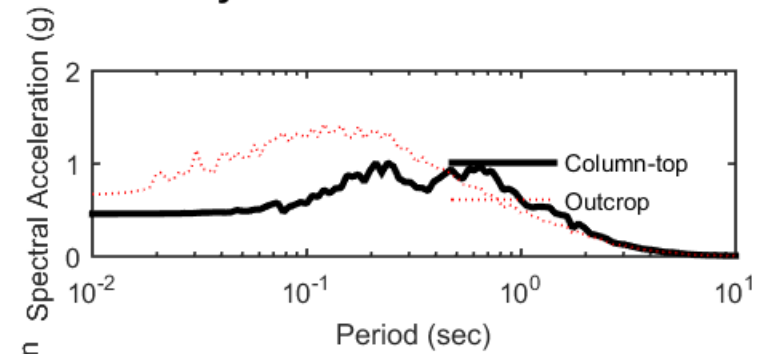
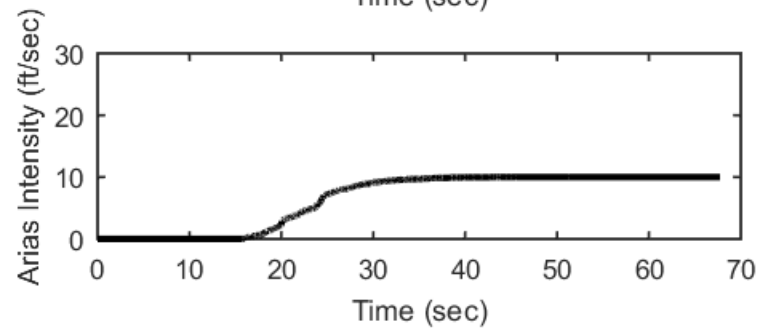
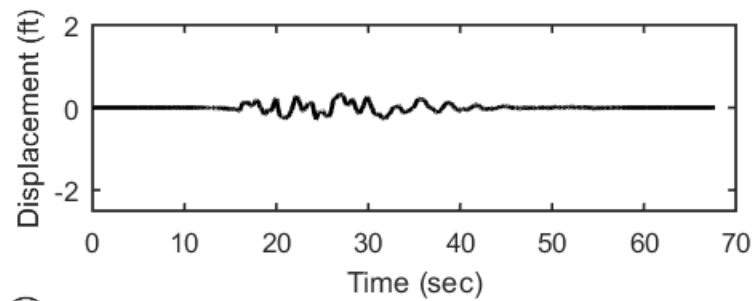
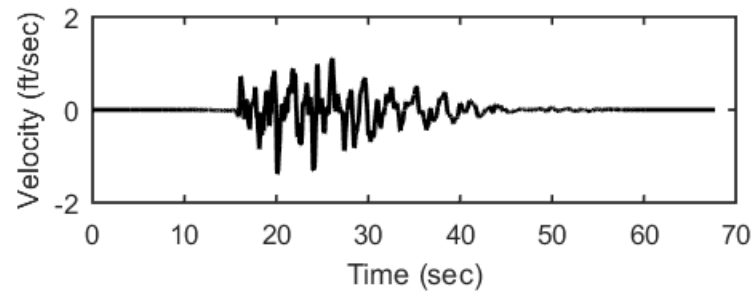
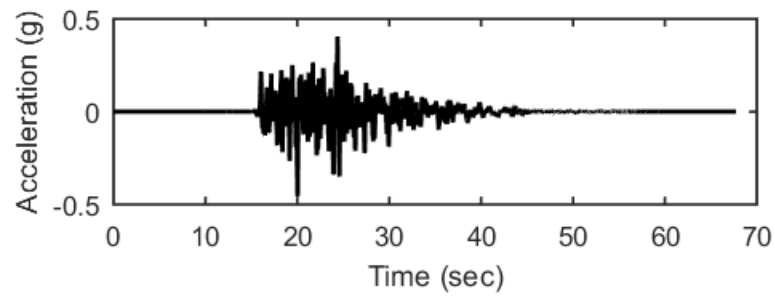
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



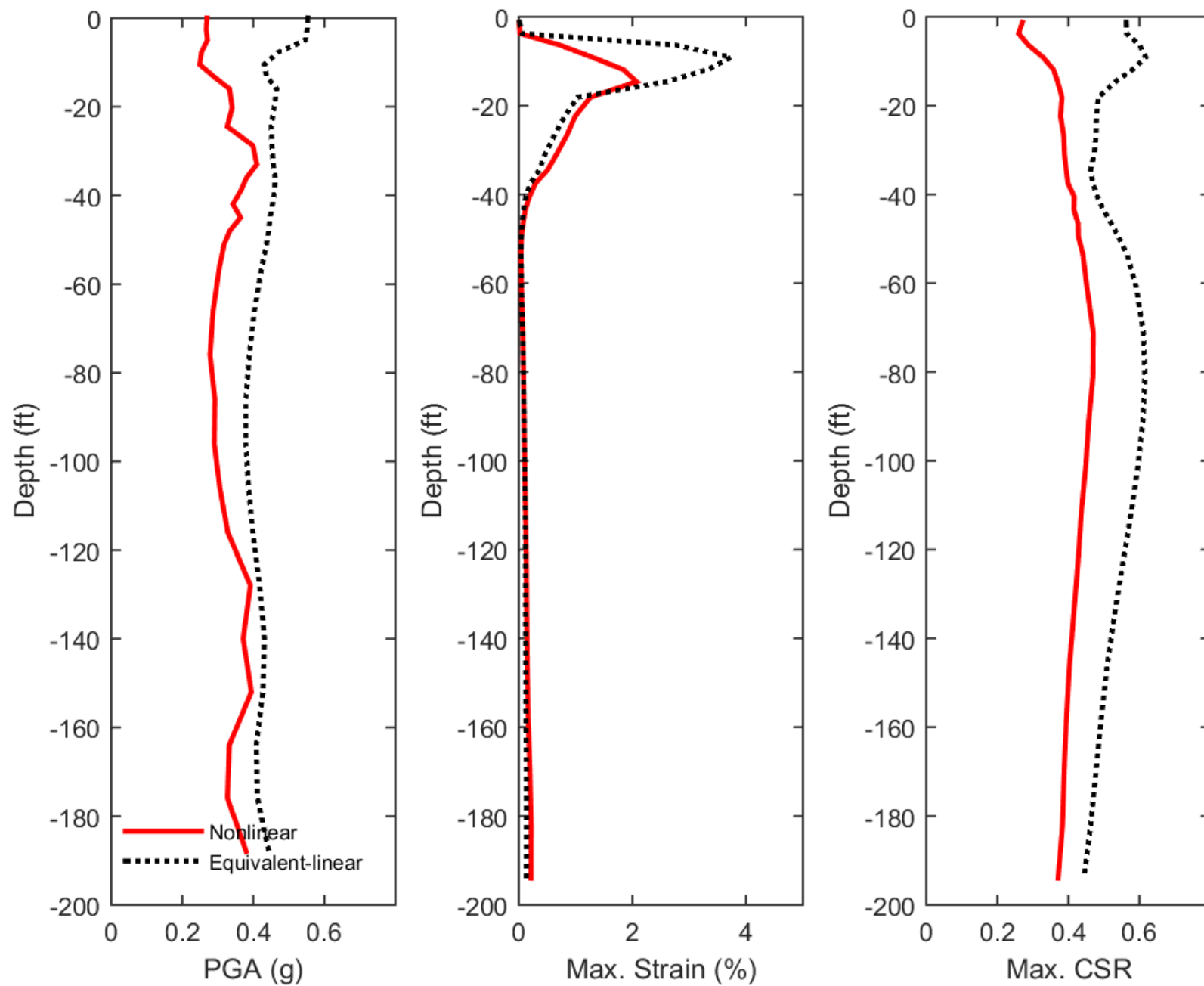
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4

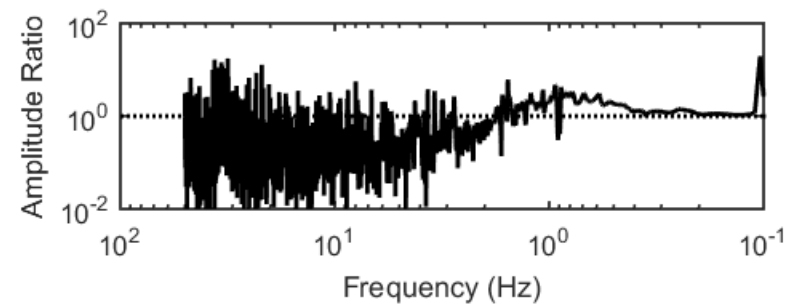
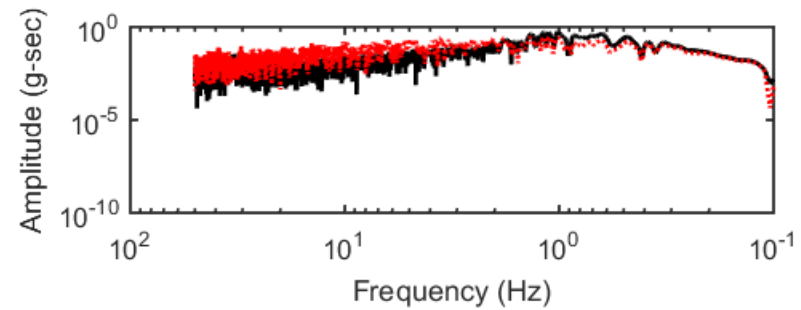
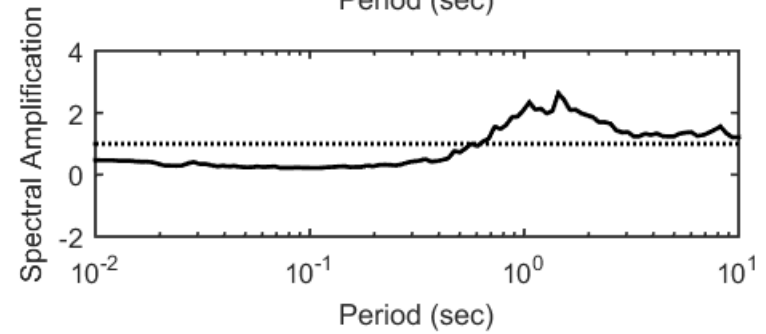
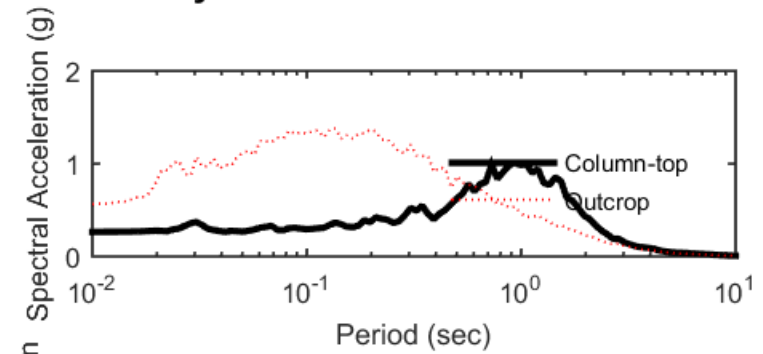
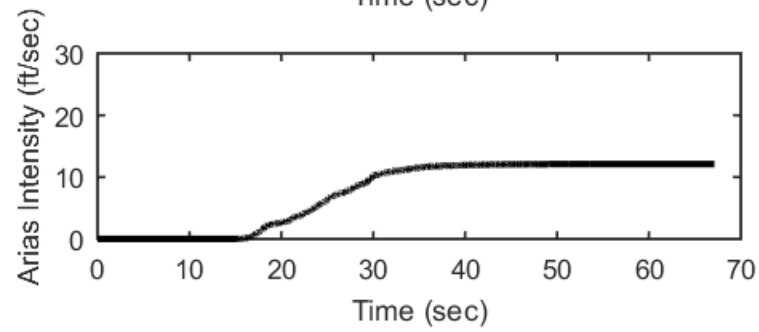
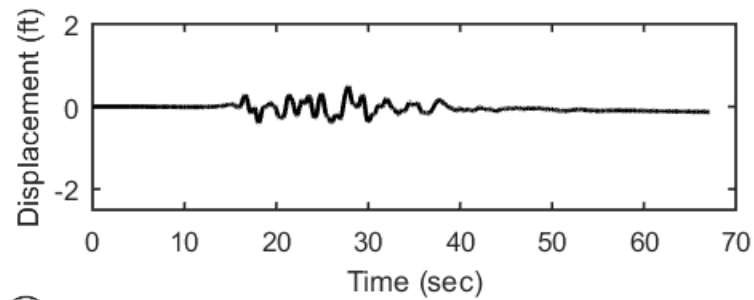
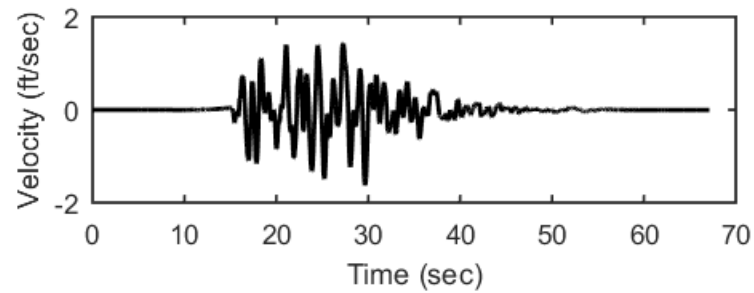
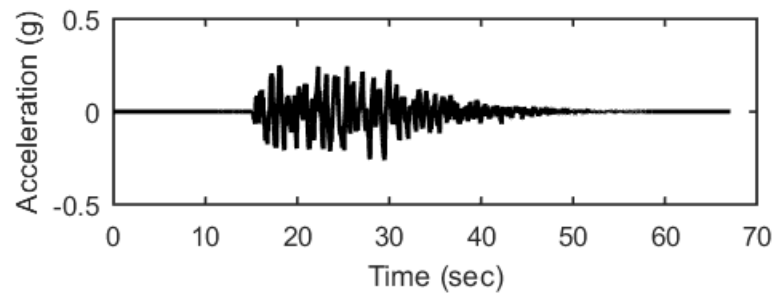


### Profile outputs for Motion: SEE4

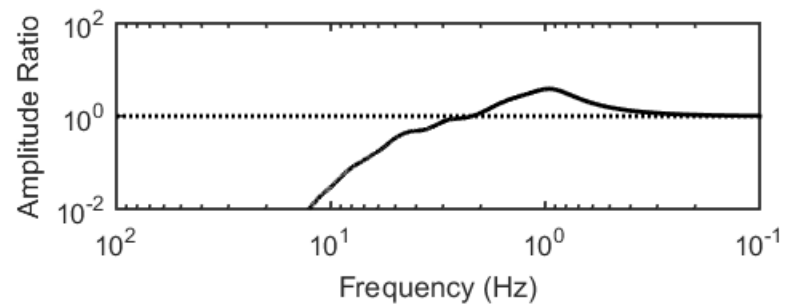
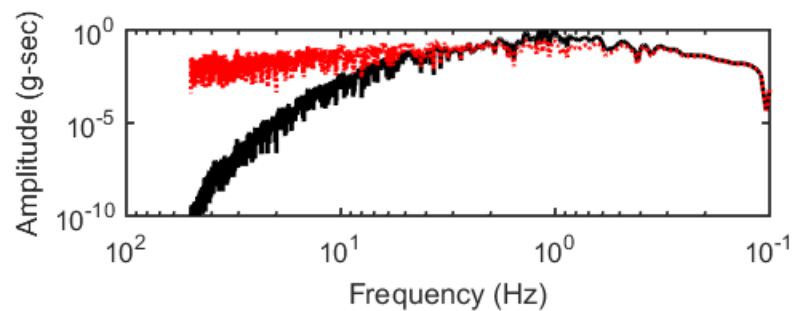
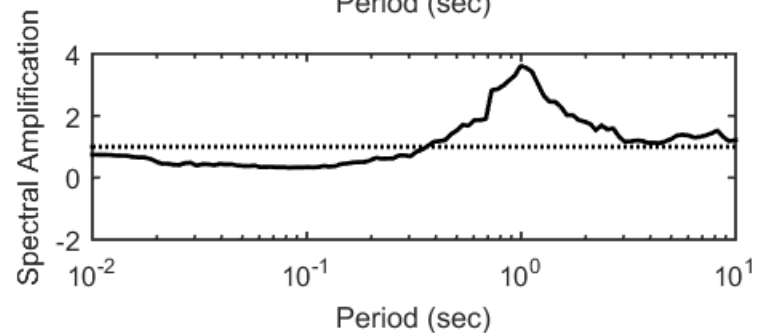
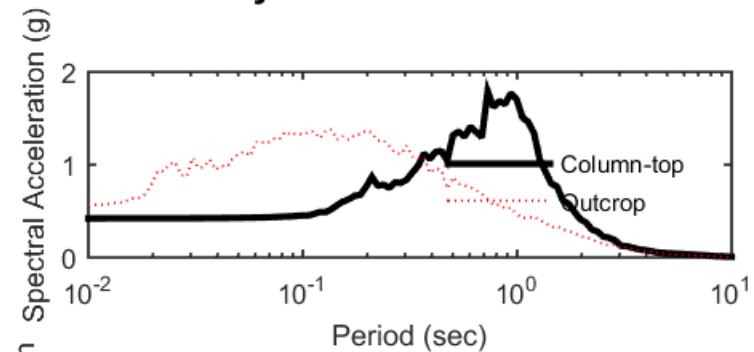
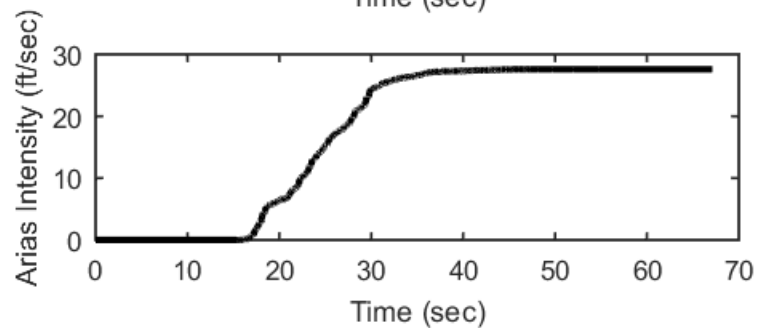
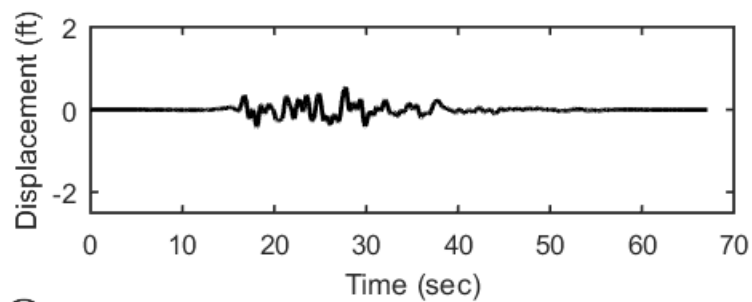
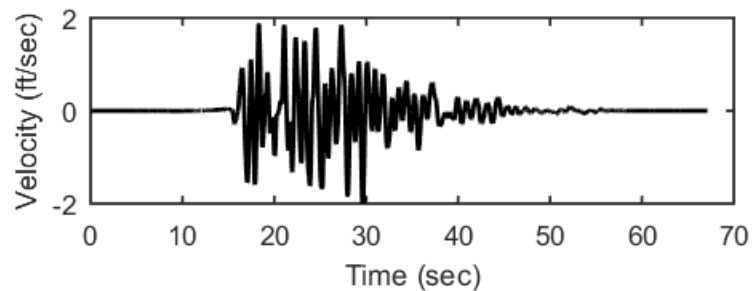
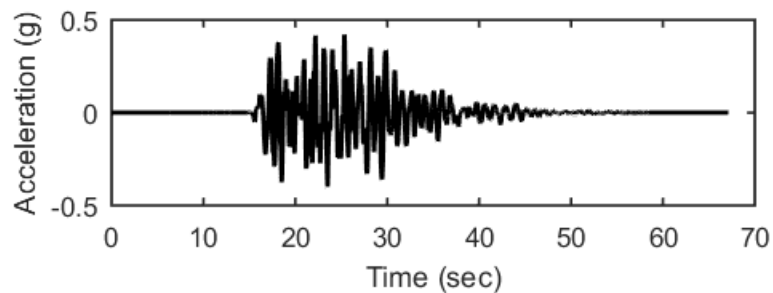




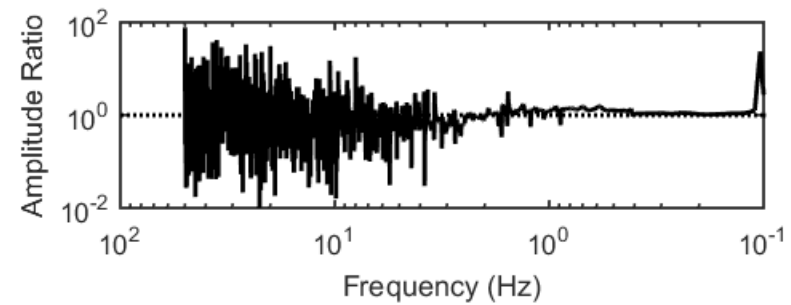
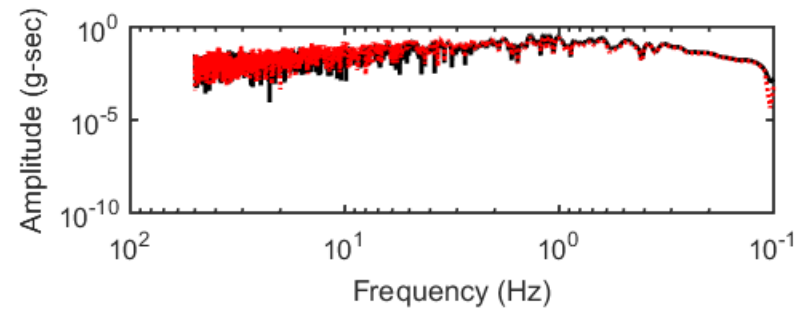
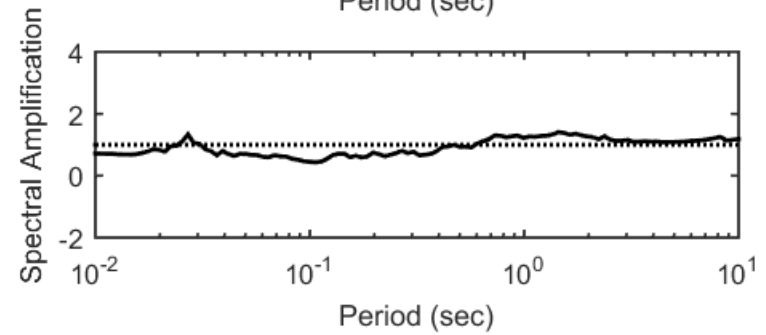
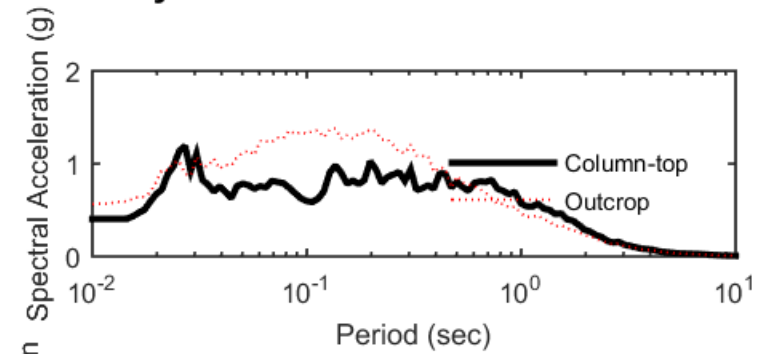
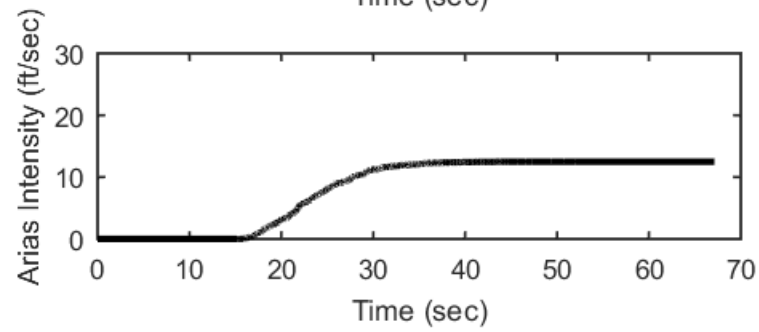
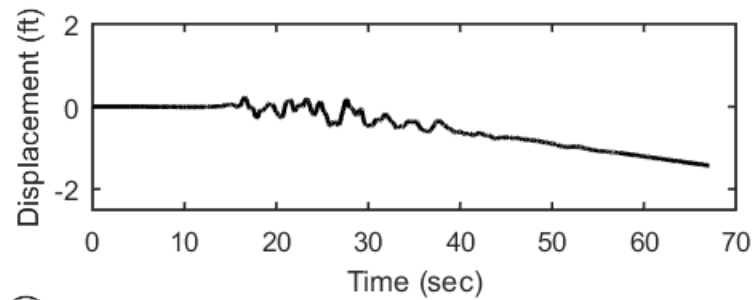
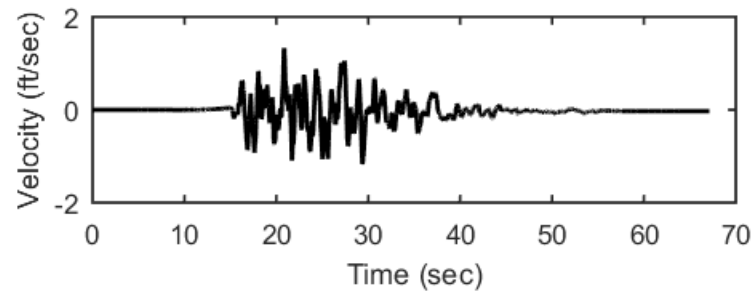
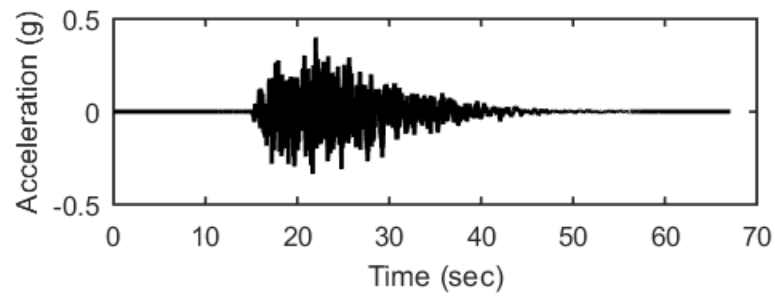
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



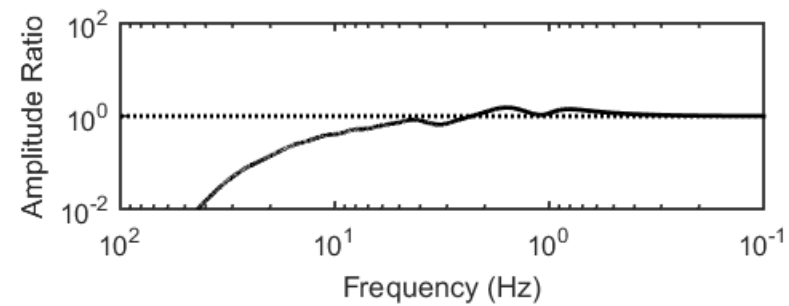
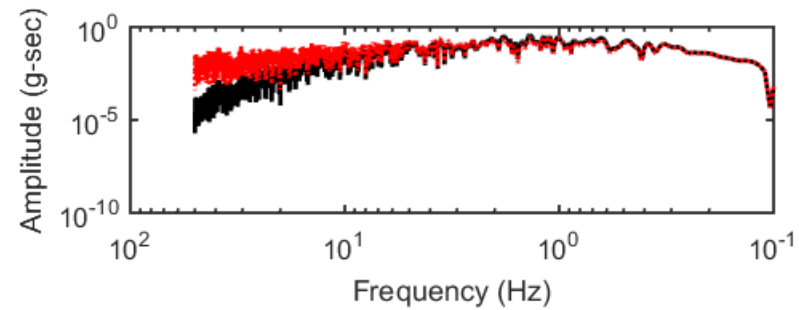
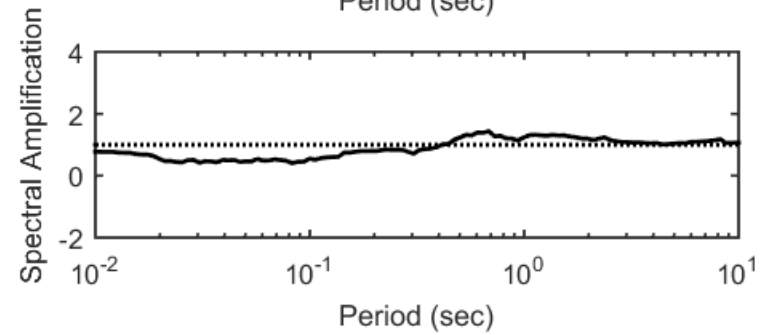
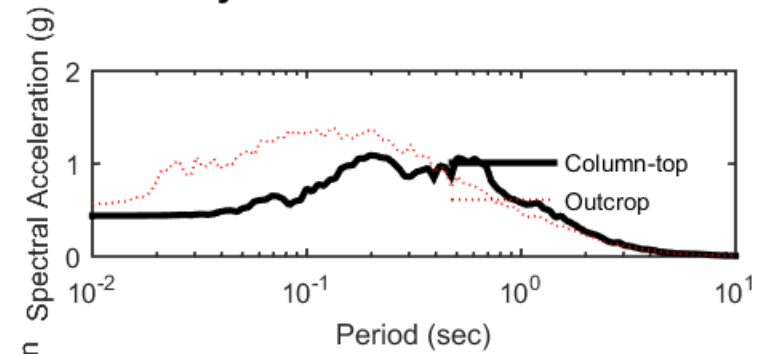
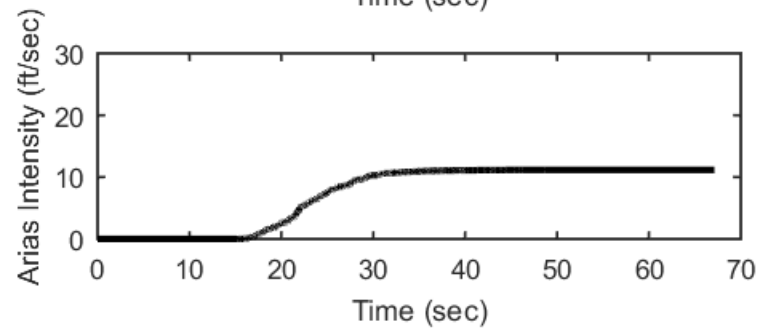
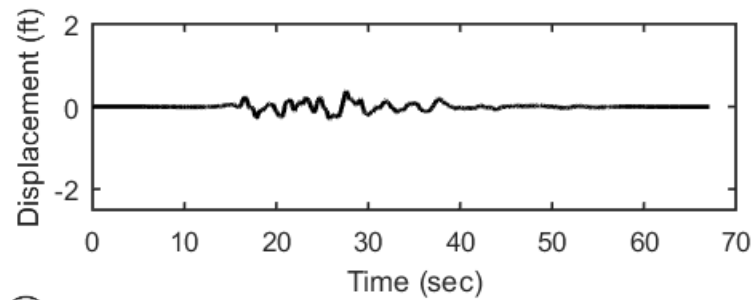
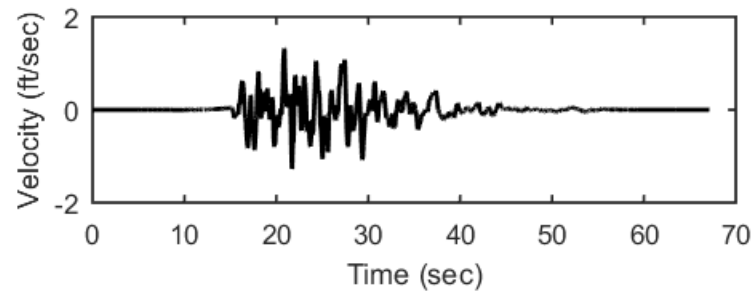
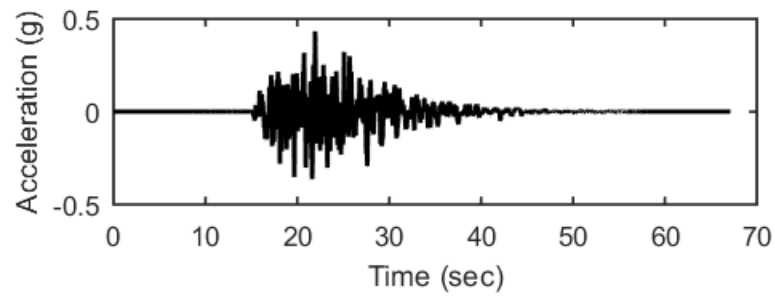
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



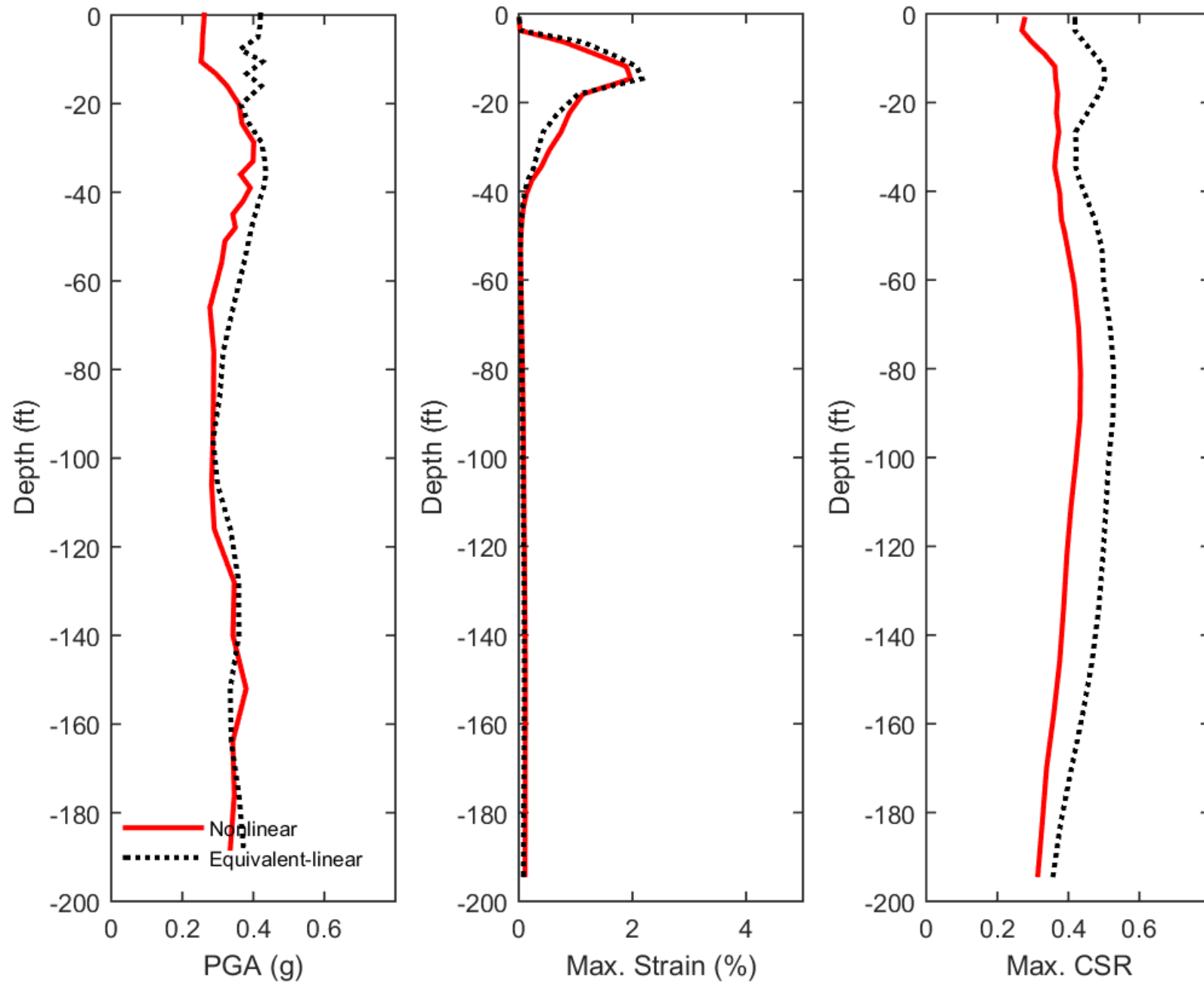
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



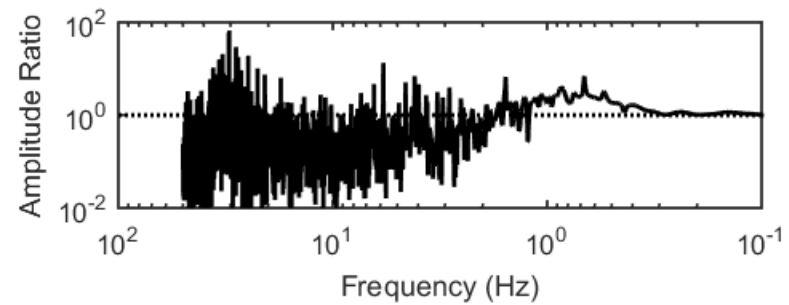
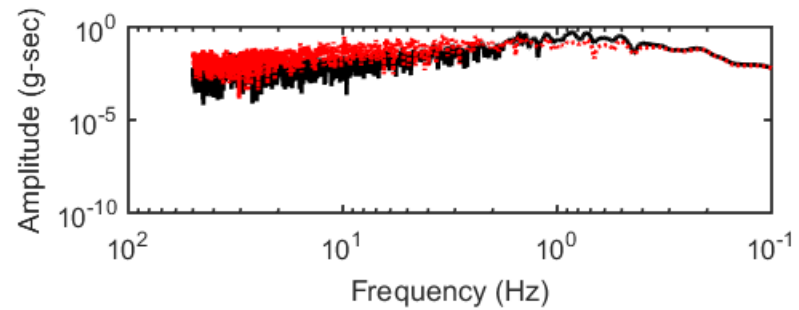
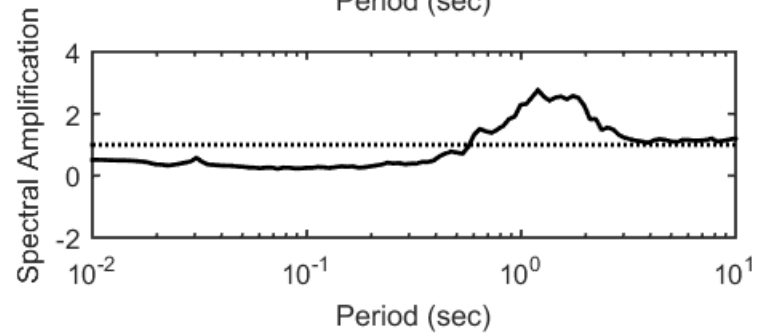
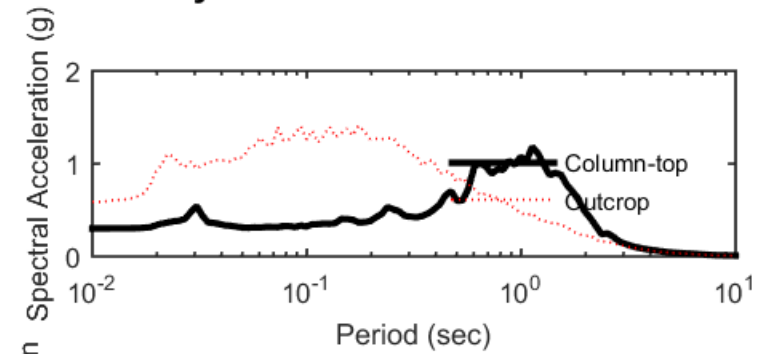
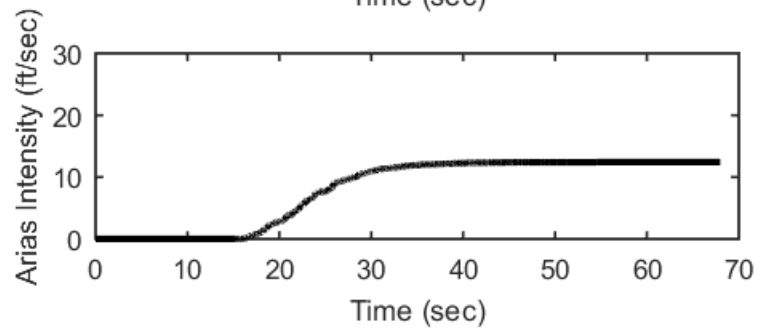
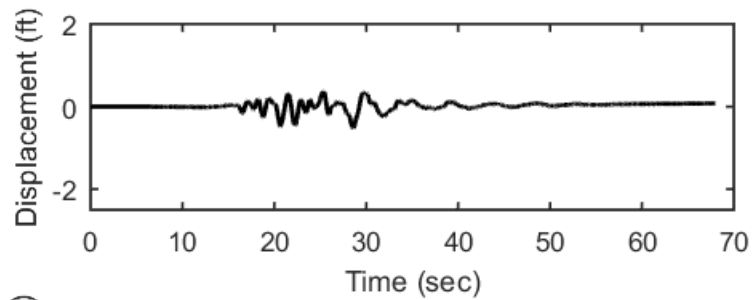
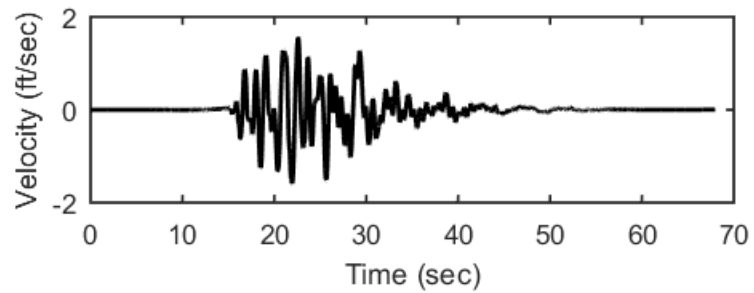
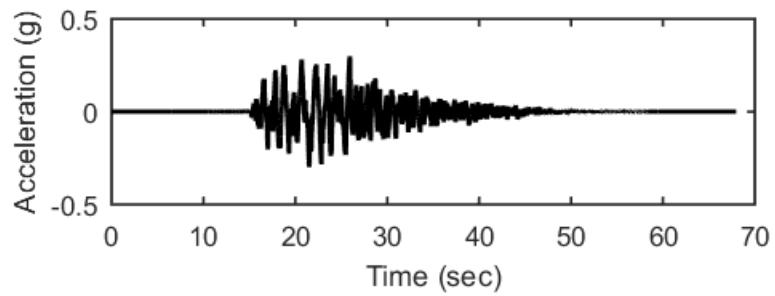
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



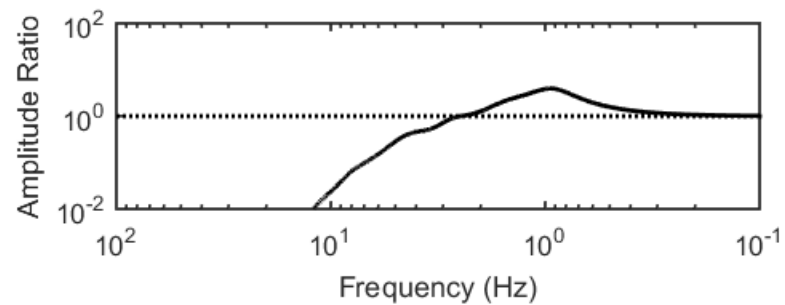
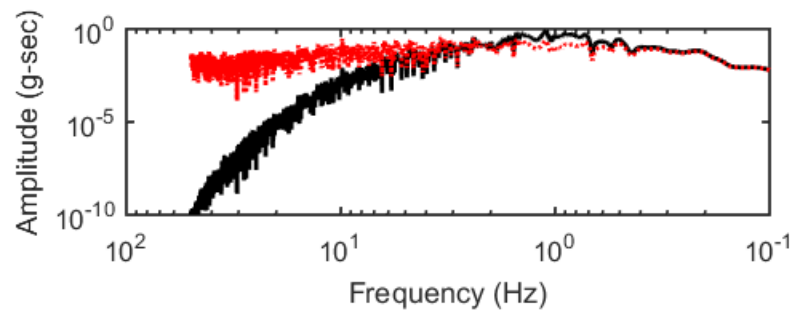
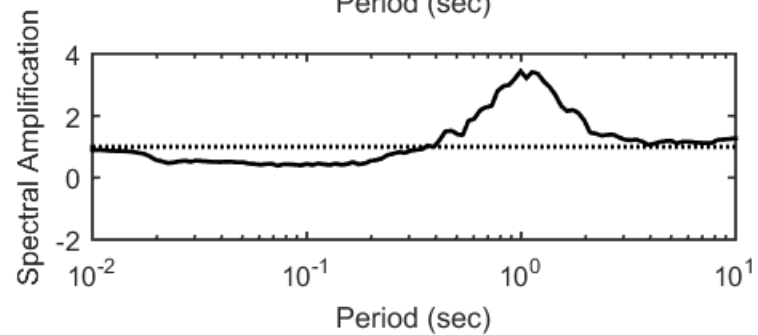
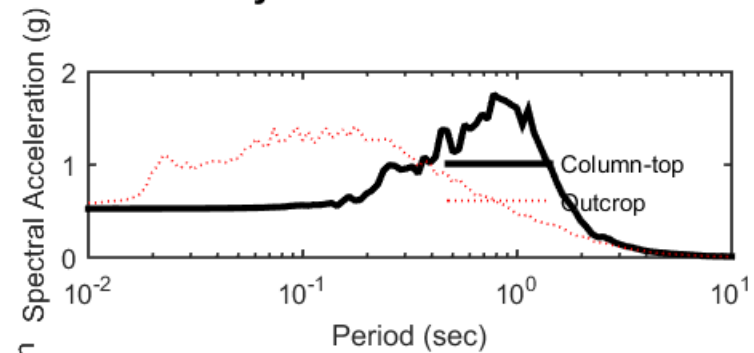
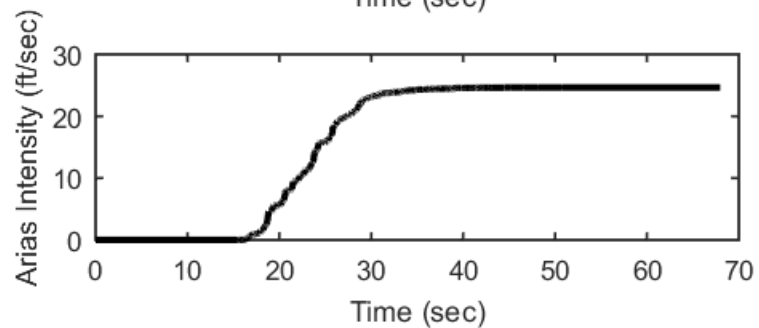
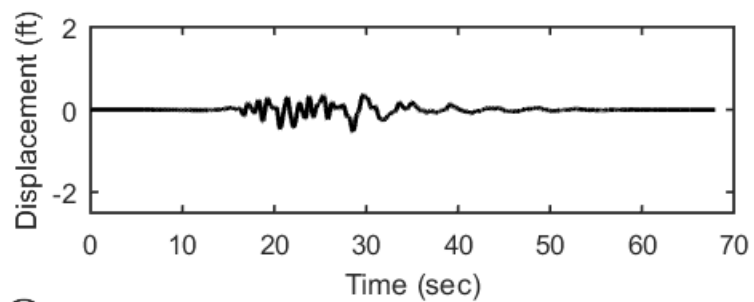
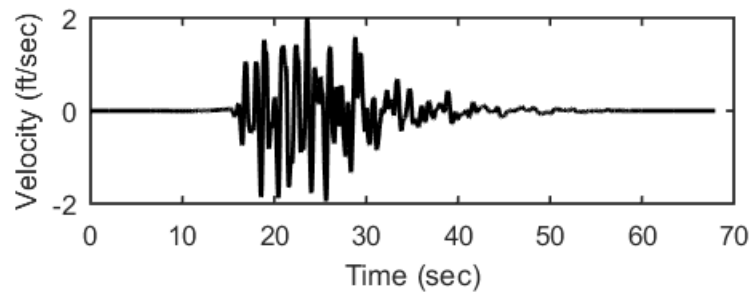
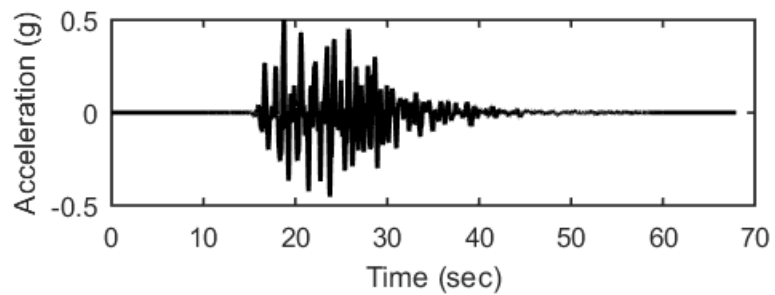
### Profile outputs for Motion: SEE5



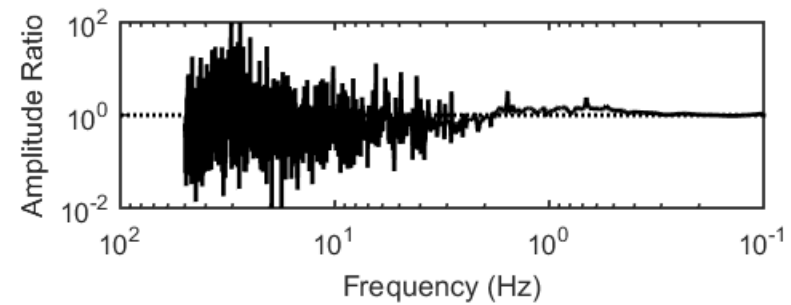
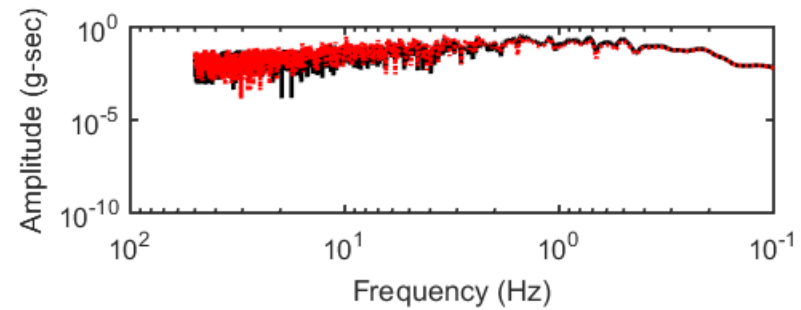
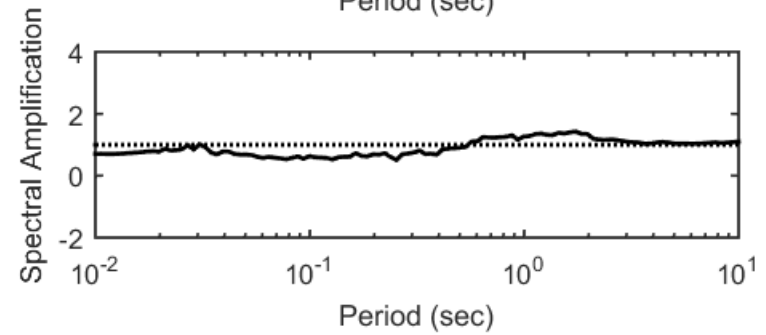
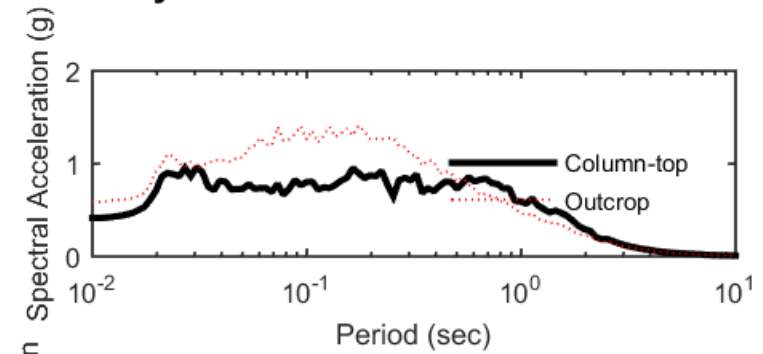
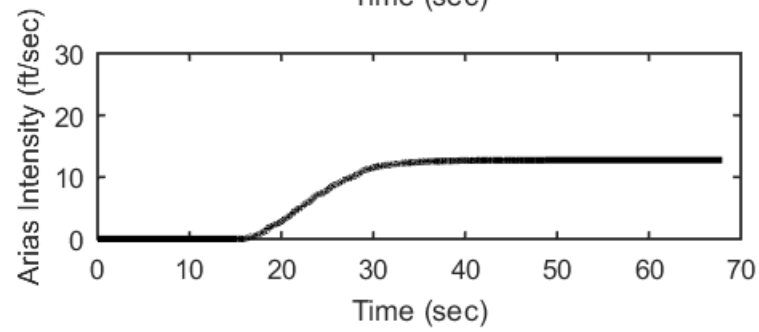
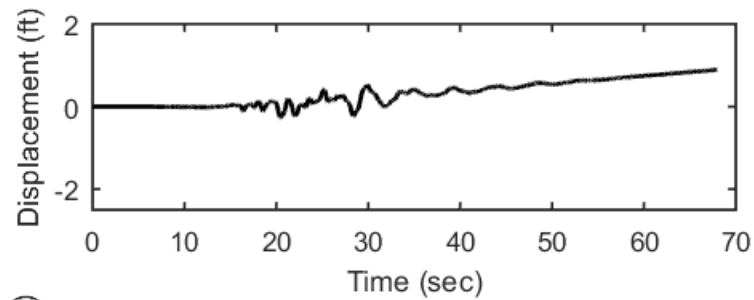
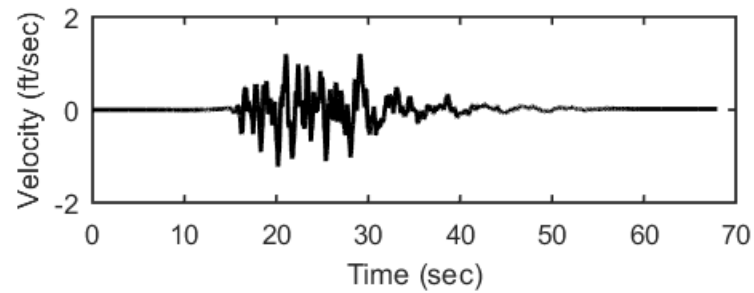
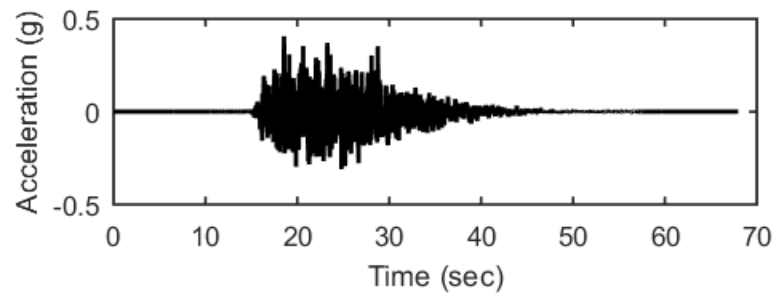
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6

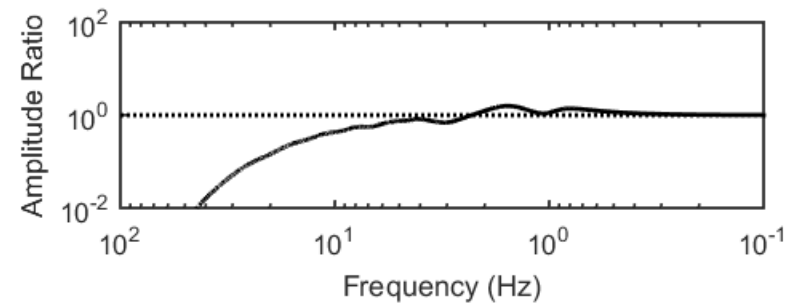
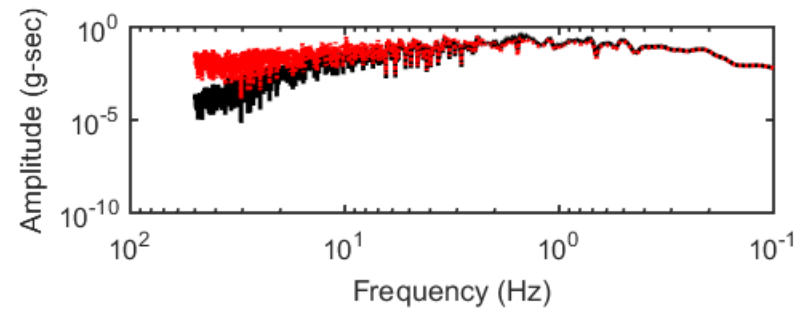
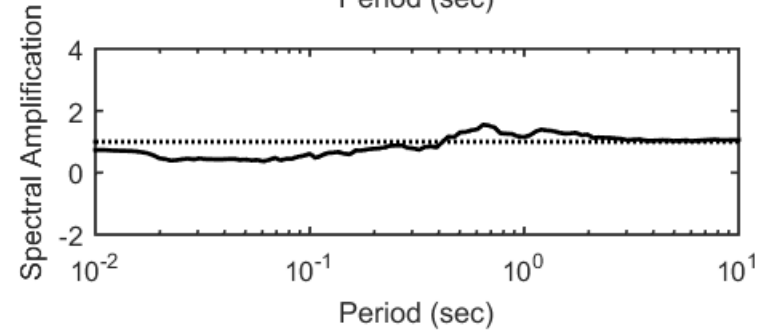
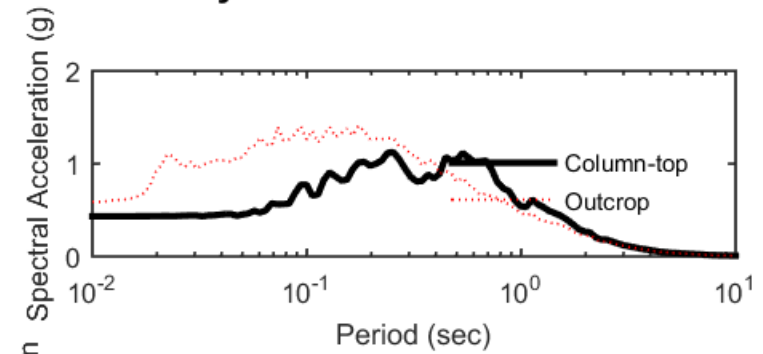
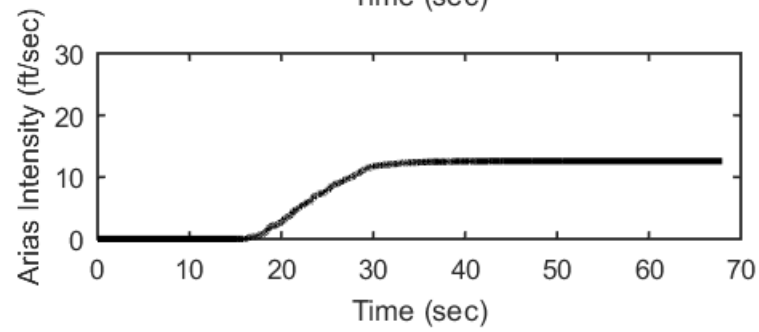
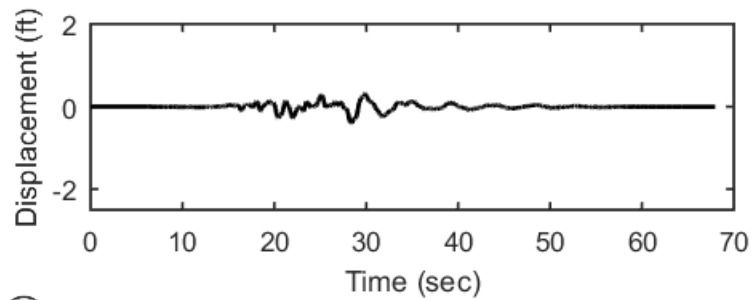
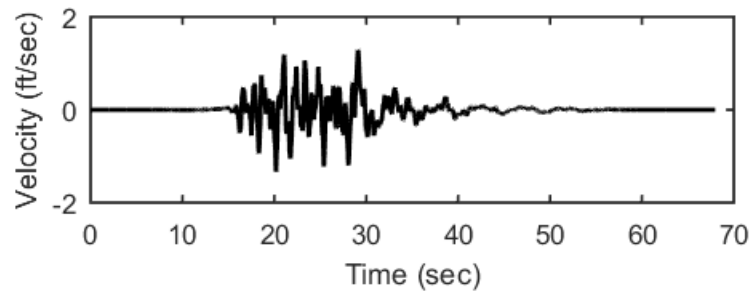
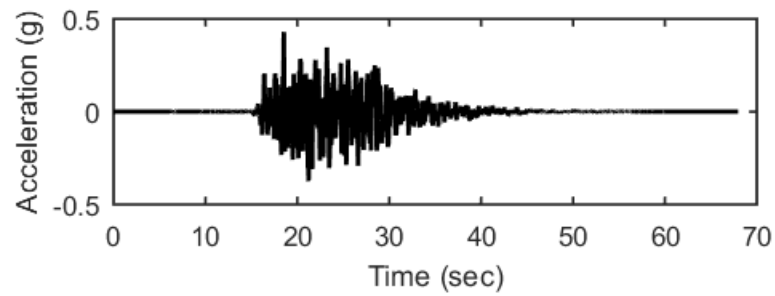


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6

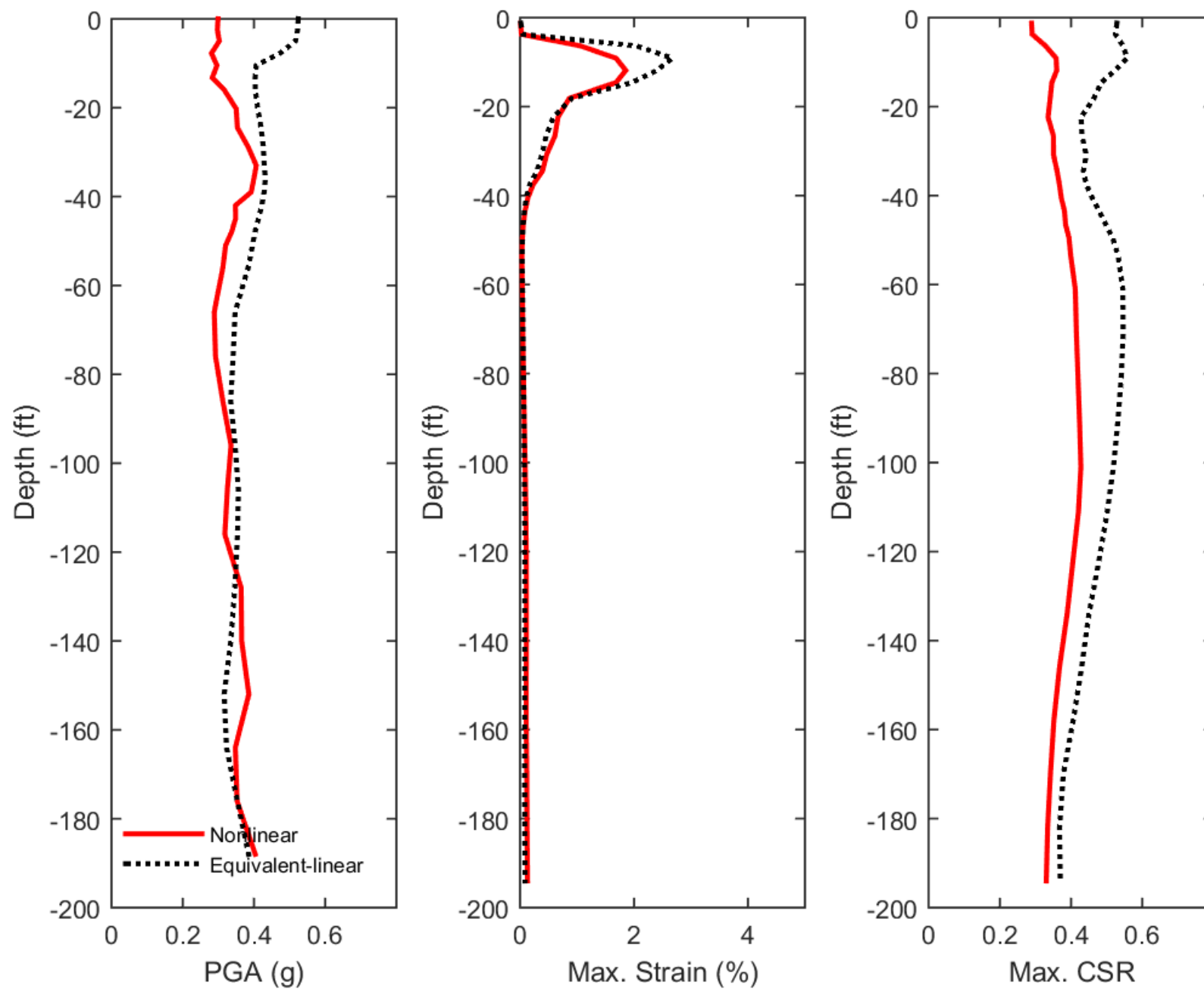




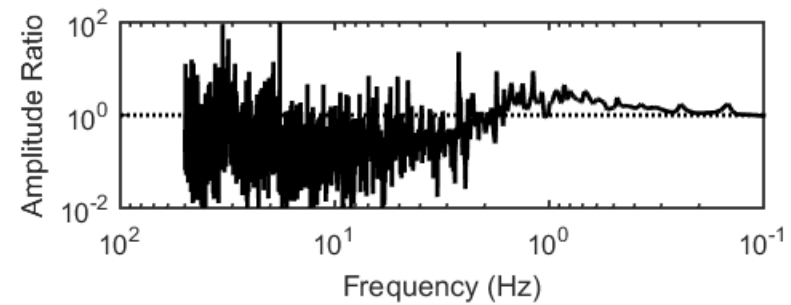
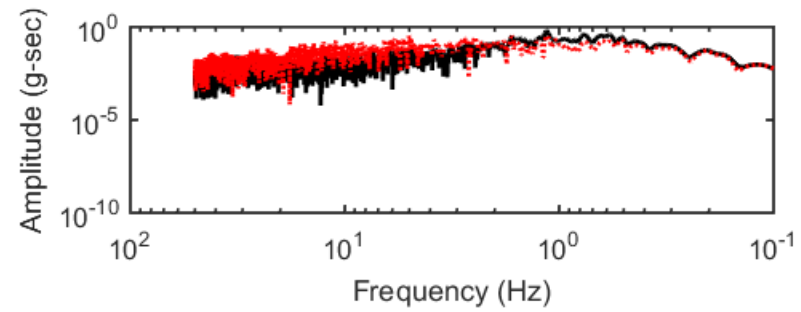
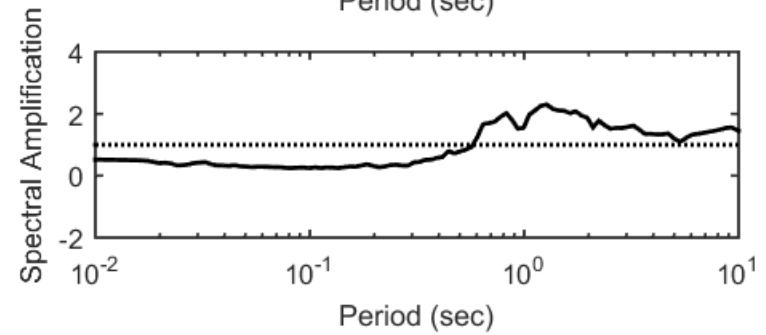
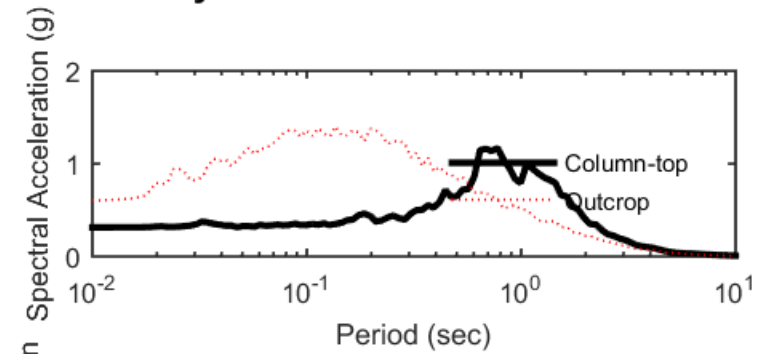
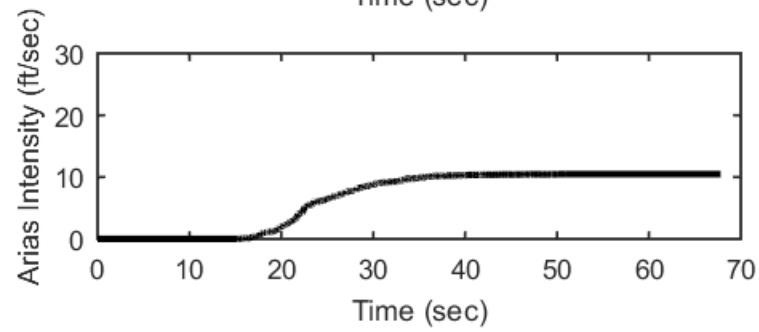
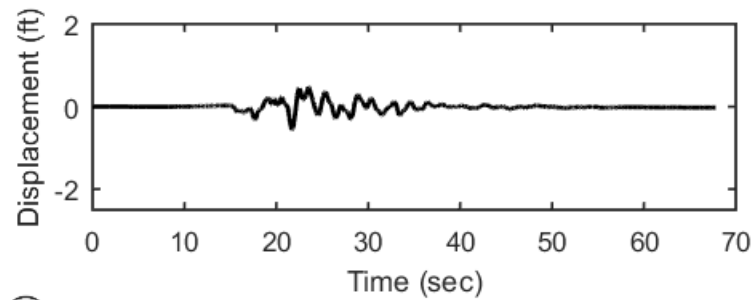
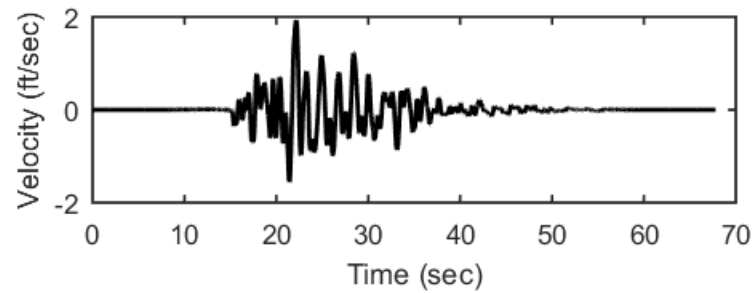
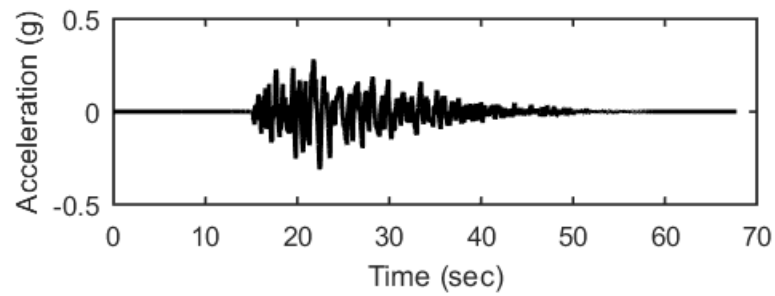
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



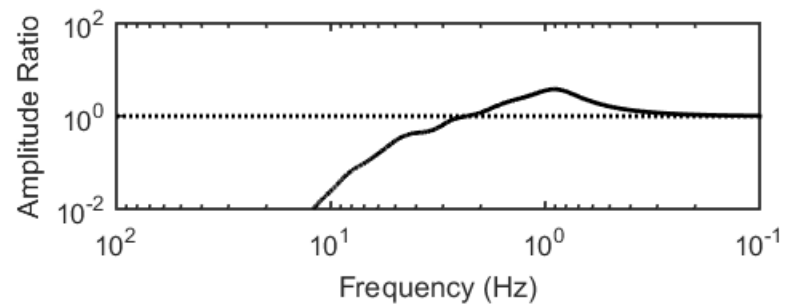
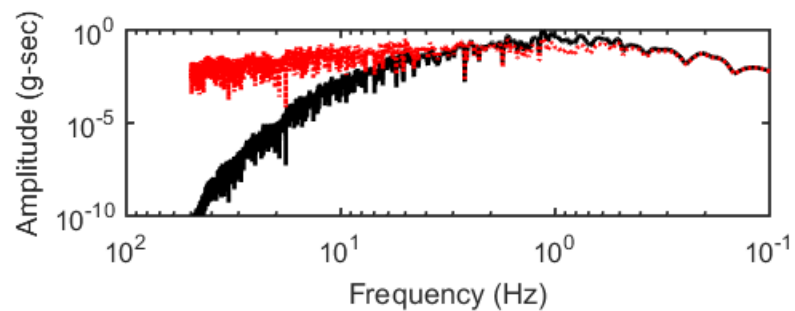
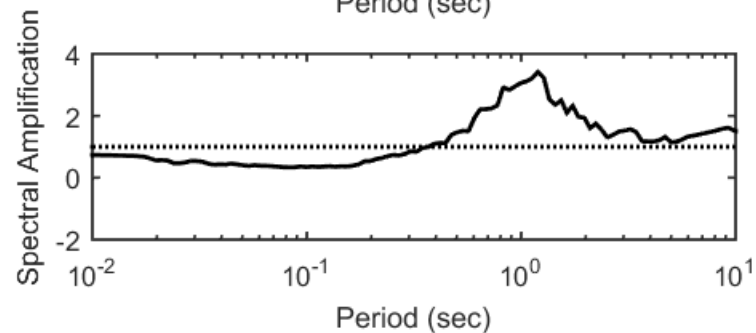
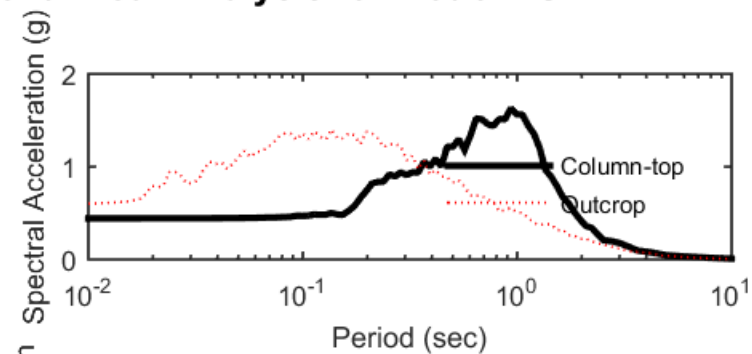
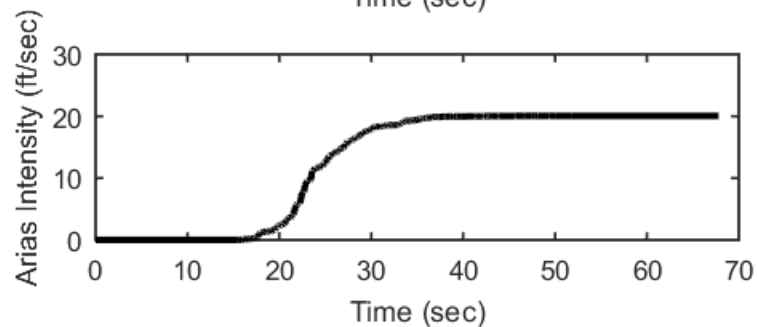
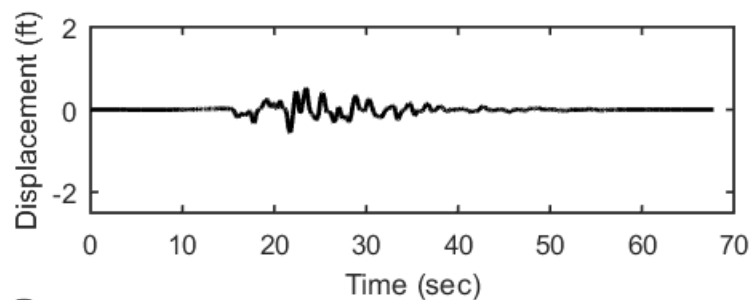
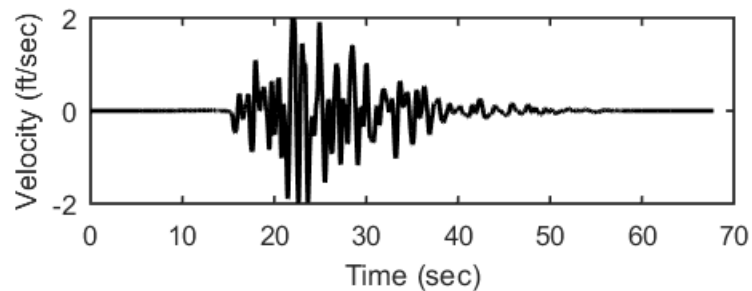
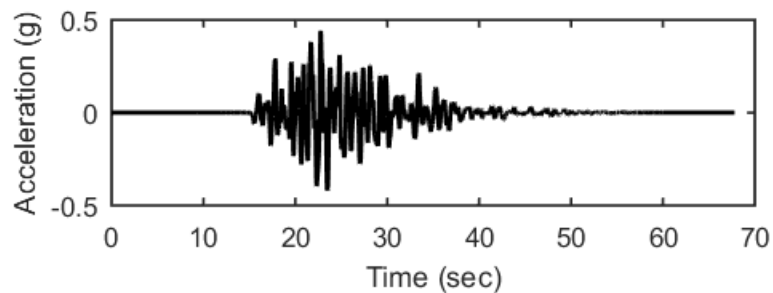
### Profile outputs for Motion: SEE6



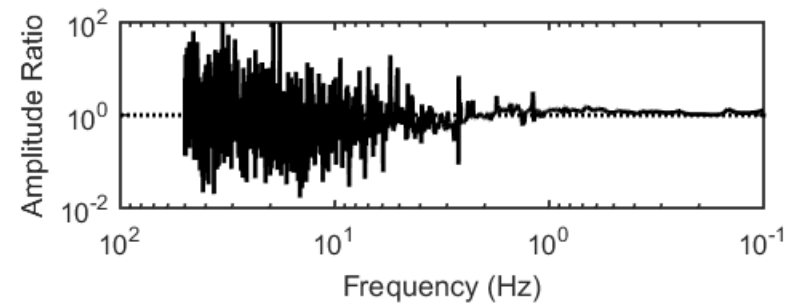
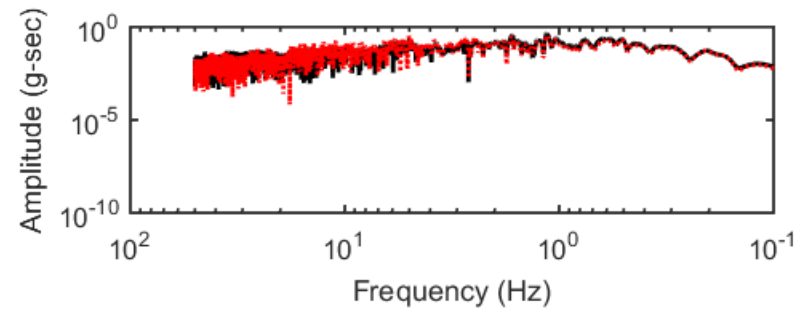
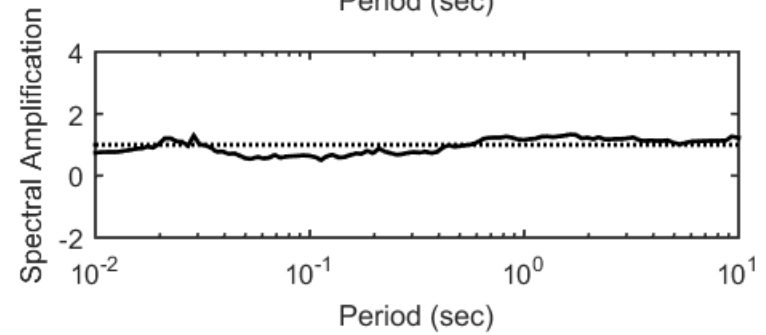
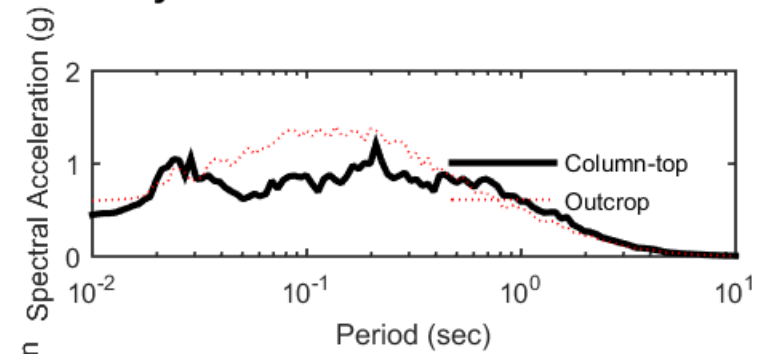
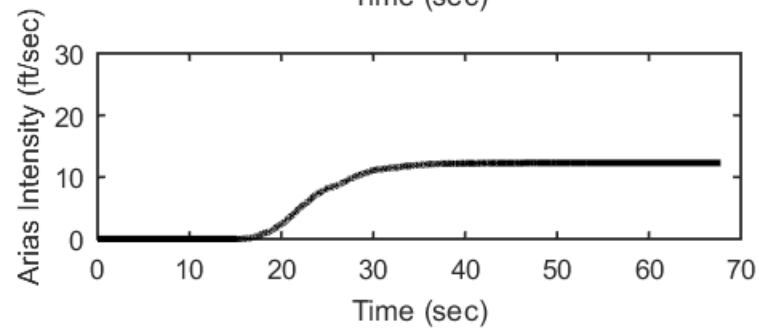
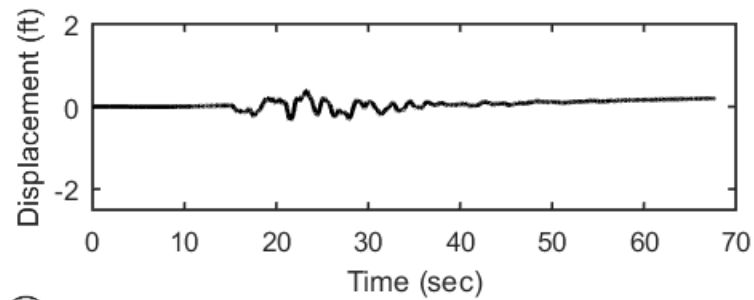
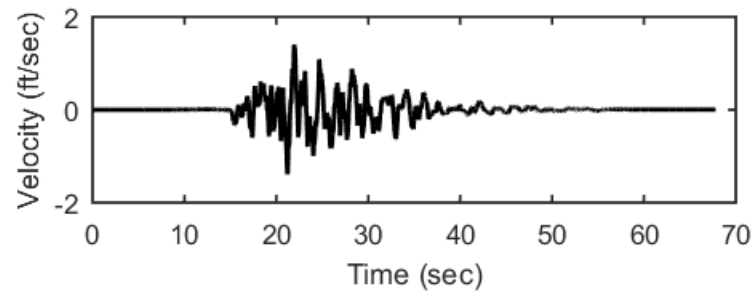
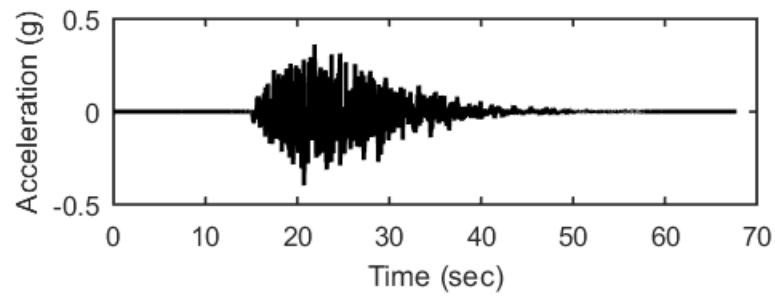
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



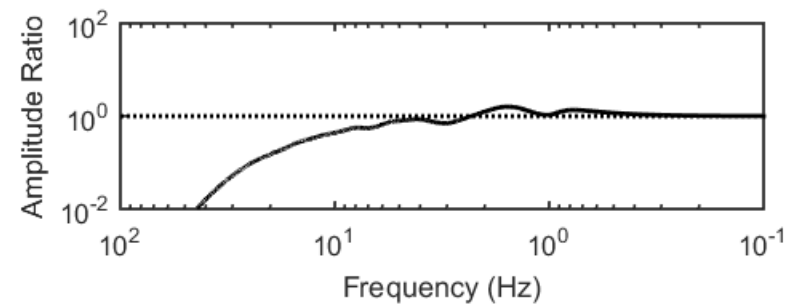
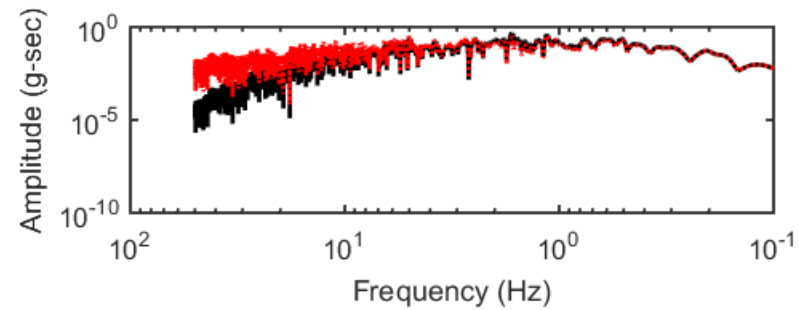
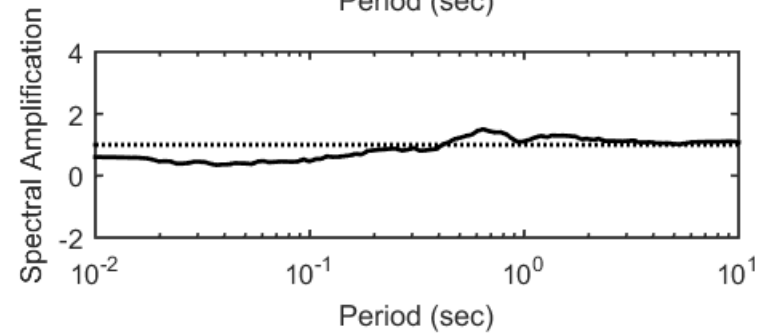
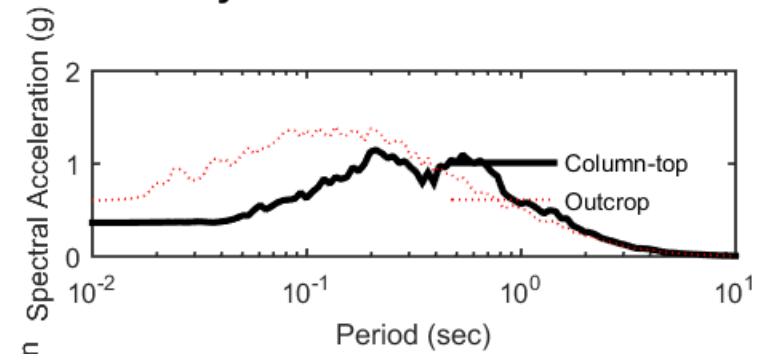
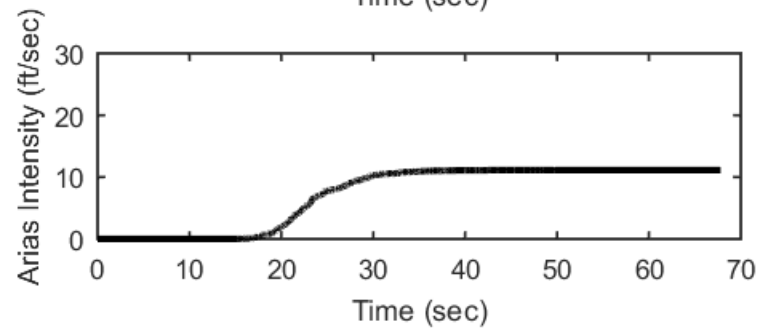
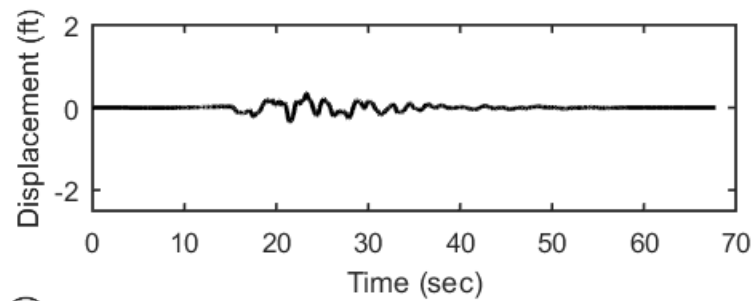
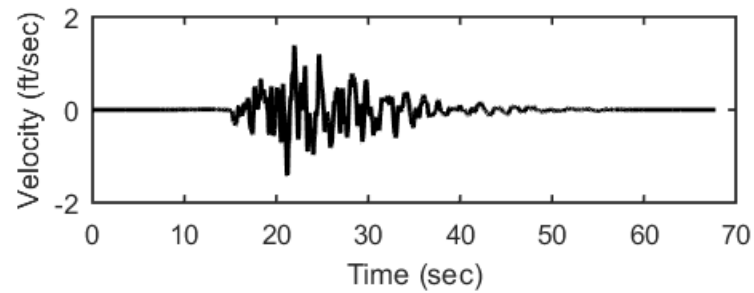
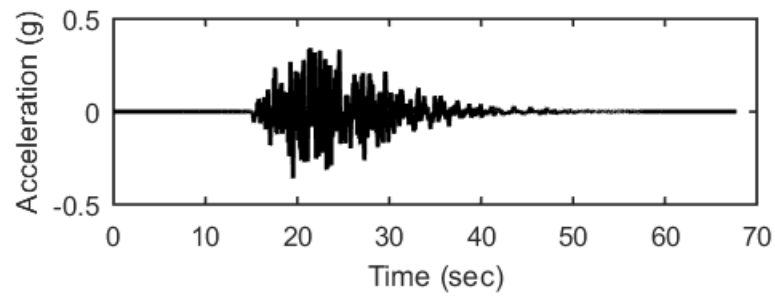
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



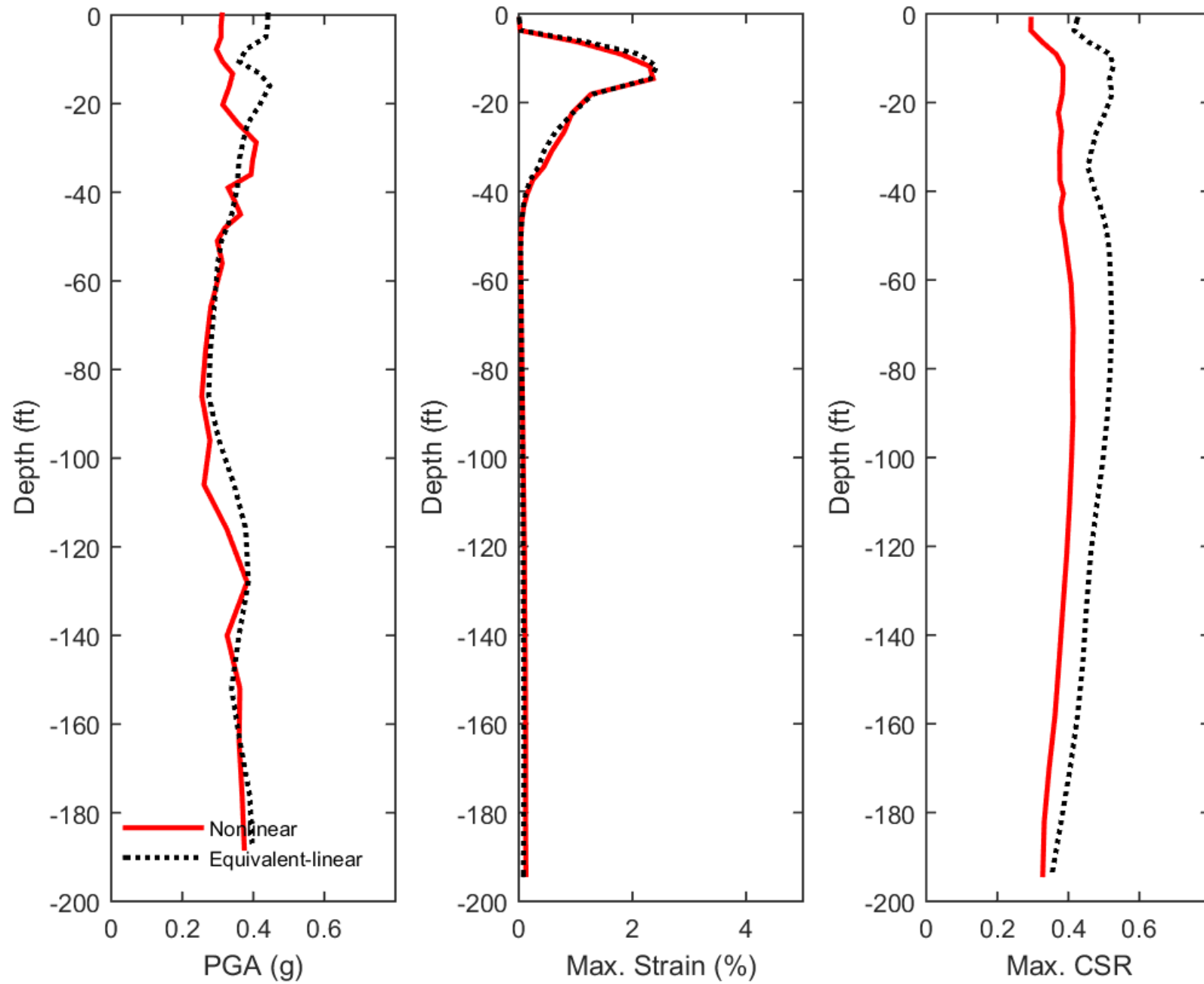
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



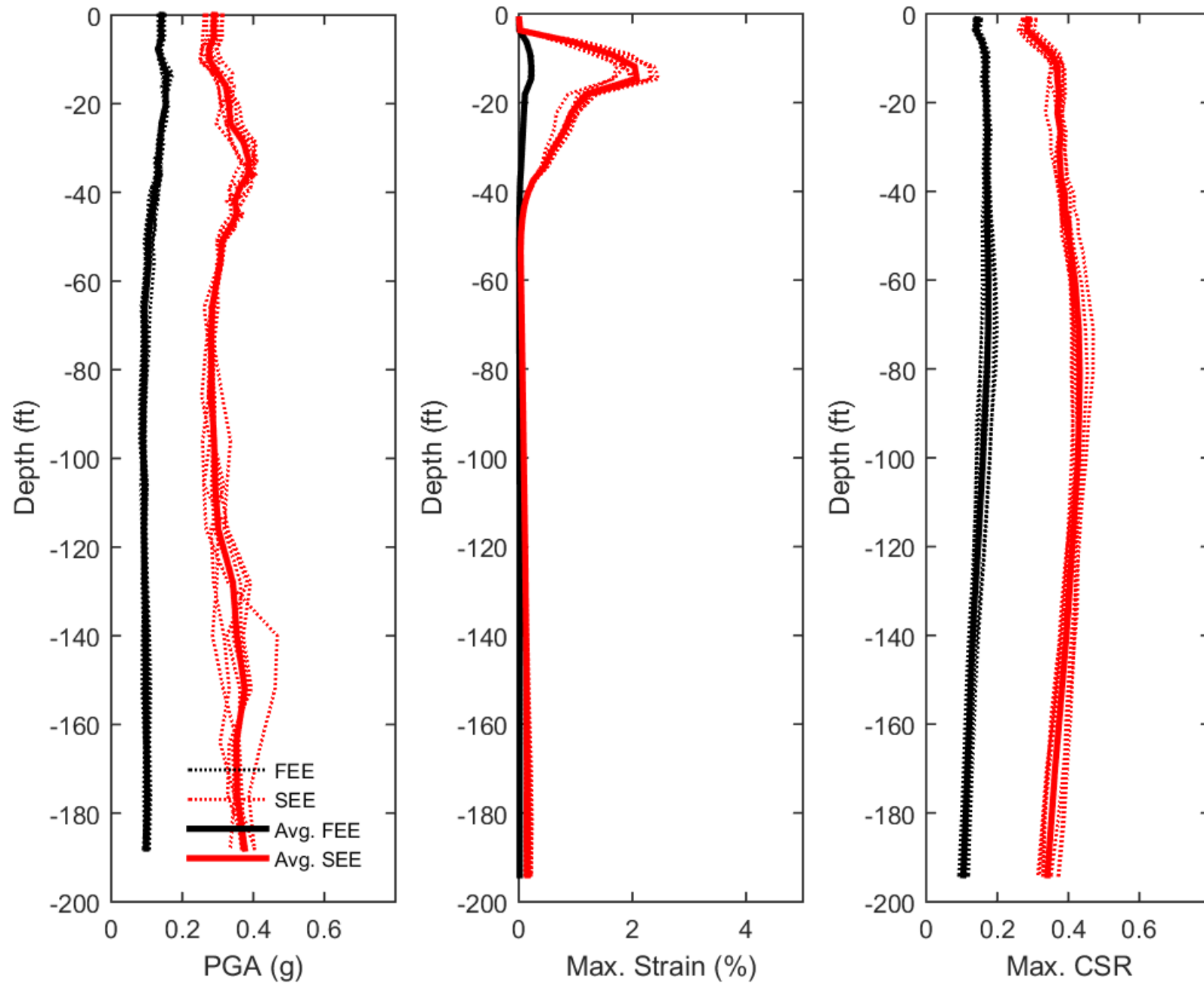
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



### Profile outputs for Motion: SEE7

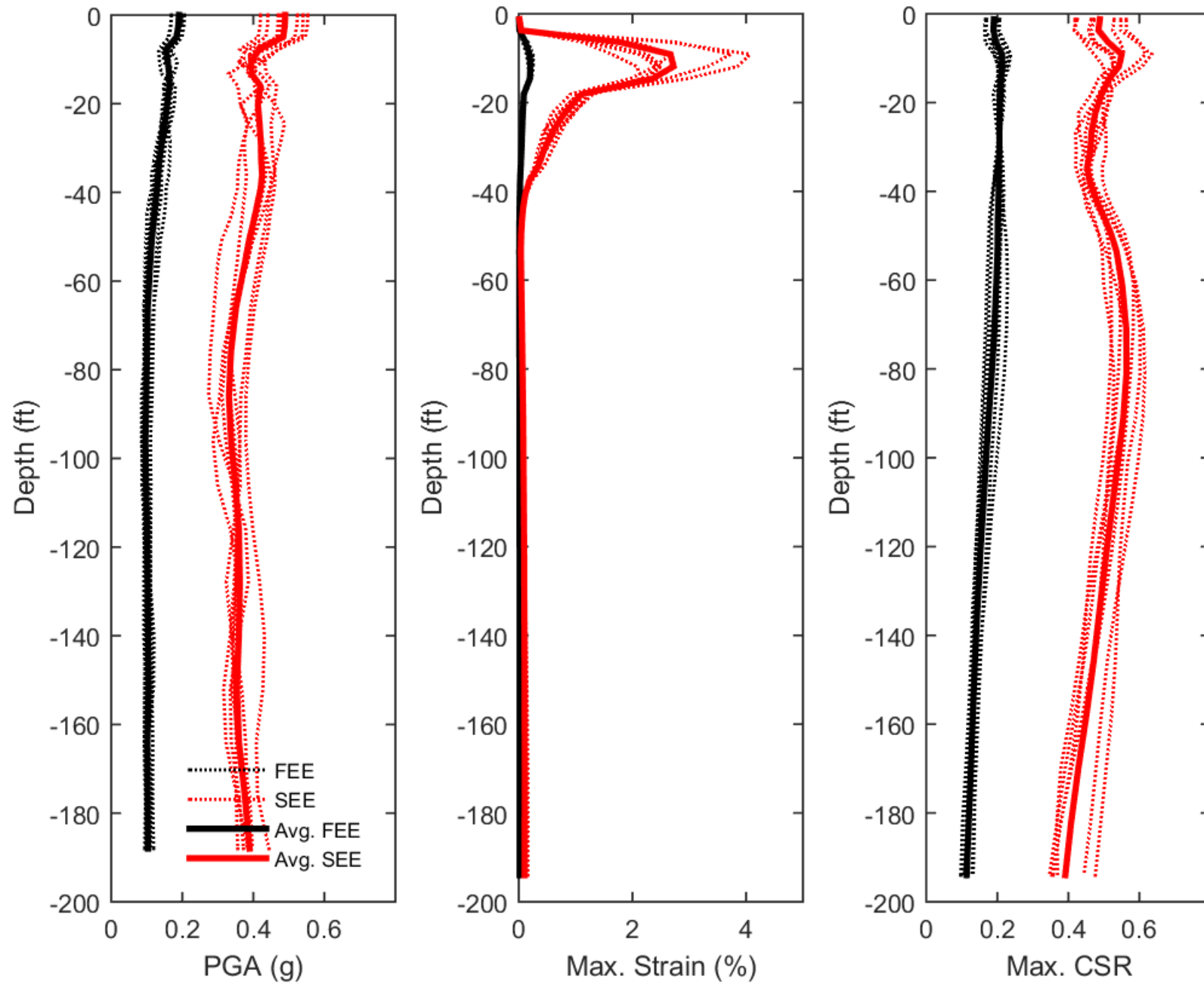


## Summary of the profile outputs for Nonlinear analysis

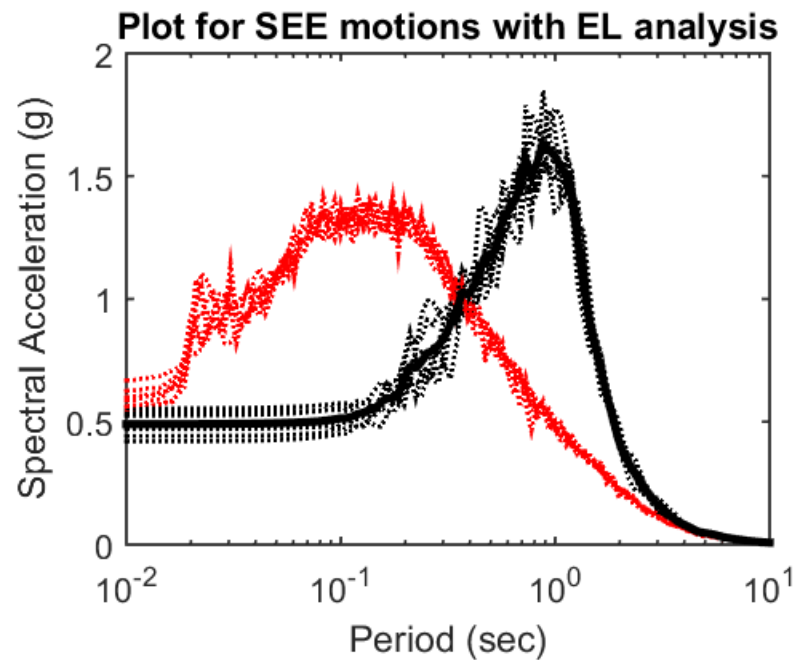
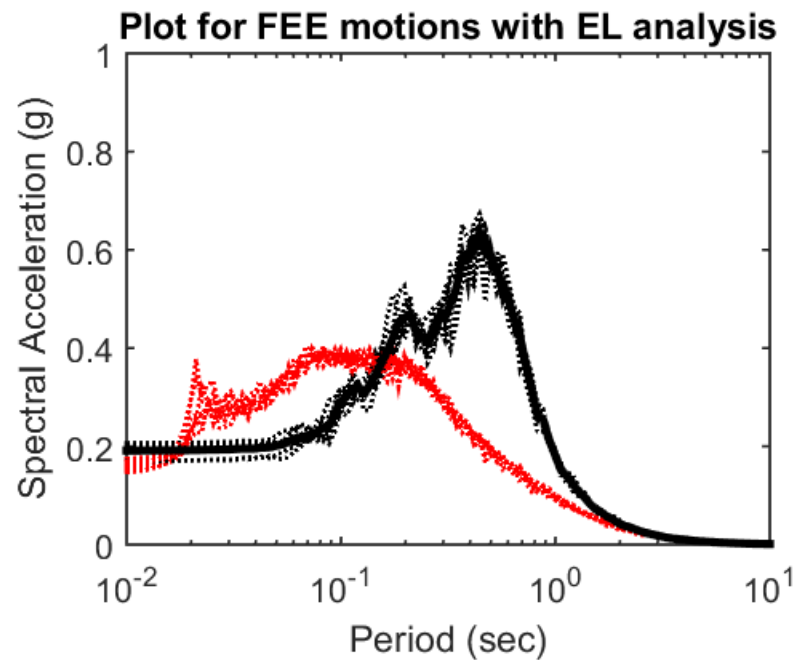
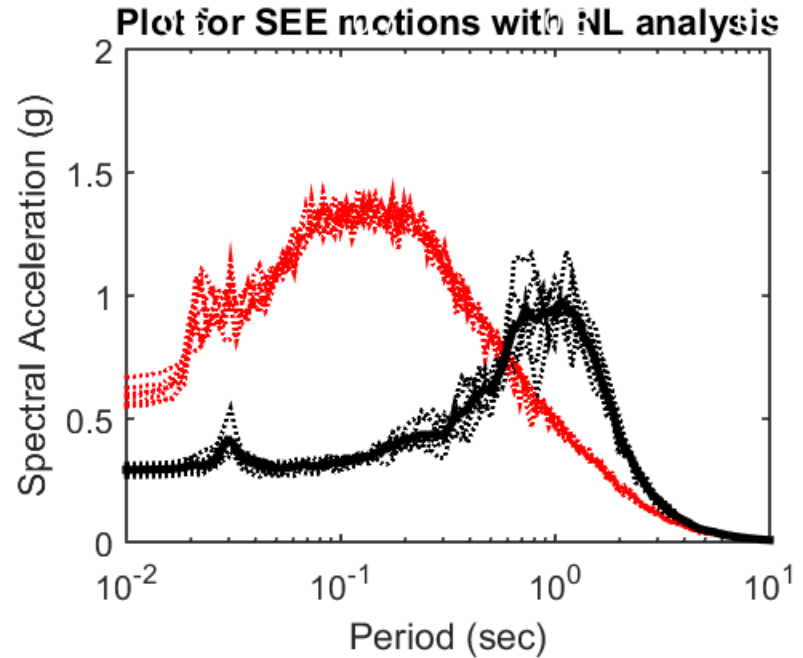
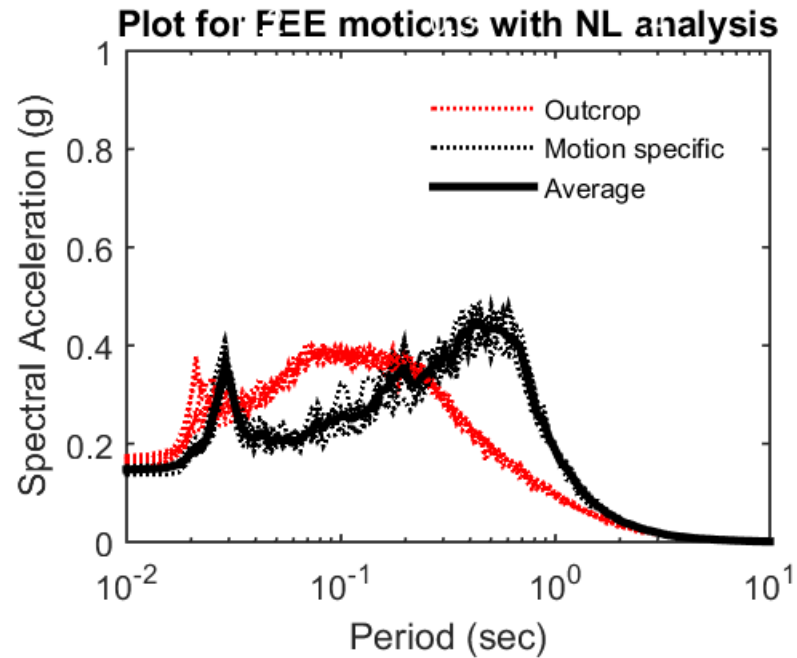




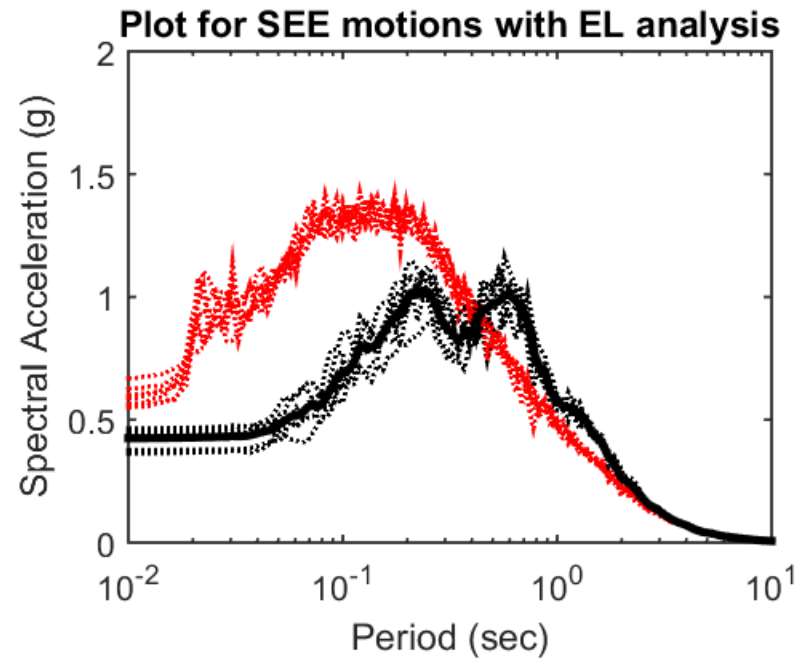
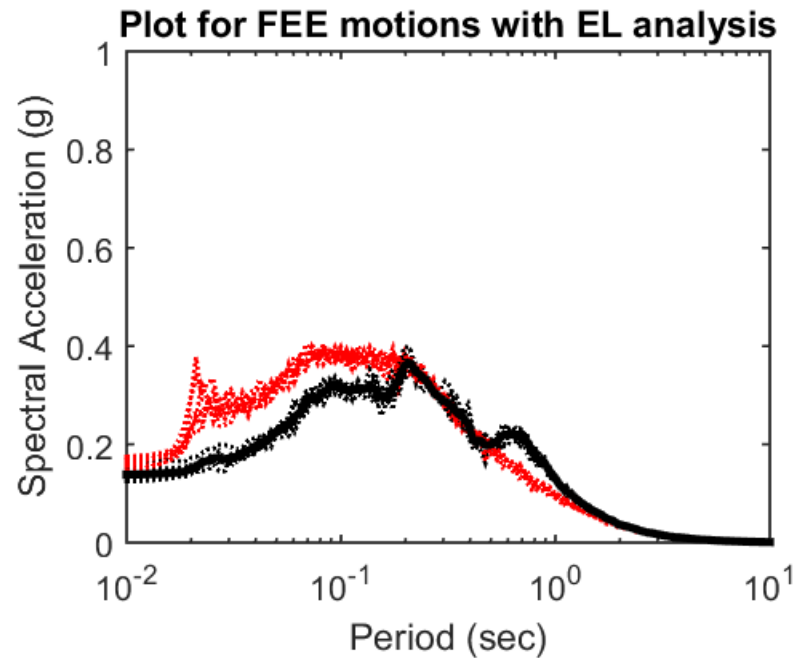
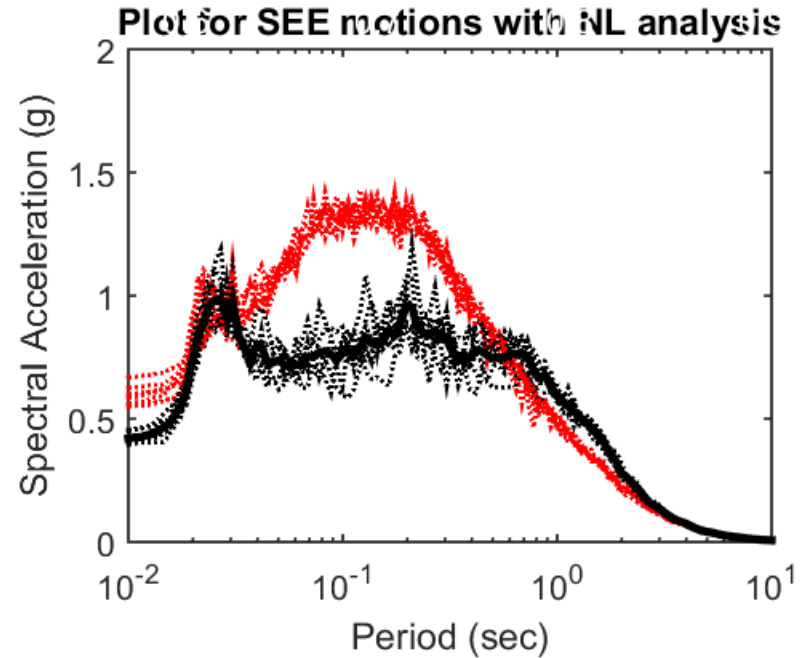
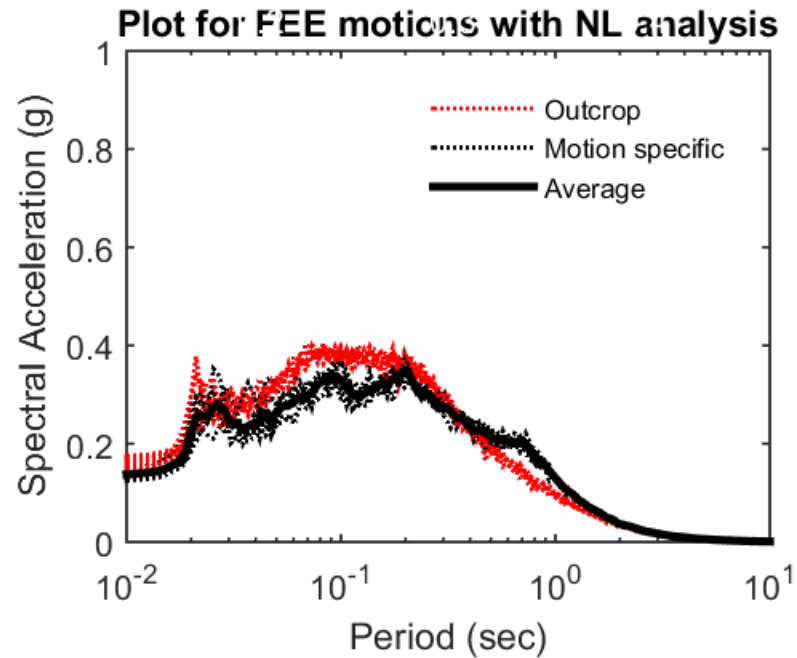
### Summary of the profile outputs for Equivalent-linear analysis



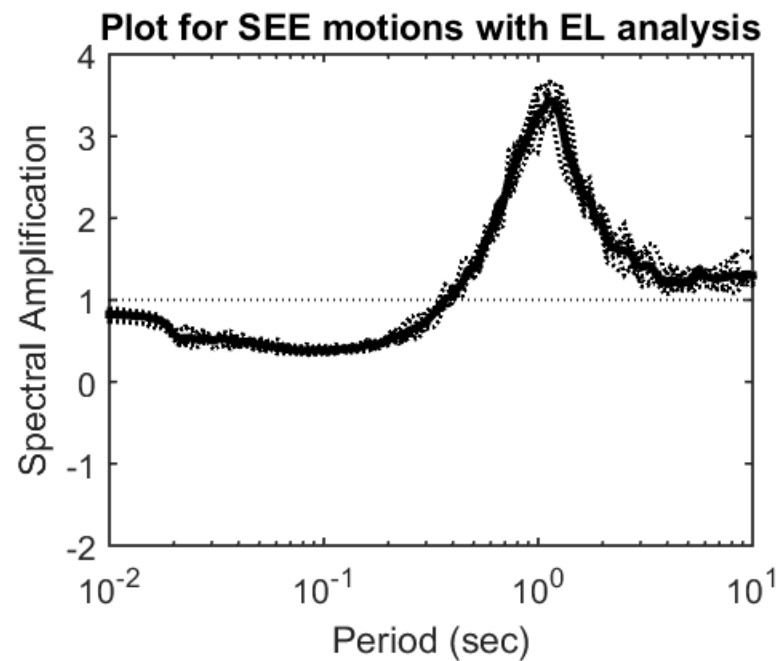
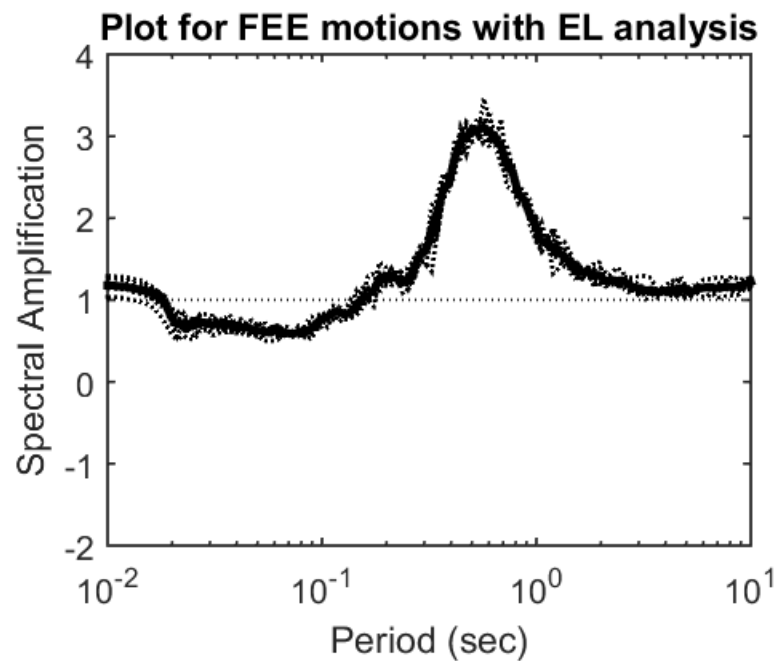
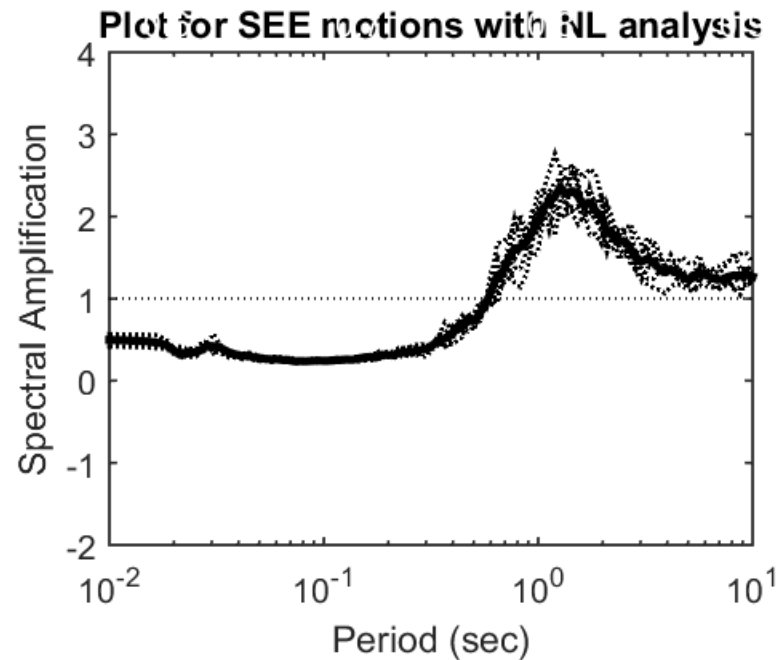
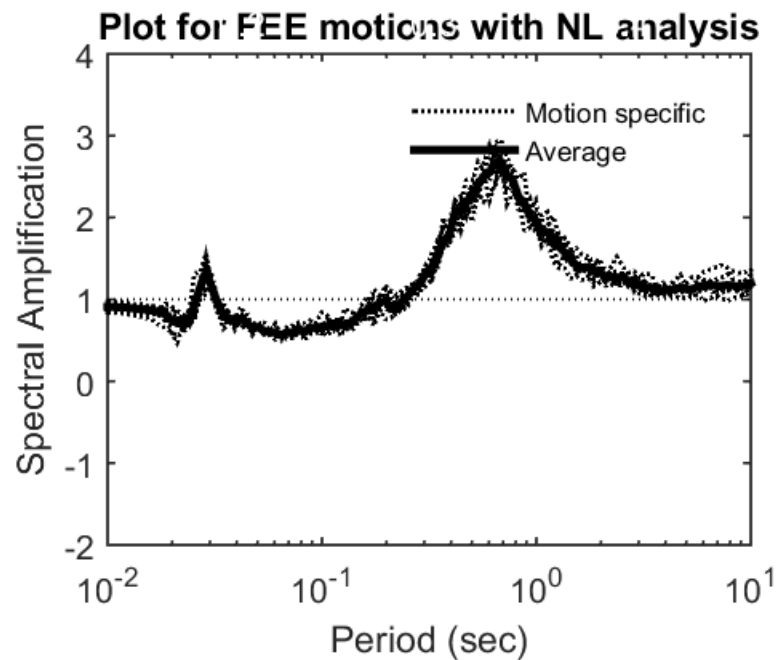
## Summary plots: RSA at ground surface



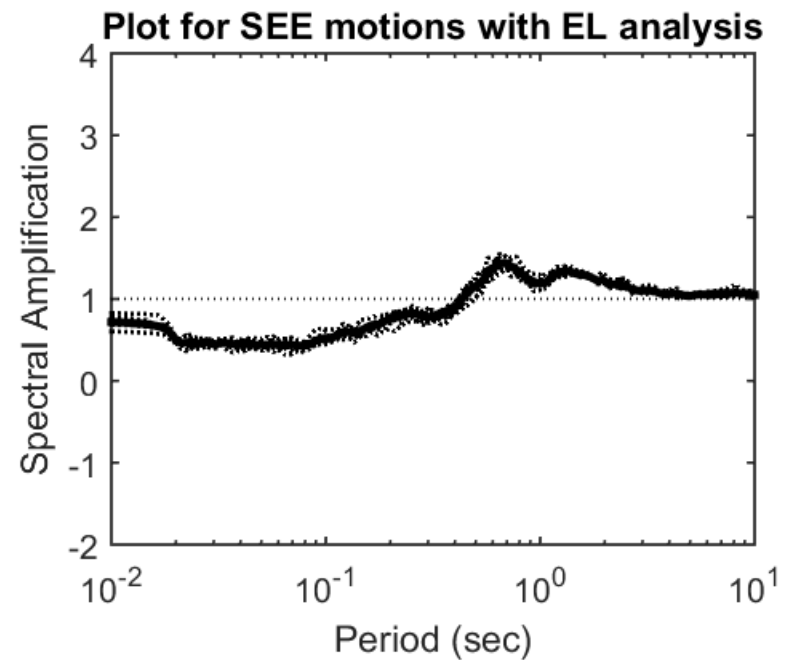
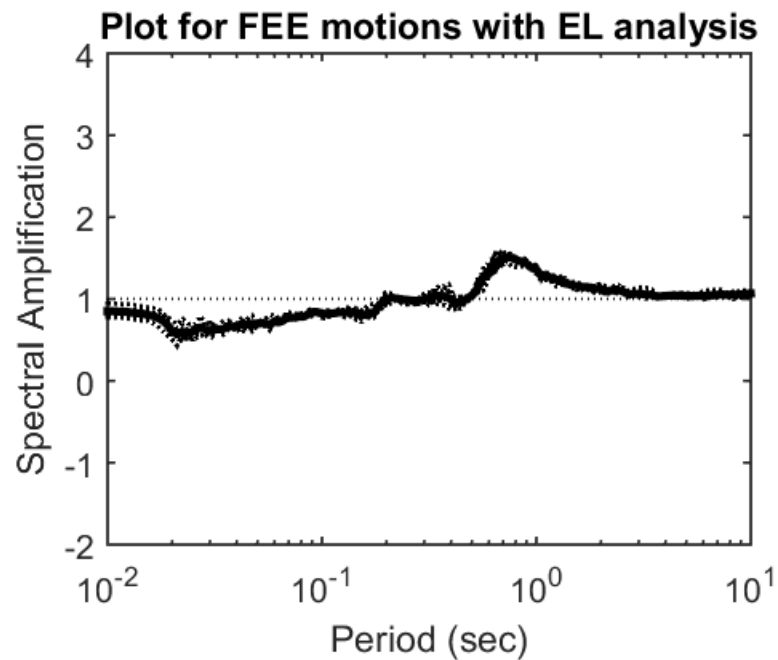
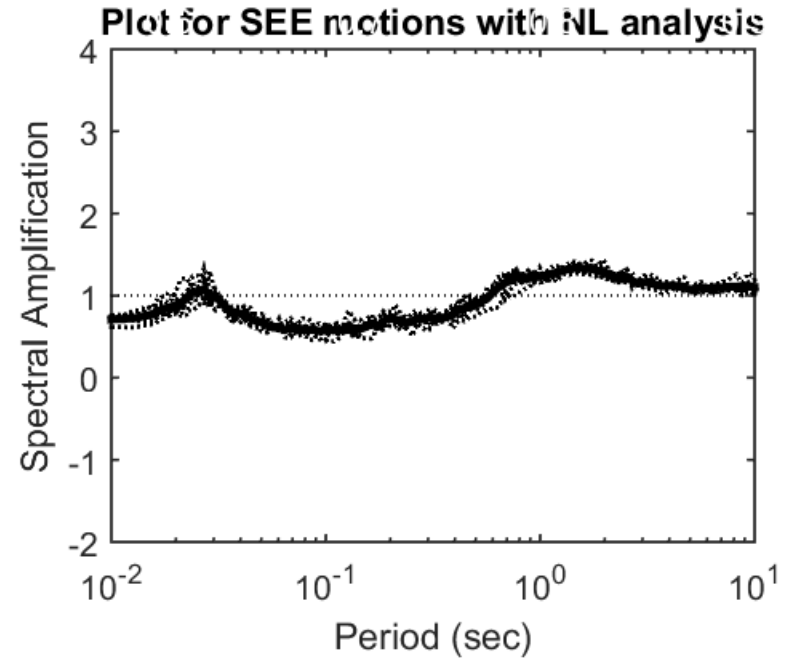
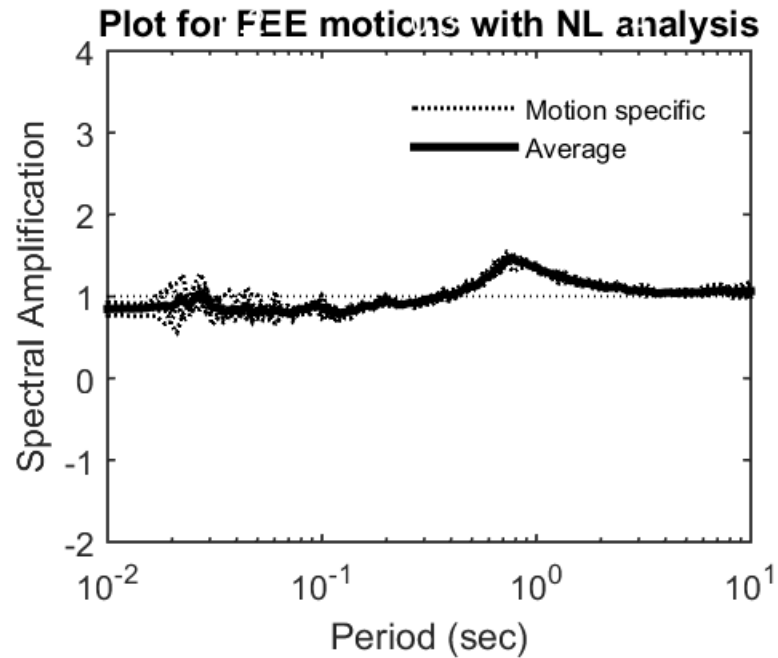
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

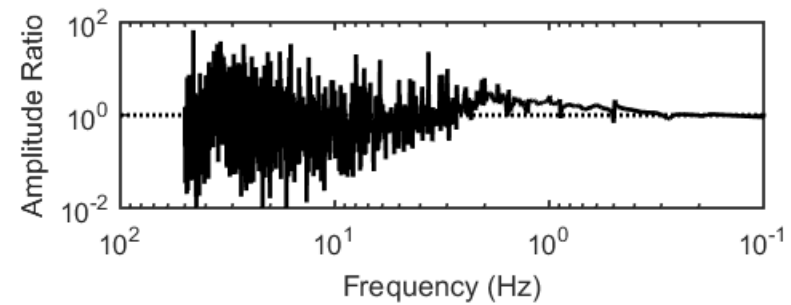
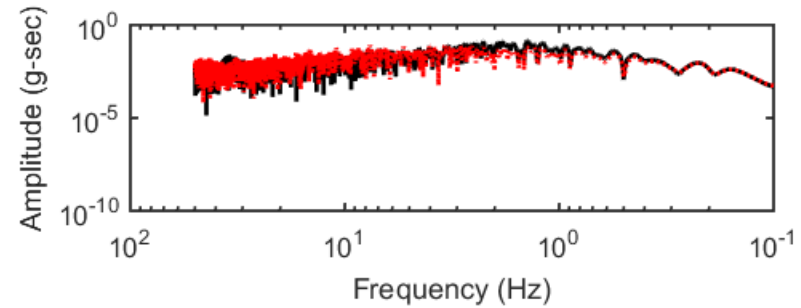
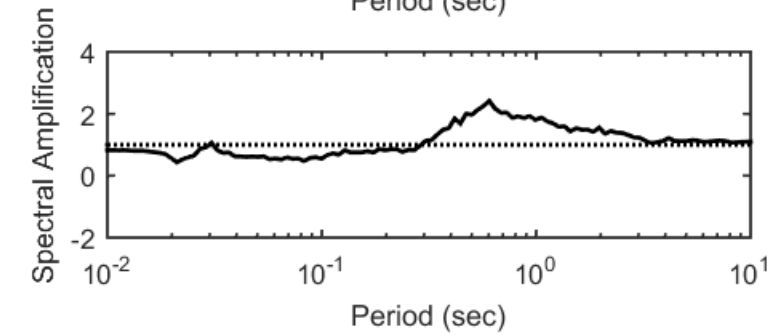
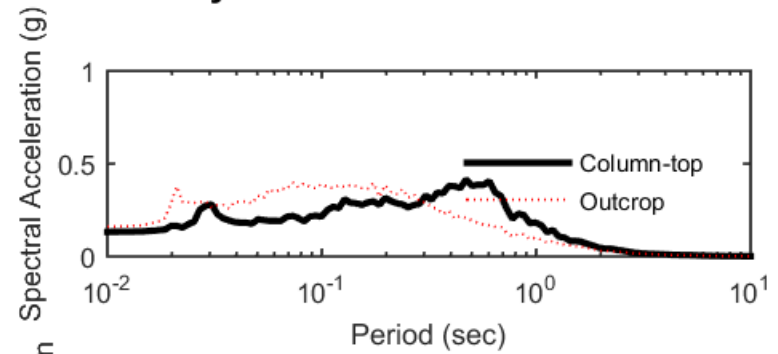
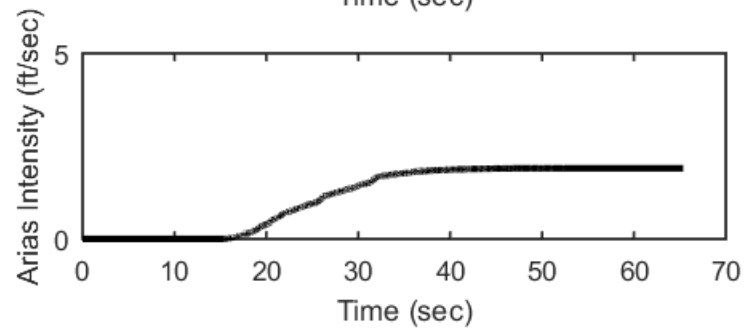
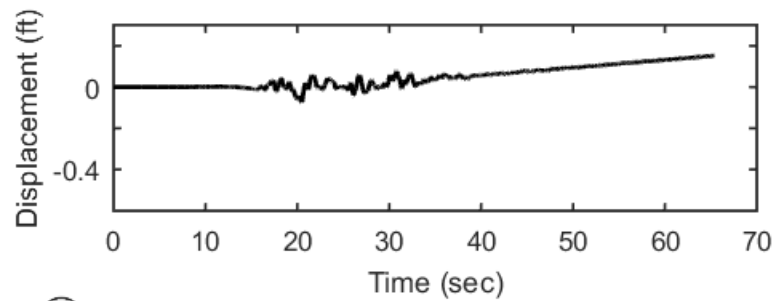
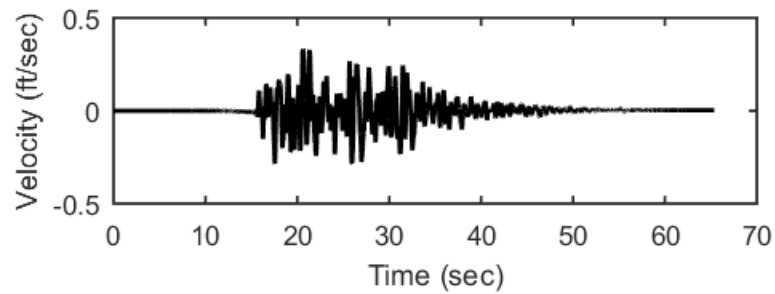
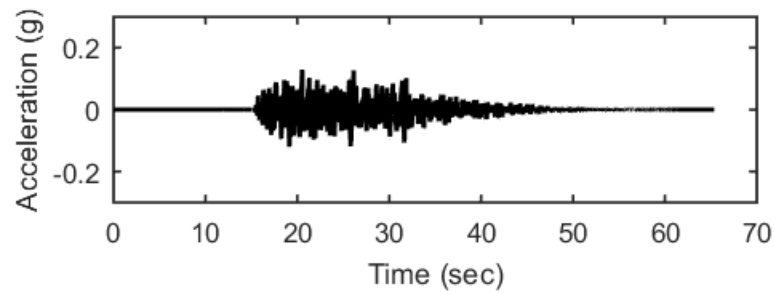


## Summary plots: Spectral amplification at top of Marl

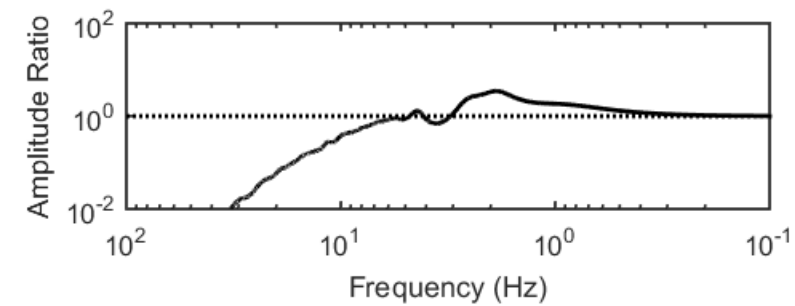
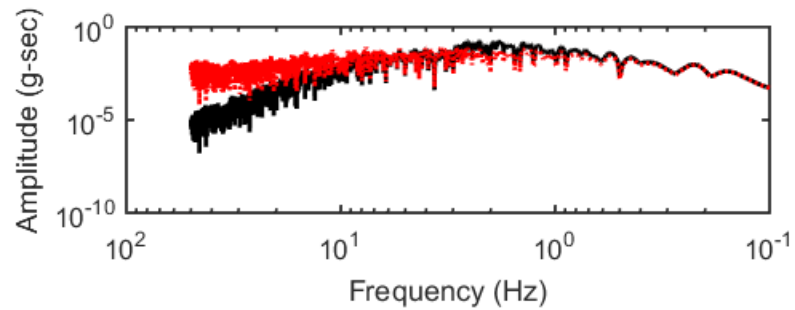
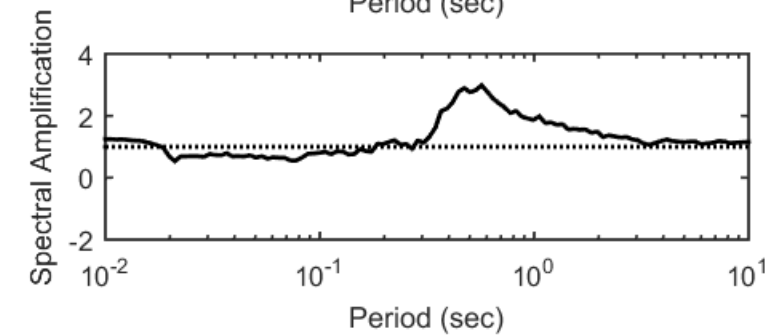
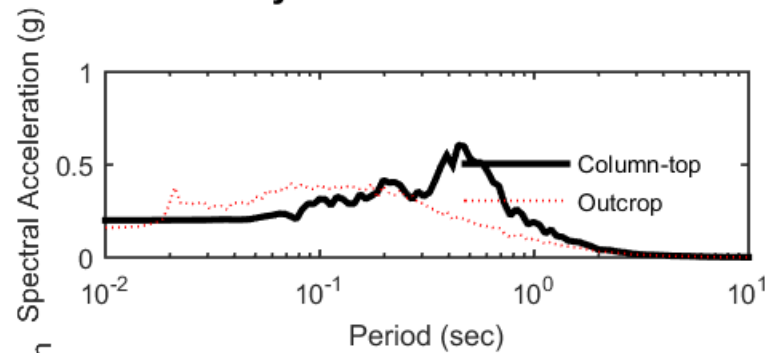
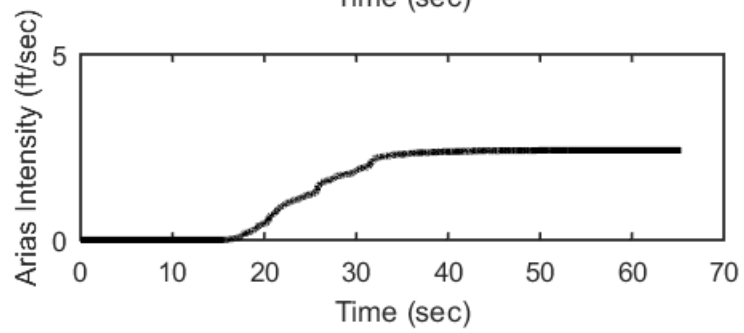
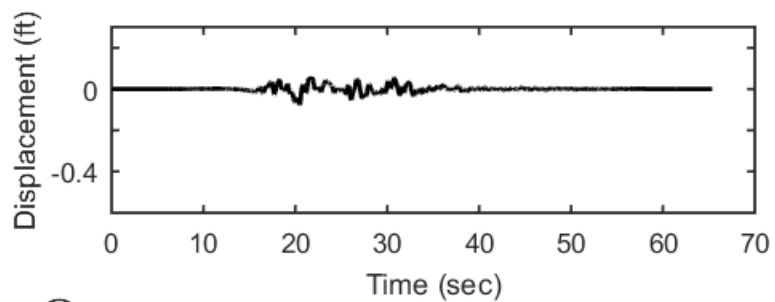
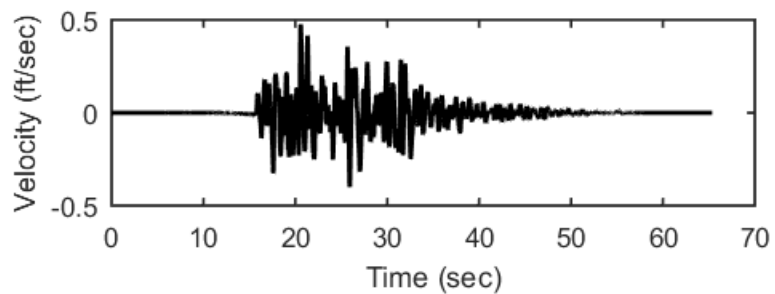
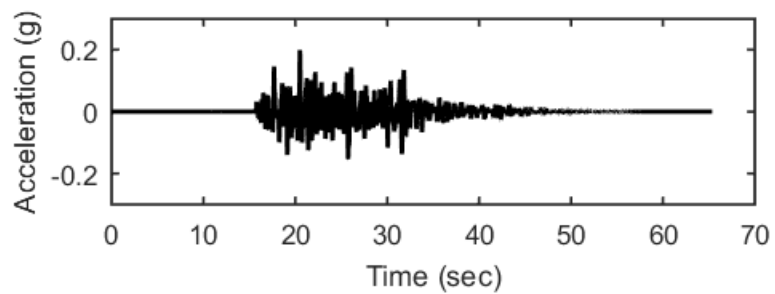


## **500 FT MODEL**

## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1

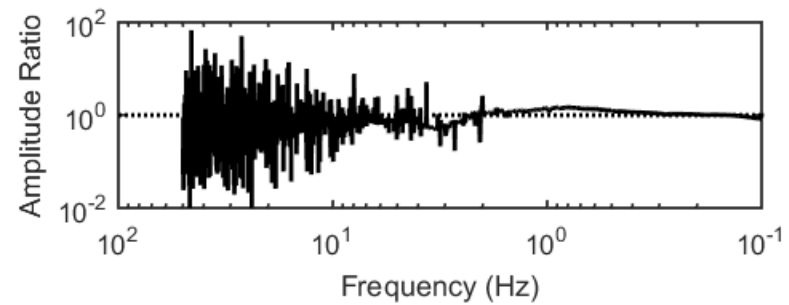
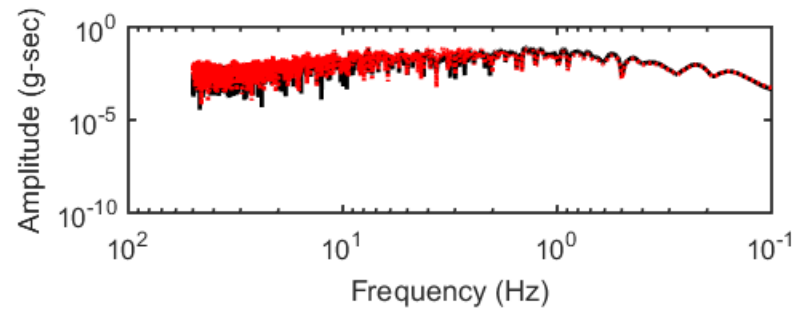
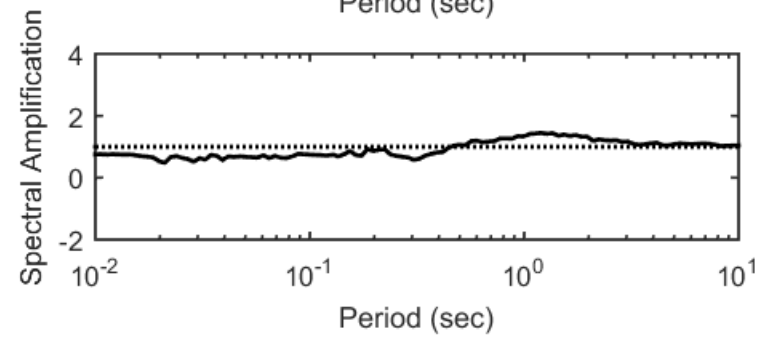
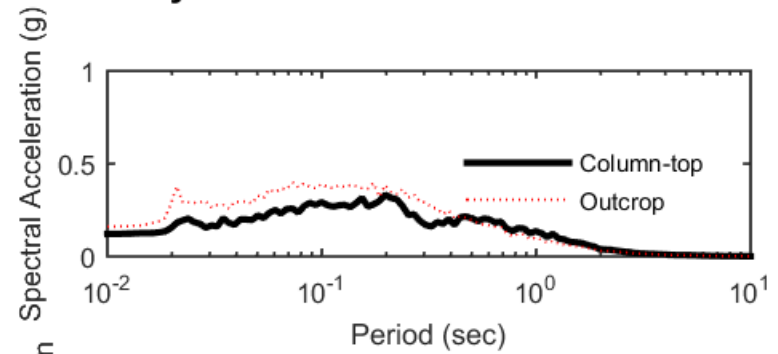
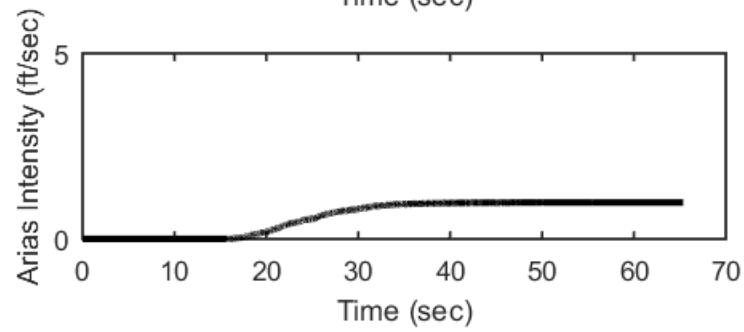
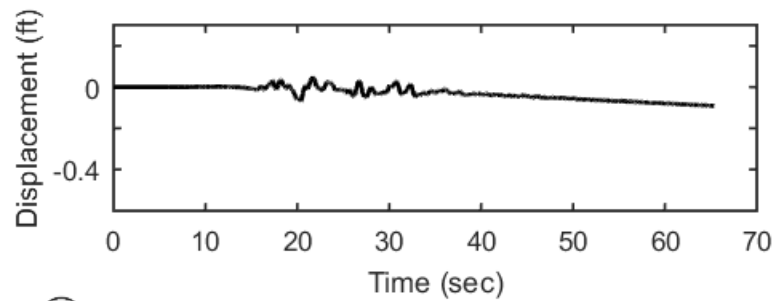
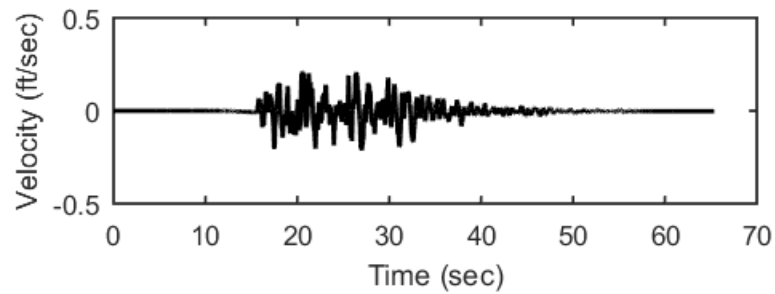
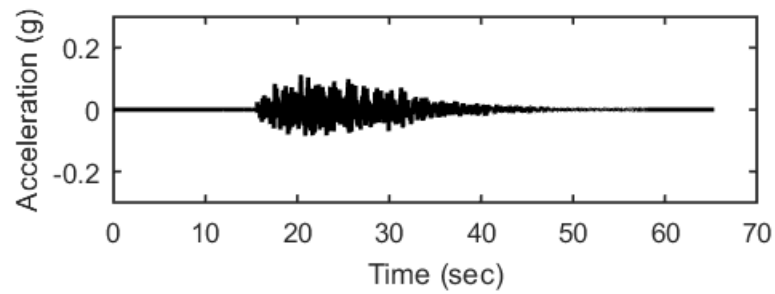


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1

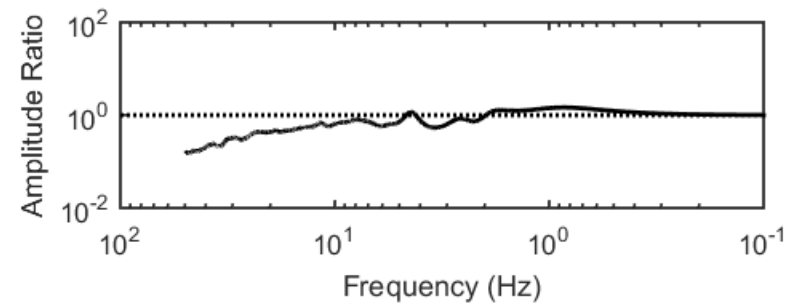
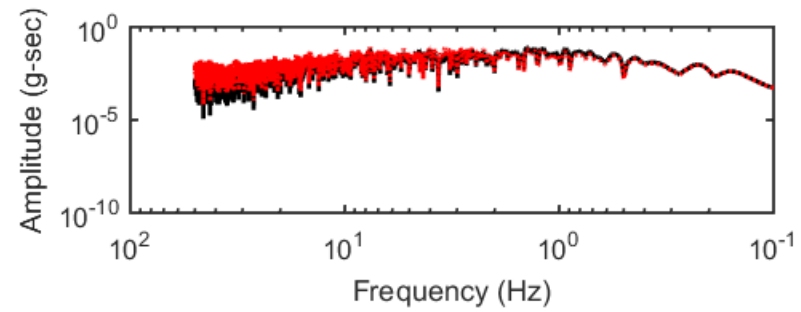
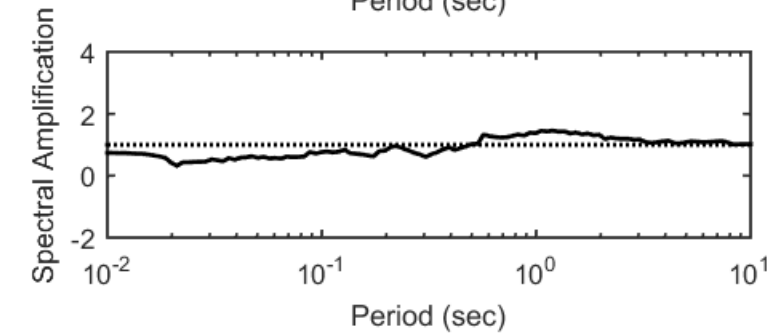
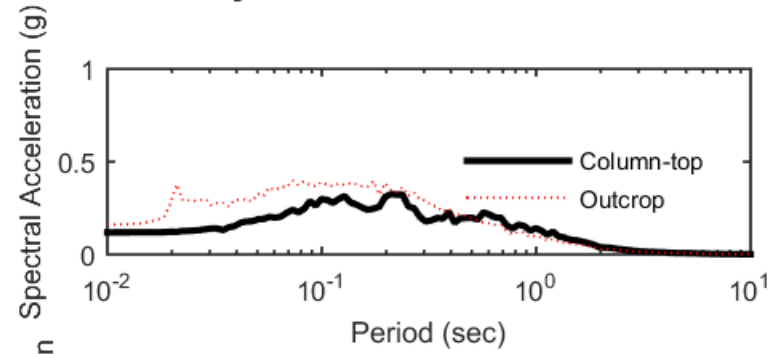
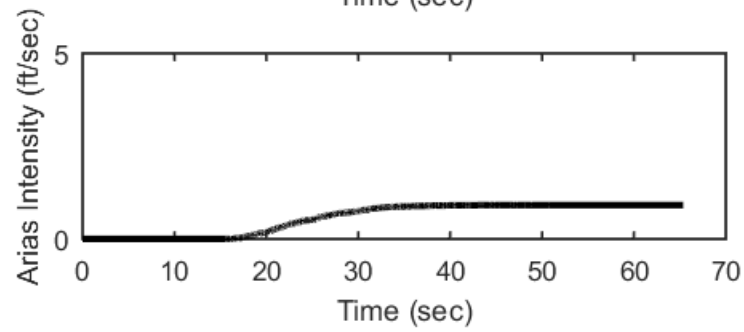
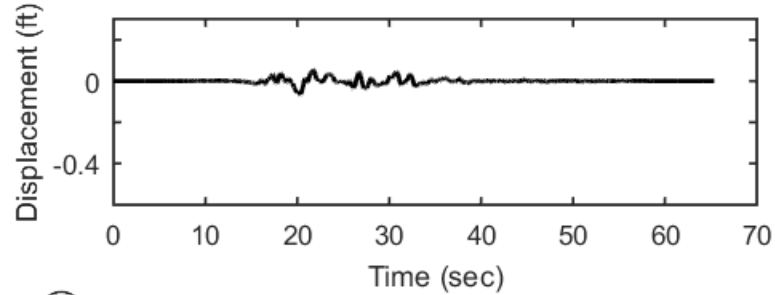
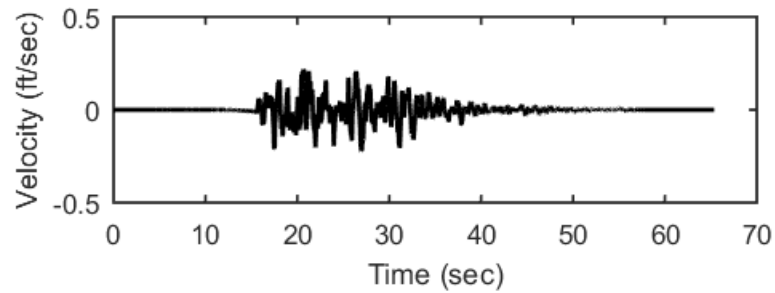
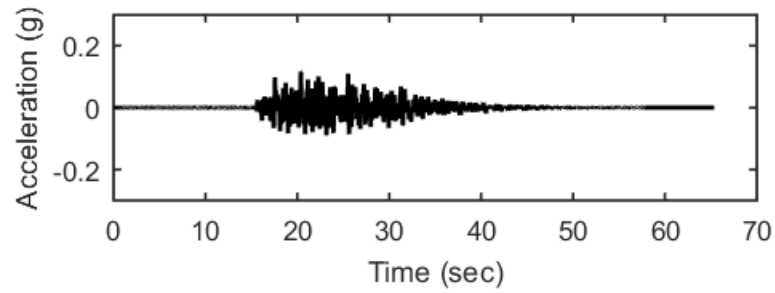




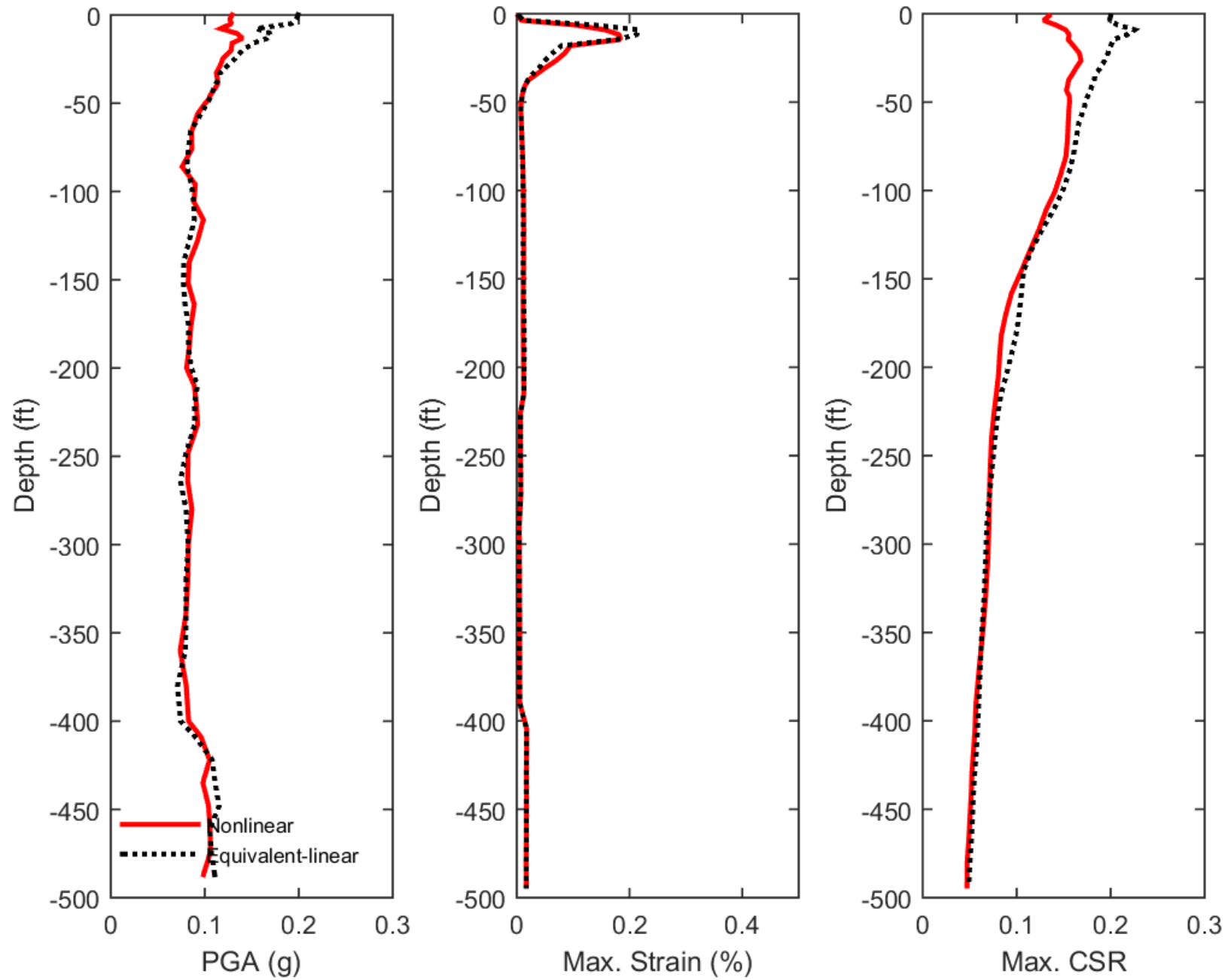
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



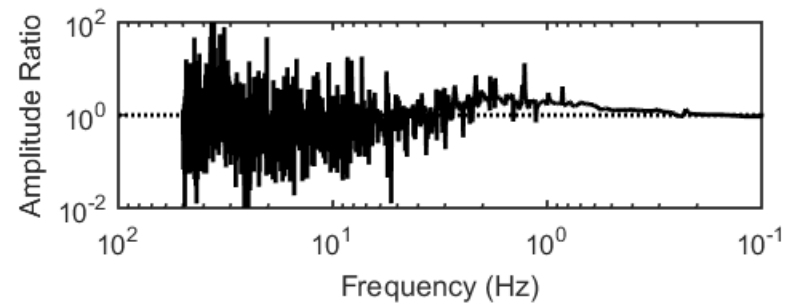
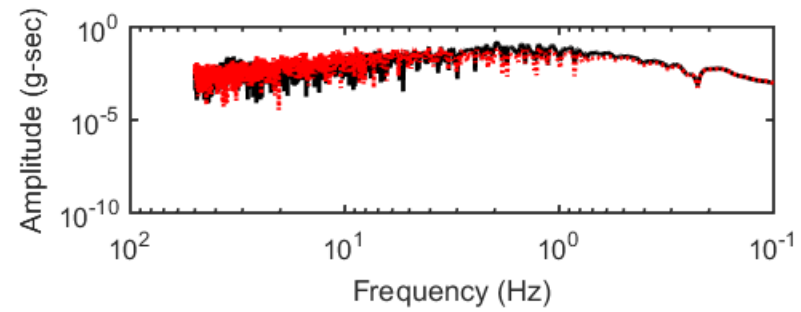
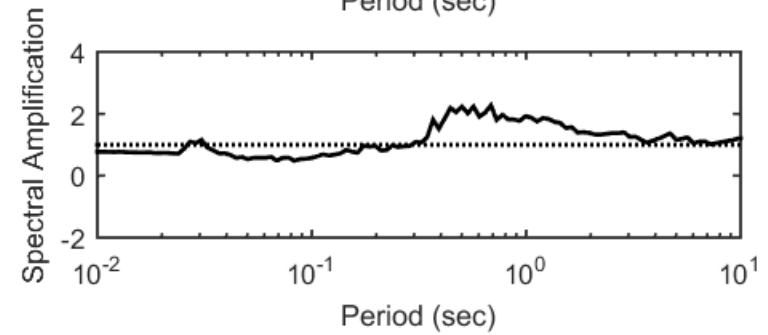
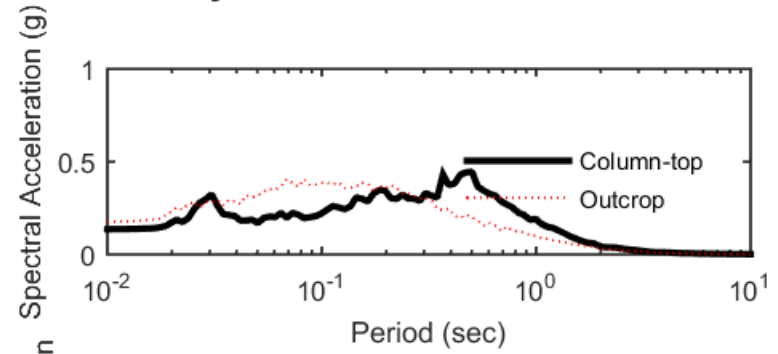
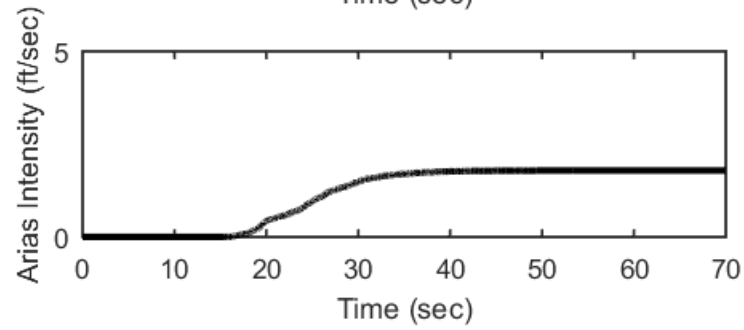
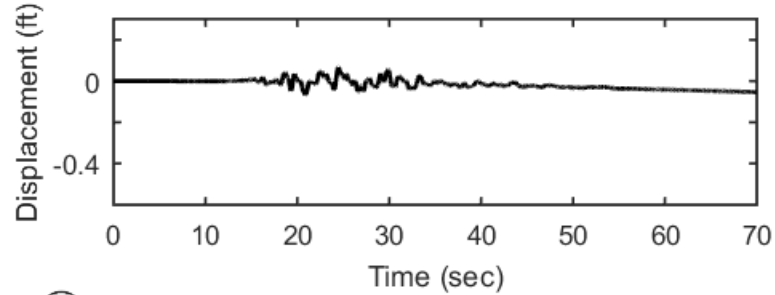
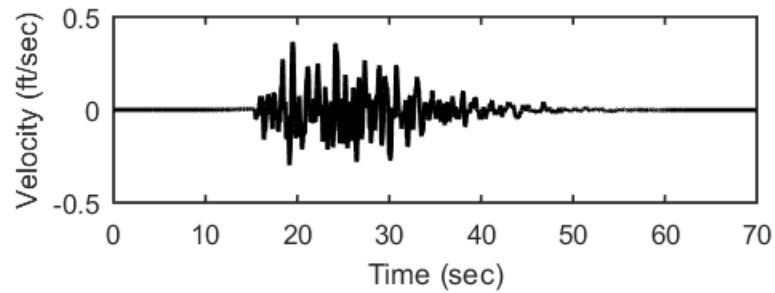
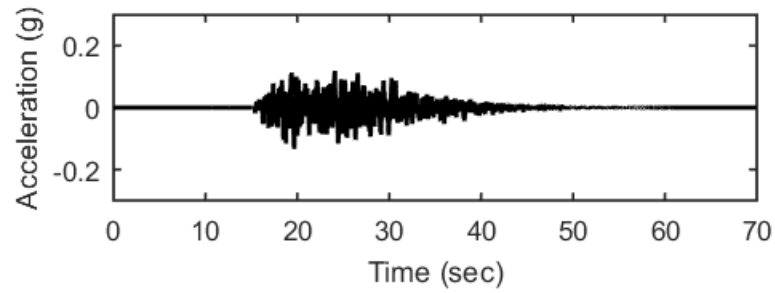
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



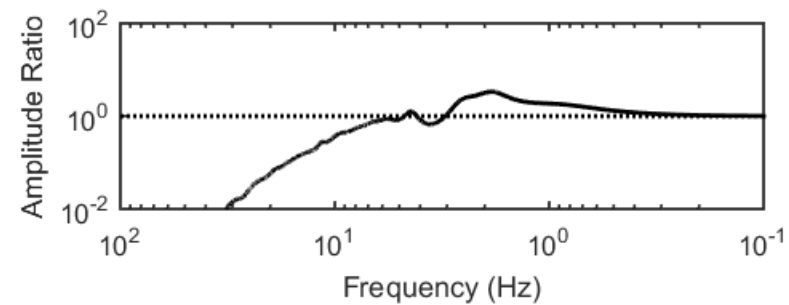
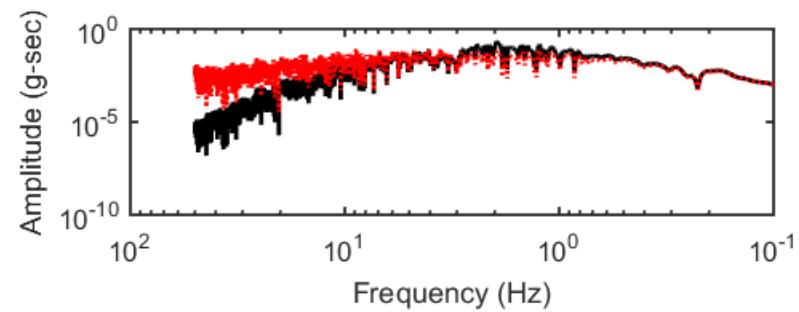
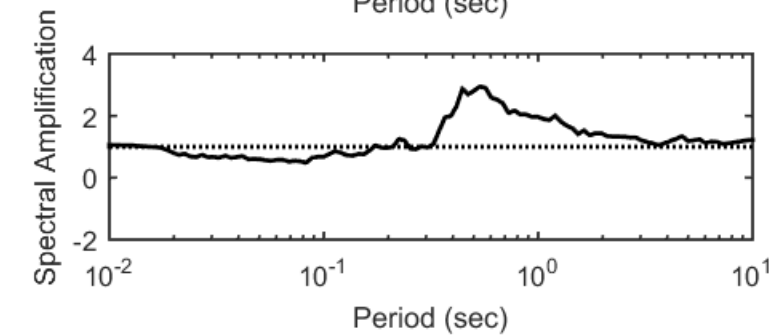
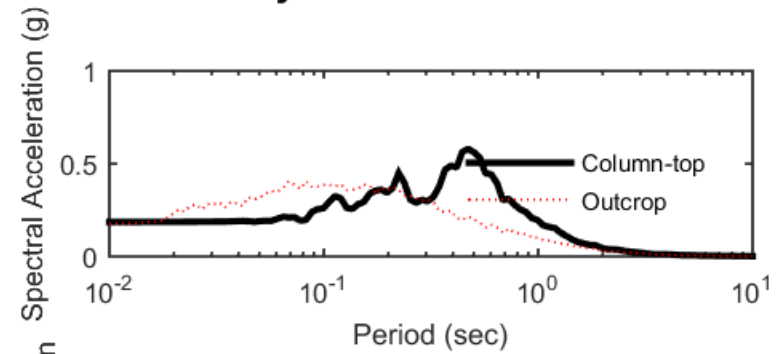
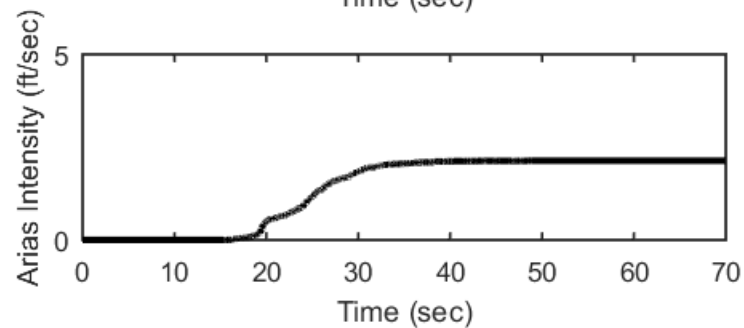
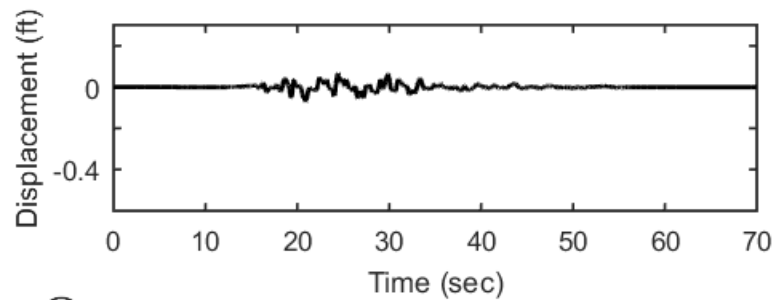
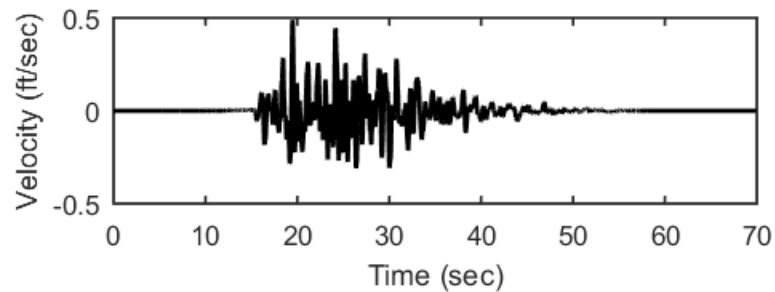
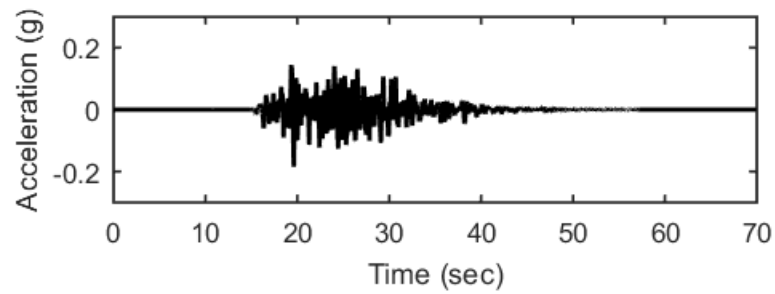
### Profile outputs for Motion: FEE1



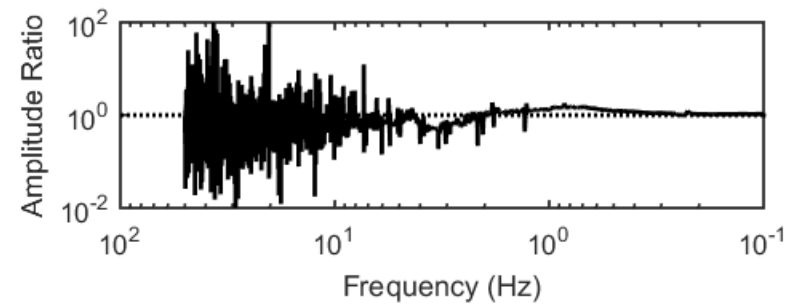
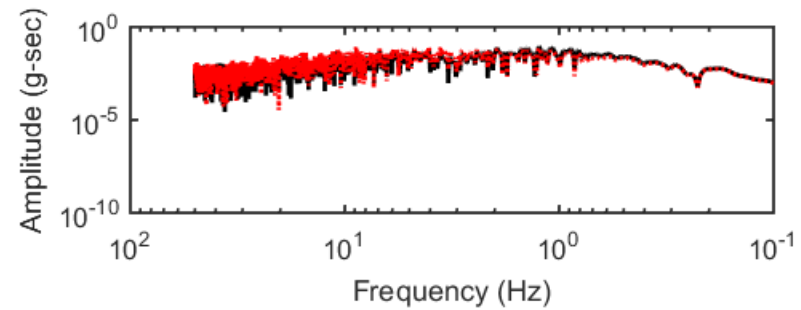
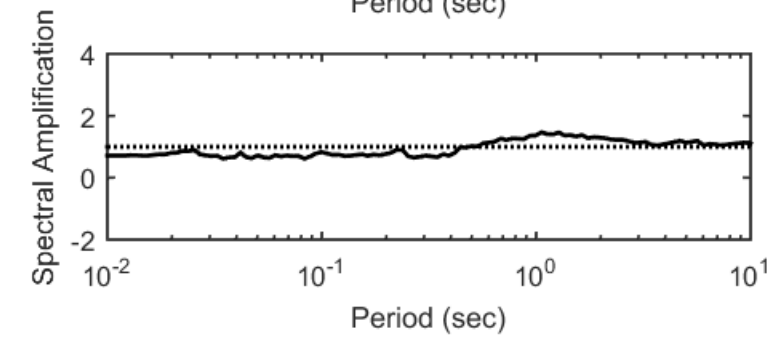
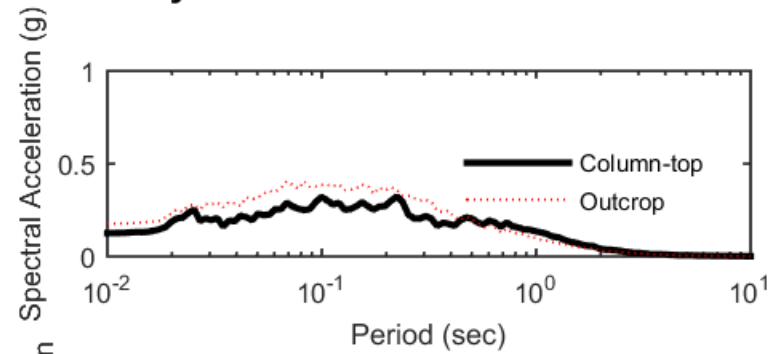
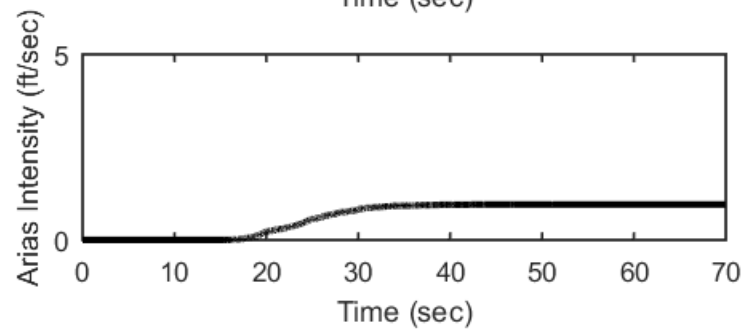
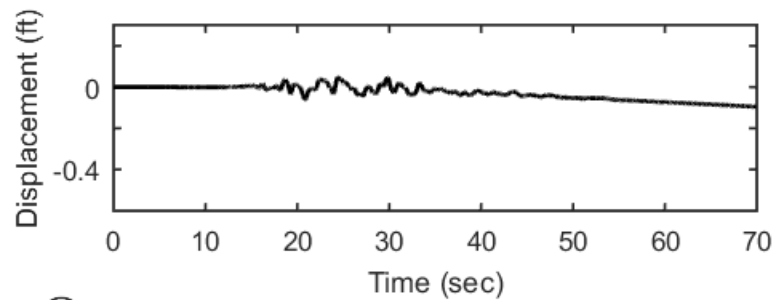
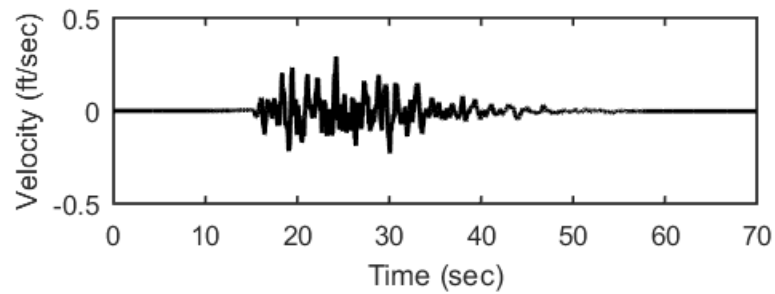
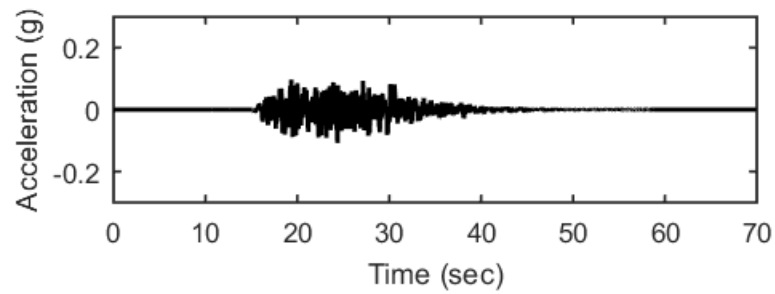
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



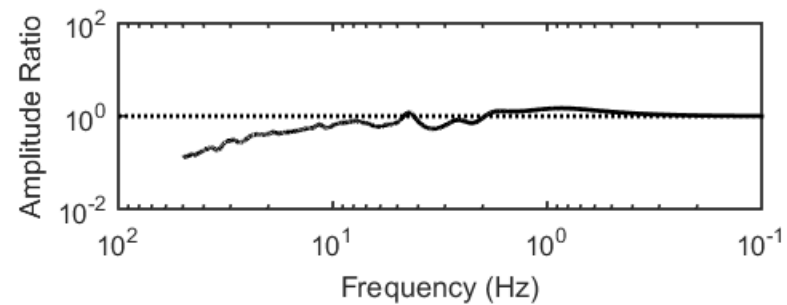
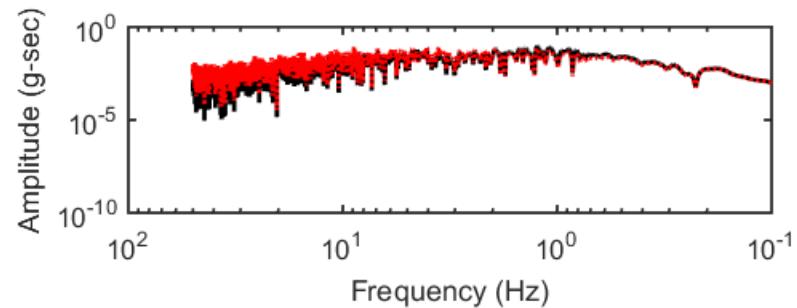
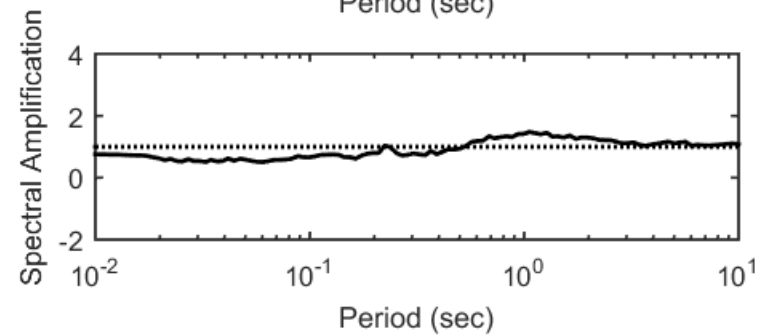
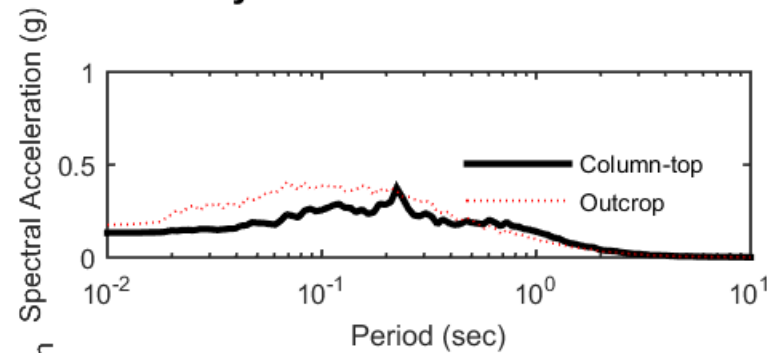
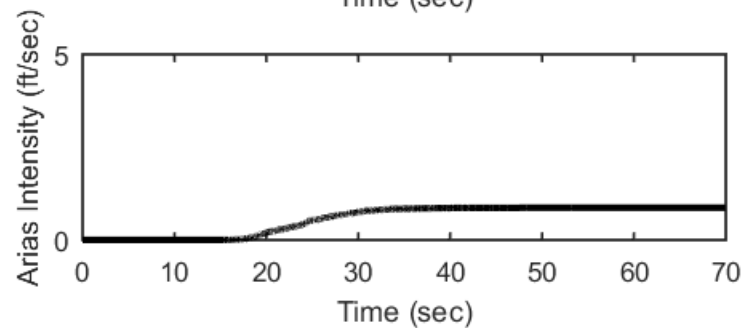
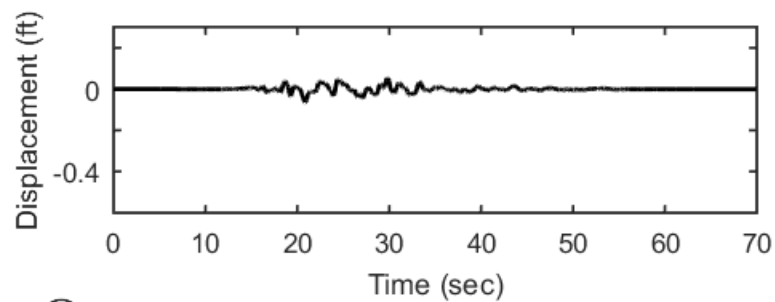
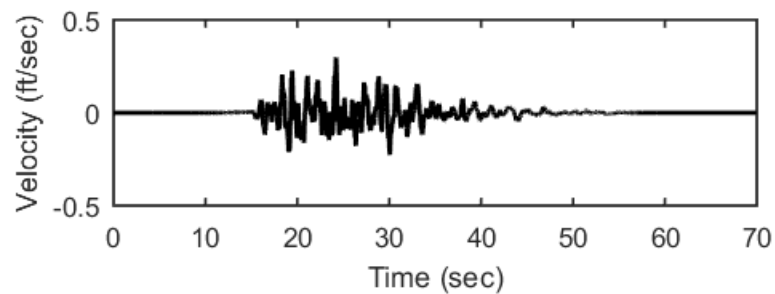
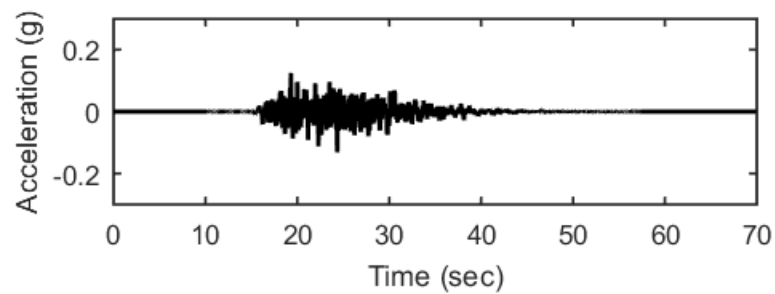
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



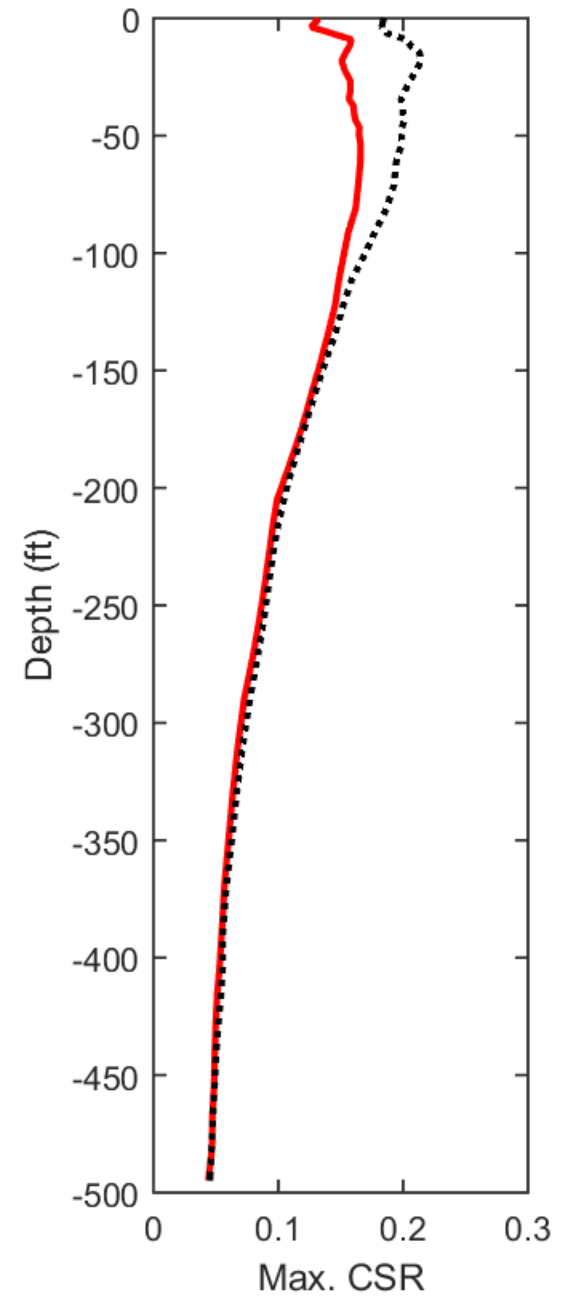
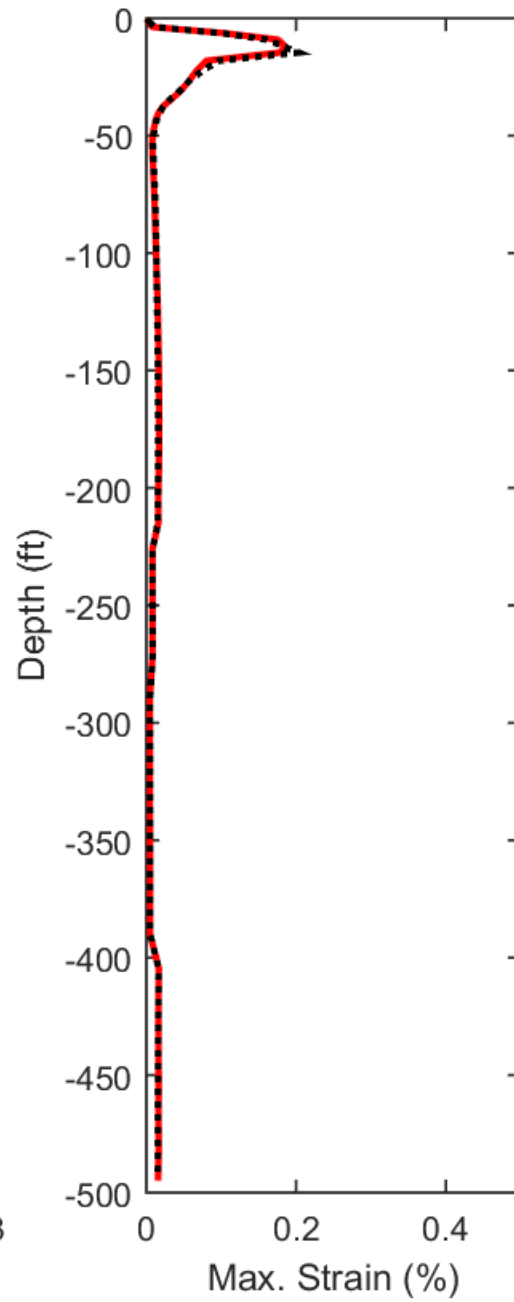
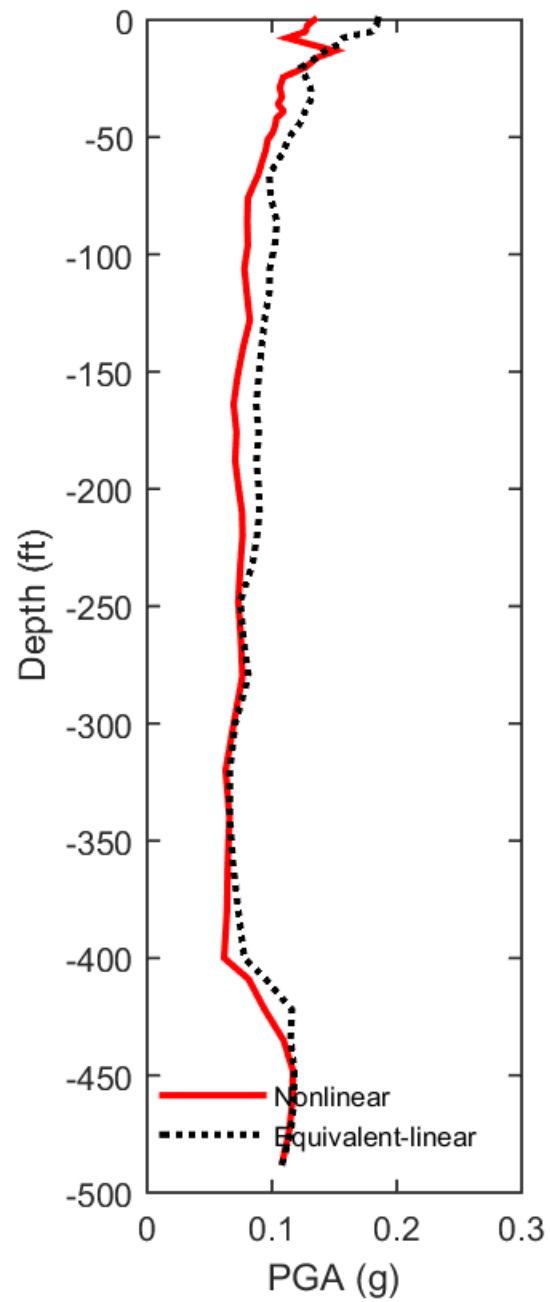
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2

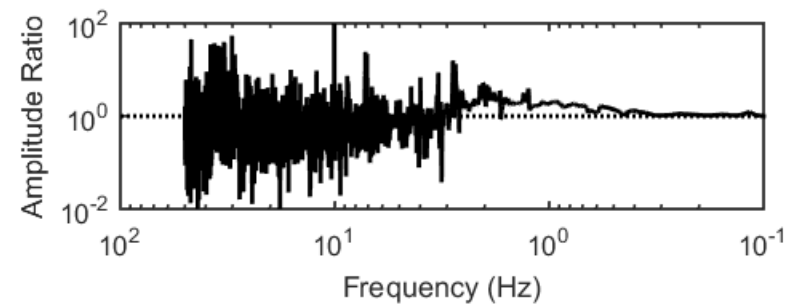
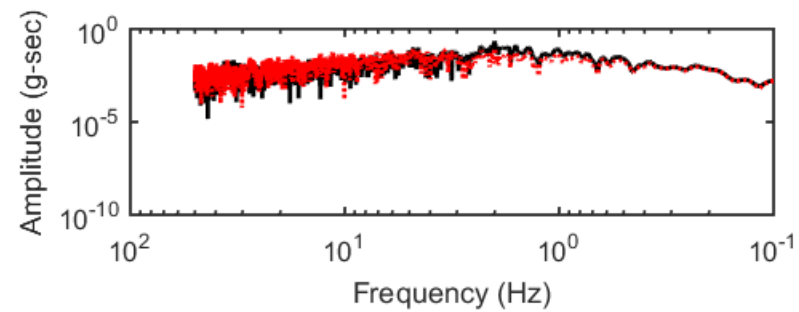
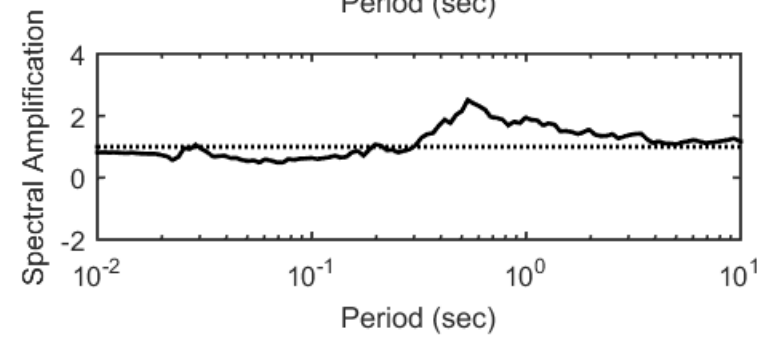
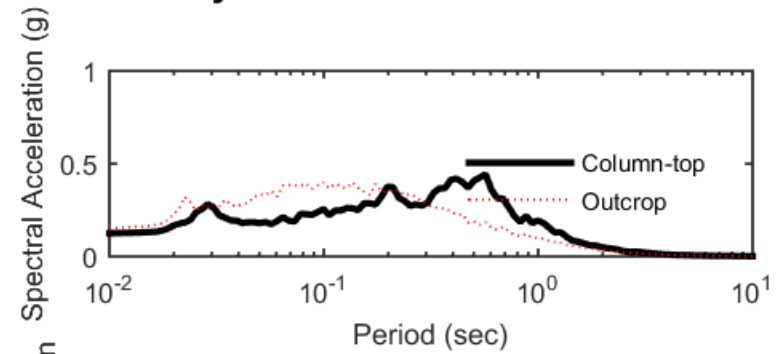
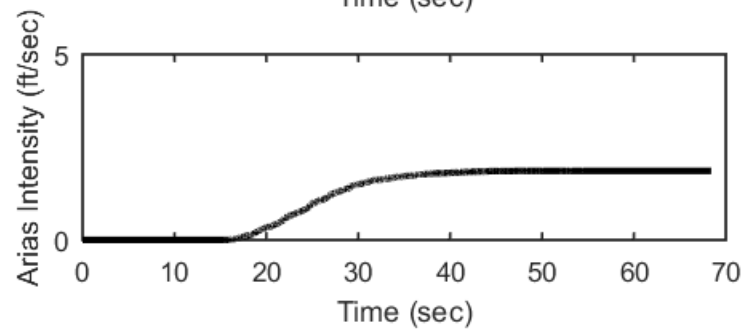
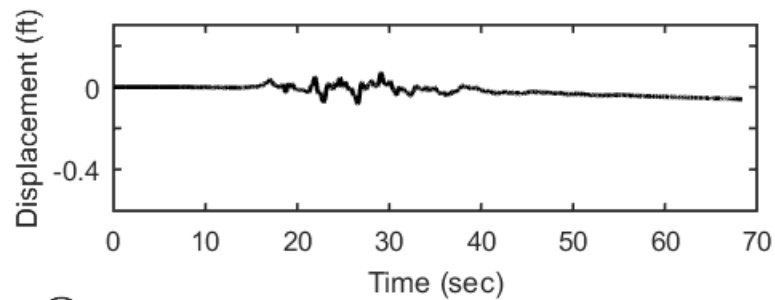
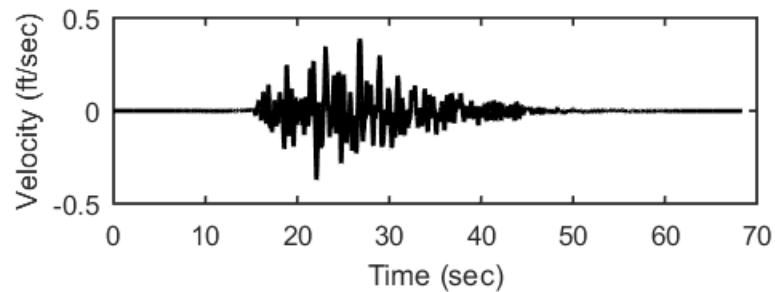
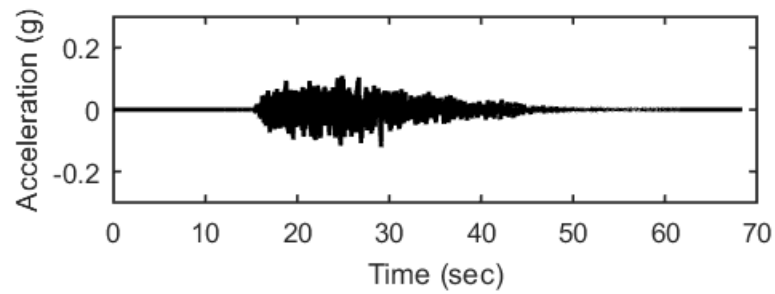


### Profile outputs for Motion: FEE2

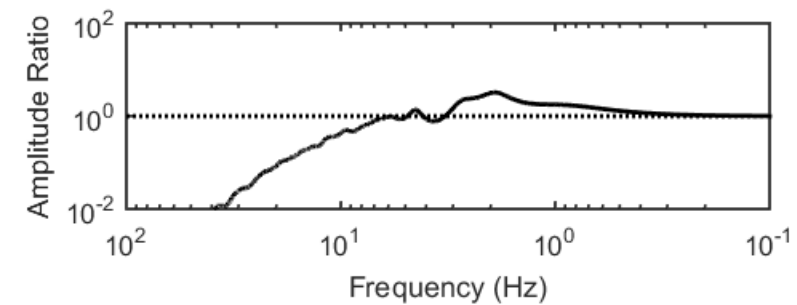
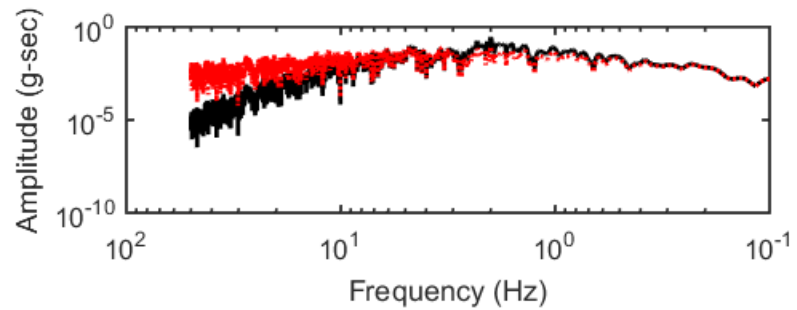
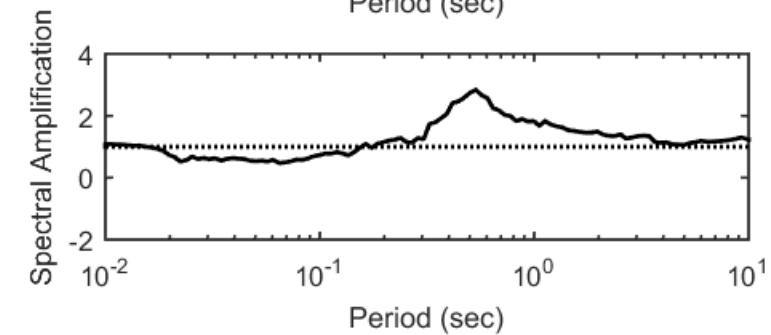
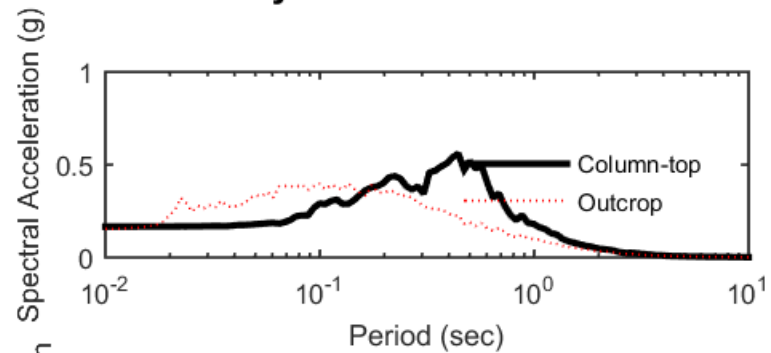
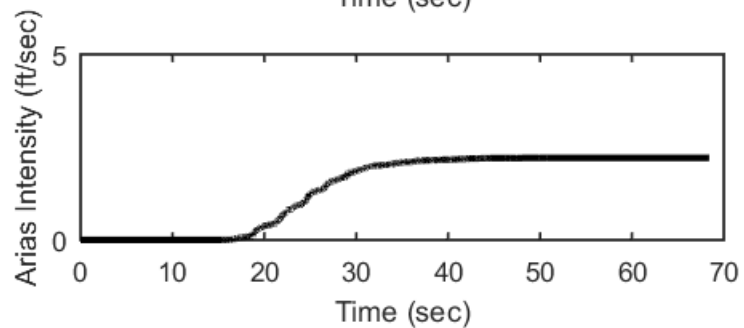
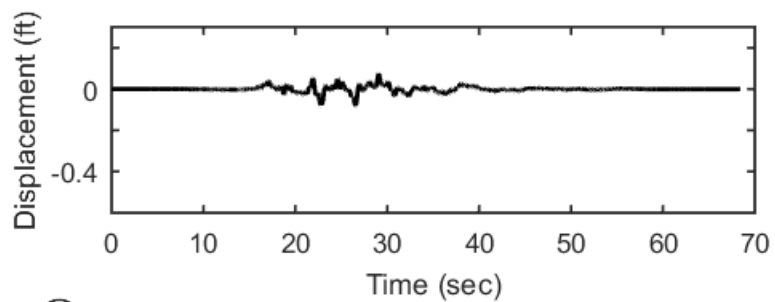
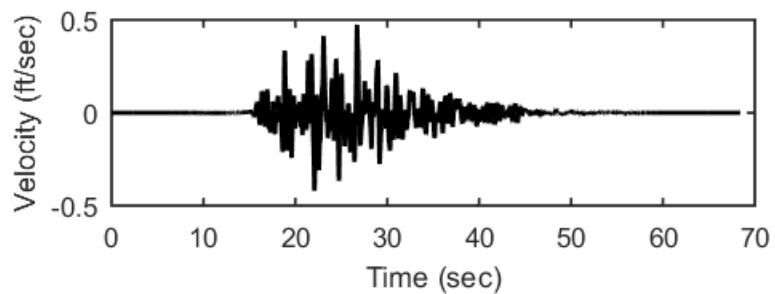
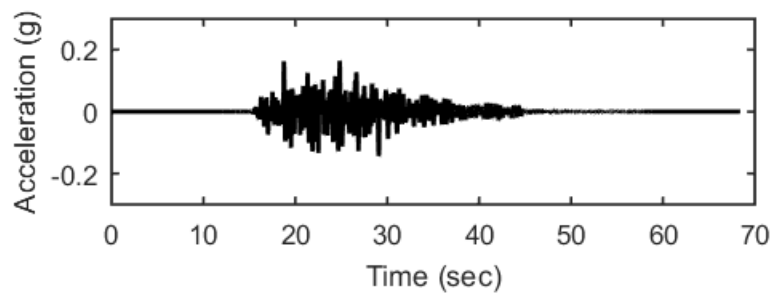




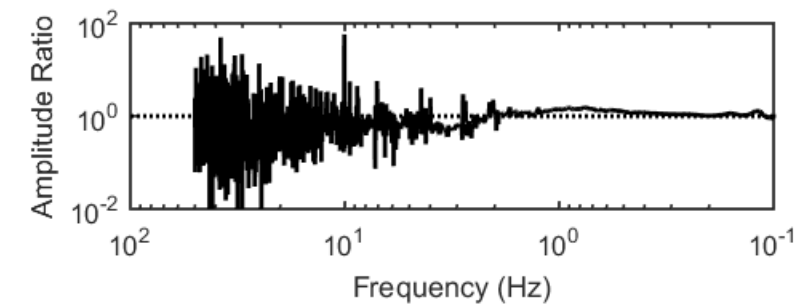
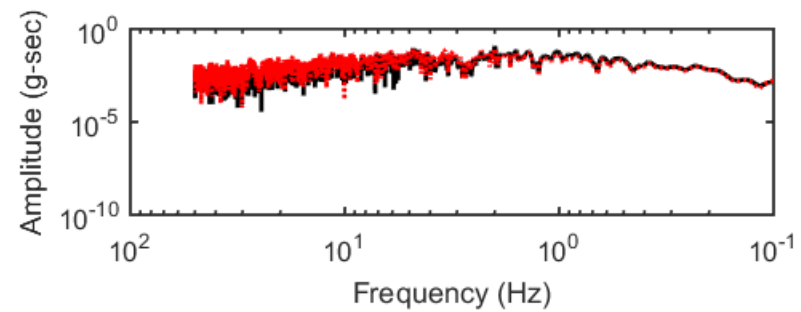
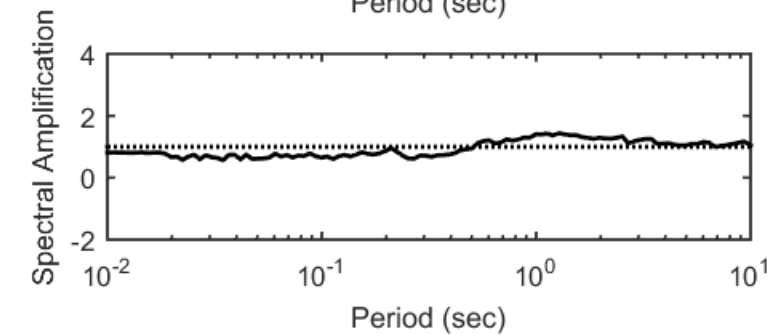
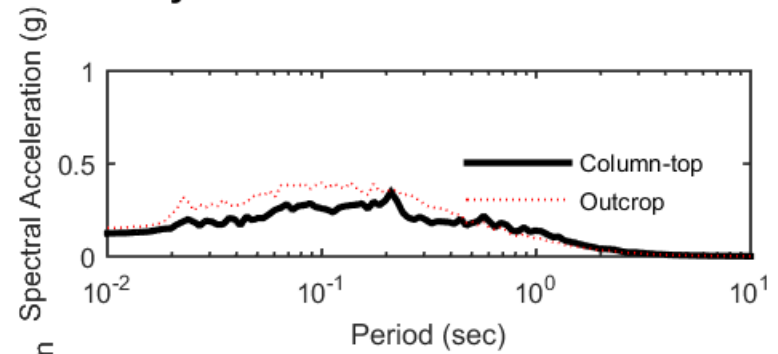
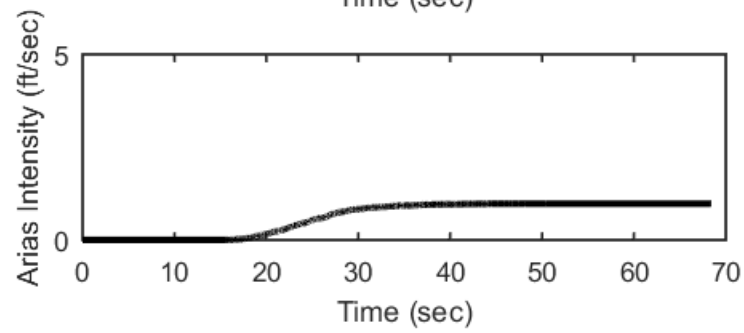
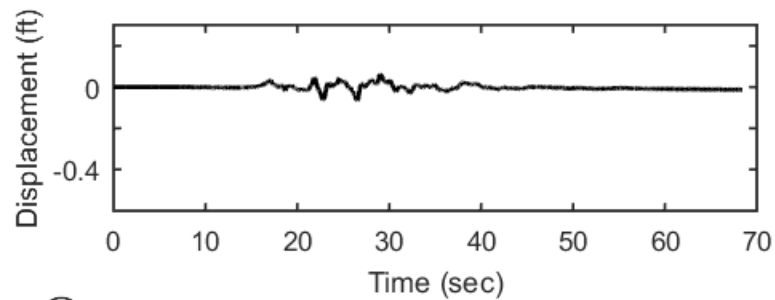
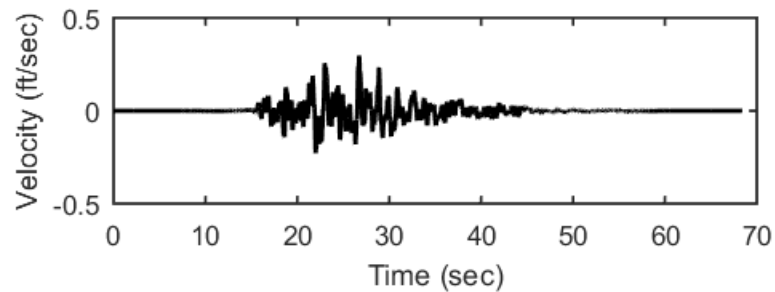
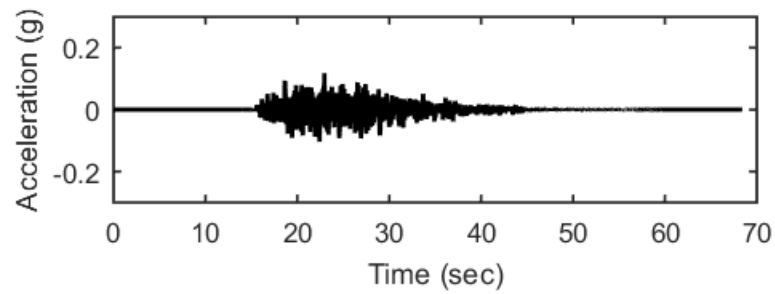
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



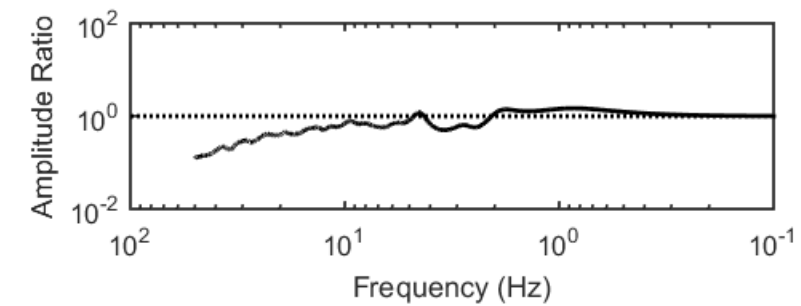
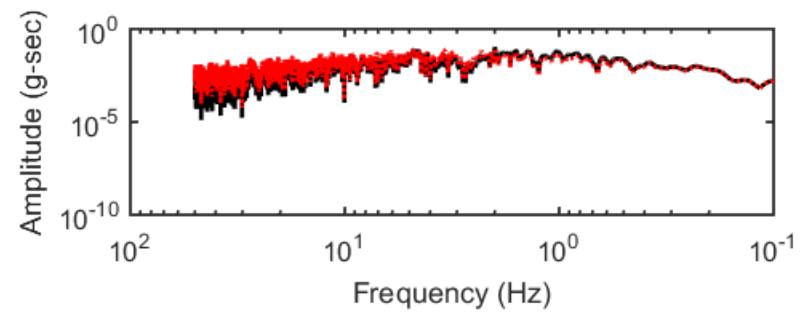
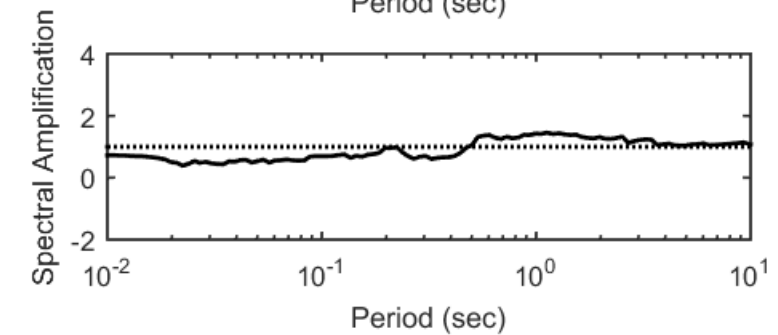
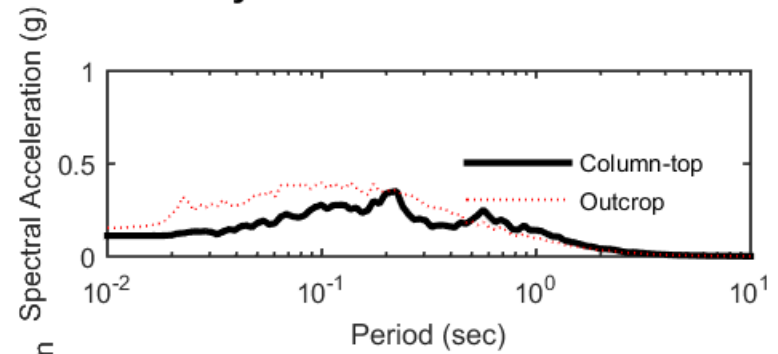
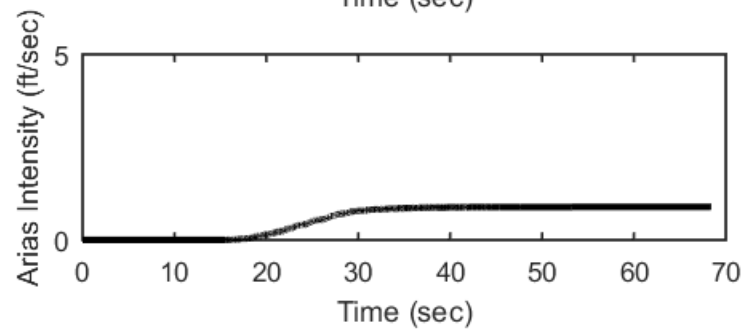
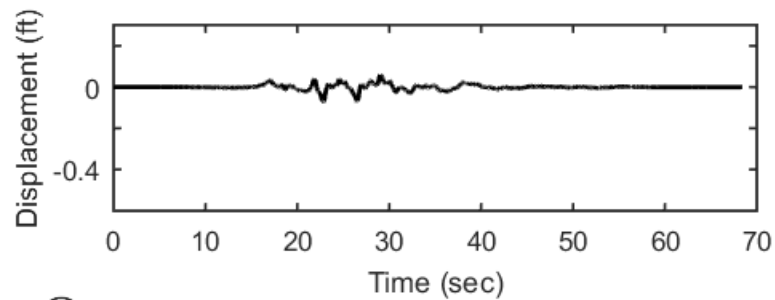
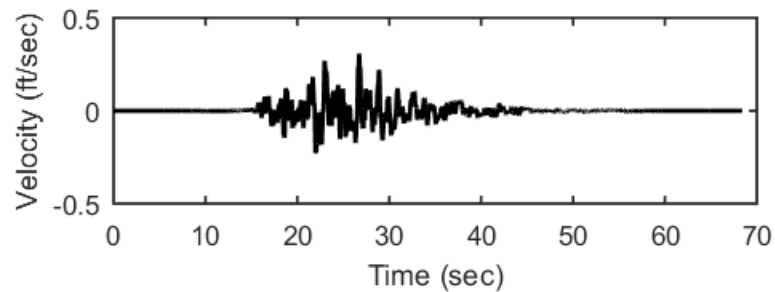
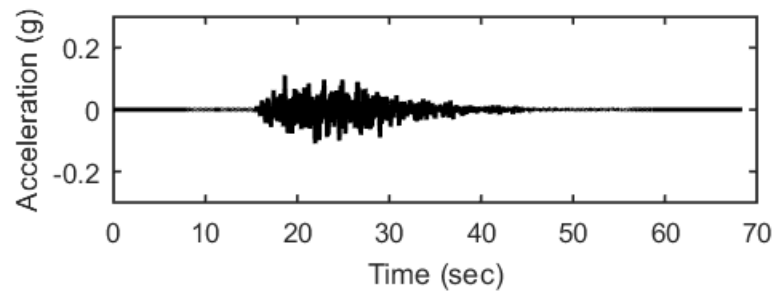
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



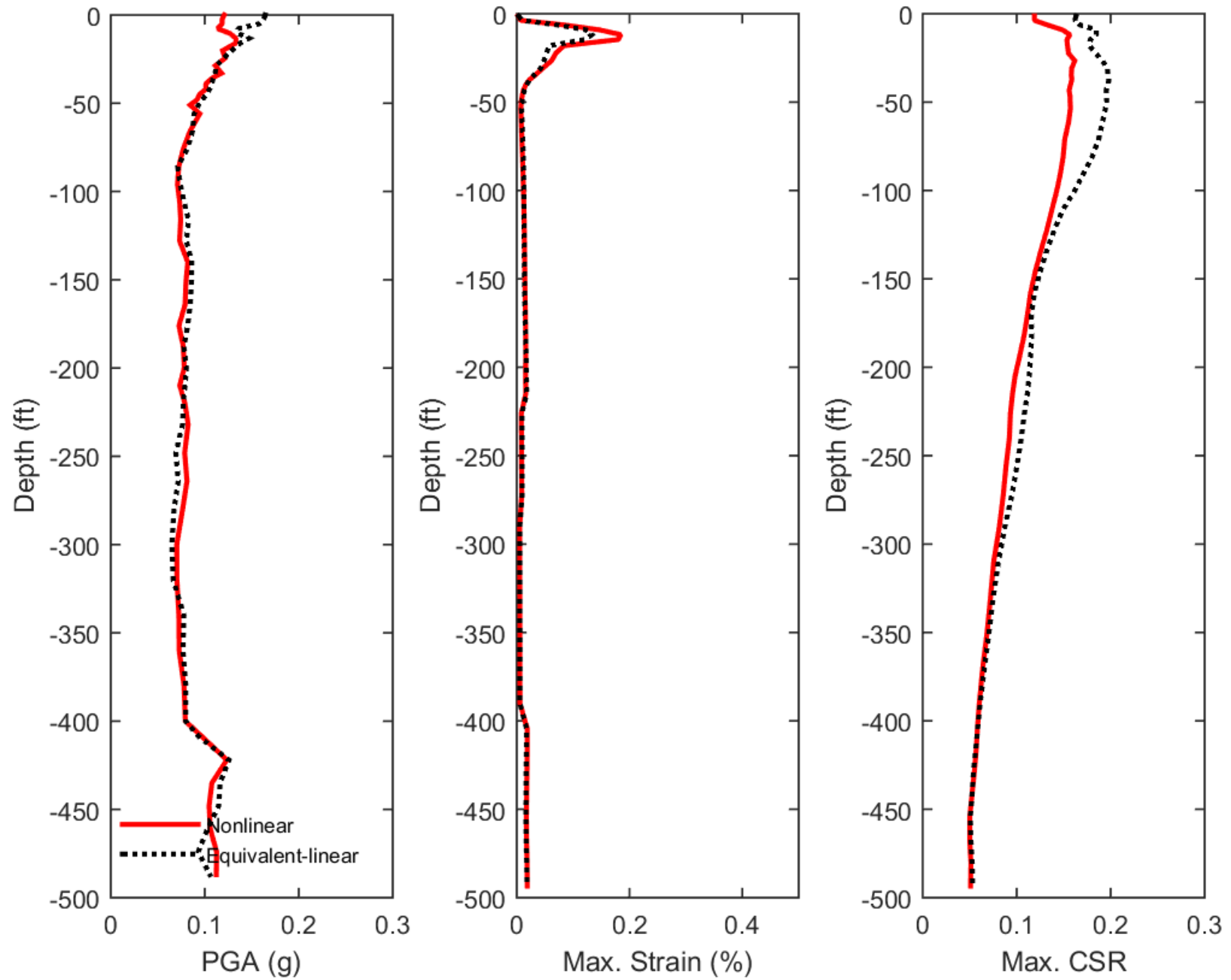
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



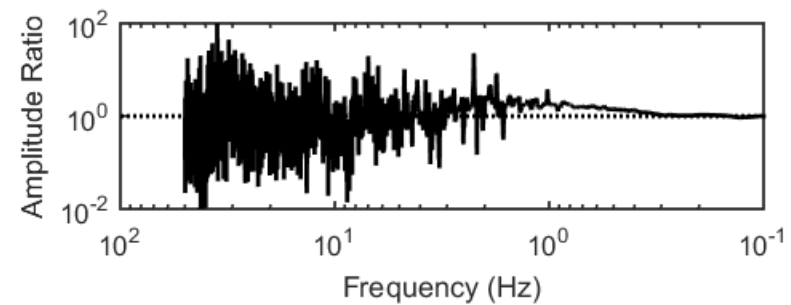
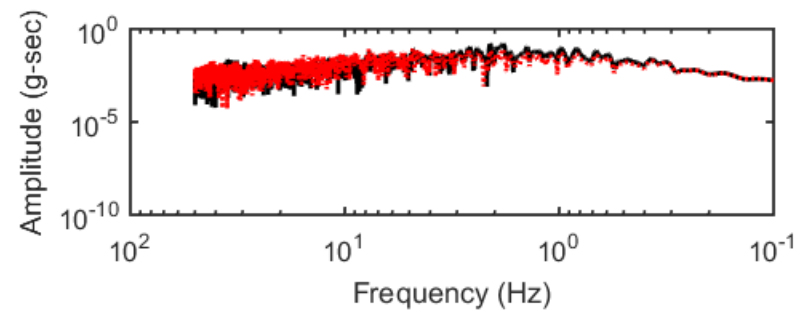
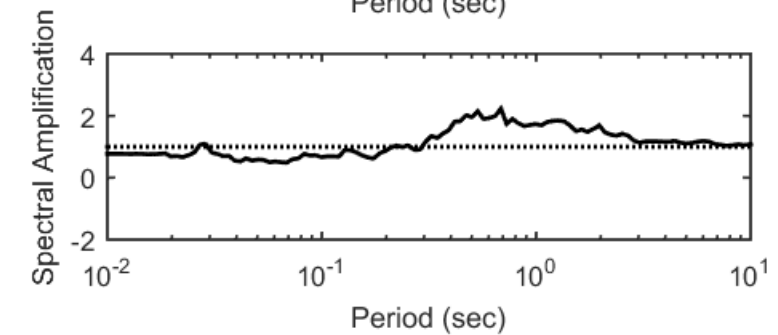
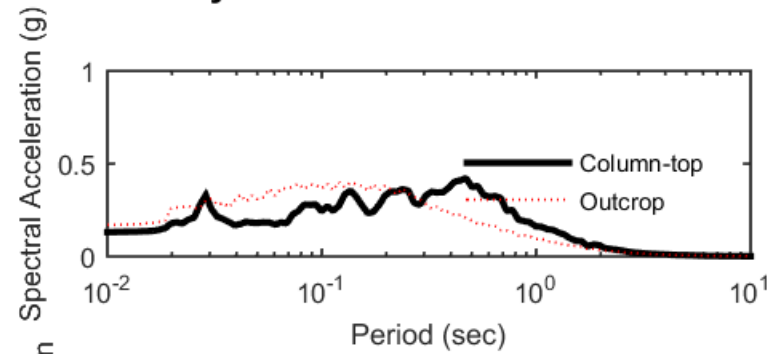
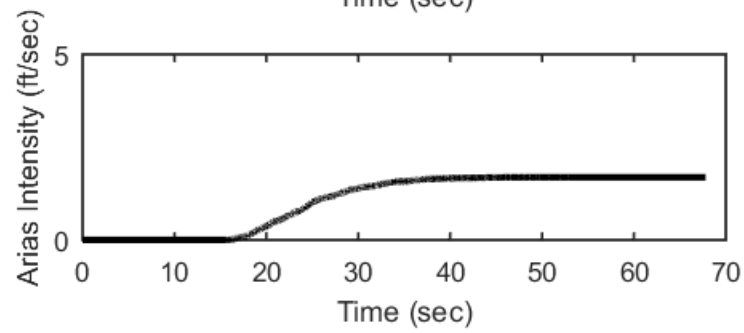
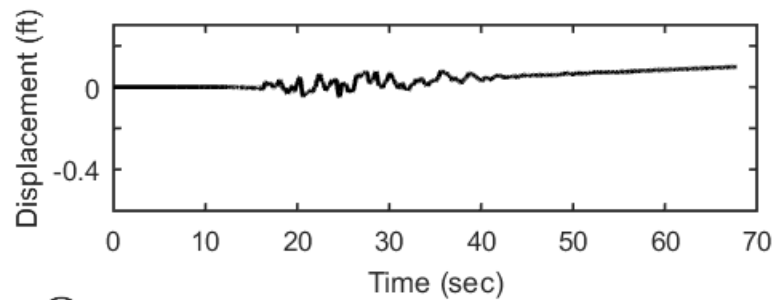
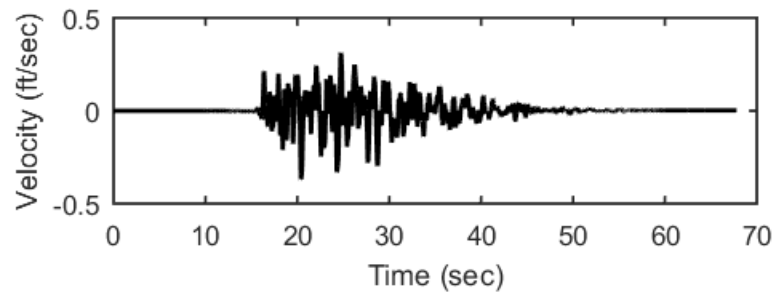
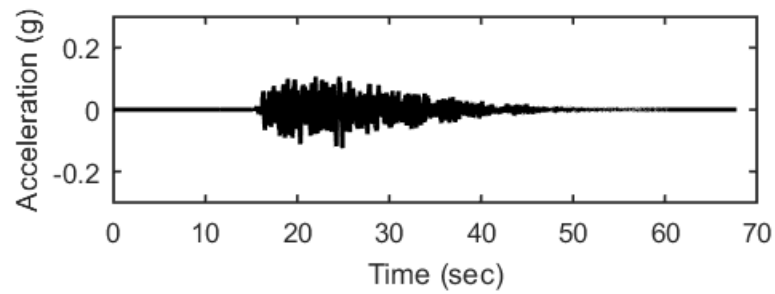
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



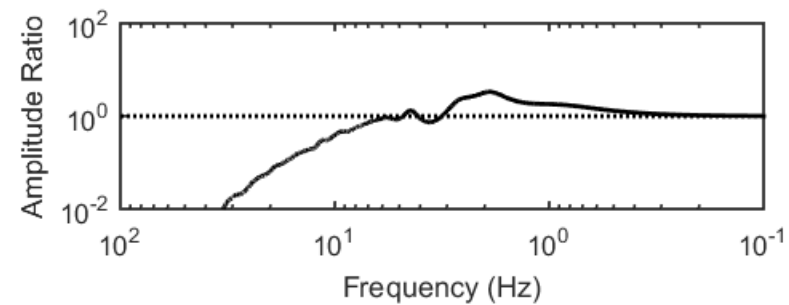
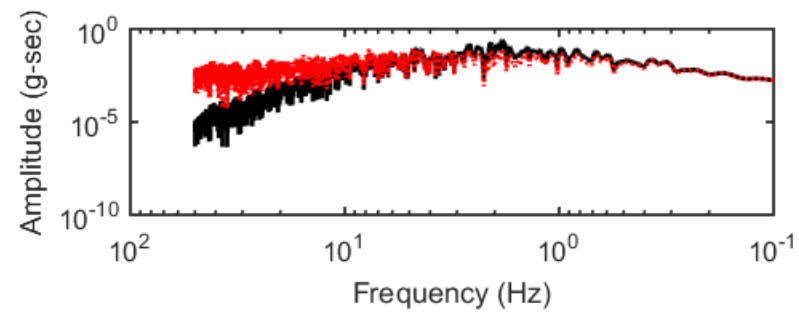
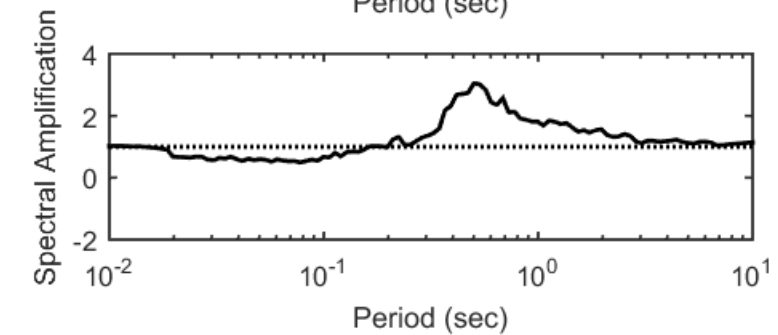
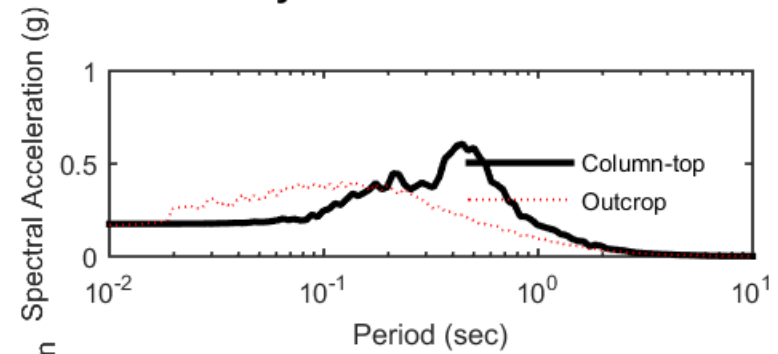
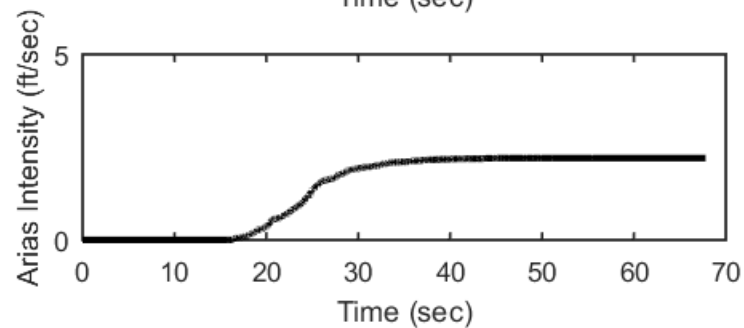
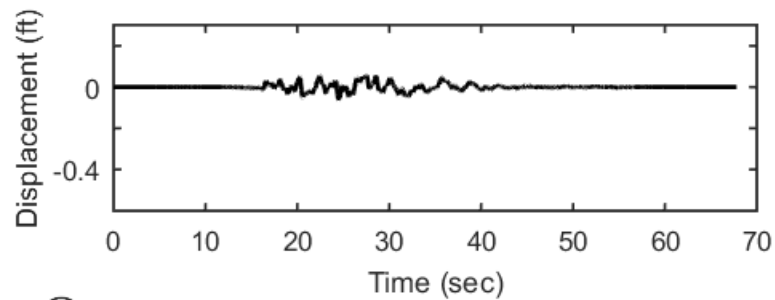
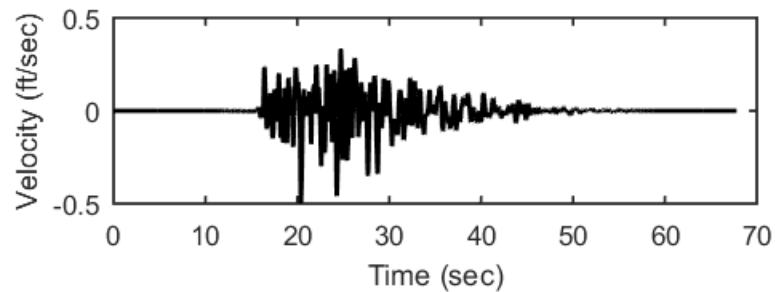
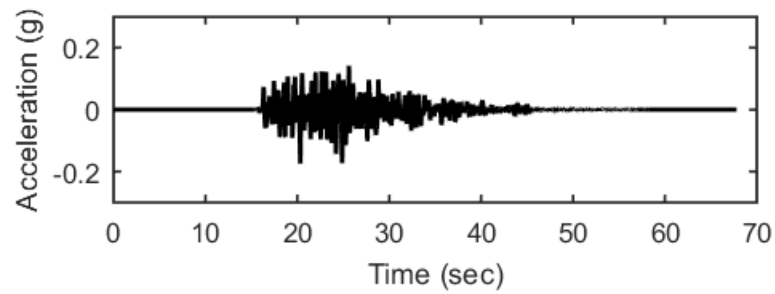
### Profile outputs for Motion: FEE3



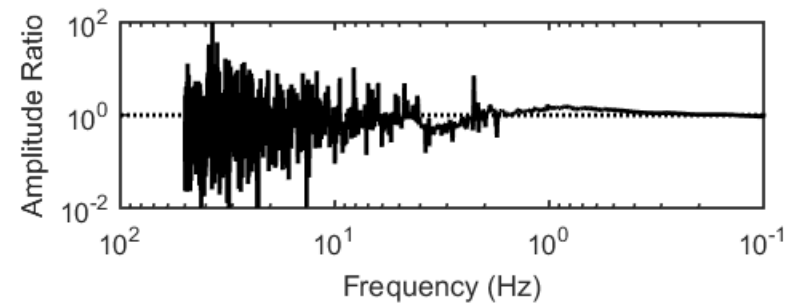
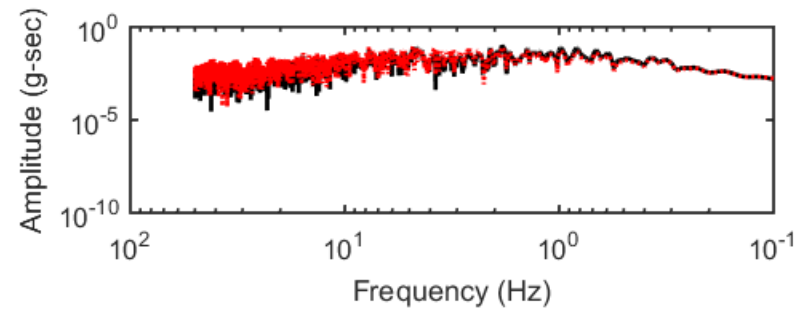
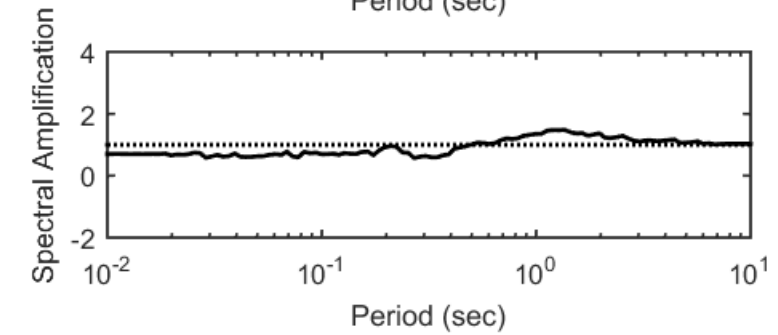
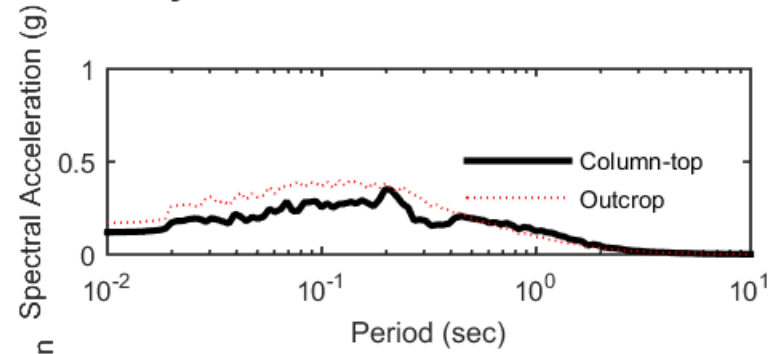
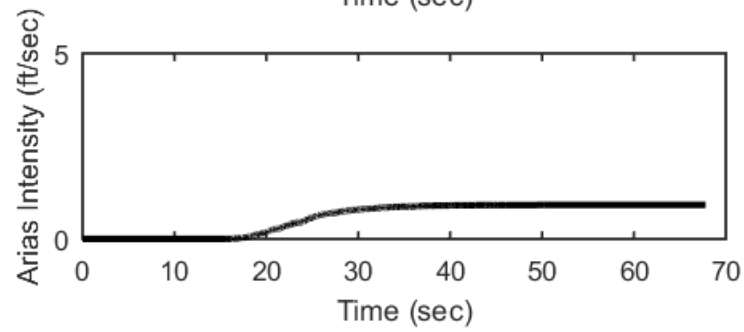
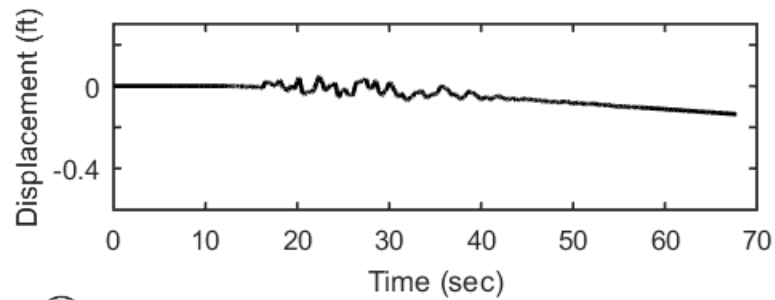
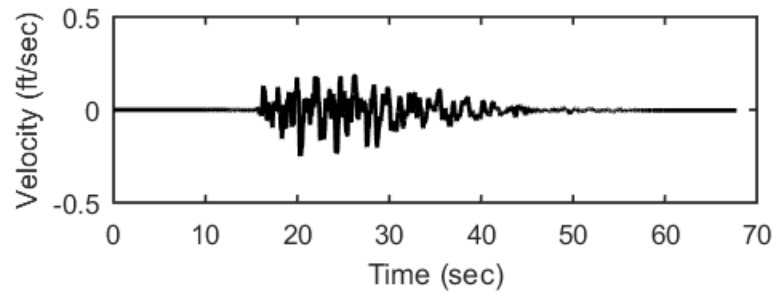
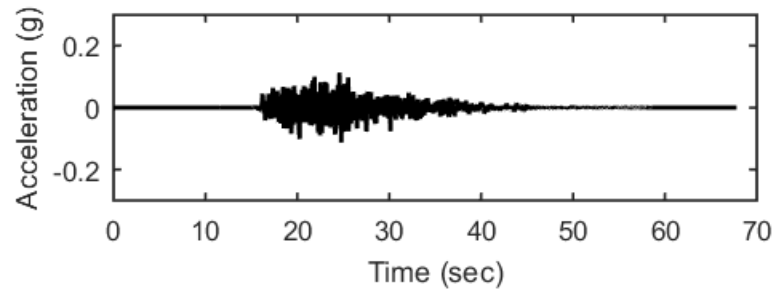
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4

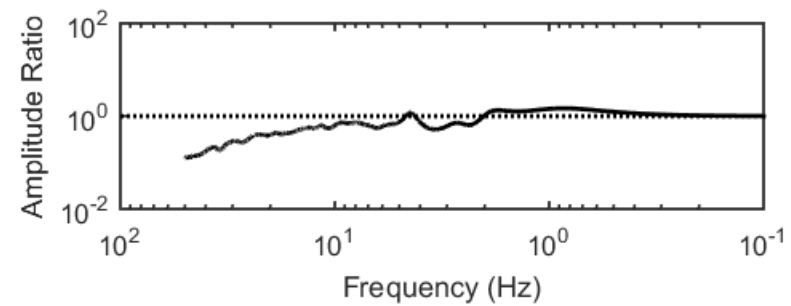
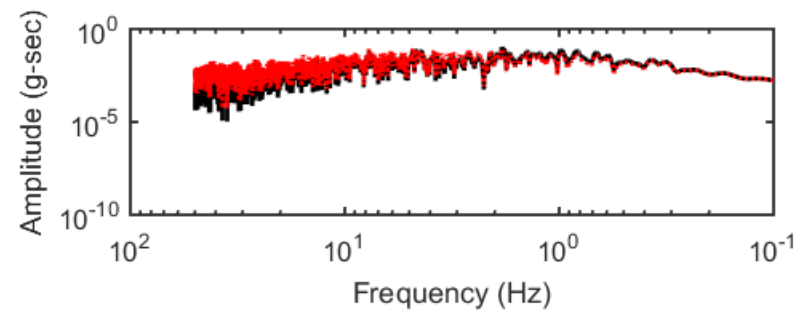
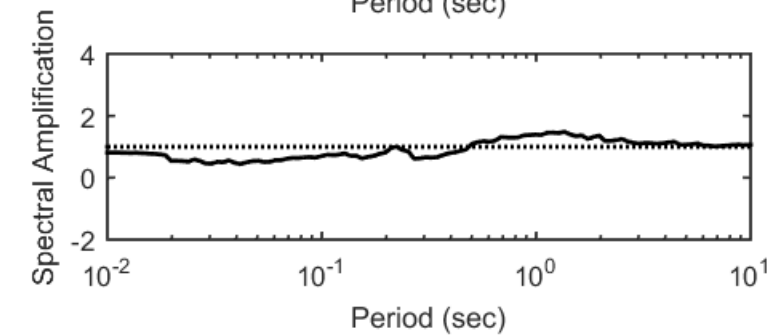
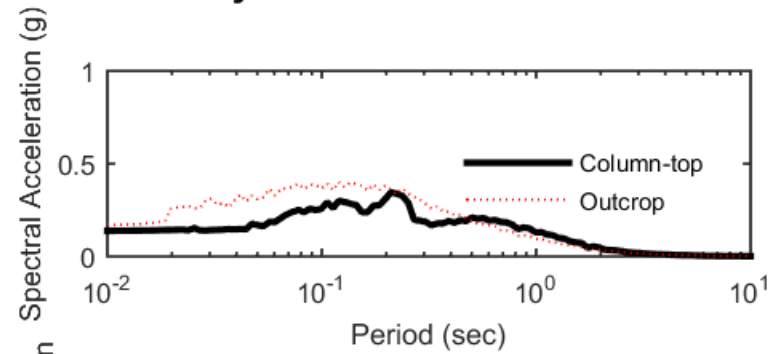
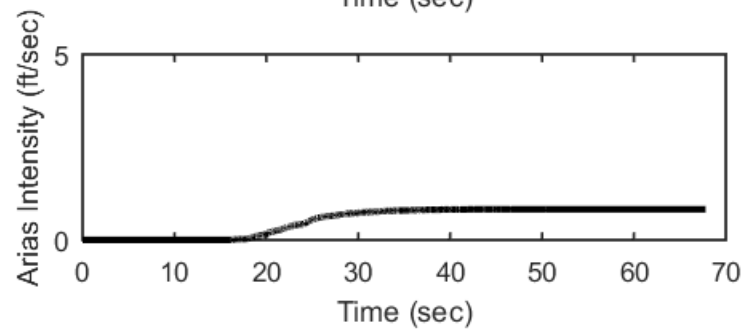
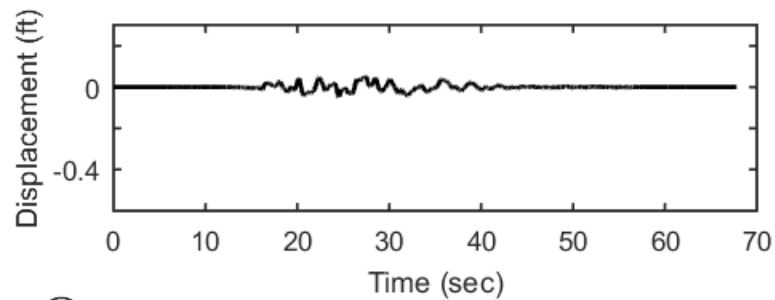
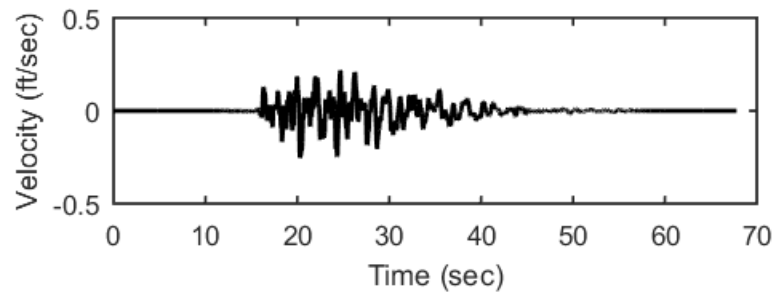
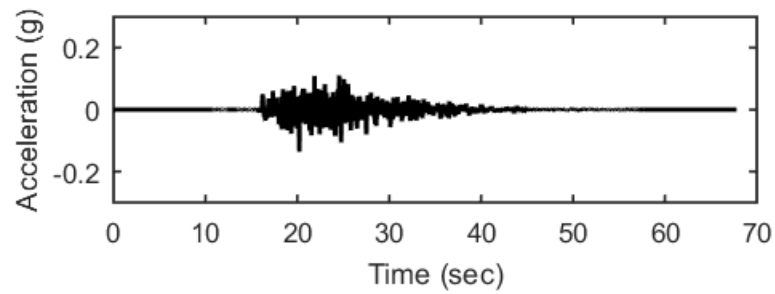


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4

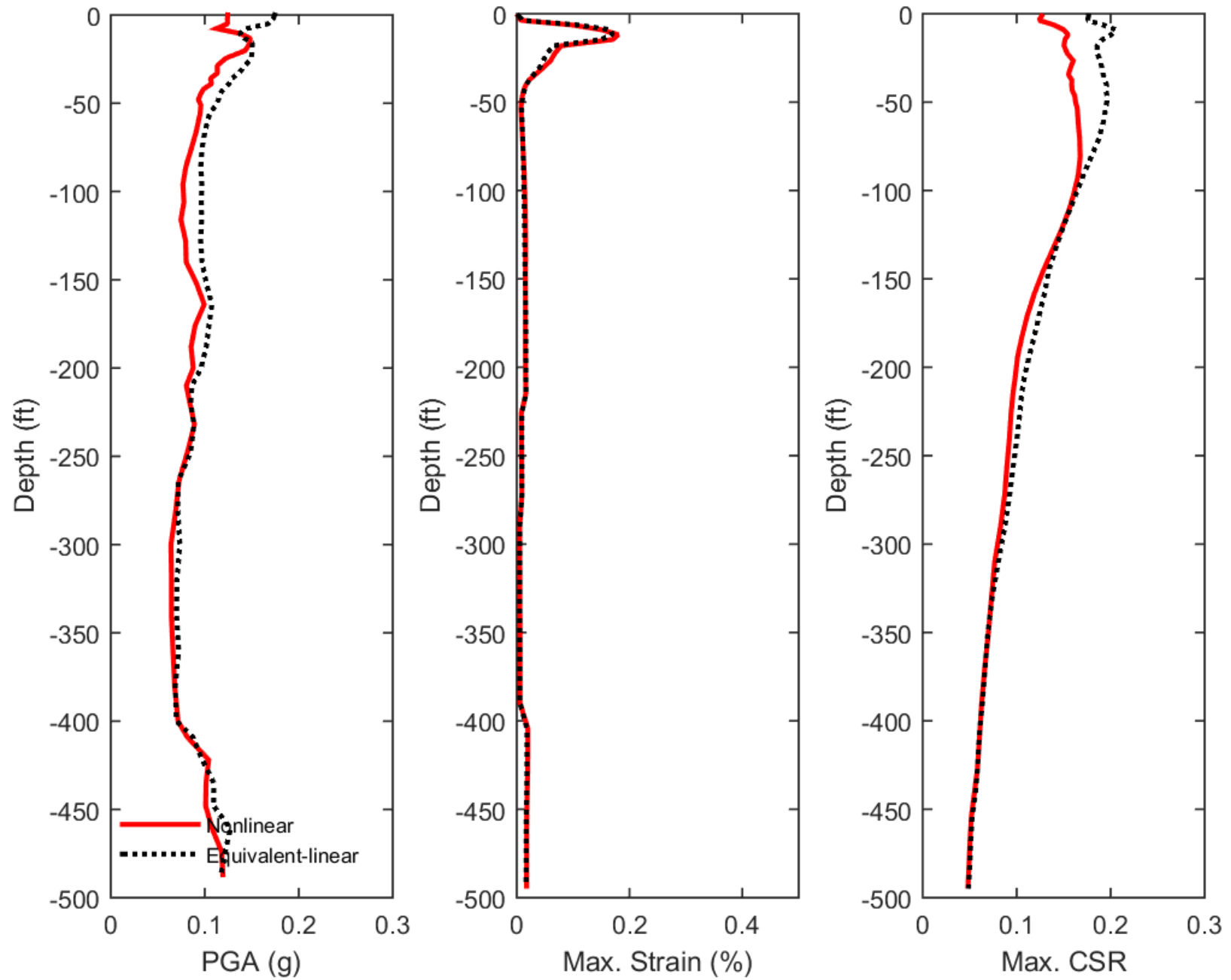




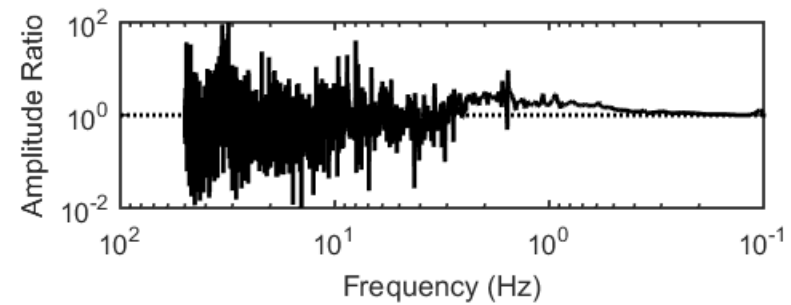
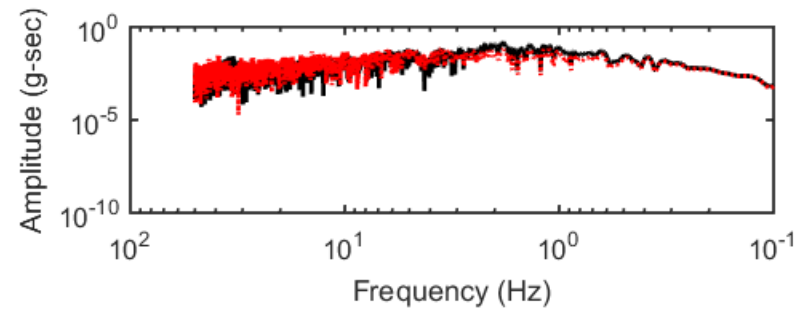
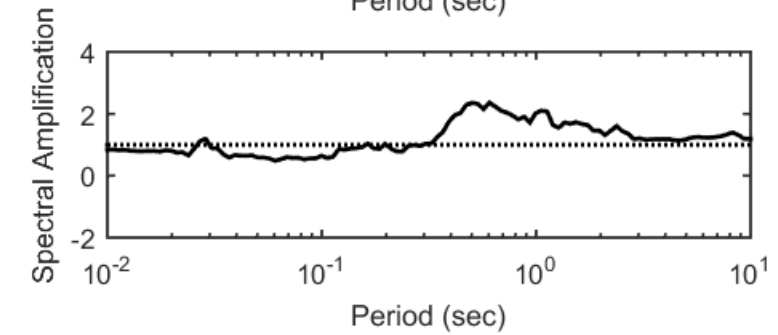
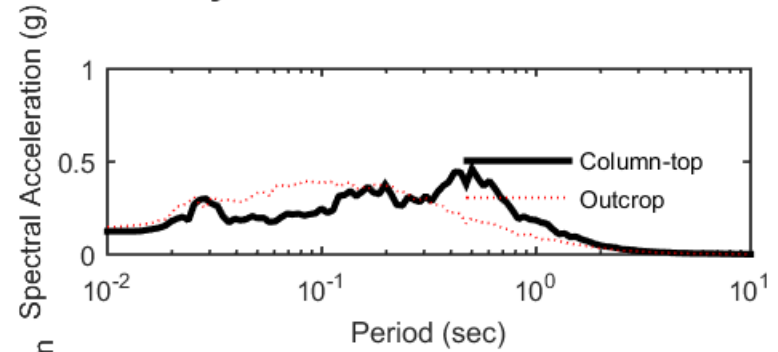
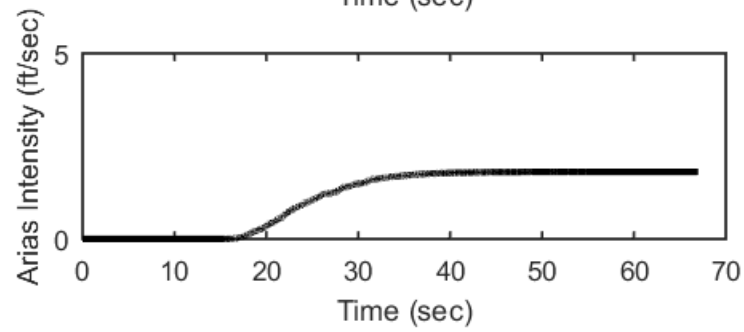
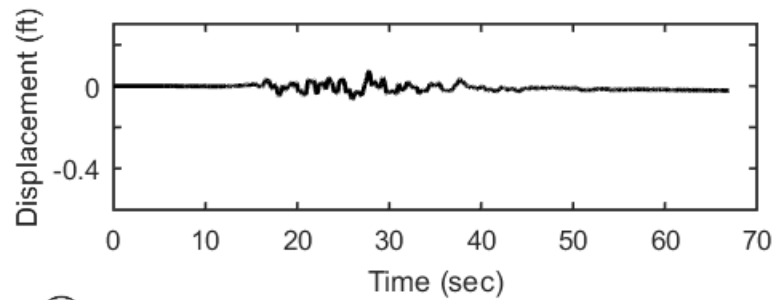
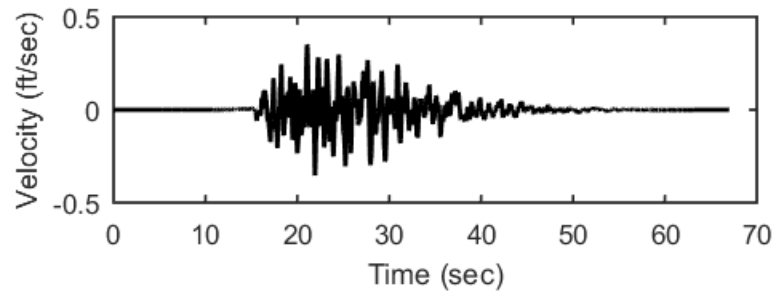
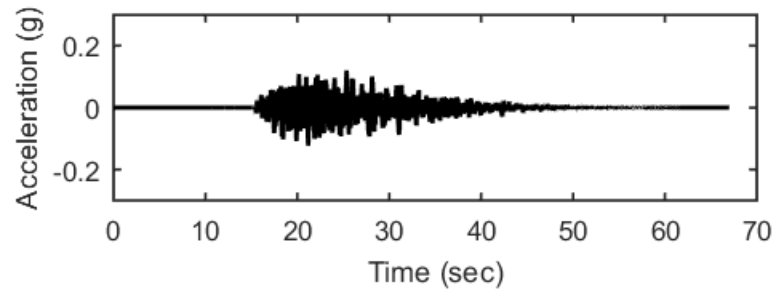
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



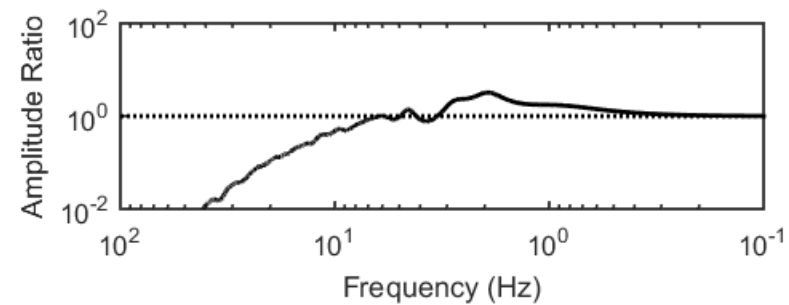
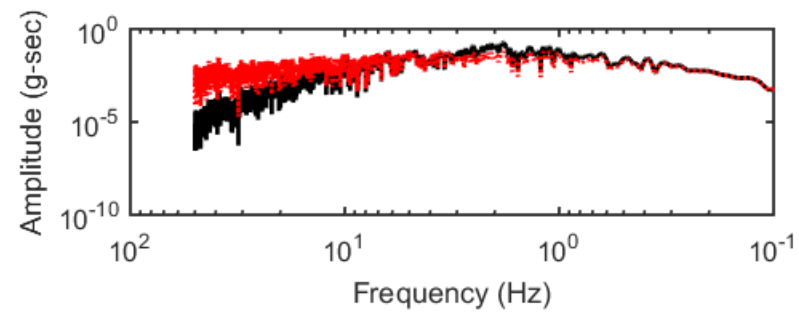
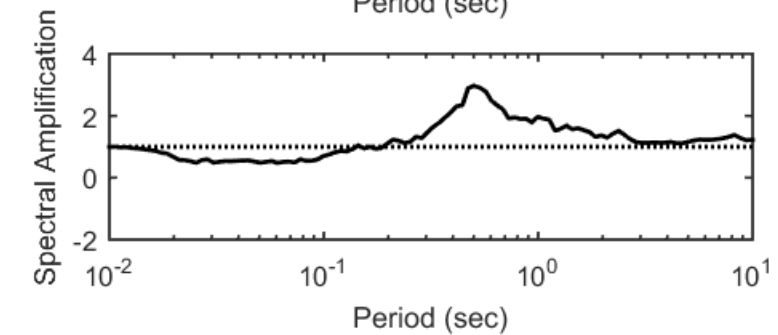
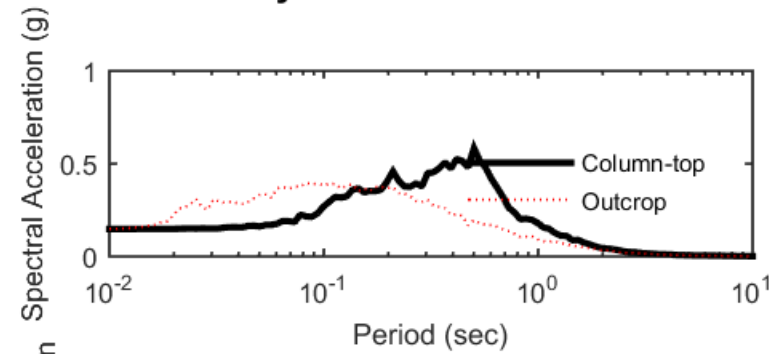
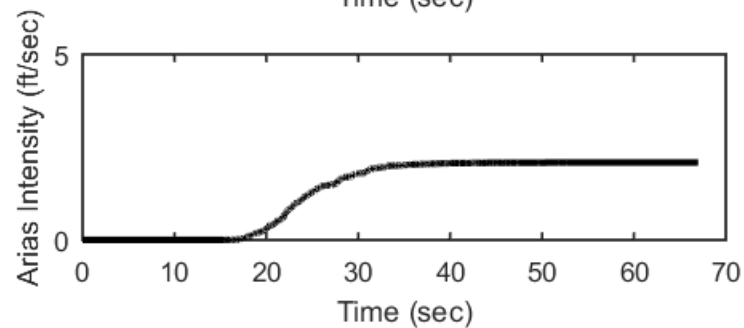
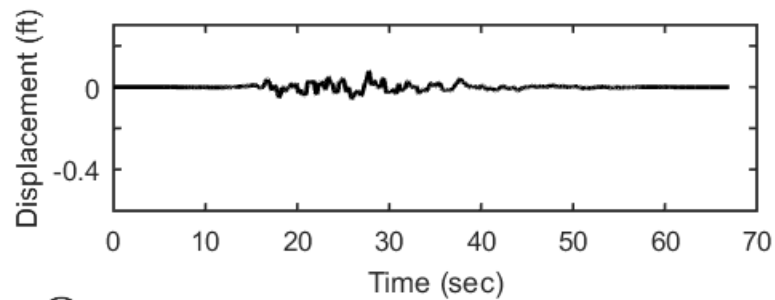
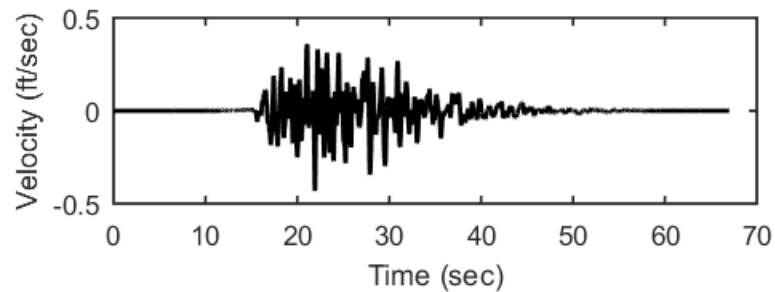
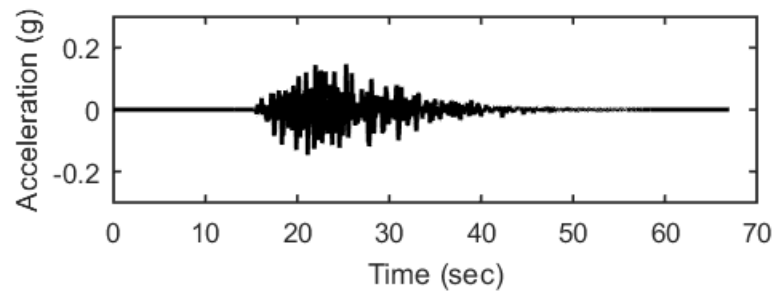
### Profile outputs for Motion: FEE4



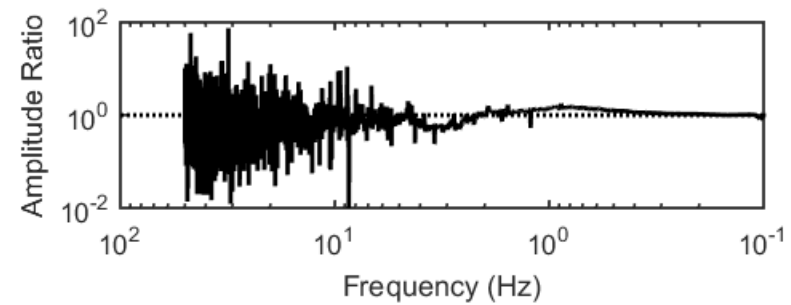
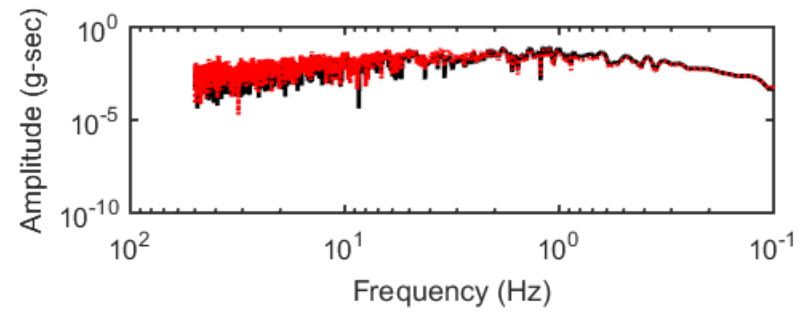
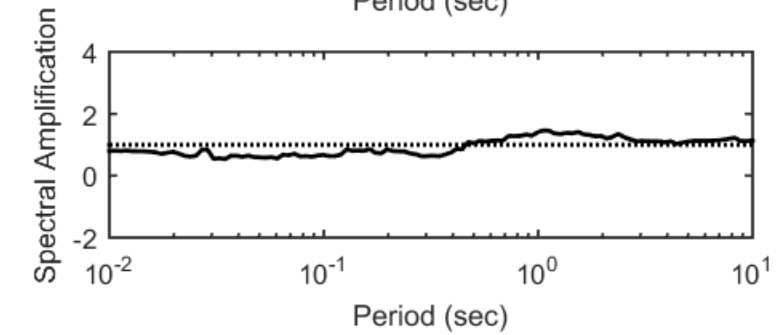
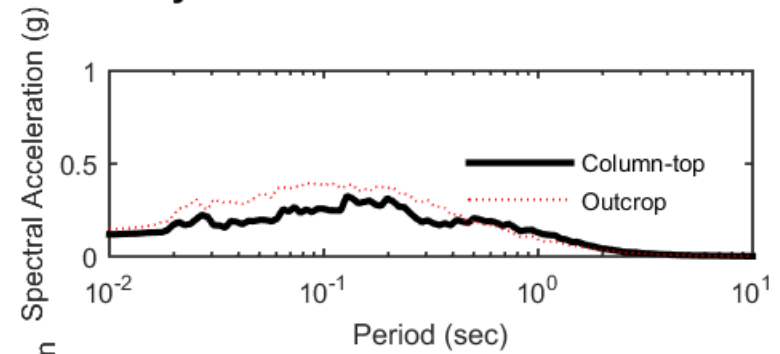
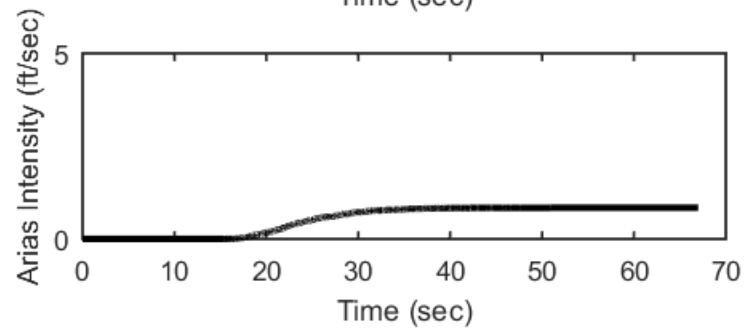
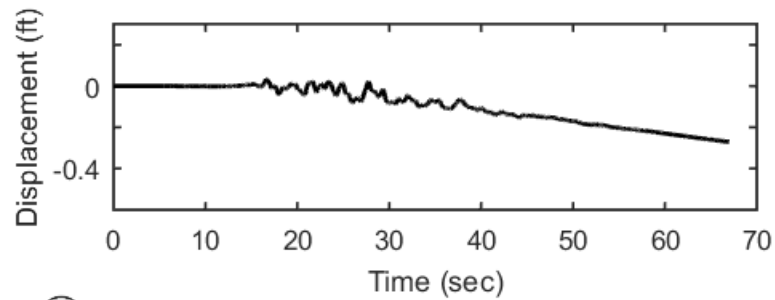
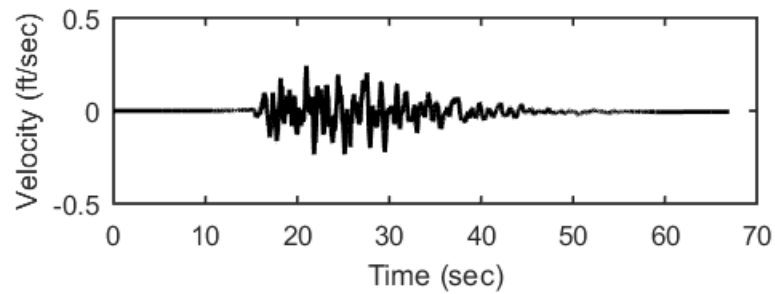
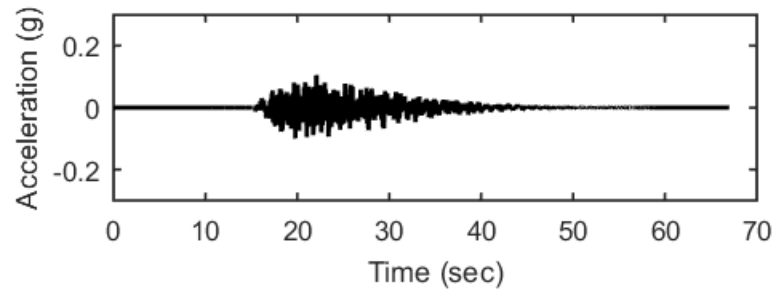
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



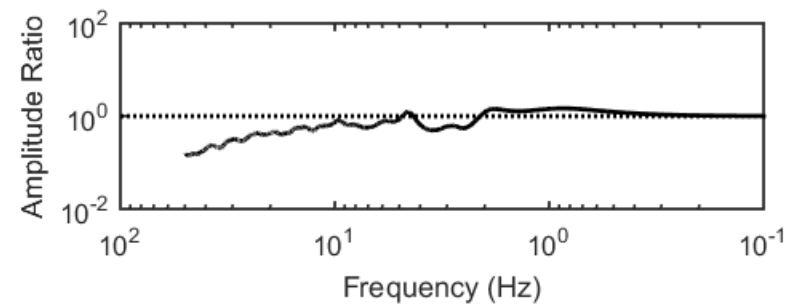
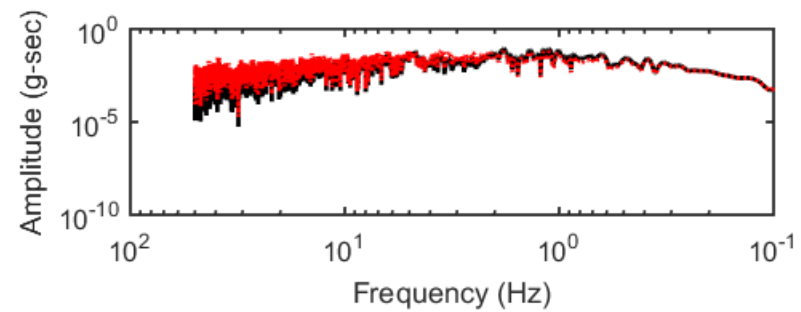
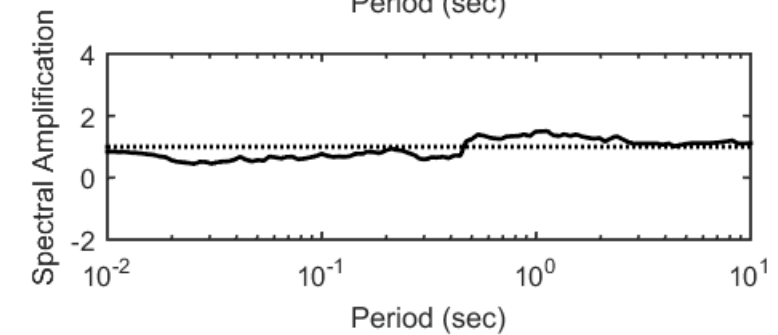
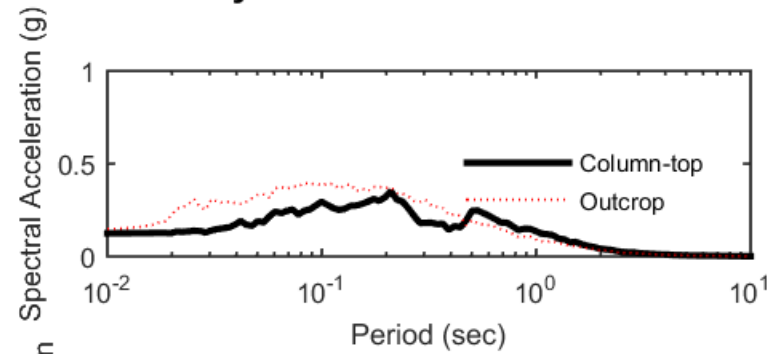
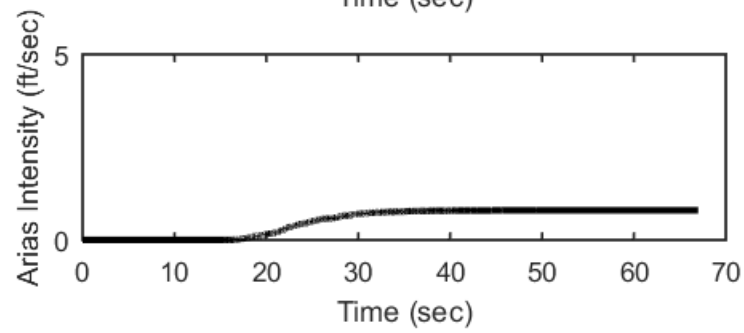
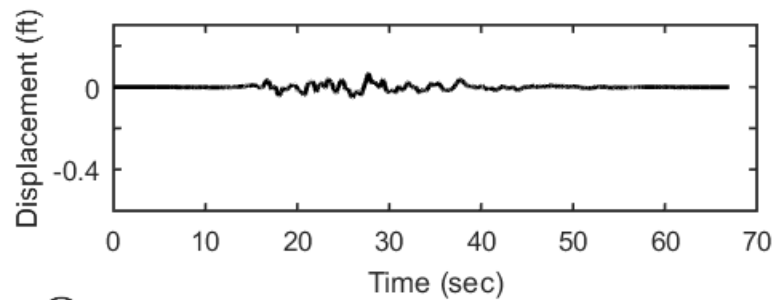
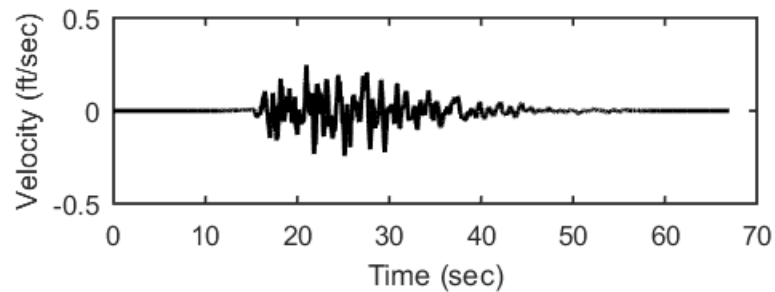
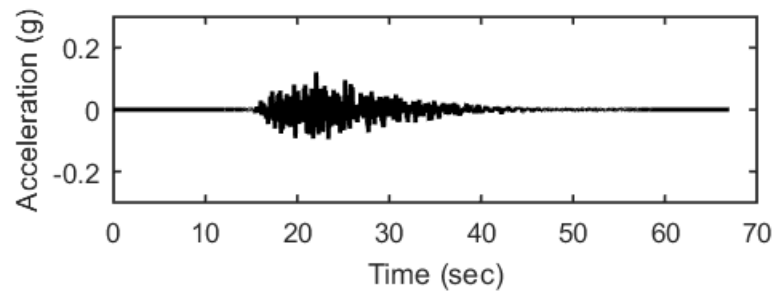
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



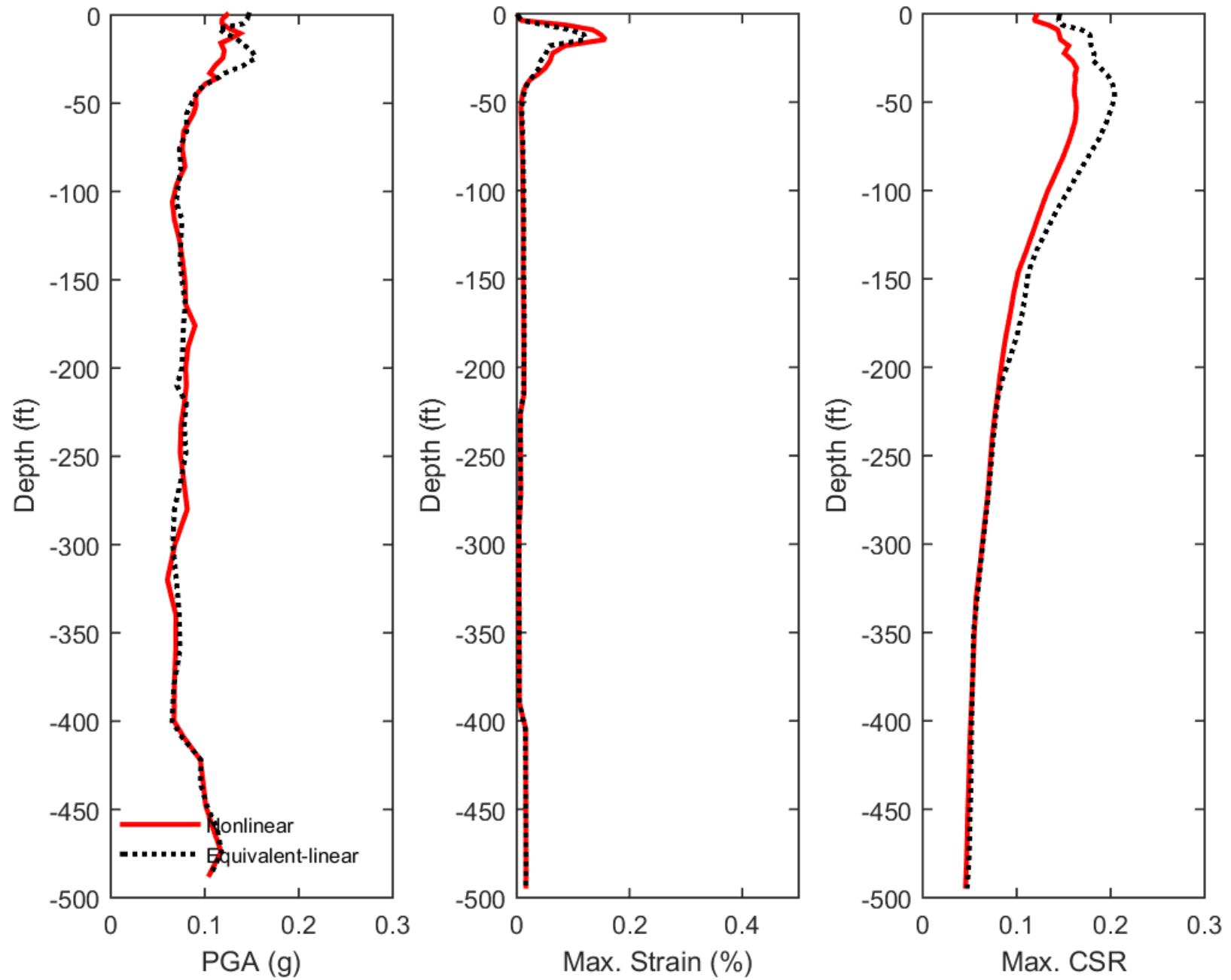
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



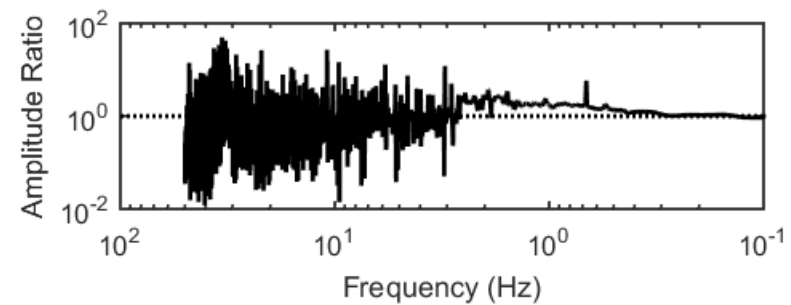
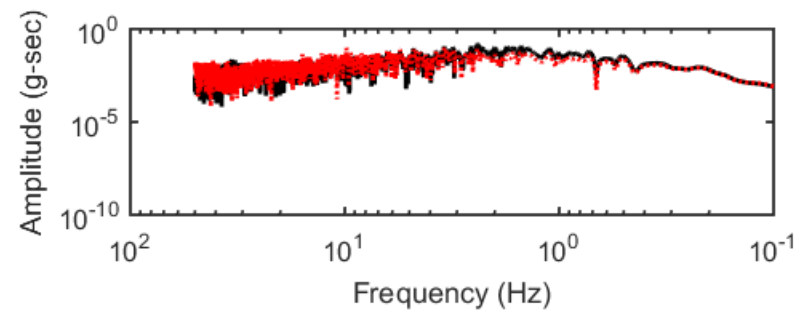
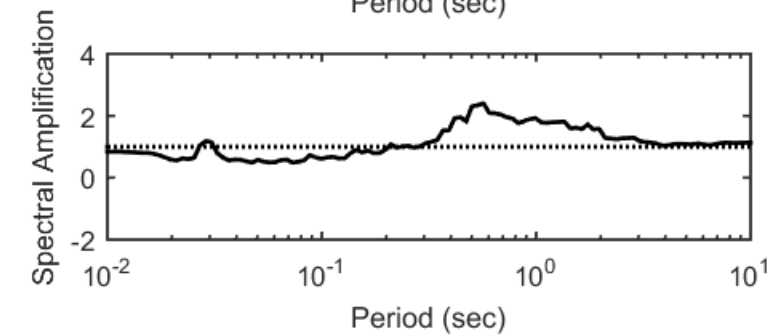
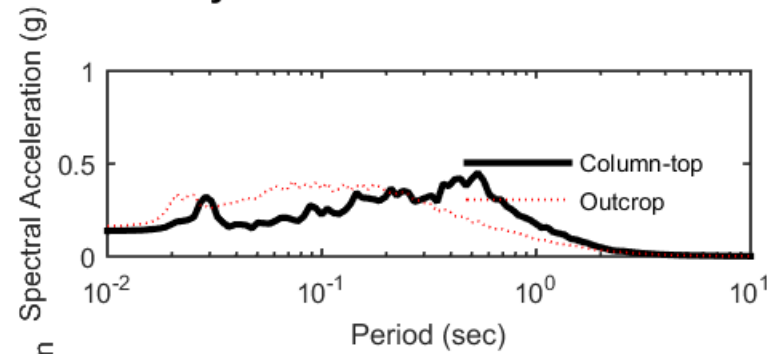
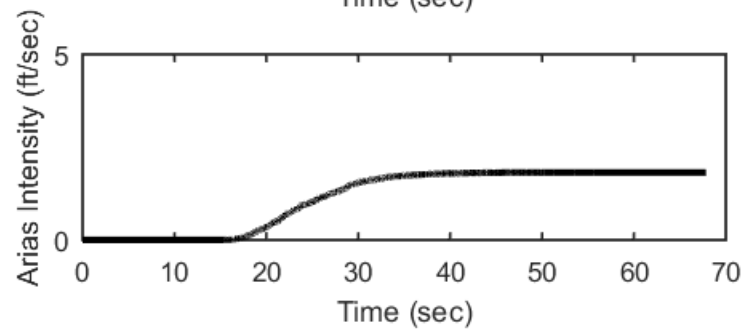
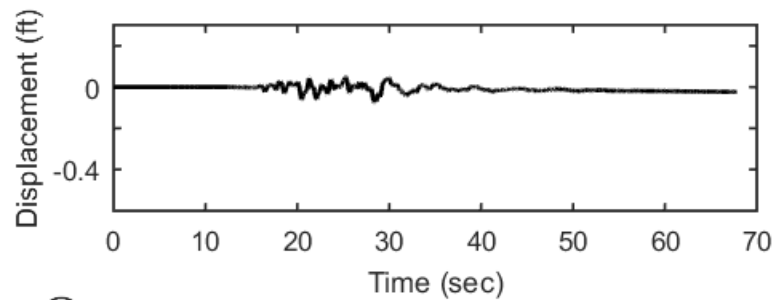
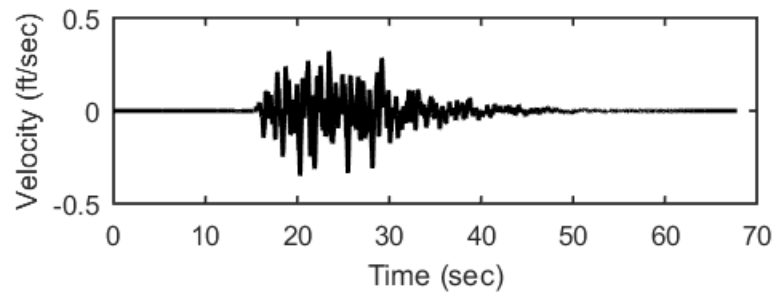
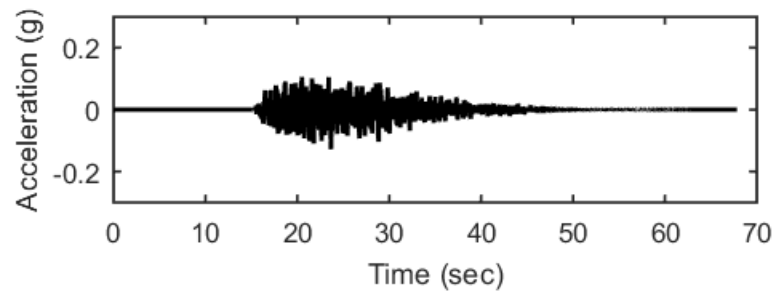
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



### Profile outputs for Motion: FEE5

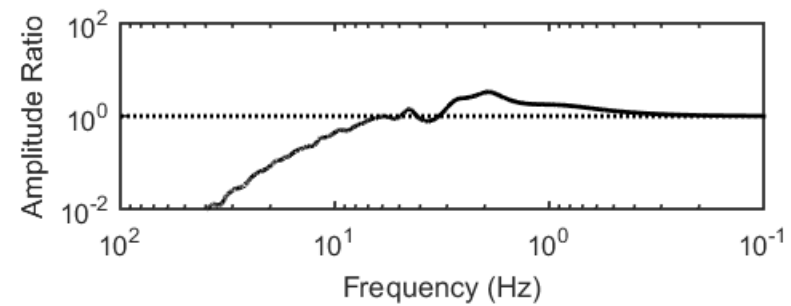
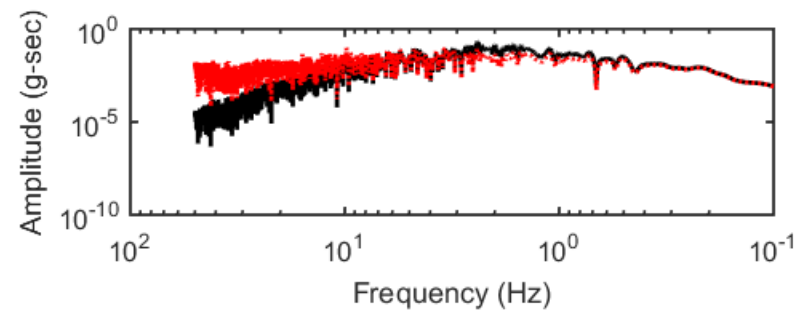
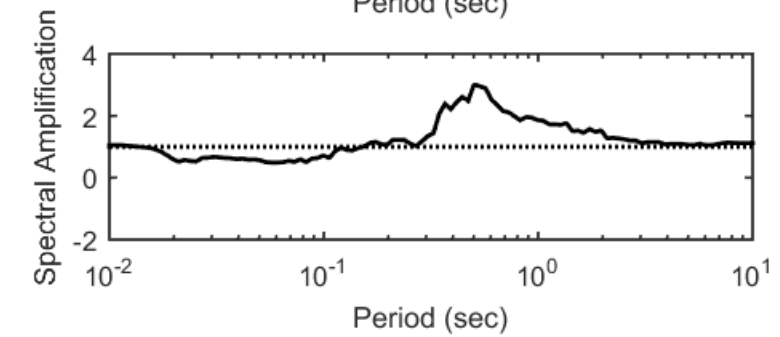
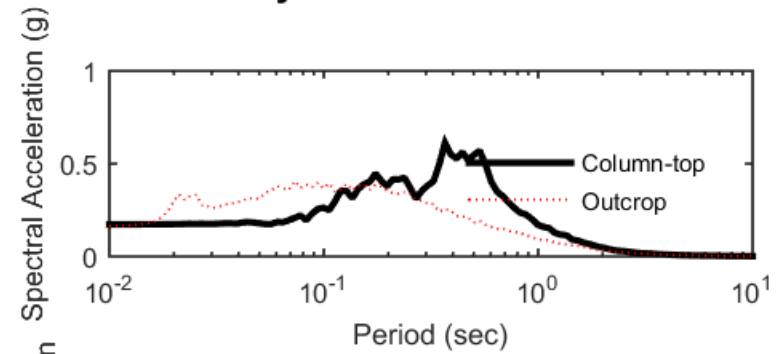
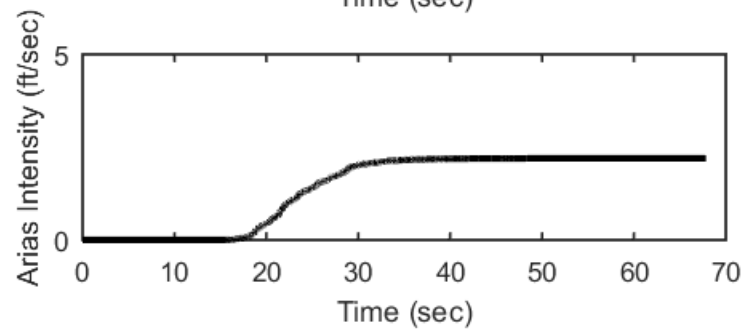
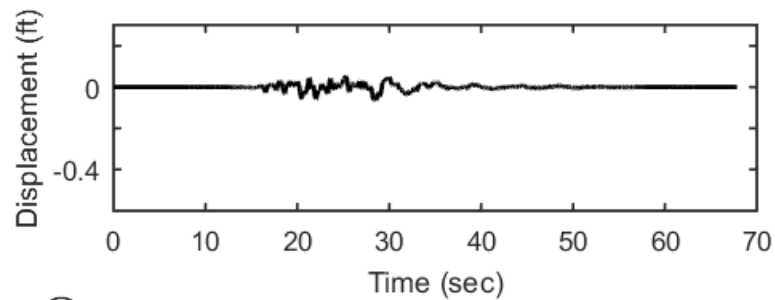
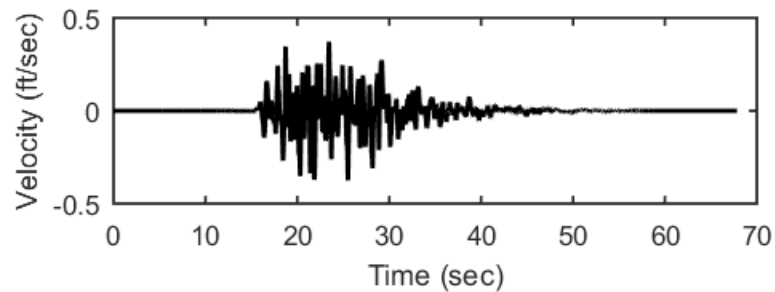
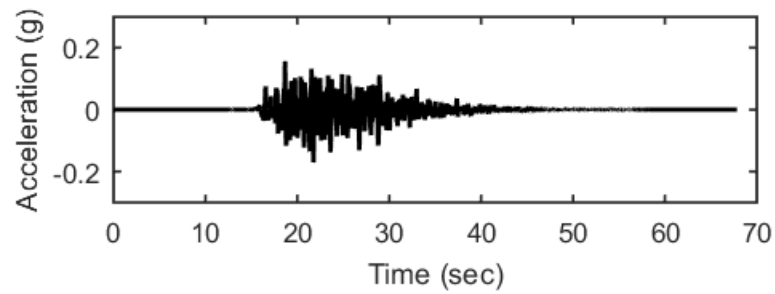


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6

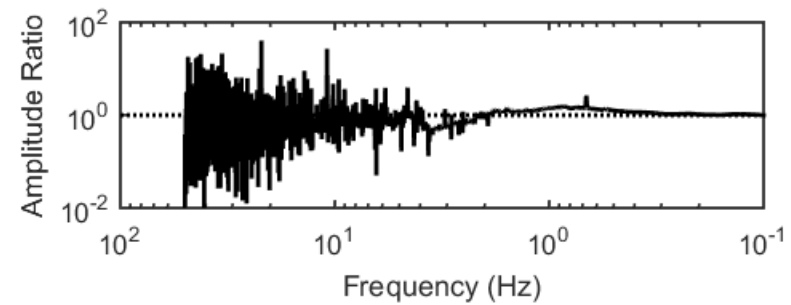
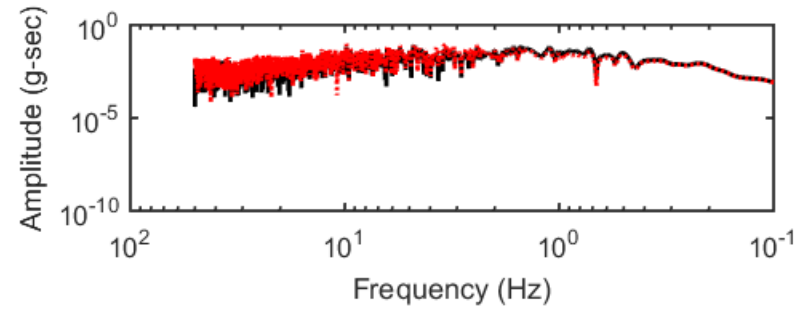
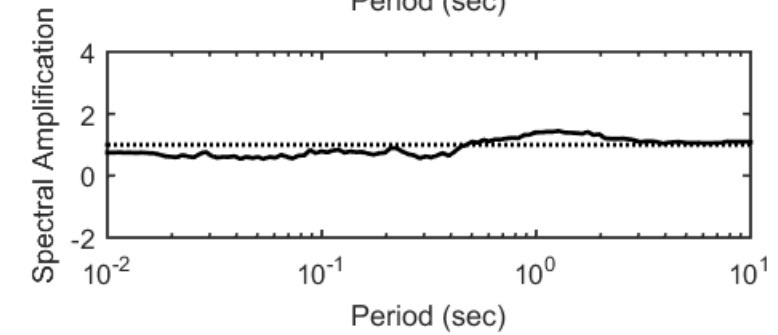
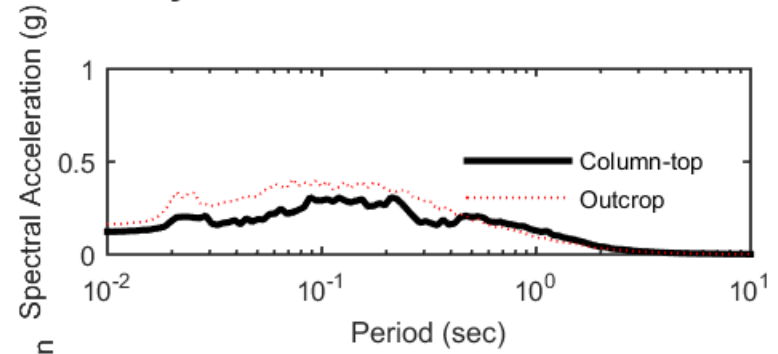
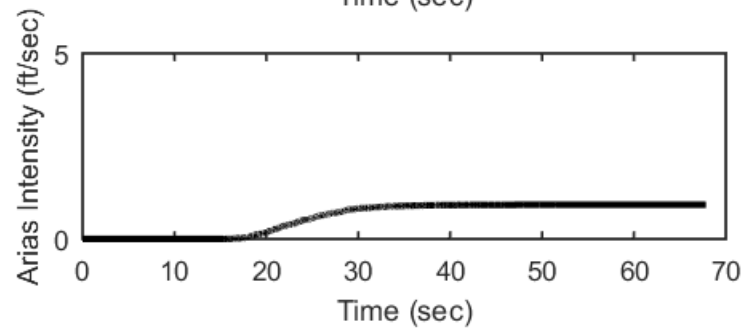
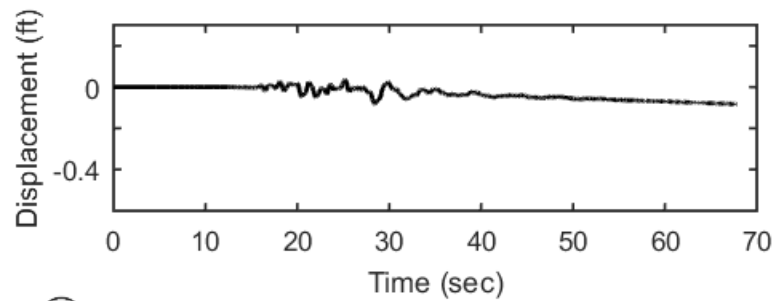
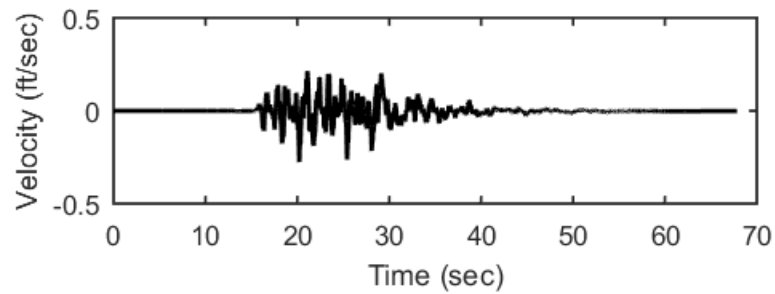
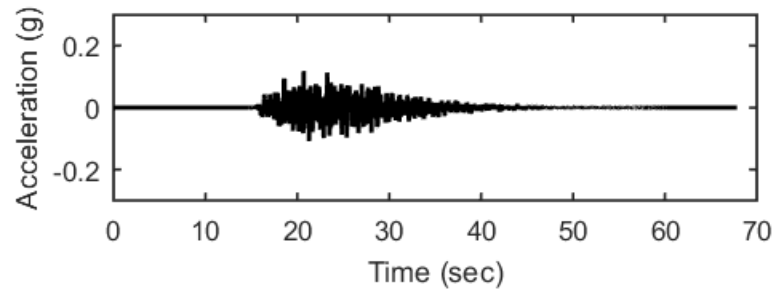




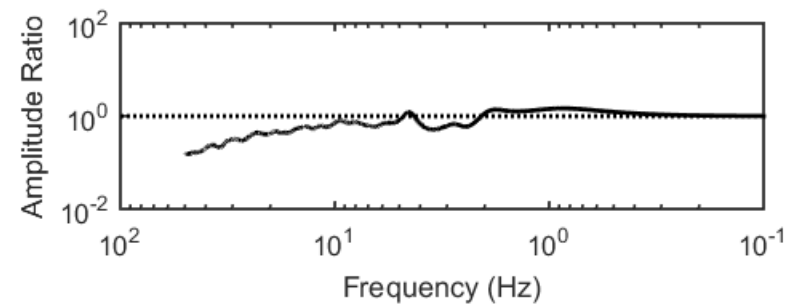
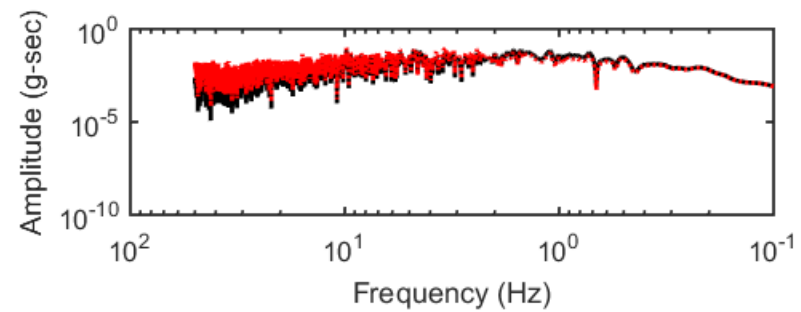
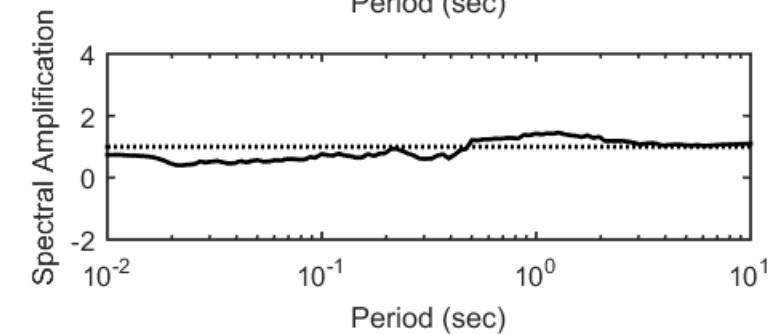
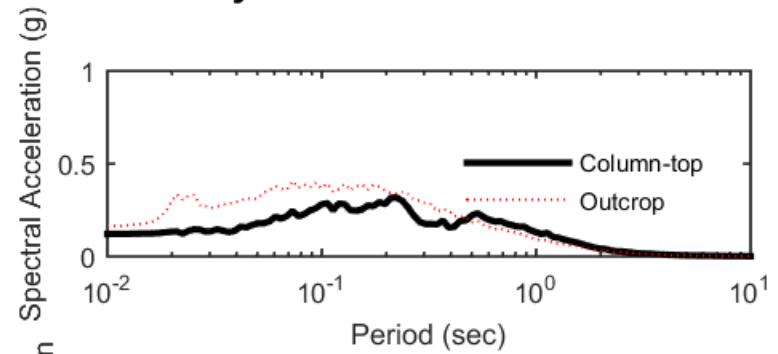
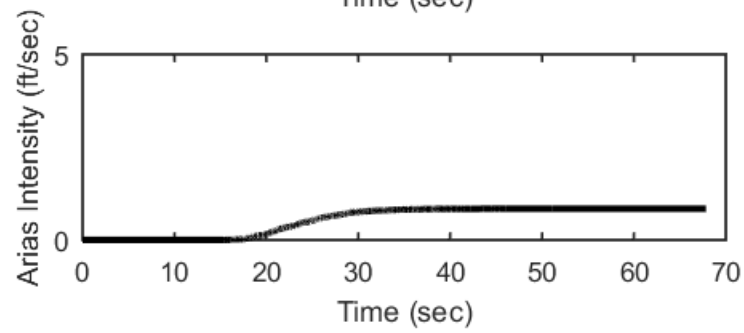
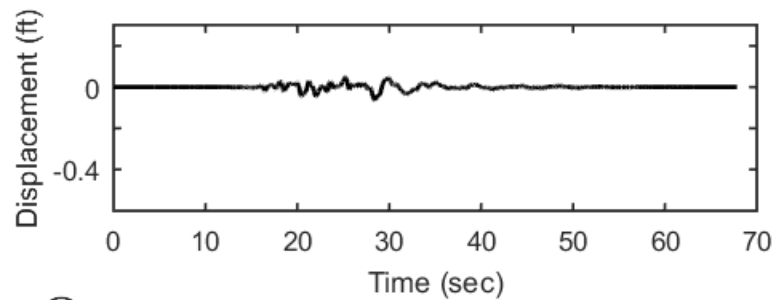
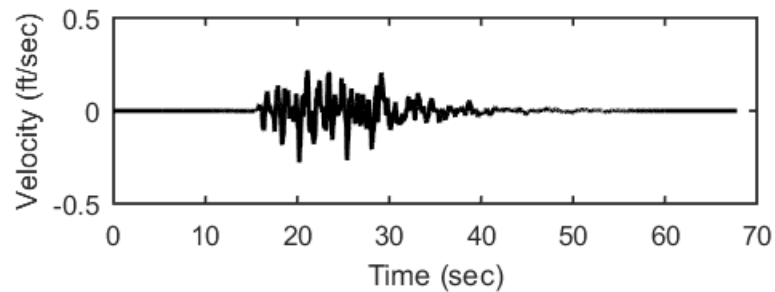
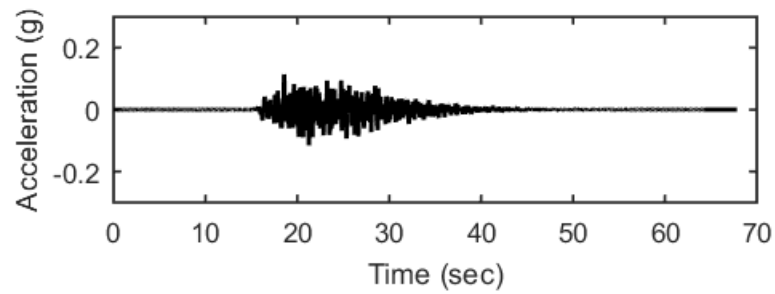
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



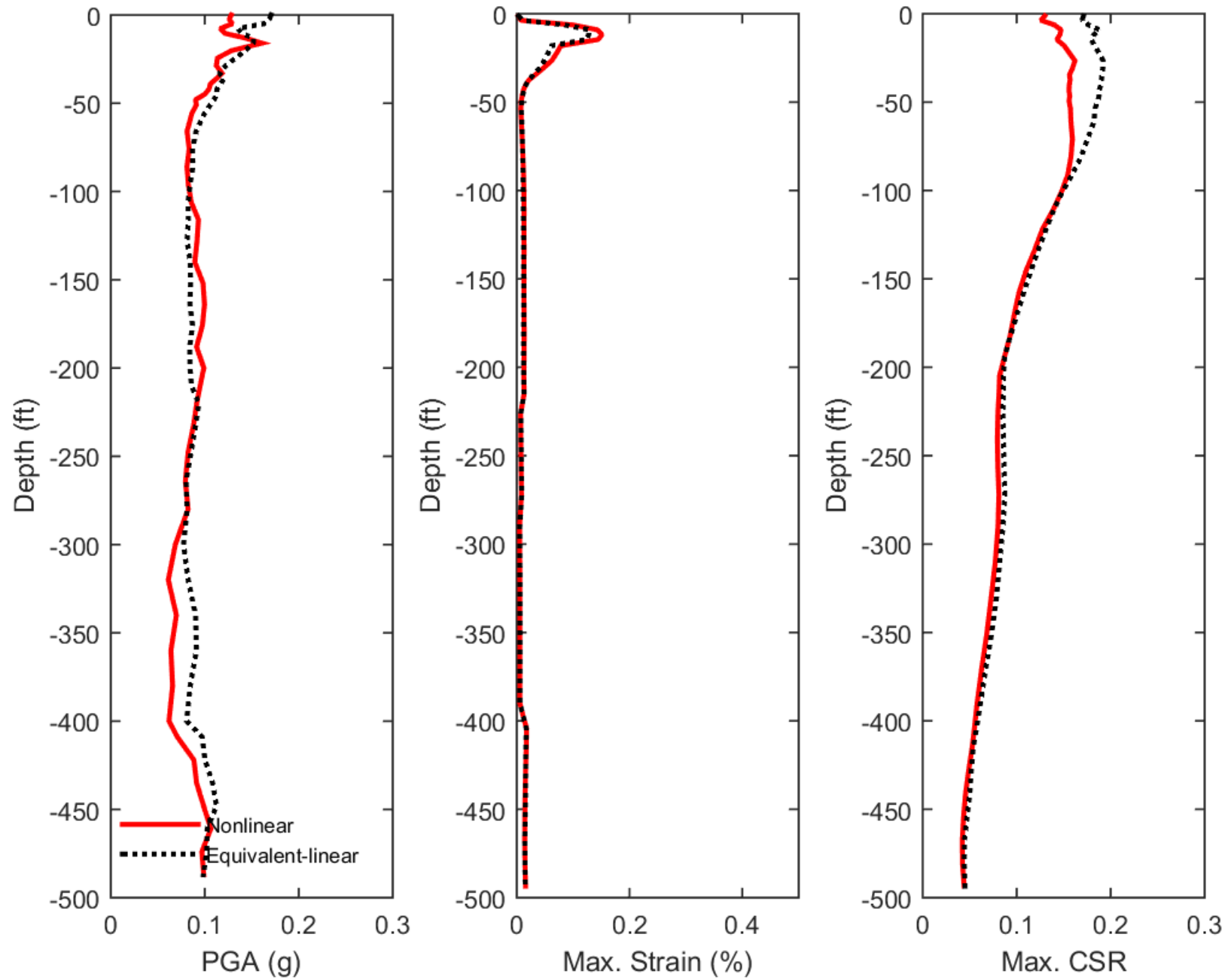
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



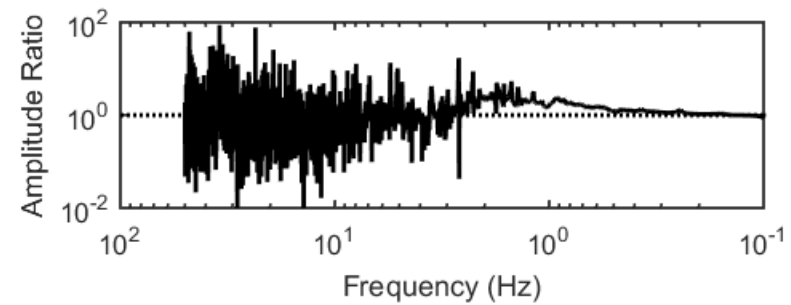
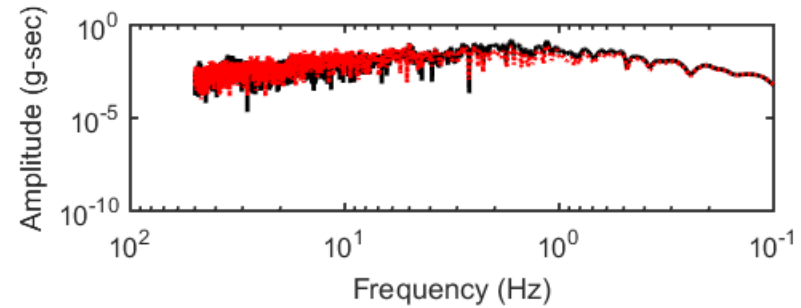
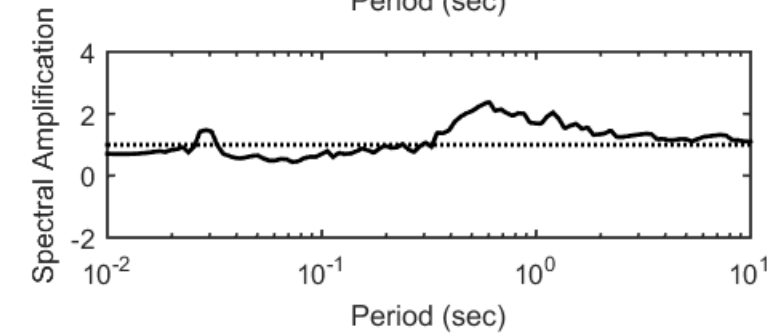
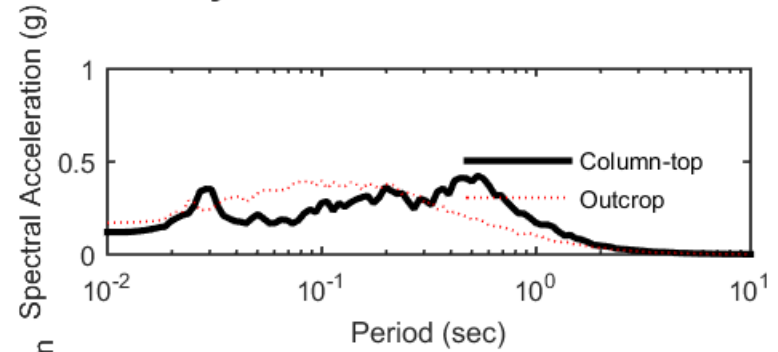
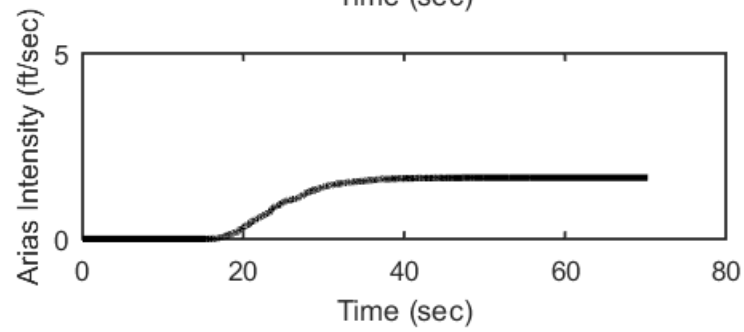
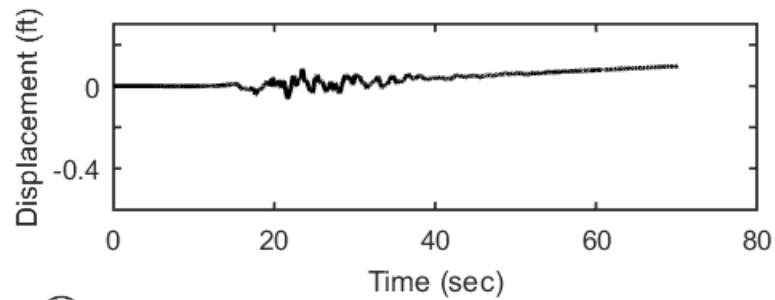
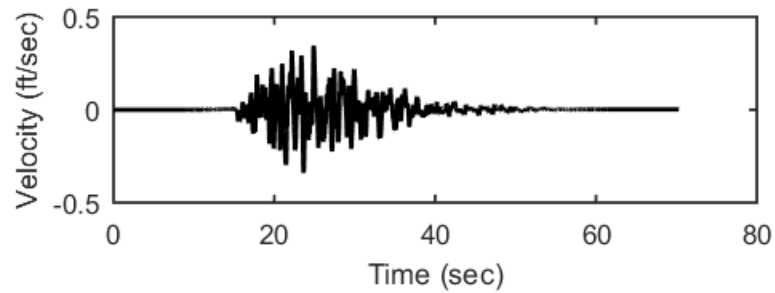
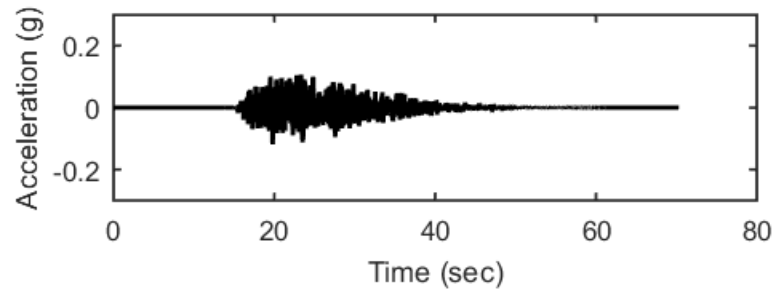
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



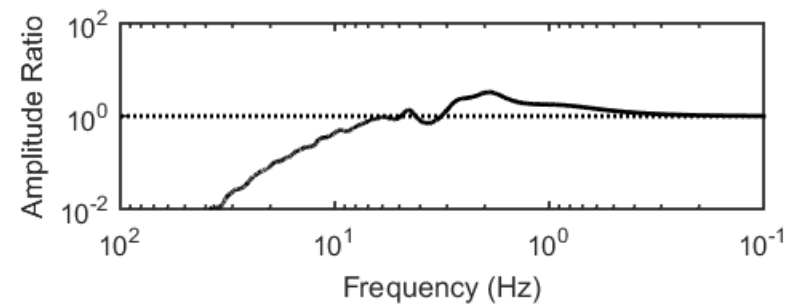
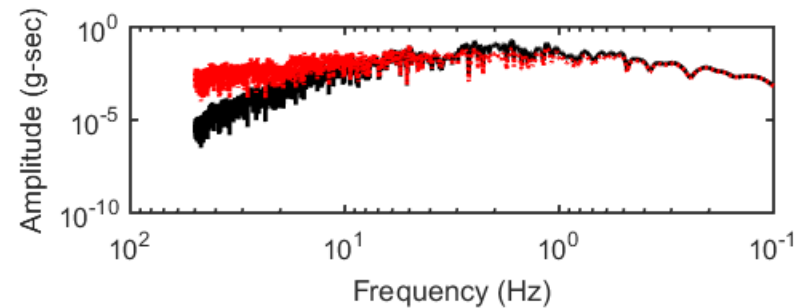
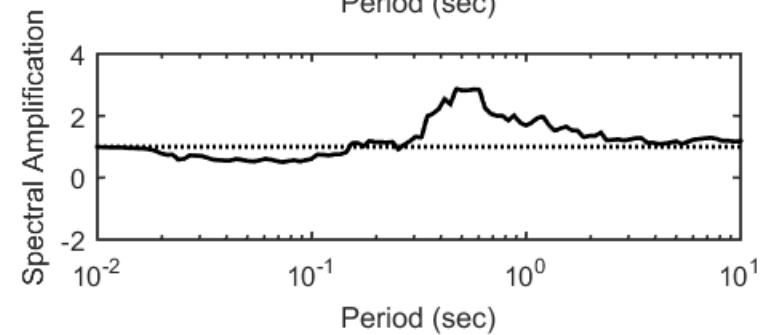
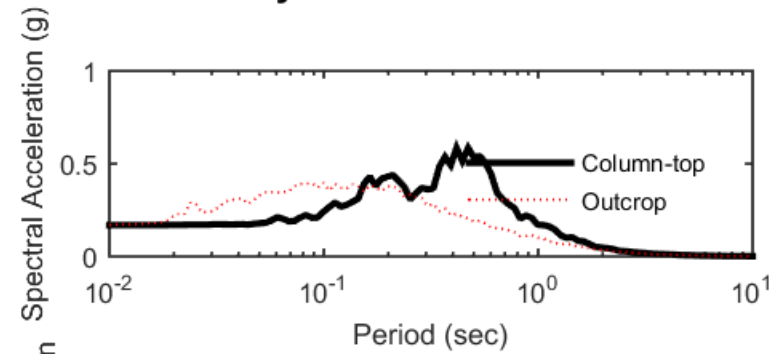
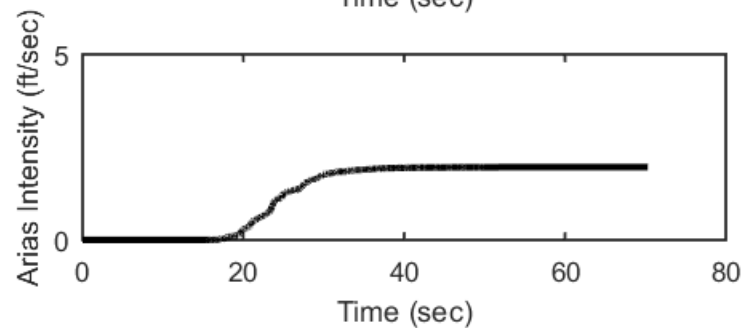
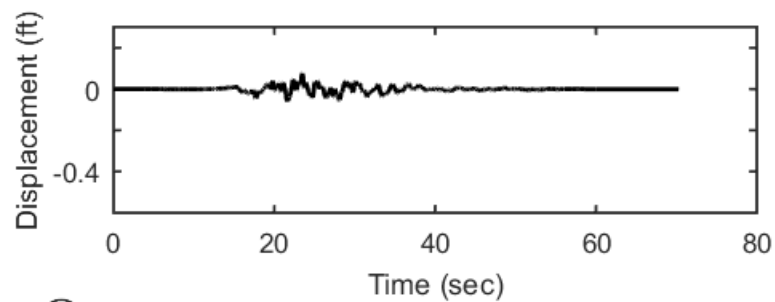
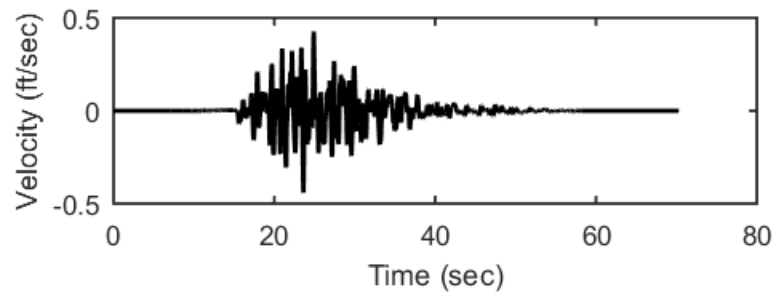
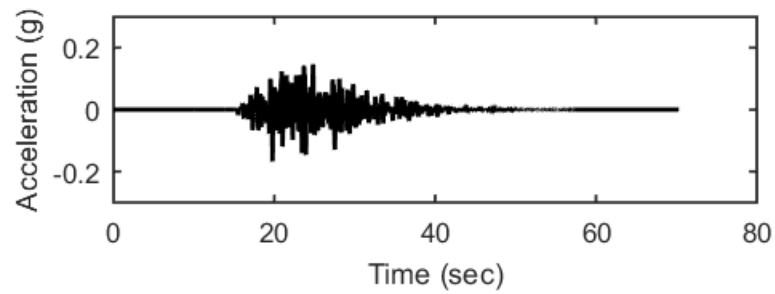
### Profile outputs for Motion: FEE6



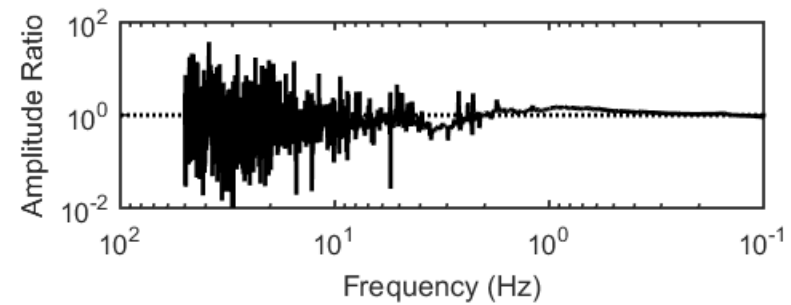
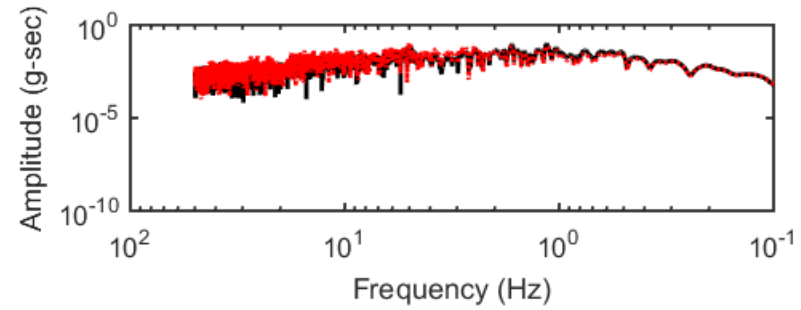
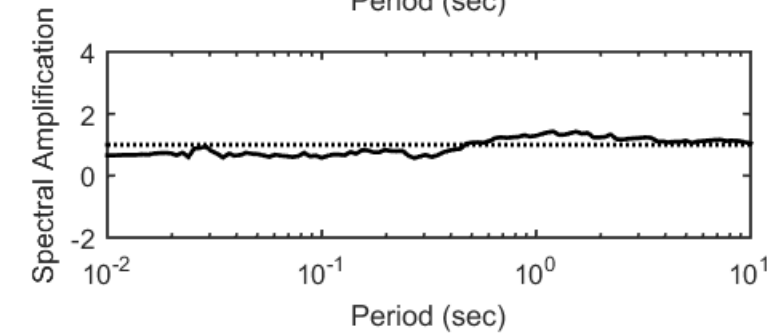
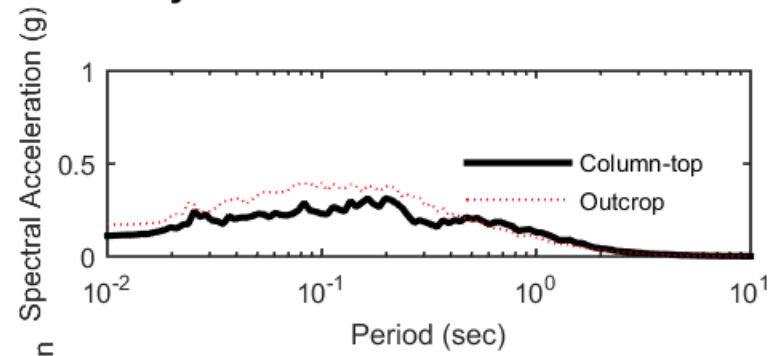
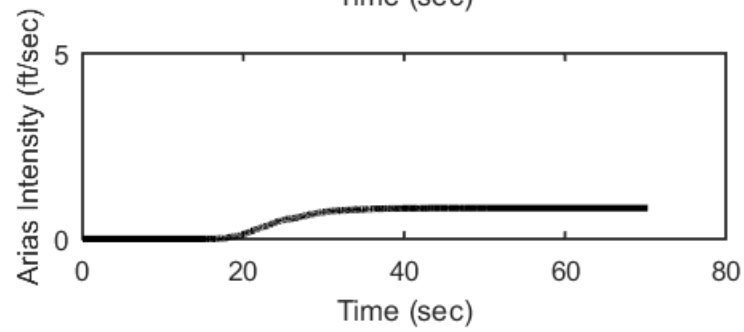
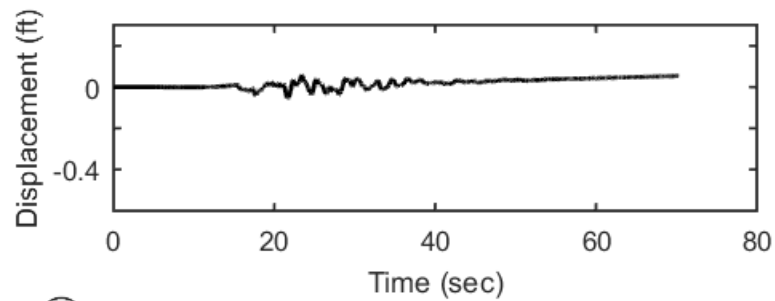
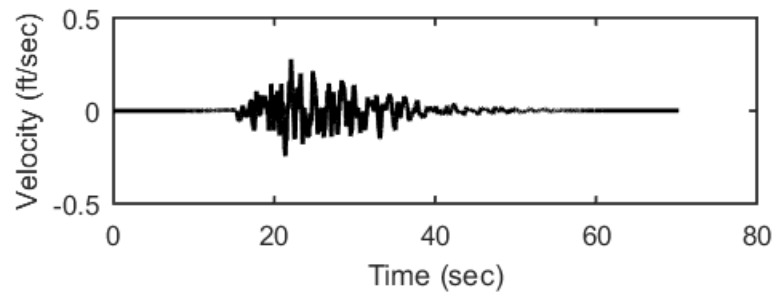
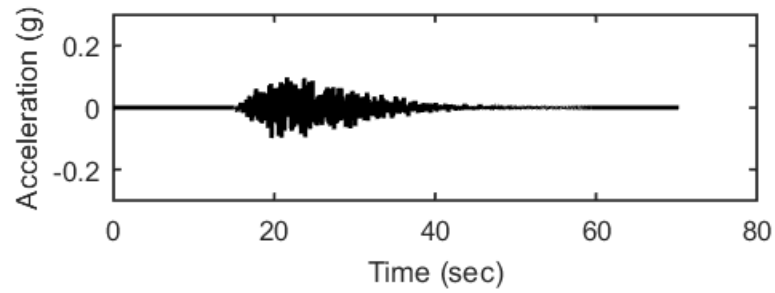
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



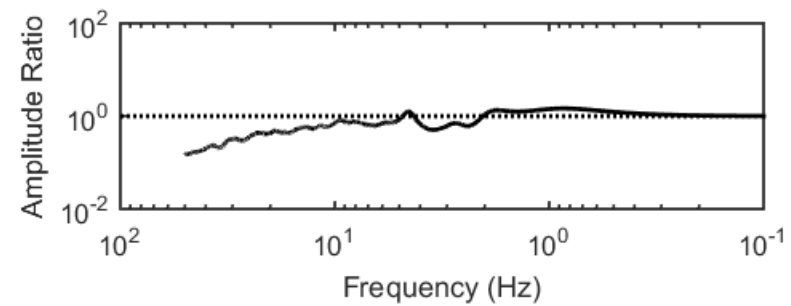
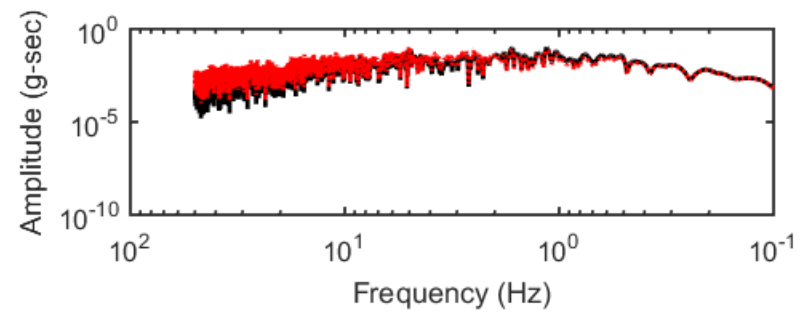
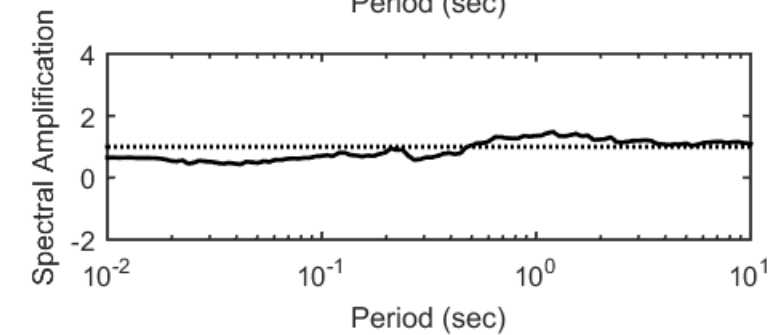
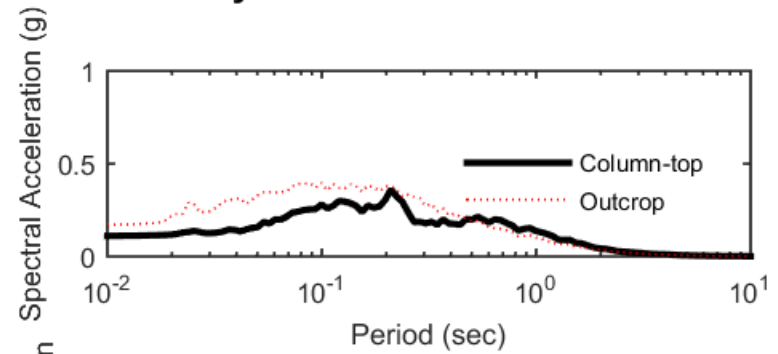
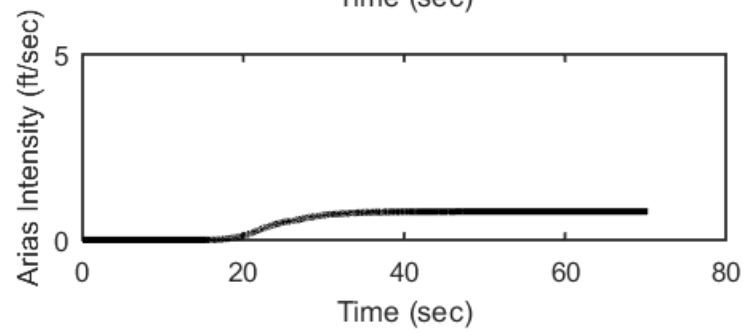
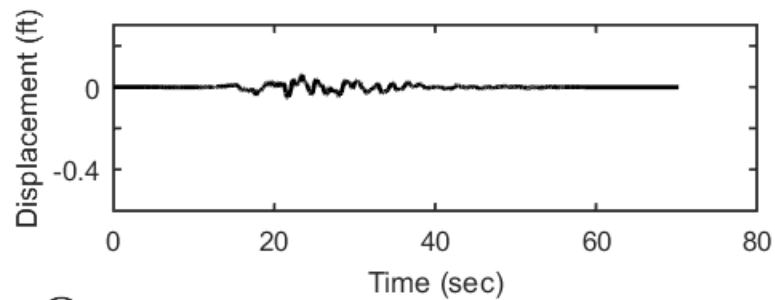
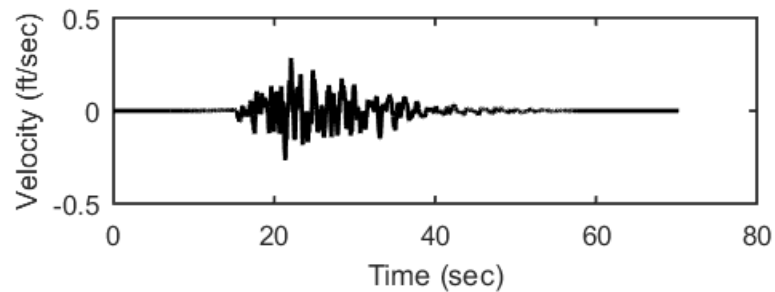
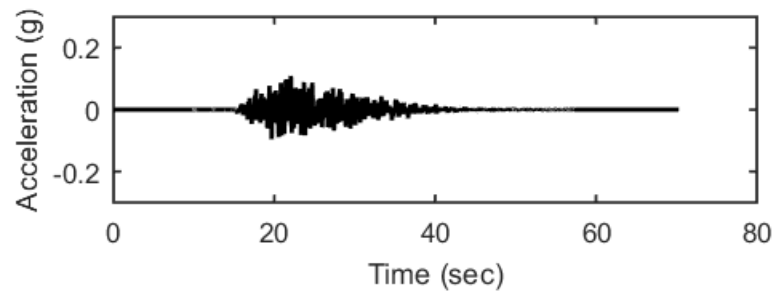
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7

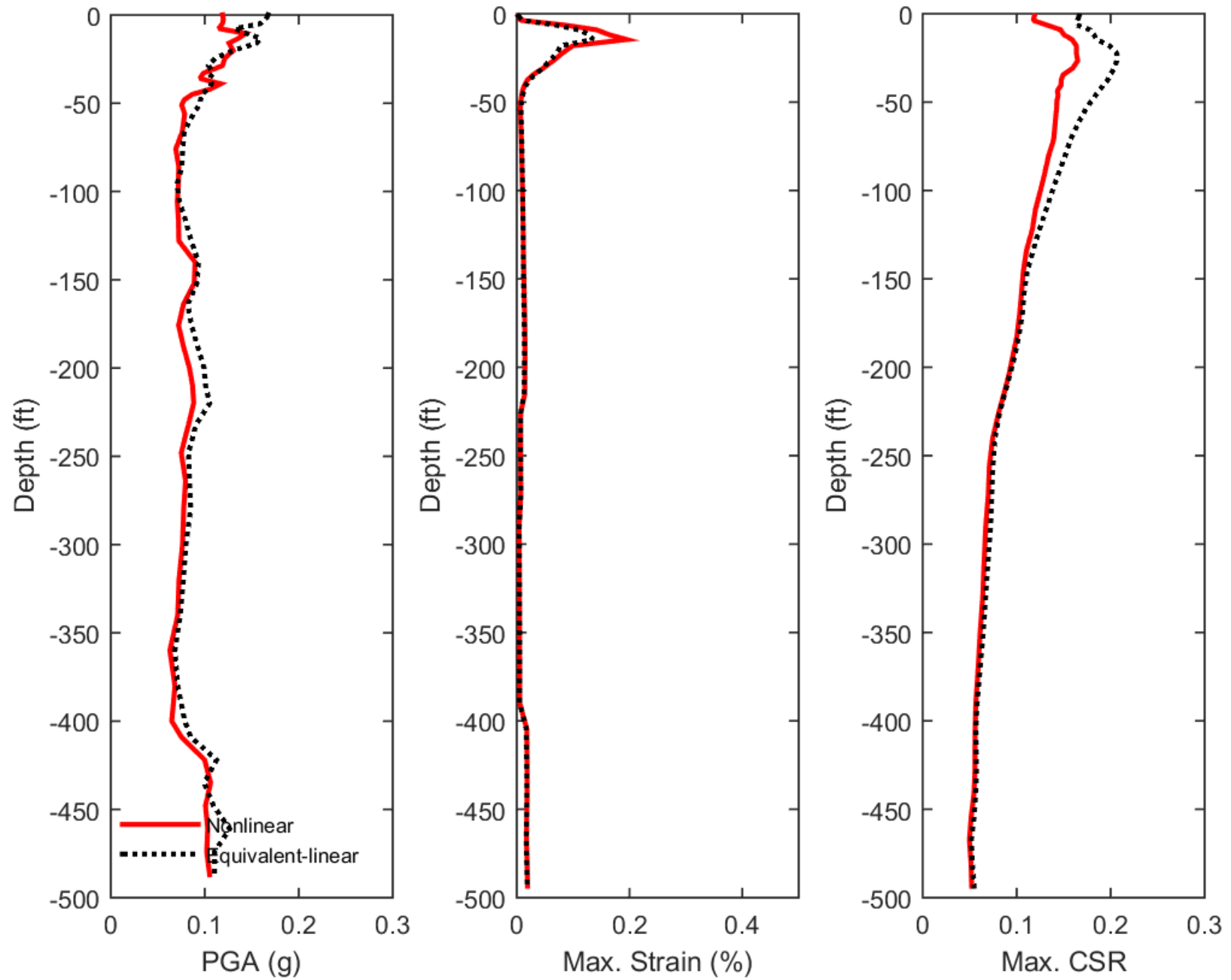


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7

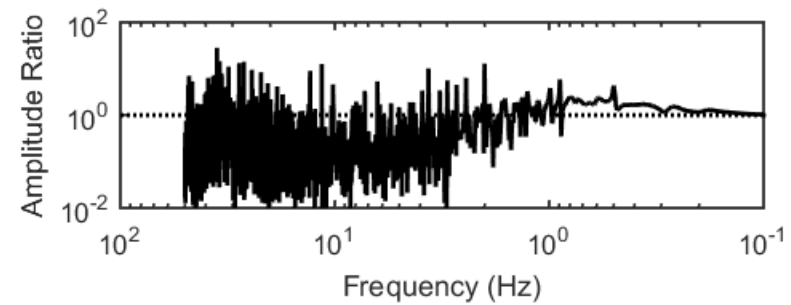
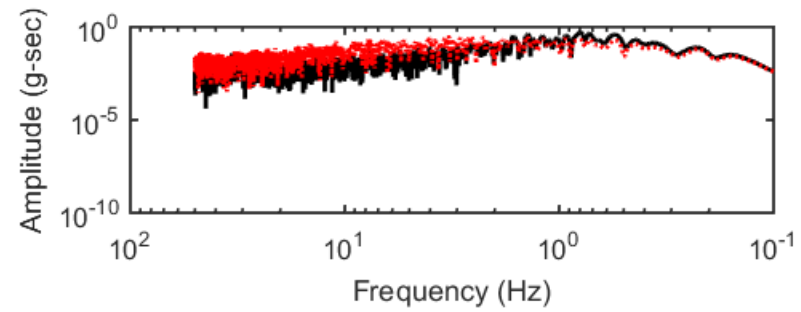
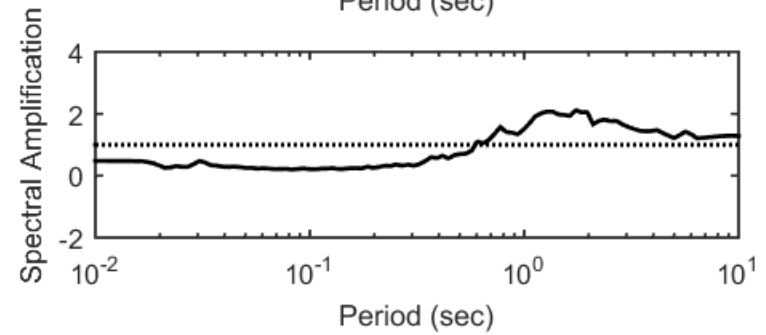
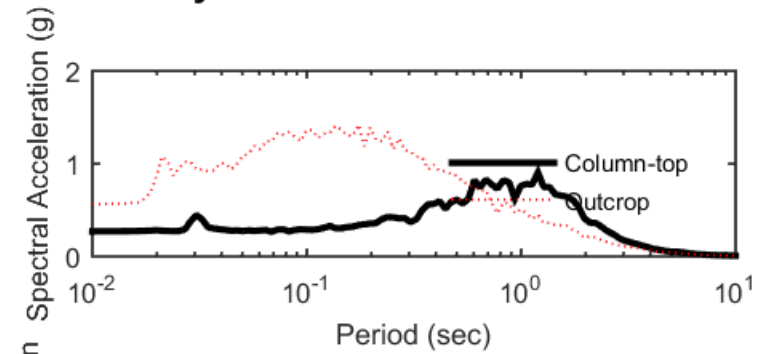
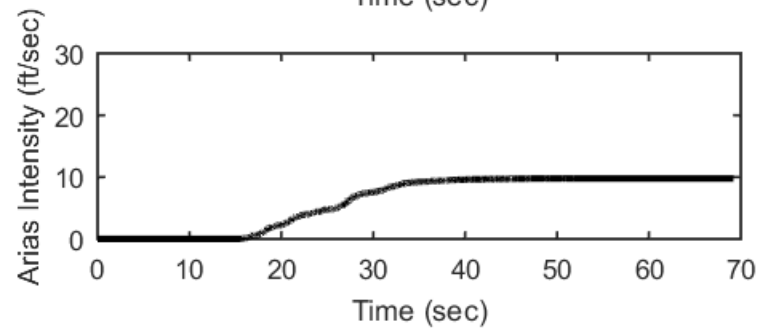
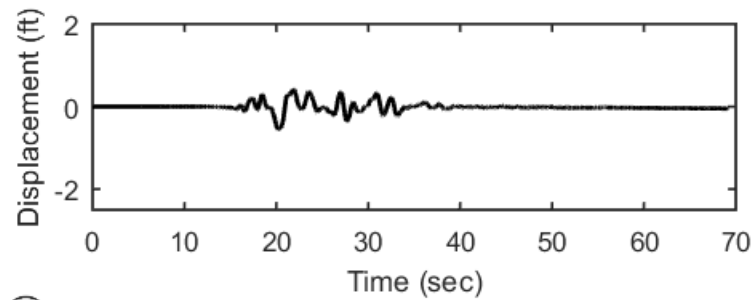
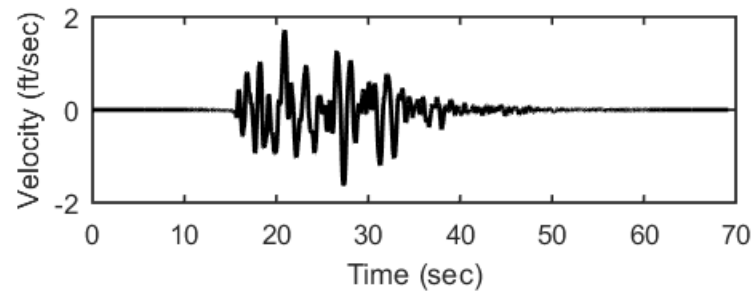
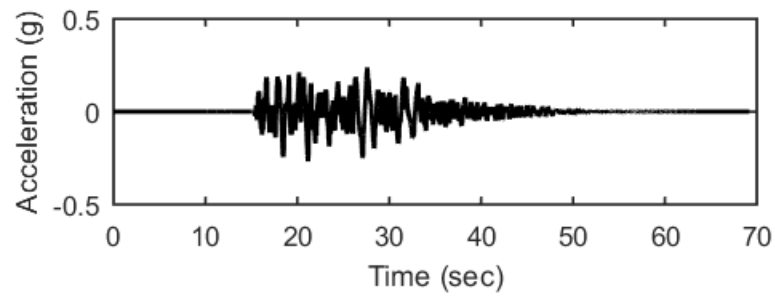




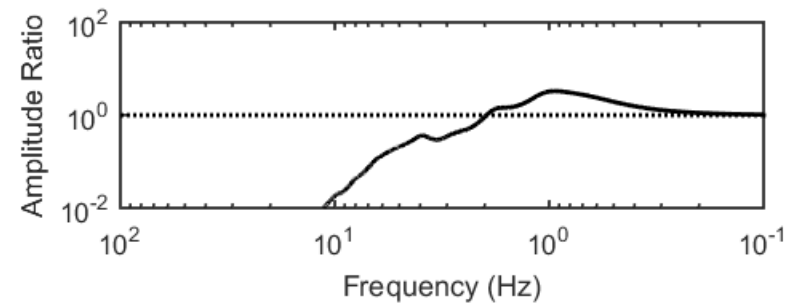
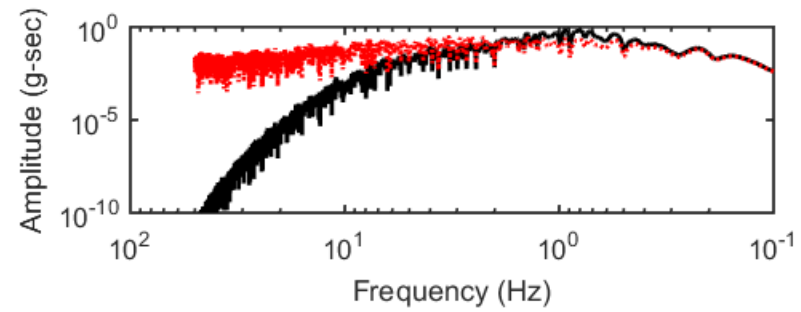
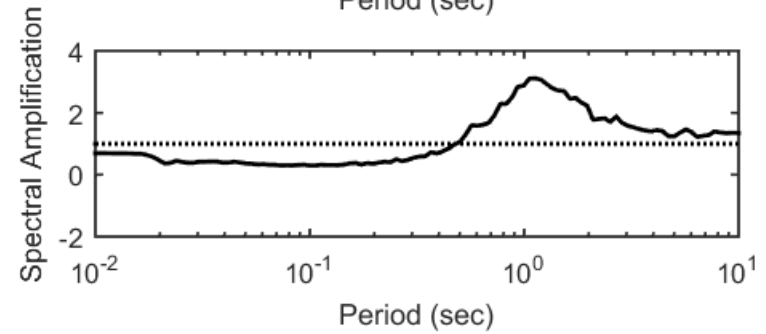
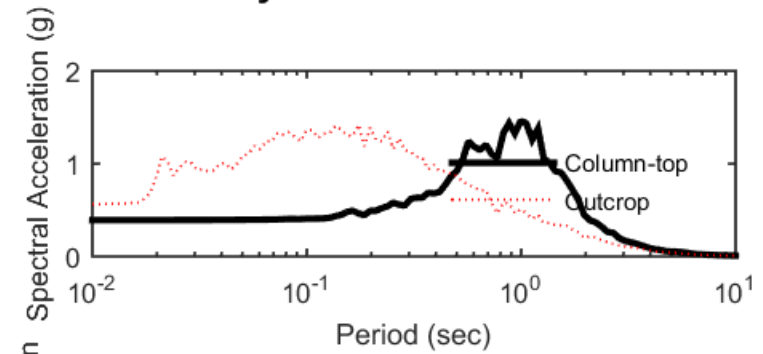
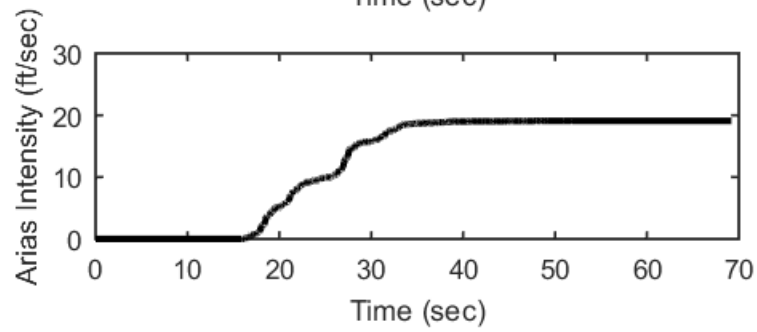
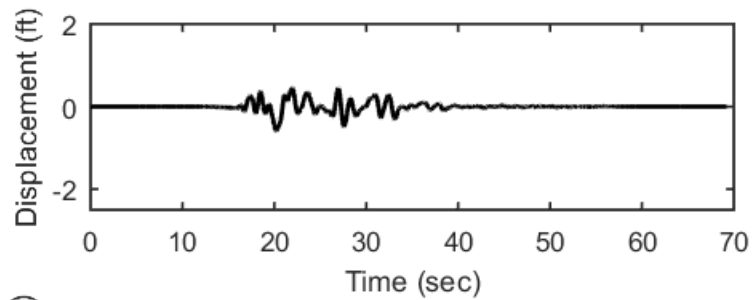
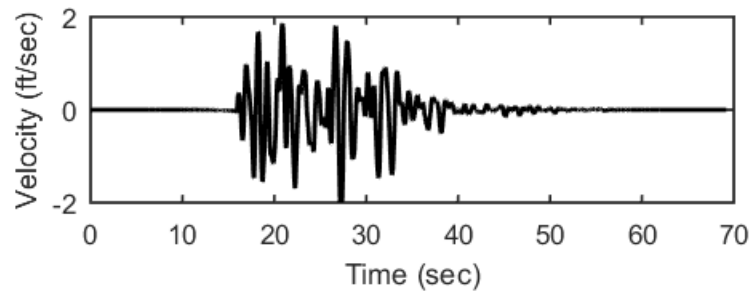
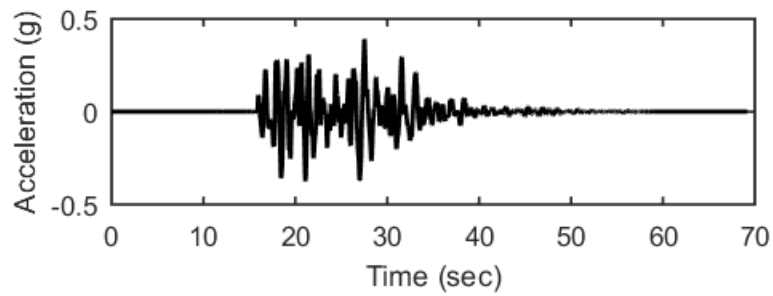
### Profile outputs for Motion: FEE7



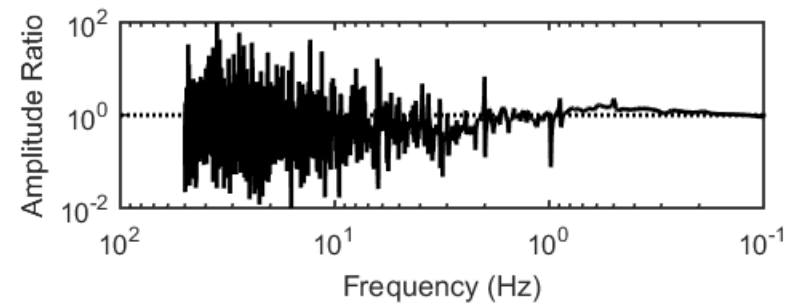
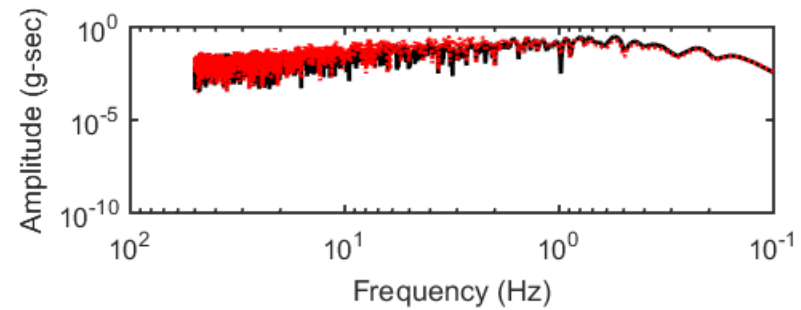
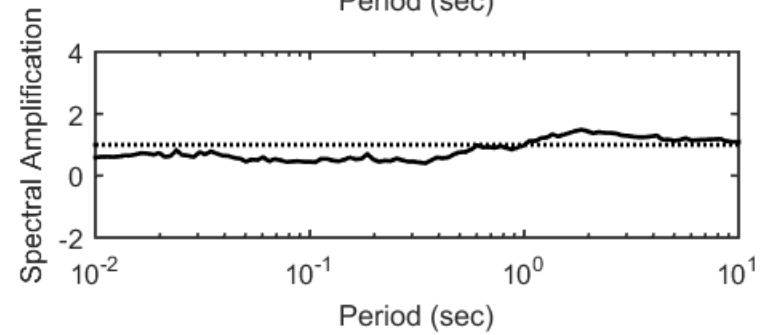
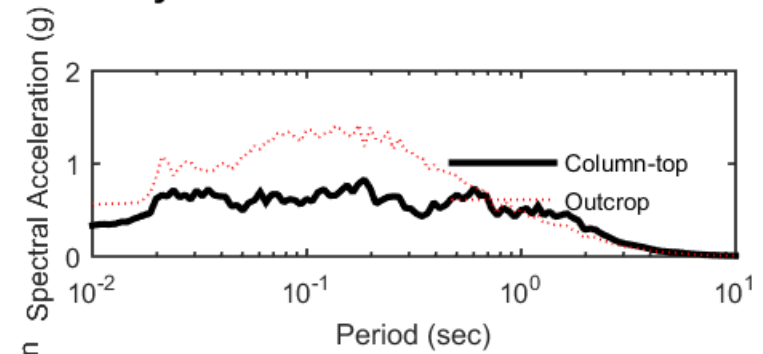
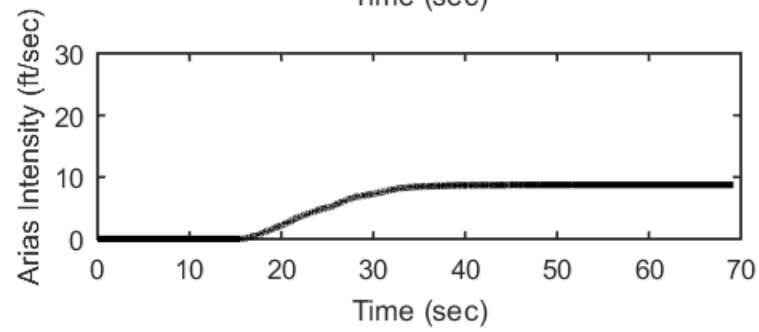
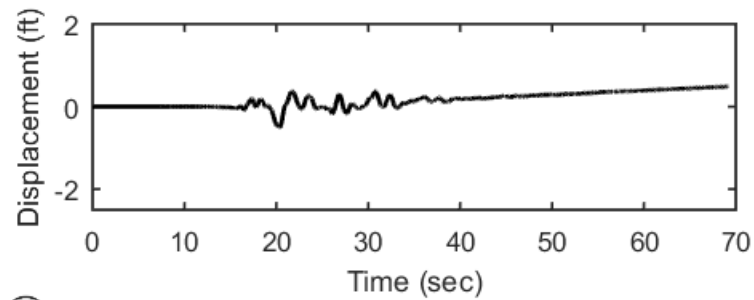
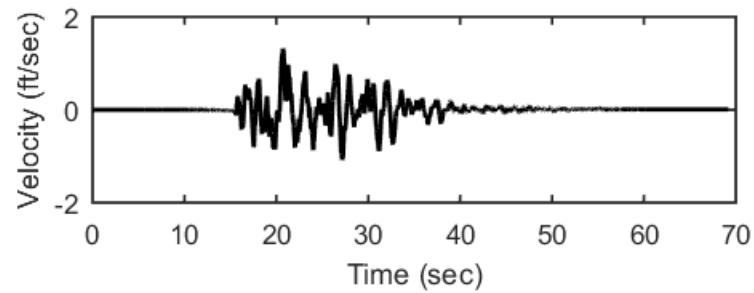
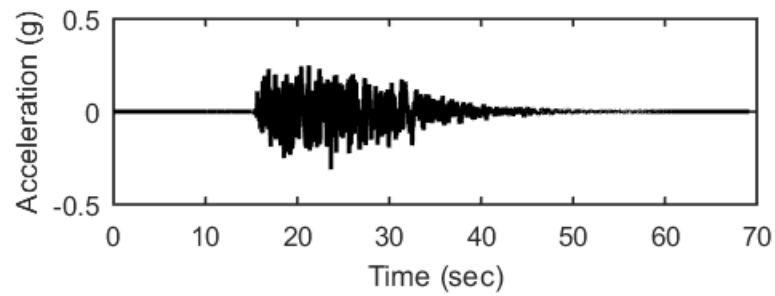
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



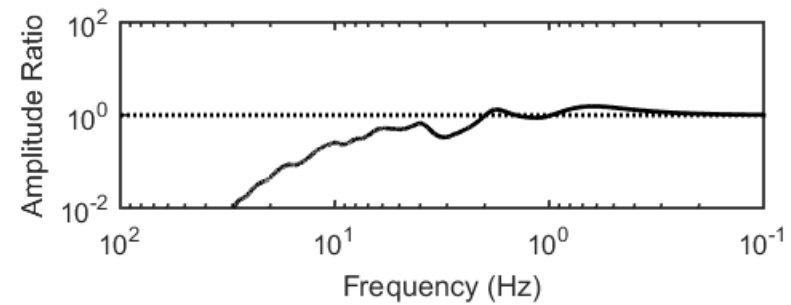
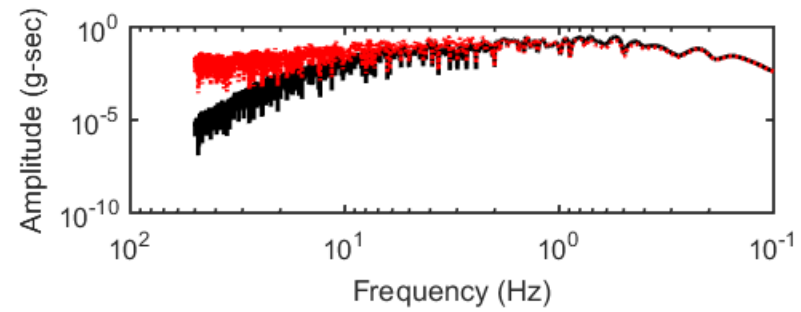
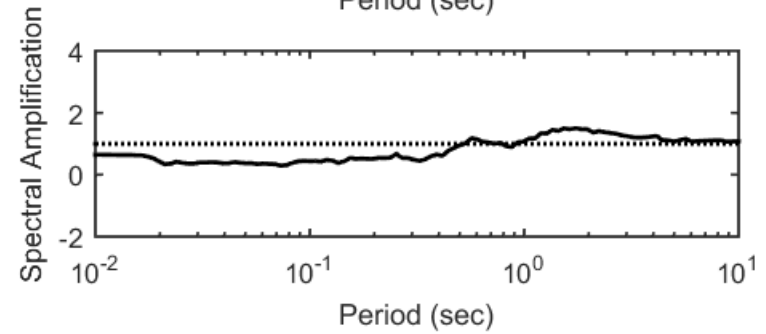
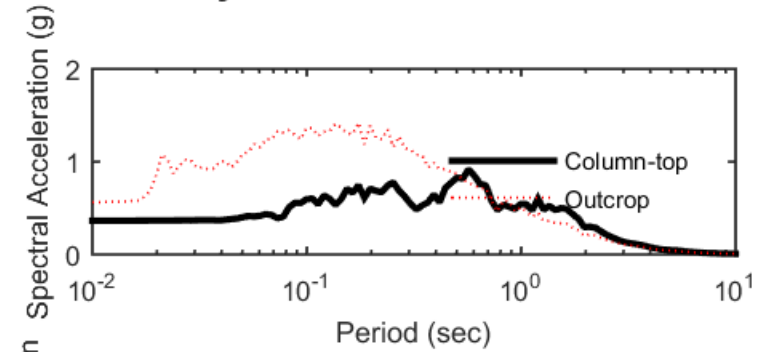
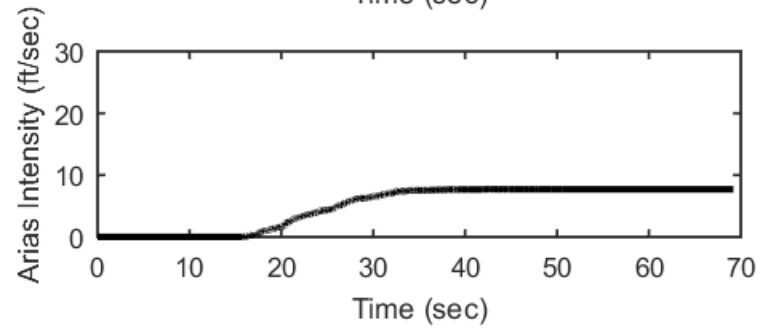
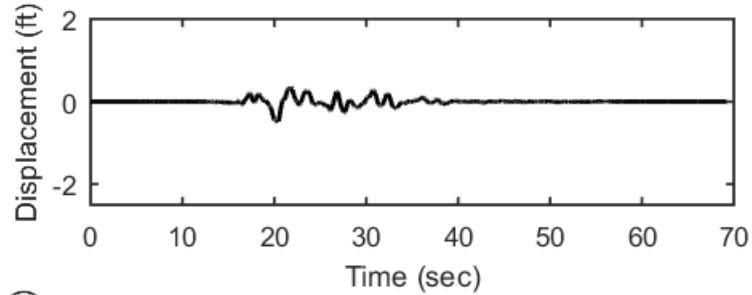
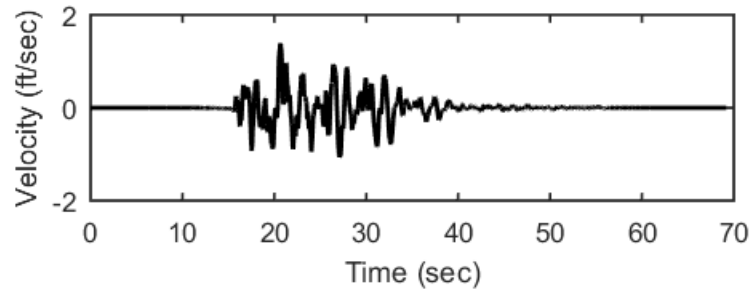
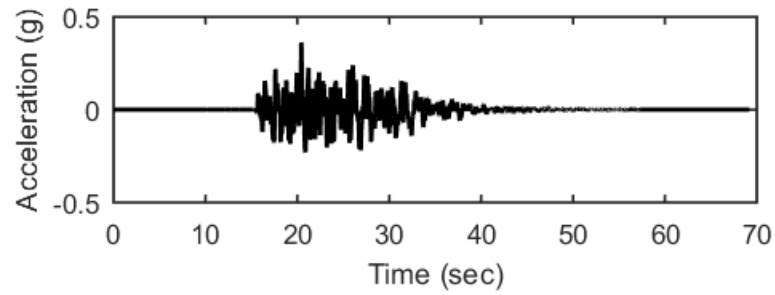
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



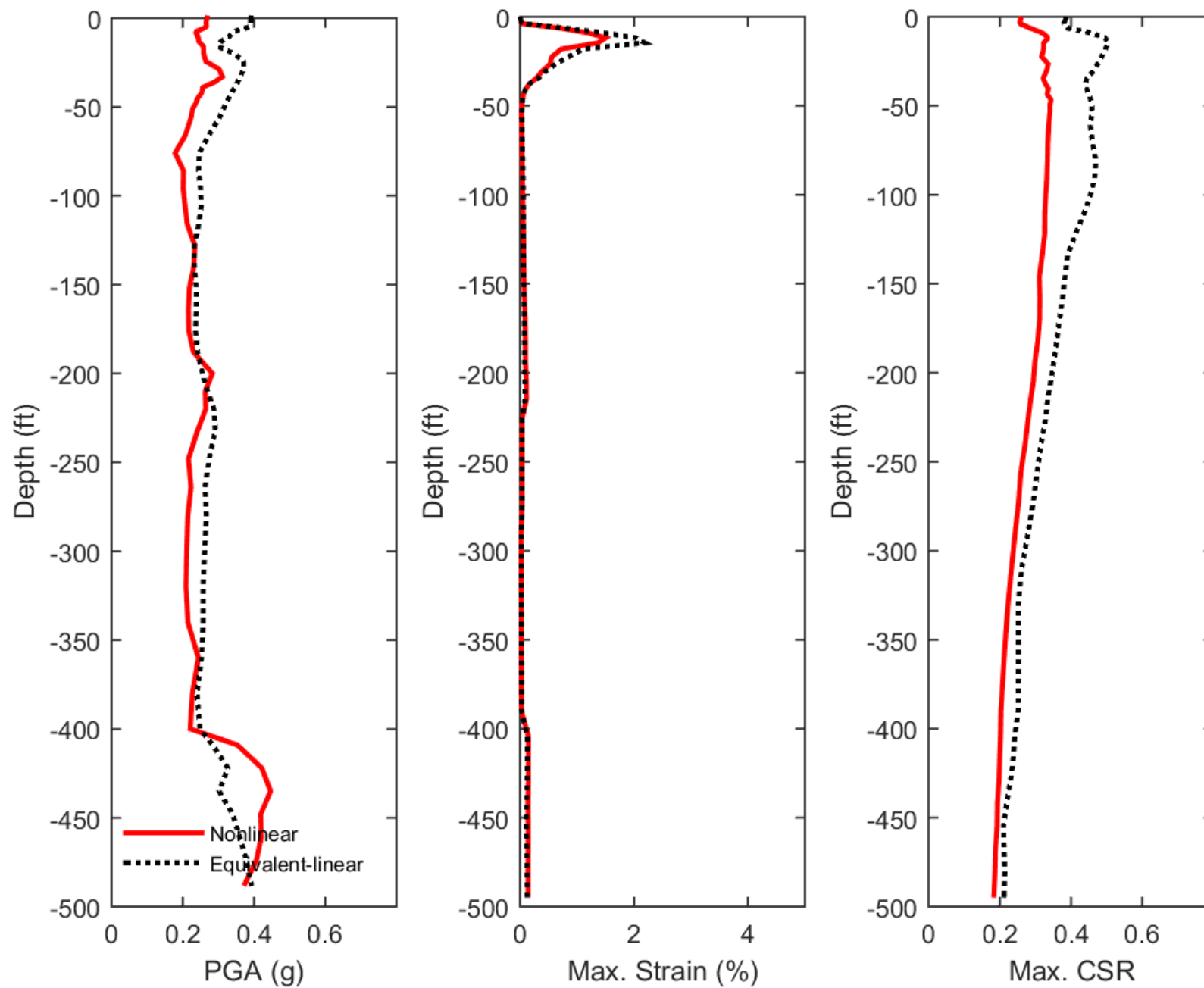
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



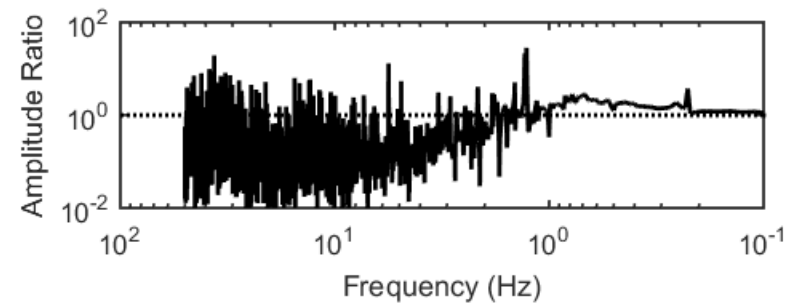
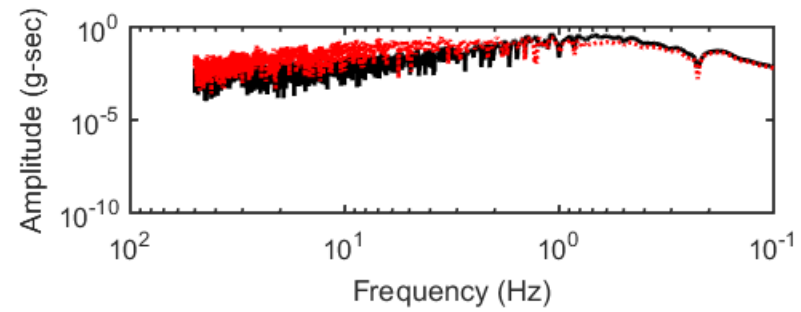
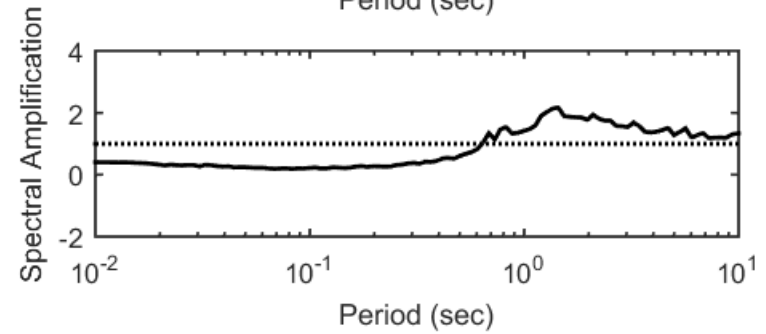
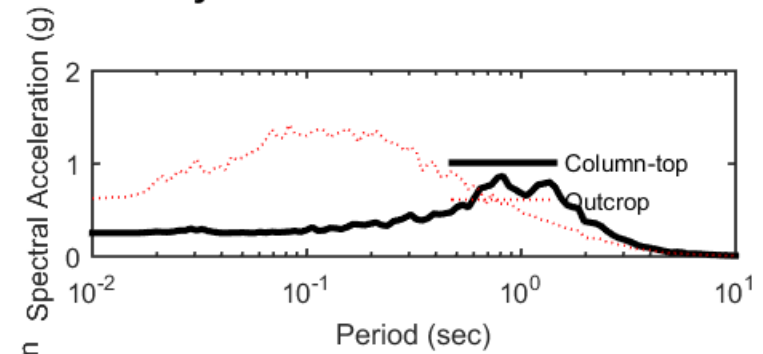
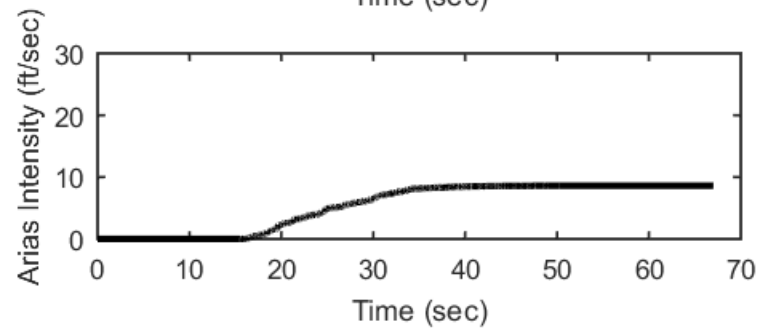
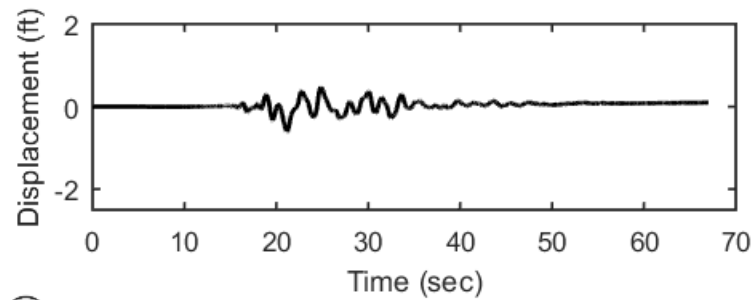
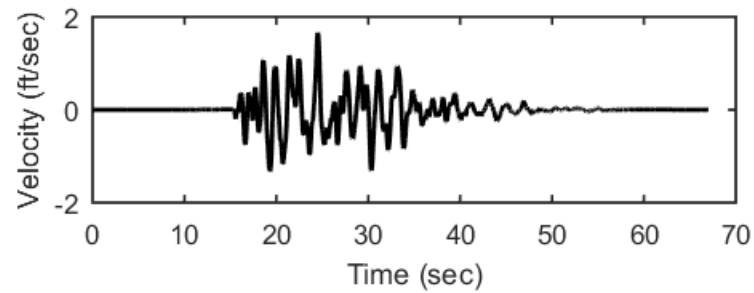
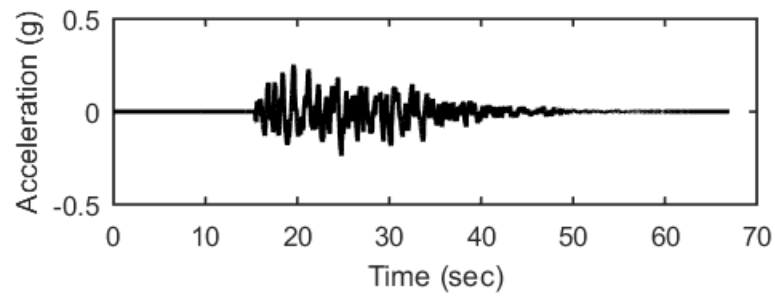
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



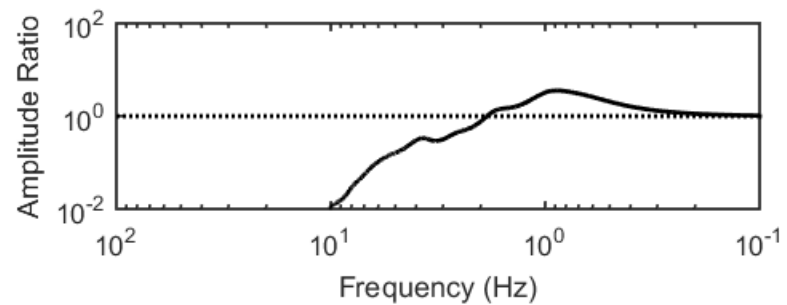
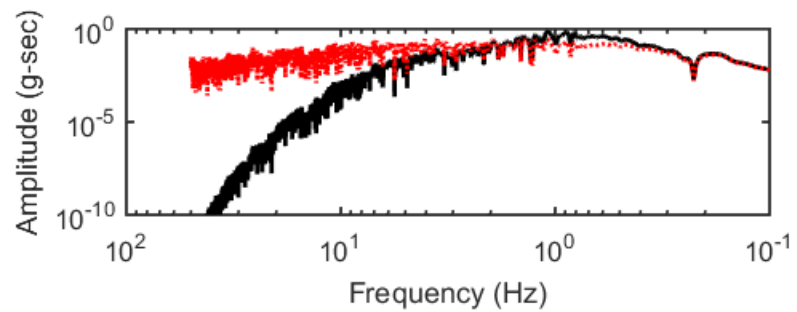
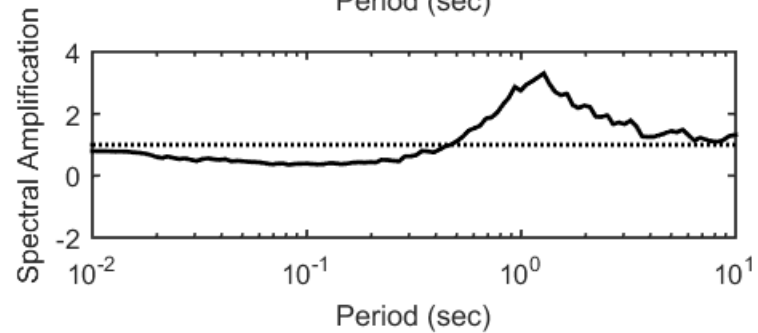
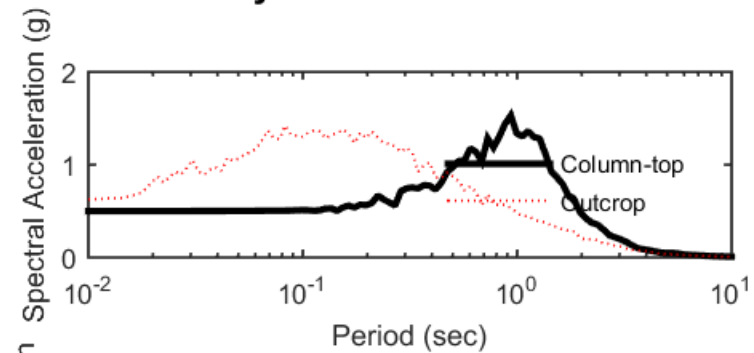
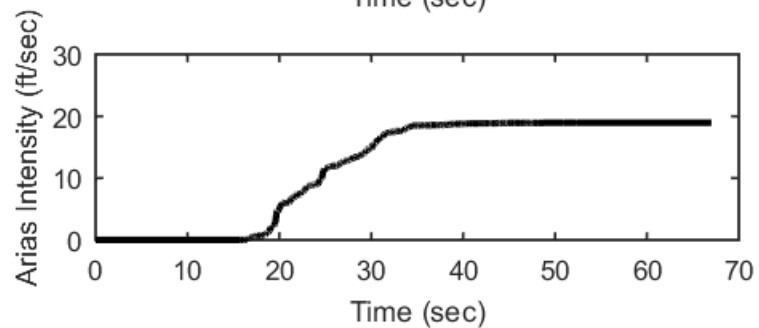
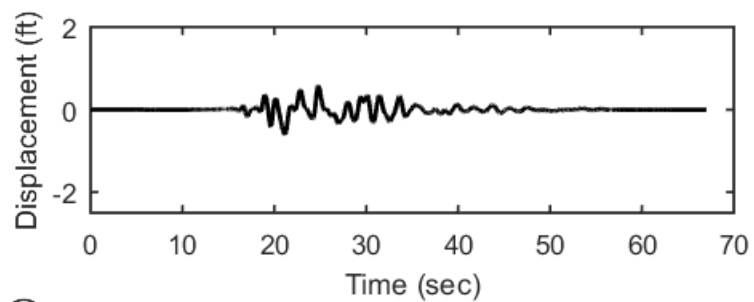
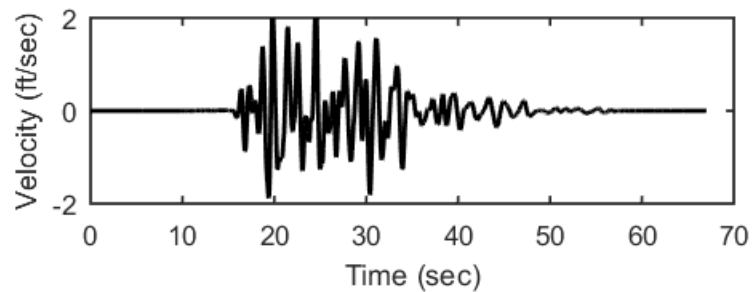
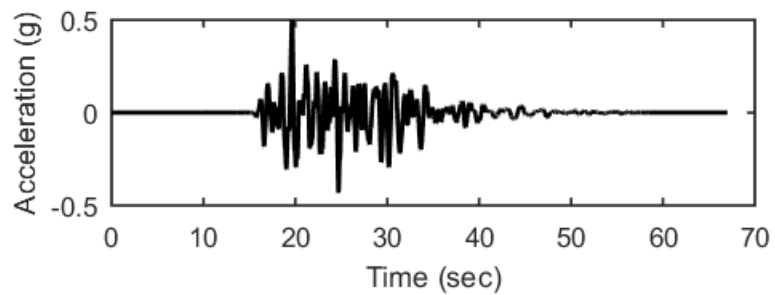
### Profile outputs for Motion: SEE1



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2

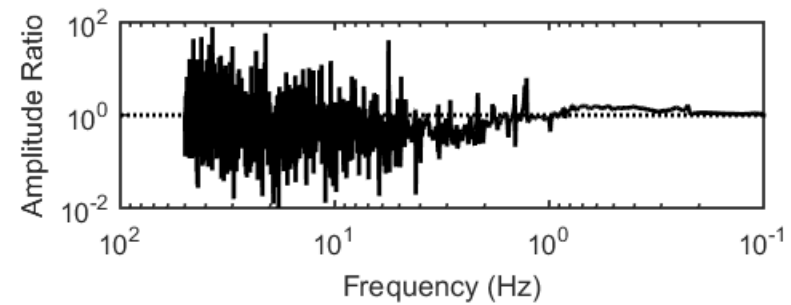
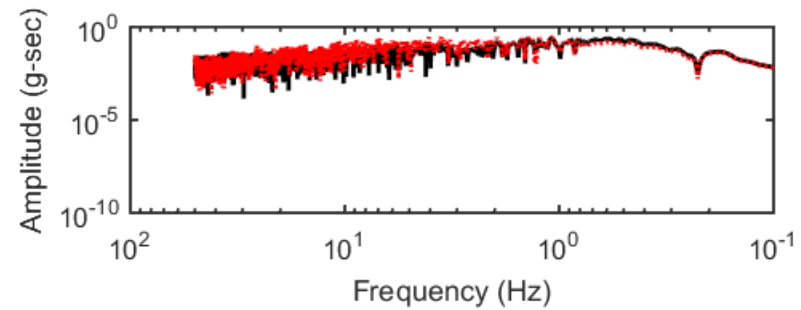
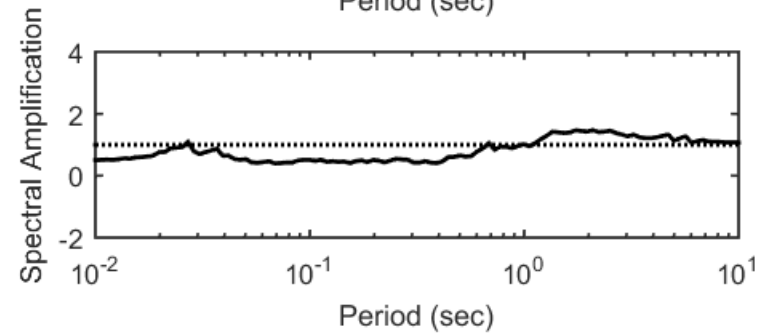
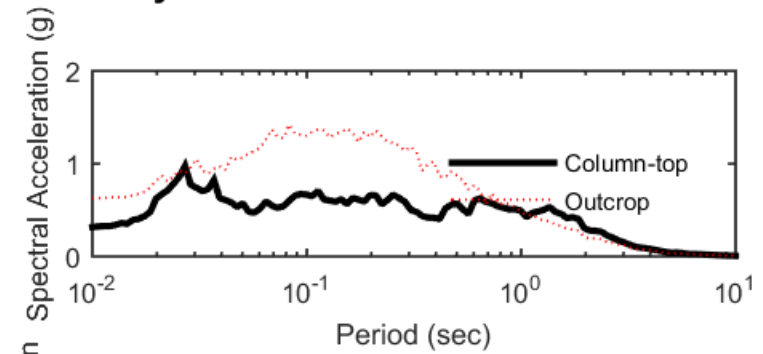
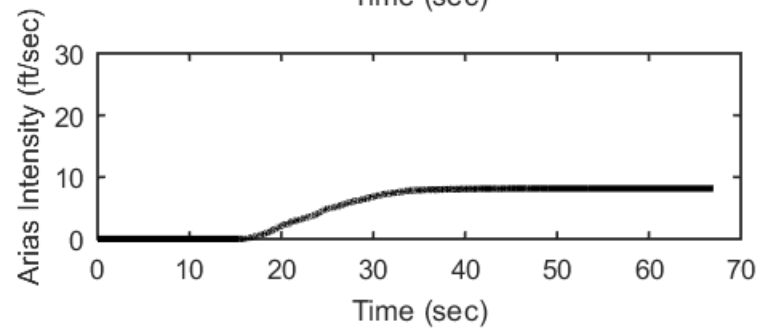
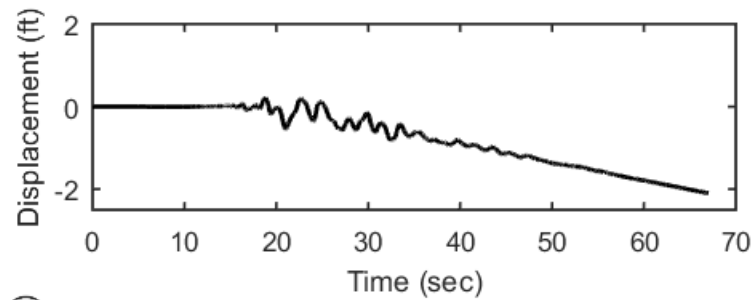
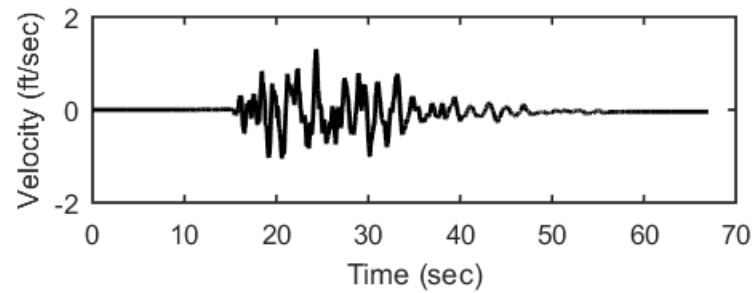
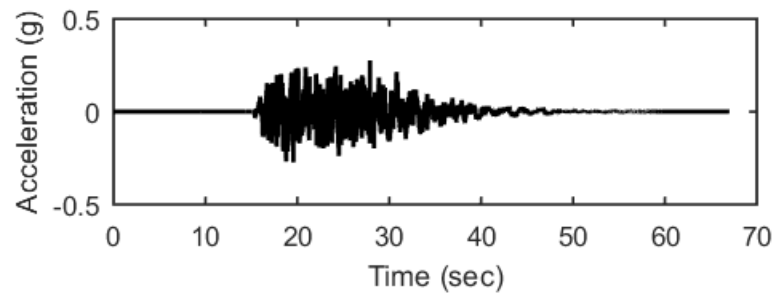


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2

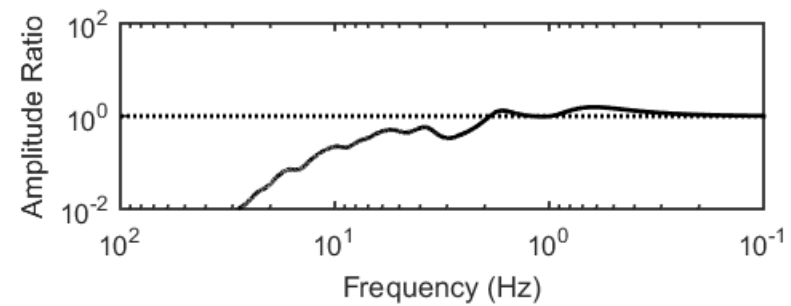
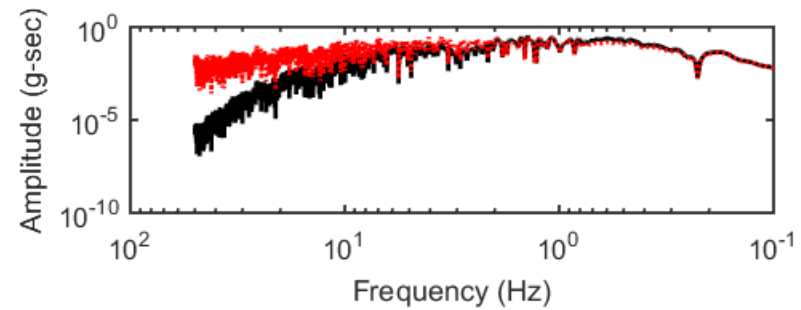
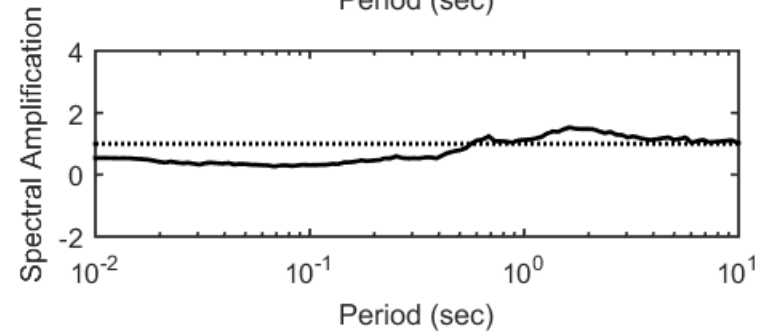
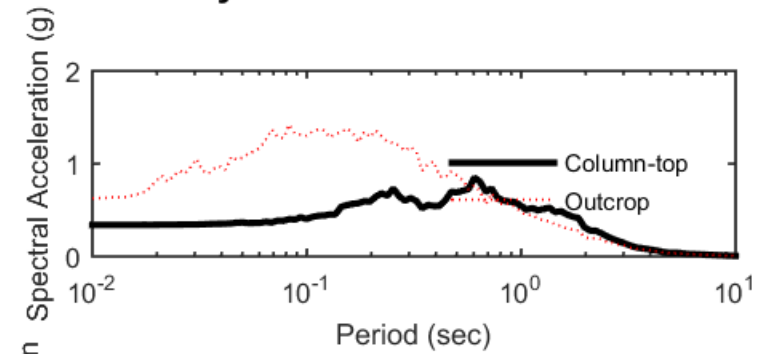
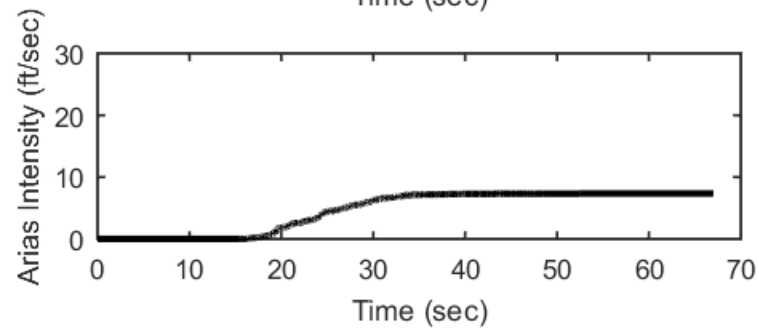
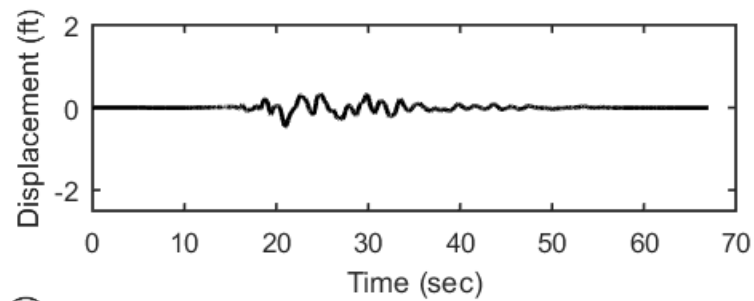
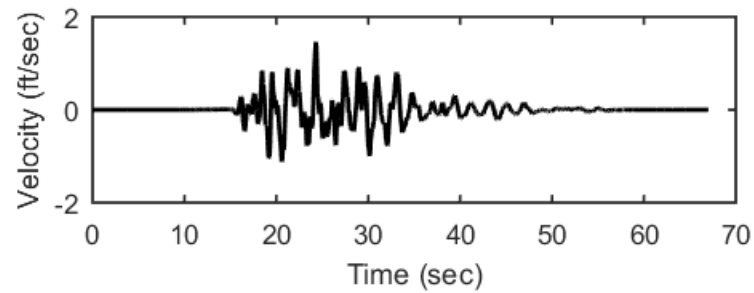
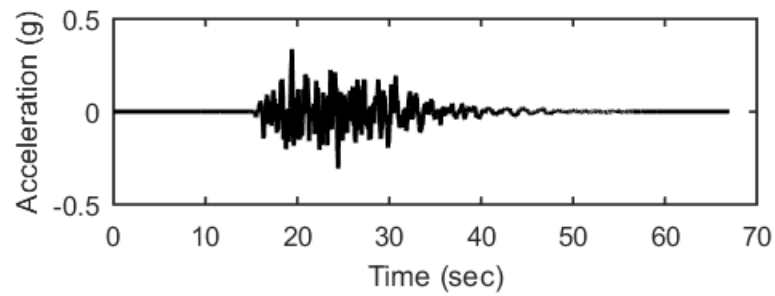




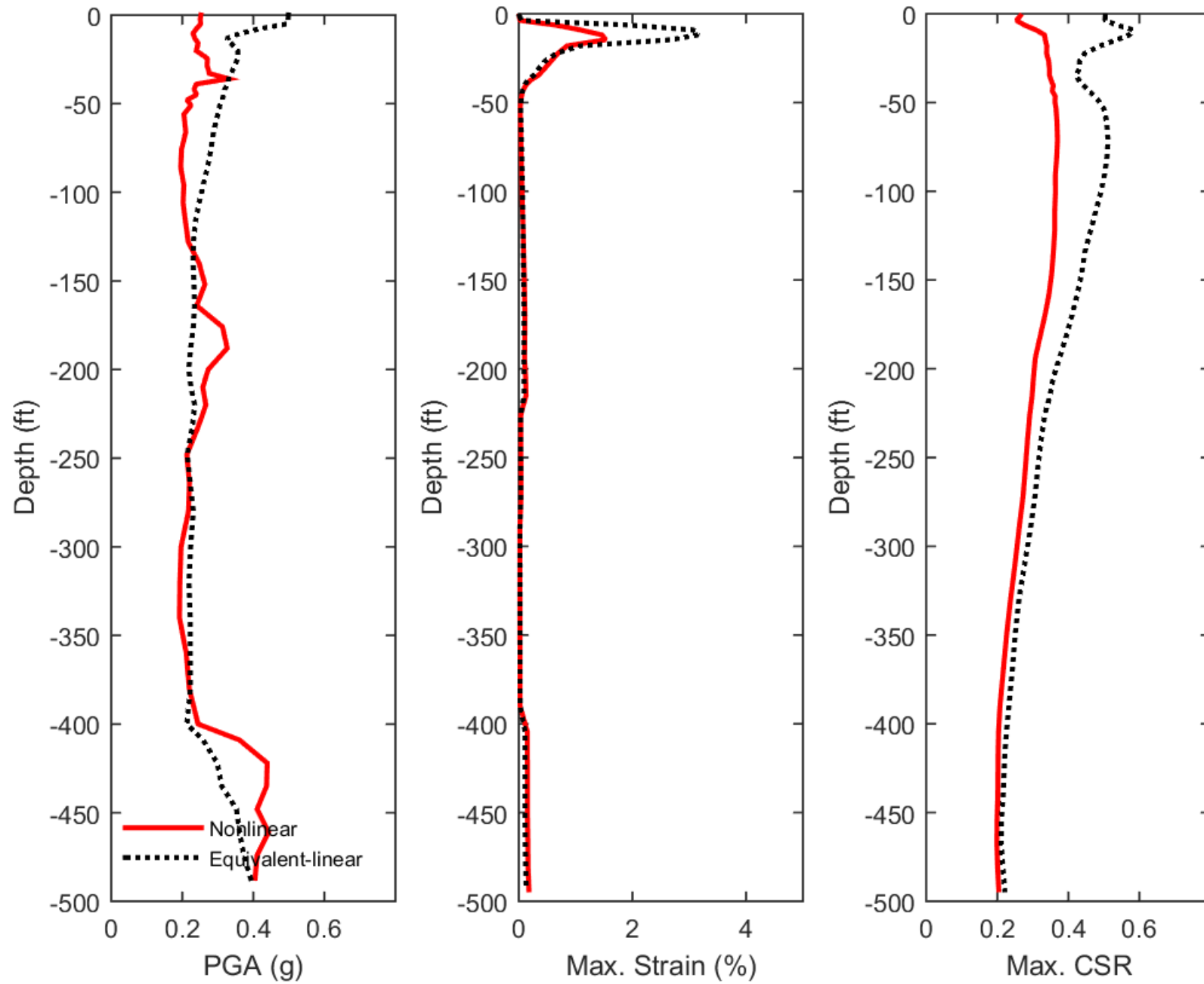
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



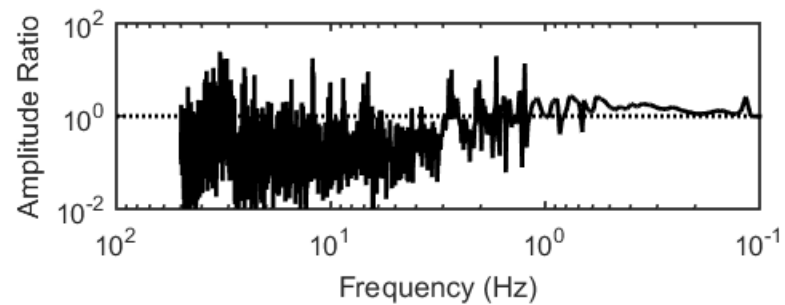
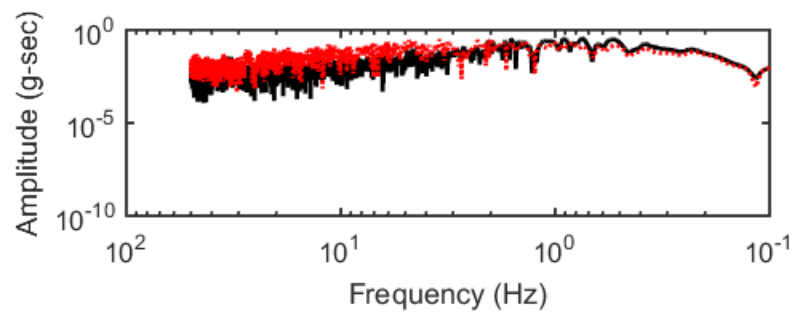
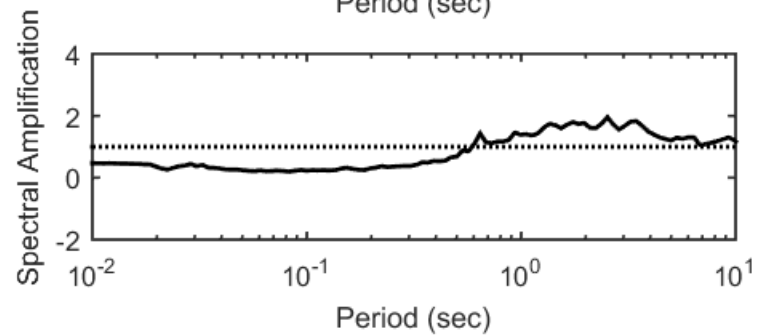
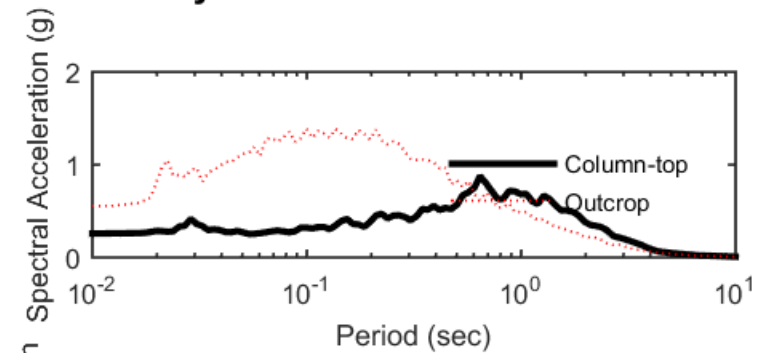
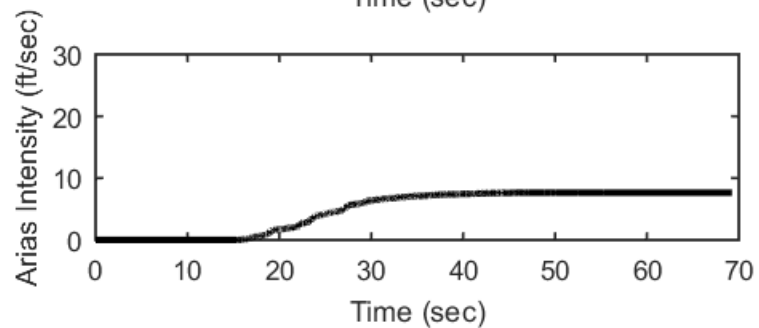
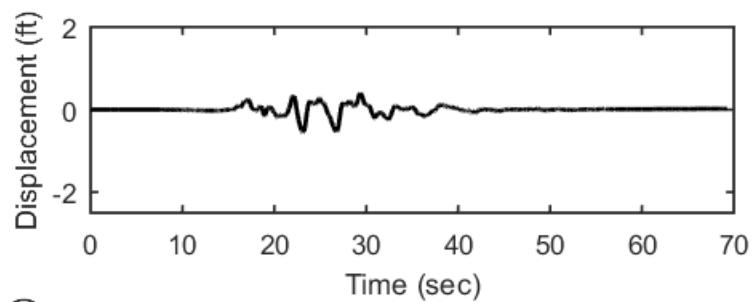
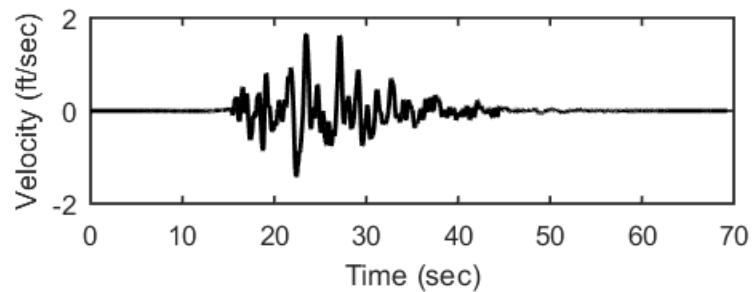
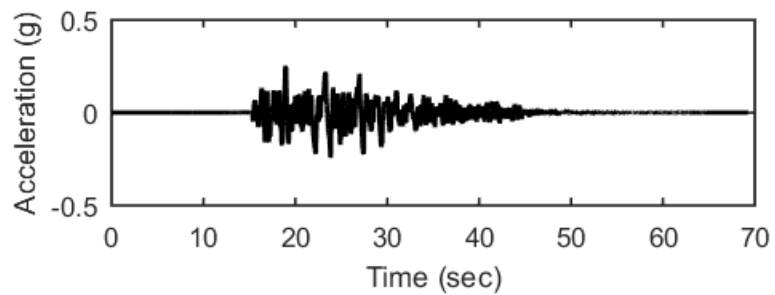
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



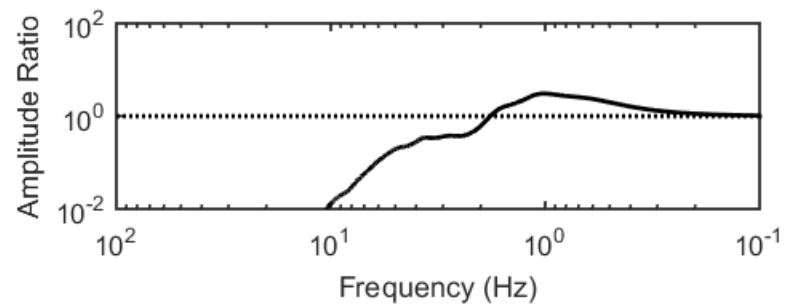
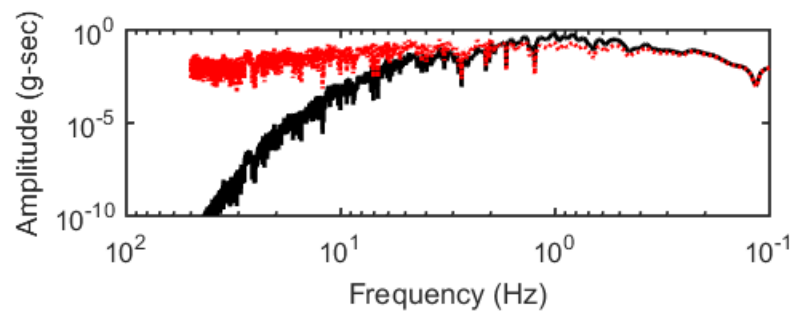
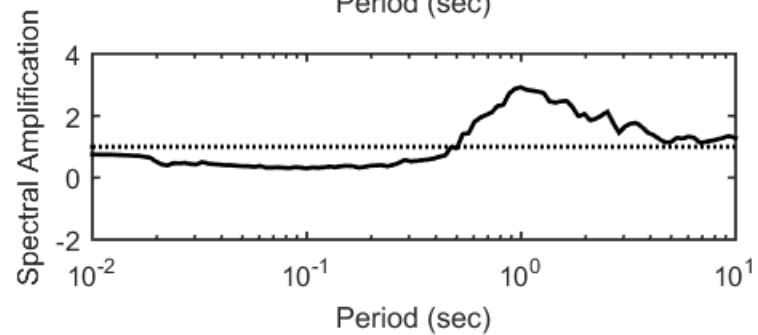
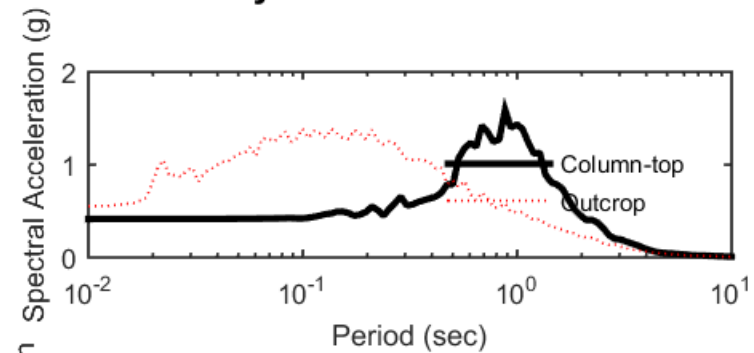
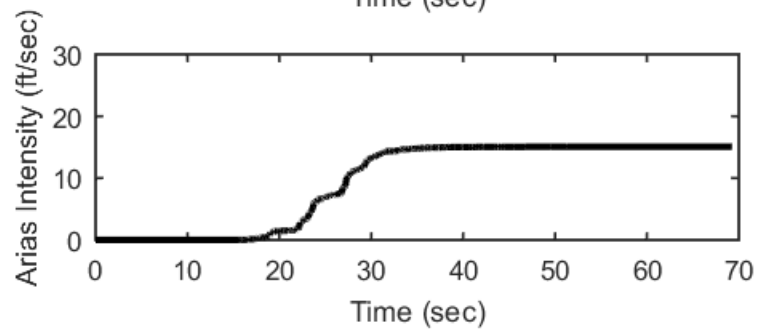
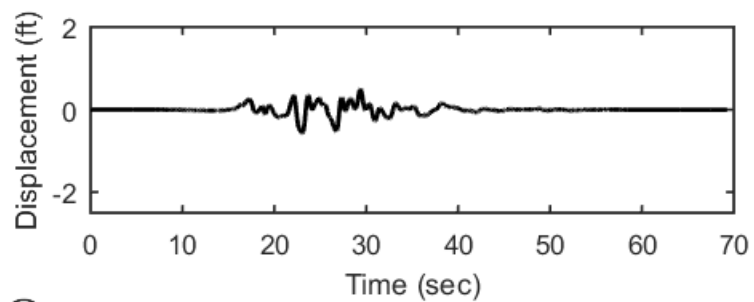
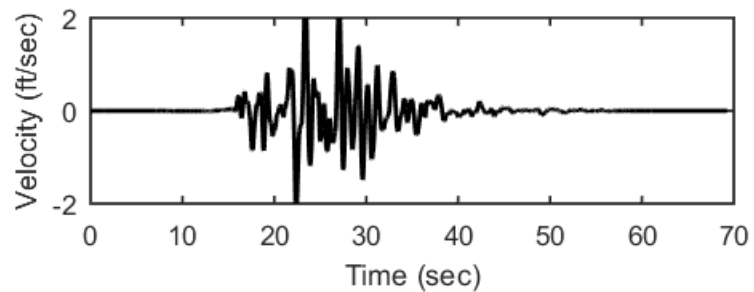
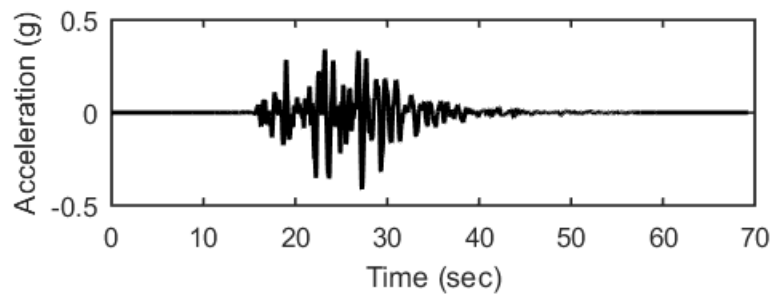
### Profile outputs for Motion: SEE2



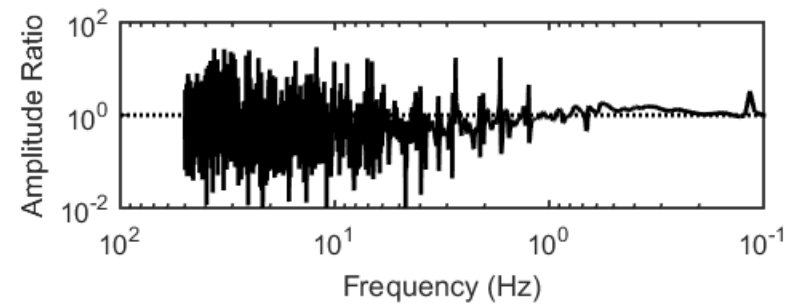
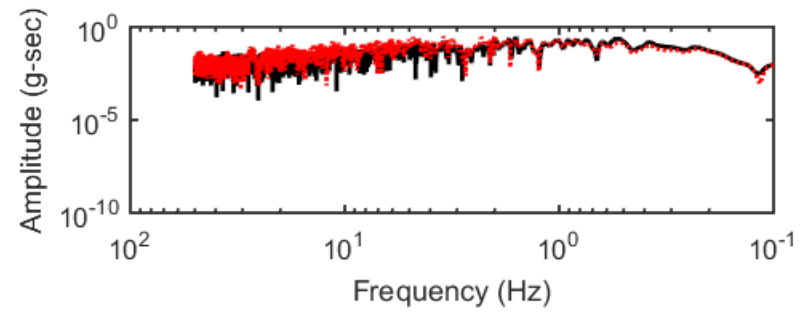
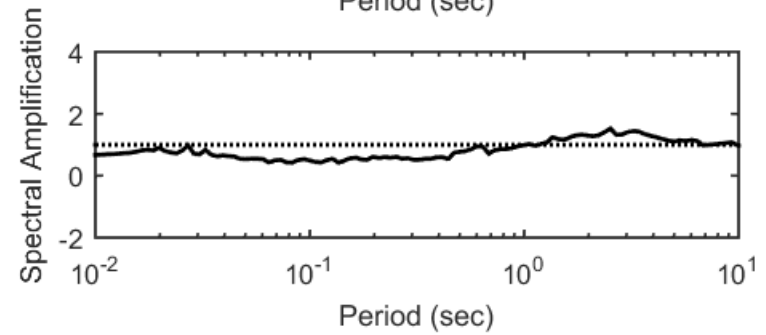
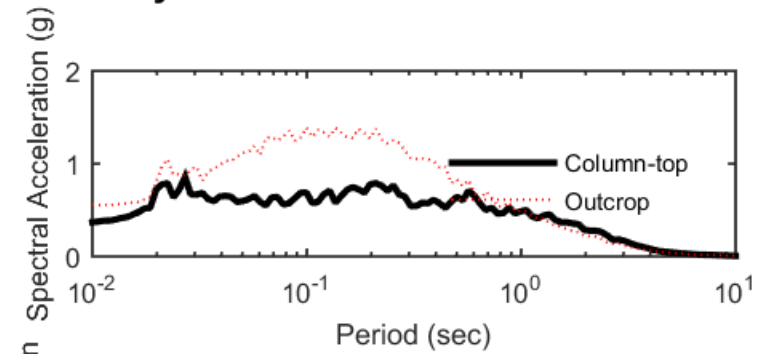
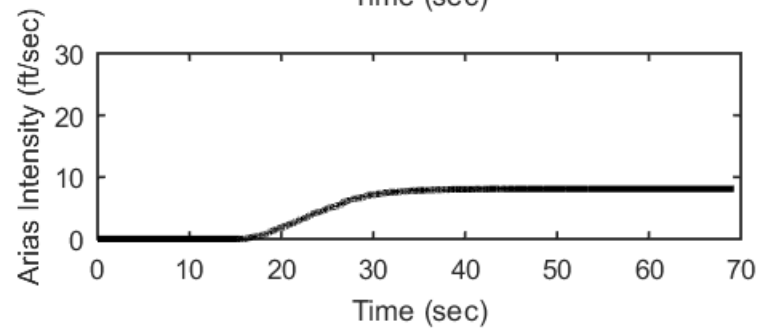
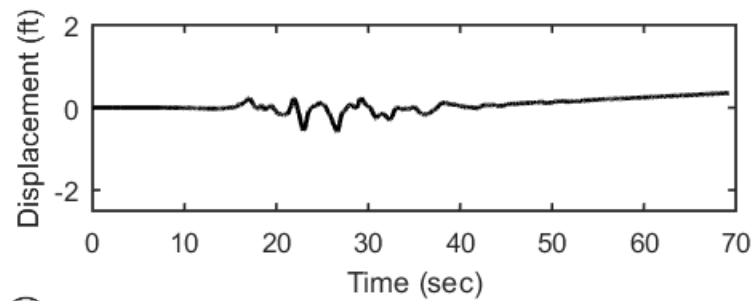
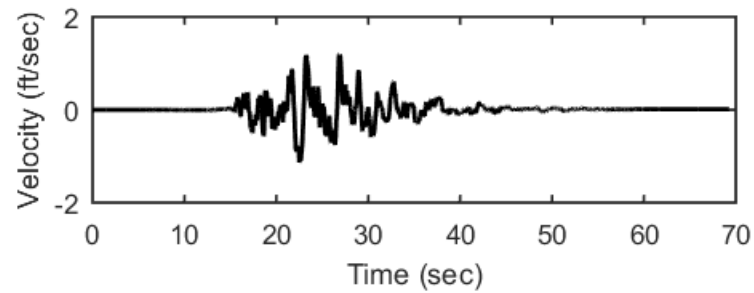
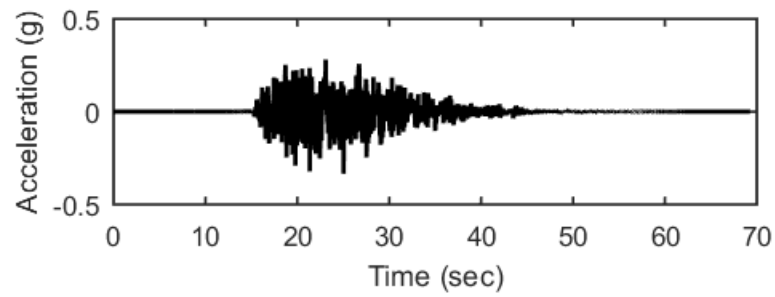
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



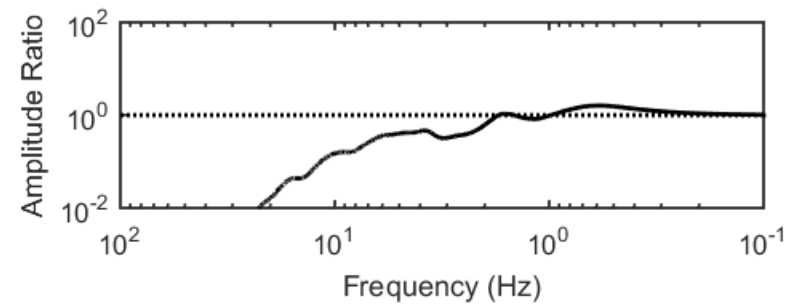
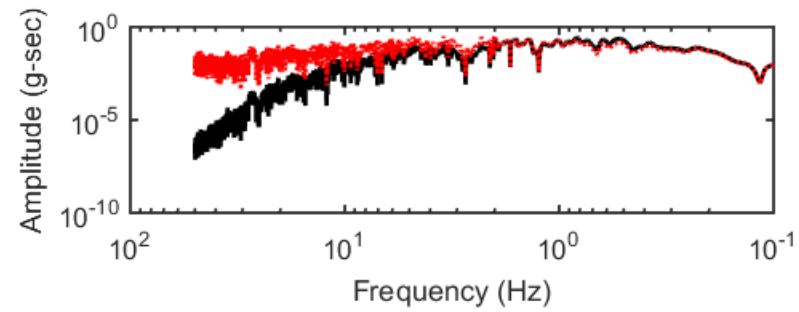
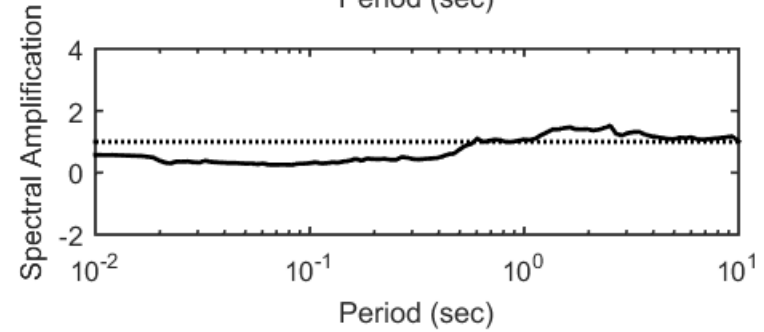
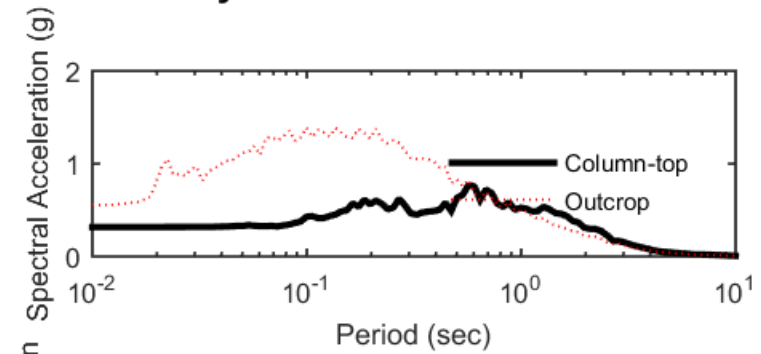
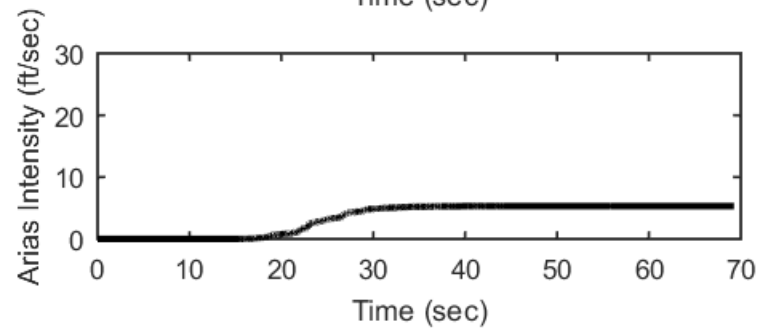
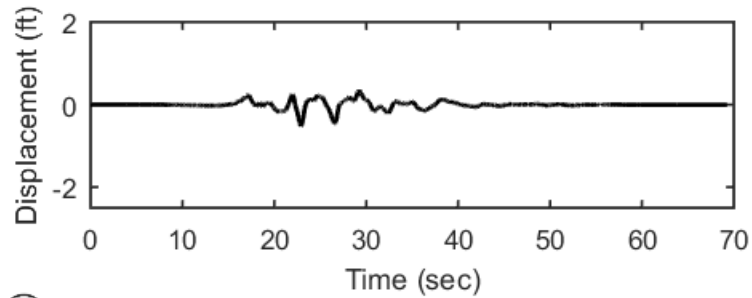
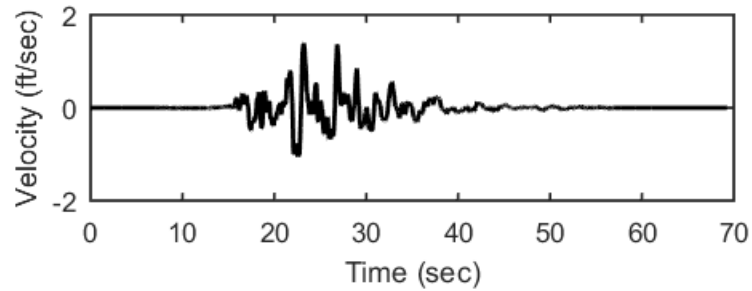
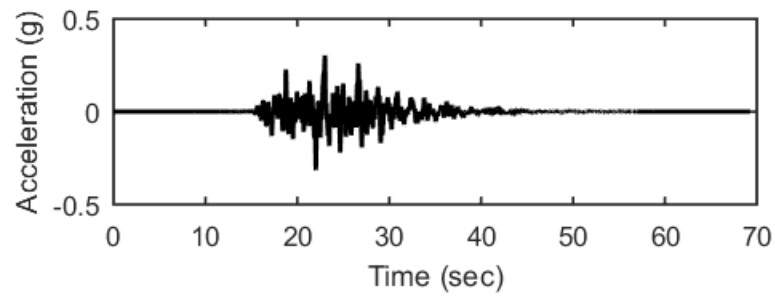
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



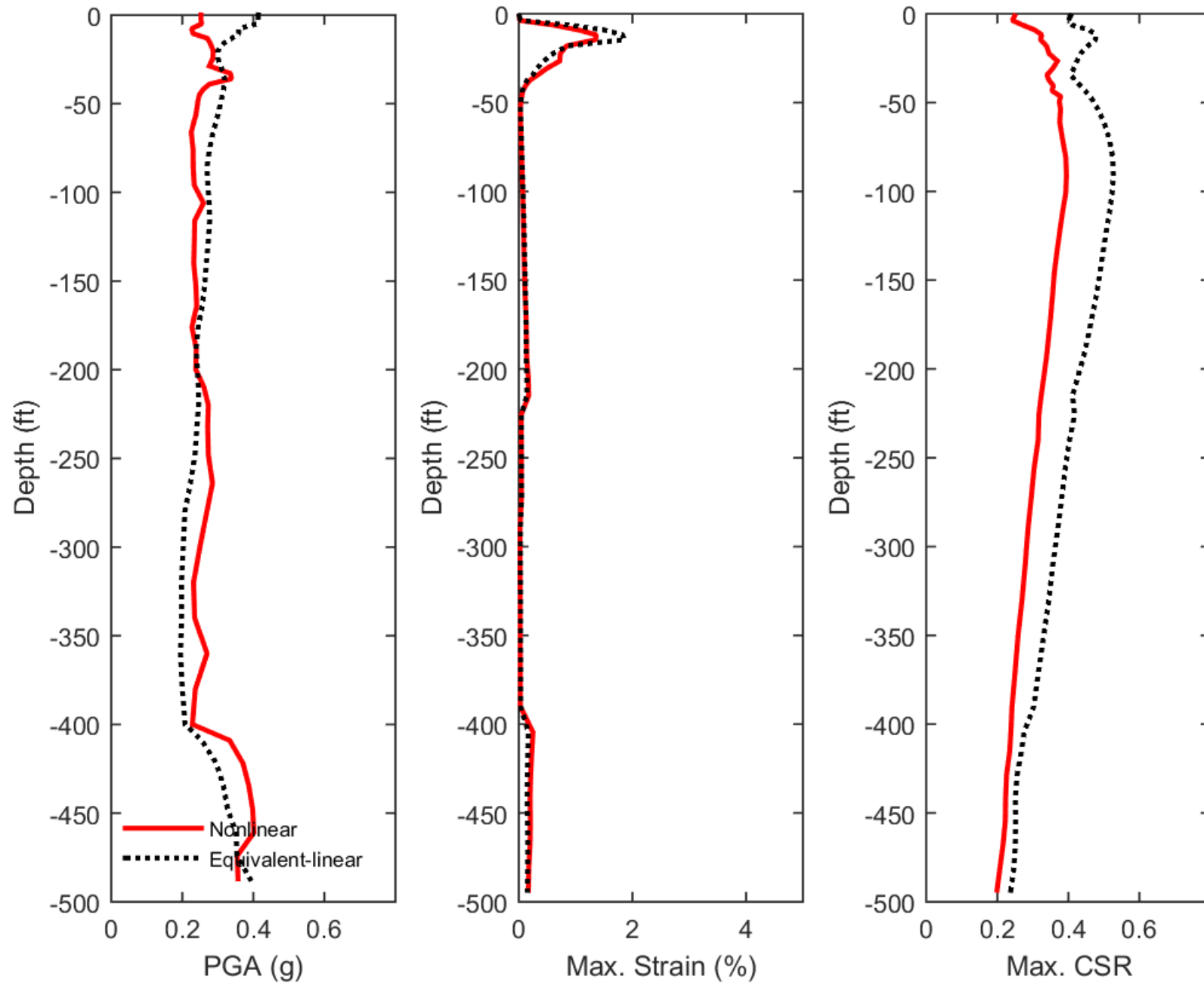
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3

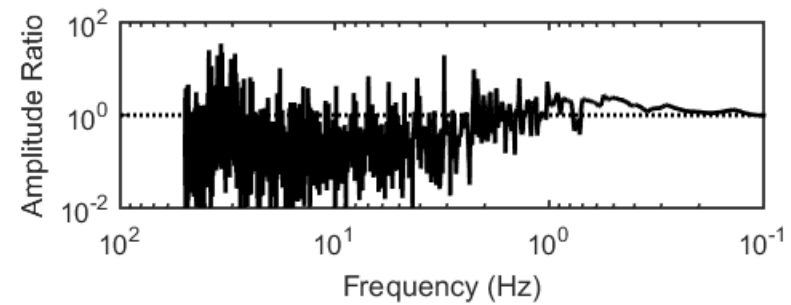
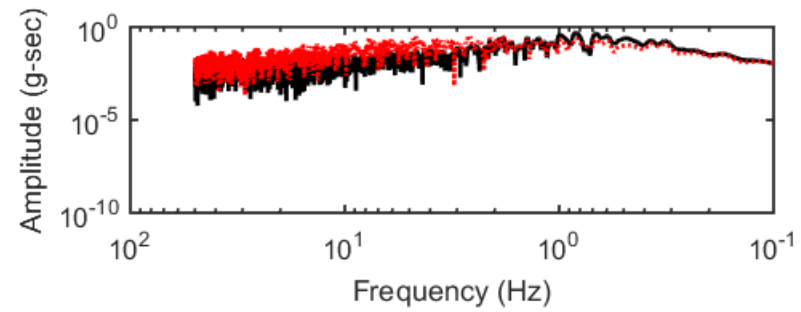
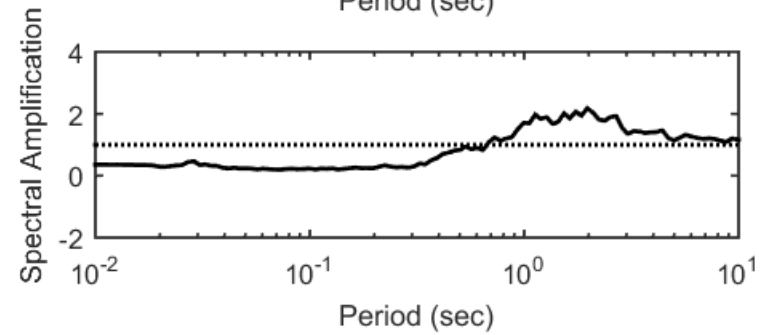
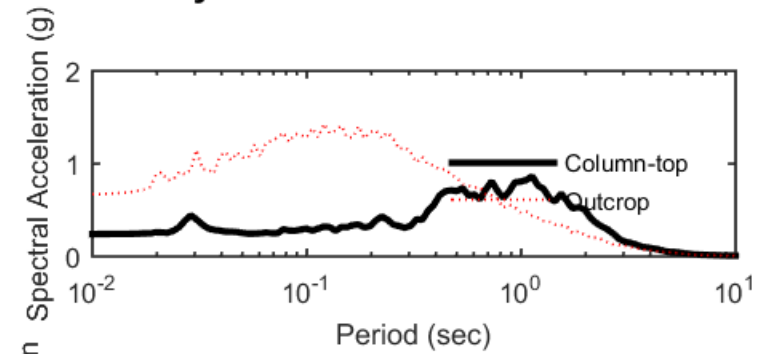
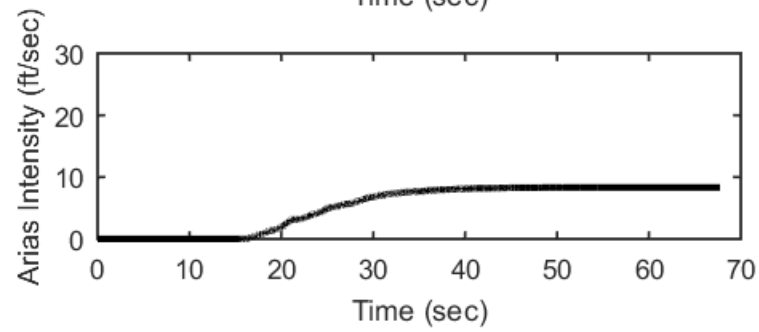
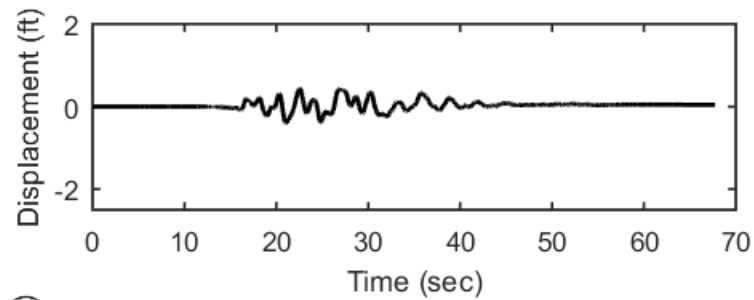
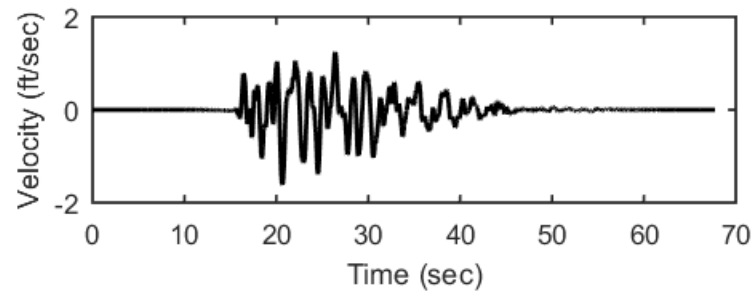
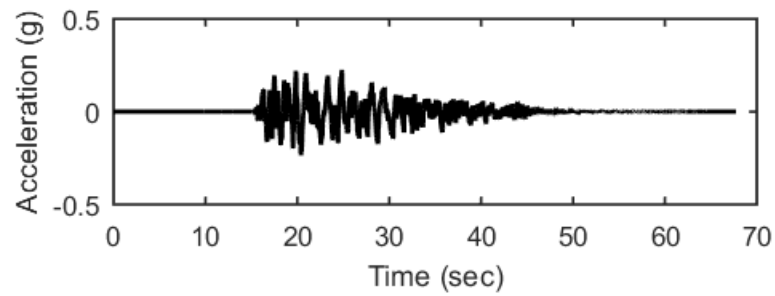


### Profile outputs for Motion: SEE3

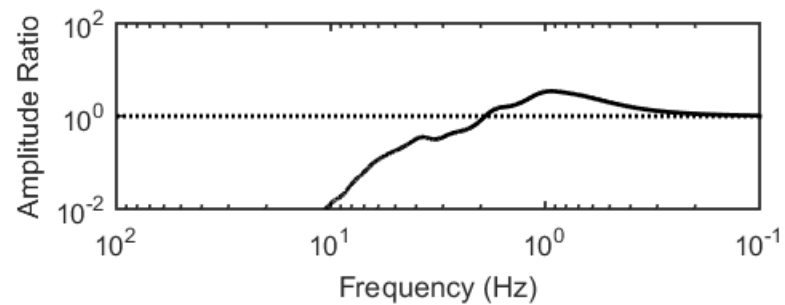
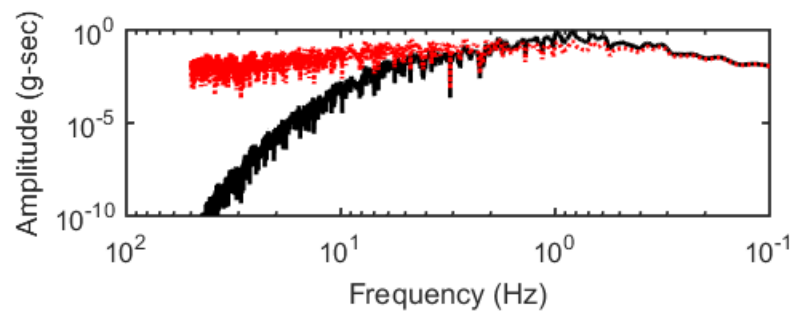
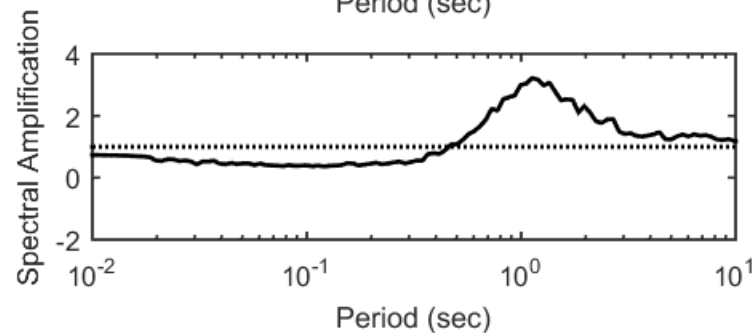
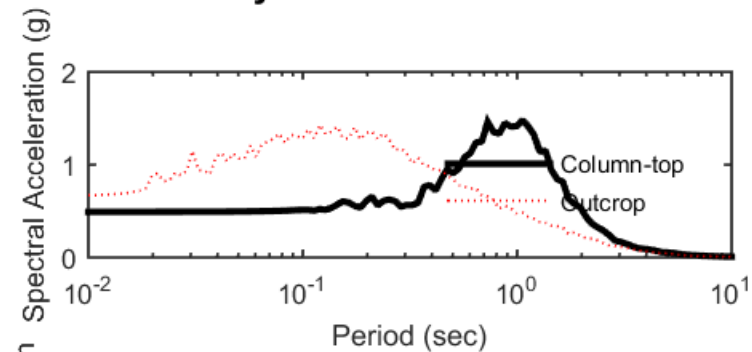
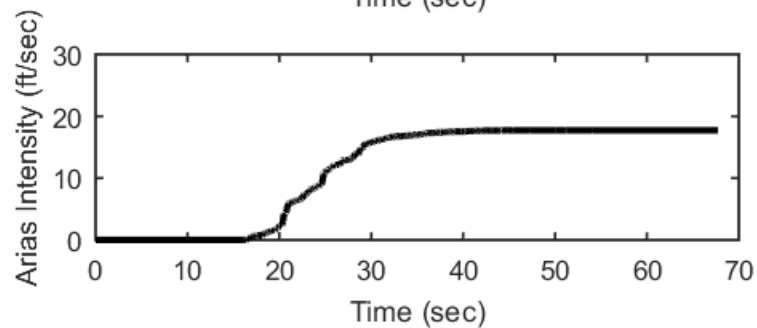
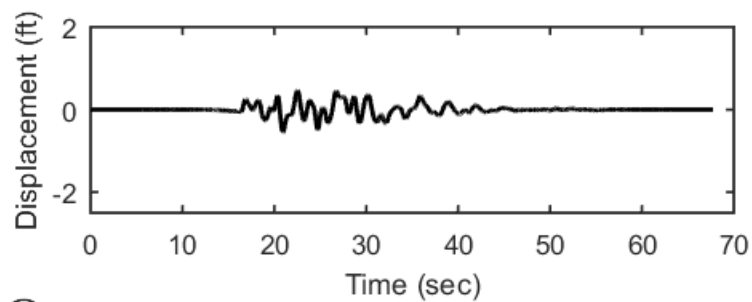
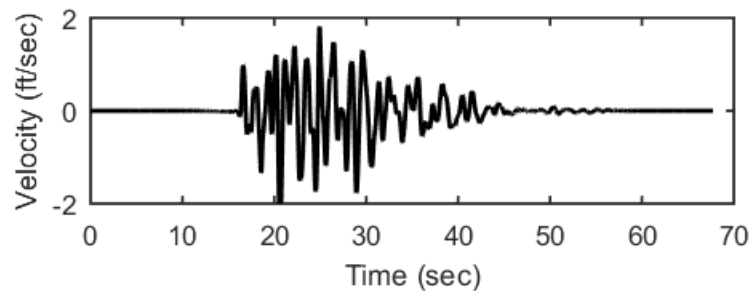
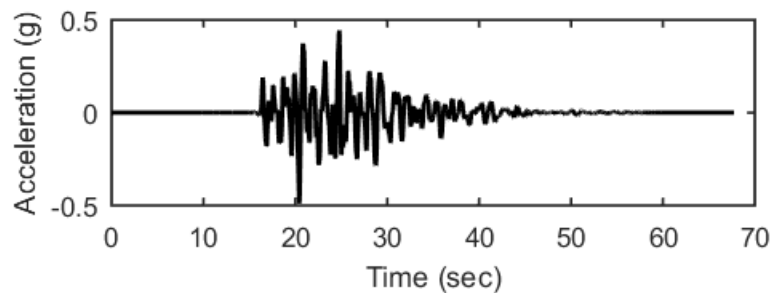




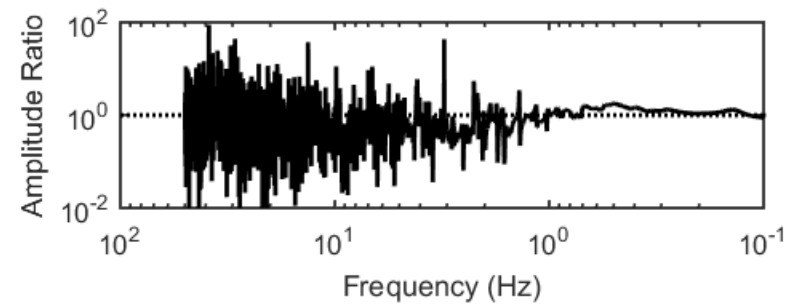
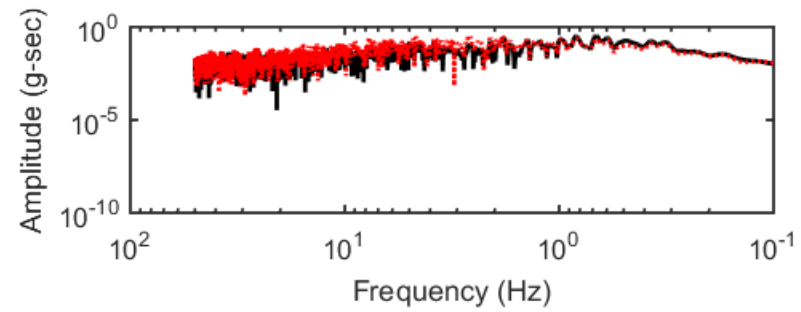
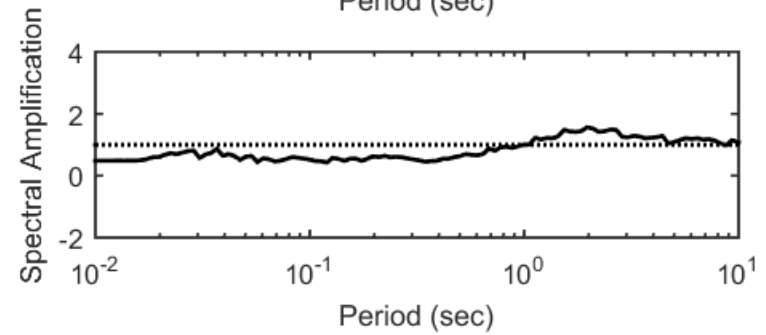
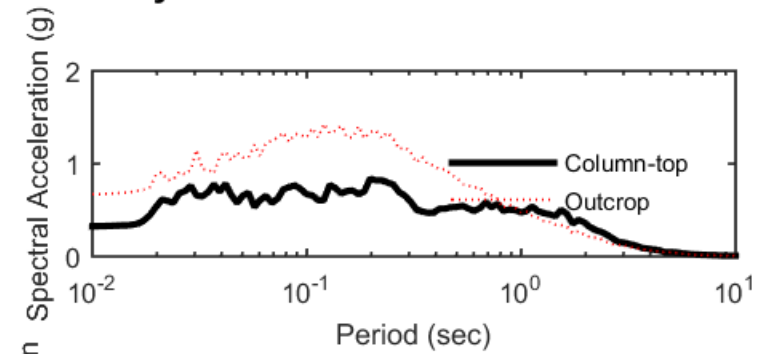
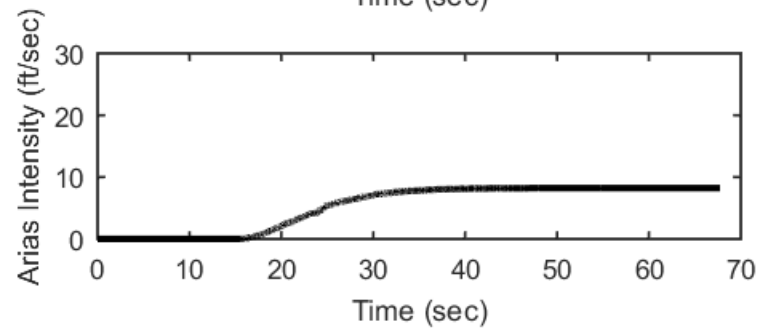
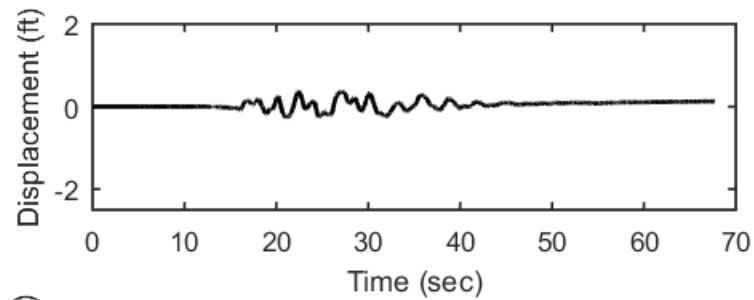
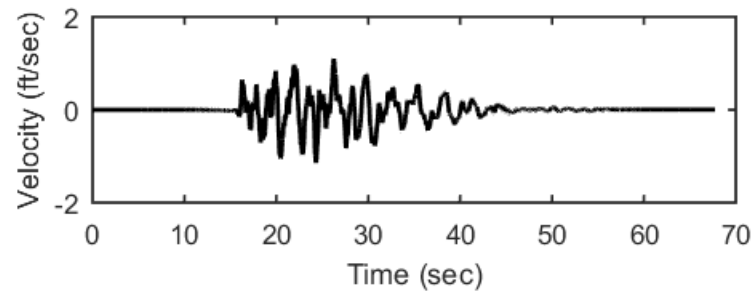
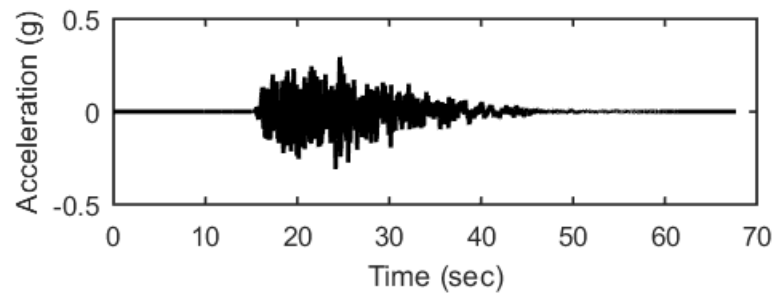
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



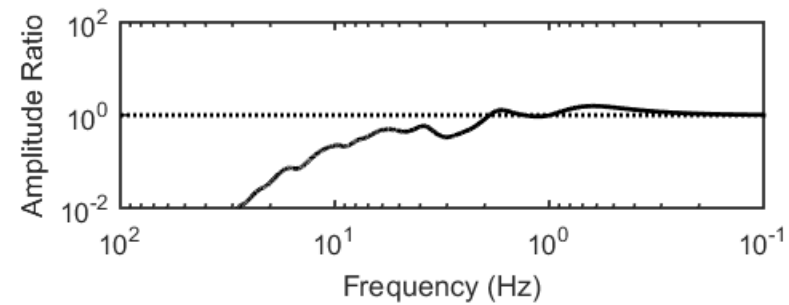
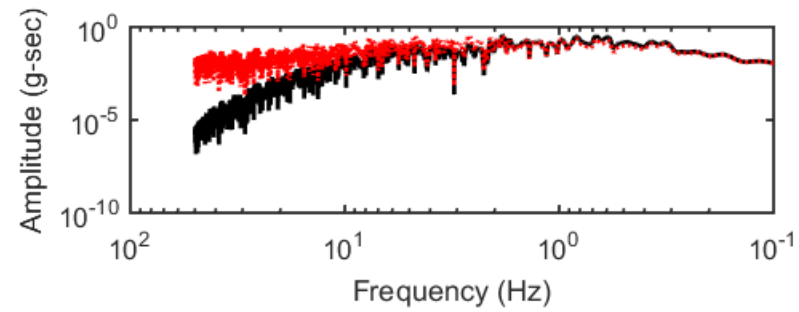
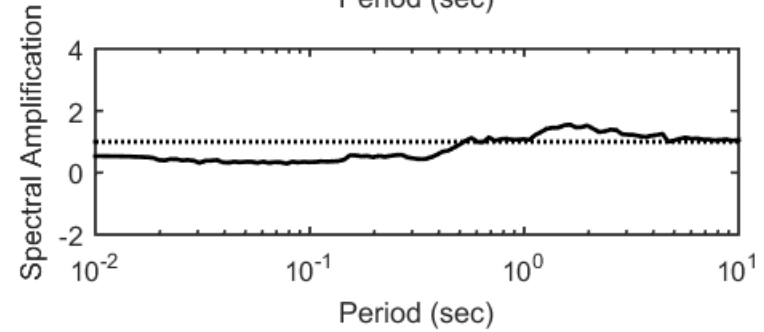
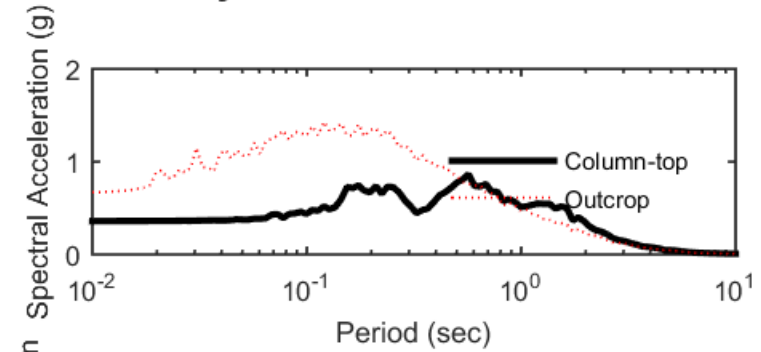
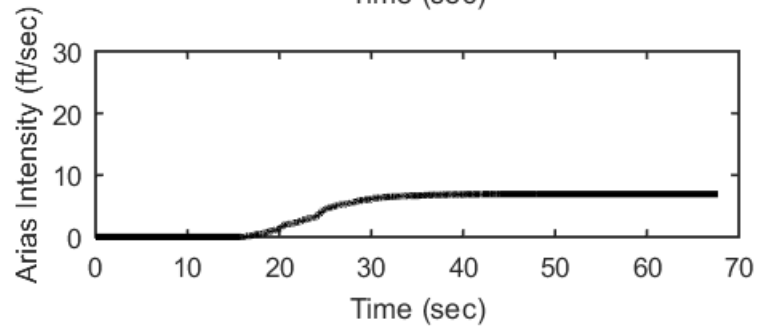
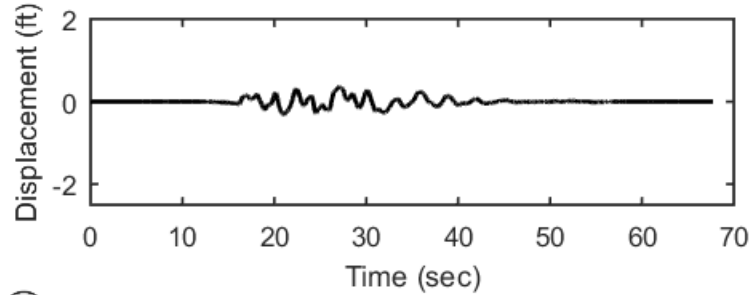
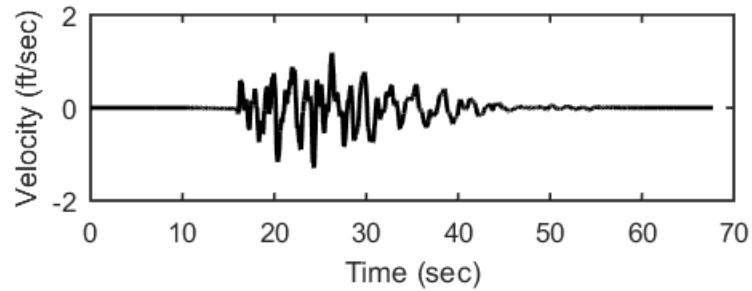
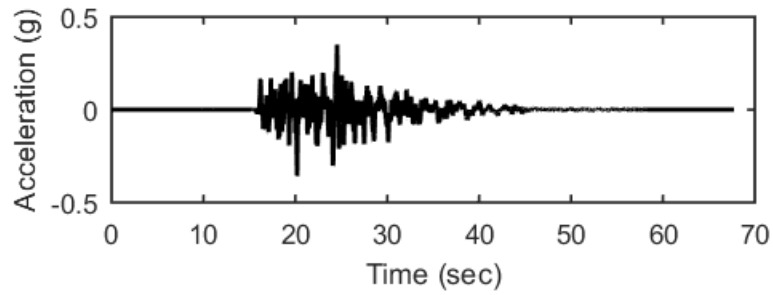
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



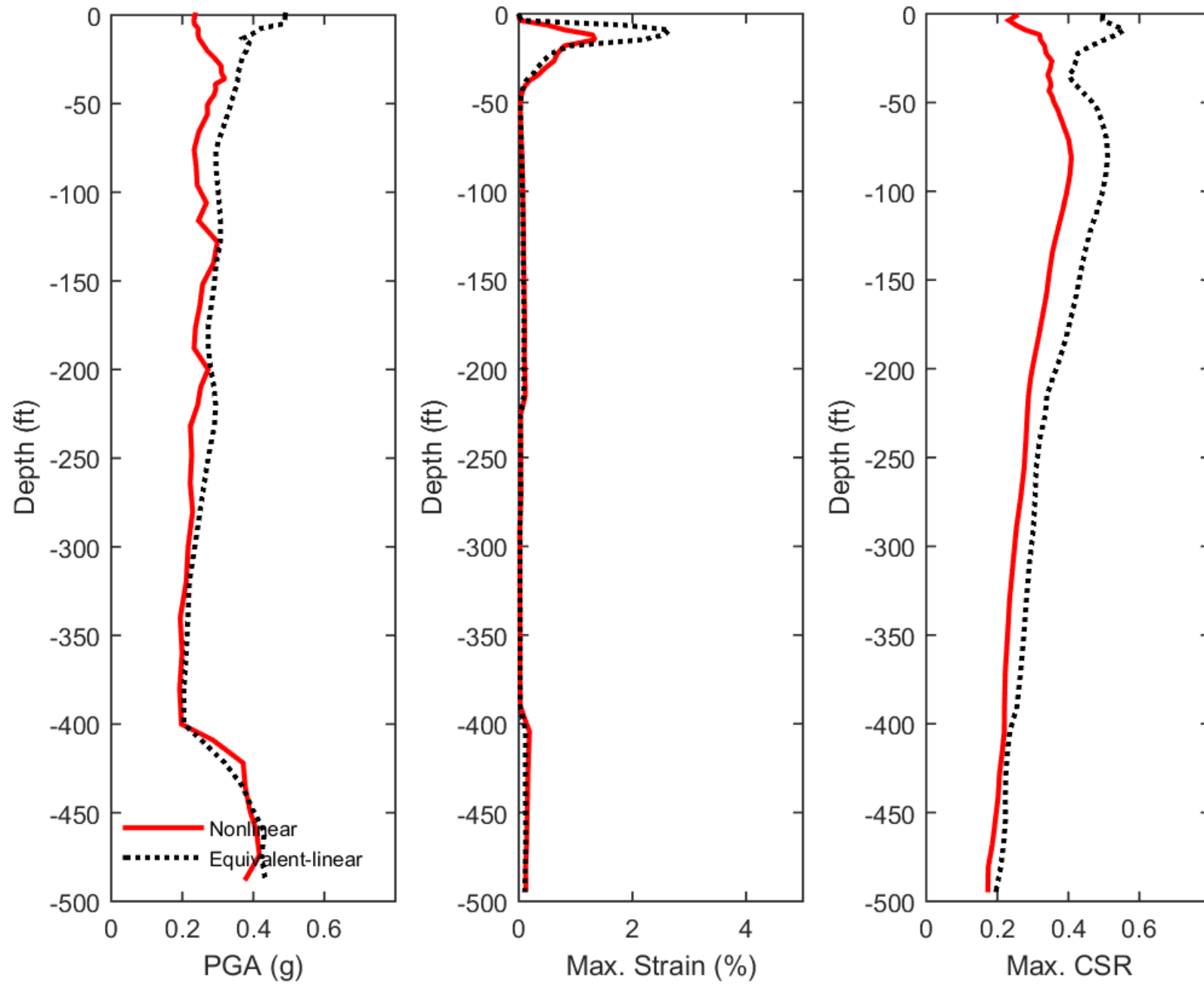
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



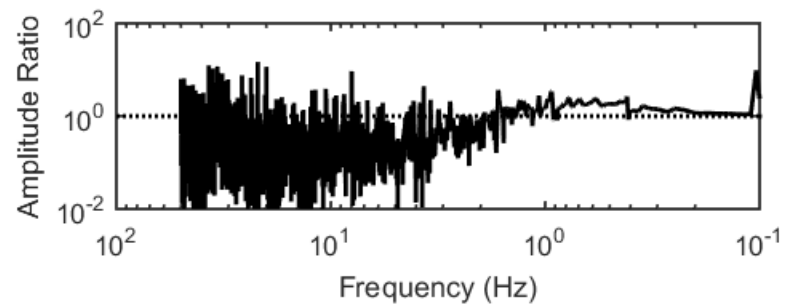
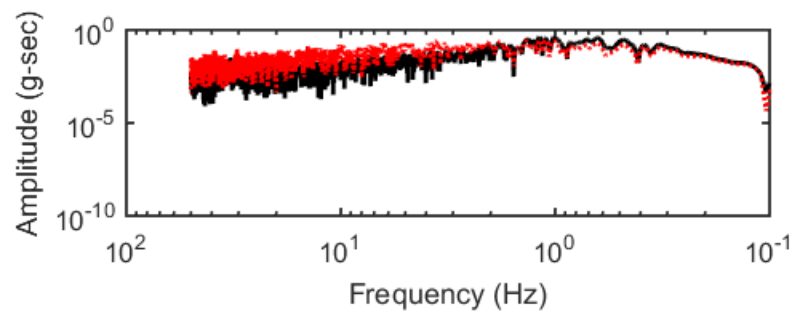
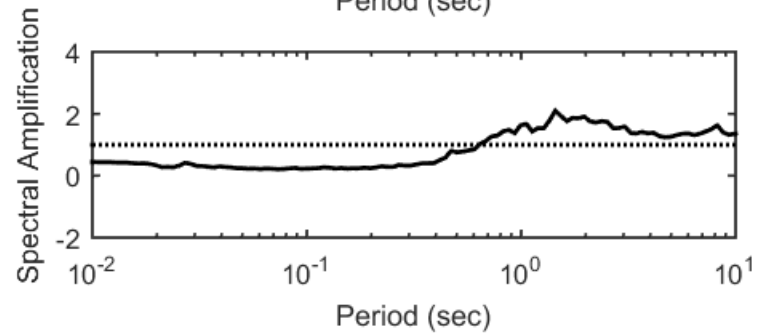
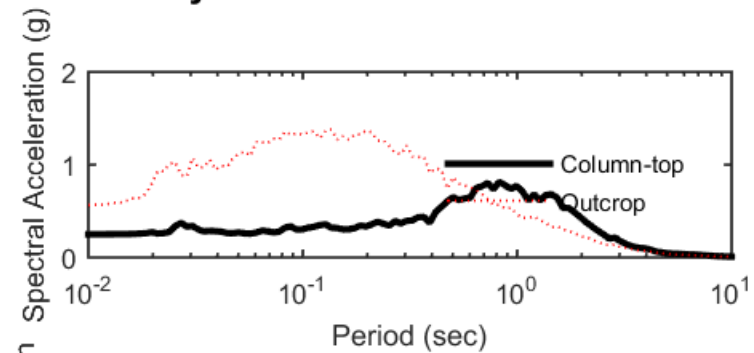
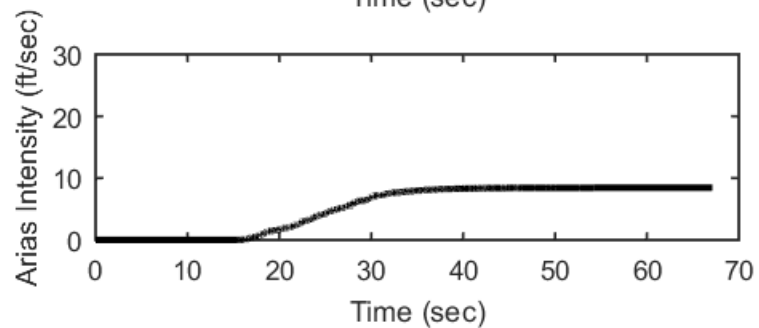
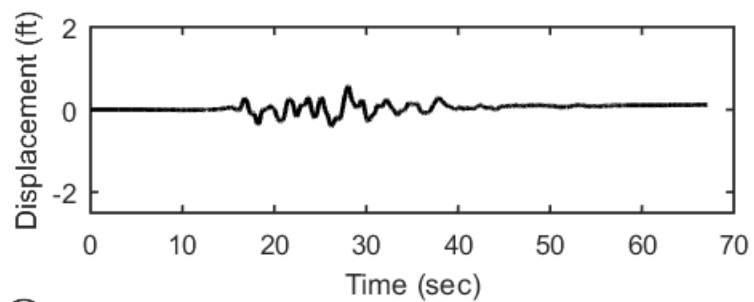
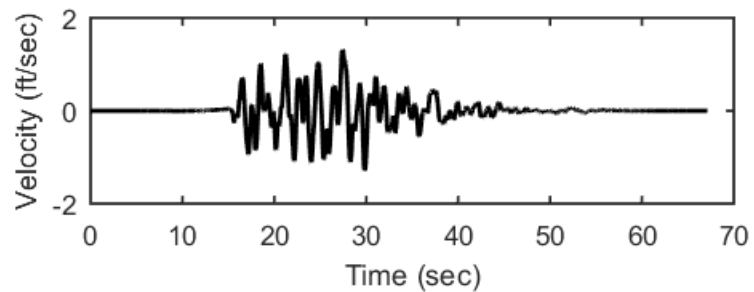
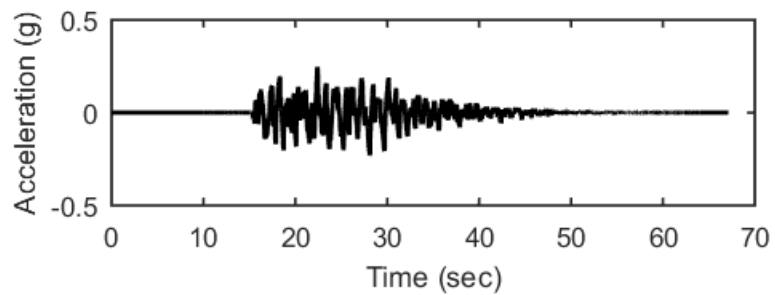
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



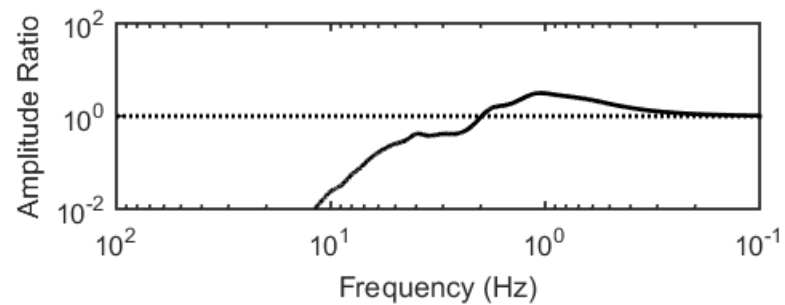
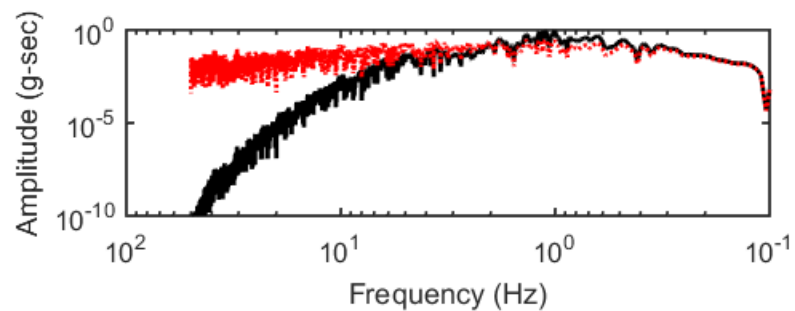
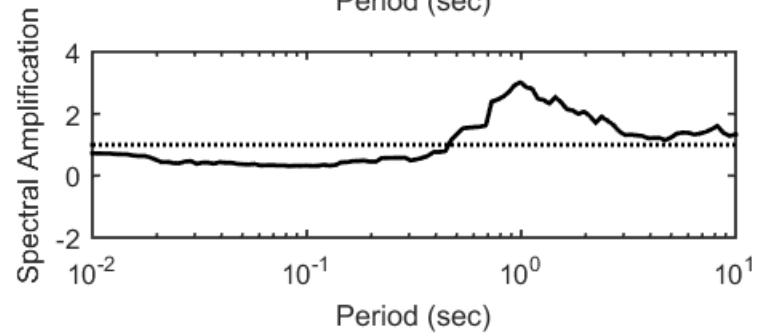
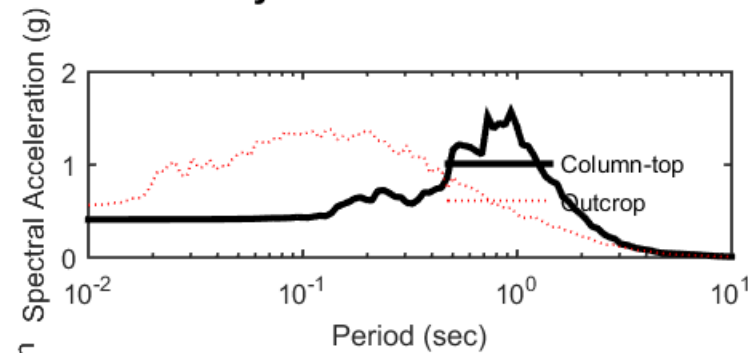
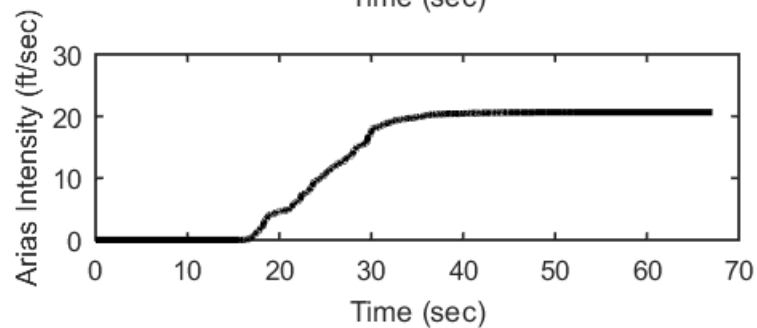
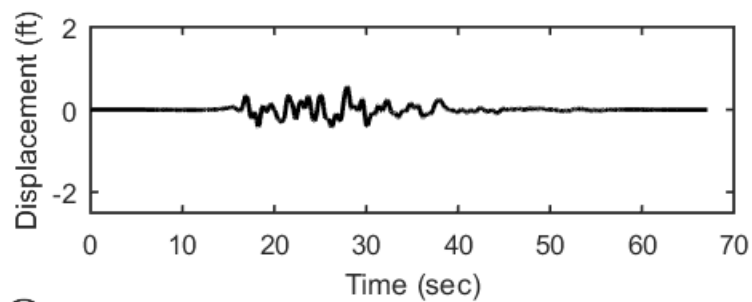
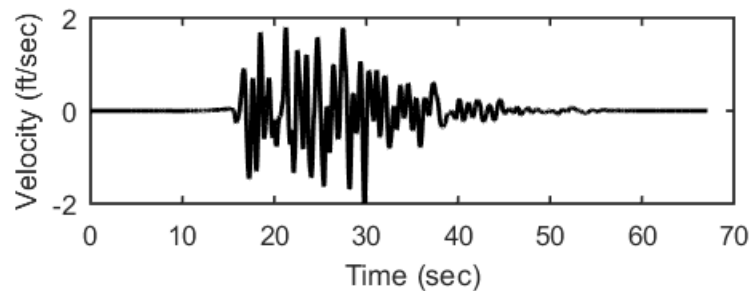
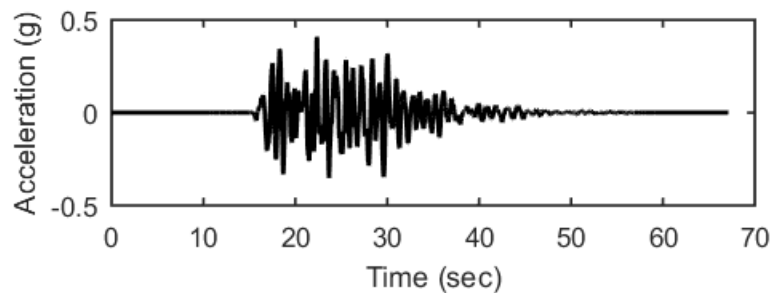
### Profile outputs for Motion: SEE4



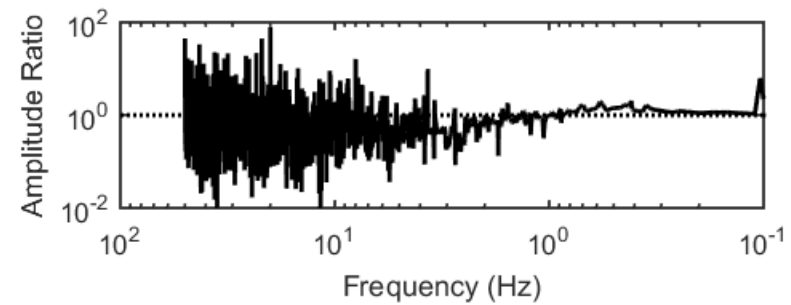
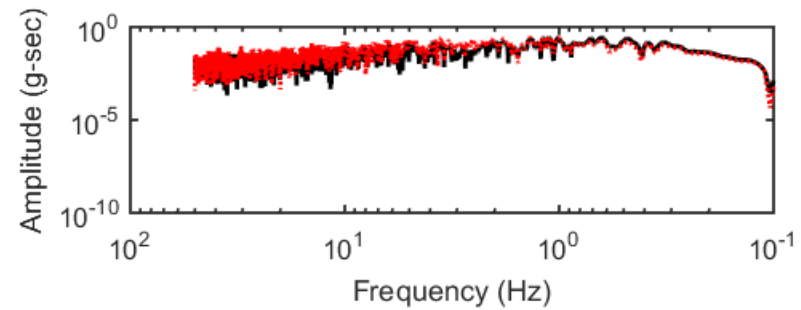
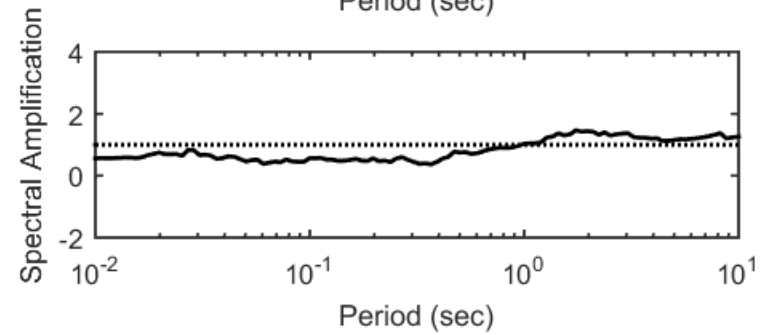
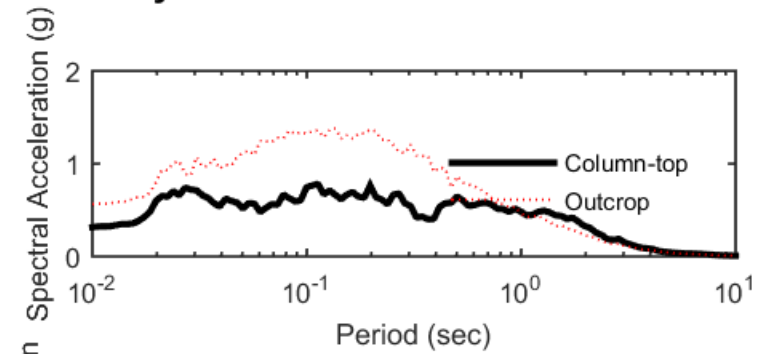
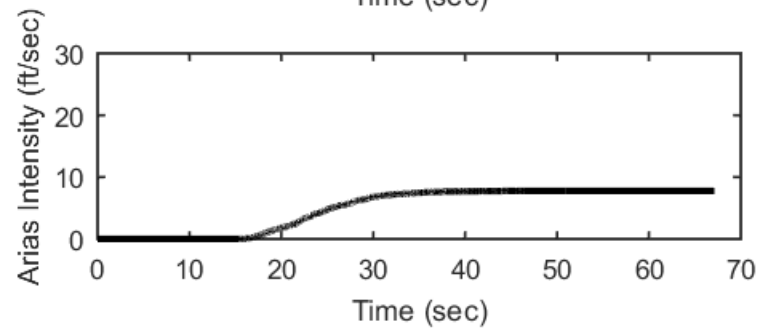
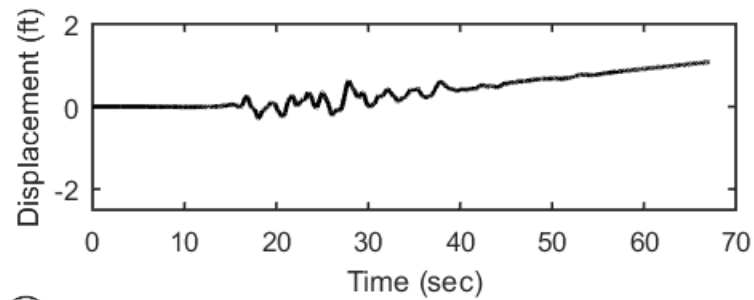
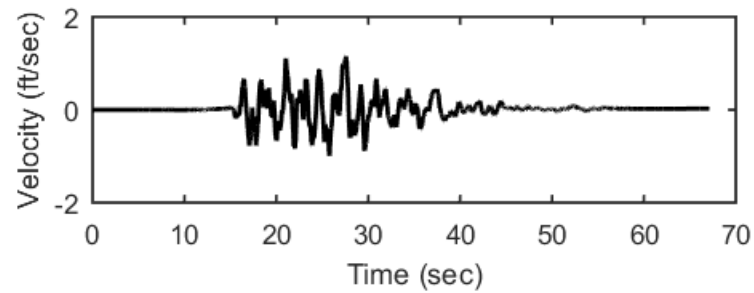
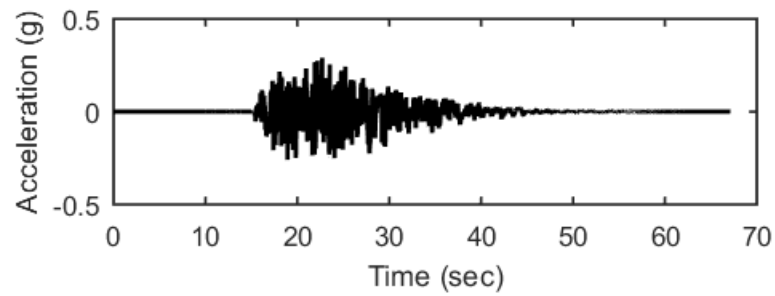
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5

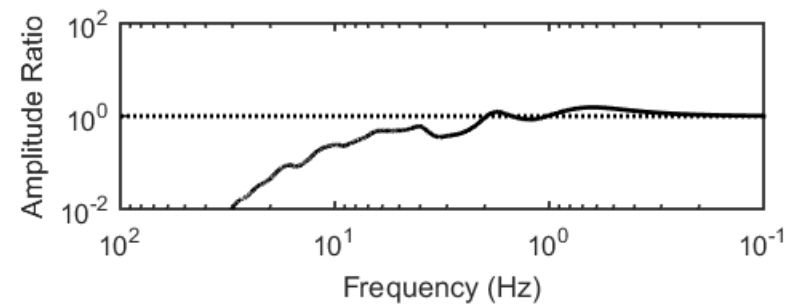
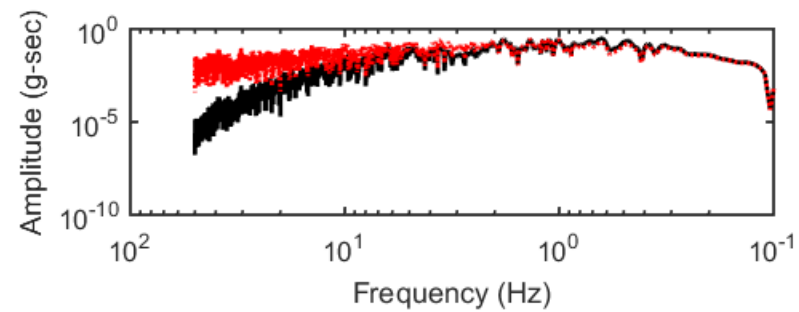
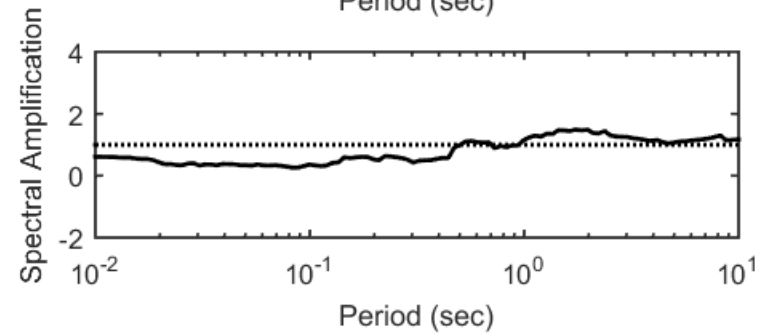
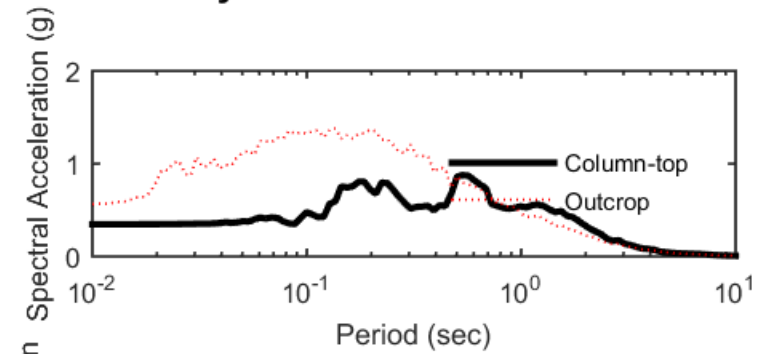
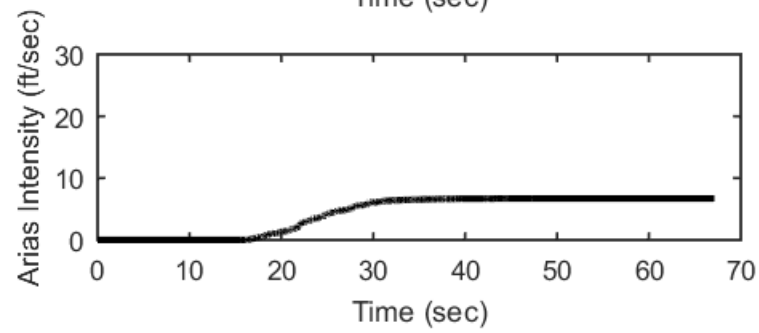
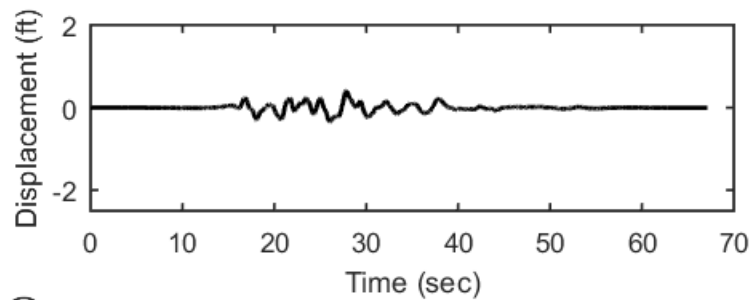
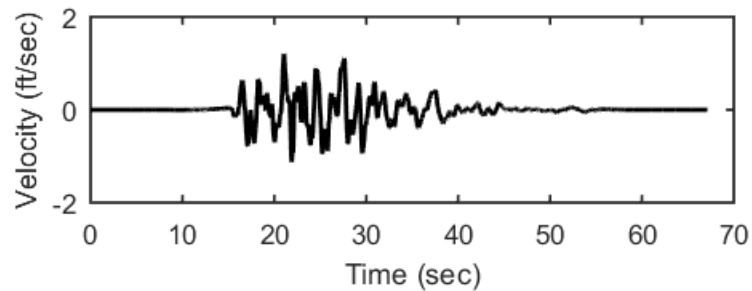
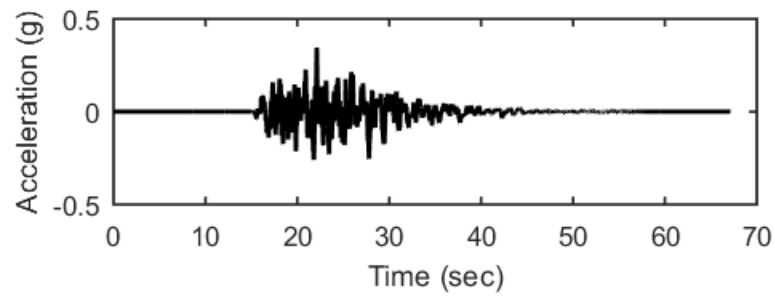


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5

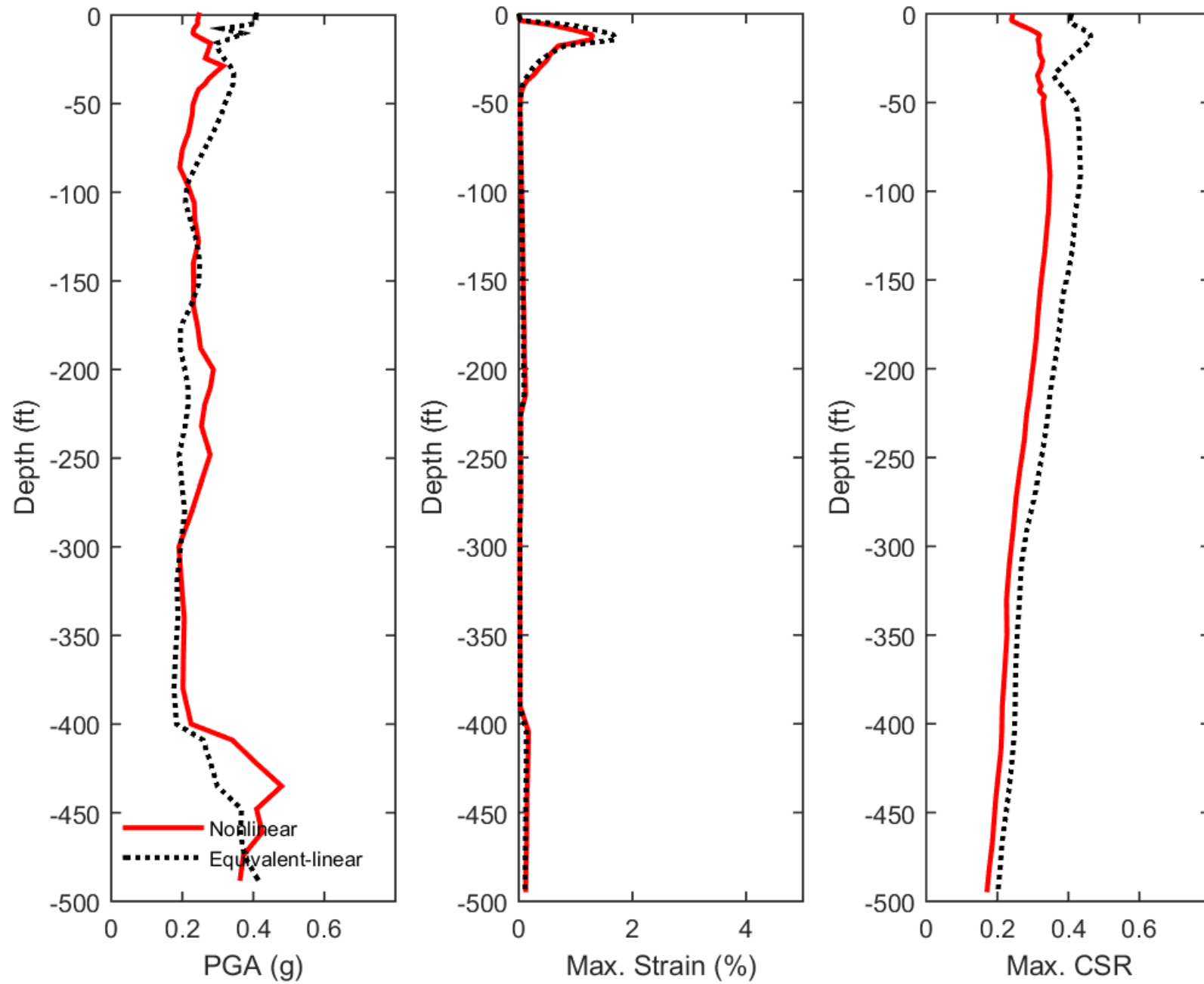




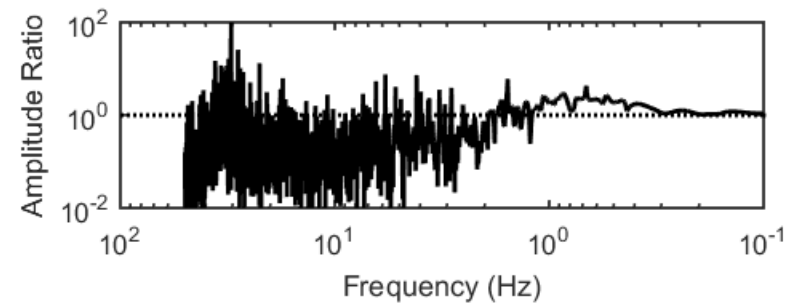
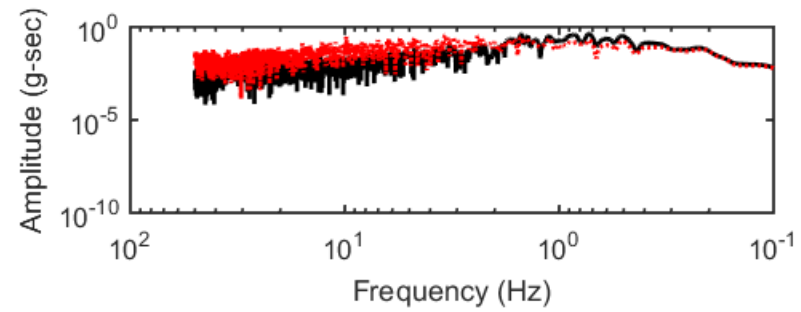
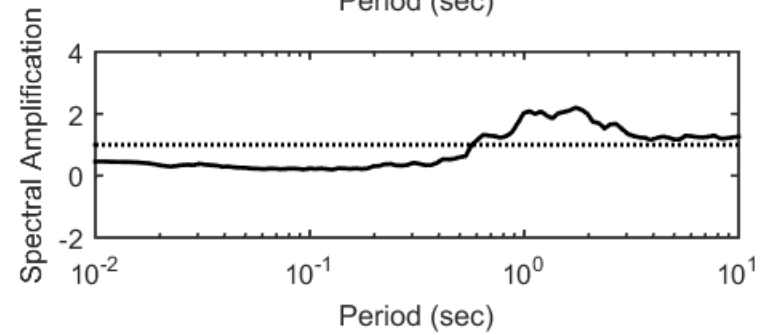
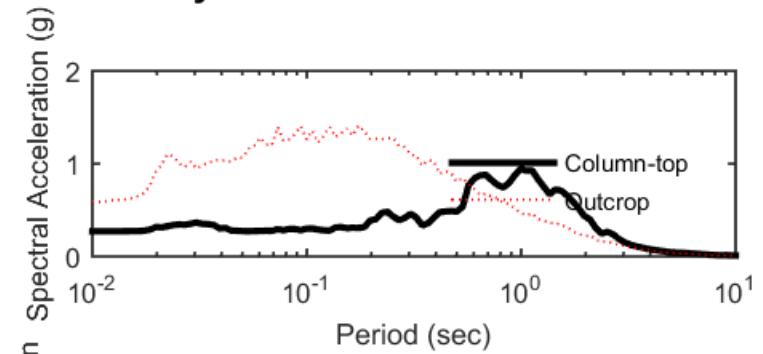
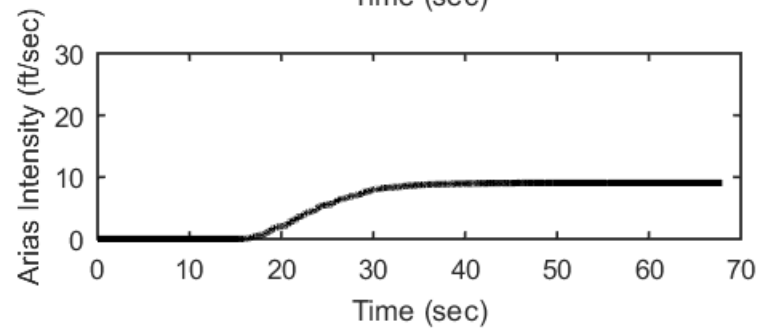
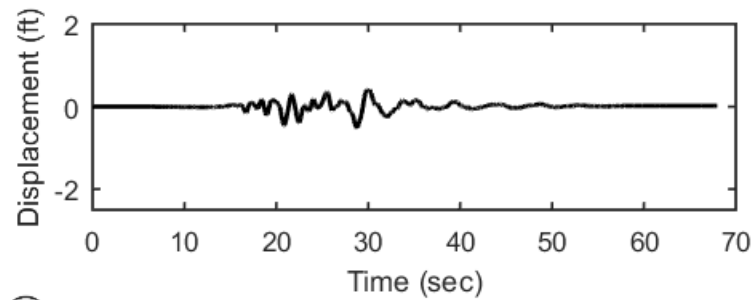
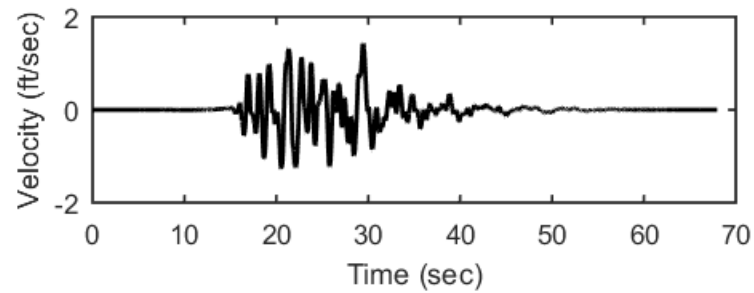
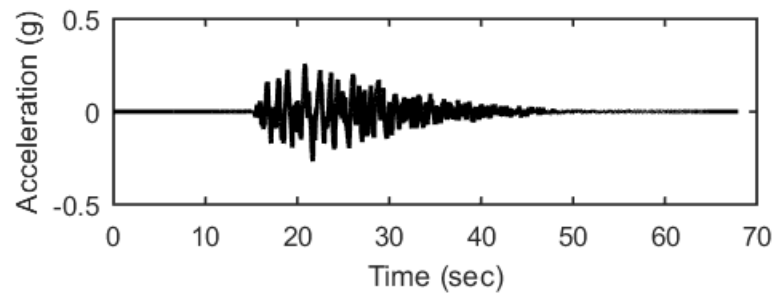
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



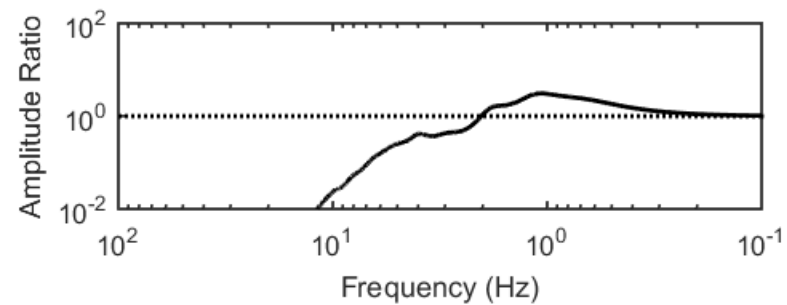
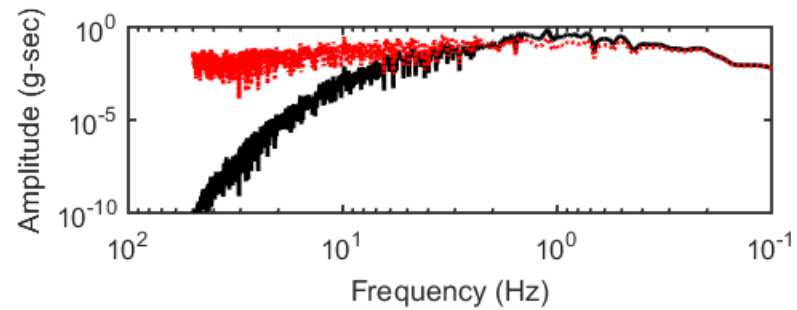
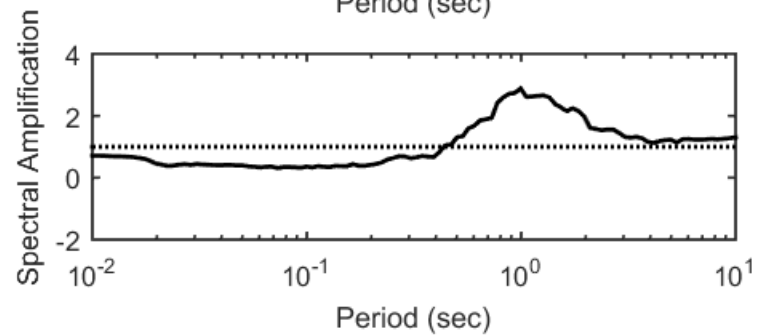
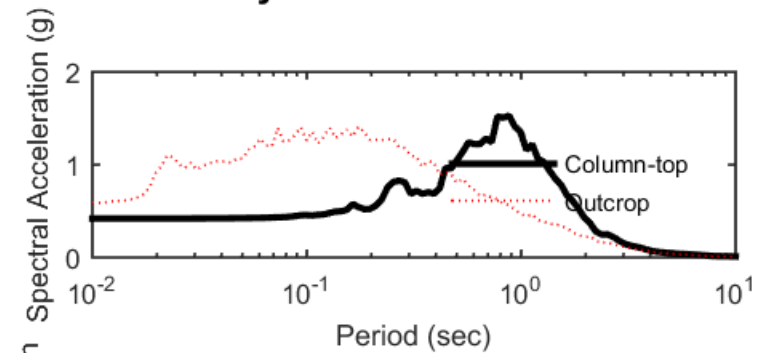
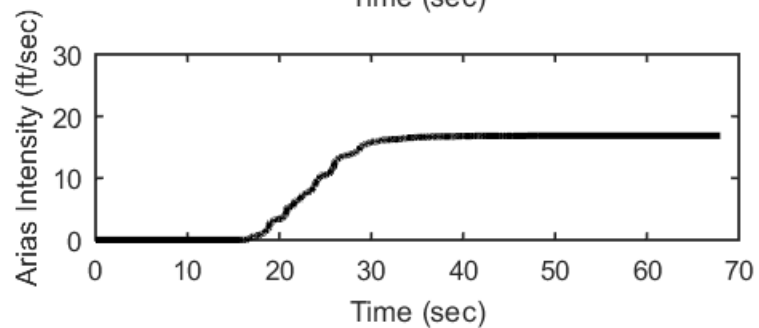
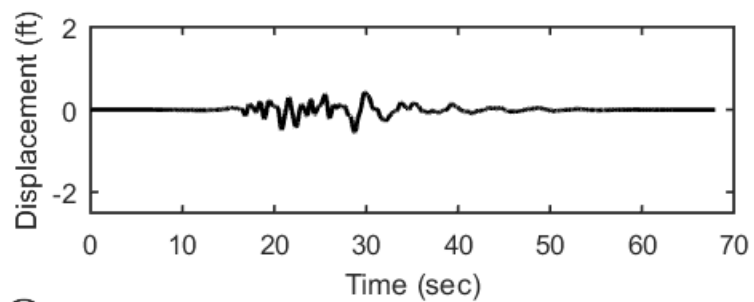
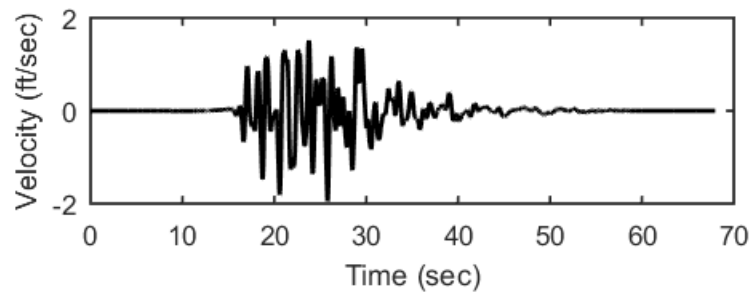
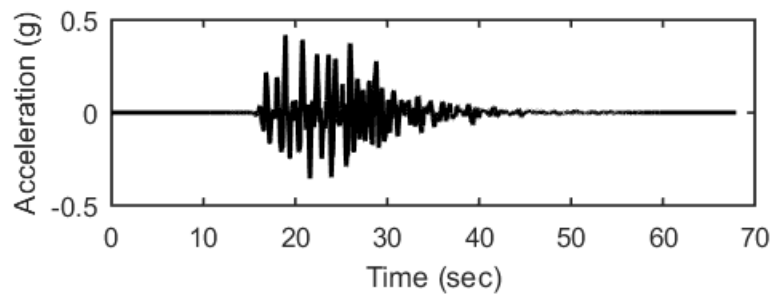
### Profile outputs for Motion: SEE5



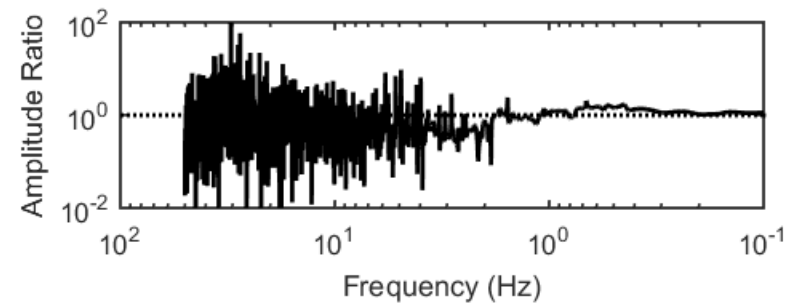
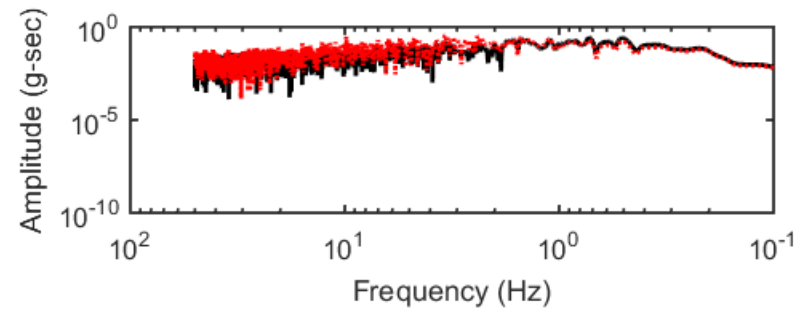
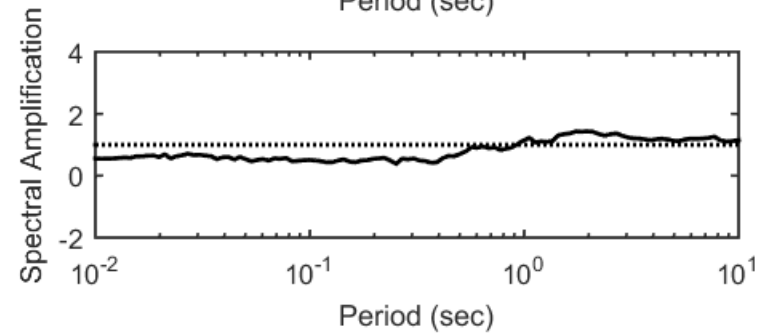
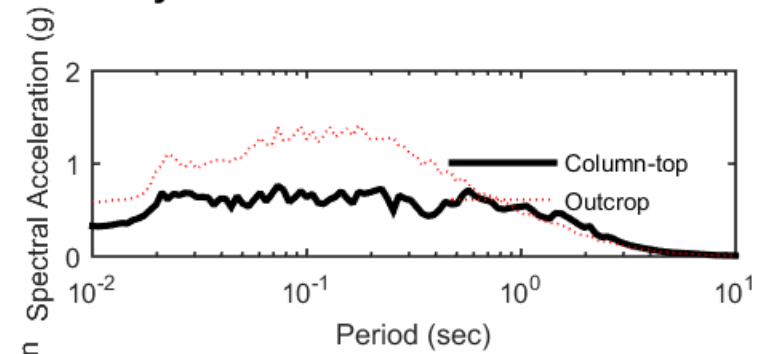
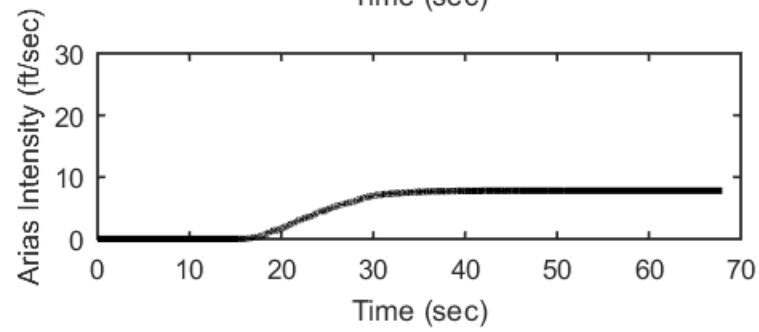
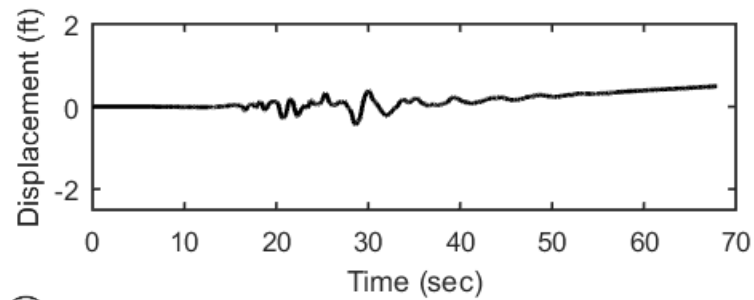
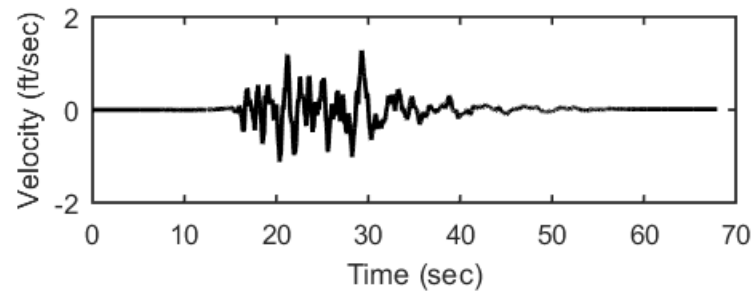
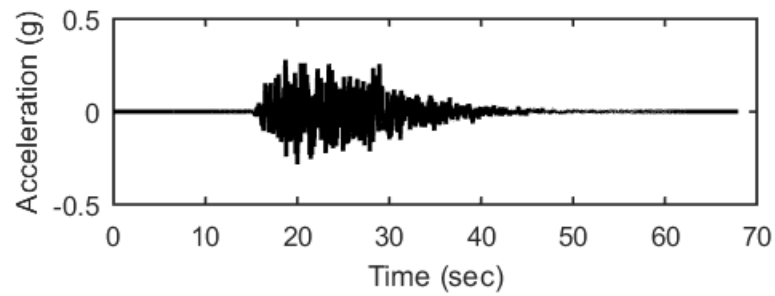
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



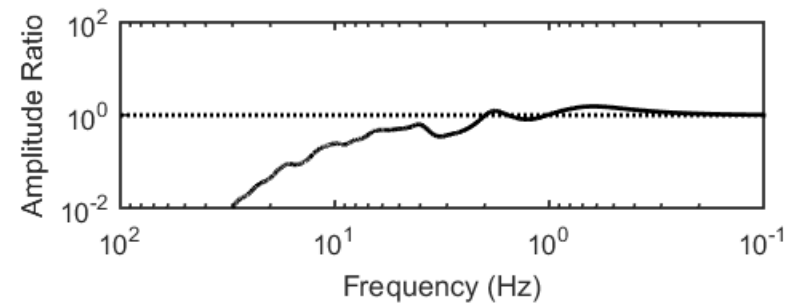
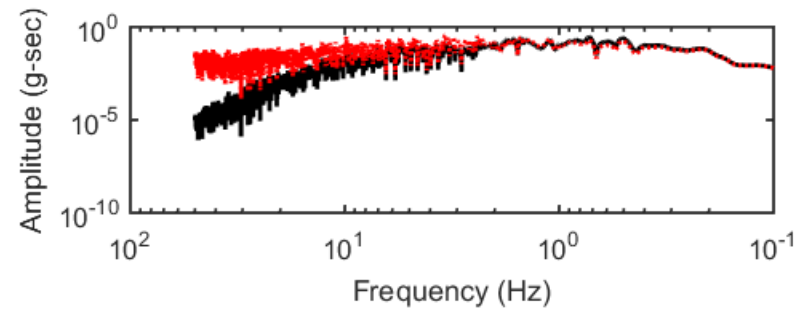
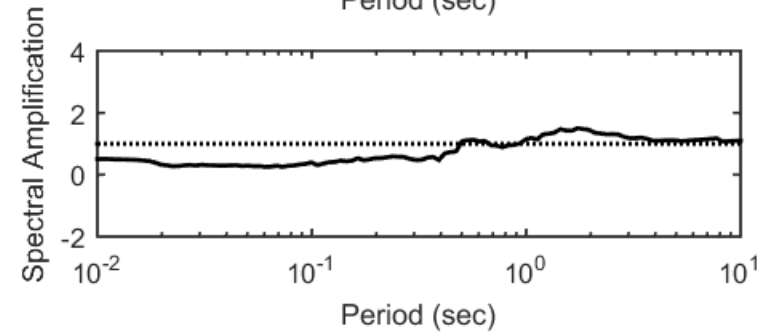
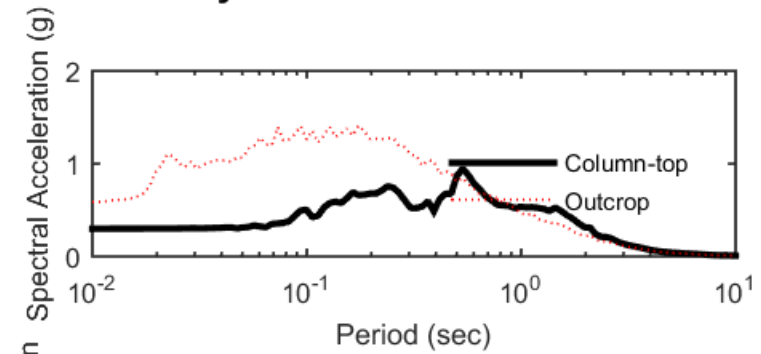
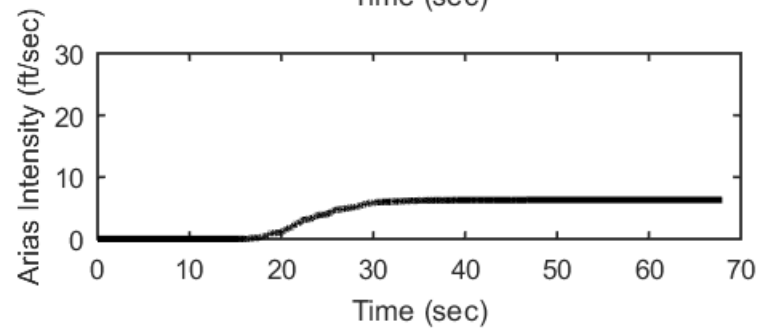
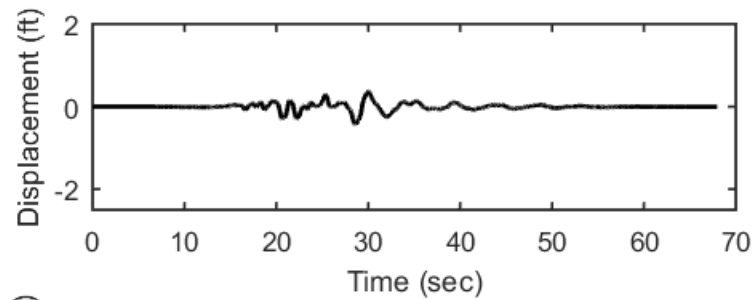
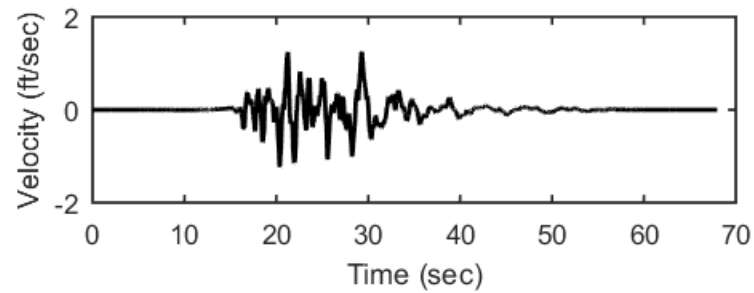
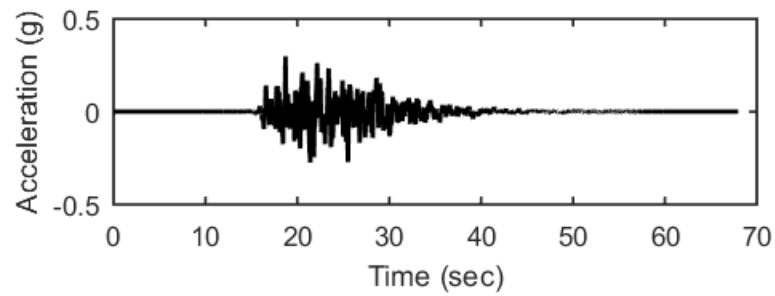
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



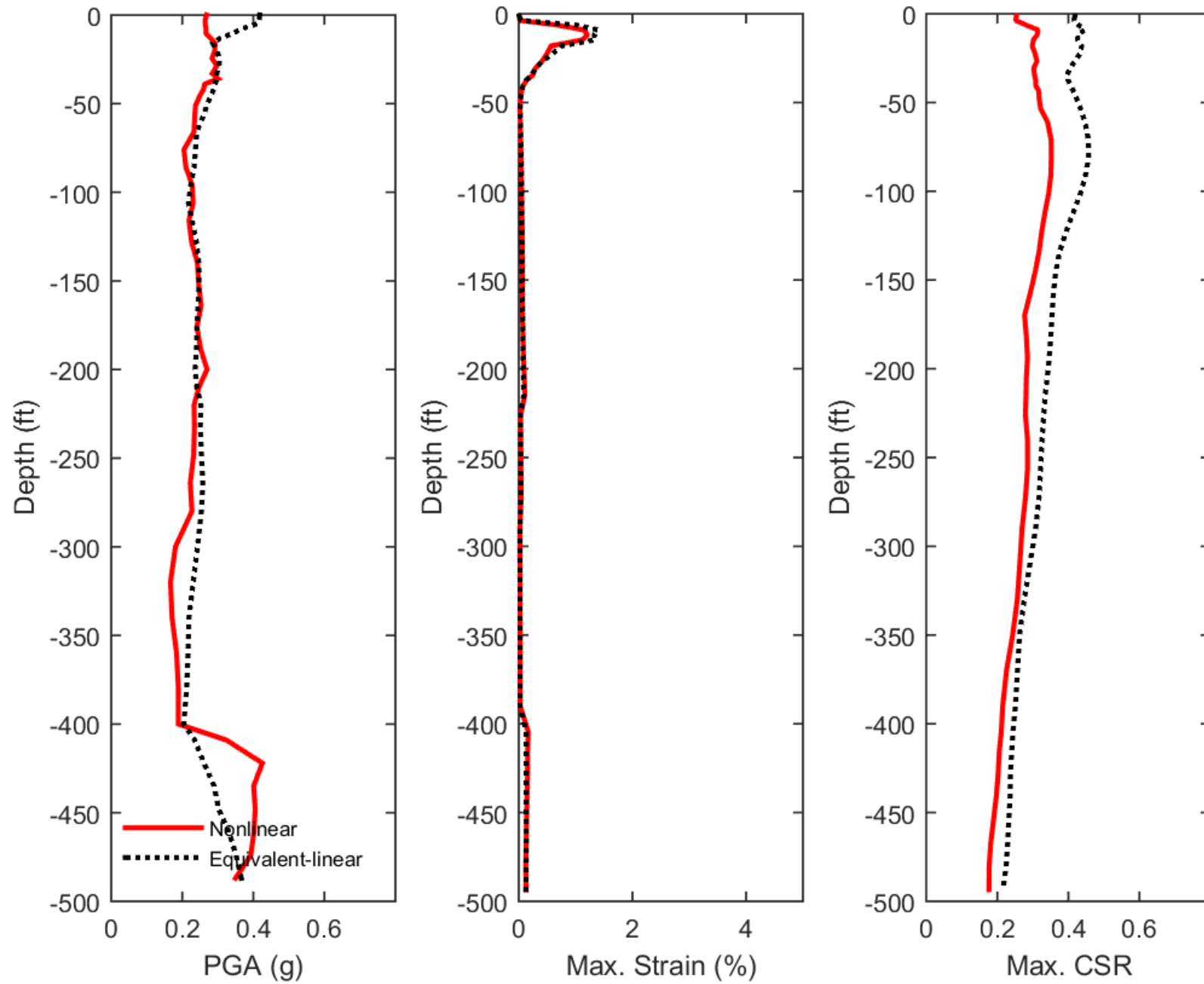
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



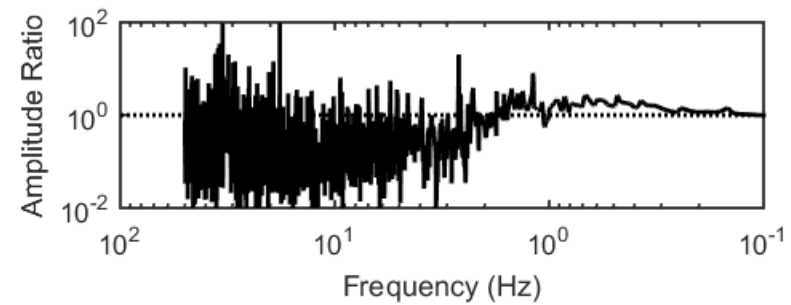
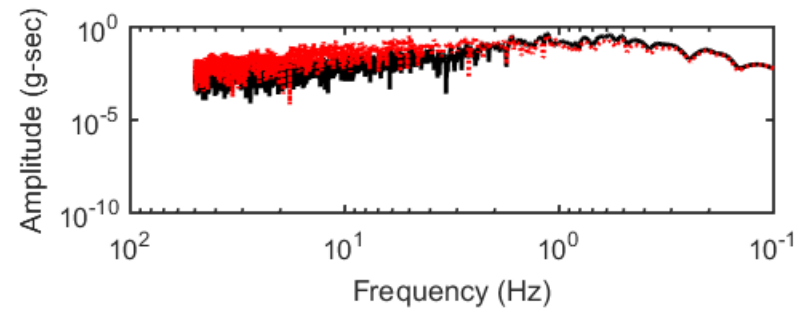
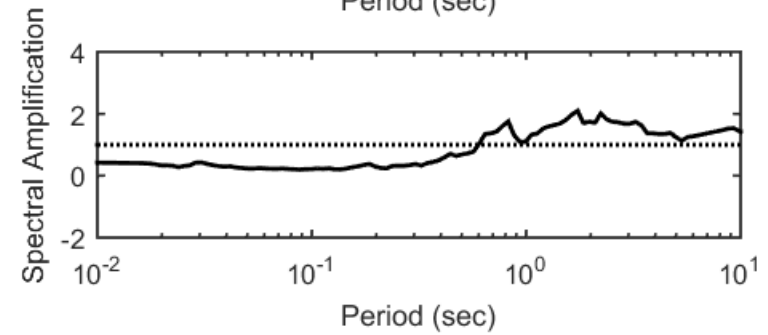
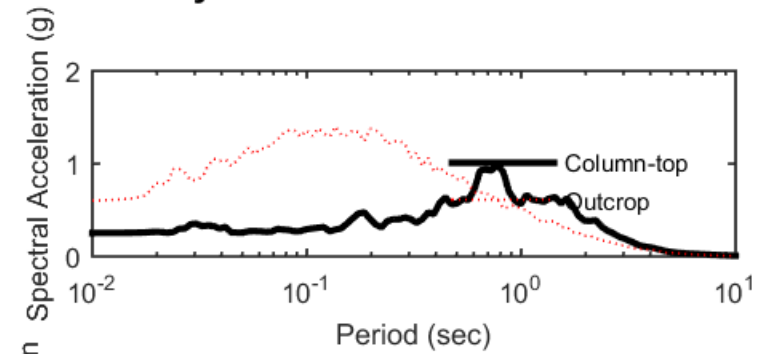
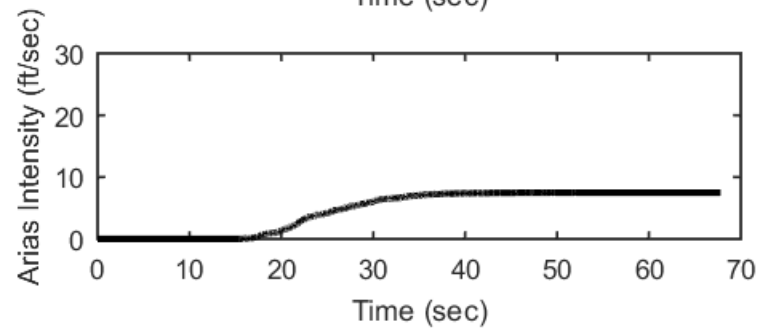
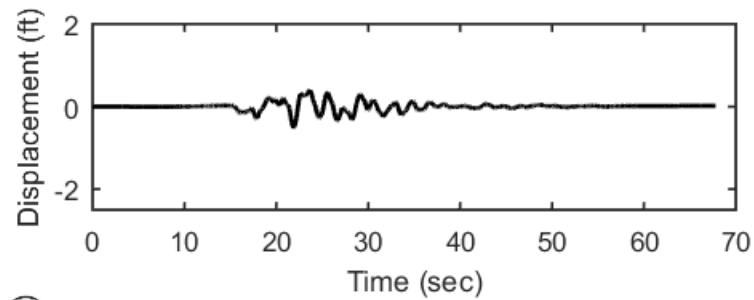
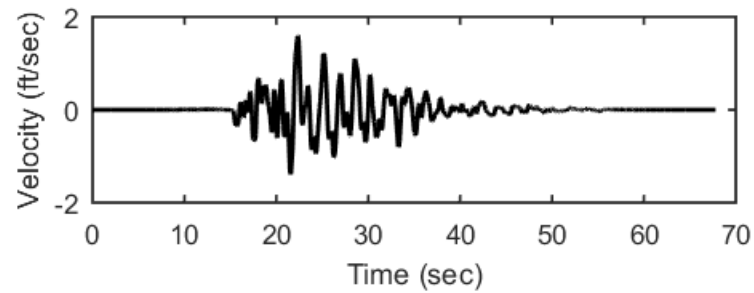
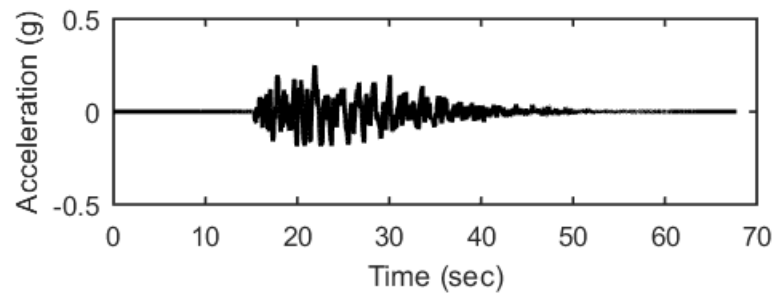
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



### Profile outputs for Motion: SEE6

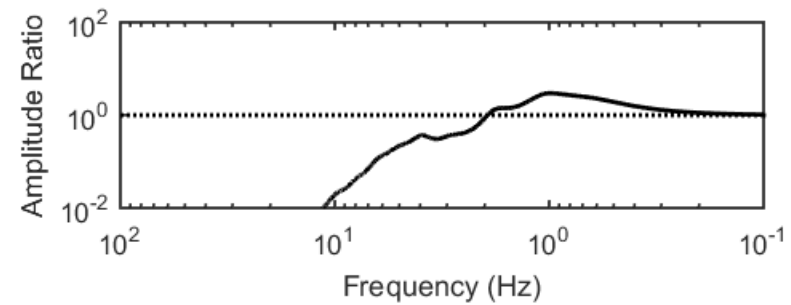
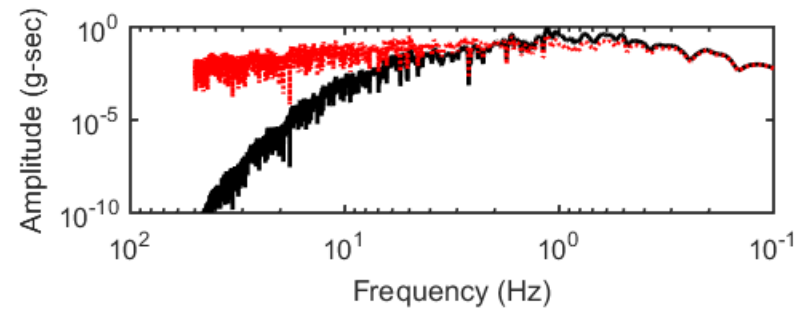
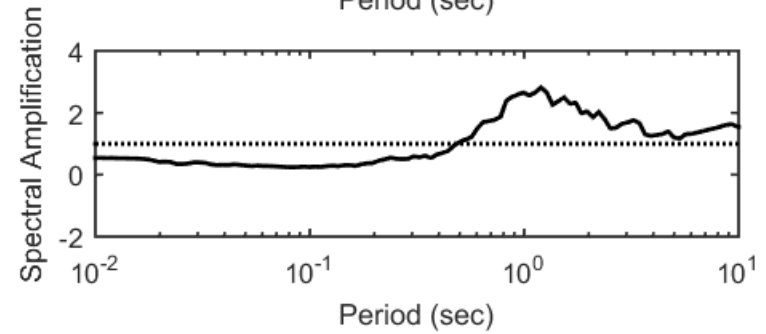
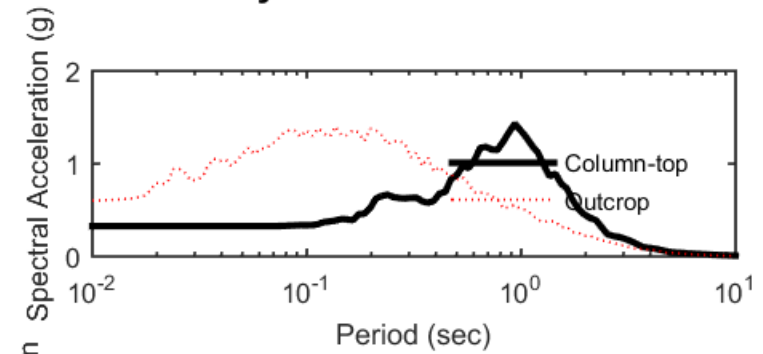
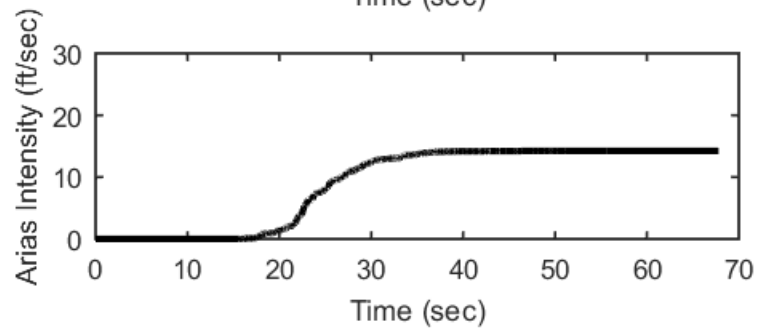
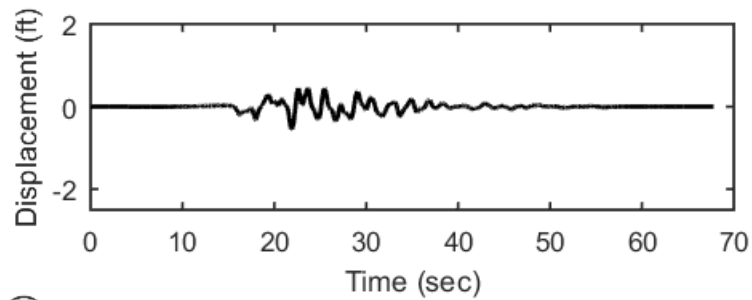
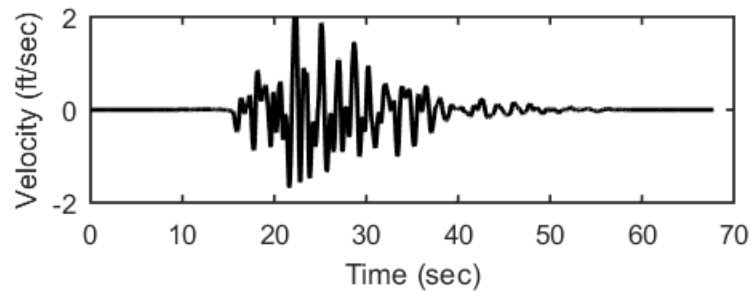
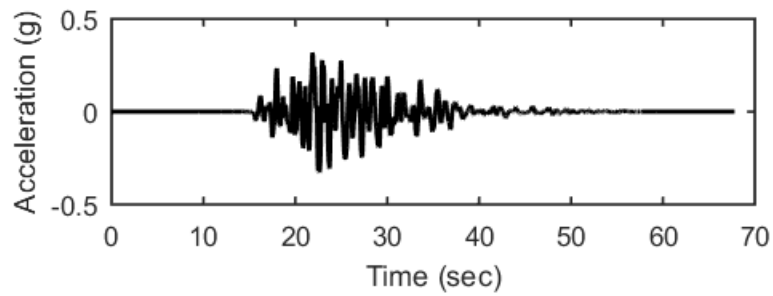


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7

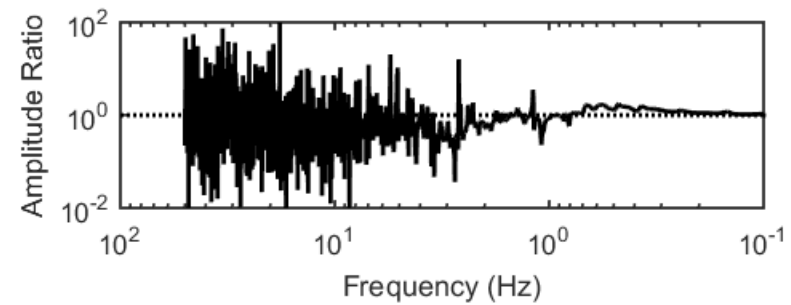
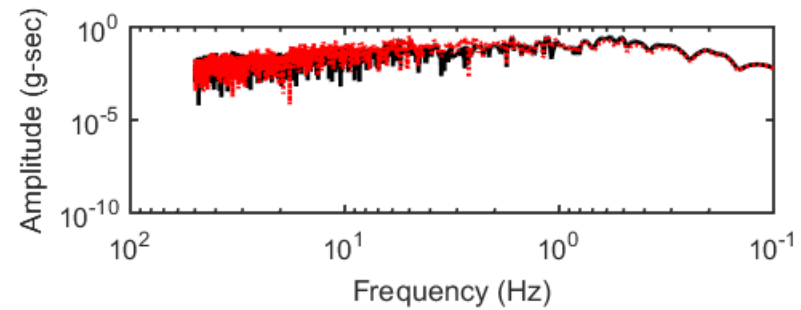
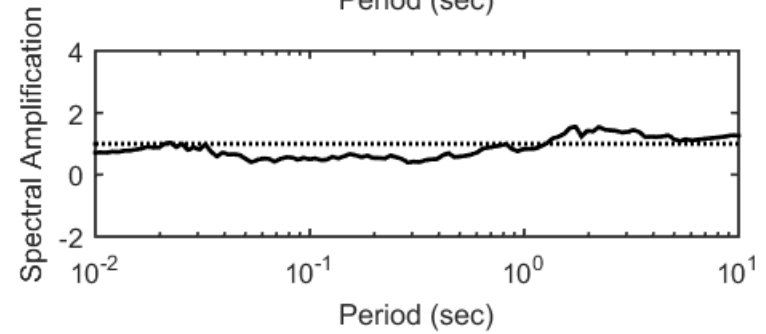
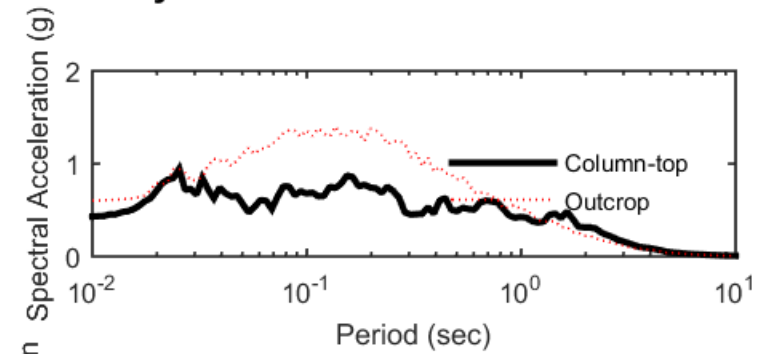
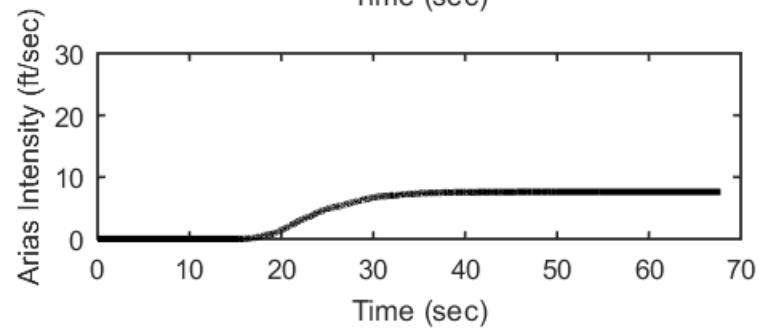
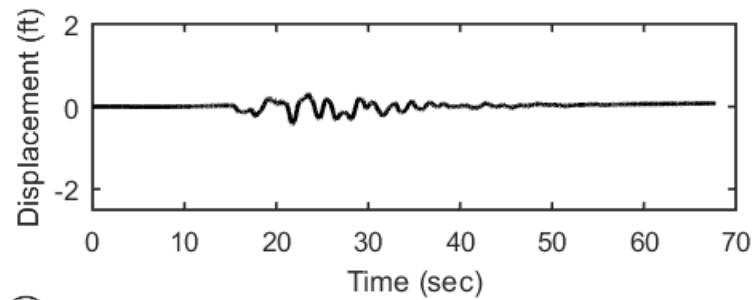
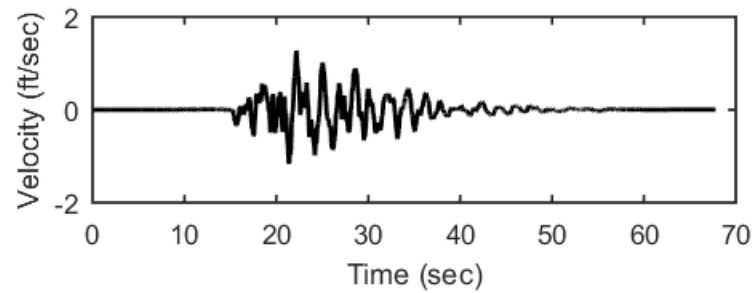
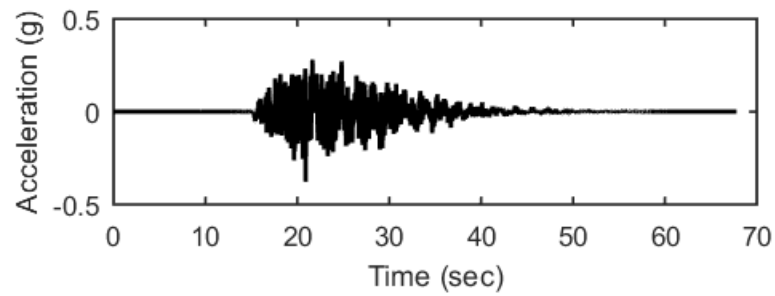




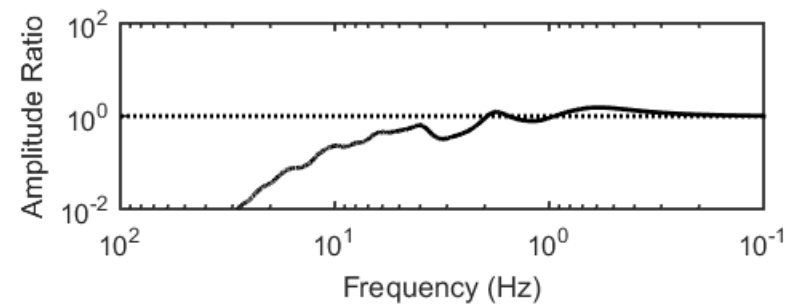
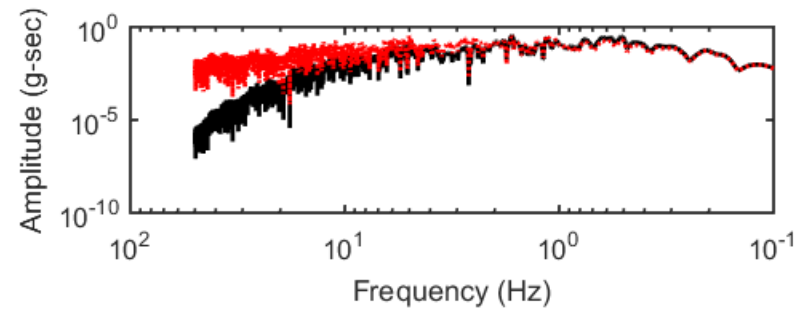
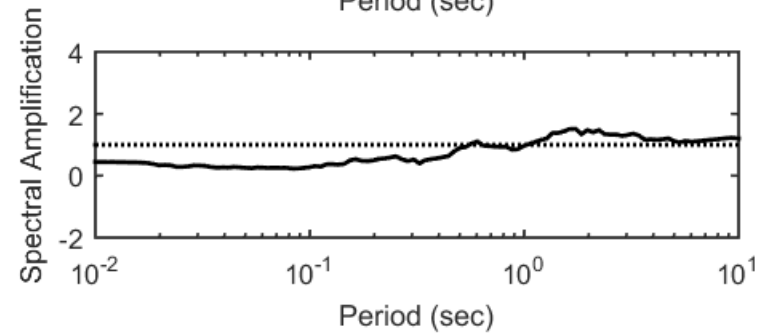
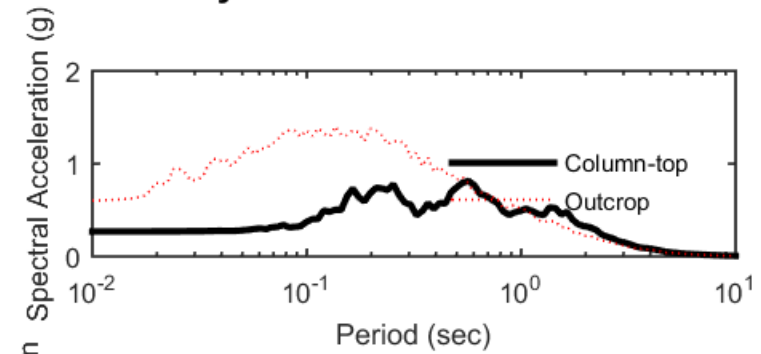
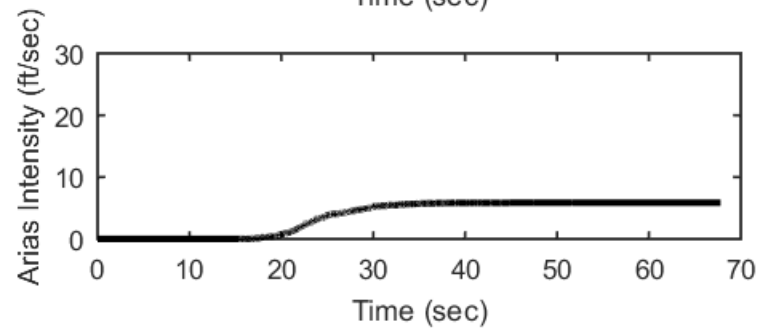
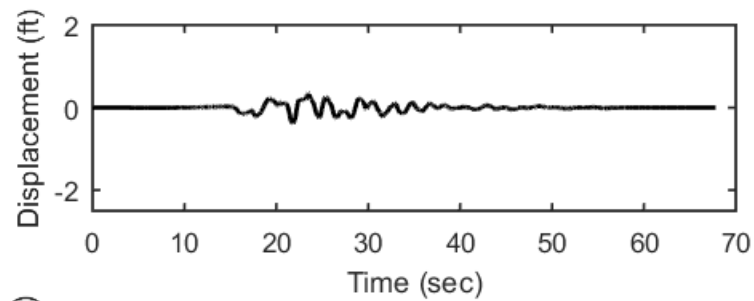
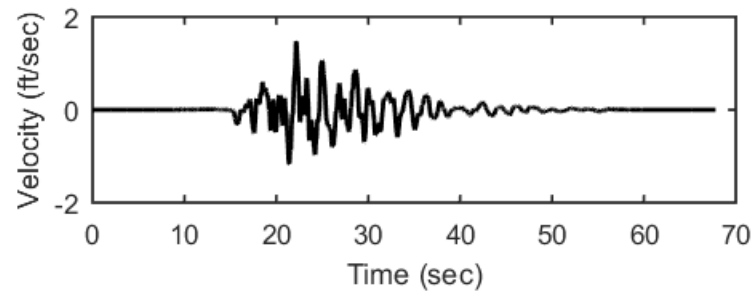
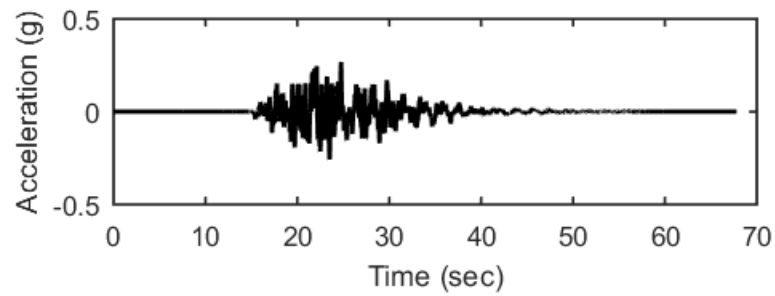
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



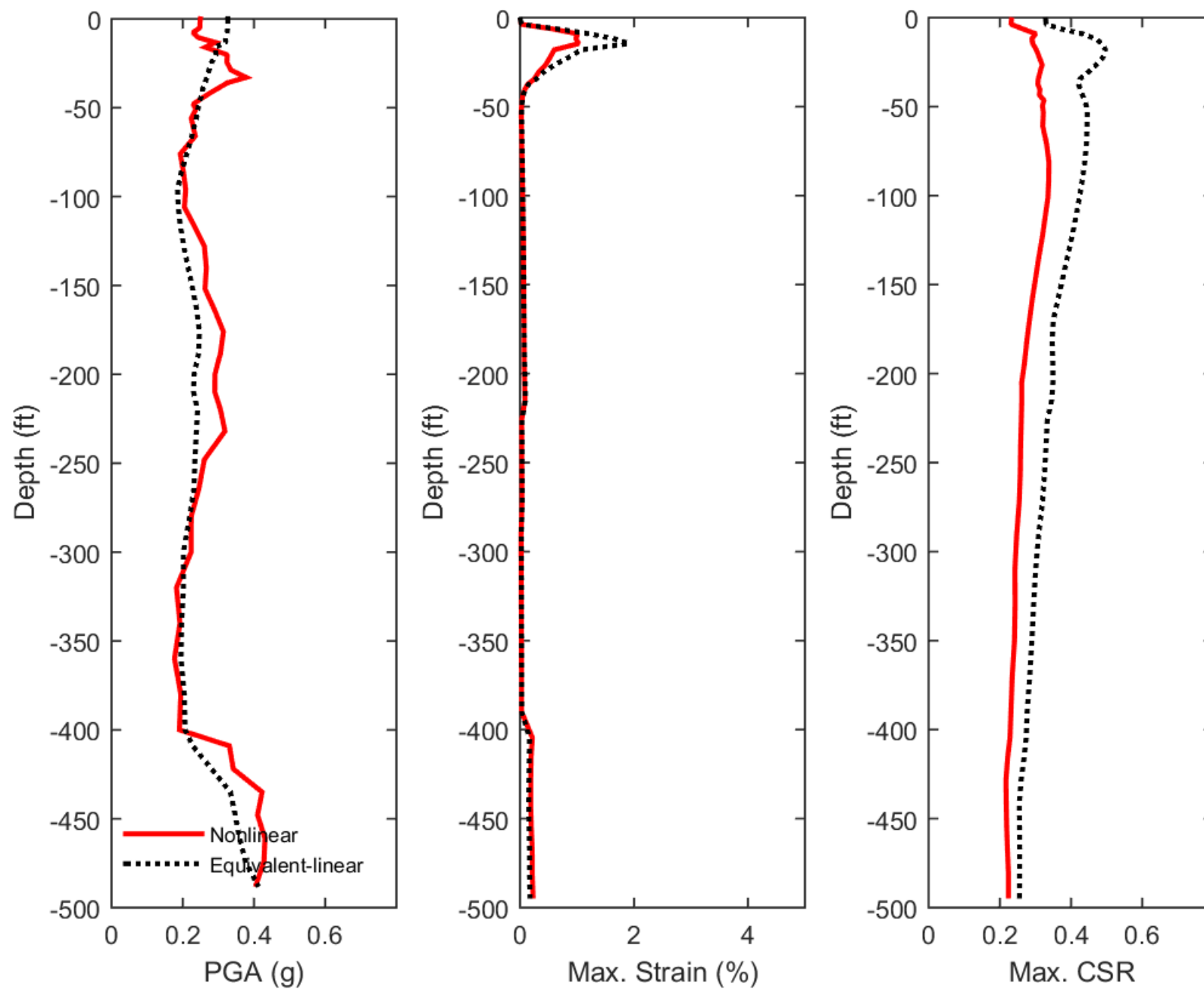
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



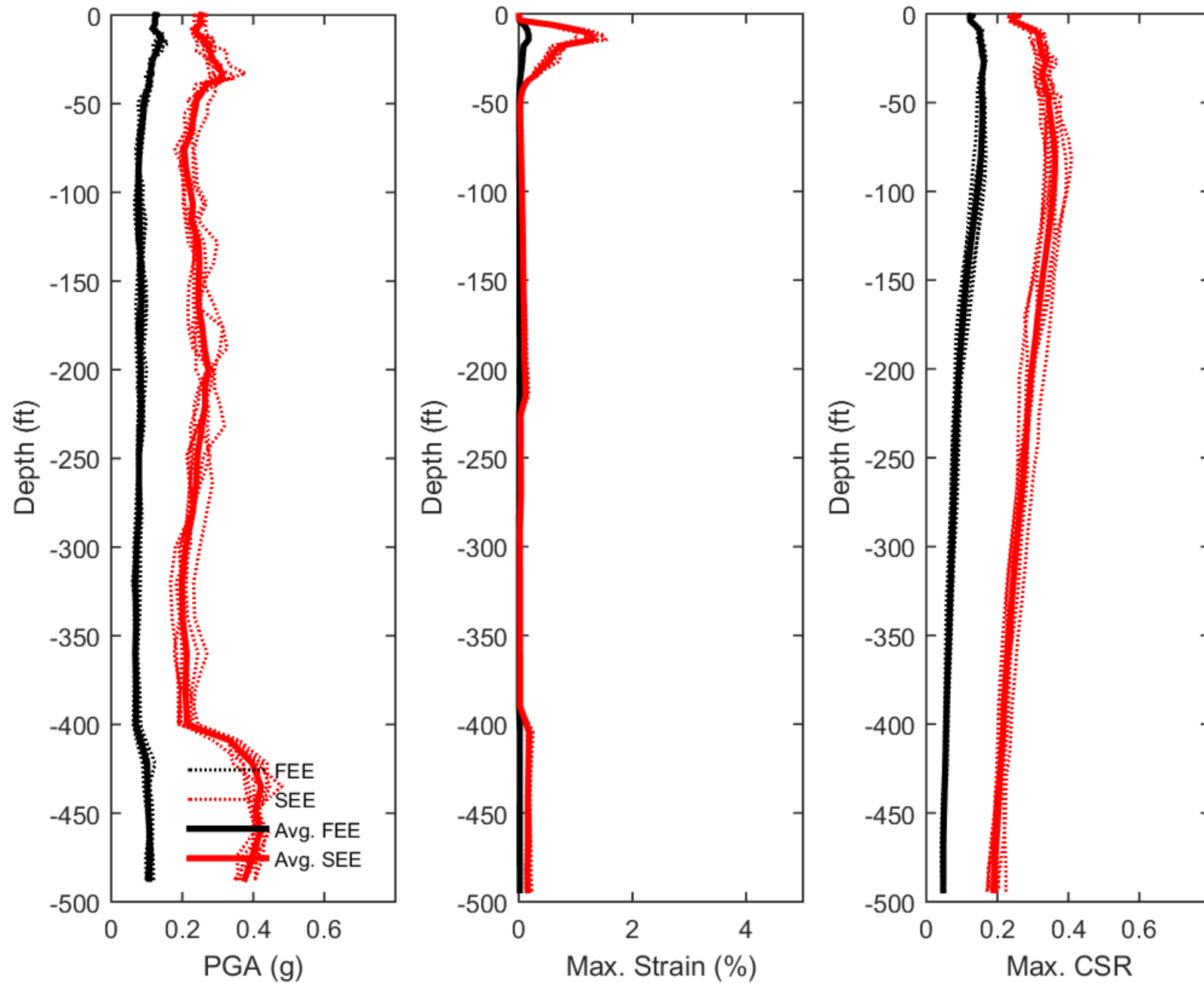
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



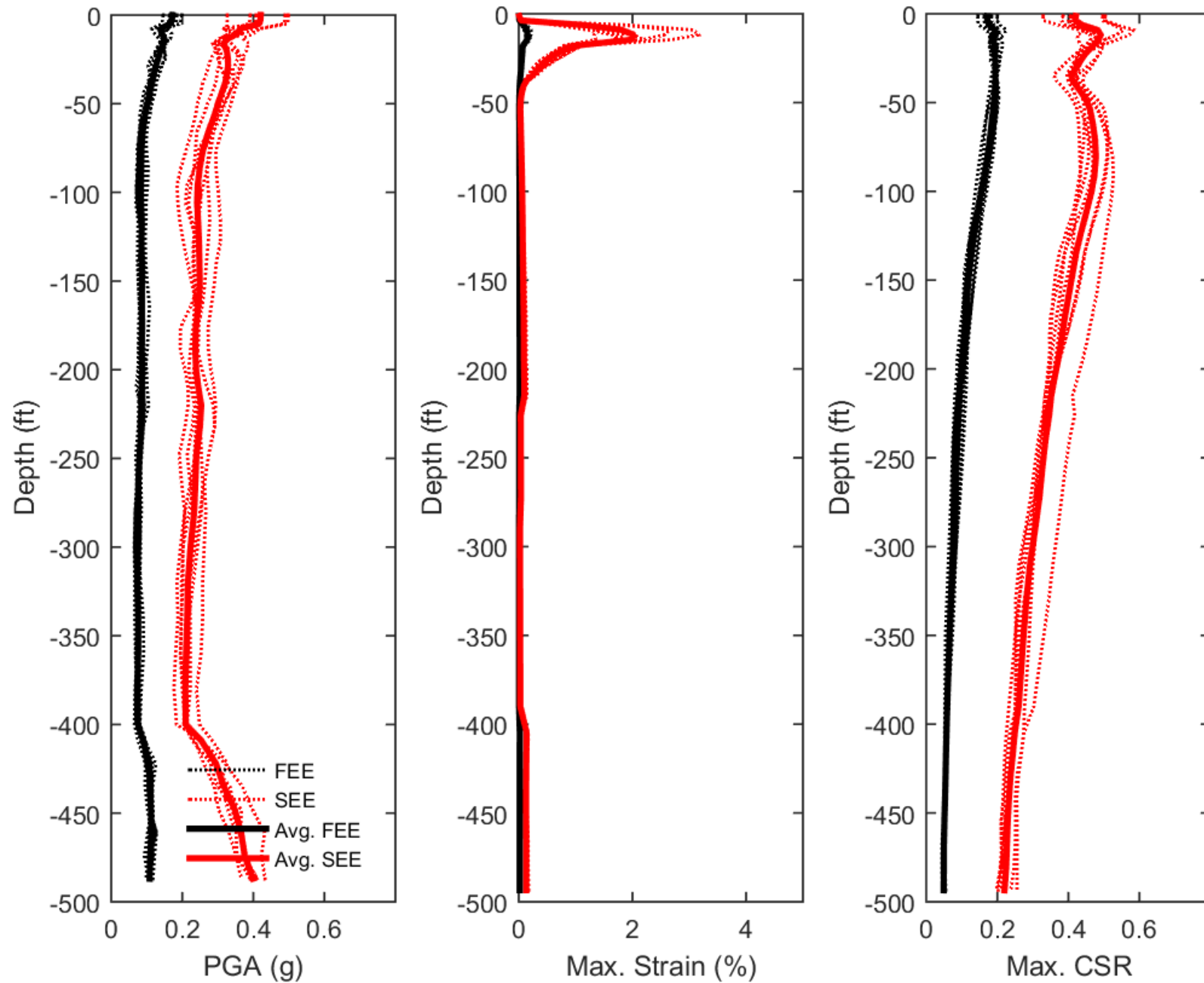
### Profile outputs for Motion: SEE7



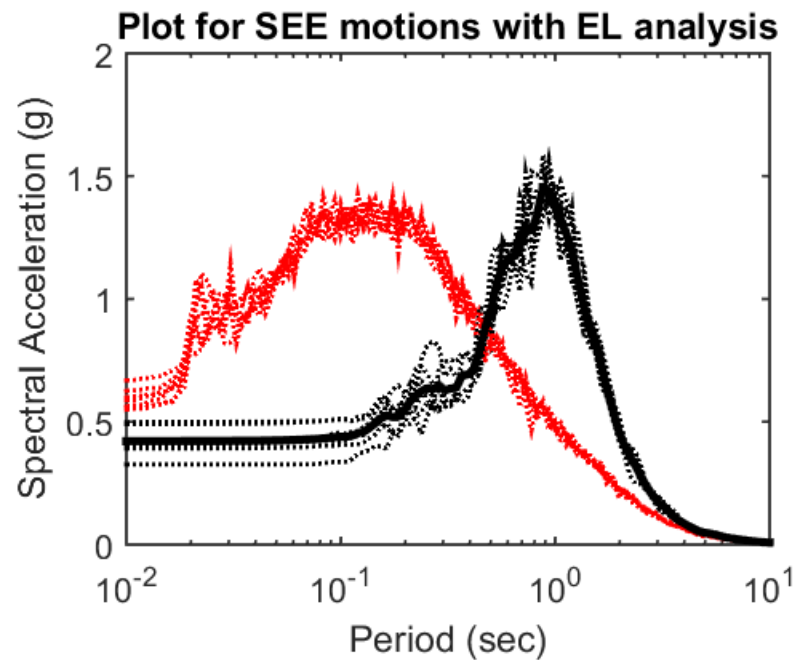
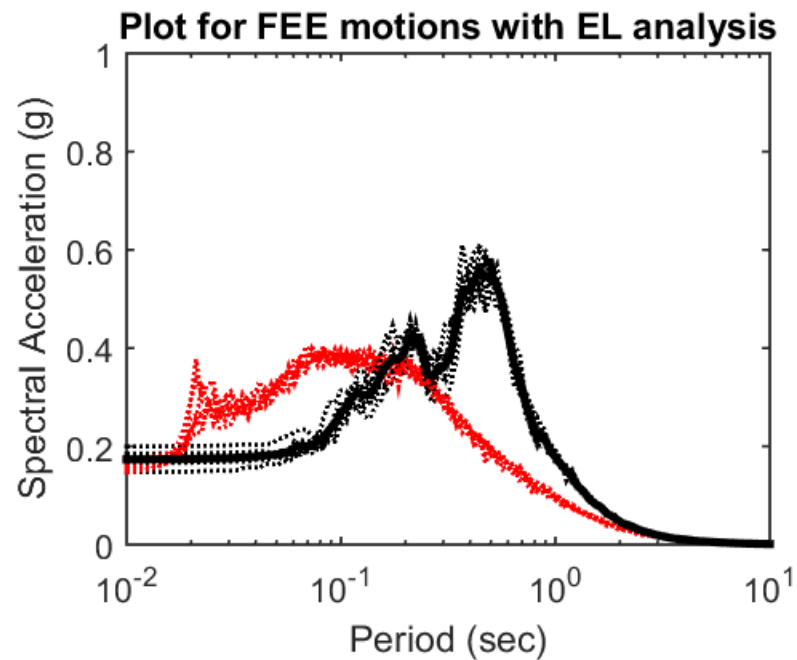
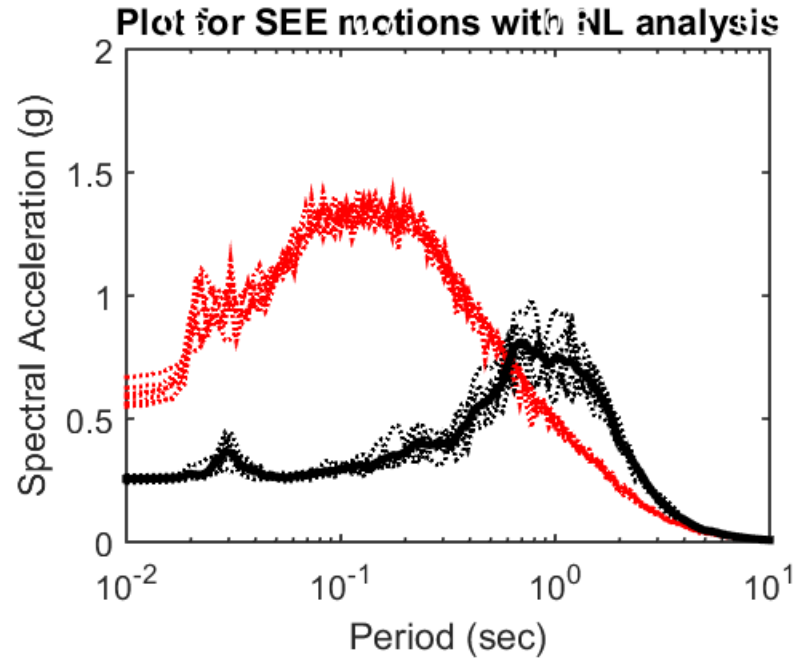
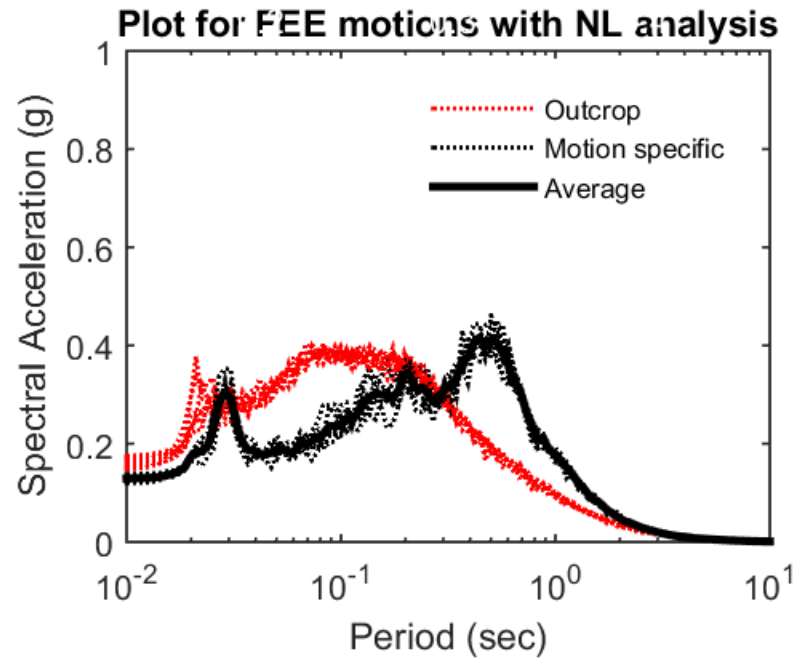
## Summary of the profile outputs for Nonlinear analysis



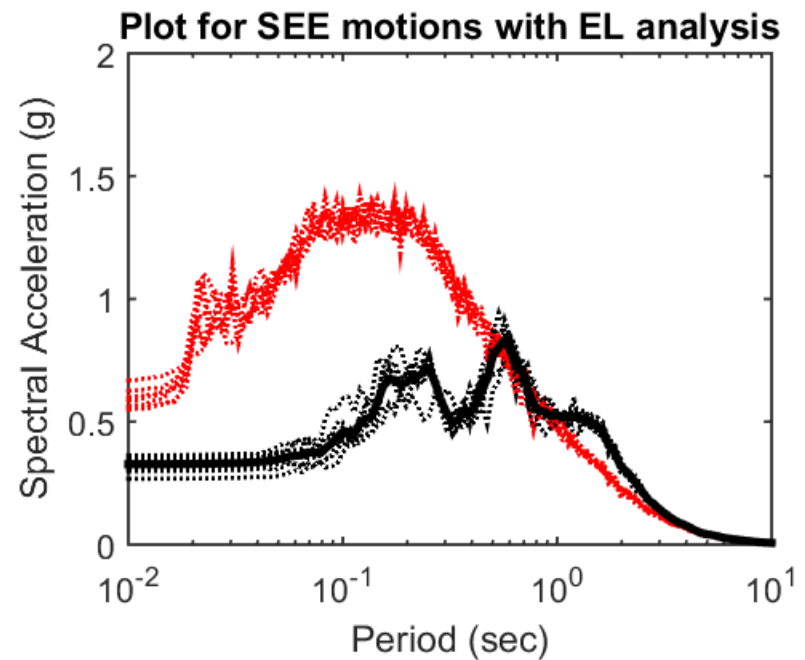
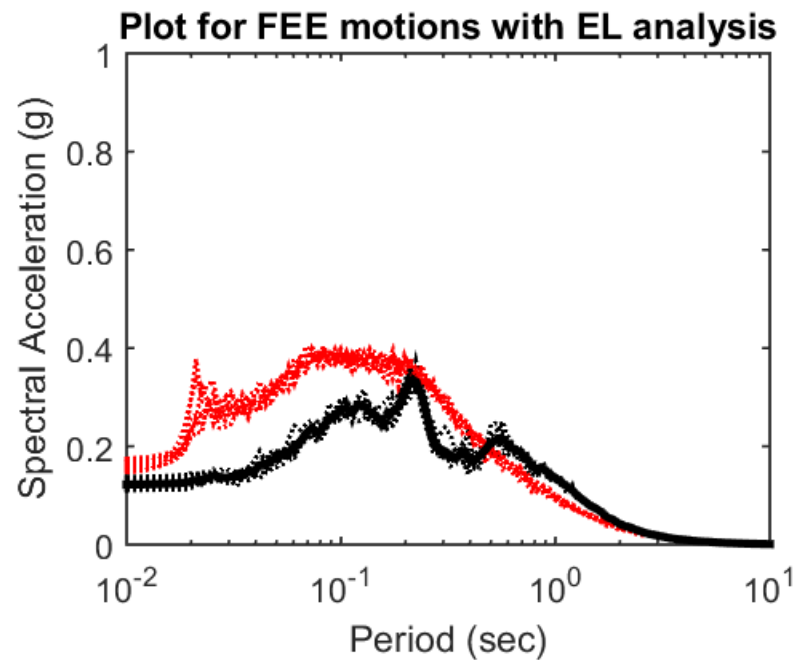
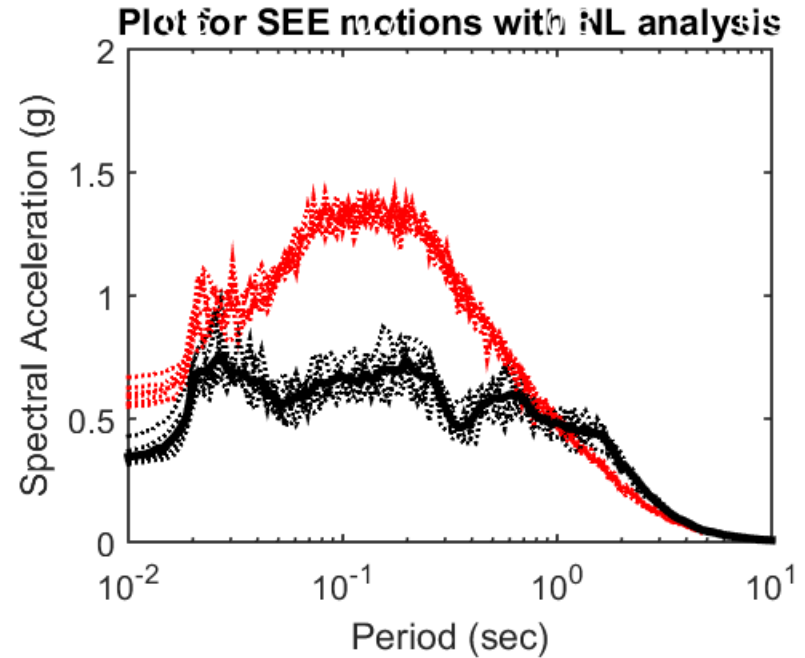
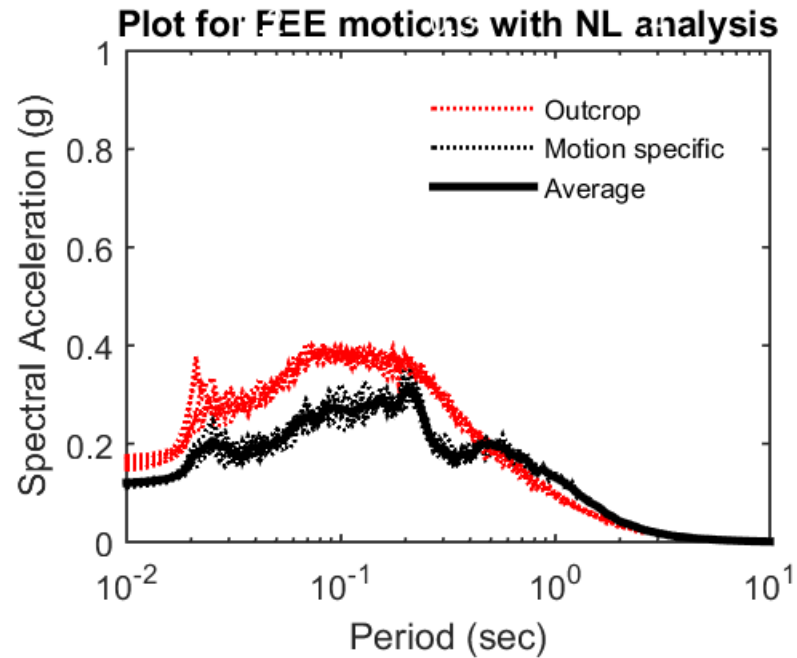
## Summary of the profile outputs for Equivalent-linear analysis



## Summary plots: RSA at ground surface

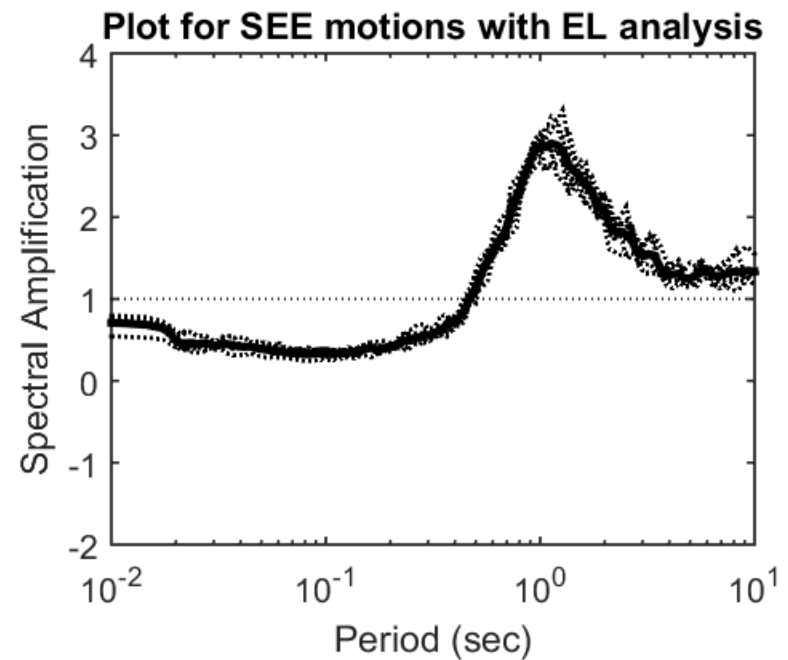
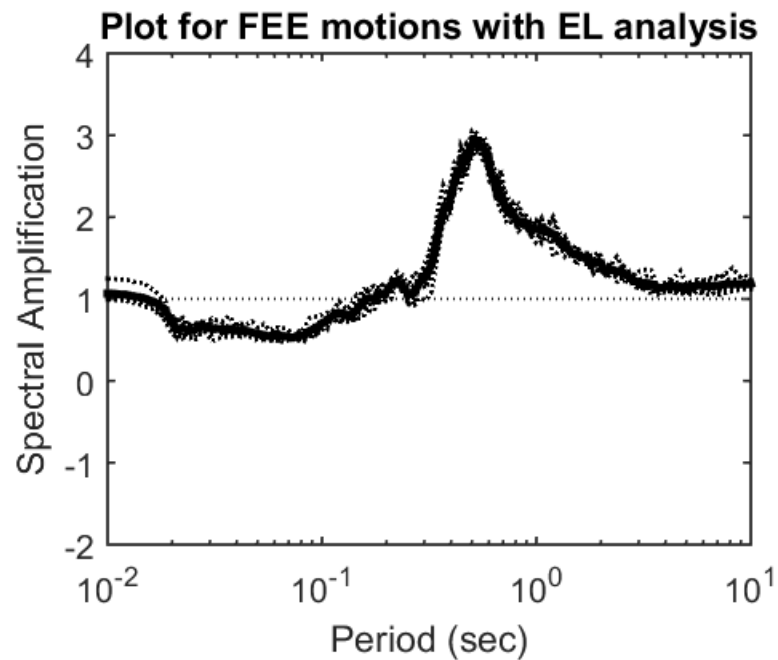
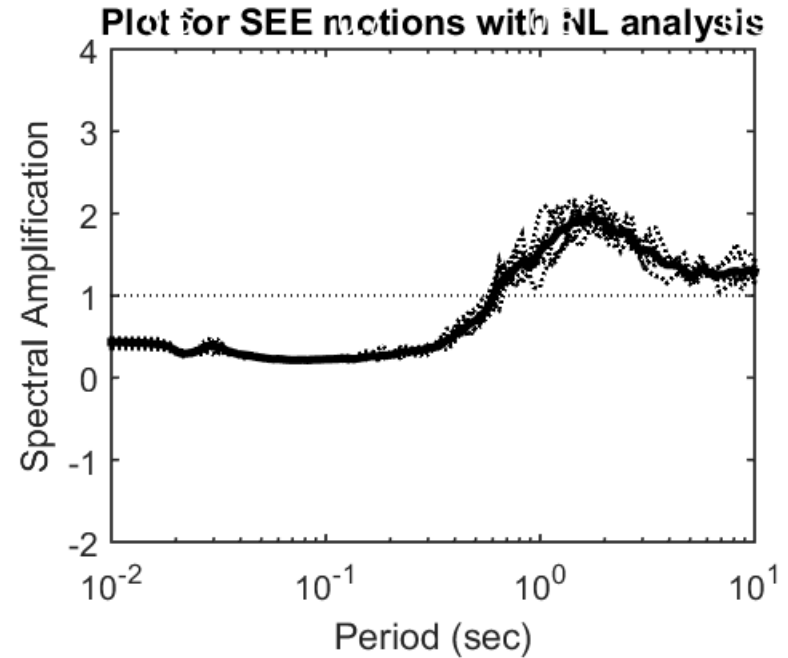
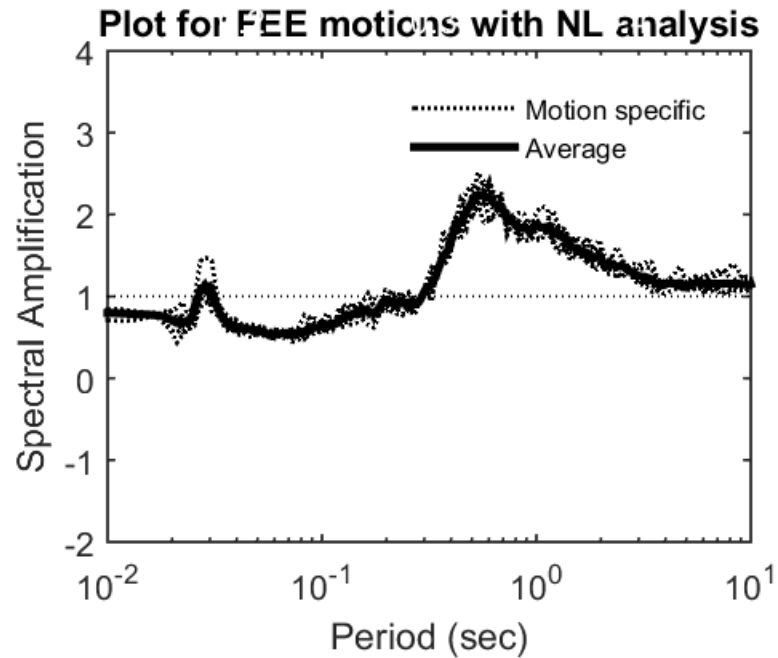


## Summary plots: RSA at top of Marl

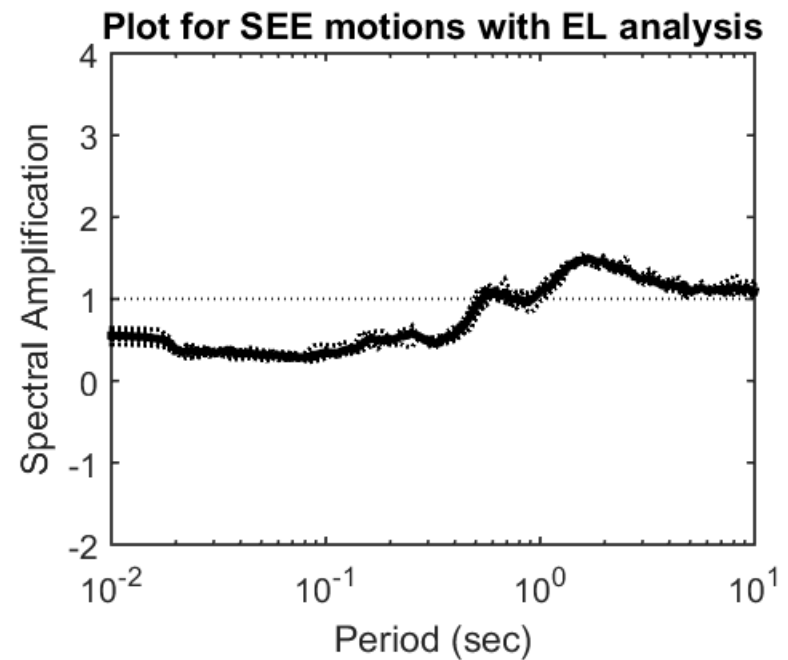
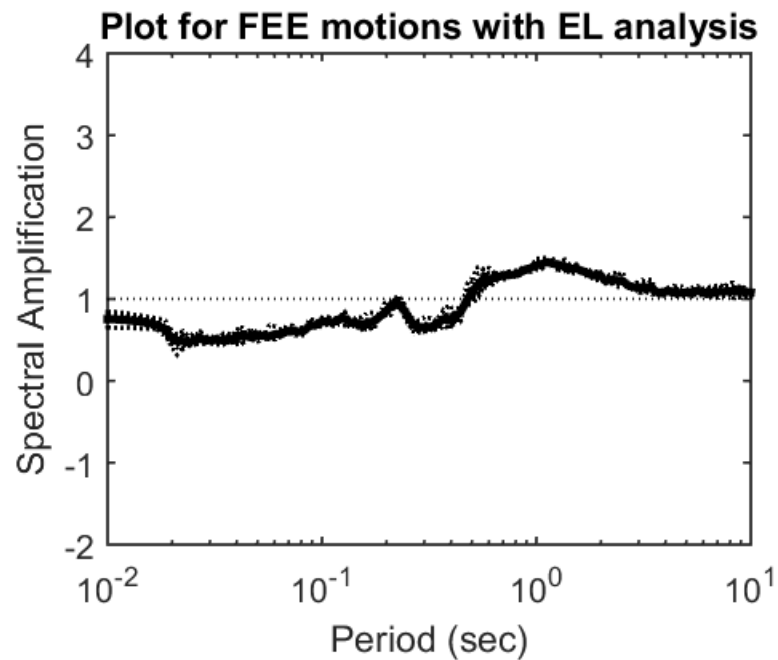
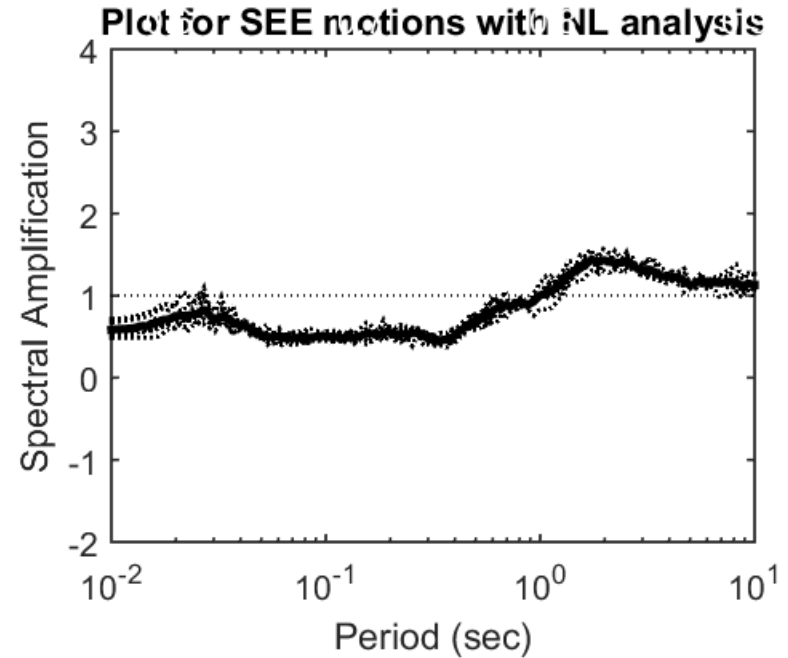
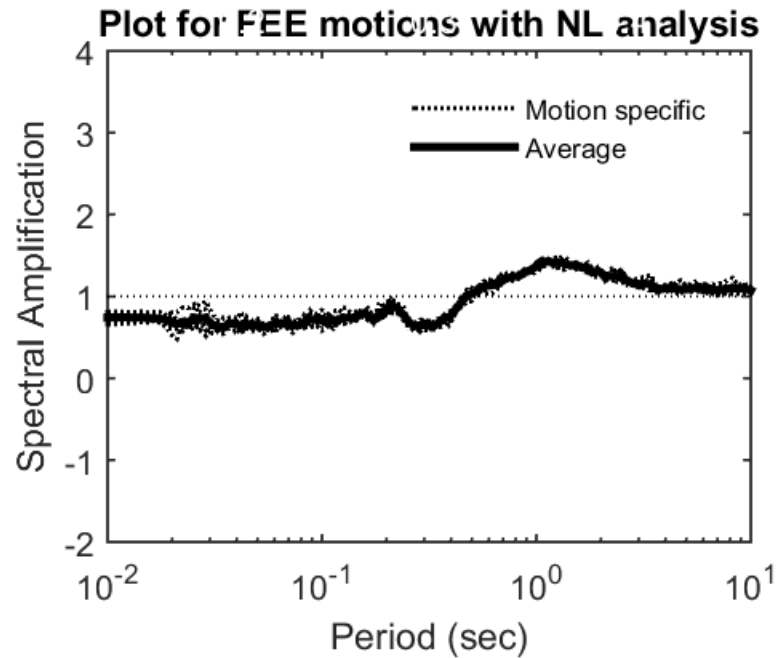




## Summary plots: Spectral amplification at ground surface

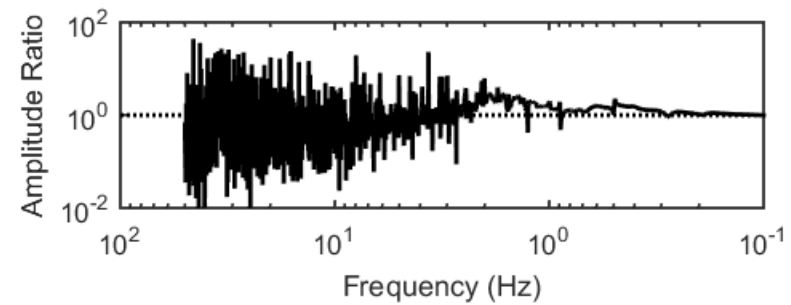
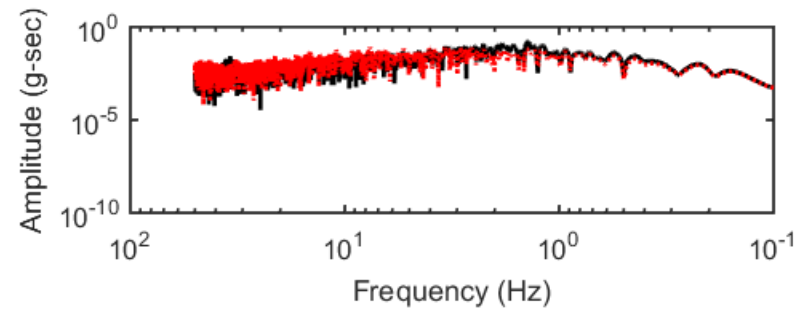
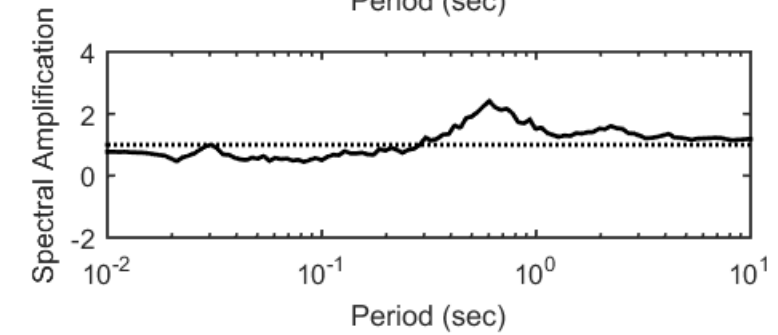
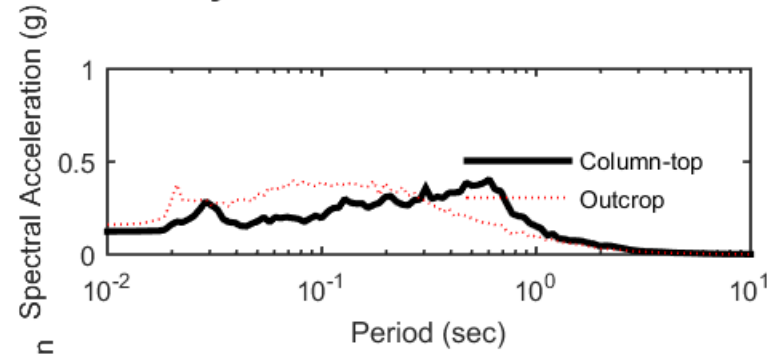
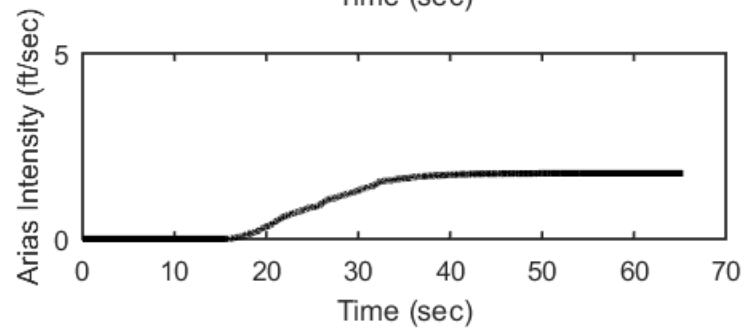
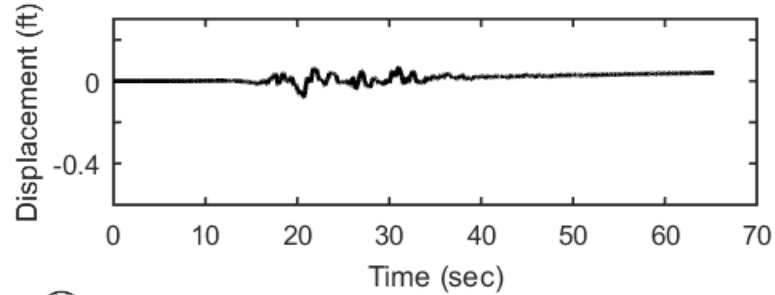
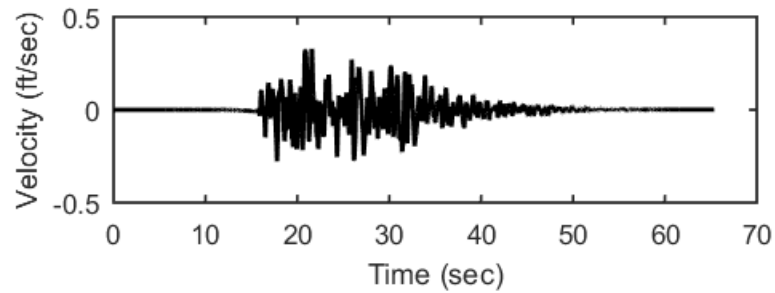
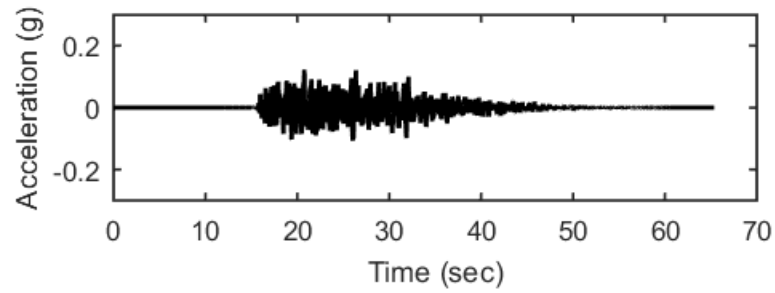


## Summary plots: Spectral amplification at top of Marl

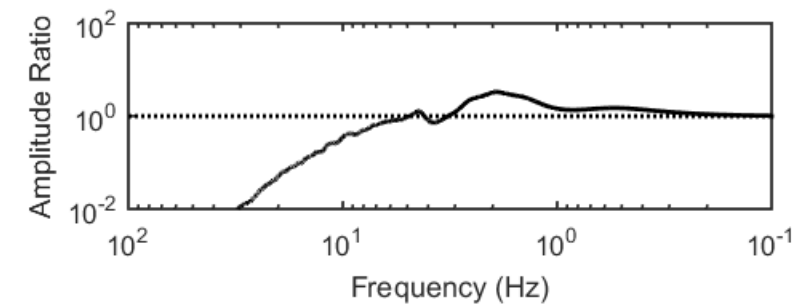
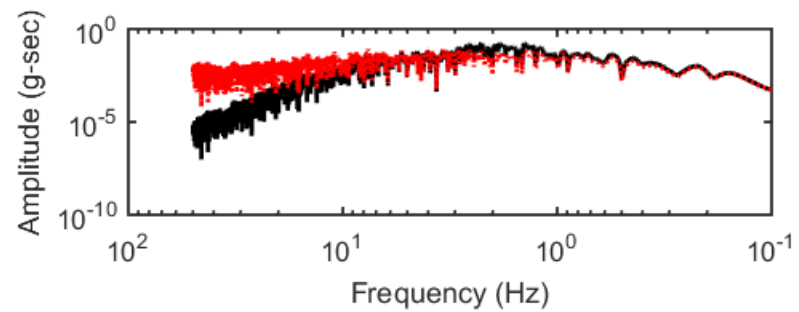
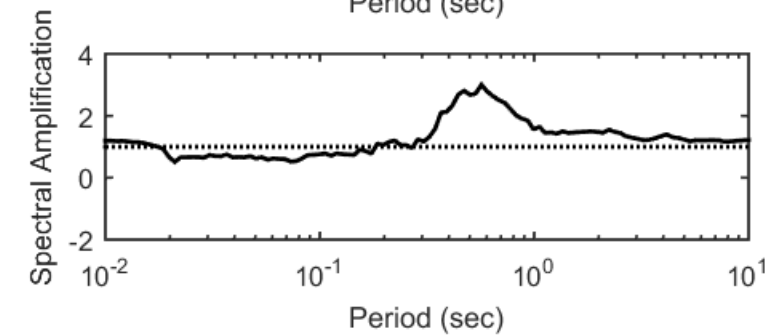
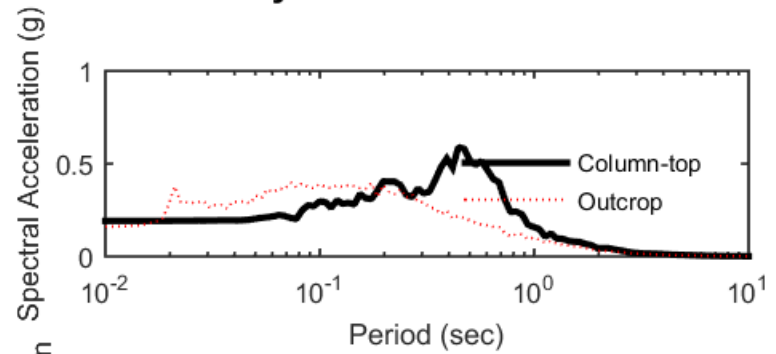
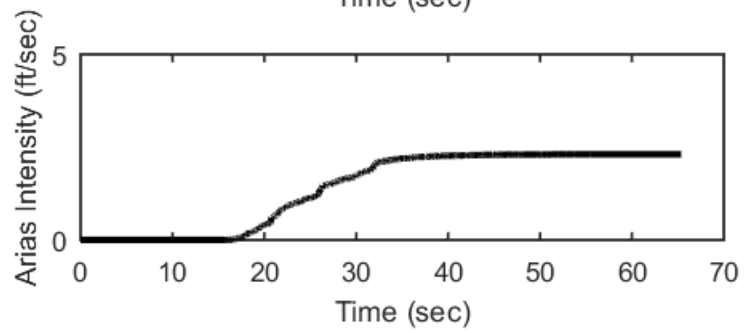
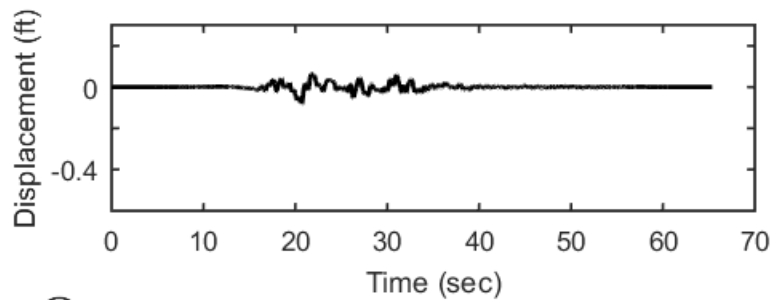
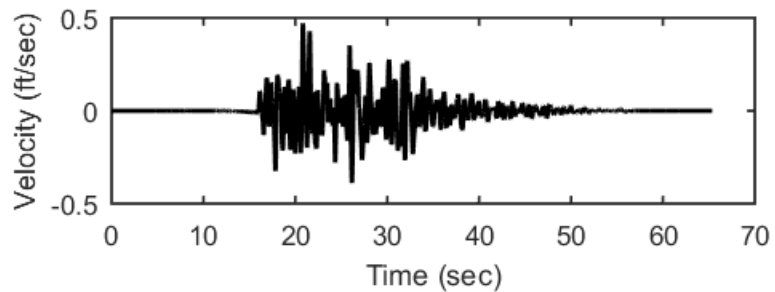
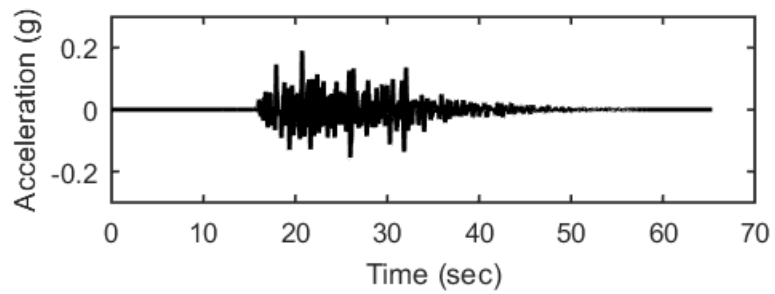


## **1,000 FT MODEL**

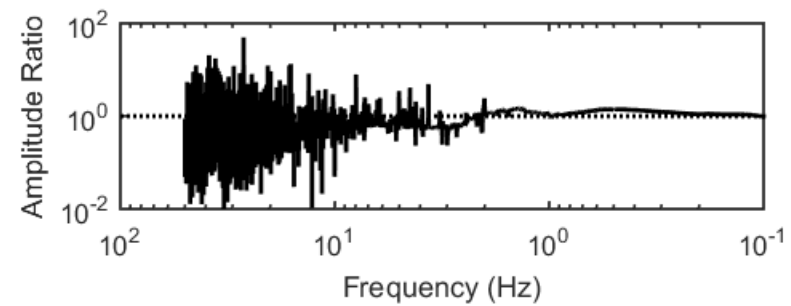
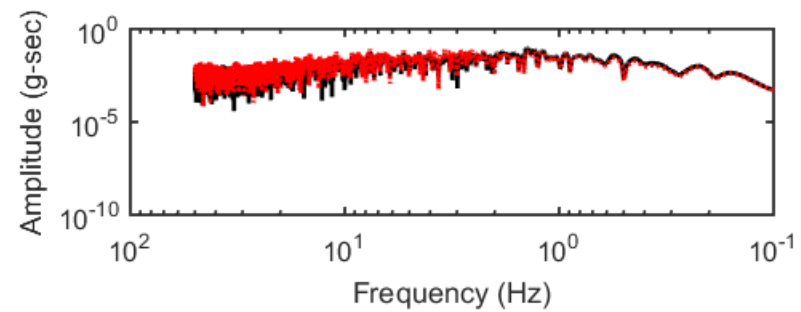
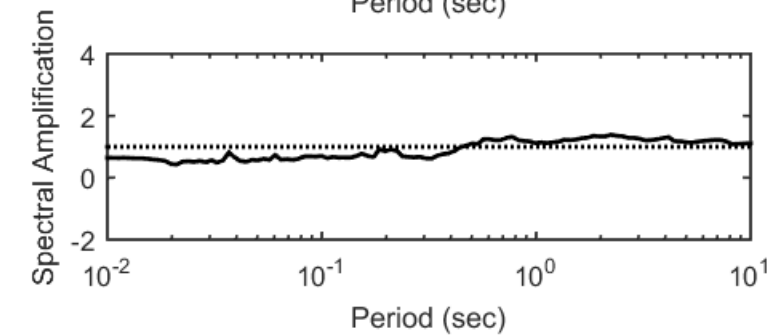
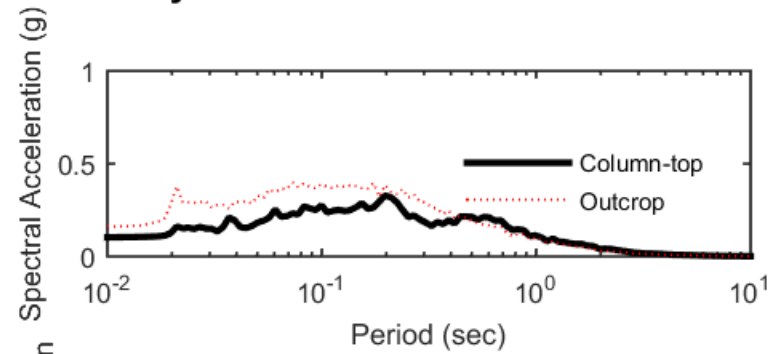
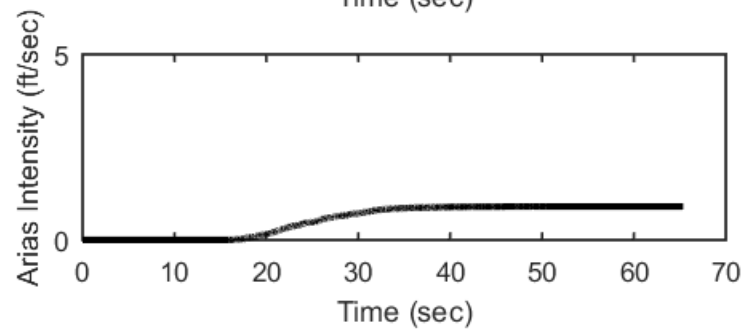
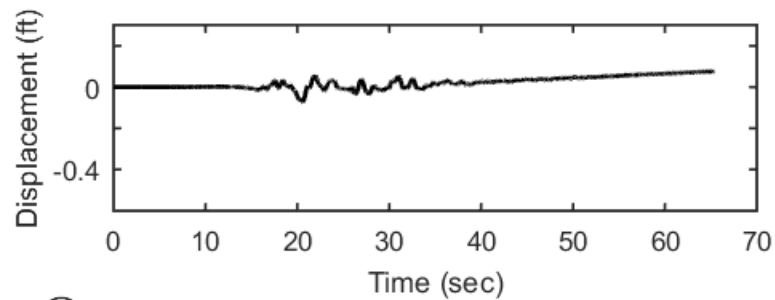
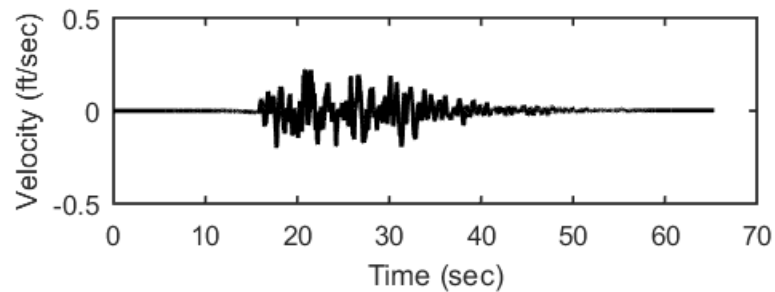
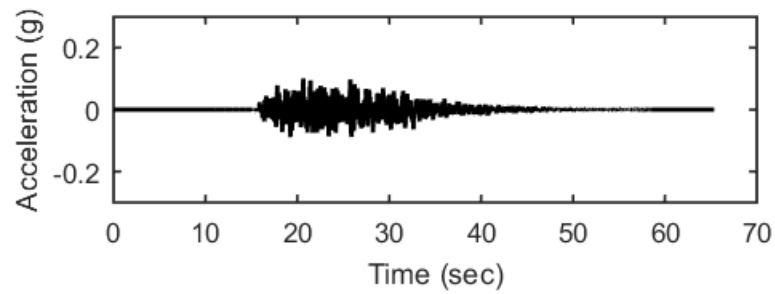
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



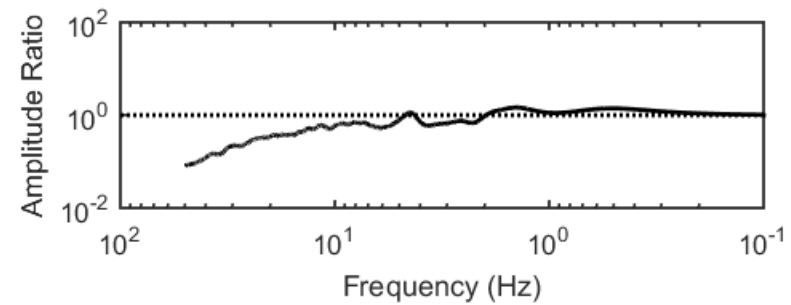
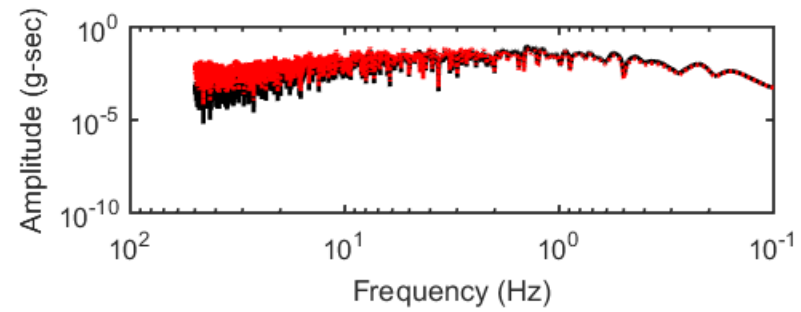
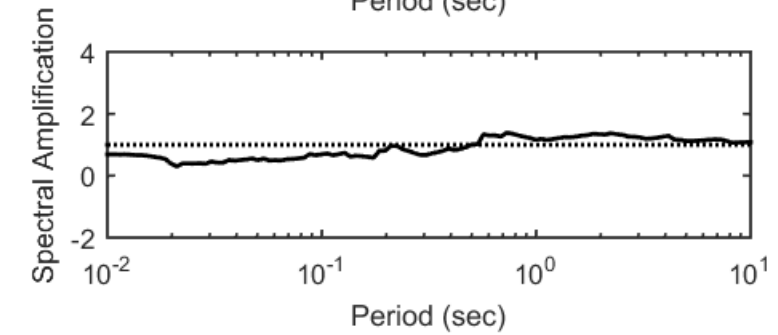
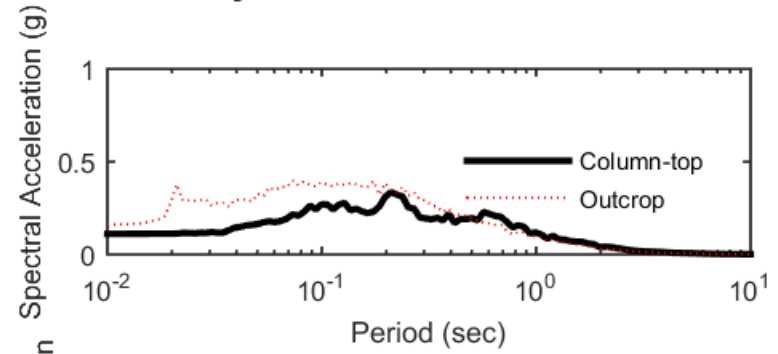
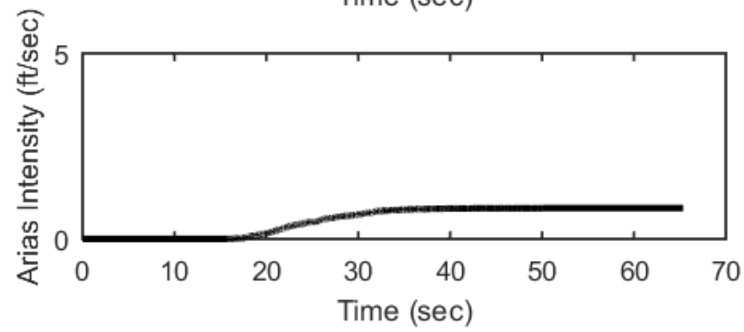
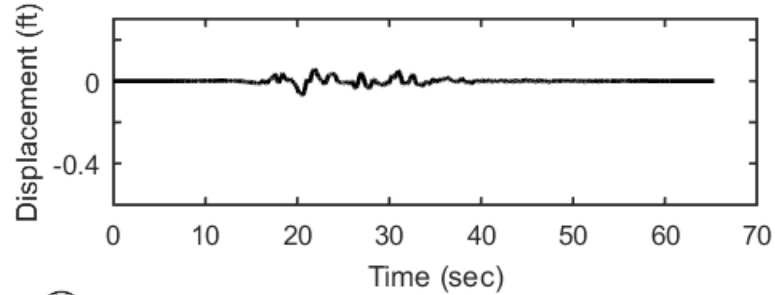
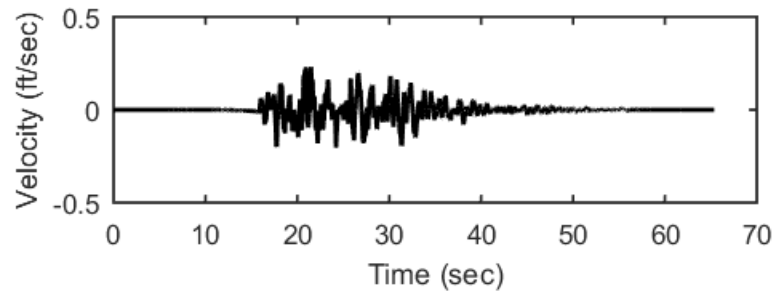
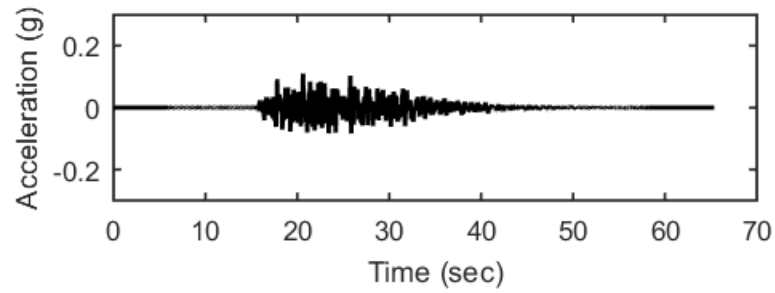
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



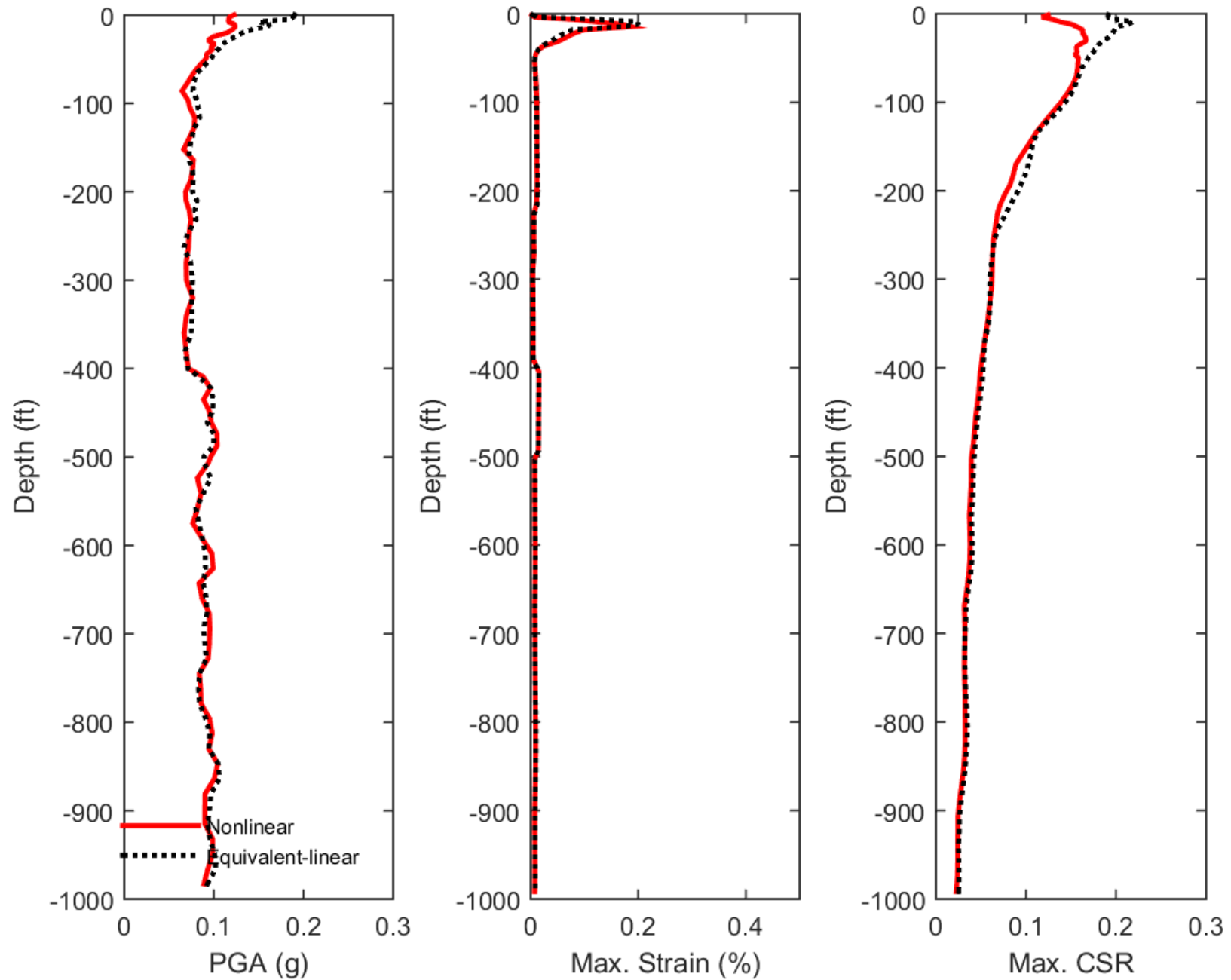
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1

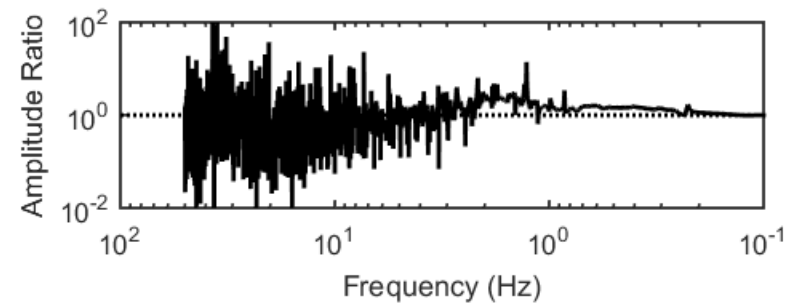
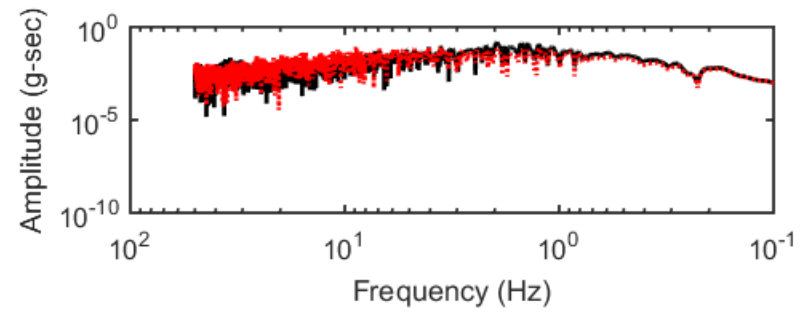
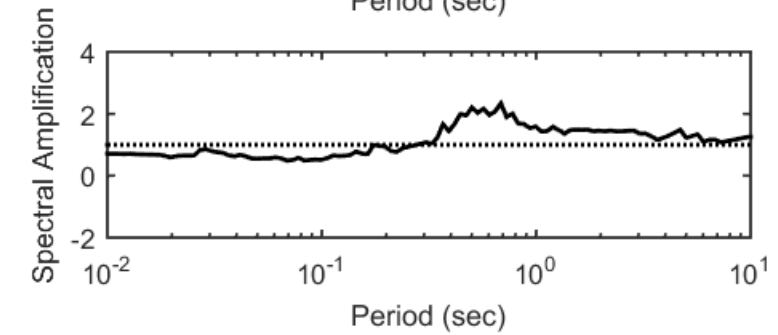
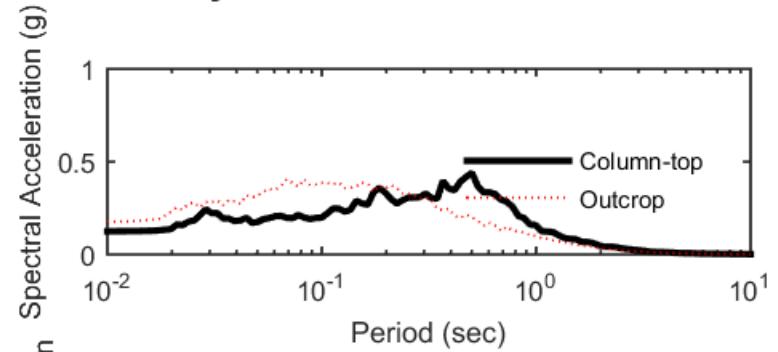
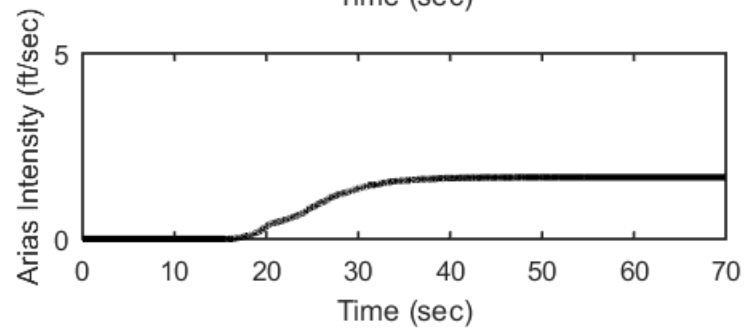
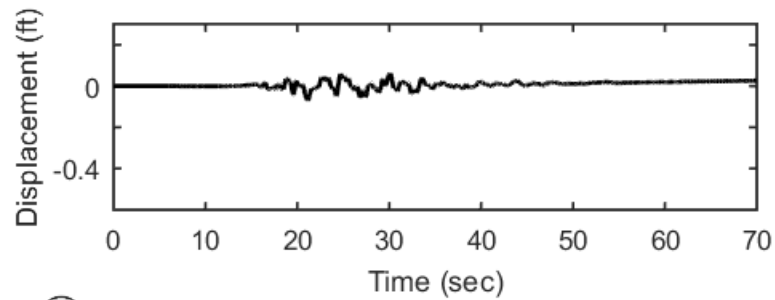
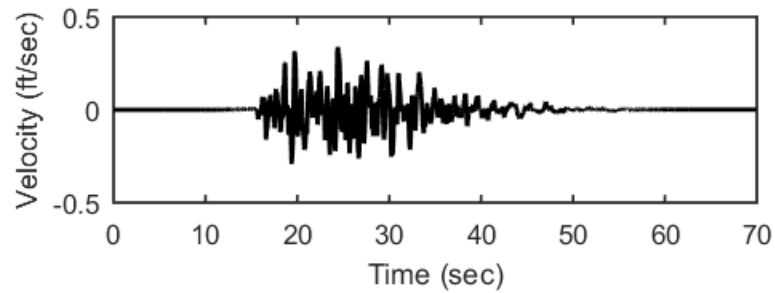
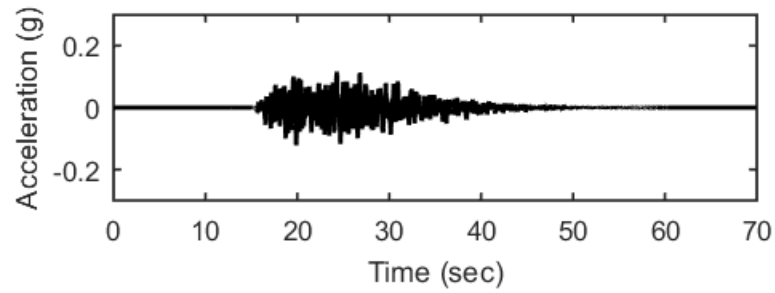


### Profile outputs for Motion: FEE1

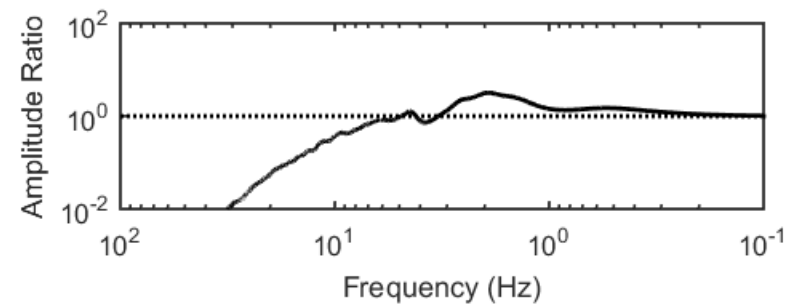
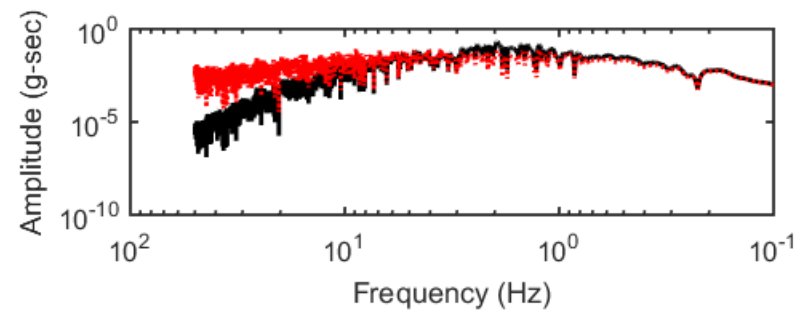
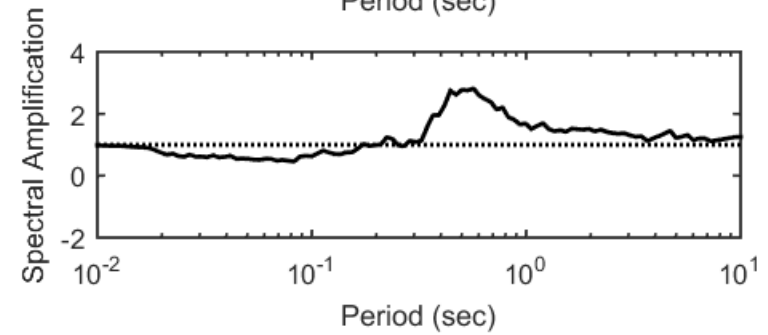
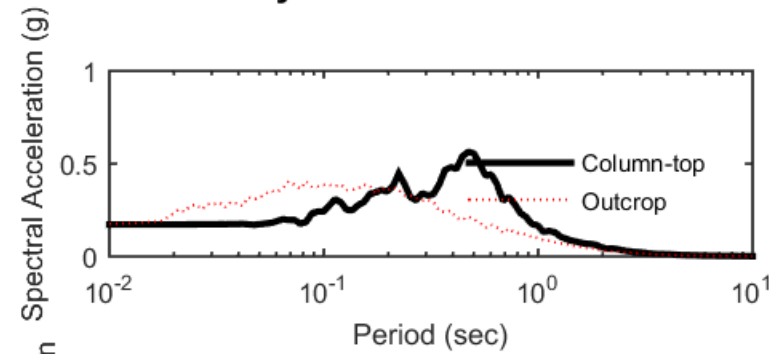
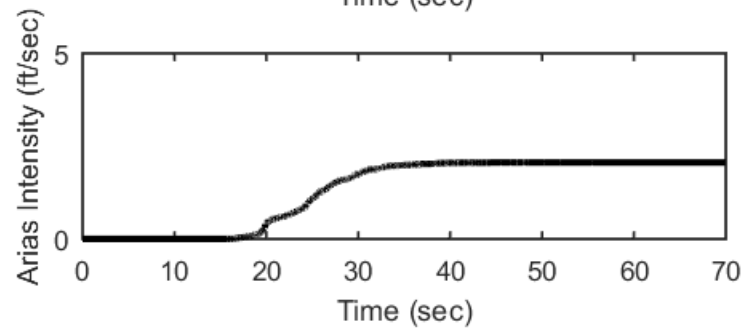
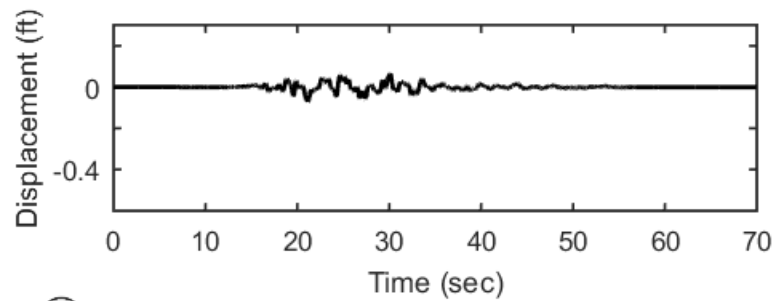
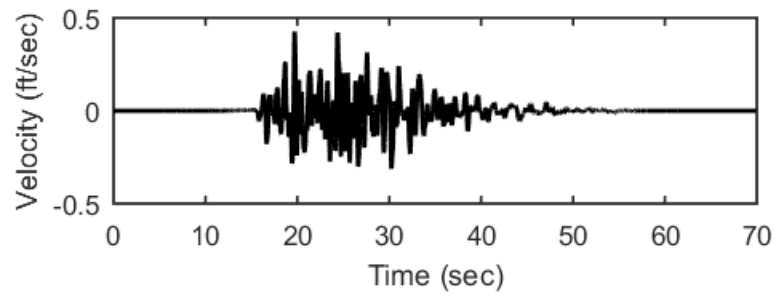
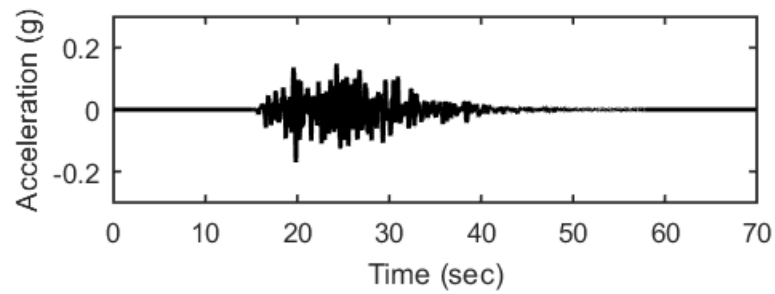




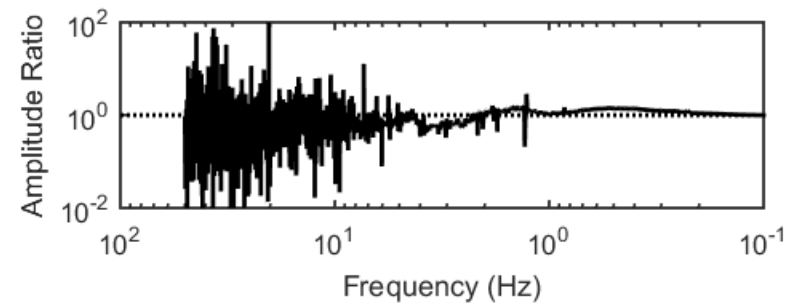
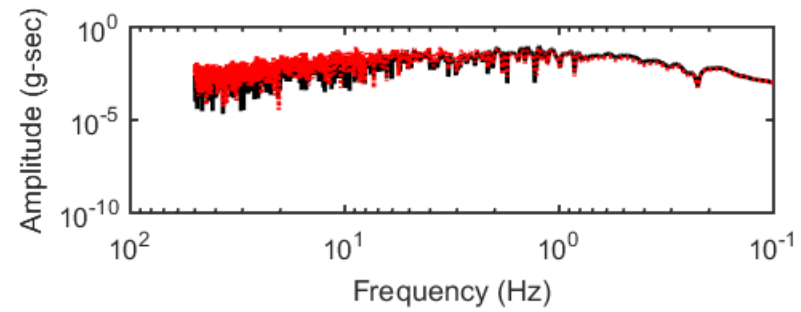
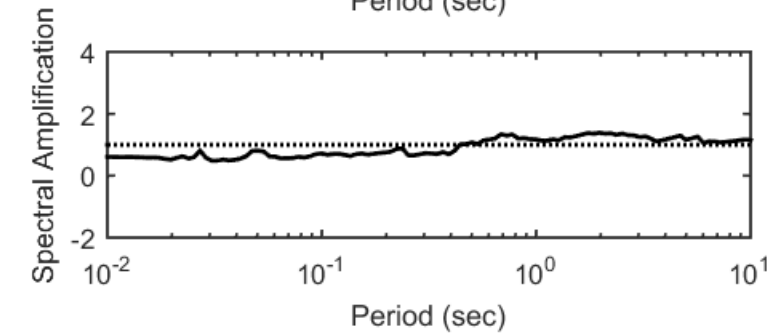
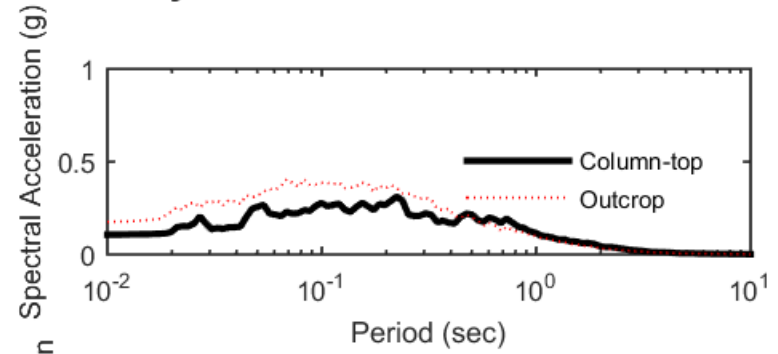
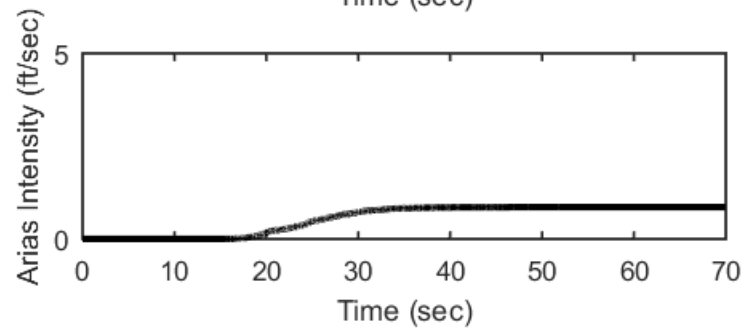
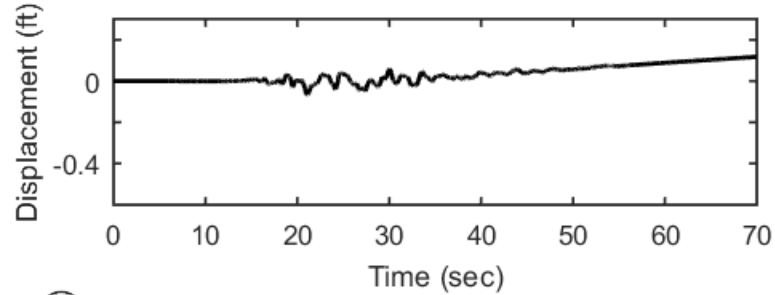
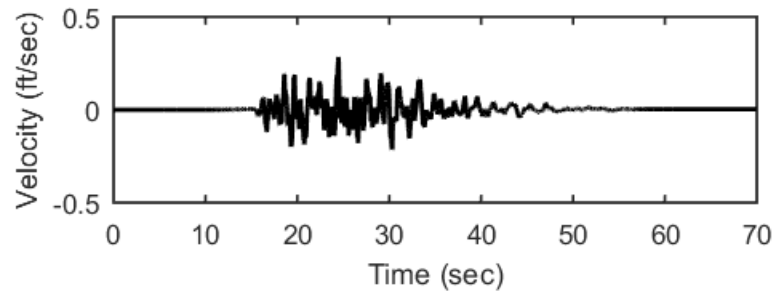
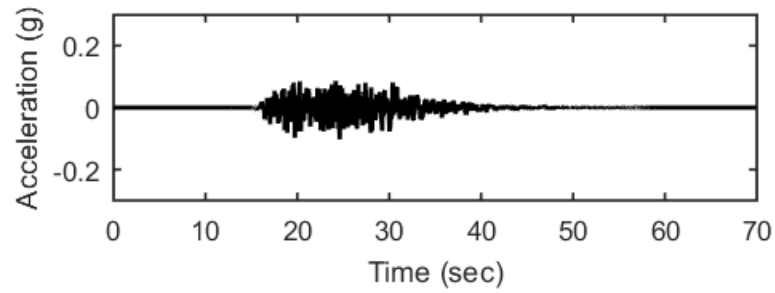
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



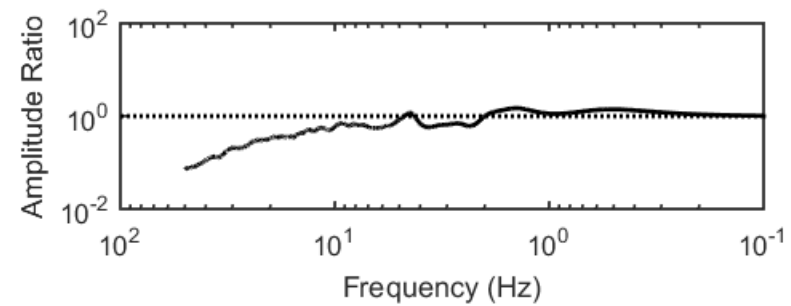
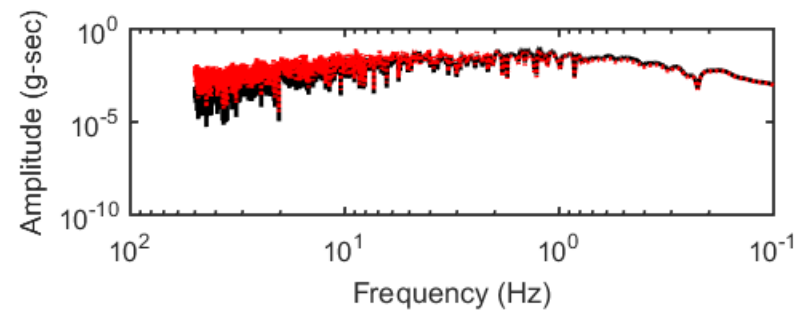
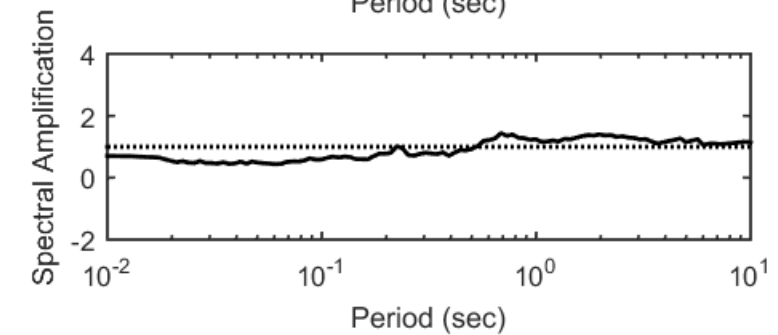
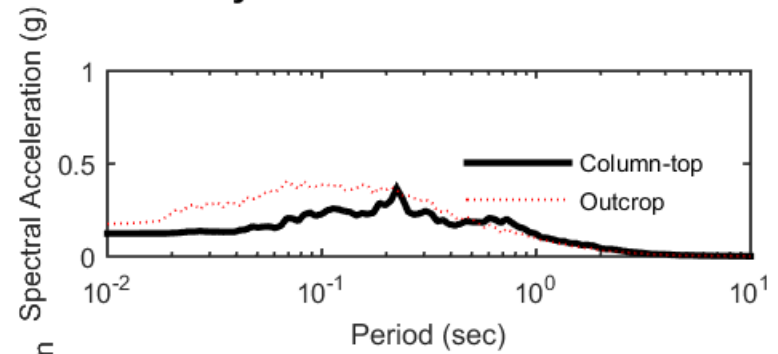
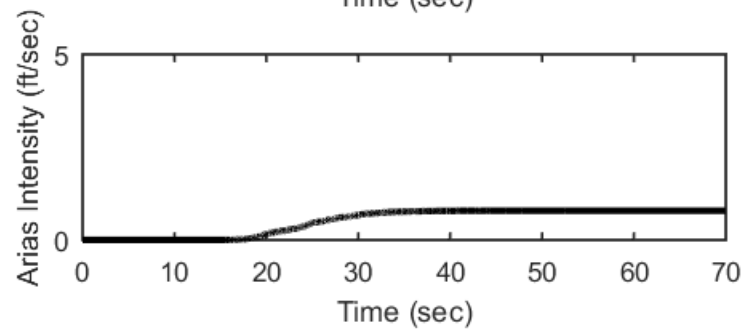
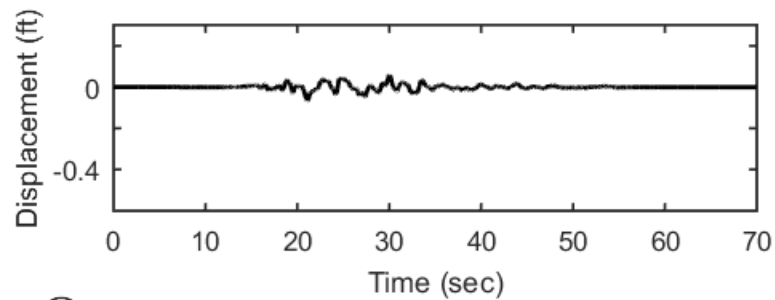
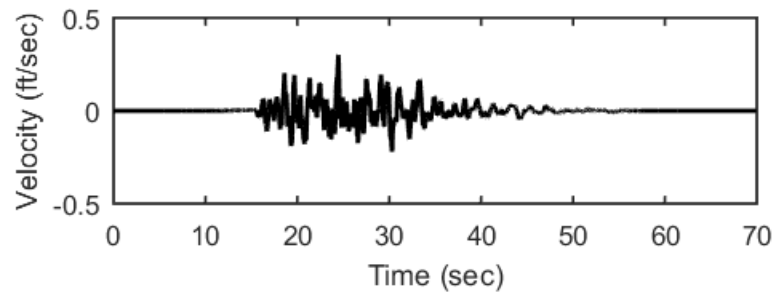
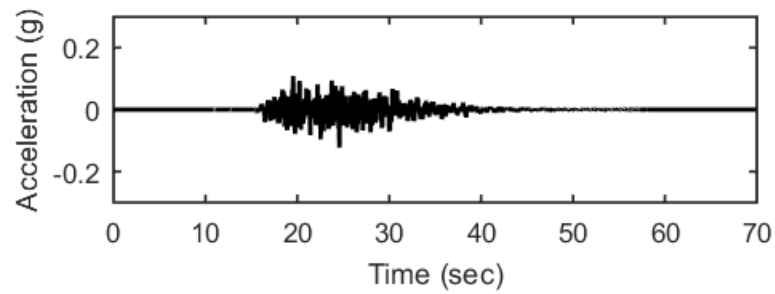
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



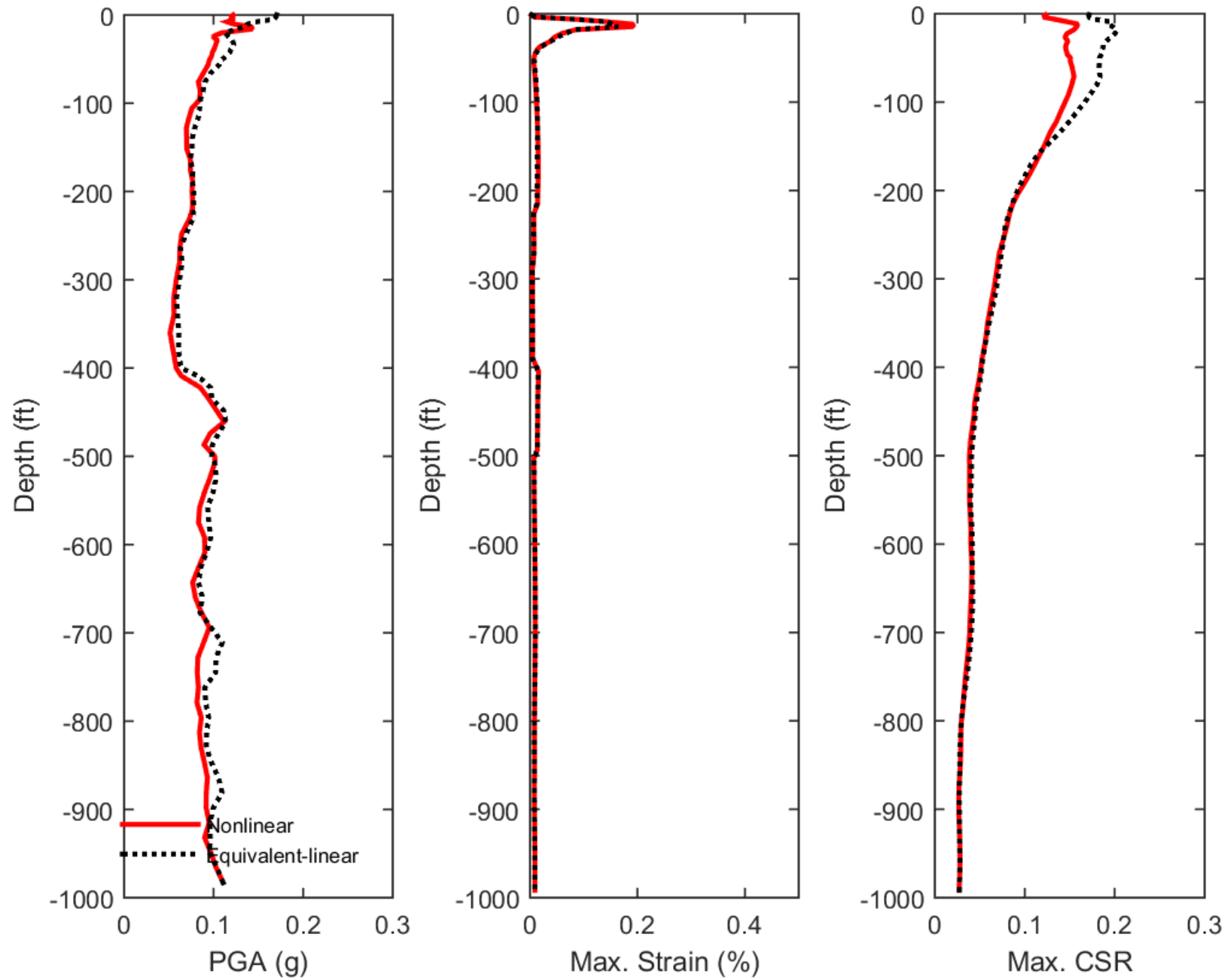
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



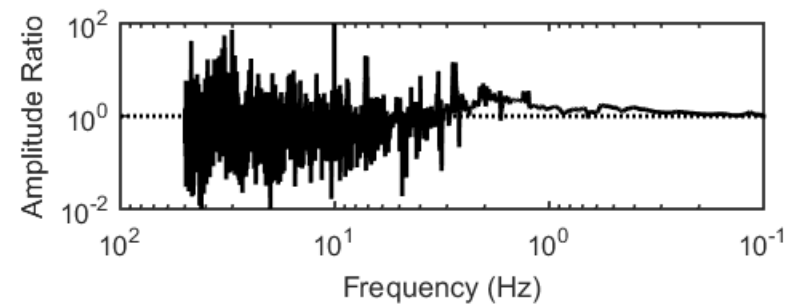
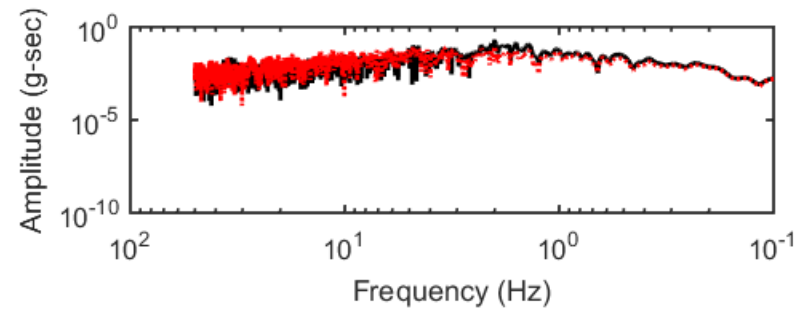
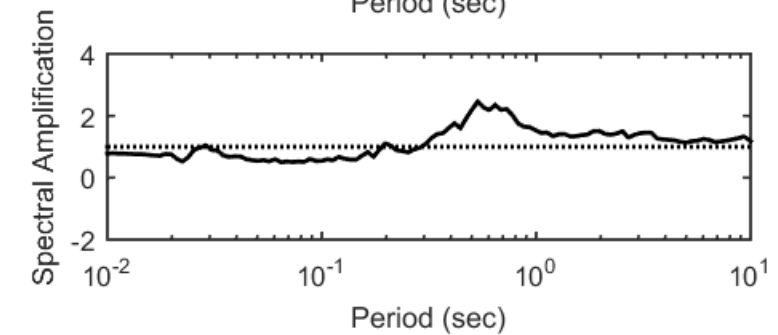
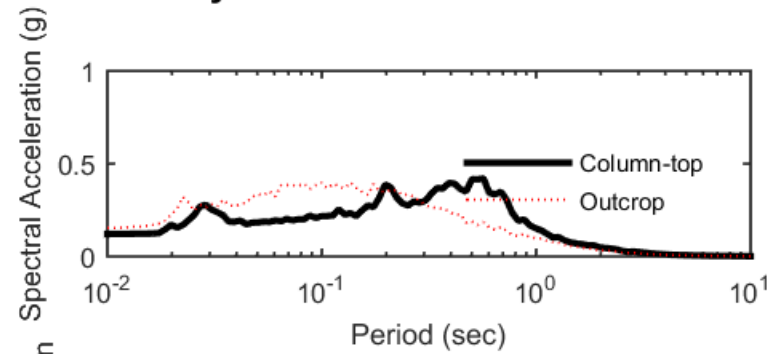
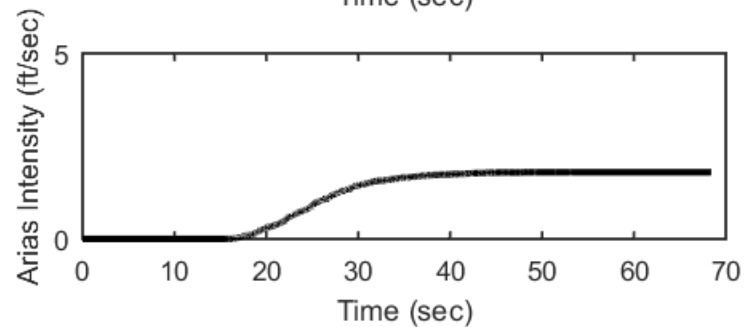
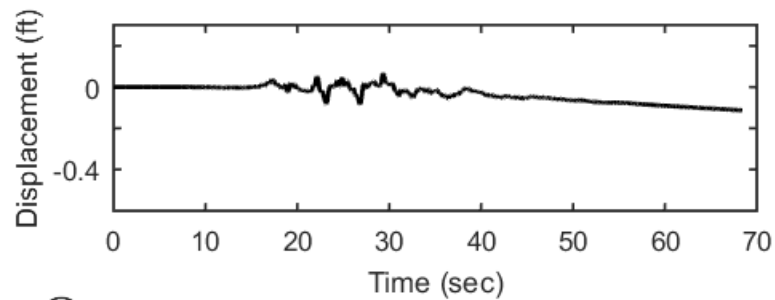
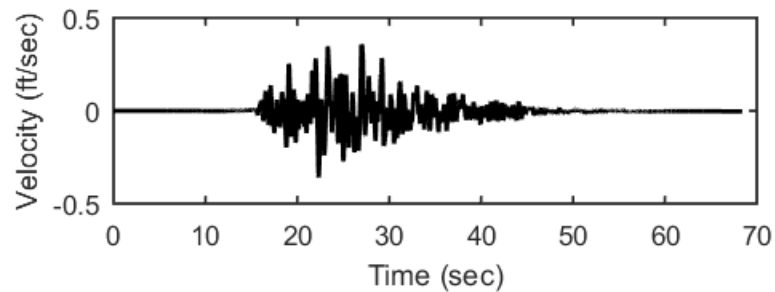
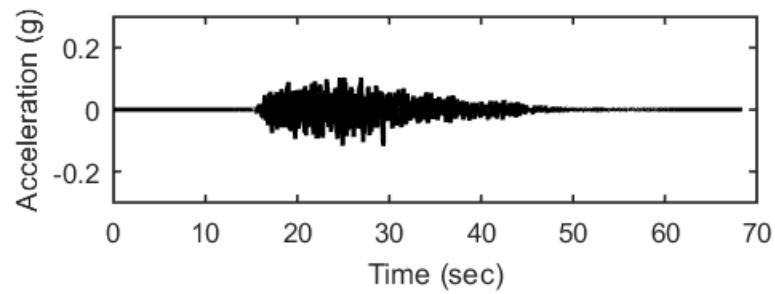
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



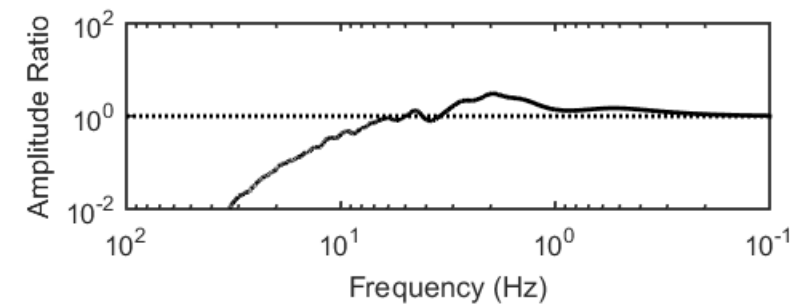
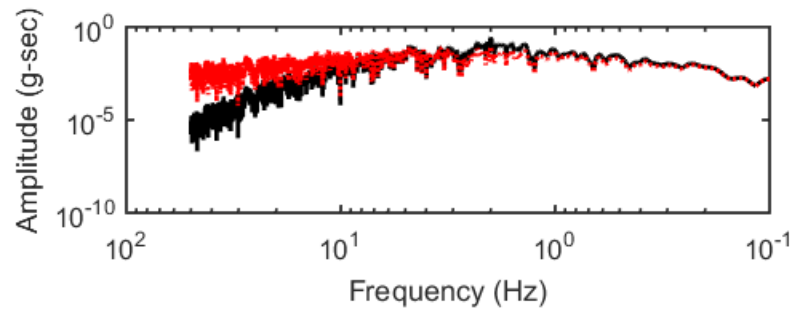
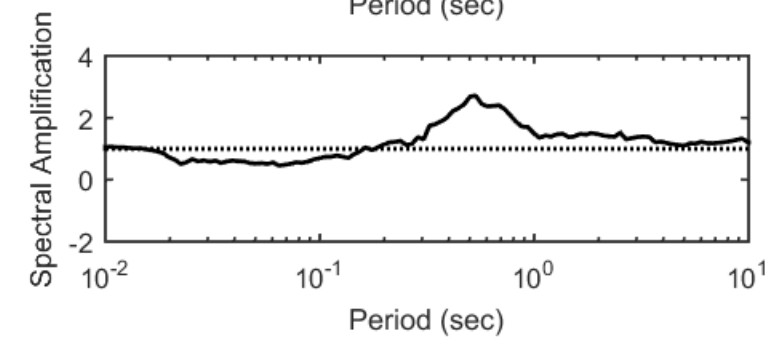
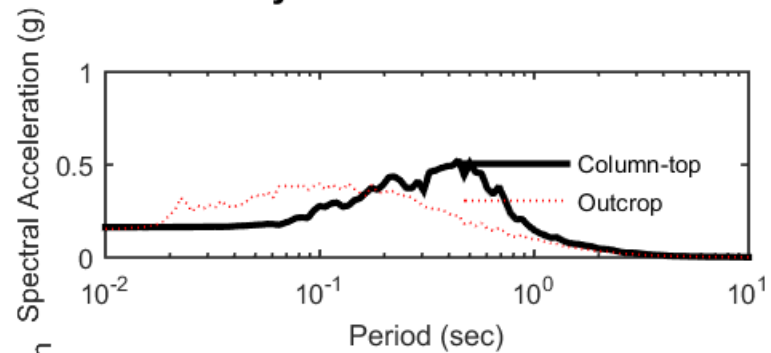
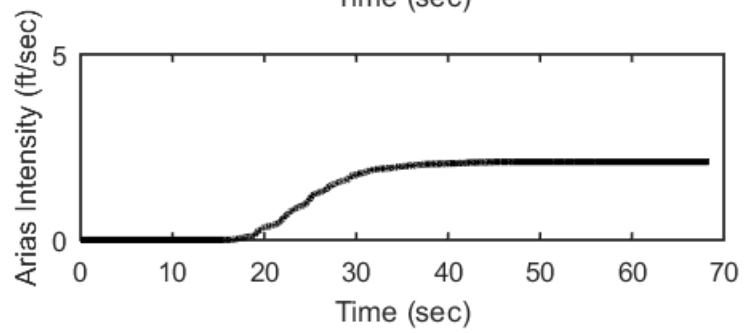
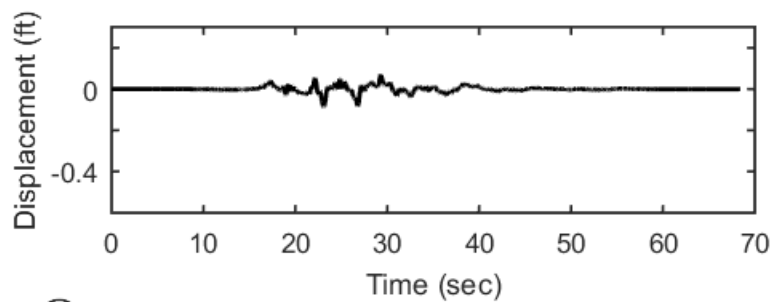
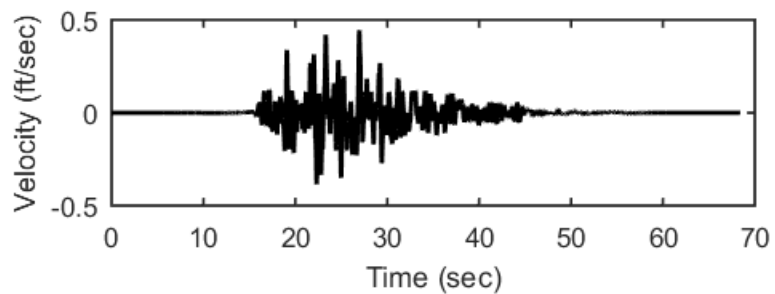
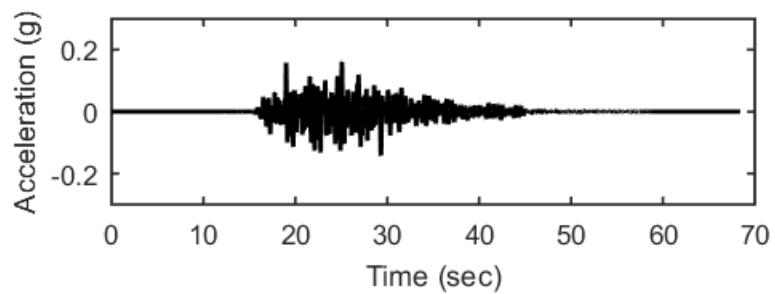
### Profile outputs for Motion: FEE2



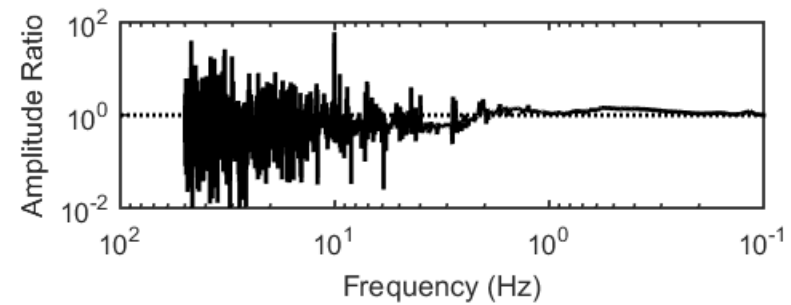
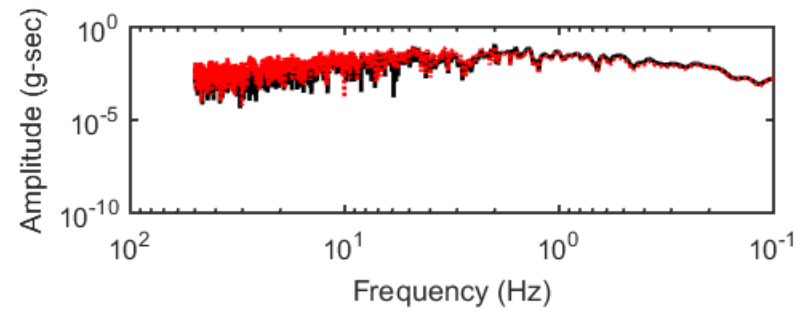
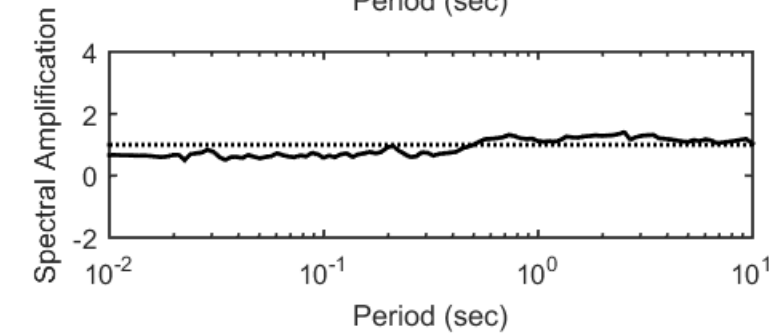
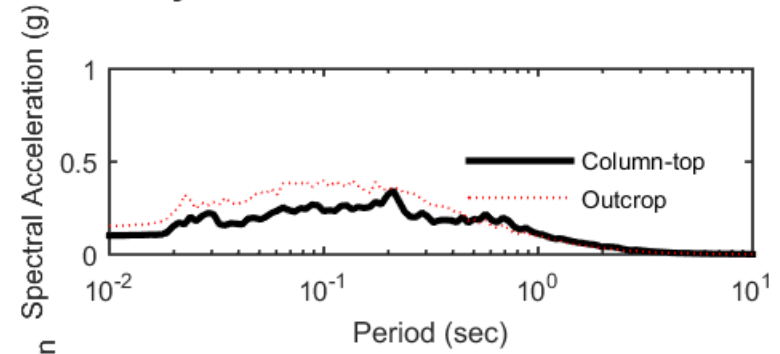
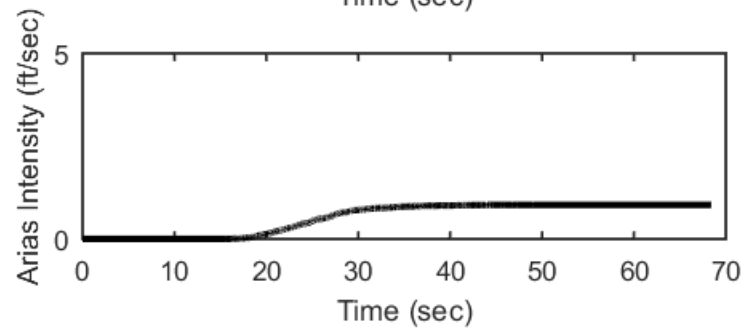
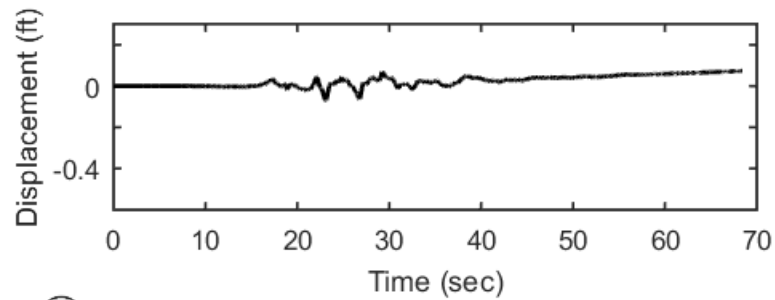
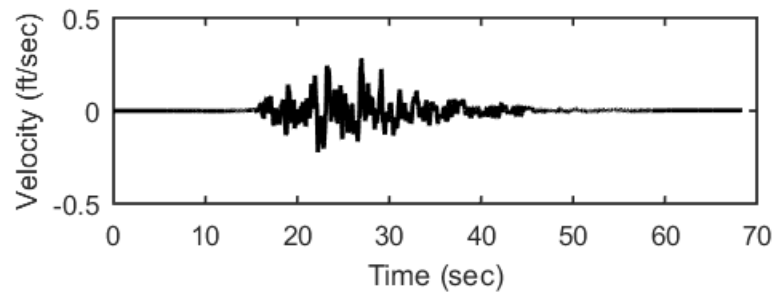
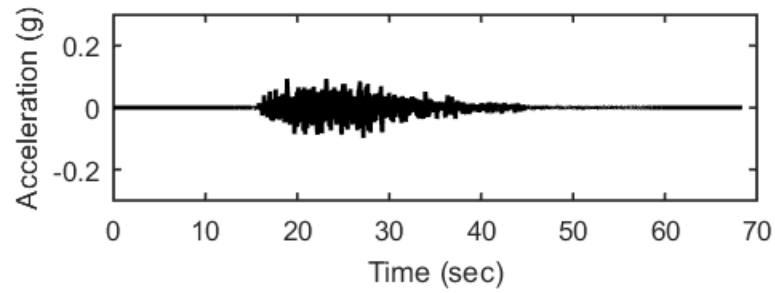
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3

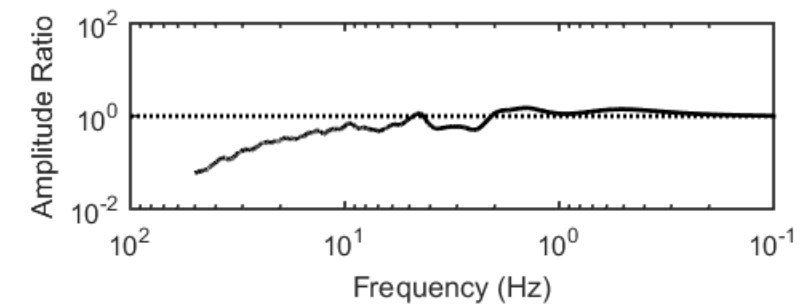
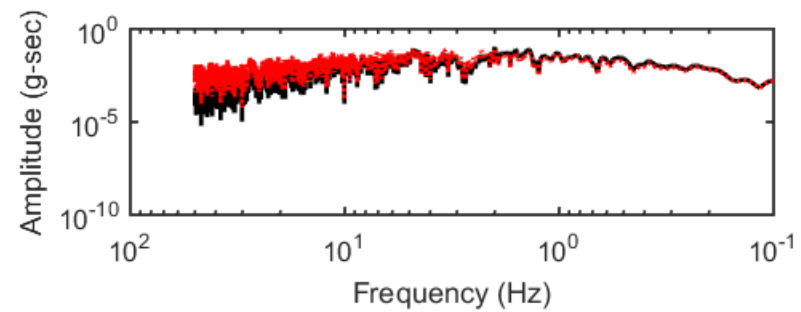
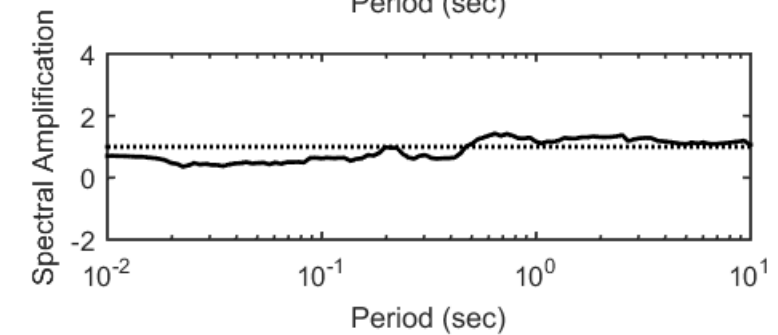
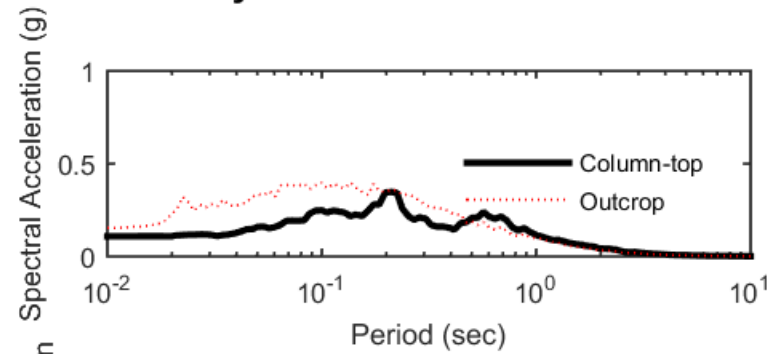
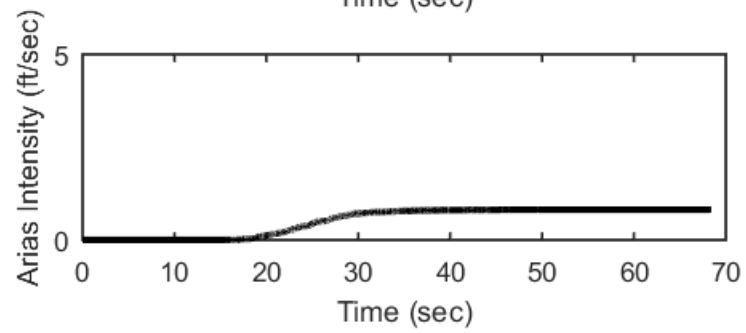
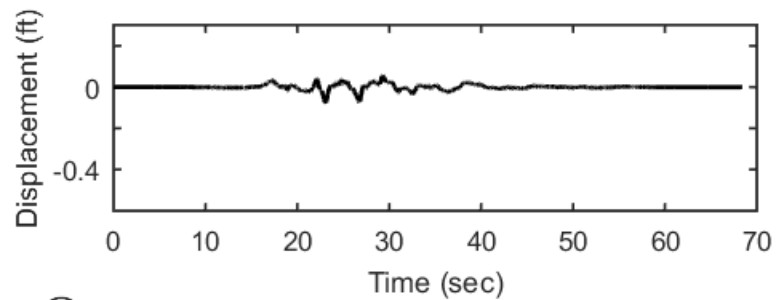
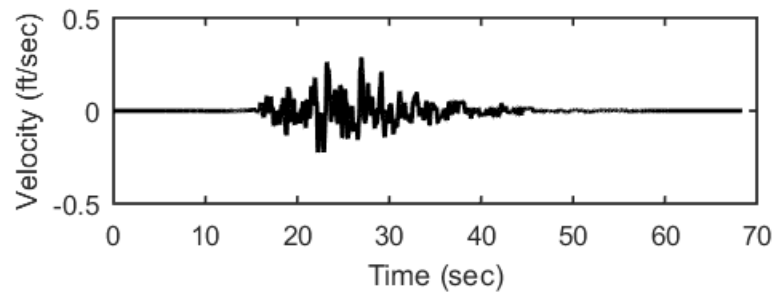
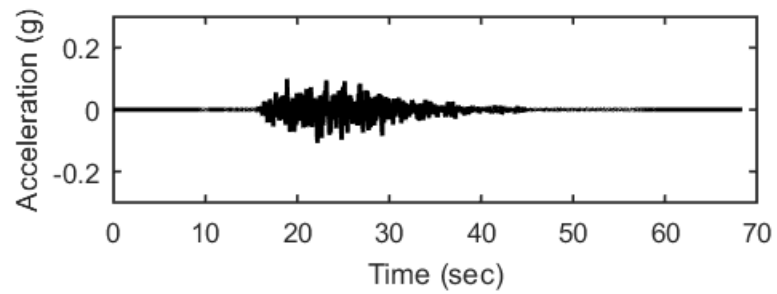


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3

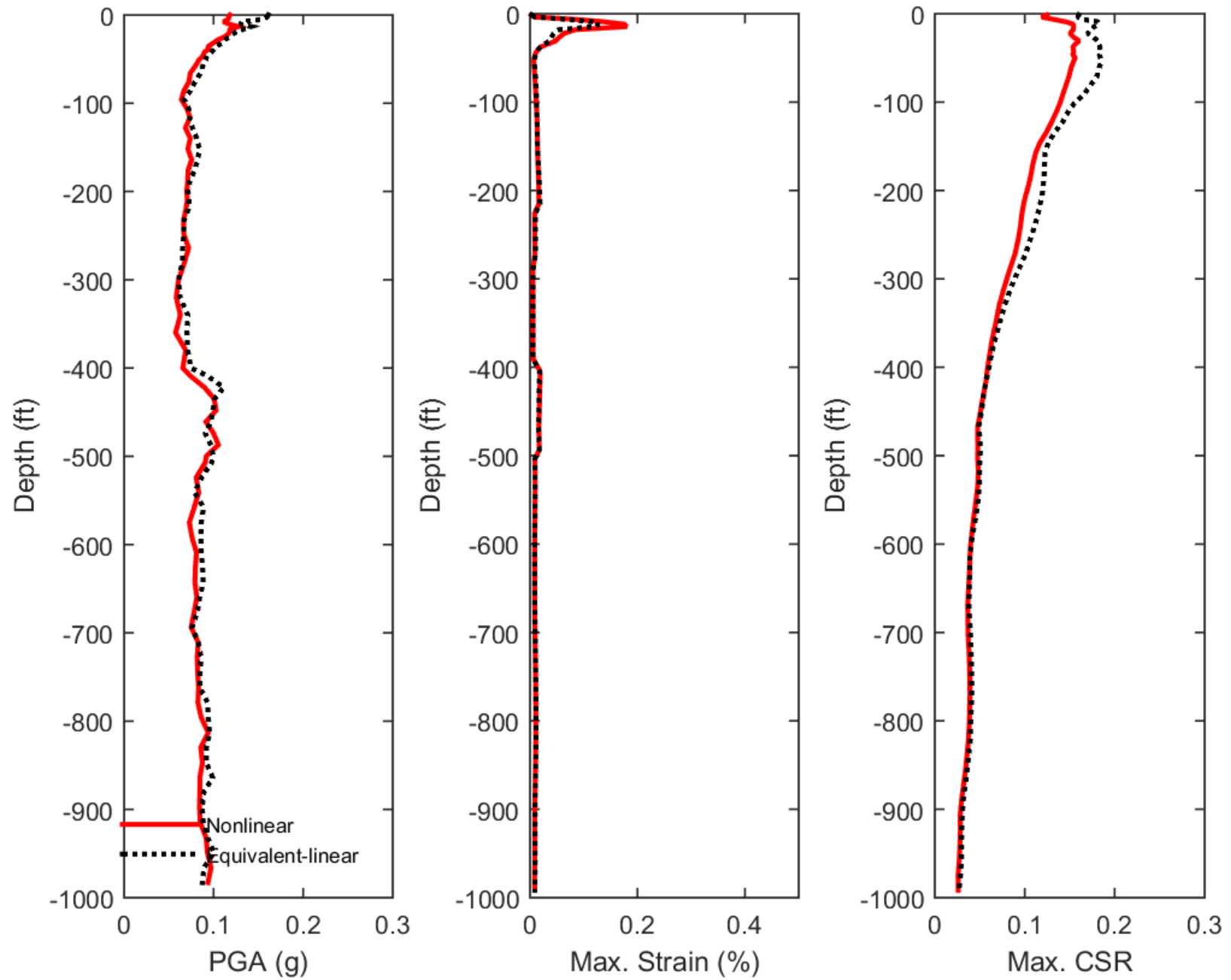




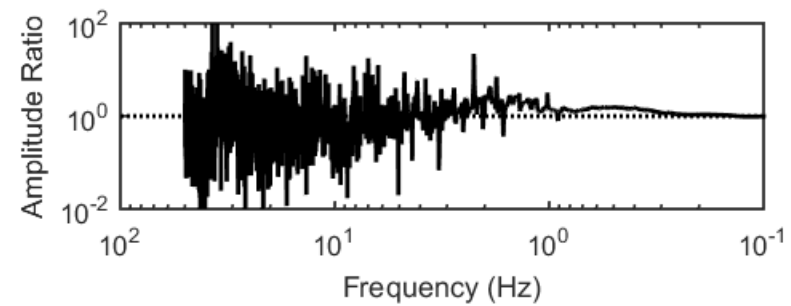
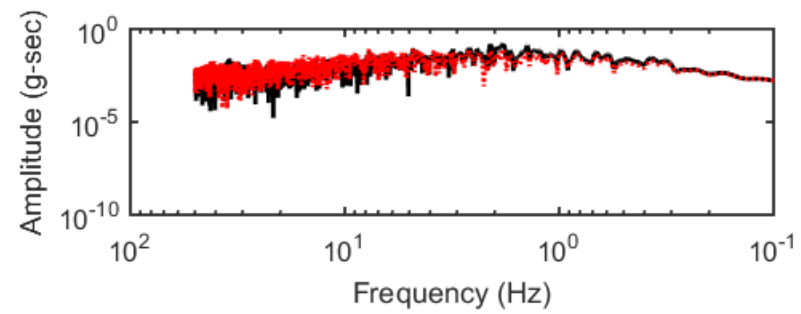
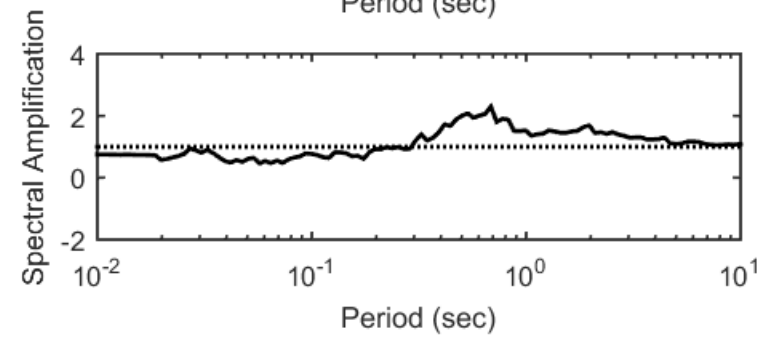
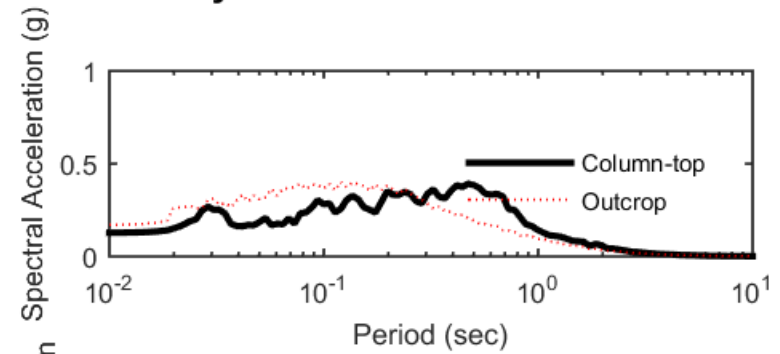
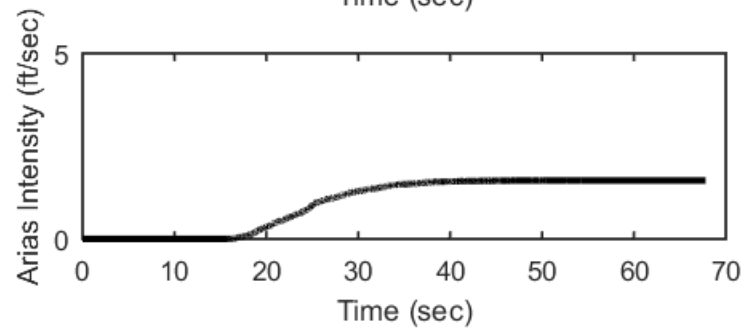
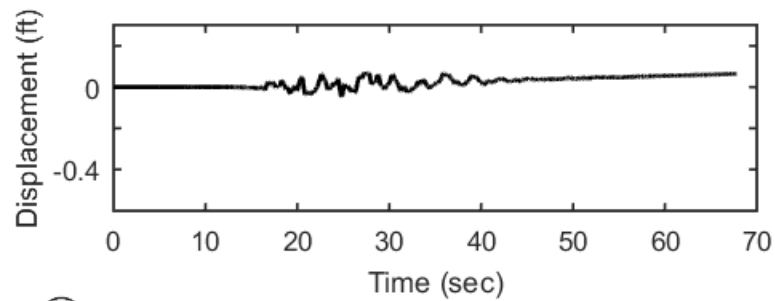
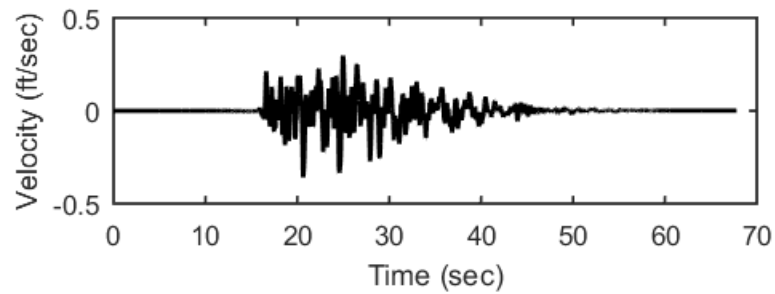
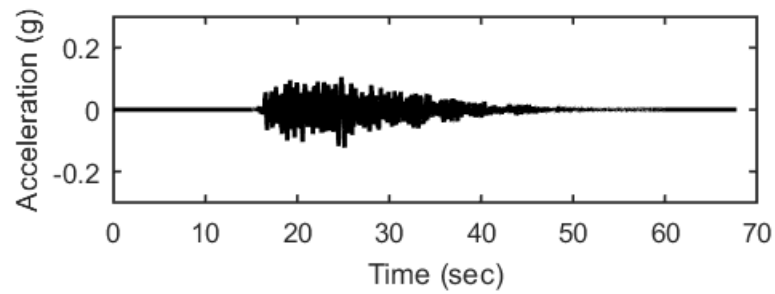
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



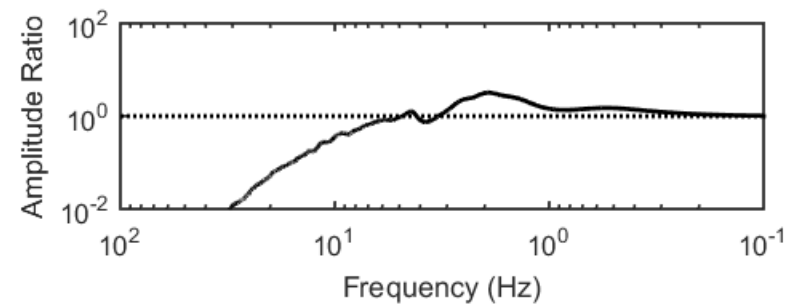
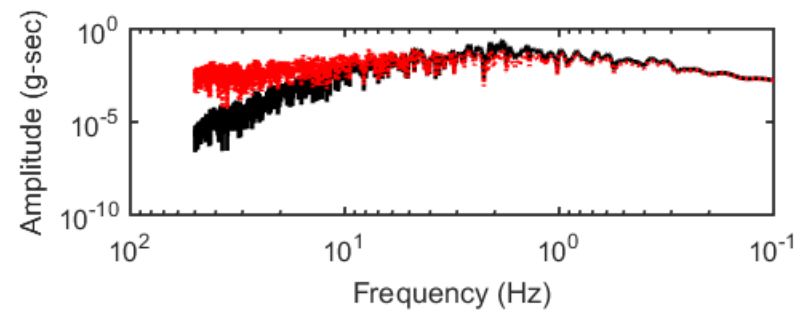
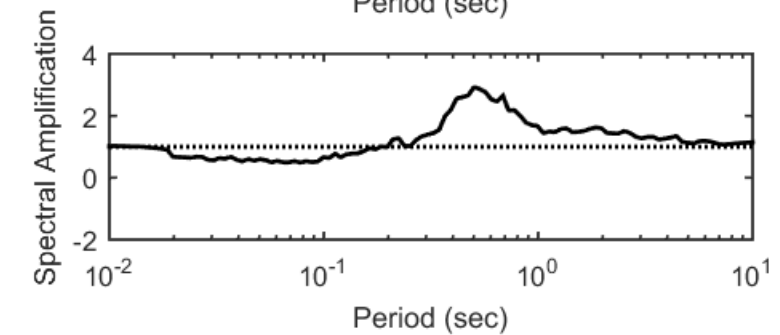
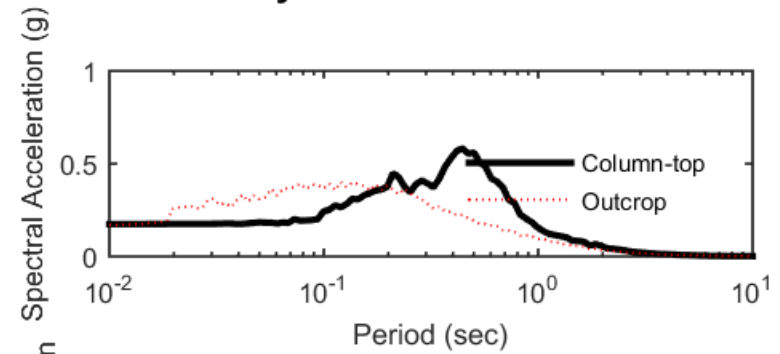
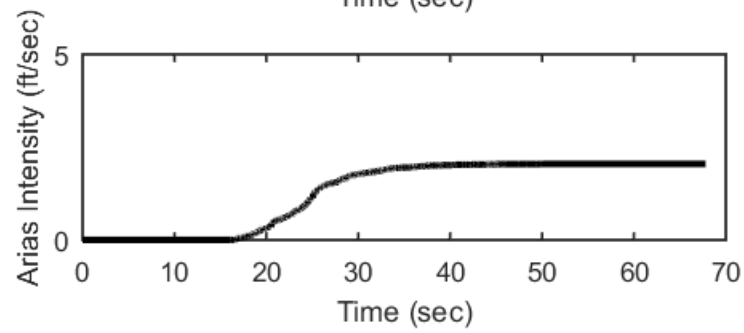
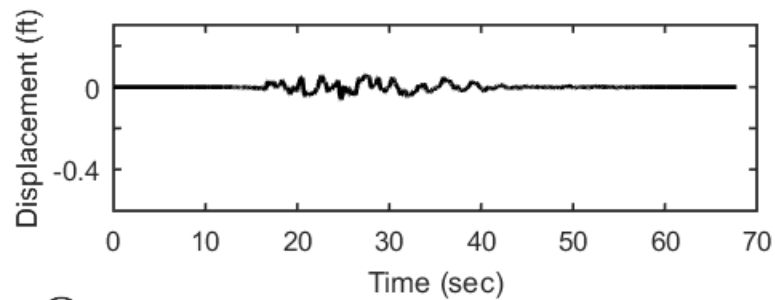
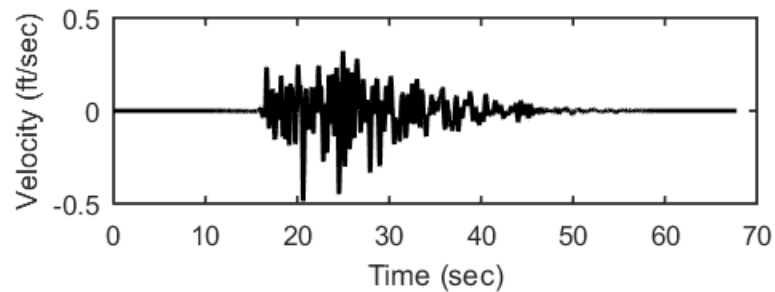
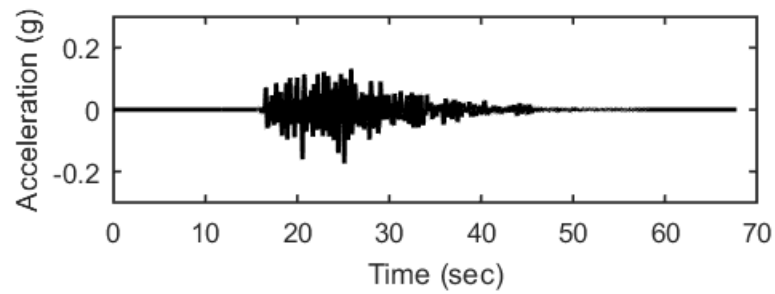
### Profile outputs for Motion: FEE3



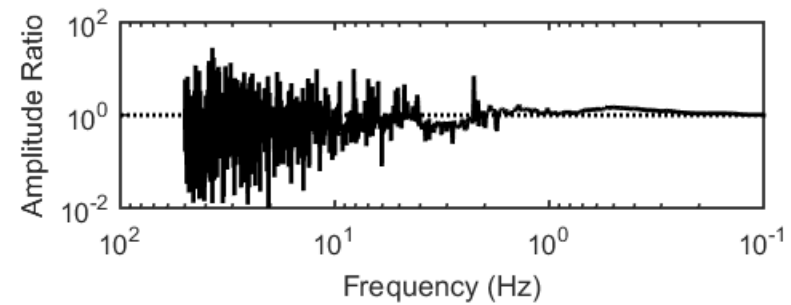
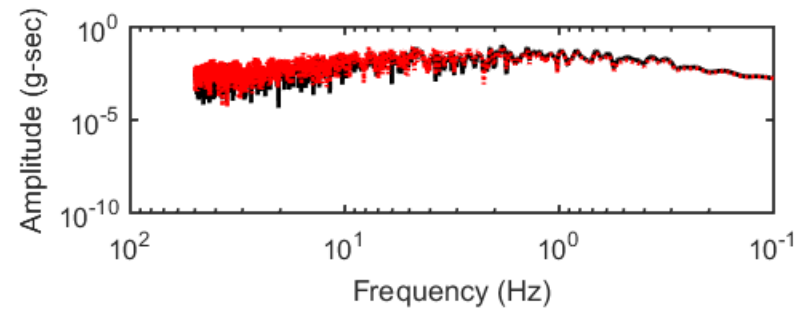
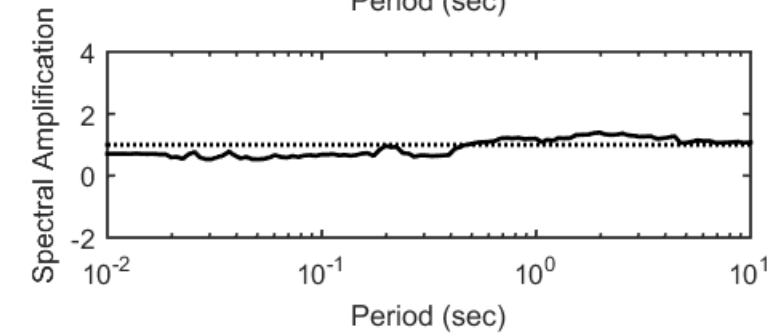
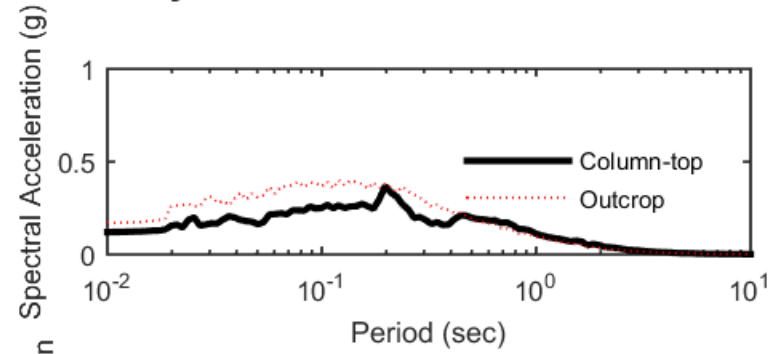
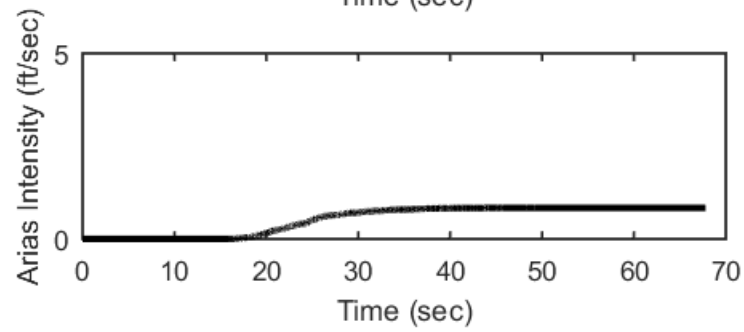
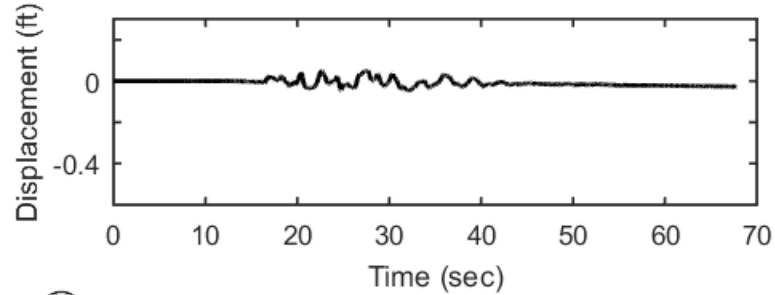
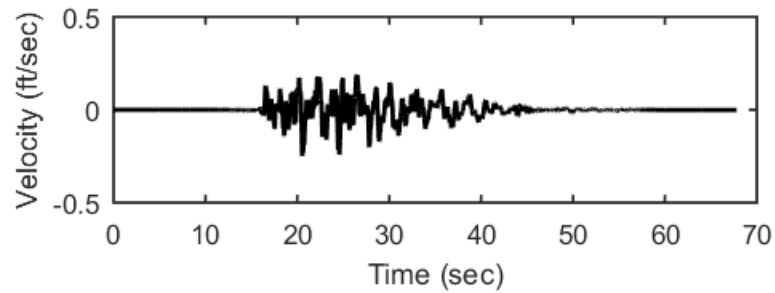
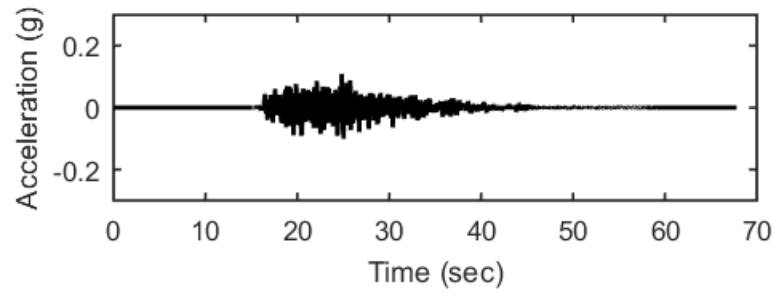
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



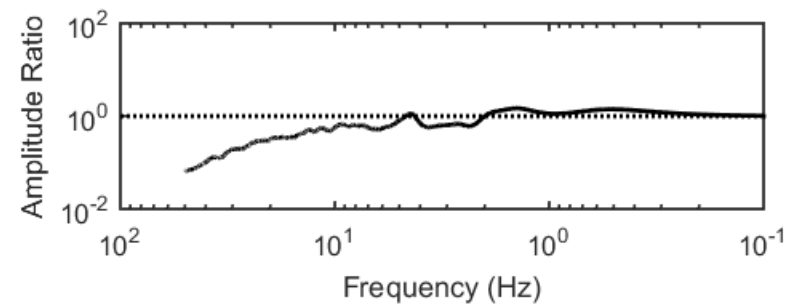
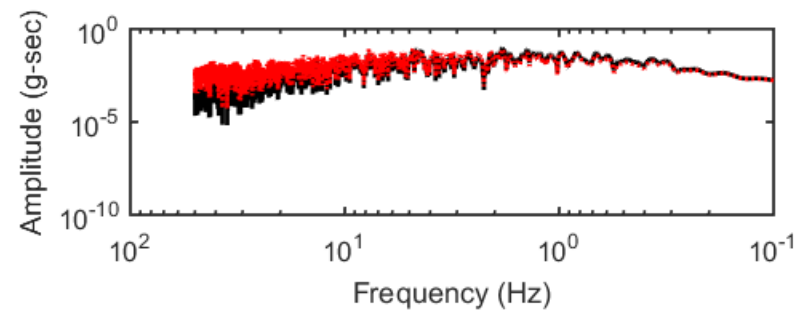
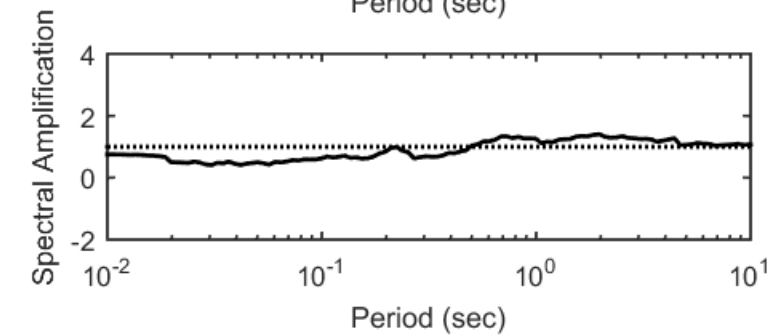
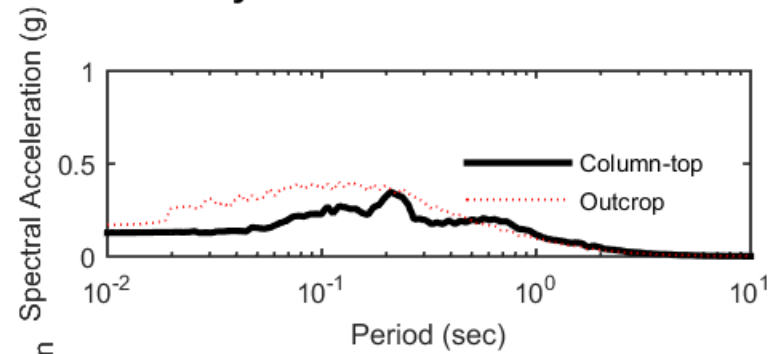
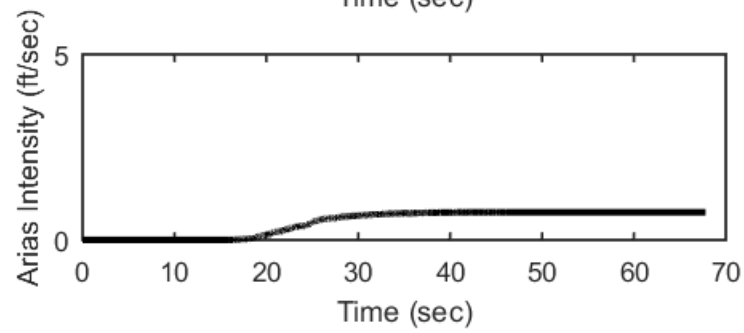
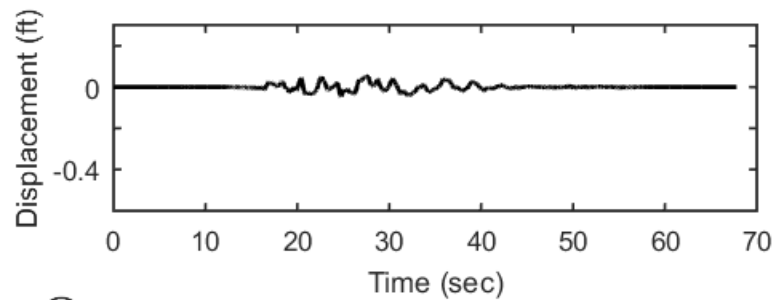
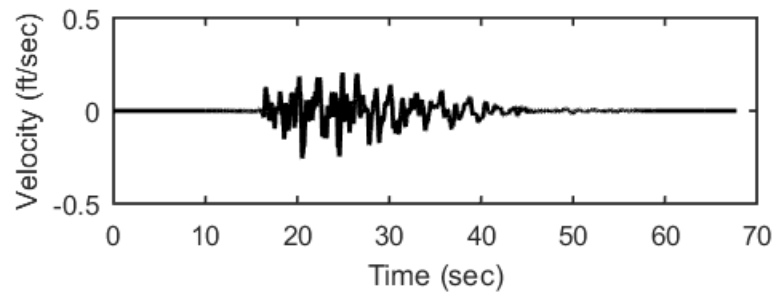
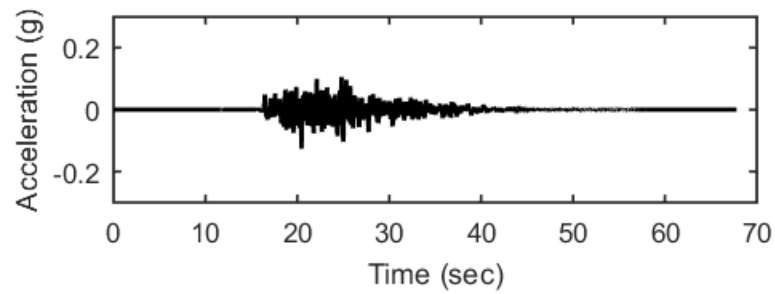
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



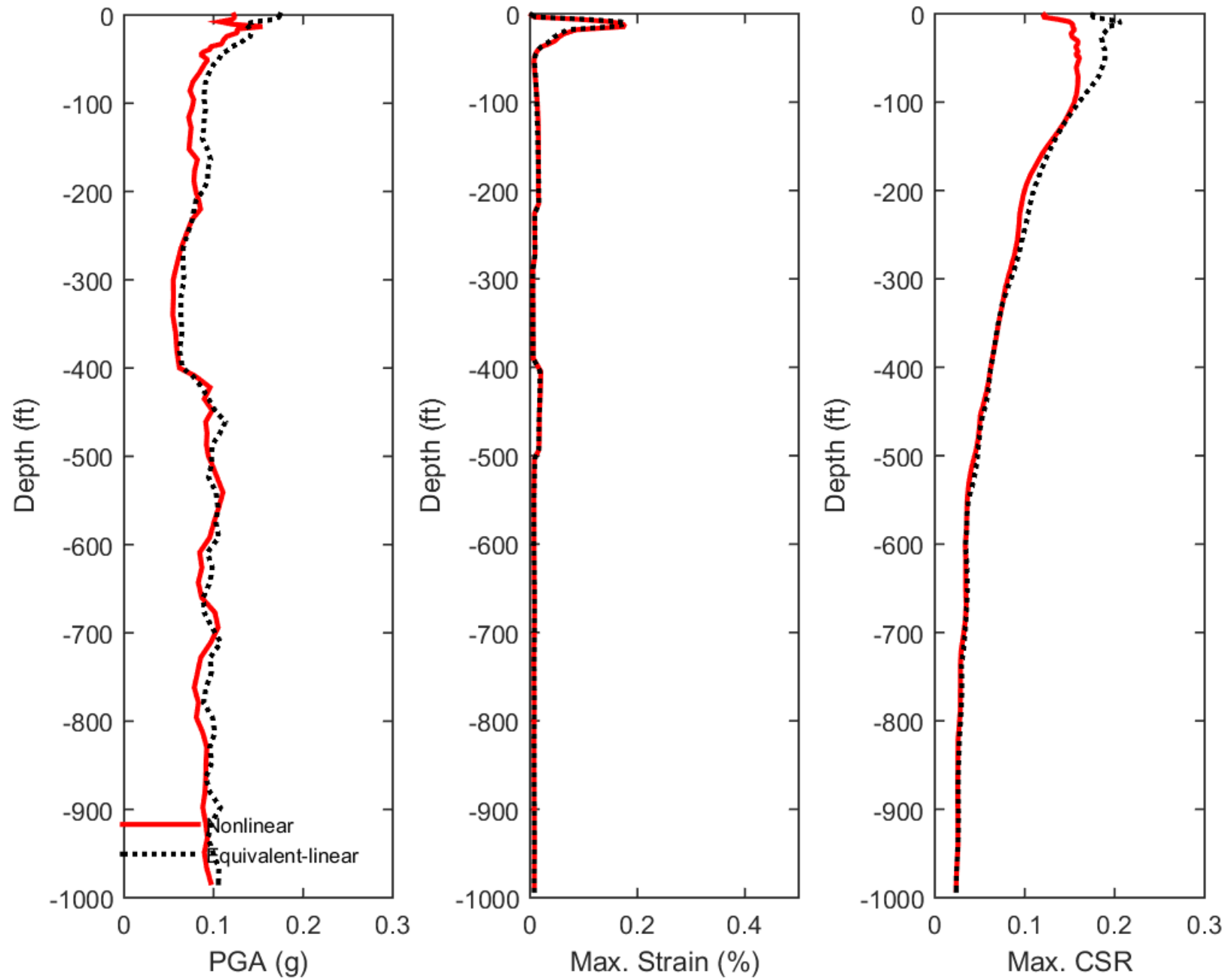
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



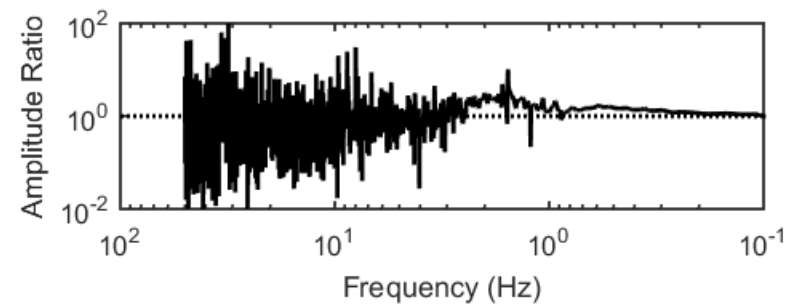
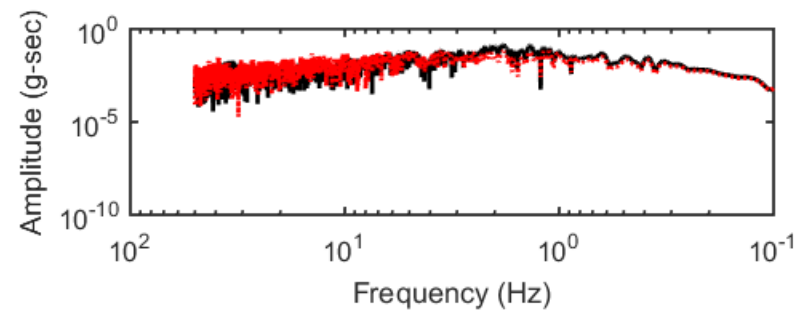
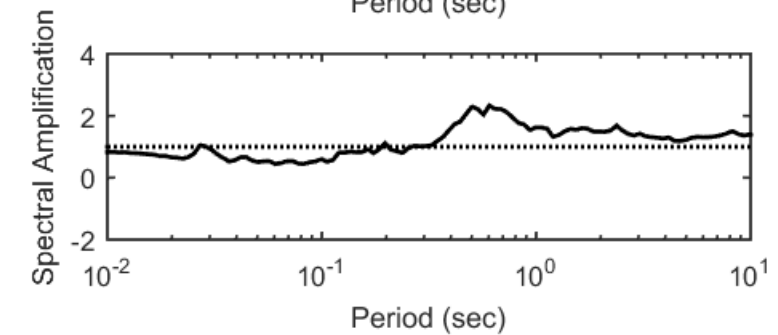
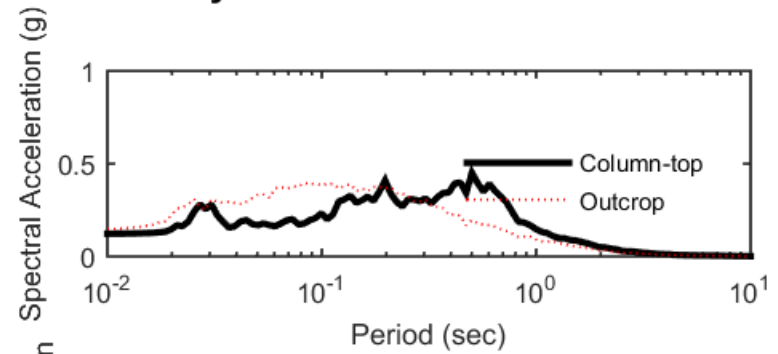
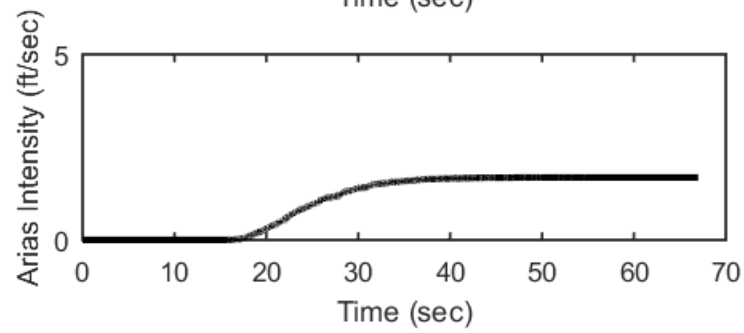
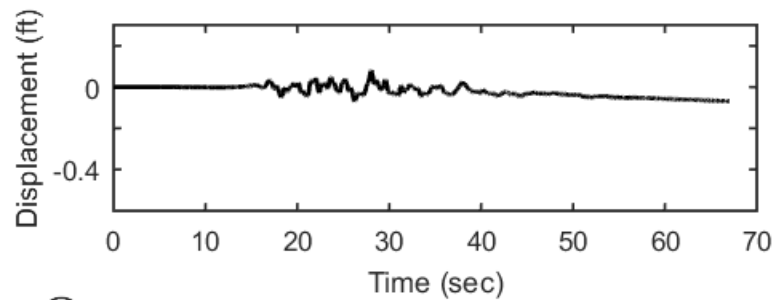
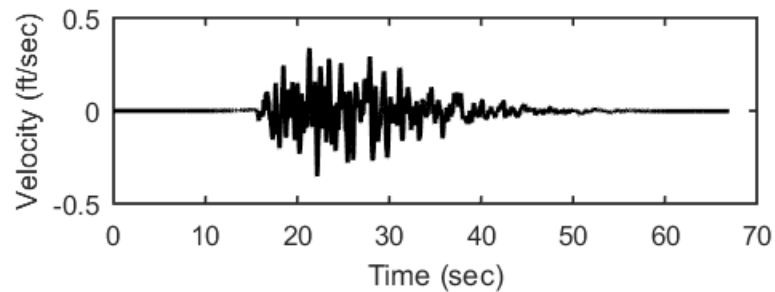
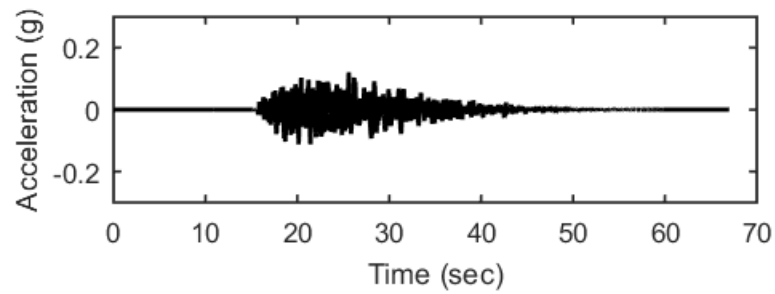
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



### Profile outputs for Motion: FEE4

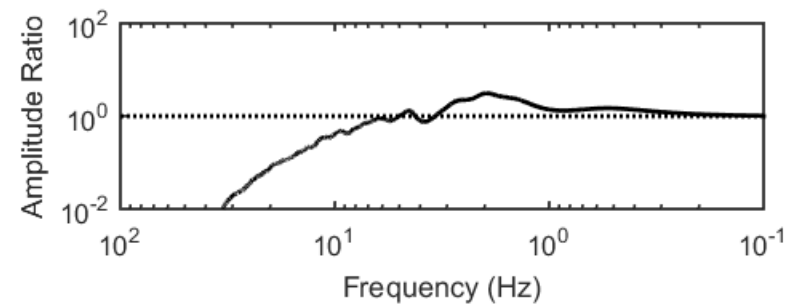
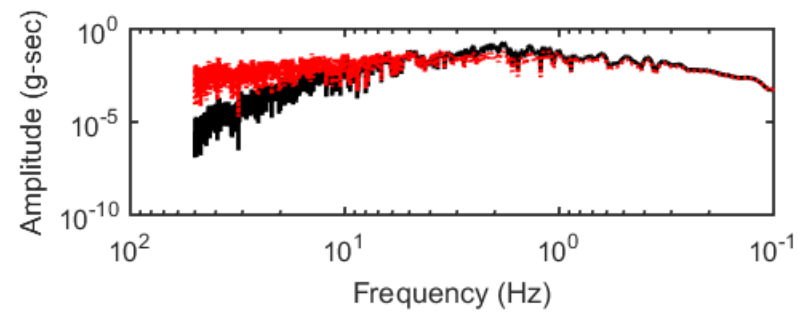
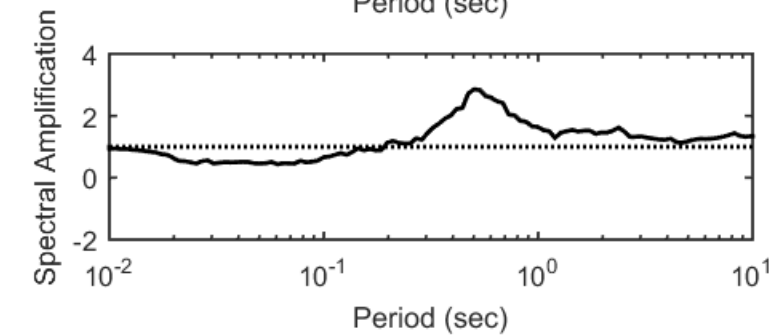
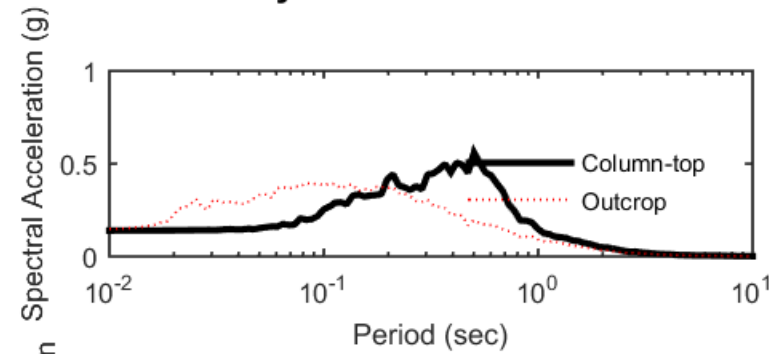
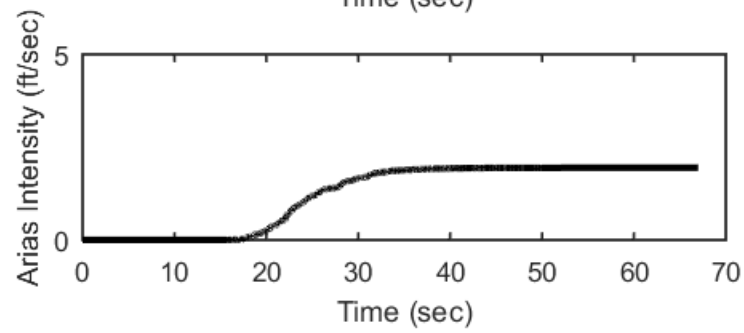
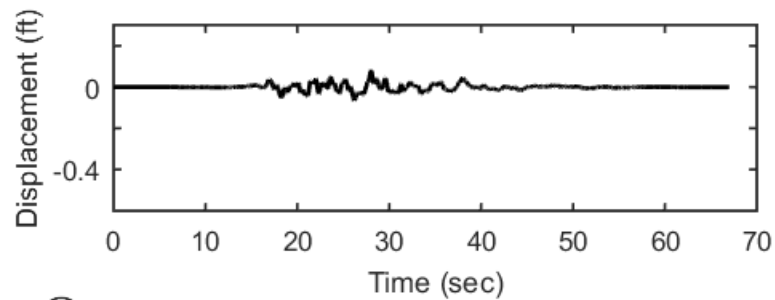
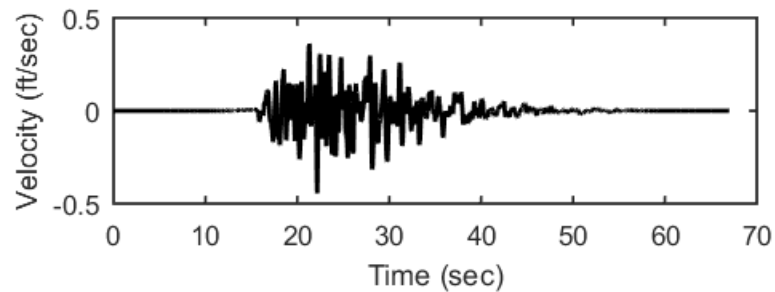
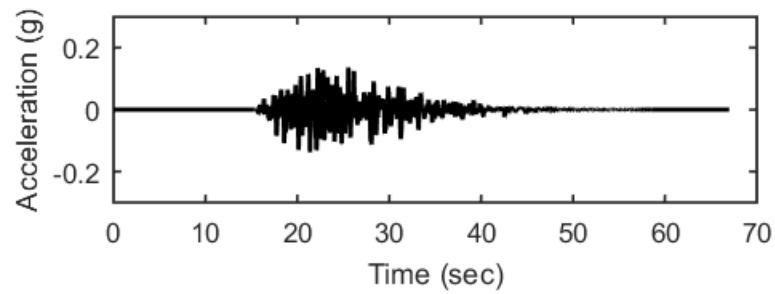


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5

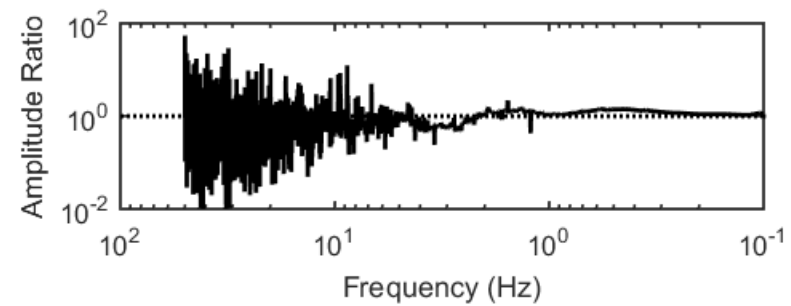
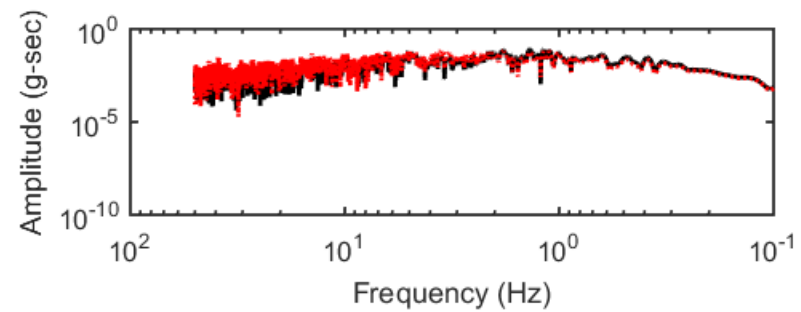
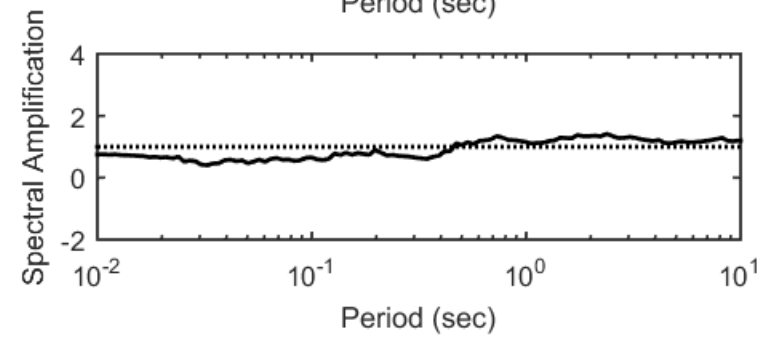
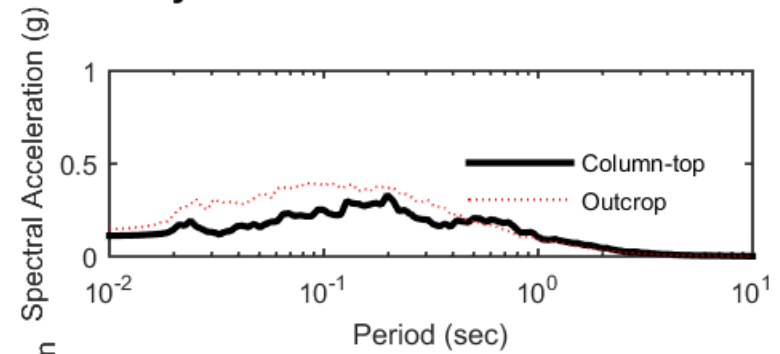
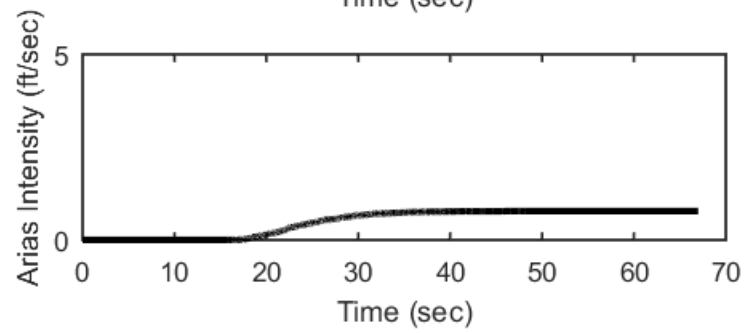
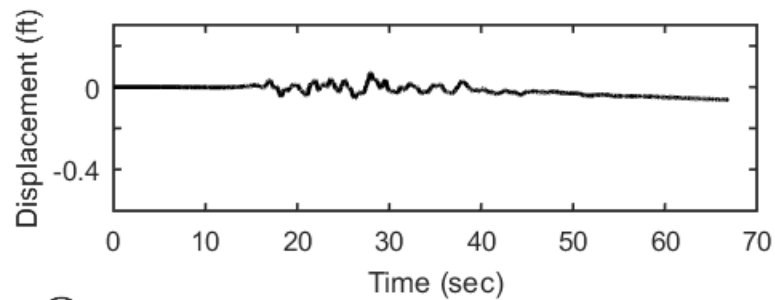
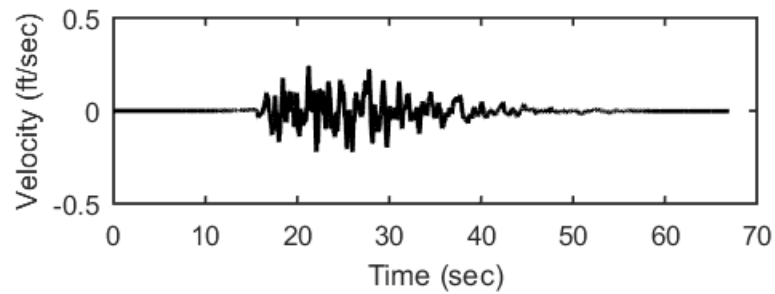
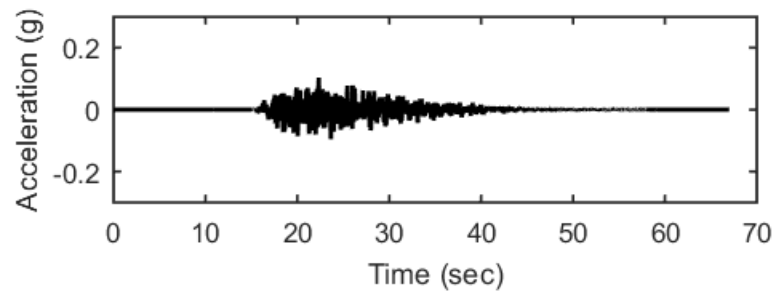




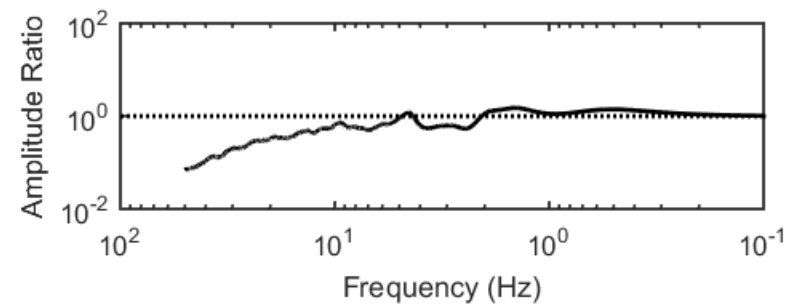
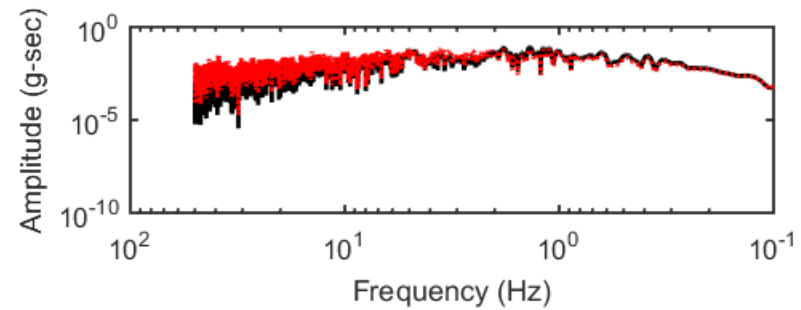
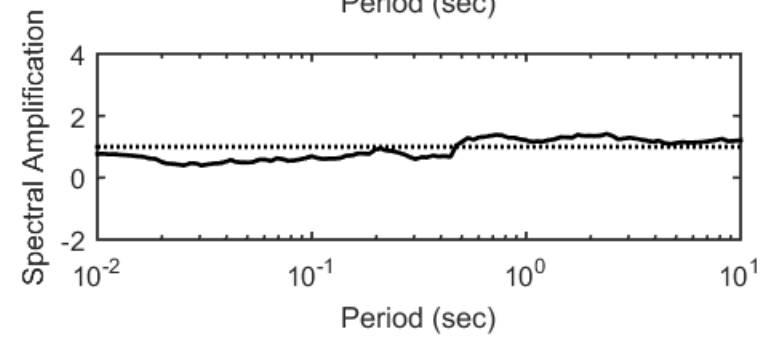
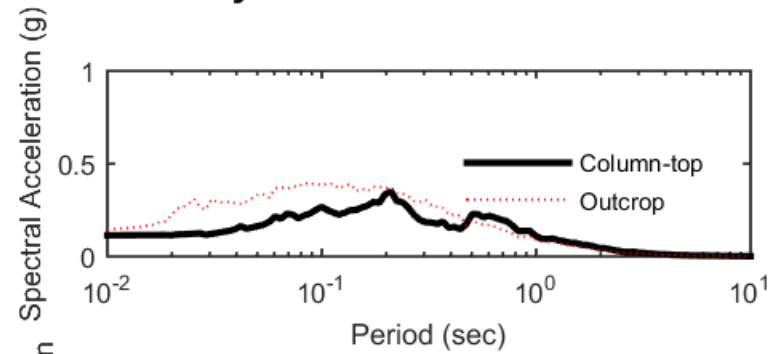
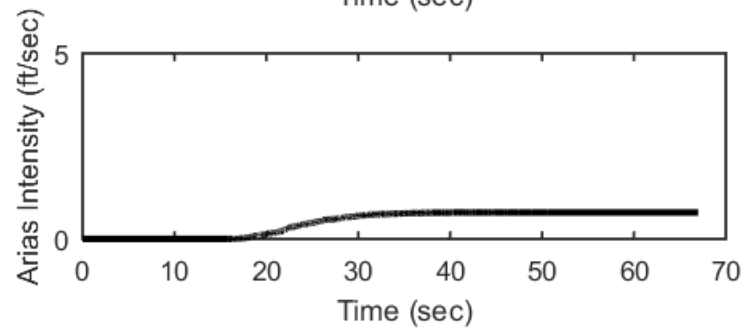
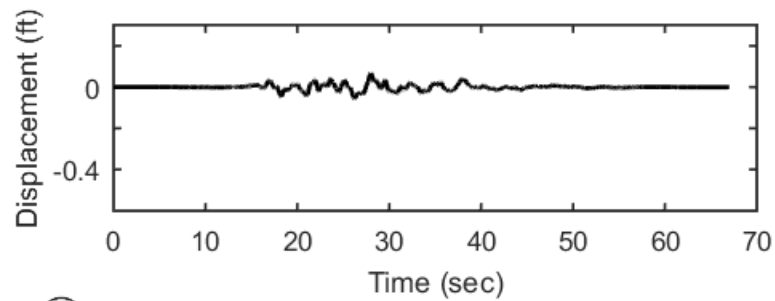
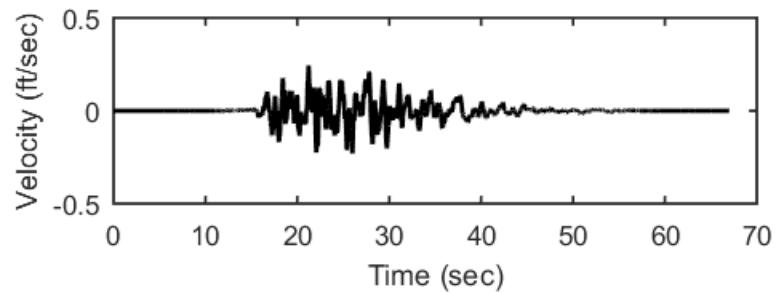
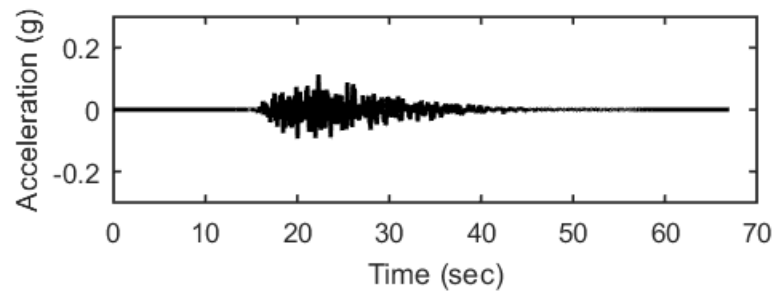
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



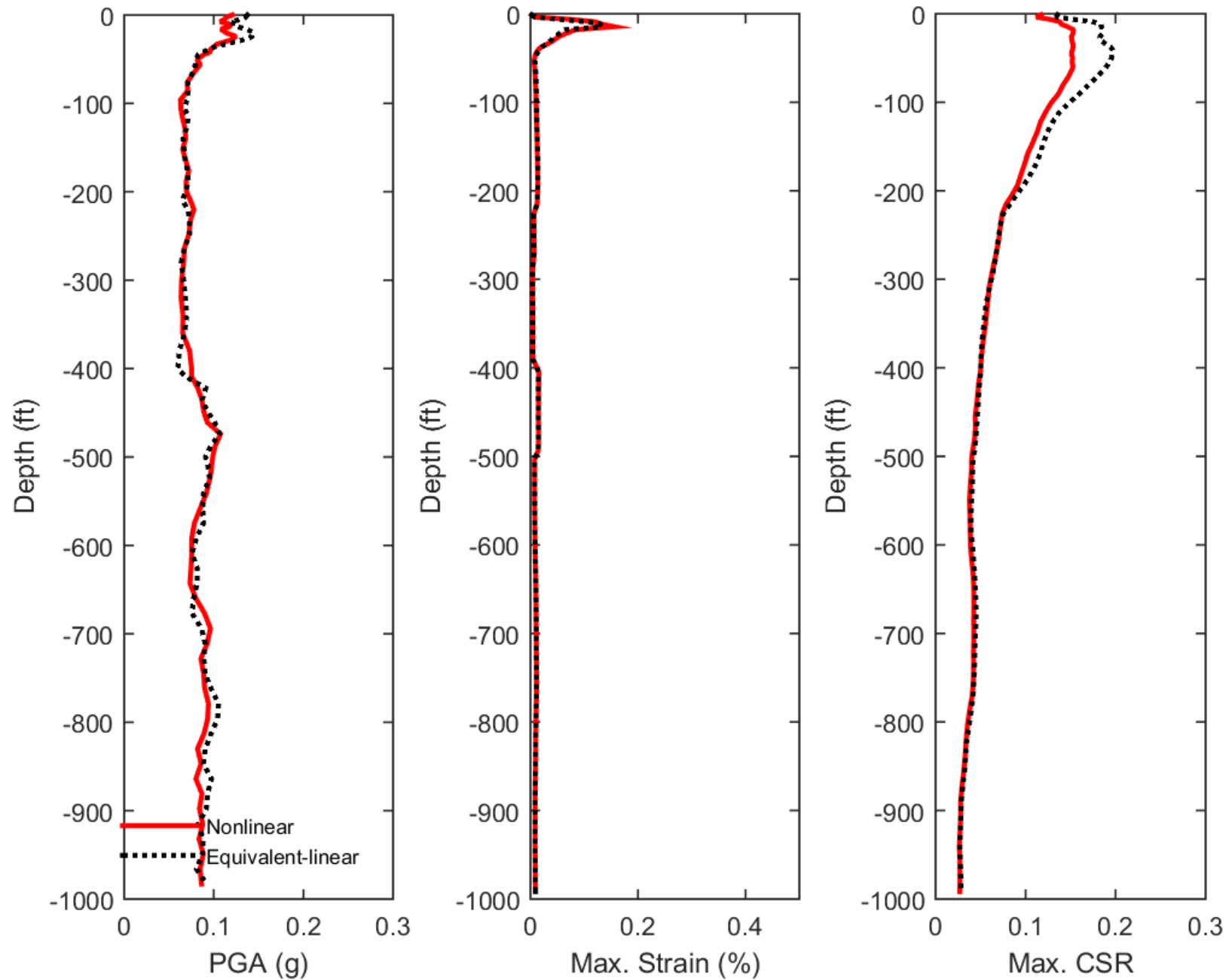
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



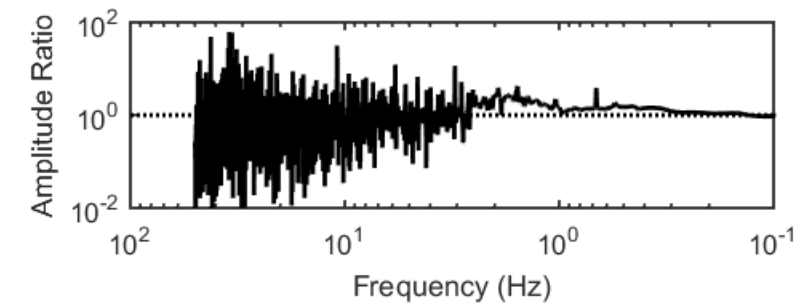
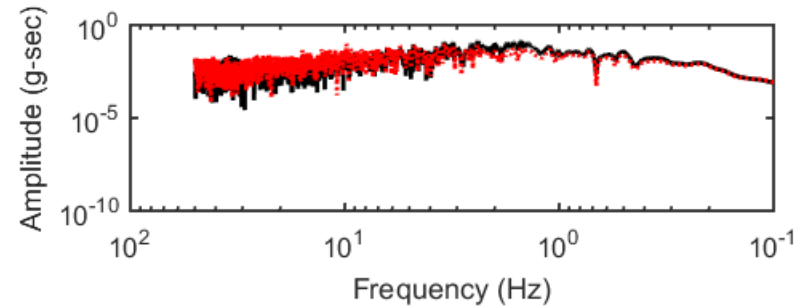
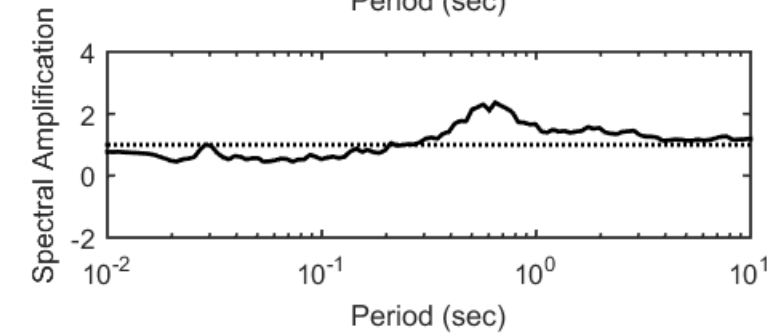
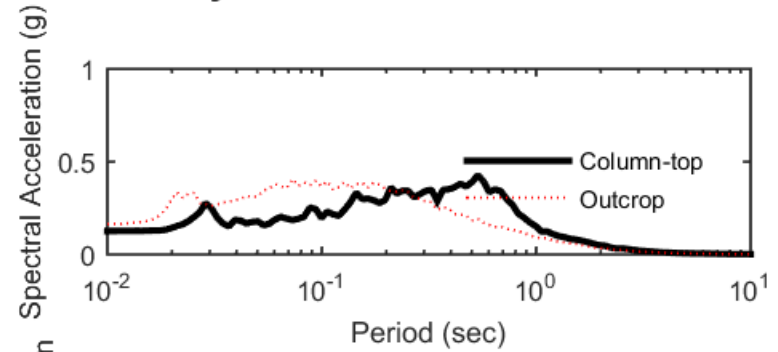
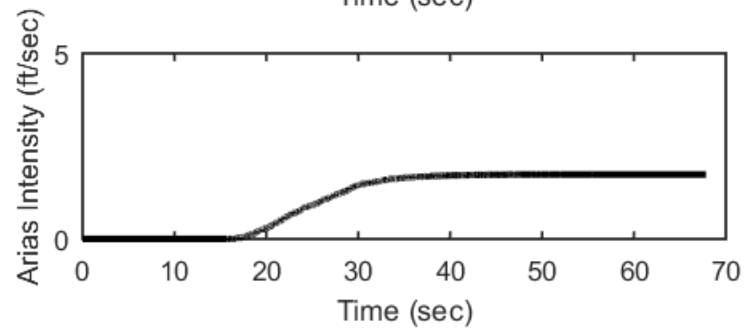
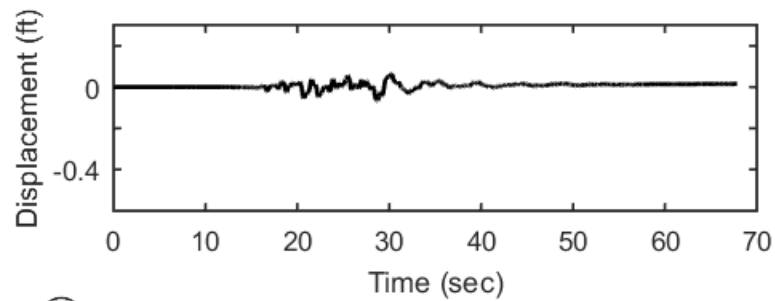
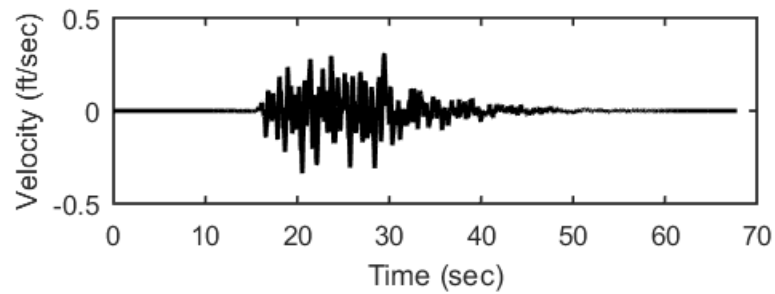
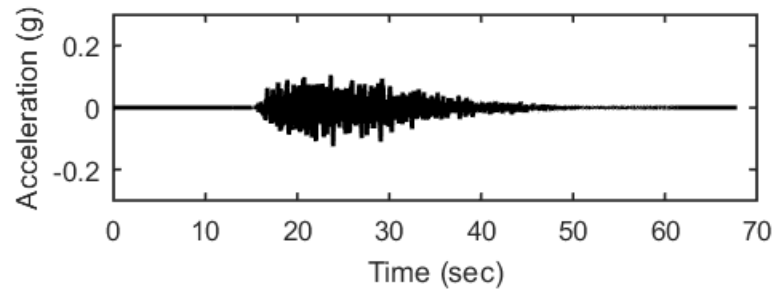
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



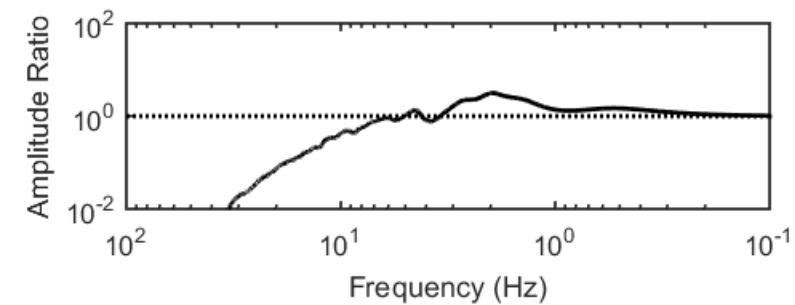
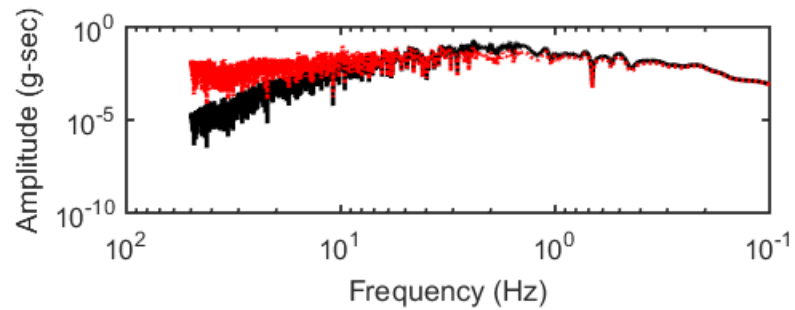
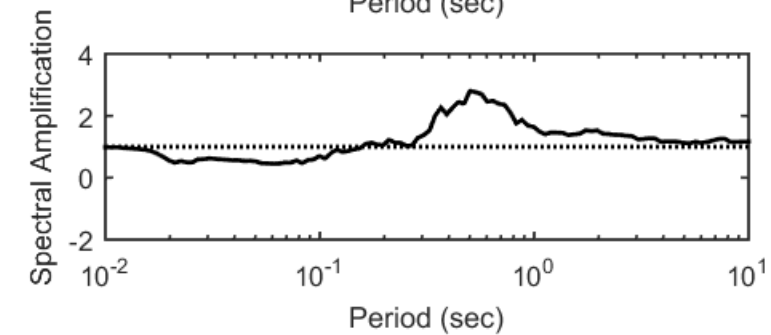
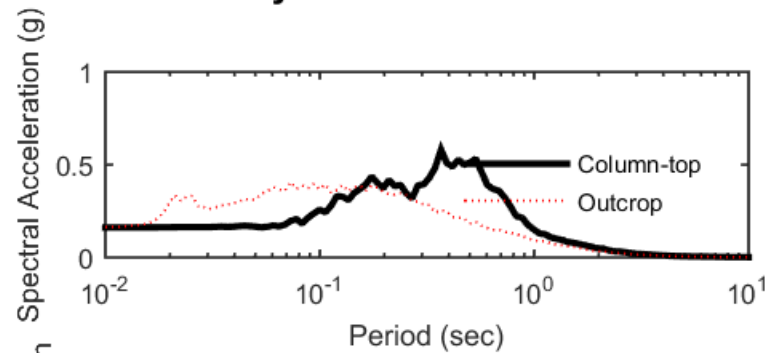
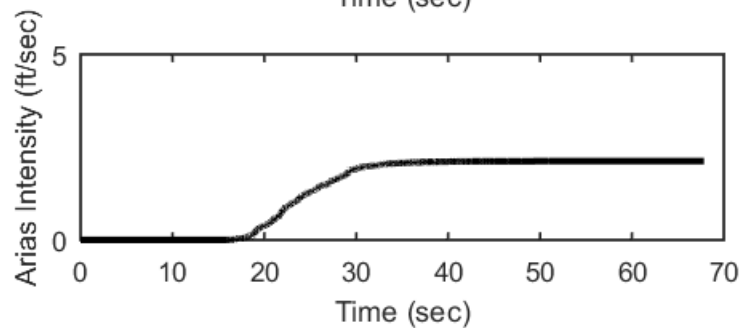
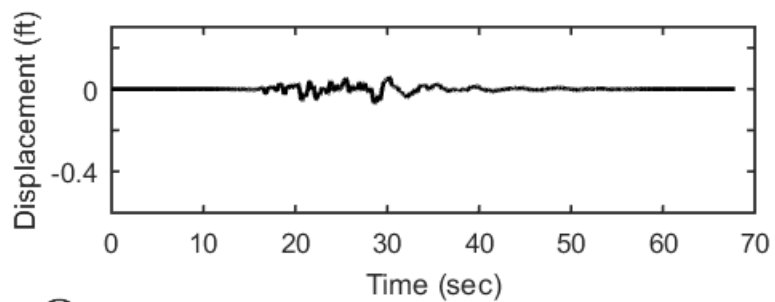
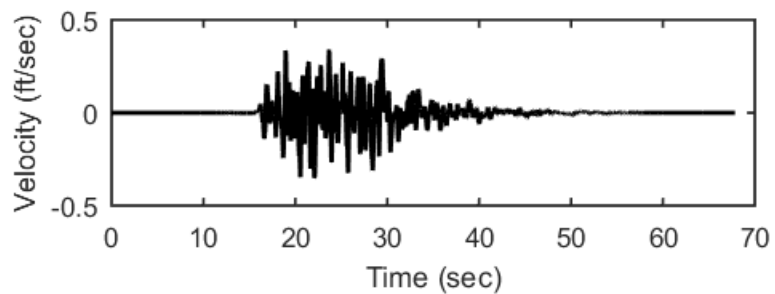
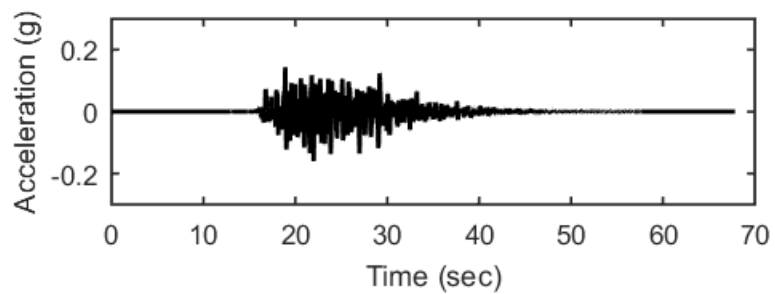
### Profile outputs for Motion: FEE5



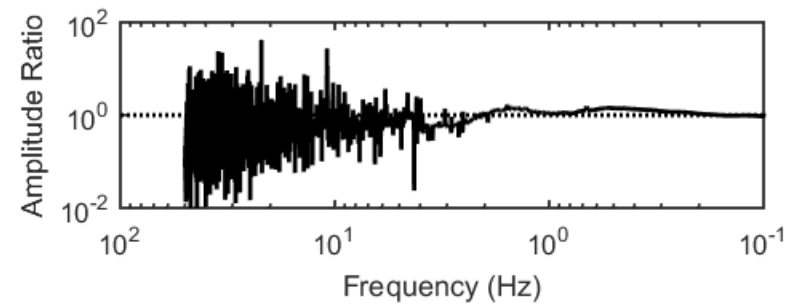
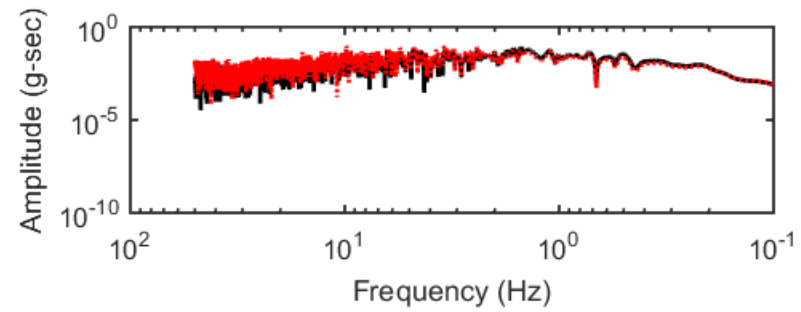
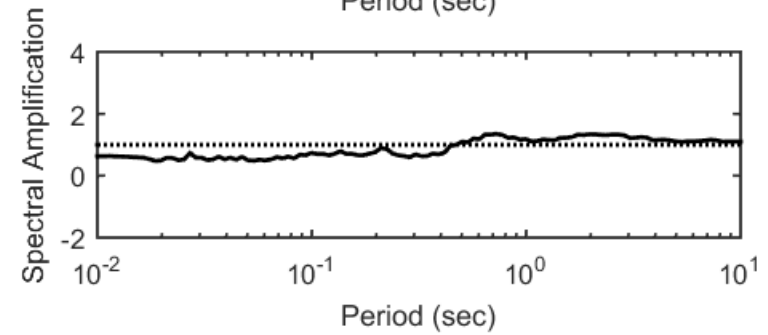
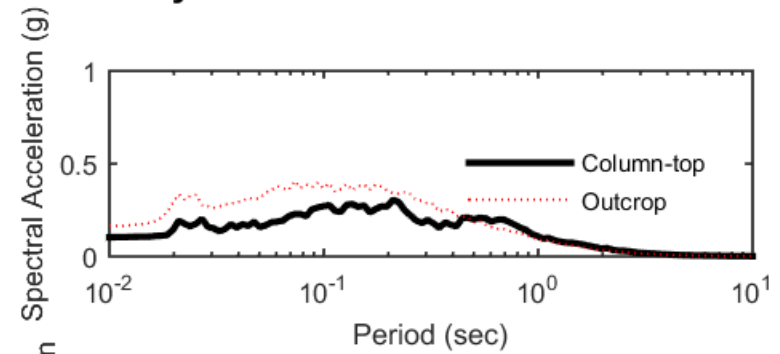
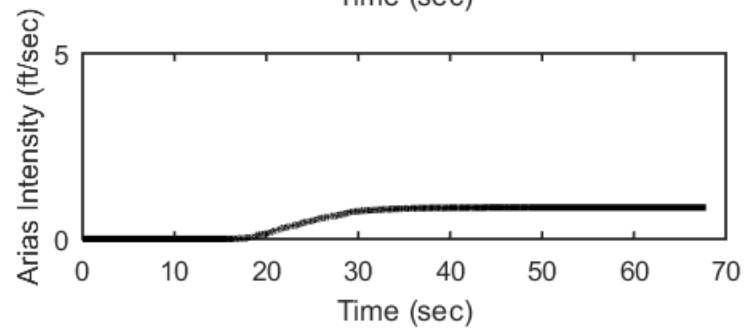
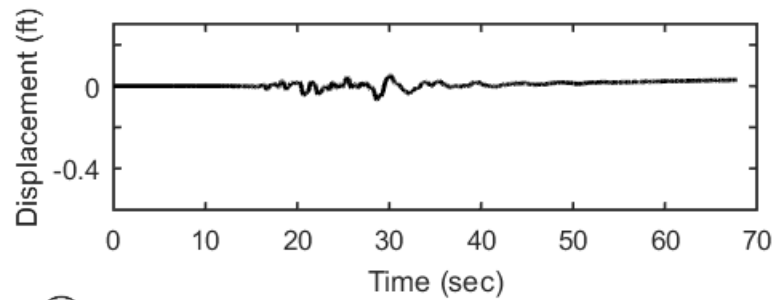
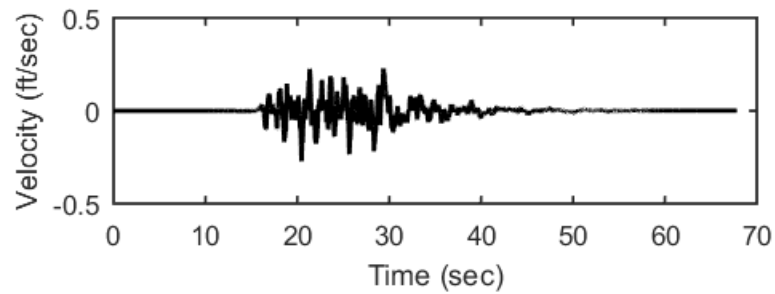
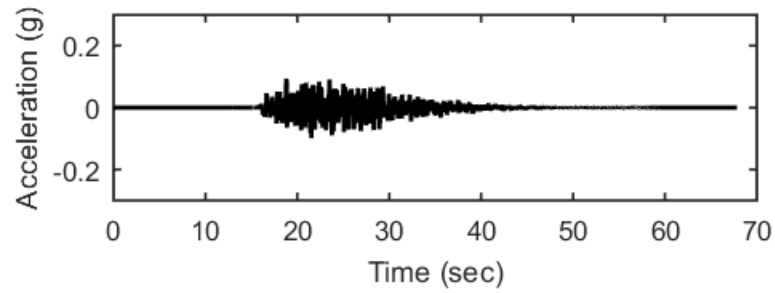
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



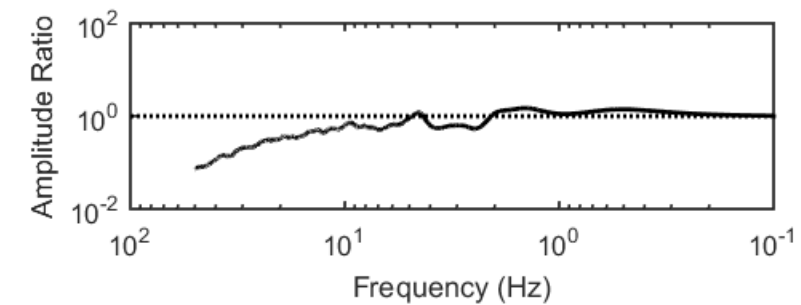
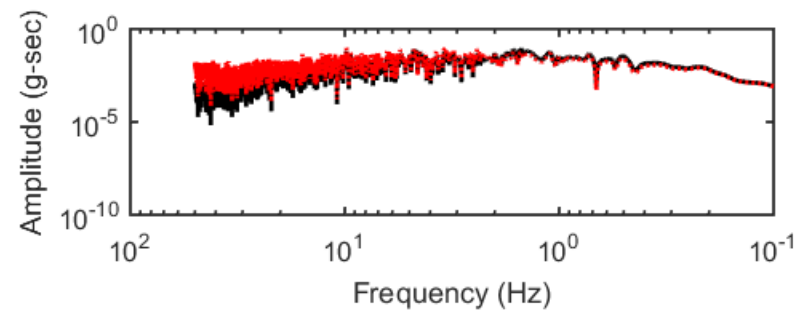
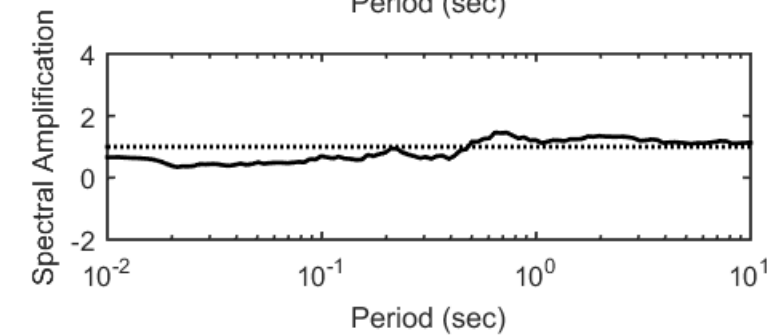
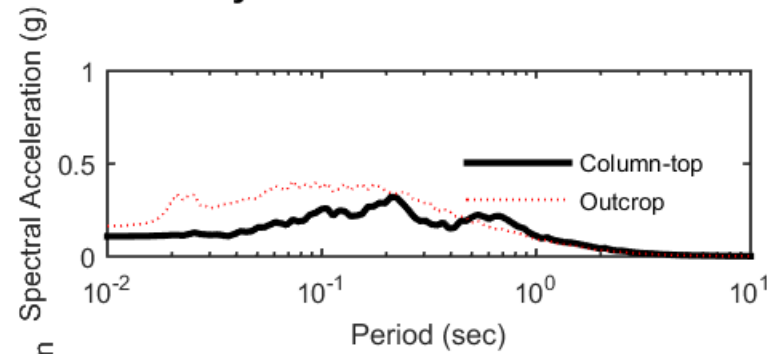
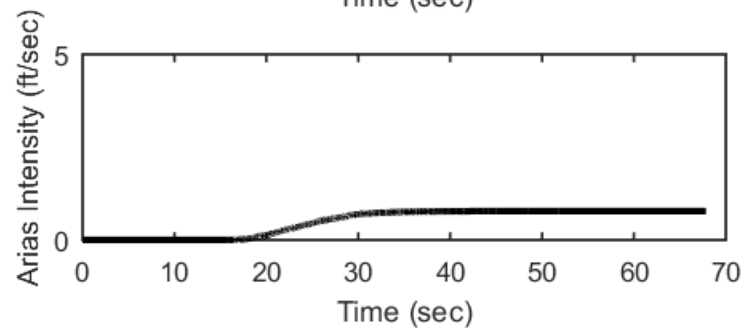
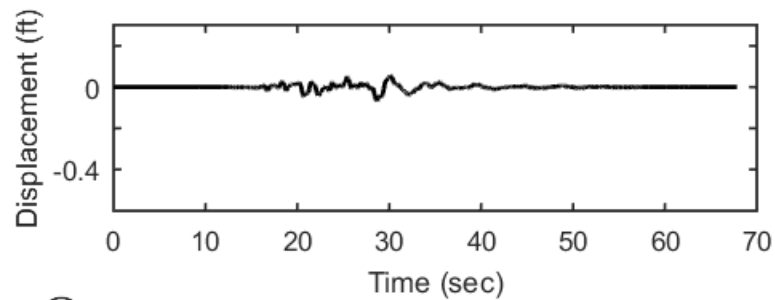
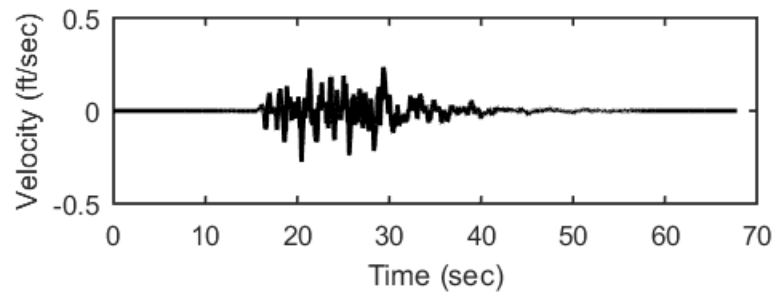
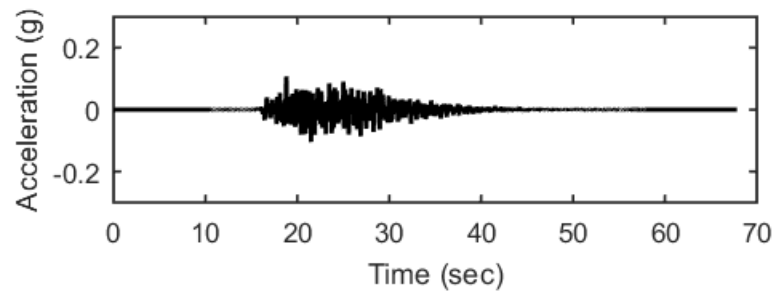
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6

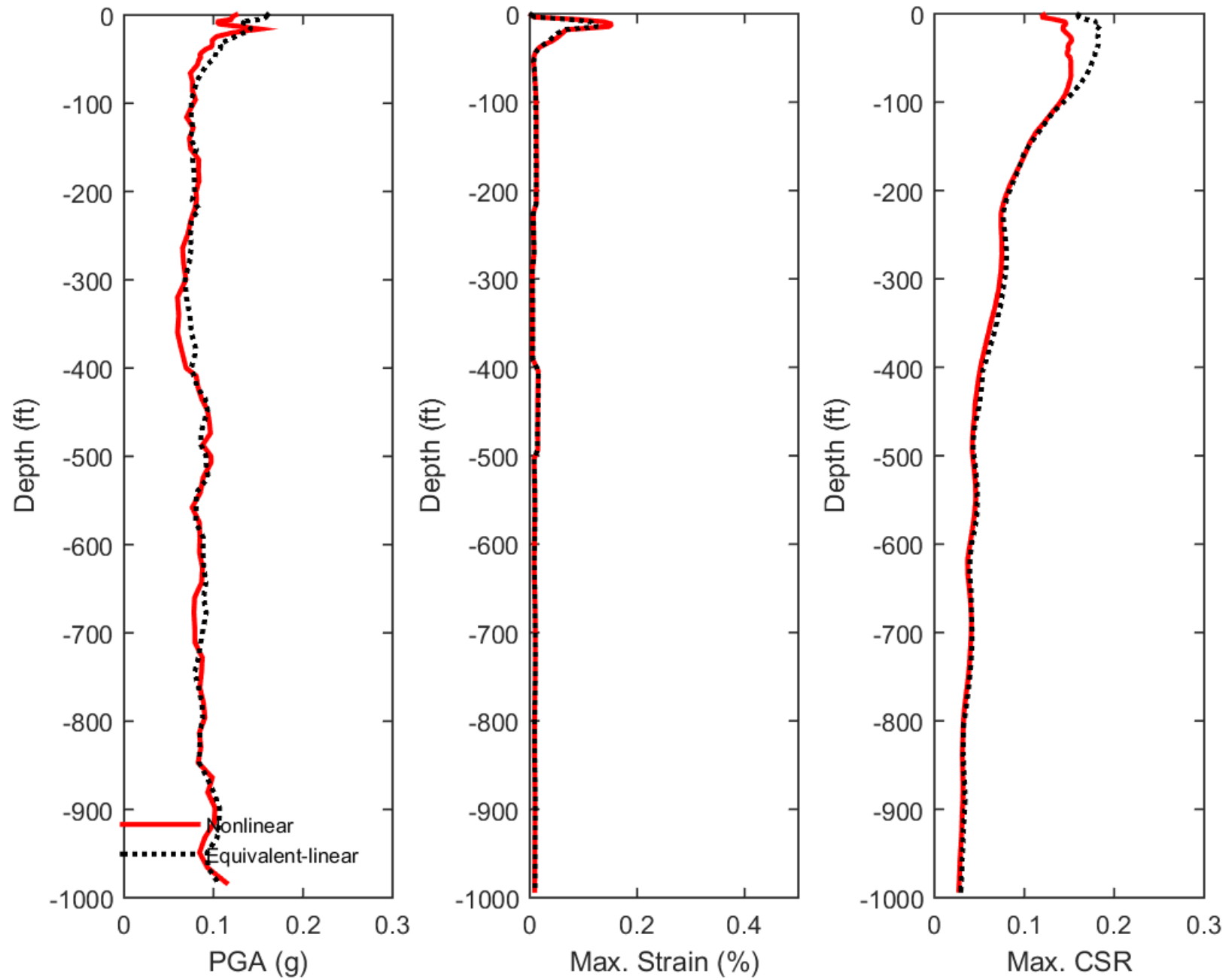


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6

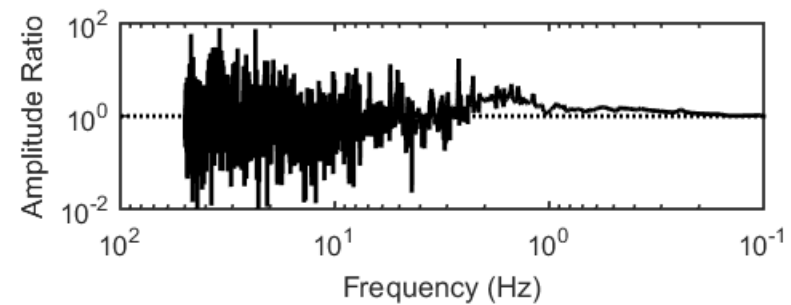
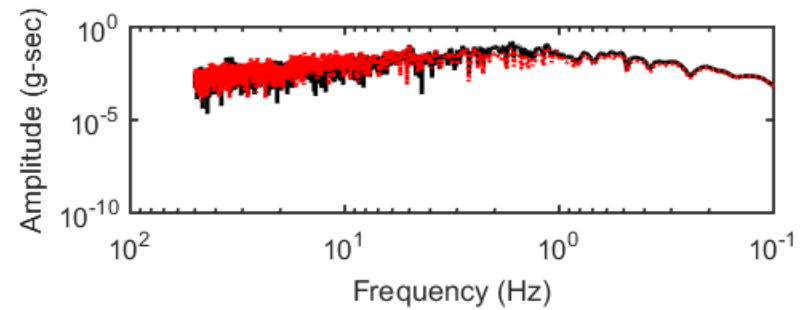
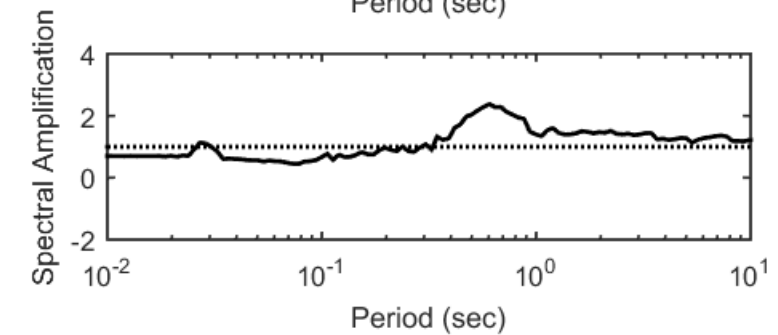
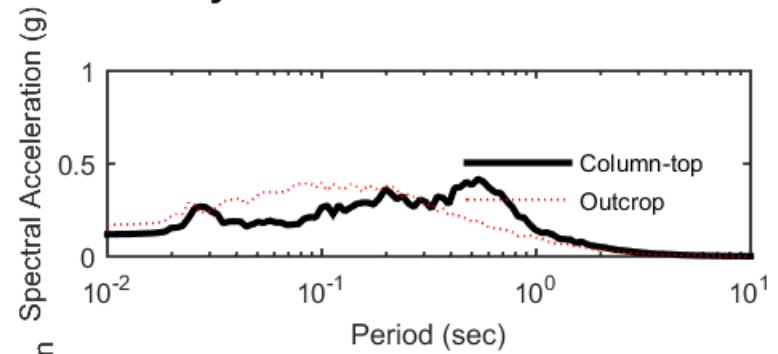
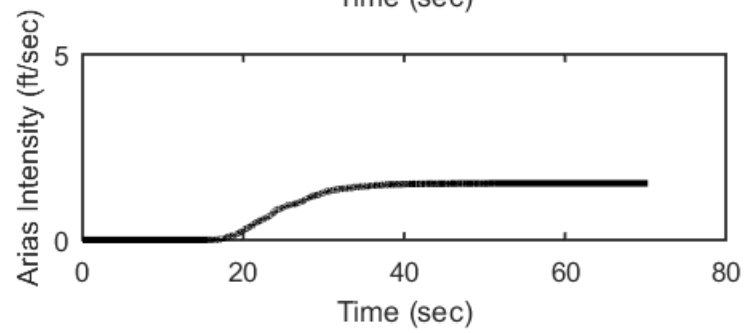
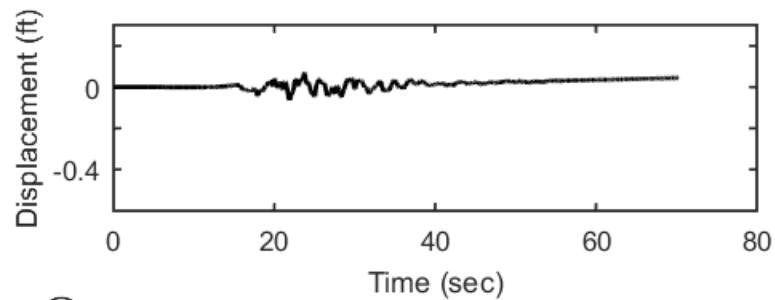
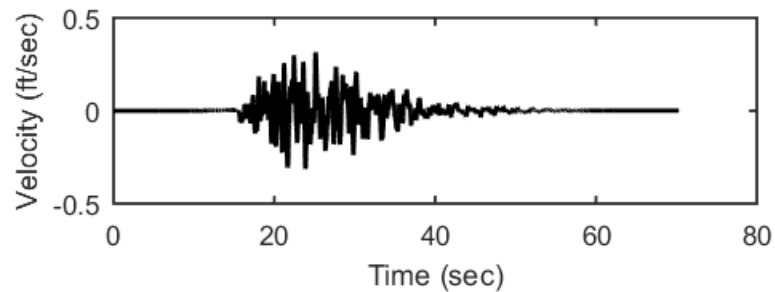
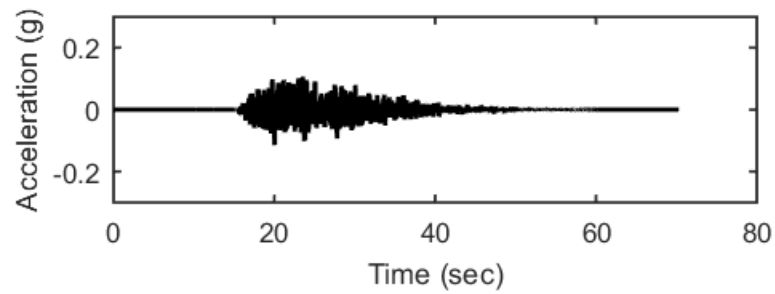




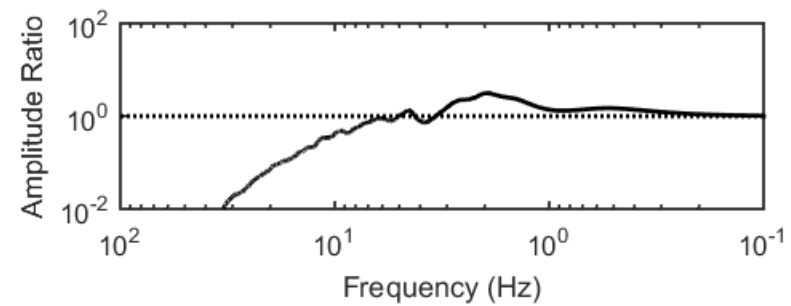
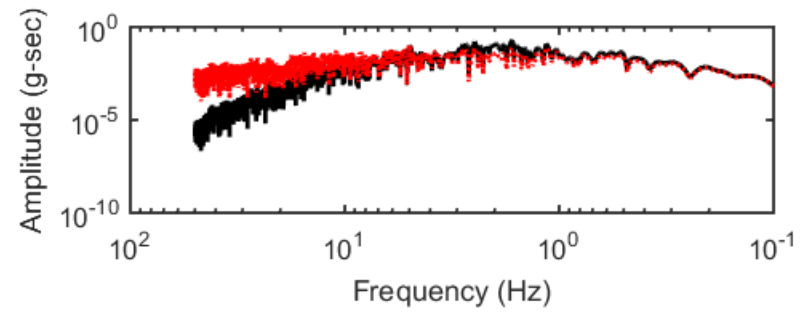
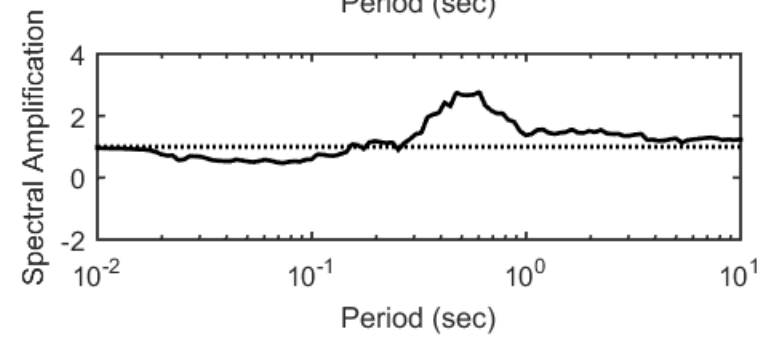
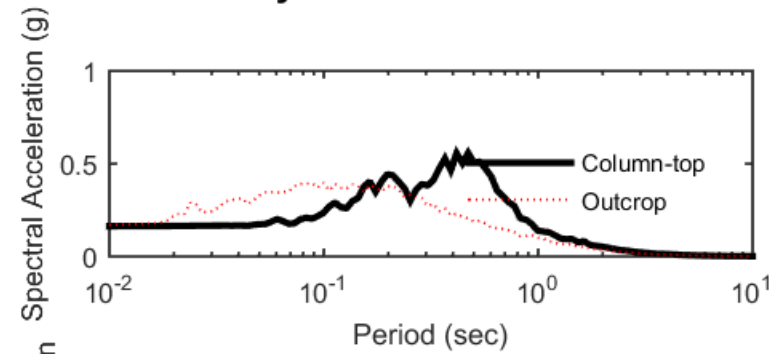
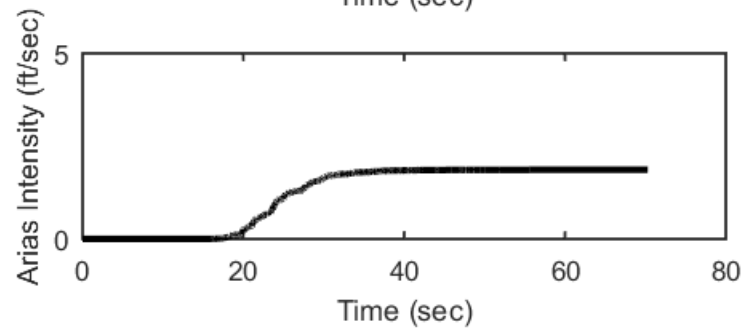
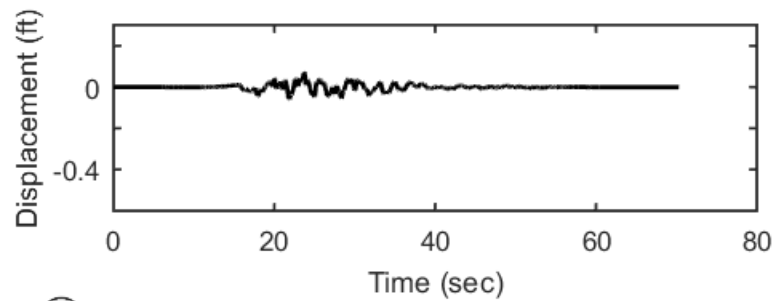
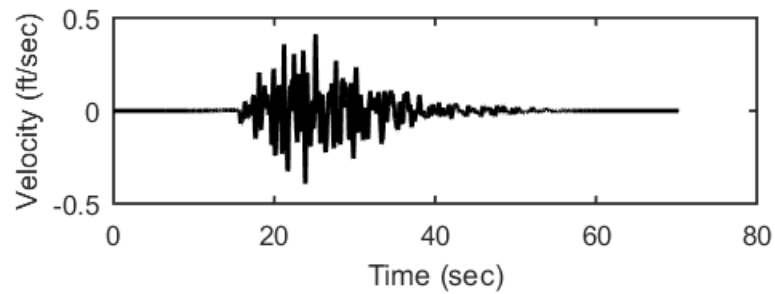
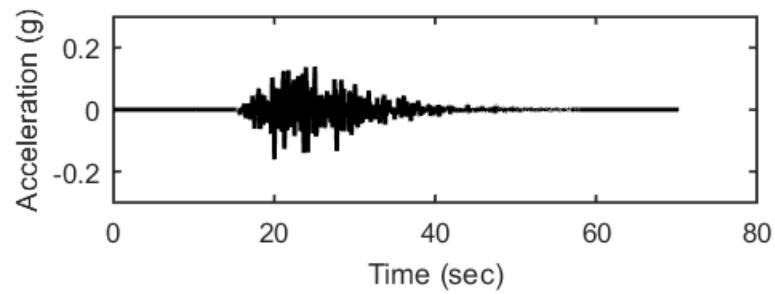
### Profile outputs for Motion: FEE6



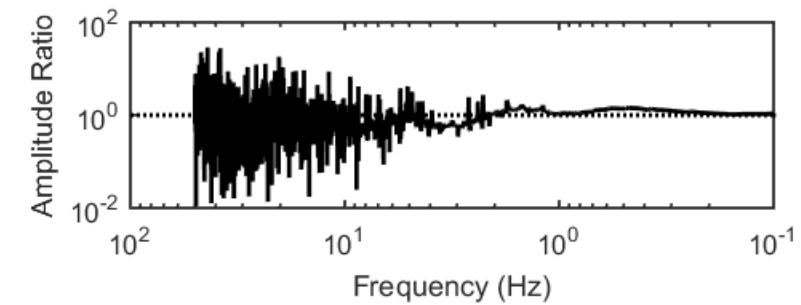
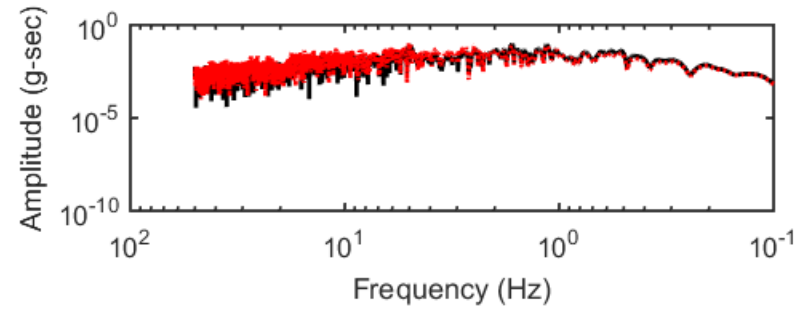
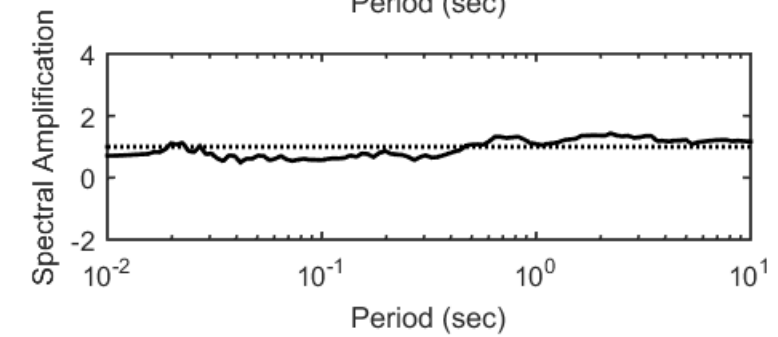
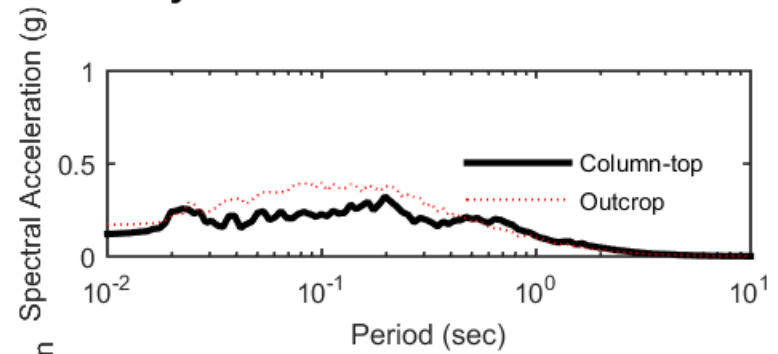
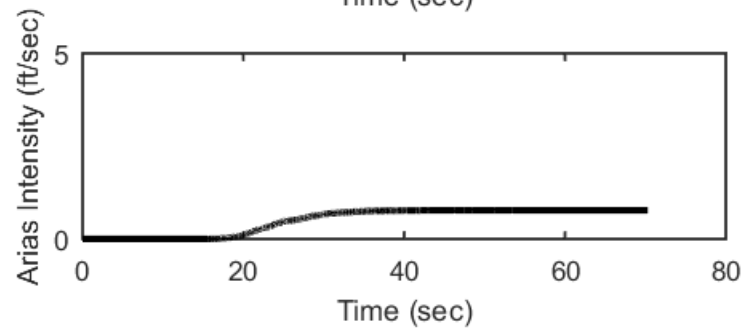
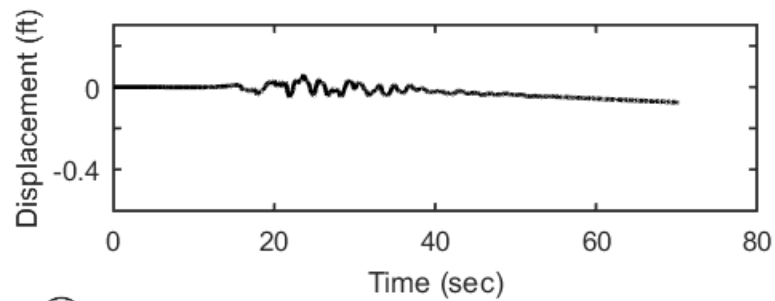
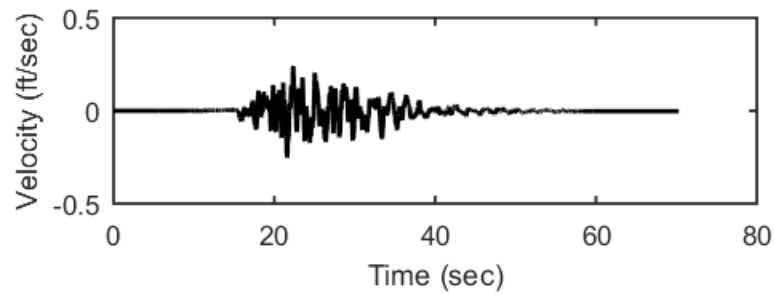
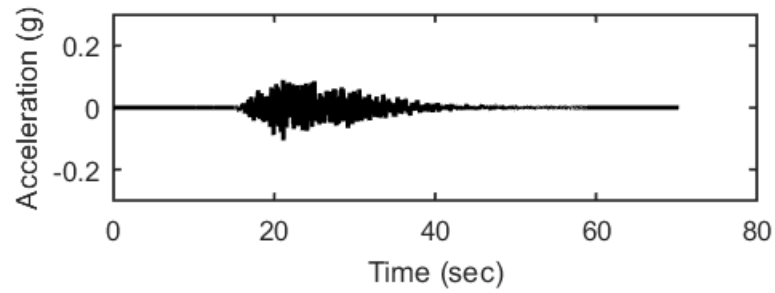
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



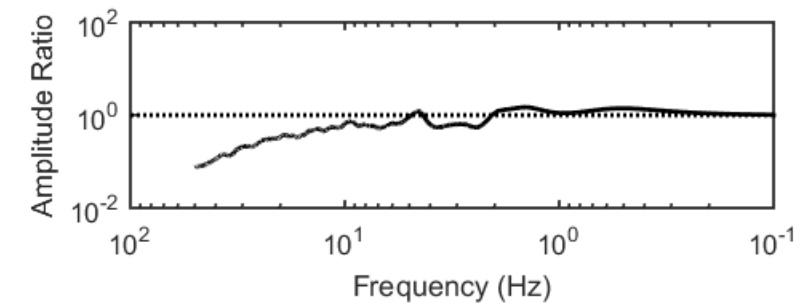
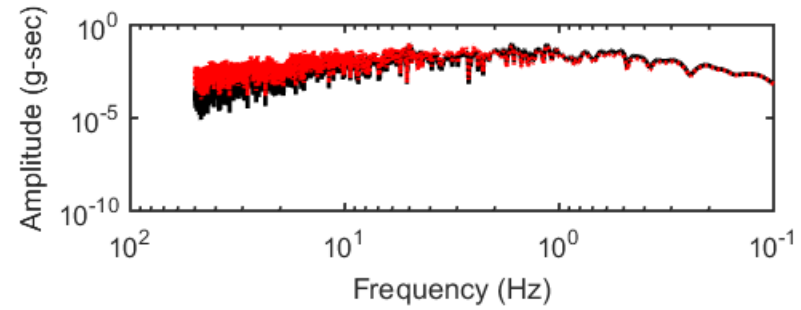
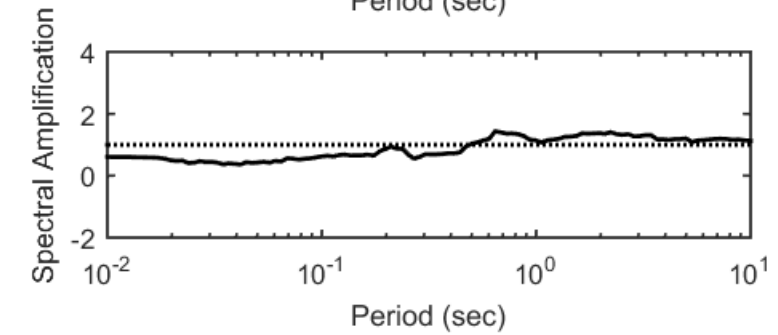
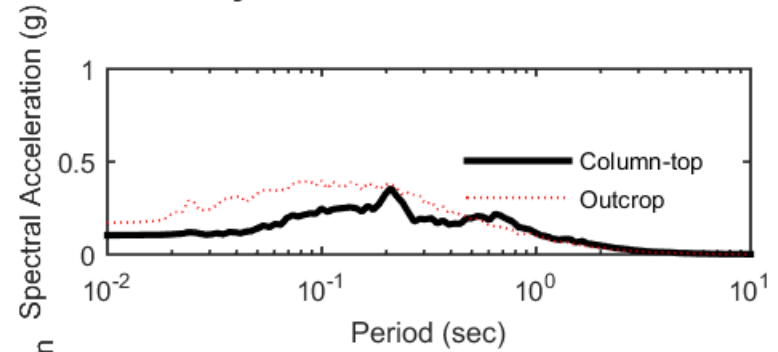
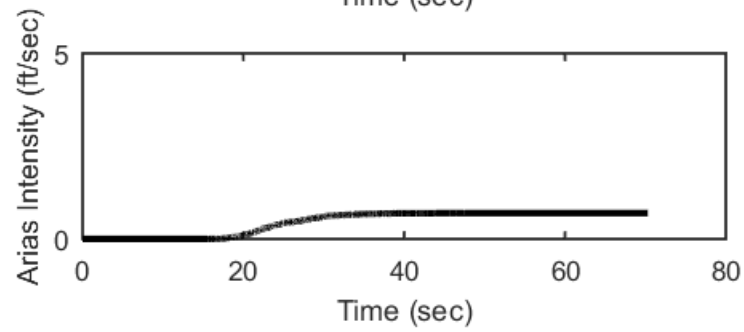
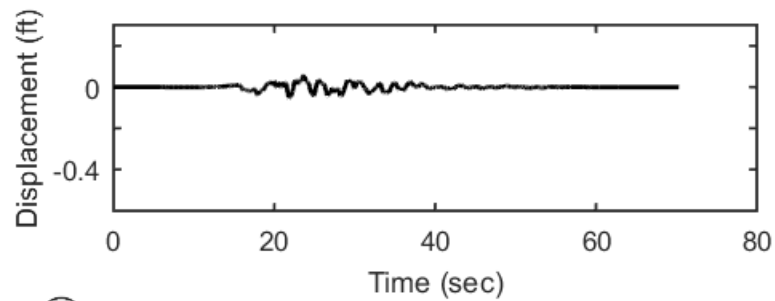
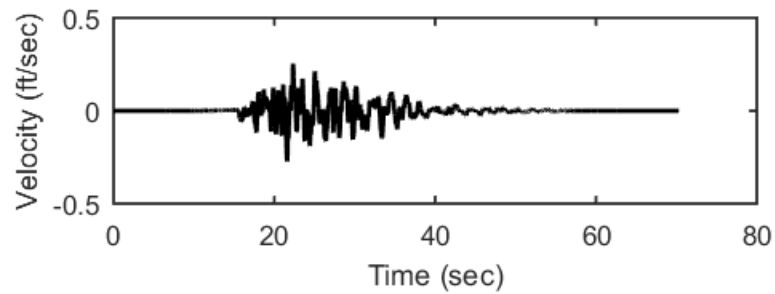
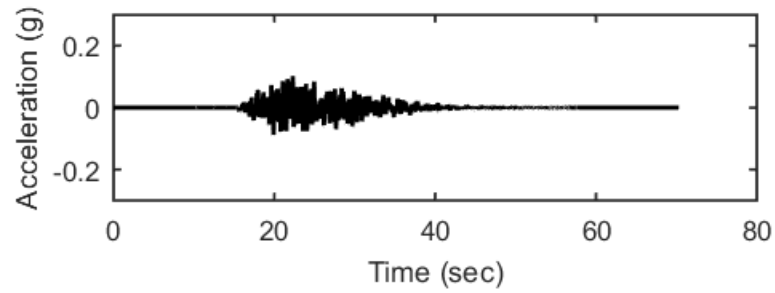
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



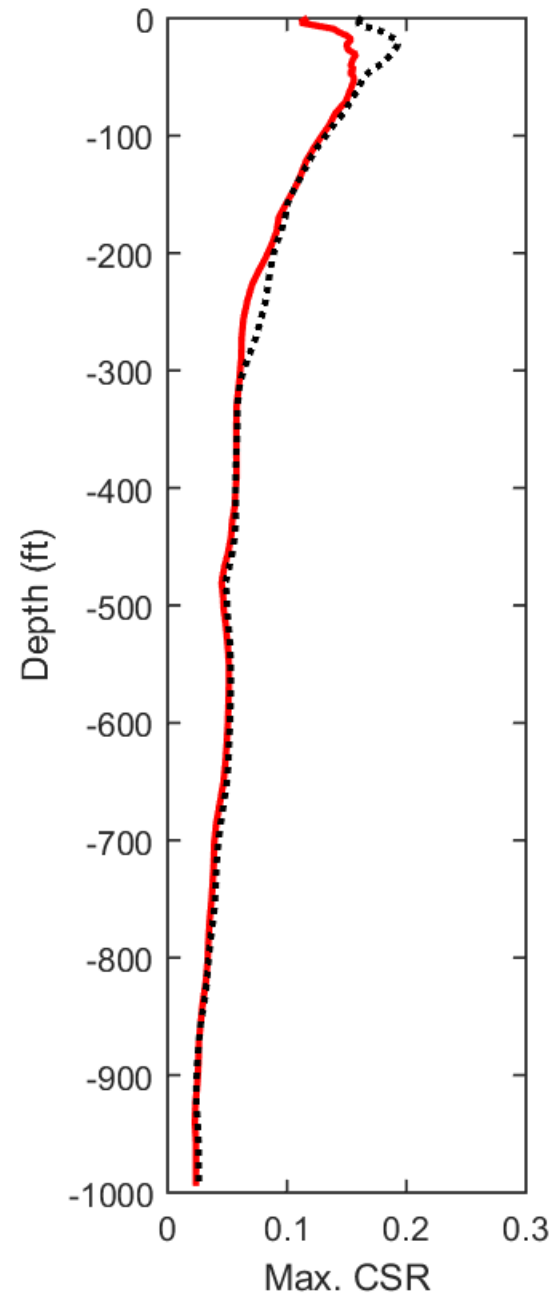
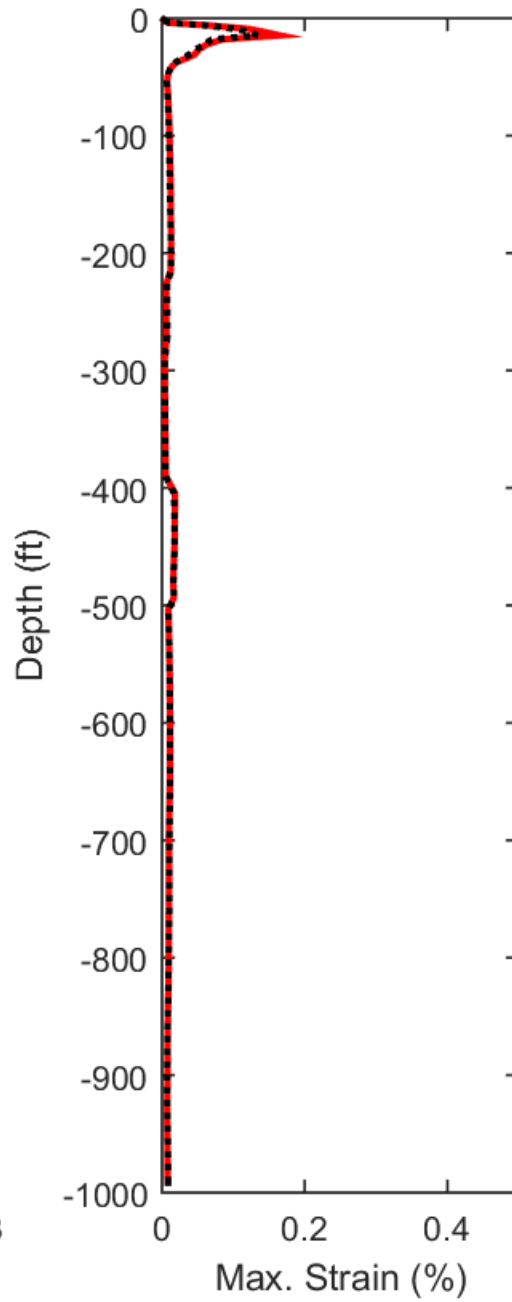
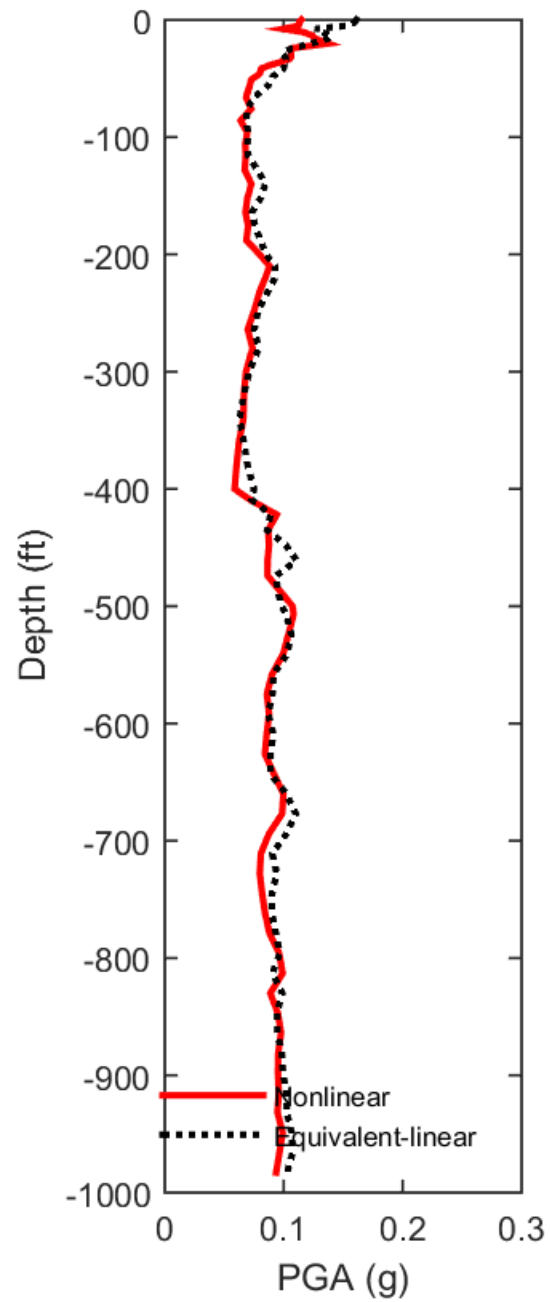
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



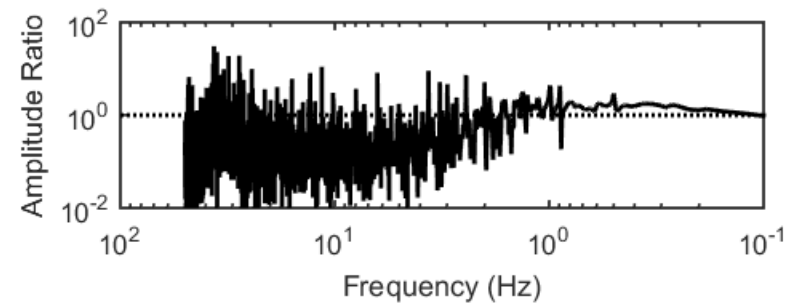
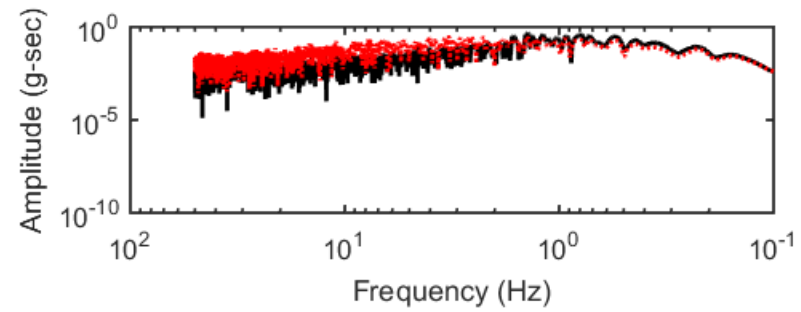
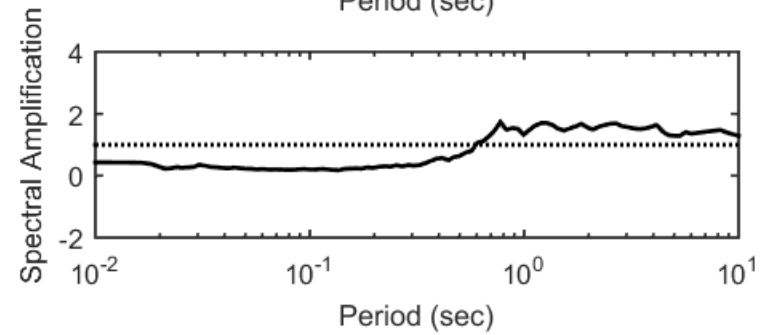
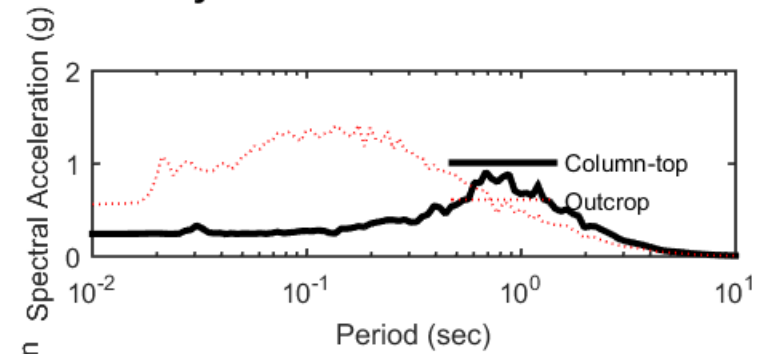
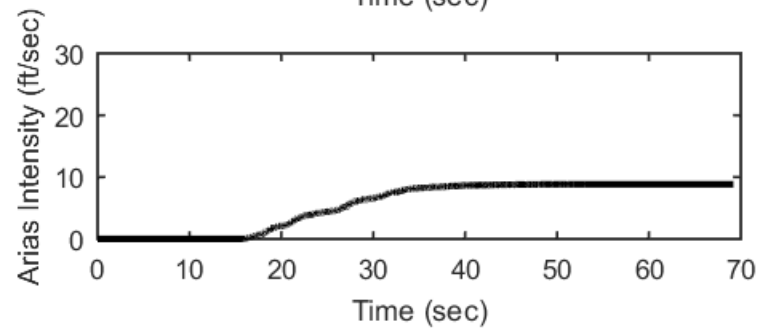
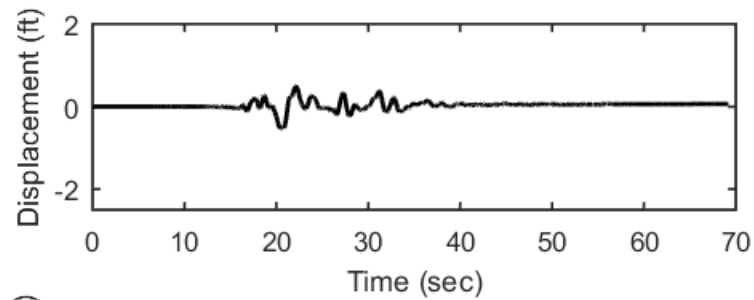
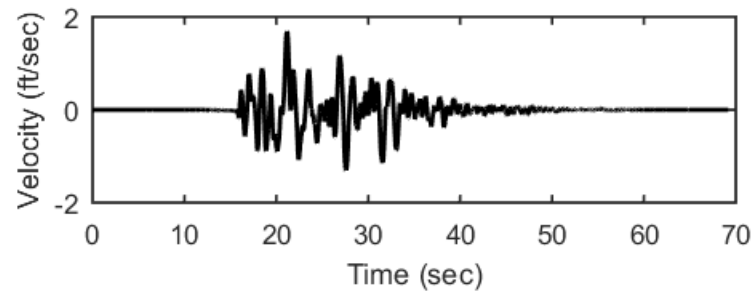
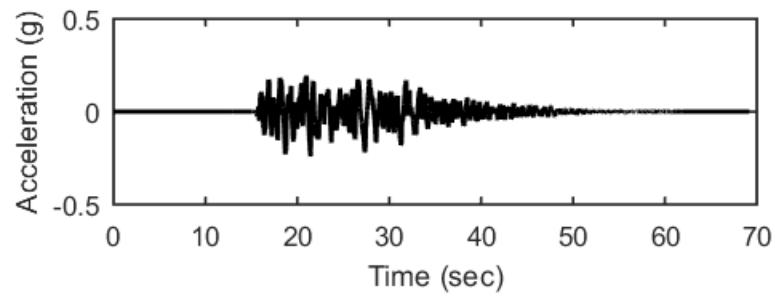
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



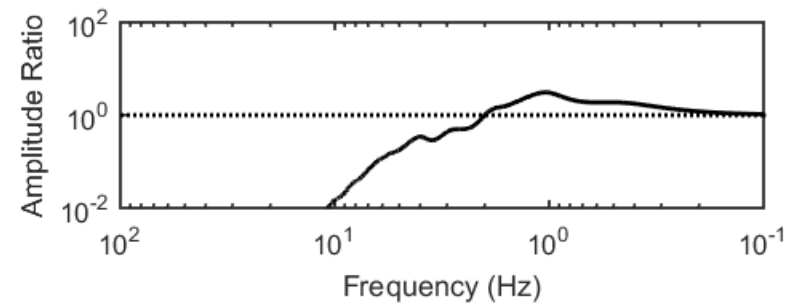
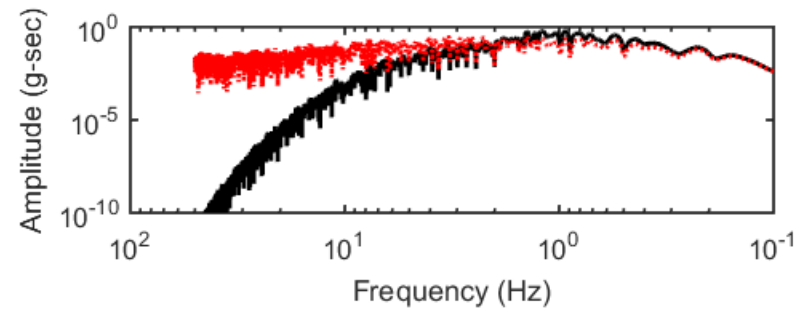
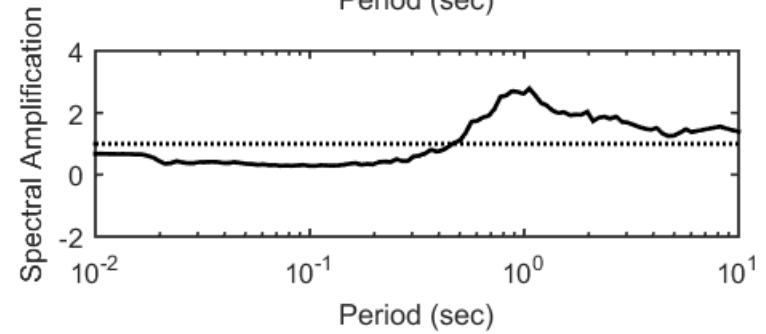
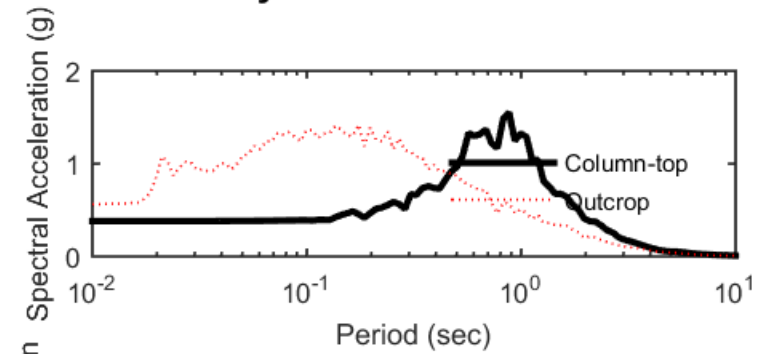
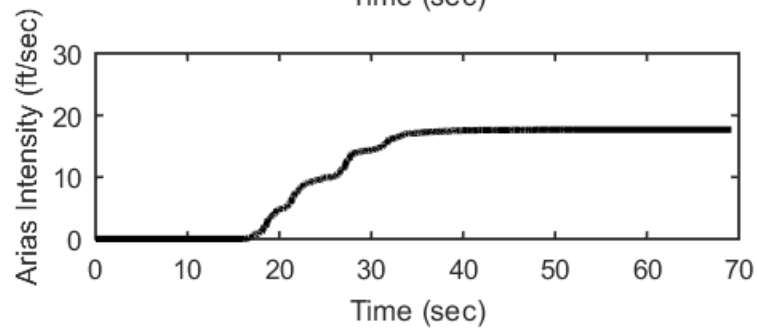
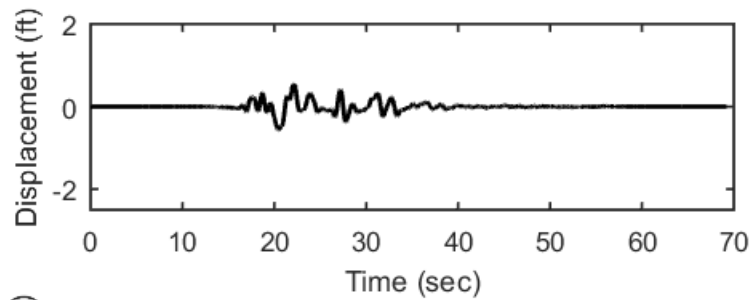
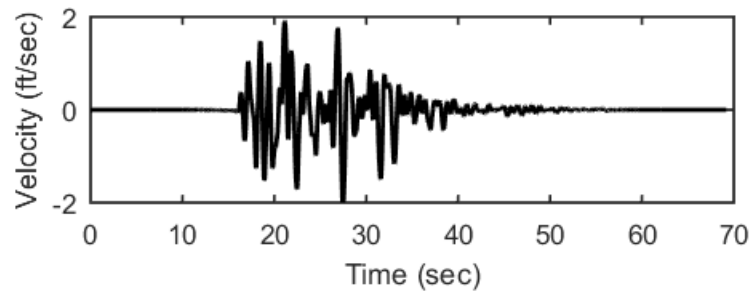
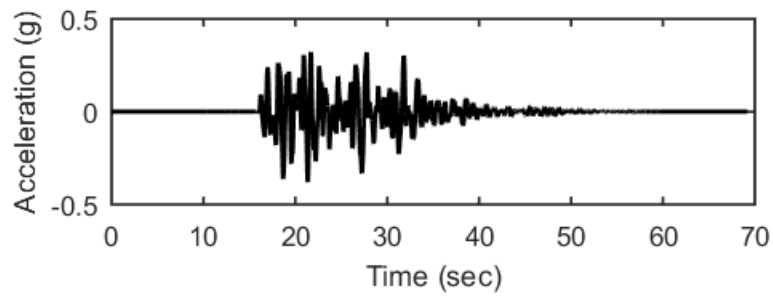
### Profile outputs for Motion: FEE7



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1

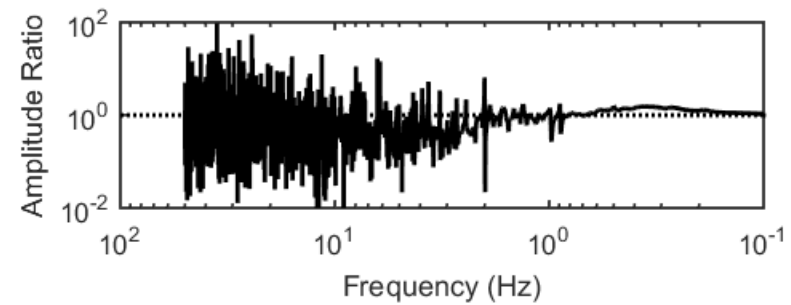
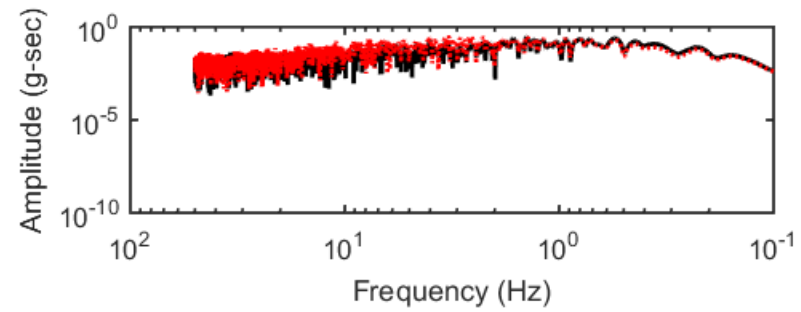
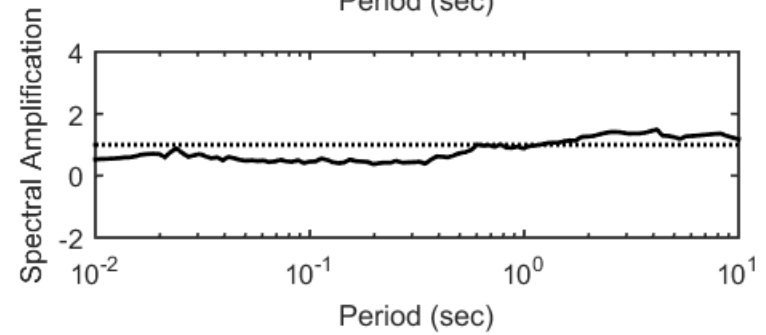
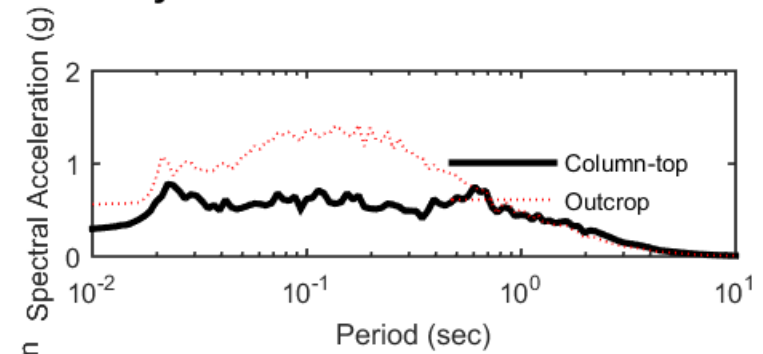
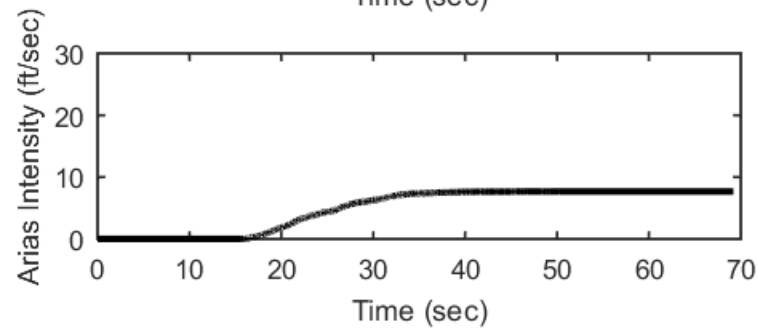
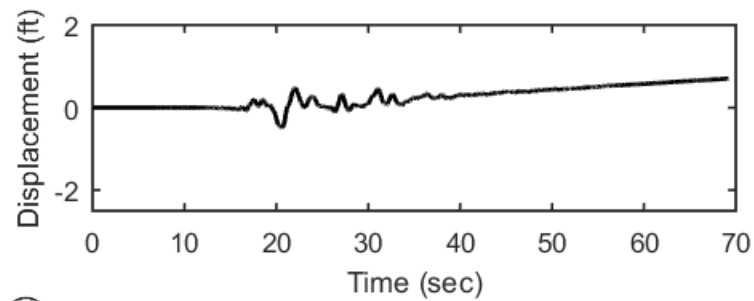
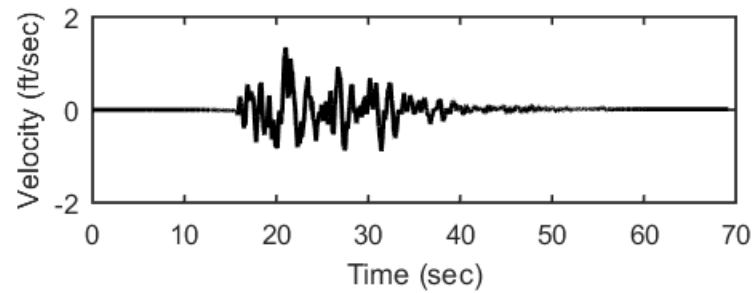
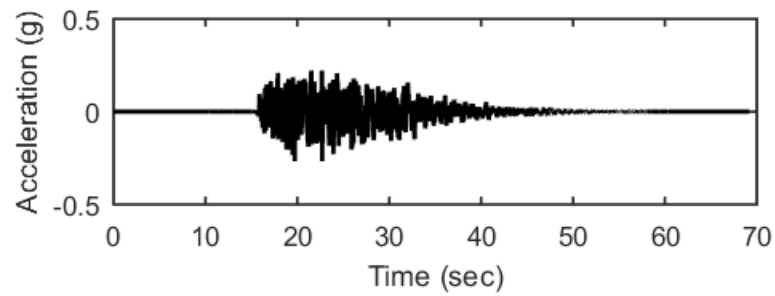


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1

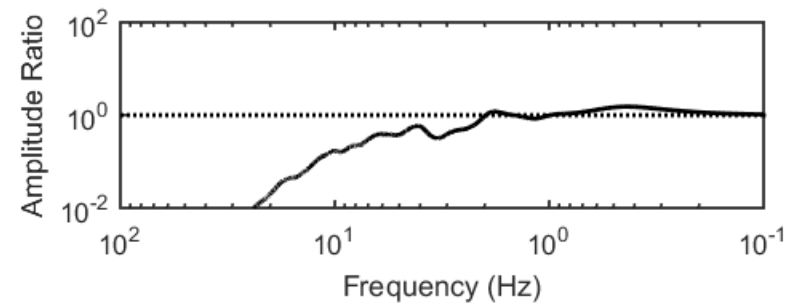
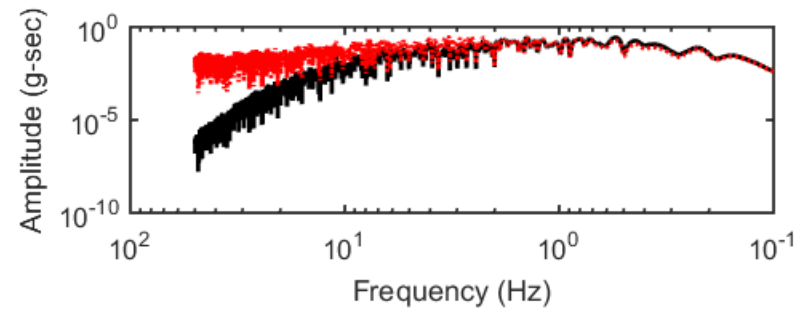
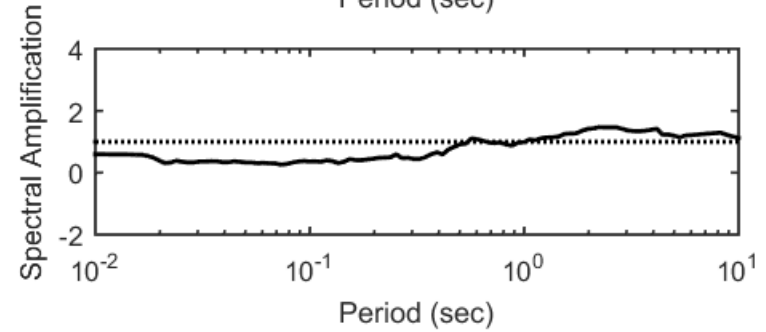
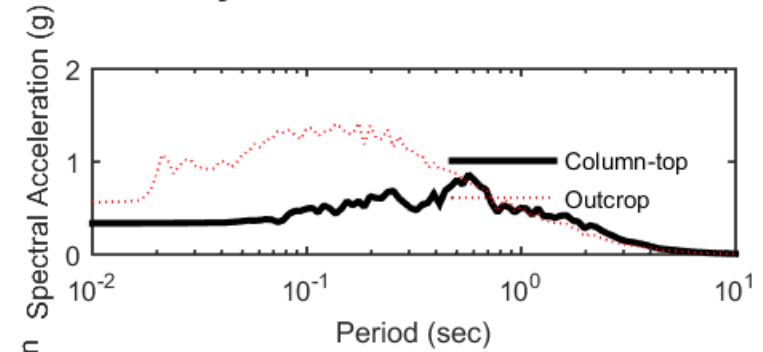
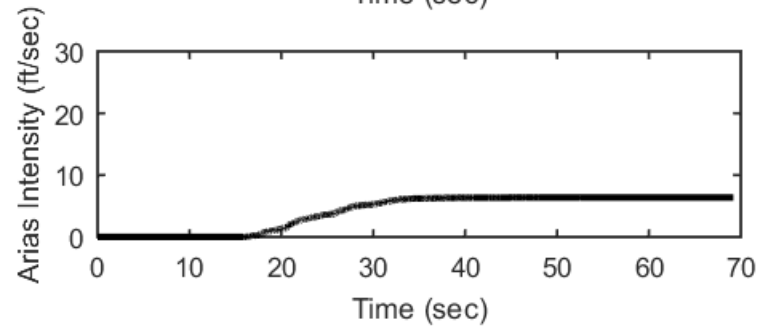
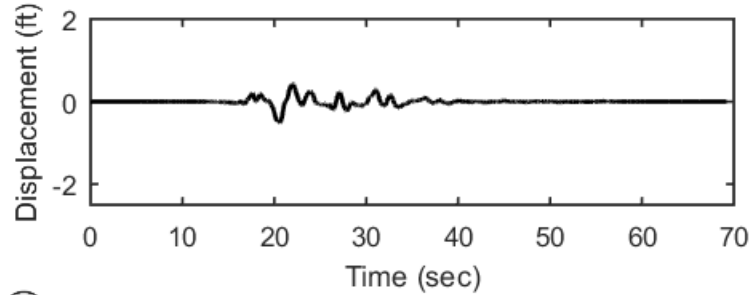
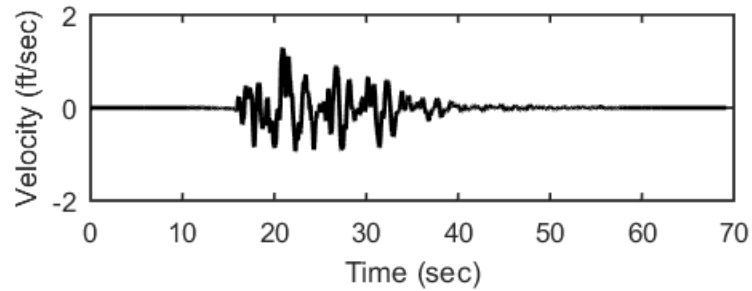
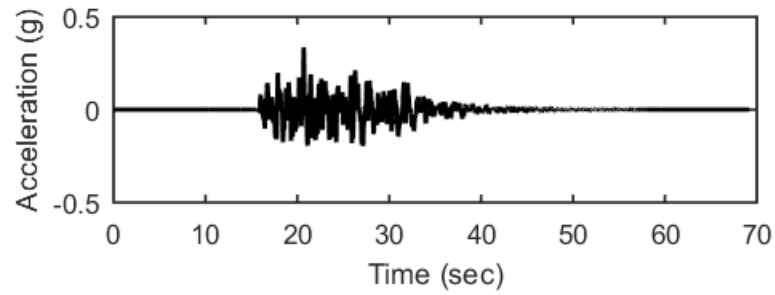




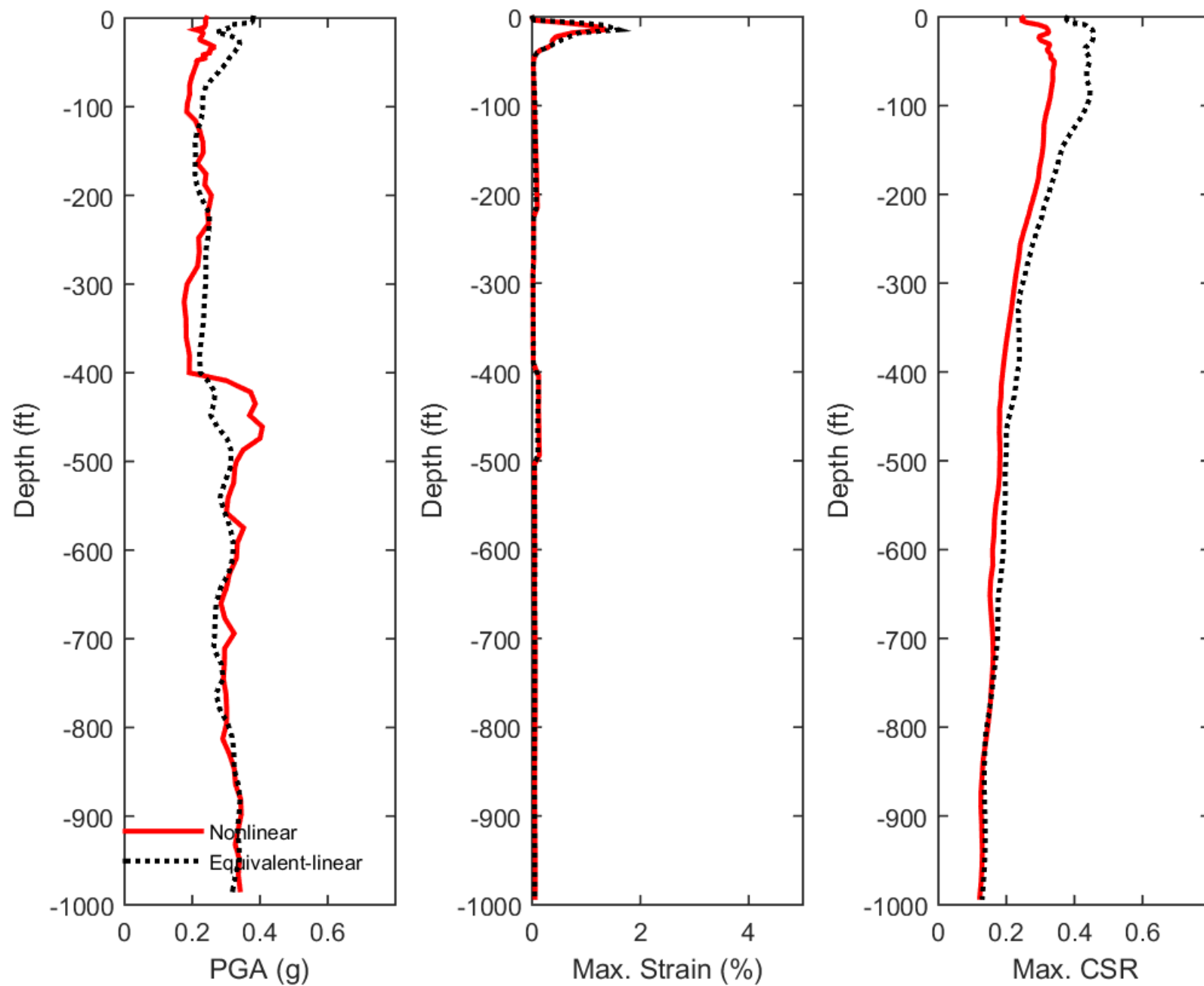
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



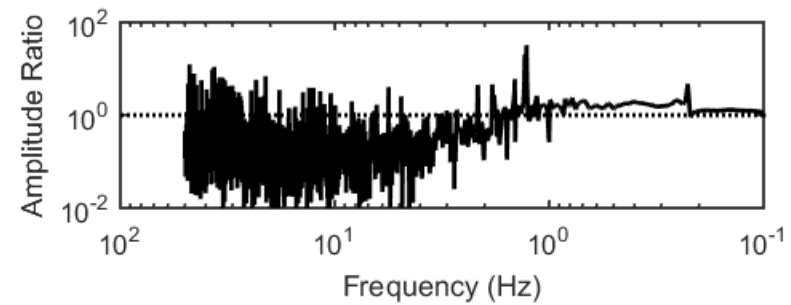
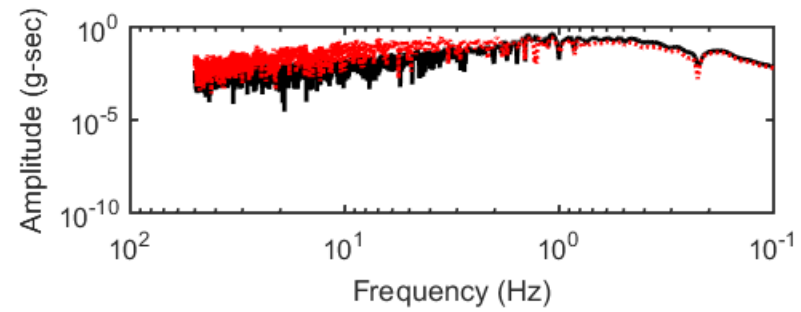
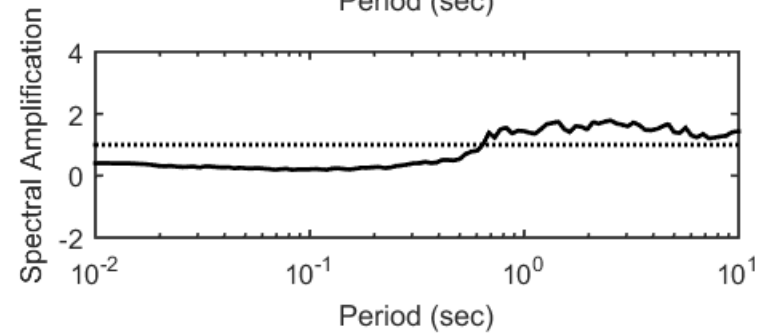
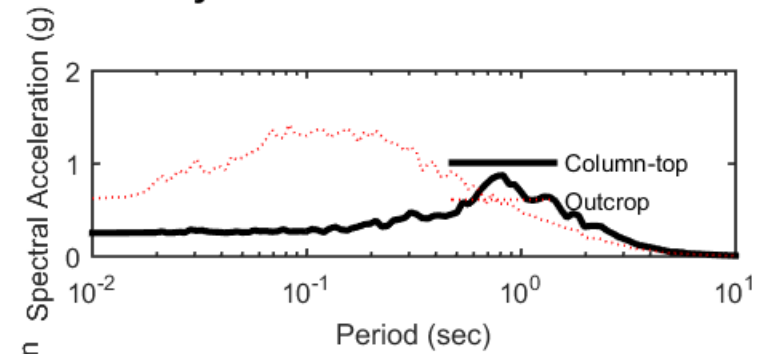
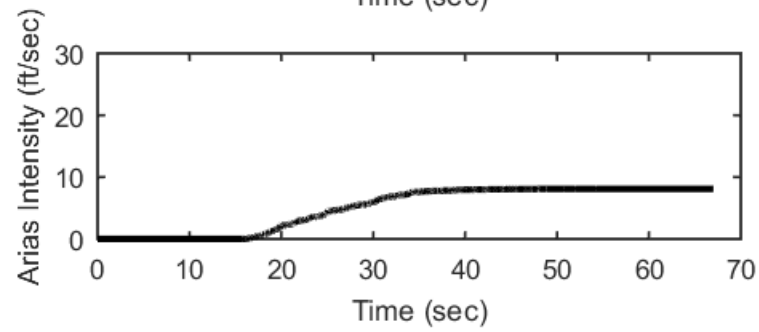
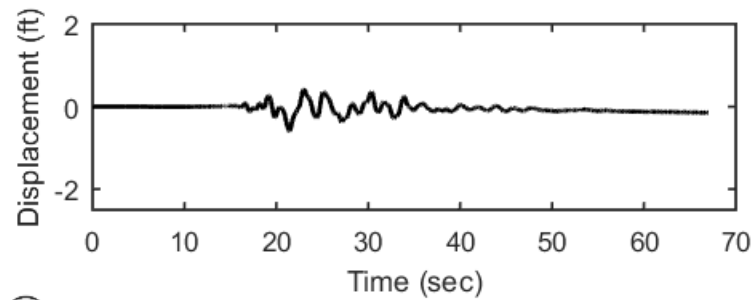
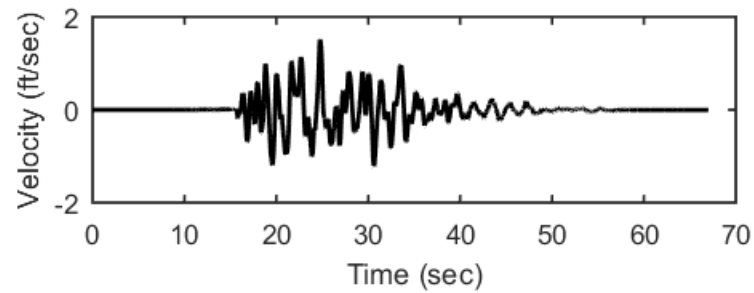
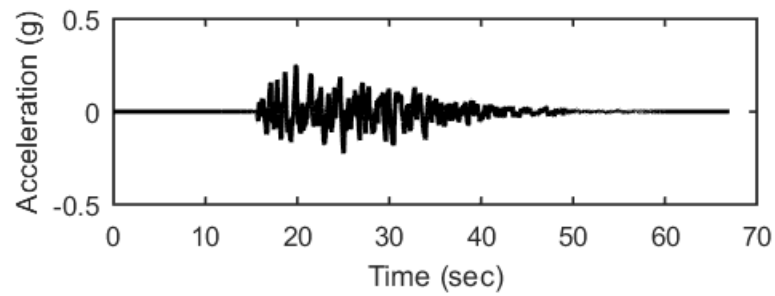
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



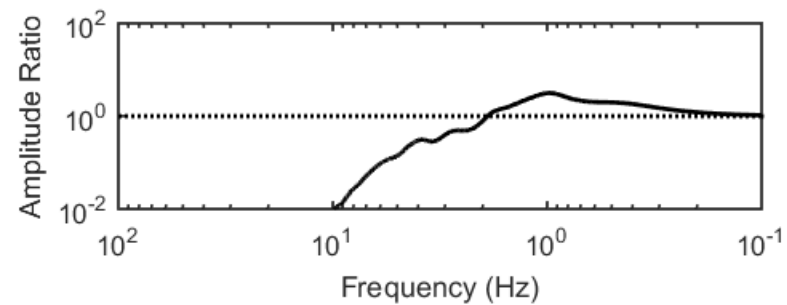
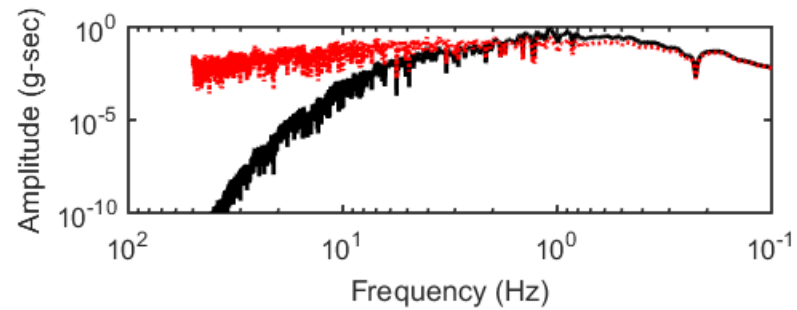
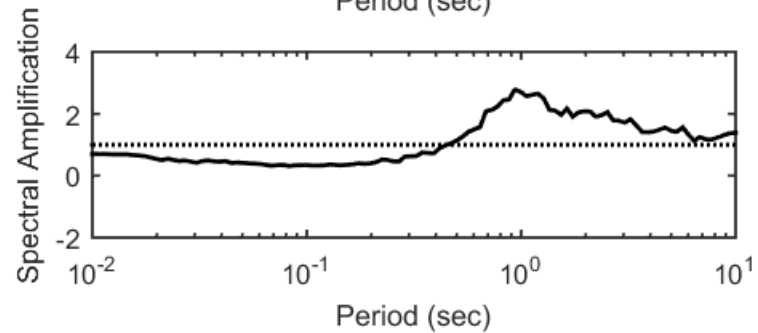
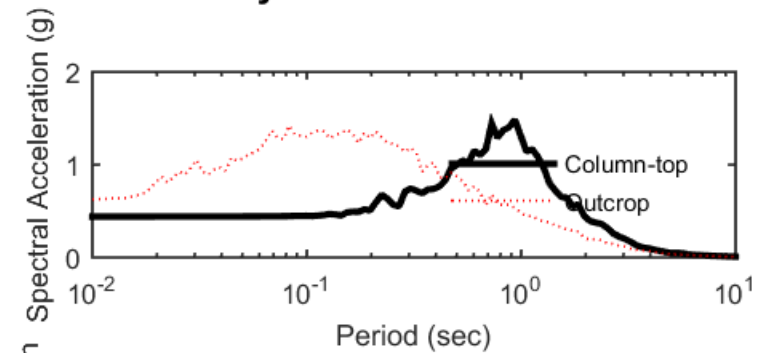
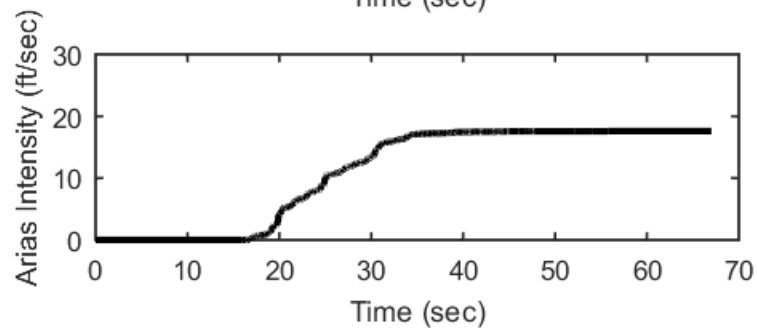
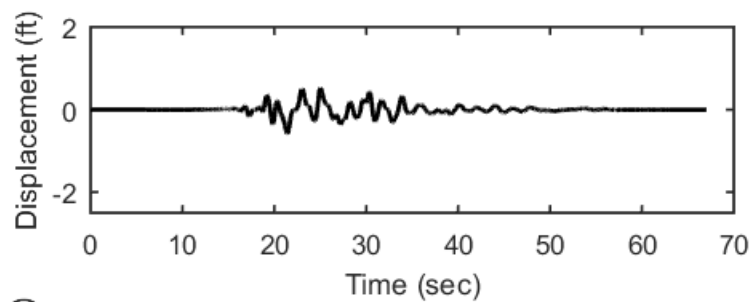
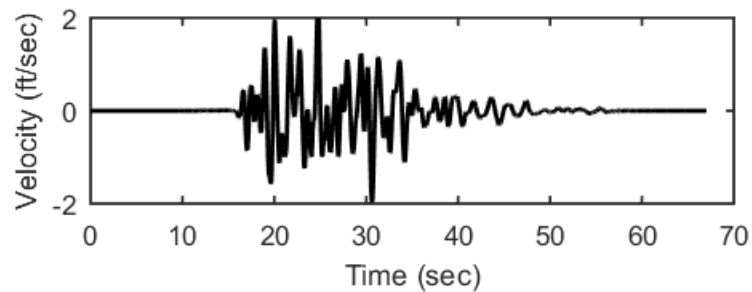
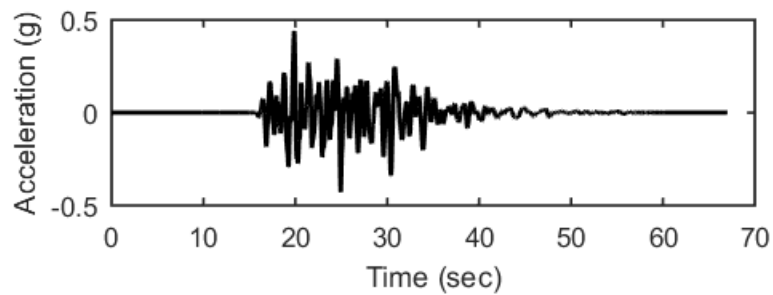
### Profile outputs for Motion: SEE1



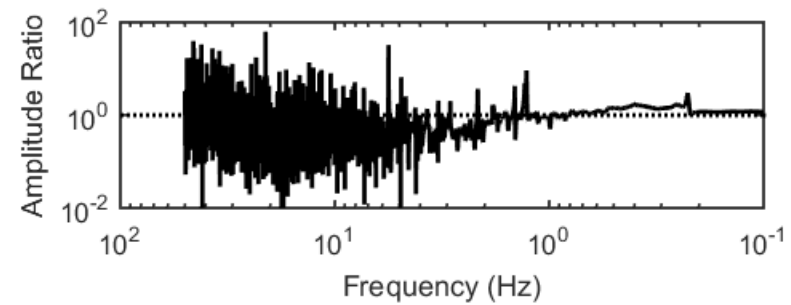
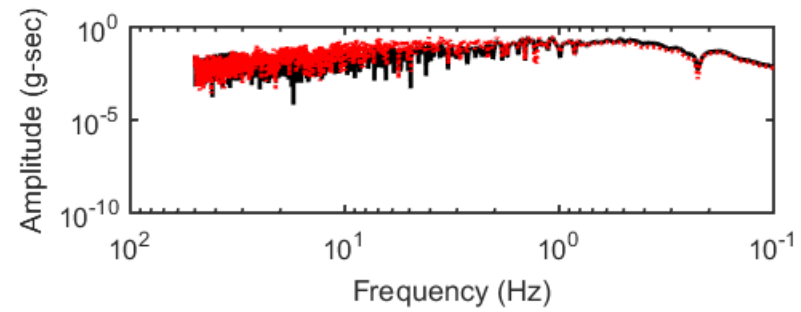
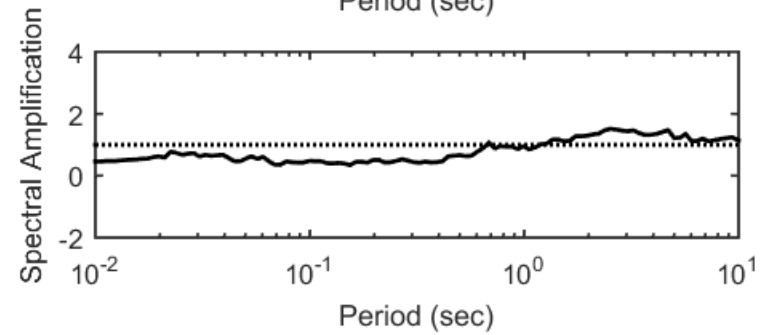
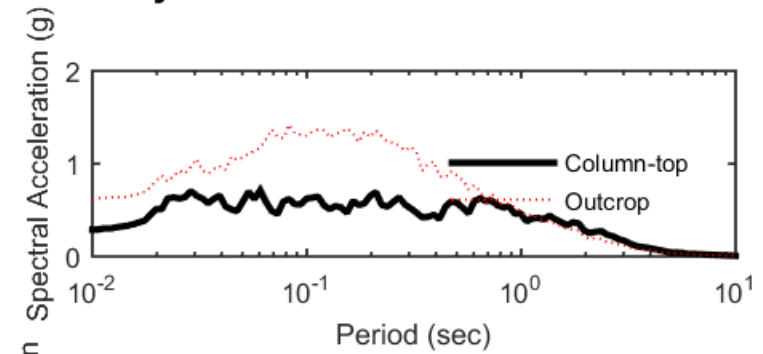
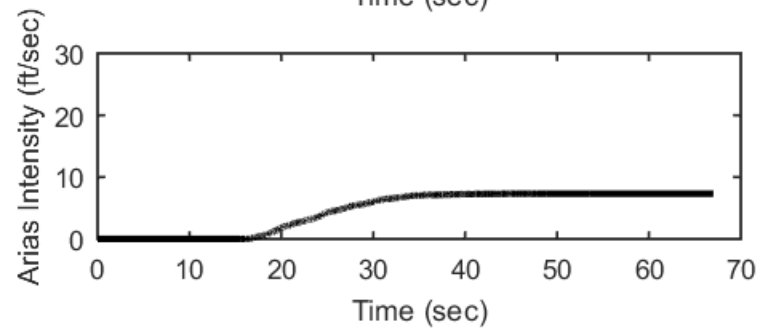
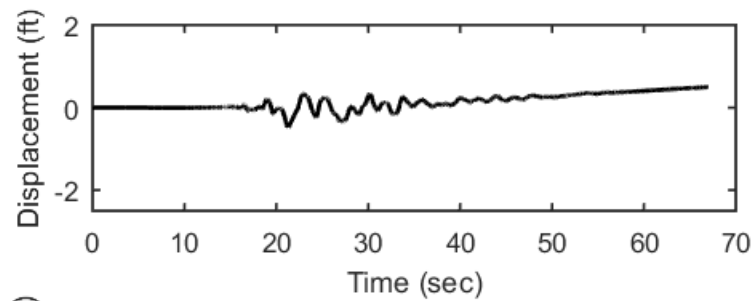
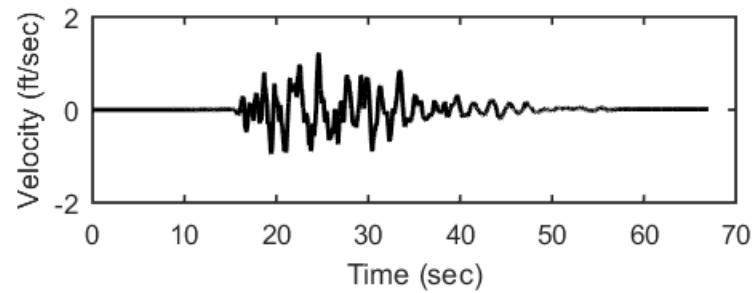
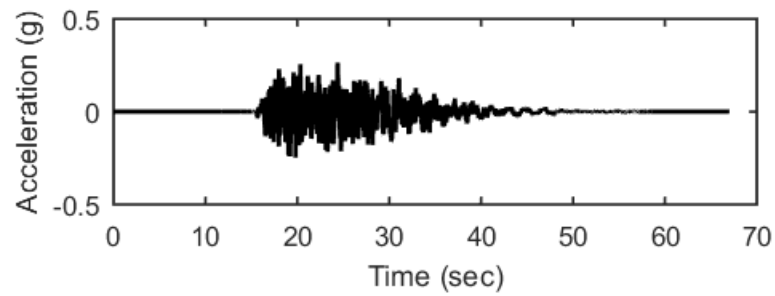
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



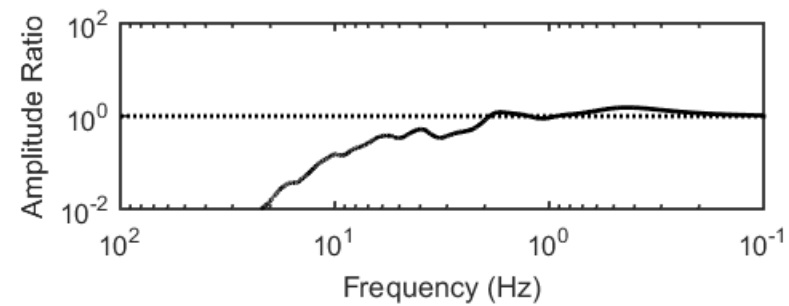
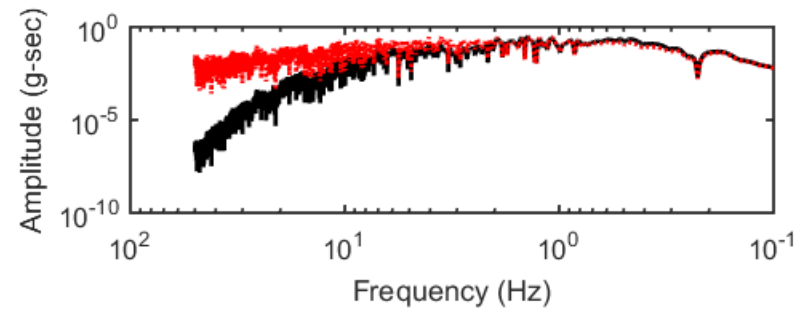
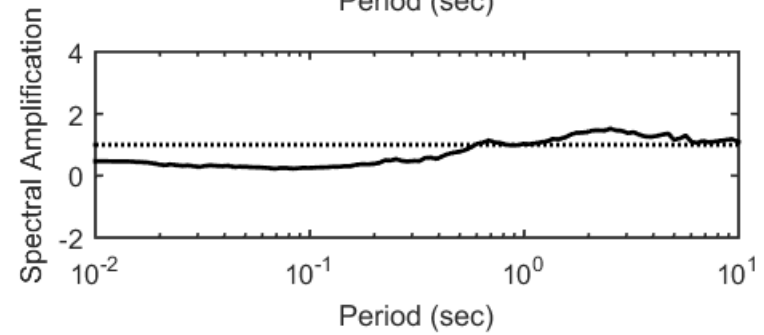
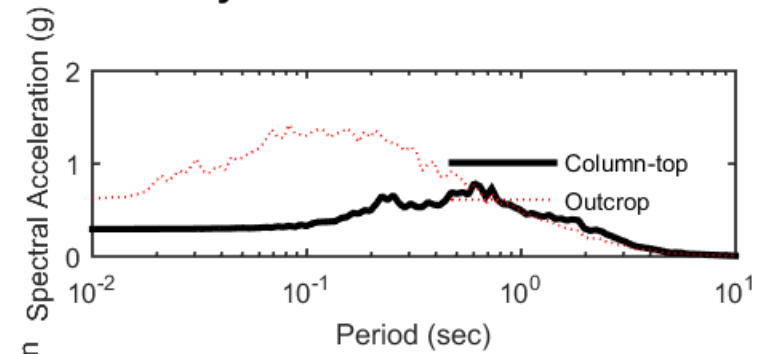
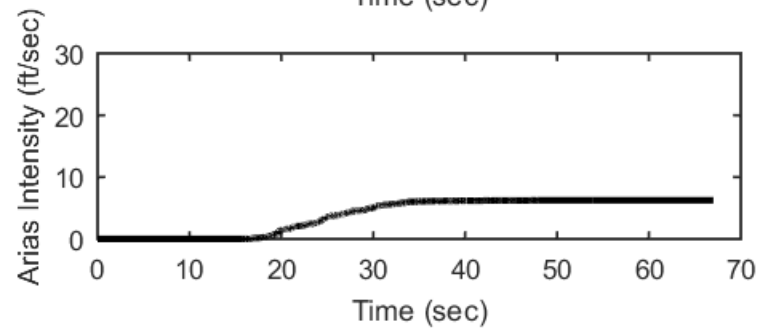
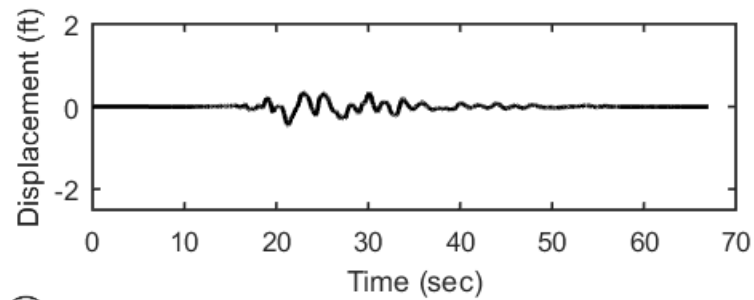
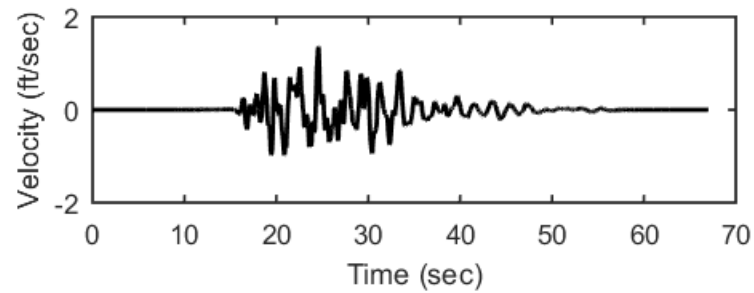
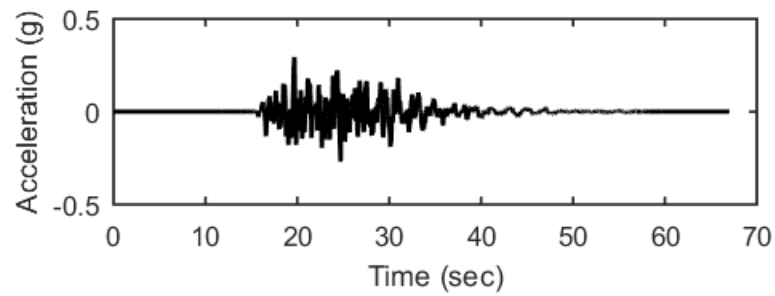
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



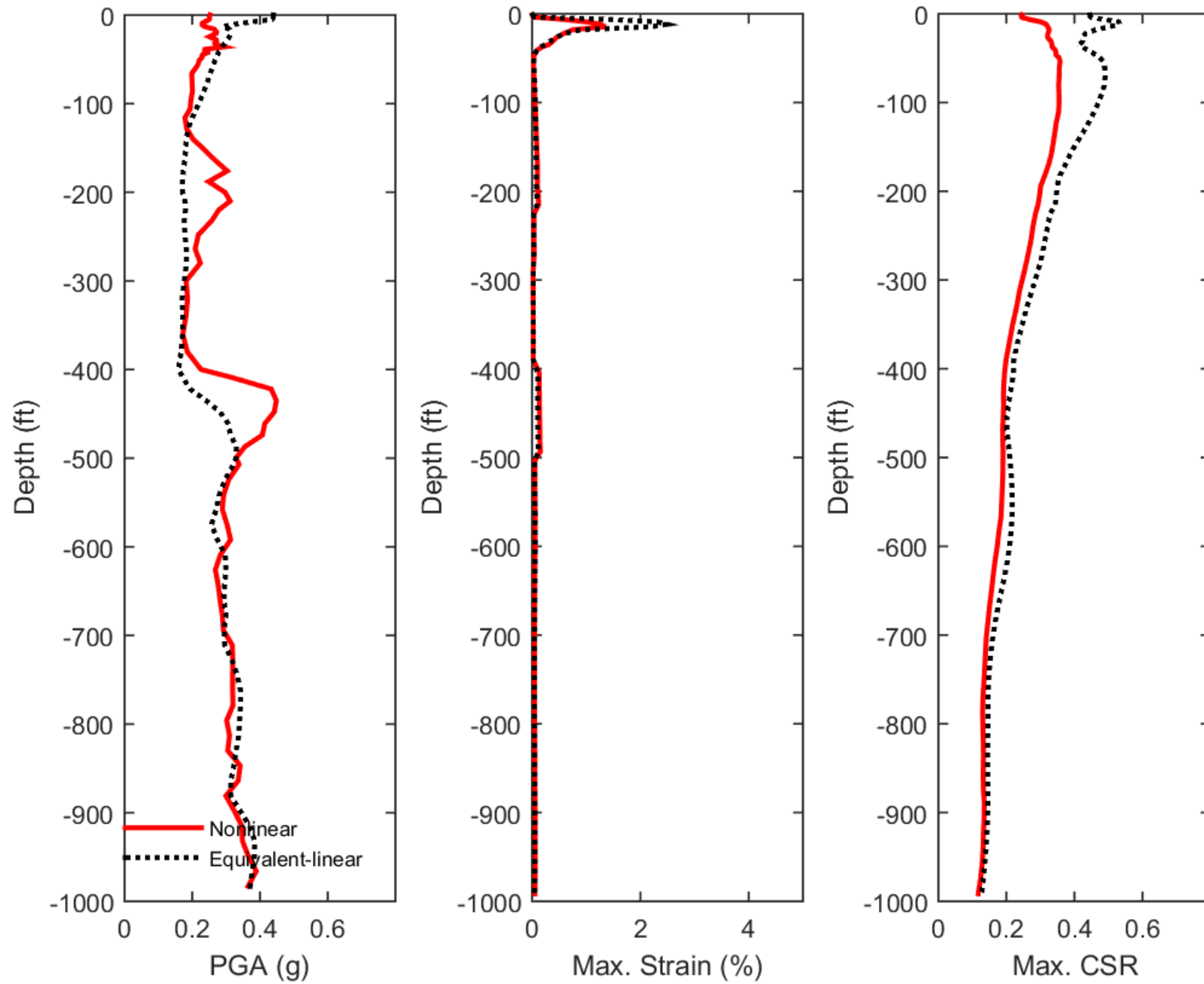
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2

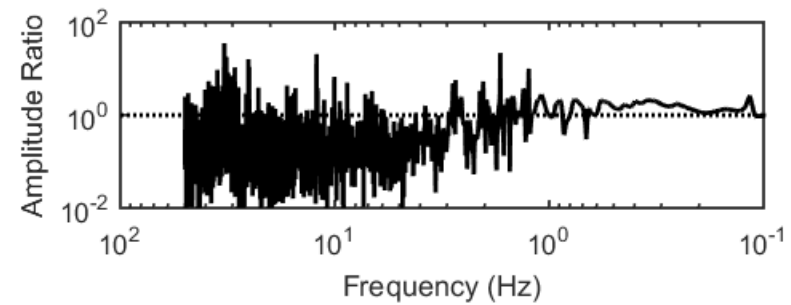
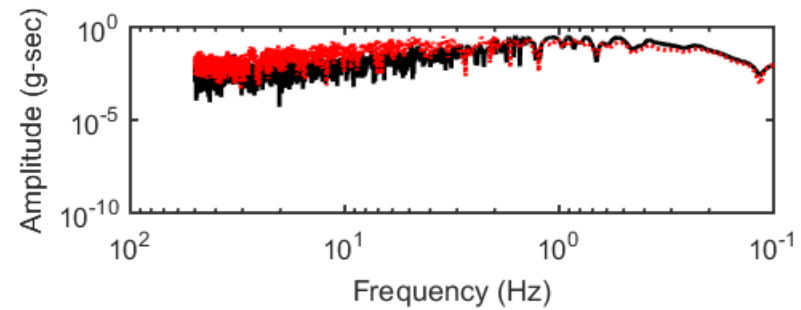
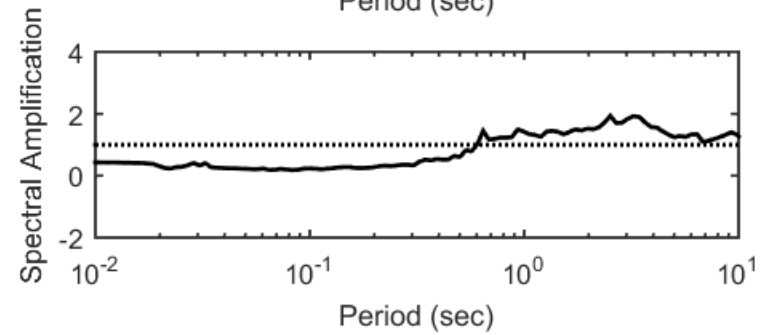
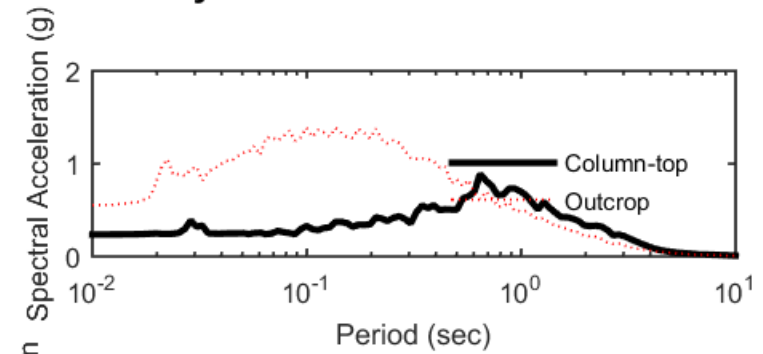
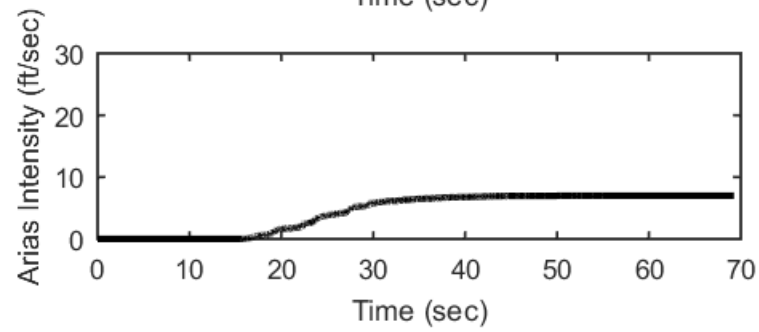
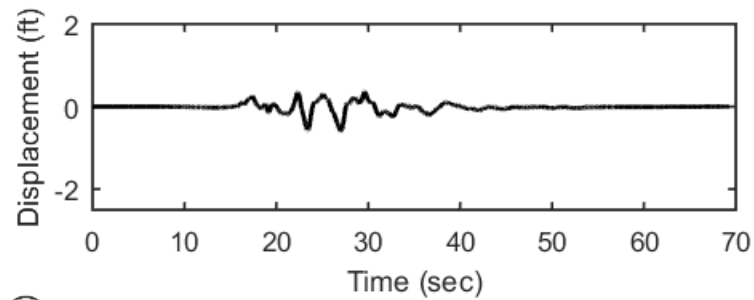
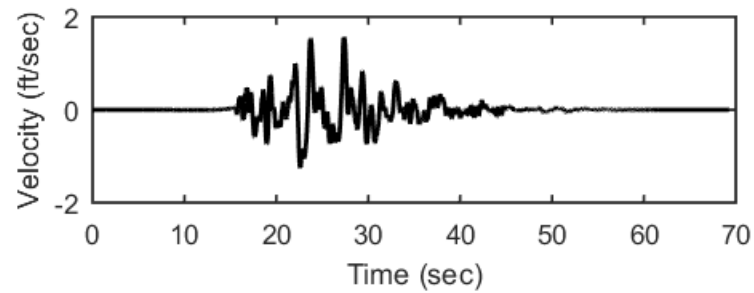
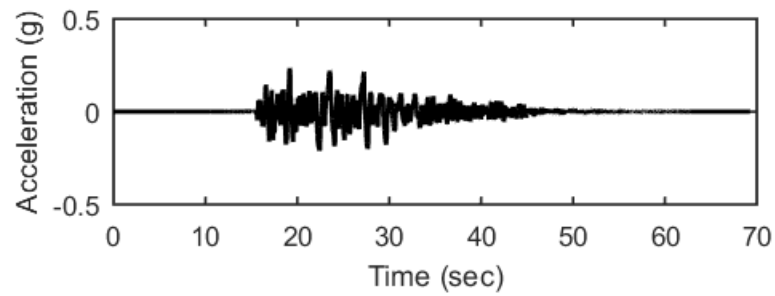


### Profile outputs for Motion: SEE2

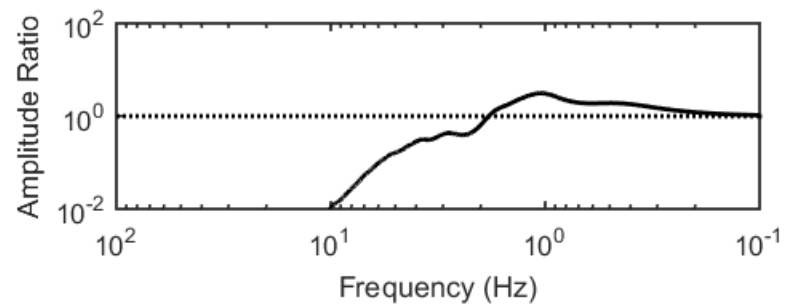
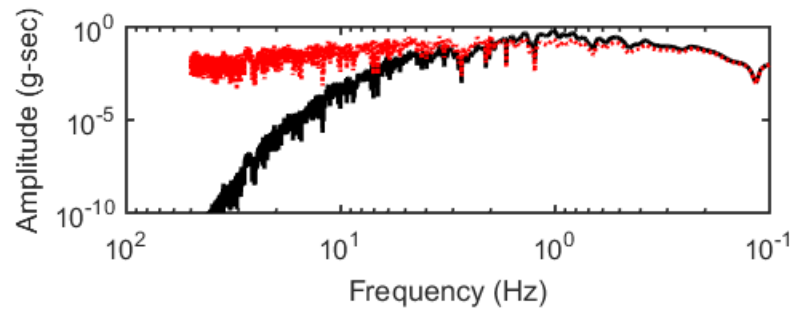
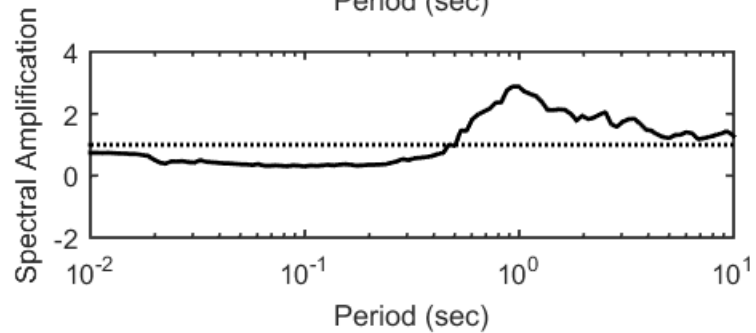
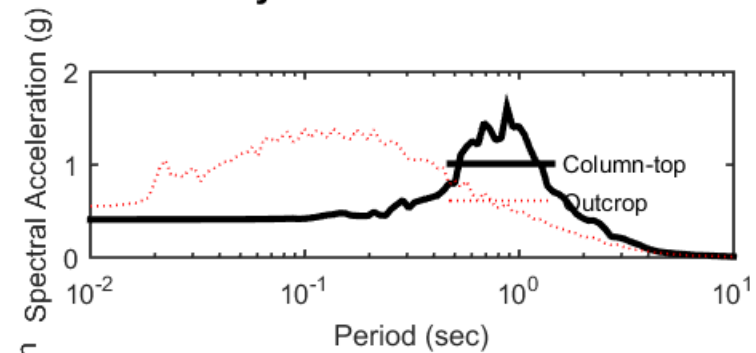
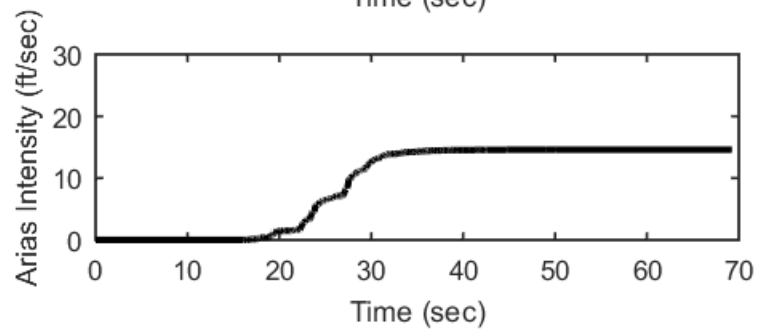
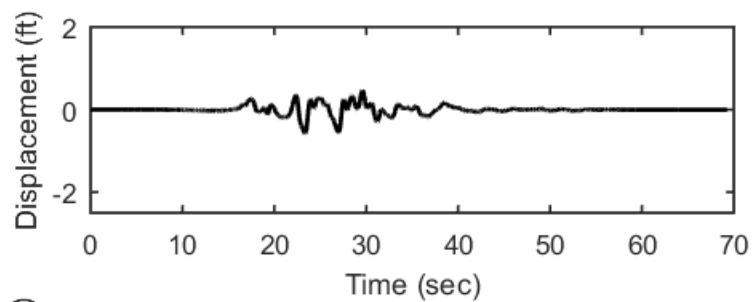
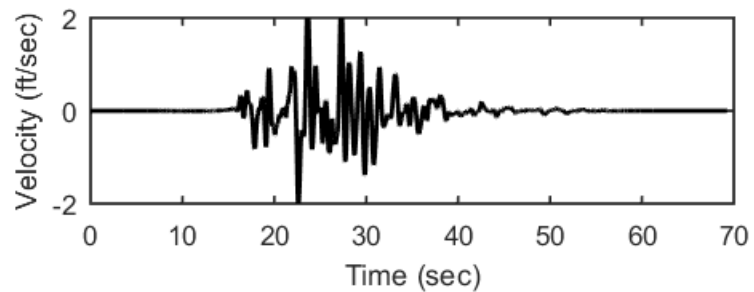
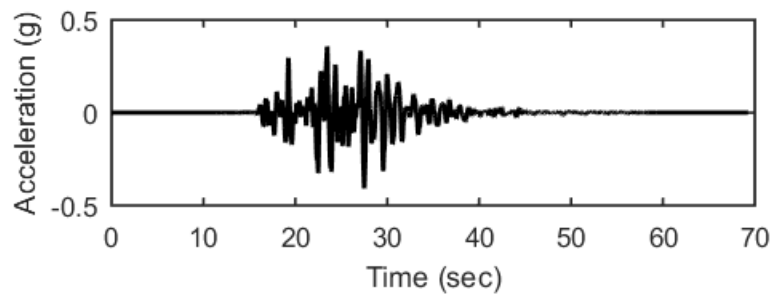




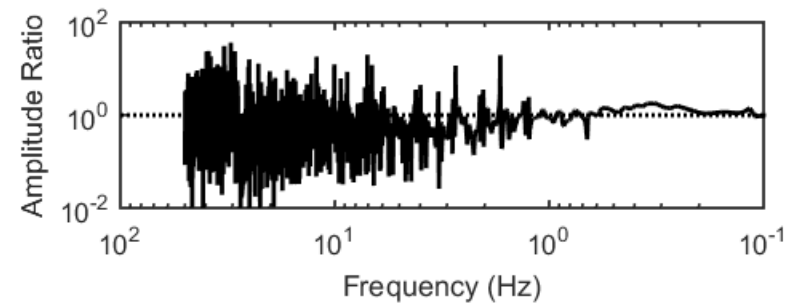
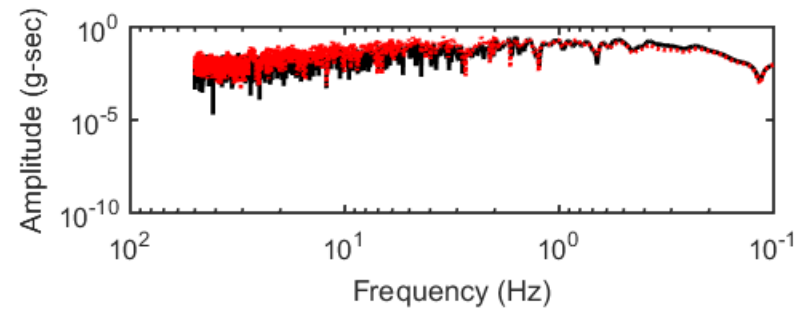
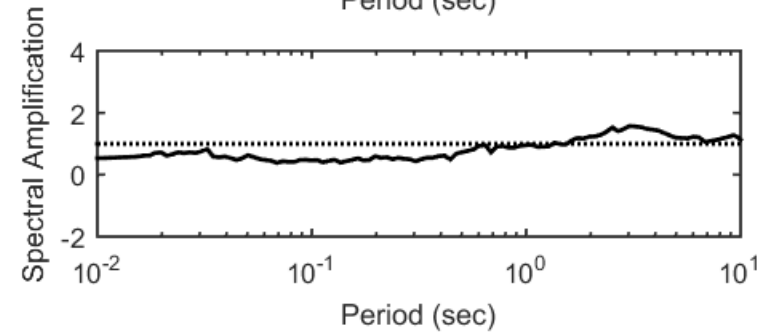
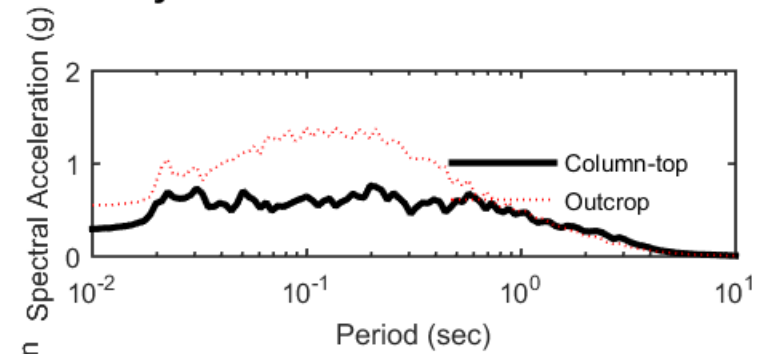
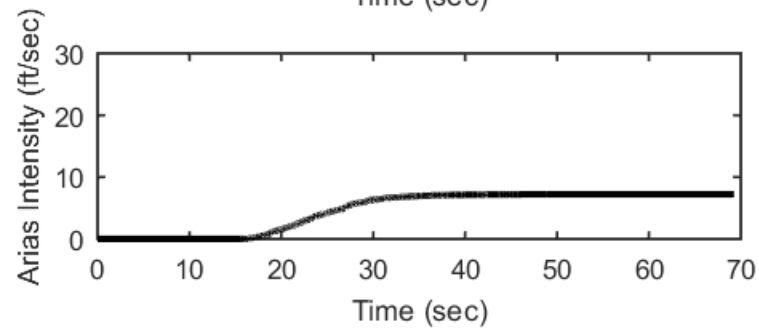
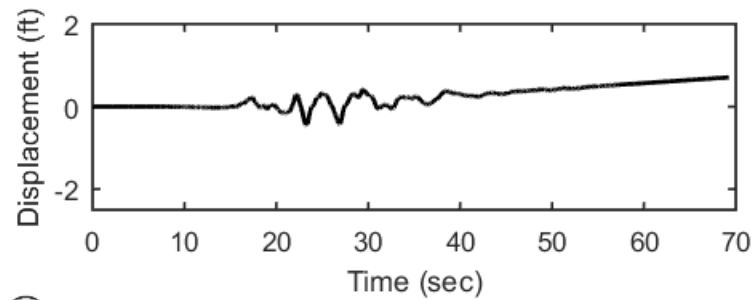
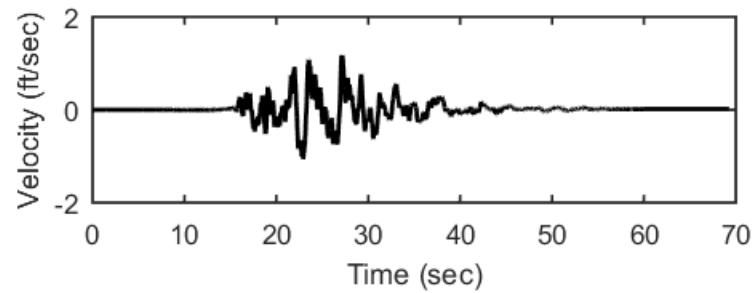
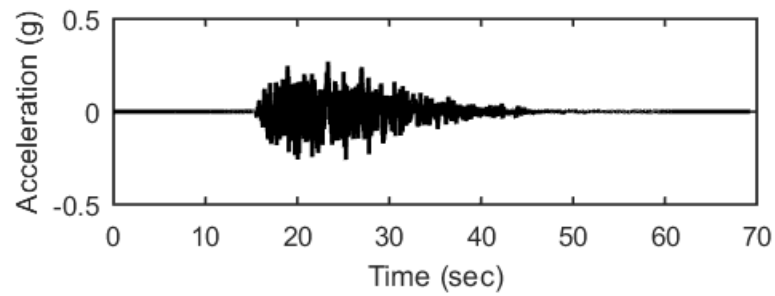
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



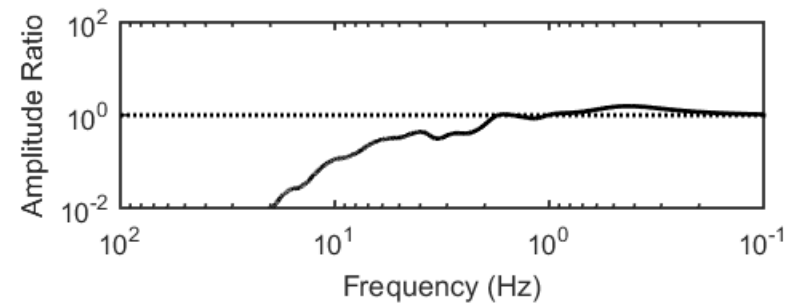
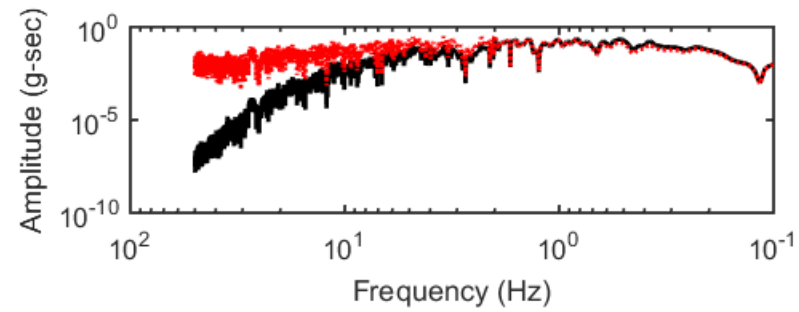
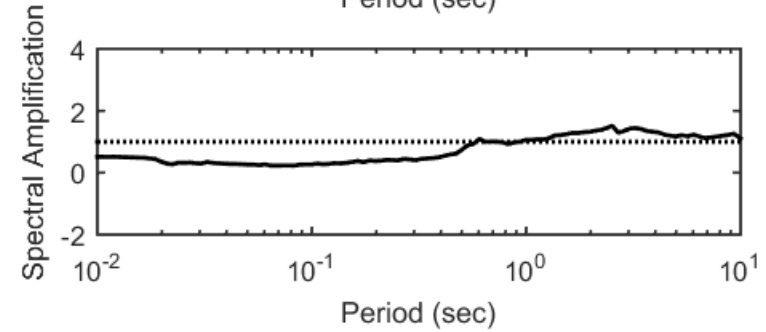
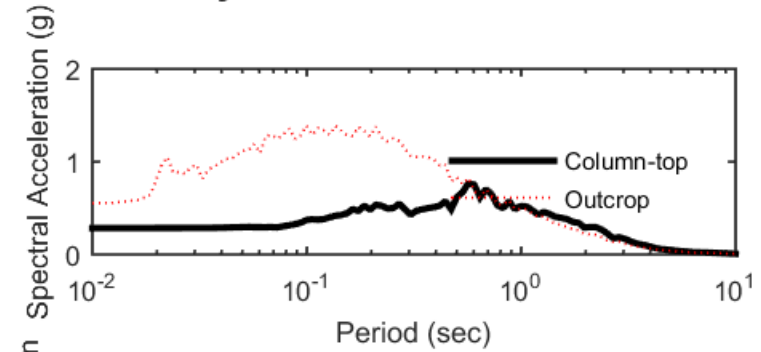
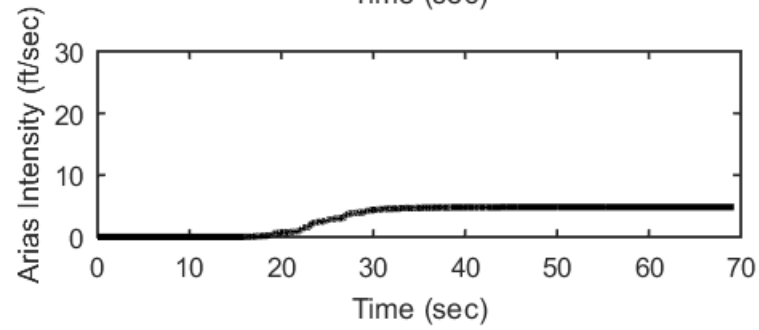
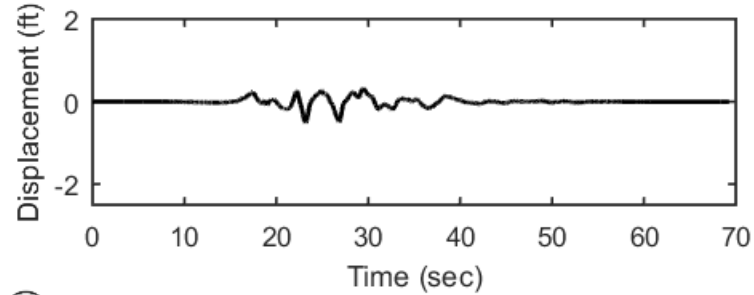
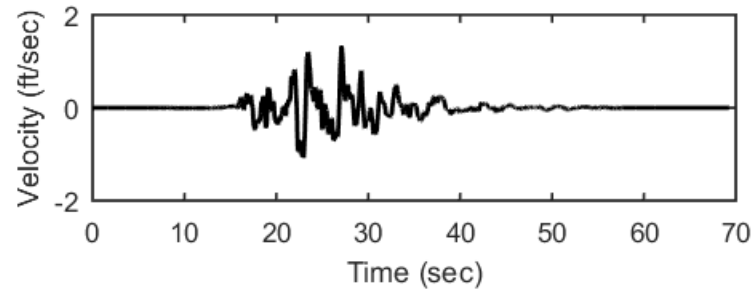
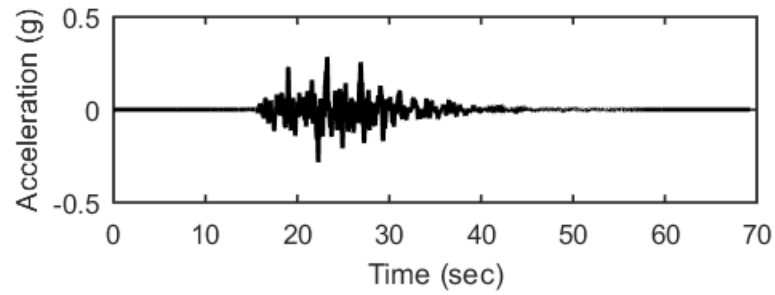
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



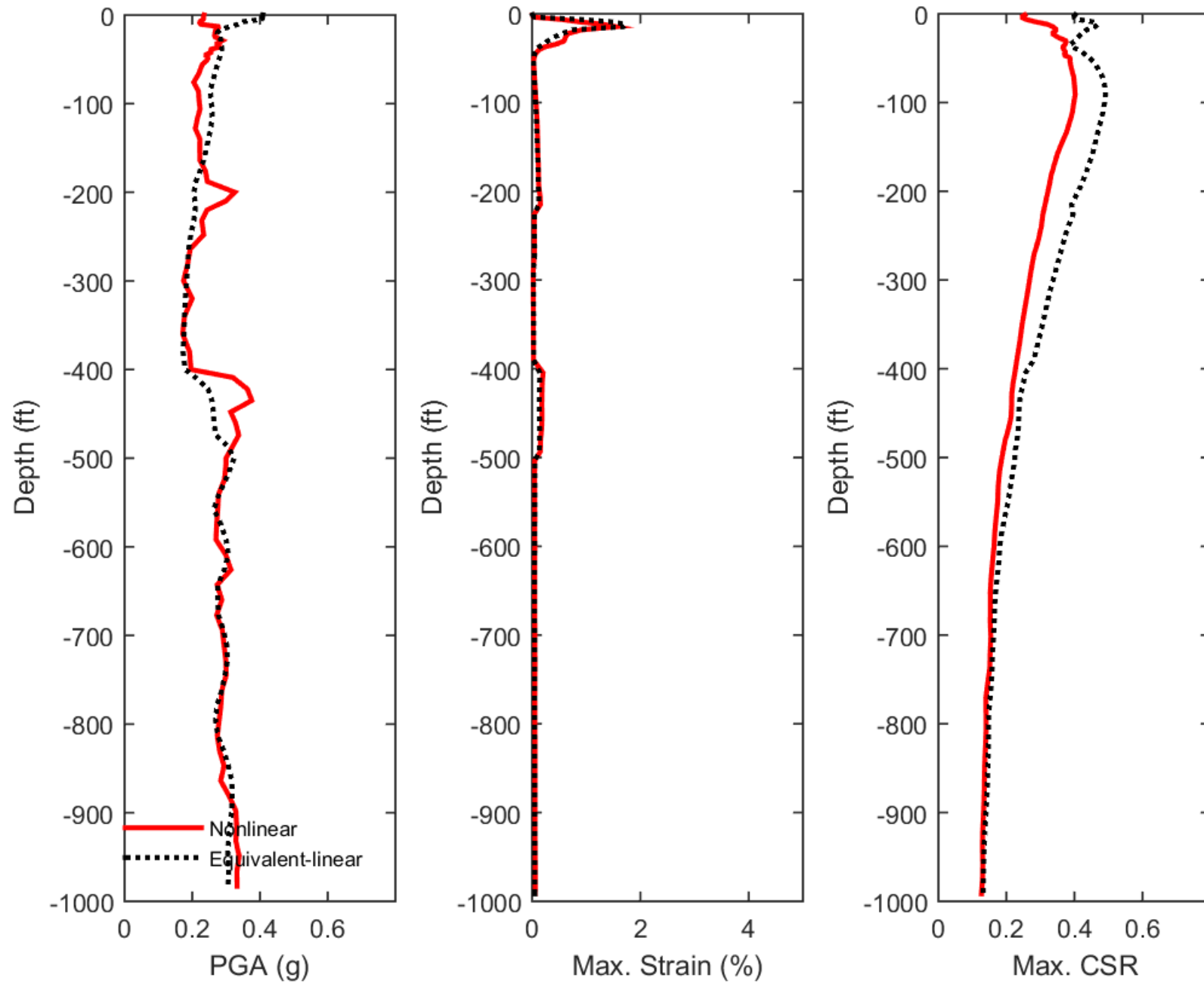
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



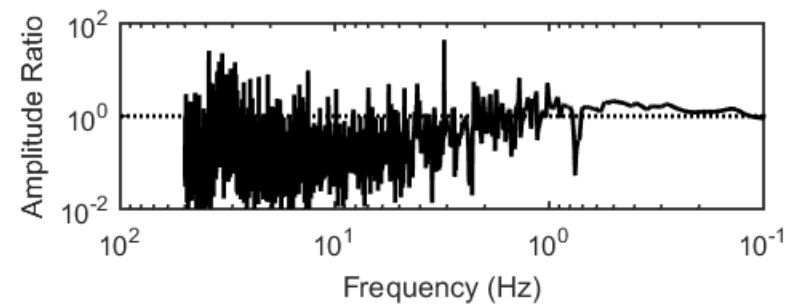
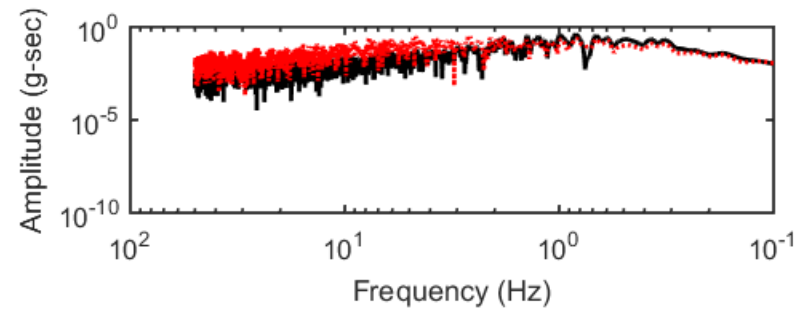
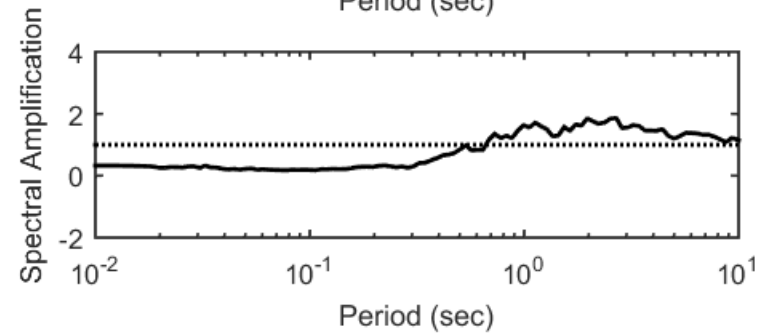
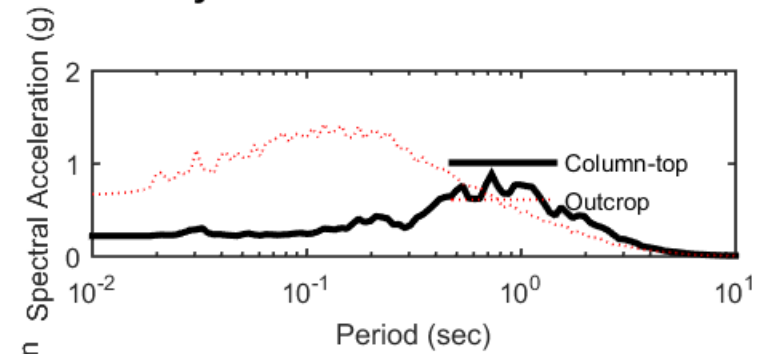
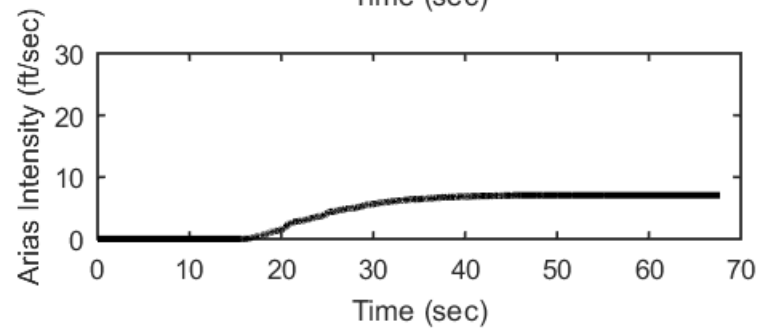
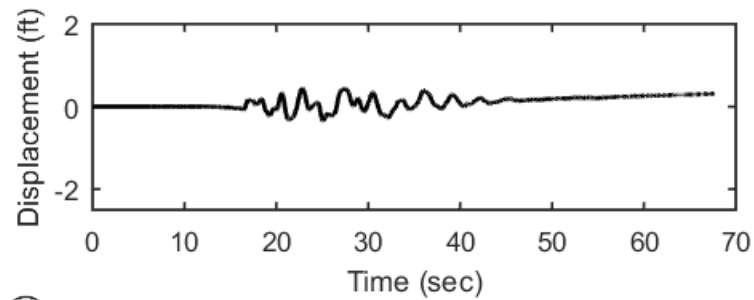
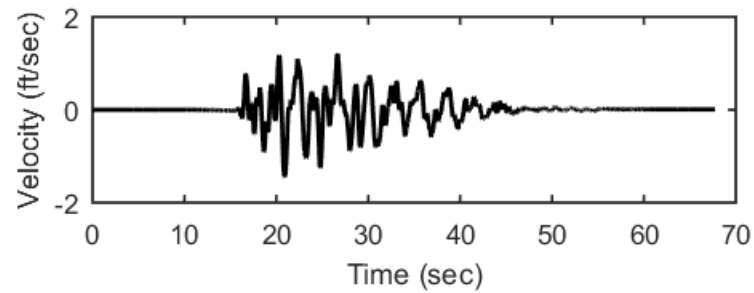
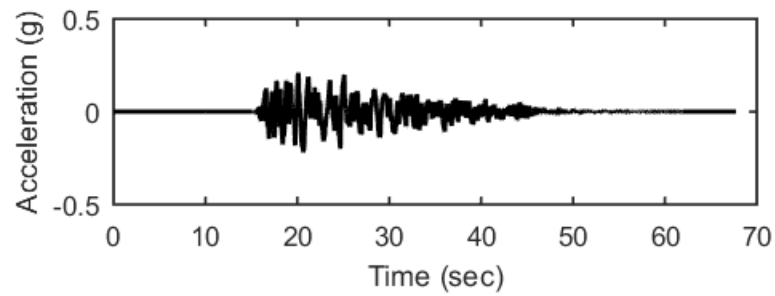
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



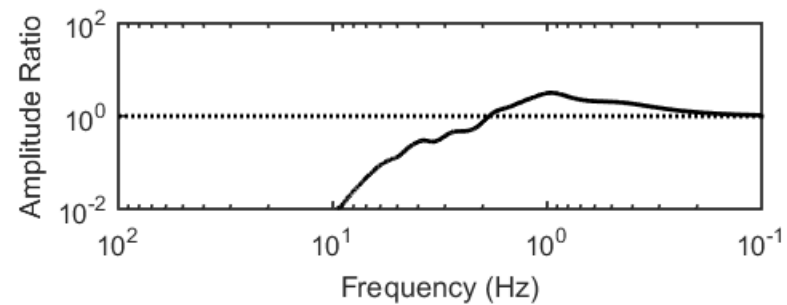
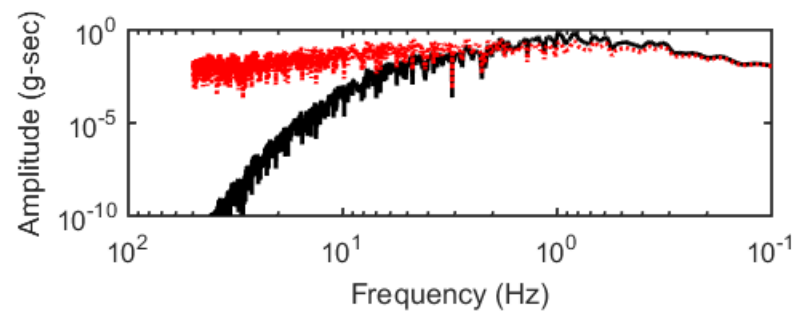
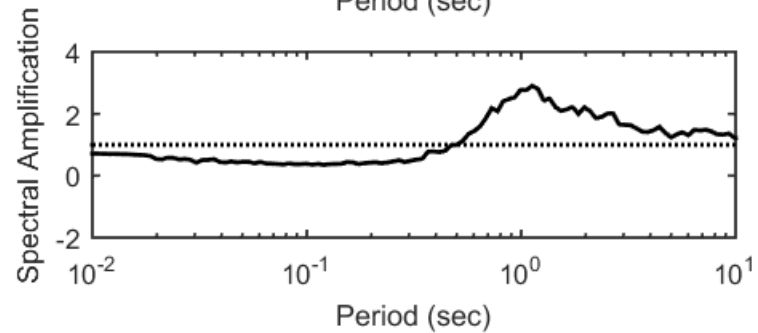
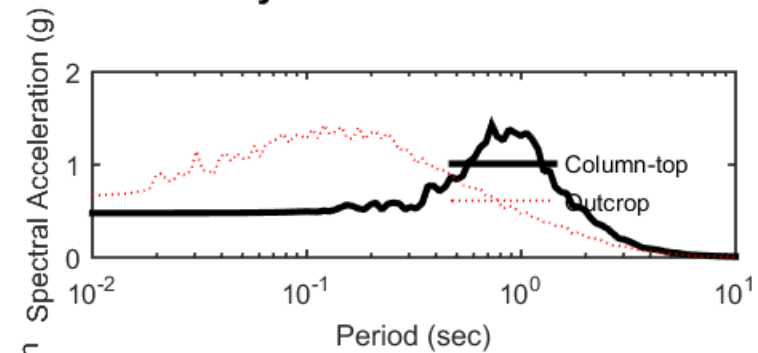
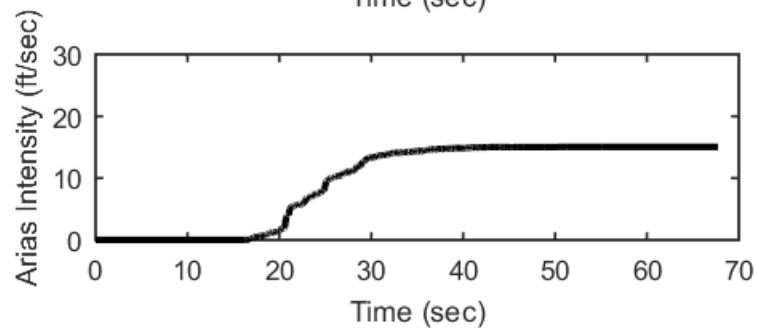
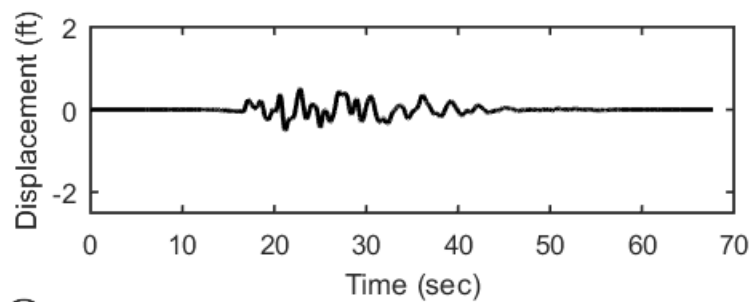
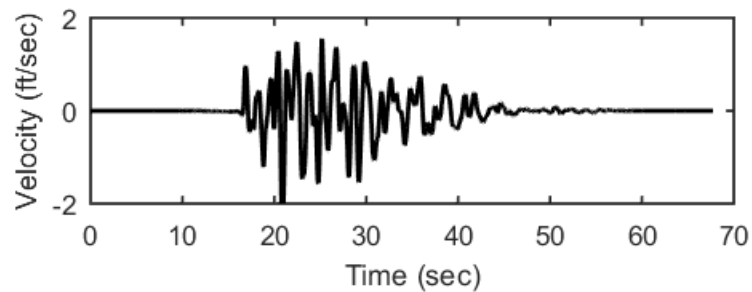
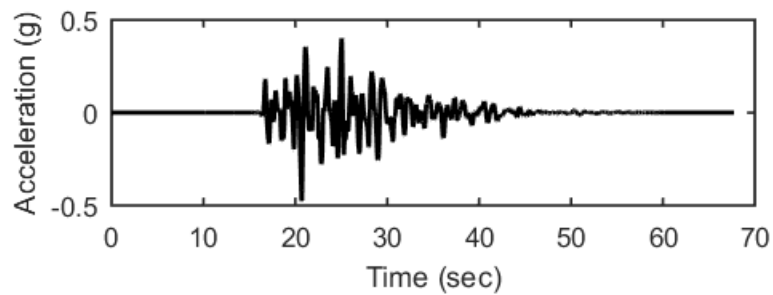
### Profile outputs for Motion: SEE3



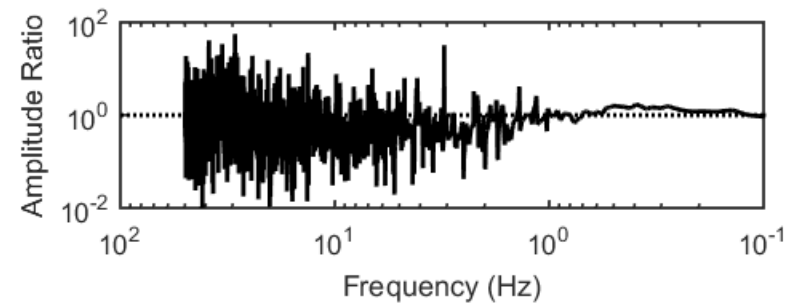
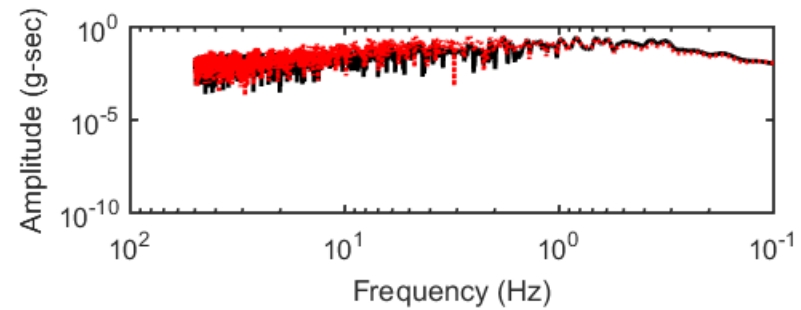
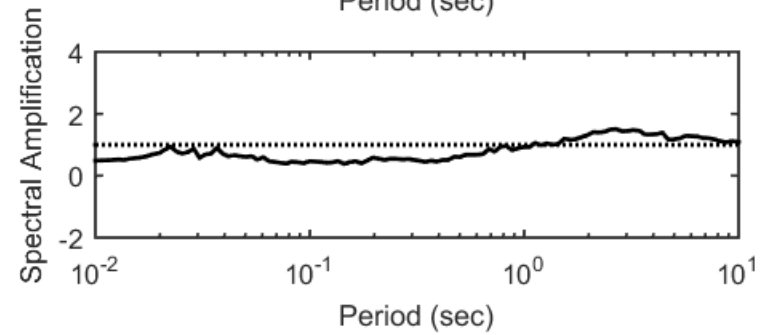
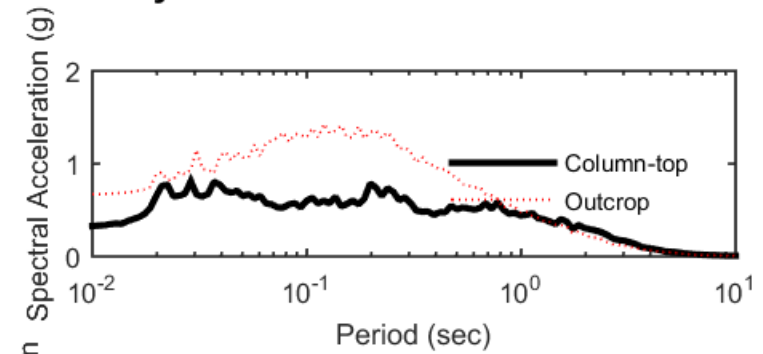
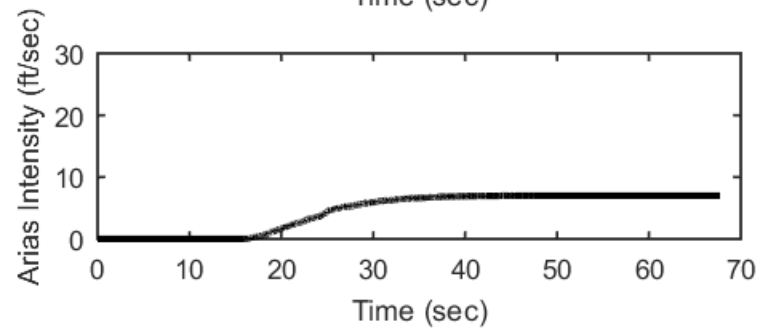
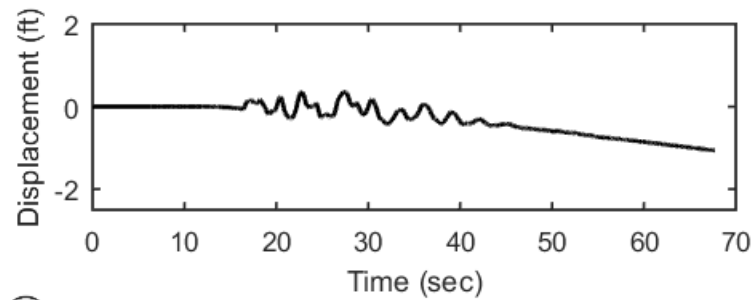
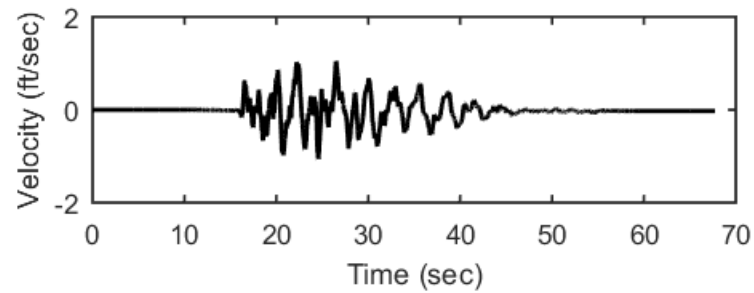
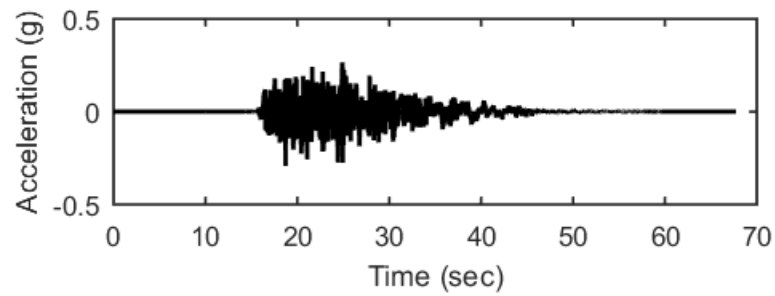
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4

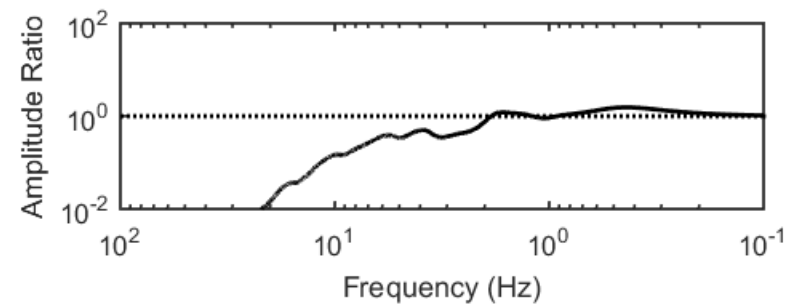
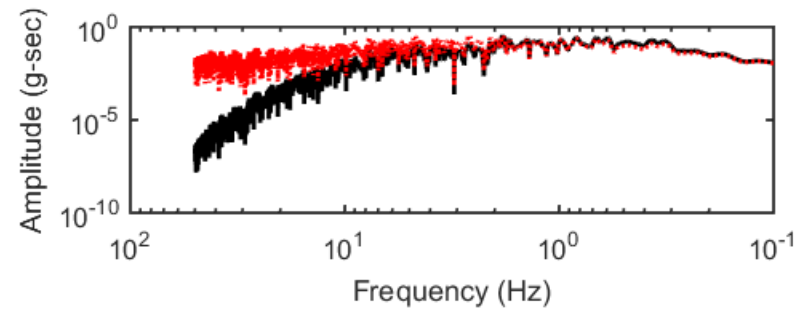
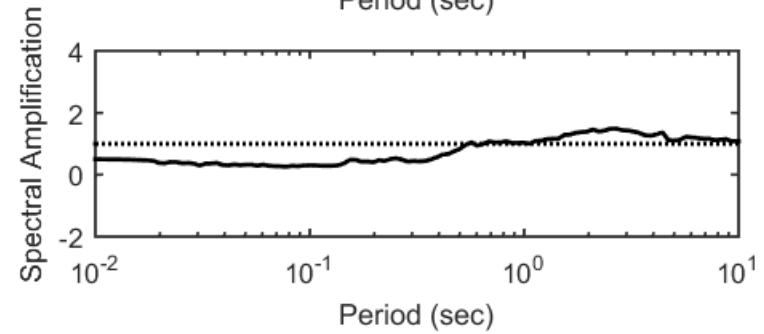
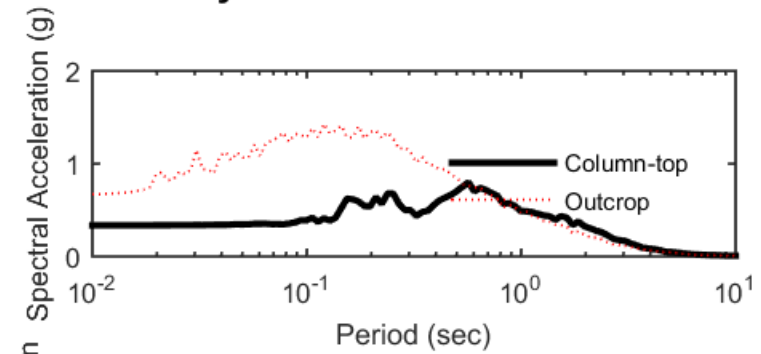
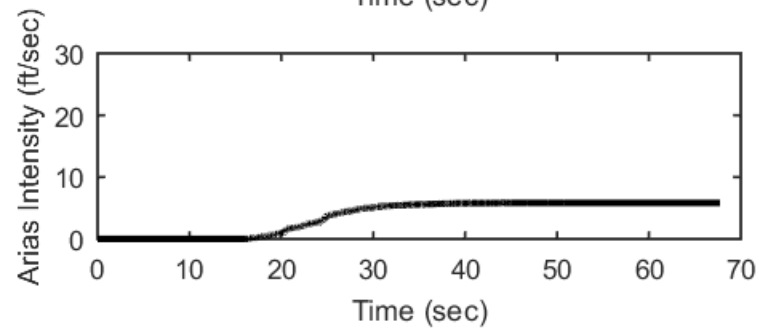
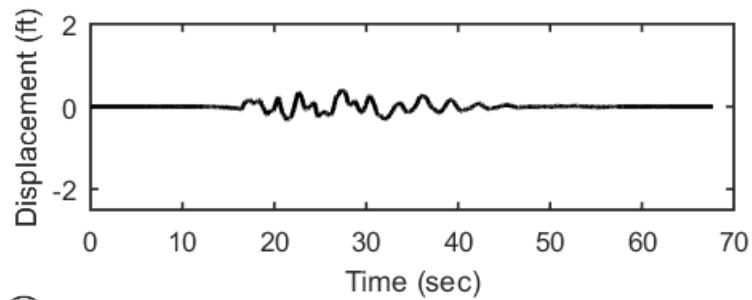
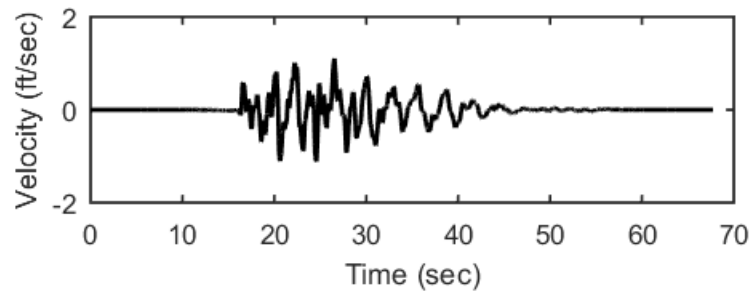
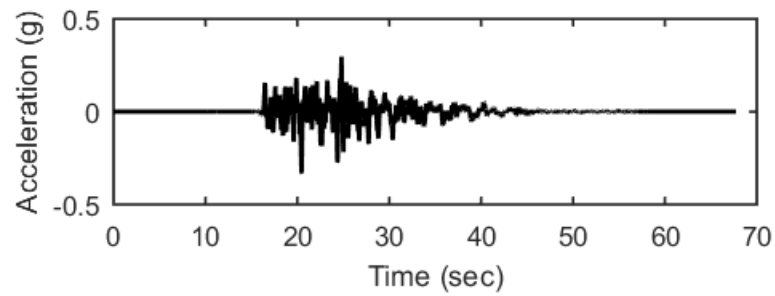


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4

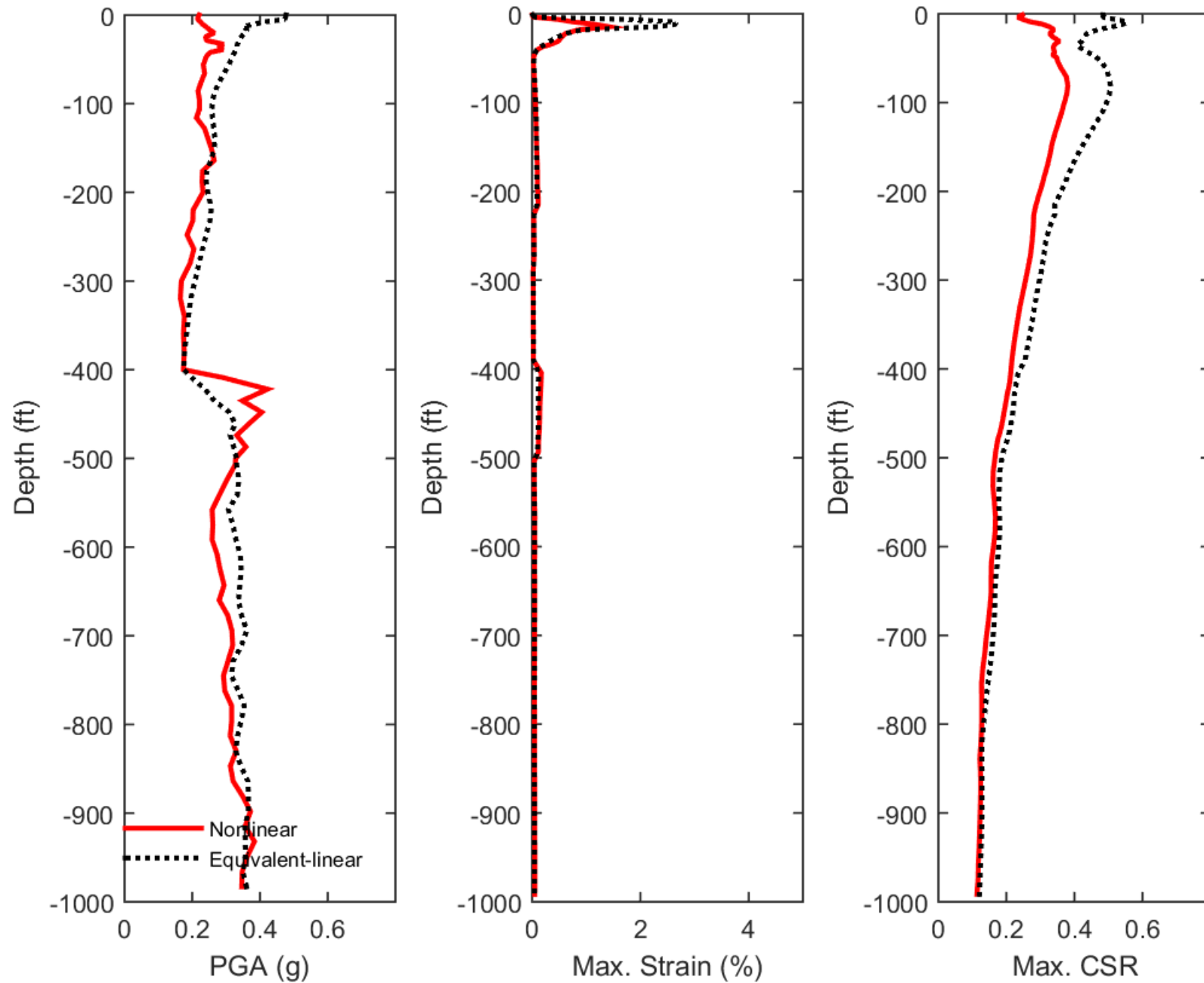




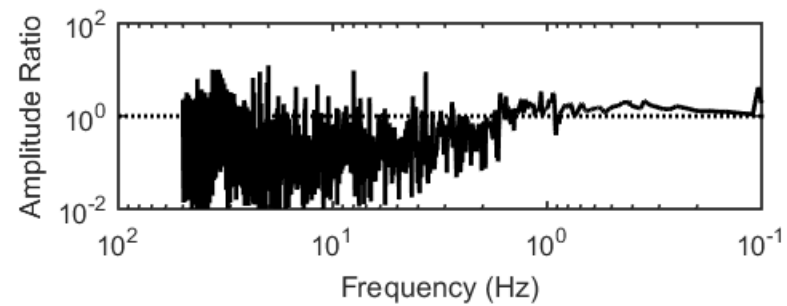
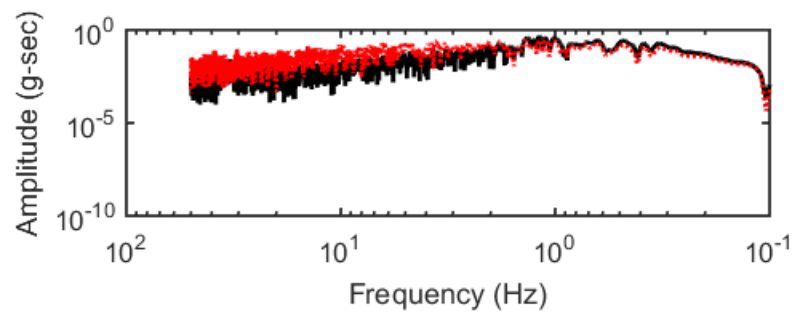
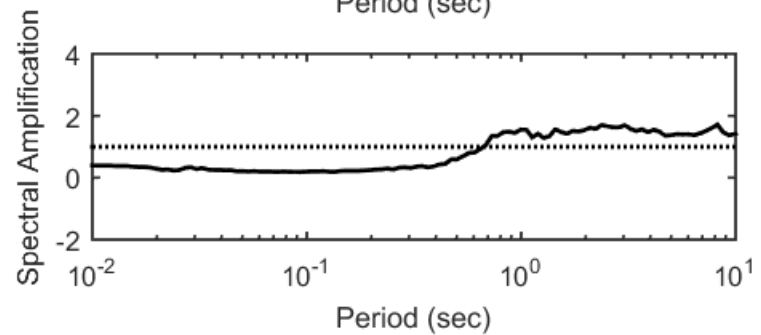
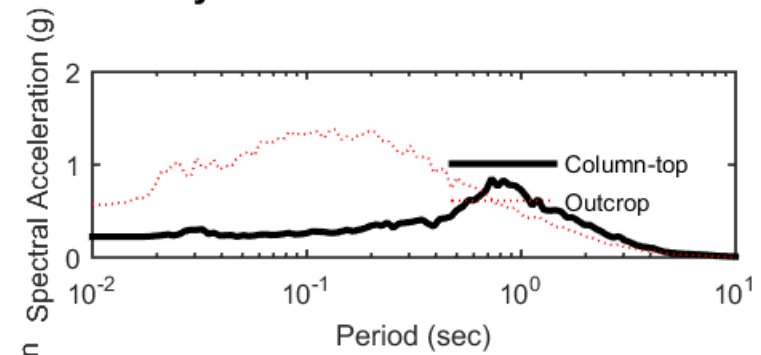
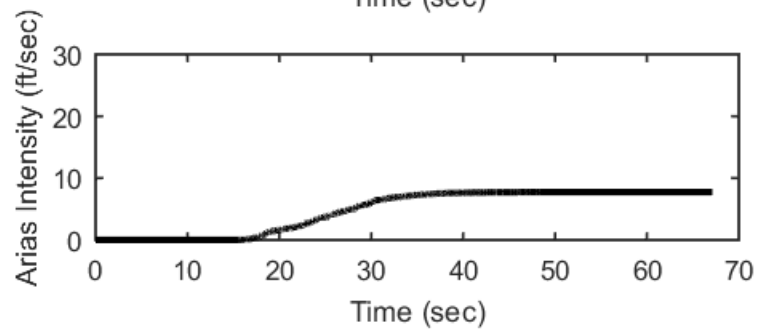
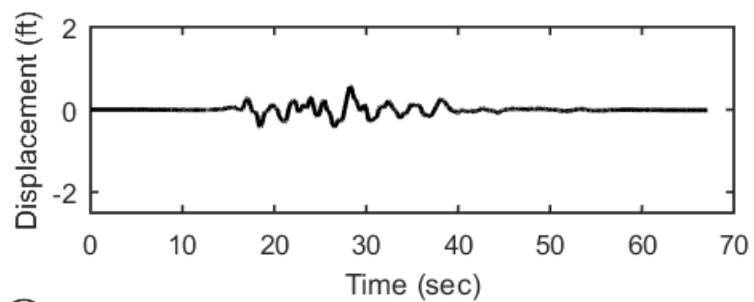
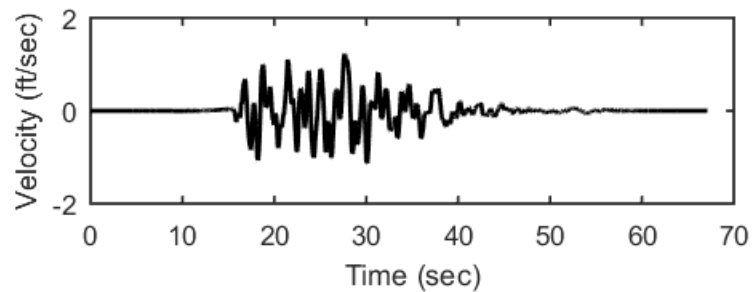
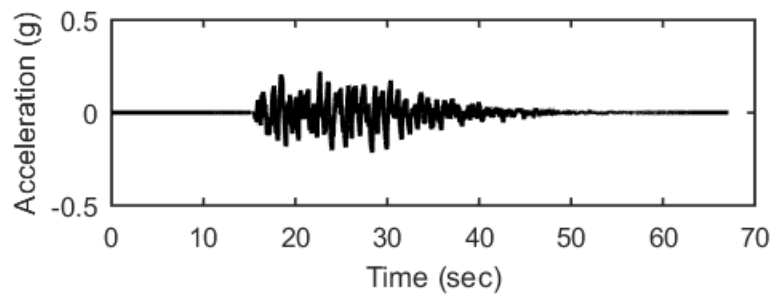
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



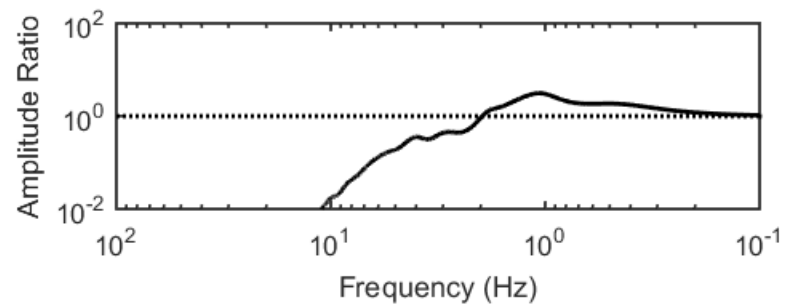
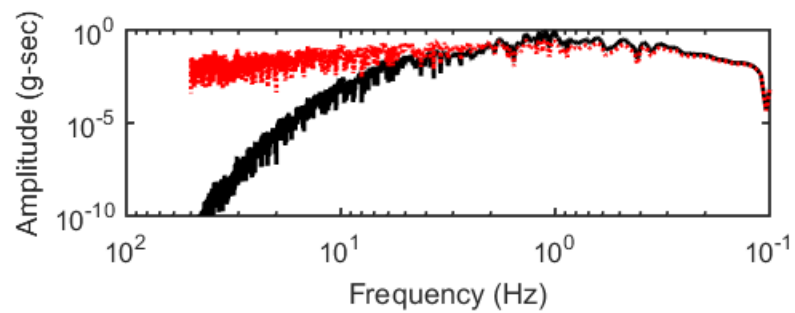
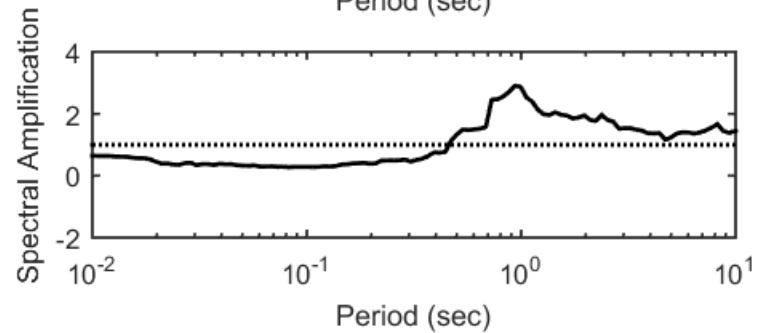
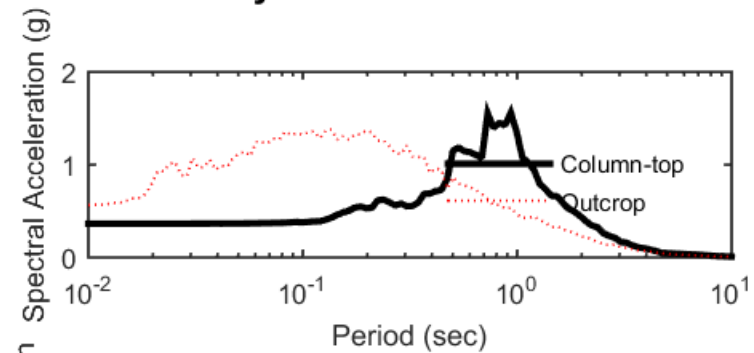
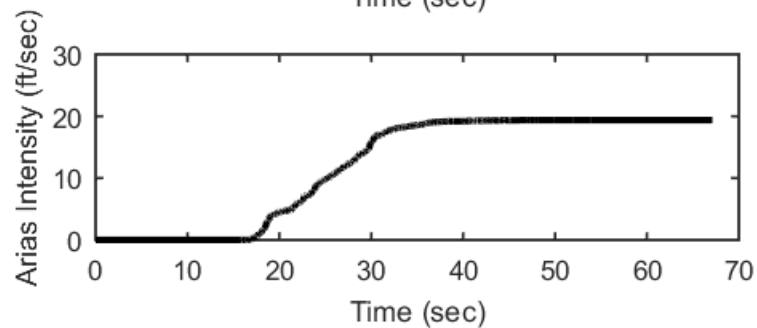
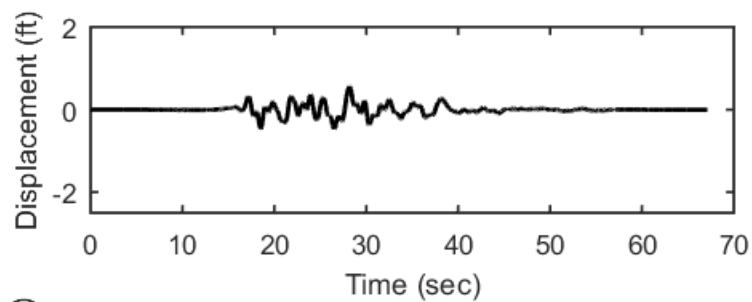
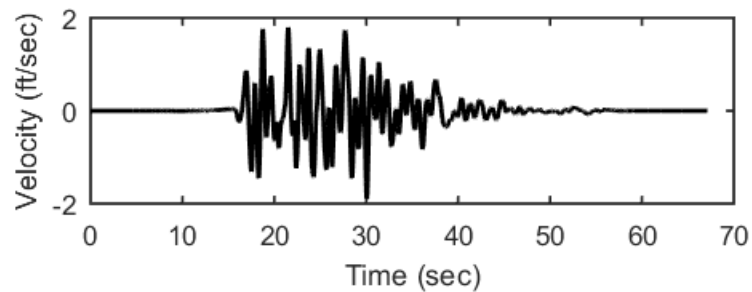
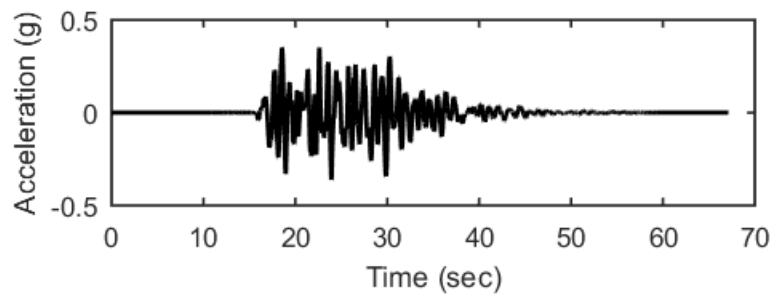
### Profile outputs for Motion: SEE4



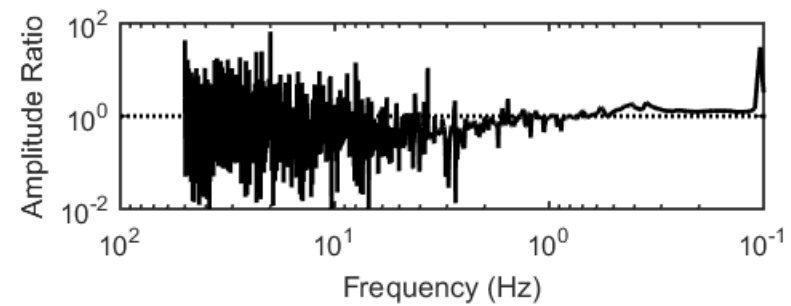
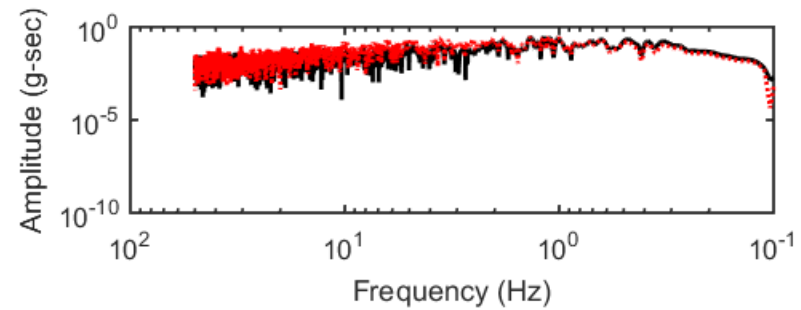
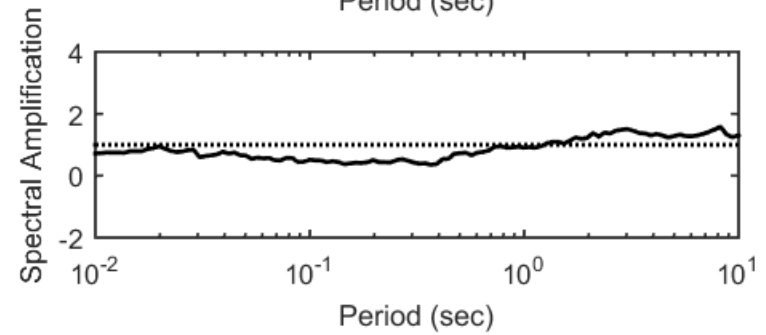
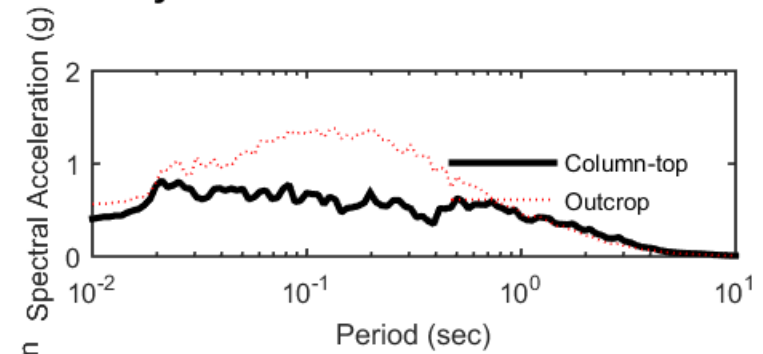
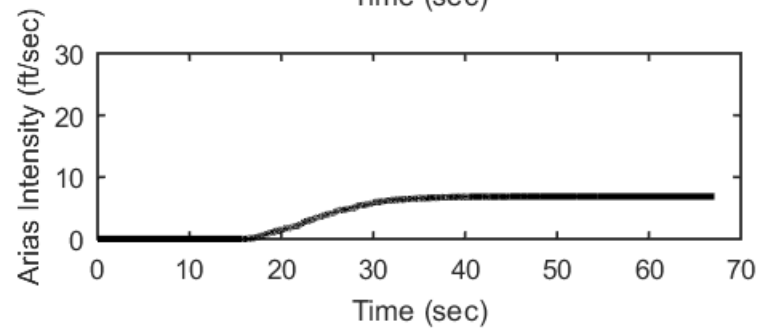
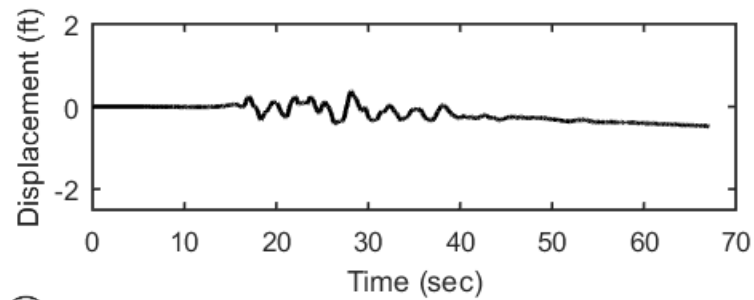
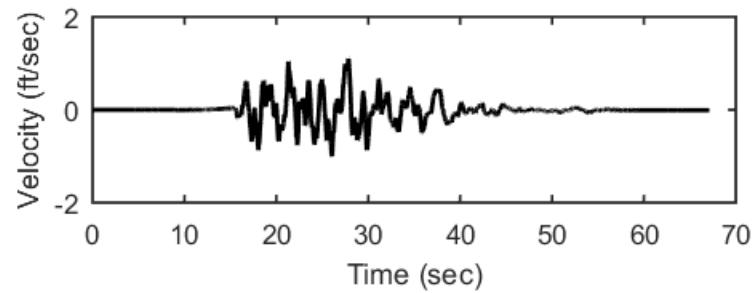
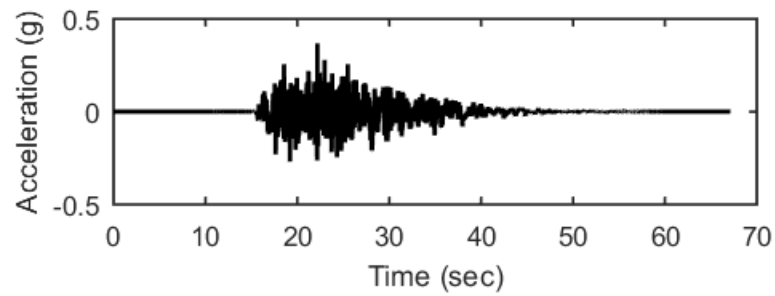
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



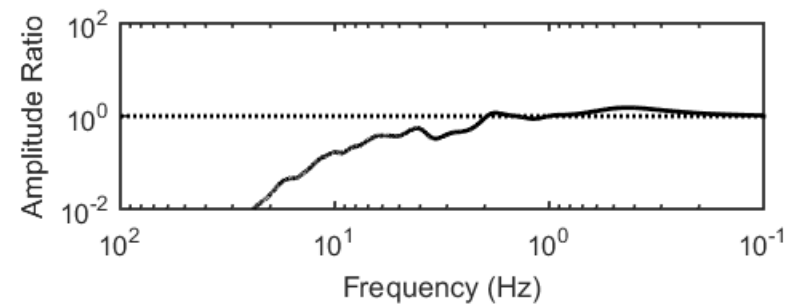
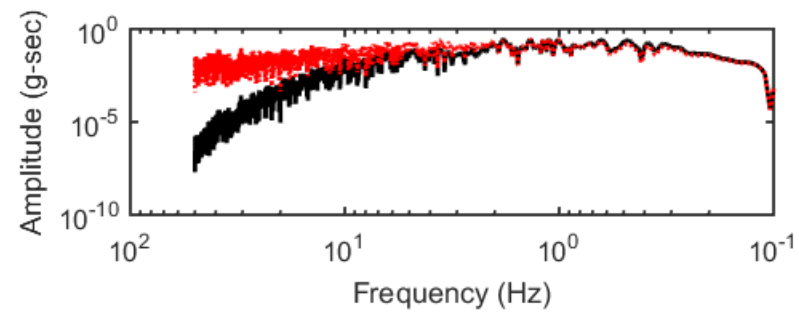
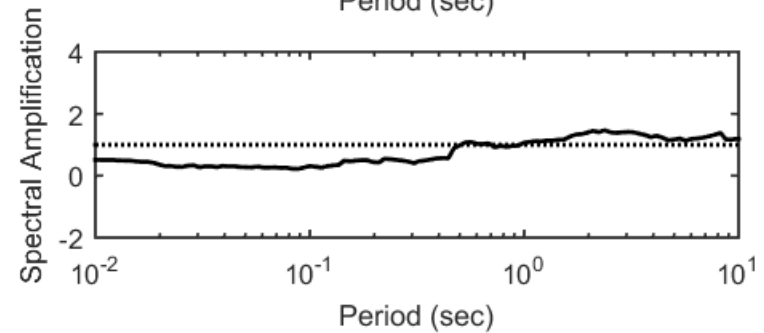
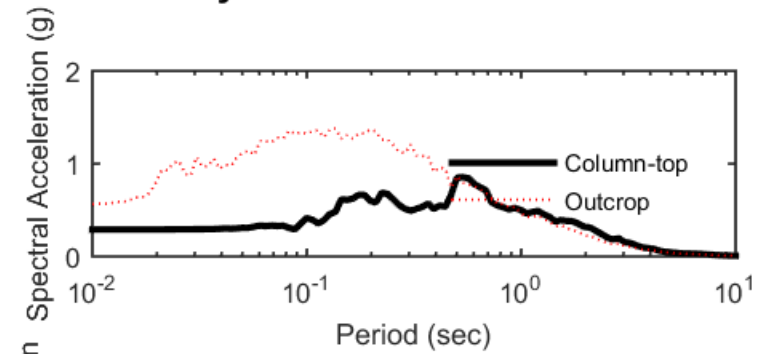
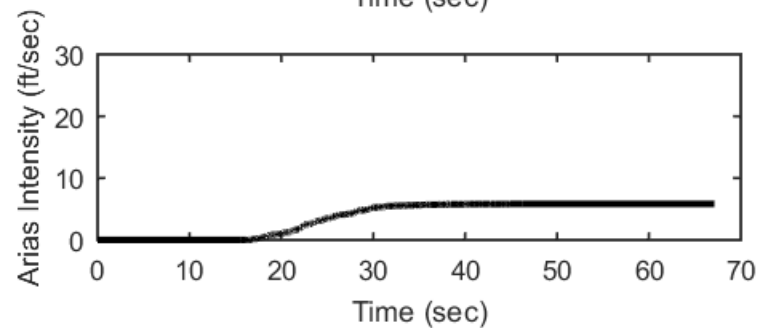
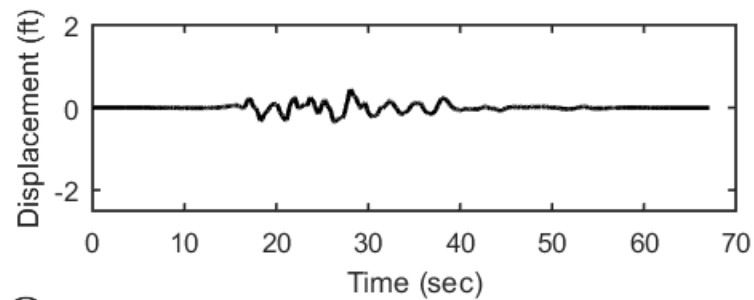
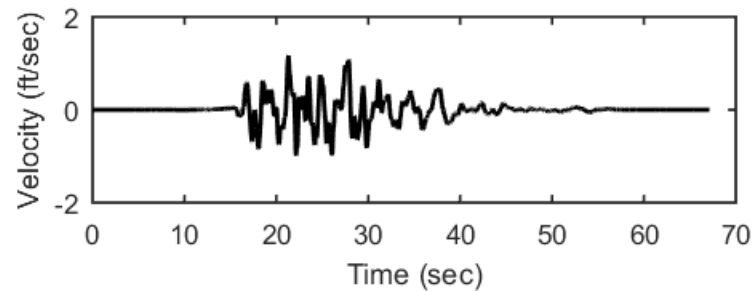
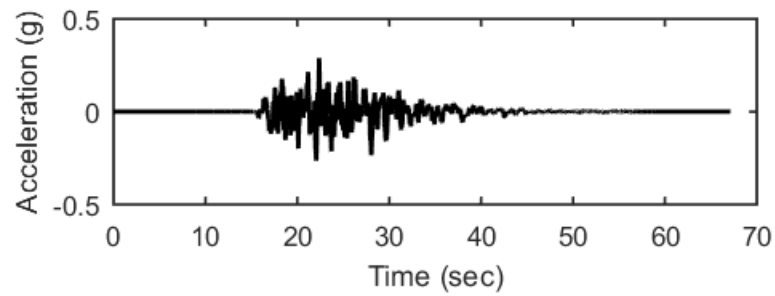
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



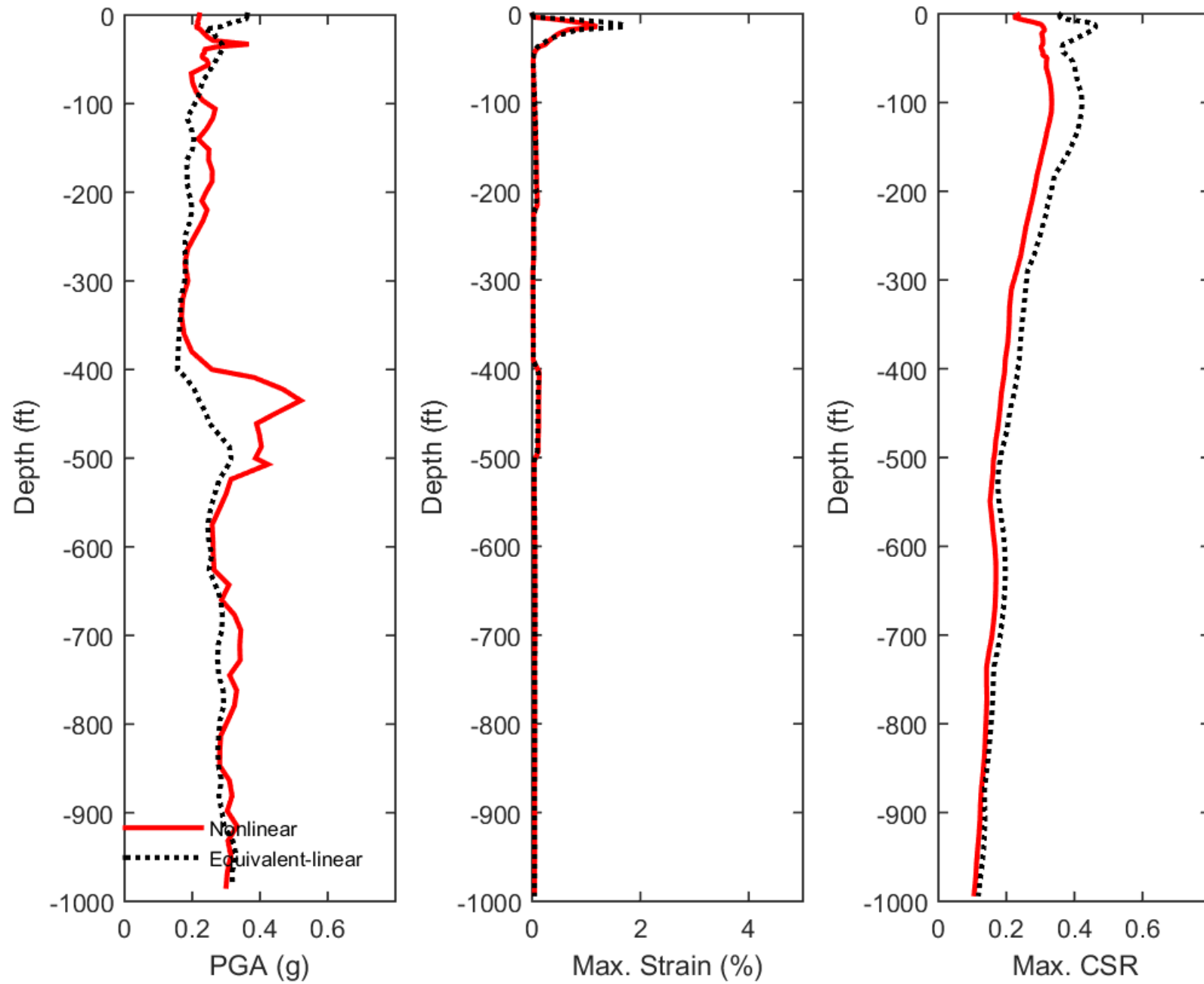
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



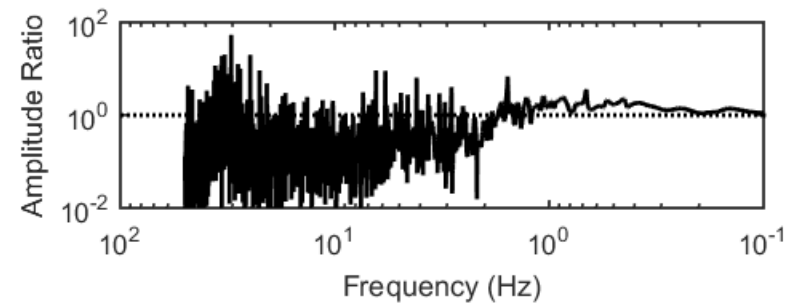
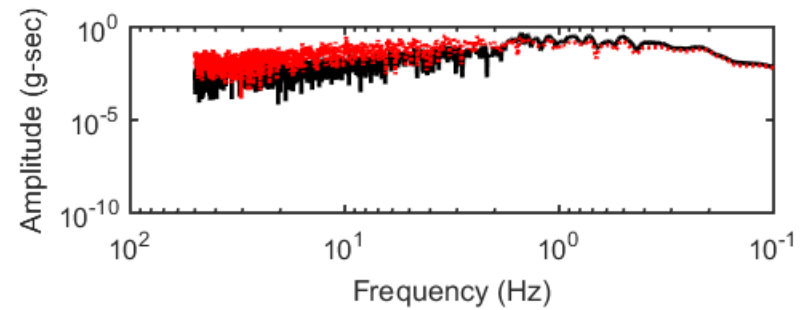
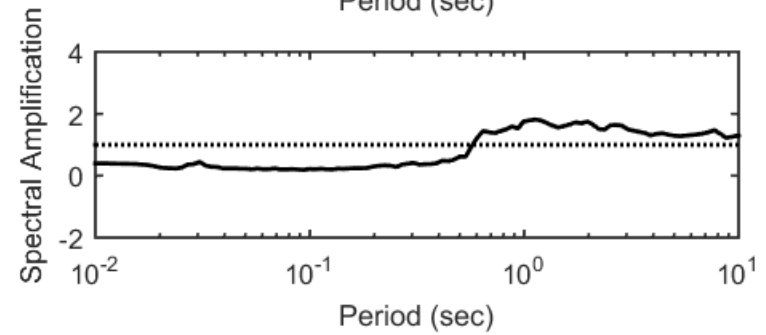
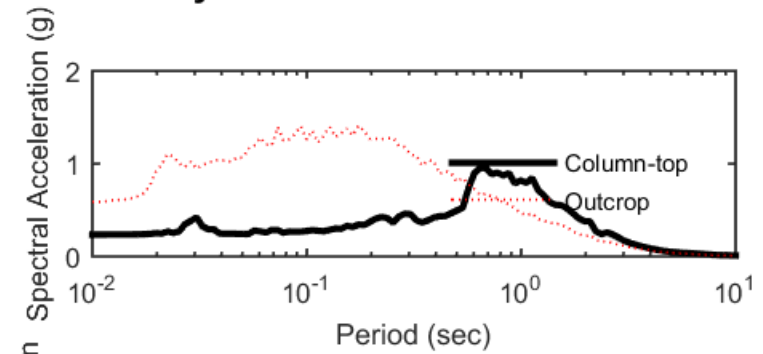
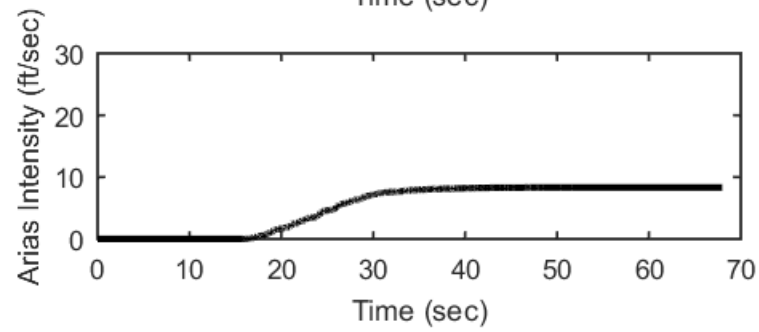
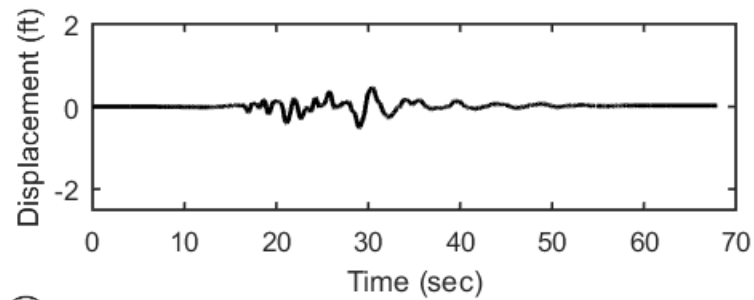
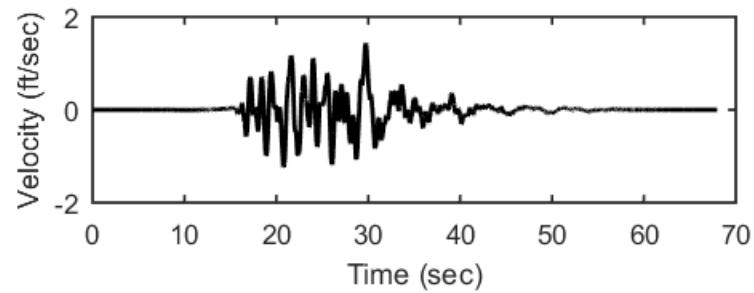
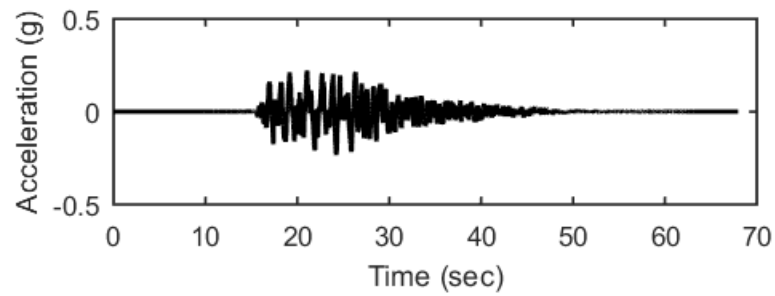
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



### Profile outputs for Motion: SEE5

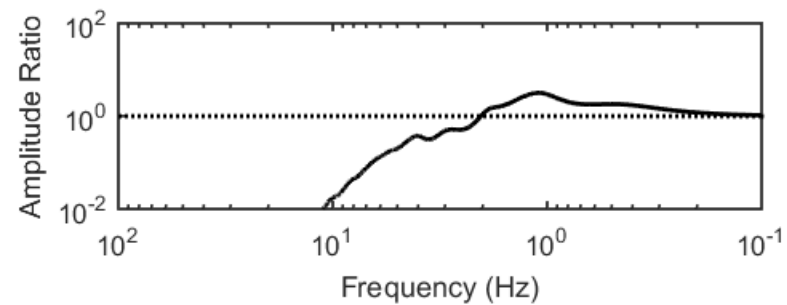
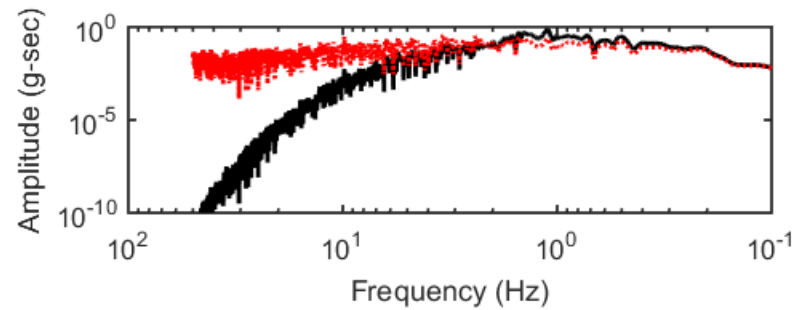
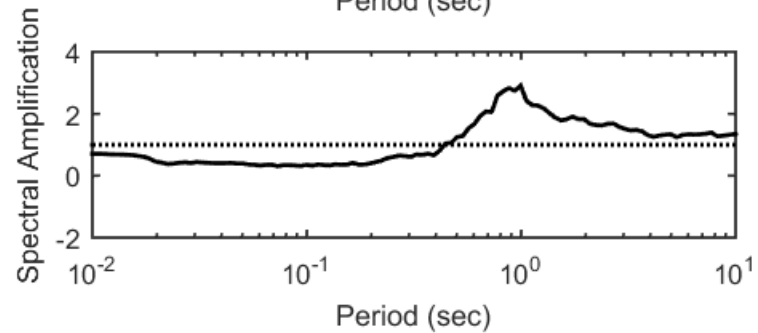
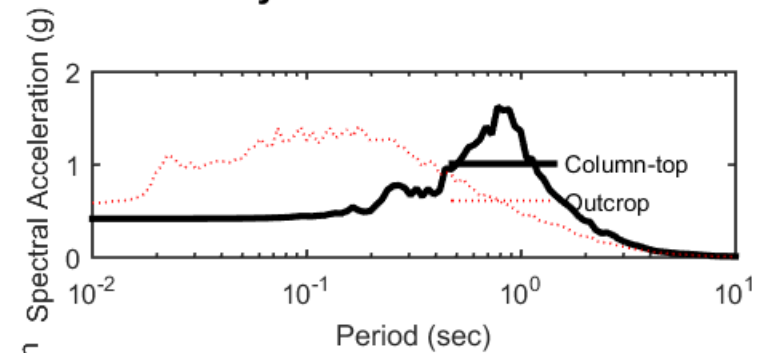
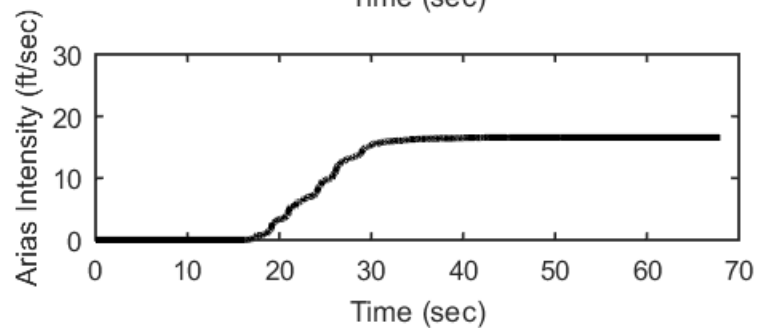
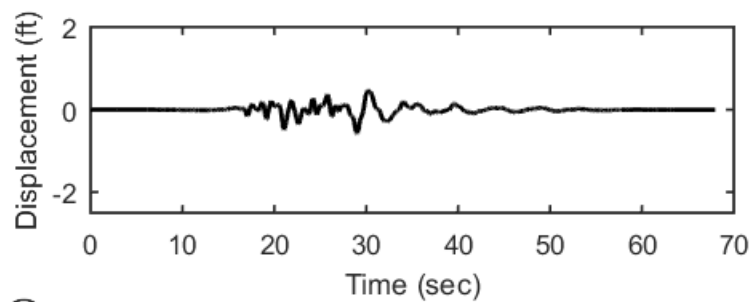
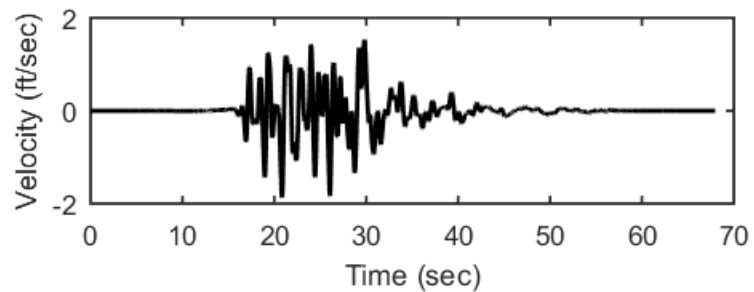
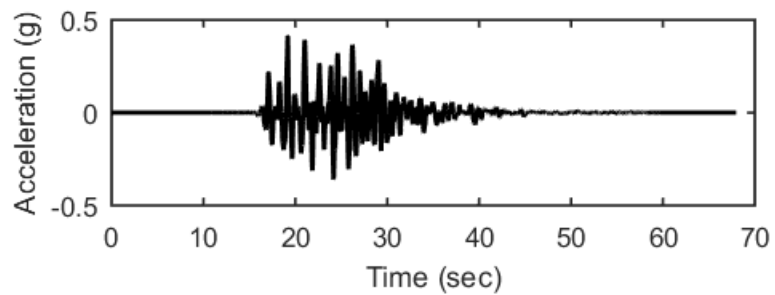


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6

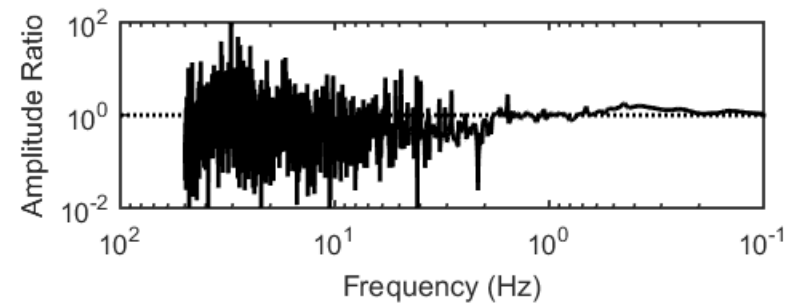
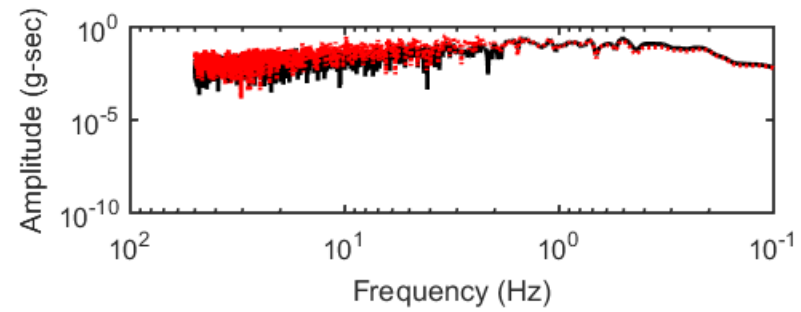
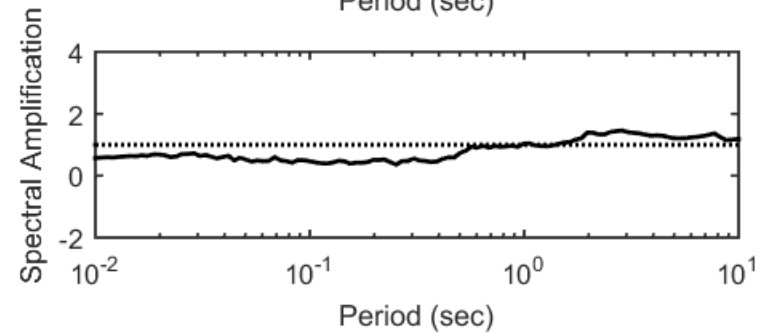
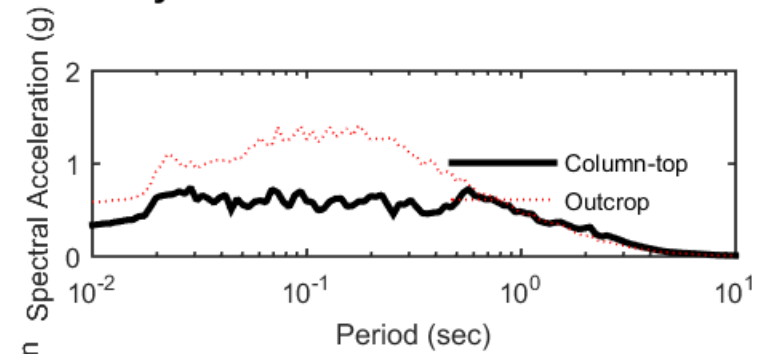
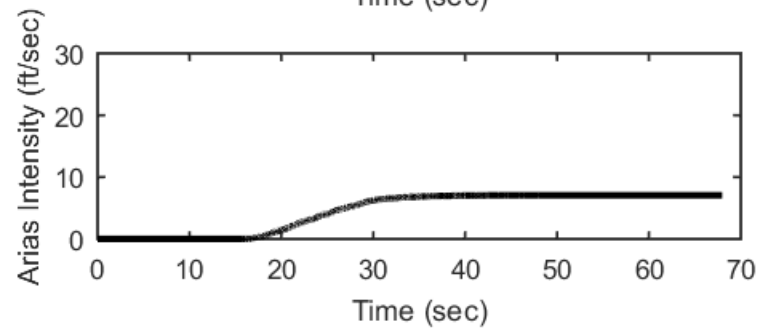
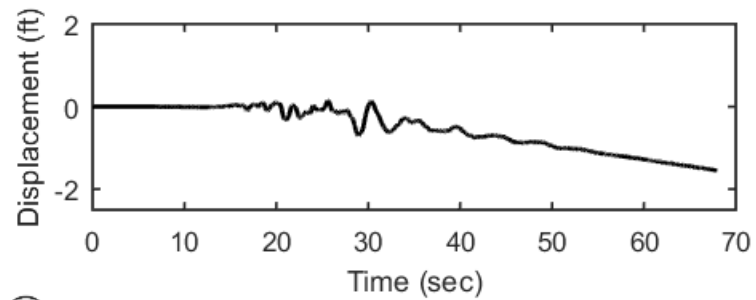
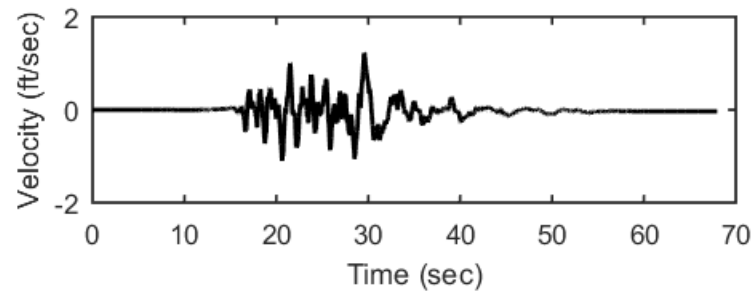
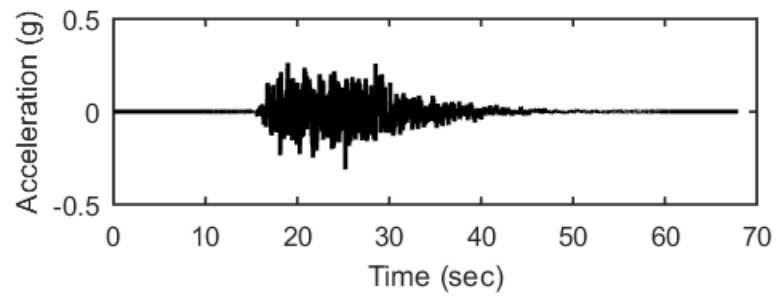




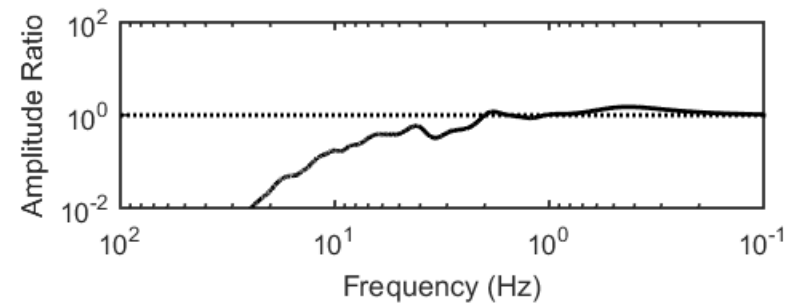
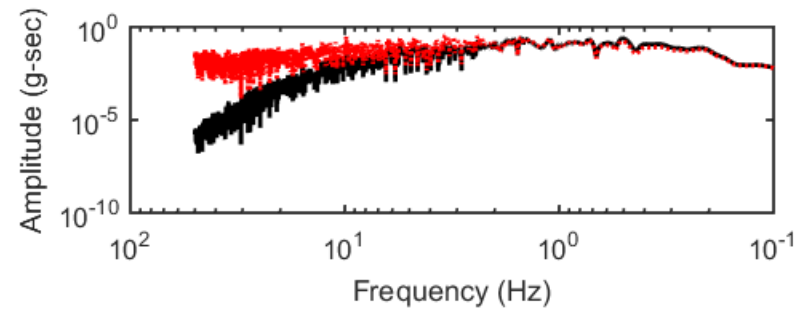
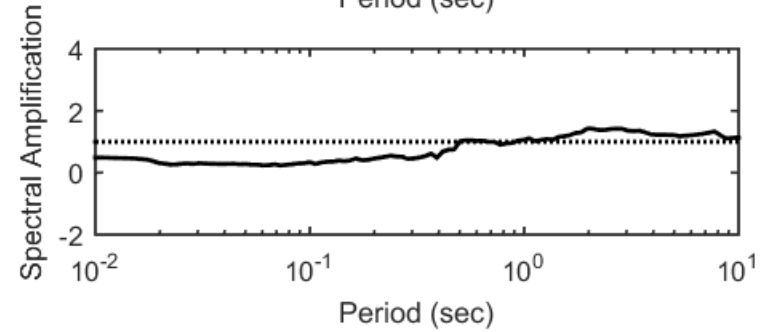
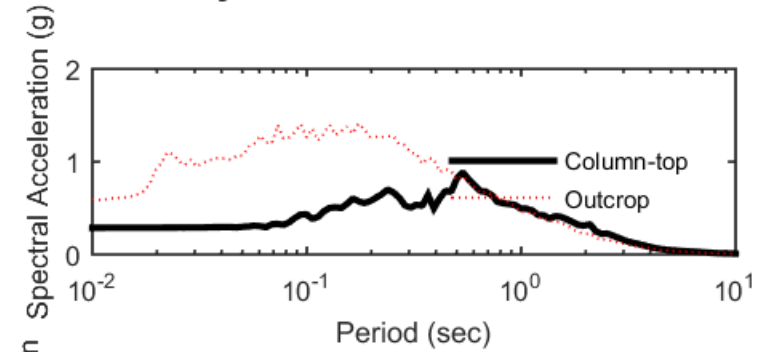
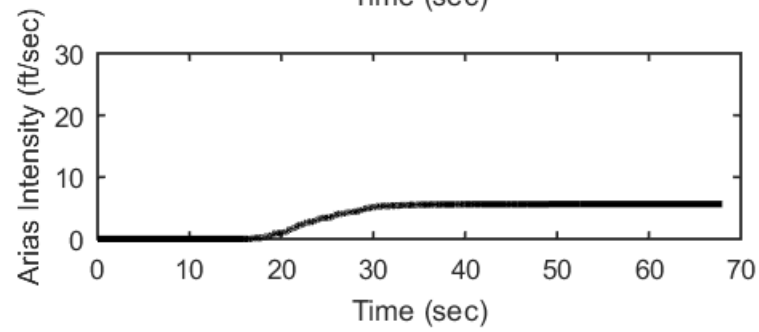
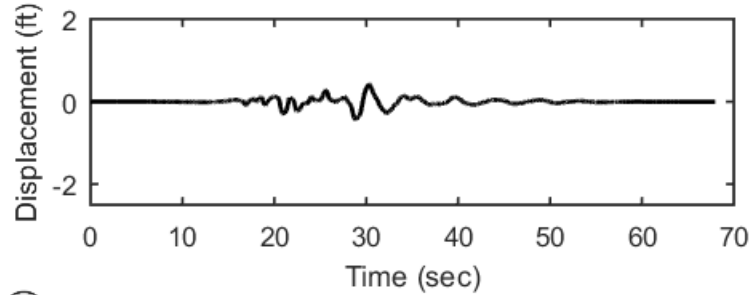
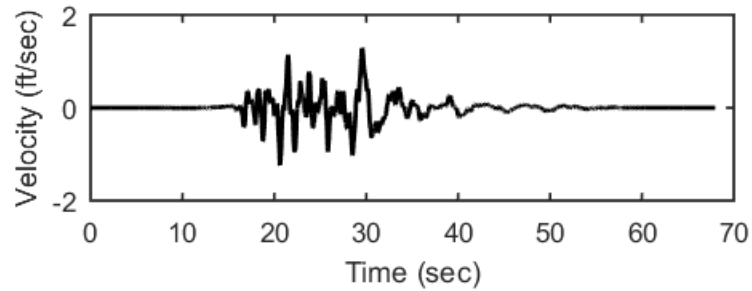
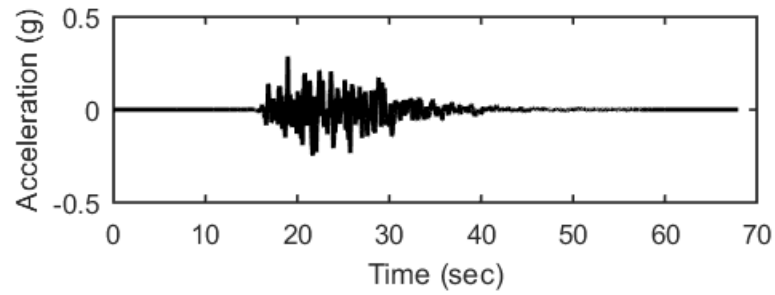
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



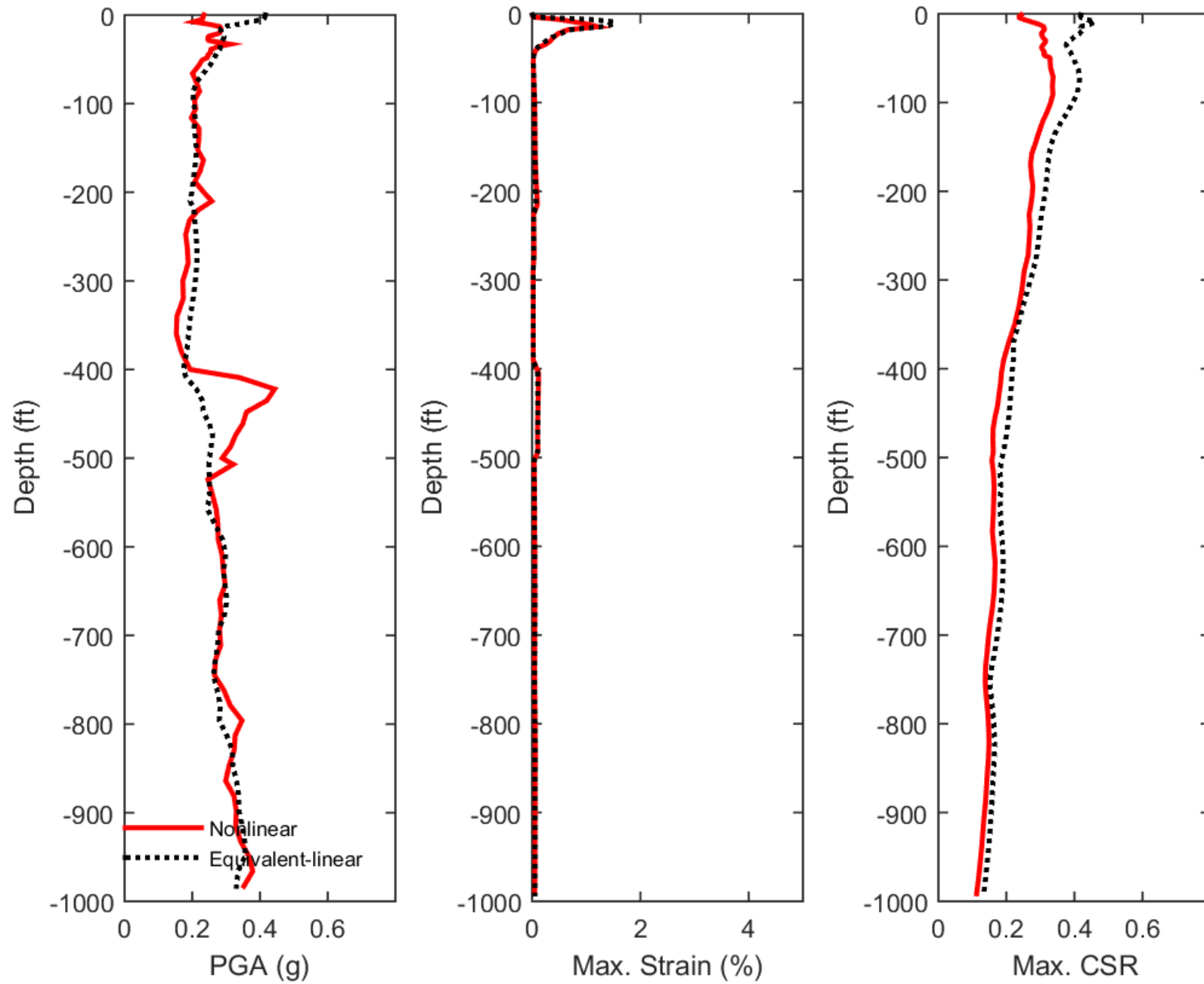
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



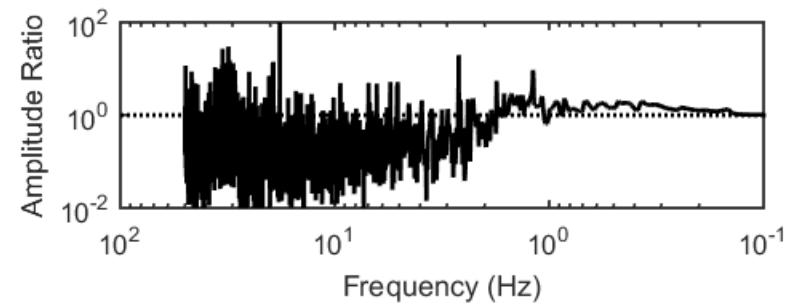
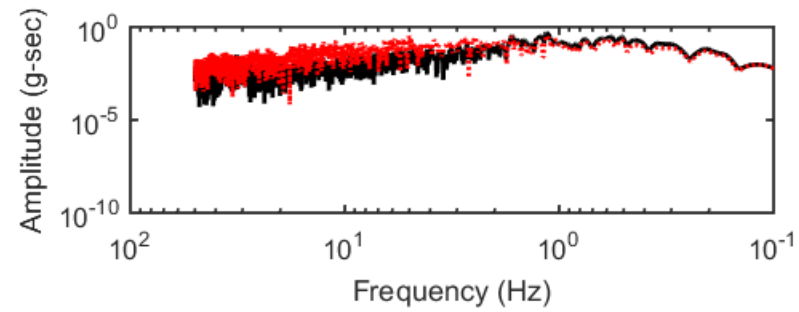
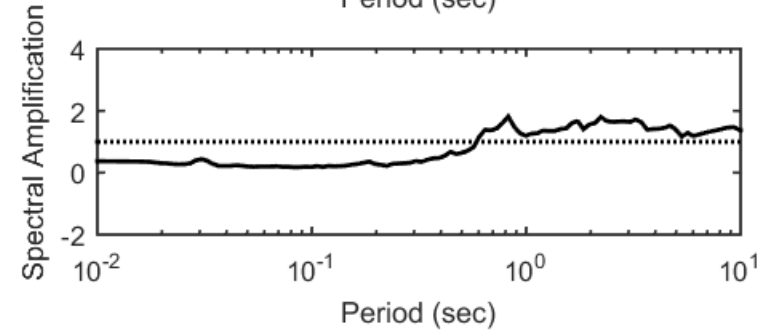
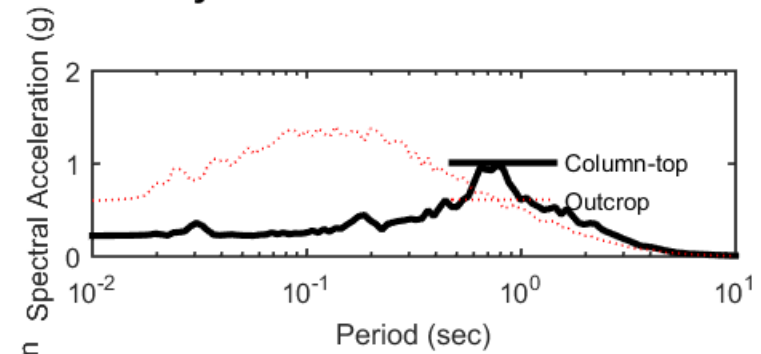
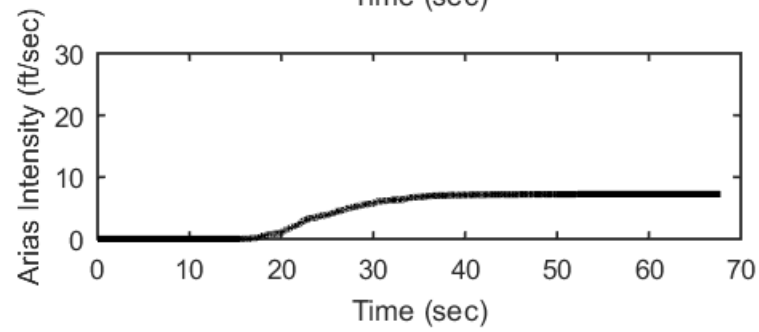
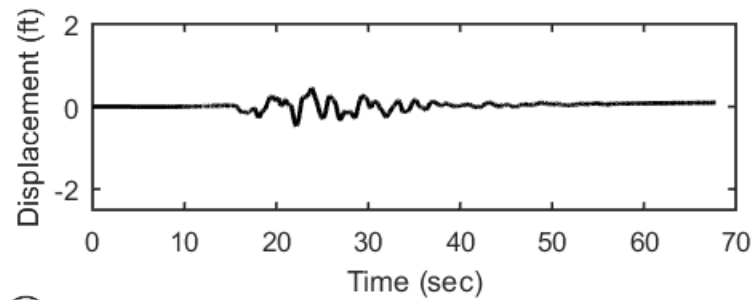
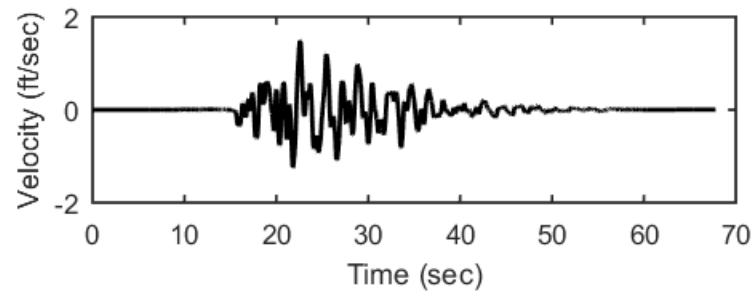
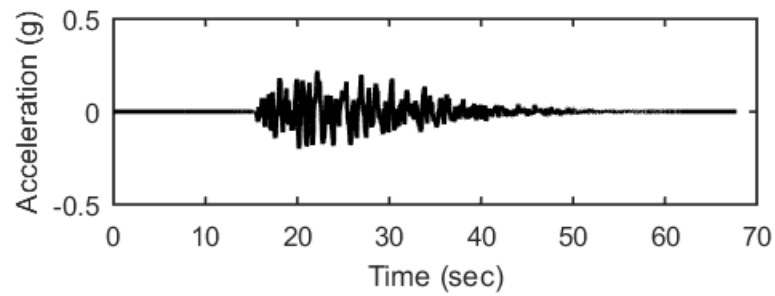
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



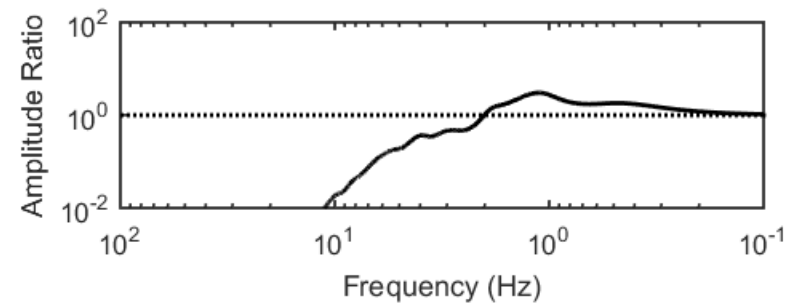
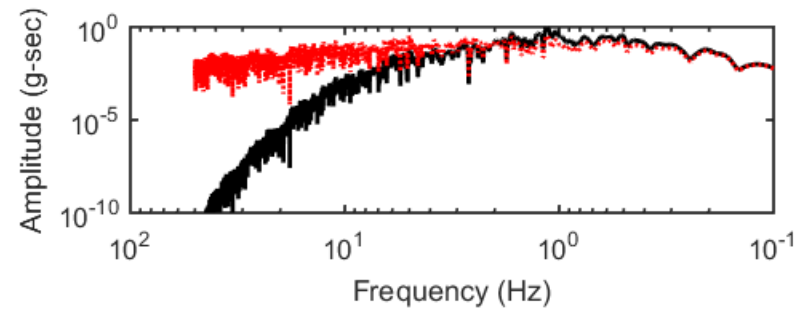
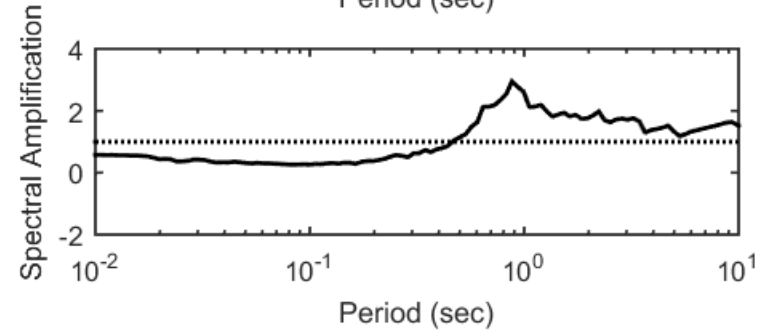
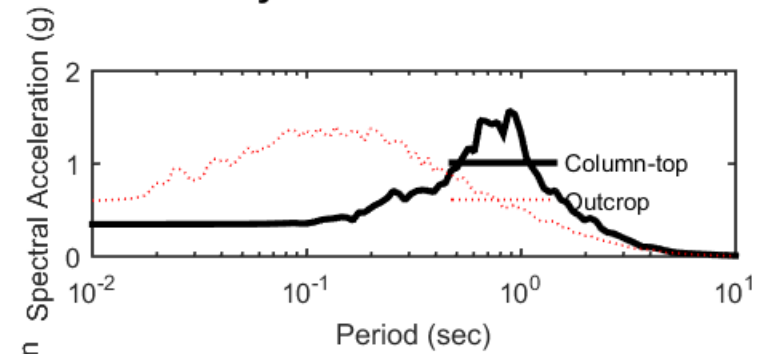
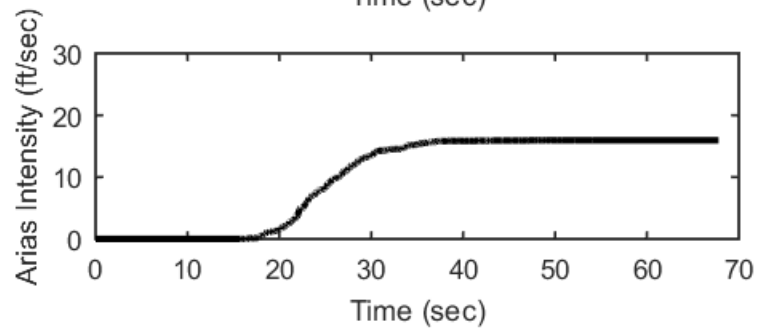
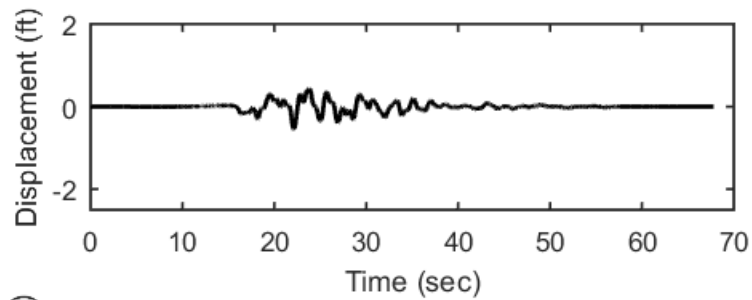
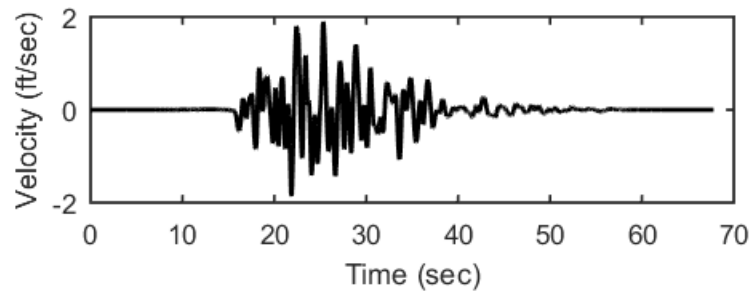
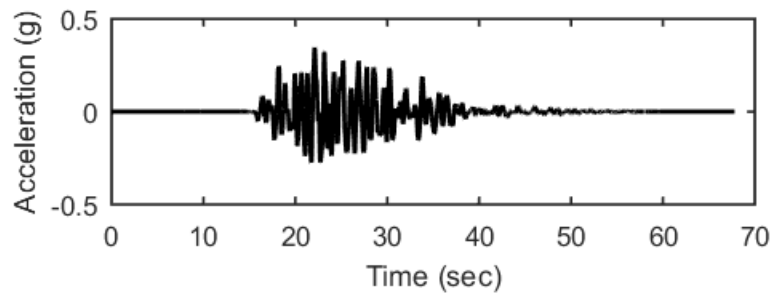
### Profile outputs for Motion: SEE6



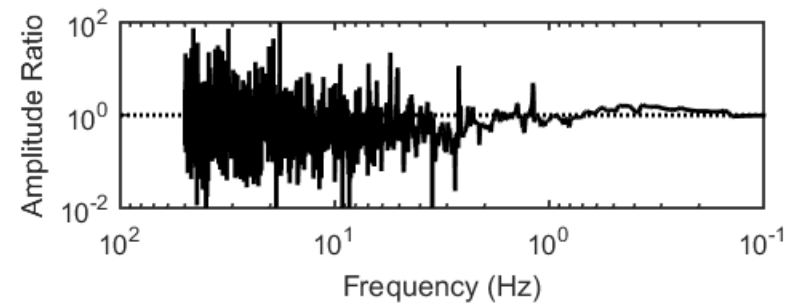
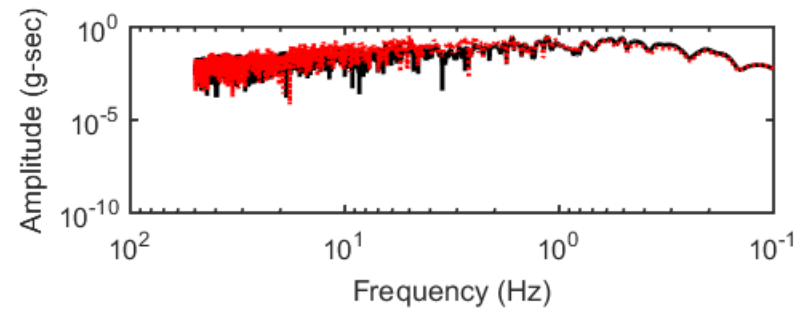
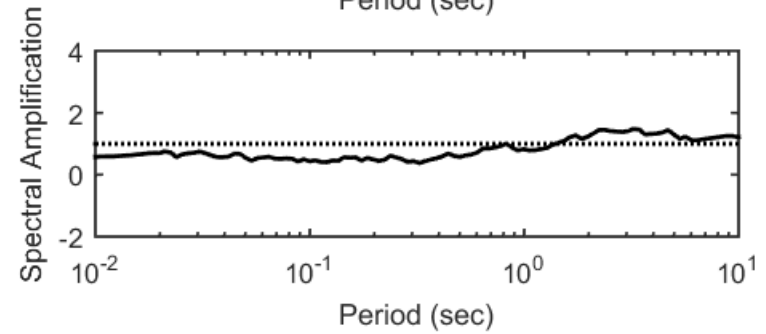
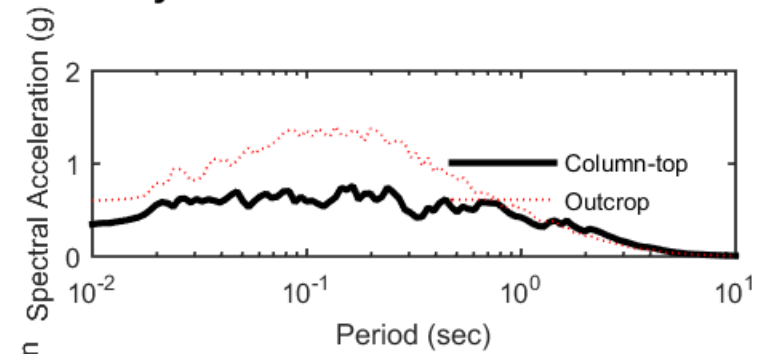
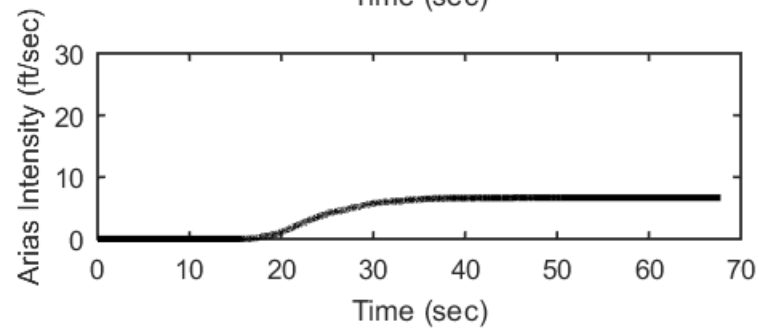
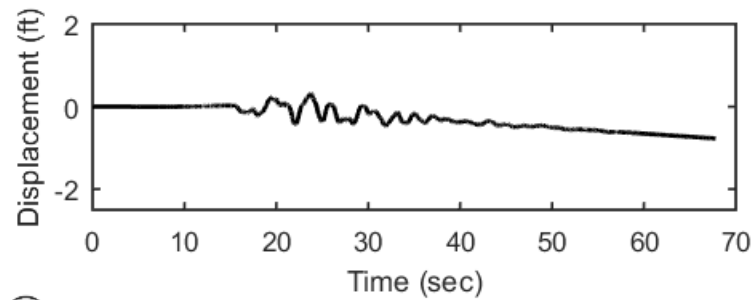
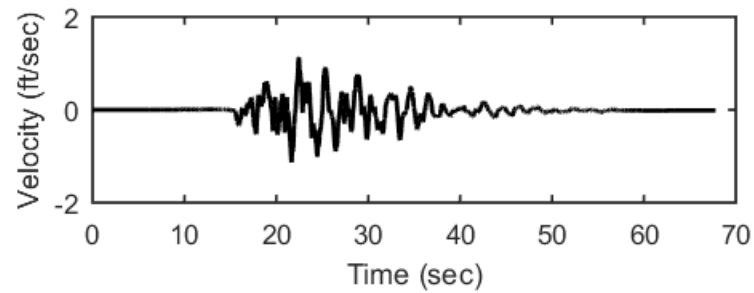
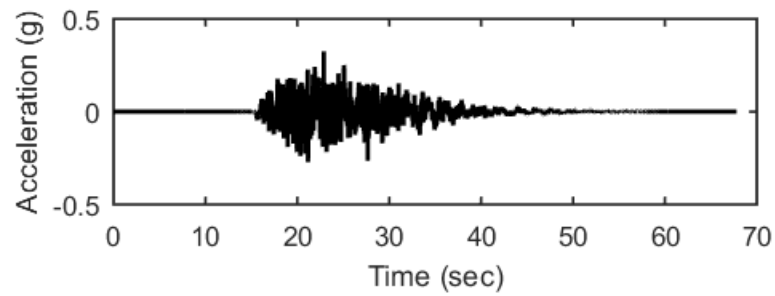
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



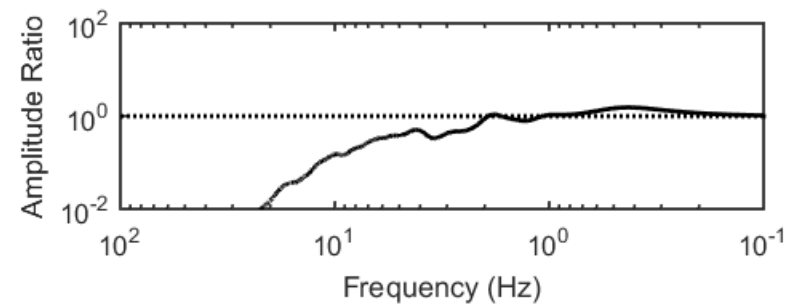
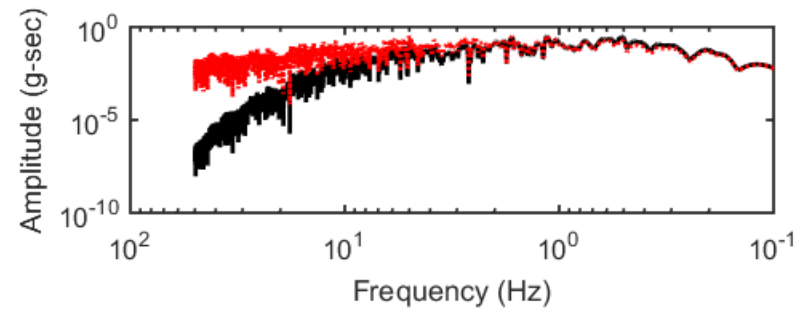
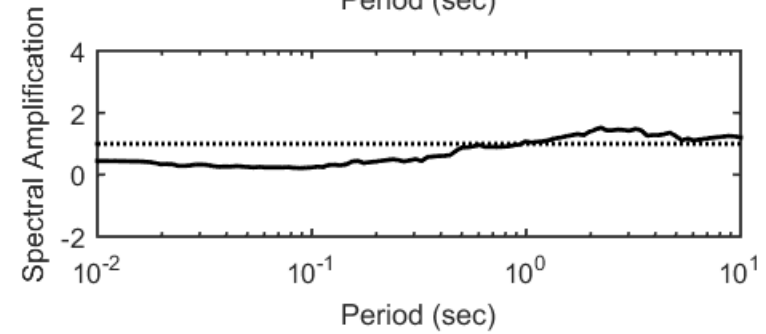
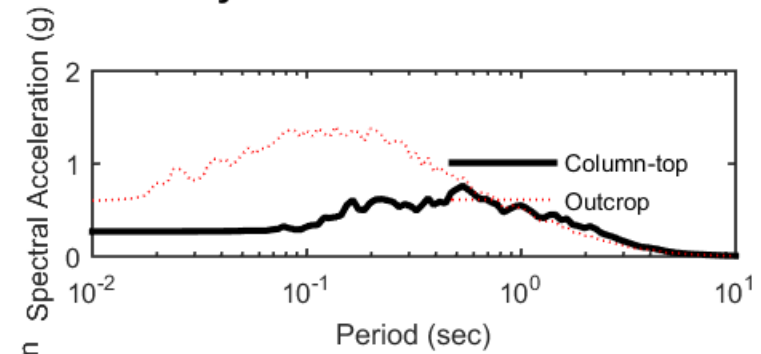
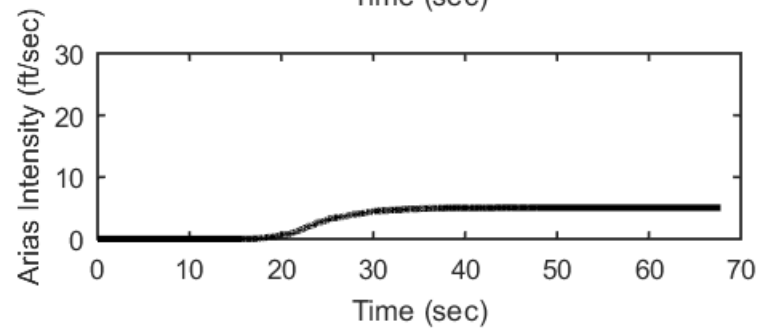
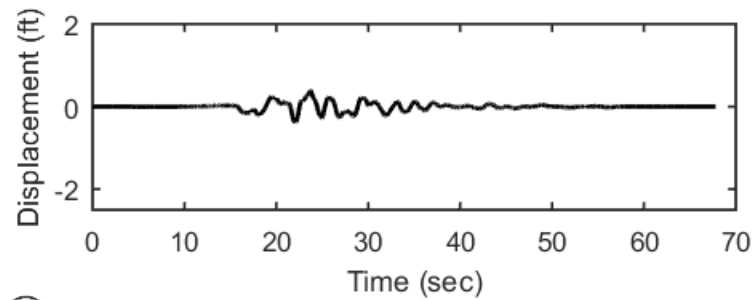
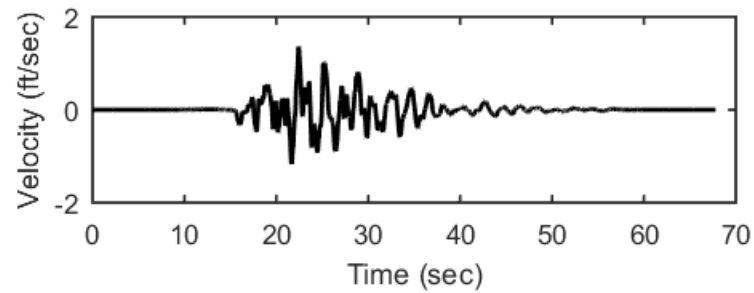
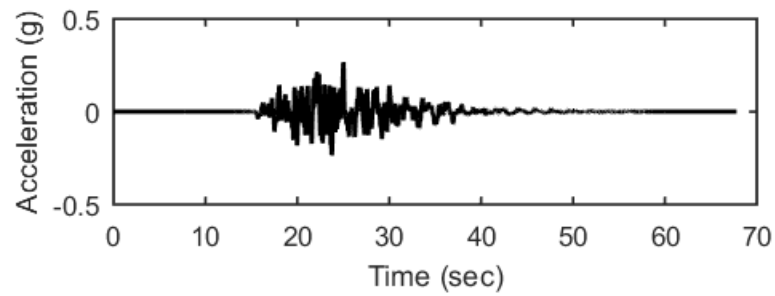
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7

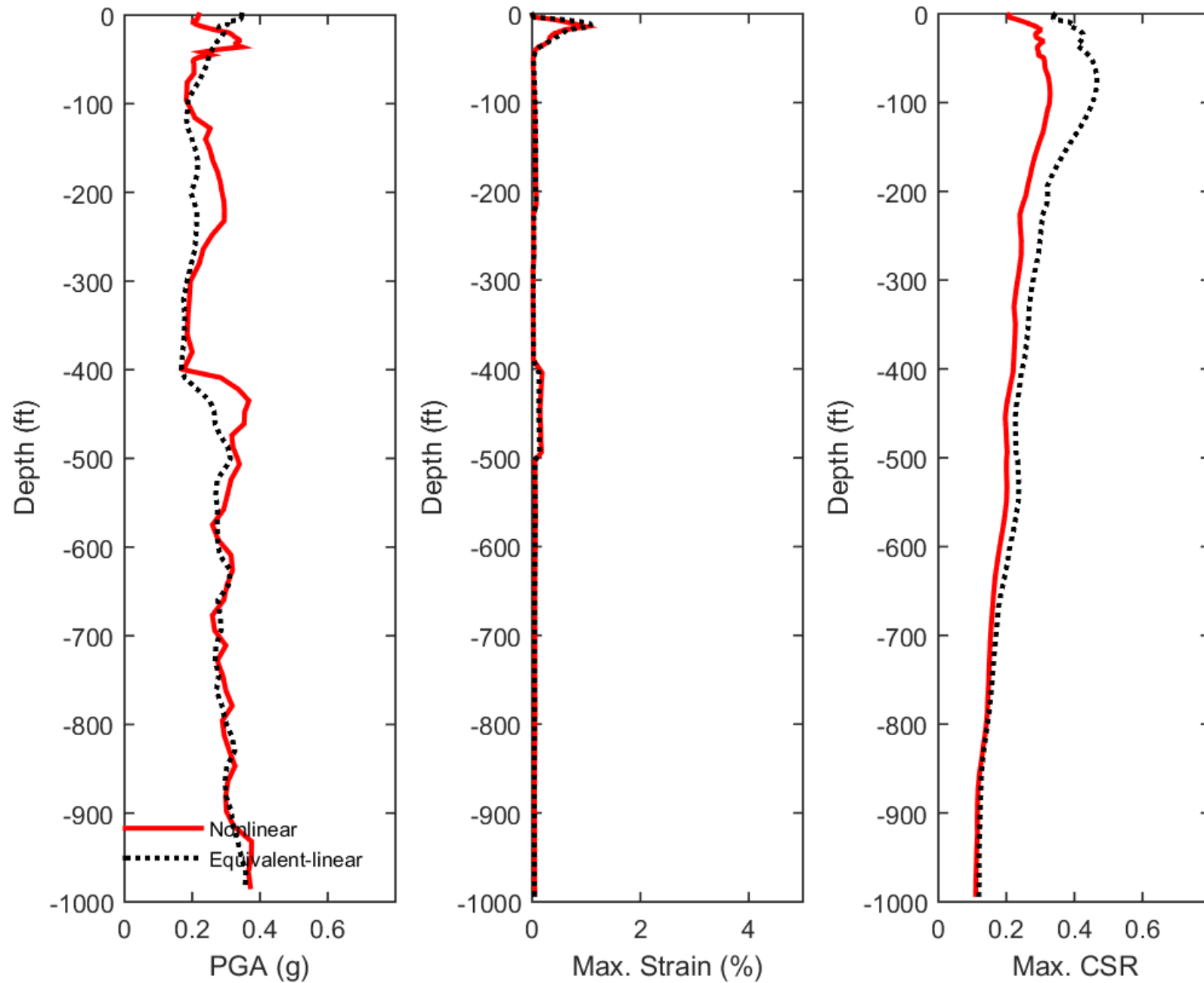


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7

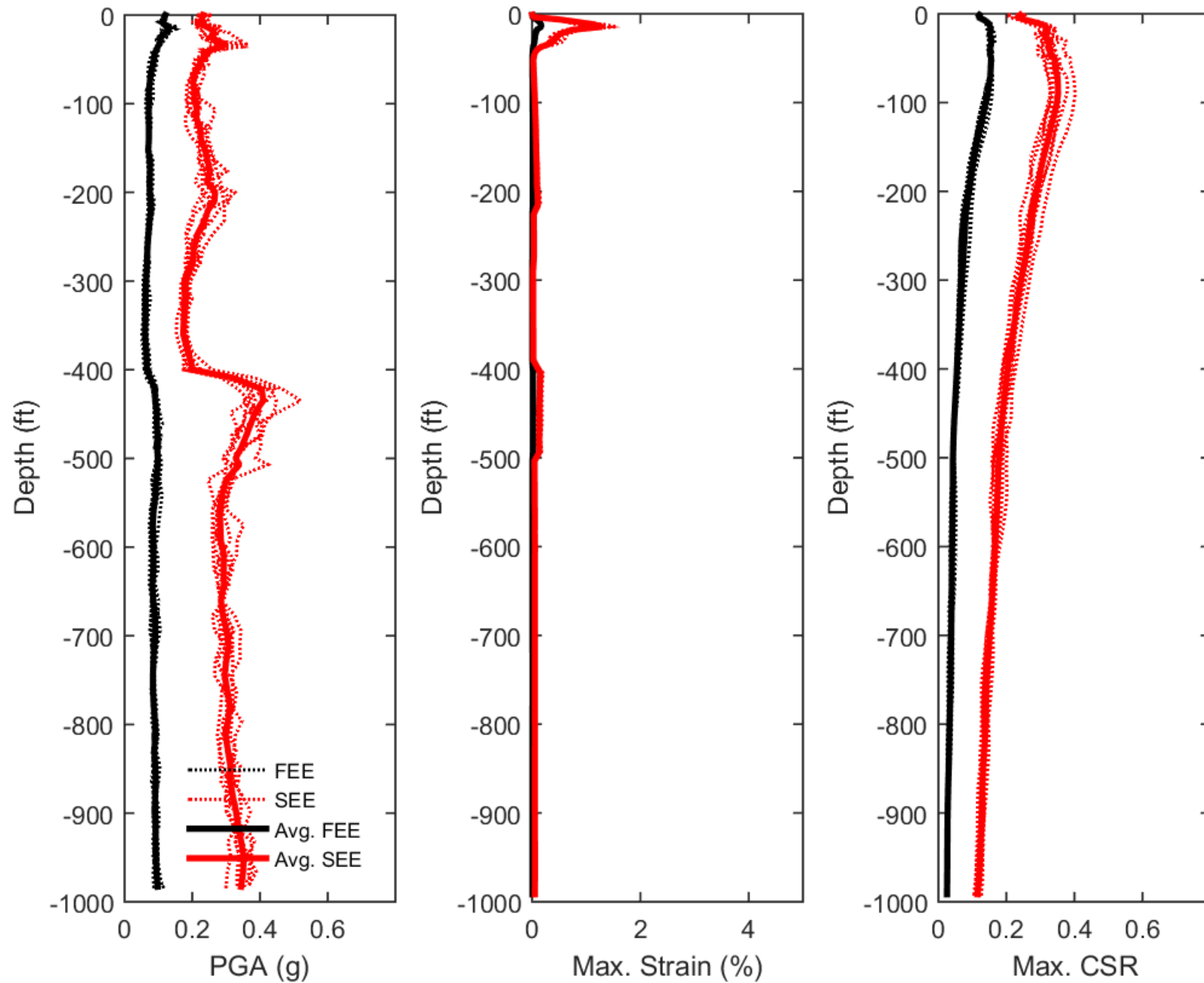




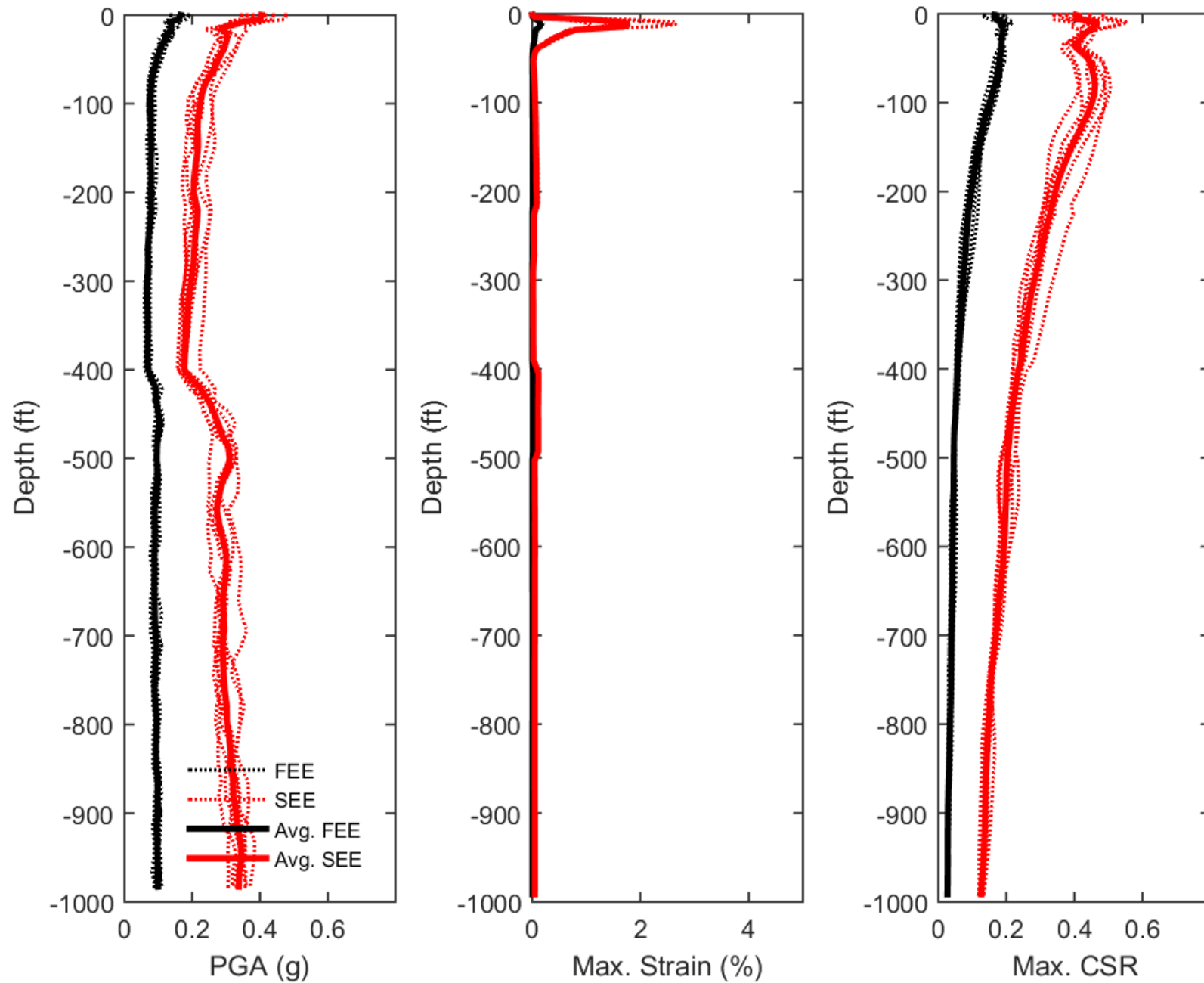
### Profile outputs for Motion: SEE7



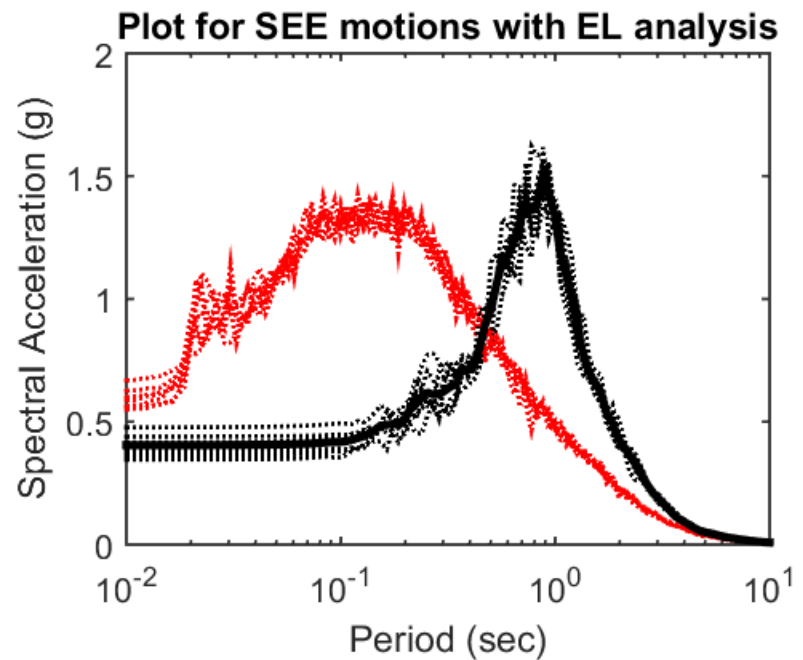
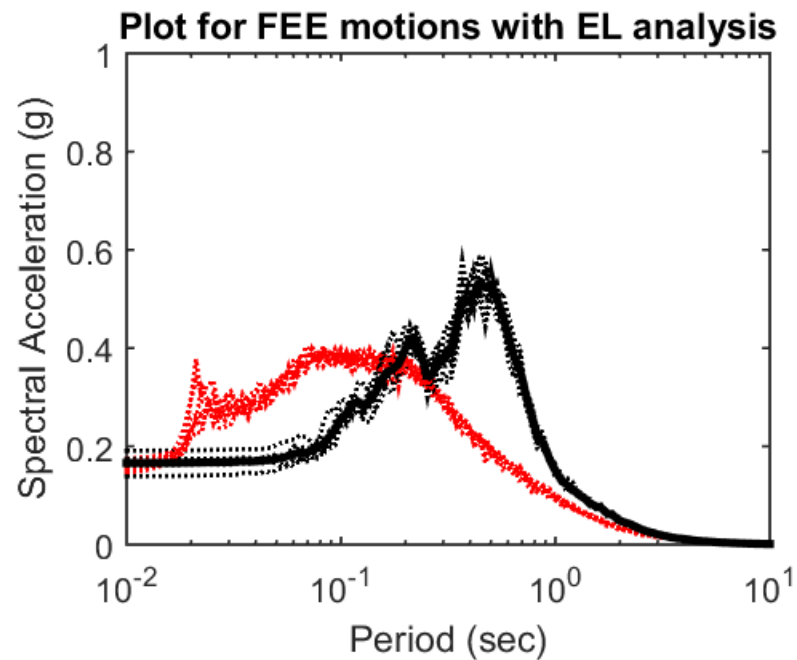
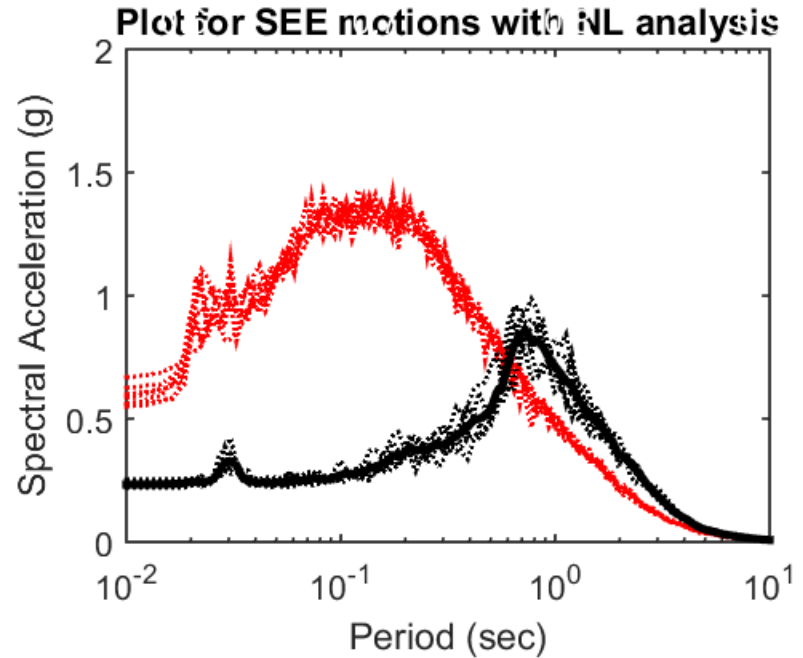
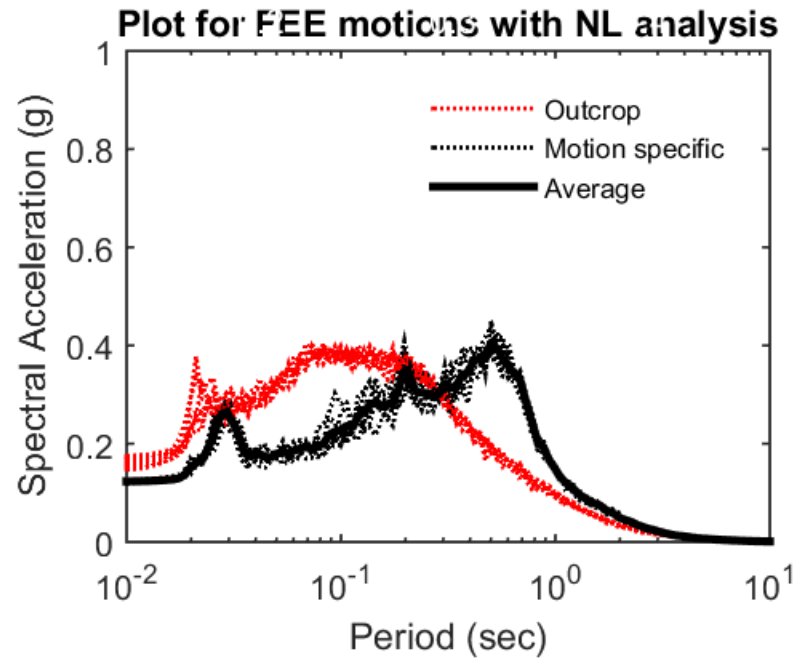
## Summary of the profile outputs for Nonlinear analysis



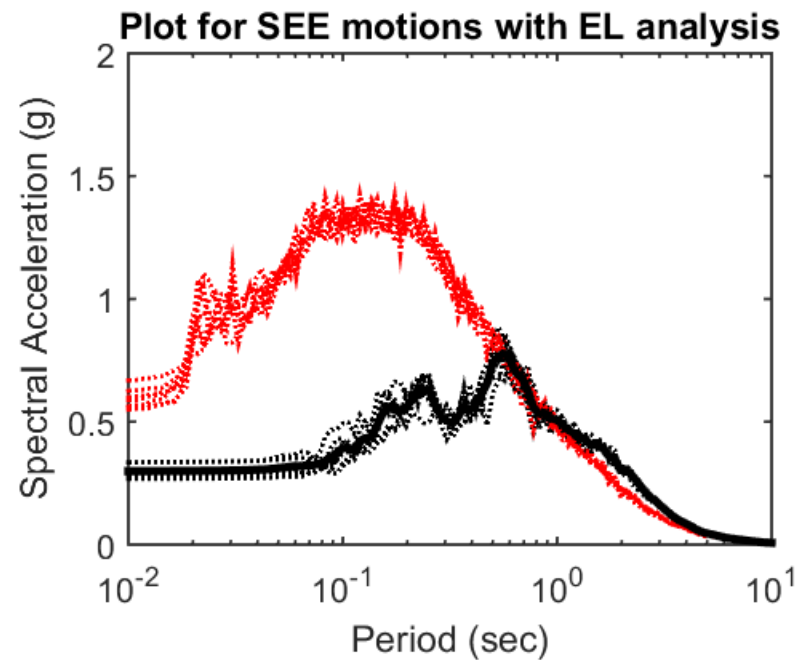
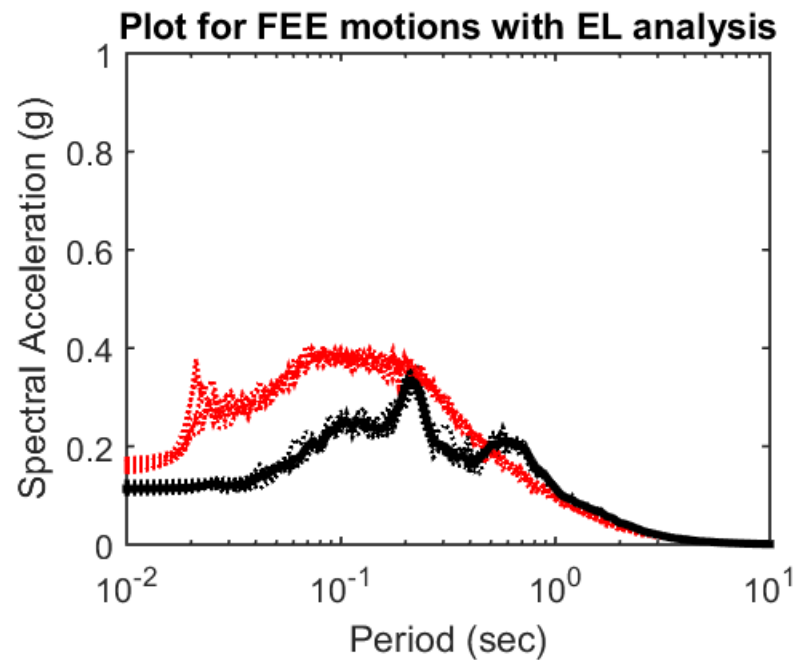
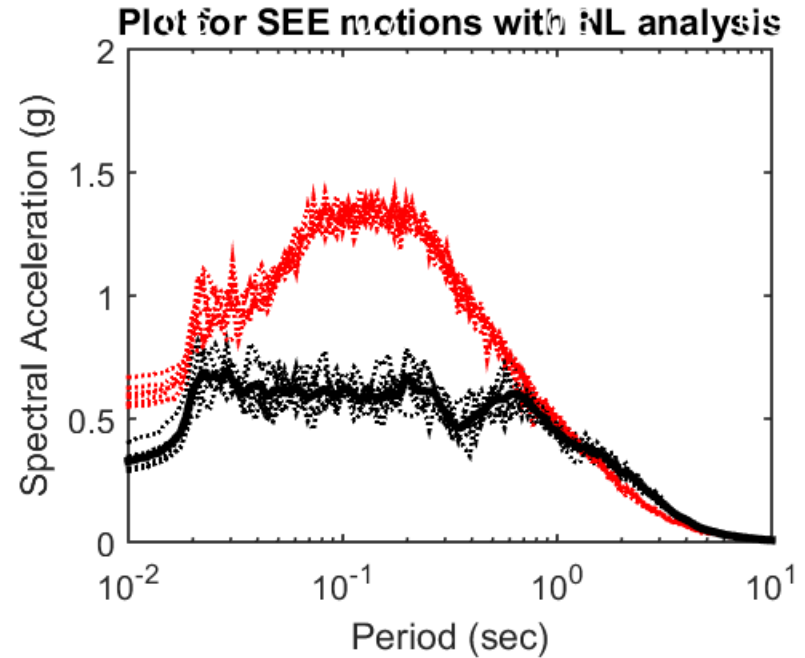
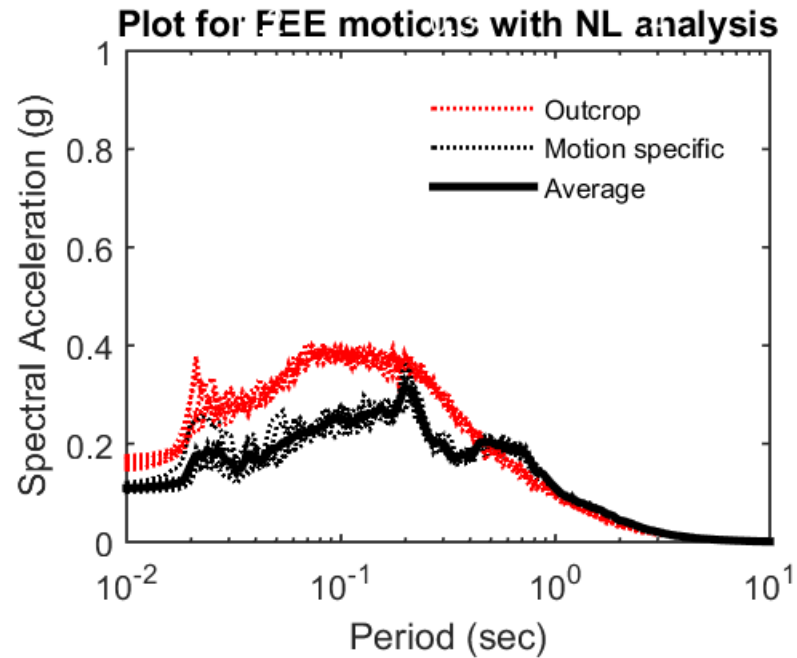
## Summary of the profile outputs for Equivalent-linear analysis



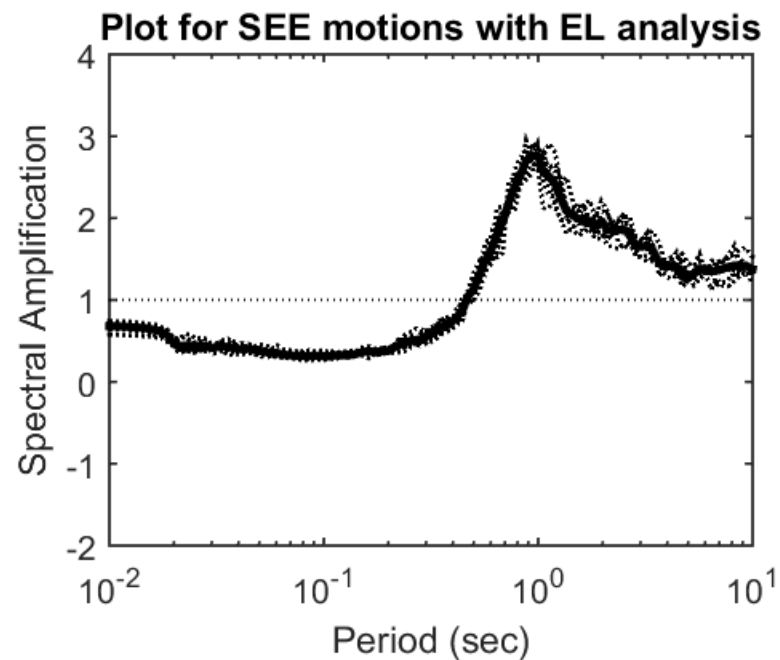
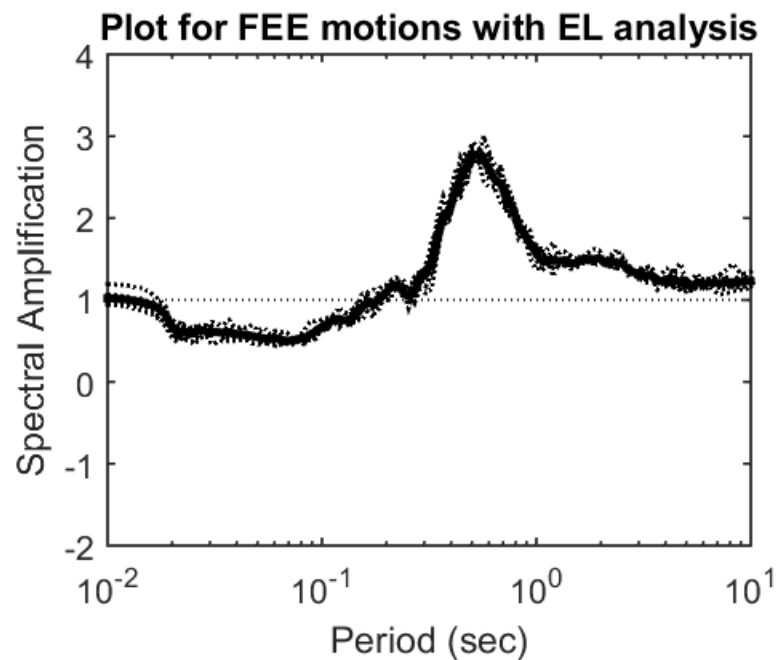
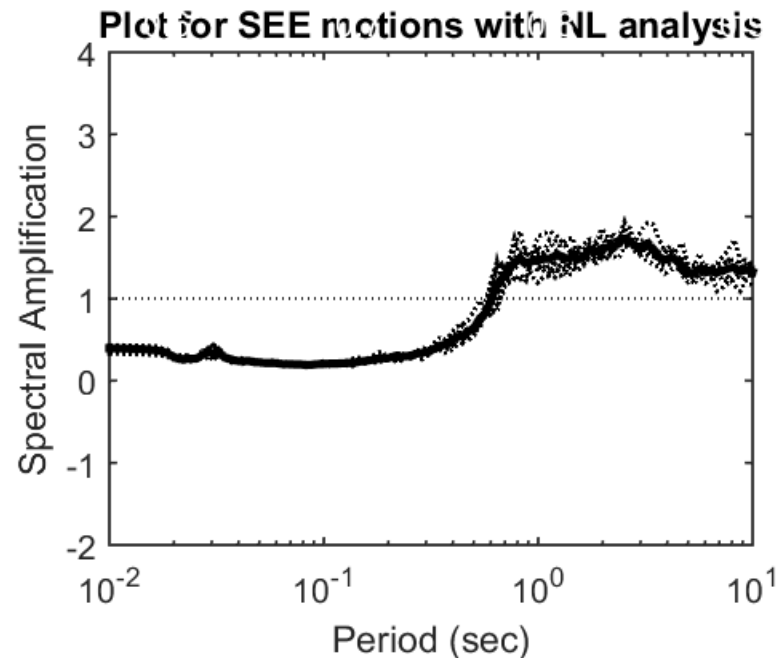
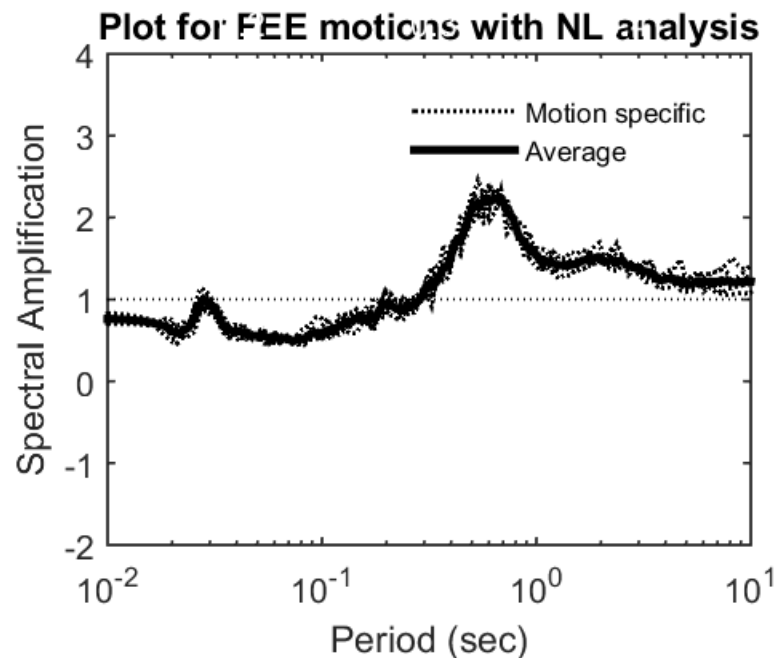
## Summary plots: RSA at ground surface



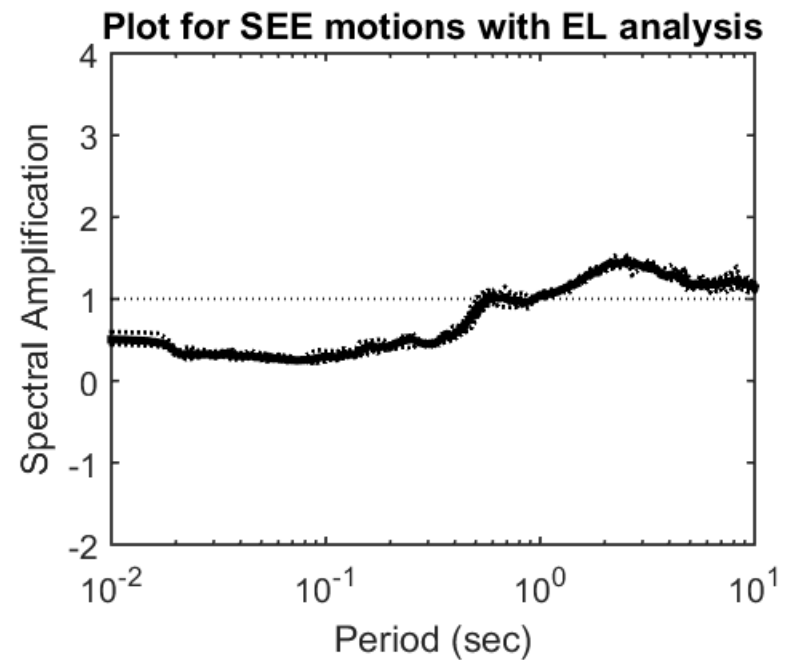
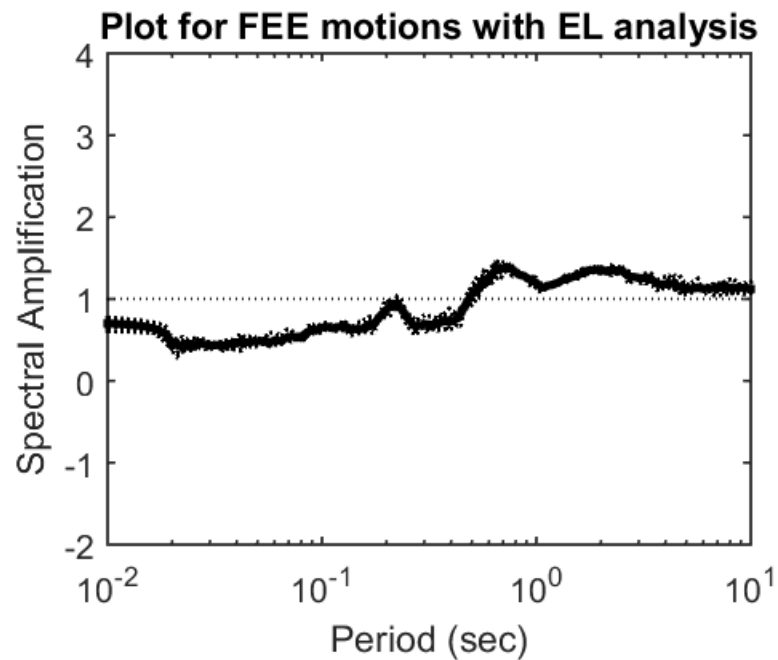
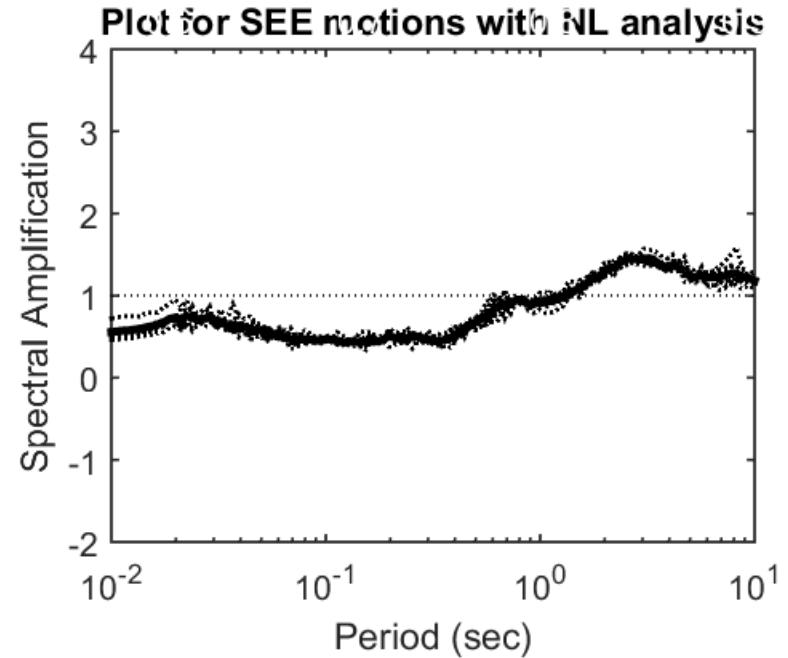
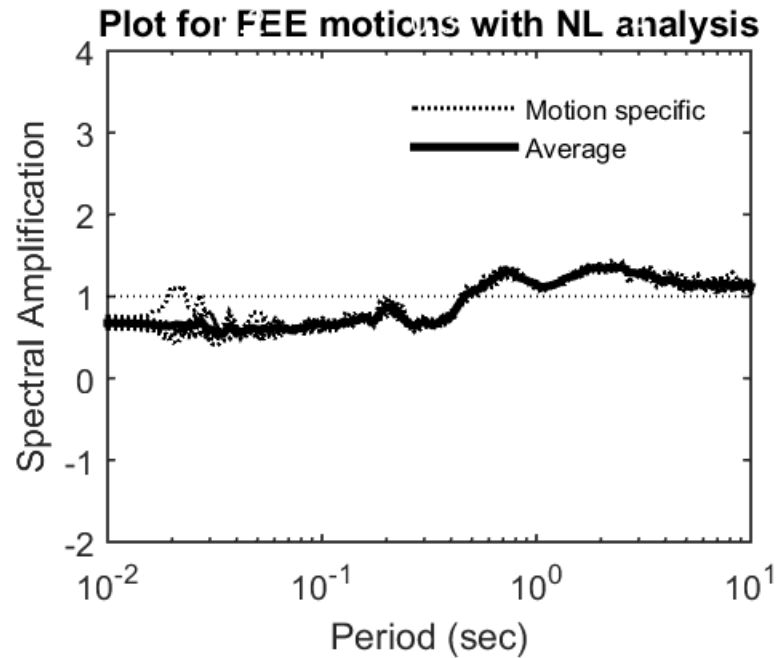
### Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



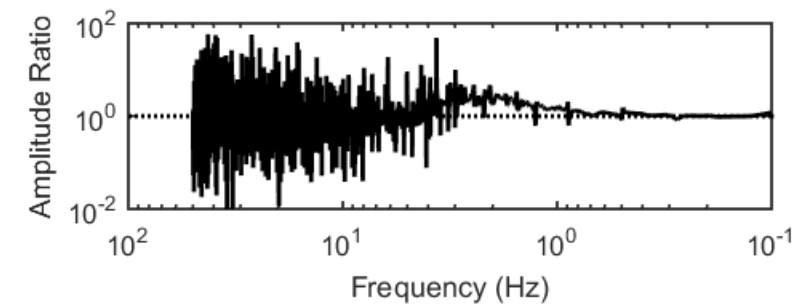
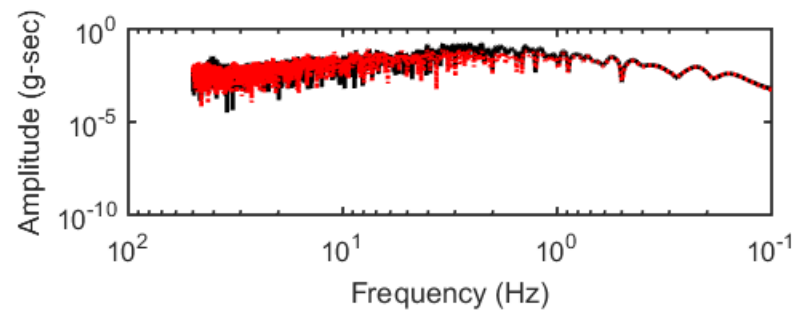
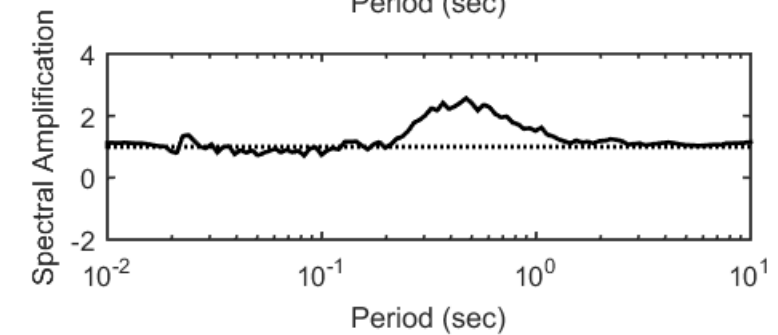
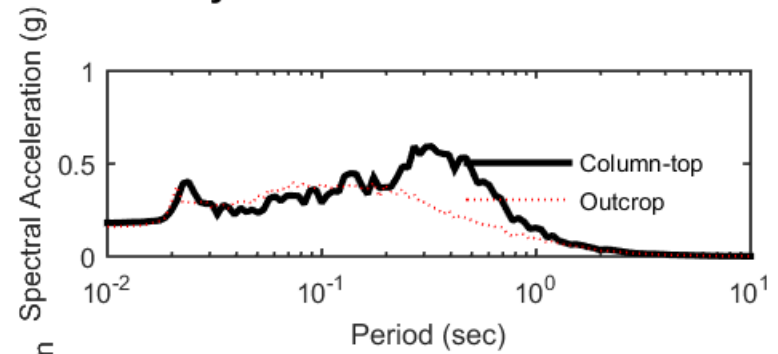
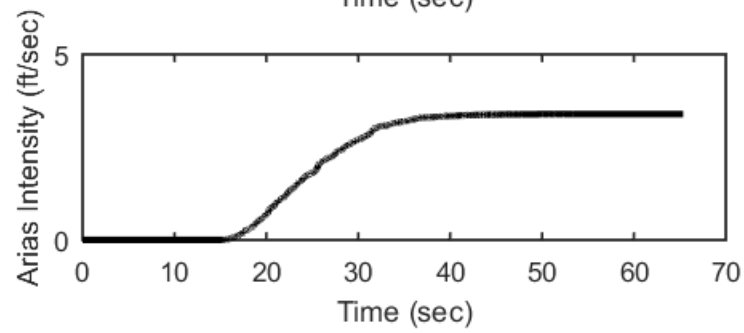
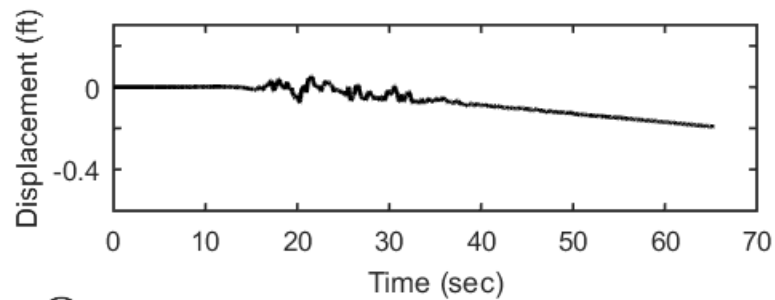
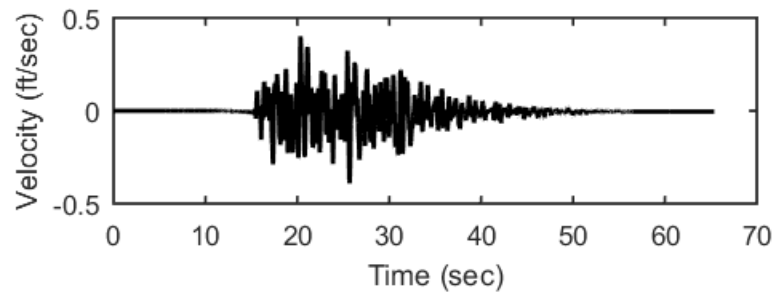
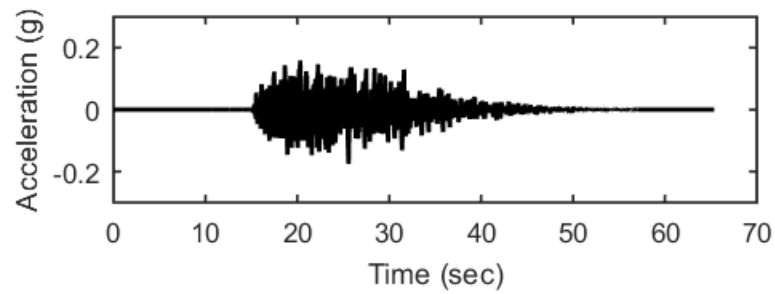
## Summary plots: Spectral amplification at top of Marl



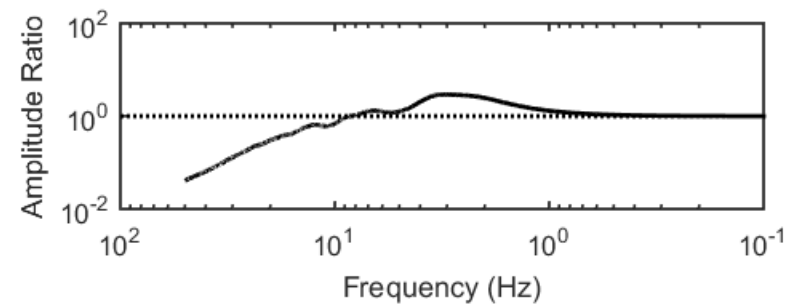
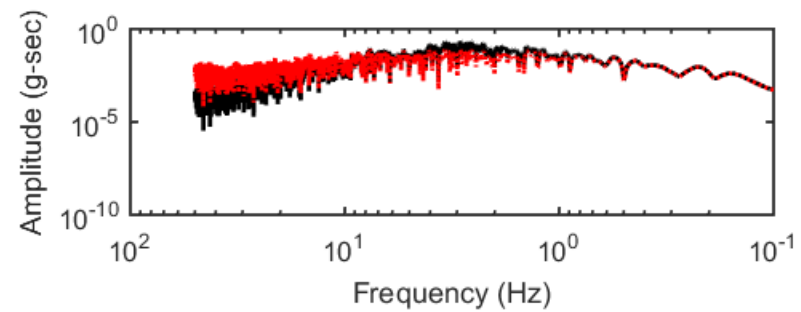
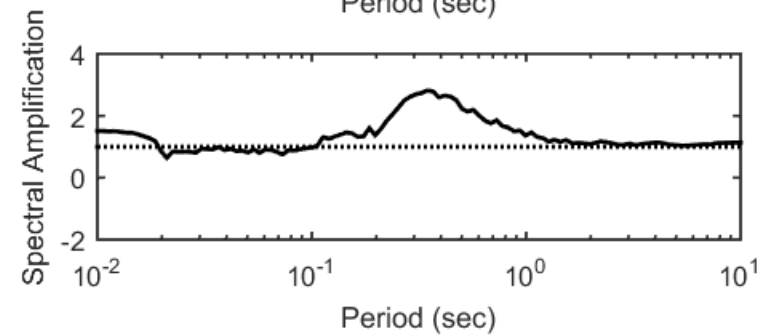
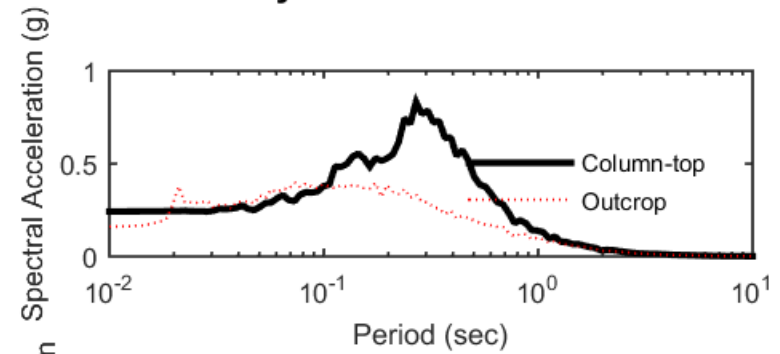
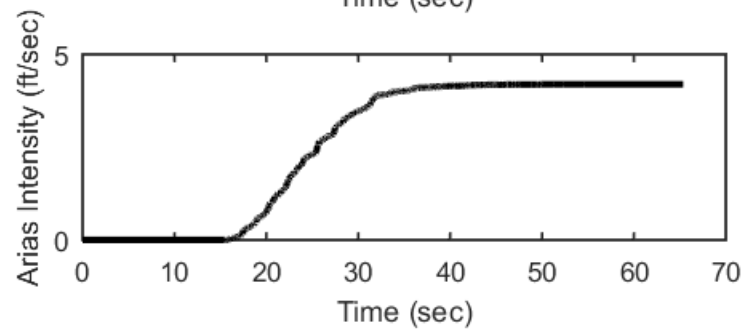
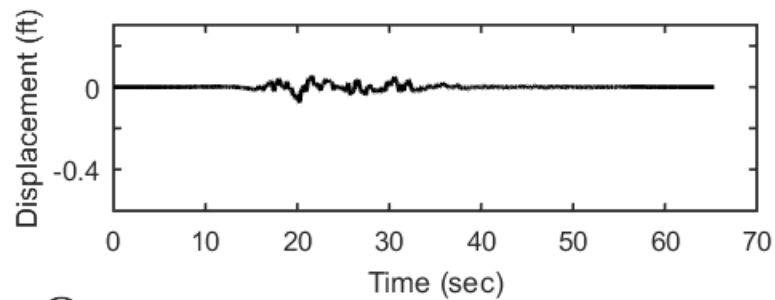
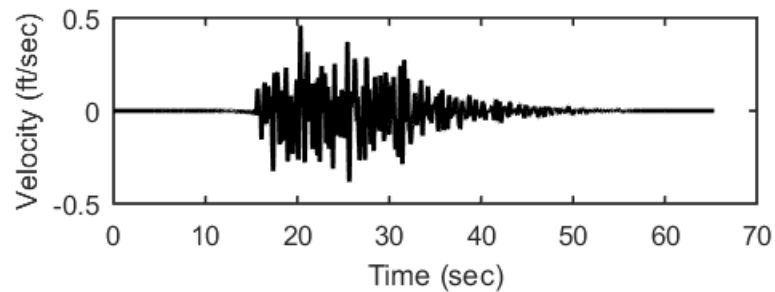
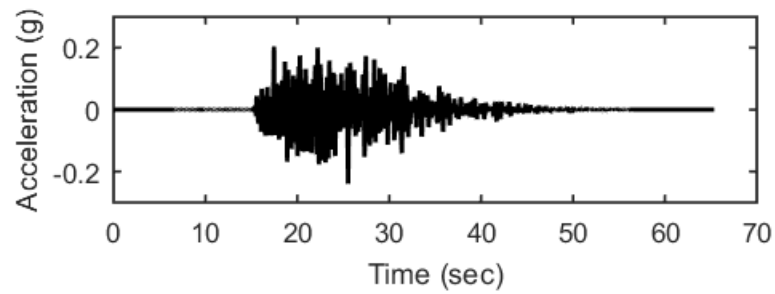
## **BASE MODEL AND HIGH SHEAR WAVE**



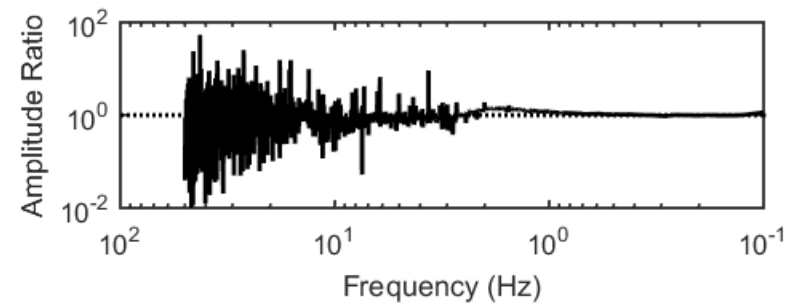
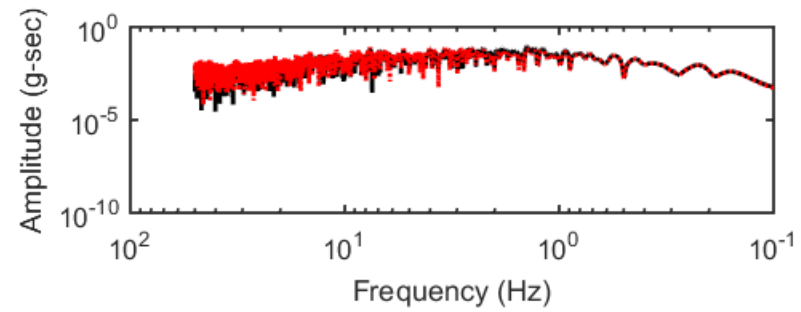
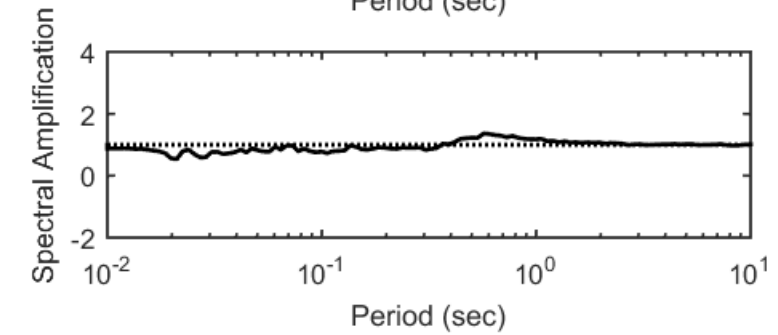
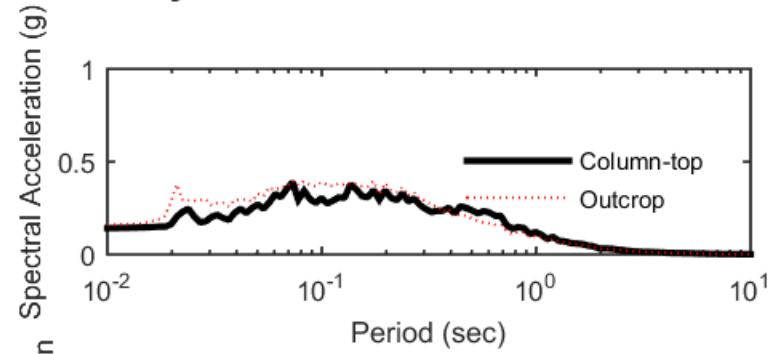
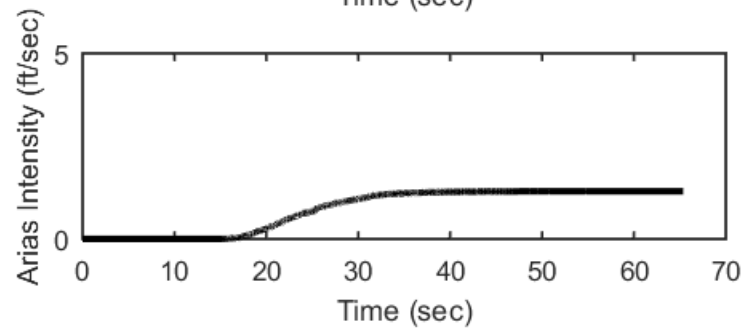
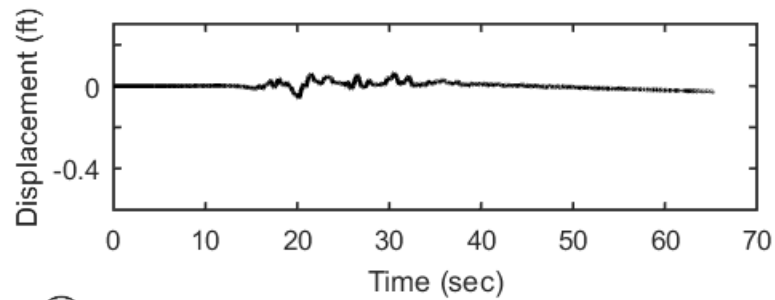
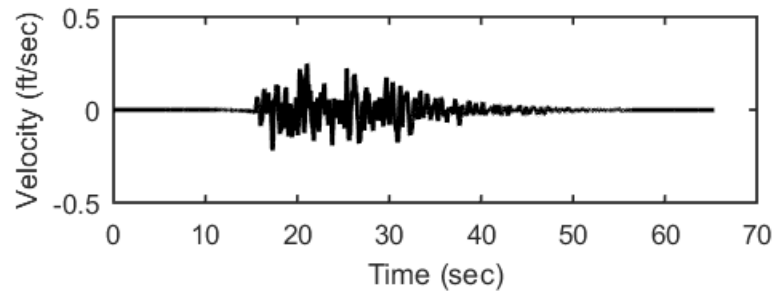
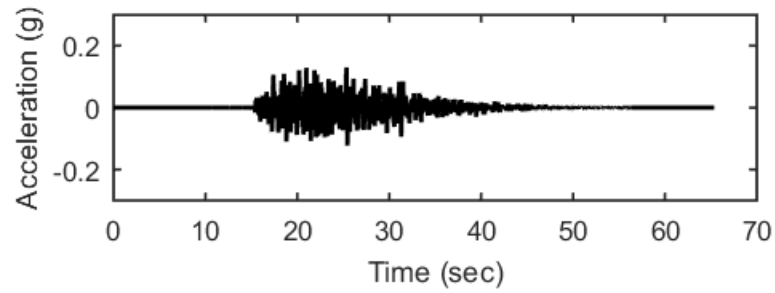
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



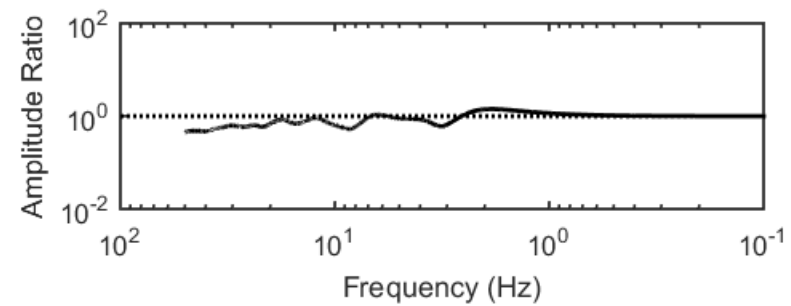
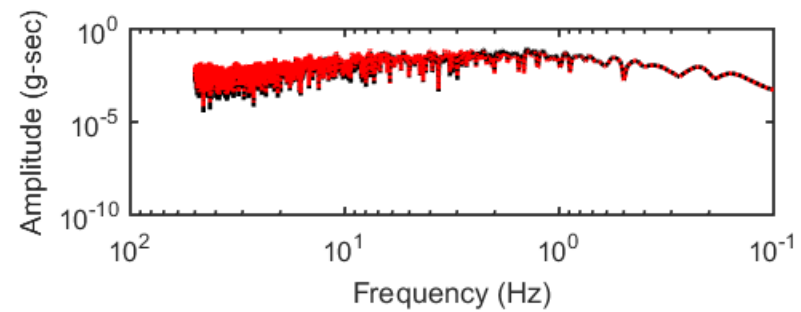
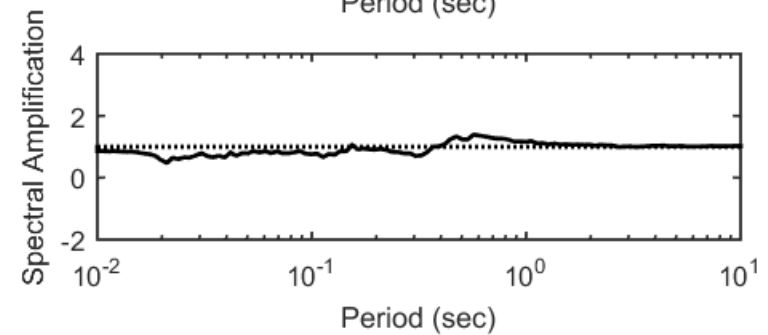
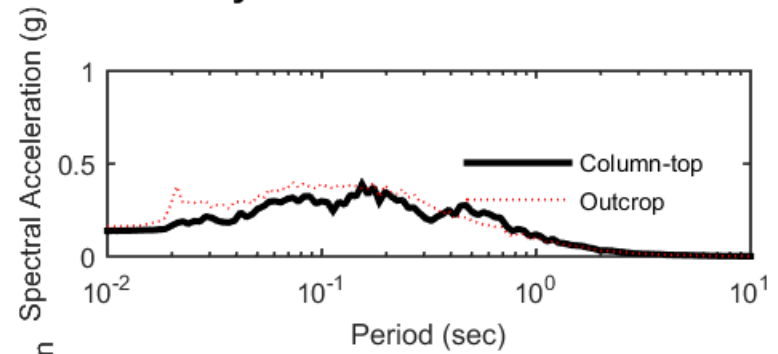
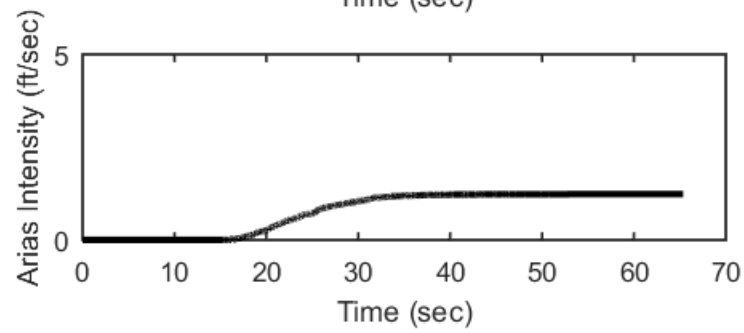
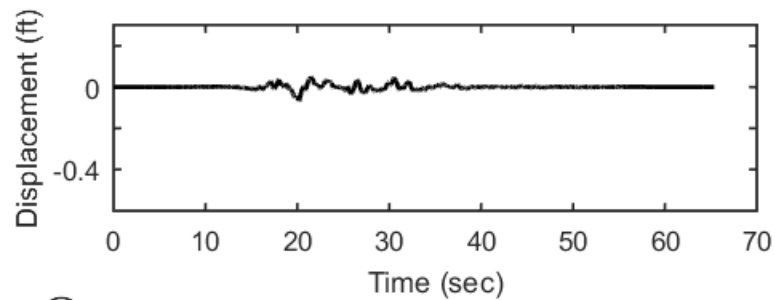
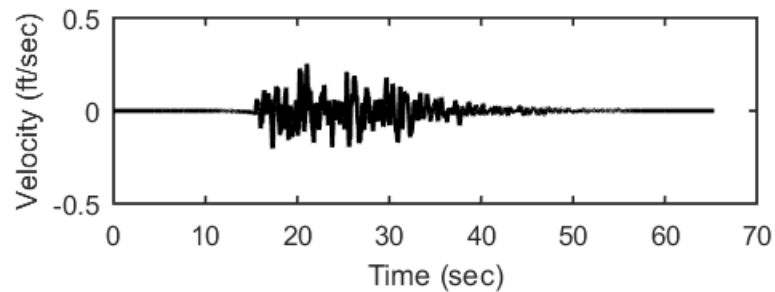
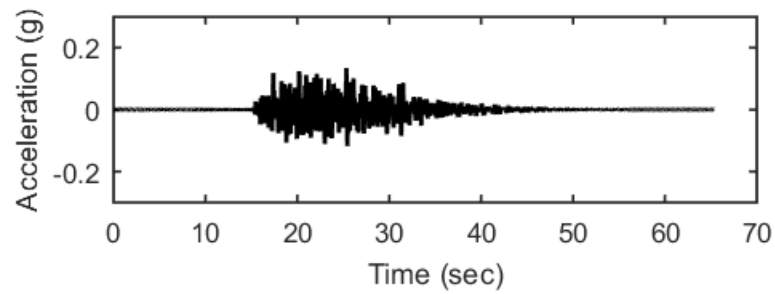
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



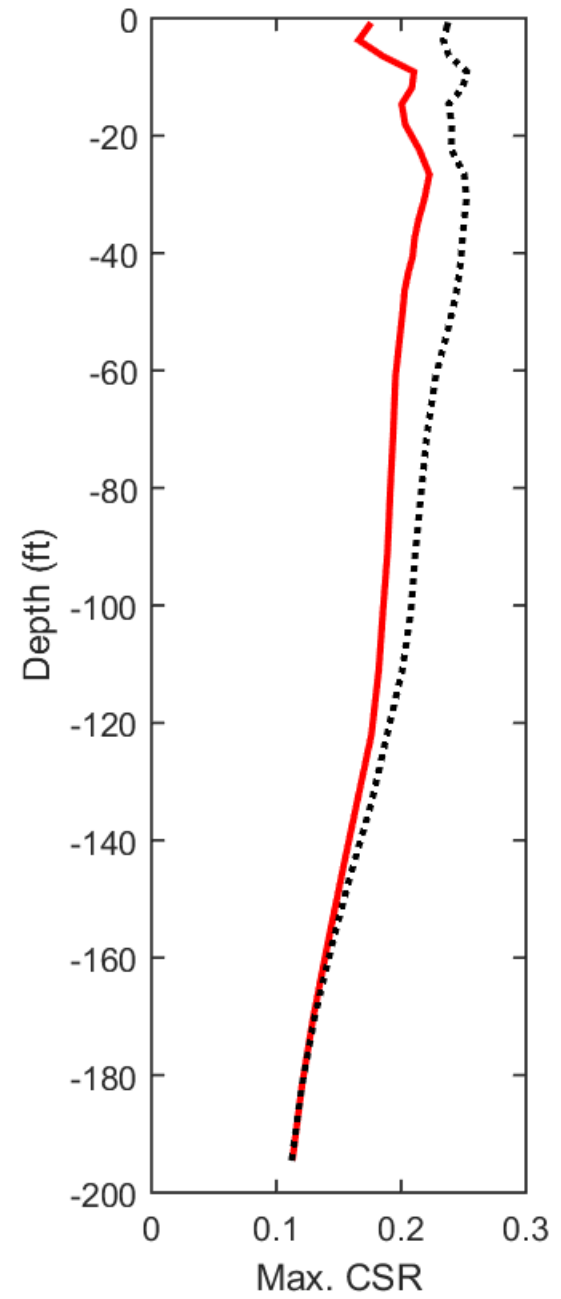
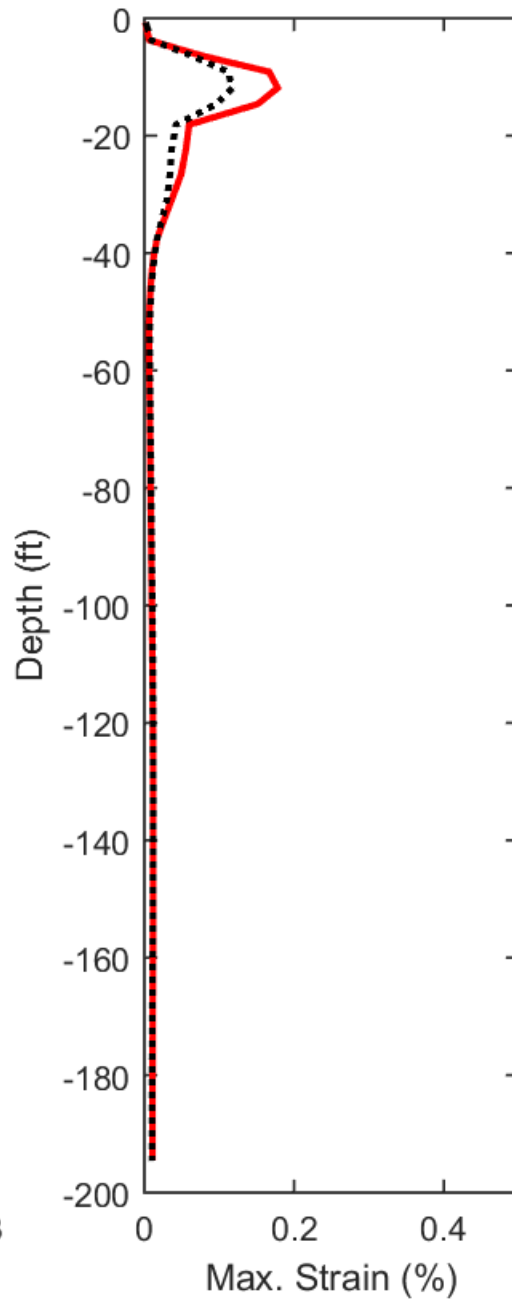
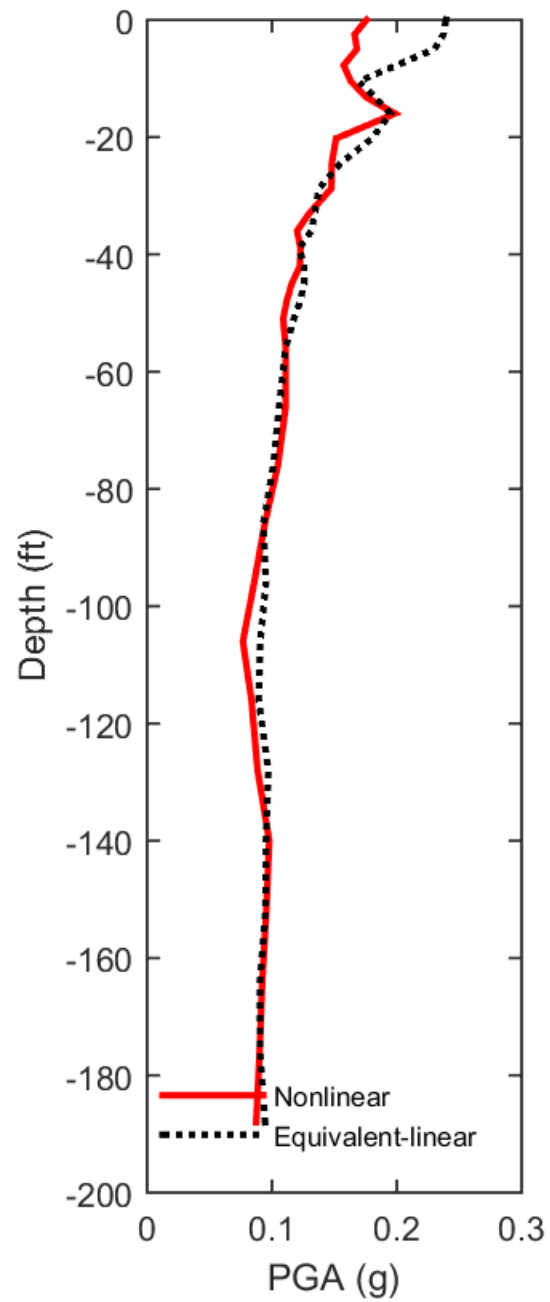
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



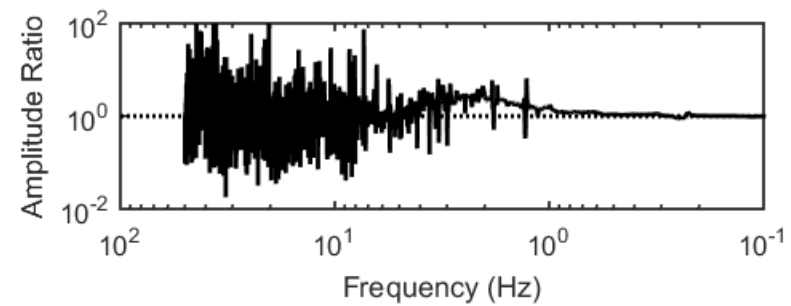
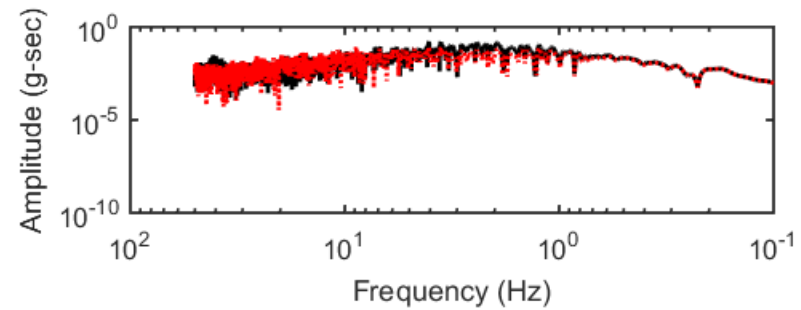
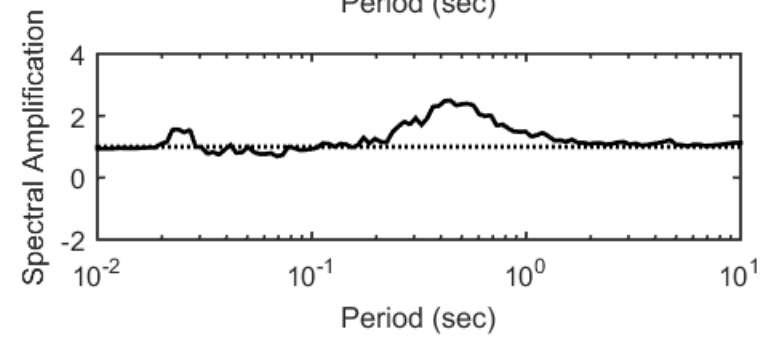
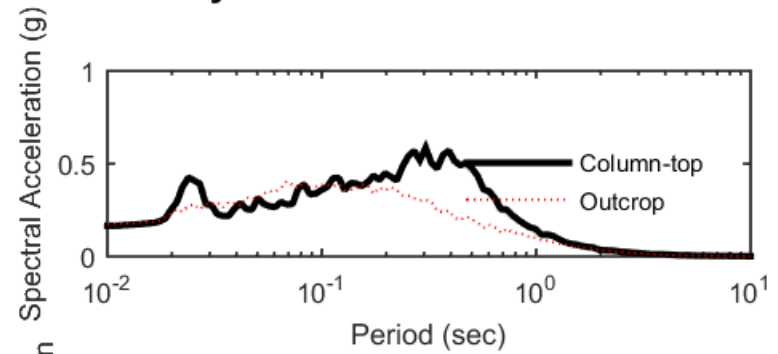
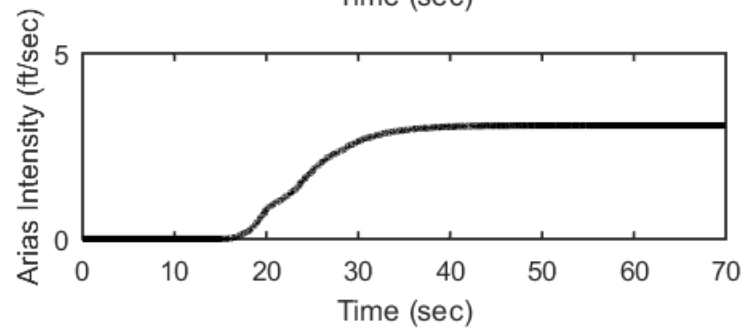
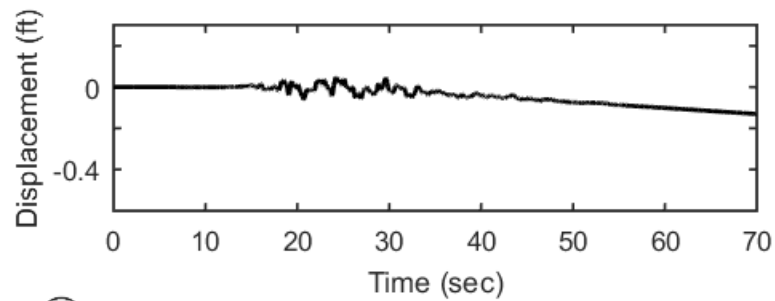
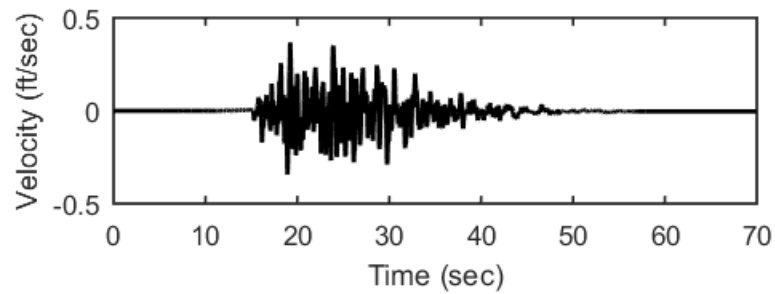
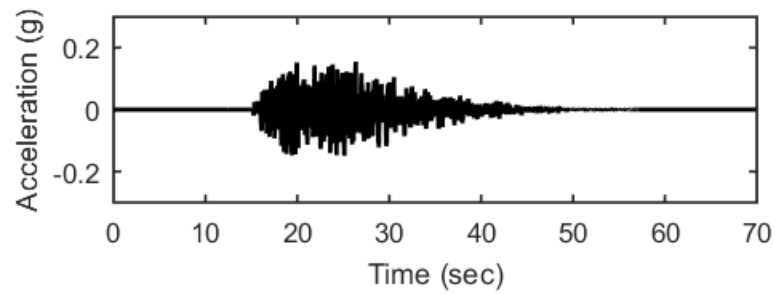
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



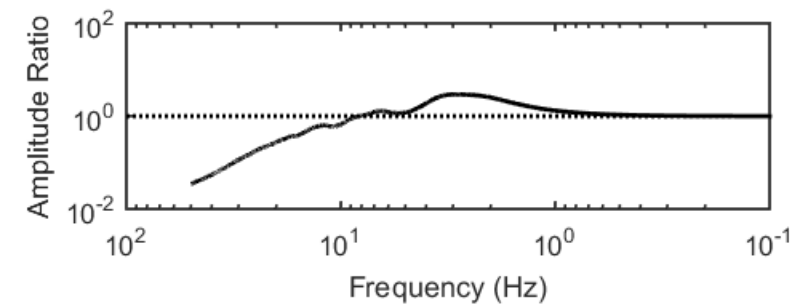
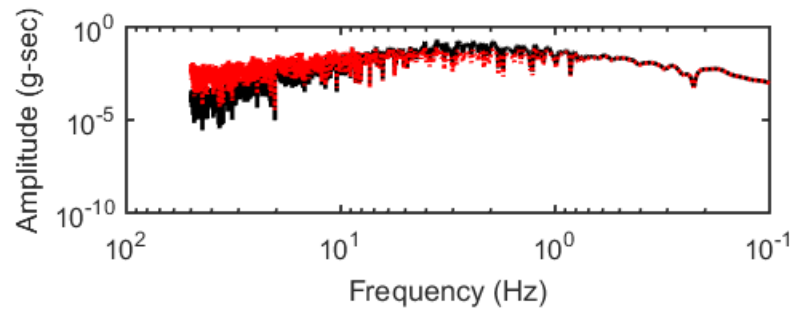
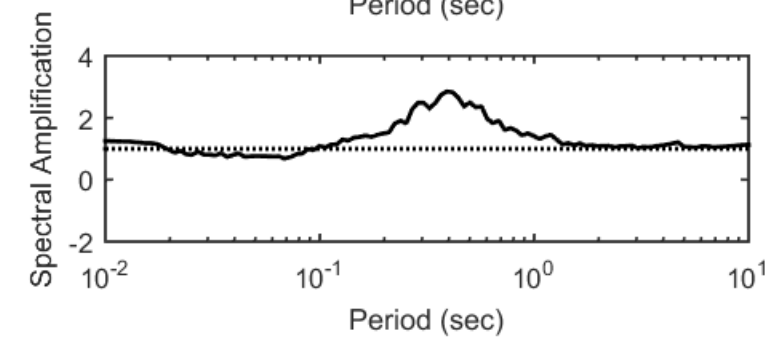
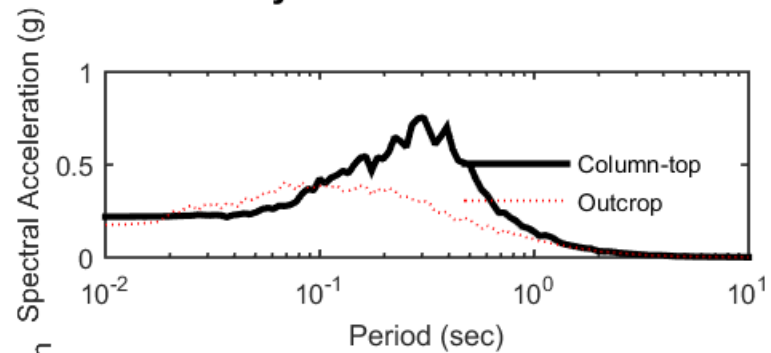
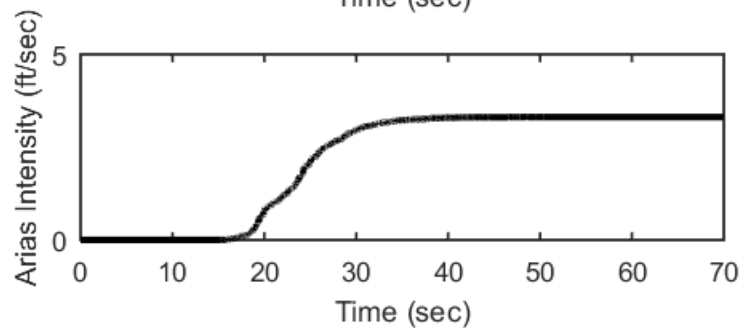
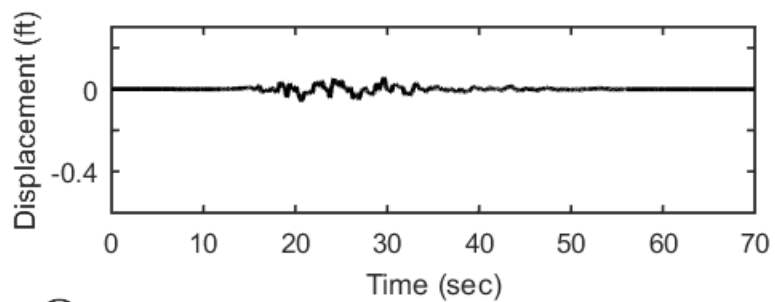
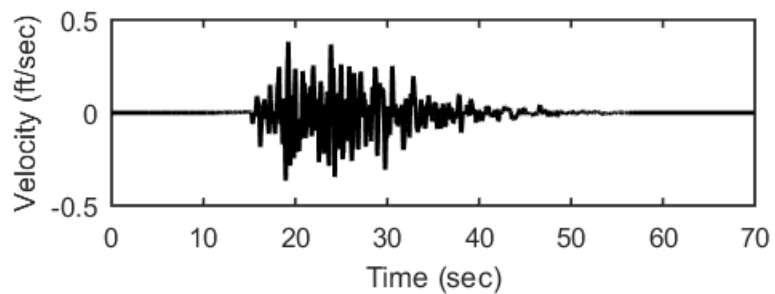
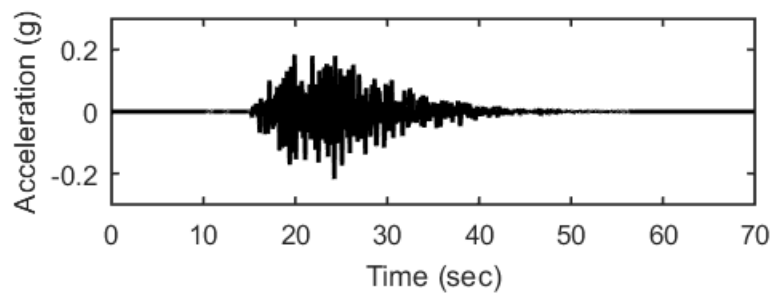
### Profile outputs for Motion: FEE1



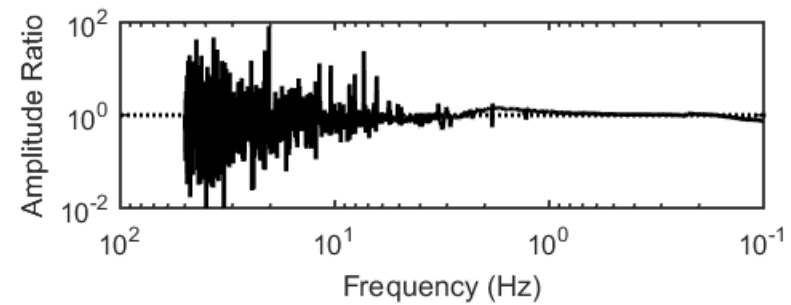
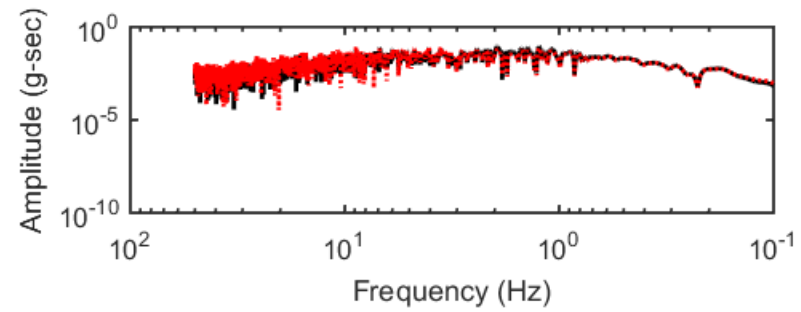
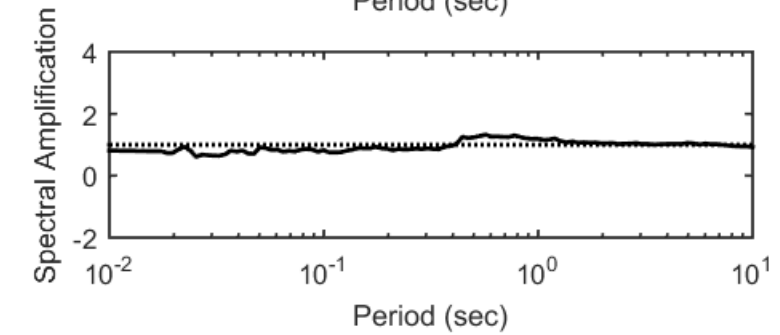
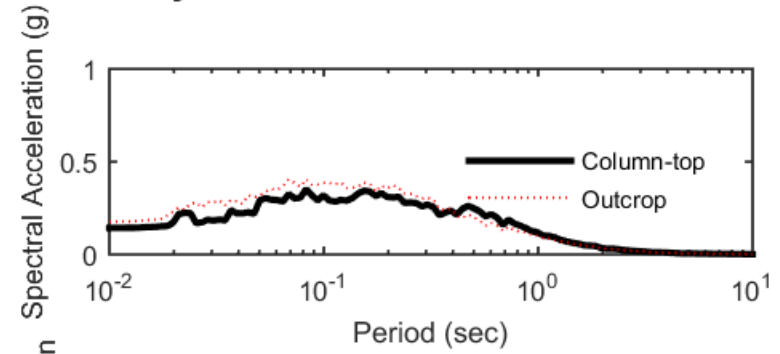
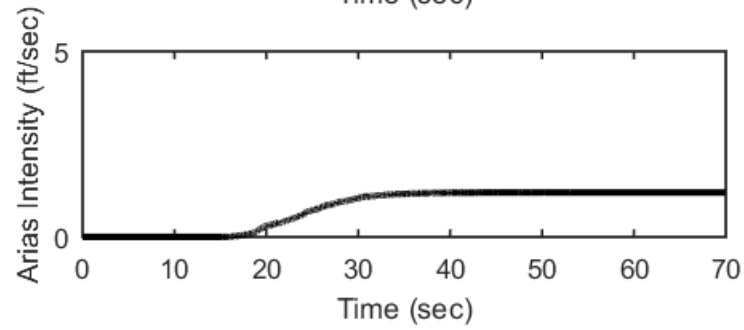
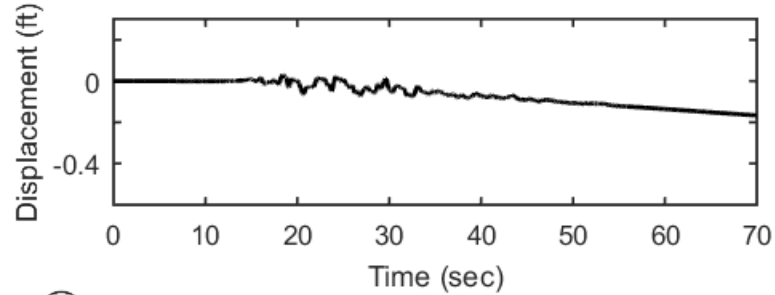
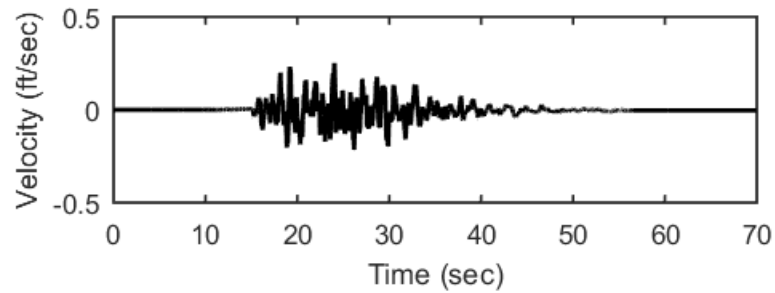
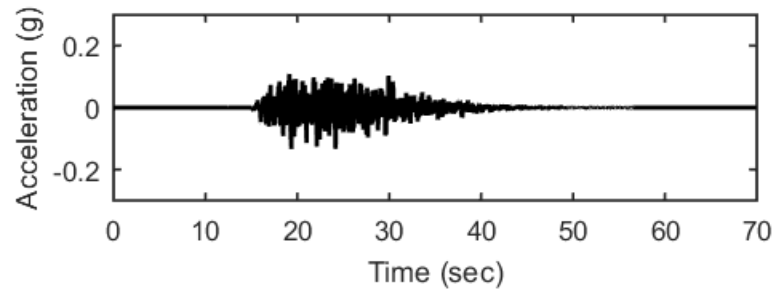
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2

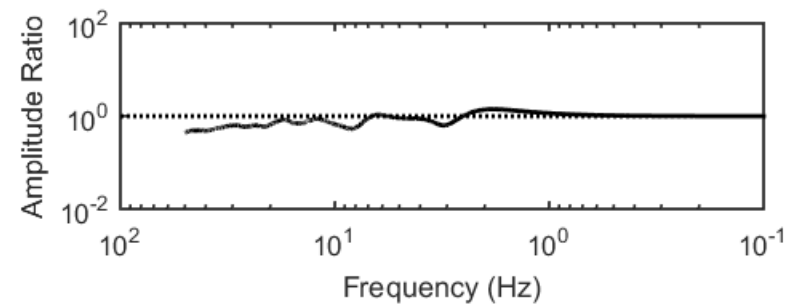
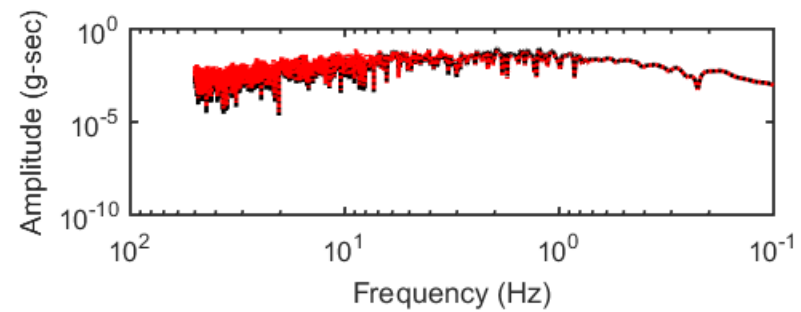
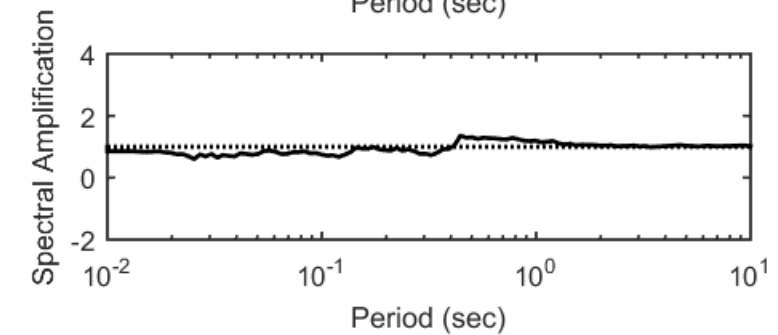
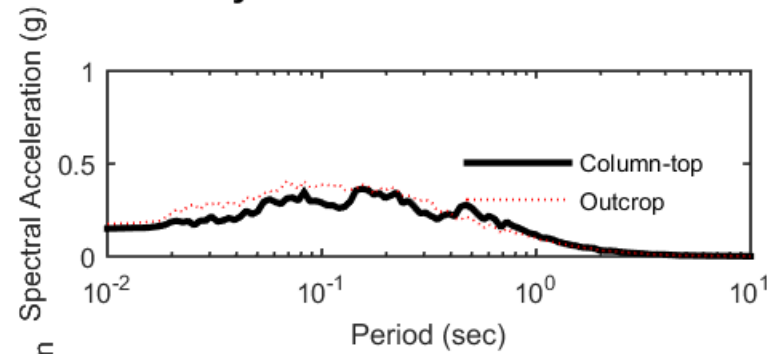
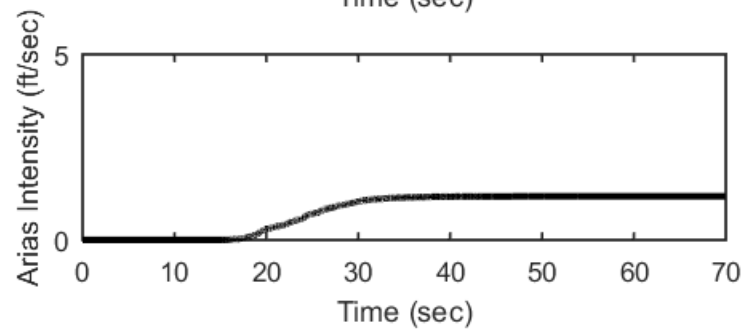
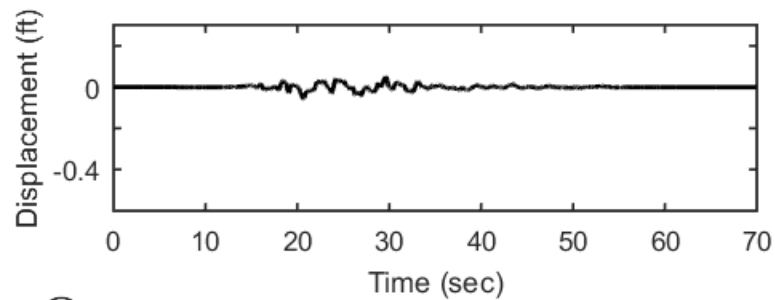
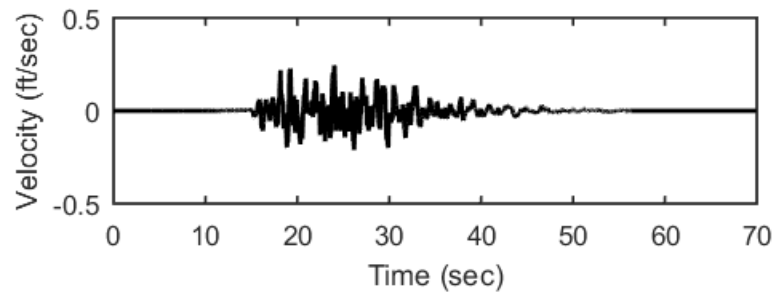
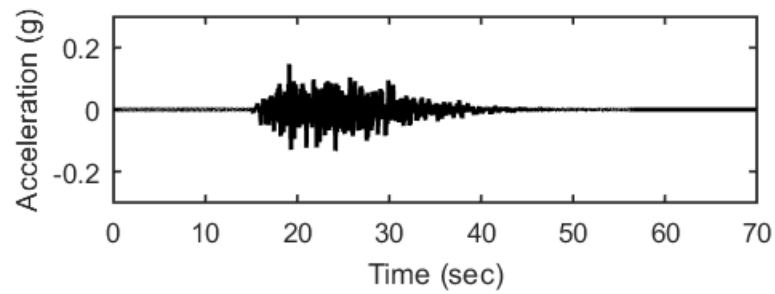


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2

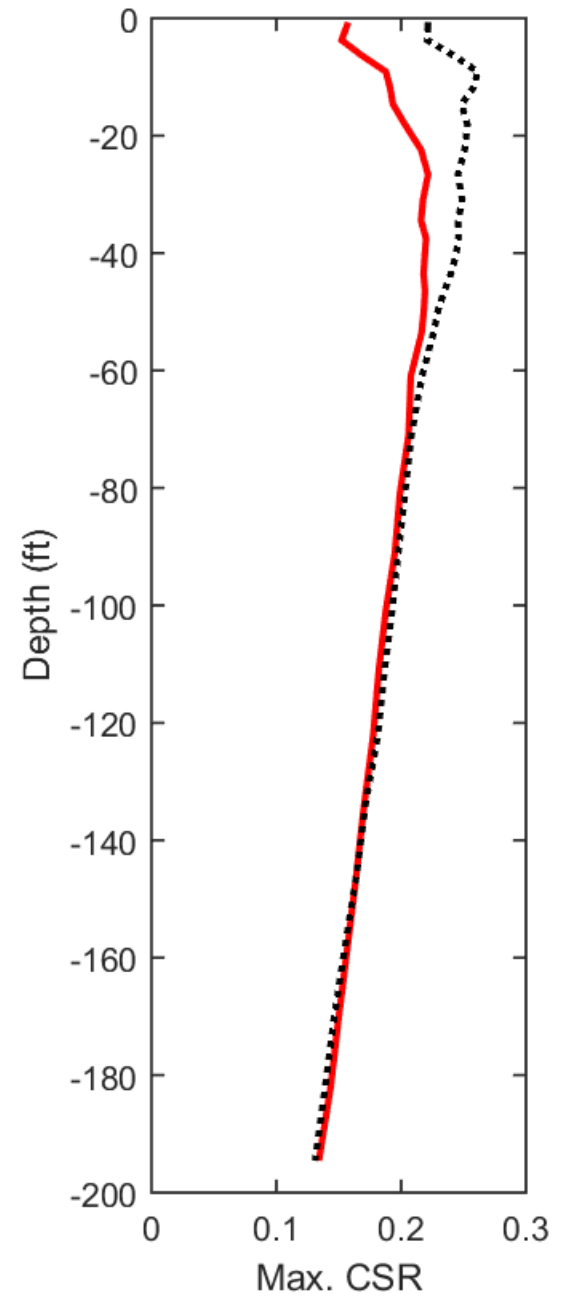
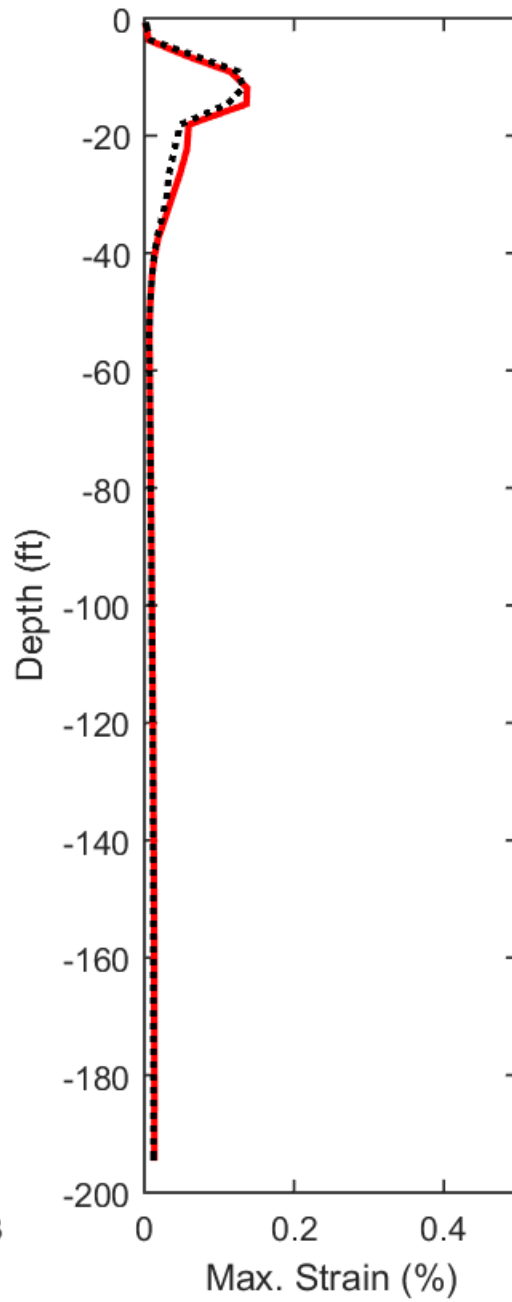
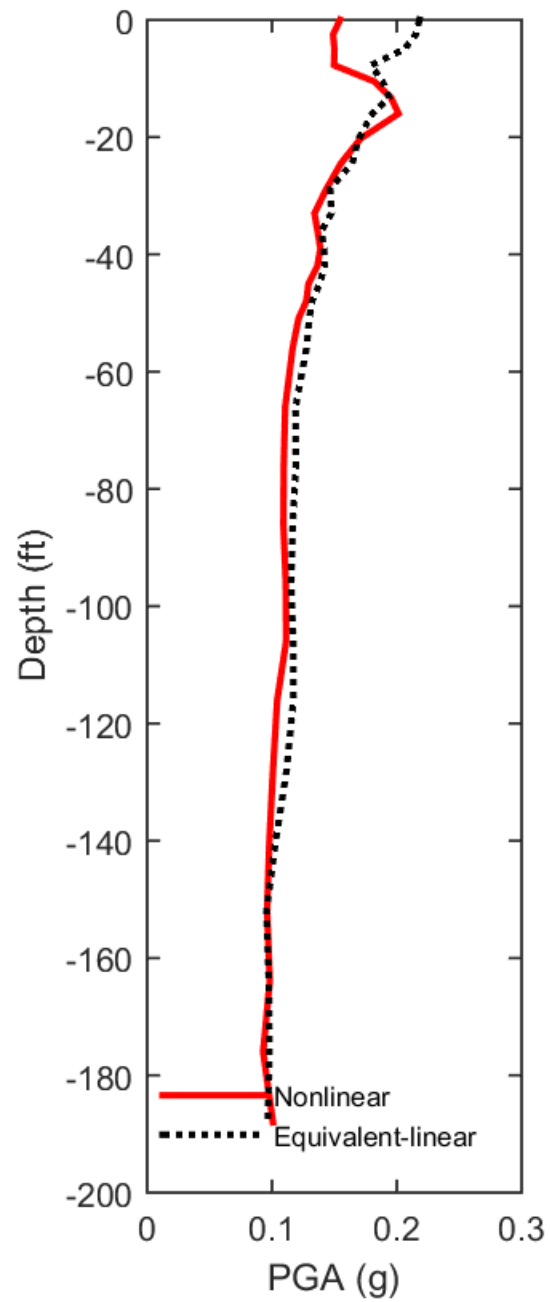




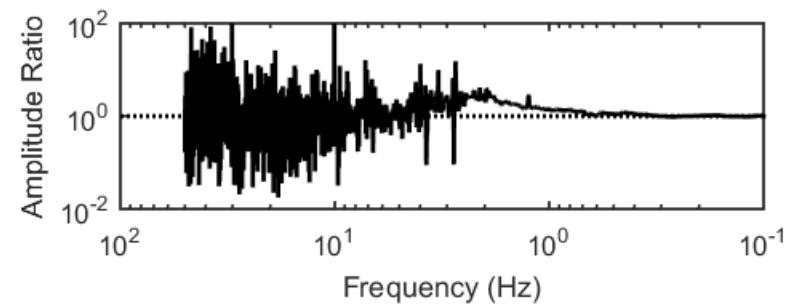
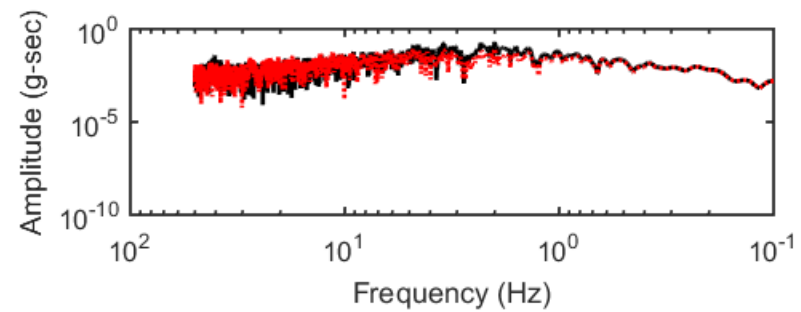
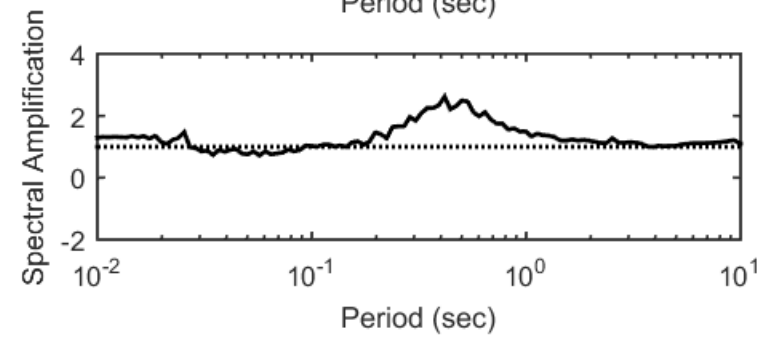
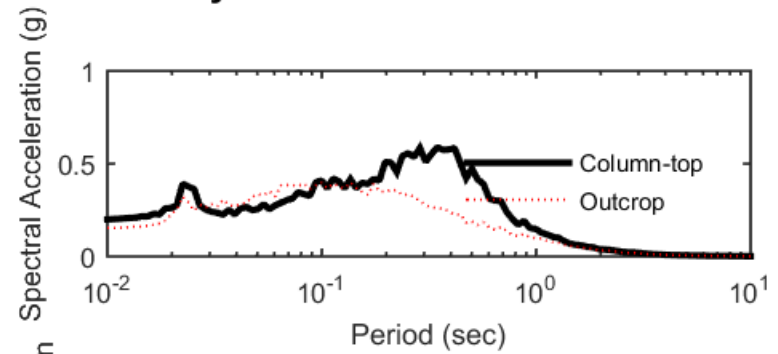
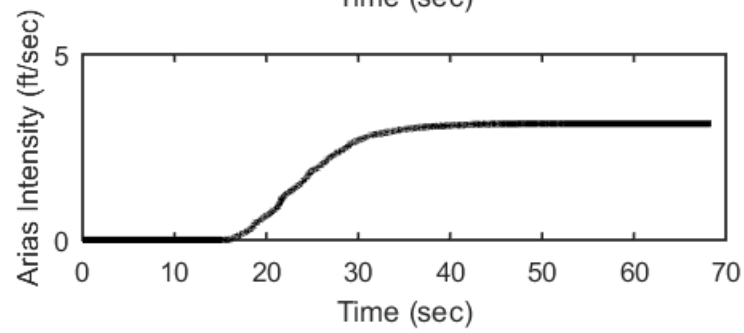
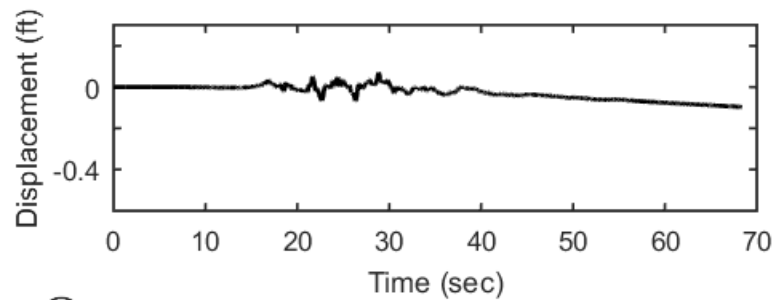
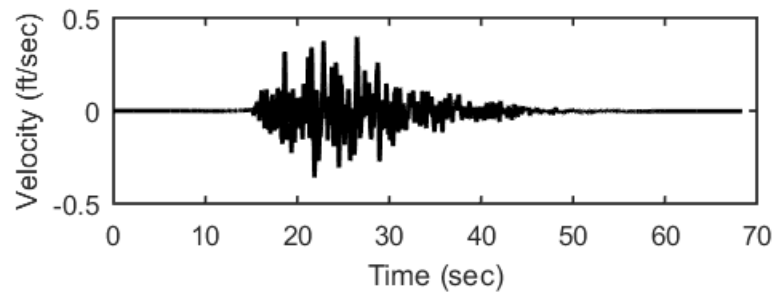
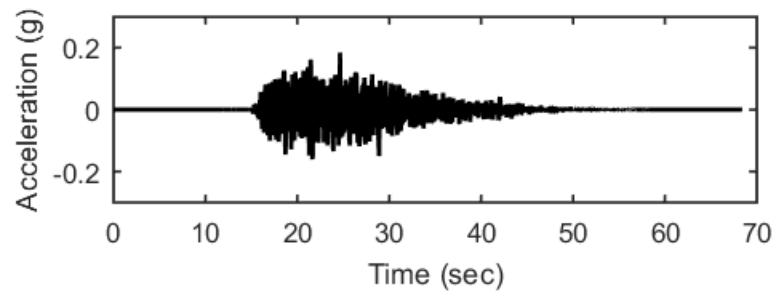
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



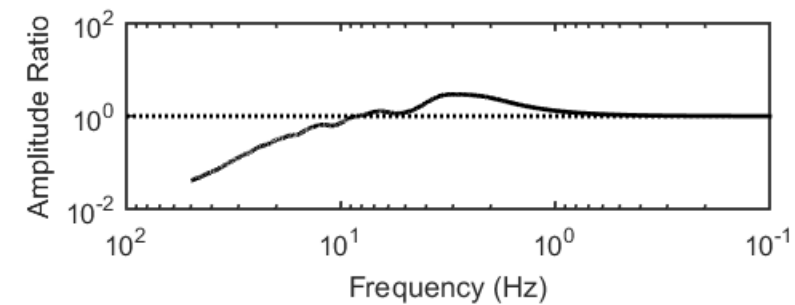
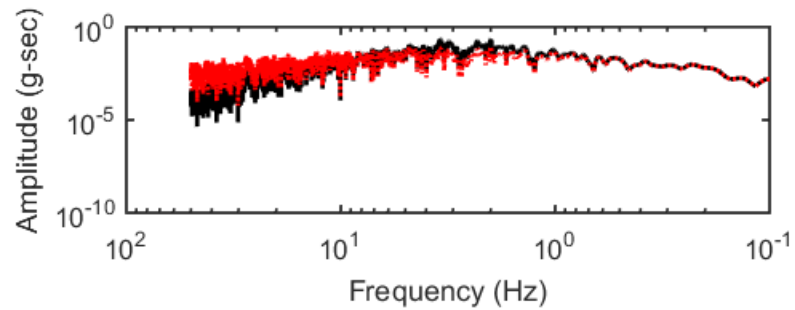
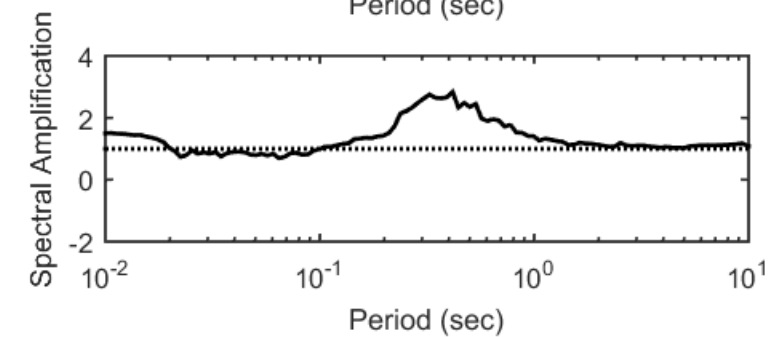
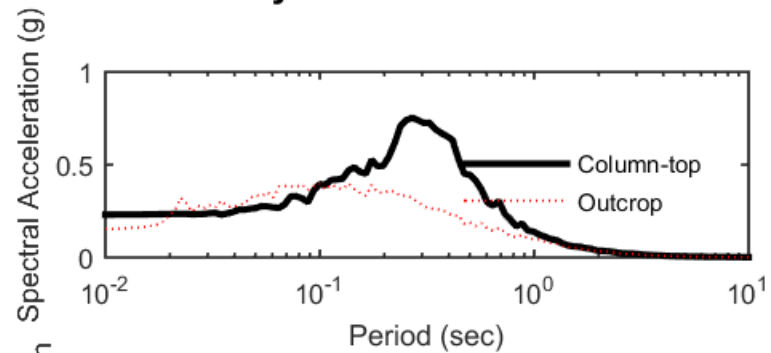
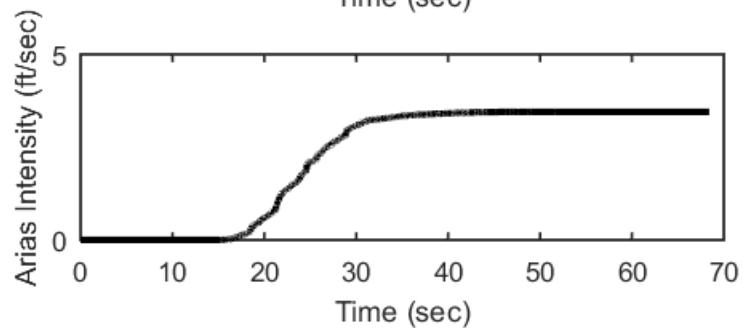
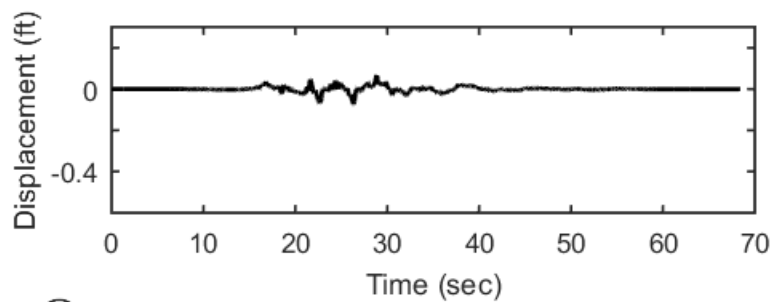
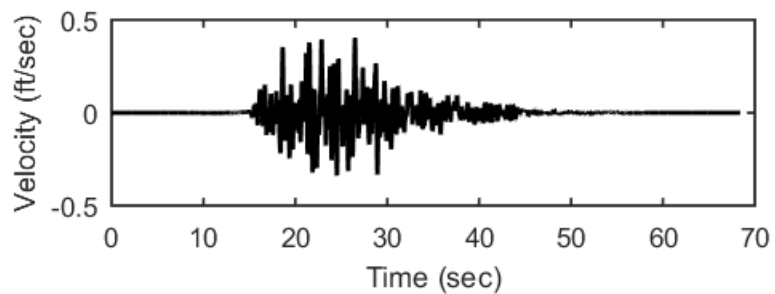
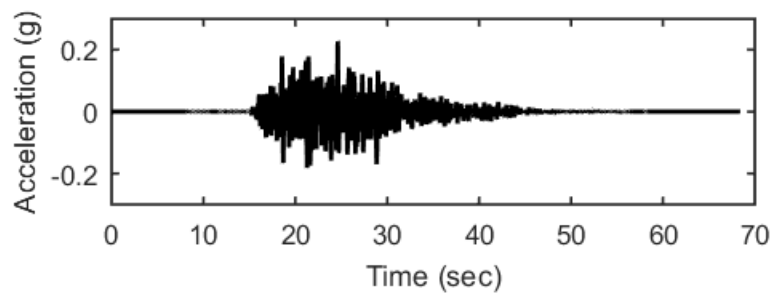
### Profile outputs for Motion: FEE2



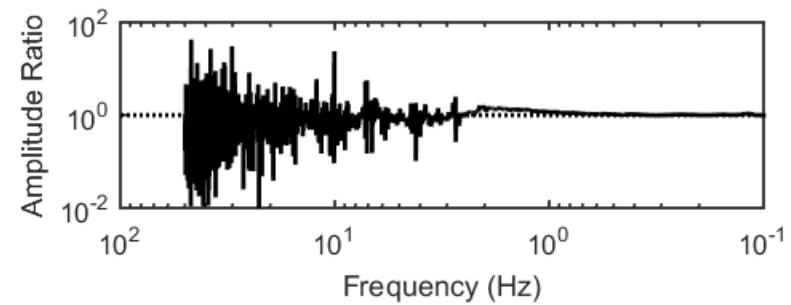
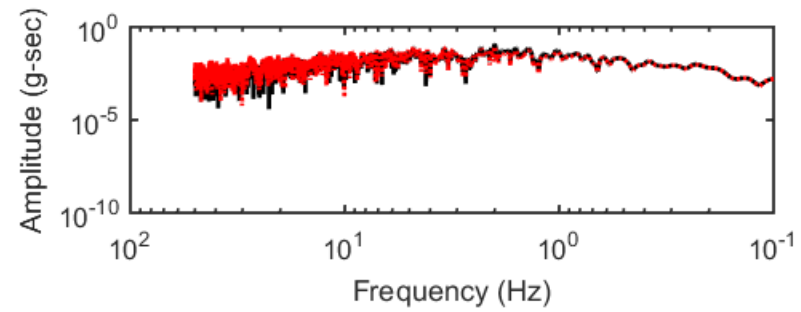
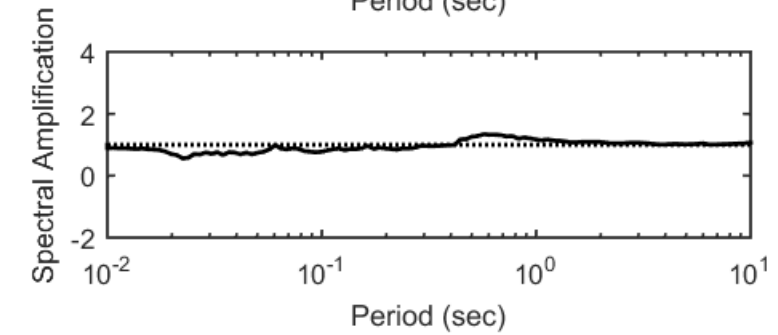
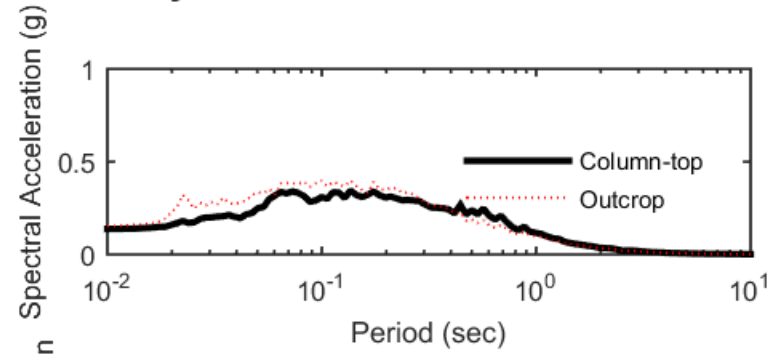
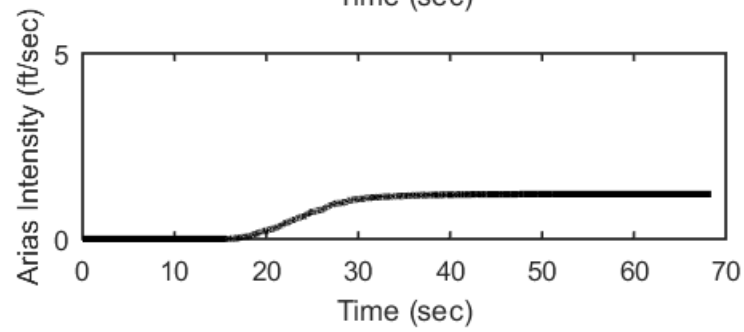
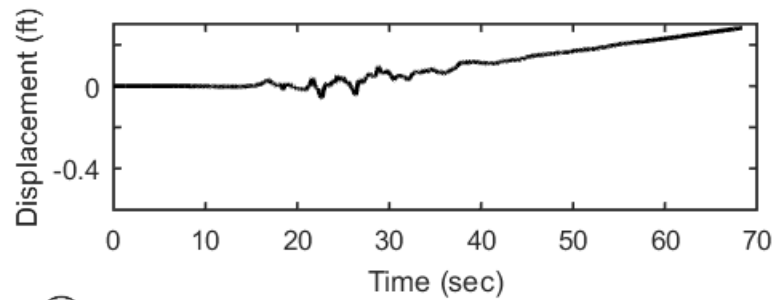
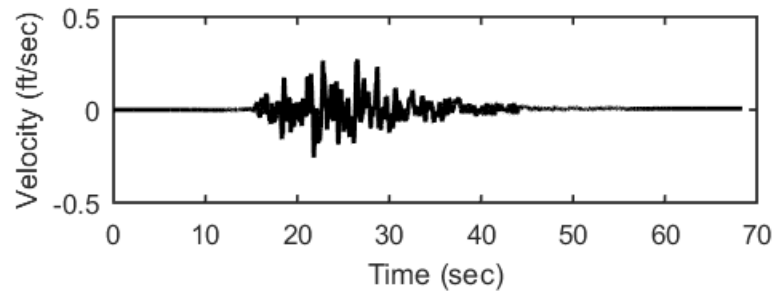
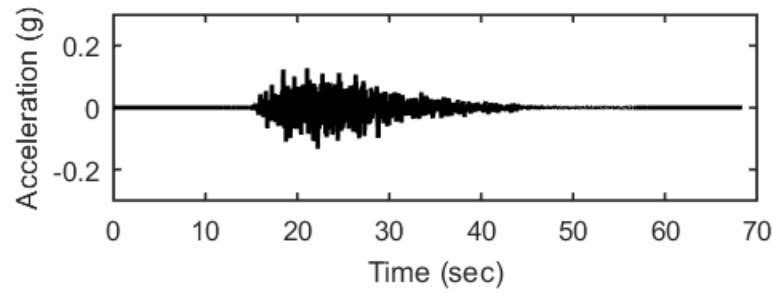
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



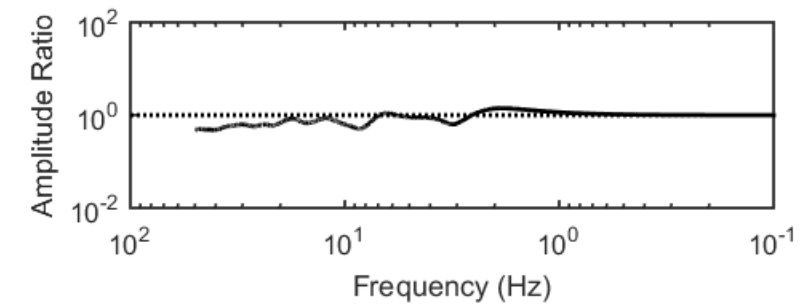
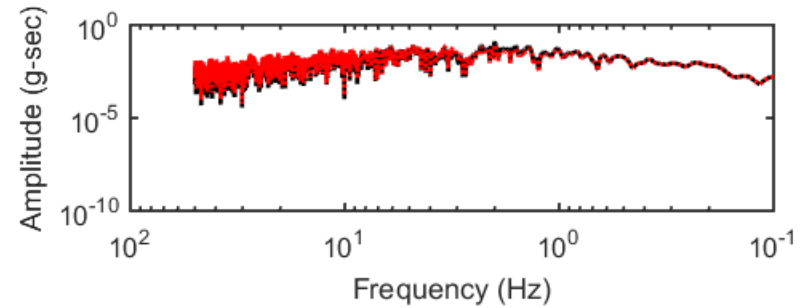
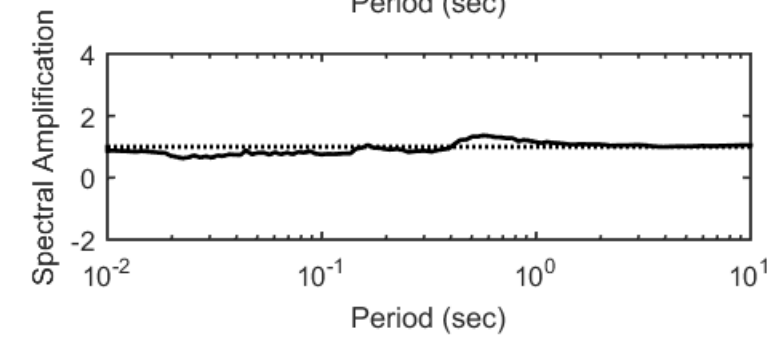
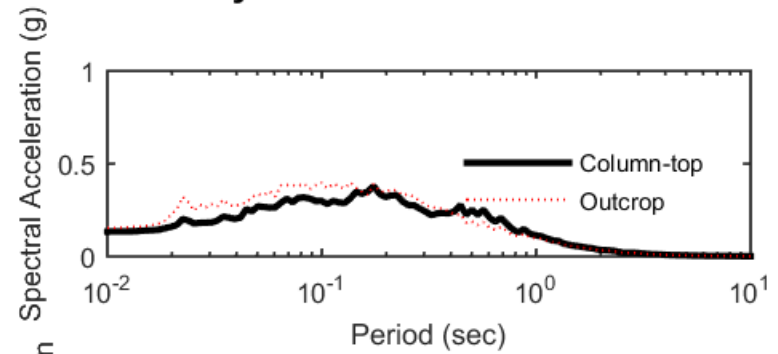
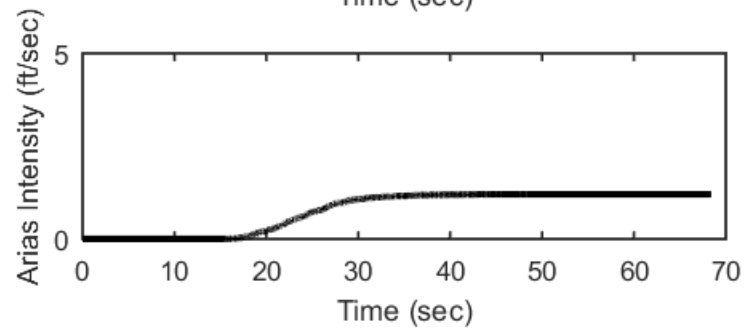
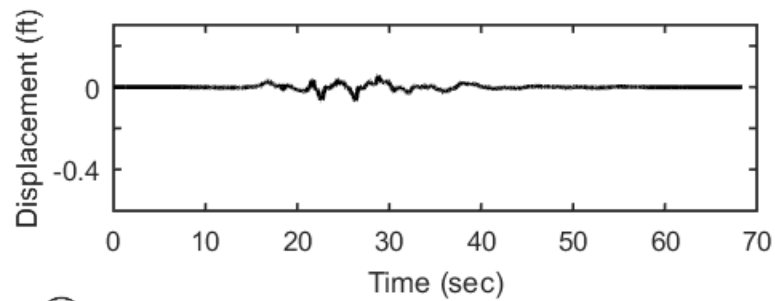
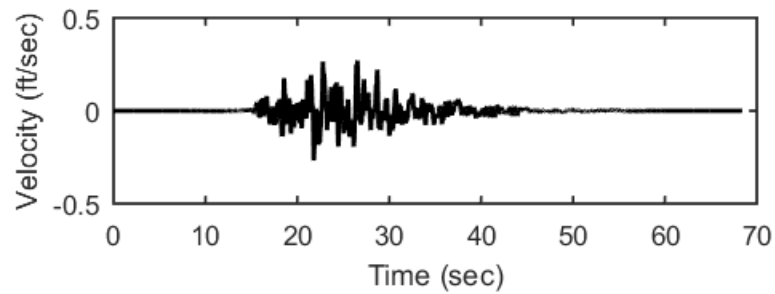
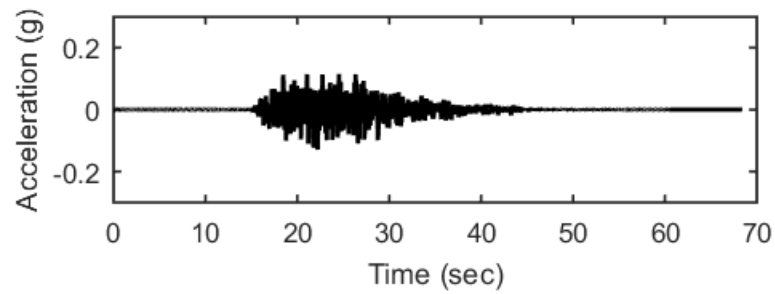
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



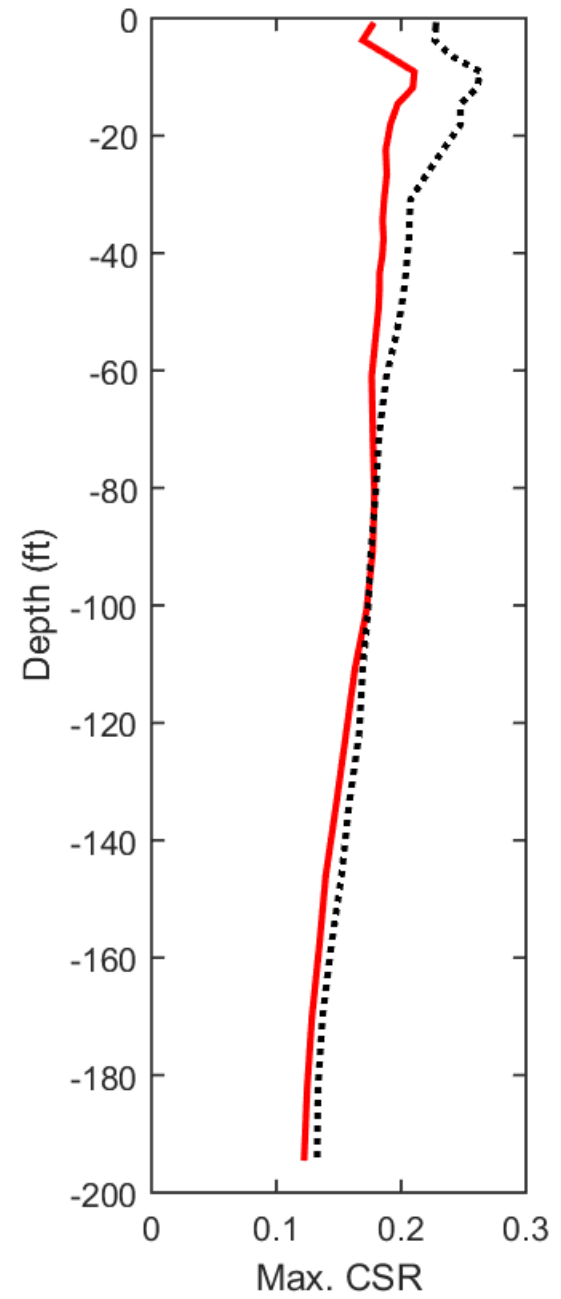
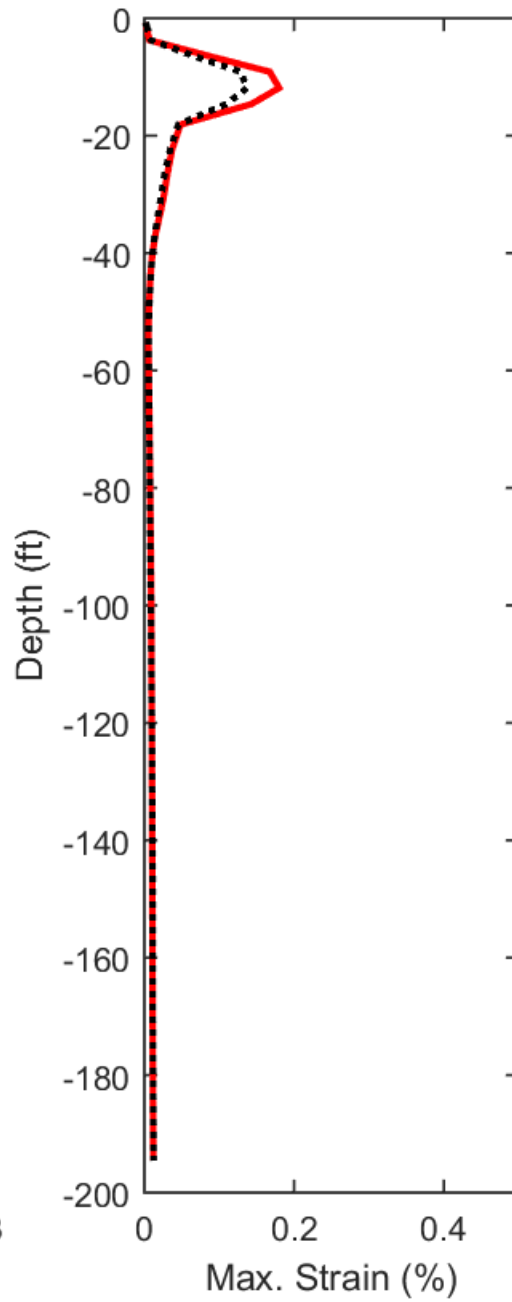
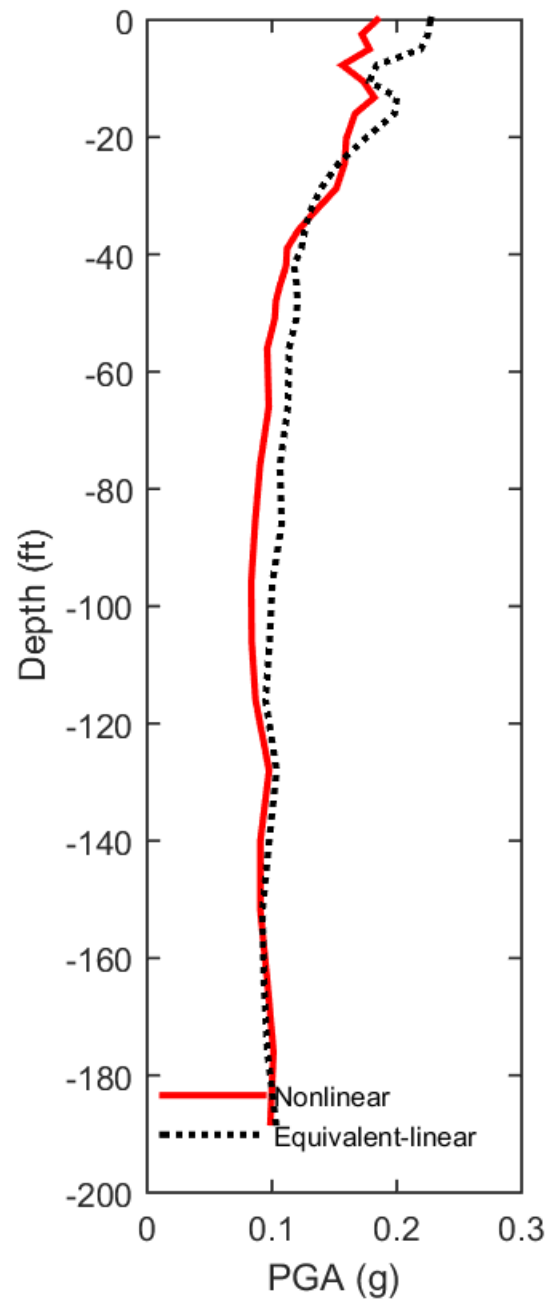
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



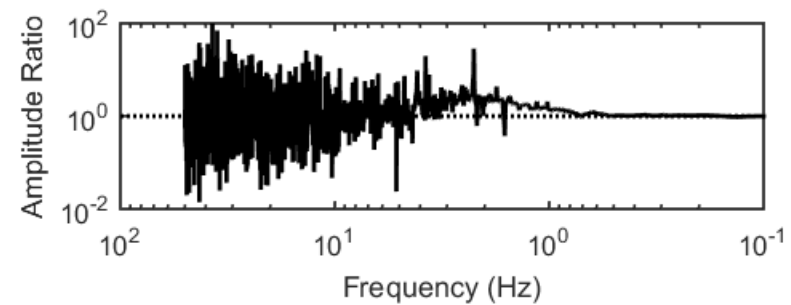
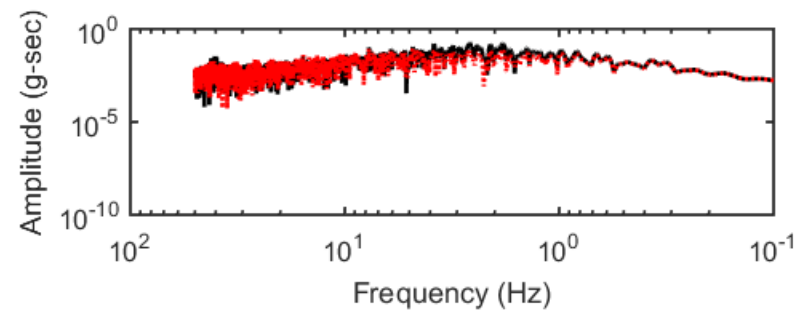
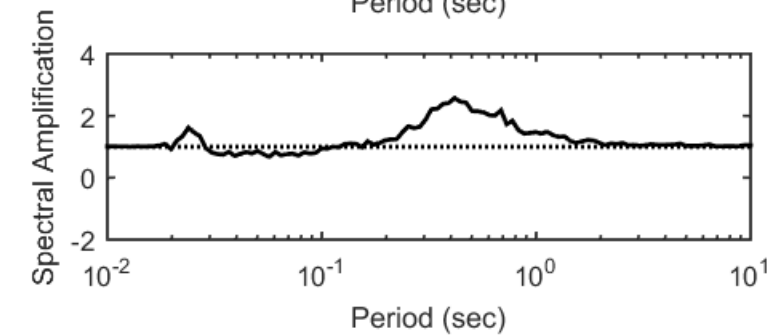
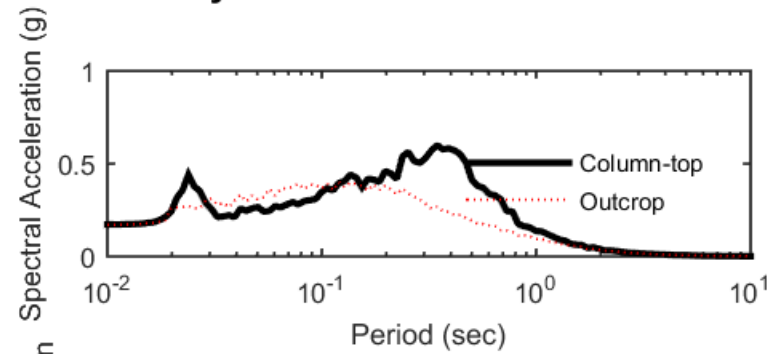
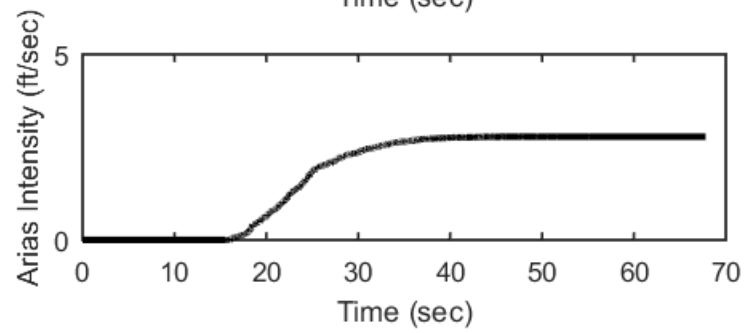
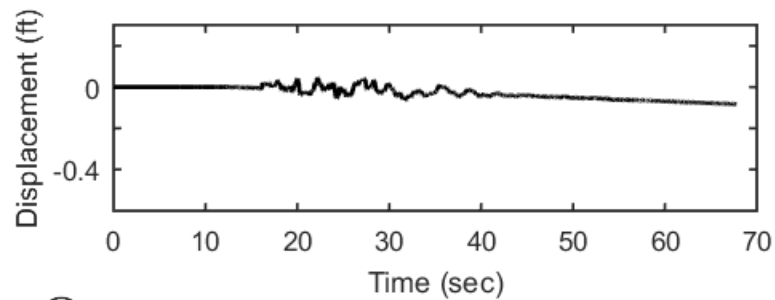
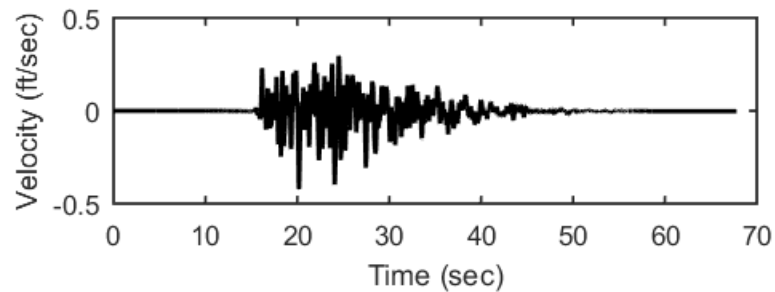
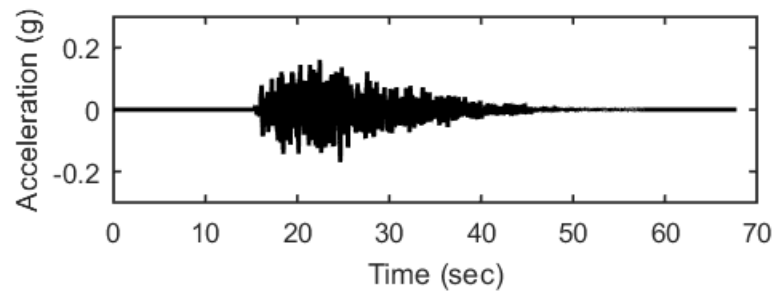
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



### Profile outputs for Motion: FEE3

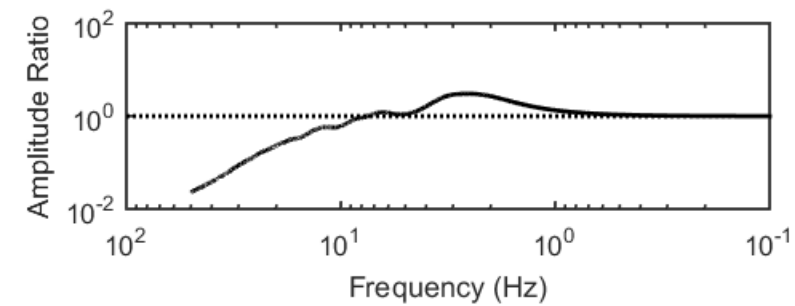
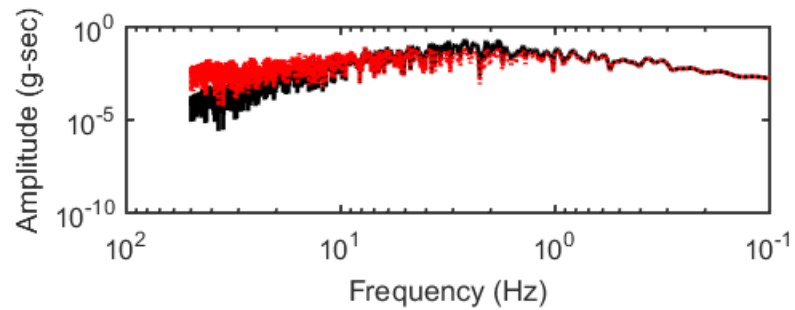
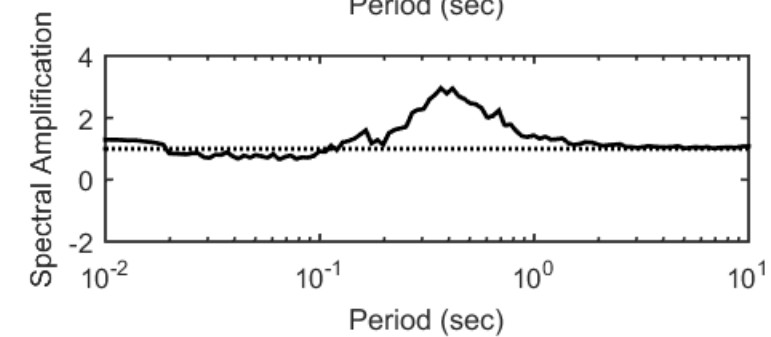
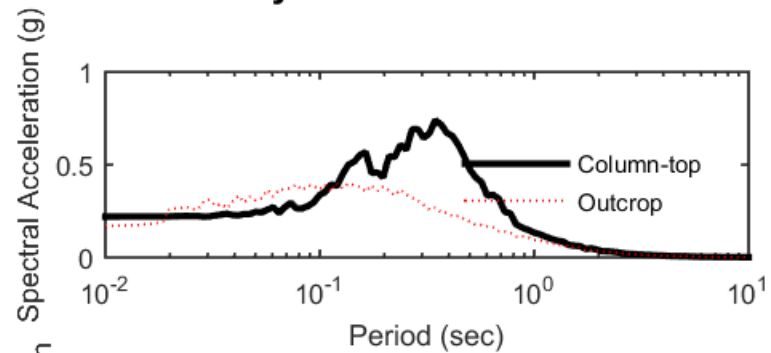
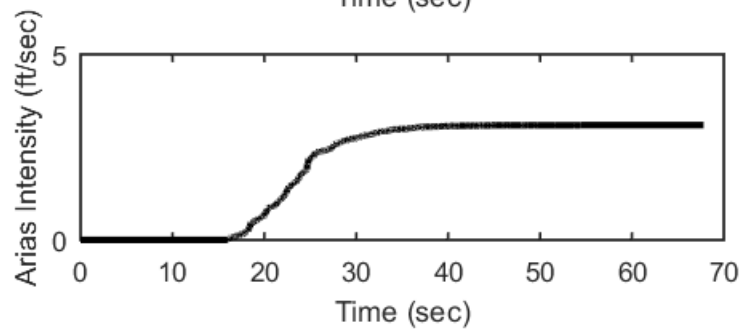
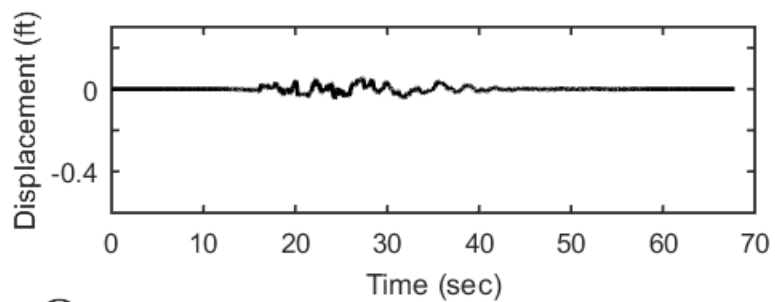
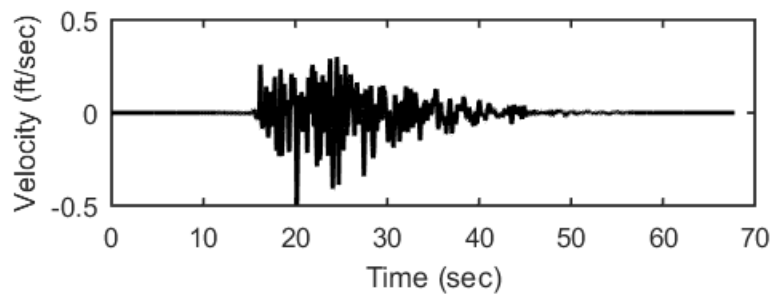
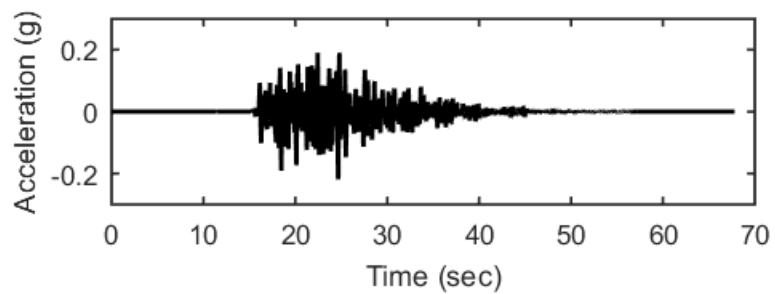


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4

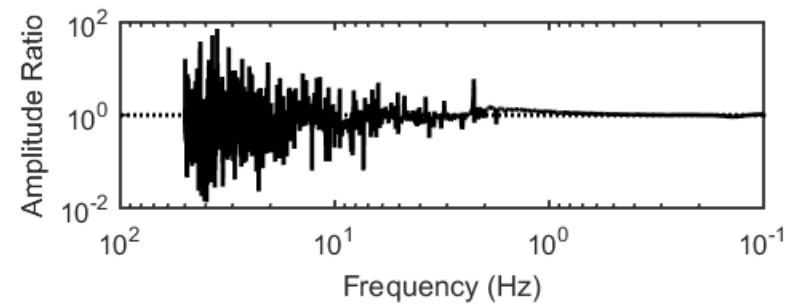
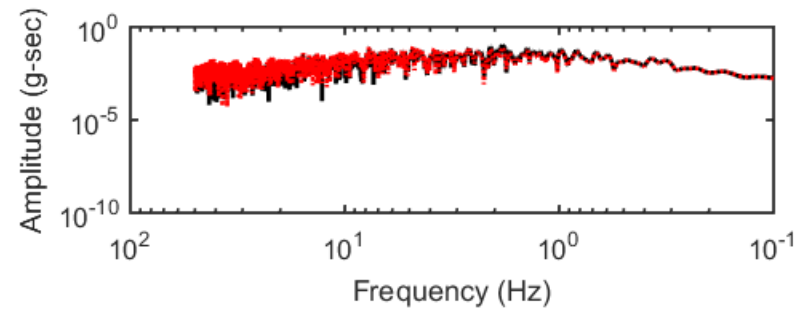
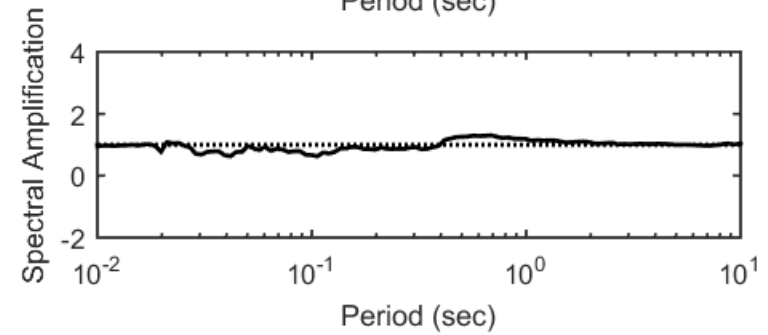
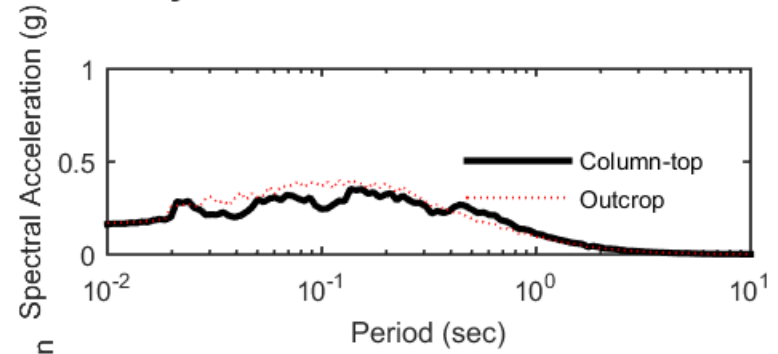
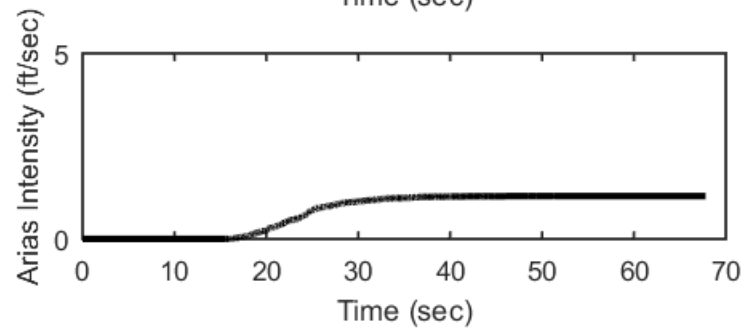
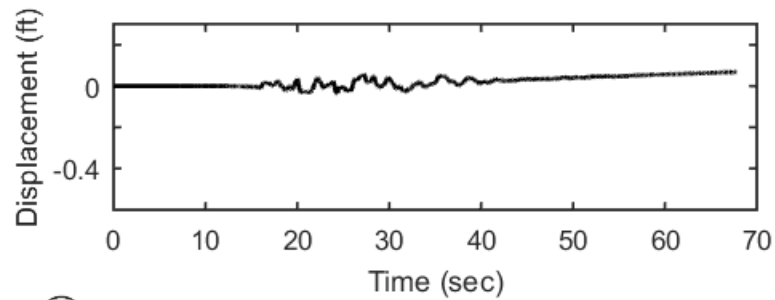
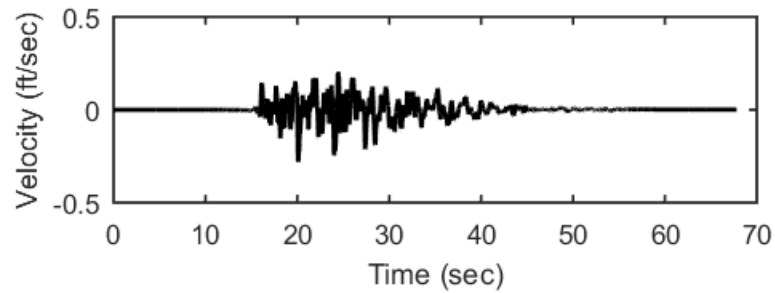
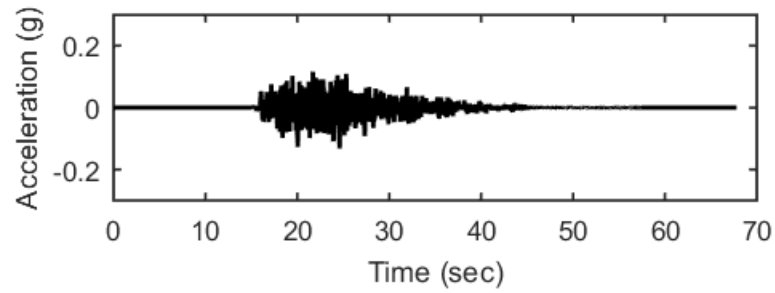




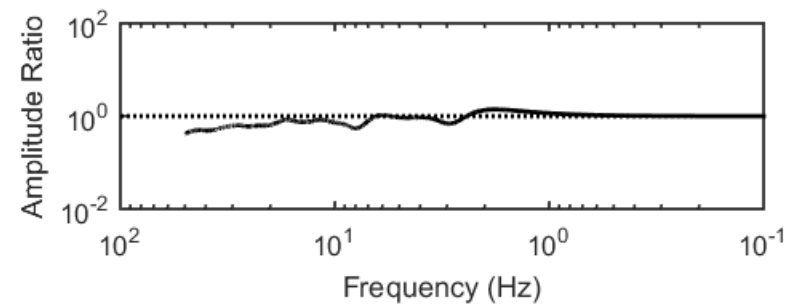
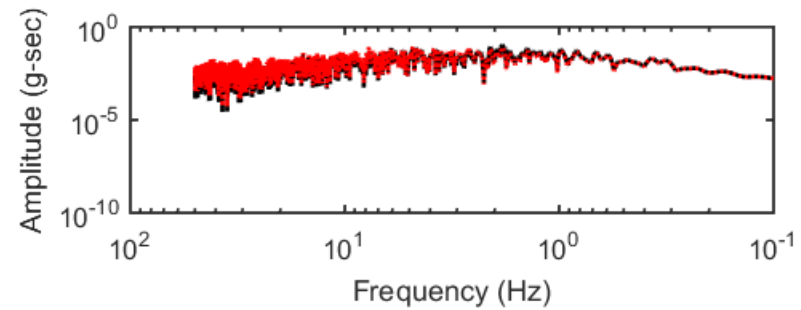
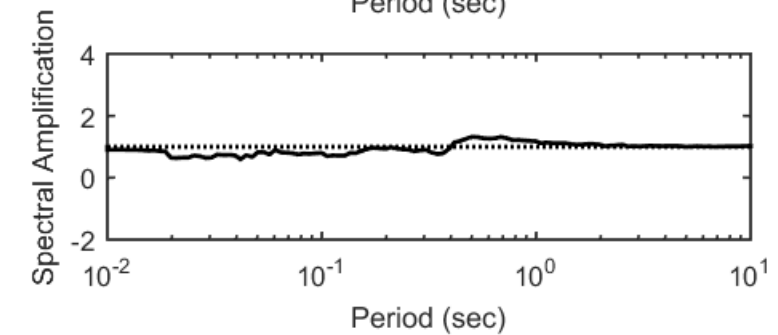
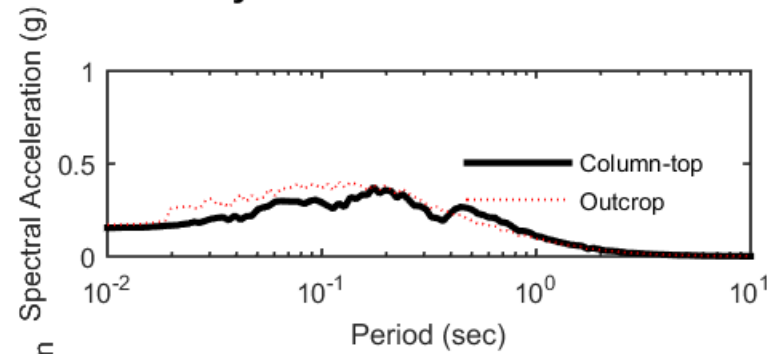
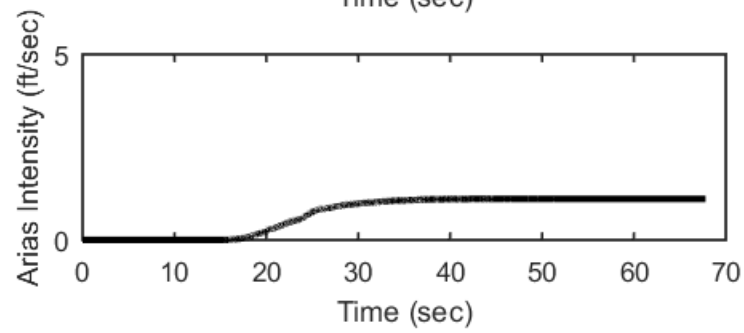
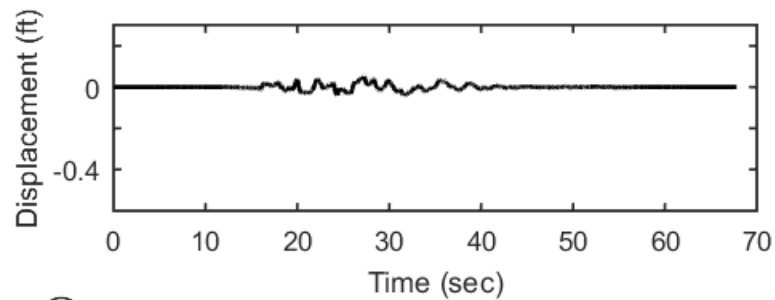
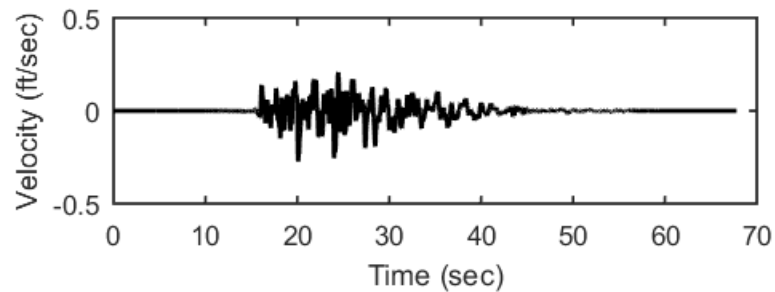
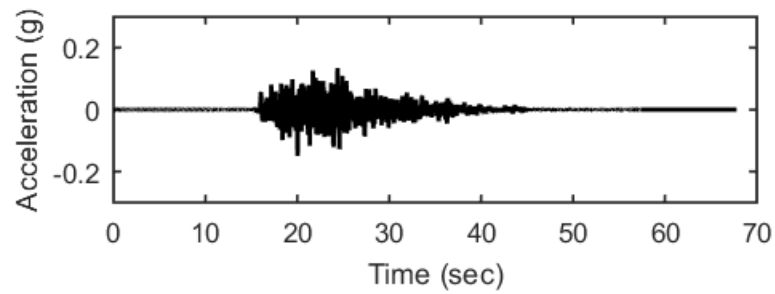
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



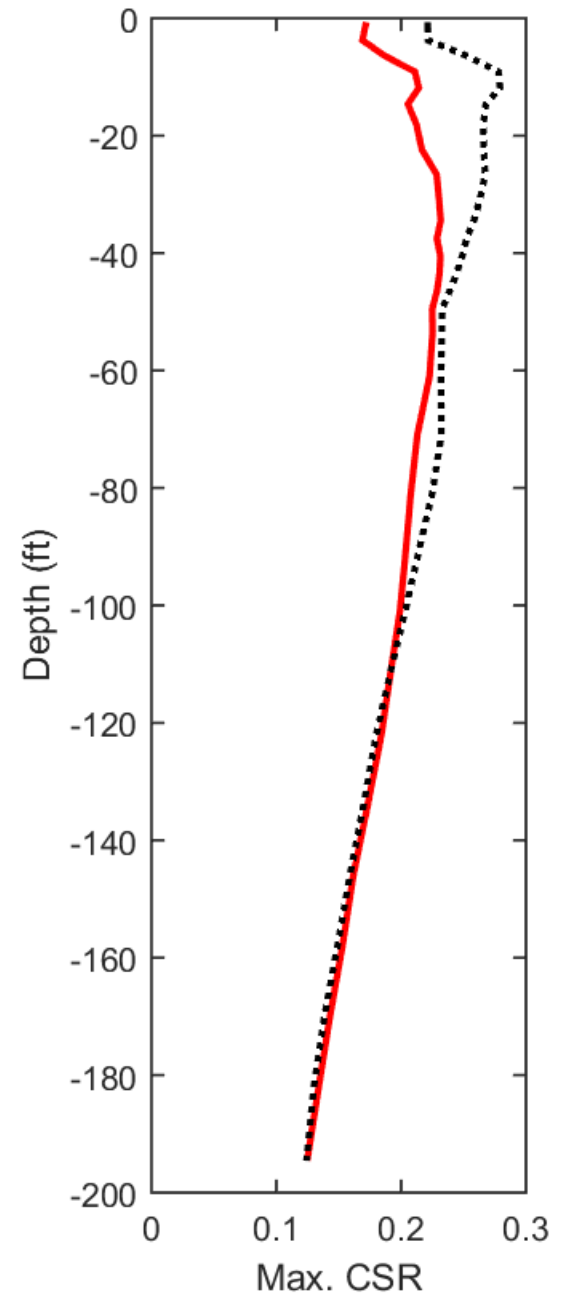
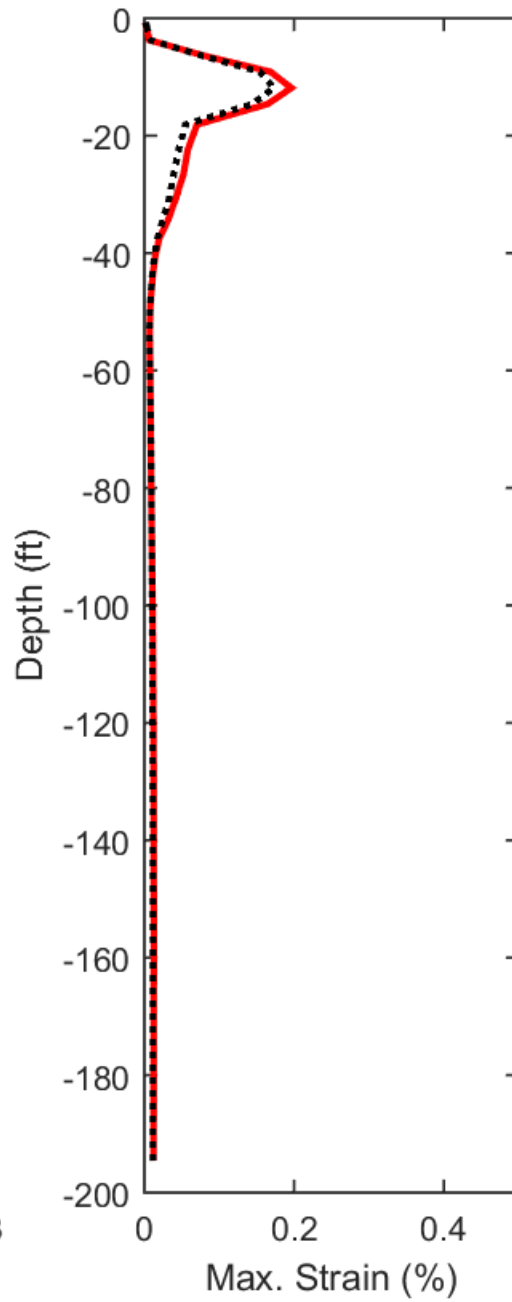
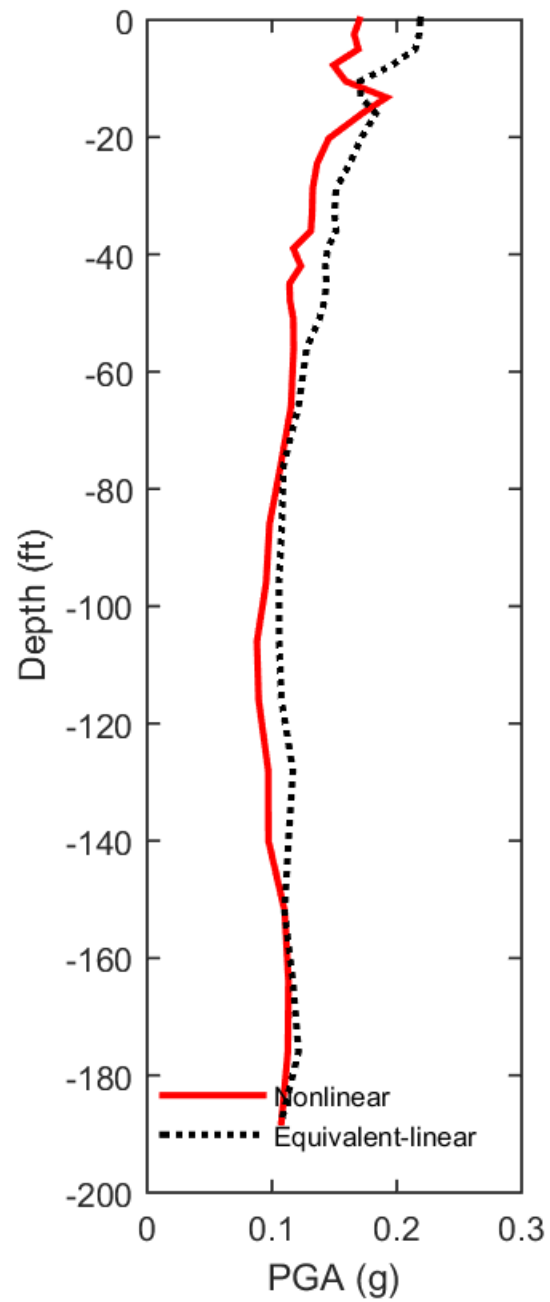
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



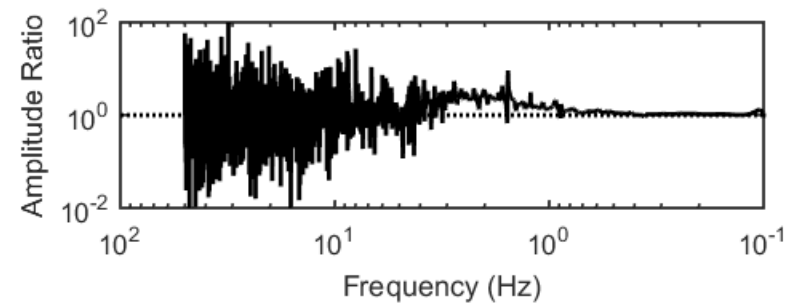
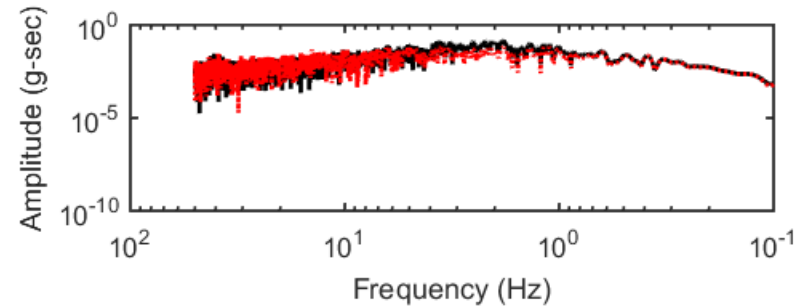
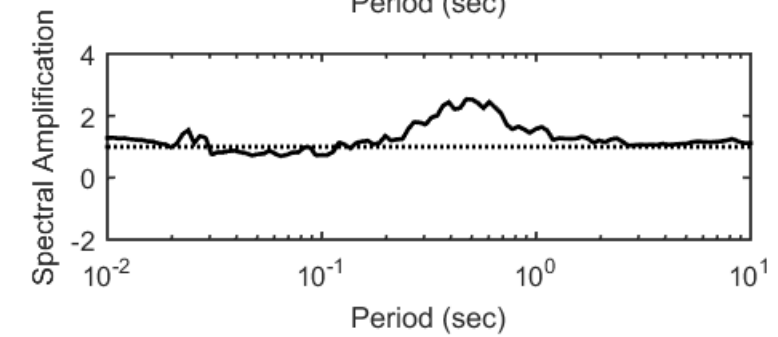
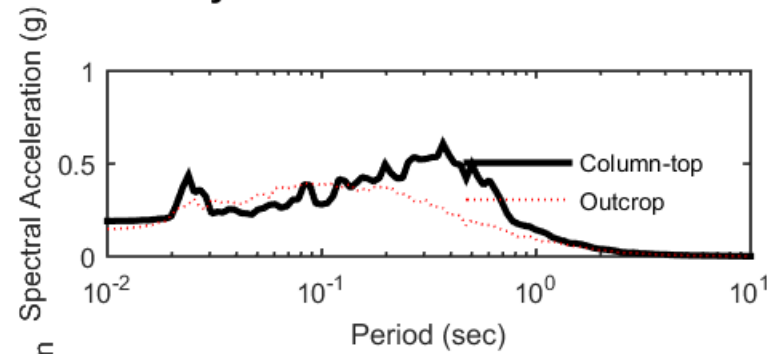
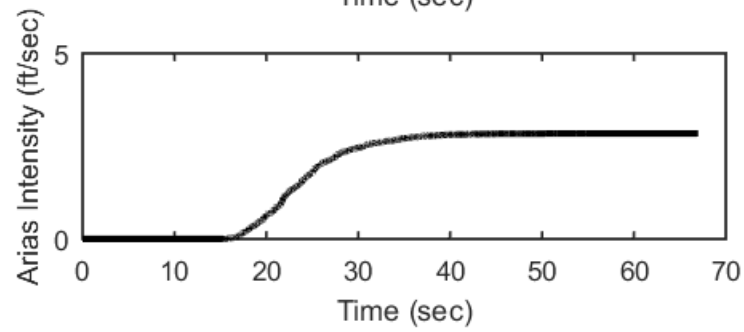
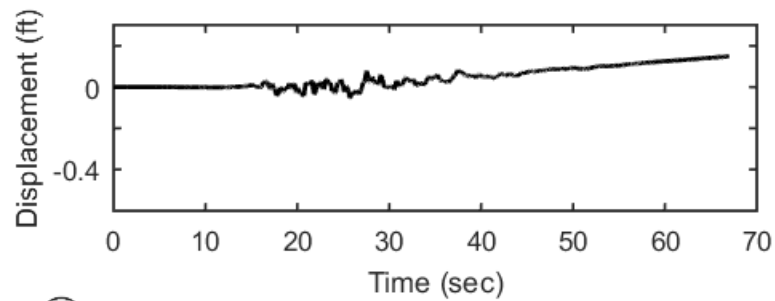
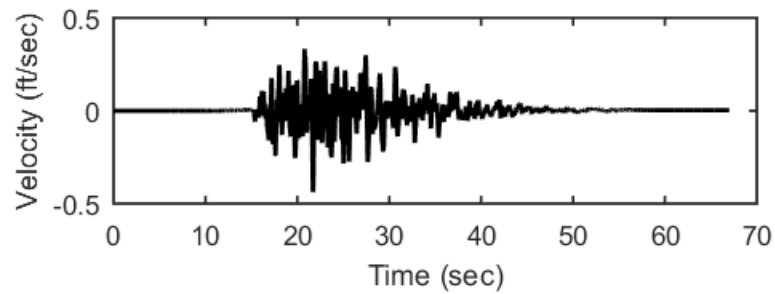
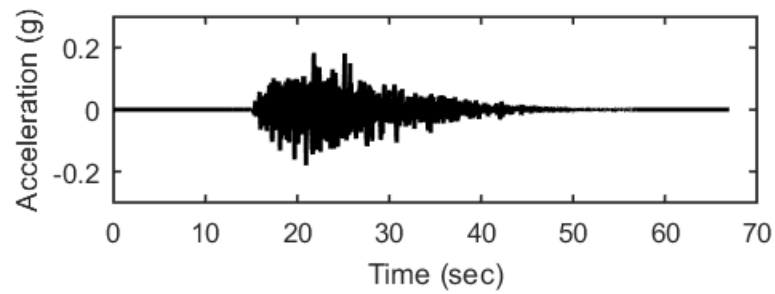
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



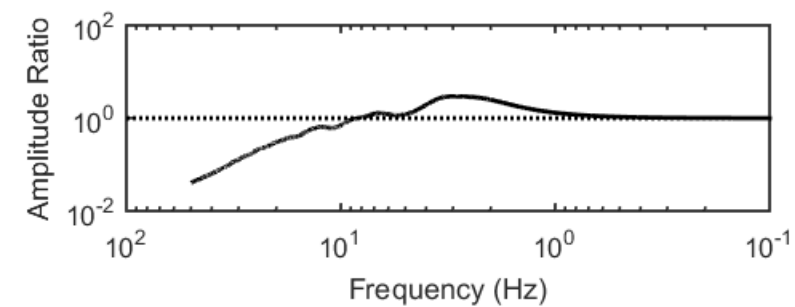
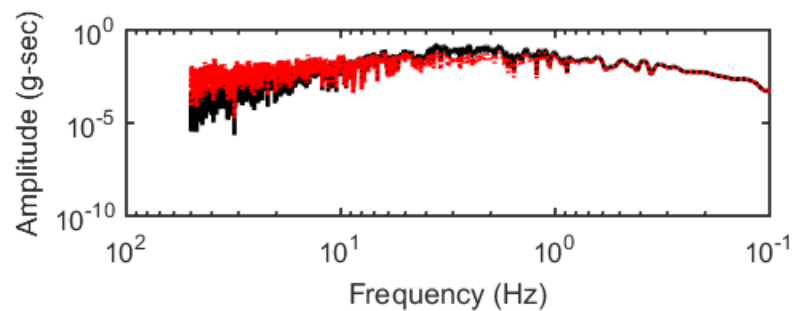
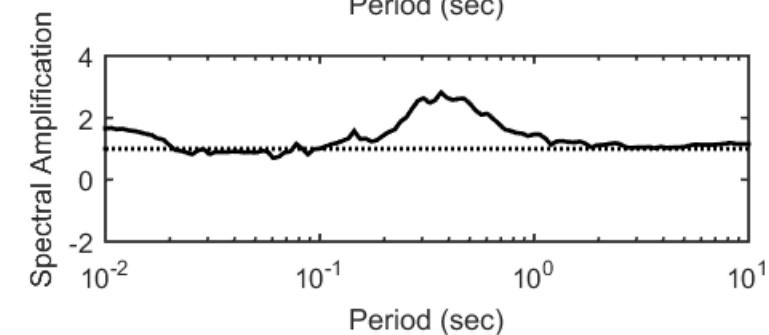
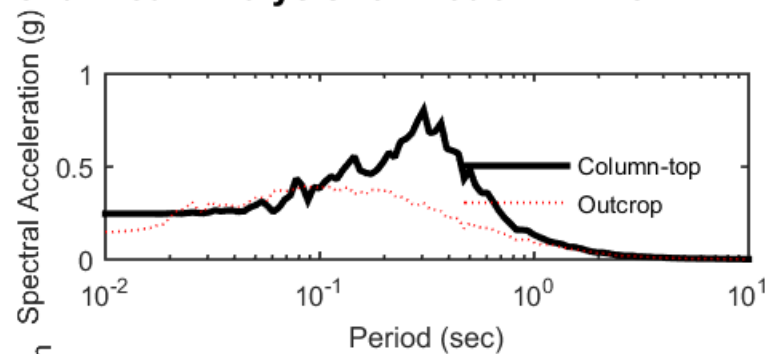
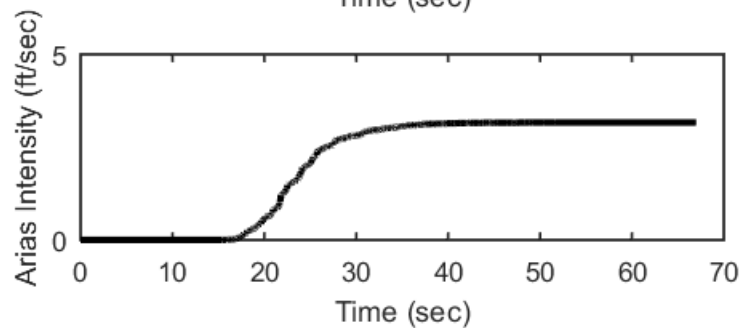
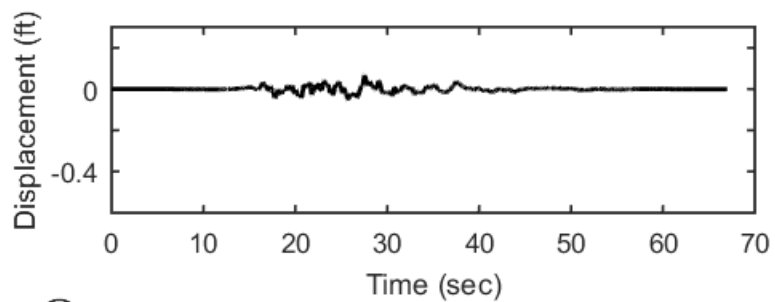
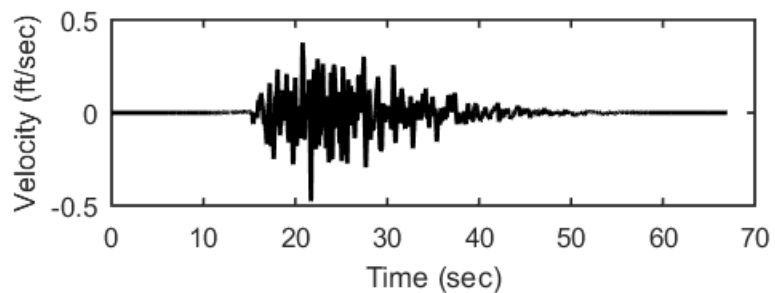
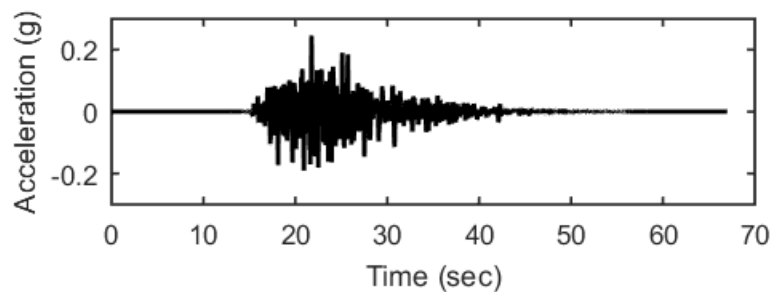
### Profile outputs for Motion: FEE4



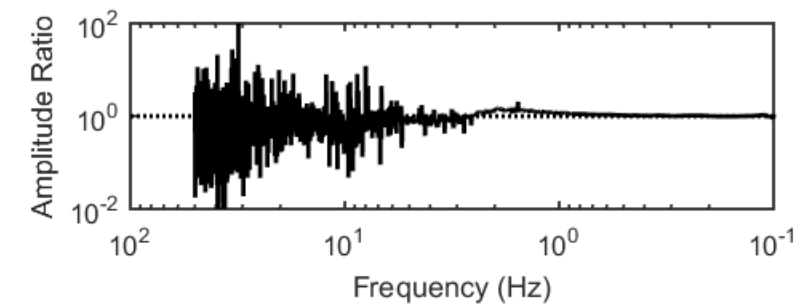
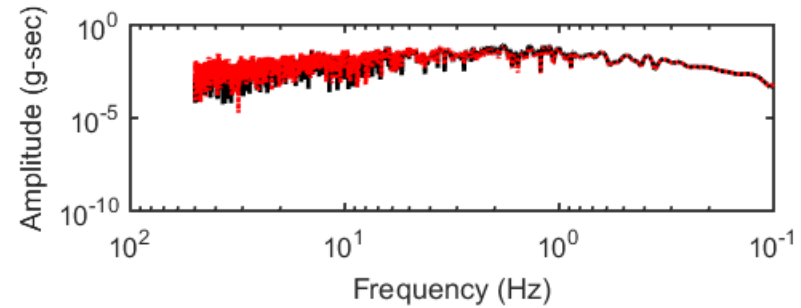
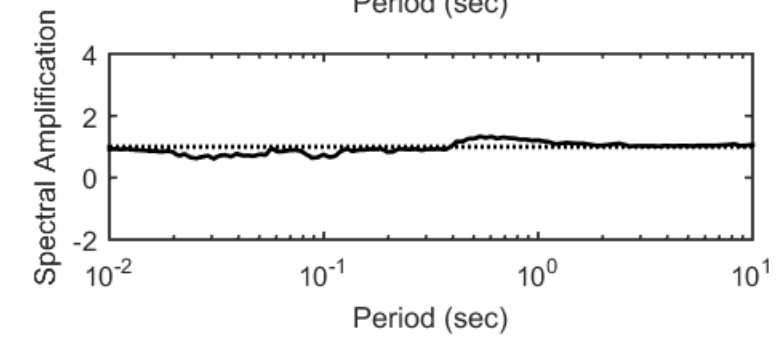
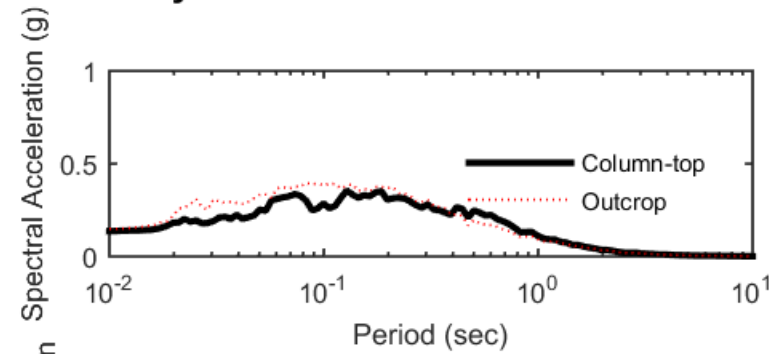
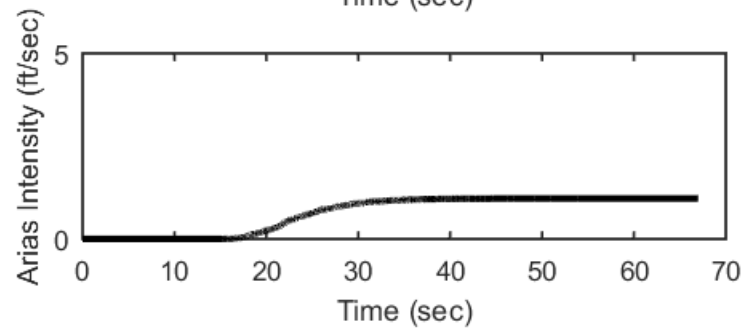
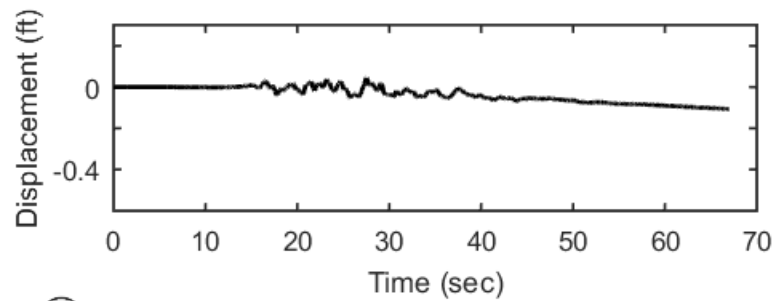
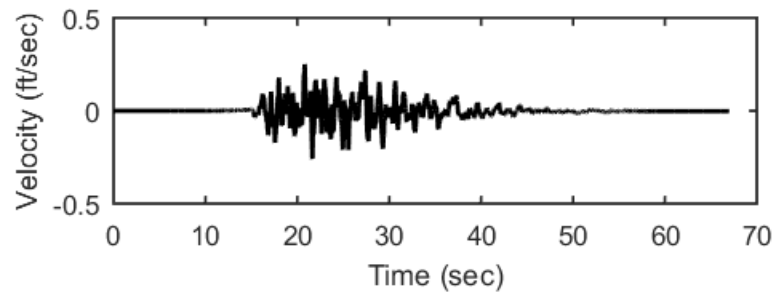
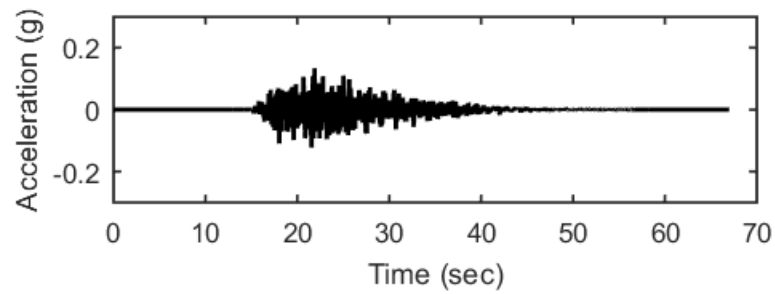
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



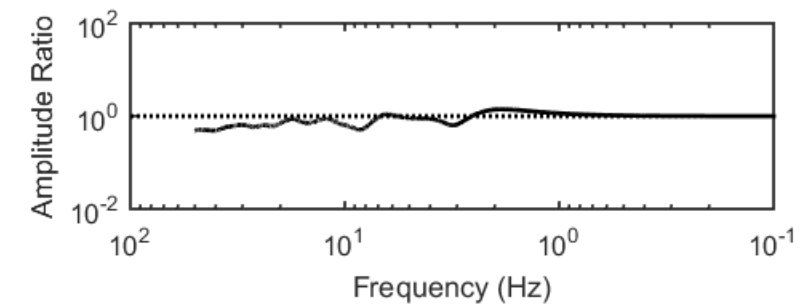
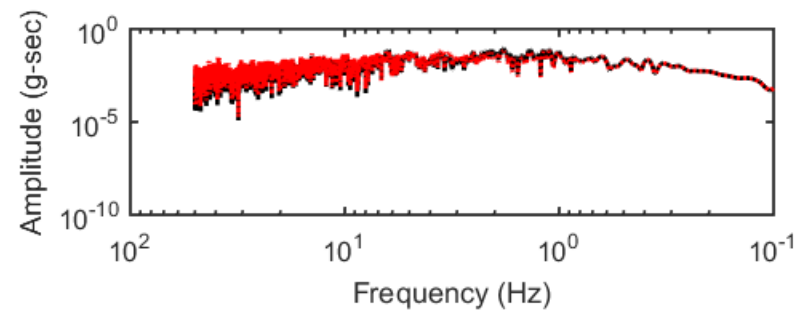
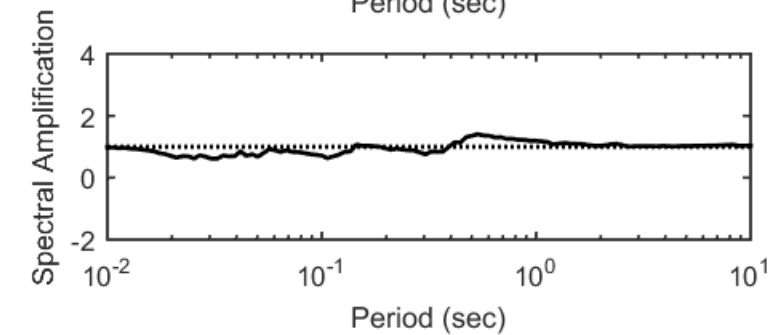
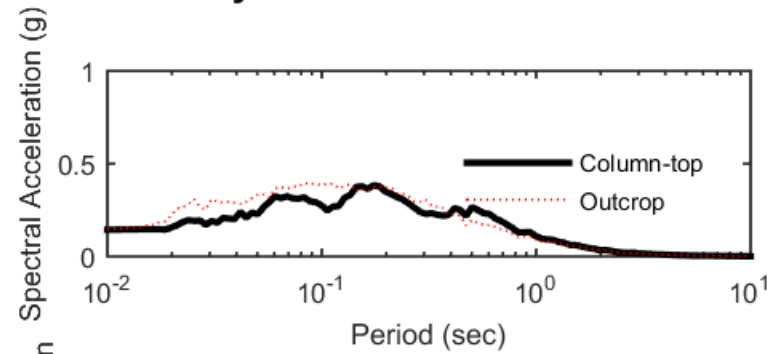
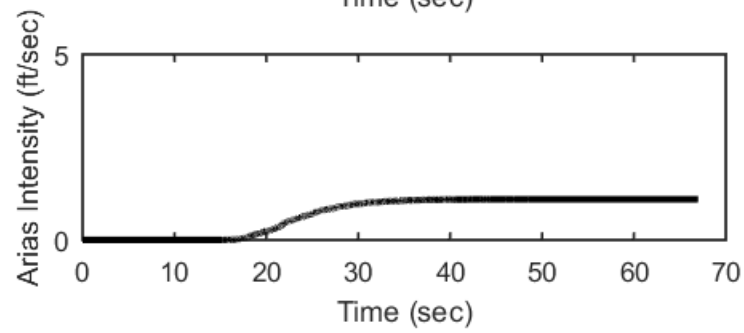
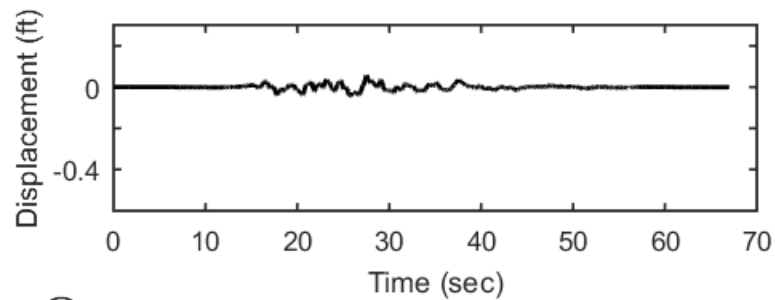
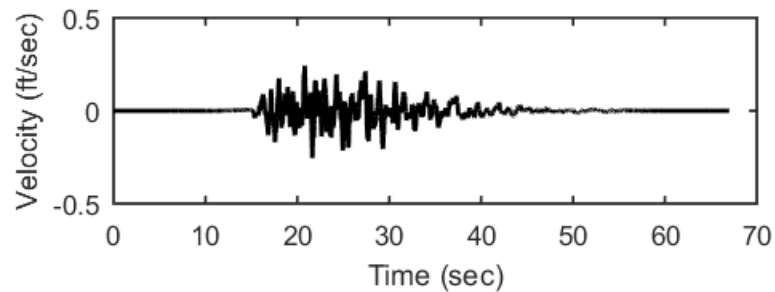
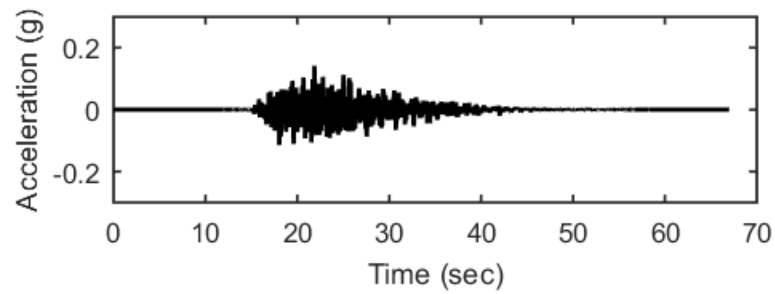
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5

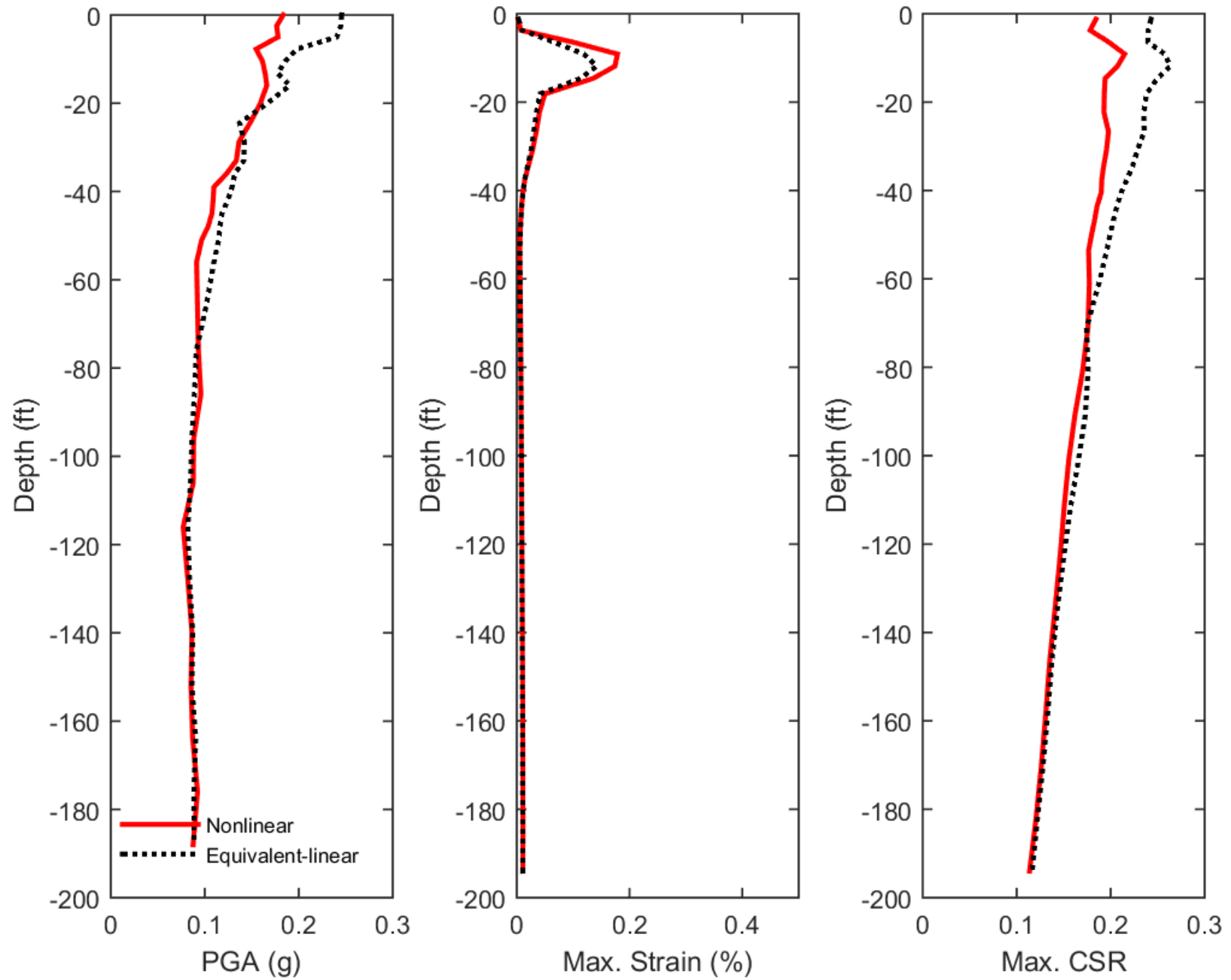


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5

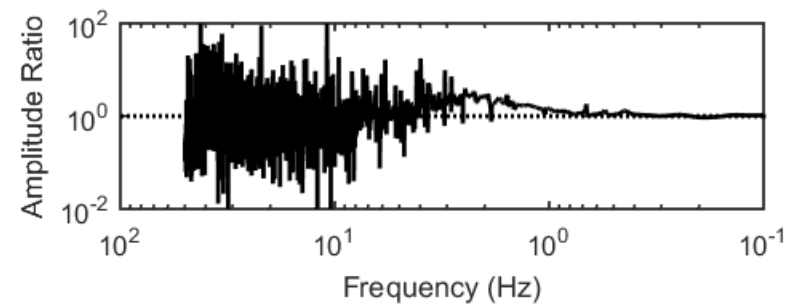
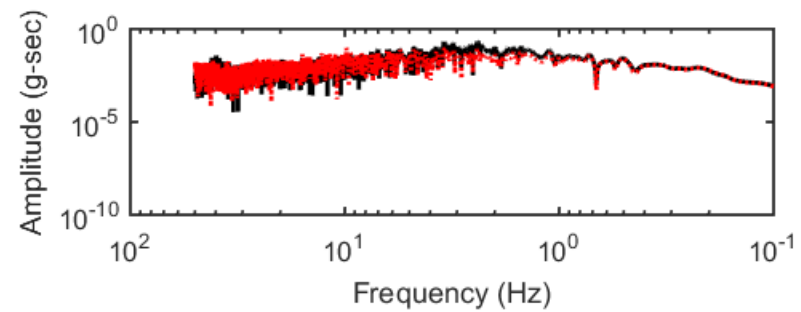
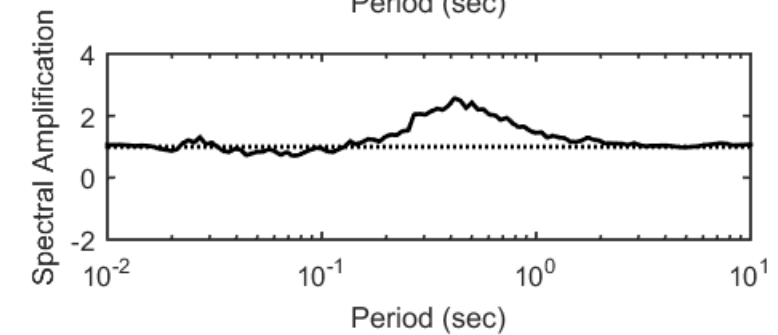
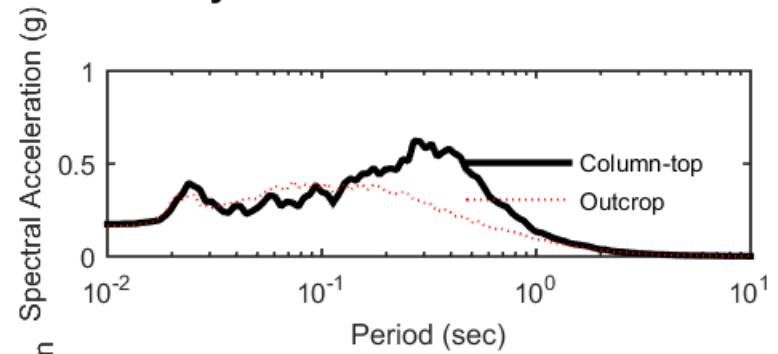
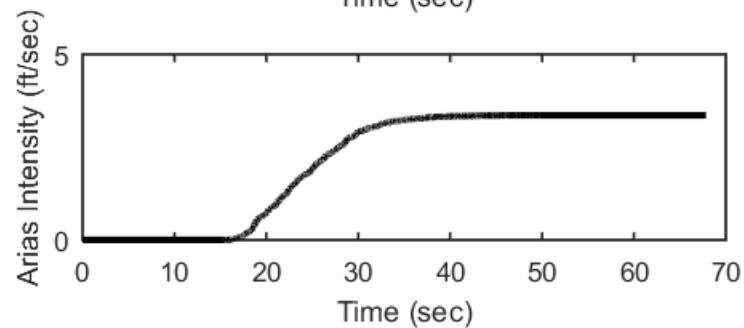
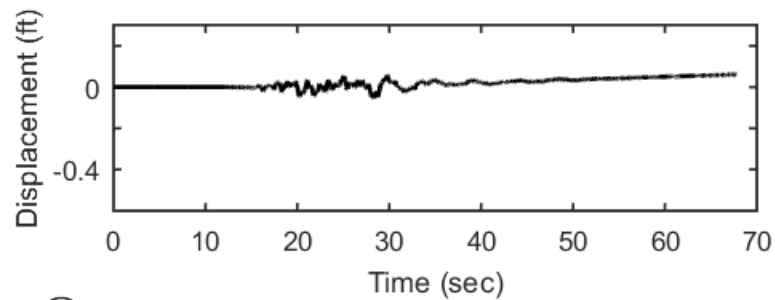
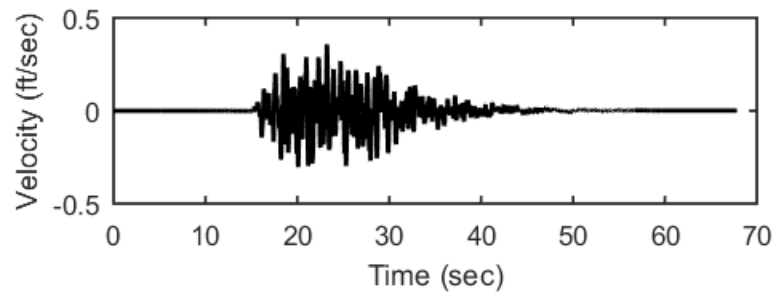
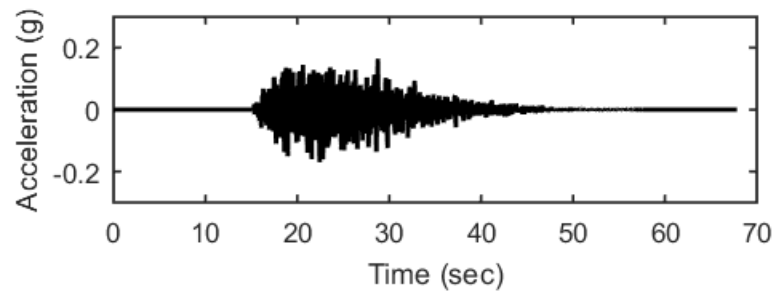




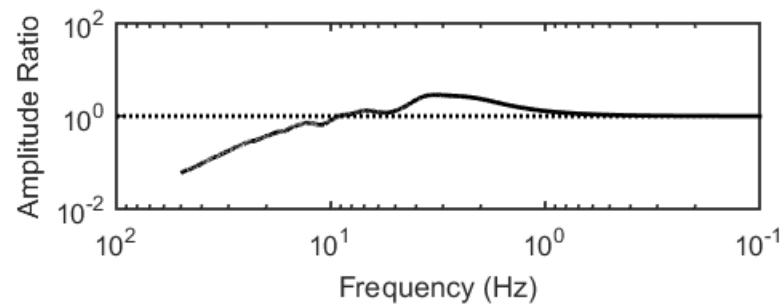
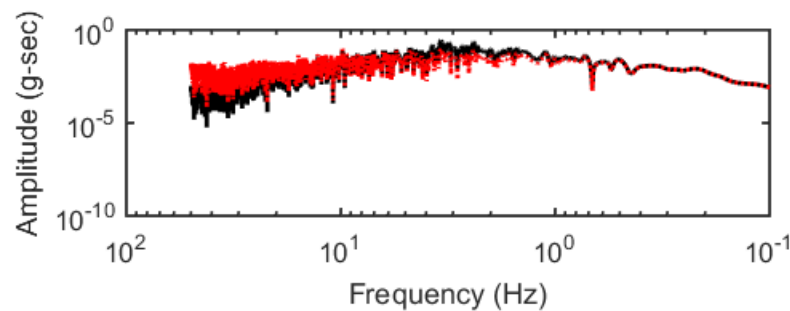
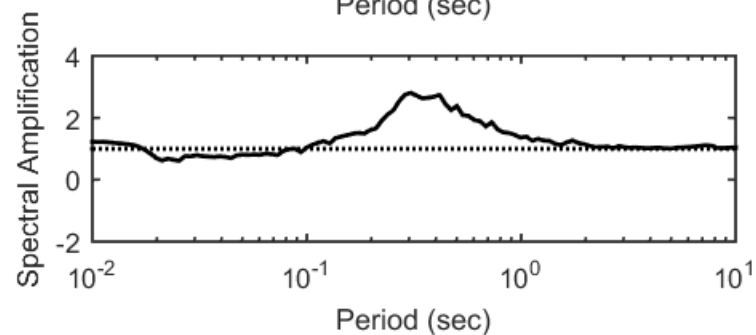
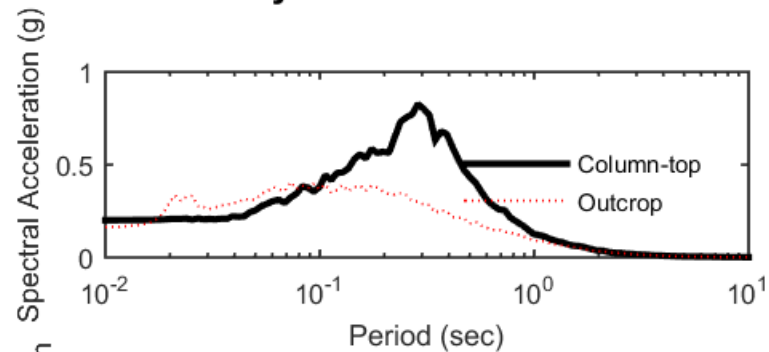
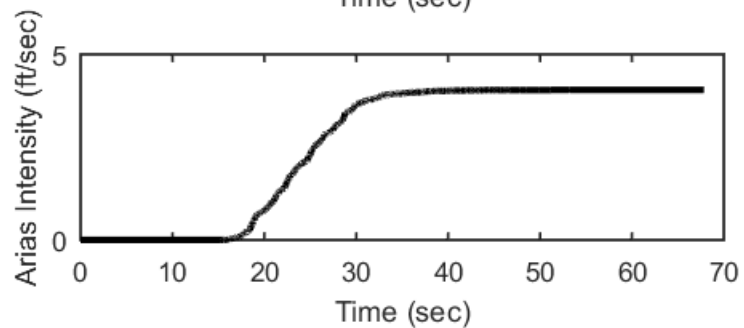
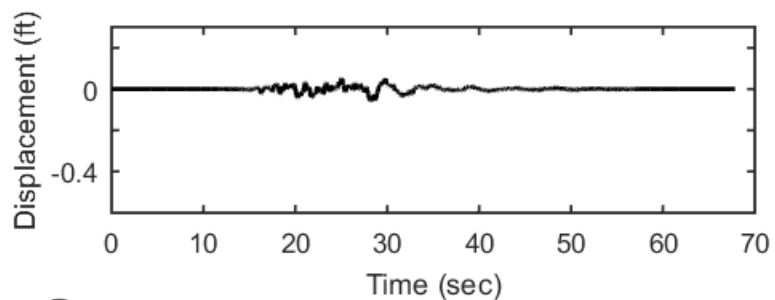
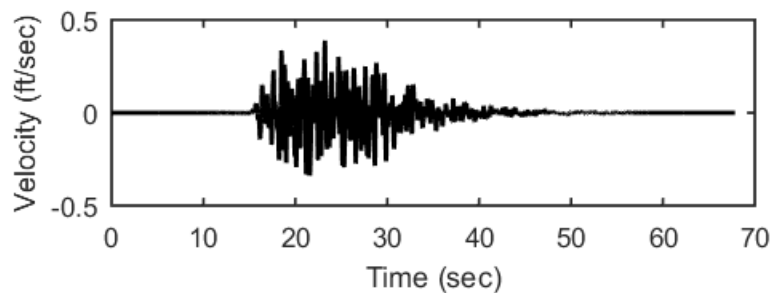
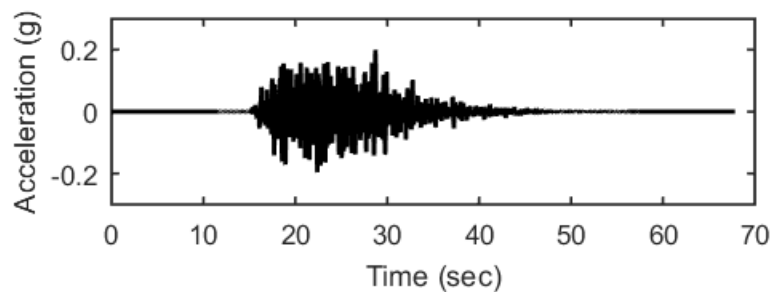
### Profile outputs for Motion: FEE5



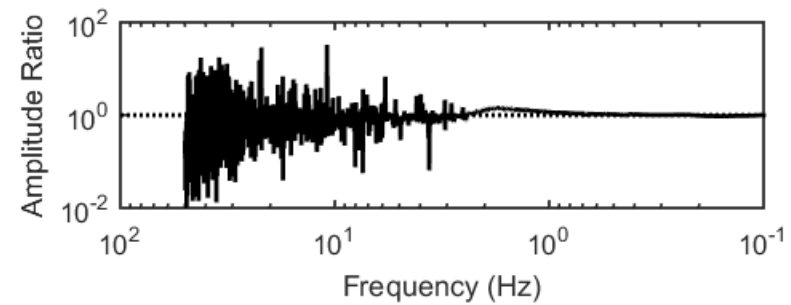
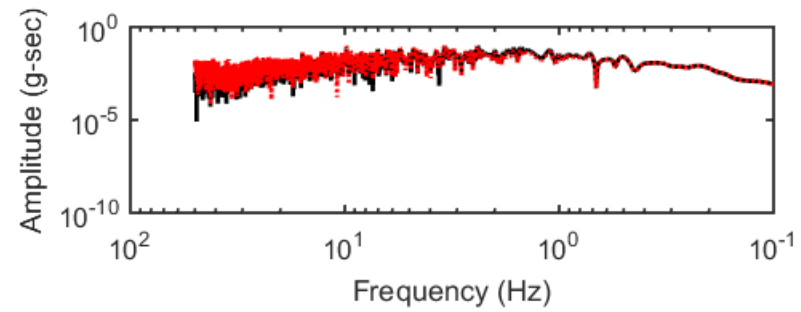
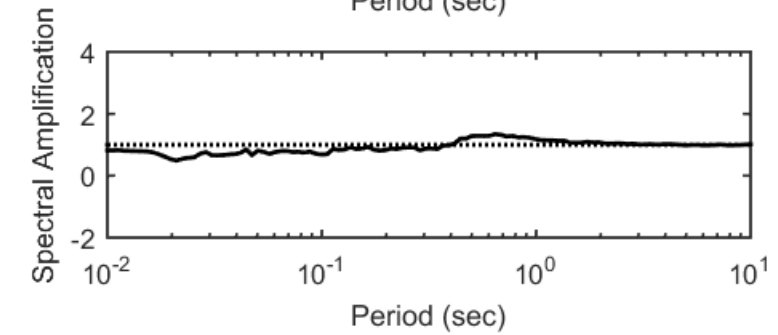
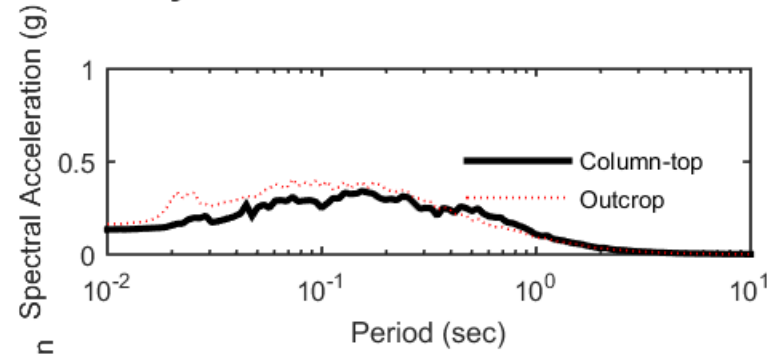
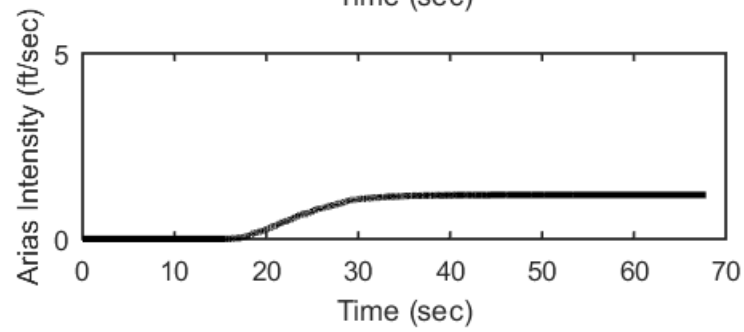
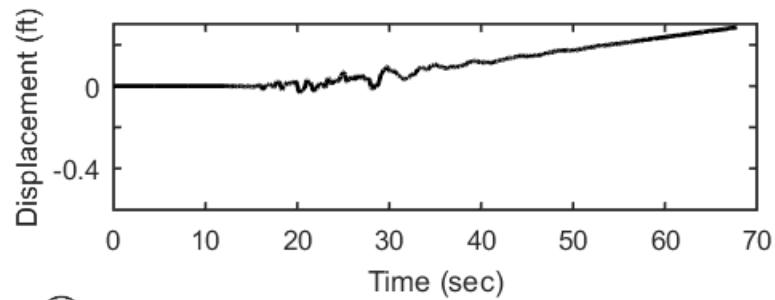
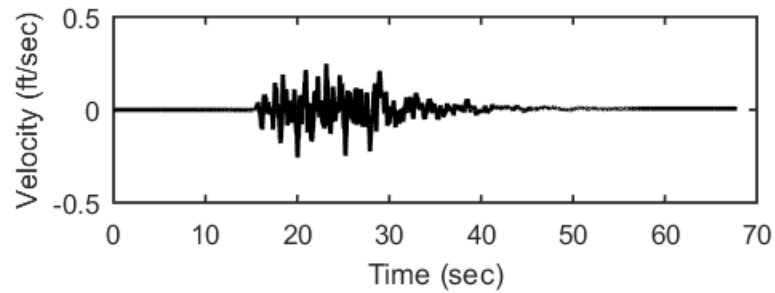
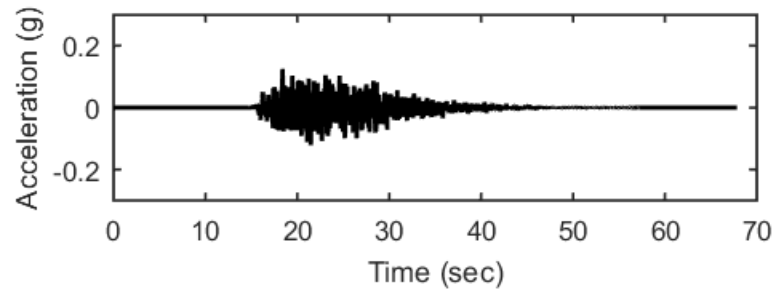
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



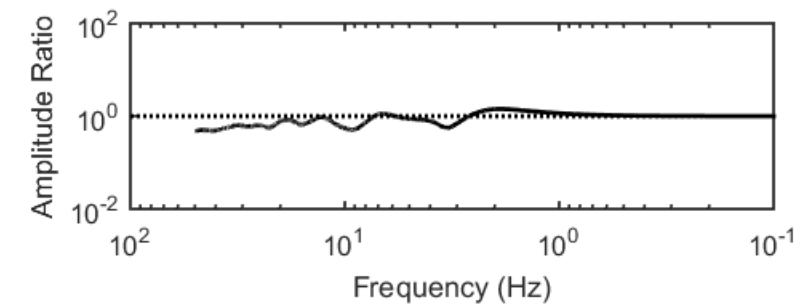
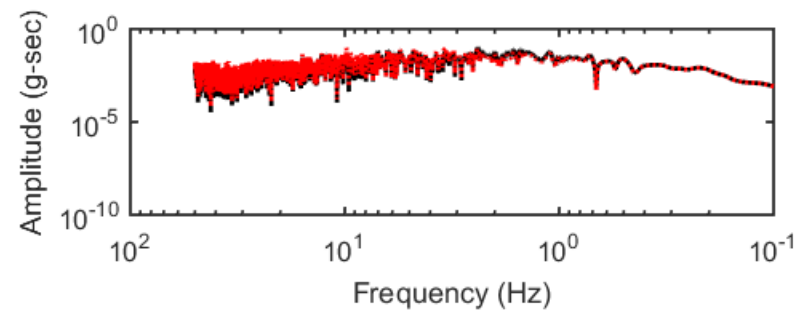
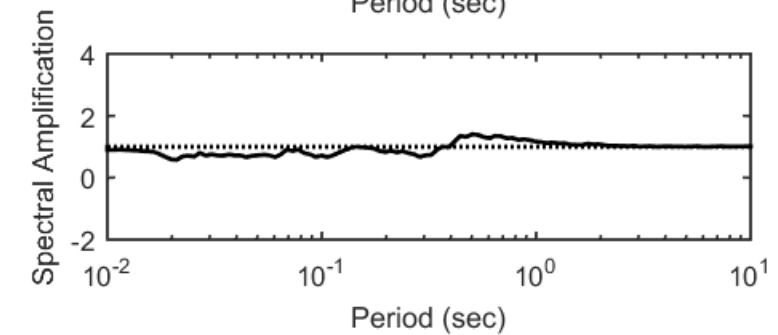
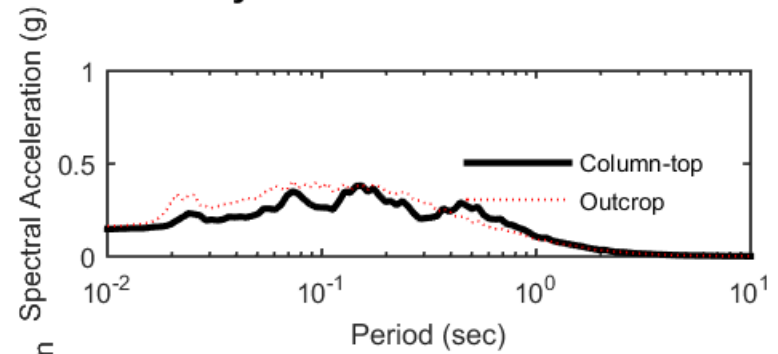
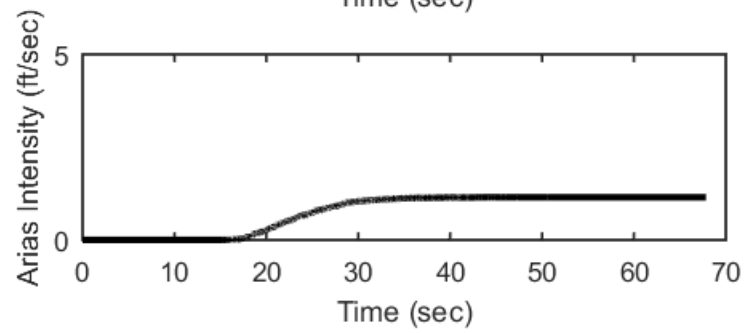
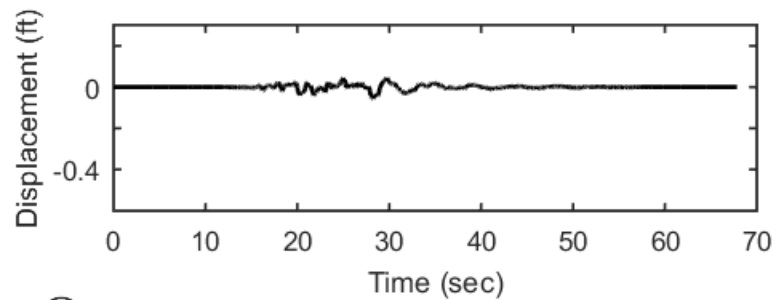
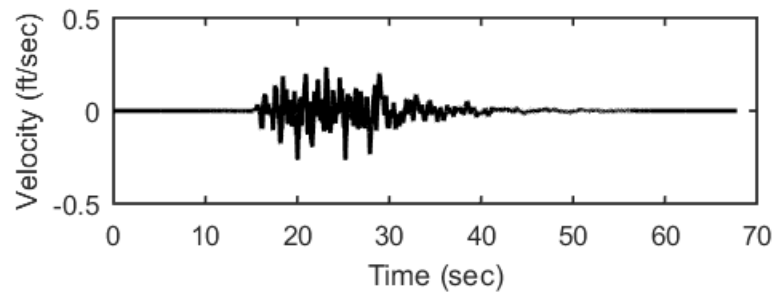
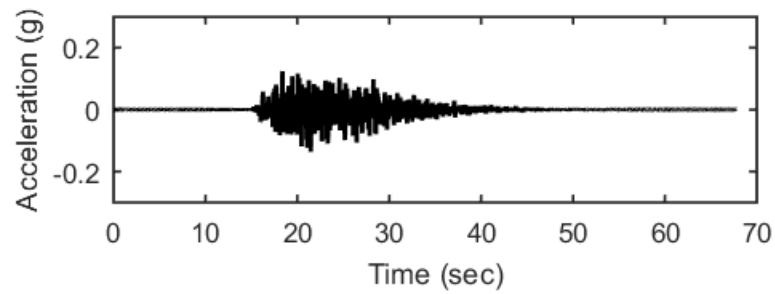
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



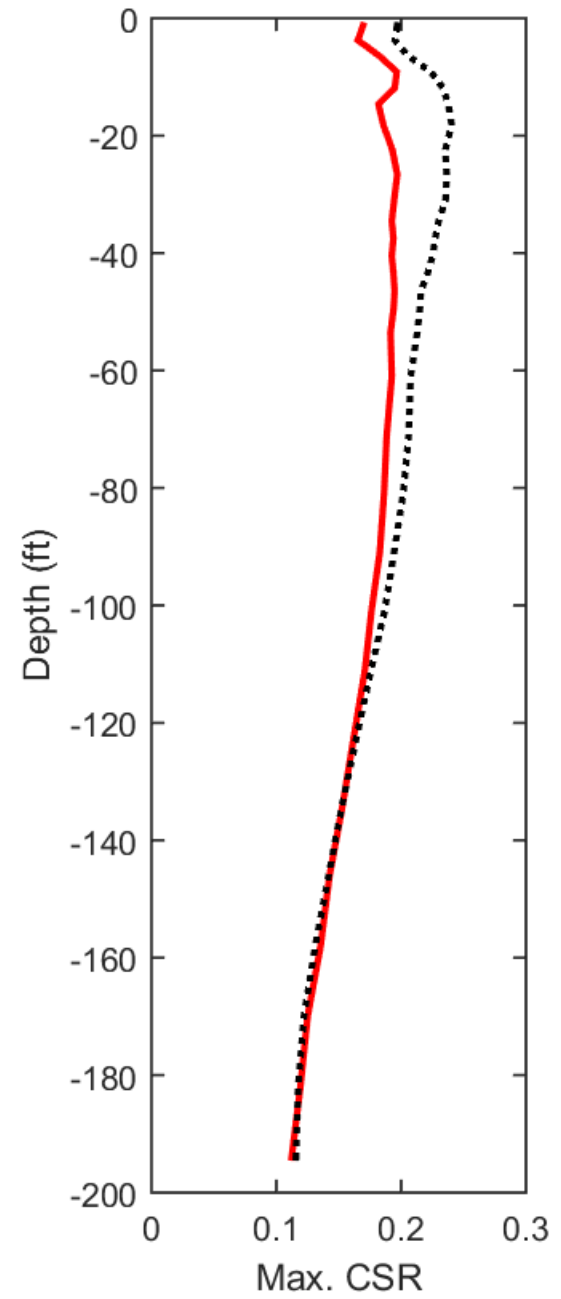
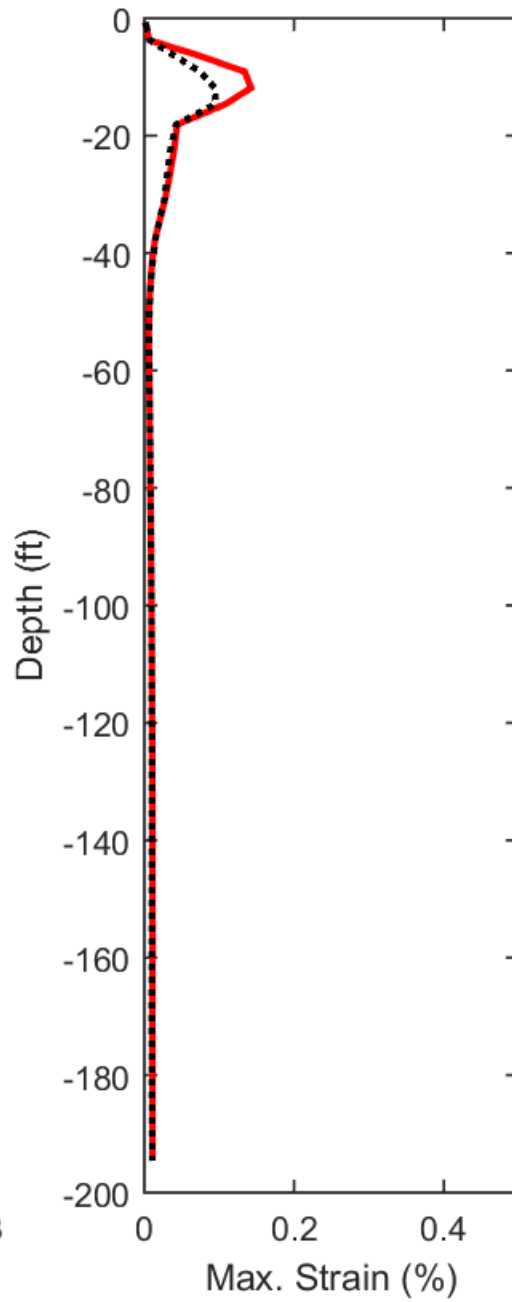
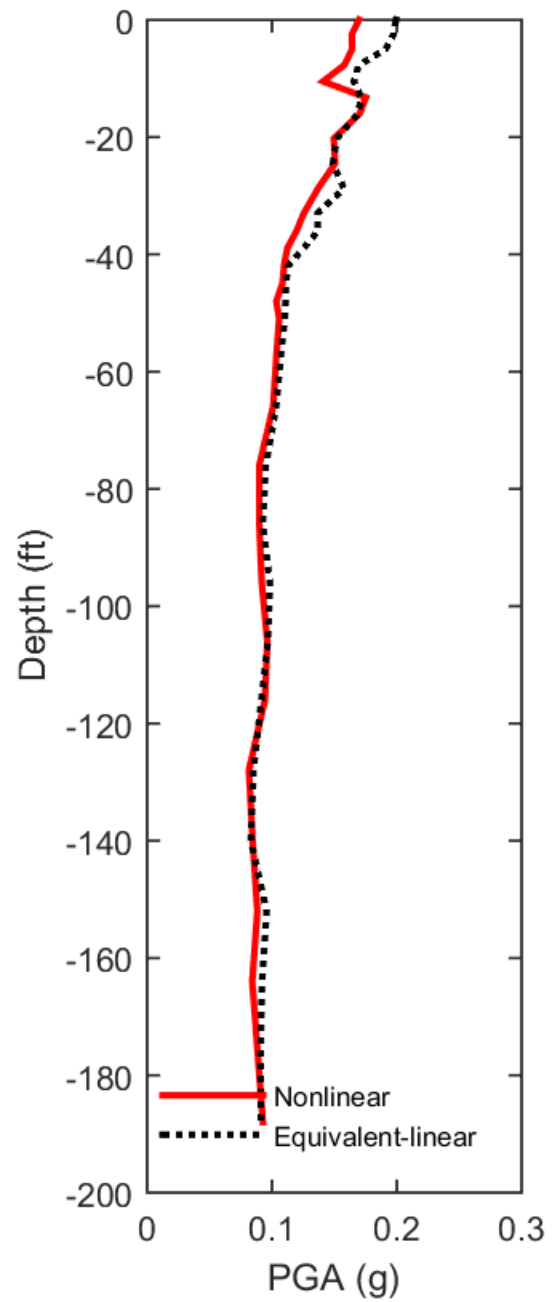
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



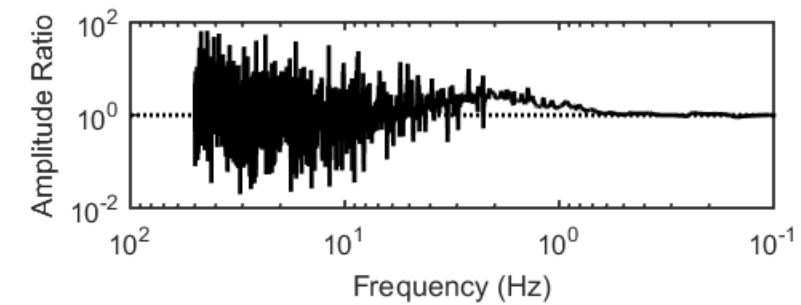
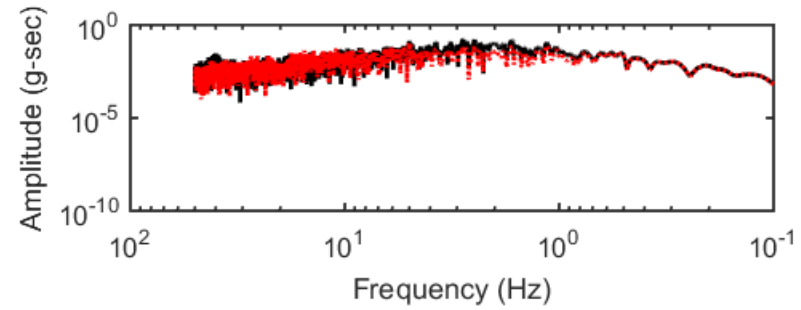
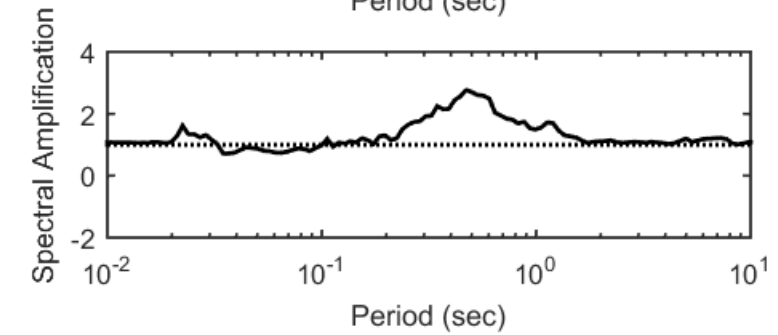
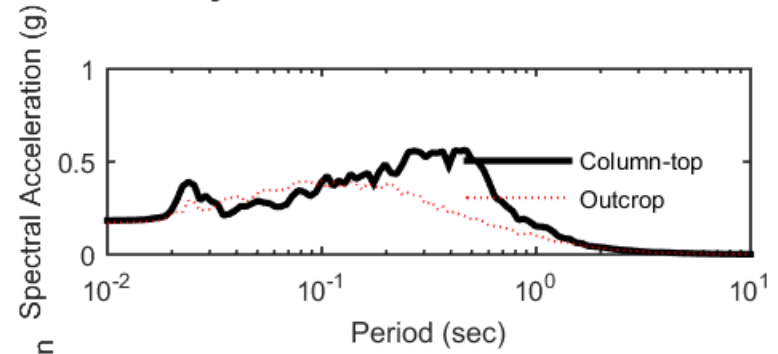
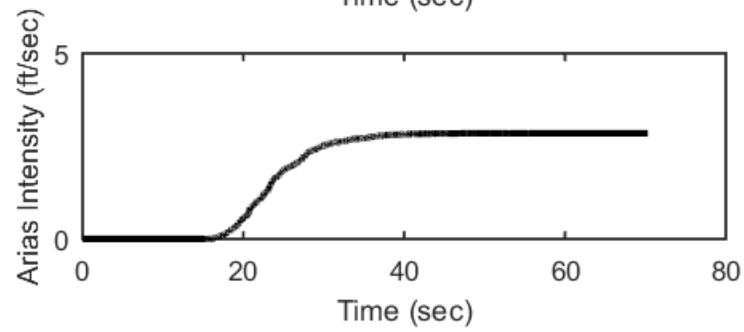
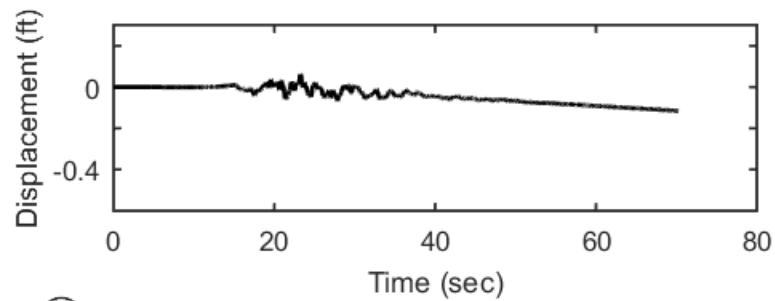
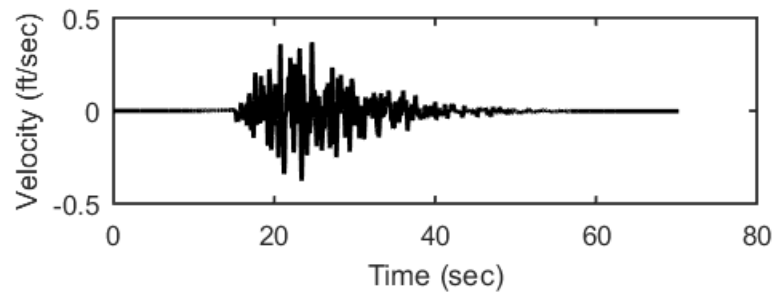
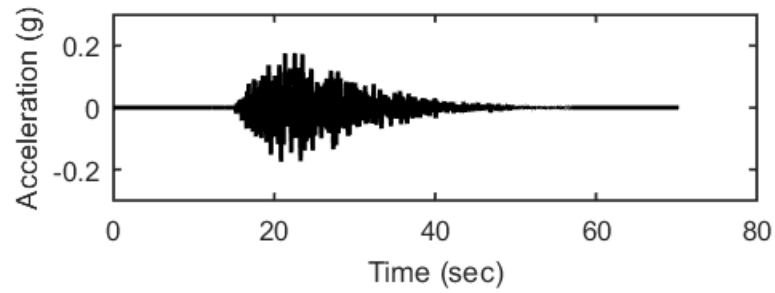
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



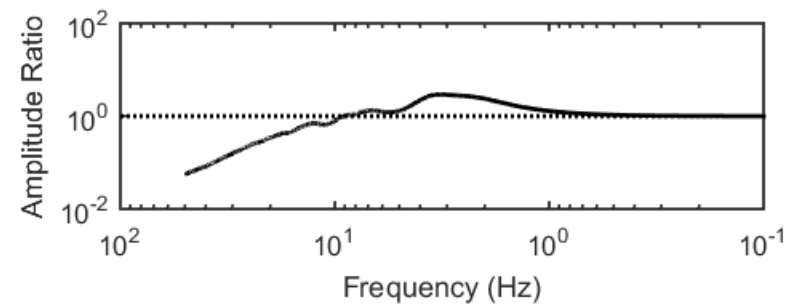
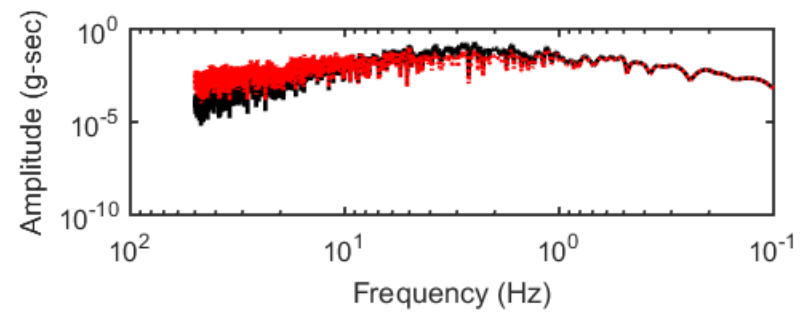
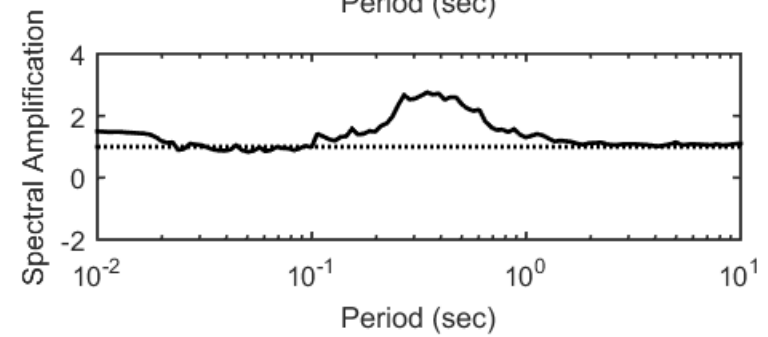
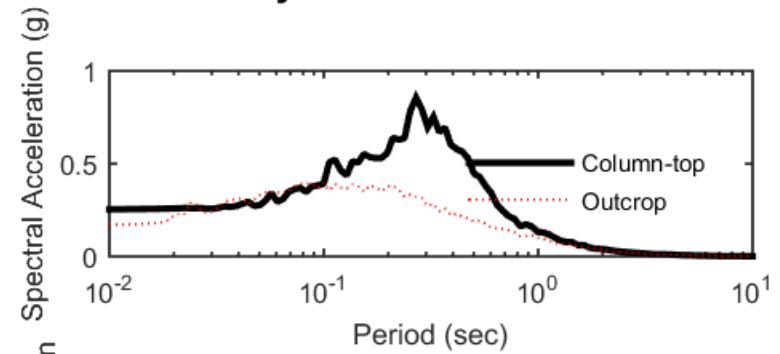
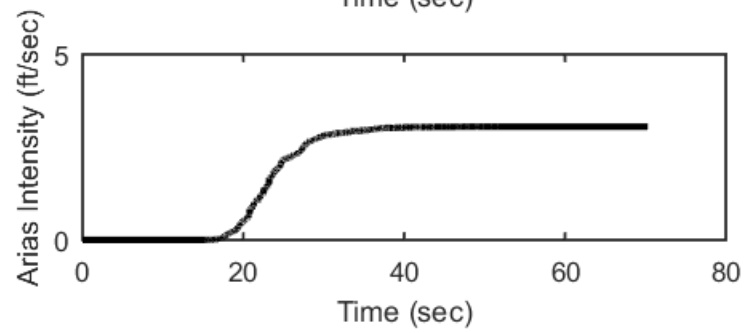
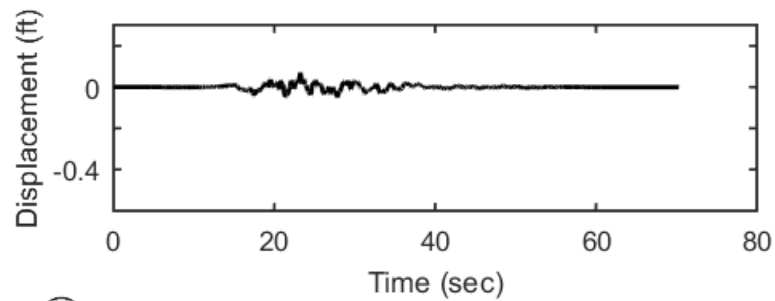
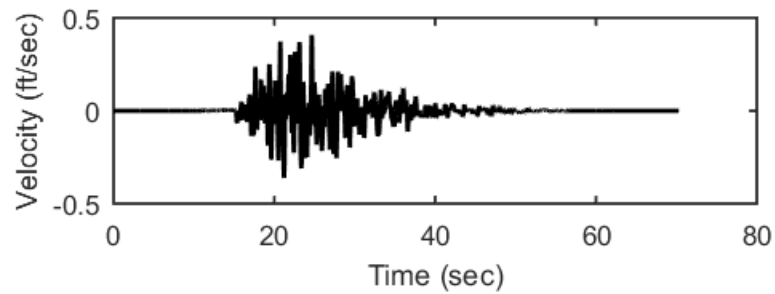
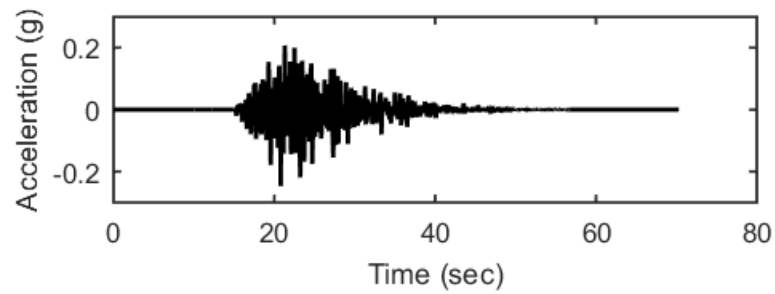
### Profile outputs for Motion: FEE6



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7

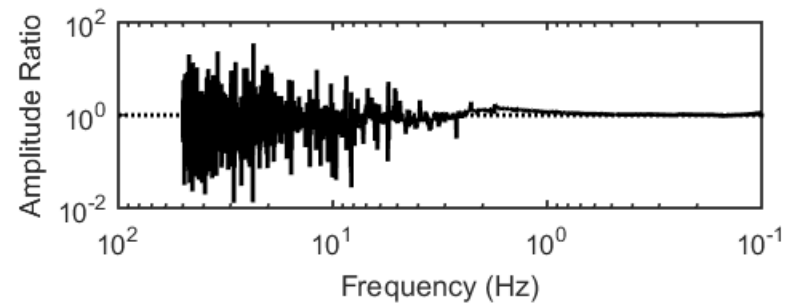
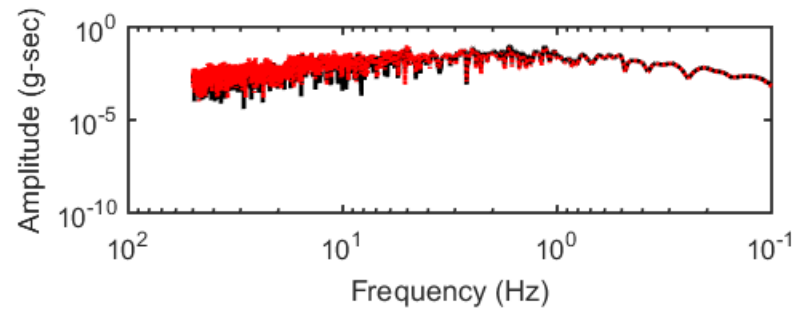
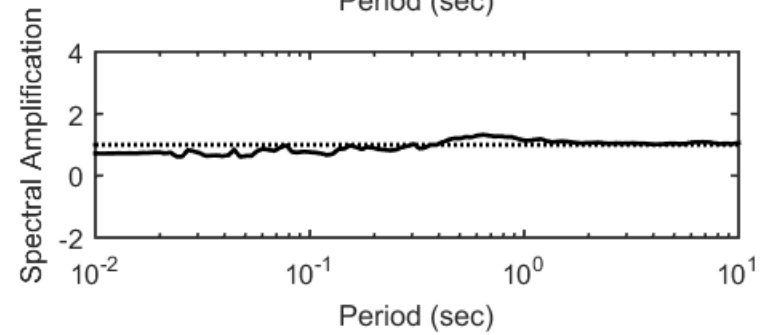
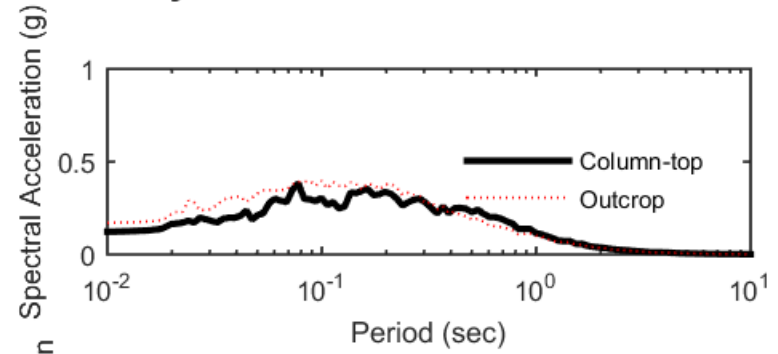
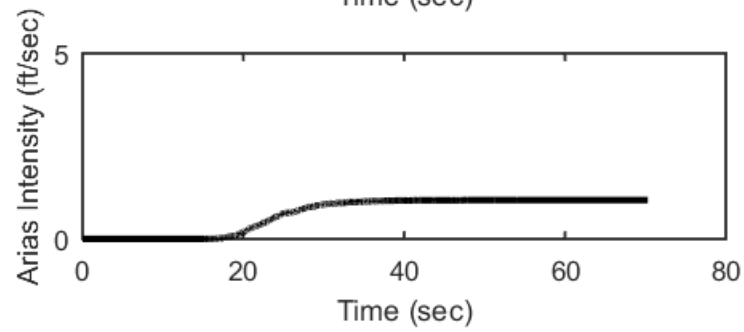
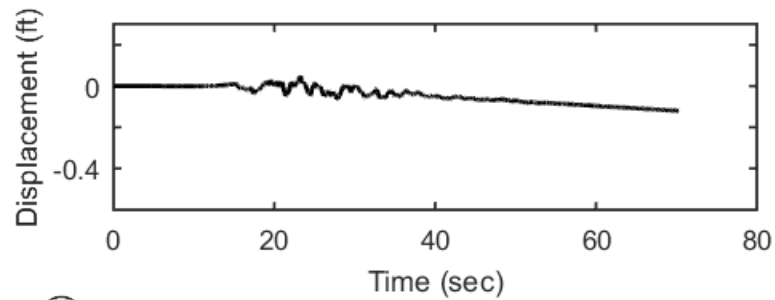
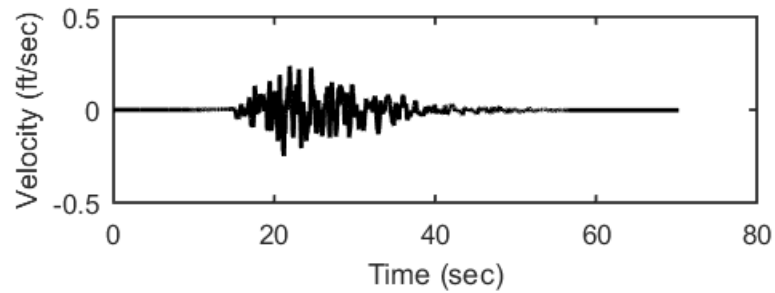
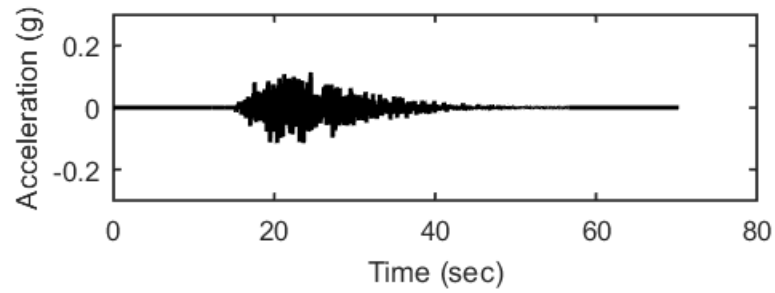


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7

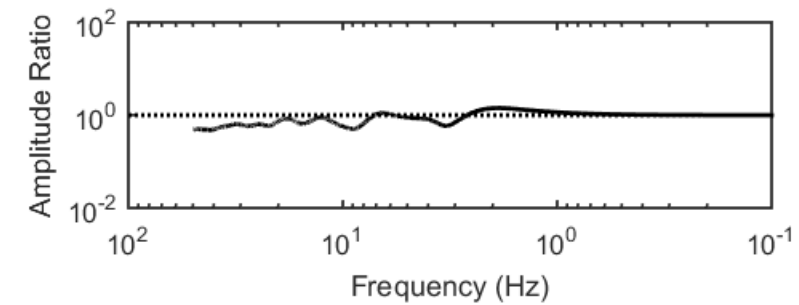
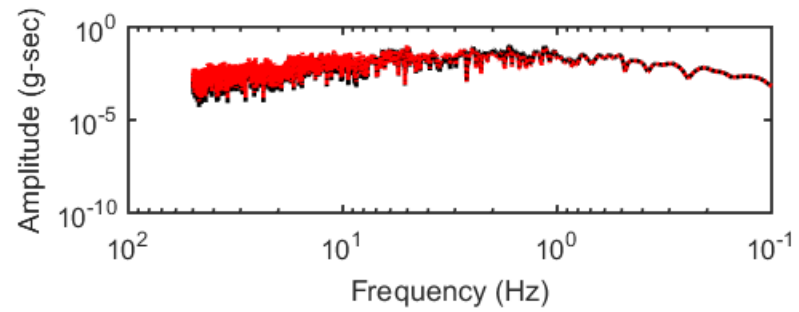
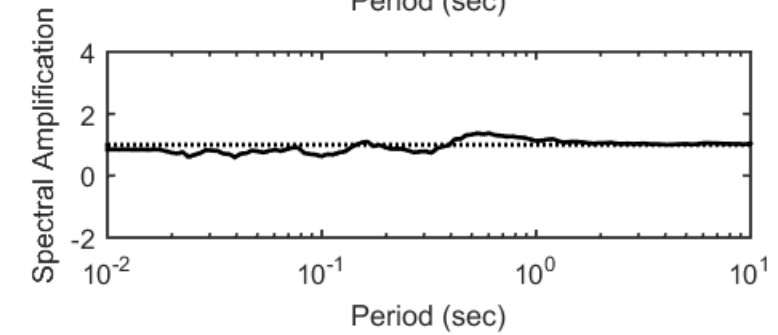
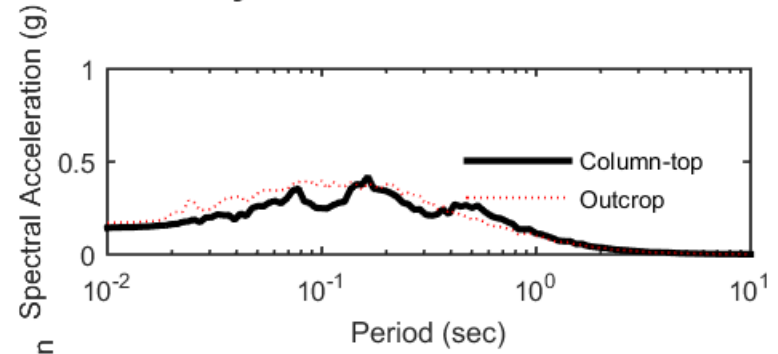
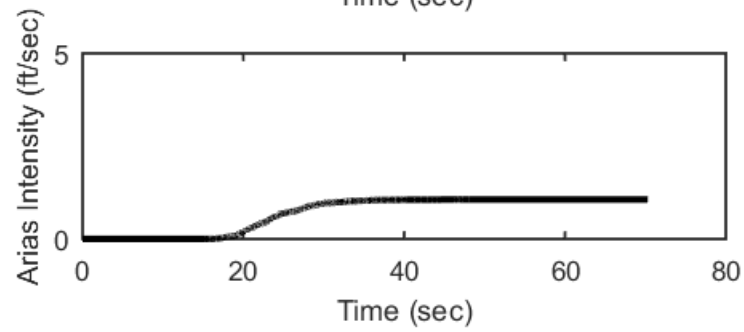
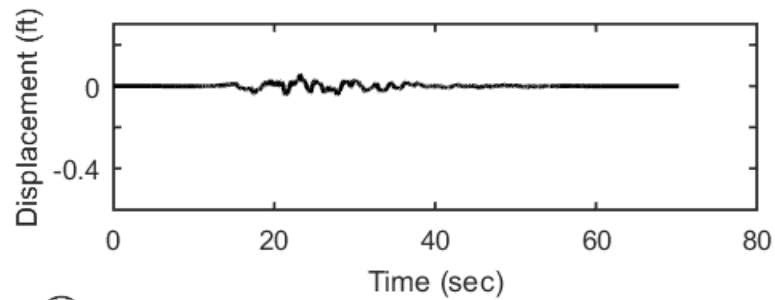
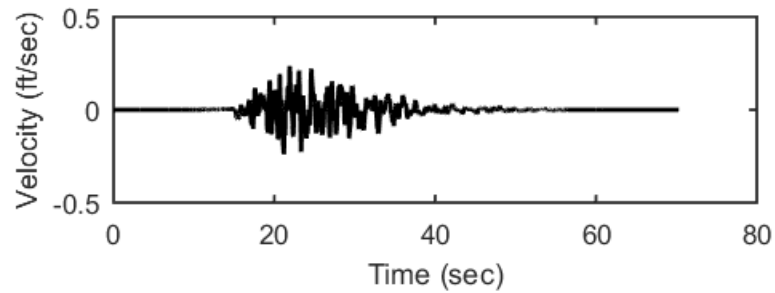
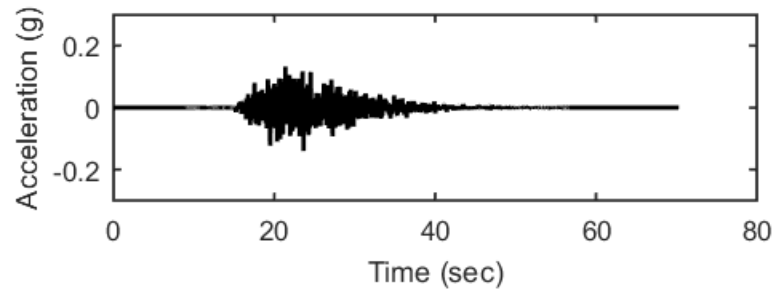




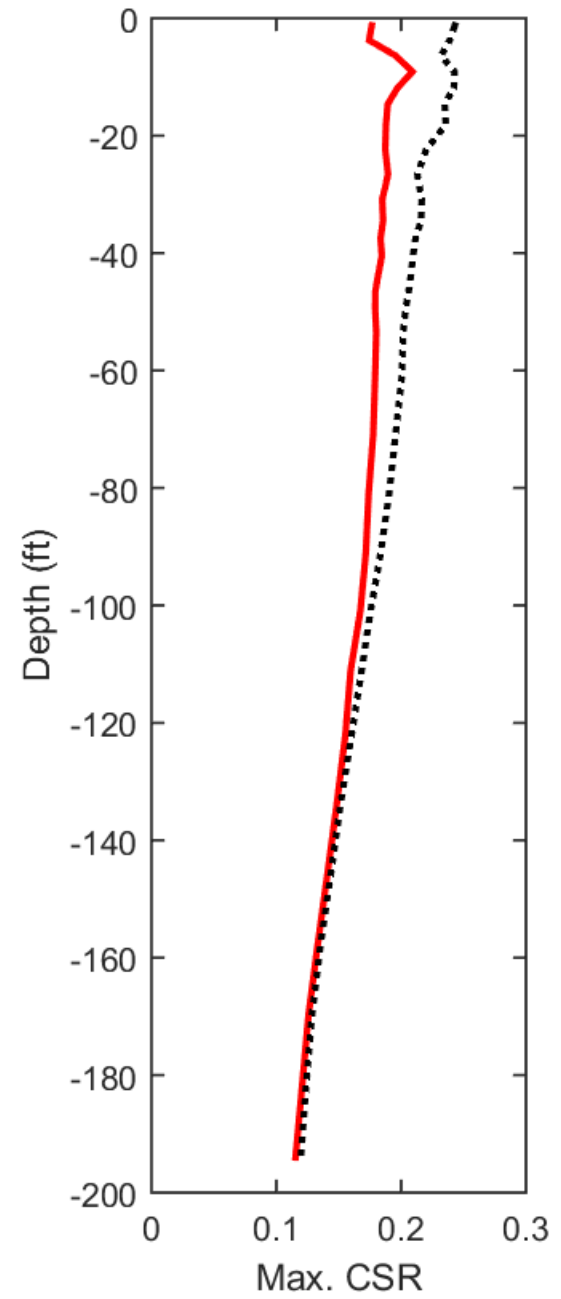
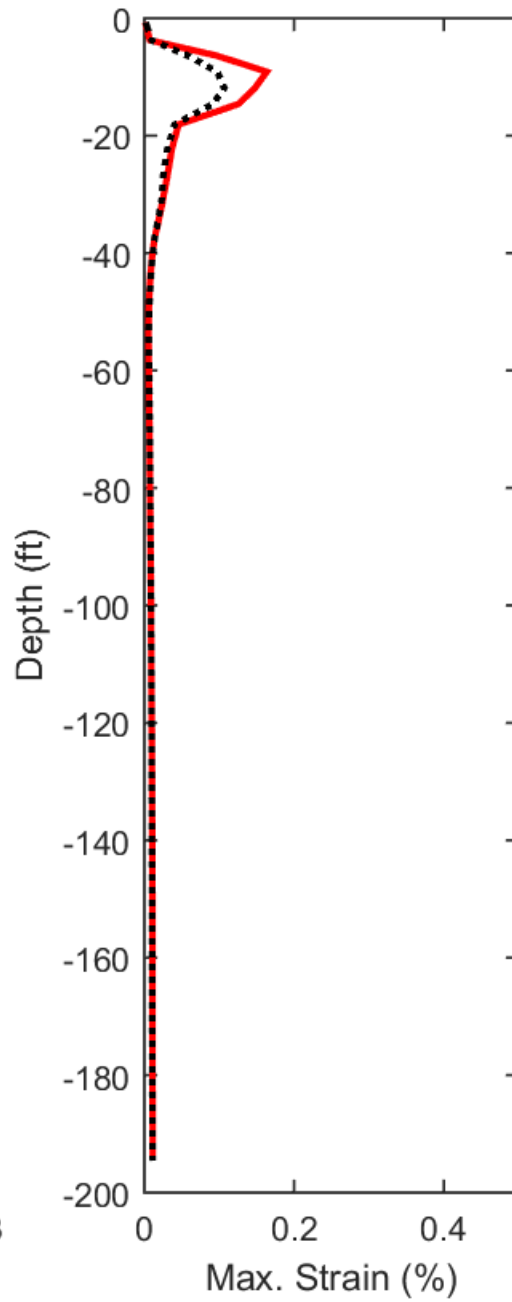
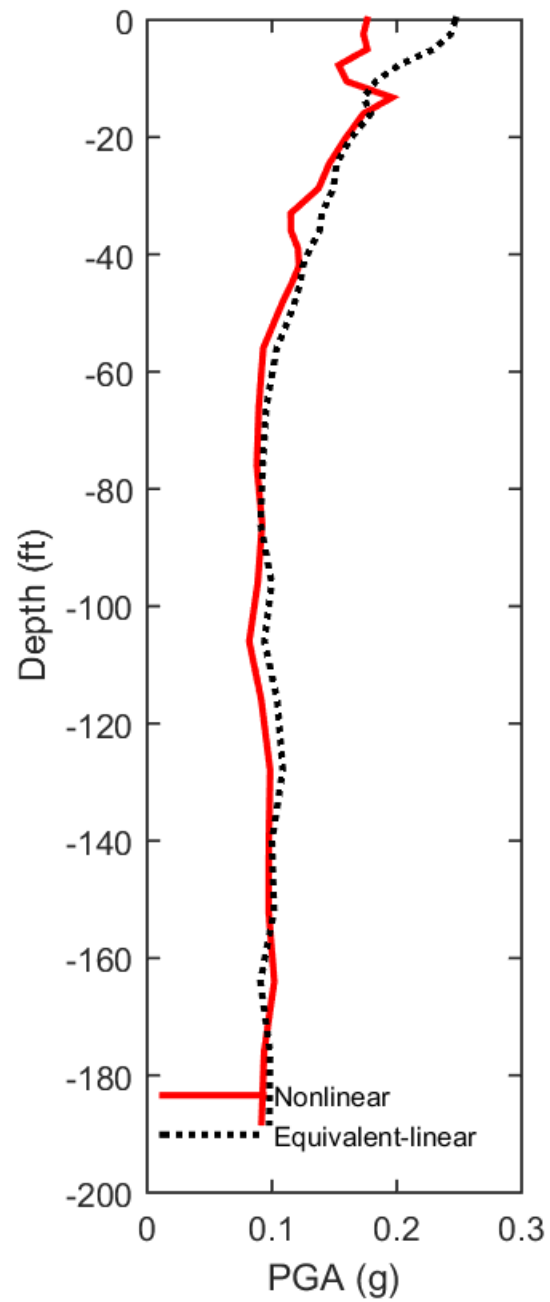
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



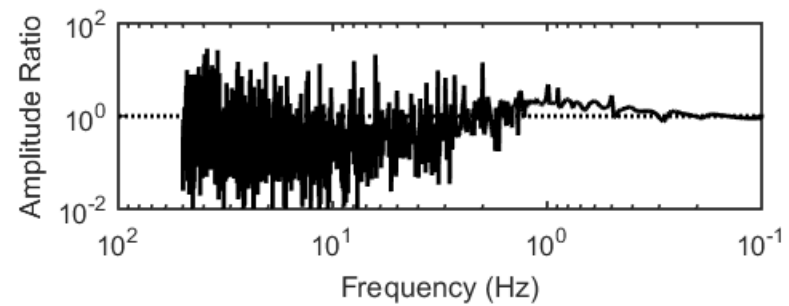
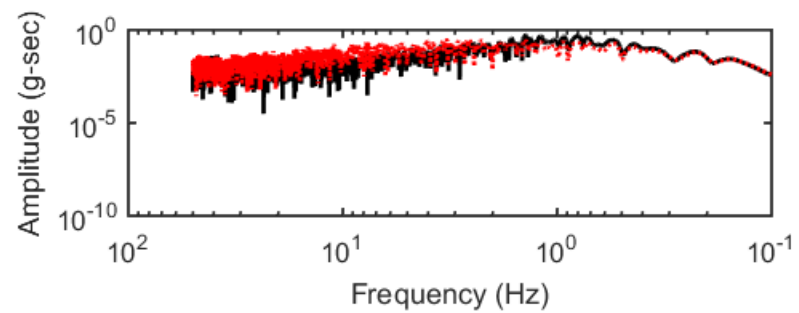
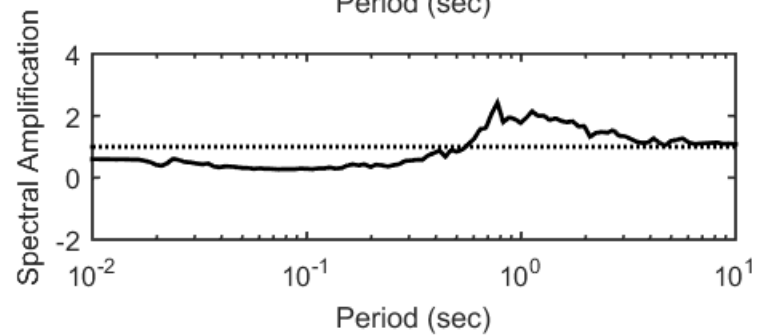
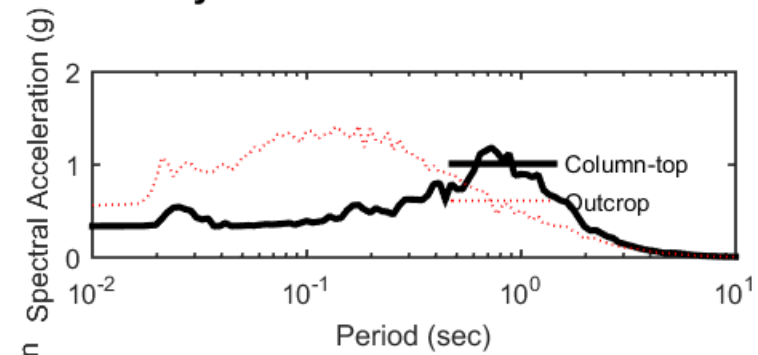
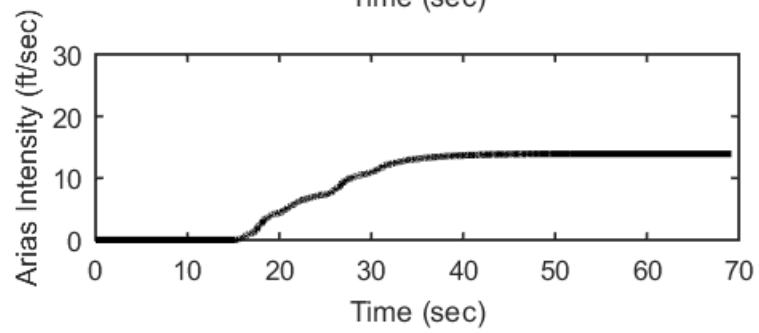
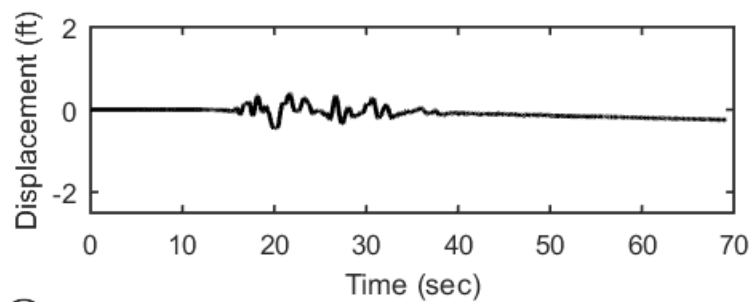
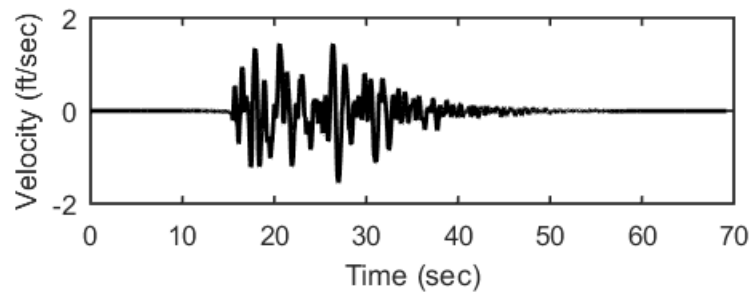
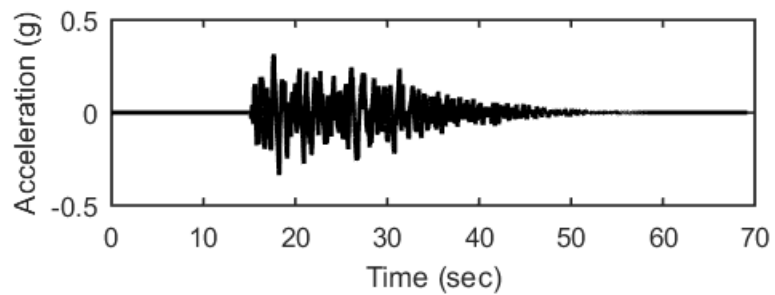
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



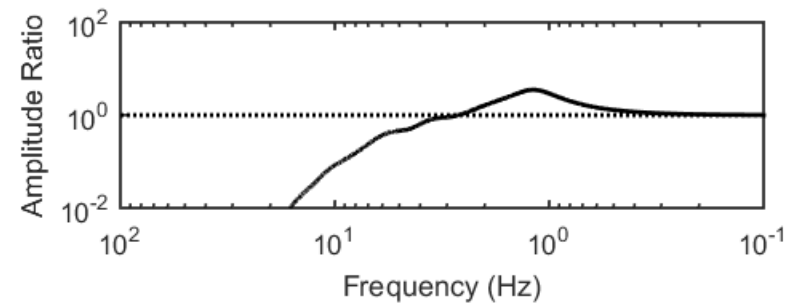
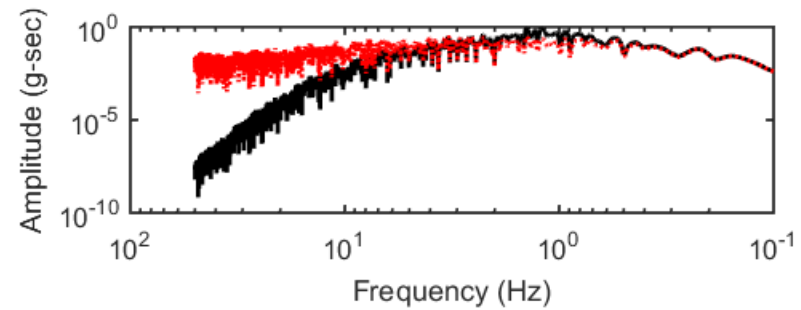
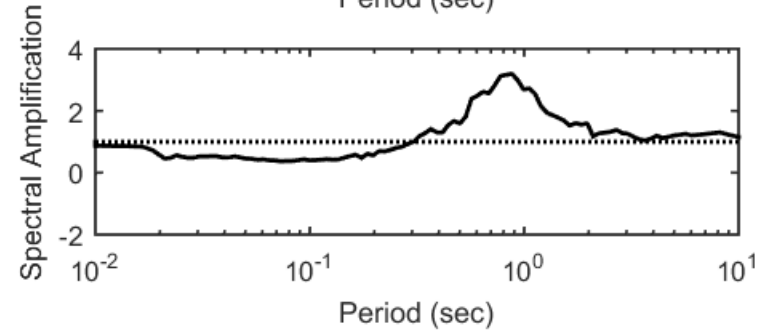
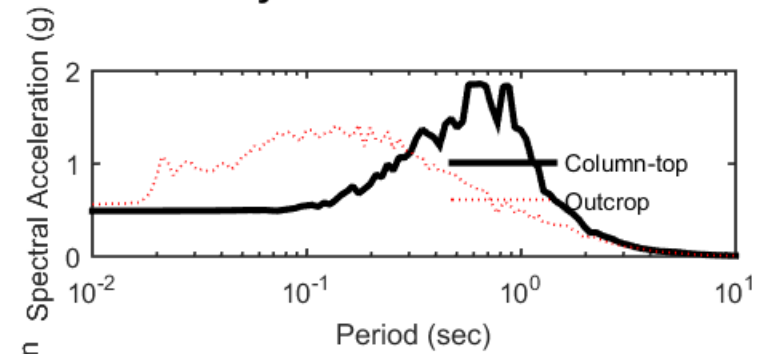
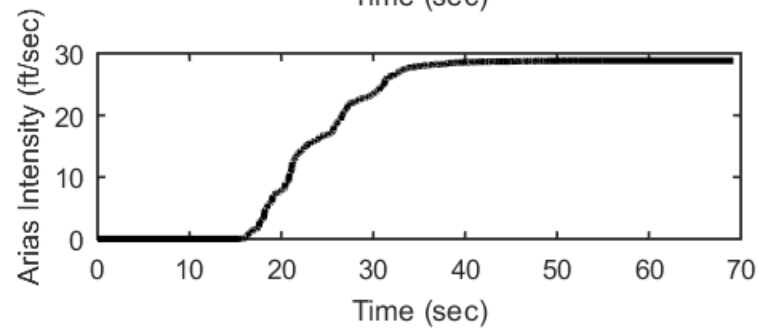
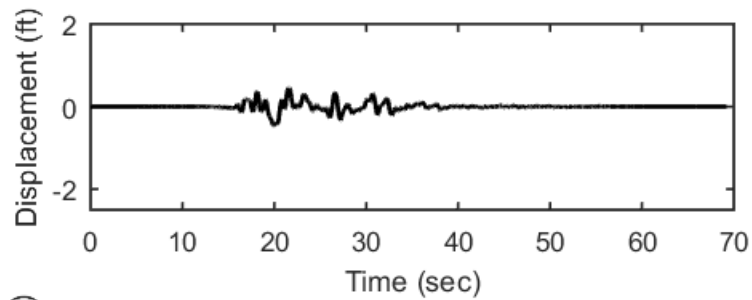
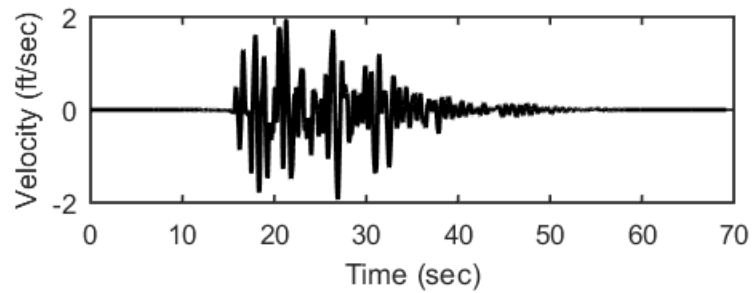
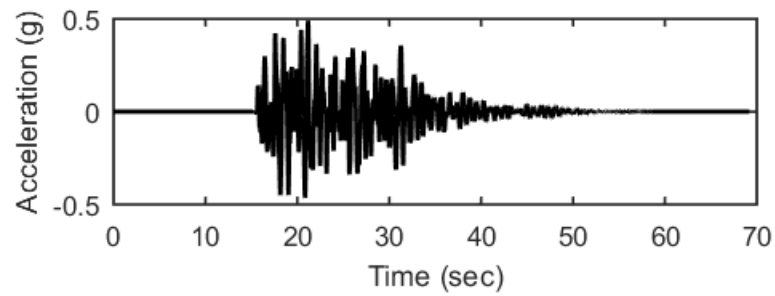
# Profile outputs for Motion: FEE7



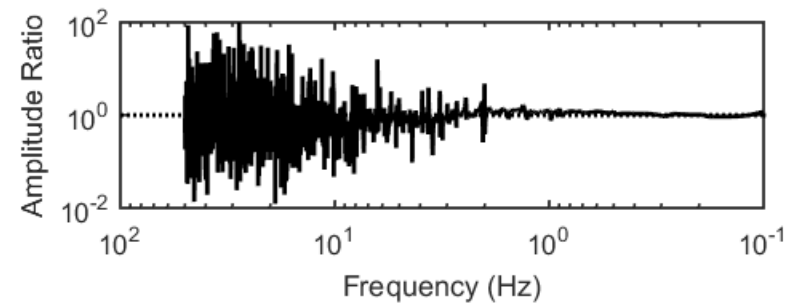
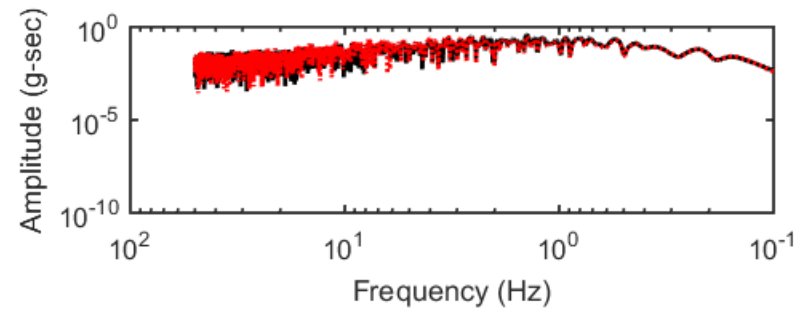
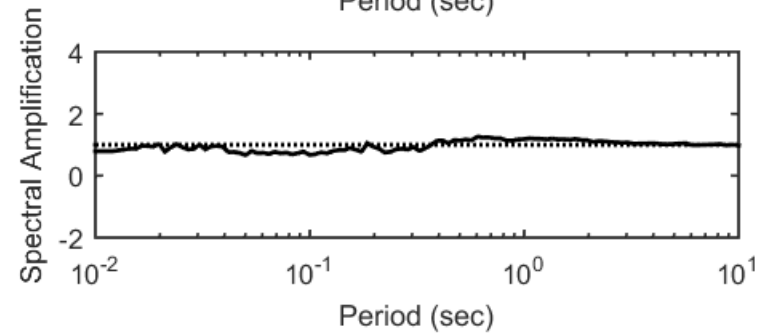
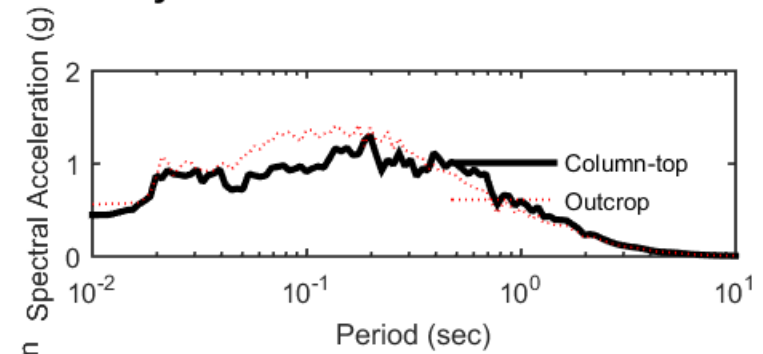
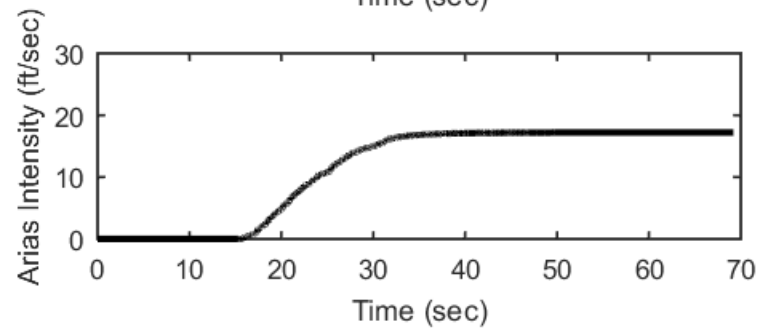
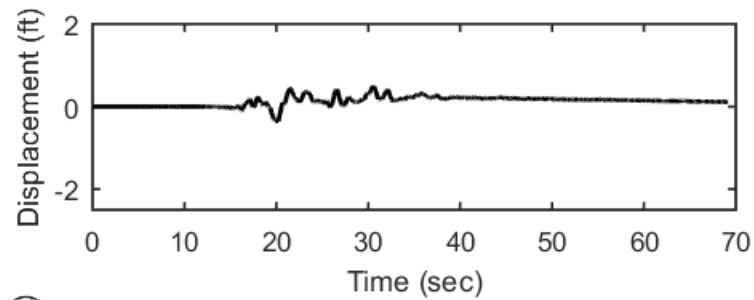
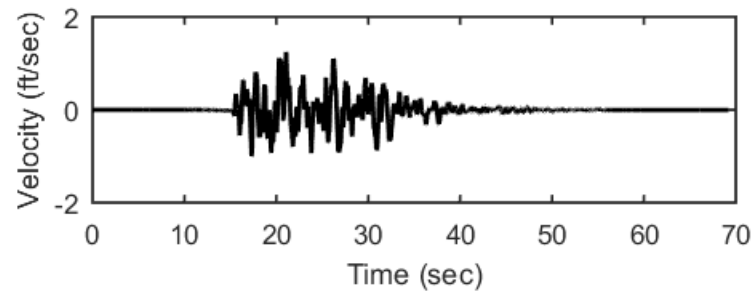
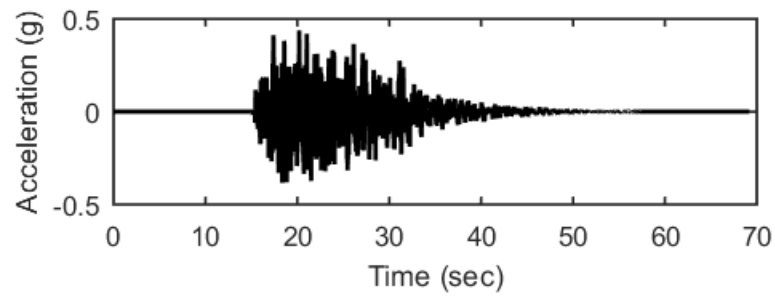
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



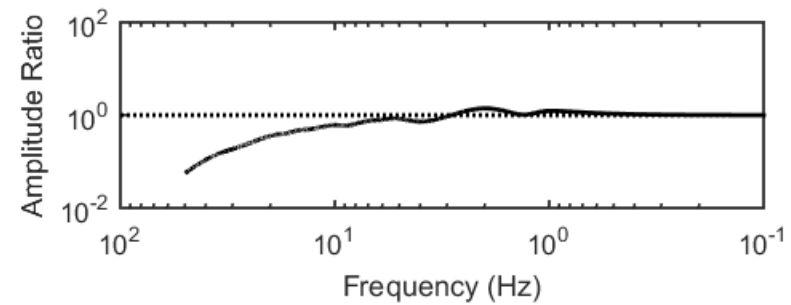
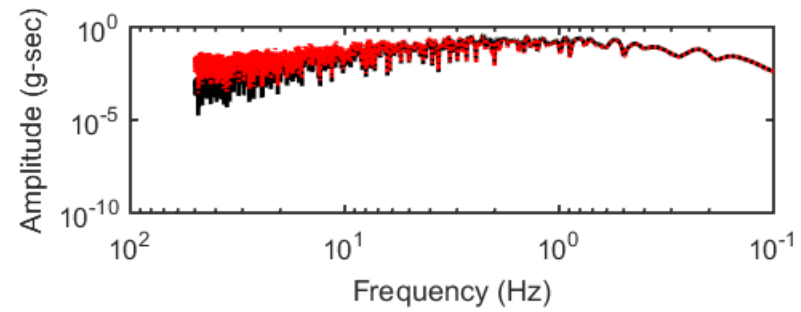
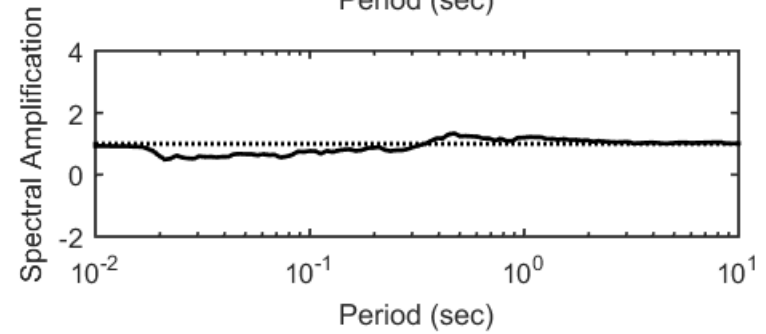
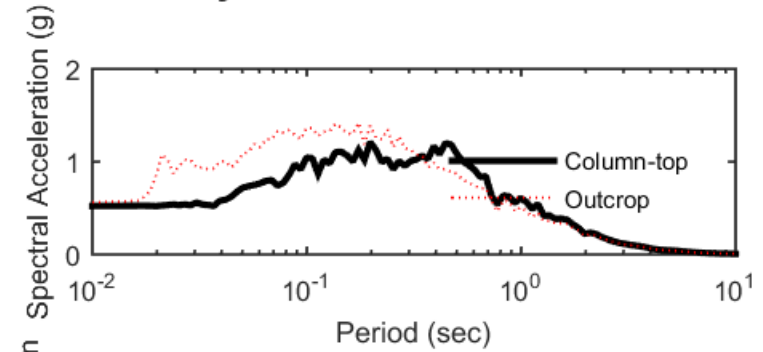
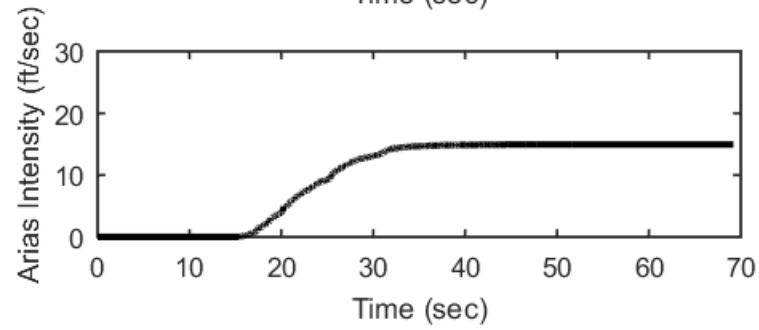
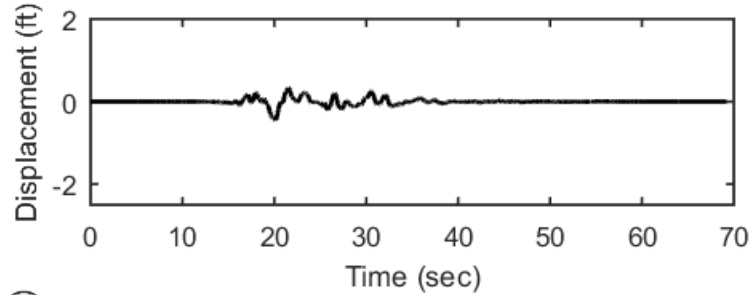
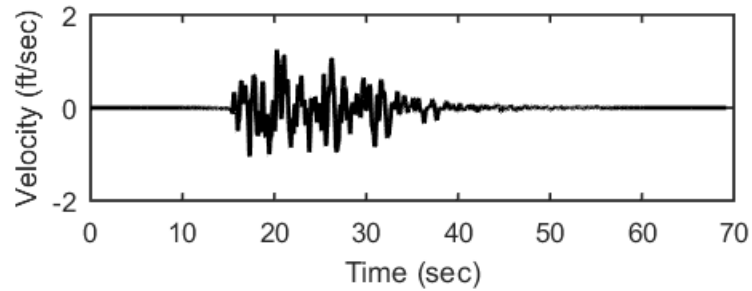
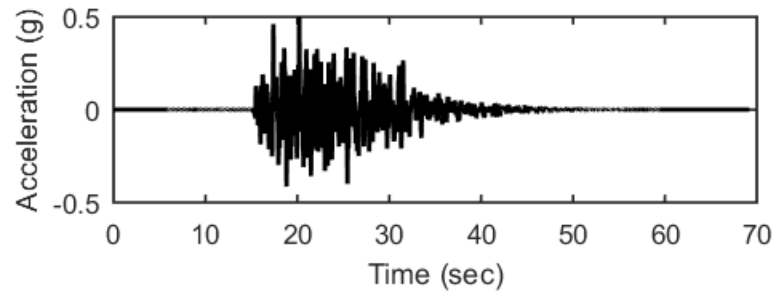
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



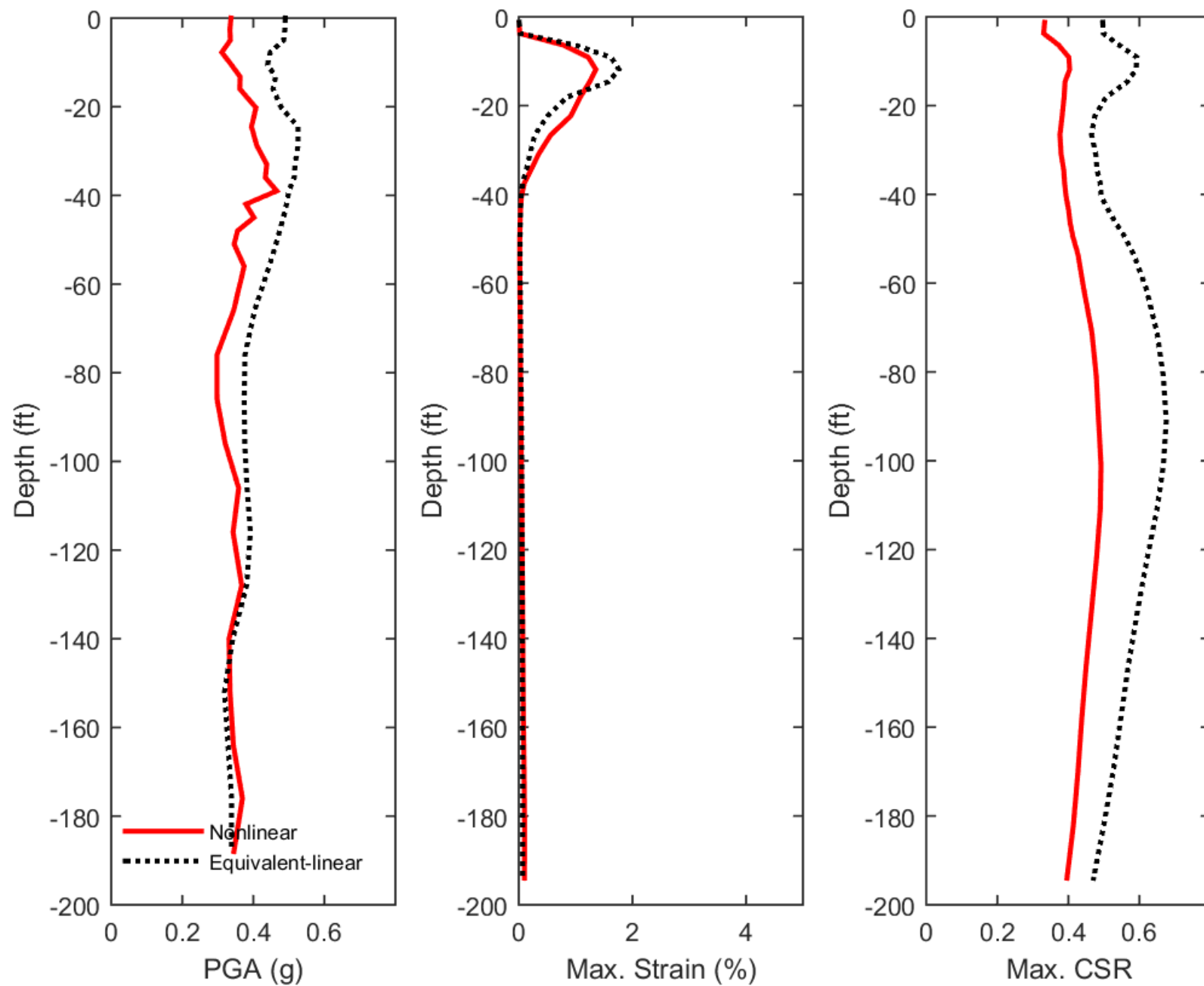
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1

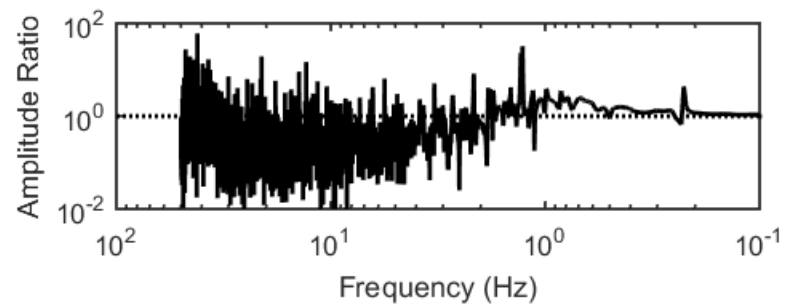
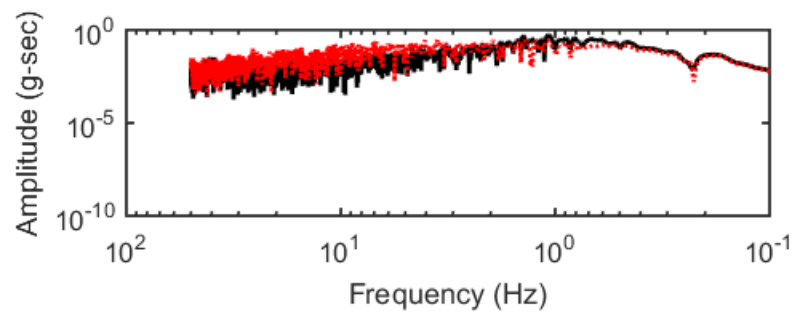
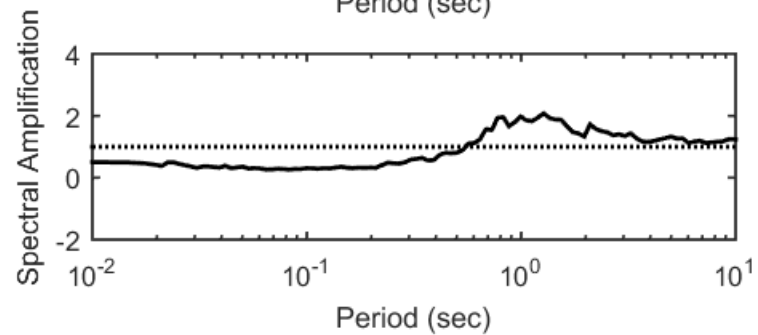
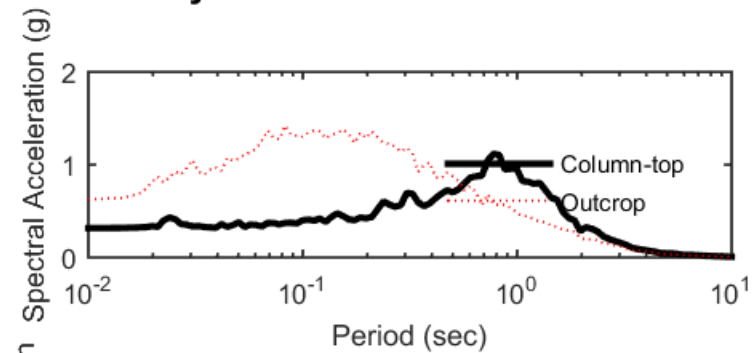
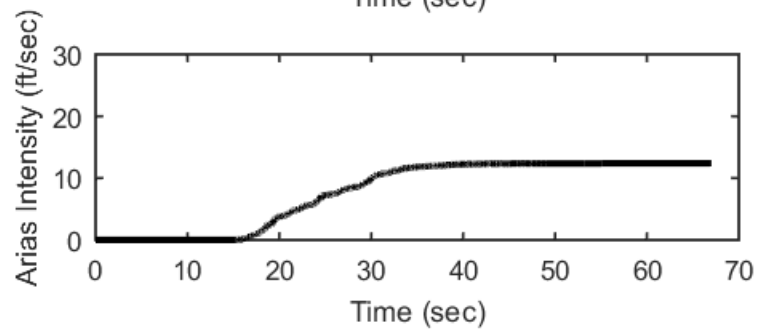
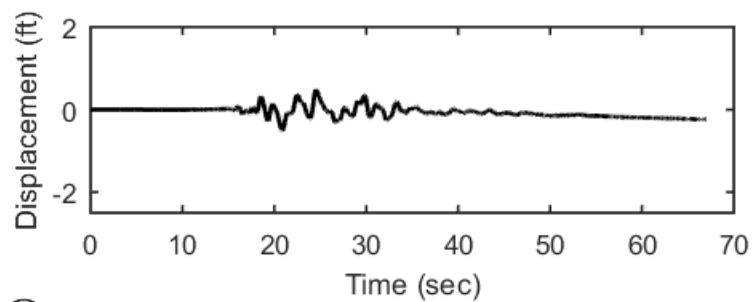
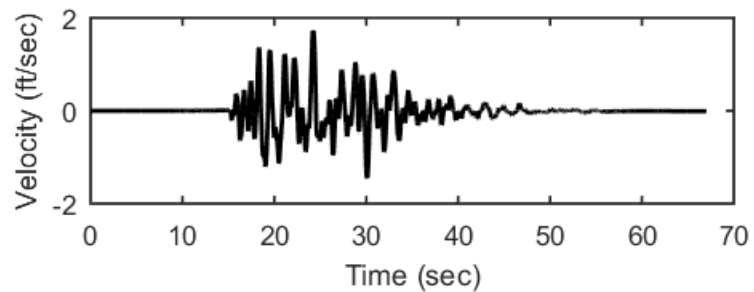
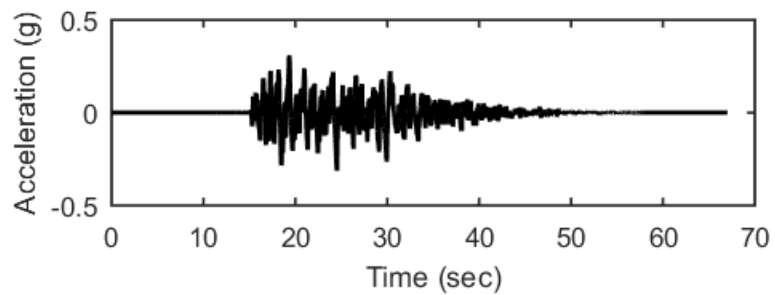


### Profile outputs for Motion: SEE1

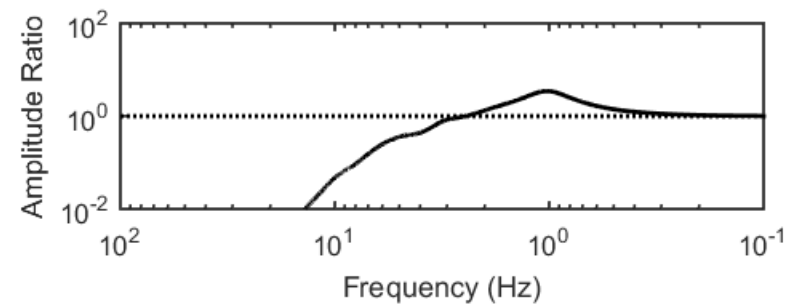
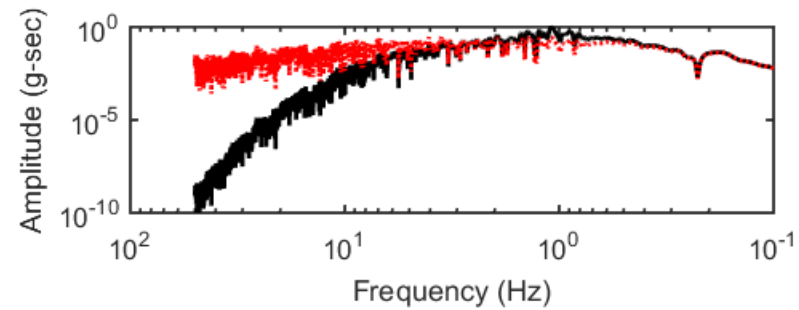
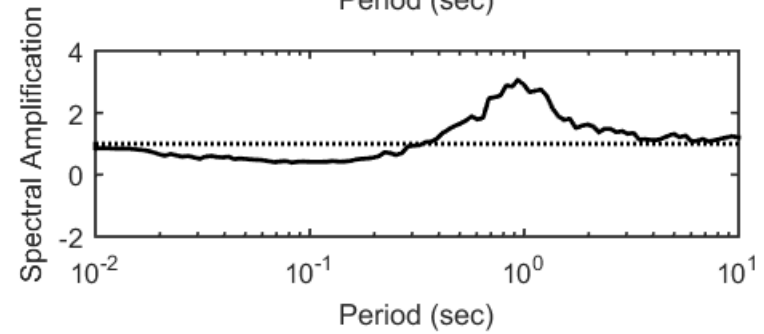
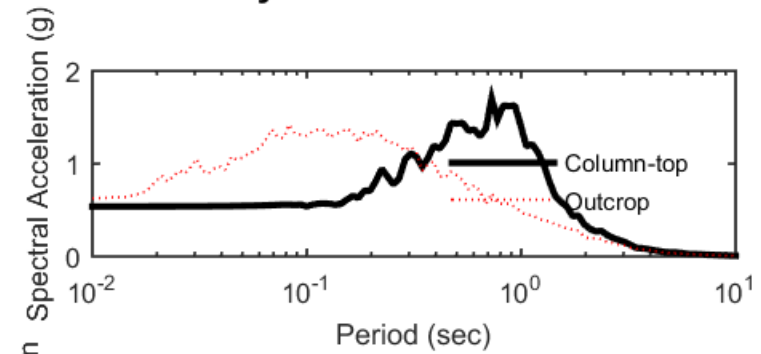
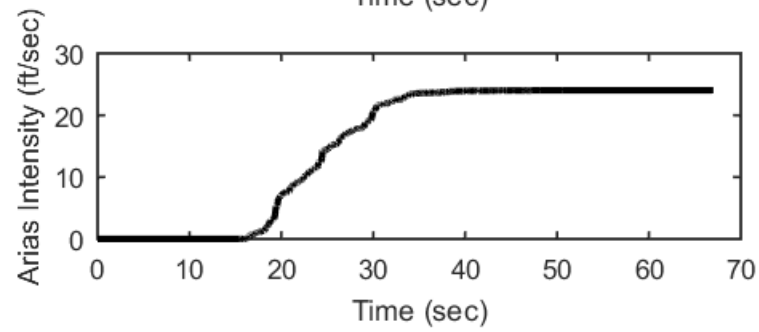
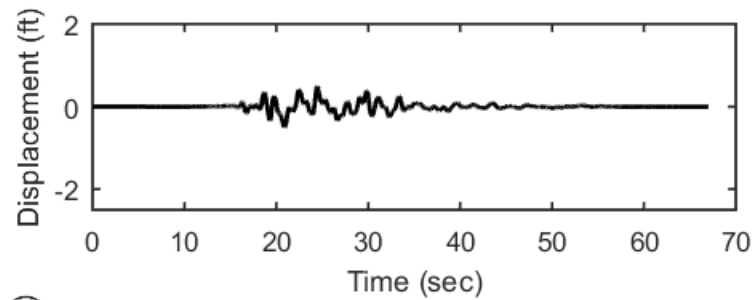
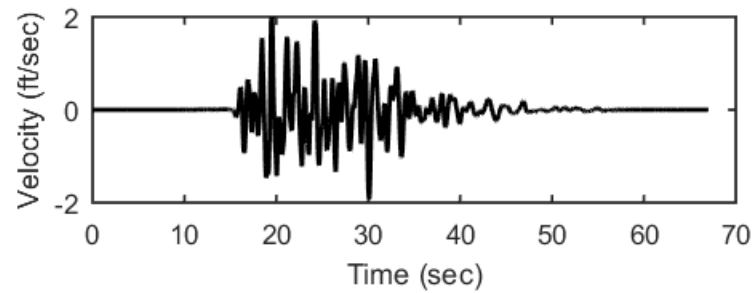
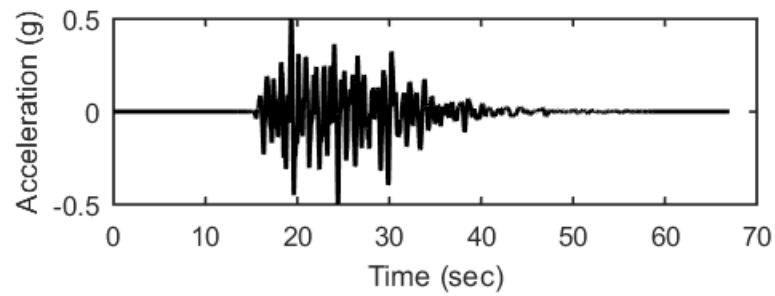




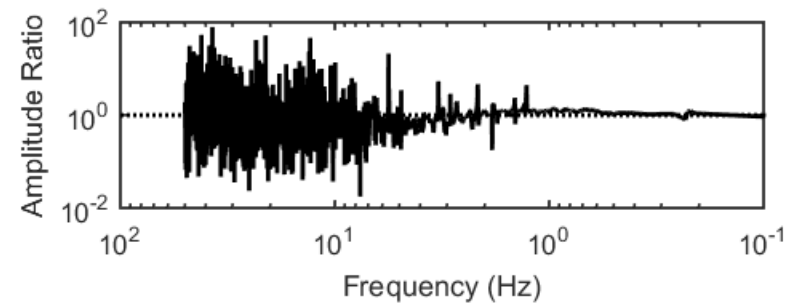
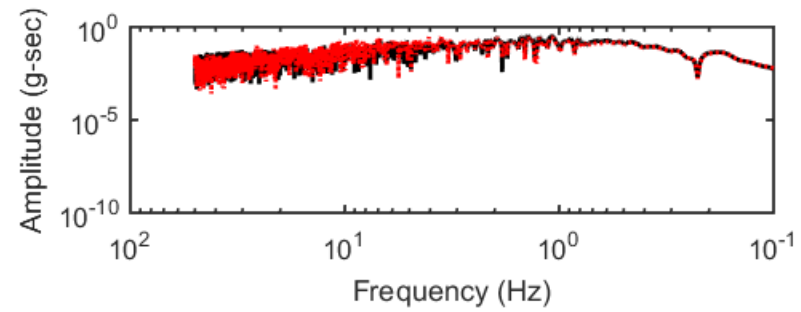
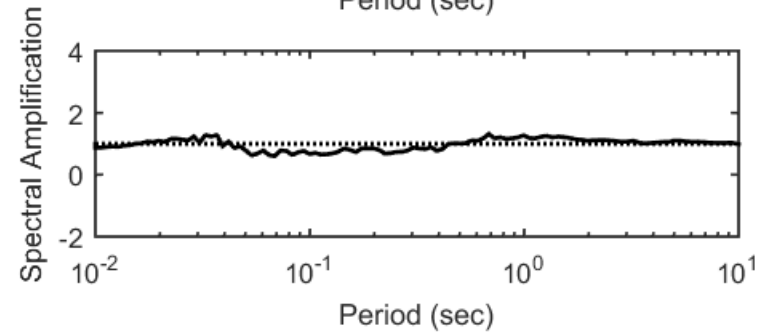
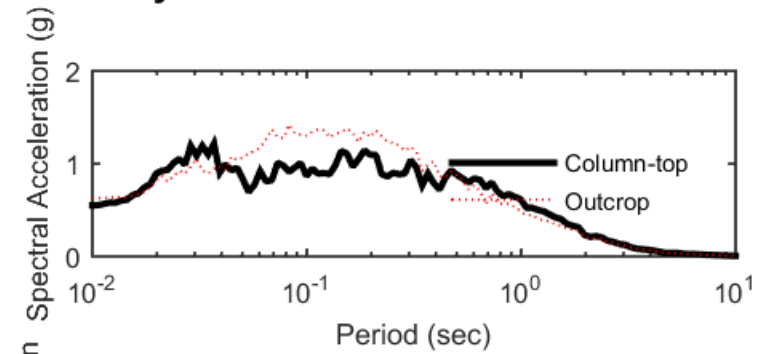
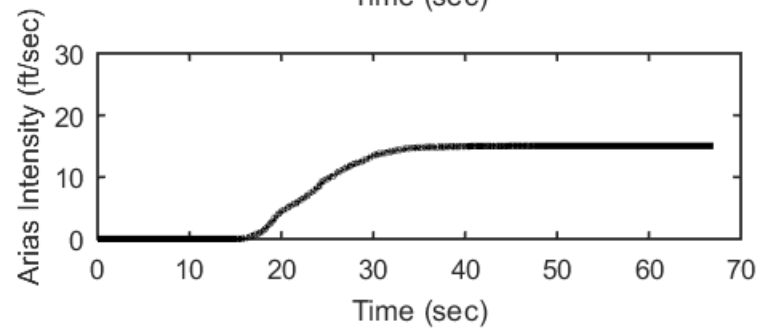
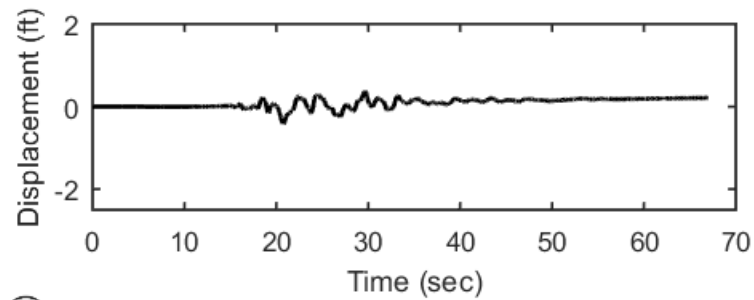
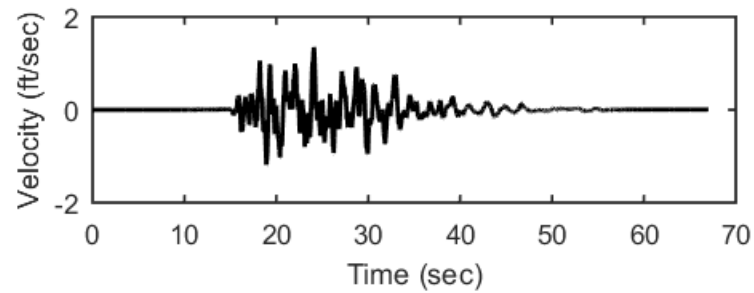
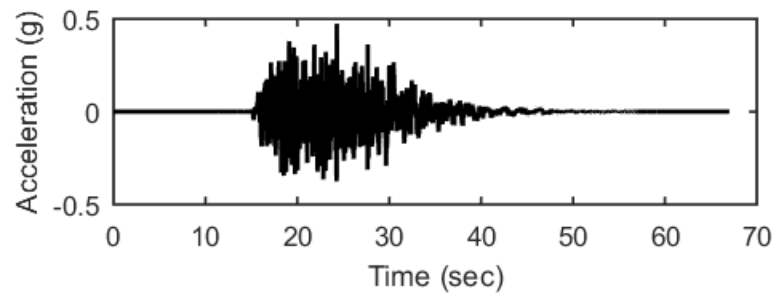
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



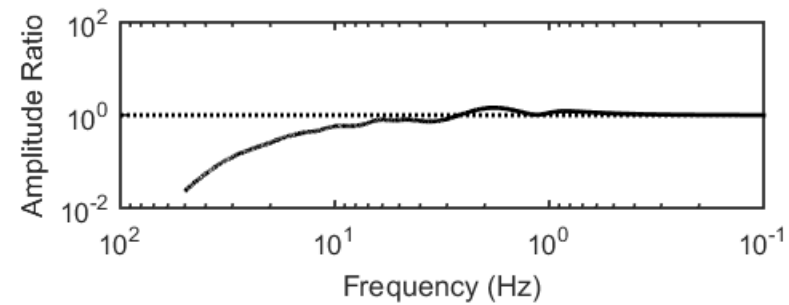
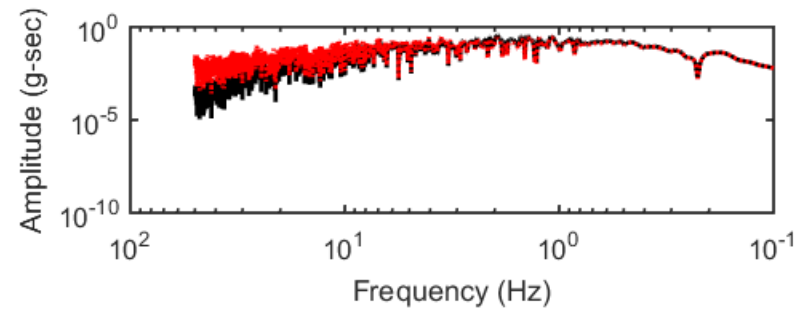
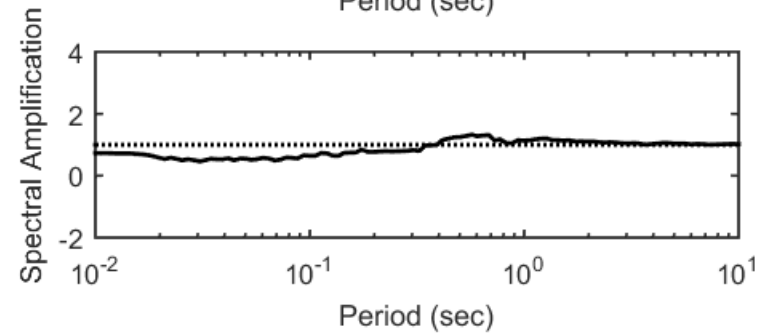
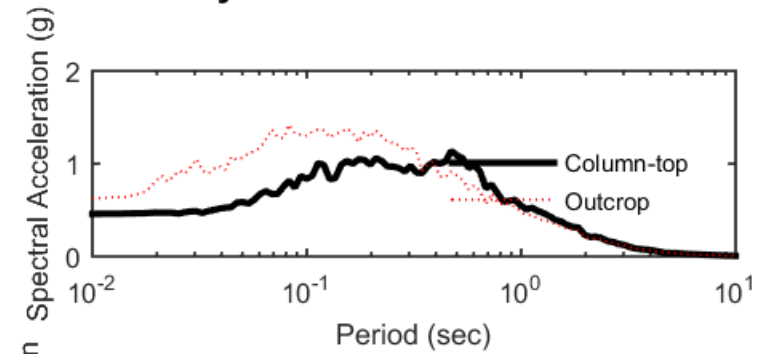
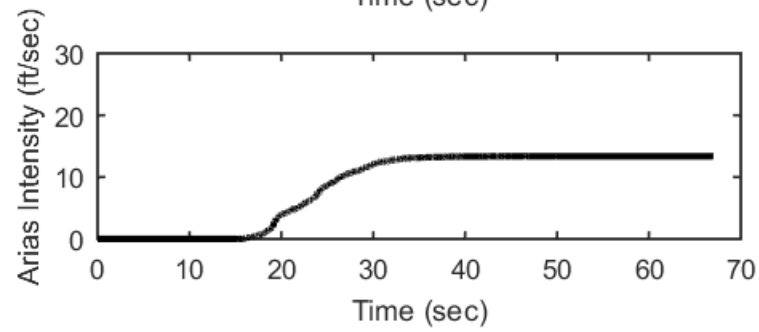
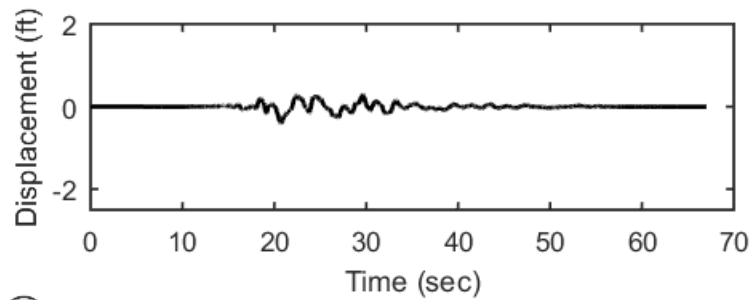
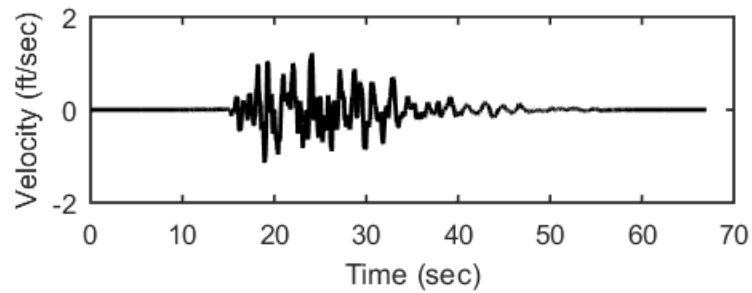
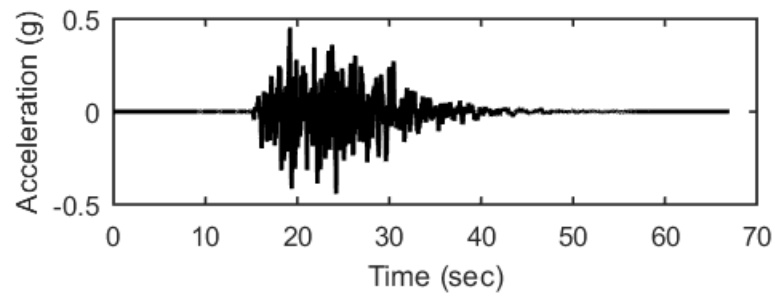
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



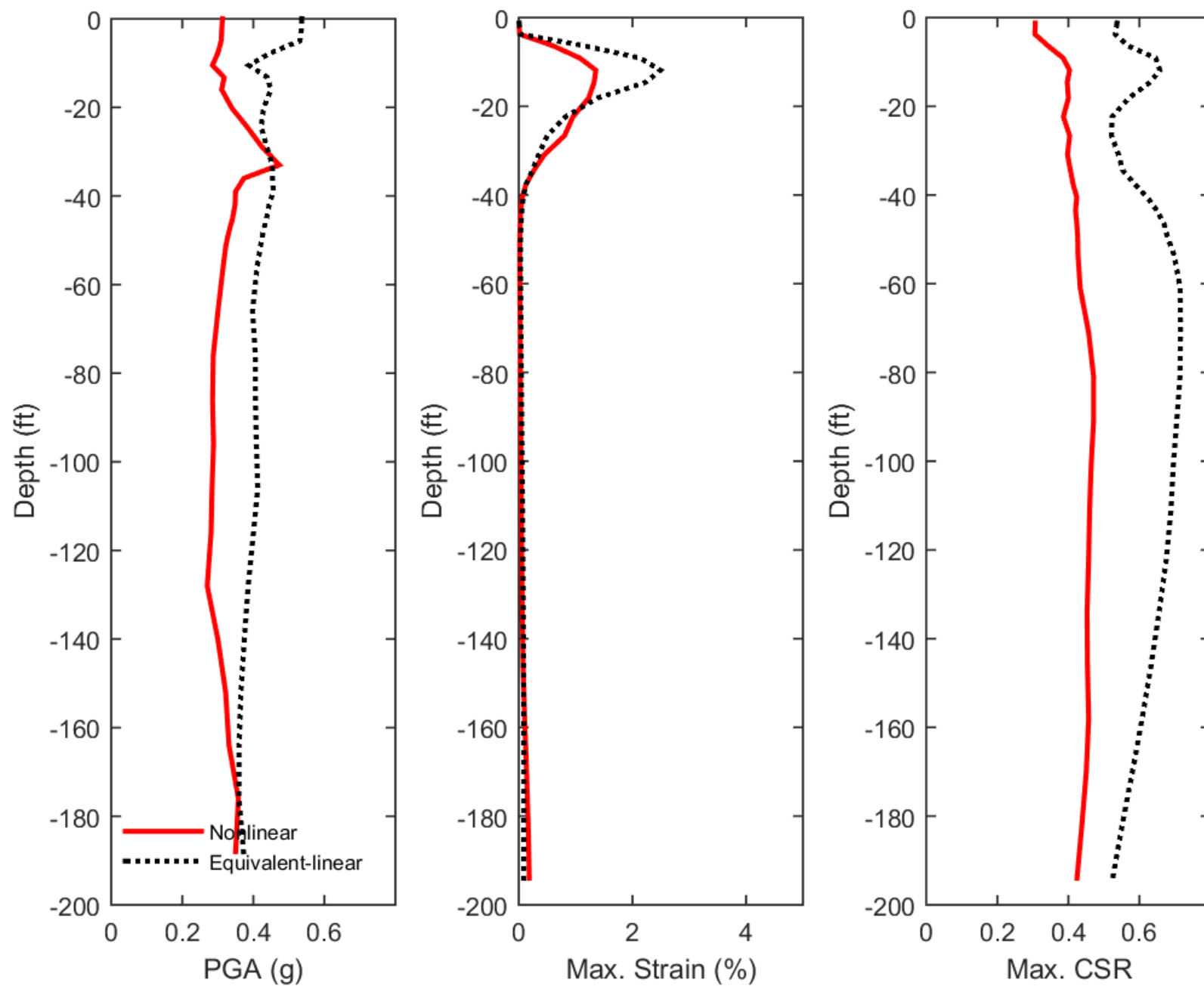
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



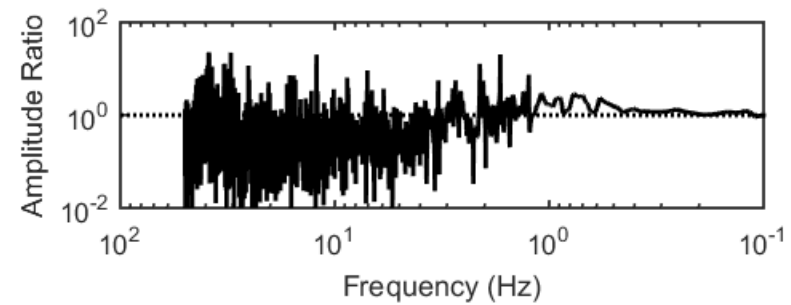
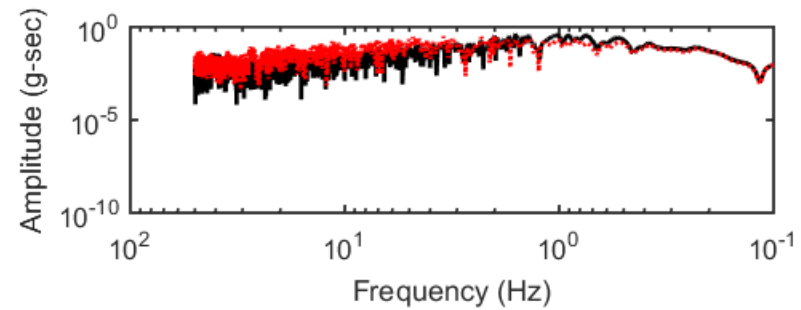
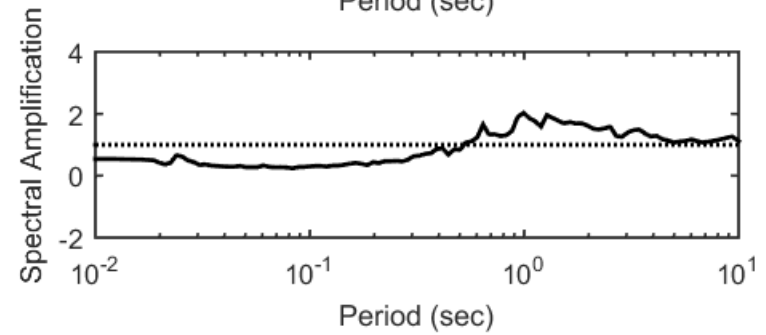
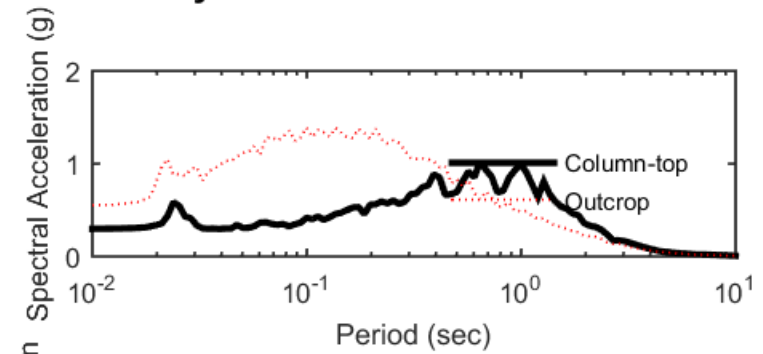
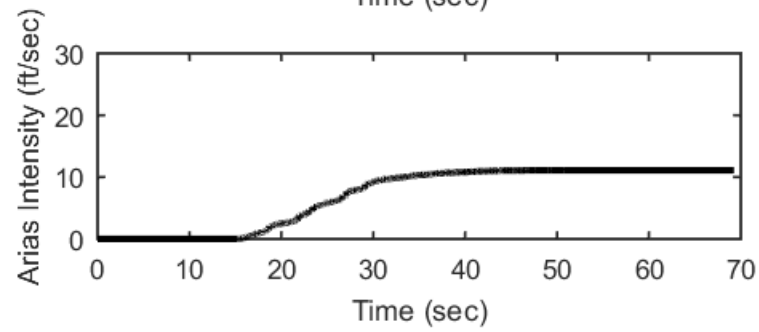
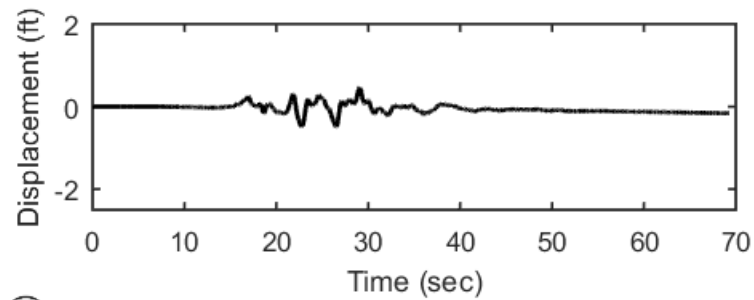
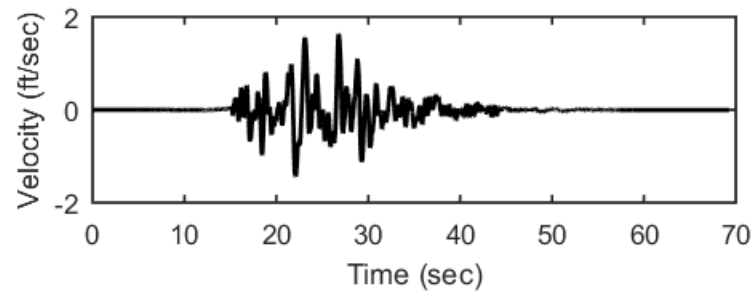
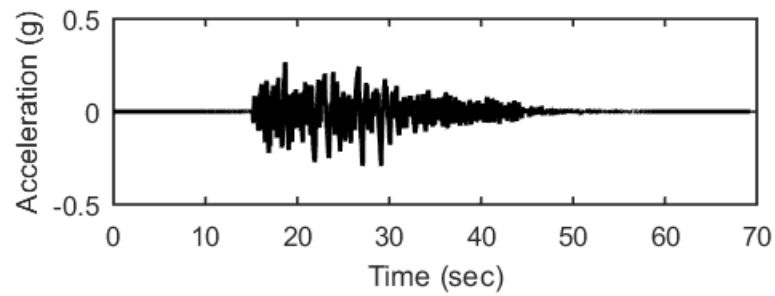
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



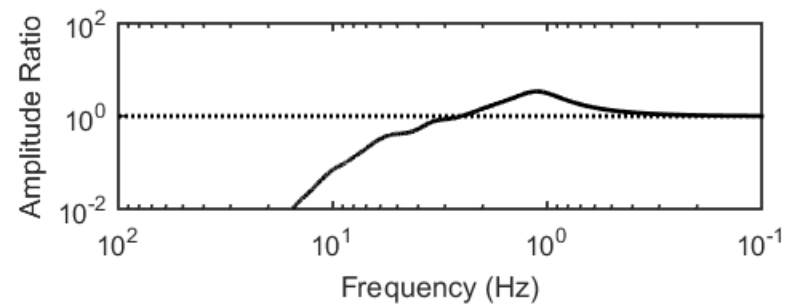
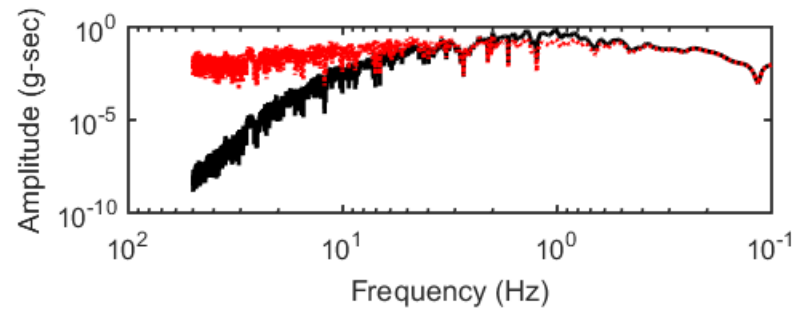
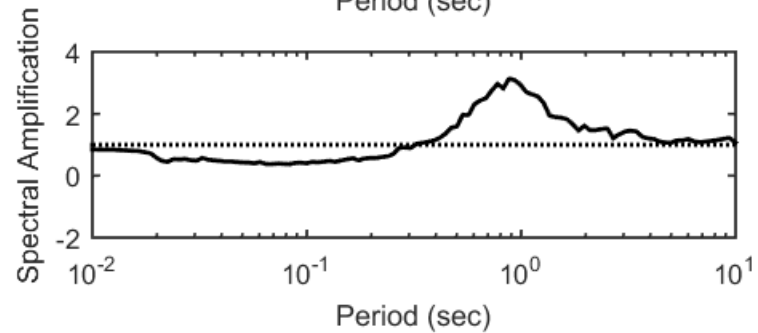
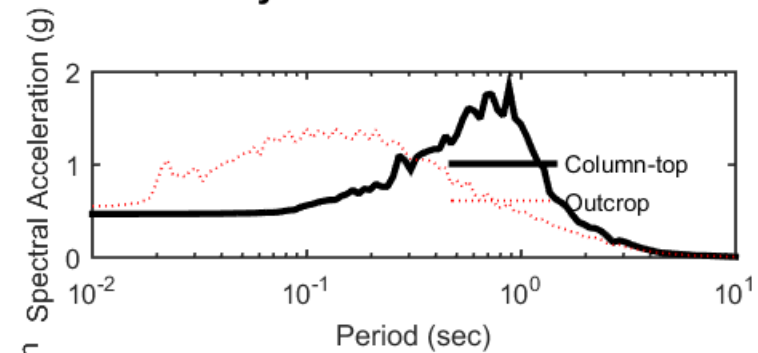
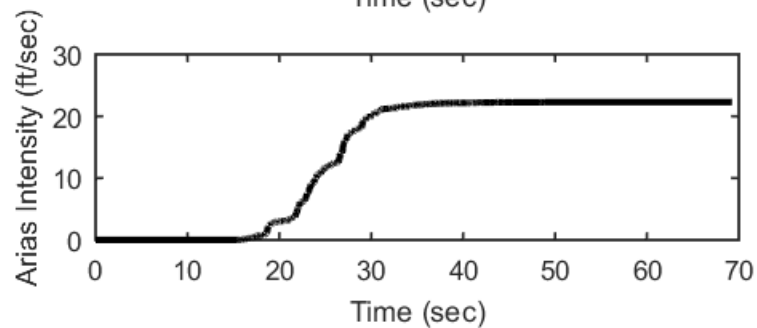
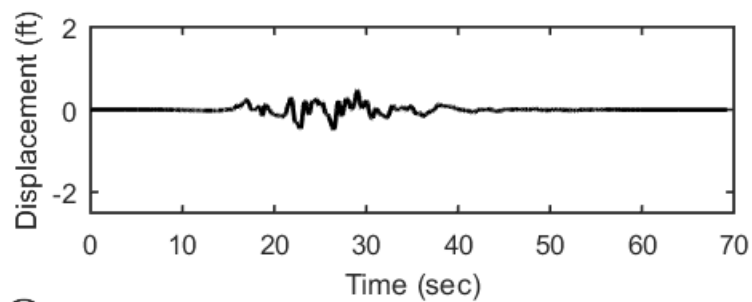
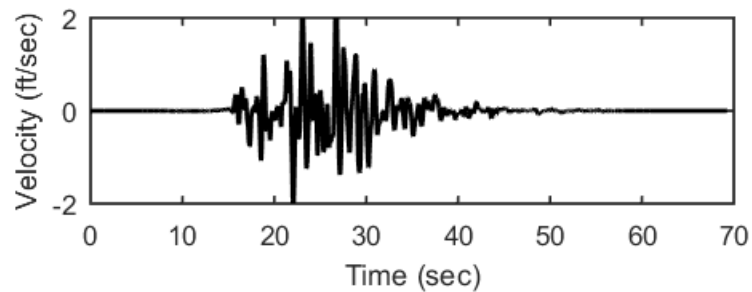
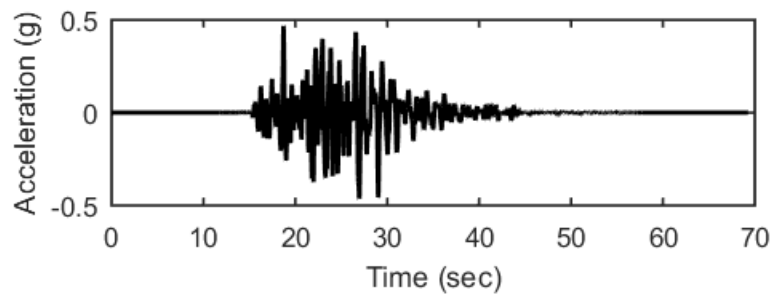
### Profile outputs for Motion: SEE2



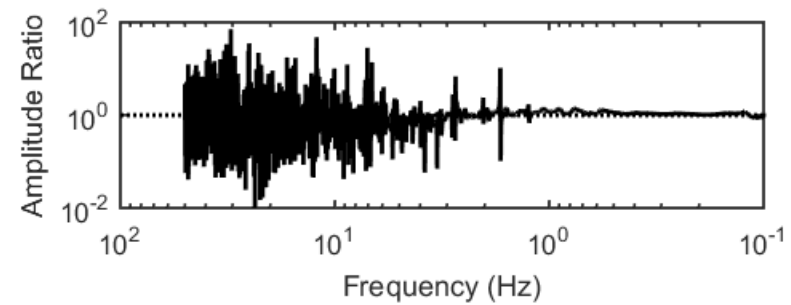
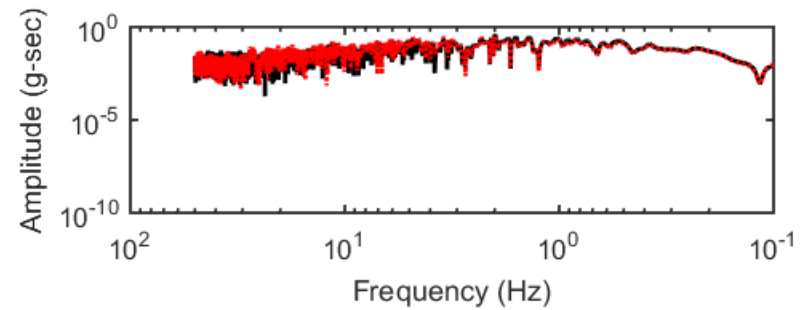
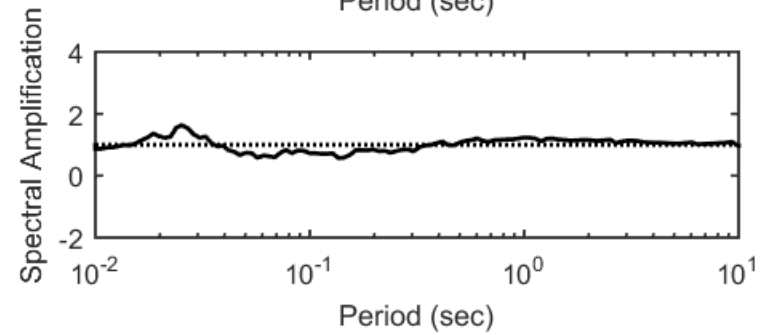
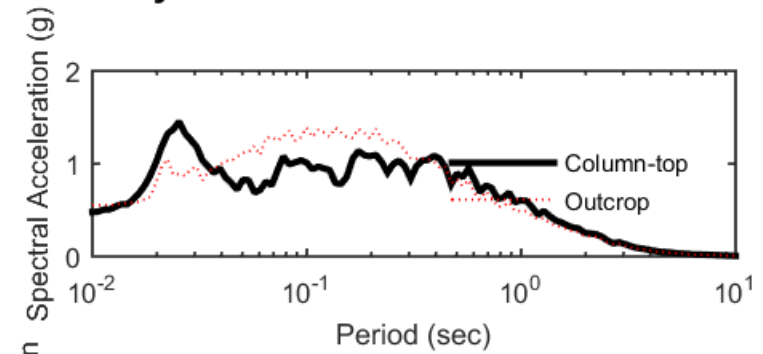
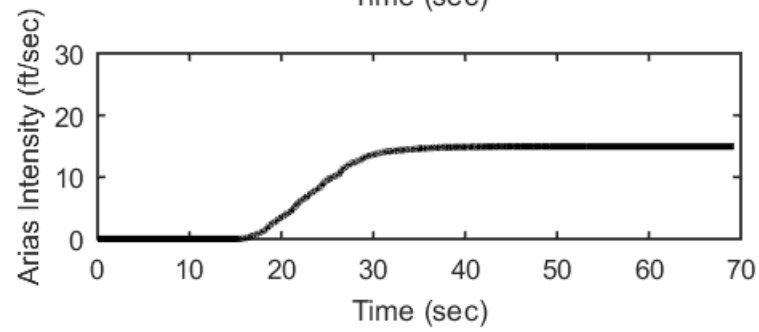
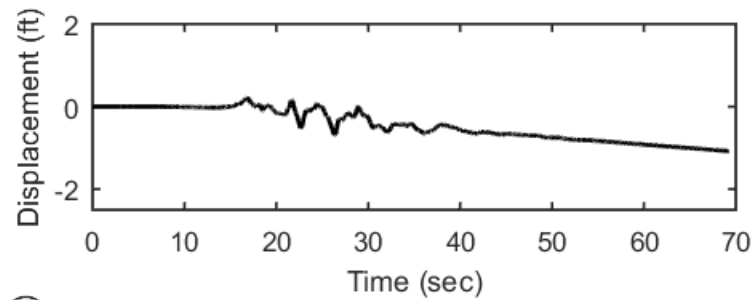
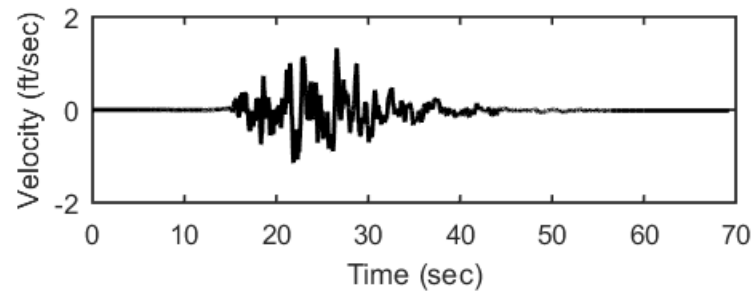
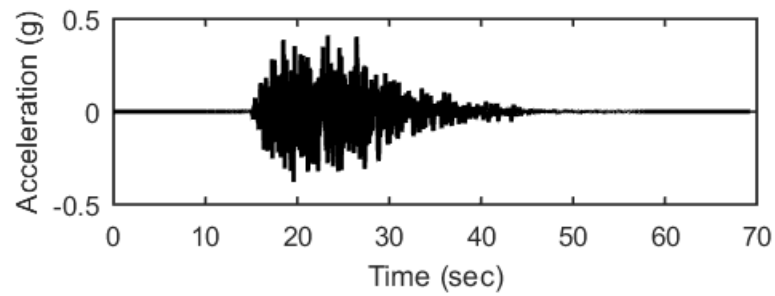
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3

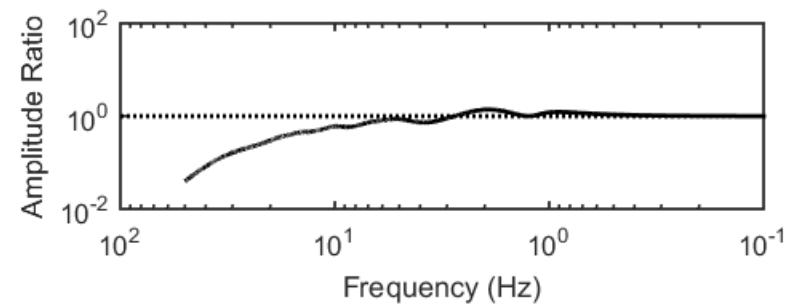
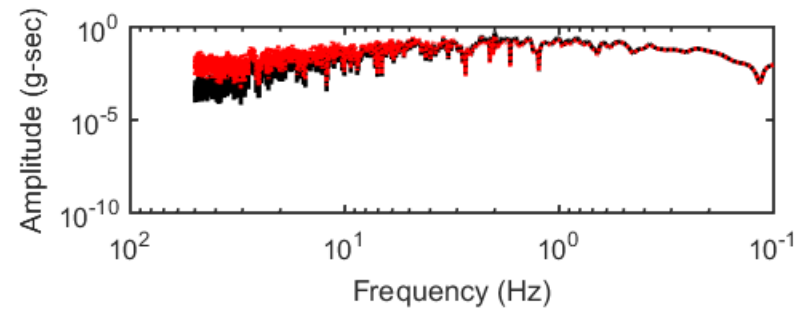
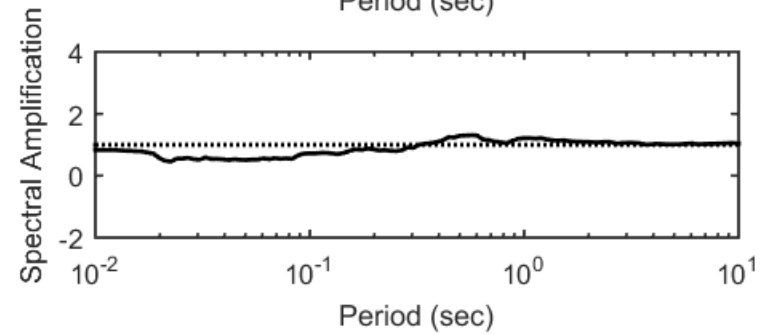
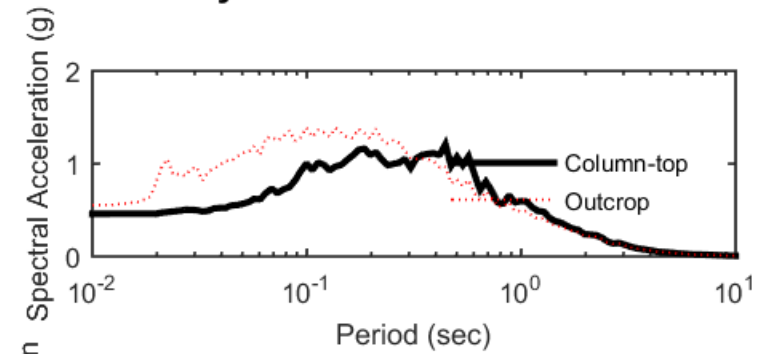
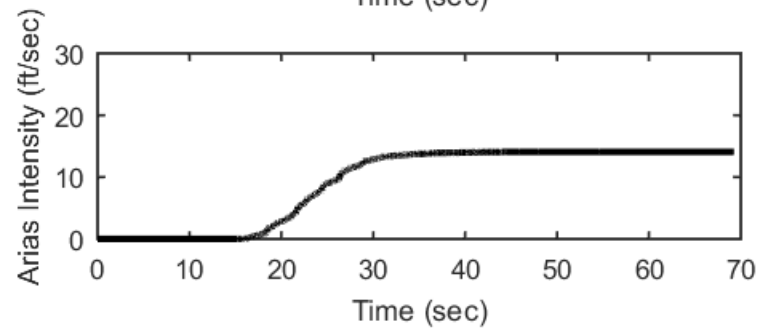
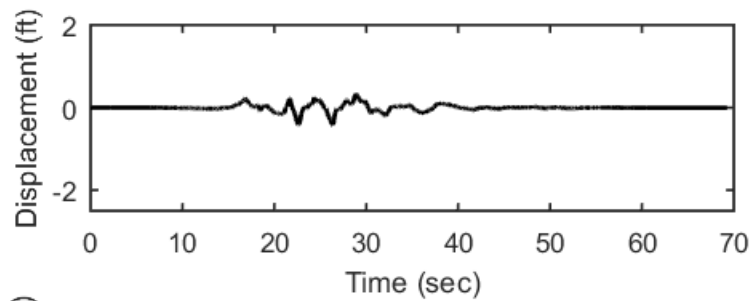
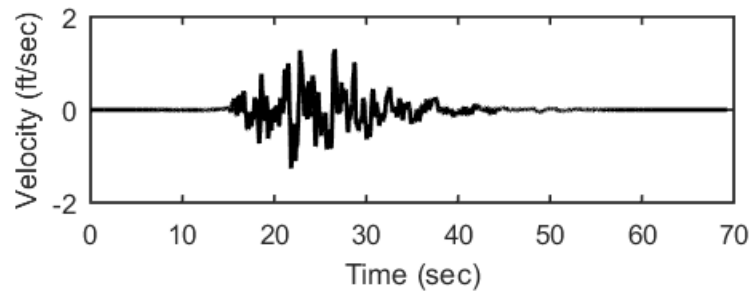
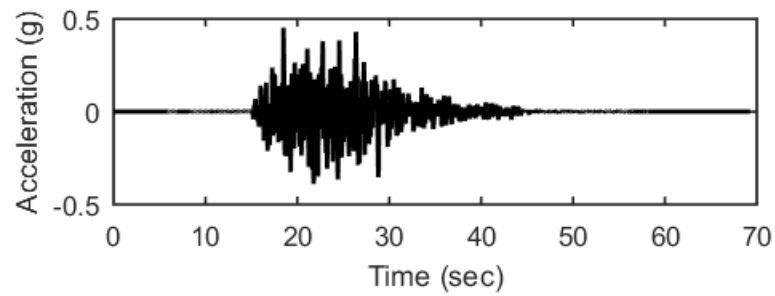


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3

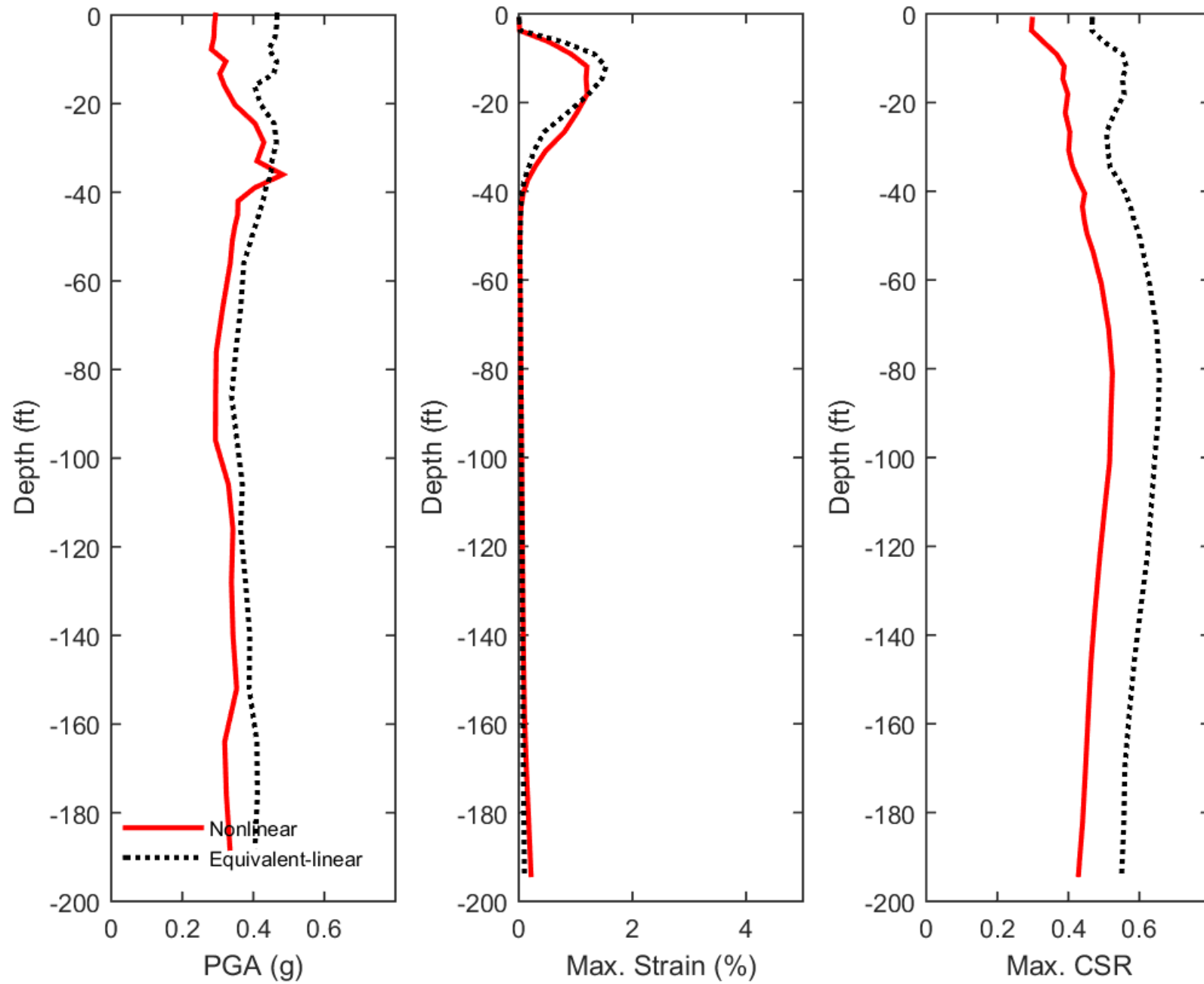




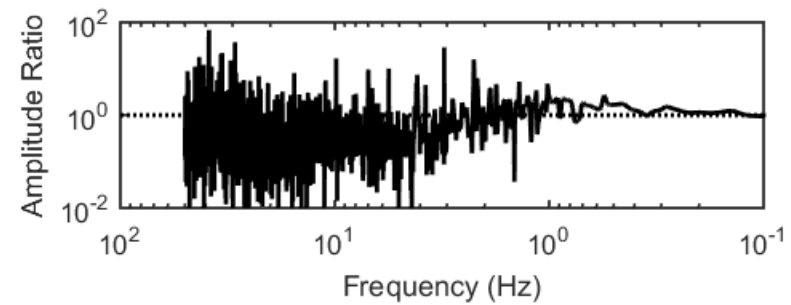
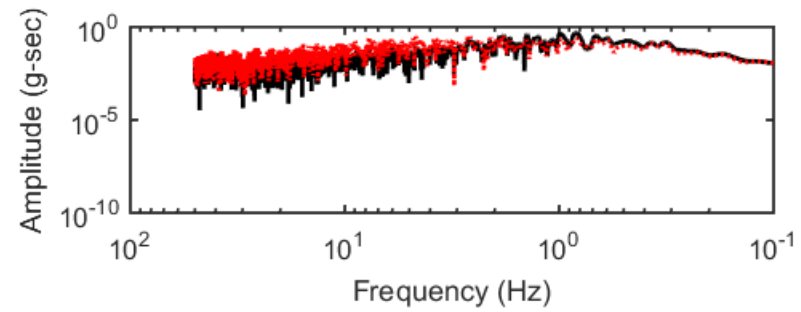
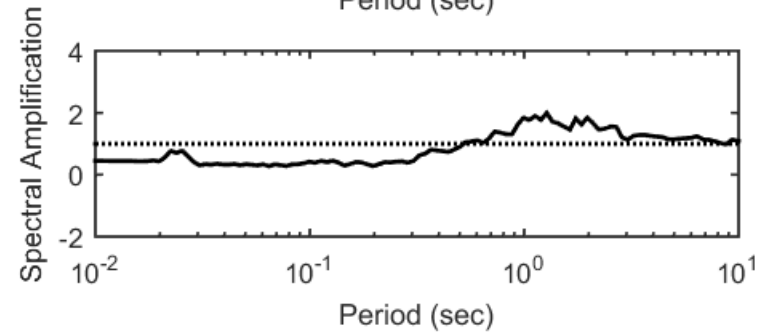
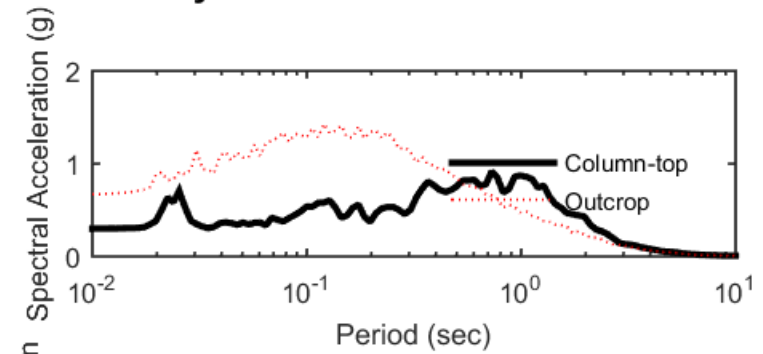
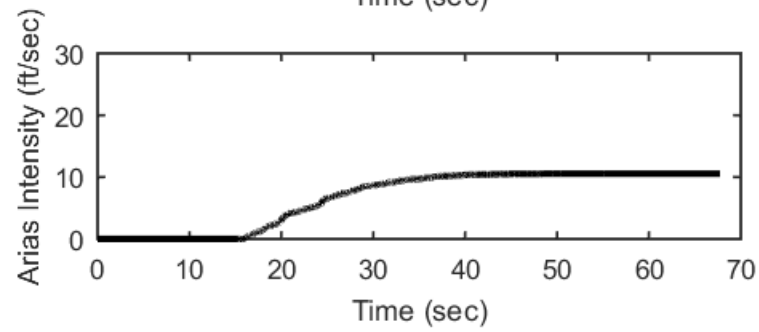
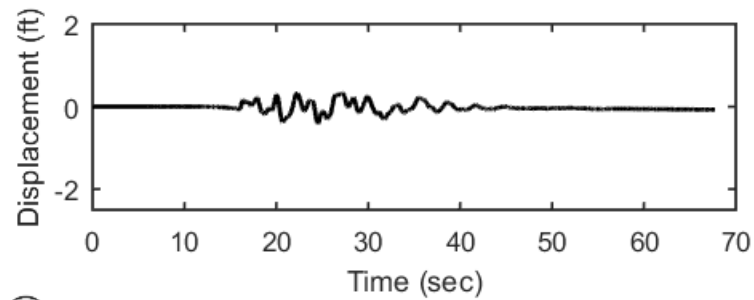
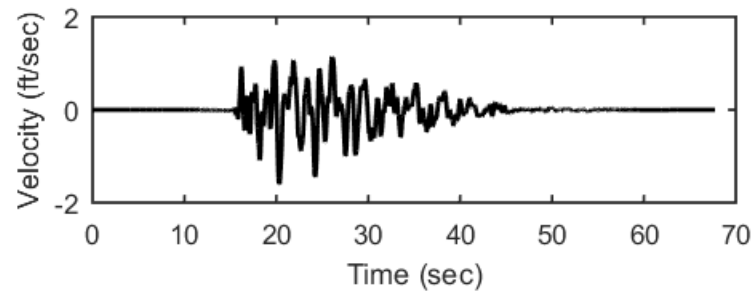
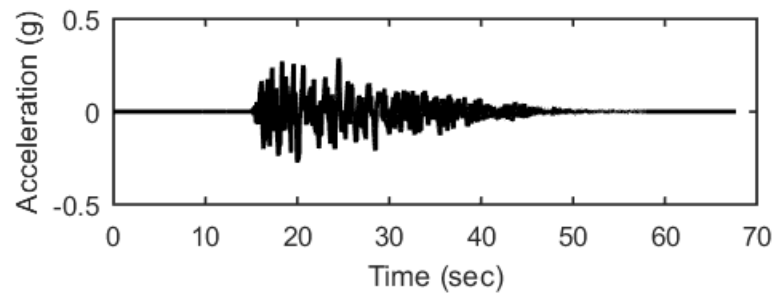
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



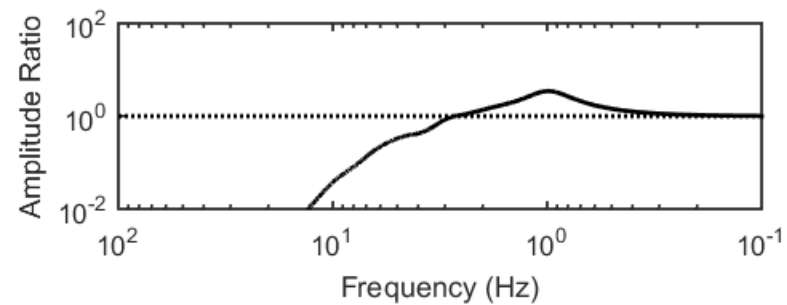
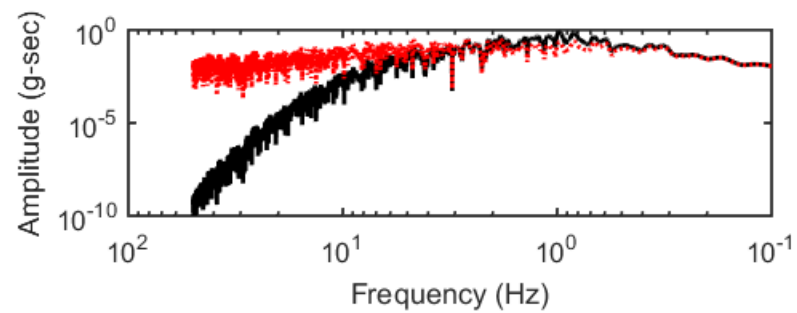
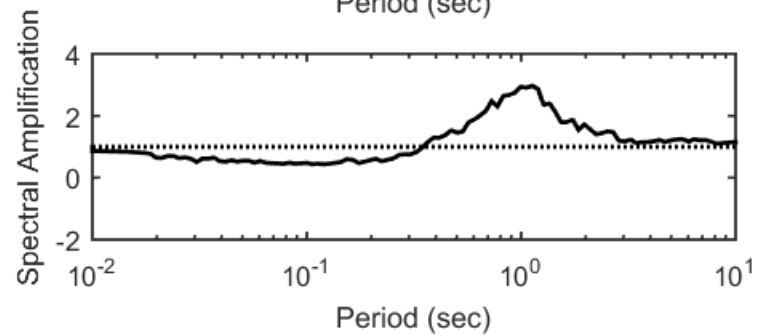
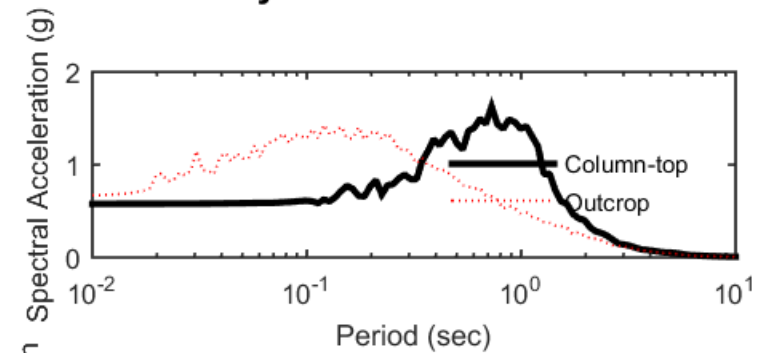
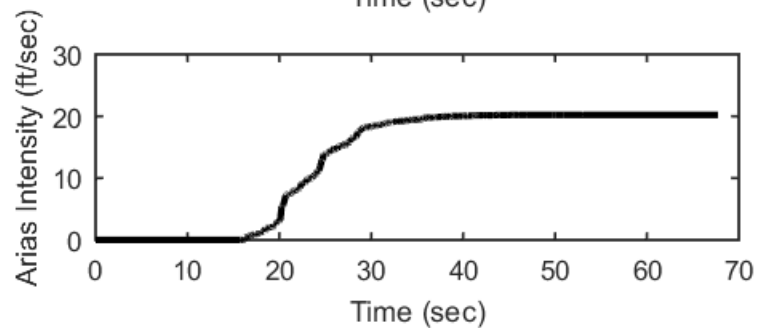
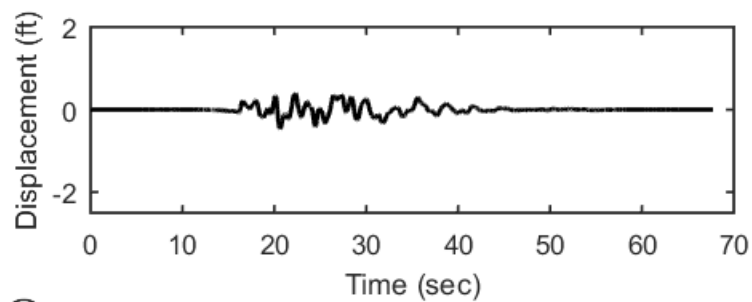
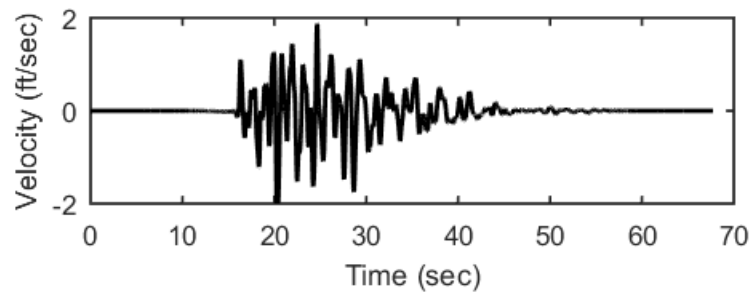
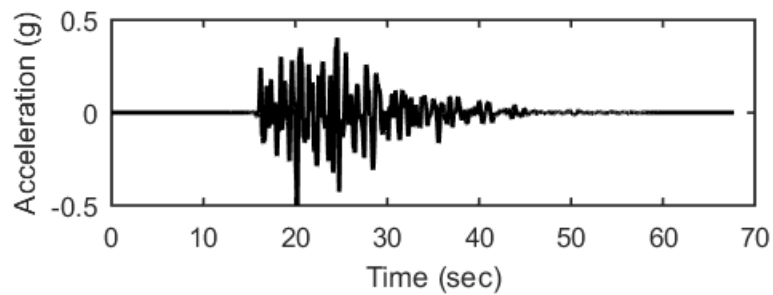
### Profile outputs for Motion: SEE3



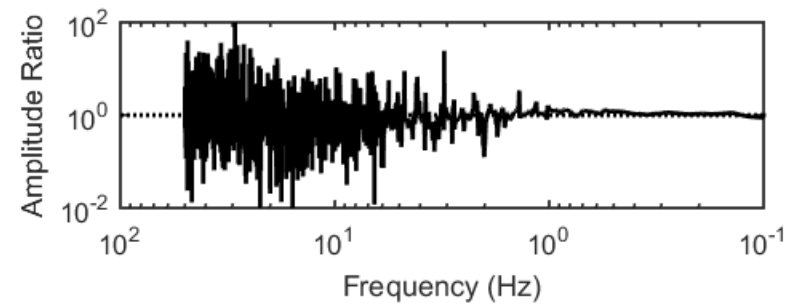
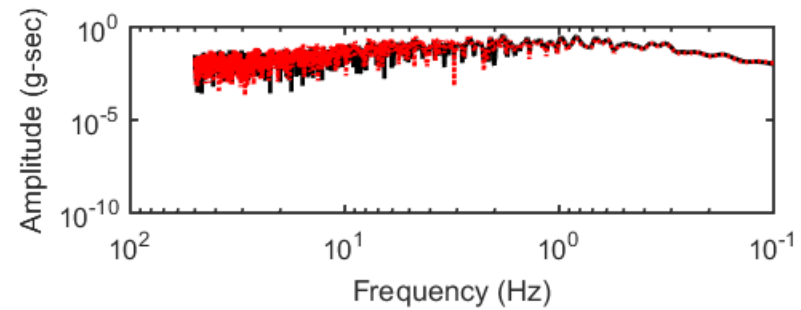
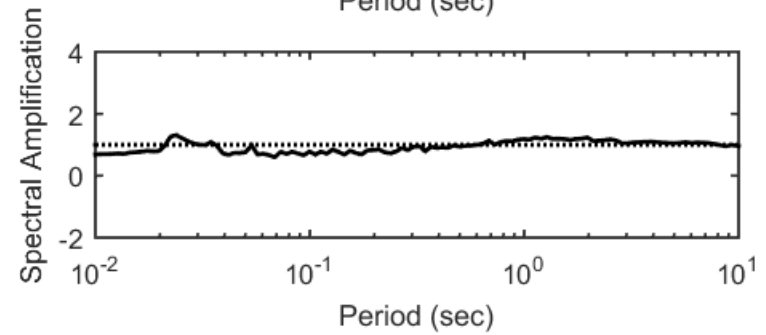
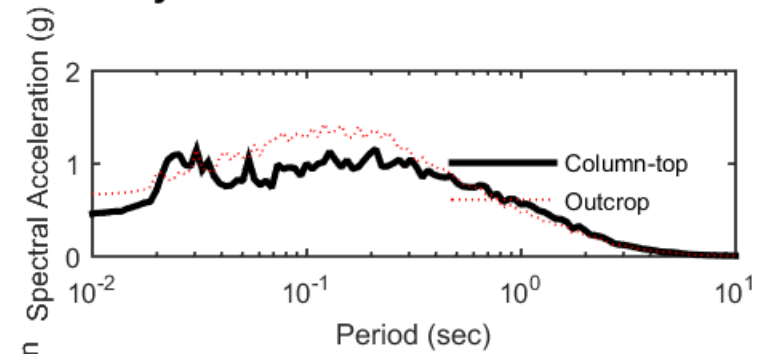
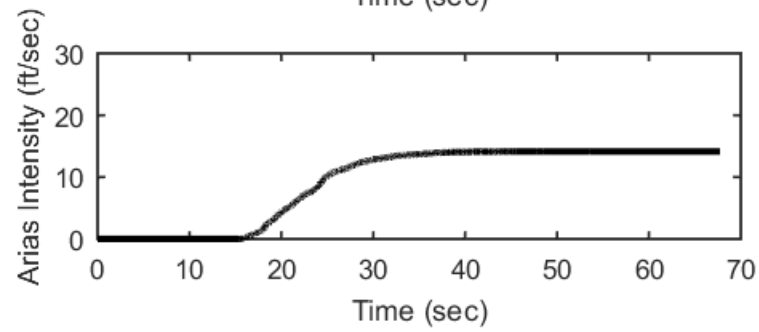
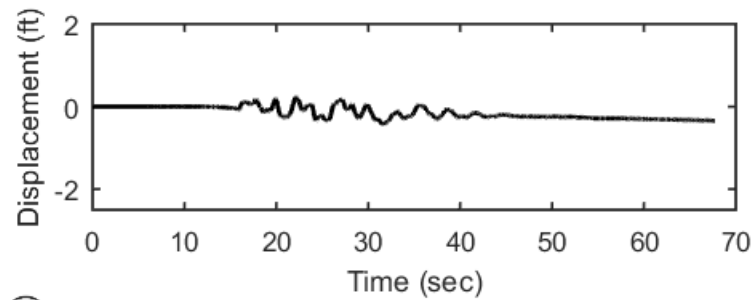
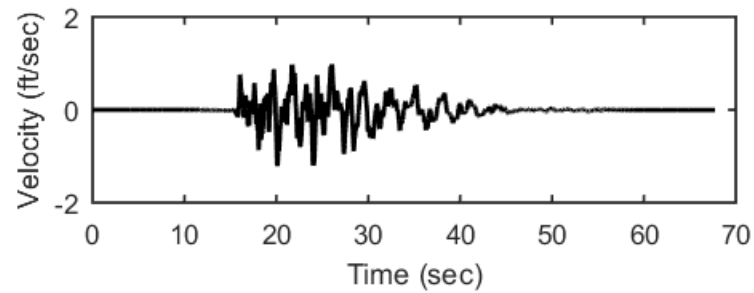
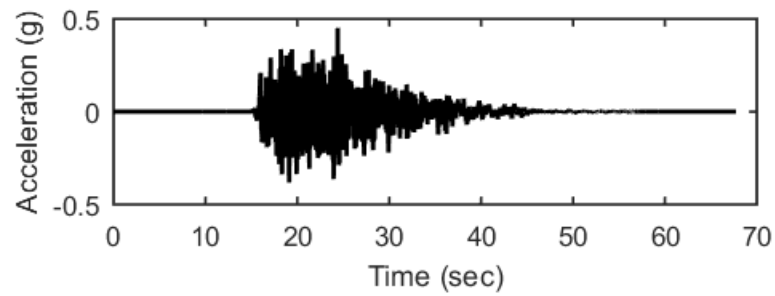
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



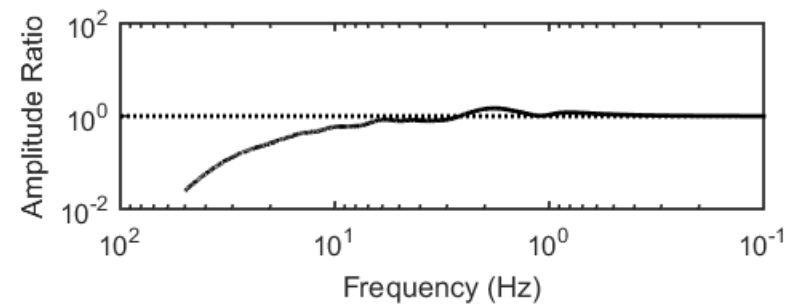
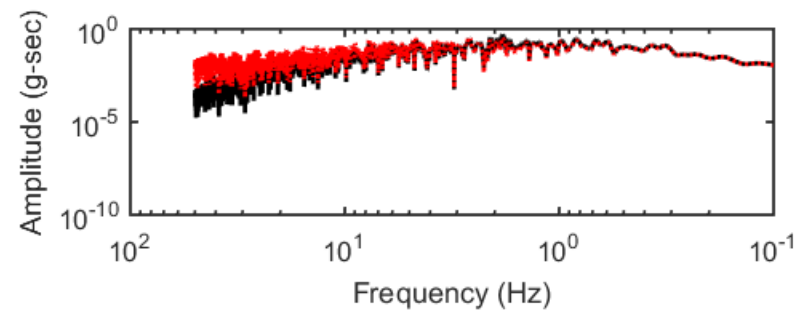
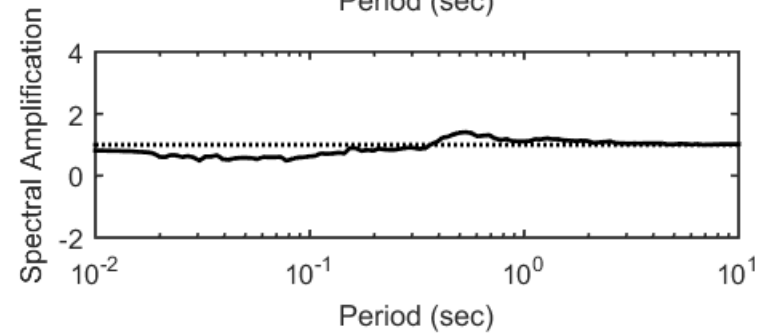
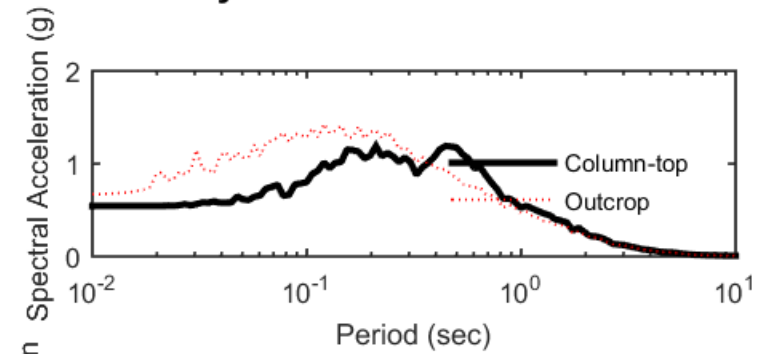
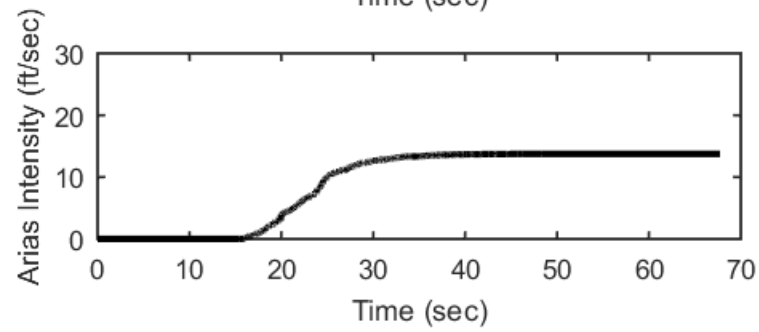
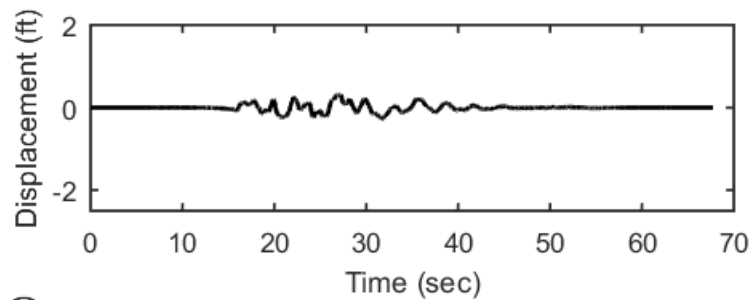
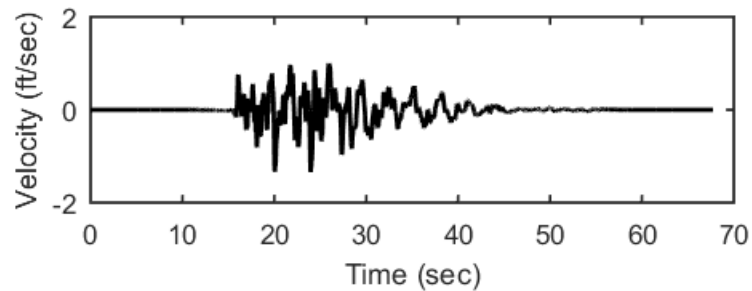
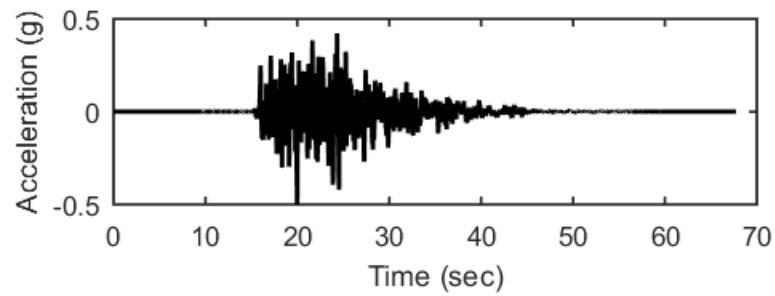
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



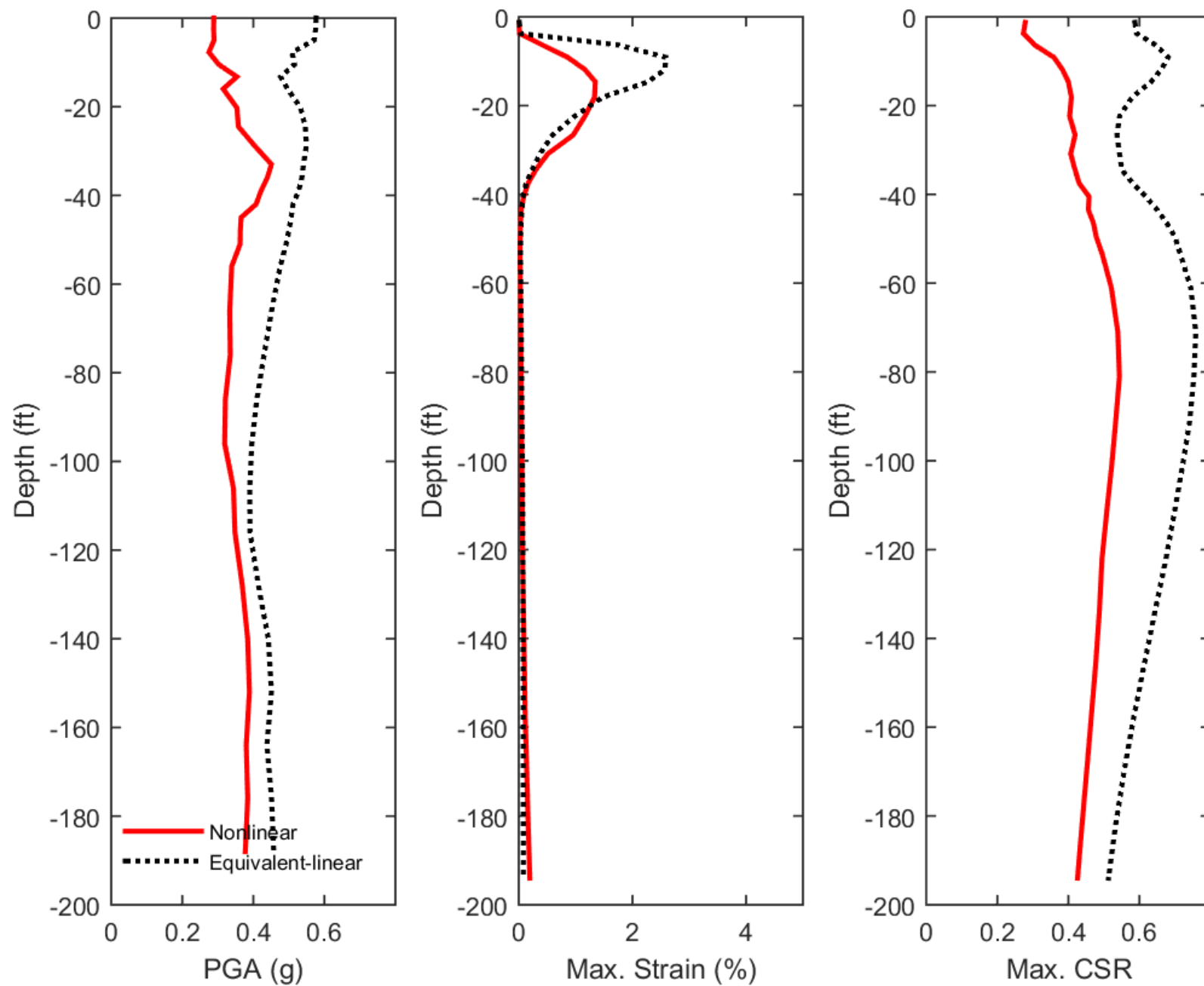
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



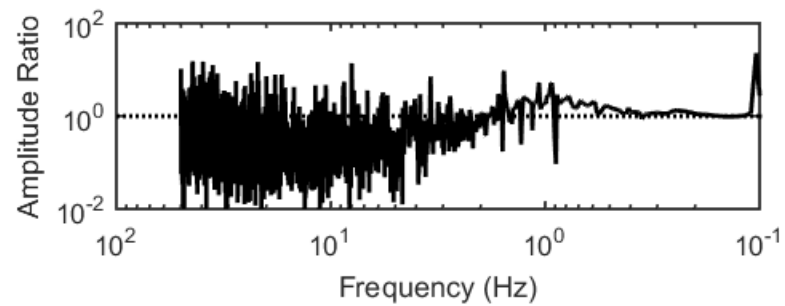
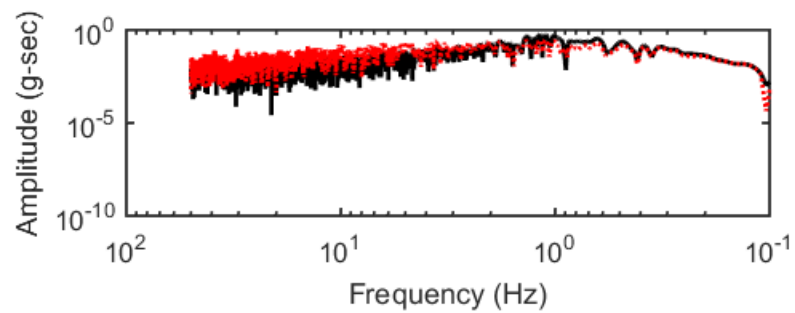
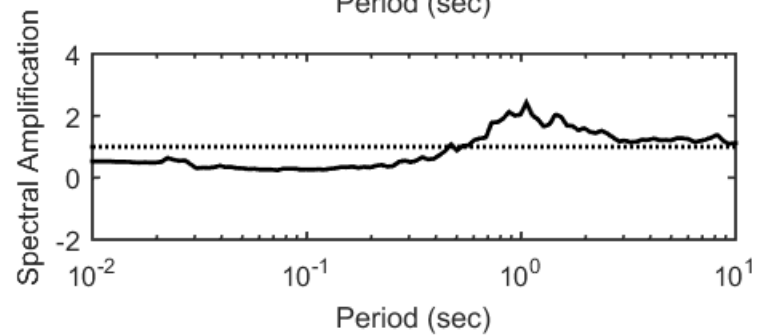
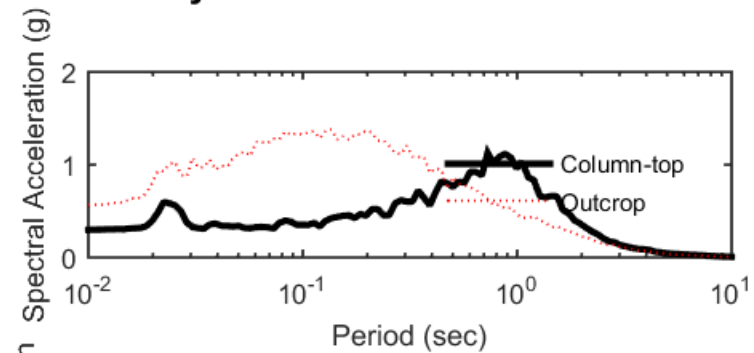
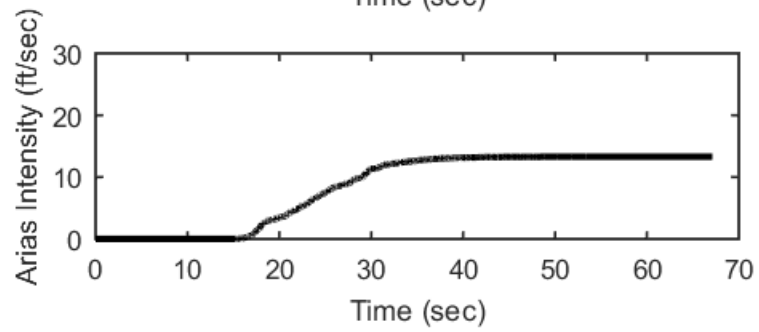
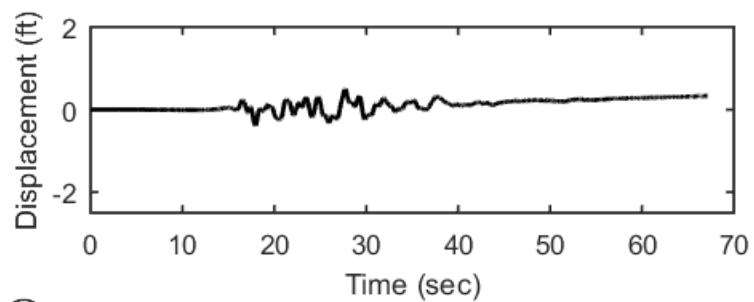
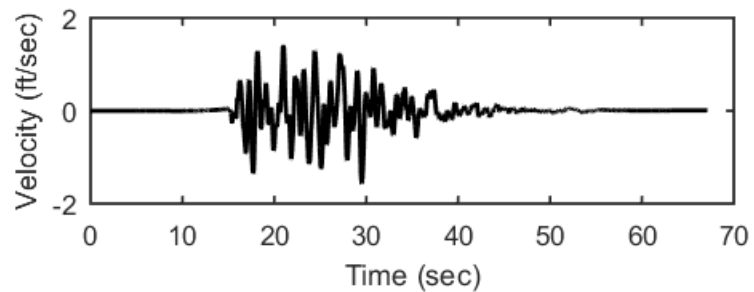
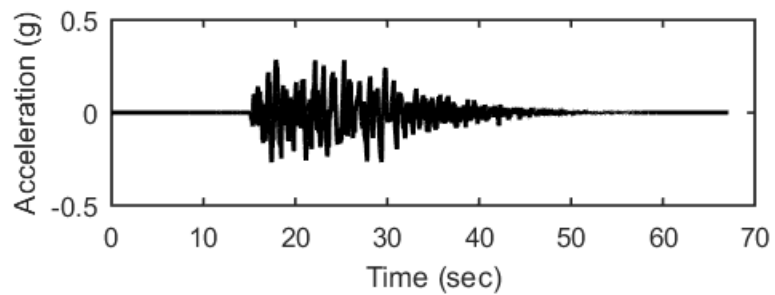
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



### Profile outputs for Motion: SEE4

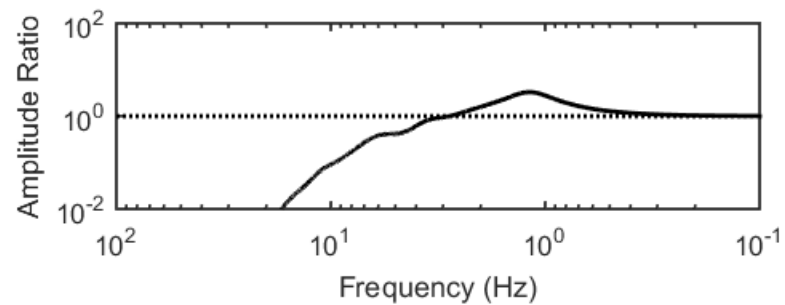
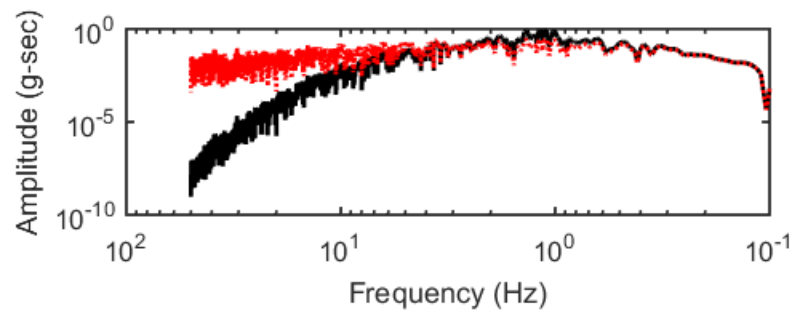
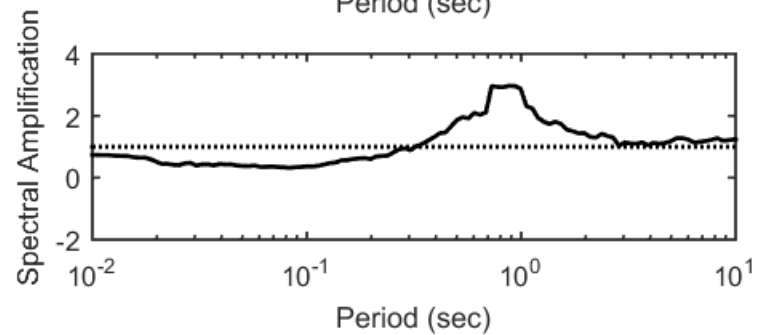
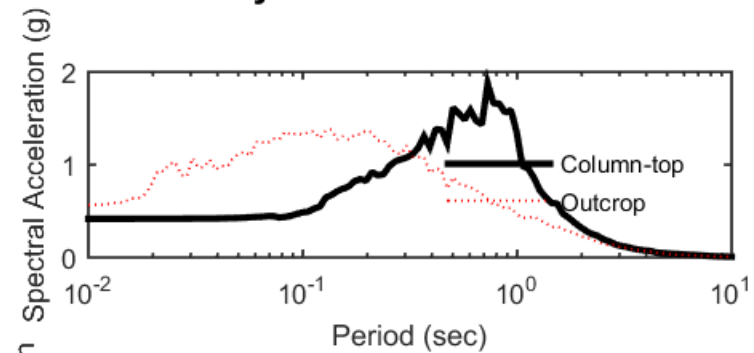
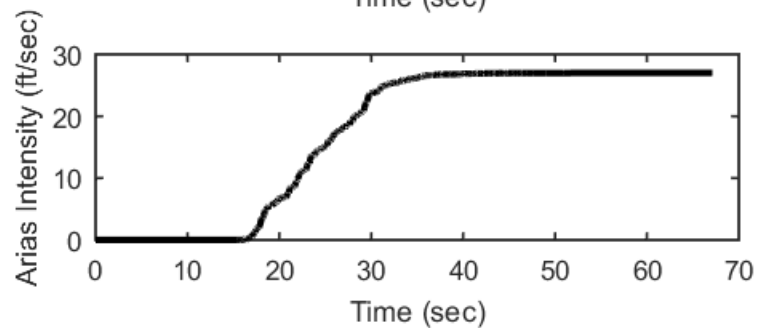
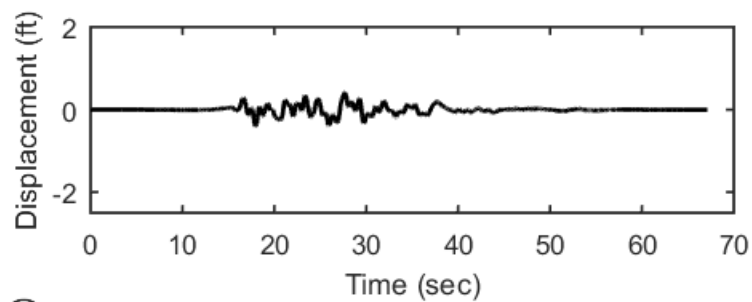
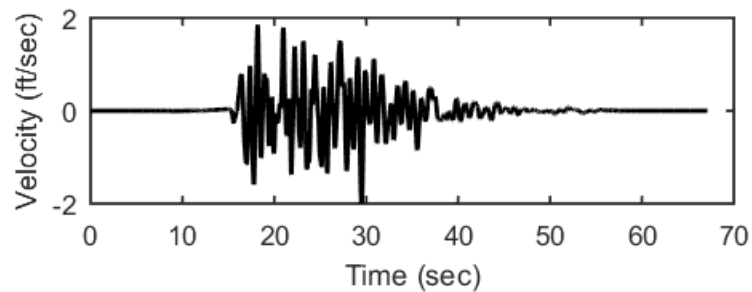
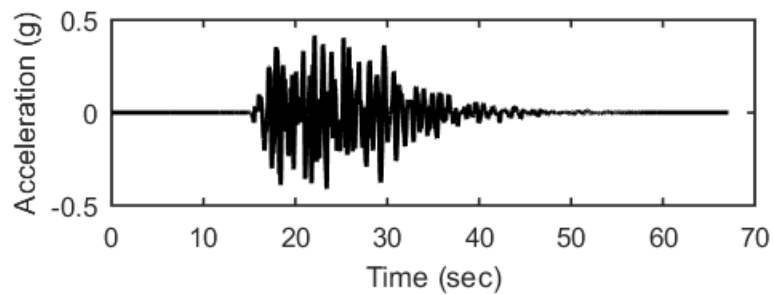


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5

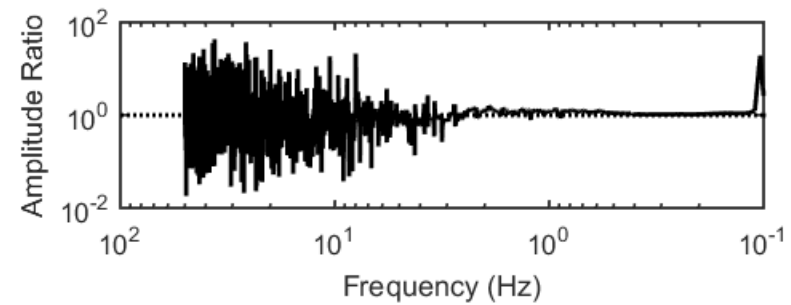
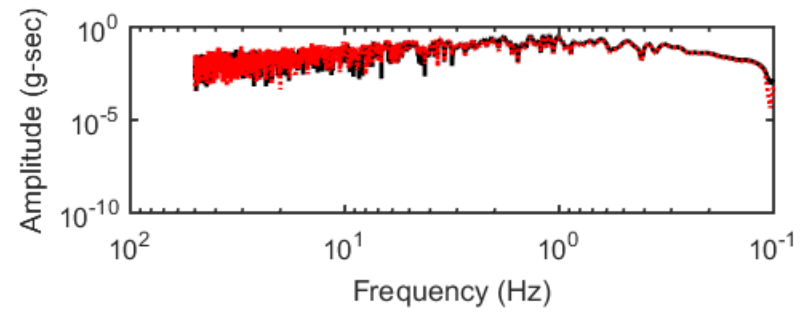
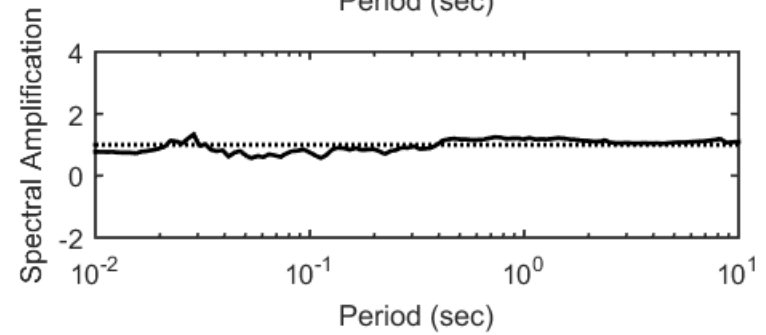
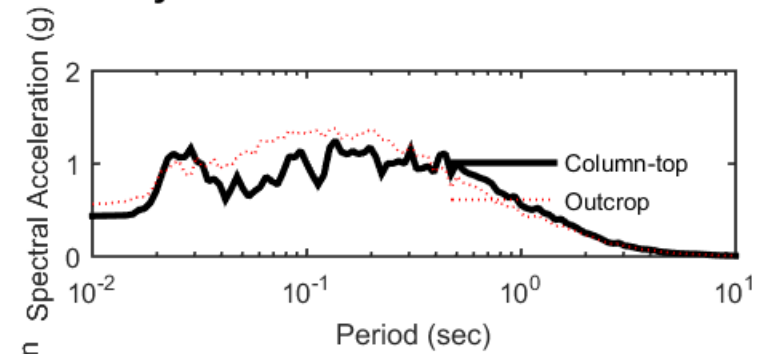
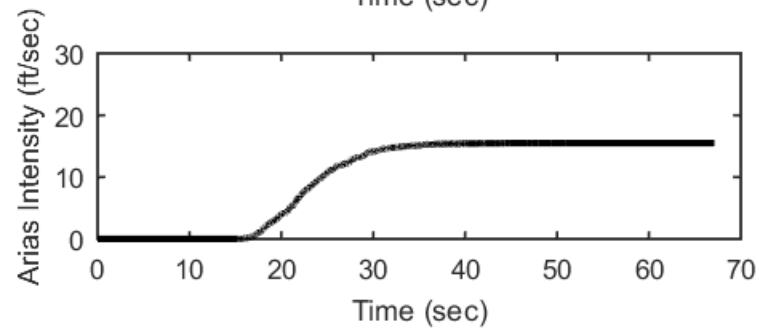
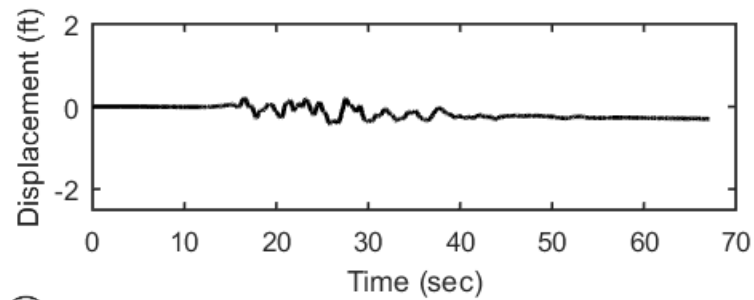
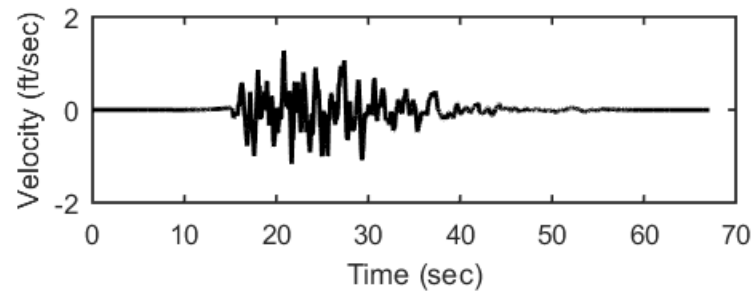
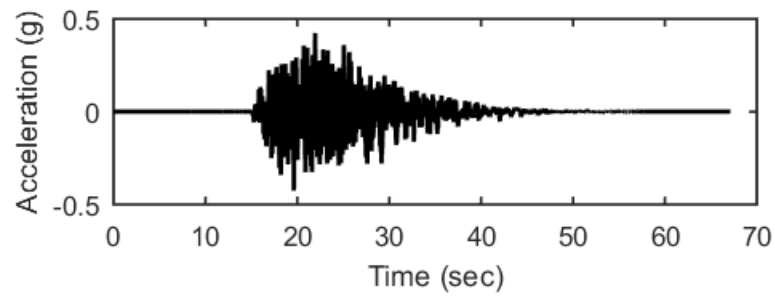




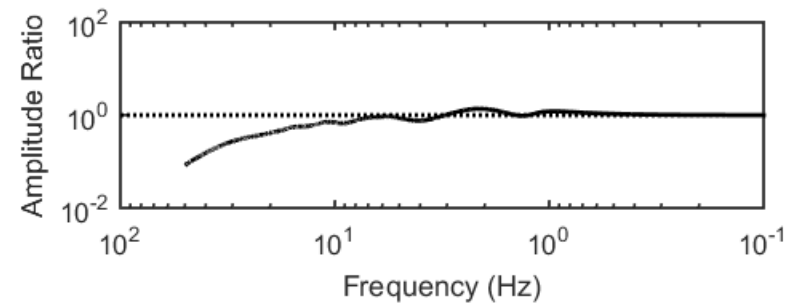
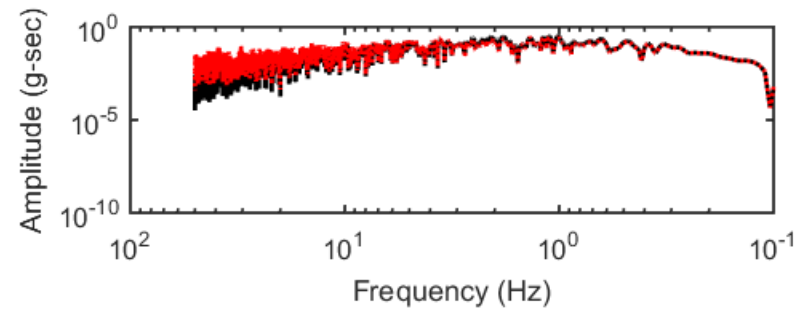
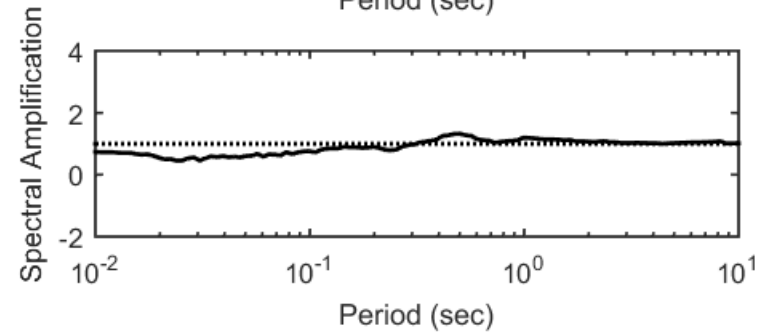
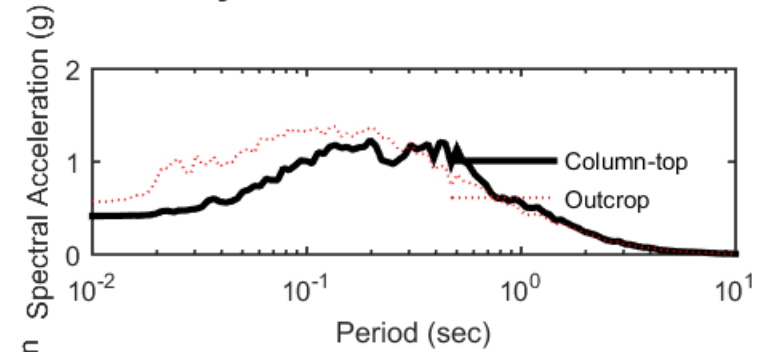
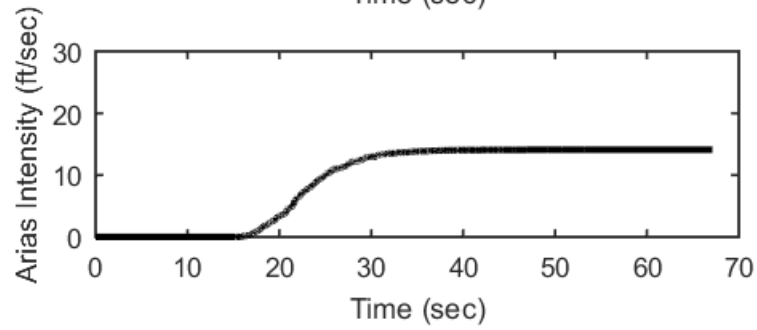
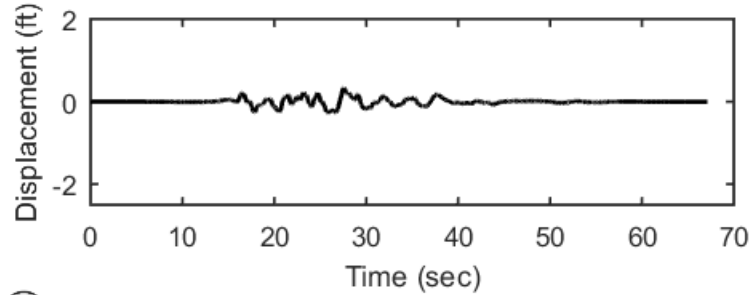
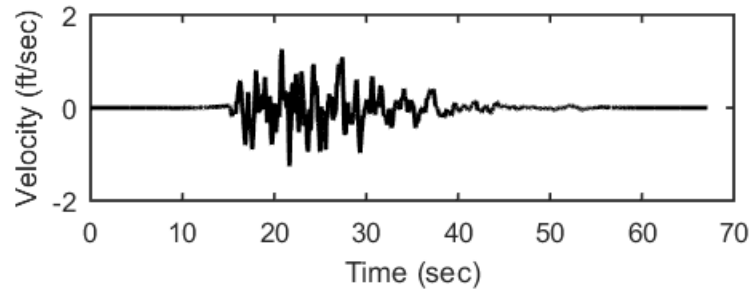
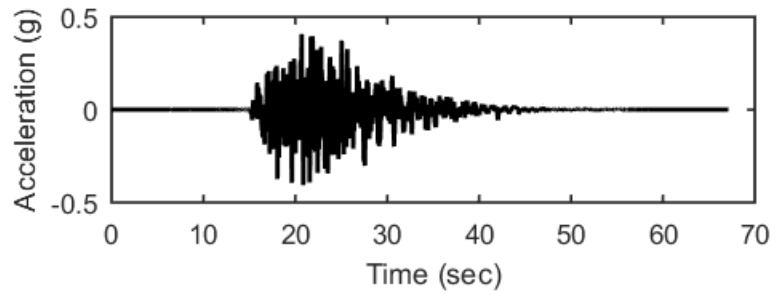
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



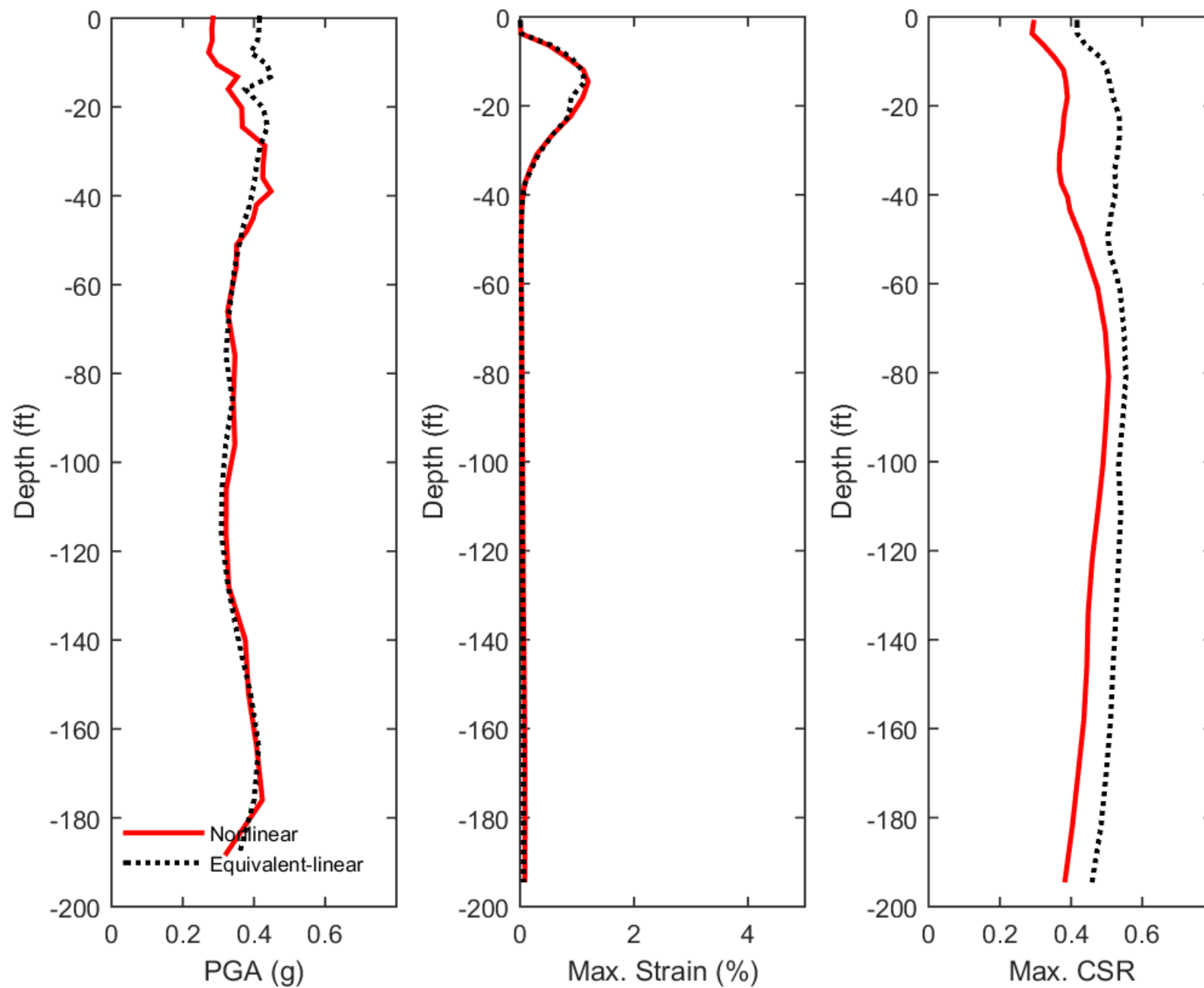
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



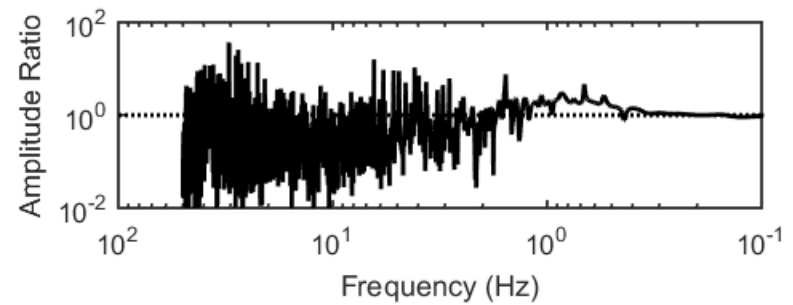
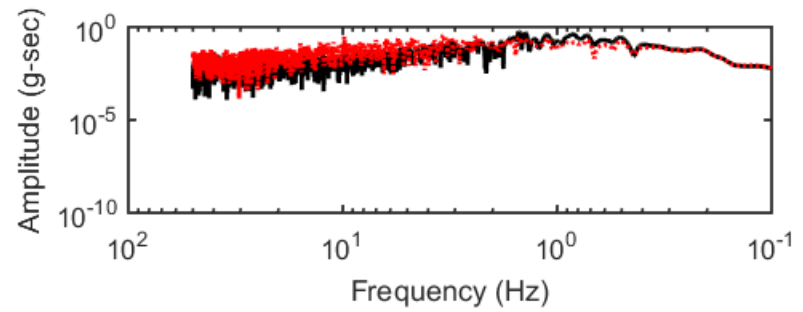
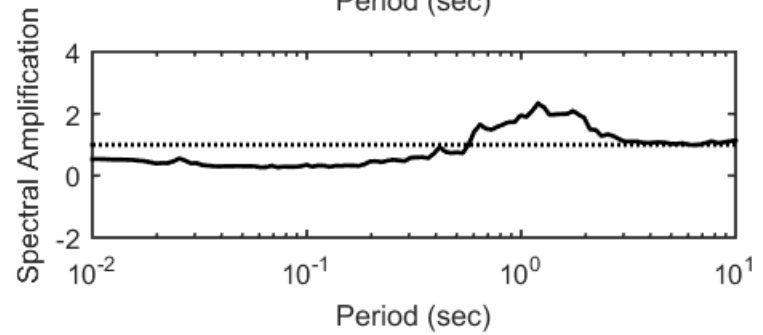
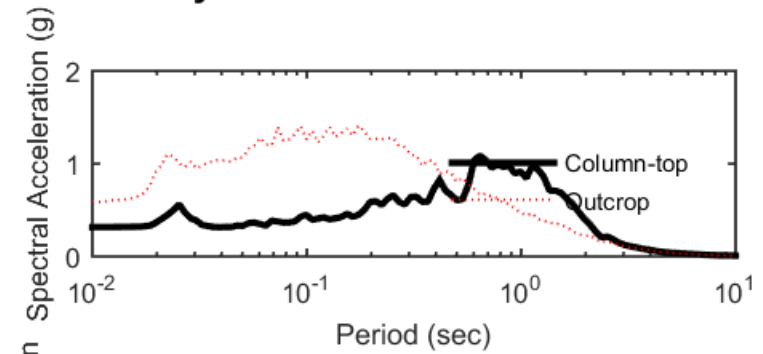
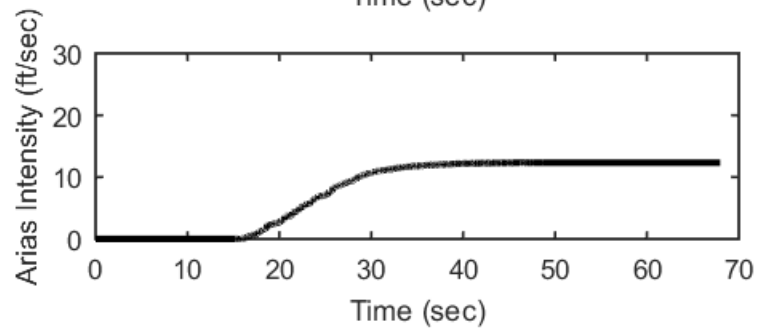
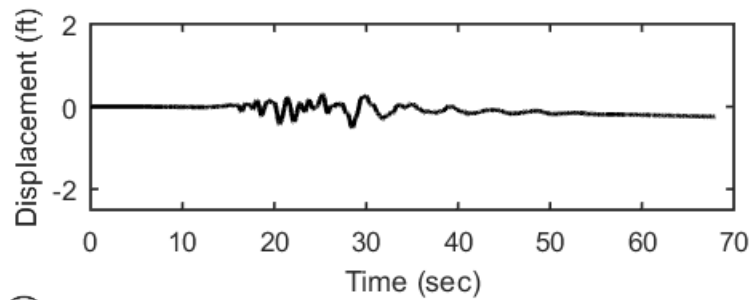
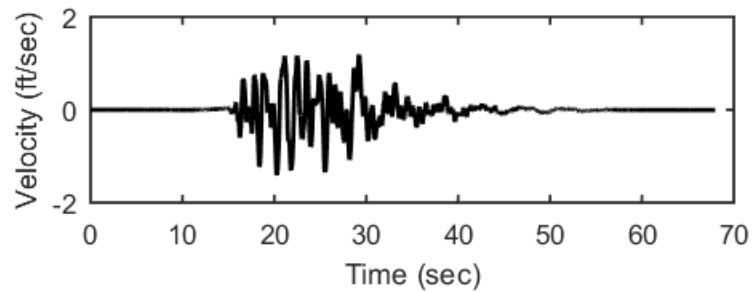
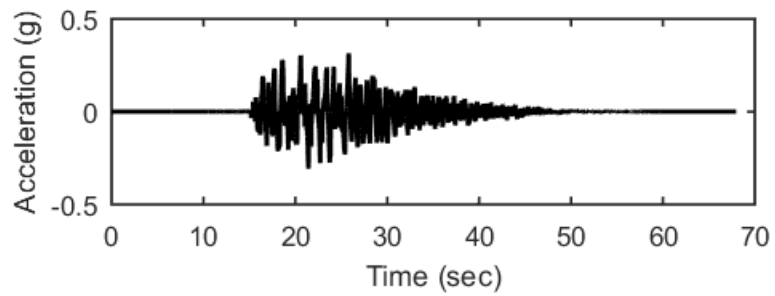
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



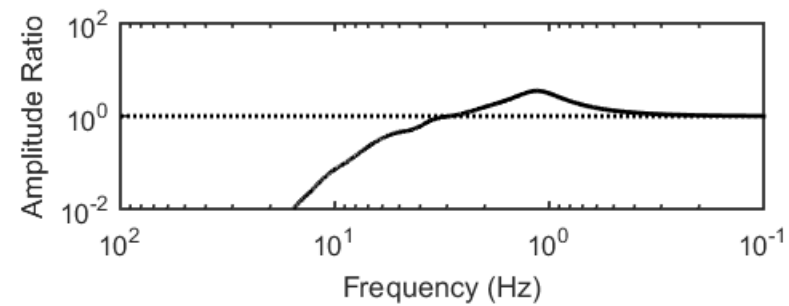
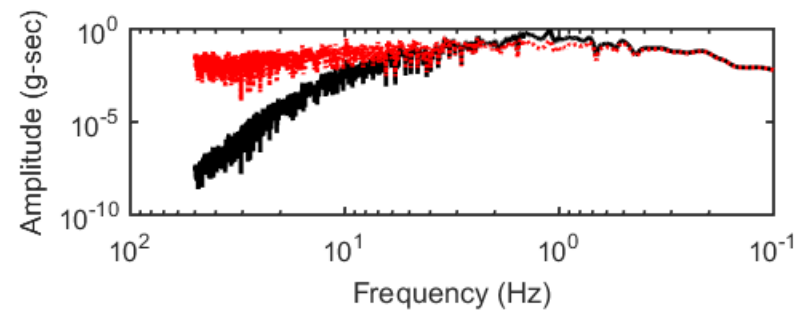
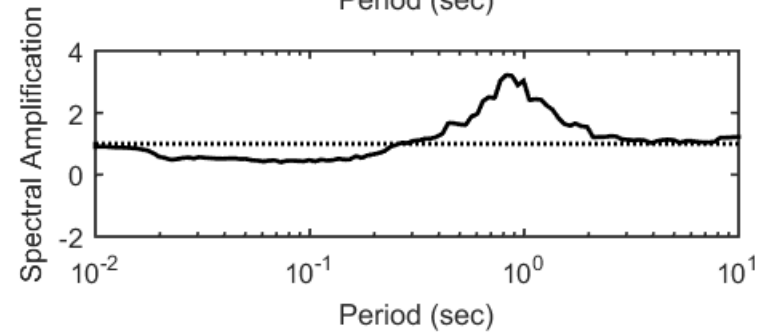
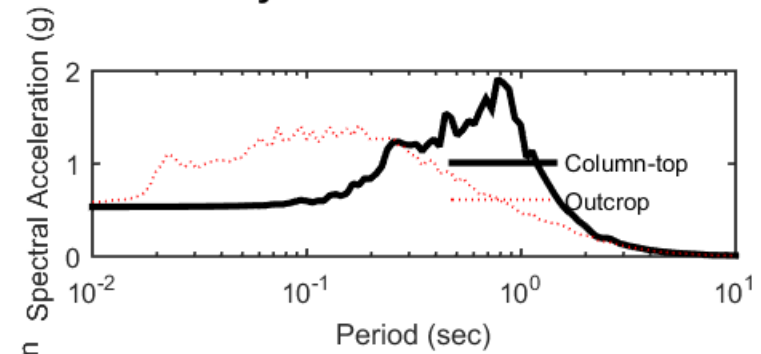
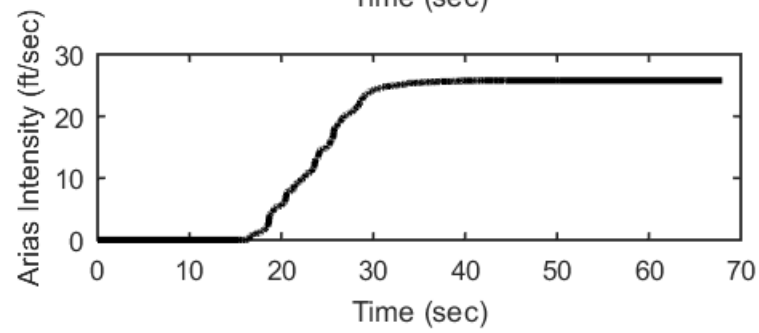
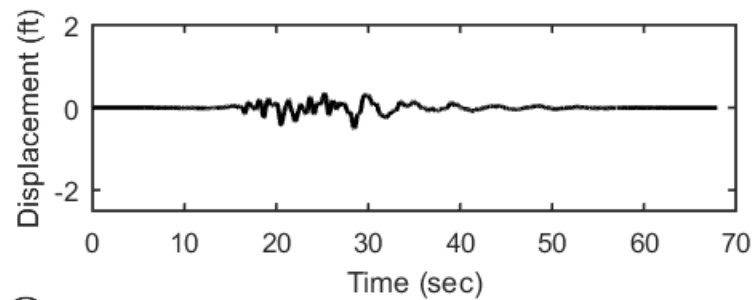
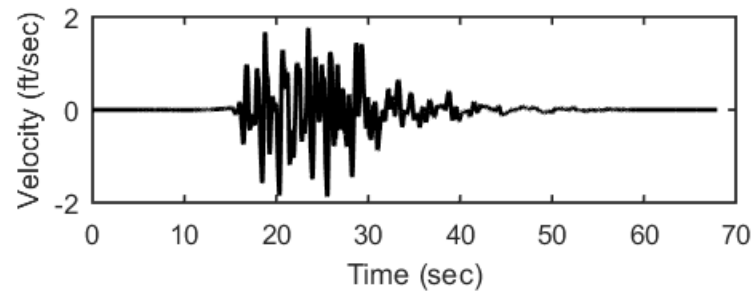
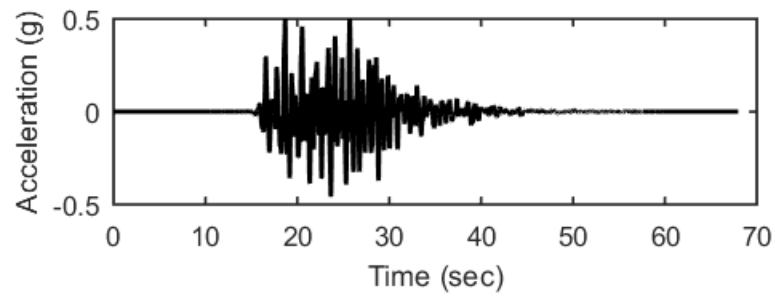
### Profile outputs for Motion: SEE5



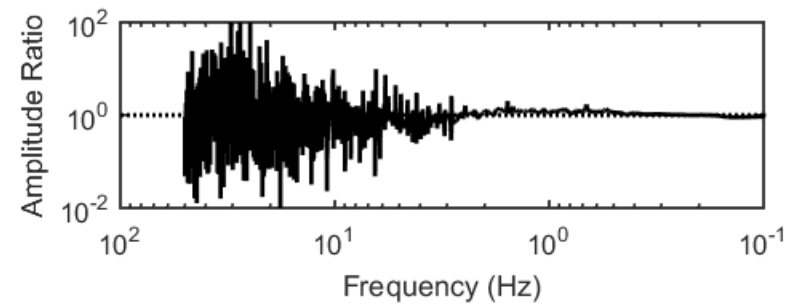
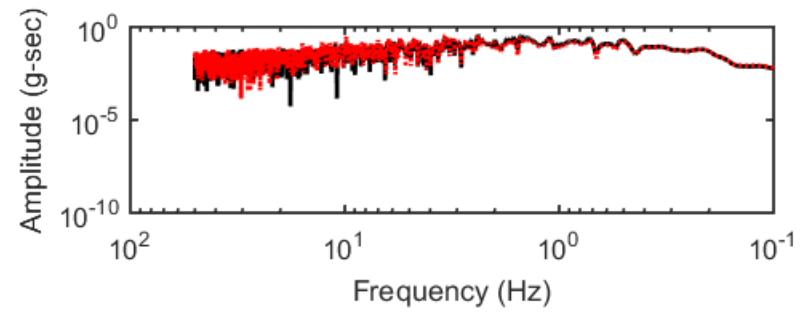
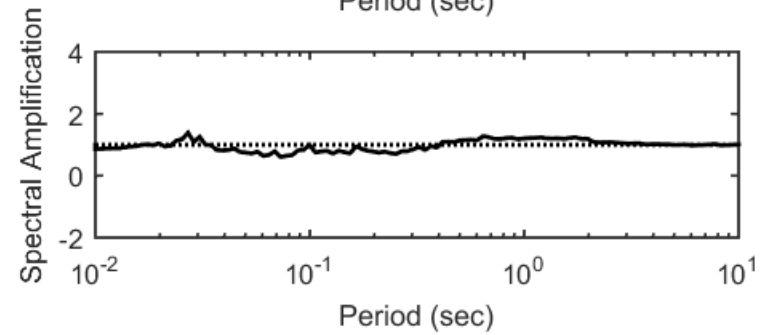
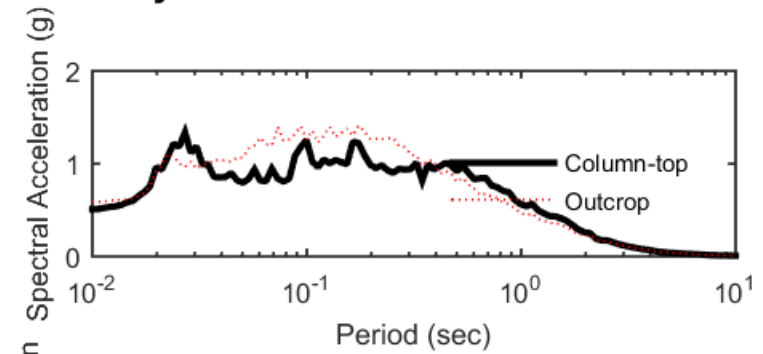
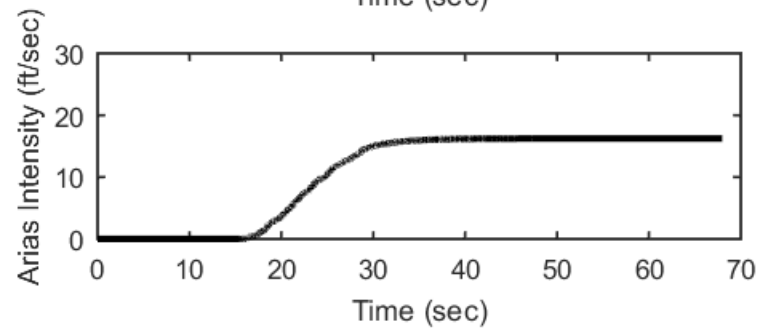
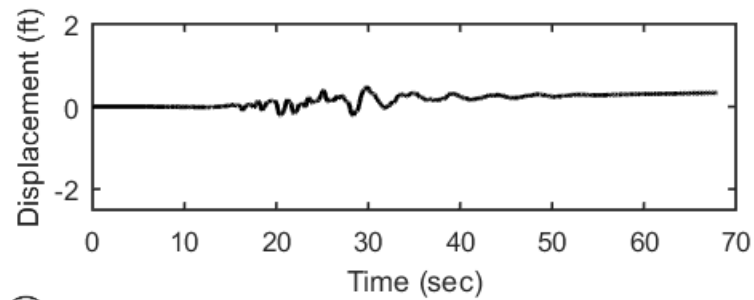
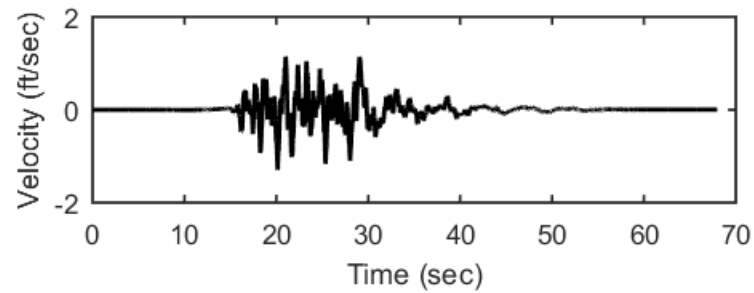
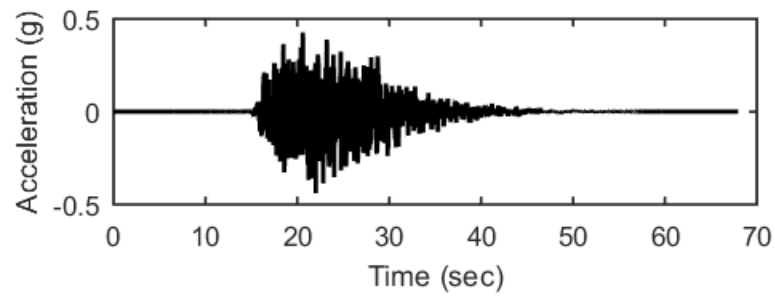
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



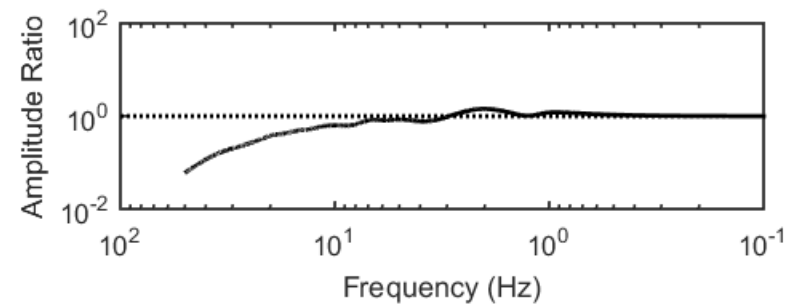
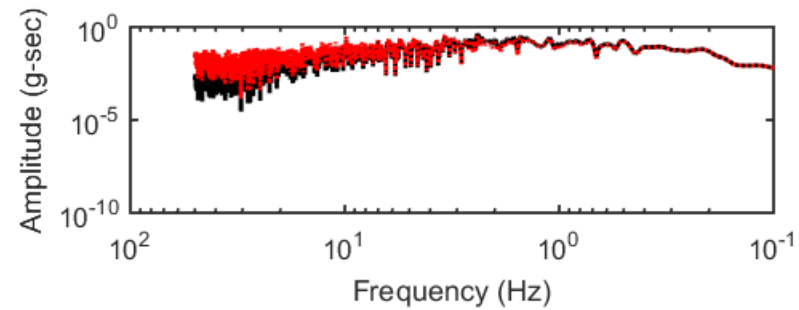
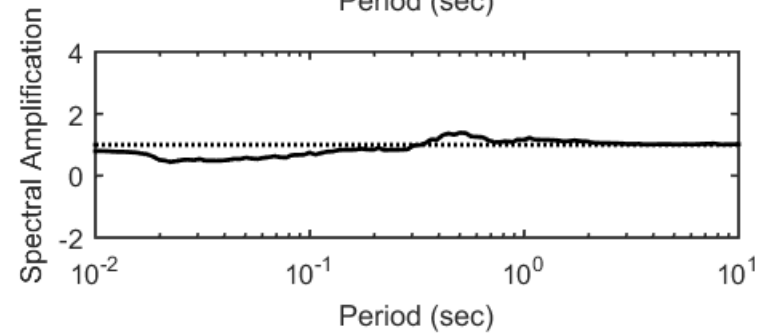
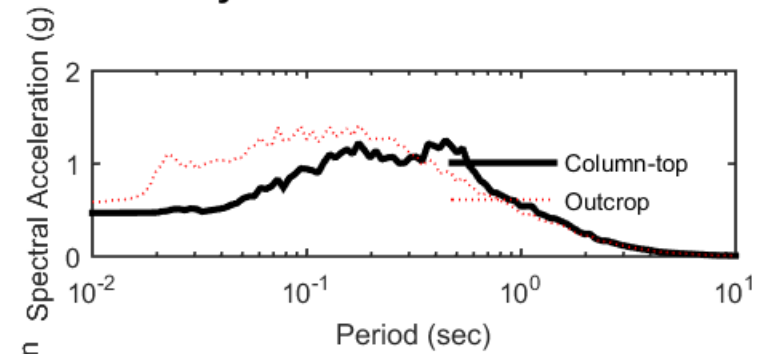
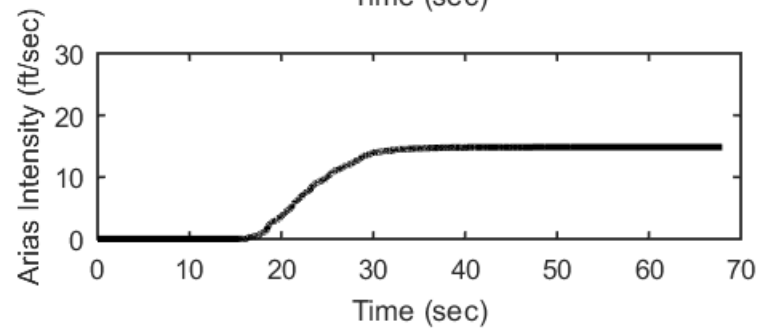
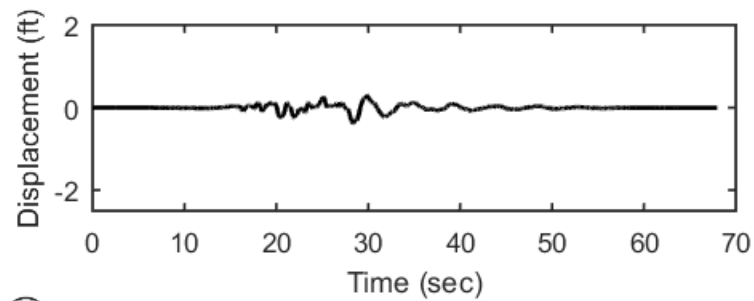
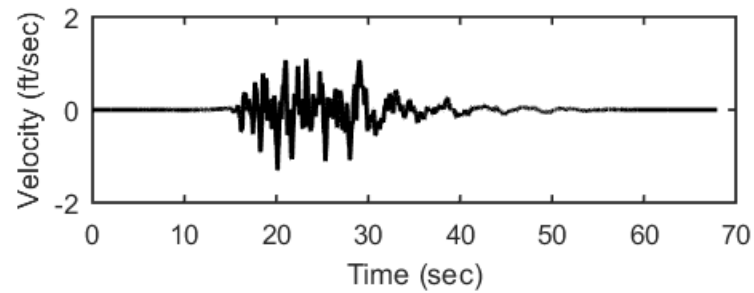
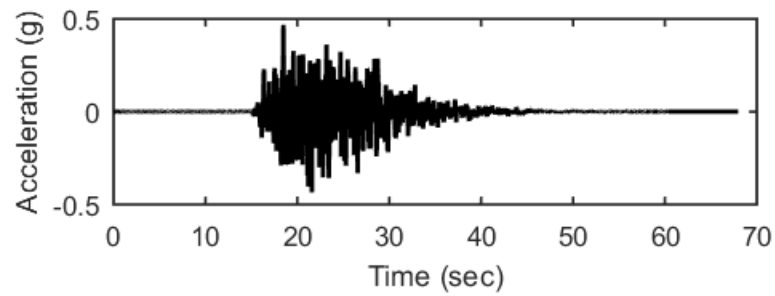
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6

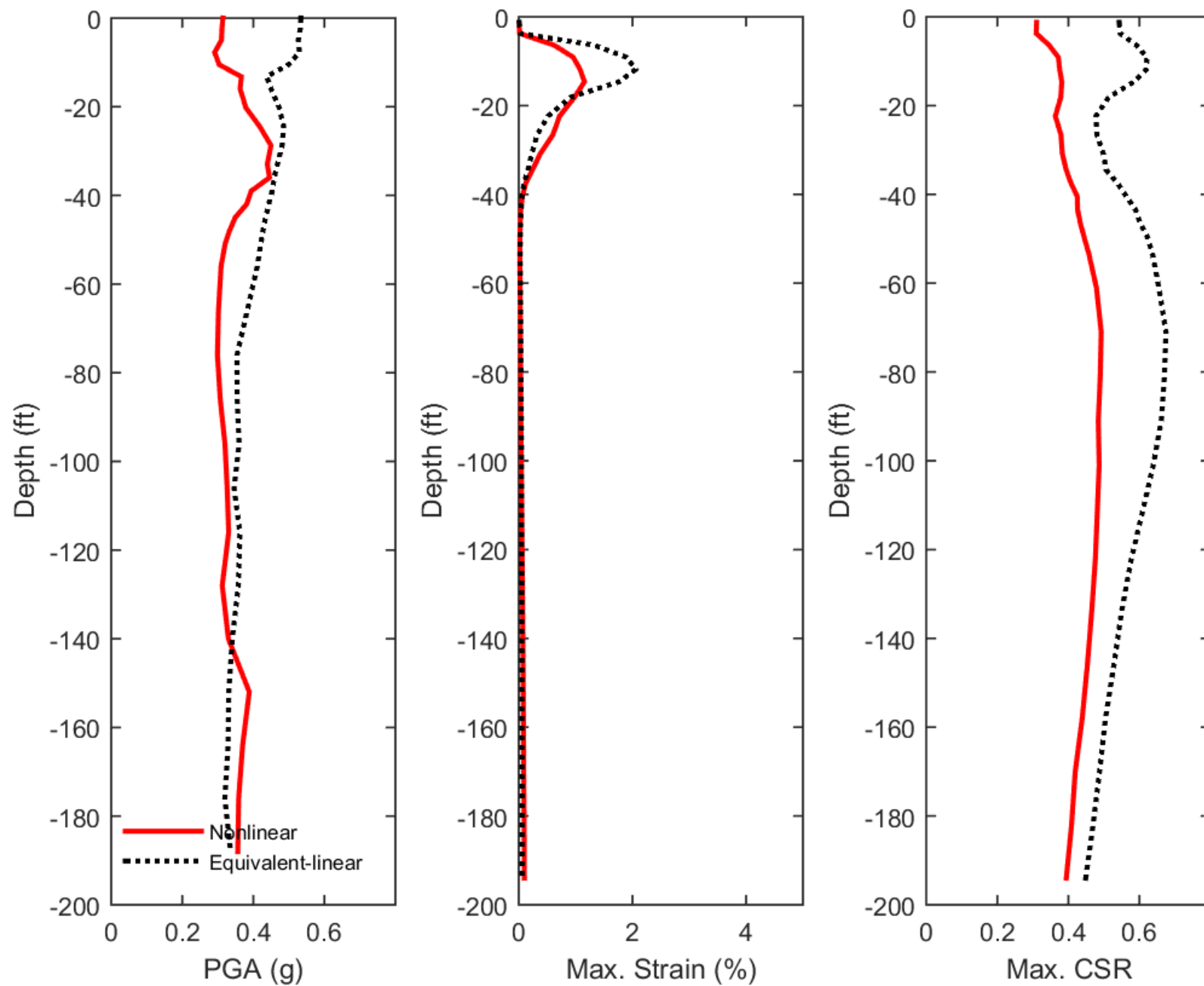


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6

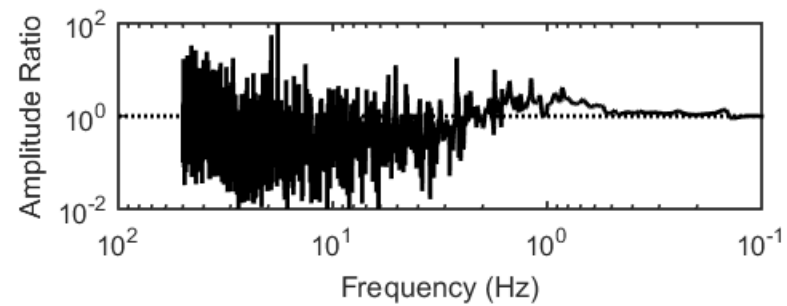
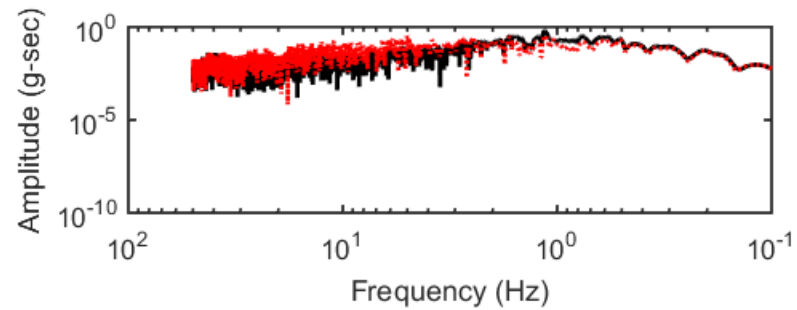
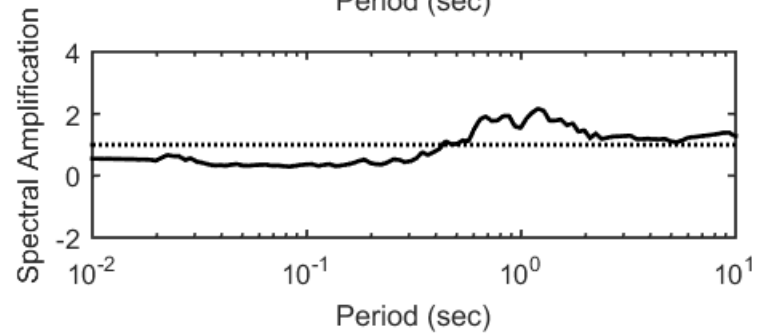
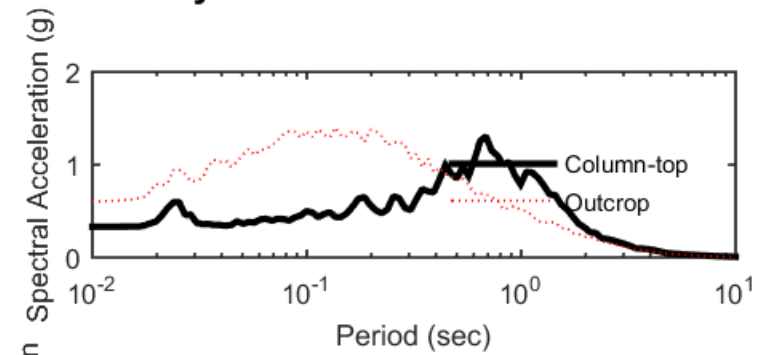
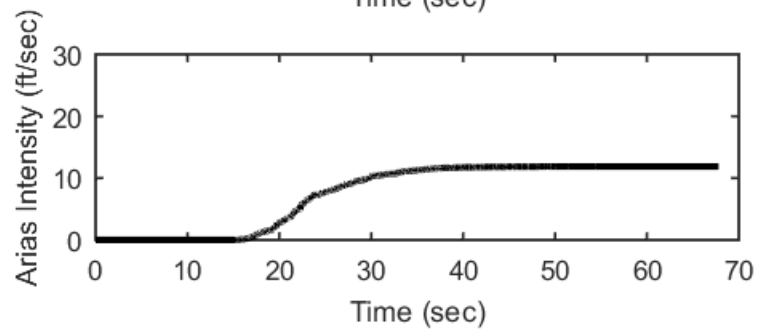
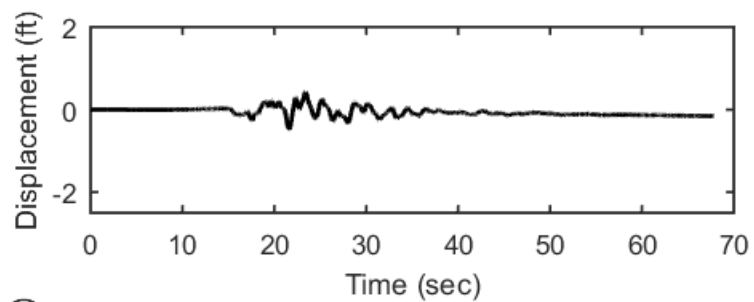
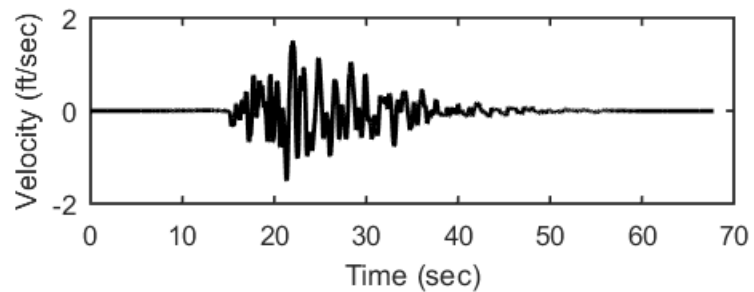
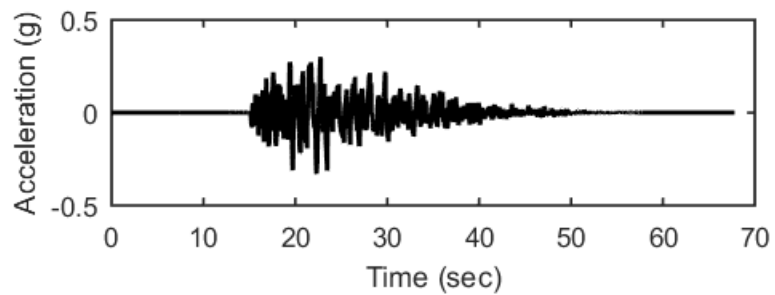




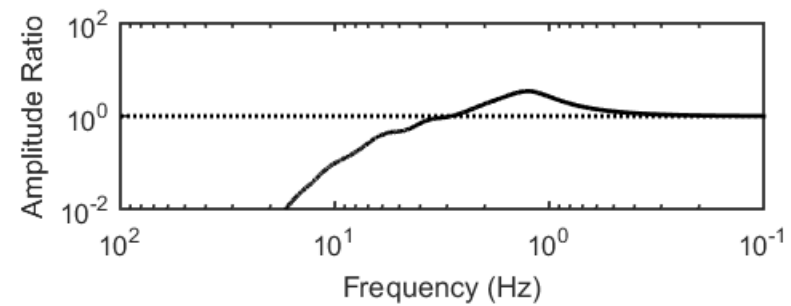
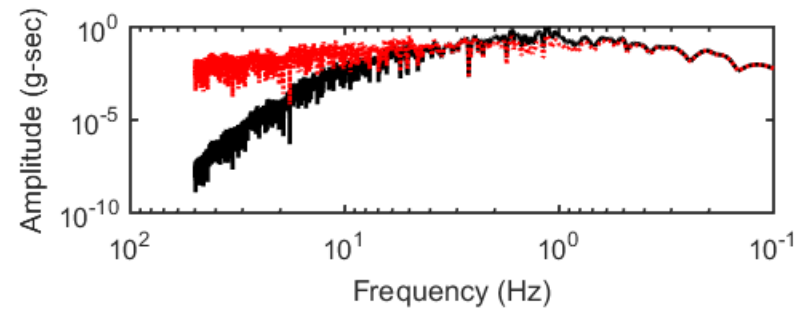
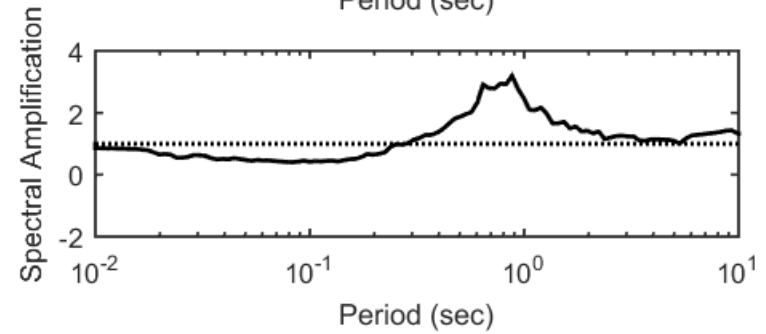
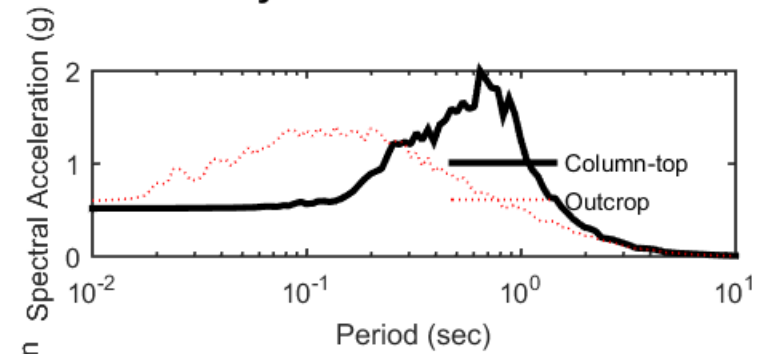
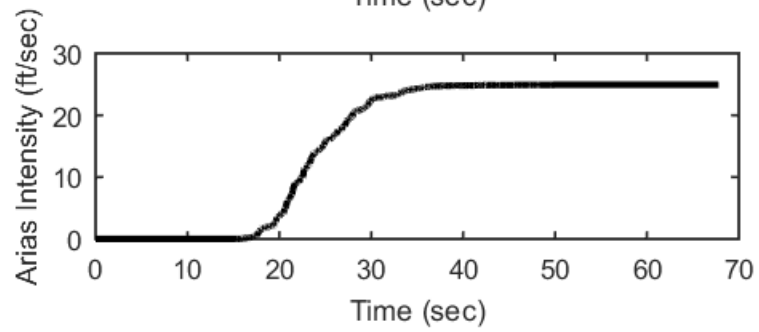
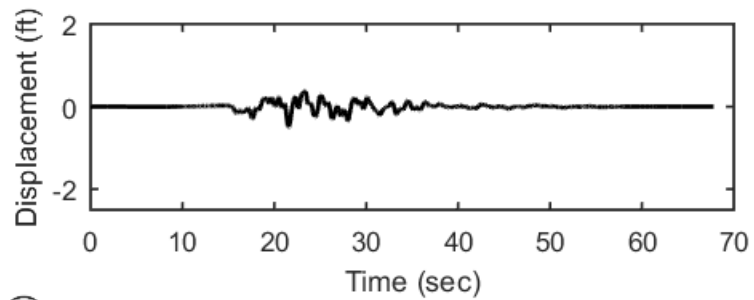
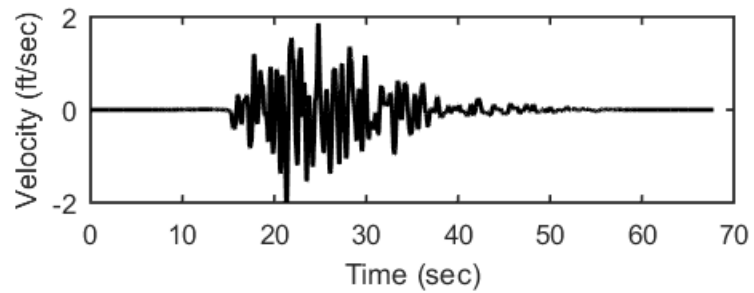
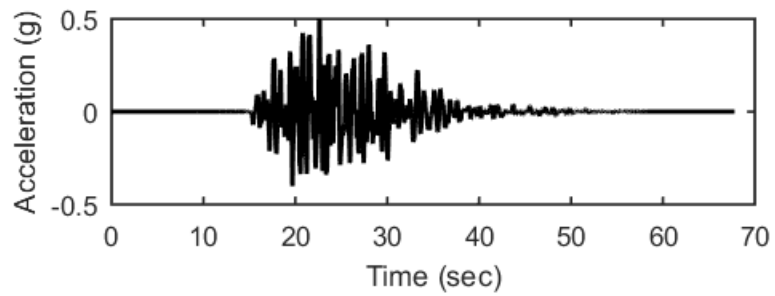
### Profile outputs for Motion: SEE6



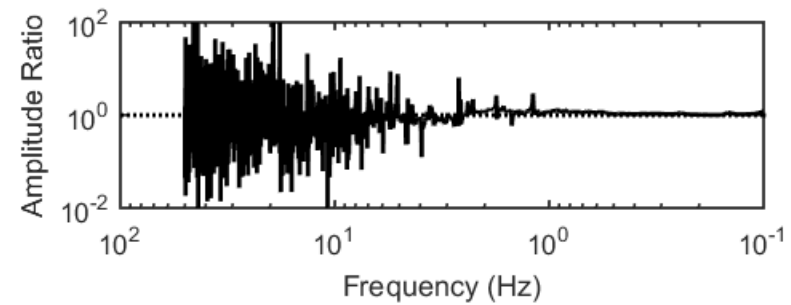
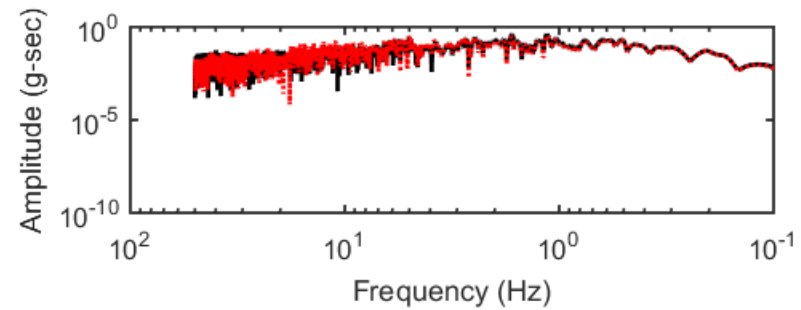
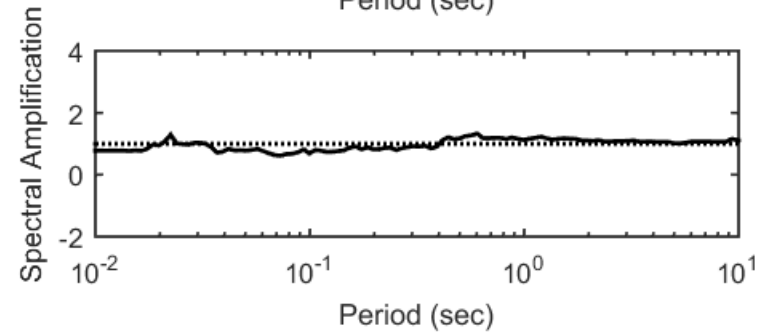
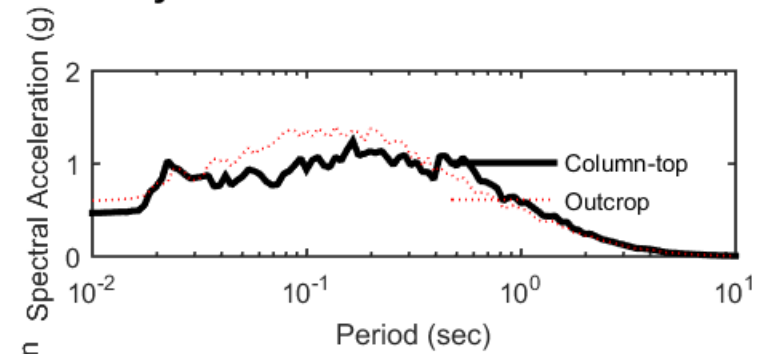
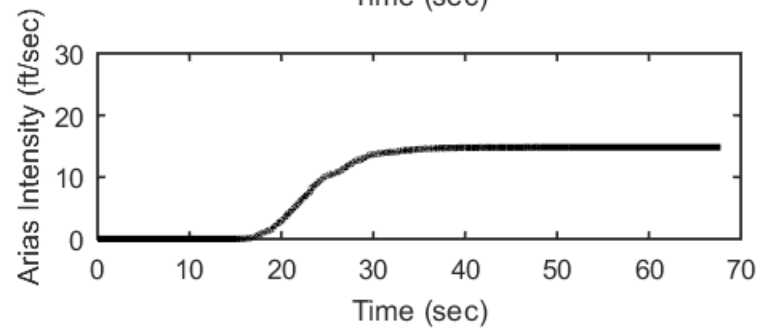
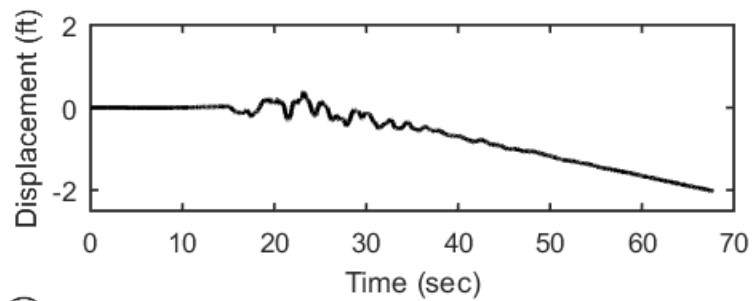
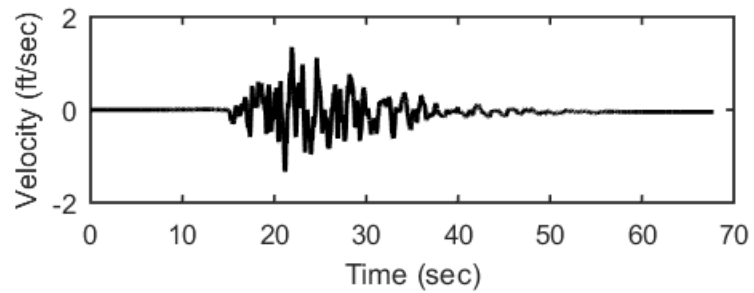
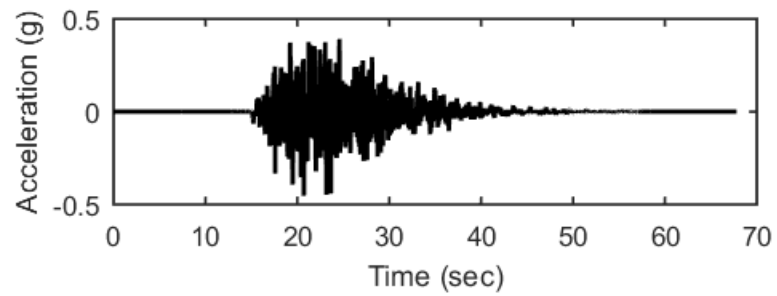
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



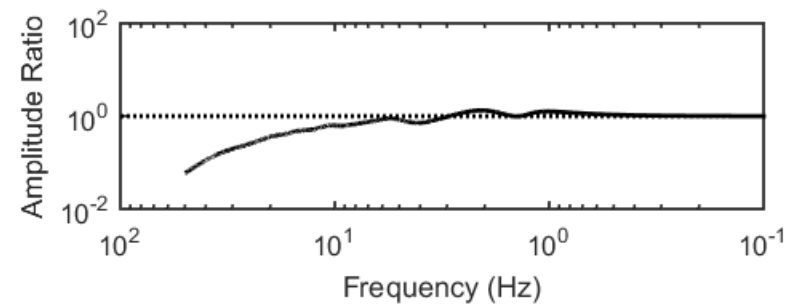
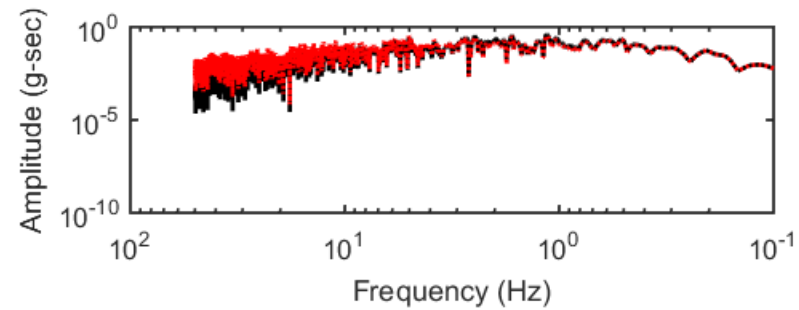
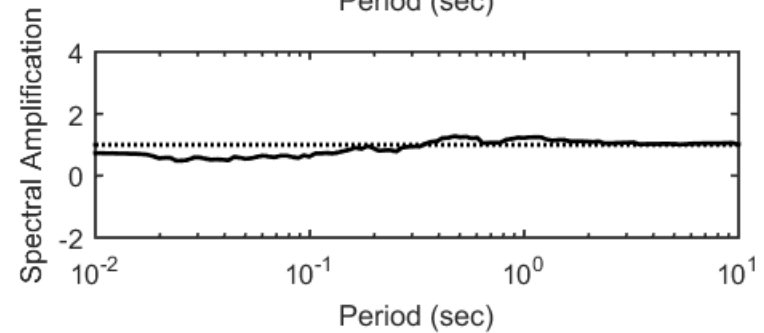
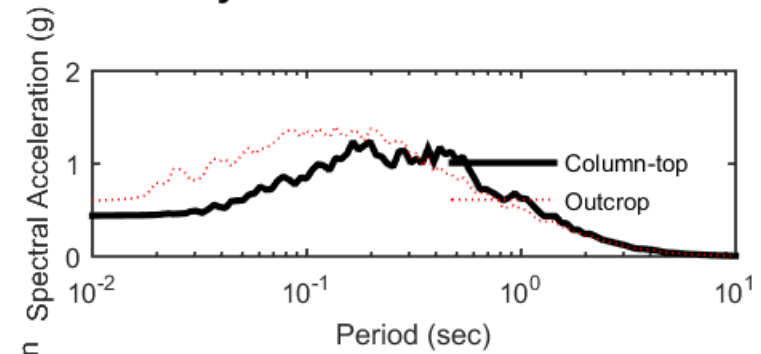
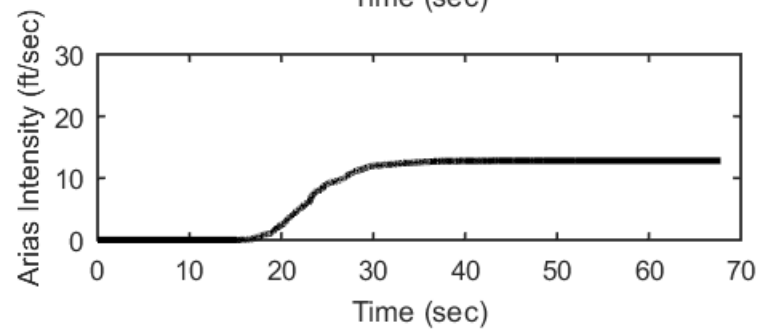
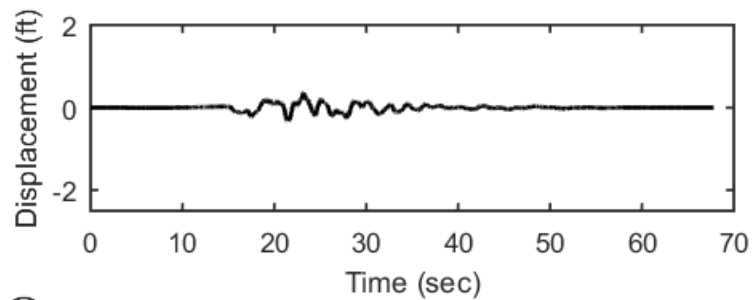
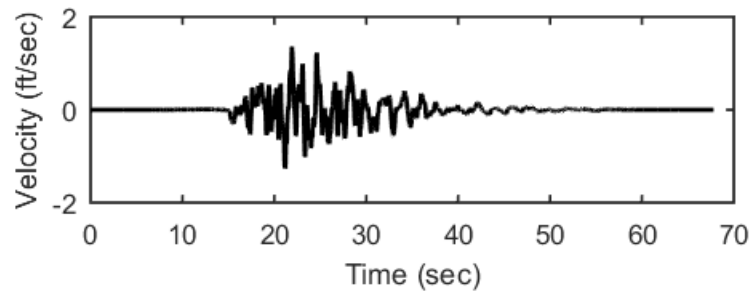
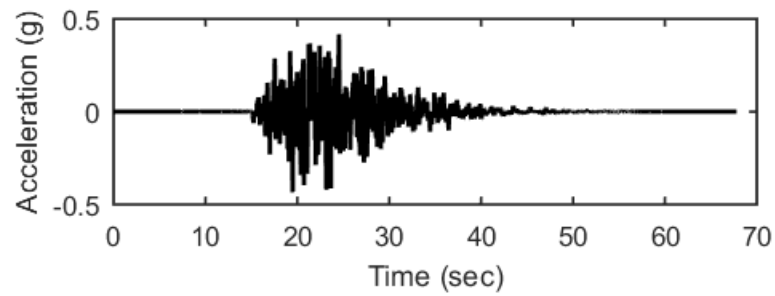
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



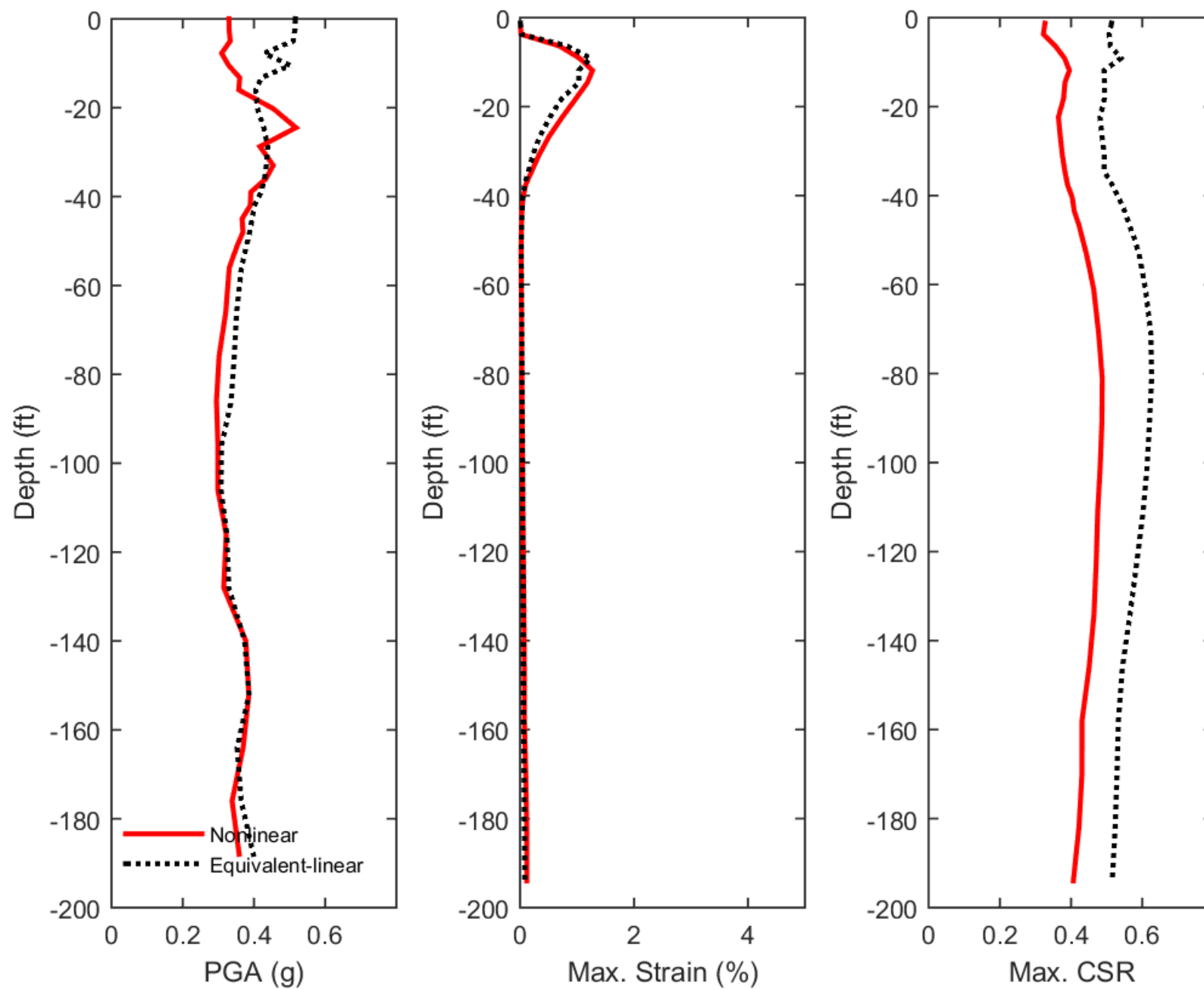
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



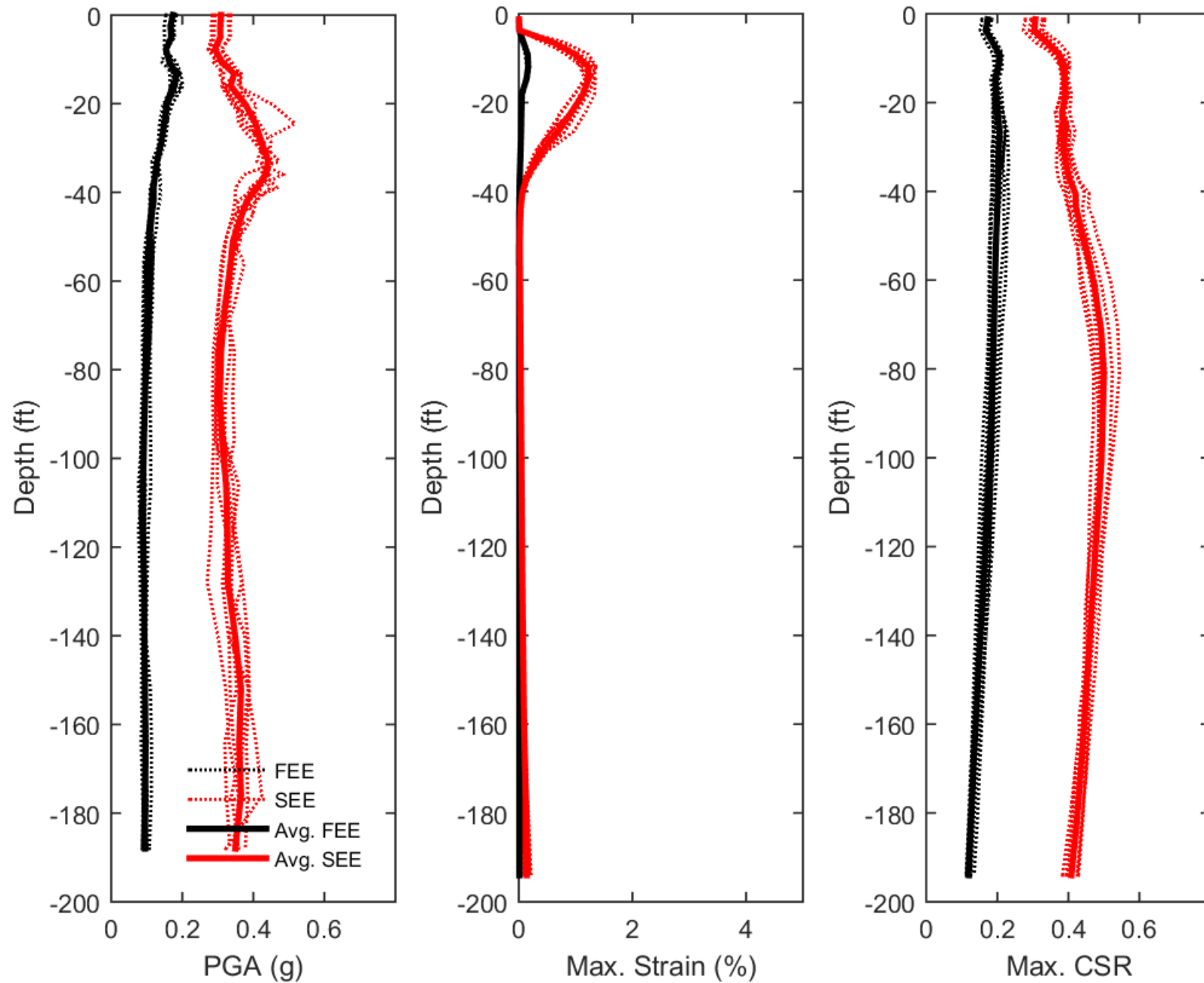
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



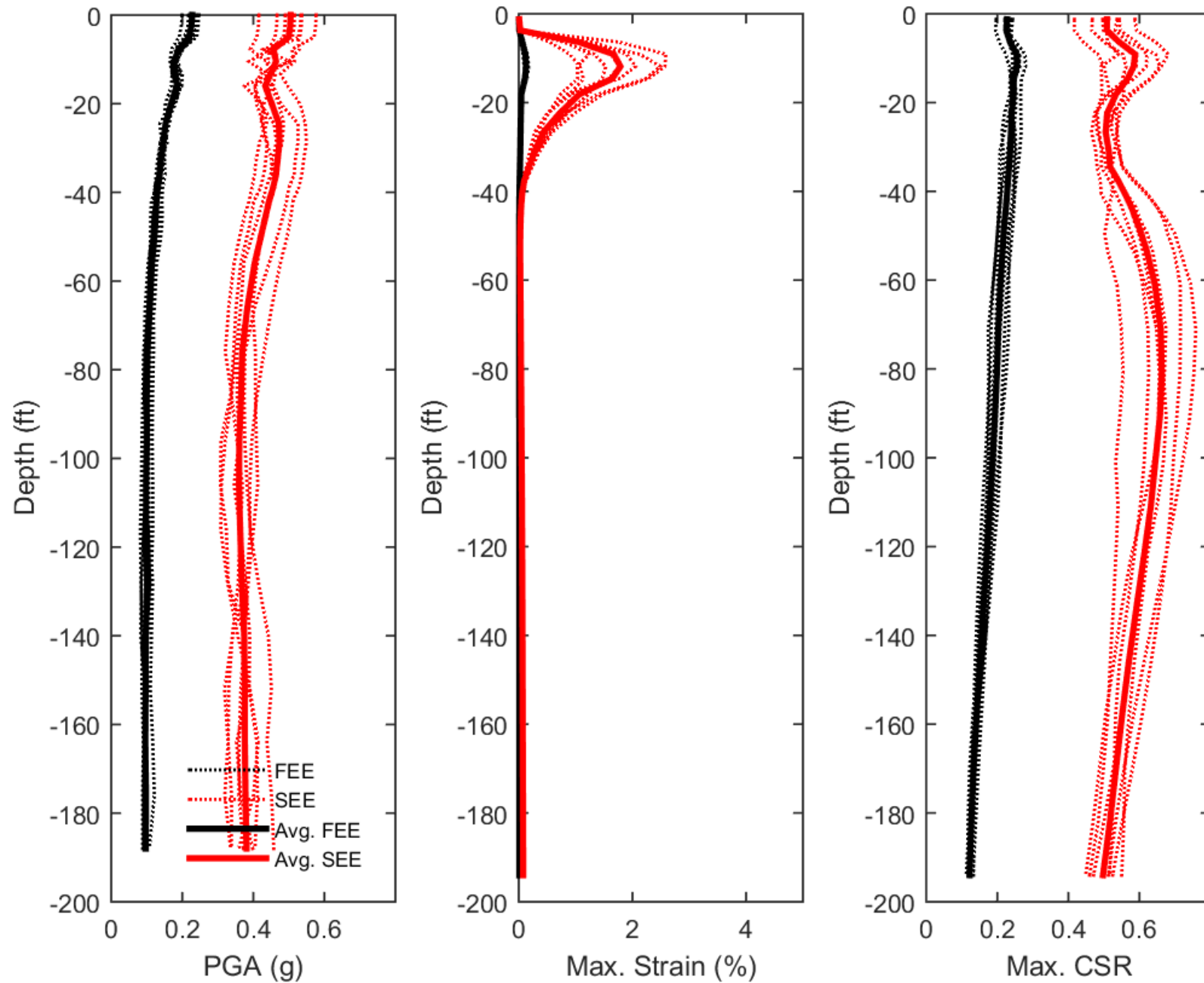
### Profile outputs for Motion: SEE7



## Summary of the profile outputs for Nonlinear analysis

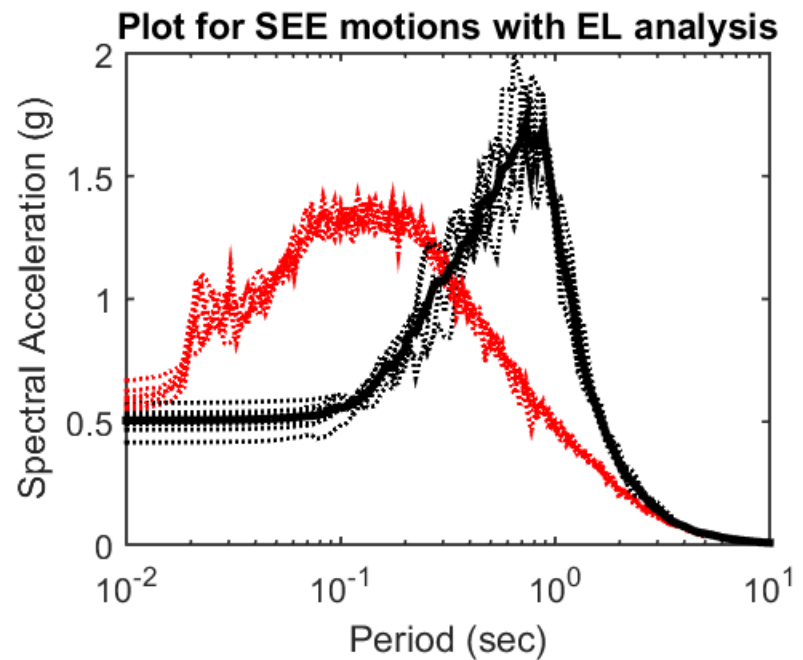
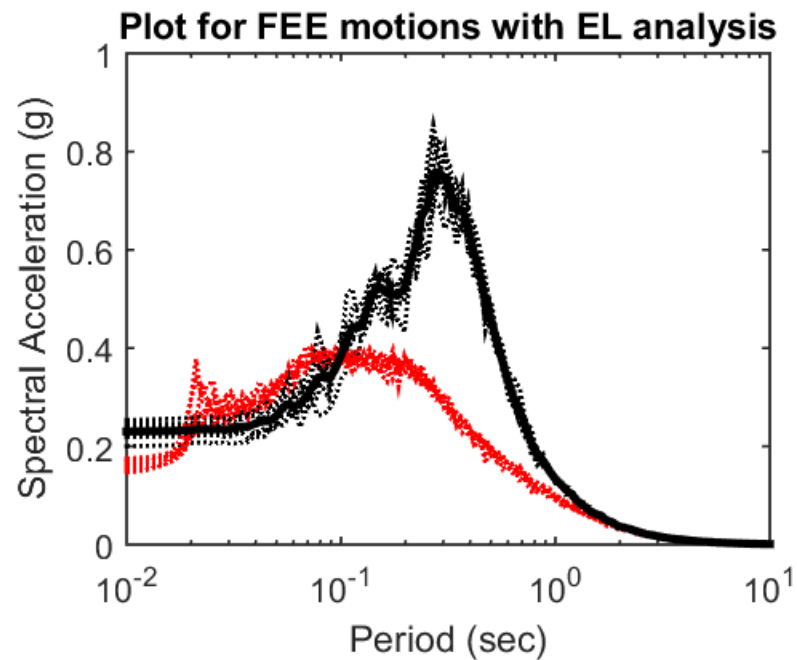
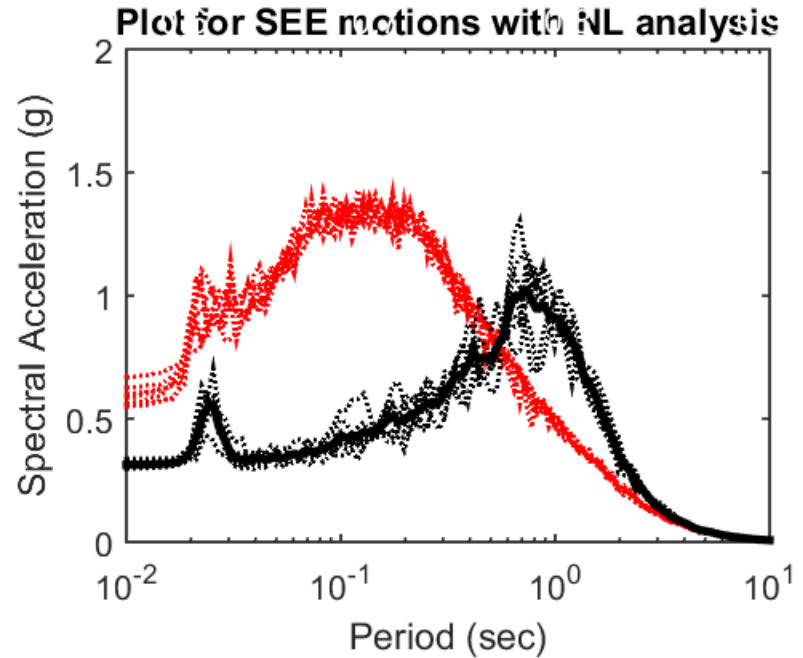
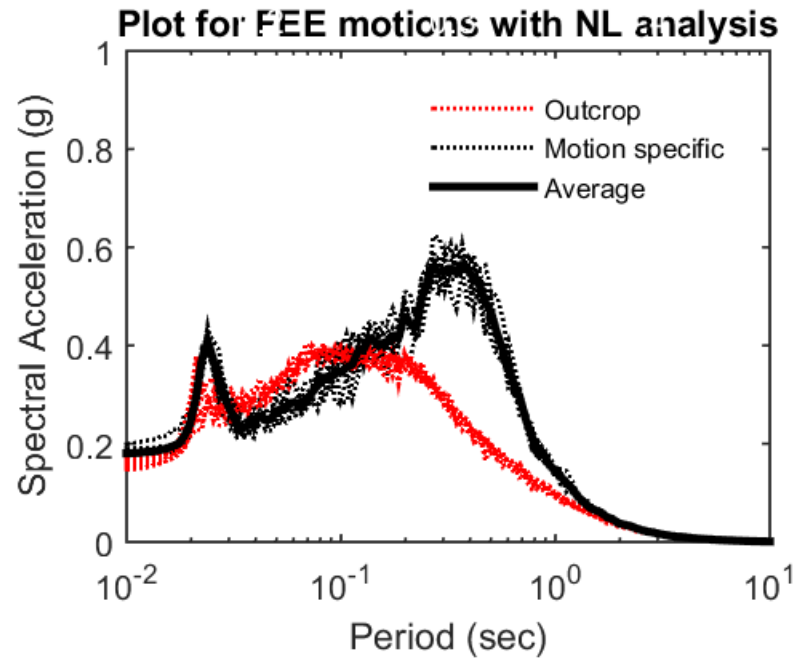


## Summary of the profile outputs for Equivalent-linear analysis

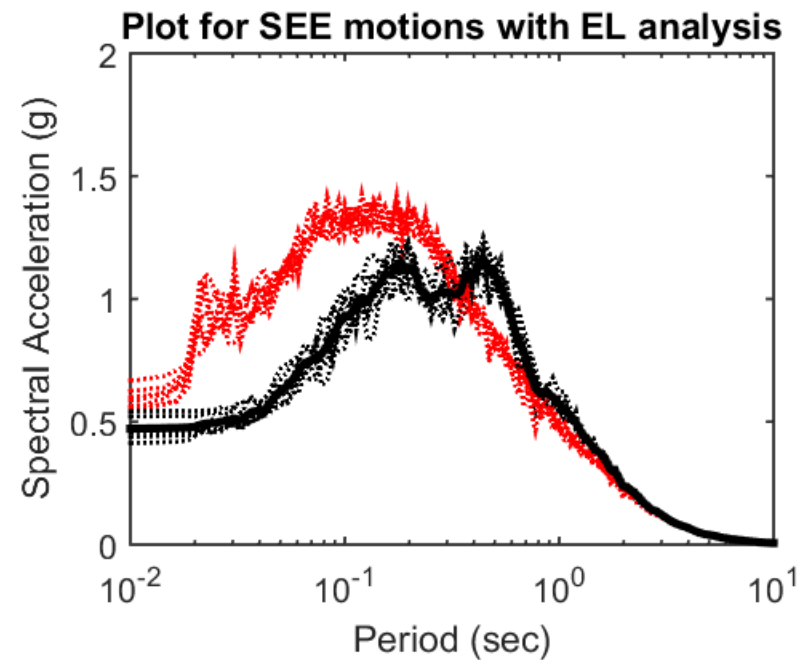
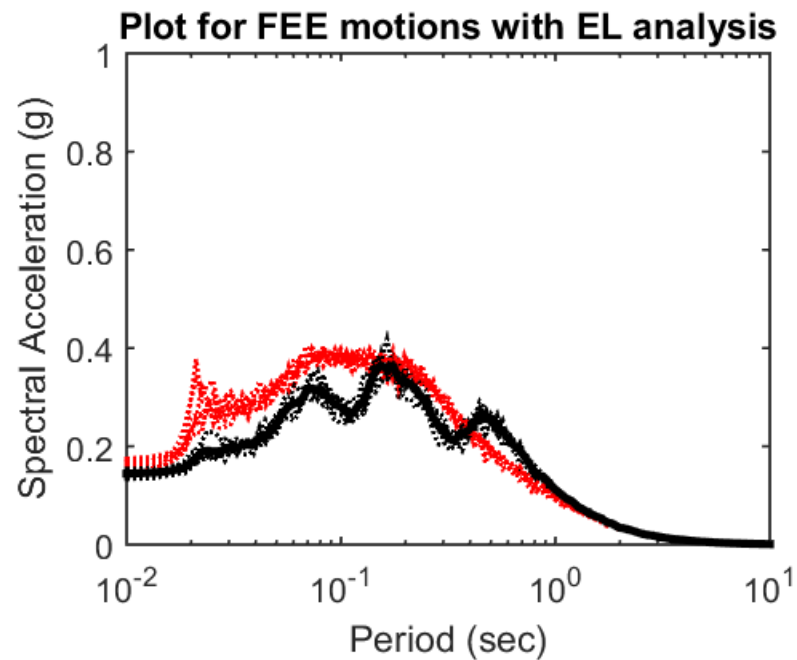
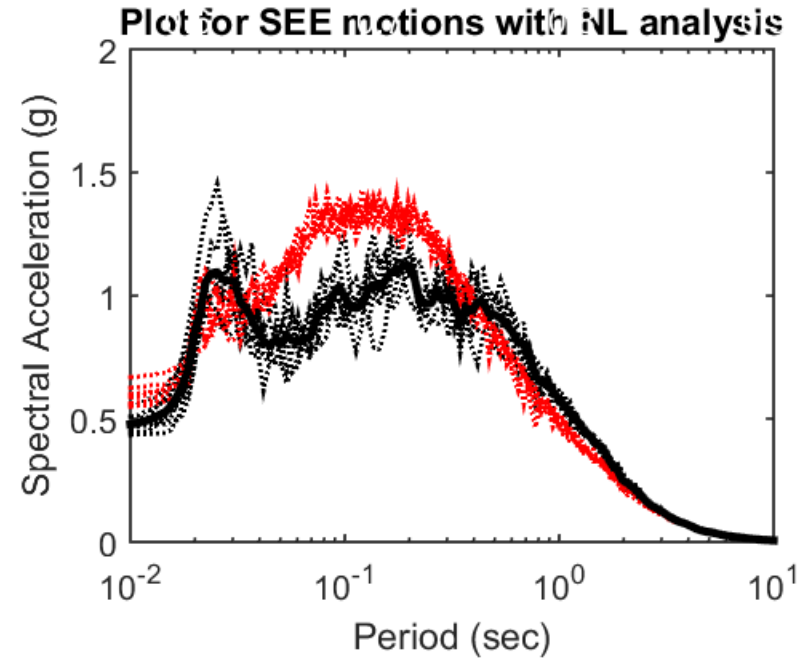
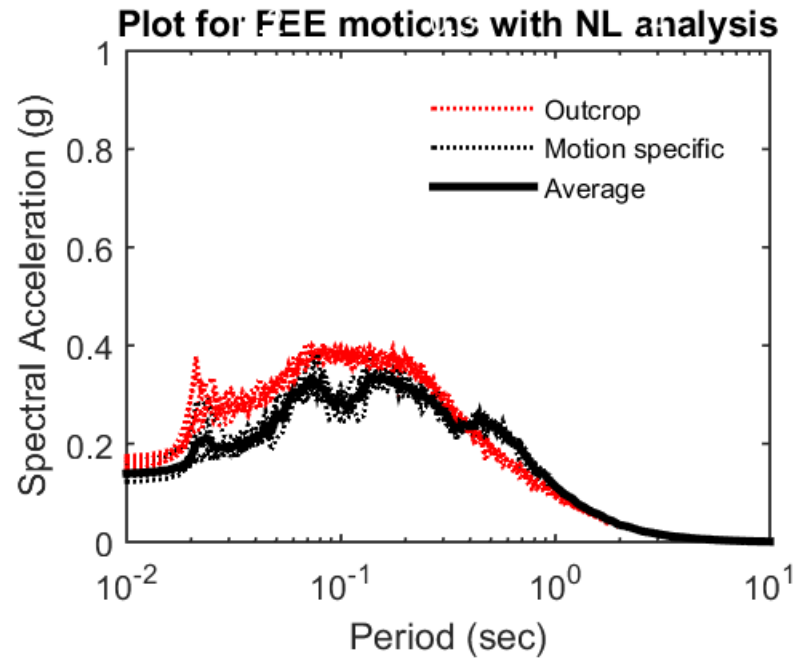




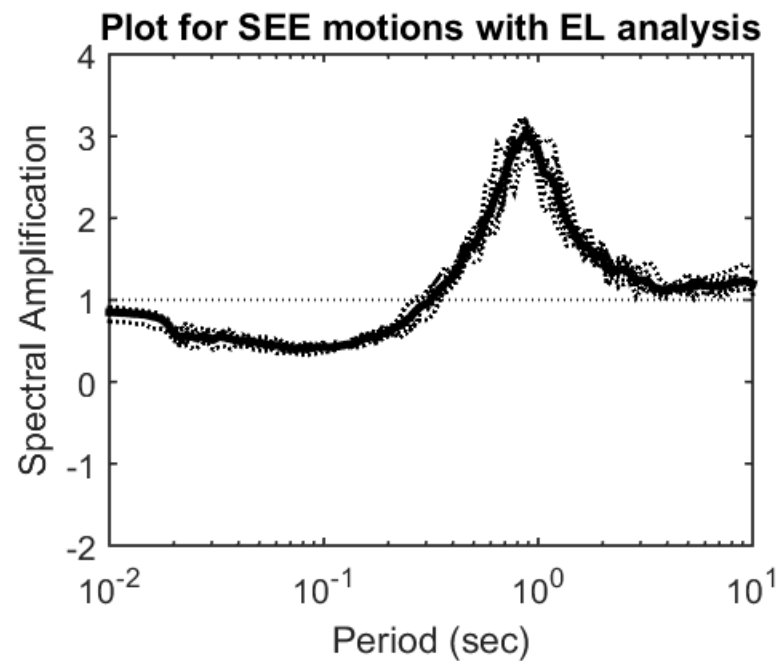
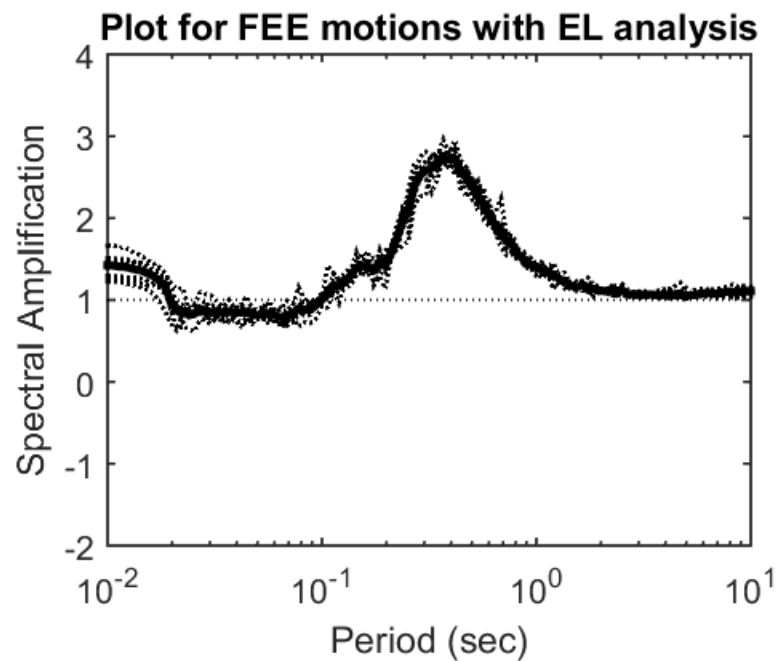
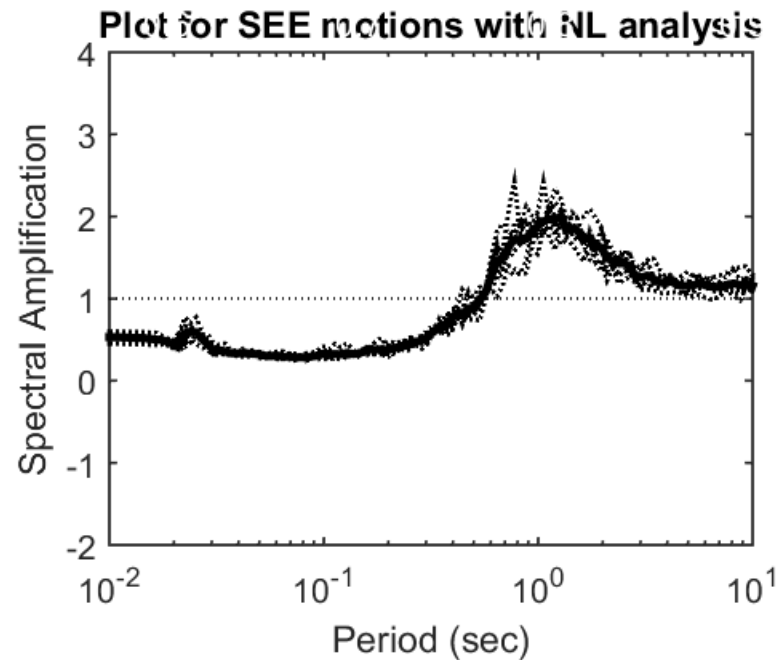
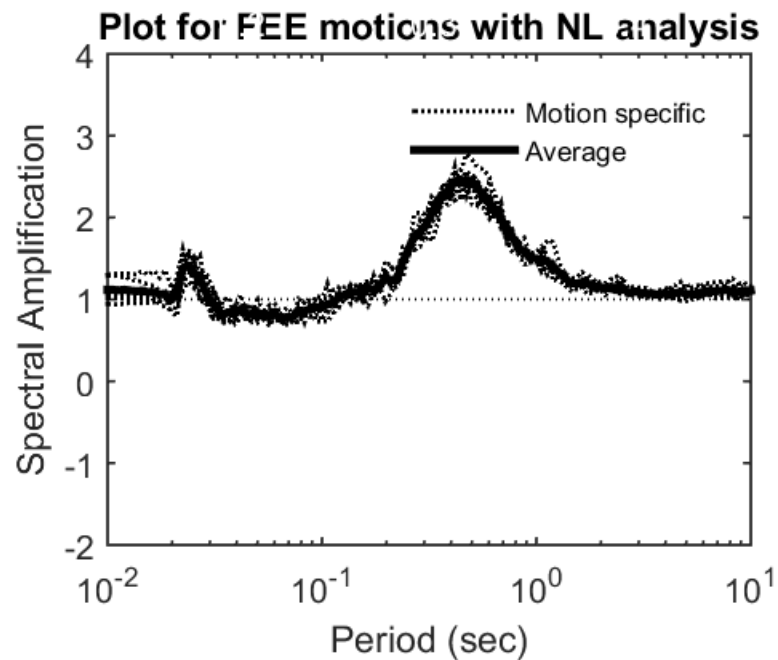
## Summary plots: RSA at ground surface



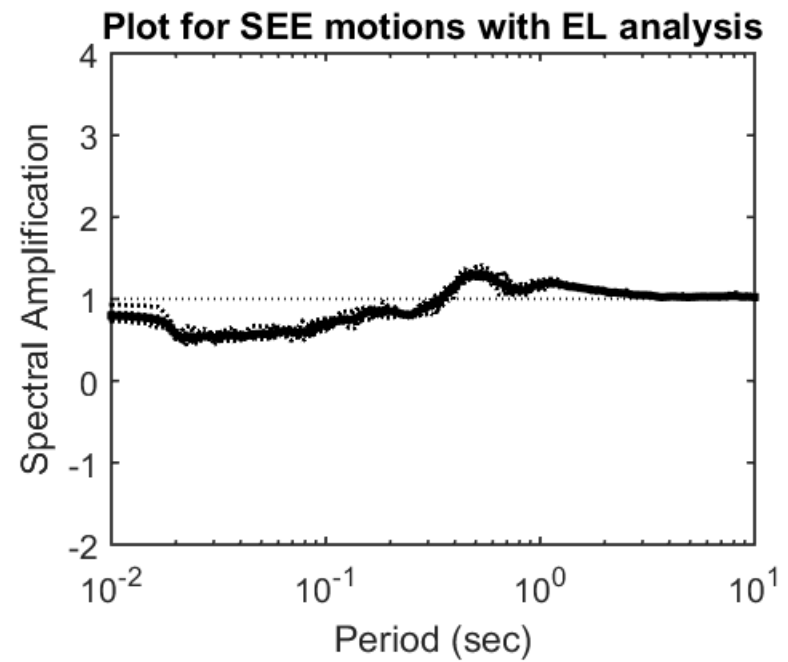
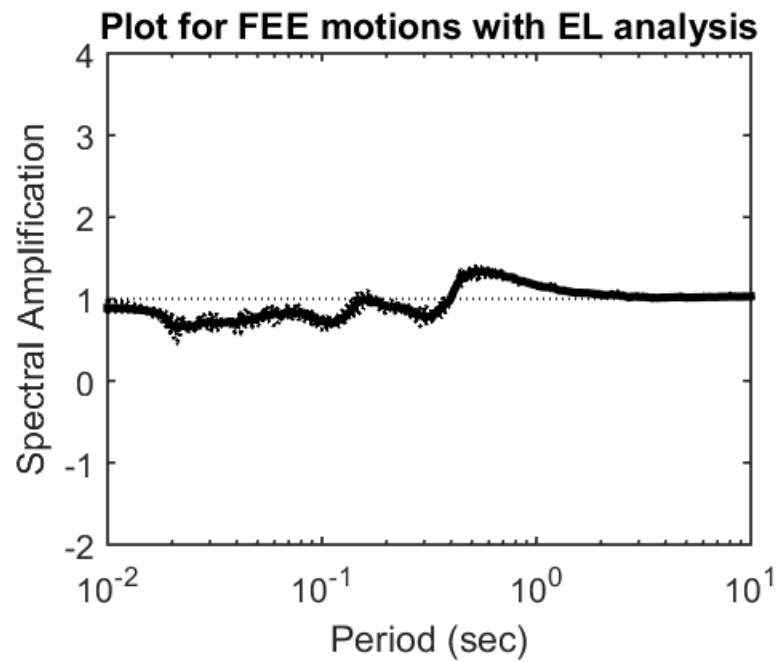
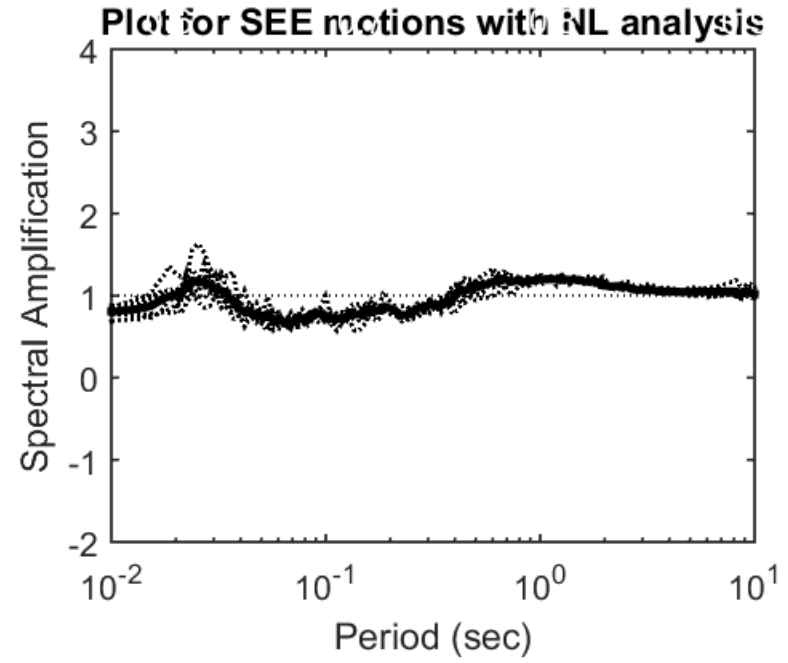
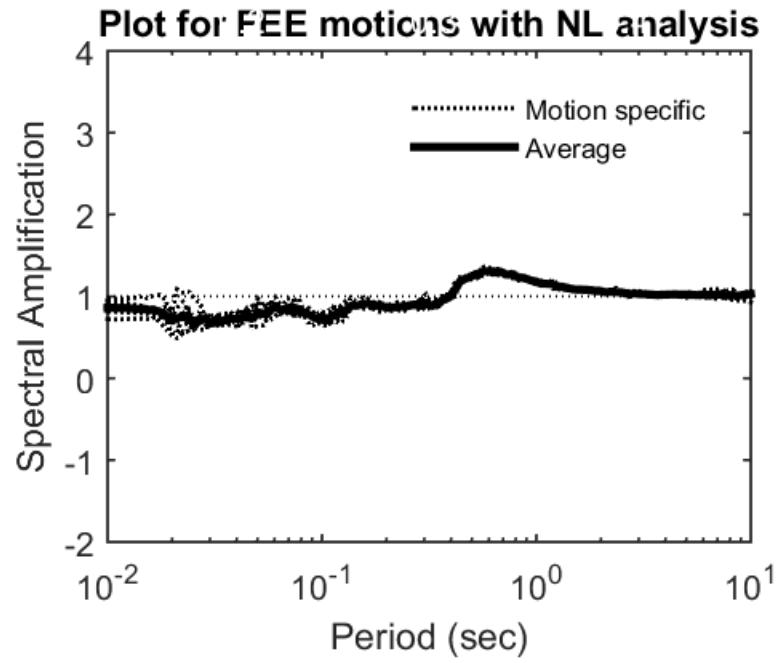
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

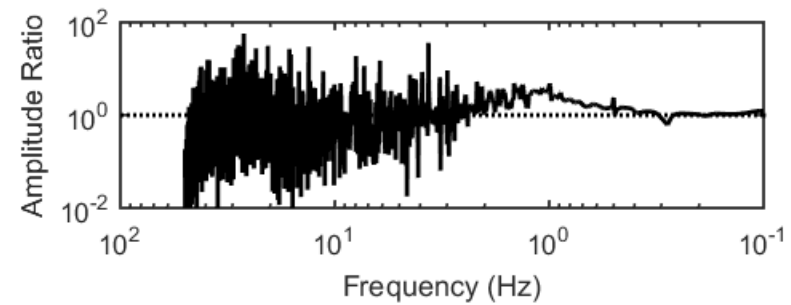
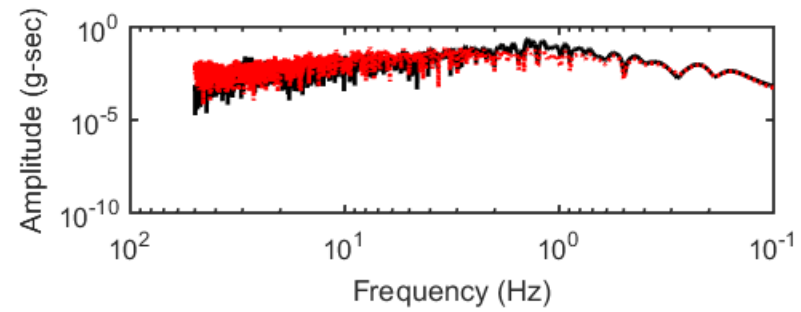
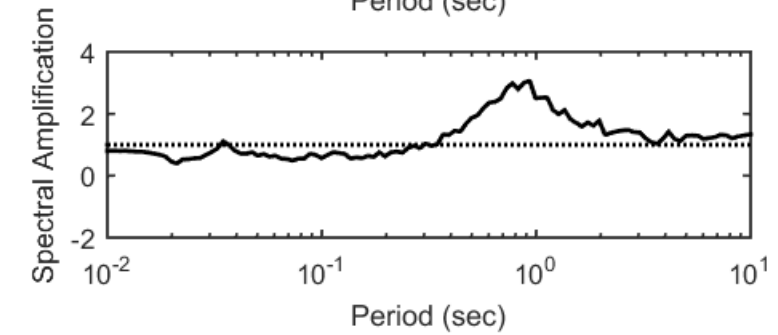
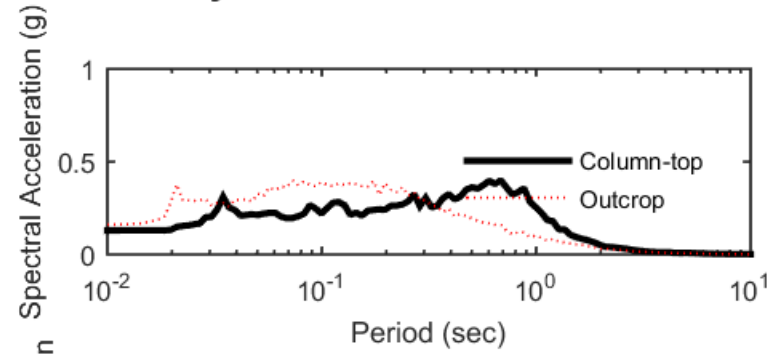
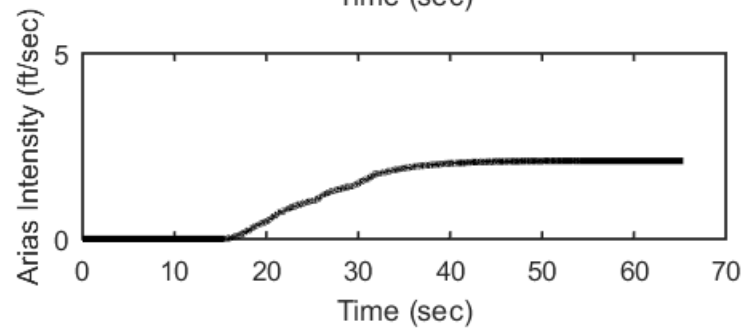
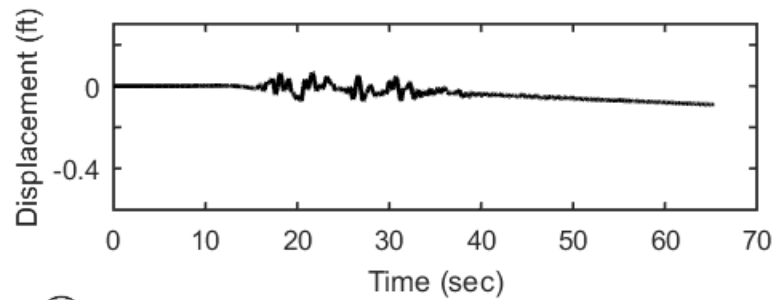
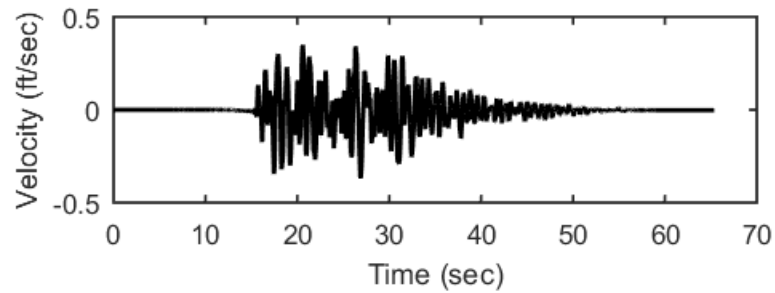
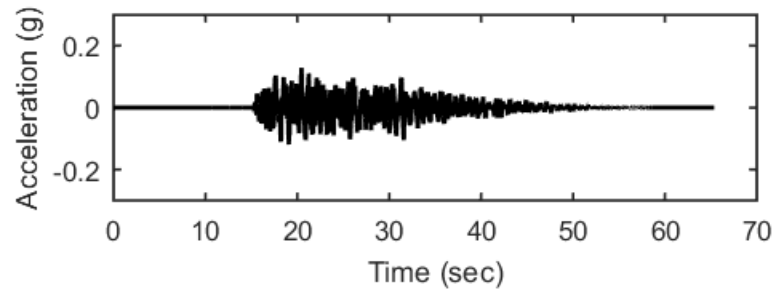


## Summary plots: Spectral amplification at top of Marl

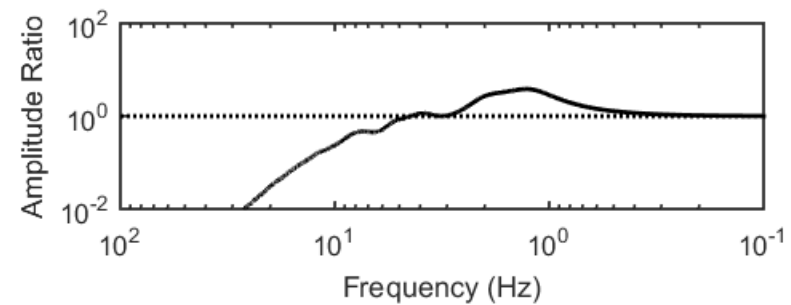
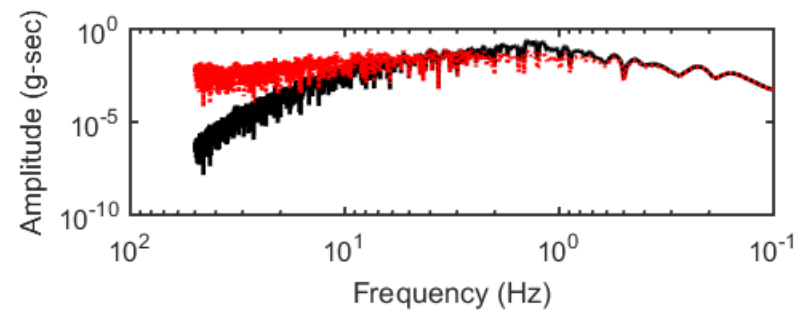
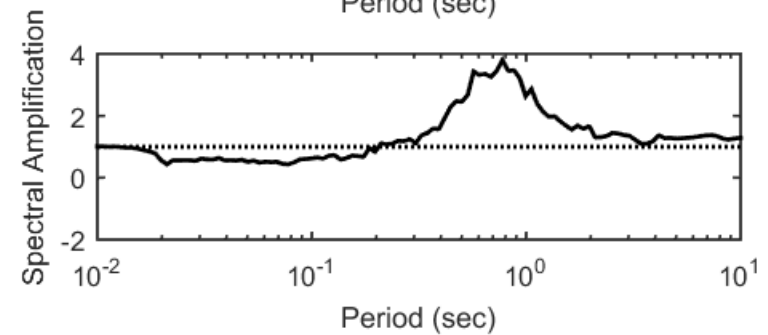
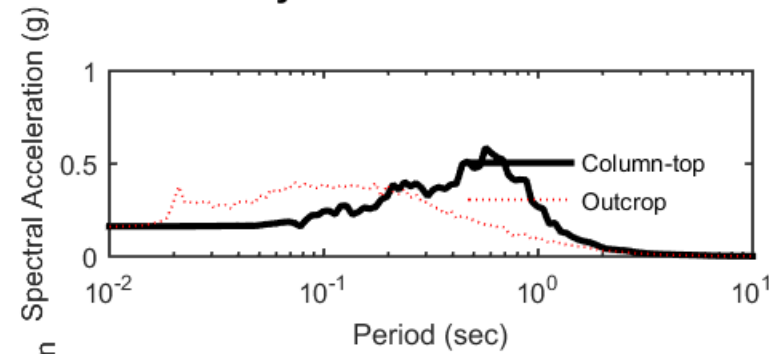
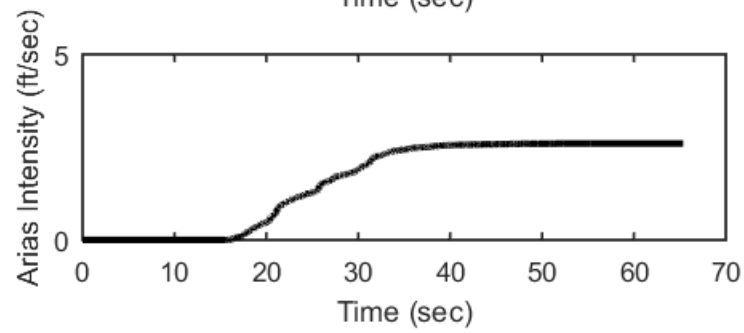
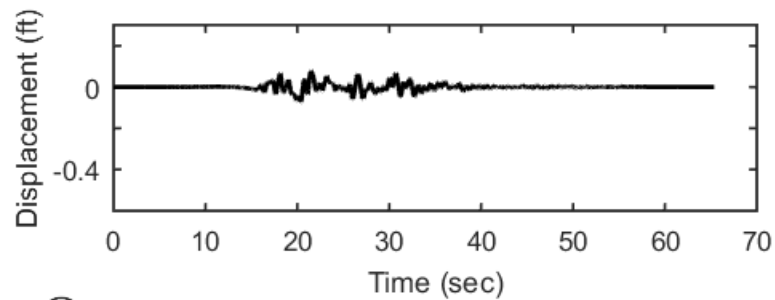
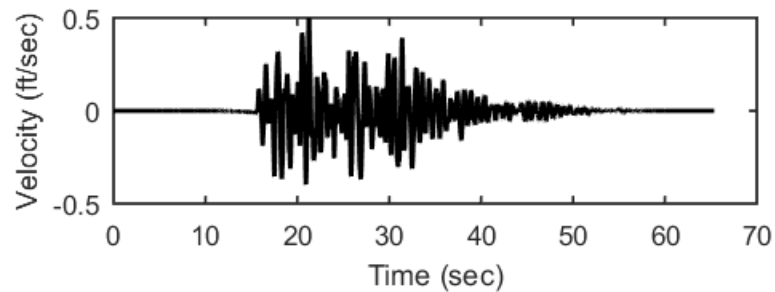
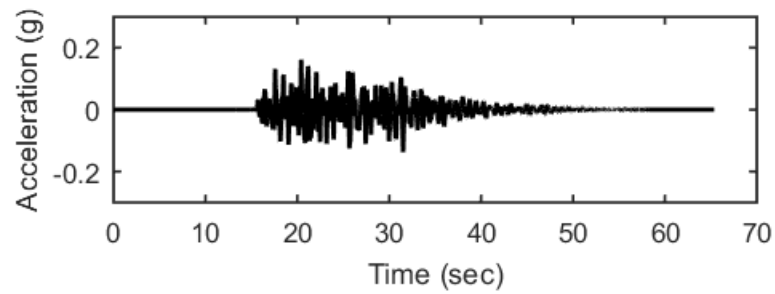


## **BASE MODEL AND LOW SHEAR WAVE**

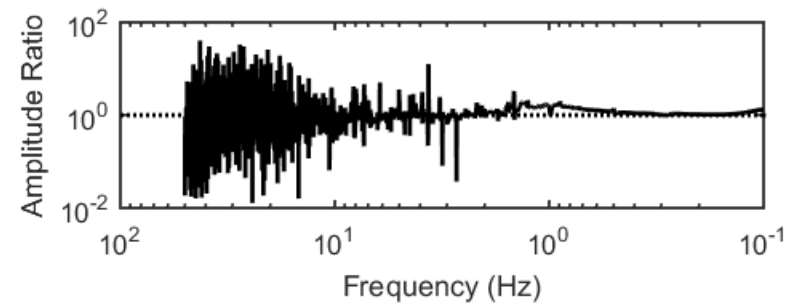
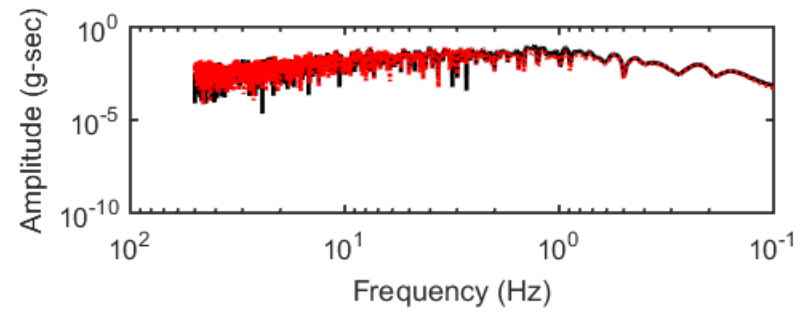
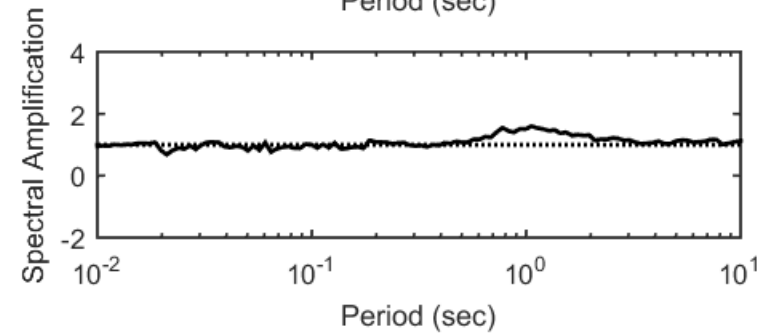
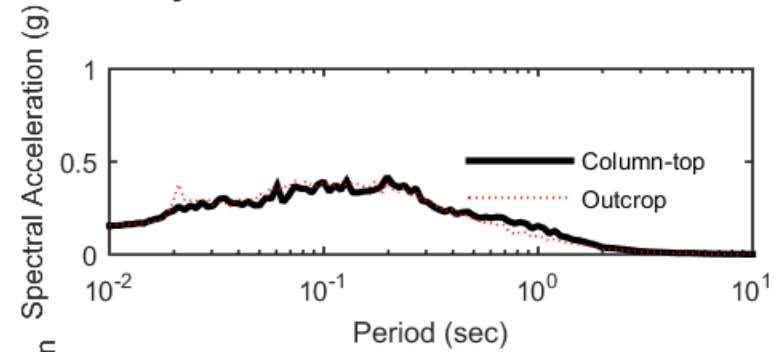
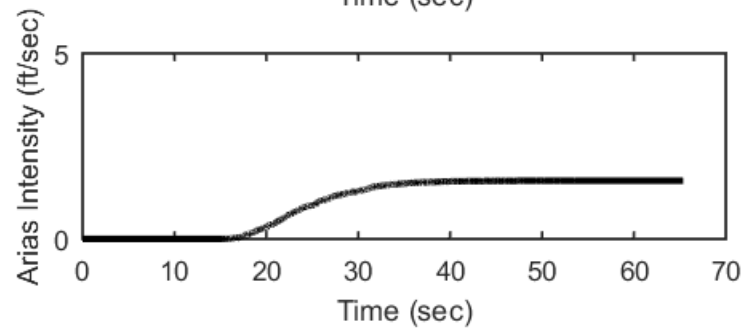
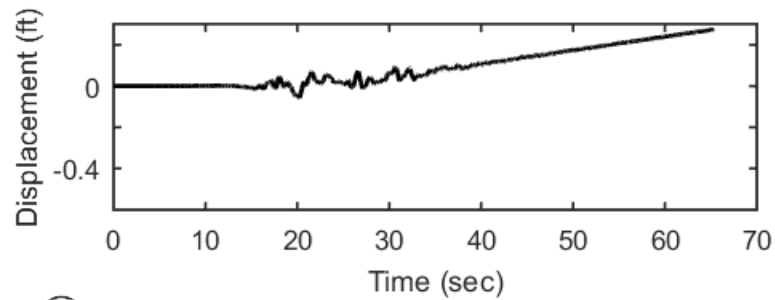
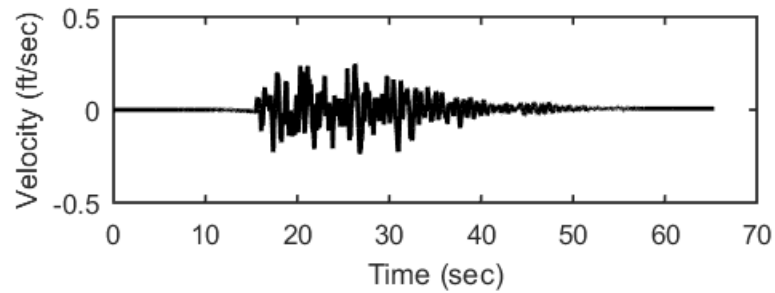
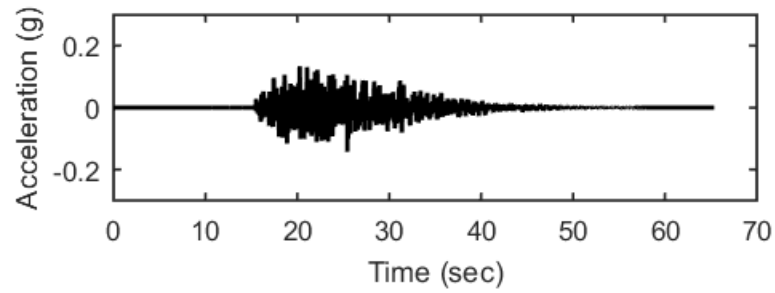
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1

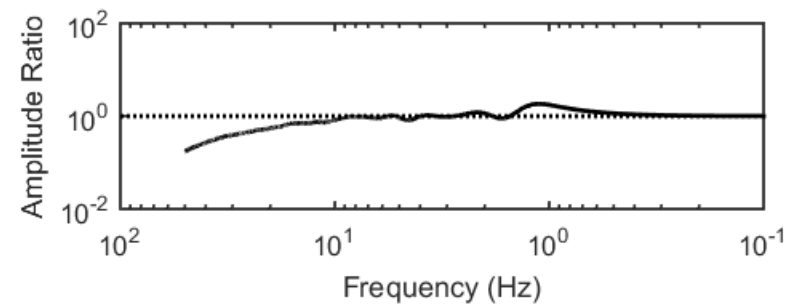
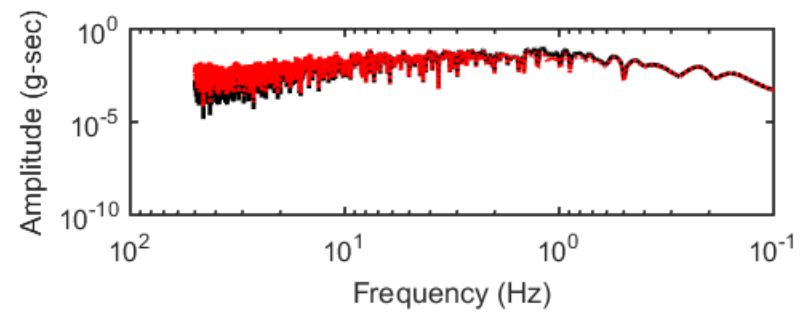
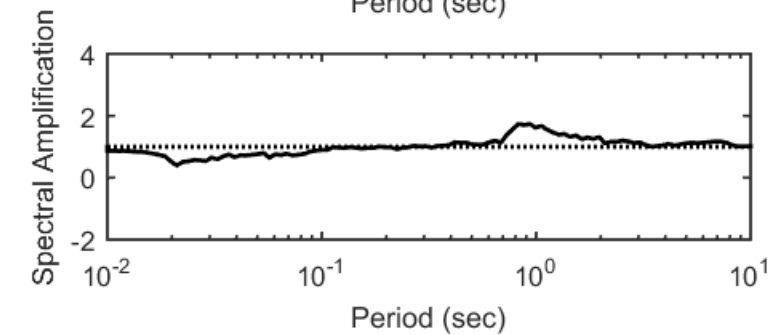
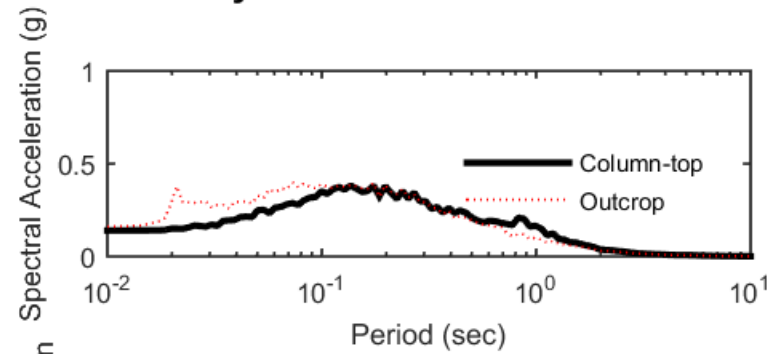
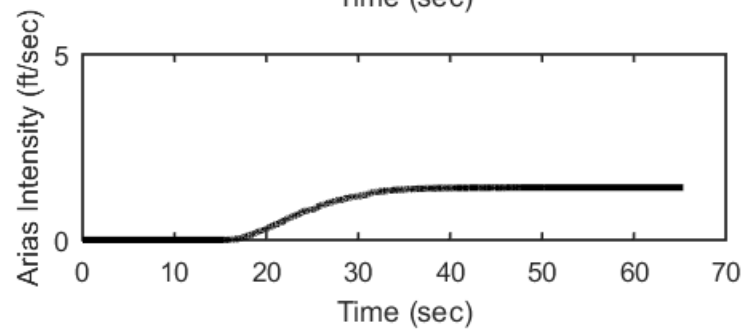
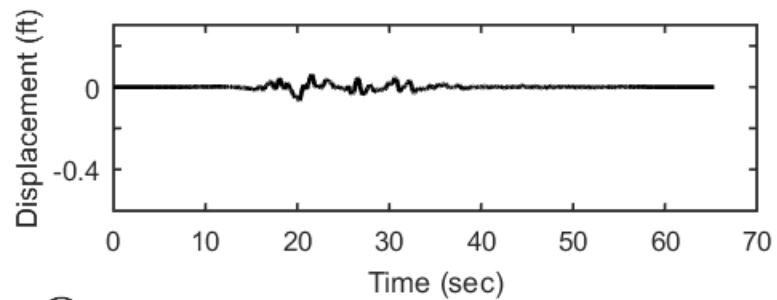
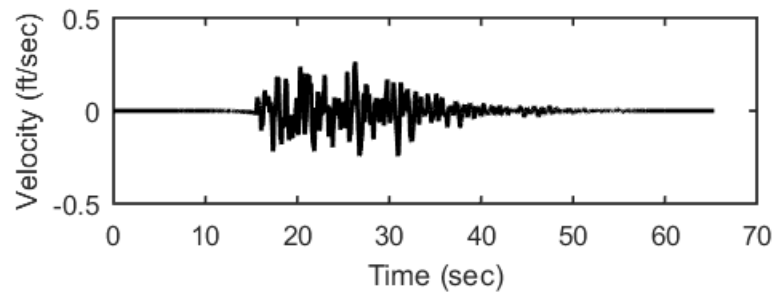
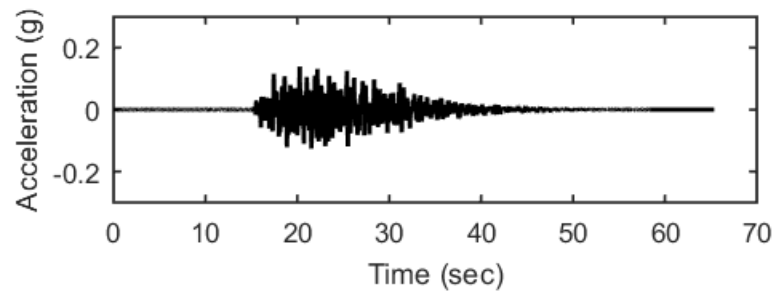


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1

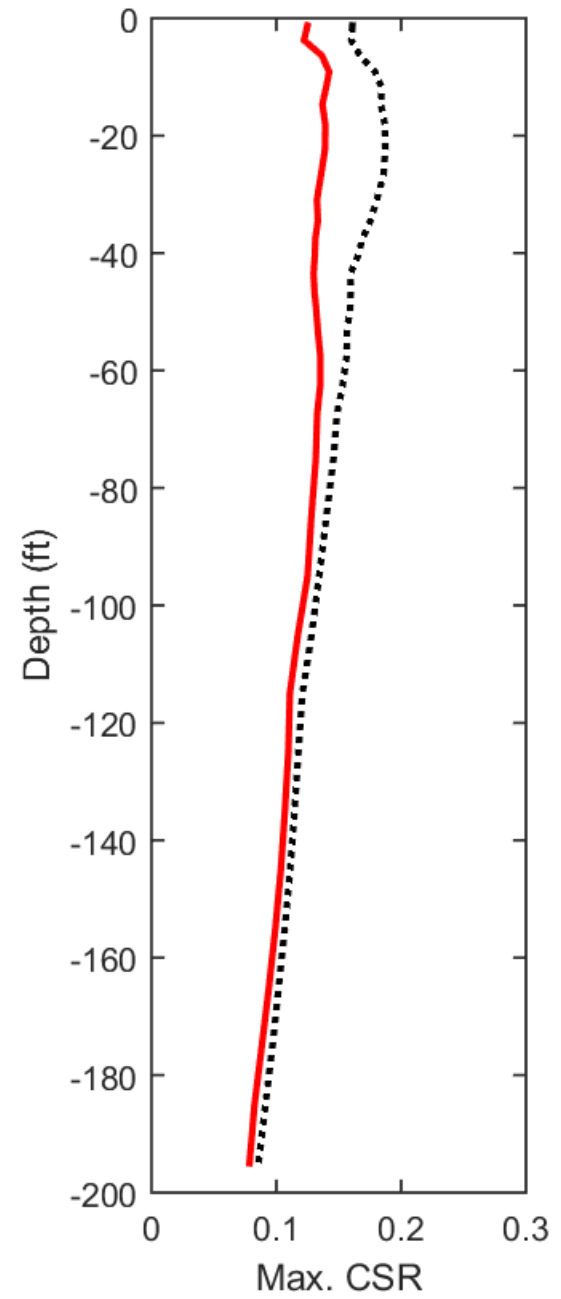
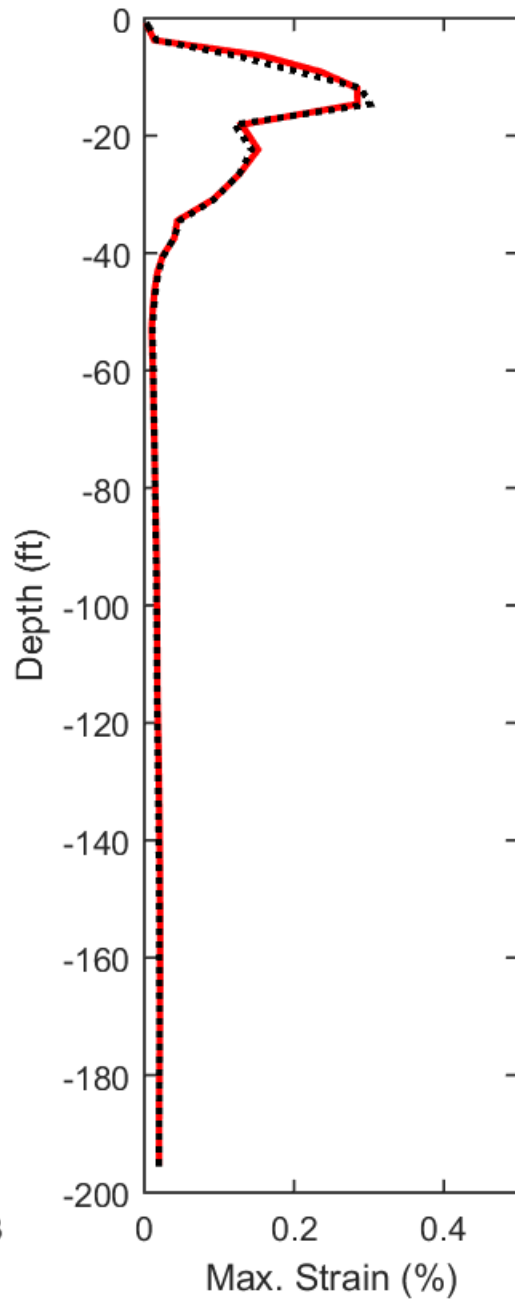
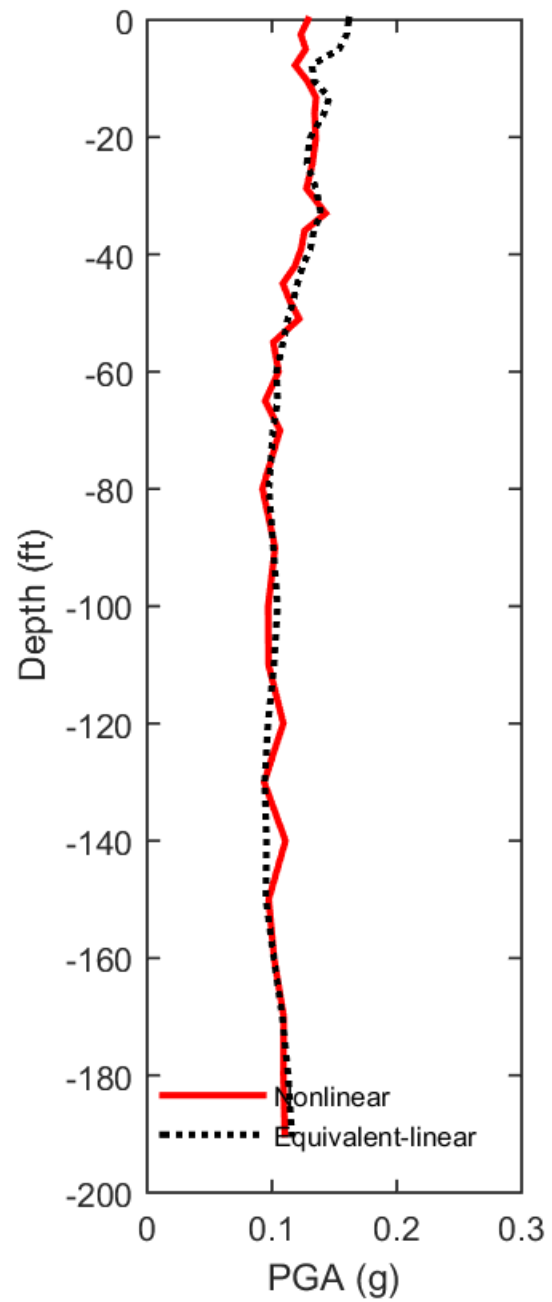




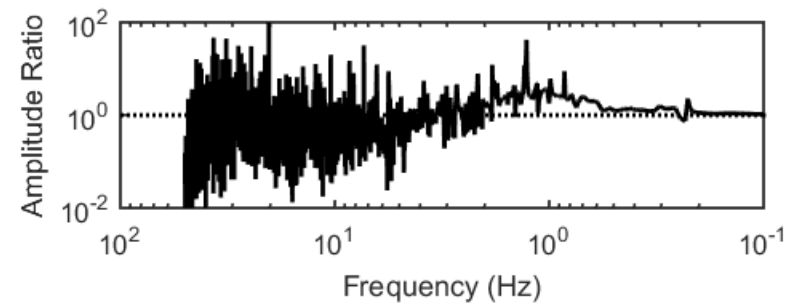
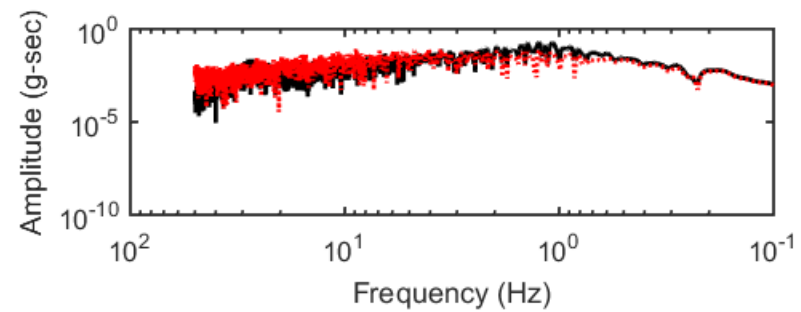
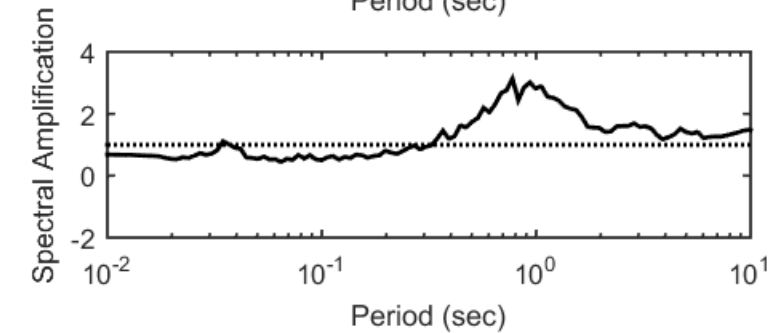
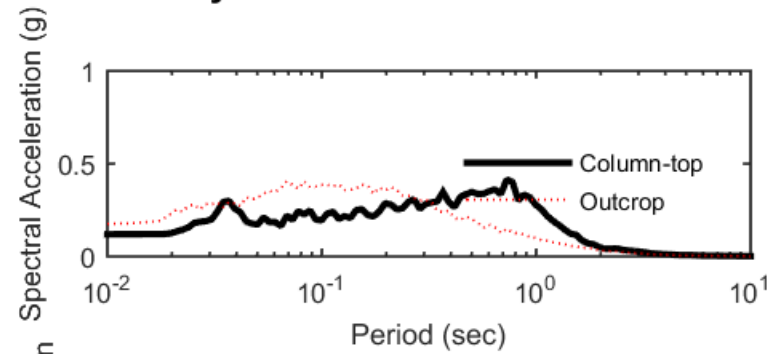
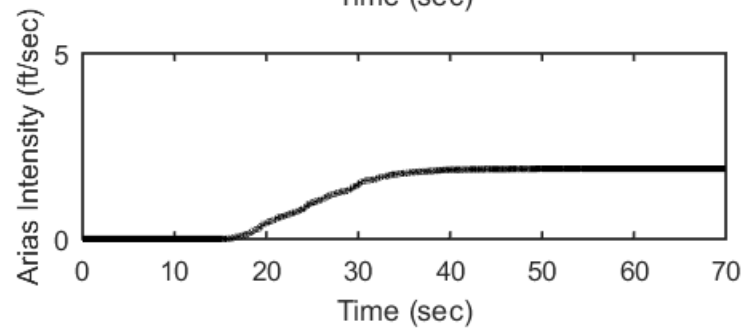
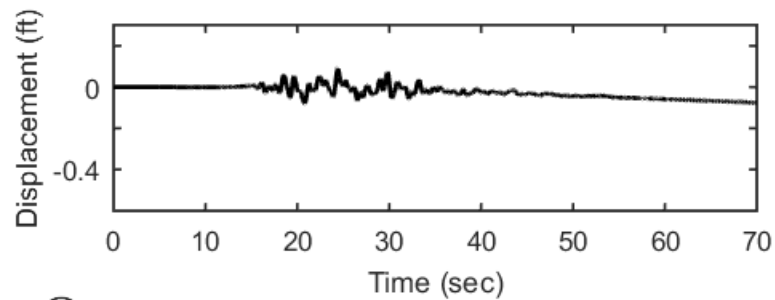
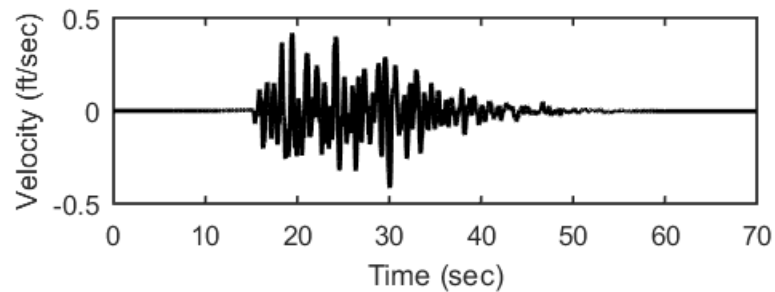
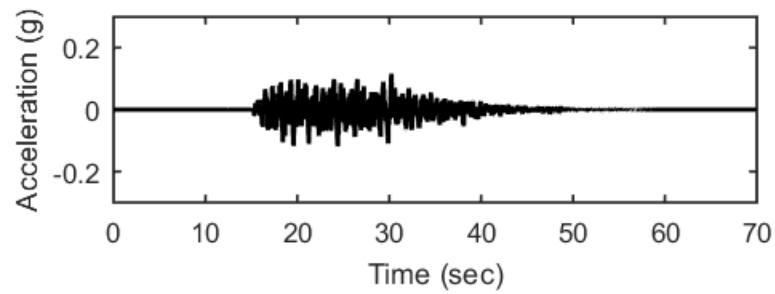
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



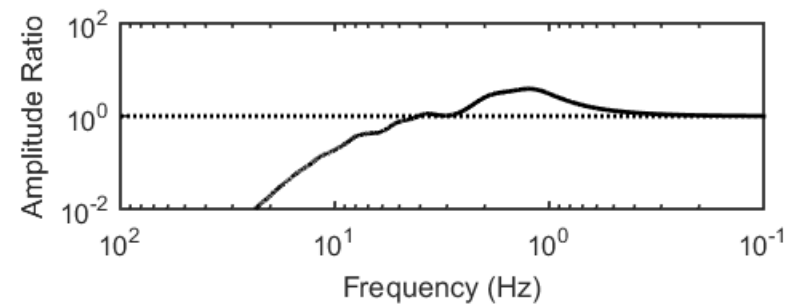
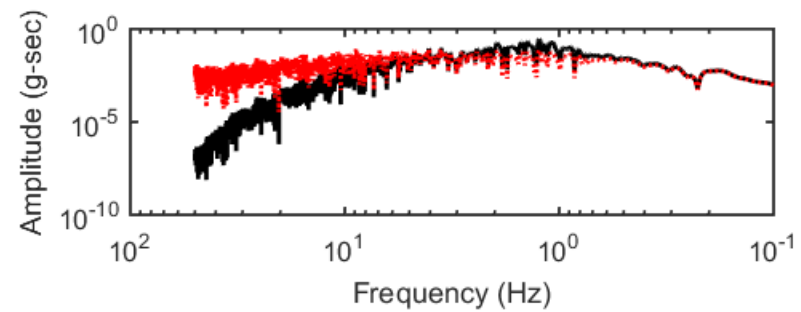
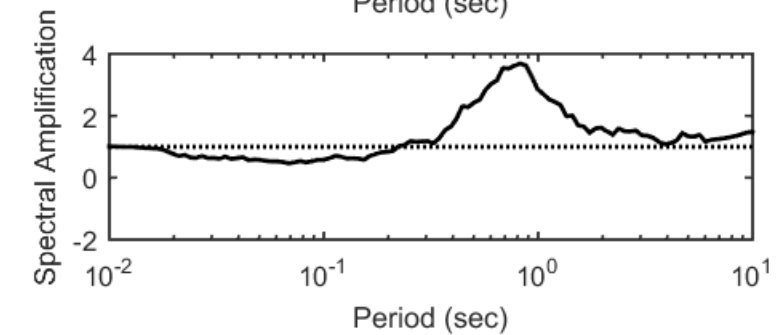
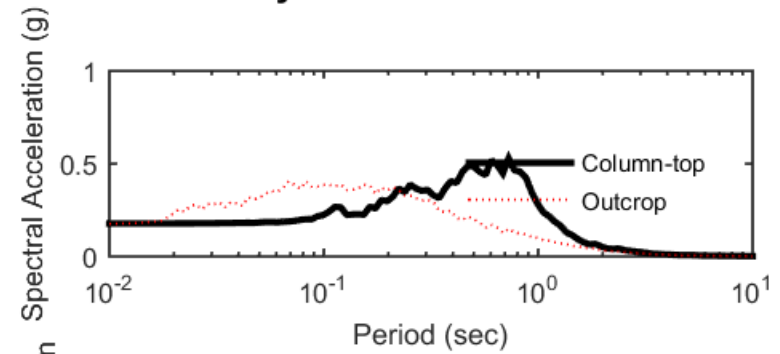
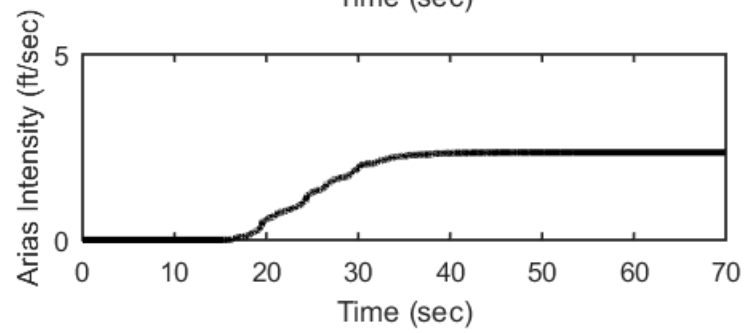
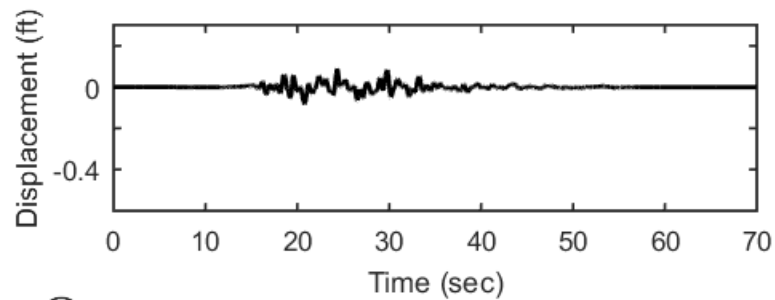
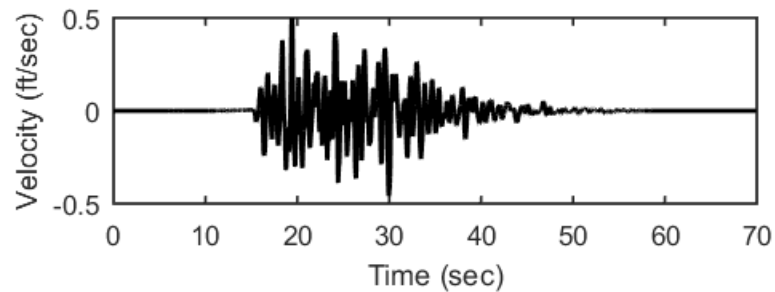
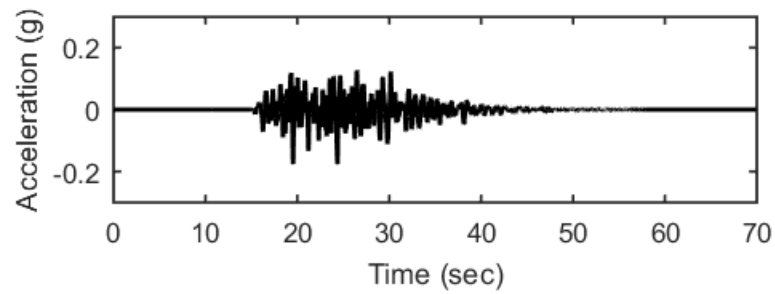
### Profile outputs for Motion: FEE1



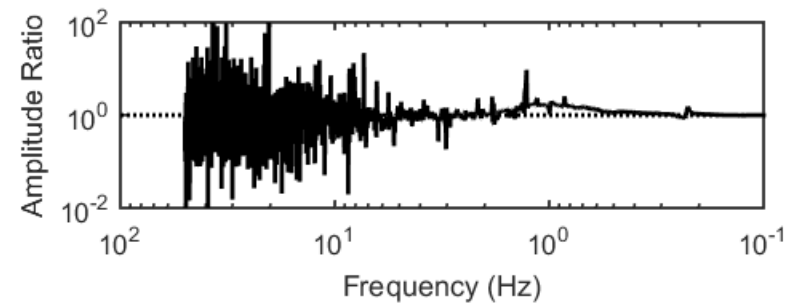
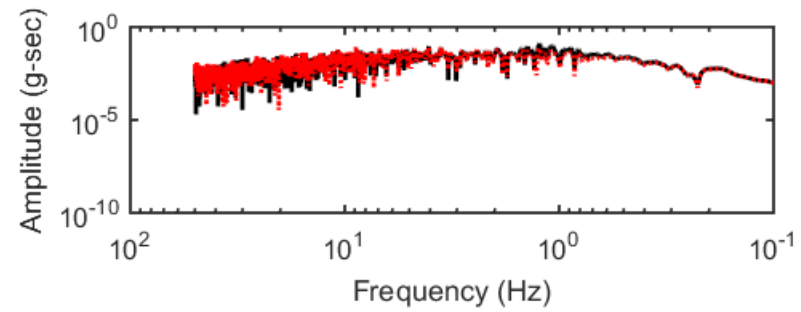
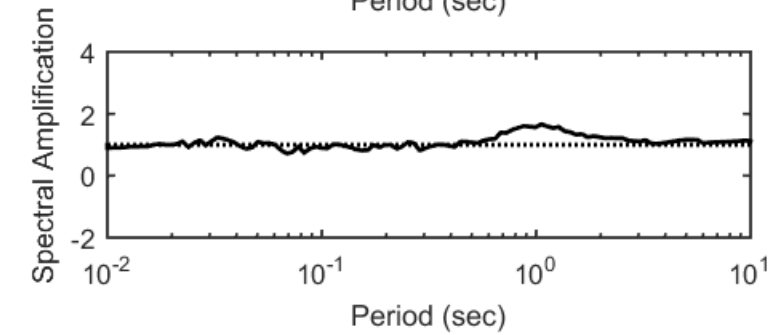
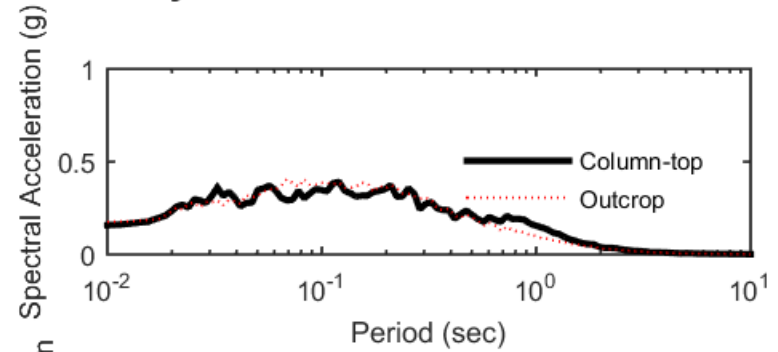
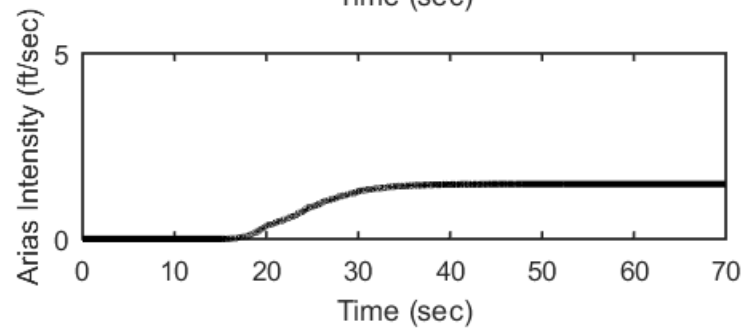
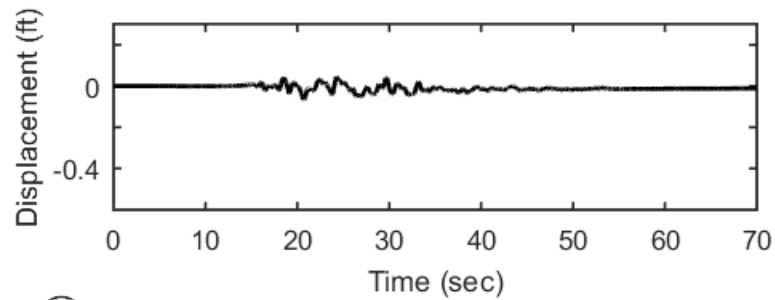
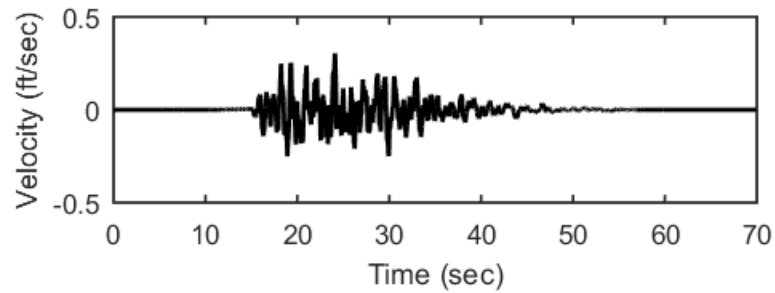
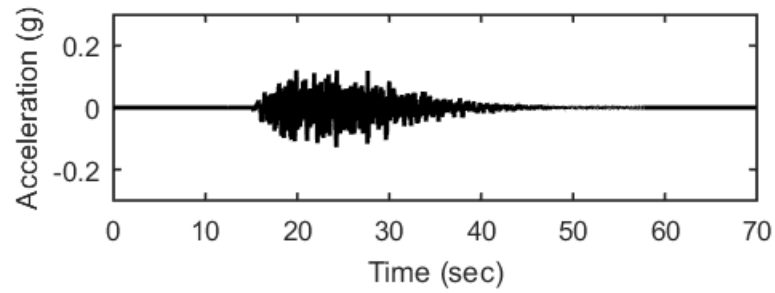
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



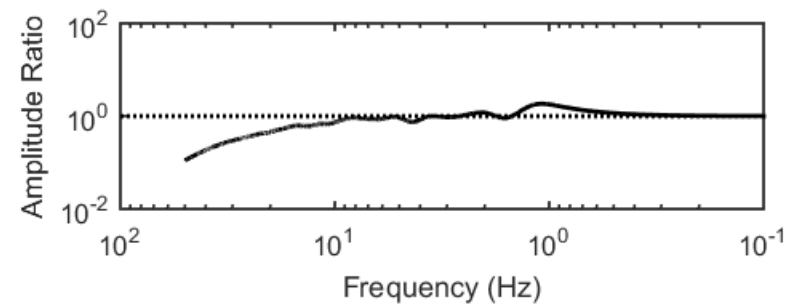
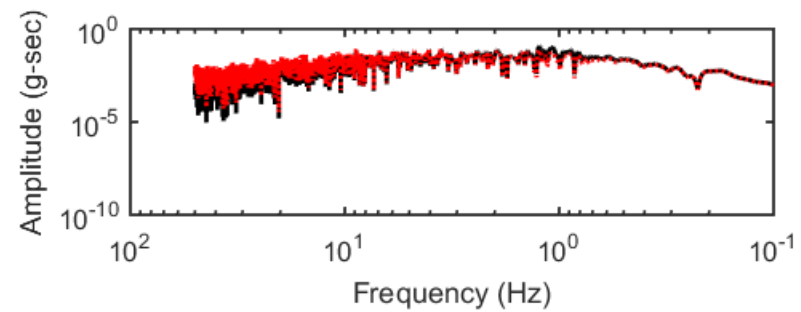
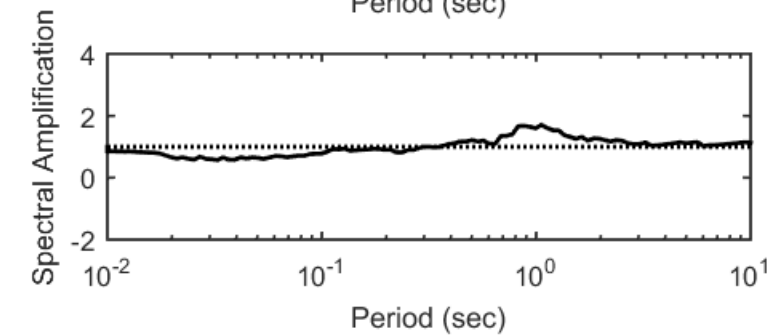
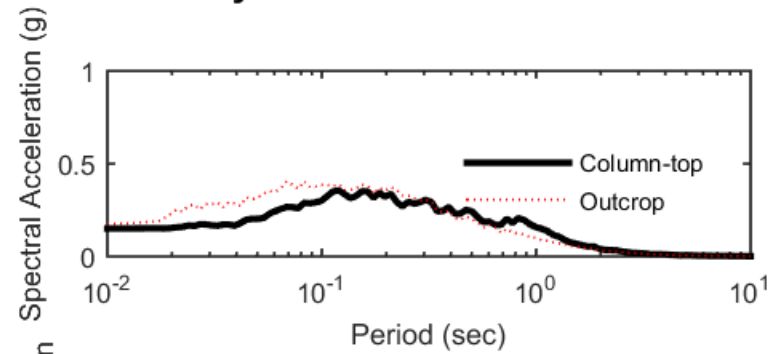
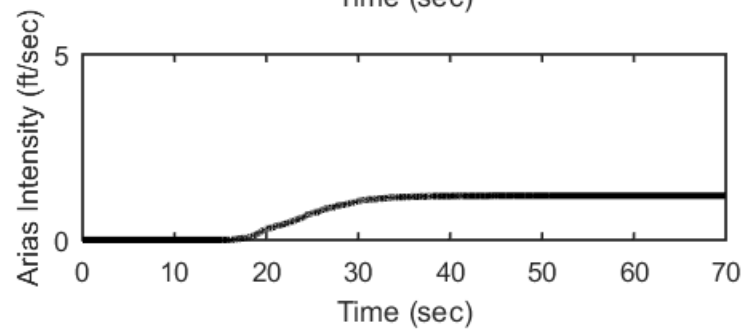
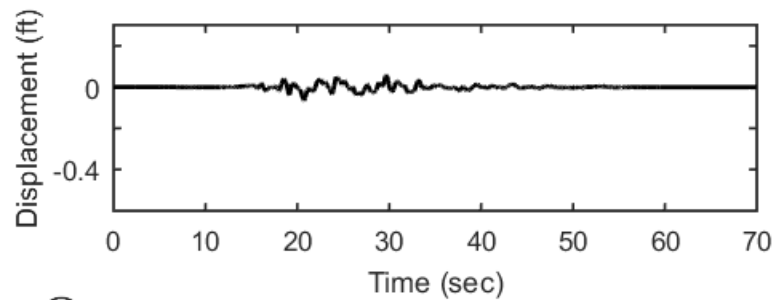
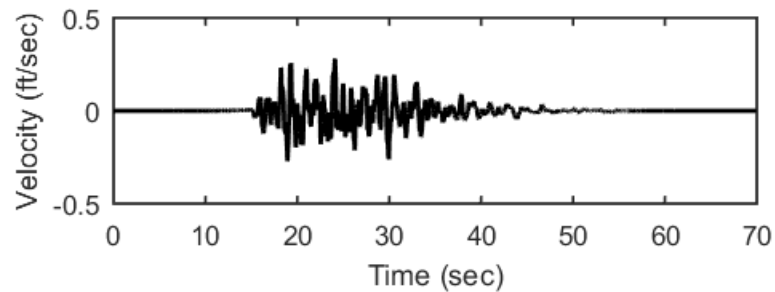
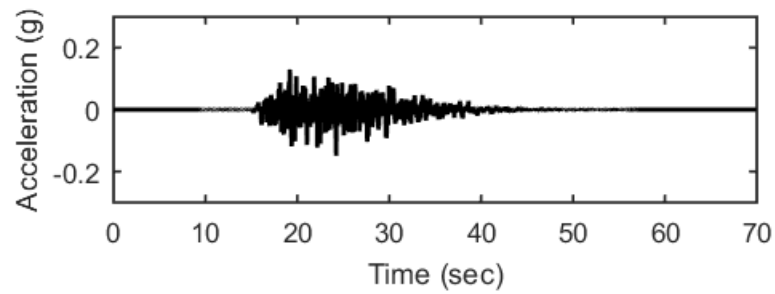
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



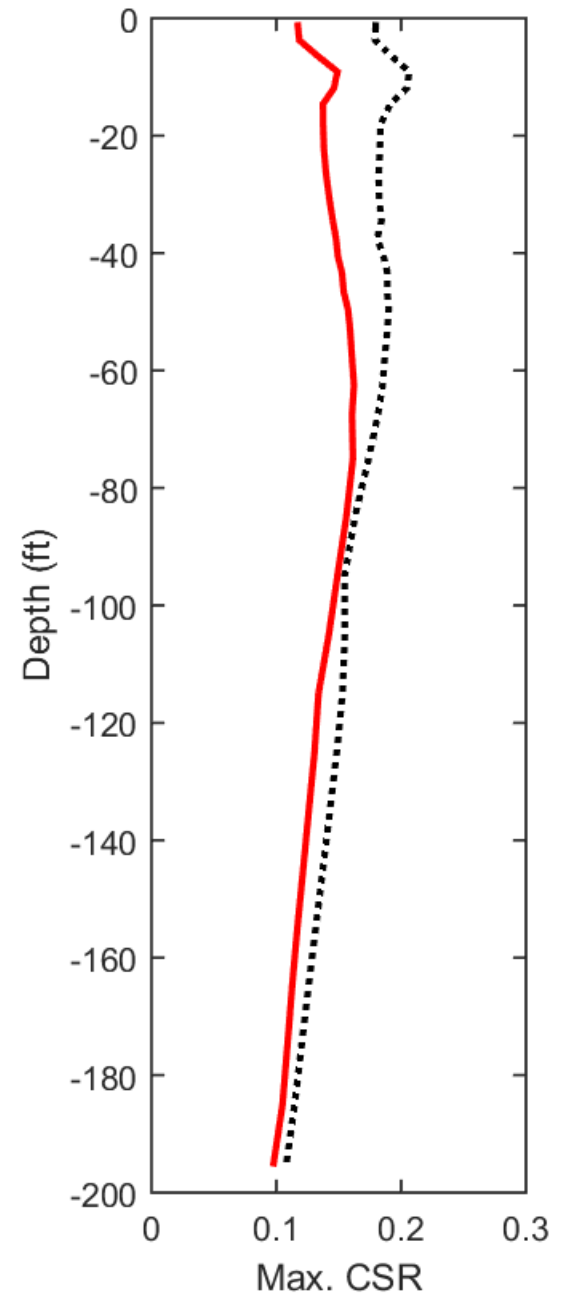
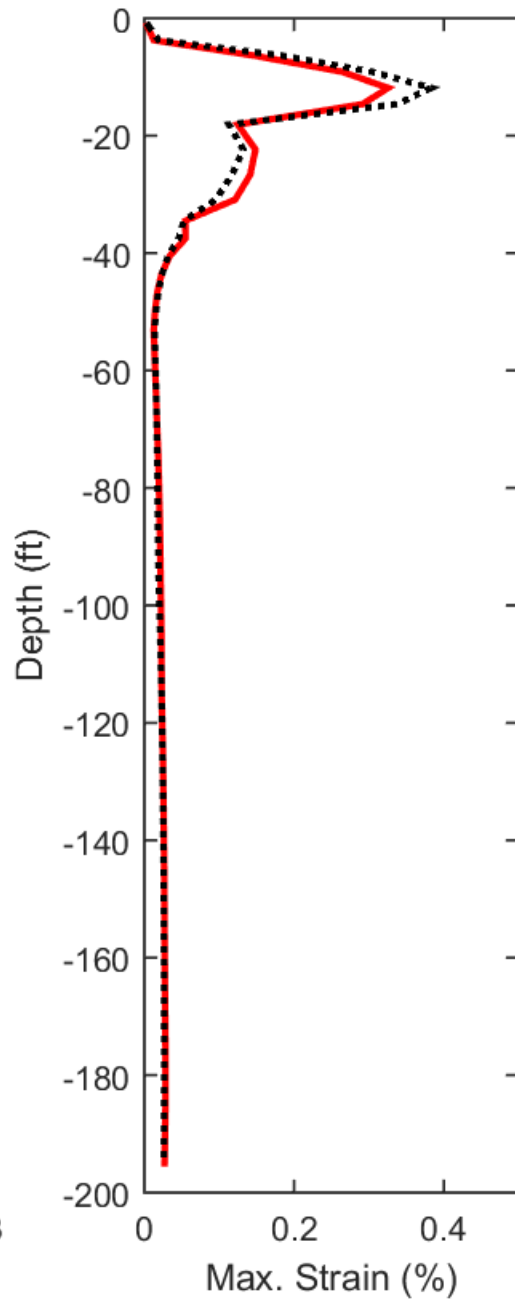
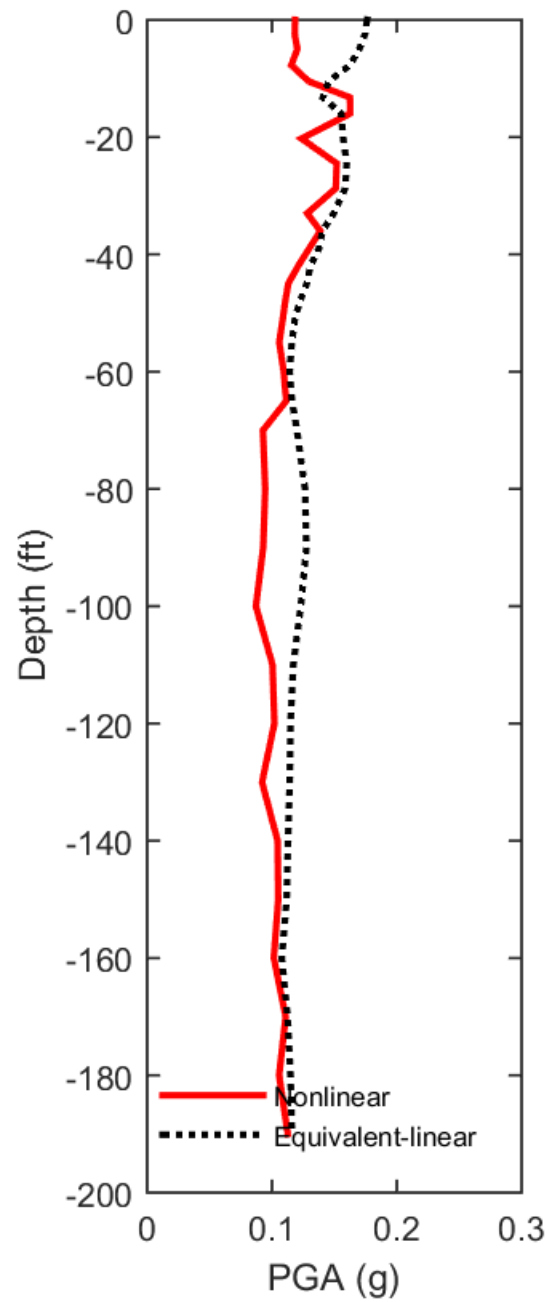
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



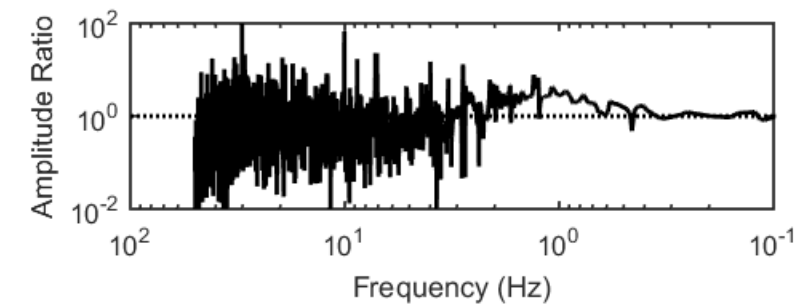
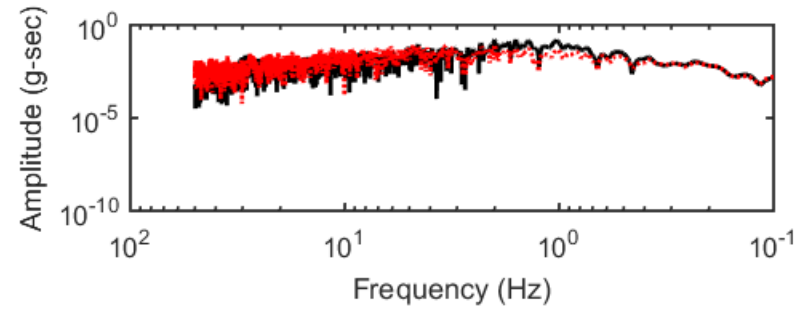
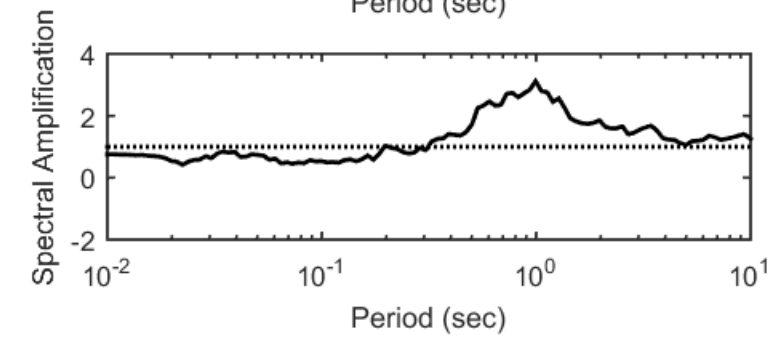
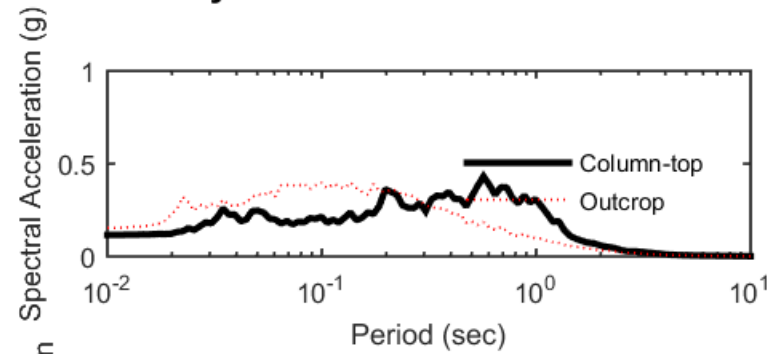
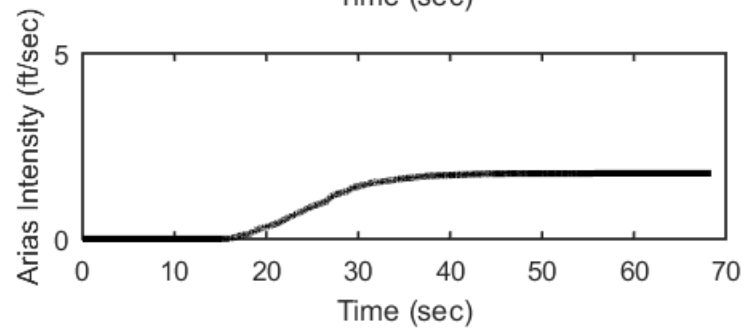
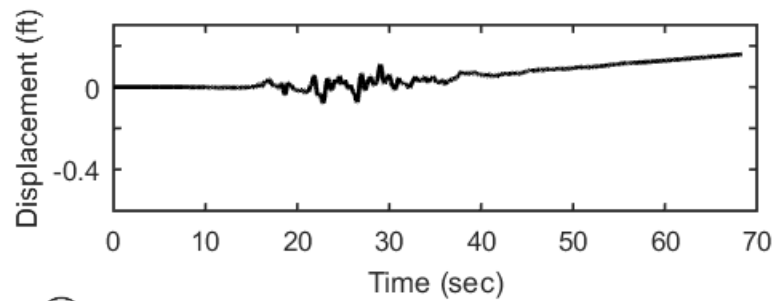
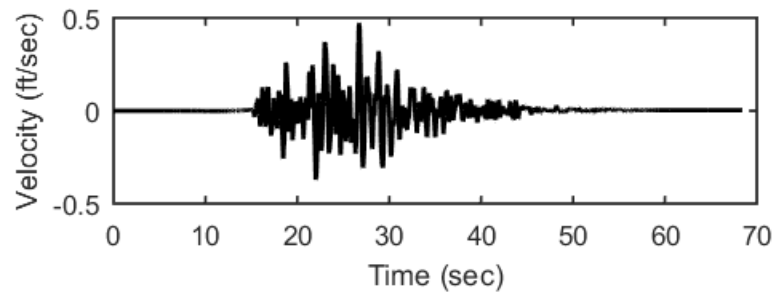
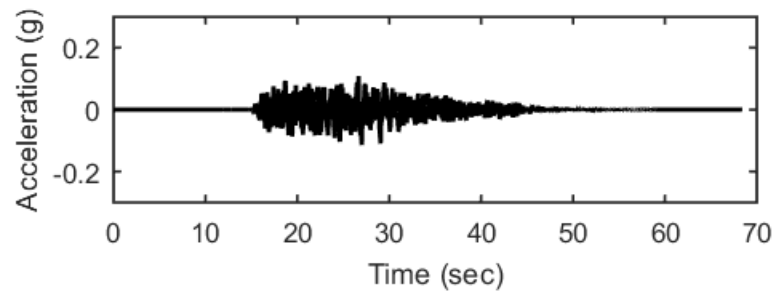
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



### Profile outputs for Motion: FEE2

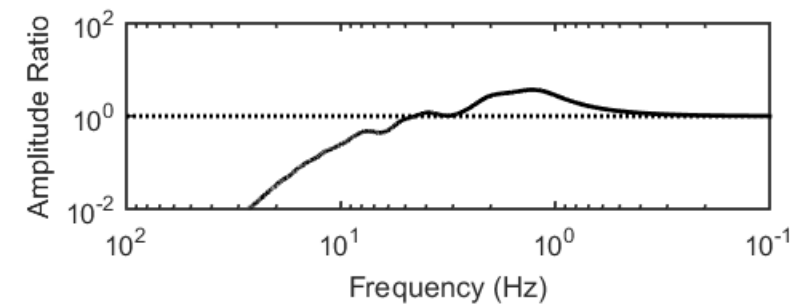
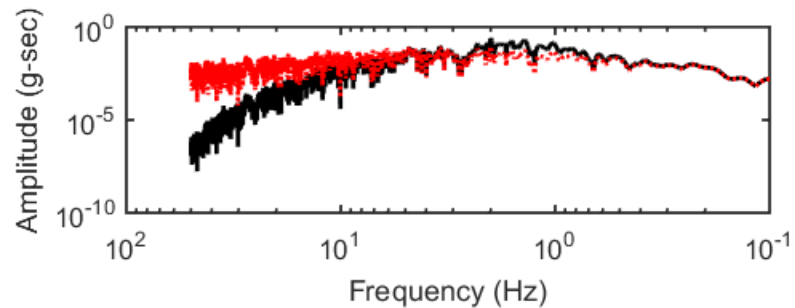
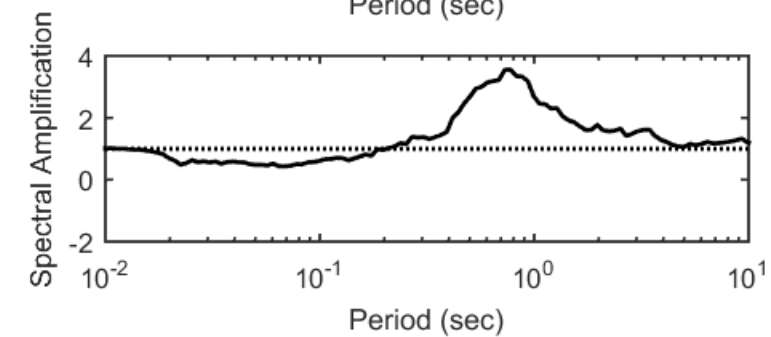
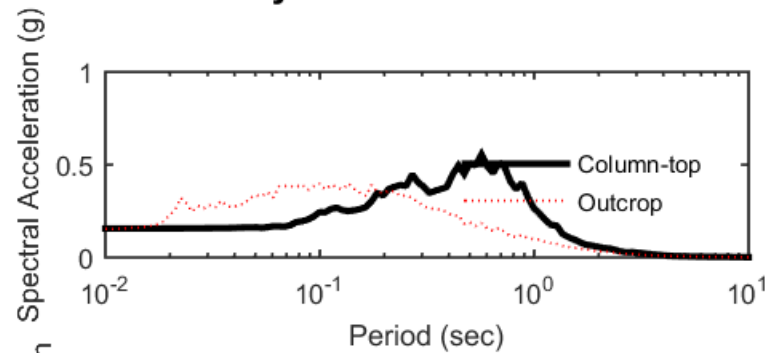
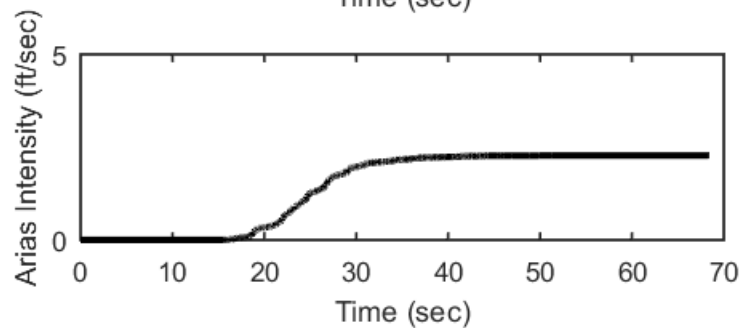
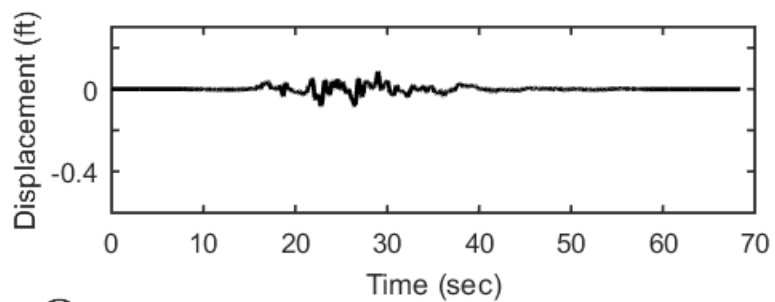
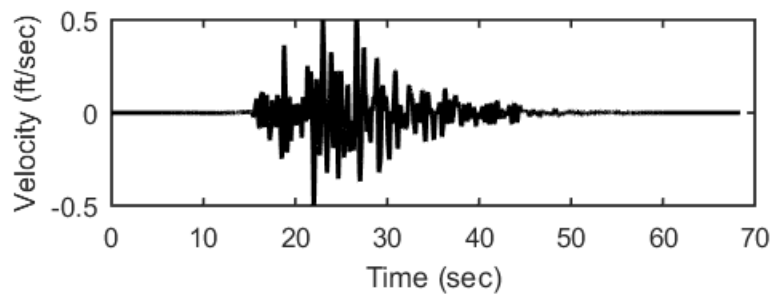
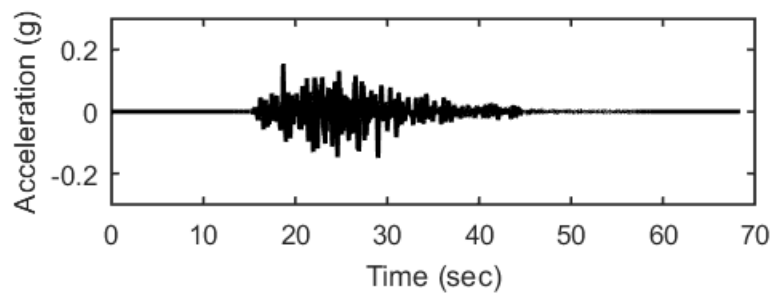


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3

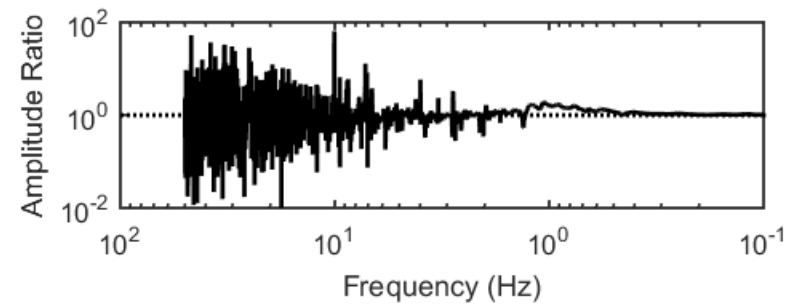
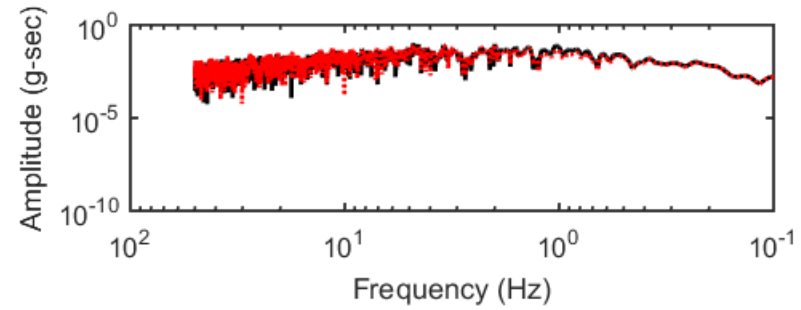
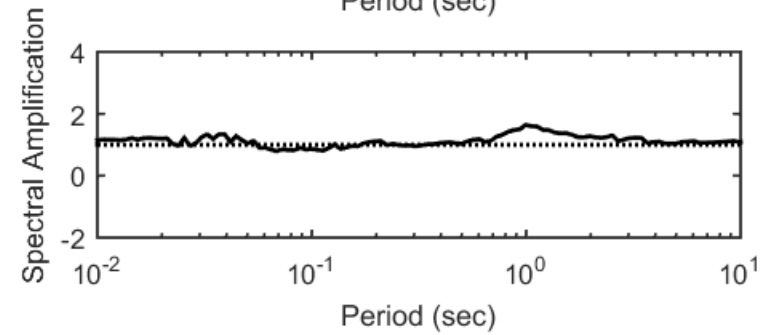
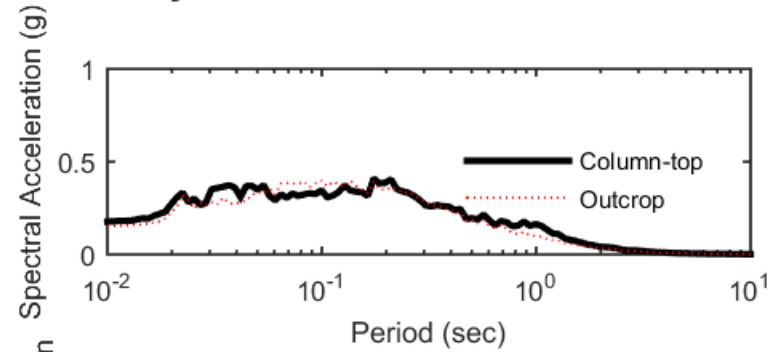
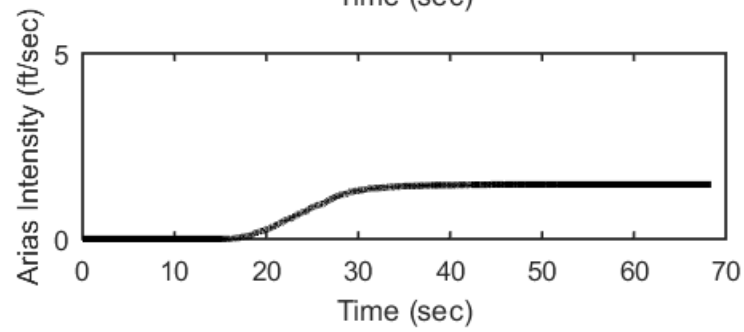
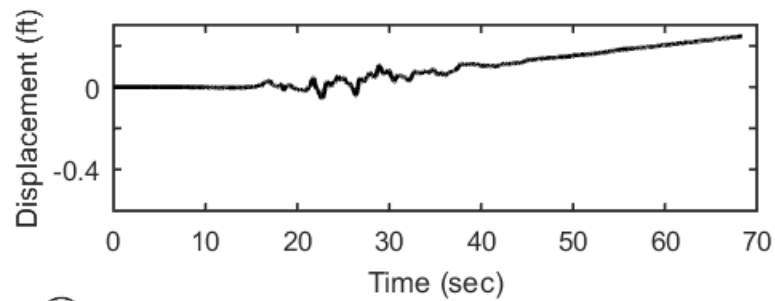
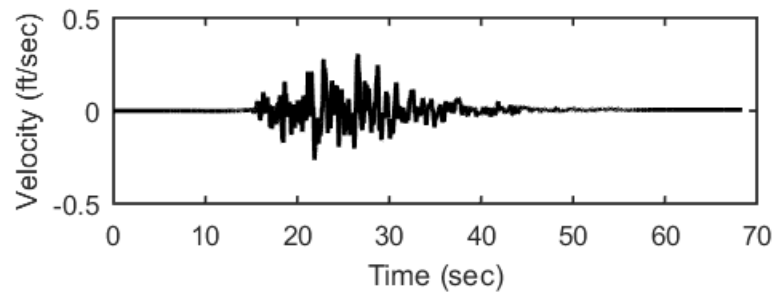
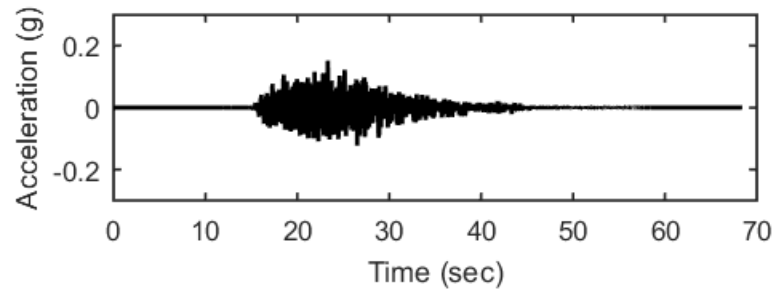




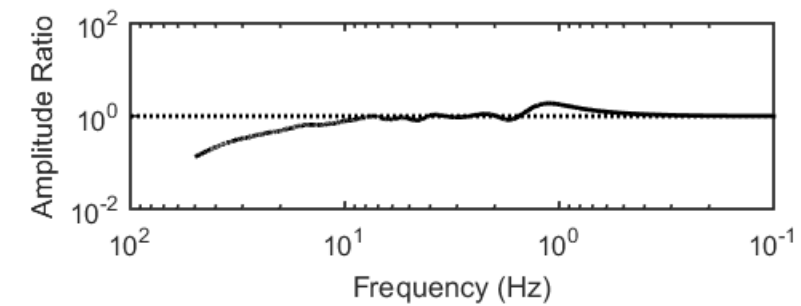
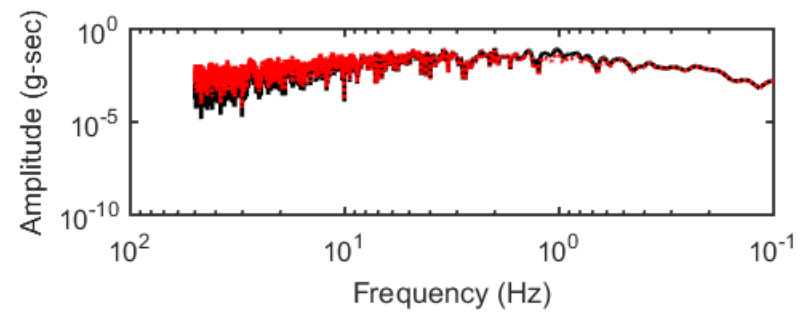
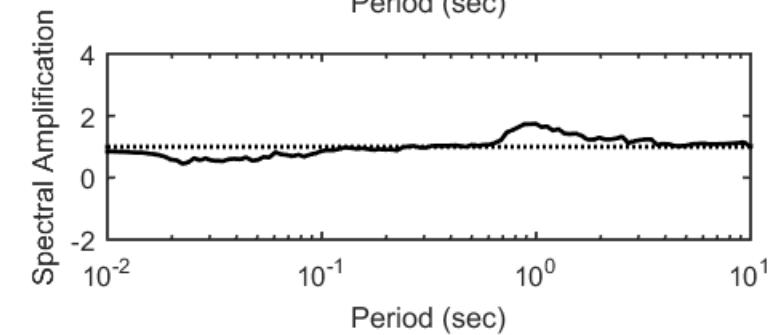
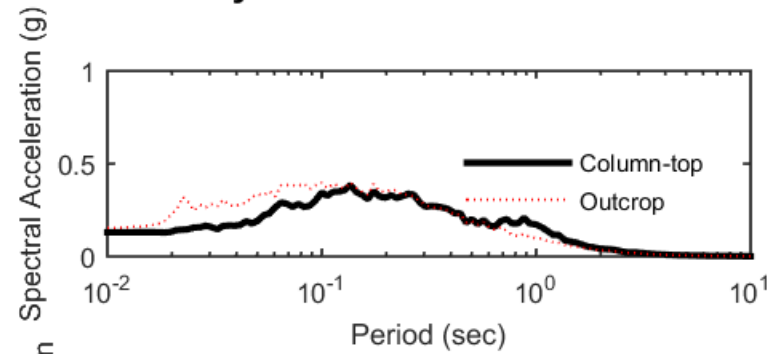
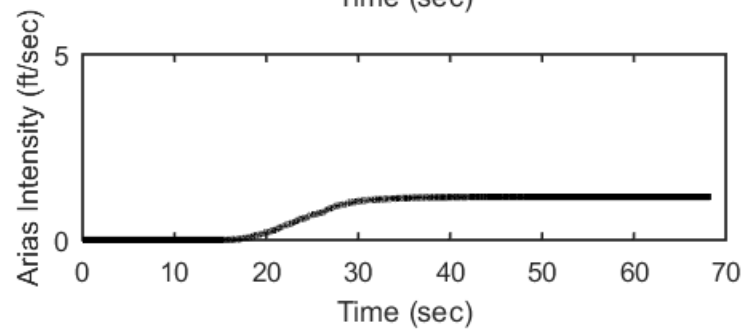
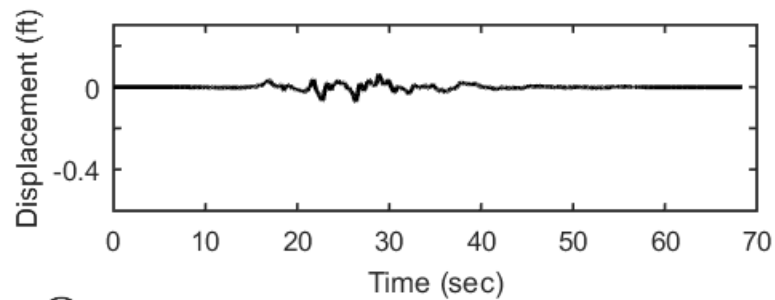
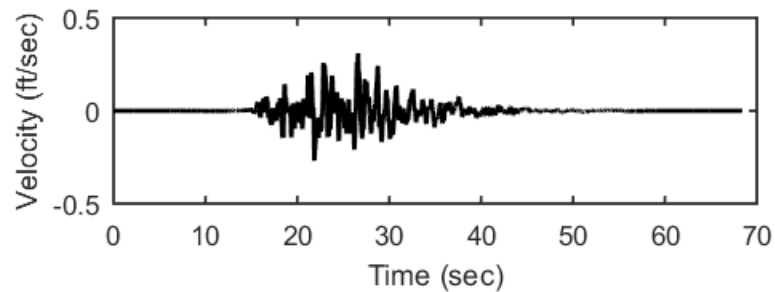
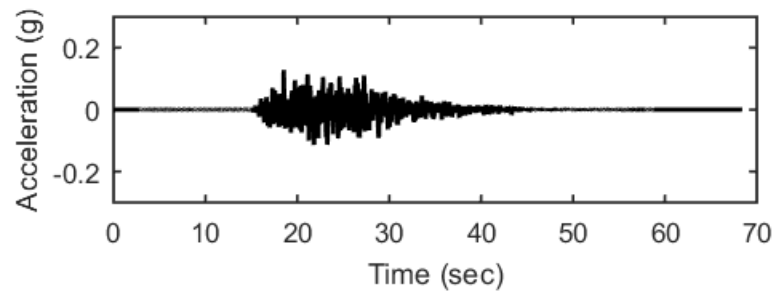
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



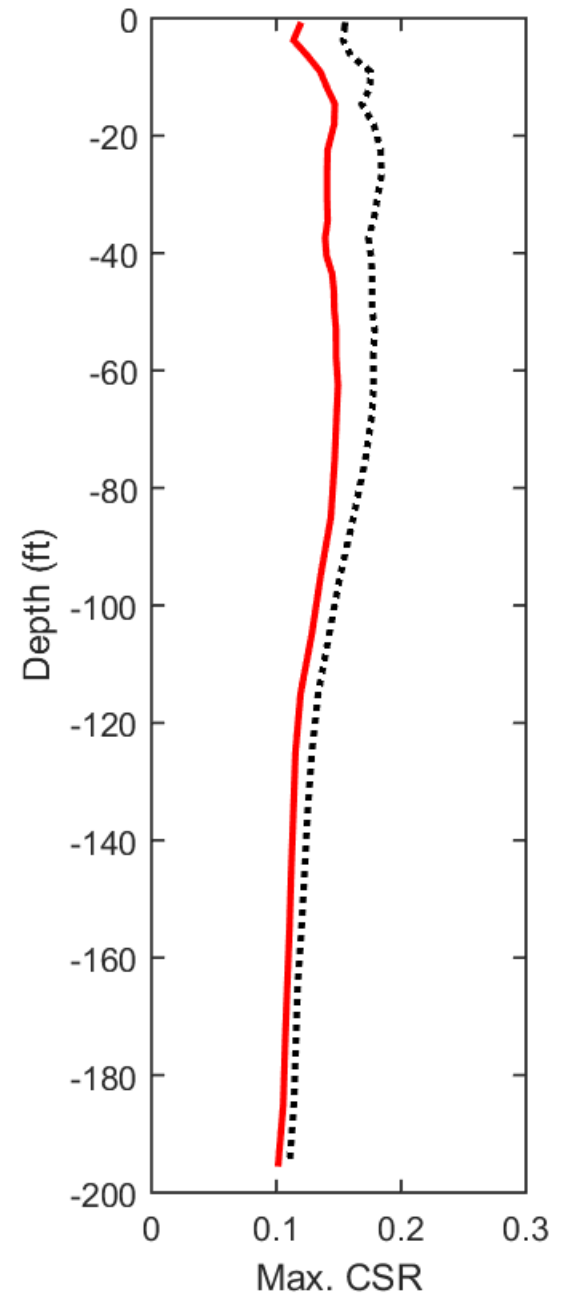
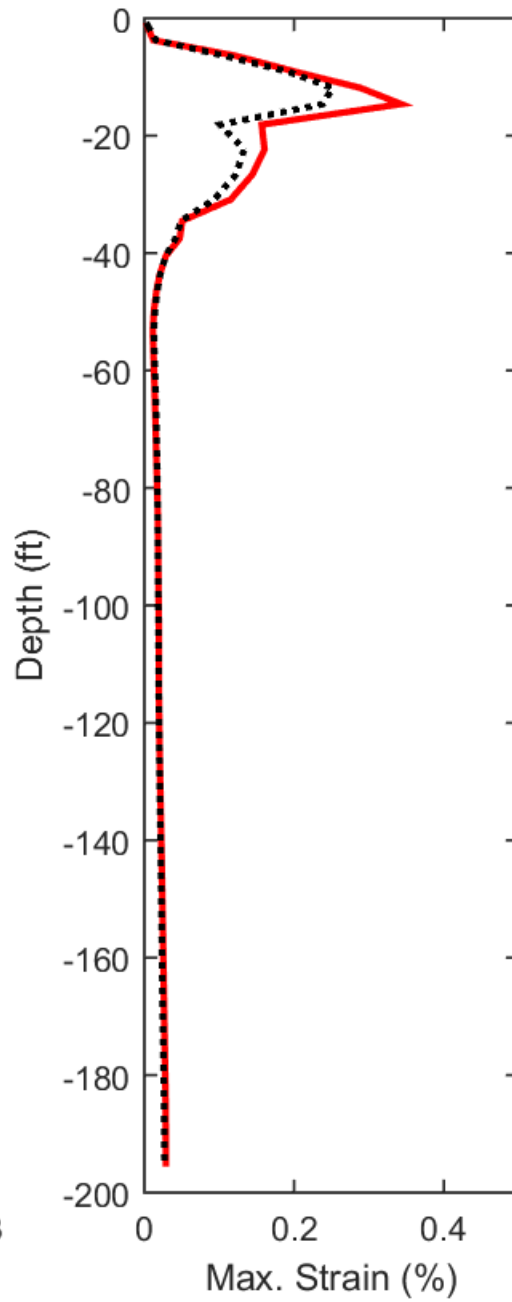
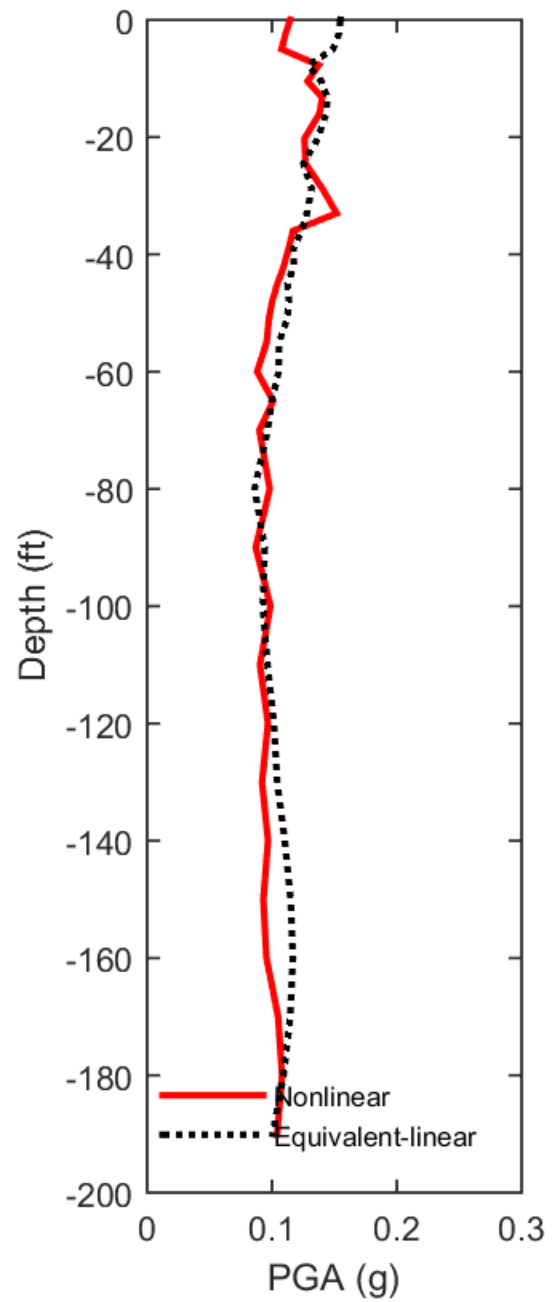
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



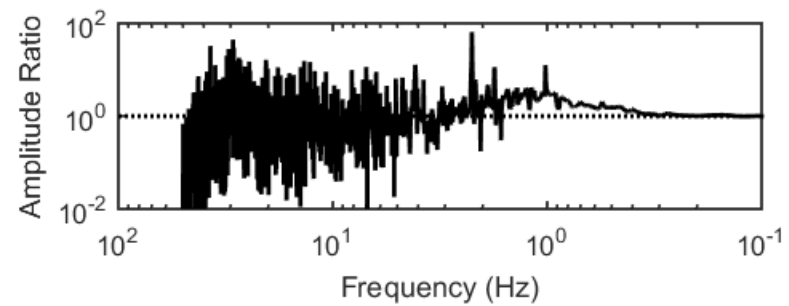
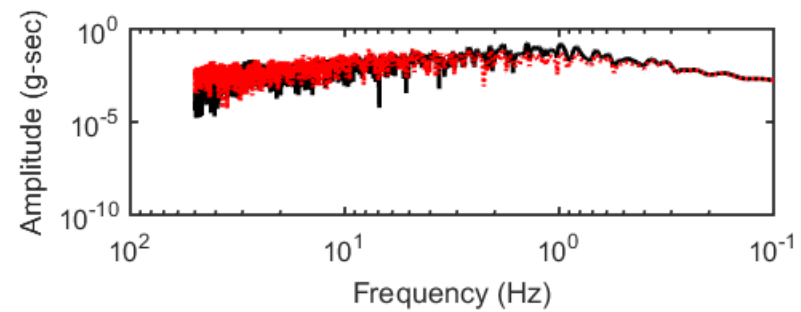
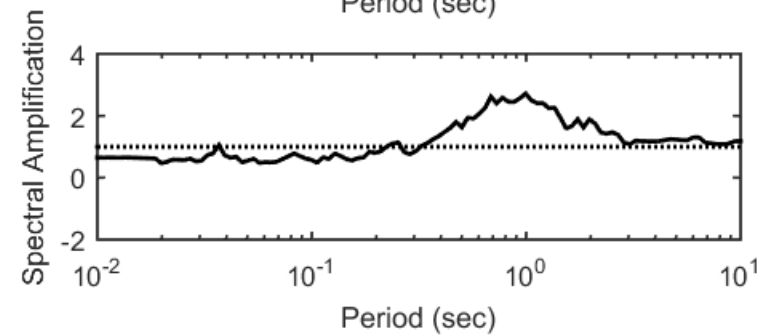
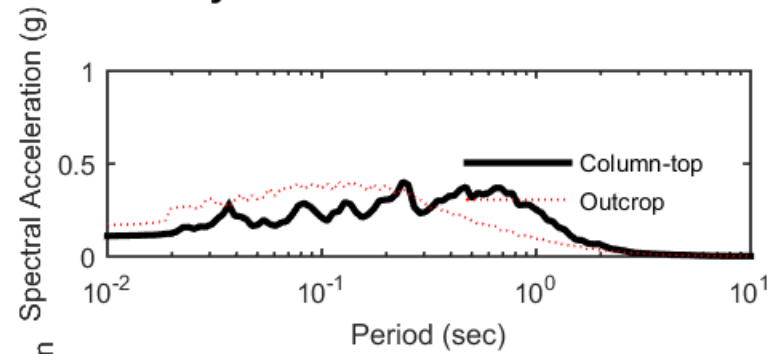
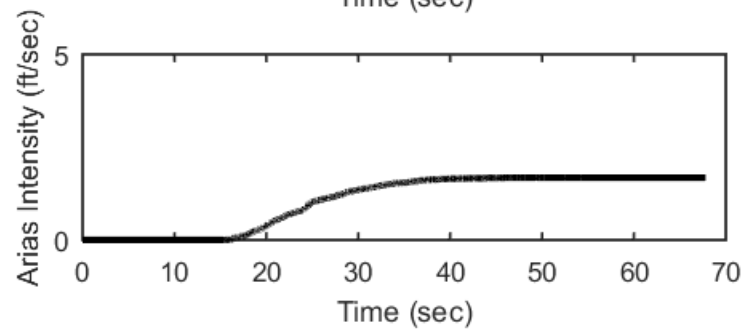
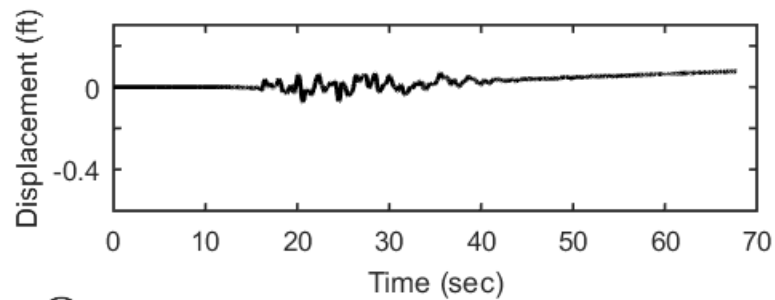
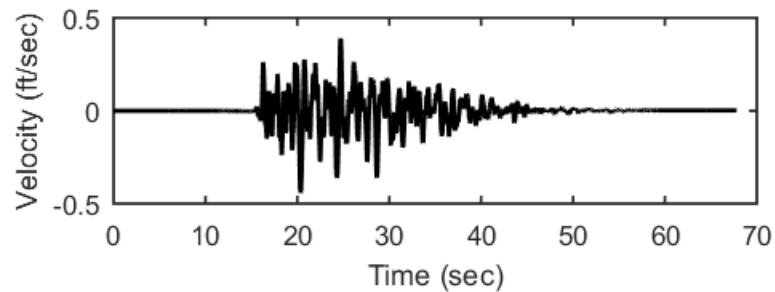
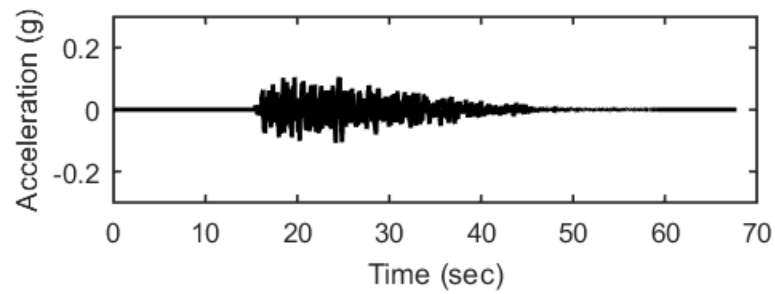
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



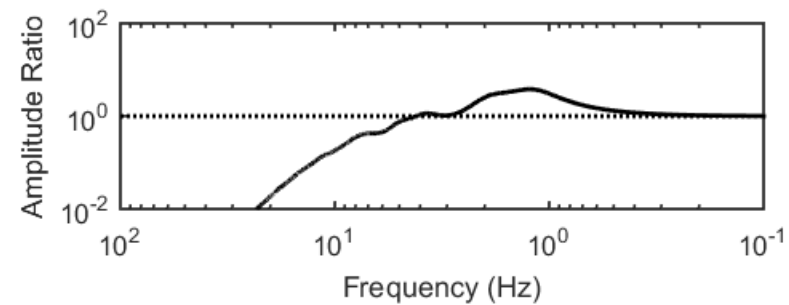
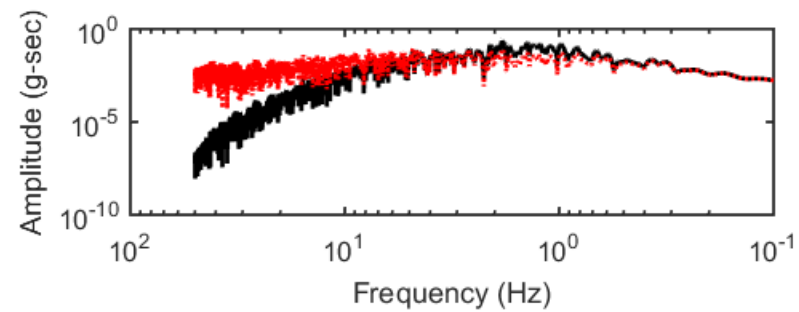
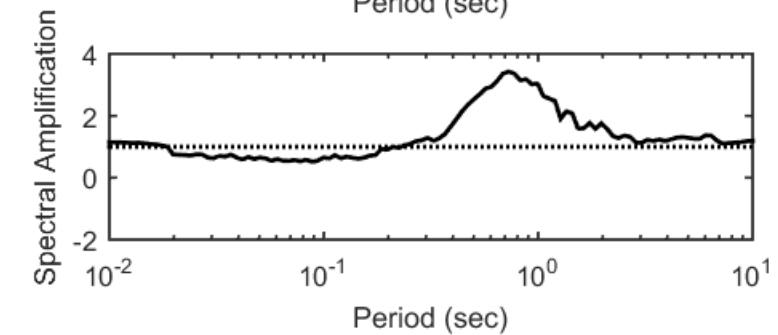
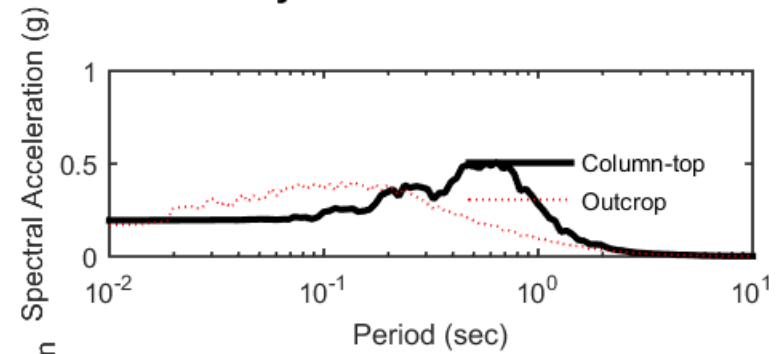
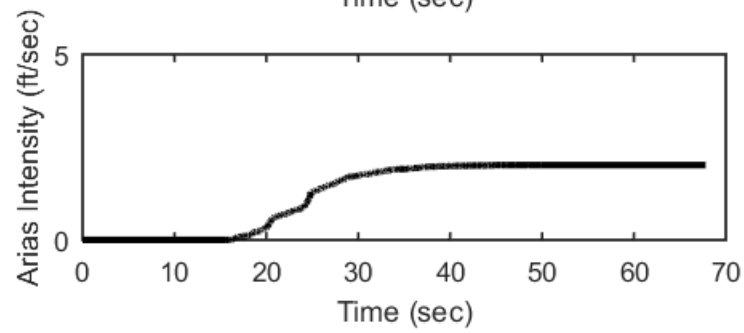
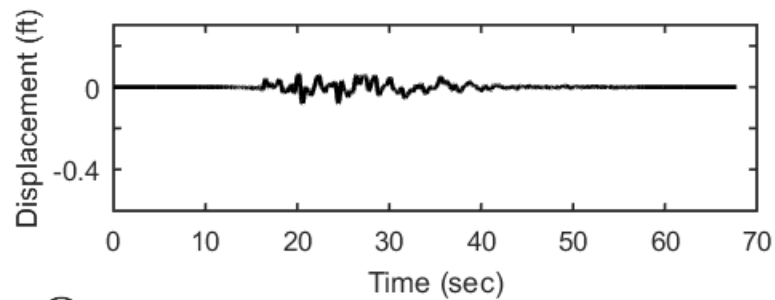
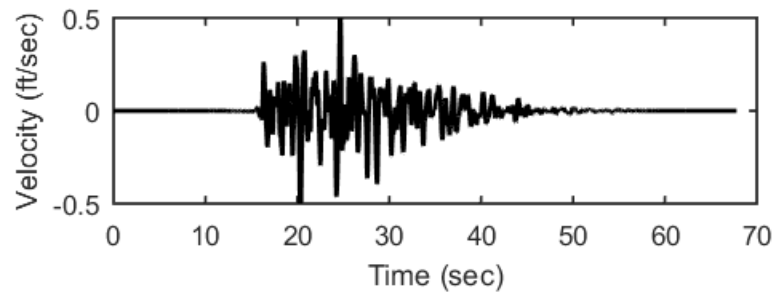
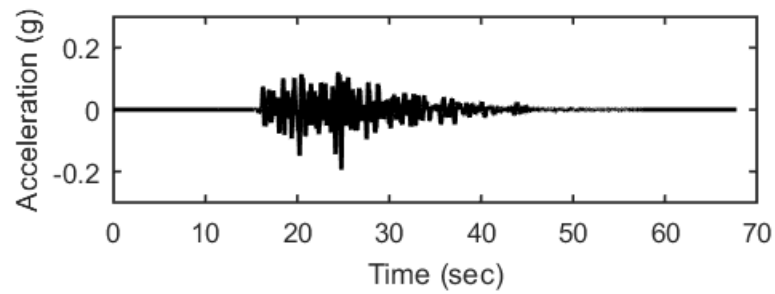
### Profile outputs for Motion: FEE3



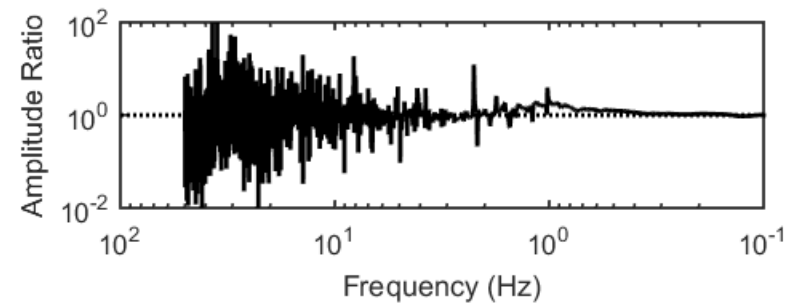
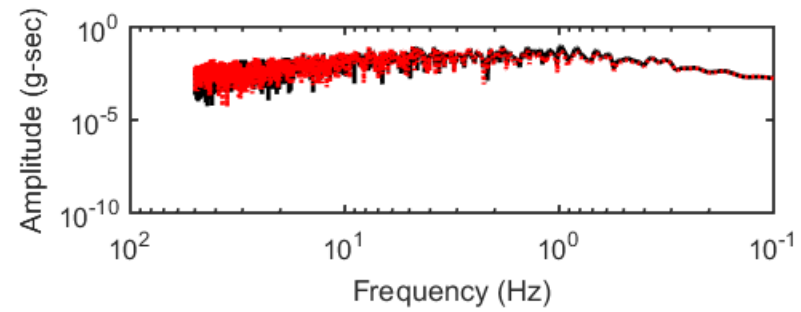
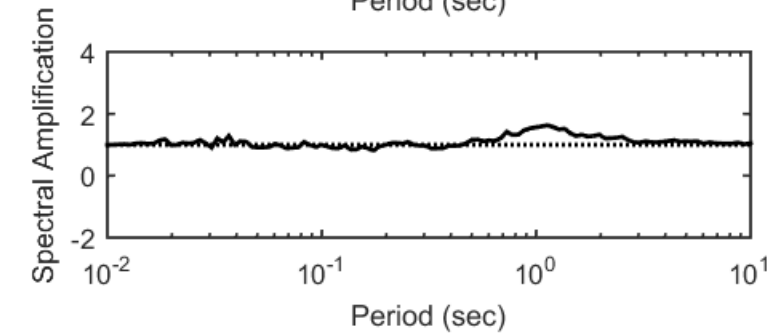
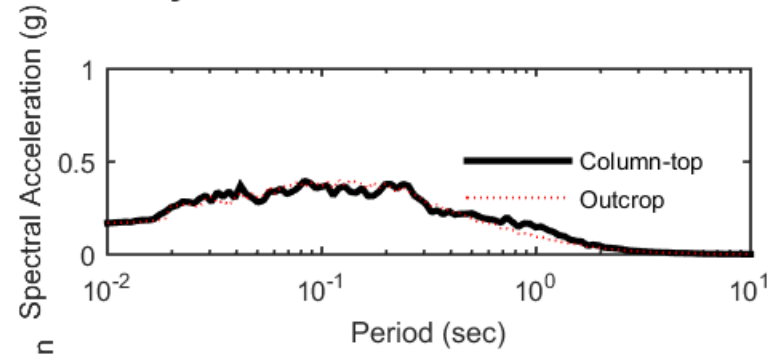
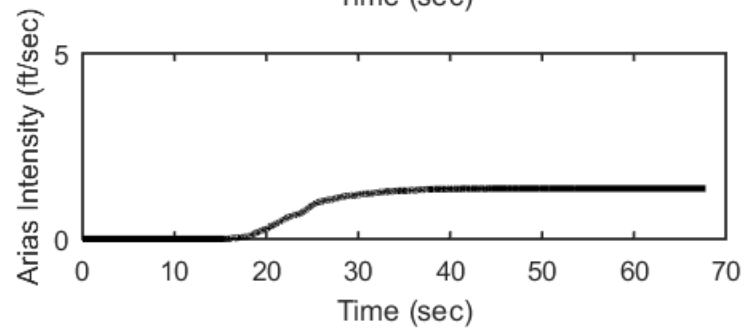
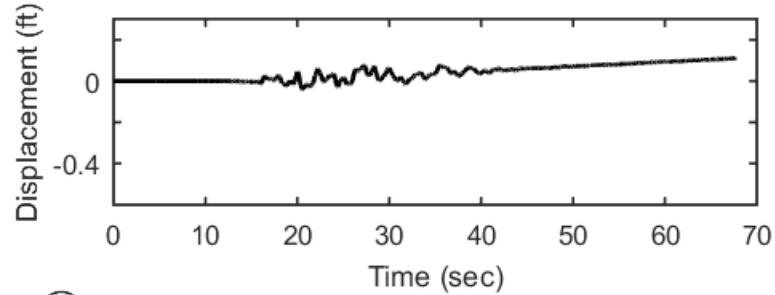
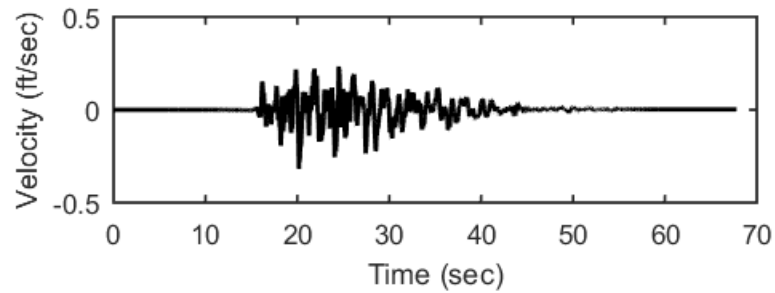
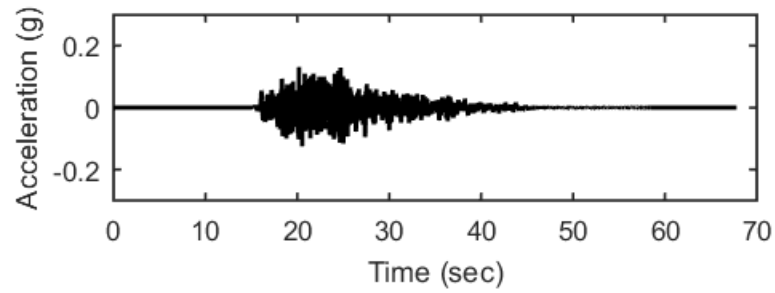
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



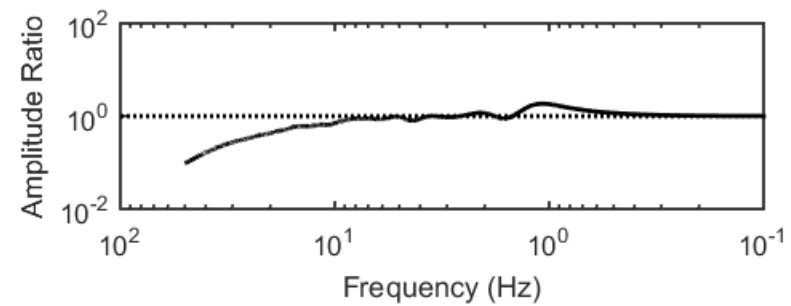
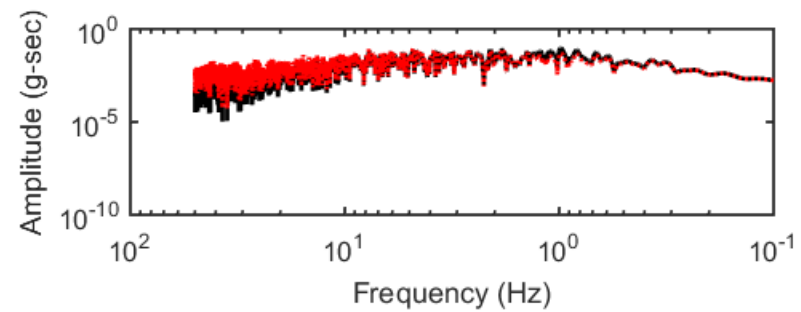
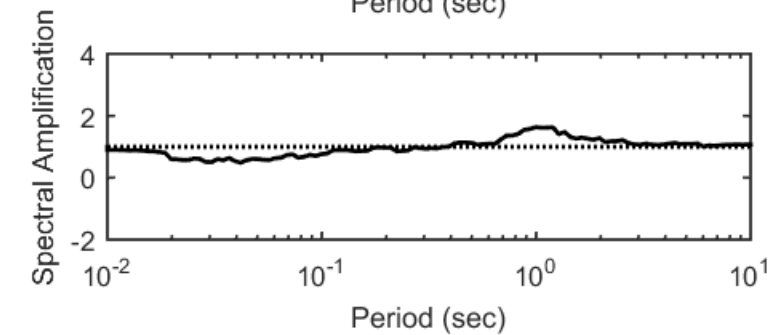
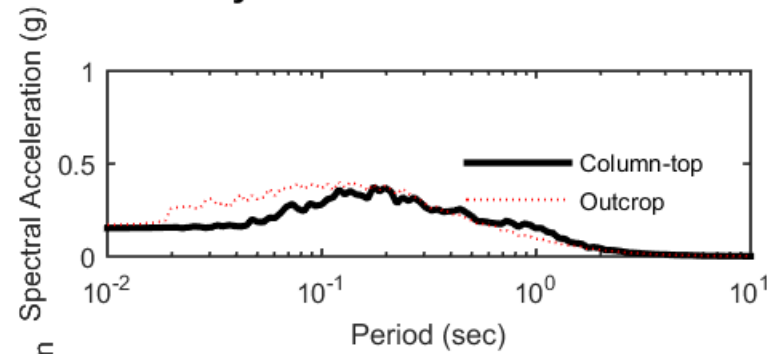
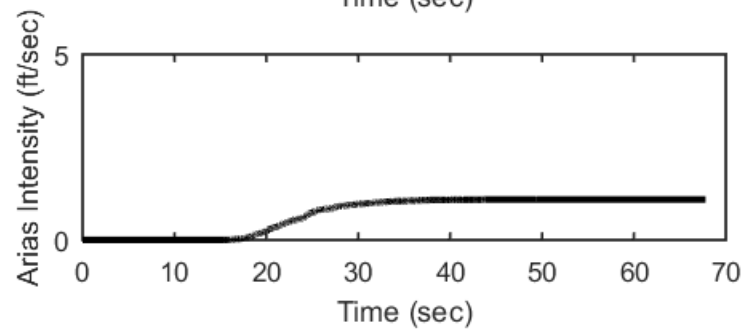
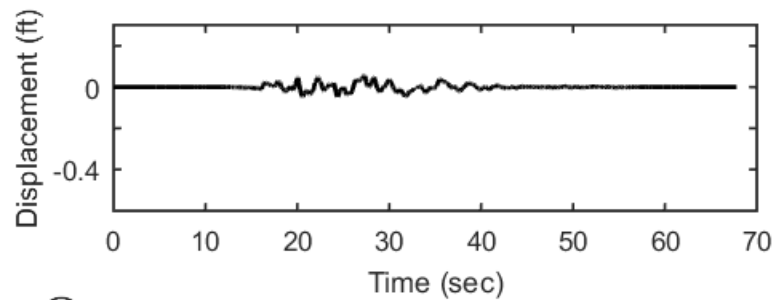
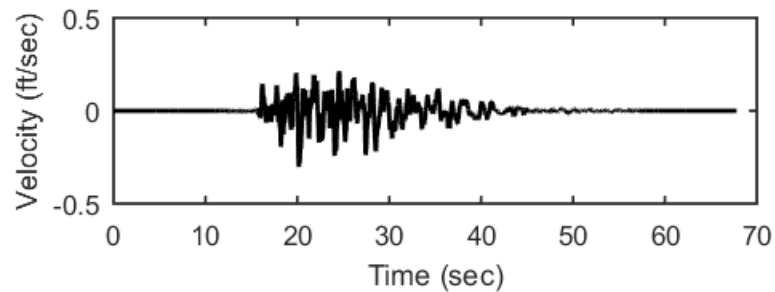
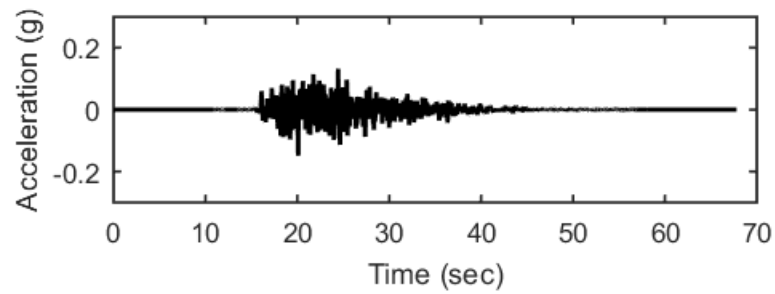
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4

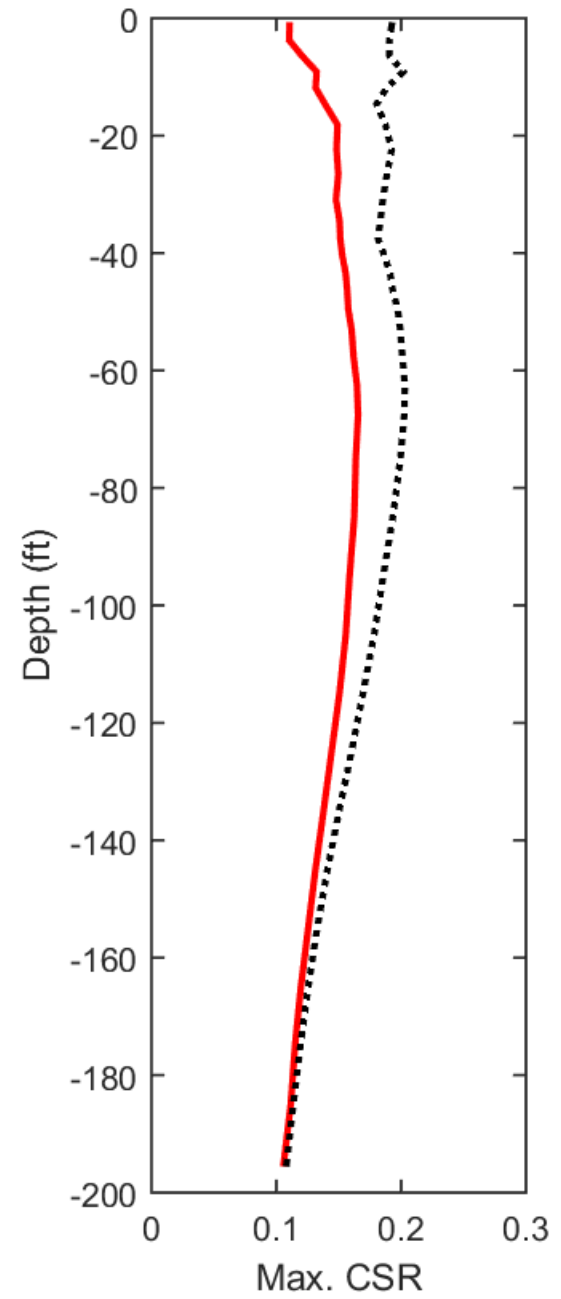
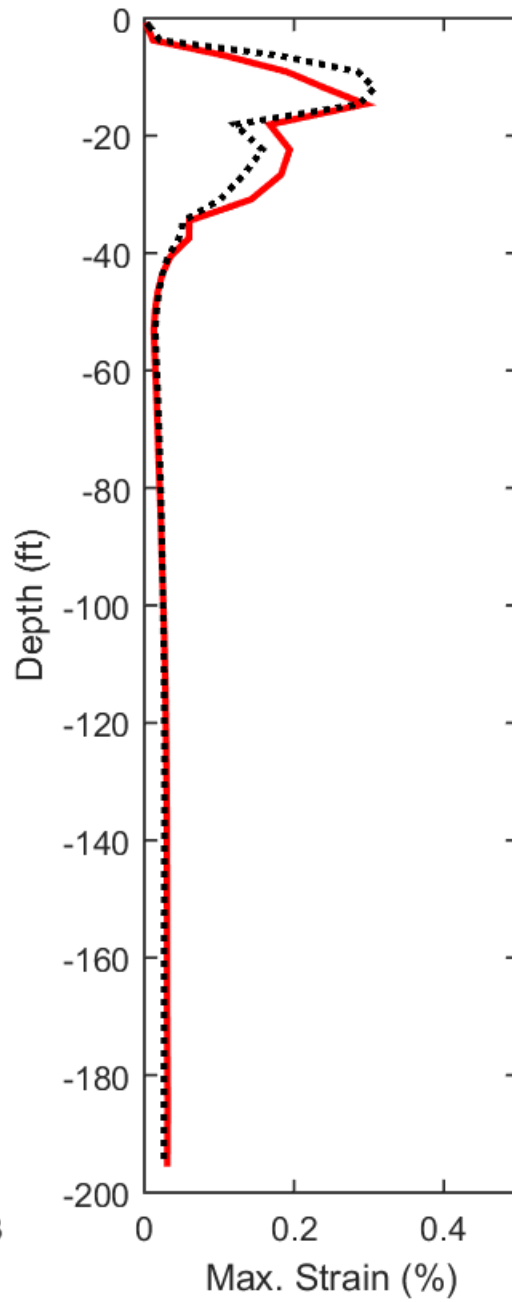
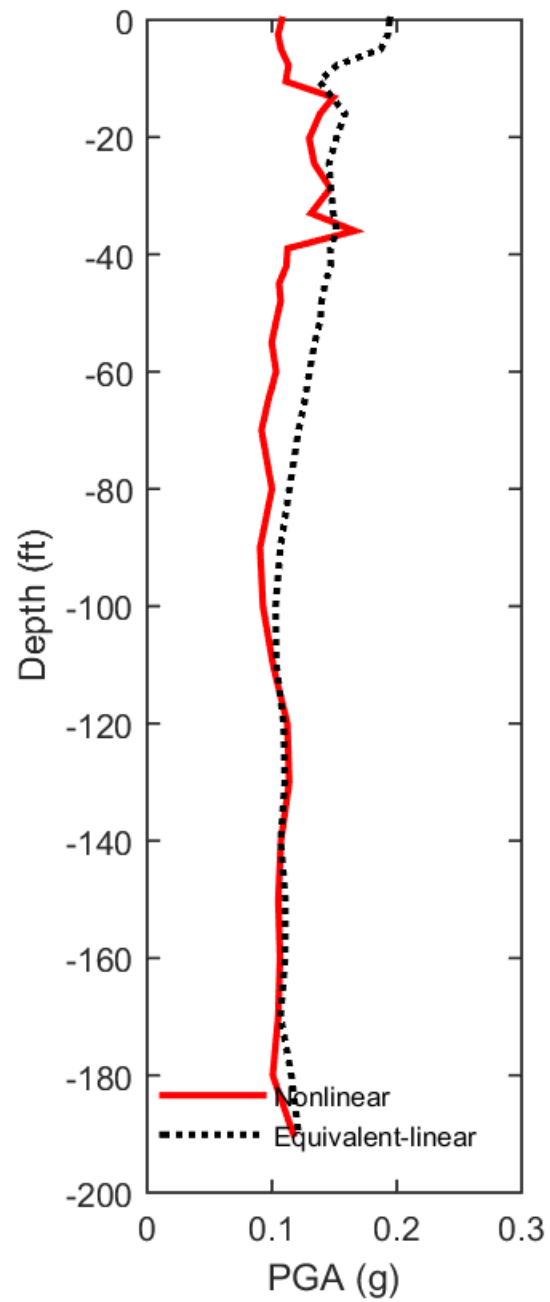


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4

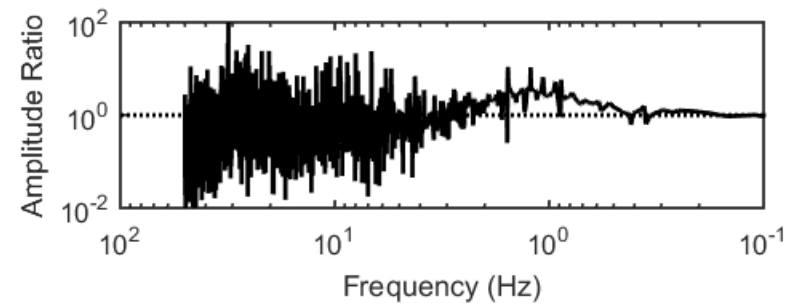
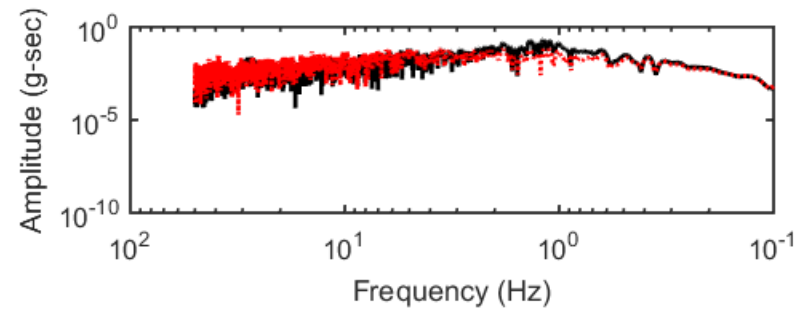
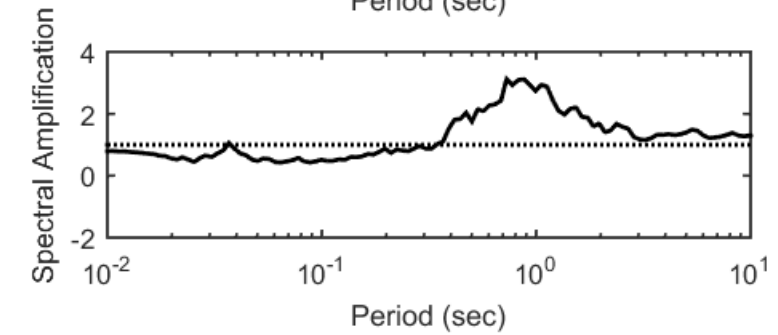
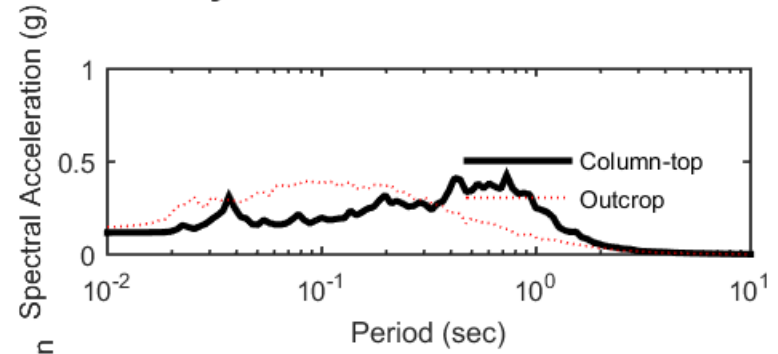
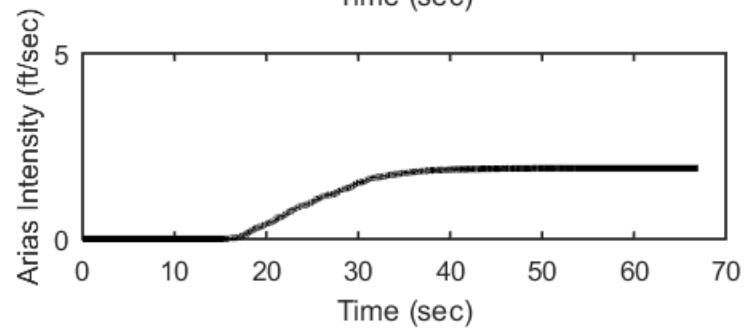
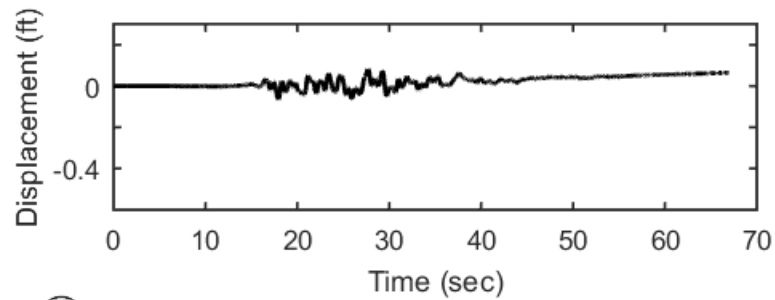
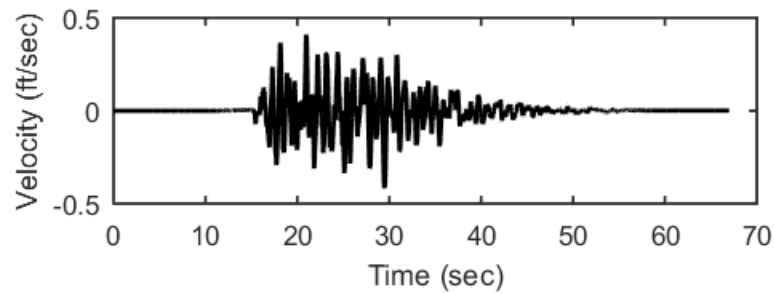
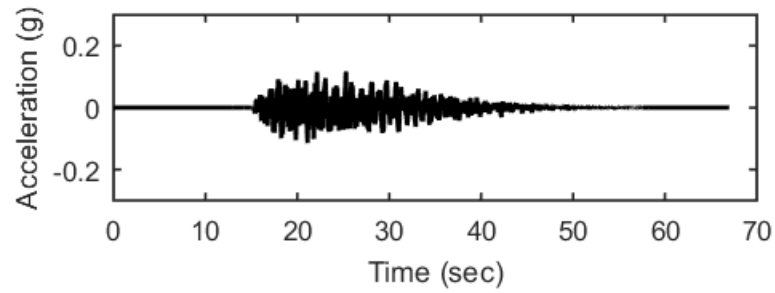




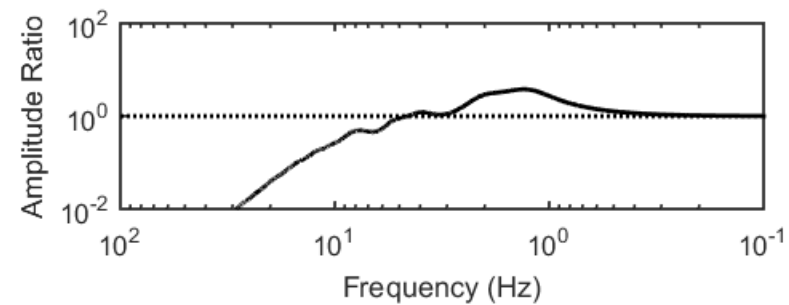
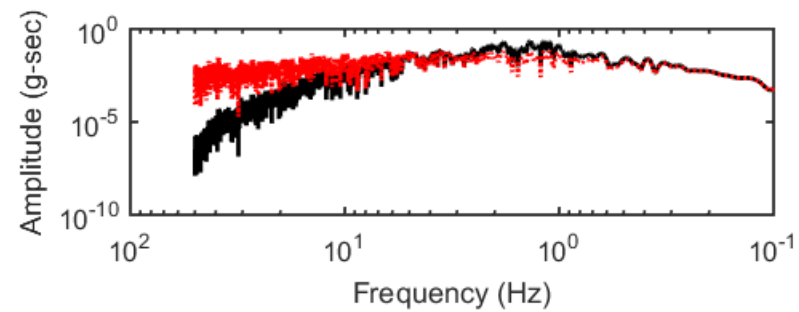
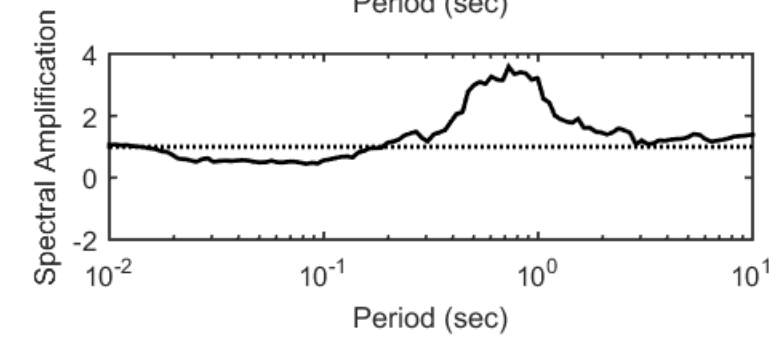
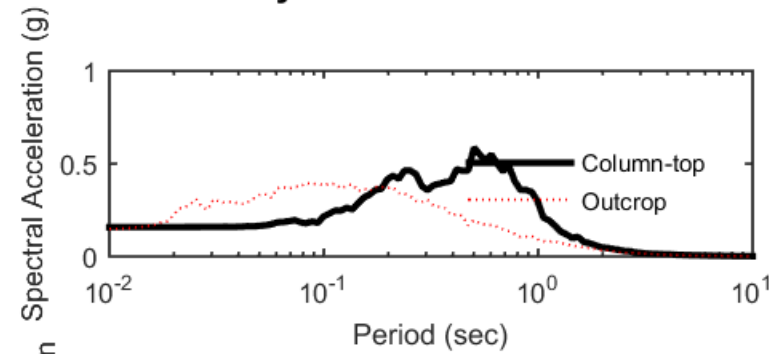
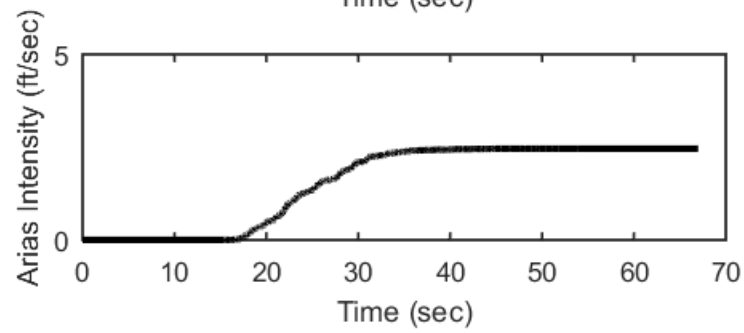
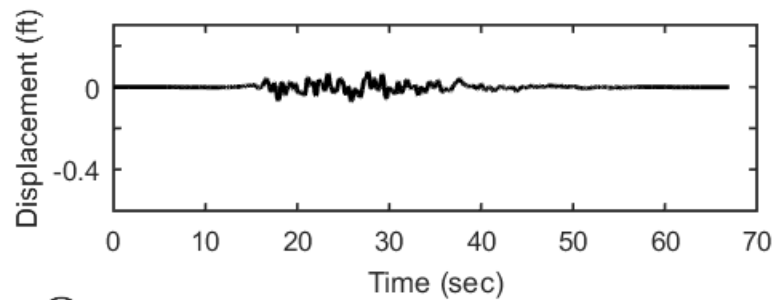
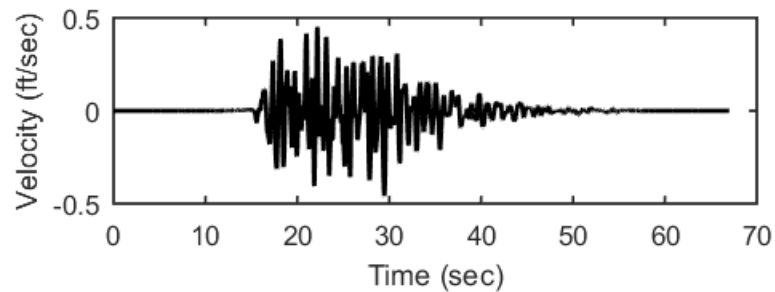
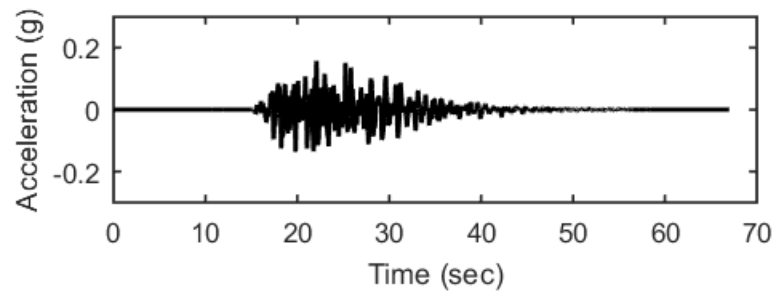
### Profile outputs for Motion: FEE4



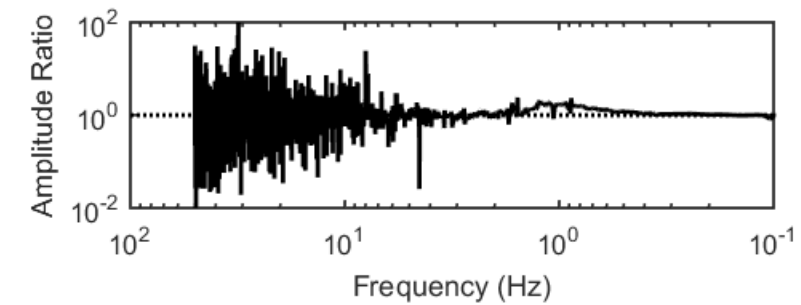
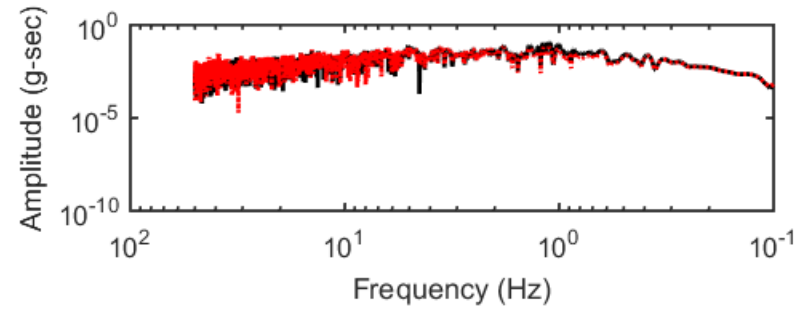
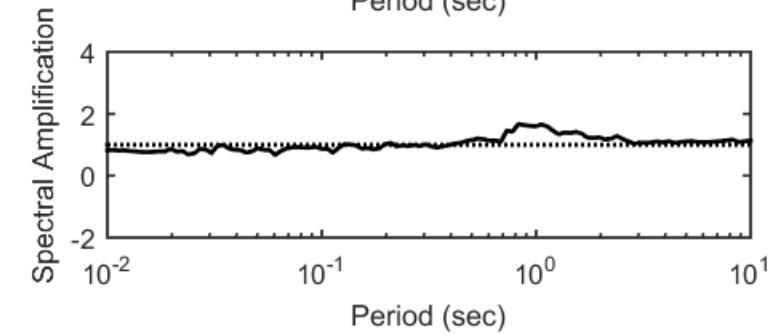
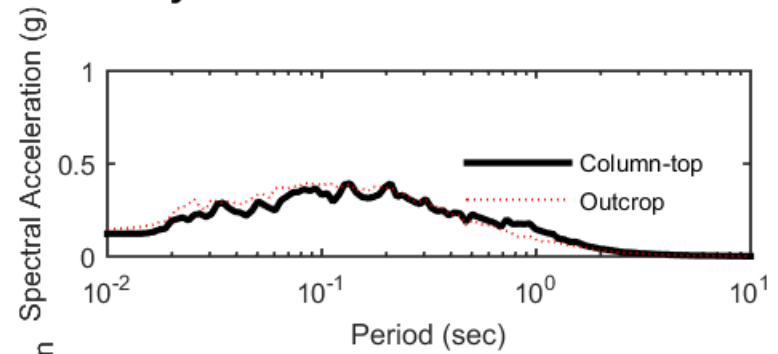
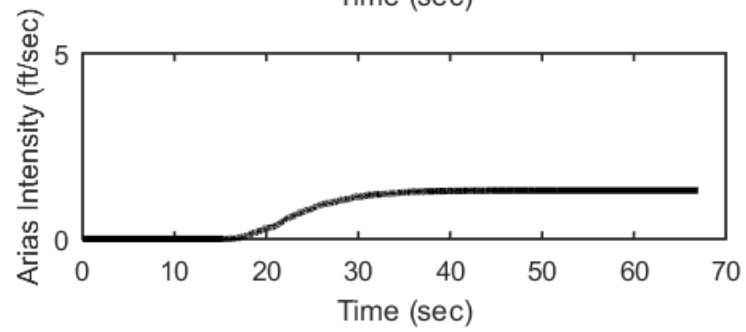
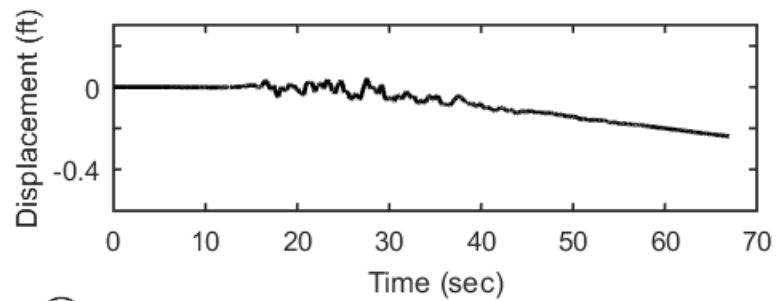
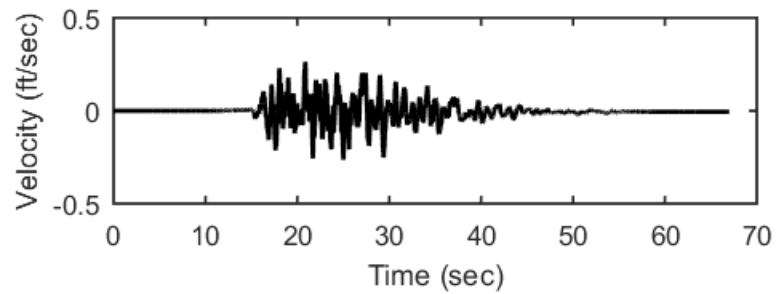
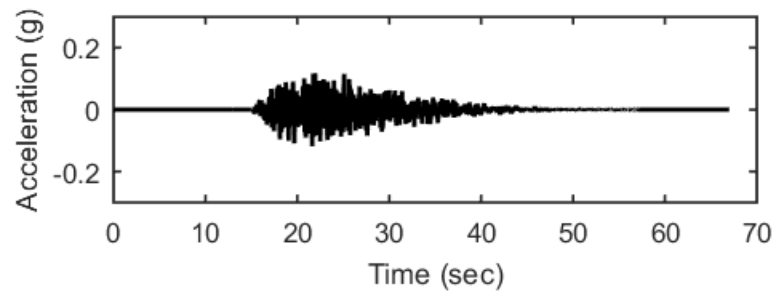
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



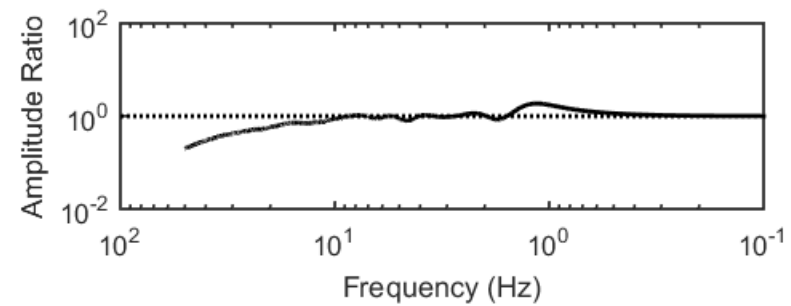
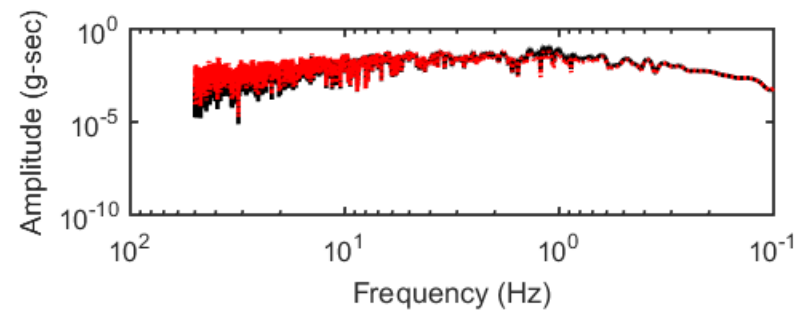
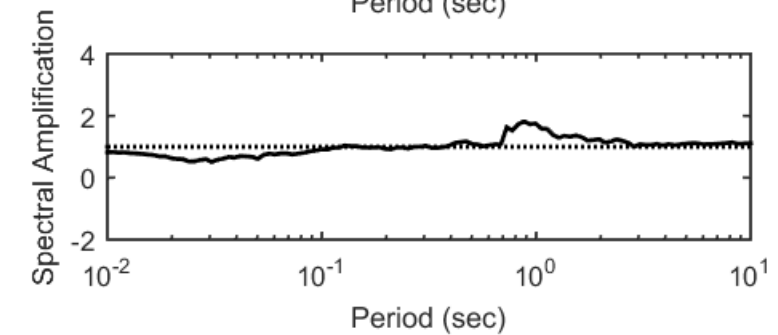
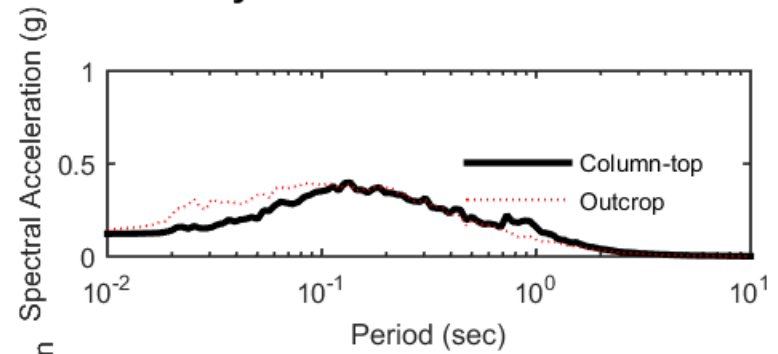
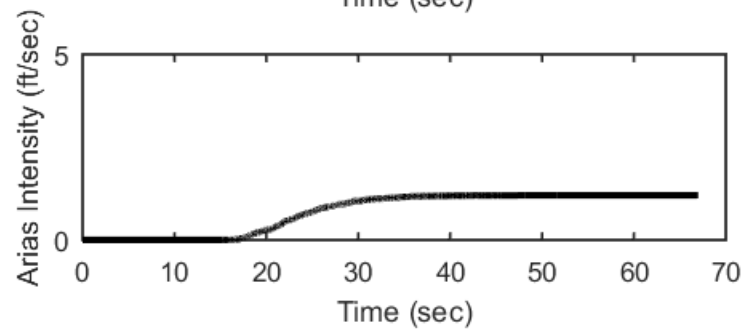
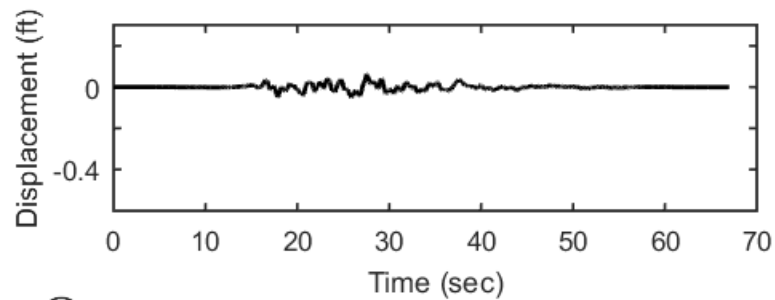
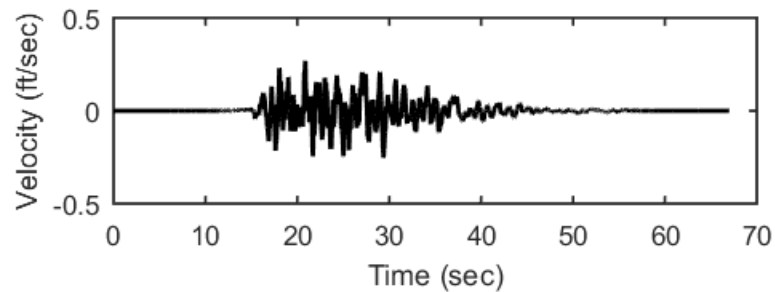
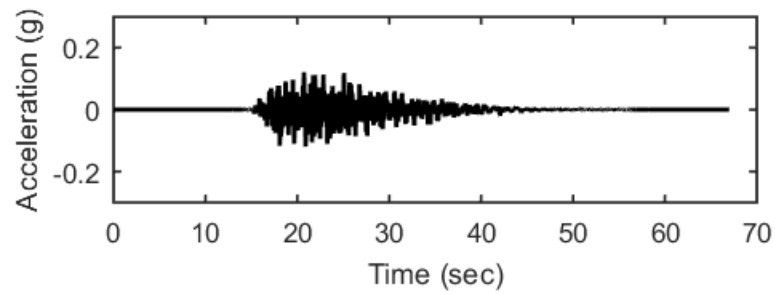
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



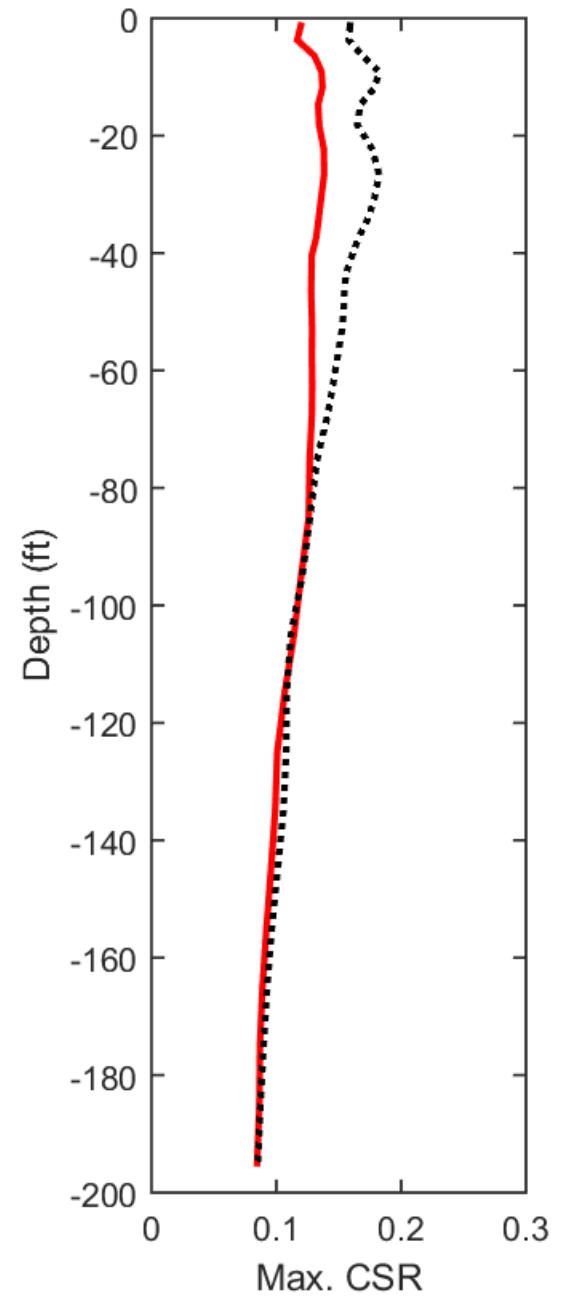
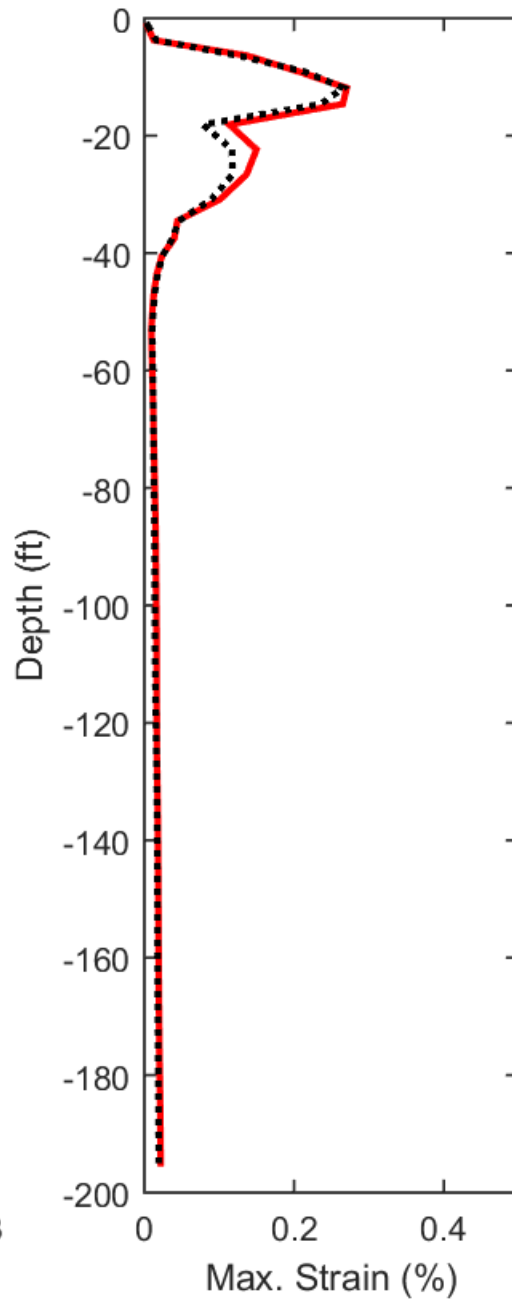
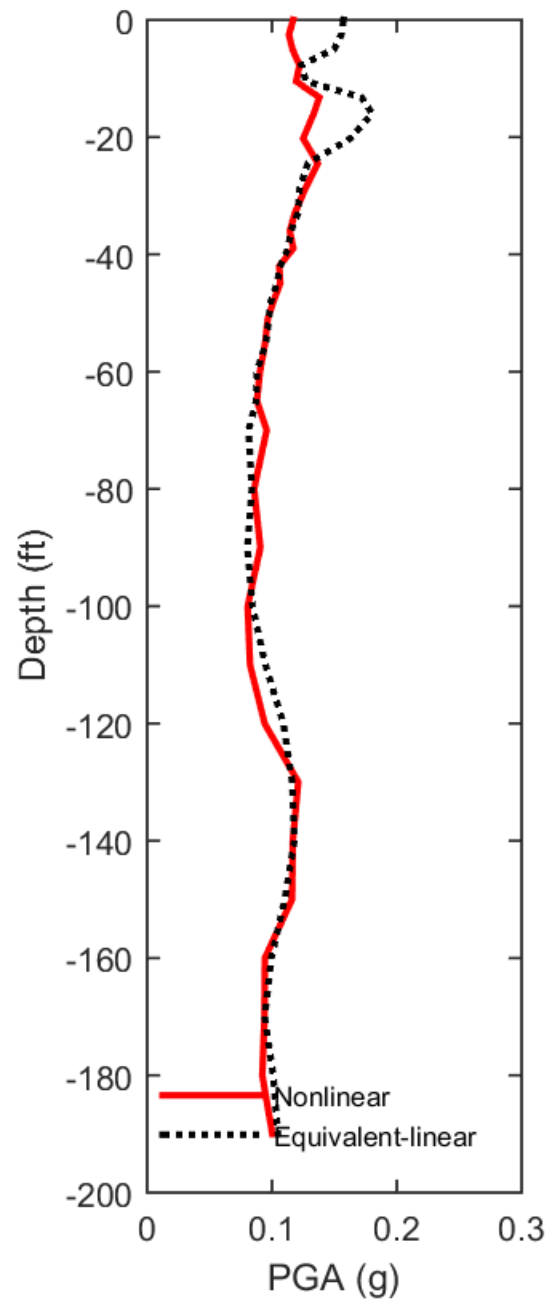
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



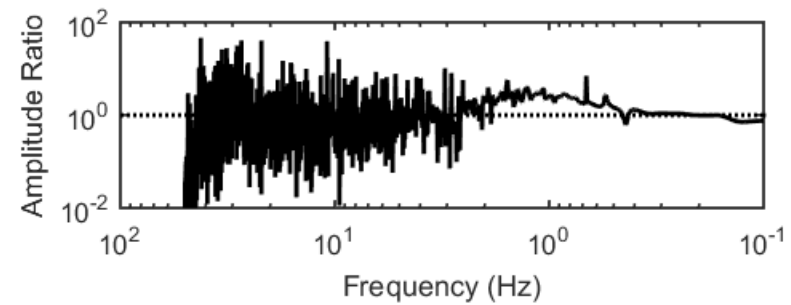
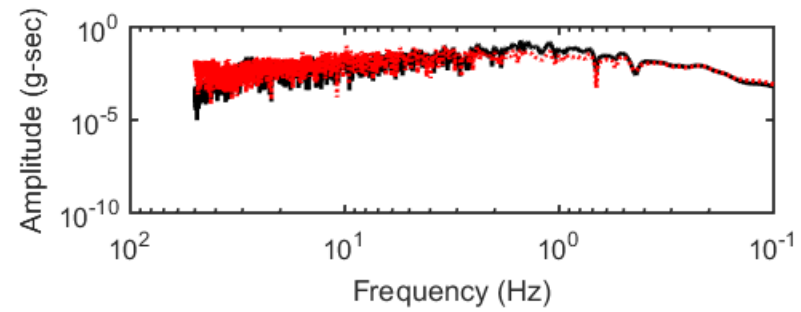
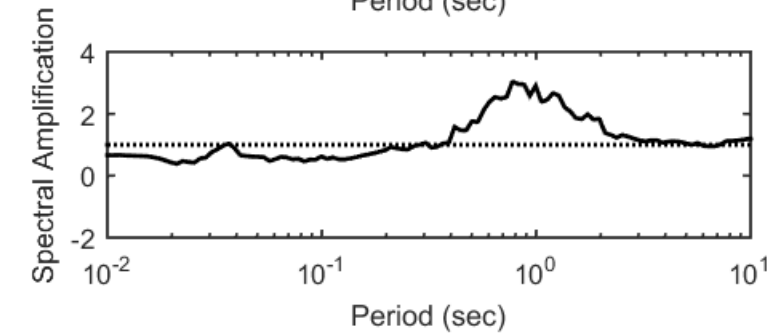
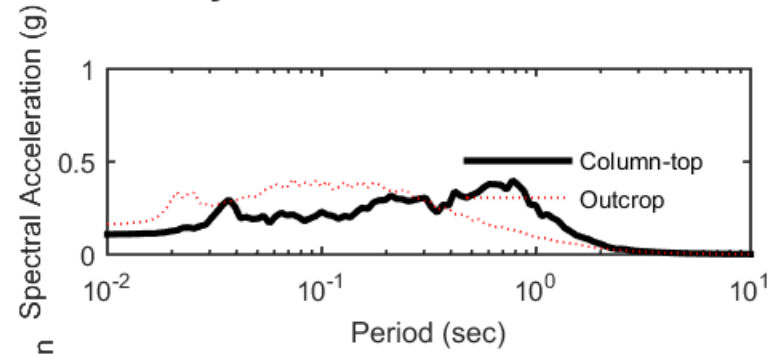
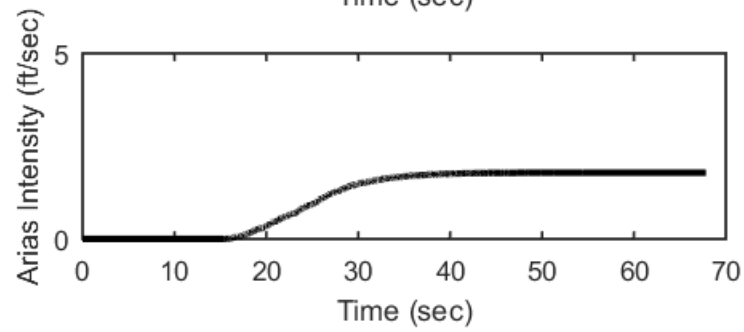
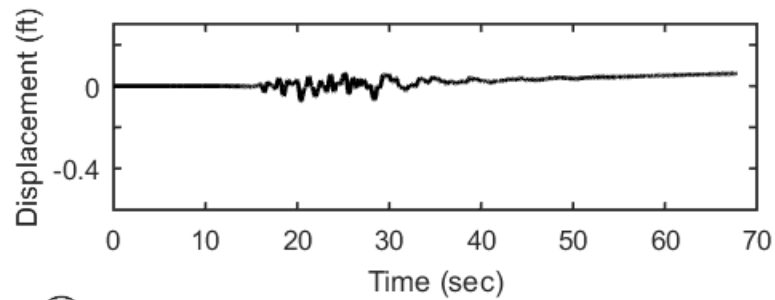
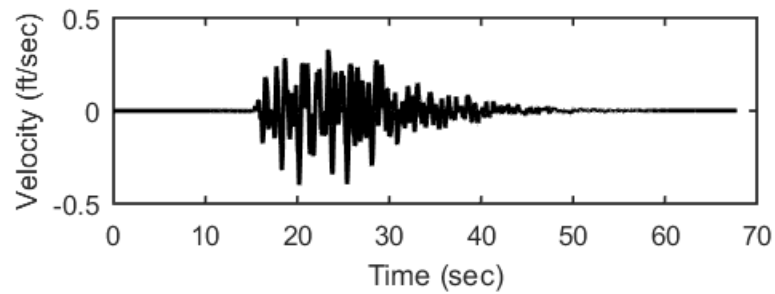
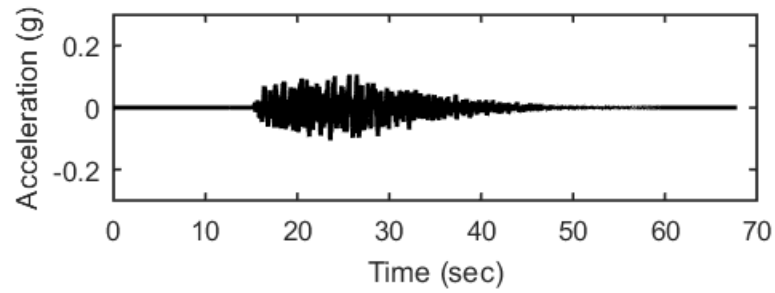
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



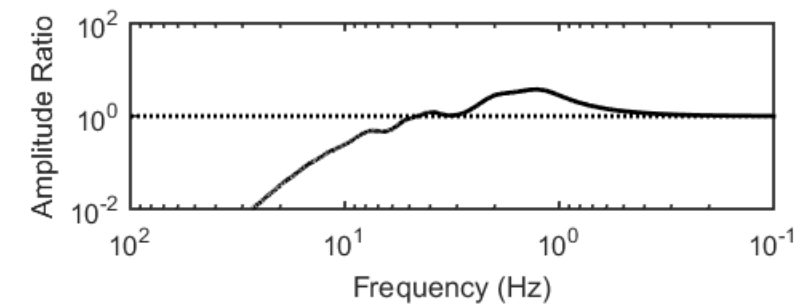
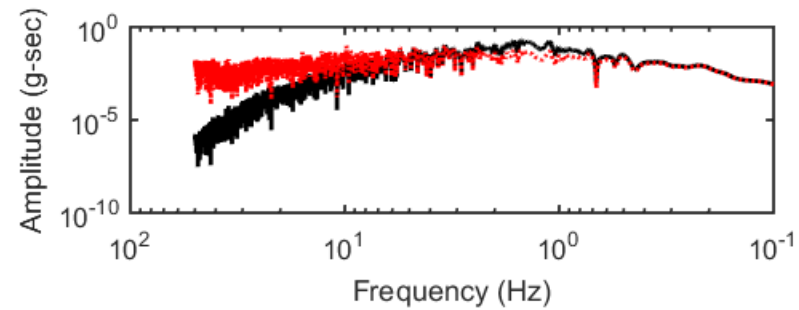
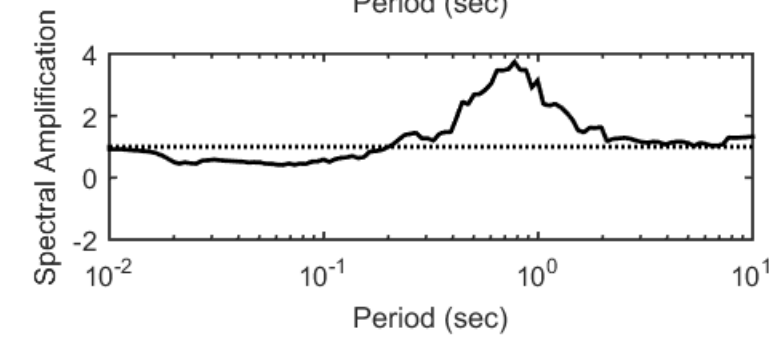
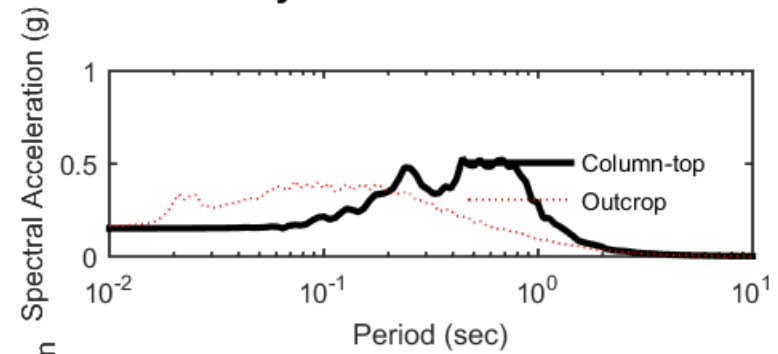
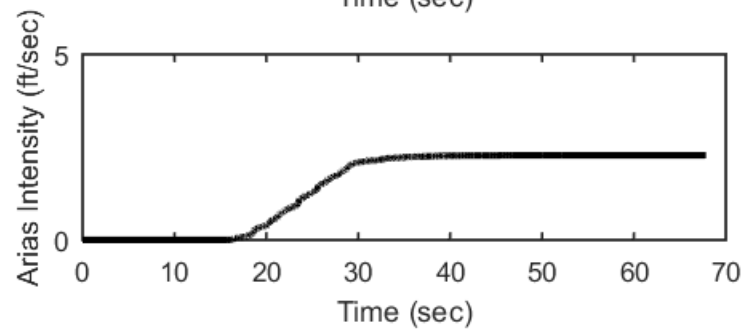
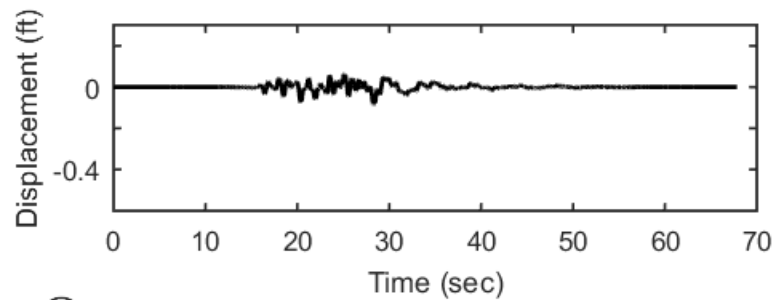
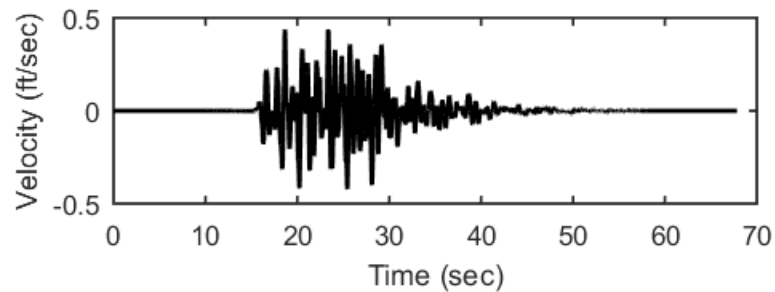
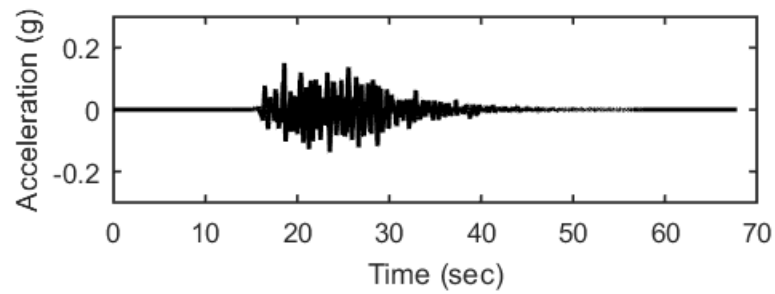
### Profile outputs for Motion: FEE5



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6

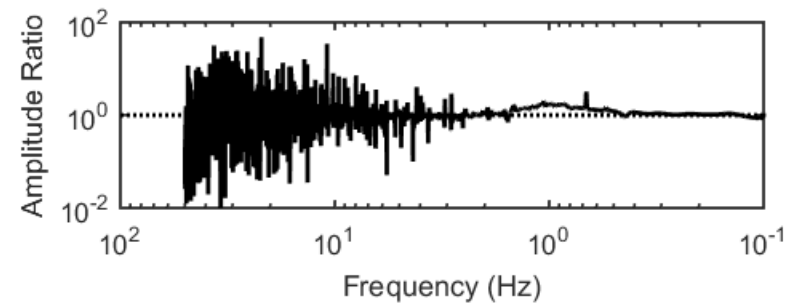
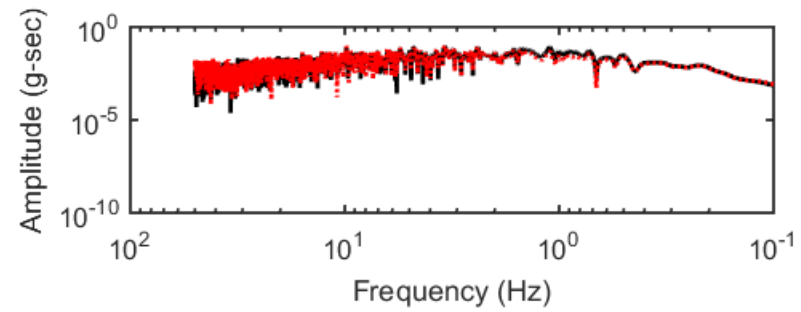
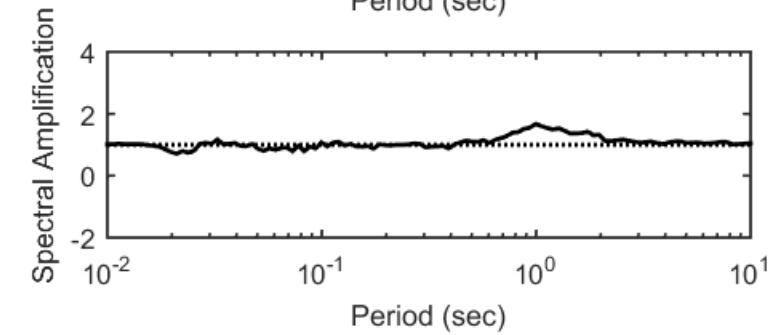
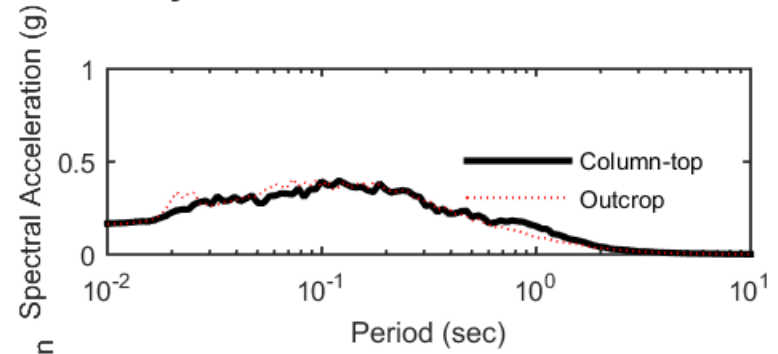
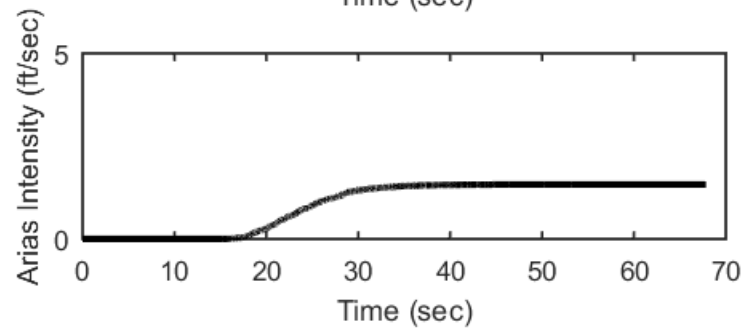
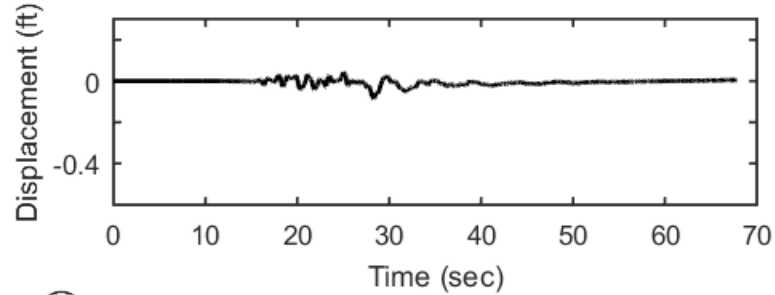
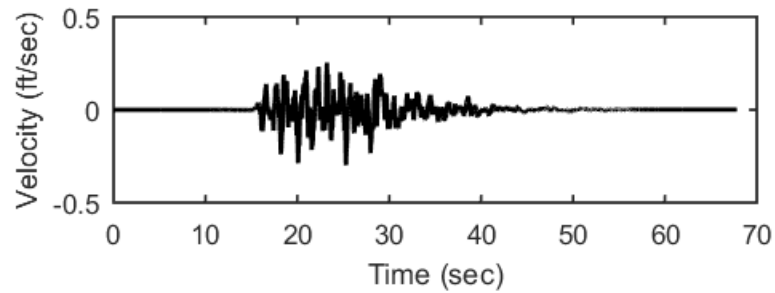
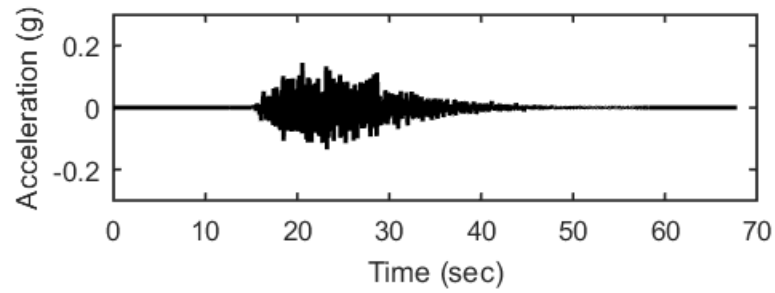


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6

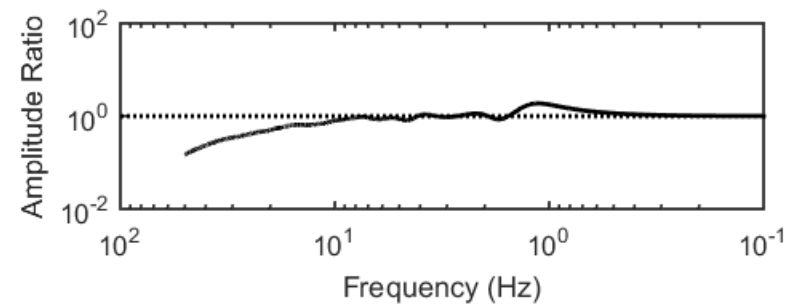
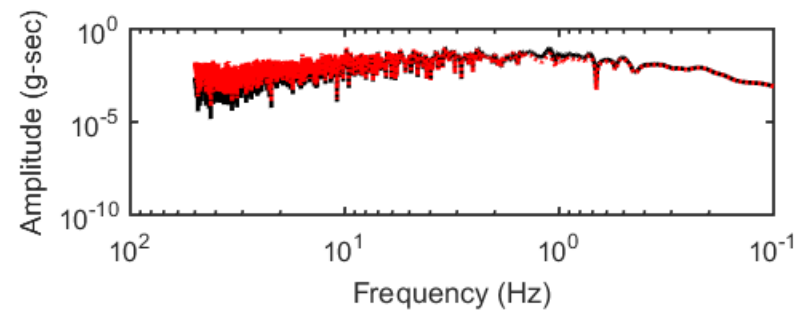
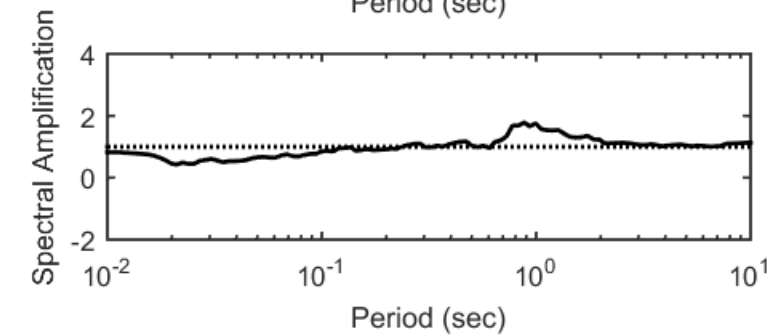
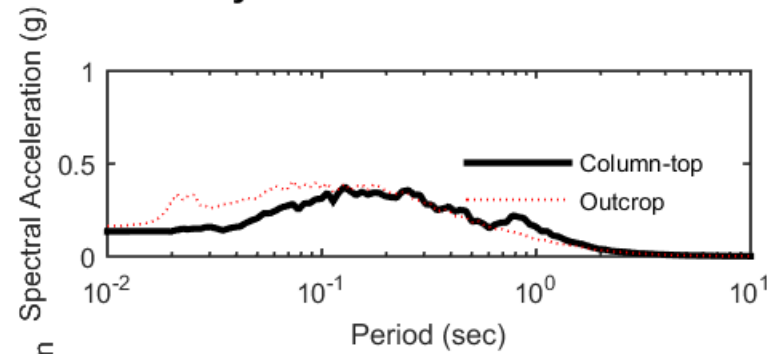
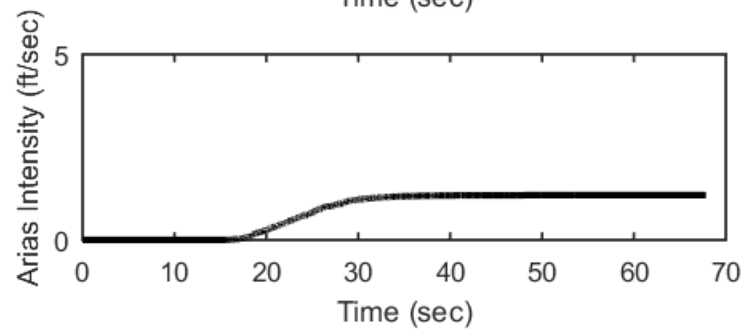
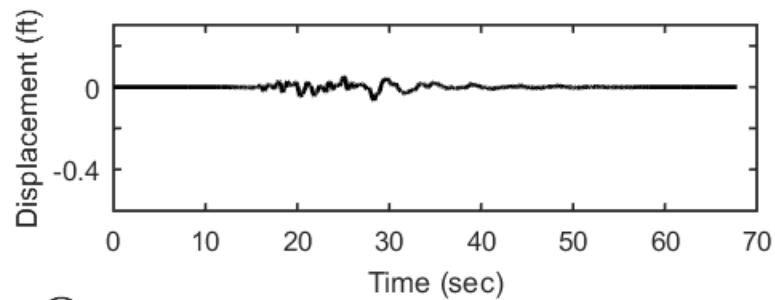
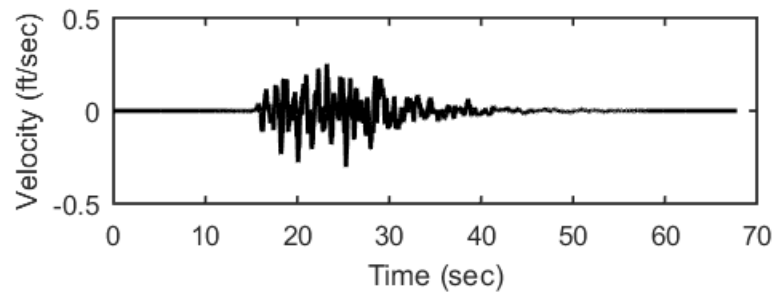
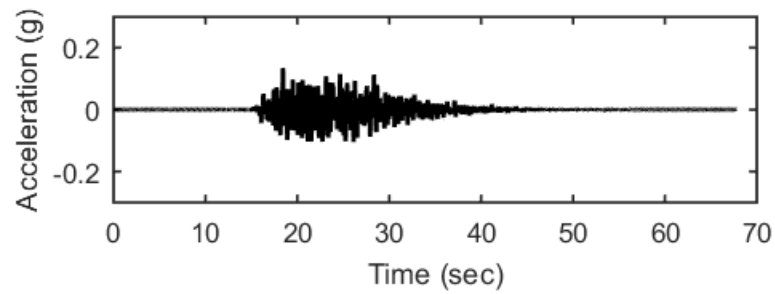




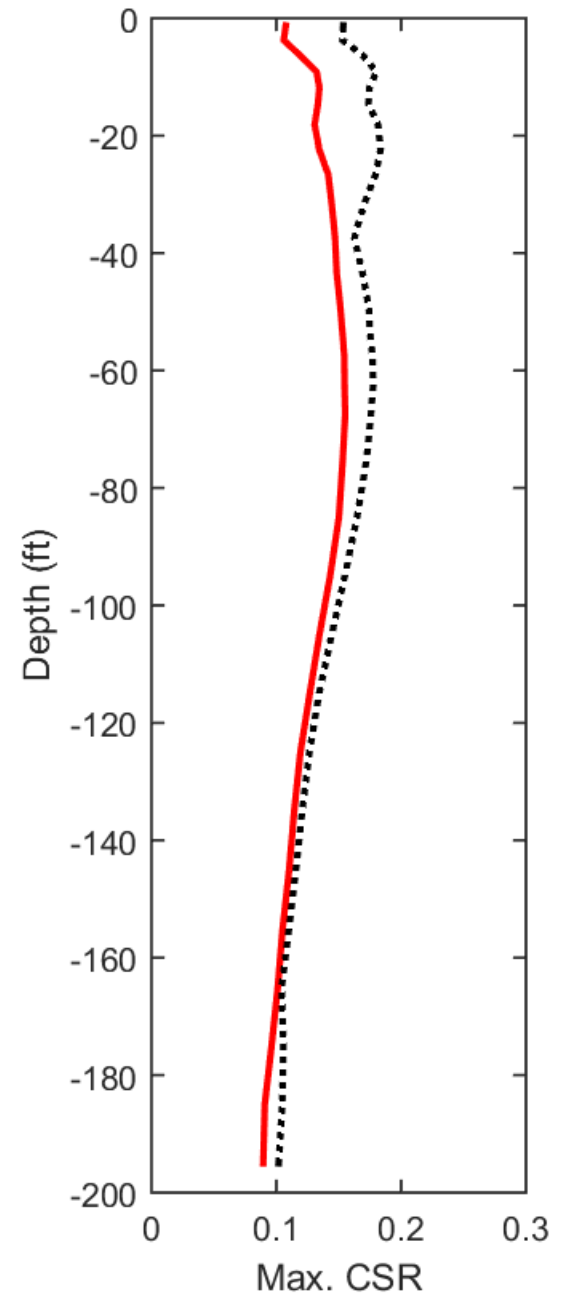
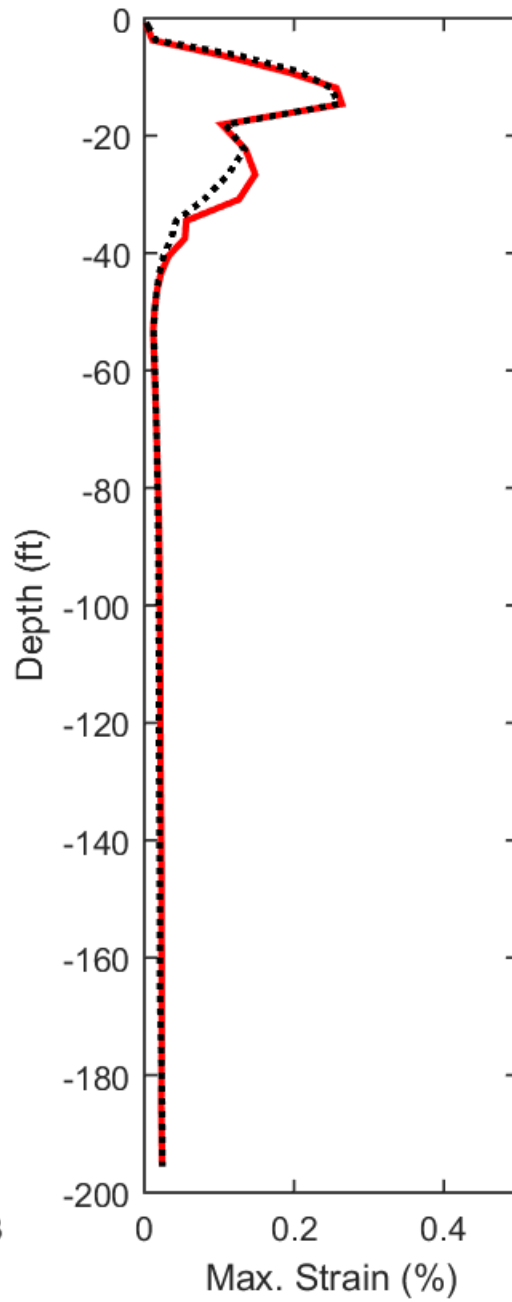
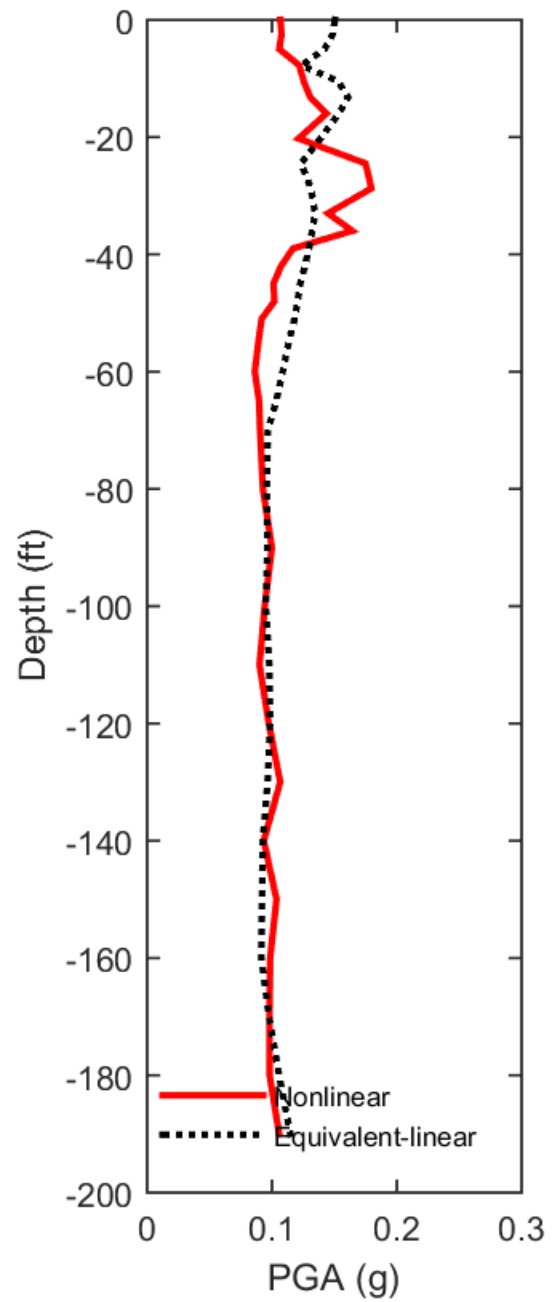
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



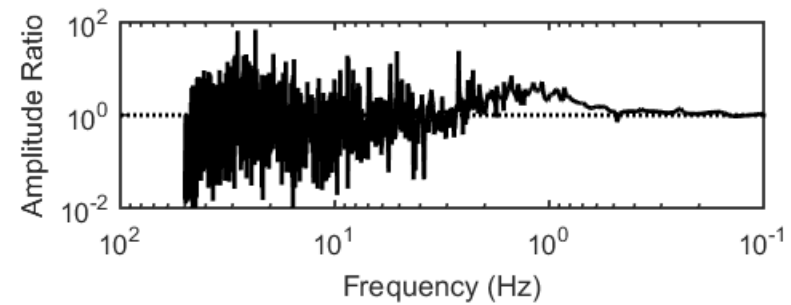
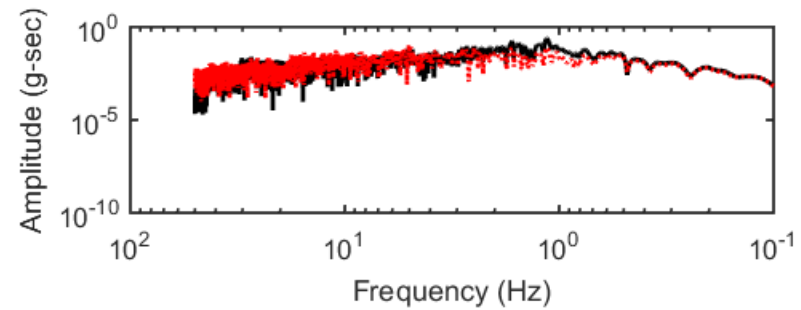
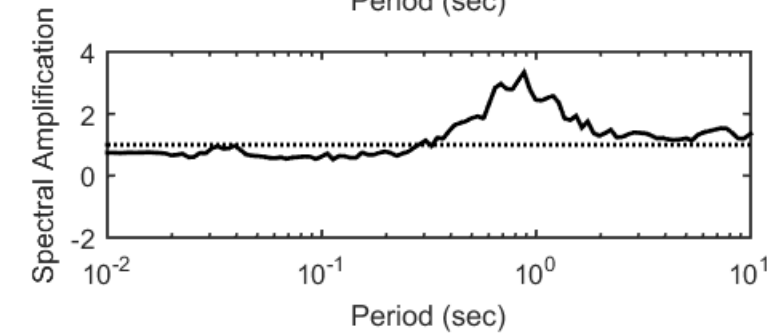
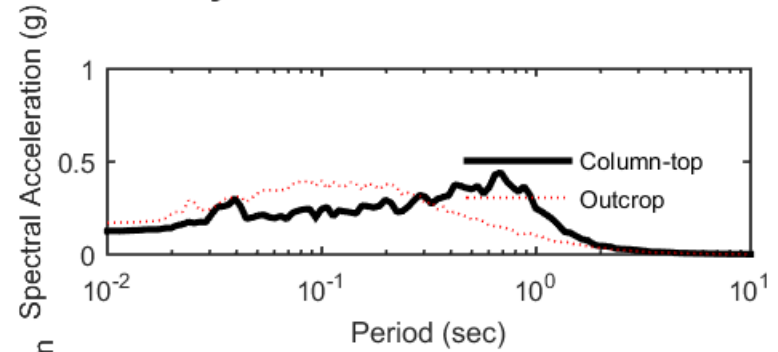
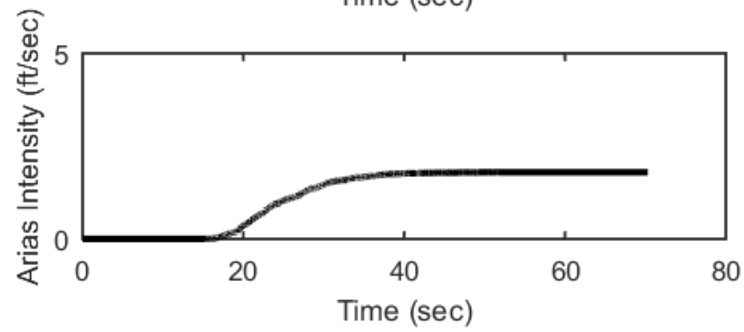
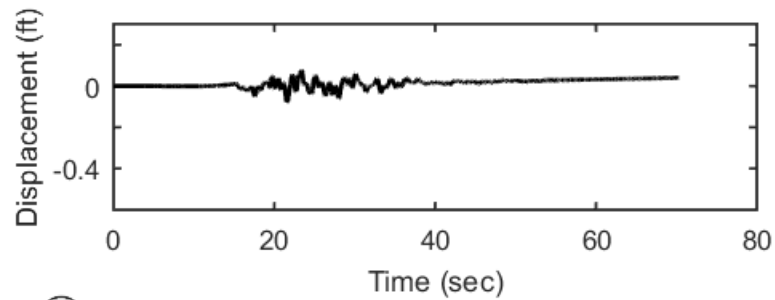
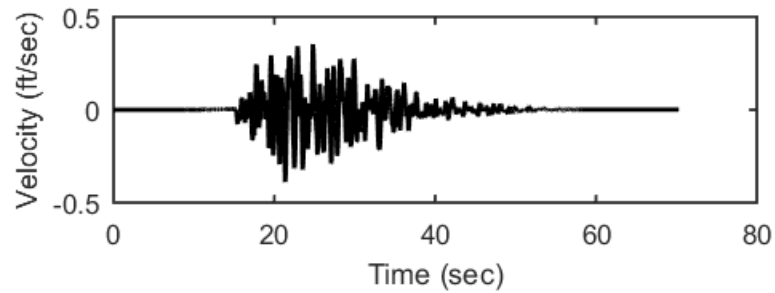
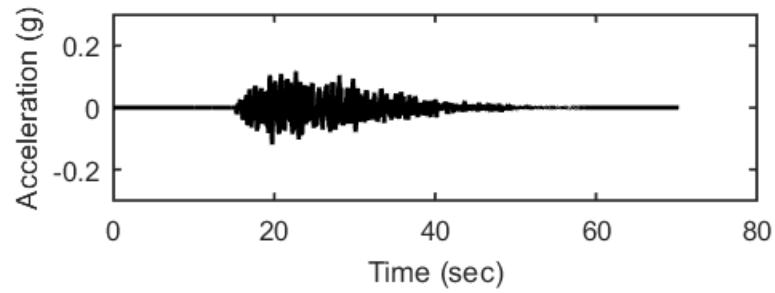
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



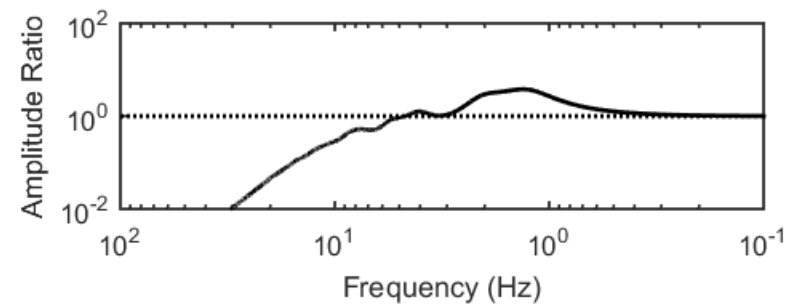
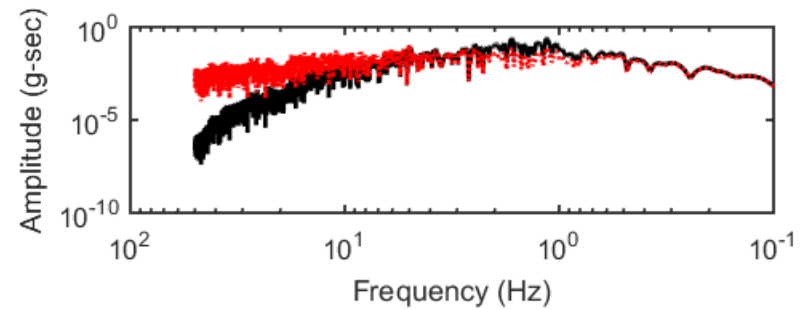
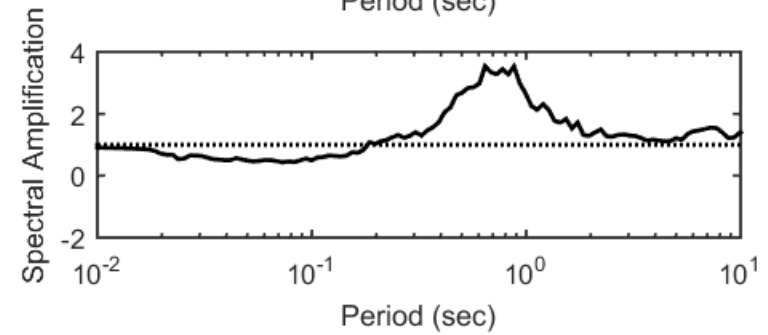
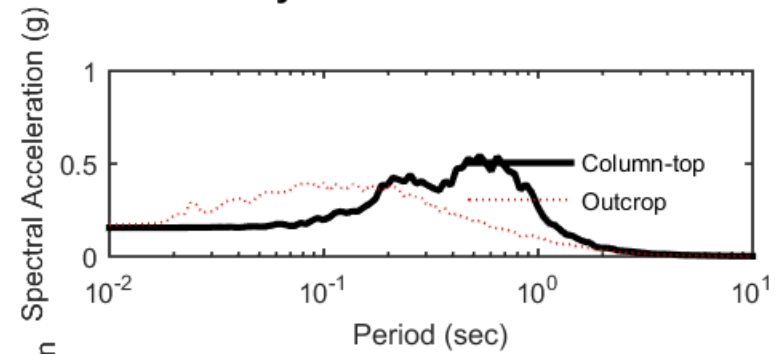
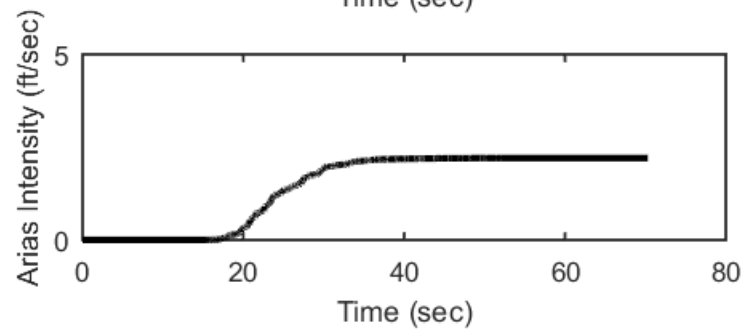
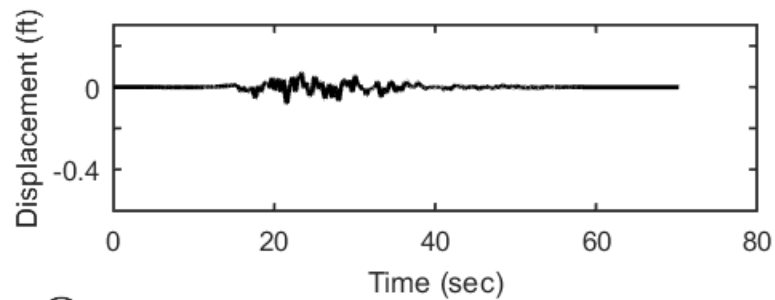
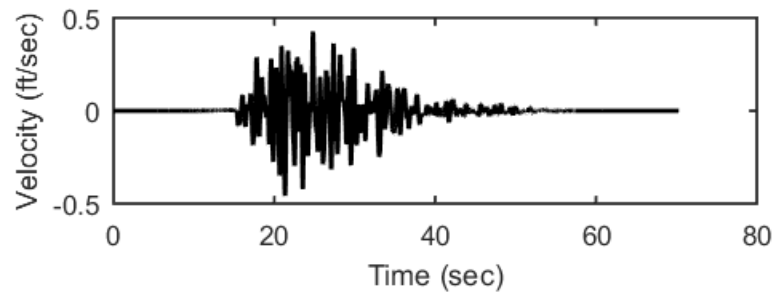
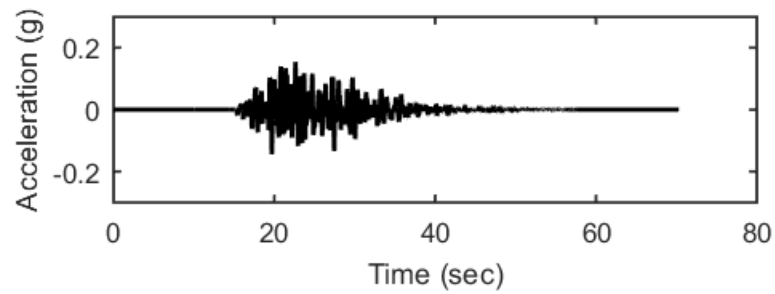
### Profile outputs for Motion: FEE6



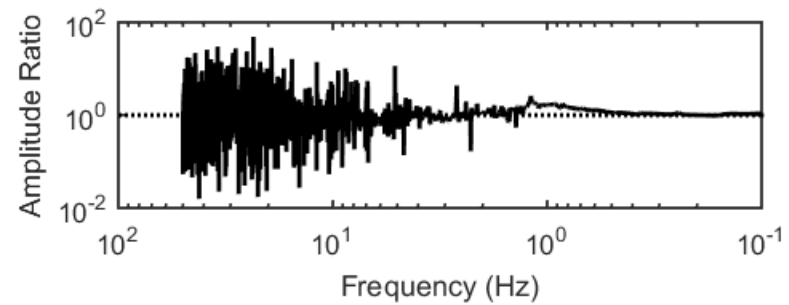
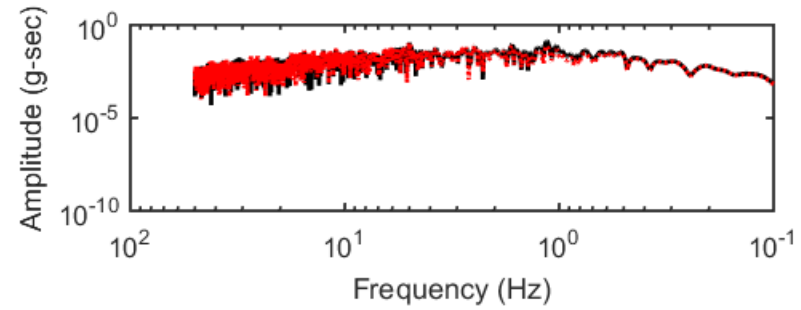
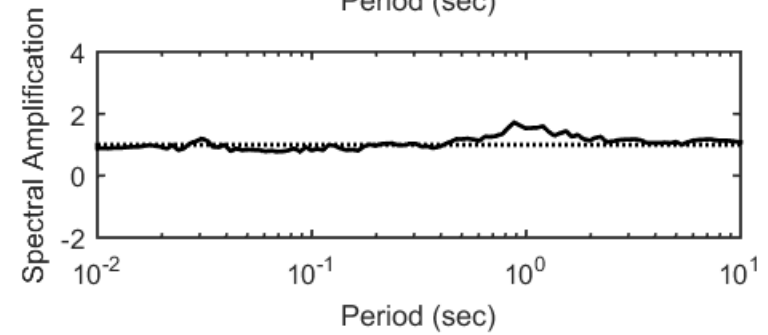
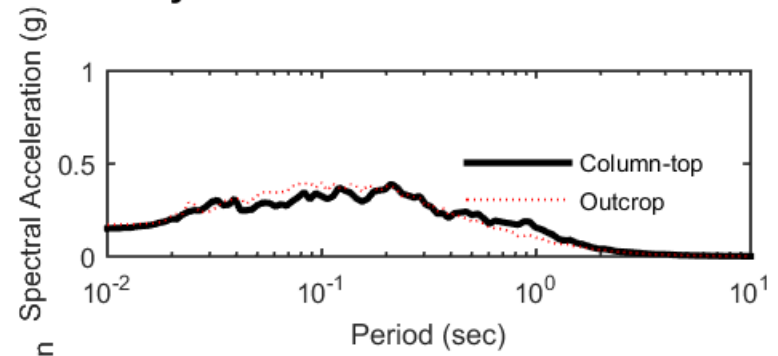
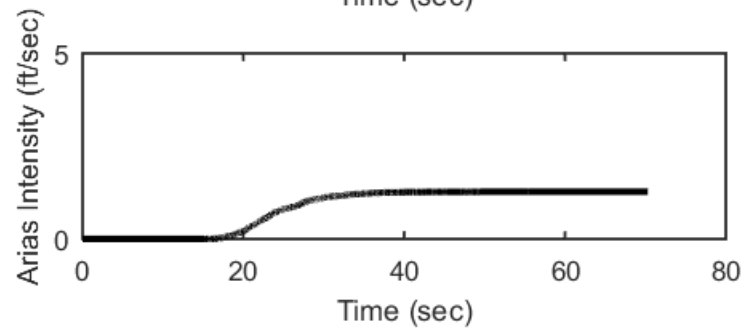
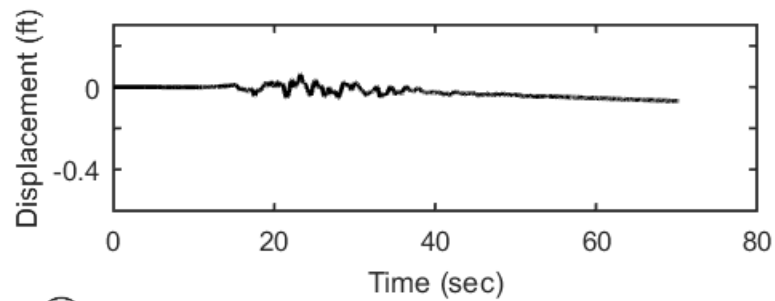
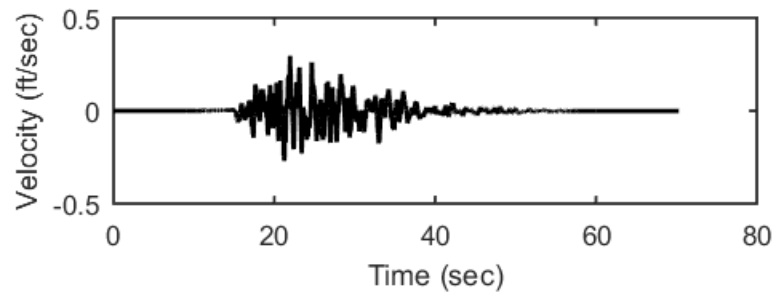
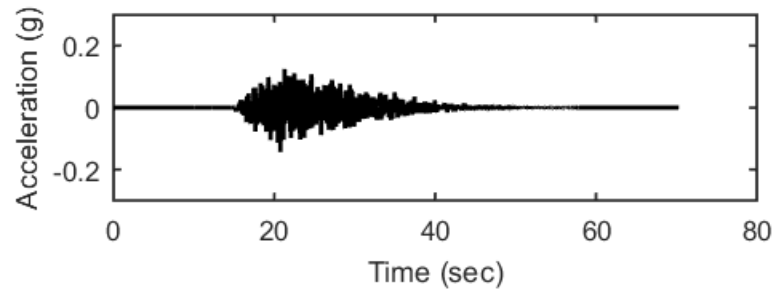
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



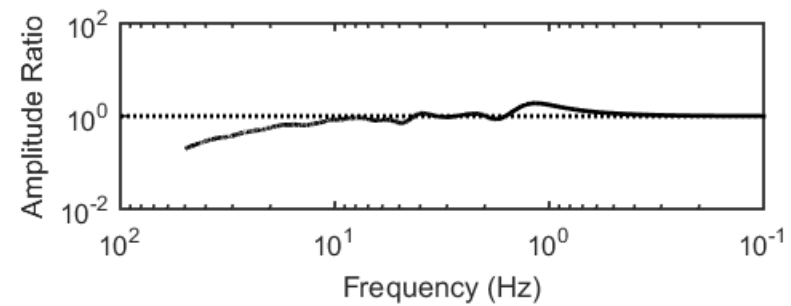
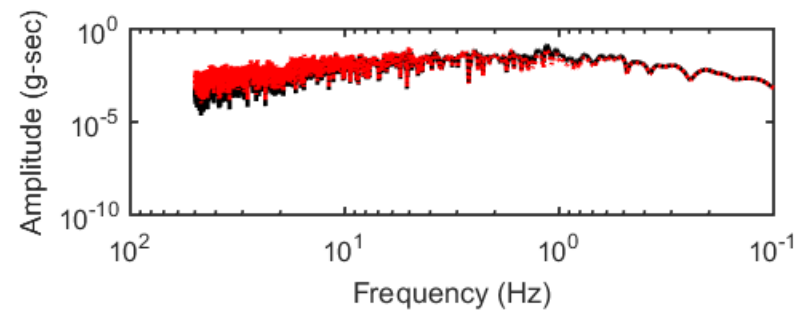
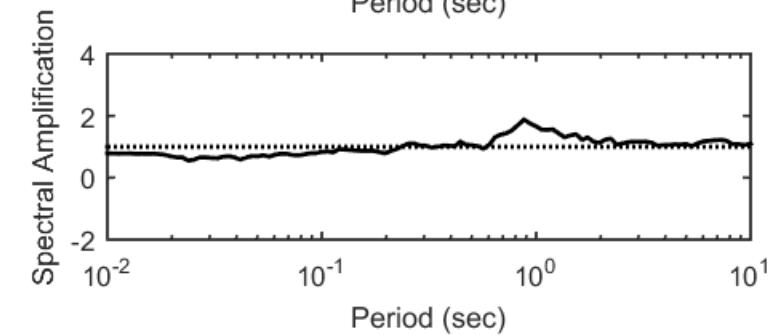
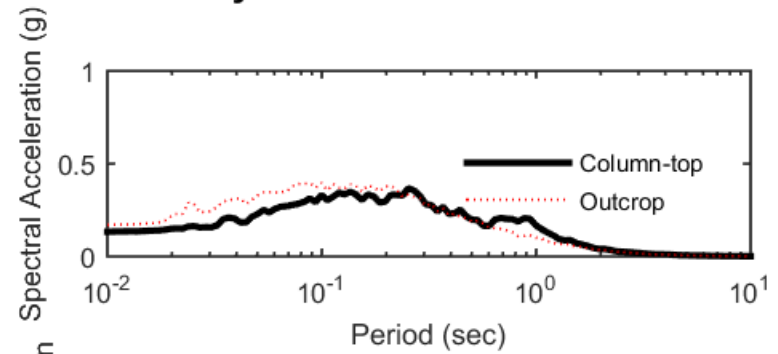
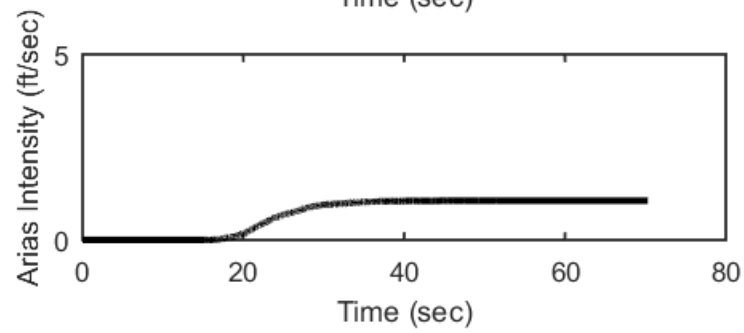
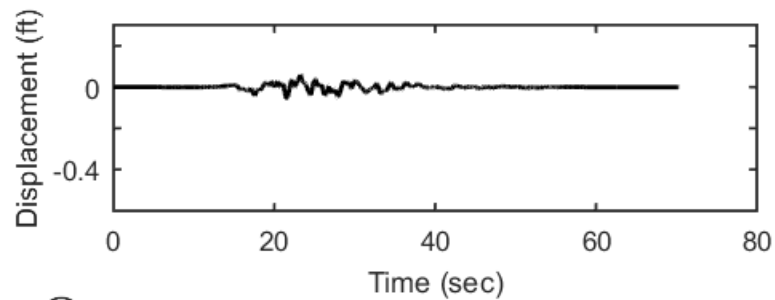
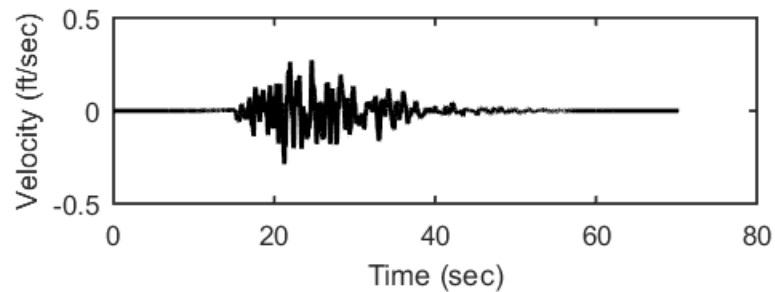
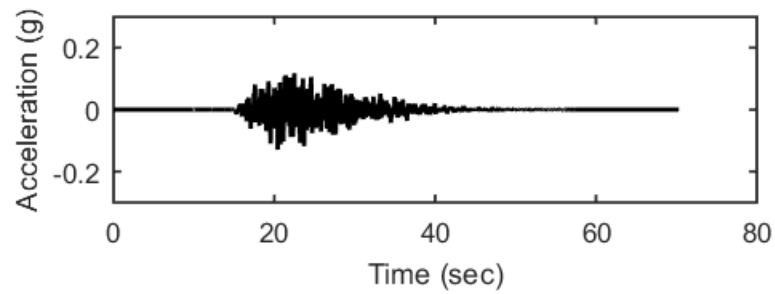
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



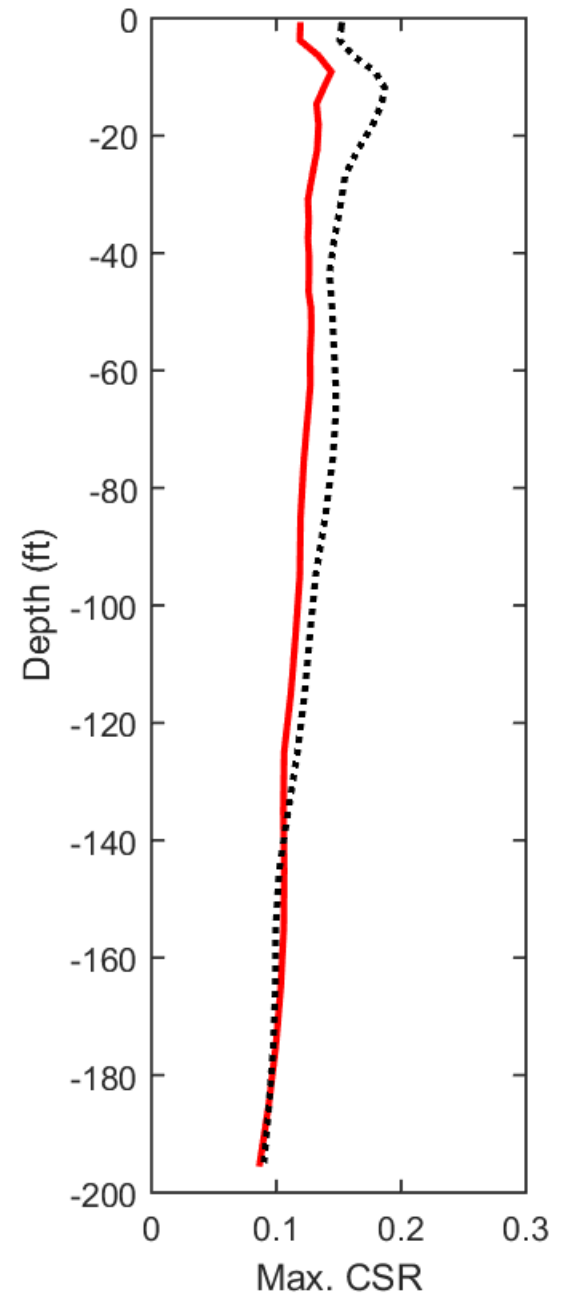
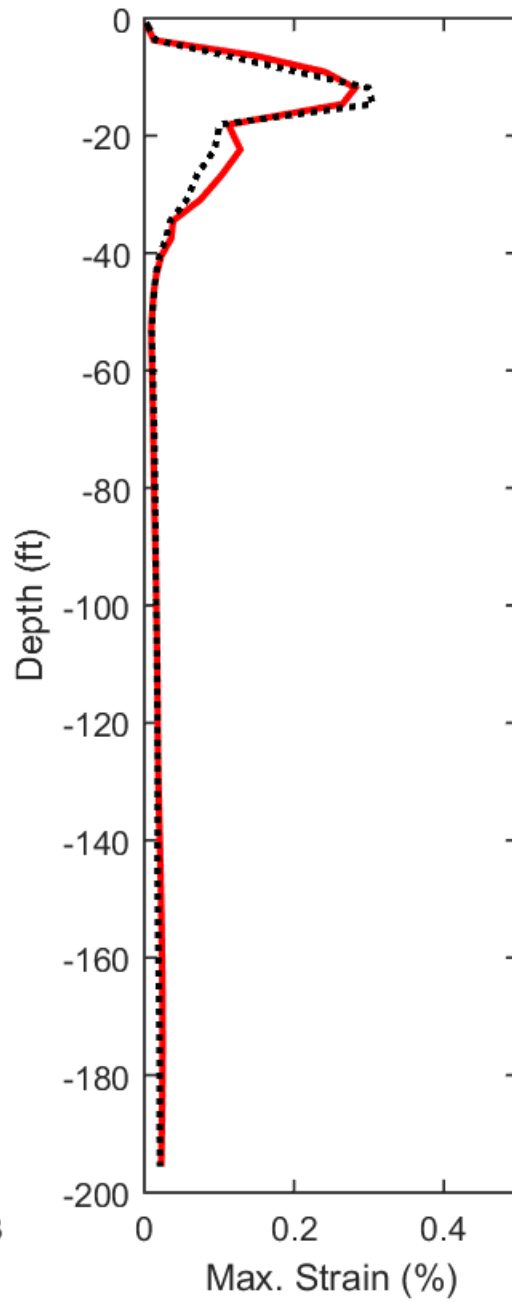
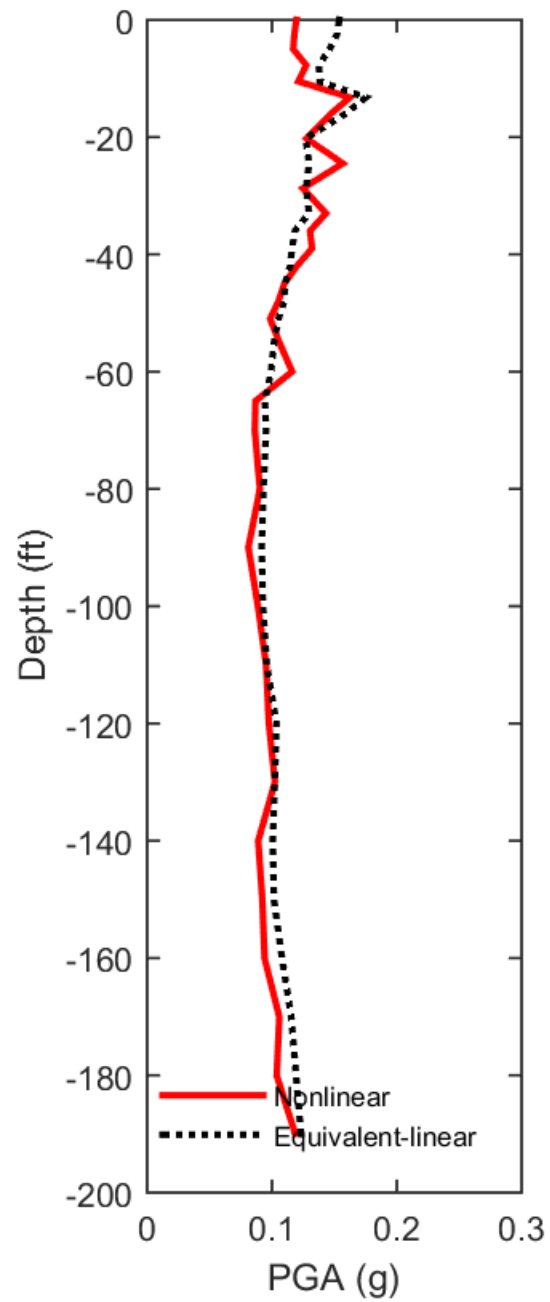
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7

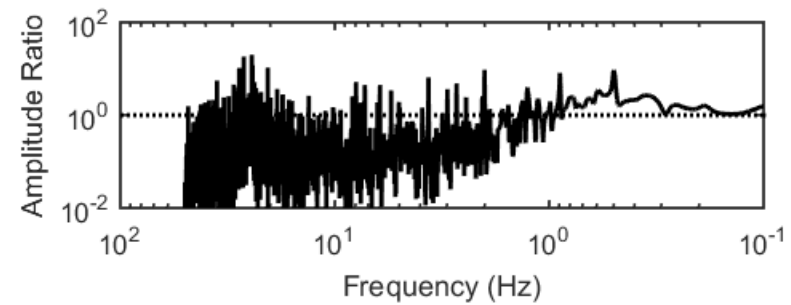
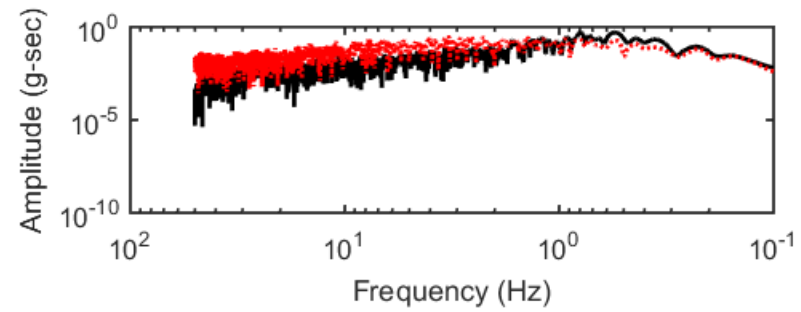
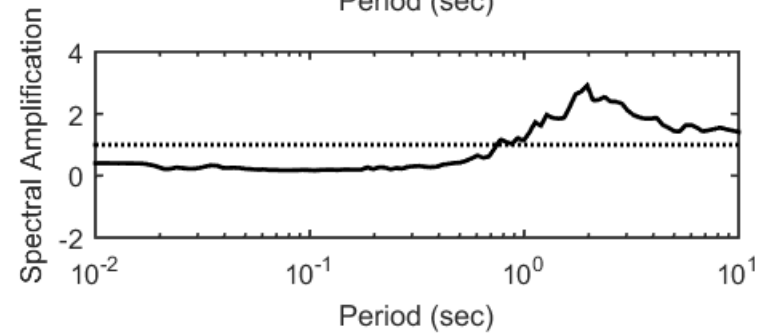
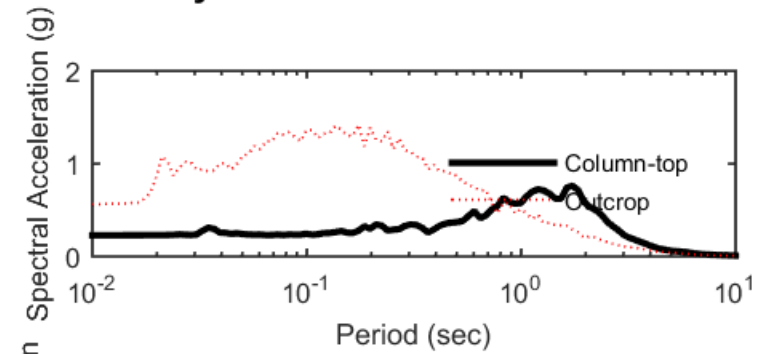
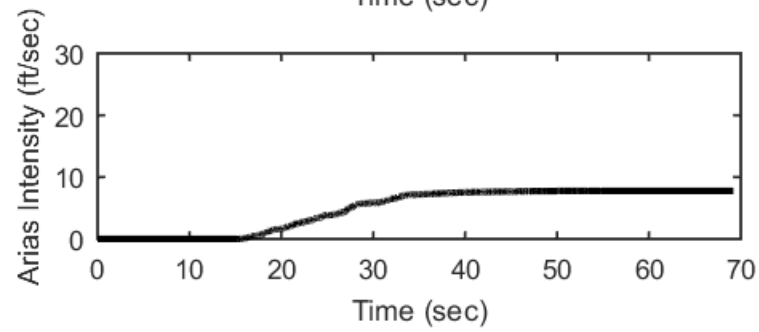
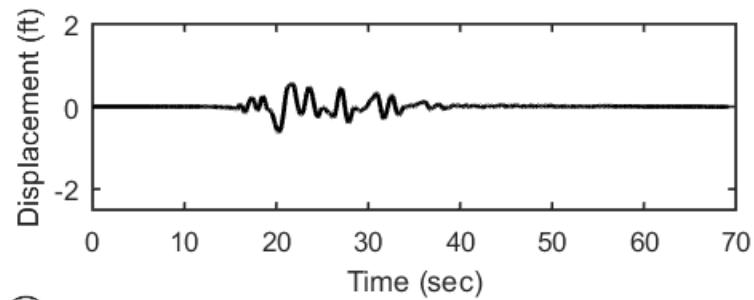
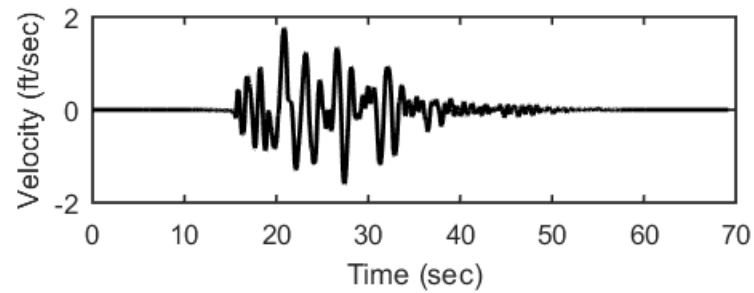
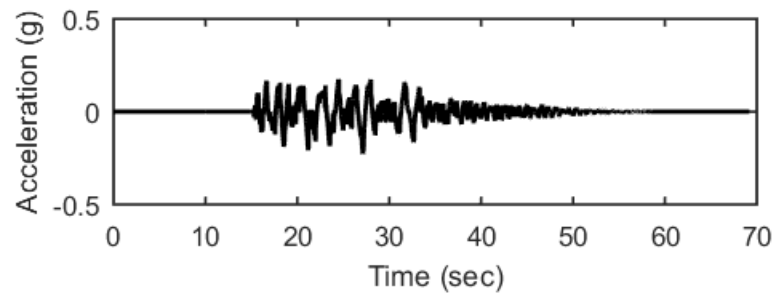


### Profile outputs for Motion: FEE7

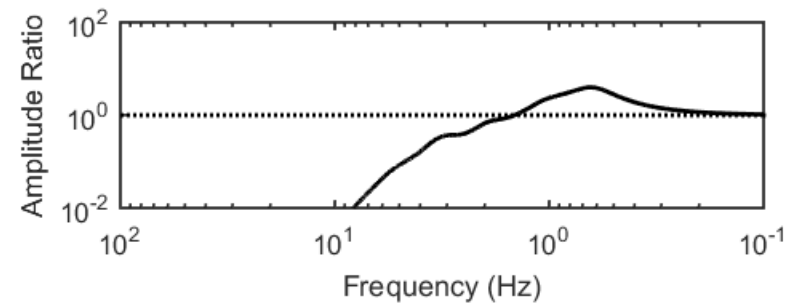
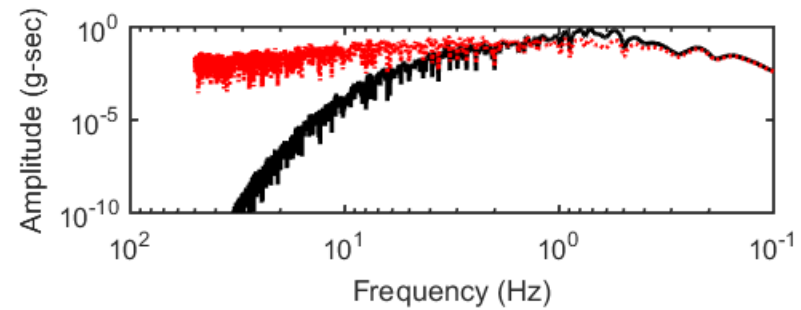
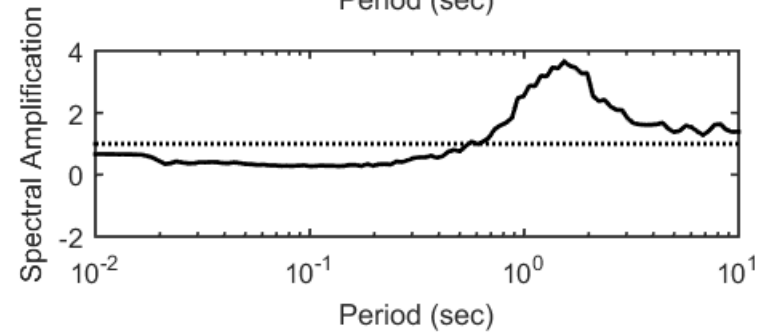
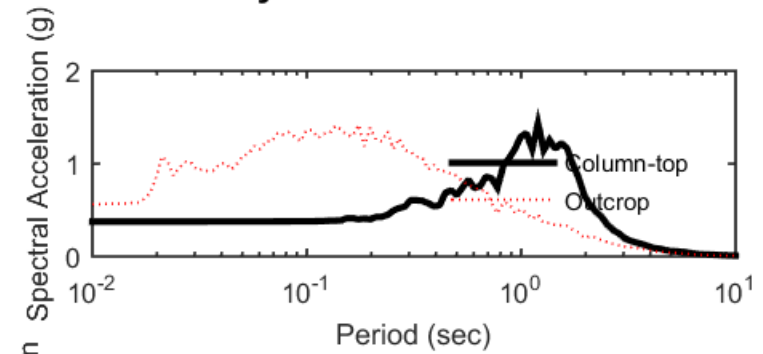
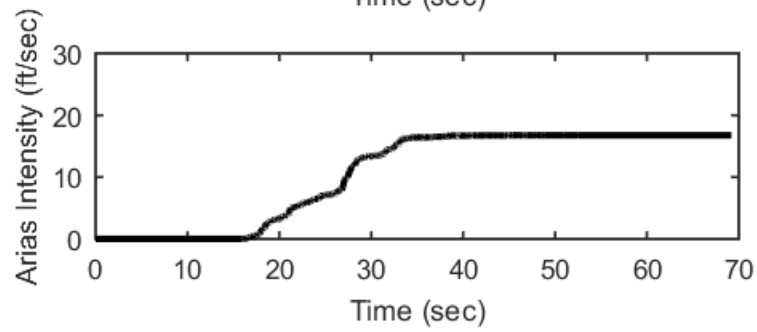
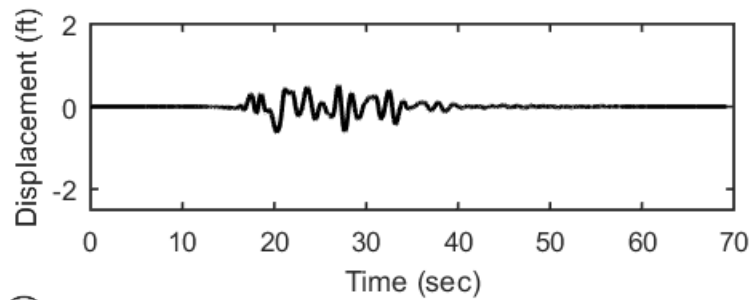
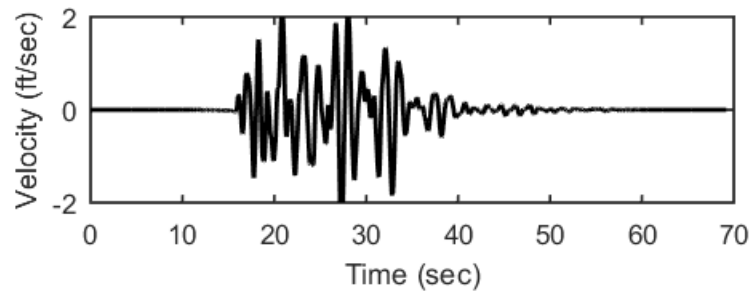
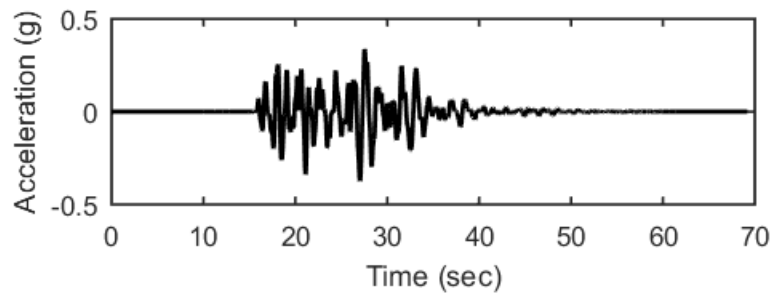




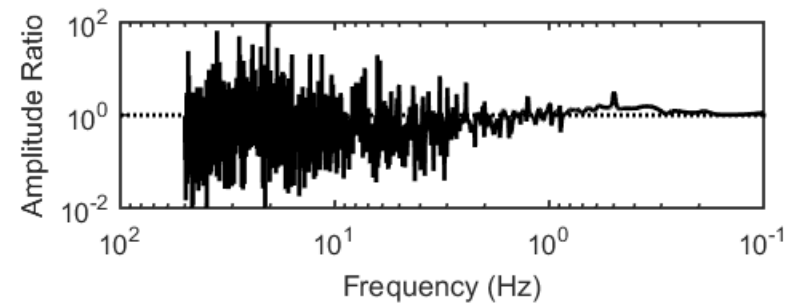
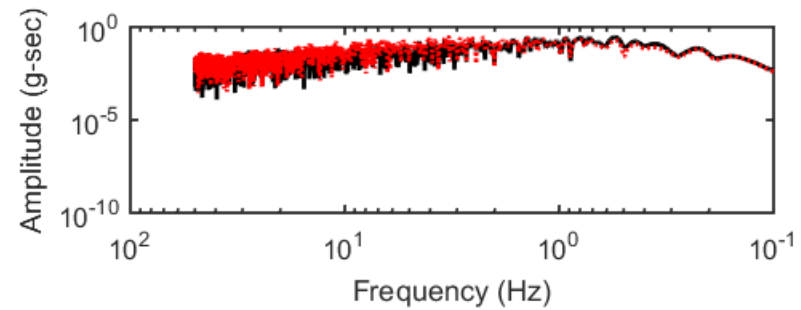
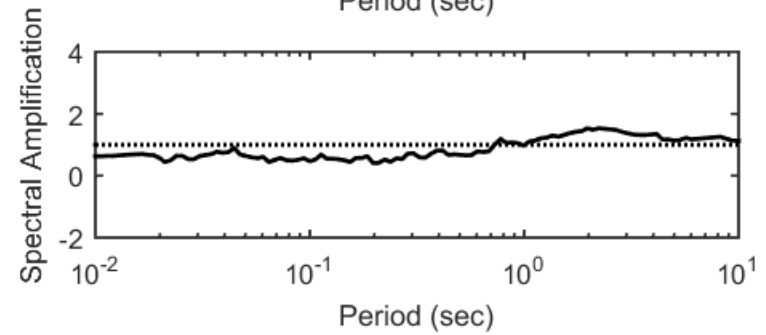
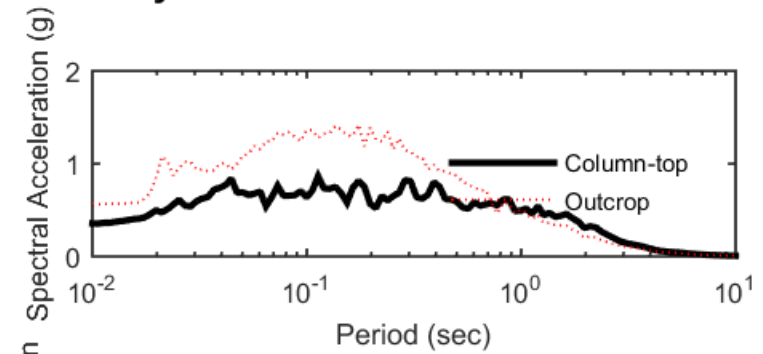
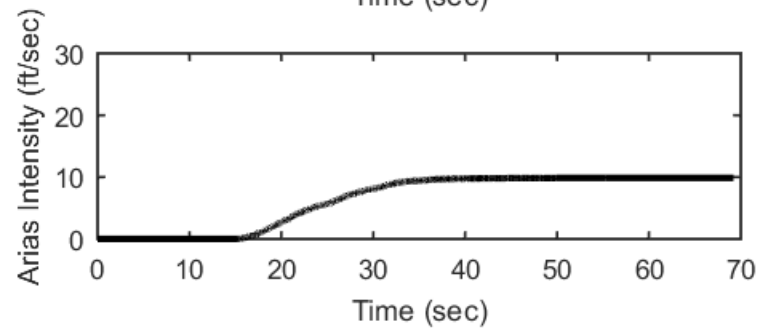
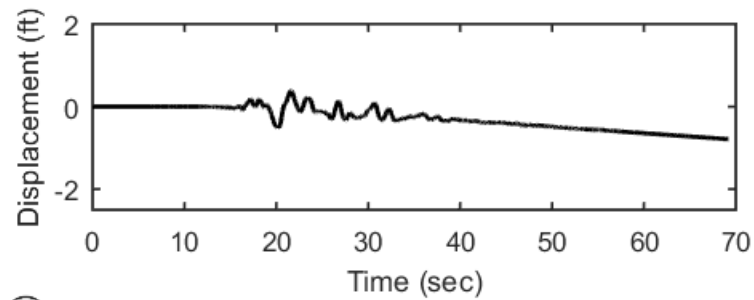
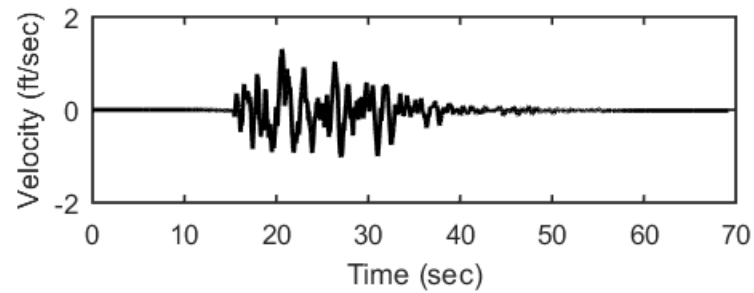
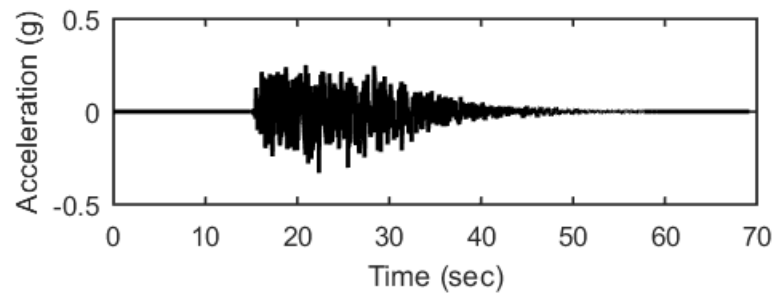
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



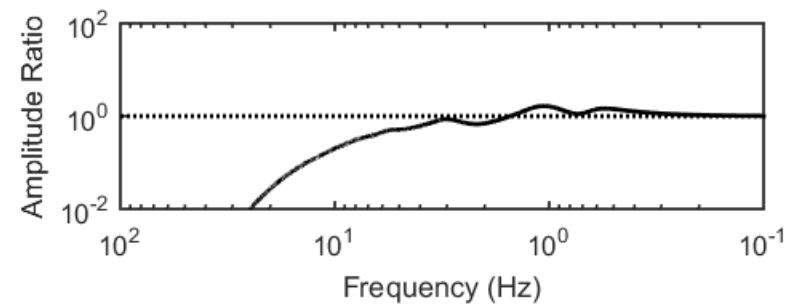
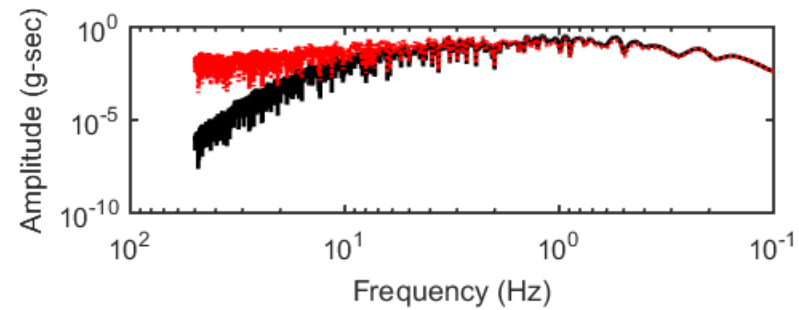
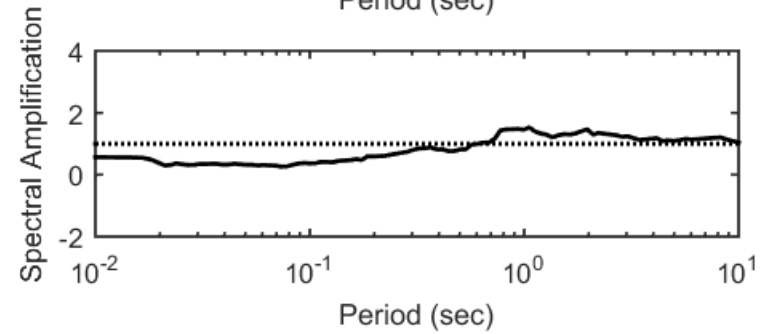
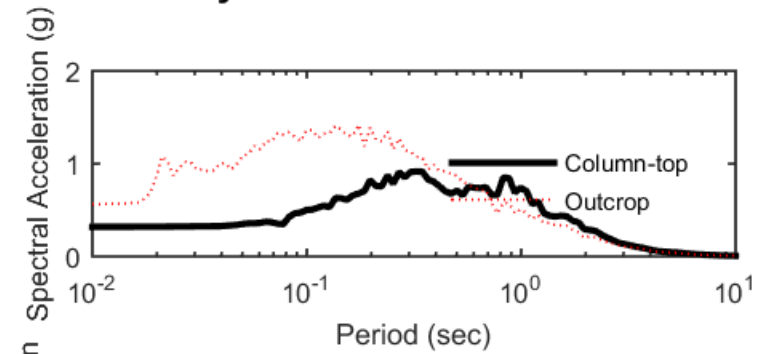
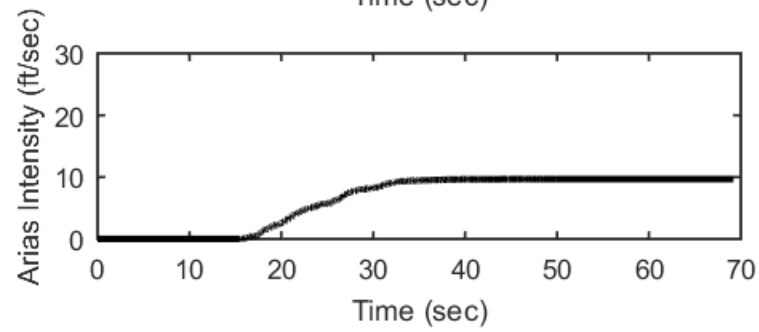
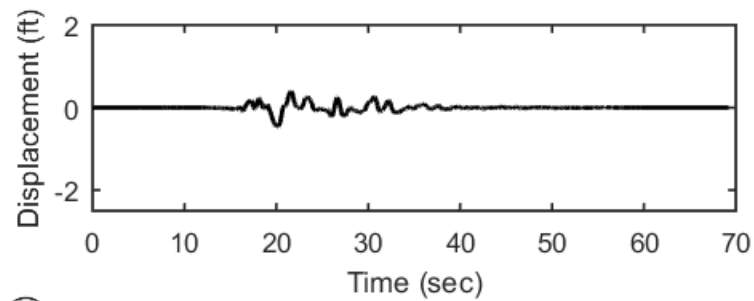
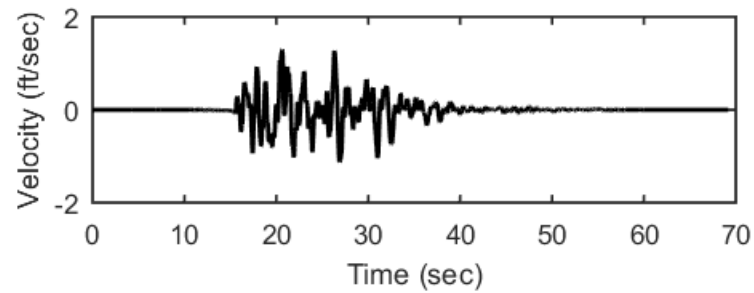
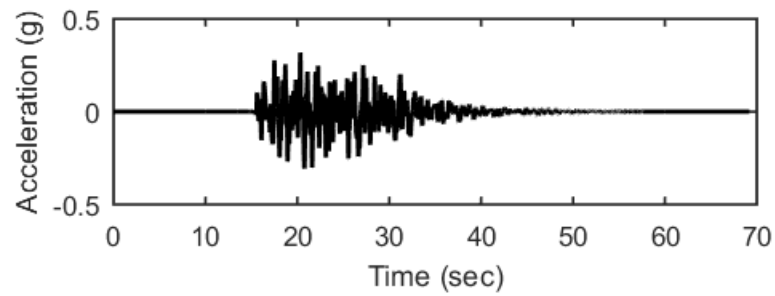
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



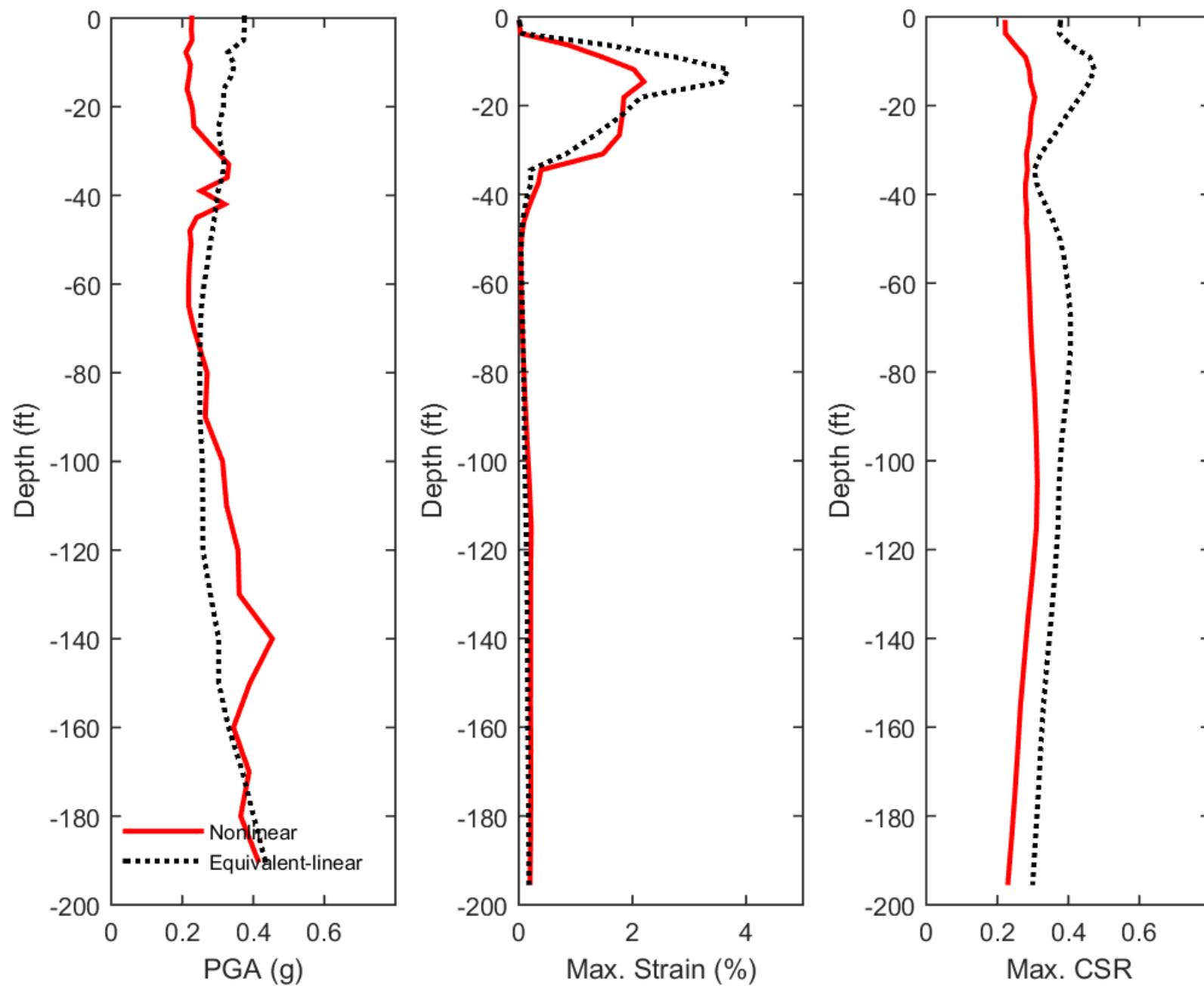
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



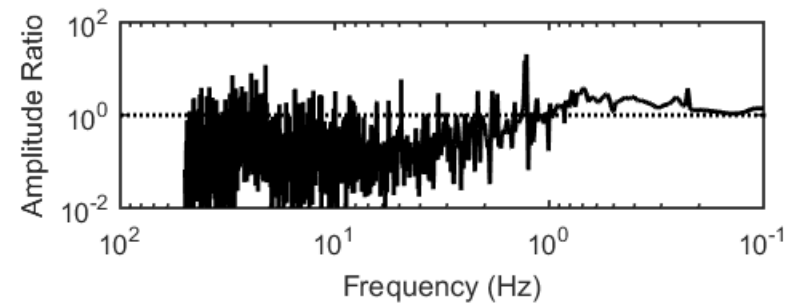
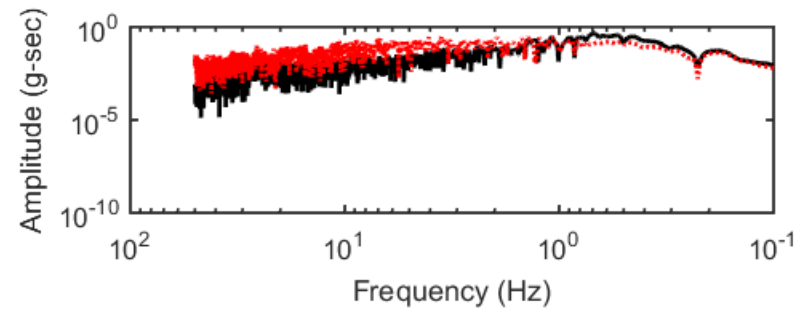
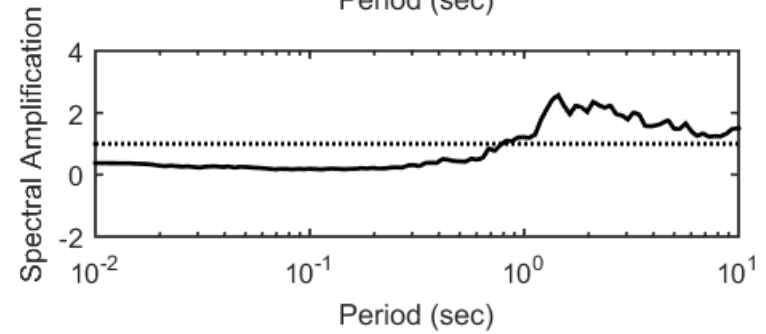
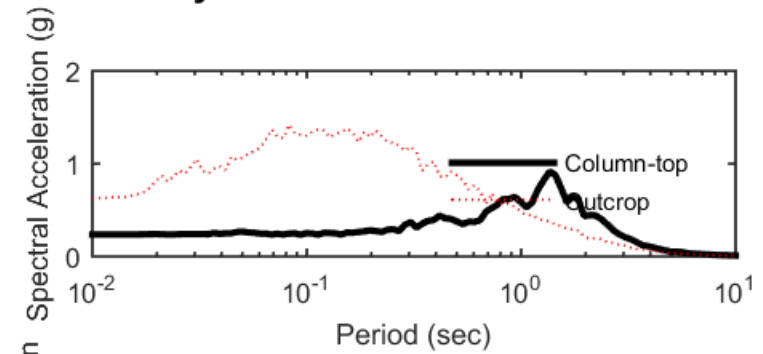
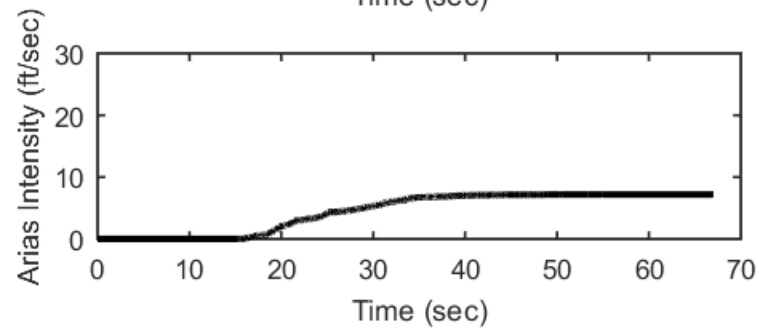
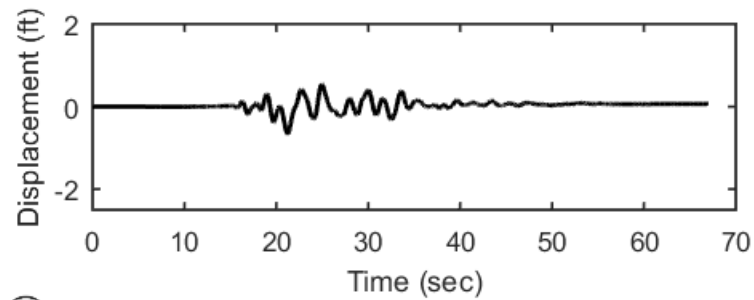
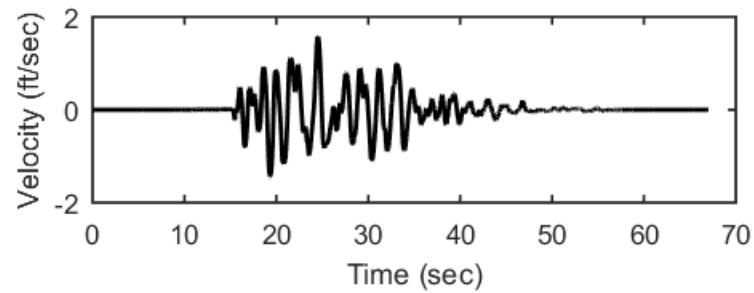
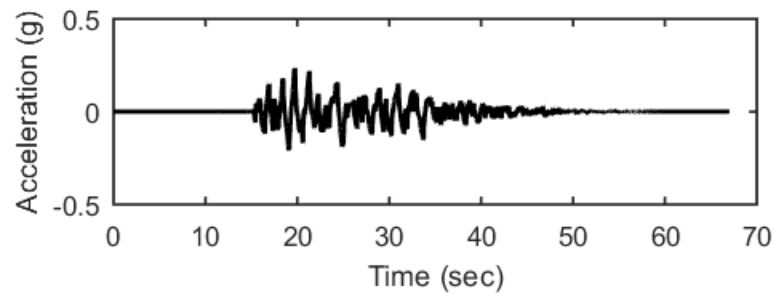
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



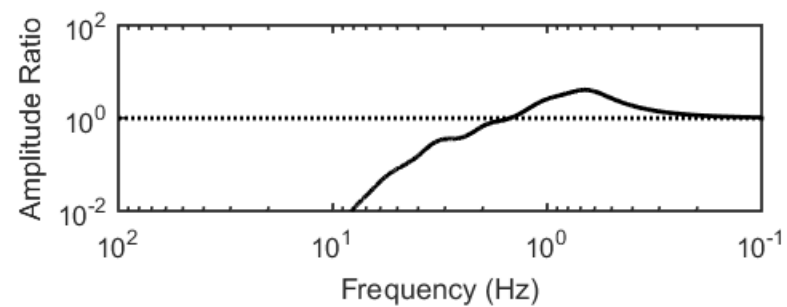
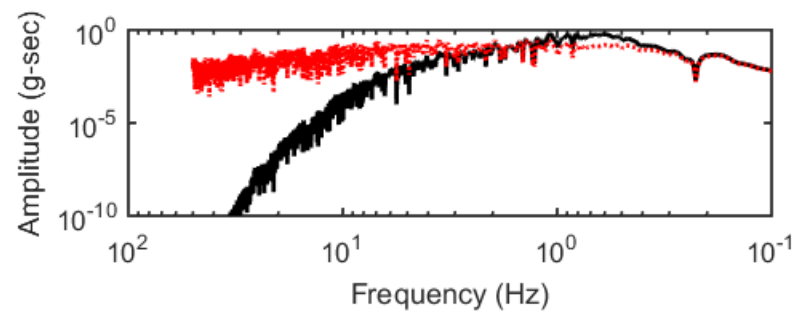
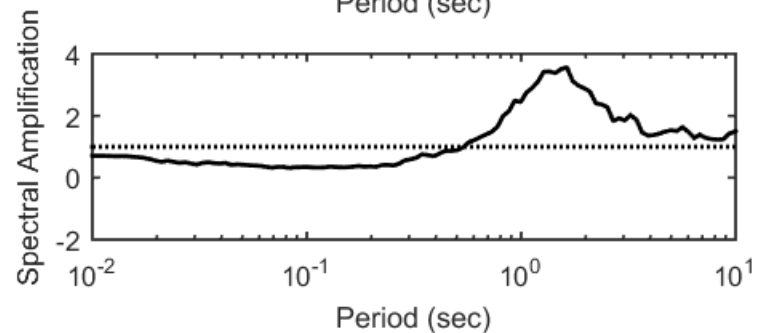
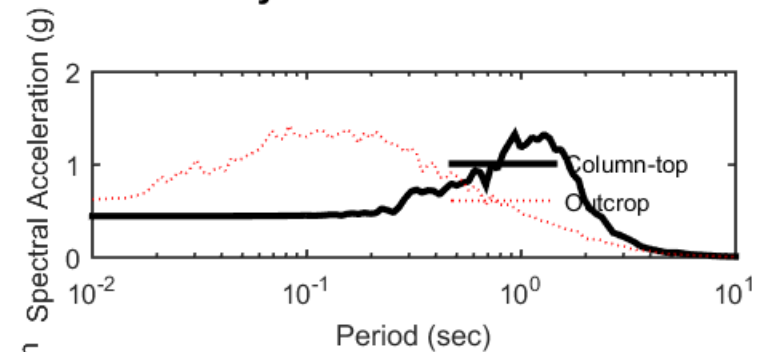
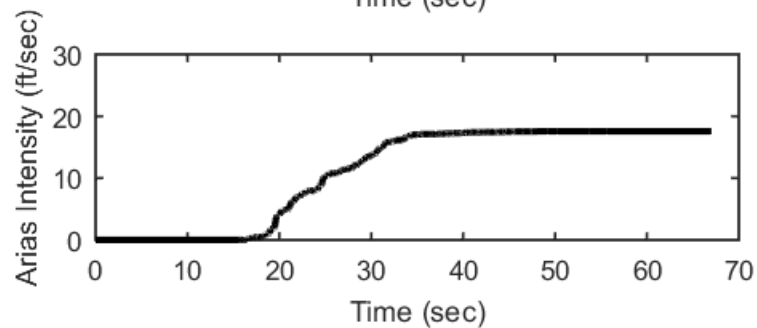
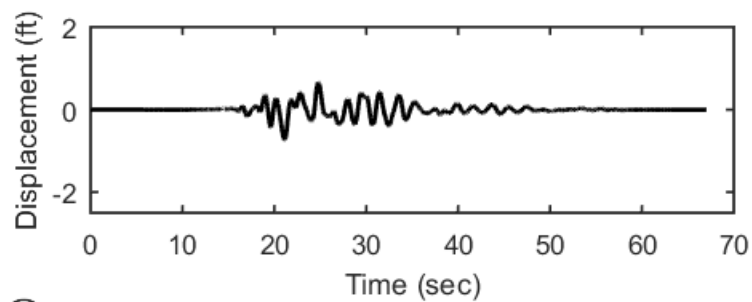
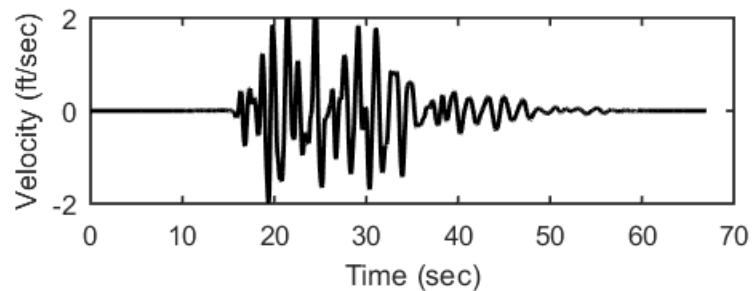
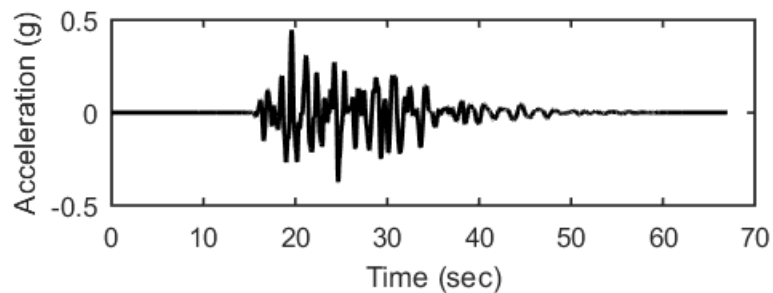
### Profile outputs for Motion: SEE1



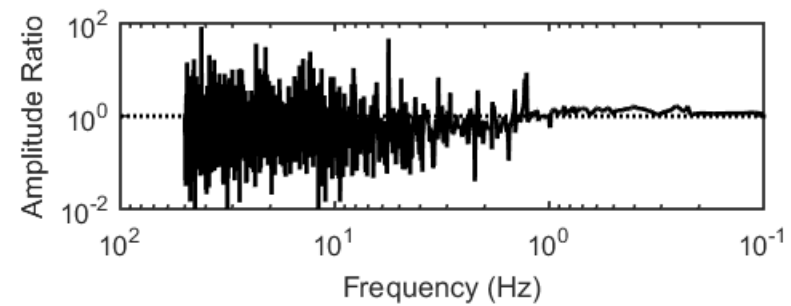
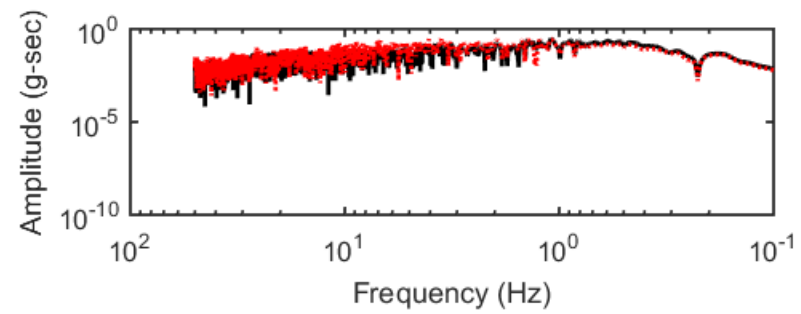
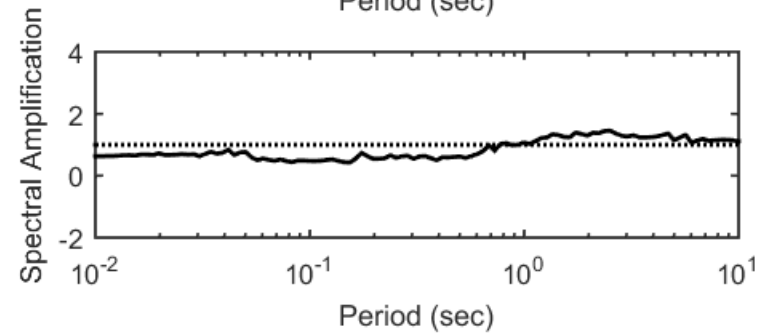
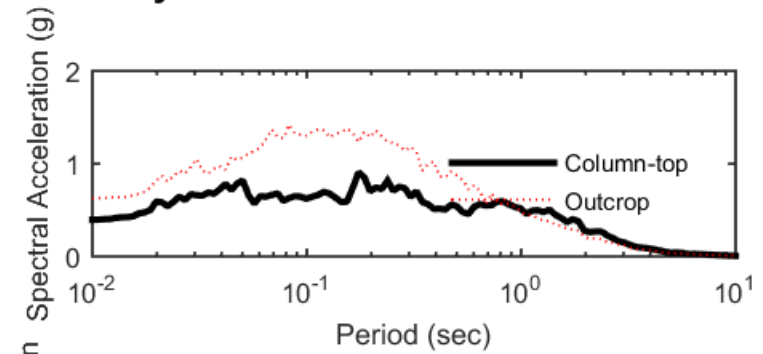
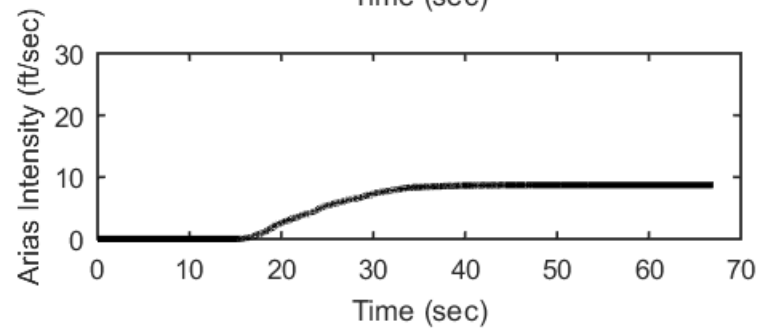
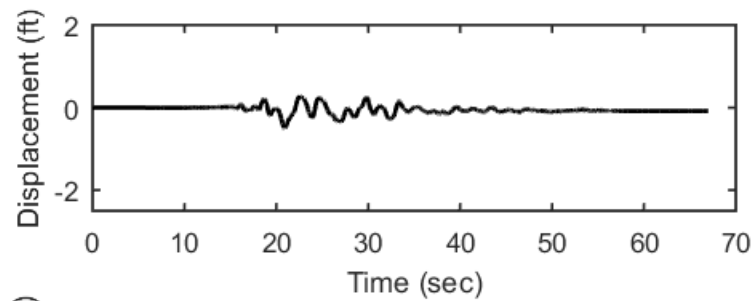
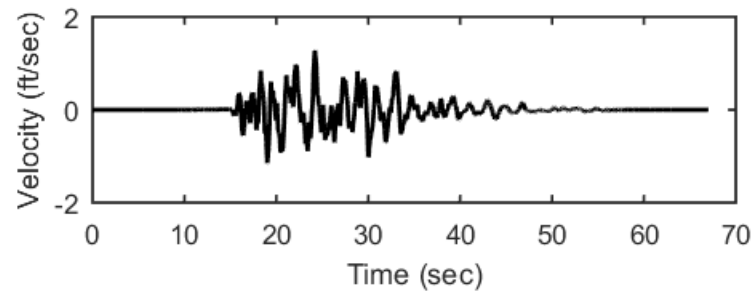
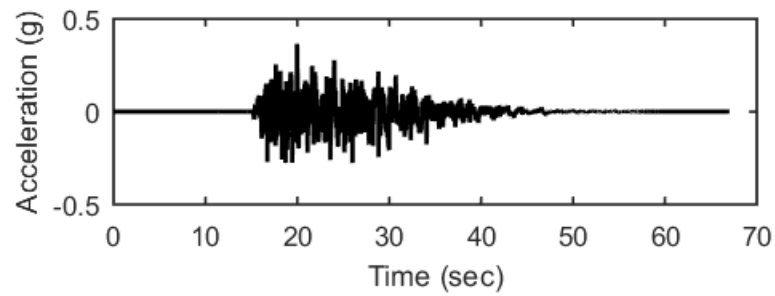
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2

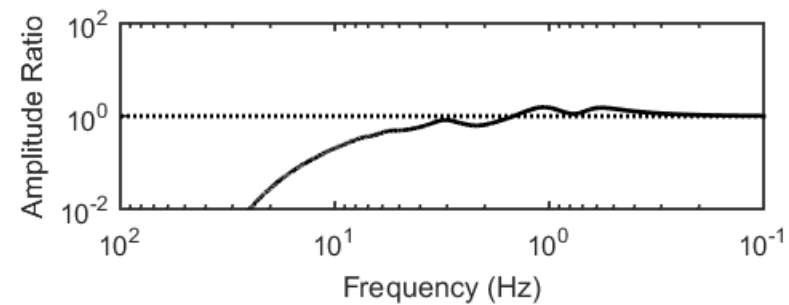
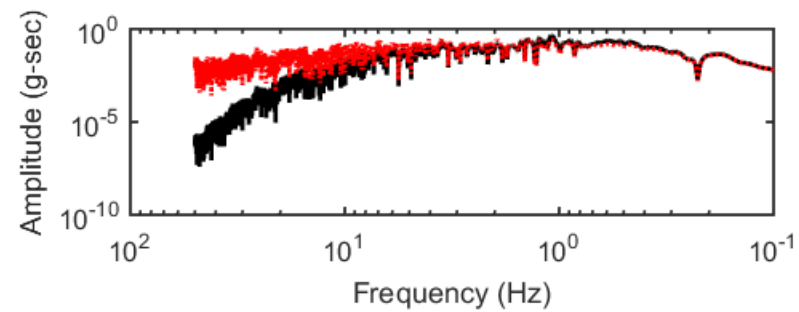
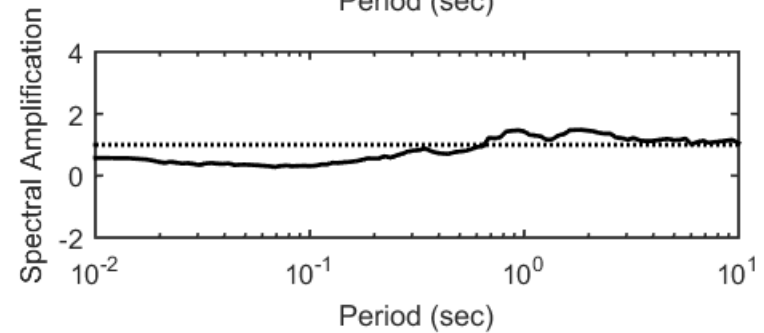
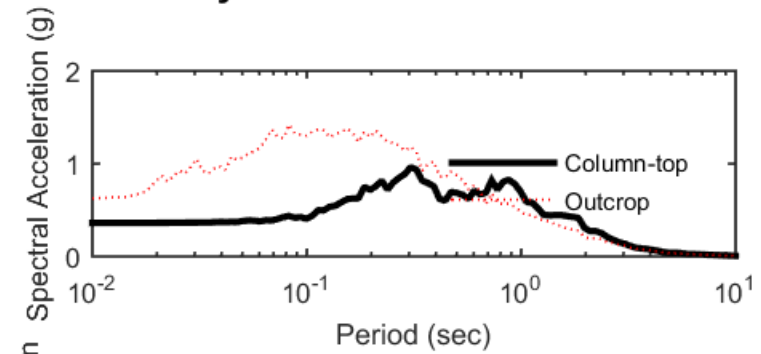
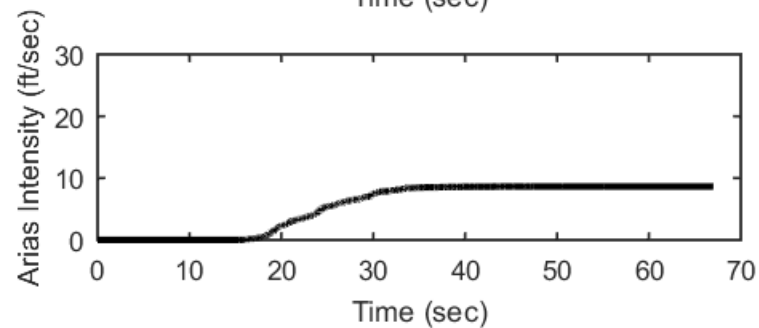
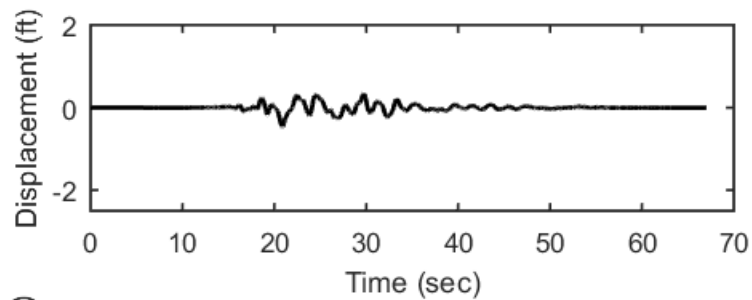
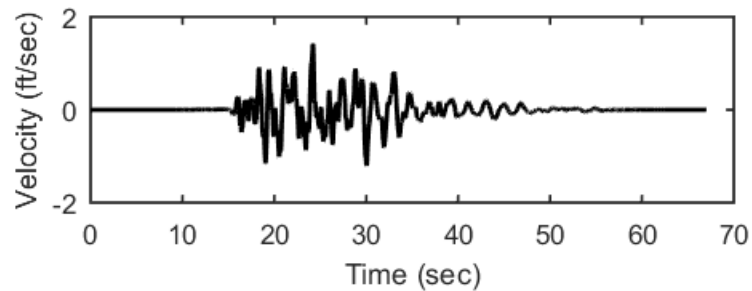
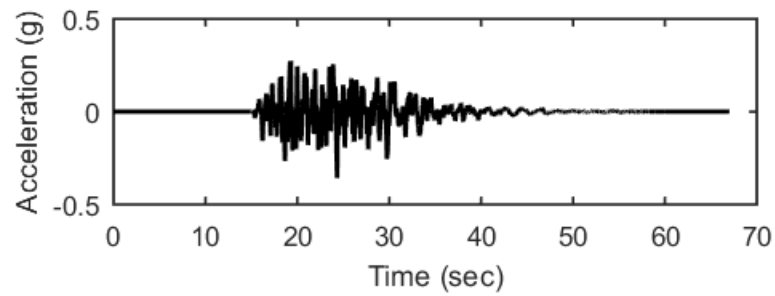


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2

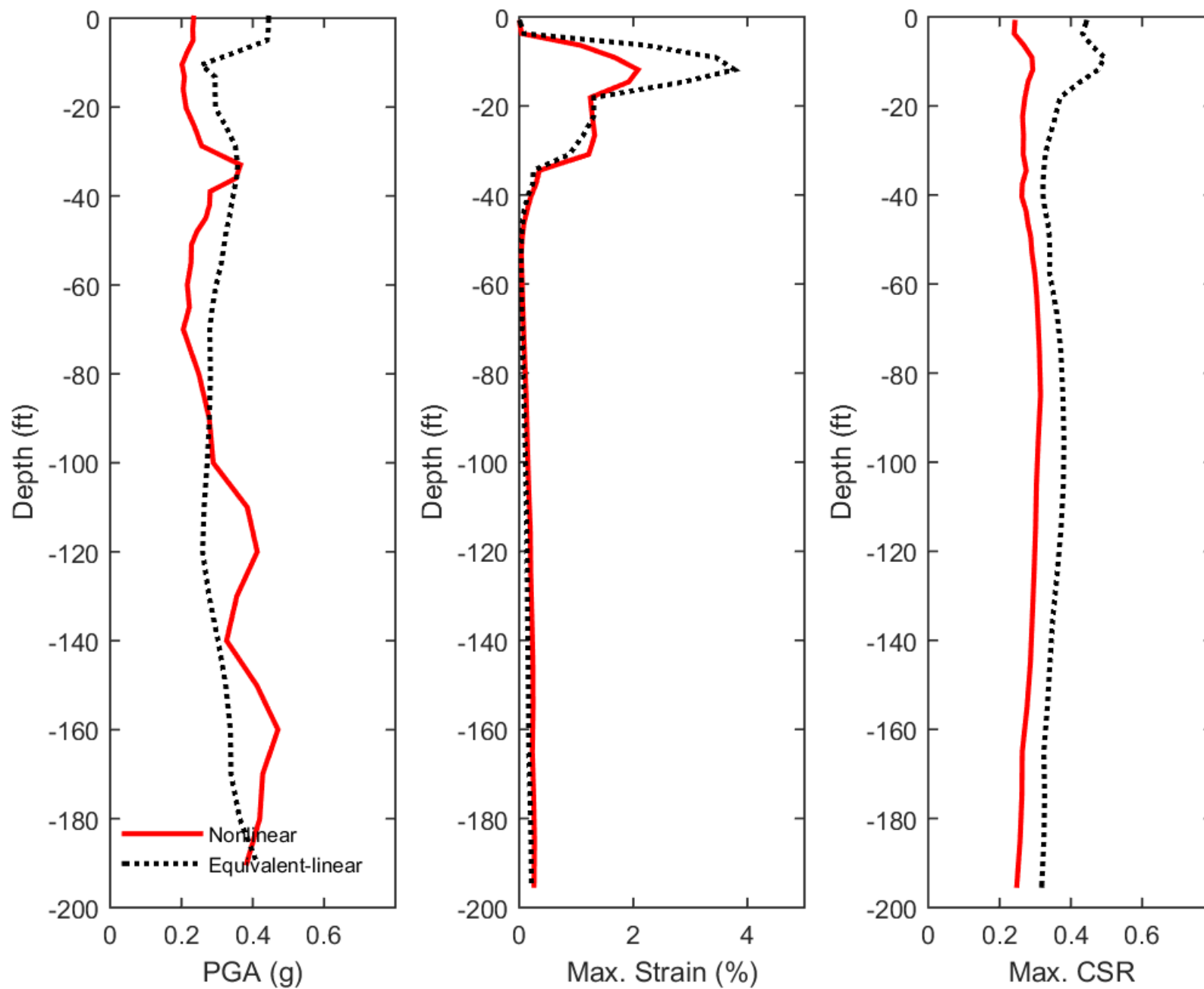




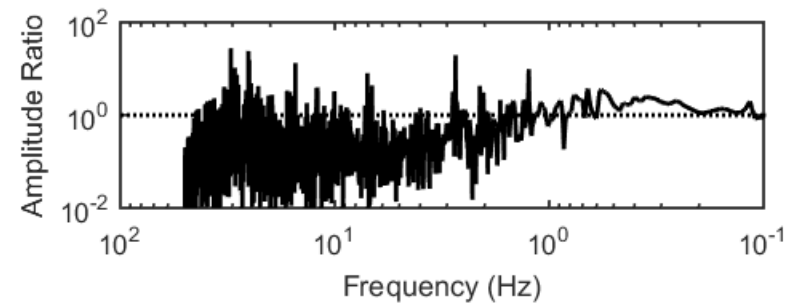
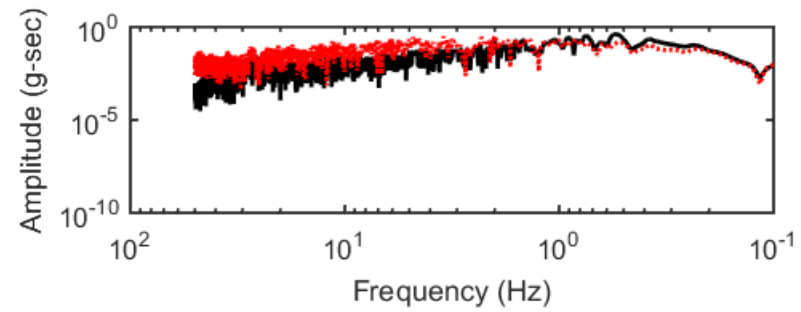
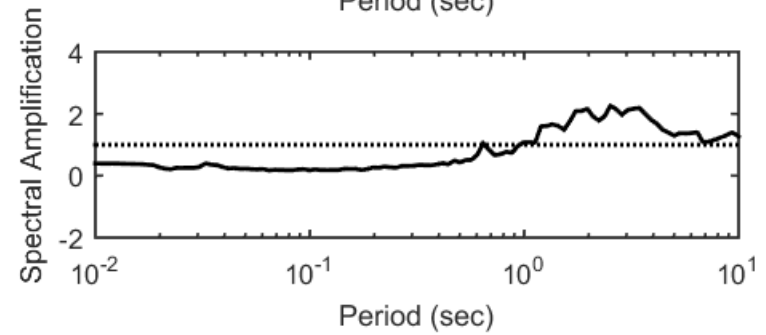
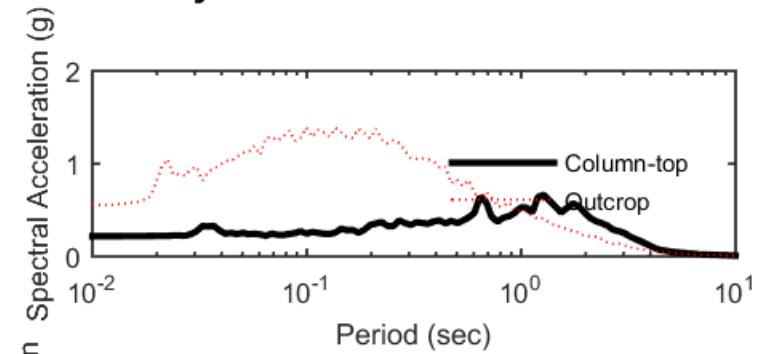
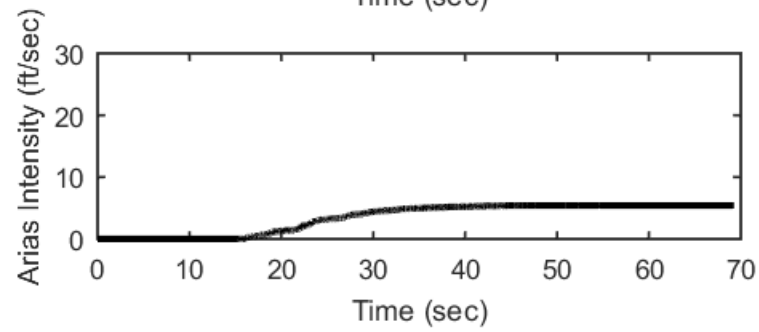
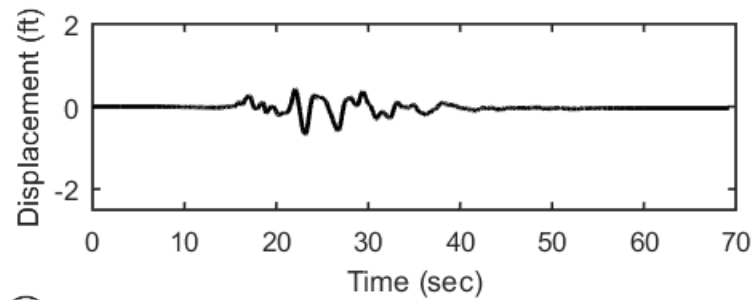
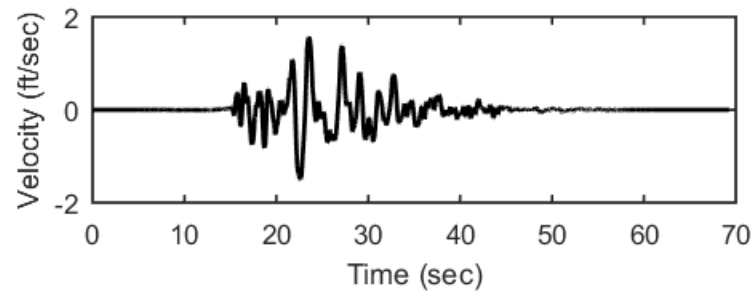
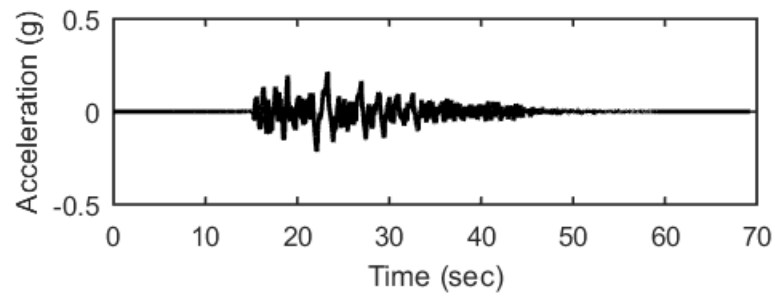
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



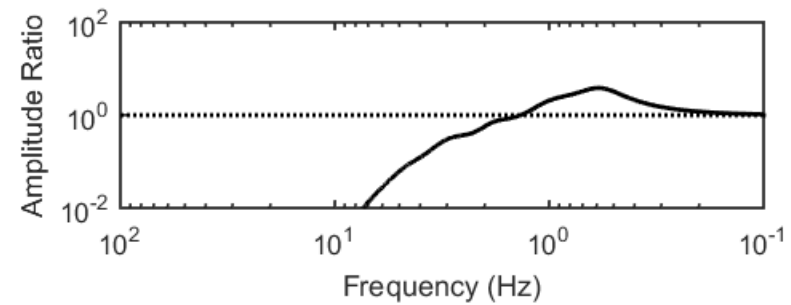
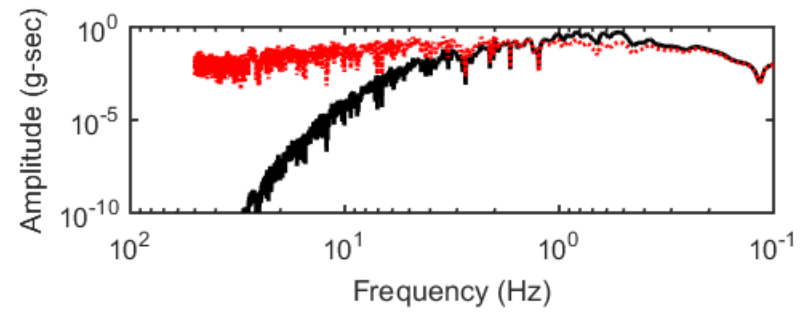
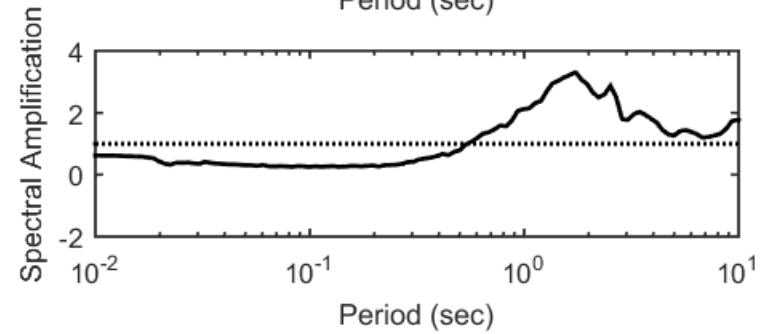
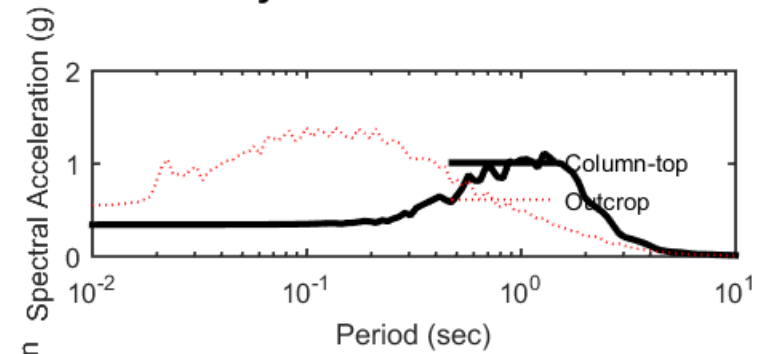
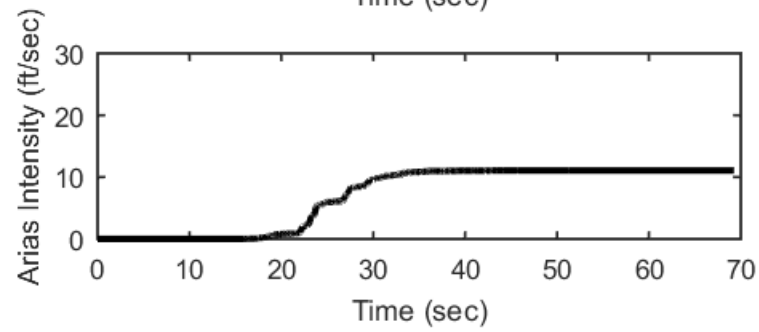
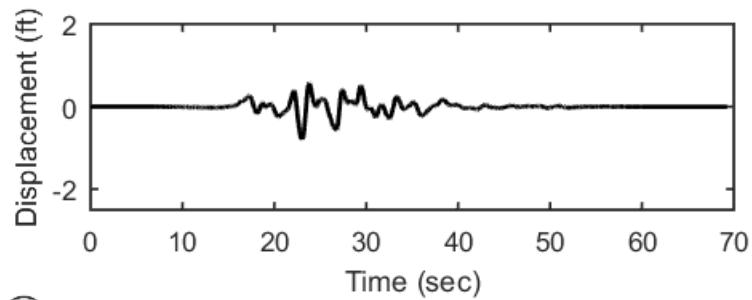
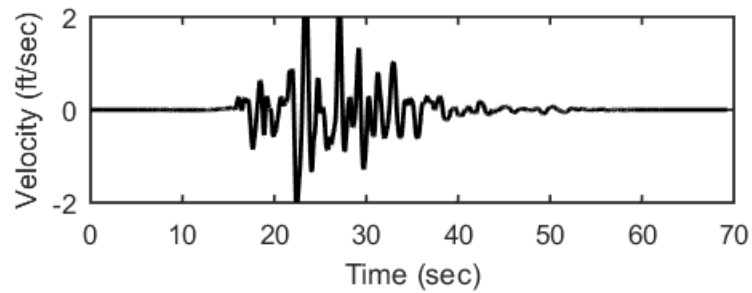
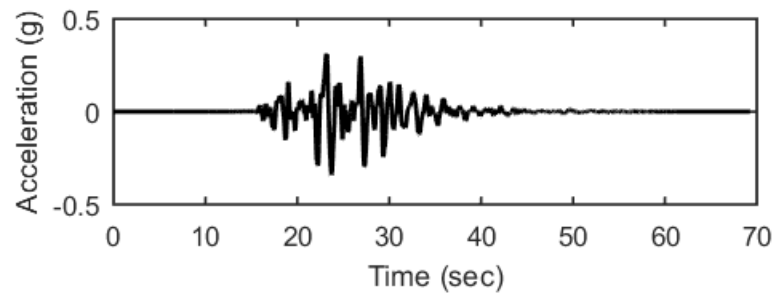
### Profile outputs for Motion: SEE2



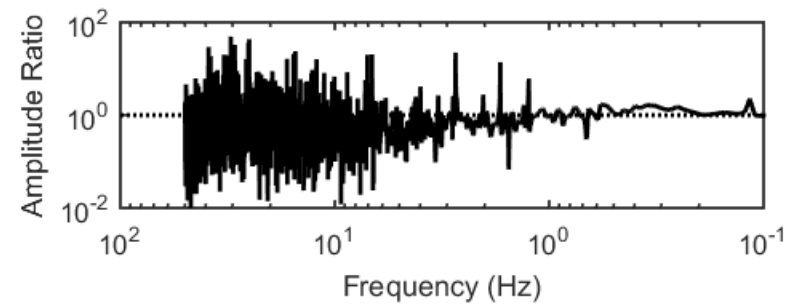
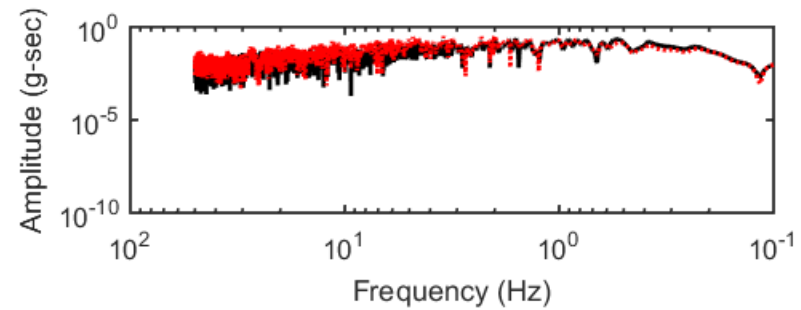
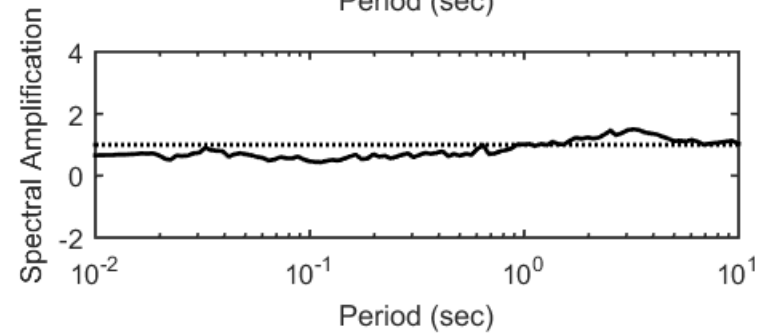
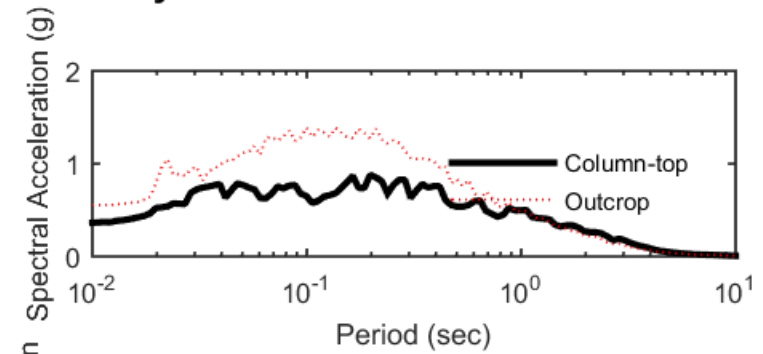
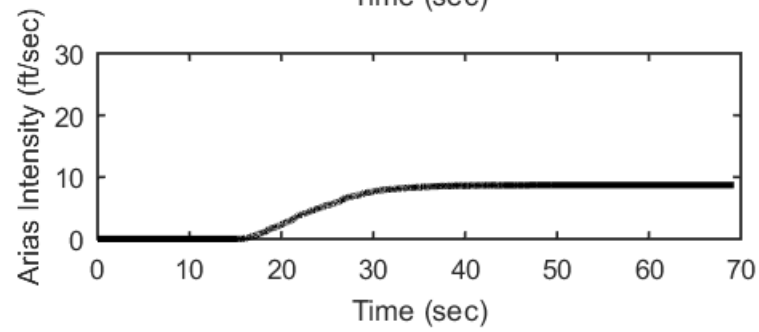
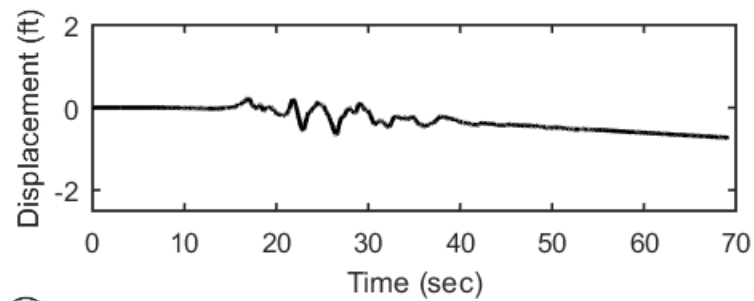
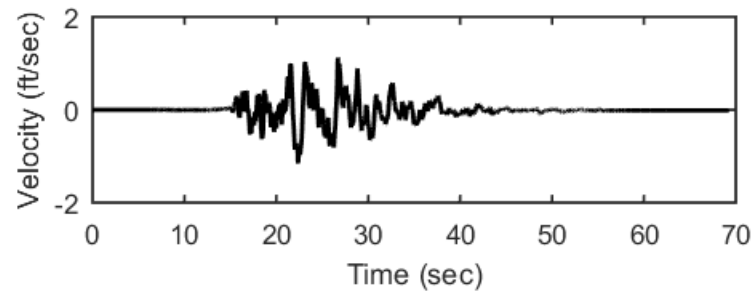
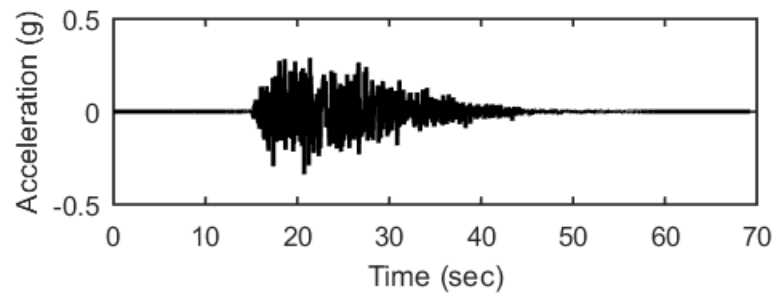
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



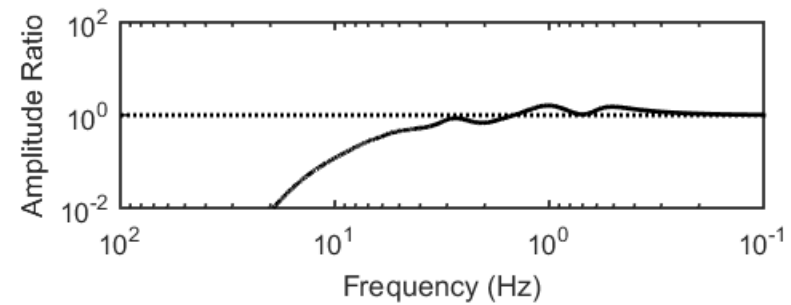
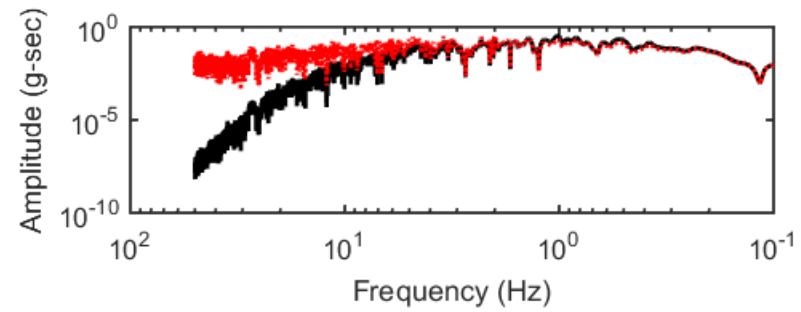
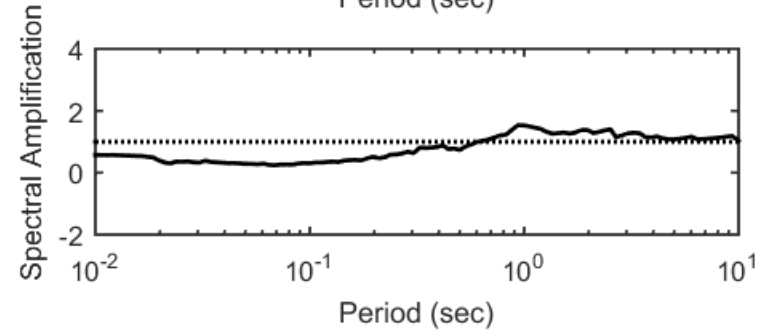
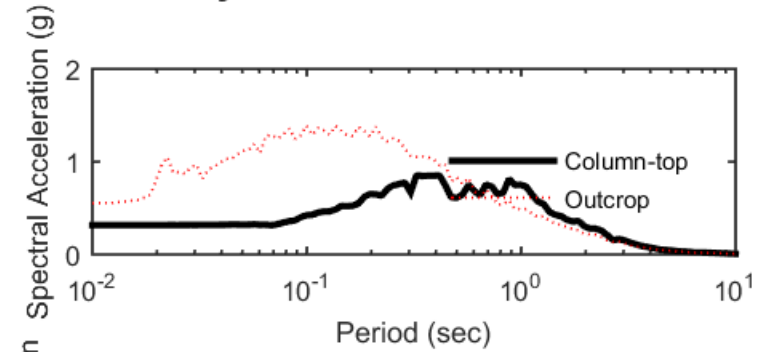
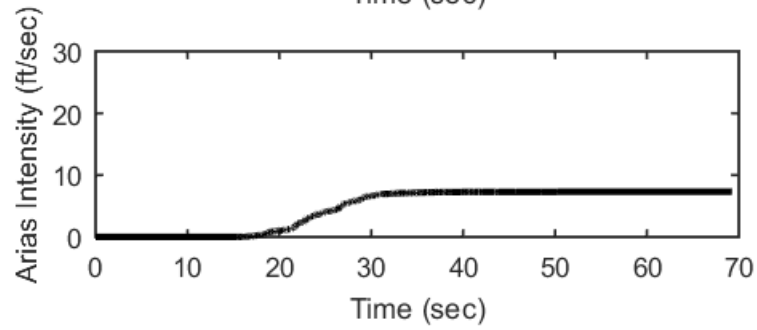
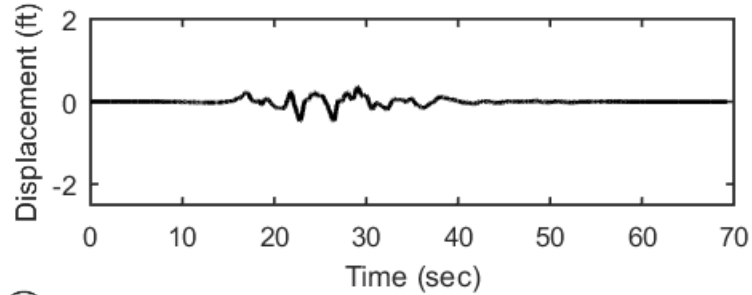
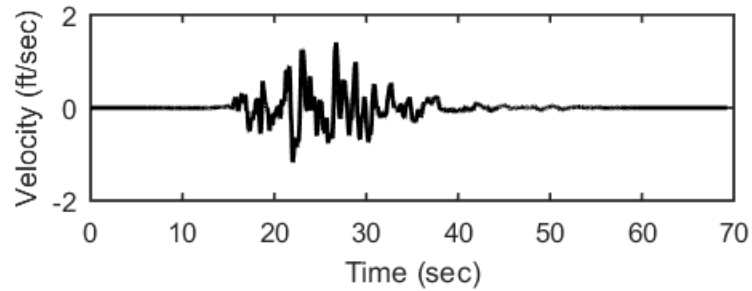
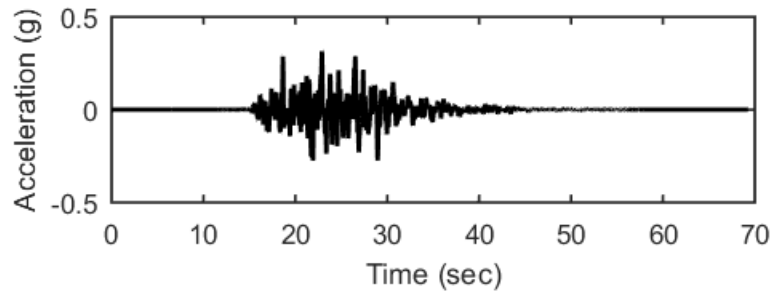
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



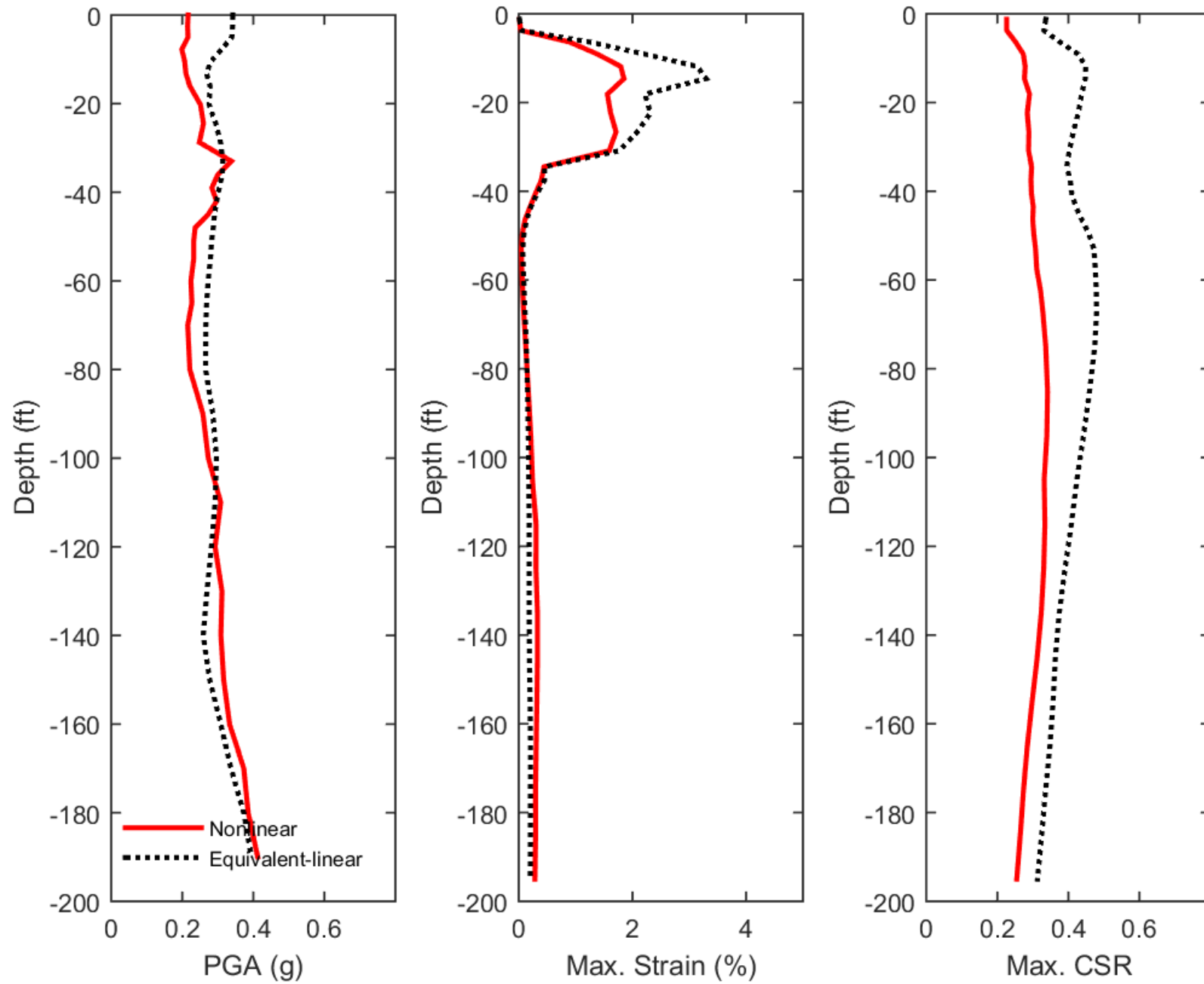
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



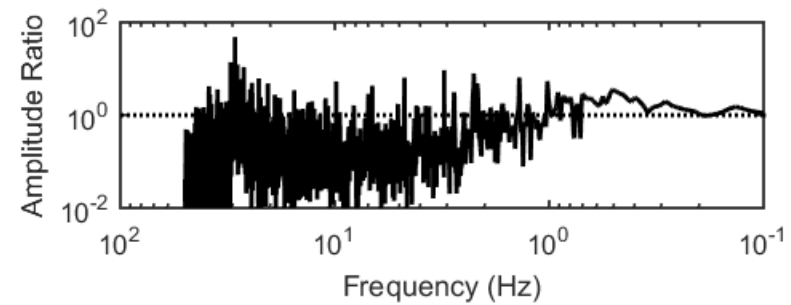
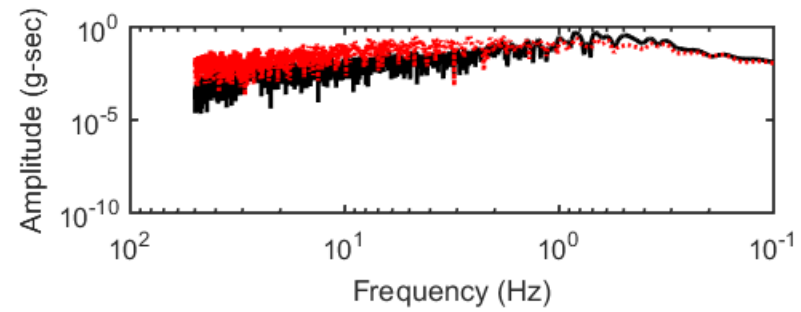
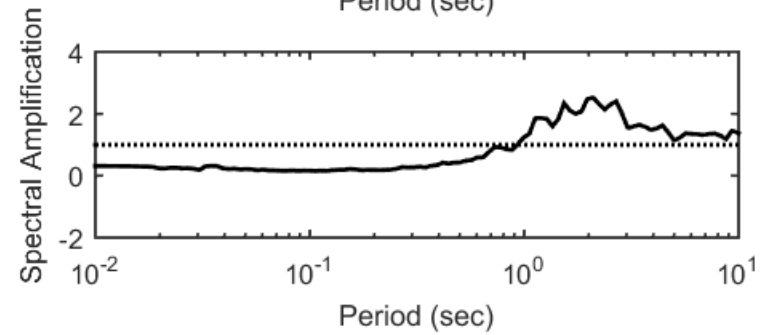
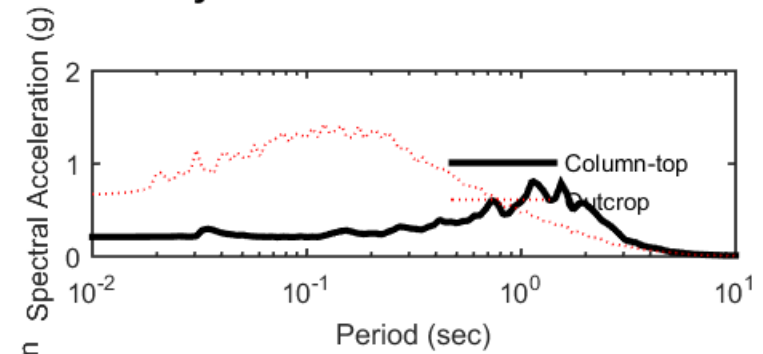
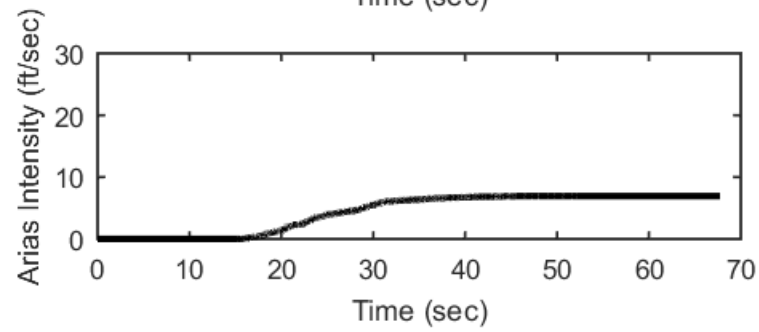
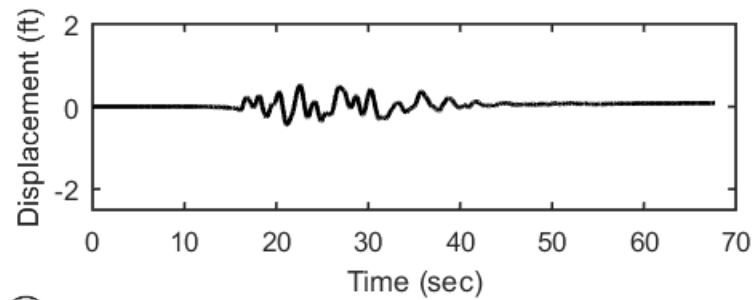
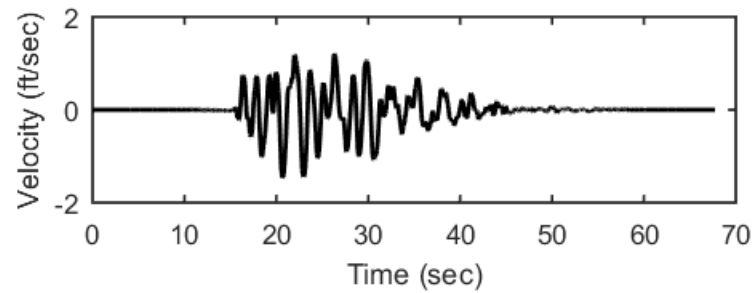
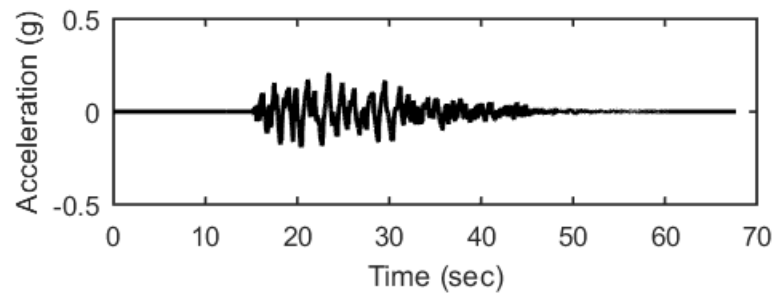
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



### Profile outputs for Motion: SEE3

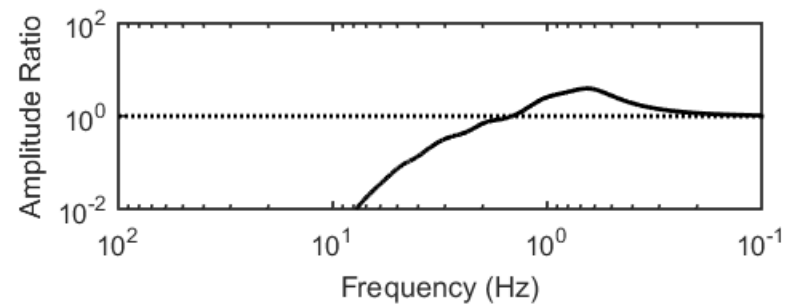
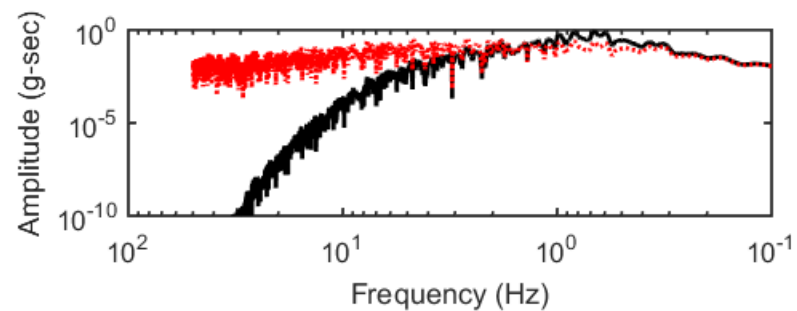
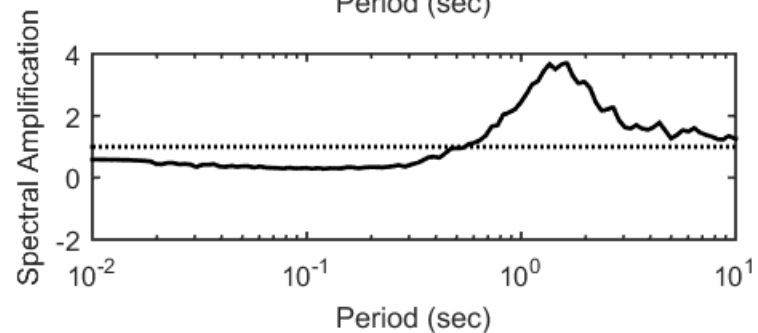
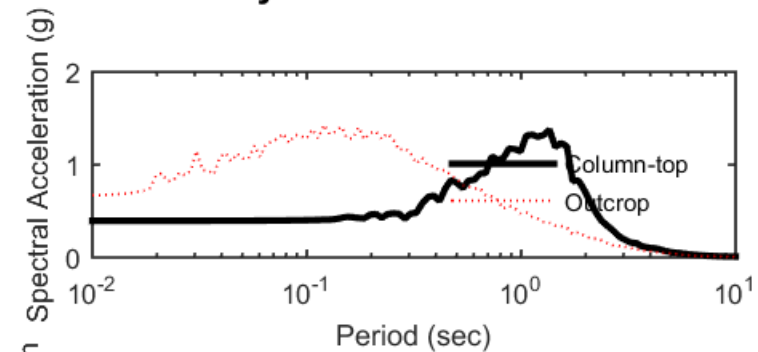
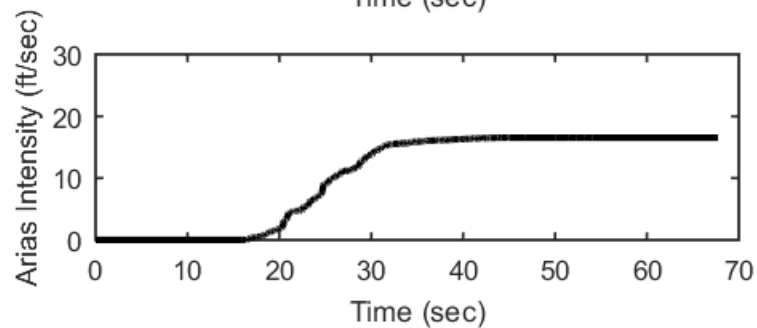
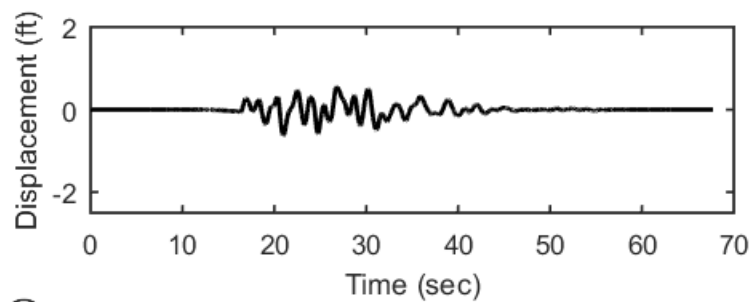
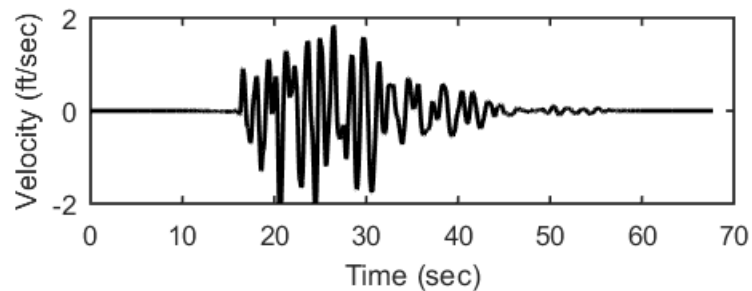
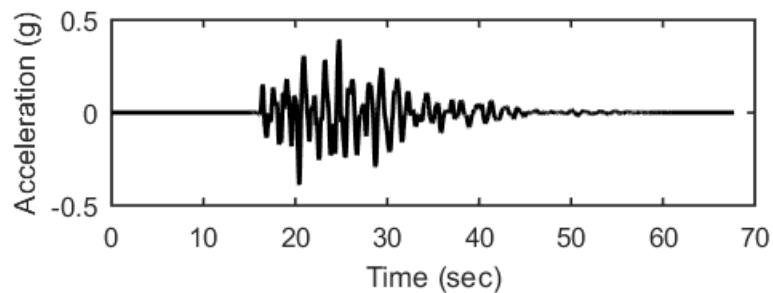


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4

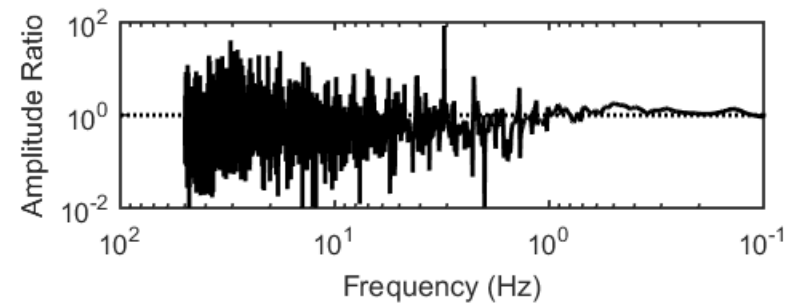
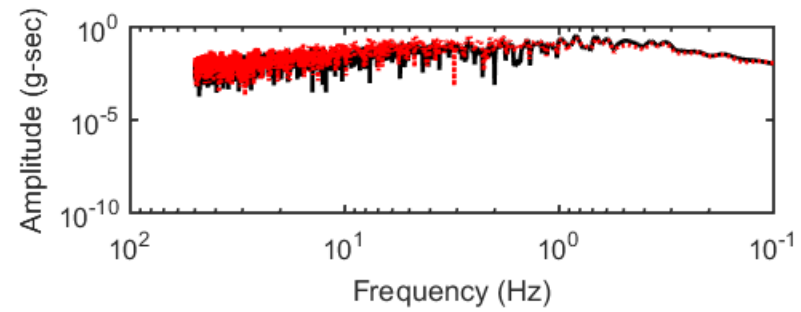
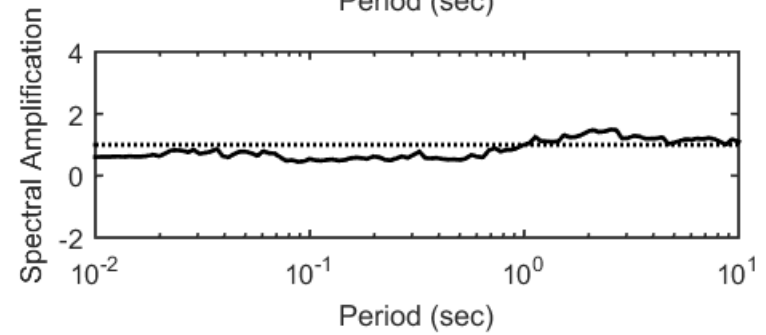
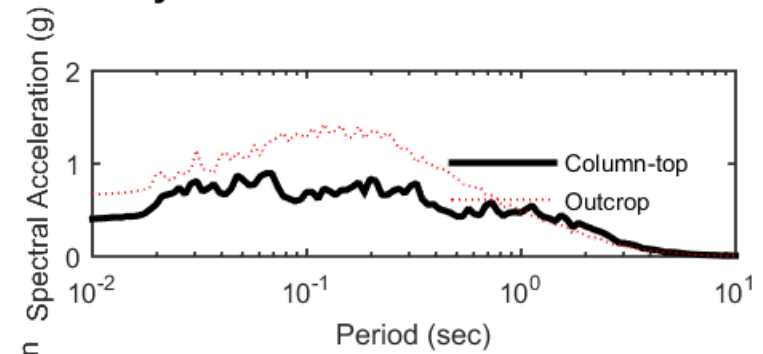
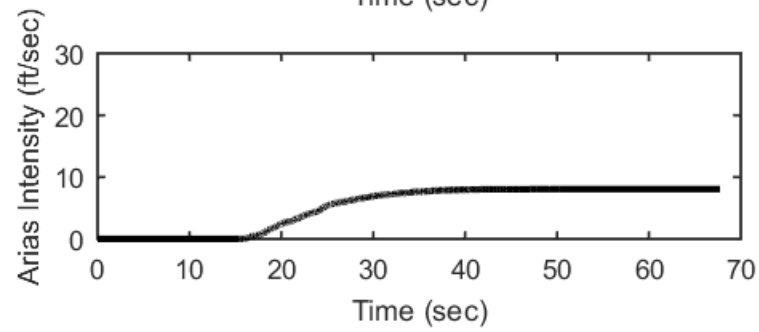
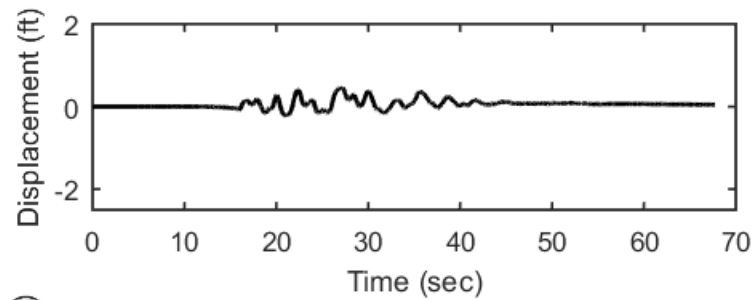
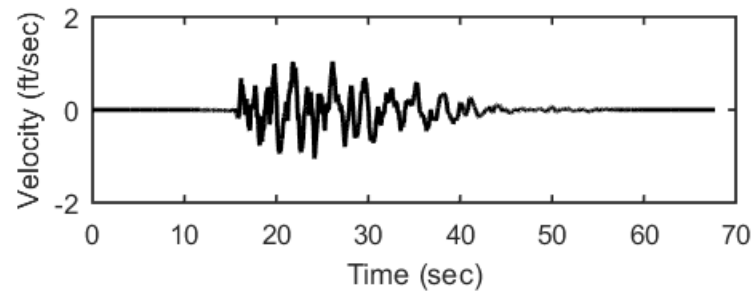
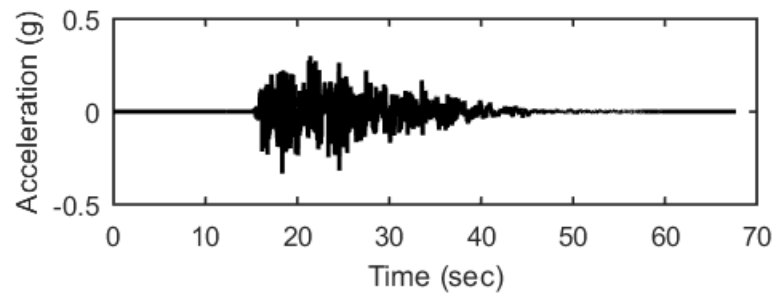




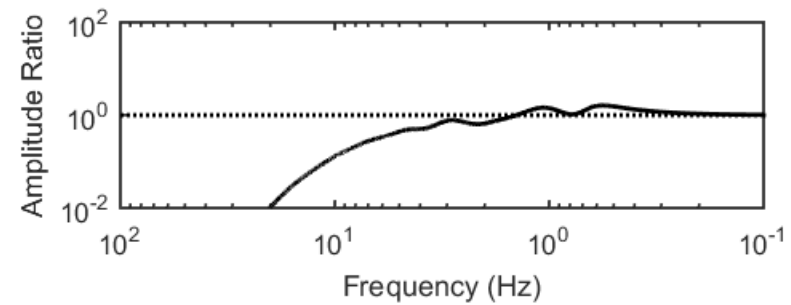
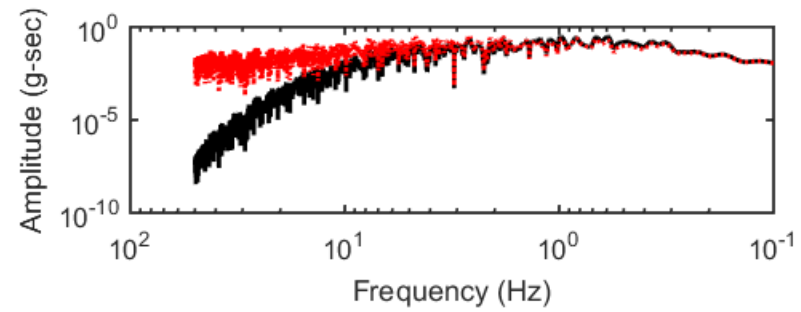
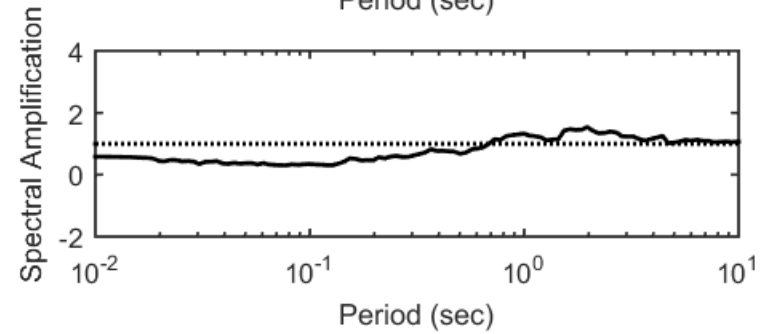
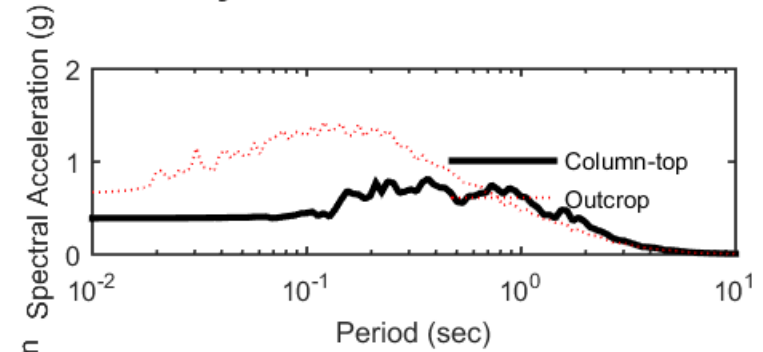
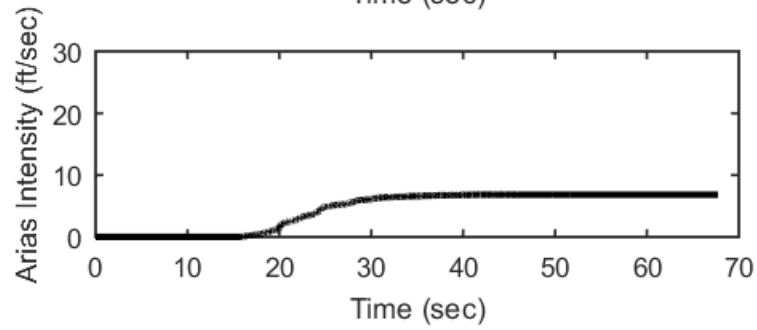
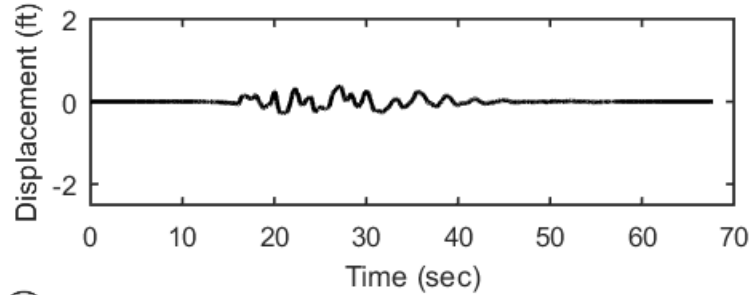
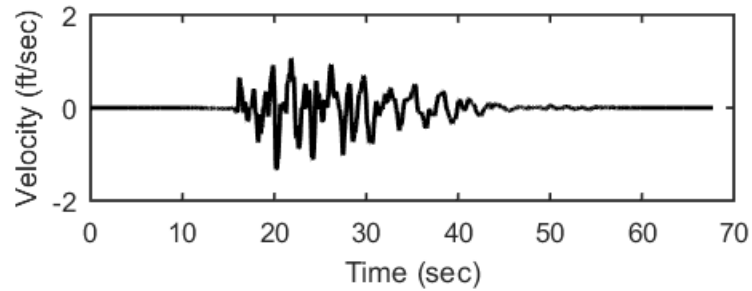
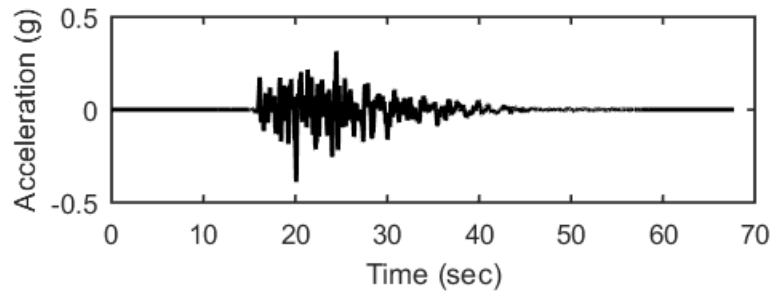
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



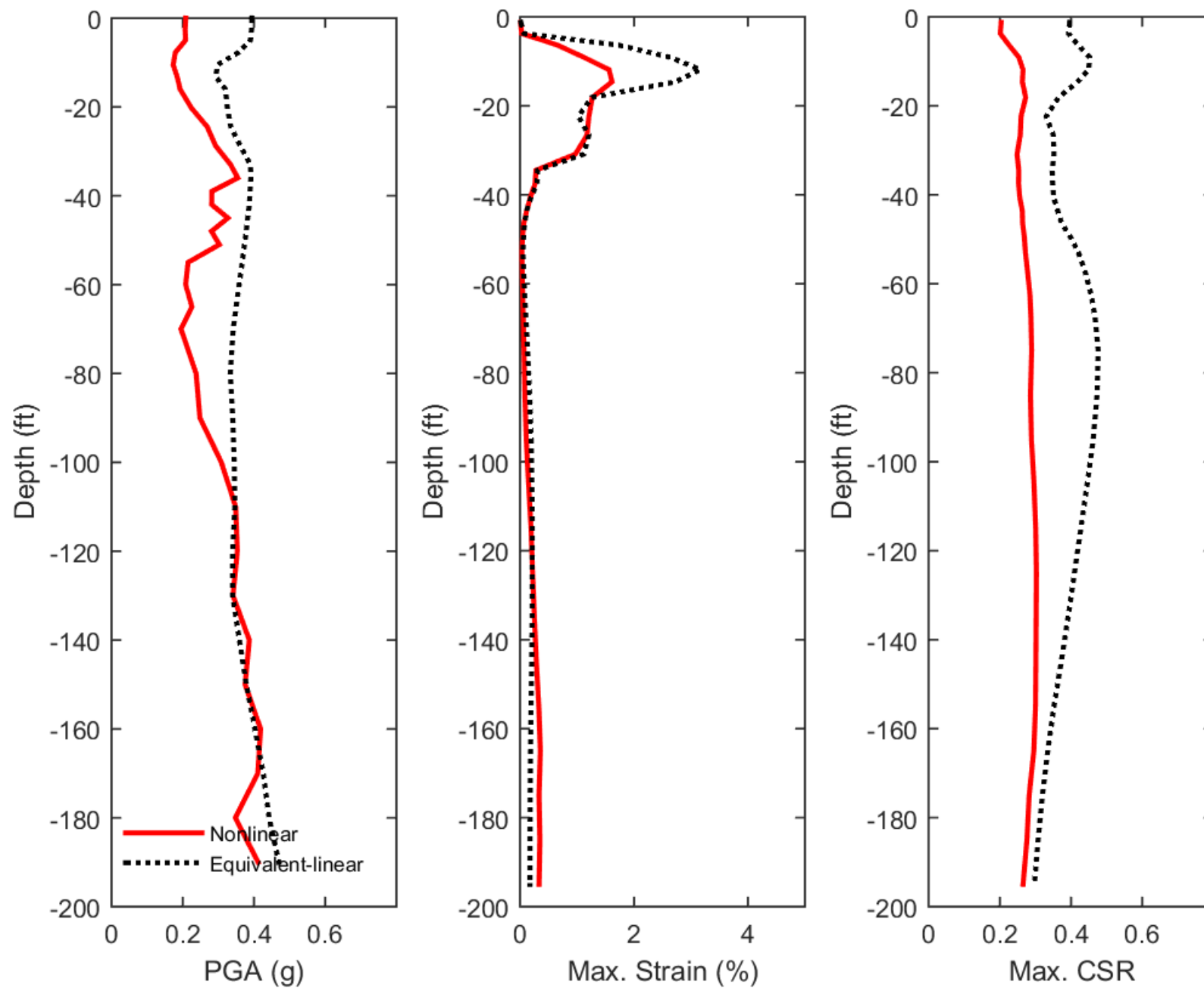
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



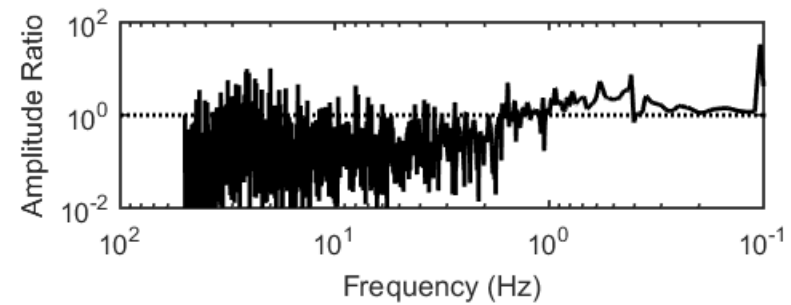
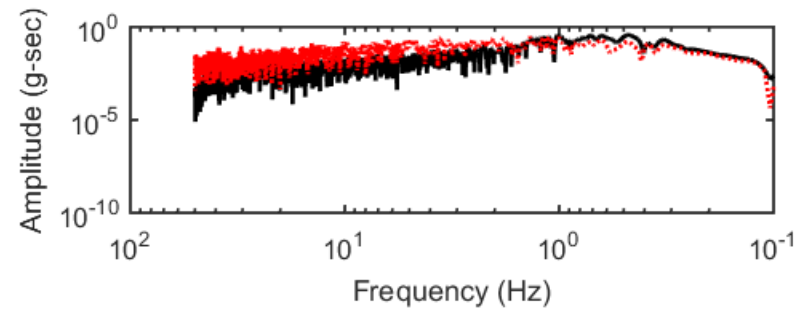
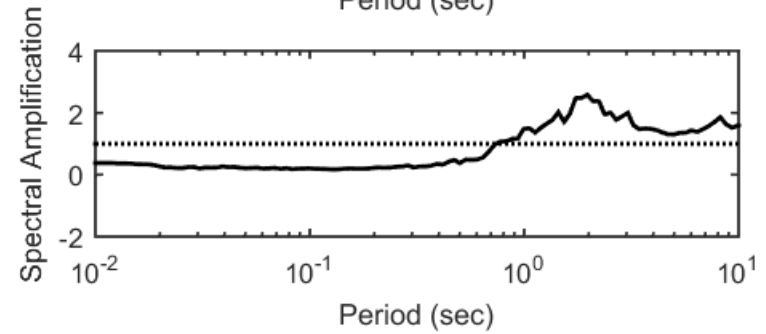
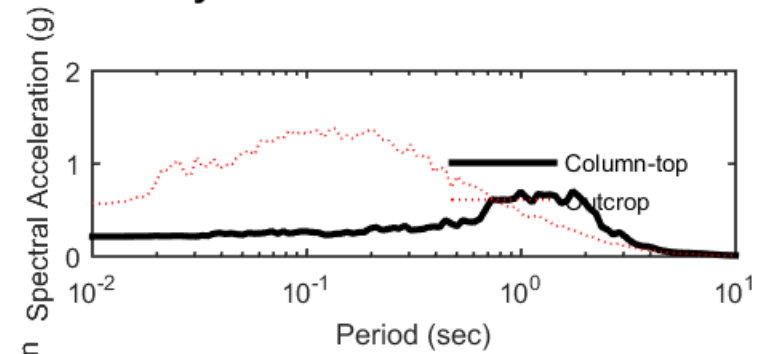
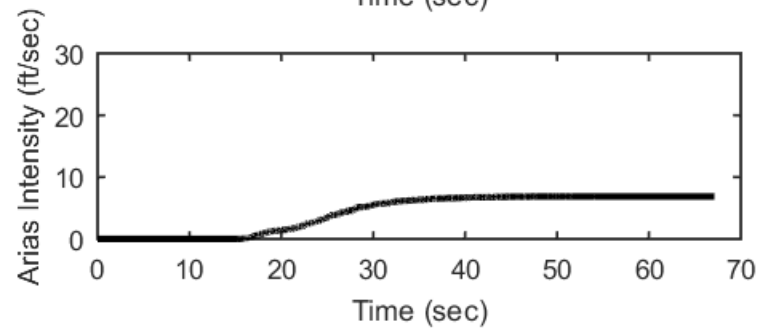
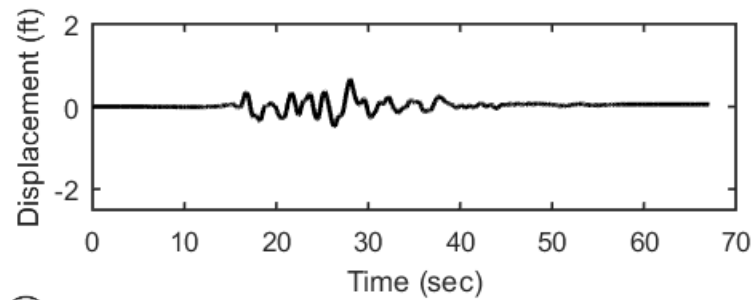
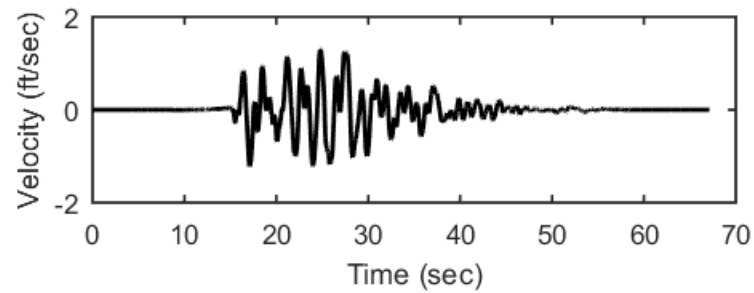
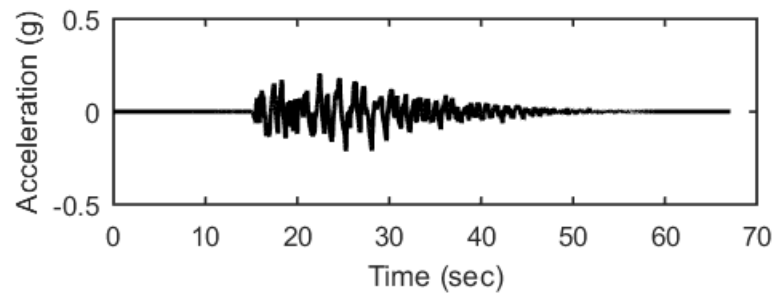
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



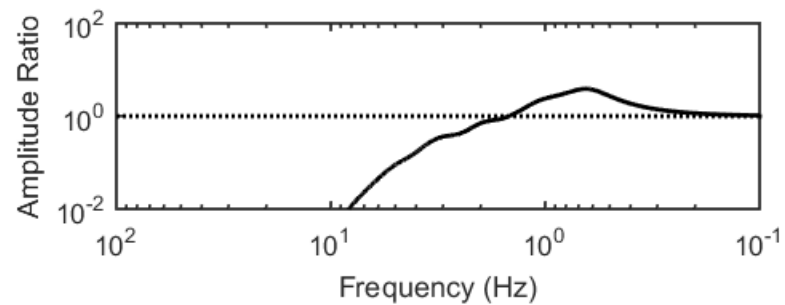
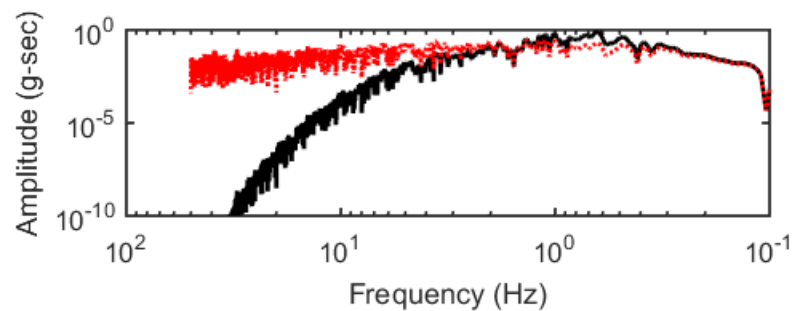
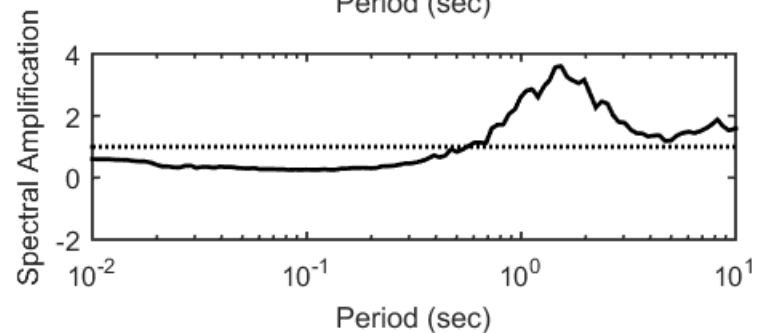
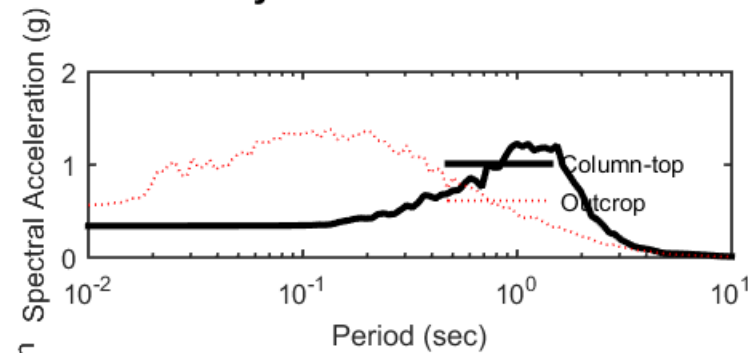
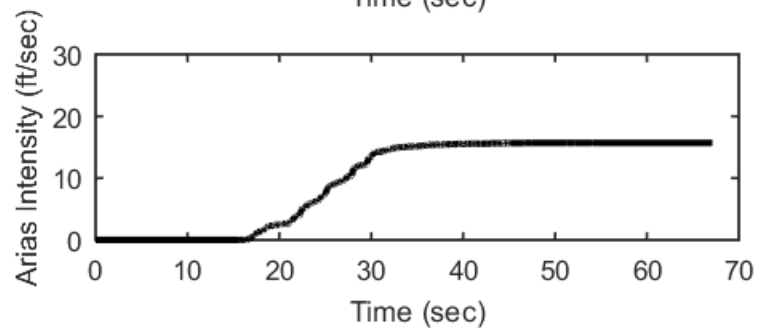
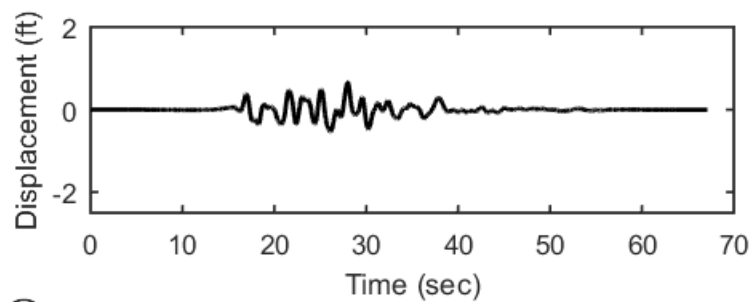
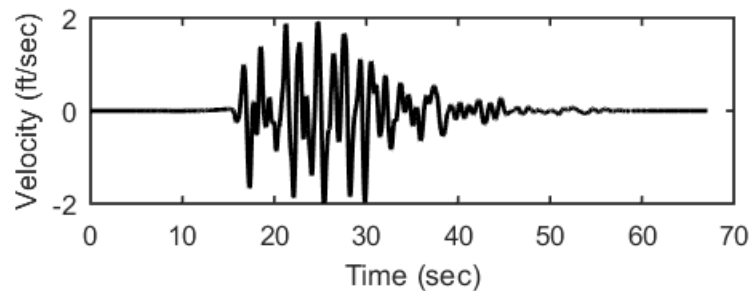
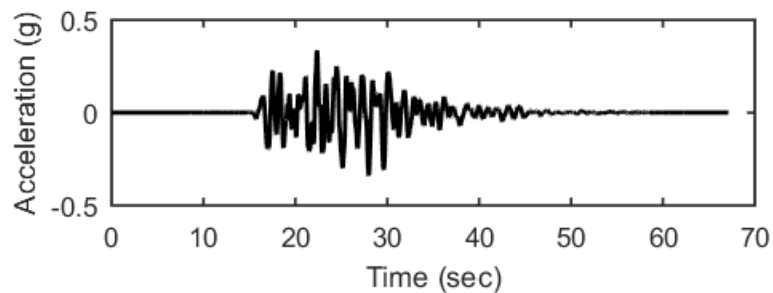
### Profile outputs for Motion: SEE4



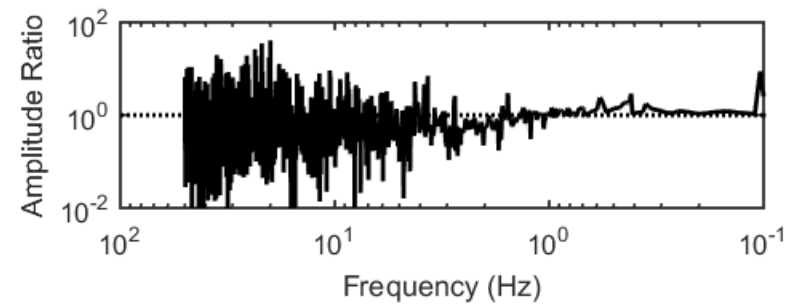
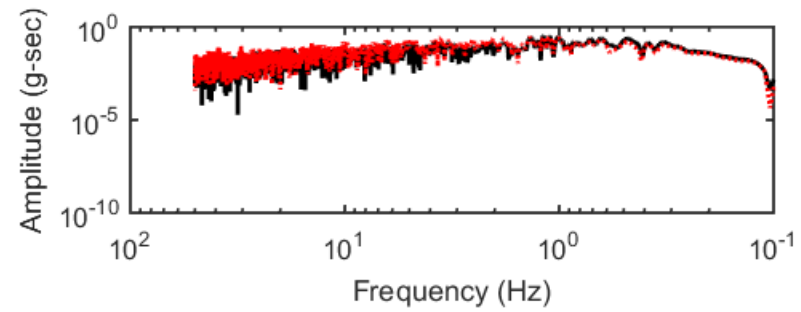
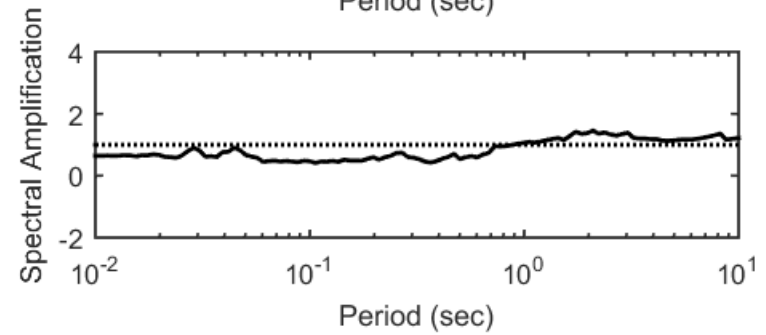
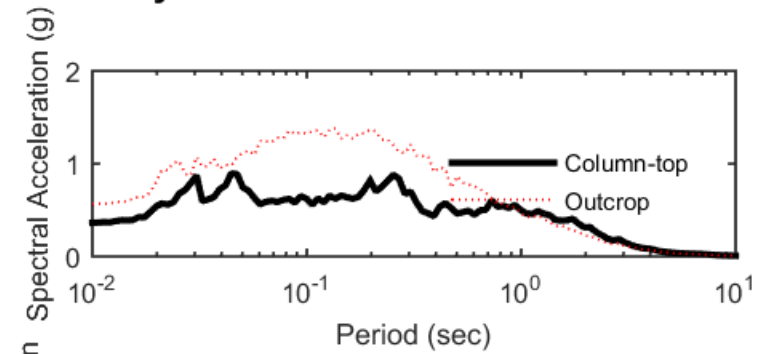
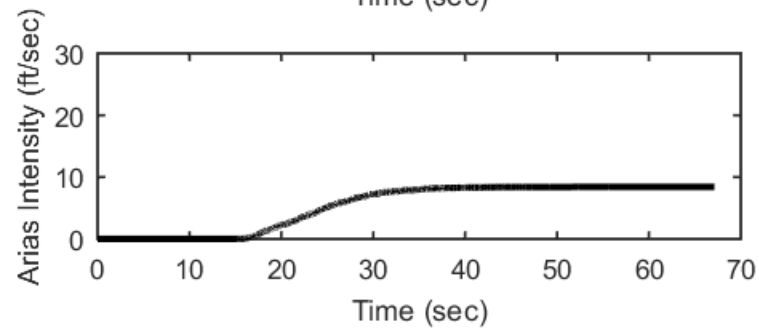
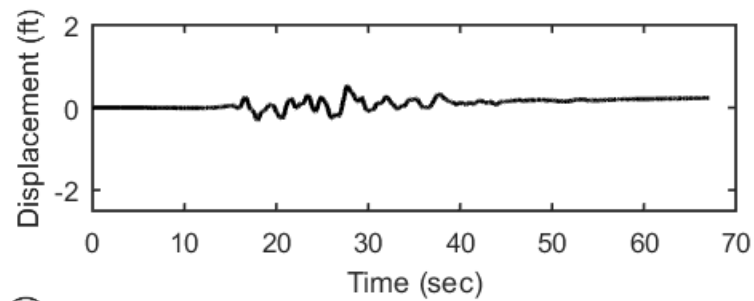
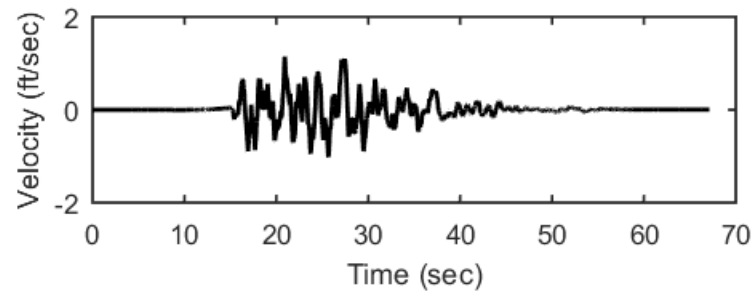
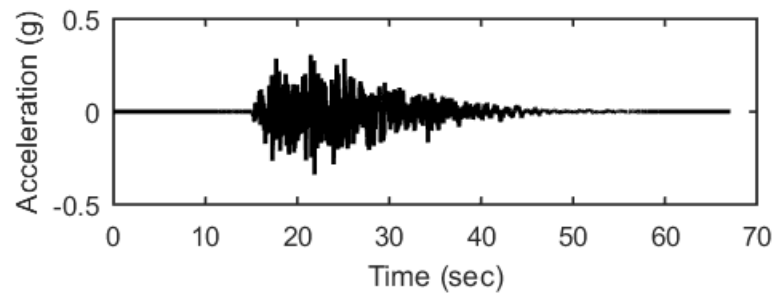
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



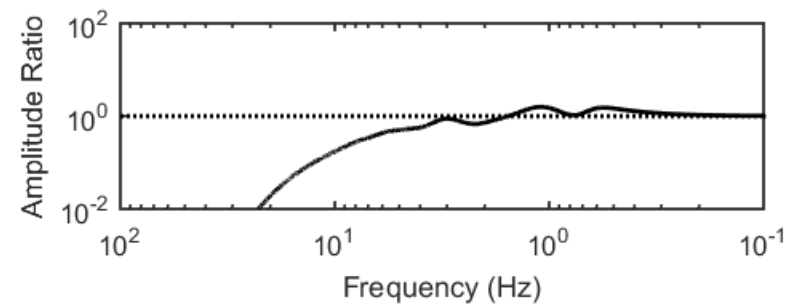
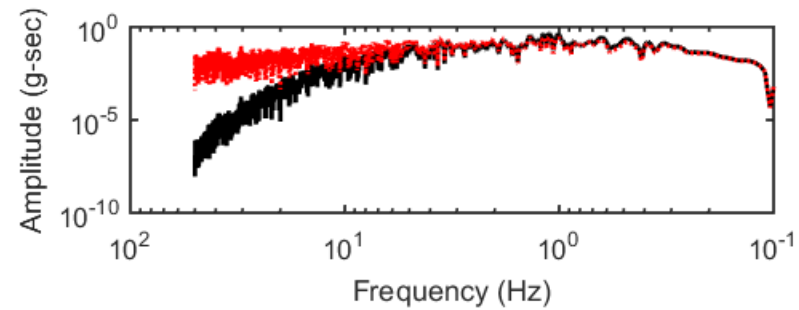
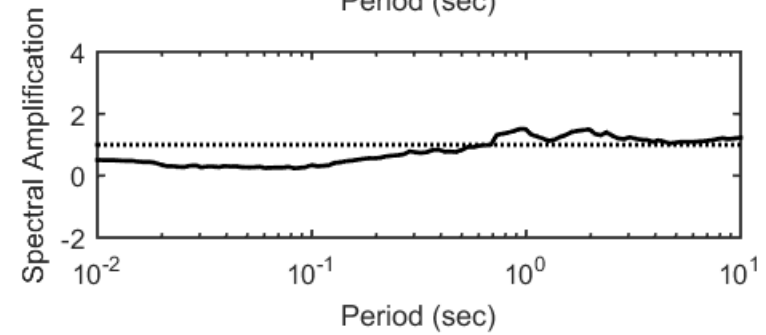
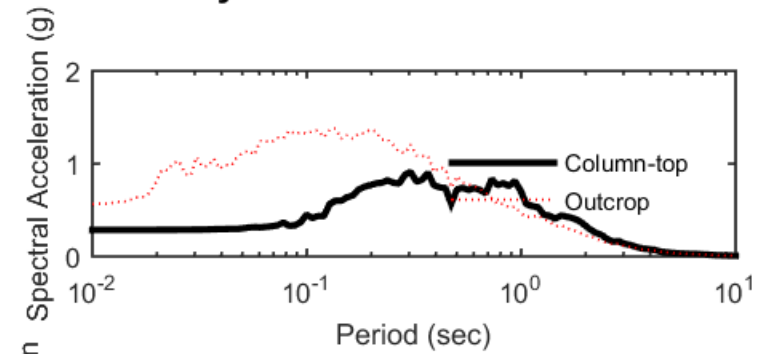
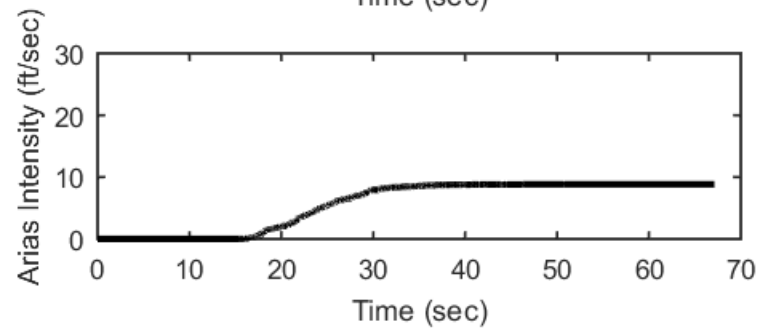
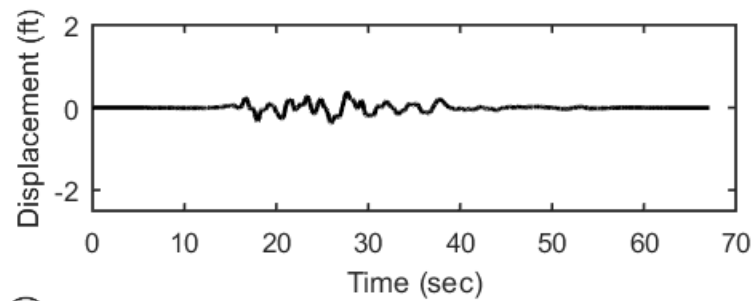
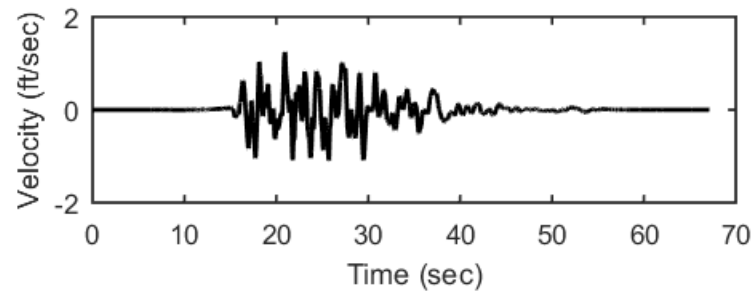
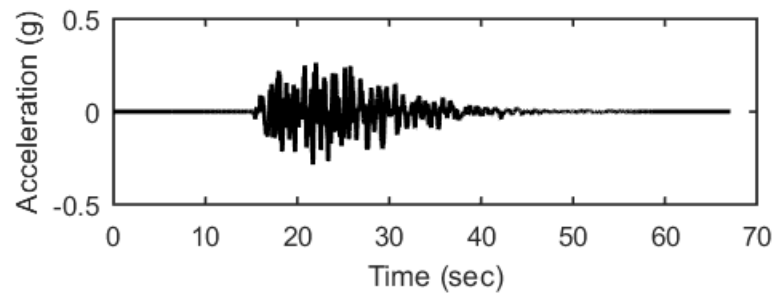
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5

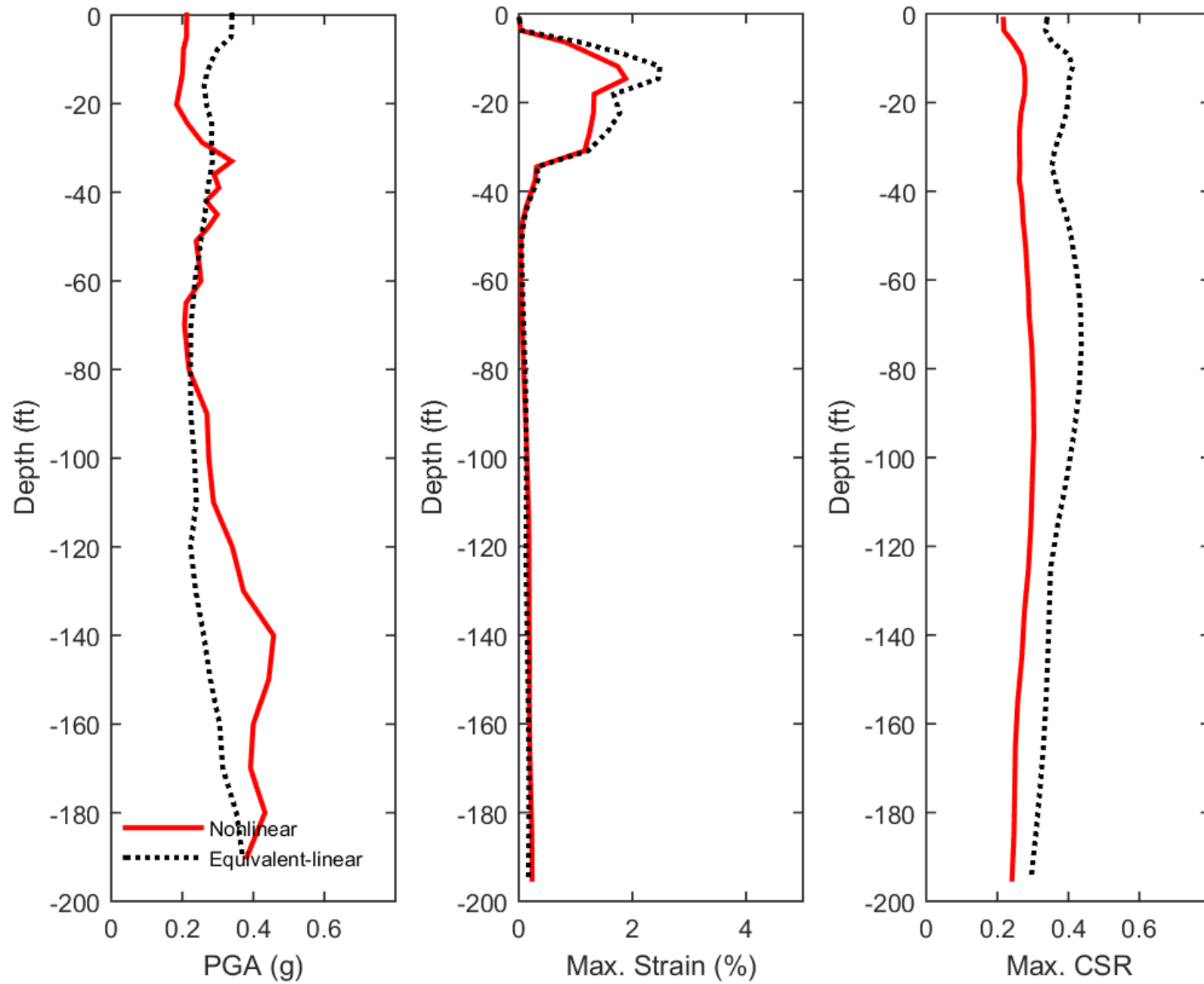


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5

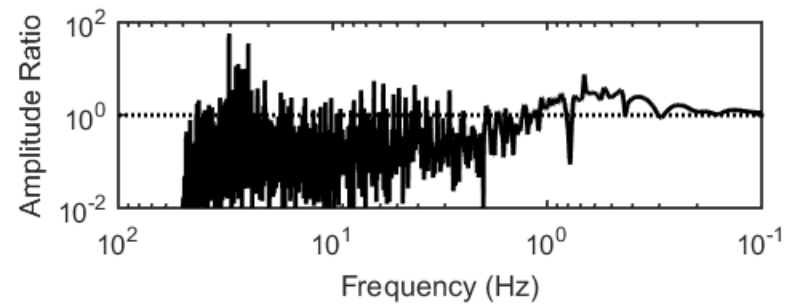
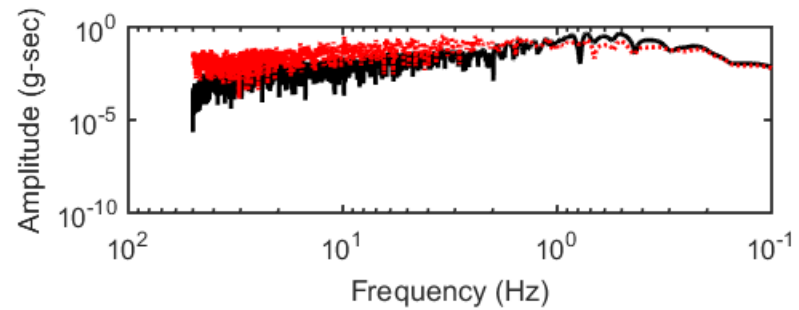
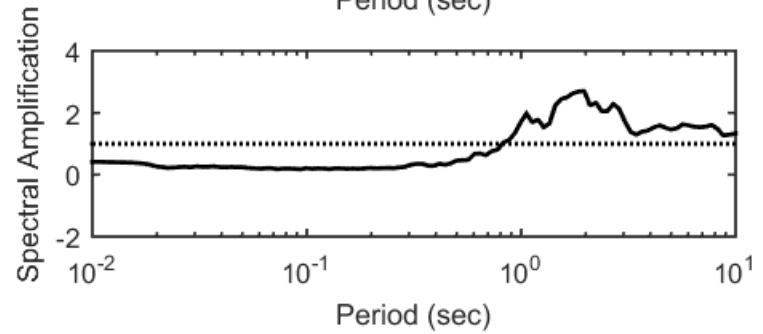
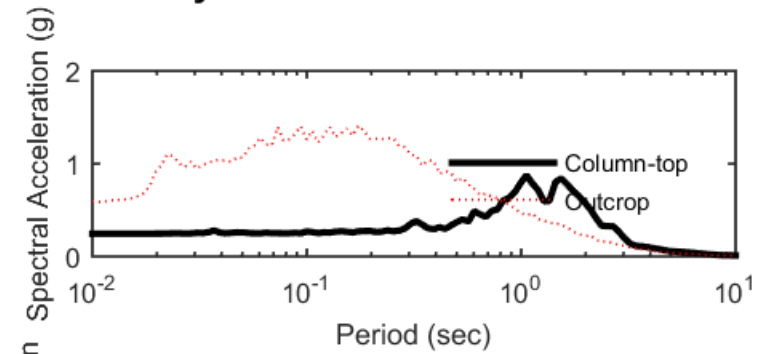
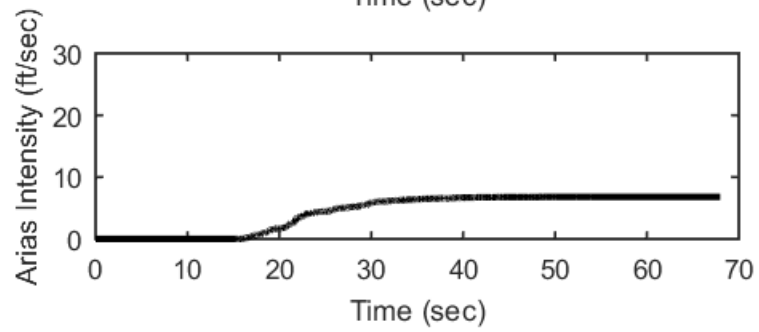
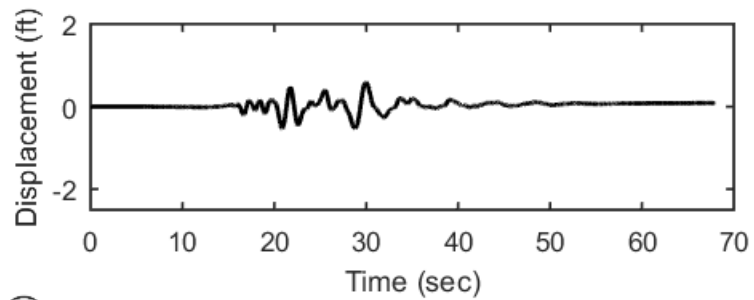
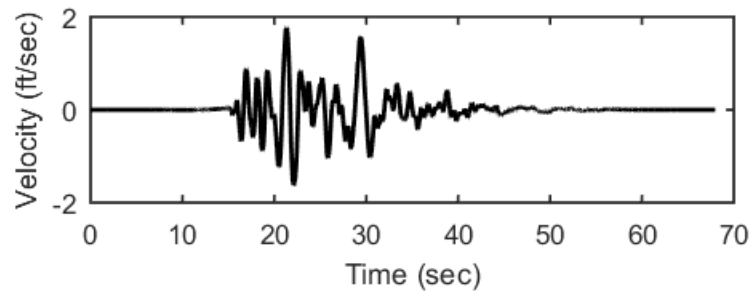
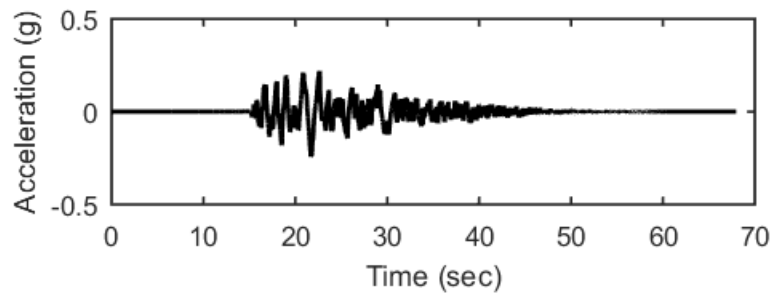




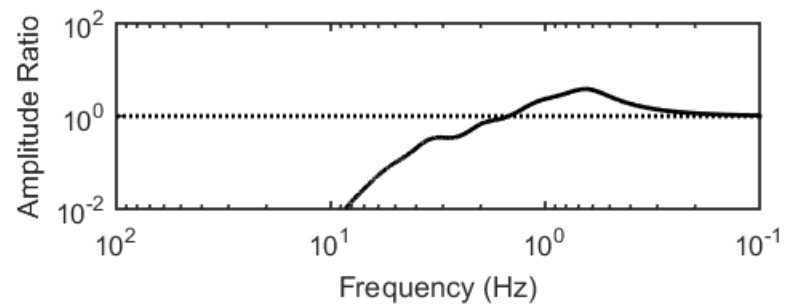
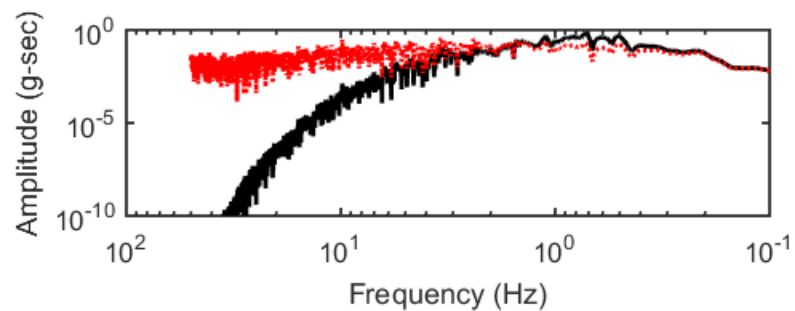
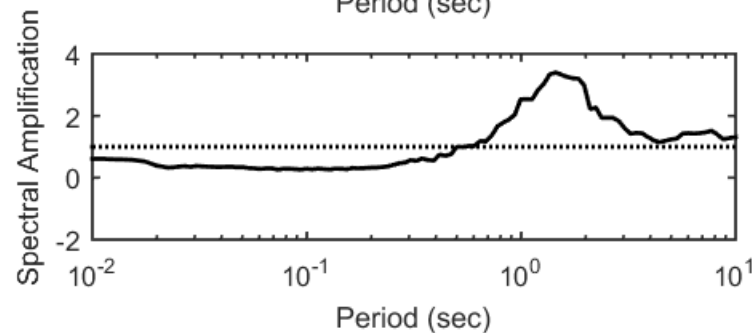
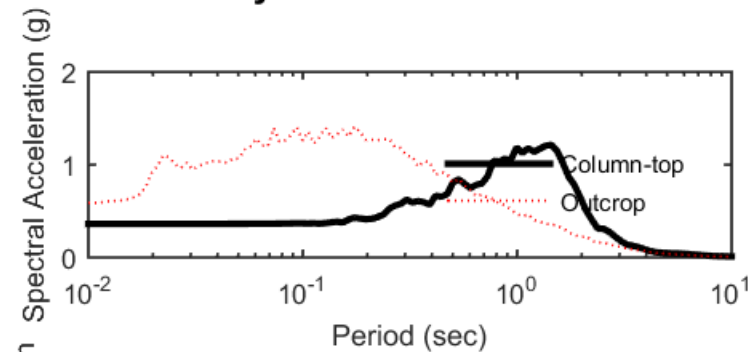
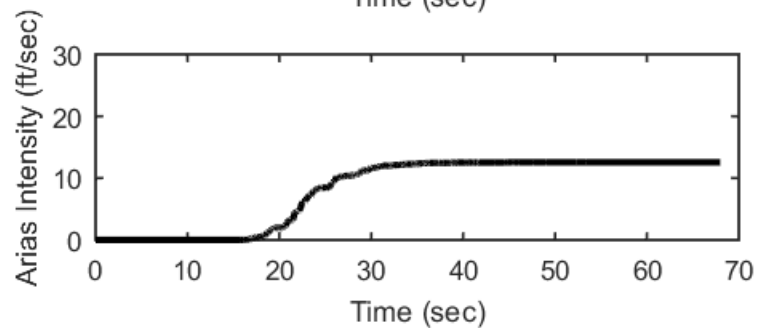
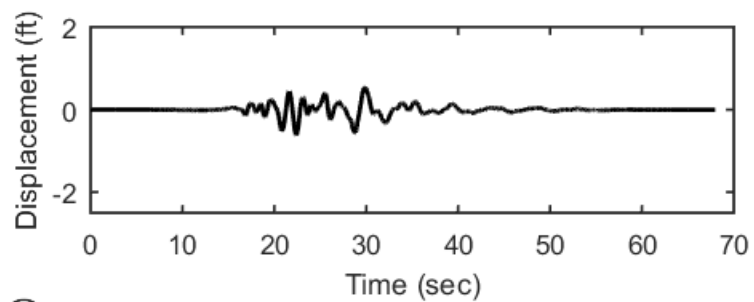
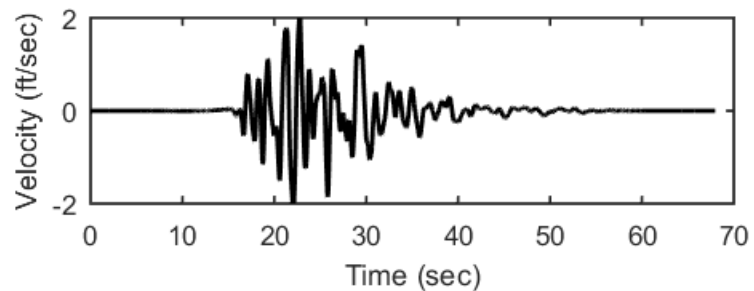
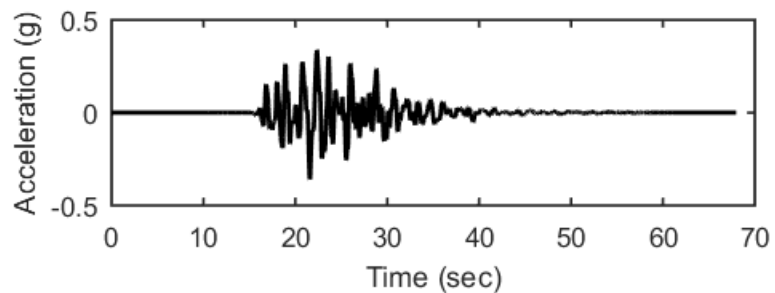
### Profile outputs for Motion: SEE5



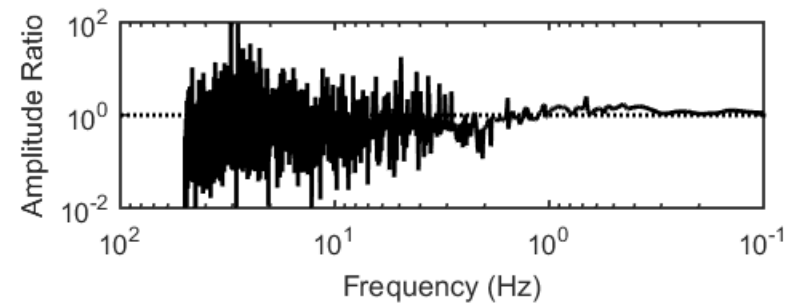
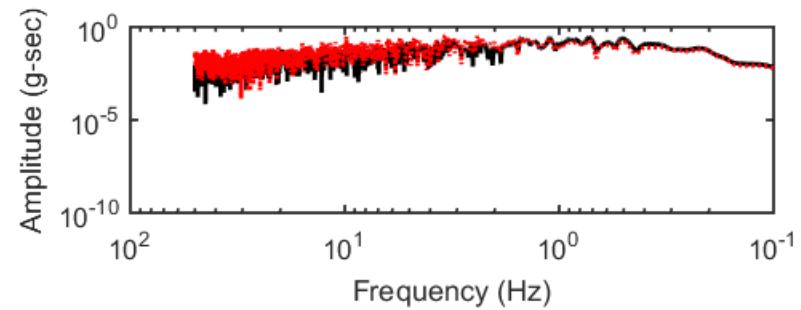
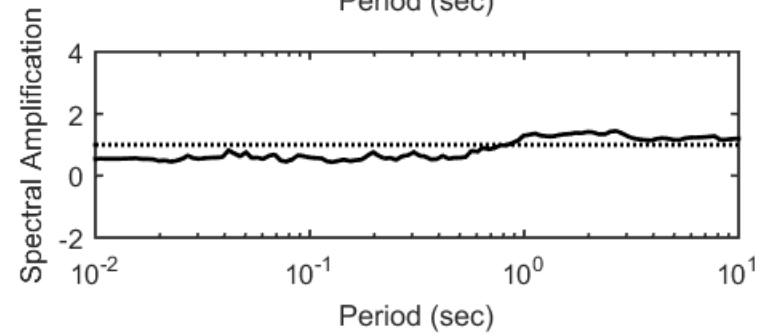
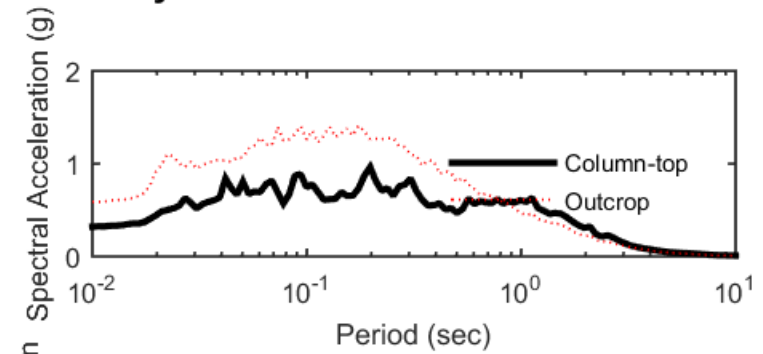
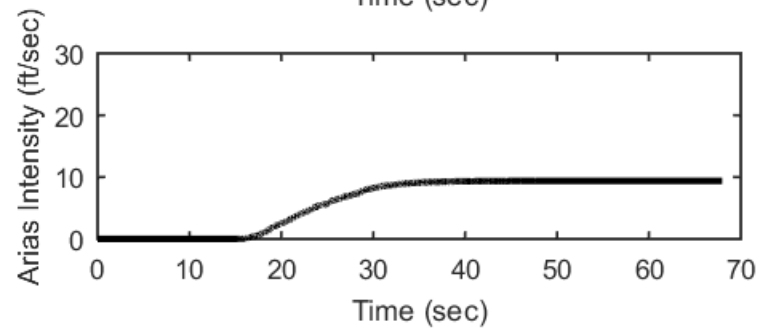
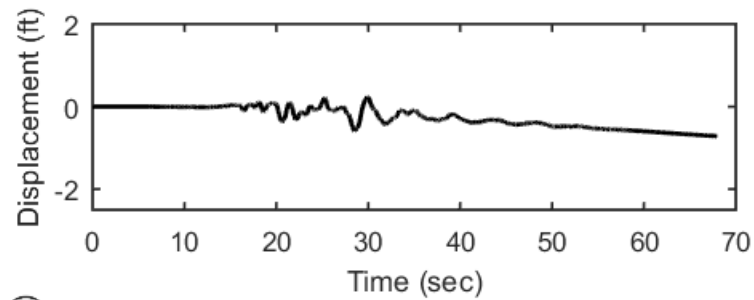
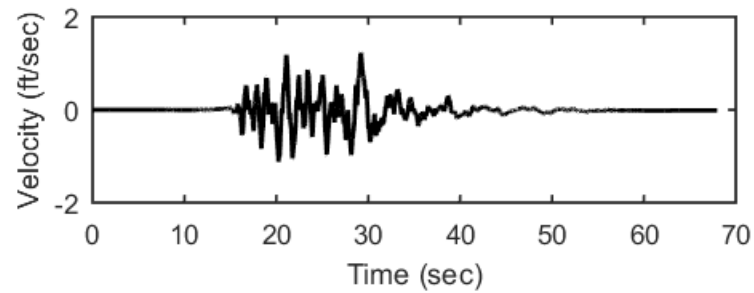
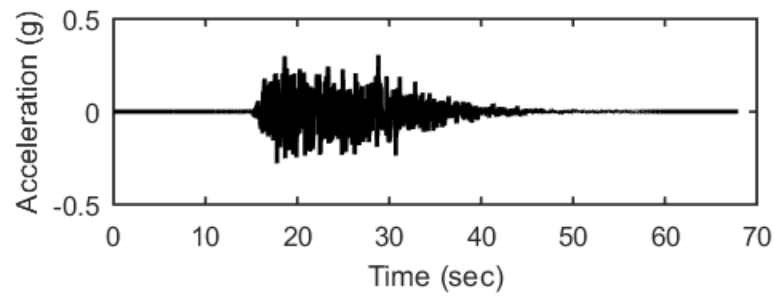
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



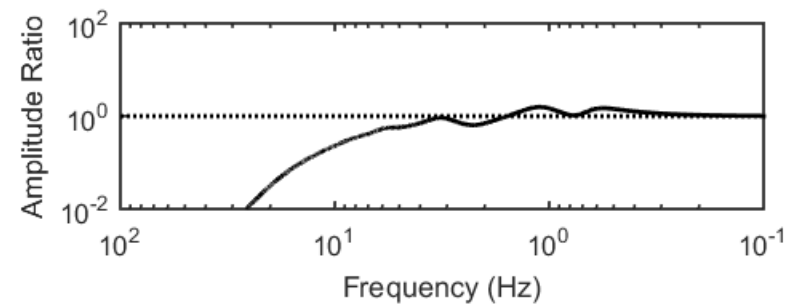
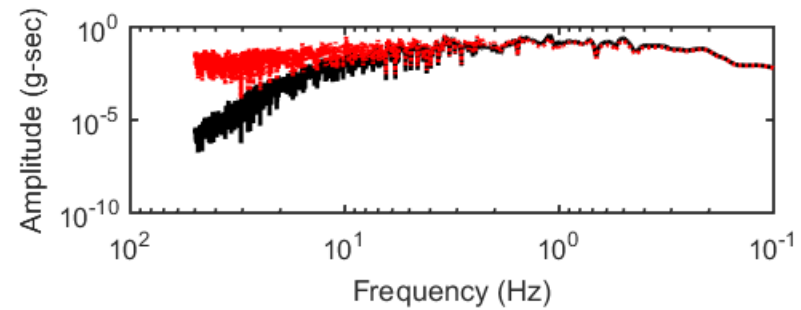
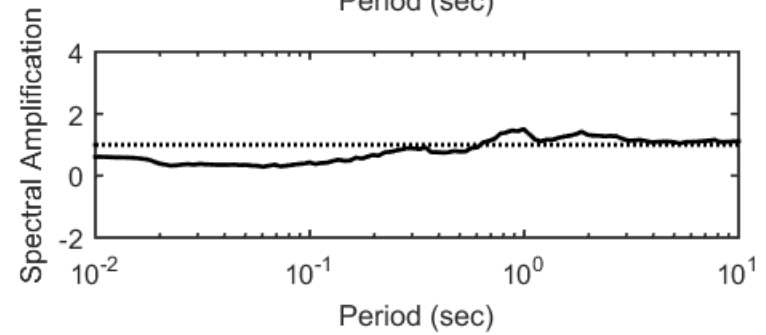
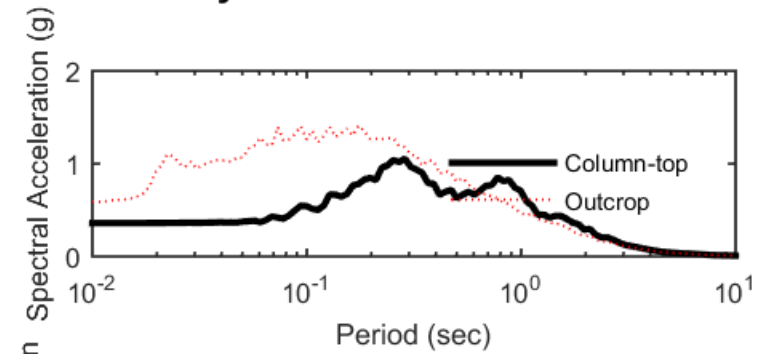
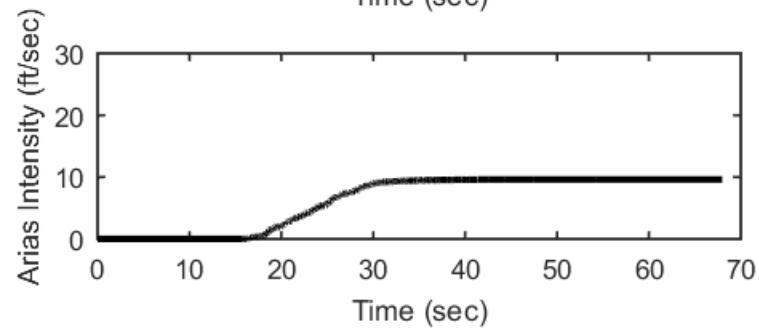
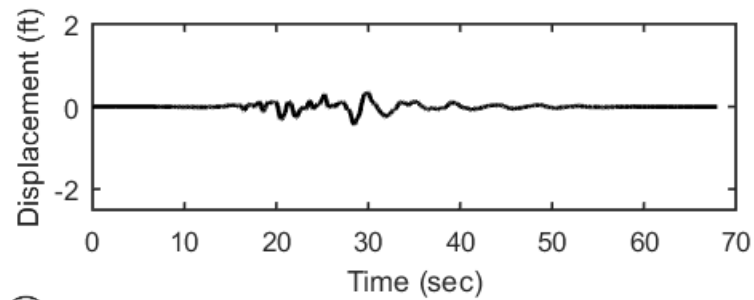
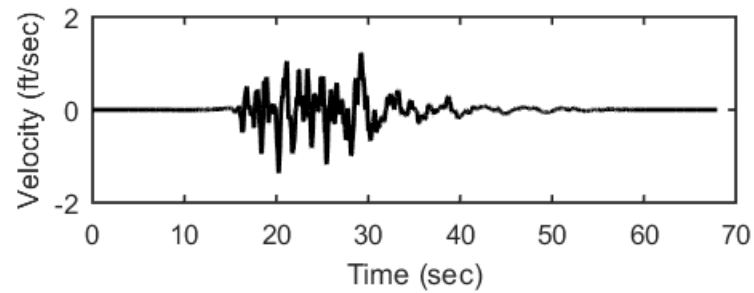
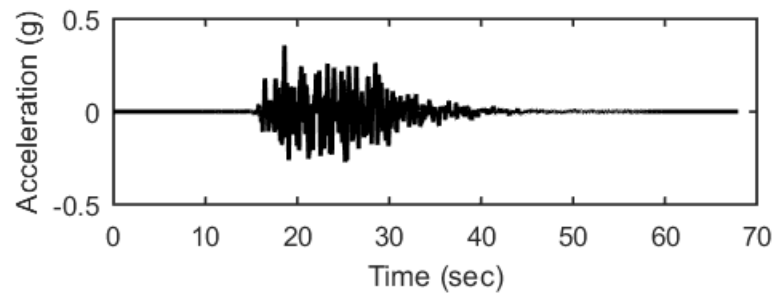
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



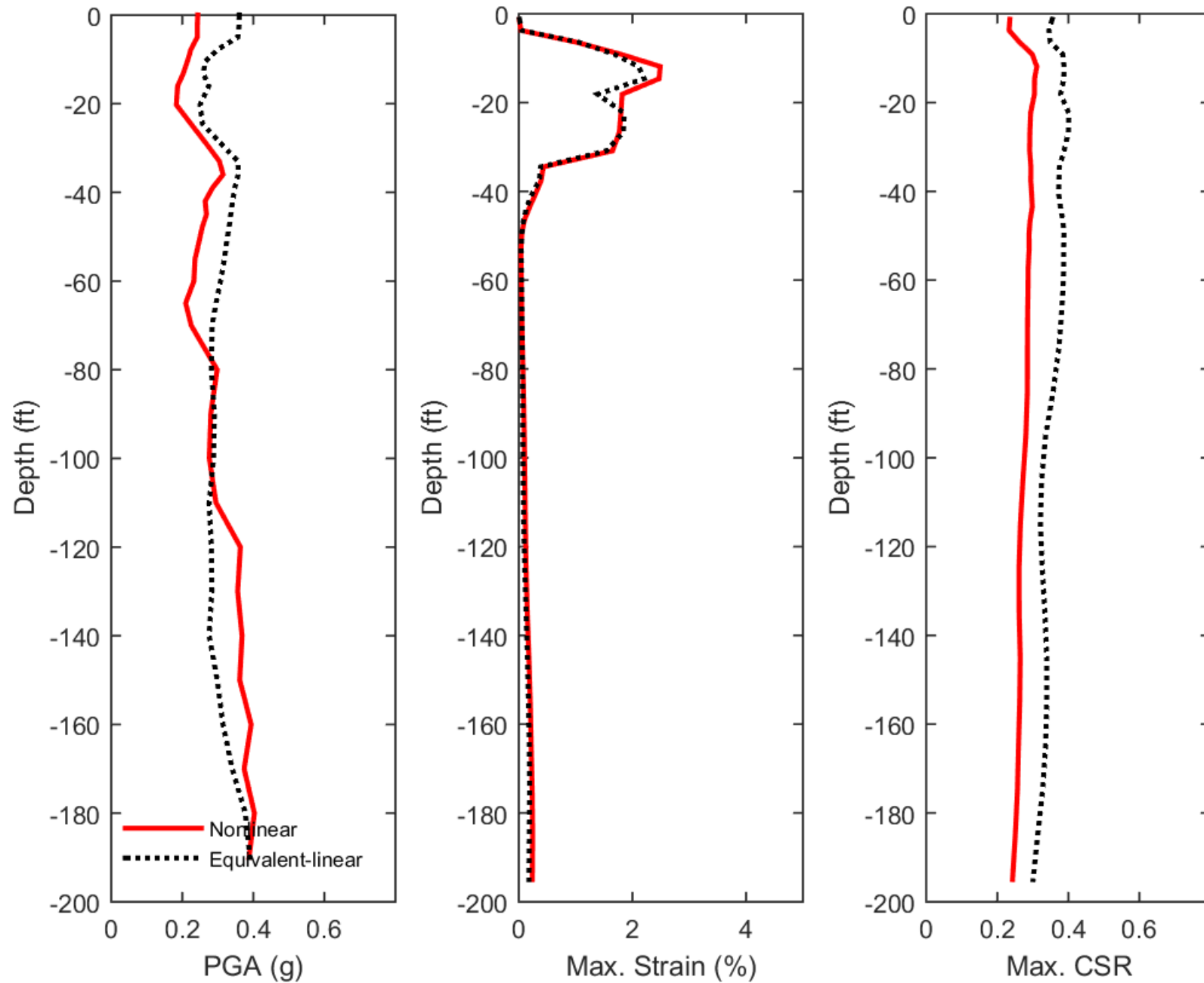
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



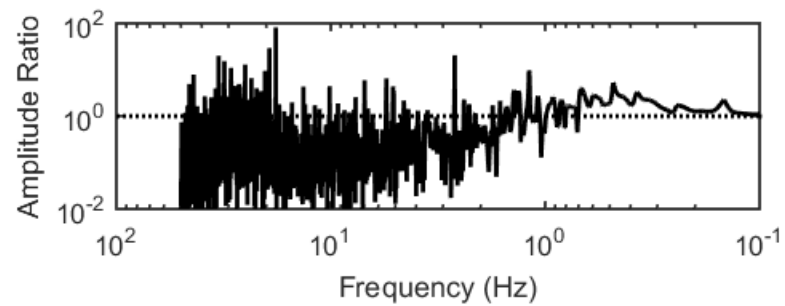
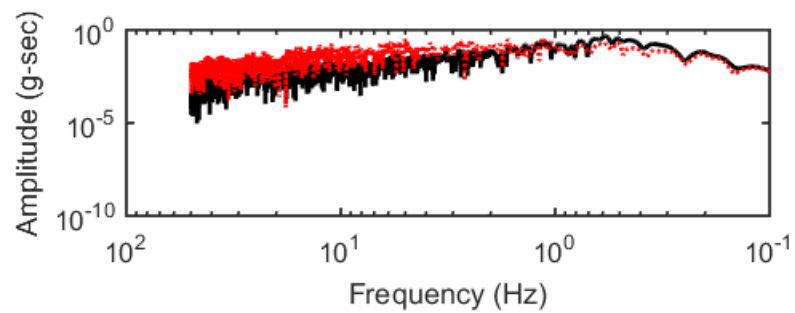
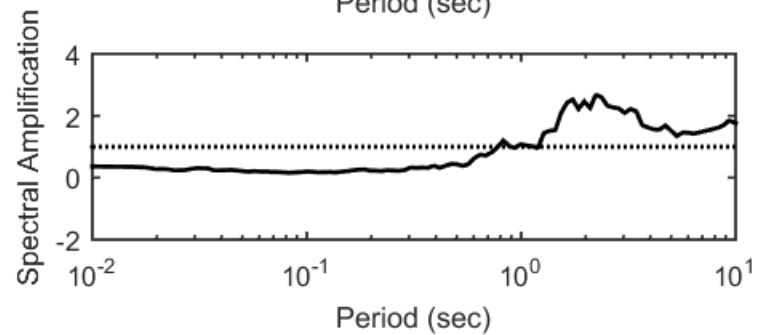
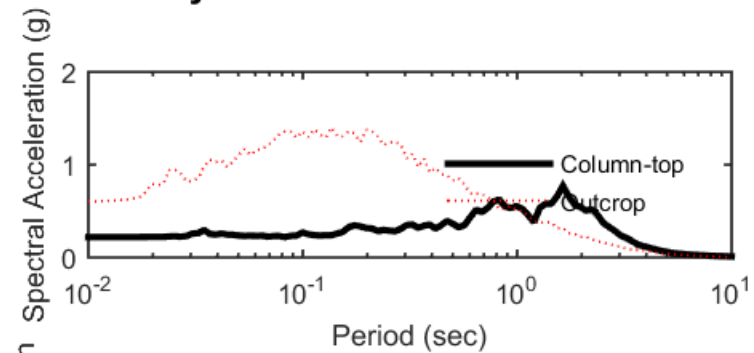
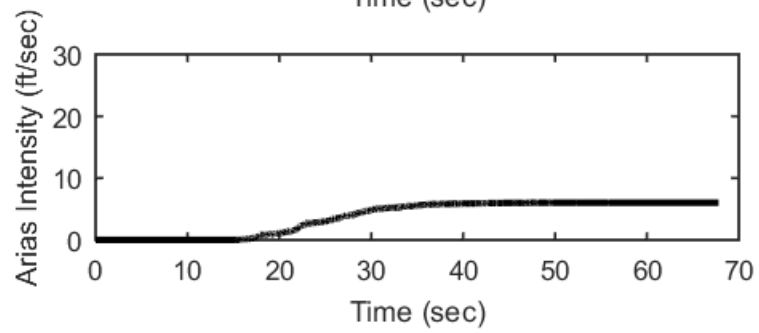
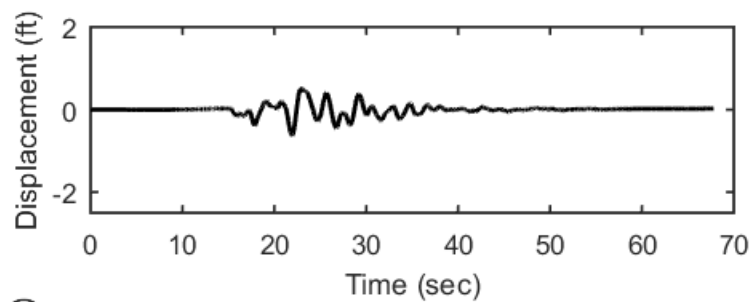
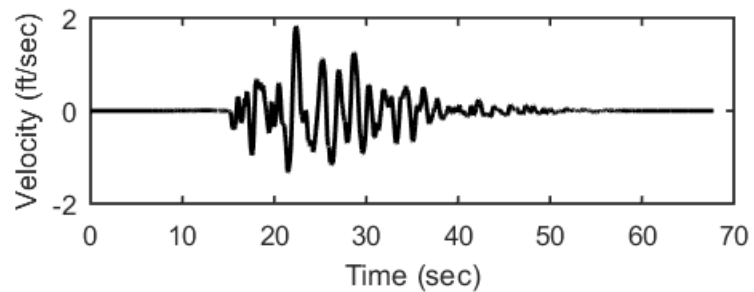
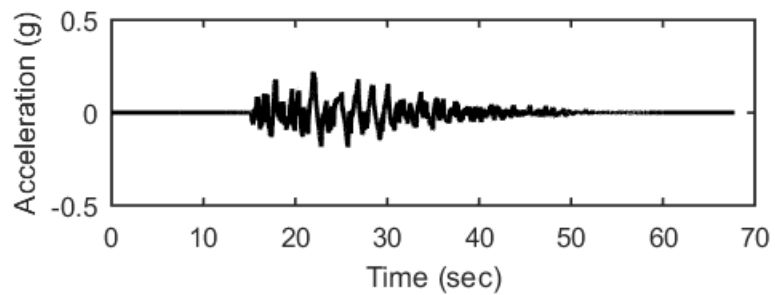
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



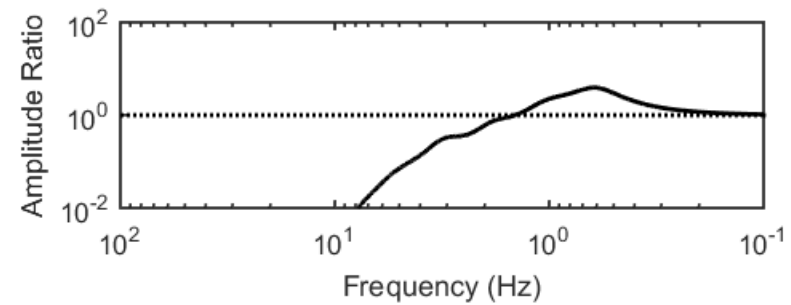
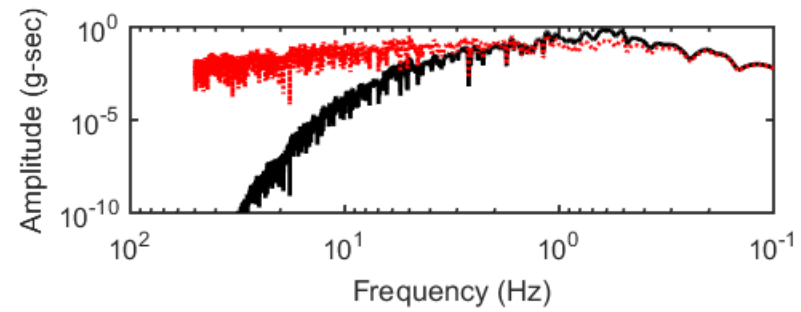
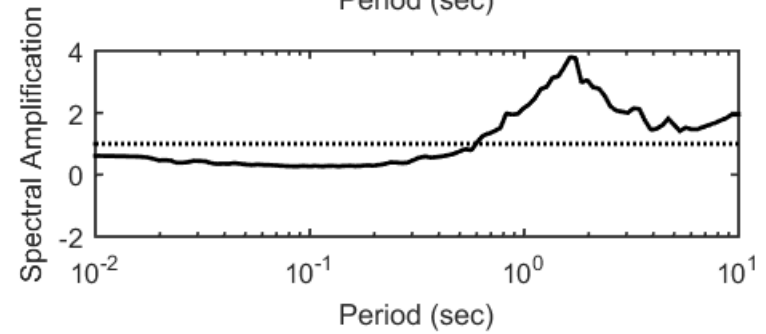
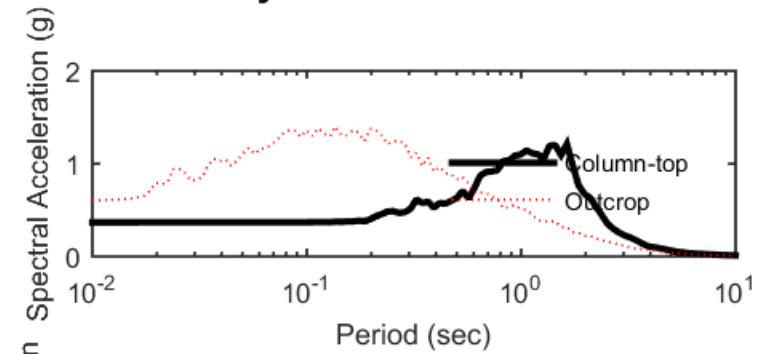
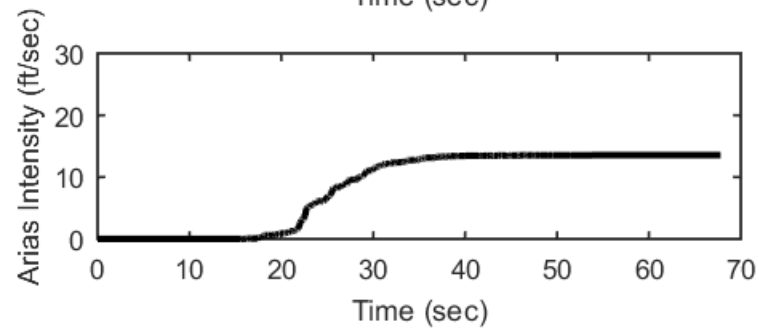
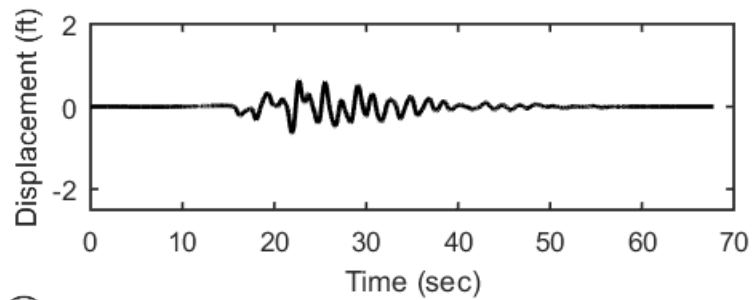
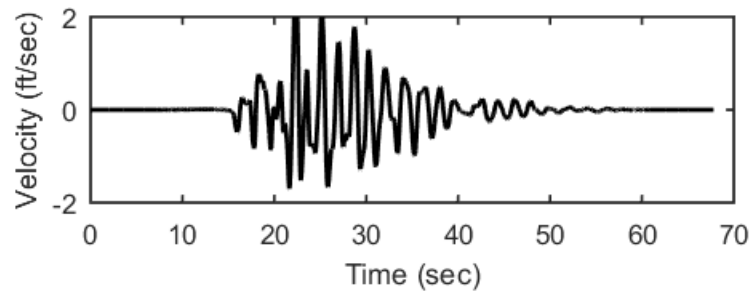
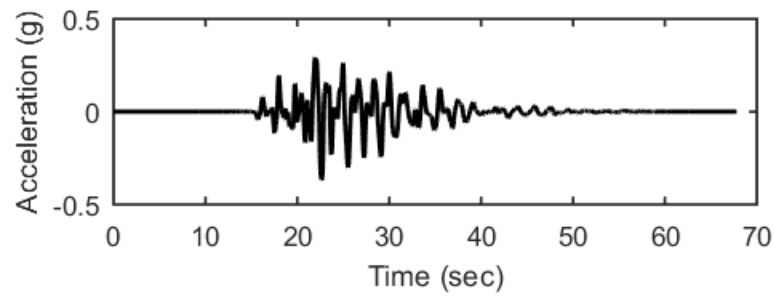
### Profile outputs for Motion: SEE6



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7

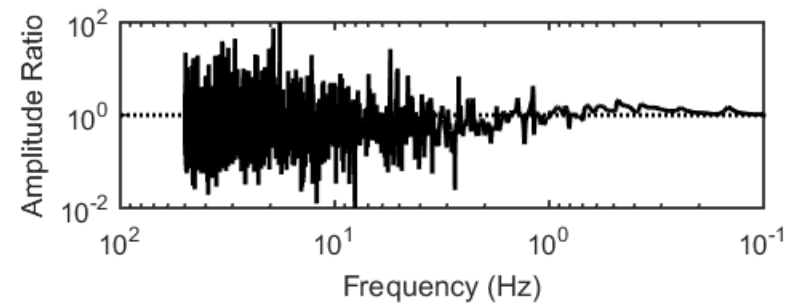
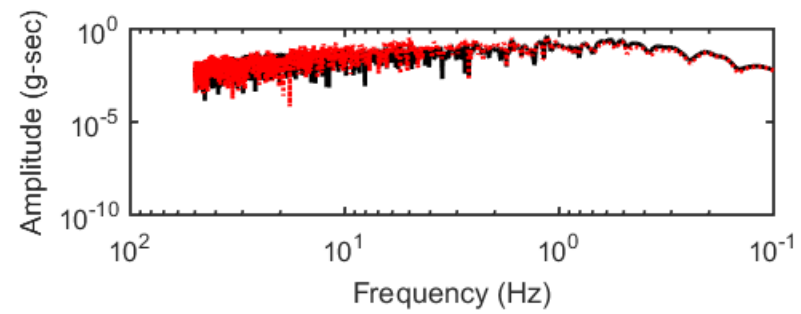
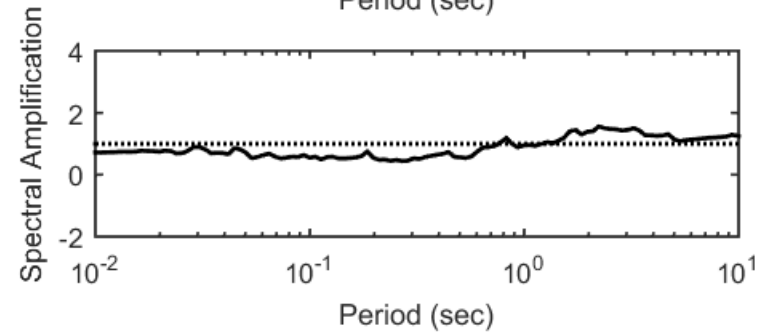
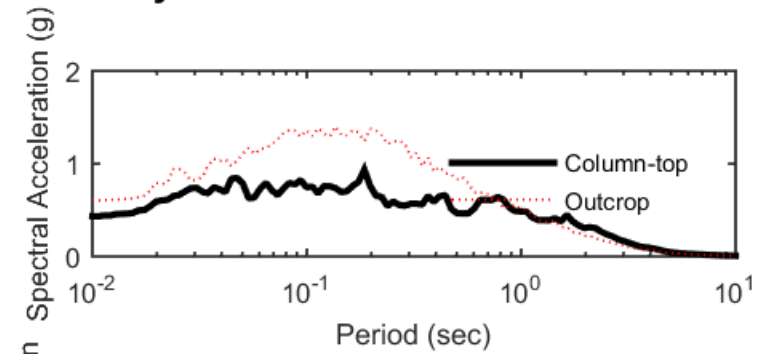
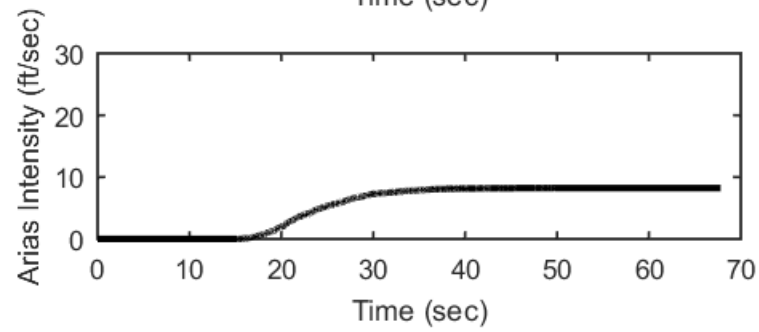
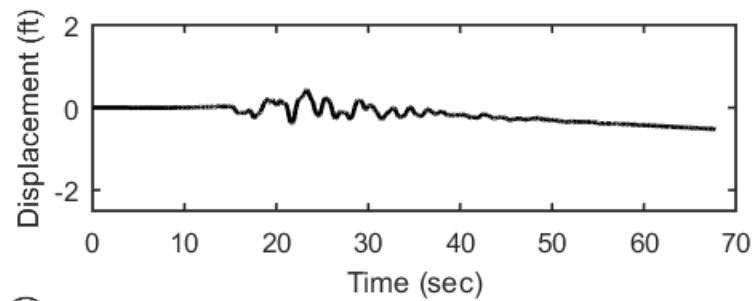
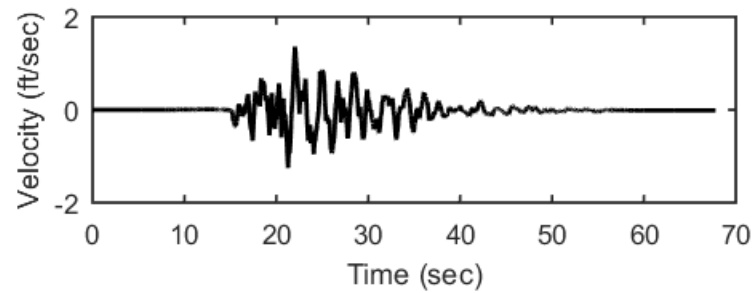
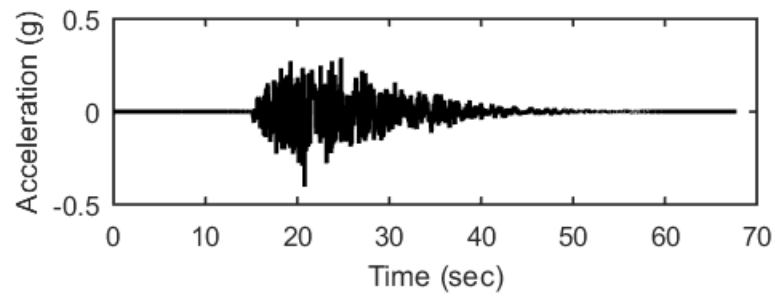


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7

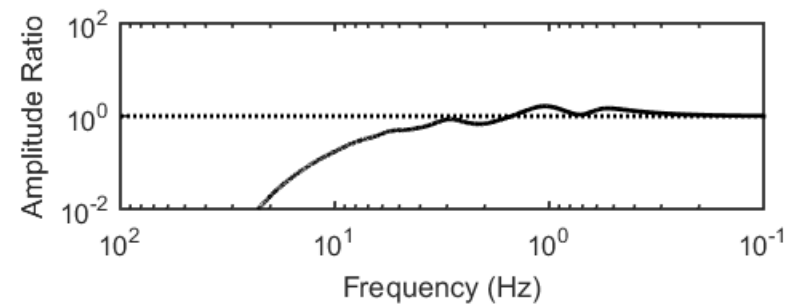
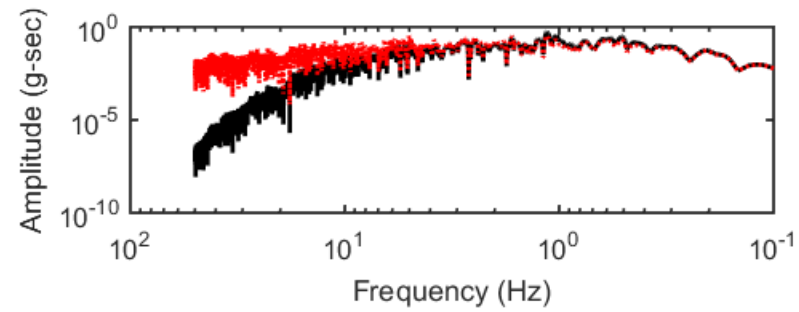
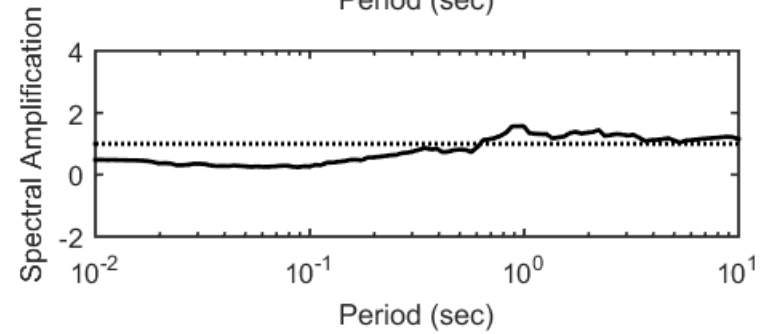
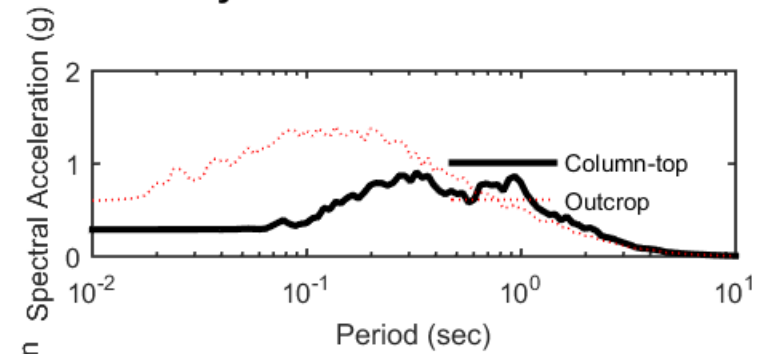
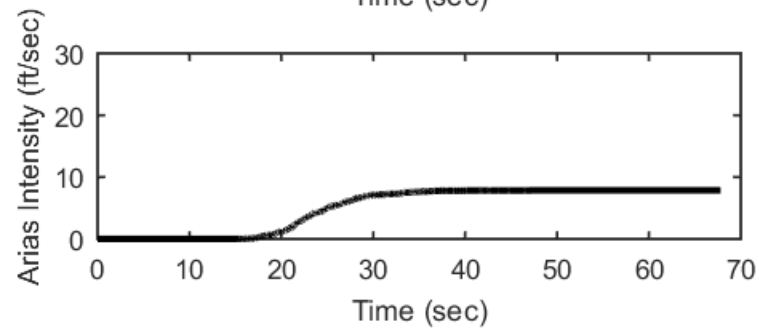
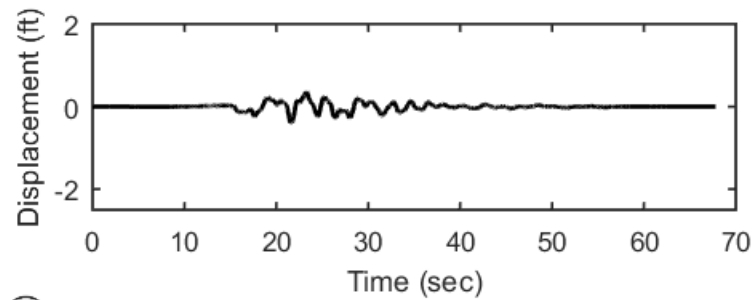
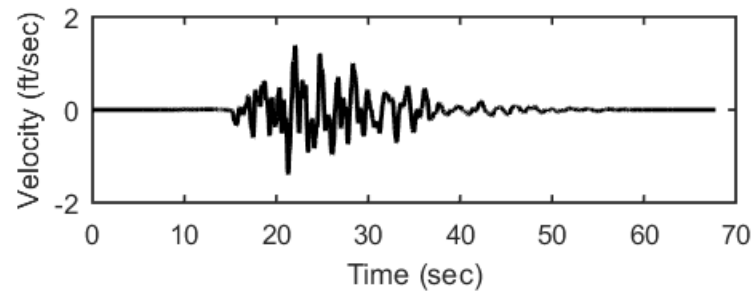
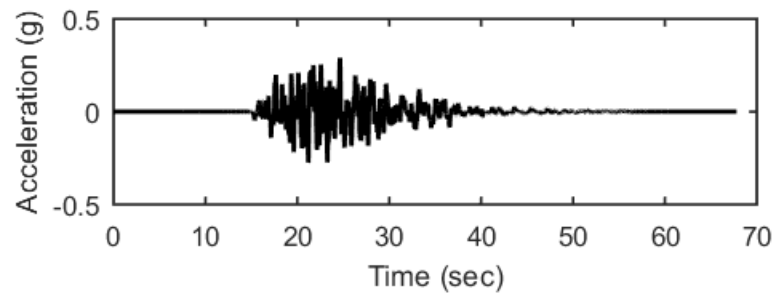




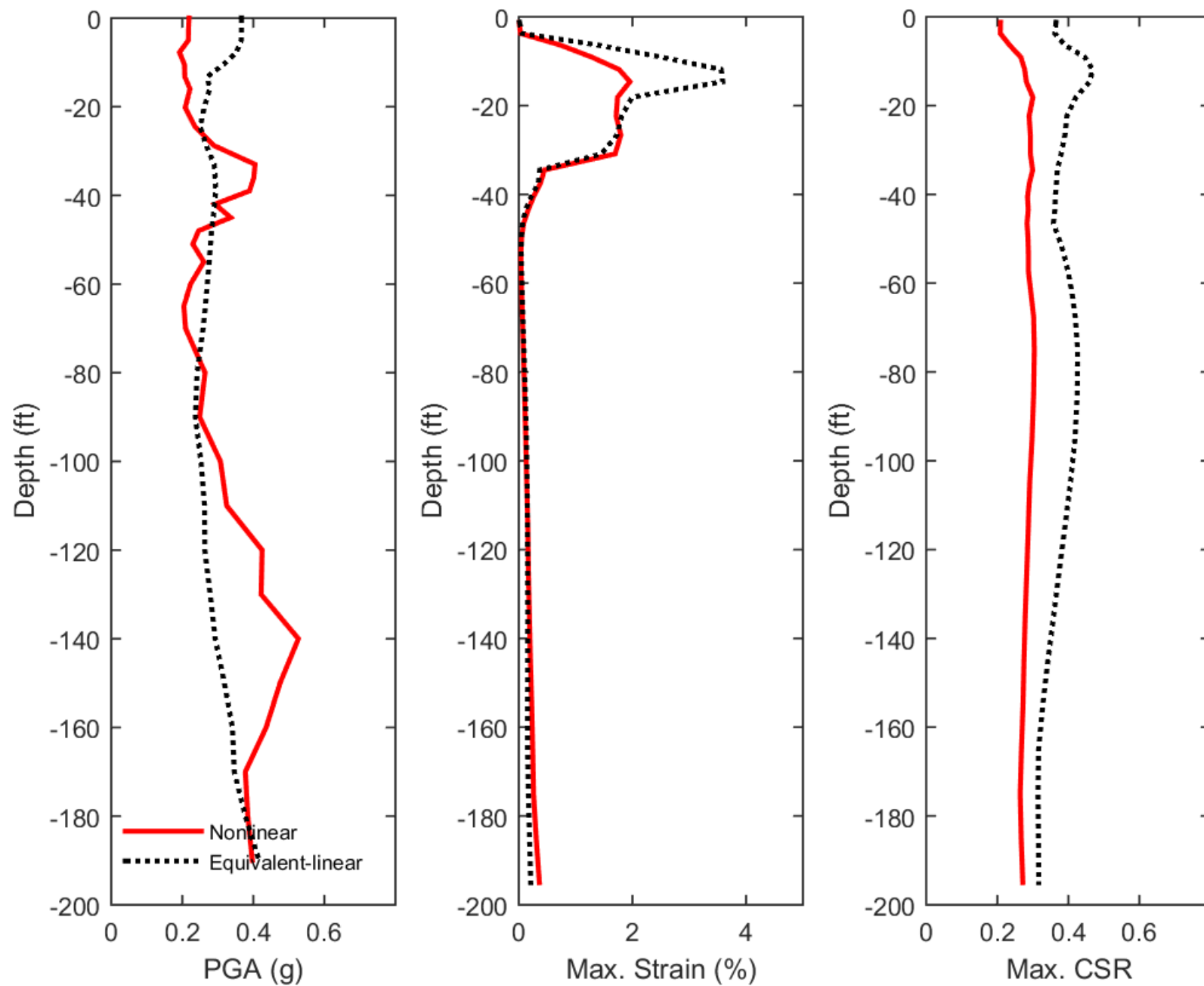
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



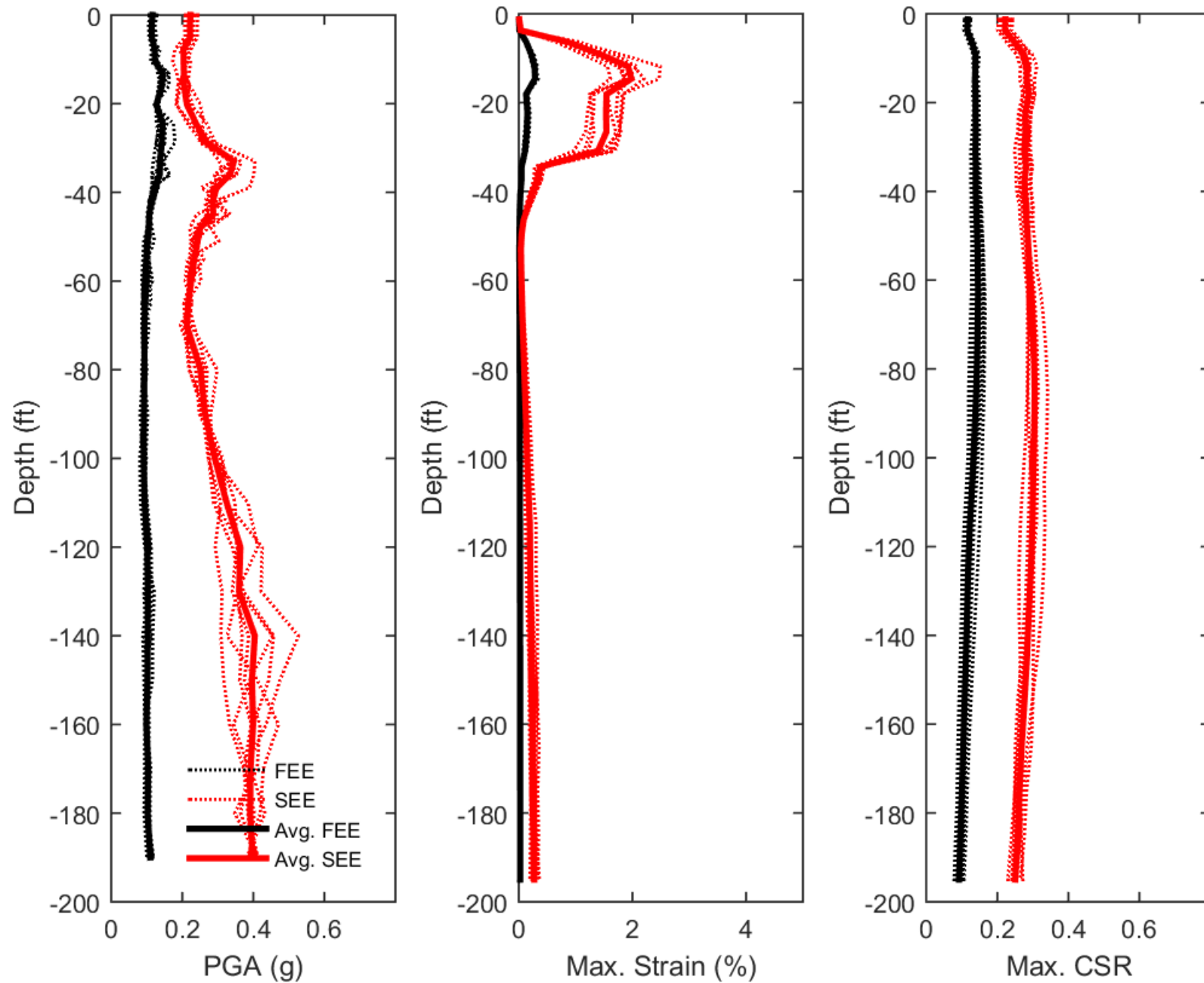
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



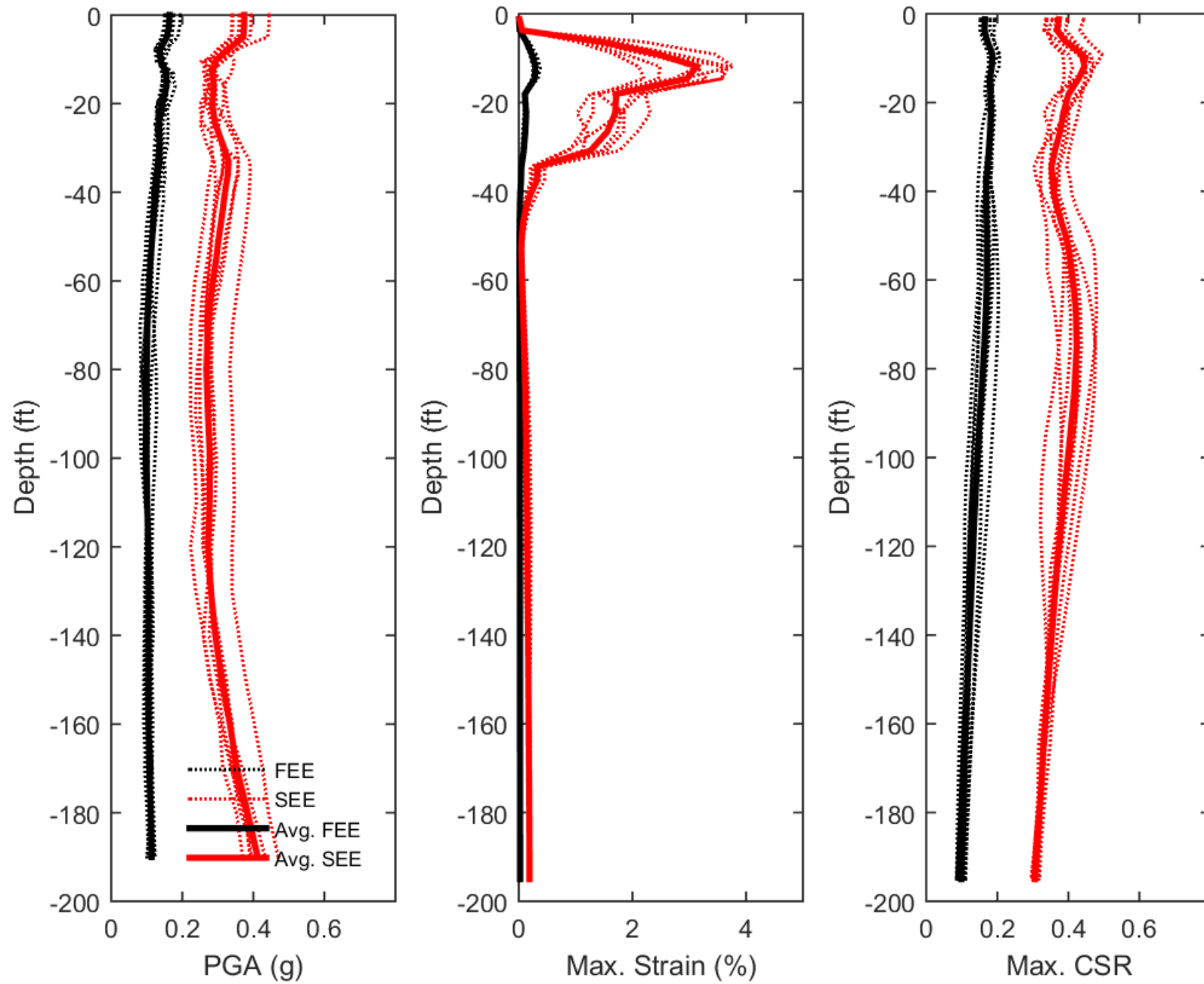
### Profile outputs for Motion: SEE7



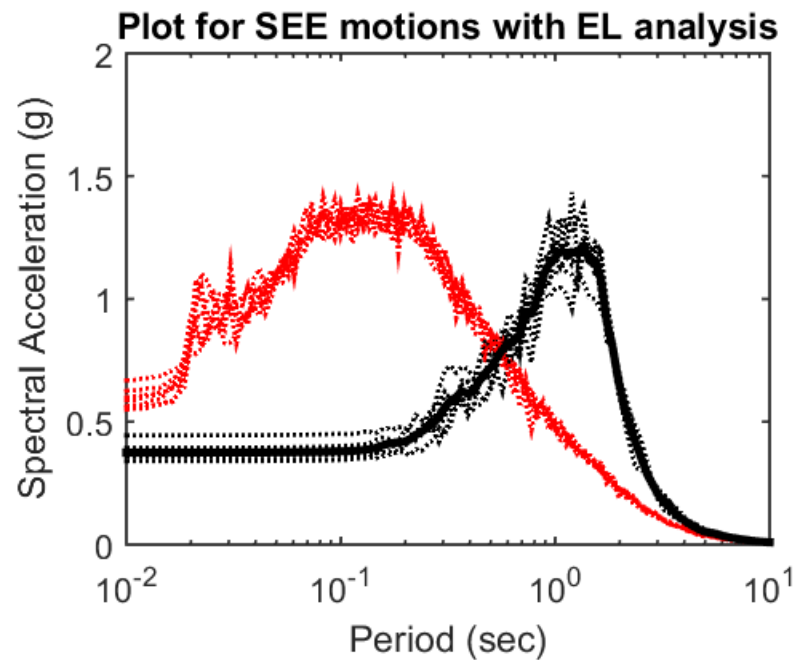
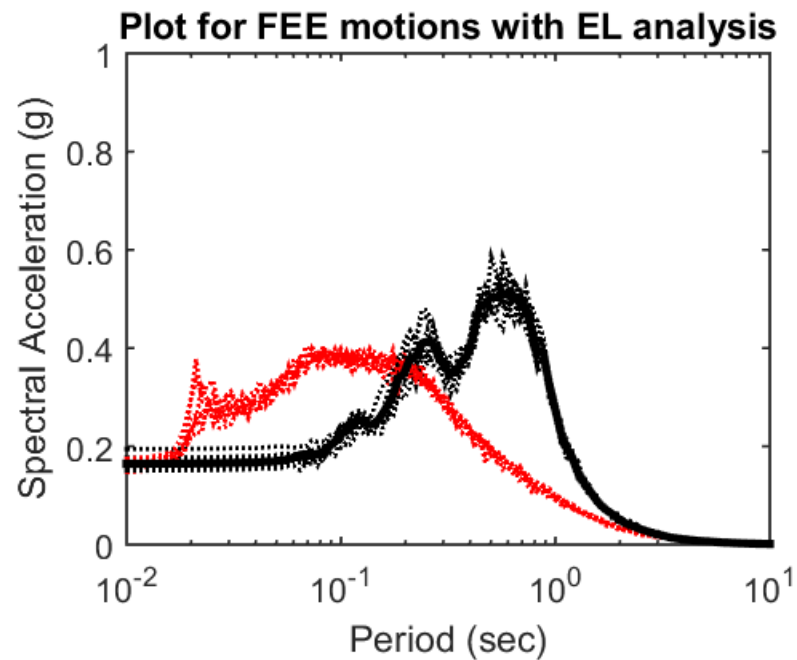
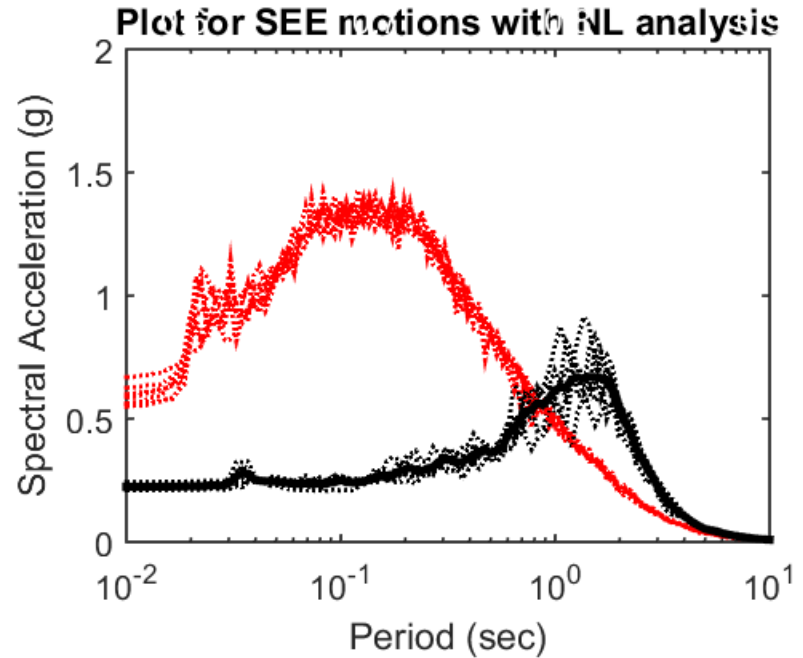
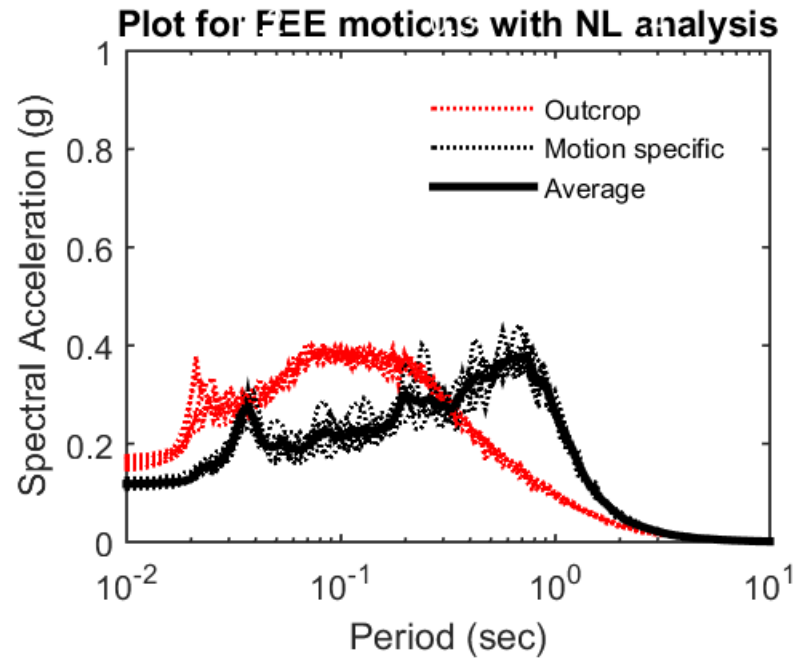
## Summary of the profile outputs for Nonlinear analysis



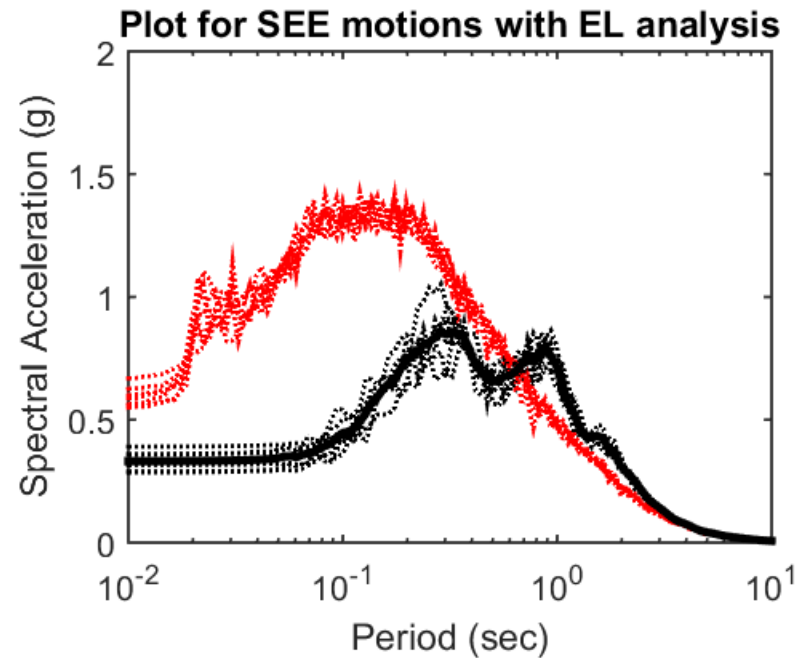
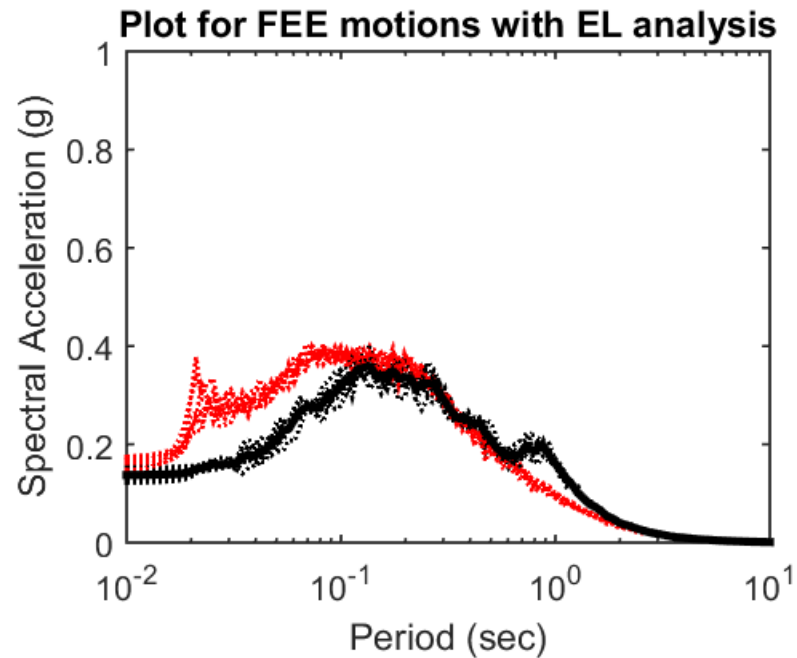
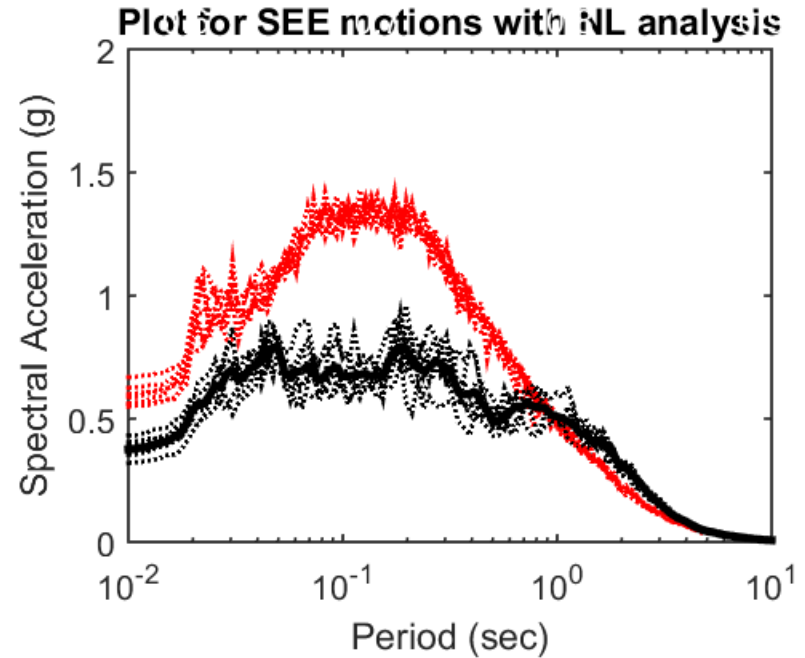
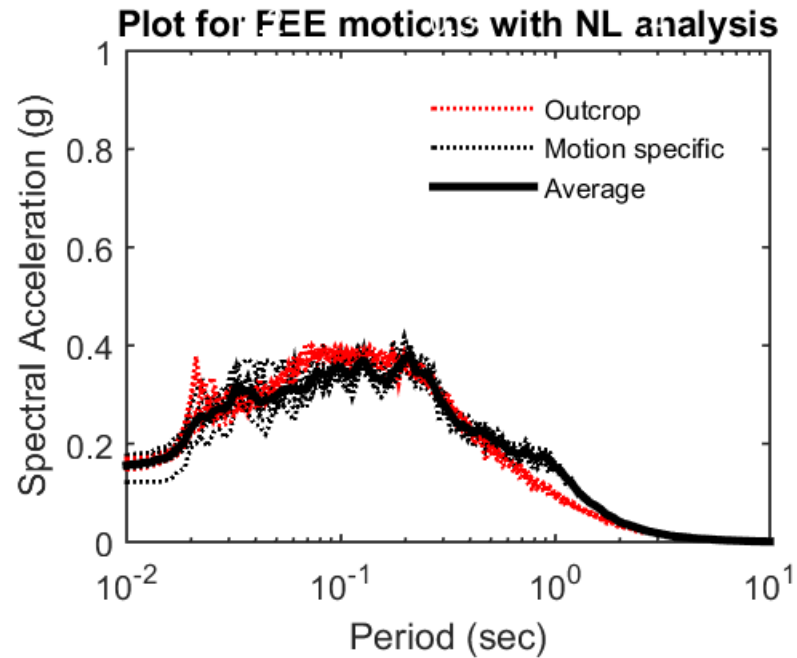
## Summary of the profile outputs for Equivalent-linear analysis



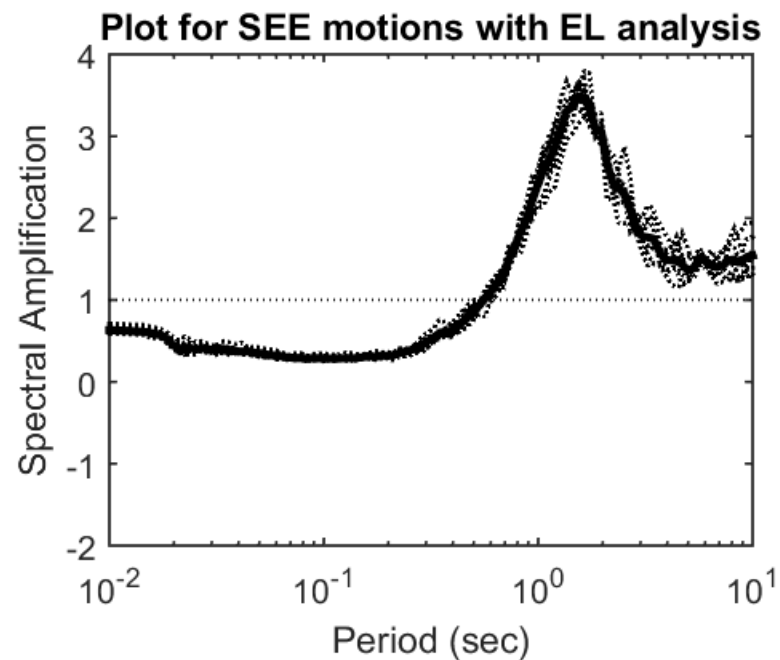
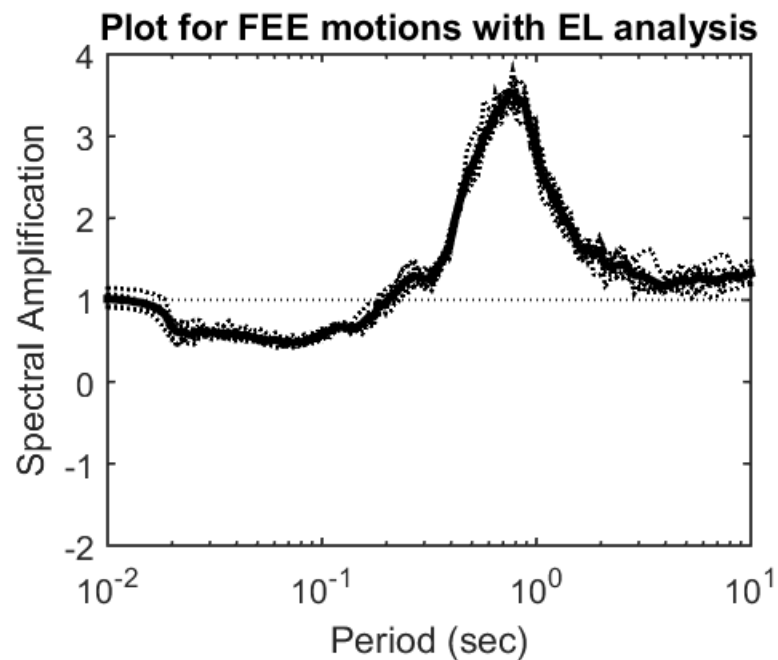
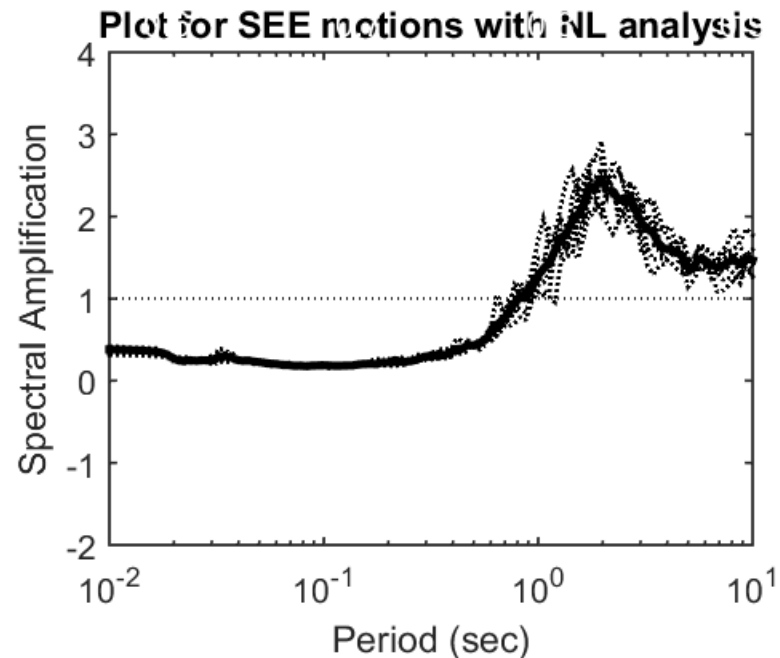
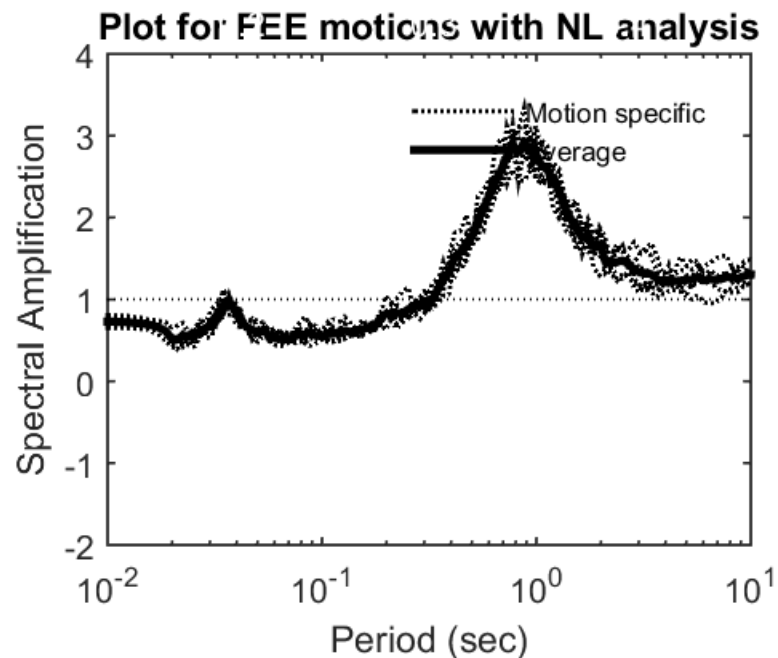
## Summary plots: RSA at ground surface



### Summary plots: RSA at top of Marl

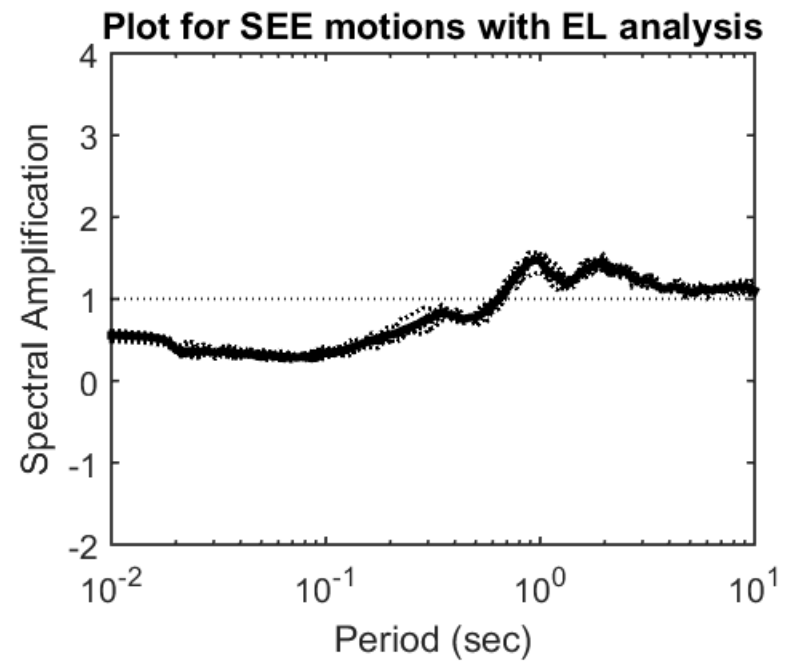
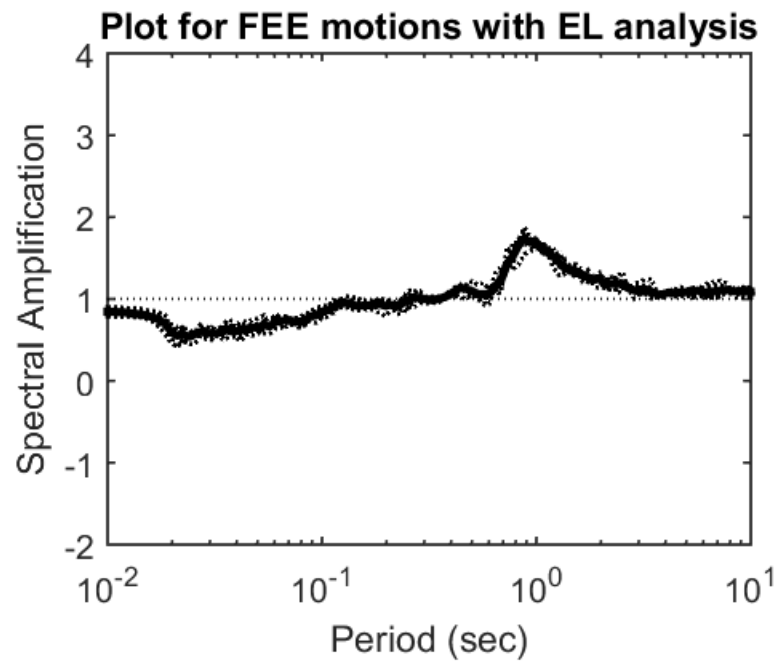
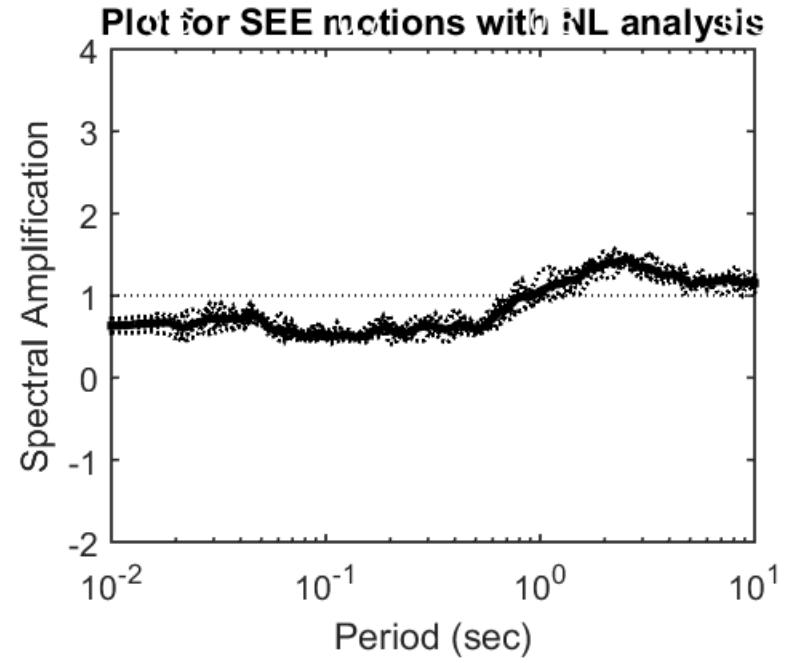
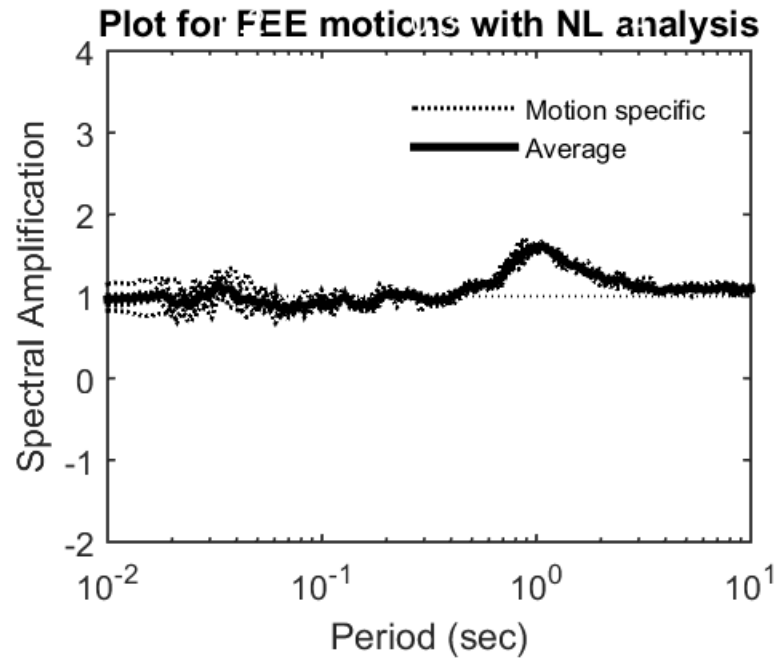


## Summary plots: Spectral amplification at ground surface



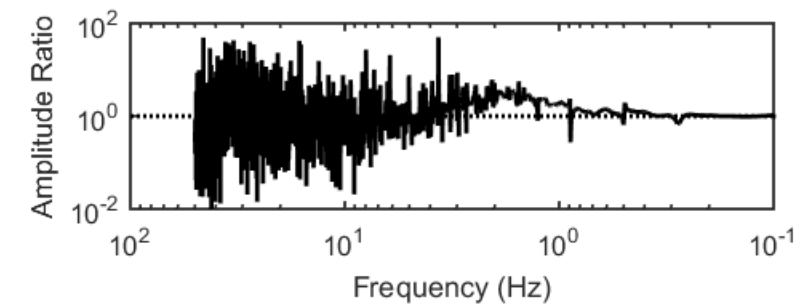
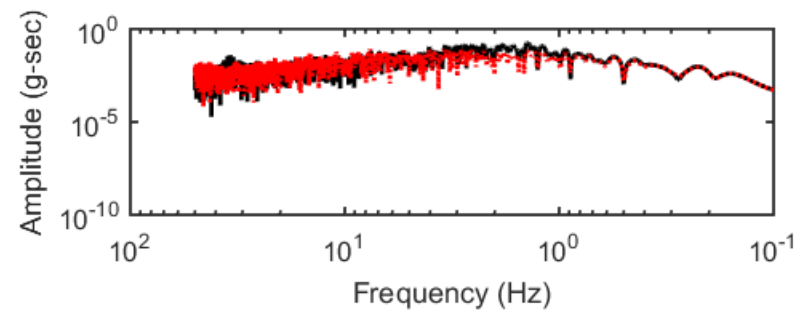
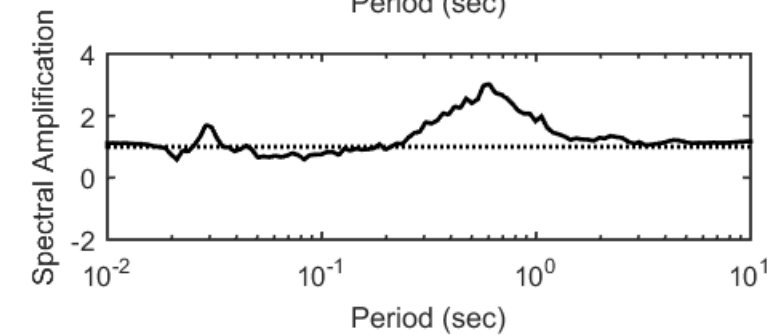
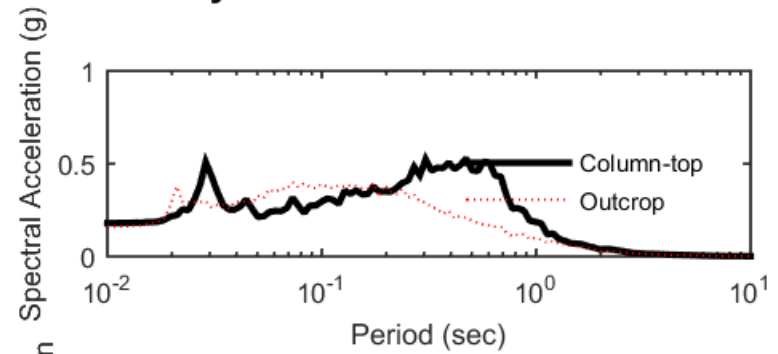
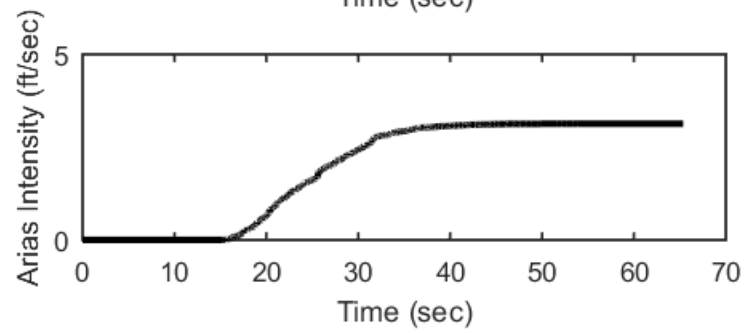
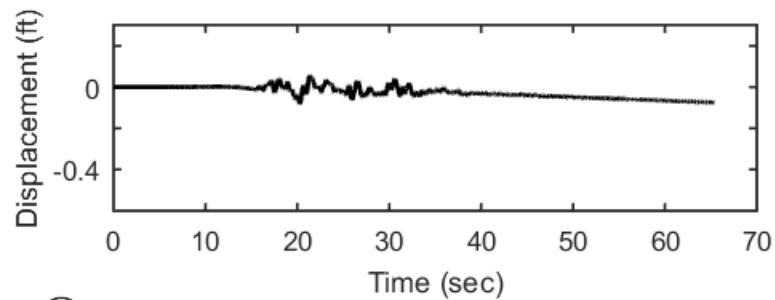
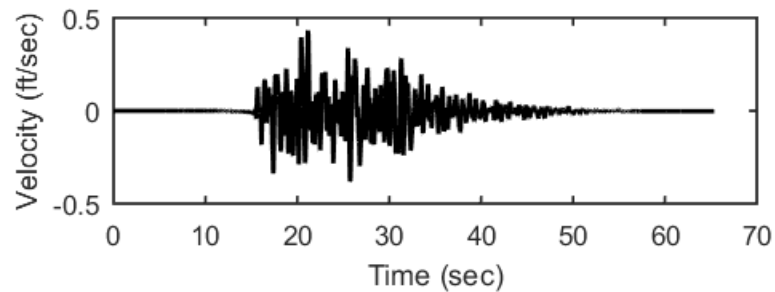
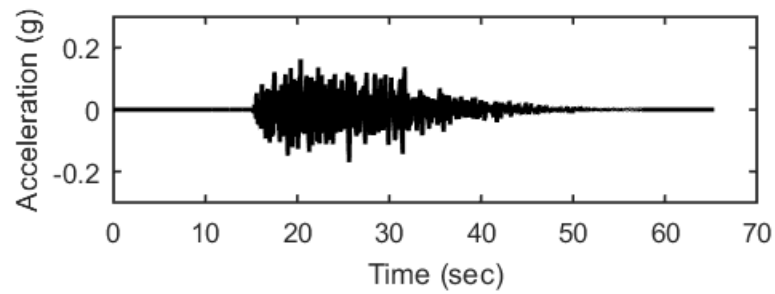


## Summary plots: Spectral amplification at top of Marl

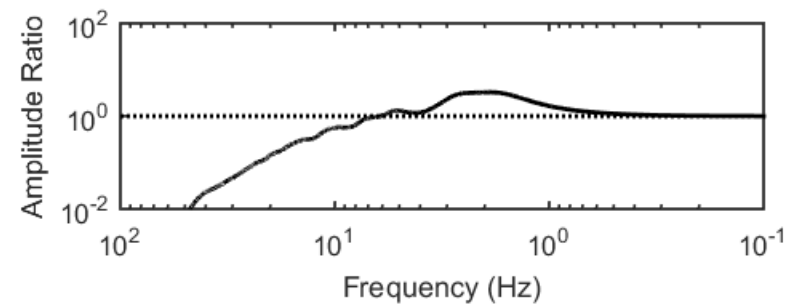
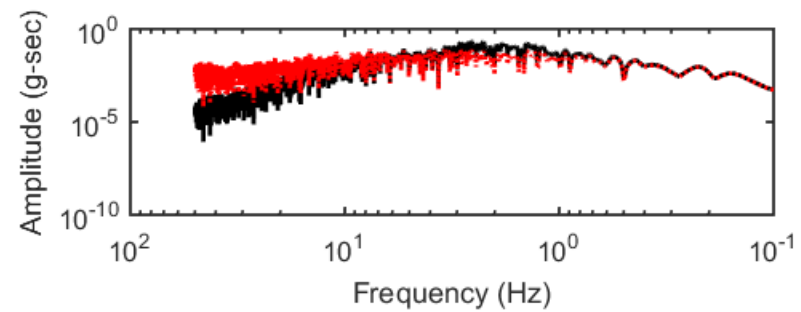
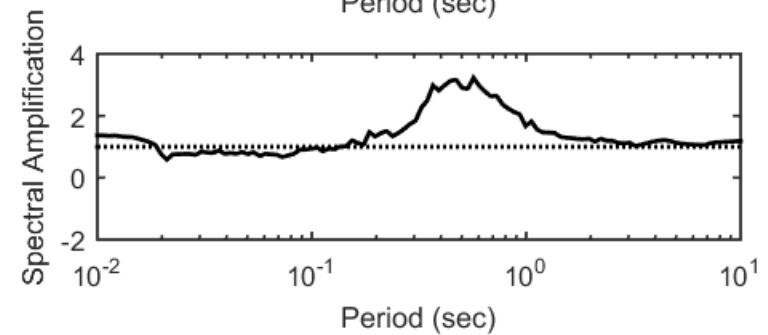
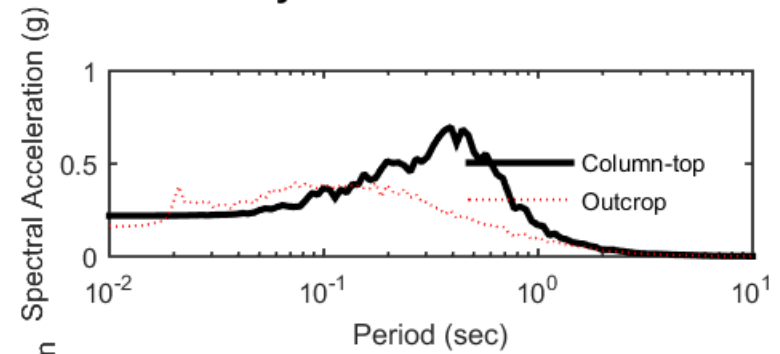
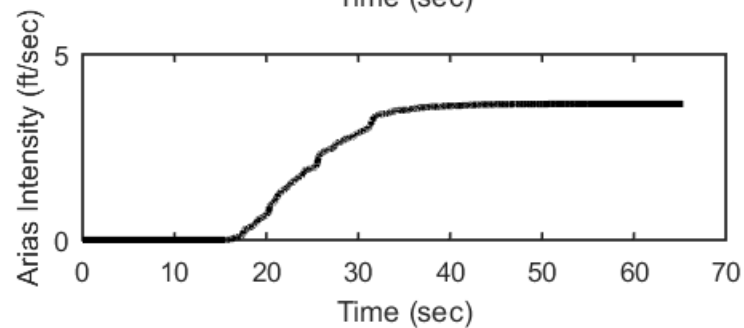
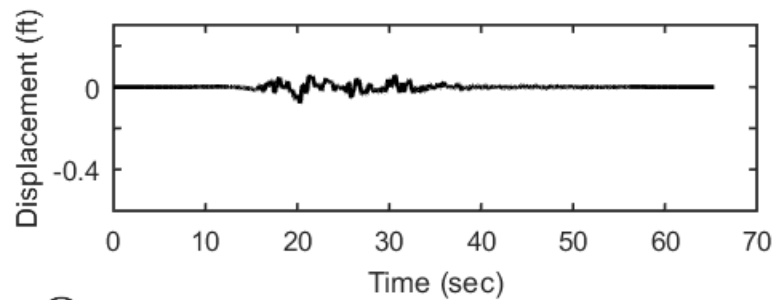
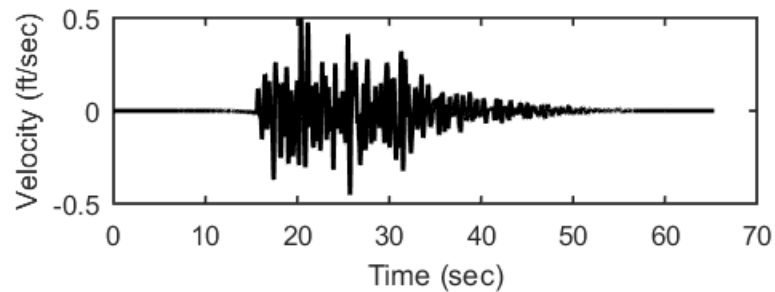
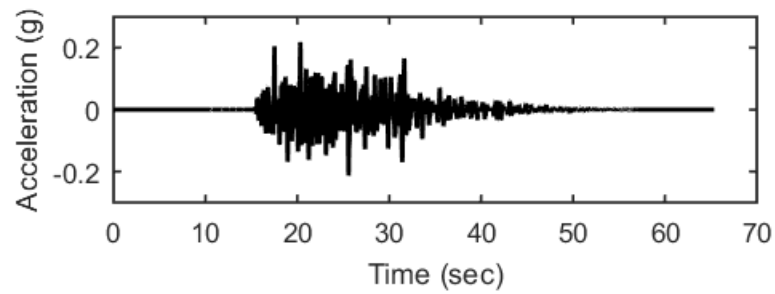


# **BASE MODEL AND HIGH PLASTICITY INDEX**

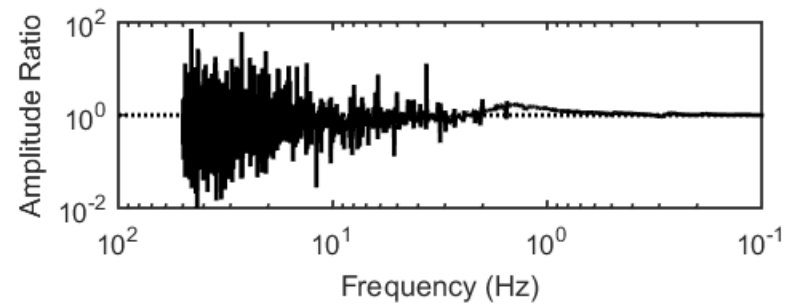
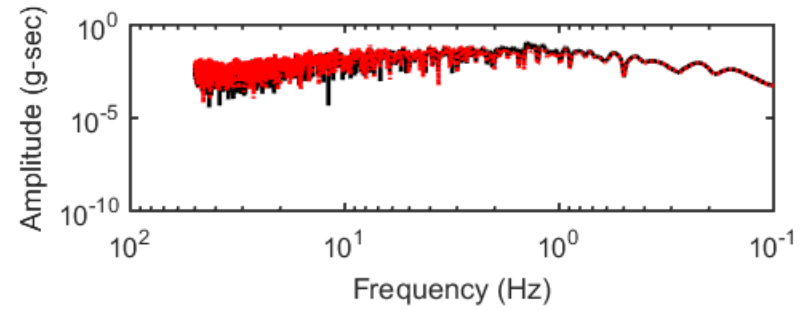
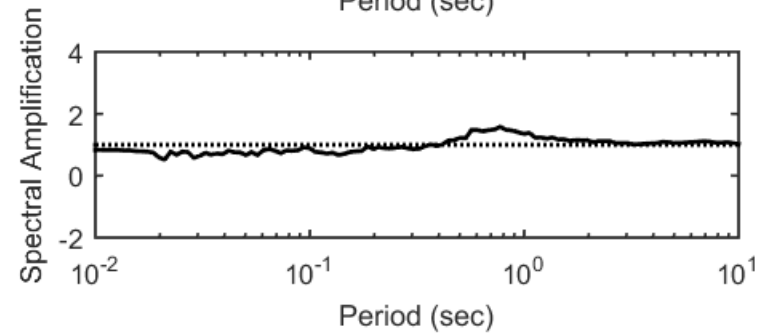
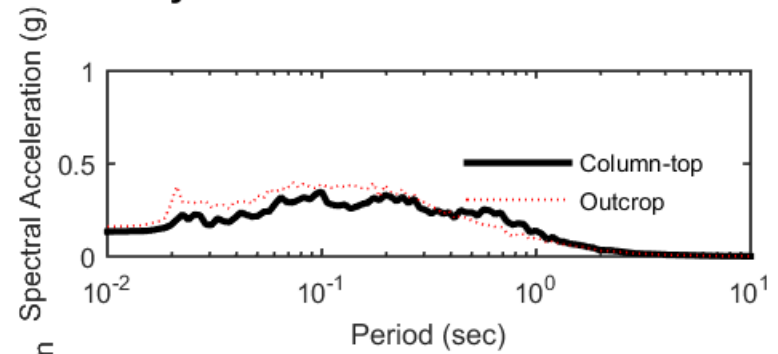
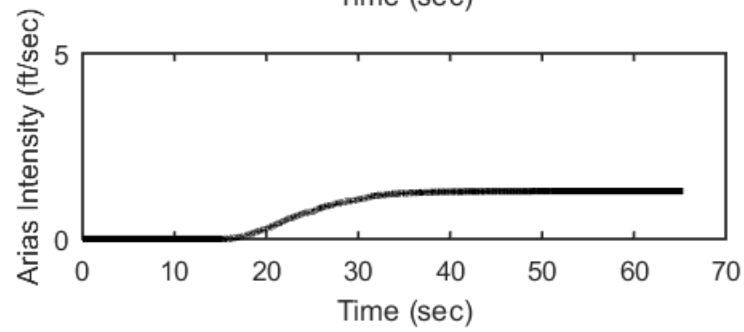
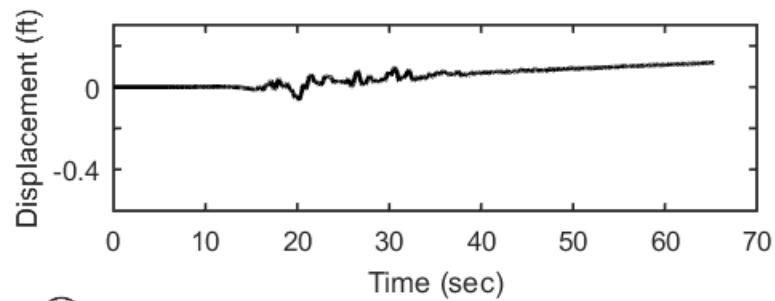
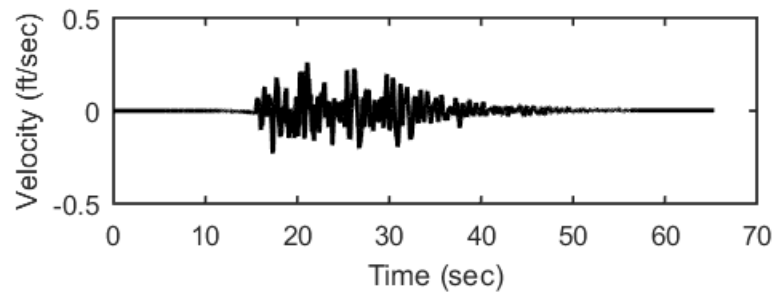
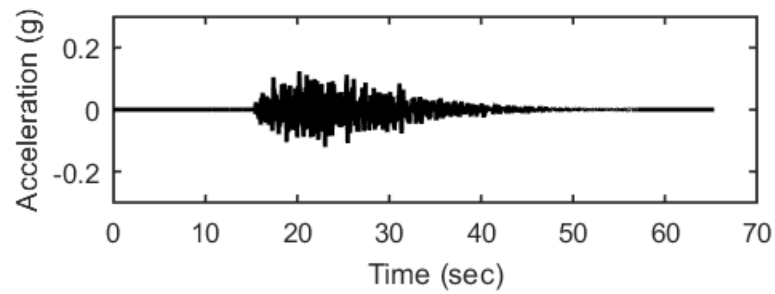
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1



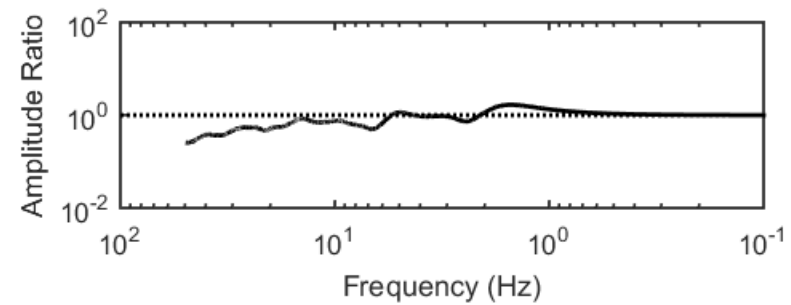
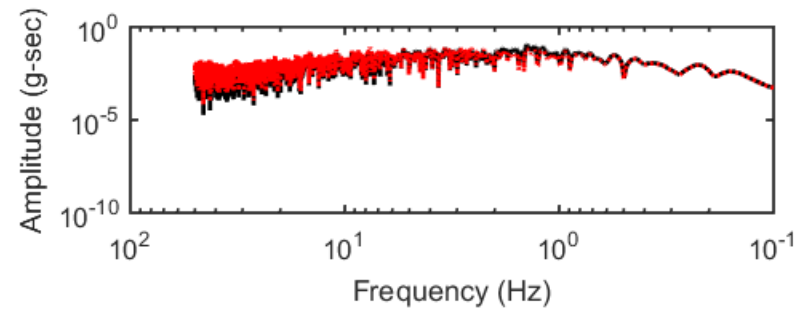
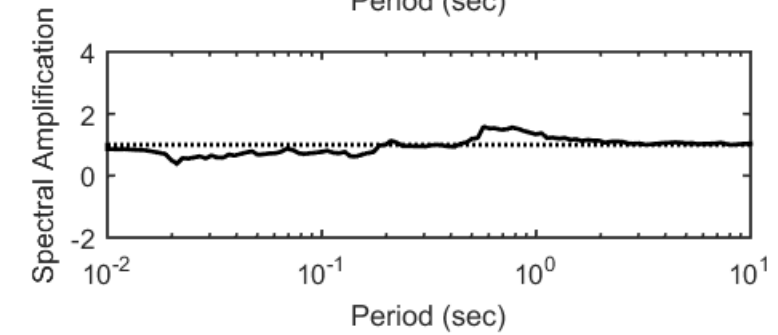
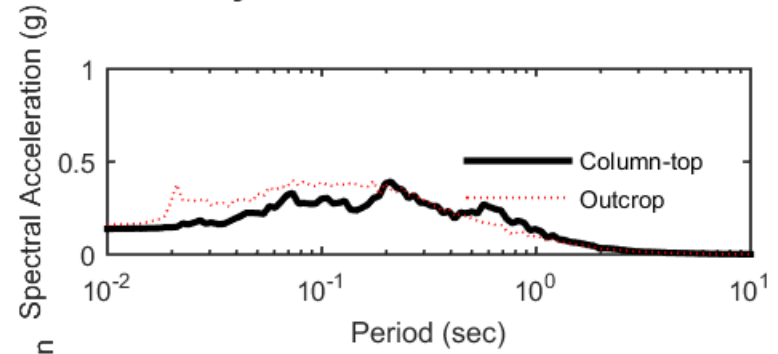
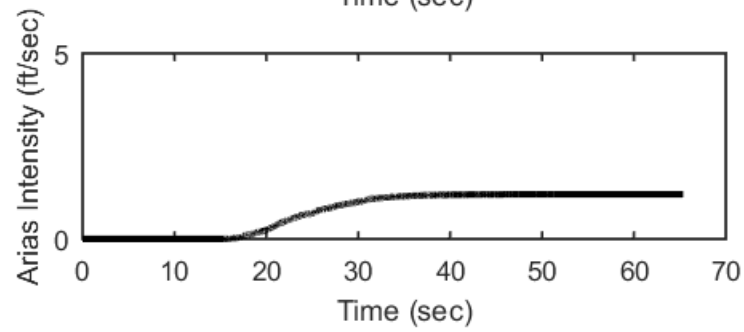
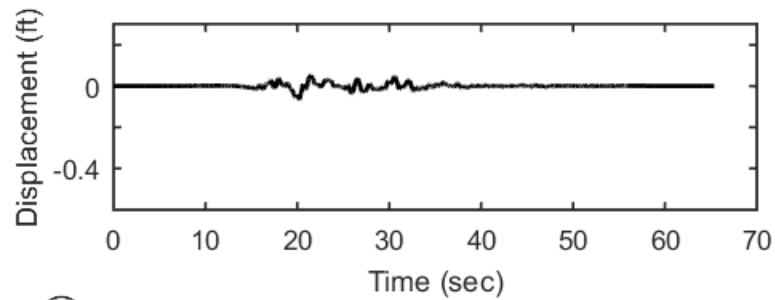
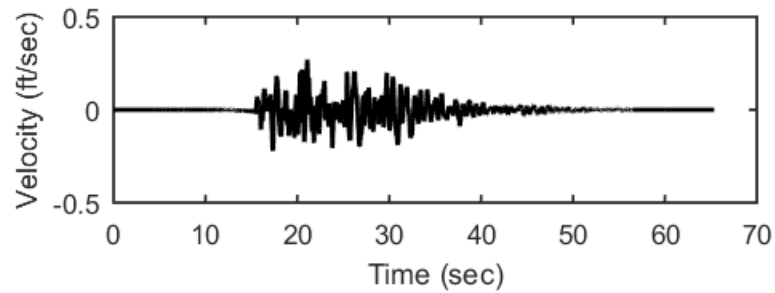
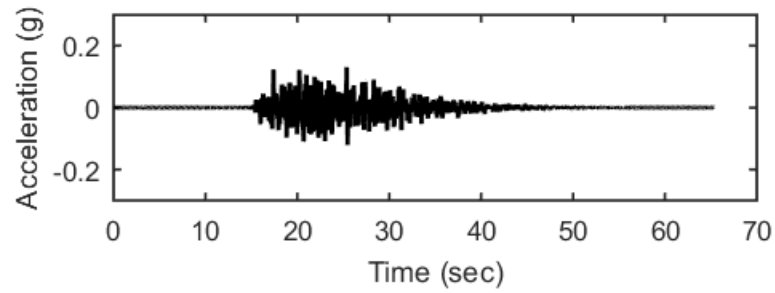
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



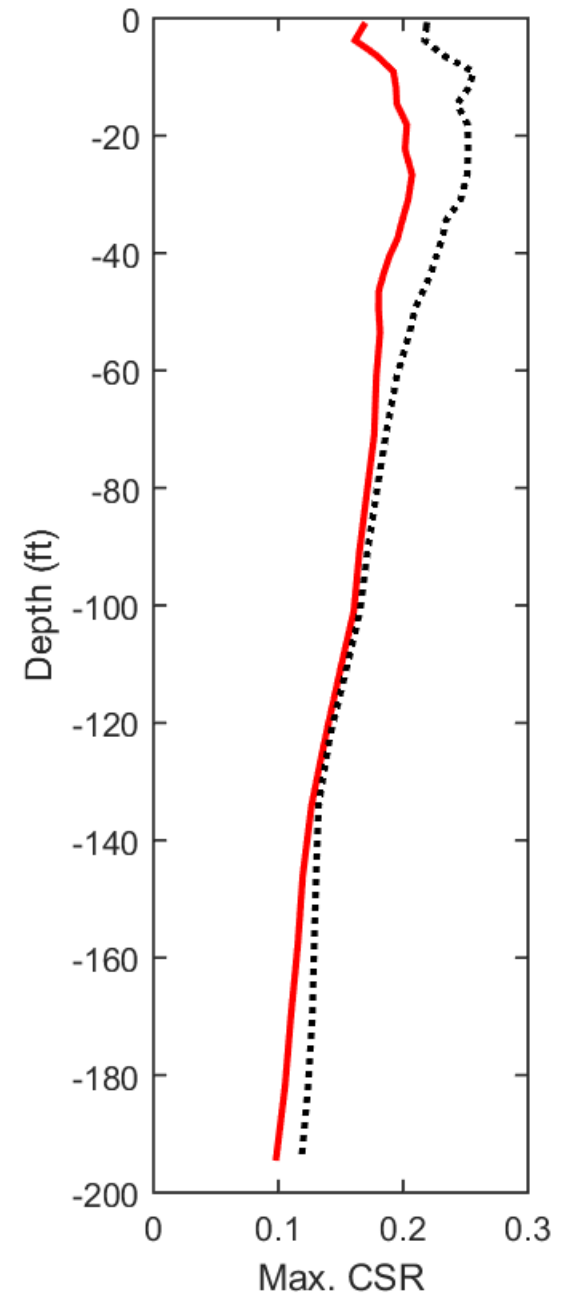
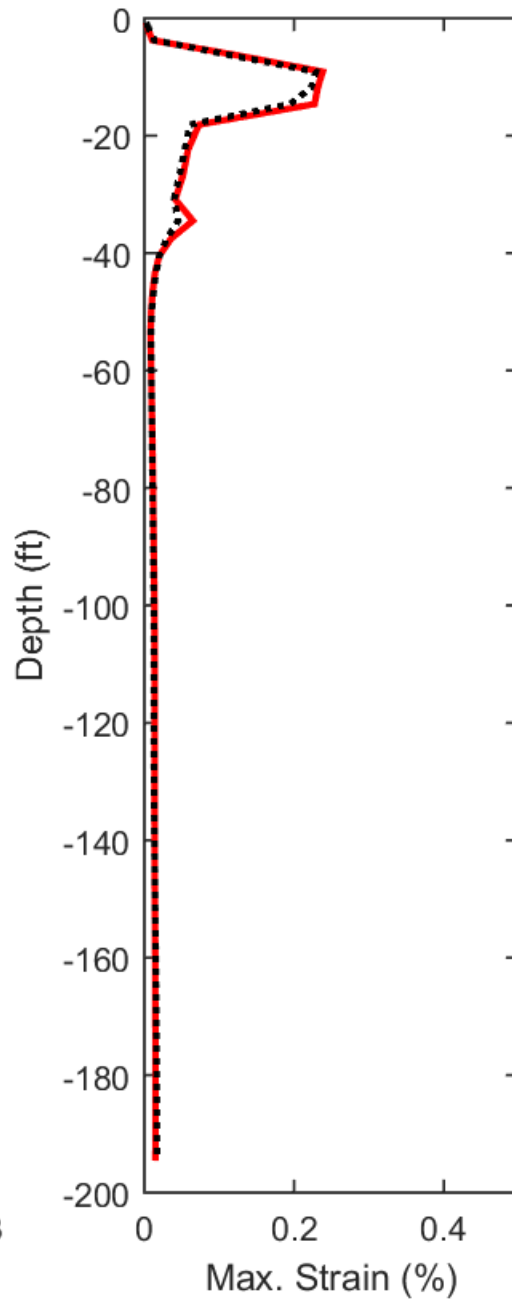
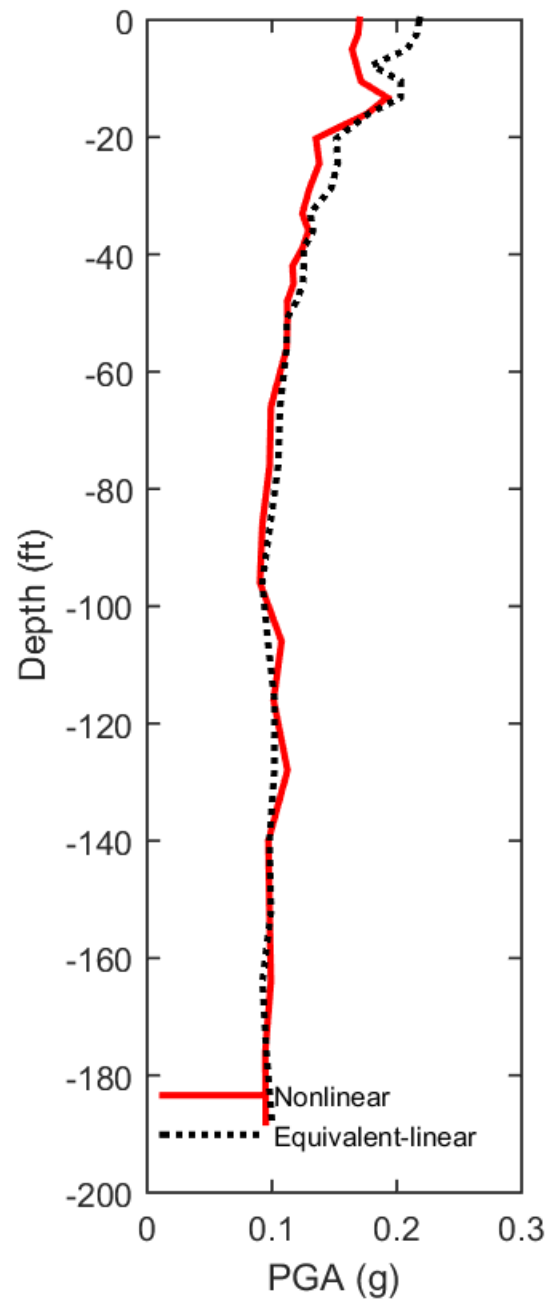
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



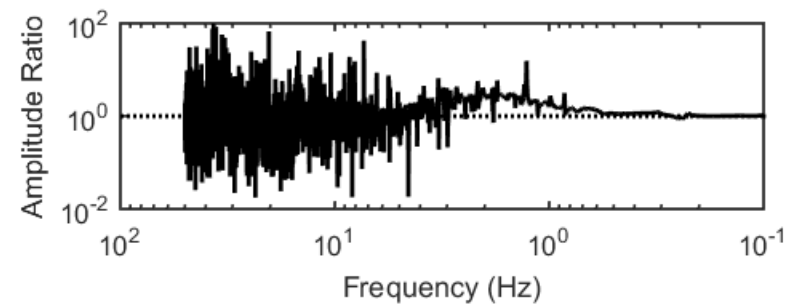
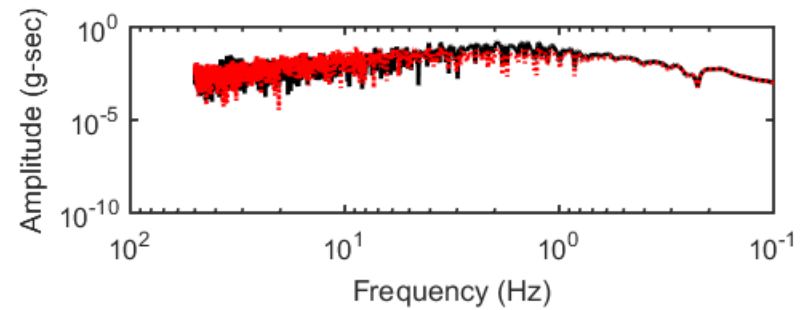
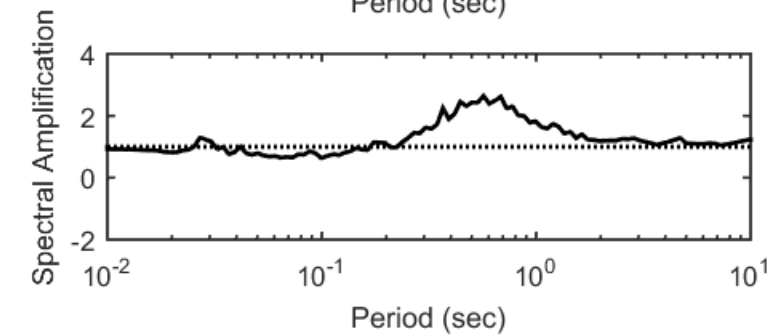
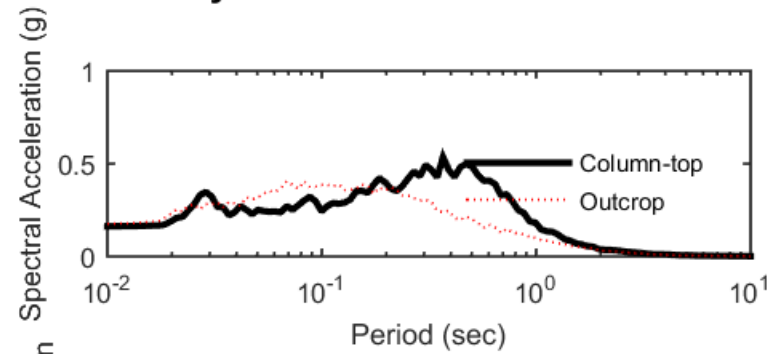
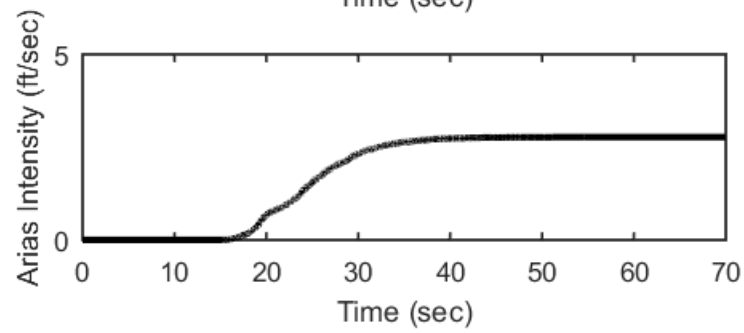
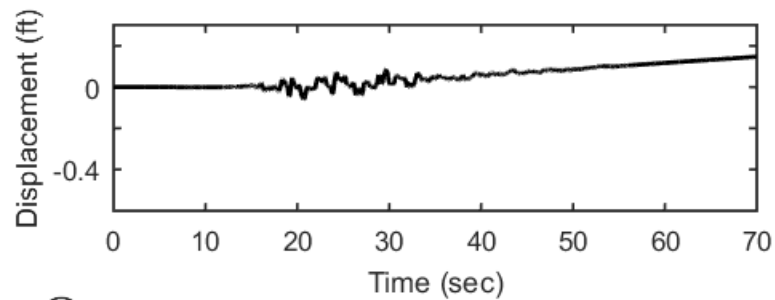
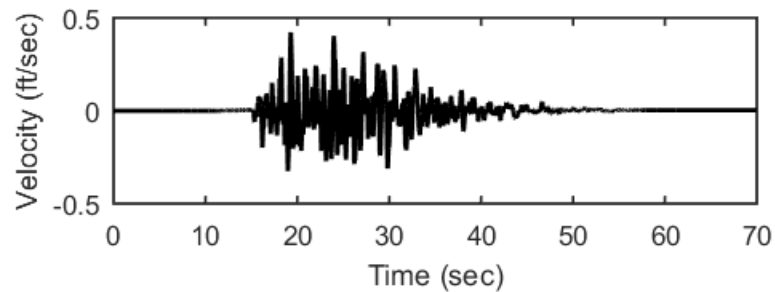
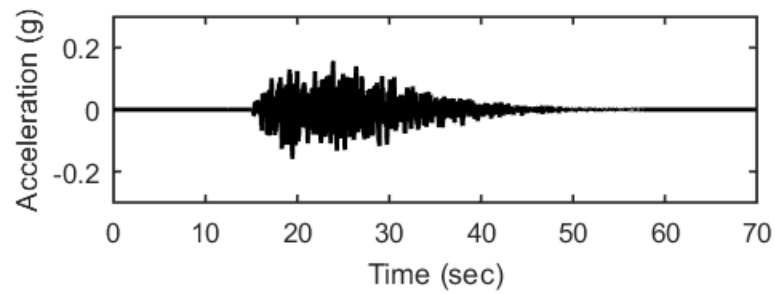
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



### Profile outputs for Motion: FEE1

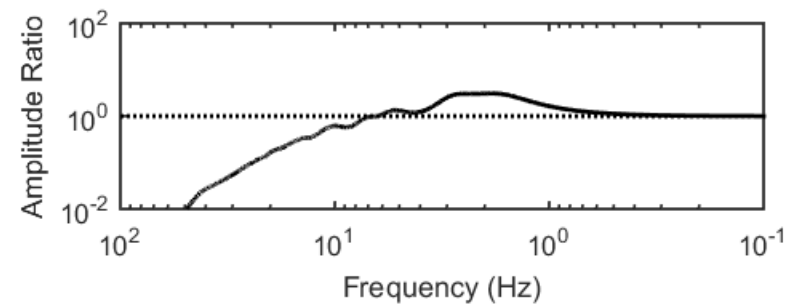
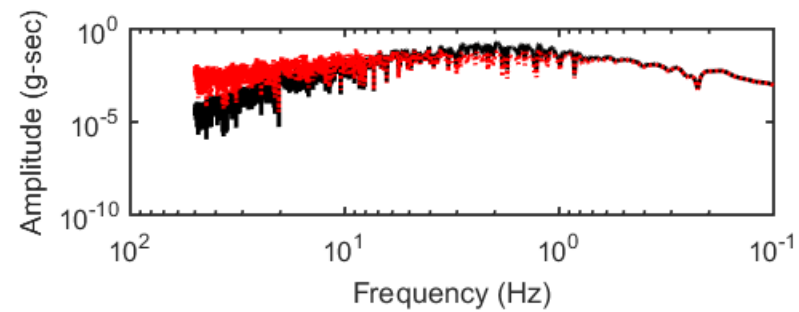
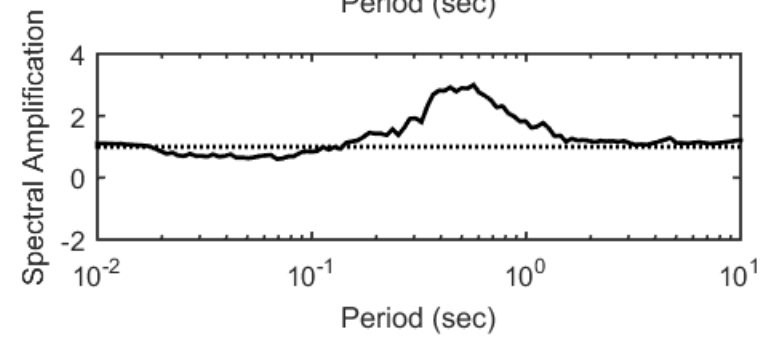
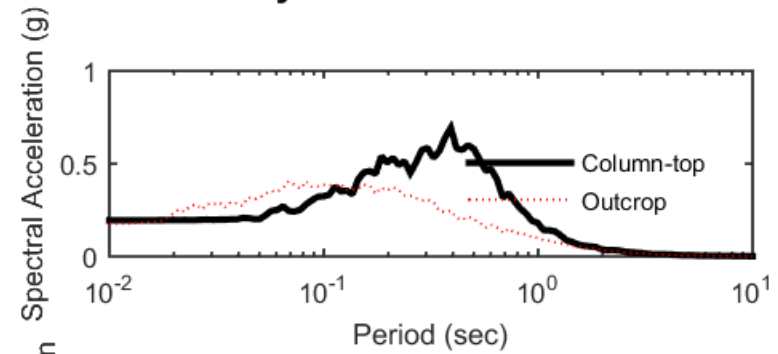
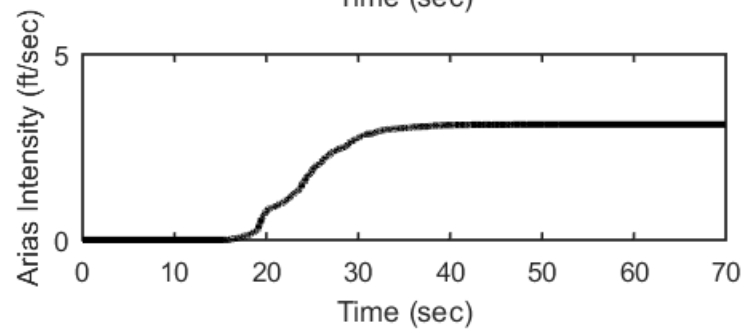
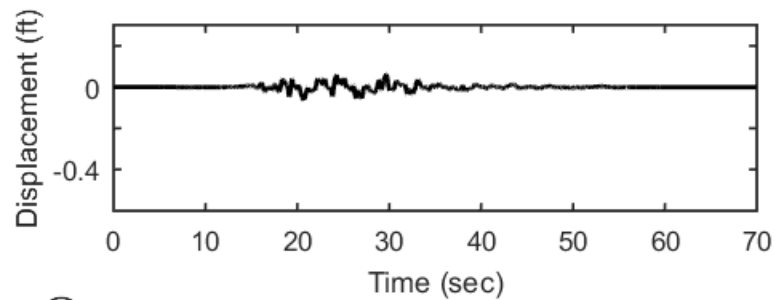
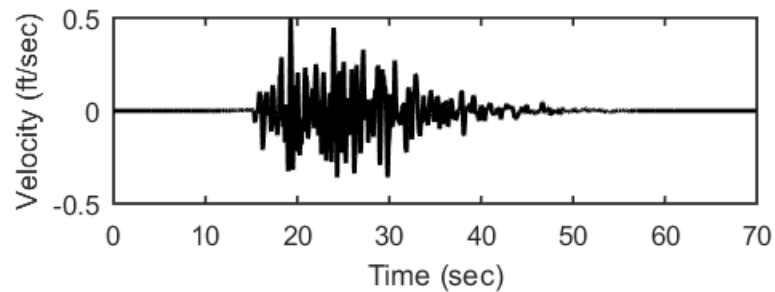
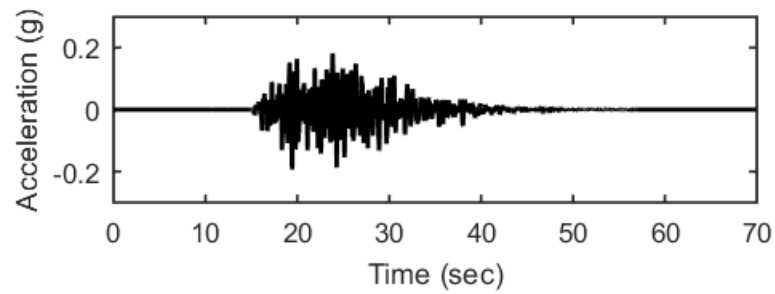


## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2

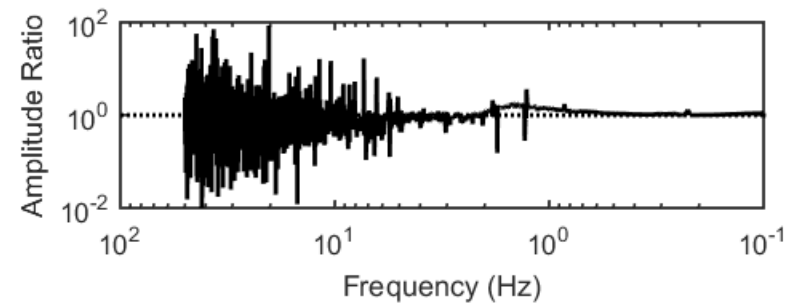
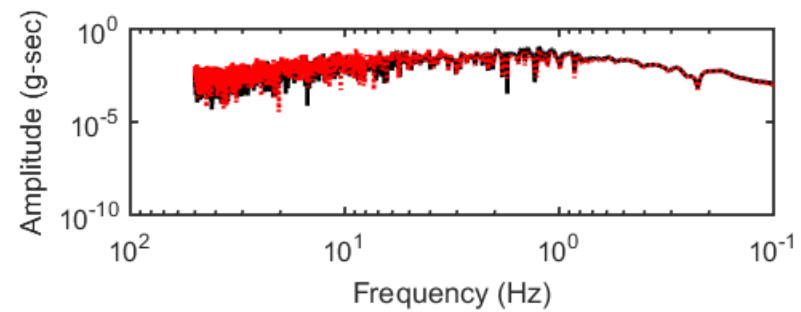
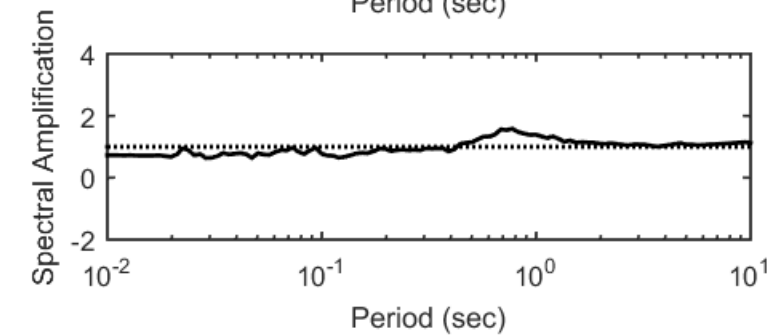
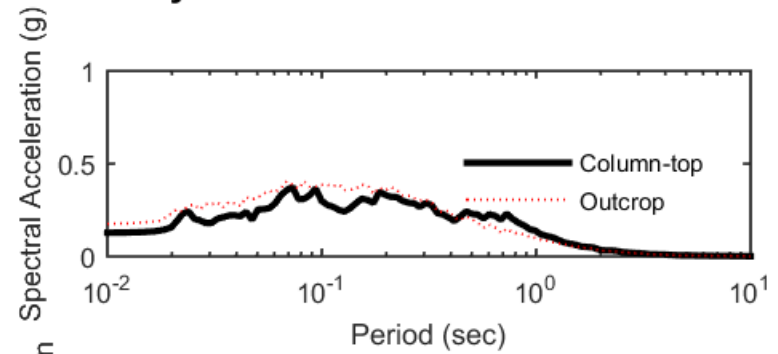
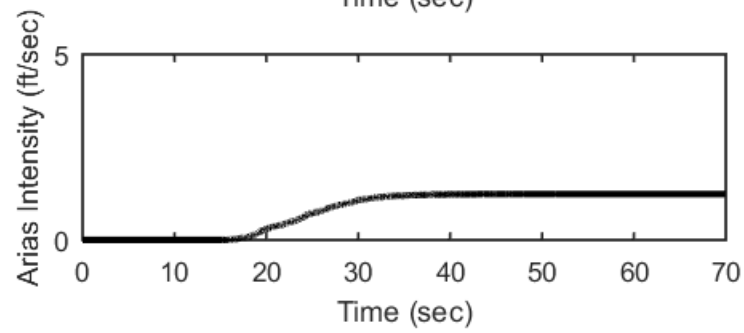
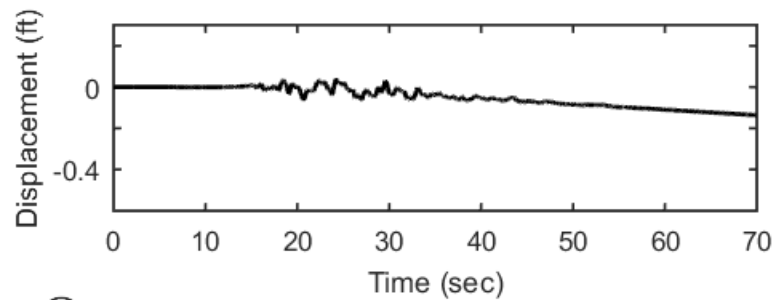
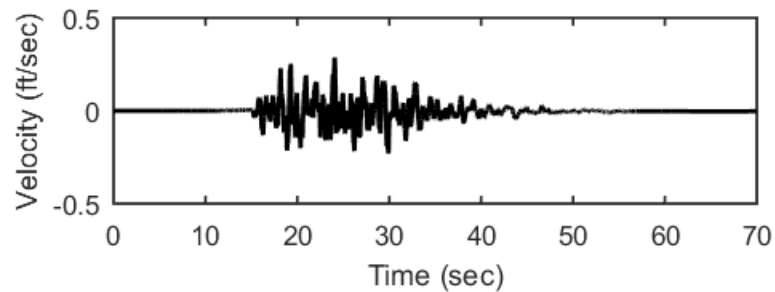
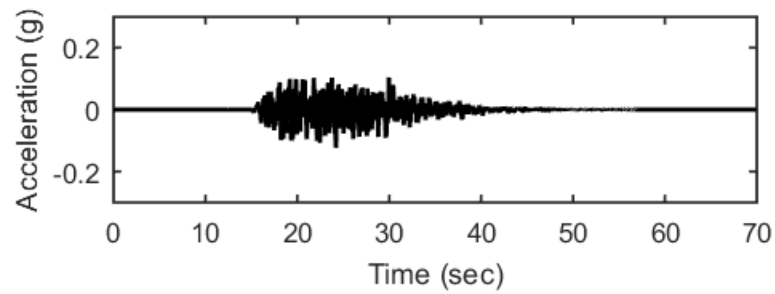




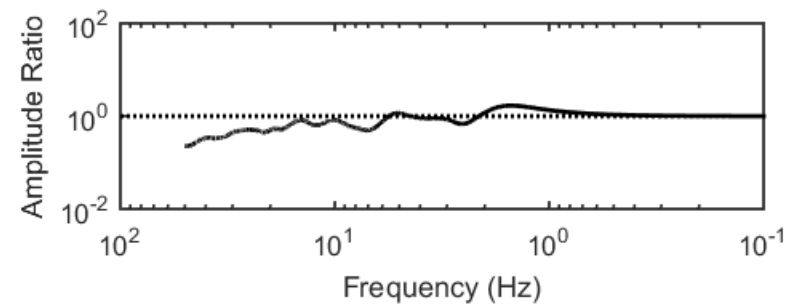
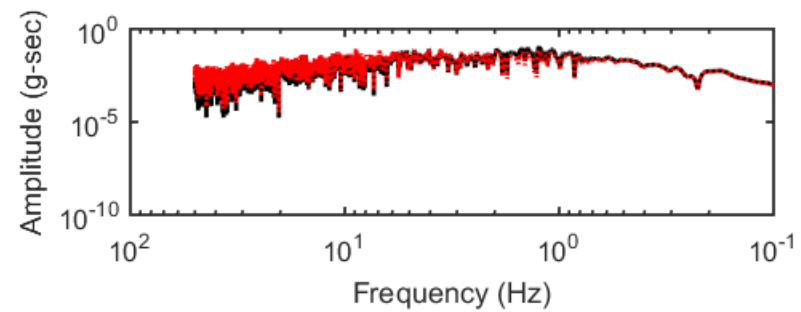
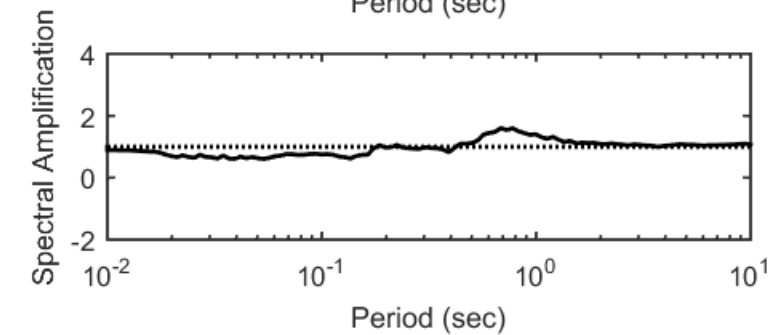
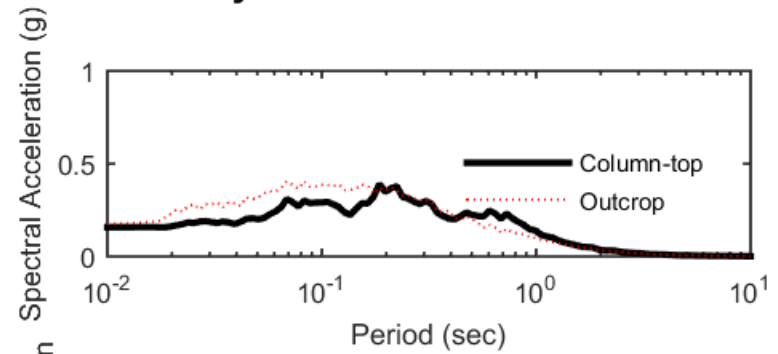
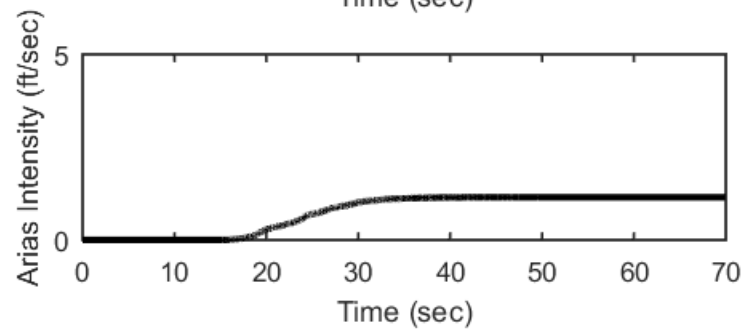
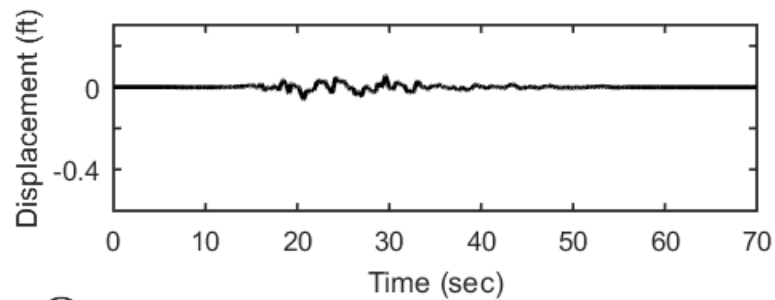
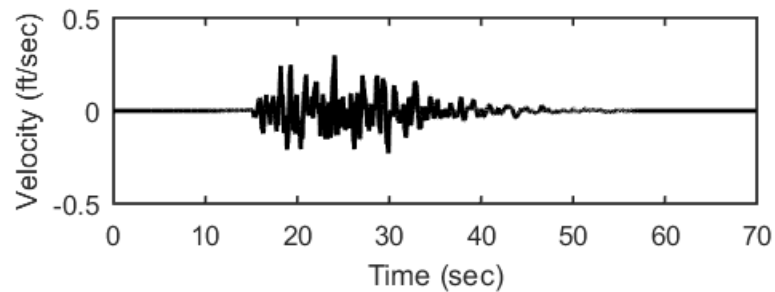
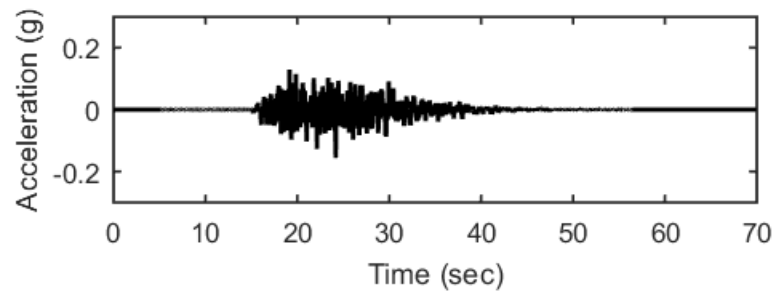
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



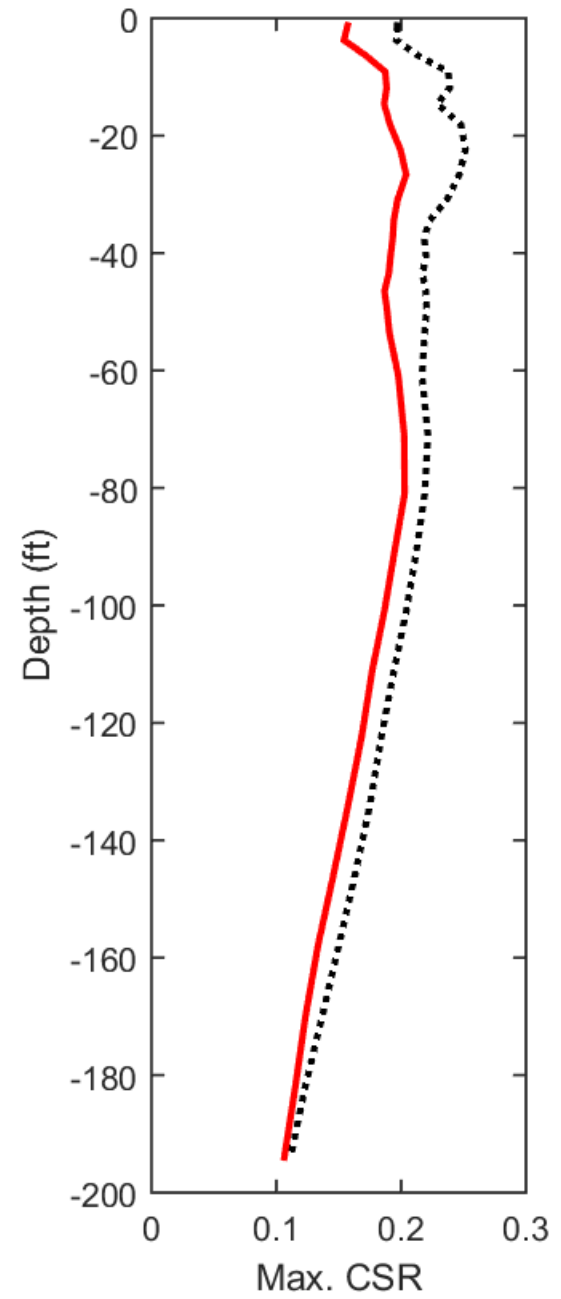
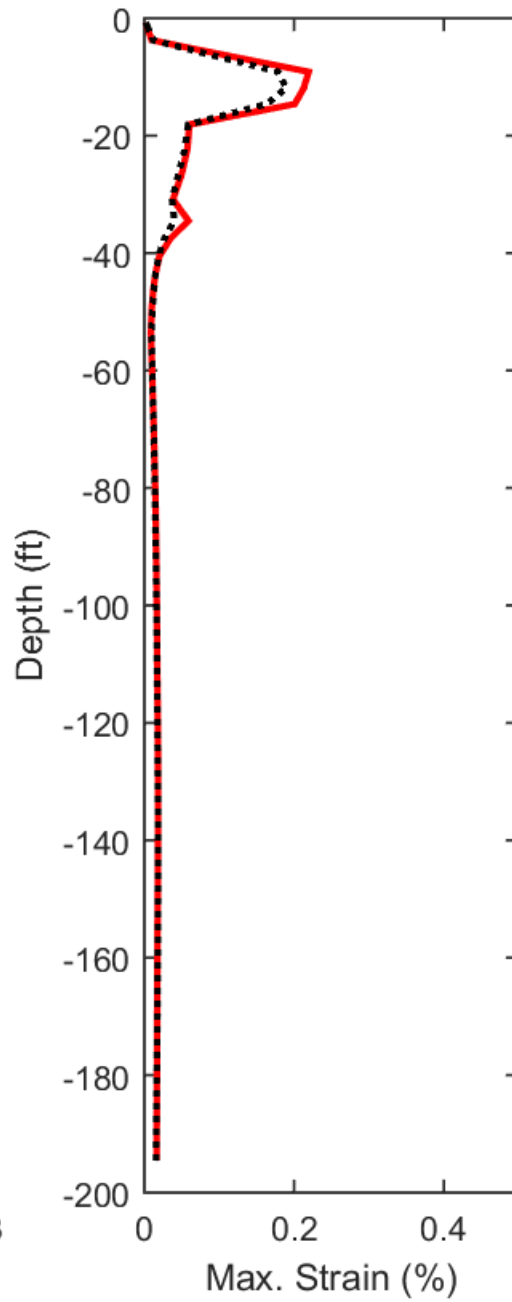
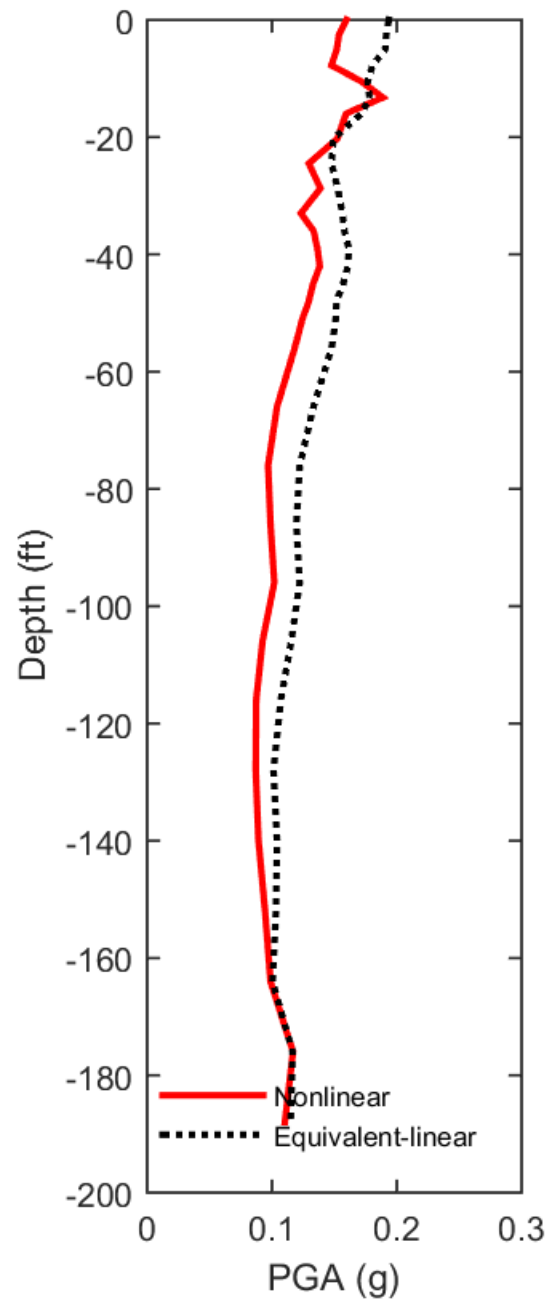
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2



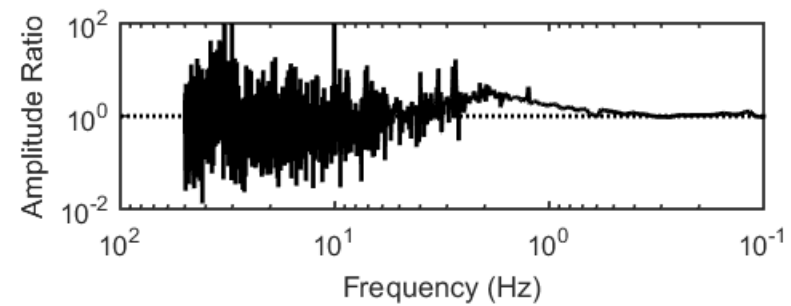
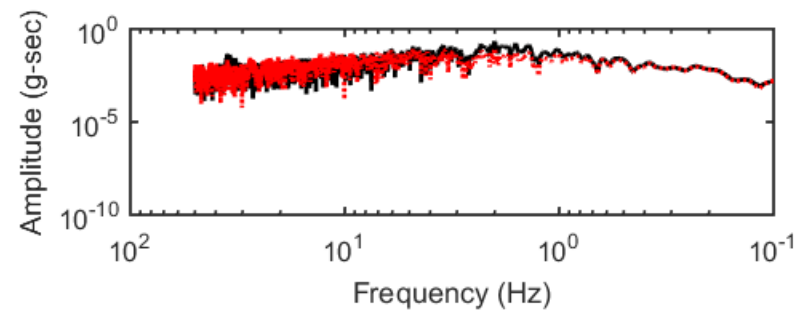
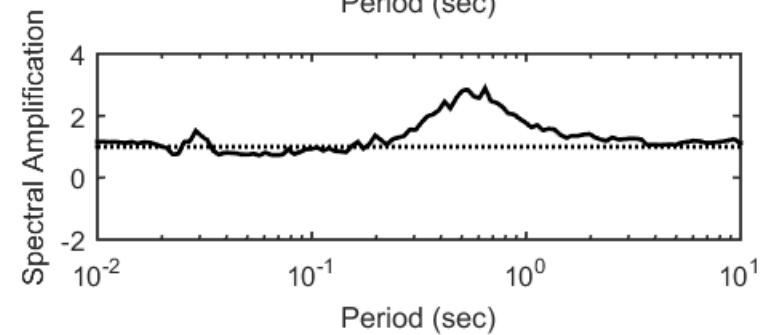
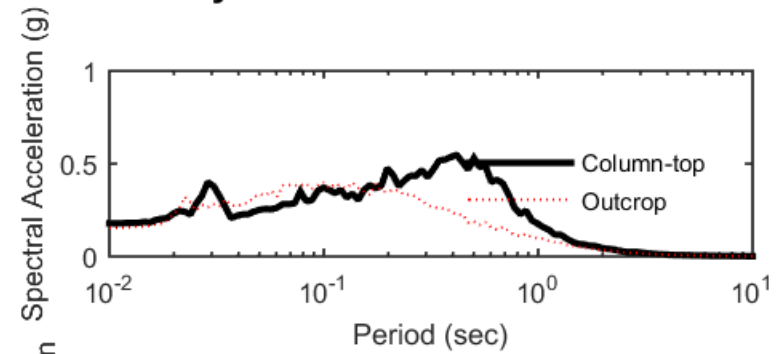
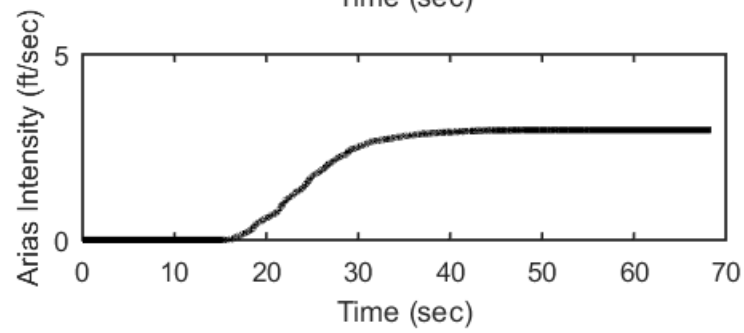
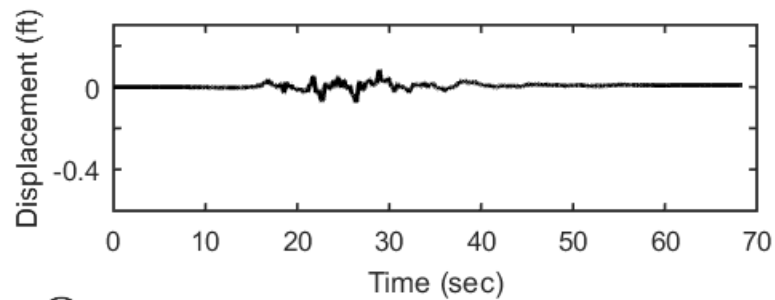
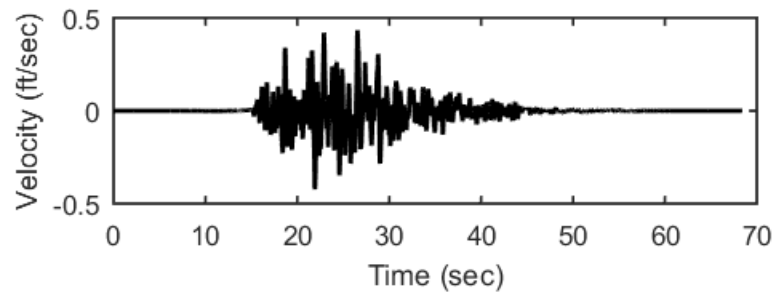
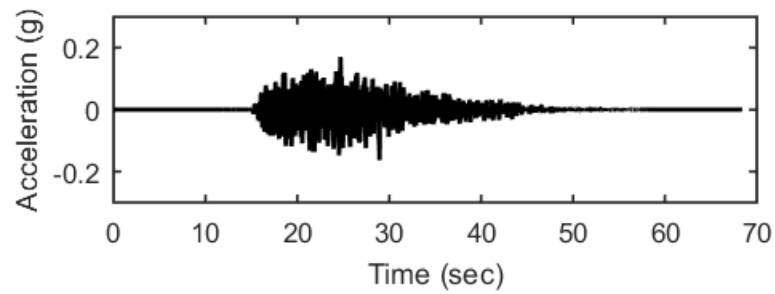
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2



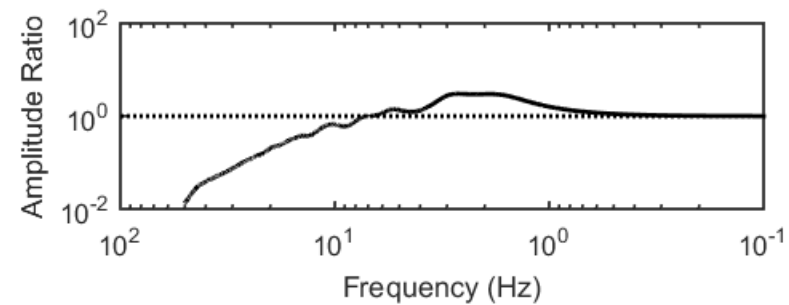
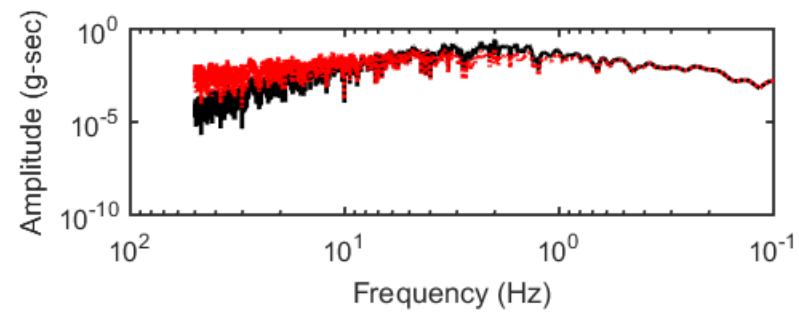
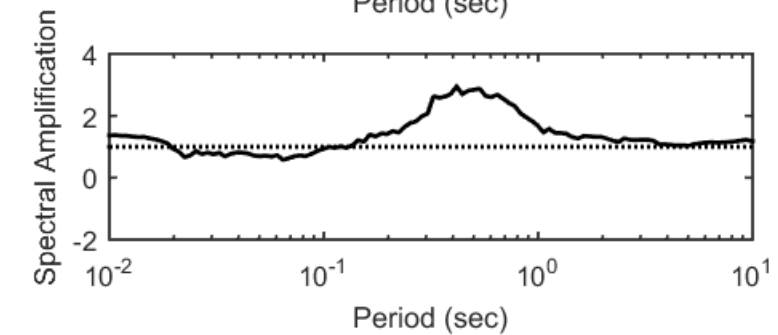
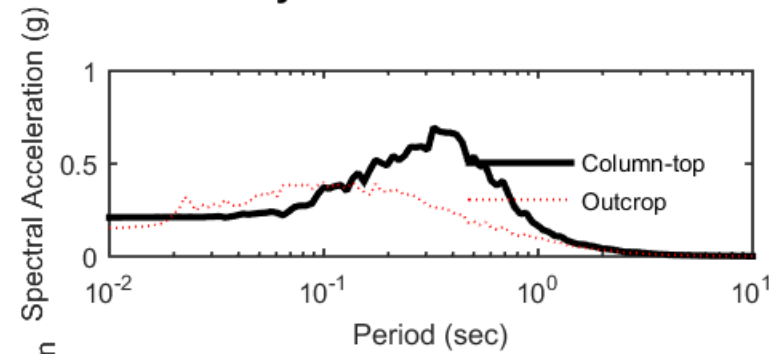
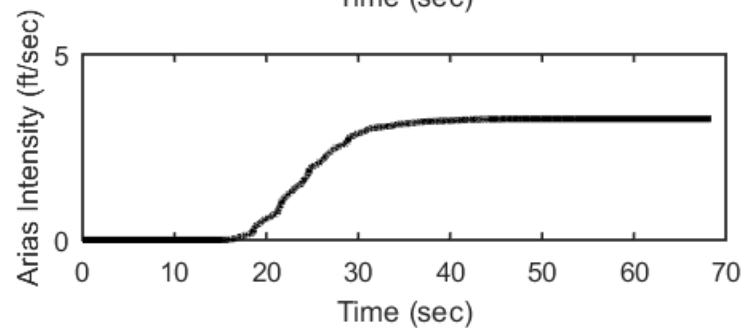
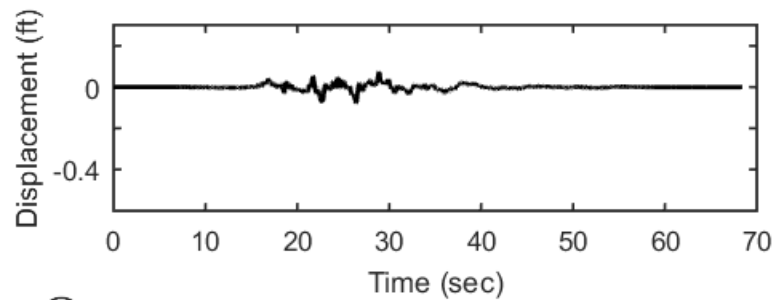
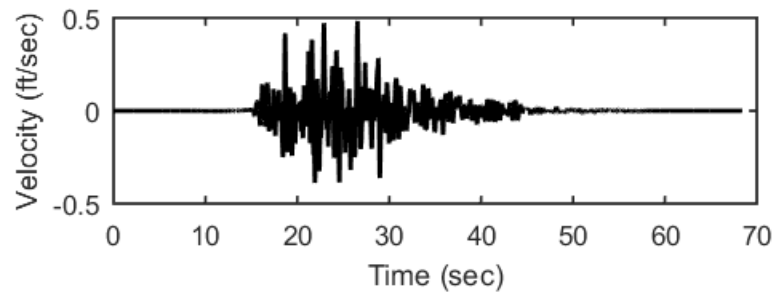
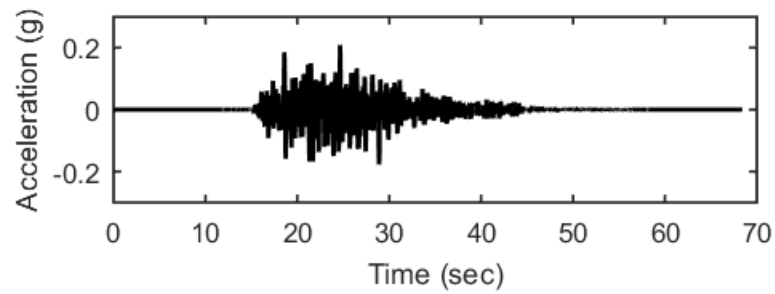
### Profile outputs for Motion: FEE2



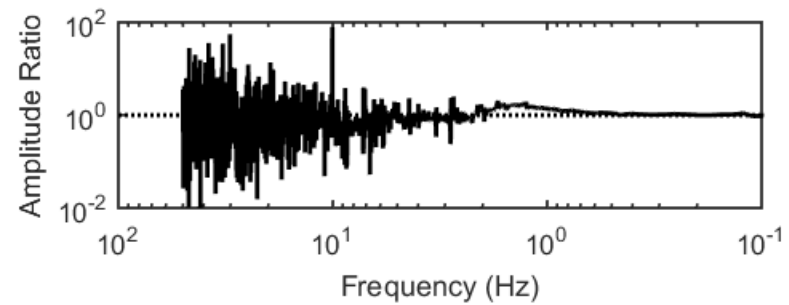
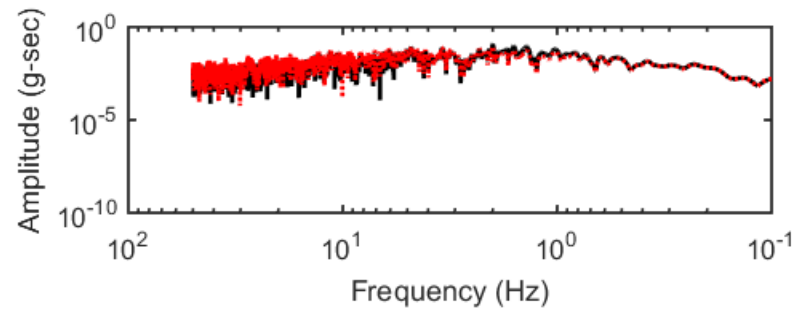
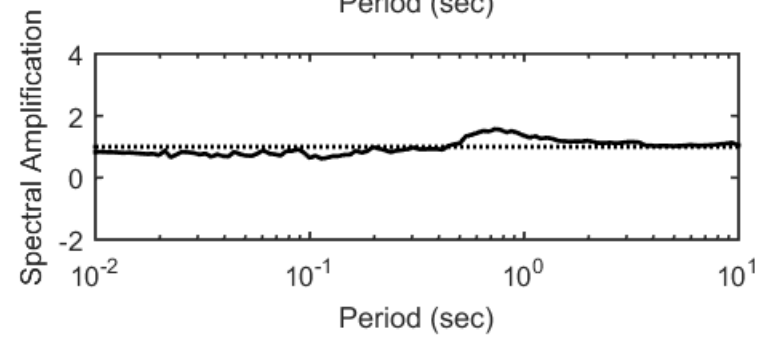
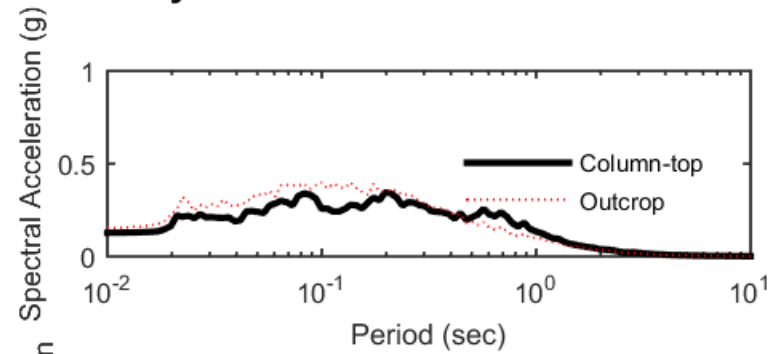
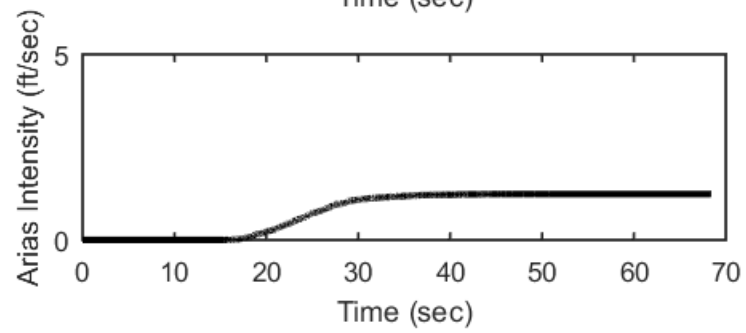
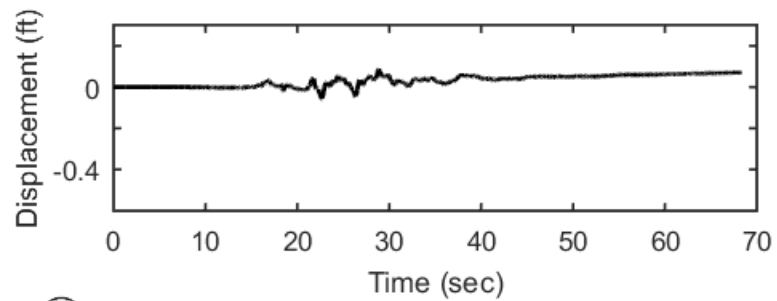
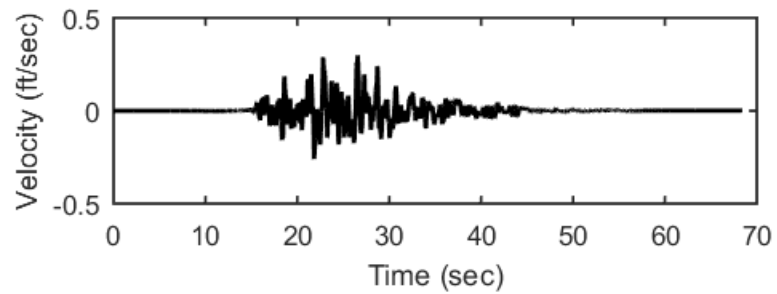
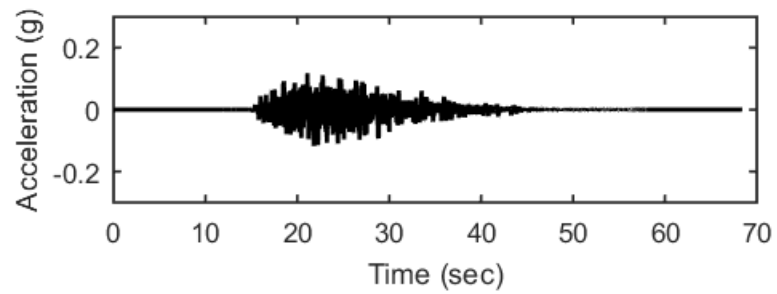
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



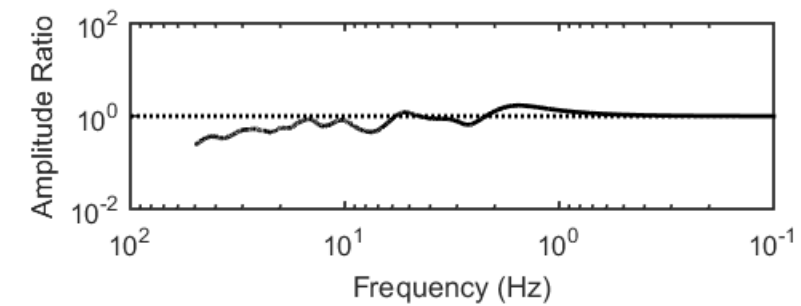
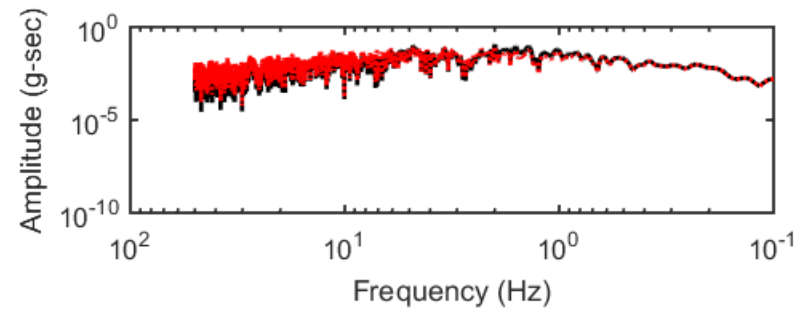
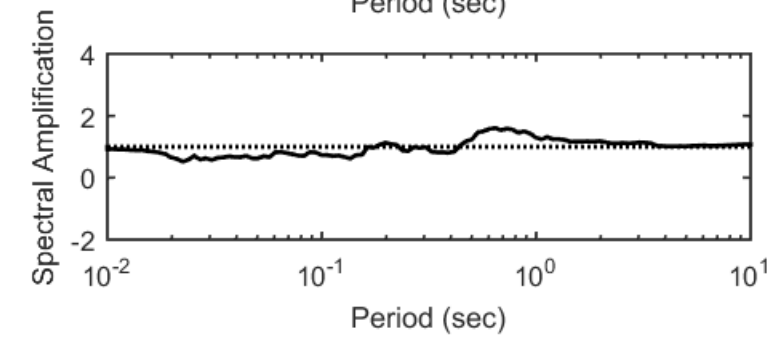
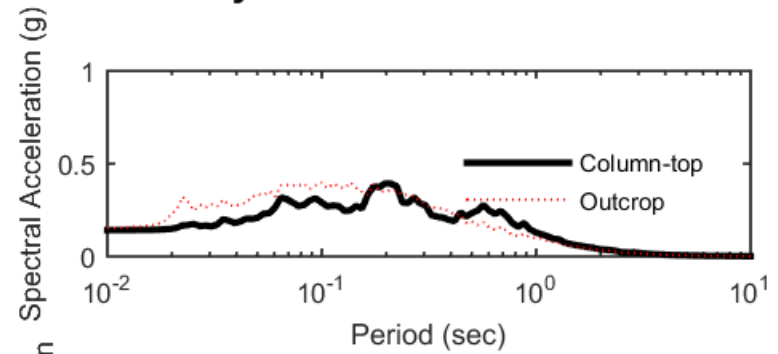
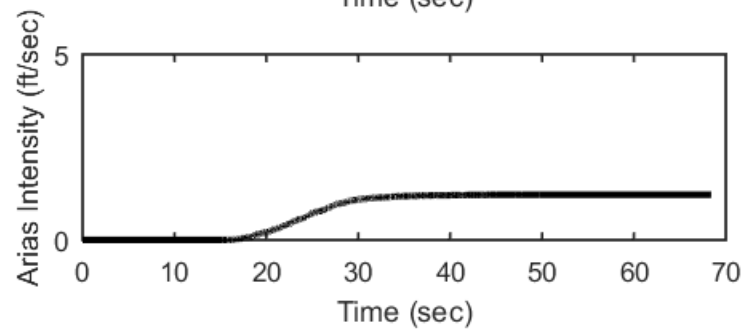
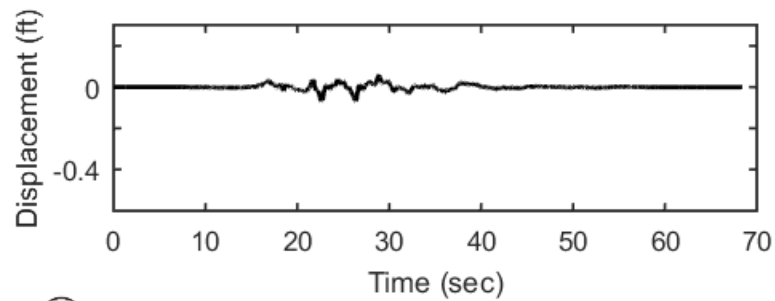
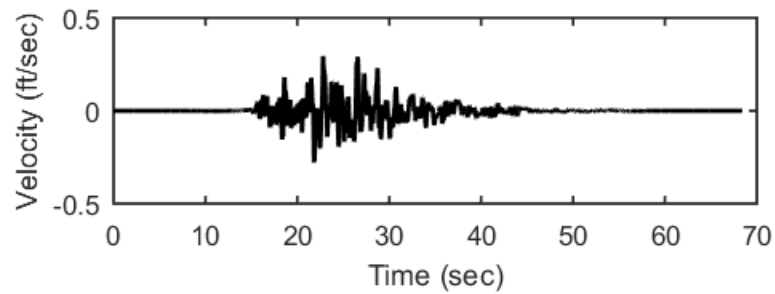
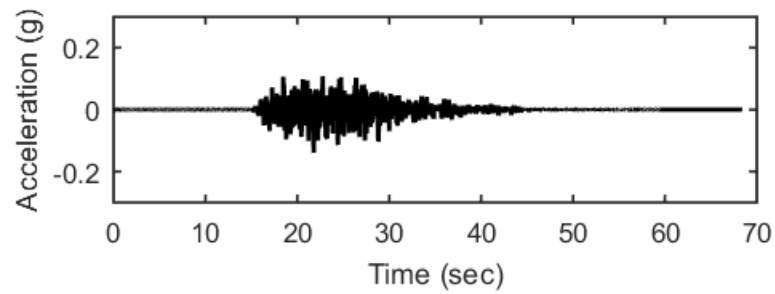
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3

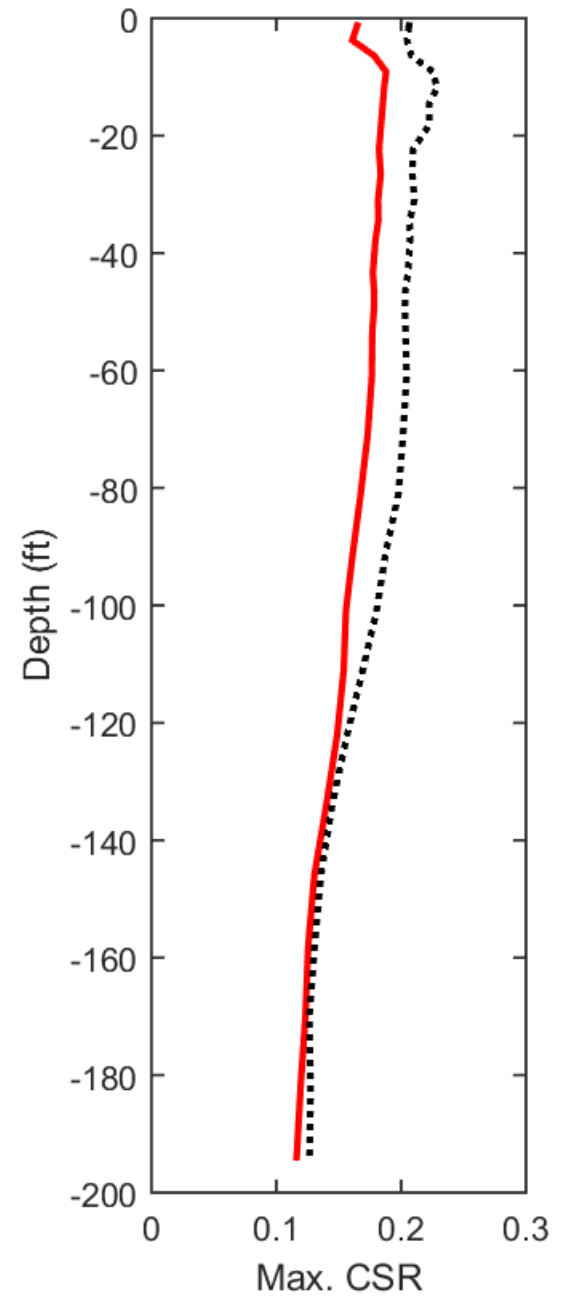
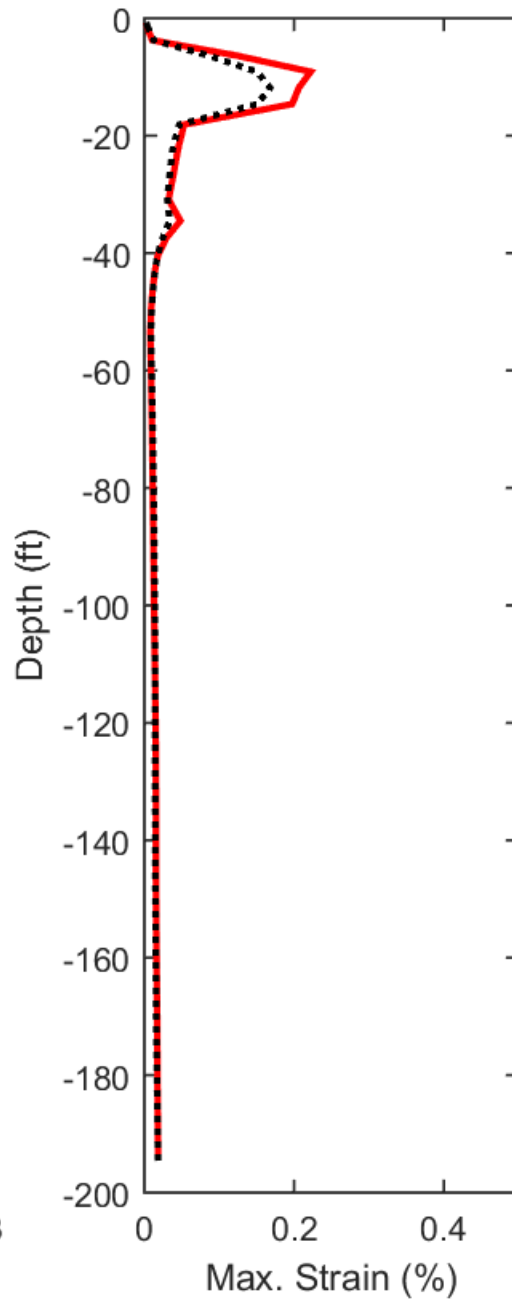
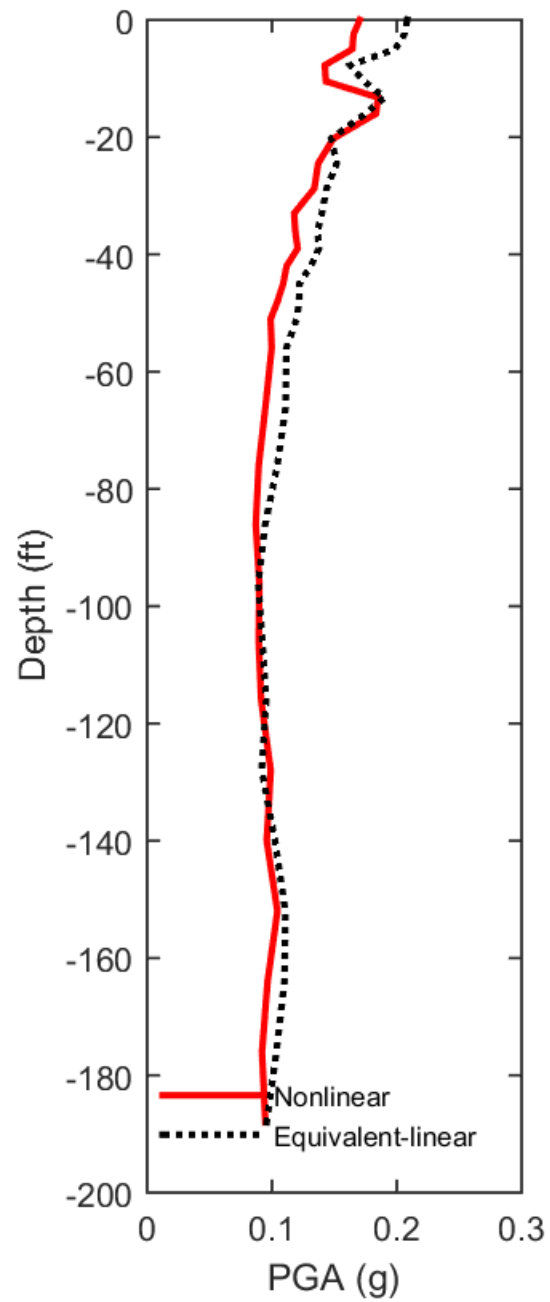


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3

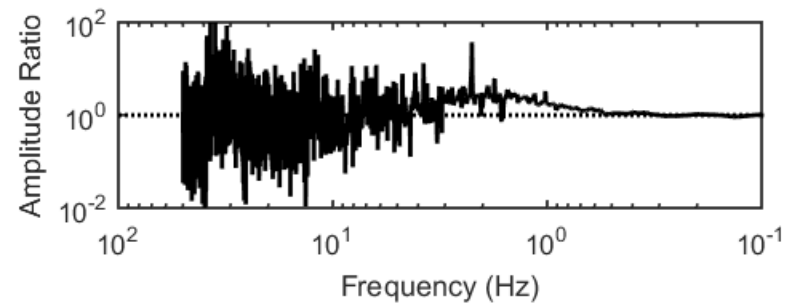
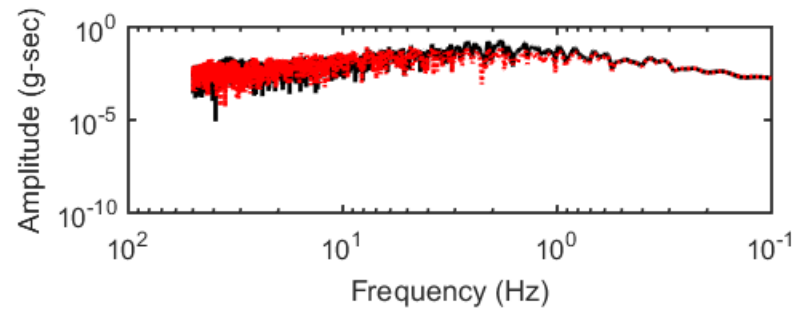
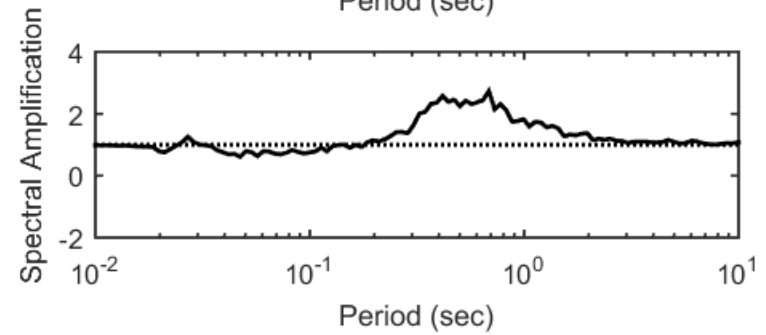
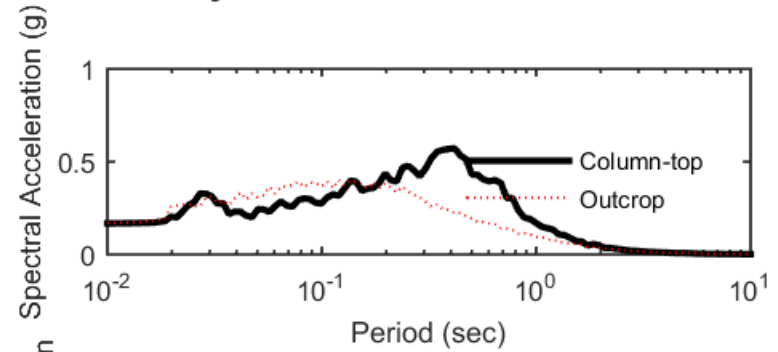
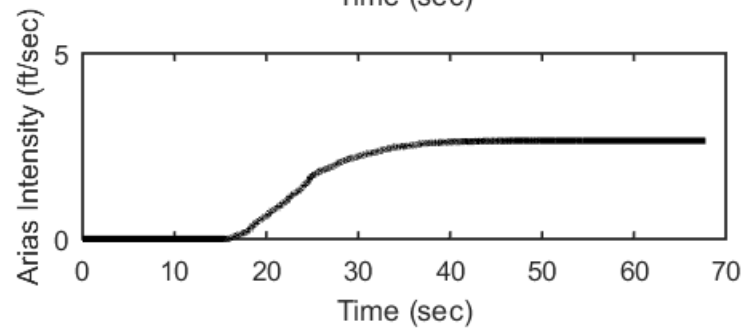
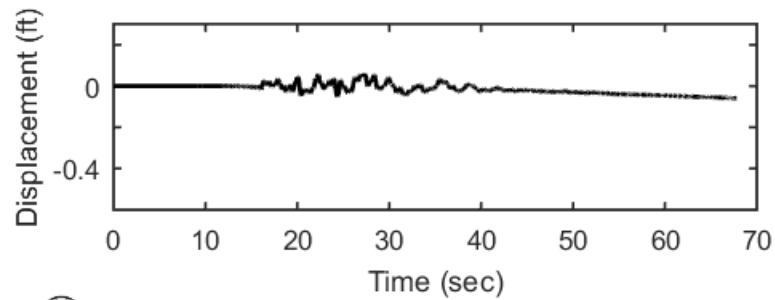
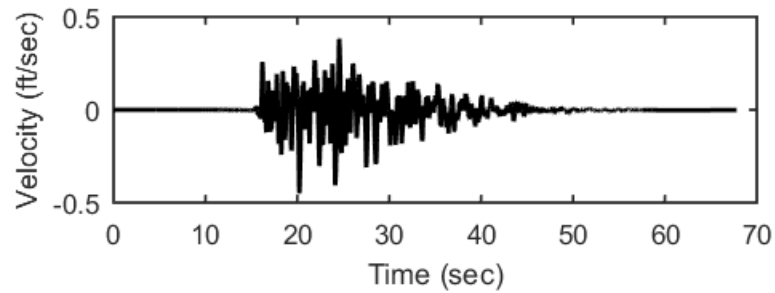
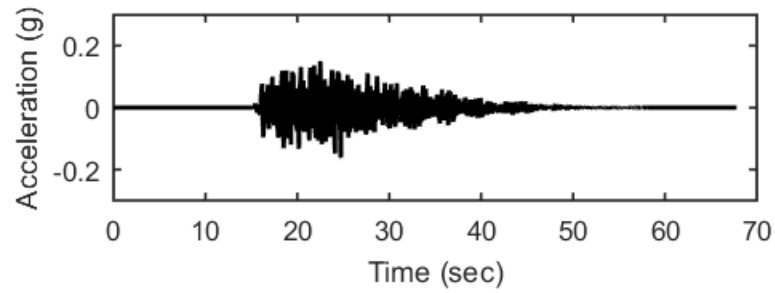




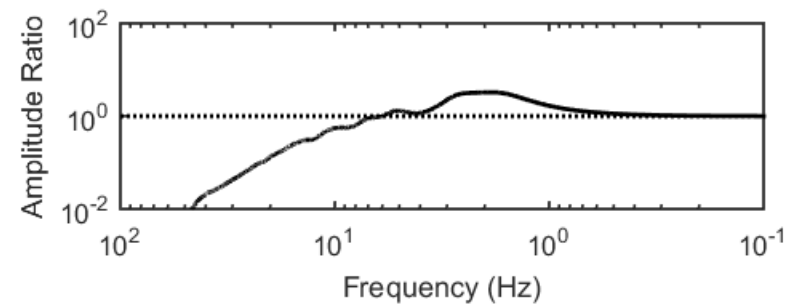
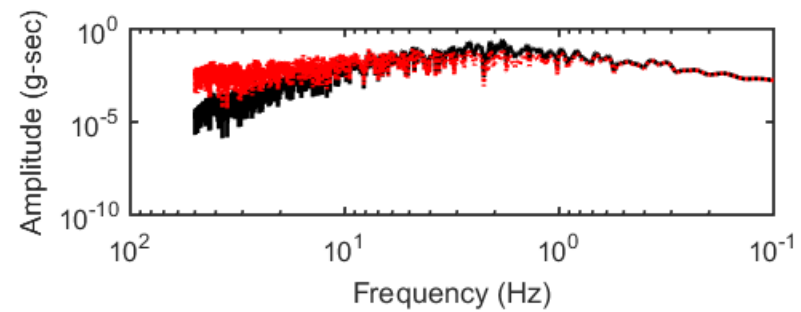
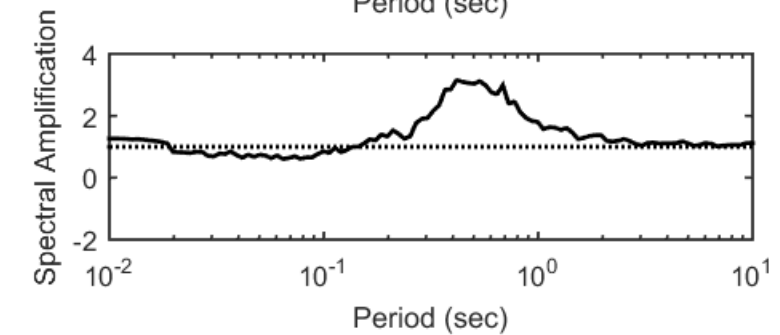
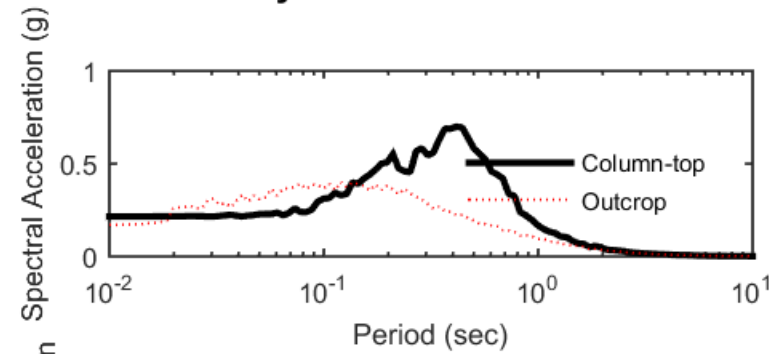
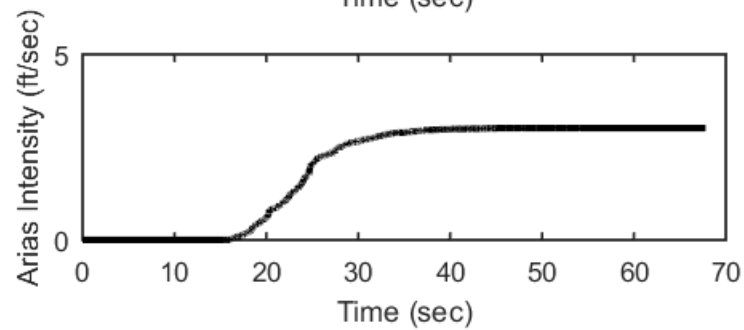
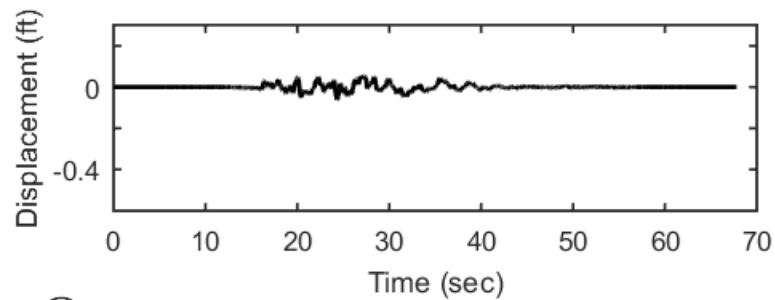
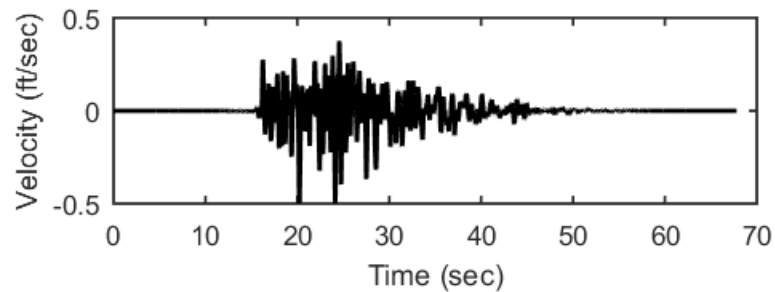
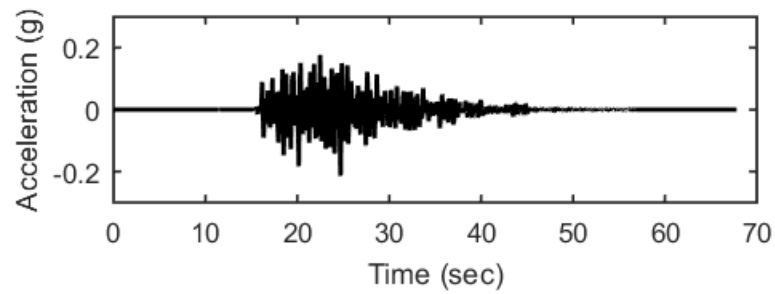
### Profile outputs for Motion: FEE3



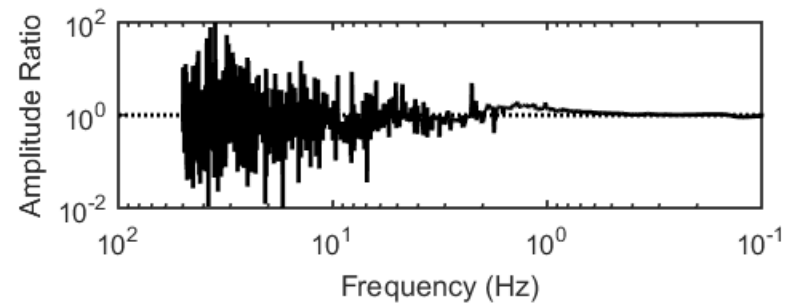
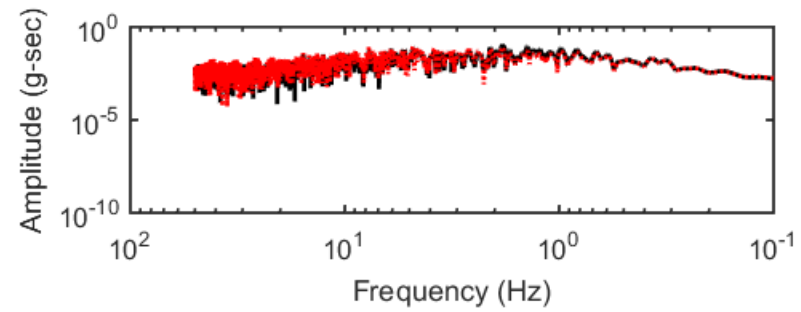
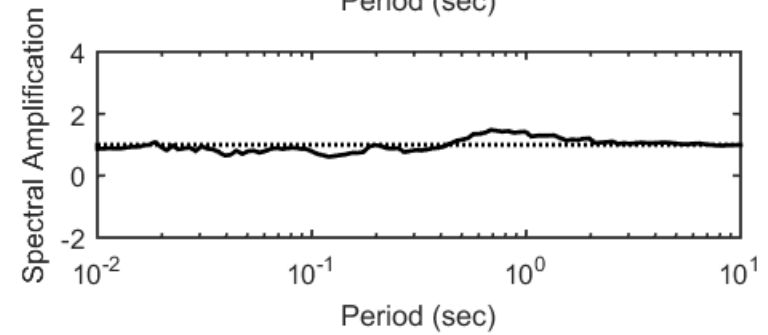
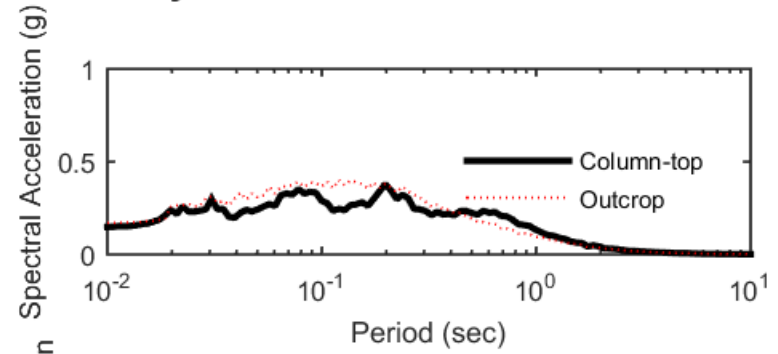
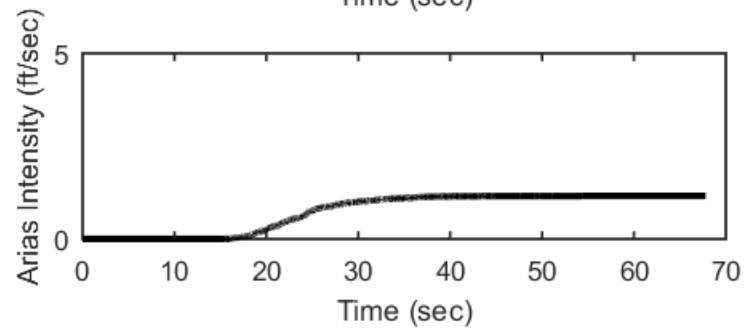
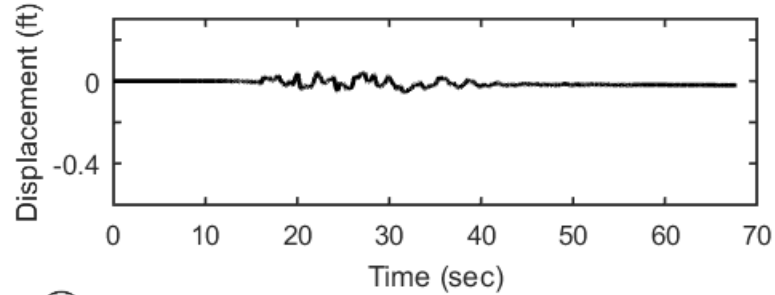
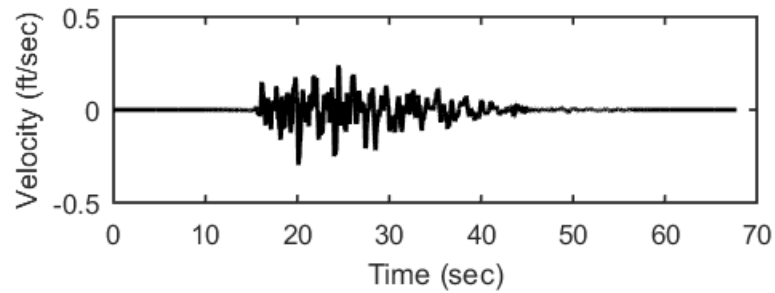
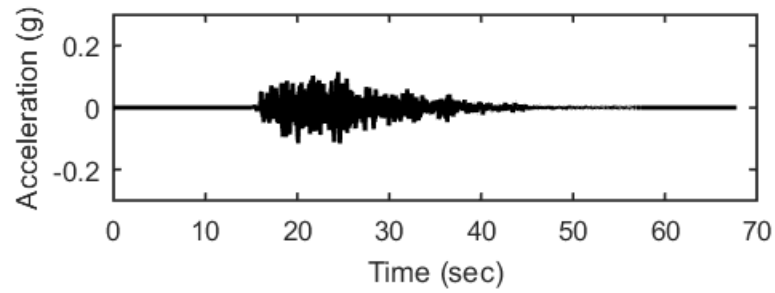
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4



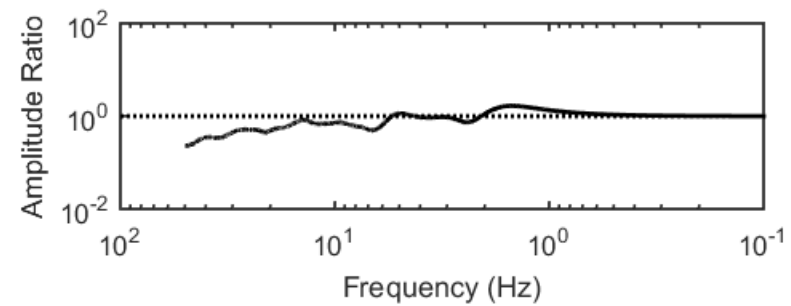
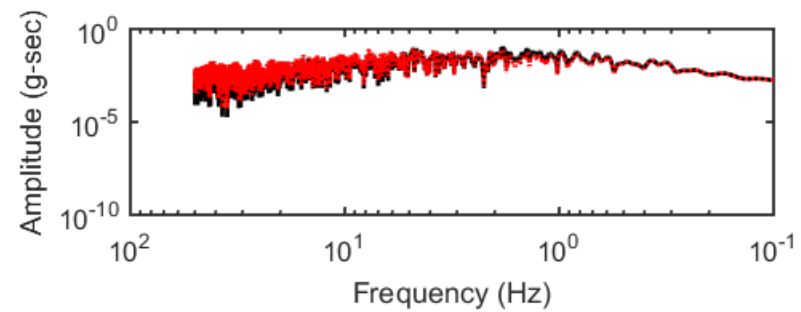
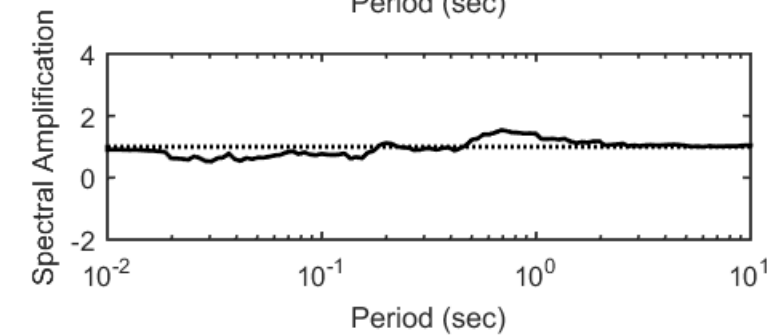
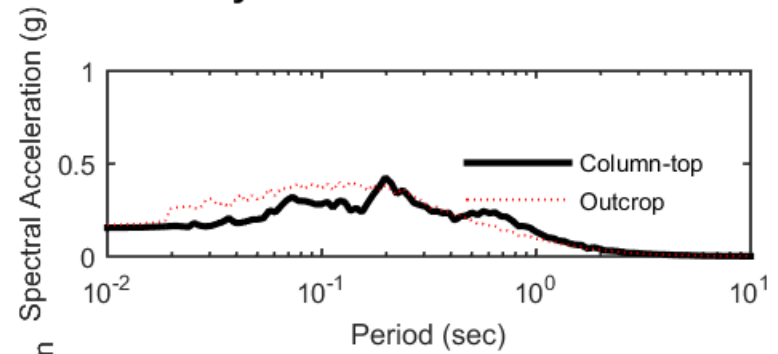
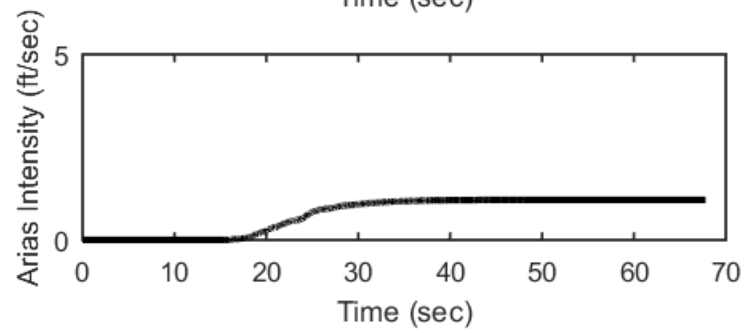
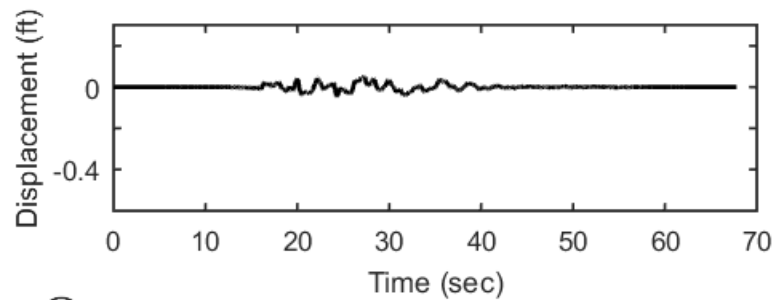
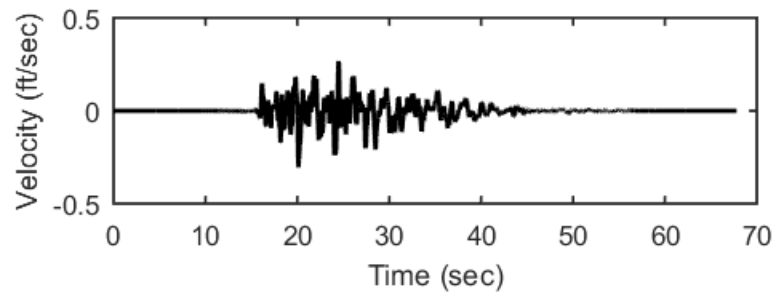
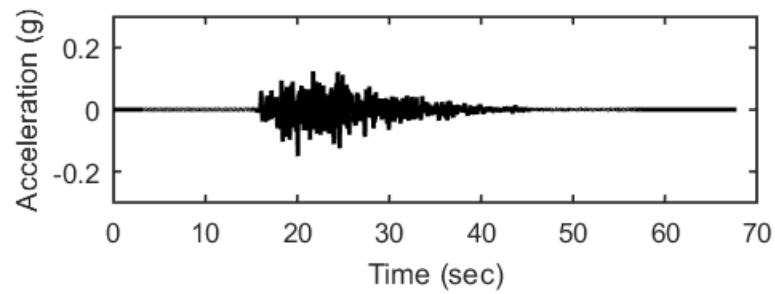
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4



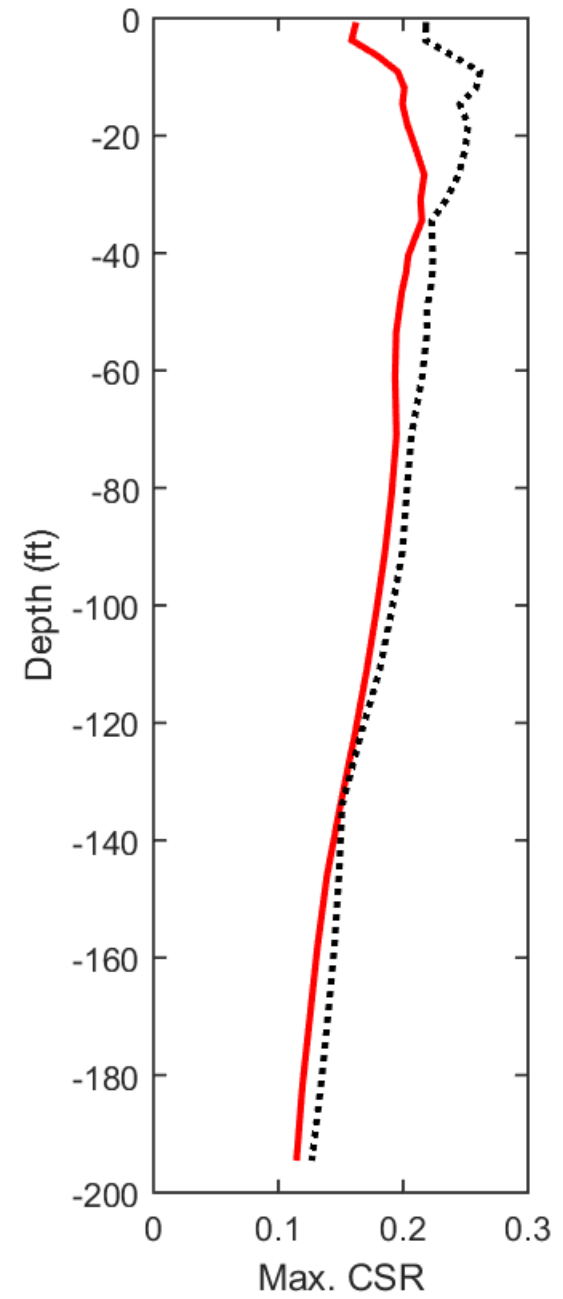
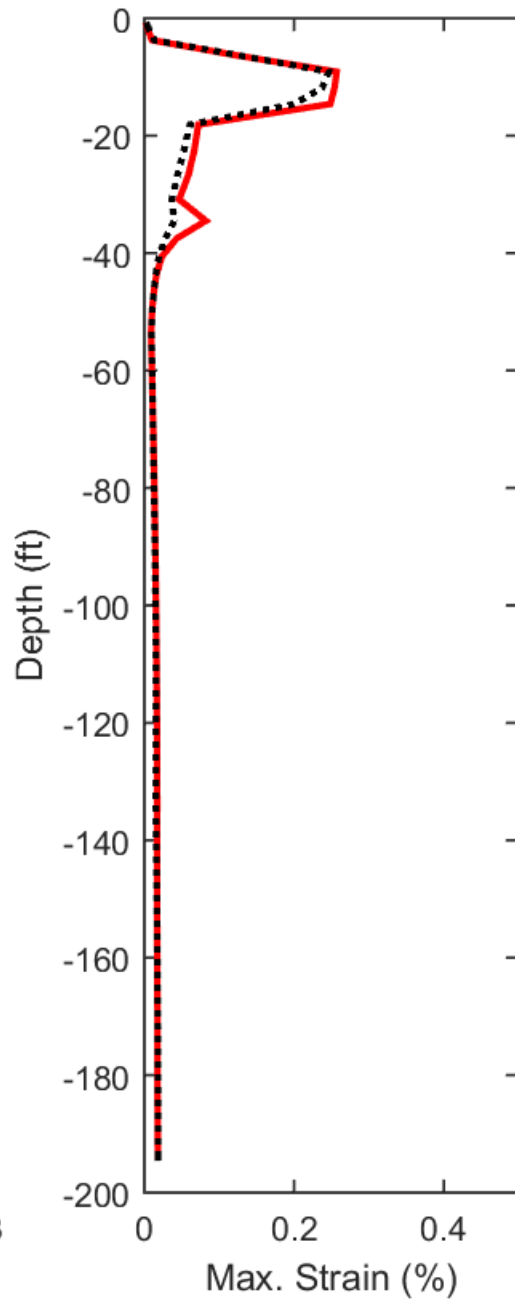
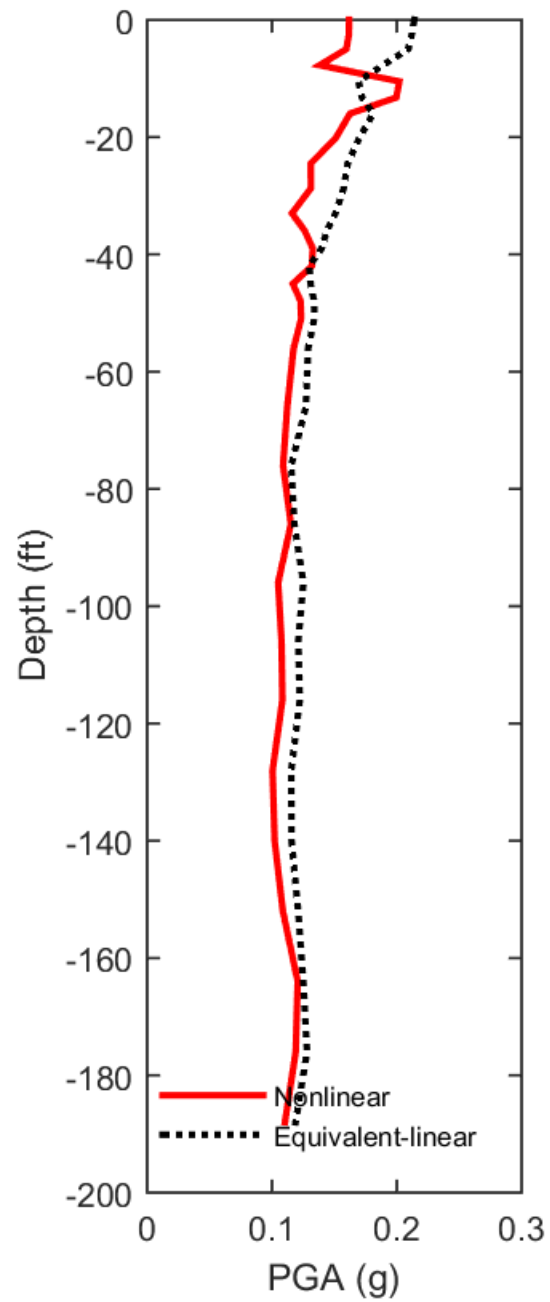
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



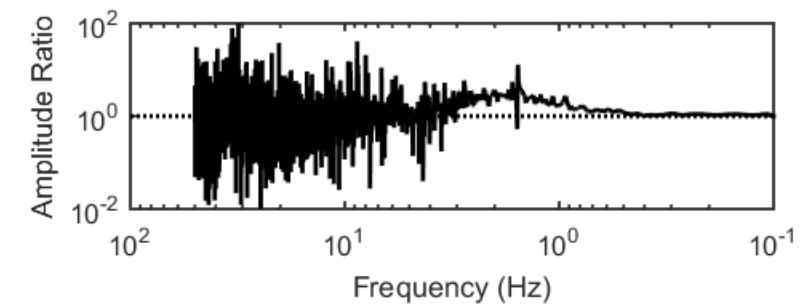
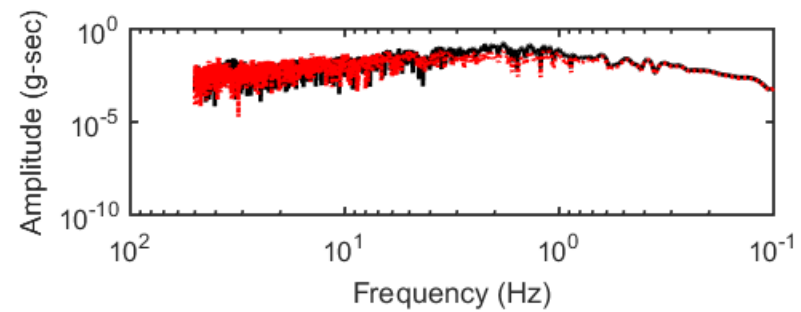
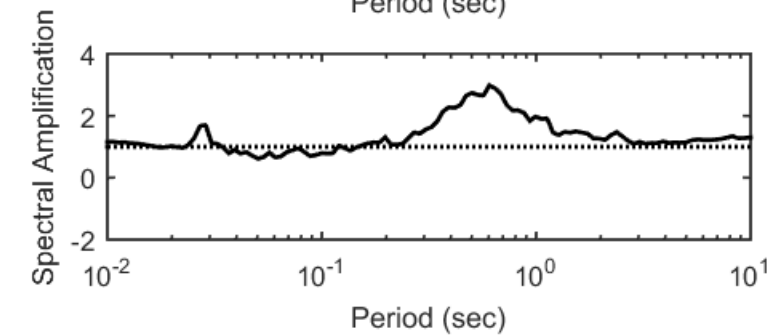
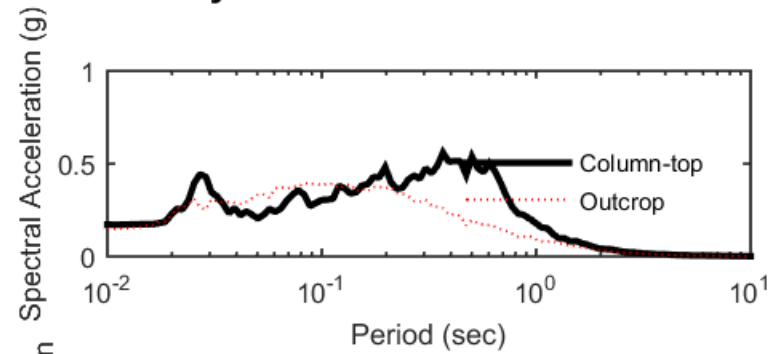
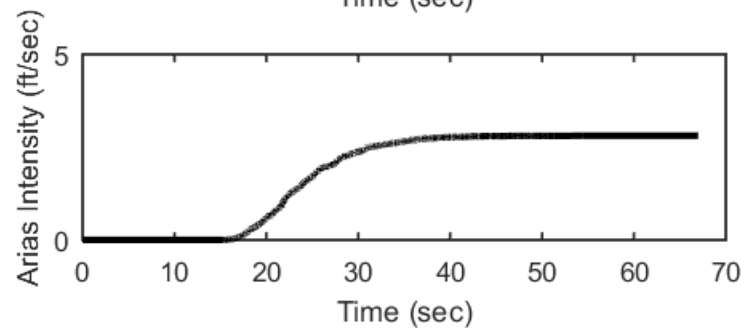
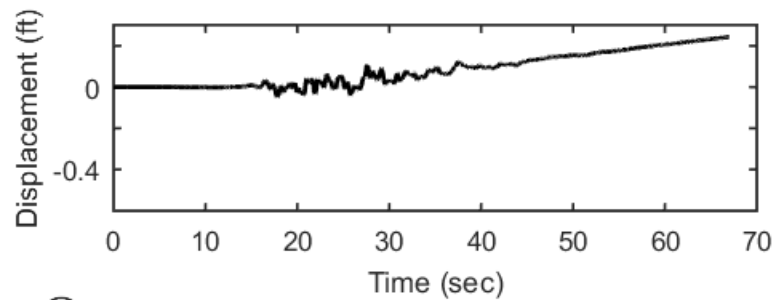
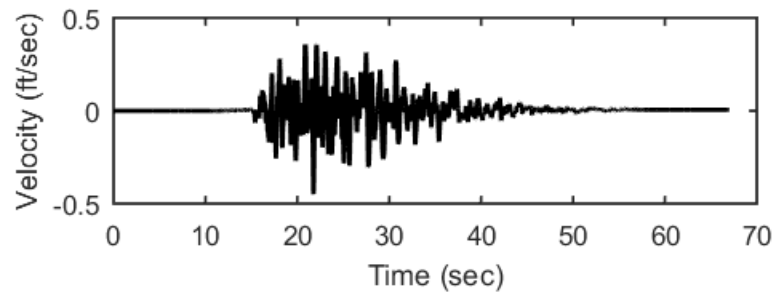
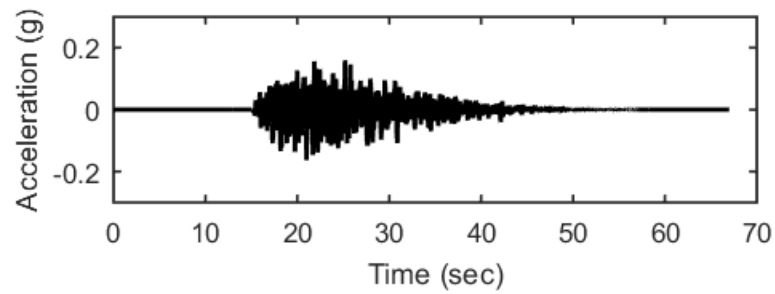
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



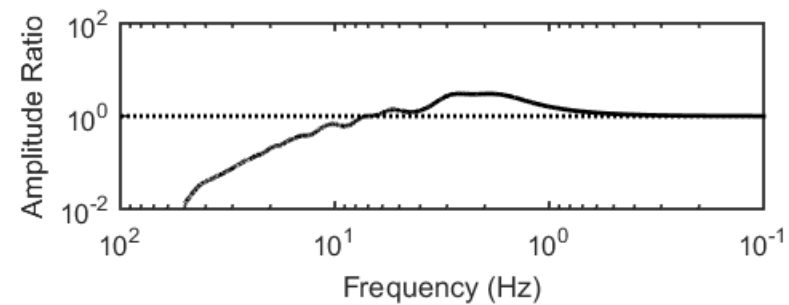
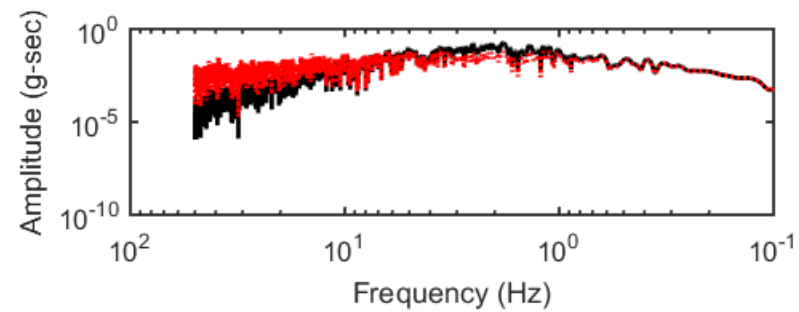
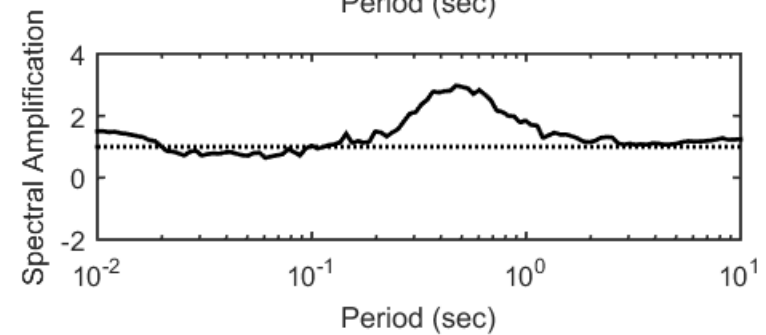
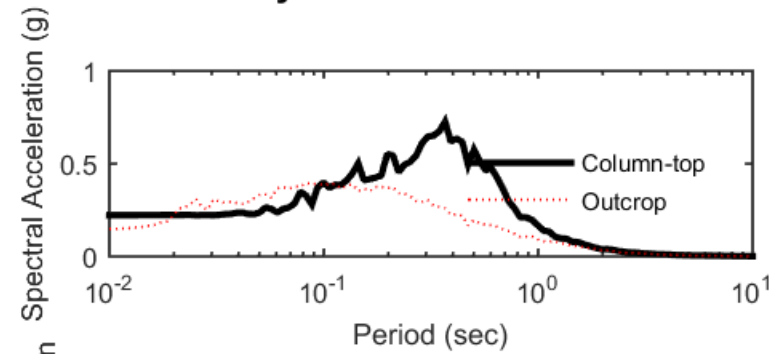
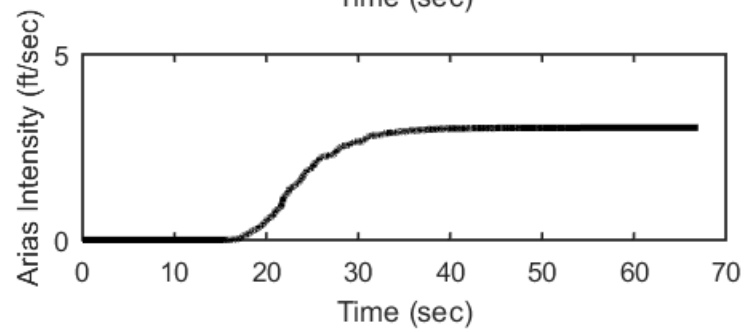
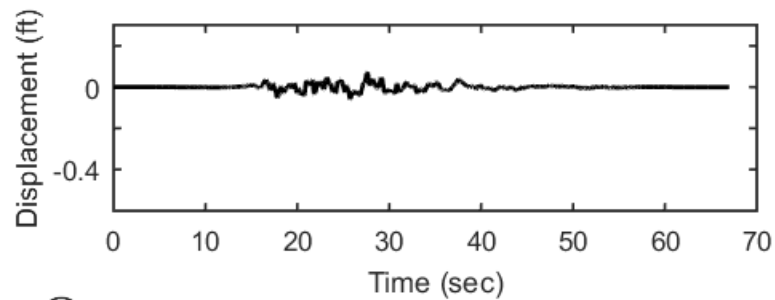
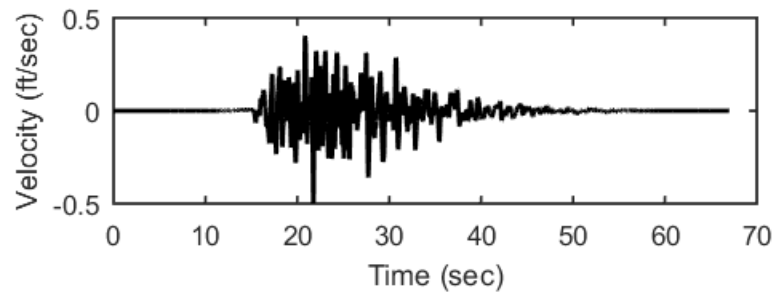
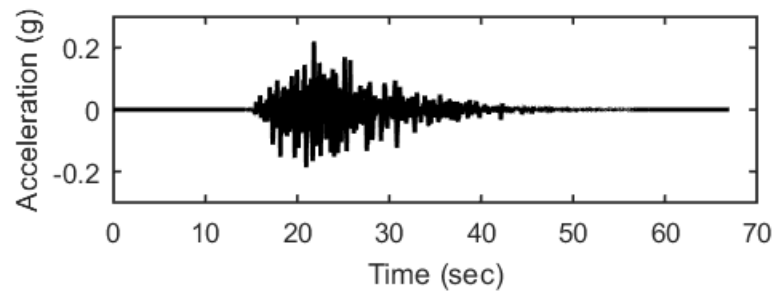
### Profile outputs for Motion: FEE4



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5

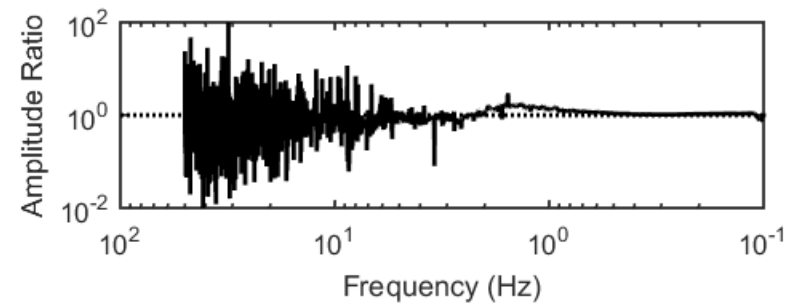
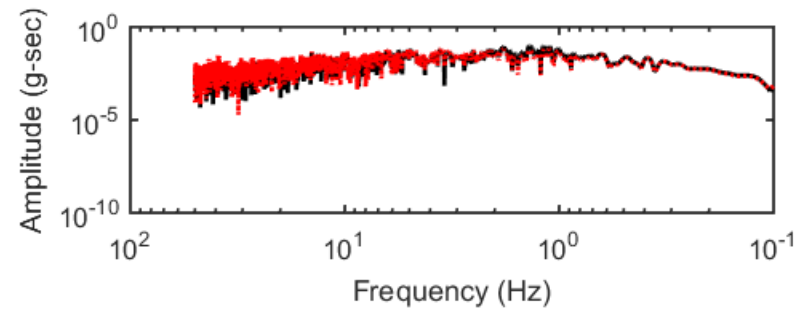
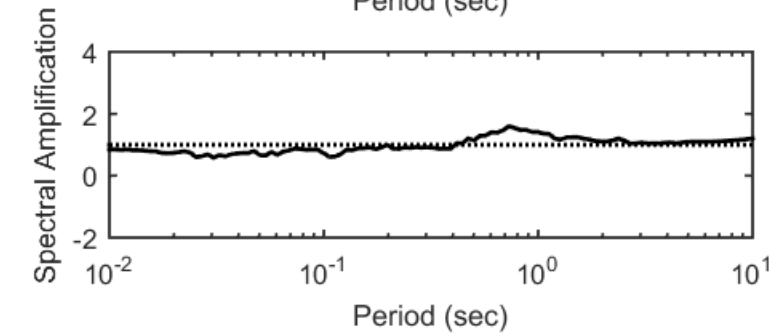
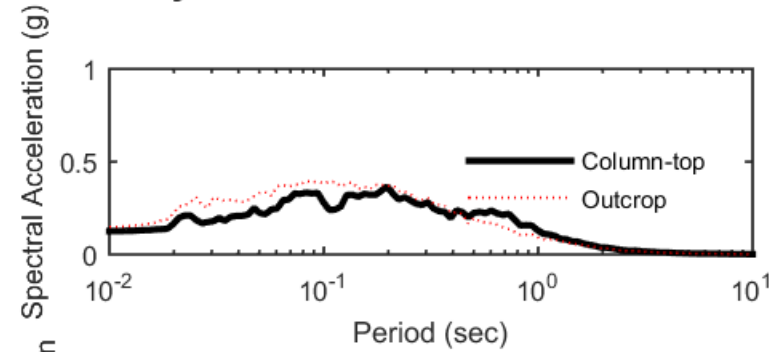
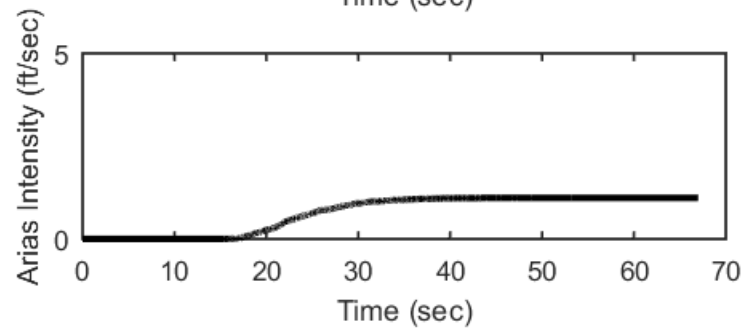
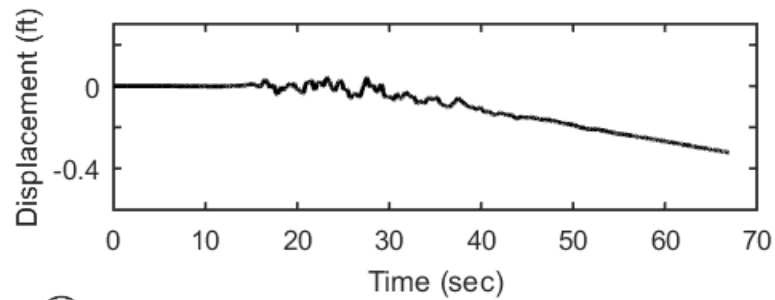
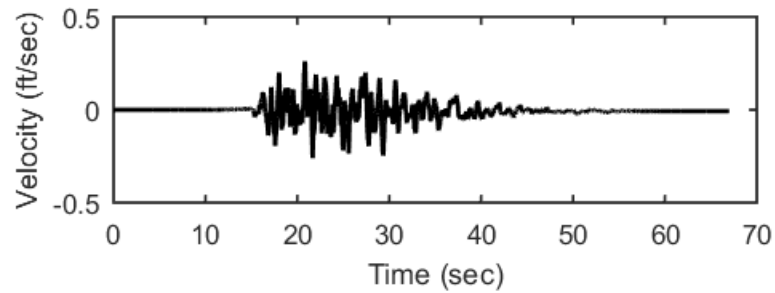
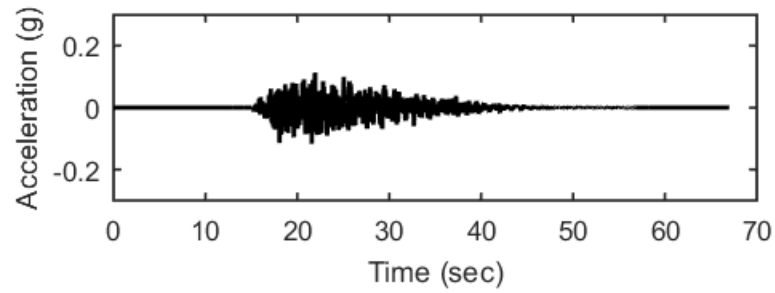


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5

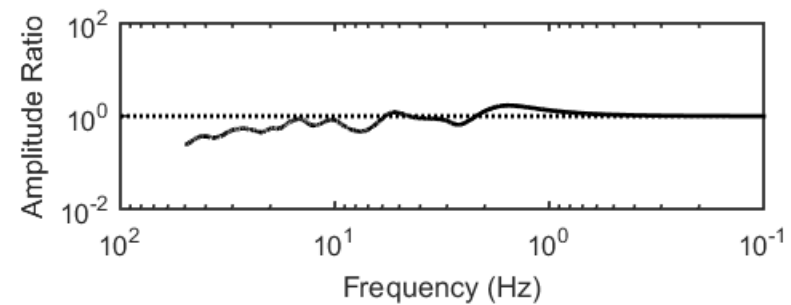
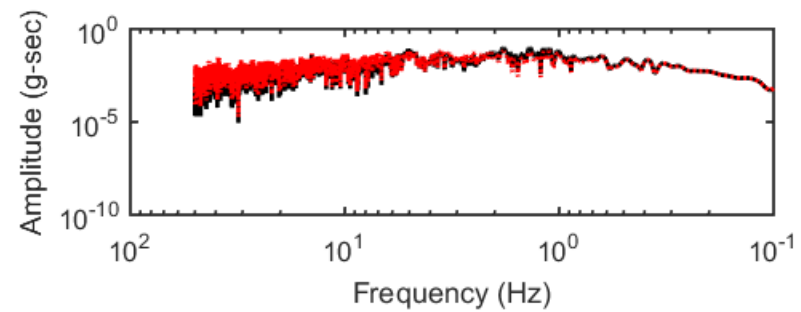
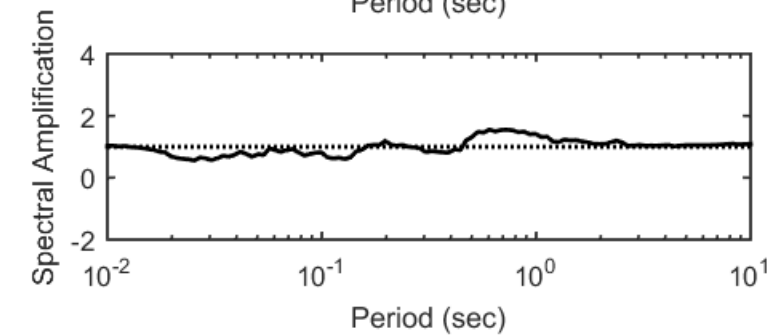
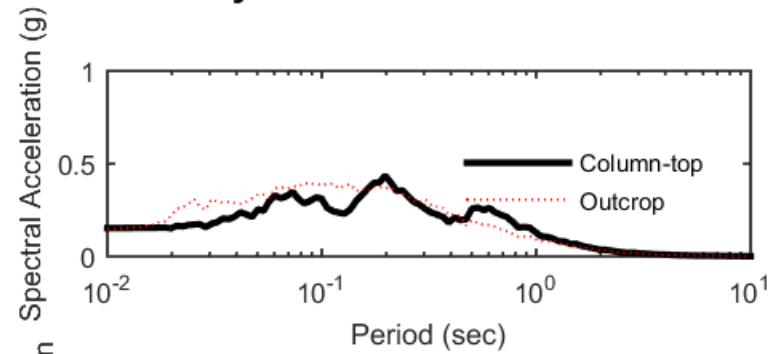
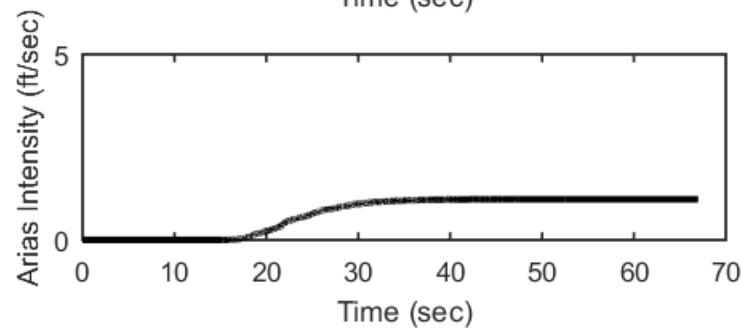
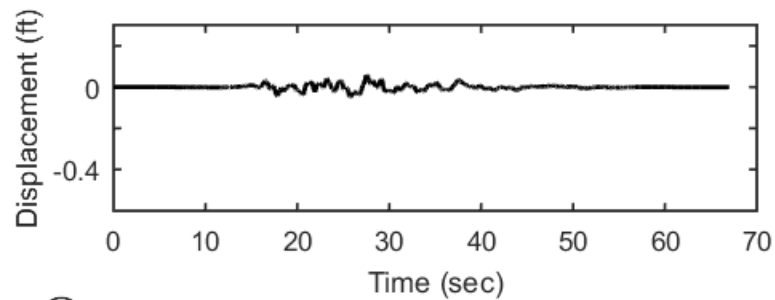
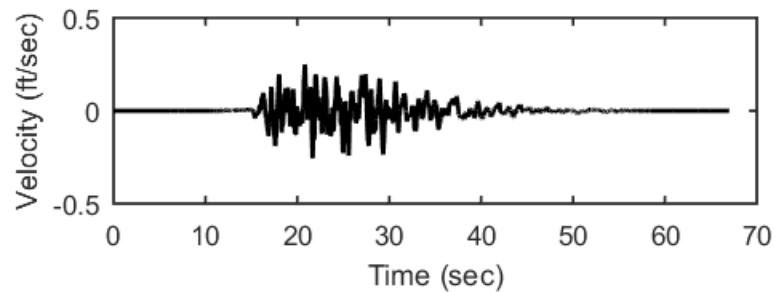
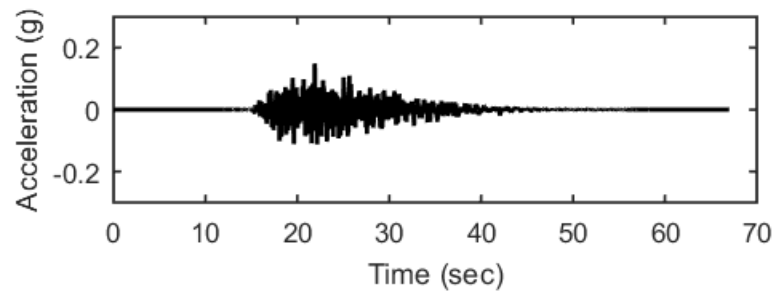




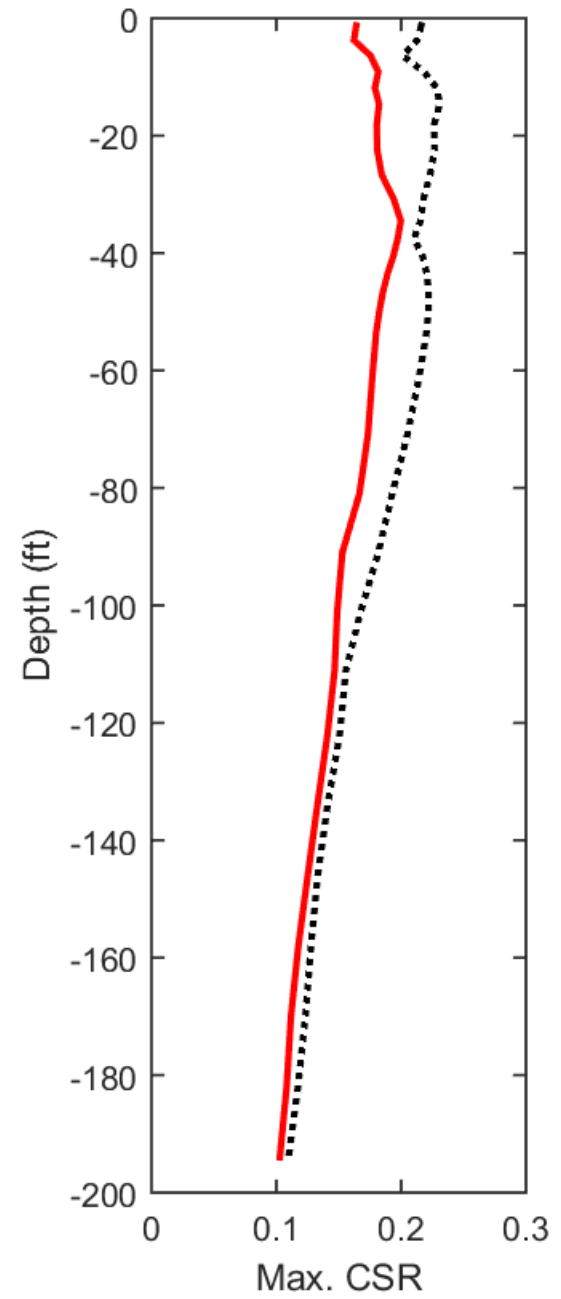
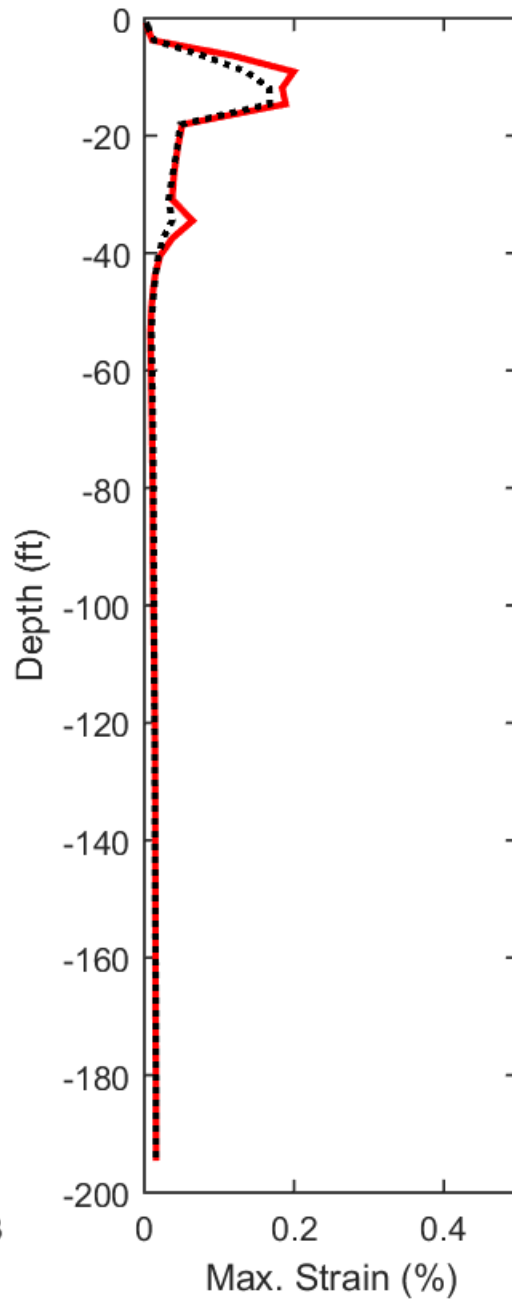
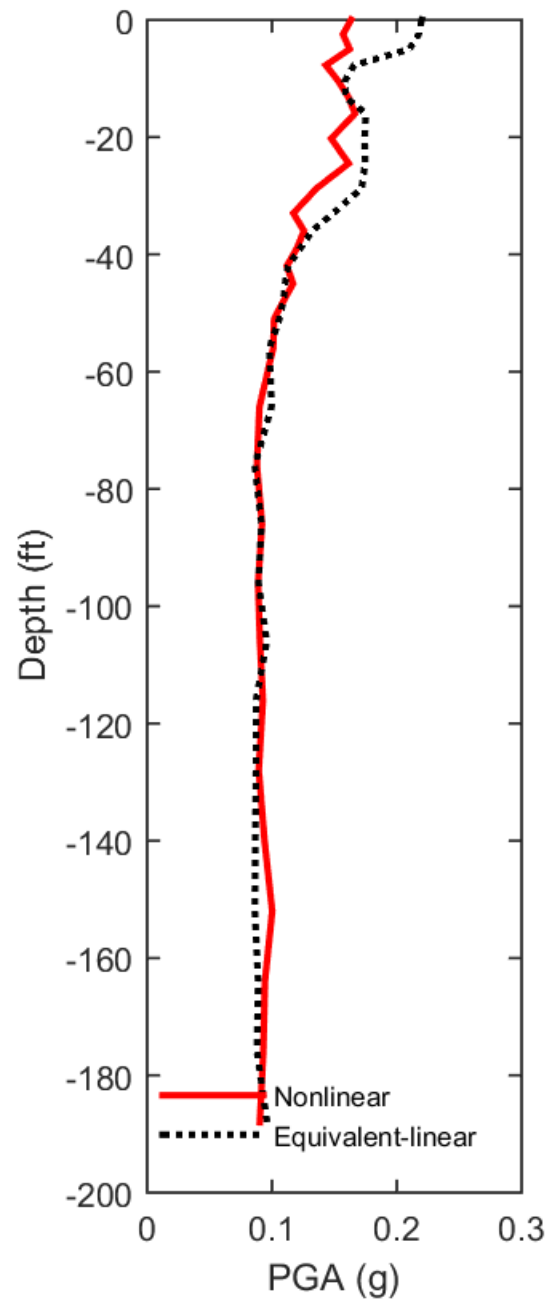
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



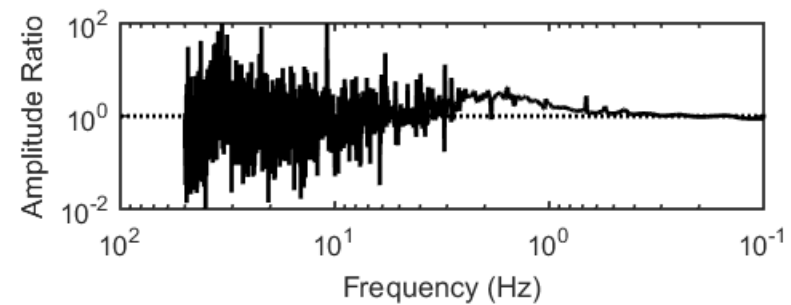
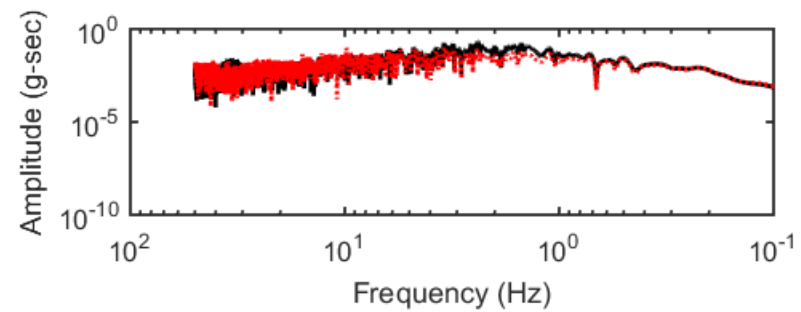
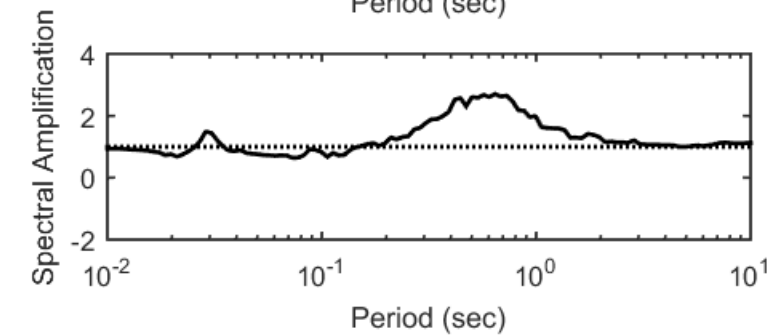
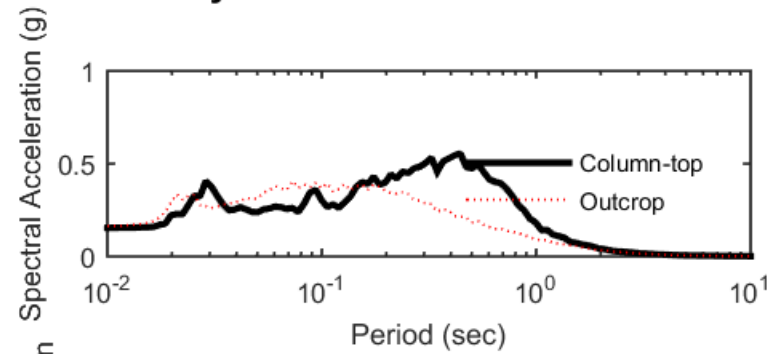
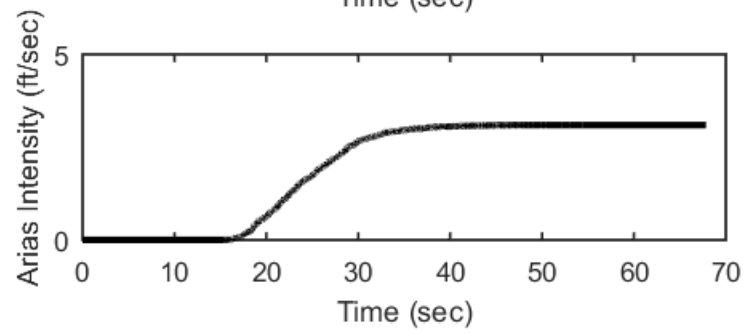
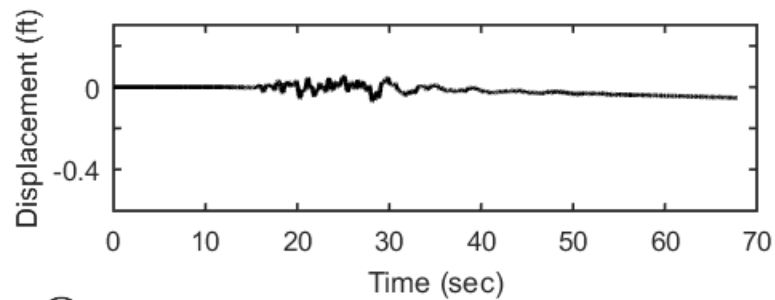
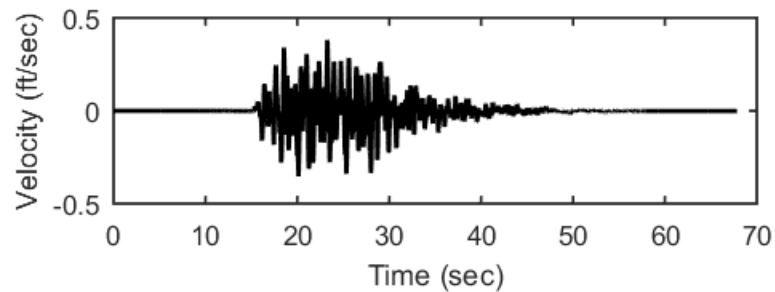
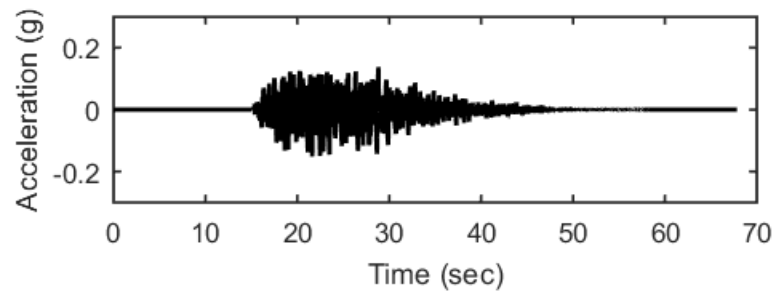
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5



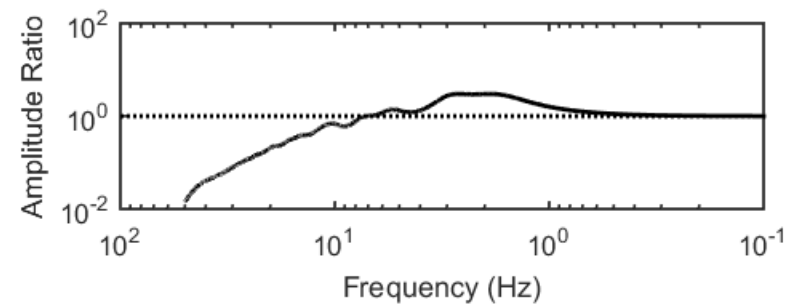
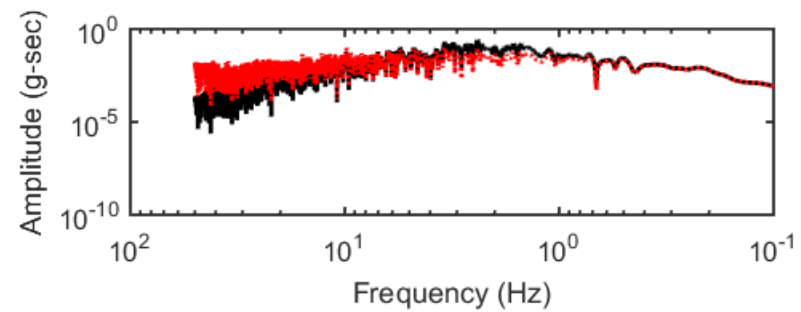
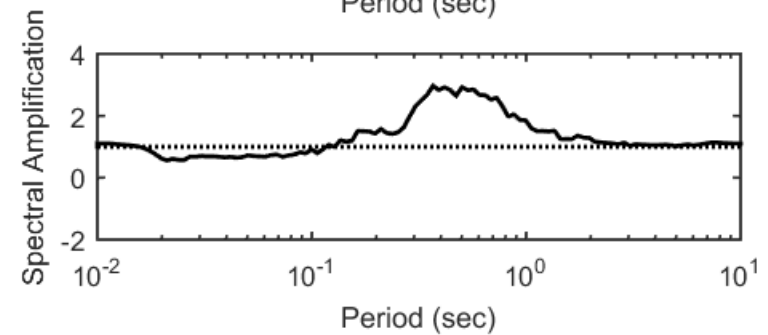
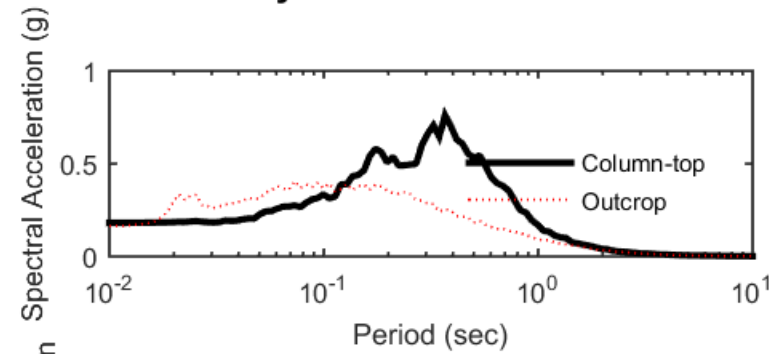
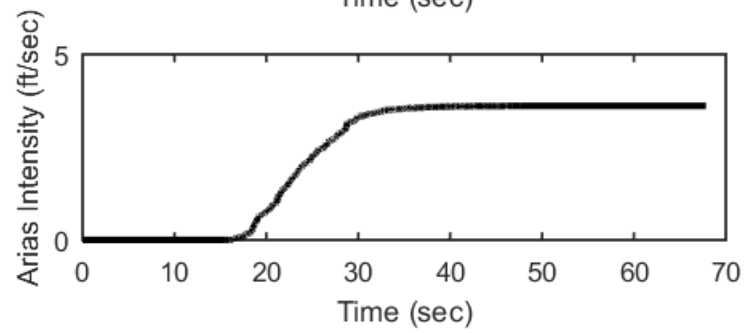
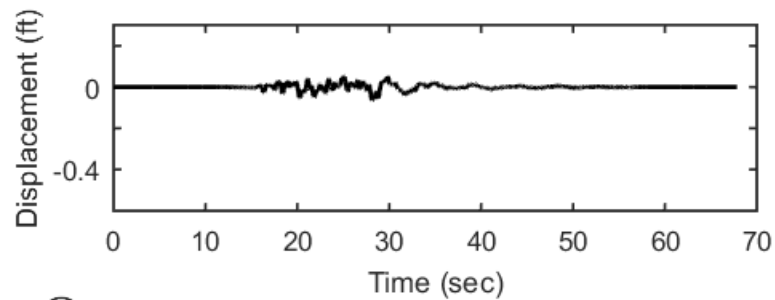
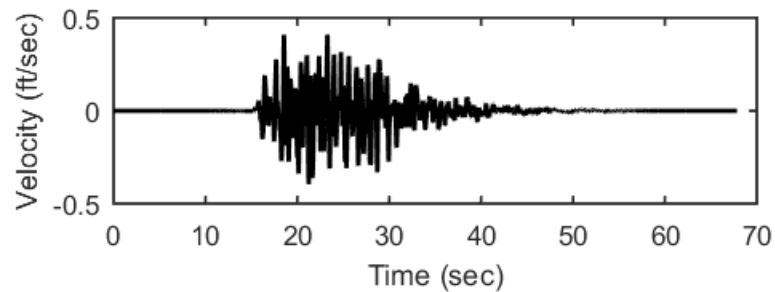
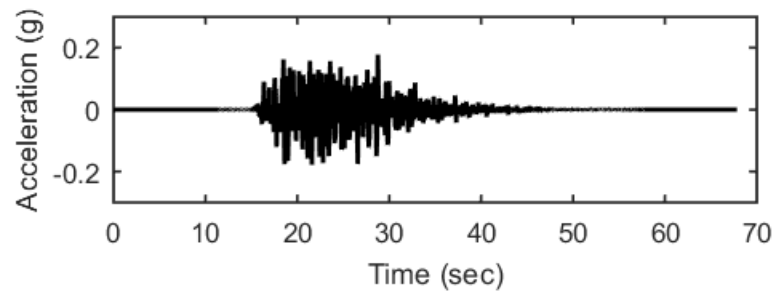
### Profile outputs for Motion: FEE5



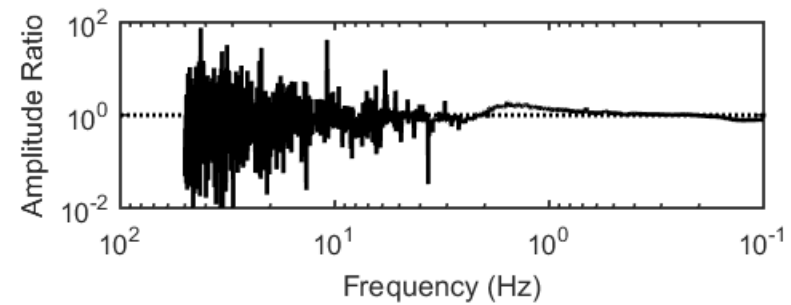
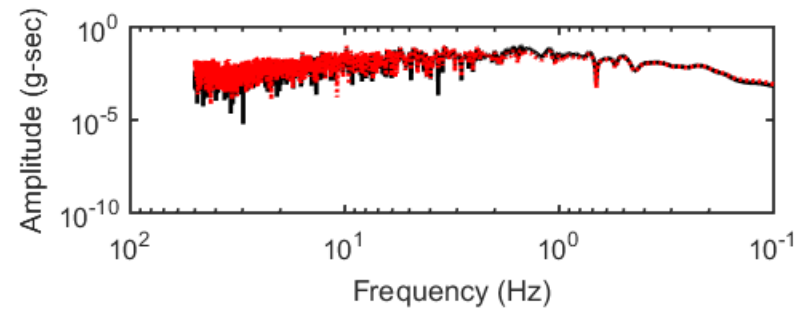
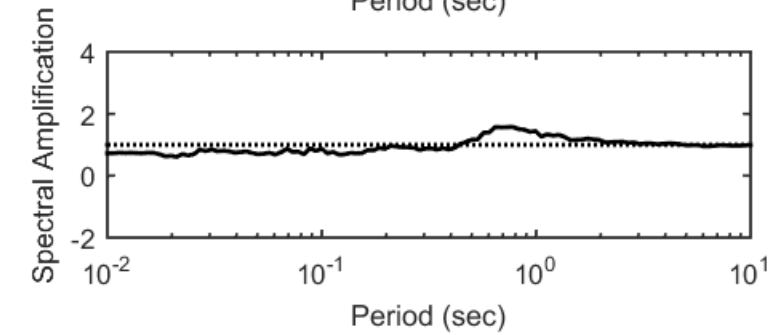
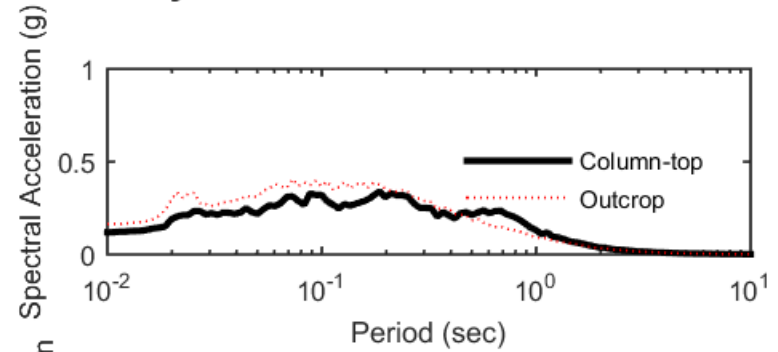
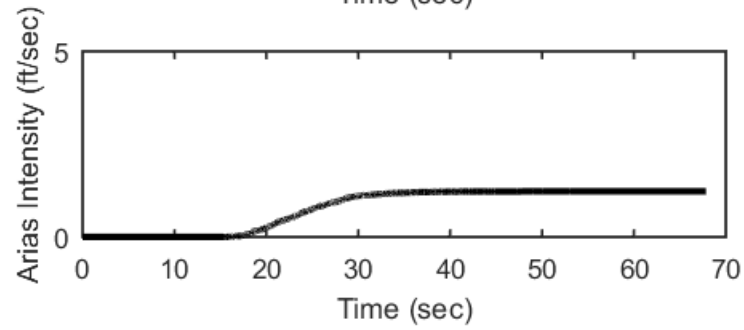
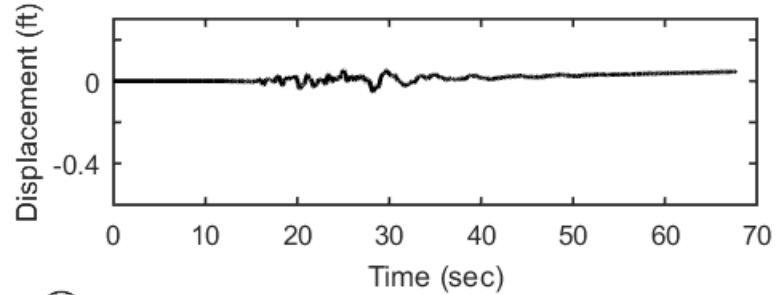
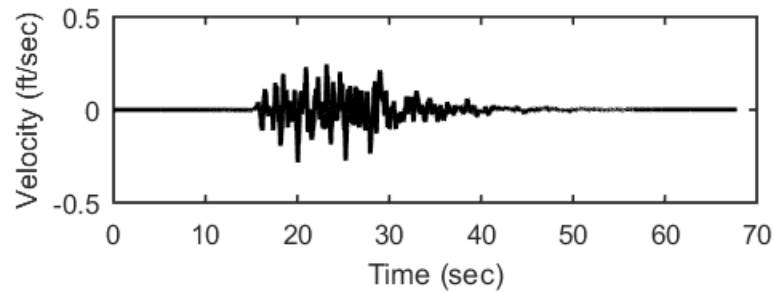
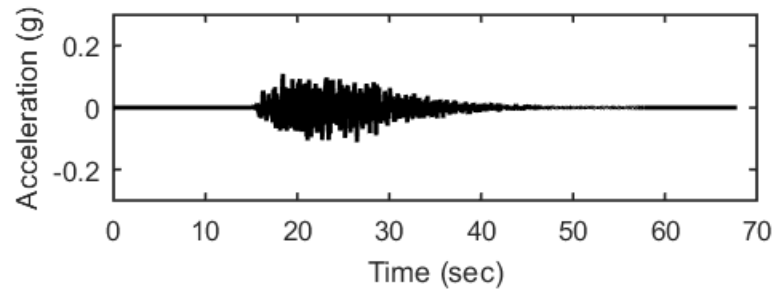
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



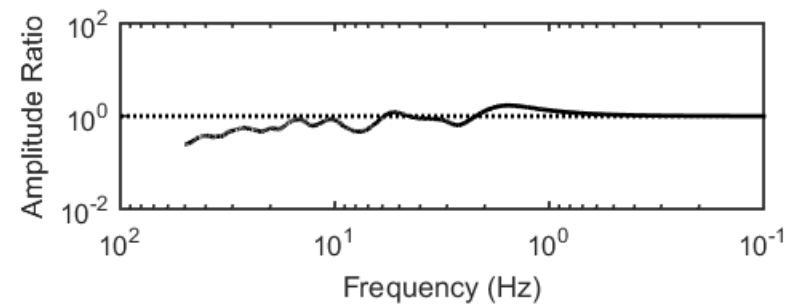
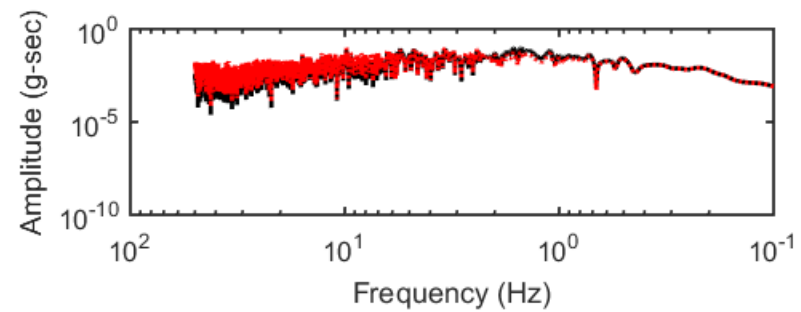
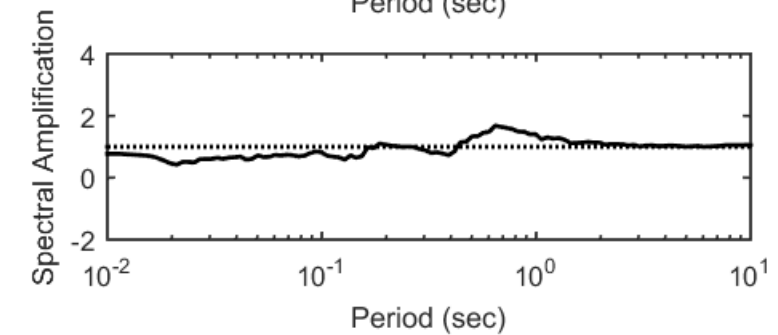
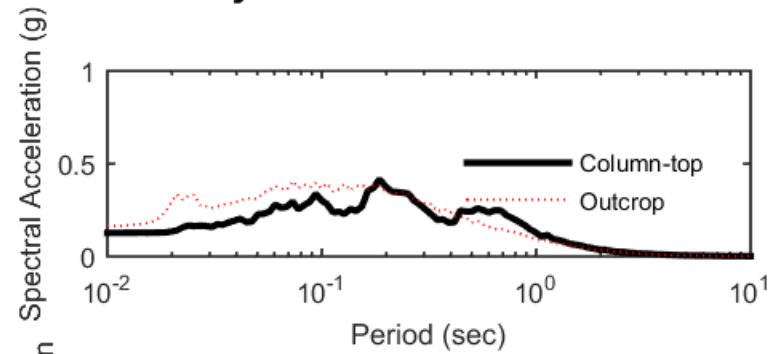
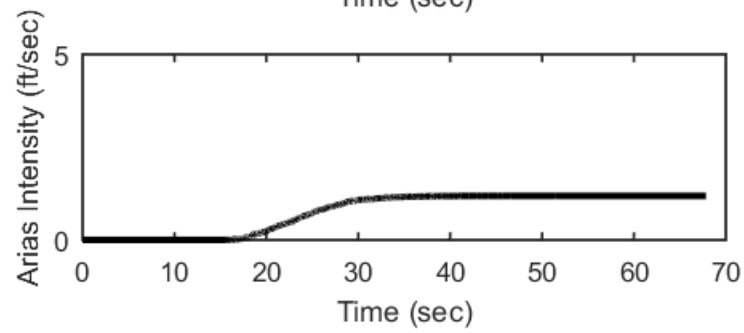
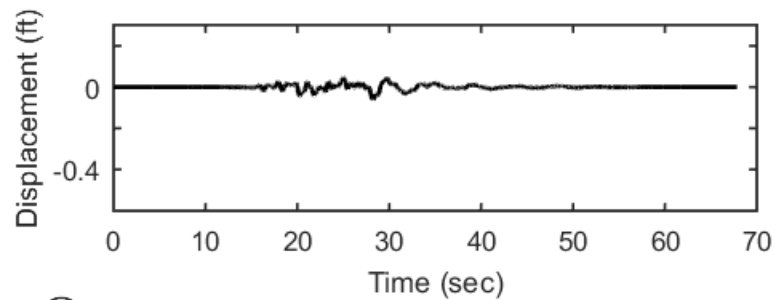
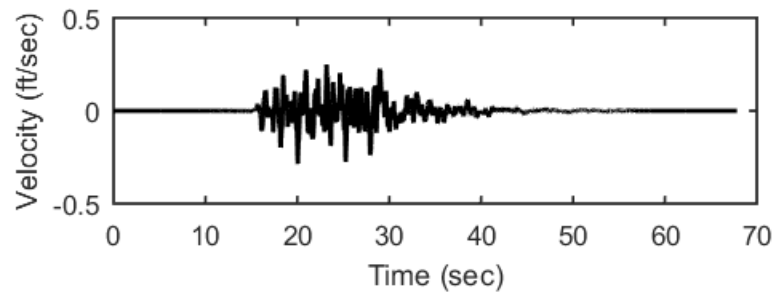
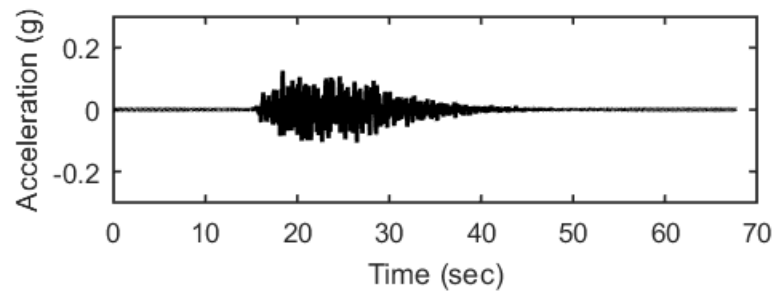
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



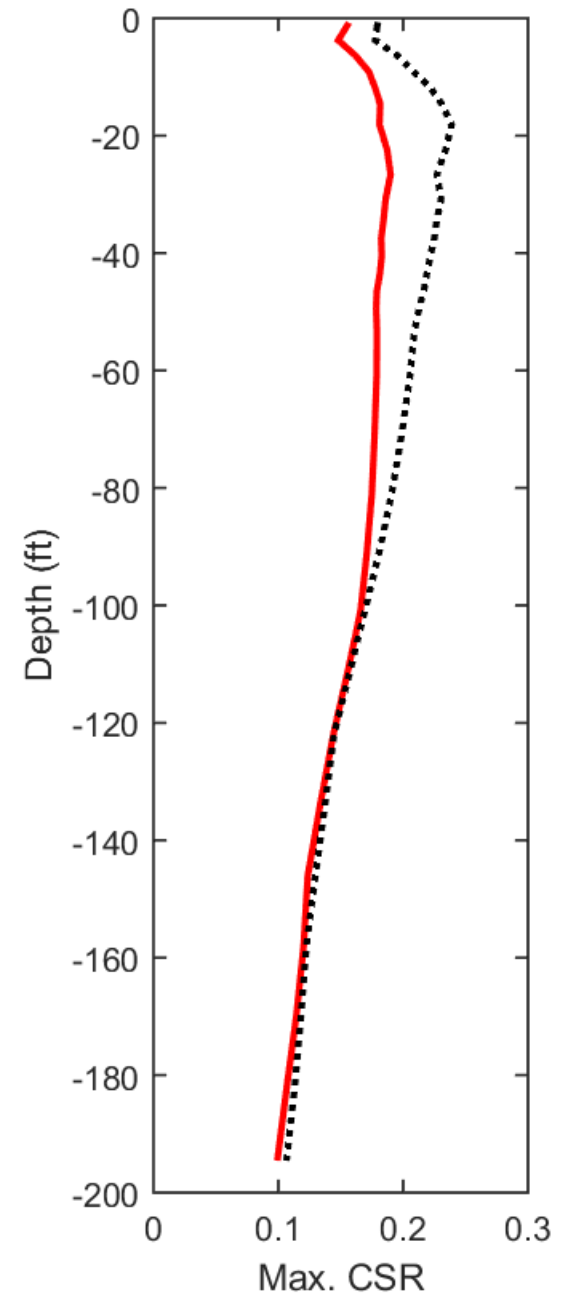
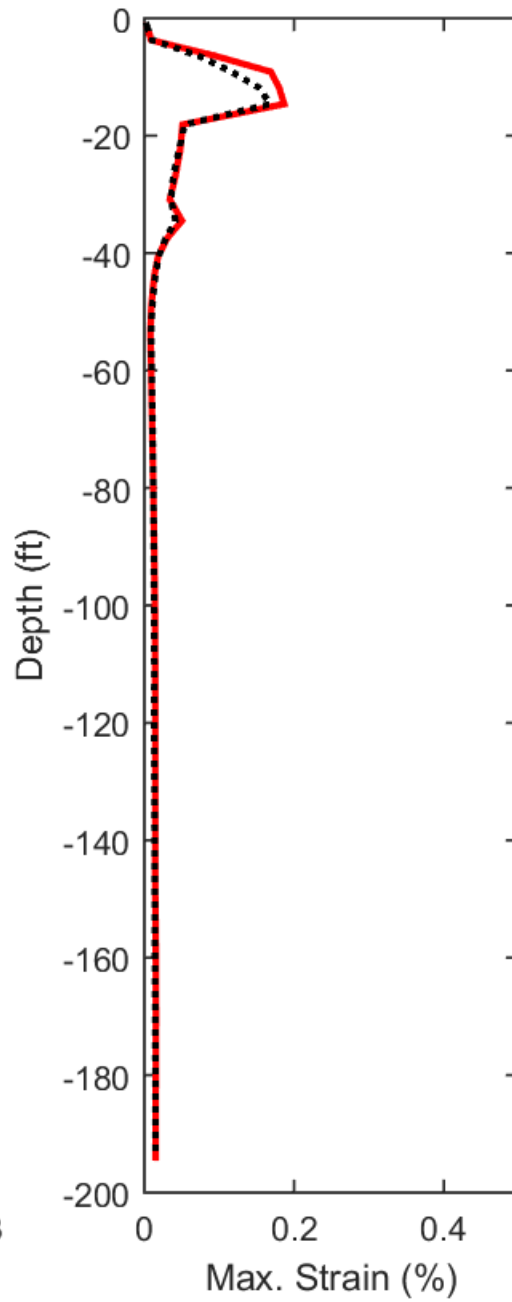
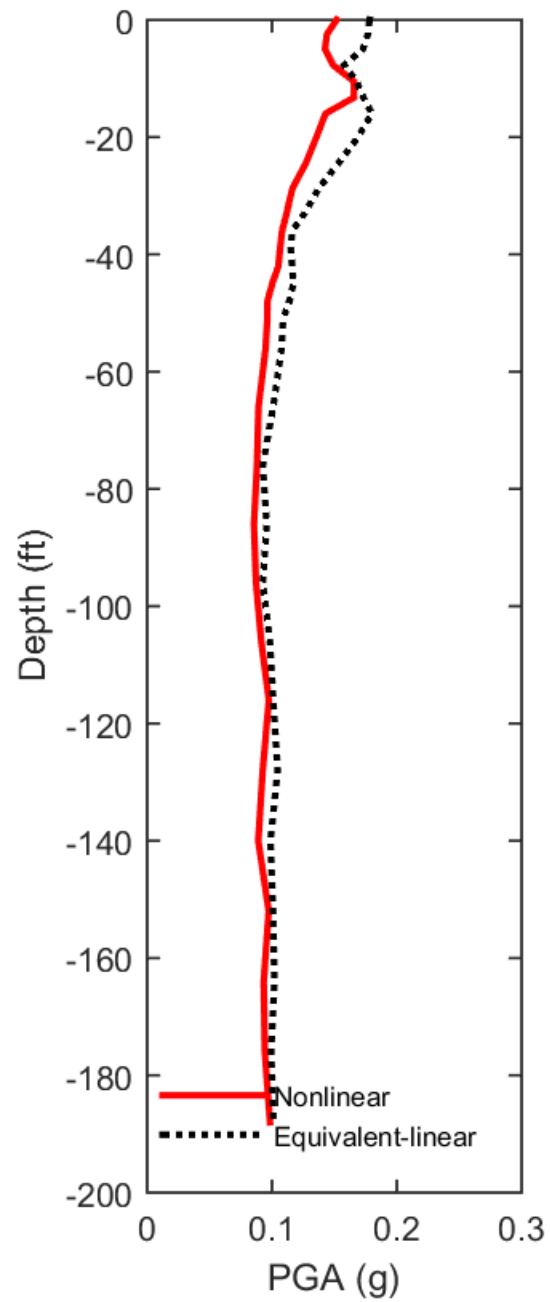
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6

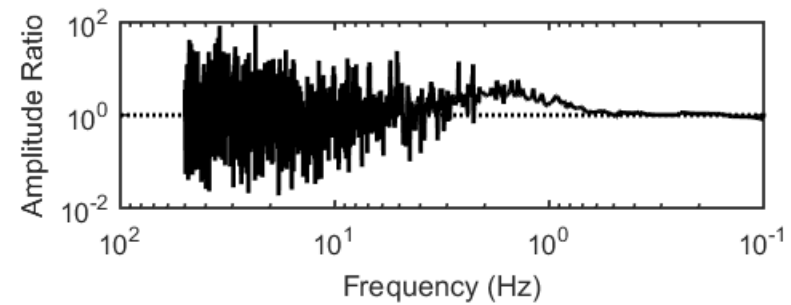
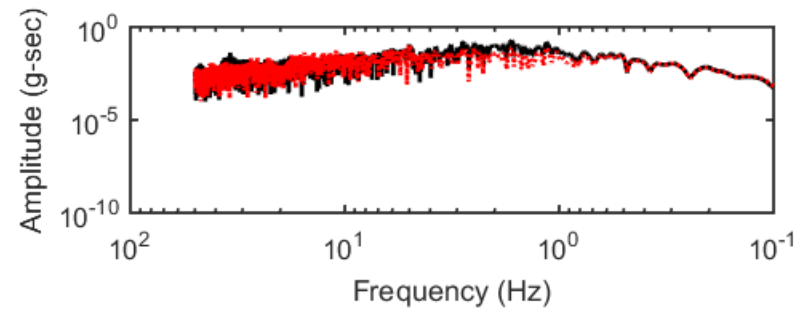
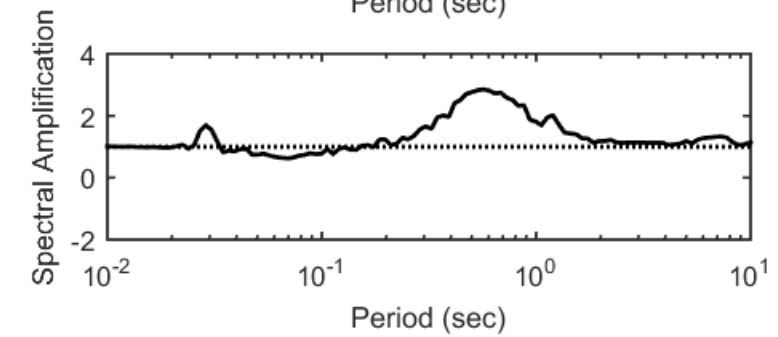
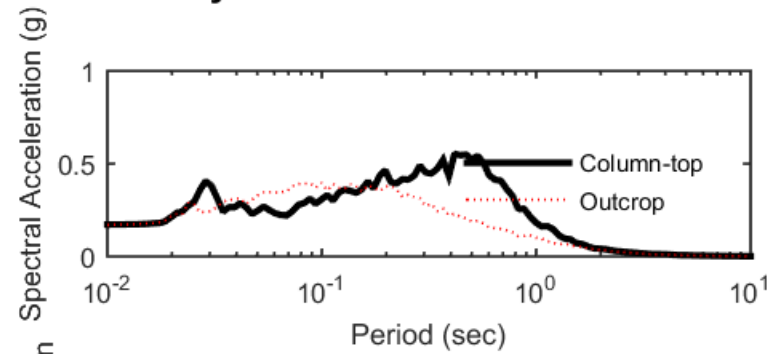
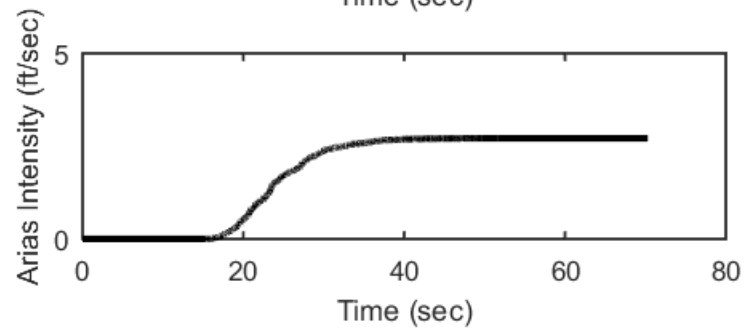
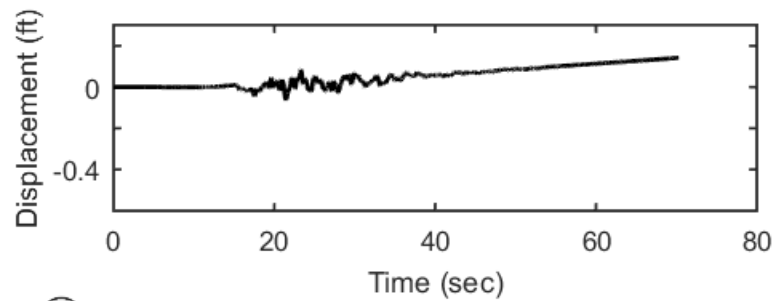
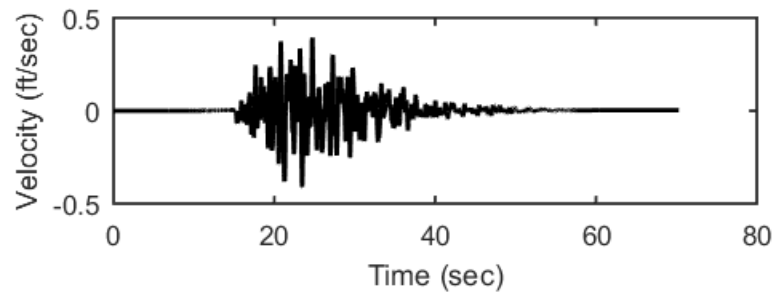
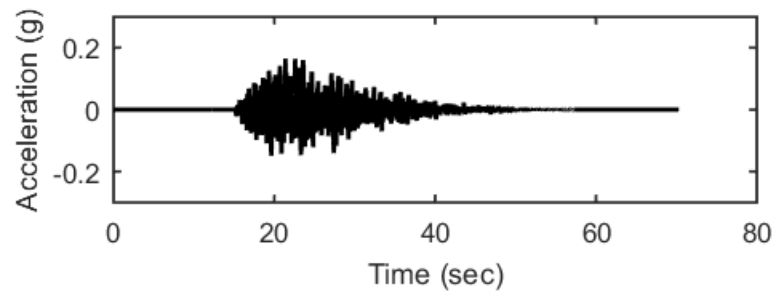


### Profile outputs for Motion: FEE6

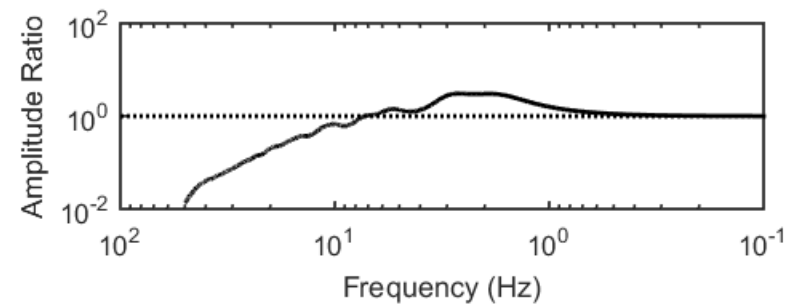
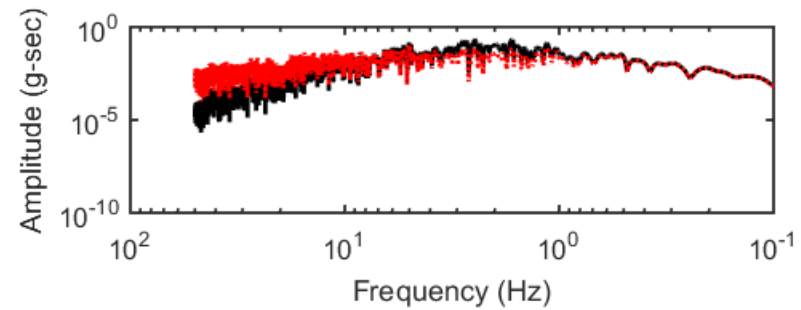
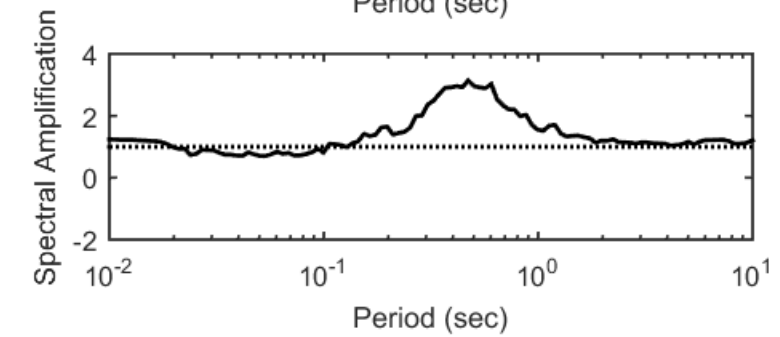
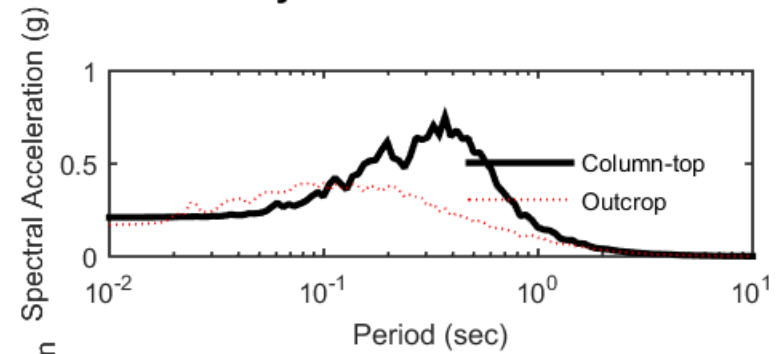
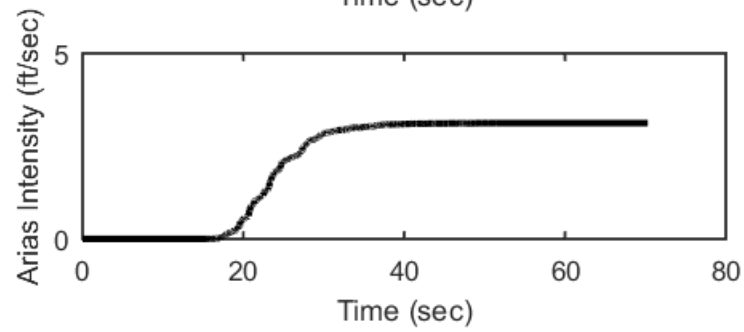
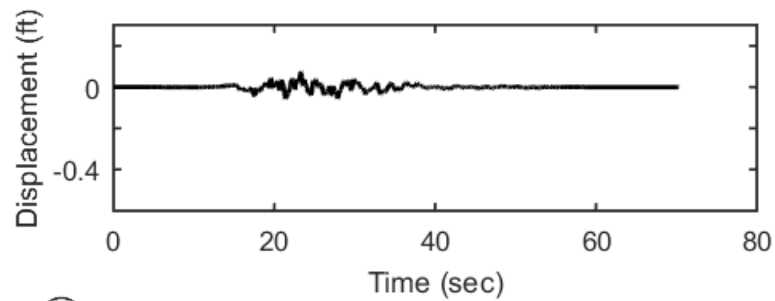
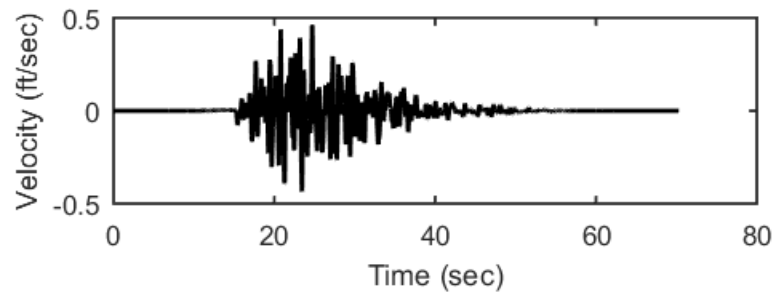
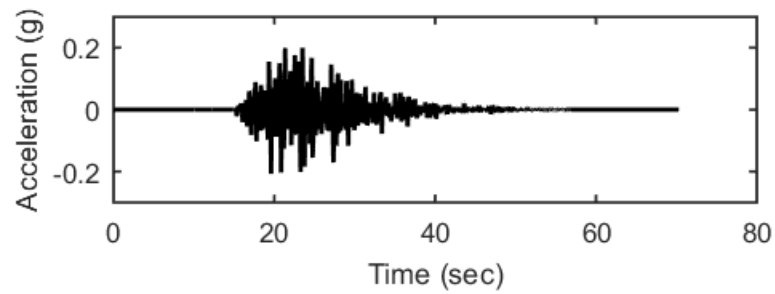




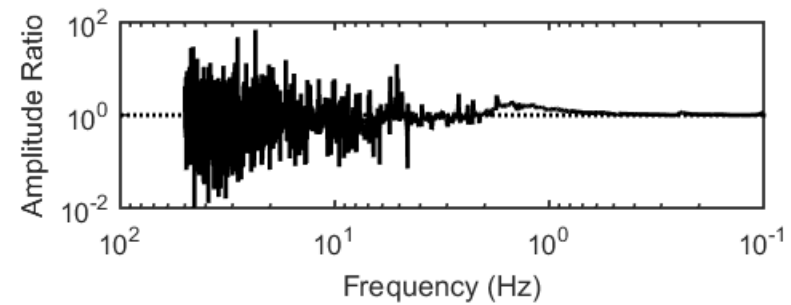
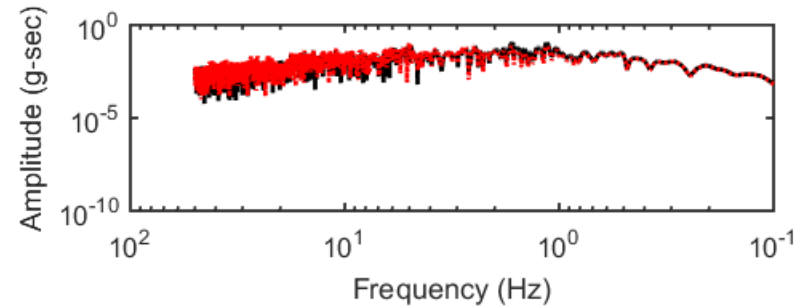
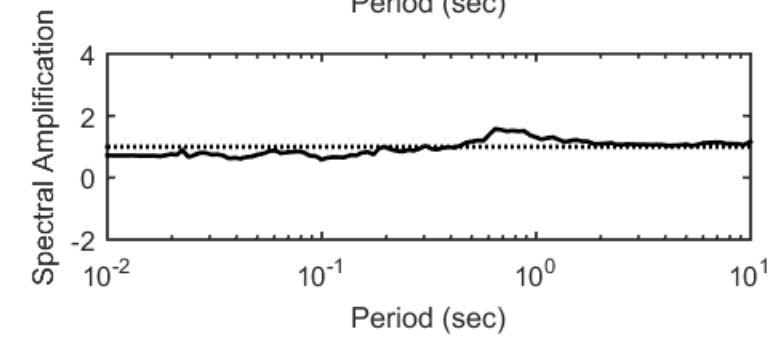
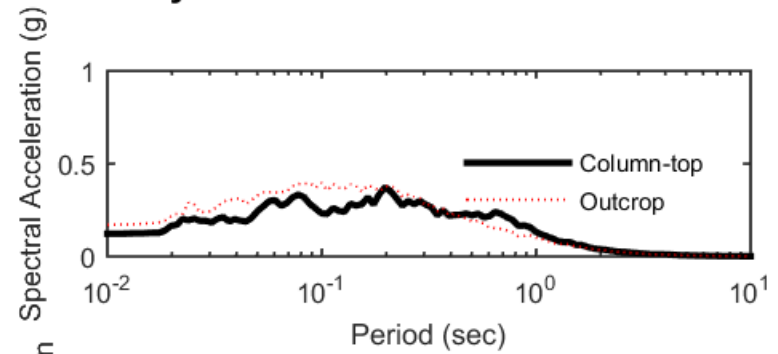
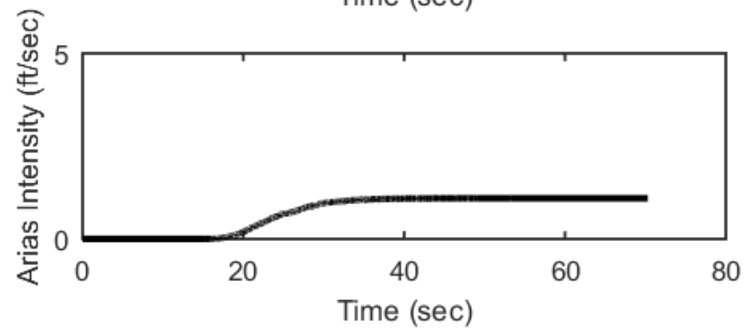
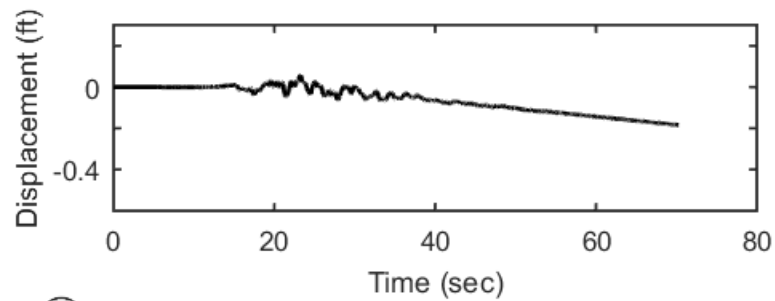
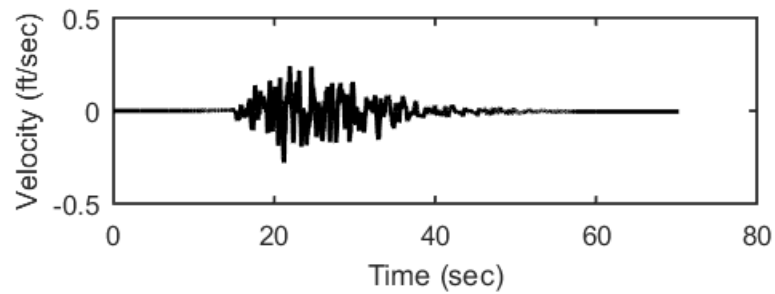
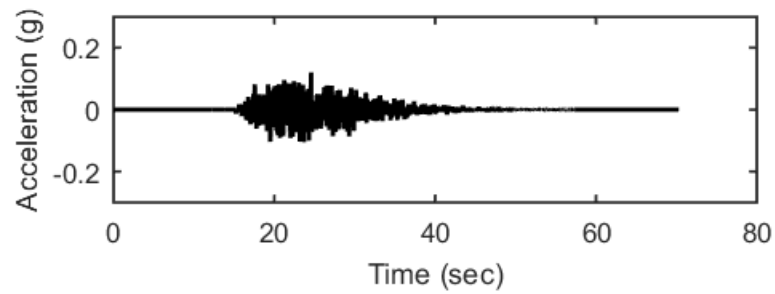
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



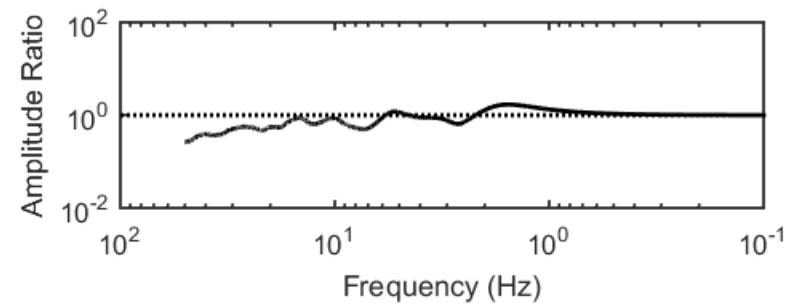
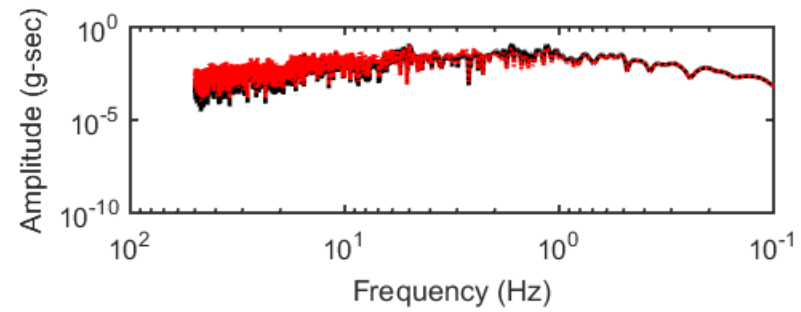
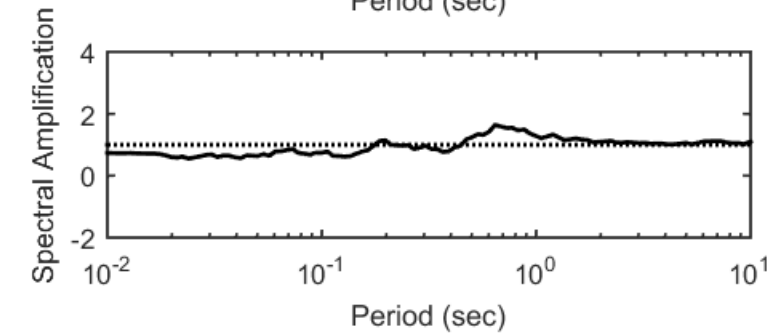
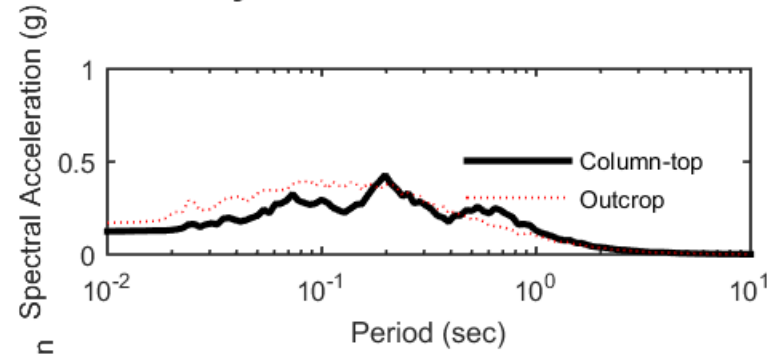
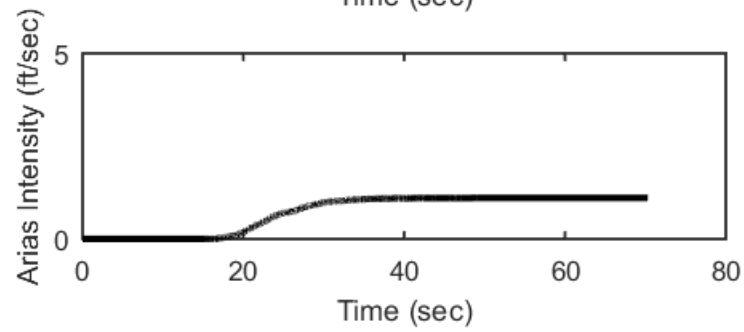
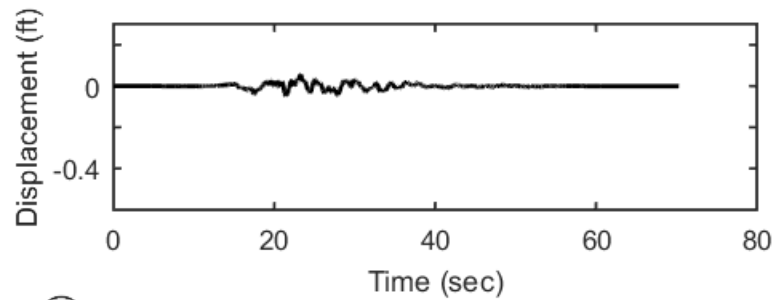
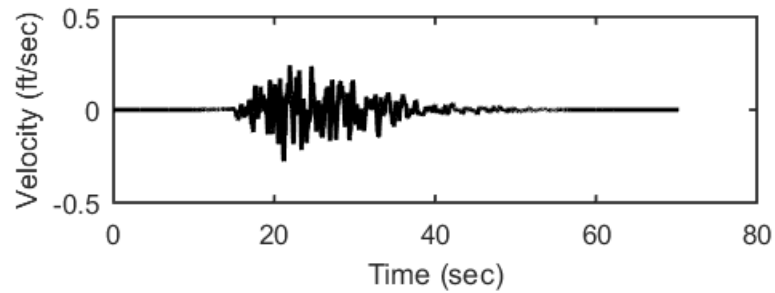
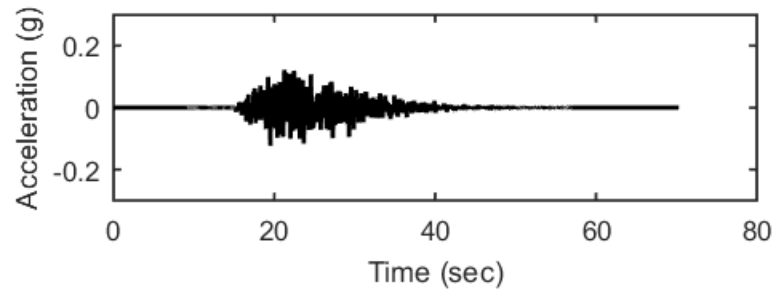
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7



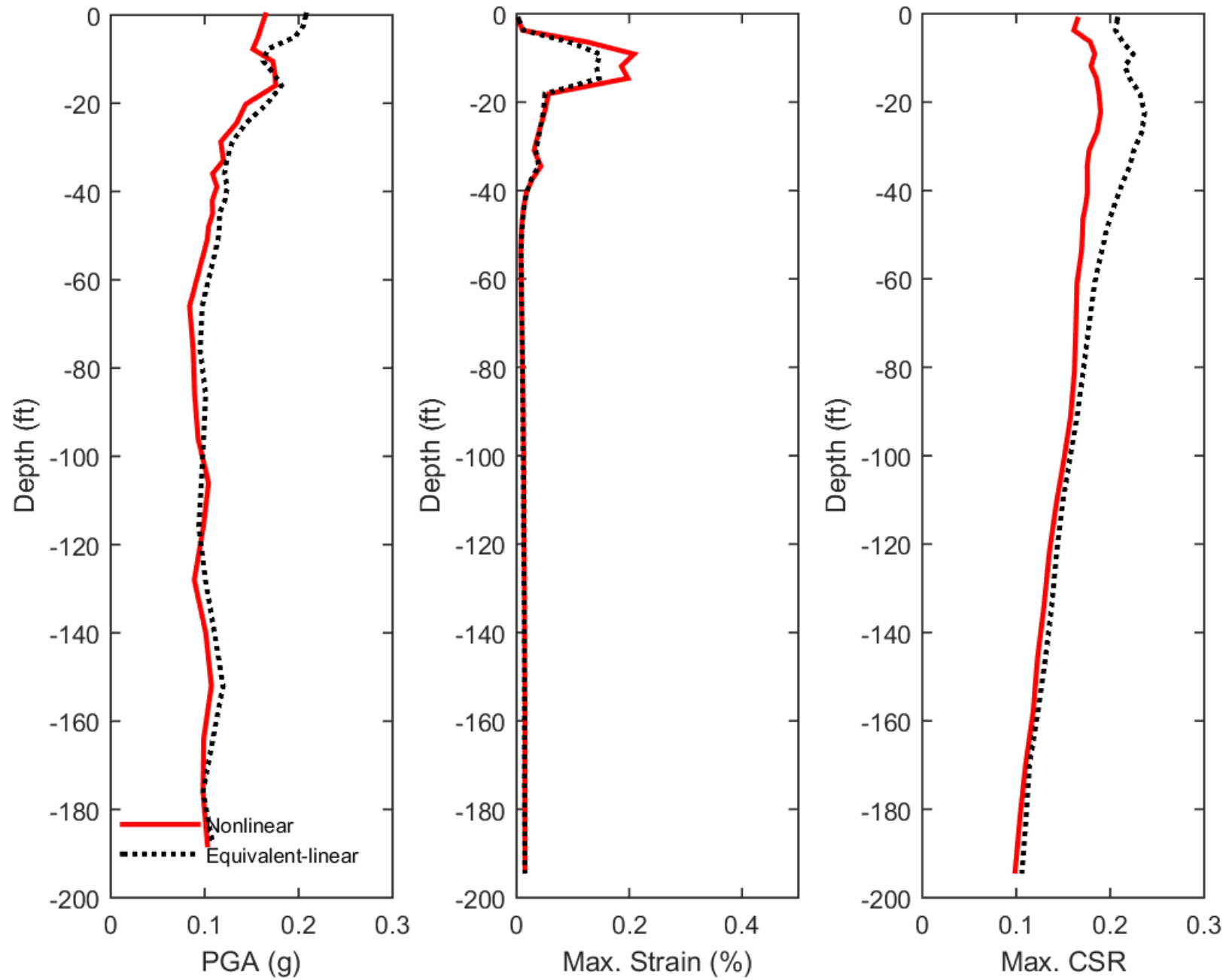
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7



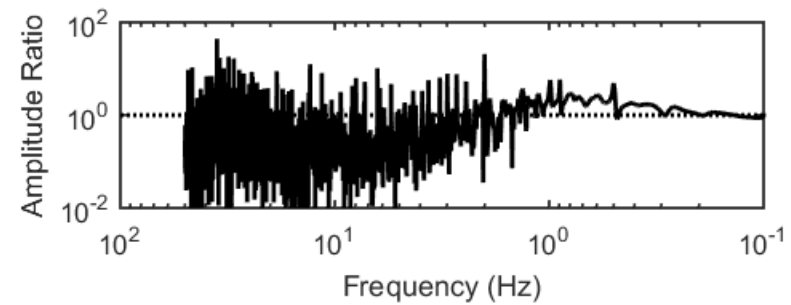
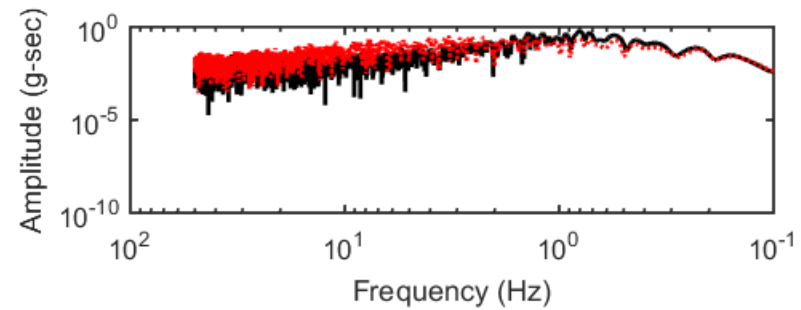
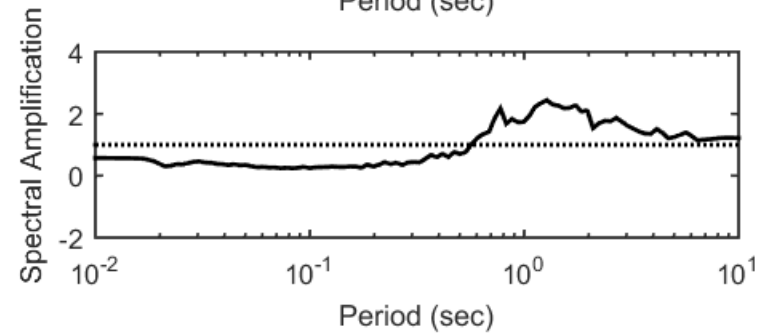
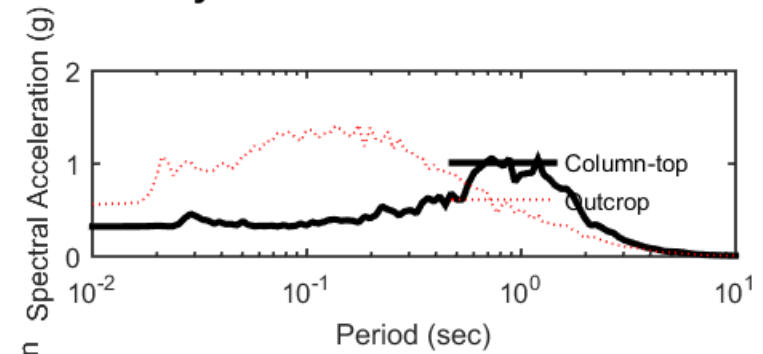
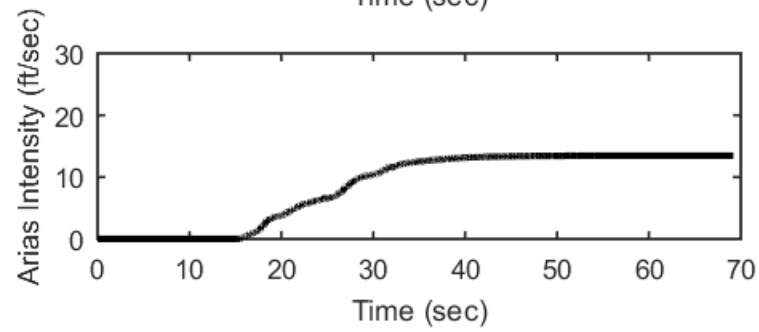
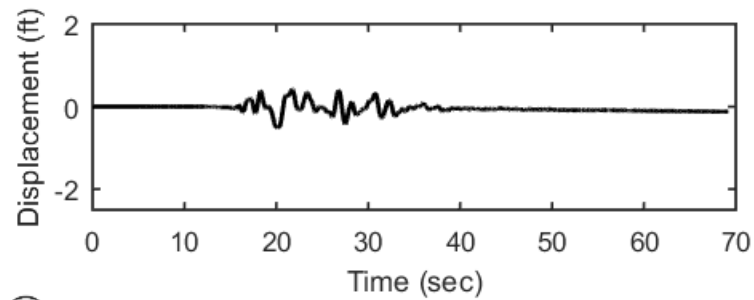
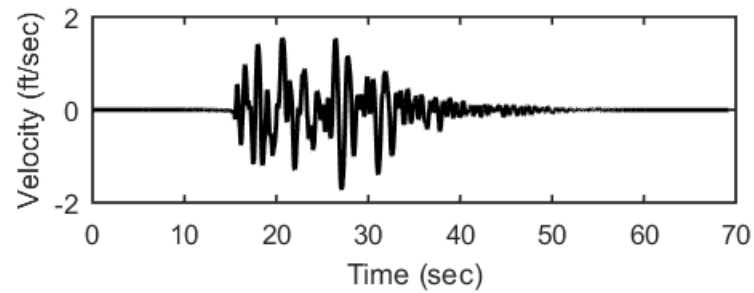
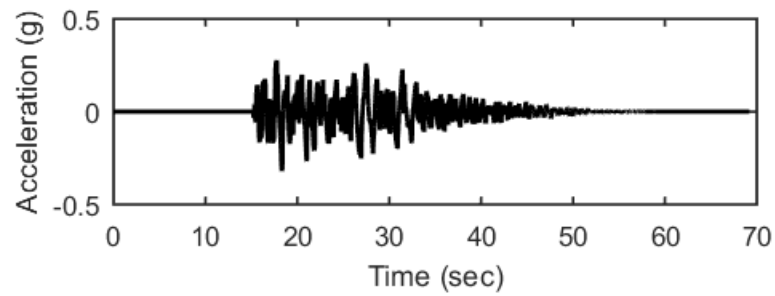
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



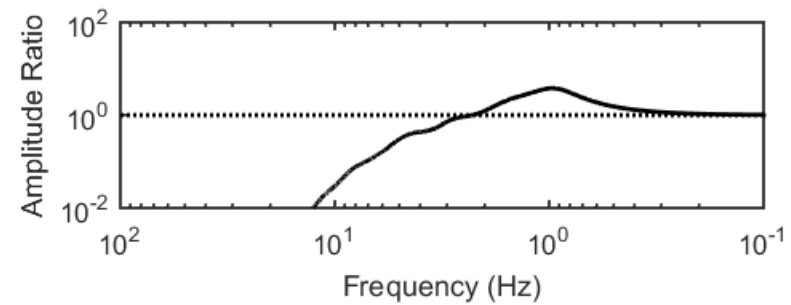
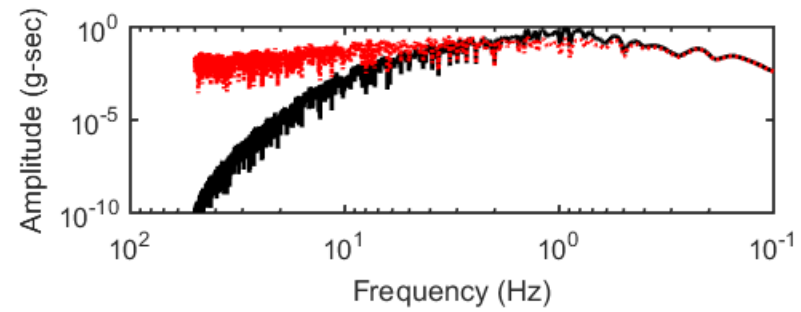
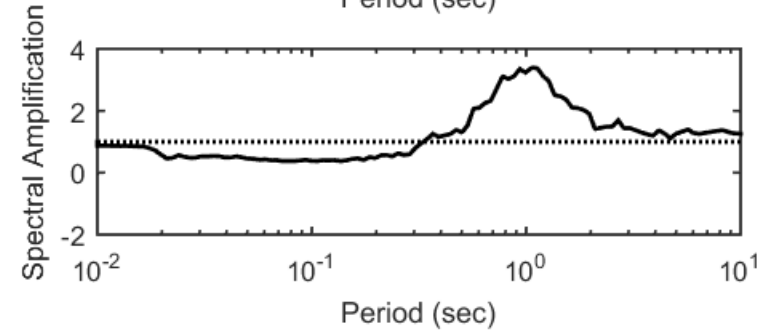
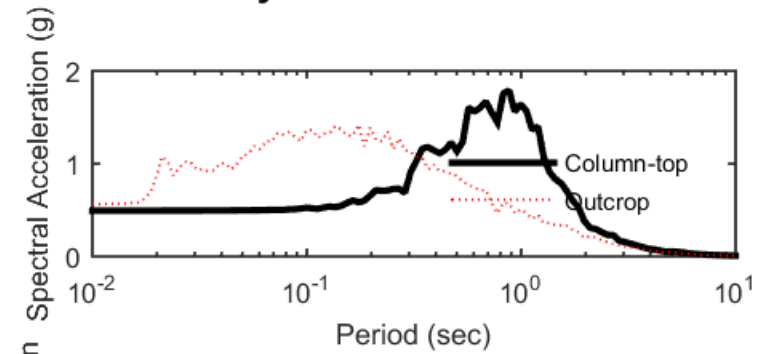
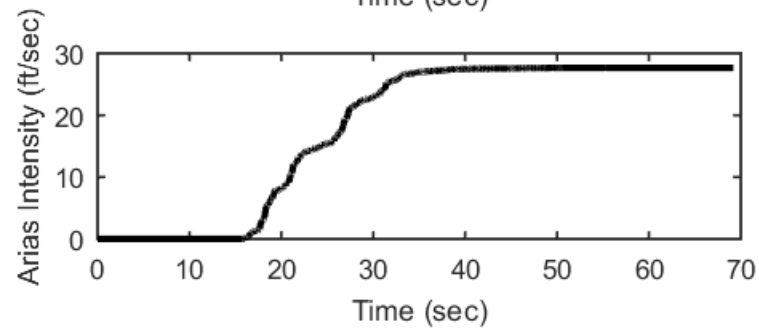
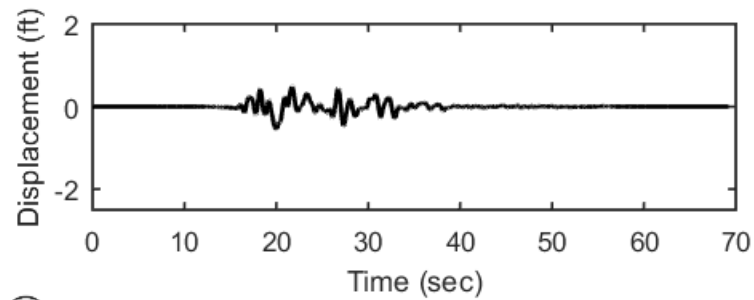
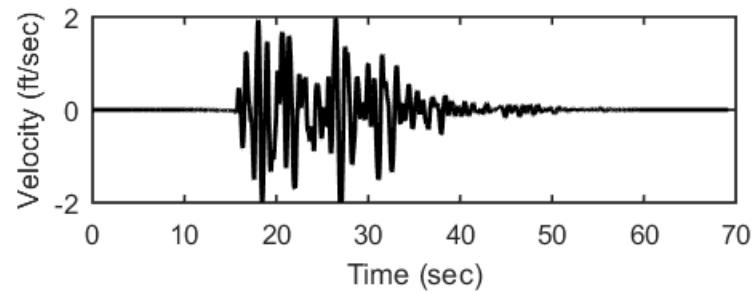
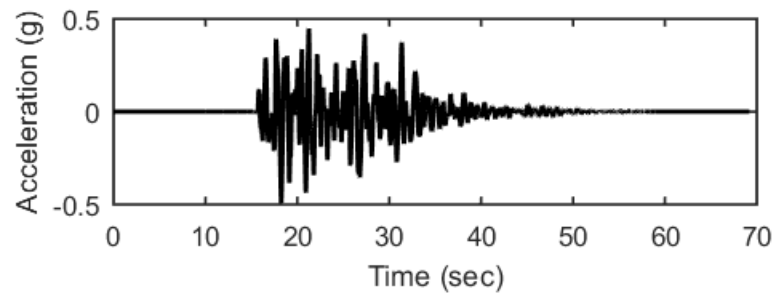
### Profile outputs for Motion: FEE7



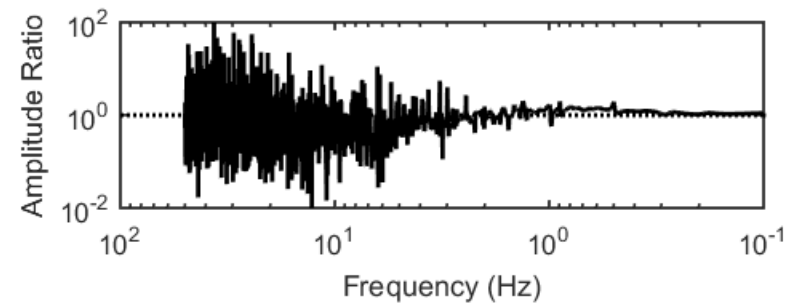
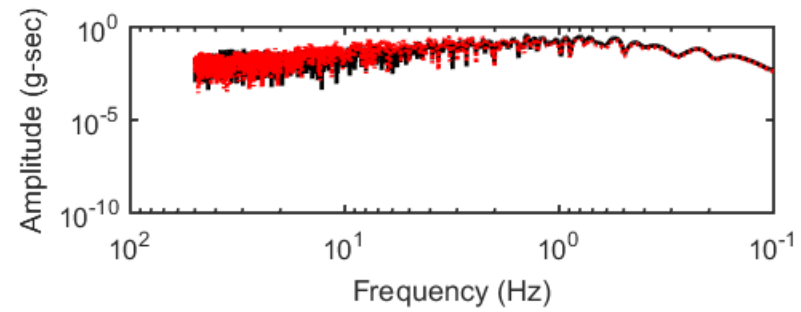
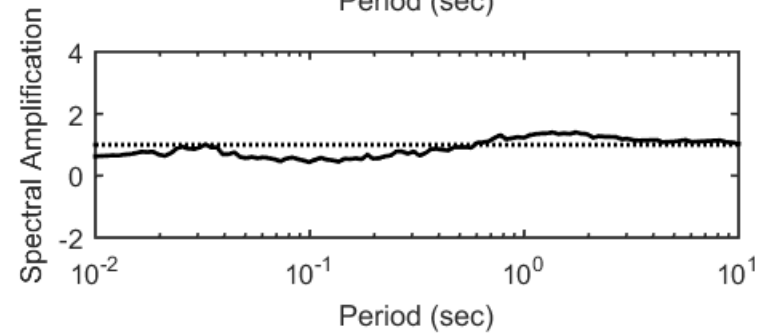
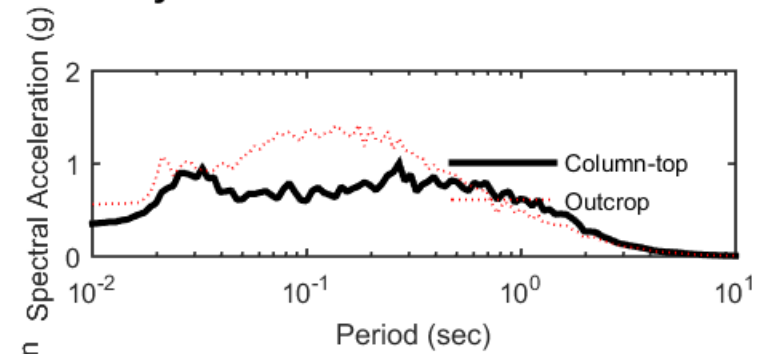
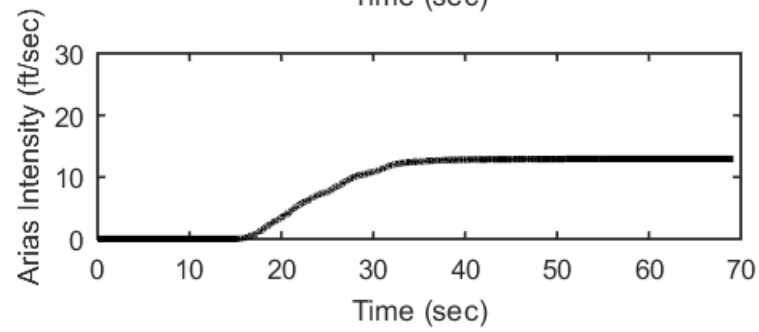
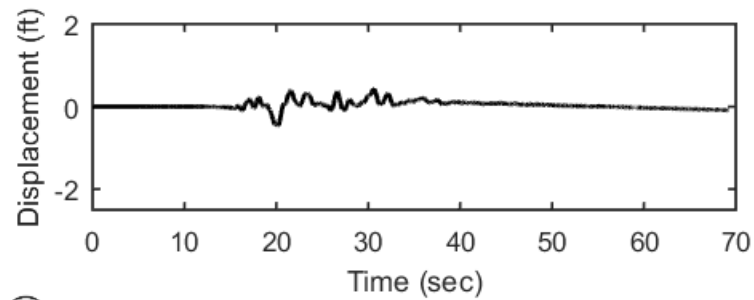
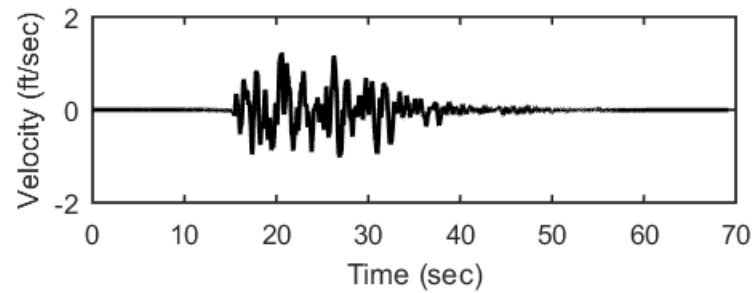
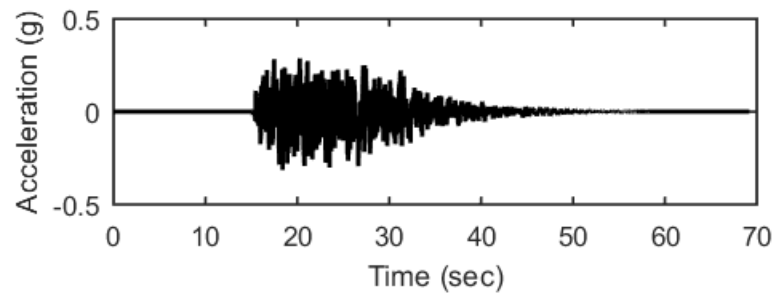
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1

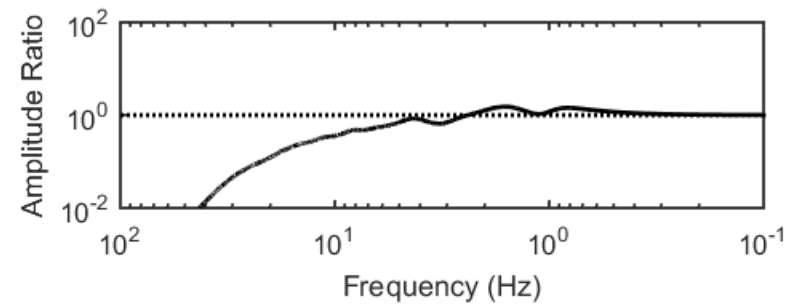
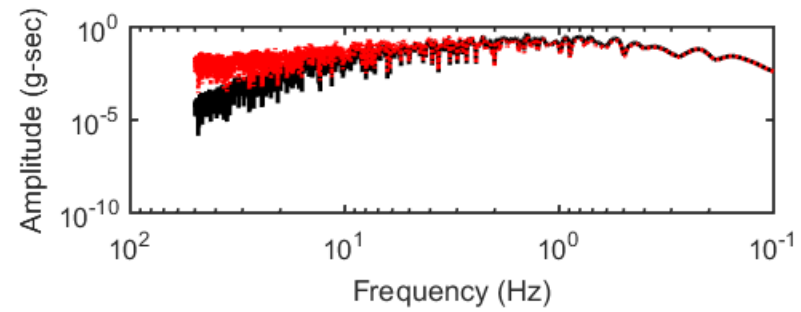
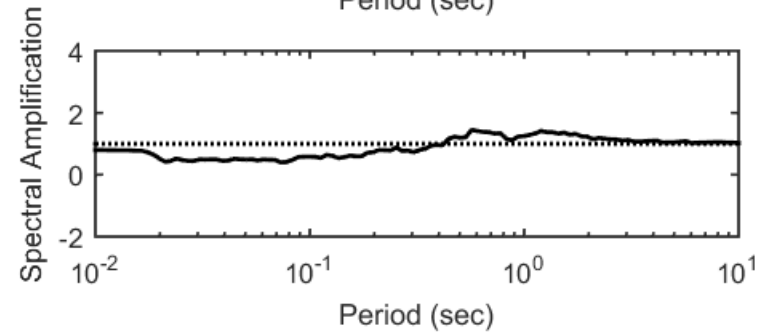
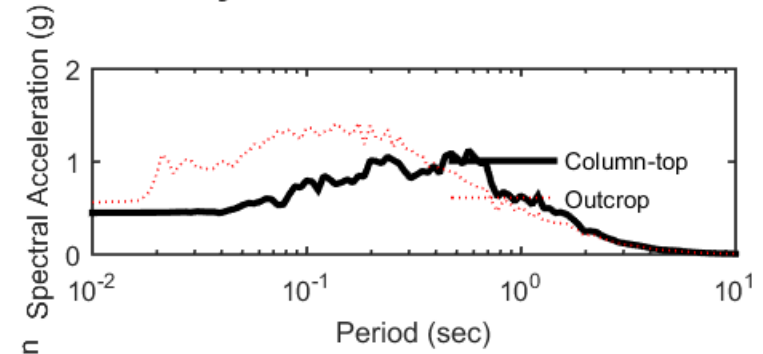
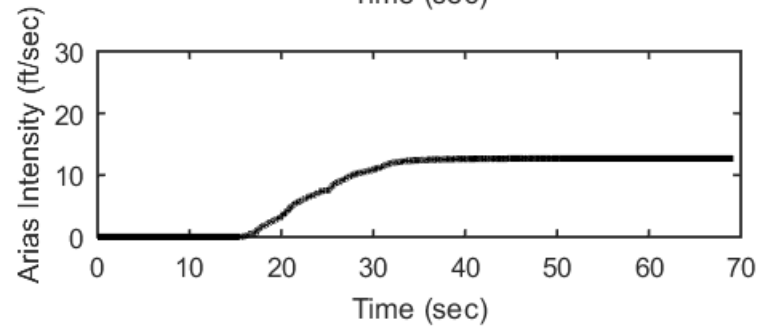
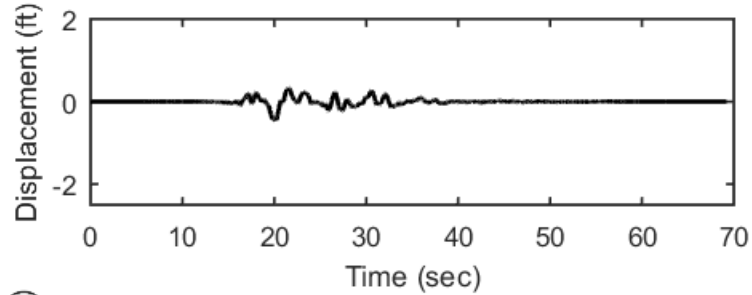
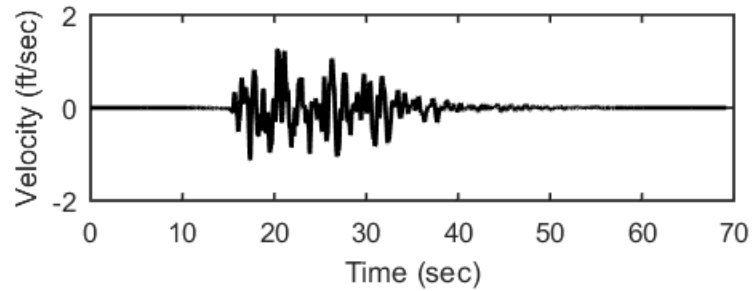
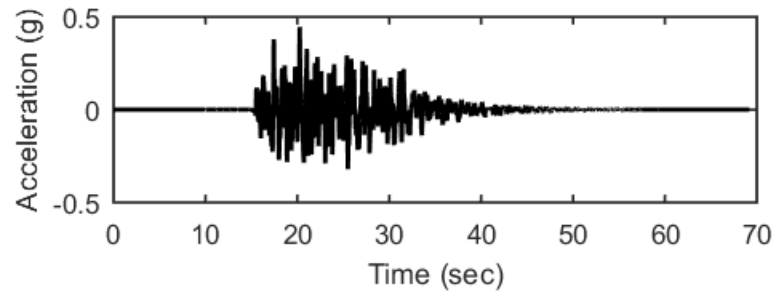


## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1

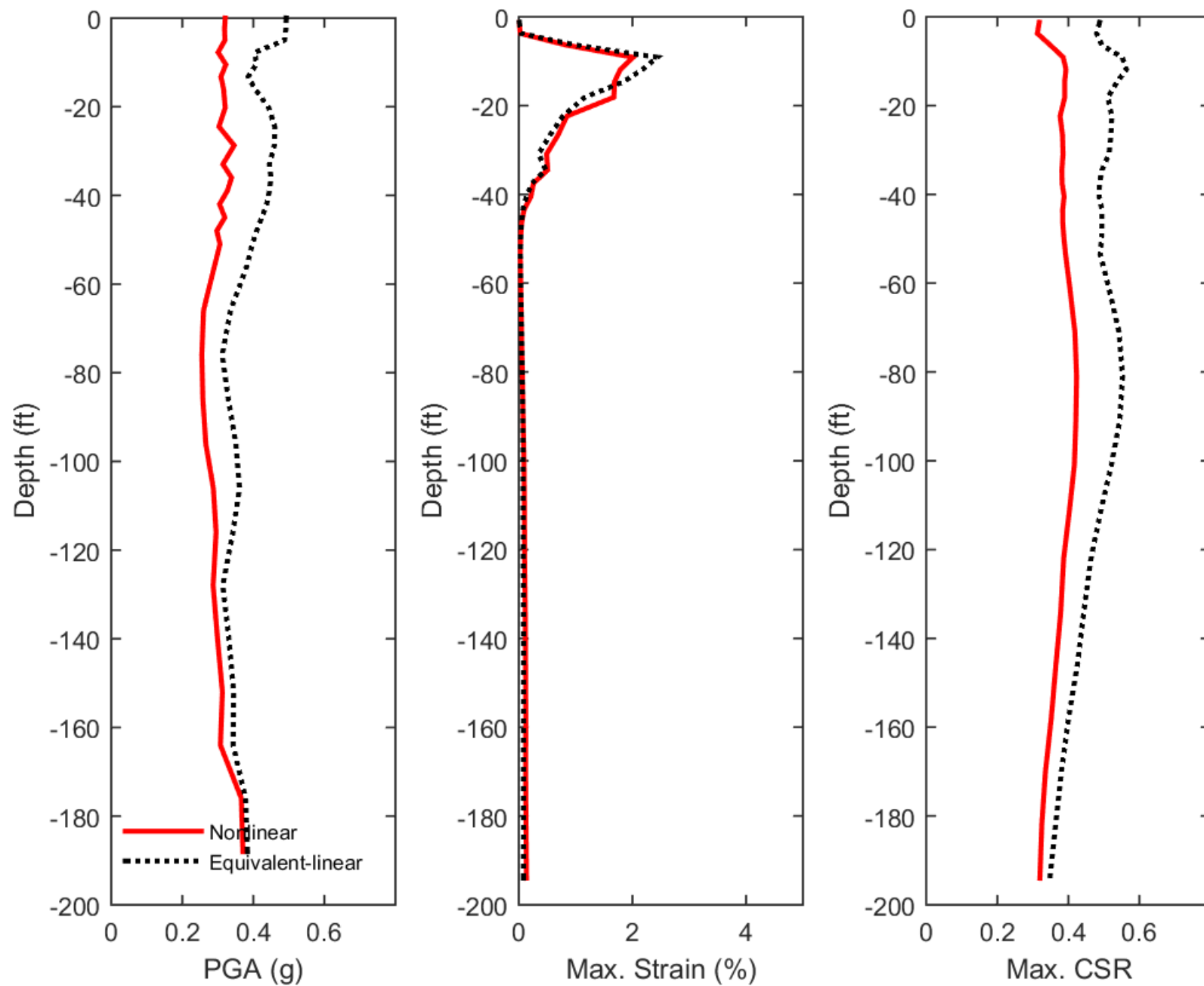




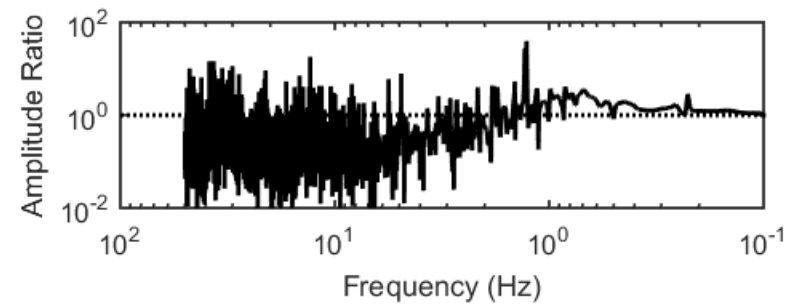
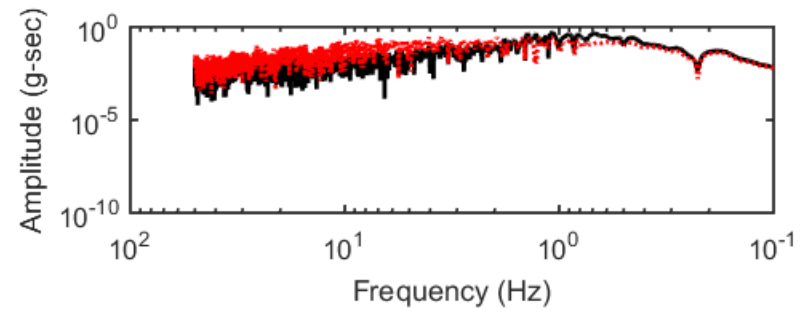
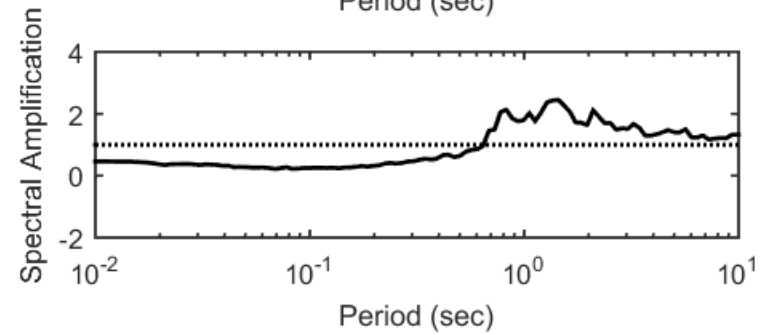
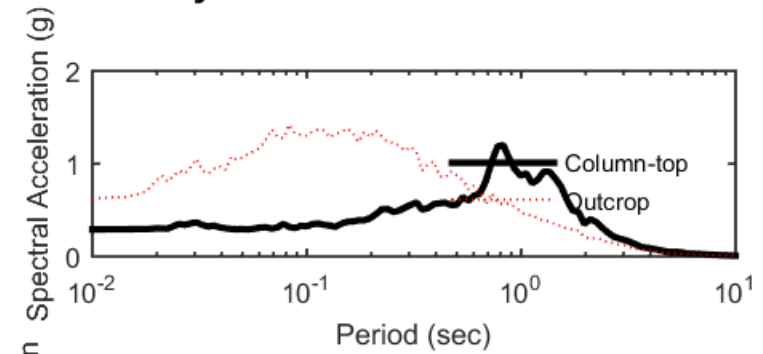
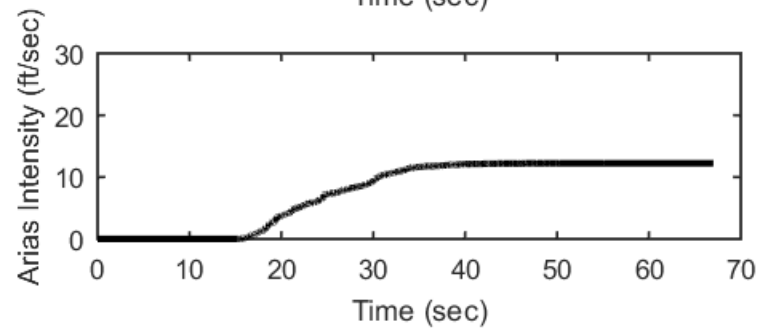
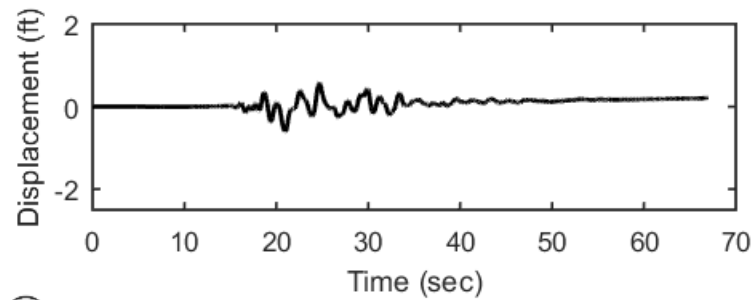
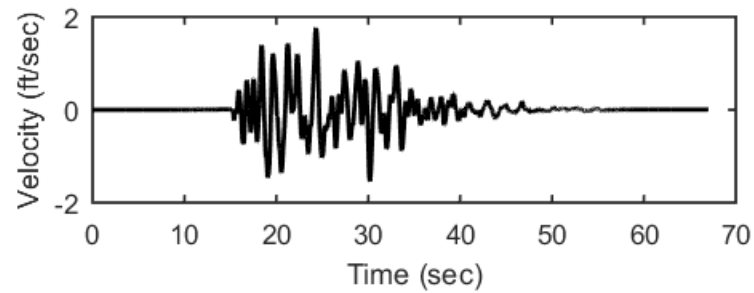
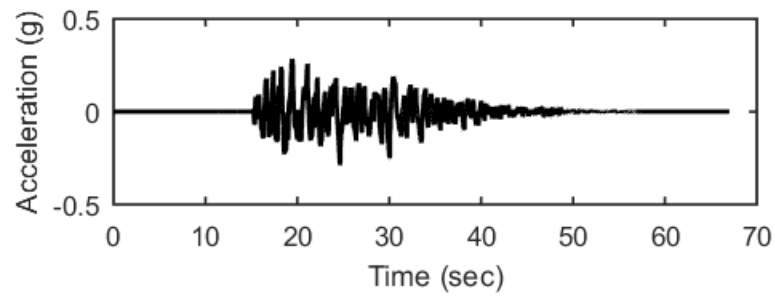
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



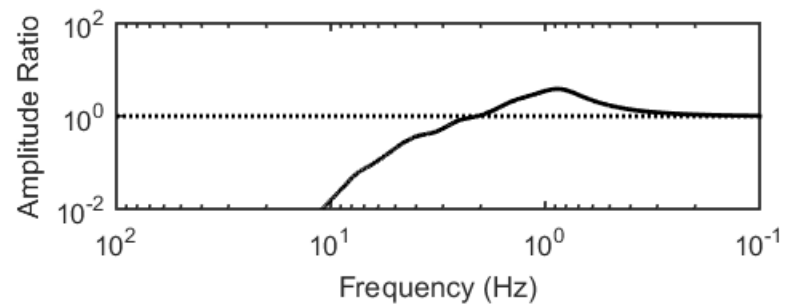
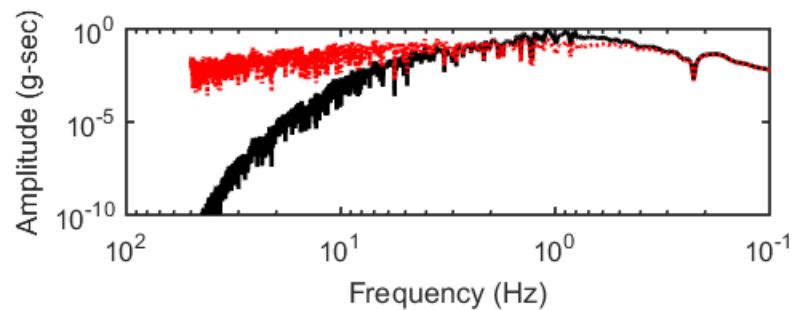
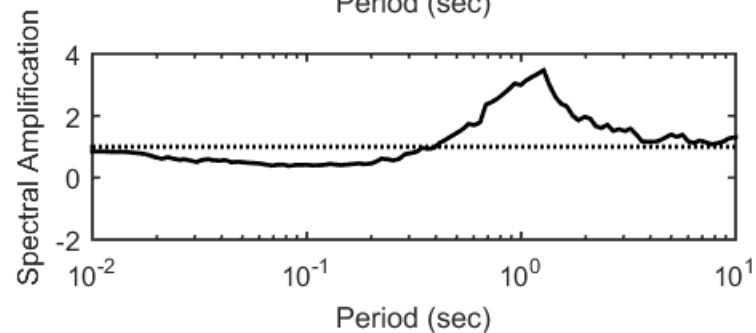
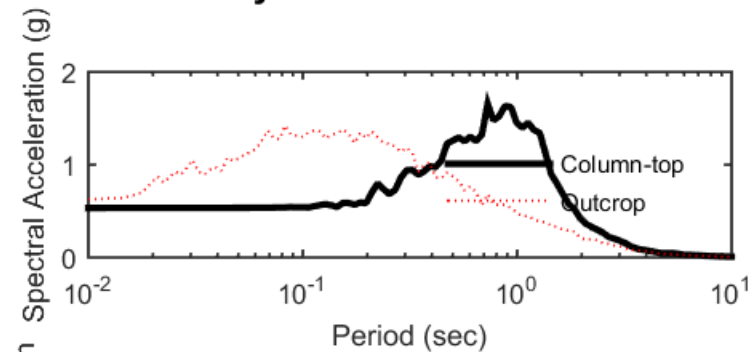
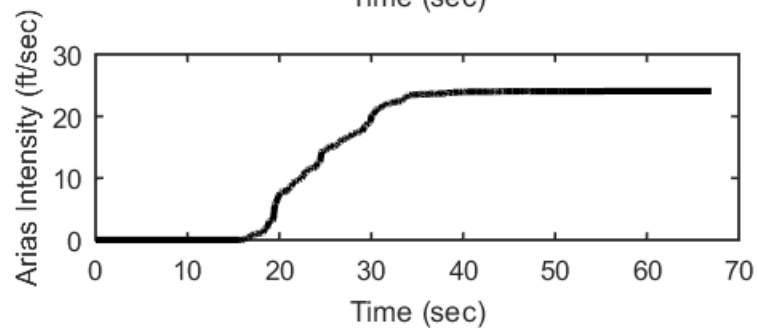
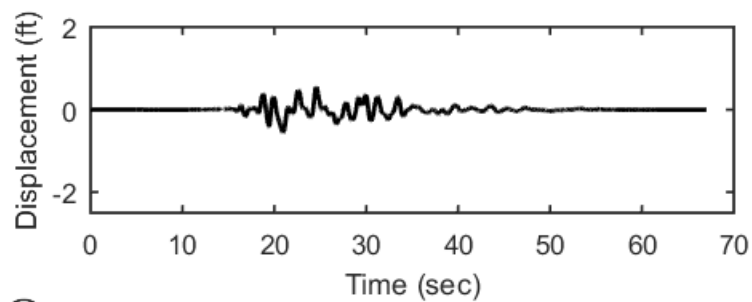
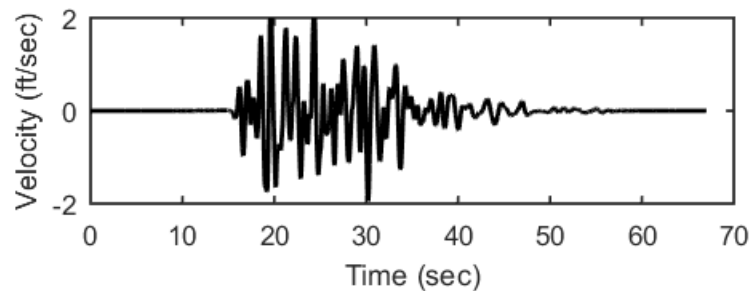
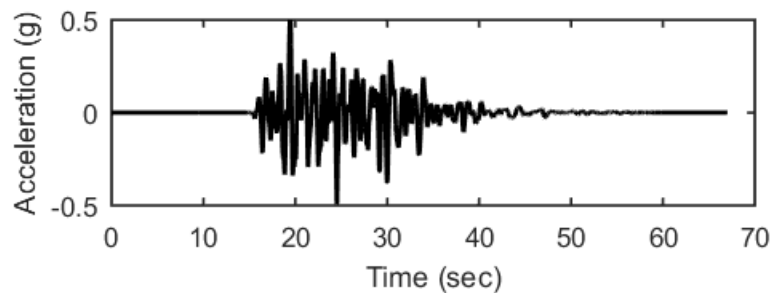
### Profile outputs for Motion: SEE1



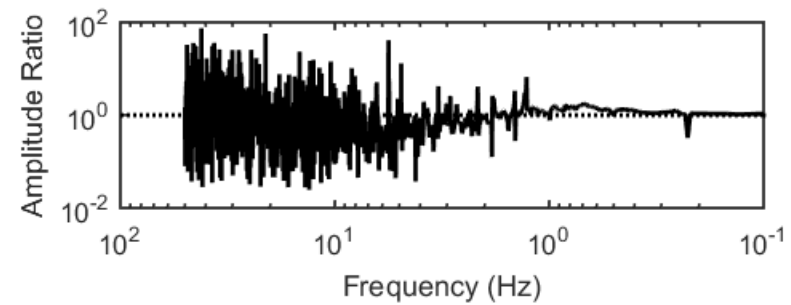
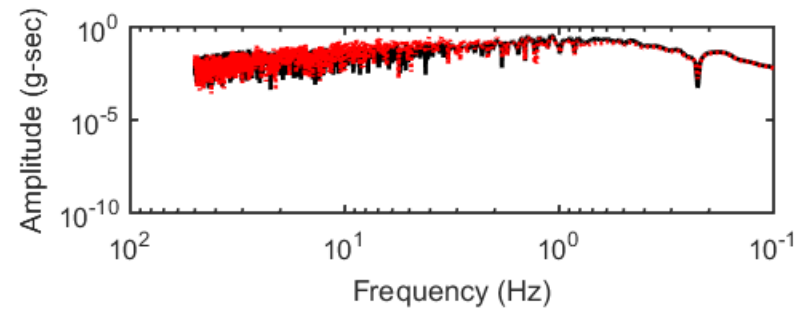
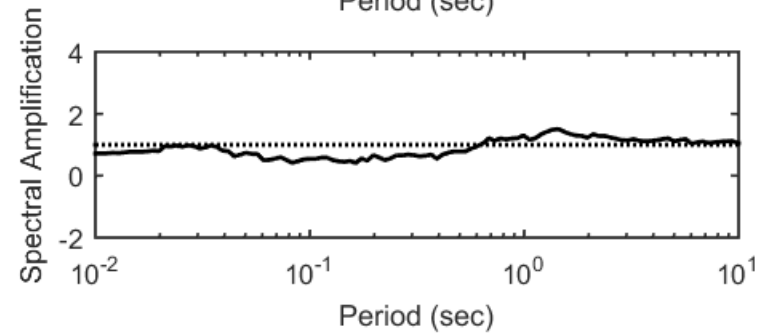
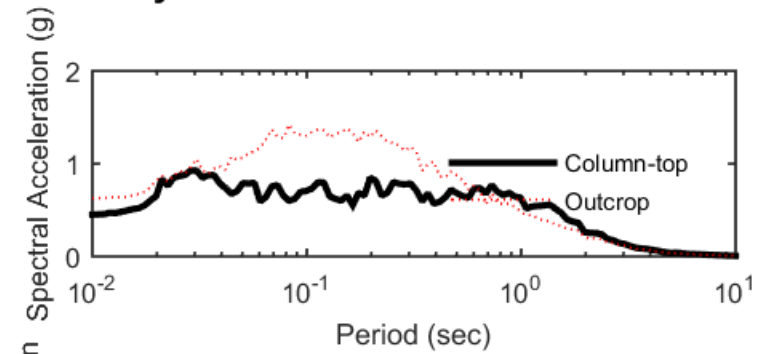
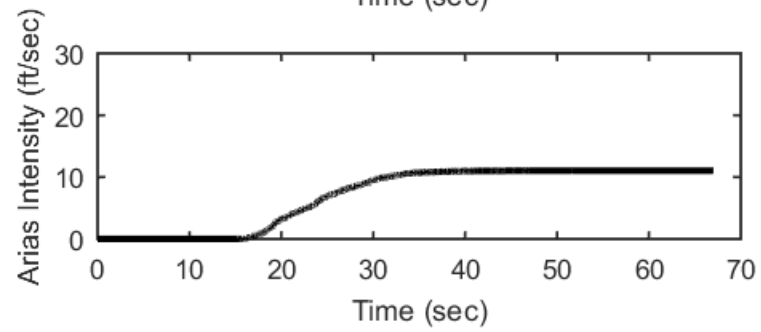
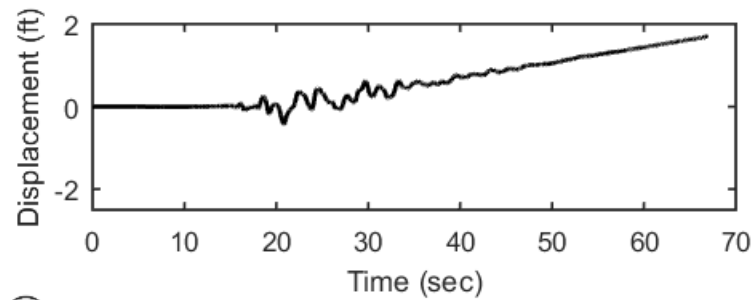
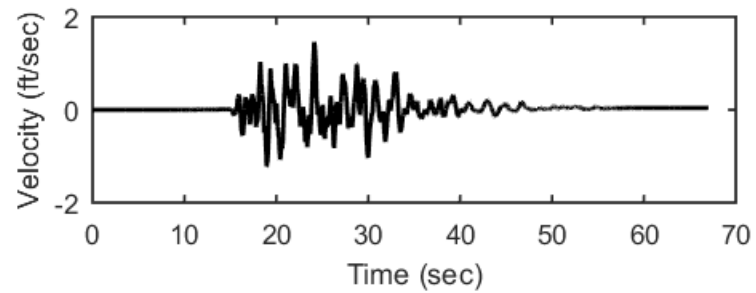
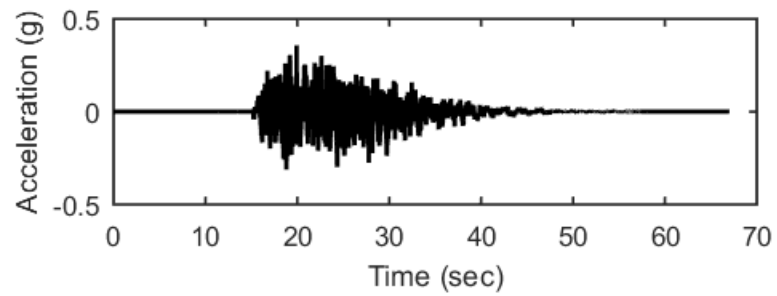
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2



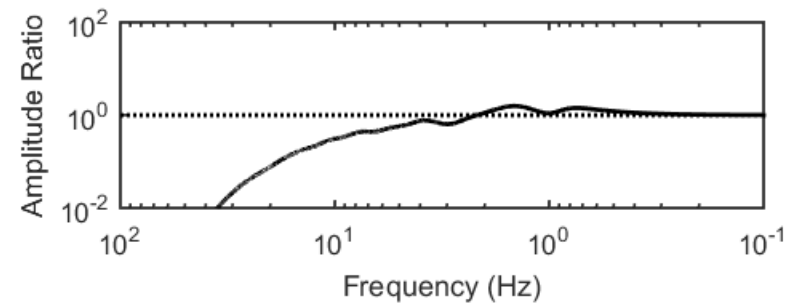
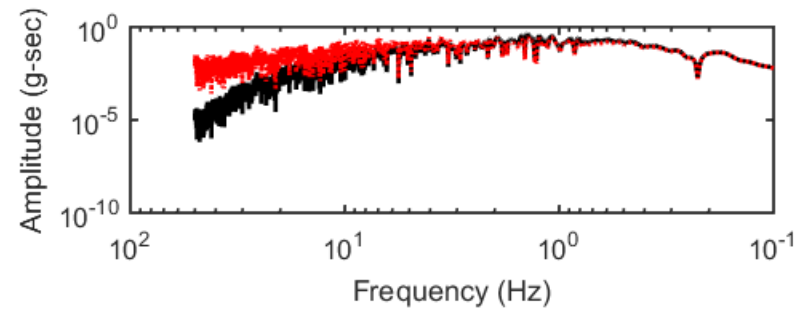
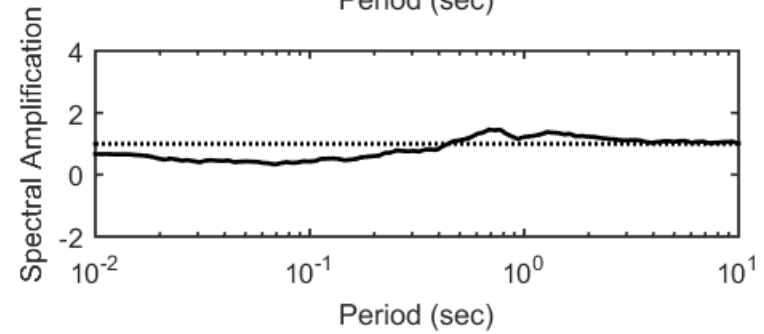
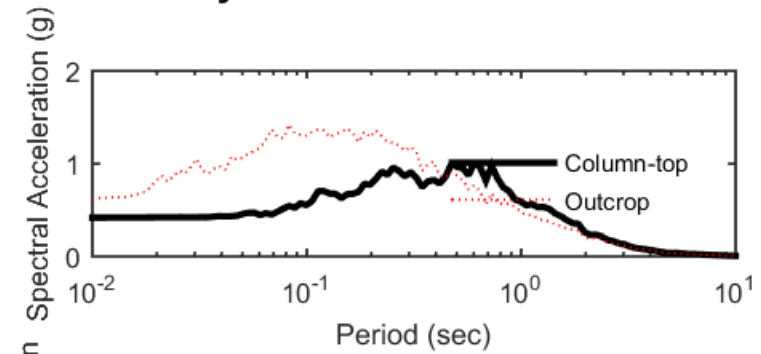
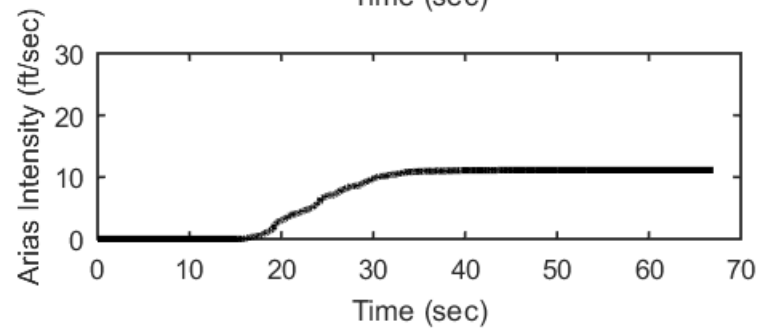
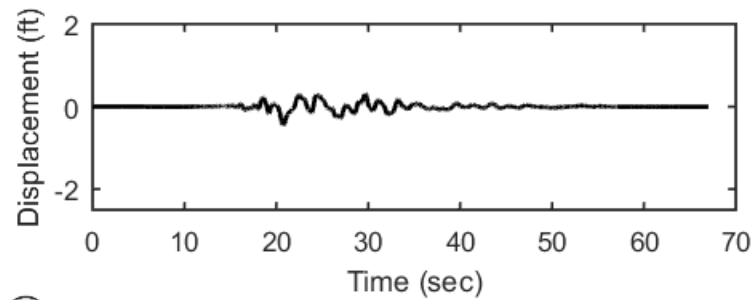
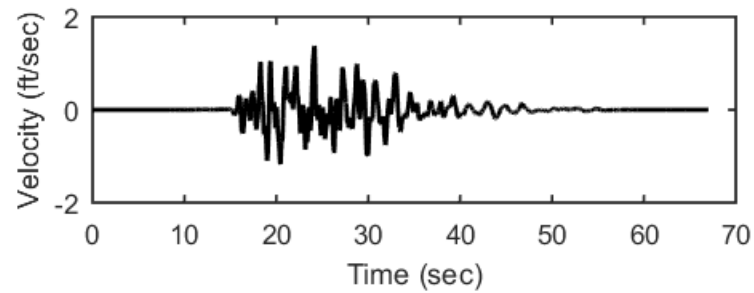
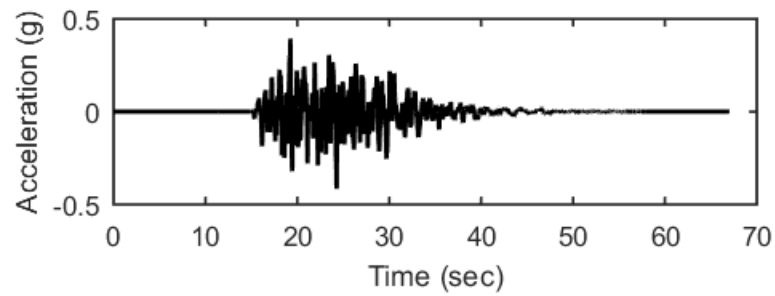
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



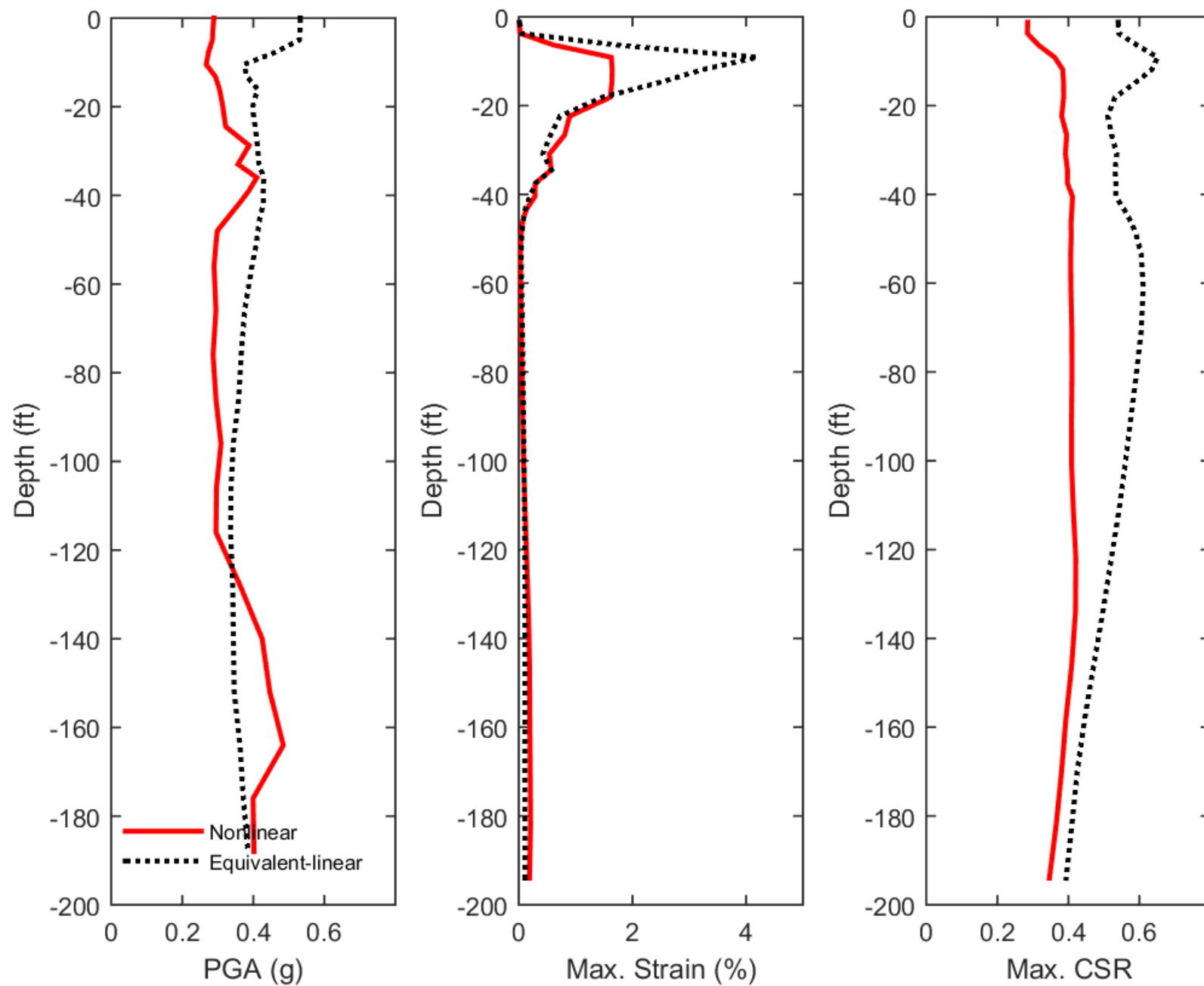
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



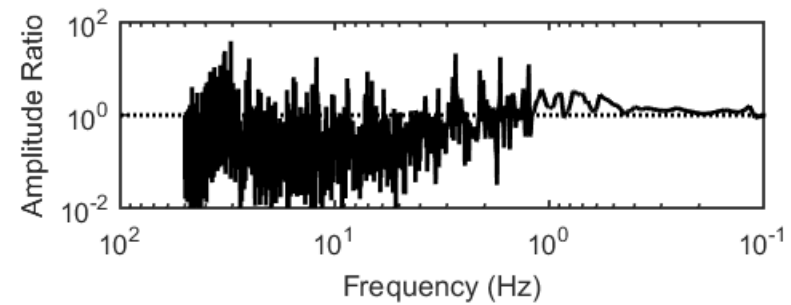
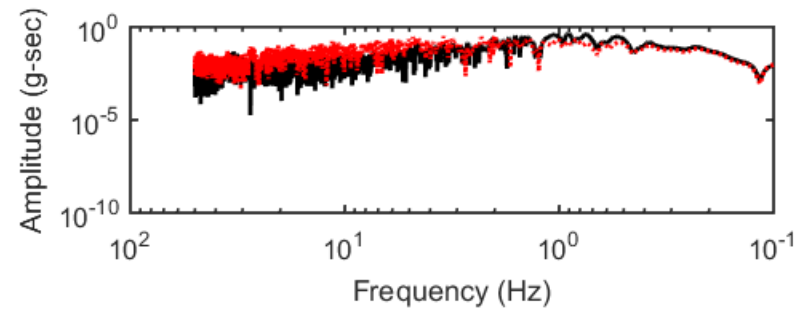
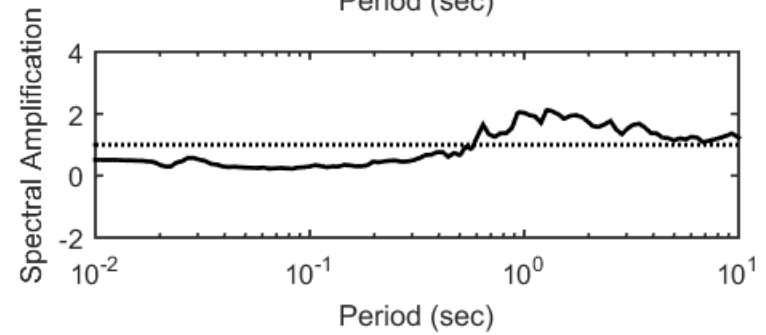
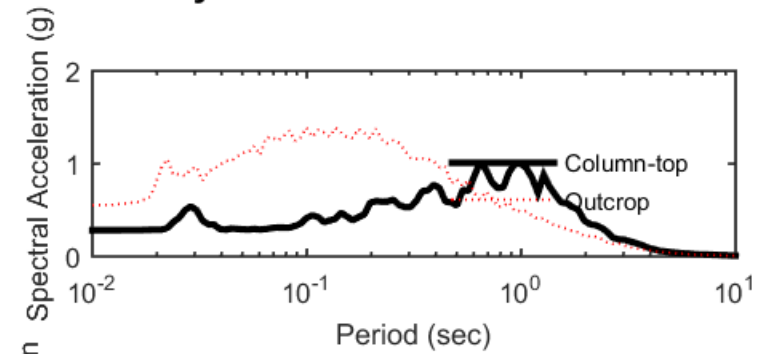
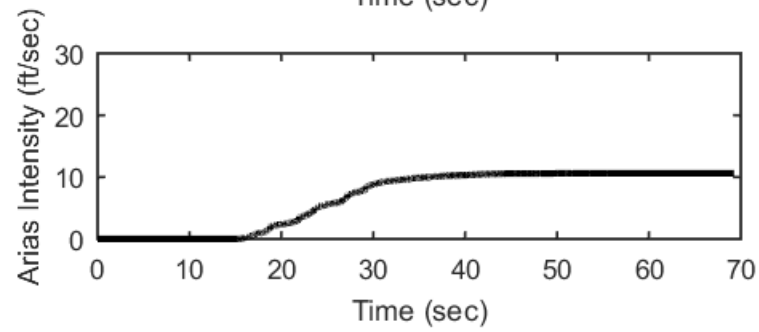
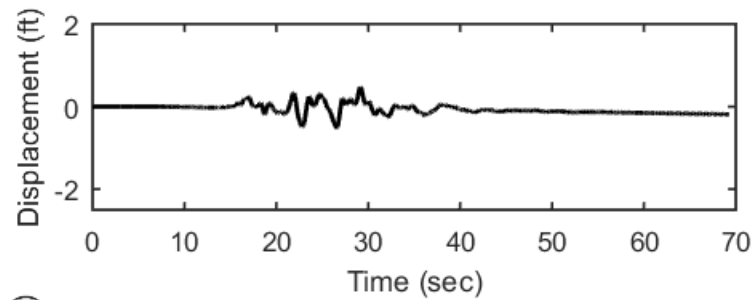
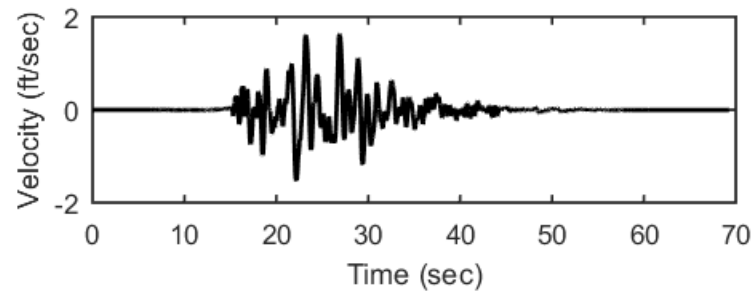
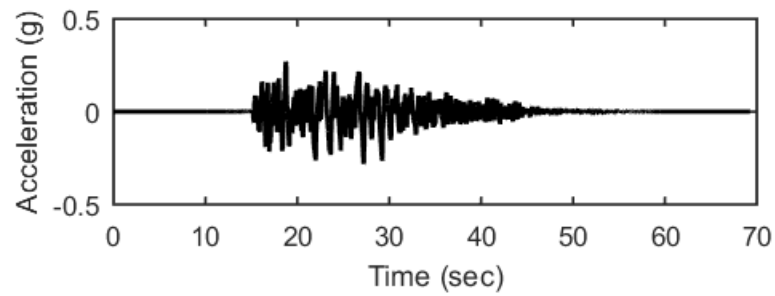
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



### Profile outputs for Motion: SEE2

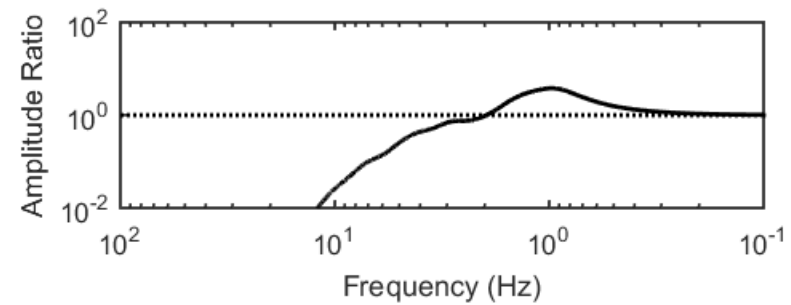
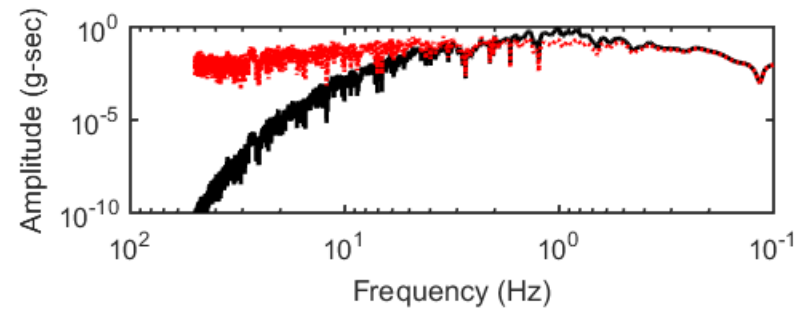
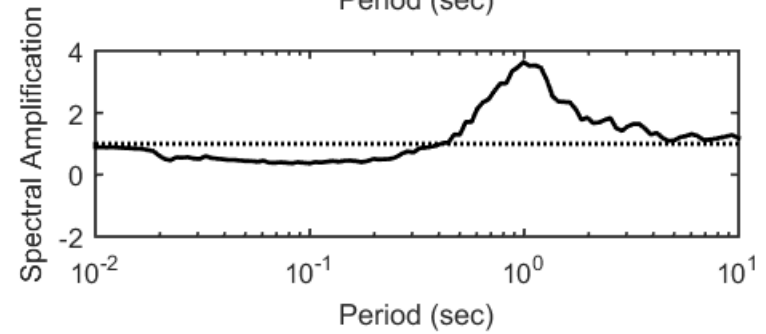
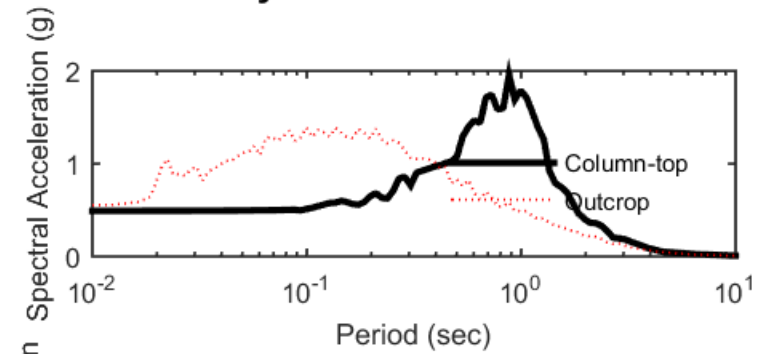
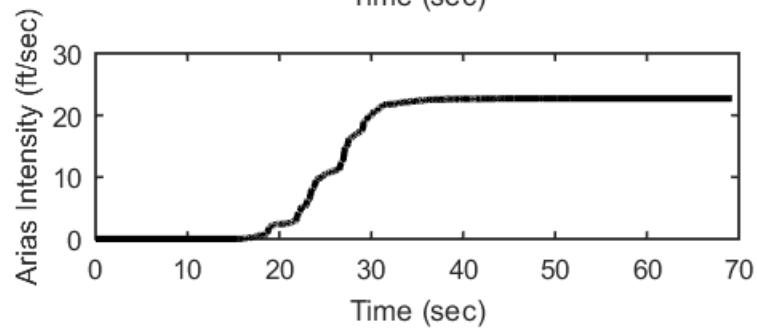
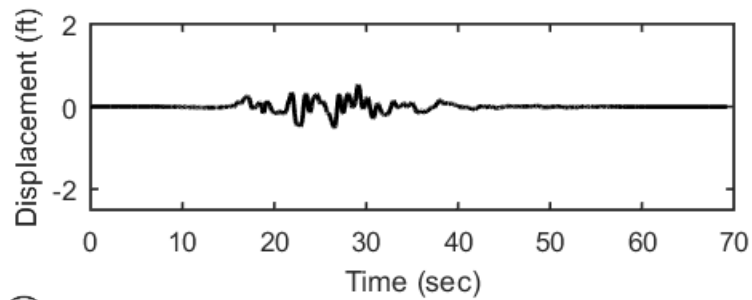
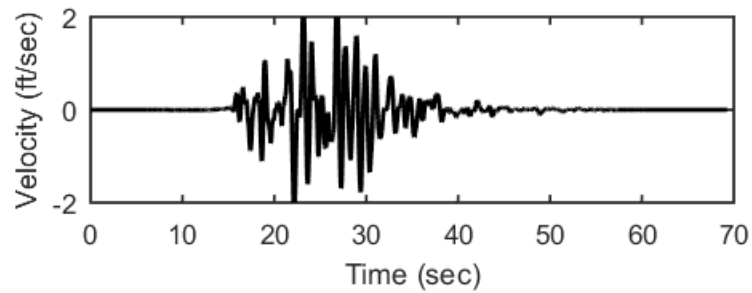
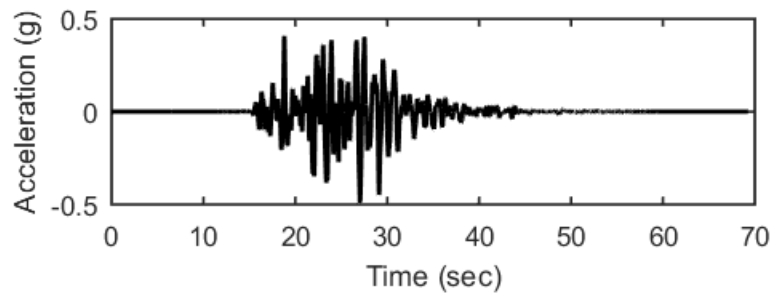


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3

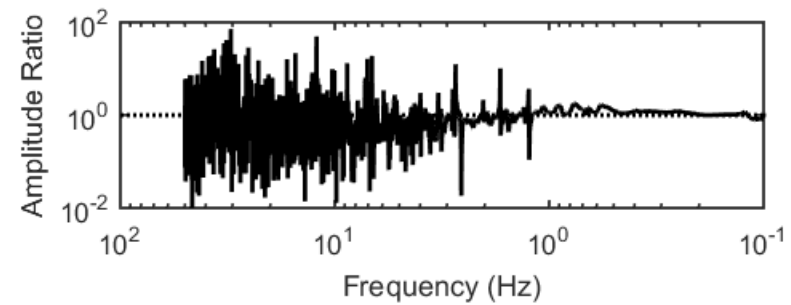
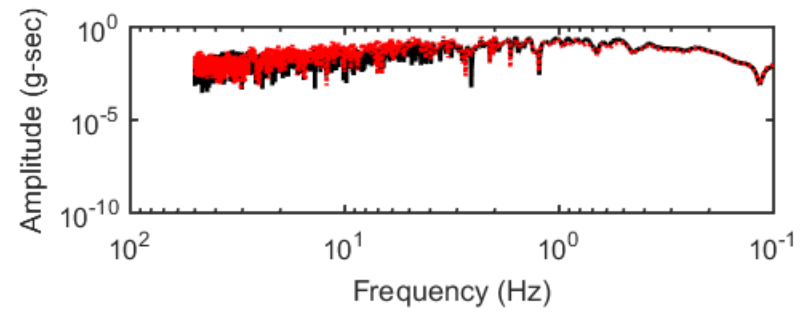
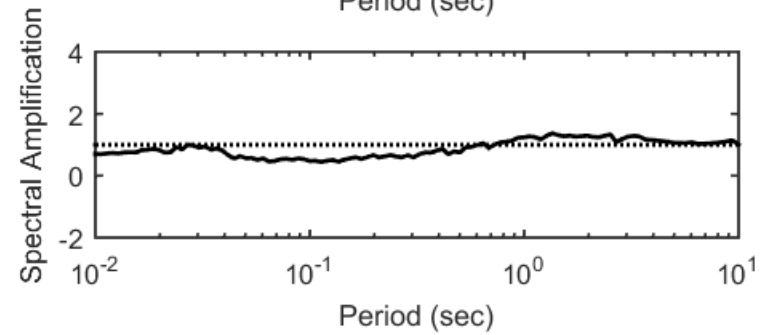
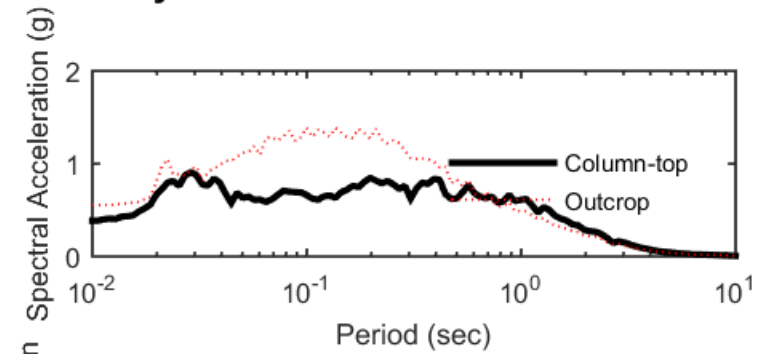
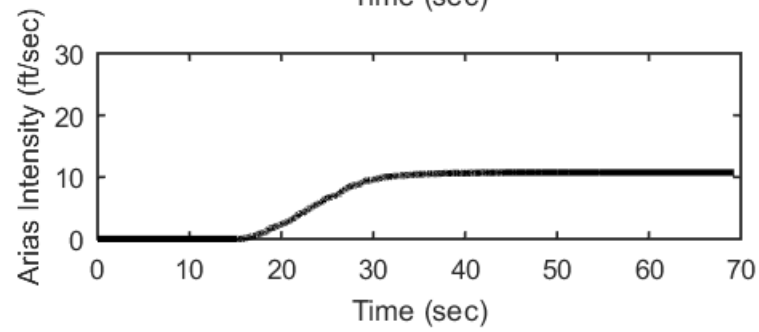
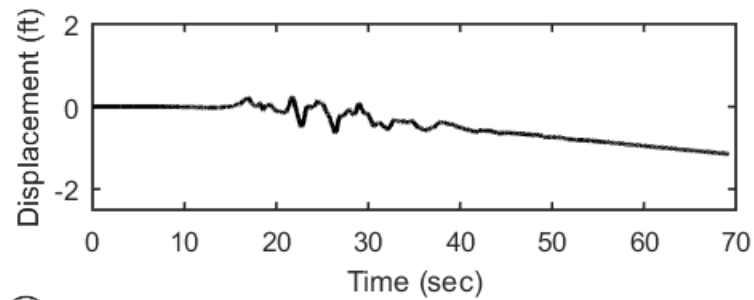
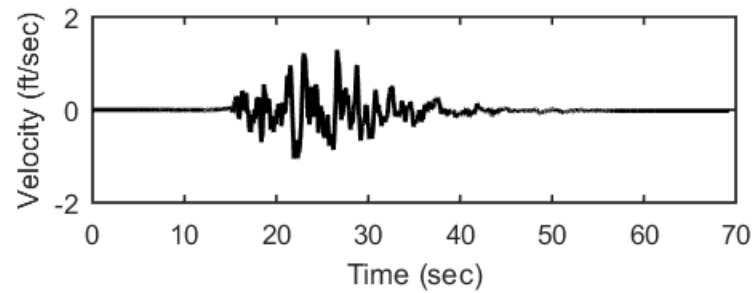
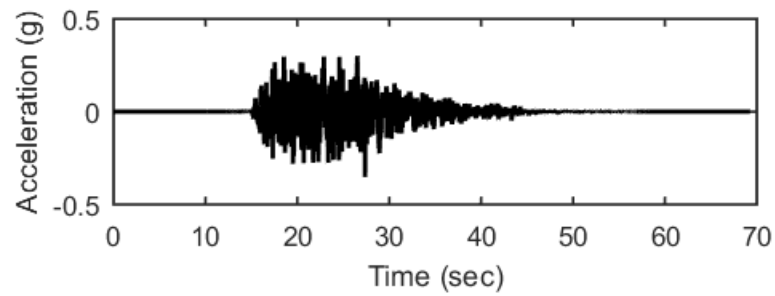




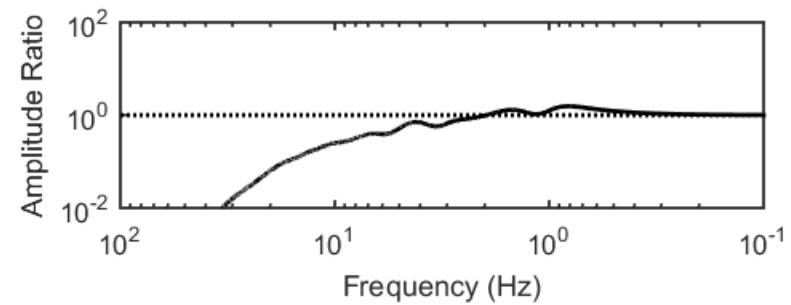
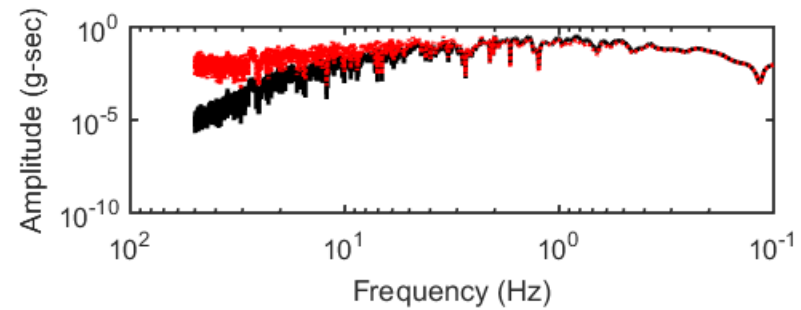
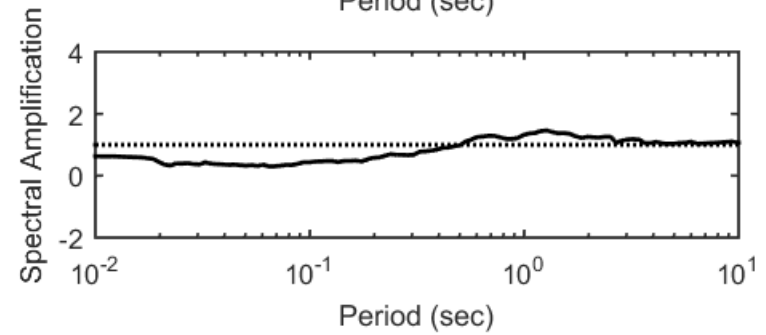
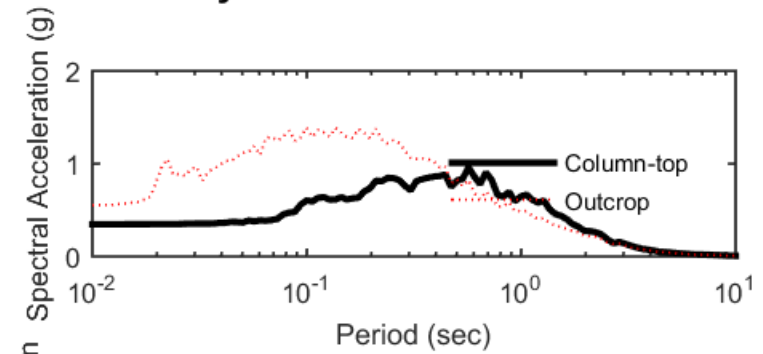
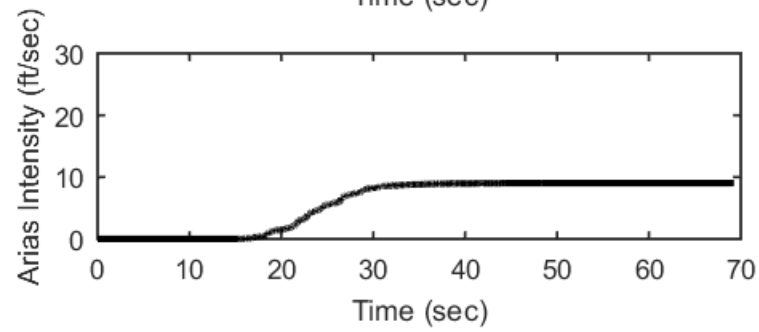
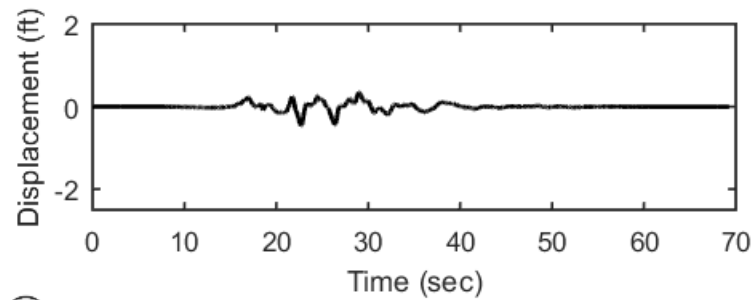
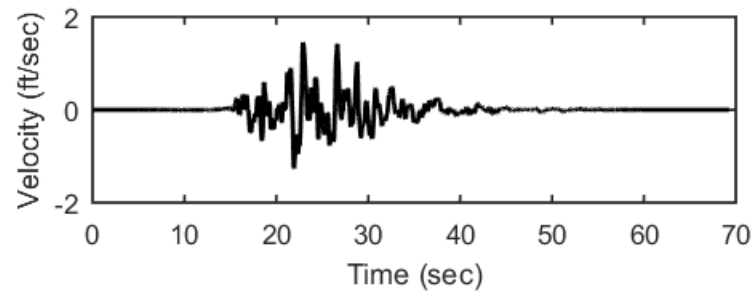
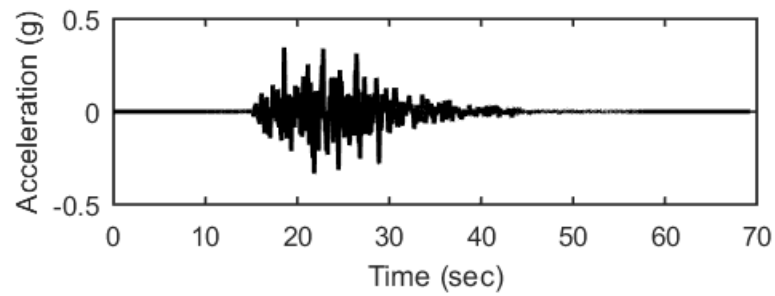
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



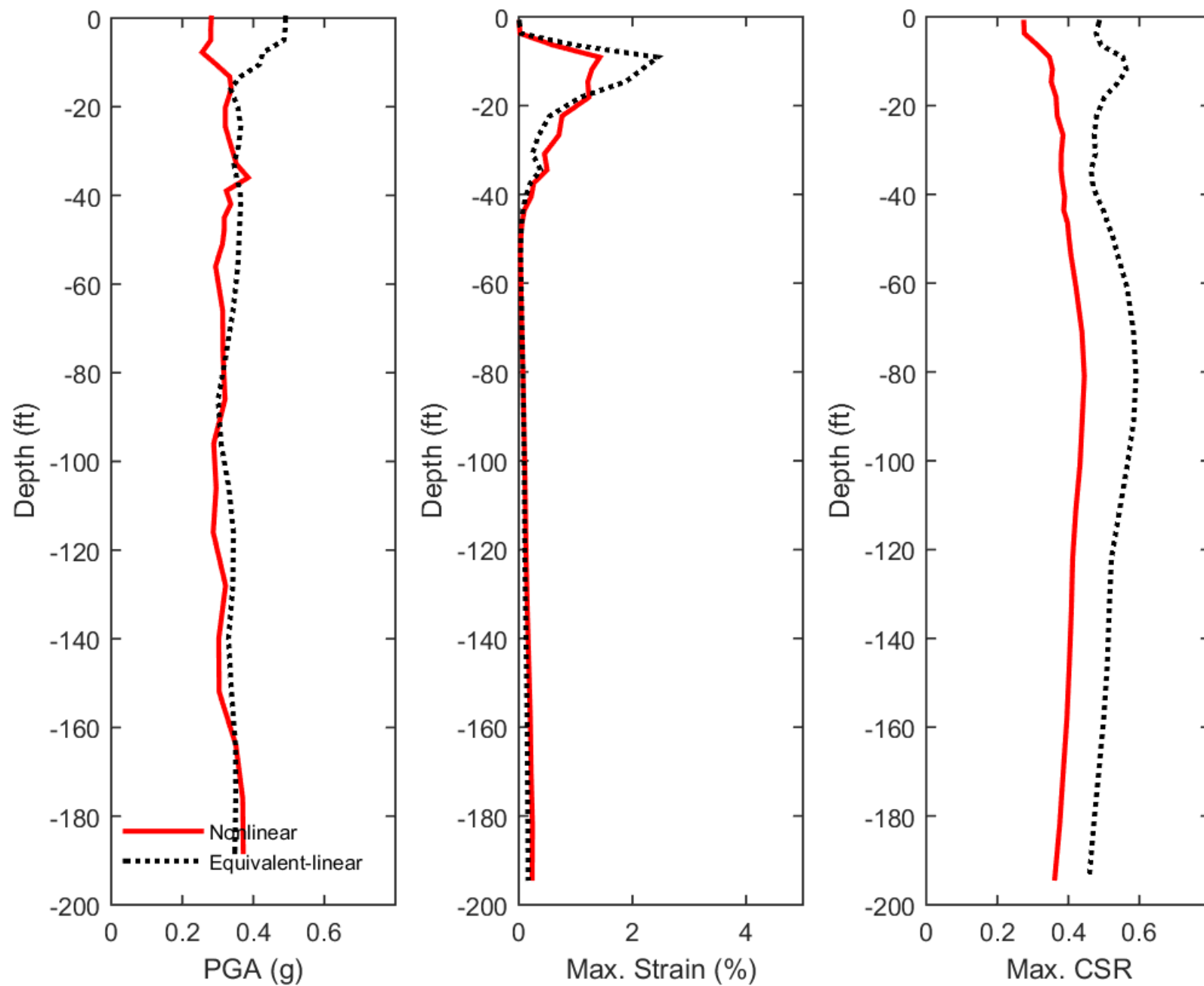
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3



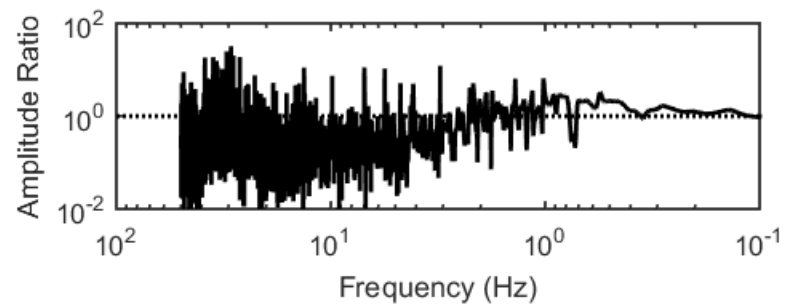
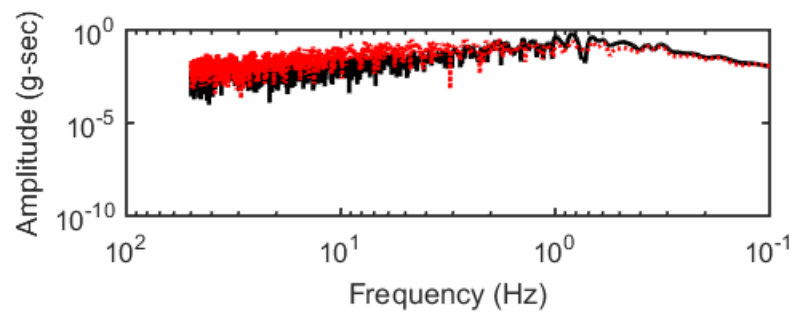
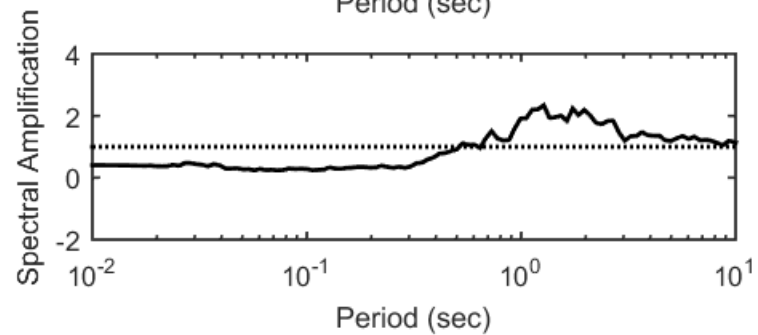
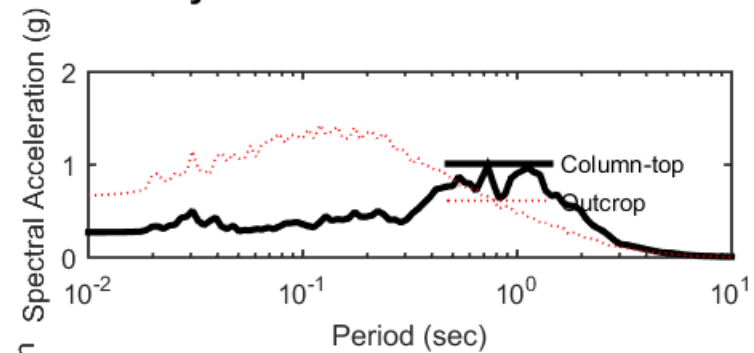
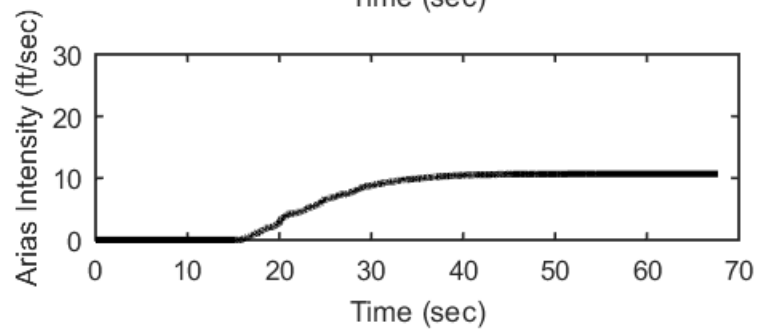
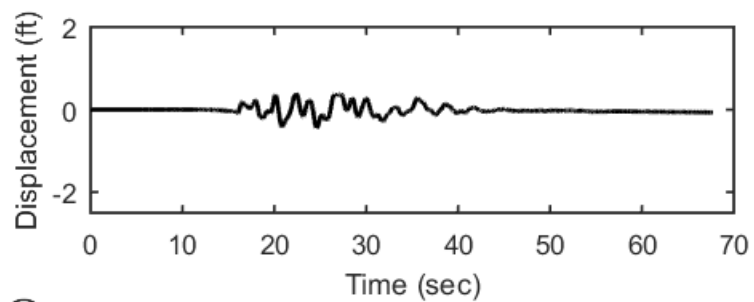
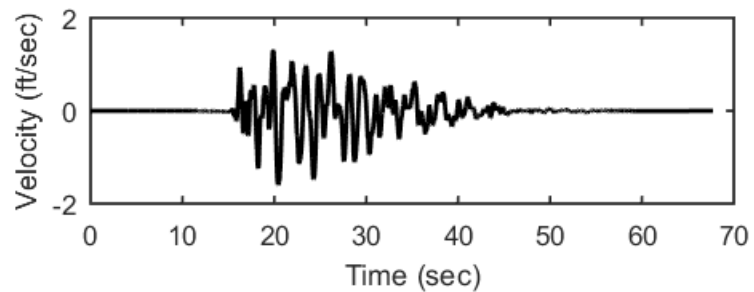
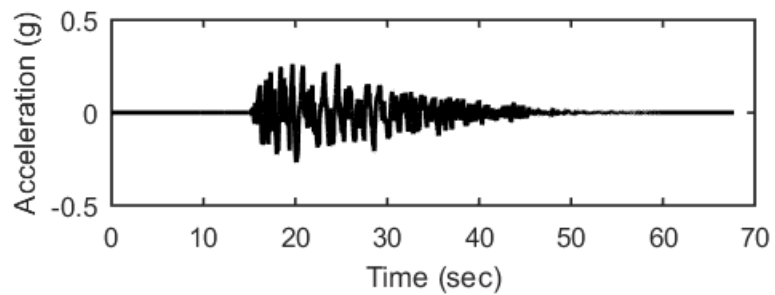
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3



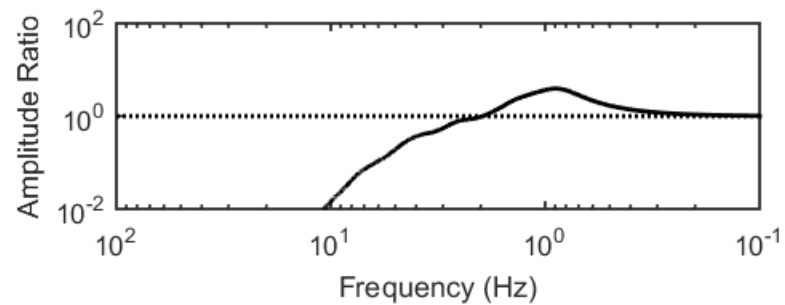
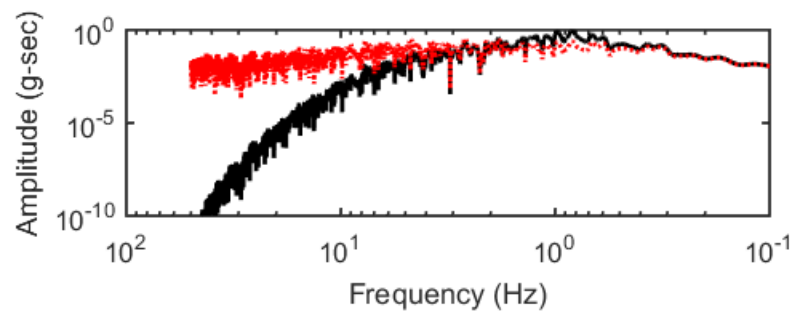
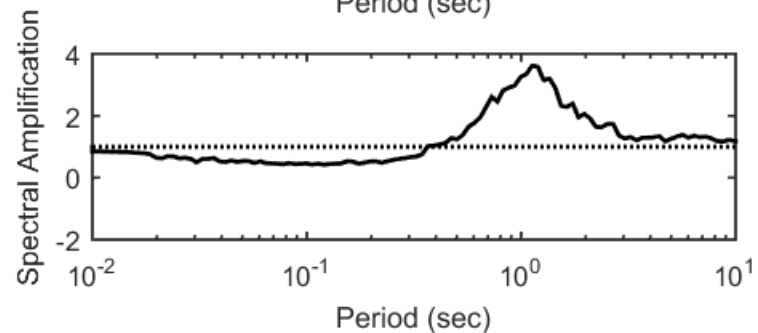
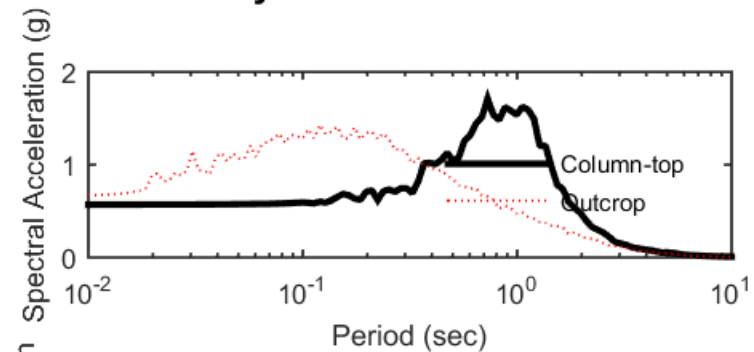
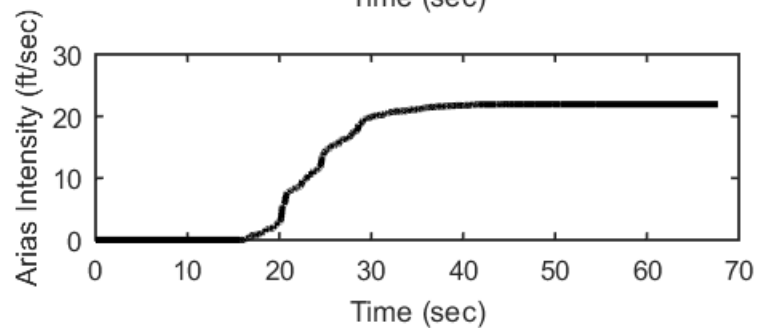
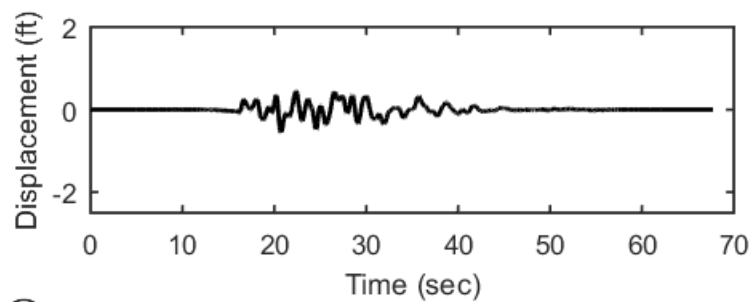
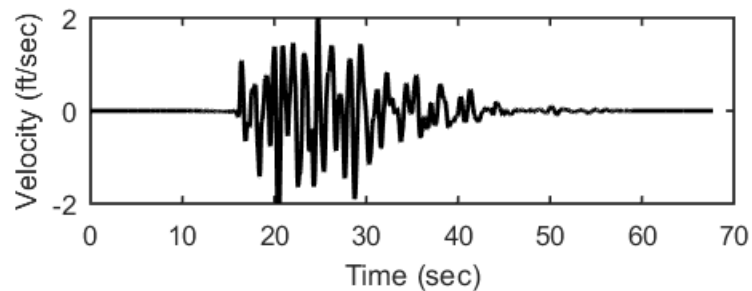
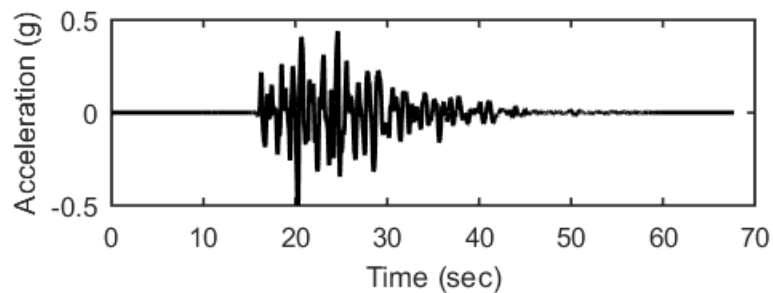
### Profile outputs for Motion: SEE3



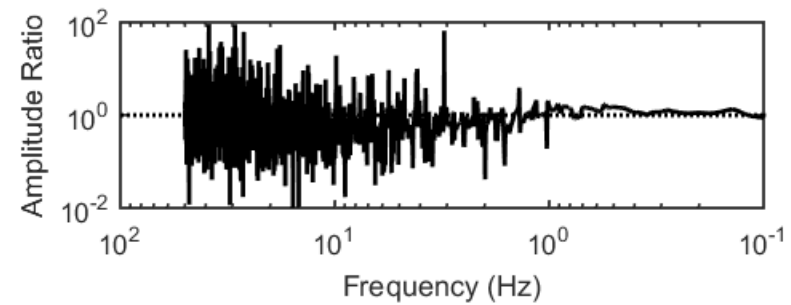
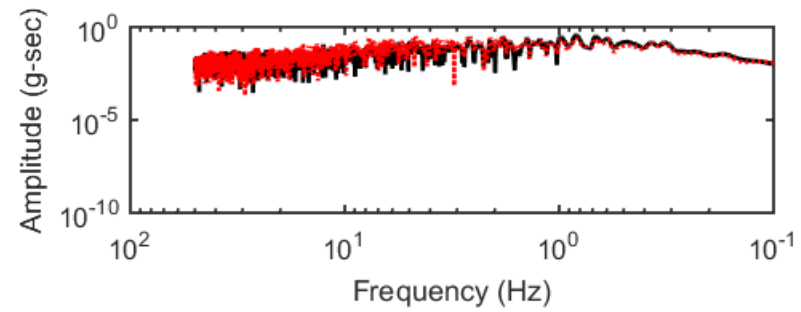
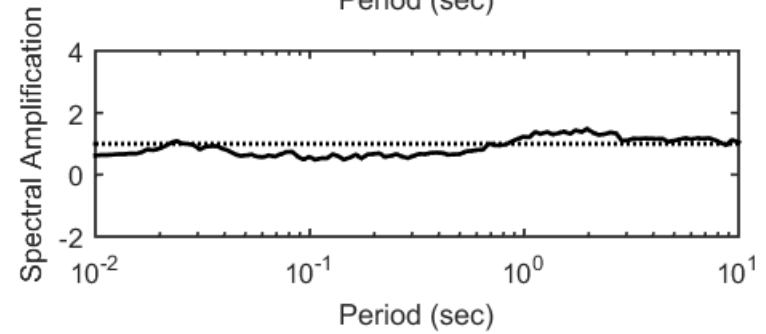
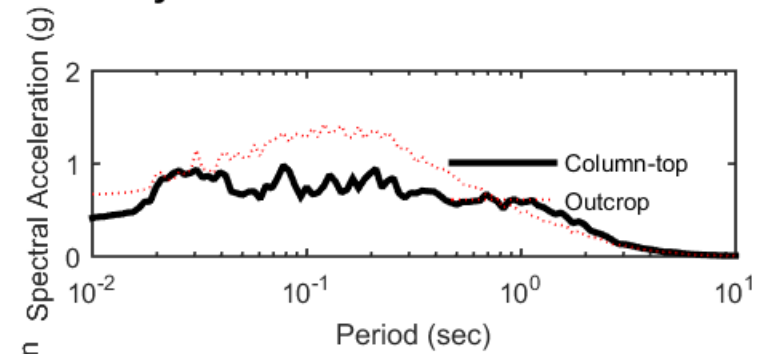
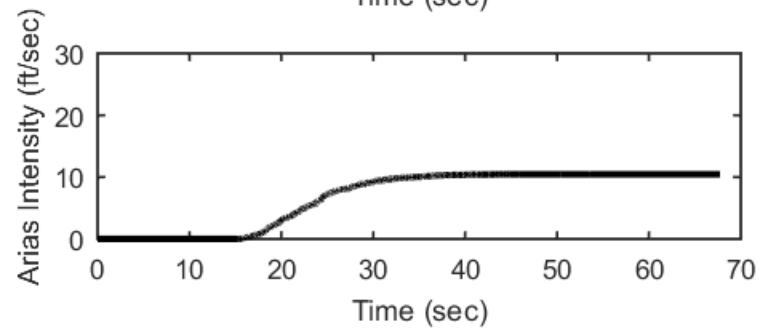
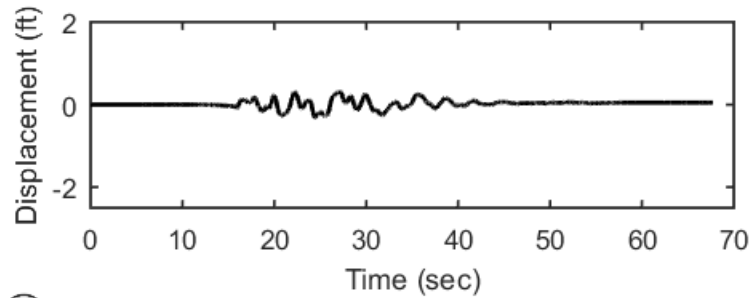
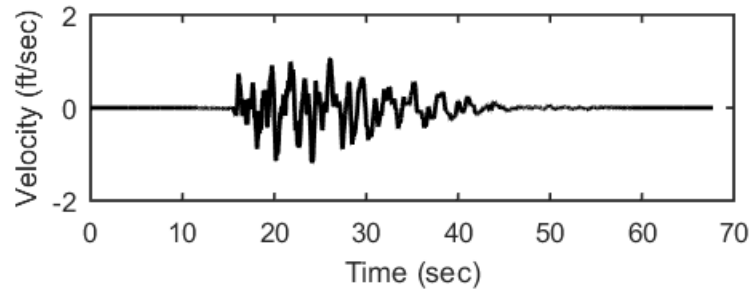
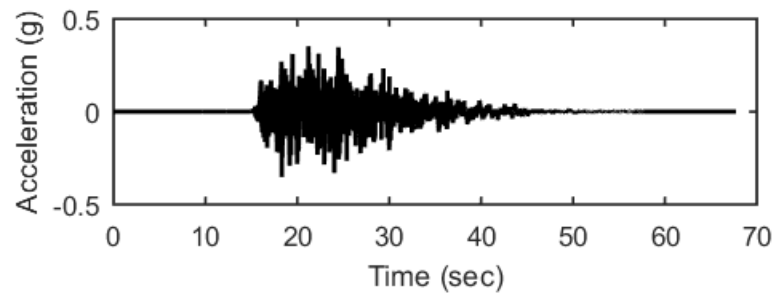
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



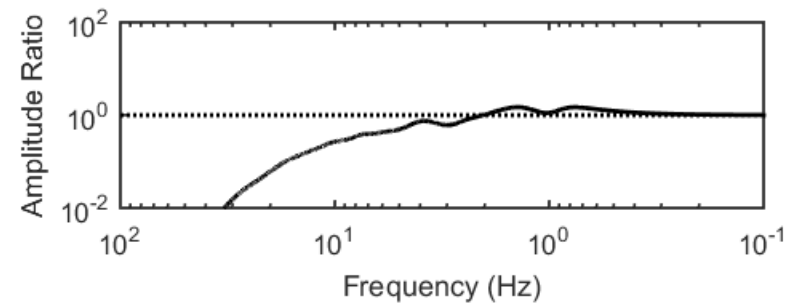
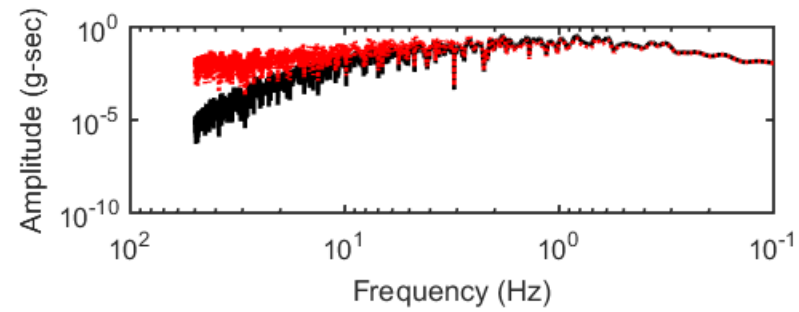
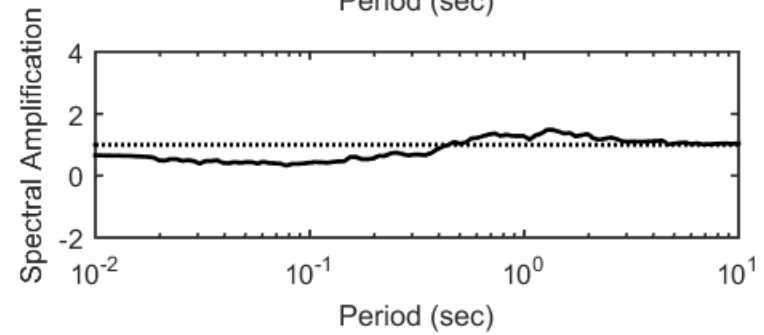
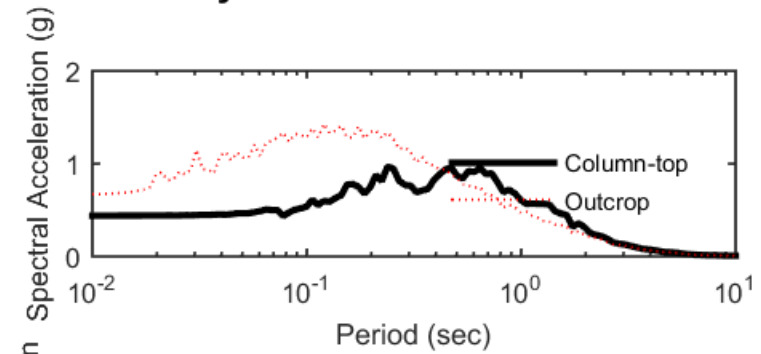
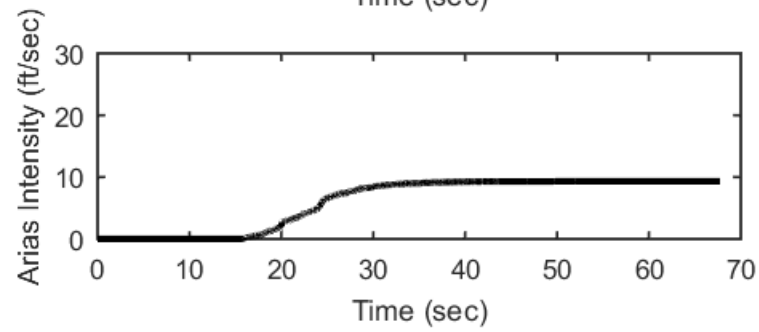
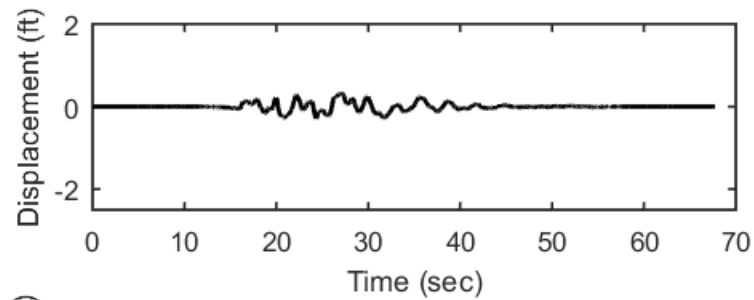
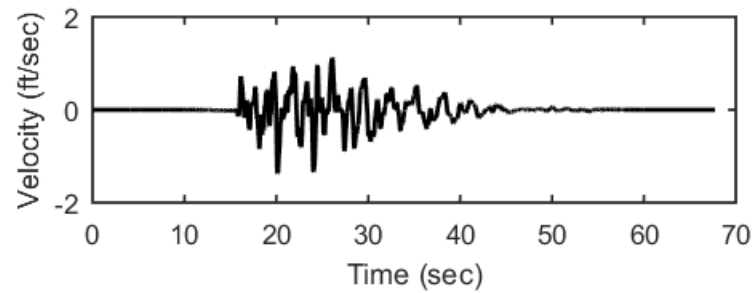
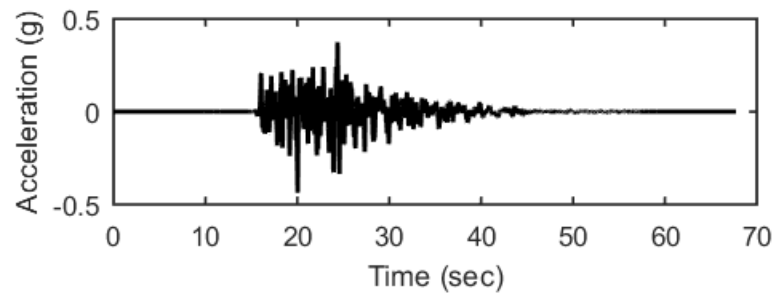
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4

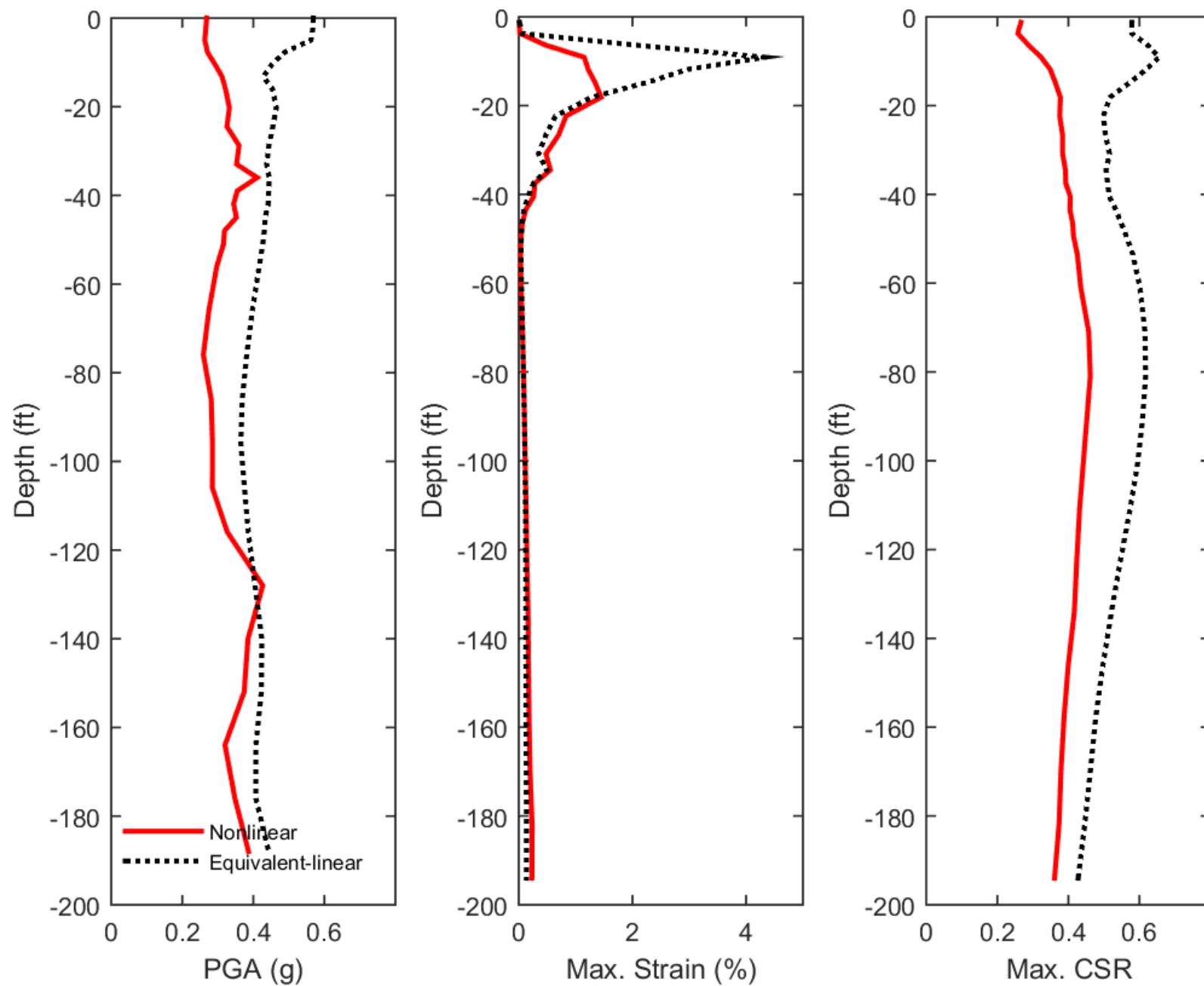


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4

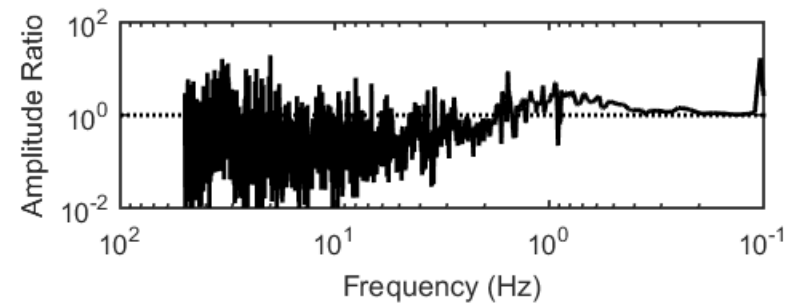
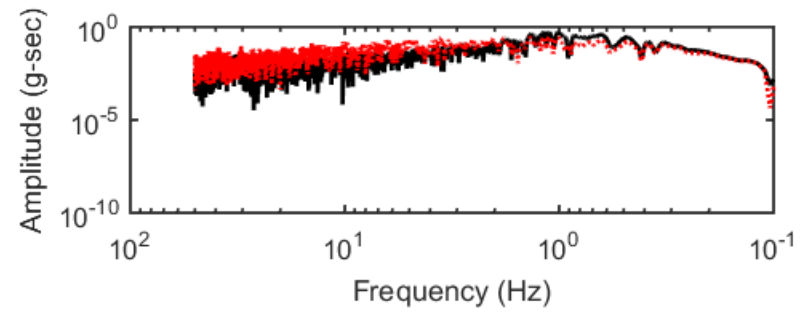
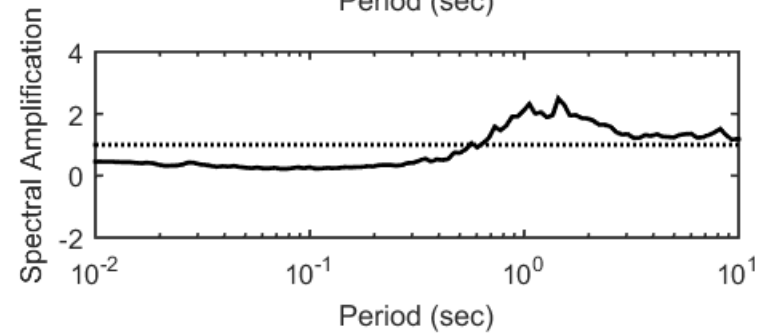
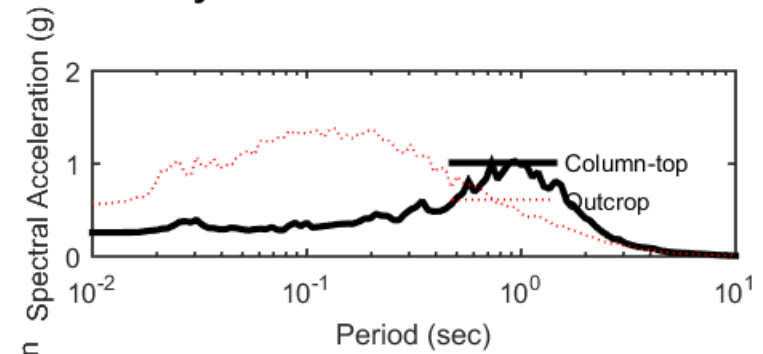
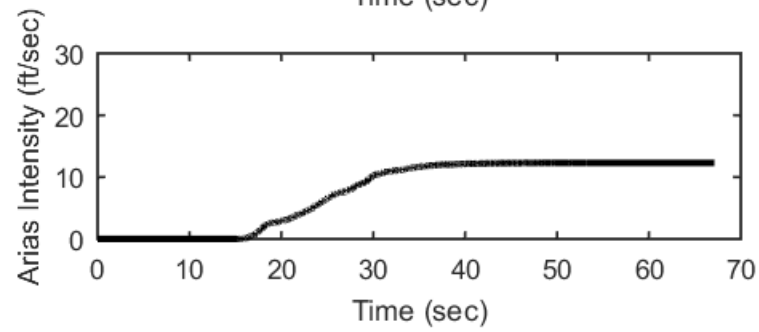
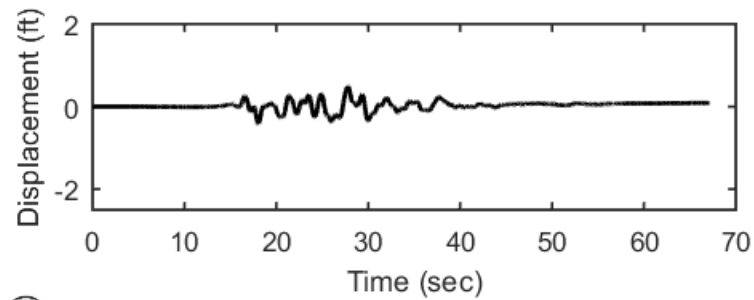
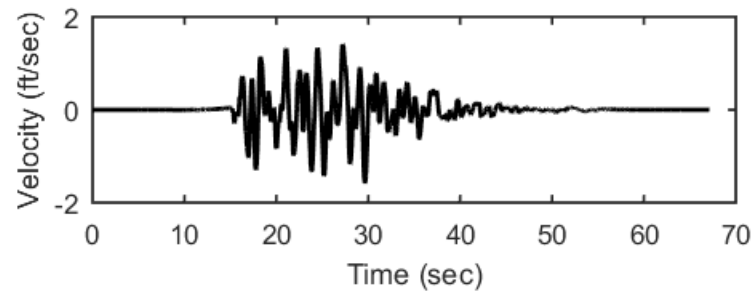
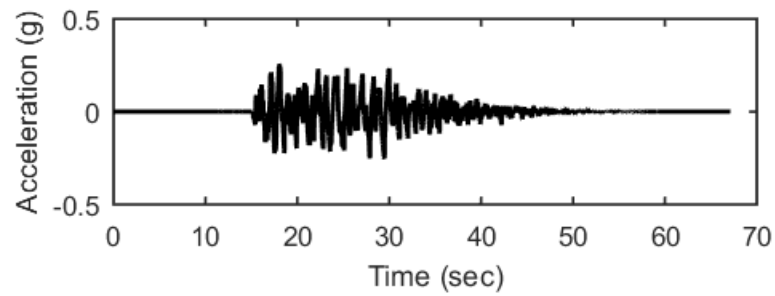




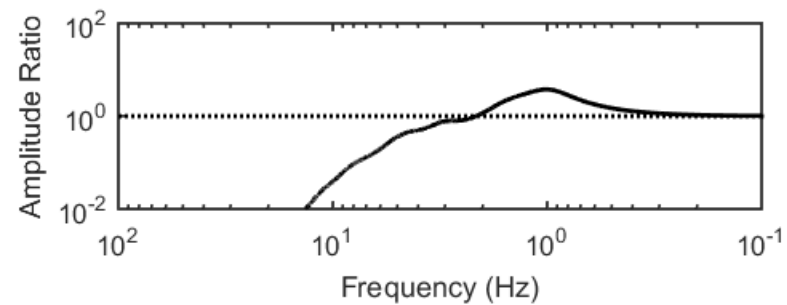
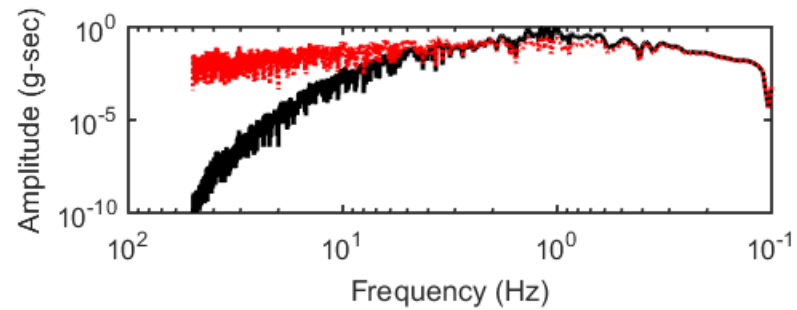
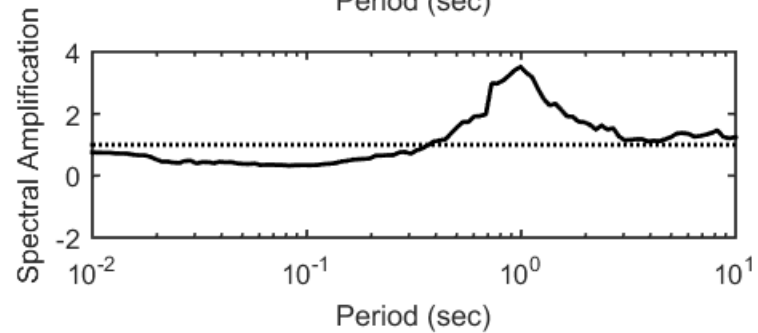
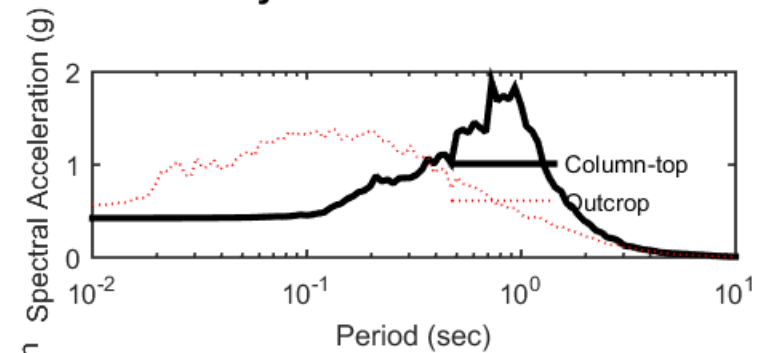
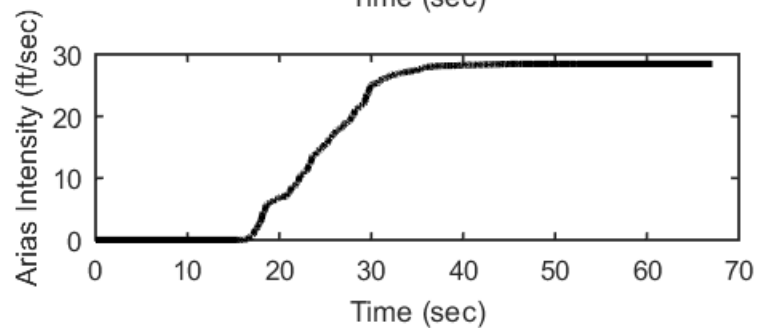
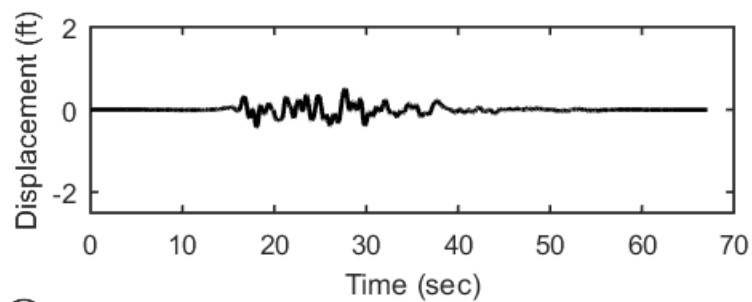
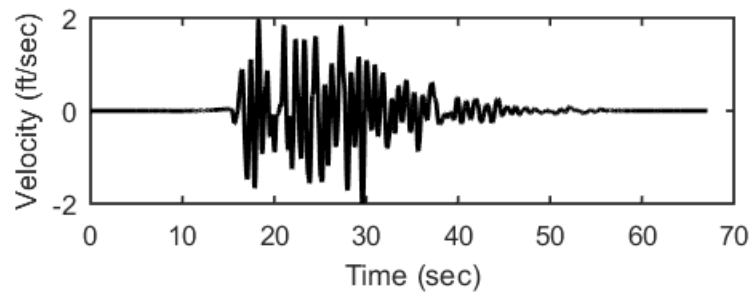
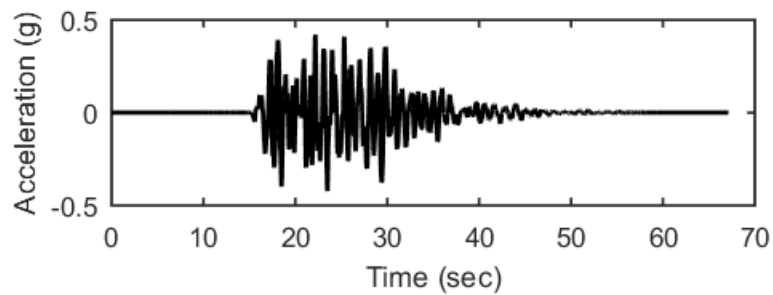
### Profile outputs for Motion: SEE4



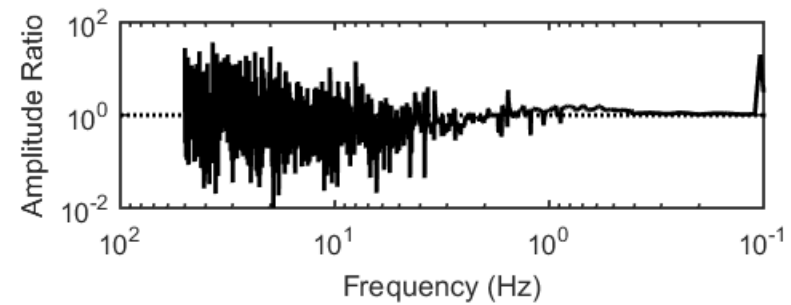
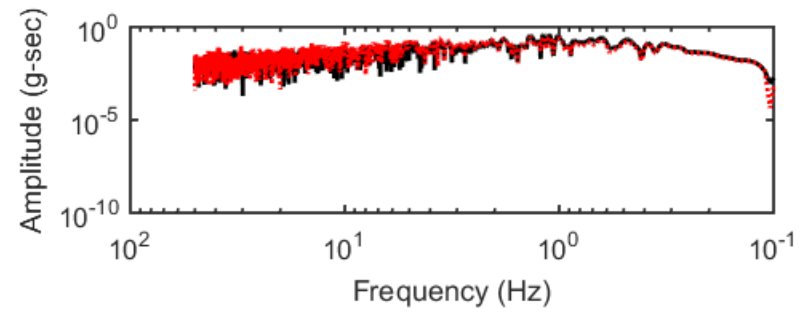
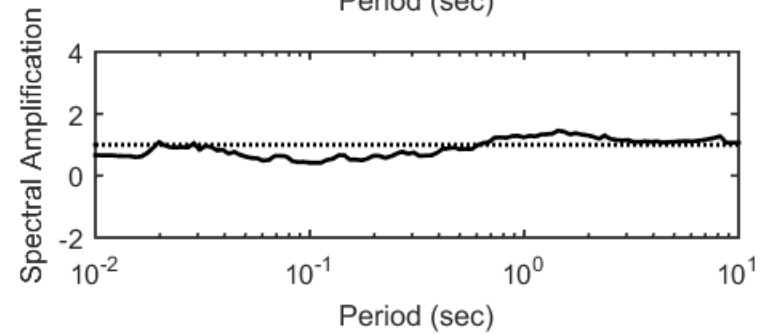
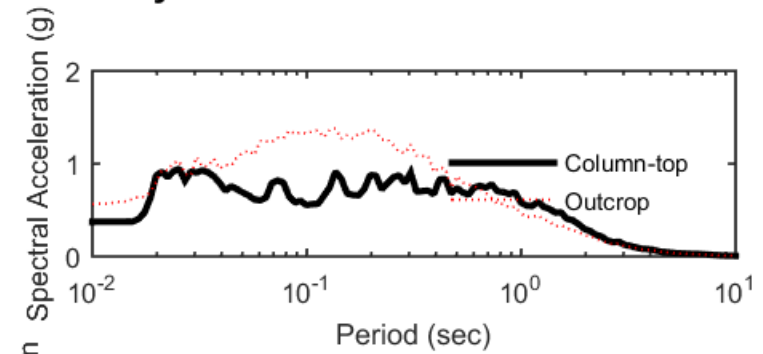
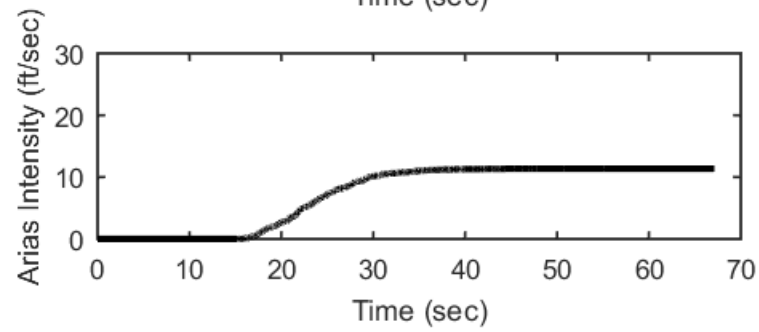
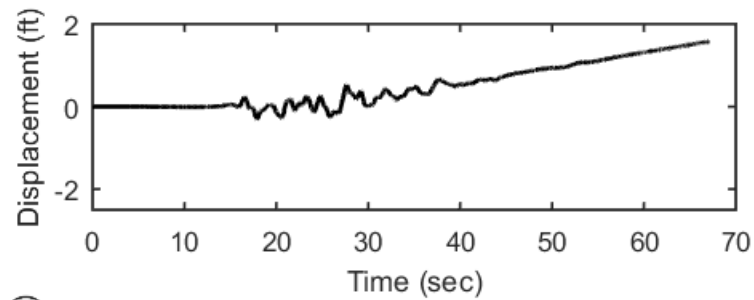
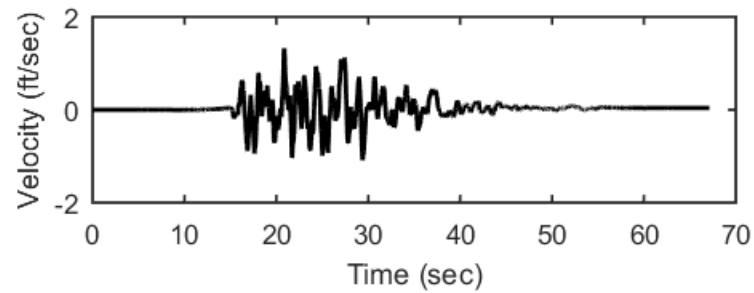
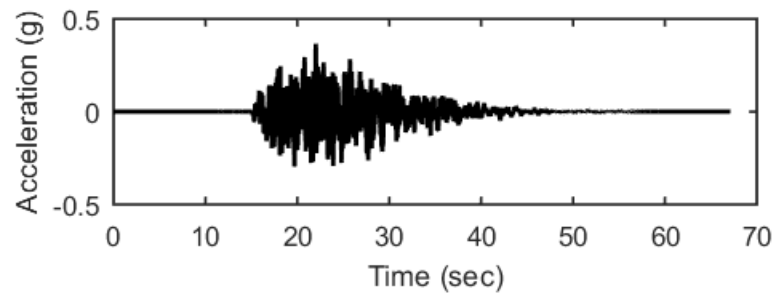
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5



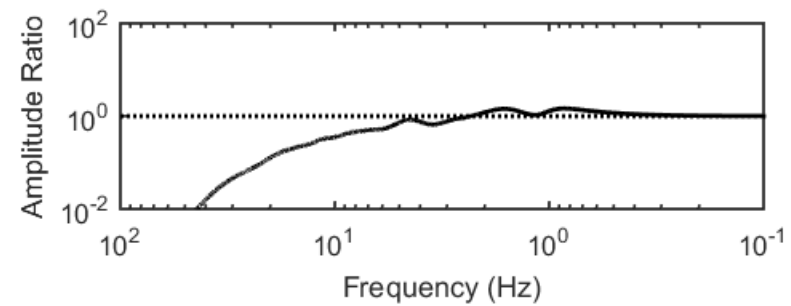
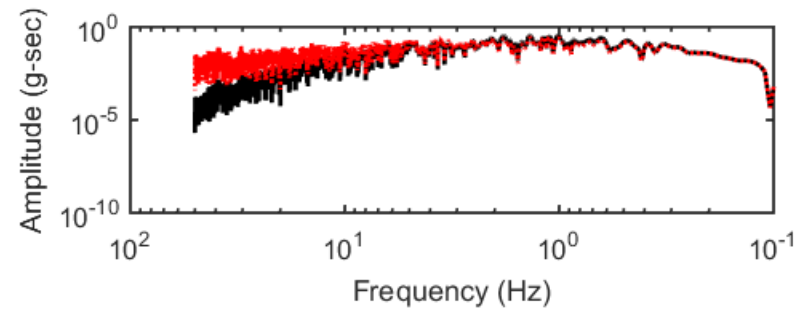
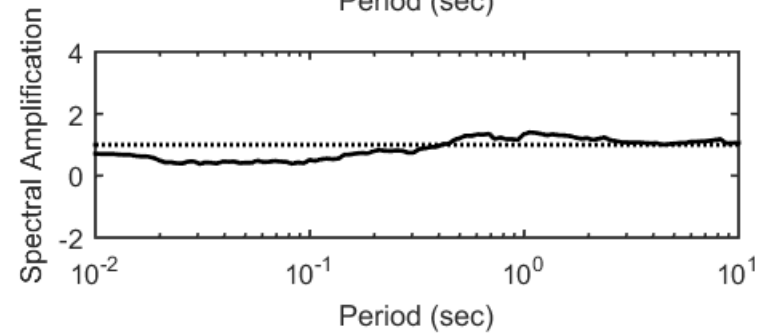
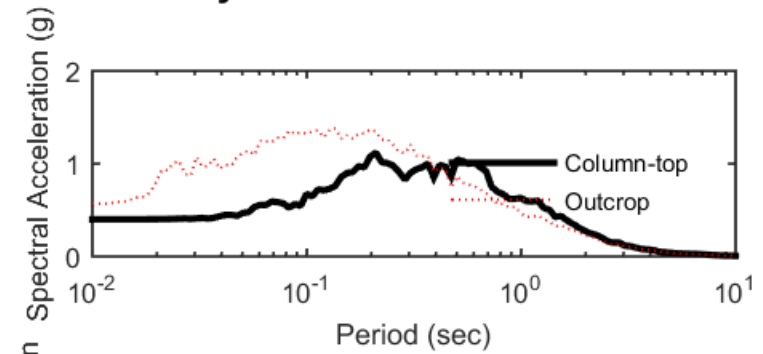
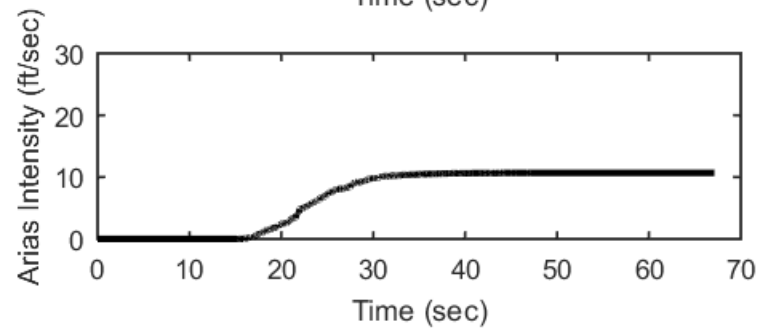
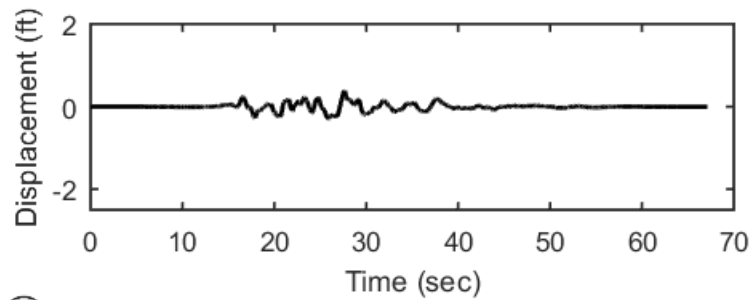
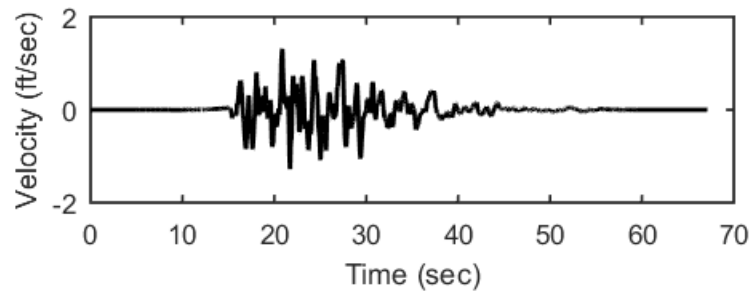
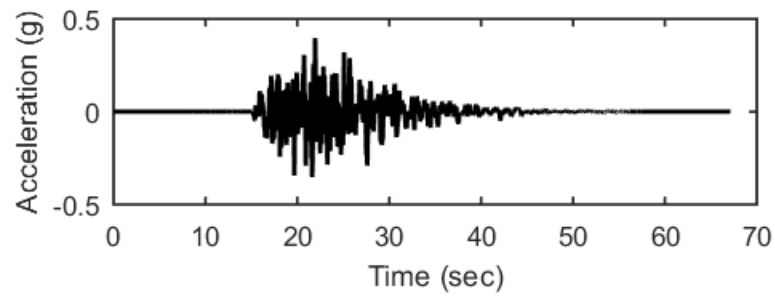
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5



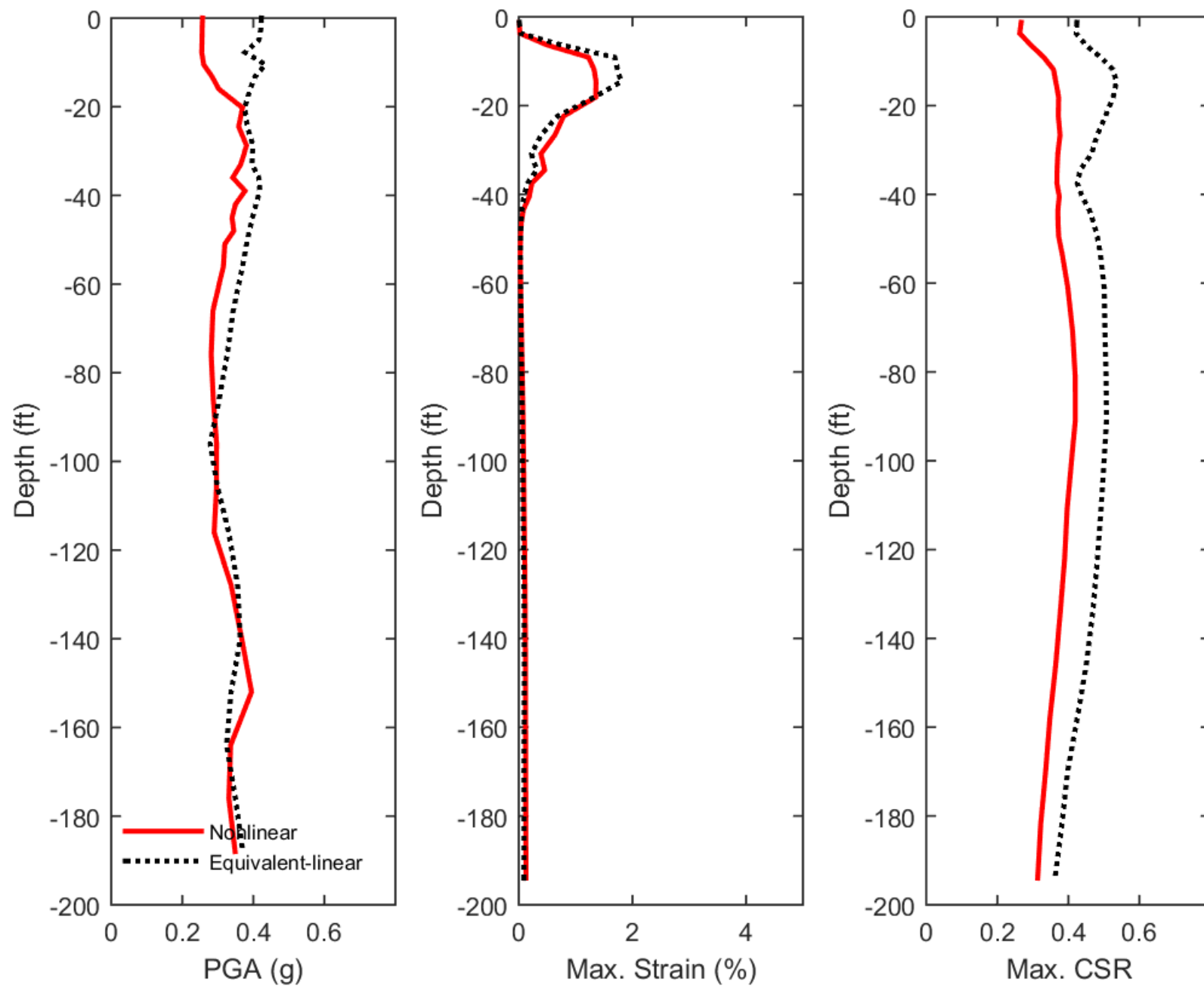
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



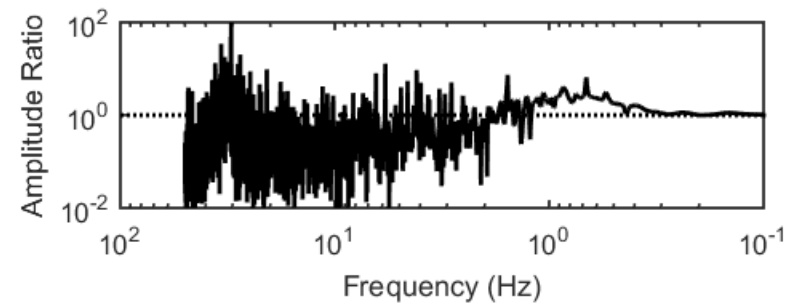
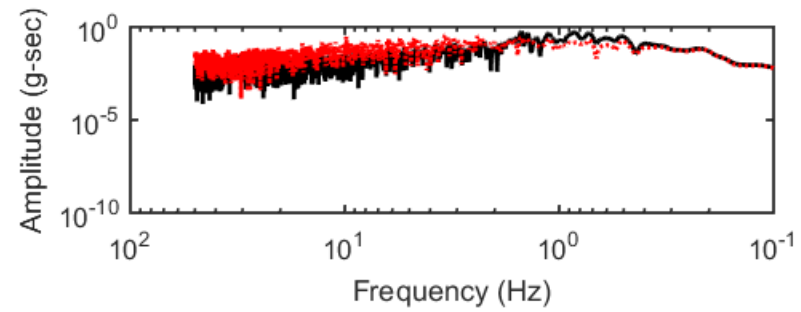
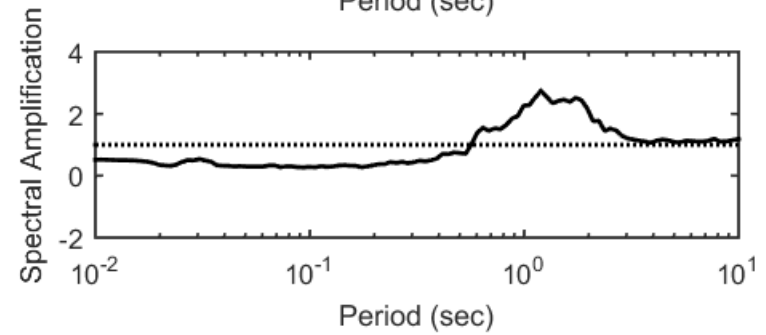
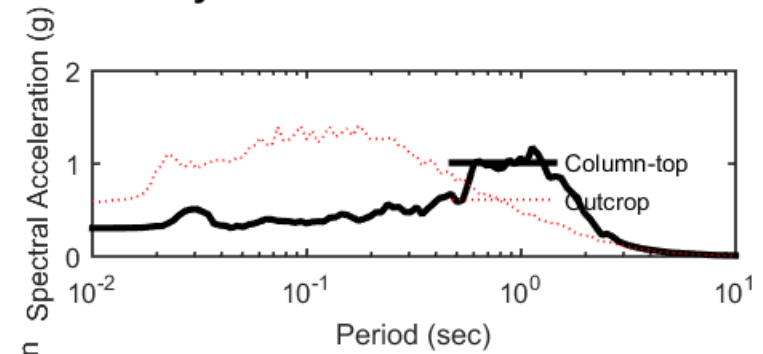
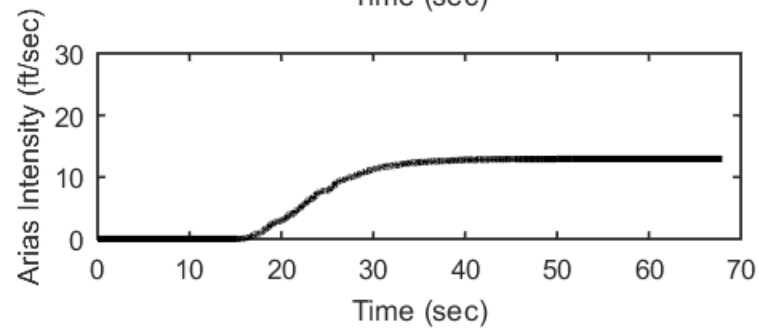
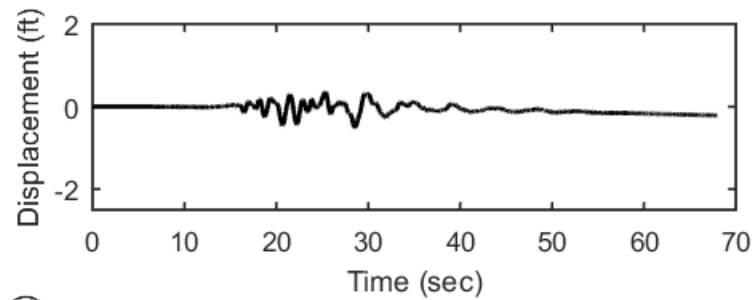
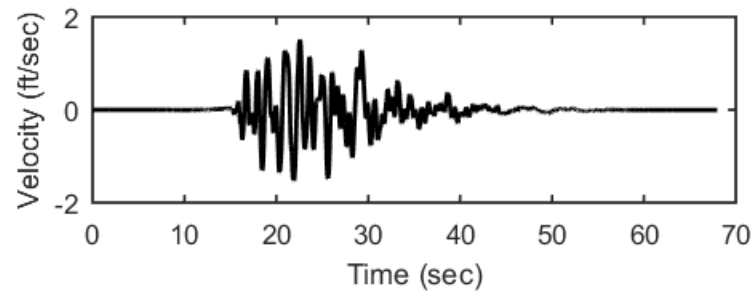
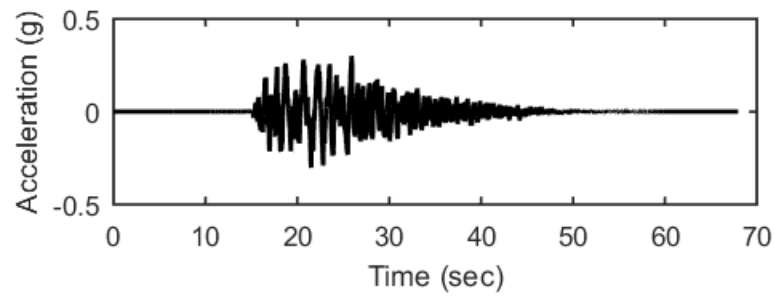
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



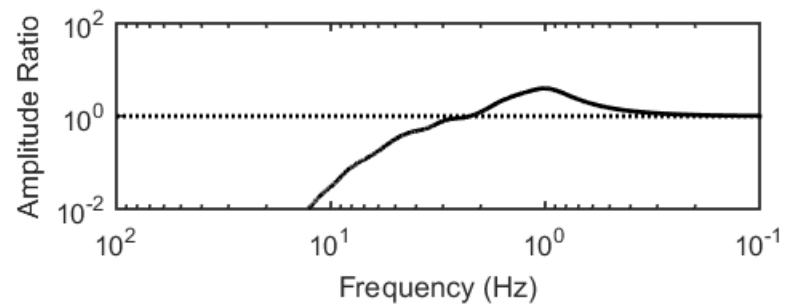
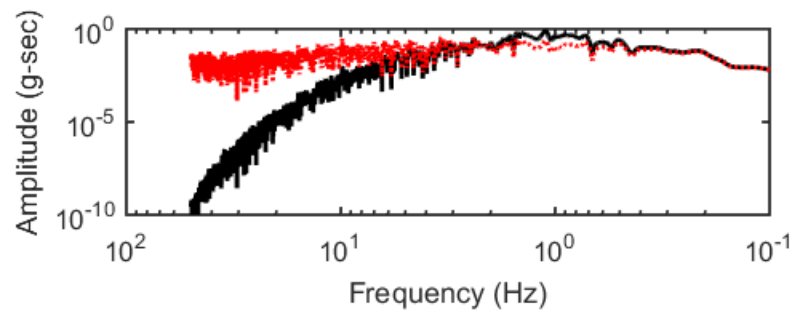
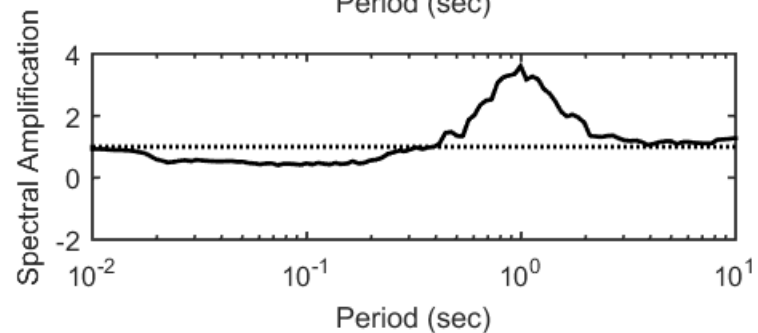
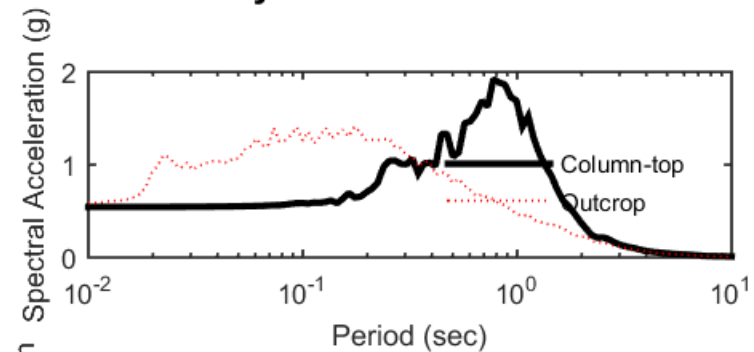
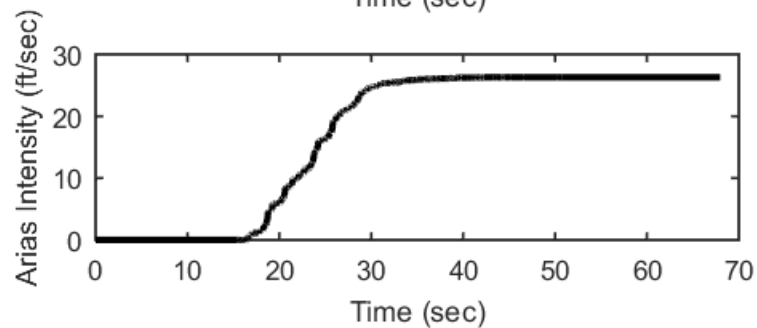
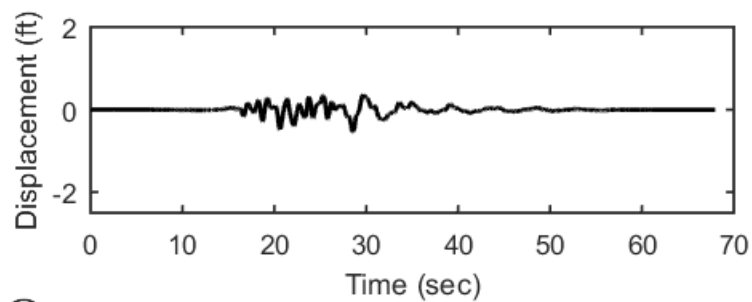
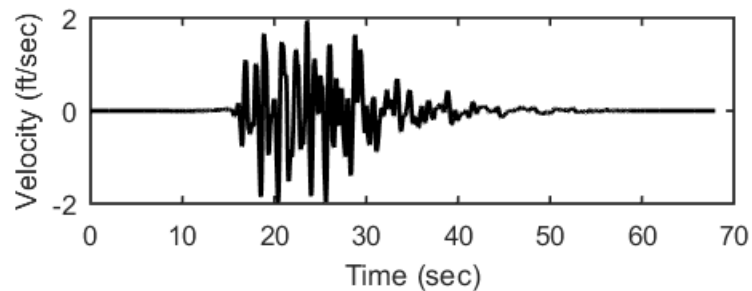
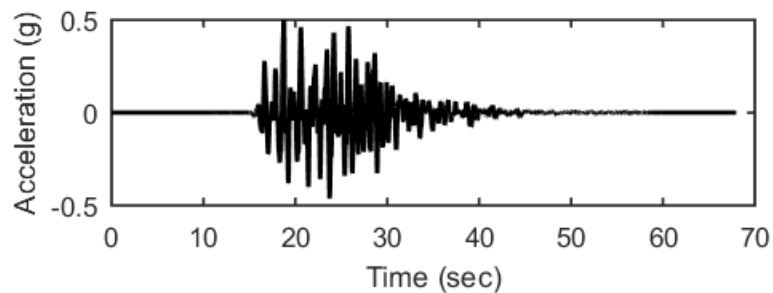
### Profile outputs for Motion: SEE5



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6

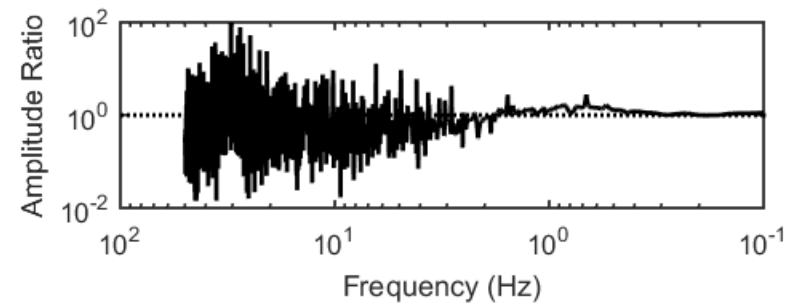
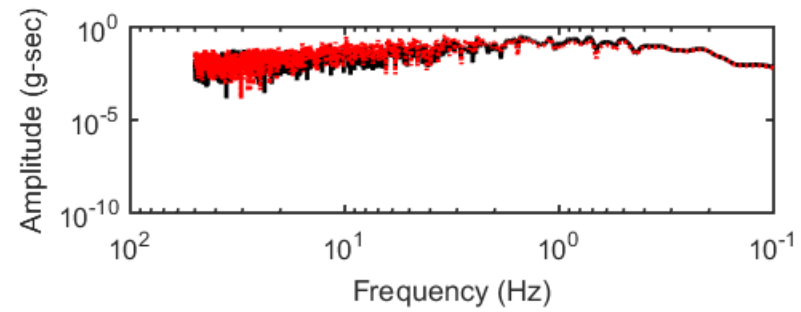
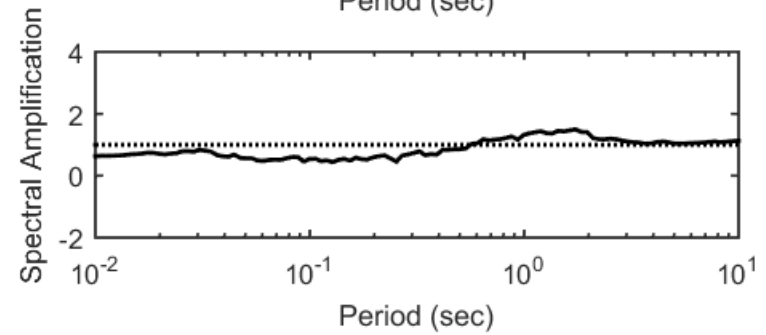
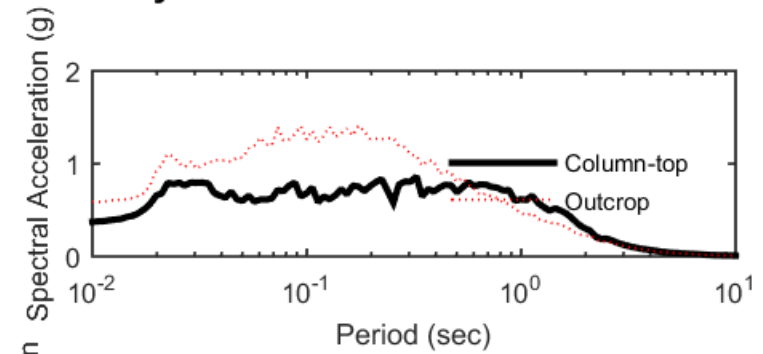
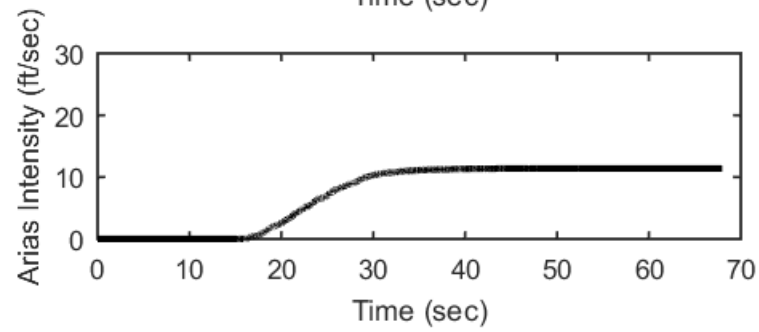
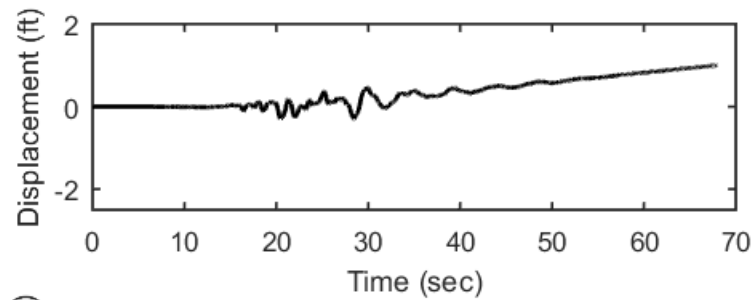
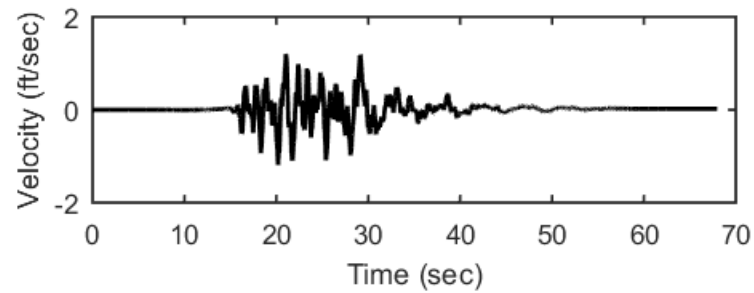
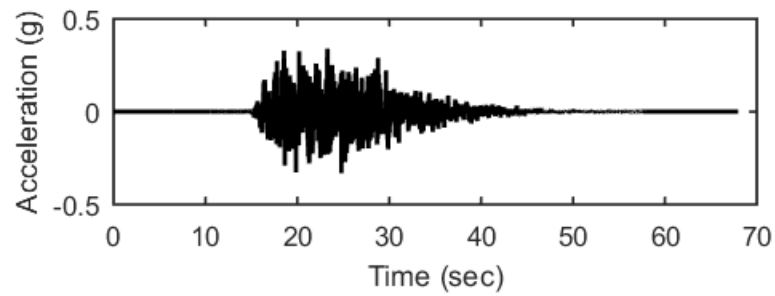


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6

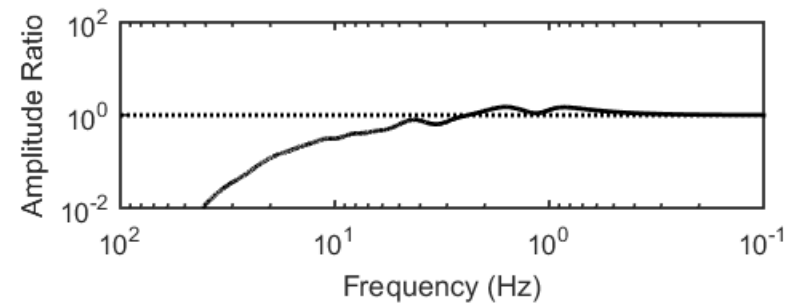
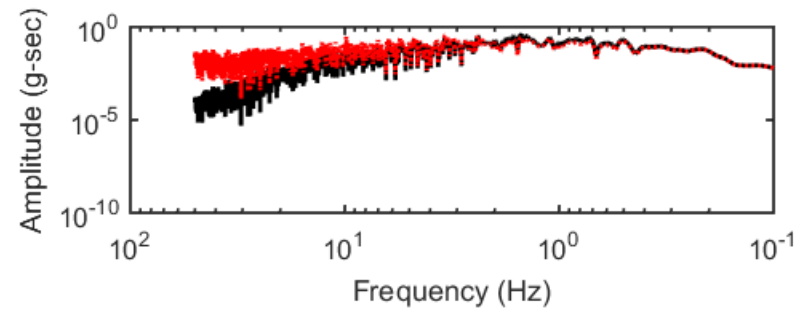
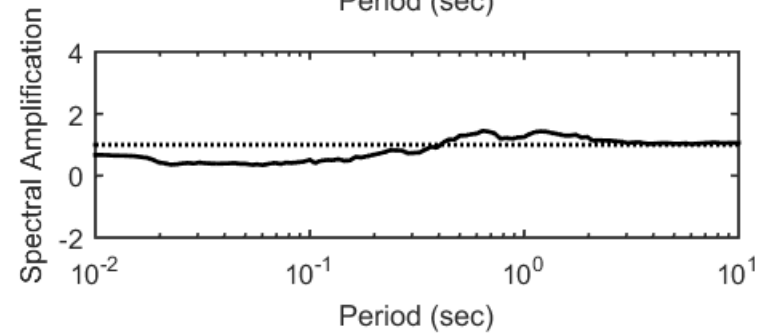
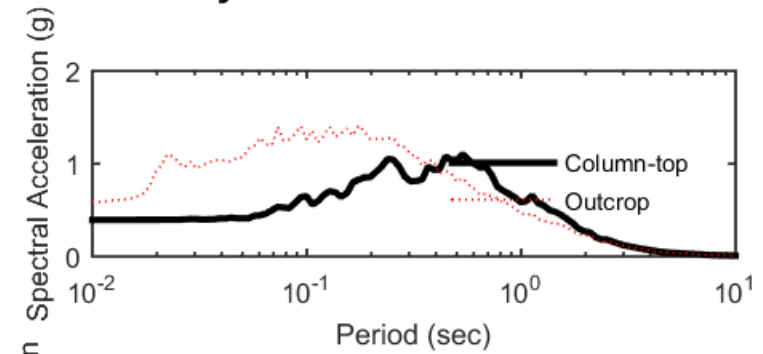
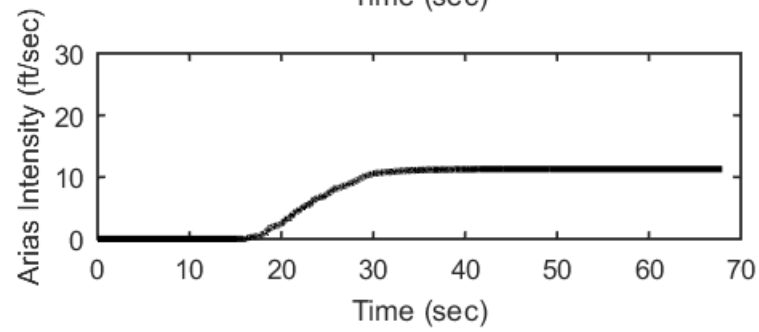
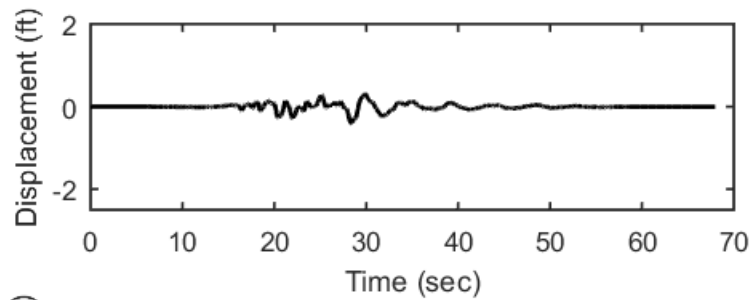
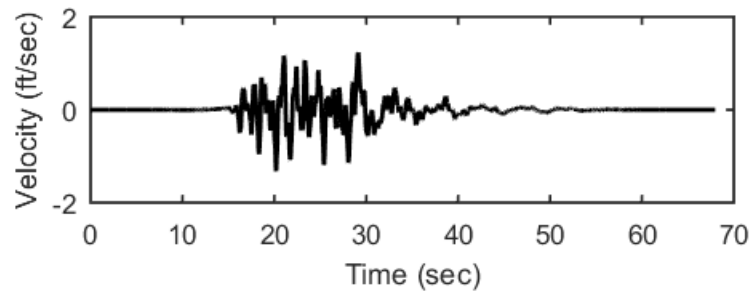
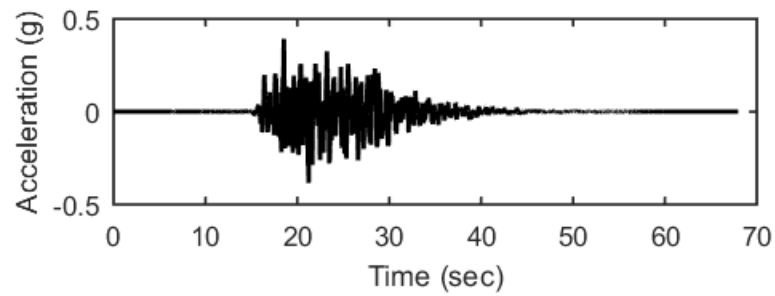




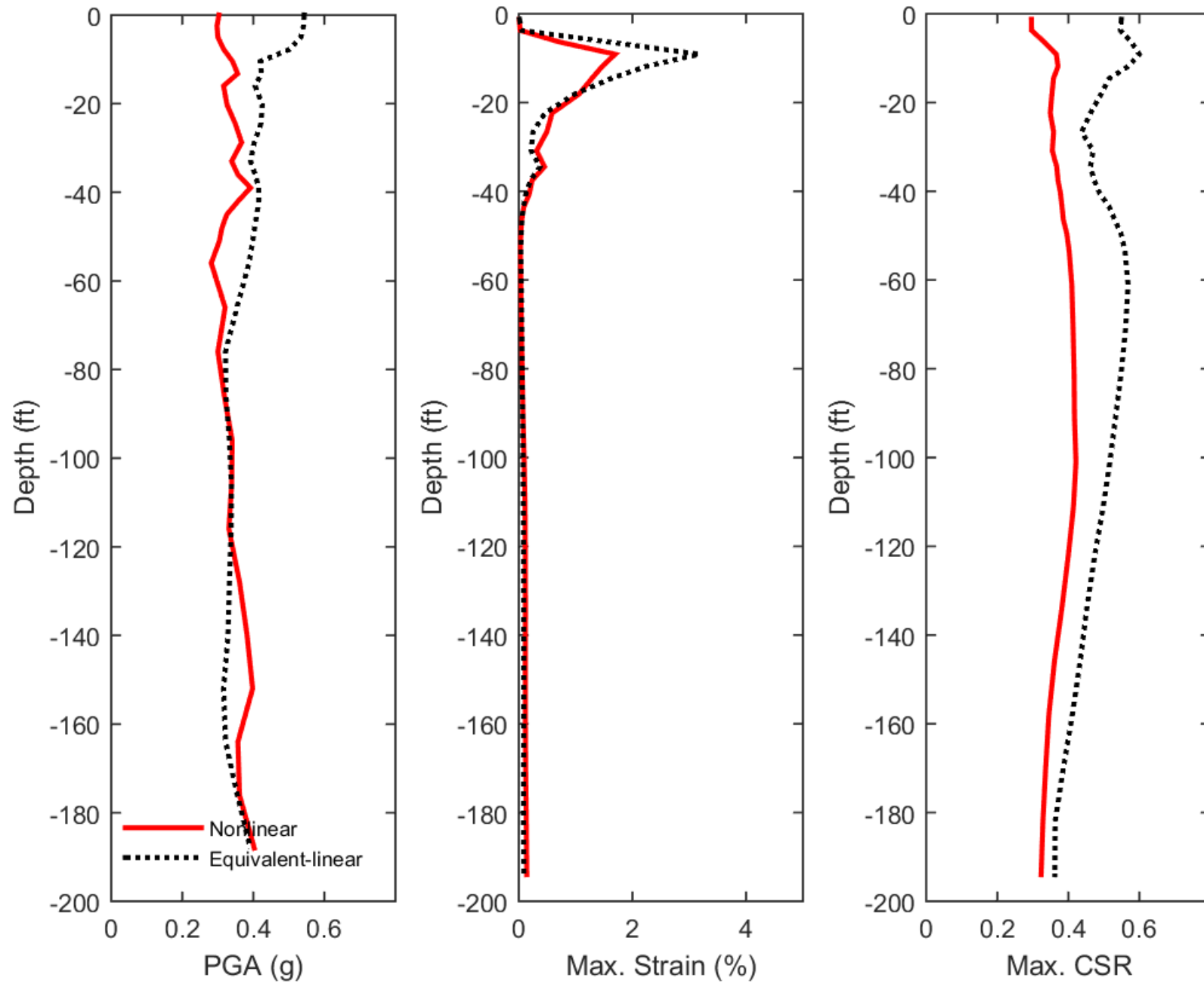
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



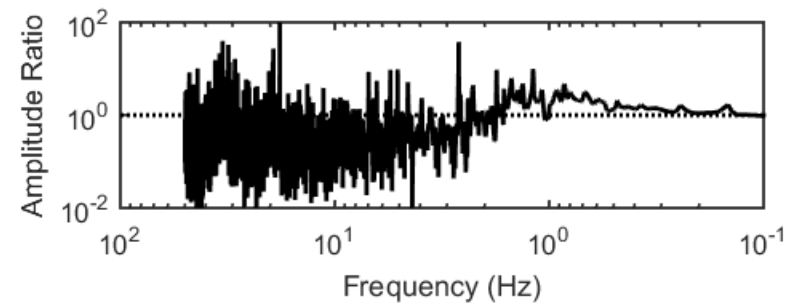
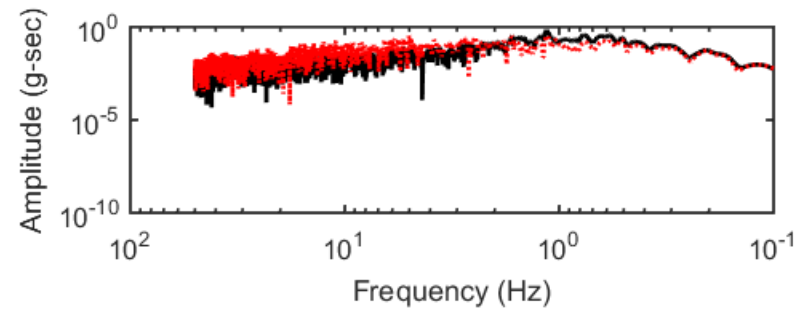
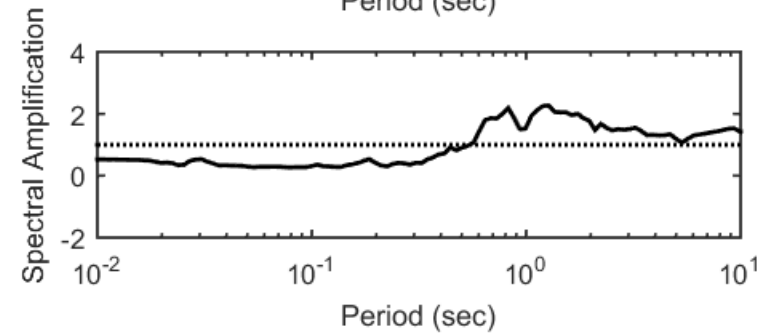
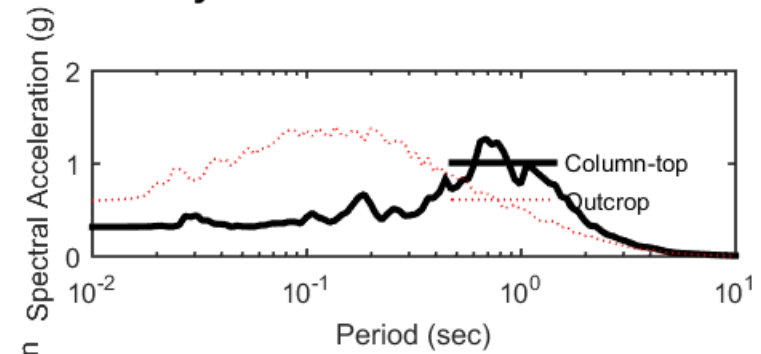
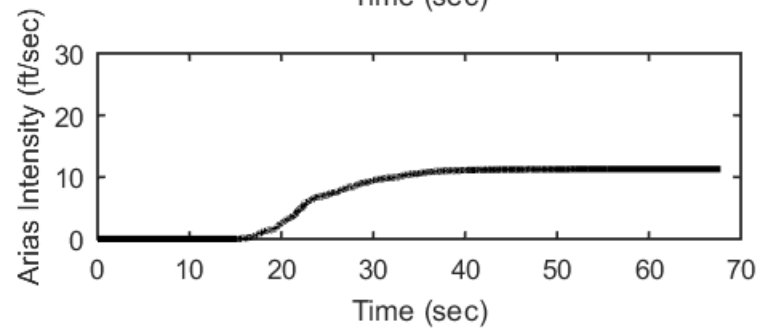
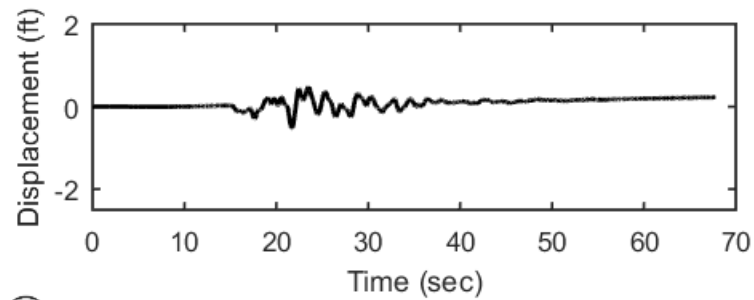
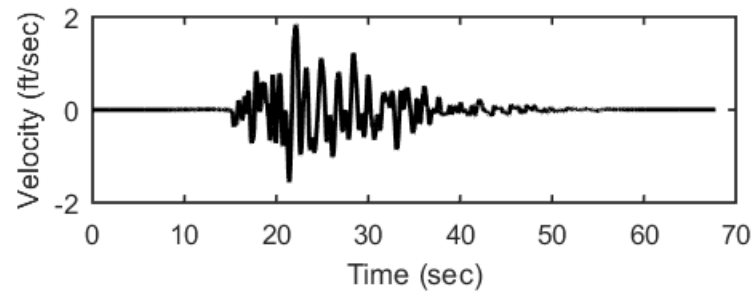
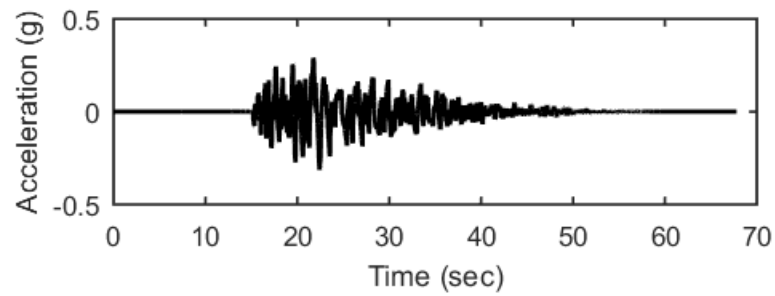
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6



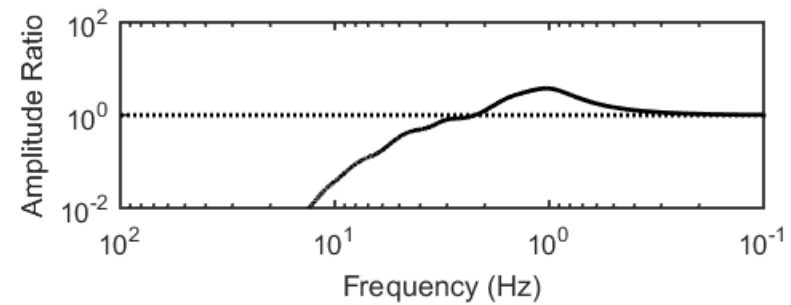
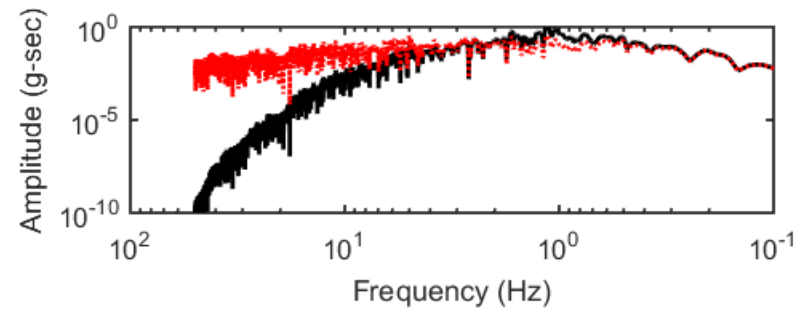
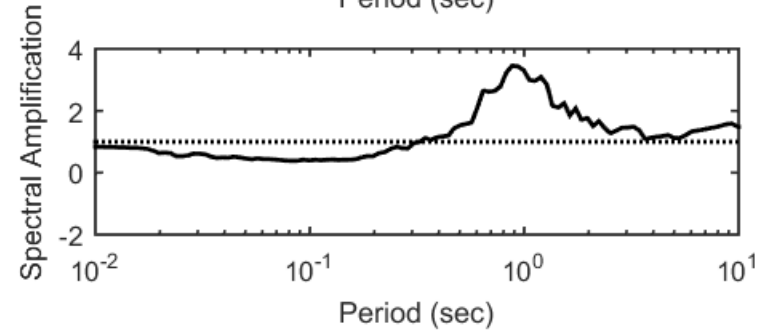
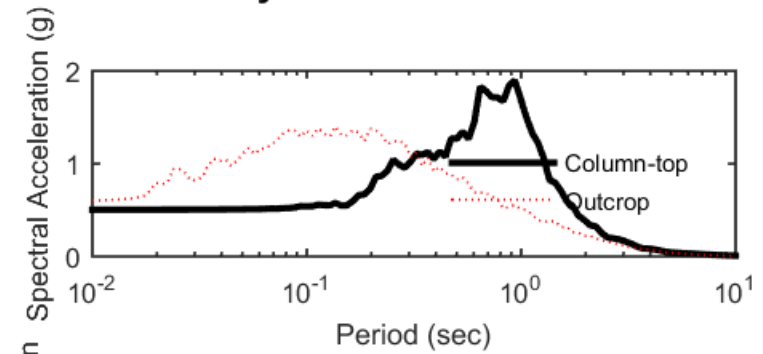
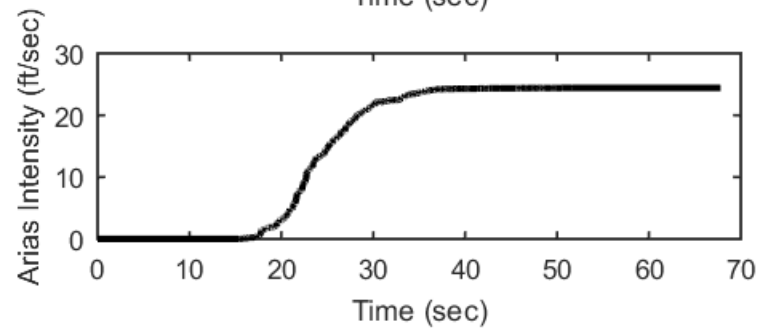
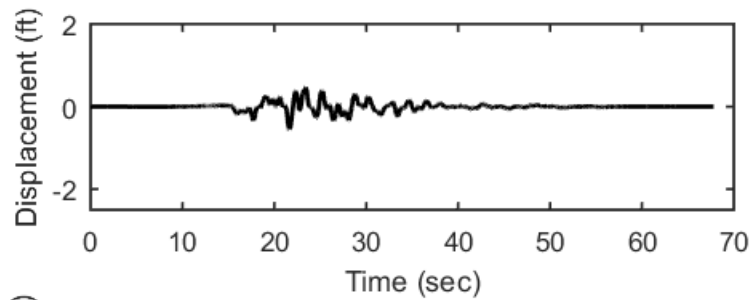
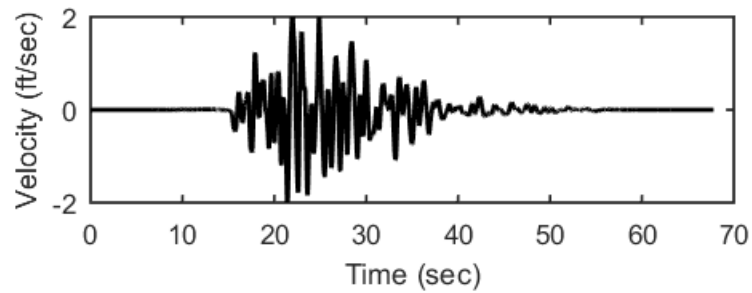
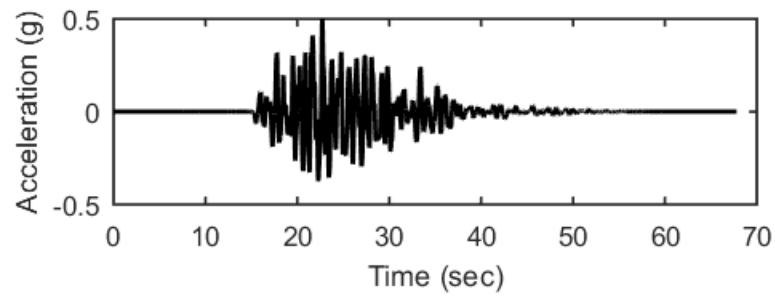
### Profile outputs for Motion: SEE6



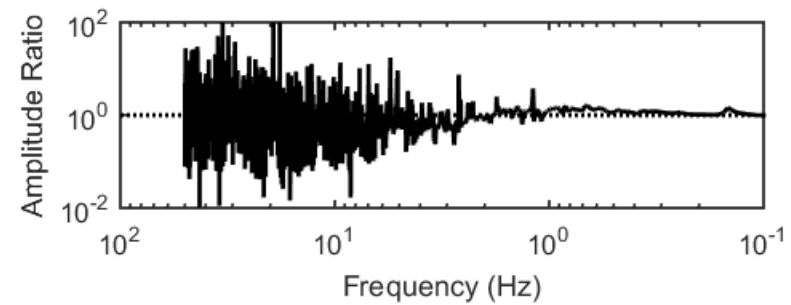
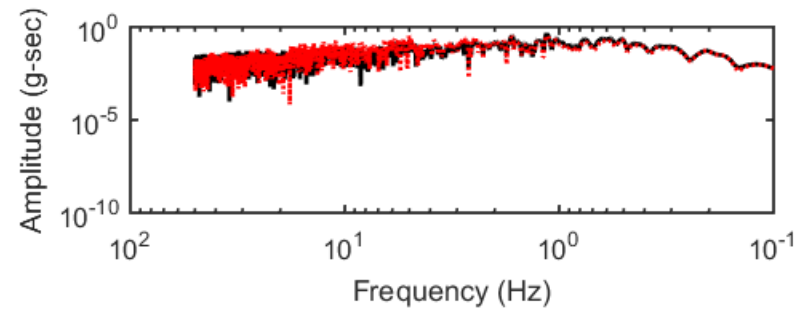
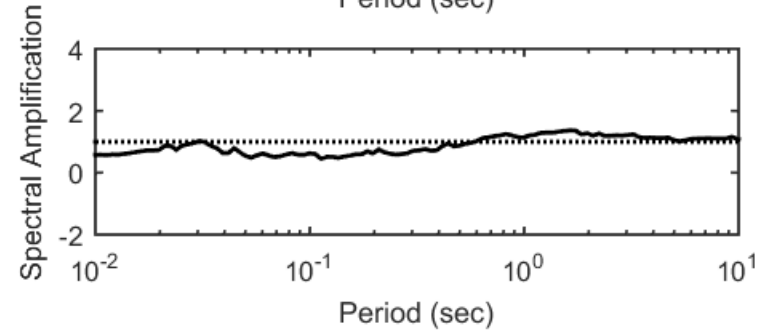
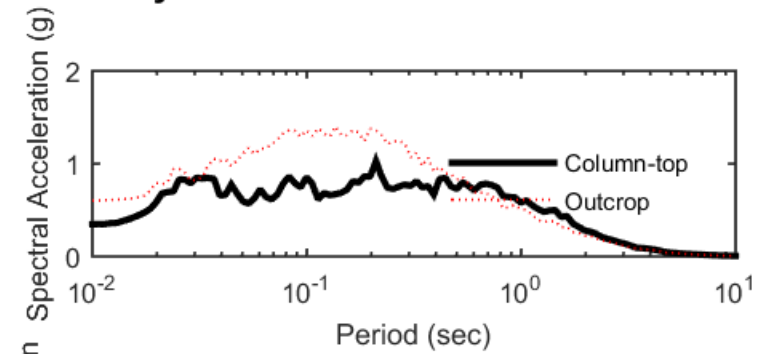
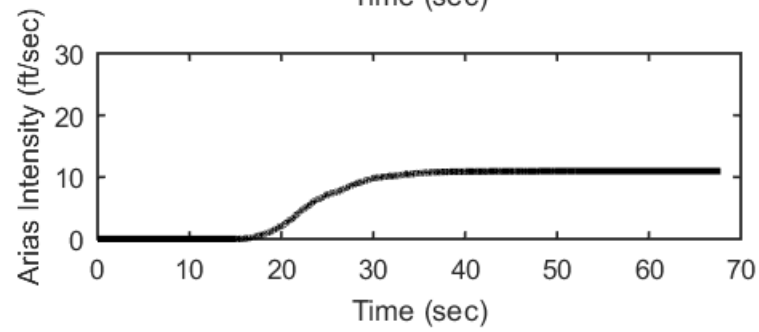
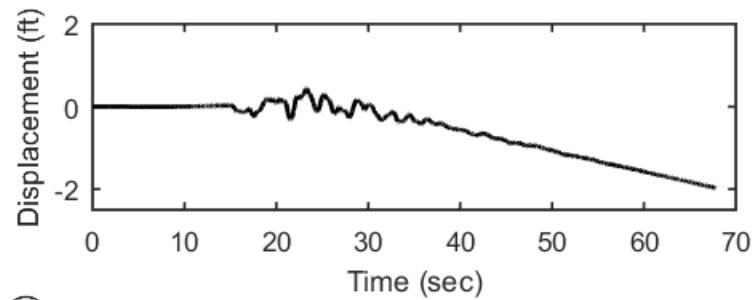
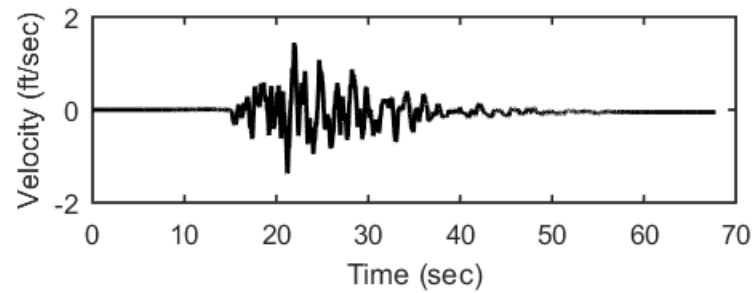
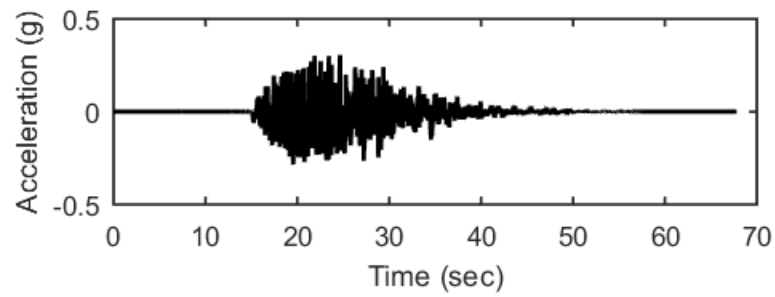
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



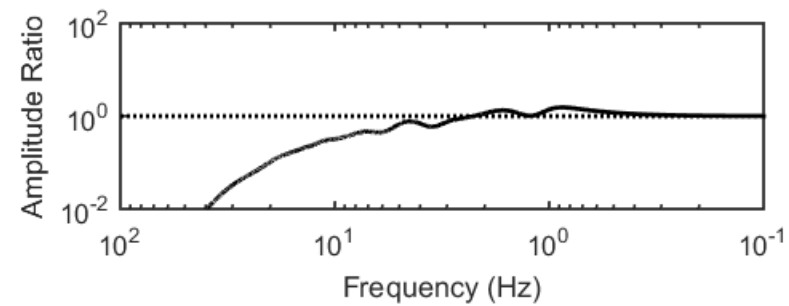
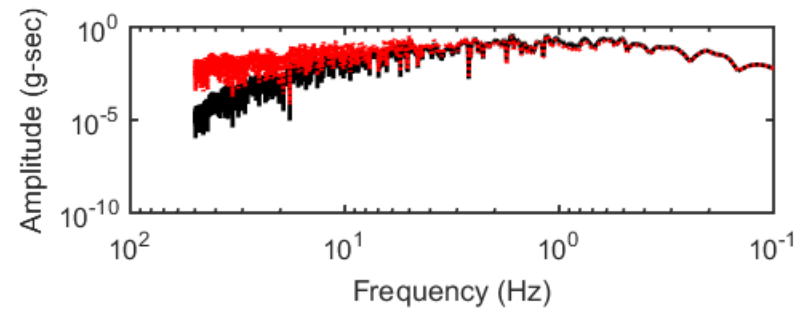
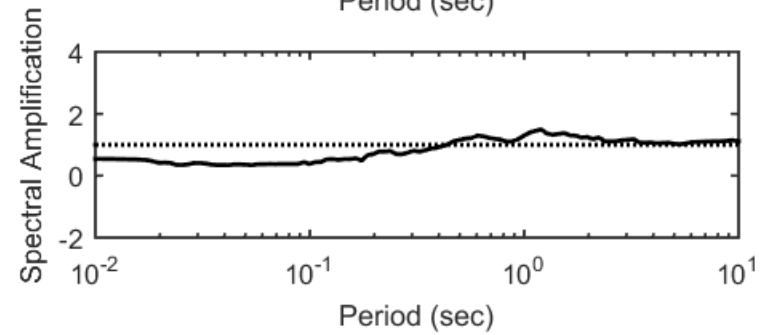
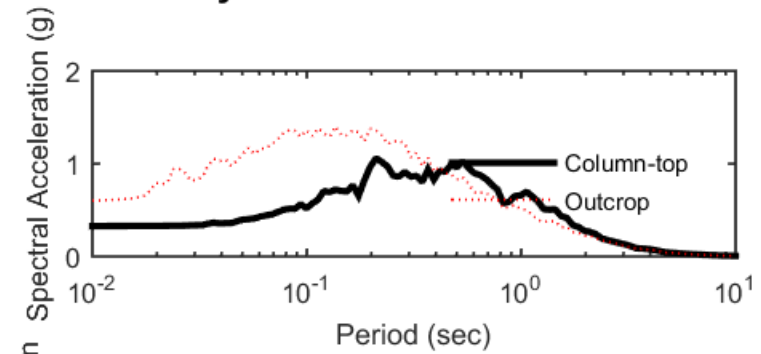
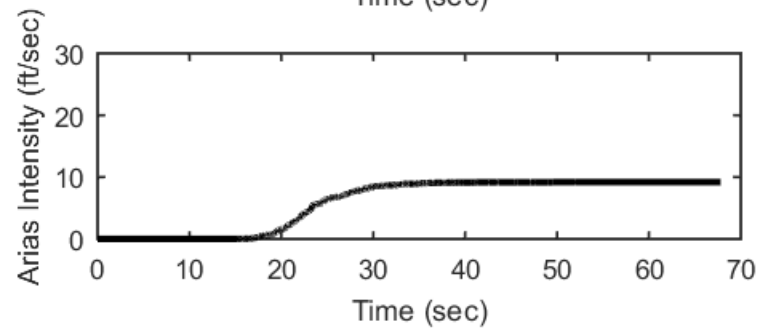
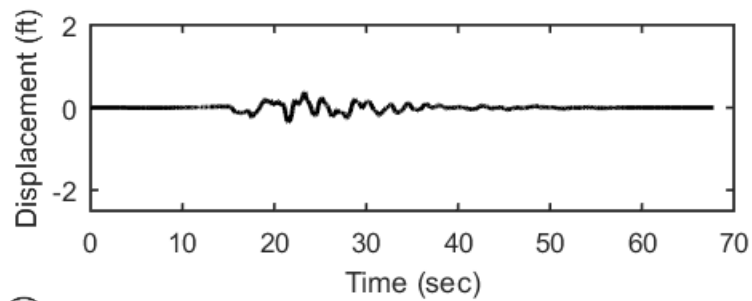
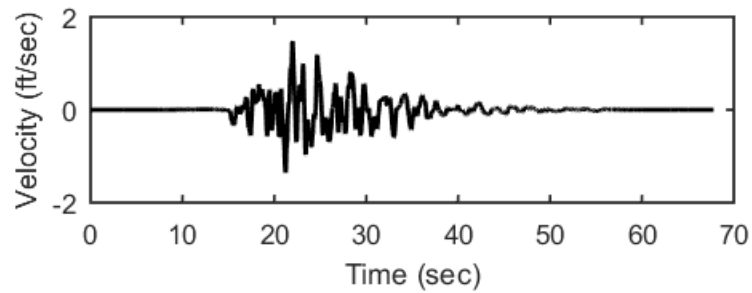
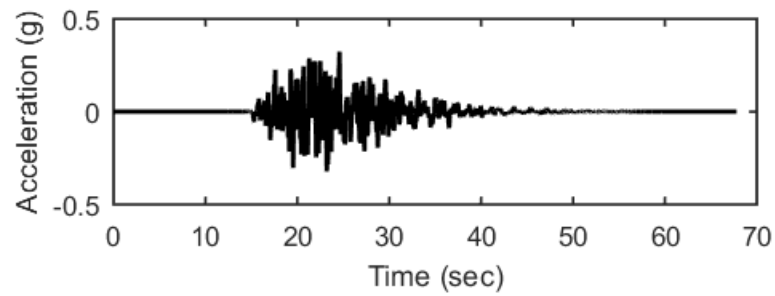
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



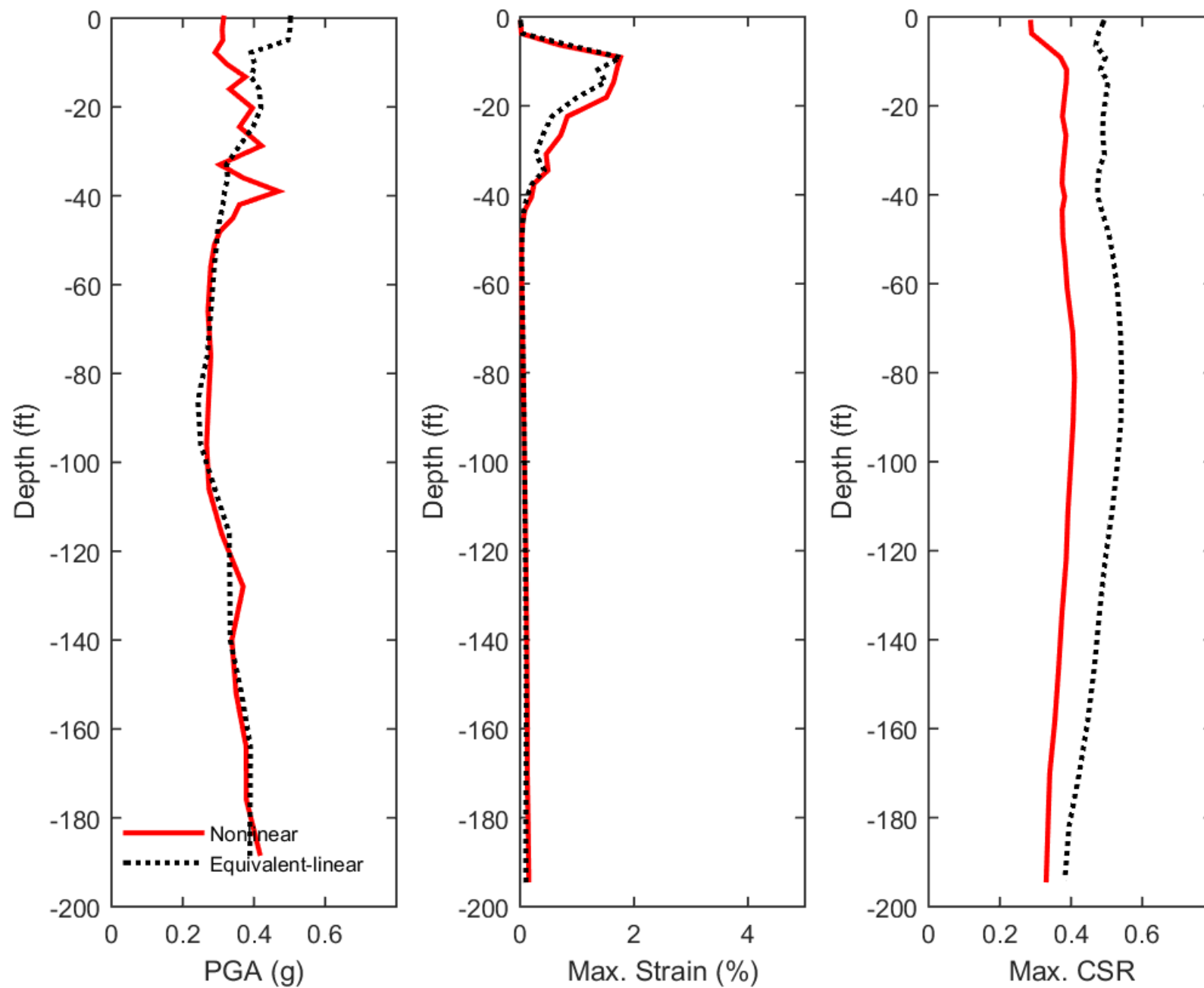
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7

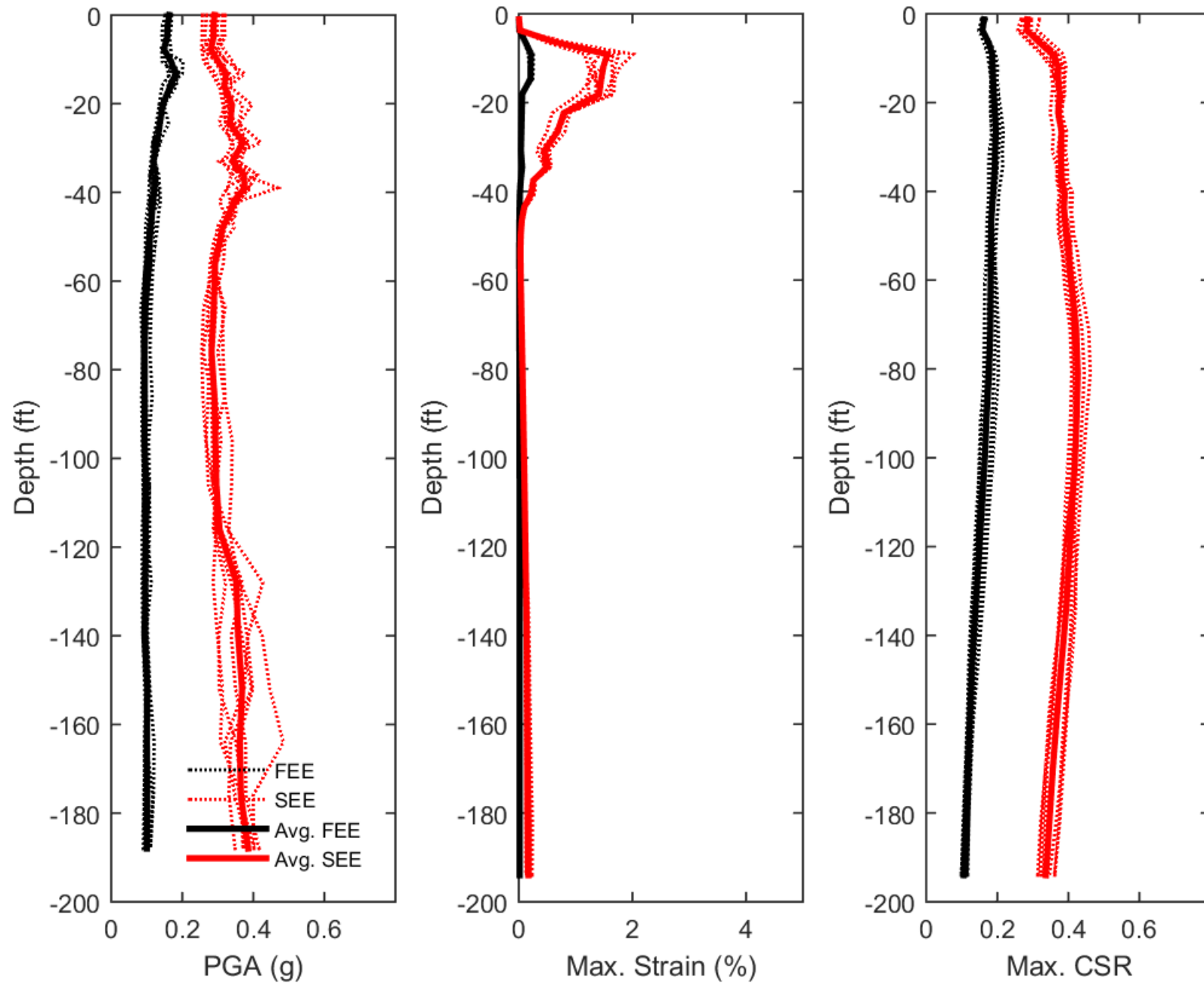


### Profile outputs for Motion: SEE7

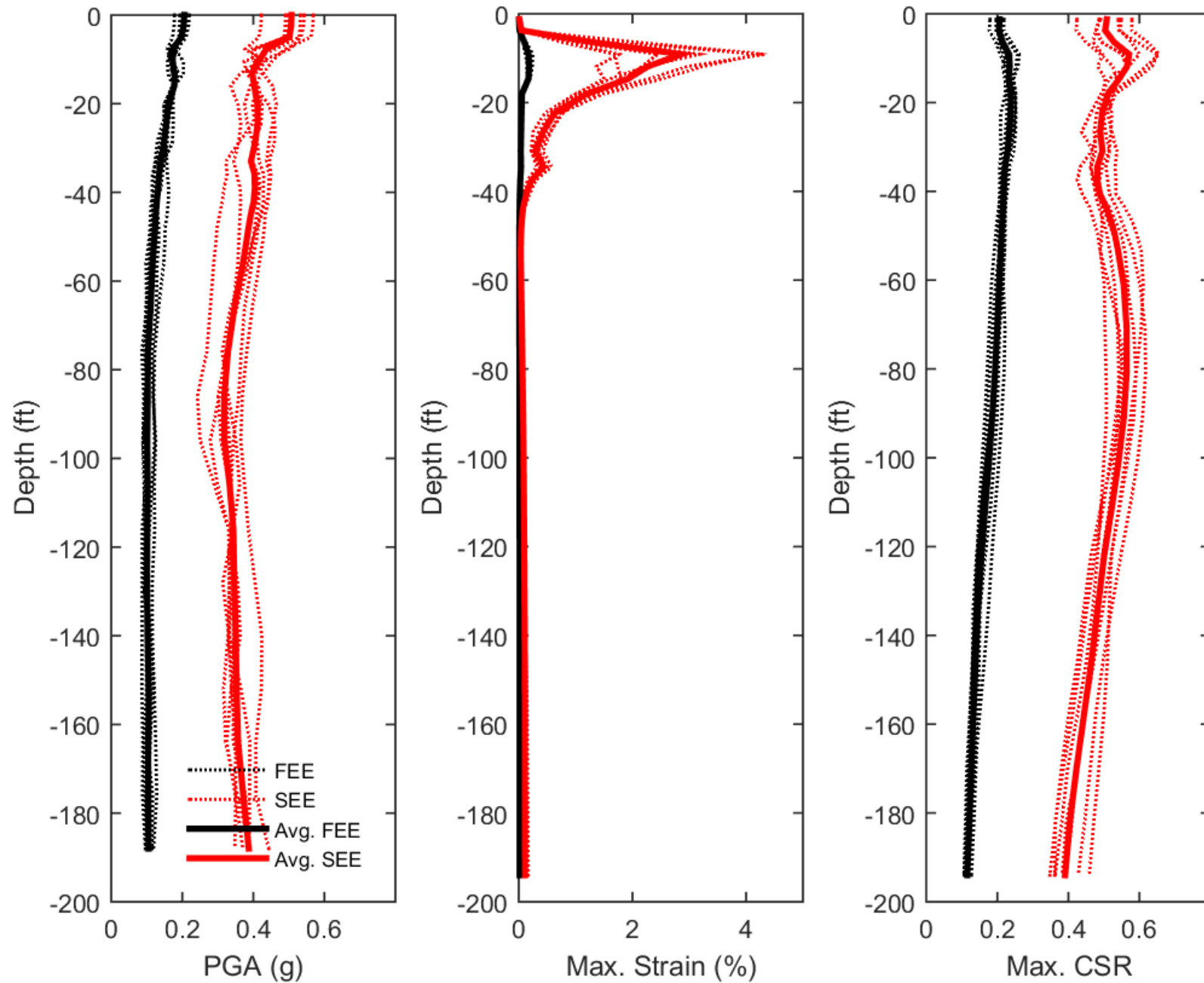




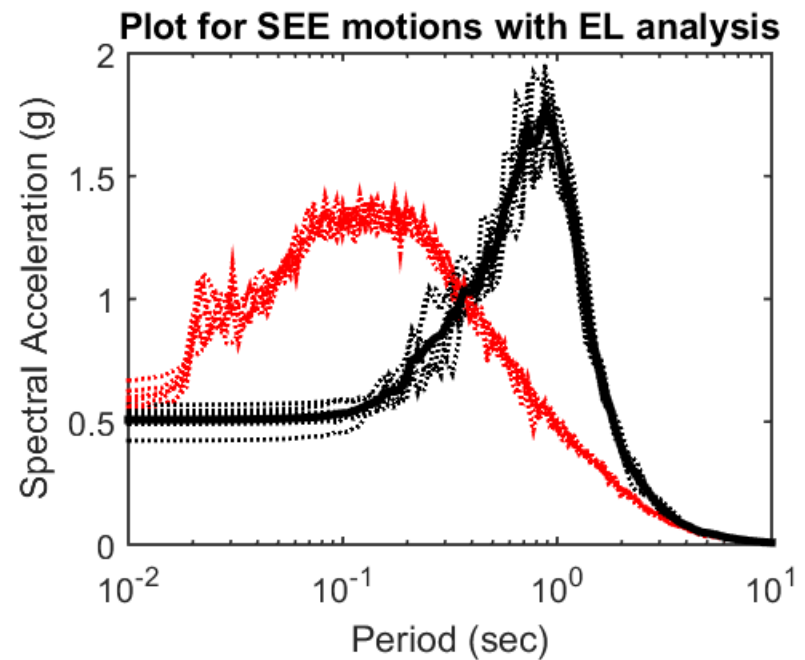
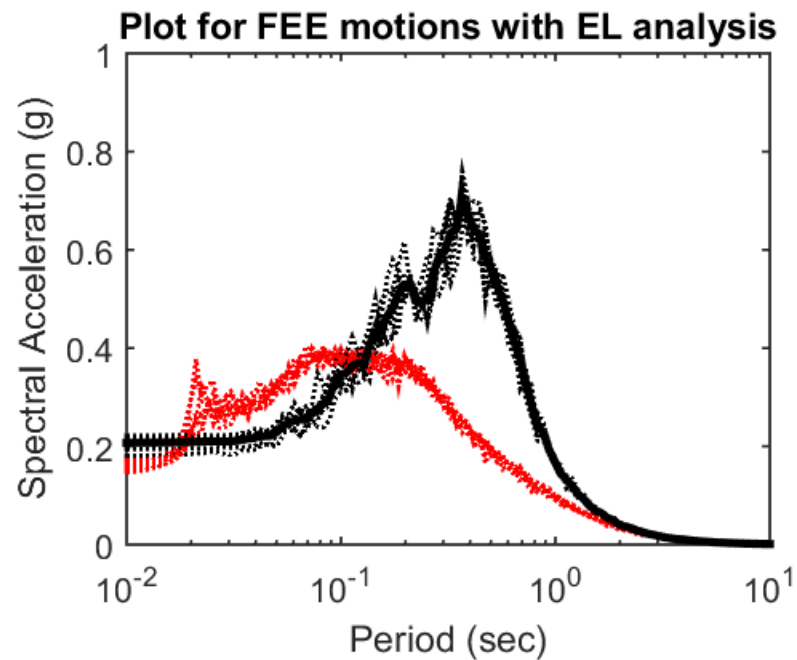
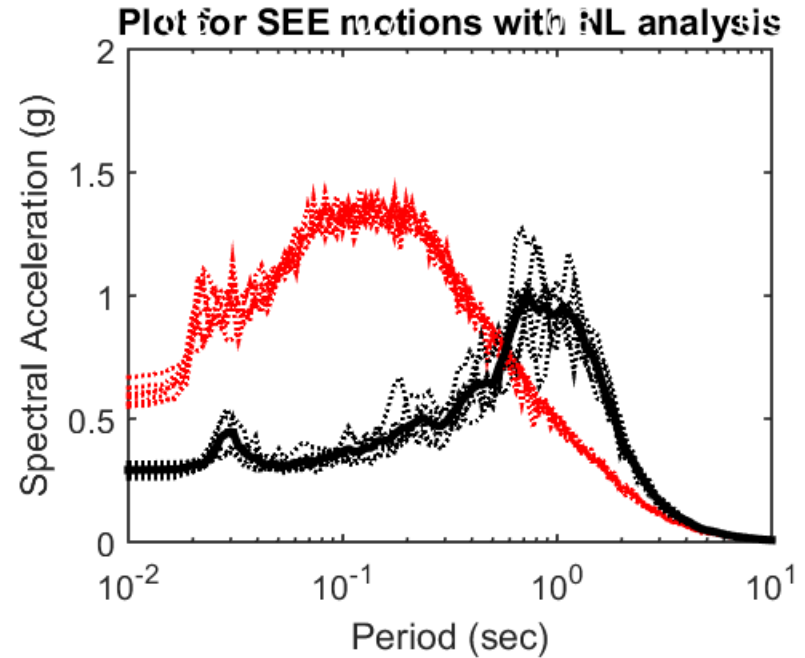
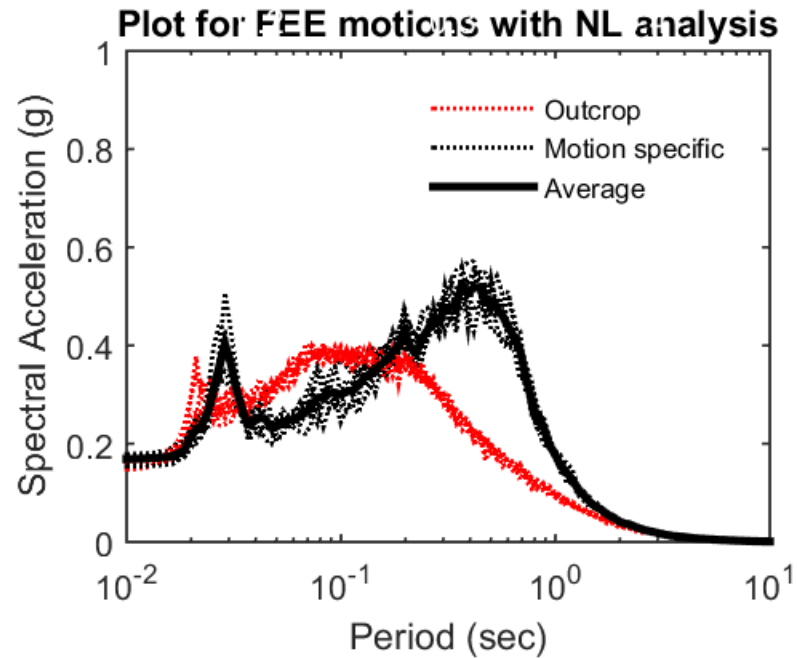
## Summary of the profile outputs for Nonlinear analysis



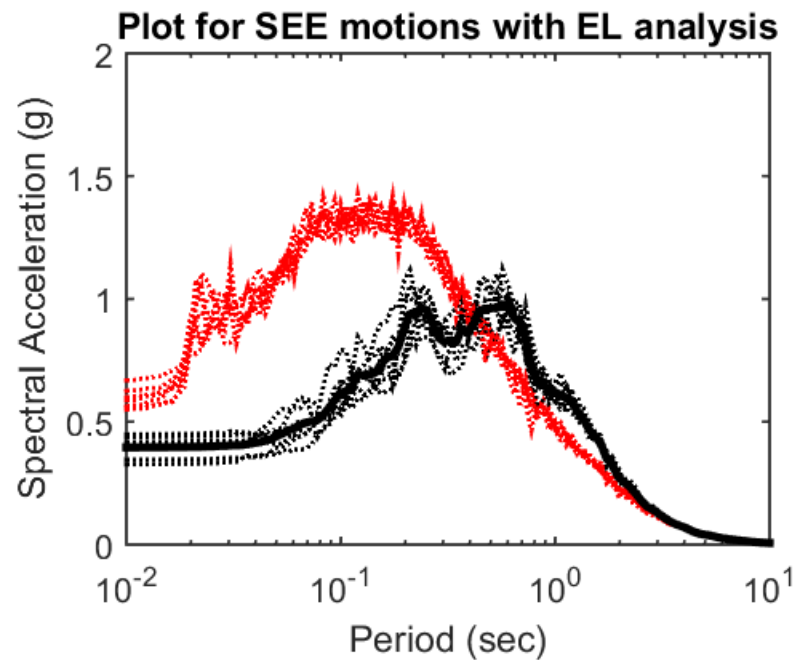
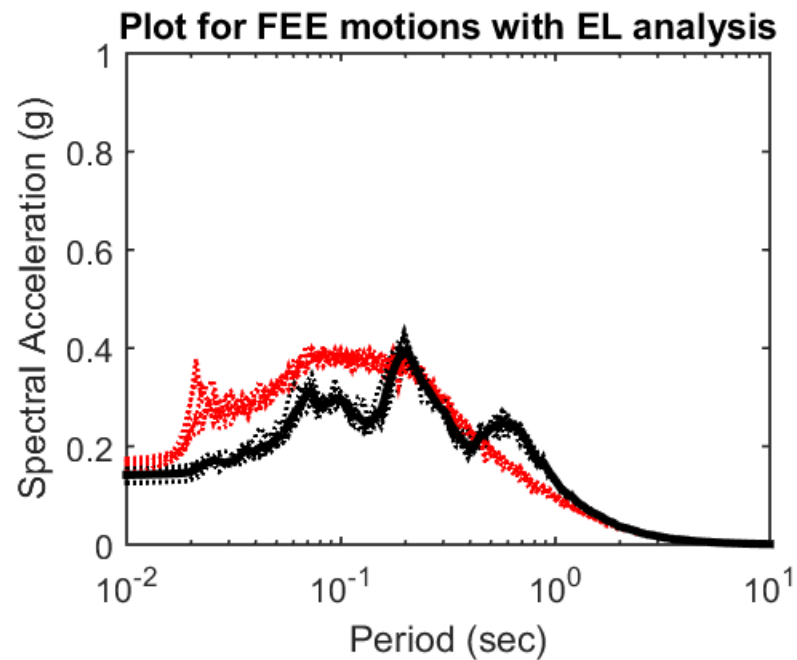
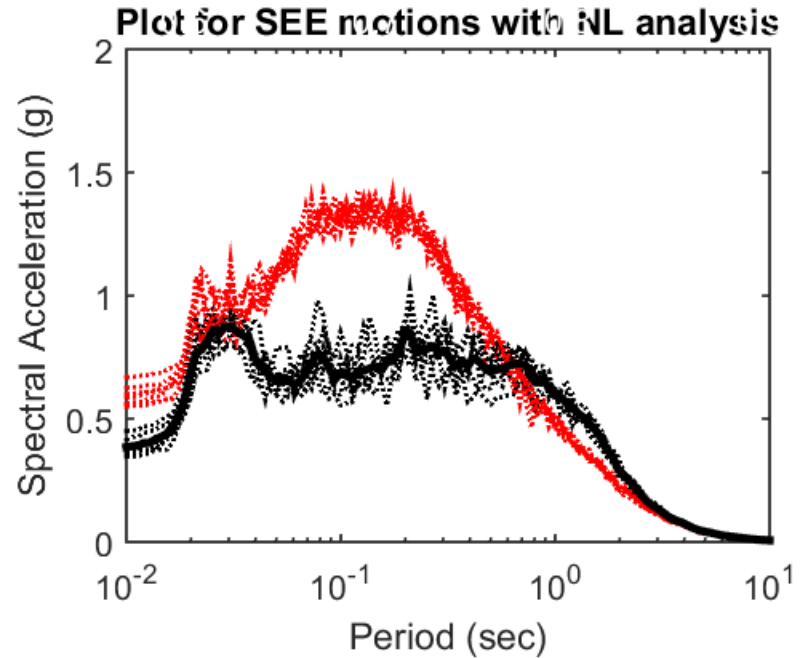
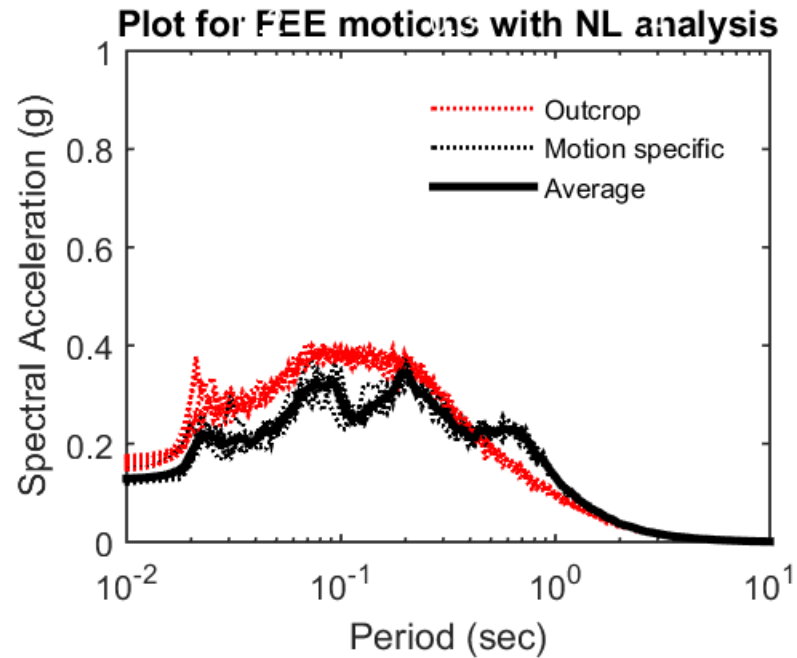
## Summary of the profile outputs for Equivalent-linear analysis



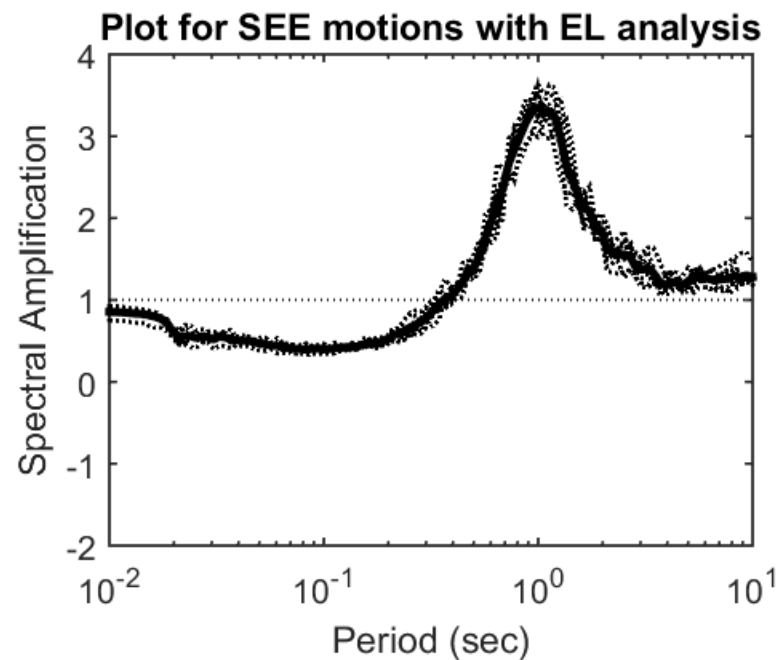
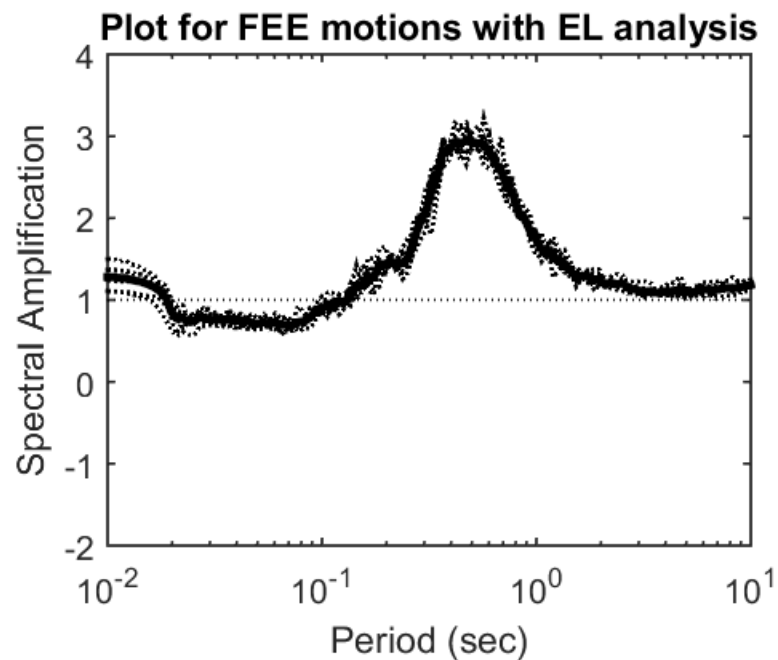
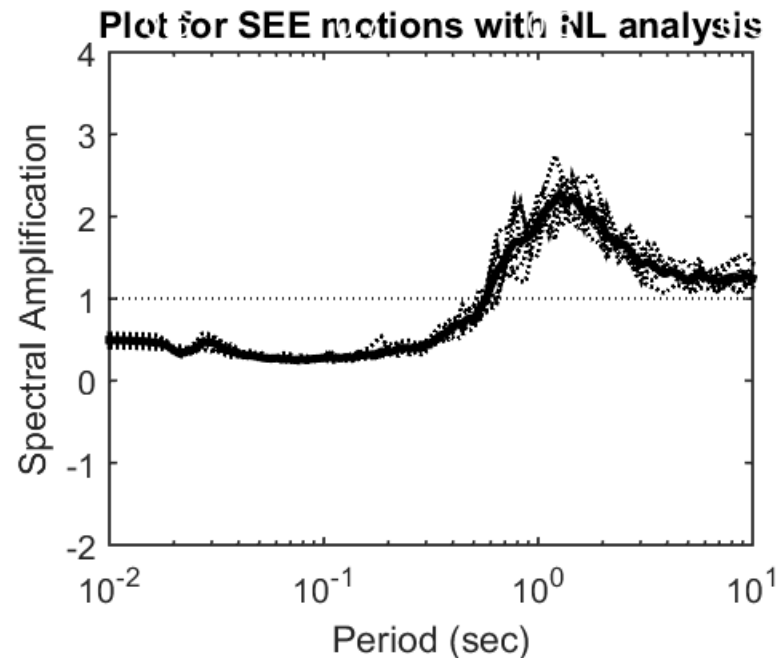
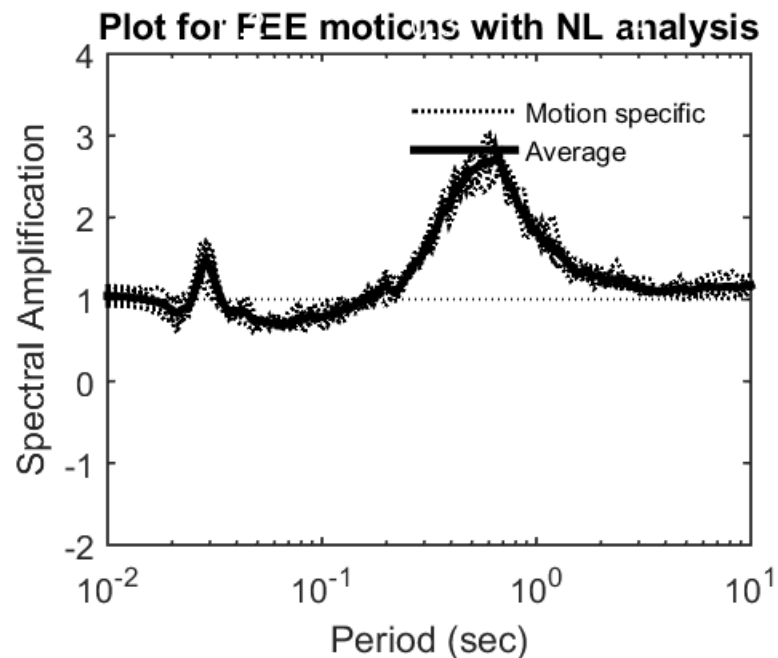
## Summary plots: RSA at ground surface



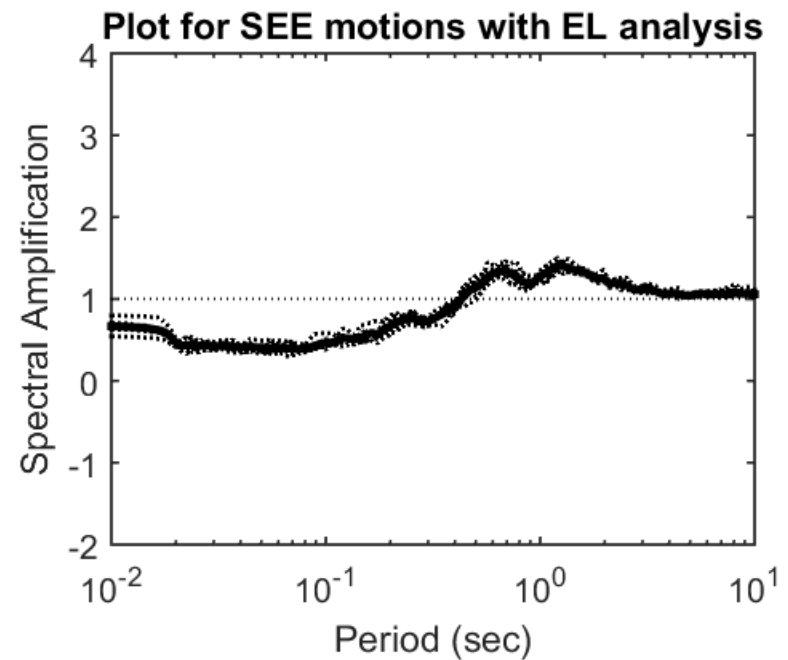
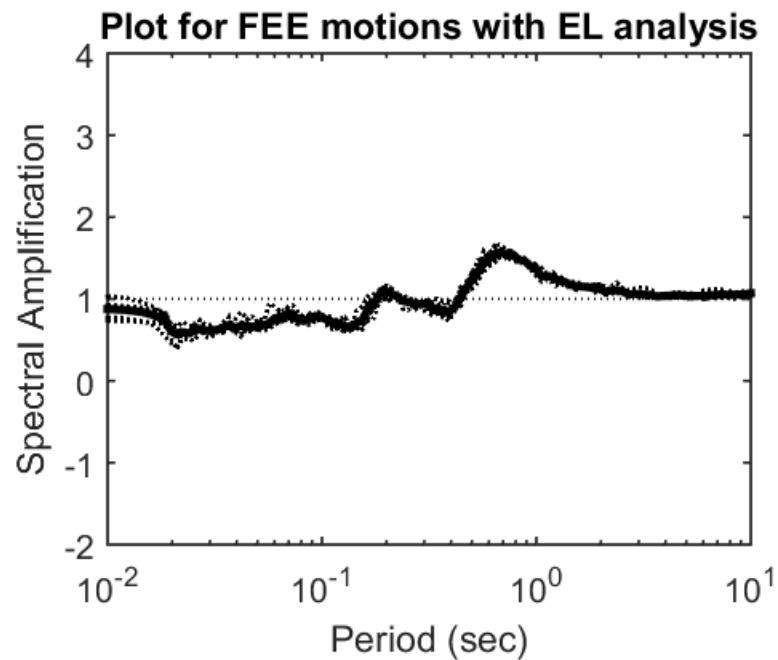
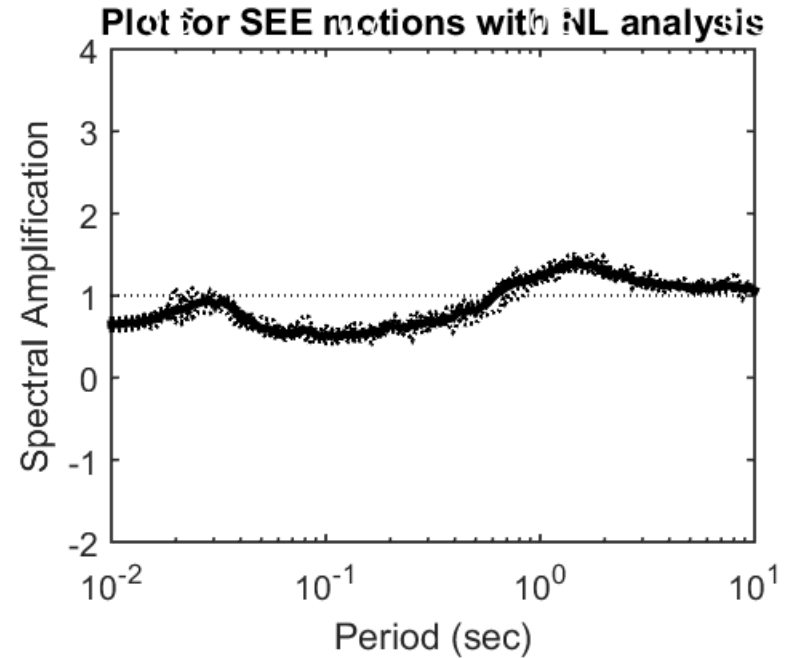
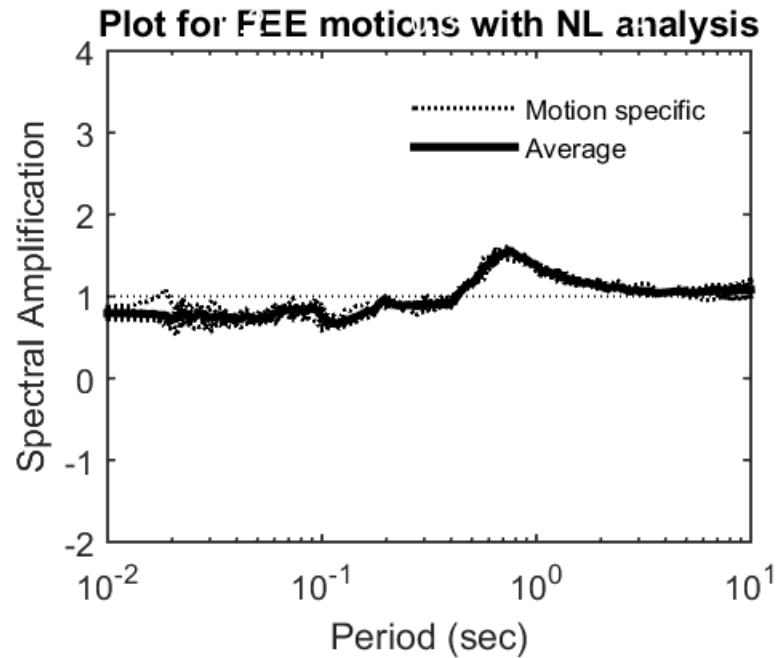
## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface

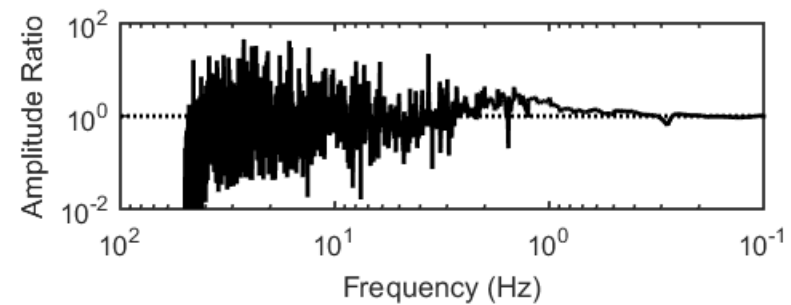
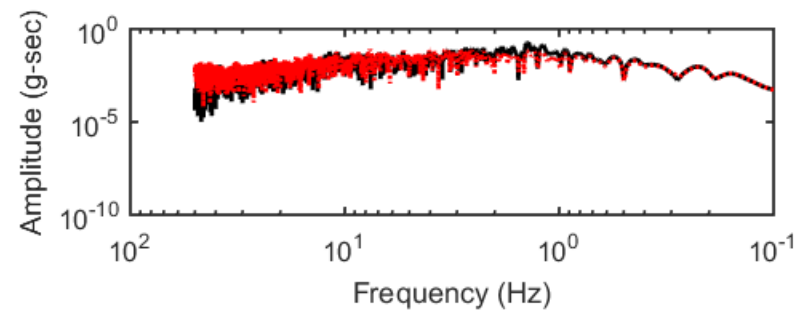
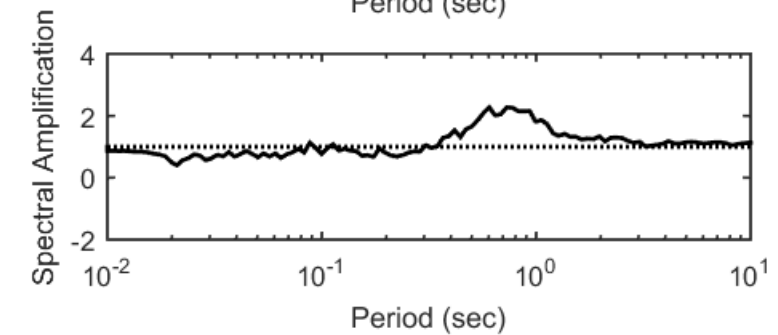
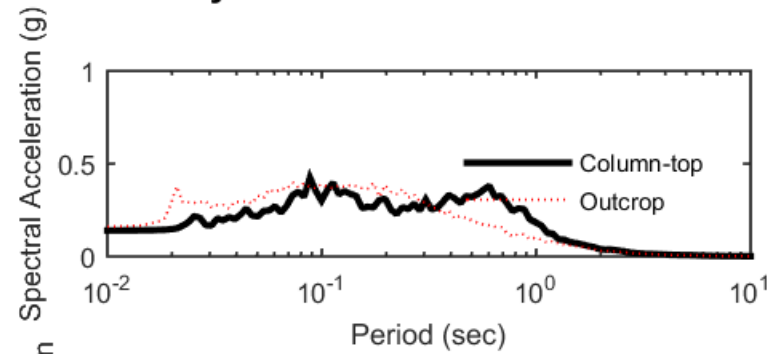
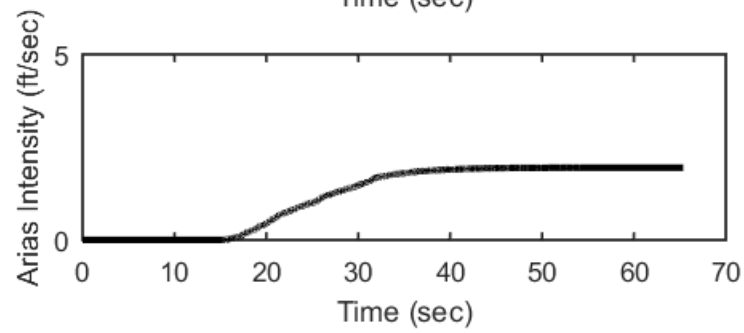
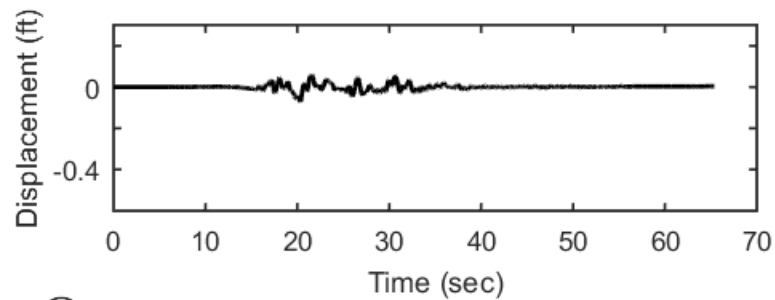
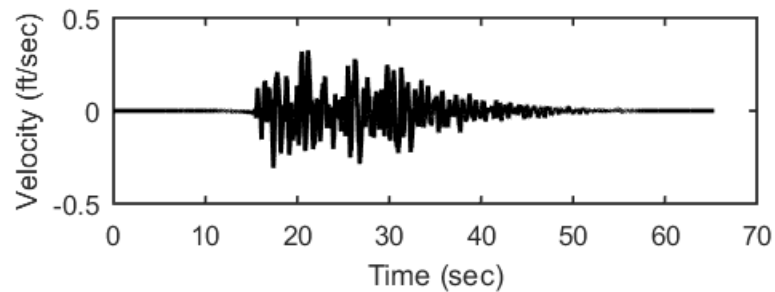
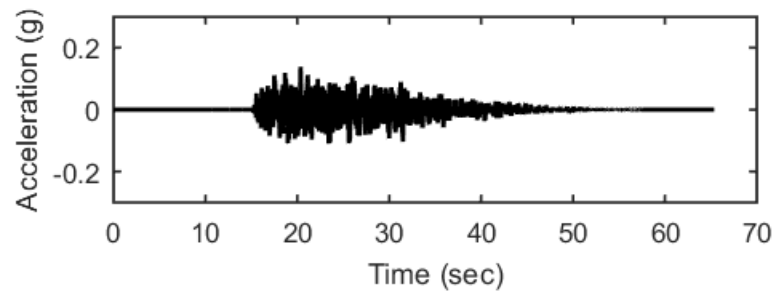


## Summary plots: Spectral amplification at top of Marl



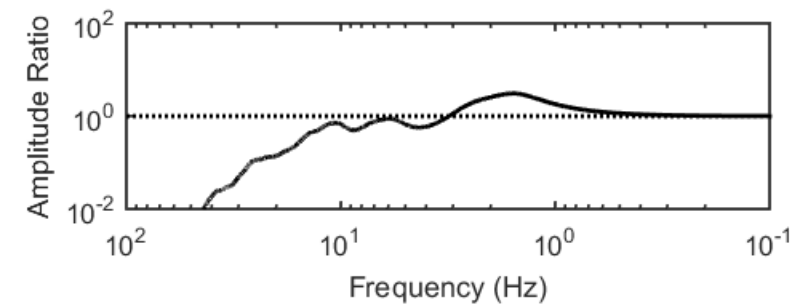
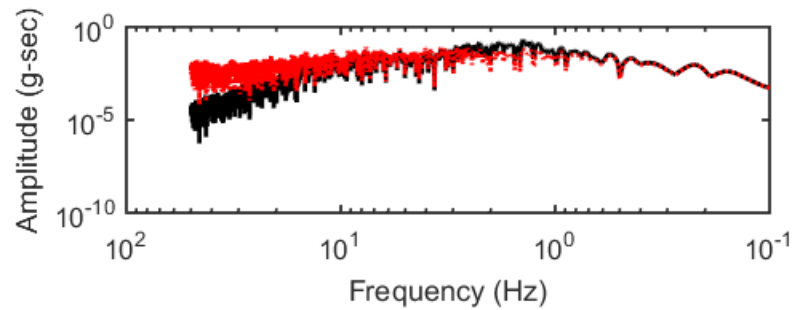
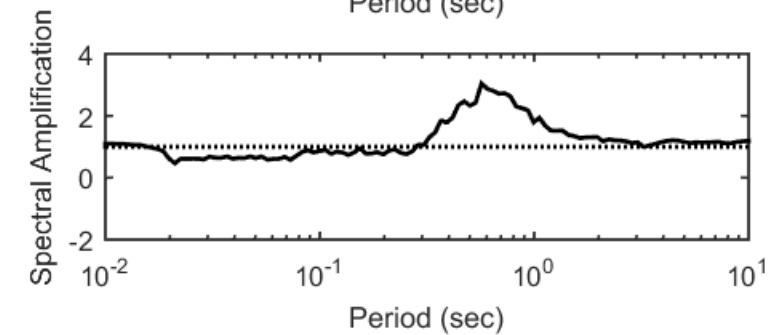
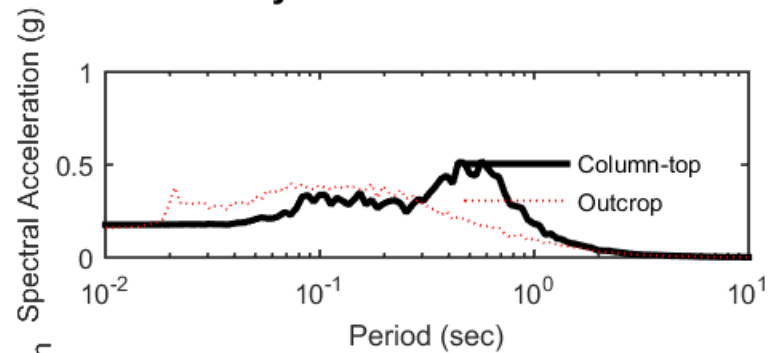
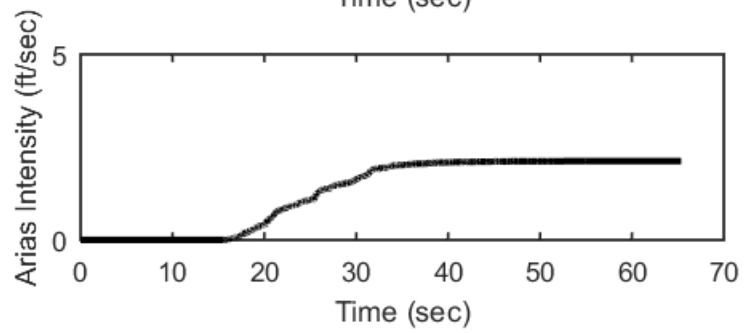
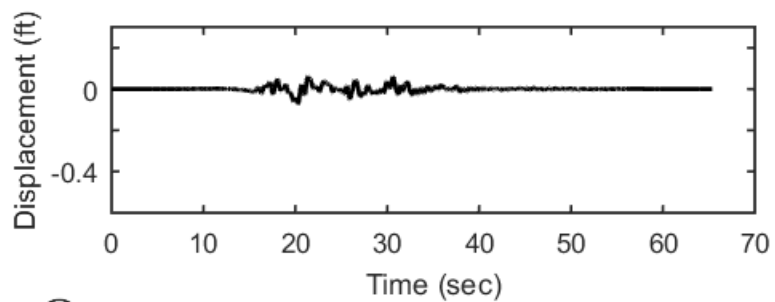
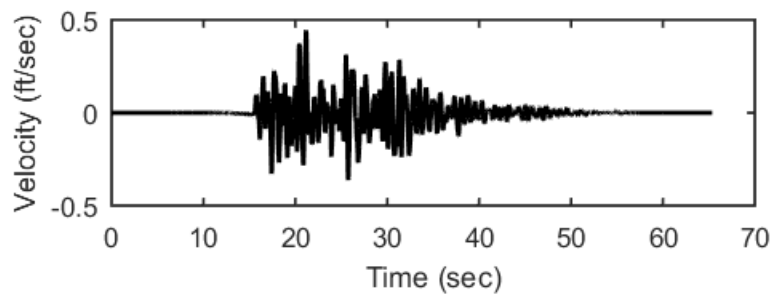
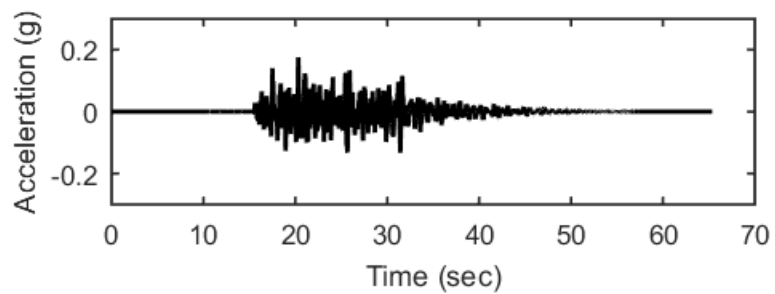
# **BASE MODEL AND LOW PLASTICITY INDEX**

## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE1

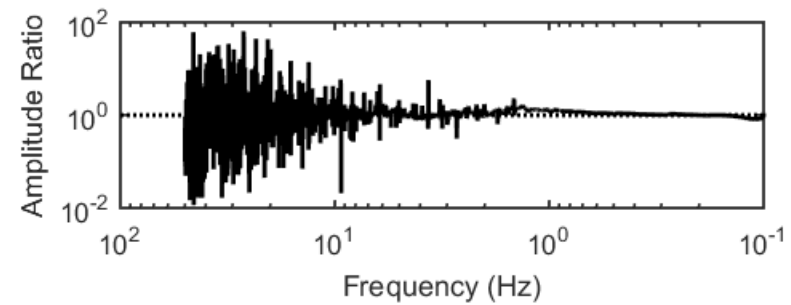
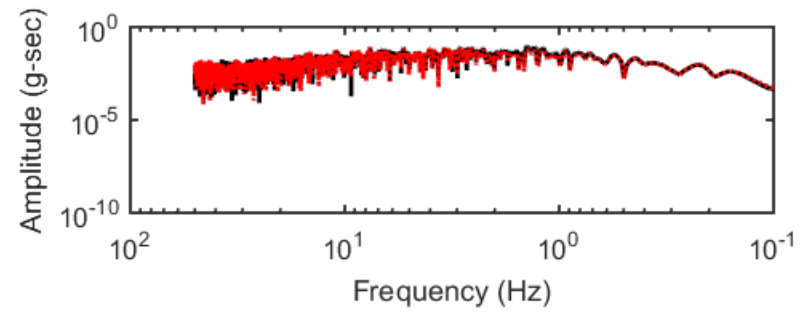
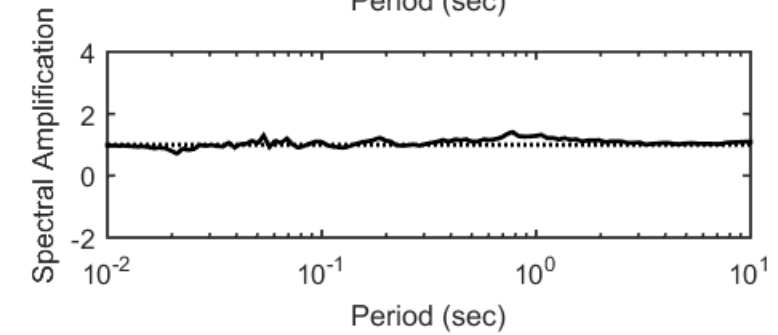
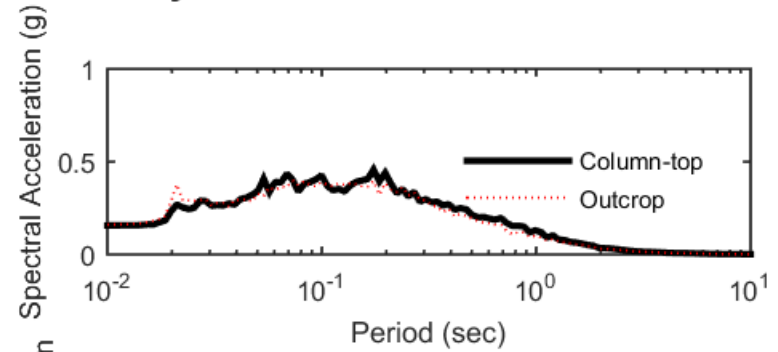
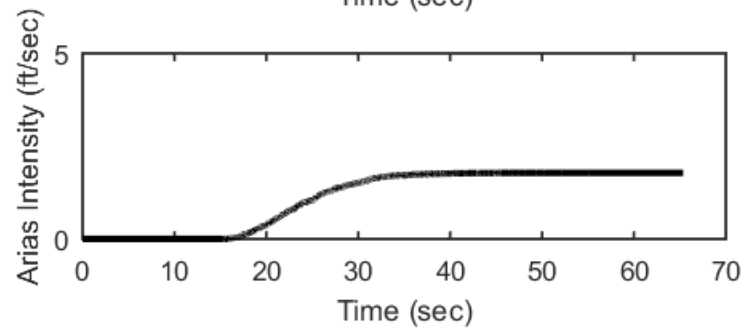
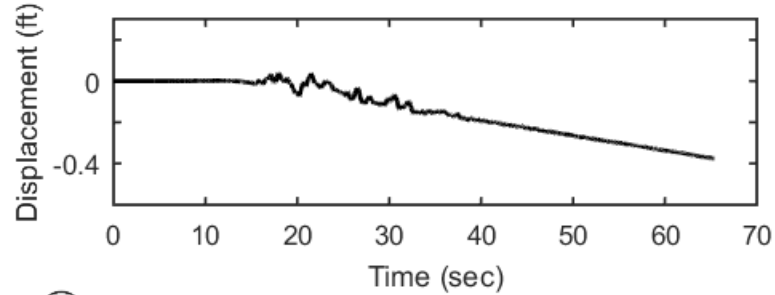
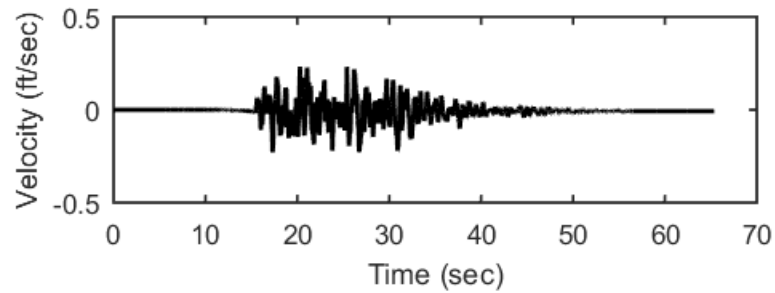
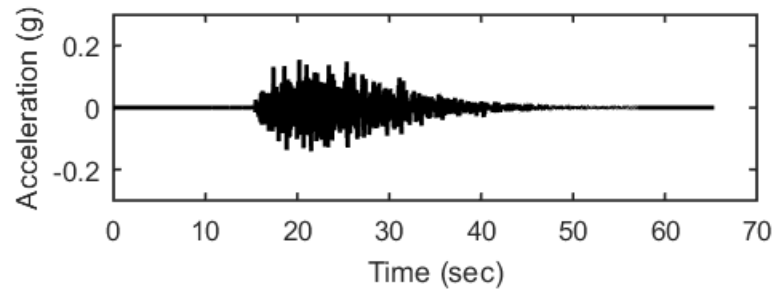




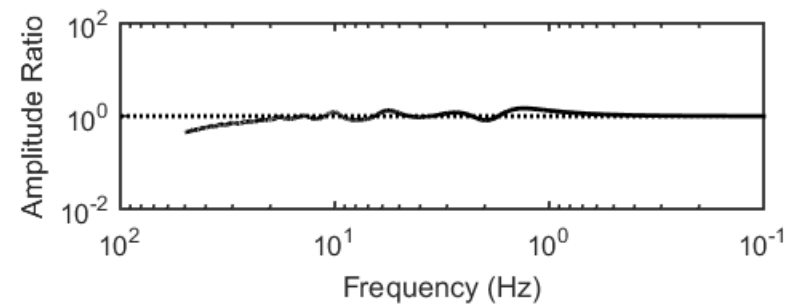
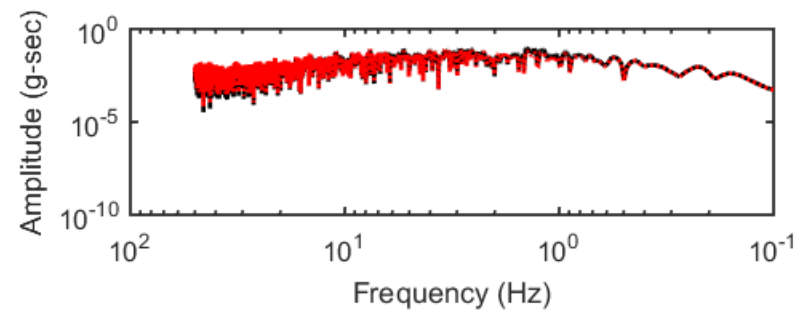
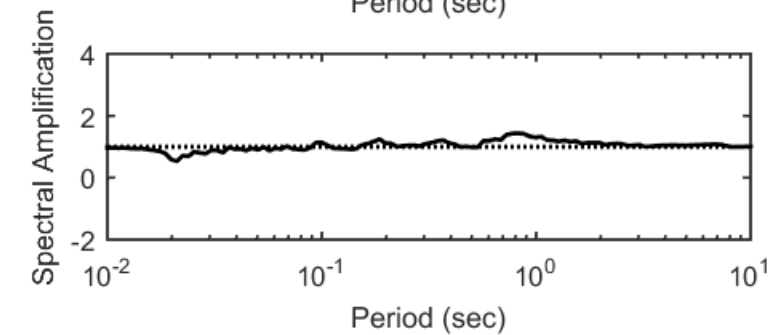
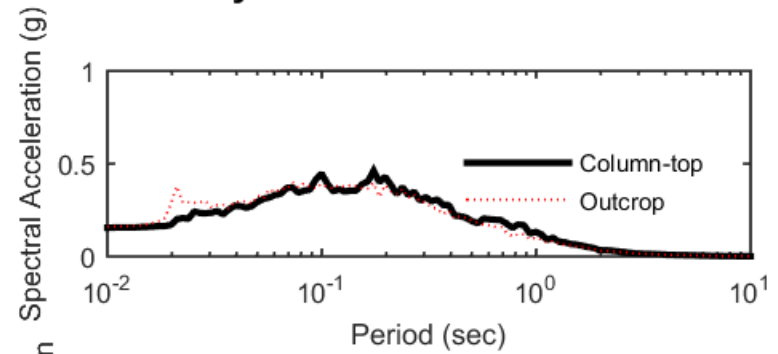
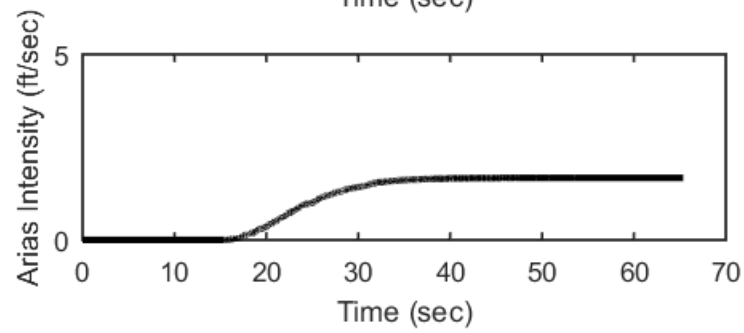
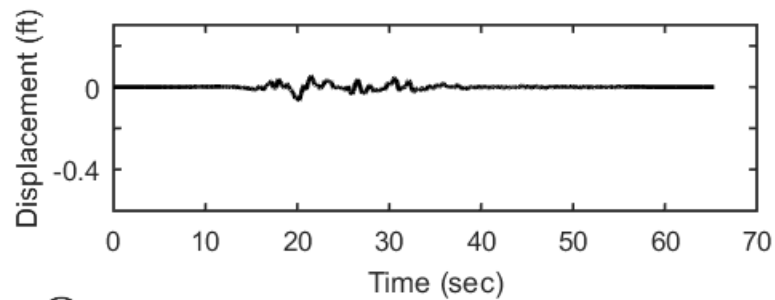
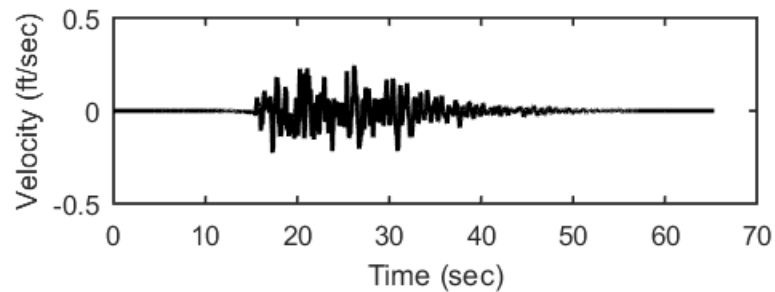
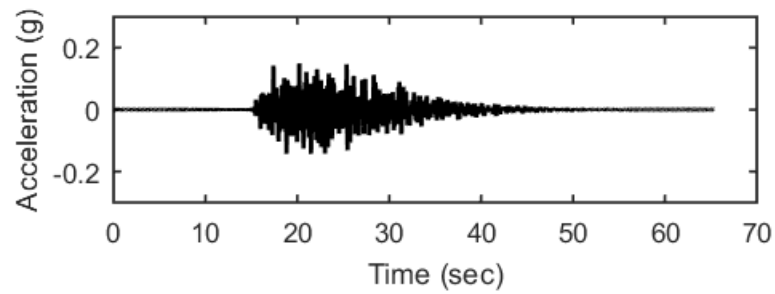
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE1



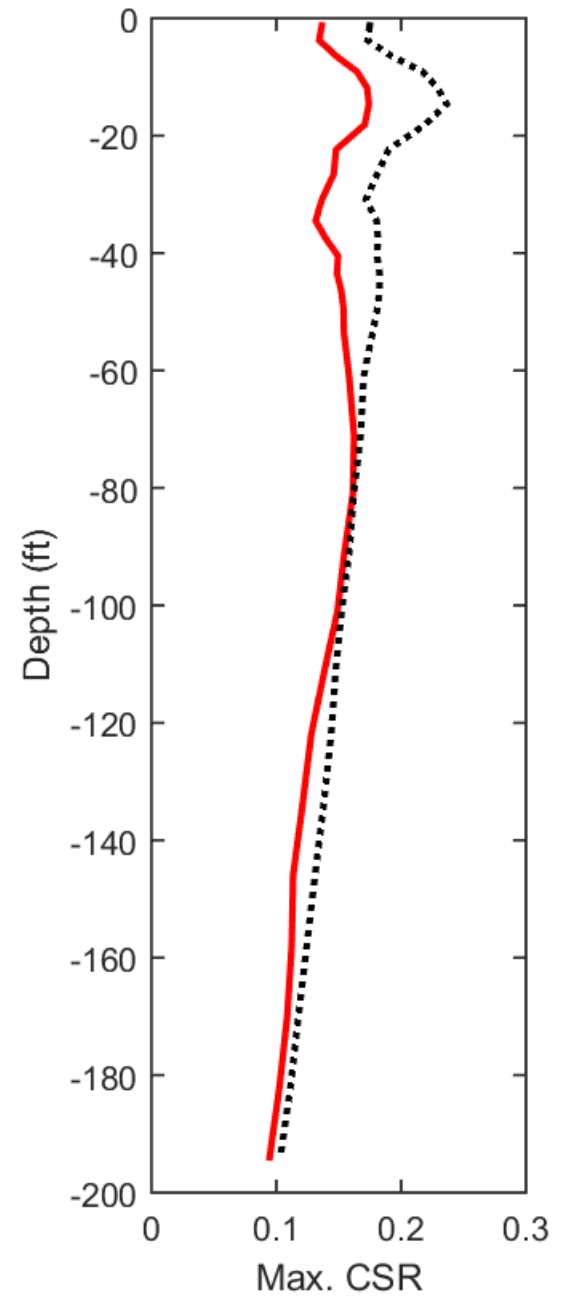
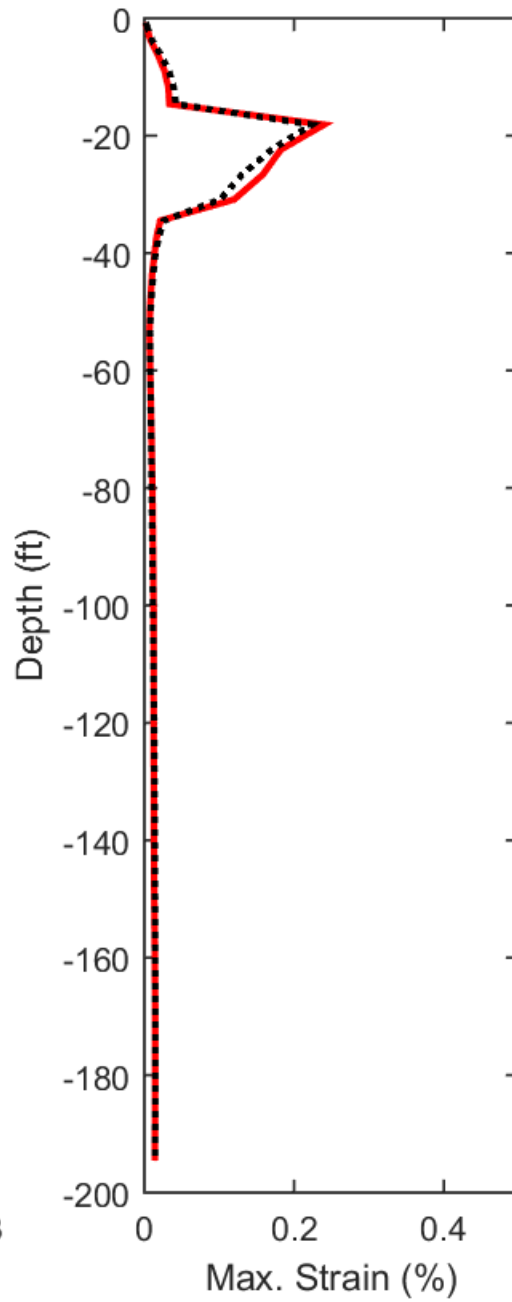
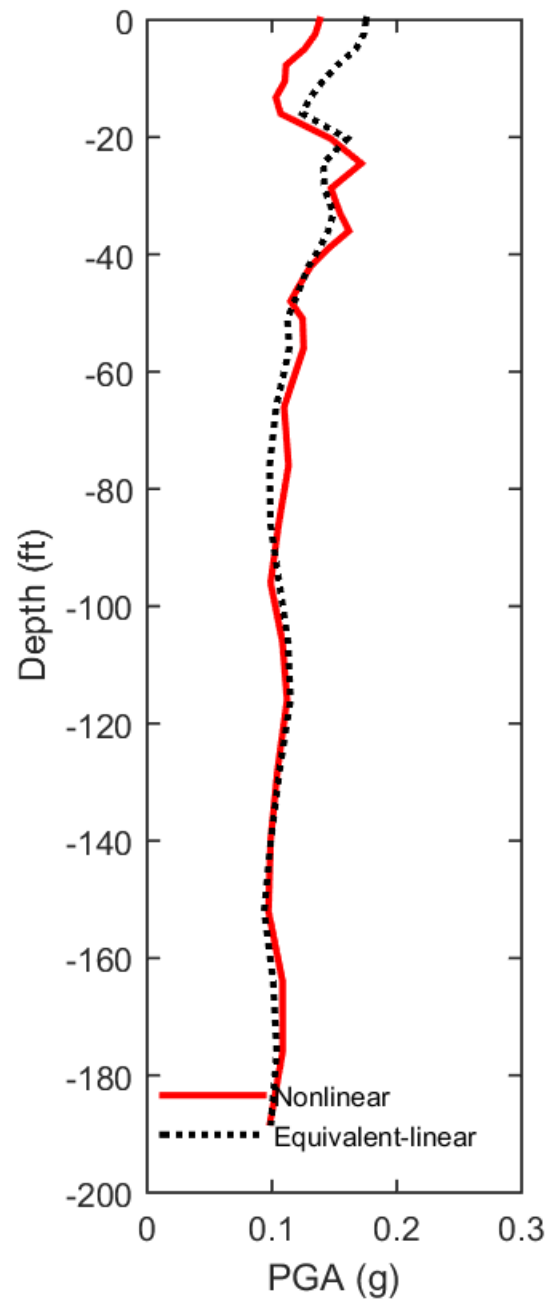
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE1



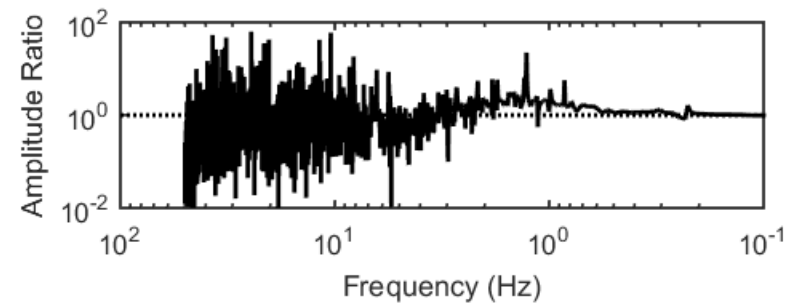
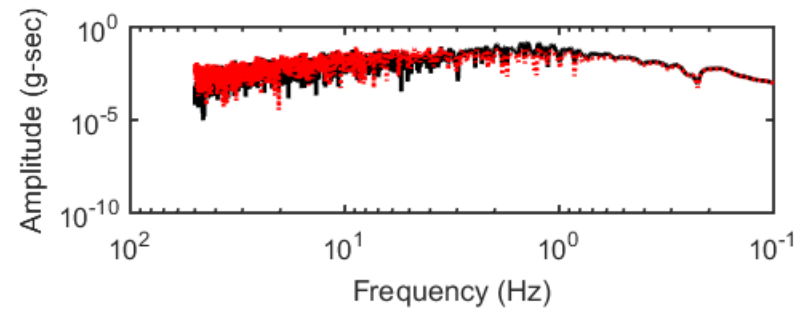
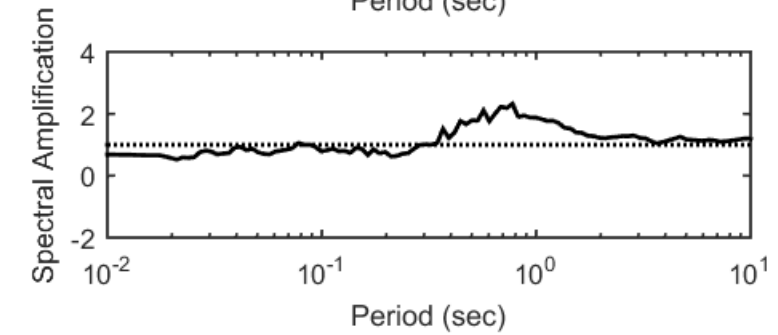
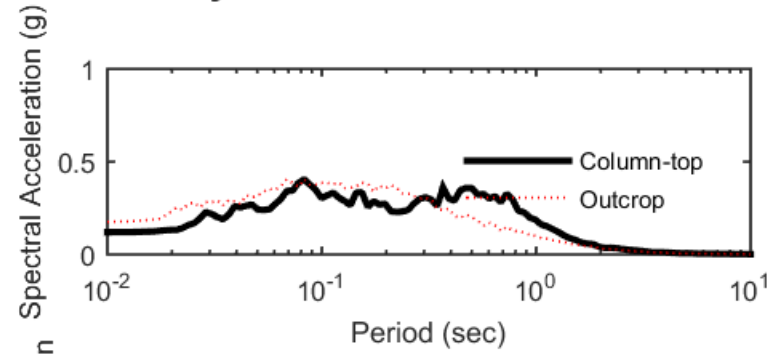
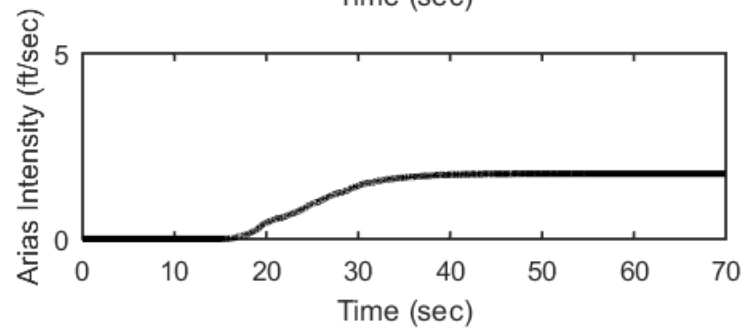
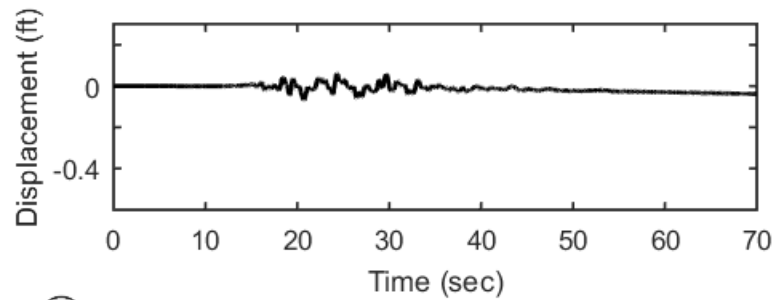
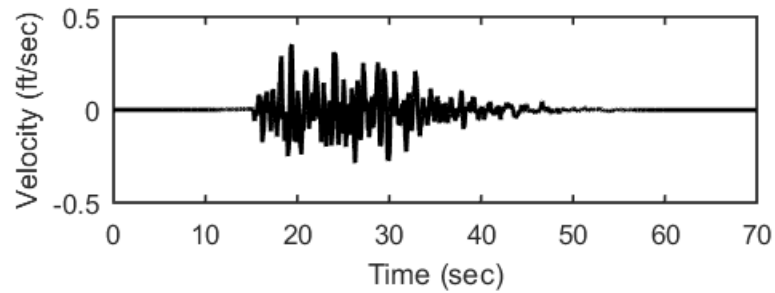
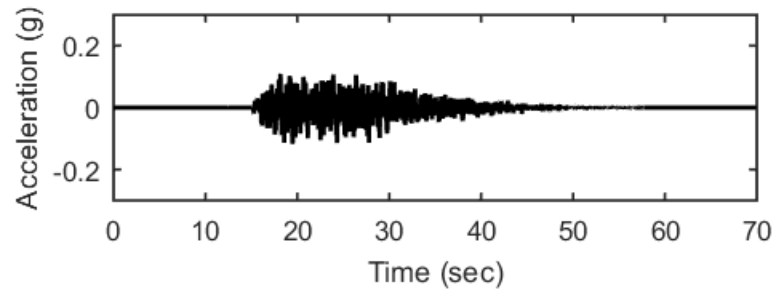
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE1



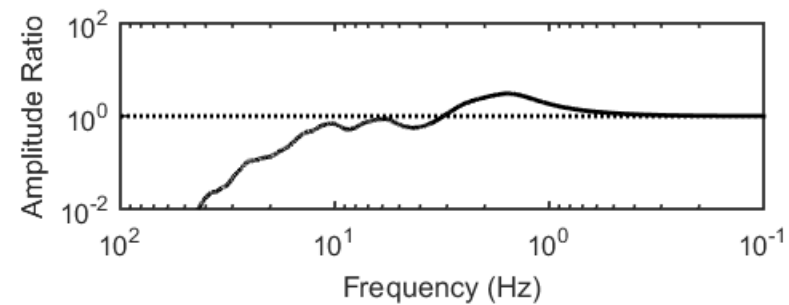
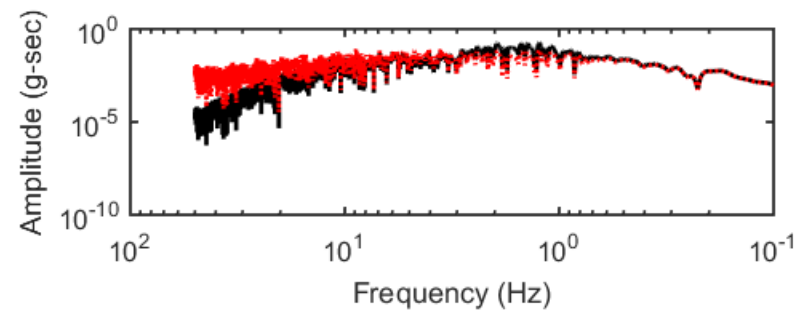
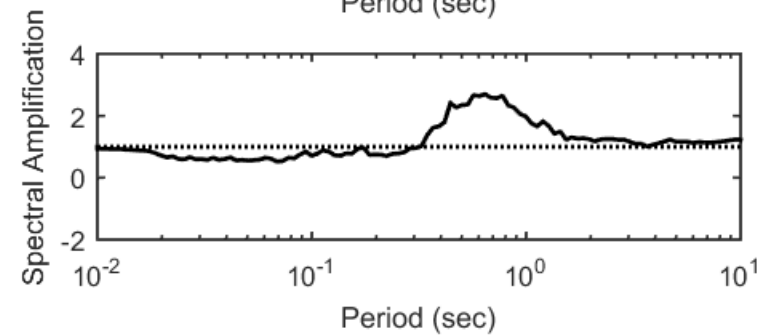
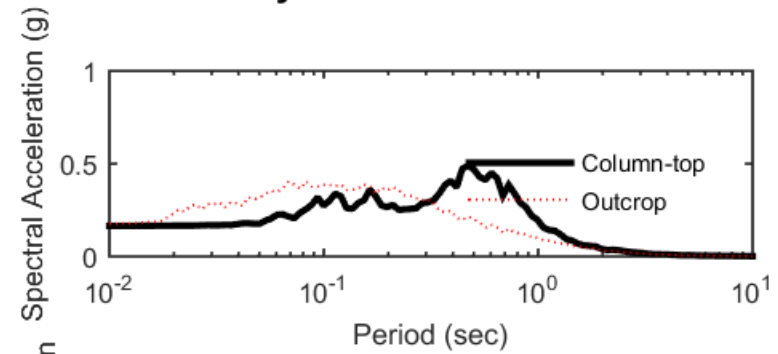
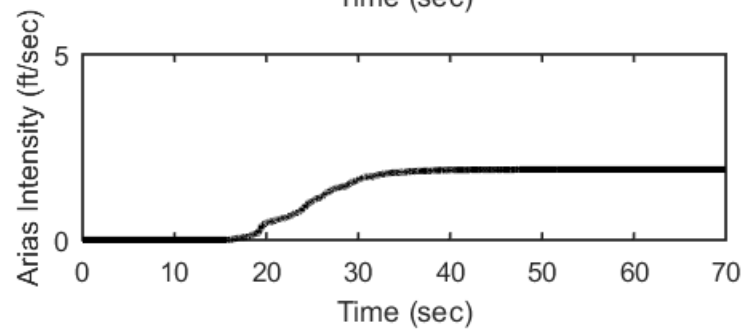
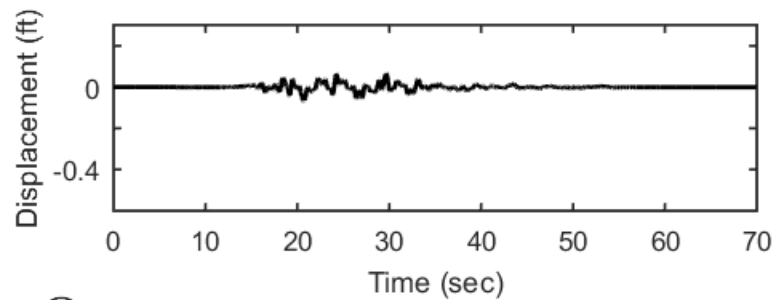
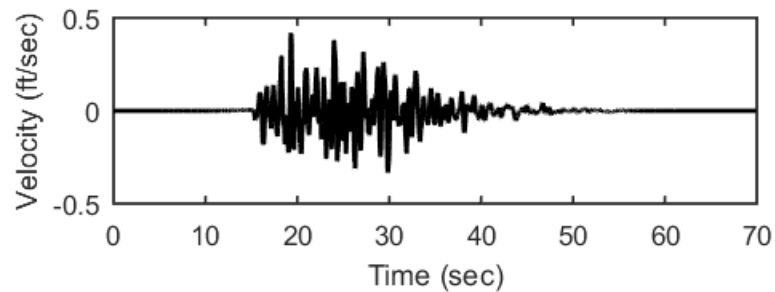
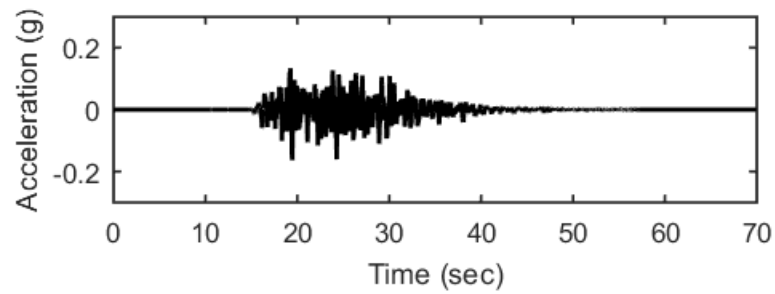
### Profile outputs for Motion: FEE1



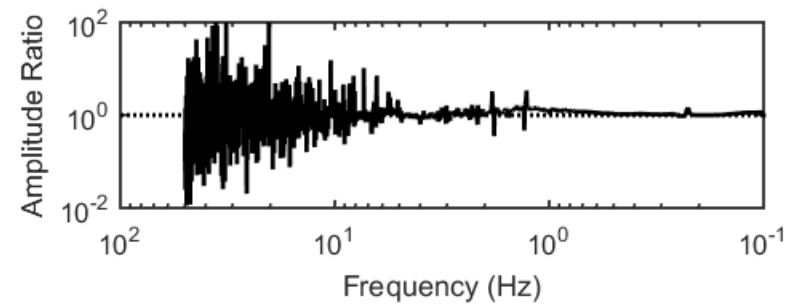
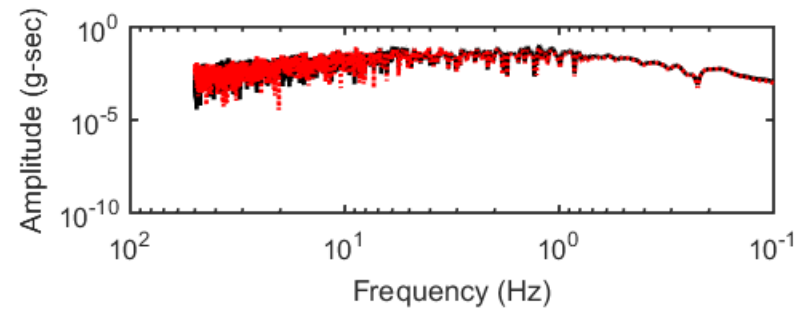
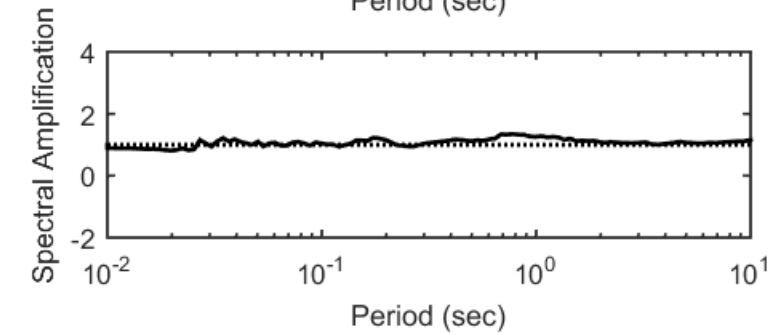
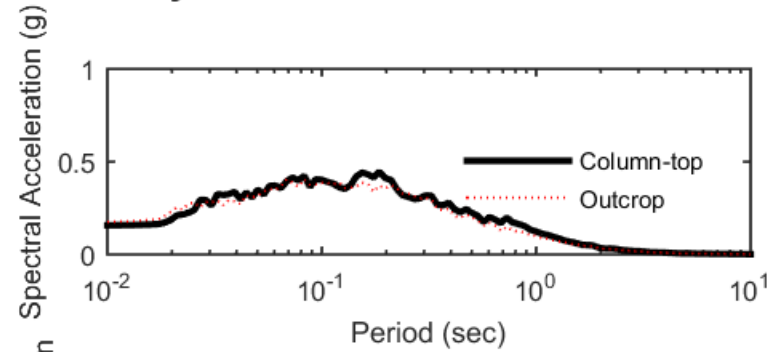
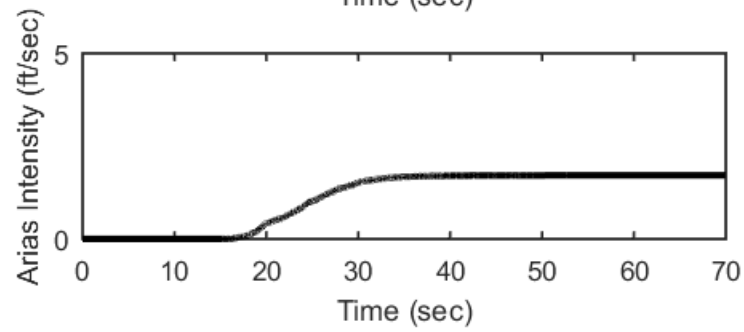
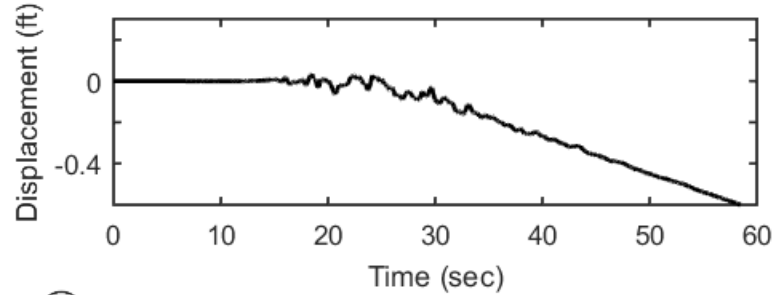
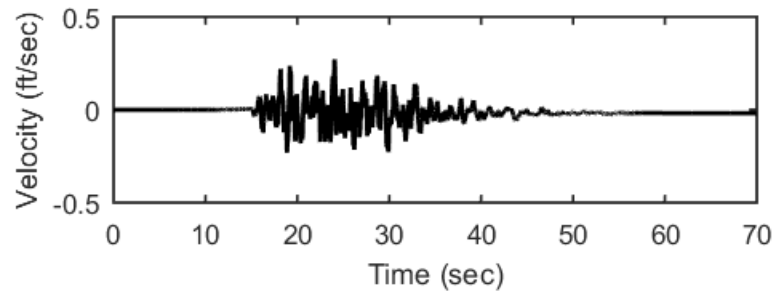
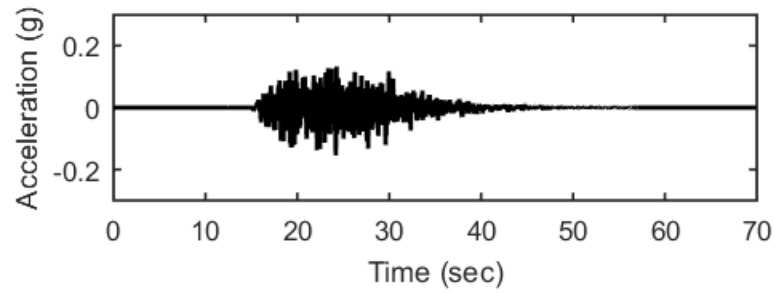
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE2



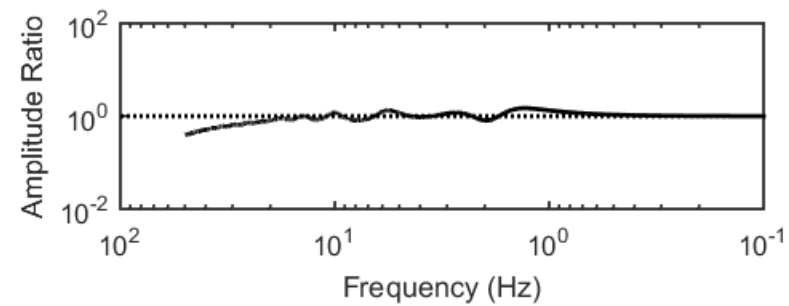
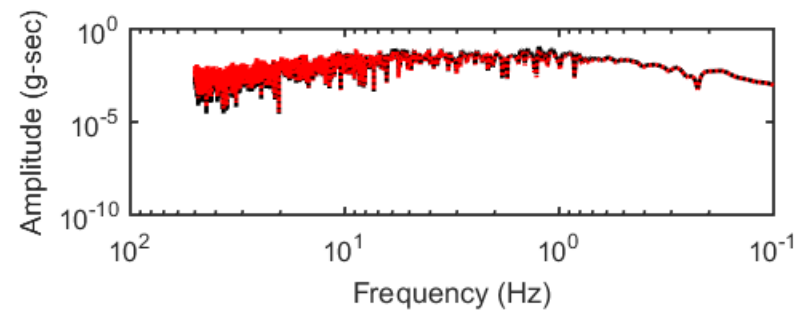
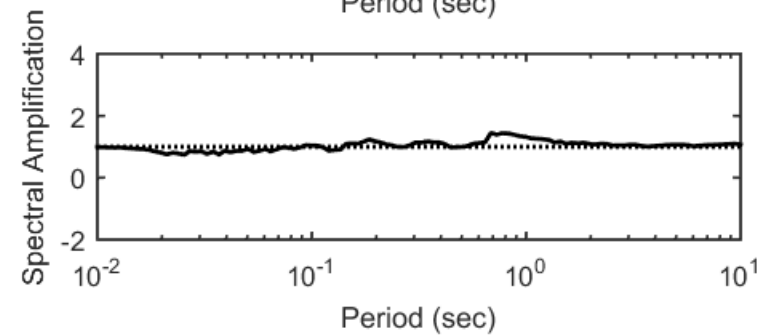
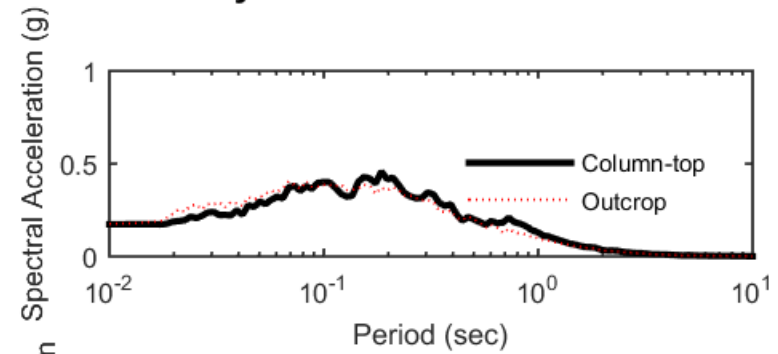
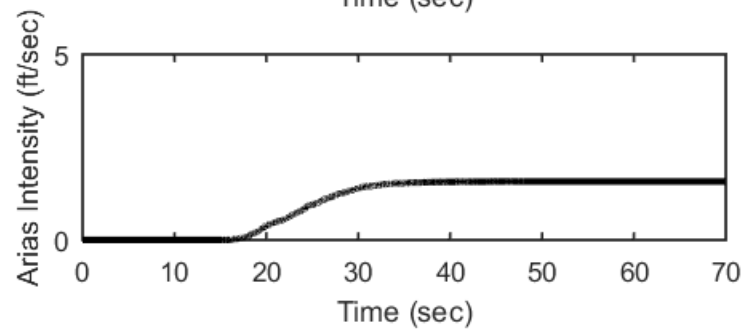
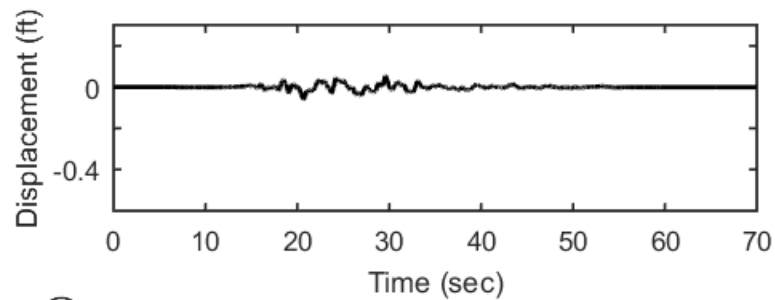
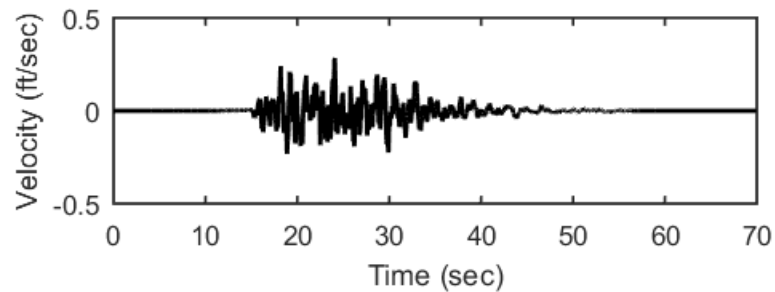
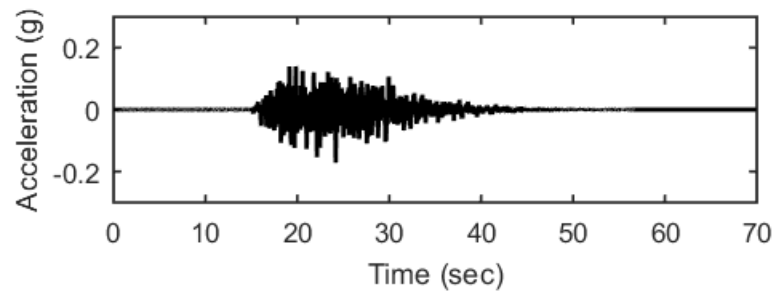
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE2



## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE2

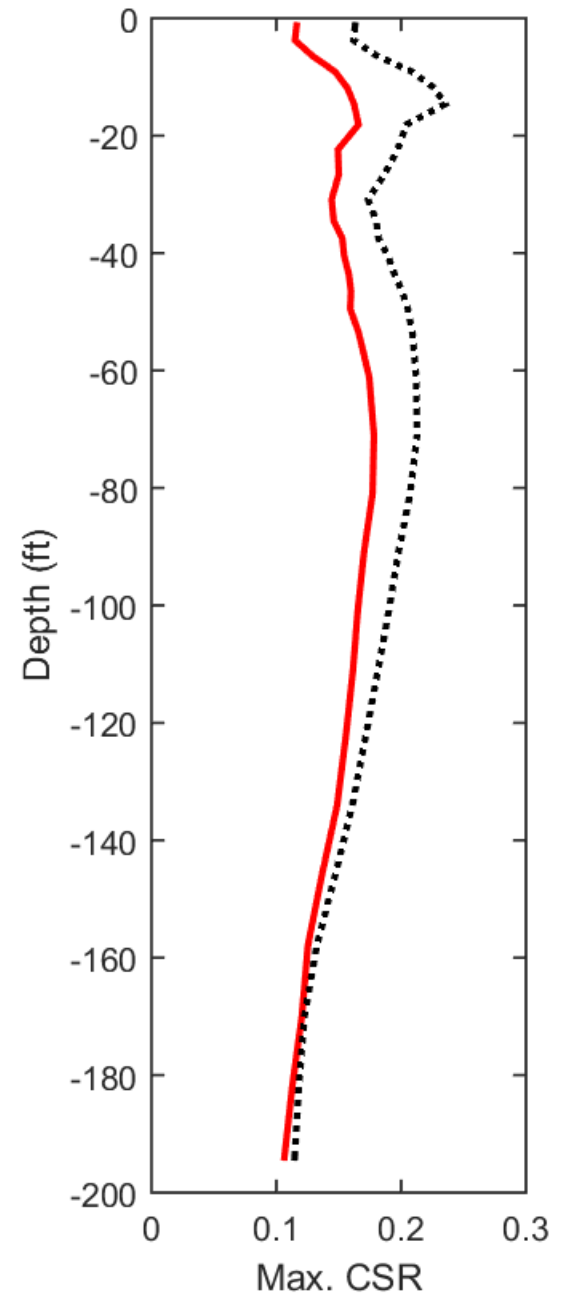
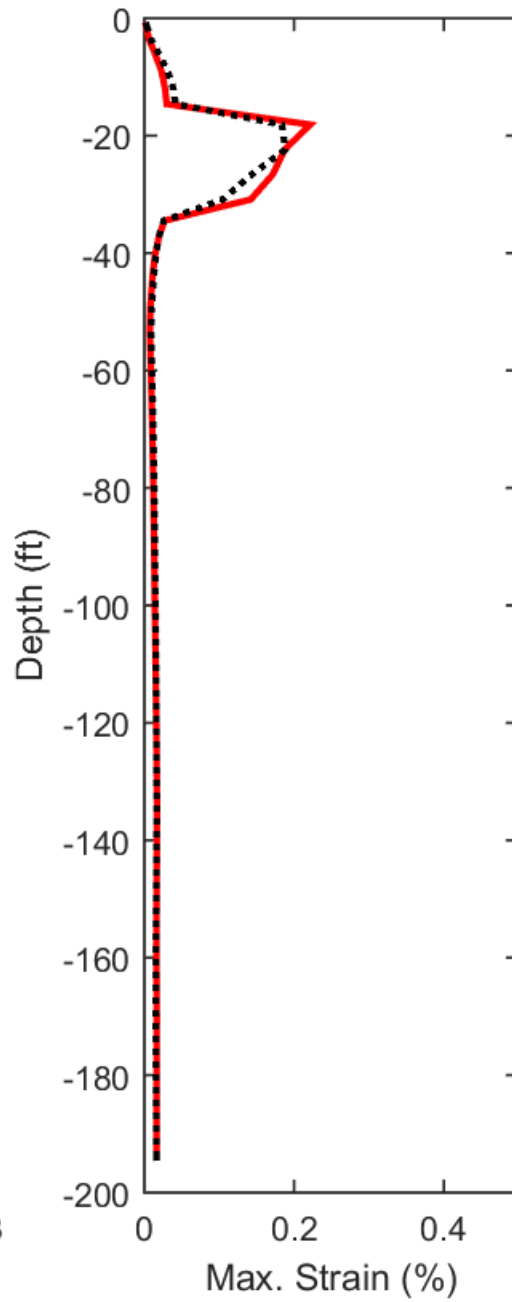
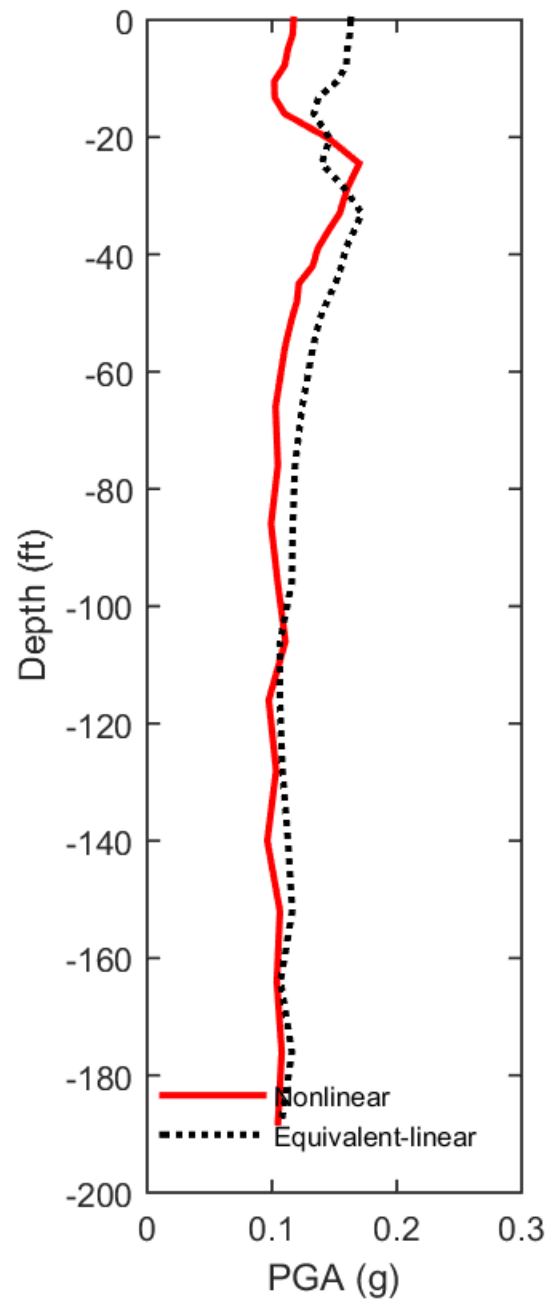


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE2

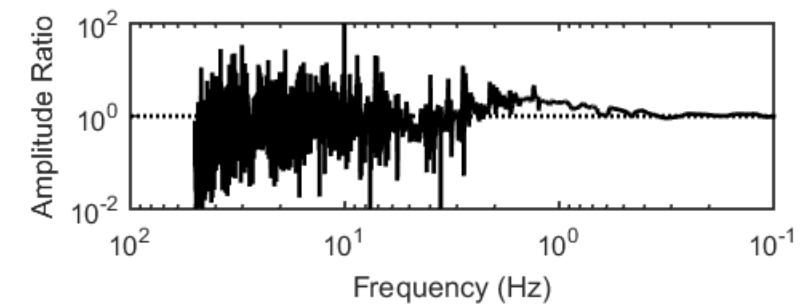
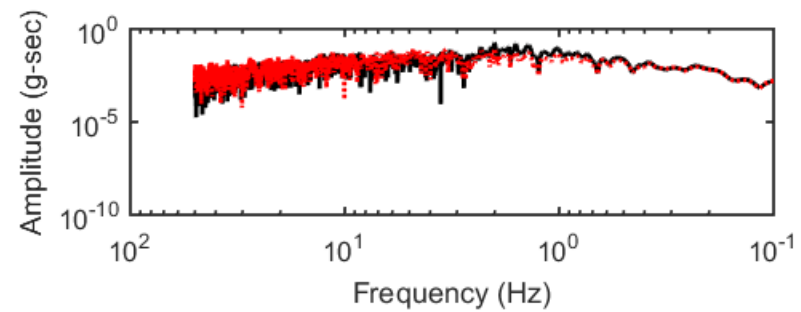
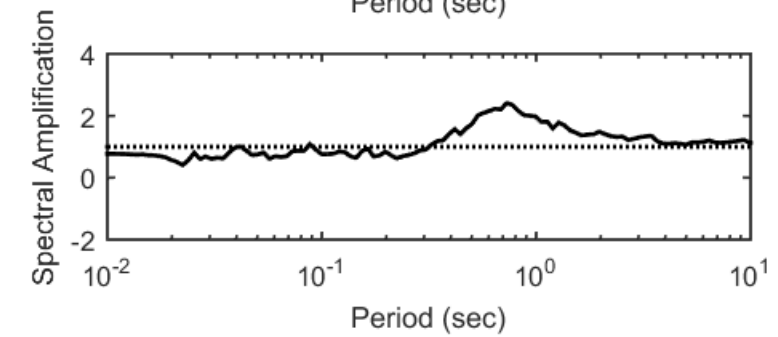
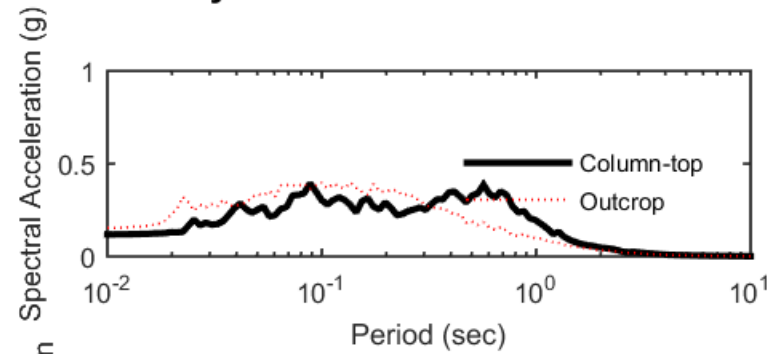
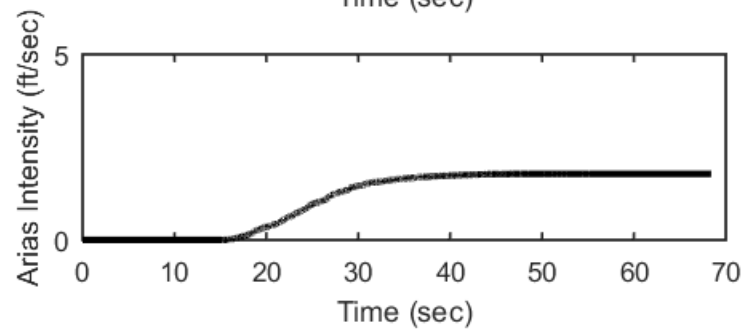
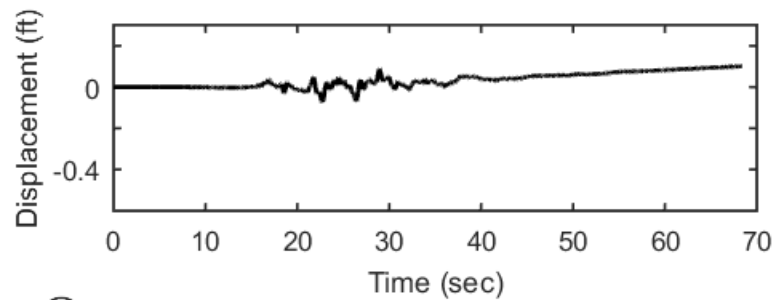
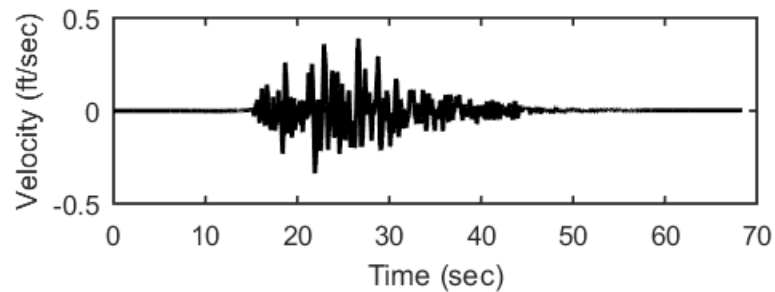
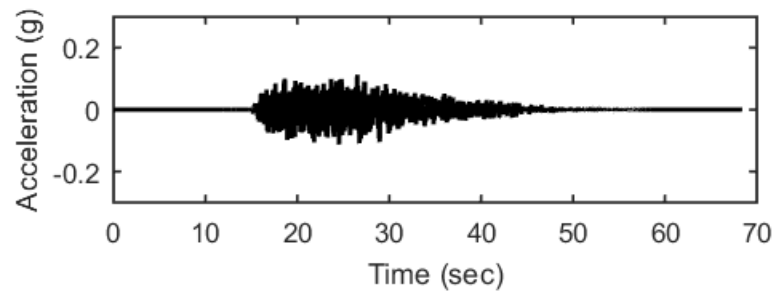




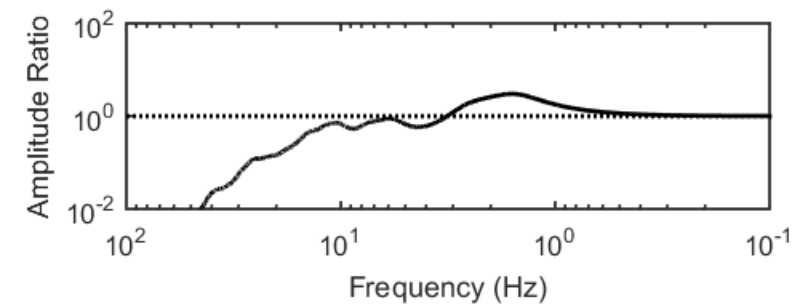
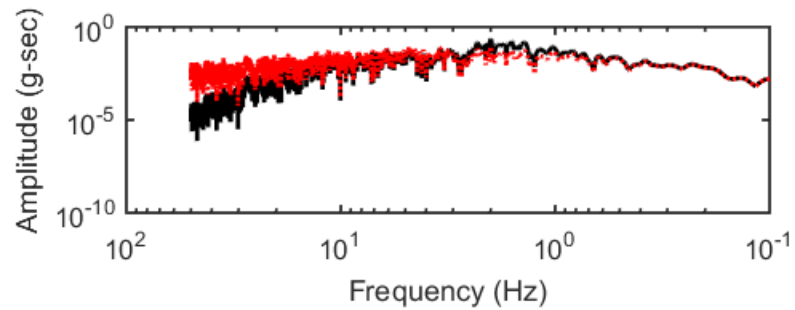
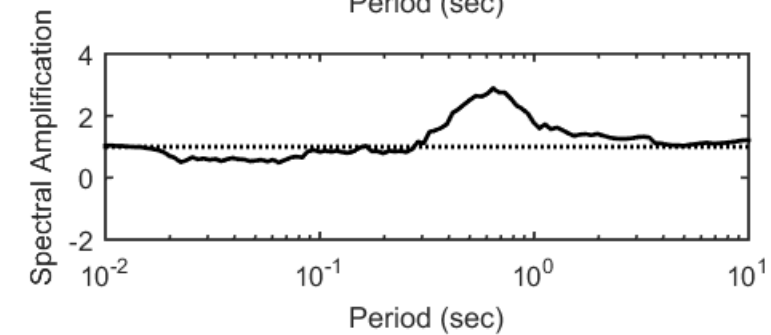
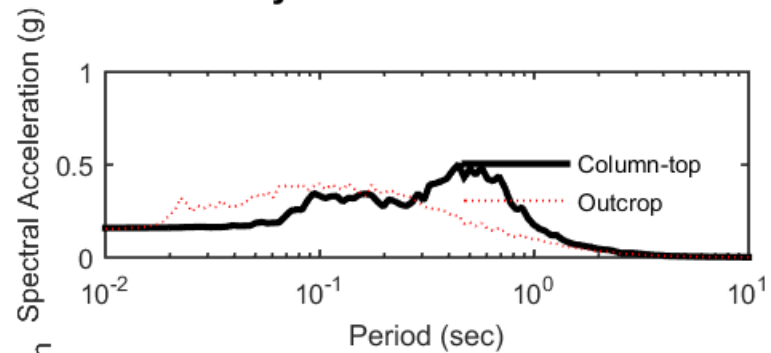
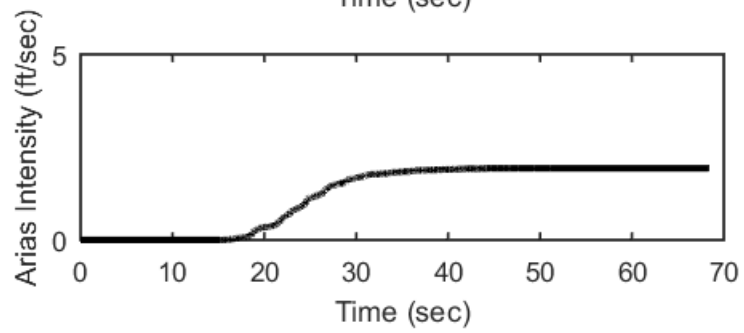
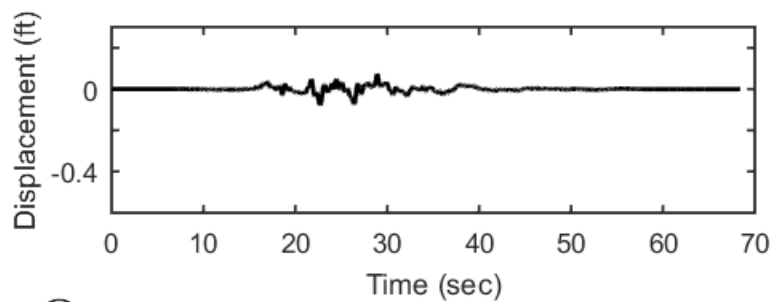
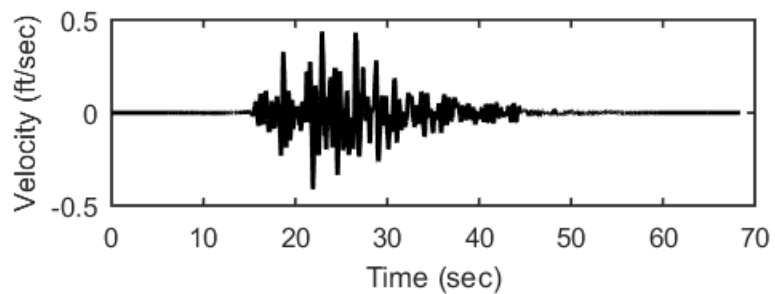
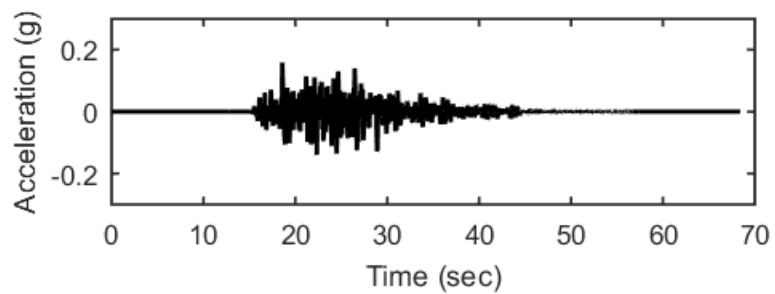
### Profile outputs for Motion: FEE2



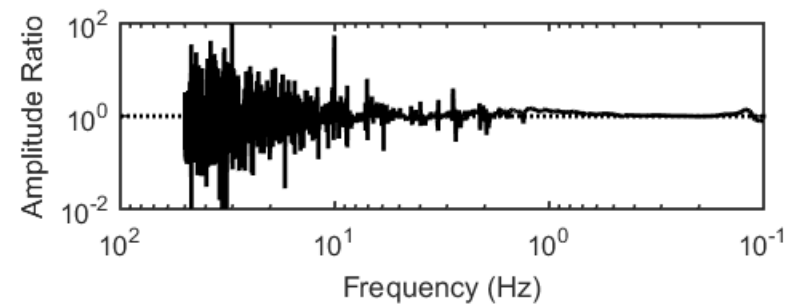
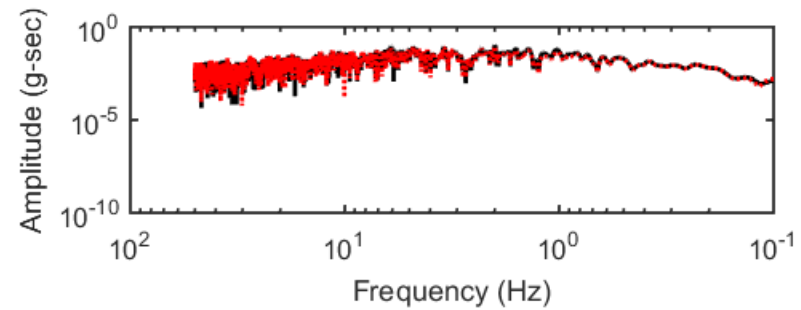
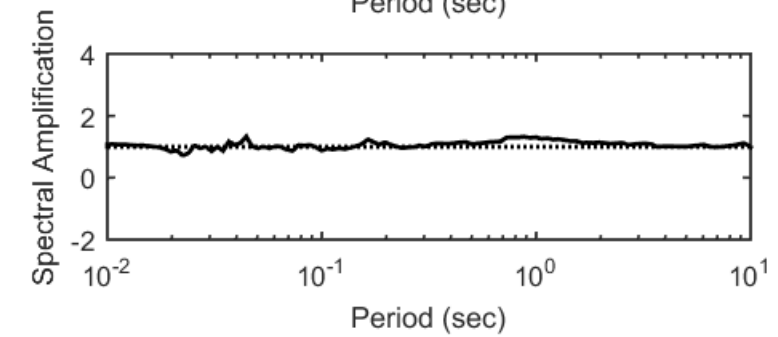
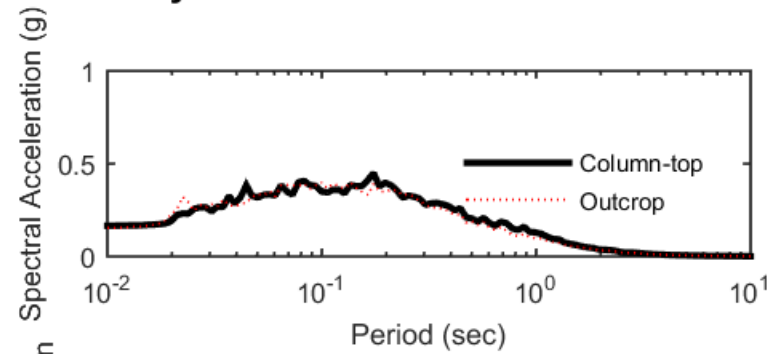
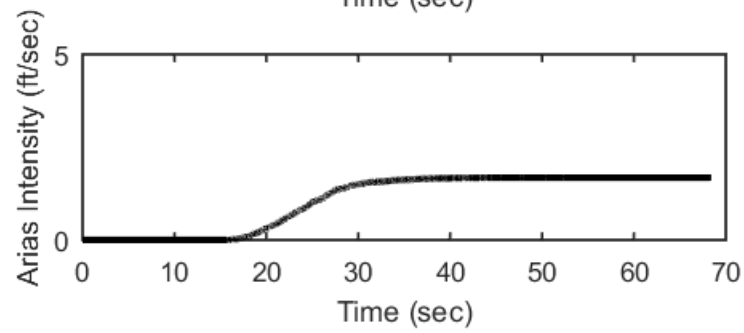
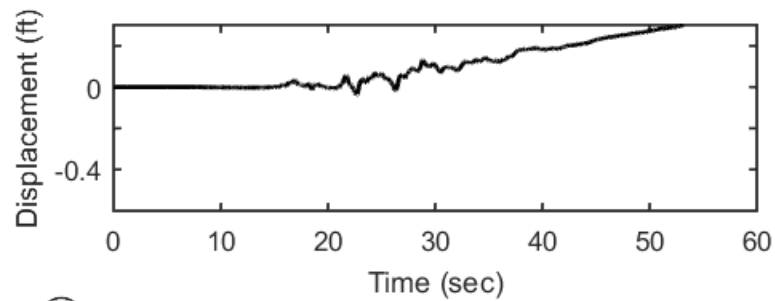
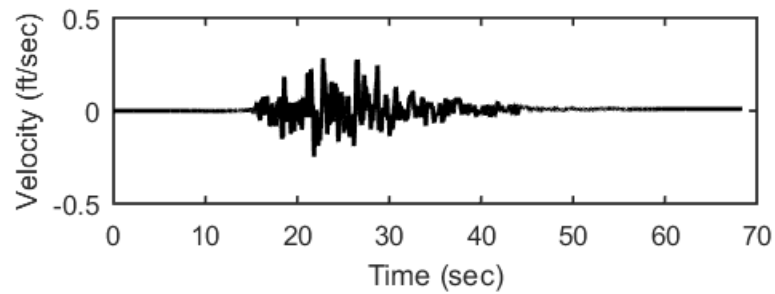
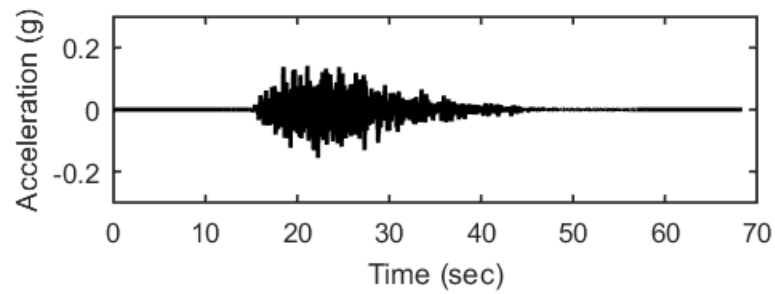
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE3



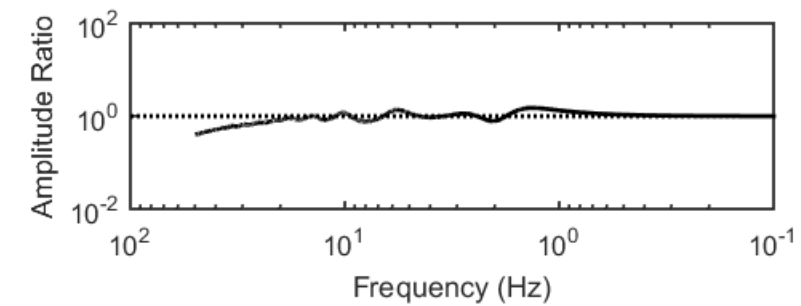
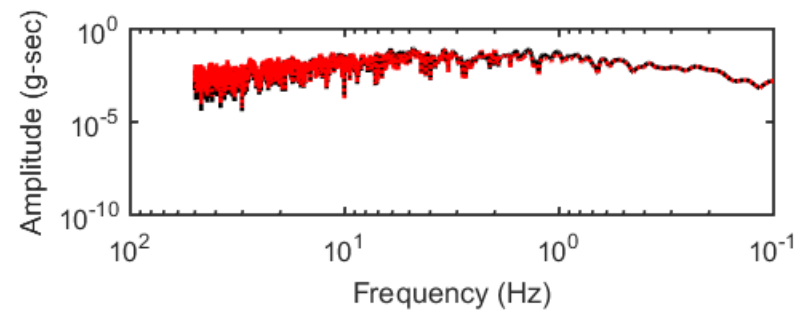
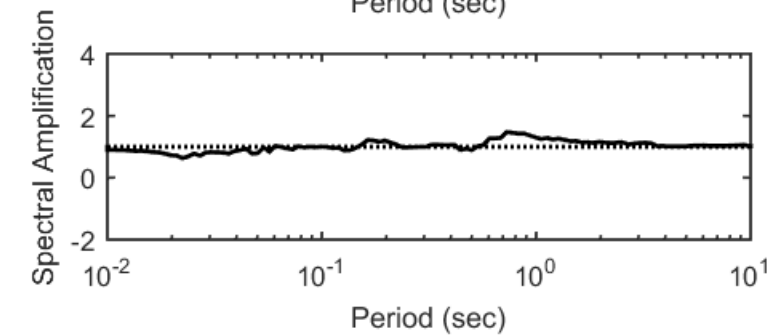
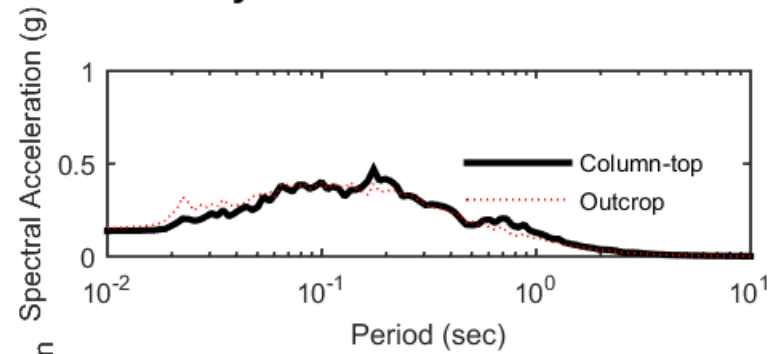
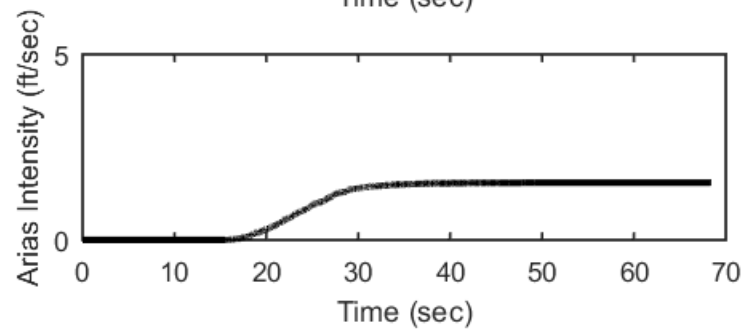
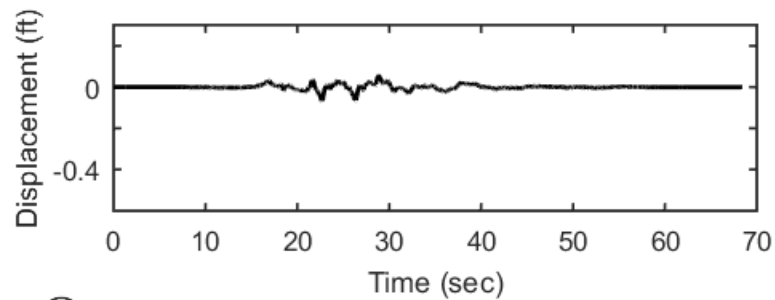
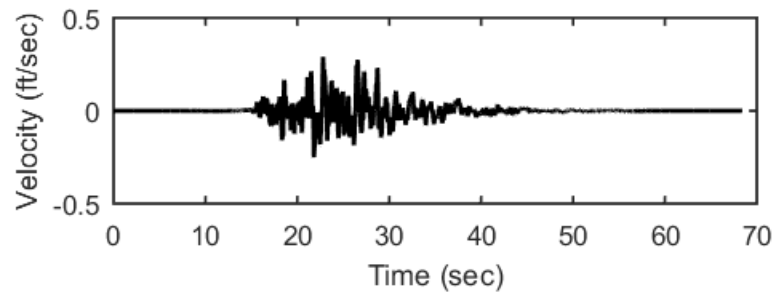
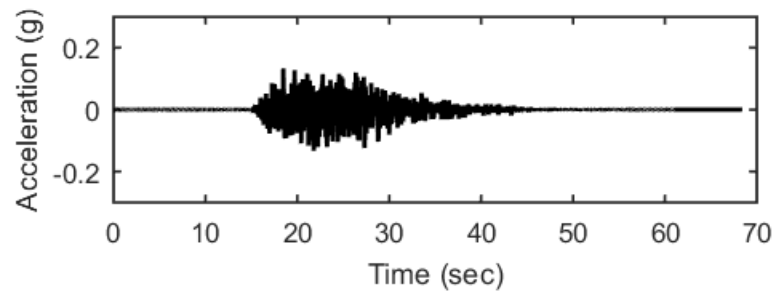
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE3



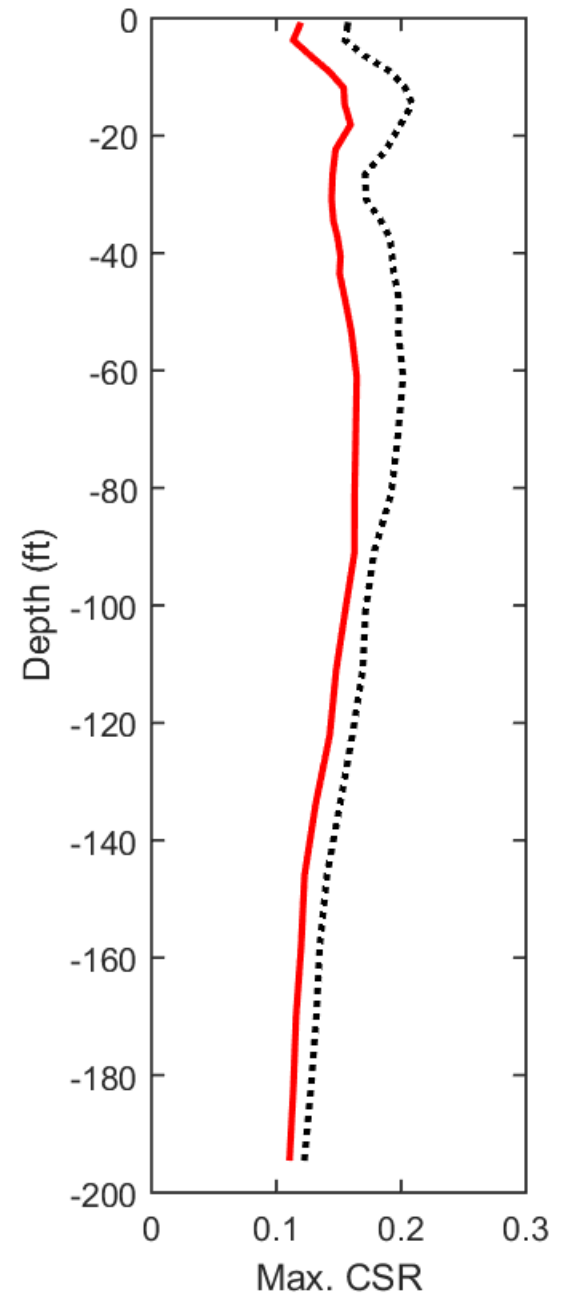
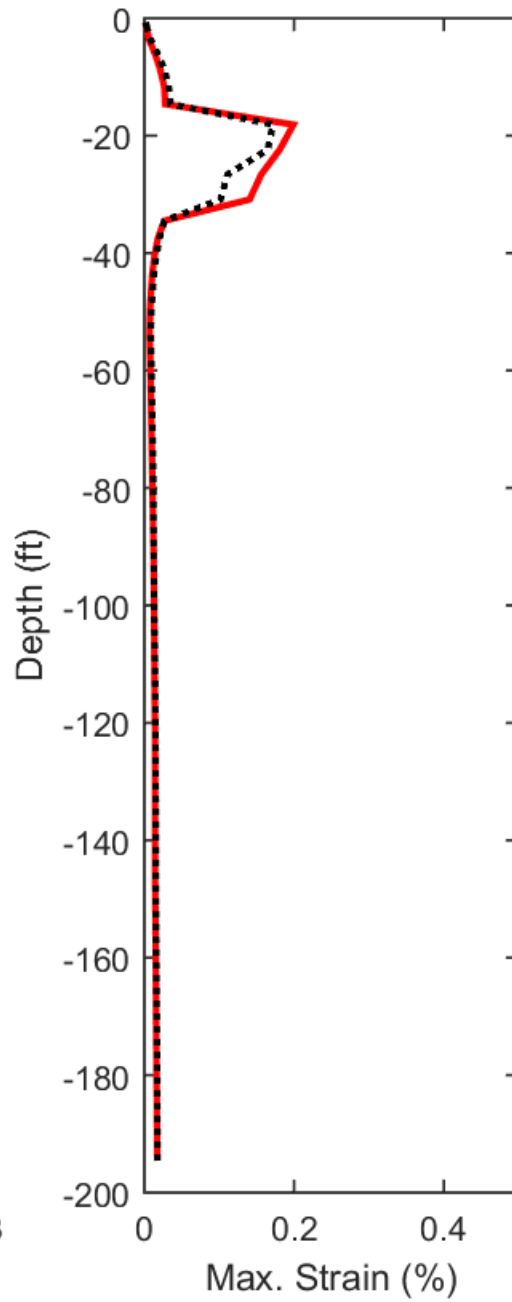
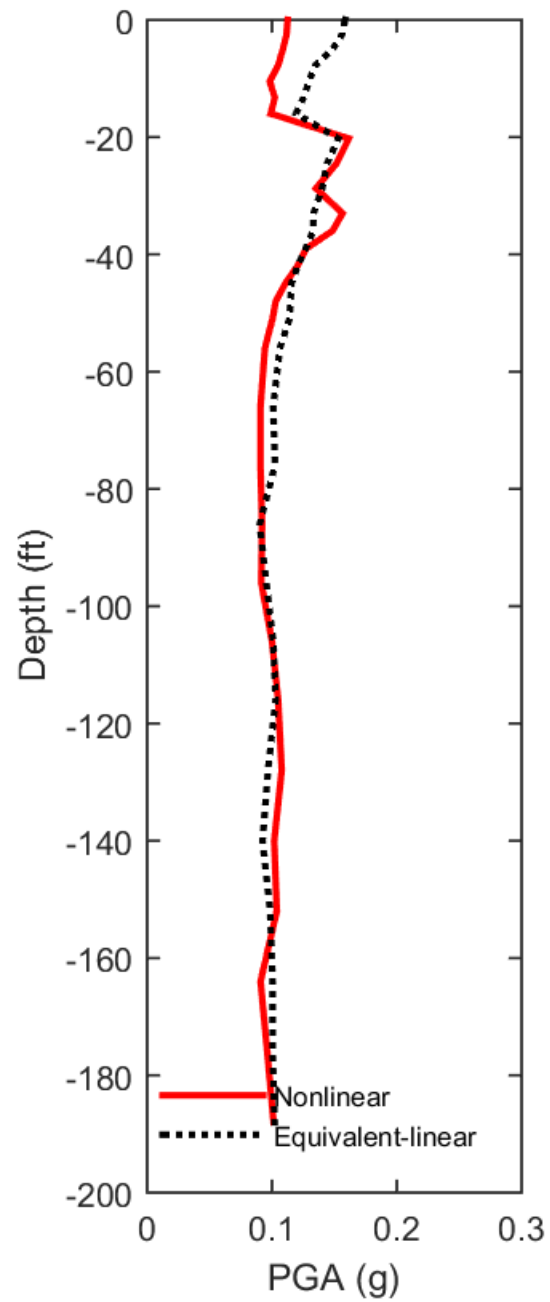
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE3



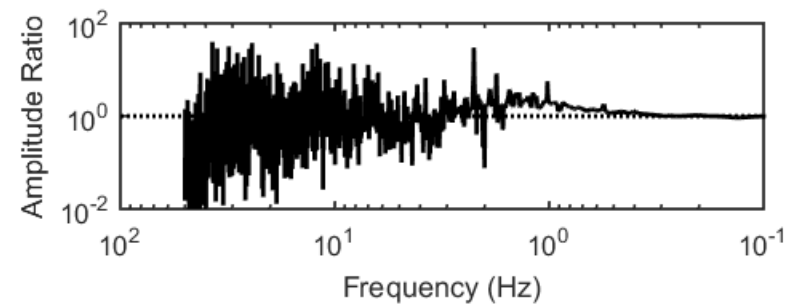
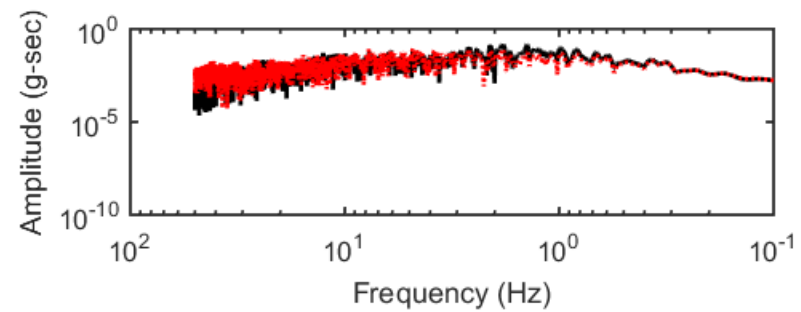
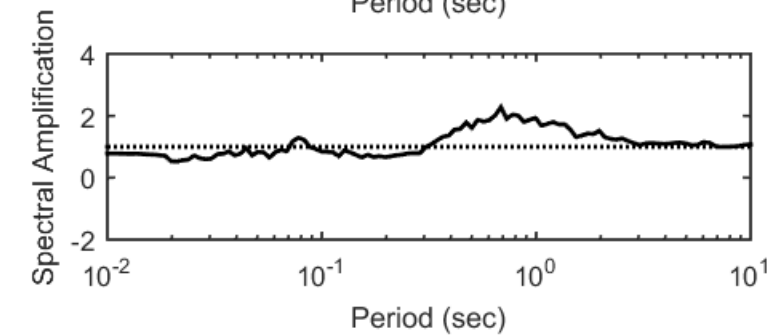
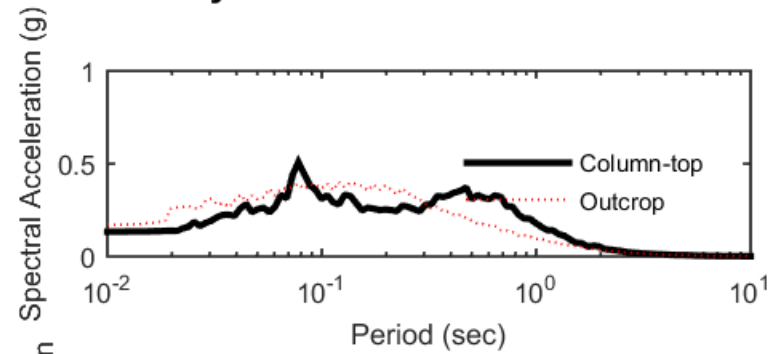
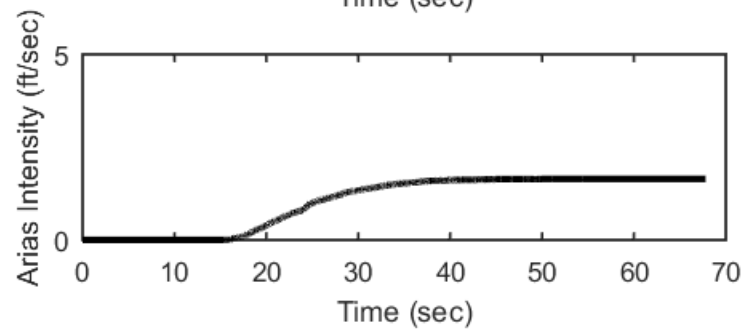
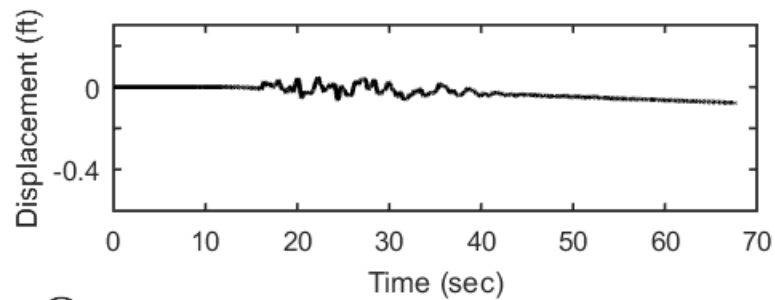
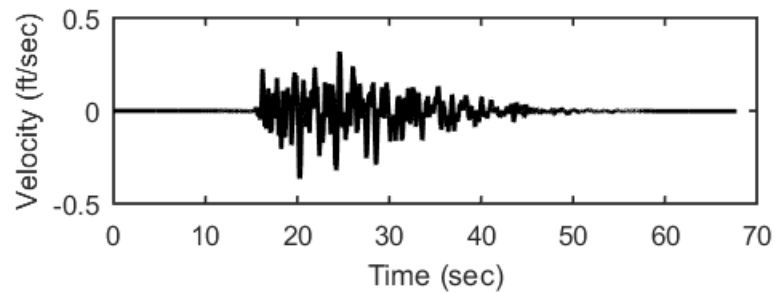
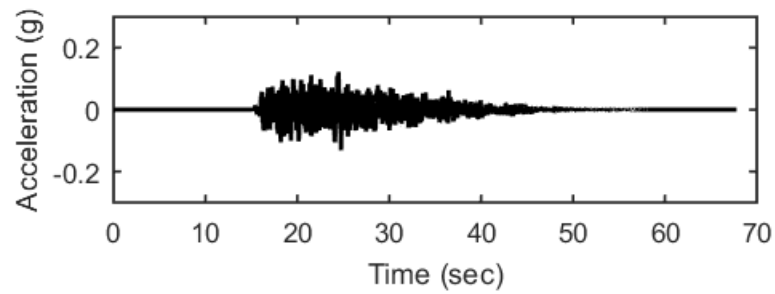
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE3



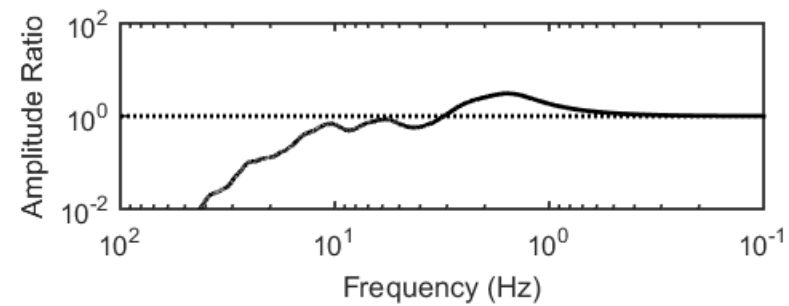
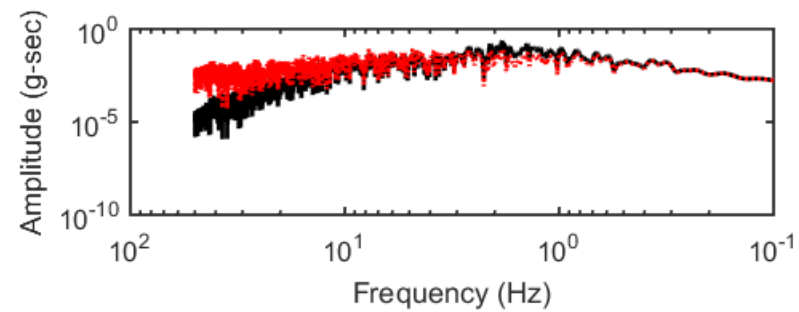
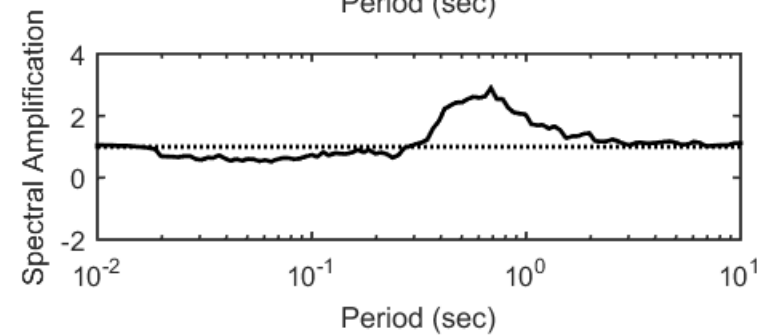
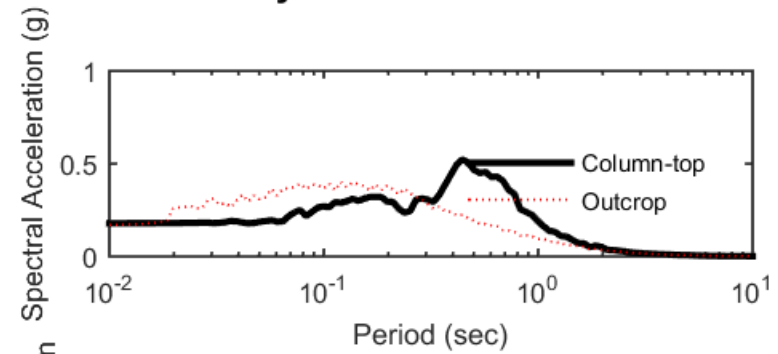
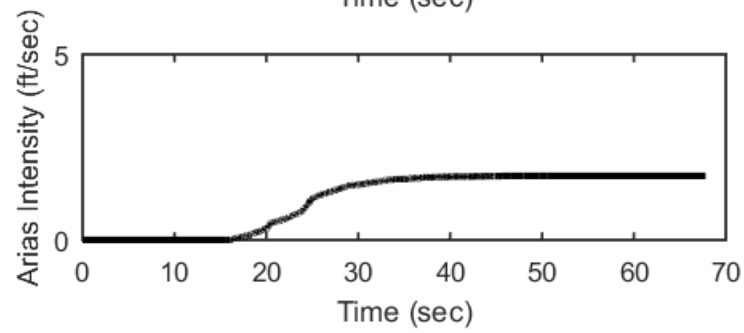
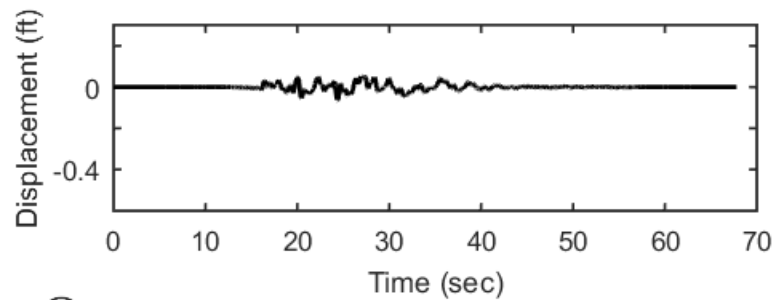
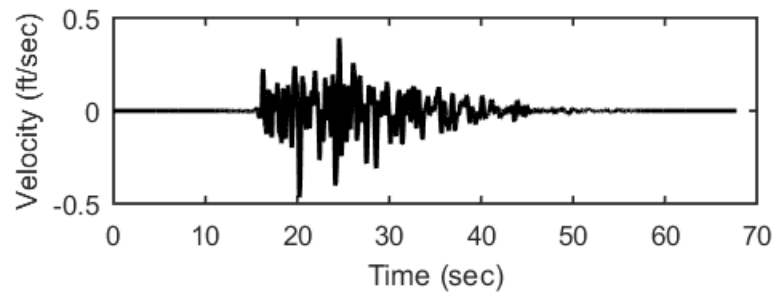
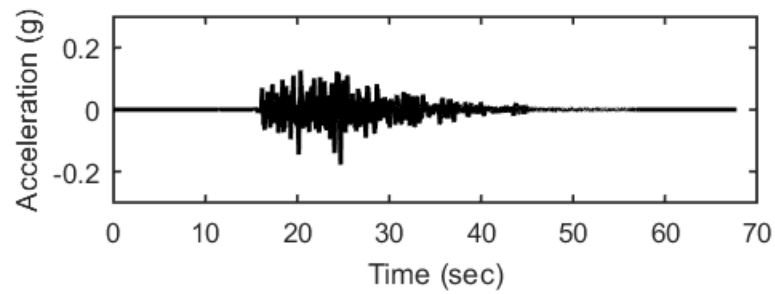
### Profile outputs for Motion: FEE3



## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE4

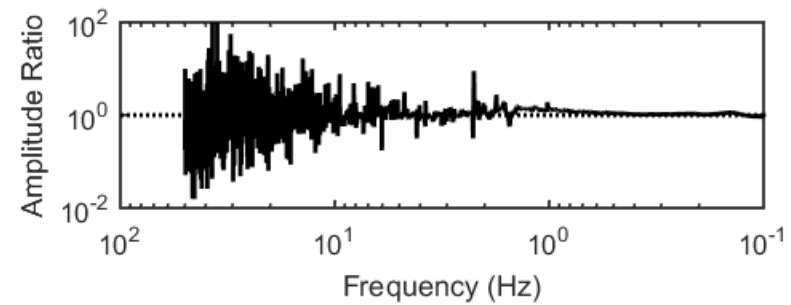
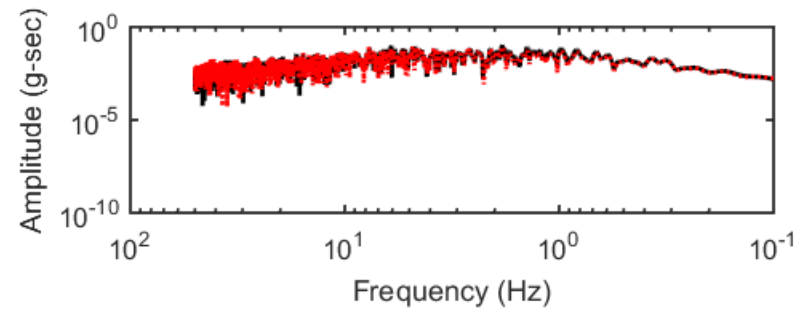
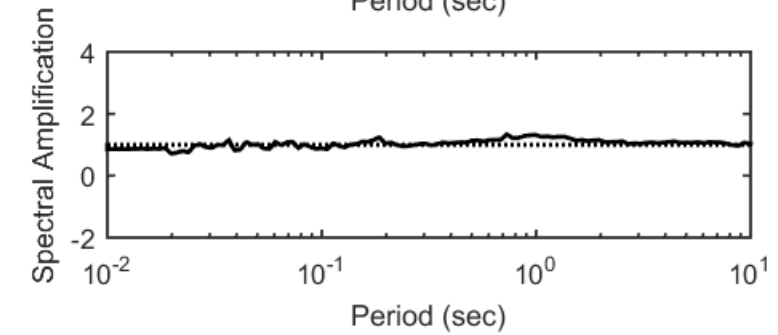
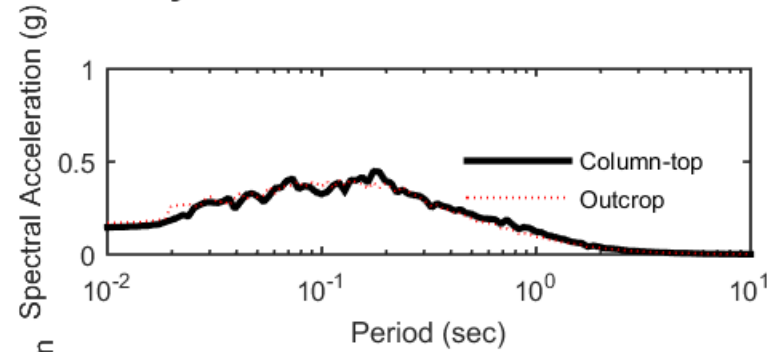
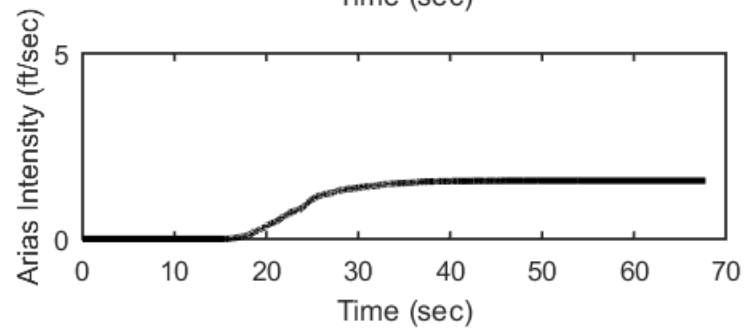
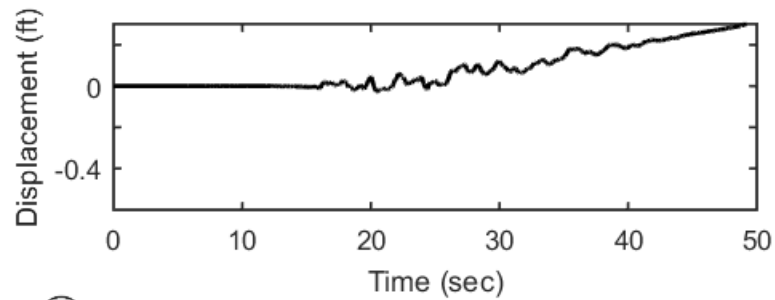
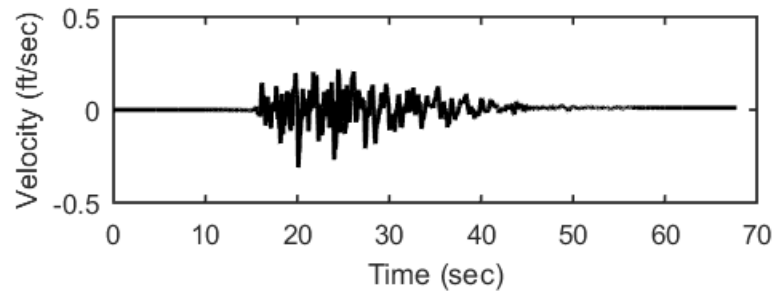
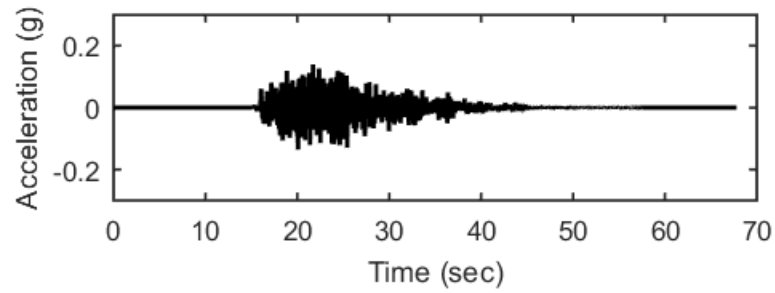


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE4

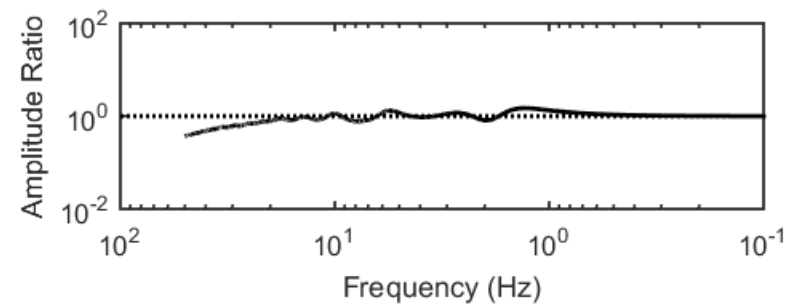
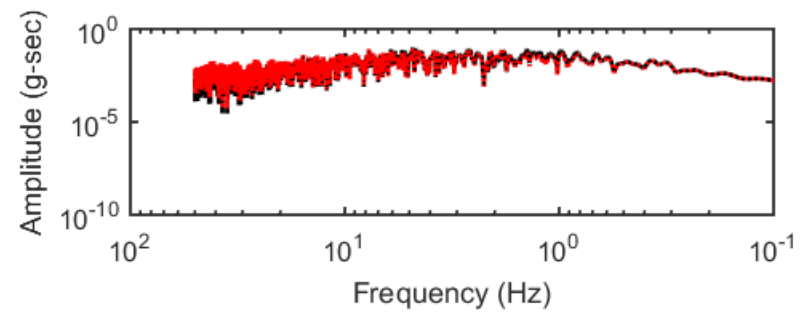
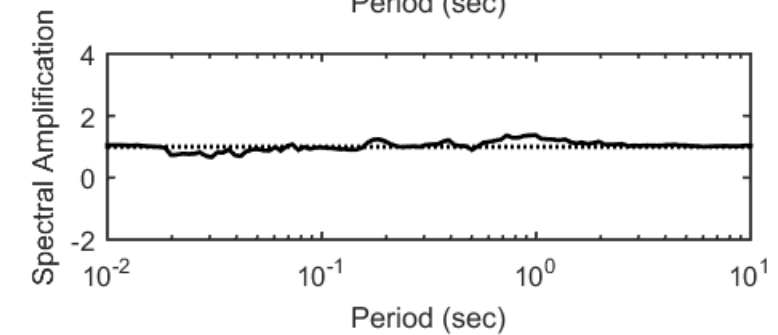
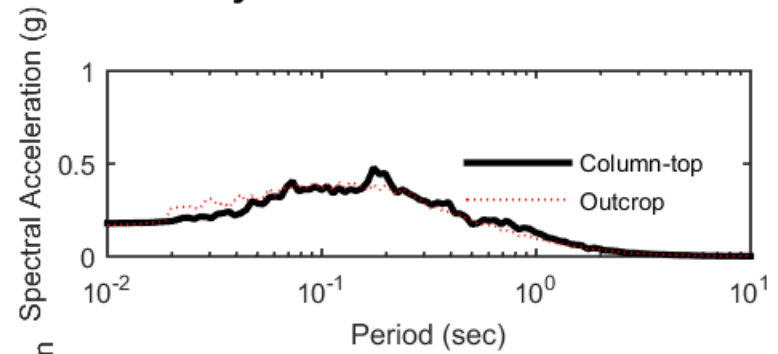
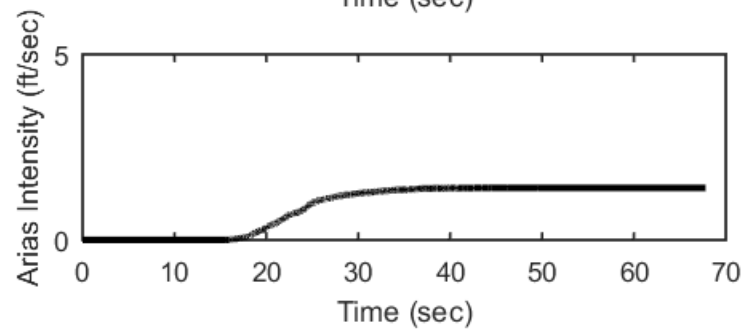
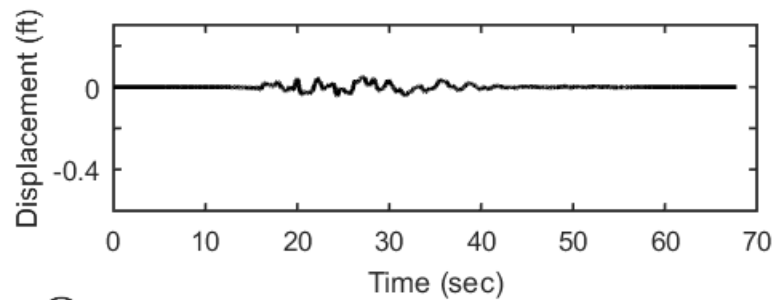
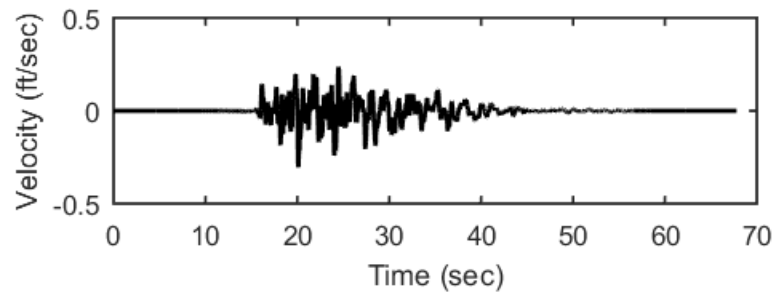
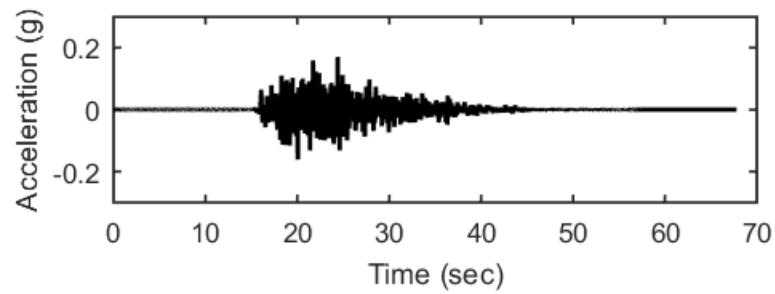




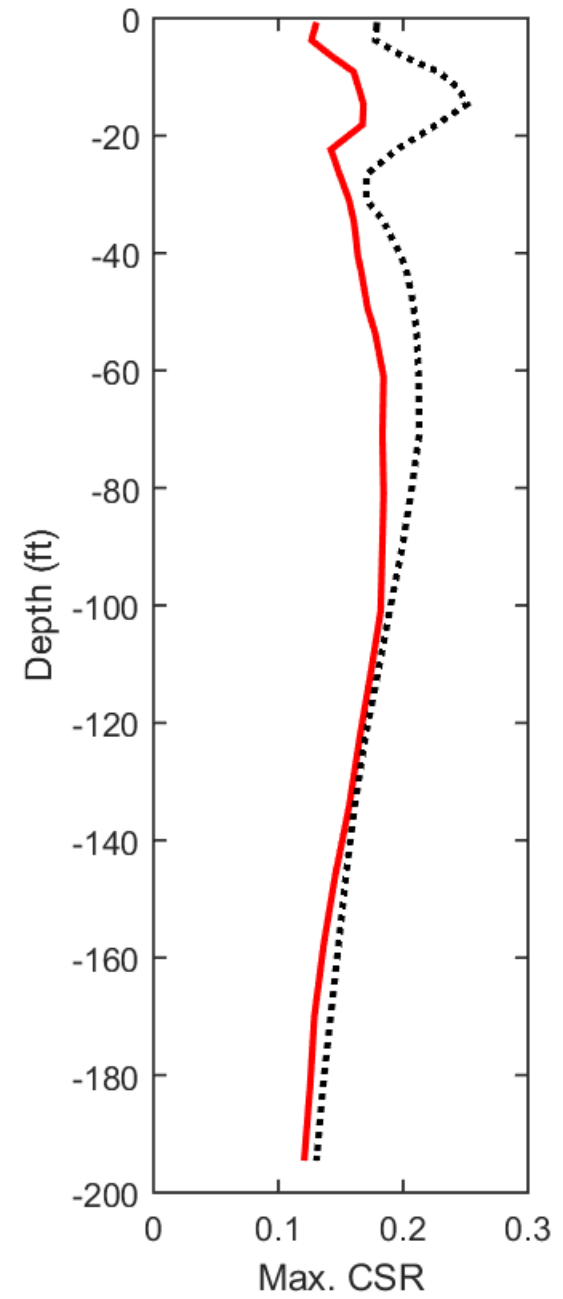
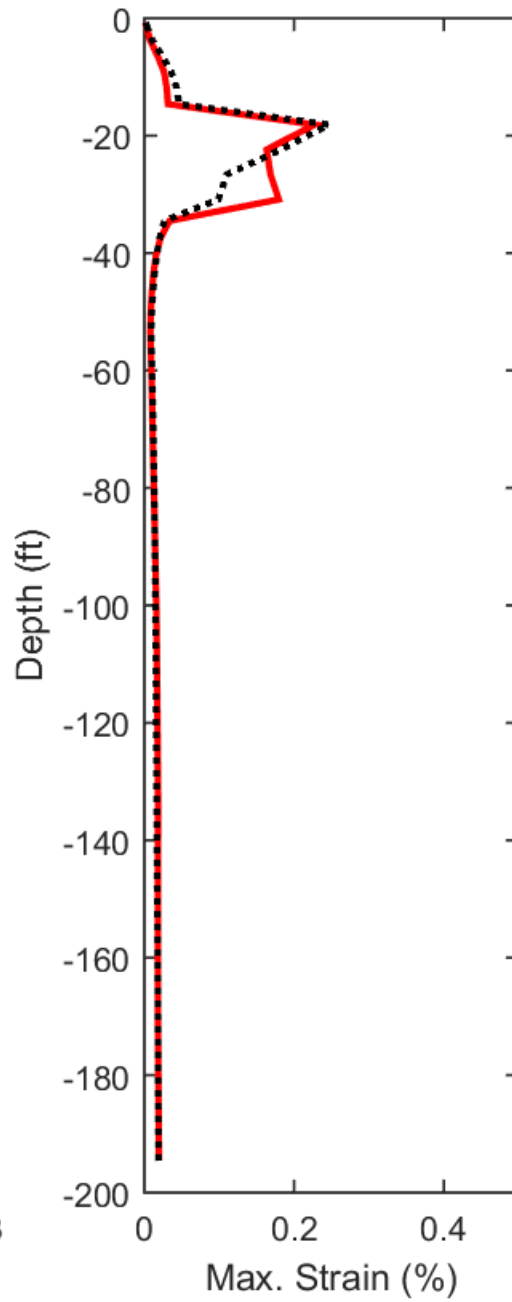
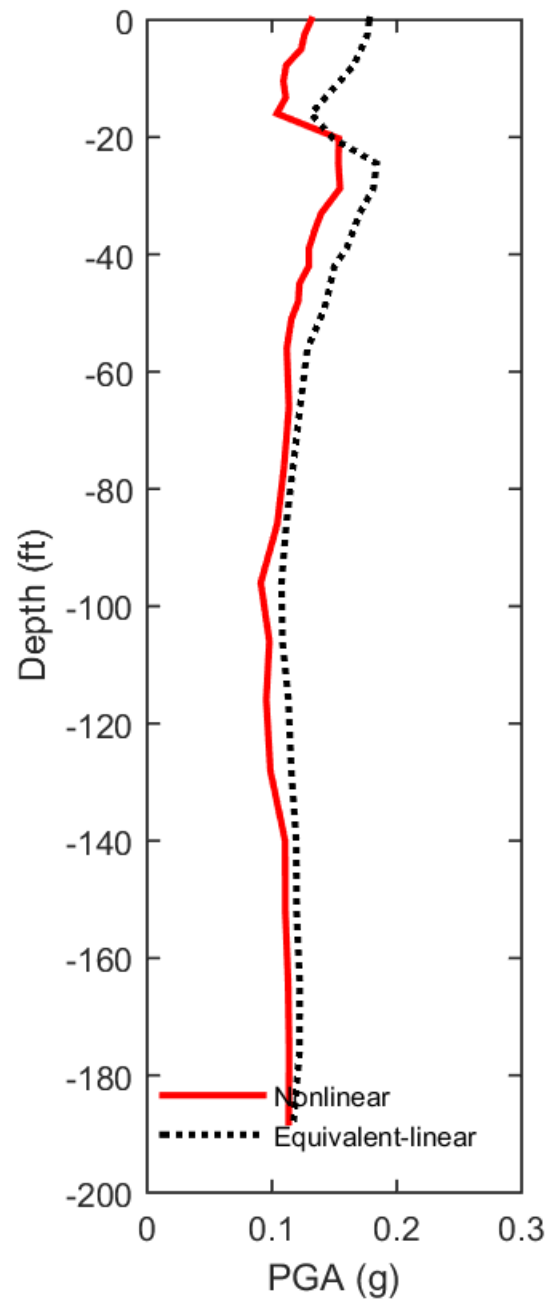
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE4



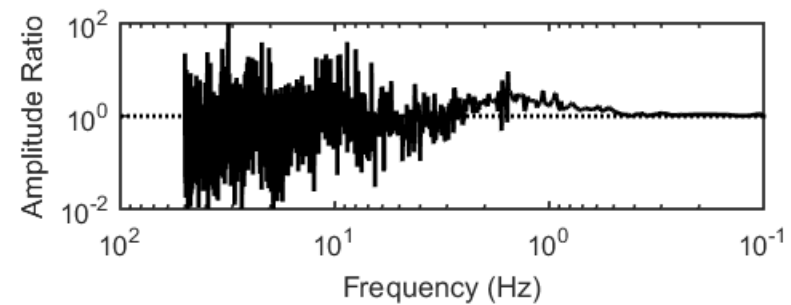
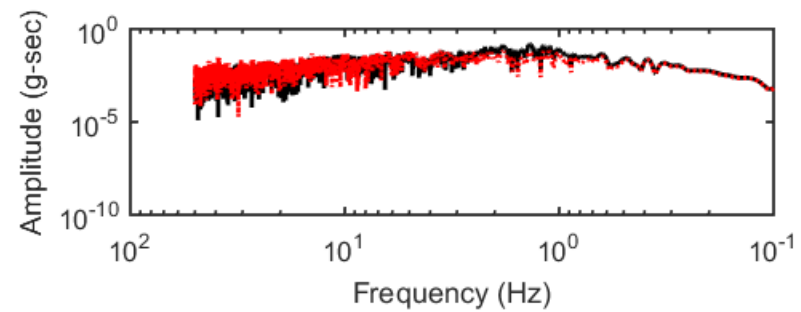
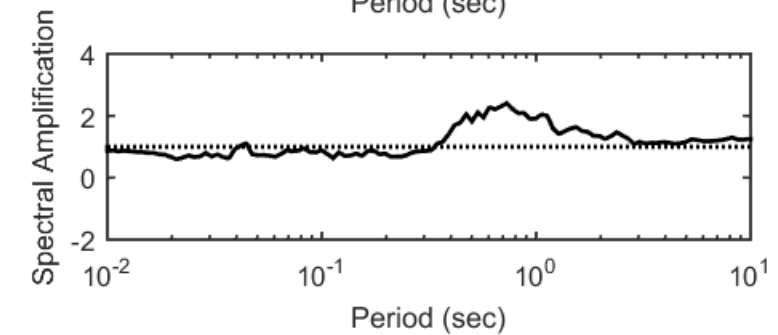
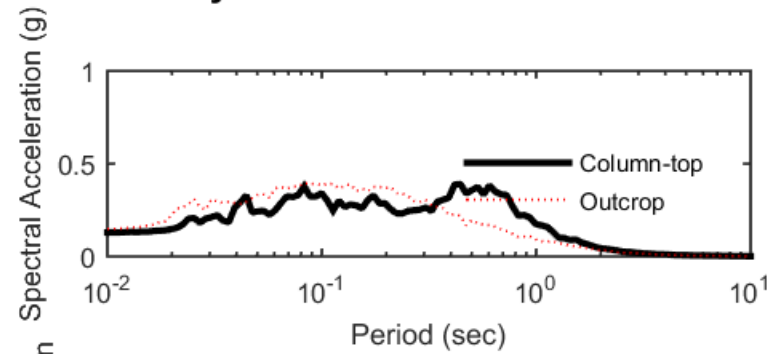
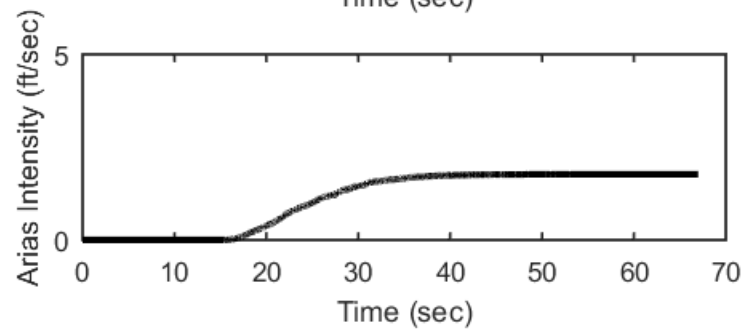
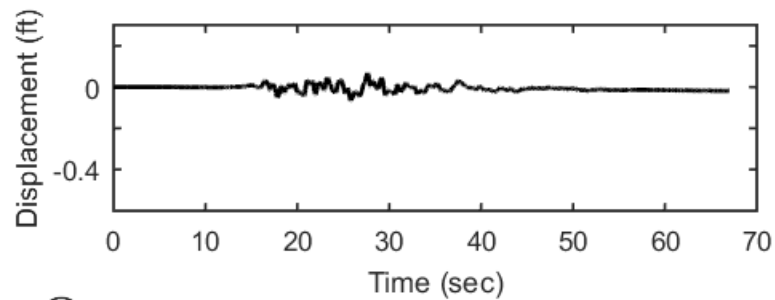
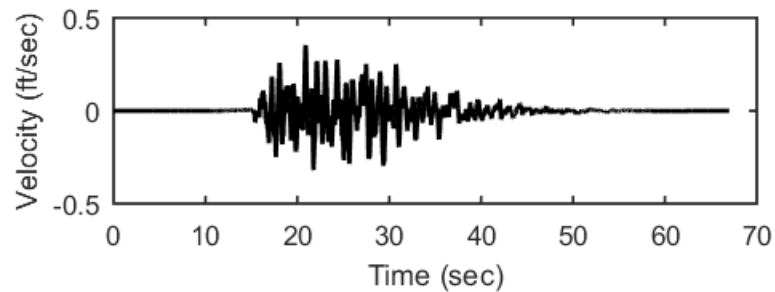
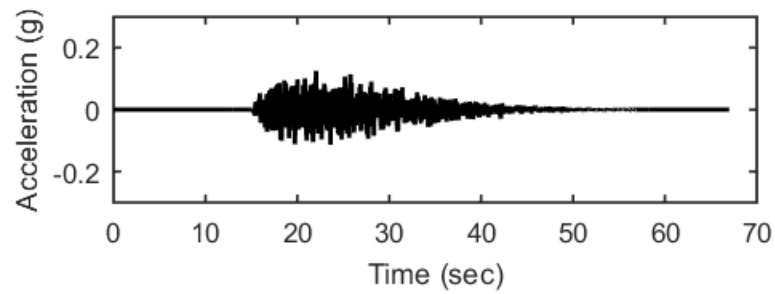
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE4



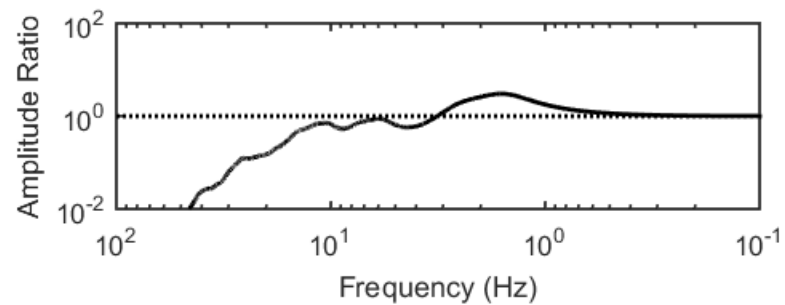
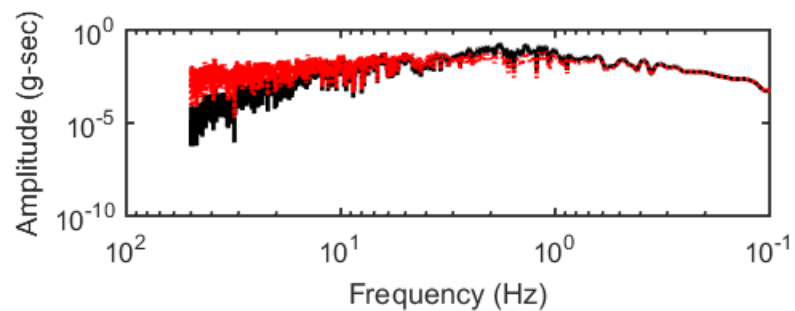
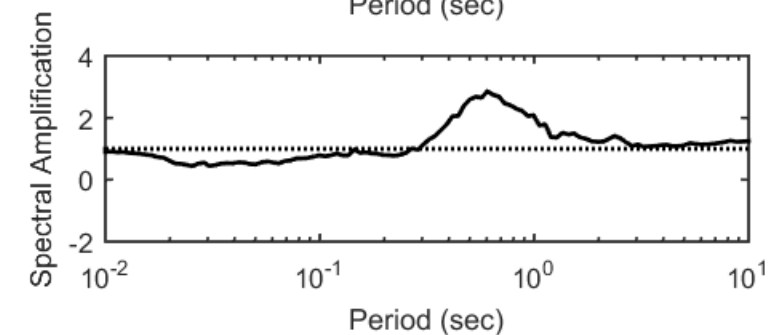
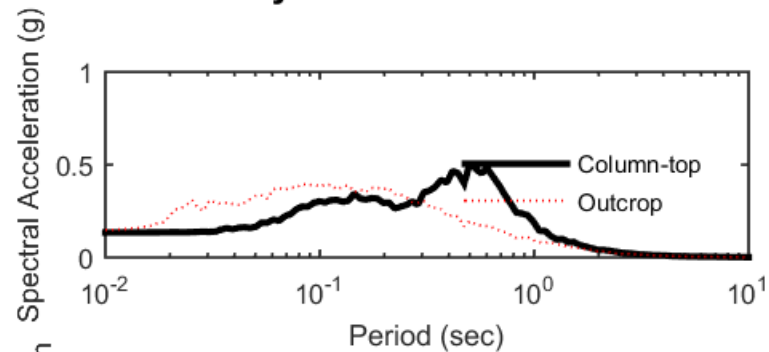
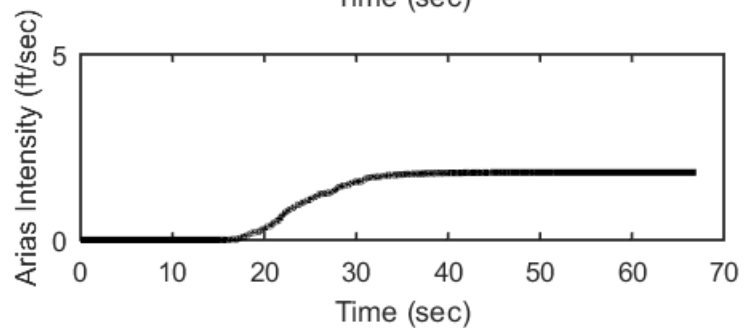
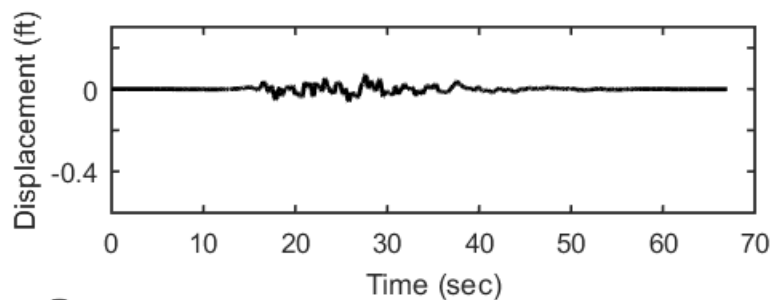
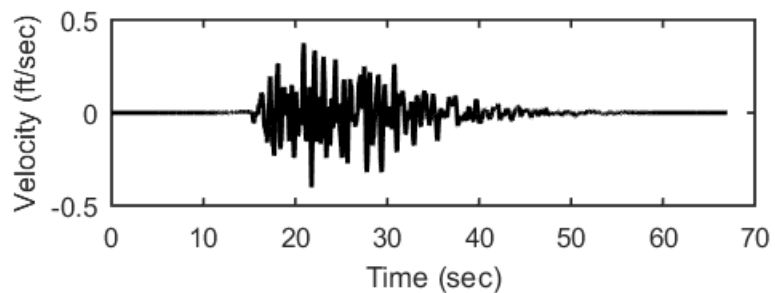
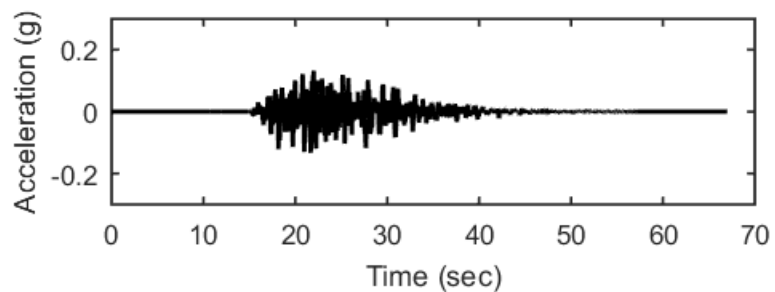
### Profile outputs for Motion: FEE4



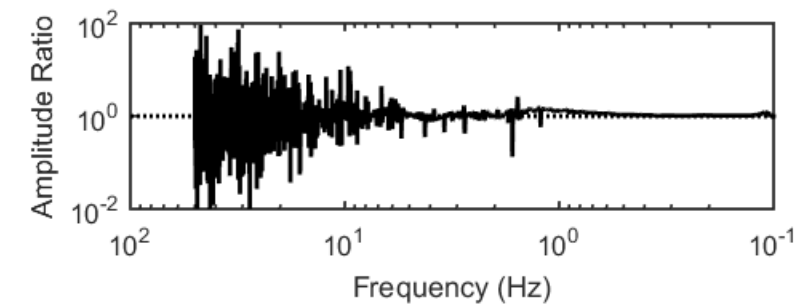
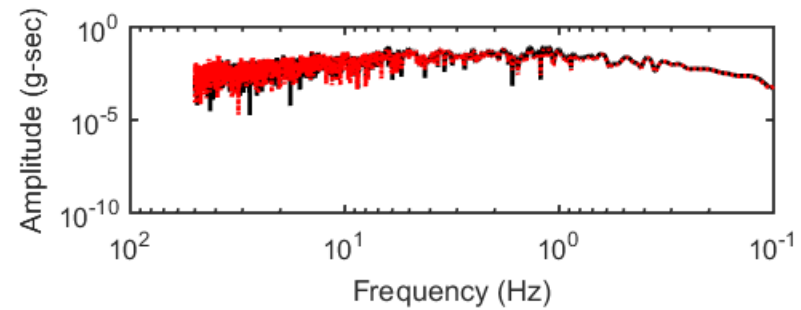
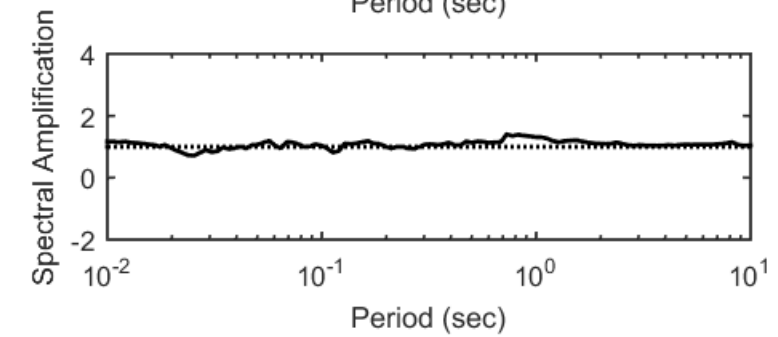
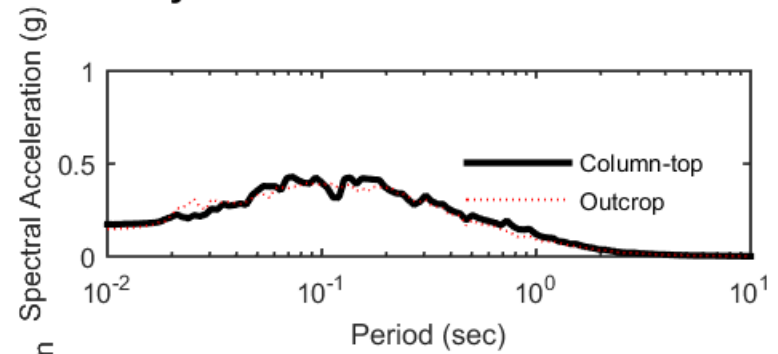
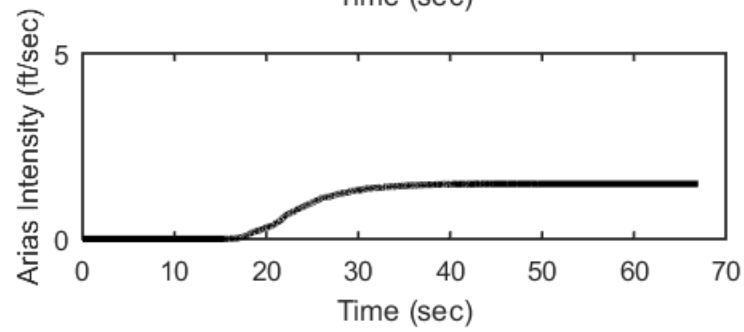
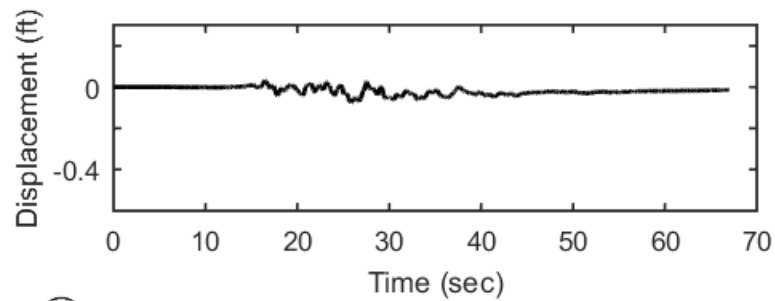
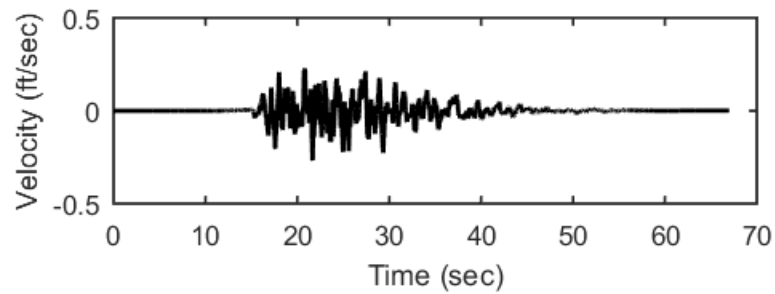
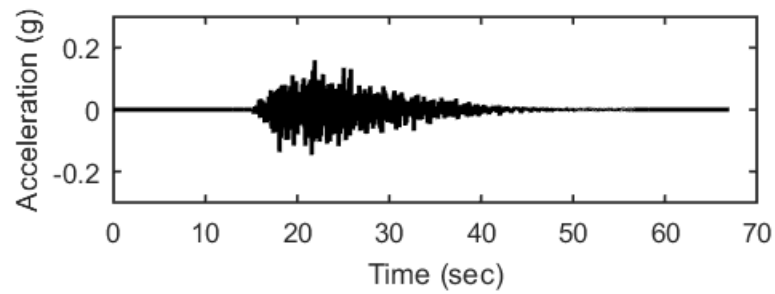
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE5



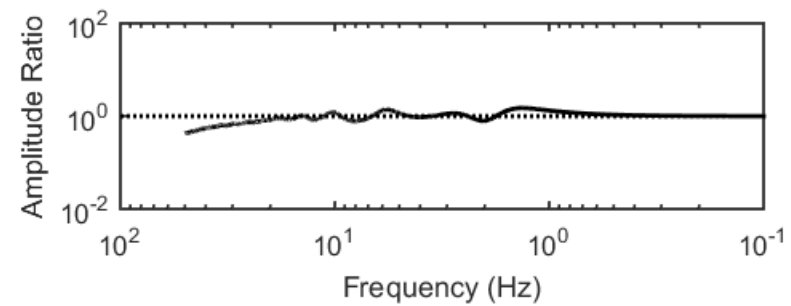
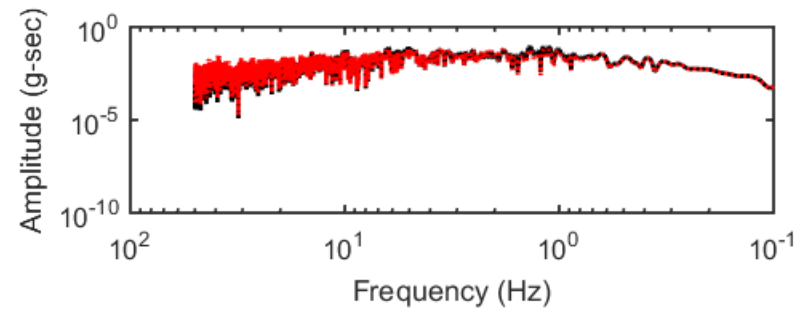
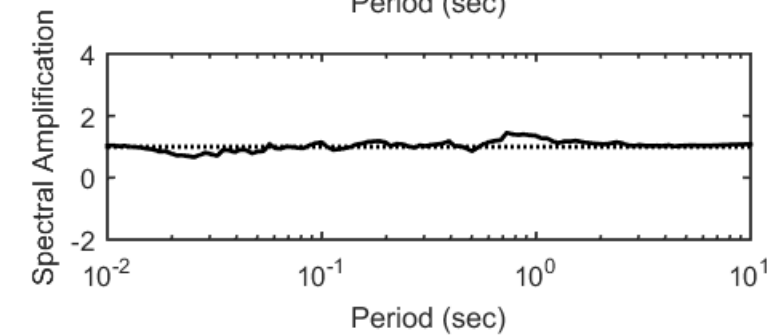
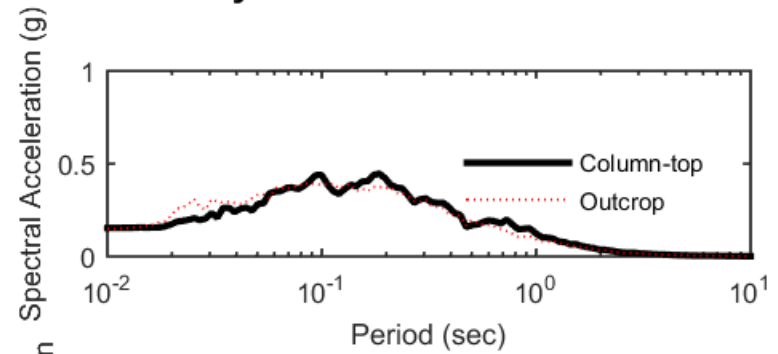
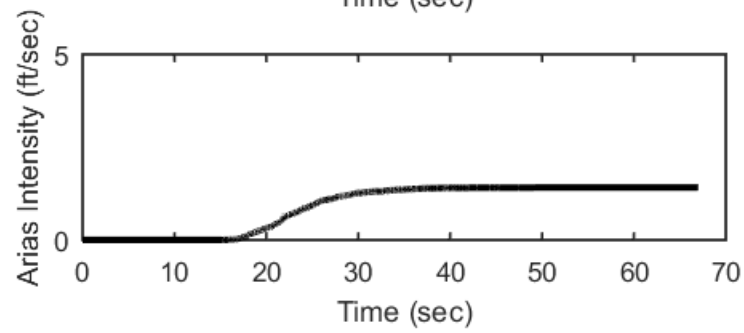
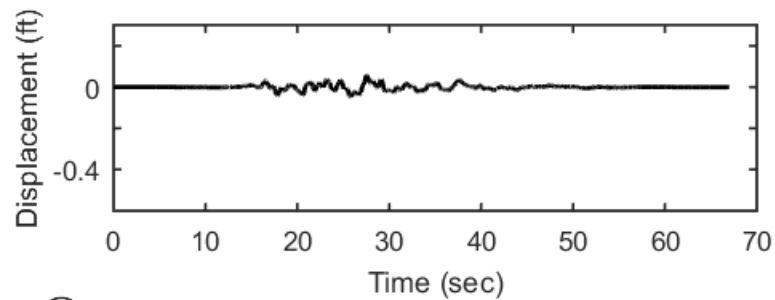
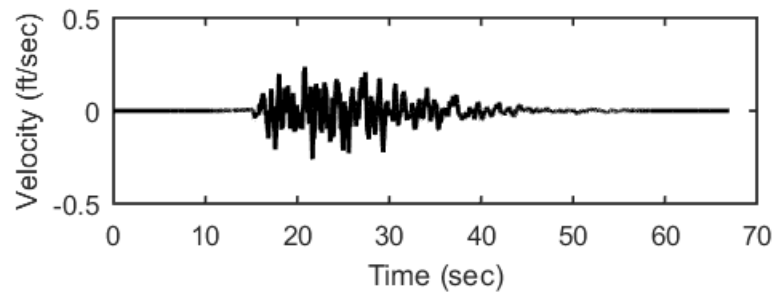
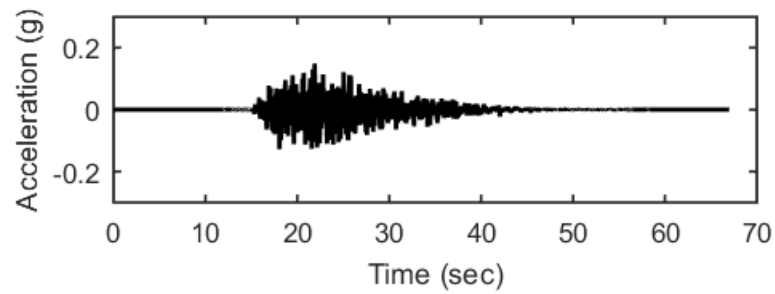
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE5



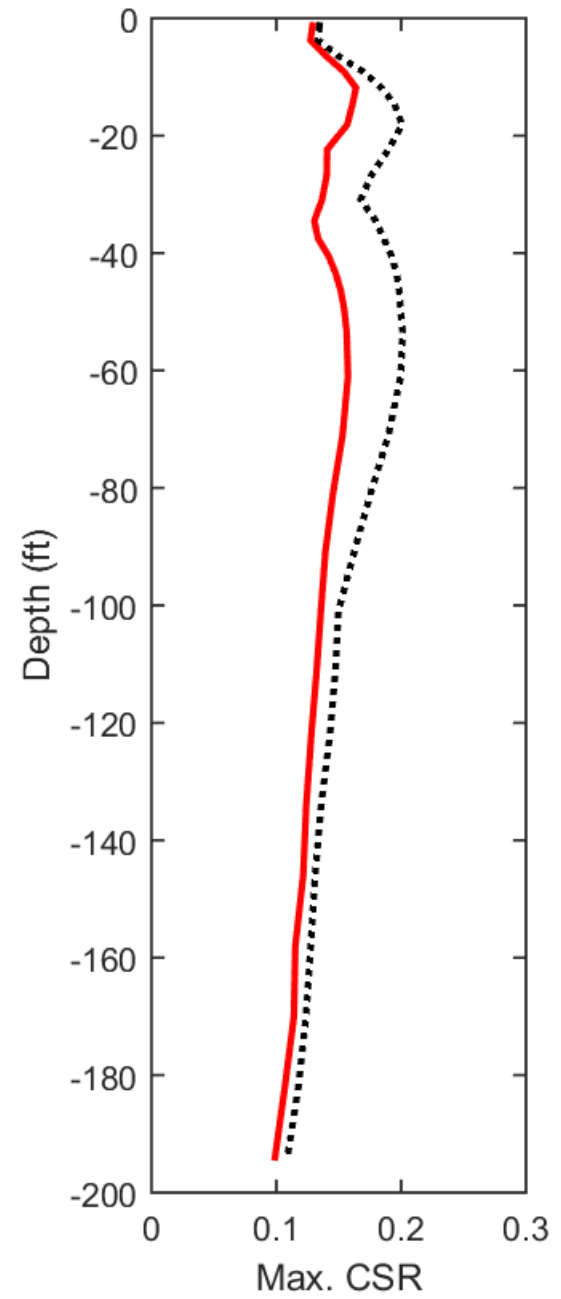
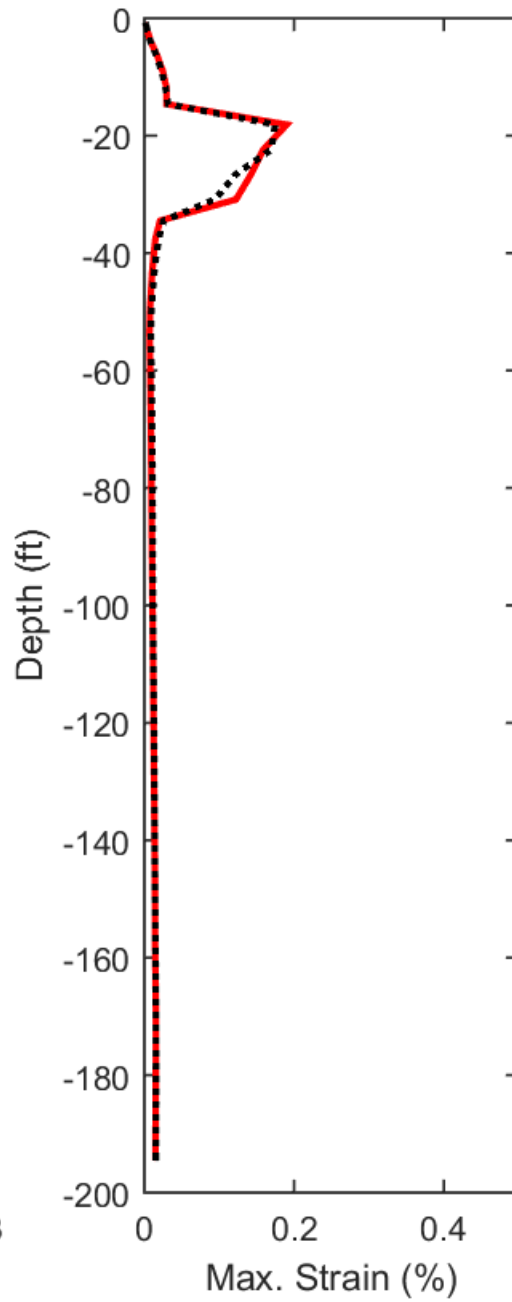
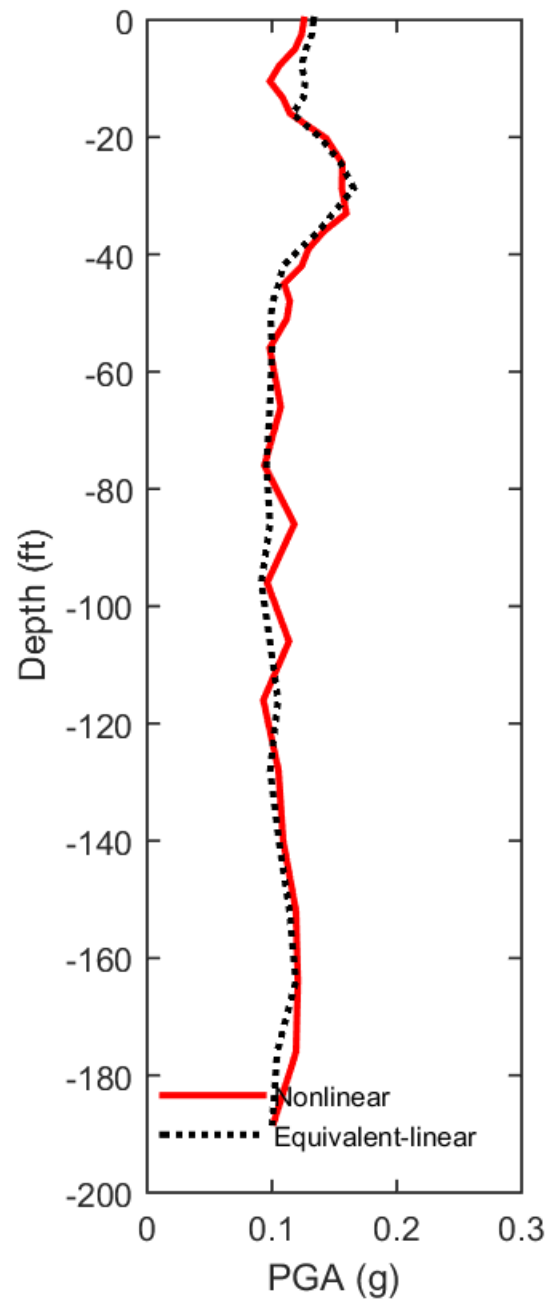
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE5



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE5

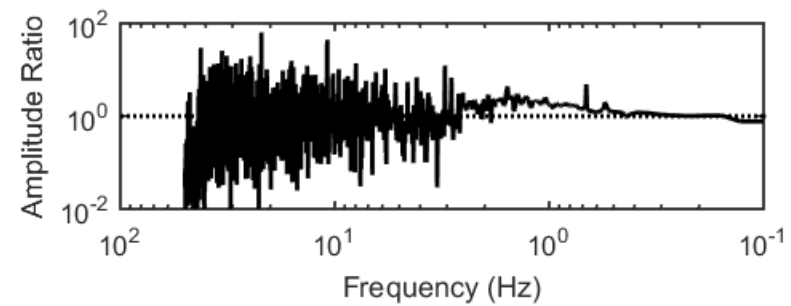
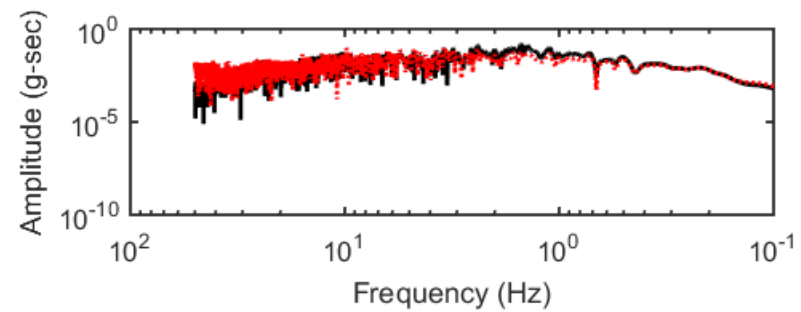
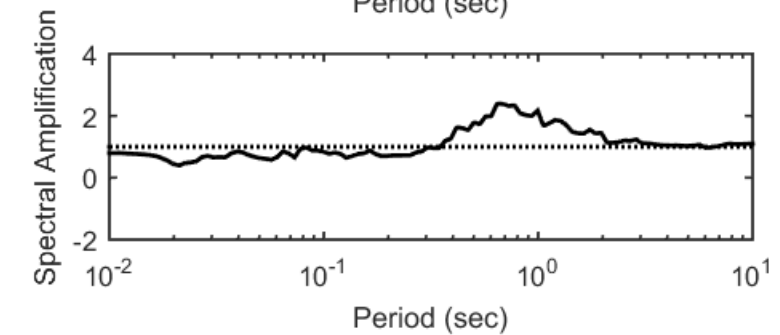
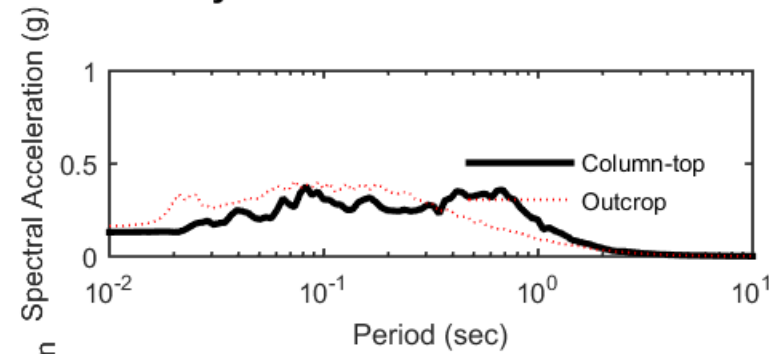
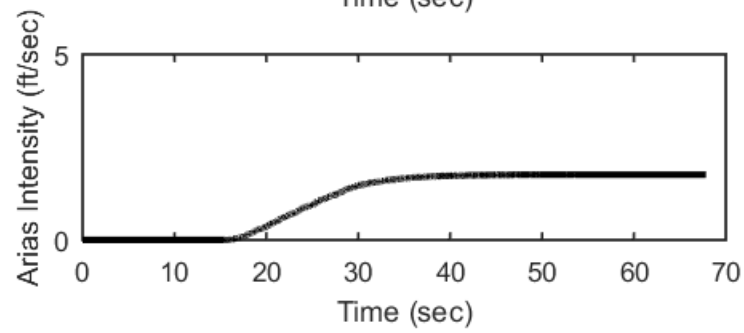
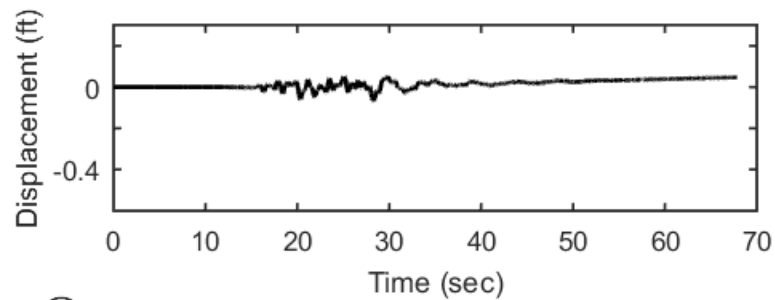
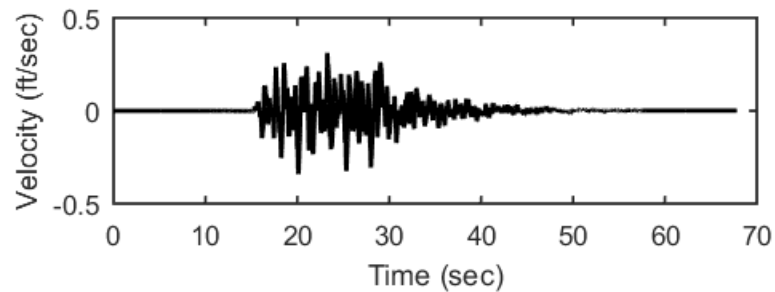
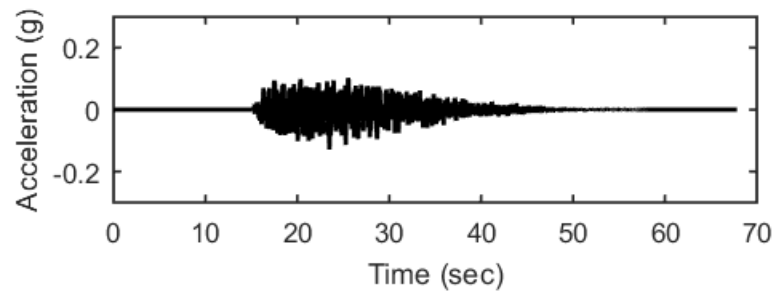


### Profile outputs for Motion: FEE5

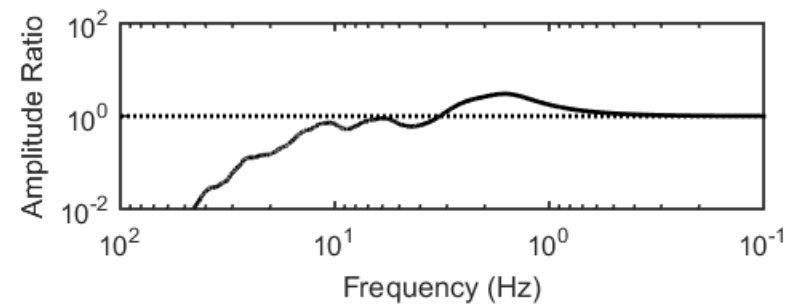
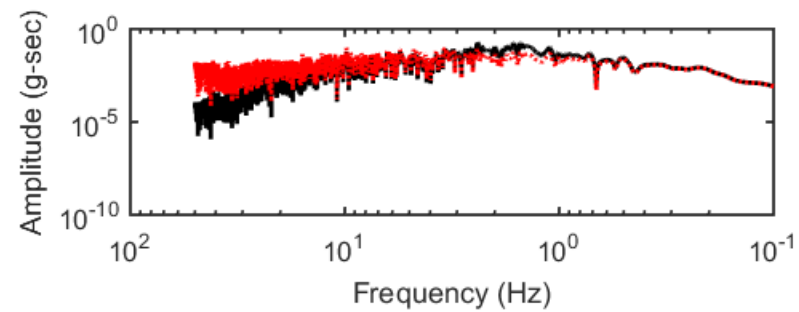
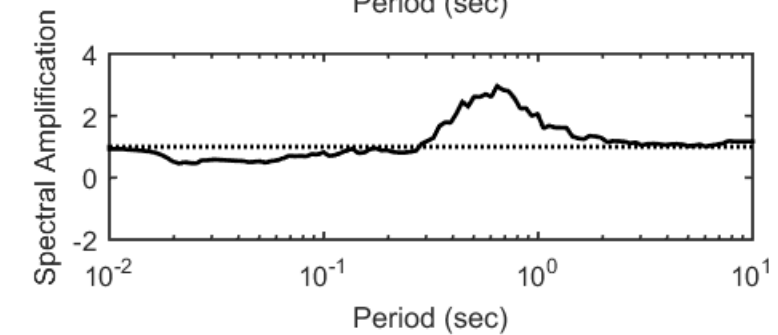
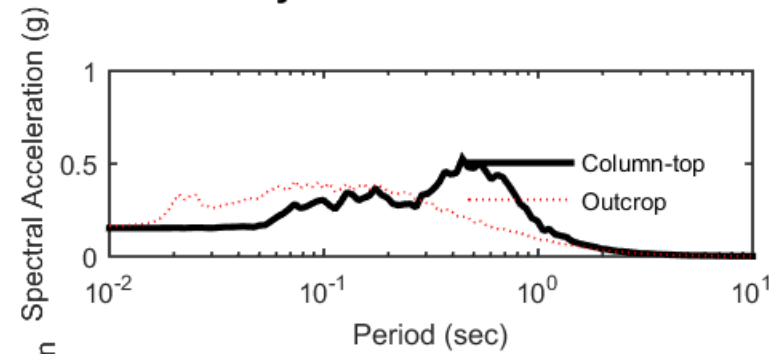
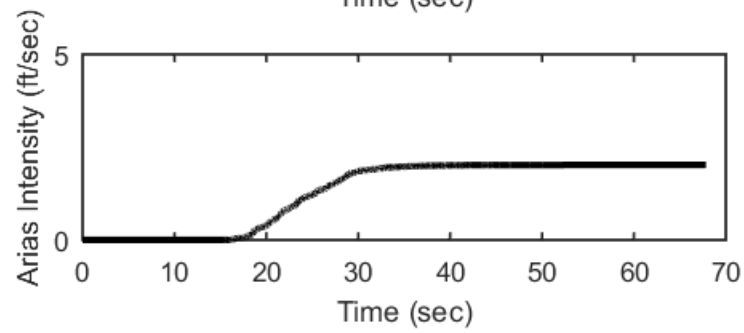
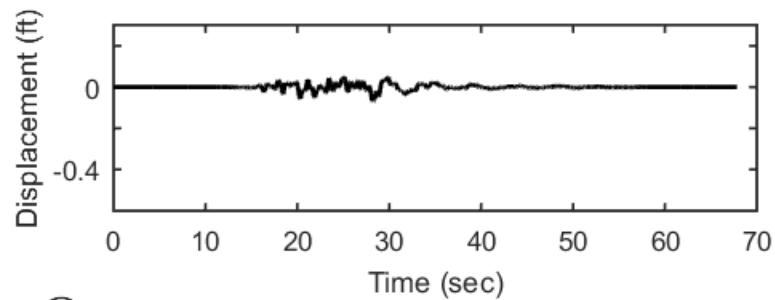
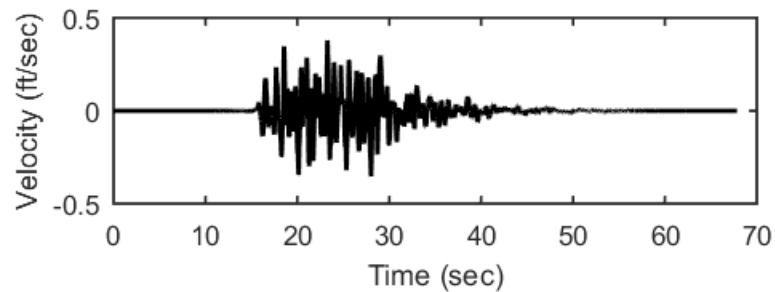
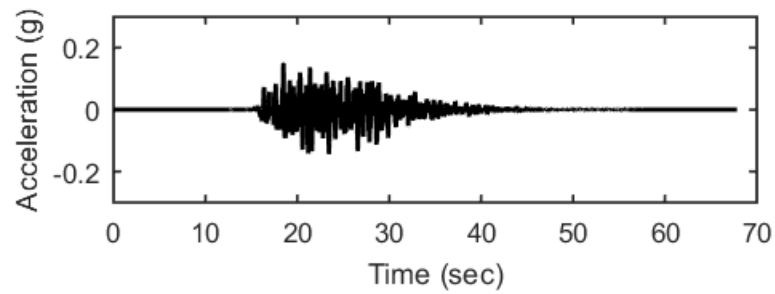




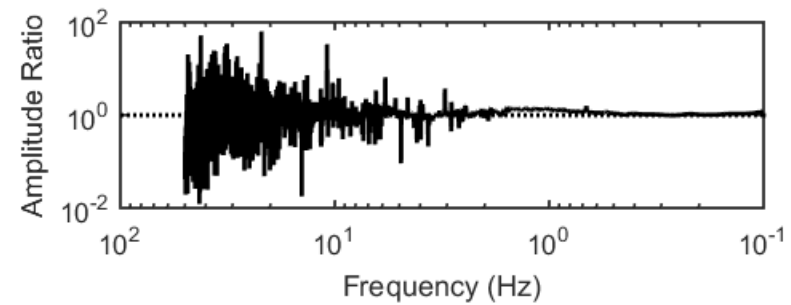
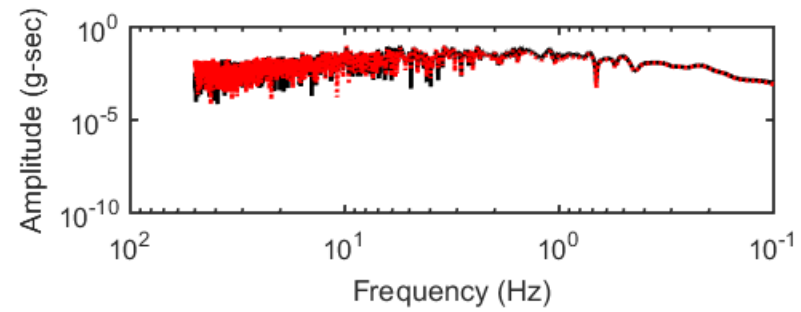
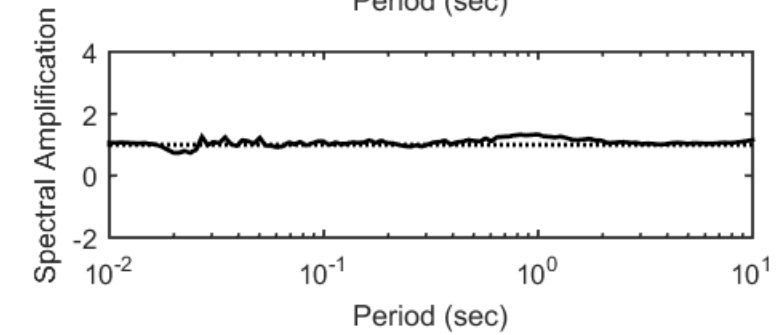
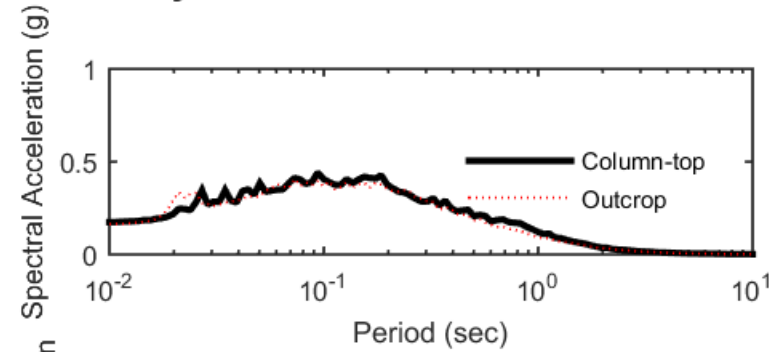
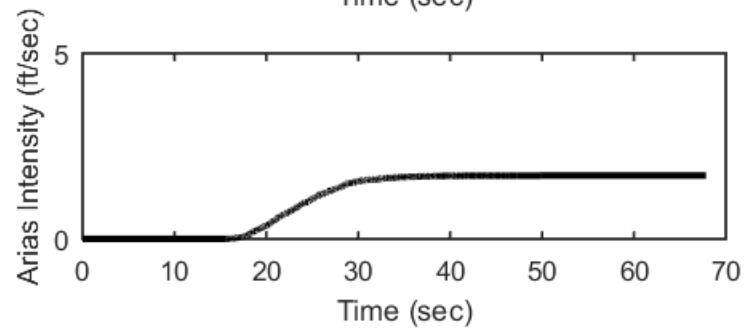
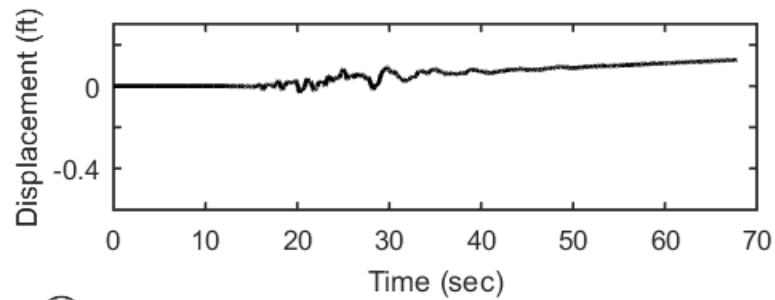
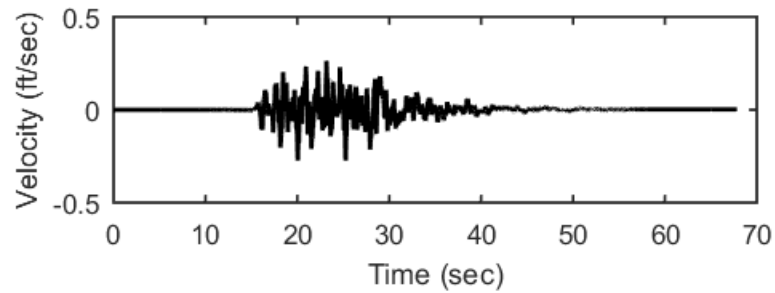
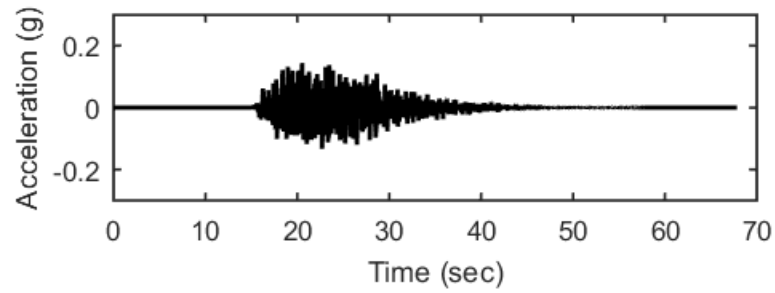
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE6



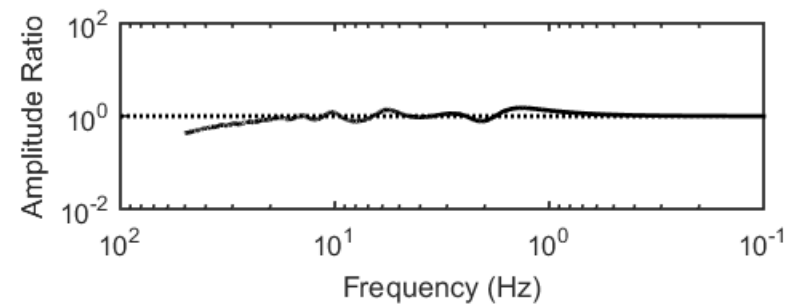
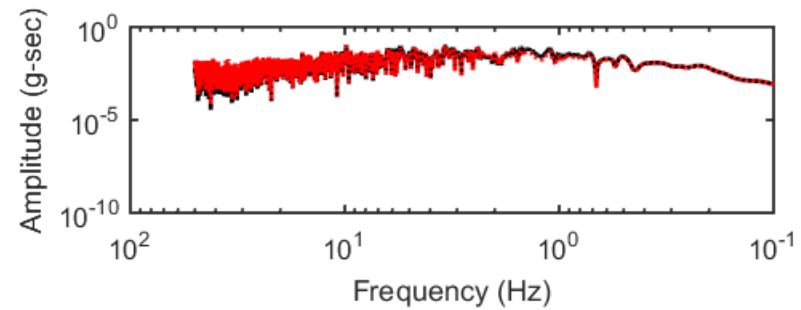
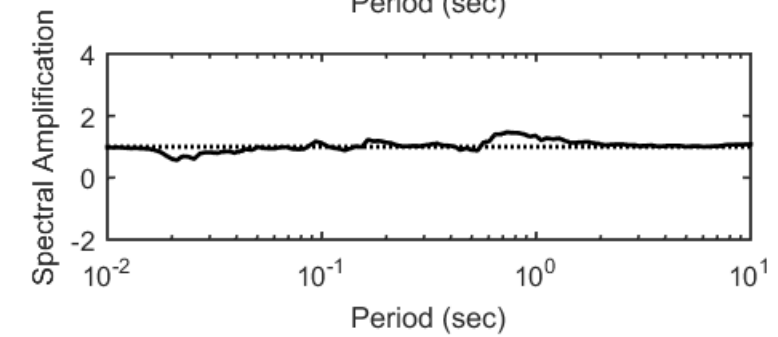
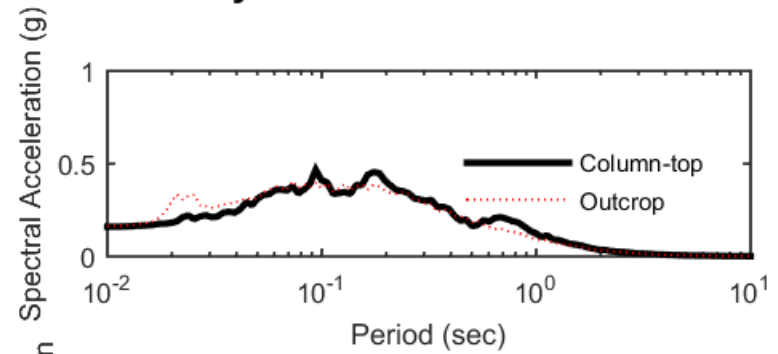
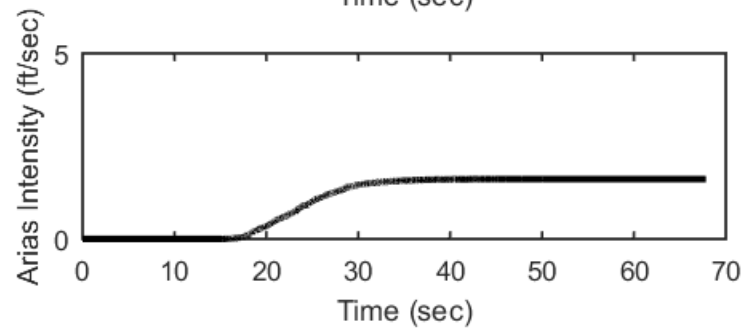
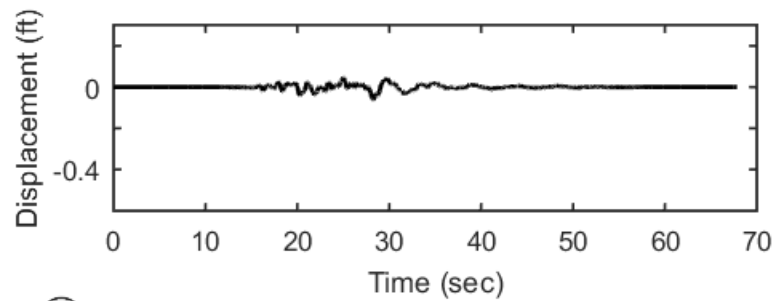
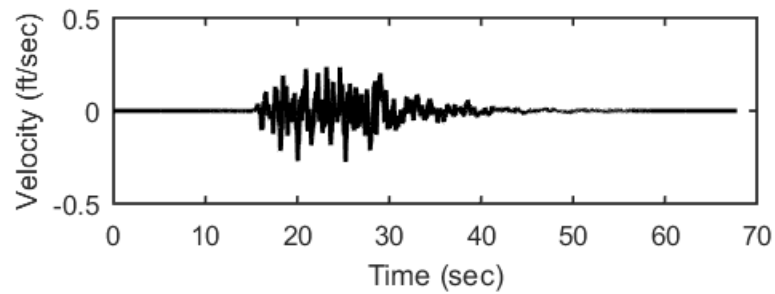
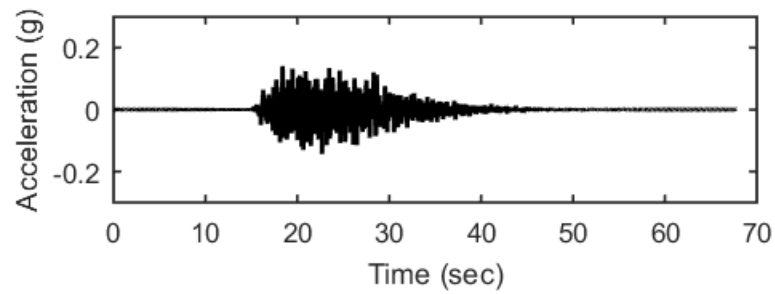
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE6



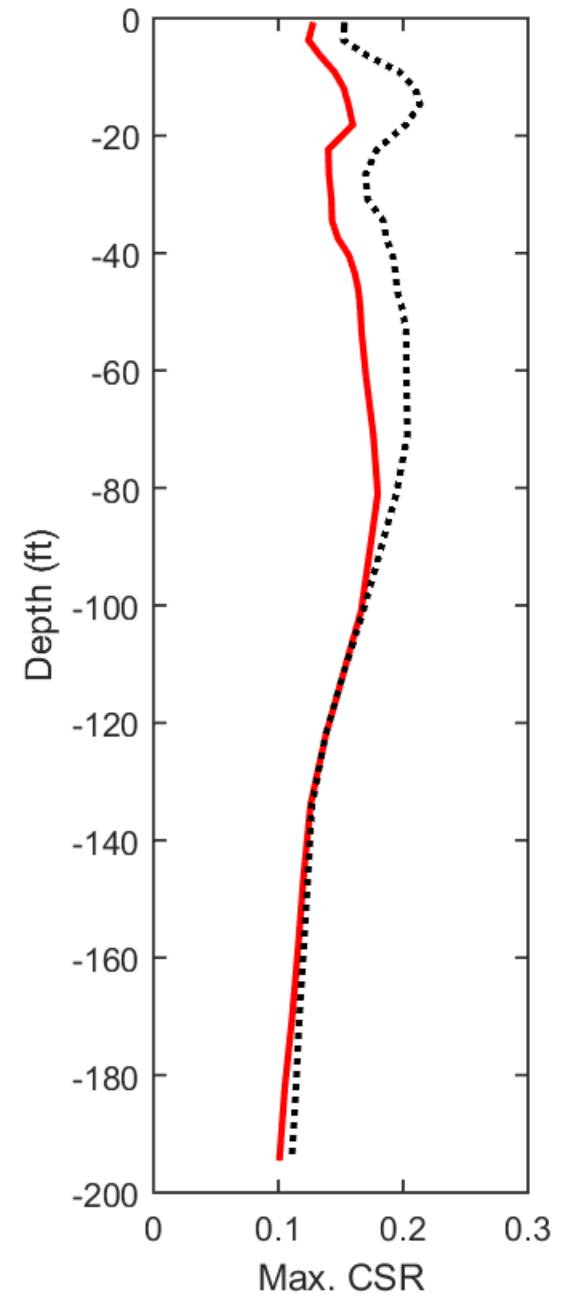
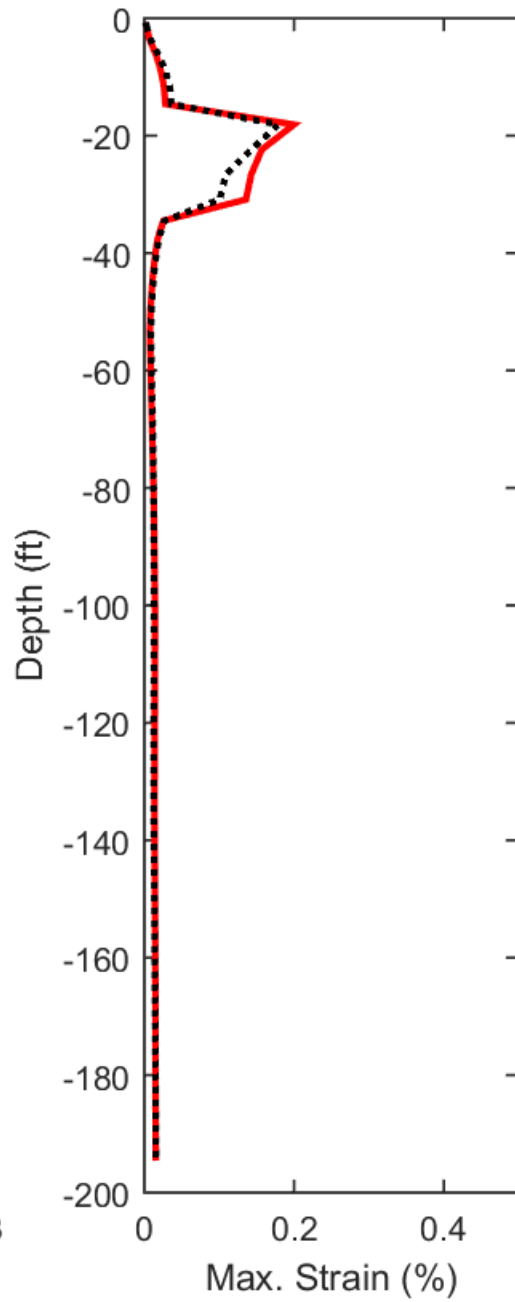
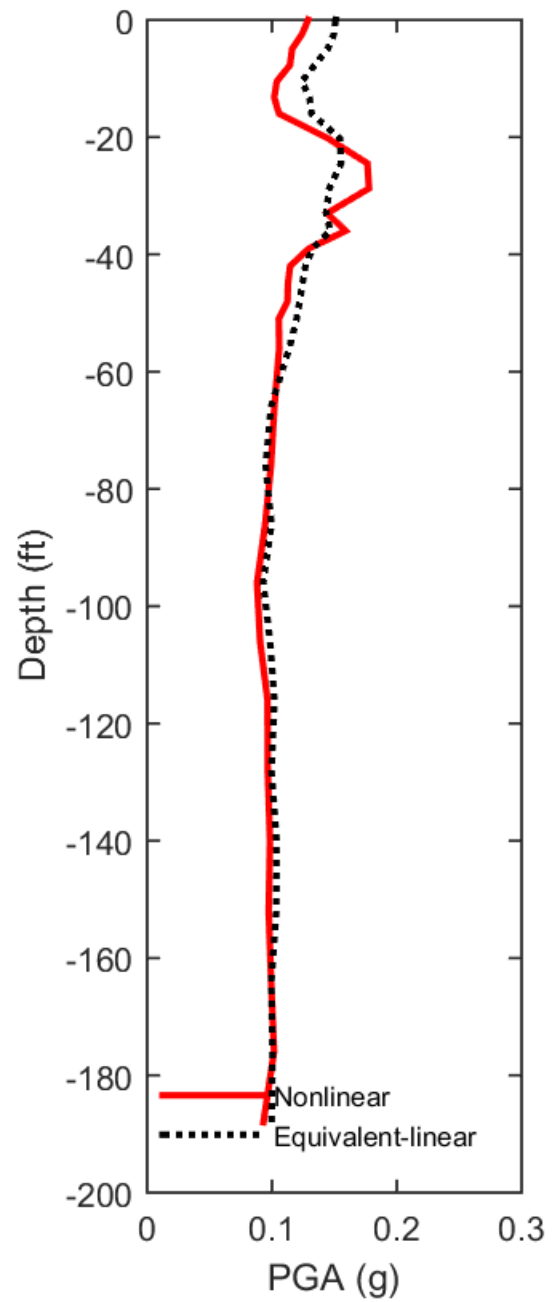
## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE6



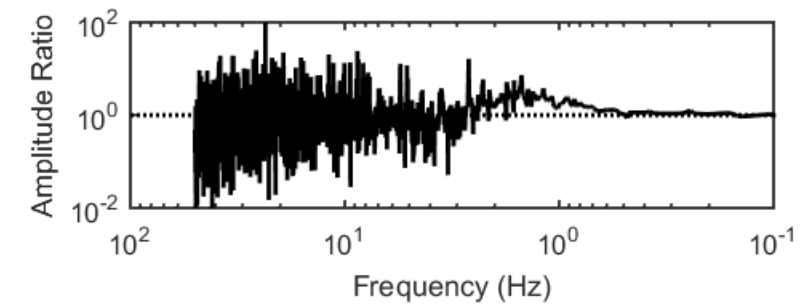
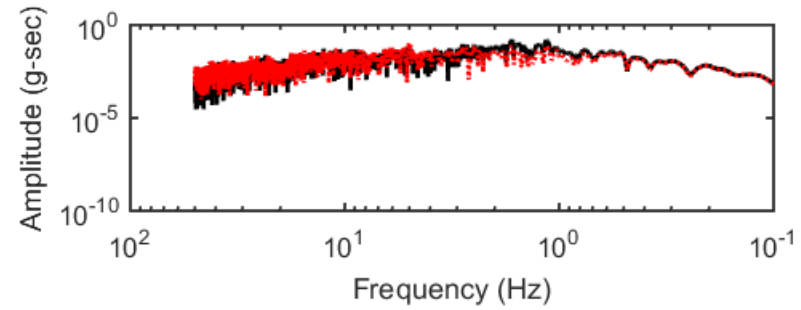
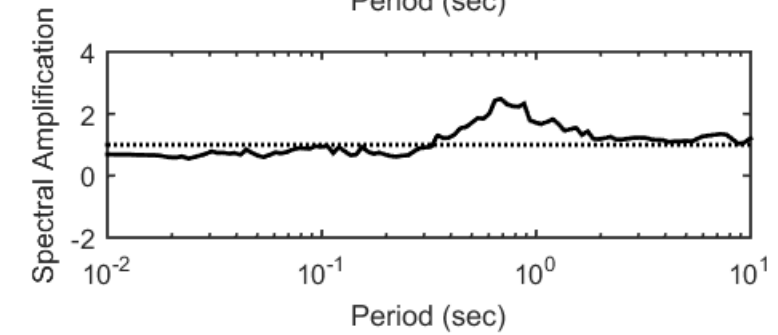
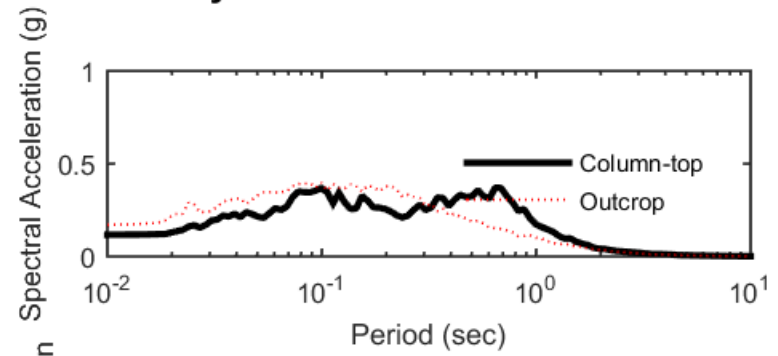
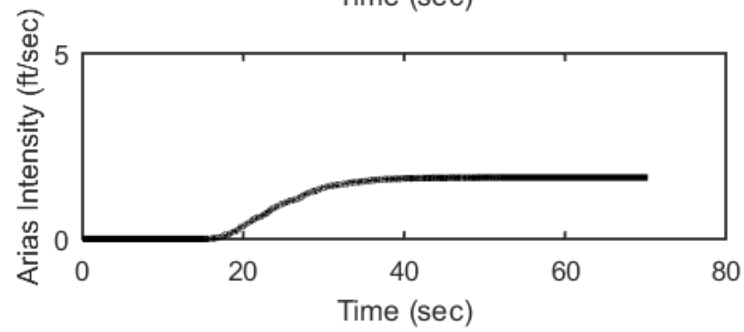
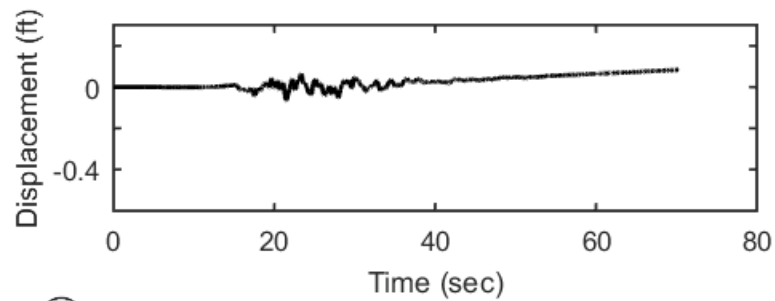
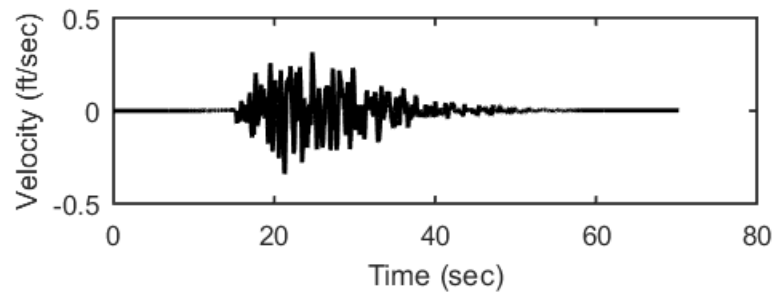
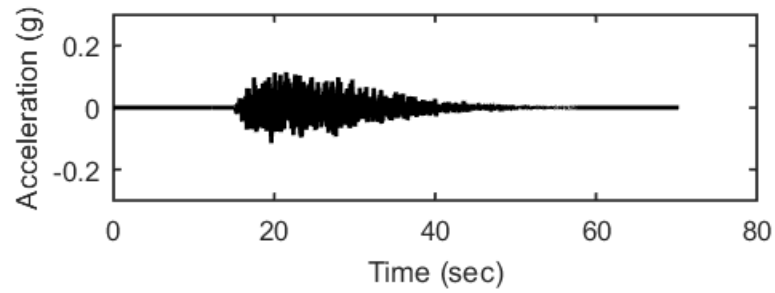
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE6



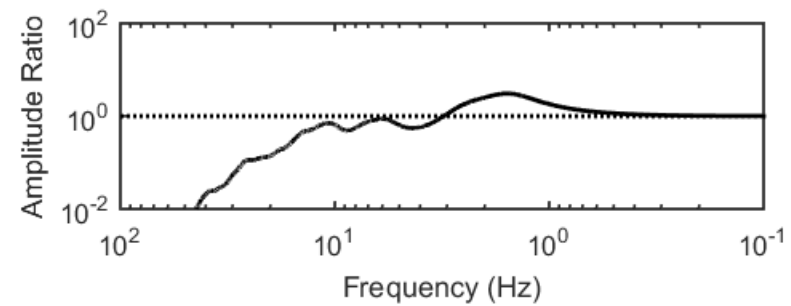
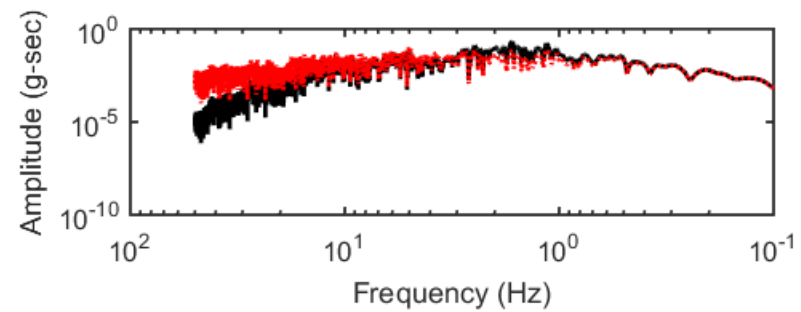
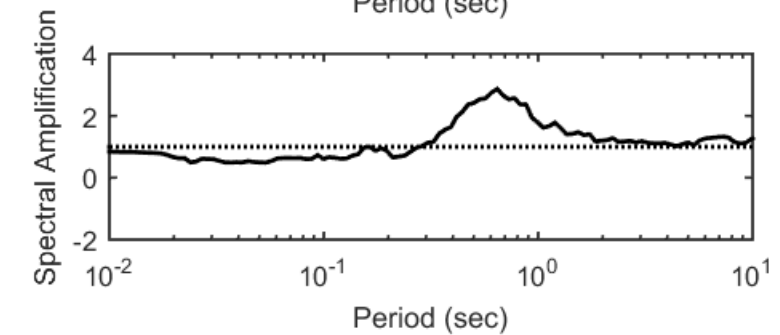
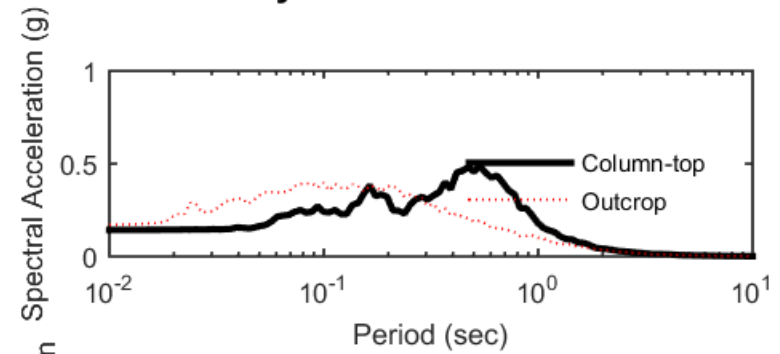
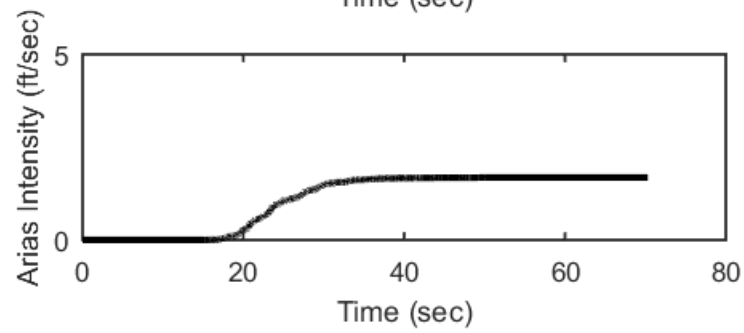
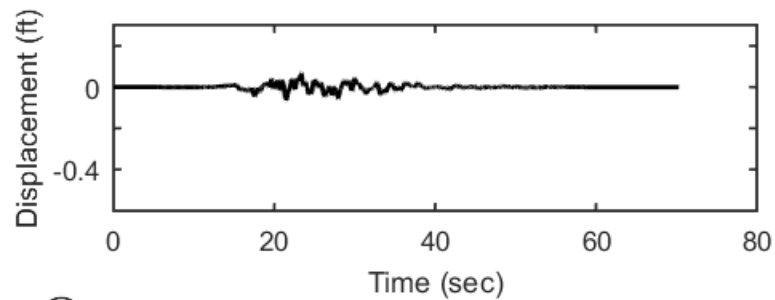
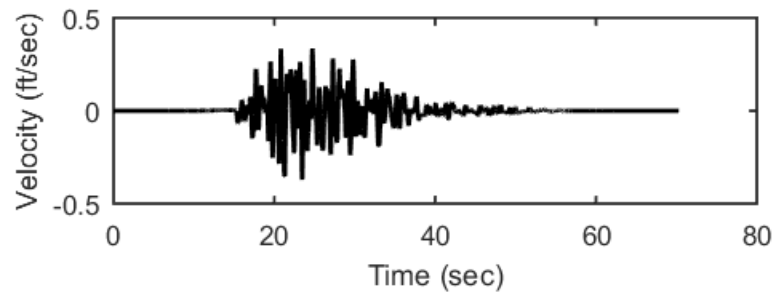
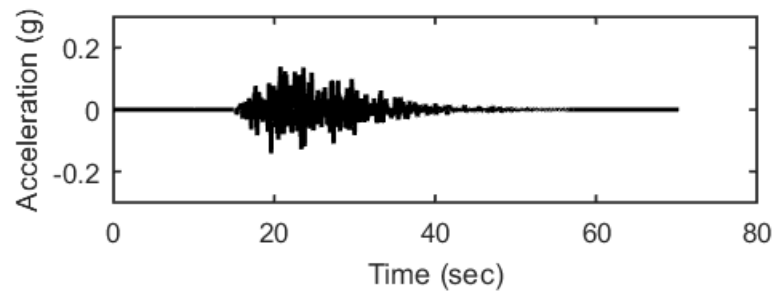
### Profile outputs for Motion: FEE6



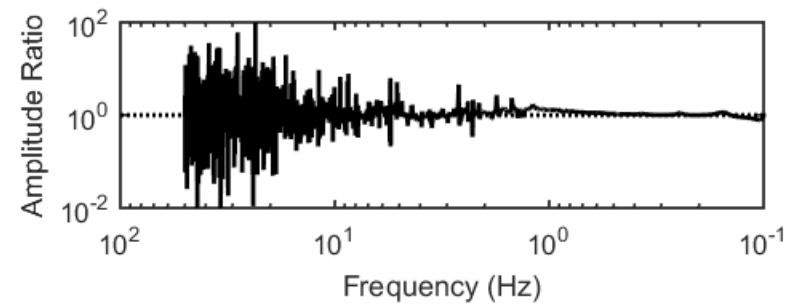
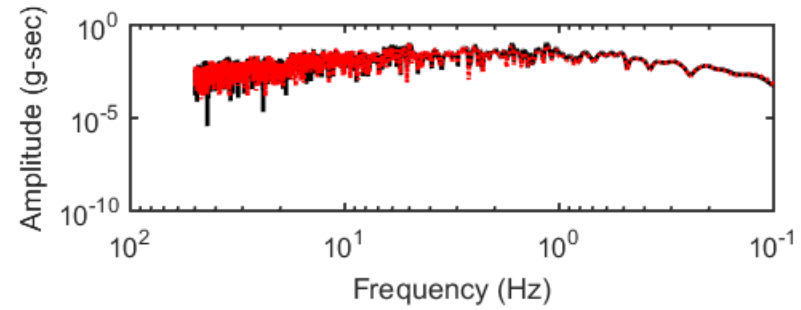
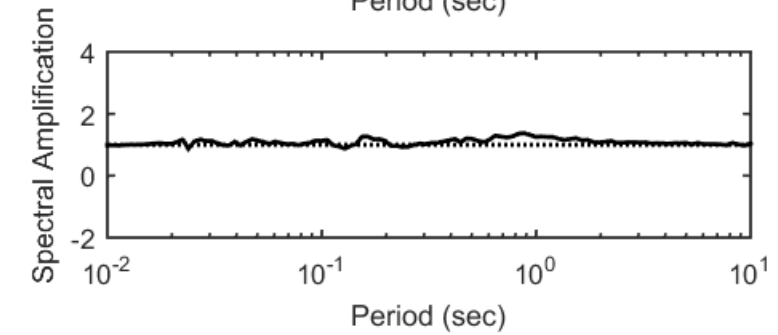
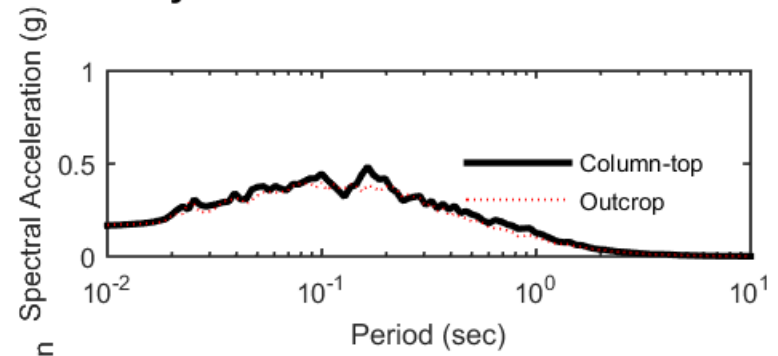
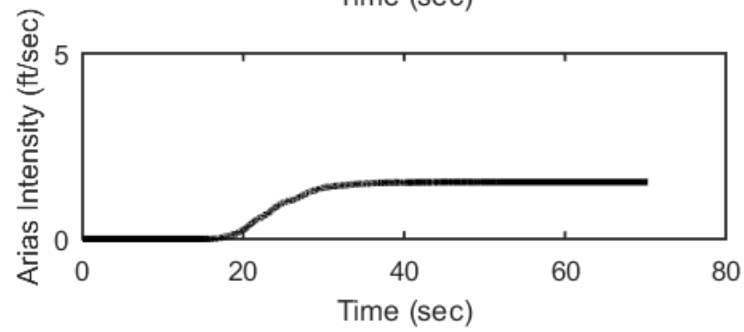
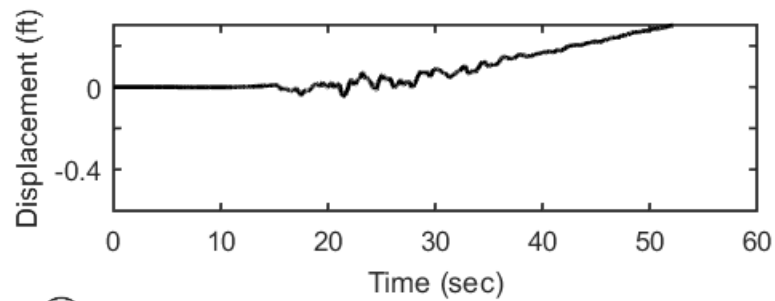
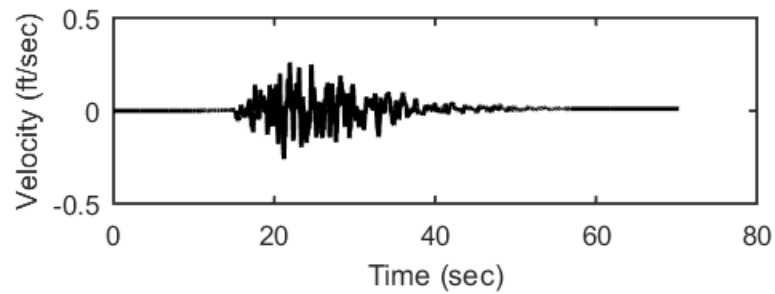
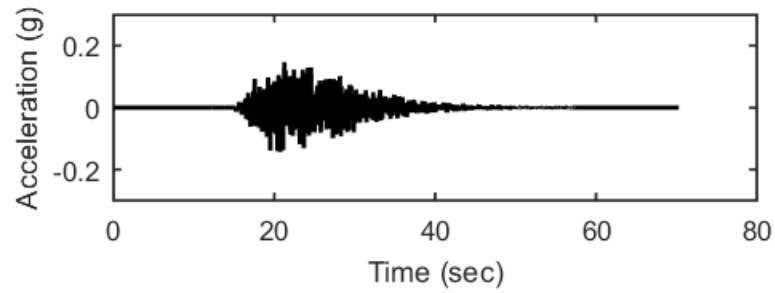
## Outputs at Ground Surface using Nonlinear Analysis for Motion: FEE7



## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: FEE7

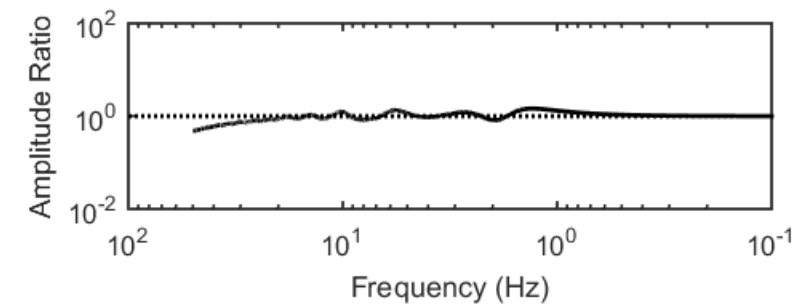
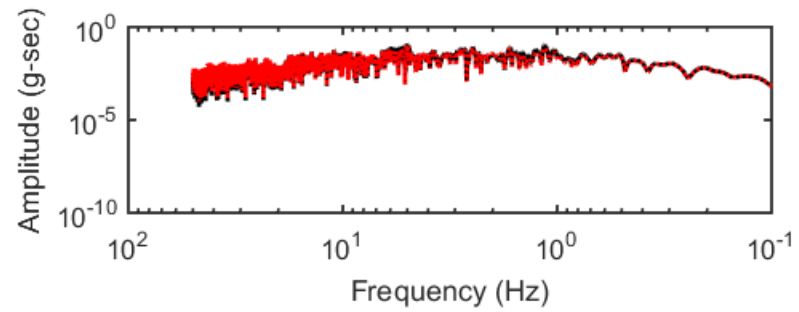
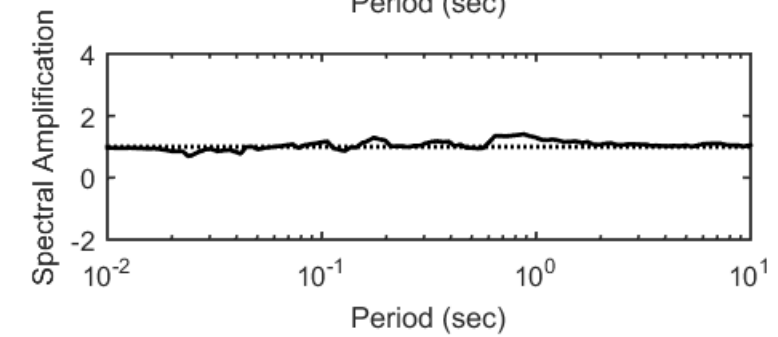
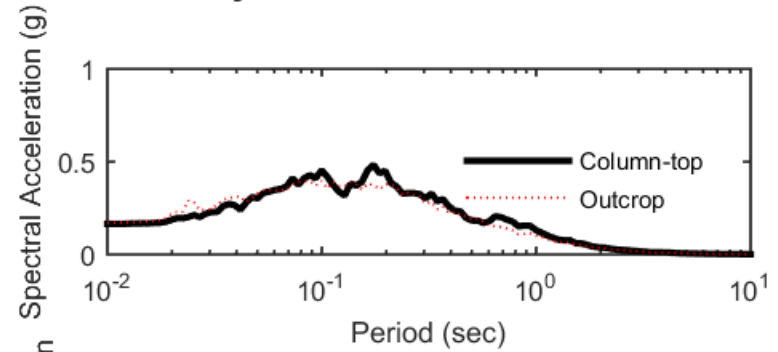
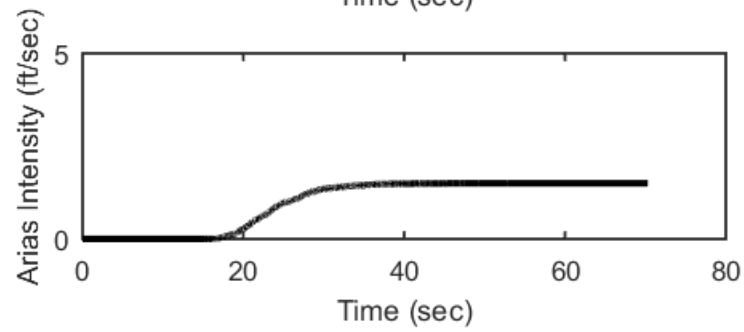
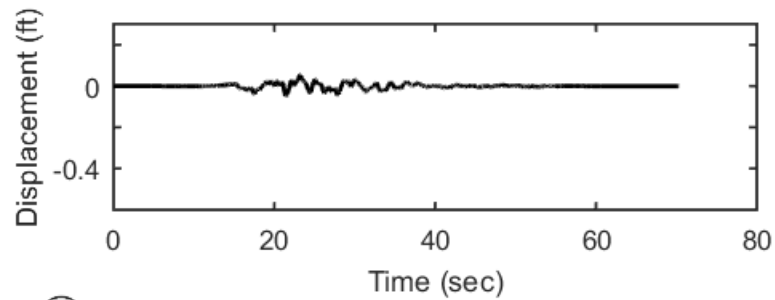
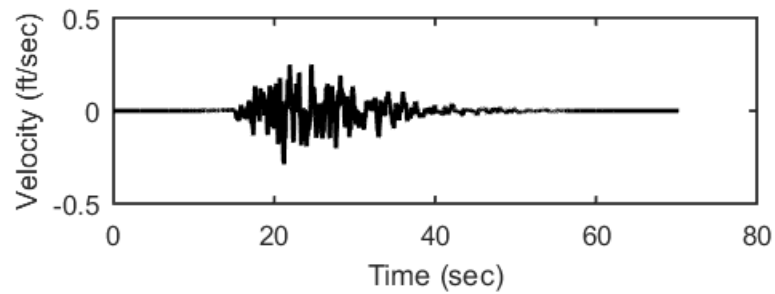
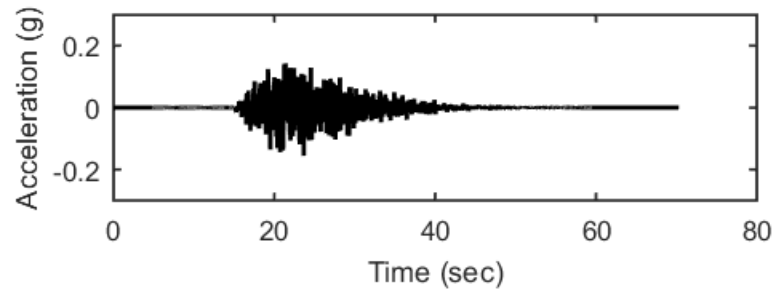


## Outputs at Top of Marl using Nonlinear Analysis for Motion: FEE7

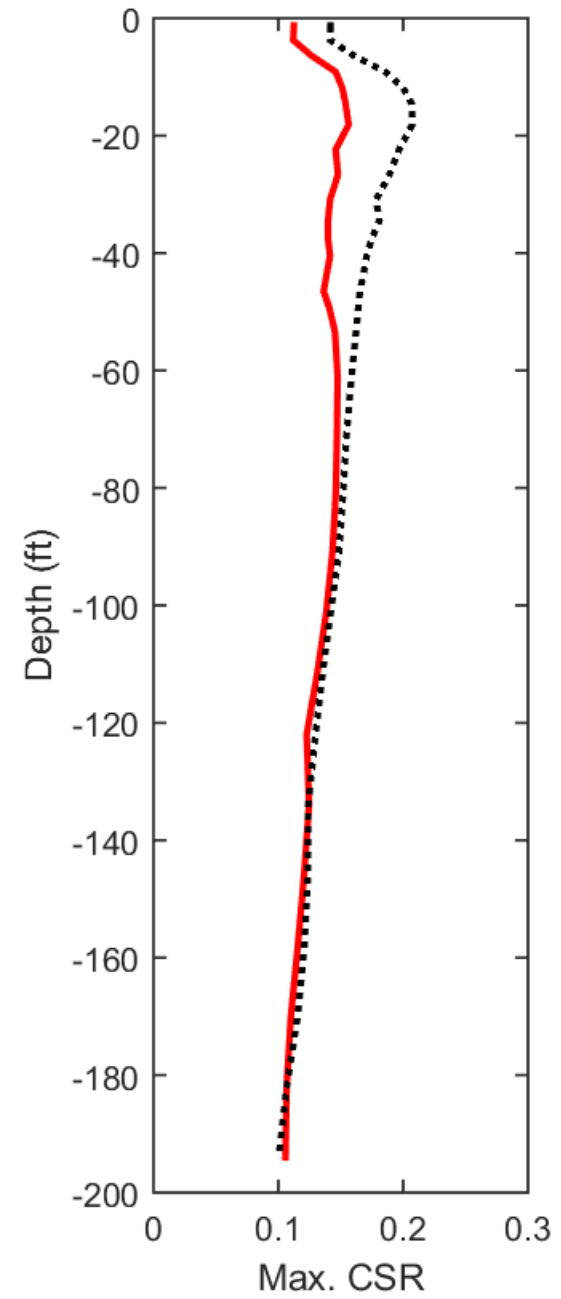
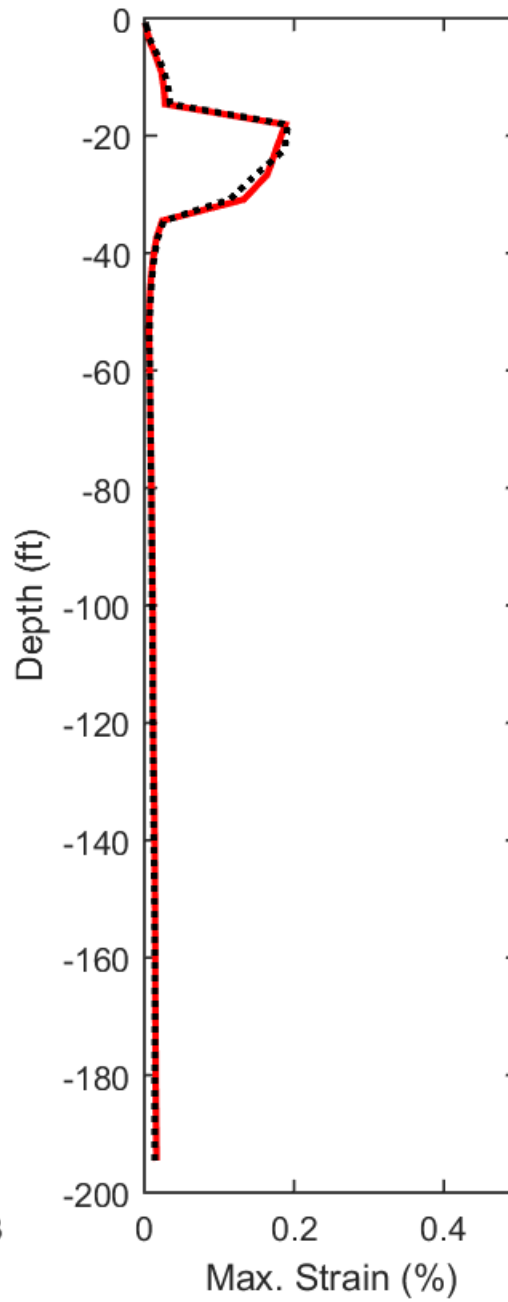
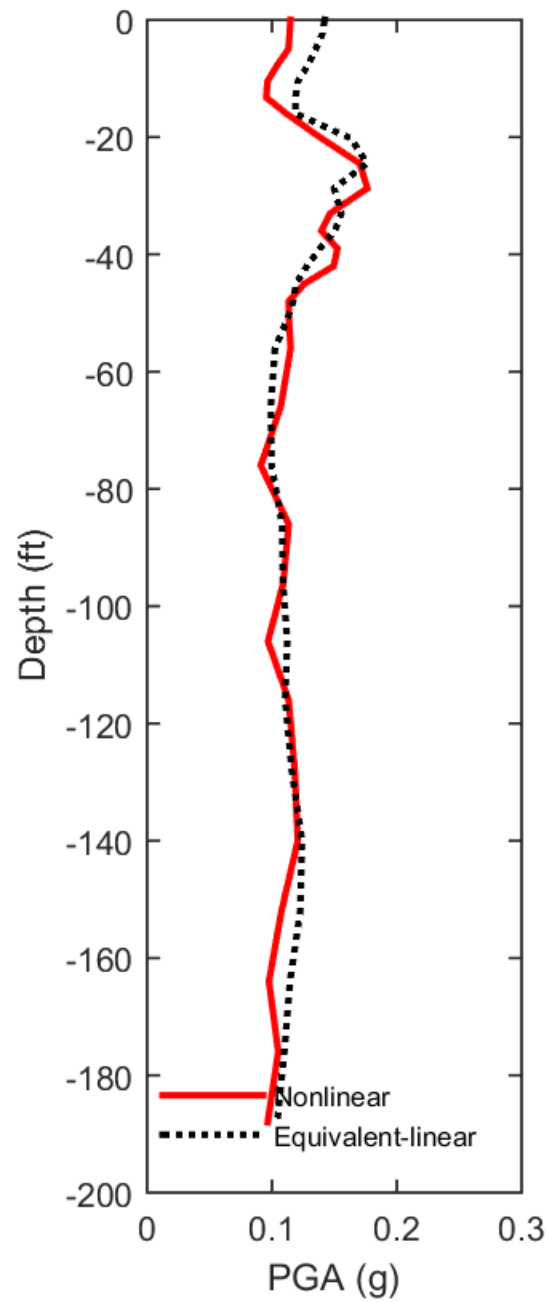




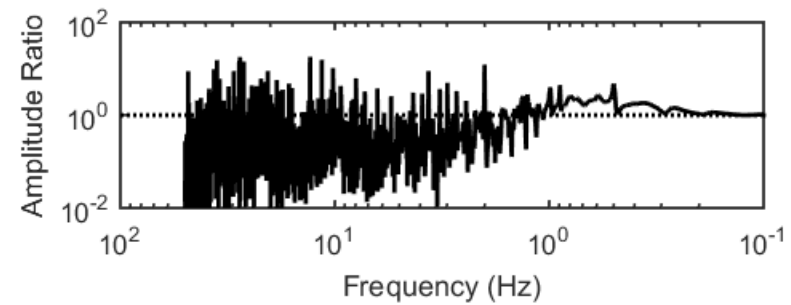
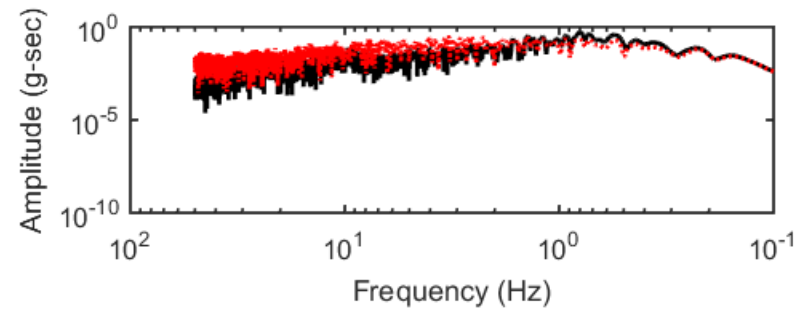
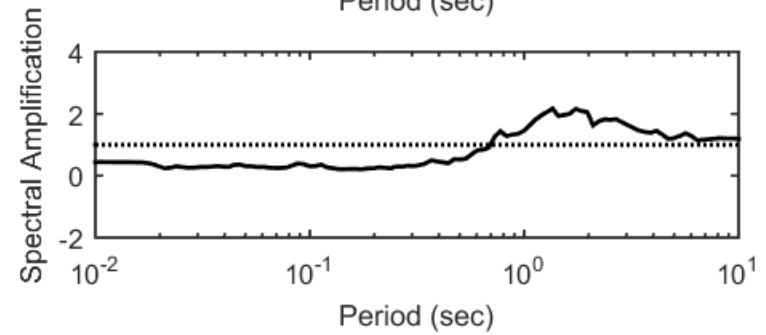
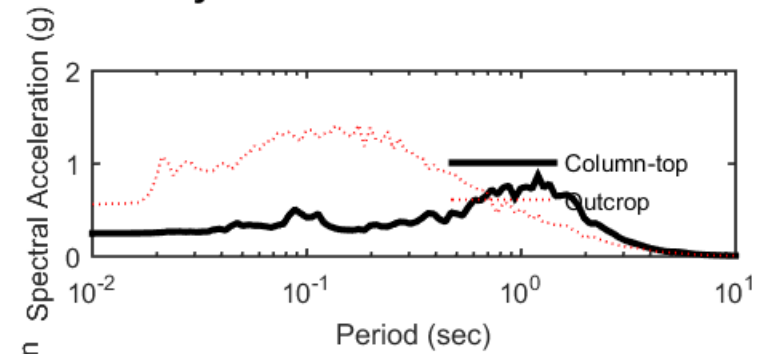
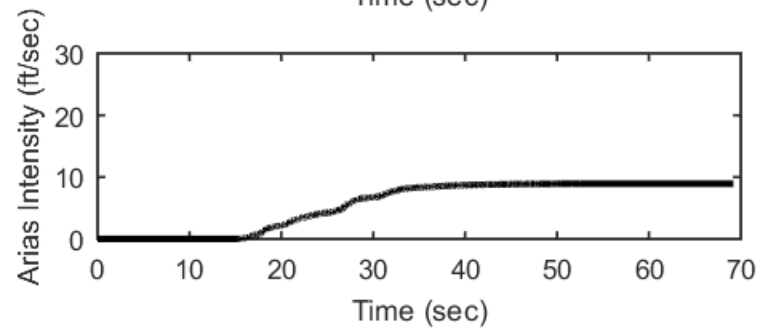
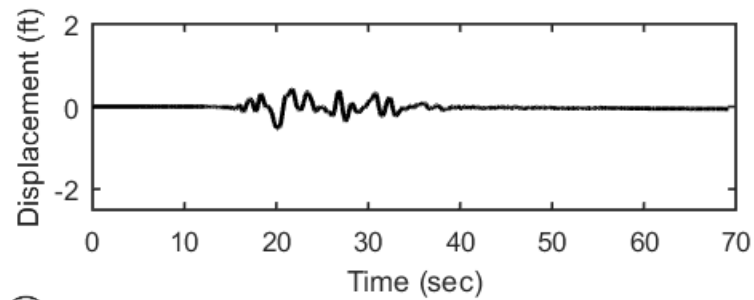
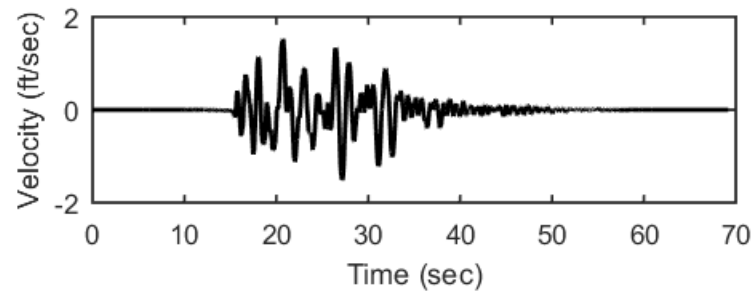
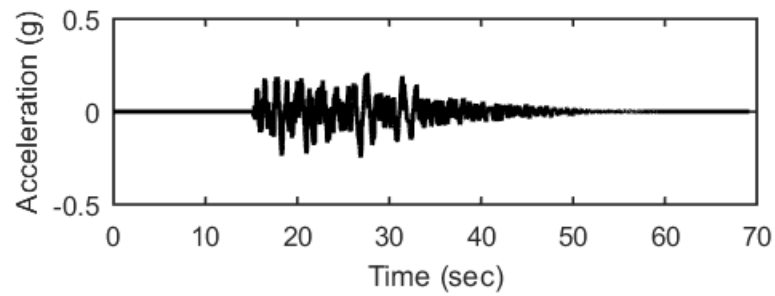
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: FEE7



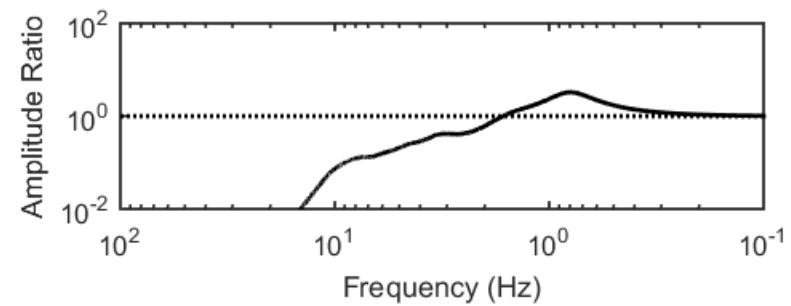
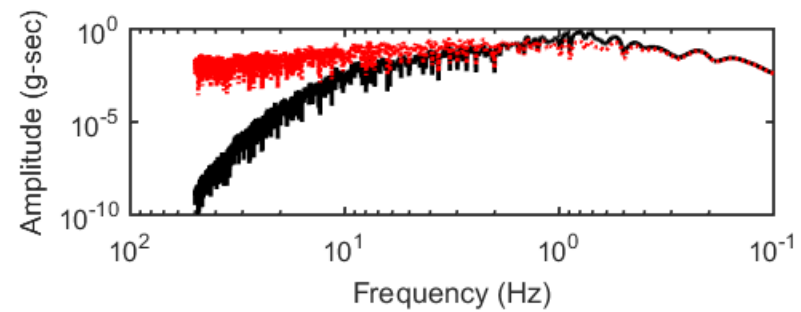
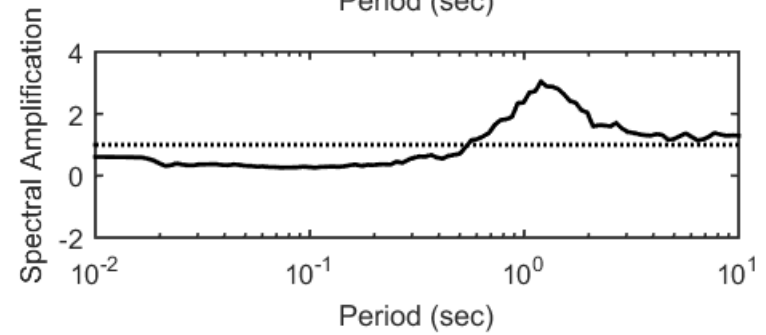
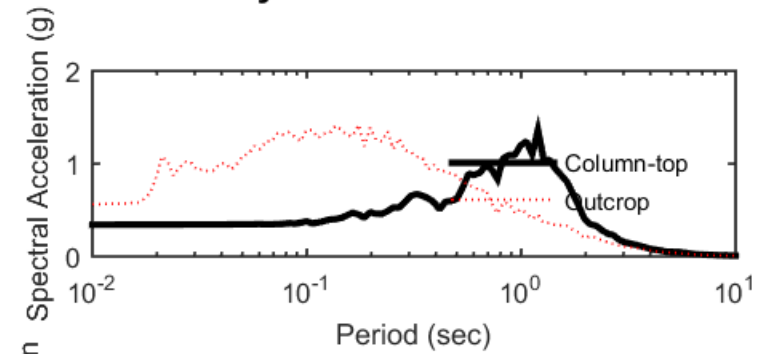
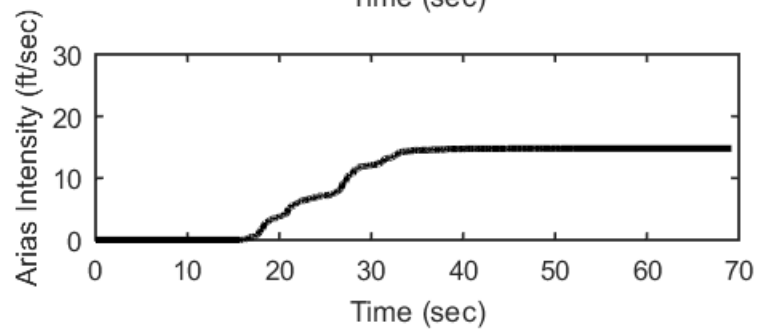
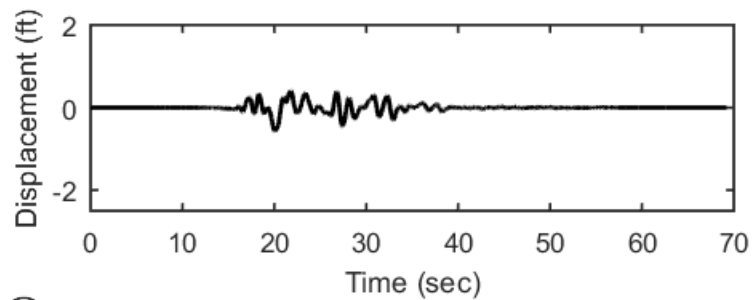
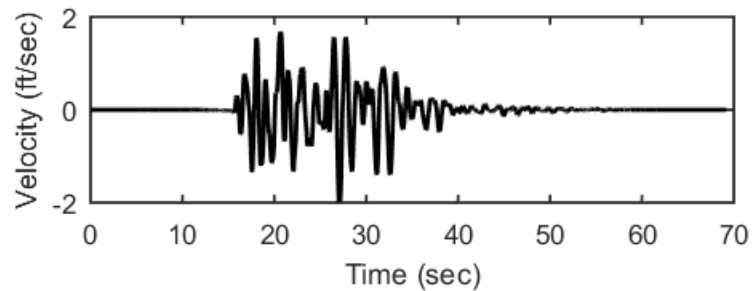
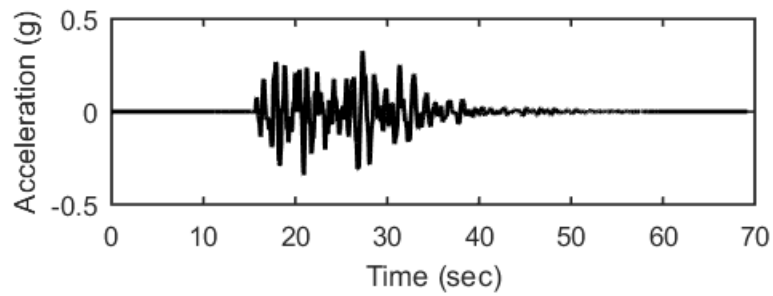
### Profile outputs for Motion: FEE7



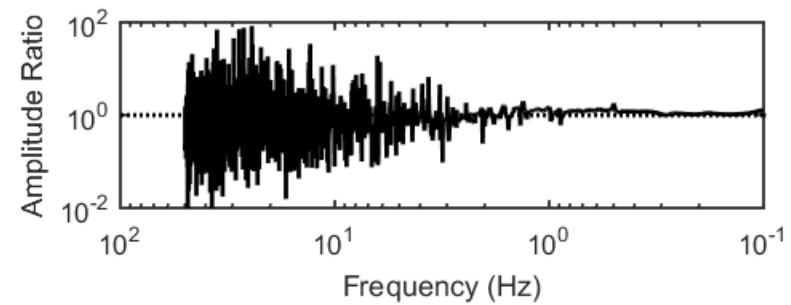
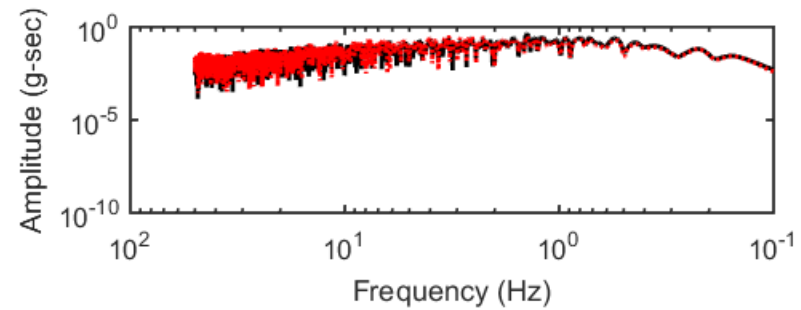
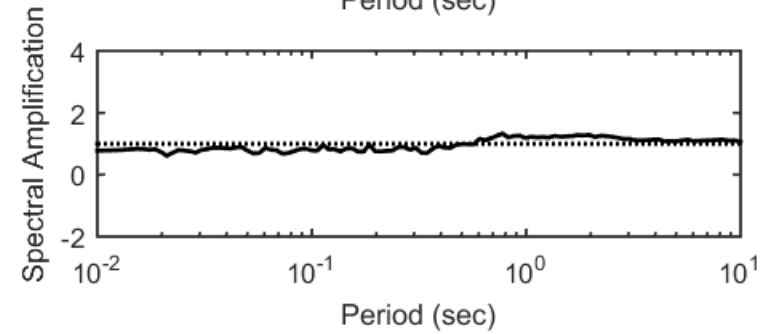
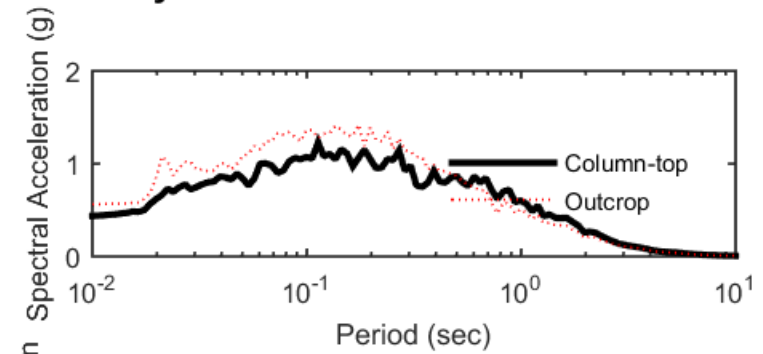
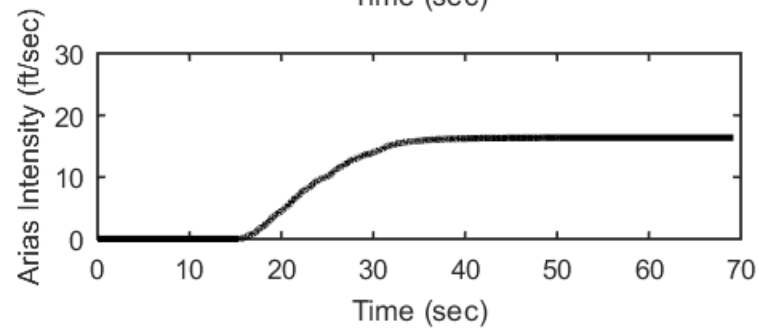
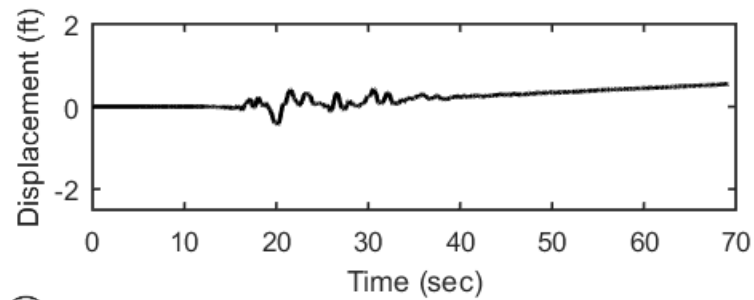
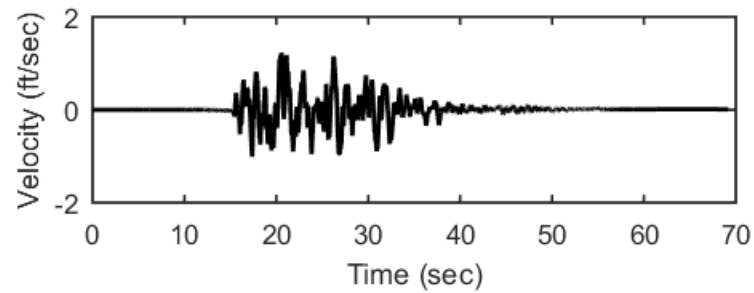
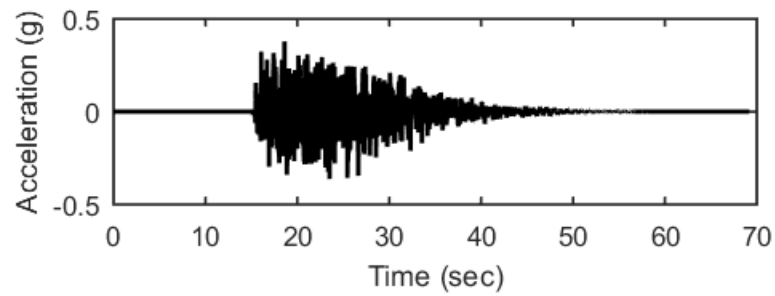
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE1



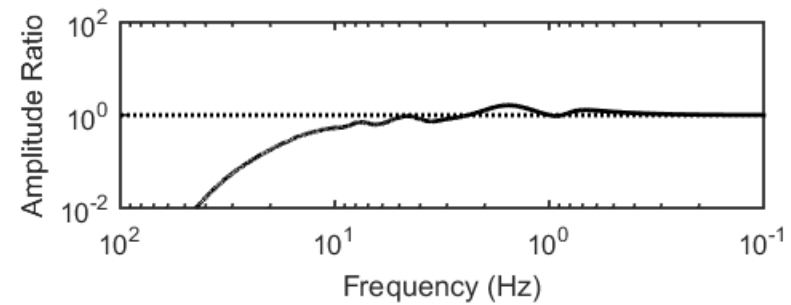
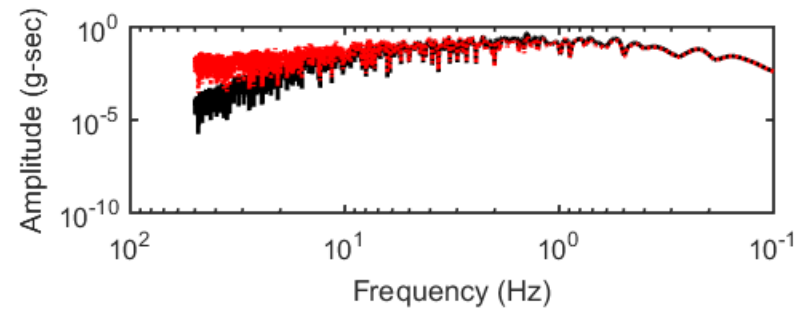
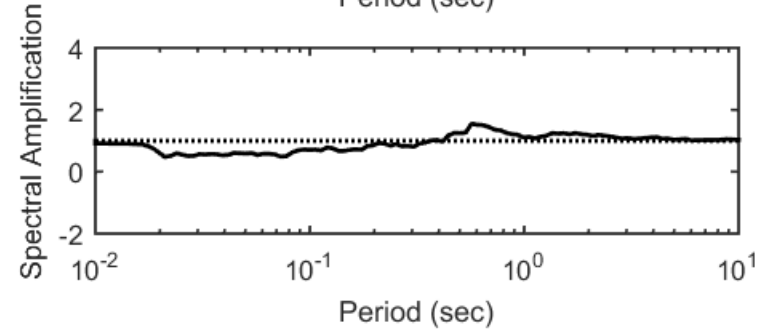
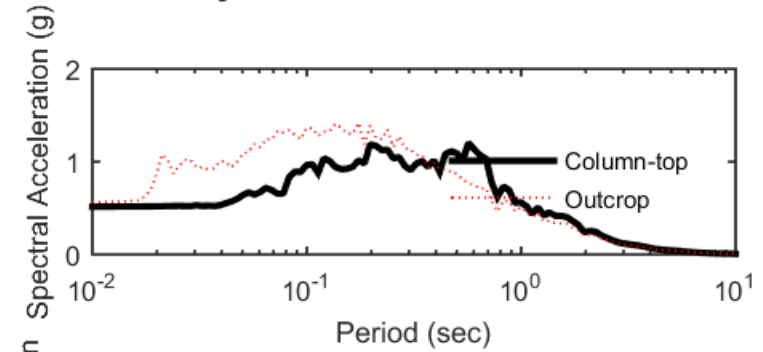
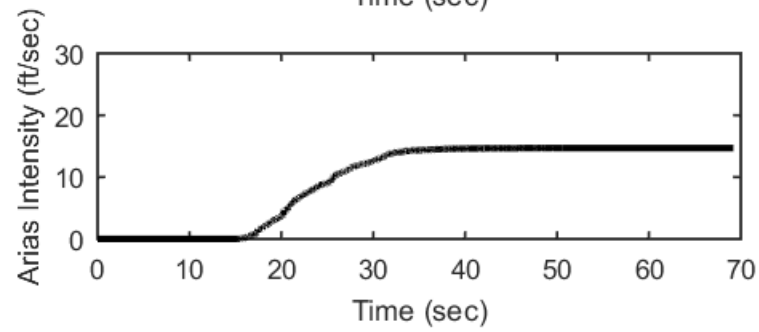
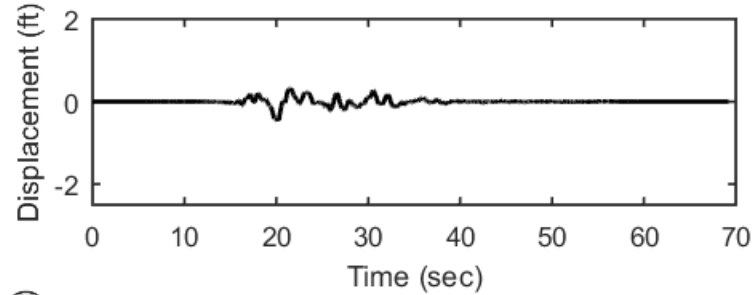
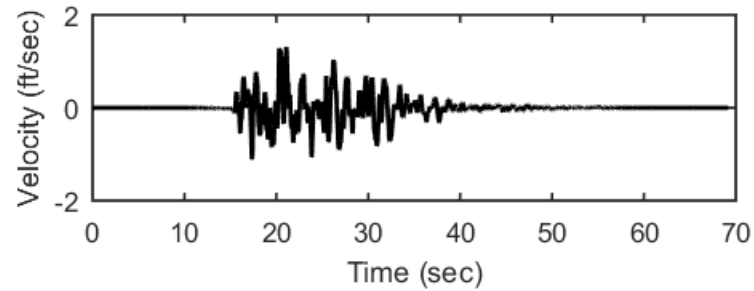
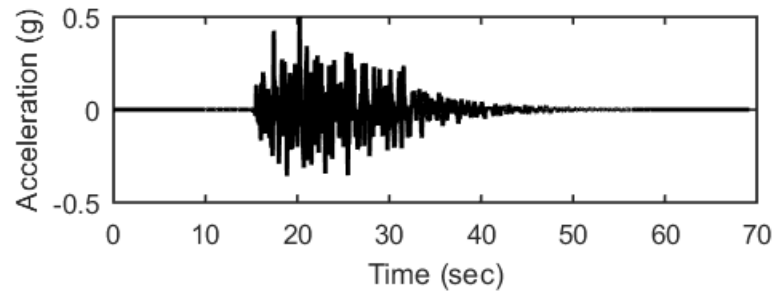
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE1



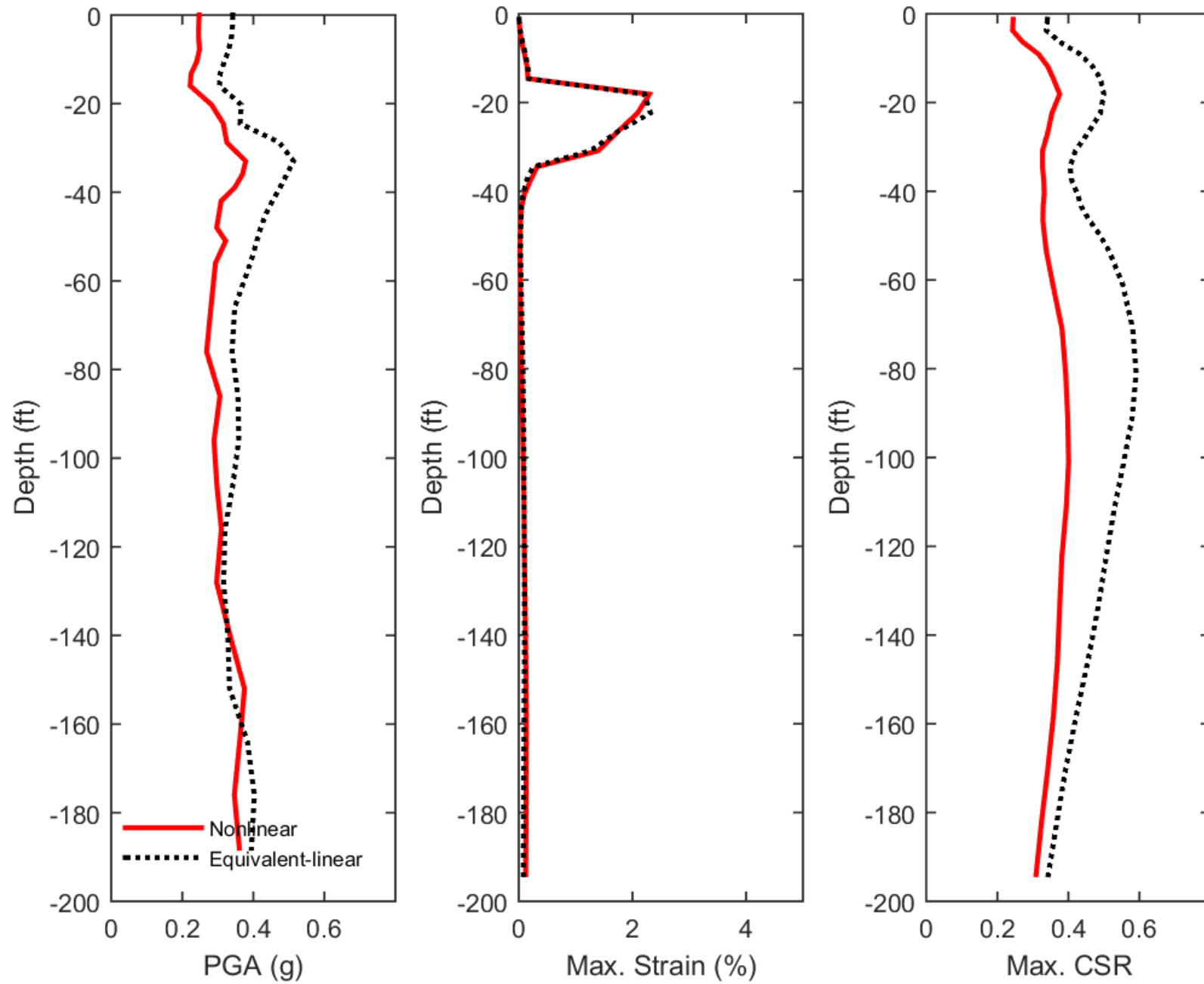
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE1



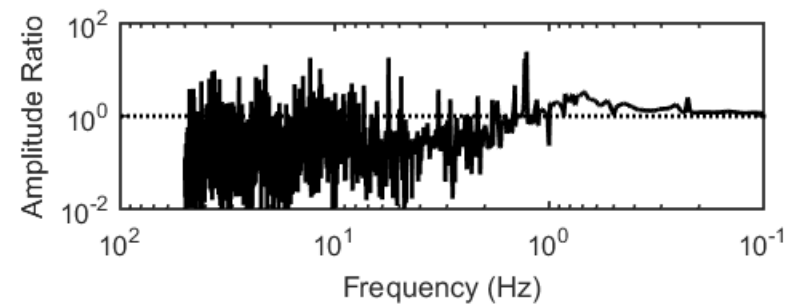
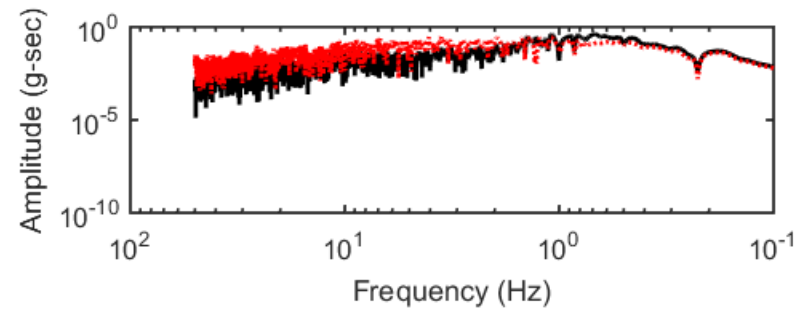
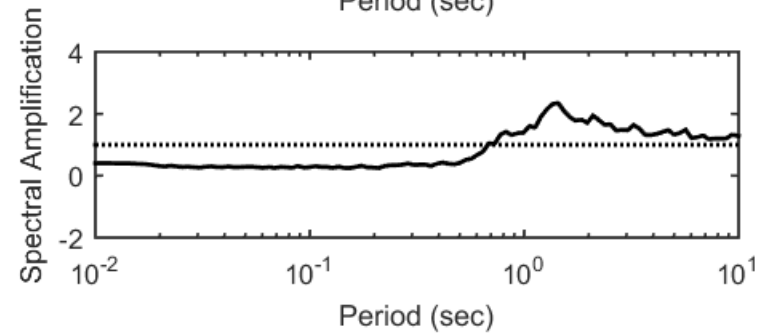
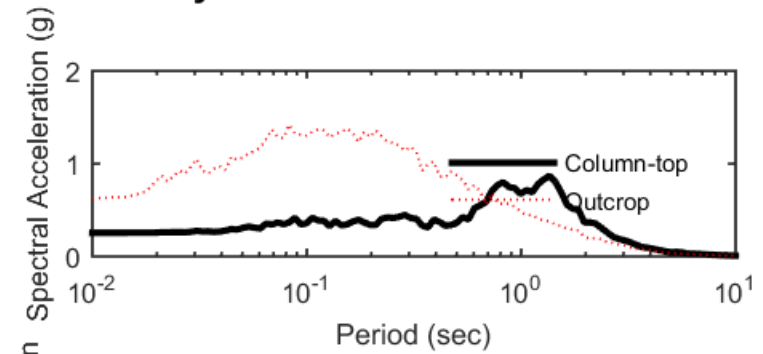
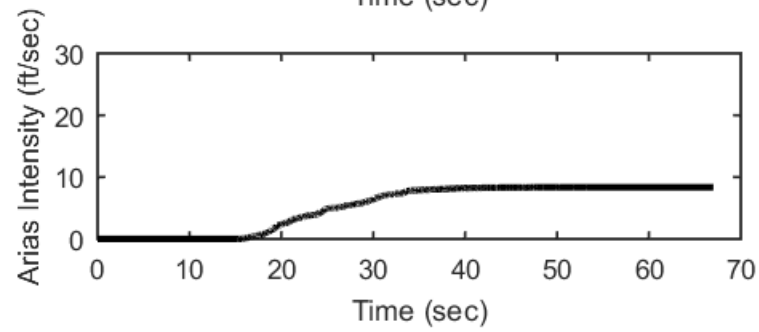
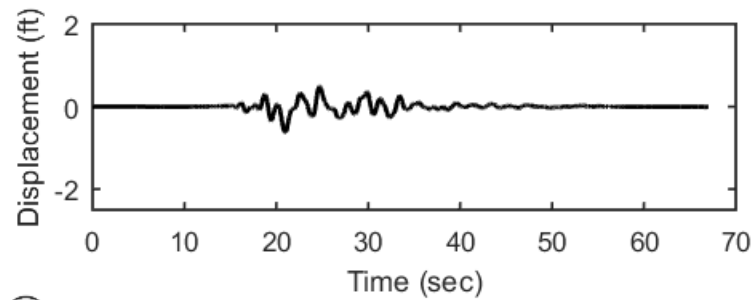
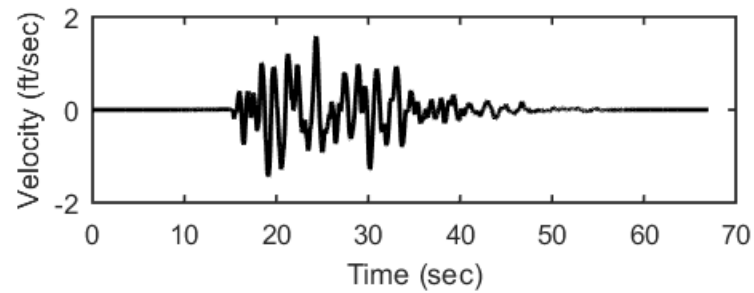
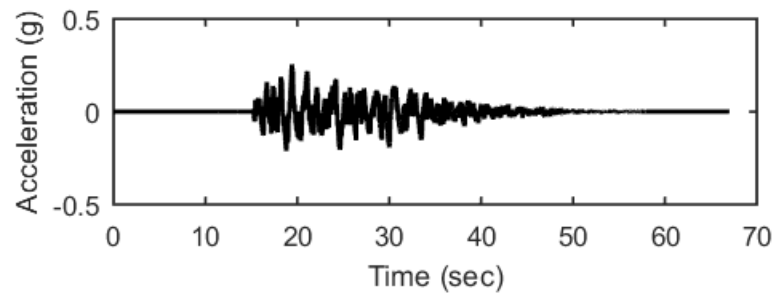
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE1



### Profile outputs for Motion: SEE1

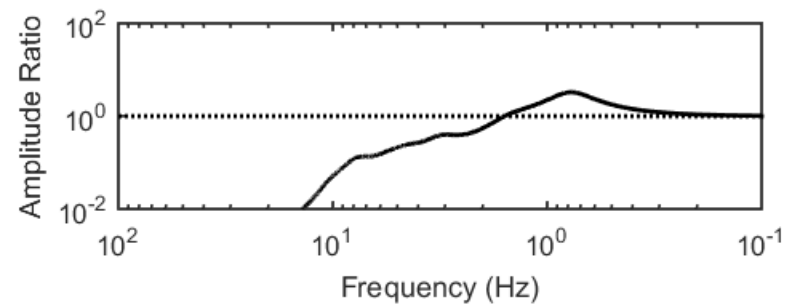
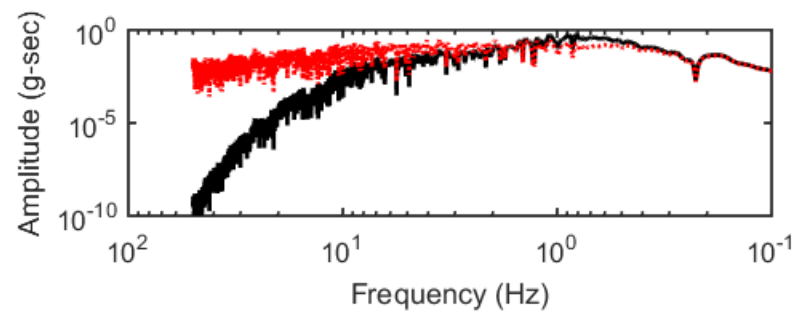
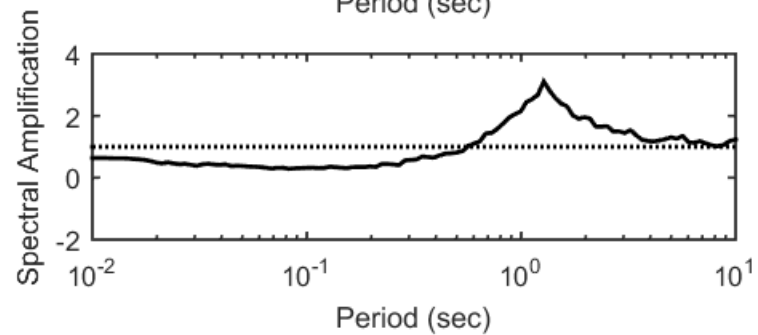
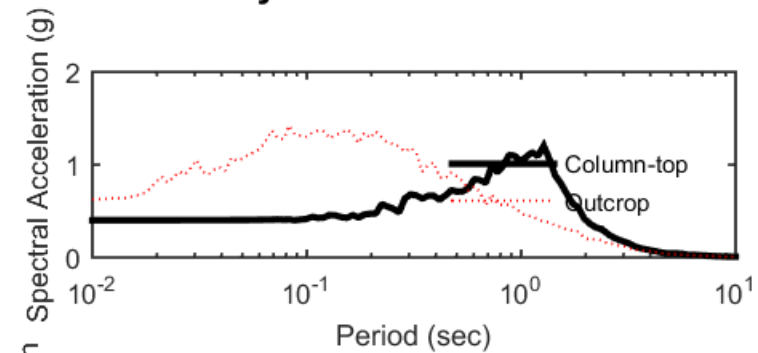
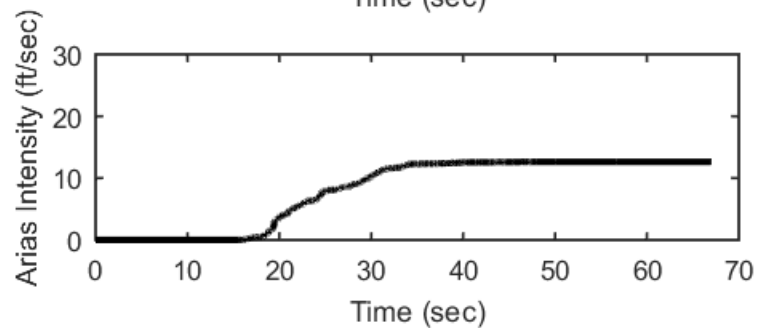
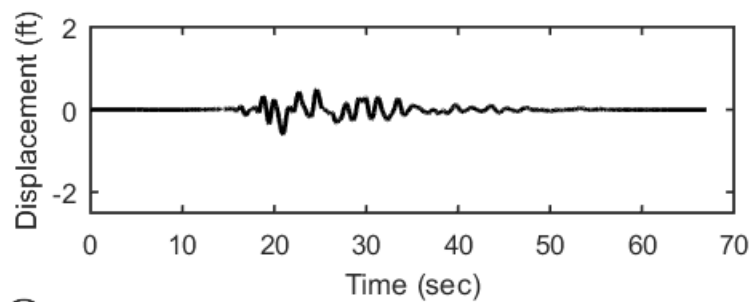
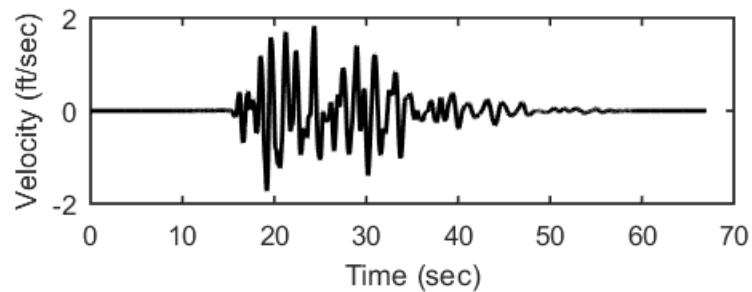
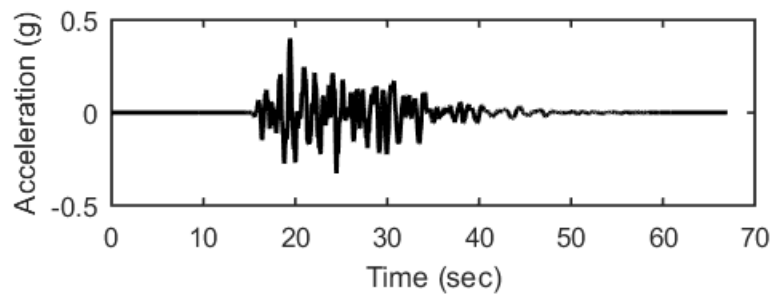


## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE2

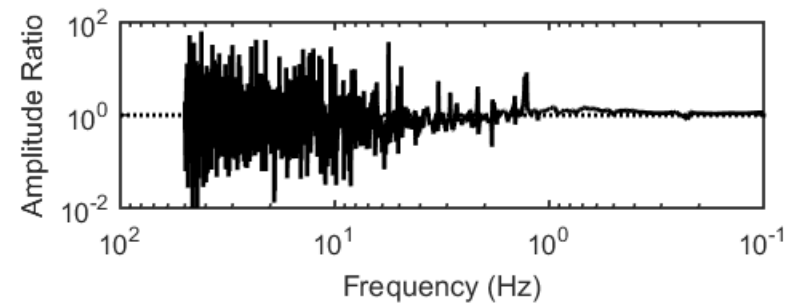
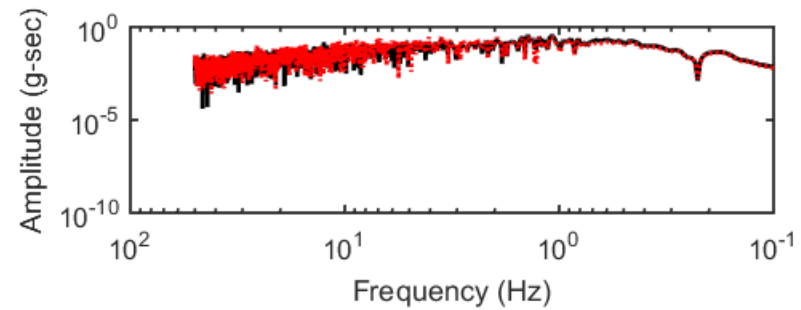
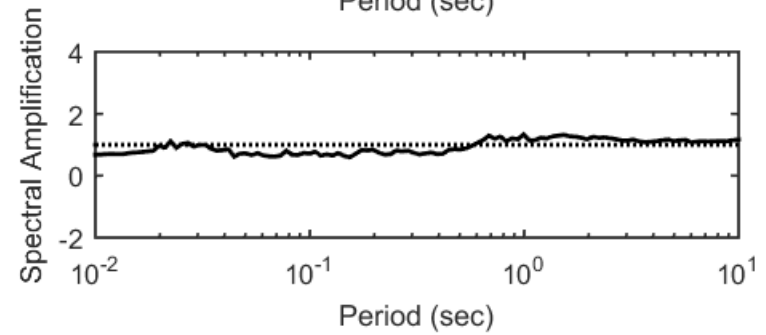
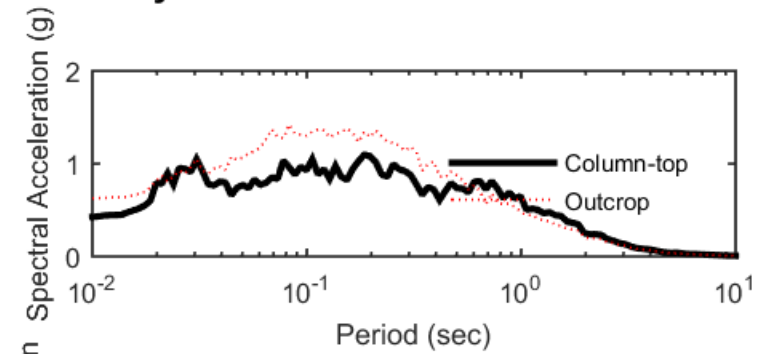
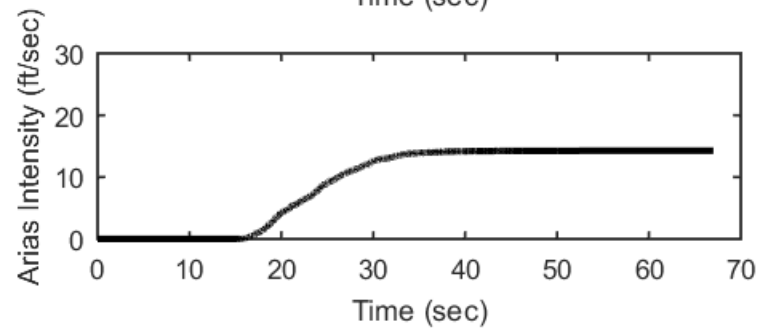
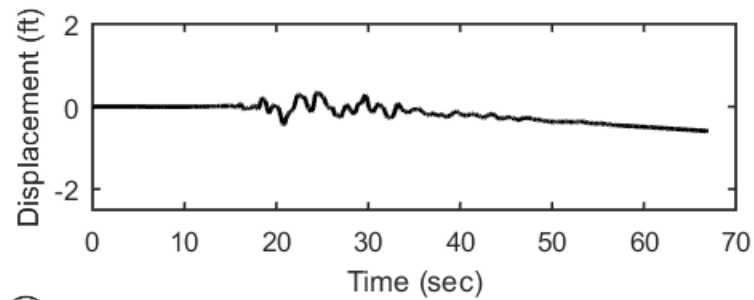
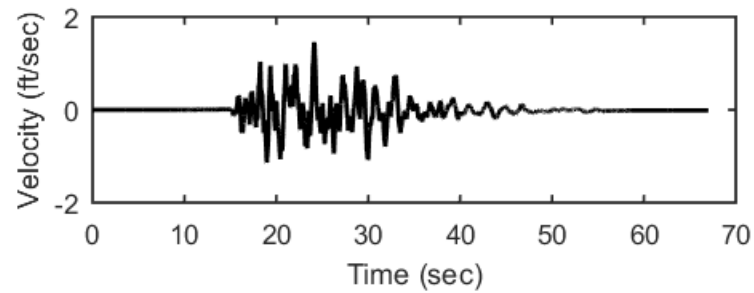
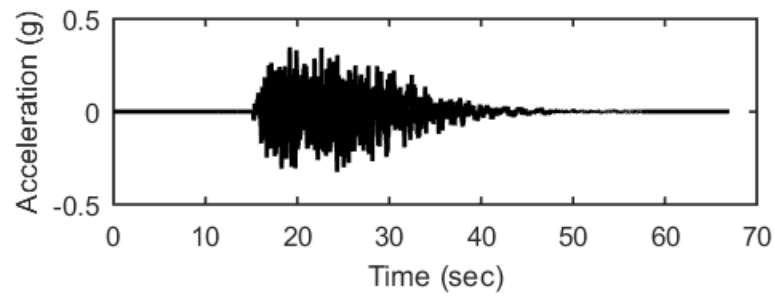




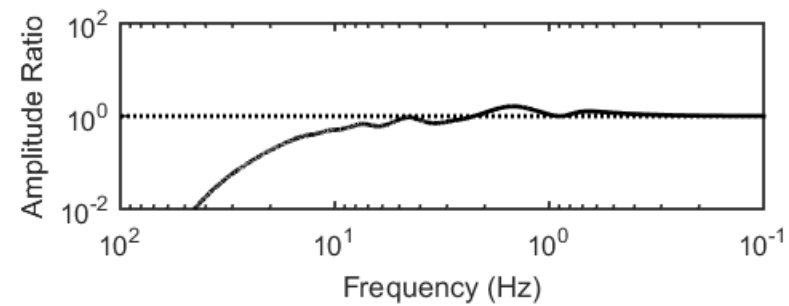
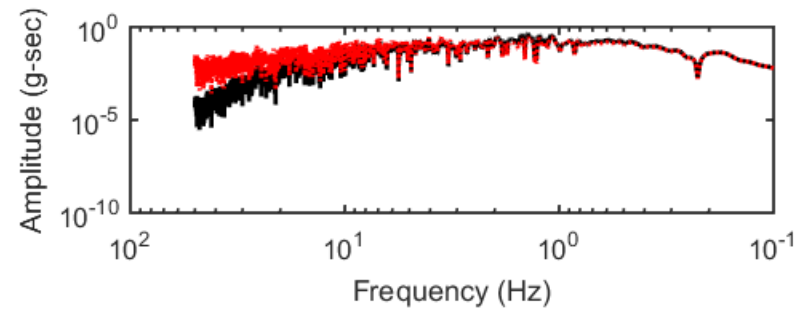
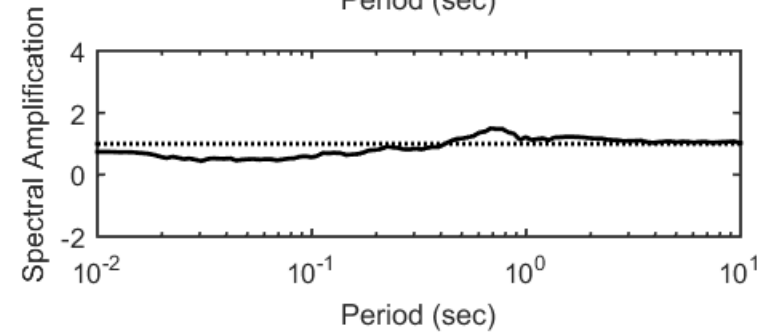
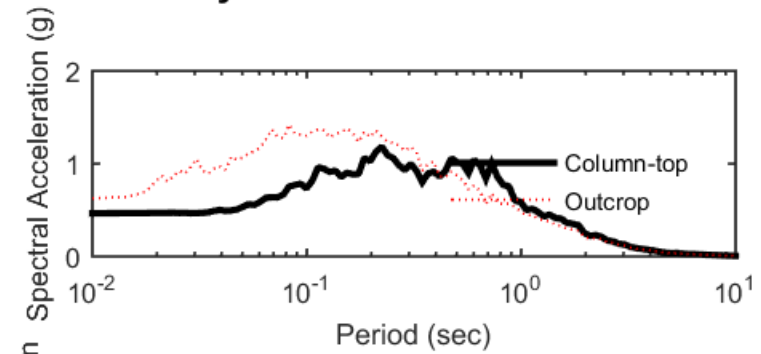
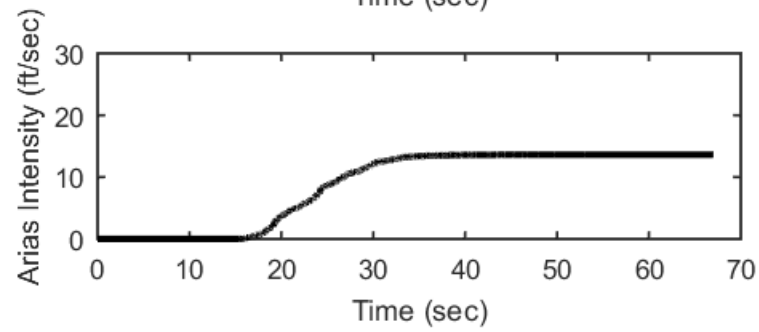
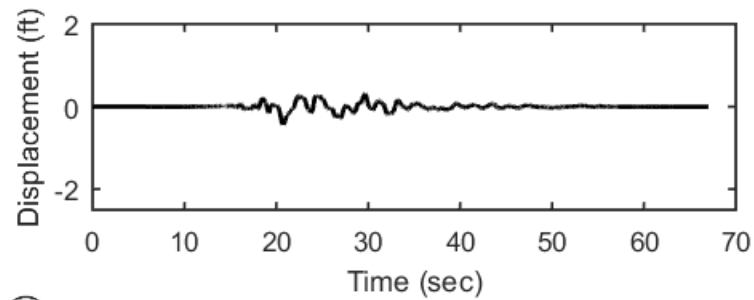
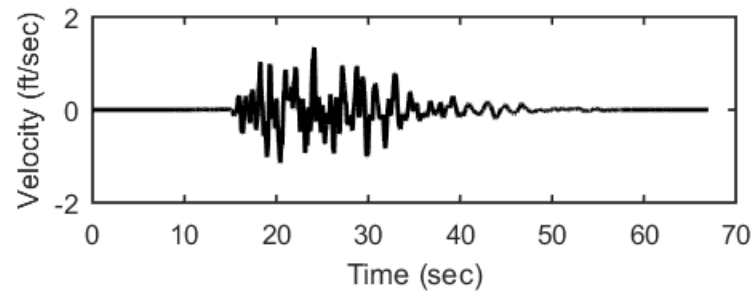
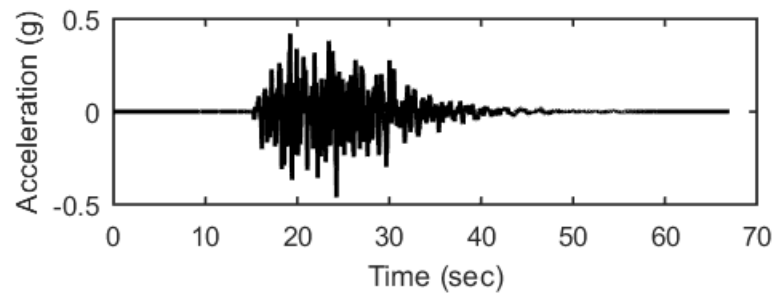
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE2



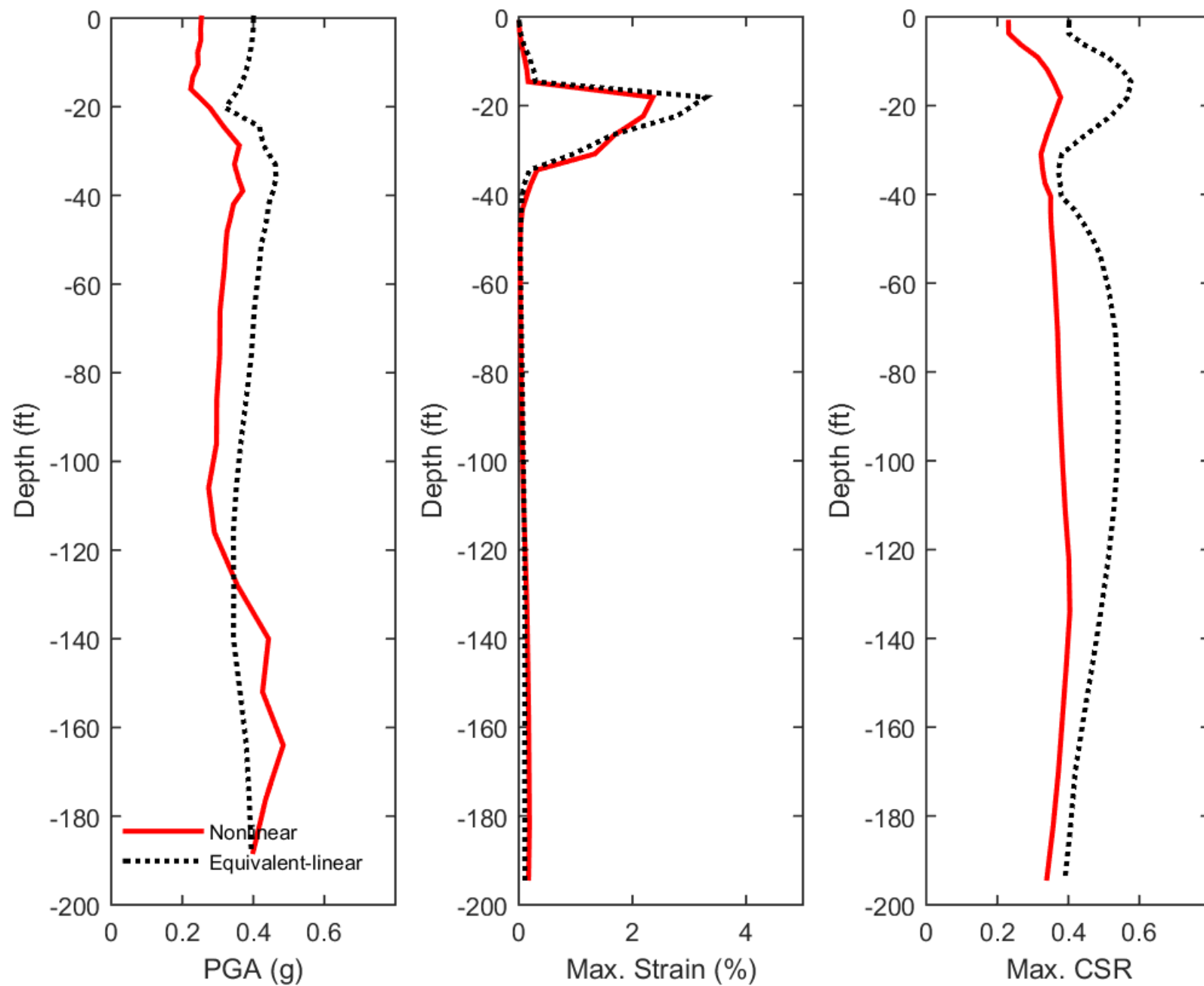
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE2



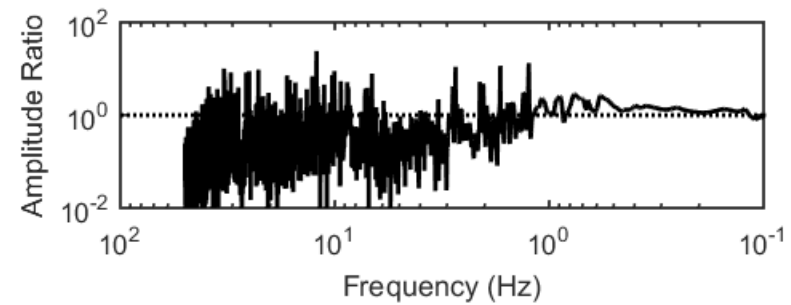
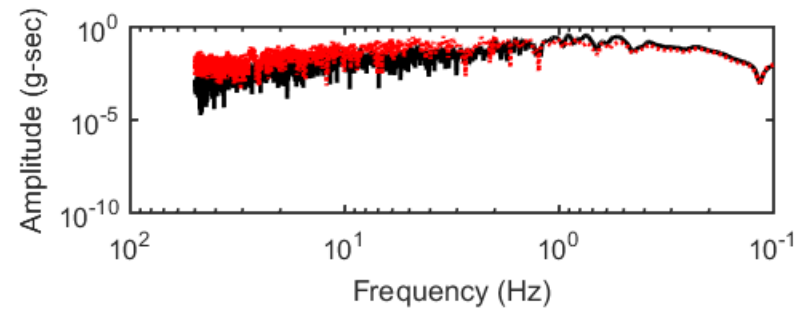
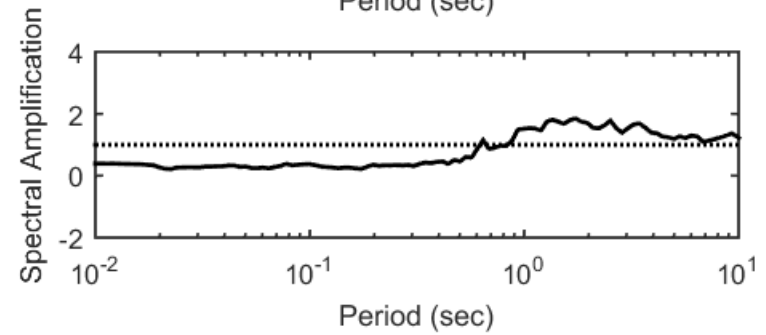
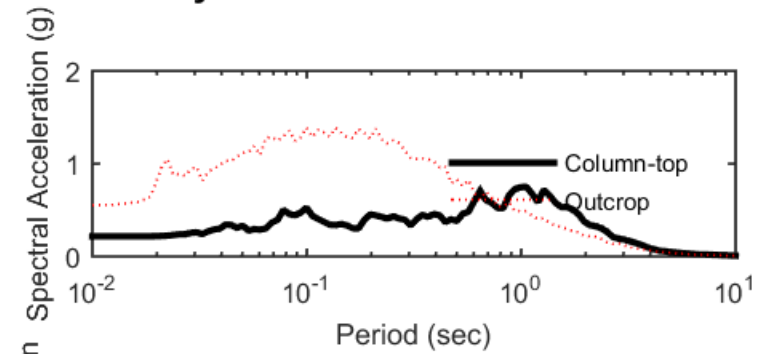
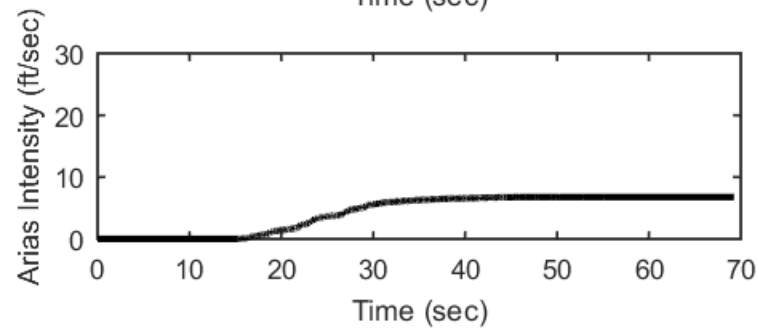
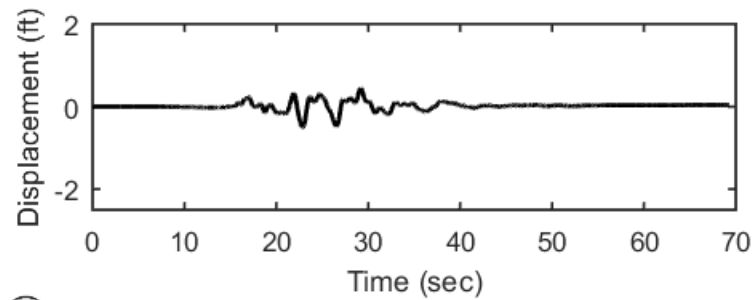
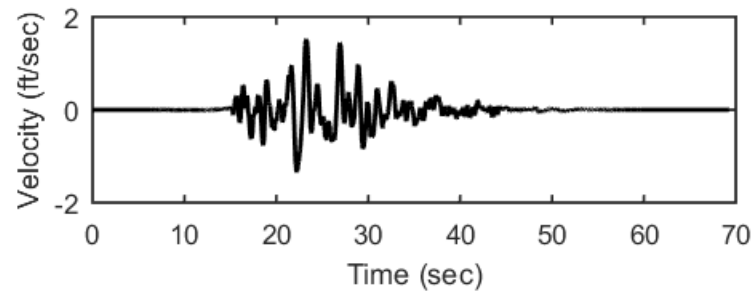
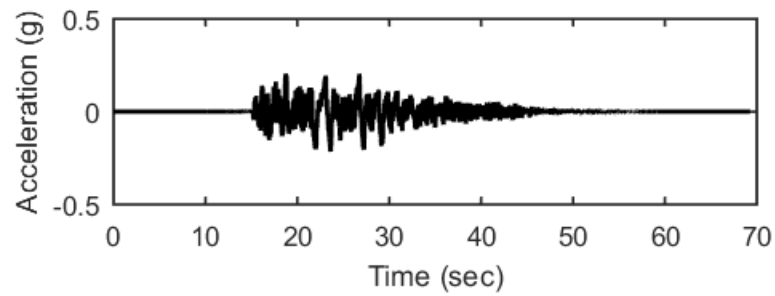
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE2



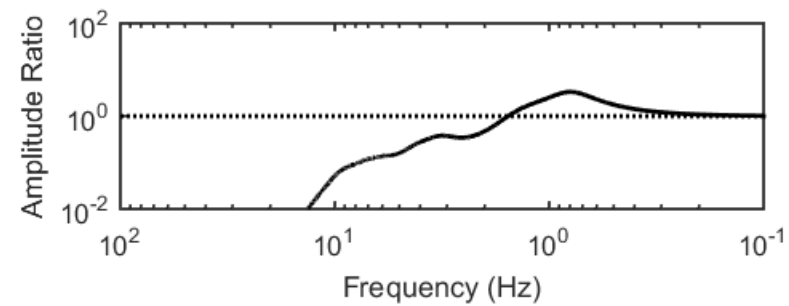
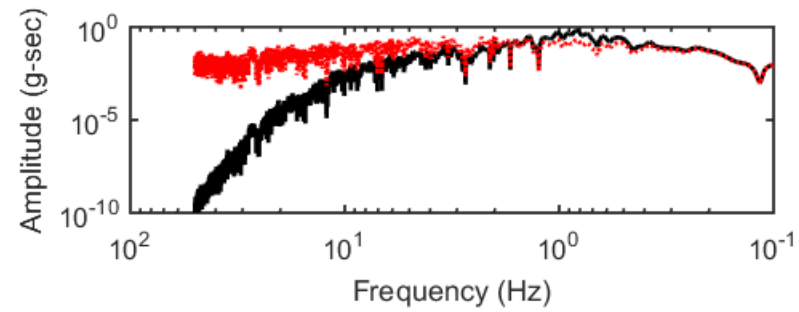
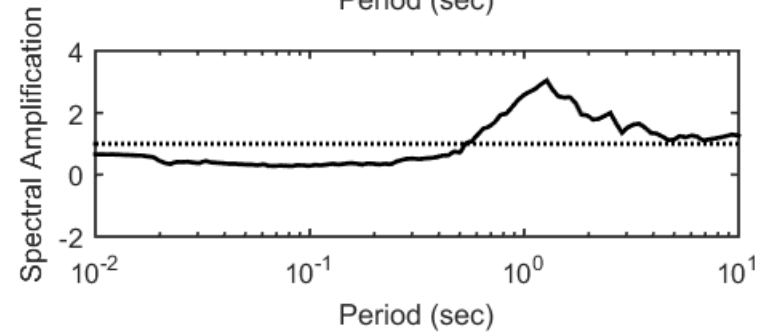
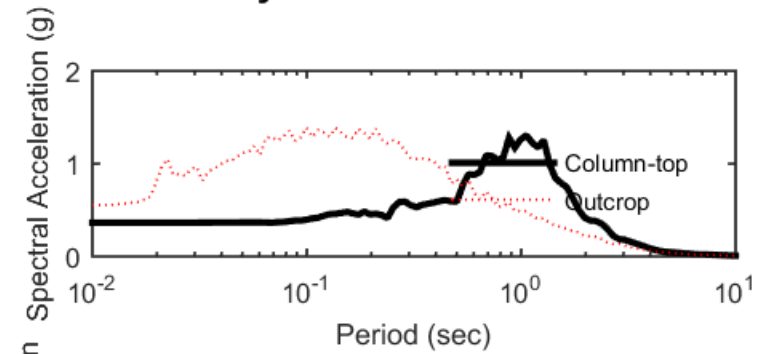
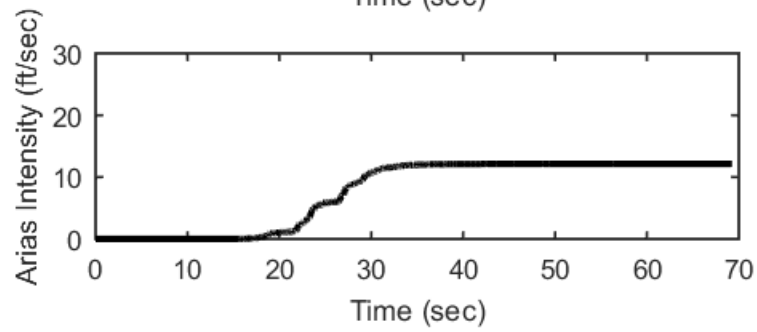
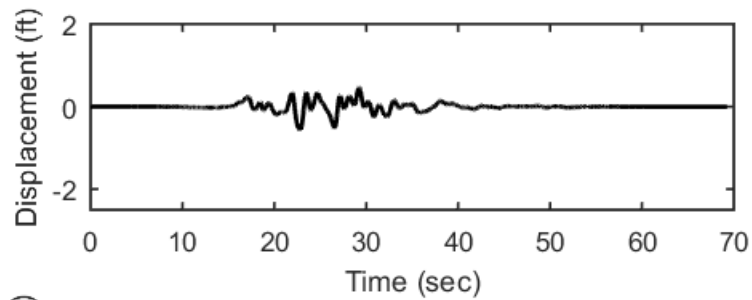
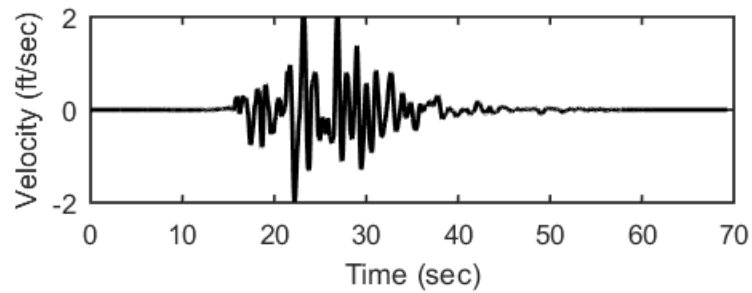
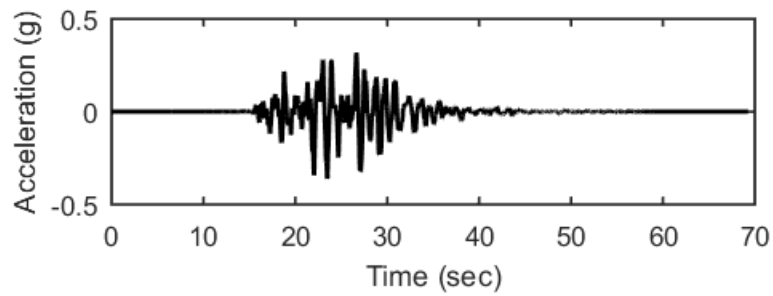
### Profile outputs for Motion: SEE2



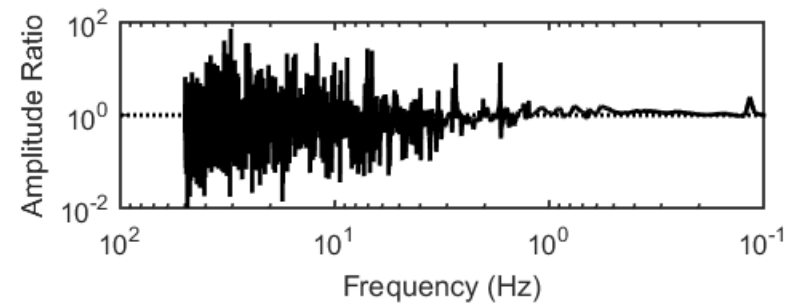
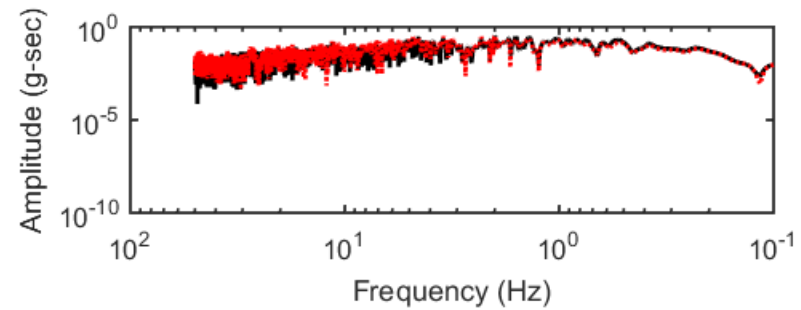
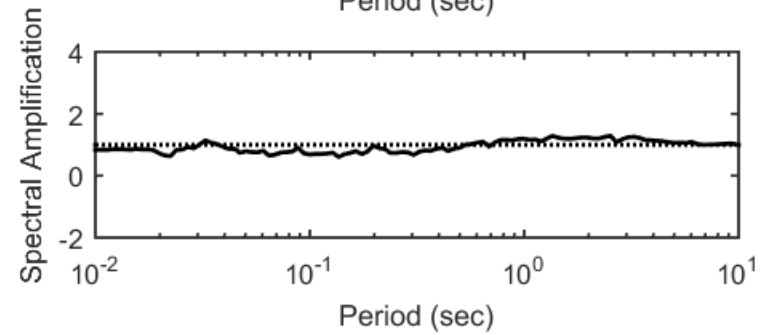
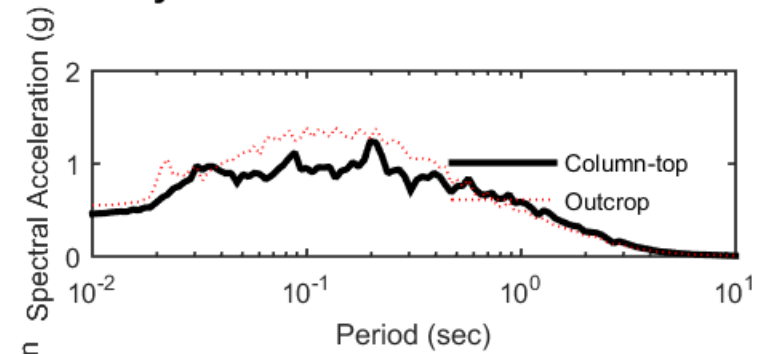
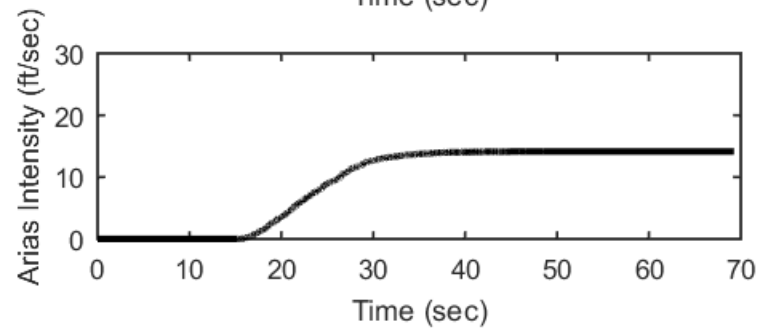
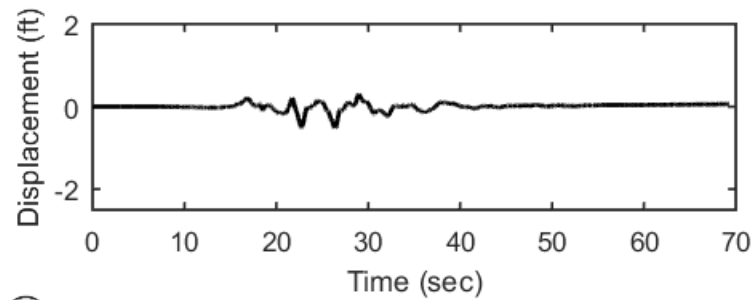
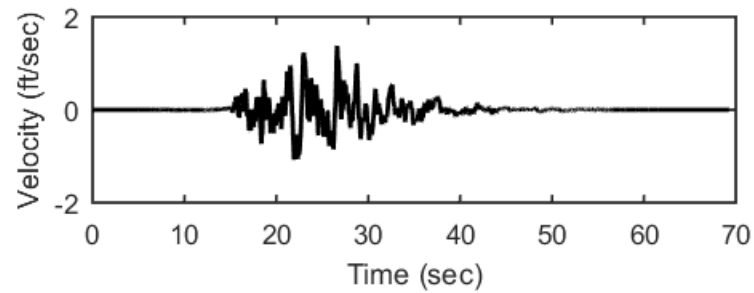
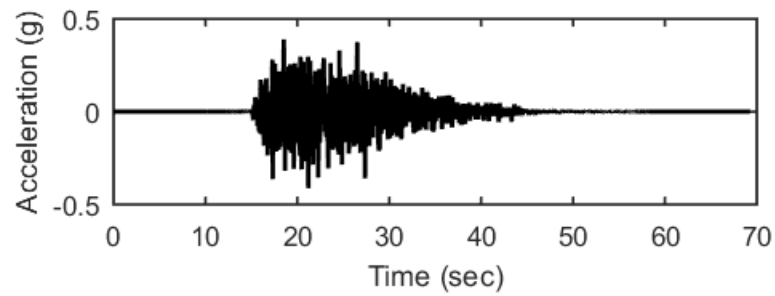
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE3



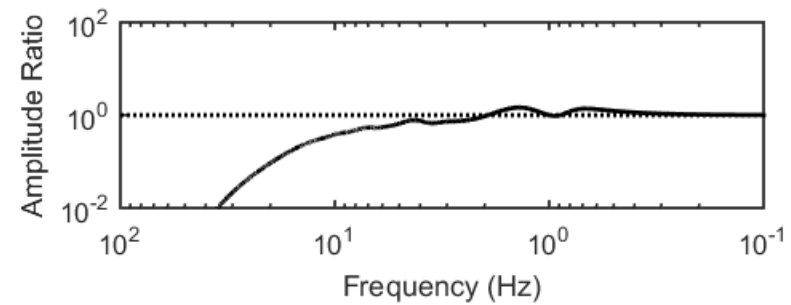
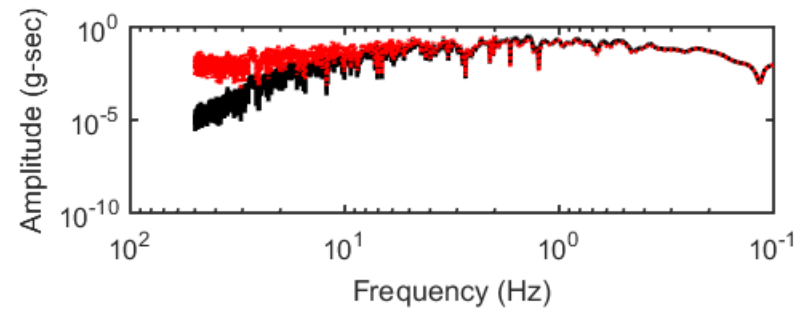
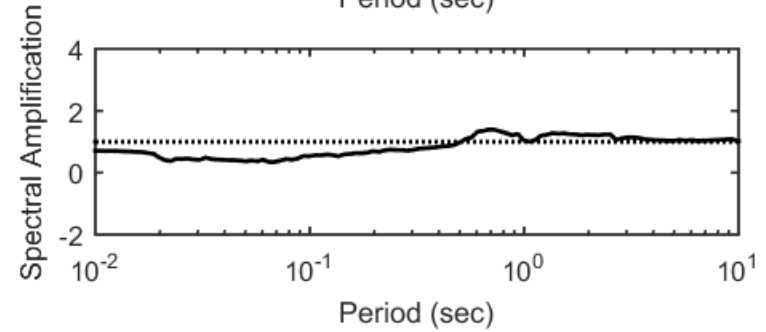
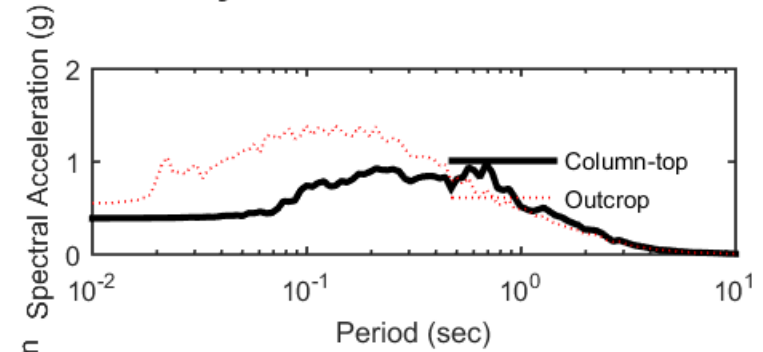
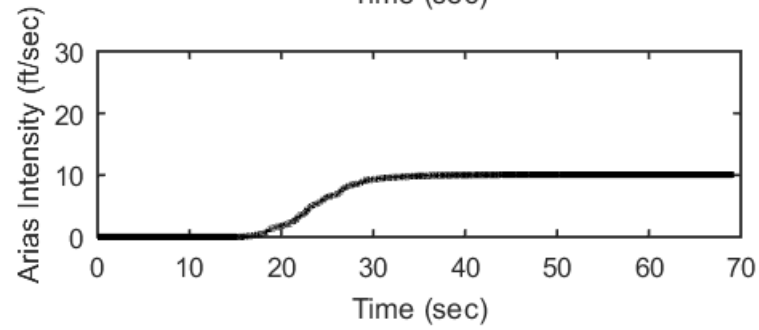
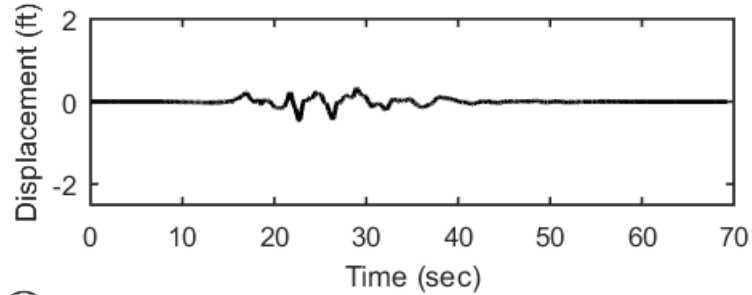
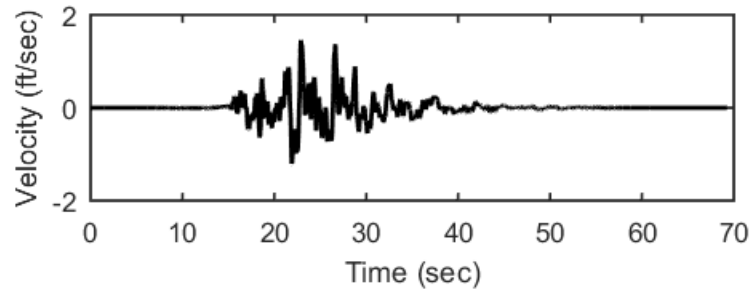
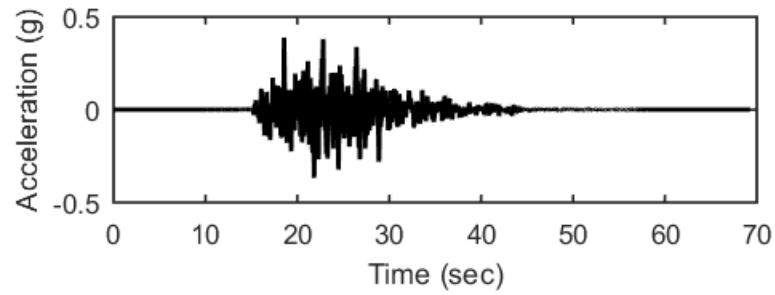
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE3



## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE3

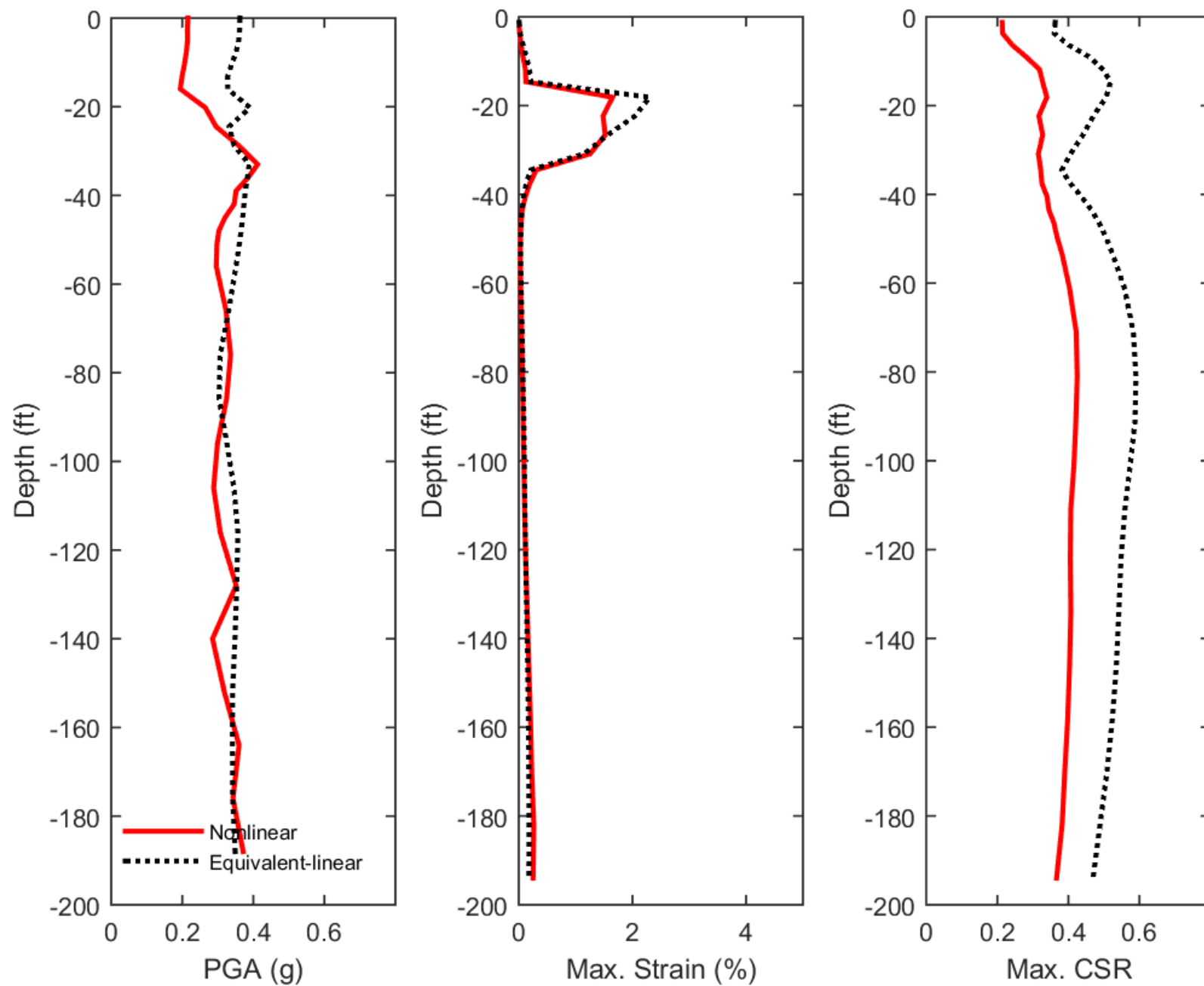


## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE3

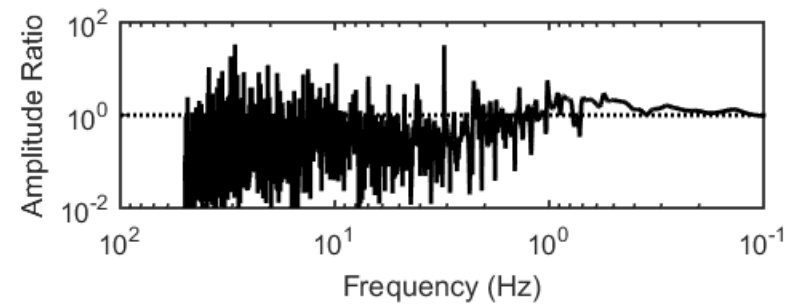
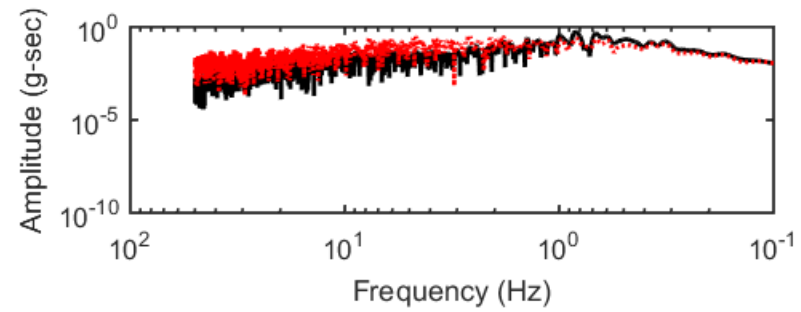
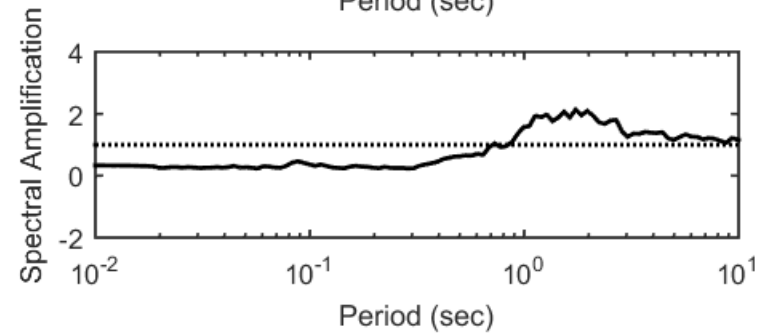
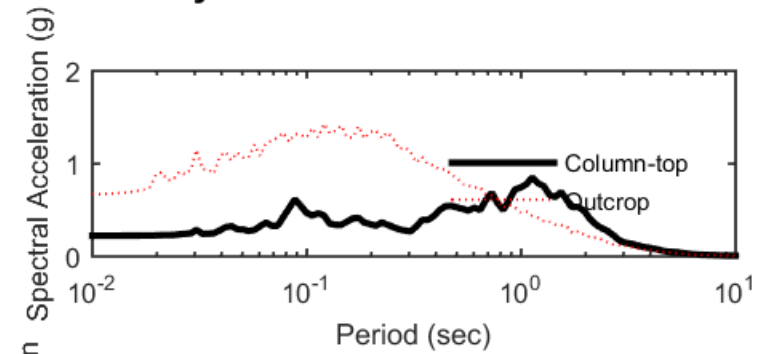
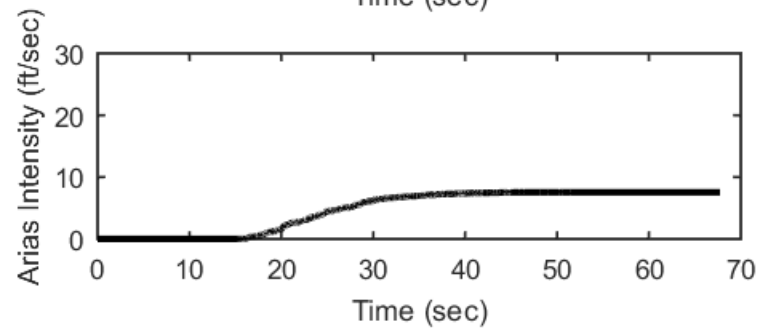
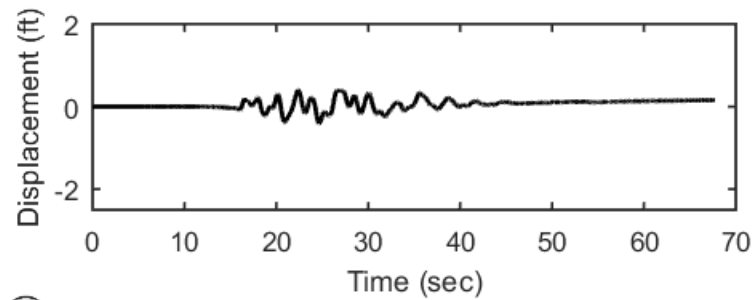
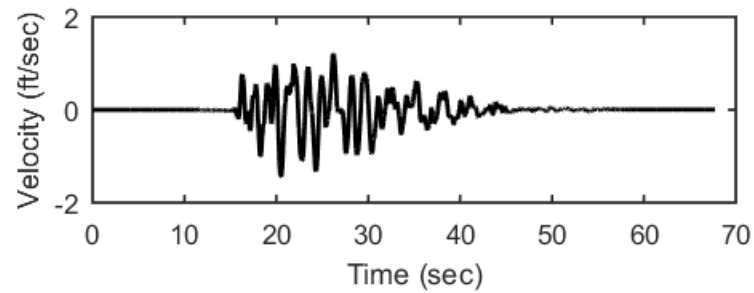
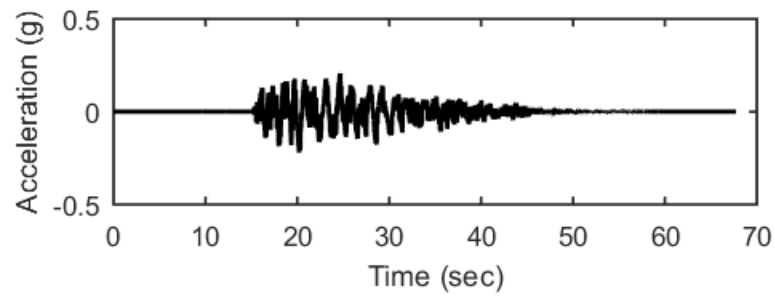




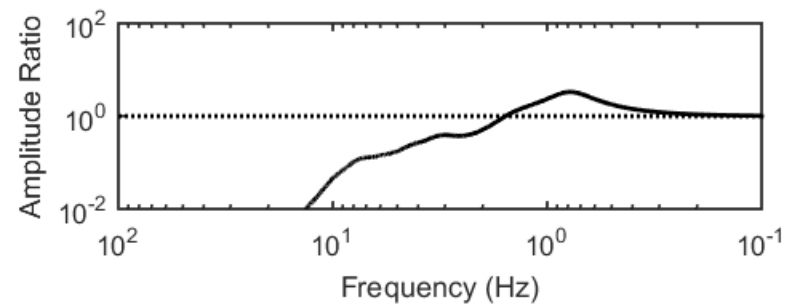
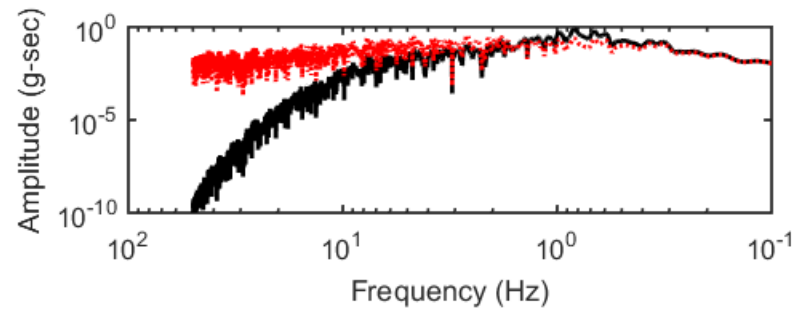
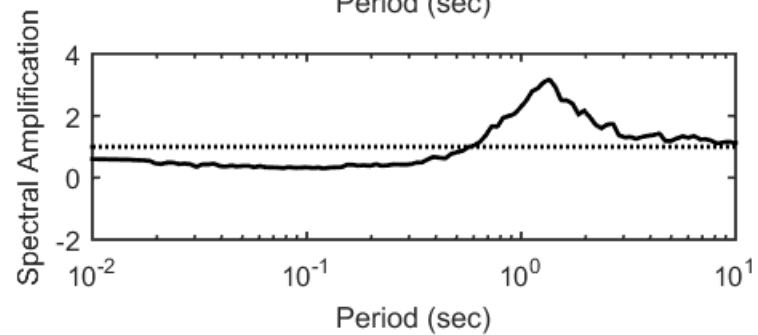
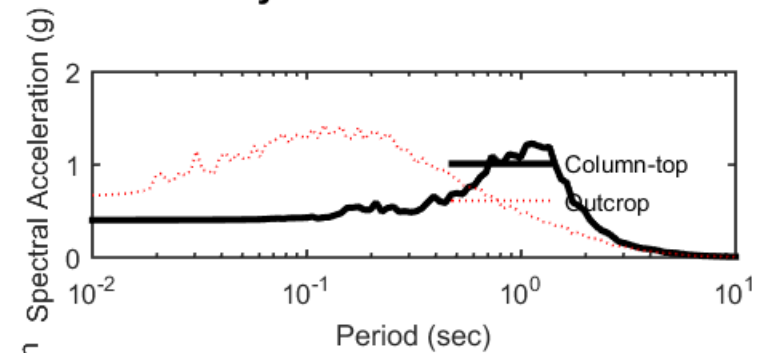
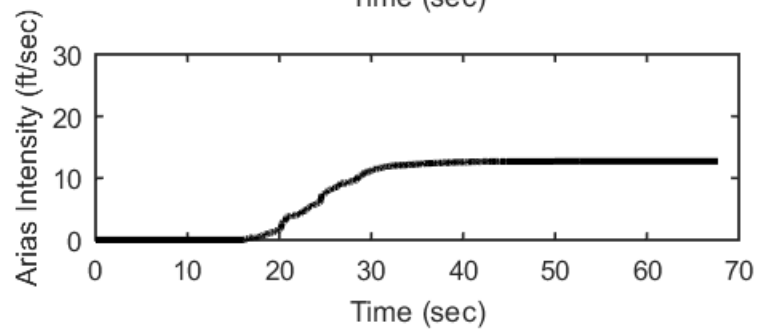
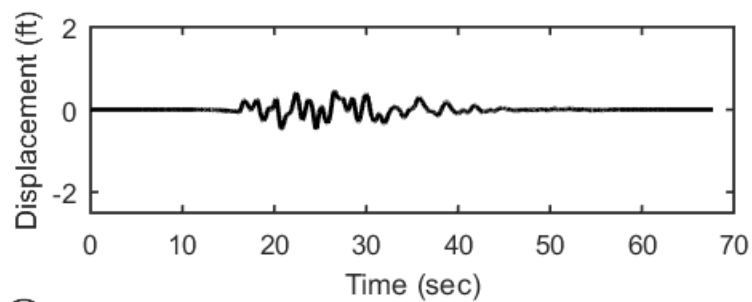
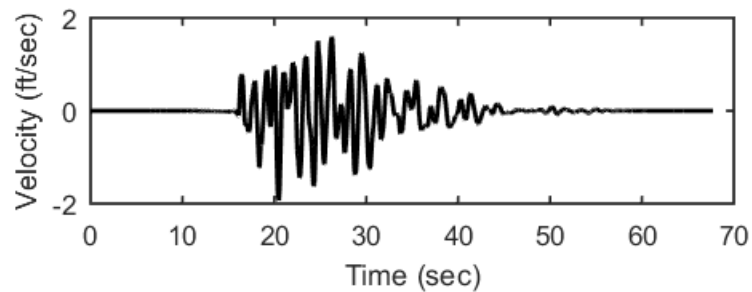
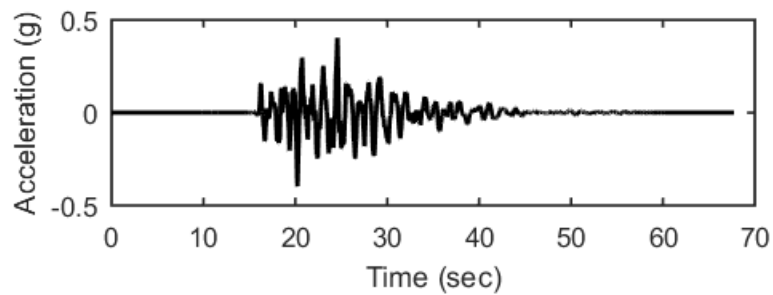
### Profile outputs for Motion: SEE3



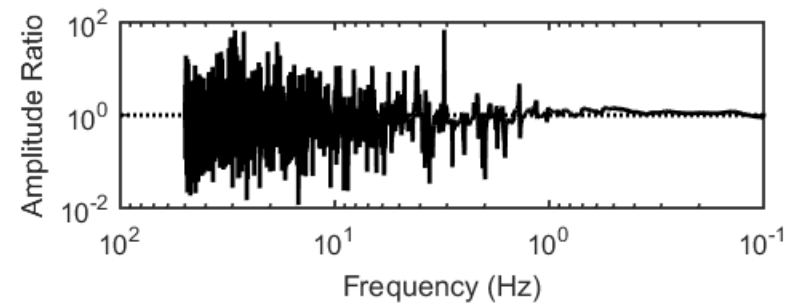
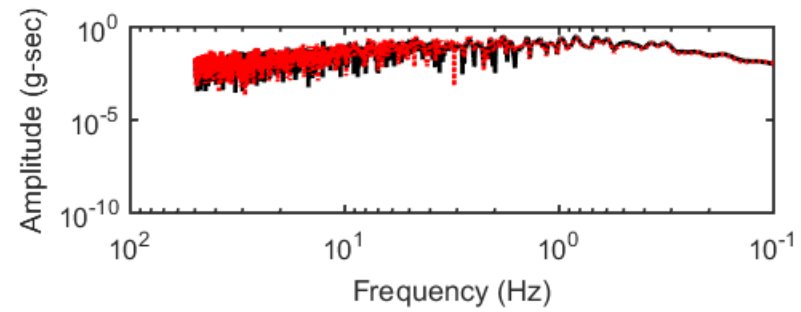
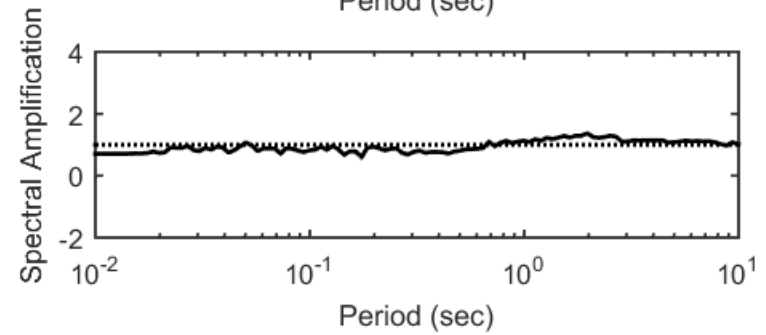
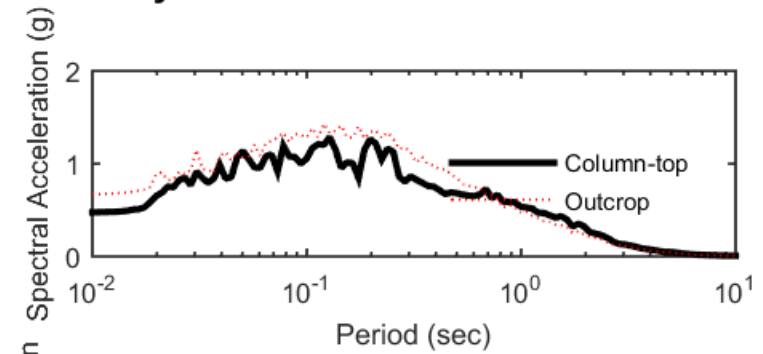
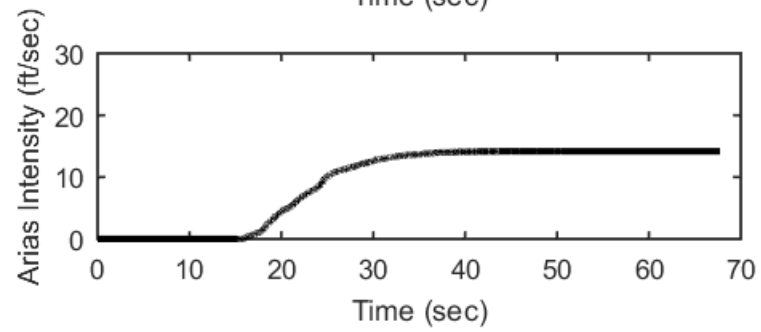
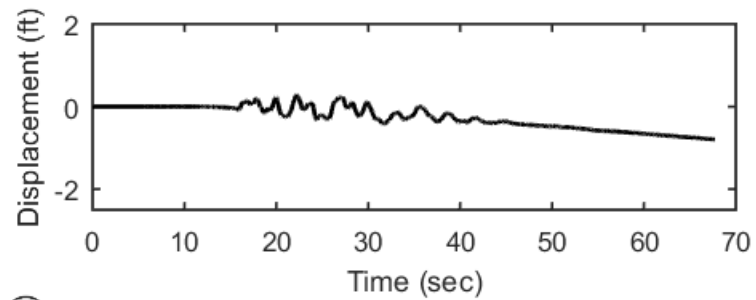
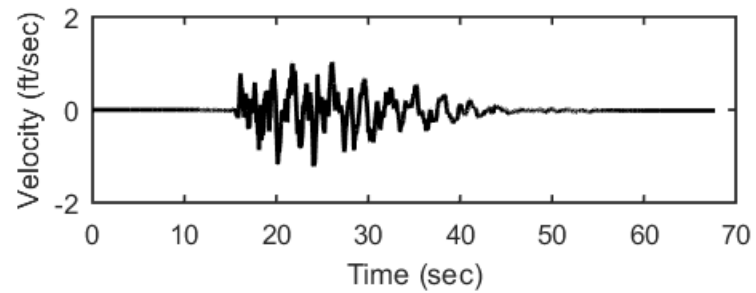
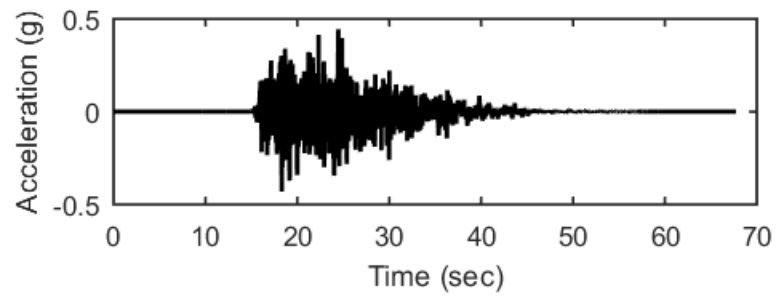
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE4



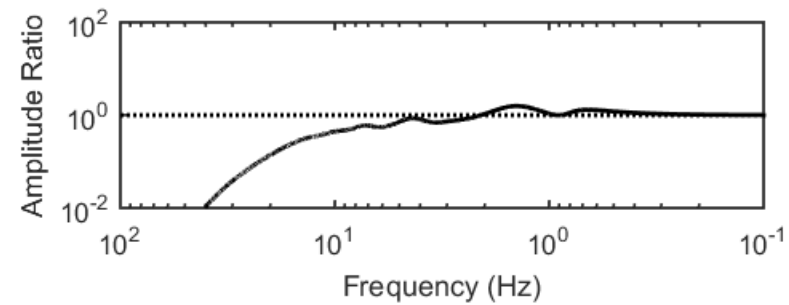
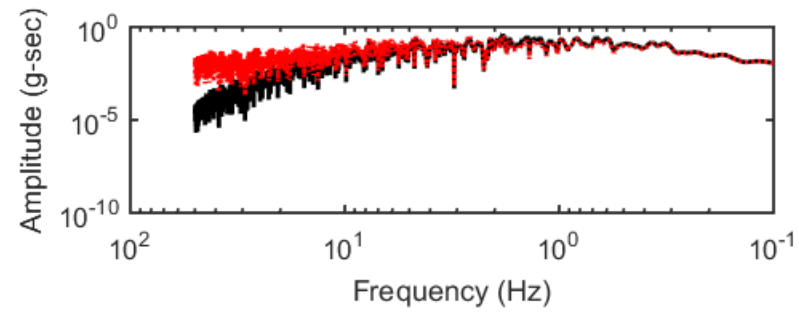
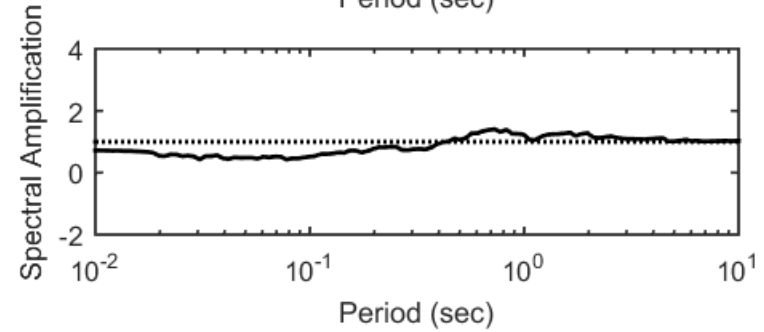
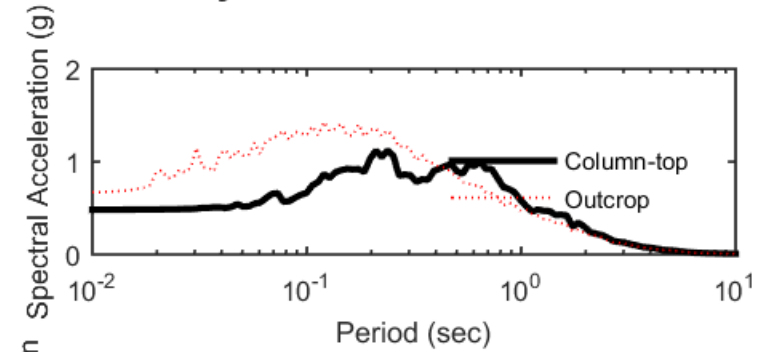
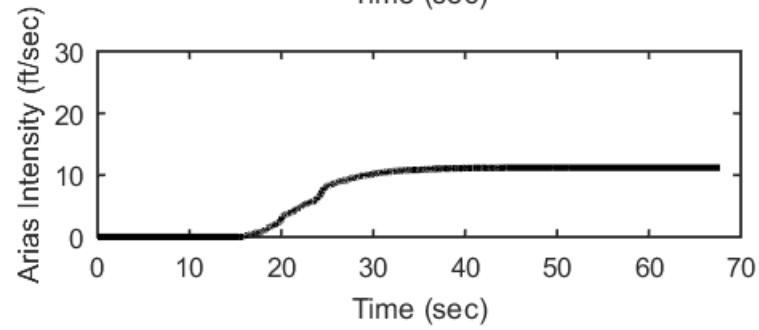
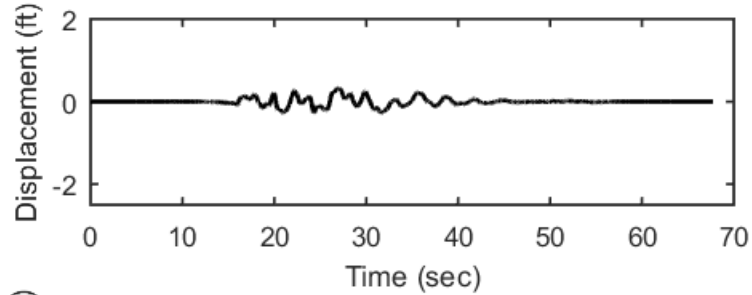
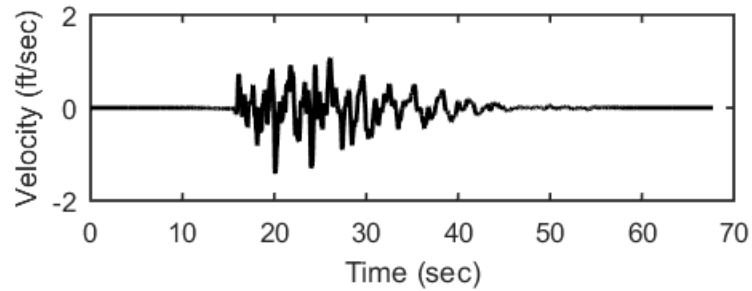
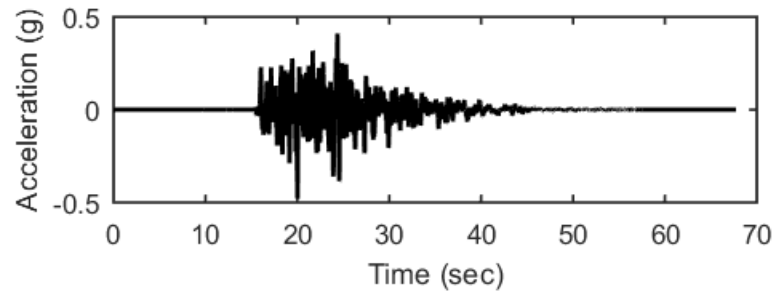
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE4



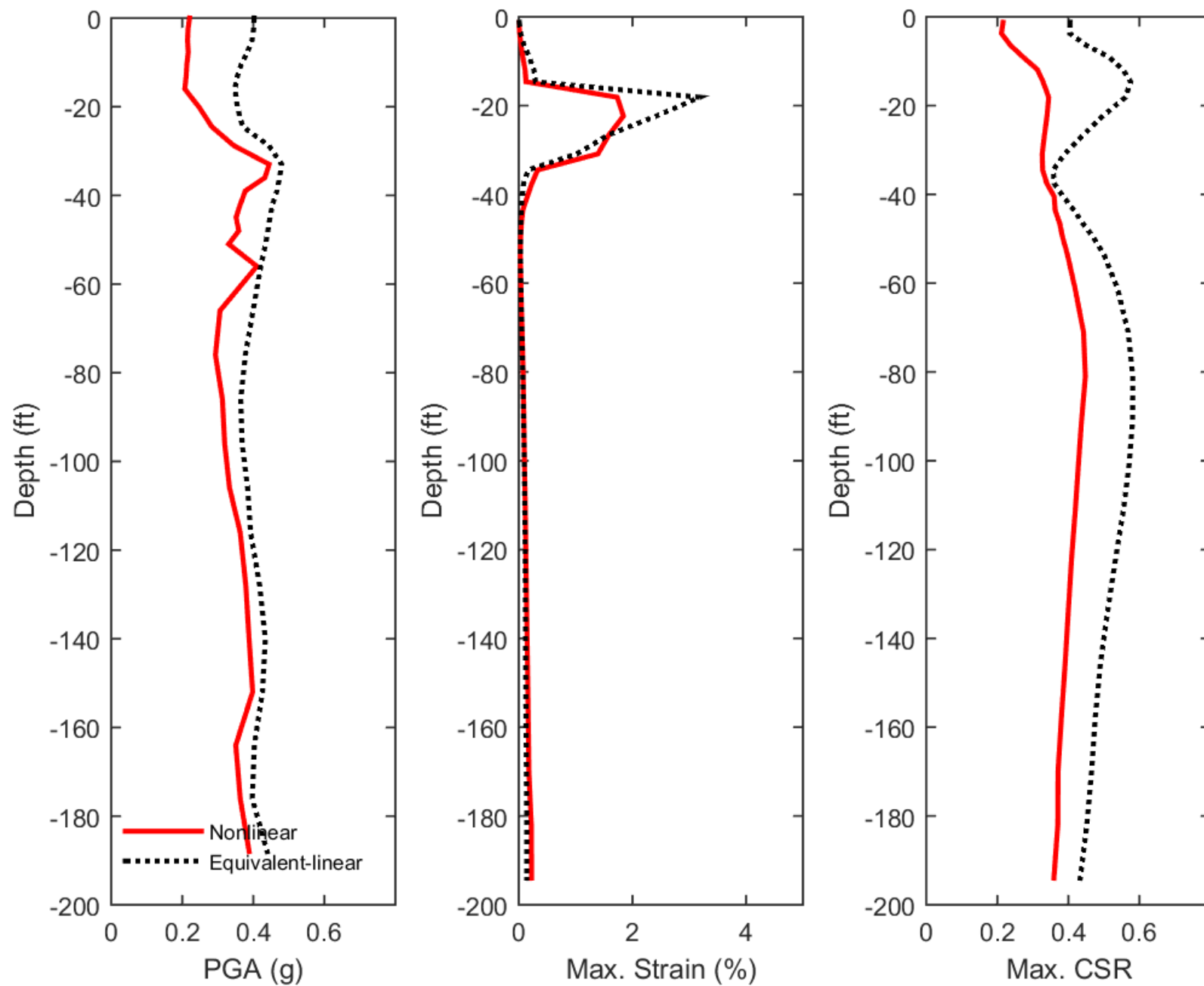
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE4



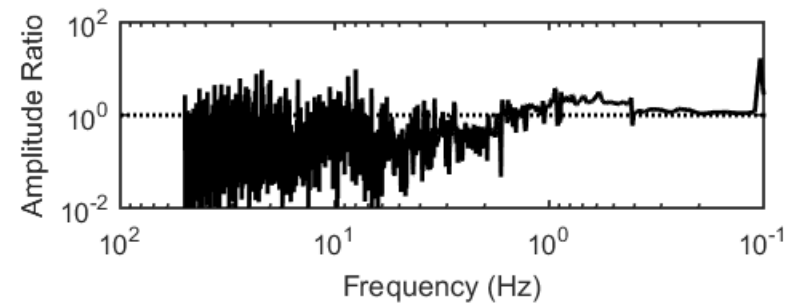
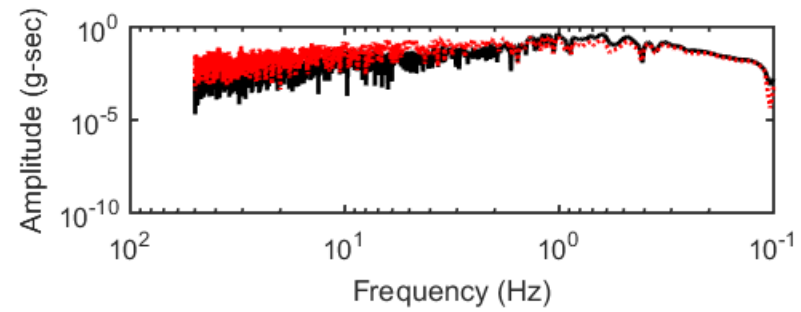
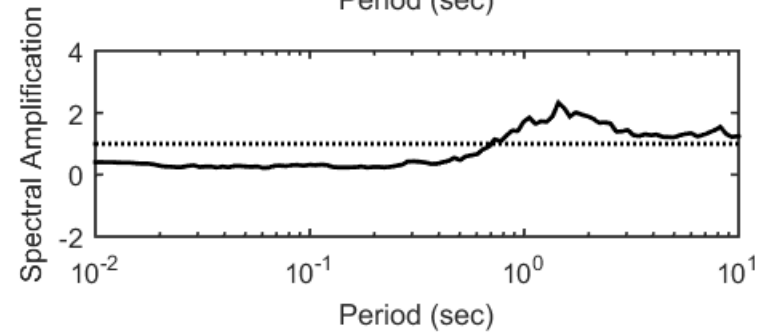
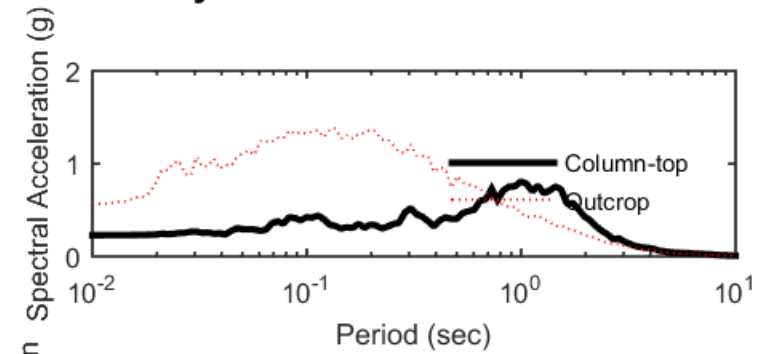
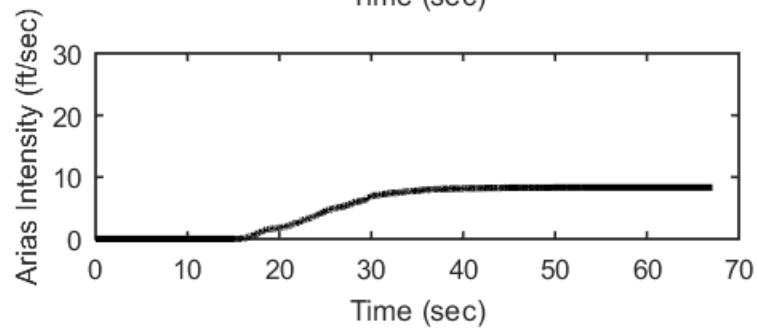
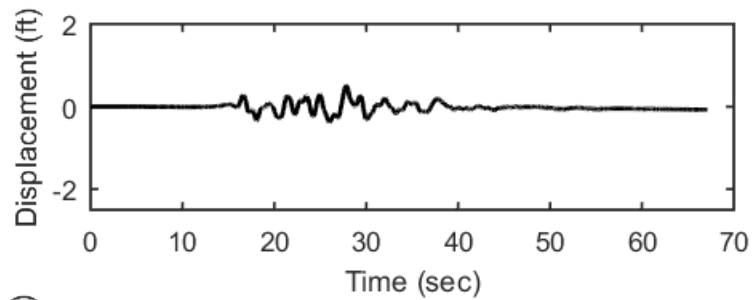
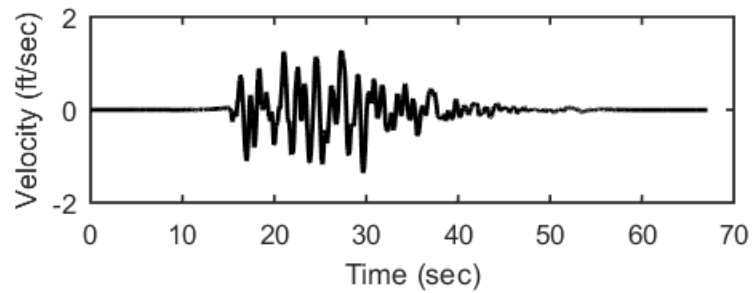
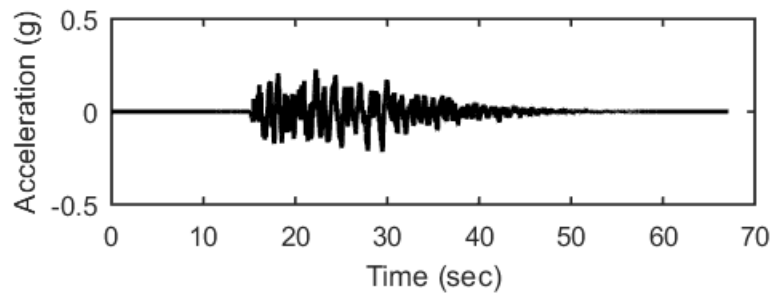
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE4



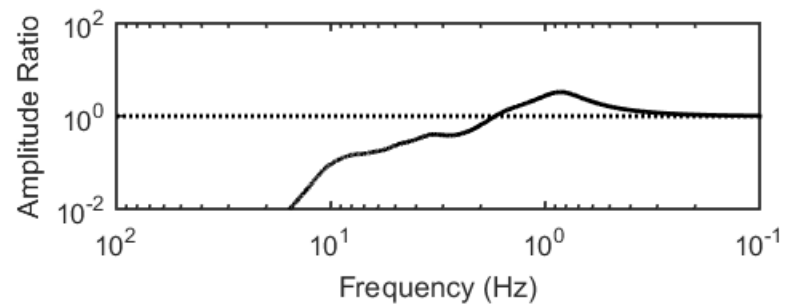
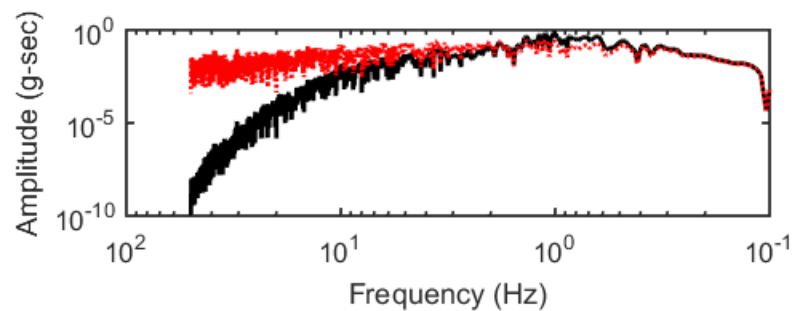
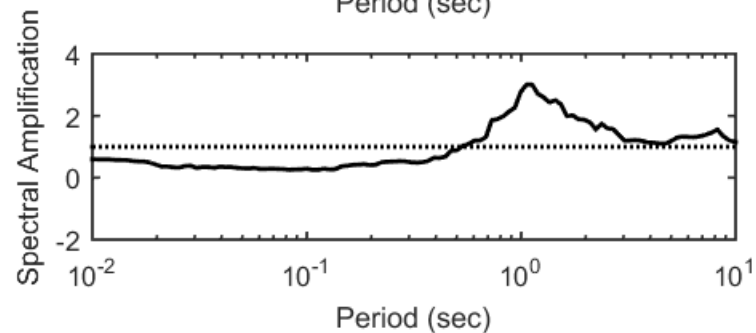
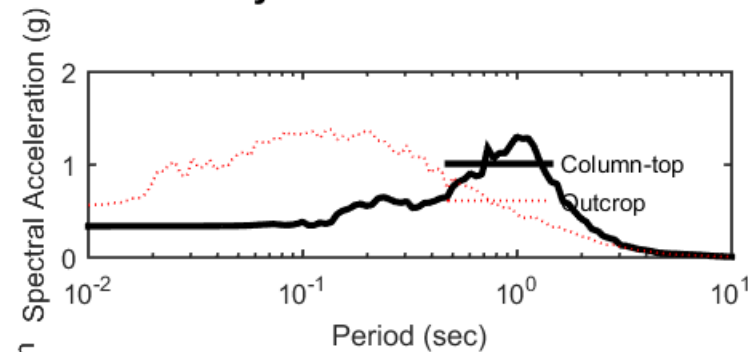
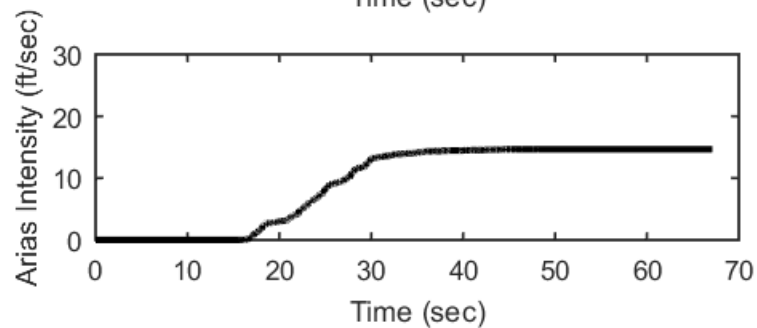
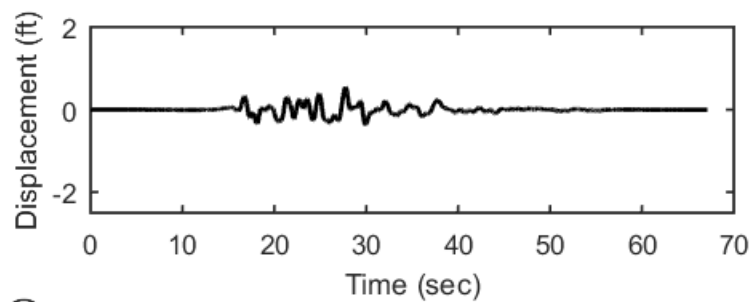
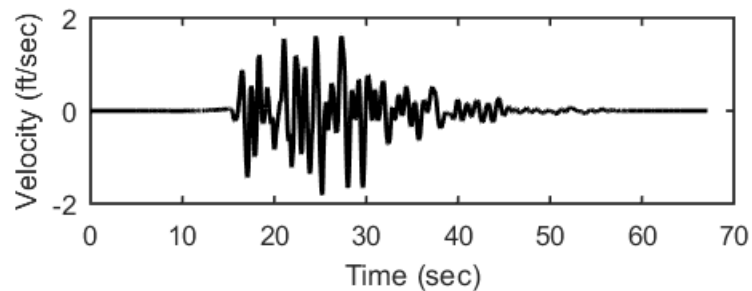
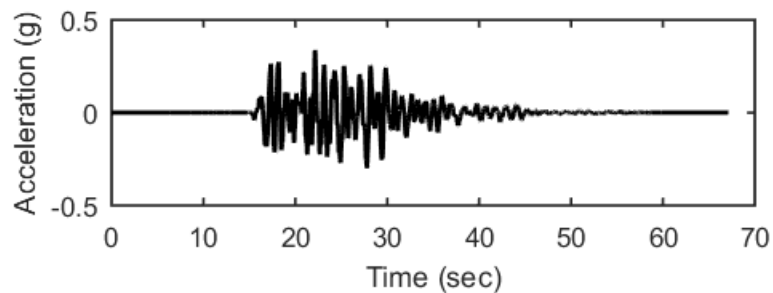
### Profile outputs for Motion: SEE4



## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE5

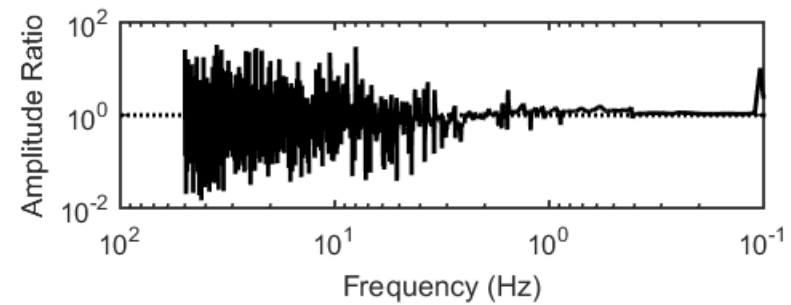
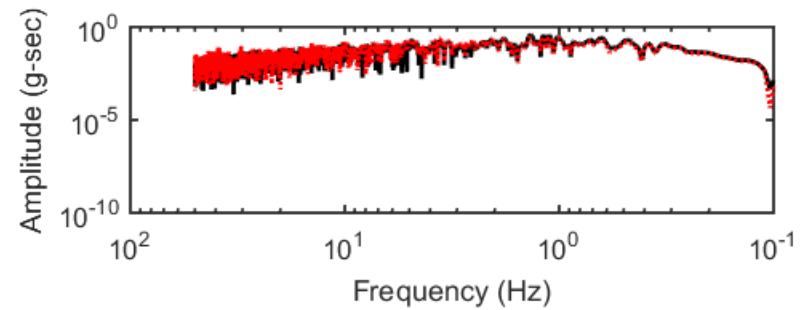
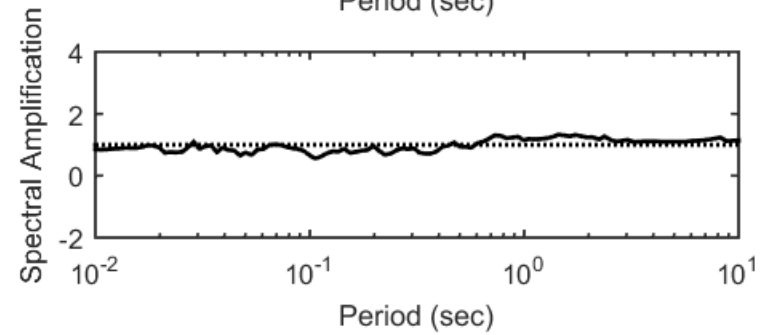
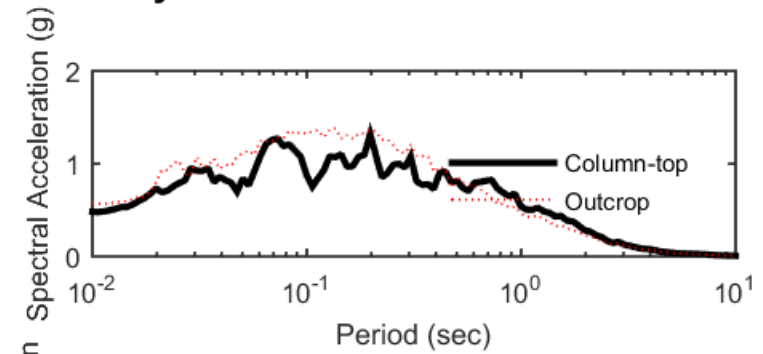
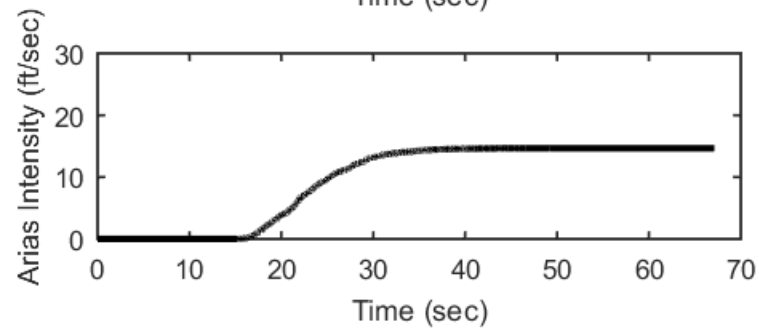
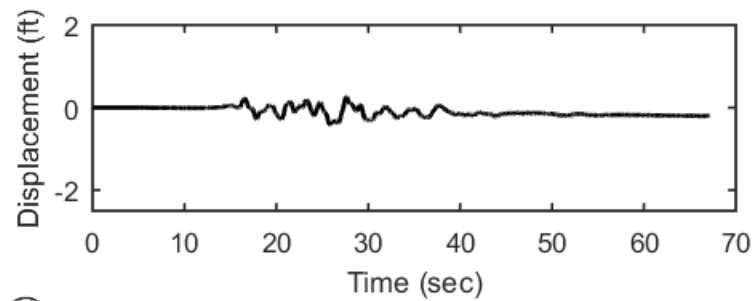
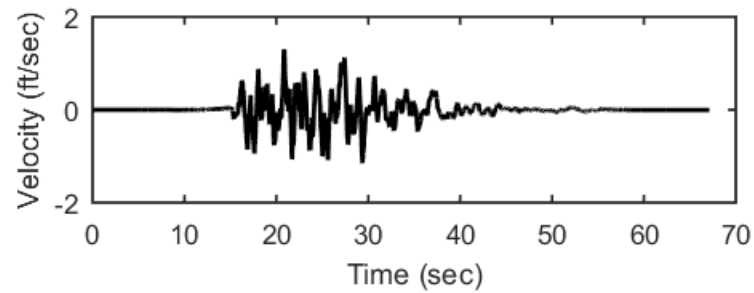
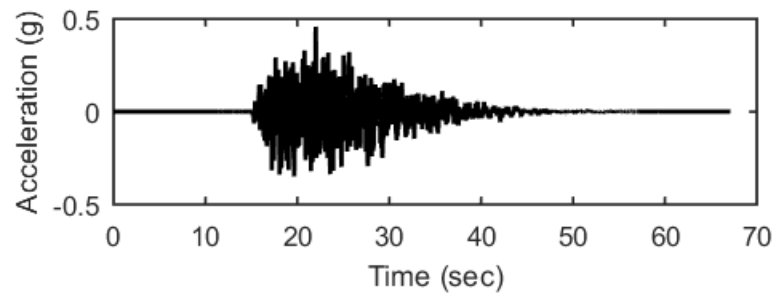


## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE5

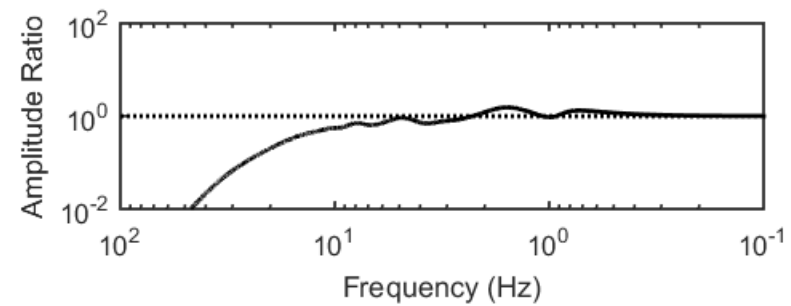
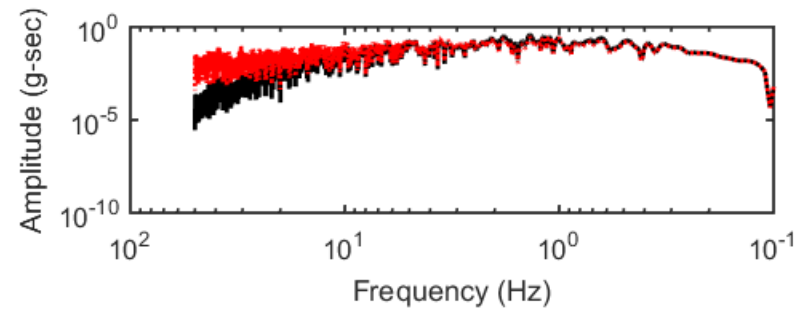
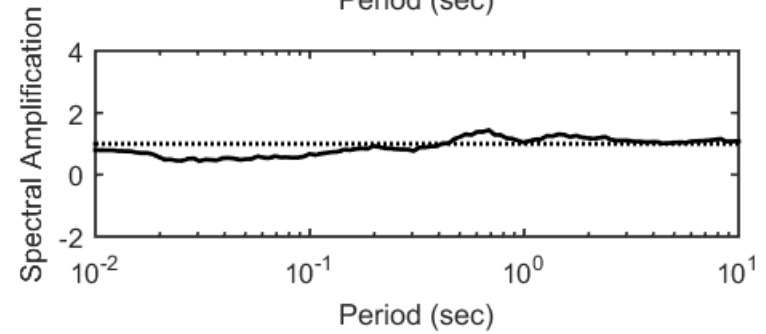
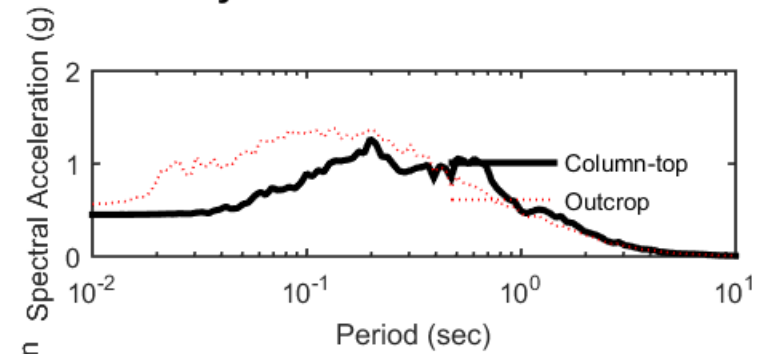
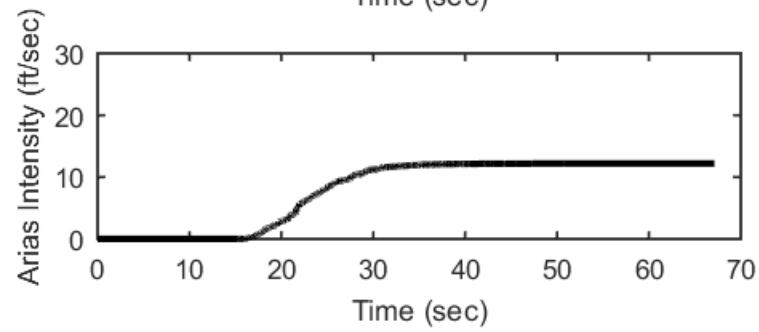
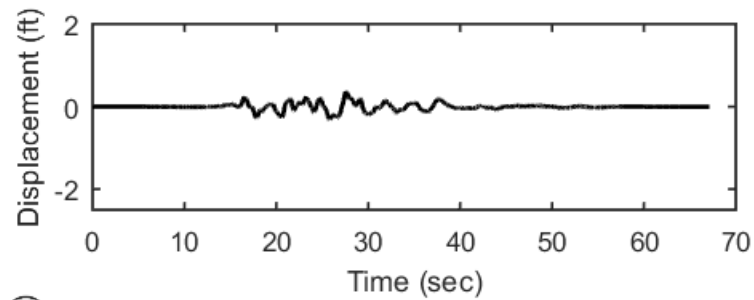
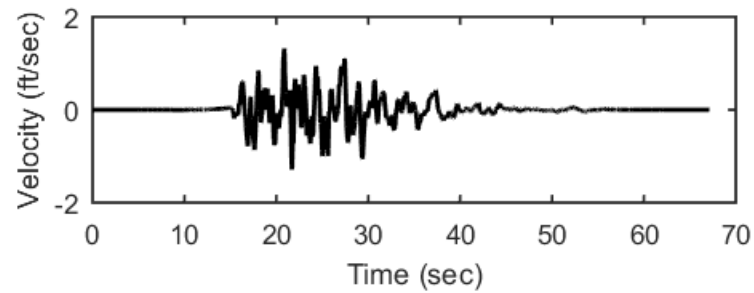
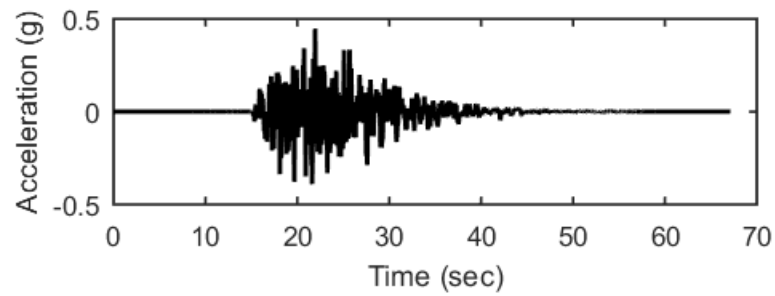




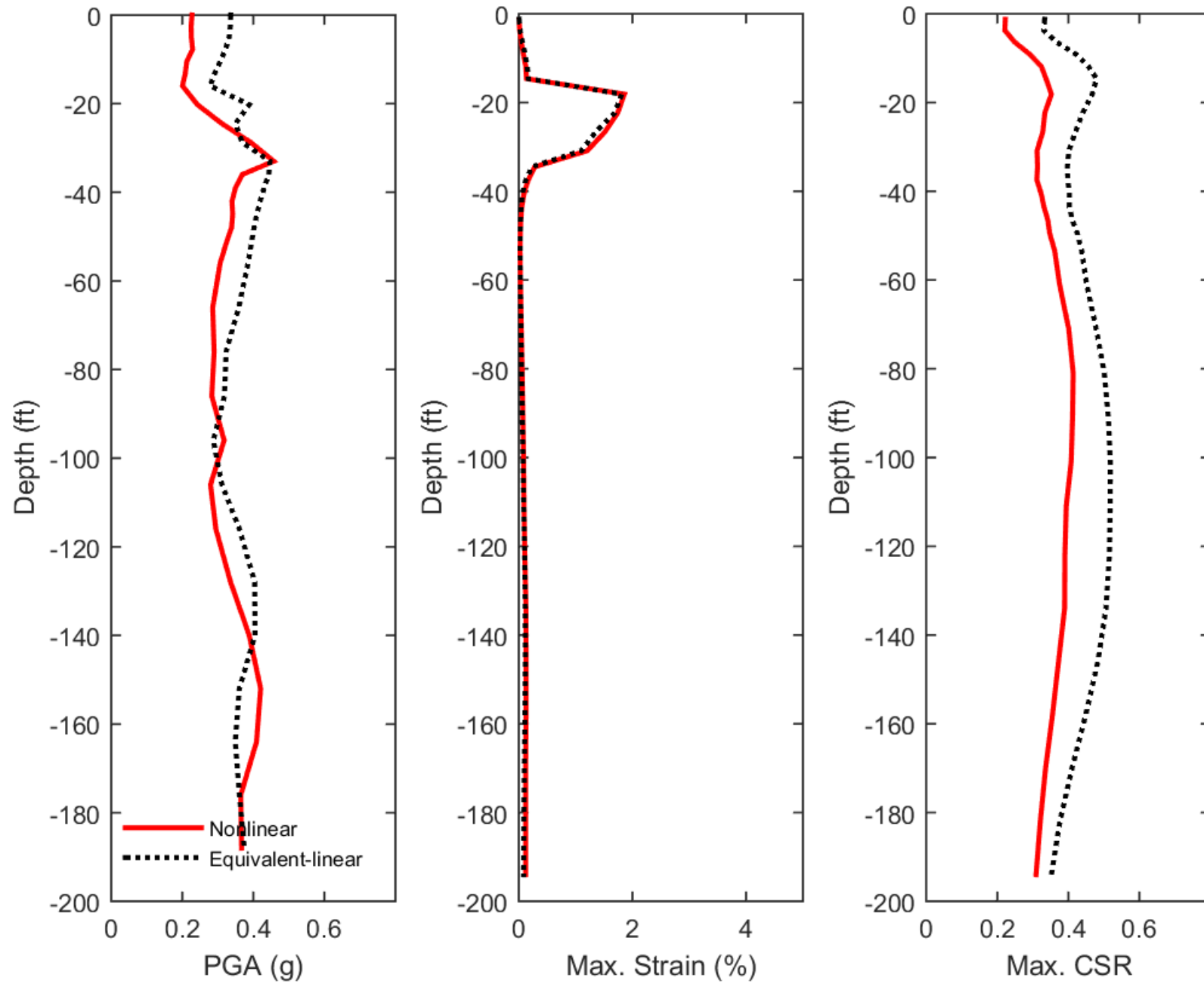
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE5



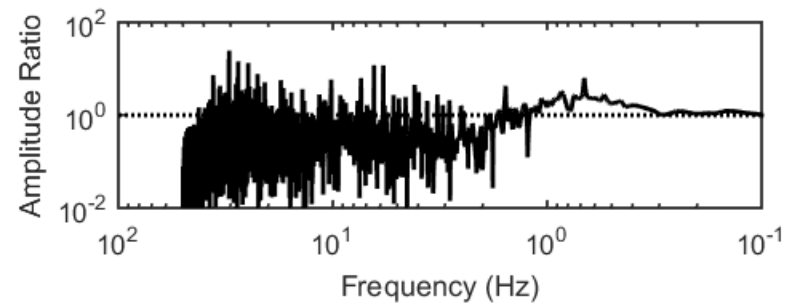
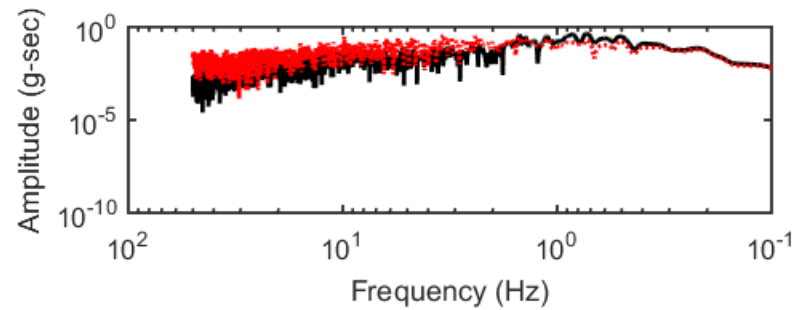
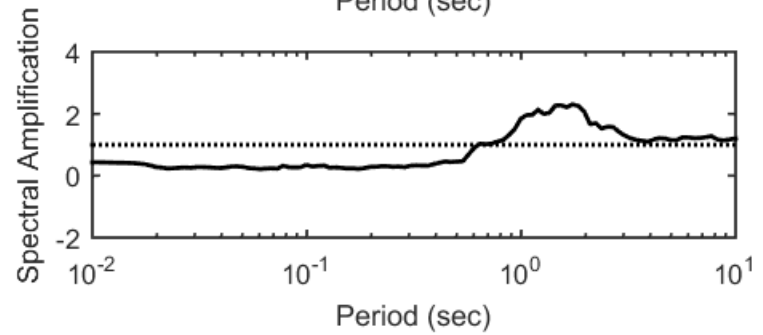
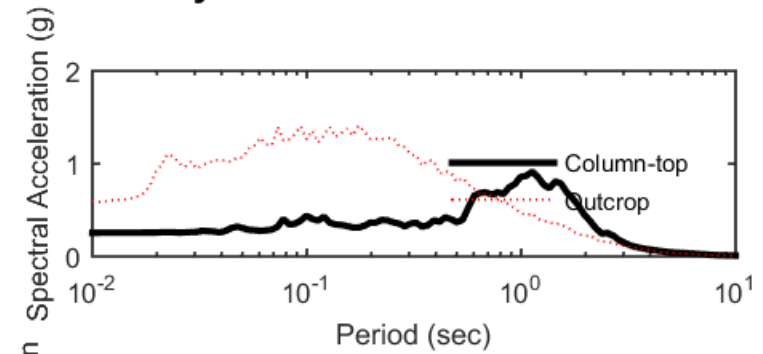
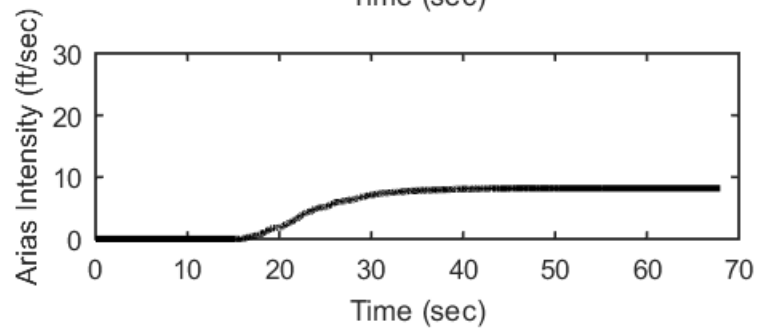
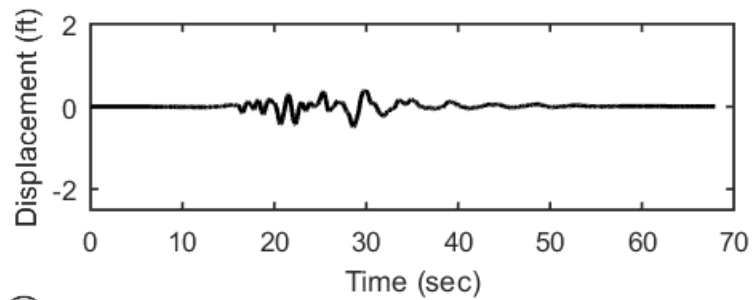
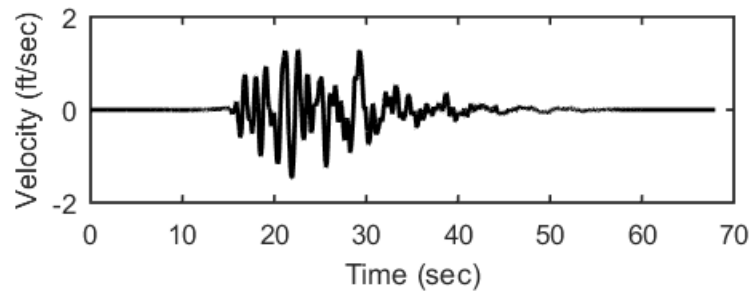
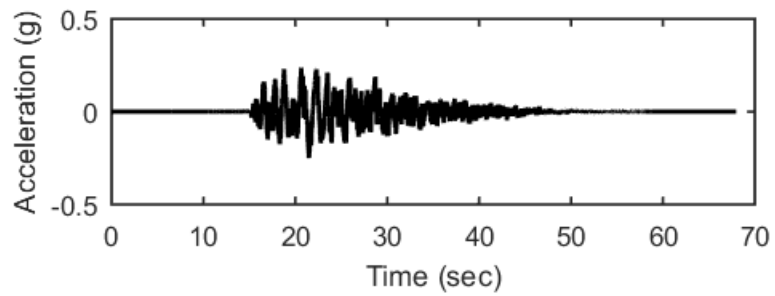
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE5



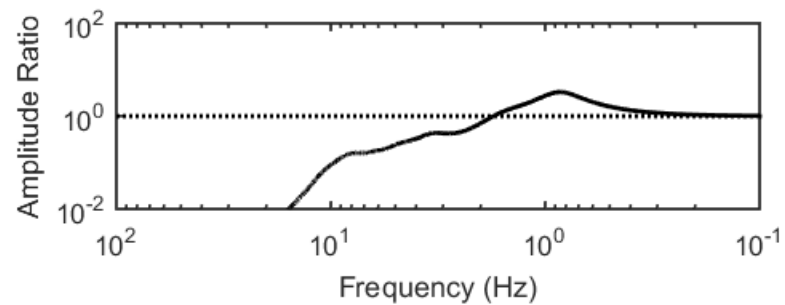
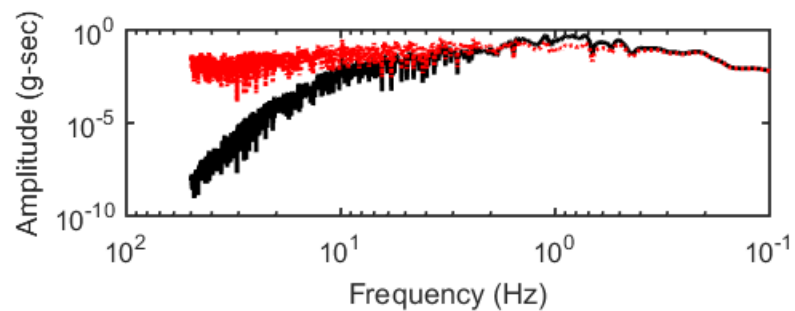
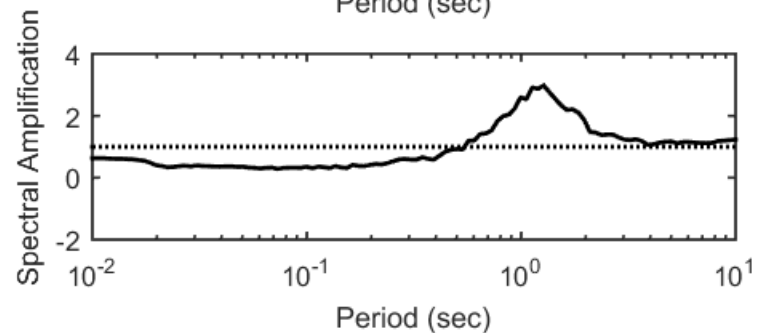
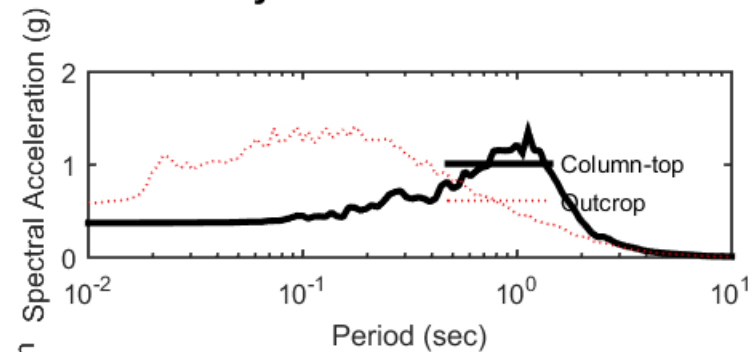
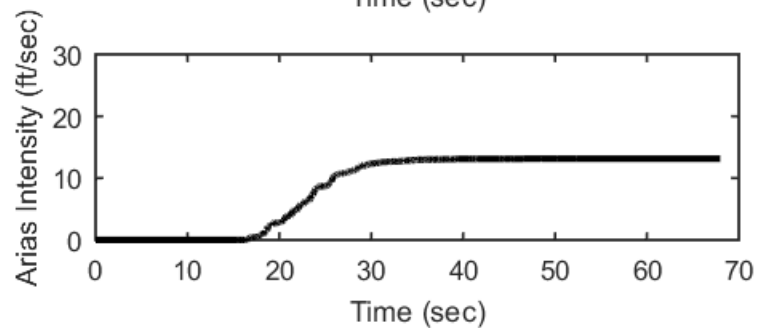
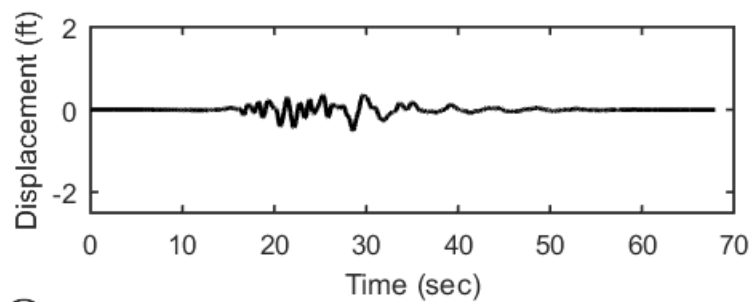
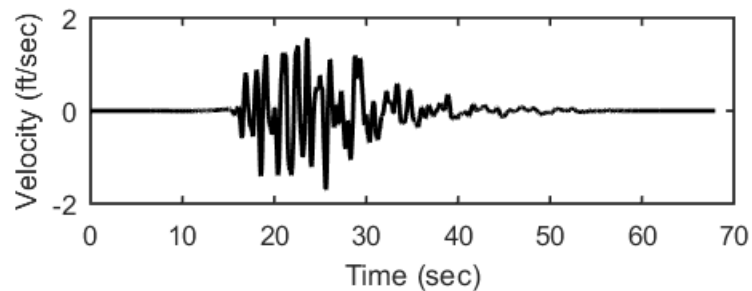
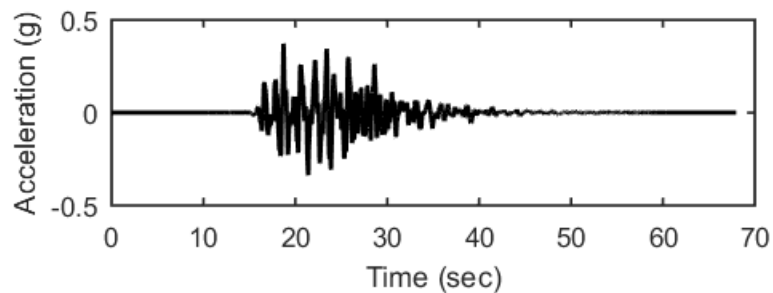
### Profile outputs for Motion: SEE5



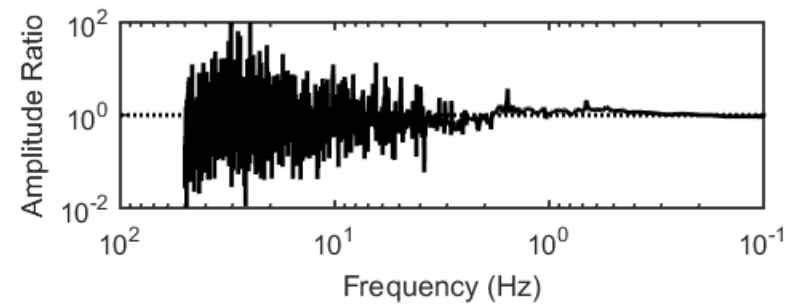
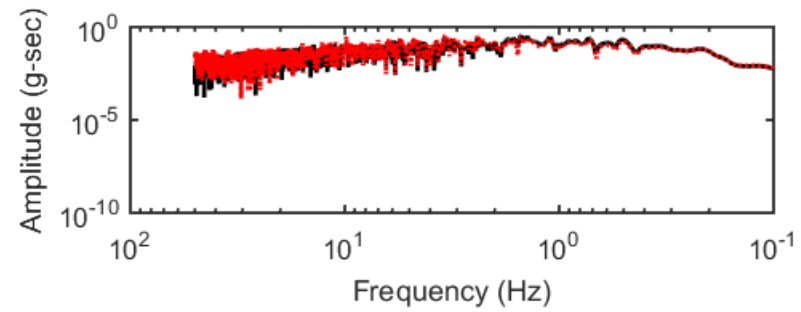
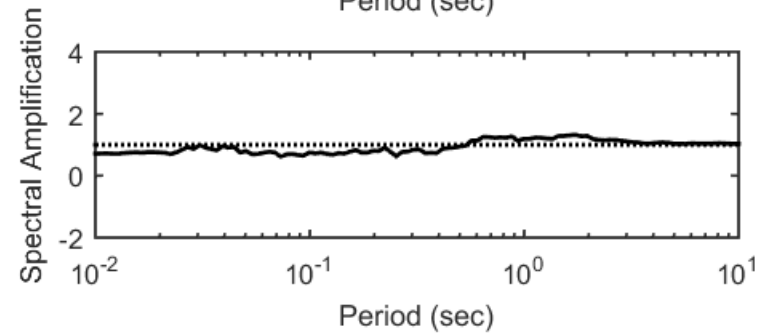
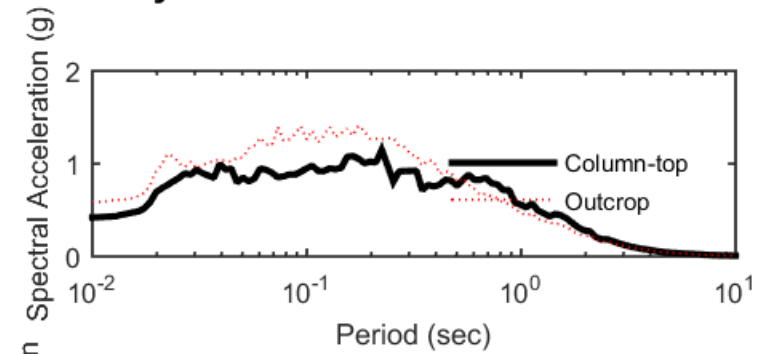
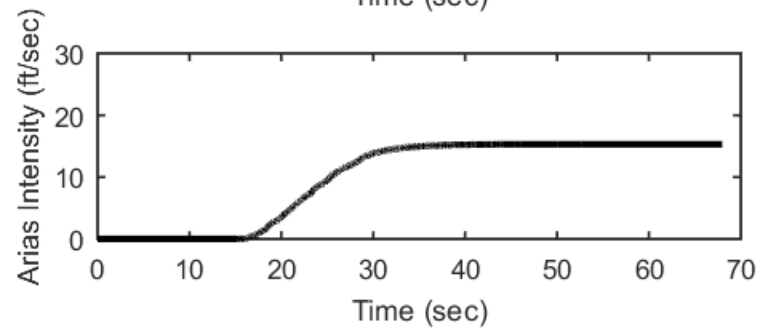
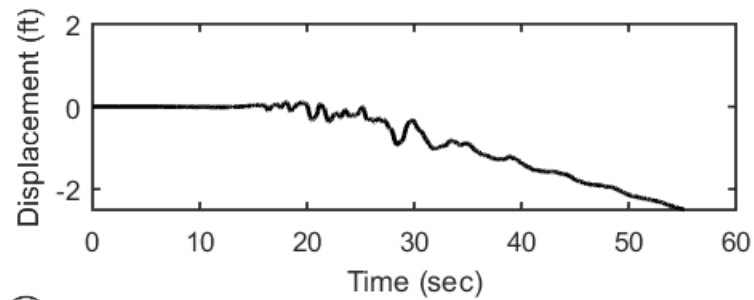
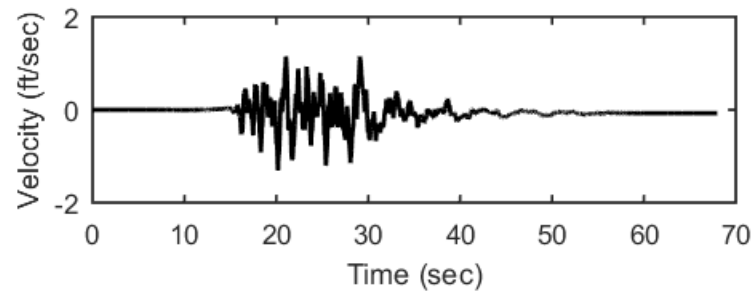
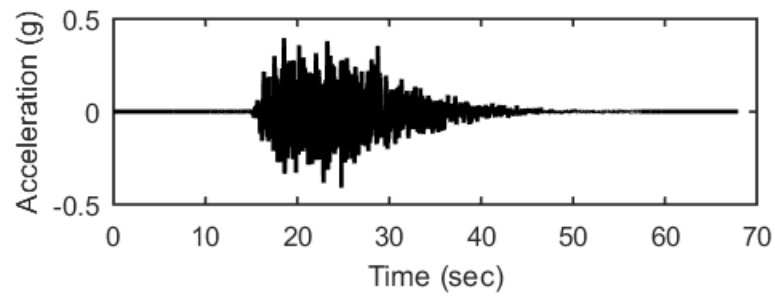
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE6



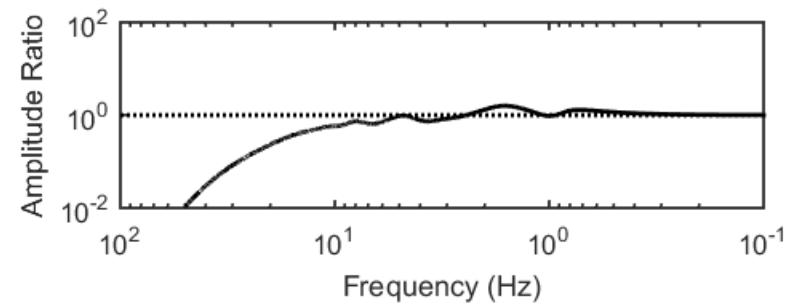
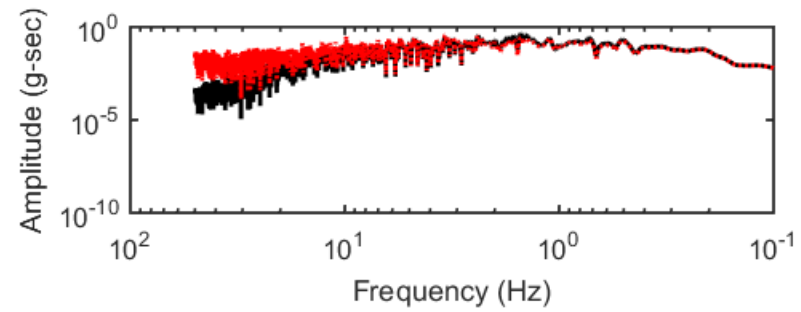
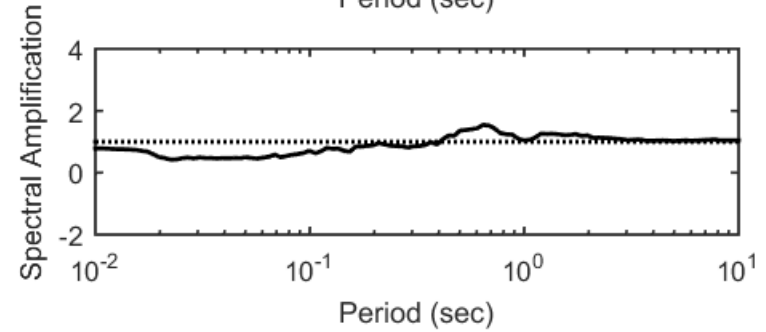
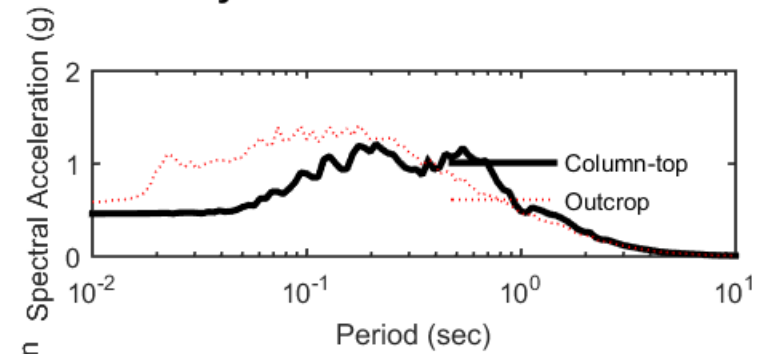
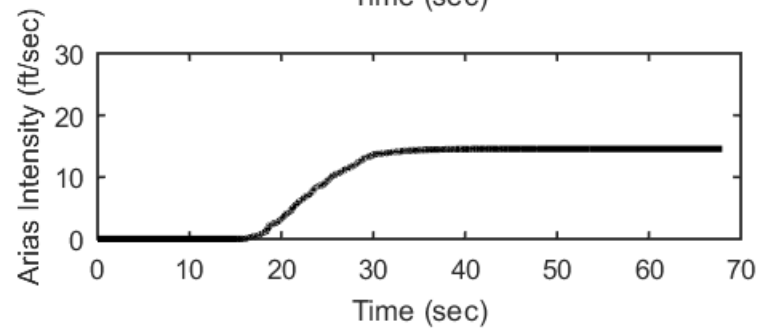
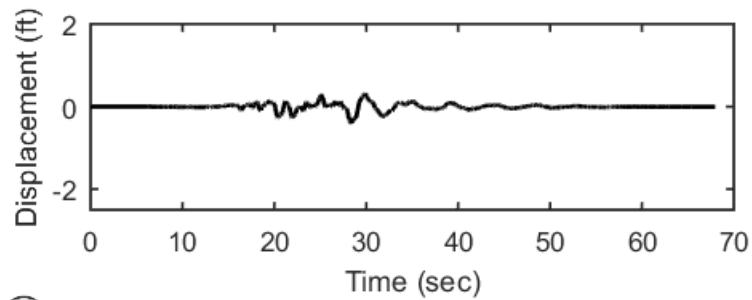
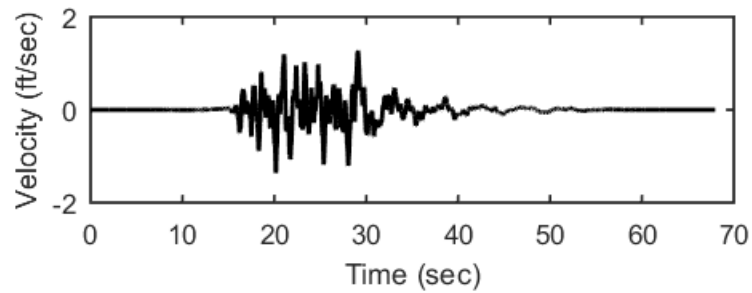
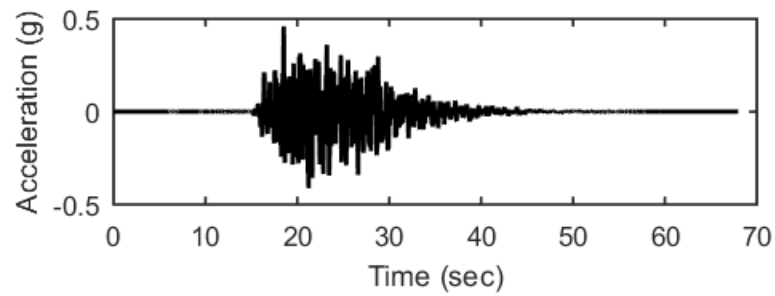
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE6



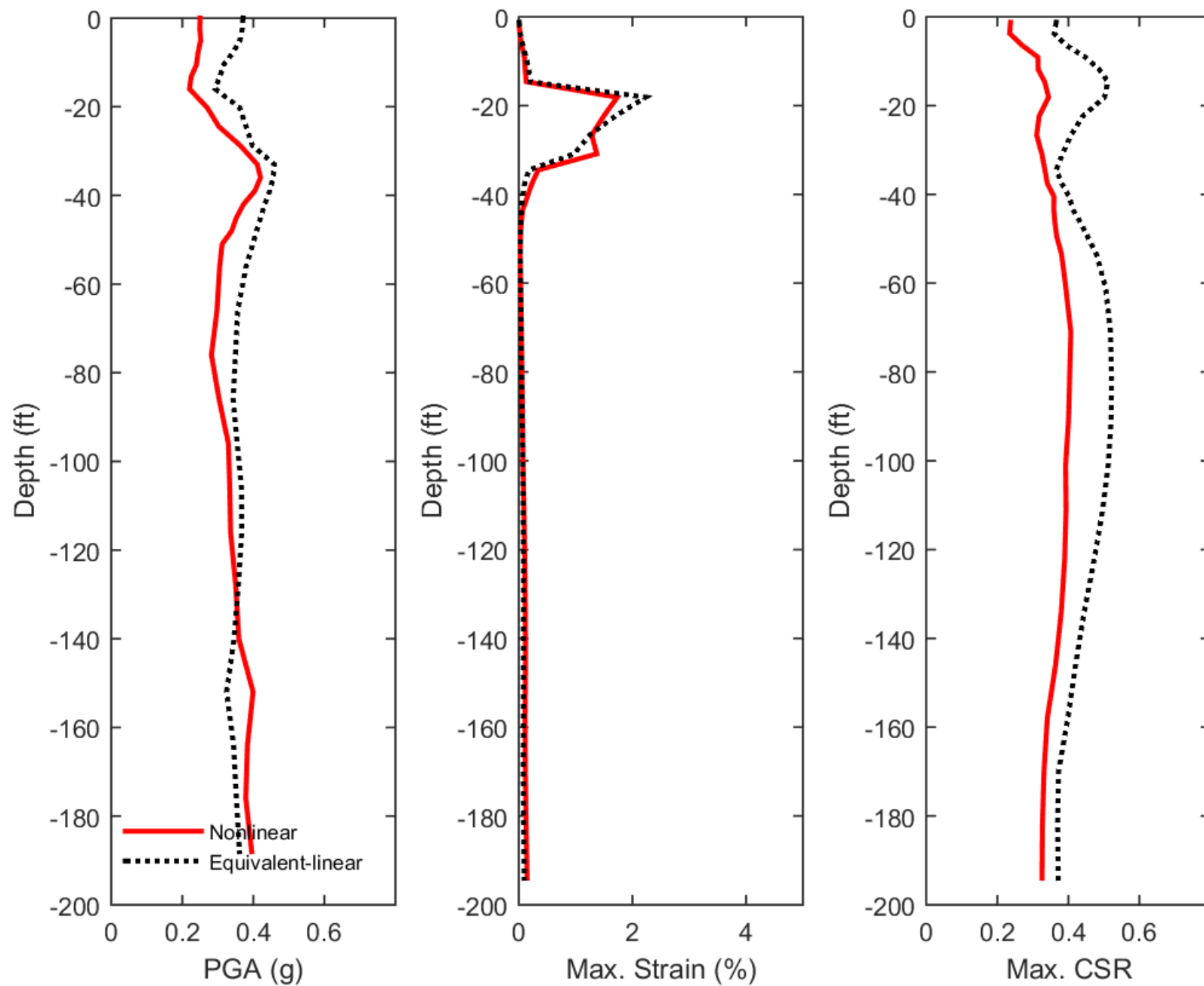
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE6



## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE6

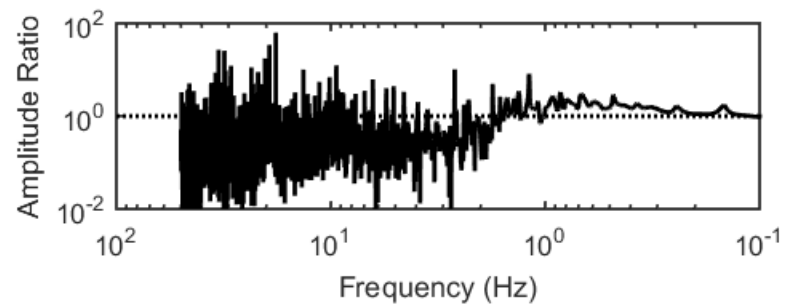
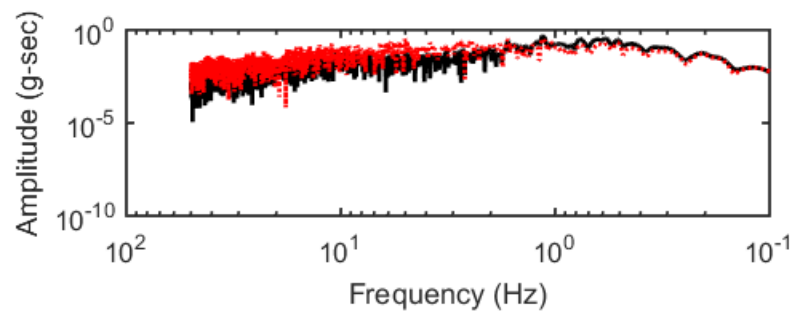
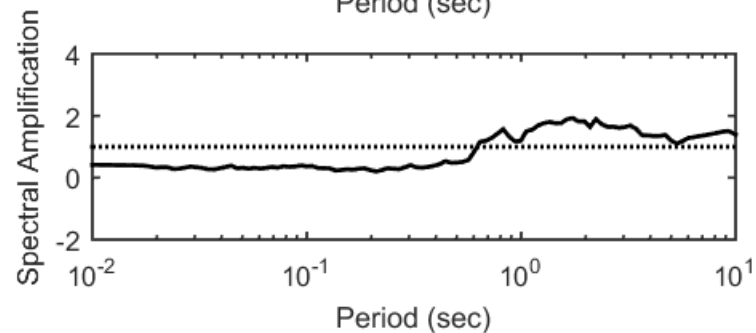
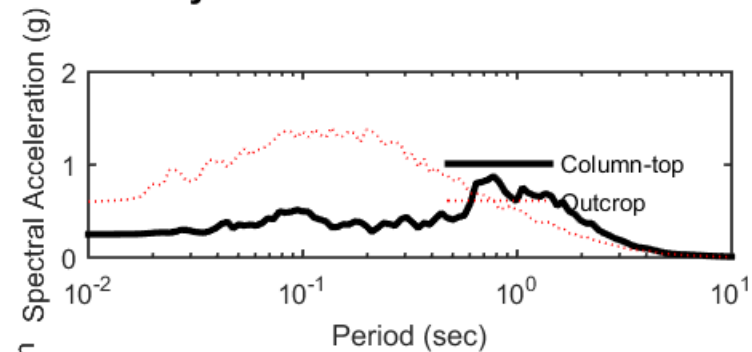
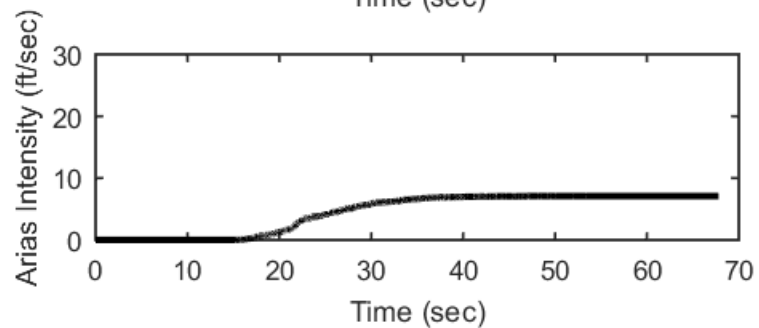
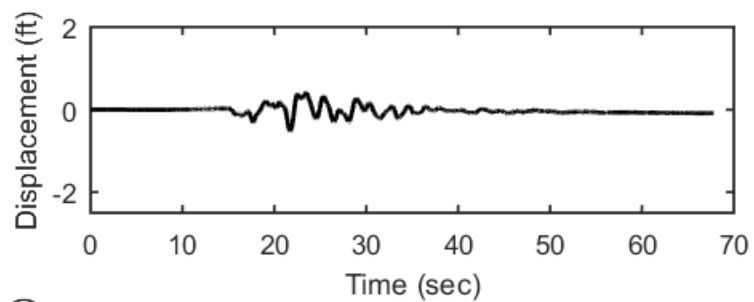
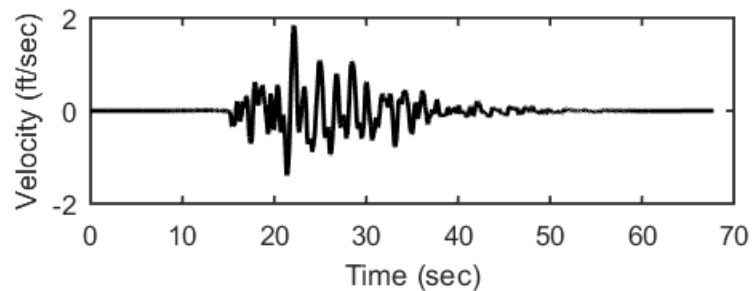
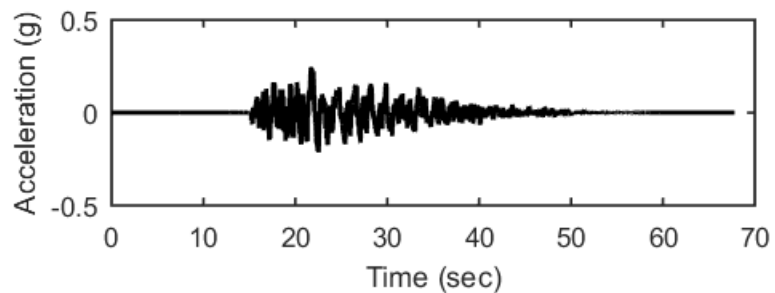


### Profile outputs for Motion: SEE6

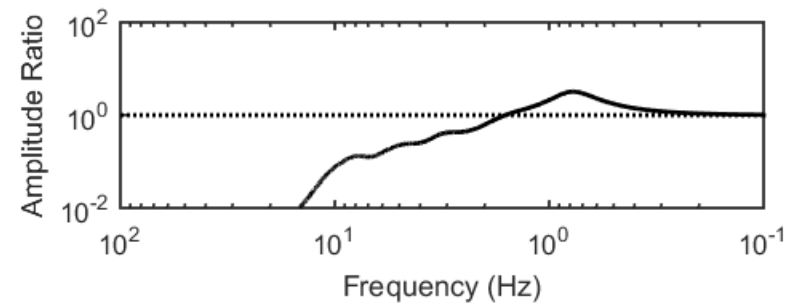
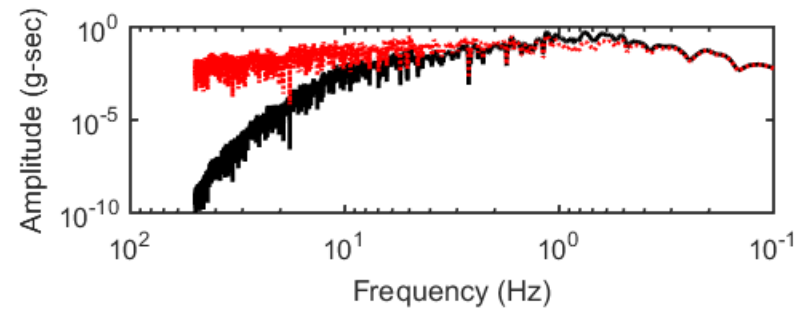
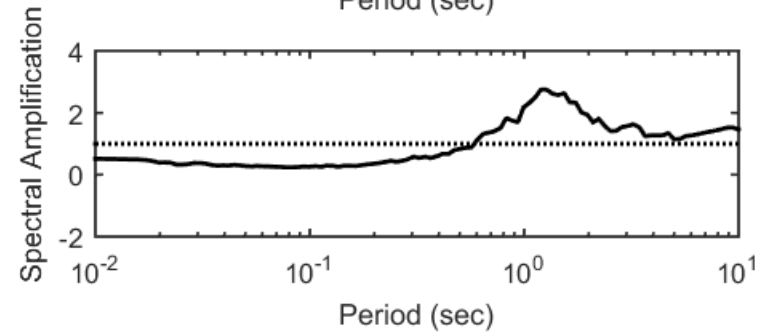
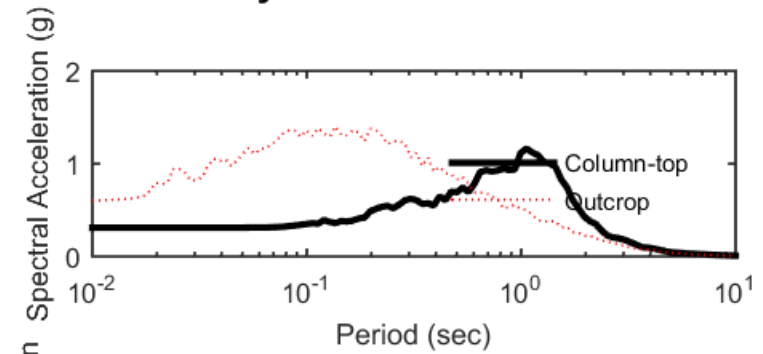
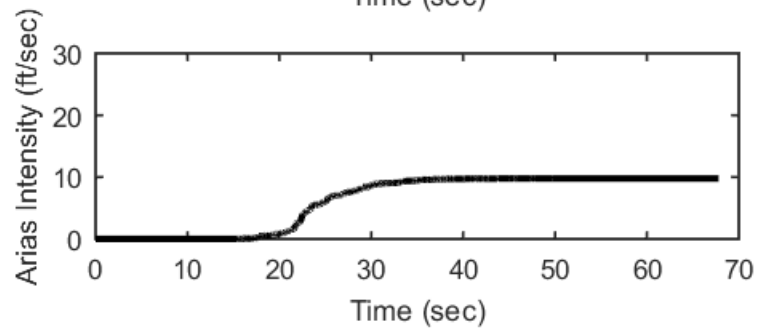
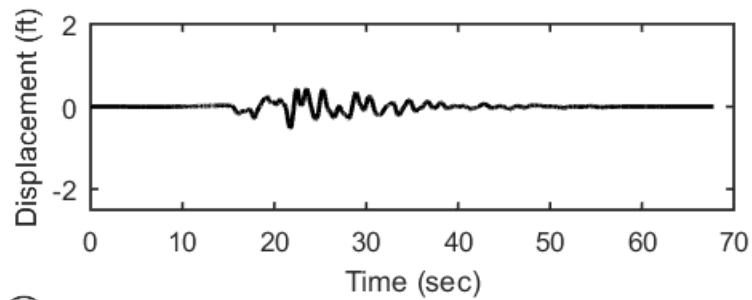
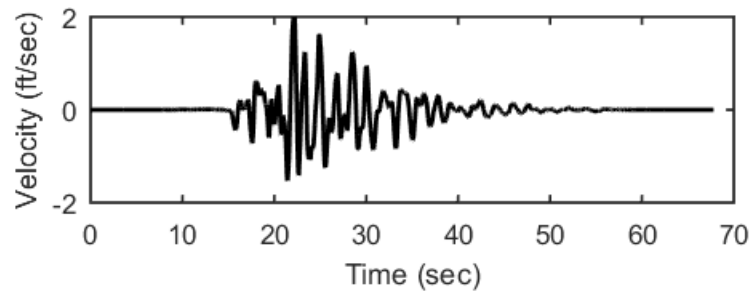
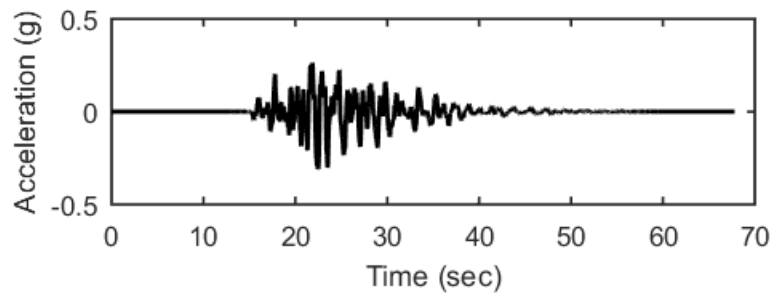




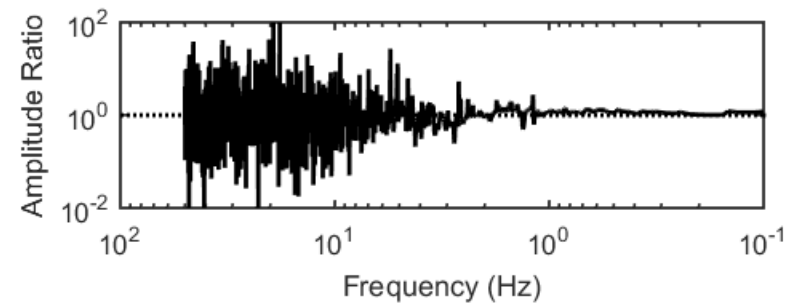
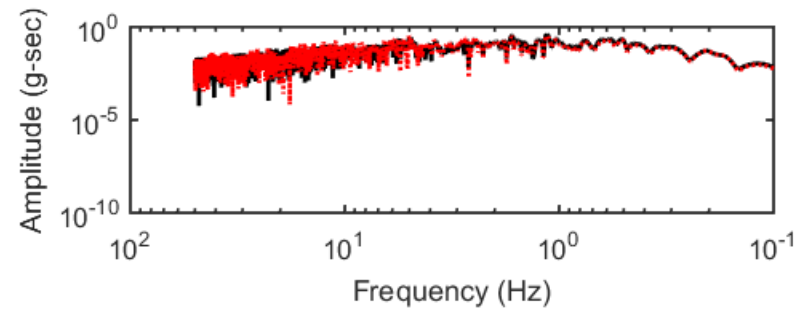
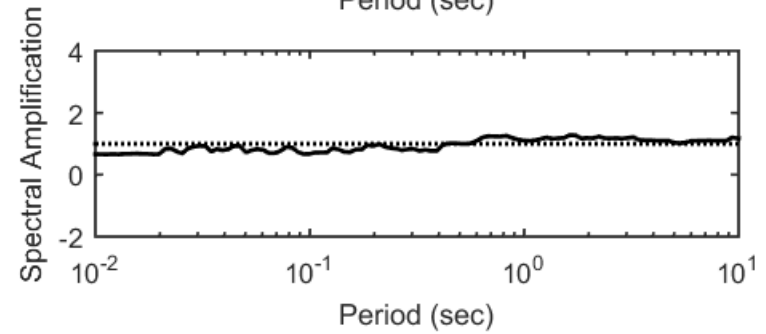
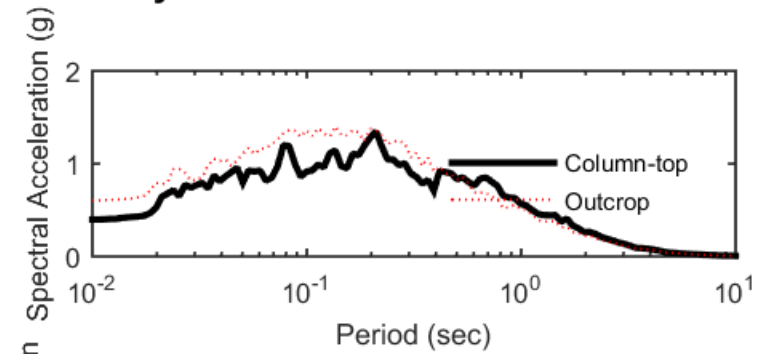
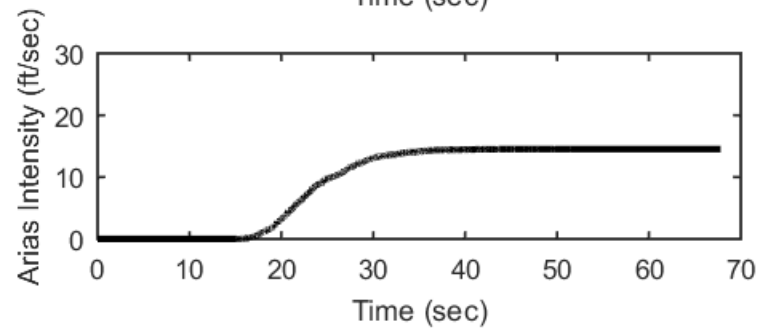
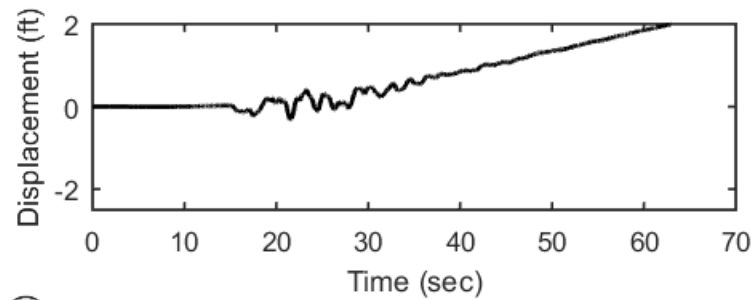
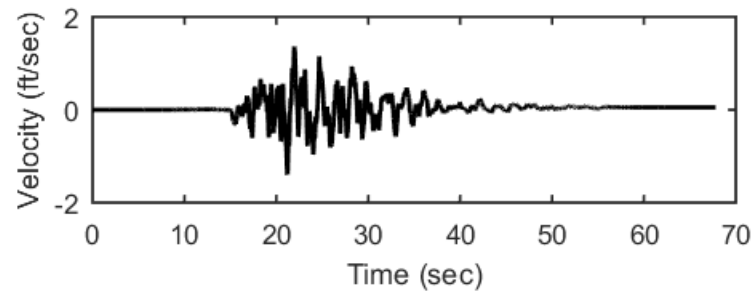
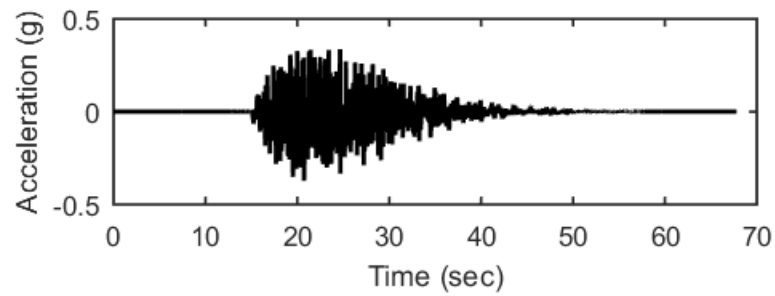
## Outputs at Ground Surface using Nonlinear Analysis for Motion: SEE7



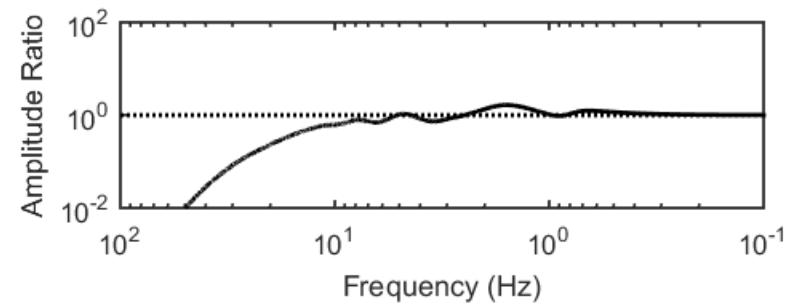
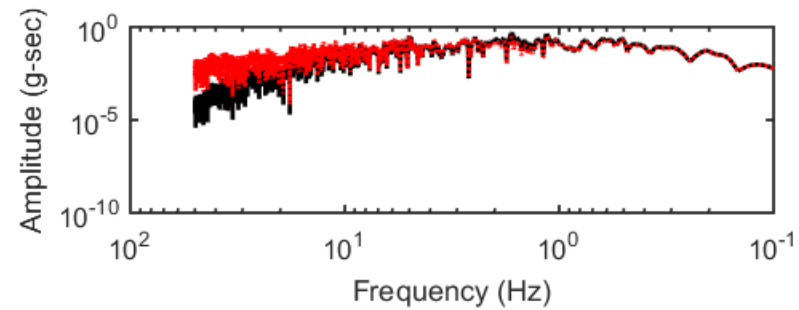
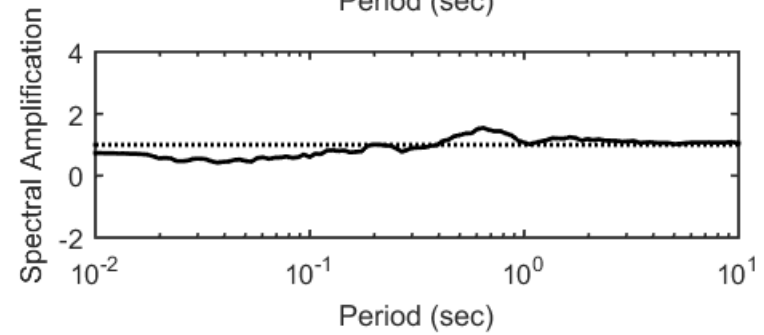
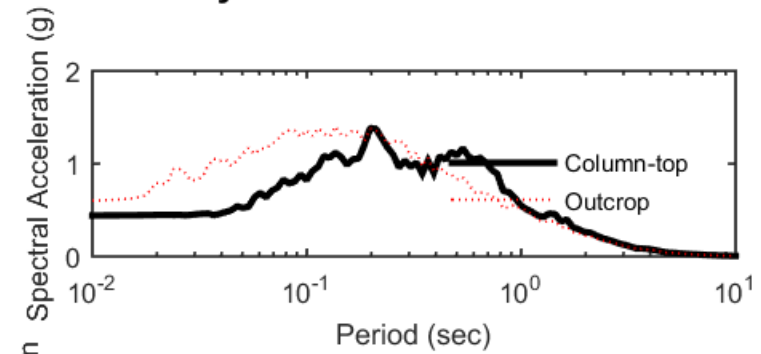
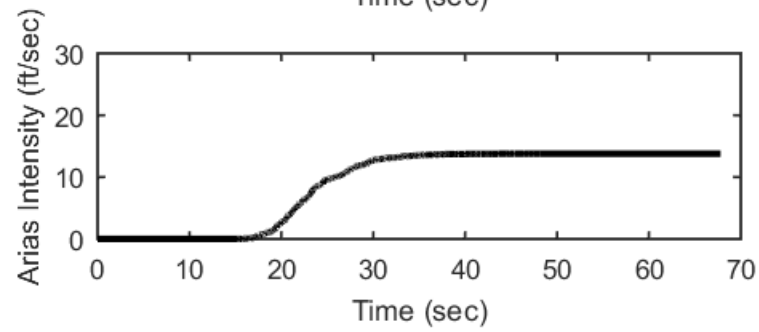
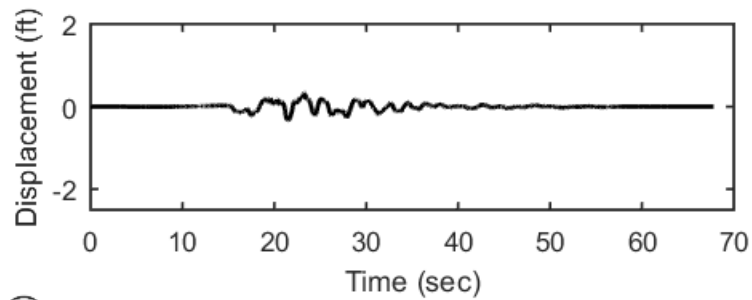
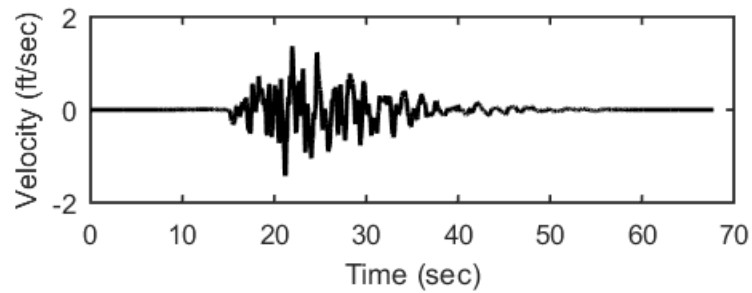
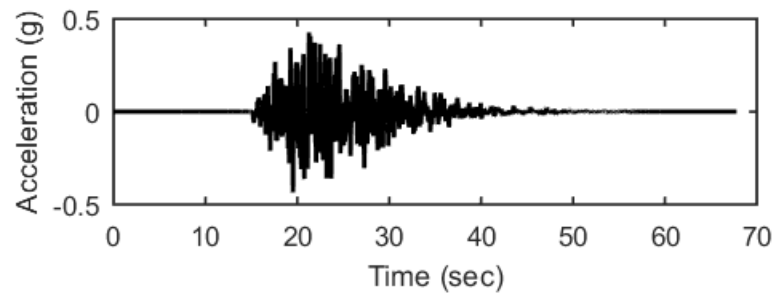
## Outputs at Ground Surface using Equivalent-linear Analysis for Motion: SEE7



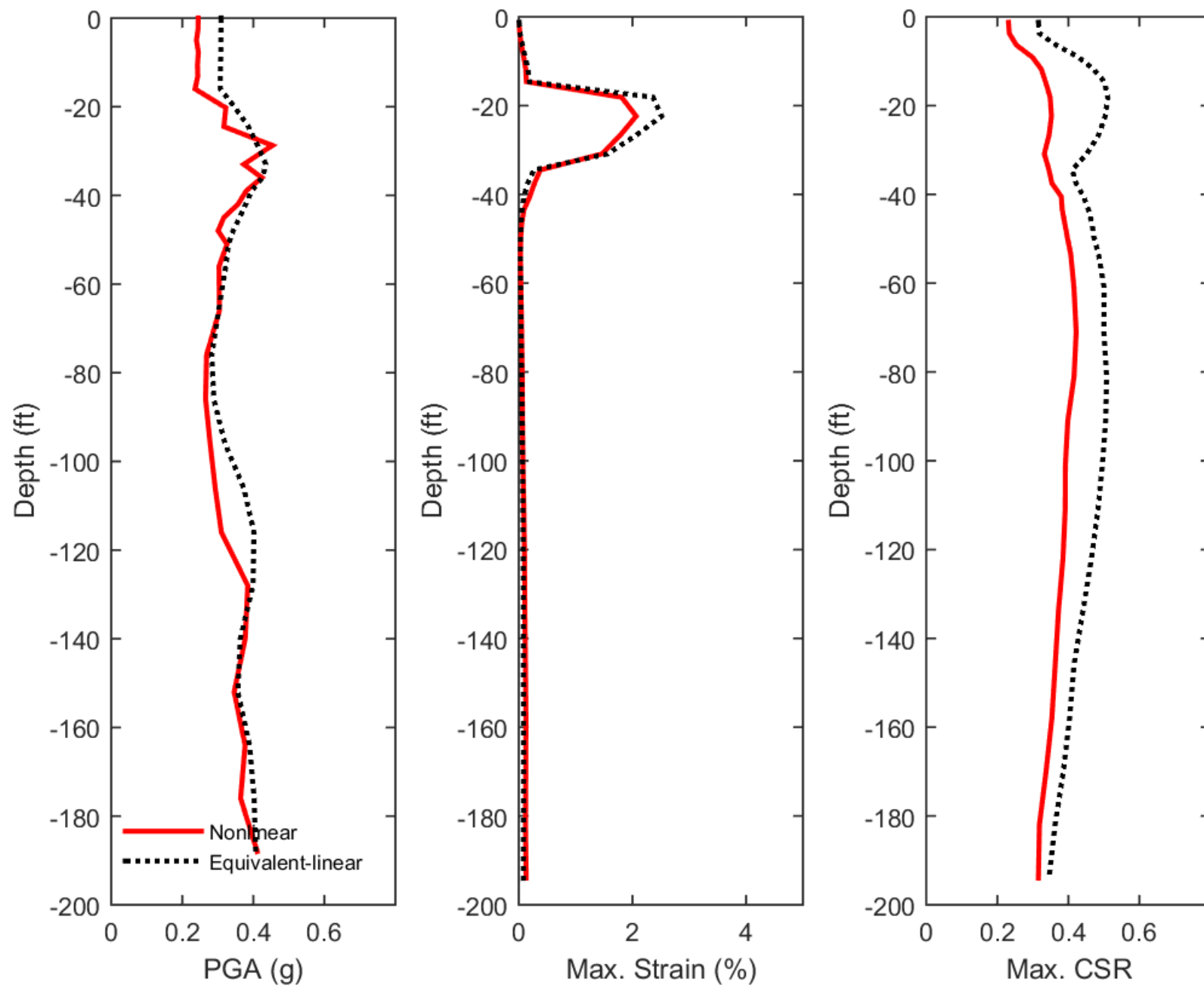
## Outputs at Top of Marl using Nonlinear Analysis for Motion: SEE7



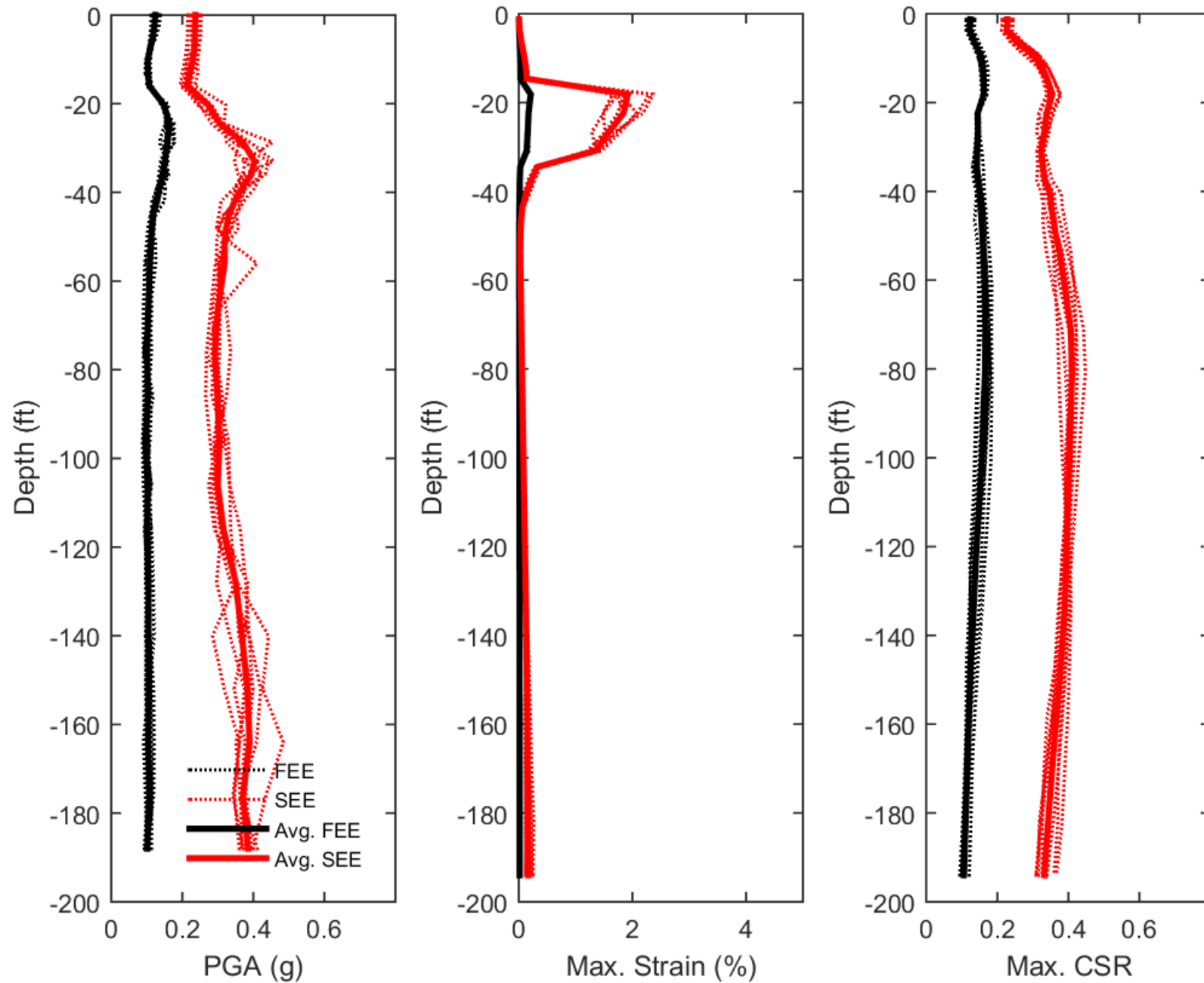
## Outputs at Top of Marl using Equivalent-linear Analysis for Motion: SEE7



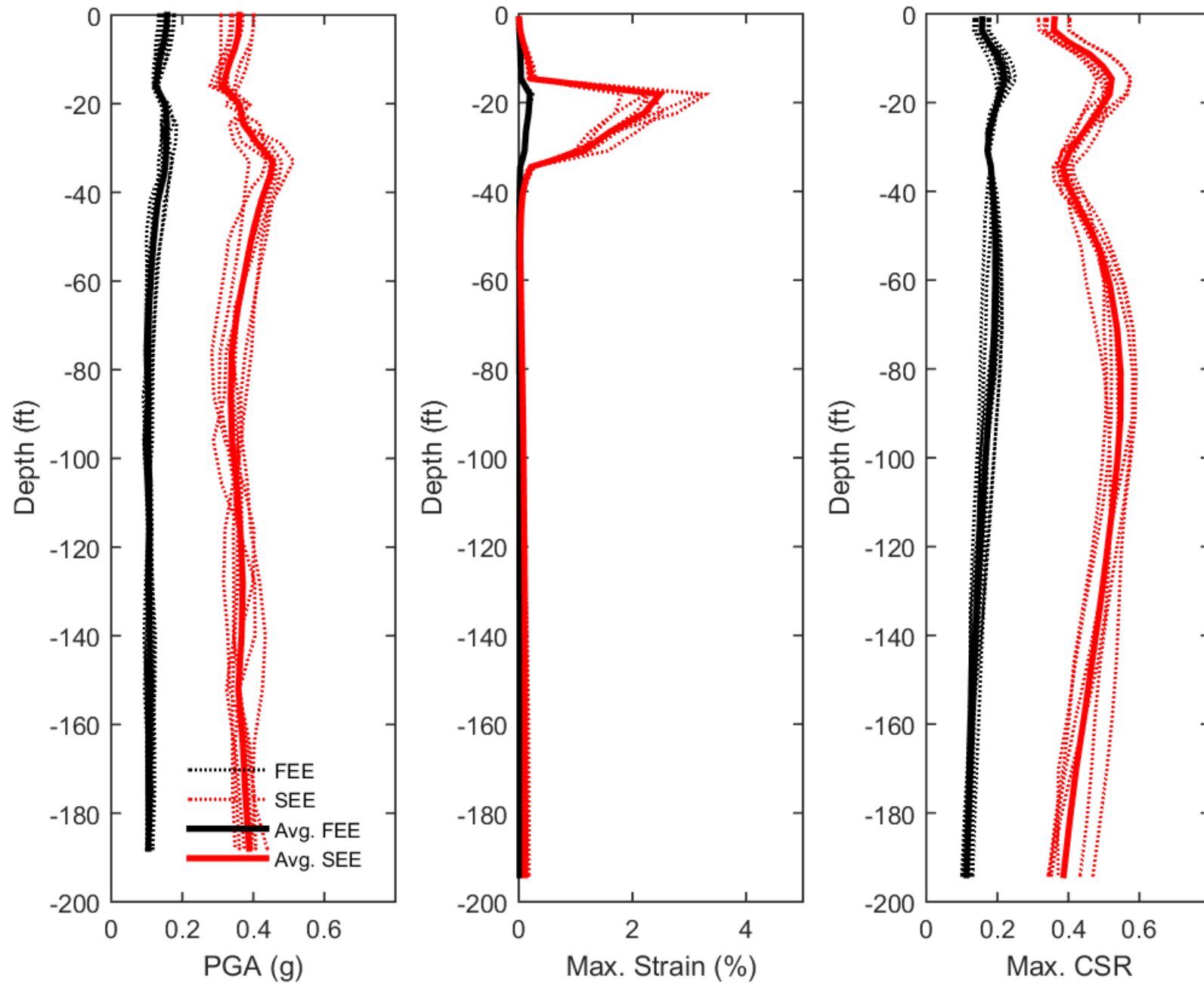
### Profile outputs for Motion: SEE7



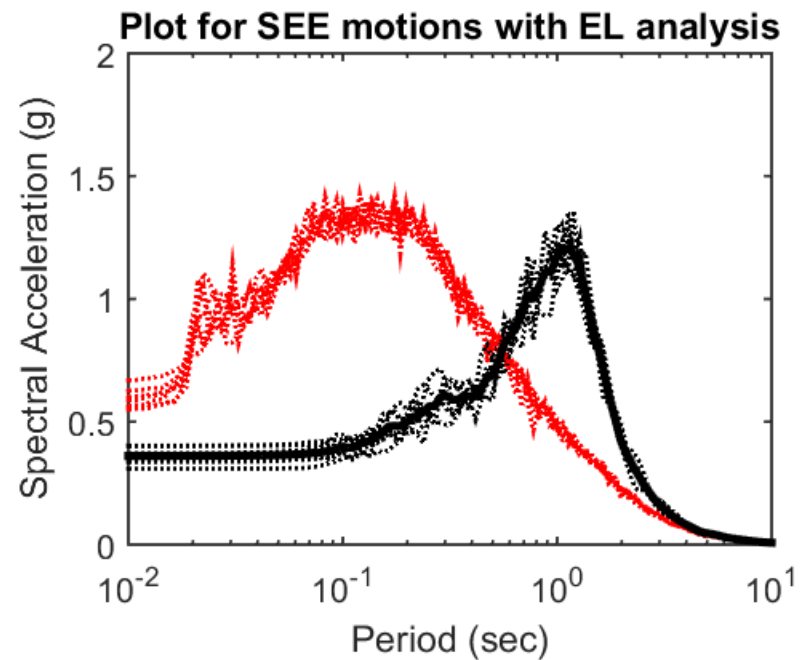
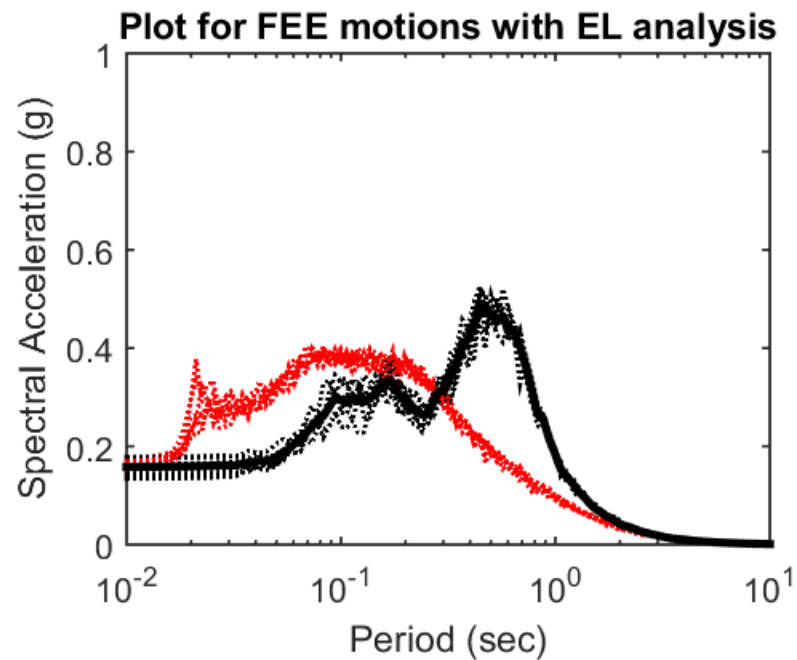
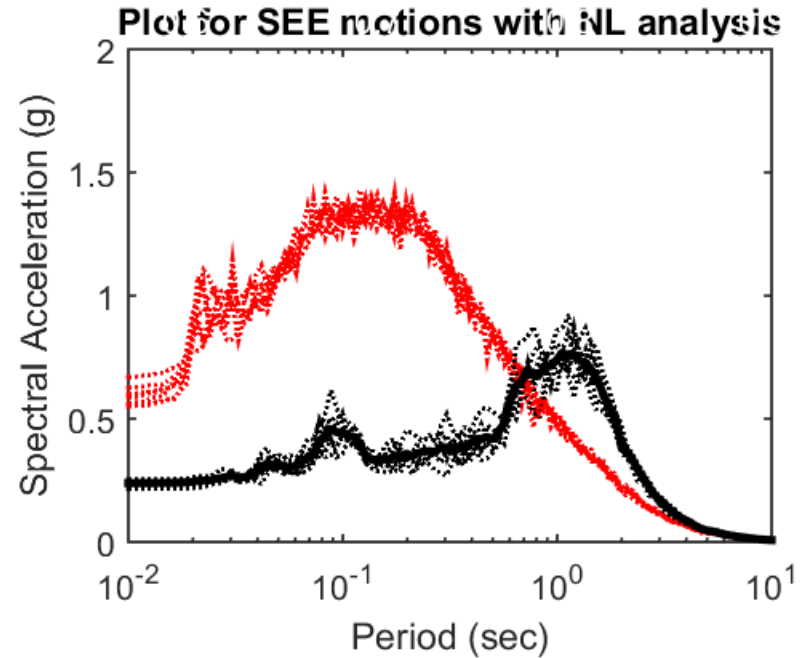
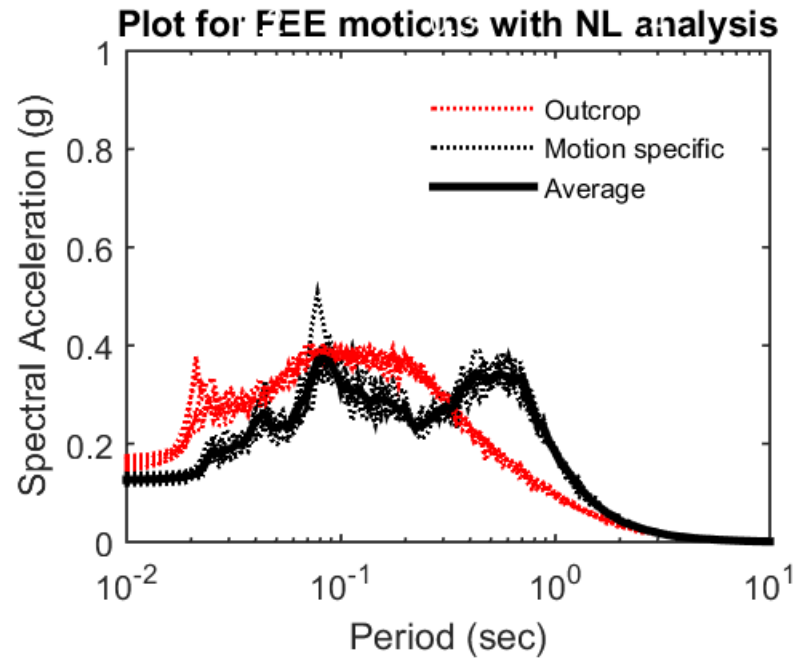
## Summary of the profile outputs for Nonlinear analysis



### Summary of the profile outputs for Equivalent-linear analysis

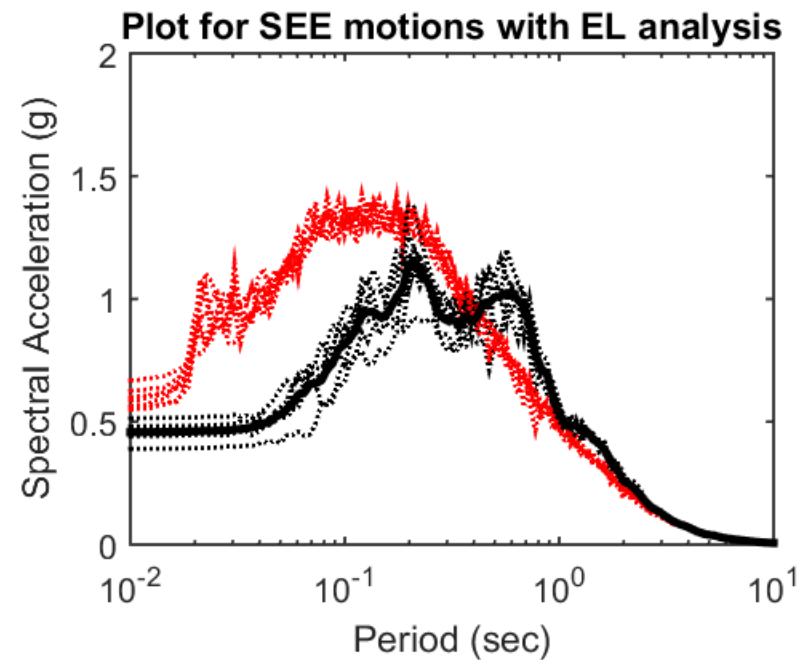
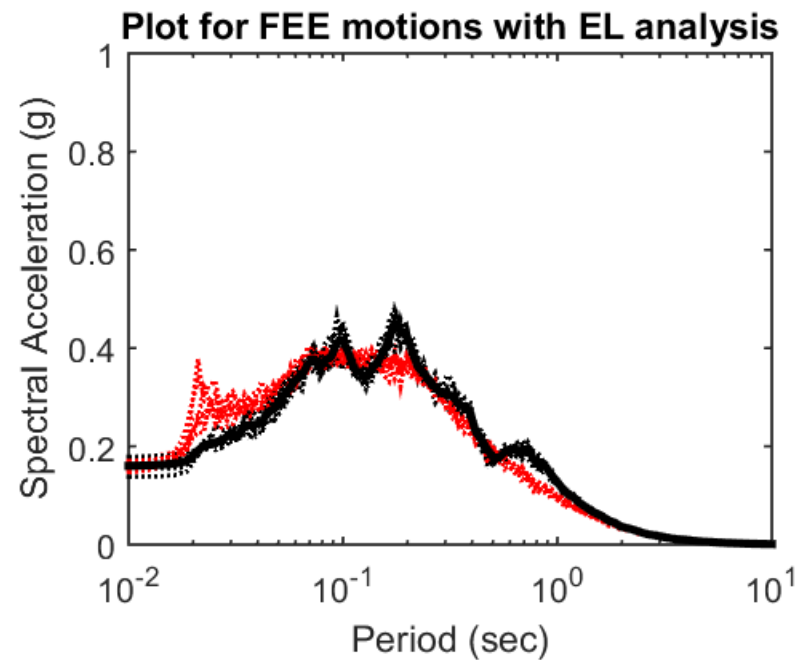
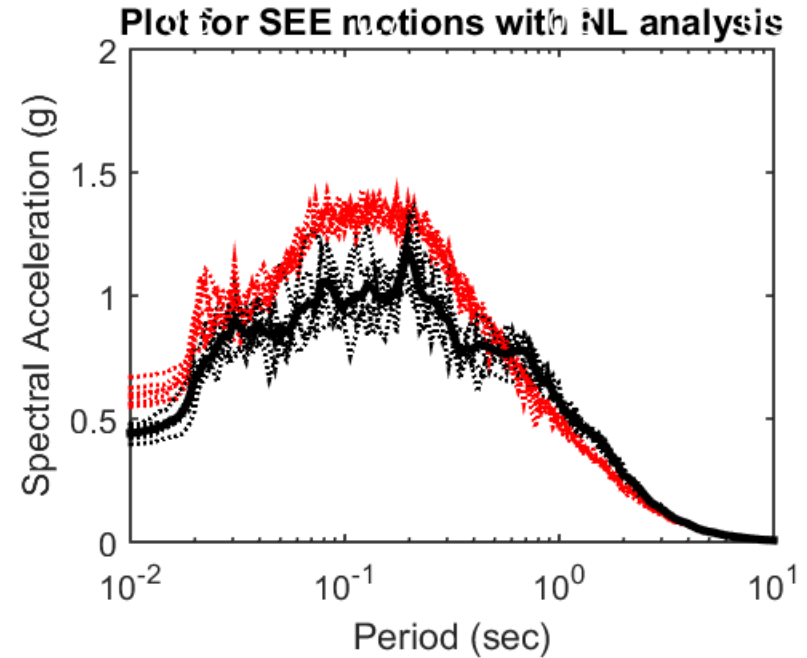
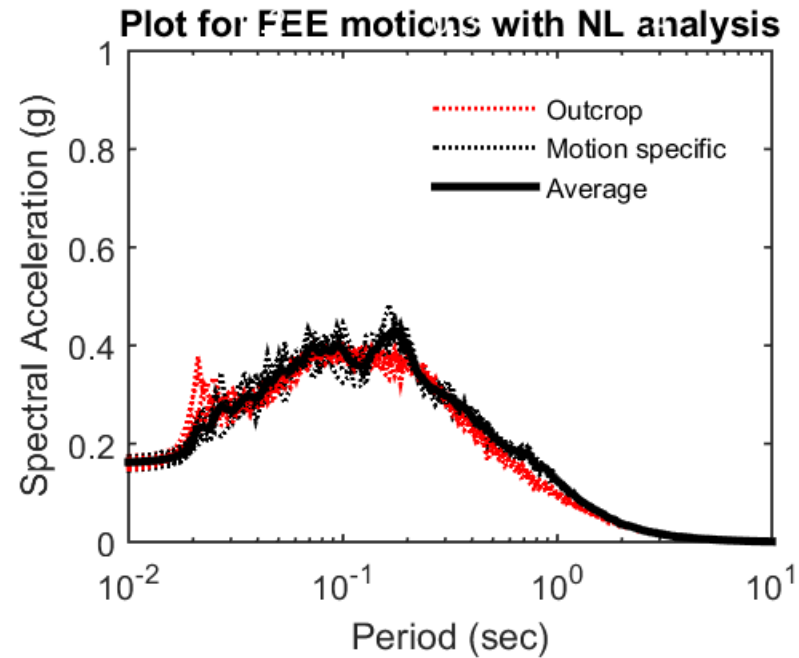


## Summary plots: RSA at ground surface

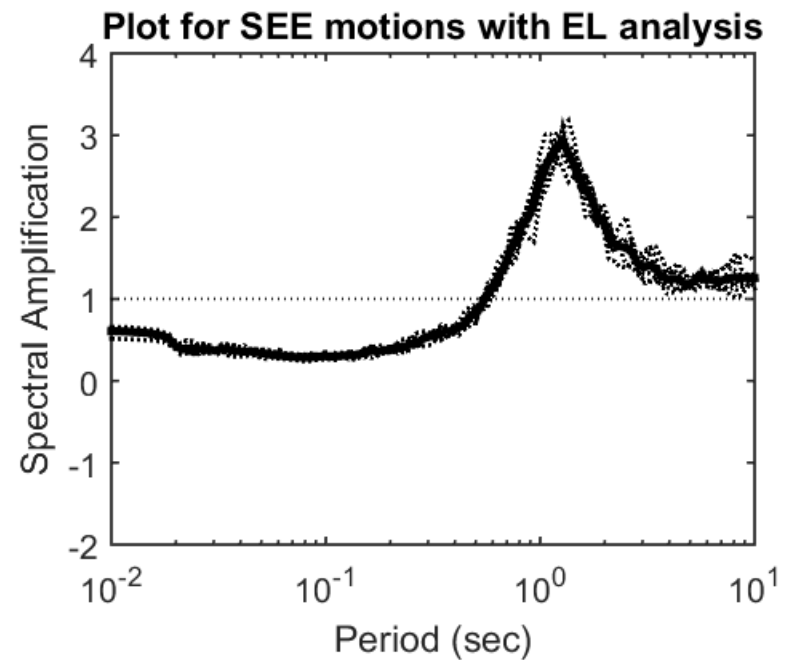
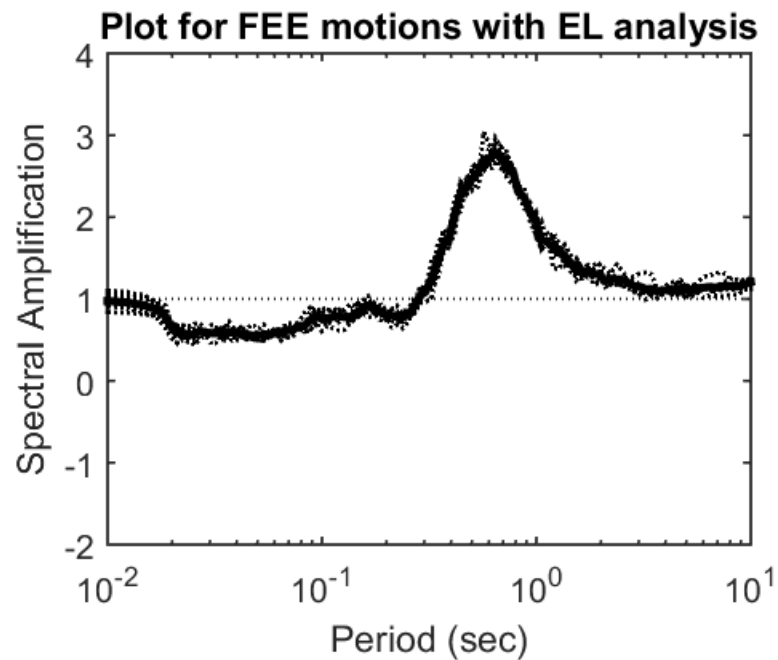
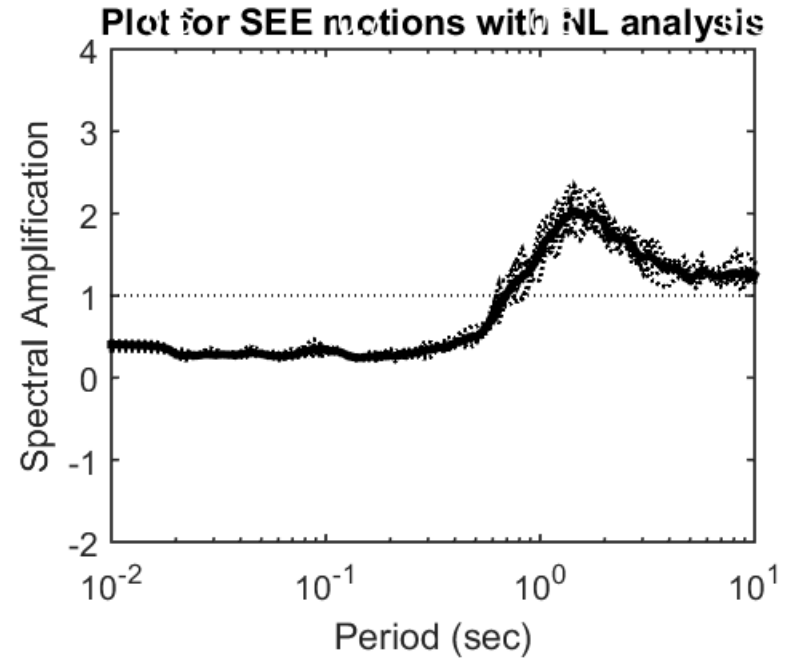
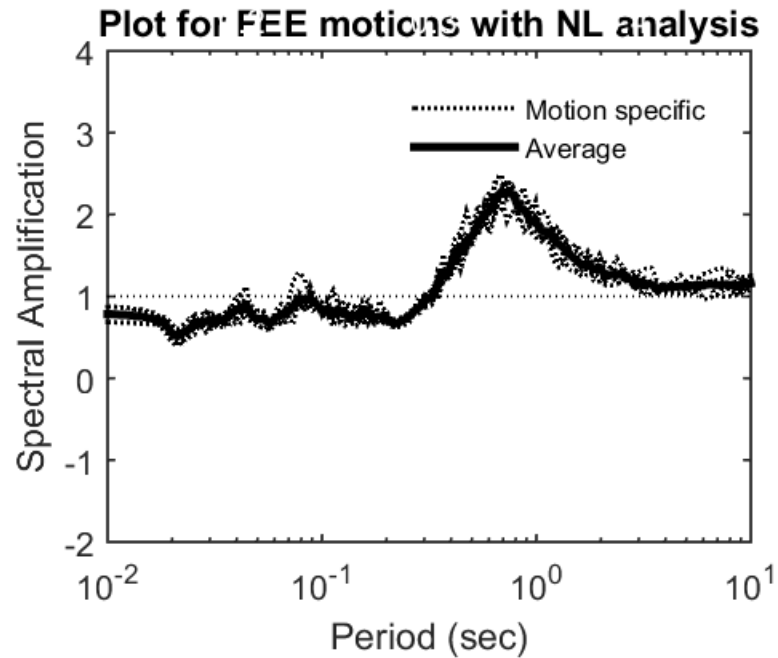




## Summary plots: RSA at top of Marl



## Summary plots: Spectral amplification at ground surface



## Summary plots: Spectral amplification at top of Marl

